CITY OF COLUMBIA
TENNESSEE

AGENDA

The Columbia Municipal Planning Commission will meet on Wednesday, August 9, 2023 at 4:00 PM in Council Chambers in the basement of City Hall, 700 N. Garden Street. The Planning Commission will consider the following:

I. Organization

1. Call to Order
2. Roll Call
3. Welcome of Visitors/Rules of Conduct
4. Acknowledgement of Official Communications of the Columbia City Council on Annexation and Zoning.
5. Approval of Minutes
6. Review of Bonds and Letters of Credit

II. Consent

1. 23-0209 - Request from T-Square Engineering for Final Plat approval with surety for Independence at Carter's Station Section 3.4 consisting of 29 lots off Lively Street.

2. 23-0129 - Request from Chet Rhodes for revision of a Final PUD Master Plan at 730 Mooresville Pike. Revisions are limited to accessory structure design.

III. Discussion Items

1. 23-0144 - Request from Joseph Ahler for Preliminary Plat and Development Plan approval for Liberty Pointe at Bear Creek located at 1451 Lasea Road consisting of 143 lots.
   THIS ITEM WAS DEFERRED FROM A PREVIOUS AGENDA

2. 23-0193 - Request from M2 Group LLC for Site Development Plan approval of Mackenzie Place consisting of 34 units at 220 Theta Pike.
   THIS ITEM WAS DEFERRED FROM A PREVIOUS AGENDA

3. 23-0237 - Request from WES Engineers & Surveyors for Preliminary Plat and Final PUD approval of the Beechcroft Plaza PUD off Cayer Lane.

4. 23-0238 - Request from Wade Kincaid for Rezoning of property located at 6218 Cayce Lane from CD-2 (Rural Character District) to CD-3L (Neighborhood Large Lot Character District).

5. 23-0244 - Request from David McGowan for revision of the Arden Village Preliminary PUD Master Plan for Building "A" off Arden Village Drive.

6. 23-0258 - Request from Steven Saenz for an Exception to Access Management at 107 South James Campbell Boulevard.

7. 23-0245 - Request from the City of Columbia for Annexation with Plan of Services for a 22 acre portion of Tax Map 88 Parcel 33.07 off Estes Lane. The property will be assigned the default zoning district of CD-3L (Neighborhood Large Lot Character District).

IV. Other Business

1. Adjournment

The Planning Commission of the City of Columbia welcomes your presence and participation at this meeting. If you wish to address the Commission regarding any item on the Agenda, please sign the sign-up sheet and indicate which agenda item you would like to comment on. You will have the opportunity to comment on an item when it comes up on the Agenda and before the Commission votes on the item. Once recognized, you may then come to the podium and state your name and address. Anyone requesting accommodation due to disabilities should contact the ADA Coordinator, Wanda McClain, at 931-560-1570 prior to the meeting. For other questions, please contact the Department of Development Services at 931-560-1560.

Organization

Item I.1. - **Call to Order**

Charlie Goatz called the Planning Commission Meeting of the City of Columbia to order at 4:00 P.M. The meeting was held in Council Chambers at City Hall. Mr. Goatz called for a moment of silence to reflect upon the events that have gone on in Columbia recently. Reflecting internally on the importance of showing love, kindness, quality and things of that nature.

Item I.2. - **Roll Call**

Chairman Goatz asked for a verbal roll call.
Quorum present and including the following:
Councilman Coleman, Mr. Thomas Hutto, Dr. Christa Martin, Mayor Molder, Mr. James Shannon, and Mr. Charlie Goatz
Absent was: Mr. Ray Pace
Other Attendees: Mr. Glenn Harper, City Engineer; Mr. Paul Keltner, Development Services Director, Mr. Tony Massey, City Manager; Mrs. Sandra Richardson, Secretary; Mr. Kevin McCarthy, City Planner, Mr. Robert Archibald, Planner II, and Mr. Tim Tisher, City Attorney

Item I.3. - **Welcome of Visitors/Rules of Conduct**

Chairman Goatz welcomed guests and applicants to the meeting. The Chairman discussed the meeting order, the process for speakers to be heard, and exiting after each item quietly.

Item I.4. - **Acknowledgement of Official Communications of the Columbia City Council on Annexation and Zoning.**

Director Paul Keltner shared the updated status of the Planning items that were forwarded to City Council.

Item I.5. - **Approval of Minutes**

Mr. Goatz moved to approve the June 2023 minutes, with Councilman Coleman seconding. The minutes were approved by a vote of six to zero.

Item I.5. - **June 2023 Minutes**

Approved.

Item I.6. - **Review of Bonds and Letters of Credit**

City Engineer Glenn Harper stated all sureties and letters of credit are in order.

Consent

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Item II.1. - **Request from TKC Architecture and Engineering for Final Plat approval with surety in the amount of $295,000 for Honey Lakes Townhomes Phase 1 off Williamsport Pike consisting of 91 lots.**

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Item II.2. - **Request from Allen O'Leary for Preliminary and Final plat approval for 3 lots at 462 Mooresville Pike.**

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Item II.3. - **Request from T-Square Engineering for Final Plat approval with surety in the amount of $175,000 for Summit at Carter's Stations Phase 2 consisting of 32 lots off Wellwind Road.**

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Item II.4. - **Request from Allen O'Leary for Final Plat approval with surety in the amount of $200,000 for Drumwright Phase 2A consisting of 29 lots off Scooter Street and Lyman Ridge Road.**

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Item II.5. - **Request from Allen O'Leary for Final Plat approval with surety in the amount of $125,000 for Drumwright Phase 2B consisting of 14 lots off Steadman Street and Lyman Ridge Road.**

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Item II.6. - **Request from Allen O'Leary for Final Plat approval with surety in the amount of $265,000 for Drumwright 2D consisting of 51 townhome units off Drumwright Way and Fordham Street.**

Mr. Goatz read the consent items and moved to approve subject to technical comments. Mr. Coleman seconded the motion. The motion to approve passed six to zero.

Discussion Items

Item III.1. - **Request from Sue Stephenson to rezone multiple properties from CD-3 (Neighborhood Character District) to CD-3L (**Neighborhood **Large Lot Character District) in the Carriage Hills subdivision located off Concord Road.**

THIS ITEM WAS DEFERRED FROM A PREVIOUS AGENDA

Mr. Kevin McCarthy presented the details of the staff report. At the last meeting there was some discussion between the Commission and the applicant and there was a deferral so that Planning Commission could consult with the legal council. Dr. Martin stated that there was some additional research done in trying to look at history across the state in this community of Columbia as to a request that related to this. The Commission have not been able to establish that. The questions that were answered include does CD-3 most closely mirror the old ordinance zoning. Mr. McCarthy stated yes, the previous zoning was converted to the CD-3 when Council adopted the current zoning ordinance July 14, 2022. Dr. Martin asked if this zoning allows apartment requests. Mr. McCarthy stated that not every zoning allows apartments. The current CD-3 does permit in certain circumstances, a duplex if a lot is at least one hundred feet, the requested CD-3L does not. Dr. Martin asked what adverse impact would be on the four lots. She knew that two of them are contiguous, and two of them are not. Mr. McCarthy stated that it wouldn't be any direct impact on them except they would be surrounded by properties with different zoning. Both the CD-3 and the CD-3L are consistent with the comprehensive plan which is what staff would call a spot zoning that allows similar uses. It would be different from anything around them. He imagined in the future those four lots where the other two large parcels above the neighborhood trying to develop there may be an argument about compatibility. Dr. Martin moved to deny the request, and Mr. Hutto seconded the motion. Ms. Sue Stephenson stated that there is nothing in the zoning ordinance that prohibits this zoning. Whether or not the Commission sees it somewhere else, she doesn't know that it is relevant. She actually did speak to the owner of those four lots early on and he made the statement to her that his lots were unbuildable. She stated that she told him what they were planning to do for a while and asked if he had any objection to that and he stated no. He also stated later on if he wanted to change his zoning to be comparable to theirs, he would do that. He had no objection to that. Those lots have sat empty for thirty-five years for a reason. She also stated that she didn't remember if she shared this last month, but they didn't just come up with this. They wanted to do this two years ago. She actually called Mr. Keltner on the telephone and he said staff was about to start working on the zoning ordinance. He recommended that they wait until staff finish the new zoning ordinance. She said fine they will do that. She stated that she also asked Mr. Austin Brass about the process, and he did recall the conversation. She also stated that they are compliant with the six criteria that this body has to look at. They just want the zoning classification that conforms with the larger lots that they have there. Most of the homes are a half acre, one acre, and one acre plus up to two acres. They just want to protect their subdivision and their property value, and yes, this would prohibit duplexes. There

is none in there currently. All the homes there now are all single family homes, which is exactly what the CD-3L under larger lots requires. They meet the Suburban Neighborhood classification. Mr. Coleman asked if it is legal would the Commission be opened up to liability if the Commission were to grant the zoning. Mr. Tim Tisher, City Attorney, stated that he doesn't think the Commission is subject to any liability. He stated that he thinks the question is that the Commission have to look at this and ask whether there is any adverse impact on the adjourned properties. That is the way the Commission has to look at it, because that is the main criteria. Councilman Coleman inquired about comments staff may have. Mr. McCarthy stated that his only comment would be that both the current and requested zoning be consistent with the comprehensive plan. Councilman stated that those would be his thoughts if it is legal and, going by the zoning ordinance, he didn't know of any negative consequences that would come from this. It seem like the purpose of this was to make sure that one of them was to sell the house and a new comer was to come in and they couldn't put a duplex in the neighborhood. Mr. Goatz stated if this was a one hundred percent request by including the empty lots, then that would be another scenario to consider. Not including those four lots some are joined and some are not but one or two of them still stand out almost like creating spot zoning. The other item that Ms. Stephenson addressed on was some of the items of our criteria. One of the criteria item was whether the conditions affecting the area had changed to a sufficient level that warranted the zoning map amendment. That is not an area of change that warrants the change. It is done and it is what it is. He is in support of the motion. Mayor Molder stated it is the surrounding property owners that he have not heard a reason articulated as to why this would be necessary, other than trying to control what happens around them. He understood that this would disallow a duplex to be built on the property, but the reality is these properties are already built. There should be no fear of duplexes. To him there is no way that you could articulate the logic here that doesn't have the ultimate impact on the surrounding owners. Further discussion included the effects on the surrounding parcels; changing this to CD-3L could impact the other parcels, greater impact, and remove restrictive covenants. The motion to deny passed with a vote of five to one, with Councilman Coleman voting nay. Ms. Stephenson asked if the denial would still go to Council. Mr. Keltner stated it is at the choice of the applicant. The applicant will have to make the choice of whether they want to move forward to City Council or if you want to remove the request. Ms. Stephenson asked if it had passed tonight would the Planning Commission have had a second reading. Mr. Keltner stated no, it is just a recommendation.

Item III.2. - **Request from Chapdelaine and Associates for Preliminary Plat and Site Development Plan approval for 29 lots in Fieldstone Farms Section 5 Phase 2 off Williamsport Pike and Golden Place.**

THIS ITEM WAS DEFERRED FROM A PREVIOUS AGENDA

Mr. McCarthy gave the details of the staff report. Mr. Allen Brawner, and Mr. Zack Harvill were present to answer questions. Discussion included sewer issues, previous plans,

and grinder pumps were to be used. Mr. Harvill stated they got things cleared up with wastewater, and he had a letter signed by Mr. Donnie Boshers. Further discussion included lot design clarification, lot width, lot density, green space area, kiosk area, different location, the goal was to maximize the property gain as many lots as possible, on the side of the road on Golden Place there is room, it is outside of the neighborhood, and keeping the tree buffer by the stream. Mr. Goatz asked if they could include the green space in the utilized space that they would use on that side of the street. Mr. Brawner stated that they potentially could lose the mail kiosk, but they would like to keep those two lots. Mr. Goatz stated having a kiosk is a requirement. Mr. Brawner stated that they can move the kiosk over adjacent to where the detention pond is. Mr. Keltner stated that the options are once they get to seventy-five in boxes, then they are required to have a dedicated parking and pick-up area. But if it is less than seventy-five, then there is a standard detail in our engineering classification that will allow you to put them on the streets. You could actually move all of that it is not really needed. Mr. Goatz stated from a design layout the two lots that are there conform to design layout. He is thinking that there will be a better layout of green space for lots 146 and 147, which is quite a bit of greenspace on the other side of the stream. He felt that it would be used more if it was on the other side of the stream. Mr. McCarthy stated that they are conforming lots with the caviar that the documents that were submitted by the applicant show a parking area that does not conform and there was a note from an earlier submittal about needing a variance which would have to be considered on a case by case basis. They are conforming lots, but it is up to this body to determine whether the civic space meets the standards. Mr. Goatz stated that his concerns are the civic space meeting that requirement. He also stated he assumed by meeting requirement by design, and utilization is functionality. Mr. McCarthy stated yes, there are eight civic space types and they have basic standards for context and facilities. The applicant did add these features from a previous version that was submitted in response to the Commission's previous request to add more amenities to the civic space. Mr. Keltner asked if they said they were going to build a sidewalk on Golden Place. Mr. Brawner stated yes. They can access the green space by constructing a sidewalk tying into the proposed sidewalk for the extension of the drive. Mr. Keltner stated that it is not on the plan, but that is what you are saying that you are doing now. Mr. Harper stated that this would require widening of a bridge. Mr. Brawner stated yes. Mr. Goatz stated that their civic space would entail some walking with some green space with picnic tables and some grills. The applicant stated yes. Mr. Goatz stated no playground equipment. Mr. Brawner stated no. Mr. Goatz stated I know, Mr. McCarthy you stated that it is up to this body to determine what is sufficient, but are there standards here that sets a minimum. Mr. McCarthy stated yes there is, but this development is under the size that triggers the requirement. Mr. Goatz stated that his issue is moving the green space to the side of the stream. Further discussion included price point. Mr. Goatz moved to approve subject to all technical comments, and moving the green space to replace lots 146 and 147, with a second by Mr. Coleman. Motion to approve with conditions passed six to zero.

Item III.3. - **Request from Larry Owens to rezone property from CD-3L (Neighborhood Large Lot Character District) to CD-4(General Urban Character District) at 1205 East End Street.**

THIS ITEM WAS DEFERRED FROM A PREVIOUS AGENDA

Chariman Goatz abstained, and Vice-Chair Coleman led the discussion. Mr. McCarthy gave the details of the staff report. The applicant's updated request is consistent with the comprehensive plan. There is an updated concept that does show one lot that does not conform. For the administrative process, it conforms to the standards. Mr. Tracey Sieber, Surveyor, and Mr. Larry Owens, were present to answer questions. Mayor Molder moved to approve, with Councilman Coleman seconding. The motion to approve passed five to zero, and Mr. Goatz abstained.

Item III.4. - **Request from Joseph Ahler for Preliminary Plat and Development Plan approval for Liberty Pointe at Bear Creek located at 1451 Lasea Road consisting of 143 lots.**

THIS ITEM WAS DEFERRED FROM A PREVIOUS AGENDA
THE APPLICANT HAS REQUESTED TO DEFER TO ANOTHER AGENDA

Mr. McCarthy gave details of the request to defer. He stated last time there were needs to address comments from Wastewater was the reason for your deferral, since that time Engineering has requested further information. Mr. Goatz asked if there is a central redesign of the plat that could occur from the Geo Tech request. If so is a deferral the right choice here, versus going through the reapplication process. Mr. McCarthy stated it is up to the Commission. His understanding is there could be some changes to the layout of lots, and roadways within the subdivision. He is not sure that the issues that wastewater raised have been addressed. It would be difficult to turn it around with Monday being resubmittal. It would be difficult for the applicant to turn it around and it would be difficult for staff to review. The City Engineer might have some thoughts on how expensive the changes would be. There were some aquatic features located, the applicant can have those investigated to determine exactly what they are. They can redesign around it or curve the road around, it is kind of up to them. He also stated that he doesn't know as far as timing goes. Mr. Goatz moved to deny it. Mr. McCarthy stated that he didn't see Mr. Ahler present. Councilman Coleman seconded that motion. Mayor Molder asked staff for clarification on the deferral. Mr. Keltner stated that they requested to defer based on not having the documentation that had been requested. Mr. McCarthy stated to clarify the applicant requested to defer because staff asked them to. Mayor Molder stated the reason for the deferral was at the request of staff. Mr. Goatz stated, upon that, he re-tracked his motion, and replaced it with a motion to defer and Mr. Coleman seconded. The motion to defer passed six to zero.

Item III.5. - **Request from P-R Vesper, LLC for Final Plat approval of Vesper Court with surety in the amount of $28,500 for 16 lots off Sunset Avenue.**

Mr. McCarthy gave the details of the staff report. Mr. Goatz stated that the water availability letter had expired on this. Mr. McCarthy stated that it is confirmed at

Preliminary Plat. Mr. Luis Campos, and Corey Nelson were present to answer questions. Discussion included dumpsters, private trash service, dumpster location, requirements, designated area, conforming to City standards, design standards, public versus private, improving the bridge, and construction dumpster administrative approval. Mr. Goatz moved to approve subject to technical comments, and Mr. Shannon seconded. The motion to approve subject to technical comments passed six to zero.

Item III.6. - **Request from Adam Crunk for Preliminary PUD Master Plan approval for Honey Farm Townhomes consisting of 197 units off Honey Farm Way.**

Mr. McCarthy gave the details of the staff report. The main issues are the height of the building fronting Honey Farm Way, and the comment from Wastewater. Right now there are two pump stations that serve Hone Farm Subdivision. Pump station one is in the lower area where single family homes are and goes up to pump station two. The Wastewater Engineer has determined, based on the one hundred and ninety-two unit development, and the other entitled units in the area will exceed the capacity of the two pump stations together, so they would like to see the applicant to commit to removing pump station one and reroute the sewer shed gravity under Rutherford Creek. The applicant is requesting deviation from the PUD-R standards specifically to allow a road to encroach the project buffer that is stub out for future development of parcels. Staff does support that. They want to deviate from the required parking for the mail kiosk detail. They provide ample parking on the street. He stated that they don't think it is necessary to provide it at the mail kiosk. Staff would be agreeable to if it is accessible to parking in a accessible path to the mail kiosk. The block perimeter the PUD-R has a maximum block perimeter of 2000 feet. They have one large block at the center of the development that include the units that front Honey Farm Way. They are greater than 3000 feet in perimeter. In response to technical comments, the applicant did to break that up a little bit a pocket park. Within the block are alleys which provide general circulation. The applicant is requesting to deviate from the standards. Mr. Crunk provided an updated water availability letter. Mr. Drew Smith and Mr. Adam Crunk were present to answer questions.Mr. Goatz called on Mr. Donnie Boshers for an update from Wastewater. Mr. Boshers stated when the Honey Farm Subdivision was planned earlier the thought was once the second pump station got built, the first pump station would be taken out. It would gravity flow under the creek. Due to around the 2007 slow down of the building market year, it never got done. It seems with sewer when something is put in it usually stays. This is an opportunity to get that done since it had been planned previously. The reason for it is there are 430 other units there that Ryan Filipkowski, Wastewater Engineer has identified that will go to pump station two. That with the193 extra units going to pump station one which pumps to pump station two would cause problems definitely in the future with other problems. They felt that this would be a good time to get that completed. That would definitely open up the second pump station to take care of everything that has been proposed previously in that area. Mr. Goatz asked Mr. Boshers if there would be any upgrades in addition to eliminating pump station one with the addition of the additional units requiring upgrades to pump station

two or is all of this going to gravity feed to pump station two. Mr. Boshers stated pump station two will be able to handle what is being proposed if they can get pump station one gravity flow under the creek. In the future that could also free up a little over fourteen thousand linear feet of force main that goes from pump station two. That is quite an undertaking, that length of pipe, it all goes to Carter's Creek Pike. Which the trust main from Rutherford Creek was put in for this reason of that east side of Highway 31. No further updates to pump station two will be needed. Mr. Crunk stated that they submitted with a different layout than the previous engineer. The road layout, the alley lay out in one that satisfies the zoning and code requirements, and it meets the constraints of the site. They passed out the water availability letter. Discussion included this is part of an existing PUD, staff supports the majority of the deviations. Mr. Crunk addressed the use of the alley. It borders Honey Farm Way almost entirely there is a kink in the property where it gets a little more narrow, lot perimeter, adding another access to Honey Farm Way, trying to be in conformance with the code, they separated the townhomes, and provided a wider walkway. He stated that visually it looks like a block separation, but it is without providing another access. Mr. Crunk stated as far as the circulation goes they have units that are fronting Honey Farm Way. They have a pretty sizable distance between the next thoroughfare which creates a gap between the alleys and the detention pond. The detention ponds from the street will not be visible. He feels that in this situation it is advantageous to have two separate alleys where there is not double frontage units. Further discussion included the site allowance, flipping the road and alleys, maintenance concern from the City's stand point, the geometry of the property, maximum setback, Honey Farm Way, least impactful, sewer, exploring options, no formal agreement, driving factor, the applicant does not think it is fair because they own about fifty percent of the property, insuring adequate copacity. Additional discussion included building height, the buildings they have are the three stories, they feel this proposal is in conformance with the land use code, and they feel that this is a down zoning from the previous PUD. Mr. Goatz stated that he got a little confused when he was discussing the green area, and the alleys. He asked if he was discussing not wanting what was on the illustration or are you wanting what was presented here, as what is illustrated.Mr. Crunk stated what was illustrated there. The only way to break up the block perimeter, the only way to divide that up is to have a public street cut through that area that is shown in green. He also stated that he doesn't recommend it, but he wanted to point out that it is the area where you would have to make the connection. Mr. Goatz stated just for clarification staff made a recommendation in that green area. He asked was it to make it more civic space instead of a roadway. Mr. McCarthy stated that it is civic space now. The sight is limited to the number of access points that you can have on Honey Farm Way. That is really driving this creating an enormous situation. He stated that he felt that if it was up to Mr. Crunk he would have a third access point there. That won't work for access management. In response to comments about the size of this block he has broken these up by adding civic space there, which does help it is an improved design. The comment in the staff report is that it would be even better and would be able to block the perimeter better and deal with the alley for general circulation if that was widened to at least fifty feet. Then the limited lots one seventy five to one

seventy eight, and lots one eighty nine through ninety one on that park if possible. Further discussion included from a civic space standpoint. The code requires a minimum of five up to a maximum of twenty-percent. It says that this has 5.3%, which is on the verge of the minimal standard. By widening the civic space, would also grant a larger percentage toward the civic space requirement is that a correct statement. Mr. McCarthy stated yes, that is correct. An earlier version that Mr. Crunk had mentioned staff had seen a few times, it is also due to the Fire Marshal sees absolutely everything that comes through. Mr. Crunk had originally proposed townhomes fronting a civic space between Honey Farm Way and the townhomes, because the access would be on the rear of the alleys to get to it,and he had to redesign it and move the block up to the roadway. That has caused him to have the circulating alleys behind it. Mr. Crunk stated that it was a detention space. Mr. Goatz stated that the Commission would like to see the sewer plan and all in this space before approval of the PUD Master Plan instead of waiting until the final Master Plan. He also stated that this is a serious issue and it needed to be addressed. Before there is an approval he think the Commission would want to see what the sewer lines would look like. Mr. Harper stated that he thinks the Commission want assurance that each unit can and will be served by utilities. Mr. Keltner stated the thing to keep in mind is an approval of a Preliminary Master Development Plan is essentially guaranteeing the rights for that particular project. If the utilities were not to work out, it could have been a utility that may not have been what you would have liked to see, and you would not be able to stop that in essence already issued the rights to develop the property. Mr. Crunk stated if they were to build their project first and the remaining townhomes on the Southside of Honey Farm Way were not built there would be adequate utilities for their project. It is that close to them having the capacity as it is. Mr. Goatz stated that without a known sewer plan he doesn't know that he has enough to move forward with a motion other than a motion to deny as it is presented here today. He encouraged Mr. Crunk to work more with the Wastewater department, and with staff, for their recommendation for the alley way suggestion on the widening of the civic space. Mr. Crunk asked if a deferral would be an option. Mr. Goatz stated that he thought with a deferral and you redesign the PUD, he didn't know that the deferral would allow time to go through the entire development review committees. Mr. McCarthy stated that a deferral would put it on the Commission's next regular schedule. Mr. Goatz moved to deny, it doen't currently conform to the PUD master plan due to infrastructure Section 8.5.21. Dr. Martin seconded. Mr. McCarthy stated to vote yes is to recommend denial of the PUD Master Plan. The motion to deny passed six to zero. Mayor Molder stated that he was going to have to leave for another commitment that he had.

Item III.7. - **Request from Eric McNeely for Access Management Exception at 2408 Nashville Highway and Greens Mill Road.**

Mr. Glenn Harper, City Engineer, gave the details of the staff report. He stated that this was an appeal to the City Engineer's ruling on the exception of the Access Management Ordinance. The proposal is for access to a car wash at the southeast corner of Nashville Highway and Greens Mill Road. In reviewing the access request, it was found not

compliant with several areas of the Access Management ordinance. There is a driveway spacing requirement and corner clearance of two hundred and twenty feet from an existing road to the new access.
The access proposed is only about ninety feet. The particular site also has three road frontages and the Access Management ordinance would require access to come off a lesser classified roadway, which is Drumwright Way. If the Commission look at the access exhibit, the access aligns with a cross hatch median, that would make the proposed access be a right in, right out only. It would create a lot of conflict there where staff has numerous traffic improvements already planned for the developments that are approved. Staff currently have access to the site to the north moved further east on Greens Mill Road because of these conflict points. Adding another access point at this location, staff found would be unsafe, and felt like the exit off Drumwright would allow better circulation on the site. Mr. Kent Harden, Chairman of the Board of Heritage Bank and Trust, stated that he was asked by the shareholders to come and share some historical context. He wanted to make sure that everybody was aware of their history. The bank purchased the property in 2018 to build a branch on. From their perspective over the past five years, the development that the Commission have approved around them now has a side street, now they have a problem with drainage coming off on their lot. The commission has approved a road to the east of them that is twenty feet higher than their elevation when they now have to deal with a water situation and run off. It seems that they have something that the government is taking that belongs to their shareholders, devaluing their property. From an ownership standpoint, his shareholders have no intention of giving up their three hundred feet of right-of-way access on Greens Mill Road. They bought it, they paid for it, and it is zoned, and they intend to keep it. Mr. Goatz stated for clarification what the Commission is looking at today is strictly for a potential car wash. If the Commission votes yes or no on this matter, it's for what's proposed here today, and it is not a permanent approval. Mr. Harper stated that the Commission is voting on just the location of the access to the site for a car wash. Mr. Goatz asked if the contract and the car wash doesn't happen, whatever happens here is null and void, unless another car wash potentially. Mr. Harper stated yes.Whatever new building that is going to be built on that site, based on all the zoning ordinance, even before the access management plan would require new access points with a new plan. Mr. Harper stated yes, each respective plan would require new access points. Mr. Goatz inquired about the elevation concerns that were addressed. Mr. Keltner asked if there had been complaints about the drainage. Mr. Harper stated not that he was aware of. The property has been a low lying area for years in the past but he hadn't received any since Drumwright Way was constructed. Mr. Goatz stated that directly across the street from this, the Commission required the design to move that access point down Greens Mill Road. Mr. Harper stated yes, because there are so many improvements approved and going to be constructed at Greens Mill Road and Nashville Highway. There will be three exiting lanes from Greens Mill Road on the Nashville Highway, and there is a right turn lane going into Drumwright Way. Mr. Goatz asked Mr. Tisher if there were any concerns about taking away rights. Mr. Tisher asked if the city had enough land to do all of these projects or would we have to take some

land in order to do these improvements. Mr. Harper stated that the right-of-way was being dedicated with the property to the north to do all the improvements. No land will be taken from the property in question with the access management exception. Mr. Goatz stated for clarification that what the Commission is looking at is a concept and the Commission really doesn't know how it will lay out. There will be another plat that will be reviewed about how it will be layed out on the site. Mr. Harper stated yes and that would be done. Administratively, you are strictly looking at the location of the access point. Mr. Harper stated that the site design could dictate where the access is. Mr. Goatz asked if the Commission is prematurely looking at this. Mr. McCarthy stated that administratively, staff wouldn't be able to approve the site that showed an access point that wouldn't allow it. Mr. Goatz stated at that point you got a conforming building, and a conforming layout and would know then. He also stated that he didn't know when setbacks were finally drawn out where the specific building was located. It might have to be further to the east or to the south.Mr. Goatz asked if the request would be in the same location. Mr. Harper stated yes. Mr. Goatz stated which violates the setback requirements from the side street to the east of it. Mr. Harper stated that the driveway separation requirement, and the corner clearance requirement. Mr. Goatz stated a left turn out of there would be an illegal move with the hash marks. Mr. Harper stated yes. Further discussion included the crossing of four lanes to go north, a left turn in, looking at the grading, the roadway should be six feet to eight feet higher, signalized at Nashville Highway, stop sign, having an exclusive left and right out, and denying what's presented. Mr. Goatz stated, based upon the concerns of the City Engineer, he moved to deny, and Mr. Shannon seconded. The motion to deny passed five to zero.

Item III.8. - **Request from Travis Bonar for revision to Final PUD Master Plan and Preliminary Plat approvals of McClure Farms Phases 1-4 consisting of 431 lots at 2504 Nashville Highway.**

THE APPLICANT HAS WITHDRAWN THIS REQUEST

Mr. Goatz stated that the applicant had last minute withdrawn the request.

Item III.9. - **Request from M2 Group LLC for Site Development Plan approval of Mackenzie Place consisting of 34 units at 220 Theta Pike.**

Mr. McCarthy gave the details of the staff report. There are some issues that came up with the resubmittal. The plan does not provide adequate parking.Mr. Goatz stated there is significant concern for garage space. One cannot count the garage space for parking, double parking, or cul de sac. We are at a bear minimum, we don't have the parking required for the civic space. Mr. McCarthy stated that one of the criteria for the review is whether or not the site design is tailored to the site. It is a very narrow piece of property, access is limited. The Civic space is on the far east side of the property, it is also where the cul-de-sac turns around it seems that this would be the natural place to put more parking. Mr. Matt Brian was present to answer questions. Mr. Goatz asked if it met the

site distance requirement. He also asked if the tenants had children, would a bus try to stop there past the curve, in Theta Pike would there be a turn lane. Mr. Harper stated that he had addressed the site distance with the applicant. As far as the school bus, he was not sure if they would pull in this road or not. There was no turning lane required for the traffic study. Mr. Brian stated that the two parking spaces for the civic space they overlooked. They are proposing to do some parallel parking spaces in the cul-de-sac. Further discussion included staff review, the guest parking meet the minimum, additional parking, adjusting the rafter for more parking, next to the civic space could be a parking lot for business, and at one point, parking off the cul-de-sac was once proposed, parking straight off the street, single point interest way, seeing more details of the garage, there is a staircase in the garage, nine foot ceiling, design eliments, HPR, reorienting the buildings, creating connections, challenging connections, single lots, redrawing the line, and adding the parking area. Mr. Harper stated that staff wouldn't support parallel parking around the cul-de-sac. Mr. Shannon asked if there is a requirement for the extra space between the sidewalk and the street. Mr. Keltner stated that the right-of-way width is a requirement. Mr. Shannon asked if they could be increased the right-of-way. Mr. Keltner stated, no it is set at seventy. They pick the thoroughfare that they want to use. It is all set up. Mr. Goatz asked what the setback requirements from the sidewalk to the driveway are. Mr. Keltner stated it is twenty-two feet from the back of the sidewalk. Mr. Goatz asked if a truck could be parked on the sidewalk, Mr. Keltner stated no. Further discussion included eliminating the extra driveway beyond the sidewalk, wider units, and counting on street parking. Mr. Goatz moved to defer, and Councilman Coleman seconded. The motion to defer passed five to zero.

Other Business

Mr. Keltner stated that he would like to acknowledge Mr. McCarthy's hard work on the staff reports. They are extremely detailed, and the format has changed. Mr. Goatz stated that he liked the detail of the reports.

Item IV.1. - **Adjournment**

Councilman Coleman moved to adjourn and Dr. Martin seconded. The motion to adjourn passed with a vote of five to zero. The meeting adjourned at 5:52 p.m.Mayor Molder left the meeting at 5:14 p.m.

_____ _____

Planning Commission Chairman, Charlie Goatz

Date

Active Letters of Credit and Sureties

8/4/2023

DEVELOPMENT	DEVELOPER	AMOUNT	EXP. DATE
Colter Place Subidivison, Section 1 (rds/drainage)	Sterling Martin	$44,502.69	09/09/2016
Honey Farm Townhomes- Phase 1A (completion of roads)	Honey Farms Management, LLC	$20,000.00	12/13/2018
Honey Farms Townhomes Phase 2, Section 2 (roads)	Honey Farms Management, LLC	$40,000.00	01/12/2019
Armstrong Meadow, Phase 1, Section 3 (roadsd/drainage)	General Homes of Columbia, LLC	$203,500.00	05/05/2019
Honey Farms Subdivsion, Phase 2, Section 8	Charles Raines Construction, LLC	$14,500.00	05/05/2020
Honey Farms Subdivision, Phase 2, Section 10	Charles Raines Construction, LLC	$103,000.00	05/23/2020
Greystone Subdivision	LPT, LLC	$166,500.00	03/07/2021
Arlington Heights Subdivision, Phase 2, Section 2	Arlington Heights General Partnership	$105,000.00	04/25/2021
Baker Landing Subdivision, Phase 1, Section 1	Howell Home Builders, LLC	$13,900.00	04/27/2021
Arlington Heights Subdivision, Phase 1, Section 2	Arlington Heights General Partnership	$106,000.00	05/09/2021
Polk Place PUD Subdivision, Phase 1 (roads & drainage)	Columbia Properties, LLC	$28,000.00	05/23/2021
Independence @Carter's Station, Section 3, Phase 1	Pulte Homes Tennessee Partnership	$390,000.00	09/15/2021
Savannah Cove Subdivision - roads/drainage	Campbell and Lovell Rentals	$45,000.00	09/28/2021
Summerdale, Phase 1 (roads & drainage)	P & L Development	$135,000.00	11/17/2021
Elan Subdivision, Phase 2 (roads and drainage)	Shaw Enterprises	$142,000.00	01/04/2022
Polk Place PUD Subdivsion, Section 2A (roads & drainage)	Columbia Properties, LLC	$55,000.00	02/03/2022
Fieldstone Farms - Section 4 (roads & drainage)	Estate of Cyril Evers	$21,000.00	03/13/2022
Summerdale Subdivision, Phase 4 (roads & drainage)	P & L Development	$64,000.00	03/19/2022
Hatton Hills Subdivision (roads & drainage)	J & B Estate	$32,000.00	03/22/2022
Honey Farms Townhomes , Phase 2, Section 3	Lennar Homes of Tenn, LLC	$50,000.00	04/05/2022
Homestead at Carter's Station, Section 2, Phase 1B	FP TCI CCS, LLC	$6,500.00	03/17/2024
Homestead at Carter's Station, 5.2 and 6.1	Pulte Homes Tennessee Partnership	$254,000.00	04/16/2022
Homestead at Carter's Station. Section 4, Phase 1A	FP TCI CCS, LLC	$13,400.00	10/17/2023
Homestead at Carter's Station, Section 4, Phase 1 B	FP TCI CCS, LLC	$12,000.00	10/17/2023
Summerdale Subdivision, Phase 2 (roads & drainage)	P & L Development, LLC	$105,000.00	05/30/2024
Homestead at Carter's Station, Section 4, Phase 2	FP TCI CCS, LLC	$12,100.00	10/17/2023
Taylor Bend Road - roads & drainage	Meritage Homes of Tenn., Inc.	$120,000.00	06/30/2024
Taylor Landing Subdivision, Phase 5A (roads & drainage)	Meritage Homes of Tenn., Inc.	$48,000.00	06/30/2022
Taylor Landing Subdivision, Phase 5B (roads & drainage)	Meritage Homes of Tenn., Inc.	$72,000.00	06/30/2022
Taylor Landing Subdivision, Phase 4B, (roads & drainage)	Meritage Homes of Tenn., Inc.	$78,000.00	06/30/2022
Homestead @Carter's Station Subdivision, Section 4 Ph 3	FP,TCI,CCS,LLC	$16,000.00	10/17/2023
Cottages at Bear Creek , Phase 1 (roads & drainage)	Riverstone Homes, LLC	$165,000.00	07/19/2022
Valley View Subdivision, (roads and drainage)	James Davis, Sr.	$258,000.00	08/14/2022
Homestead @ Carter's Station Section 2 Phase 2B	FP TCI CCS, LLC	$11,100.00	04/20/2024
Summerdale Subdivision, Phase 5 (roads & drainage)	P & L Development, LLC	$55,000.00	10/14/2022
Independence at Carter's Station, Section 6, Phase 2	Pulte Homes Tennessee Partnership	$207,000.00	11/08/2022
Polk Place , Phase 2B (roads & drainage)	Columbia Properties, LLC	$56,000.00	11/12/2022
Homestead at Carter's Station Subm Section2 Phase 3	FP TCI CCS, LLC	$19,000.00	03/17/2024
The Ridge at Carter's Station, Phase 1A	Richmond American Homes of Tenn	$121,000.00	12/03/2022

Active Letters of Credit and Sureties

8/4/2023

DEVELOPMENT	DEVELOPER	AMOUNT	EXP. DATE
Independence at Carter's Station, Section 3, Phase 2	Pulte Homes Tennessee Partnership	$372,000.00	12/06/2022
Homestead at Carter's Station Section 2, Phase 1	FP TCI CCS, LLC	$14,100.00	03/17/2024
Homestead at Carter's Station, Section 2, Phase 2A	FP TCI CCS, LLC	$8,700.00	04/20/2024
Armstrong Meadows Subdivision, Section 4	Smith Douglas, LLC	$475,000.00	02/01/2023
Villages at Carter's Station	Villages at Carter's Station Dev., LLC	$200,000.00	02/04/2023
Cottages at Bear Creek , Phase II (roads & drainage)	Riverstone Homes, LLC	$156,000.00	03/18/2023
Summerdale Subdivision, Phase 7 (roads & drainage)	P & L Development, LLC	$66,000.00	03/21/2023
Ridge at Carter's Station, Phase 1B (roads & drainage)	Richmond American Homes of Tenn	$260,000.00	03/31/2023
Vesper Court (completion of the work)	P-R Vesper, LLC	$18,500.00	04/18/2023
Morgan Meadow Phase 2 (roads & drainage)	KCS Property, LLC	$135,000.00	05/12/2024
Armstrong Street Subdivision (roads & drainage)	Tennessee Regional Holdings, LLC	$75,500.00	05/14/2023
Polk Place, Phase 3 , (roads and drainage)	Columbia Properties, LLC	$79,000.00	06/17/2023
Independence at Carters Station Section6, Phase 3	Pulte Homes Tennessee Partnership	$197,000.00	07/14/2023
Bear Creek Overlook Place Phase 1 (roads and drainage)	CHR Land, LLC	$203,000.00	07/12/2024
Bear Creek Glen, Phase 1 (roads and drainage)	CHR Land, LLC	$90,000.00	07/12/2024
Homestead at Carters Station, Section 5, Phase 2	Pulte Homes Tennessee Partnership	$149,000.00	07/29/2023
Independence at Carters Section 3, Phase 3	Pulte Homes Tennessee Partnership	$155,000.00	08/05/2024
Quail Run Development, Phase 2 (roads and drainage)	Quail Run Development Co., LLC	$182,000.00	08/09/2023
Quail Run Development, Phase 1B (roads and drainage)	Quail Run Development Co., LLC	$185,000.00	08/09/2023
Drumwright, Phase 1 Townhomes Section (roads & drainage)	Lennar Homes of Tenn, LLC	$275,000.00	08/11/2023
Drumwright, Phase 1 Family Section (roads & drainage)	Lennar Homes of Tenn, LLC	$890,000.00	08/11/2023
Ridgeview Oaks, Phase 1 (roads and drainage)	A1 Home Builders, Inc.	$450,000.00	08/22/2023
Taylor Landing Subdivision, Phase 1A (roads & drainage)	Meritage Homes of Tenn., Inc.	$9,000.00	08/30/2023
Elan Subdivision, Phase 1 (roads and drainage)	Shaw Enterprises, Inc	$15,700.00	10/11/2023
Morgan Meadows Subdivision (roads & drainage)	KCS Property, LLC	$24,200.00	07/14/2024
Ridge at Carter's Station, Phase 2 (roads & drainage)	Richmond American Homes of Tenn	$645,000.00	10/31/2023
Taylor Landing, Phase 1B (roads & drainage)	Meritage Homes of Tenn., Inc.	$11,850.00	11/30/2023
Taylor Landing, Phase 4A (roads & drainage)	Meritage Homes of Tenn., Inc.	$121,000.00	11/30/2023
Summerdale Subdivision, Phase 3 (roads & drainage)	P & L Development	$97,000.00	12/22/2023
Quail Run Development Phase 1 (roads & drainage)	Quail Run Development Co., LLC	$157,000.00	01/03/2024
Summerdale Subdivision, Phase 3B (roads & drainage)	P & L Development, LLC	$17,000.00	01/27/2024
Summerdale Subdivision, Phase 6 (roads & drainage)	P & L Development, LLC	$103,000.00	02/07/2024
Morgan Meadow Phase 3 (roads & drainage)	KCS Property, LLC	$220,000.00	02/10/2024
Vulcan Quary Site Restoration	Vulcan Construction Materials, LLC	$62,000.00	03/01/2024
Ridgeview Oaks, Phase 2 (roads and drainage)	A-1 Home Builders, Inc.	$335,000.00	03/10/2024
Summit at Carter's Station Phase 1 (roads & drainage)	Tamarack Land - Carter's Station LLC	$465,000.00	03/17/2024
Baker Creek Place (roads & drainage)	SDH Nashville, LLC	$360,000.00	04/28/2024
Taylor Landing - Phase 2 (roads & drainage)	Meritage Homes of Tenn., Inc.	$188,000.00	04/30/2024
Taylor Landing Subdivision, Phase 3 (roads and drainage)	Meritage Homes of Tenn., Inc.	$11,700.00	07/31/2024

Active Letters of Credit and Sureties

8/4/2023

DEVELOPMENT	DEVELOPER	AMOUNT	EXP. DATE
Quail Run Meadows, Phase 3	Quail Run Development Co., LLC	$185,000.00	05/18/2024
Drumwright, Phase 2C	Lennar Homes of Tenn, LLC	$125,000.00	05/23/2024
Drumwright, Phase 2A	Lennar Homes of Tenn, LLC	$200,000.00	05/23/2024
Drumwright, Phase 2B	Lennar Homes of Tenn, LLC	$125,000.00	05/23/2024
Drumwright TH, Phase 2D	Lennar Homes of Tenn, LLC	$265,000.00	05/23/2024
Honey Lakes	Honey Lakes LLC	$295,000.00	06/14/2024
Vesper Court (completion of the work) 2	P-R Vesper, LLC	$10,000.00	06/16/2024
Summit at Carter's Station Phase	Tamarack Land - Carter's Station LLC	$175,000.00	06/14/2024
Independence @ Carter's Station, Section 3, Phase 4	Pulte Homes Tennessee Partnership	$140,000.00	07/13/2024
Independence @ Carter's Station, Section 6, Phase 4	Pulte Homes Tennessee Partnership	$160,000.00	07/13/2024
Homestead South @ Carter's Station	Pulte Homes Tennessee Partnership	$125,000.00	07/13/2024
Independence @ Carter's Station, Section 3, Phase 5	Pulte Homes Tennessee Partnership	$35,000.00	07/19/2024



VICINITY MAP - NOT TO SCALE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	30.00'	47.52'	42.70'	S 37°01'01" E
C2	30.00'	46.73'	42.15'	N 52°58'59" E

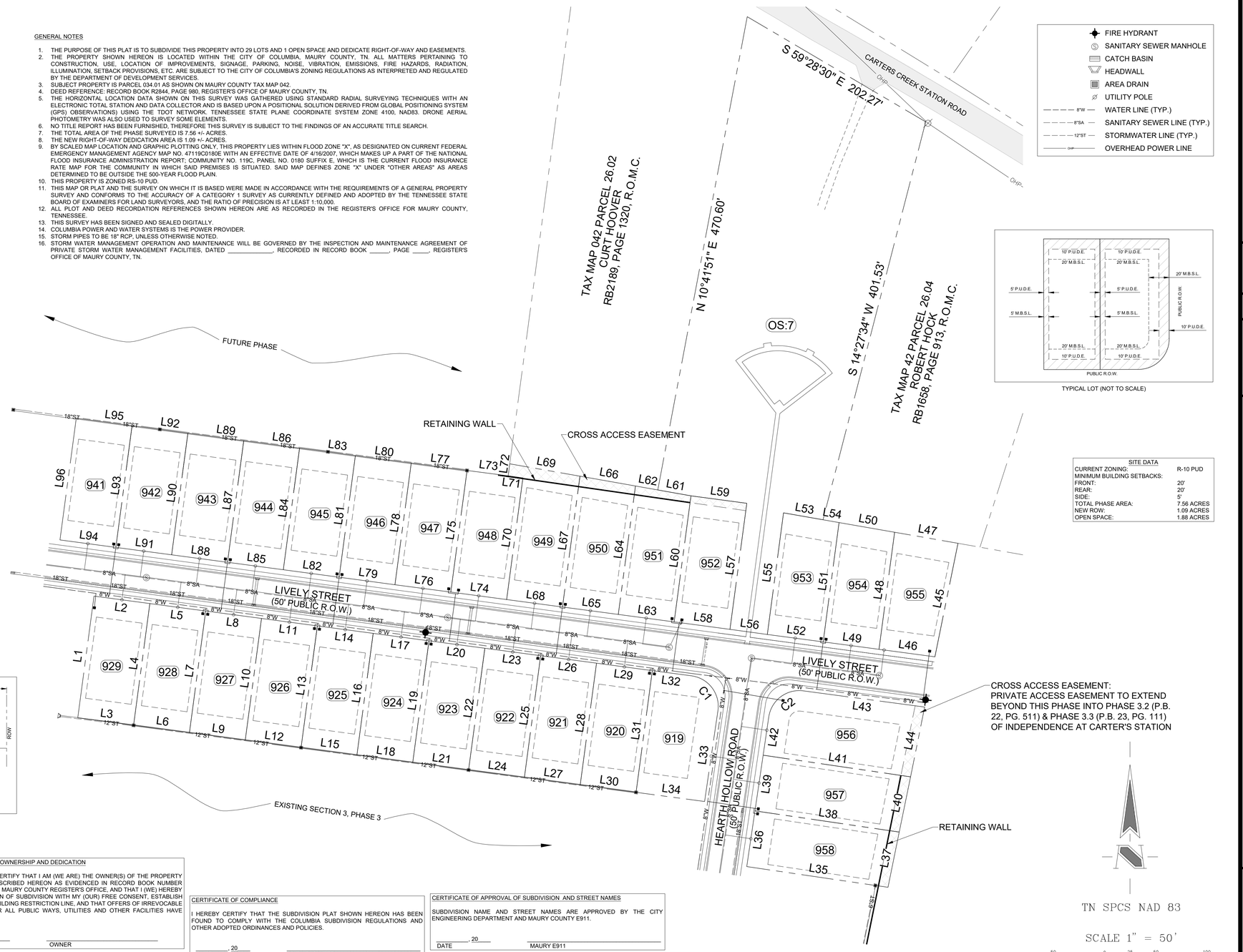
LOT	SQ. FT.
941	6600.0
942	6598.1
943	6597.2
944	6597.2
945	6597.2
946	6597.2
947	6597.2
948	6597.2
949	7324.2
950	7027.6
951	6899.4
952	6834.0
953	6531.2
954	6408.4
955	6731.2
956	9901.8
957	7916.6
958	7747.8
919	7995.6
920	6600.2
921	6600.2
922	6600.2
923	6600.2
924	6600.1
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926	6599.7
927	6600.1
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929	6599.7
OS:7	81975.2

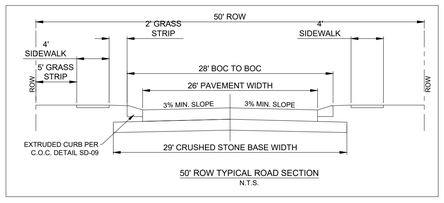
LINE	BEARING	DISTANCE
L1	N 07°36'17" E	120.00'
L2	S 82°23'33" E	55.00'
L3	N 82°23'31" W	54.99'
L4	N 07°36'27" E	120.00'
L5	S 82°23'33" E	55.00'
L6	N 82°23'31" W	55.01'
L7	N 07°36'17" E	120.00'
L8	S 82°23'33" E	55.00'
L9	N 82°23'31" W	55.00'
L10	N 07°36'17" E	120.00'
L11	S 82°23'33" E	55.00'
L12	N 82°23'31" W	54.99'
L13	N 07°36'27" E	120.00'
L14	S 82°23'33" E	55.00'
L15	N 82°23'31" W	55.00'
L16	N 07°36'27" E	120.00'
L17	S 82°23'33" E	55.00'
L18	N 82°23'31" W	55.00'
L19	N 07°36'27" E	120.00'
L20	S 82°23'33" E	55.00'
L21	N 82°23'26" W	55.00'
L22	N 07°36'27" E	120.00'
L23	S 82°23'33" E	55.00'
L24	N 82°23'3" W	55.00'
L25	N 07°36'27" E	120.00'
L26	S 82°23'33" E	55.00'
L27	N 82°23'31" W	55.00'
L28	N 07°36'27" E	120.00'
L29	S 82°23'33" E	55.00'
L30	N 82°23'31" W	55.00'
L31	N 07°36'27" E	120.00'
L32	S 82°23'33" E	38.68'
L33	S 08°21'31" W	89.62'
L34	N 82°23'31" W	67.50'
L35	N 81°38'29" W	139.36'
L36	N 08°21'31" E	55.00'
L37	S 11°29'43" W	55.08'
L38	N 81°38'29" W	142.38'
L39	N 08°21'31" E	55.00'
L40	S 11°36'26" W	55.09'
L41	N 81°38'29" W	145.50'
L42	N 08°21'31" E	37.90'
L43	N 82°23'33" E	119.60'
L44	S 11°24'24" W	69.56'
L45	S 11°29'52" W	113.19'
L46	N 82°22'44" W	55.06'
L47	S 80°07'29" E	62.83'
L48	S 07°35'08" W	115.40'

LINE	BEARING	DISTANCE
L49	N 82°24'52" W	55.00'
L50	S 80°05'23" E	55.05'
L51	S 07°35'08" W	117.63'
L52	N 82°24'52" W	55.00'
L53	S 80°05'23" E	39.12'
L54	S 80°05'23" E	15.93'
L55	S 07°35'08" W	119.86'
L56	N 82°11'57" W	36.83'
L57	S 07°36'27" W	124.25'
L58	N 82°23'33" W	55.00'
L59	S 82°23'33" E	55.00'
L60	N 07°36'27" E	124.25'
L61	S 79°54'21" E	32.93'
L62	S 79°58'39" E	22.12'
L63	N 82°23'33" W	55.00'
L64	N 07°36'27" E	126.62'
L65	N 82°23'33" W	55.00'
L66	S 79°58'39" E	55.05'
L67	N 07°36'27" E	128.94'
L68	N 82°23'33" W	55.00'
L69	S 79°58'39" E	69.61'
L70	N 07°36'27" E	119.90'
L71	N 81°59'54" W	14.55'
L72	N 07°36'27" E	11.87'
L73	S 82°32'04" E	40.45'
L74	N 82°23'33" W	55.00'
L75	N 07°36'27" E	119.90'
L76	N 82°29'49" W	55.00'
L77	S 82°23'33" E	55.00'
L78	N 07°36'27" E	120.00'
L79	N 82°17'18" W	55.00'
L80	S 82°23'33" E	55.00'
L81	N 07°36'27" E	119.90'
L82	N 82°23'33" W	55.00'
L83	S 82°14'15" E	37.02'
L84	N 07°36'27" E	119.90'
L85	N 82°23'33" W	55.00'
L86	S 82°14'15" E	37.02'
L87	N 07°36'27" E	119.90'
L88	N 82°23'33" W	55.00'
L89	S 82°14'15" E	37.02'
L90	N 07°36'27" E	119.90'
L91	N 82°23'33" W	55.00'
L92	S 82°14'15" E	37.02'
L93	N 07°36'27" E	120.00'
L94	N 82°23'33" W	55.00'
L95	S 82°23'33" E	37.02'
L96	N 07°36'27" E	120.00'

GENERAL NOTES

1. THE PURPOSE OF THIS PLAT IS TO SUBDIVIDE THIS PROPERTY INTO 29 LOTS AND 1 OPEN SPACE AND DEDICATE RIGHT-OF-WAY AND EASEMENTS.
2. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
3. SUBJECT PROPERTY IS PARCEL 034.01 AS SHOWN ON MAURY COUNTY TAX MAP 042.
4. DEED REFERENCE: RECORD BOOK R2844, PAGE 980, REGISTER'S OFFICE OF MAURY COUNTY, TN.
5. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS) USING THE TDOT NETWORK. TENNESSEE STATE PLANE COORDINATE SYSTEM ZONE 4100, NAD83. DRONE AERIAL PHOTOMETRY WAS ALSO USED TO SURVEY SOME ELEMENTS.
6. NO TITLE REPORT HAS BEEN FURNISHED, THEREFORE THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
7. THE TOTAL AREA OF THE PHASE SURVEYED IS 7.56 +/- ACRES.
8. THE NEW RIGHT-OF-WAY DEDICATION AREA IS 1.09 +/- ACRES.
9. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN FLOOD ZONE "X", AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47119C0180E WITH AN EFFECTIVE DATE OF 4/16/2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE ADMINISTRATION REPORT; COMMUNITY NO. 119C, PANEL NO. 0180 SUFFIX E, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PREMISES IS SITUATED. SAID MAP DEFINES ZONE "X" UNDER "OTHER AREAS" AS AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.
10. THIS PROPERTY IS ZONED RS-10 PUD.
11. THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF A GENERAL PROPERTY SURVEY AND CONFORMS TO THE ACCURACY OF A CATEGORY 1 SURVEY AS CURRENTLY DEFINED AND ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS, AND THE RATIO OF PRECISION IS AT LEAST 1:10,000.
12. ALL PLOT AND DEED RECORDATION REFERENCES SHOWN HEREON ARE AS RECORDED IN THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
13. THIS SURVEY HAS BEEN SIGNED AND SEALED DIGITALLY.
14. COLUMBIA POWER AND WATER SYSTEMS IS THE POWER PROVIDER.
15. STORM PIPES TO BE 18" RCP, UNLESS OTHERWISE NOTED.
16. STORM WATER MANAGEMENT OPERATION AND MAINTENANCE WILL BE GOVERNED BY THE INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORM WATER MANAGEMENT FACILITIES, DATED _____, RECORDED IN RECORD BOOK _____, PAGE ____, REGISTER'S OFFICE OF MAURY COUNTY, TN.





50' ROW TYPICAL ROAD SECTION
N.T.S.

TYPICAL LOT (NOT TO SCALE)

SITE DATA	
CURRENT ZONING:	R-10 PUD
MINIMUM BUILDING SETBACKS:	
FRONT:	20'
REAR:	20'
SIDE:	5'
TOTAL PHASE AREA:	7.56 ACRES
NEW ROW:	1.09 ACRES
OPEN SPACE:	1.88 ACRES

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE AND UTILITIES

I HEREBY CERTIFY THAT THE STREETS, DRAINAGE AND UTILITIES DESIGNATED IN INDEPENDENCE AT CARTER'S STATION (SECTION 3, PHASE 4) HAVE BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR A PERFORMANCE SURETY IN THE AMOUNT OF $_____ FOR STREETS AND DRAINAGE HAS BEEN POSTED WITH THE CITY OF COLUMBIA TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

_____, 20____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED HEREON AS EVIDENCED IN RECORD BOOK NUMBER R2844, PAGE 980, MAURY COUNTY REGISTER'S OFFICE, AND THAT I (WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINE, AND THAT OFFERS OF IRREVOCABLE DEDICATION FOR ALL PUBLIC WAYS, UTILITIES AND OTHER FACILITIES HAVE BEEN FILED.

_____, 20____
DATE OWNER

CERTIFICATE OF SURVEY ACCURACY

I (WE) HEREBY CERTIFY THAT TO THE BEST OF MY (OUR) KNOWLEDGE AND BELIEF THIS IS A TRUE AND ACCURATE SURVEY OF THE PROPERTY SHOWN HEREON; THAT THIS IS A CATEGORY I LAND SURVEY AS DEFINED IN TITLE 62, CHAPTER 18, TENNESSEE CODE ANNOTATED, AND THAT THE RATIO OF PRECISION IS LESS THAN OR EQUAL TO 1:10,000.

_____, 20____
DATE MARK CANTRELL, R.L.S

CERTIFICATE OF COMPLIANCE

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS AND OTHER ADOPTED ORDINANCES AND POLICIES.

_____, 20____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF APPROVAL OF SUBDIVISION AND STREET NAMES

SUBDIVISION NAME AND STREET NAMES ARE APPROVED BY THE CITY ENGINEERING DEPARTMENT AND MAURY COUNTY E911.

_____, 20____
DATE MAURY E911

CERTIFICATE OF APPROVAL OF SEWER SYSTEM

I HEREBY CERTIFY THAT THE SEWER SYSTEM OUTLINED OR INDICATED ON THIS FINAL SUBDIVISION PLAT HAS BEEN INSTALLED IN ACCORDANCE WITH THE CURRENT LOCAL AND STATE GOVERNMENT REQUIREMENTS OR A SUFFICIENT BOND OR OTHER SURETY HAS BEEN FILED TO GUARANTEE SAID INSTALLATION.

_____, 20____
DATE DIRECTOR OF COLUMBIA WASTEWATER DEPARTMENT

IF YOU DIG TENNESSEE...
CALL US FIRST!
1-800-351-1111
TENNESSEE ONE CALL
IT'S THE LAW

OWNER OF RECORD
PULTE HOMES OF TENNESSEE LTD PARTNERSHIP
DEED BK. R2844 PG. 980, MAP 042 PARCEL 034.01
APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

J. MARK CANTRELL
PROFESSIONAL LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 1865

REVISIONS

NO.	DATE

DATE: 5-15-2023
SCALE: 1" = 50'
DRAWN BY: DSW
REVIEWER:

FINAL PLAT
CARTER'S STATION
SECTION 3, PHASE 4
COLUMBIA, MAURY COUNTY, TENNESSEE

INDEPENDENCE AT CARTER'S STATION

PROJECT
18-0530

SHEET
1 OF 1

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • WWW.T2-ENG.COM

T-SQUAREENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

1329 West Main Street
Franklin, TN 37064
615.678.8212

www.T2-eng.com

June 20th, 2023
City of Columbia
Comment Response Letter – Final Plat – Independence at Carters Station Section 3.4
Project Number – 18-0530
Project Name – Independence at Carters Station Section 3.4

Fire

1. No comments

Engineering

2. Binder and curbing shall be installed prior to the resubmittal date of 6/19/23.
   Binder and curbing is down.
3. Record/reference stormwater maintenance agreement.
   Documents will be recorded prior to recording final plat.
4. Surety in the amount of $140,000 shall be provided prior to the resubmittal date.
   Surety is submitted.
5. Provide temporary or permanent turnarounds at any dead end over 150'.
   As measured from the edge of pavement along Hearth Hollow Road, the length is not longer than 150'. This dead end is shown per approved preliminary plat.

Building

6. No comments.

Public Works

7. No comments.

Planning

8. If the cross access easement on lots 957 and 958 affect lots located in Section 3.3, please add a note indicating the scope of the easement and the book and page where it is recorded (if applicable).
   Access easement is private and has not yet been recorded. Reference is made to the adjacent phase final plat record book.
9. Please have the PLS add a date and signature to the Final Plat upon approval by the Planning Commission.
   Final plat will have date and signature.

Maury County Schools

10. Spring Hill Elementary, Spring Hill Middle School, Spring Hill High School. See attached capacity numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.
    Acknowledged.

RECEIVED
JUN 20 2023
By: 23-0209

Maury County E911

11. No comment.

Columbia Power

12. Columbia Power System has an existing power line near your proposed development.
    We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
    • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.
    Acknowledged.

Duck River Electric Membership Corp

13. No comment.

Maury County Highway Dept.

14. No comment.

Wastewater

15. Columbia Wastewater has no concerns.

Police

16. No comments provided.

Columbia Water

17. "Conduct pressure testing, flush system, conduct bacteria testing and deed infrastructure to CPWS. System must be "active" in order for the final plat to be signed for recording."
    Acknowledged.

Atmos Energy

18. No comments provided.

ATT

19. No comments provided.

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, June 13, 2023

ITEM NO.
23-0209

DESCRIPTION: Final Plat section 3.4.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Fire

1. No comments

Engineering

2. Binder and curbing shall be installed prior to the resubmittal date of 6/19/23
3. Record/reference stormwater maintenance agreement.
4. Surety in the amount of $140,000 shall be provided prior to the resubmittal date.
5. Provide temporary or permanent turnarounds at any dead end over 150'

Building

6. No comments.

Public Works

7. No comments.

Planning

8. If the cross access easement on lots 957 and 958 affect lots located in Section 3.3, please add a note indicating the scope of the easement and the book and page where it is recorded (if applicable).
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Maury County E911

11. No comment.

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    We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
    • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Duck River Electric Membership Corp

13. No comment.

Maury County Highway Dept.

14. No comment.

Wastewater

15. Columbia Wastewater has no concerns.

Police

16. No comments provided.

Columbia Water

17. "Conduct pressure testing, flush system, conduct bacteria testing and deed infrastructure to CPWS. System must be "active" in order for the final plat to be signed for recording."

Atmos Energy

18. No comments provided.

ATT

19. No comments provided.

ATTACHMENTS: Final Plat

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

Current Enrollment / Capacity

	Facility Name	Date Constructed	Sq. Ft.	Acreage	Capacity	Current Enrollment	Capacity Used
Elementary	Baker	1960	43,920	12	340	325	95.6%
	Battle Creek	2019	90,000	30	700	609	87.0%
	Brown	1968	56,720	20	405	348	85.9%
	Highland	1986	47,800	4.5	380	304	80.0%
	Howell	1999	81,600	17.5	700	644	92.0%
	Mt. Pleasant	1978	80,021	22	630	566	89.8%
	Riverside	1984	71,150	14	500	413	82.6%
	Spring Hill	1984	69,000	10	540	439	81.3%
	Woodard	1990	76,200	17	600	567	94.5%
	Wright	2005	97,765	18	740	631	85.3%
					5535	***4846***	***87.6%***
Middle	Battle Creek	2019	125,000	45	900	693	77.0%
	Cox	1997	137,200	25	900	646	71.8%
	Mt. Pleasant	2001	113,938	29.2	550	414	75.3%
	Spring Hill	2010	158,106	39.49	950	524	55.2%
	Whitthorne	1979	175,600	17	1050	912	86.9%
					4350	***3189***	***73.3%***
High	Central	2016	296,740	55	1700	1402	82.5%
	Mt. Pleasant	1969	110,759	31	600	391	65.2%
	Spring Hill	1993	181,800	57	1200	1165	97.1%
					3500	***2958***	***84.5%***
Unit	Culleoka	1969	205,800	34	1020	903	88.5%
	Hampshire	1978	83,410	13.12	500	407	81.4%
	Santa Fe	1964	94,225	24	650	532	81.8%
					2170	***1842***	***84.9%***
Other	Central Office	1960	15,400	1.5			
	College Hill	1958	42,211	2.26		209	
	Maintenance	1987	9,400	4.7			
	McDowell		46,165	7			
			2,509,930	**550.27**	**15555**	**13044**	

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: [SEE MAP] Banner Road

DATE: 7/12/2022

MODEL BY: Inflo Design Group, LLC

SYS. DEMAND Max Day

DURATION: 1 hrs.

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: Independence Section 6.3

MODEL DATA

FLOW HYDRANT(S)	[SEE MAP]	[P-0164]	n/a
GPM:	**854**	0	0

TOTAL FLOW DURING SIMULATION: **854** GPM

GAUGE HYDRANT

HYDRANT # & LOCATION: [SEE MAP] Tucker Trace

CONDITION 1

STATIC 81 PSI RESIDUAL: 47 PSI

CONDITION 2

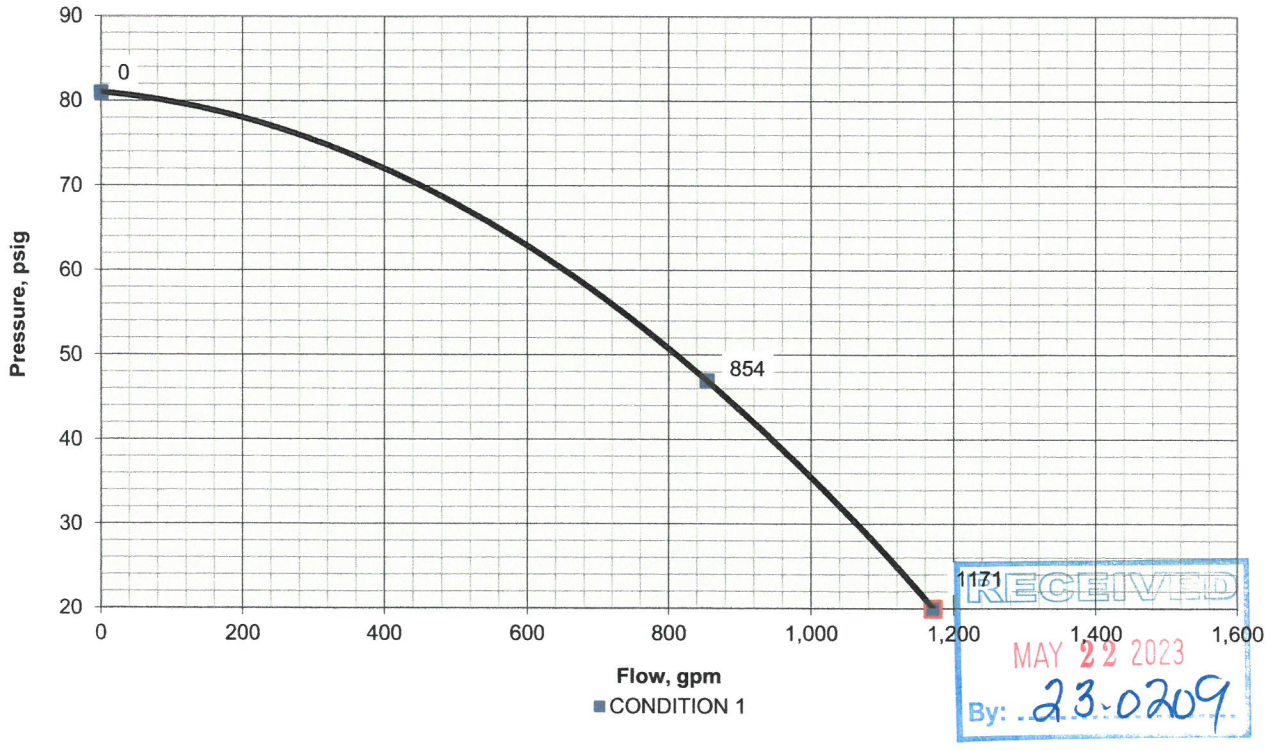
STATIC _____ PSI RESIDUAL: _____ PSI

RESULTS: AT 20 PSI RESIDUAL

CONDITION 1 **1171** GPM

CONDITION 2 **---** GPM

REMARKS: Performance based on service elevation of 683' and current CPWS water infrastructure.



RECEIVED
MAY 22 2023
By: 23-0209



Hydrant Analysis Location Map

Independence at Carters Station - Section 6.3

Tax Map 41, Parcel 15.00

Esri Community Maps Contributors, Tennessee STS GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

2022

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

N

0 0.02 0.04 Mi

0 0.04 0.07 Km

Appendix B: Subdivision Development Agreement

This DEVELOPMENT AGREEMENT is made and entered into on this

_____ day of _____, 20_____ ,
between THE CITY OF COLUMBIA, TENNESSEE, (hereinafter the "CITY"), and

Pulte Homes Tennessee Limited Partnership, the DEVELOPER (hereinafter the "DEVELOPER") named on the Addendum to this Agreement attached hereto and by this reference made a part hereof (hereinafter the "ADDENDUM").

WITNESSETH:

WHEREAS, the DEVELOPER desires to develop the property described on the ADDENDUM (hereinafter the "PROJECT"); and,

WHEREAS, the Development Plan of the PROJECT has been approved by the Columbia Municipal Planning Commission (hereinafter the "CMPC") on the

_____ day of _____, 20_____ ,
pursuant to Tennessee Code Annotated Title 13, Chapter 4, and the Subdivision Regulations of Columbia, Tennessee (hereinafter the "SUBDIVISION REGULATIONS"); and,

WHEREAS, the DEVELOPER is the owner of the PROJECT and has authority to engage in such development; and,

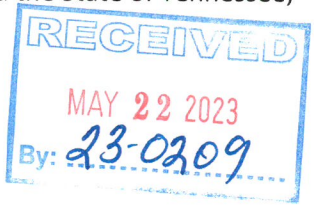
WHEREAS, the DEVELOPER desires to develop and improve said PROJECT; and,

WHEREAS, in order to provide for the health, safety, and welfare of future residents of the PROJECT, it will be necessary for certain improvements to the CITY'S utility systems, public infrastructure, and common areas to be constructed within and to serve the PROJECT including but not be limited to roads, bridges, sidewalks, pedestrian facilities, stormwater facilities, street signs, markings, signals, street lighting, recreation and park facilities, landscaping, and the like (hereinafter the "IMPROVEMENTS"); and,

WHEREAS, in order for the IMPROVEMENTS to be fully integrated with the utility systems and public infrastructure of the CITY and to function in a satisfactory manner, the DEVELOPER has agreed to construct, in accordance with the Subdivision Regulations and other rules, regulations, and ordinances of the CITY, the IMPROVEMENTS in said PROJECT and extend utilities to the PROJECT at their own cost; and,

WHEREAS, the CITY is willing to accept the dedication of the streets, utilities, and other improvements as determined in the Development Plan of the PROJECT, subject to the City of Columbia City Council approval by resolution, and subject to the applicant's compliance with all requirements in this agreement and applicable existing laws of the CITY of Columbia and the State of Tennessee,

NOW, THEREFORE, it is agreed and understood as follows:



B1 General Conditions

B1.1 Construction Costs

The DEVELOPER shall pay for all material and labor necessary to install and complete the roads, sidewalks, sewers, utilities, and other facilities in accordance with this agreement.

B1.2 City Ordinances, Rules and Regulations

All currently existing CITY ordinances, rules and regulations, and the Subdivision Regulations adopted by the CMPC are made a part of this agreement. In the event of a conflict between the terms of this agreement and a CITY ordinance, the ordinance shall prevail. In the event of a conflict between the terms of this agreement and the Subdivision Regulations, the Subdivision Regulations shall prevail. All work done under this agreement is to be performed in accordance with plans and specifications approved by the City and made a part, hereof.

B1.3 Fees

Review fees, inspection fees, and other amounts established by the CITY shall be paid prior to any review of the plans. If the DEVELOPER fails to install the facilities in accordance with the terms of this Agreement, no portion of the review fees, inspection fees, or other amounts paid to the CITY shall be refundable to the DEVELOPER.

B1.4 Inspection

The CITY shall have a continuous right to inspect the work and facilities to assure that the work and facilities are in accordance with the Subdivision Regulations, approved Construction Plans, and other rules, regulations, and ordinances of the CITY.

B1.5 Right of Entry

The CITY shall have the right, in case of breach of the Performance Agreement, to enter upon any property of the DEVELOPER and take all necessary actions to complete the work and obligations not completed.

B1.6 Easements

The DEVELOPER shall obtain and dedicate to the CITY or cause to be dedicated to the CITY, either by dedication on the plat or by easement deed, in either case in a form acceptable to the CITY, permanent easements of such widths as required by the CITY and noted on the Plans. The DEVELOPER further agrees to grant the necessary easements and rights-of-way across the DEVELOPER's properties without expense to the CITY and waive any claim for damages.

B1.7 Stormwater Maintenance Agreement

If the PROJECT includes any detention or retention ponds, common drainage ditches, water quality facilities, or stormwater facilities outside of the CITY rights-of-way, the DEVELOPER will submit a Stormwater Maintenance Agreement, to be filed with and recorded with the Final Plat.

B1.8 Attorney Fees and Other Expenses

The DEVELOPER shall pay all reasonable costs and expenses incurred by the CITY in enforcing or completing this agreement. The DEVELOPER shall pay all costs and expenses, including the CITY'S attorney fees, of any legal proceedings brought by the CITY against the DEVELOPER seeking remedies for the DEVELOPER'S failure to perform any of its obligations hereunder, whether or not any proceedings are prosecuted to judgment.

B1.9 Agreement Not Assignable

No third party shall obtain any benefits or rights under this agreement nor shall the rights or duties be assigned by either party.

B1.10 Revocation and Interpretation

This agreement shall bind the DEVELOPER when executed by the DEVELOPER and may not be revoked by the DEVELOPER without permission of the CITY, even if the agreement has not been executed by the CITY, or does not bind CITY, for other reasons. This agreement shall be interpreted in accordance with Tennessee law and may only be enforced in the Chancery Court or Circuit Court or Court of competent jurisdiction of Maury County, Tennessee, and Tennessee Appellate Courts.

B1.11 No Oral Agreement

This agreement may not be orally amended and supersedes all prior negotiations, commitments, or understandings.

B1.12 Separability

If any portion of this agreement is held to be unenforceable, the CITY shall have the right to determine whether the remainder of the agreement shall remain in effect, or whether the agreement shall be void and all rights of the DEVELOPER pursuant to this agreement terminated.

B 1.13 Transferability

The DEVELOPER agrees to not transfer the property on which this PROJECT is to be located without first providing the CITY with written notice. The transferee shall provide the CITY an Assumption Agreement of this Agreement, whereby the transferee agrees to perform the IMPROVEMENTS required under this agreement and to provide a performance surety. The DEVELOPER understands that if the DEVELOPER transfers said property without providing the notice of transfer and Assumption Agreement as required herein, they will be in breach of this agreement and in violation of the Subdivision Regulations.

B1.14 Indemnity

The DEVELOPER shall indemnify and hold the CITY harmless from all loss, costs, expenses, liability, money damages, penalties, or claims arising out of any work covered by this agreement, including any attorney fees incurred by the CITY in connection therewith. Inspection of the IMPROVEMENTS by an authorized representative of the CITY shall not constitute a waiver by the CITY of any defect or of any of the DEVELOPER'S obligations hereunder.

B1.15 Binding Effect

This agreement shall be binding upon the DEVELOPER and the DEVELEPOR's heirs, administrators, executors, assigns, and any other successors in interest.

B1.16 Entire Agreement

This document contains the entire agreement between the parties, and there are no collateral understandings or agreements between them. No variations or alterations of the terms of this agreement shall be binding upon either of the parties, unless the same be reduced to writing and made an amendment to this agreement.

B1.17 Headings

Paragraph titles and headings contained herein are inserted for convenience only and shall not be deemed a part of the agreement and in no way shall define, limit, extend, or describe the scope or intent of any provision, hereof.

B2 Performance Surety

At the time of execution of this agreement, the DEVELOPER shall provide the CITY a performance surety, in an amount determined by the City Engineer for the IMPROVEMENTS and other items specified by the Construction Plans, plats, and plans approved by the CMPC. This performance surety shall secure performance of all obligations of the DEVELOPER under this agreement. The performance surety shall meet all requirements established in Chapter 4: Performance Agreement of the Subdivision Regulations and secure full compliance with all terms and conditions of this agreement. The performance surety may be called for failure to comply with the provisions of this agreement in whole or in part according to the terms of the performance surety. The performance surety will not be released, except and until there has been full compliance with this agreement.

B3 Construction

B3.1 Construction Plans

The DEVELOPER shall submit to the CITY, Construction Plans describing in reasonable detail all utility systems, all storm water management systems, all street systems, pedestrian facilities, and all IMPROVEMENTS. The Construction Plans shall be designed according to the Engineering Standards and Specifications, all other codes and ordinances enforced by the City, and sound engineering judgment. The design of all utility systems shall follow the State of Tennessee and utility provider design criteria and specifications. In the event of a disagreement as to compliance with or interpretation of the Construction Plans and the CITY'S specifications, the decision of the CITY shall be final and binding on the DEVELOPER. The Construction Plans shall be prepared by a design professional licensed by the State of Tennessee to design all systems and shall bear the seal, signature, date, and license number of the professional preparing the Construction Plans.

B3.2 Commencement of Construction

Construction of IMPROVEMENTS may not begin until the following events have occurred:

A. The Preliminary Plat has been approved by the CMPC;
B. The Construction Plans are approved by the CITY;
C. The Tennessee Department of Environment and Conservation has approved the applicable portions of the Plans and has confirmed its approval to the CITY and/or DEVELOPER in writing;
D. The CITY shall have received an appropriately executed Development Agreement; and
E. The DEVELOPER shall give the CITY notice of commencement of construction, in writing at least one (1) working day prior to commencement.

B3.3 Site Grading

The DEVELOPER, hereby, agrees to construct all site grading to comply with the approved Construction Plans, including the approved Erosion Control Plan for the PROJECT and to comply with the Engineering Standards and Specifications, Stormwater Ordinance, and all other codes and ordinances enforced by the CITY.

B3.4 Storm Water Management Systems

The DEVELOPER shall be responsible for all storm water management work made necessary by the development of this PROJECT. It is understood and agreed that the CITY in its proprietary function is not and could not be expected to oversee, supervise, or direct the construction of all drainage improvements, and the excavation incident thereto. Neither is the CITY vested with the original design responsibility nor the means to formally survey elevations or the locations of improvements at every stage of the construction process. The CITY is vested with the right of periodic inspections, stop work order, and final approval as a measure of secondary or subsequent enforcement. The DEVELOPER has and shall retain the responsibility to properly anticipate, survey, design and construct the subdivision storm water improvements and give full assurance that same shall not adversely affect the flow or quality of surface water from or upon any property. In providing technical assistance, plan and design review, the CITY does not and shall not relieve or accept any liability from the DEVELOPER.

B3.5 Street Construction

The DEVELOPER, hereby, agrees to construct and improve the streets shown on the Construction Plans to comply with the CITY's specifications and to the satisfaction and approval of the City Engineer by grading, draining, subgrade preparation, base preparation, curbing, signage, striping, signalization, sidewalk installation, and paving with the required preparation, amounts, and types of material. The DEVELOPER further agrees to pay the cost of all engineering, inspection and laboratory cost incidental to the construction of subdivision streets including but not limited to material and density testing. The DEVELOPER further agrees to make all necessary adjustments to manholes and valve boxes to meet finished surface grade and to repair subsurface or base material, as required, in areas directed by the CITY Engineer, prior to application of final surface.

B3.6 Time Period for Construction

The DEVELOPER agrees to be bound to complete, within three (3) years of commencement of construction, all IMPROVEMENTS shown on the plat and plans and all things required by this agreement.

The DEVELOPER further agrees that if due to unforeseen circumstances, he is unable to complete all work included in this agreement within the time specified above, but desires to complete said agreement to the satisfaction of the CITY, the DEVELOPER shall submit a written request for extension of the agreement period to the CITY at least sixty (60) days prior to the expiration of the existing agreement period, specifying the reason for the DEVELOPER's failure to complete the work as agreed and a prospective date for such completion. The DEVELOPER further agrees that if the performance surety executed to secure the value of the work to be performed under this agreement, due to inflation or rising costs, is determined to be inadequate by the City Engineer to secure the cost of said IMPROVEMENTS at the time an extension is sought, the DEVELOPER will provide the additional security to bring the performance surety amount in line with current cost projections as made by the CITY. The DEVELOPER understands that the DEVELOPER's failure to follow the extension procedure constitutes a breach of this agreement and places the DEVELOPER in violation of the Subdivision Regulations. The DEVELOPER further understands, that should the DEVELOPER fail to complete any part of the work outlined in this agreement in a good and workmanlike manner as approved, the CITY shall reserve the right to withhold and withdraw all building permits within the PROJECT until all items of this Agreement have been fulfilled by the DEVELOPER.

B3.7 Off-Site Improvements

The DEVELOPER shall construct any and all off-site facilities that may be required to serve the PROJECT. Unless specifically noted in the Construction Plans and made a part of separate agreement with the CITY, the CITY shall not be required to reimburse the DEVELOPER for construction of off-site improvements.

B3.9 Inspection and Compliance

After construction begins, the CITY shall provide on-site construction inspection as the CITY deems necessary to ensure that all work is performed and completed in accordance with the Construction Plans, CITY specifications, and the contents of this agreement. In the event of a disagreement as to compliance with or interpretation of the Construction Plans and the CITY'S specifications, the decision of the CITY shall be final and binding on the DEVELOPER. If the DEVELOPER fails to construct in accordance with the approved Construction Plans or to comply with the CITY'S specifications, the CITY may issue a stop-work order and DEVELOPER, hereby, agrees to be bound by such order.

B3.10 Testing

The DEVELOPER agrees to pay the cost of all engineering, inspection, and laboratory cost incidental to construction of the streets, sidewalks, utilities, sewers, compacted fill material, and other facilities included within this agreement. Such testing includes, but is not limited to, material and density testing.

B3.11 Scrap Removal

The DEVELOPER agrees to comply with all local, state, and federal rules and regulations regarding waste material and debris disposal.

B3.12 Traffic Control

The DEVELOPER, hereby, agrees to prepare a traffic control/detour plan where required and shall submit said plan to the CITY for review and approval. All traffic control and safety devices, including

signs, lane markings, and barriers necessitated by construction activity undertaken pursuant to this agreement shall be installed and maintained by the DEVELOPER. All traffic control devices shall meet the standards and be installed in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the United States Department of Transportation.

B3.13 Temporary Facilities

The DEVELOPER shall provide all temporary facilities including but not limited to utilities and roadways, that are determined by the CITY to be required in connection with or as a result of interruption of service or access that occurs as a consequence of construction activity associated with the work covered by this agreement. Such temporary services shall in all regards and at all points in time be adequate to assure emergency access and adequate fire flows.

B4 Acceptance of Improvements

B4.1 Completion of Improvements

At such time as the improvements have been constructed and installed, in accordance with the Constructions Plans and specifications, required testing and inspections completed and found satisfactory, and all clean-up and cover-up has been done to the satisfaction the City Engineer, a letter requesting preliminary acceptance of the PROJECT will be provided by the DEVELOPER. Formal acceptance shall follow the procedure established in the Subdivision Regulations.

The DEVELOPER agrees the DEVELOPER shall have no claim, direct or implied, in the title or ownership of the IMPROVEMENTS specified in this agreement when the IMPROVEMENTS are complete and thereafter accepted by the CITY. The DEVELOPER will be responsible for construction failures and defects in PROJECT prior to final acceptance. During this period, it shall remain the responsibility of the DEVELOPER to correct and cure these defects and failures.

B4.2 As-Built Drawings and Post-Completion Items

The DEVELOPER agrees to furnish to the CITY as-built plans, on a reproducible, stable media, of the sanitary sewer, storm water management, water mains and service system, and streets within the subdivision before the CITY shall accept the subdivision.

B4.3 Acceptance of Facilities

Upon final acceptance of all or part of the IMPROVEMENTS in the PROJECT, then those IMPROVEMENTS shall become the property of the CITY free from all claims from any person or entity without the necessity of any further writing, agreement, or deed. The DEVELOPER further agrees that any facilities placed within a public or platted right-of-way or dedicated public easement are irrevocably dedicated to the public use without any right of reimbursement or compensation of any kind.

B4.4 Failure to Install

In the event the DEVELOPER fails to install the facilities in accordance with the terms of this agreement, the CITY may, in its sole discretion, elect to accept all or a portion of the IMPROVEMENTS in the PROJECT. Should the CITY choose to accept all or a portion of these IMPROVEMENTS, the CITY shall become the sole owner of these facilities. The CITY may give notice of acceptance by writing delivered to the DEVELOPER or recorded in the Register's Office of Maury County, Tennessee. No further writing or deed shall be required.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in multiple originals by persons properly authorized so, to do on or as of the day and year first given.

Independence at Carter's Station Section 3.4

PROJECT

Completed by the Developer	*Completed by the City*
Pulte Homes Tennessee Limited Partnership DEVELOPER NAME	
JEREMY BROOKS AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
5/11/2023 DATE	DATE
100 Westwood Place, Suite 100 STREET	
Brentwood,TN,37027 CITY, STATE, ZIP	
615.992.9508 PHONE	
Jeremy.brooks@pultegroup.com EMAIL	
Attest	*Attest*
KEVIN R. CHAPMAN ATTEST NAME	ATTEST NAME
ATTEST SIGNATURE	ATTEST SIGNATURE
5/11/2023 DATE	DATE



VICINITY MAP - NOT TO SCALE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	30.00'	47.52'	42.70'	S 37°01'01" E
C2	30.00'	46.73'	42.15'	N 52°58'59" E

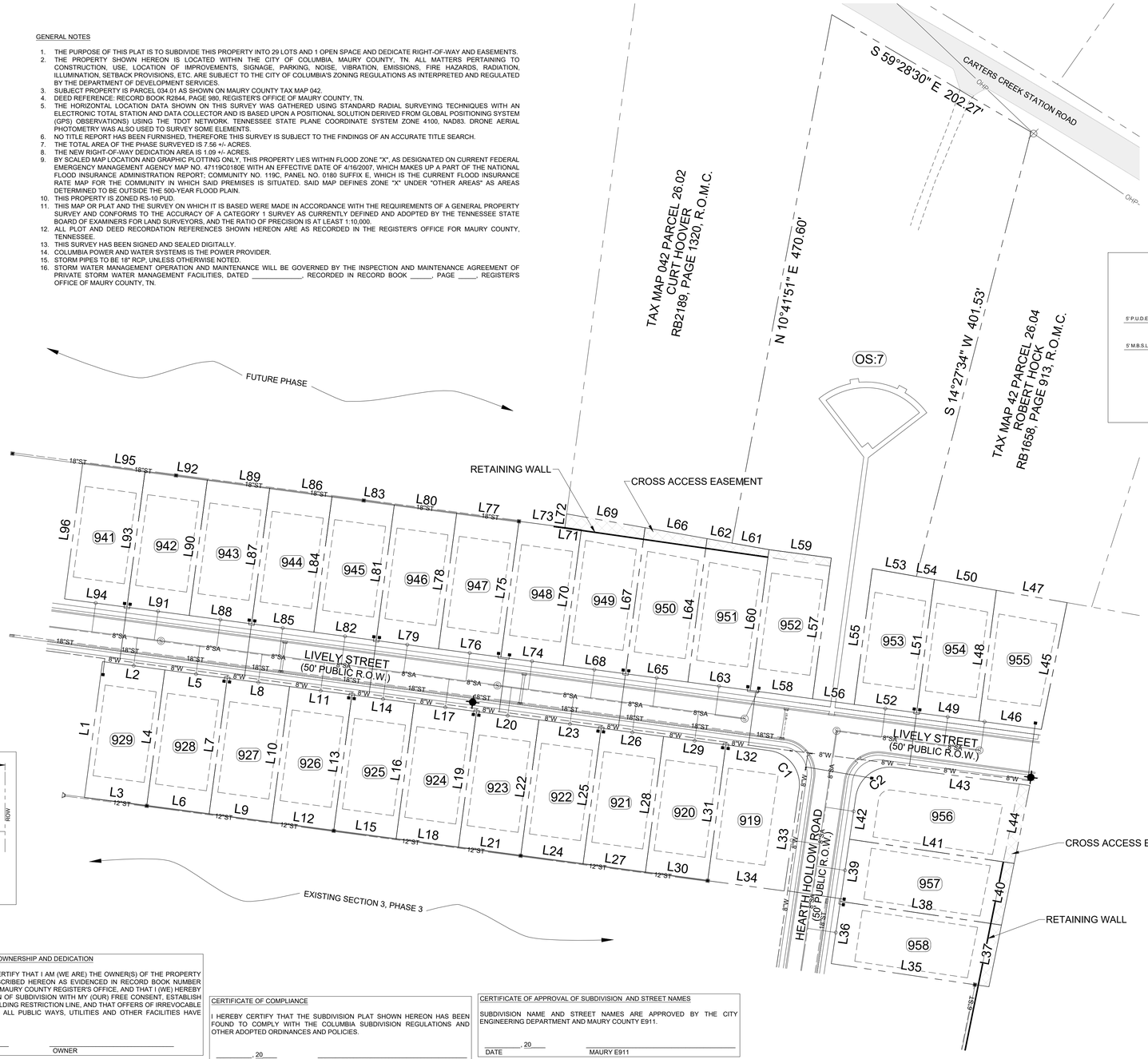
LOT	SQ. FT.
941	6600.0
942	6598.1
943	6597.2
944	6597.2
945	6597.2
946	6597.2
947	6597.2
948	6597.2
949	7324.2
950	7027.6
951	6899.4
952	6834.0
953	6531.2
954	6408.4
955	6731.2
956	9901.8
957	7916.6
958	7747.8
919	7995.6
920	6600.2
921	6600.2
922	6600.2
923	6600.2
924	6600.1
925	6600.1
926	6599.7
927	6600.1
928	6600.4
929	6599.7
OS:7	81975.2

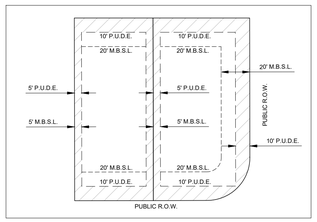
LINE	BEARING	DISTANCE
L1	N 07°36'17" E	120.00'
L2	S 82°23'33" E	55.00'
L3	N 82°23'31" W	54.99'
L4	N 07°36'27" E	120.00'
L5	S 82°23'33" E	55.00'
L6	N 82°23'31" W	55.01'
L7	N 07°36'17" E	120.00'
L8	S 82°23'33" E	55.00'
L9	N 82°23'31" W	55.00'
L10	N 07°36'17" E	120.00'
L11	S 82°23'33" E	55.00'
L12	N 82°23'31" W	54.99'
L13	N 07°36'27" E	120.00'
L14	S 82°23'33" E	55.00'
L15	N 82°23'31" W	55.00'
L16	N 07°36'27" E	120.00'
L17	S 82°23'33" E	55.00'
L18	N 82°23'31" W	55.00'
L19	N 07°36'27" E	120.00'
L20	S 82°23'33" E	55.00'
L21	N 82°23'26" W	55.00'
L22	N 07°36'27" E	120.00'
L23	S 82°23'33" E	55.00'
L24	N 82°23'3" W	55.00'
L25	N 07°36'27" E	120.00'
L26	S 82°23'33" E	55.00'
L27	N 82°23'31" W	55.00'
L28	N 07°36'27" E	120.00'
L29	S 82°23'33" E	55.00'
L30	N 82°23'31" W	55.00'
L31	N 07°36'27" E	120.00'
L32	S 82°23'33" E	38.68'
L33	S 08°21'31" W	89.62'
L34	N 82°23'31" W	67.50'
L35	N 81°38'29" W	139.36'
L36	N 08°21'31" E	55.00'
L37	S 11°29'43" W	55.08'
L38	N 81°38'29" W	142.38'
L39	N 08°21'31" E	55.00'
L40	S 11°36'26" W	55.09'
L41	N 81°38'29" W	145.50'
L42	N 08°21'31" E	37.90'
L43	S 82°23'33" E	119.60'
L44	S 11°24'24" W	69.56'
L45	S 11°29'52" W	113.19'
L46	N 82°22'44" W	55.06'
L47	S 80°07'29" E	62.83'
L48	S 07°35'08" W	115.40'

LINE	BEARING	DISTANCE
L49	N 82°24'52" W	55.00'
L50	S 80°05'23" E	55.05'
L51	S 07°35'08" W	117.63'
L52	N 82°24'52" W	55.00'
L53	S 80°05'23" E	39.12'
L54	S 80°05'23" E	15.93'
L55	S 07°35'08" W	119.86'
L56	N 82°11'57" W	36.83'
L57	S 07°36'27" W	124.25'
L58	N 82°23'33" W	55.00'
L59	S 82°23'33" E	55.00'
L60	N 07°36'27" E	124.25'
L61	S 79°54'21" E	32.93'
L62	S 79°58'39" E	22.12'
L63	N 82°23'33" W	55.00'
L64	N 07°36'27" E	126.62'
L65	N 82°23'33" W	55.00'
L66	S 79°58'39" E	55.05'
L67	N 07°36'27" E	128.94'
L68	N 82°23'33" W	55.00'
L69	S 79°58'39" E	69.61'
L70	N 07°36'27" E	119.90'
L71	N 81°59'54" W	14.55'
L72	N 07°36'27" E	11.87'
L73	S 82°32'04" E	40.45'
L74	N 82°23'33" W	55.00'
L75	N 07°36'27" E	119.90'
L76	N 82°29'49" W	55.00'
L77	S 82°23'33" E	55.00'
L78	N 07°36'27" E	120.00'
L79	N 82°17'18" W	55.00'
L80	S 82°23'33" E	55.00'
L81	N 07°36'27" E	119.90'
L82	N 82°23'33" W	55.00'
L83	S 82°14'15" E	37.02'
L84	N 07°36'27" E	119.90'
L85	N 82°23'33" W	55.00'
L86	S 82°14'15" E	37.02'
L87	N 07°36'27" E	119.90'
L88	N 82°23'33" W	55.00'
L89	S 82°14'15" E	37.02'
L90	N 07°36'27" E	119.90'
L91	N 82°23'33" W	55.00'
L92	S 82°14'15" E	37.02'
L93	N 07°36'27" E	120.00'
L94	N 82°23'33" W	55.00'
L95	S 82°23'33" E	37.02'
L96	N 07°36'27" E	120.00'

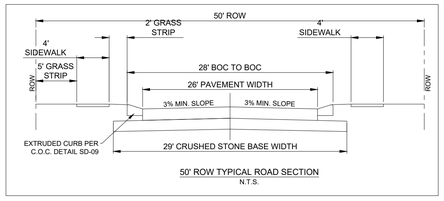
GENERAL NOTES

1. THE PURPOSE OF THIS PLAT IS TO SUBDIVIDE THIS PROPERTY INTO 29 LOTS AND 1 OPEN SPACE AND DEDICATE RIGHT-OF-WAY AND EASEMENTS.
2. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
3. SUBJECT PROPERTY IS PARCEL 034.01 AS SHOWN ON MAURY COUNTY TAX MAP 042.
4. DEED REFERENCE: RECORD BOOK R2844, PAGE 980, REGISTER'S OFFICE OF MAURY COUNTY, TN.
5. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS) USING THE TDOT NETWORK. TENNESSEE STATE PLANE COORDINATE SYSTEM ZONE 4100, NAD83. DRONE AERIAL PHOTOMETRY WAS ALSO USED TO SURVEY SOME ELEMENTS.
6. NO TITLE REPORT HAS BEEN FURNISHED, THEREFORE THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
7. THE TOTAL AREA OF THE PHASE SURVEYED IS 7.56 +/- ACRES.
8. THE NEW RIGHT-OF-WAY DEDICATION AREA IS 1.09 +/- ACRES.
9. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN FLOOD ZONE "X", AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47119C0180E WITH AN EFFECTIVE DATE OF 4/16/2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE ADMINISTRATION REPORT; COMMUNITY NO. 119C, PANEL NO. 0180 SUFFIX E, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PREMISES IS SITUATED. SAID MAP DEFINES ZONE "X" UNDER "OTHER AREAS" AS AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.
10. THIS PROPERTY IS ZONED RS-10 PUD.
11. THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF A GENERAL PROPERTY SURVEY AND CONFORMS TO THE ACCURACY OF A CATEGORY 1 SURVEY AS CURRENTLY DEFINED AND ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS, AND THE RATIO OF PRECISION IS AT LEAST 1:10,000.
12. ALL PLOT AND DEED RECORDATION REFERENCES SHOWN HEREON ARE AS RECORDED IN THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
13. THIS SURVEY HAS BEEN SIGNED AND SEALED DIGITALLY.
14. COLUMBIA POWER AND WATER SYSTEMS IS THE POWER PROVIDER.
15. STORM PIPES TO BE 18" RCP, UNLESS OTHERWISE NOTED.
16. STORM WATER MANAGEMENT OPERATION AND MAINTENANCE WILL BE GOVERNED BY THE INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORM WATER MANAGEMENT FACILITIES, DATED _____, RECORDED IN RECORD BOOK _____, PAGE ____, REGISTER'S OFFICE OF MAURY COUNTY, TN.





TYPICAL LOT (NOT TO SCALE)



50' ROW TYPICAL ROAD SECTION
N.T.S.

SITE DATA	
CURRENT ZONING:	R-10 PUD
MINIMUM BUILDING SETBACKS:	
FRONT:	20'
REAR:	20'
SIDE:	5'
TOTAL PHASE AREA:	7.56 ACRES
NEW ROW:	1.09 ACRES
OPEN SPACE:	1.88 ACRES

TN SPCS NAD 83

SCALE 1" = 50'

50 0 25 50 100

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE AND UTILITIES

I HEREBY CERTIFY THAT THE STREETS, DRAINAGE AND UTILITIES DESIGNATED IN INDEPENDENCE AT CARTER'S STATION (SECTION 3, PHASE 4) HAVE BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR A PERFORMANCE SURETY IN THE AMOUNT OF $_____ FOR STREETS AND DRAINAGE HAS BEEN POSTED WITH THE CITY OF COLUMBIA TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

_____, 20____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED HEREON AS EVIDENCED IN RECORD BOOK NUMBER R2844, PAGE 980, MAURY COUNTY REGISTER'S OFFICE, AND THAT I (WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINE, AND THAT OFFERS OF IRREVOCABLE DEDICATION FOR ALL PUBLIC WAYS, UTILITIES AND OTHER FACILITIES HAVE BEEN FILED.

_____, 20____
DATE OWNER

CERTIFICATE OF SURVEY ACCURACY

I (WE) HEREBY CERTIFY THAT TO THE BEST OF MY (OUR) KNOWLEDGE AND BELIEF THIS IS A TRUE AND ACCURATE SURVEY OF THE PROPERTY SHOWN HEREON; THAT THIS IS A CATEGORY I LAND SURVEY AS DEFINED IN TITLE 62, CHAPTER 18, TENNESSEE CODE ANNOTATED, AND THAT THE RATIO OF PRECISION IS LESS THAN OR EQUAL TO 1:10,000.

_____, 20____
DATE MARK CANTRELL, R.L.S

CERTIFICATE OF COMPLIANCE

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS AND OTHER ADOPTED ORDINANCES AND POLICIES.

_____, 20____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF APPROVAL OF SUBDIVISION AND STREET NAMES

SUBDIVISION NAME AND STREET NAMES ARE APPROVED BY THE CITY ENGINEERING DEPARTMENT AND MAURY COUNTY E911.

_____, 20____
DATE MAURY E911

CERTIFICATE OF APPROVAL OF SEWER SYSTEM

I HEREBY CERTIFY THAT THE SEWER SYSTEM OUTLINED OR INDICATED ON THIS FINAL SUBDIVISION PLAT HAS BEEN INSTALLED IN ACCORDANCE WITH THE CURRENT LOCAL AND STATE GOVERNMENT REQUIREMENTS OR A SUFFICIENT BOND OR OTHER SURETY HAS BEEN FILED TO GUARANTEE SAID INSTALLATION.

_____, 20____
DATE DIRECTOR OF COLUMBIA WASTEWATER DEPARTMENT

IF YOU DIG TENNESSEE...
CALL US FIRST!
1-800-351-1111
TENNESSEE ONE CALL
IT'S THE LAW

OWNER OF RECORD
PULTE HOMES OF TENNESSEE LTD PARTNERSHIP DEED BK. R2844 PG. 980, MAP 042 PARCEL 034.01
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

J. MARK CANTRELL
PROFESSIONAL LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 1859

REVISIONS

NO.	DATE

DATE: 5-15-2023
SCALE: 1" = 50'
DRAWN BY: DSW
REVIEWER:

INDEPENDENCE AT CARTER'S STATION

FINAL PLAT
CARTER'S STATION
SECTION 3, PHASE 4
COLUMBIA, MAURY COUNTY, TENNESSEE

PROJECT
18-0530

SHEET
1 OF 1

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • WWW.T2-ENG.COM

T-SQUARE ENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

701 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-ENG.com

5/08/2023

City of Columbia
Development Services
700 N. Garden Street
Columbia, TN 38401

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: INDEPENDENCE AT CARTER'S STATION, SECTION 3, PHASE 4

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds.

- 904 LF of round concrete pipe and 11 storms inlets.

Upon completion of the site construction, 'Record Drawings' in a version not less than AutoCAD 2006 LT (NAD83, NAVD88) of the stormwater controls will be provided to the City of Columbia for verification.

A copy of the INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES that has been completed, notarized and recorded in the Land Records of the County of Maury, Tennessee will be kept on site with this document.

MAINTENANCE PROCEDURES

1. 904 LF OF RCP AND 11 STORM DRAINS
   - These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.

RECEIVED
MAY 22 2023
By: 23-0209

CONSTRUCTION DRAWINGS
FOR
SECTION 3, PHASE 4
INDEPENDENCE AT CARTER'S STATION
3040 CLEBURNE ROAD
COLUMBIA, TN 37174
CITY OF COLUMBIA, WARD #5

DEVELOPER: PULTE GROUP
370 MALLORY STATION ROAD, STE 500
FRANKLIN, TN 37067

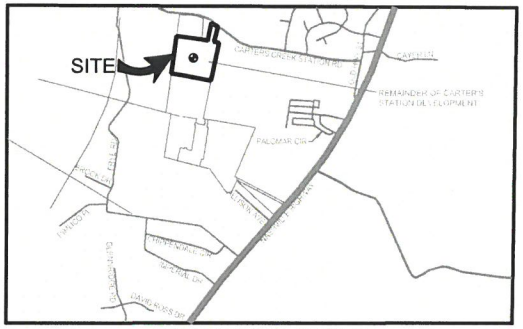
ENGINEER: T-SQUARE ENGINEERING
701 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

SURVEYOR: H&H LAND SURVEYING
612A FITZHUGH BLVD
SMYRNA, TN 37167
615-831-0756

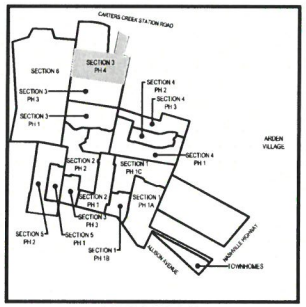
T-SQUARE ENGINEERING AND ITS ASSOCIATES WILL NOT BE HELD RESPONSIBLE FOR ITS ACCURACY OR FOR DESIGN ERRORS OR EMISSIONS RESULTING FROM POTENTIAL SURVEY INACCURACIES.

WATER UTILITY: CPWS
Shane Andrews
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833

POWER UTILITY: CPWS
Doug Burgess
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833



SITE VICINITY MAP



KEY MAP

Permits
TDEC: TNR182340 (ACTIVE)

Sheet Schedule

C-0.0	Cover Sheet
C-1.0	Overall Existing Conditions
C-1.1	Existing Conditions
C-2.0	Overall Site Plan
C-2.1	Site Plan
C-3.0	Initial Erosion Control Plan
C-3.1	Temporary Erosion Control Plan
C-3.2	Permanent Erosion Control Plan
C-4.0	Pre-Development Conditions
C-4.1	Post Development Conditions
C-5.0	Grading Plan
C-5.1	Drainage Plan
C-5.2	Inlet Areas
C-6.0	Hearth Hollow Rd and Lively Street Plan and Profile
C-7.0	Utility Plan
C-7.1	Utility Plan Overview
C-8.0	Detail Sheet
C-8.1	Detail Sheet
C-8.2	Detail Sheet
C-8.3	Detail Sheet
C-8.4	Detail Sheet

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118OE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TO CCS, LLC DEED BK. H2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5/17/22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7/25/22	GRADING REVISIONS PER OWNER
3	10/31/22	WATERLINE REVISIONS PER CPWS
4	1/16/23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

COVER SHEET
CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

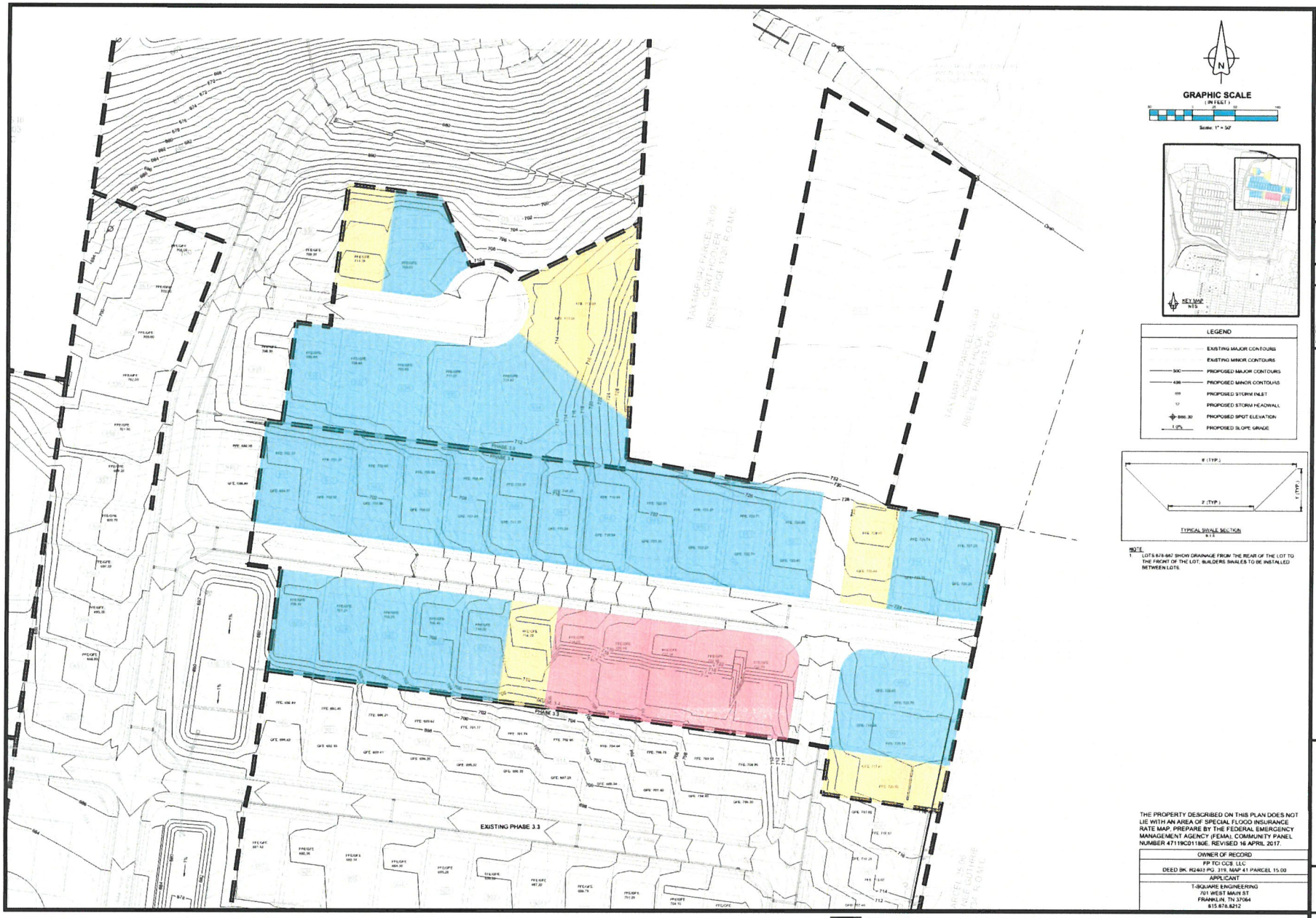
INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-0.0



THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP. PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA). COMMUNITY PANEL NUMBER 47119C0119GE. REVISED 16 APRIL 2017.

OWNER OF RECORD
PP TCI CCB LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

REVISIONS		
NO.	DATE	
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER DESIGN CRITERIA
2	7.25.22	WATERLINE REVISIONS PER CPWS
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

GRADING PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

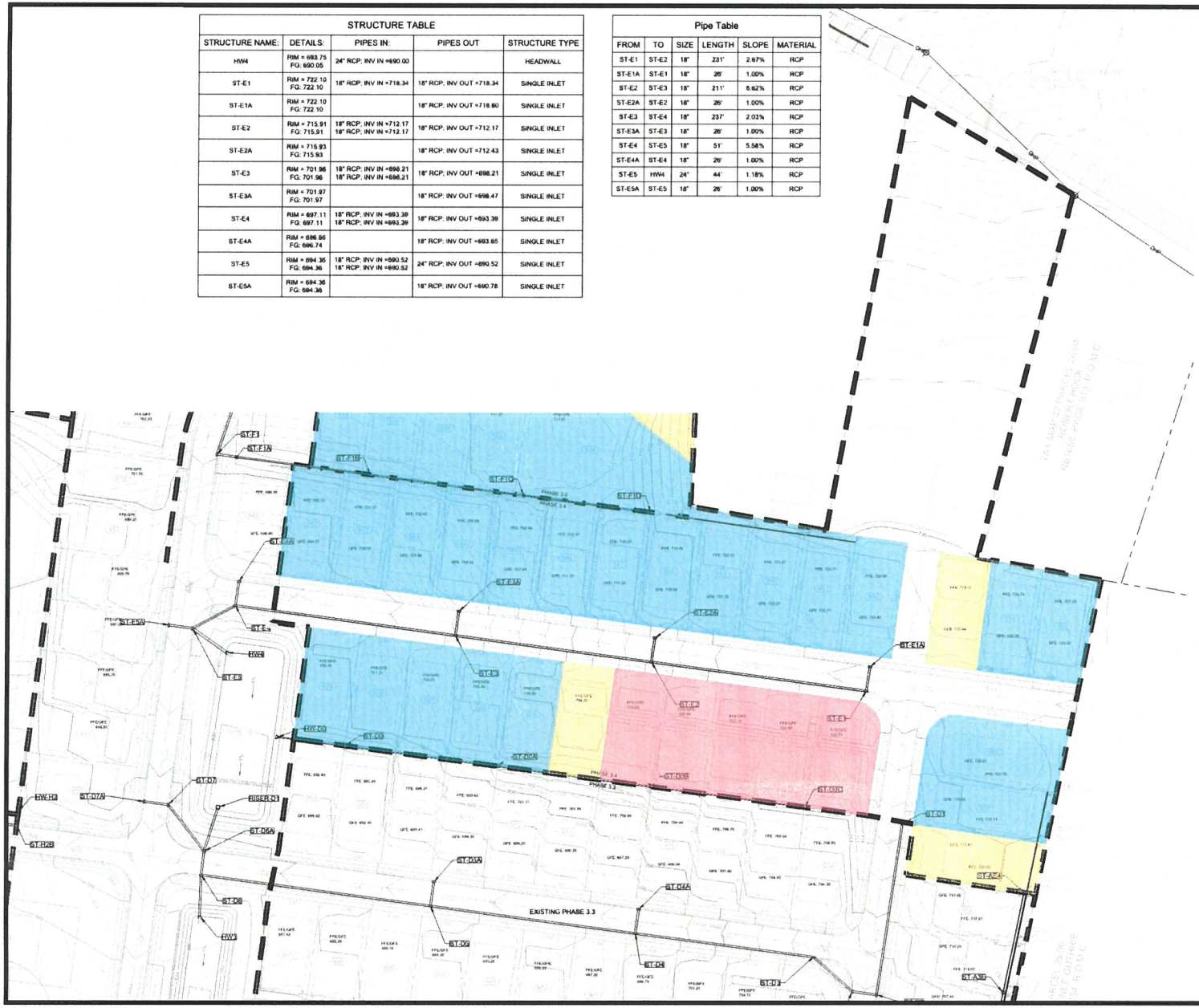
PROJECT
18-0530

SHEET
C-5.0

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT	STRUCTURE TYPE
HW4	RIM = 683.75 FG: 680.05	24" RCP; INV IN =680.00		HEADWALL
ST-E1	RIM = 722.10 FG: 722.10	18" RCP; INV IN =718.34	18" RCP; INV OUT =718.34	SINGLE INLET
ST-E1A	RIM = 722.10 FG: 722.10		18" RCP; INV OUT =718.60	SINGLE INLET
ST-E2	RIM = 715.91 FG: 715.91	18" RCP; INV IN =712.17 18" RCP; INV IN =712.17	18" RCP; INV OUT =712.17	SINGLE INLET
ST-E2A	RIM = 715.93 FG: 715.93		18" RCP; INV OUT =712.43	SINGLE INLET
ST-E3	RIM = 701.96 FG: 701.96	18" RCP; INV IN =698.21 18" RCP; INV IN =698.21	18" RCP; INV OUT =698.21	SINGLE INLET
ST-E3A	RIM = 701.97 FG: 701.97		18" RCP; INV OUT =698.47	SINGLE INLET
ST-E4	RIM = 697.11 FG: 697.11	18" RCP; INV IN =693.39 18" RCP; INV IN =693.39	18" RCP; INV OUT =693.39	SINGLE INLET
ST-E4A	RIM = 686.86 FG: 686.74		18" RCP; INV OUT =693.65	SINGLE INLET
ST-E5	RIM = 694.36 FG: 694.36	18" RCP; INV IN =690.52 18" RCP; INV IN =690.52	24" RCP; INV OUT =690.52	SINGLE INLET
ST-E5A	RIM = 694.36 FG: 684.36		18" RCP; INV OUT =690.78	SINGLE INLET

Pipe Table					
FROM	TO	SIZE	LENGTH	SLOPE	MATERIAL
ST-E1	ST-E2	18"	231'	2.97%	RCP
ST-E1A	ST-E1	18"	26'	1.00%	RCP
ST-E2	ST-E3	18"	211'	6.62%	RCP
ST-E2A	ST-E2	18"	26'	1.00%	RCP
ST-E3	ST-E4	18"	237'	2.03%	RCP
ST-E3A	ST-E3	18"	26'	1.00%	RCP
ST-E4	ST-E5	18"	51'	5.58%	RCP
ST-E4A	ST-E4	18"	26'	1.00%	RCP
ST-E5	HW4	24"	44'	1.18%	RCP
ST-E5A	ST-E5	18"	26'	1.00%	RCP



GRAPHIC SCALE
(IN FEET)
Scale: 1" = 50'



LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED AREA DRAIN
- PROPOSED STORM HEADWALL
- PROPOSED STORM PIPE

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0119DE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI OCB, LLC
DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00

APPLICANT
T-SQUARE ENGINEERING
701 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

REVISIONS		
NO.	DATE	
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7.25.22	GRADING REVISIONS PER OWNER
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

DRAINAGE PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.1

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INDEPENDENCE AT CARTER'S STATION

INLET AREA PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

DATE:	5-11-22
SCALE:	AS SHOWN
DRAWN BY:	T-SQUARE
REVIEWER:	
TET	

NO.	DATE	REVISIONS
1	5/17/22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7/29/22	GRADING REVISIONS PER OWNER
3	10/31/22	WATERLINE REVISIONS PER CPWS
4	1/16/23	WATERLINE REVISIONS PER CPWS

1/30/2023

PROJECT
18-0530

SHEET
C-5.2

GRAPHIC SCALE
(IN FEET)
Scale: 1" = 50'

KEY MAP
N.T.S.

LEGEND
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM PIPE
- PROPOSED STORM HEADWALL
- E1 A1 / 0.09 AC — AREA NAME AND ACREAGE
- AREA BOUNDARY

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) COMMUNITY PANEL NUMBER 47119C0135E, EFFECTIVE APRIL 2017.

OWNER OF RECORD
HP TCO CB, LLC
DEED BK. R24631 PG. 370, MAP 41 PARCEL 15.00

APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN STREET
FRANKLIN, TN 37064
615.678.8212

EXISTING PHASE 3

ST-E1 0.02 AC
ST-E1A 0.09 AC
ST-E2 0.11 AC
ST-E3A 1.01 AC
ST-E3A 0.17 AC
ST-E3 0.18 AC
ST-E3A 0.06 AC
ST-E4 0.22 AC
ST-E5 0.06 AC
ST-E3A 0.02 AC

T-SQUARE ENGINEERING
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DOCUMENT PREPARED BY:
Name: Breanna Smith
Company T-Square Engineering

Address: 1329 West Main Street
Franklin, TN

After recording return copy to City of Columbia, Development Services

INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES

Map & Parcel Number: Map 41, Parcel 15.00
Project Name: Independence at Carter's Station, Section 3.4

Recorded by deed in the Register of Deeds Office of Maury County in Deed Book R2403, Page(s) 319.

THIS AGREEMENT, made this _____ day of _____, 20____, by and between Pulte Homes hereinafter referred to as the "OWNER(S)" of the following property and City of Columbia, Tennessee, hereinafter referred to as the "CITY",

WE, the OWNER(S), with full authority to execute deeds, mortgages, other covenants, all rights, titles, and interests in the property described above, do hereby covenant with the CITY and agree as follows:

1. The OWNER(S) covenant and agree with the CITY that the OWNER(S) shall provide for adequate long term maintenance and continuation of stormwater control measures described in the Long Term Maintenance Plan and shown on the location map, deed of easement drawing or plat attached hereto to ensure that the facilities, are and remain in proper working condition in accordance with approved design standards, rules and regulations, and applicable laws. The OWNER(S) shall perform preventative maintenance activities at intervals described in the schedule attached hereto along with necessary landscaping (grass cutting, etc.) and trash removal as part of regular maintenance.

2. The OWNER(S) shall perform routine inspections to ensure that all long term stormwater management facilities are properly functioning. These inspections shall be conducted on an annual basis, at a minimum. These inspections shall be conducted by a person familiar with control measures implemented at the site. The OWNER(S) or operators shall maintain documents of these inspections.

3. The OWNER(S) shall perform comprehensive inspections of all stormwater management facilities and practices. These inspections shall be conducted once every five years, at a minimum. Such inspections must be conducted by either a professional engineer or landscape architect.

4. The OWNER(S) shall grant to the CITY or its agent or contractor the right of entry at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the facility within the CITY.

5. The OWNER(S) shall record and grant to the CITY the necessary easements and rights-of-way and maintain perpetual access from public rights-of-way to the facility for the CITY or its agent and contractor.

6. If, upon inspection, the CITY finds that the OWNER(S) has failed to properly maintain the facilities, the CITY may order the work performed within ten (10) days. In the event the work is not performed within the specified time, the ONWER(S) agrees to allow the CITY to enter the property and take whatever steps it deems necessary to maintain the stormwater control facilities. This provision shall not be construed to allow the CITY to erect any structure of a permanent nature on the PROPERTY without first obtaining written approval of the OWNER(S)

7. The CITY is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any obligation on the CITY. The OWNER(S) shall reimburse the CITY upon demand the costs incurred in the maintenance of the facilities.

8. If the OWNER(S) fails to pay the CITY for the above expensive after forty-five (45) days written notice, the OWNER(S) authorizes the CITY to collect said expenses from the OWNER(S) through appropriate legal action and the OWNER(S) shall be liable for the reasonable expenses of collection, court costs, and attorney fees.

9. The OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns, and any other successor in interest shall indemnify and hold harmless the CITY and its officers, agents and employees for any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part,

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MAY 22 2023
By 23-0209

against the CITY from the construction, presence, existence, or maintenance of the stormwater control facilities subject to this AGREEMENT. In the event a claim is asserted against the CITY, its officers, agents or employees, the CITY shall notify OWNER(S) and the OWNER(S) shall defend at OWNER(S) expense any suit based on such claim. If any judgment or claims against the CITY, its officers, agents or employees, shall be allowed, the OWNER(S) shall pay all costs and expenses in connection therewith. The CITY will not indemnify, defend or hold harmless in any fashion the OWNER(S) from any claims arising from any failure, regardless of any language in any attachment or other document that the OWNER(S) may provide

10. The OWNER(S) shall not be able to transfer, assign or modify its responsibilities with respect to this agreement without the CITY's written prior consent. Nothing herein shall be construed to prohibit a transfer by OWNER(S) to subsequent owners and assigns.

11. No waiver of any provision of this AGREEMENT shall affect the right of any party thereafter to enforce such provision or to exercise any right or remedy available to it in the event of any default.

12. The OWNER(S) shall record a plat showing and accurately defining the easements for stormwater control facilities. The plat must reference the Instrument Number where this AGREEMENT and its attachments are recorded and contain a note that the OWNER(S) is responsible for maintaining the stormwater management facilities.

13. The OWNER(S) shall record this AGREEMENT in the office of the Register of Deeds for the county of Maury, Tennessee, and the AGREEMENT shall constitute a covenant running with the land, and shall be binding upon the OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns, and any other successors in interest

ATTEST BY OWNER(S):

Print Name: JEREMY BROOKS

Title: DIRECTOR OF LAND

Signature: _____

Owner: PULTE HOMES TENNESSEE LIMITED PARTNERSHIP

Address: 100 WESTWOOD PLACE SUITE 100

City, State ZIP: BRENTWOOD, TN 37027

STATE OF Tennessee
COUNTY OF Williamson

Before me, Kimberly Maynard of the state and county mentioned, personally appeared Jeremy Brooks, with whom I am personally acquainted and who acknowledged that he/she executed the foregoing instrument of the purposes therein contained.

Witness my hand this the 11th day of May, 2023.

Kimberly Maynard
Notary Public

My Commission Expires: 9-8-2025

KIMBERLY MAYNARD
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY
MY COMMISSION EXPIRES 9-8-2025

CITY OF COLUMBIA, TENNESSEE
ENGINEERING DEPARTMENT

APPROVED BY :_____

STATE OF TENNESSEE
COUNTY OF MAURY

Before me, _____ of the state and county mentioned, personally appeared _____, with whom I am personally acquainted, and who acknowledged themselves to be the City Engineer of the City of Columbia or his designee and as such, being authorized so to do, executed the foregoing instrument of the purposes therein contained.

Witness my hand this the _____ day of _____, 20_____.

_____
Notary Public
My Commission Expires:_____

Rev. 1/17/2017

T-SQUARE ENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

701 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-ENG.com

5/08/2023

City of Columbia
Development Services
700 N. Garden Street
Columbia, TN 38401

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: INDEPENDENCE AT CARTER'S STATION, SECTION 3, PHASE 4

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds.

- 904 LF of round concrete pipe and 11 storms inlets.

Upon completion of the site construction, 'Record Drawings' in a version not less than AutoCAD 2006 LT (NAD83, NAVD88) of the stormwater controls will be provided to the City of Columbia for verification.

A copy of the INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES that has been completed, notarized and recorded in the Land Records of the County of Maury, Tennessee will be kept on site with this document.

MAINTENANCE PROCEDURES

1. 904 LF OF RCP AND 11 STORM DRAINS
   - These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.

CONSTRUCTION DRAWINGS
FOR
SECTION 3, PHASE 4
INDEPENDENCE AT CARTER'S STATION
3040 CLEBURNE ROAD
COLUMBIA, TN 37174
CITY OF COLUMBIA, WARD #5

DEVELOPER: PULTE GROUP
370 MALLORY STATION ROAD, STE 500
FRANKLIN, TN 37067

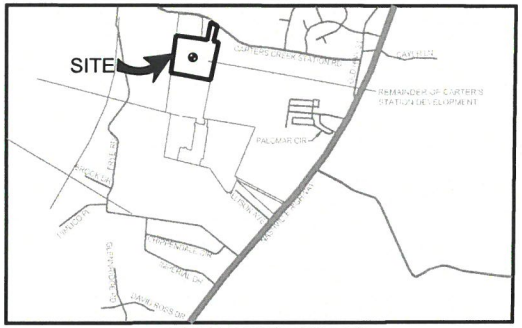
ENGINEER: T-SQUARE ENGINEERING
701 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

SURVEYOR: H&H LAND SURVEYING
612A FITZHUGH BLVD
SMYRNA, TN 37167
615-831-0756

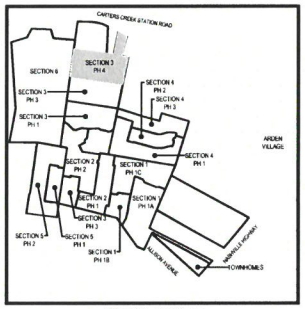
T-SQUARE ENGINEERING AND ITS ASSOCIATES WILL NOT BE HELD RESPONSIBLE FOR ITS ACCURACY OR FOR DESIGN ERRORS OR EMISSIONS RESULTING FROM POTENTIAL SURVEY INACCURACIES.

WATER UTILITY: CPWS Shane Andrews
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833

POWER UTILITY: CPWS Doug Burgess
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833



SITE VICINITY MAP



KEY MAP

Permits
TDEC: TNR182340 (ACTIVE)

Sheet Schedule

C-0.0	Cover Sheet
C-1.0	Overall Existing Conditions
C-1.1	Existing Conditions
C-2.0	Overall Site Plan
C-2.1	Site Plan
C-3.0	Initial Erosion Control Plan
C-3.1	Temporary Erosion Control Plan
C-3.2	Permanent Erosion Control Plan
C-4.0	Pre-Development Conditions
C-4.1	Post Development Conditions
C-5.0	Grading Plan
C-5.1	Drainage Plan
C-5.2	Inlet Areas
C-6.0	Hearth Hollow Rd and Lively Street Plan and Profile
C-7.0	Utility Plan
C-7.1	Utility Plan Overview
C-8.0	Detail Sheet
C-8.1	Detail Sheet
C-8.2	Detail Sheet
C-8.3	Detail Sheet
C-8.4	Detail Sheet

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118OE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TG CCS, LLC DEED BK. H2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5/17/22	CHANGES PER COC OF CONNER WASTEWATER
2	7/25/22	GRADING REVISIONS PER OWNER
3	10/31/22	WATERLINE REVISIONS PER CPWS
4	1/16/23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

COVER SHEET
CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER 101172 STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-0.0

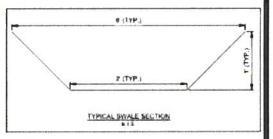


GRAPHIC SCALE
(IN FEET)
Scale: 1" = 50'

KEY MAP
NTS

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 500 PROPOSED MAJOR CONTOURS
- 498 PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED STORM HEADWALL
- 866.30 PROPOSED SPOT ELEVATION
- 1.0% PROPOSED SLOPE GRADE



TYPICAL SWALE SECTION
N.T.S.

NOTE
1. LOT 6 678-687 SHOW DRAINAGE FROM THE REAR OF THE LOT TO THE FRONT OF THE LOT; BUILDERS SWALES TO BE INSTALLED BETWEEN LOTS.

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118E, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TO CCB, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 707 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7.25.22	GRADING REVISIONS PER COLUMBIA
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

GRADING PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

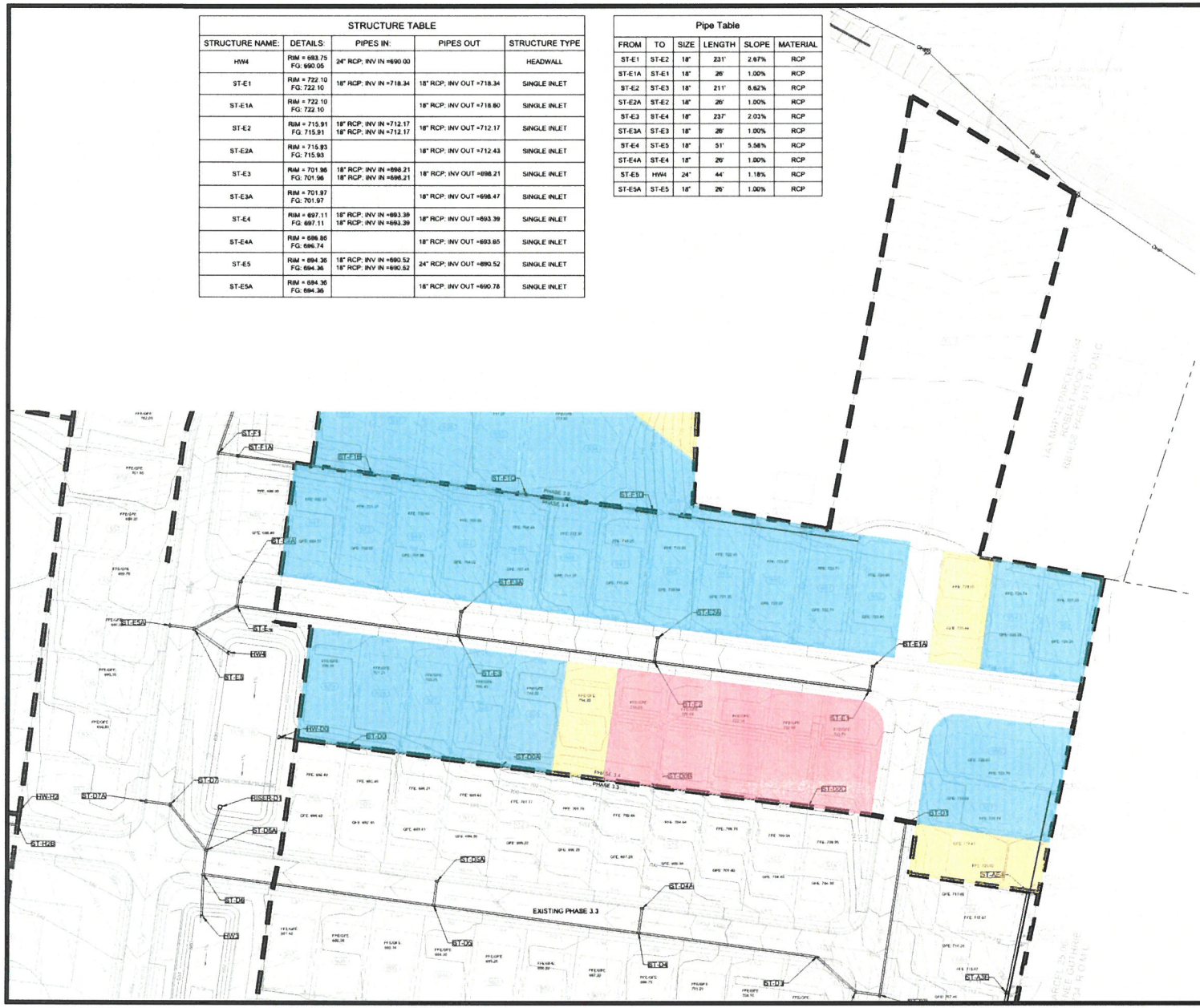
PROJECT
18-0530

SHEET
C-5.0

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STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT	STRUCTURE TYPE
HW4	RIM = 683.75 FG: 680.05	24" RCP; INV IN =680.00		HEADWALL
ST-E1	RIM = 722.10 FG: 722.10	18" RCP; INV IN =718.34	18" RCP; INV OUT =718.34	SINGLE INLET
ST-E1A	RIM = 722.10 FG: 722.10		18" RCP; INV OUT =718.80	SINGLE INLET
ST-E2	RIM = 715.91 FG: 715.91	18" RCP; INV IN =712.17 18" RCP; INV IN =712.17	18" RCP; INV OUT =712.17	SINGLE INLET
ST-E2A	RIM = 715.93 FG: 715.93		18" RCP; INV OUT =712.43	SINGLE INLET
ST-E3	RIM = 701.96 FG: 701.96	18" RCP; INV IN =698.21 18" RCP; INV IN =698.21	18" RCP; INV OUT =698.21	SINGLE INLET
ST-E3A	RIM = 701.97 FG: 701.97		18" RCP; INV OUT =698.47	SINGLE INLET
ST-E4	RIM = 697.11 FG: 697.11	18" RCP; INV IN =693.39 18" RCP; INV IN =693.39	18" RCP; INV OUT =693.39	SINGLE INLET
ST-E4A	RIM = 686.86 FG: 686.74		18" RCP; INV OUT =693.85	SINGLE INLET
ST-E5	RIM = 694.36 FG: 694.36	18" RCP; INV IN =690.52 18" RCP; INV IN =690.52	24" RCP; INV OUT =690.52	SINGLE INLET
ST-E5A	RIM = 694.36 FG: 694.36		18" RCP; INV OUT =690.78	SINGLE INLET

Pipe Table					
FROM	TO	SIZE	LENGTH	SLOPE	MATERIAL
ST-E1	ST-E2	18"	231'	2.97%	RCP
ST-E1A	ST-E1	18"	26'	1.00%	RCP
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ST-E2A	ST-E2	18"	26'	1.00%	RCP
ST-E3	ST-E4	18"	237'	2.03%	RCP
ST-E3A	ST-E3	18"	26'	1.00%	RCP
ST-E4	ST-E5	18"	51'	5.58%	RCP
ST-E4A	ST-E4	18"	26'	1.00%	RCP
ST-E5	HW4	24"	44'	1.18%	RCP
ST-E5A	ST-E5	18"	26'	1.00%	RCP



GRAPHIC SCALE
(IN FEET)
Scale: 1" = 50'

KEY MAP
NTS

LEGEND
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED AREA DRAIN
- PROPOSED STORM HEADWALL
- PROPOSED STORM PIPE

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118E, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCB, LLC DEED BK. 2403 PG. 219, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7.25.22	GRADING REVISIONS PER OWNER
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

DRAINAGE PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

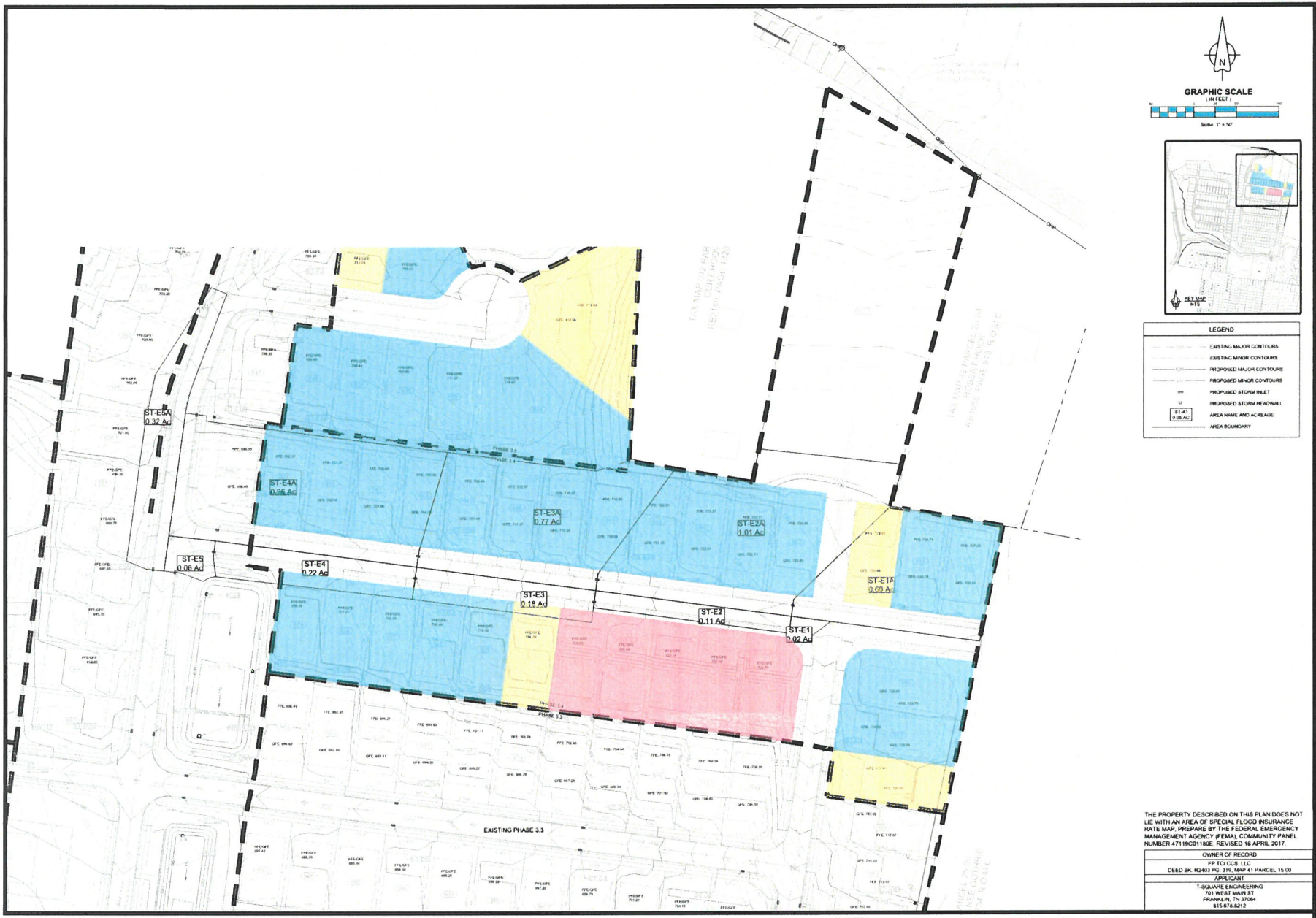
TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.1

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GRAPHIC SCALE
(IN FEET)
Scale: 1" = 50'

KEY MAP
NTS

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED STORM HEADWALL
- ST-A1 / 0.05 Ac — AREA NAME AND ACREAGE
- AREA BOUNDARY

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0119DE. REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCB, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1.	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7.25.22	GRADING REVISIONS PER OWNER
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

INLET AREA PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER — STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.2

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	Independence at Carter's Station, Columbia, TN		
	TAX MAP: 41	GROUP:	PARCEL: 15.00
SUMMARY OF NATURE OF REQUEST AND WORK	This application is to approve the final plat for section 3.4 Independence at Carter's Station.		

DATE OF PRE-APPLICATION CONFERENCE		*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ❑ Preliminary Plat [4] Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ❑ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** [4] Project Name (include Sections & Phases) Independence at Carter's Station Sec 3.4 [4] Total Number of Lots 29 [4] Total acreage 7.61

RECEIVED
MAY 22 2023
By: 23-0209

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	T-Square Engineering	PHONE	615.678.8212
ADDRESS	1329 West Main St., Franklin, TN 37064	EMAIL	Breanna.Smith@T2-Eng.com

PROPERTY OWNER NAME	Pulte Homes Tennessee Limited Partnership	PHONE	615.992.9508
ADDRESS	100 Westwood Place, Suite #100 Brentwood, TN 37027	EMAIL	Jeremy.Brooks@PulteGroup.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Breanna Smith	Breanna Smith	5/8/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
JEREMY BROOKS		5/11/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

RHODES ENGINEERING

Civil * Structural * Geotechnical * Stormwater

7 17 2023

Kevin McCarthy
City Planner
City of Columbia Tennessee
700 North Garden Street
Columbia, TN 38401

Request for Placement on July PC Meeting Agenda for Go Cart Pit Structure Change for Tenn Pin Alley

Dear Mr. McCarthy On April 14, 2023, at my Client Derek Ransom's request, I (Chet Rhodes), submitted application to the City of Columbia's Planning Commission for approval of the revised Final Site Plan adding outdoor amusements, expand the existing parking lot, update, and increase the number of fixtures, curbs, and landscaping at Tenn Pin Alley, 730 Mooresville Pike.

After further study, we were desirous to modify the Pit Structure and other items including but not limited to parking.

We have since redesigned the Pit Structure only so as to become more functional and aesthetically pleasing. The revised design was submitted to and approved by the Architectural Review Team (ART) for review and approval. Our redesign was approved July 11th. Once approved we respectfully request our PUD application be modified to include only the redesigned Pit Structure and placed before the Columbia Planning Commission for consideration. It may be well to articulate only changes to the PUD will be changes to the Pit Structure.

Only ART approved changes to the Pit Structure are being changed for the PC to consider. This request is made by me as I am technically the applicant on behalf of my Clients:

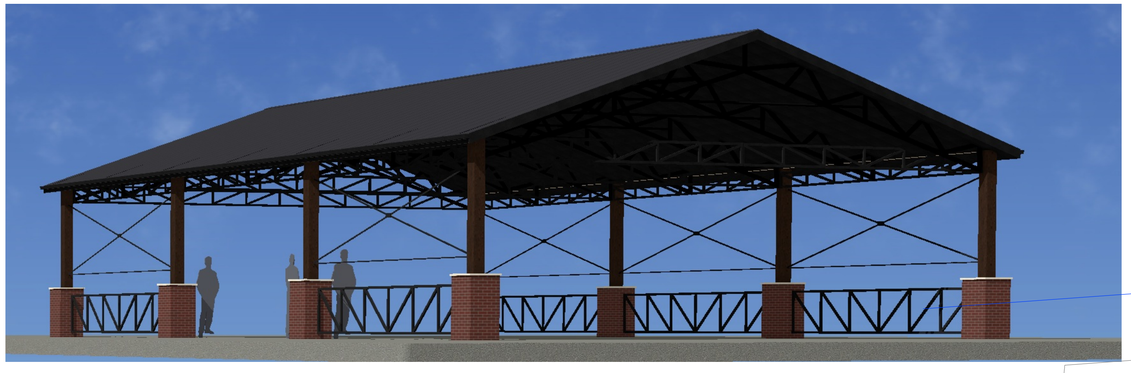
Derek and Brandi Ransom
Tenn Pin Alley
730 Mooresville Pike
Columbia, TN 38401
931 381 BOWL derek@tennpin.com

Please do not hesitate to contact me at 615-480-7535 should you have any questions and/or comments.

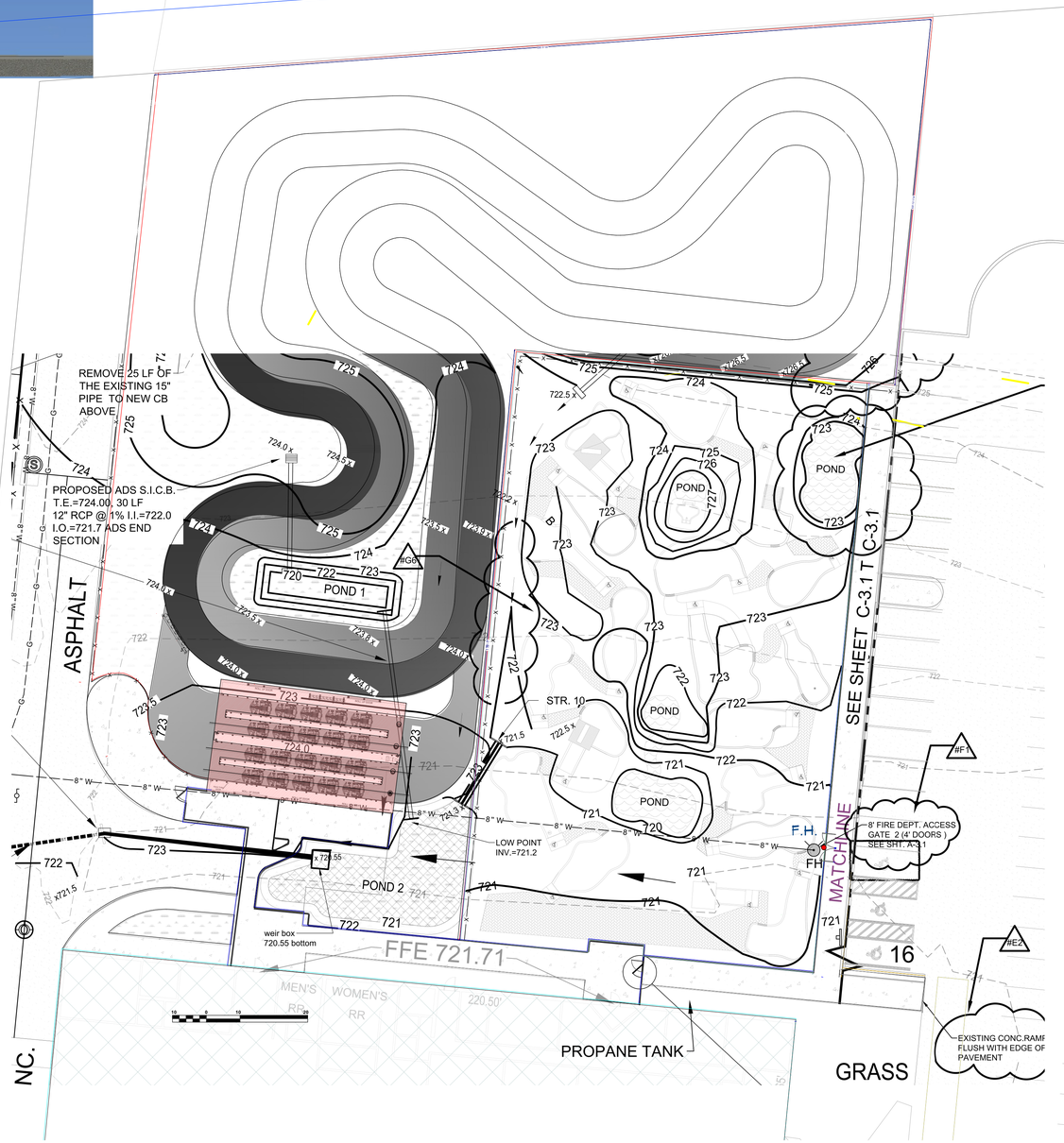
Sincerely,
Chet Rhodes,PE

Chet Rhodes

7/17/2023



3 D VIEW



BUILDING LOCATION ON SITE

3D VIEWS ARE NOT TO SCALE AND MAY NOT REFLECT EXACTLY WHAT IS AVAILABLE FOR THE PROJECT. RENDER VIEWS ARE REPRESENTATIONS OF WHAT THE VIEW COULD LOOK LIKE, NOT WHAT IT WILL LOOK LIKE. 2D VIEWS ALWAYS SUPERCEDE 3D VIEWS

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PRELIMINARY NOT FOR CONSTRUCTION

CECIL D. JOHNS REGISTERED ARCHITECT AGRICULTURE COMMERCE NO. 21939 STATE OF TENNESSEE

6 20 23

REVISIONS

Number	Date	Description

SITE PLAN - GOCART BUILDING

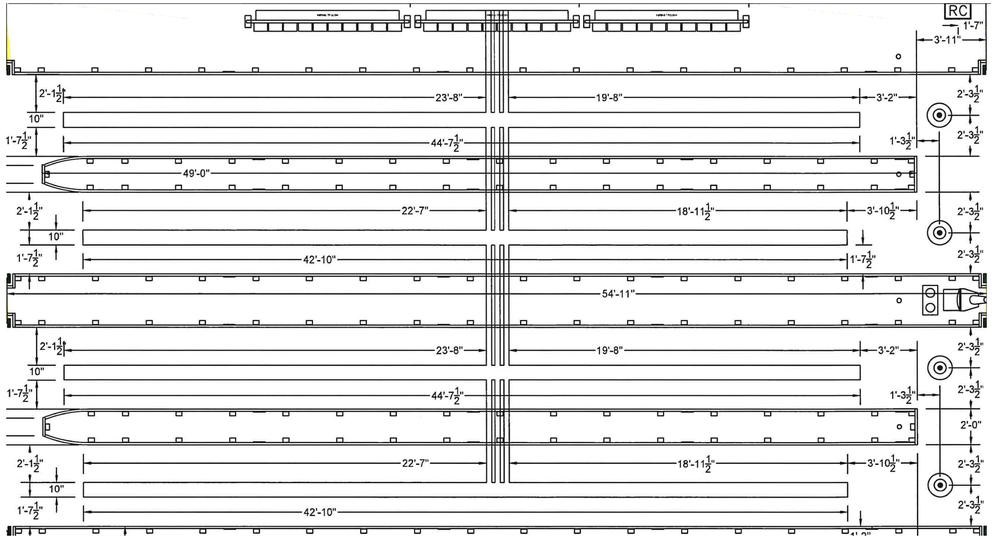
Tenn Pin Alley
730 Mooresville Pike
Columbia, TN 38401

C.D. Johns Architect
606 Riverside Drive
Columbia, TN 38401
615.332.4551 615.443.7362
c.d. Johns

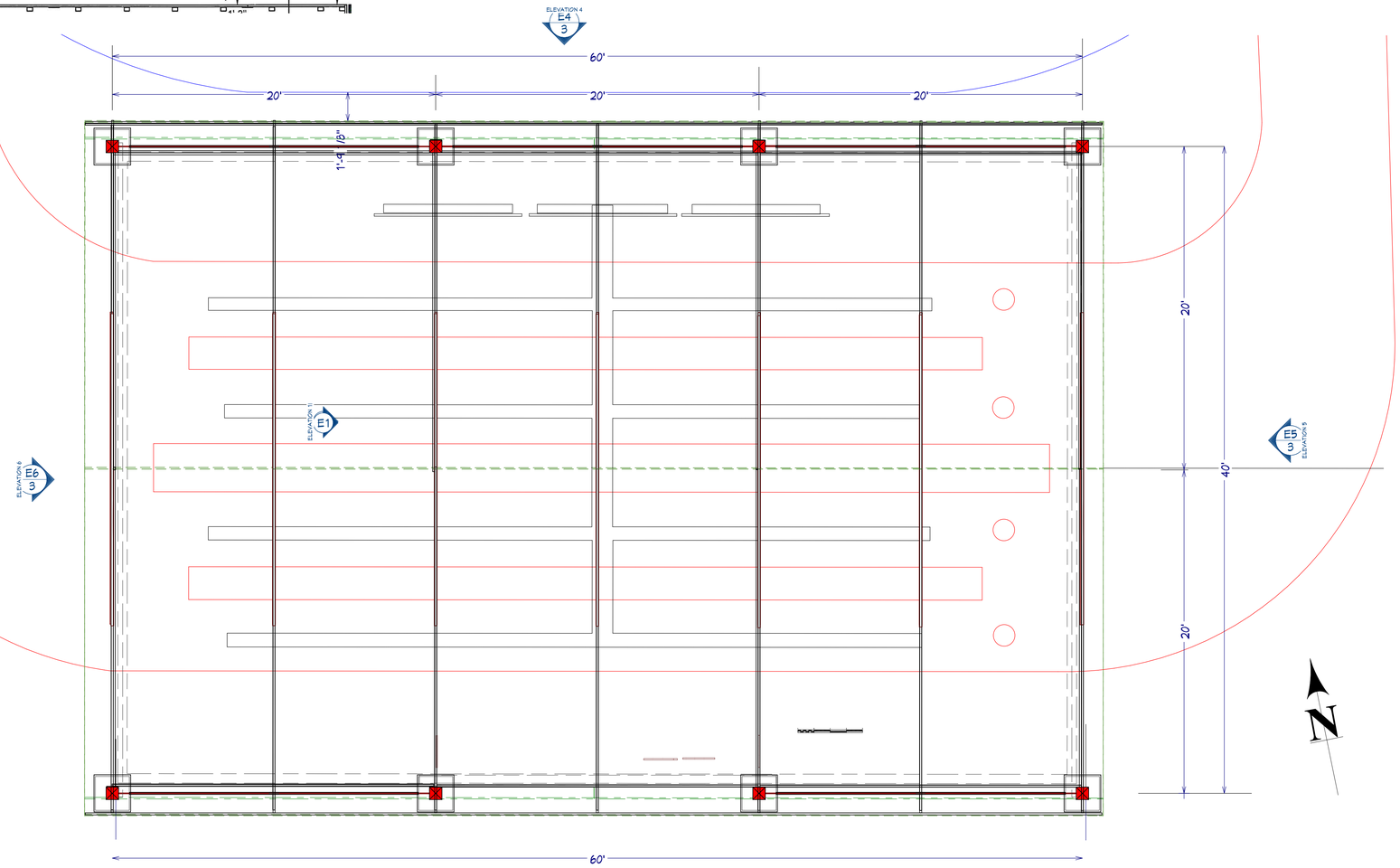
DATE: 6/20/2023

SCALE: 1" = 20'-0"

SHEET #: 1



TRACK PLAN



BUILDING FLOOR PLAN

3D VIEWS ARE NOT TO SCALE AND MAY NOT REFLECT EXACTLY WHAT IS AVAILABLE FOR THE PROJECT. RENDER VIEWS ARE REPRESENTATIONS OF WHAT THE VIEW COULD LOOK LIKE, NOT WHAT IT WILL LOOK LIKE. 2D VIEWS ALWAYS SUPERCEDE 3D VIEWS

PRELIMINARY NOT FOR CONSTRUCTION

CECIL D. JOHNS REGISTERED ARCHITECT AGRICULTURE COMMERCE NO. 21939 STATE OF TENNESSEE

6.20.23

REVISIONS

Number	Date	Description

FLOOR PLAN - GOCART BUILDING

Tenn Pin Alley
730 Mooresville Pike
Columbia, TN 38401

C.D. Johns Architect
606 Riverside Drive
Columbia, TN 38401
615.332.4531 615.943.7362

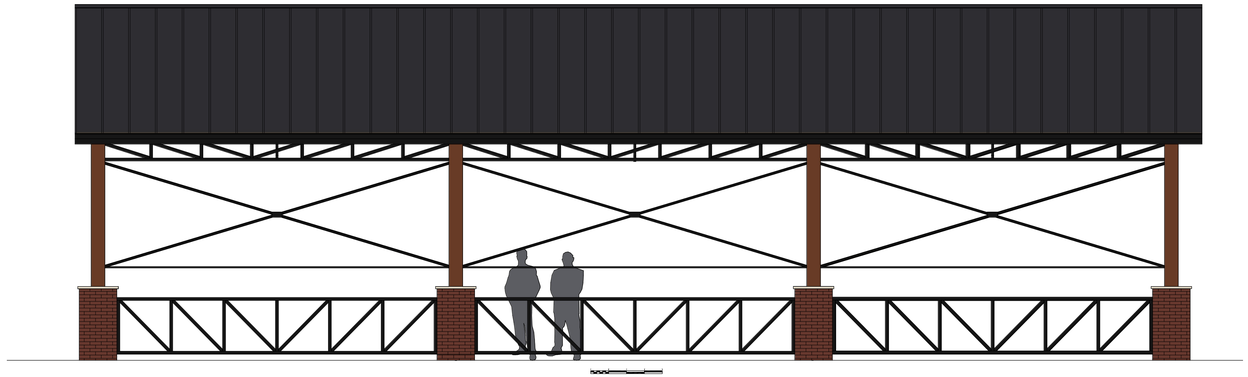
c.d. Johns

DATE: 6/20/2023

SCALE: 1/4" = 1'0"

SHEET #: 2

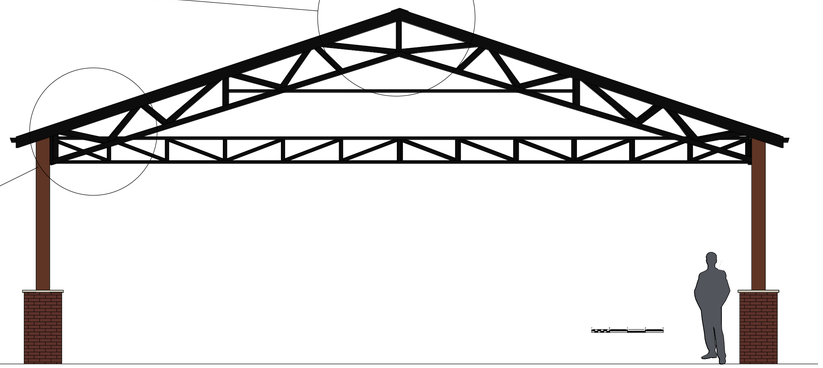
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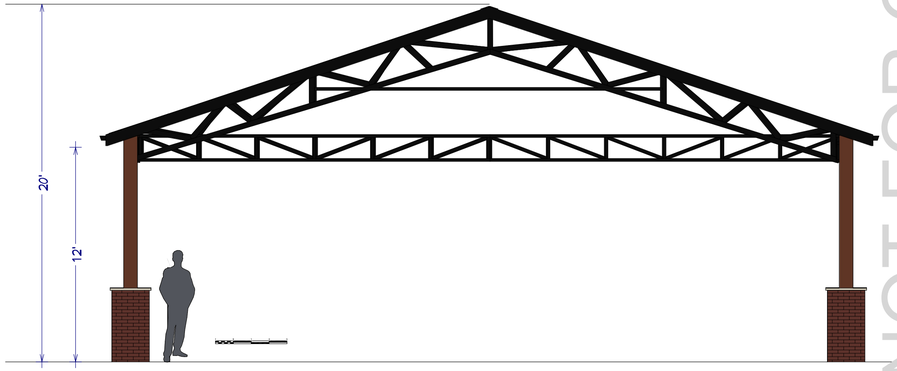
NORTH ELEVATION



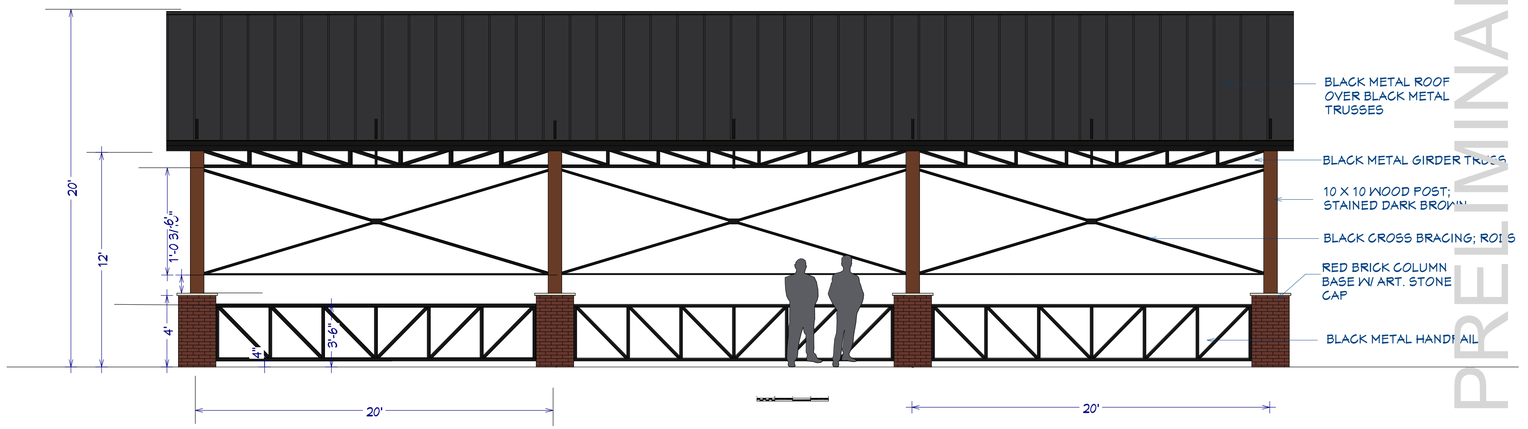




WEST ELEVATION



EAST ELEVATION



SOUTH ELEVATION

US Steel TRUSS
STANDING STRONG

3D VIEWS ARE NOT TO SCALE AND MAY NOT REFLECT EXACTLY WHAT IS AVAILABLE FOR THE PROJECT. RENDER VIEWS ARE REPRESENTATIONS OF WHAT THE VIEW COULD LOOK LIKE, NOT WHAT IT WILL LOOK LIKE.
2D VIEWS ALWAYS SUPERCEDE 3D VIEWS

PRELIMINARY NOT FOR CONSTRUCTION

CECIL D. JOHNS
REGISTERED ARCHITECT
AGRICULTURE
COMMERCE
NO. 21239
STATE OF TENNESSEE
6 20 23

REVISIONS

Number	Date	Description

ELEVATIONS -
GOCART BUILDING

Tenn Pin Alley
730 Mooresville Pike
Columbia, TN 38401

C.D. Johns Architect
606 Riverside Drive
Columbia, TN 38401
615.332.4531 615.943.7362

c.d. Johns

DATE: 6/20/2023

SCALE: 1/4' = 1'0"

SHEET #: 3

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CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

ARCHITECTURAL REVIEW TEAM
PROJECT DEVELOPMENT APPLICATION

ADDRESS/LOCATION	322 East James Campbell Blvd		
	TAX MAP: 114	GROUP: N/A	PARCEL: 074.00
SUMMARY OF NATURE OF REQUEST AND WORK	The Go-Kart track best function with a shelter covering the "pit area" Request approval of the submitted plan, pages 1,2, & 3 Construct a steel structure, with black steel roof, masonry sidewalls columns (stone, architectural CMU, brick and or exterior finish) 3'-02" above finished floor elevation.		

REQUEST DATE FOR PRE-APPLICATION CONFERENCE		*Pre-application meetings are scheduled for Wednesdays between 8 and 10 am. Meeting must be requested by Monday of the same week.*

SUBMITTAL REQUIREMENTS
10 copies of plan + PDF
Fold all submittals larger than 8½"x11"

SELECT REQUEST	PLAN SHALL INCLUDE
☐ Façade Approval ☐ Alternative Compliance Requested ☒ Other: Approval of structure	• Site Plan • Building elevations for all sides of the building: Color elevations, required, at legible scale, with all materials listed (materials board may be required) • If Alternative Compliance is requested, provide scope of alternative and description of proposed compliance. • Floor Plans for all new construction and façade remodels.

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application. A representative for the project is required to be present at the meeting, at the request of the Commission.

APPLICANT

NAME	Derek Ransom	PHONE	615-423-2567
ADDRESS	322 East James Campbell Blvd	EMAIL	derekransom@bellsouth.net

PROPERTY OWNER

NAME	Ransom Entertainment Partnership	PHONE	931-381-2695
ADDRESS	322 East James Campbell Blvd	EMAIL	derekransom@bellsouth.net

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Derek Ransom
APPLICANT NAME


APPLICANT SIGNATURE

June 19, 2023
DATE

* Zoning Ordinance Article 3.3.3, Applications will be reviewed for completeness within 5 days of submittal. Incomplete applications will be removed and the applicant will be notified by certified mail listing incomplete information.*

Derek and Brandee Ransom
PROPERTY OWNER NAME


PROPERTY OWNER SIGNATURE

June 19, 2023
DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

CITY OF COLUMBIA TENNESSEE
PLANNING COMMISSION
STAFF REPORT

STAFF REPORT CONTACT INFORMATION
Kevin C. McCarthy, AICP, City Planner kmccarthy@columbiatn.com, 931-560-1560

APPLICATION NUMBER
23-0144

APPLICANT/PROPERTY OWNER
Joseph Ahler, P.E./ Imer Development

PUBLIC HEARING DATE
N/A

PROPERTY ADDRESS/LOCATION
1451 Lasea Road / Tax Map 73, Parcel 51.00

SUMMARY OF REQUEST: **Preliminary Plat & Site Development Plan**

The applicant requests approval of a Preliminary Plat and Site Development Plan for 140 lots as well as associated infrastructure and civic spaces on a 29.5-acre Development Parcel yielding a density of 4.74 density units per acre (du/ac). The home sites include a mix of townhomes, single family detached homes, and live-work units. The subject site is located on Lasea Road within a CD-4 Character District.



MAP SOURCE: City GIS

EXISTING ZONING	EXISTING LAND USE	SURROUNDING ZONING & LAND USE	SITE IMPROVEMENTS PROPOSED	SIZE OF PROPERTY
CD-4	Undeveloped	Unincorporated/CD-2 Single-Family/Vacant	140 Single-Family Home Lots	29.5 acres

CONSISTENCTY with the **COMPREHENSIVE PLAN:**

Suburban Corridor: The future land use classification of the subject property is Suburban Corridor. The future land use is characterized by mix of residential and commercial uses. The general development pattern is context specific, and traverses through rural and urban settings.

PROPERTY HISTORY:

In 2022 the Planning Commission denied a request for an RM-1 PUD consisting of 198 townhome units on the subject site.

In 2016, City Council approved a request for annexation and rezoning of the subject site to the RM-1 zoning designation under the previous zoning ordinance.

CONFORMITY with the ZONING ORDINANCE:

Zoning Ordinance Referenced:
The CD-4 General Urban Charter District consists primarily of a medium density (12 du/ac) area in with a range of building types. The CD-4 district permits a range of residential, retail, artisan, office, and civic uses. The arrangement of buildings features medium, shallow or no front Setbacks and narrow to medium side Setbacks. Private landscaping varies. Thoroughfares and Internal Drives with curbs, sidewalks and trees define medium-sized blocks with a perimeter of 2,400 feet or less (Table 3.7.1 p. 36; Table 4.3.1-D, p. 76-85).

Lot Building Site Standards/ Setbacks (*Table 4.3.1-D, p. 76-85*):

- Building site width:
  - 8 – 36' for Townhouses with each unit on its own Lot or Building Site;
  - 38' for alley loaded houses, otherwise 50' for
- Maximum of 8 attached Townhouse units;
- 6' minimum, 20' maximum front setback;
- 0' side yard setback between townhome units;
- 6' side yard setback generally;
- 3' rear yard setback or 15' from center of alley.
- Up to 20% of lots or building sites may enfront a pedestrian path, passage, or walkway.

This preliminary plat indicates a variation of rear-loaded lots that comply with the building site standards within a CD-4 Character District:

- 59 single family lots will be a minimum of 38' wide with a rear-loaded driveway off an alley;
- 53 townhomes lots will be a minimum of 22' wide with a rear-loaded driveway off an alley;
- 28 live-work units will be a minimum of 22' wide with rear-loaded driveway off an alley.

Streets/Connectivity:

Thoroughfares and Internal Drives shall be provided and designed to define Blocks which do not exceed a maximum block perimeter (§ 5.2.2.D, p.308).

- The term block is defined in § 9.3 (p. 482) to include lots and building sites circumscribed by thoroughfares and alleys.
- The maximum block perimeter in a CD-4 character district is 2,400 feet.
- The proposed Preliminary Plat and Site Development Plan includes a network of thoroughfares and alleys which define conforming blocks.

Mix of Uses:

The Zoning Ordinance requires a mix of building types and land uses on CD-4 zoned sites larger than 10 acres. Section 5.1.10 of the Zoning Ordinance prescribes a minimum 15% of total building frontage be Live/Work, Commercial, Mixed Use or Flex buildings (p. 304-305). Section 5.1.11 establishes a maximum residential land use of 85% of the net site area.

- The proposed Preliminary Plat and Site Development Plan includes Live-Work units which conform to building type standards at Table 4.3.8.B (p. 215).
- The Live-Work units meet the frontage and area requirements under §§ 5.1.10 and 5.1.11.

Civic Space:

Section 5.3.1 of Zoning Ordinance 4400 requires any development parcel[1] to utilize at least 5% but no more than 20% of its gross acreage as Civic Space conforming to the standards of § 5.3.3.

Section 5.3.3 offers a variety of Civic Space types that include green space, natural areas, pocket parks

[1] Development Parcel: a parcel of land: (1) which, either alone or together with one or more other parcels under a common Development scheme, program or plan, is ten (10) or more gross acres; (2) with respect to the Development of which any new Thoroughfare, Internal Drive, or extension or change of the design of any existing Thoroughfare or Internal Drive is required or will be made or proposed; or (3) with respect to which any District assignment or any Thoroughfare or Internal Drive or alignment thereof is proposed to be made or changed by a Zoning Map or Zoning Map amendment. (§ 9.3, p. 490).

etc.

Each Civic Space type has its own standards for intent, size, frontage, character, and typical facilities. Section 5.3.3.B further requires civic space designed and equipped as a playground within 800 feet of every lot or building site greater than 20 acres in residential use.

- The proposed Preliminary Plat and Site Development Plan depicts 1.92 acres of Civic Space, exceeding the 5% minimum.
- Playgrounds account for 0.44 acres of the proposed Civic Space.
- Greens account for the balance of the proposed Civic Space.
- The Civic Space Plan on sheet 6.0 of the Preliminary Plat and Site Development Plan depicts the placement and type of playground equipment, as well as landscaping and other features in each playground.
- The Civic Space Plan depicts benches, picnic table, and walking trails within the Green.
- The Civic Spaces depicted in the Preliminary Plat and Site Development Plan generally conform to the standards of the Ordinance for these Civic Space types.

Playground



Permitted In / Adjacent to:

CD-2 | CD-3L | CD-3 | CD-4 | CD-4C | CD-5 | CD-5C | SD-MHP | SD-LI | PUD-R | PUD-MU

Intent

An open area designed and equipped for the recreation of children. A Playground may include an open shelter. Playgrounds shall be interspersed within Residential areas and may be placed within a Block. Playgrounds may be included within Natural Areas and Greens. There is no minimum or maximum size.

Specifications

Size	No min. No max
Frontage	Buildings
Character	Formal or Informal

Typical Facilities

- Active recreation
- Play structures
- Paths
- Water features

Green



Permitted In / Adjacent to:

CD-2 | CD-3L | CD-3 | CD-4 | CD-4C | SD-MHP | PUD-R

Intent

An open area, available for unstructured recreation. A Green may be spatially defined by landscaping rather than Building Frontages. Its landscape shall consist of lawn and trees, naturalistically disposed. The minimum size is 0.5 acre and the maximum is 8 acres.

Specifications

Size	0.5 ac min, 8 ac max
Frontage	Independent
Character	Informal

Typical Facilities

- Passive and active recreation
- Playgrounds and play structures
- Paths and trails
- Accessory structures

Tree Canopy Cover Retention:

Section 4.3.16 of the Zoning Ordinance requires a percentage of existing tree cover to be preserved based upon the existing canopy on the development site.

- The applicant's tree preservation plan identifies 23.9 acres (81%) of the 29.5 acre site as existing tree canopy.
- Table 4.3.16.L of the Ordinance requires retention of at least 30% of the existing canopy.
- The applicant's tree preservation plan proposes to preserve 30.1% of the existing tree canopy and identifies 7.2 acres of tree save areas.

Procedural Requirements:

The water availability letter provided at application has expired. If the applicant cannot verify water availability for the density and intensity of development proposed, action on this item should be deferred.

Section 8.5.6 of the Zoning Ordinance requires that the appropriate Decision-Making Authority approve a Site Development Plan demonstrating compliance with the Ordinance prior to any development or subdivision of land. The Planning Commission is the Decision-Making Authority for properties which qualify as Development Parcels, including the subject site. The applicant has submitted elements of a Site Development Plan along with a Preliminary Plat as a single document. Approval should be conditioned on timely submittal of two separate "as-approved" documents which, in the determination of the Zoning Administrator and the City Engineer, reflect the substance of the plans approved by the Planning Commission.

Site Development Plan:

Staff reviewed the request for a Site Development Plan for conformity with the standards listed in the City of Columbia Zoning Ordinance. The relevant provisions of the Ordinance are listed below. Staff analysis follows in the next section.

Section 8.5.6.N Review Criteria.

1. The criteria to be applied by the Zoning Administrator in reviewing a Development Plan and application shall be whether such Plan and application comply with the applicable conditions, standards, and requirements of this Ordinance, all applicable previously approved Plans, such as earlier Development Plans, the Comprehensive Plan and all other applicable Land Use Plans.

2. With respect to a Development Plan the Planning Commission shall rely on all conditions, standards, and requirements of Articles 1-5 and Article 7 of this Ordinance and the Planning Commission shall review the Plan and application for compliance with all other conditions, standards, and requirements of this Ordinance, including without limitation those of Article 6 (Supplemental Standards) , and compliance with all applicable previously approved Plans, such as earlier Development Plans, the Comprehensive Plan and all other applicable Land Use Plans.

Additionally, in the case of Development in a Special District, the Planning Commission shall determine:

a. Whether the Development design and Development intensity are appropriate for and tailored to the unique characteristics of the site, such as significant wooded areas, specimen trees, wetlands, steep slopes, floodplains, and zoning of or existing Development on Adjacent property;

b. Whether the proposed access and circulation are adequate with respect to traffic patterns, traffic control measures, and street pavement areas, with provisions for maintaining traffic flows and reducing any negative effects of traffic on nearby properties;

c. Compliance with site construction requirements;

d. Adequacy of stormwater facilities, water supply, sanitary sewer service, fire protection, street signs, and street lighting as evidenced by conformance with City standards, specifications and guidelines; and

e. Compliance with requirements for Easements or dedications.

Section 8.5.6.O Development Plan Procedures Decision-Making Authority's Action.

1. Within 62 days for a Development Plan and application for which the Zoning Administrator is the Decision-Making Authority, or within 62 days after the hearing on a Development Plan and application for which the Planning Commission is the Decision-Making Authority, the Development Plan and application shall be approved or disapproved by the Decision-Making Authority in accordance with the review criteria of Section 8.5.6.N and Sections 8.5.6.O.2-.5 below:

2. A Development Plan and application shall be approved by the Decision-Making Authority, upon a finding that the Development Plan and application are in compliance with the review criteria set forth in Section 8.5.6.N.

3. If a Development Plan and Application are approved, the Development Plan as approved shall become part of the record of approval, and subsequent actions relating to the authorized Development must be consistent with approved items.

4. A Development Plan and application shall be disapproved if the Decision-Making Authority determines that the Plan and application do not comply with any one or more of the review criteria set forth in Section 8.5.6.N.

Staff's review of Section 8.5.6.N and O in relation to this request finds the following:

The proposed Site Development Plan generally conforms to the requirements of the Zoning Ordinance.

Technical comments from service providers indicate that services are in place to support the proposed development. A few technical comments are noteworthy and may warrant further evaluation by the Planning Commission.

- **The water availability letter provided at application has expired. If the applicant cannot verify water availability for the density and intensity of development proposed, action on this item should be deferred.**
- Public works recommends the use of dumpsters or private sanitation services for townhomes and live/work units.
- Maury County Schools provided comments that the proposed development would be served by Howell Elementary; Cox Middle School; and Spring Hill High School. Maury County Schools reiterated in its comments that no residence is guaranteed assignment to a specific attendance zone.

Preliminary Plat and Site Development Plan are two separate documents which are reviewed concurrently.[2]

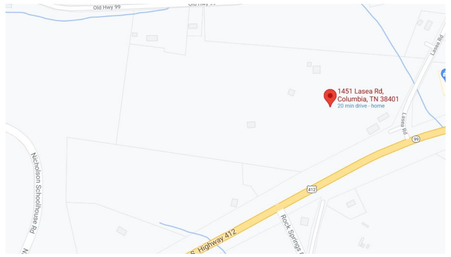
- The Preliminary Plat must adhere to the Subdivision Regulations and propose a plan for installation of infrastructure and the subdivision of land in a manner that conforms to the Zoning Ordinance and other regulations of the City. A Preliminary Plat approved by Planning Commission is the first step in the process of subdividing the property into smaller parcels.
- The Site Development Plan details how the proposed development of the site will conform to the requirements of the Zoning Ordinance for Development Parcels. A Site Development Plan approved by the Planning Commission will control all subsequent development of the site.
- Approval should be conditioned on the submittal of separate "as-approved" documents which reflect the determinations of the Planning Commission.

[2] There are some exceptions where Preliminary Plats and/or Site Construction Plans serve as the required Development Plan.

PRELIMINARY DEVELOPMENT PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, TENNESSEE
MAP 73, PARCEL 51

SHEET INDEX

C0.0-COVER SHEET
C1.0- GENERAL NOTES
C2.0-EXISTING CONDITIONS
C3.0-SITE PLAN
C4.0-UTILITY PLAN
C5.0-GRADING PLAN
C6.0-EROSION CONTROL PLAN-PH. 1
C7.0-EROSION CONTROL PLAN-PH. 2
C8.0-EROSION CONTROL PLAN-PH. 3
C9.0-TREE PRESERVATION PLAN



VICINITY MAP
NTS

OWNER

IMER DEVELOPMENT, LLC
1909 COLUMBIA AVENUE
FRANKLIN, TN 37064
615-788-1320

UTILITY COMPANIES

WATER

COLUMBIA POWER & WATER SYSTEM
201 PICKENS LANE
COLUMBIA, TN 38401
931-388-4833

SEWER

COLUMBIA WASTEWATER SYSTEM
1244 TREATMENT PLANT ROAD
COLUMBIA, TN 38401
931-560-1011

NATURAL GAS

ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
931-388-9136

ELECTRIC

COLUMBIA POWER & WATER SYSTEM
201 PICKENS LANE
COLUMBIA, TN 38401
931-388-4833

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SURVEYING
PLANNING
DESIGN
CIVIL

Seal
JOSEPH E AHLER
REGISTERED ENGINEER
LICENSE
CERTIFICATE
NO. 147451
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

Issue:	Mark	Date	Description
		7/31/23	POND REVISION
	-	1/17/23	Original Issue

Project No:	NUMBER
DWG. File:	DWGFILE
Drawn By:	JEA
Chk'd By:	JEA

Sheet Description
COVER SHEET
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GENERAL NOTES

1) THE LOCATION OF EXISTING UTILITIES, INCLUDING UNDERGROUND UTILITIES, IF INDICATED ON THE DRAWINGS ARE SO SHOWN INSOFAR AS THEIR EXISTENCE AND LOCATION WERE KNOWN AT THE TIME OF PREPARATION OF THE DRAWINGS. HOWEVER, NOTHING IN THESE CONTRACT DOCUMENTS SHALL BE CONSTRUED AS A GUARANTEE THAT SUCH UTILITIES ARE IN THE LOCATION INDICATED OR THAT THEY ACTUALLY EXIST, OR THAT OTHER UTILITIES ARE NOT WITHIN THE AREA OF OPERATIONS. THE CONTRACTOR SHALL MAKE ALL NECESSARY INVESTIGATIONS TO DETERMINE THE EXISTENCE AND LOCATIONS OF SUCH UTILITIES FAR ENOUGH IN ADVANCE TO ALLOW FOR ADJUSTMENTS DUE TO CONFLICTS IN THE HORIZONTAL AND VERTICAL LOCATION OF THE PIPE. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR MAINTENANCE AND PROTECTION OF EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL OBTAIN FIELD UTILITY LOCATIONS BY CALLING "TENNESSEE ONE CALL" (1-800-351-1111) AND ALL OTHER UTILITIES 3 DAYS PRIOR TO WORKING IN THE VICINITY OF EXISTING UTILITIES. THE FIELD UTILITY LOCATIONS MUST BE SUBMITTED TO THE ENGINEER.

2) ALL WORK SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND THE TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL MAINTAIN A COPY OF BOTH THE DRAWINGS AND SPECIFICATIONS AT THE SITE AT ALL TIMES.

3) ANY FENCING WHICH IS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE IMMEDIATELY REPLACED OR SUPPLEMENTED BY TEMPORARY FENCING OR BARRICADE SUITABLE FOR INTENDED PURPOSE OF EXISTING FENCING OR BARRICADE. CONTRACTOR SHALL PROMPTLY REPAIR AND/OR REPLACE DAMAGED FENCING TO EQUAL OR BETTER CONDITIONS.

4) PHYSICAL CONDITIONS DISTURBED BY WORK SHALL BE RESTORED TO CONDITIONS EQUAL OR BETTER THAN THOSE EXISTING PRIOR TO THE WORK. REPAIR DAMAGES TO STRUCTURES AND UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. RESTORATION INCLUDES, BUT IS NOT LIMITED TO, FINE GRADING, SEEDING, PAVEMENT REPLACEMENT, AND DRAINAGE STRUCTURES.

5) THE CONTRACTOR SHALL MAKE EVERY ATTEMPT POSSIBLE TO MAINTAIN THROUGH TRAFFIC AT ALL TIMES. ALL CONSTRUCTION OPERATIONS SHALL BE SCHEDULED TO KEEP TRAFFIC DELAYS TO A MINIMUM. THE CONTRACTOR SHALL NOT CLOSE OR EXCAVATE WITHIN THE RIGHT-OF-WAY OF A STREET OR ALLEY WITHOUT OBTAINING THE APPROVAL OF AND THE REQUIRED PERMITS FROM THE LOCAL GOVERNING AUTHORITIES AND PROVIDING EVIDENCE OF SUCH APPROVAL TO ENGINEER. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN, AT HIS EXPENSE ALL WARNING DEVICES AND FLAG MEN REQUIRED TO CONTROL AND PROTECT TRAFFIC PASSING THROUGH THE WORK ZONE. THE CONTRACTOR SHALL PROVIDE PILOT TRUCKS AND DRIVERS WHEN NEEDED. ALL METHODS OF CONTROLLING AND PROTECTING THE TRAFFIC SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL GOVERNING AUTHORITIES.

TRENCH EXCAVATION NOTES

1) CONTRACTOR IS REQUIRED TO TAKE ALL NECESSARY AND POTENTIAL PRECAUTIONARY MEASURES TO ASSURE THAT NO DAMAGE (TO PERSONAL AND PRIVATE PROPERTY) WILL RESULT FROM THE EXCAVATION OF ROCK - INCLUDING THROUGH USE OF EXPLOSIVES. PRE-BLASTING STUDIES MUST BE PERFORMED. ADDITIONALLY, CONTRACTOR MUST PROVIDE A PLAN OF ACTION TO THE ENGINEER AT LEAST ONE (1) WEEK PRIOR TO BLASTING. THE PLAN OF ACTION MUST IDENTIFY MEANS AND METHODS TO FULLY PROTECT ALL ADJACENT REAL AND PERSONAL PROPERTY OWNED BY OTHERS. ENGINEER WILL NOT AND DOES NOT ACCEPT ANY LIABILITY ASSOCIATED WITH ADEQUACY OF PLAN.

2) CONTRACTOR IS STRONGLY URGED TO TAKE ALL PRECAUTIONS TO AVOID DAMAGE TO PERSONAL AND REAL PROPERTY. ALL DAMAGE RESULTING FROM CONTRACTORS OPERATION OR CONTRACTOR'S AGENTS MUST BE FULLY REPAIRED OR REPLACED TO A CONDITION EQUAL TO OR BETTER THAN ORIGINALLY EXISTED.

3) TRENCH WIDTH AT THE GROUND SURFACE MAY VARY WITH AND DEPEND UPON DEPTH, TYPE OF SOILS, AND POSITION OF SURFACE STRUCTURES. THE MINIMUM CLEAR WIDTH OF THE TRENCH, SHEETED OR UNSHEETED, MEASURED AT THE SPRING LINE OF THE PIPE SHOULD BE ONE FOOT (1') GREATER THAN THE OUTSIDE DIAMETER OF THE PIPE. THE MAXIMUM CLEAR WIDTH OF THE TRENCH AT THE TOP OF THE PIPE SHOULD NOT EXCEED A WIDTH EQUAL TO THE OUTSIDE DIAMETER PLUS TWO FEET (2'). IF THE ABOVE DEFINED TRENCH WIDTHS MUST BE EXCEEDED, OR IF THE PIPE IS INSTALLED IN A COMPACTED EMBANKMENT, PIPE EMBEDMENT SHOULD BE COMPACTED TO A POINT OF AT LEAST 2.5 PIPE DIAMETERS FROM THE PIPE ON BOTH SIDES OF THE PIPE OR THE TRENCH WALLS, WHICHEVER IS LESS. EXCAVATION AT MANHOLES AND SIMILAR STRUCTURES SHALL BE SUFFICIENT TO PROVIDE 12-INCHES IN THE CLEAR BETWEEN THE OUTSIDE OF THE STRUCTURE AND THE EMBANKMENT OR SHEETING.

4) THE TRENCH SHALL BE EXCAVATED TO THE DEPTH REQUIRED AND SHALL PROVIDE A FIRM, STABLE, AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE ON SOLID OR UNDISTURBED SOIL. BELL HOLES AND DEPRESSIONS SHALL BE PROVIDED TO PERMIT PROPER JOINT ASSEMBLY AND PIPE SUPPORT. ANY PART OF THE TRENCH BOTTOM EXCAVATED BELOW THE ESTABLISHED PIPE GRADE SHALL BE BACKFILLED AND COMPACTED AS REQUIRED TO PROVIDE FIRM PIPE SUPPORT. LEDGE ROCK, BOULDERS, AND LARGE STONES SHALL BE REMOVED TO PROVIDE SIX INCHES (6") OF SOIL CUSHION ON ALL SIDES OF THE PIPE, INCLUDING THE BOTTOM, AND ON ALL SIDES OF ACCESSORIES. ALL UNDERCUT TRENCH EXCAVATION SHALL BE BACKFILLED AND COMPACTED WITH APPROVED GRANULAR MATERIAL.

5) THE BOTTOM OF THE TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF TWO TO FOUR INCHES (4") BELOW THE BOTTOM OF THE PIPE TO PROVIDE FOR THE SPECIFIED PIPE BEDDING FOR THE ENTIRE LENGTH OF PIPELINE. ANY PART OF THE TRENCH BOTTOM THAT IS EXCAVATED BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL AND COMPACTED/ CONSOLIDATED.

6) WHEN AN UNSTABLE SUBGRADE CONDITION IS ENCOUNTERED, WHICH WILL NOT PROVIDE ADEQUATE PIPE SUPPORT, ADDITIONAL TRENCH DEPTH SHALL BE EXCAVATED TO A STABLE FOUNDATION AND BACKFILLED WITH APPROVED GRANULAR MATERIAL. BACKFILL, REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL SHALL BE AT THE CONTRACTOR'S EXPENSE.

7) THE CONTRACTOR SHALL REMOVE ALL ROCK THAT IS SHATTERED BELOW GRADE AND REFILL. THE EXCAVATION TO THE REQUIRED GRADE WITH COMPACTED GRAVEL. LEDGE ROCK, BOULDERS, OR LARGE STONES WILL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF 4 INCHES BELOW AND ON EACH SIDE OF PIPE. ALL LOOSE DIRT AND ROCK WILL BE REMOVED FROM THE TRENCH BOTTOM BEFORE PLACEMENT OF BEDDING MATERIAL.

8) DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONE, ORGANIC MATERIAL OR OTHER UNSTABLE MATERIALS SHALL NOT BE USED FOR FINAL BACKFILL WITHIN 2 FEET OF THE TOP OF THE PIPE.

9) THE INTERIOR OF THE PIPE, AS THE WORK PROGRESSES, SHALL BE CLEANED OF ALL DIRT, JOINTING MATERIAL, AND SUPERFLUOUS MATERIAL OF EVERY DESCRIPTION.

10) PIPE CROSSING OF ALL PROPOSED AND/OR EXISTING STREETS, AND PARKING AREAS WILL BE BACKFILLED WITH TDOT No. 57 STONE TO THE TOP OF THE TRENCH SURFACE.

11) MINIMUM COVER OVER WATER PIPE IN DEVELOPED AREAS IS TO BE 36" UNLESS OTHERWISE NOTED.
MINIMUM COVER OVER VALVE NUT IS TO BE 12": MAXIMUM COVER IS TO BE 36".

12) THE ENGINEER AND OWNER MAY APPROVE EXTRA DEPTH TRENCHING WHERE VERTICAL BENDS ARE IDENTIFIED. WHERE EXTRA DEPTH TRENCHING IS APPROVED, THE CONTRACTOR SHALL NOT EXCEED THE MAXIMUM DEFLECTION OF THE PIPE JOINTS RECOMMENDED BY THE PIPE MANUFACTURER.

PROJECT LAYOUT

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL LAYOUT ALL WORK. THE CONTRACTOR SHALL SET TRENCH LINE STATIONS AHEAD OF TRENCHING. THESE STATIONS SHALL BE SET AT 100 FOOT INTERVALS ALONG THE CENTER OF THE PIPELINE AND AT THE LOCATIONS OF PIPELINE ACCESSORIES (VALVES, HYDRANTS, FITTINGS,....).
PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CONTACT THE LOCAL UTILITY OFFICE AND ANY OTHER APPLICABLE UTILITY COMPANY WHICH MAY HAVE UNDERGROUND UTILITIES ON OR IN CONTIGUOUS TO, THE PROJECT SITE.
THE CONTRACTOR IS RESPONSIBLE FOR MANAGING STORM WATER RUNOFF AND EROSION DURING CONSTRUCTION AS REQUIRED BY ORDINANCES SET FORTH BY CITY OF COLUMBIA AND ANY OTHER RESPONSIBLE AGENCIES.
CONSTRUCTION INSPECTION AND CERTIFICATION SHALL BE PROVIDED BY THE LOCAL UTILITY IF SO DESIRED/REQUIRED. NO TRENCHES SHALL BE BACKFILLED UNTIL THE LOCAL UTILITY AND/OR DESIGN ENGINEER HAS APPROVED THE GRADE AND ALIGNMENT OF THE WATER LINE.
THE LAYOUT OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

GENERAL EROSION CONTROL NOTES

1. SEDIMENT BARRIERS SHALL BE PLACED AS INDICATED ON THE PLAN PRIOR TO ANY GRADING WORK.

2. DUST CONTROL ON SITE SHALL BE KEPT WITHIN ACCEPTABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER APPROPRIATE METHODS.

3. ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF THE CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.

4. THE LOCATIONS OF EROSION CONTROL DEVICES SHALL BE ADJUSTED AS CONSTRUCTION PROGRESSES TO MAINTAIN A FUNCTIONAL EROSION CONTROL SYSTEM.

5. ANY FAILURE OF ANY EROSION CONTROL DEVICE TO FUNCTION AS INTENDED FOR ANY REASON SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.

6. INSPECTIONS
A. AN INSPECTION SHALL BE CONDUCTED AT LEAST TWICE EACH CALENDAR WEEK AND AT LEAST 72 HOURS APART. PERMITTEE MUST PROVIDE WRITTEN NOTIFICATION TO LOCAL ENVIRONMENTAL FIELD OFFICE.
B. INSPECTIONS SHALL INCLUDE OBSERVATIONS OF THE FOLLOWING:
1. DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED
2. AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION
3. EROSION AND SEDIMENT CONTROL DEVICES
4. OUTFALL POINTS
C. INADEQUATE CONTROL MEASURES OR MEASURES IN DISREPAIR SHOULD SHALL BE MODIFIED OR REPAIRED WITHIN SEVEN (7) DAYS OF THE NEED BEING IDENTIFIED.
D. PERSON CONDUCTING INSPECTION MAY BE LICENSED ENGINEER OR LANDSCAPE ARCHITECT,
CPESC, OR COMPLETED TDEC LEVEL II OR LEVEL I.

7. EROSION CONTROL DEVICES SHALL BE REPAIRED AS NECESSARY TO MAINTAIN A FUNCTIONAL EROSION CONTROL SYSTEM.

8. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED AND THEN REMOVED SO THAT DRAINAGE OF THE SITE IS NOT IMPAIRED.

9. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 15 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING.

10. SILT BARRIERS TO BE CLEANED WHEN THEY ARE APPROXIMATELY 50% OBSTRUCTED BY SEDIMENT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SILT BARRIERS SHALL BE REPLACED AS EFFECTIVENESS IS SIGNIFICANTLY REDUCED.

11. SEDIMENT BASIN/POND TO BE CLEANED OF DEPOSITS WHEN CAPACITY HAS REACHED 50% OF VOLUME THROUGH OUT ALL PHASES OF CONSTRUCTION OR AS DIRECTED BY THE OWNERS REPRESENTATIVE.

12. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4 INCHES.

13. ALL DISTURBED AREAS SHALL BE SEEDED AND RESEEDED AS NECESSARY TO PROVIDE A STABILIZED SITE.

14. REMOVE ALL SEDIMENT FROM ALL DRAINAGE STRUCTURES PRIOR TO ACCEPTANCE BY THE OWNER.

15. CONTRACTOR TO INSTALL ALL EROSION CONTROL DEVICES IN ACCORDANCE WITH LOCAL CODES.

16. CONTRACTOR TO PROVIDE A RAIN GAUGE, MONITOR, AND RECORD RAIN DATA DAILY AND MONITOR AND RECORD THE START AND END TIME FOR EACH RAIN EVENT.

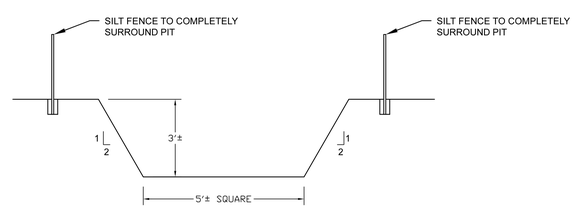
GENERAL GRADING NOTES:

1. ALL SUBGRADE AREAS TO BE PROOF ROLLED WITH FULLY LOADED TANDEM AXLE TRUCK WITH NO PUMPING OR YIELDING SOILS.
2. ALL SUBGRADE AREAS UNDER ROADWAY, PARKING, AND BUILDING EXTENDING OUT FIVE FEET RECOMMENDED TO BE TESTED FOR COMPACTION WITH A PASS/FAIL CRITERIA AS FOLLOWS:
> 98% COMPACTION RELATIVE TO STANDARD PROCTOR, AND
MOISTURE WITHIN - 1% AND 3+% OF OPTIMUM.
3. STONE TESTED FOR COMPACTION WITH A PASS/FAIL CRITERIA AS FOLLOWS:
> 95% COMPACTION RELATIVE TO STANDARD PROCTOR, AND
MOISTURE WITHIN - 1% AND 3+% OF OPTIMUM.
4. AT THE END OF EACH WORKING DAY (WHEN RAIN IS FORECAST), THE SOILS MUST BE SEALED BY AN APPROPRIATE METHOD, E.G., SMOOTH ROLLING.
5. PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITY, CONTRACTOR TO OBTAIN CONSTRUCTION STORM WATER PERMIT AND CONTACT TENNESSEE ONE-CALL AT (800) 351-1111.
6. CONTRACTOR TO INSTALL ALL EROSION AND SEDIMENT CONTROL PROTECTION PRIOR TO GRADING AND PROVIDE CONTINUOUS MAINTENANCE OF SAME.
7. CONTRACTOR TO PLACE FILL IN MAXIMUM 8-INCH LIFTS.

MISCELLANEOUS NOTES

ALL CONSTRUCTION MATERIALS AND METHODS PERFORMED ON THIS PROJECT SHALL CONFORM TO THE FOLLOWING DOCUMENTS:
A: THE CONSTRUCTION PLANS AS APPROVED BY CITY OF COLUMBIA, TN.
B: THE CITY OF COLUMBIA, TN APPROVAL LETTERS.
C: APPROVED SHOP DRAWINGS.
D: ANY SPECIAL SPECIFICATIONS OF SPECIAL PROVISIONS THAT MAY BE ASSIGNED TO THIS PROJECT.
SHOULD CIRCUMSTANCES EXIST WHERE THE CONSTRUCTION MATERIALS' AND/OR METHODS ARE NOT SPECIFICALLY REFERENCED, THE CONTRACTOR SHALL ADMINISTER RECOMMENDATIONS DEVELOPED BY THE ENGINEER AND APPROVED BY THE LOCAL UTILITY.
E. CITY OF COLUMBIA, TN STANDARD SPECIFICATIONS AND DETAILS.

CONTRACTOR TO PROVIDE AND SHALL ALWAYS USE A CONCRETE WASHDOWN CONTROL AS SHOWN BELOW.



NOTE: CONTRACTOR TO CLEAN WHEN WASHOUT MATERIAL ACCUMULATES TO A DEPTH OF 18 INCHES.

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SEAL



HIGHLAND POINTE AT BEAR CREEK

1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

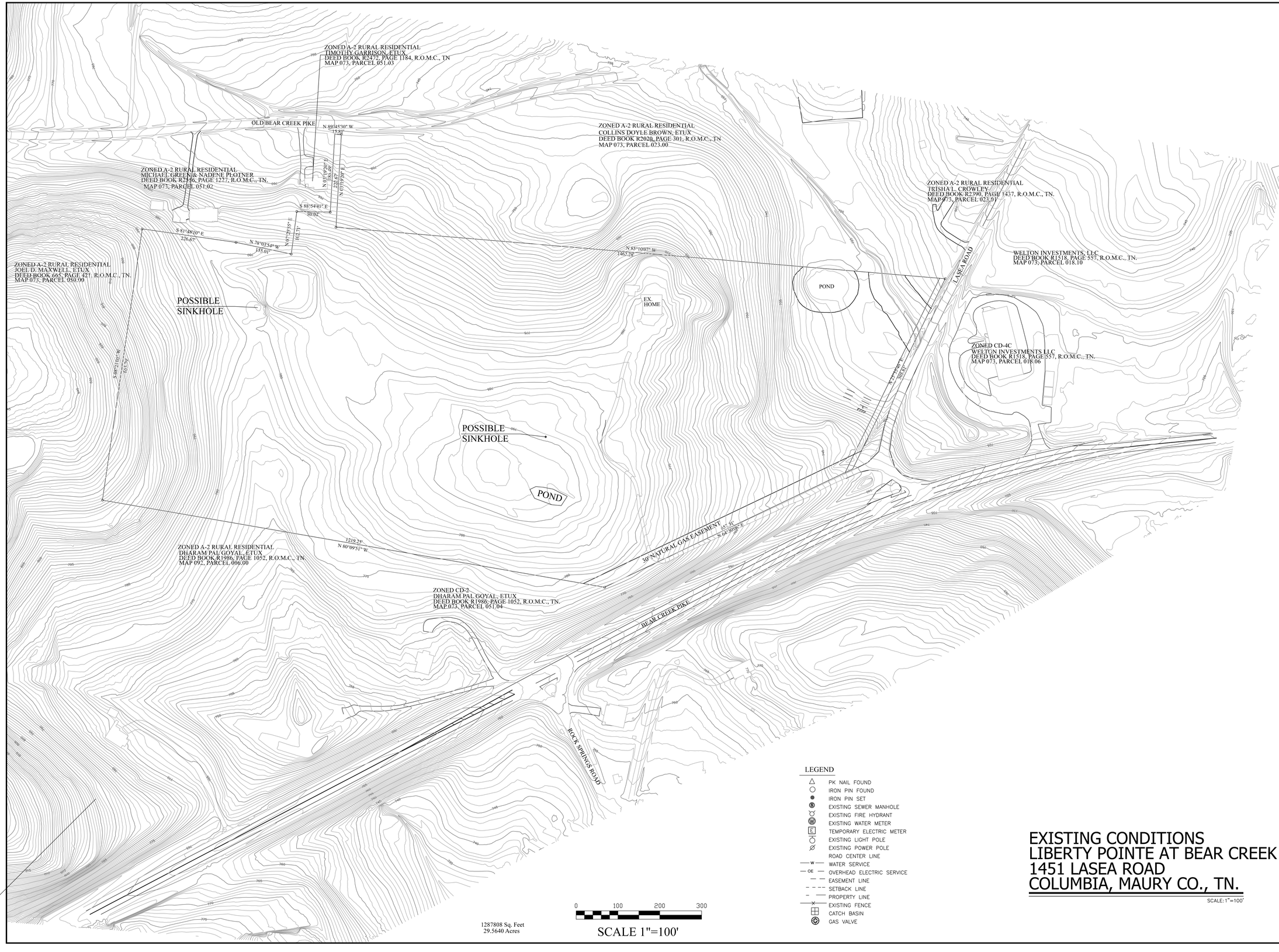
ISSUE:	MARK	DATE	DESCRIPTION
	-	1/17/23	ORIGINAL ISSUE

PROJECT No:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

COVER SHEET
-

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EXISTING CONDITIONS
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
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SURVEYING
PLANNING
DESIGN
CIVIL

Seal

JOSEPH E AHLER
REGISTERED ENGINEER
No. 109024
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK

1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

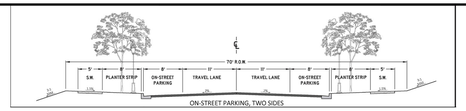
Issue:	Mark	Date	Description
	–	1/04/23	Original Issue
		7/31/23	POND

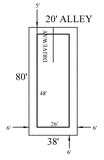
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Chk'd By:	JEA

Sheet Description

EXISITING CONDITIONS
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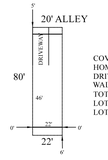
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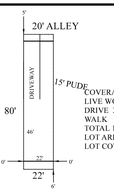
COVERAGE
HOME 1248 SQ. FT
DRIVE 312 SQ. FT
WALK 30 SQ. FT.
TOTAL 1590 SQ. FT.
LOT AREA 3040 SQ. FT
LOT COVERAGE= 52.3%

TYPICAL LOT LAYOUT
SINGLE FAMILY



COVERAGE
HOME 1012 SQ. FT
DRIVE 336 SQ. FT
WALK 30 SQ. FT.
TOTAL 1378 SQ. FT.
LOT AREA 1760 SQ. FT
LOT COVERAGE= 78%

TYPICAL LOT LAYOUT
TOWNHOME



COVERAGE
LIVE WORK 1012 SQ. FT.
DRIVE 366 SQ. FT
WALK 30 SQ. FT.
TOTAL 1378 SQ. FT.
LOT AREA 1760 SQ. FT
LOT COVERAGE= 78%

TYPICAL LOT LAYOUT
LIVE/WORK

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

N 89°45'30" W
15.81'

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 023.00

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2556, PAGE 1227, R.O.M.C., TN.
MAP 073, PARCEL 051.02

N 03°19'20" E
186.49'
N 03°19'20" E
232.25'

S 88°54'41" E
80.02'

NOTE: SINGLE FAMILY UNITS WILL HAVE TRASH CAN PICKUP AND TOWNHOMES/WORK/LIVE UNITS WILL UTILIZE DUMPSTER COLLECTION THREE TIMES PER WEEK.

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2390, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

S 81°48'10" E
226.67'

N 78°03'54" W
135.01'

N 07°25'55" E
102.71'

N 85°10'07" W
1462.28'

STREAM BUFFER

30'

30'

LASEA ROAD

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.10

ZONED A-2 RURAL RESIDENTIAL
JOEL D. MAXWELL, ETUX
DEED BOOK 665, PAGE 421, R.O.M.C., TN.
MAP 073, PARCEL 050.00

S 00°27'05" W
655.79'

PLAYGROUND #2

OPEN SPACE

ALLEY (20' ROW)

FRANKLIN BRIDGE DRIVE (70' ROW) (PUBLIC)

PINE CREEK DRIVE (70' ROW) (PUBLIC)

DUMPSTER

MAIL KIOSK

ZONED CD-4C
WELTON INVESTMENTS LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

N 85°10'07" W
60.31'

12.5' RIGHT-OF-WAY DEDICATION

GLEN TRAIL DRIVE (70' ROW) (PUBLIC)

PLAYGROUND #1

15' PUDE

30' NATURAL GAS EASEMENT

N 64°30'06" E
657.31'

1219.25'
N 80°09'51" W

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

BEAR CREEK PIKE

ROCK SPRINGS ROAD

THE STRUCTURES WILL CONFORM TO THE DESIGN AND FACADE STANDARDS OF TABLE 4.3.1-D AND TABLE 4.3.8.B OF THE ZONING ORDINANCE. EXTERIOR LIGHTING PLANS MAY BE REQUIRED AT SITE CONSTRUCTION PLAN REVIEW AND WILL MEET THE STANDARDS UNDER 4.3.17.B

CENTERLINE CURVE DATA

CURVE NO.	DELTA	RADIUS	LENGTH	CHORD	CH. BRG
C1	100°04'12"	250.17'	436.94'	383.48'	S 65°00'41" W
C2	49°25'51"	125.00'	107.84'	104.53'	S 39°43'25" W
C3	35°20'03"	333.00'	205.36'	202.12'	S 82°10'07" W
C4	90°17'32"	125.00'	197.98'	177.23'	N 34°02'50" W
C5	90°00'01"	125.00'	196.35'	176.78'	N 53°38'24" E
C6	6°17'57"	333.00'	36.61'	36.19'	S 77°02'57" E
C7	42°43'00"	333.00'	248.27'	242.56'	S 05°17'33" E
C8	47°53'01"	70.00'	58.50'	56.81'	N 39°33'05" E
C9	92°16'14"	70.02'	112.76'	100.93'	N 29°36'47" W
C10	5°43'30"	70.00'	6.99'	6.99'	N 76°45'15" W
C11	114°55'42"	70.00'	140.41'	118.03'	S 42°22'21" W
C12	89°55'28"	70.00'	109.86'	98.93'	N 54°52'25" E
C13	89°58'26"	70.00'	109.92'	98.97'	S 35°10'38" E
C14	46°16'08 "	70.00'	56.53'	55.00'	N 81°13'54" W
C16	02°08'00"	70.00'	2.61'	2.61'	N 81°13'54" W

SITE COVERAGE
DEVELOPED AREA =866408.4 SQ. FT OR 19.89 ACRES
TOTAL AREA=1287808 SQ. FT. OR 29.5640 ACRES
COVERAGE =67%

NEW IMPERVIOUS AREA= 472760.0 SQ. FT OR 10.85 ACRES

CIVIC SPACE PROVIDED
GREEN SPACE 1.48 ACRES
PLAYGROUND #1 0.14 ACRES
PLAYGROUND #2 0.30 ACRES
TOTAL 1.92 ACRES OR 6.5%

LEGEND
- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- W — WATER SERVICE
- OE — OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

1287808 Sq. Feet
29.5640 Acres

0 100 200 300
SCALE 1"=100'

PROPERTY IS ZONED CD-4

PROPOSED DEVELOPMENT
LOTS 21-26, LOTS 56-83, LOTS 112-136 TOWN HOMES =59 UNITS OR 43.3%
LOTS 1-20, LOTS 27-55, SINGLE FAMILY HOMES= 49 UNITS OR 36.0%
LOTS 88-115 LIVE/WORK UNITS=28 UNITS OR 20.6%

DENSITY= 136 UNITS/29.56 AC=4.60 DU/AC (12.0 DU/AC ALLOWED)

BUILDING BREAKDOWN
10-5 UNIT TOWNHOME BUILDINGS
3-3 UNIT TOWNHOME BUILDINGS

49-SINGLE FAMILY HOMES
5-5 UNIT LIVE/WORK BUILDINGS
3-3 UNIT LIVE/WORK BUILDING

BUILDING FRONTAGE BREAKDOWN
TOWNHOMES=1298' OR 40.7%
SINGLE FAMILY=1274' OR 40.0%
LIVE/WORK=616 OR 19.3%

28,336 SQ. FT. OF NON-RESIDENTIAL WORK SPACE
REQUIRED PARKING 57 SPACES
PROPOSED ON STREET PARKING
IN FRONT OF UNITS=35 SPACES
PARKING AT REAR OF THE LIVE/WORK UNITS=56 SPACES

PARKING SUMMARY
REAR PARKING 2/UNIT= 286 SPACES
STREET PARKING= 290 SPACES*
TOTAL=574 SPACES
REQUIRED 2/UNIT
*NOTE = ENTRY DRIVE SLOPE EXCEEDS 8%
NO PARKING ALONG THAT REACH WAS COUNTED

SITE PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
Fax: 615.523.1517

SURVEYING
PLANNING
DESIGN
CIVIL

Seal
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OF
TENNESSEE
No. 114745
STATE OF TENNESSEE

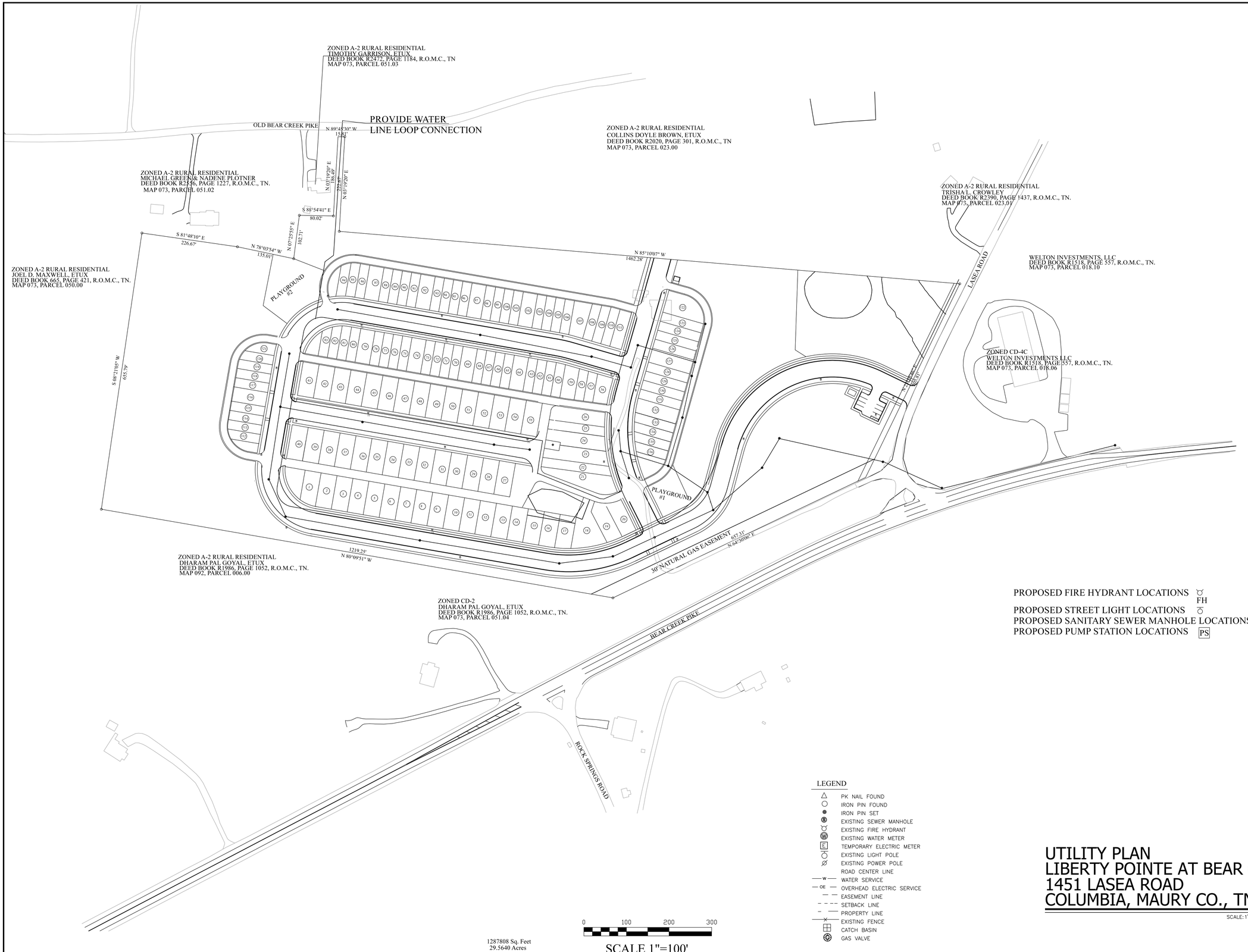
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN

Issue:	Mark	Date	Description
	–	4/10/23	Original Issue
		7/31/23	POND REVISION

Project No:	NUMBER
DWG. File:	DWGFILE
Drawn By:	JEA
Chk'd By:	JEA

Sheet Description
SITE PLAN
-

C3.0



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Fax: 615.523.1517
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Seal
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OR
CONSERVATION
PARCELS
No. 14745
STATE OF TENNESSEE

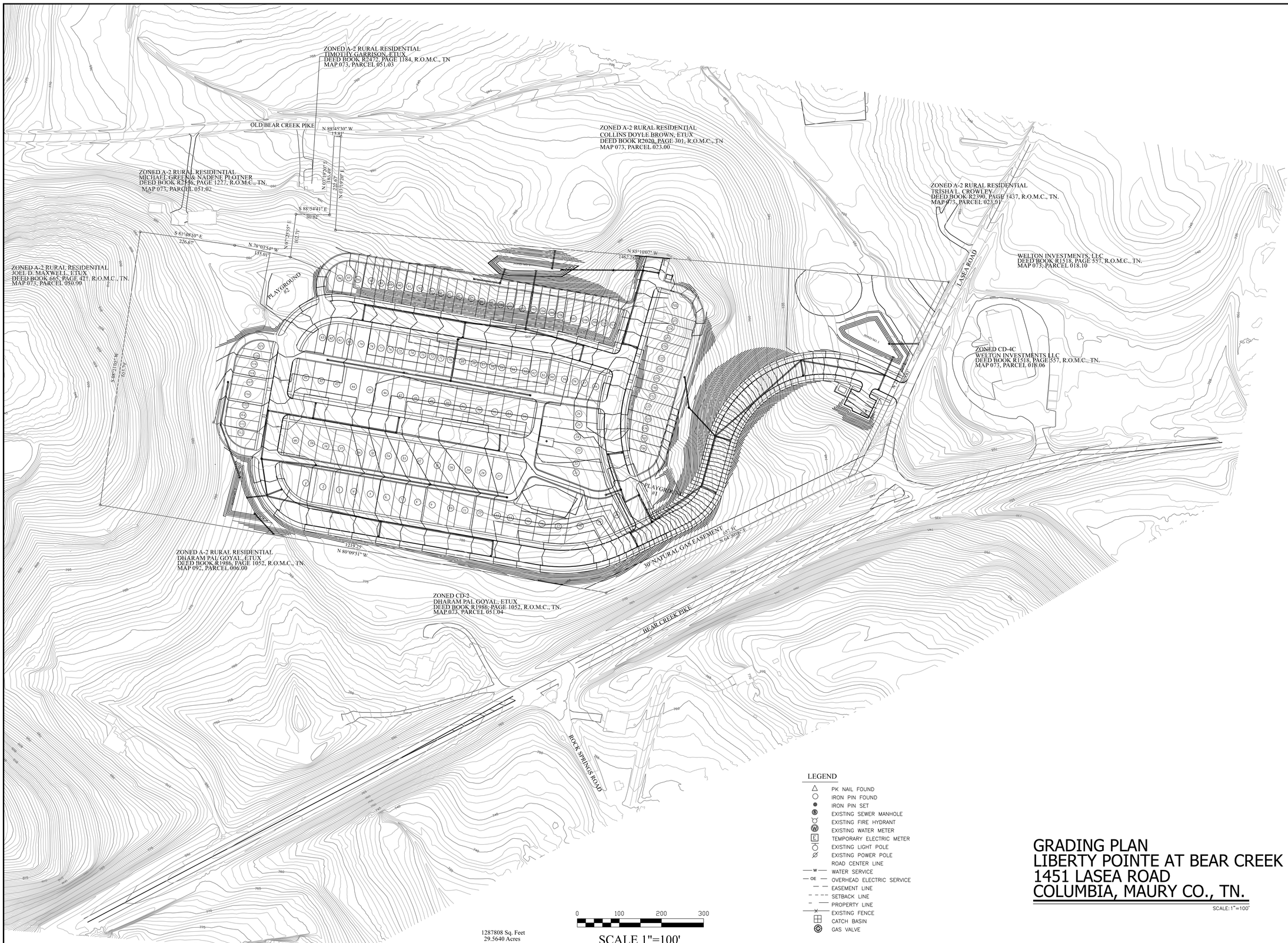
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN

Issue:	Mark	Date	Description
	–	1/04/23	Original Issue
		7/31/23	POND REVISION

Project No:	NUMBER
DWG. File:	DWGFILE
Drawn By:	JEA
Chk'd By:	JEA

Sheet Description
UTILITY PLAN
-

C4.0



1287808 Sq. Feet
29.5640 Acres

LEGEND

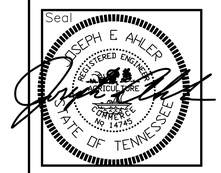
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- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- W — WATER SERVICE
- OE — OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

GRADING PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

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PH 615.481.3106
Fax: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

Seal



LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

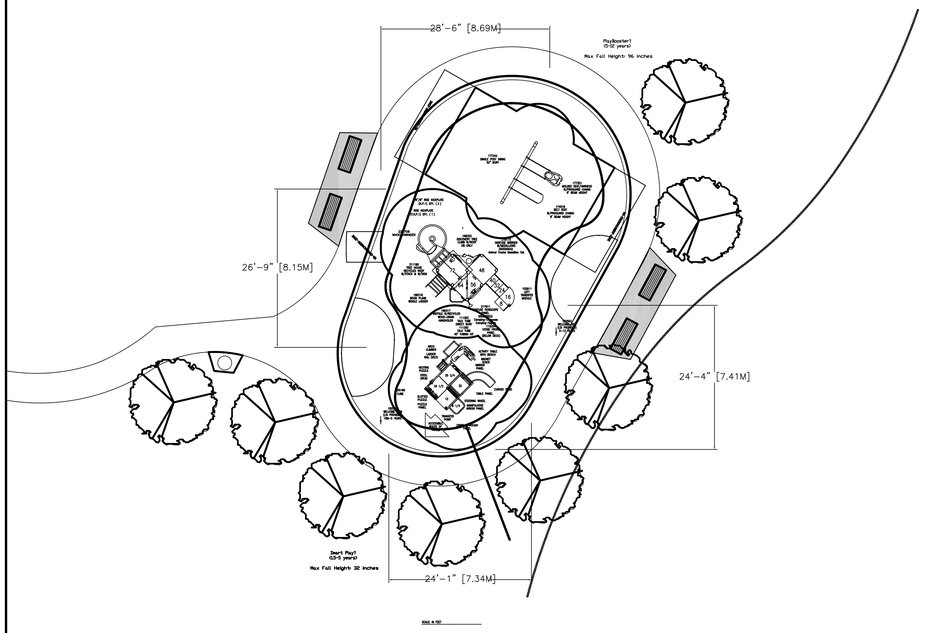
Issue:	Mark	Date	Description
	–	1/04/23	Original Issue

Project No:	NUMBER
DWG. File:	DWGFILE
Drawn By:	JEA
Chk'd By:	JEA

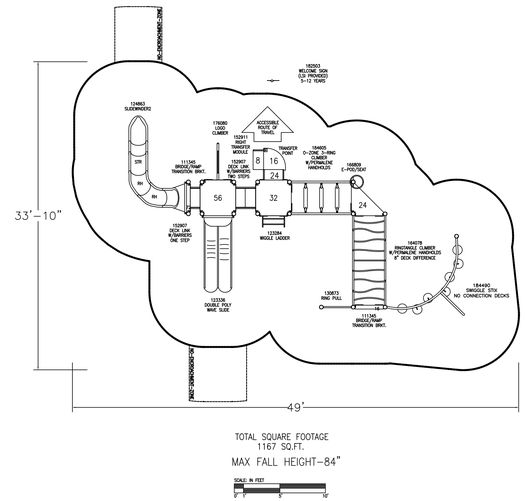
Sheet Description

GRADING PLAN
-

C5.0



PLAYGROUND NO. 2
NTS



TOTAL SQUARE FOOTAGE
1167 SQ.FT.
MAX FALL HEIGHT-84"

SCALE: IN FEET
0 5 10

PLAYGROUND NO. 1
NTS



LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

GREEN SPACE

SCALE
1"=50'

CIVIC SPACE
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: NTS

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FAX: 615.523.1517

SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OCTOBER
No. 14745
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
CIVIC SPACE PLAN

C6.0

APPROXIMATE TOTAL TREE CANOPY(UNDEVELOPED)=23.9 ACRES
APPROX. TOTAL TREE CANOPY(REMAININGG)=7.2 ACRES
TOTAL TREE CANOPY(UNDEVELOPED)=23.9/29.5=81%
TOTAL TREE CANOPY(RETAINED)=7.2/23.9=30.1%

AERIAL PHOTOGRAPHY FROM 2021 BY MAPTECH, LLC

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

N 89°54'30" W
15.85'

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 023.00

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2586, PAGE 1227, R.O.M.C., TN.
MAP 073, PARCEL 051.02

N 03°19'20" E
185.65'

N 03°19'20" E
235.00'

S 88°54'41" E
30.02'

N 07°25'55" E
102.71'

S 81°48'10" E
226.67'

N 78°03'44" W
185.01'

TREE SAVE AREA

ZONED A-2 RURAL RESIDENTIAL
JOEL D. MAXWELL, ETUX
DEED BOOK 665, PAGE 421, R.O.M.C., TN.
MAP 073, PARCEL 050.00

PLAYGROUND #2

N 85°10'07" W
1462.7'

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2790, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

LASEA ROAD

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.10

TREE SAVE AREA

ZONED CD-4C
WELTON INVESTMENTS LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

N 85°10'07" W
60.01'

EXISTING TREE CANOPY LIMITS

TREE SAVE AREA

PLAYGROUND #1

TREE SAVE AREA

LIMITS OF DISTURBANCE

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

1219.25'
N 80°09'51" W

30' NATURAL GAS EASEMENT

S 64°30'00" E
457.34'

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

BEAR CREEK PIKE

ROCK SPRINGS ROAD

LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

1287808 Sq. Feet
29.5640 Acres

0 100 200 300
SCALE 1"=100'

PER SECTION 4.3.16C.1 OF THE ZONING ORDINANCE, FUTURE TREE REMOVAL WITHIN THE TREE SAVE AREAS WILL REQUIRE APPROVAL BY THE PLANNING COMMISSION.

TREE PRESERVATION PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
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SPRING HILL, TN 37174
PH 615.481.3106
Fax: 615.523.1517

SURVEYING
PLANNING
DESIGN
CIVIL

Seal
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OREGON
PARCHER
No. 14745
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

Issue:	Mark	Date	Description
	–	4/10/23	Original Issue
		7/31/23	POND REVISION

Project No:	NUMBER
DWG. File:	DWGFILE
Drawn By:	JEA
Chk'd By:	JEA

Sheet Description
TREE PRESERVATION PLAN

C9.0

C&T ENGINEERING

1113 Murfreesboro Road
Suite 106-102
Franklin, TN 3706

615.567.3306
www.ct-eng.net

July 24, 2023

Imer Development
1909 Columbia Avenue
Franklin, Tennessee 37064

Subject: **HYDROLOGIC DETERMINATION REPORT**
1451 Lesea Rd
Parcel ID 073 051.00
Columbia, Maury County, Tennessee
C&T Project No. 03-23027

C&T Engineering and Inspection, LLC has completed Hydrologic Determination Services for a suspected pond located on the property of 1451 Lesea Rd (Parcel # 073 051.00) in Columbia, Maury County, Tennessee. Please see attached a formal report summarizing the findings of the assessment.

We appreciate the opportunity to provide these services to you and look forward to working with you again in the future. If you have any questions regarding this report, please do not hesitate to contact me.

Sincerely,

C&T Engineering and Inspection, LLC

C. Brandon Garrett, CPESC, TN-QHP

Senior Environmental Scientist/Project Manager

C&T ENGINEERING

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Franklin, TN 3706

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INTRODUCTION

C&T Engineering and Inspection, LLC (Consultant) performed a Hydrologic Determination for a pond located on the property of planned residential development located at 1451 Lesea Rd (Parcel # 073 051.00) (+/- 29 acres) (See **Figure 1** - Site Location Map). The hydrologic determination of the features located onsite were conducted on July 10, 2023 by Brandon Garrett, QHP-1130TN15. During this field review, information was gathered regarding any drainage feature present onsite. Any drainage features observed were to be analyzed following the Tennessee Department of Environment and Conservation (TDEC) standard operating procedures for Hydrologic Determinations. Field data sheets completed during the course of the delineation are provided in **Appendix IV**. Also, during this field review, information was gathered following the routine three parameter approach to wetland delineation as published by the U.S. Army Corps of Engineers (USACE), 1987 edition (Technical Report Y-87-1). USACE wetland field data sheets completed during the course of the delineation are provided in **Appendix V**. During this site investigation the pond in question was the only area of the property that was assessed as requested by IMER Development.

SITE DESCRIPTION

The Subject Property includes approximately 29 acres of gently sloping vacant property with open pasture near the southeastern corner while the remainder of the property included mostly wooded property dominated by Upland and FACU vegetation. C&T investigated the area surrounding a pond located at **Latitude: N35.642374° Longitude: W-86.907760°**. The surroundings of the proposed project include residential properties and vacant property.

The site is located on the Carter's Creek, Tennessee US Geological Survey 7.5 Minute Topographic Quadrangle dated 2016 and the elevation ranges from 730 feet near the northeastern property corner to 820 feet near the southwestern property corner. (**Figure 1**).

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SITE INFORMATION

The Subject Property includes approximately 29 acres of vacant wooded property with the eastern portion of the property including open pasture. C&T has been requested to determine if the pond located at **Latitude: N35.642374° Longitude: W-86.907760°** near the center of the property was jurisdictional in nature or considered "Waters of the State". This pond was surrounded by upland and FACU vegetation. The vegetation observed within the pond banks include FACW and OBL vegetative species (more information below in on-site findings). The remainder of the property was not assessed during the field investigation on July 10, 2023.The surroundings of the proposed project include mostly residential and vacant properties. The property is located within the Flat Creek watershed (HUC12 060400020705).

During the site investigation no other drainage features, wetlands or ponds were identified or observed. One blue-line stream was shown on the Carter's Creek, Tennessee US Geological Survey 7.5 Minute Topographic Quadrangle dated 2016 for the subject property. No other water resources were identified on the above-mentioned topographic map. The site layout can be found in (**Appendix I**) section of this report.

NATIONAL WETLANDS INVENTORY (NWI) MAP

The NWI map was reviewed to identify any previously mapped wetlands within the boundaries of the site. The NWI map did not identify any wetlands or potential wetlands on the property **(Appendix II).** The stream shown on the topographic map was shown on the NWI map as well as a pond adjacent to stream in the northeastern property corner.

SOIL SURVEY

As shown in (**Appendix III)**, the site is predominantly underlain by soils listed in **Table 1** located below. None of the listed soils were found to be hydric in the Maury County hydric soils list with exception to Lindell silt loam which has a minor component (Norene) which is considered hydric.

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Symbol	Soil Name	Description	Hydric
Ae	Armour silt loam, gently sloping, eroded	Silty alluvium and/or loamy alluvium over clayey residuum weathered from phosphatic limestone	NO
Bf	Braxton cherty silty clay, severely eroded, moderately steep phase	Clayey alluvium and/or residuum weathered from limestone	NO
Cb	Colbert silty clay, severely eroded, sloping phosphatic phase	Clayey residuum weathered from argillaceous limestone	NO
Gd	Gullied land	Variable bedrock	NO
Hr	Huntington silt loam, local alluvium phosphatic phase	Loamy alluvium derived from limestone, sandstone, and shale	NO
Lc	**Lindell silt loam, 0 to 2 percent slopes, frequently flooded**	**Fine-loamy alluvium derived from limestone and siltstone**	**MC-Norene**
Ld	**Lindell silt loam 0 to 2 percent slopes, occasionally flooded**	**Fine-loamy alluvium derived from limestone and siltstone**	**MC-Norene**
Rb	Gladeville-rock outcrop complex, 2 to 15 percent slopes, extremely stoney	Clayey residuum weathered from limestone	NO
Rc	Rockland steep	Bedrock/ Clayey residuum weathered from limestone	NO
Rf	Rockland-Talbott material, sloping	Clayey residuum weathered from limestone	NO
Tb	Talbott silty clay, severely eroded sloping phase	Clayey residuum weathered from cherty limestone	NO

Source: NRCS Web Soil Survey

ON-SITE FINDINGS

C&T investigated the area surrounding the Pond in question located near the center of the property at **Latitude: N35.642374° Longitude: W-86.907760°**. During this field review, information was

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gathered following the routine three parameter approach to wetland delineation as published by the U.S. Army Corps of Engineers (USACE), 1987 edition (Technical Report Y-87-1). USACE wetland field data sheets completed during the course of the delineation are provided in **Appendix V.** Approximate locations of sample points are also shown on figures in **Appendix I**. If present, wetland boundaries were flagged with pink wetland flagging.

The following surface water feature was identified and assessed:

- **PND-A**– Located at **Latitude: N35.642374° Longitude: W-86.907760**°. The area surrounding the pond included mostly Upland and FACU vegetation consisting of Eastern Red Cedar (*Juniperus virginiana*), Chinese Privet (*Ligustrum sinense*), Common Hackberry (*Celtis occidentalis*) and Black Cherry (*Prunus serotina*). Shallow bedrock was encountered in some area directly surrounding the pond, typical of the Nashville Basin area. The pond included 6 to 18 inches of water within the bank area and the dominant vegetation within the pond banks included FAC-OBL vegetation and included Black Willow (*Salix nigra*), Broadleaf Cattail (*Typhus latifolia*), Sedge grass (*Carex sp*.), Common Rushgrass (*Juncus effusus*), Silver Maple (*Acer saccharinum*), Duckweed (*Lemna minor*) and Common Persimmon (*Diospyros virginiana*). Hydric soils were encountered within the banks of the Pond (See Wetland Data Sheets **Appendix V**). No groundwater flow was observed within the Pond but is inferred from the amount of water in the pond and the vegetation within the pond banks. Also, DP-1 location pit recharged with groundwater within 30 minutes of the soil boring. Based on the information listed above this pond is in C&T's opinion jurisdictional "Waters of the State" based on the inferred groundwater connection to the pond. The pond is 2,580 square feet (**0.059 acres**) in size.

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The pond in question (PND-A) was the only surface water feature assessed during the field investigation on July 10, 2023.

Feature	Location	Length
PND-A	N35.642374 W-86.907760	2580 square feet/ 0.059 acres

Any wetland boundaries are marked with pink wetland flagging in the field. Any wetland area identified in this study is subject to verification by the U.S. Army Corps of Engineers (USACE) and the Tennessee Department of Environment and Conservation (TDEC). After field verification by these two regulatory agencies, the area should then be surveyed and tied to the property boundaries. Any boundaries indicated on the enclosed site maps (**Appendix I**) are general based on visual observations related to obvious features in the landscape along with a handheld GPS unit and not the result of a field survey. Because of this, exact wetland boundaries and overall acreage are subject to change based on a field survey (by a TN registered surveyor) of the approved delineation flagging.

More information regarding on-site findings of the drainage features can be found in the field data sheets included in **Appendix IV.** Photographs taken during the investigation are included in **Appendix VI**.

I certify under penalty of law that this report and all attachments are, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. As specified in Tennessee Code Annotated Section 39-16-1702 (a)(4), this declaration is made under penalty of perjury.

C. Brandon Garrett, TN-QHP #1130-15

Senior Environmental Scientist/Project Manager

C&T ENGINEERING

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Suite 106-102
Franklin, TN 3706

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Appendix I

Figures

FIGURE 1-SITE LOCATION
1451 LESEA RD
COLUMBIA, TENNESSEE
C&T PROJECT NO. 03-23027

C&T ENGINEERING
1113 MURFREESBORO RD
SUITE 106-102
FRANKLIN, TN 37064
WWW.CT-ENG.NET

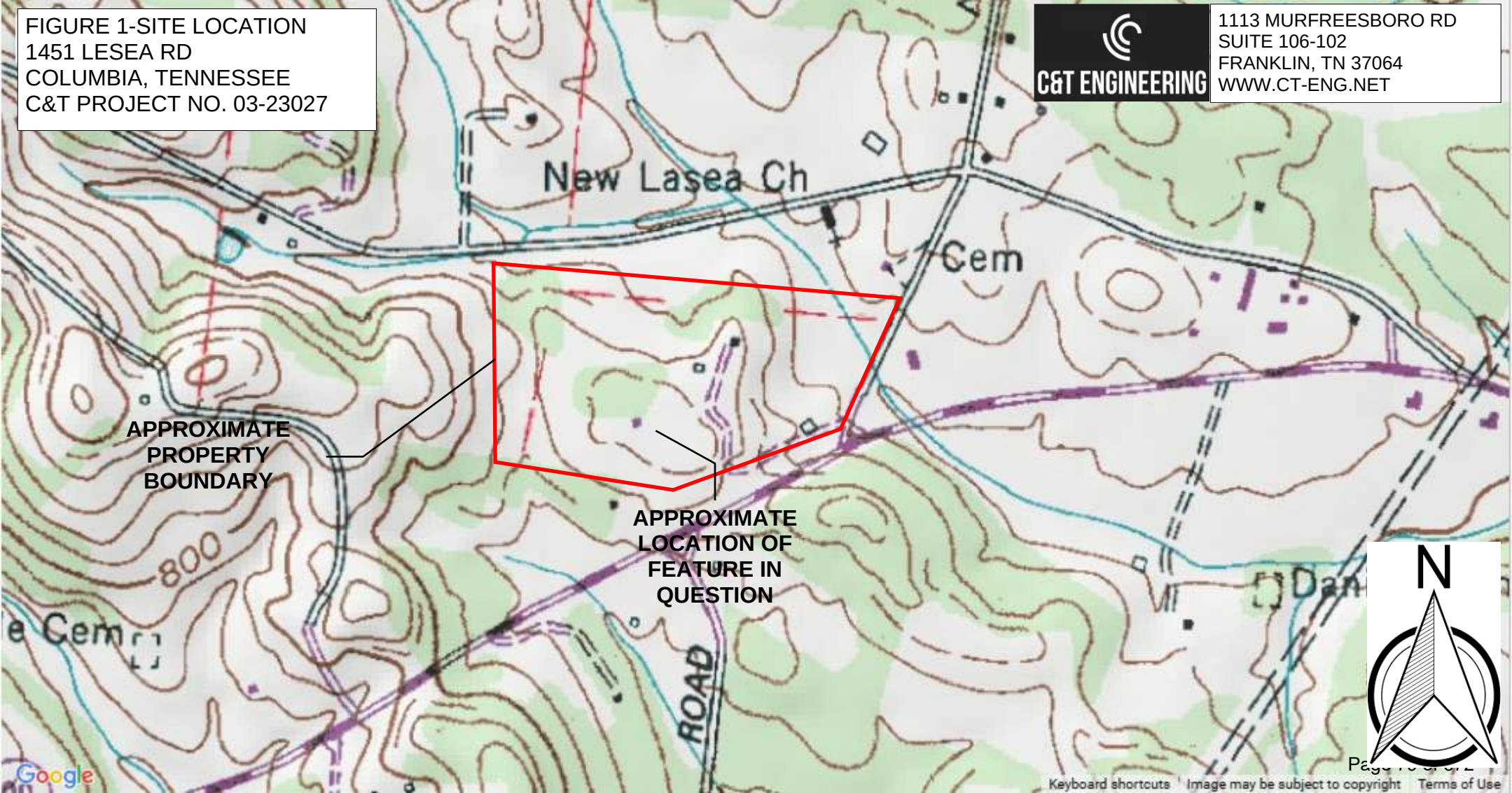


FIGURE 2-ASSESSMENT AREA
1451 LESEA RD
COLUMBIA, TENNESSEE
C&T PROJECT NO. 03-23027

C&T ENGINEERING
1113 MURFREESBORO RD
SUITE 106-102
FRANKLIN, TN 37064
WWW.CT-ENG.NET

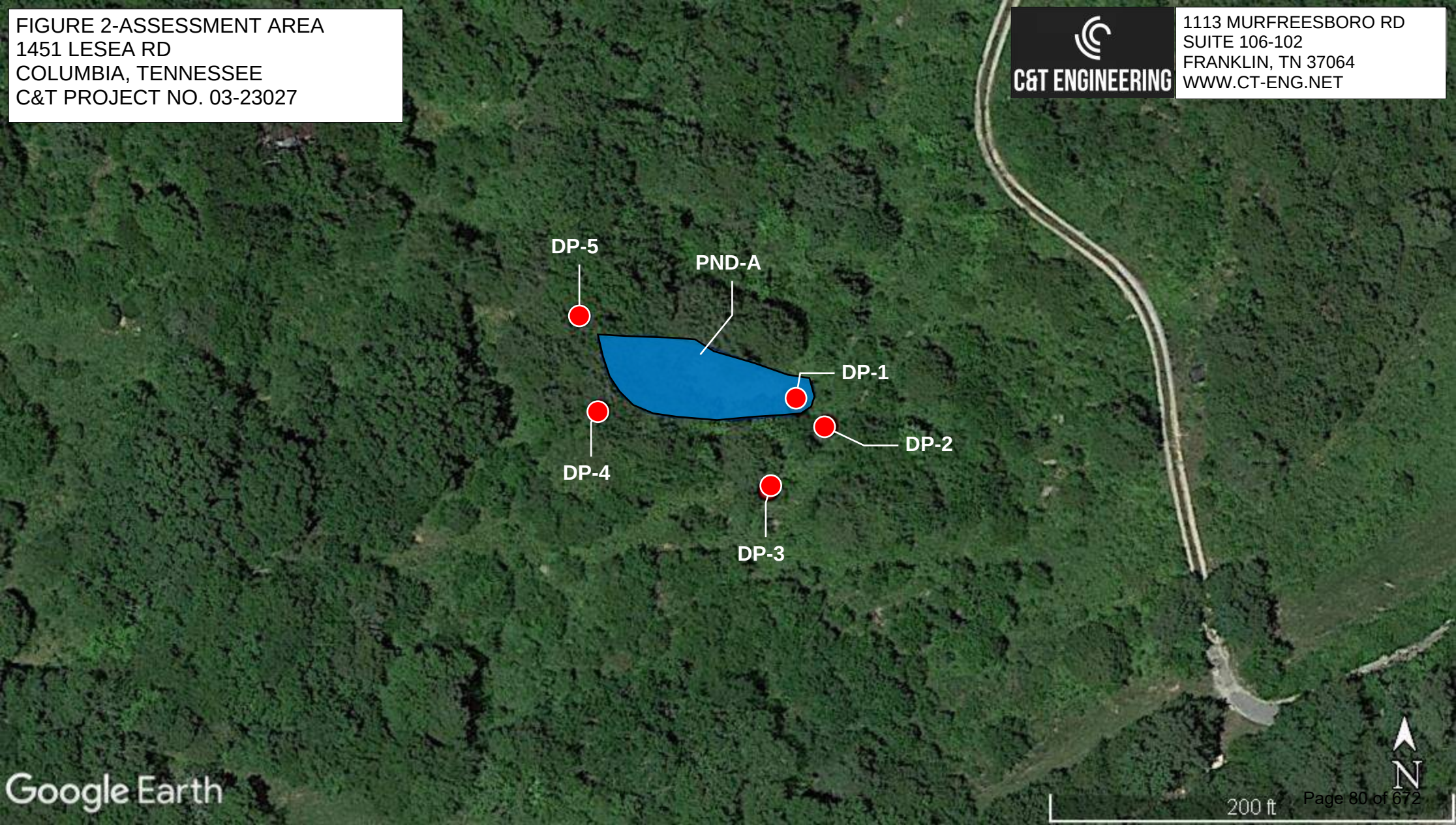
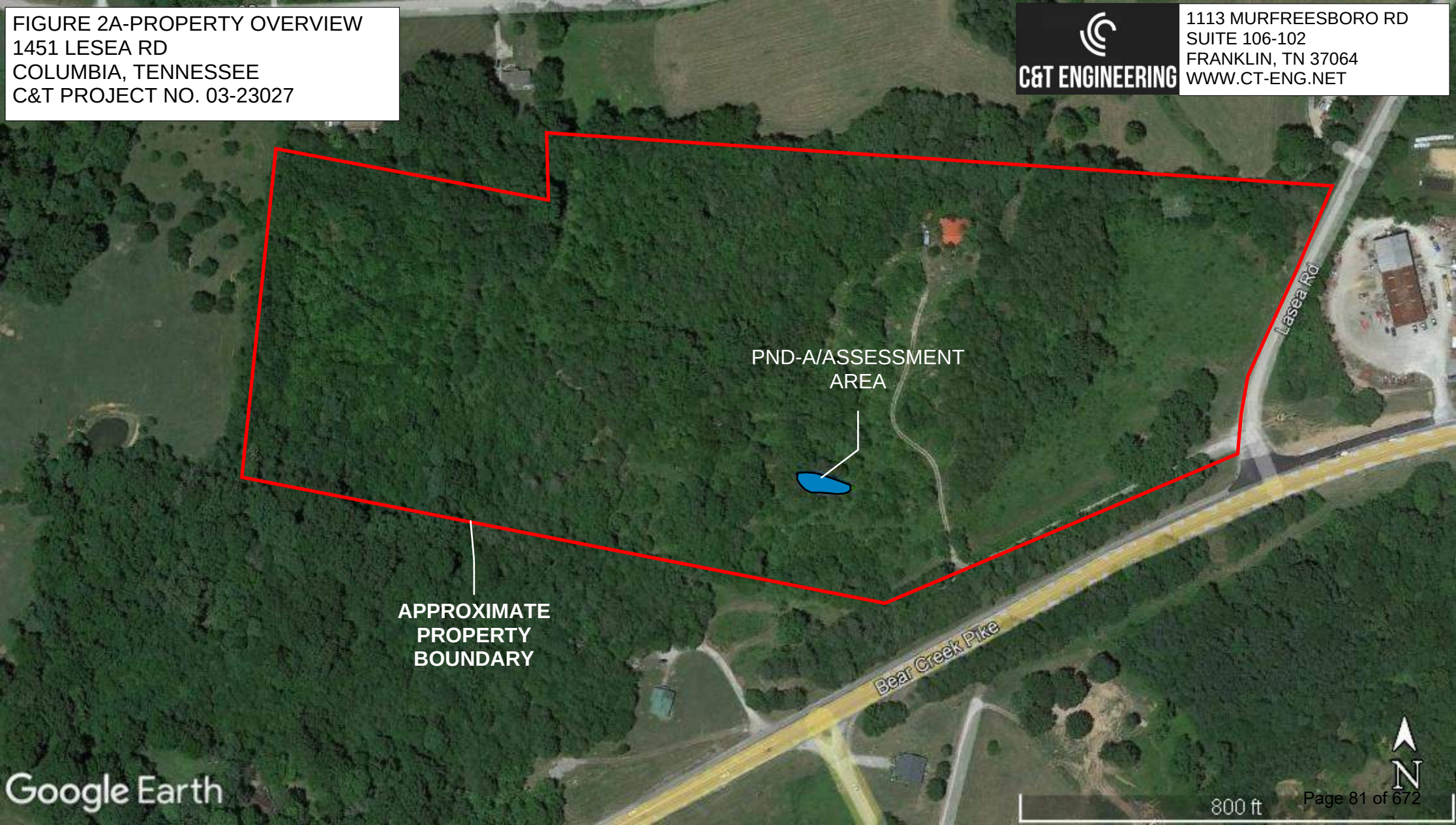


FIGURE 2A-PROPERTY OVERVIEW
1451 LESEA RD
COLUMBIA, TENNESSEE
C&T PROJECT NO. 03-23027

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1113 MURFREESBORO RD
SUITE 106-102
FRANKLIN, TN 37064
WWW.CT-ENG.NET



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Franklin, TN 3706

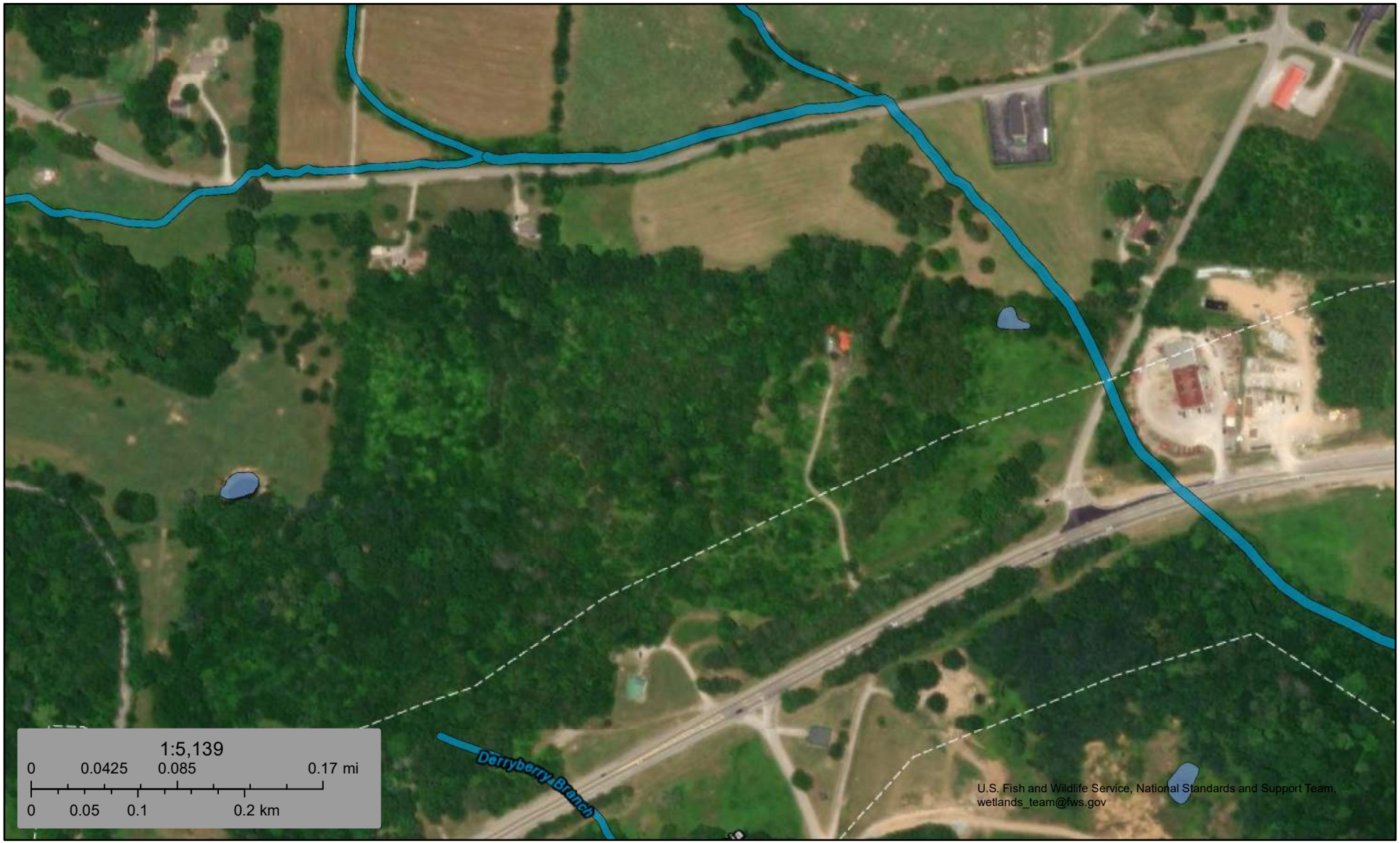
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Appendix II

National Wetland Inventory Maps

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



July 24, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

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Appendix III

NRCS Soil Survey Maps

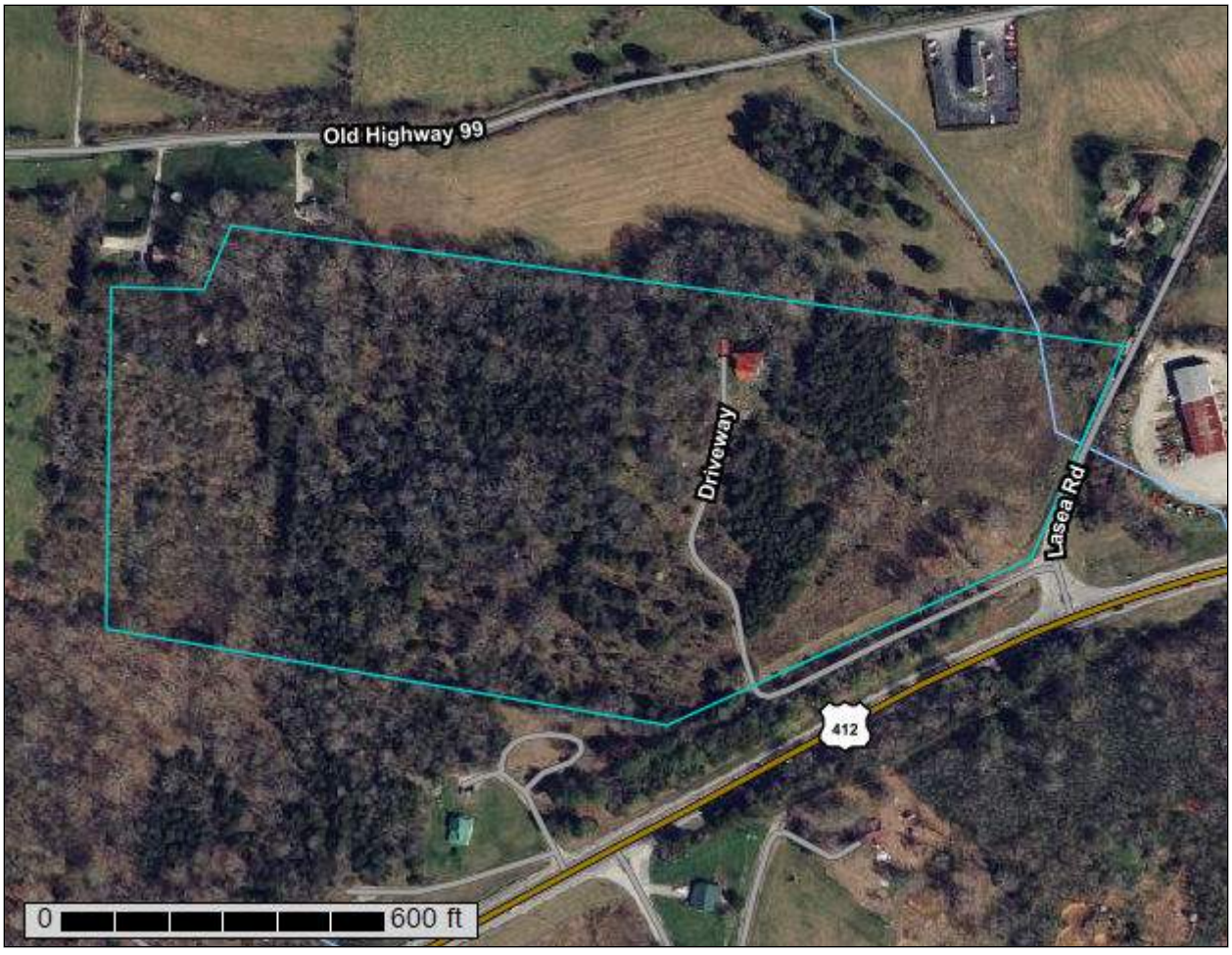
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Maury County, Tennessee



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:3,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Maury County, Tennessee
Survey Area Data: Version 17, Sep 15, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 20, 2021—Apr 20, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ae	Armour silt loam, eroded gently sloping phase	2.0	6.9%
Bf	Braxton cherty silty clay, severely eroded moderately steep phase	0.1	0.4%
Cb	Colbert silty clay, severely eroded, sloping phosphatic phase	1.3	4.4%
Gd	Gullied land, phosphatic	0.9	3.0%
Hr	Huntington silt loam, local alluvium phosphatic phase	0.5	1.7%
Lc	Lindell silt loam, 0 to 2 percent slopes, frequently flooded	0.9	3.0%
Ld	Lindell silt loam, 0 to 2 percent slopes, occasionally flooded	1.0	3.6%
Rb	Gladeville-Rock outcrop complex, 2 to 15 percent slopes, extremely stony	19.3	67.0%
Rc	Rockland, steep	2.4	8.3%
Rf	Rockland, Talbott material, sloping	0.5	1.6%
Tb	Talbott silty clay, severely eroded sloping phase	0.0	0.1%
Totals for Area of Interest		**28.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion

of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Maury County, Tennessee

Ae—Armour silt loam, eroded gently sloping phase

Map Unit Setting

National map unit symbol: kq4h
Elevation: 450 to 700 feet
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Armour and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Armour

Setting

Landform: Hillslopes
Landform position (three-dimensional): Base slope
Parent material: Silty alluvium and/or loamy alluvium over clayey residuum weathered from phosphatic limestone

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 40 inches: silty clay loam
H3 - 40 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F123XY004TN - Deep Loamy Terraces And Depressions
Hydric soil rating: No

Bf—Braxton cherty silty clay, severely eroded moderately steep phase

Map Unit Setting

National map unit symbol: kq4w

Elevation: 900 to 1,200 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition
Braxton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braxton

Setting
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey alluvium and/or residuum weathered from limestone

Typical profile
H1 - 0 to 10 inches: gravelly silty clay
H2 - 10 to 30 inches: clay
H3 - 30 to 60 inches: clay

Properties and qualities
Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F123XY001TN - Limestone Uplands
Hydric soil rating: No

Cb—Colbert silty clay, severely eroded, sloping phosphatic phase

Map Unit Setting
National map unit symbol: kq55
Elevation: 500 to 950 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition
Colbert and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colbert

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from argillaceous limestone

Typical profile

H1 - 0 to 8 inches: silty clay
H2 - 8 to 45 inches: clay
H3 - 45 to 55 inches: clay
R - 55 to 65 inches: bedrock

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 40 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Gd—Gullied land, phosphatic

Map Unit Composition

Gullied land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gullied Land

Typical profile

H1 - 0 to 30 inches: variable
R - 30 to 34 inches: bedrock

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: 9 to 79 inches to lithic bedrock

Hr—Huntington silt loam, local alluvium phosphatic phase

Map Unit Setting

National map unit symbol: kq6s
Elevation: 510 to 1,000 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Huntington and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Huntington

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Parent material: Loamy alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 24 inches: silt loam
H2 - 24 to 64 inches: silt loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F123XY005TN - Floodplains
Hydric soil rating: No

Lc—Lindell silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2td3f
Elevation: 500 to 850 feet

Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Lindell and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindell

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from limestone and siltstone

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 15 inches: silt loam
Bg - 15 to 52 inches: silt loam
Cg - 52 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 16 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F123XY005TN - Floodplains
Hydric soil rating: No

Minor Components

Norene

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Arrington

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Armour

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Ld—Lindell silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2td2y
Elevation: 500 to 850 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lindell and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lindell

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from limestone and siltstone

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 15 inches: silt loam
Bg - 15 to 52 inches: silt loam
Cg - 52 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 16 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F123XY005TN - Floodplains
Hydric soil rating: No

Minor Components

Arrington

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Norene

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Armour

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rb—Gladeville-Rock outcrop complex, 2 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2v58s
Elevation: 380 to 1,290 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Gladeville and similar soils: 60 percent
Rock outcrop: 31 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gladeville

Setting

Landform: Flats
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone

Typical profile

A - 0 to 8 inches: very flaggy silty clay loam
C - 8 to 10 inches: very flaggy clay
R - 10 to 20 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Ecological site: F123XY003TN - Limestone Glades And Dry Woodlands
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

Minor Components

Talbott
Percent of map unit: 9 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Rc—Rockland, steep

Map Unit Setting
National map unit symbol: kq7t
Elevation: 500 to 1,200 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition
Rock outcrop: 55 percent
Barfield and similar soils: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Typical profile
R - 0 to 10 inches: bedrock

Description of Barfield

Setting
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone

Typical profile
H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 18 inches: clay

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 12 to 60 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Rf—Rockland, Talbott material, sloping

Map Unit Setting

National map unit symbol: kq7x
Elevation: 460 to 1,400 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 55 percent
Talbott and similar soils: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Typical profile

R - 0 to 10 inches: bedrock

Description of Talbott

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 37 inches: clay
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 2 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F123XY001TN - Limestone Uplands
Hydric soil rating: No

Tb—Talbott silty clay, severely eroded sloping phase

Map Unit Setting

National map unit symbol: kq80
Elevation: 460 to 1,400 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Talbott and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Talbott

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silty clay
H2 - 6 to 37 inches: clay
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F123XY001TN - Limestone Uplands
Hydric soil rating: No

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Appendix IV

HD Field Data Sheets

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody:	Date/Time:
Assessors/Affiliation:	Project ID :
Site Name/Description:	
Site Location:	
HUC (12 digit):	Lat/Long:
Previous Rainfall (7-days) :	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data :	
Watershed Size :	County:
Soil Type(s) / Geology :	Source:
Surrounding Land Use :	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate Slight Absent	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge		WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species		WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase		Stream
6. Presence of fish (except *Gambusia*)		Stream
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed		Stream
9. Evidence watercourse has been used as a supply of drinking water		Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination =

Secondary Indicator Score (if applicable) =

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal =)	**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal =)	**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal =)	**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	3	2	1	0
21. Rooted plants in the thalweg [1]	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = _____

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

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Appendix V

Wetland Field Data Sheets

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 1451 LESEA RD City/County: COLUMBIA/MAURY Sampling Date: 7/10/2023

Applicant/Owner: IMER DEVELOPMENT State: TN Sampling Point: DP-1

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): TOESLOPE Local relief (concave, convex, none): CONCAVE Slope (%): 0-3

Subregion (LRR or MLRA): Lat: 35.642365 Long: -86.907603 Datum: WTL

Soil Map Unit Name: GLADEVILL ROCK OUTCR/OP COMPLEX NWI classification: NA/UPLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

DATA POINT TAKEN WITHIN POND BANK TO DETERMINE PRESENCE OF HYDRIC SOILS

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): UPPER 12

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. DIOSPYROS VIRGINIANA	10	NO	FAC
2. JUNIPERUS VIRGINIANA	10	NO	FACU
3. ACER SACCHERINUM	10	NO	FACW
4. SALIX NIGRA	20	YES	OBL
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	0	= Total Cover	
Herb Stratum (Plot size:)			
1. JUNCUS EFFUSUS	10	NO	FACW
2. CAREX SP	20	YES	FACW
3. TYPHA LATIFOLIA	20	YES	OBL
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	50	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	40	x 2 =	80
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

DATA POINT TAKEN WITHIN POND BANKS TO DETERMINE THE PRESENCE OF HYDRIC SOILS.

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/1	80	10YR 4/6	20	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 1451 LESEA RD City/County: COLUMBIA/MAURY Sampling Date: 7/10/2023

Applicant/Owner: IMER DEVELOPMENT State: TN Sampling Point: DP-2

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): TOESLOPE Local relief (concave, convex, none): CONCAVE Slope (%): 0-3

Subregion (LRR or MLRA): Lat: 35.642341 Long: -86.907532 Datum: UPL

Soil Map Unit Name: GLADEVILL ROCK OUTCR/OP COMPLEX NWI classification: NA/UPLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. CELTIS OCCIDENTALIS	10	NO	FACU
2. JUNIPERUS VIRGINIANA	30	YES	FACU
3. ACER SACCHERINUM	10	NO	FACW
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	20	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	20	= Total Cover	
Herb Stratum (Plot size:)			
1. LESPEDEZA CUNEATA	10	NO	FACU
2. AMBROSIA TRIFIDA	20	YES	FAC
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	30	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species	20	x 3 =	60
FACU species	70	x 4 =	280
UPL species		x 5 =	
Column Totals:	100 (A)		360 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

.

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/6	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 1451 LESEA RD City/County: COLUMBIA/MAURY Sampling Date: 7/10/2023

Applicant/Owner: IMER DEVELOPMENT State: TN Sampling Point: DP-3

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): CONVEX Slope (%): 0-3

Subregion (LRR or MLRA): Lat: 35.642266 Long: -86.907633 Datum: UPL

Soil Map Unit Name: GLADEVILL ROCK OUTCR/OP COMPLEX NWI classification: NA/UPLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. CELTIS OCCIDENTALIS	10	NO	FACU
2. JUNIPERUS VIRGINIANA	40	YES	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	30	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	30	= Total Cover	
Herb Stratum (Plot size:)			
1. LESPEDEZA CUNEATA	10	NO	FACU
2. AMBROSIA TRIFIDA	10	NO	FAC
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	20	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	10	x 3 =	30
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks: (Include photo numbers here or on a separate sheet.)

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SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/4	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 1451 LESEA RD City/County: COLUMBIA/MAURY Sampling Date: 7/10/2023

Applicant/Owner: IMER DEVELOPMENT State: TN Sampling Point: DP-4

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE/TERRACE Local relief (concave, convex, none): CONVEX Slope (%): 0-3

Subregion (LRR or MLRA): Lat: 35.642360 Long: -86.907894 Datum: UPL

Soil Map Unit Name: GLADEVILL ROCK OUTCR/OP COMPLEX NWI classification: NA/UPLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. CELTIS OCCIDENTALIS	10	NO	FACU
2. JUNIPERUS VIRGINIANA	40	YES	FACU
3. PRUNUS SEROTINA	10	NO	FACU
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	20	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	20	= Total Cover	
Herb Stratum (Plot size:)			
1. LESPEDEZA CUNEATA	10	NO	FACU
2. AMBROSIA TRIFIDA	10	NO	FAC
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	20	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	10	x 3 =	30
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** ✓

Remarks: (Include photo numbers here or on a separate sheet.)

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SOIL

Sampling Point: DP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/6	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 1451 LESEA RD City/County: COLUMBIA/MAURY Sampling Date: 7/10/2023

Applicant/Owner: IMER DEVELOPMENT State: TN Sampling Point: DP-5

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE/TERRACE Local relief (concave, convex, none): CONVEX Slope (%): 0-3

Subregion (LRR or MLRA): Lat: 35.642360 Long: -86.907894 Datum: UPL

Soil Map Unit Name: GLADEVILL ROCK OUTCR/OP COMPLEX NWI classification: NA/UPLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-5

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. CELTIS OCCIDENTALIS	10	NO	FACU
2. JUNIPERUS VIRGINIANA	40	YES	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	50	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	50	= Total Cover	
Herb Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	0	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

.

SOIL

Sampling Point: DP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/6	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

C&T ENGINEERING

1113 Murfreesboro Road
Suite 106-102
Franklin, TN 3706

615.567.3306
www.ct-eng.net

Appendix VI

Field Photographs



Photograph 1: View looking west from eastern point of Pond-A.



Photograph 2: Alternate view looking west across Pond A from eastern edge of Pond A.



Photograph 3: View of soils encountered at DP-1 location.



Photograph 4 : View of soils encountered at DP-2 location.



Photograph 5: View of soils encountered at DP-3 location.



Photograph 6: View of soils encountered at DP-4 location.



Photograph 7: Soils encountered at DP-5 location.



Photograph 8: View looking east across Pond A from western edge of Pond A.



Photograph 9: View looking southeast from near DP-4 location.



Photograph 10: View looking east along northern edge of Pond A.



Photograph 11: View of vegetation encountered along western side of Pond A.



Photograph 12: View of vegetation encountered along southern edge of Pond A.

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Franklin, TN 3706

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Appendix VII

Additional Information

Tennessee Department of Environment & Conservation

This is to certify that

C Brandon Garrett

successfully completed the one-day
Tennessee Hydrologic Determination Refresher Course

September 8, 2021

Jonathon Burr, DWR

Timothy Gangaware, TNWRRC

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

This certifies that the recipient has earned 6 Professional Development Hours

TNQHP
TENNESSEE QUALIFIED HYDROLOGIC PROFESSIONAL

Southern Consulting

Engineering • Materials Testing • Environmental Services

Project:	1451 Lasea Road (Columbia)	Date:	May 17, 2023
Engineering Technician:	TJ Randolph	Weather:	Clear

Condition of Site at Arrival:

Project property still has some exisiting structures on it with the vast majority of the property covered in dense foliage.

Inspection Activities:	_ Concrete Placement	_ Concrete/Mortar	_ Conc/Grout
_ Subgrade Suitable Soils	_ Proofroll	_ Moisture Density	_ Footing/SCP
_ Foundation Static Probe	_ Foundation Steel	_ Foundation Size/Depth	_ Steel/Weld
_ Frame	**X** Other (Describe): Sinkhole investigation		

Test(s) Location(s):

See attached image for testing locations

Testing Performed and Results:

- Visual observation of alleged sinkholes to make remediation recommendations if necessary.

REQUIREMENTS:

- Indications of a sinkhole would be a depression and area where water would drain with no surface outfall.
- If it is determined that there is a sinkhole the specification for sinkhole repair would be to undercut the location of the sinkhole until the opening in bedrock or "throat" is found and the placement of lean concrete to plug throat, a non-woven geotextile fabric for soil rock seperation and backfilled with large stone decreasing in size incrementally to the surface.

OBSERVATIONS:

- Technician traversed the majority site with a surveying employee, Chris, of Joe Ahler and Associates beginning at the exisiting home structure located on the attached drawing heading westward through the vegetation until coordinates of several individual locations designated by Joe Ahler were reached.
- At the first location Location 1 on attached image) there was a small area of standing water that was off of the target property approximately 20 feet to the North which had the potential to be a cause for concern.
- Technician continued to traverse the site to the two other locations (locations 2 and 3) on the attached image and at each location nothing was observed that would indicate the existence of a sinkhole on the property.

CONCLUSION:

- During this visit other than the original location that was deemed to be off our target property, no evidence of a sinkhole was observed.

RECOMMENDATIONS:

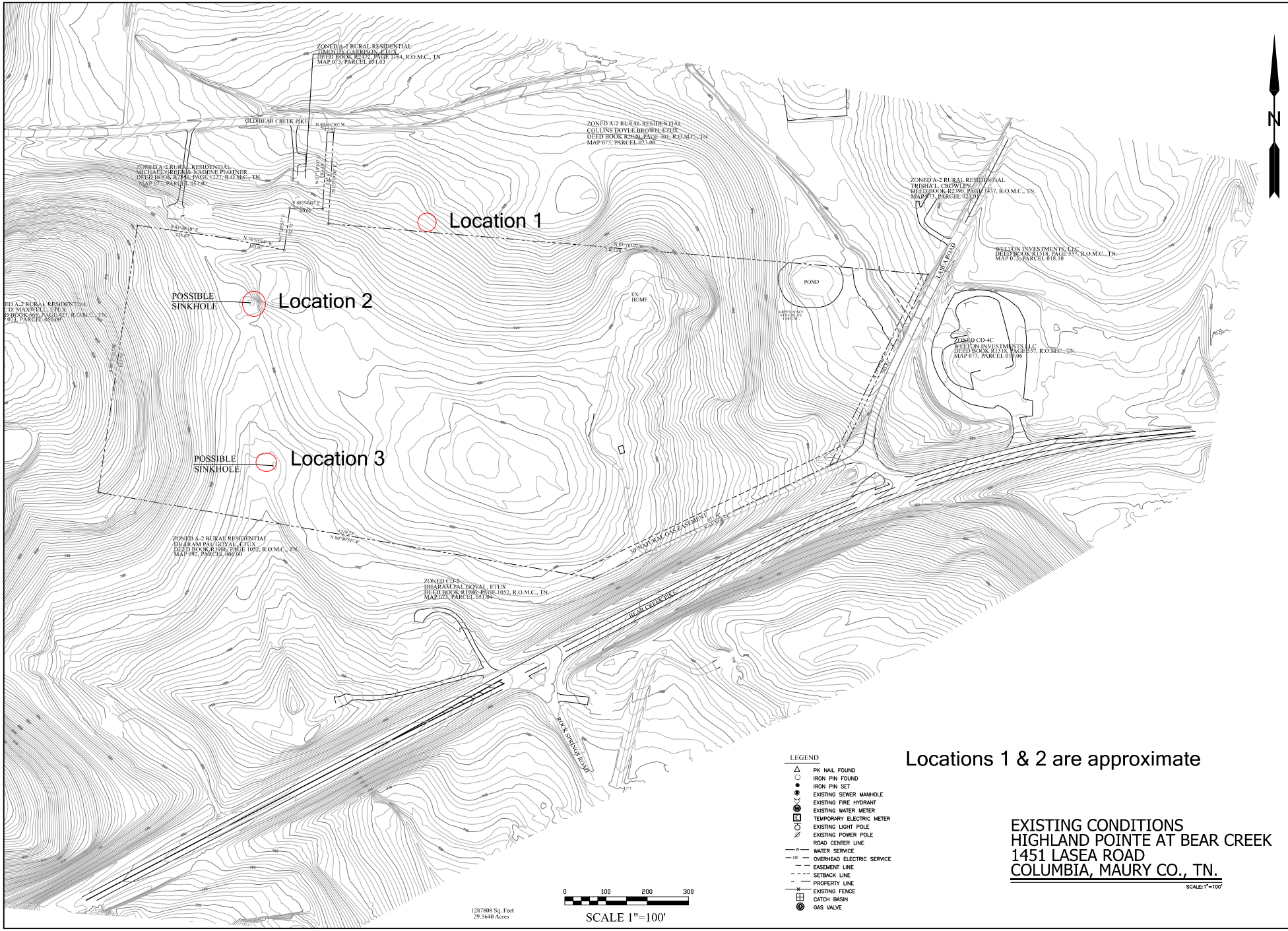
- No further recommendations at this time.

This document does not indicate final test results. Test results are not considered final until they are reviewed and signed by a Southern Consulting Registered Engineer.

TJ Randolph
Southern Consulting Engineering Technician

Trent Smith
Southern Consulting Engineer

1208 Hwy 47 E • Dickson, Tennessee 37055 • Phone: 615-740-8777 • Fax: 615-441-8776



Ahler & Associates, LLC
CIVIL ENGINEERS & LAND SURVEYORS
P.O. BOX 6356
SPRING HILL, TN 37174
PH: 615.481.1066
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E. AHLER
REGISTERED ENGINEER
LICENSED
CIVIL ENGINEER
No. 14740
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN

ISSUE:			

CPWS

June 15, 2023

Mr. Joseph Ahler
Ahler & Associates, LLC
Sent via email: joe.ahler@gmail.com

RE: Water Availability Letter
Highland Pointe at Bear Creek – 143 Lots
1451 Lasea Rd
Tax Map 73, Parcel 51
Columbia, Maury County, TN

Dear Mr. Ahler:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 143 units. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connections will be made to the existing 8-inch water main located on Lasea Road and the existing 6-inch water main located on Old Highway 99.
- Minimum size 8-inch, looped water mains are required throughout the development.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (143 SFUs)	$54,410.00

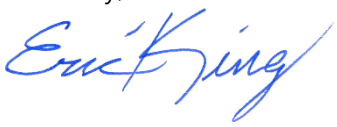
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $540 per ¾" meter (70 meters)	$77,220.00
Impact Fee: $4,500 per ¾" meter (70 meters)	$643,500.00
Total Meter and Impact Fees Due =	**$720,720.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact Mr. Jonathan Hardin or myself at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-103

Ahler & Associates, LLC
CONSULTING ENGINEERS AND LAND SURVEYORS

June 23, 2023

Development Services
City of Columbia
700 N. Garden St.
Columbia, TN 38401

Re: Responses to Development Review Committee notes
May 9, 2023

To whom it may concern:

As a response to your request dated June 21, 2023, I have the following to offer. The responses are in the order of the comments listed.

Engineering

1. Acknowledged
2. We have enlarged the stormwater detention areas.
3. We have labeled the buffers and provided a minimum of 30' buffer from the top of Pumpkin Creek
4. We have had the areas pointed out by staff investigated and located, as soon as the report comes in, we will forward it to you.
5. The roadways have been labeled "public."
6. We have adjusted the radius of curves 4, 5, and 6 to meet the City's requirements.
7. We have lengthened the tangent between curves 1 and 2 to 94'.
8. We have provided a roadway cross section.
9. We have provided the storm inlets at 300' intervals.
10. We provided the survey with the seal of a Registered Land Surveyor
11. We have removed the EPSC sheets from the packet.
12. We have corrected the lot numbers of each sheet to agree with the others.
13. We have corrected the slope on the southern property line.

Wastewater

14. This comment was blank.
15. We changed the entire sanitary sewer collection system to gravity flow. Ryan Filipkowski, P.E. has reviewed and provided the following comments, "I don't think there are any major comments, as long as it's gravity sewer and made as shallow as possible; the sewer is definitely available through the ROW of Bear Creek Pike. I should have emailed you sooner."

Planning

16. The playgrounds are within 800' of each home proposed.
17. We have provided additional details on the Civic Space Green Area and the playgrounds.
18. There is sufficient parking to conform to 4.3.12.B.3 in the Live/Work locations.
19. The thoroughfare is shown on the drawings and the conformity note was added.

P.O. Box 1636
SPRING HILL, TN 37174
PHONE 615-481-3106
FAX 615-468-9357
www.ahlerengineering.com

20. We have corrected the spacing on the townhome units to conform to 4.3.1-D
21. An update water availability letter from CPWS has been provided,
22. Plans have been updated to comply with the Zoning Ordinance
23. Note has been added.
24. Note has been added.
25. Note has been added.
26. The aerial image has been provided.
27. Dumpsters were added for the townhome use while the single family residential will have rear alley collection.
28. Square footage of the non-residential area in the live/work units has been provided on the drawings.
29. Civic space page has been provided.
30. A detail of the mail kiosk area has been provided.
31. Noted

Fire

32. Provided no comment.

Building

33. Provided no comment.

Police

34. Provided no comment.

City Attorney

35. Provided no comment.

ATT

36. Plans to service the development.

Maury Co. Highway Department

37. Provided no comment.

Columbia Power

38. Duck River Electric will serve the development, CPWS has no power facilities in the area

Columbia Water

39. An updated water availability letter has been provided.

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FAX 615-468-9357
www.ahlerengineering.com

Public Works

40. Public Works recommends two 8-yard dumpsters serviced 3 times a week. We have shown these dumpsters at the north end of the site.

Maury County E911

41. Maury County E911 has approved the subdivision and street names.

Atmos Energy

42. Provided no comment.

Maury County Schools

43. Provided the following, "Howell Elementary, Cox Middle School, Spring Hill High School. See Attached Capacity Numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students."

Duck River Electric Membership Corp.

44. Provided no comment.

Should you have any additional comments or questions, do not hesitate to contact me.

Sincerely,

Joseph Ahler

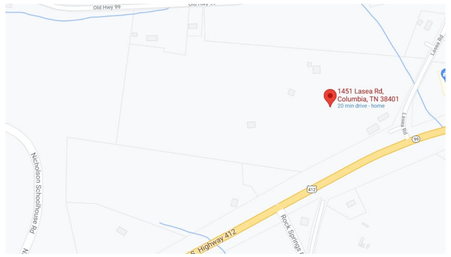
Joseph Ahler P.E., R.L.S.
Ahler & Associates, LLC

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PHONE 615-481-3106
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www.ahlerengineering.com

PRELIMINARY DEVELOPMENT PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, TENNESSEE
MAP 73, PARCEL 51

SHEET INDEX

C0.0-COVER SHEET
C1.0- GENERAL NOTES
C2.0-EXISTING CONDITIONS
C3.0-SITE PLAN
C4.0-UTILITY PLAN
C5.0-GRADING PLAN
C6.0-CIVIC SPACE PLAN
C9.0-TREE PRESERVATION PLAN



VICINITY MAP
NTS

OWNER

IMER DEVELOPMENT, LLC
1909 COLUMBIA AVENUE
FRANKLIN, TN 37064
615-788-1320

UTILITY COMPANIES

WATER

COLUMBIA POWER & WATER SYSTEM
201 PICKENS LANE
COLUMBIA, TN 38401
931-388-4833

SEWER

COLUMBIA WASTEWATER SYSTEM
1244 TREATMENT PLANT ROAD
COLUMBIA, TN 38401
931-560-1011

NATURAL GAS

ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
931-388-9136

ELECTRIC

COLUMBIA POWER & WATER SYSTEM
201 PICKENS LANE
COLUMBIA, TN 38401
931-388-4833

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
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PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
LICENSE
CERTIFICATE
NO. 14745
STATE OF TENNESSEE

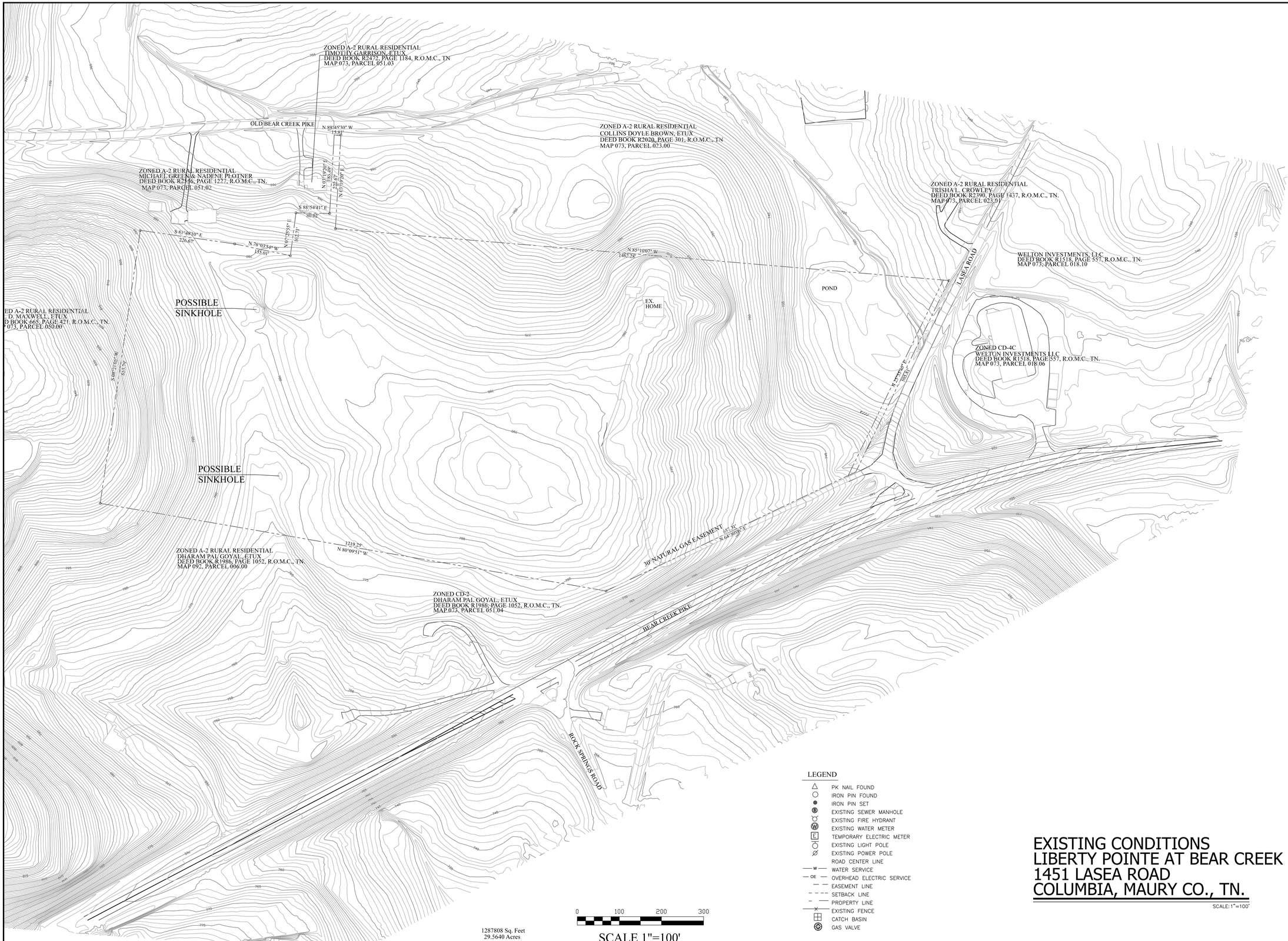
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	1/17/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
COVER SHEET
-

C0.0



EXISTING CONDITIONS
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
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SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL

JOSEPH E AHLER
REGISTERED ENGINEER
No. 109424
STATE OF TENNESSEE
No. 1474S

LIBERTY POINTE AT BEAR CREEK

1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

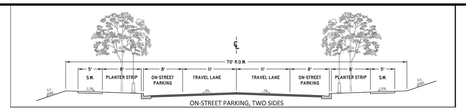
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	-	1/04/23	ORIGINAL ISSUE

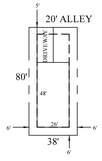
PROJECT No:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

EXISITING CONDITIONS
-

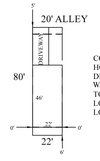
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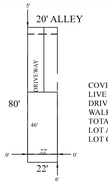
COVERAGE
HOME 1248 SQ. FT
DRIVE 312 SQ. FT
WALK 30 SQ. FT.
TOTAL 1590 SQ. FT.
LOT AREA 3040 SQ. FT
LOT COVERAGE= 52.3%

TYPICAL LOT LAYOUT
SINGLE FAMILY



COVERAGE
HOME 1012 SQ. FT
DRIVE 336 SQ. FT
WALK 30 SQ. FT.
TOTAL 1378 SQ. FT.
LOT AREA 1760 SQ. FT
LOT COVERAGE= 78%

TYPICAL LOT LAYOUT
TOWNHOME



COVERAGE
LIVE WORK 1012 SQ. FT.
DRIVE 366 SQ. FT
WALK 30 SQ. FT.
TOTAL 1378 SQ. FT.
LOT AREA 1760 SQ. FT
LOT COVERAGE= 78%

TYPICAL LOT LAYOUT
LIVE/WORK

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

N 89°45'30" W
15.81'

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 023.00

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2556, PAGE 1227, R.O.M.C., TN.
MAP 073, PARCEL 051.02

N 03°19'20" E
186.49'

N 01°19'20" E
212.50'

S 88°54'41" E
80.02'

N 07°25'55" E
102.71'

S 81°48'10" E
226.67'

N 78°03'54" W
135.01'

ZONED A-2 RURAL RESIDENTIAL
JOEL D. MAXWELL, ETUX
DEED BOOK 665, PAGE 421, R.O.M.C., TN.
MAP 073, PARCEL 050.00

S 08°21'05" W
655.79'

NOTE: SINGLE FAMILY UNITS WILL HAVE TRASH CAN PICKUP AND TOWNHOMES/WORK/LIVE UNITS WILL UTILIZE DUMPSTER COLLECTION THREE TIMES PER WEEK.

N 85°10'07" W
1462.28'

DUMPSTER

PLAYGROUND #2

OPEN SPACE

ALLEY (20' ROW)

FRANKLIN BRIDGE DRIVE (70' ROW) (PUBLIC)

PINE CREEK DRIVE (70' ROW) (PUBLIC)

ALLEY (20' ROW)

ALLEY (20' ROW)

ALLEY (20' ROW)

ALLEY (20' ROW)

CHESTNUT BRIDGE DRIVE (70' ROW) (PUBLIC)

PLAYGROUND #1

FRANKLIN BRIDGE DRIVE (70' ROW) (PUBLIC)

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

1219.25'
N 80°09'51" W

30' NATURAL GAS EASEMENT

657.31'
N 64°30'06" E

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

BEAR CREEK PIKE

ROCK SPRINGS ROAD

STREAM BUFFER

30'

30'

LASEA ROAD

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2390, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.10

GREEN SPACE
64716 SQ. FT.
1.4857 AC.

MAIL KIOSK

ZONED CD-4C
WELTON INVESTMENTS LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

12.5' RIGHT-OF-WAY DEDICATION

OPEN SPACE

THE STRUCTURES WILL CONFORM TO THE DESIGN AND FACADE STANDARDS OF TABLE 4.3.1-D AND TABLE 4.3.8.B OF THE ZONING ORDINANCE. EXTERIOR LIGHTING PLANS MAY BE REQUIRED AT SITE CONSTRUCTION PLAN REVIEW AND WILL MEET THE STANDARDS UNDER 4.3.17.B

CENTERLINE CURVE DATA

CURVE NO.	DELTA	RADIUS	LENGTH	CHORD	CH. BRG
C1	100°04'12"	250.17'	436.94'	383.48'	S 65°00'41" W
C2	49°25'51"	125.00'	107.84'	104.53'	S 39°43'25" W
C3	35°20'03"	333.00'	205.36'	202.12'	S 82°10'07" W
C4	90°17'32"	125.00'	197.98'	177.23'	N 34°02'50" W
C5	90°00'01"	125.00'	196.35'	176.78'	N 53°38'24" E
C6	6°17'57"	333.00'	36.61'	36.19'	S 77°02'57" E
C7	42°43'00"	333.00'	248.27'	242.56'	S 05°17'33" E
C8	47°53'01"	70.00'	58.50'	56.81'	N 39°33'05" E
C9	92°16'14"	70.02'	112.76'	100.93'	N 29°36'47" W
C10	5°43'30"	70.00'	6.99'	6.99'	N 76°45'15" W
C11	114°55'42"	70.00'	140.41'	118.03'	S 42°22'21" W
C12	89°55'28"	70.00'	109.86'	98.93'	N 54°52'25" E
C13	89°58'26"	70.00'	109.92'	98.97'	S 35°10'38" E
C14	44°04'23"	209.22'	160.94'	157.01'	S 78°37'33" W
C15	17°35'32"	333.00'	102.24'	101.84'	N 88°57'37" W
C16	02°08'00"	70.00'	2.61'	2.61'	N 81°13'54" W

SITE COVERAGE
DEVELOPED AREA =866408.4 SQ. FT OR 19.89 ACRES
TOTAL AREA=1287808 SQ. FT. OR 29.5640 ACRES
COVERAGE =67%

NEW IMPERVIOUS AREA= 472760.0 SQ. FT OR 10.85 ACRES

CIVIC SPACE PROVIDED
GREEN SPACE 1.48 ACRES
PLAYGROUND #1 0.14 ACRES
PLAYGROUND #2 0.30 ACRES
TOTAL 1.92 ACRES OR 6.5%

LEGEND
- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

1287808 Sq. Feet
29.5640 Acres

0 100 200 300

SCALE 1"=100'

PROPERTY IS ZONED CD-4

PROPOSED DEVELOPMENT
LOTS 60-87, LOTS 118-39 TOWN HOMES =53 UNITS OR 37.9%
LOTS 1-59, SINGLE FAMILY HOMES= 59 UNITS OR 42.1%
LOTS 88-115 LIVE/WORK UNITS=28 UNITS OR 20.0%

DENSITY= 140 UNITS/29.56 AC=4.74 DU/AC (12.0 DU/AC ALLOWED)

BUILDING BREAKDOWN
10-5 UNIT TOWNHOME BUILDINGS
1-3 UNIT TOWNHOME BUILDINGS

BUILDING FRONTAGE BREAKDOWN
TOWNHOMES=1166' OR 35.2%
SINGLE FAMILY=1534' OR 46.3%
LIVE/WORK=616 OR 18.6%

59-SINGLE FAMILY HOMES
5-5 UNIT LIVE/WORK BUILDINGS
1-3 UNIT LIVE/WORK BUILDING

28,336 SQ. FT. OF NON-RESIDENTIAL WORK SPACE
REQUIRED PARKING 57 SPACES
PROPOSED ON STREET PARKING
IN FRONT OF UNITS=35 SPACES
PARKING AT REAR OF THE LIVE/WORK UNITS=56 SPACES

PARKING SUMMARY
REAR PARKING 2/UNIT= 286 SPACES
STREET PARKING= 290 SPACES*
TOTAL=574 SPACES
REQUIRED 2/UNIT
*NOTE = ENTRY DRIVE SLOPE EXCEEDS 8%
NO PARKING ALONG THAT REACH WAS COUNTED

SITE PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517

SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OCTOBER 14, 2015
STATE OF TENNESSEE

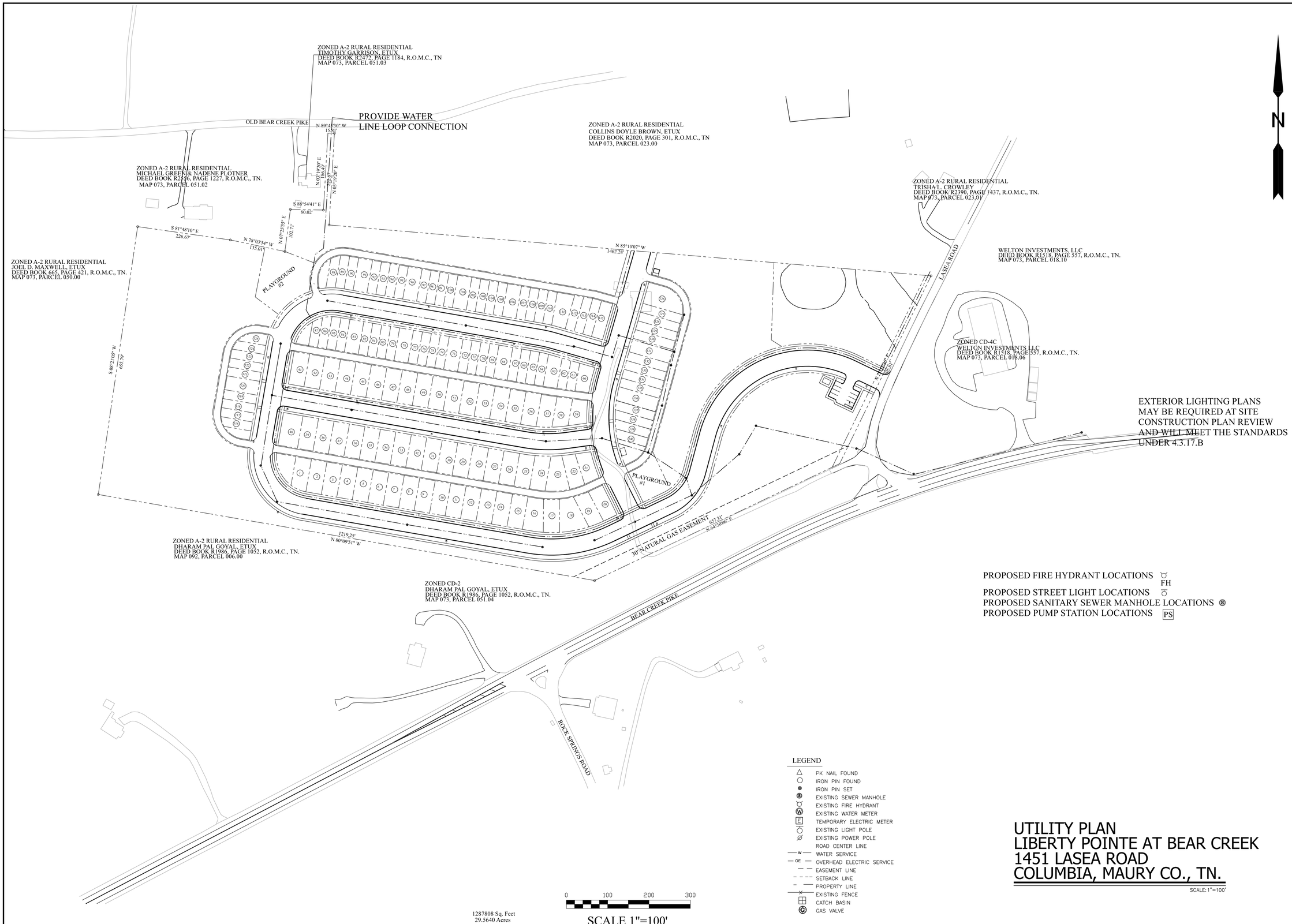
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
SITE PLAN
-

C3.0



UTILITY PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
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CIVIL

SEAL

JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
CIVIL
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

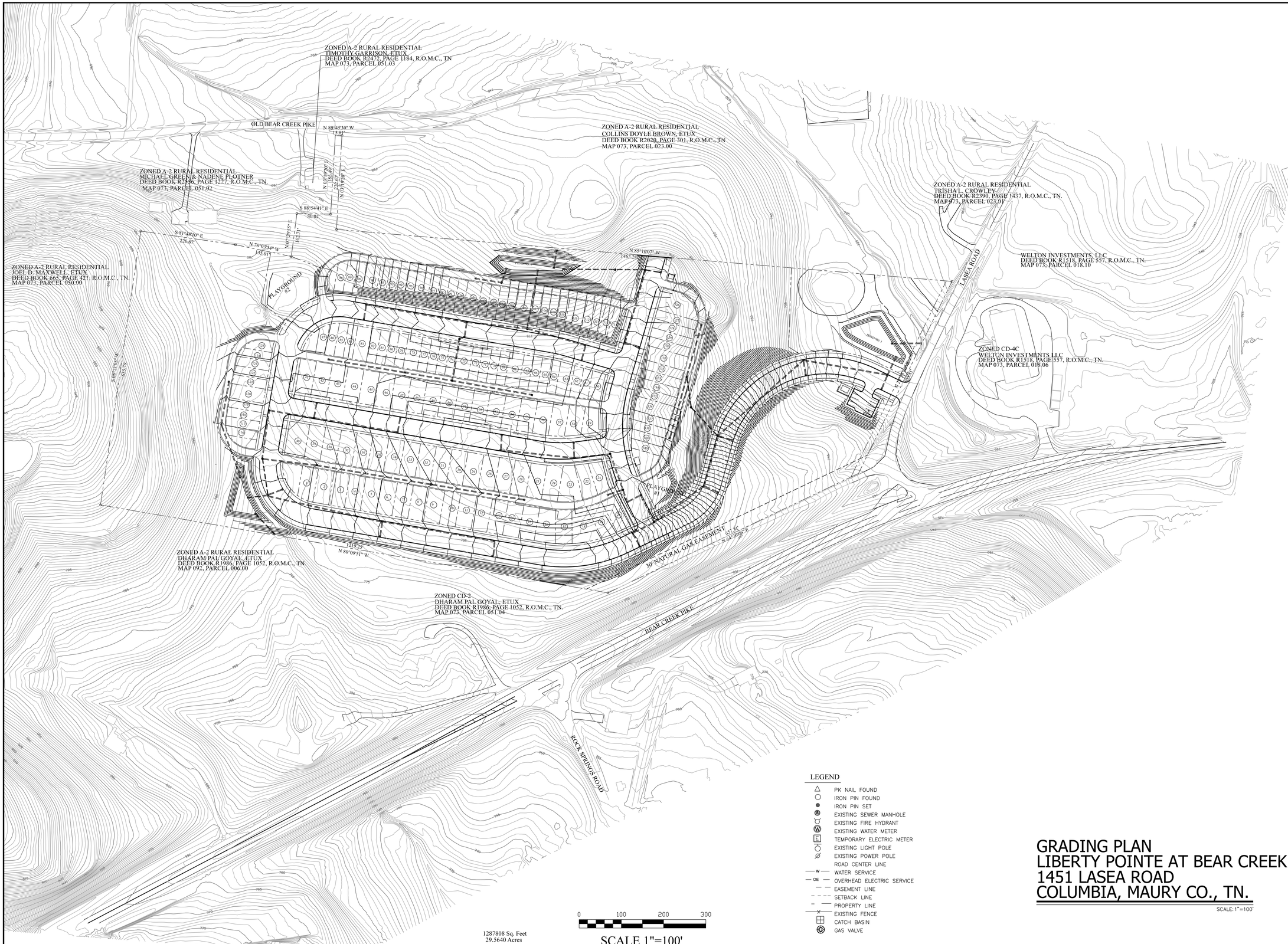
ISSUE:	MARK	DATE	DESCRIPTION
	-	10.4.23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

UTILITY PLAN
-

C4.0



GRADING PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL

JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OCTOBER
PERMIT
No. 14745
STATE OF TENNESSEE

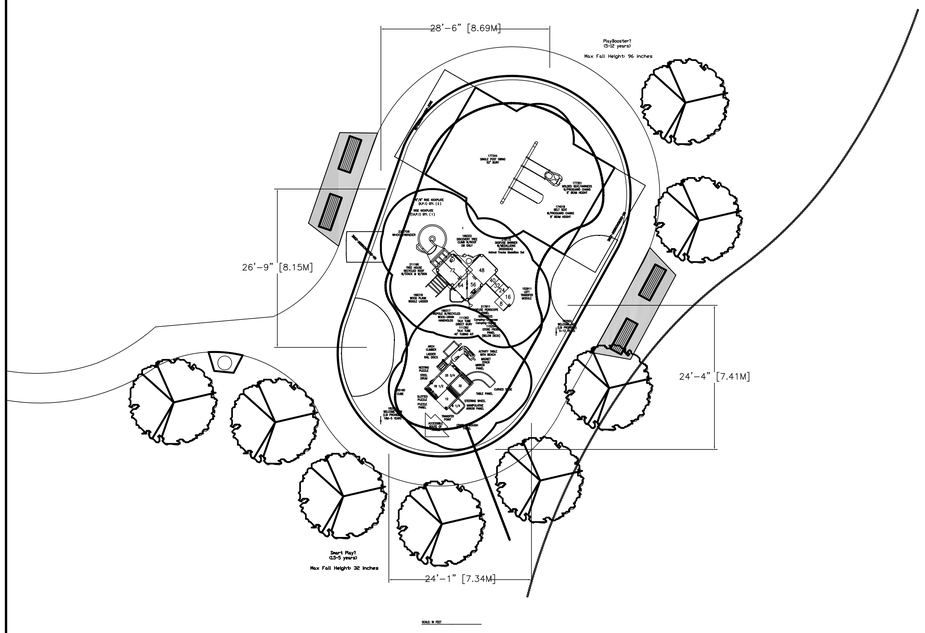
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	7/04/23	ORIGINAL ISSUE

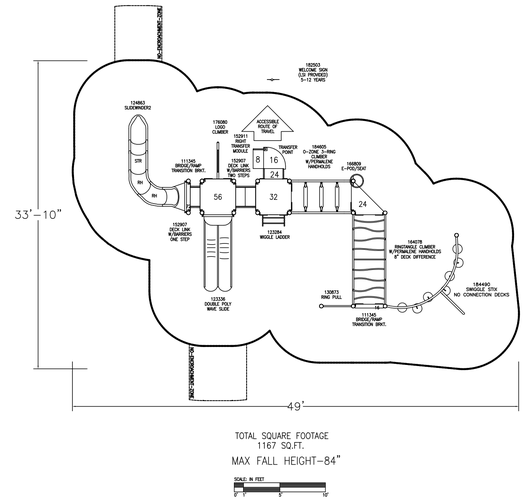
PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
GRADING PLAN
-

C5.0



PLAYGROUND NO. 2
NTS



TOTAL SQUARE FOOTAGE
1167 SQ.FT.
MAX FALL HEIGHT-84"

SCALE: IN FEET
0 3' 6' 12'

PLAYGROUND NO. 1
NTS



LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

GREEN SPACE

SCALE
1"=50'

CIVIC SPACE
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: NTS

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SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OF
CONSERVICE
No. 147145
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
CIVIC SPACE PLAN

C6.0

APPROXIMATE TOTAL TREE CANOPY(UNDEVELOPED)=23.9 ACRES
APPROX. TOTAL TREE CANOPY(REMAININGG)=7.2 ACRES
TOTAL TREE CANOPY(UNDEVELOPED)=23.9/29.5=81%
TOTAL TREE CANOPY(RETAINED)=7.2/23.9=30.1%

AERIAL PHOTOGRAPHY FROM 2021 BY MAPTECH, LLC

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

N 89°58'30" W
73.85'

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 025.00

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2546, PAGE 1272, R.O.M.C., TN.
MAP 073, PARCEL 051.02

N 03°09'20" E
252.52'
N 03°09'20" E
125.00'

S 88°54'45" E
30.02'

S 81°38'00" E
226.67'

N 78°03'54" W
185.01'

N 07°25'55" E
102.73'

TREE SAVE AREA

N 85°10'07" W
146.21'

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2560, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN
MAP 073, PARCEL 018.10

LASEA ROAD

PLAYGROUND #2

ZONED A-2 RURAL RESIDENTIAL
D. MAXWELL, ETUX
DEED BOOK 665, PAGE 421, R.O.M.C., TN.
073, PARCEL 050.00

N 78°03'54" W
82.53'

EXISTING TREE CANOPY LIMITS

TREE SAVE AREA

GREEN SPACE
64716 SQ FT
1.4857 AC

ZONED CD-4C
WELTON INVESTMENTS LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

N 85°10'07" W
46.31'

TREE SAVE AREA

PLAYGROUND #1

LIMITS OF DISTURBANCE

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN
MAP 092, PARCEL 006.00

1219.25'
N 80°09'51" W

10' NATURAL GAS EASEMENT

657.45'
S 64°30'00" E

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

BEAR CREEK PIKE

ROCK SPRINGS ROAD

PER SECTION 4.3.16C.1 OF THE ZONING ORDINANCE, FUTURE TREE REMOVAL WITHIN THE TREE SAVE AREAS WILL REQUIRE APPROVAL BY THE PLANNING COMMISSION.

LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
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- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

1287808 Sq. Feet
29.5640 Acres

0 100 200 300
SCALE 1"=100'

TREE PRESERVATION PLAN
LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517

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SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OF
TENNESSEE
No. 14745
STATE OF TENNESSEE

LIBERTY POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

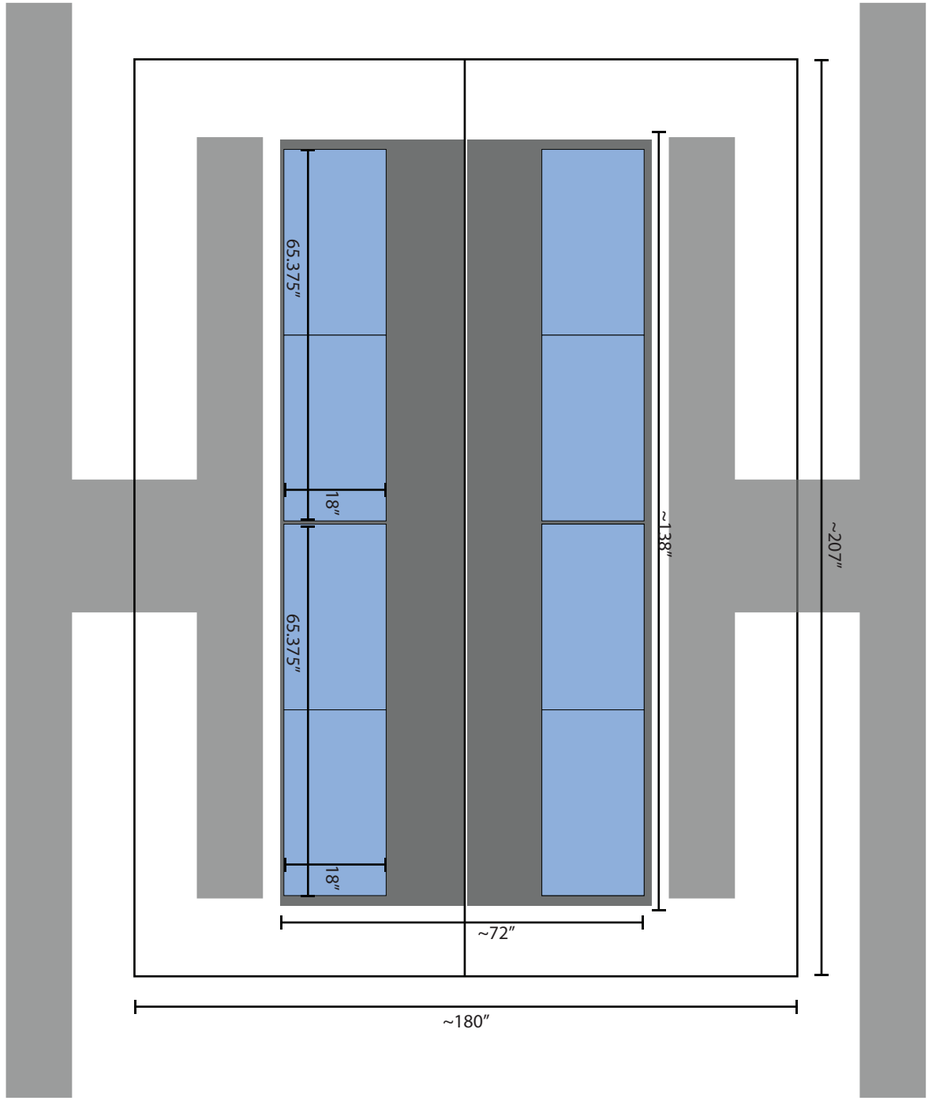
ISSUE:	MARK	DATE	DESCRIPTION
	1	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
TREE PRESERVATION PLAN

C9.0







HEIGHT:

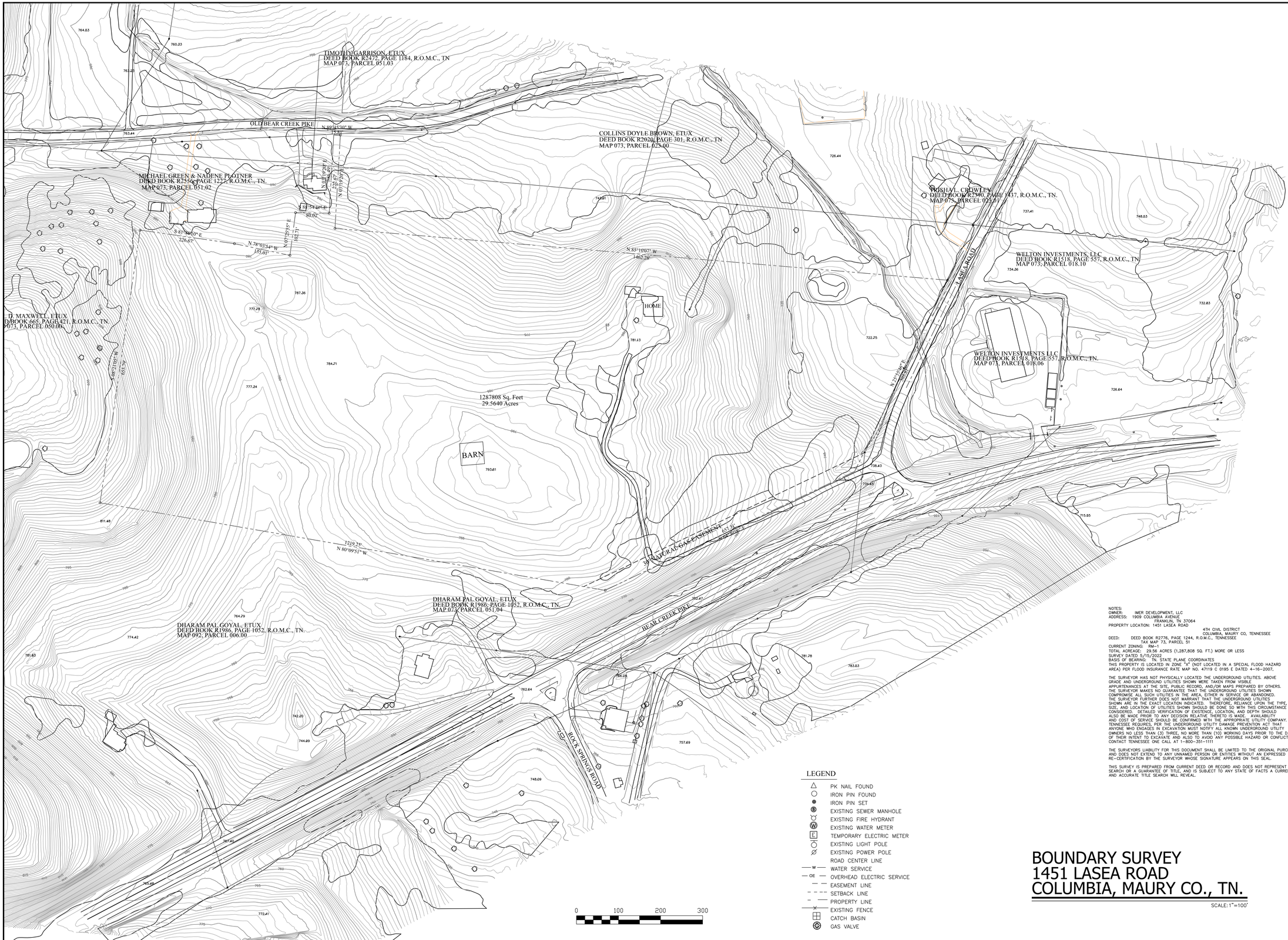
Unit height is 72 1/16"
WIDTH:

Unit width is 32 11/16"
DEPTH:

Unit depth is 18"

Florence Versatile 4C Depot Cabinet
4C16D-20-D

Quantity	Compartment Name	Compartment Type	Compartment Height	Compartment Width	Compartment Depth
20	1H Tenant	Standard Mail	3"	12"	15"
2	15" Parcel	Parcel Locker	15"	12"	15"
1	1H Outgoing	Outgoing Mail Slot	3"	12"	15"
1	1H Master	Master Collection	3"	12"	15"



LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

NOTES:
OWNER: IMER DEVELOPMENT, LLC
ADDRESS: 1909 COLUMBIA AVENUE
FRANKLIN, TN 37064
PROPERTY LOCATION: 1451 LASEA ROAD
4TH CIVIL DISTRICT
COLUMBIA, MAURY CO, TENNESSEE
DEED: DEED BOOK R2776, PAGE 1244, R.O.M.C., TENNESSEE
TAX MAP 73, PARCEL 51
CURRENT ZONING: RM-1
TOTAL ACREAGE: 29.56 ACRES (1,287,808 SQ. FT.) MORE OR LESS
SURVEY DATED 5/15/2022
BASIS OF BEARING: TN. STATE PLANE COORDINATES
THIS PROPERTY IS LOCATED IN ZONE "X" (NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA) PER FLOOD INSURANCE RATE MAP NO. 47119 C 0195 E DATED 4-16-2007,

THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORD, AND/OR MAPS PREPARED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPROMISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE, AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION, AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. TENNESSEE REQUIRES, PER THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS NO LESS THAN (3) THREE, NO MORE THAN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. CONTACT TENNESSEE ONE CALL AT 1-800-351-1111

THE SURVEYORS LIABILITY FOR THIS DOCUMENT SHALL BE LIMITED TO THE ORIGINAL PURCHASER AND DOES NOT EXTEND TO ANY UNNAMED PERSON OR ENTITIES WITHOUT AN EXPRESSED RE-CERTIFICATION BY THE SURVEYOR WHOSE SIGNATURE APPEARS ON THIS SEAL.

THIS SURVEY IS PREPARED FROM CURRENT DEED OR RECORD AND DOES NOT REPRESENT A TITLE SEARCH OR A GUARANTEE OF TITLE, AND IS SUBJECT TO ANY STATE OF FACTS A CURRENT AND ACCURATE TITLE SEARCH WILL REVEAL.

BOUNDARY SURVEY
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517

SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E. AHLER
REGISTERED LAND SURVEYOR
STATE OF TENNESSEE
TENNESSEE NO. 1434

BOUNDARY SURVEY
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	5/26/22	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

BOUNDARY SURVEY
-

S1.0

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, May 9, 2023

ITEM NO.
23-0144

DESCRIPTION: CD-4 RESIDENTIAL DEVELOPMENT

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. Subject to construction plans and traffic impact study.
2. Stormwater detention area(s) appear to be small for the amount of added impervious surface.
3. Label aquatic buffers and provide dimensions. Pumpkin creek is exceptional and will require a 60 foot buffer average 30 ft minimum from the top of bank for each side of the creek.
4. Provide geotechnical report evaluating the presence of karst features on site, suitability of soils/rock formation for construction, and recommendations.
5. Label roadways as public or private (minor local)
6. Minimum horizontal centerline radius is 125 ft. (C4, C5, C6,)
7. 50 foot tangent required between reverse curves. (C1, C2)
8. Provide roadway cross section.
9. Inlets shall be located a minimum of every three hundred (300) feet of roadway for each side of the roadway, unless specific hydraulic analysis of spread is provided.
10. Provide survey signed and sealed by a Registered Land Surveyor.
11. Remove EPSC sheets
12. Lot numbers on Utility Sheet do not match the rest of the plan.
13. Slope along southern property line exceeds 3H:1V

Wastewater

14.
15. Wastewater does not approve this request. The Department would like to discuss the possibility of gravity flor to the Bear Creek Pike instead of two pump stations as shown on the plans.

Planning

16. Provide 800' radius for playgrounds and basic facilities to be added.
17. Provide details of Civic Space Green area, typical facilities. Please revise to provide sufficient detail for the Planning Commission to determine that the Green and Playground spaces meet

the standards for such areas in the Ordinance (e.g. show typical facilities and sufficient detail to discern that "landscape consists of lawn and trees, naturalistically disposed" etc).

18. Show live/work locations and extra parking for the commercial space (1:500 sf). Parlong locations must conform with § 4.3.12.B.3 (p. 268).
19. Please note on the plan which thoroughfare is being used and that structures shall comply with Article 4.3.1-D of Ordinance 4400.
20. In the typical lot layout please illustrate the series of Townhomes with the spacing between sets of units. Please include the lot layout for 32' wide townhome units (appears to be end units).
21. The water availability letter is dated January 13th and is set to expire before the June Planning Commission meeting. Please provide an updated letter at resubmittal.
22. Please provide Site Development Plan as a separate document (See sec. 8.5.6, p. 408-422 of the Zoning Ordinance). Site Development Plan should respond to planning comments and address all applicable standards of the Zoning Ordinance, including civic space and tree preservation requirements.
23. Please add note acknowledging the design and façade standards of Table 4.3.1-D (p.78-85) and Table 4.3.8.B (p. 212) of the Zoning Ordinance and indicate that structures will conform. Conformity will be confirmed at building permit.
24. Please add note to site development plan referencing the private lighting standards at Table 4.3.17.B (p. 297) of the Zoning Ordinance. Note should acknowledging that exterior lighting plans may be required as appropriate at site construction plan review/building permit (§ 8.5.6.G.4.p).
25. Please add note to tree preservation page pf Site Development Plan acknowledging requirement at 4.3.16.C.1 (p. 290) of the Zoning Ordinance that future removal of trees depicted on the plan will require approval by Planning Commission.
26. Please provide the ariel image referenced in the tree preservation plan.
27. Please indicate how solid waste will be handled. If dumpsters are to be utilized, please provide location and details (See ESS detail MD-01, Table 4.3.1-D and §4.3.15 of the Zoning Ordinance).
28. Please indicate the square footage of non-residential area in the Live-Work units (§ 8.5.6.H.3.C).
29. The Site Development Plan should include a Civic Space page. Please label pedestrian shed(s) and identify the "Main Civic Space" for each. The Main Civic Space must be a Green, Square, or Plaza (§ 5.3.3; p. 335).
30. Please show detail of mail kiosk area conforming to ESS detail MD-03.
31. The Site Development Plan portion of this application should be reviewed by the Development Review Committee again for completeness before advancing to the Planning Commission agenda. At resubmittal, the Preliminary Plat should be more legible and clear of matters not pertinent to the items listed at 2.2.8 of the Subdivision Regulations.

Fire

32. No comment

Building

33. No comments.

Police

34. No comments provided.

City Attorney

35. No comments provided.

ATT

36. Plan to serve.

Maury County Highway Dept.

37. No comment.

Columbia Power

38. Columbia Power System does not have existing power facilities near your proposed development within our service territory. DREMC will be the service provider for this area.

Columbia Water

39. "A water availability letter was issued on 1-13-23, it will expire prior to the Commission meeting. For the project to move forward the availability letter must be current. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements stated in the water availability letter are the responsibility of the developer/owner. All water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

Public Works

40. For the 54 townhomes and 28 live/work units, we recommend two 8 yd dumpsters serviced 3 times a week. Please see attached dumpster guidelines and accessibility requirements. Private

sanitation services (including individual garbage receptacles) are an option for townhomes and live/work units. Single family homes will receive our trashcan service.

Maury County E911

41. Contact Maury County 911 for subdivision and street name request. cgideon@maury911.org

Atmos Energy

42. No comment provided.

Maury County Schools

43. Howell Elementary, Cox Middle School, Spring Hill High School. See Attached Capacity Numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Duck River Electric Membership Corp

44. No comment provided.

ATTACHMENTS:

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, May 9, 2023

ITEM NO.
23-0144

DESCRIPTION: CD-4 RESIDENTIAL DEVELOPMENT

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. Subject to construction plans and traffic impact study.
2. Stormwater detention area(s) appear to be small for the amount of added impervious surface.
3. Label aquatic buffers and provide dimensions. Pumpkin creek is exceptional and will require a 60 foot buffer average 30 ft minimum from the top of bank for each side of the creek.
4. Provide geotechnical report evaluating the presence of karst features on site, suitability of soils/rock formation for construction, and recommendations.
5. Label roadways as public or private (minor local)
6. Minimum horizontal centerline radius is 125 ft. (C4, C5, C6,)
7. 50 foot tangent required between reverse curves. (C1, C2)
8. Provide roadway cross section.
9. Inlets shall be located a minimum of every three hundred (300) feet of roadway for each side of the roadway, unless specific hydraulic analysis of spread is provided.
10. Provide survey signed and sealed by a Registered Land Surveyor.
11. Remove EPSC sheets
12. Lot numbers on Utility Sheet do not match the rest of the plan.
13. Slope along southern property line exceeds 3H:1V

Wastewater

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15. Wastewater does not approve this request. The Department would like to discuss the possibility of gravity flor to the Bear Creek Pike instead of two pump stations as shown on the plans.

Planning

16. Provide 800' radius for playgrounds and basic facilities to be added.
17. Provide details of Civic Space Green area, typical facilities. Please revise to provide sufficient detail for the Planning Commission to determine that the Green and Playground spaces meet

the standards for such areas in the Ordinance (e.g. show typical facilities and sufficient detail to discern that "landscape consists of lawn and trees, naturalistically disposed" etc).

18. Show live/work locations and extra parking for the commercial space (1:500 sf). Parlong locations must conform with § 4.3.12.B.3 (p. 268).
19. Please note on the plan which thoroughfare is being used and that structures shall comply with Article 4.3.1-D of Ordinance 4400.
20. In the typical lot layout please illustrate the series of Townhomes with the spacing between sets of units. Please include the lot layout for 32' wide townhome units (appears to be end units).
21. The water availability letter is dated January 13th and is set to expire before the June Planning Commission meeting. Please provide an updated letter at resubmittal.
22. Please provide Site Development Plan as a separate document (See sec. 8.5.6, p. 408-422 of the Zoning Ordinance). Site Development Plan should respond to planning comments and address all applicable standards of the Zoning Ordinance, including civic space and tree preservation requirements.
23. Please add note acknowledging the design and façade standards of Table 4.3.1-D (p.78-85) and Table 4.3.8.B (p. 212) of the Zoning Ordinance and indicate that structures will conform. Conformity will be confirmed at building permit.
24. Please add note to site development plan referencing the private lighting standards at Table 4.3.17.B (p. 297) of the Zoning Ordinance. Note should acknowledging that exterior lighting plans may be required as appropriate at site construction plan review/building permit (§ 8.5.6.G.4.p).
25. Please add note to tree preservation page pf Site Development Plan acknowledging requirement at 4.3.16.C.1 (p. 290) of the Zoning Ordinance that future removal of trees depicted on the plan will require approval by Planning Commission.
26. Please provide the ariel image referenced in the tree preservation plan.
27. Please indicate how solid waste will be handled. If dumpsters are to be utilized, please provide location and details (See ESS detail MD-01, Table 4.3.1-D and §4.3.15 of the Zoning Ordinance).
28. Please indicate the square footage of non-residential area in the Live-Work units (§ 8.5.6.H.3.C).
29. The Site Development Plan should include a Civic Space page. Please label pedestrian shed(s) and identify the "Main Civic Space" for each. The Main Civic Space must be a Green, Square, or Plaza (§ 5.3.3; p. 335).
30. Please show detail of mail kiosk area conforming to ESS detail MD-03.
31. The Site Development Plan portion of this application should be reviewed by the Development Review Committee again for completeness before advancing to the Planning Commission agenda. At resubmittal, the Preliminary Plat should be more legible and clear of matters not pertinent to the items listed at 2.2.8 of the Subdivision Regulations.

Fire

32. No comment

Building

33. No comments.

Police

34. No comments provided.

City Attorney

35. No comments provided.

ATT

36. Plan to serve.

Maury County Highway Dept.

37. No comment.

Columbia Power

38. Columbia Power System does not have existing power facilities near your proposed development within our service territory. DREMC will be the service provider for this area.

Columbia Water

39. "A water availability letter was issued on 1-13-23, it will expire prior to the Commission meeting. For the project to move forward the availability letter must be current. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements stated in the water availability letter are the responsibility of the developer/owner. All water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

Public Works

40. For the 54 townhomes and 28 live/work units, we recommend two 8 yd dumpsters serviced 3 times a week. Please see attached dumpster guidelines and accessibility requirements. Private

sanitation services (including individual garbage receptacles) are an option for townhomes and live/work units. Single family homes will receive our trashcan service.

Maury County E911

41. Contact Maury County 911 for subdivision and street name request. cgideon@maury911.org

Atmos Energy

42. No comment provided.

Maury County Schools

43. Howell Elementary, Cox Middle School, Spring Hill High School. See Attached Capacity Numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Duck River Electric Membership Corp

44. No comment provided.

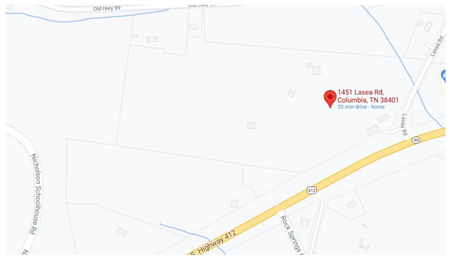
ATTACHMENTS:

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

PRELIMINARY DEVELOPMENT PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, TENNESSEE
MAP 73, PARCEL 51

SHEET INDEX

C0.0-COVER SHEET
C1.0- GENERAL NOTES
C2.0-EXISTING CONDITIONS
C3.0-SITE PLAN
C4.0-UTILITY PLAN
C5.0-GRADING PLAN
C6.0-EROSION CONTROL PLAN-PH. 1
C7.0-EROSION CONTROL PLAN-PH. 2
C8.0-EROSION CONTROL PLAN-PH. 3
C9.0-TREE PRESERVATION PLAN



VICINITY MAP
NTS

OWNER

IMER DEVELOPMENT, LLC
1909 COLUMBIA AVENUE
FRANKLIN, TN 37064
615-788-1320

UTILITY COMPANIES

WATER

COLUMBIA POWER & WATER SYSTEM
201 PICKENS LANE
COLUMBIA, TN 38401
931-388-4833

SEWER

COLUMBIA WASTEWATER SYSTEM
1244 TREATMENT PLANT ROAD
COLUMBIA, TN 38401
931-560-1011

NATURAL GAS

ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
931-388-9136

ELECTRIC

COLUMBIA POWER & WATER SYSTEM
201 PICKENS LANE
COLUMBIA, TN 38401
931-388-4833

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
LICENSE
CERTIFICATE
NO. 14745
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	1/17/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
COVER SHEET
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C0.0

GENERAL NOTES

1) THE LOCATION OF EXISTING UTILITIES, INCLUDING UNDERGROUND UTILITIES, IF INDICATED ON THE DRAWINGS ARE SO SHOWN INSOFAR AS THEIR EXISTENCE AND LOCATION WERE KNOWN AT THE TIME OF PREPARATION OF THE DRAWINGS. HOWEVER, NOTHING IN THESE CONTRACT DOCUMENTS SHALL BE CONSTRUED AS A GUARANTEE THAT SUCH UTILITIES ARE IN THE LOCATION INDICATED OR THAT THEY ACTUALLY EXIST, OR THAT OTHER UTILITIES ARE NOT WITHIN THE AREA OF OPERATIONS. THE CONTRACTOR SHALL MAKE ALL NECESSARY INVESTIGATIONS TO DETERMINE THE EXISTENCE AND LOCATIONS OF SUCH UTILITIES FAR ENOUGH IN ADVANCE TO ALLOW FOR ADJUSTMENTS DUE TO CONFLICTS IN THE HORIZONTAL AND VERTICAL LOCATION OF THE PIPE. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR MAINTENANCE AND PROTECTION OF EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL OBTAIN FIELD UTILITY LOCATIONS BY CALLING "TENNESSEE ONE CALL" (1-800-351-1111) AND ALL OTHER UTILITIES 3 DAYS PRIOR TO WORKING IN THE VICINITY OF EXISTING UTILITIES. THE FIELD UTILITY LOCATIONS MUST BE SUBMITTED TO THE ENGINEER.

2) ALL WORK SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND THE TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL MAINTAIN A COPY OF BOTH THE DRAWINGS AND SPECIFICATIONS AT THE SITE AT ALL TIMES.

3) ANY FENCING WHICH IS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE IMMEDIATELY REPLACED OR SUPPLEMENTED BY TEMPORARY FENCING OR BARRICADE SUITABLE FOR INTENDED PURPOSE OF EXISTING FENCING OR BARRICADE. CONTRACTOR SHALL PROMPTLY REPAIR AND/OR REPLACE DAMAGED FENCING TO EQUAL OR BETTER CONDITIONS.

4) PHYSICAL CONDITIONS DISTURBED BY WORK SHALL BE RESTORED TO CONDITIONS EQUAL OR BETTER THAN THOSE EXISTING PRIOR TO THE WORK. REPAIR DAMAGES TO STRUCTURES AND UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. RESTORATION INCLUDES, BUT IS NOT LIMITED TO, FINE GRADING, SEEDING, PAVEMENT REPLACEMENT, AND DRAINAGE STRUCTURES.

5) THE CONTRACTOR SHALL MAKE EVERY ATTEMPT POSSIBLE TO MAINTAIN THROUGH TRAFFIC AT ALL TIMES. ALL CONSTRUCTION OPERATIONS SHALL BE SCHEDULED TO KEEP TRAFFIC DELAYS TO A MINIMUM. THE CONTRACTOR SHALL NOT CLOSE OR EXCAVATE WITHIN THE RIGHT-OF-WAY OF A STREET OR ALLEY WITHOUT OBTAINING THE APPROVAL OF AND THE REQUIRED PERMITS FROM THE LOCAL GOVERNING AUTHORITIES AND PROVIDING EVIDENCE OF SUCH APPROVAL TO ENGINEER. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN, AT HIS EXPENSE ALL WARNING DEVICES AND FLAG MEN REQUIRED TO CONTROL AND PROTECT TRAFFIC PASSING THROUGH THE WORK ZONE. THE CONTRACTOR SHALL PROVIDE PILOT TRUCKS AND DRIVERS WHEN NEEDED. ALL METHODS OF CONTROLLING AND PROTECTING THE TRAFFIC SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL GOVERNING AUTHORITIES.

TRENCH EXCAVATION NOTES

1) CONTRACTOR IS REQUIRED TO TAKE ALL NECESSARY AND POTENTIAL PRECAUTIONARY MEASURES TO ASSURE THAT NO DAMAGE (TO PERSONAL AND PRIVATE PROPERTY) WILL RESULT FROM THE EXCAVATION OF ROCK - INCLUDING THROUGH USE OF EXPLOSIVES. PRE-BLASTING STUDIES MUST BE PERFORMED. ADDITIONALLY, CONTRACTOR MUST PROVIDE A PLAN OF ACTION TO THE ENGINEER AT LEAST ONE (1) WEEK PRIOR TO BLASTING. THE PLAN OF ACTION MUST IDENTIFY MEANS AND METHODS TO FULLY PROTECT ALL ADJACENT REAL AND PERSONAL PROPERTY OWNED BY OTHERS. ENGINEER WILL NOT AND DOES NOT ACCEPT ANY LIABILITY ASSOCIATED WITH ADEQUACY OF PLAN.

2) CONTRACTOR IS STRONGLY URGED TO TAKE ALL PRECAUTIONS TO AVOID DAMAGE TO PERSONAL AND REAL PROPERTY. ALL DAMAGE RESULTING FROM CONTRACTORS OPERATION OR CONTRACTOR'S AGENTS MUST BE FULLY REPAIRED OR REPLACED TO A CONDITION EQUAL TO OR BETTER THAN ORIGINALLY EXISTED.

3) TRENCH WIDTH AT THE GROUND SURFACE MAY VARY WITH AND DEPEND UPON DEPTH, TYPE OF SOILS, AND POSITION OF SURFACE STRUCTURES. THE MINIMUM CLEAR WIDTH OF THE TRENCH, SHEETED OR UNSHEETED, MEASURED AT THE SPRING LINE OF THE PIPE SHOULD BE ONE FOOT (1') GREATER THAN THE OUTSIDE DIAMETER OF THE PIPE. THE MAXIMUM CLEAR WIDTH OF THE TRENCH AT THE TOP OF THE PIPE SHOULD NOT EXCEED A WIDTH EQUAL TO THE OUTSIDE DIAMETER PLUS TWO FEET (2'). IF THE ABOVE DEFINED TRENCH WIDTHS MUST BE EXCEEDED, OR IF THE PIPE IS INSTALLED IN A COMPACTED EMBANKMENT, PIPE EMBEDMENT SHOULD BE COMPACTED TO A POINT OF AT LEAST 2.5 PIPE DIAMETERS FROM THE PIPE ON BOTH SIDES OF THE PIPE OR THE TRENCH WALLS, WHICHEVER IS LESS. EXCAVATION AT MANHOLES AND SIMILAR STRUCTURES SHALL BE SUFFICIENT TO PROVIDE 12-INCHES IN THE CLEAR BETWEEN THE OUTSIDE OF THE STRUCTURE AND THE EMBANKMENT OR SHEETING.

4) THE TRENCH SHALL BE EXCAVATED TO THE DEPTH REQUIRED AND SHALL PROVIDE A FIRM, STABLE, AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE ON SOLID OR UNDISTURBED SOIL. BELL HOLES AND DEPRESSIONS SHALL BE PROVIDED TO PERMIT PROPER JOINT ASSEMBLY AND PIPE SUPPORT. ANY PART OF THE TRENCH BOTTOM EXCAVATED BELOW THE ESTABLISHED PIPE GRADE SHALL BE BACKFILLED AND COMPACTED AS REQUIRED TO PROVIDE FIRM PIPE SUPPORT. LEDGE ROCK, BOULDERS, AND LARGE STONES SHALL BE REMOVED TO PROVIDE SIX INCHES (6") OF SOIL CUSHION ON ALL SIDES OF THE PIPE, INCLUDING THE BOTTOM, AND ON ALL SIDES OF ACCESSORIES. ALL UNDERCUT TRENCH EXCAVATION SHALL BE BACKFILLED AND COMPACTED WITH APPROVED GRANULAR MATERIAL.

5) THE BOTTOM OF THE TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF TWO TO FOUR INCHES (4") BELOW THE BOTTOM OF THE PIPE TO PROVIDE FOR THE SPECIFIED PIPE BEDDING FOR THE ENTIRE LENGTH OF PIPELINE. ANY PART OF THE TRENCH BOTTOM THAT IS EXCAVATED BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL AND COMPACTED/ CONSOLIDATED.

6) WHEN AN UNSTABLE SUBGRADE CONDITION IS ENCOUNTERED, WHICH WILL NOT PROVIDE ADEQUATE PIPE SUPPORT, ADDITIONAL TRENCH DEPTH SHALL BE EXCAVATED TO A STABLE FOUNDATION AND BACKFILLED WITH APPROVED GRANULAR MATERIAL. BACKFILL, REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL SHALL BE AT THE CONTRACTOR'S EXPENSE.

7) THE CONTRACTOR SHALL REMOVE ALL ROCK THAT IS SHATTERED BELOW GRADE AND REFILL. THE EXCAVATION TO THE REQUIRED GRADE WITH COMPACTED GRAVEL. LEDGE ROCK, BOULDERS, OR LARGE STONES WILL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF 4 INCHES BELOW AND ON EACH SIDE OF PIPE. ALL LOOSE DIRT AND ROCK WILL BE REMOVED FROM THE TRENCH BOTTOM BEFORE PLACEMENT OF BEDDING MATERIAL.

8) DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONE, ORGANIC MATERIAL OR OTHER UNSTABLE MATERIALS SHALL NOT BE USED FOR FINAL BACKFILL WITHIN 2 FEET OF THE TOP OF THE PIPE.

9) THE INTERIOR OF THE PIPE, AS THE WORK PROGRESSES, SHALL BE CLEANED OF ALL DIRT, JOINTING MATERIAL, AND SUPERFLUOUS MATERIAL OF EVERY DESCRIPTION.

10) PIPE CROSSING OF ALL PROPOSED AND/OR EXISTING STREETS, AND PARKING AREAS WILL BE BACKFILLED WITH TDOT No. 57 STONE TO THE TOP OF THE TRENCH SURFACE.

11) MINIMUM COVER OVER WATER PIPE IN DEVELOPED AREAS IS TO BE 36" UNLESS OTHERWISE NOTED.
MINIMUM COVER OVER VALVE NUT IS TO BE 12": MAXIMUM COVER IS TO BE 36".

12) THE ENGINEER AND OWNER MAY APPROVE EXTRA DEPTH TRENCHING WHERE VERTICAL BENDS ARE IDENTIFIED. WHERE EXTRA DEPTH TRENCHING IS APPROVED, THE CONTRACTOR SHALL NOT EXCEED THE MAXIMUM DEFLECTION OF THE PIPE JOINTS RECOMMENDED BY THE PIPE MANUFACTURER.

PROJECT LAYOUT

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL LAYOUT ALL WORK. THE CONTRACTOR SHALL SET TRENCH LINE STATIONS AHEAD OF TRENCHING. THESE STATIONS SHALL BE SET AT 100 FOOT INTERVALS ALONG THE CENTER OF THE PIPELINE AND AT THE LOCATIONS OF PIPELINE ACCESSORIES (VALVES, HYDRANTS, FITTINGS,....).
PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CONTACT THE LOCAL UTILITY OFFICE AND ANY OTHER APPLICABLE UTILITY COMPANY WHICH MAY HAVE UNDERGROUND UTILITIES ON OR IN CONTIGUOUS TO, THE PROJECT SITE.
THE CONTRACTOR IS RESPONSIBLE FOR MANAGING STORM WATER RUNOFF AND EROSION DURING CONSTRUCTION AS REQUIRED BY ORDINANCES SET FORTH BY CITY OF COLUMBIA AND ANY OTHER RESPONSIBLE AGENCIES.
CONSTRUCTION INSPECTION AND CERTIFICATION SHALL BE PROVIDED BY THE LOCAL UTILITY IF SO DESIRED/REQUIRED. NO TRENCHES SHALL BE BACKFILLED UNTIL THE LOCAL UTILITY AND/OR DESIGN ENGINEER HAS APPROVED THE GRADE AND ALIGNMENT OF THE WATER LINE.
THE LAYOUT OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

GENERAL EROSION CONTROL NOTES

1. SEDIMENT BARRIERS SHALL BE PLACED AS INDICATED ON THE PLAN PRIOR TO ANY GRADING WORK.

2. DUST CONTROL ON SITE SHALL BE KEPT WITHIN ACCEPTABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER APPROPRIATE METHODS.

3. ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF THE CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.

4. THE LOCATIONS OF EROSION CONTROL DEVICES SHALL BE ADJUSTED AS CONSTRUCTION PROGRESSES TO MAINTAIN A FUNCTIONAL EROSION CONTROL SYSTEM.

5. ANY FAILURE OF ANY EROSION CONTROL DEVICE TO FUNCTION AS INTENDED FOR ANY REASON SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.

6. INSPECTIONS
A. AN INSPECTION SHALL BE CONDUCTED AT LEAST TWICE EACH CALENDAR WEEK AND AT LEAST 72 HOURS APART. PERMITTEE MUST PROVIDE WRITTEN NOTIFICATION TO LOCAL ENVIRONMENTAL FIELD OFFICE.
B. INSPECTIONS SHALL INCLUDE OBSERVATIONS OF THE FOLLOWING:
1. DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED
2. AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION
3. EROSION AND SEDIMENT CONTROL DEVICES
4. OUTFALL POINTS
C. INADEQUATE CONTROL MEASURES OR MEASURES IN DISREPAIR SHOULD SHALL BE MODIFIED OR REPAIRED WITHIN SEVEN (7) DAYS OF THE NEED BEING IDENTIFIED.
D. PERSON CONDUCTING INSPECTION MAY BE LICENSED ENGINEER OR LANDSCAPE ARCHITECT,
CPESC, OR COMPLETED TDEC LEVEL II OR LEVEL I.

7. EROSION CONTROL DEVICES SHALL BE REPAIRED AS NECESSARY TO MAINTAIN A FUNCTIONAL EROSION CONTROL SYSTEM.

8. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED AND THEN REMOVED SO THAT DRAINAGE OF THE SITE IS NOT IMPAIRED.

9. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 15 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING.

10. SILT BARRIERS TO BE CLEANED WHEN THEY ARE APPROXIMATELY 50% OBSTRUCTED BY SEDIMENT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SILT BARRIERS SHALL BE REPLACED AS EFFECTIVENESS IS SIGNIFICANTLY REDUCED.

11. SEDIMENT BASIN/POND TO BE CLEANED OF DEPOSITS WHEN CAPACITY HAS REACHED 50% OF VOLUME THROUGH OUT ALL PHASES OF CONSTRUCTION OR AS DIRECTED BY THE OWNERS REPRESENTATIVE.

12. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4 INCHES.

13. ALL DISTURBED AREAS SHALL BE SEEDED AND RESEEDED AS NECESSARY TO PROVIDE A STABILIZED SITE.

14. REMOVE ALL SEDIMENT FROM ALL DRAINAGE STRUCTURES PRIOR TO ACCEPTANCE BY THE OWNER.

15. CONTRACTOR TO INSTALL ALL EROSION CONTROL DEVICES IN ACCORDANCE WITH LOCAL CODES.

16. CONTRACTOR TO PROVIDE A RAIN GAUGE, MONITOR, AND RECORD RAIN DATA DAILY AND MONITOR AND RECORD THE START AND END TIME FOR EACH RAIN EVENT.

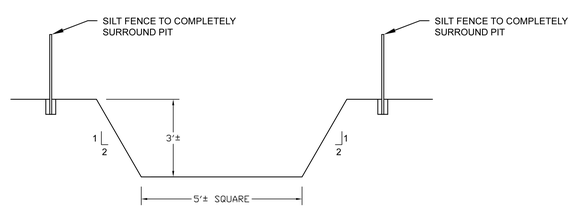
GENERAL GRADING NOTES:

1. ALL SUBGRADE AREAS TO BE PROOF ROLLED WITH FULLY LOADED TANDEM AXLE TRUCK WITH NO PUMPING OR YIELDING SOILS.
2. ALL SUBGRADE AREAS UNDER ROADWAY, PARKING, AND BUILDING EXTENDING OUT FIVE FEET RECOMMENDED TO BE TESTED FOR COMPACTION WITH A PASS/FAIL CRITERIA AS FOLLOWS:
> 98% COMPACTION RELATIVE TO STANDARD PROCTOR, AND
MOISTURE WITHIN - 1% AND 3+% OF OPTIMUM.
3. STONE TESTED FOR COMPACTION WITH A PASS/FAIL CRITERIA AS FOLLOWS:
> 95% COMPACTION RELATIVE TO STANDARD PROCTOR, AND
MOISTURE WITHIN - 1% AND 3+% OF OPTIMUM.
4. AT THE END OF EACH WORKING DAY (WHEN RAIN IS FORECAST), THE SOILS MUST BE SEALED BY AN APPROPRIATE METHOD, E.G., SMOOTH ROLLING.
5. PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITY, CONTRACTOR TO OBTAIN CONSTRUCTION STORM WATER PERMIT AND CONTACT TENNESSEE ONE-CALL AT (800) 351-1111.
6. CONTRACTOR TO INSTALL ALL EROSION AND SEDIMENT CONTROL PROTECTION PRIOR TO GRADING AND PROVIDE CONTINUOUS MAINTENANCE OF SAME.
7. CONTRACTOR TO PLACE FILL IN MAXIMUM 8-INCH LIFTS.

MISCELLANEOUS NOTES

ALL CONSTRUCTION MATERIALS AND METHODS PERFORMED ON THIS PROJECT SHALL CONFORM TO THE FOLLOWING DOCUMENTS:
A: THE CONSTRUCTION PLANS AS APPROVED BY CITY OF COLUMBIA, TN.
B: THE CITY OF COLUMBIA, TN APPROVAL LETTERS.
C: APPROVED SHOP DRAWINGS.
D: ANY SPECIAL SPECIFICATIONS OF SPECIAL PROVISIONS THAT MAY BE ASSIGNED TO THIS PROJECT.
SHOULD CIRCUMSTANCES EXIST WHERE THE CONSTRUCTION MATERIALS' AND/OR METHODS ARE NOT SPECIFICALLY REFERENCED, THE CONTRACTOR SHALL ADMINISTER RECOMMENDATIONS DEVELOPED BY THE ENGINEER AND APPROVED BY THE LOCAL UTILITY.
E. CITY OF COLUMBIA, TN STANDARD SPECIFICATIONS AND DETAILS.

CONTRACTOR TO PROVIDE AND SHALL ALWAYS USE A CONCRETE WASHDOWN CONTROL AS SHOWN BELOW.



NOTE: CONTRACTOR TO CLEAN WHEN WASHOUT MATERIAL ACCUMULATES TO A DEPTH OF 18 INCHES.

Ahler & Associates, LLC
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P.O. BOX 1636
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PLANNING
DESIGN
CIVIL

SEAL

JOSEPH E. AHLER
REGISTERED ENGINEER
AGRICULTURE
CIVIL
STATE OF TENNESSEE
No. 14736

HIGHLAND POINTE AT BEAR CREEK

1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	1/17/23	ORIGINAL ISSUE

PROJECT No:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

COVER SHEET
-

C0.0



EXISTING CONDITIONS
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
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SEAL

JOSEPH E AHLER
REGISTERED ENGINEER
No. 109024
STATE OF TENNESSEE
No. 14745

HIGHLAND POINTE AT BEAR CREEK

1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

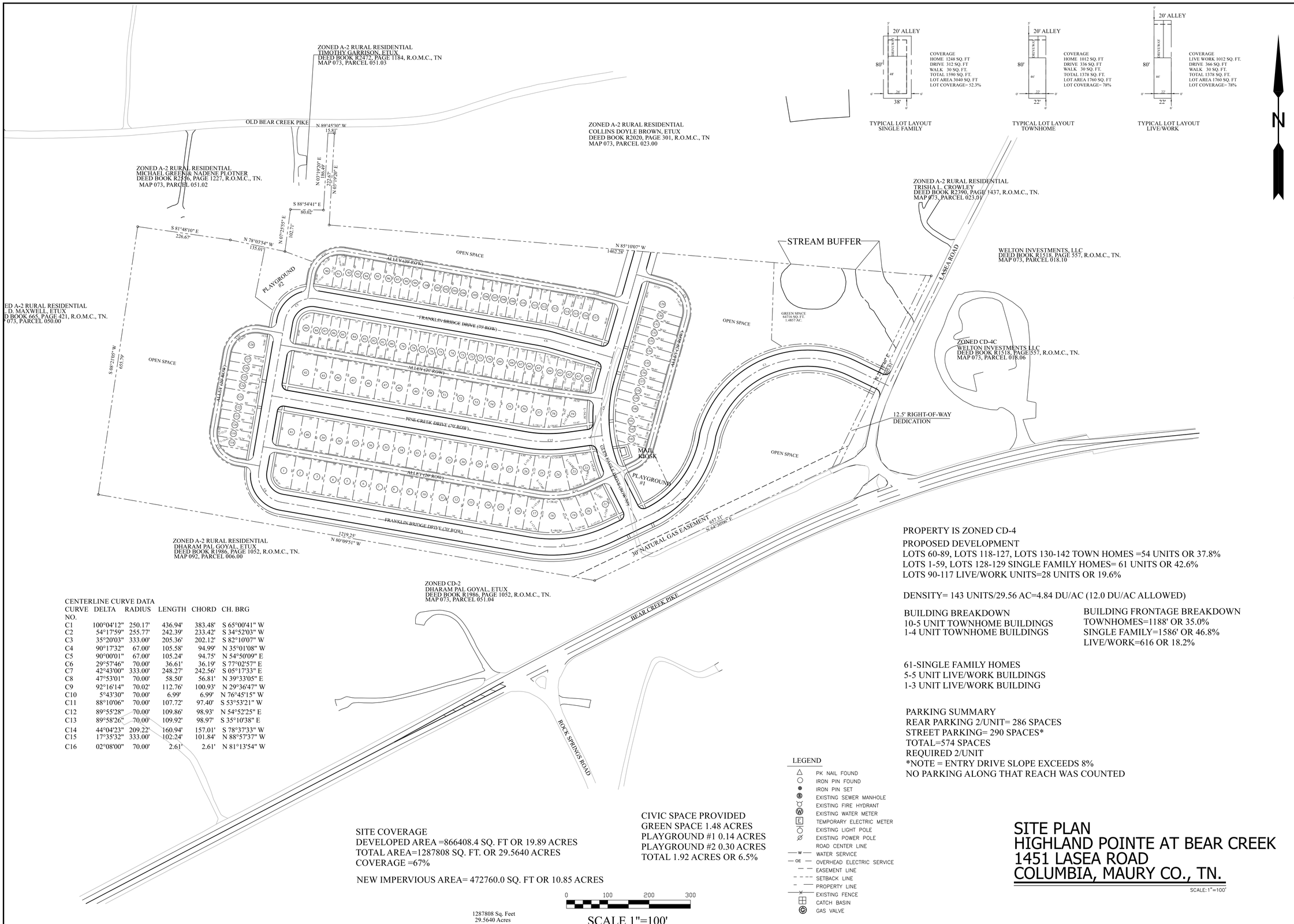
ISSUE:	MARK	DATE	DESCRIPTION
	1	7/04/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

EXISITING CONDITIONS
-

C2.0



CENTERLINE CURVE DATA

CURVE NO.	DELTA	RADIUS	LENGTH	CHORD	CH. BRG
C1	100°04'12"	250.17'	436.94'	383.48'	S 65°00'41" W
C2	54°17'59"	255.77'	242.39'	233.42'	S 34°52'03" W
C3	35°20'03"	333.00'	205.36'	202.12'	S 82°10'07" W
C4	90°17'32"	67.00'	105.58'	94.99'	N 35°01'08" W
C5	90°00'01"	67.00'	105.24'	94.75'	N 54°50'09" E
C6	29°57'46"	70.00'	36.61'	36.19'	S 77°02'57" E
C7	42°43'00"	333.00'	248.27'	242.56'	S 05°17'33" E
C8	47°53'01"	70.00'	58.50'	56.81'	N 39°33'05" E
C9	92°16'14"	70.02'	112.76'	100.93'	N 29°36'47" W
C10	5°43'30"	70.00'	6.99'	6.99'	N 76°45'15" W
C11	88°10'06"	70.00'	107.72'	97.40'	S 53°53'21" W
C12	89°55'28"	70.00'	109.86'	98.93'	N 54°52'25" E
C13	89°58'26"	70.00'	109.92'	98.97'	S 35°10'38" E
C14	44°04'23"	209.22'	160.94'	157.01'	S 78°37'33" W
C15	17°35'32"	333.00'	102.24'	101.84'	N 88°57'37" W
C16	02°08'00"	70.00'	2.61'	2.61'	N 81°13'54" W

SITE COVERAGE
DEVELOPED AREA =866408.4 SQ. FT OR 19.89 ACRES
TOTAL AREA=1287808 SQ. FT. OR 29.5640 ACRES
COVERAGE =67%

NEW IMPERVIOUS AREA= 472760.0 SQ. FT OR 10.85 ACRES

CIVIC SPACE PROVIDED
GREEN SPACE 1.48 ACRES
PLAYGROUND #1 0.14 ACRES
PLAYGROUND #2 0.30 ACRES
TOTAL 1.92 ACRES OR 6.5%

LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- (S) EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- (W) EXISTING WATER METER
- [E] TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- —W— WATER SERVICE
- —OE— OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- (G) GAS VALVE

0 100 200 300

1287808 Sq. Feet
29.5640 Acres

SCALE 1"=100'

PROPERTY IS ZONED CD-4

PROPOSED DEVELOPMENT
LOTS 60-89, LOTS 118-127, LOTS 130-142 TOWN HOMES =54 UNITS OR 37.8%
LOTS 1-59, LOTS 128-129 SINGLE FAMILY HOMES= 61 UNITS OR 42.6%
LOTS 90-117 LIVE/WORK UNITS=28 UNITS OR 19.6%

DENSITY= 143 UNITS/29.56 AC=4.84 DU/AC (12.0 DU/AC ALLOWED)

BUILDING BREAKDOWN
10-5 UNIT TOWNHOME BUILDINGS
1-4 UNIT TOWNHOME BUILDINGS

BUILDING FRONTAGE BREAKDOWN
TOWNHOMES=1188' OR 35.0%
SINGLE FAMILY=1586' OR 46.8%
LIVE/WORK=616 OR 18.2%

61-SINGLE FAMILY HOMES
5-5 UNIT LIVE/WORK BUILDINGS
1-3 UNIT LIVE/WORK BUILDING

PARKING SUMMARY
REAR PARKING 2/UNIT= 286 SPACES
STREET PARKING= 290 SPACES*
TOTAL=574 SPACES
REQUIRED 2/UNIT
*NOTE = ENTRY DRIVE SLOPE EXCEEDS 8%
NO PARKING ALONG THAT REACH WAS COUNTED

SITE PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
STATE OF TENNESSEE

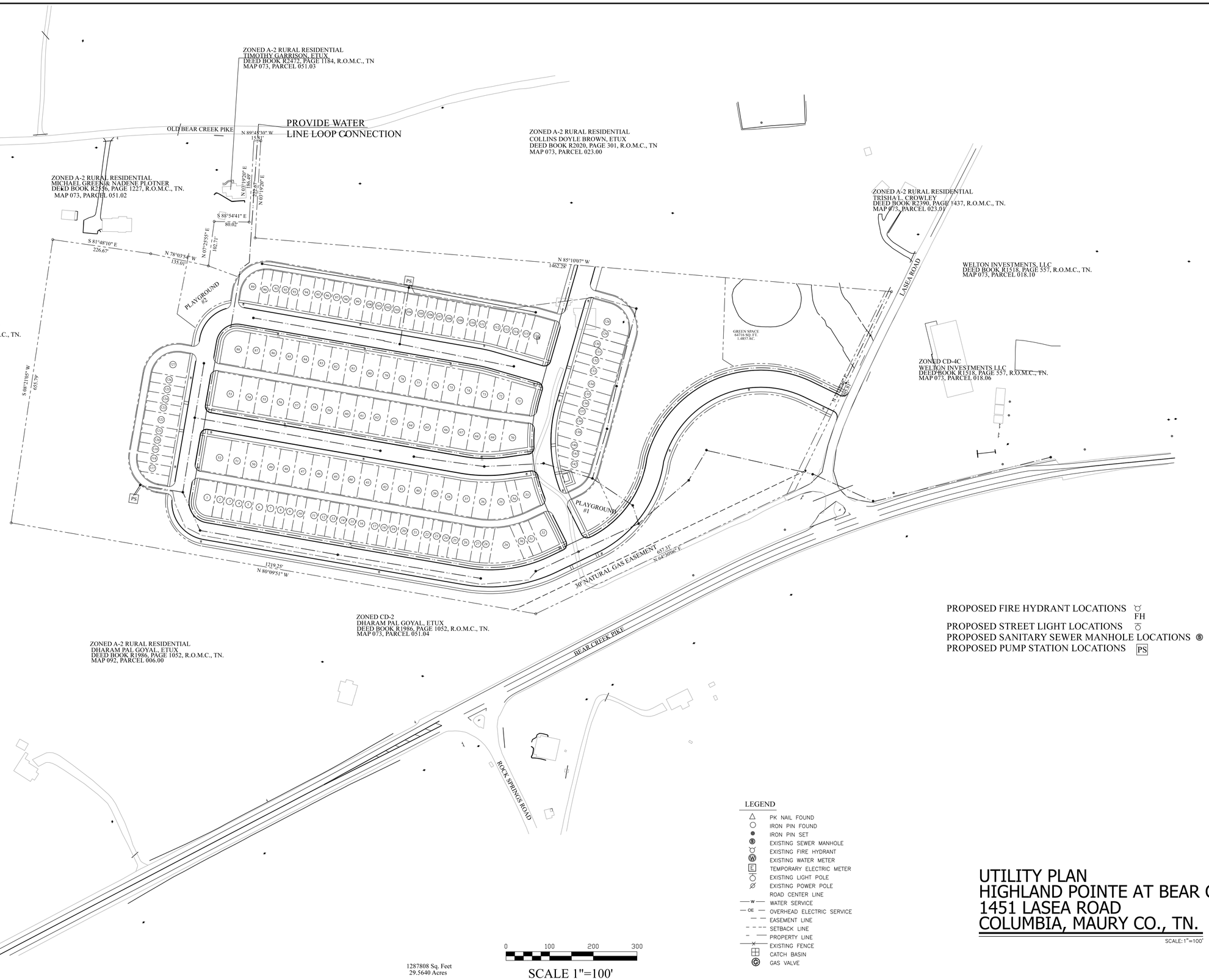
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
SITE PLAN
-

C3.0



UTILITY PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL

JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OF
TENNESSEE
No. 14745
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

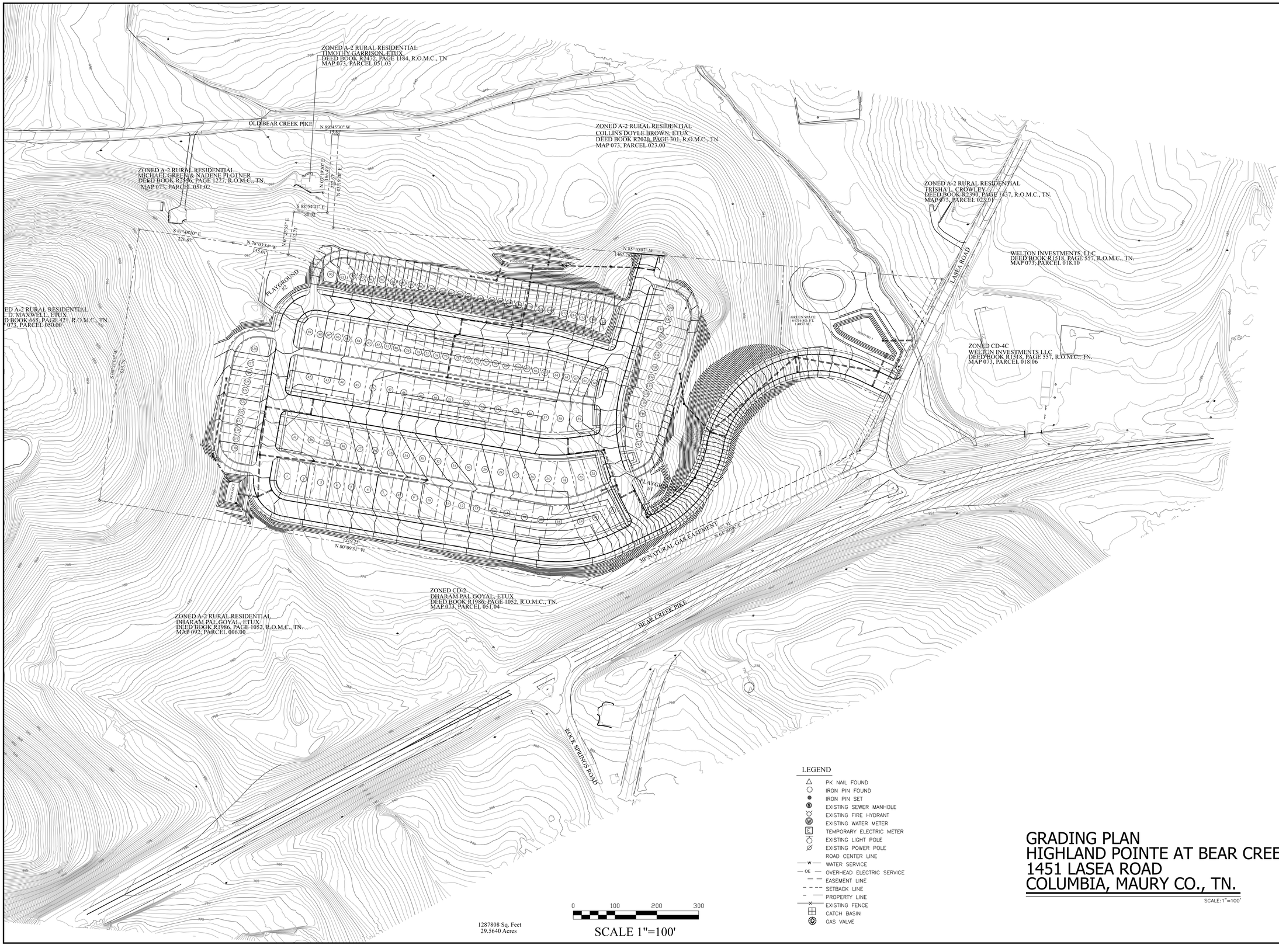
ISSUE:	MARK	DATE	DESCRIPTION
	-	1/04/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

UTILITY PLAN
-

C4.0



GRADING PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL

JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
CERTIFICATE NO. 114745
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	7/04/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

GRADING PLAN
-

C5.0

TENNESSEE GENERAL CONSTRUCTION PERMIT NO. TNR

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

N 89°45'30" W
15.81'

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2556, PAGE 1227, R.O.M.C., TN.
MAP 073, PARCEL 051.02

N 03°19'20" E
186.49'

N 03°19'20" E
212.15'

S 88°54'41" E
80.02'

N 07°25'55" E
102.71'

S 81°48'10" E
226.67'

N 78°03'54" W
135.01'

ZONED A-2 RURAL RESIDENTIAL
L. D. MAXWELL, ETUX
D BOOK 665, PAGE 421, R.O.M.C., TN.
' 073, PARCEL 050.00

S 08°21'05" W
653.79'

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 023.00

N 85°10'07" W
1462.24'

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2390, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

LASEA ROAD

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.10

GREEN SPACE
64716 SQ.FT.
1.4857 AC.

ZONED CD-4C
WELTON INVESTMENTS LLC
DEEDBOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

S 77°55'E
200.00'

INSTALL
CONSTRUCTION
ENTRANCE

INSTALL
SILT FENCE

LIMITS OF
DISTURBANCE

1219.25'
N 80°09'51" W

30' NATURAL GAS EASEMENT

657.31'
N 64°30'06" E

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

BEAR CREEK PIKE

ROCK SPRINGS ROAD

TOTAL AREA=1287808 SQ. FT OR 29.56 ACRES
TOTAL DISTURBED AREA=913481 SQ. FT. OR 20.97 ACRES

1287808 Sq. Feet
29.5640 Acres

0 100 200 300
SCALE 1"=100'

LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- (S) EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- (W) EXISTING WATER METER
- [E] TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- —W— WATER SERVICE
- —OE— OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- (G) GAS VALVE

GENERAL EROSION CONTROL NOTES

1. SEDIMENT BARRIERS SHALL BE PLACED AS INDICATED ON THE PLAN PRIOR TO ANY GRADING WORK.
2. DUST CONTROL ON SITE SHALL BE KEPT WITHIN ACCEPTABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER APPROPRIATE METHODS.
3. ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF THE CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF EROSION CONTROL DEVICES SHALL BE ADJUSTED AS CONSTRUCTION PROGRESSES TO MAINTAIN A FUNCTIONAL EROSION CONTROL SYSTEM.
5. ANY FAILURE OF ANY EROSION CONTROL DEVICE TO FUNCTION AS INTENDED FOR ANY REASON SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
6. EROSION CONTROL DEVICES SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND AT LEAST DAILY DURING PROLONGED PERIODS OF CONTINUOUS RAINFALL. MINIMUM CLEANING AND REPAIR FREQUENCY SHALL BE ONCE PER MONTH.
7. EROSION CONTROL DEVICES SHALL BE REPAIRED AS NECESSARY TO MAINTAIN A FUNCTIONAL EROSION CONTROL SYSTEM.
8. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED AND THEN REMOVED SO THAT DRAINAGE OF THE SITE IS NOT IMPAIRED.
9. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 15 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING.
10. SILT BARRIERS TO BE CLEANED WHEN THEY ARE APPROXIMATELY 50% OBSTRUCTED BY SEDIMENT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SILT BARRIERS SHALL BE REPLACED AS EFFECTIVENESS IS SIGNIFICANTLY REDUCED.
11. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4 INCHES.
12. ALL DISTURBED AREAS SHALL BE SEEDED AND RESEEDED AS NECESSARY TO PROVIDE A STABILIZED SITE.
13. REMOVE ALL SEDIMENT FROM ALL DRAINAGE STRUCTURES PRIOR TO ACCEPTANCE BY THE OWNER.
14. CONTRACTOR TO INSTALL ALL EROSION CONTROL DEVICES IN ACCORDANCE WITH LOCAL CODES.

SEEDING NOTES:

1. SOIL TO BE TILLED TO A DEPTH OF 4-INCHES.
2. SEED MIX TO BE A DROUGHT TOLERANCE FESCUE BLEND.
3. SEED TO BE SOWN AT A RATE OF 6#/1,000 S.F.
4. A 10-10-10 FERTILIZER IS TO BE SPREAD AT A RATE OF 10#/1,000 S.F.
5. LIME IS TO BE SPREAD AT A RATE OF 1,000#/ACRE.
6. STRAW TO BE PLACED AT A RATE OF 2 BALES/1,000 S.F.
7. CONTRACTOR IS RESPONSIBLE FOR RESEEDING BARE UNTIL AN ACCEPTABLE STAND OF GRASS IS ACHIEVED.

PHASE ONE
EROSION AND SEDIMENT CONTROL PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OCTOBER 19, 1982
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
EROSION CONTROL PLAN

C6.0

TENNESSEE GENERAL CONSTRUCTION PERMIT NO. TNR

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2556, PAGE 1227, R.O.M.C., TN.
MAP 073, PARCEL 051.02

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 023.00

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2390, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.10

ZONED CD-4C
WELTON INVESTMENTS LLC
DEEDBOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

ED A-2 RURAL RESIDENTIAL
. D. MAXWELL, ETUX
D BOOK 665, PAGE 421, R.O.M.C., TN.
073, PARCEL 050.00

LASEA ROAD

INSTALL CONSTRUCTION ENTRANCE

INSTALL SILT FENCE

LIMITS OF DISTURBANCE

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

BEAR CREEK PIKE

ROCK SPRINGS ROAD

50' NATURAL GAS EASEMENT

TOTAL AREA=1287808 SQ. FT OR 29.56 ACRES
TOTAL DISTURBED AREA=913481 SQ. FT. OR 20.97 ACRES

1287808 Sq. Feet
29.5640 Acres

0 100 200 300
SCALE 1"=100'

IP PROVIDE INLET PROTECTION

OP PROVIDE OUTLET PROTECTION

LEGEND
- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

GENERAL EROSION CONTROL NOTES

1. SEDIMENT BARRIERS SHALL BE PLACED AS INDICATED ON THE PLAN PRIOR TO ANY GRADING WORK.
2. DUST CONTROL ON SITE SHALL BE KEPT WITHIN ACCEPTABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER APPROPRIATE METHODS.
3. ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF THE CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
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9. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 15 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING.
10. SILT BARRIERS TO BE CLEANED WHEN THEY ARE APPROXIMATELY 50% OBSTRUCTED BY SEDIMENT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SILT BARRIERS SHALL BE REPLACED AS EFFECTIVENESS IS SIGNIFICANTLY REDUCED.
11. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4 INCHES.
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13. REMOVE ALL SEDIMENT FROM ALL DRAINAGE STRUCTURES PRIOR TO ACCEPTANCE BY THE OWNER.
14. CONTRACTOR TO INSTALL ALL EROSION CONTROL DEVICES IN ACCORDANCE WITH LOCAL CODES.

SEEDING NOTES:

1.SOIL TO BE TILLED TO A DEPTH OF 4-INCHES.
2. SEED MIX TO BE A DROUGHT TOLERANCE FESCUE BLEND.
3. SEED TO BE SOWN AT A RATE OF 6#/1,000 S.F.
4. A 10-10-10 FERTILIZER IS TO BE SPREAD AT A RATE OF 10#/1,000 S.F.
5. LIME IS TO BE SPREAD AT A RATE OF 1,000#/ACRE.
6. STRAW TO BE PLACED AT A RATE OF 2 BALES/1,000 S.F.
7. CONTRACTOR IS RESPONSIBLE FOR RESEEDING BARE UNTIL AN ACCEPTABLE STAND OF GRASS IS ACHIEVED.

PHASE TWO
EROSION AND SEDIMENT CONTROL PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
CERTIFICATE NO. 114745
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
EROSION CONTROL PLAN

C7.0

TENNESSEE GENERAL CONSTRUCTION PERMIT NO. TNR

STABILIZATION SYMBOLS

VM VEGETATIVE MAT AND SEED

SS SEED AND STRAW(ALL AREAS BETWEEN CURB & SIDEWALK)

AP ASPHALT PAVING

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN& NADENE PLOTNER
DEED BOOK R2556, PAGE 1227, R.O.M.C., TN.
MAP 073, PARCEL 051.02

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 023.00

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2390, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 023.01

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.10

ZONED CD-4C
WELTON INVESTMENTS LLC
DEEDBOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

LASEA ROAD

REMOVE CONSTRUCTION ENTRANCE

REMOVE SILT FENCE

ZONED A-2 RURAL RESIDENTIAL
D. D. MAXWELL, ETUX
D BOOK 665, PAGE 421, R.O.M.C., TN.
073, PARCEL 050.00

LIMITS OF DISTURBANCE

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

BEAR CREEK PIKE

ROCK SPRINGS ROAD

10' NATURAL GAS EASEMENT

IP REMOVE INLET PROTECTION

OP PROVIDE OUTLET PROTECTION

LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- WATER SERVICE
- OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

GENERAL EROSION CONTROL NOTES

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2. DUST CONTROL ON SITE SHALL BE KEPT WITHIN ACCEPTABLE LIMITS BY SPRINKLING WITH WATER OR BY OTHER APPROPRIATE METHODS.
3. ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF THE CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
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13. REMOVE ALL SEDIMENT FROM ALL DRAINAGE STRUCTURES PRIOR TO ACCEPTANCE BY THE OWNER.
14. CONTRACTOR TO INSTALL ALL EROSION CONTROL DEVICES IN ACCORDANCE WITH LOCAL CODES.

SEEDING NOTES:

1.SOIL TO BE TILLED TO A DEPTH OF 4-INCHES.
2. SEED MIX TO BE A DROUGHT TOLERANCE FESCUE BLEND.
3. SEED TO BE SOWN AT A RATE OF 6#/1,000 S.F.
4. A 10-10-10 FERTILIZER IS TO BE SPREAD AT A RATE OF 10#/1,000 S.F.
5. LIME IS TO BE SPREAD AT A RATE OF 1,000#/ACRE.
6. STRAW TO BE PLACED AT A RATE OF 2 BALES/1,000 S.F.
7. CONTRACTOR IS RESPONSIBLE FOR RESEEDING BARE UNTIL AN ACCEPTABLE STAND OF GRASS IS ACHIEVED.

TOTAL AREA=1287808 SQ. FT OR 29.56 ACRES
TOTAL DISTURBED AREA=913481 SQ. FT. OR 20.97 ACRES

1287808 Sq. Feet
29.5640 Acres

0 100 200 300

SCALE 1"=100'

PHASE THREE
EROSION AND SEDIMENT CONTROL PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517
SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
CERTIFICATE NO. 114745
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	4/10/23	ORIGINAL ISSUE

PROJECT NO:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION

EROSION CONTROL PLAN

C8.0

APPROXIMATE TOTAL TREE CANOPY(UNDEVELOPED)=23.9 ACRES
APPROX. TOTAL TREE CANOPY(REMAININGG)=7.2 ACRES
TOTAL TREE CANOPY(UNDEVELOPED)=23.9/29.5=81%
TOTAL TREE CANOPY(RETAINED)=7.2/23.9=30.1%

AERIAL PHOTOGRAPHY FROM 2021 BY MAPTECH, LLC

ZONED A-2 RURAL RESIDENTIAL
TIMOTHY GARRISON, ETUX
DEED BOOK R2472, PAGE 1184, R.O.M.C., TN
MAP 073, PARCEL 051.03

OLD BEAR CREEK PIKE

N 89°58'30" W
75.81'

ZONED A-2 RURAL RESIDENTIAL
COLLINS DOYLE BROWN, ETUX
DEED BOOK R2020, PAGE 301, R.O.M.C., TN
MAP 073, PARCEL 025.00

ZONED A-2 RURAL RESIDENTIAL
MICHAEL GREEN & NADENE PLOTNER
DEED BOOK R2586, PAGE 1272, R.O.M.C., TN.
MAP 073, PARCEL 051.02

N 03°19'20" E
25.00'
N 03°19'20" E
25.00'
S 88°54'45" E
30.02'
S 81°38'00" E
226.67'
N 78°03'54" W
185.01'
N 07°25'55" E
102.73'

TREE SAVE AREA

PLAYGROUND #2

ZONED A-2 RURAL RESIDENTIAL
D. MAXWELL, ETUX
DEED BOOK 665, PAGE 421, R.O.M.C., TN.
MAP 073, PARCEL 050.00

N 85°10'07" W
1462.71'

TREE SAVE AREA

GREEN SPACE
64316 SQ FT
1.4857 AC

ZONED A-2 RURAL RESIDENTIAL
TRISHA L. CROWLEY
DEED BOOK R2569, PAGE 1437, R.O.M.C., TN.
MAP 073, PARCEL 022.01

LASEA ROAD

WELTON INVESTMENTS, LLC
DEED BOOK R1518, PAGE 557, R.O.M.C., TN
MAP 073, PARCEL 018.10

ZONED CD-4C
WELTON INVESTMENTS LLC
DEEDBOOK R1518, PAGE 557, R.O.M.C., TN.
MAP 073, PARCEL 018.06

EXISTING TREE CANOPY LIMITS

TREE SAVE AREA

LIMITS OF DISTURBANCE

N 80°09'51" W
1219.25'

TREE SAVE AREA

PLAYGROUND #1

30' NATURAL GAS EASEMENT

S 04°30'00" E
657.35'

ZONED CD-2
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 073, PARCEL 051.04

ZONED A-2 RURAL RESIDENTIAL
DHARAM PAL GOYAL, ETUX
DEED BOOK R1986, PAGE 1052, R.O.M.C., TN.
MAP 092, PARCEL 006.00

BEAR CREEK PIKE

ROCK SPRINGS ROAD

LEGEND

- PK NAIL FOUND
- IRON PIN FOUND
- IRON PIN SET
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- TEMPORARY ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING POWER POLE
- ROAD CENTER LINE
- W — WATER SERVICE
- OE — OVERHEAD ELECTRIC SERVICE
- EASEMENT LINE
- SETBACK LINE
- PROPERTY LINE
- EXISTING FENCE
- CATCH BASIN
- GAS VALVE

1287808 Sq. Feet
29.5640 Acres

0 100 200 300
SCALE 1"=100'

TREE PRESERVATION PLAN
HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA, MAURY CO., TN.

SCALE: 1"=100'

Ahler & Associates, LLC
CONSULTING ENGINEERS & LAND SURVEYORS
P.O. BOX 1636
SPRING HILL, TN 37174
PH 615.481.3106
FAX: 615.523.1517

SURVEYING
PLANNING
DESIGN
CIVIL

SEAL
JOSEPH E AHLER
REGISTERED ENGINEER
AGRICULTURE
OCTOBER
No. 14745
STATE OF TENNESSEE

HIGHLAND POINTE AT BEAR CREEK
1451 LASEA ROAD
COLUMBIA,MAURY CO., TN

ISSUE:	MARK	DATE	DESCRIPTION
	-	11/10/23	ORIGINAL ISSUE

PROJECT No:	NUMBER
DWG. FILE:	DWGFILE
DRAWN BY:	JEA
CHK'D BY:	JEA

SHEET DESCRIPTION
TREE PRESERVATION PLAN

C9.0

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

7 February 2023

Stuart Beattie
Imer Development, LLC
1909 Columbia Avenue
Franklin, TN 37064

RE: Map 73, Parcel 51
CC: Joseph Ahler

Stuart,

This letter serves as confirmation that the City of Columbia Wastewater Department has the available capacity to service the above-referenced development. Major or minor improvements to existing infrastructure may or may not be necessary to satisfactorily convey the additional sanitary sewer flow from the above-referenced proposed development. Any extension to the existing sewer infrastructure will be initiated by the owner/developer, reviewed by our department and approved by the State of Tennessee. Grinder Pump systems are not allowed by the City of Columbia. The project must be advanced in accordance with local, state and federal rules, regulations and policies. Funding and construction of those improvements will remain the responsibility of the owner/developer. New customers will be required to pay all fees applicable at the time of connection. No detailed design plan for an extension of the sewer has been proposed at this time.

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

CPWS

January 13, 2023

Mr. Joseph Ahler
Ahler & Associates, LLC
Sent via email: joe.ahler@gmail.com

RE: Water Availability Letter
Highland Pointe at Bear Creek – 143 Lots
1451 Lasea Rd
Tax Map 73, Parcel 51
Columbia, Maury County, TN

Dear Mr. Ahler:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 143 units. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connections will be made to the existing 8-inch water main located on Lasea Road and the existing 6-inch water main located on Old Highway 99.
- Minimum size 8-inch, looped water mains are required throughout the development.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (143 SFUs)	$54,410.00

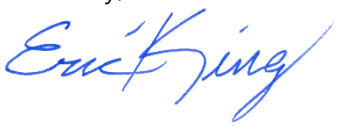
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and capacity fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $540 per ¾" meter (70 meters)	$77,220.00
Impact Fee: $4,500 per ¾" meter (70 meters)	$643,500.00
Total Meter and Impact Fees Due =	**$720,720.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact Mr. Jonathan Hardin or myself at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-103

TRAFFIC IMPACT STUDY

Crichton Property Development

Map 112 Parcel 003.00
Columbia, TN

T2-Eng.com

T-SQUARE ENGINEERING

TRAFFIC IMPACT STUDY

1451 Lasea Road Development
Tax Map 73 Parcel 51
Columbia, TN

Prepared for:

NASON HOMES

1909 Columbia Avenue
Franklin, TN 37064

Prepared by:

T-SQUARE ENGINEERING

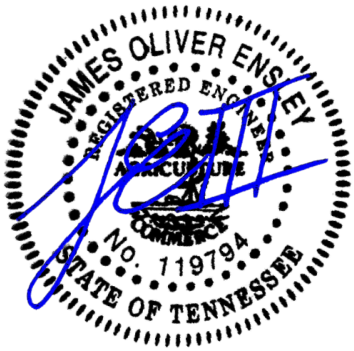
1329 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-eng.com

1329 West Main Street
Franklin, TN 37064
615.678.8212

www.T2-Eng.com

Certification

I certify that this Traffic Impact Study has been prepared by me and under my immediate supervision and that I have the experience and training in the field of traffic and transportation engineering.



10/18/21

James O. Ensley, III, P.E.
T-Square Engineering, Inc.
Project Manager – Traffic Division

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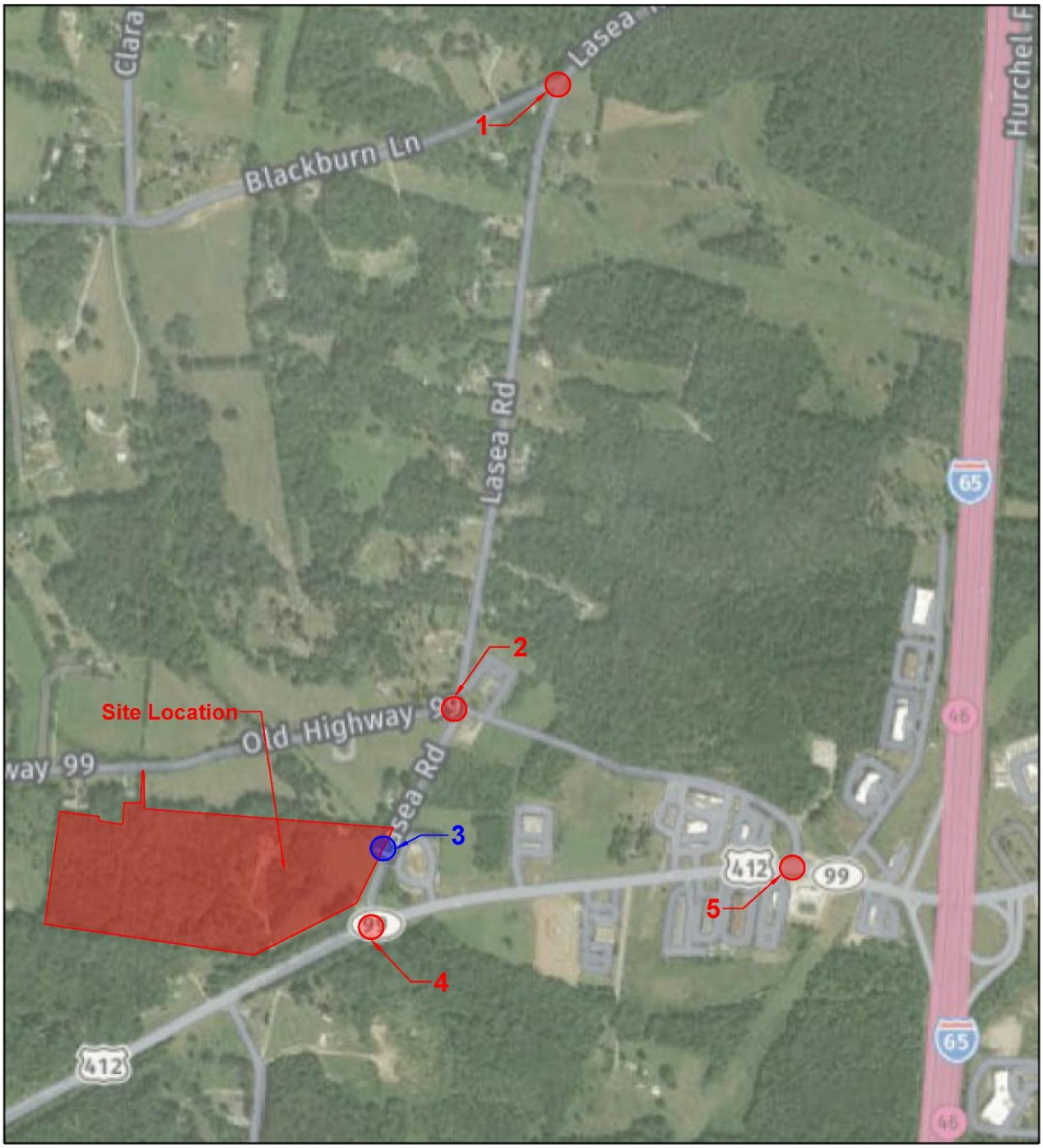
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Introduction

The purpose of this study is to analyze the traffic impacts on the surrounding roadway network associated with the proposed 1451 Lasea Road Development along Lasea Road in Columbia, TN. The proposed development will consist of approximately 208 multi-family (low-rise) housing units.

As shown on the Location Map and Preliminary Site Plan on Figures 1 and 2, respectively, the proposed development is located along the west side of Lasea Road in Columbia, TN. The development is proposing one (1) site access located approximately 400 feet north of the intersection of Lasea Road and Bear Creek Pike. The surrounding area is predominantly residential.

This study analyzes the existing and projected traffic operations of the roadway networks and intersections surrounding the proposed development. To evaluate the projected traffic operations, existing traffic volumes were grown (background traffic volumes) to a 2023 design year based on average traffic growth rates and combined with the generated traffic volumes from nearby background developments and estimated trips generated from the proposed development. Lastly, improvement recommendations were presented to alleviate the anticipated traffic volumes' effect on the existing roadway network near the site.



LEGEND
- Existing Study Intersection
- Proposed Study Intersection

N.T.S.

Figure 1
Location Map

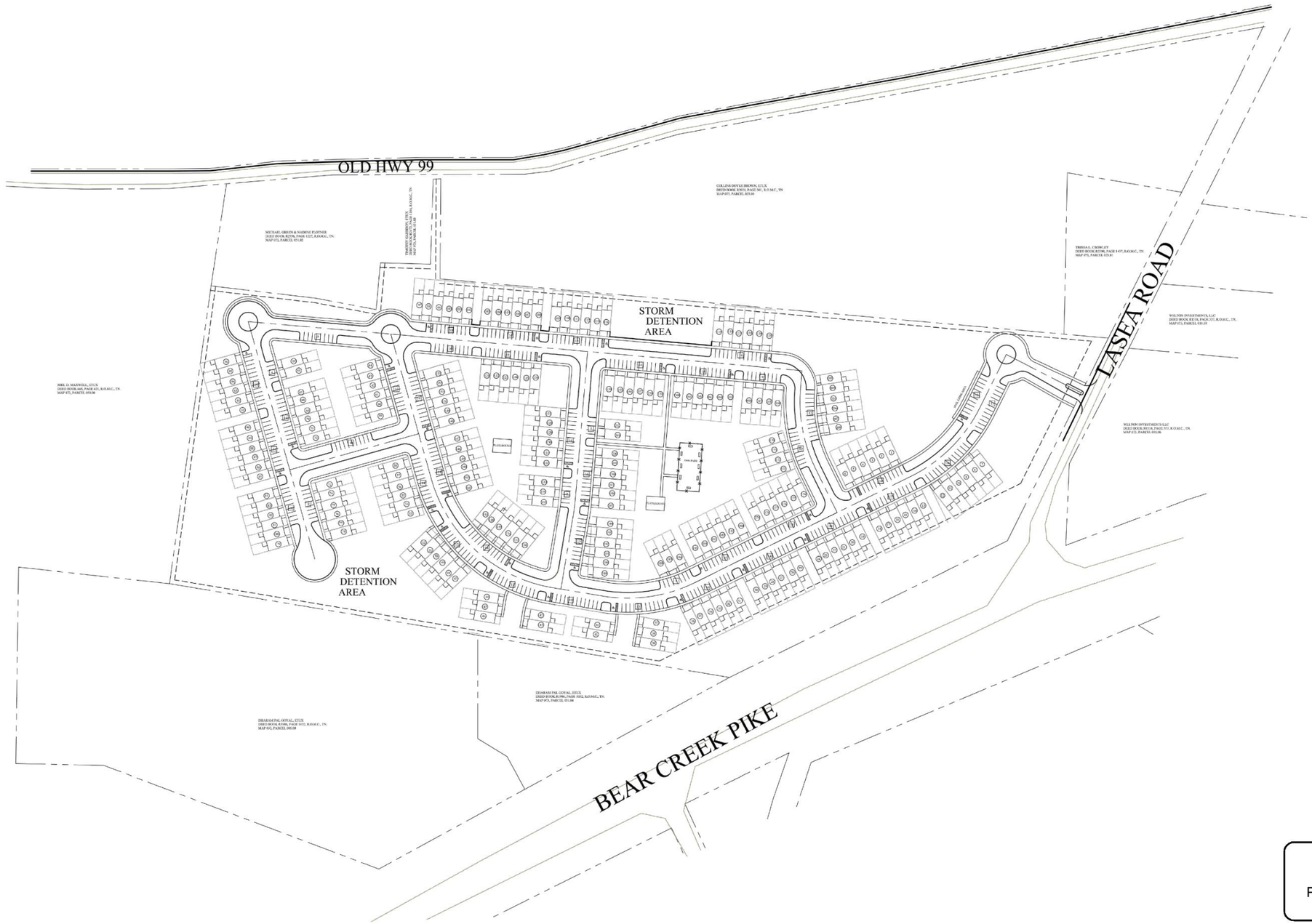


Figure 2
Preliminary Site Plan

Existing Study Area

Existing Roadway Network

The existing roadway network surrounding the proposed Quail Run Meadows Subdivisions includes Lasea Road, Bear Creek Pike (US-412), Old Highway 99, and Blackburn Lane. Below is a description of each roadway. Below is a description of each roadway serving the proposed development:

Lasea Road

Lasea Road is not functionally classified in the City of Columbia, and therefore assumed to be classified as a local roadway. Lasea Road is oriented in a north-south direction and provides a connection between Bear Creek Pike (US-412) to the south and Joe Brown Road to the north. Near the project site, Lasea Road is a two (2) lane roadway with one (1) ten (10) foot travel lane in each direction (northbound and southbound) and three (3) foot shoulders. There is no posted speed limit along Lasea Road. The assumed speed limit for Lasea Road is 35 MPH.



Looking south along Lasea Road

Bear Creek Pike (US-412)

Bear Creek Pike (US-412) is functionally classified by the City of Columbia as an arterial roadway. Bear Creek Pike (US-412) is oriented in an east-west direction and provides a connection between I-65 to the east and Nashville Highway to the west. Near the project site, Bear Creek Pike (US-412) is a three (3) lane roadway with one (1) twelve (12) foot travel lane in each direction (eastbound and westbound), a center two-way left turn lane (TWLTL), and four (4) foot shoulders. The posted speed limit along Bear Creek Pike (US-412) is 45 MPH.



Looking east along Bear Creek Pike (US-412)

Old Highway 99

Old Highway 99 is functionally classified by the City of Columbia as a collector roadway. Near the project site, Old Highway 99 is oriented in an east-west direction and provides a connection to Bear Creek Pike (US-412) to the east and west. Near the project site, Old Highway 99 is a two (2) lane roadway with one (1) nine (9) foot travel lane in each direction (eastbound and westbound) and one (1) foot shoulders. The posted speed limit along Old Highway 99 is 25 MPH.



Looking east along Old Highway 99

Blackburn Lane

Blackburn Lane is not functionally classified in the City of Columbia, and therefore assumed to be classified as a local roadway. Near the project site, Blackburn Lane is oriented in an east-west direction and provides a connection from Lasea Road to the east and Old Highway 99 to the west. Blackburn Lane is a two (2) lane roadway with one (1) nine (9) foot travel lane in each direction (eastbound and westbound). No shoulders currently exist along Blackburn Lane. The posted speed limit along Blackburn Lane is 45 MPH.



Looking west along Blackburn Lane

Existing Intersections

This study analyzed four (4) existing intersections within the vicinity of the project site. The intersections analyzed are listed below with a brief description of each, and Figure 3 shows the existing lane geometry at the intersections.

Lasea Road and Bear Creek Pike (US-412)


Looking west along Bear Creek Pike (US-412) toward its intersection with Lasea Road

The existing intersection of Lasea Road and Bear Creek Pike (US-412) is an unsignalized intersection with three (3) approaches. The southbound approach of Lasea Road has one (1) shared lane for left and right turn movements operating under a stop condition. The eastbound approach of Bear Creek Pike (US-412) has one (1) exclusive lane for left turn movements that transitions into a two-way left-turn lane and one (1) exclusive lane for through movements operating under a free-flow condition. The westbound approach of Bear Creek Pike (US-412) has one (1) shared lane for through and right turn movements operating under a free-flow condition.

Old Highway 99 and Bear Creek Pike (US-412)


Looking south along Old Highway 99 toward its intersection with Bear Creek Pike (US-412)

The existing intersection of Old Highway 99 and Bear Creek Pike (US-412) is an unsignalized intersection with three (3) approaches. The southbound approach of Old Highway 99 has one (1) shared lane for left and right turn movements operating under a stop condition. The eastbound approach of Bear Creek Pike (US-412) has one (1) exclusive lane for left turn movements that transitions into a two-way left-turn lane and one (1) exclusive lane for through movements operating under a free-flow condition. The westbound approach of Bear Creek Pike (US-412) has one (1) shared lane for through and right turn movements operating under a free-flow condition.

Lasea Road and Old Highway 99

The existing intersection of Lasea Road and Old Highway 99 is an unsignalized intersection with four (4) approaches. The southbound approach of Lasea Road has one (1) shared lane for left turn, through, and right turn movements operating under a stop condition. The northbound approach of Lasea Road has one (1) shared lane for left turn, through, and right turn movements operating under a stop condition. The eastbound approach of Old Highway 99 has one (1) shared lane for left turn, through, and right turn movements operating under a stop condition. The westbound approach of Old Highway 99 has one (1) shared lane for left turn, through, and right turn movements operating under a stop condition.



Looking north along Lasea Road toward its intersection with Old Highway 99

Lasea Road and Blackburn Lane

The existing intersection of Lasea Road and Blackburn Lane is an unsignalized intersection with three (3) approaches. The eastbound approach of Blackburn Lane has one (1) shared lane for left and right turn movements operating under a stop condition. The northbound approach of Lasea Road has one (1) shared lane for left turn and through movements operating under a free-flow condition. The southbound approach of Lasea Road has one (1) shared lane for through and right turn movements operating under a free-flow condition.



Looking east along Blackburn Lane toward its intersection with Lasea Road

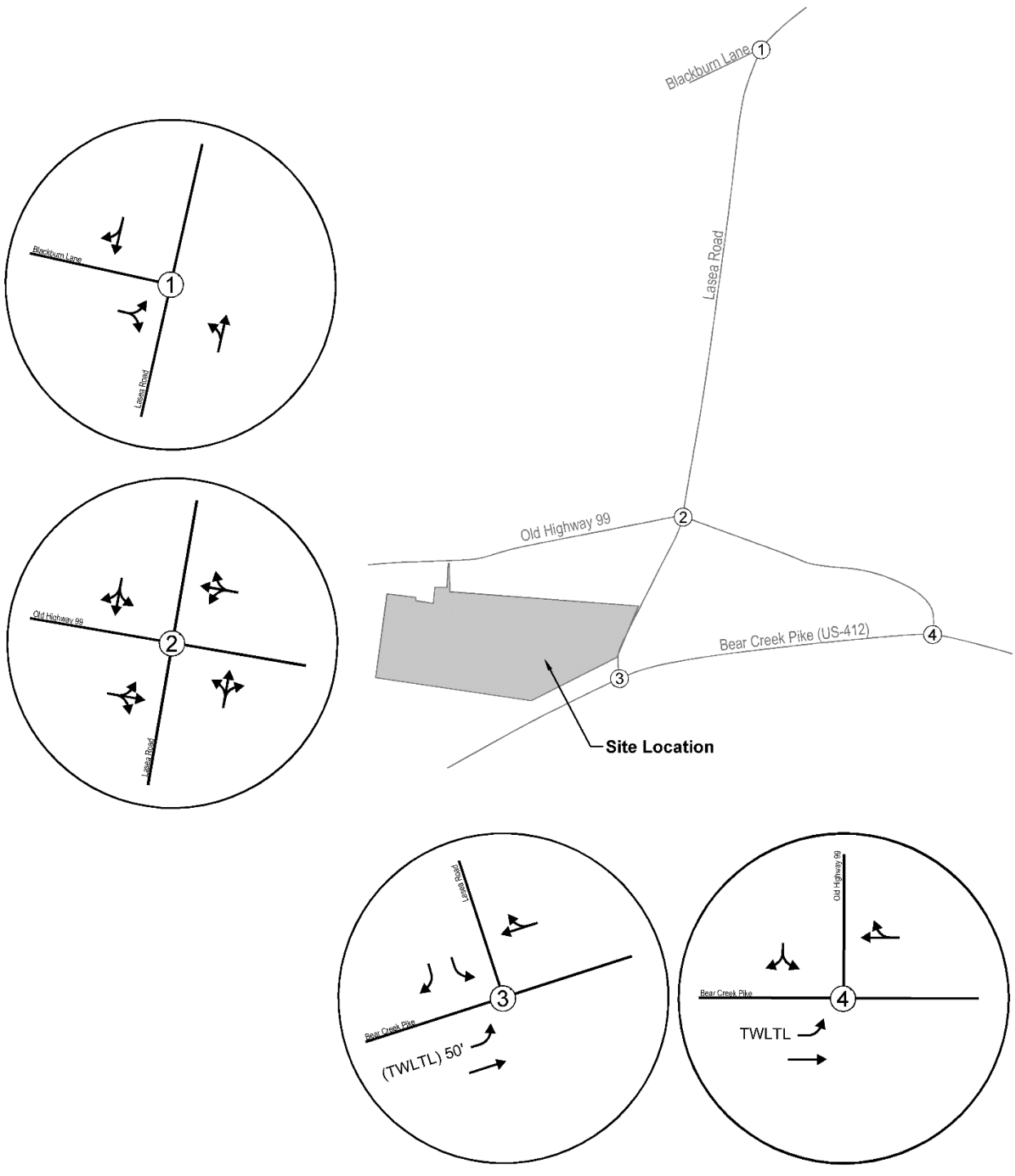


Figure 3
Existing Lane Geometry

Existing Traffic Volumes

To establish existing traffic volumes within the study area (as requested and provided by the City of Columbia), T-Square Engineering utilized the turning movement counts conducted by T-Square Engineering as part of the Quail Run Meadows Traffic Impact Study (TIS) in February 2018 for the following intersections:

- Lasea Road and Blackburn Lane
- Lasea Road and Old Highway 99
- Bear Creek Pike (US-412) and Old Highway 99

To establish existing (2021) traffic volumes, it should be noted that the traffic count volumes for the above intersections were grown for four (4) years by a rate of 2.00% which was determined based on information provided by the City of Columbia regarding growth within the surrounding area. The AM and PM peak hour traffic volumes for these intersections were established and determined to occur between 6:45 AM – 7:45 AM and 4:15 PM – 5:15 PM, respectively.

In addition, as requested by the City of Columbia, T-Square Engineering utilized the turning movement counts conducted by Ragan-Smith Associates as part of the 1449 Rock Springs Road PUD Traffic Impact Study (TIS) in April 2021 for the following intersection:

- Lasea Road and Bear Creek Pike (US-412)

For this analysis, the AM and PM peak hour traffic volumes for this intersection was established and determined to occur between 6:45 AM – 7:45 AM and 4:00 PM – 5:00 PM, respectively. As outlined in the 1449 Rock Springs Road PUD Traffic Impact Study (TIS), the AM peak hour volumes were grown by approximately 1.121 to account for the changes int ravel patterns due to COVID-19. Figure 4 shows the adjusted existing peak hour totals at the study intersections for the AM and PM peak hour periods. Appendix A contains the adjusted peak hour turning movement counts.

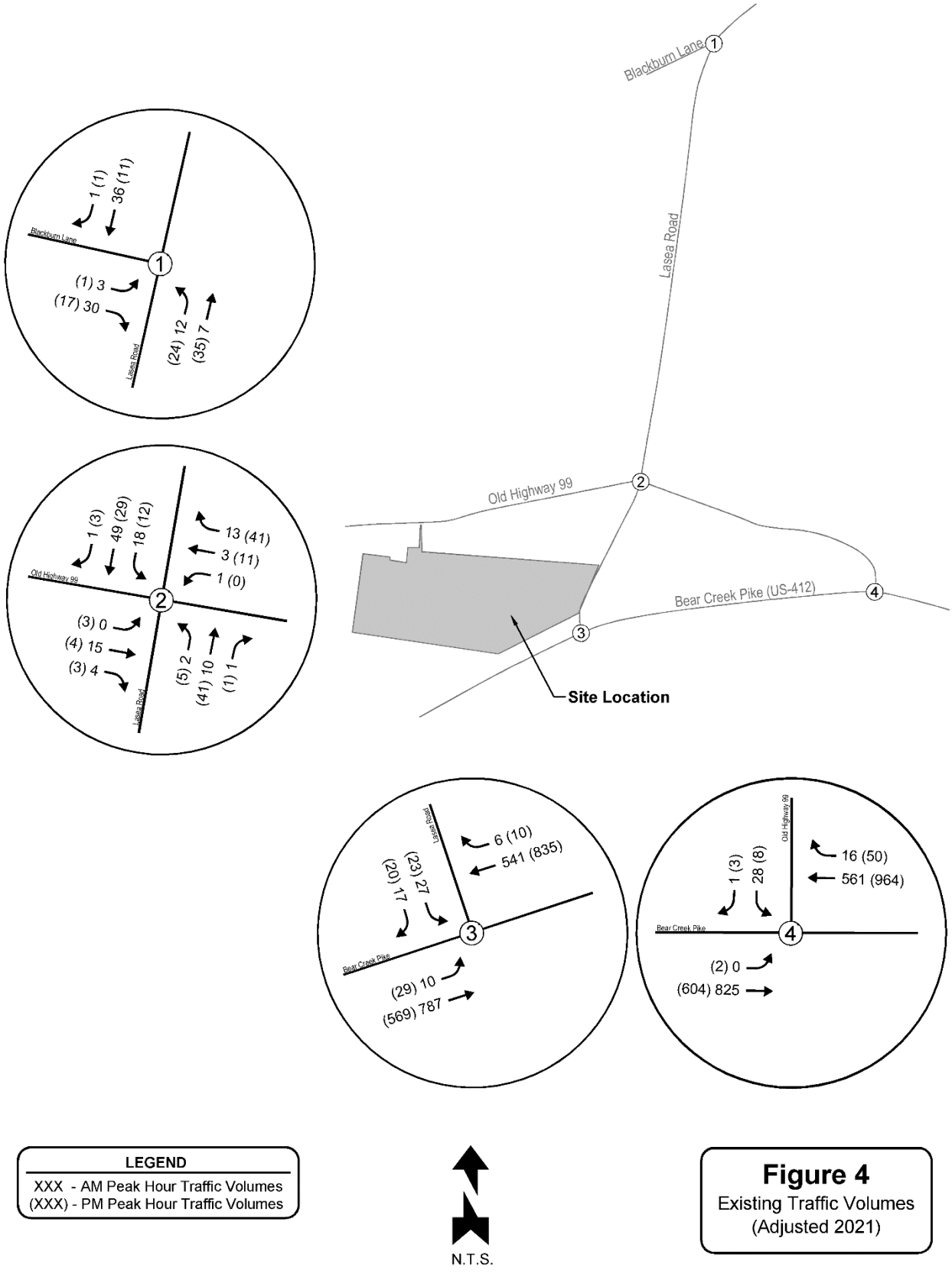


Figure 4
Existing Traffic Volumes
(Adjusted 2021)

Existing Capacity Analysis

To evaluate the existing traffic operations at the study intersections within the vicinity of the project site, AM and PM peak hour capacity analyses were performed per the calculations outlined in the Highway Capacity Manual[1](HCM). Levels of service (LOS), corresponding average delays, and 95th percentile queues were calculated for each turning movement. An LOS is a qualitative measure or grade used to distinguish how traffic is serviced at an intersection or along a roadway. The range of LOS is A to F, with A being the highest and F the lowest. The 95th percentile queue is the queue length (in vehicles) that has only a five (5) percent probability of being exceeded during the analysis period. The 95th percentile queue is not typical of what an average driver would experience, and driver experiences would be better characterized by the mean queue length. The table below details each LOS for signalized and unsignalized intersections, as specified within the HCM.

Table 1. Level of Service (LOS) Details

Level of Service*	Average Control Delay (seconds per vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50
Source: HCM 2010, Exhibits 18-4 and 19-1		

To determine the effectiveness of traffic operations within the study area a minimum LOS or baseline needs to be established. Any LOS below the established baseline will be considered unsatisfactory. LOS C is generally acceptable for typical roadway function while LOS D is typically considered to be the minimum acceptable LOS. According to the City of Columbia's *Transportation Master Plan (2018)*, "In urban areas, LOS D is typically considered to be the minimum acceptable level of service." The following conditions shall be considered unsatisfactory for the purposes of this study:

1. Overall intersections with an LOS E or F.
2. Individual traffic movements with an LOS E or F.

The existing intersections within the study area were analyzed with existing traffic volumes under existing roadway conditions/geometries. The existing capacity analyses were conducted using *Synchro/SimTraffic* software by Trafficware for the unsignalized intersections. Appendix C contains the detailed capacity analyses results.

[1] Transportation Research Board (TRB). Highway Capacity Manual, 5th Edition (2010). Washington, DC: 2010

Table 2. Existing Capacity Analyses

Study Intersection	Control	Approach	2021 Existing Conditions					
			AM Peak Hour			PM Peak Hour		
			LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
1. **Lasea Road and Bear Creek Pike (US-412)**	TWSC	SB Left/Right	C	17.6	59	C	20.5	56
		EB Left	A	8.7	19	B	10.1	41
2. **Bear Creek Pike (US-412) and Old Highway 99**	TWSC	SB Left/Right	C	20.0	51	C	21.3	35
		EB Left	A	0.0		B	10.7	9
3. **Lasea Road and Old Highway 99**	TWSC	NB L/T/R	A	7.1	16	A	7.4	26
		SB L/T/R	A	7.4	48	A	7.4	50
		EB L/T/R/	A	7.1	34	A	7.1	28
		WB L/T/R	A	6.8	38	A	6.9	56
4. **Lasea Road and Blackburn Lane**	TWSC	NB Left/Thru	A	7.3	10	A	7.3	9
		EB Left/Right	A	8.7	37	A	8.5	22

The following assessments are based on the results of the Existing Capacity Analyses as shown in the table above:

- All critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS C during the AM and PM peak hours with adjusted 2021 existing traffic volumes.

Background Traffic Volumes

To account for traffic growth within the vicinity of the project site prior to the completion of the proposed 1451 Lasea Road Development, background traffic volumes were established. A growth trend was used as a multiplication factor to grow the existing traffic volumes to the 2023 design year (expansion completion). The turning movement counts conducted by T-Square Engineering as part of the Quail Run Meadows Subdivision Traffic Impact Study (TIS) in February 2018 were grown for six (6) years by a rate of 2.00% to establish 2023 background traffic volumes. The turning movement counts conducted by Ragan-Smith Associates as part of the 1449 Rock Springs Road PUD Traffic Impact Study (TIS) in April 2021 were grown by +2.00% per year for two (2) years to establish 2023 background traffic volumes. Figure D1 in Appendix D shows the 2023 background peak hour totals at the study intersections for the AM and PM peak hour periods.

To account for the additional traffic growth within the vicinity of the project site, the generated traffic volumes from previously conducted Traffic Studies near the project site were added to the grown 2023 background traffic volumes. These Traffic Studies include the following:

- Quail Run Meadows Subdivision Traffic Impact Study in February 2018
- Bear Creek Hotel Traffic Impact Study in July 2018
- I-65 and Bear Creek Pike Traffic Impact Study in December 2020
- 1449 Rock Springs Road PUD Traffic Impact Study in April 2021

The generated traffic volumes from each development above are shown on Figures D2-D5 in Appendix D. The 2023 background traffic volumes as shown on Figure D1 were combined with the generated traffic volumes from each development above as shown on Figures D2, resulting in the total combined background peak hour traffic volumes for the study intersections, as shown on Figure 5.

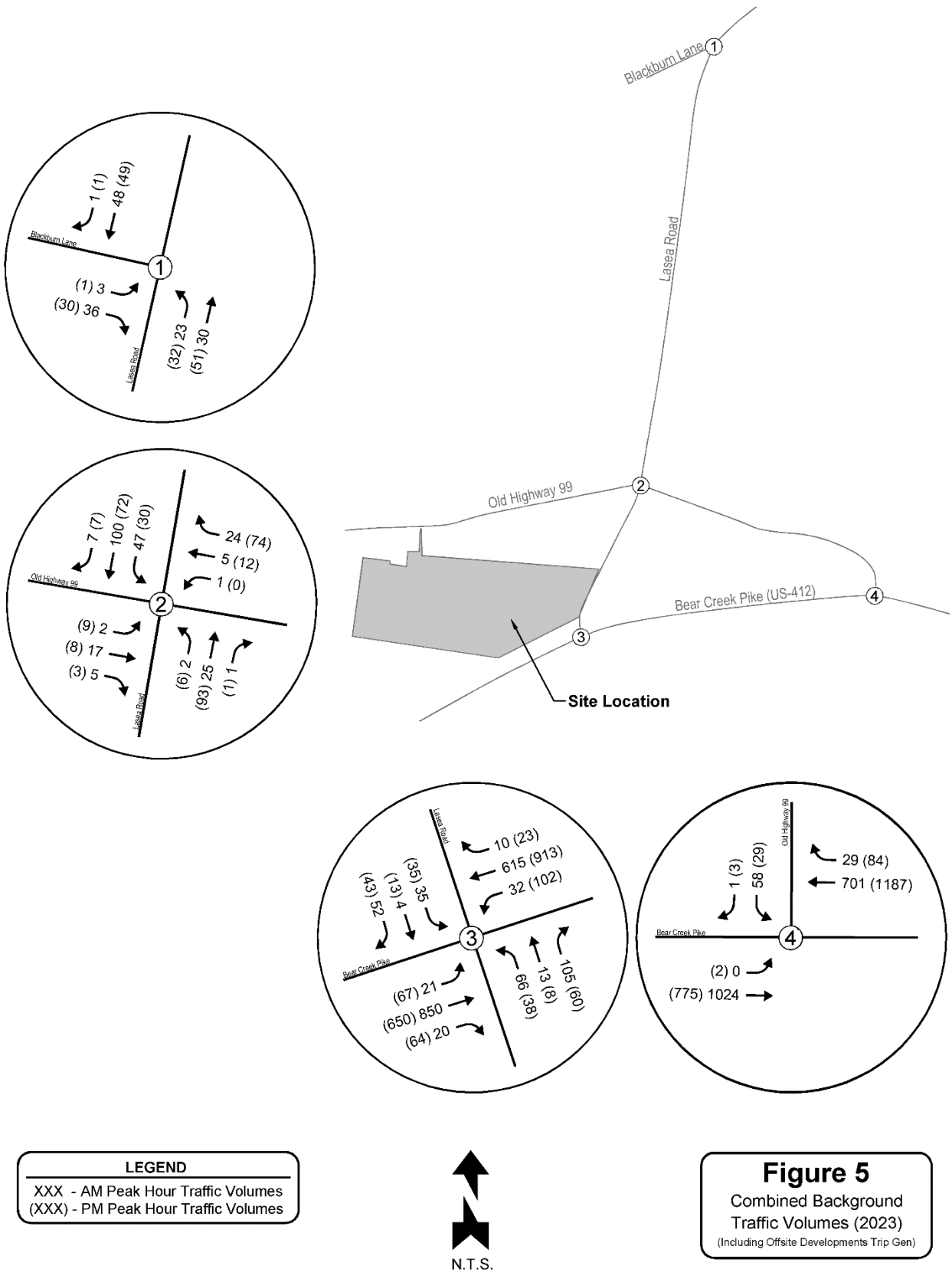


Figure 5
Combined Background Traffic Volumes (2023)
(Including Offsite Developments Trip Gen)

Background Capacity Analyses

To evaluate the background traffic operations at the study intersections within the vicinity of the project site, the AM and PM peak hour capacity analyses were performed based on calculations outlined in the Highway Capacity Manual (HCM). Levels of service (LOS), corresponding average delays, and 95th percentile queues were calculated for each turning movement.

The previously conducted Traffic Studies for the background developments resulted in multiple recommended roadway improvements to the study intersections. These recommended improvements will be utilized as part of the background roadway conditions and have been included in the background capacity analyses. The improvements are listed below by intersection. Figure 6 shows a summary of the off-site improvements from previously conducted traffic studies for background developments.

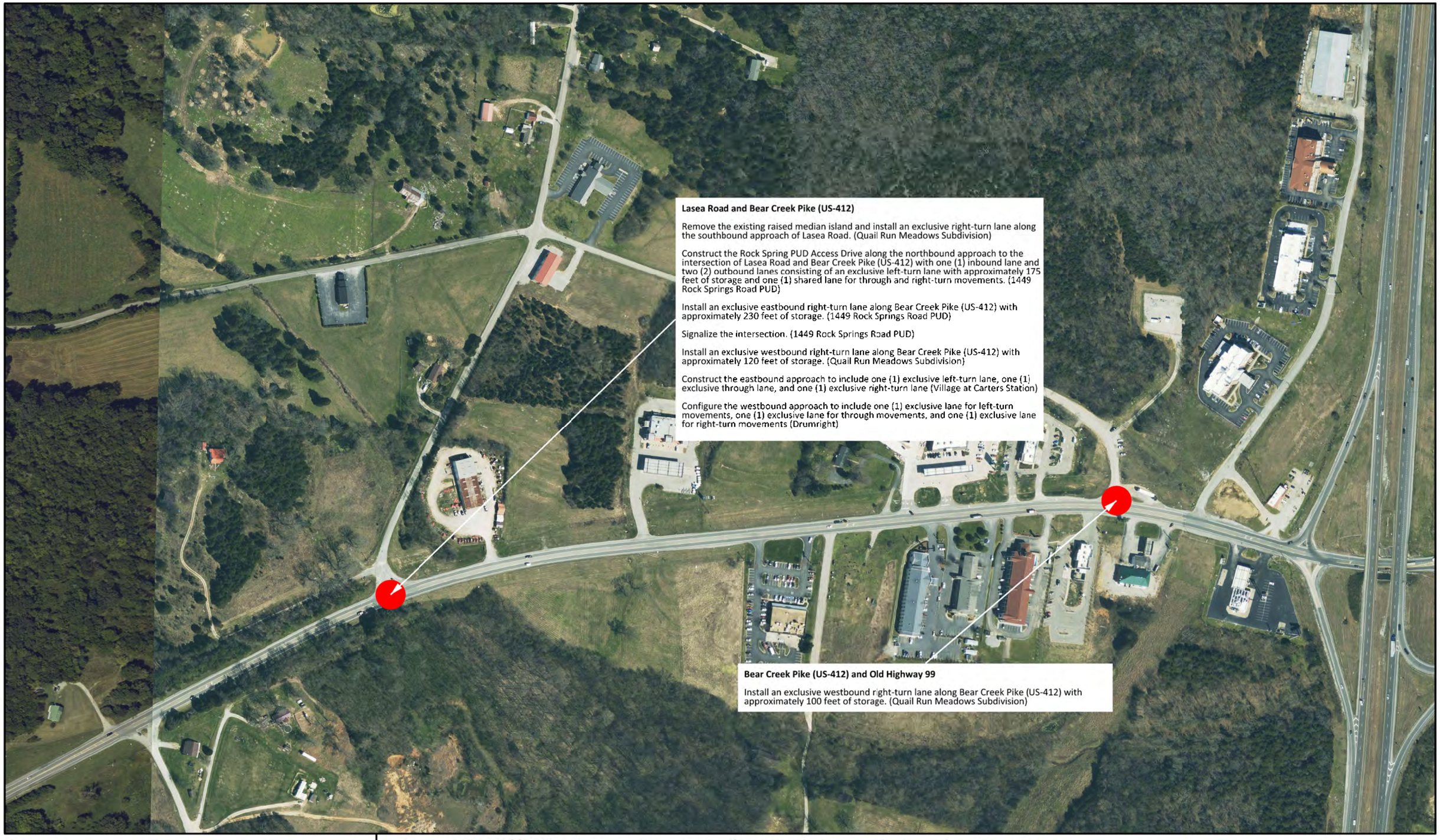
<u>Lasea Road and Bear Creek Pike (US-412)</u>

- Remove the existing raised median island and install an exclusive right-turn lane along the southbound approach of Lasea Road. (Quail Run Meadows Subdivision)
- Construct the Rock Spring PUD Access Drive along the northbound approach to the intersection of Lasea Road and Bear Creek Pike (US-412) with one (1) inbound lane and two (2) outbound lanes consisting of an exclusive left-turn lane with approximately 175 feet of storage and one (1) shared lane for through and right-turn movements. (1449 Rock Springs Road PUD)
- Install an exclusive eastbound right-turn lane along Bear Creek Pike (US-412) with approximately 230 feet of storage. (1449 Rock Springs Road PUD)
- Signalize the intersection. (1449 Rock Springs Road PUD)
- Install an exclusive westbound right-turn lane along Bear Creek Pike (US-412) with approximately 120 feet of storage. (Quail Run Meadows Subdivision)

<u>Bear Creek Pike (US-412) and Old Highway 99</u>

- Install an exclusive westbound right-turn lane along Bear Creek Pike (US-412) with approximately 100 feet of storage. (Quail Run Meadows Subdivision).

The study intersections were analyzed based on background roadway conditions and lane geometries. It should be noted that optimized traffic signal timings were utilized at the intersection of Lasea Road and Bear Creek Pike (US-412) for this analysis. The background capacity analyses were conducted using *Synchro/SimTraffic* software by Trafficware for both signalized and unsignalized intersections. Appendix C contains the detailed capacity analyses results.



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Figure 6 - Off-Site Improvements for Background Developments

1451 Lasea Road Development • Columbia, TN • Approximate Scale: 1" = 300'

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300' 150' 0' 300'

1 inch = 300 feet

Table 3. Background Capacity Analyses

Study Intersection	Control	Approach	2023 Background Conditions					
			AM Peak Hour			PM Peak Hour		
			LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
1. **Lasea Road and Bear Creek Pike (US-412)**	Signal	NB Left	C	34.3	65	D	37.6	52
		NB Thru/Right	D	46.3	113	D	47.7	58
		SB Left	C	33.2	47	D	36.0	51
		SB Thru/Right	D	38.1	48	D	41.0	57
		EB Left	B	11.4	32	C	21.0	125
		EB Thru	C	28.3	388	B	15.8	254
		EB Right	A	9.6	28	A	9.3	39
		WB Left	B	18.5	82	B	11.6	192
		WB Thru	B	15.2	219	C	33.0	475
		WB Right	A	9.2	108	A	8.7	83
		Overall	**C**	**25.0**	**--**	**C**	**25.8**	**--**
2. **Bear Creek Pike (US-412) and Old Highway 99**	TWSC	SB Left/Right	D	30.2	152	D	31.4	73
		EB Left	A	9.4	0	B	12.3	9
3. **Lasea Road and Old Highway 99**	TWSC	NB L/T/R	A	7.4	28	A	7.9	46
		SB L/T/R	A	8.1	67	A	8.0	63
		EB L/T/R/	A	7.4	37	A	7.7	32
		WB L/T/R	A	7.1	42	A	7.4	60
4. **Lasea Road and Blackburn Lane**	TWSC	NB Left/Thru	A	7.4	9	A	7.4	10
		EB Left/Right	A	8.8	43	A	8.7	37

The following assessments are based on the results of the Background Capacity Analyses as shown in the table above:

- All critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours with background 2023 traffic volumes.

Impacts

Trips were generated to establish projected traffic volumes for the proposed 1451 Lasea Road Development. Daily and peak hour trips were generated by formulas presented in the Trip Generation Manual[2] based on the number of proposed housing units by the development. As previously stated, the development will consist of approximately 208 multi-family (low-rise) housing units. The Multi-Family (Low-Rise) Housing (220) ITE Land Use was used to estimate the generated traffic volumes. The table below provides the new trips generated for the proposed development. Appendix B contains detailed trip generation calculations.

Table 4. Crichton Property Development Trip Generation

ITE Land Use (Code)	Size	Generated Traffic Volumes				
		Daily	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
Multi-Family (Low-Rise) Housing (220)	208 Units	1,532	22	74	71	42

Projected Traffic Distribution and Assignments

For the purposes of this study, estimated directional distributions shown on Figure 7 were established for the proposed development's generated traffic volumes. The development of these directional distributions was established based on the following:

- Conducted hourly turning movement counts
- Proposed land use characteristics
- Existing roadway network
- Existing lane geometry of surrounding intersections
- The developments proposed access locations
- Locations of populations centers within the surrounding area

The primary trips generated were assigned to the existing roadway network per the distributions shown on Figure 7, resulting in the generated peak hour traffic volumes shown on Figure 8. The generated peak hour traffic volumes were then added to the 2023 background volumes as shown on Figure 5, resulting in the total projected peak hour traffic volumes in Figure 9.

[2] Institute of Transportation Engineers (ITE). Trip Generation Manual, 10th Edition. Washington, DC: ITE, 2018

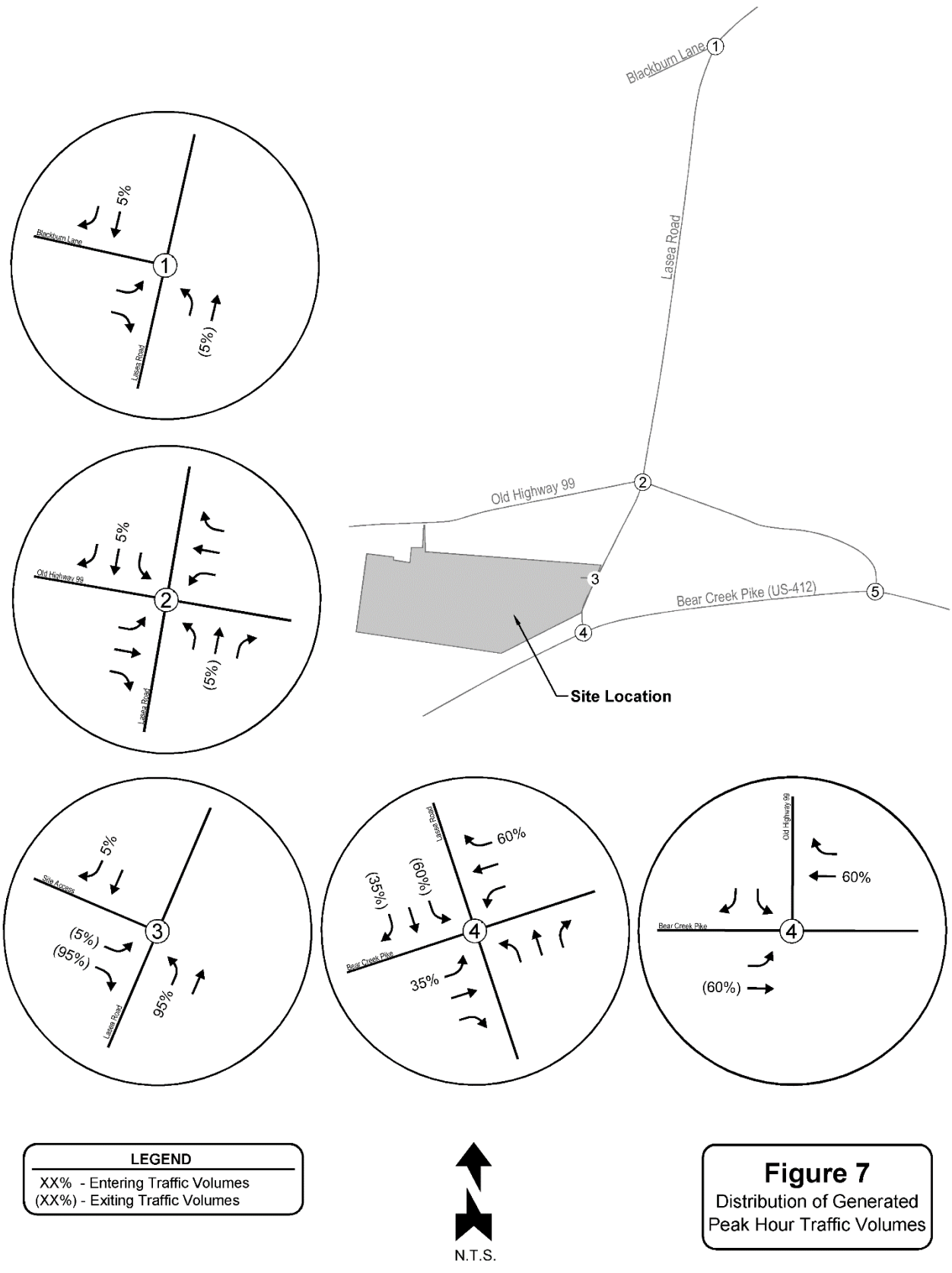


Figure 7
Distribution of Generated
Peak Hour Traffic Volumes

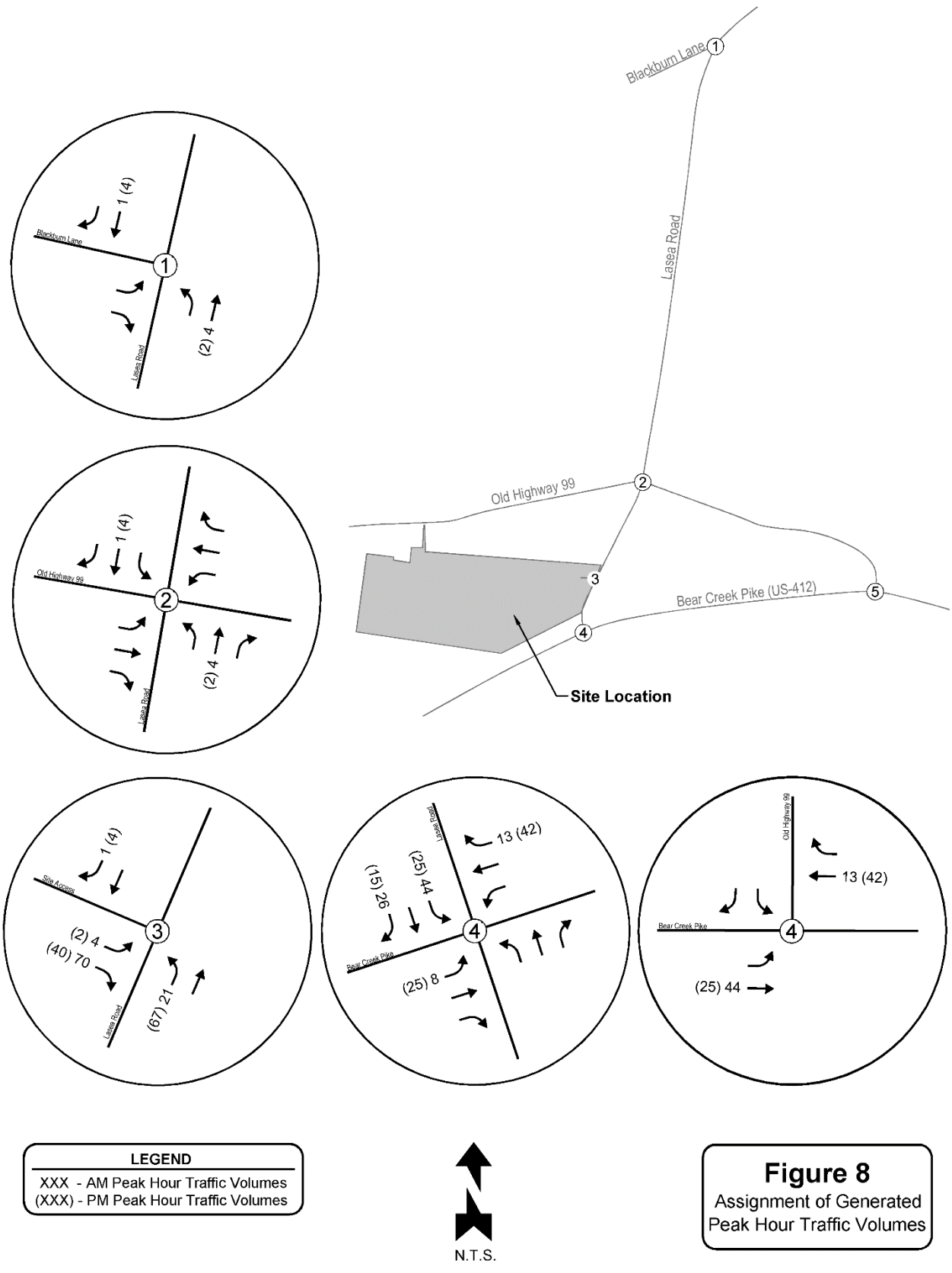


Figure 8
Assignment of Generated Peak Hour Traffic Volumes

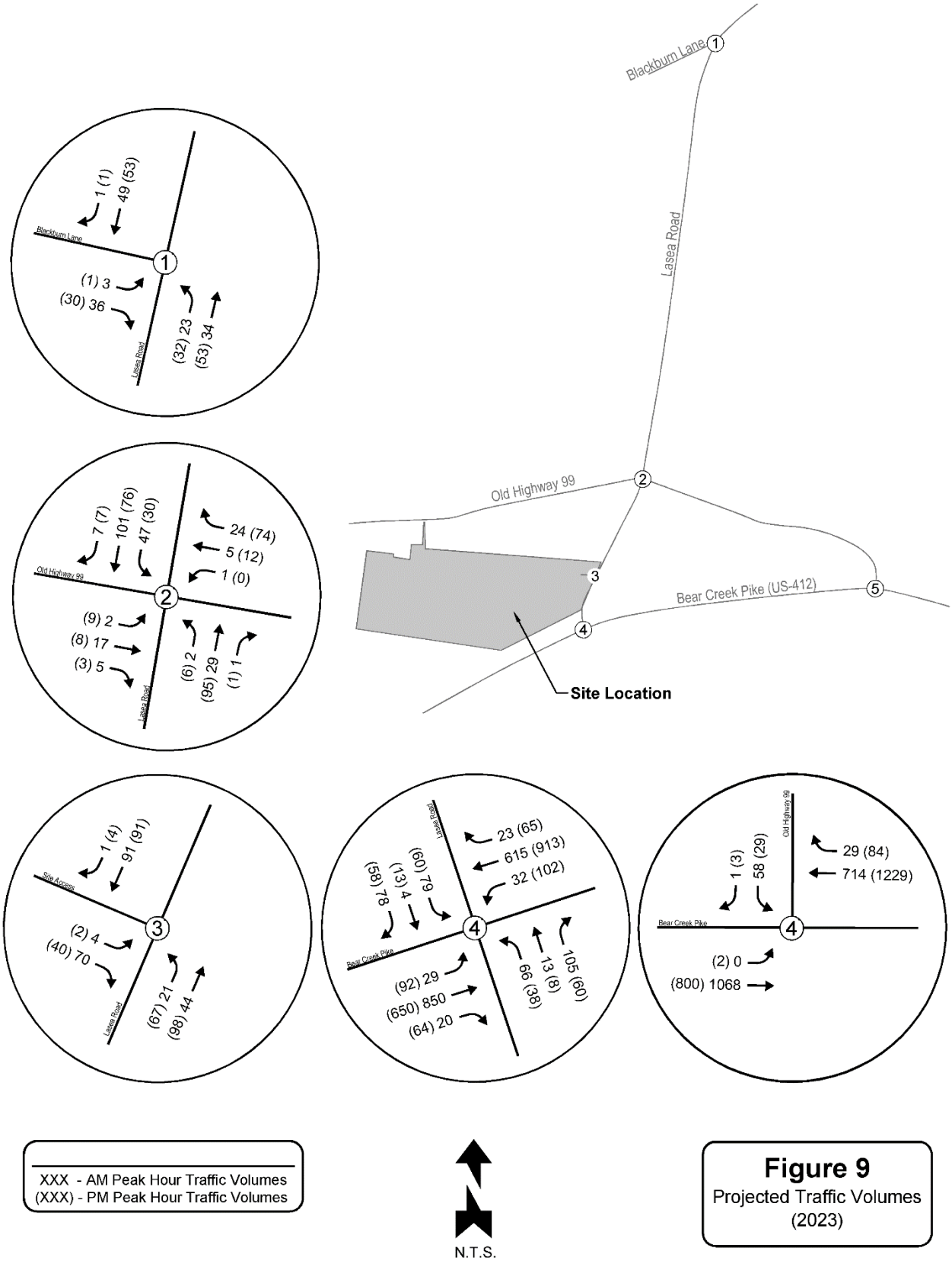


Figure 9
Projected Traffic Volumes
(2023)

Projected Capacity Analysis

To evaluate the projected traffic operations at the study intersections within the vicinity of the project site, AM and PM peak hour capacity analyses were performed. The capacity analyses include the total projected traffic volumes generated from the proposed development in addition to background traffic volumes. Levels-of-service (LOS), corresponding average delays, and 95th percentile queues were calculated for each turning movement. The intersections were analyzed based on background roadway conditions and lane geometries as outlined previously with projected traffic volumes.

The intersections were analyzed based on background roadway conditions and lane geometries as outlined in the Background Traffic Volumes section above. It should be noted that optimized traffic signal timings were utilized at the intersection of Lasea Road and Bear Creek Pike (US-412) for this analysis. The projected capacity analyses were conducted using *Synchro/SimTraffic* software by Trafficware for both signalized and unsignalized intersections. Appendix C contains the detailed capacity analyses results.

Table 5. Projected Capacity Analyses

Study Intersection	Control	Approach	2023 Projected Conditions					
			AM Peak Hour			PM Peak Hour		
			LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
1. **Lasea Road and Bear Creek Pike (US-412)**	Signal	NB Left	D	35.3	64	D	38.2	49
		NB Thru/Right	D	47.6	94	D	48.3	56
		SB Left	C	34.9	84	D	37.4	74
		SB Thru/Right	D	39.6	62	D	42.8	45
		EB Left	B	12.0	101	C	22.6	138
		EB Thru	C	29.7	354	B	15.7	289
		EB Right	A	10.0	8	A	9.2	36
		WB Left	B	19.2	44	B	11.6	237
		WB Thru	B	16.2	241	C	33.9	913
		WB Right	A	9.9	29	A	9.2	176
		Overall	**C**	**26.4**	**--**	**C**	**26.2**	**--**
2. **Bear Creek Pike (US-412) and Old Highway 99**	TWSC	SB Left/Right	D	31.9	122	D	33.2	51
		EB Left	A	0.0	0	B	12.6	19
3. **Lasea Road and Old Highway 99**	TWSC	NB L/T/R	A	7.4	28	A	8.0	39
		SB L/T/R	A	8.1	65	A	8.1	53
		EB L/T/R/	A	7.4	39	A	7.7	26
		WB L/T/R	A	7.1	50	A	7.4	50
4. **Lasea Road and Blackburn Lane**	TWSC	NB Left/Thru	A	7.4	0	A	7.4	0
		EB Left/Right	A	8.8	38	A	8.7	34
5. **Lasea Road and Site Access**	TWSC	NB Left/Thru	A	7.4	10	A	7.5	26
		EB Left/Right	A	9.2	44	A	9.1	50

The following assessments are based on the results of the Projected Capacity Analyses as shown in the table above:

- All critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours with projected 2023 traffic volumes.

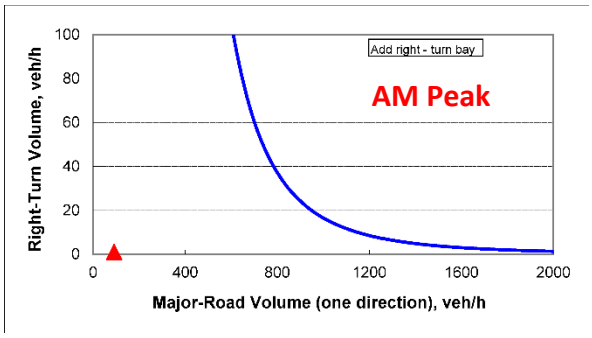
Intersection Assessments (Projected Conditions)

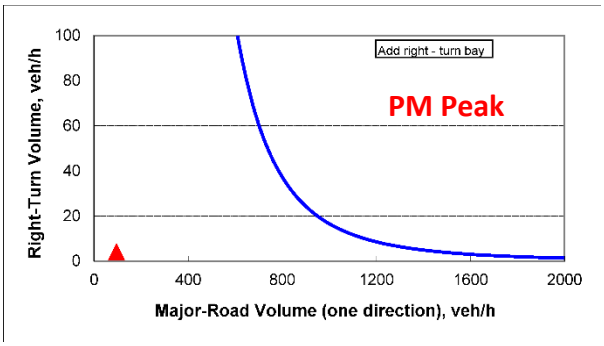
Engineering assessments were performed on the intersections within the study area to identify underlying inefficiencies and solutions to alleviate any concerns associated with intersection geometries and traffic volumes along the roadway network. Major-road approach left-turn lane warrants were performed based on Figures 2-5 and 2-6 in the *NCHRP Report 457 – Evaluating Intersection Improvements: An Engineering Study Guide*[3] and projected traffic volumes. Minor-road approach geometric warrants were performed based on Figure 2-4 in the *NCHRP Report 457 – Evaluating Intersection Improvements: An Engineering Study Guide*[4]. The results of the warrants are shown below.

Lasea Road and Site Access

Table 6. Major-Road Approach Geometry, SBR Lasea Road at Site Access

Variable	AM Peak	PM Peak
Major-road speed, mph:	35	35
Major-road volume (one direction), veh/h:	92	95
Major-road right-turn volume, veh/h:	1	4
Limiting right-turn volume, veh/h:	1000+	1000+
Right-turn bay warranted:	**NO**	**NO**
Source: *NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide*		





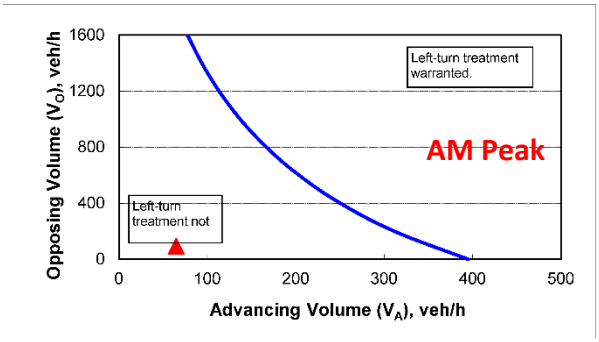
As shown in Table 6 and the corresponding graphs, it was determined that a southbound right-turn lane is not warranted along Lasea Road at its intersection with the proposed Site Access during either of the peak hour periods with projected traffic volumes.

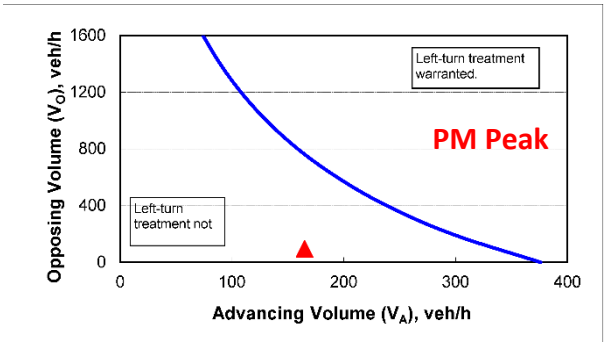
[3] Transportation Research Board (TRB). Evaluating Intersection Improvements: An Engineering Study Guide. Washington, DC: 2001

[4] Transportation Research Board (TRB). Evaluating Intersection Improvements: An Engineering Study Guide. Washington, DC: 2001

Table 7. Major-Road Approach Geometry, NBL Lasea Road at Site Access

Variable	AM Peak	PM Peak
85th percentile speed, mph:	35	35
Percent of left-turns in advancing volume (V_A), %:	32%	41%
Advancing volume (V_A), veh/h:	65	165
Opposing volume (V_O), veh/h:	92	95
Limiting advancing volume (V_A), veh/h:	353	335
Left-turn bay warranted:	**NO**	**NO**
Source: *NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide*		

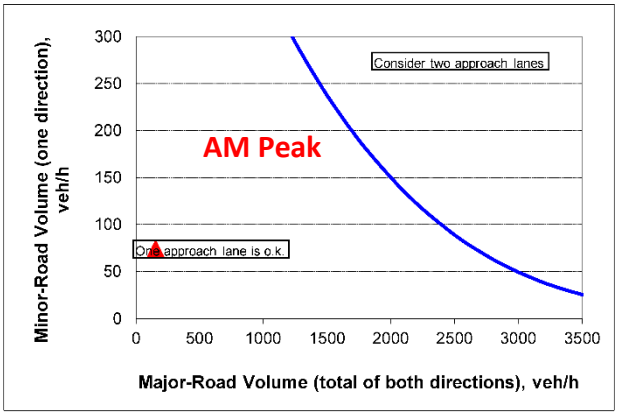


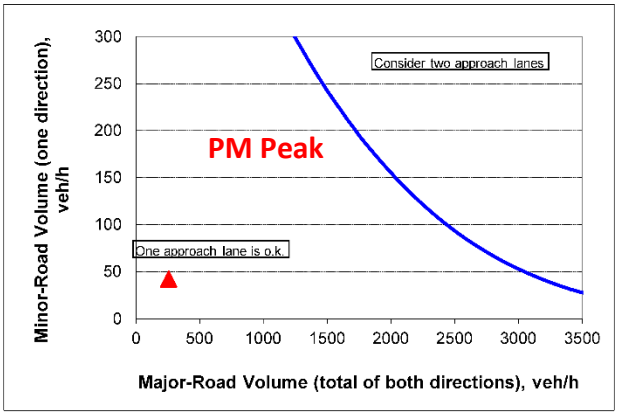


As shown in Table 7 and the corresponding graphs, it was determined that a northbound left-turn lane is not warranted along Lasea Road at its intersection with the proposed Site Access during either of the peak hour periods with projected traffic volumes.

Table 8. Minor-Road Approach Geometry, EBR Site Access at Lasea Road

Variable	AM Peak	PM Peak
Major-road volume (total both directions), veh/h:	157	260
Percentage of right-turns on minor road, %:	95%	95%
Minor-road volume (one direction), veh/h:	74	42
Limiting minor-road volume (one direction), veh/h:	673	628
Right-turn bay warranted:	**One (1) approach lane is sufficient**	**One (1) approach lane is sufficient**
Source: *NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide*		





As shown in Table 8 and the corresponding graphs, it was determined that one (1) shared lane for left-turn and right-turn movements on the eastbound approach of the proposed Site Access at its intersection with Lasea Road is sufficient with projected traffic volumes.

Conclusions

Existing Conditions

Intersection Capacity Analyses

- All critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS C during the AM and PM peak hours with adjusted 2021 existing traffic volumes.

Background Conditions

Intersection Capacity Analyses

- All critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours with background 2023 traffic volumes.

Projected Conditions

Intersection Capacity Analyses

- All critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours with projected 2023 traffic volumes.

Turn Lane Analyses

- It was determined that the eastbound approach of the proposed Site Access at its intersection with Lasea Road will be sufficient with one (1) shared lane for left-turn and right-turn movements with projected traffic volumes.

Recommendations

Based on the analyses within this study, and a review of the proposed development's access plan, the recommendations below have been presented to be implemented as part of the proposed 1451 Lasea Road Development in Columbia, TN. These recommendations will be implemented in addition to the various improvements at the study intersections outlined in previously conducted traffic studies within the area. Figure 10 shows a summary of the recommended improvements for this development and other nearby developments.

Improvement Recommendations for the 1451 Lasea Road Development

Lasea Road and Bear Creek Pike (US-412)

- No improvements are recommended for this intersection as part of the construction of the 1451 Lasea Road Development.

Bear Creek Pike (US-412) and Old Highway 99

- No improvements are recommended for this intersection as part of the construction of the 1451 Lasea Road Development.

Lasea Road and Old Highway 99

- No improvements are recommended for this intersection as part of the construction of the 1451 Lasea Road Development.

Lasea Road and Blackburn Lane

- No improvements are recommended for this intersection as part of the construction of the 1451 Lasea Road Development.

Lasea Road and Site Access

- Construct the proposed Site Access along Lasea Road with one (1) inbound lane and one (1) outbound lane operating under a stop condition for Lasea Road according to MUTCD, AASHTO, TDOT, and City of Columbia standards.
- All radii for the proposed access shall be designed via coordination with the City of Columbia to accommodate the largest turning vehicle requirements that will service the development according to MUTCD, AASHTO, TDOT, and City of Columbia standards.
- Ensure the departure sight distance triangles for all driveways, internal intersections, and site access intersections are designed to be clear of all sight obstructions (including vegetation) as specified by AASHTO. The design of proposed internal roadway system should be completed according to the MUTCD, AASHTO, TDOT, and City of Columbia standards.



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Figure 10 - Recommended Improvements for 1451 Lasea Road Development

1451 Lasea Road Development • Columbia, TN • Approximate Scale: 1" = 600'

Prepared by T-Square Engineering, Inc.

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600' 300' 0' 600'

1 inch = 600 feet

APPENDIX

APPENDIX A – DETAILED TURNING MOVEMENT COUNTS

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs) - Ragan Smith and Assoc

Count Sites: 4
Intersection #: 1
Intersection: Lasea Road and Bear Creek Pike (US-412)

Southbound: Lasea Road
Westbound: Bear Creek Pike (US-412)
Northbound: N/A
Eastbound: Bear Creek Pike (US-412)

Lat/Long: N/A

Count Date: 3/4/2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

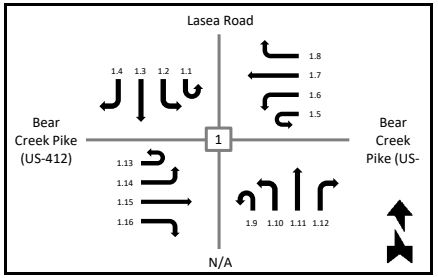
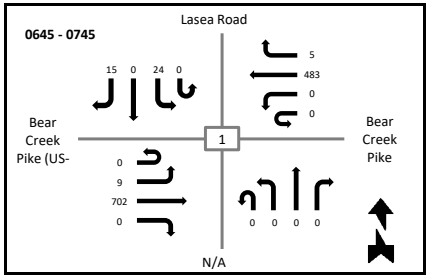


Figure 2 - AM Peak Hour TMC



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	Southbound						Westbound						Northbound						Eastbound					
	Lasea Road						Bear Creek Pike (US-412)						N/A						Bear Creek Pike (US-412)					
Time	U-Turn 1.1	Left 1.2	Thru 1.3	Right 1.4	Peds X-Walk	App Total	U-Turn 1.5	Left 1.6	Thru 1.7	Right 1.8	Peds X-Walk	App Total	U-Turn 1.9	Left 1.10	Thru 1.11	Right 1.12	Peds X-Walk	App Total	U-Turn 1.13	Left 1.14	Thru 1.15	Right 1.16	Peds X-Walk	App Total
0600 - 0615	0	8	0	0	0	8	0	0	47	0	0	47	0	0	0	0	0	0	0	3	137	0	0	140
0615 - 0630	0	2	0	6	0	8	0	0	93	2	0	95	0	0	0	0	0	0	0	1	132	0	0	133
0630 - 0645	0	5	0	4	0	9	0	0	76	0	0	76	0	0	0	0	0	0	0	1	179	0	0	180
0645 - 0700	0	6	0	5	0	11	0	0	113	0	0	113	0	0	0	0	0	0	0	2	187	0	0	189
0700 - 0715	0	7	0	6	0	13	0	0	111	0	0	111	0	0	0	0	0	0	0	3	172	0	0	175
0715 - 0730	0	6	0	2	0	8	0	0	116	2	0	118	0	0	0	0	0	0	0	0	175	0	0	175
0730 - 0745	0	5	0	2	0	7	0	0	143	3	0	146	0	0	0	0	0	0	0	4	168	0	0	172
0745 - 0800	0	4	0	2	0	6	0	0	119	0	0	119	0	0	0	0	0	0	0	3	151	0	0	154
0800 - 0815	0	4	0	3	0	7	0	0	109	4	0	113	0	0	0	0	0	0	0	4	158	0	0	162
0815 - 0830	0	4	0	5	0	9	0	0	95	1	0	96	0	0	0	0	0	0	0	1	131	0	0	132
0830 - 0845	0	3	0	6	0	9	0	0	93	0	0	93	0	0	0	0	0	0	0	1	106	0	0	107
0845 - 0900	0	4	0	1	0	5	0	0	73	1	0	74	0	0	0	0	0	0	0	3	129	0	0	132
Grand Total	**0**	**58**	**0**	**42**	**0**	**100**	**0**	**0**	**1188**	**13**	**0**	**1201**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	**1825**	**0**	**0**	**1851**
Peak Hour Total																								
0645 - 0745	**0**	**24**	**0**	**15**	**0**	**39**	**0**	**0**	**483**	**5**	**0**	**488**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**702**	**0**	**0**	**711**
App %	0.00%	58.00%	0.00%	42.00%			0.00%	0.00%	98.92%	1.08%			0.00%	0.00%	0.00%	0.00%			0.00%	1.40%	98.60%	0.00%		
Int %	0.00%	1.84%	0.00%	1.33%		3.17%	0.00%	0.00%	37.69%	0.41%		38.10%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.82%	57.90%	0.00%		58.72%
Cars Total	0	58	0	42			0	0	1188	13			0	0	0	0			0	26	1825	0		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**0.00%**	**100.00%**			**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs) - Ragan Smith and Assoc

Count Sites: 4
Intersection #: 1
Intersection: Lasea Road and Bear Creek Pike (US-412)

Southbound: Lasea Road
Westbound: Bear Creek Pike (US-412)
Northbound: N/A
Eastbound: Bear Creek Pike (US-412)

Lat/Long: N/A

Count Date: 3/4/2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

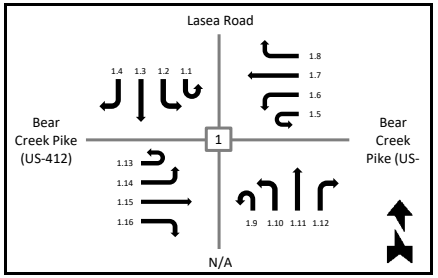
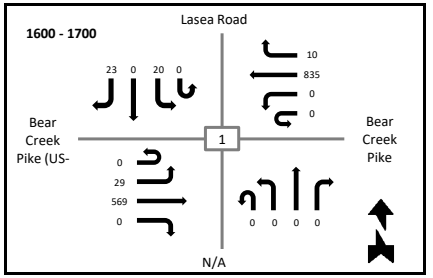


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Lasea Road						Bear Creek Pike (US-412)						N/A						Bear Creek Pike (US-412)					
Time	U-Turn 1.1	Left 1.2	Thru 1.3	Right 1.4	Peds X-Walk	App Total	U-Turn 1.5	Left 1.6	Thru 1.7	Right 1.8	Peds X-Walk	App Total	U-Turn 1.9	Left 1.10	Thru 1.11	Right 1.12	Peds X-Walk	App Total	U-Turn 1.13	Left 1.14	Thru 1.15	Right 1.16	Peds X-Walk	App Total
1500 - 1515	0	4	0	6	0	10	0	0	158	2	0	160	0	0	0	0	0	0	0	7	125	0	0	132
1515 - 1530	0	3	0	5	0	8	0	0	180	2	0	182	0	0	0	0	0	0	0	4	132	0	0	136
1530 - 1545	0	5	0	6	0	11	0	0	214	4	0	218	0	0	0	0	0	0	0	8	129	0	0	137
1545 - 1600	0	4	0	6	0	10	0	0	205	1	0	206	0	0	0	0	0	0	0	4	159	0	0	163
1600 - 1615	0	7	0	7	0	14	0	0	219	1	0	220	0	0	0	0	0	0	0	5	137	0	0	142
1615 - 1630	0	3	0	5	0	8	0	0	217	7	0	224	0	0	0	0	0	0	0	8	138	0	0	146
1630 - 1645	0	7	0	8	0	15	0	0	228	1	0	229	0	0	0	0	0	0	0	6	165	0	0	171
1645 - 1700	0	3	0	3	0	6	0	0	171	1	0	172	0	0	0	0	0	0	0	10	129	0	0	139
1700 - 1715	0	4	0	5	0	9	0	0	189	5	0	194	0	0	0	0	0	0	0	5	135	0	0	140
1715 - 1730	0	5	0	2	0	7	0	0	175	3	0	178	0	0	0	0	0	0	0	11	157	0	0	168
1730 - 1745	0	4	0	9	0	13	0	0	152	5	0	157	0	0	0	0	0	0	0	5	135	0	0	140
1745 - 1800	0	4	0	3	0	7	0	0	167	3	0	170	0	0	0	0	0	0	0	4	106	0	0	110
Grand Total	**0**	**53**	**0**	**65**	**0**	**118**	**0**	**0**	**2275**	**35**	**0**	**2310**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**77**	**1647**	**0**	**0**	**1724**
Peak Hour Total																								
1600 - 1700	**0**	**20**	**0**	**23**	**0**	**43**	**0**	**0**	**835**	**10**	**0**	**845**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**569**	**0**	**0**	**598**
App %	0.00%	44.92%	0.00%	55.08%			0.00%	0.00%	98.48%	1.52%			0.00%	0.00%	0.00%	0.00%			0.00%	4.47%	95.53%	0.00%		
Int %	0.00%	1.28%	0.00%	1.57%		2.84%	0.00%	0.00%	54.79%	0.84%		55.64%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	1.85%	39.67%	0.00%		41.52%
Cars Total	0	53	0	65			0	0	2275	35			0	0	0	0			0	77	1647	0		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**0.00%**	**100.00%**			**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs)

Count Sites: 4
Intersection #: 2
Intersection: Bear Creek Pike (US-412) and Old Highway 99

Southbound: Old Highway 99
Westbound: Bear Creek Pike (US-412)
Northbound: N/A
Eastbound: Bear Creek Pike (US-412)

Lat/Long: N/A

Count Date: 9/6/2017

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

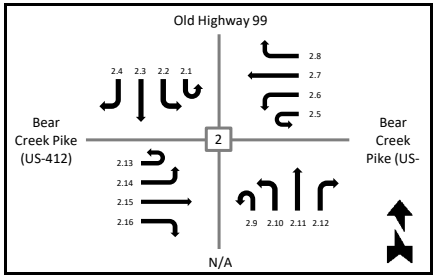
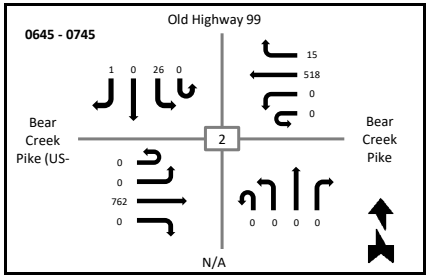


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Old Highway 99						Bear Creek Pike (US-412)						N/A						Bear Creek Pike (US-412)					
Time	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds X-Walk	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds X-Walk	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds X-Walk	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds X-Walk	App Total
0600 - 0615	0	13	0	0	0	13	0	0	69	1	0	70	0	0	0	0	0	0	0	0	260	0	0	260
0615 - 0630	0	7	0	0	0	7	0	0	81	0	0	81	0	0	0	0	0	0	0	0	204	0	0	204
0630 - 0645	0	3	0	0	0	3	0	0	104	3	0	107	0	0	0	0	0	0	0	1	190	0	0	191
0645 - 0700	0	8	0	1	0	9	0	0	110	1	0	111	0	0	0	0	0	0	0	0	201	0	0	201
0700 - 0715	0	10	0	0	0	10	0	0	144	2	0	146	0	0	0	0	0	0	0	0	200	0	0	200
0715 - 0730	0	4	0	0	0	4	0	0	142	5	0	147	0	0	0	0	0	0	0	0	191	0	0	191
0730 - 0745	0	4	0	0	0	4	0	0	122	7	0	129	0	0	0	0	0	0	0	0	170	0	0	170
0745 - 0800	0	8	0	1	0	9	0	0	108	2	0	110	0	0	0	0	0	0	0	0	152	0	0	152
0800 - 0815	0	8	0	0	0	8	0	0	100	2	0	102	0	0	0	0	0	0	0	0	158	0	0	158
0815 - 0830	0	2	0	1	0	3	0	0	106	3	0	109	0	0	0	0	0	0	0	1	139	0	0	140
0830 - 0845	0	6	0	1	0	7	0	0	107	4	0	111	0	0	0	0	0	0	0	0	135	0	0	135
0845 - 0900	0	5	0	0	0	5	0	0	103	1	0	104	0	0	0	0	0	0	0	1	102	0	0	103
Grand Total	**0**	**78**	**0**	**4**	**0**	**82**	**0**	**0**	**1296**	**31**	**0**	**1327**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**2102**	**0**	**0**	**2105**
Peak Hour Total																								
0645 - 0745	**0**	**26**	**0**	**1**	**0**	**27**	**0**	**0**	**518**	**15**	**0**	**533**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**762**	**0**	**0**	**762**
App %	0.00%	95.12%	0.00%	4.88%			0.00%	0.00%	97.66%	2.34%			0.00%	0.00%	0.00%	0.00%			0.00%	0.14%	99.86%	0.00%		
Int %	0.00%	2.22%	0.00%	0.11%		2.33%	0.00%	0.00%	36.88%	0.88%		37.76%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.09%	59.82%	0.00%		59.90%
Cars Total	0	78	0	4			0	0	1296	31			0	0	0	0			0	3	2102	0		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**0.00%**	**100.00%**			**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs)

Count Sites: 4
Intersection #: 2
Intersection: Bear Creek Pike (US-412) and Old Highway 99

Southbound: Old Highway 99
Westbound: Bear Creek Pike (US-412)
Northbound: N/A
Eastbound: Bear Creek Pike (US-412)

Lat/Long: N/A

Count Date: 9/6/2017

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

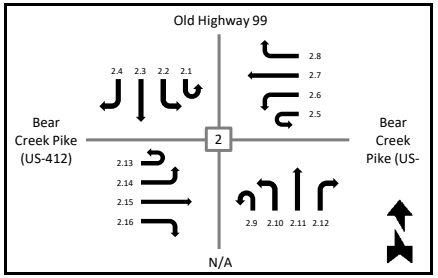
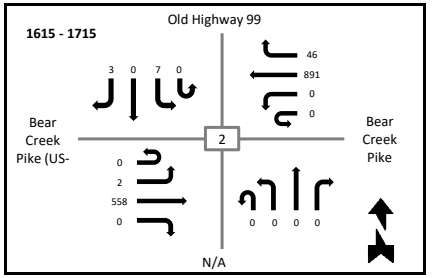


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Old Highway 99						Bear Creek Pike (US-412)						N/A						Bear Creek Pike (US-412)					
Time	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds X-Walk	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds X-Walk	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds X-Walk	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds X-Walk	App Total
1500 - 1515	0	4	0	0	0	4	0	0	171	3	0	174	0	0	0	0	0	0	0	0	128	0	0	128
1515 - 1530	0	3	0	1	0	4	0	0	170	4	0	174	0	0	0	0	0	0	0	0	137	0	0	137
1530 - 1545	0	8	0	3	0	11	0	0	190	16	0	206	0	0	0	0	0	0	0	2	127	0	0	129
1545 - 1600	0	2	0	3	0	5	0	0	179	11	0	190	0	0	0	0	0	0	0	0	112	0	0	112
1600 - 1615	0	5	0	4	0	9	0	0	196	9	0	205	0	0	0	0	0	0	0	0	125	0	0	125
1615 - 1630	0	2	0	0	0	2	0	0	212	10	0	222	0	0	0	0	0	0	0	1	148	0	0	149
1630 - 1645	0	3	0	2	0	5	0	0	232	16	0	248	0	0	0	0	0	0	0	0	121	0	0	121
1645 - 1700	0	1	0	1	0	2	0	0	233	9	0	242	0	0	0	0	0	0	0	1	148	0	0	149
1700 - 1715	0	1	0	0	0	1	0	0	214	11	0	225	0	0	0	0	0	0	0	0	141	0	0	141
1715 - 1730	0	4	0	0	0	4	0	0	205	10	0	215	0	0	0	0	0	0	0	0	129	0	0	129
1730 - 1745	0	4	0	0	0	4	0	0	204	13	0	217	0	0	0	0	0	0	0	0	133	0	0	133
1745 - 1800	0	5	0	1	0	6	0	0	177	13	0	190	0	0	0	0	0	0	0	1	118	0	0	119
Grand Total	**0**	**42**	**0**	**15**	**0**	**57**	**0**	**0**	**2383**	**125**	**0**	**2508**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1567**	**0**	**0**	**1572**
Peak Hour Total																								
1615 - 1715	**0**	**7**	**0**	**3**	**0**	**10**	**0**	**0**	**891**	**46**	**0**	**937**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**558**	**0**	**0**	**560**
App %	0.00%	73.68%	0.00%	26.32%			0.00%	0.00%	95.02%	4.98%			0.00%	0.00%	0.00%	0.00%			0.00%	0.32%	99.68%	0.00%		
Int %	0.00%	1.02%	0.00%	0.36%		1.38%	0.00%	0.00%	57.60%	3.02%		60.62%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.12%	37.88%	0.00%		38.00%
Cars Total	0	42	0	15			0	0	2383	125			0	0	0	0			0	5	1567	0		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**0.00%**	**100.00%**			**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs)

Count Sites: 4
Intersection #: 3
Intersection: Lasea Road and Old Highway 99

Southbound: Lasea Road
Westbound: Old Highway 99
Northbound: Lasea Road
Eastbound: Old Highway 99

Lat/Long: N/A

Count Date: 9/6/2017

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

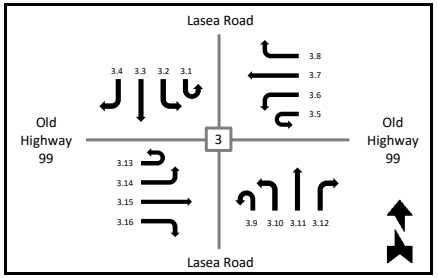
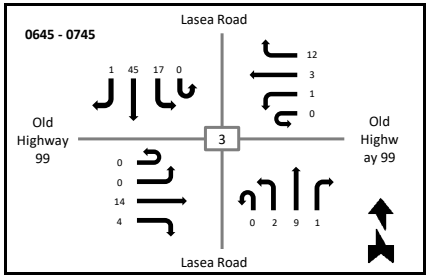


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Lasea Road						Old Highway 99						Lasea Road						Old Highway 99					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	3.1	3.2	3.3	3.4	X-Walk	Total	3.5	3.6	3.7	3.8	X-Walk	Total	3.9	3.10	3.11	3.12	X-Walk	Total	3.13	3.14	3.15	3.16	X-Walk	Total
0600 - 0615	0	8	15	0	0	23	0	0	1	0	0	1	0	0	1	0	0	1	0	0	5	1	0	6
0615 - 0630	0	5	15	0	0	20	0	0	0	0	0	0	0	1	3	0	0	4	0	0	1	1	0	2
0630 - 0645	0	5	10	0	0	15	0	1	0	1	0	2	0	0	3	0	0	3	0	2	0	3	0	5
0645 - 0700	0	3	11	0	0	14	0	0	0	2	0	2	0	0	4	0	0	4	0	0	6	2	0	8
0700 - 0715	0	5	9	1	0	15	0	0	0	2	0	2	0	0	0	1	0	1	0	0	4	1	0	5
0715 - 0730	0	5	14	0	0	19	0	0	2	4	0	6	0	1	2	0	0	3	0	0	2	1	0	3
0730 - 0745	0	4	11	0	0	15	0	1	1	4	0	6	0	1	3	0	0	4	0	0	2	0	0	2
0745 - 0800	0	9	7	0	0	16	0	0	1	2	0	3	0	1	2	0	0	3	0	0	1	1	0	2
0800 - 0815	0	4	6	0	0	10	0	0	1	2	0	3	0	0	3	0	0	3	0	0	3	1	0	4
0815 - 0830	0	1	5	0	0	6	0	0	2	1	0	3	0	0	8	0	0	8	0	0	1	0	0	1
0830 - 0845	0	5	10	1	0	16	0	0	1	3	0	4	0	0	5	0	0	5	0	0	0	0	0	0
0845 - 0900	0	6	4	0	0	10	0	0	0	2	0	2	0	0	2	0	0	2	0	0	2	0	0	2
Grand Total	**0**	**60**	**117**	**2**	**0**	**179**	**0**	**2**	**9**	**23**	**0**	**34**	**0**	**4**	**36**	**1**	**0**	**41**	**0**	**2**	**27**	**11**	**0**	**40**
Peak Hour Total																								
0645 - 0745	**0**	**17**	**45**	**1**	**0**	**63**	**0**	**1**	**3**	**12**	**0**	**16**	**0**	**2**	**9**	**1**	**0**	**12**	**0**	**0**	**14**	**4**	**0**	**18**
App %	0.00%	33.52%	65.36%	1.12%			0.00%	5.88%	26.47%	67.65%			0.00%	9.76%	87.80%	2.44%			0.00%	5.00%	67.50%	27.50%		
Int %	0.00%	20.41%	39.80%	0.68%		60.88%	0.00%	0.68%	3.06%	7.82%		11.56%	0.00%	1.36%	12.24%	0.34%		13.95%	0.00%	0.68%	9.18%	3.74%		13.61%
Cars Total	0	60	117	2			0	2	9	23			0	4	36	1			0	2	27	11		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs)

Count Sites: 4
Intersection #: 3
Intersection: Lasea Road and Old Highway 99

Southbound: Lasea Road
Westbound: Old Highway 99
Northbound: Lasea Road
Eastbound: Old Highway 99

Lat/Long: N/A

Count Date: 9/6/2017

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

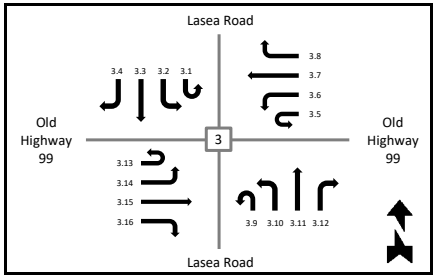
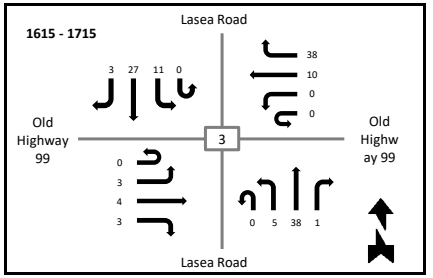


Figure 2 - PM Peak Hour TMC



	Southbound						Westbound						Northbound						Eastbound					
	Lasea Road						Old Highway 99						Lasea Road						Old Highway 99					
Time	U-Turn 3.1	Left 3.2	Thru 3.3	Right 3.4	Peds X-Walk	App Total	U-Turn 3.5	Left 3.6	Thru 3.7	Right 3.8	Peds X-Walk	App Total	U-Turn 3.9	Left 3.10	Thru 3.11	Right 3.12	Peds X-Walk	App Total	U-Turn 3.13	Left 3.14	Thru 3.15	Right 3.16	Peds X-Walk	App Total
1500 - 1515	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
1600 - 1615	0	2	2	0	0	4	0	0	1	4	0	5	0	2	8	0	0	10	0	0	0	1	0	1
1615 - 1630	0	3	7	0	0	10	0	0	2	9	0	11	0	2	14	0	0	16	0	1	3	1	0	5
1630 - 1645	0	4	8	2	0	14	0	0	1	15	0	16	0	0	8	0	0	8	0	1	1	0	0	2
1645 - 1700	0	1	10	0	0	11	0	0	3	9	0	12	0	3	10	1	0	14	0	1	0	0	0	1
1700 - 1715	0	3	2	1	0	6	0	0	4	5	0	9	0	0	6	0	0	6	0	0	0	2	0	2
1715 - 1730	0	1	4	0	0	5	0	0	4	5	0	9	0	1	10	0	0	11	0	1	1	1	0	3
1730 - 1745	0	3	9	0	0	12	0	0	2	13	0	15	0	1	6	0	0	7	0	0	1	1	0	2
1745 - 1800	0	2	7	0	0	9	0	0	5	7	0	12	0	3	7	0	0	10	0	1	0	0	0	1
Grand Total	**0**	**19**	**50**	**3**	**0**	**72**	**0**	**0**	**23**	**67**	**0**	**90**	**0**	**13**	**70**	**1**	**0**	**84**	**0**	**5**	**6**	**6**	**0**	**17**
Peak Hour Total																								
1615 - 1715	**0**	**11**	**27**	**3**	**0**	**41**	**0**	**0**	**10**	**38**	**0**	**48**	**0**	**5**	**38**	**1**	**0**	**44**	**0**	**3**	**4**	**3**	**0**	**10**
App %	0.00%	26.39%	69.44%	4.17%			0.00%	0.00%	25.56%	74.44%			0.00%	15.48%	83.33%	1.19%			0.00%	29.41%	35.29%	35.29%		
Int %	0.00%	7.22%	19.01%	1.14%		27.38%	0.00%	0.00%	8.75%	25.48%		34.22%	0.00%	4.94%	26.62%	0.38%		31.94%	0.00%	1.90%	2.28%	2.28%		6.46%
Cars Total	0	19	50	3			0	0	23	67			0	13	70	1			0	5	6	6		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs)

Count Sites: 4
Intersection #: 4
Intersection: Lasea Road and Blackburn Lane

Southbound: Lasea Road
Westbound: N/A
Northbound: Lasea Road
Eastbound: Blackburn Lane

Lat/Long: N/A

Count Date: 9/7/2017

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

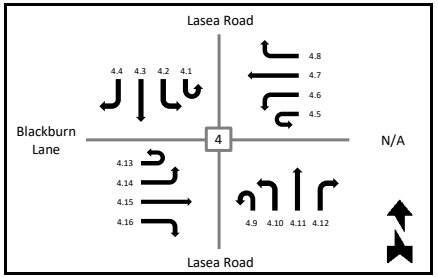
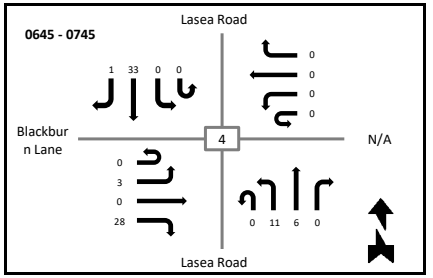


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Lasea Road						N/A						Lasea Road						Blackburn Lane					
Time	U-Turn 4.1	Left 4.2	Thru 4.3	Right 4.4	Peds X-Walk	App Total	U-Turn 4.5	Left 4.6	Thru 4.7	Right 4.8	Peds X-Walk	App Total	U-Turn 4.9	Left 4.10	Thru 4.11	Right 4.12	Peds X-Walk	App Total	U-Turn 4.13	Left 4.14	Thru 4.15	Right 4.16	Peds X-Walk	App Total
0600 - 0615	0	0	9	0	0	9	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	10	0	10
0615 - 0630	0	0	9	0	0	9	0	0	0	0	0	0	0	1	5	0	0	6	0	0	0	11	0	11
0630 - 0645	0	0	7	2	0	9	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	9	0	9
0645 - 0700	0	0	9	1	0	10	0	0	0	0	0	0	0	5	3	0	0	8	0	0	0	6	0	6
0700 - 0715	0	0	11	0	0	11	0	0	0	0	0	0	0	3	1	0	0	4	0	1	0	9	0	10
0715 - 0730	0	0	9	0	0	9	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	5	0	5
0730 - 0745	0	0	4	0	0	4	0	0	0	0	0	0	0	2	2	0	0	4	0	2	0	8	0	10
0745 - 0800	0	0	1	0	0	1	0	0	0	0	0	0	0	3	2	0	0	5	0	0	0	7	0	7
0800 - 0815	0	0	6	0	0	6	0	0	0	0	0	0	0	5	4	0	0	9	0	0	0	3	0	3
0815 - 0830	0	0	2	0	0	2	0	0	0	0	0	0	0	3	6	0	0	9	0	0	0	2	0	2
0830 - 0845	0	0	6	0	0	6	0	0	0	0	0	0	0	4	1	0	0	5	0	0	0	4	0	4
0845 - 0900	0	0	4	0	0	4	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	3	0	3
Grand Total	**0**	**0**	**77**	**3**	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**32**	**26**	**0**	**0**	**58**	**0**	**3**	**0**	**77**	**0**	**80**
Peak Hour Total																								
0645 - 0745	**0**	**0**	**33**	**1**	**0**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**6**	**0**	**0**	**17**	**0**	**3**	**0**	**28**	**0**	**31**
App %	0.00%	0.00%	96.25%	3.75%			0.00%	0.00%	0.00%	0.00%			0.00%	55.17%	44.83%	0.00%			0.00%	3.75%	0.00%	96.25%		
Int %	0.00%	0.00%	35.32%	1.38%		36.70%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	14.68%	11.93%	0.00%		26.61%	0.00%	1.38%	0.00%	35.32%		36.70%
Cars Total	0	0	77	3			0	0	0	0			0	32	26	0			0	3	0	77		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Turning Movement Counts (TMCs)

Count Sites: 4
Intersection #: 4
Intersection: Lasea Road and Blackburn Lane

Southbound: Lasea Road
Westbound: N/A
Northbound: Lasea Road
Eastbound: Blackburn Lane

Lat/Long: N/A

Count Date: 9/7/2017

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

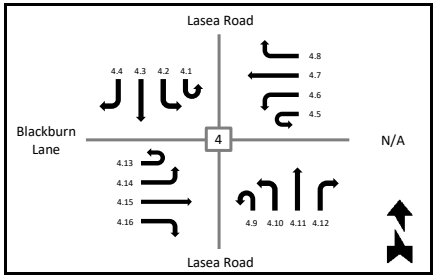
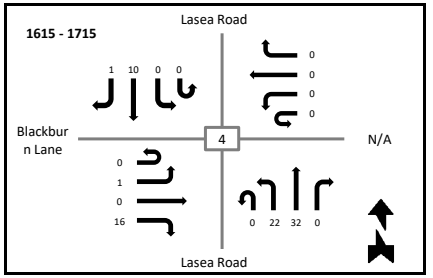


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Lasea Road						N/A						Lasea Road						Blackburn Lane					
Time	U-Turn 4.1	Left 4.2	Thru 4.3	Right 4.4	Peds X-Walk	App Total	U-Turn 4.5	Left 4.6	Thru 4.7	Right 4.8	Peds X-Walk	App Total	U-Turn 4.9	Left 4.10	Thru 4.11	Right 4.12	Peds X-Walk	App Total	U-Turn 4.13	Left 4.14	Thru 4.15	Right 4.16	Peds X-Walk	App Total
1500 - 1515	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
1600 - 1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
1615 - 1630	0	0	2	0	0	2	0	0	0	0	0	0	0	5	4	0	0	9	0	0	0	3	0	3
1630 - 1645	0	0	4	0	0	4	0	0	0	0	0	0	0	6	10	0	0	16	0	0	0	3	0	3
1645 - 1700	0	0	2	0	0	2	0	0	0	0	0	0	0	4	8	0	0	12	0	0	0	4	0	4
1700 - 1715	0	0	2	1	0	3	0	0	0	0	0	0	0	7	10	0	0	17	0	1	0	6	0	7
1715 - 1730	0	0	4	0	0	4	0	0	0	0	0	0	0	5	6	0	0	11	0	1	0	5	0	6
1730 - 1745	0	0	5	0	0	5	0	0	0	0	0	0	0	7	7	0	0	14	0	0	0	7	0	7
1745 - 1800	0	0	2	0	0	2	0	0	0	0	0	0	0	9	3	0	0	12	0	0	0	2	0	2
Grand Total	**0**	**0**	**21**	**1**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**46**	**50**	**0**	**0**	**96**	**0**	**2**	**0**	**30**	**0**	**32**
Peak Hour Total																								
1615 - 1715	**0**	**0**	**10**	**1**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**32**	**0**	**0**	**54**	**0**	**1**	**0**	**16**	**0**	**17**
App %	0.00%	0.00%	95.45%	4.55%			0.00%	0.00%	0.00%	0.00%			0.00%	47.92%	52.08%	0.00%			0.00%	6.25%	0.00%	93.75%		
Int %	0.00%	0.00%	14.00%	0.67%		14.67%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	30.67%	33.33%	0.00%		64.00%	0.00%	1.33%	0.00%	20.00%		21.33%
Cars Total	0	0	21	1			0	0	0	0			0	46	50	0			0	2	0	30		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

APPENDIX B – DETAILED TRIP GENERATION CALCULATIONS

1329 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-eng.com

TRIP GENERATION

Project:	1451 Lasea Road – Columbia, TN
ITE Land Use:	Multi-Family Housing (Low-Rise)
ITE Code:	220
Trip Ends vs:	**ITE 220** – 208 DU
Daily Equation:	Weekday – Fitted Curve Equation
AM Equation:	Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 AM – Fitted Curve Equation
PM Equation:	Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 PM – Fitted Curve Equation

Time Period	Formula[1]	Calculation	Trips
Daily	$T = 7.56(X) - 40.86$	$T = 7.56(208) - 40.86$	1,532
AM Peak (Total)	$Ln(T) = 0.95Ln(X) - 0.51$	$Ln(T) = 0.95Ln(208) - 0.51$	96
AM Peak (Entering)	$T = 0.23(Total\ AM\ Trips)$	$T = 0.23(96)$	22
AM Peak (Exiting)	$T = 0.77(Total\ AM\ Trips)$	$T = 0.77(96)$	74
PM Peak (Total)	$Ln(T) = 0.89Ln(X) - 0.02$	$Ln(T) = 0.89Ln(208) - 0.02$	113
PM Peak (Entering)	$T = 0.63(Total\ PM\ Trips)$	$T = 0.63(113)$	71
PM Peak (Exiting)	$T = 0.37(Total\ PM\ Trips)$	$T = 0.37(113)$	42

[1] Institute of Transportation Engineers (ITE). Trip Generation Manual, 10th Edition. Washington, DC: ITE, 2020

Multifamily Housing (Low-Rise)
(220)

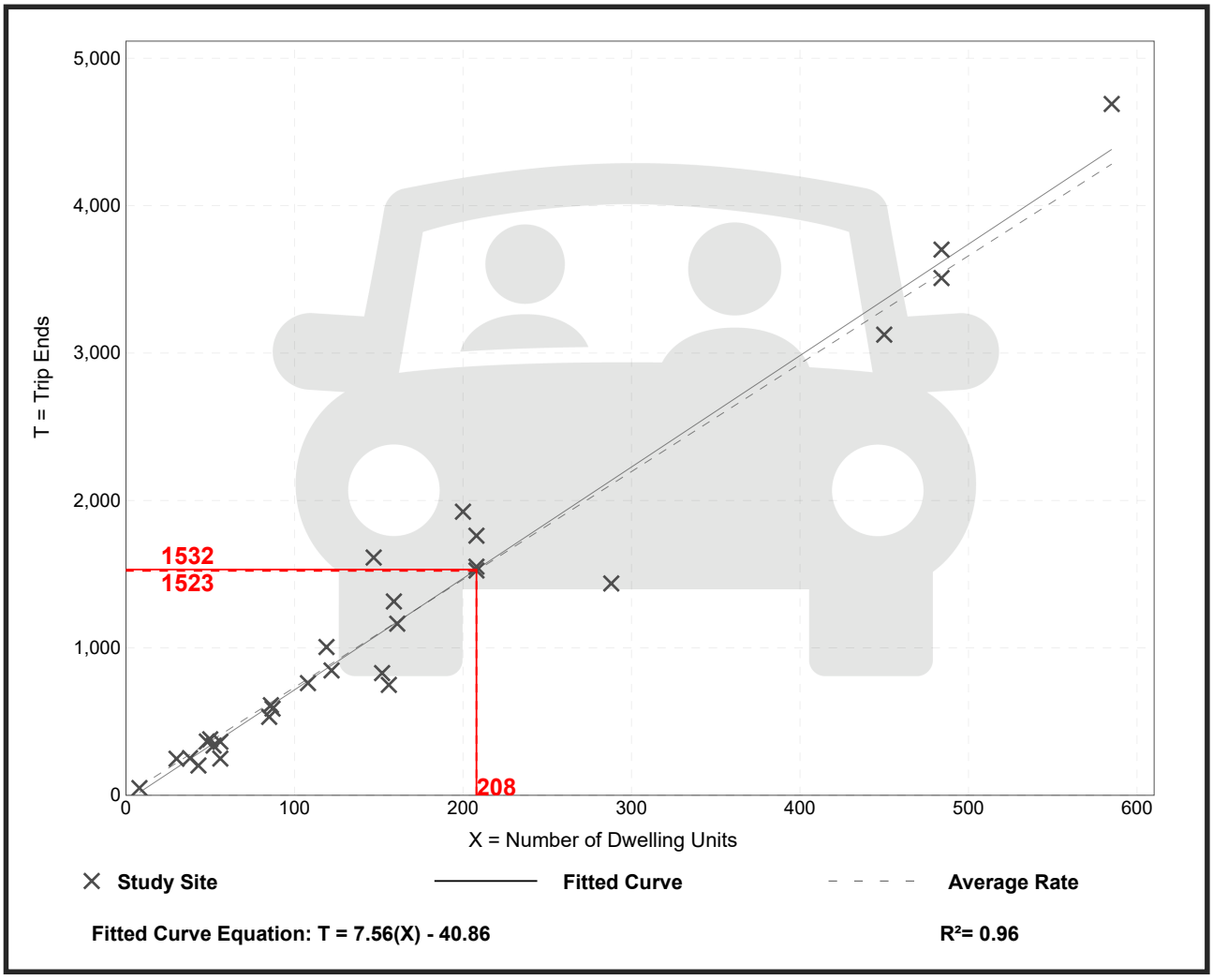
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 29
Avg. Num. of Dwelling Units: 168
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement ● Institute of Transportation Engineers

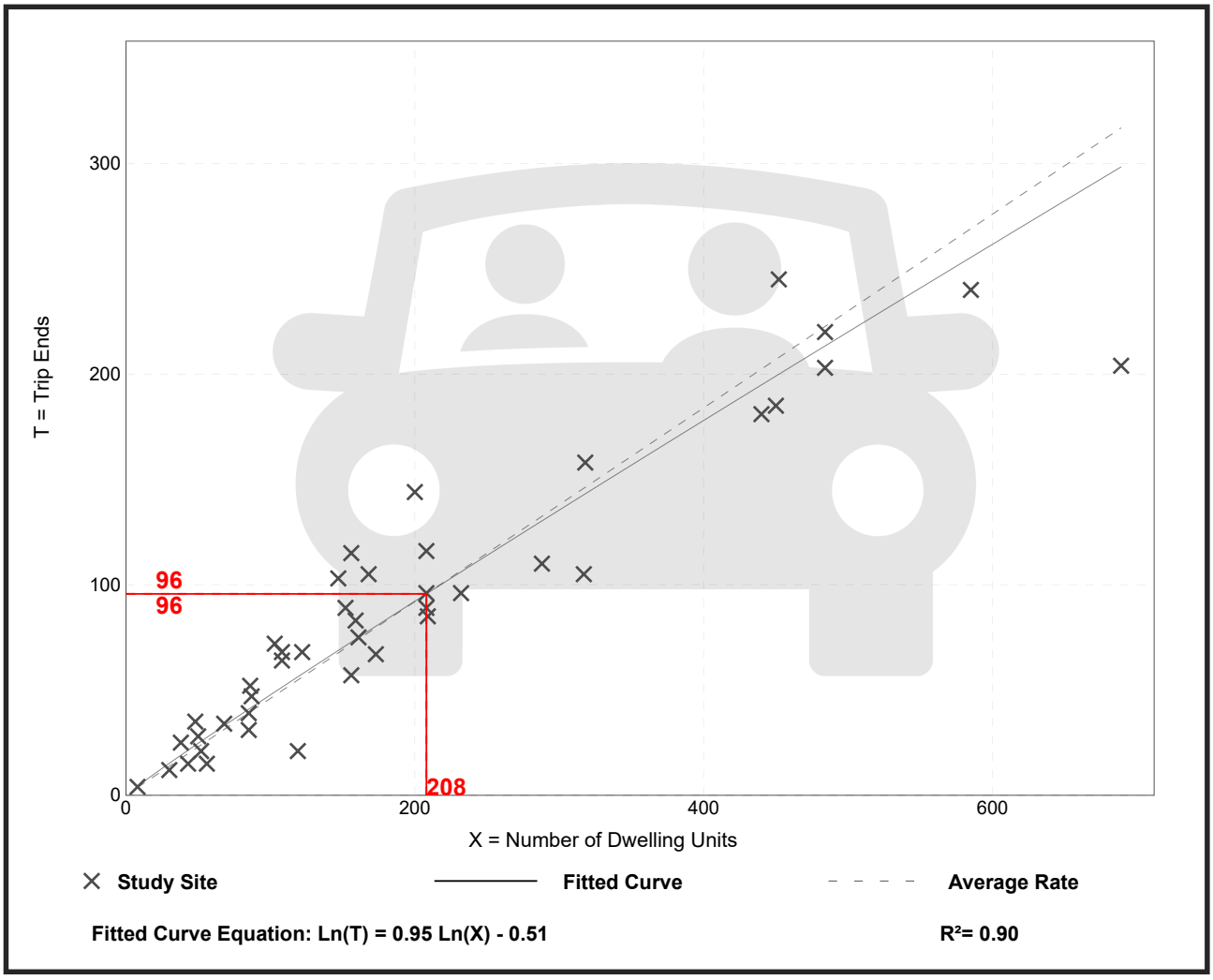
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement ● Institute of Transportation Engineers

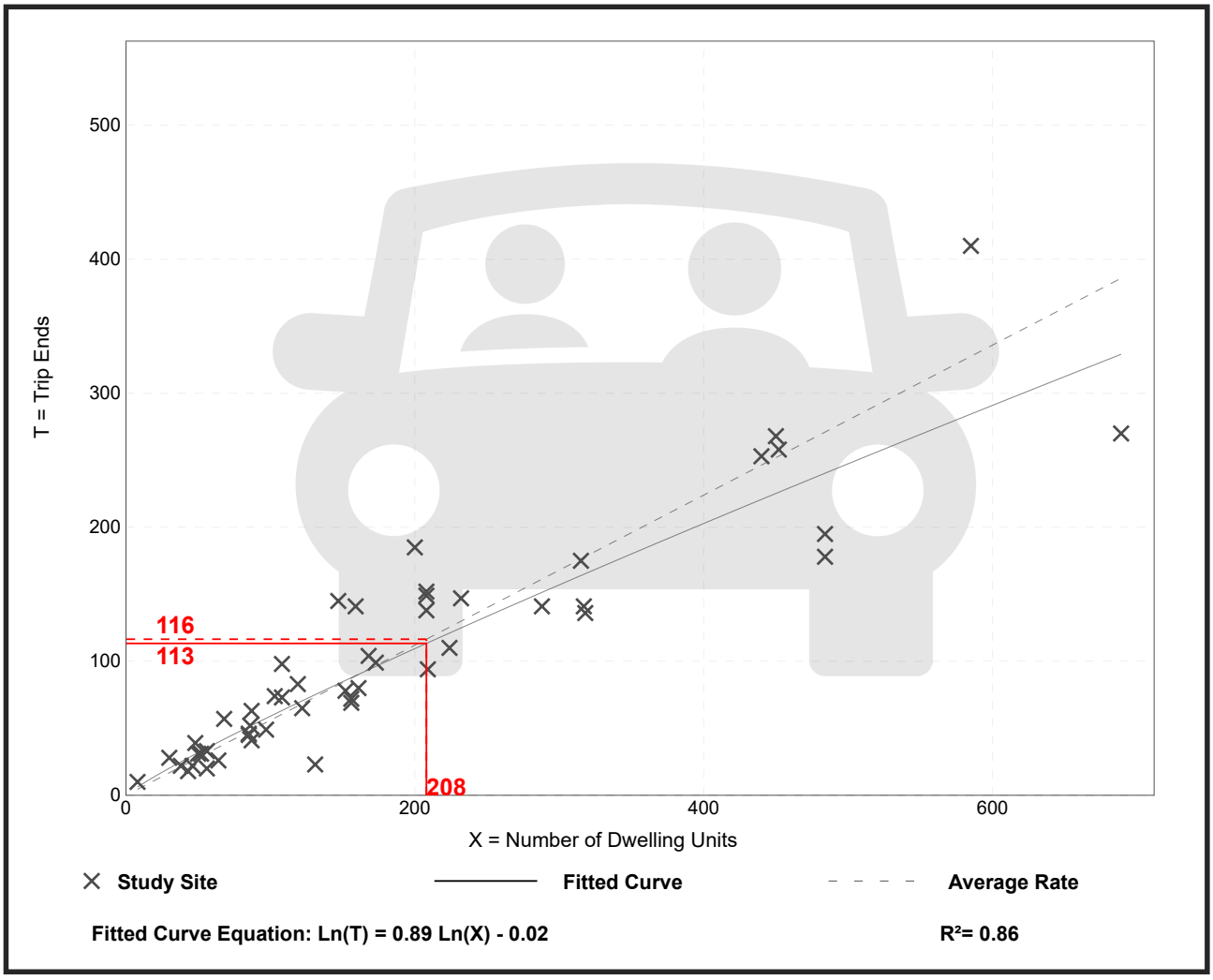
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement ● Institute of Transportation Engineers

APPENDIX C – CAPACITY ANALYSES

EXISTING CAPACITY ANALYSES

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	787	541	6	27	17
Future Vol, veh/h	10	787	541	6	27	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	855	588	7	29	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	595	0	-	0	1469	592
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	877	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	981	-	-	-	140	506
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	407	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	981	-	-	-	138	506
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	981	-	-	-	333
HCM Lane V/C Ratio	0.011	-	-	-	0.144
HCM Control Delay (s)	8.7	-	-	-	17.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	825	561	16	28	1
Future Vol, veh/h	0	825	561	16	28	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	897	610	17	30	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	627	0	-	0	1516	619
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	897	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	955	-	-	-	131	489
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	398	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	955	-	-	-	131	489
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	398	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	955	-	-	-	271
HCM Lane V/C Ratio	-	-	-	-	0.116
HCM Control Delay (s)	0	-	-	-	20
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	15	4	1	3	13	2	10	1	18	49	1
Future Vol, veh/h	0	15	4	1	3	13	2	10	1	18	49	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	16	4	1	3	14	2	11	1	20	53	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	6.8	7.1	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	0%	6%	26%
Vol Thru, %	77%	79%	18%	72%
Vol Right, %	8%	21%	76%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	19	17	68
LT Vol	2	0	1	18
Through Vol	10	15	3	49
RT Vol	1	4	13	1
Lane Flow Rate	14	21	18	74
Geometry Grp	1	1	1	1
Degree of Util (X)	0.016	0.023	0.019	0.083
Departure Headway (Hd)	4.041	3.976	3.656	4.056
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	885	897	973	885
Service Time	2.071	2.017	1.699	2.074
HCM Lane V/C Ratio	0.016	0.023	0.018	0.084
HCM Control Delay	7.1	7.1	6.8	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0.3

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	30	12	7	36	1
Future Vol, veh/h	3	30	12	7	36	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	33	13	8	39	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	74	40	40	0	-	0
Stage 1	40	-	-	-	-	-
Stage 2	34	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	930	1031	1570	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	923	1031	1570	-	-	-
Mov Cap-2 Maneuver	923	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	988	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	4.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1570	-	1020	-	-
HCM Lane V/C Ratio	0.008	-	0.035	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection: 1: Bear Creek Pike & Lasea Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	28	104
Average Queue (ft)	4	20
95th Queue (ft)	19	59
Link Distance (ft)		1262
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Bear Creek Pike & Old Highway 99

Movement	SB
Directions Served	LR
Maximum Queue (ft)	66
Average Queue (ft)	19
95th Queue (ft)	51
Link Distance (ft)	248
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Lasea Road & Old Highway 99

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	27	31	19	55
Average Queue (ft)	12	13	4	34
95th Queue (ft)	34	38	16	48
Link Distance (ft)	892	1948	1262	3595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Lasea Road & Blackburn Lane

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	68	29
Average Queue (ft)	14	1
95th Queue (ft)	37	10
Link Distance (ft)	911	3595
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	569	835	10	23	20
Future Vol, veh/h	29	569	835	10	23	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	618	908	11	25	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	919	0	-	0	1596	914
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	743	-	-	-	117	331
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	502	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	743	-	-	-	112	331
Mov Cap-2 Maneuver	-	-	-	-	245	-
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	502	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	743	-	-	-	279
HCM Lane V/C Ratio	0.042	-	-	-	0.168
HCM Control Delay (s)	10.1	-	-	-	20.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	604	964	50	8	3
Future Vol, veh/h	2	604	964	50	8	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	657	1048	54	9	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1102	0	-	0	1736	1075
Stage 1	-	-	-	-	1075	-
Stage 2	-	-	-	-	661	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	633	-	-	-	96	267
Stage 1	-	-	-	-	328	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	633	-	-	-	96	267
Mov Cap-2 Maneuver	-	-	-	-	223	-
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	514	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	633	-	-	-	233
HCM Lane V/C Ratio	0.003	-	-	-	0.051
HCM Control Delay (s)	10.7	-	-	-	21.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	4	3	0	11	41	5	41	1	12	29	3
Future Vol, veh/h	3	4	3	0	11	41	5	41	1	12	29	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	3	0	12	45	5	45	1	13	32	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	6.9	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	30%	0%	27%
Vol Thru, %	87%	40%	21%	66%
Vol Right, %	2%	30%	79%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	47	10	52	44
LT Vol	5	3	0	12
Through Vol	41	4	11	29
RT Vol	1	3	41	3
Lane Flow Rate	51	11	57	48
Geometry Grp	1	1	1	1
Degree of Util (X)	0.058	0.012	0.057	0.055
Departure Headway (Hd)	4.097	4.029	3.64	4.104
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	874	882	977	872
Service Time	2.125	2.083	1.69	2.133
HCM Lane V/C Ratio	0.058	0.012	0.058	0.055
HCM Control Delay	7.4	7.1	6.9	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0	0.2	0.2

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	17	24	35	11	1
Future Vol, veh/h	1	17	24	35	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	18	26	38	12	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	103	13	13	0	-	0
Stage 1	13	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	895	1067	1606	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	880	1067	1606	-	-	-
Mov Cap-2 Maneuver	880	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1606	-	1055	-	-
HCM Lane V/C Ratio	0.016	-	0.019	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection: 1: Bear Creek Pike & Lasea Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	49	22	79
Average Queue (ft)	20	1	20
95th Queue (ft)	41	7	56
Link Distance (ft)		2447	1262
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Bear Creek Pike & Old Highway 99

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	27	31
Average Queue (ft)	1	11
95th Queue (ft)	9	35
Link Distance (ft)		248
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Lasea Road & Old Highway 99

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	27	56	19	54
Average Queue (ft)	8	31	16	23
95th Queue (ft)	28	56	26	50
Link Distance (ft)	892	1948	1262	3595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Lasea Road & Blackburn Lane

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	29
Average Queue (ft)	7	1
95th Queue (ft)	22	9
Link Distance (ft)	911	3595
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

BACKGROUND CAPACITY ANALYSES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	850	20	32	615	10	66	13	105	35	4	52
Future Volume (veh/h)	21	850	20	32	615	10	66	13	105	35	4	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	924	22	35	668	11	72	14	114	38	4	57
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	349	1009	857	191	1024	870	267	18	149	212	12	166
Arrive On Green	0.02	0.54	0.54	0.03	0.55	0.55	0.05	0.10	0.10	0.06	0.11	0.11
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	176	1434	1774	105	1494
Grp Volume(v), veh/h	23	924	22	35	668	11	72	0	128	38	0	61
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1610	1774	0	1599
Q Serve(g_s), s	0.5	40.6	0.6	0.8	22.7	0.3	3.2	0.0	7.0	1.7	0.0	3.2
Cycle Q Clear(g_c), s	0.5	40.6	0.6	0.8	22.7	0.3	3.2	0.0	7.0	1.7	0.0	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		0.93
Lane Grp Cap(c), veh/h	349	1009	857	191	1024	870	267	0	167	212	0	178
V/C Ratio(X)	0.07	0.92	0.03	0.18	0.65	0.01	0.27	0.00	0.76	0.18	0.00	0.34
Avail Cap(c_a), veh/h	404	1231	1046	232	1231	1046	280	0	322	468	0	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.4	18.8	9.6	18.1	14.2	9.2	33.7	0.0	39.3	32.8	0.0	37.0
Incr Delay (d2), s/veh	0.1	9.5	0.0	0.5	0.9	0.0	0.5	0.0	7.1	0.4	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	23.2	0.3	0.4	11.8	0.1	1.6	0.0	3.4	0.8	0.0	1.5
LnGrp Delay(d),s/veh	11.4	28.3	9.6	18.5	15.2	9.2	34.3	0.0	46.3	33.2	0.0	38.1
LnGrp LOS	B	C	A	B	B	A	C		D	C		D
Approach Vol, veh/h		969			714			200			99	
Approach Delay, s/veh		27.4			15.2			42.0			36.2	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	54.8	10.4	16.0	8.2	55.5	11.0	15.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	59.5	5.0	29.5	5.0	59.5	18.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	42.6	5.2	5.2	2.5	24.7	3.7	9.0
Green Ext Time (p_c), s	0.0	6.1	0.0	0.3	0.0	4.6	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1024	701	29	58	1
Future Vol, veh/h	2	1024	701	29	58	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	1113	762	32	63	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	794	0	-	0	1879	762
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	1117	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	827	-	-	-	78	405
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	313	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	827	-	-	-	78	405
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	313	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	30.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	827	-	-	-	206
HCM Lane V/C Ratio	0.003	-	-	-	0.311
HCM Control Delay (s)	9.4	-	-	-	30.2
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	1.3

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	17	5	1	5	24	2	25	1	47	100	7
Future Vol, veh/h	2	17	5	1	5	24	2	25	1	47	100	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	18	5	1	5	26	2	27	1	51	109	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.1	7.4	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	8%	3%	31%
Vol Thru, %	89%	71%	17%	65%
Vol Right, %	4%	21%	80%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	24	30	154
LT Vol	2	2	1	47
Through Vol	25	17	5	100
RT Vol	1	5	24	7
Lane Flow Rate	30	26	33	167
Geometry Grp	1	1	1	1
Degree of Util (X)	0.035	0.031	0.036	0.19
Departure Headway (Hd)	4.156	4.295	3.923	4.092
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	853	839	918	874
Service Time	2.221	2.295	1.924	2.129
HCM Lane V/C Ratio	0.035	0.031	0.036	0.191
HCM Control Delay	7.4	7.4	7.1	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1	0.7

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	36	23	30	48	1
Future Vol, veh/h	3	36	23	30	48	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	39	25	33	52	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	136	53	53	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	83	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	857	1014	1553	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	843	1014	1553	-	-	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	940	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	3.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1553	-	998	-	-
HCM Lane V/C Ratio	0.016	-	0.042	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection: 1: Rock Springs Access Drive/Lasea Road & Bear Creek Pike

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	40	552	29	199	307	220	66	124	59	87
Average Queue (ft)	11	220	8	24	128	18	35	57	17	16
95th Queue (ft)	32	388	28	82	219	108	65	113	47	48
Link Distance (ft)		2212			2439			620	1247	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		230	100		120	175			40
Storage Blk Time (%)		20			10				6	2
Queuing Penalty (veh)		8			4				3	1

Intersection: 2: Bear Creek Pike & Old Highway 99

Movement	SB
Directions Served	LR
Maximum Queue (ft)	200
Average Queue (ft)	69
95th Queue (ft)	152
Link Distance (ft)	239
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Lasea Road & Old Highway 99

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	27	31	37	78
Average Queue (ft)	16	19	11	42
95th Queue (ft)	37	42	28	67
Link Distance (ft)	892	1948	1247	3595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Lasea Road & Blackburn Lane

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	66	27
Average Queue (ft)	18	1
95th Queue (ft)	43	9
Link Distance (ft)	911	3595
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 17

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	650	64	102	913	23	38	8	60	35	13	43
Future Volume (veh/h)	67	650	64	102	913	23	38	8	60	35	13	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	73	707	70	111	992	25	41	9	65	38	14	47
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	1042	885	385	1052	894	214	14	98	210	33	112
Arrive On Green	0.05	0.56	0.56	0.05	0.56	0.56	0.04	0.07	0.07	0.06	0.09	0.09
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	196	1417	1774	376	1263
Grp Volume(v), veh/h	73	707	70	111	992	25	41	0	74	38	0	61
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1613	1774	0	1640
Q Serve(g_s), s	1.5	24.5	1.8	2.4	45.0	0.6	1.9	0.0	4.1	1.7	0.0	3.2
Cycle Q Clear(g_c), s	1.5	24.5	1.8	2.4	45.0	0.6	1.9	0.0	4.1	1.7	0.0	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.88	1.00		0.77
Lane Grp Cap(c), veh/h	200	1042	885	385	1052	894	214	0	112	210	0	146
V/C Ratio(X)	0.37	0.68	0.08	0.29	0.94	0.03	0.19	0.00	0.66	0.18	0.00	0.42
Avail Cap(c_a), veh/h	215	1109	943	411	1130	960	249	0	320	464	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.9	14.2	9.2	11.2	18.4	8.7	37.2	0.0	41.2	35.6	0.0	39.1
Incr Delay (d2), s/veh	1.1	1.6	0.0	0.4	14.6	0.0	0.4	0.0	6.5	0.4	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	12.8	0.8	1.2	27.1	0.3	1.0	0.0	2.0	0.9	0.0	1.5
LnGrp Delay(d),s/veh	21.0	15.8	9.3	11.6	33.0	8.7	37.6	0.0	47.7	36.0	0.0	41.0
LnGrp LOS	C	B	A	B	C	A	D		D	D		D
Approach Vol, veh/h		850			1128			115			99	
Approach Delay, s/veh		15.7			30.4			44.1			39.1	
Approach LOS		B			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	56.7	9.2	14.1	10.2	57.2	11.0	12.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	5.0	31.0	5.0	55.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	4.4	26.5	3.9	5.2	3.5	47.0	3.7	6.1
Green Ext Time (p_c), s	0.0	5.0	0.0	0.3	0.0	4.2	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	775	1187	84	29	3
Future Vol, veh/h	2	775	1187	84	29	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	842	1290	91	32	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1381	0	-	0	2136	1290
Stage 1	-	-	-	-	1290	-
Stage 2	-	-	-	-	846	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	496	-	-	-	54	200
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	496	-	-	-	54	200
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	31.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	496	-	-	-	171
HCM Lane V/C Ratio	0.004	-	-	-	0.203
HCM Control Delay (s)	12.3	-	-	-	31.4
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	8	3	0	12	74	6	93	1	30	72	7
Future Vol, veh/h	9	8	3	0	12	74	6	93	1	30	72	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	9	3	0	13	80	7	101	1	33	78	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.4	7.9	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	45%	0%	28%
Vol Thru, %	93%	40%	14%	66%
Vol Right, %	1%	15%	86%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	20	86	109
LT Vol	6	9	0	30
Through Vol	93	8	12	72
RT Vol	1	3	74	7
Lane Flow Rate	109	22	93	118
Geometry Grp	1	1	1	1
Degree of Util (X)	0.128	0.027	0.103	0.139
Departure Headway (Hd)	4.231	4.541	3.952	4.235
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	836	792	912	835
Service Time	2.317	2.545	1.952	2.318
HCM Lane V/C Ratio	0.13	0.028	0.102	0.141
HCM Control Delay	7.9	7.7	7.4	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.3	0.5

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	30	32	51	49	1
Future Vol, veh/h	1	30	32	51	49	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	33	35	55	53	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	179	54	54	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	811	1013	1551	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	792	1013	1551	-	-	-
Mov Cap-2 Maneuver	792	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1551	-	1004	-	-
HCM Lane V/C Ratio	0.022	-	0.034	-	-
HCM Control Delay (s)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection: 1: Rock Springs Access Drive/Lasea Road & Bear Creek Pike

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	200	313	51	200	573	219	66	86	93	106
Average Queue (ft)	48	152	15	74	276	18	22	27	17	19
95th Queue (ft)	125	254	39	192	475	83	52	58	51	57
Link Distance (ft)		2212			2439			620	1247	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		230	100		120	175			40
Storage Blk Time (%)	0	12		0	24				6	4
Queuing Penalty (veh)	2	16		0	29				3	1

Intersection: 2: Bear Creek Pike & Old Highway 99

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	27	94
Average Queue (ft)	1	30
95th Queue (ft)	9	73
Link Distance (ft)		239
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Lasea Road & Old Highway 99

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	27	76	44	68
Average Queue (ft)	10	37	28	40
95th Queue (ft)	32	60	46	63
Link Distance (ft)	892	1948	1247	3595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Lasea Road & Blackburn Lane

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	56	29
Average Queue (ft)	15	1
95th Queue (ft)	37	10
Link Distance (ft)	911	3595
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 52

PROJECTED CAPACITY ANALYSES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	850	20	32	615	23	66	13	105	79	4	78
Future Volume (veh/h)	29	850	20	32	615	23	66	13	105	79	4	78
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	32	924	22	35	668	25	72	14	114	86	4	85
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1004	854	185	1007	856	253	18	148	227	9	183
Arrive On Green	0.03	0.54	0.54	0.03	0.54	0.54	0.05	0.10	0.10	0.07	0.12	0.12
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	176	1434	1774	72	1522
Grp Volume(v), veh/h	32	924	22	35	668	25	72	0	128	86	0	89
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1610	1774	0	1594
Q Serve(g_s), s	0.7	41.9	0.6	0.8	23.7	0.7	3.3	0.0	7.1	3.9	0.0	4.8
Cycle Q Clear(g_c), s	0.7	41.9	0.6	0.8	23.7	0.7	3.3	0.0	7.1	3.9	0.0	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		0.96
Lane Grp Cap(c), veh/h	344	1004	854	185	1007	856	253	0	166	227	0	192
V/C Ratio(X)	0.09	0.92	0.03	0.19	0.66	0.03	0.28	0.00	0.77	0.38	0.00	0.46
Avail Cap(c_a), veh/h	387	1201	1021	225	1201	1021	263	0	314	457	0	535
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	19.5	9.9	18.8	15.2	9.9	34.7	0.0	40.3	33.8	0.0	37.8
Incr Delay (d2), s/veh	0.1	10.3	0.0	0.5	1.1	0.0	0.6	0.0	7.3	1.0	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	24.2	0.3	0.5	12.4	0.3	1.7	0.0	3.5	2.0	0.0	2.2
LnGrp Delay(d),s/veh	12.0	29.7	10.0	19.2	16.2	9.9	35.3	0.0	47.6	34.9	0.0	39.6
LnGrp LOS	B	C	A	B	B	A	D		D	C		D
Approach Vol, veh/h		978			728			200			175	
Approach Delay, s/veh		28.7			16.2			43.2			37.3	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	55.8	10.5	17.1	8.8	55.9	12.0	15.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	59.5	5.0	31.0	5.0	59.5	18.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	43.9	5.3	6.8	2.7	25.7	5.9	9.1
Green Ext Time (p_c), s	0.0	5.9	0.0	0.4	0.0	4.6	0.1	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1068	714	29	58	1
Future Vol, veh/h	0	1068	714	29	58	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1161	776	32	63	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	808	0	-	0	1937	776
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	1161	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	817	-	-	-	72	397
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	298	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	817	-	-	-	72	397
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	298	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	31.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	817	-	-	-	197
HCM Lane V/C Ratio	-	-	-	-	0.326
HCM Control Delay (s)	0	-	-	-	31.9
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	1.3

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	17	5	1	5	24	2	29	1	47	101	7
Future Vol, veh/h	2	17	5	1	5	24	2	29	1	47	101	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	18	5	1	5	26	2	32	1	51	110	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.1	7.4	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	8%	3%	30%
Vol Thru, %	91%	71%	17%	65%
Vol Right, %	3%	21%	80%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	24	30	155
LT Vol	2	2	1	47
Through Vol	29	17	5	101
RT Vol	1	5	24	7
Lane Flow Rate	35	26	33	168
Geometry Grp	1	1	1	1
Degree of Util (X)	0.04	0.031	0.036	0.192
Departure Headway (Hd)	4.158	4.308	3.936	4.096
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	853	836	915	874
Service Time	2.224	2.309	1.937	2.133
HCM Lane V/C Ratio	0.041	0.031	0.036	0.192
HCM Control Delay	7.4	7.4	7.1	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1	0.7

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	36	23	34	49	1
Future Vol, veh/h	3	36	23	34	49	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	39	25	37	53	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	141	54	54	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	852	1013	1551	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	936	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	838	1013	1551	-	-	-
Mov Cap-2 Maneuver	838	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	936	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1551	-	997	-	-
HCM Lane V/C Ratio	0.016	-	0.043	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	70	21	44	91	1
Future Vol, veh/h	4	70	21	44	91	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	76	23	48	99	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	194	100	100	0	-	0
Stage 1	100	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	795	956	1493	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	782	956	1493	-	-	-
Mov Cap-2 Maneuver	782	-	-	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	930	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	2.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1493	-	945	-	-
HCM Lane V/C Ratio	0.015	-	0.085	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection: 1: Rock Springs Access Drive/Lasea Road & Bear Creek Pike

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	199	360	25	64	265	30	85	120	126	88
Average Queue (ft)	21	232	1	16	143	8	32	47	42	23
95th Queue (ft)	101	354	8	44	241	29	64	94	84	62
Link Distance (ft)		2212			2442			620	364	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		230	100		120	175			40
Storage Blk Time (%)		20			12				18	4
Queuing Penalty (veh)		10			7				14	3

Intersection: 2: Bear Creek Pike & Old Highway 99

Movement	SB
Directions Served	LR
Maximum Queue (ft)	134
Average Queue (ft)	70
95th Queue (ft)	122
Link Distance (ft)	239
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Lasea Road & Old Highway 99

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	27	54	41	79
Average Queue (ft)	19	24	11	40
95th Queue (ft)	39	50	28	65
Link Distance (ft)	891	1948	820	3595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Lasea Road & Blackburn Lane

Movement	EB
Directions Served	LR
Maximum Queue (ft)	48
Average Queue (ft)	15
95th Queue (ft)	38
Link Distance (ft)	911
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Lasea Road & Site Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	48	31
Average Queue (ft)	26	1
95th Queue (ft)	44	10
Link Distance (ft)	316	364
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 34

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	650	64	102	913	65	38	8	60	60	13	58
Future Volume (veh/h)	92	650	64	102	913	65	38	8	60	60	13	58
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	100	707	70	111	992	71	41	9	65	65	14	63
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	1047	890	387	1049	892	200	14	98	210	27	119
Arrive On Green	0.05	0.56	0.56	0.05	0.56	0.56	0.04	0.07	0.07	0.06	0.09	0.09
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	196	1417	1774	296	1332
Grp Volume(v), veh/h	100	707	70	111	992	71	41	0	74	65	0	77
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	0	1613	1774	0	1628
Q Serve(g_s), s	2.1	24.6	1.9	2.4	45.7	1.9	1.9	0.0	4.1	3.1	0.0	4.1
Cycle Q Clear(g_c), s	2.1	24.6	1.9	2.4	45.7	1.9	1.9	0.0	4.1	3.1	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.88	1.00		0.82
Lane Grp Cap(c), veh/h	202	1047	890	387	1049	892	200	0	111	210	0	146
V/C Ratio(X)	0.49	0.68	0.08	0.29	0.95	0.08	0.21	0.00	0.67	0.31	0.00	0.53
Avail Cap(c_a), veh/h	210	1096	932	412	1116	949	234	0	316	458	0	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.8	14.2	9.2	11.2	18.7	9.2	37.7	0.0	41.7	36.6	0.0	39.9
Incr Delay (d2), s/veh	1.9	1.6	0.0	0.4	15.2	0.0	0.5	0.0	6.7	0.8	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	13.0	0.8	1.2	27.6	0.8	1.0	0.0	2.0	1.5	0.0	2.0
LnGrp Delay(d),s/veh	22.6	15.7	9.2	11.6	33.9	9.2	38.2	0.0	48.3	37.4	0.0	42.8
LnGrp LOS	C	B	A	B	C	A	D		D	D		D
Approach Vol, veh/h		877			1174			115			142	
Approach Delay, s/veh		16.0			30.3			44.7			40.3	
Approach LOS		B			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	57.6	9.2	14.2	10.6	57.7	11.1	12.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	5.0	31.0	5.0	55.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	4.4	26.6	3.9	6.1	4.1	47.7	5.1	6.1
Green Ext Time (p_c), s	0.0	5.0	0.0	0.4	0.0	4.0	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	800	1229	84	29	3
Future Vol, veh/h	2	800	1229	84	29	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	870	1336	91	32	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1427	0	-	0	2210	1336
Stage 1	-	-	-	-	1336	-
Stage 2	-	-	-	-	874	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	477	-	-	-	49	188
Stage 1	-	-	-	-	245	-
Stage 2	-	-	-	-	408	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	477	-	-	-	49	188
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	408	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	477	-	-	-	162
HCM Lane V/C Ratio	0.005	-	-	-	0.215
HCM Control Delay (s)	12.6	-	-	-	33.2
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	8	3	0	12	74	6	95	1	30	76	7
Future Vol, veh/h	9	8	3	0	12	74	6	95	1	30	76	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	9	3	0	13	80	7	103	1	33	83	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.4	8	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	45%	0%	27%
Vol Thru, %	93%	40%	14%	67%
Vol Right, %	1%	15%	86%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	102	20	86	113
LT Vol	6	9	0	30
Through Vol	95	8	12	76
RT Vol	1	3	74	7
Lane Flow Rate	111	22	93	123
Geometry Grp	1	1	1	1
Degree of Util (X)	0.13	0.028	0.103	0.145
Departure Headway (Hd)	4.235	4.557	3.967	4.236
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	834	790	909	835
Service Time	2.324	2.56	1.968	2.321
HCM Lane V/C Ratio	0.133	0.028	0.102	0.147
HCM Control Delay	8	7.7	7.4	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.3	0.5

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	30	32	53	53	1
Future Vol, veh/h	1	30	32	53	53	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	33	35	58	58	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	187	59	59	0	-	0
Stage 1	59	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	802	1007	1545	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	784	1007	1545	-	-	-
Mov Cap-2 Maneuver	784	-	-	-	-	-
Stage 1	942	-	-	-	-	-
Stage 2	898	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1545	-	998	-	-
HCM Lane V/C Ratio	0.023	-	0.034	-	-
HCM Control Delay (s)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	40	67	98	91	4
Future Vol, veh/h	2	40	67	98	91	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	43	73	107	99	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	354	101	103	0	-	0
Stage 1	101	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	644	954	1489	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	611	954	1489	-	-	-
Mov Cap-2 Maneuver	611	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1489	-	929	-	-
HCM Lane V/C Ratio	0.049	-	0.049	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection: 1: Rock Springs Access Drive/Lasea Road & Bear Creek Pike

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	200	399	29	200	982	220	66	80	99	49
Average Queue (ft)	50	170	14	107	493	49	19	24	27	18
95th Queue (ft)	138	289	36	237	913	176	49	56	74	45
Link Distance (ft)		2212			2442			620	364	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		230	100		120	175			40
Storage Blk Time (%)		17		1	32				11	2
Queuing Penalty (veh)		26		9	54				8	1

Intersection: 2: Bear Creek Pike & Old Highway 99

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	48	64
Average Queue (ft)	3	23
95th Queue (ft)	19	51
Link Distance (ft)		239
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Lasea Road & Old Highway 99

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	27	56	43	55
Average Queue (ft)	7	35	23	35
95th Queue (ft)	26	50	39	53
Link Distance (ft)	891	1948	820	3595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Lasea Road & Blackburn Lane

Movement	EB
Directions Served	LR
Maximum Queue (ft)	42
Average Queue (ft)	15
95th Queue (ft)	34
Link Distance (ft)	911
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

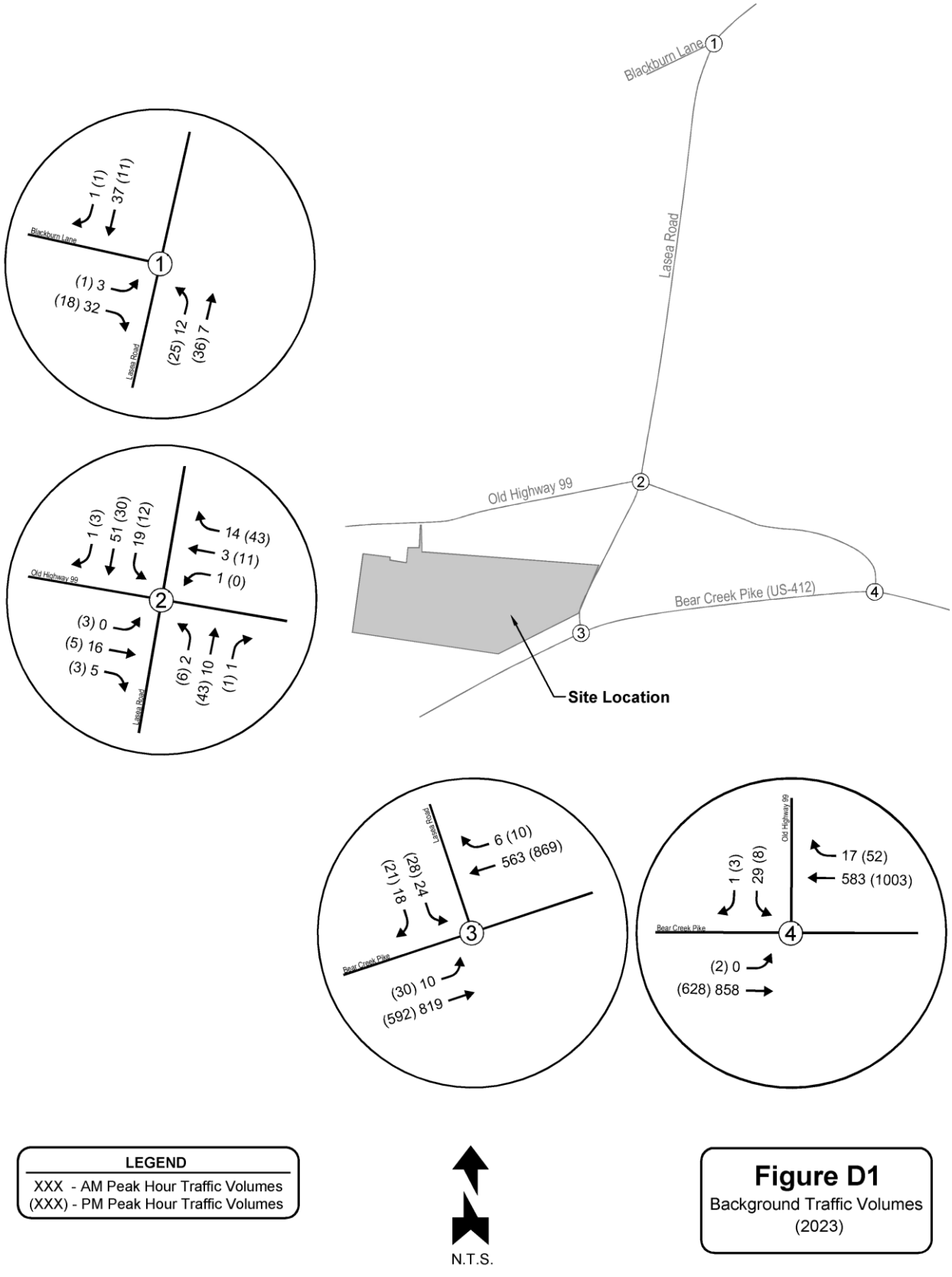
Intersection: 5: Lasea Road & Site Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	75	32
Average Queue (ft)	23	6
95th Queue (ft)	50	26
Link Distance (ft)	316	364
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 98

APPENDIX D – ADDITIONAL FIGURES


Blackburn Lane
1
Lasea Road
Old Highway 99
2
Bear Creek Pike (US-412)
4
3
Site Location
1 (1)
37 (11)
(1) 3
(18) 32
(25) 12
(36) 7
1 (3)
51 (30)
19 (12)
14 (43)
3 (11)
1 (0)
(3) 0
(5) 16
(3) 5
(6) 2
(43) 10
(1) 1
6 (10)
563 (869)
(28) 24
(21) 18
(30) 10
(592) 819
1 (3)
29 (8)
17 (52)
583 (1003)
(2) 0
(628) 858
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D1
Background Traffic Volumes
(2023)

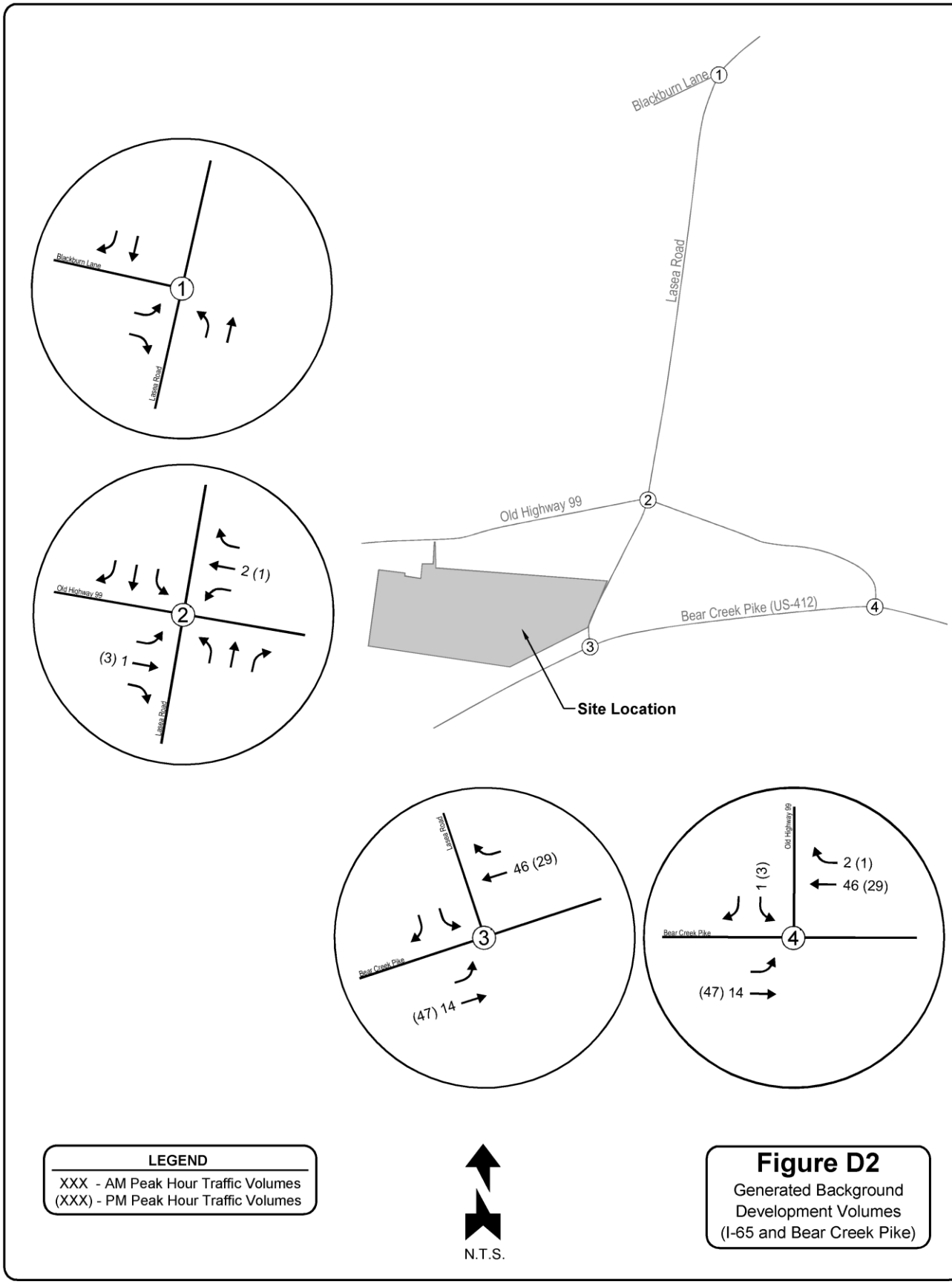


Figure D2
Generated Background Development Volumes (I-65 and Bear Creek Pike)

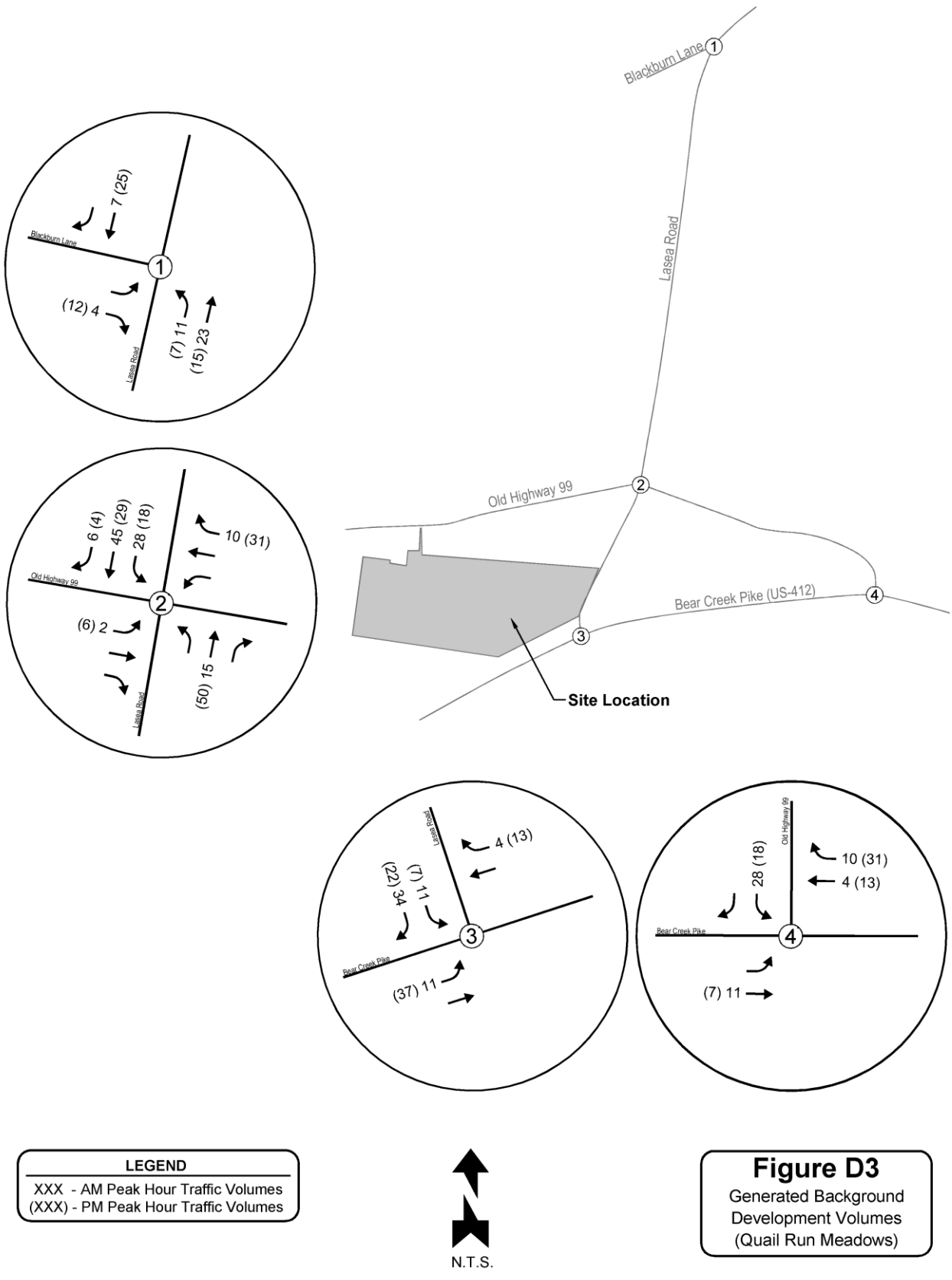


Figure D3
Generated Background Development Volumes (Quail Run Meadows)

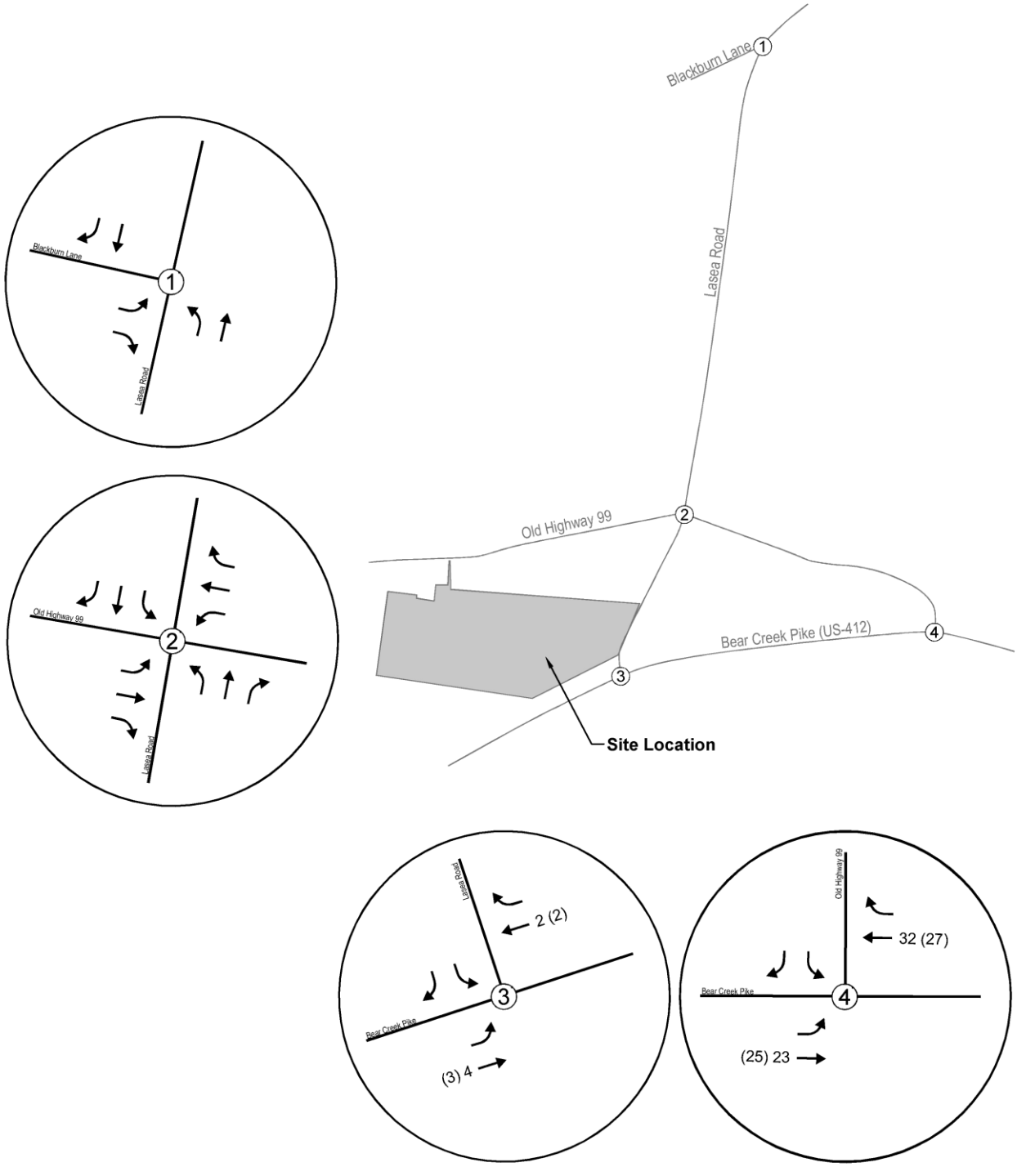


Figure D4
Generated Background Development Volumes (Bear Creek Hotel)

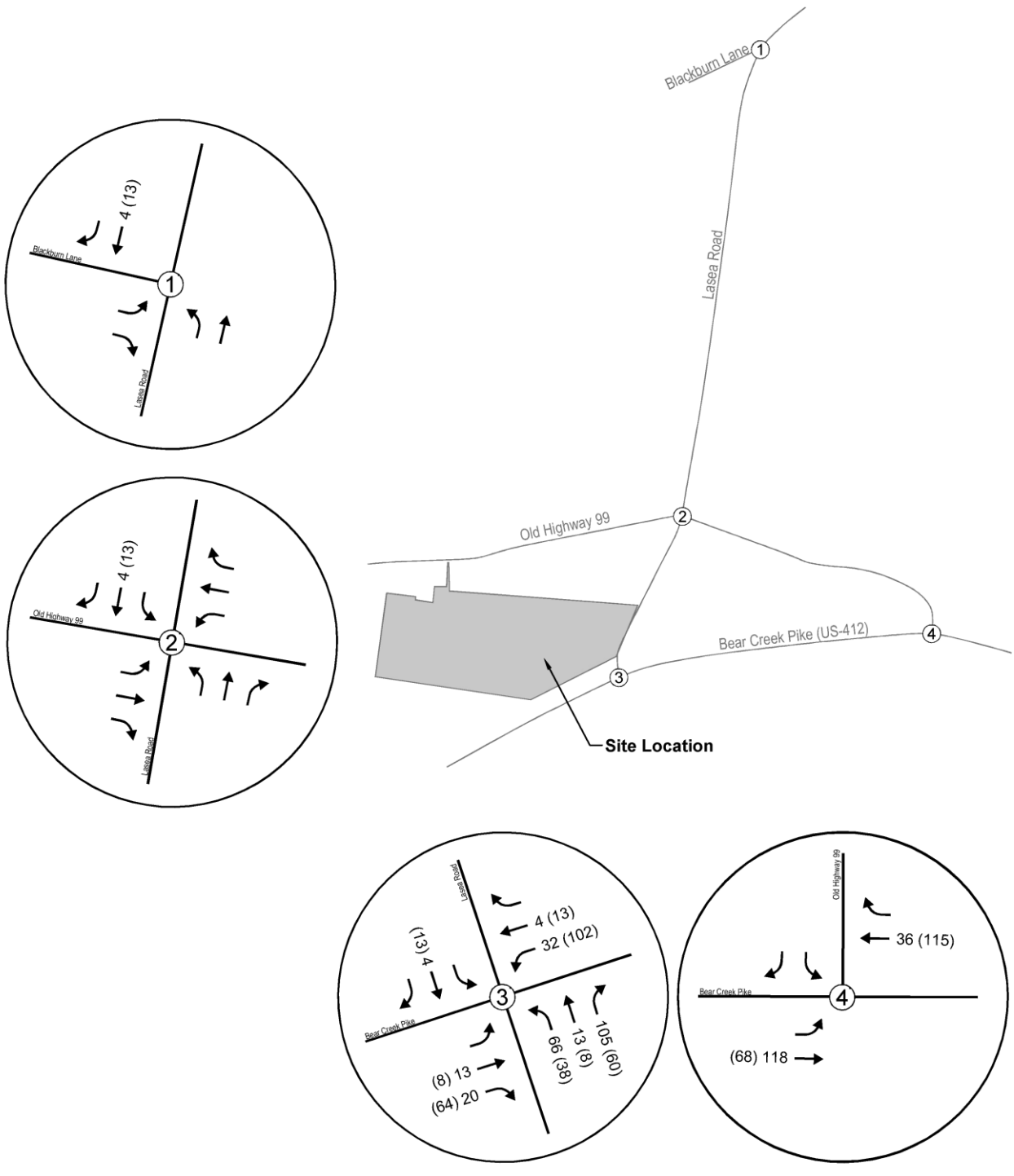


Figure D5
Generated Background Development Volumes
(1449 Rock Springs Rd PUD)

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	1451 Lasea Road, Columbia, TN		
	TAX MAP: 073	GROUP:	PARCEL: 051.00
SUMMARY OF NATURE OF REQUEST AND WORK	Preliminary Development Plan and Preliminary Plat of residential development		

DATE OF PRE-APPLICATION CONFERENCE	2/22/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☐ Annexation ☐ Rezoning ☒ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☒ Other: Preliminary Development plan **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) Highland Point @ Bear Creek ☐ Total Number of Lots 143 ☐ Total acreage 29.5 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Joseph Ahler P.E., R.L.S.	PHONE	615-481-3106
ADDRESS	P.O. Box 1636, Spring Hill, TN 37174	EMAIL	joe.ahler@gmail.com

PROPERTY OWNER NAME	Imer Development, LLC	PHONE	615-788-1320
ADDRESS	1909 Columbia Ave.,Franklin TN, 37064	EMAIL	stuart@nasonhomes.com

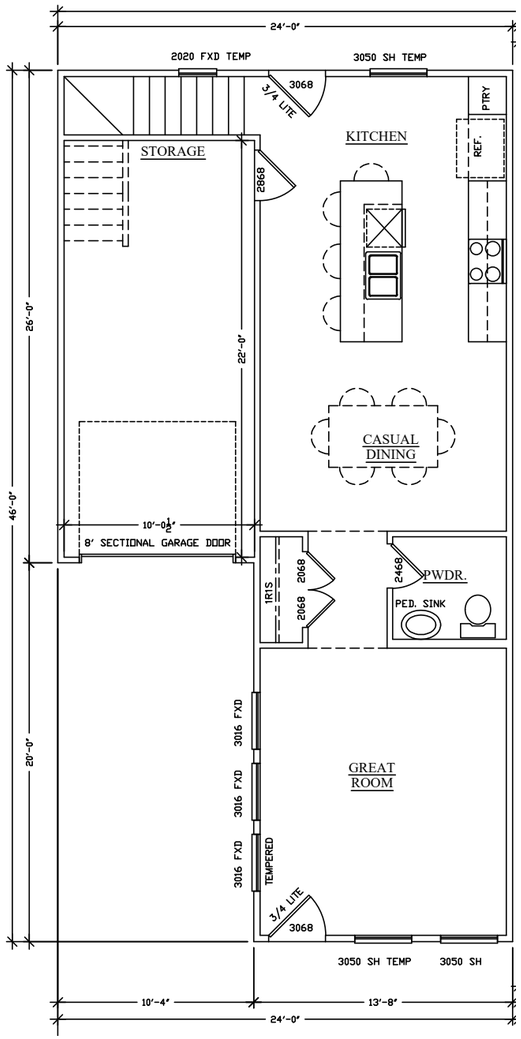
In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Joseph Ahler	Joseph Ahler	4/17/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Imer Development, LLC		4/17/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

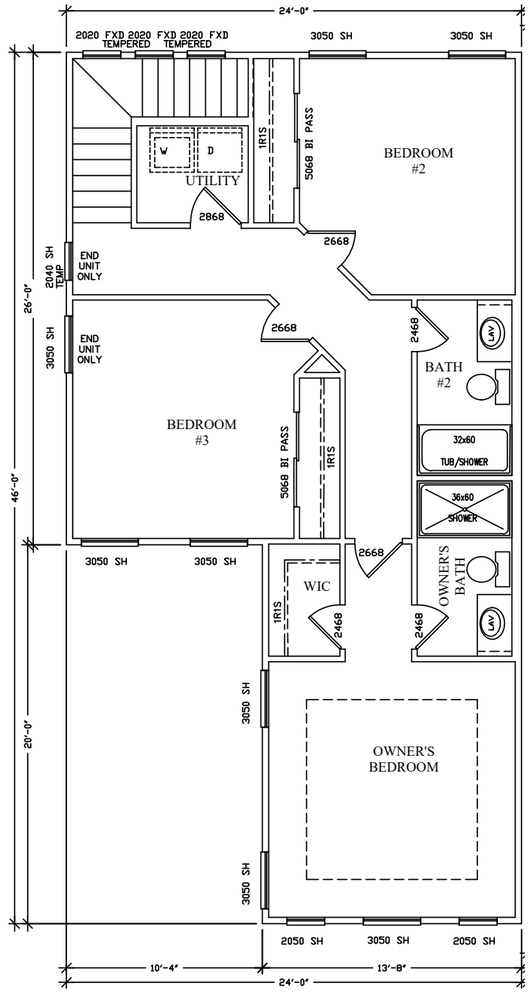
STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

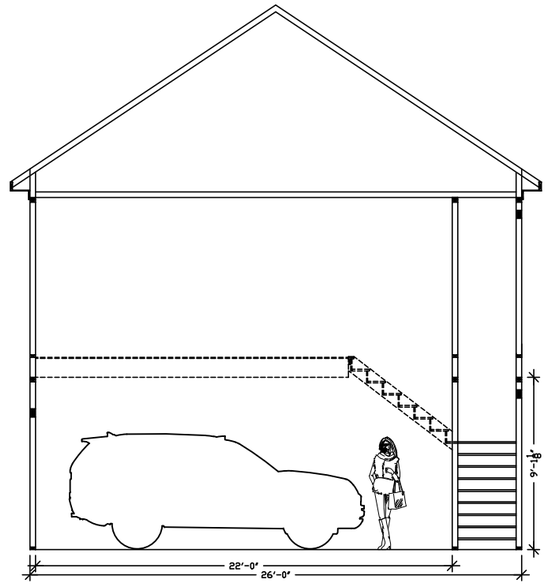
DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	
BOARD ACTION	



FIRST FLOORPLAN 1/8"=1'-0"



SECOND FLOORPLAN 1/8"=1'-0"



SECTION THRU GARAGE @ STAIRS 1/8"=1'-0"

Project	
TOWNHOME	
Spec. Revision Date:	
Lot #	Market Home or Home Owner
#	Name:
Plan Name:	
PROPOSED	
Sheet Name:	
STANDARD FLOORPLANS	

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

Scale: 1/16"=1'-0"

Date: XX/XX/XX

Revision Dates:

A1.1

PRELIMINARY PLAT FOR:

MACKENZIE PLACE

TAX MAP 90B, GROUP B, PARCEL 47.00

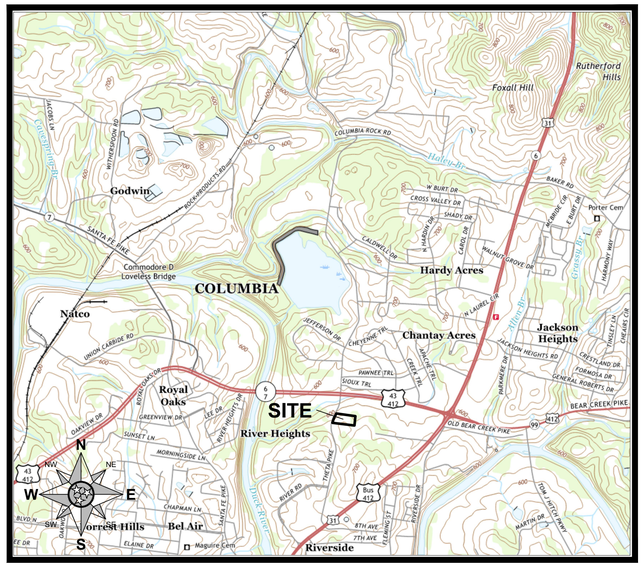
220 THETA PIKE

CITY OF COLUMBIA

MAURY COUNTY, TENNESSEE

JULY 17, 2023

Sheet List Table	
SHEET NUMBER	SHEET TITLE
PP-01	COVER SHEET
PP-02	EXISTING CONDITIONS
PP-03	PRELIMINARY PLAT
PP-04	PRELIMINARY PLAT



VICINITY MAP

SCALE: 1" = 2,000'

SOURCE: USGS

PROJECT NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
3. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
4. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
5. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
6. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
7. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

CONTACT LIST

OWNER/DEVELOPER

WAITS DEVELOPMENT GROUP, LLC
ADDRESS: PO BOX 111285
NASHVILLE, TENNESSEE 37222
PHONE NO.:615-498-4190
CONTACT NAME: JOHN WAITS

CIVIL ENGINEER

M2 GROUP, LLC
P.O. BOX 848
FRANKLIN, TN 37065
PHONE: (615) 406-3415
CONTACT: MATT W. BRYANT, P.E.
E-MAIL: matt@m2groupllc.com

UTILITY CONTACTS:

WATER SUPPLY:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

SANITARY SEWER
COLUMBIA WASTEWATER DEPARTMENT
1244 Treatment Plant Road
COLUMBIA, TN 38401
(931) 560-1001

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

GAS SERVICE
ATMOS ENERGY CORPORATION
810 NASHVILLE HWY
COLUMBIA, TN 38401
(931) 388-9136

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYANT — LICENSED PROFESSIONAL ENGINEER — COMMERCE & CONFIDENCE — STATE OF TENNESSEE — 07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

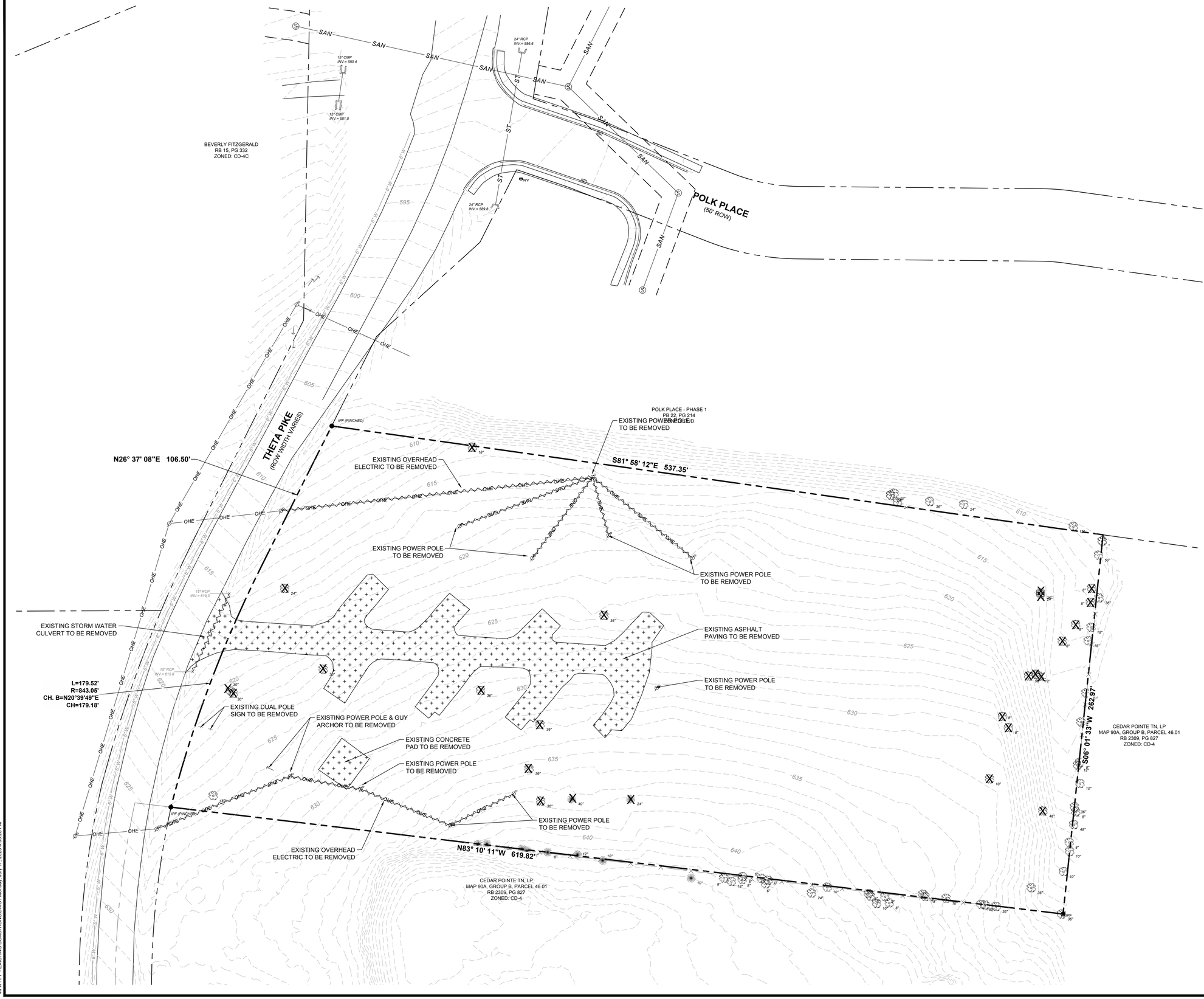
COVER SHEET

DATE :	JULY 17, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

SHEET NUMBER:

PP-01

MPA - PP - COVER SHEET.DWG / Monday, July 17, 2023 4:35:22 PM



LEGEND

- ASPHALT REMOVAL
- UTILITY REMOVAL
- TREE REMOVAL
- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPEF
- EXISTING INDEX CONTOUR
- EXISTING OVERHEAD ELECTI
- EXISTING SANITARY SEWER I
- EXISTING TREELINE
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER LIN
- FIRE HYDRANT
- WATER METER
- TREE, DECIDUOUS
- TREE, CONIFER
- IRON PIPE FOUND (IPF)
- SANITARY MANHOLE
- WATER BOX (WATER VALVE)
- POWER POLE
- CURB INLET

SURVEYOR'S NOTES

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. THE FIELD SURVEY WAS COMPLETED ON MAY, 2022.
3. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD.
4. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
5. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
6. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP", 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
7. UTILITIES SHOWN HEREON WERE COMPILED FROM VISIBLE STRUCTURES AT THE SITE, INFORMATION FROM PLANS, AND PHYSICAL MARKINGS AND COMBINED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. VERIFICATION OF EXISTENCE, LOCATIONS, AND DEPTH SHOULD BE MADE BEFORE CONDUCTING ANY EXCAVATION IN THE VICINITY OF THE UTILITY.
8. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.
9. NO TITLE REPORT WAS PROVIDED TO THIS SURVEYOR REGARDING THE SUBJECT PROPERTIES, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH AND REPORT MAY DISCLOSE.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

.

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYANT — LICENSED PROFESSIONAL LAND SURVEYOR — TENNESSEE — STATE OF TENNESSEE — 07/17/23

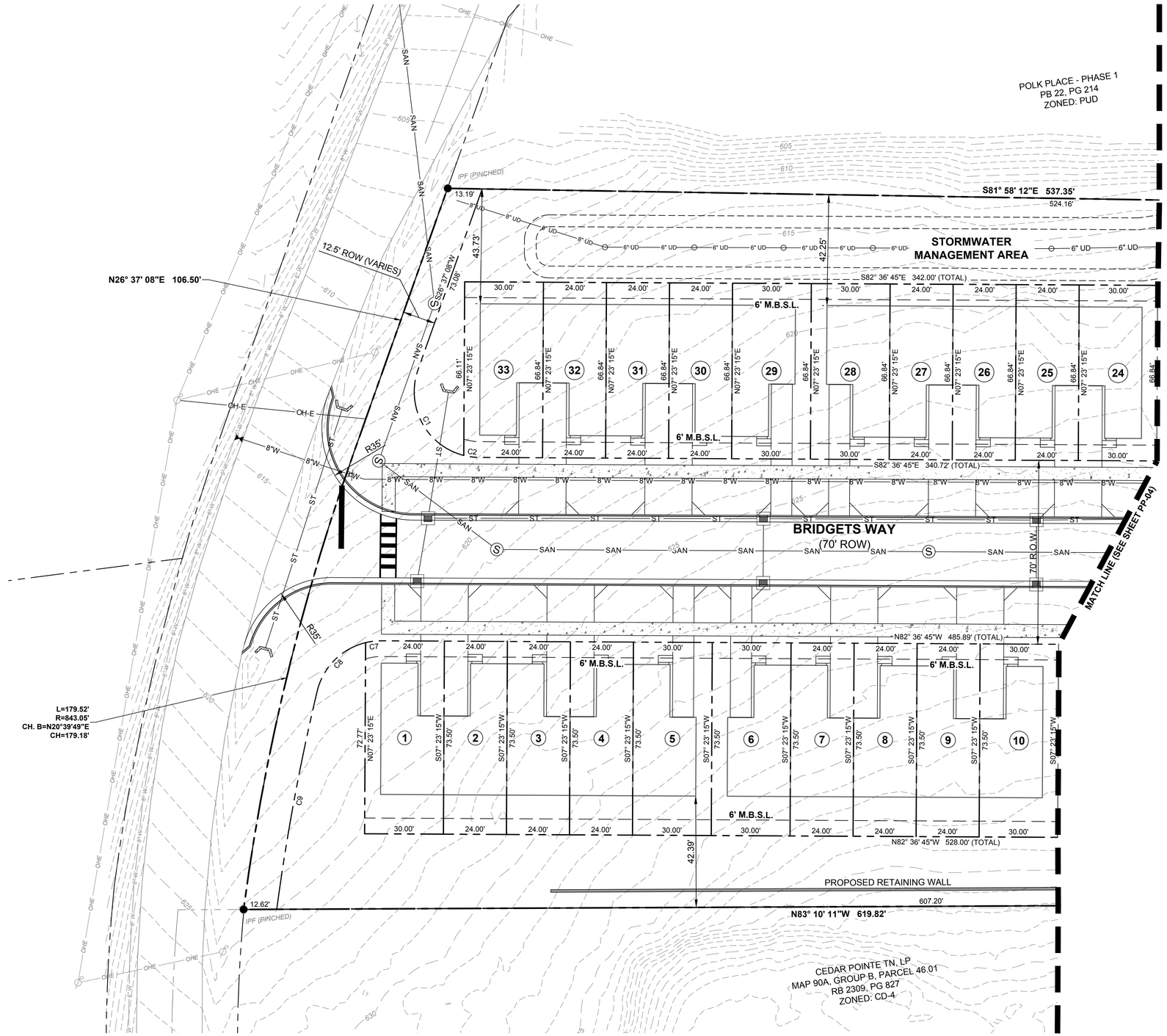
PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

EXISTING CONDITIONS

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	JULY 17, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
PP-02



N NE E SE S SW W NW

20' 0 20' 40'
GRAPHIC SCALE

PROJECT NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
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LOT AREA TABLE		
LOT #	AREA (S.F.)	AREA (AC.)
1	2,204	0.05
2	1,764	0.04
3	1,764	0.04
4	1,764	0.04
5	2,205	0.05
6	2,205	0.05
7	1,764	0.04
8	1,764	0.04
9	1,764	0.04
10	2,205	0.05
11	2,205	0.05
12	1,764	0.04
13	1,764	0.04
14	1,764	0.04
15	2,205	0.05
16	2,205	0.05
17	1,764	0.04

LOT AREA TABLE		
LOT #	AREA (S.F.)	AREA (AC.)
18	1,764	0.04
19	1,765	0.04
20	2,323	0.05
21	1,604	0.04
22	1,604	0.04
23	2,005	0.05
24	2,005	0.05
25	1,604	0.04
26	1,604	0.04
27	1,604	0.04
28	2,005	0.05
29	2,005	0.05
30	1,604	0.04
31	1,604	0.04
32	1,604	0.04
33	2,004	0.05

CURVE TABLE				
CURVE #	LENGTH	RADIUS	CHORD BRNG	CHORD LENGTH
C1	41.60	25.00	S21° 03' 13"E	36.97
C2	6.06	25.00	S75° 40' 09"E	6.04
C3	57.25	51.00	N65° 13' 38"E	54.29
C4	256.22	69.00	S40° 33' 12"E	132.40
C5	31.89	69.00	S79° 03' 54"W	31.60
C6	6.12	69.00	N85° 09' 17"W	6.12
C7	6.06	25.00	N89° 33' 21"W	6.04
C8	27.49	25.00	S52° 00' 19"W	26.12
C9	84.49	830.55	S17° 35' 42"W	84.46

Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYANT — LICENSED PROFESSIONAL ENGINEER — AGRICULTURE & LAND DEVELOPMENT — COMMERCE & CONSTRUCTION — TENNESSEE — STATE OF TENNESSEE — 07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

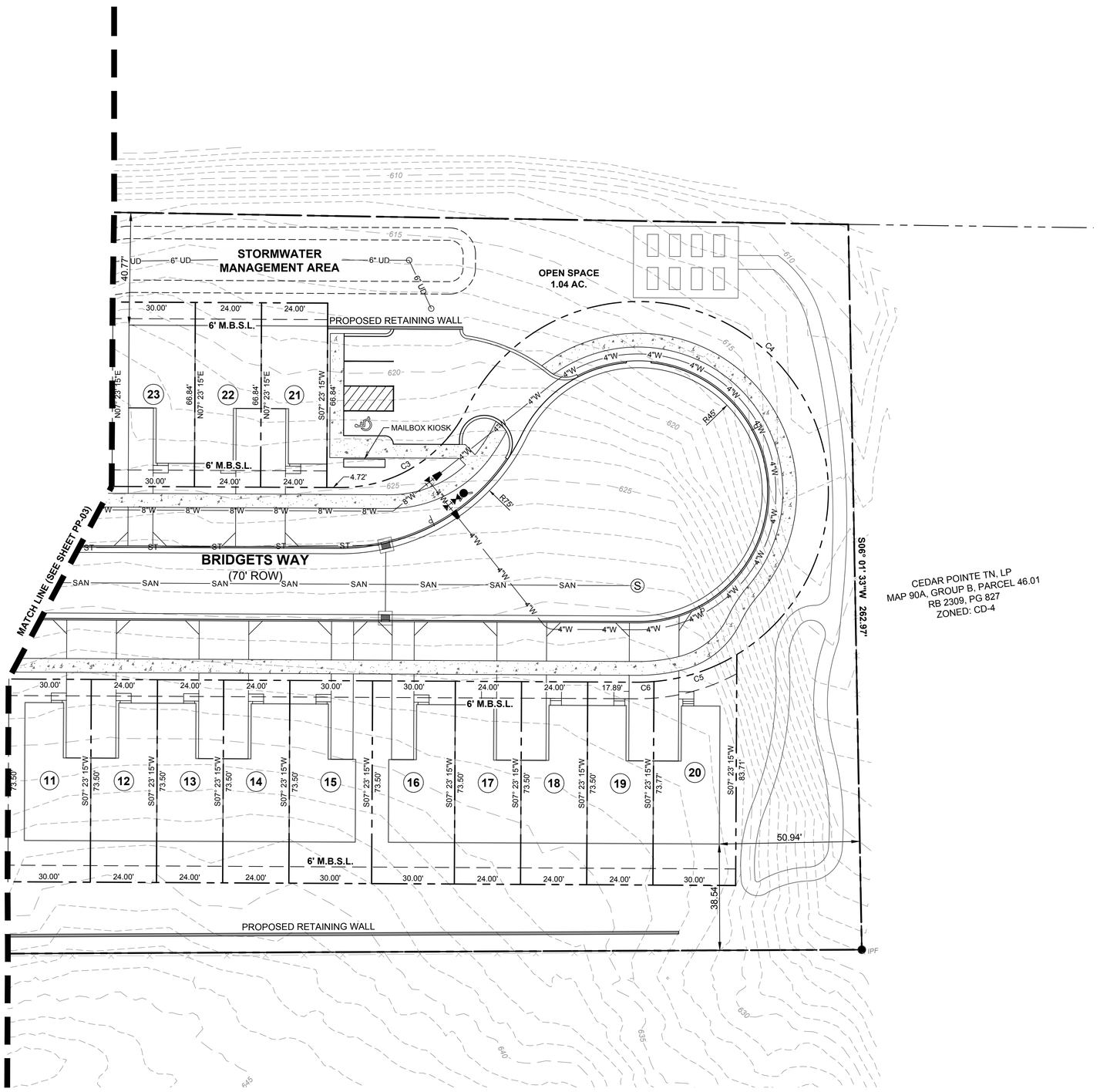
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

PRELIMINARY PLAT

DATE: JULY 17, 2023
PROJECT NO.: 22-085
DRAWN BY: M2G
CHECKED BY: MWB

SHEET NUMBER:
PP-03

MPA - PP - PRELIMINARY PLAT.DWG / Monday, July 17, 2023 4:35:41 PM



PROJECT NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
3. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
4. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
5. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
6. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
7. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

LOT AREA TABLE		
LOT #	AREA (S.F.)	AREA (AC.)
1	2,204	0.05
2	1,764	0.04
3	1,764	0.04
4	1,764	0.04
5	2,205	0.05
6	2,205	0.05
7	1,764	0.04
8	1,764	0.04
9	1,764	0.04
10	2,205	0.05
11	2,205	0.05
12	1,764	0.04
13	1,764	0.04
14	1,764	0.04
15	2,205	0.05
16	2,205	0.05
17	1,764	0.04

LOT AREA TABLE		
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27	1,604	0.04
28	2,005	0.05
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30	1,604	0.04
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C9	84.46	830.55	S17° 35' 42"W	84.46

811 Know what's below. Call before you dig.

DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYANT — LICENSED PROFESSIONAL ENGINEER — AGRICULTURE, COMMERCE & INDUSTRY, RESIDENTIAL — STATE OF TENNESSEE — 07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

PRELIMINARY PLAT

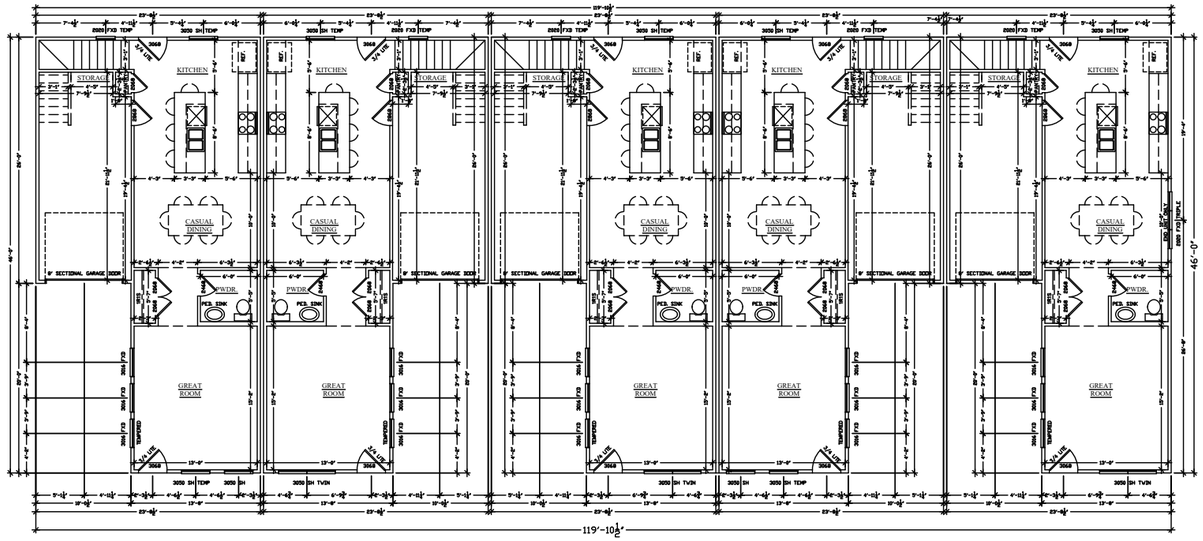
DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	JULY 17, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
PP-04

MPA - PP - PRELIMINARY PLAT.DWG / Monday, July 17, 2023 4:35:43 PM

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.

DURING FINAL ARCHITECTURAL / BUILDING PERMIT PHASE, PLAN WILL DEMONSTRATE MINIMUM INTERIOR DIMENSION TO MEET CITY STANDARDS.



STANDARD FIRST FLOORPLAN 1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

Scale: 1/16"=1'-0"

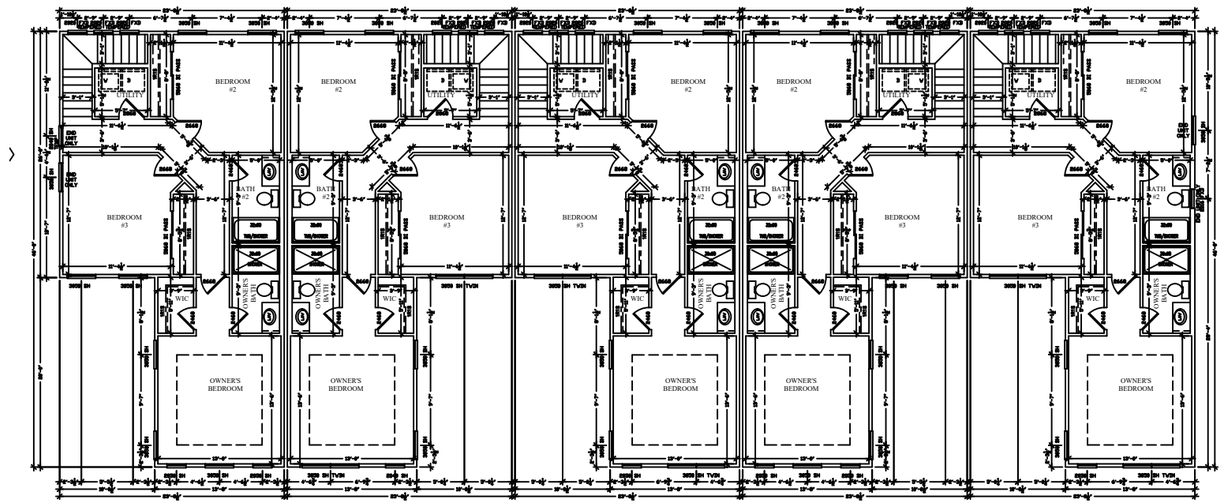
Date: XX/XX/XX

Revision Dates:

A1.0

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.

DURING FINAL ARCHITECTURAL / BUILDING PERMIT PHASE, PLAN WILL DEMONSTRATE MINIMUM INTERIOR DIMENSION TO MEET CITY STANDARDS.



STANDARD SECOND FLOORPLAN 1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

Scale: 1/16"=1'-0"

Date: XX/XX/XX

Revision Dates:

A2.0

GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

February 23, 2023

Waits Development
PO Box 111285
Nashville, TN 37222

Attention: Mr. John Waits
john.waits1@icloud.com

Subject: **REPORT FOR GEOTECHNICAL EXPLORATION**
Proposed Mackenzie Place Townhomes
220 Theta Pike
Columbia, Tennessee
GEOServices Project No. 31-231084

Dear Mr. Waits:

We are submitting the results of the geotechnical exploration performed for the proposed Mackenzie Place townhomes development in Columbia, Tennessee. The geotechnical exploration was performed in accordance with GEOServices Proposal No. 13-231101 dated February 2, 2023 and authorized by you.

The following report presents our findings and recommendations for the proposed development. Should you have any questions regarding this report, or if we can be of any further assistance, please contact us at your convenience.

Sincerely,

GEOServices, LLC



S. Scott Williams, E.I.
Staff Professional

Jerry W. Gammon, P.E.
V.P., Nashville Area Branch Manager
TN 111633



REPORT OF

GEOTECHNICAL EXPLORATION

Proposed Mackenzie Place Townhomes
Columbia, Tennessee

GEOServices Project No. 31-231084

Submitted to:

Waits Development
PO Box 111285
Nashville, Tennessee 37222

Submitted by:

GEOServices, LLC
91 South Eastgate Court
Lebanon, Tennessee 37090

Phone (615) 547-9314
Fax (615) 547-9451

GEOServices, LLC, Geotechnical and Materials Engineers

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APPENDIX A – Figures and Observation Trench Records
APPENDIX B – Laboratory Testing Results
APPENDIX C – Representative Site Photographs

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this geotechnical exploration was to characterize the subsurface conditions for the design and construction of the proposed Mackenzie Place townhomes development in Columbia, Tennessee. This report provides recommendations for general site preparation, excavation and fill requirements, foundation design recommendations, and pavement design recommendations.

1.2 PROJECT INFORMATION AND SITE DESCRIPTION

Initial project information was provided in a February 2, 2023, email from Mr. Brian Holcombe (M2 Group) to Mr. Jerry Gammon with GEOServices, LLC (GEOS). A link was attached to a set of plans titled "Mackenzie Place" developed by M2 Group and dated 1/16/23. Based on the plans provided in the email, we understand that townhomes with associated roadway infrastructure are planned to be developed at 220 Theta Pike in Columbia, Tennessee. We understand the buildings will be multi-story wood framed with a concrete slab-on-grade supported by shallow foundations. At this time, structural loading information has not been provided. From experience with similar projects, we assume maximum column and wall loadings will be about 100 kips, and 3 to 5 kip per linear foot (klf), respectively.

At the time of site reconnaissance, the site was observed to be occupied by construction debris scattered through the site at the ground surface and an existing mobile residential home in the eastern portion. Based on site observations and publicly available historical aerial imagery, we note the majority of the site was previously occupied by several mobile-residential homes, which

have since been demolished, and the construction debris remains onsite. An existing asphalt drive was observed leading into the site from Theta Pike. The existing ground surface was observed to be generally grass covered, with sparse areas of trees and grassy overgrowth. Existing utilities from the previous development were also observed onsite. Areas of rock outcroppings were observed onsite, as shown in Site Photo 10 of Appendix C. The existing site conditions at the time of site reconnaissance are depicted in Appendix C of the Appendices. The site was observed to be generally rolling with the majority of the site sloping from the south/southeastern areas down toward the northern areas of the site.

Based on the proposed grading plan provided by M2 Group as produced by M2 Group, the subject site has a maximum elevation of approximately 643 feet at the southern-central portion of the site and a minimum elevation of approximately 606 feet at the most northwest portion of the site. Additionally, the proposed structure footprints have a maximum elevation of approximately 639 feet at the southern-central portion of the area and a minimum elevation of approximately 612 feet at the northwestern portion of the area. Finish floor elevations (FFE) ranging from 621.75 to 629.40 feet were also provided for the proposed structures. Based on the provided existing site grades and provided planned finish floor elevations, the structure footprints will require cut depths on the order of about 12 feet or less and fill thicknesses on the order of about 10 feet or less to establish subgrade elevations within the building footprints. The remainder of the site will require similar cut depths and fill thicknesses to establish subgrade elevations based on the provided proposed grading plan.

1.3 SCOPE OF STUDY

This geotechnical exploration involved a site reconnaissance, field exploration, and engineering analysis. The following sections of this report present discussions of the field exploration, site

conditions, and general recommendations. Following the text of this report, figures, observation trench logs, and laboratory results are provided in the appendices. Appendix A provides figures and observation trench logs. Appendix B provides the results of laboratory testing. Appendix C provides representative photographs of the site.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, subsurface water, or air, on, or below, or around this site. Any statements in this report or on the observation trench summary regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

2.0 EXPLORATION

2.1 FIELD EXPLORATION

The site subsurface conditions were explored on February 13, 2022 with a total of fifteen (15) observation trenches at the approximate locations shown by Figure 3 in Appendix A. The observation trench locations were located by GEOServices personnel in the field by measuring off known site reference points and utilizing GPS coordinates extrapolated from Google Earth. The depths reference the ground surface elevations at the site that existed at the time of the exploration. Testing of overburden soils was accomplished using a dynamic cone penetrometer (DCP) at select observation trenches. In dynamic cone penetrometer (DCP) testing, a 1.5-inch diameter cone (45° vertex angle) is driven into the subgrade soil with a 15-pound steel mass falling 20 inches. The blows required to drive the embedded cone a depth of 1-3/4 inch have been correlated to N-values derived from the Standard Penetration Test (SPT). These DCP-values

are indicated on the summary of observation trench logs at the testing depth, and provide an indication of the relative density of granular materials and strength of cohesive materials.

Upon completion, the excavations were observed for the presence of groundwater and then backfilled with the excavated material. Minor settlement of the backfill should be expected over time. Detailed observation trench records are presented in Appendix A.

2.2 LABORATORY TEST PROGRAM

Soil samples collected during excavation were transported to our laboratory for visual classification and laboratory testing. The following laboratory testing will be performed on select samples to determine various properties of the soil:

- Natural Moisture Content (ASTM D 2216): Moisture content determinations were performed. The natural moisture content is defined as the ratio of the weight of water present in the soil to the dry weight of soil.

- Atterberg Limits (ASTM D 4318): Atterberg Limits tests were performed. These tests help us to confirm our visual classifications according to the AASHTO Classification System and the Unified Soil Classification System (USCS). The plastic limit and liquid limit represent the moisture content at which a cohesive soil changes from a semi-solid to a plastic state and from a plastic state to liquid state, respectively.

The test results are presented in the Soil Data Summary enclosed in Appendix B.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGIC CONDITIONS

The subject site is located within the Central Basin Physiographic Province of Middle Tennessee. The Central Basin is an elliptical basin surrounded by the Highland Rim. The Basin is subdivided into inner and outer sections. The inner section is generally smooth and gently rolling in contrast to the higher and more deeply dissected outer Basin. Bedrock is primarily Ordovician limestone, shale and dolomite in the outer Basin. The inner basin is generally covered with limestone with patches of bare platy rock and thin topsoil with glade areas supporting red cedar trees. The region is moderate in karst development with many sinkholes and some large caves present, notably in the glade areas.

The Geologic Map of the Godwin Quadrangle, Tennessee (Tennessee Division of Geology, 1964) shows the site is underlain by the Carters Limestone formation. The Carters Limestone formation is typically a hard, light gray to brown, cryptocrystalline (i.e., microscopically crystalline), medium- to thick-bedded, brittle limestone with occasional thin chert lenses. The limestone weathers to produce a 5- to 10-foot thick layer of native soil (residuum) which is typically an orange to brown silty clay. The soil/rock interface may be irregular due to a layer of rounded boulders at the base of the soil zone.

The limestone bedrock of the Carters Limestone formation is susceptible to solution weathering and the creation of karst features, such as sinkholes. In general, because of the shallow overburden soils, karst features are relatively small in horizontal extent, but can extend into the bedrock several feet. Review of the USGS Godwin Quadrangle, Tennessee, Topographic Quadrangle Map (1964) did not indicate the presence of any closed depressions on-site.

However, the topographic mapping did indicate the presence of multiple closed depressions within a 1-mile radius of the site within each direction of the site. We note the scale of the map often precludes mapping of smaller depressions.

Since the bedrock underlying the site mainly consists of carbonate rock, the site is susceptible to the typical carbonate hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes. Carbonate rock, while appearing very hard and resistant, is soluble in slightly acidic water. This characteristic, plus differential weathering of the bedrock mass, is responsible for the hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging to overlying soil-supported structures. In Middle Tennessee, sinkholes occur primarily due to differential weathering of the bedrock and "flushing" or "raveling" of overburden soils into the cavities in the bedrock. The loss of solids creates a cavity or "dome" in the overburden. Growth of the dome over time or excavation over the dome can create a condition in which rapid, local subsidence or collapse of the roof of the dome occurs.

3.2 SUBSURFACE CONDITIONS

A surficial layer of topsoil was encountered in 14 of the 15 observation trenches to depths ranging from about 2 to 18 inches below the existing ground surface elevation. No surficial layer was encountered at observation trench OT-12 due to fill soils at the surface. Beneath the surficial layers or at the surface of each of the observation trenches, fill and/or residual soils were encountered to excavator refusal or termination depths ranging from about 1 to 8 feet below the existing ground surface elevation.

3.2.1 Fill Soils

Existing fill was encountered within 11 of the 15 observation trenches (OT-1, OT-3, OT-5, OT-7, OT-8, and OT-10 through OT-15) to depths ranging from about 1 to 5 feet below the existing

ground surface elevation. The fill material retrieved from the observation trenches generally consisted of brown, reddish brown, dark brown, and dark gray clays with varying amounts of gravel, limestone fragments and boulders, chert fragments, abandoned underground utilities, trace construction debris, and trace asphalt debris. A dynamic cone penetrometer (DCP) is used to evaluate the consistency or density of the subsurface soils encountered in the observation trenches. The DCP N-values of the fill soil tested ranged from 1 blows per increment (bpi) to 9 bpi, indicating a consistency of very soft to stiff. The consistency of the fill soil was most generally soft to firm. The natural moisture content of the fill soil samples retrieved from the observation trenches ranged from 16.5 to 26.8 percent. Atterberg limits testing on one selected fill sample retrieved from observation trench OT-1 yielded a liquid limit (LL) of 29 percent and a plasticity index (PI) of 10 percent. This sample is classified as lean clay (CL) in accordance with the Unified Soil Classification System (USCS).

3.2.2 Residual Soils

Beneath the surficial layers and/or existing fill soils in 14 of the 15 observation trenches (OT-2 through OT-15), residual soil was encountered to excavator refusal or termination depths. Residual soils are generally defined as soils which have weathered in place from the underlying bedrock. The residual soil generally consisted of brown, light brown, and reddish brown clay with varying amounts of sand, chert fragments, limestone fragments and boulders, and black oxide nodules. The DCP N-values of the residual soil ranged from 2 bpi to 8 bpi, indicating a consistency of very soft to firm. The consistency of the residual soil was most generally firm. The natural moisture content of the residual soil samples retrieved from the observation trenches ranged from 16.7 to 33.3 percent. Atterberg limits testing on three selected residual samples retrieved from observation trenches OT-10, OT-11, and OT-13 yielded liquid limits (LL) ranging from 33 to 58 percent and plasticity indices (PI) ranging from 14 to 29 percent. These samples are classified as lean clay (CL) and fat clay (CH) in accordance with the Unified Soil Classification System (USCS).

3.2.3 Subsurface Water

Subsurface water was not observed in any of the observation trenches during or at the completion of excavation activities. However, discontinuous zones of perched water may exist within the overburden and/or at the contact with bedrock. Subsurface water levels may fluctuate due to seasonal change in precipitation amounts or due to construction activities in the area. The groundwater presented in this report is the information that was collected at the time of our field activities. We recommend that the contractor determine the actual groundwater level at the site at the time of the construction activities.

3.2.4 Observation Trench Refusal Conditions

Observation trench refusal materials were encountered in five of the 15 observation trenches at depths ranging from about 1 to 7 feet below existing ground surface elevation. Refusal is a designation applied to any material that cannot be penetrated by the bucket of the excavator. Observation trench refusal may indicate dense gravel or cobble layers, boulders, rock ledges or pinnacles, or the top of continuous bedrock. The following table presents the observation trench refusal depths at each observation trench location:

OBSERVATION TRENCH REFUSAL DEPTHS					
Location	**Refusal Depth (feet)**	**Location**	**Refusal Depth (feet)**	**Location**	**Refusal Depth (feet)**
OT-1	3 to 4	OT-6	>7.5	OT-11	>8
OT-2	4 to 7	OT-7	>8	OT-12	1 to 6
OT-3	3	OT-8	>8	OT-13	>8
OT-4	1 to 4	OT-9	>8	OT-14	>8
OT-5	>8	OT-10	>8	OT-15	>8

Note: Refusal depths are taken from the ground surface elevation at the time of exploration and rounded to the nearest ½ foot interval.

3.2.5 General

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The observation trench record included in Appendix A should be reviewed for specific information at individual test locations. The depth and thickness of the subsurface strata indicated on the observation trench records were generalized from and interpolated between test locations. The transition between materials will be more or less gradual than indicated and may be abrupt. Information on actual subsurface conditions exists only at the specific observation trench locations and is relevant to the time the exploration was performed. Variations may occur and should be expected between observation trench locations. The stratification lines were used for our analytical purposes and, unless specifically stated otherwise, should not be used as the basis for design or construction cost estimates.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 SITE ASSESSMENT

Based on the results of our subsurface exploration, this site is adaptable for the proposed development. However, as with most sites, some inherent geotechnical issues should be considered during the construction phases. These issues include the existing fill materials, soft soil conditions, moisture sensitive soils, shallow refusal conditions, differential bearing concerns, and the underlying karst geology.

4.1.1 Existing Fill Materials

Existing fill was encountered within 11 of the 15 observation trenches (OT-1, OT-3, OT-5, OT-7, OT-8, and OT-10 through OT-15) to depths ranging from about 1 to 5 feet below the existing ground surface elevation. We are not aware nor have we been provided testing records of the fill. Accordingly, there are certain risks associated with construction on these types of fill. The risk primarily consists of excessive and/or non-uniform settlement caused by extensive zones or pockets or soft, loose, or uncompacted material.

Based on the fill depths and the planned development, we anticipate that a portion, if not majority, of the fill may be removed during mass grading activities within the building footprints. However, the possibility exists that deeper fill depths may be encountered between our observation trench locations. Recommendations for dealing with the in-place fill material is included in later sections of the report.

4.1.2 Soft Soil Conditions

Soft soil conditions were encountered in six of the 15 observation trenches (OT-5, OT-7, OT-10, and OT-13 through OT-15) to depths ranging from approximately 1 to 5.5 feet below the existing ground surface elevation. These soft zones encountered within the observation trenches can potentially impact the performance of the proposed structures and/or pavements depending on final grades. The possibility exists that some of the soft soils will be removed during mass grading activities. However, if these soft soils are not removed during mass grading activities, these soft soils will perform unsatisfactorily during initial proofroll activities. Therefore, we recommend that the owner carry a contingency budget to remediate these soils during mass grading activities.

4.1.3 Moisture Sensitive Soils

The subgrade soils at this site, as with most sites in middle Tennessee, consist of clayey soils. These materials will be sensitive to changes in moisture contents. As such, it will be advantageous to perform grading activities during periods of warm and/or dry weather. Areas that are wet or become unstable can possibly be repaired by scarification and re-compaction if grading occurs during warm, dry weather. If grading occurs during wet, cool weather, we expect that additional soft soil at or near the surface soils across the site will have to be undercut and replaced. A contingency budget should be established for subgrade stabilization consistent with the time of year that grading will take place.

4.1.4 Shallow Refusal Conditions

Observation trench refusal materials were encountered in five of the 15 observation trenches at depths ranging from about 1 to 7 feet below existing ground surface elevation. The refusal materials encountered were generally hard and could not be penetrated by the excavator bucket. We anticipated these refusal materials will be encountered in utility areas and portions of the building foundations. As such, we anticipate excavation of the refusal materials will require blasting and/or hoe-ramming for removal.

4.1.5 Differential Bearing Concerns

Based on the results of our subsurface exploration and the anticipated cut and fill requirements to develop the site, the possibility exists that a portion of the building foundations may bear in residual soil material or structural fill, while a portion could be bearing on boulders or other refusal materials. This condition will result in a differential bearing condition which could result in excessive differential settlement across the buildings. As a result, recommendations are provided in later sections that will help alleviate the risk of adverse differential settlement.

4.1.6 Karst Geology

A certain degree of risk with respect to sinkhole formation and subsidence should be considered with any site located within geologic areas underlain by potentially soluble rock units. While a detailed effort to assess the potential for sinkhole formation on this site was beyond the scope of this evaluation, our observation trenches did not encounter obvious indications of sinkhole development. Additionally, review of the USGS topographic map did not indicate the presence of any closed depressions on-site. However, the topographic mapping did indicate the presence of multiple closed depressions within a 1-mile radius of the site within each direction of the site. Based on these findings and our experience with this formation at other sites, we consider that this site has no greater risk for sinkhole activity than other sites in the immediate vicinity of this site.

4.2 SITE PREPARATION

4.2.1 Subgrade

Vegetation, topsoil, organic soils, existing utilities, existing foundations, loose rock fragments greater than 6 inches and other debris should be removed from the proposed construction area. A portion of the site has tree foliage. Therefore, thicker topsoil depths or deep root zones may be encountered which will also require removal. Information pertaining to the age, placement and compaction of the fill materials encountered within our observation trenches were not available. Based on the observed existing fill materials encountered and the inconsistencies of these fill soil materials, any existing fill encountered after mass grading activities within the building footprint plus 5 feet beyond the most outer foundation limit should be undercut to stiff residual soil materials or bedrock and replaced with suitable fill materials. In the roadway areas, if the owner is willing to accept the risk of potential poor pavement performance with leaving the existing fill soils in place, we would recommend these fill materials be thoroughly evaluated during mass grading activities to determine if any fill materials should be remediated. If unsuitable soil conditions are

encountered, these unsuitable materials should be remediated at the geotechnical engineer's recommendations. It is recommended that a contingency budget be reserved for undercutting and replacement for the development of this project. The actual depth of removal should be determined by a representative of the geotechnical engineer at the time of construction.

After completion of stripping operations and any required excavations to reach planned subgrade elevation, we recommend that the subgrade be proofrolled with a fully loaded, tandem-axle dump truck or other pneumatic-tired construction equipment of similar weight. The geotechnical engineer or his representative should observe proofrolling. Weak or unstable areas should be remediated at the geotechnical engineer's recommendation. Areas to receive structural soil fill should also be proofrolled prior to the placement of any fill. Due to the consistency of the soils encountered during this geotechnical exploration, most generally in the area of observation trench locations OT-5, OT-7, OT-10, and OT-13 through OT-15, it should be anticipated that remediation of soft soils will be required in order to complete the development of this project.

4.2.2 Structural Soil Fill

Material considered suitable for use as structural fill should be clean soil free of organics, trash, and other deleterious material, containing no rock fragments greater than 6 inches in any one dimension. Preferably, structural soil fill material should have a standard Proctor (ASTM D698) maximum dry density of 90 pcf or greater and a plasticity index (PI) of 35 percent or less. Materials with a PI greater that 35 percent are susceptible to volume changes with changes in moisture content. Volume changes in the foundation subgrade can cause structural distress in buildings, floor slabs, and pavements. Material to be used as structural fill should be tested by the geotechnical engineer to confirm that it meets the project requirements before being placed. The standard proctor testing typically requires at least 3 to 4 days to complete. To avoid delays

during grading, samples of proposed fill materials (both on-site and off-site) should be collected during site preparation activities.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 95 percent of the soil's maximum dry density per the standard Proctor method (ASTM D698) and within the range of minus (-) 2 percent to plus (+) 2 percent of the optimum moisture content. Each lift should be tested by geotechnical personnel to confirm that the contractors' method is capable of achieving the project requirements before placing any subsequent lifts. Any areas, which have become soft or frozen, should be removed before additional structural fill is placed. Structural soil fill placement should be accomplished under the full-time or near full-time observation of a representative of the geotechnical engineer.

4.2.3 Shotrock Fill Materials

Shotrock fill, with acceptable gradation, can be used as structural fill. Shotrock utilized as structural fill should be well graded with a maximum rock size of 12 inches and be placed in lifts not to exceed 18 inches thick. Shotrock of this size should be placed at depths deeper than 4 feet below planned subgrade levels in the building area. The rock or stone should have a maximum particle size of 8-inches in the largest dimension up to proposed subgrade (from minus 4 feet below subgrade up to subgrade) when mixed with satisfactory material.

Shotrock fill should have adequate fines to effectively "choke" the larger rock pieces, adequately filling voids or open spaces. The larger rock pieces should lie flat and not overlap each other. The percentage of soil in the fill should be limited to a maximum of 10 percent. Shotrock fill should be compacted using complete passes of a D-8 class crawler tractor, or equivalent. A pass is defined as a complete coverage of the surface with the D-8 track overlapping 50 percent. Half of the passes

should be in each perpendicular direction. Shotrock fill placement should be accomplished under the full-time observation of a representative of the geotechnical engineer.

4.2.4 Compacted Crushed Stone Fill

Compacted crushed stone fill should be Type A, Class A, and Grading D in accordance with Section 903.05 of the Tennessee Department of Transportation specifications. The crushed stone fill should be placed in loose, horizontal lifts not exceeding 10 inches in loose thickness. Each lift should be compacted to at least 95 percent of maximum dry density per the standard Proctor method (ASTM D698). Each lift should be compacted and tested by geotechnical personnel to confirm that the contractor's method is capable of achieving the project requirements before placing any subsequent lifts.

4.3 FOUNDATIONS

4.3.1 Option #1: Soil Bearing Foundations

Foundations for the proposed townhome construction can be supported on stiff or better residual soil or properly compacted structural fill materials. The recommended allowable bearing capacity for design of soil bearing foundations is 2,000 pounds per square foot (psf). We recommend that continuous foundations be a minimum of 18 inches wide and isolated spread footings be a minimum of 24 inches wide to reduce the possibility of a localized punching shear failure. Exterior footings should be designed to bear at least 18 inches below finished exterior grade to protect against frost.

As mentioned previously, observation trench refusal was encountered at depths ranging from about 1 to 7 feet below the existing ground surface elevation. Due to the anticipated cut and fill depths, it should be anticipated that competent bedrock may be encountered during foundation and/or utility excavations. If rock is encountered at the foundation bearing elevation over small portions of the

building footprint, we recommend the rock be removed to a minimum depth of 18 inches below planned bearing elevation. The area can then be backfilled with properly compacted crushed stone or open-graded #57-sized stone. The crushed stone will help act as a "cushion" to prevent point loading of the foundation. If desired, the foundation designer may also elect to include additional reinforcing steel into the foundations at these transition points to help resist negative moment forces.

Foundation excavations should be opened, the subgrade evaluated, remedial work performed, and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in terms of maintaining dry footing trenches) and after construction.

4.3.2 Option #2: Rock Bearing Foundations

If bedrock is encountered over the majority of the townhome building foundation, the remaining isolated foundation areas underlain by soil can be over-excavated to bedrock, cleaned of remaining soil particles, and backfilled with lean concrete and/or flowable fill back to bottom of foundation elevation. The recommended allowable bearing capacity for design of the foundations bearing on bedrock, concrete fill, or rock fill is 4,000 pounds per square foot (psf). The above minimum foundation sizes will still apply.

Foundation excavations should be opened, the subgrade evaluated, remedial work performed, and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in terms of maintaining dry footing trenches) and after construction.

4.3.3 Slab-on-Grade

For slab-on-grade construction, the site should be prepared as previously described. We recommend that the subgrade be topped with a minimum 4-inch layer of crushed stone to act as a capillary moisture block. The subgrade should be proofrolled and approved prior to the placement of the crushed stone. Based on the conditions encountered on this site, we recommend that the floor slabs be designed using a subgrade modulus of 100 pounds per cubic inch (pci). This modulus is appropriate for small diameter loads (i.e. a 1ft x 1ft plate) and should be adjusted for wider loads.

4.4 LATERAL EARTH PRESSURES

Based on the proposed design, we anticipate the development will have retaining walls to help development the site. Therefore, we are providing equivalent fluid pressures for three backfill conditions for cantilever-type walls. These are 1) active earth pressure for granular backfill (clean sand or gravel), 2) at-rest earth pressure for granular backfill, and 3) at-rest earth pressure for fine-grained (silt or clay) backfill.

Condition 1 - The active earth pressure for granular backfill will result in an equivalent fluid pressure of 40 pounds per cubic foot (pcf). If the granular backfill is to develop active earth pressure conditions, walls must be flexible and/or free to rotate or translate at the top approximately one inch laterally for every 20 feet of wall height.

Condition 2 - The at-rest earth pressure for granular backfill will result in an equivalent fluid pressure of 50 pcf. For retaining walls that will not rotate or translate, such as building walls or other walls rigidly connected to structures, at-rest conditions will develop.

Condition 3 - Walls backfilled with fine-grained material (silt or clay) should be designed using the at-rest earth pressure whether restrained at the top, or not. Fine-grained soils typically creep over

time which produces additional lateral stresses to the wall. The equivalent fluid pressure for this case is 70 pcf.

For rigid, cast-in-place concrete walls, a friction factor of 0.35 between foundation concrete and clayey soil may be used when evaluating friction. If a stone leveling course is utilized beneath the foundation, a friction factor of 0.50 between foundation concrete and the dense grade aggregate base may be used when evaluating friction. Also, an ultimate passive earth pressure resistance of well-compacted soil fill can be approximated by a uniformly acting resistance of 750 psf. However, to limit deformation when relying on passive strength, we recommend using a minimum safety factor of 3.0 applied to the ultimate passive resistance value.

4.5 PAVEMENT RECOMMENDATIONS

4.5.1 Flexible Pavement Design

AASHTO flexible pavement design methods have been utilized for pavement recommendations. Our recommendations are based on the assumptions that the subgrade consists of residual soil or properly compacted soil fill that has been properly prepared as described previously. Traffic intensities were not available at the time this report was prepared. Based on our experience with similar projects and estimated traffic intensities, we recommend the following light duty and heavy duty flexible pavement section:

	Recommended Thickness (Inches)	
Pavement Materials	Light Duty	Heavy Duty
Bituminous Asphalt Surface Mix	1.5	1.5
Bituminous Asphalt Base Mix	2.0	2.5
Compacted Crushed Aggregate Base	6.0	8.0

Note: Section thicknesses are based on estimated traffic intensities. Once known, we should be provided with anticipated intensities to determine if the provided pavement section thicknesses are appropriate.

We recommend a base stone equivalent to a Type A, Class A and Grading D in accordance with Section 903.05 of the Tennessee Department of Transportation specifications. The bituminous asphalt pavement should be Grading "E" as per Section 411 for the surface mix and Grading “B” as per section 307 for the binder mix. Compaction requirements for the crushed aggregate base and the bituminous asphalt pavement should generally follow Tennessee Department of Transportation specifications.

4.5.2 Rigid Pavement Design

Areas of the project site with anticipated heavy vehicle loads should utilize the use of rigid pavement. We recommend the following rigid pavement section:

Pavement Materials	Recommended Thickness (Inches)
4,000 psi Type I Concrete	6.0
Compacted Crushed Aggregate Base	6.0

Concrete should be reinforced with welded wire fabric or reinforcing bars to assist in controlling cracking from drying shrinkage and thermal changes. Sawed or formed control joints should be

included for each 225 sq. ft of area or less (15 ft by 15 ft). Saw cuts should not cut through the welded wire fabric or reinforcing steel and dowels should be utilized at formed and/or cold joints.

If rigid pavement is used for dumpster pads, the rigid pavement should, at a minimum, be extended so that at least the front wheels of the dumpster truck are sitting on the rigid pavement during lifting and dumping of the trash container into the dumpster truck.

4.5.3 General

Our recommendations are based upon the assumption that the subgrade has been properly prepared (as per previous sections) and that any off-site soil borrow to be used to backfill to the final subgrade meets the requirements of structural soil fill section for off-site borrow. Site grading is generally accomplished early in the construction phase. As construction proceeds, the subgrade may be disturbed or degraded due to utility construction, construction traffic, or wetting or drying. As a result, the pavement subgrade may not be suitable for pavement construction and remedial repair may be required prior to pavement construction. The subgrade should be evaluated immediately prior to pavement construction by proof-rolling, as discussed earlier in this report. Particular attention should be given to check for weak materials in anticipated high traffic areas, areas that were degraded by construction traffic, or where backfilled trenches are located. Weak materials identified should be repaired by undercutting the weak materials and backfilling the undercut with compacted fill. We also recommend the moisture content of the subgrade materials be checked immediately prior to pavement construction. If the soil moisture content is not within the ranges recommended in this report, the upper 8 inches should be scarified, moisture conditioned to the recommended moisture content range and recompacted. Stability should then be evaluated by proof-rolling.

Paved areas should be constructed with positive drainage to direct water off-site and to minimize surface water seeping into the pavement subgrade. The subgrade should have a minimum slope of 1 percent. In down grade areas, the basestone should extend through the slope to allow any water entering the basestone a path to exit.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 EXCAVATIONS

Excavator refusal conditions were encountered in five of the 15 observation trenches at depths ranging from about 1 to 7 feet below existing ground surface elevation. Typically, soils excavated by the excavator can be removed with conventional earthmoving equipment. It is our experience that in this geology the weathering process is erratic and variations in the rock profile can occur in small lateral distances. Therefore, it is likely that some large boulders, partially weathered rock, and/or rock pinnacles/ledges requiring difficult excavation techniques may be encountered in site areas between our observation trench locations, or in deeper utility excavations.

Overblasting Concerns

If required, we caution against extensive overblasting in building areas during the site grading operations. Overblasting typically damages below grade bedrock by fracturing or heaving the rock from its original position. This often creates difficulties for foundations and floor slabs supported on these materials by creating voids in the rock unit and greatly reducing the support capacity. Any areas damaged by overblasting should be evaluated by the geotechnical engineer to determine appropriate corrective measures.

Excavation Safety

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually solely responsible for site safety. This information is provided only as a service and under no circumstances should GEOServices be assumed to be responsible for construction site safety.

5.2 FOUNDATION CONSTRUCTION

Foundation excavations should be opened, the subgrade evaluated, remedial work performed, and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in terms of maintaining dry footing trenches) and after construction. Soil backfill for footings should be placed in accordance with the recommendations for structural fill presented herein.

Foundation subgrade observations should be performed by a GEOServices geotechnical engineer, or his qualified representative, so that the recommendations provided in this report are consistent with the site conditions encountered. A dynamic cone penetrometer (DCP) is commonly utilized to provide information that is compared to the data obtained in the geotechnical report. Where unacceptable materials are encountered, the material should be excavated to stiff, suitable soils or remediated at the geotechnical engineer's direction. Typical remedial measures consist of undercutting, over excavation, or combinations thereof.

5.3 MOISTURE SENSITIVE SOILS

The fine-grained soils encountered at this site will be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support

capabilities. Construction traffic patterns should be varied to prevent the degradation of previously stable subgrade. In addition, plastic soils which become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. We caution if site grading is performed during the wet weather season, methods such as discing and allowing the material to dry will be required to meet the required compaction recommendations. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

5.4 DRAINAGE AND SURFACE WATER CONCERNS

To reduce the potential for undercut and construction induced dropouts, water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped to facilitate removal of any collected rainwater, subsurface water, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the building structures. The grades should be sloped away from the building structures and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill.

5.5 SINKHOLE CORRECTIVE ACTIONS AND CONSIDERATIONS

While no evidence of karst activity or sinkhole development was observed onsite or in our test locations, we have included the below section to help prevent future development of features at the site. Based on our experience, corrective actions can be performed to reduce the potential for sinkhole development at this site. These corrective actions, such as proper grade selection and positive site drainage, would decrease but not eliminate the potential for sinkhole development.

In general, the portions of a site that are excavated to achieve the desired grades will have a higher risk of sinkhole development than the areas that are filled, because of the exposure of relic fractures in the soil to rainfall and runoff. On the other hand, those portions of a site that receive a modest amount of fill (or that have been filled in the past) will have a decreased risk of sinkhole development caused by rainfall because that placement of a cohesive soil fill over these areas effectively caps the area with a relatively impervious "blanket" of remolded soil. Therefore, the recommendations that follow incorporate a modest remedial treatment program designed to make the surface of the soil in excavated areas less permeable.

Although it is our opinion that the risk of ground subsidence associated with sinkhole formation cannot be eliminated, we have found that several measures are useful in site design and development to reduce this potential risk. These measures include:

- Maintaining positive site drainage to route surface waters well away from structural areas both during construction and for the life of the structure.
- The scarification and re-compaction of the upper 6 to 10 inches of soil in earthwork cut areas.
- Verifying that subsurface piping beneath structures is carefully constructed and pressure tested prior to its placement in service.
- The use of pavement or lined ditches, particularly in cut areas, to collect and transport surface water to areas away from structures.

Considerations when building within a sinkhole prone area are to provide positive surface drainage away from any proposed building or parking area both during and after construction. Backfill in utility trenches of other excavations should consist of compacted, well-graded material such as dense graded aggregate or compacted on site soils. The use of an open graded stone such as No. 57 stone is not recommended unless the stone backfill is provided an exit path and not allowed to pond. If sinkhole conditions are observed, the type of corrective action is most appropriately determined by GEOServices on a case-by-case basis.

5.6 SLOPES

Analysis of proposed slopes for stability was not included in the authorized scope of services. If the client would like this service completed for proposed slopes, GEOS can perform these services for an additional fee, upon request. When requested, GEOS will issue an additional services proposal for review and authorization.

6.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

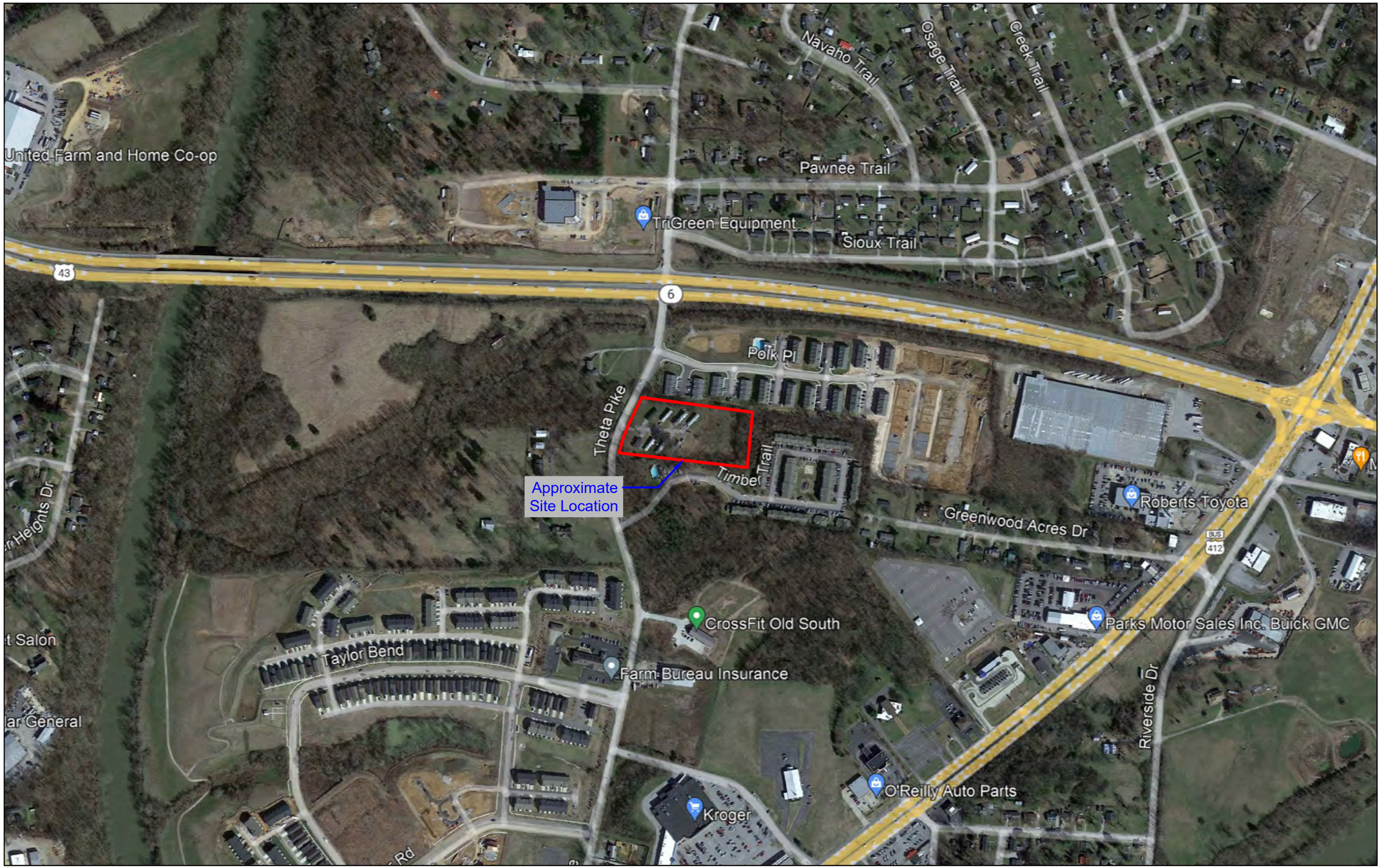
The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the observation trenches will not become evident until construction. We recommend that GEOServices be retained to observe the project construction in the field. GEOServices cannot accept responsibility for conditions which deviate from those described in this report if not retained to perform construction observation and testing. If variations appear evident, then we will re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed, and conclusions modified or verified in writing. Also, if the scope of the project should change significantly from that described herein, these recommendations may have to be re-evaluated.

GEOServices, LLC, Geotechnical and Materials Engineers

APPENDICES

GEOServices, LLC, Geotechnical and Materials Engineers

APPENDIX A



Notes:

1) Aerial Provided by: Google Earth Pro, (2021)

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Site Vicinity Plan
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023

GEOS Project No. 31-231084

FIGURE: 1

N

Chantay
-Acres

River
Heights

Approximate
Site Location

COLUMBIA

Gas

ANDREW

Source Provided by: MYTOPO

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

USGS Topographic Map
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE:
02/20/2023

GEOS Project No.
31-231084

FIGURE:
2

N

OT-1
OT-2
OT-3
OT-4
OT-5
OT-6
OT-7
OT-8
OT-9
OT-10
OT-11
OT-12
OT-13
OT-14
OT-15

Notes:

1) Site Source Provided by: Client
2) Aerial Provided by: Google Earth Pro, (2022)
3) Observation Trench Locations are shown in general arrangement only
4) Do Not use Observation Trench Locations for determinations of Distance or Quantities

Observation Trench Location & Identifier

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Observation Trench Location Plan
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023
GEOS Project No. 31-231084
FIGURE: 3

GENERAL NOTES

FINE AND COARSE GRAINED SOIL PROPERTIES

PARTICLE SIZE

BOULDERS:	GREATER THAN 300 mm
COBBLES:	75 mm to 300 mm
GRAVEL:	4.74 mm to 75 mm
COARSE SAND:	2 mm to 4.74 mm
MEDIUM SAND:	0.425 mm to 2 mm
FINE SAND:	0.075 mm to 0.425 mm
SILTS & CLAYS:	LESS THAN 0.075 mm

COARSE GRAINED SOILS (SANDS & GRAVELS)

N-VALUE	RELATIVE DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
OVER 50	VERY DENSE

FINE GRAINED SOILS (SILTS & CLAYS)

N-VALUE	CONSISTENCY	Qu, PSF
0 - 2	VERY SOFT	0 - 500
3 - 4	SOFT	500 - 1000
5 - 8	FIRM	1000 - 2000
9 - 15	STIFF	2000 - 4000
16 - 30	VERY STIFF	4000 - 8000
OVER 31	HARD	8000 +

STANDARD PENETRATION TEST (ASTM D1586)

THE STANDARD PENETRATION TEST AS DEFINED BY ASTM D1586 IS A METHOD TO OBTAIN A DISTURBED SOIL SAMPLE FOR EXAMINATION AND TESTING AND TO OBTAIN RELATIVE DENSITY AND CONSISTENCY INFORMATON. THE 1.4 INCH I.D./2.0 INCH O.D. SAMPLER IS DRIVEN 3-SIX INCH INCREMENTS WITH A 140 LB. HAMMER FALLING 30 INCHES. THE BLOW COUNTS REQUIRED TO DRIVE THE SAMPLER THE FINAL 2 INCREMENTS ARE ADDED TOGETHER AND DESIGNATED THE N-VALUE. AT TIMES, THE SAMPLER CAN NOT BE DRIVEN THE FULL 18 INCHES. THE FOLLOWING REPRESENTS OUR INTERPRETATION OF THE STANDARD PENETRATION TEST WITH VARIATIONS.

BLOWS/FOOT (N-VALUE)	DESCRIPTION
25	25 BLOWS DROVE SAMPLER 12" AFTER INITIAL 6" SEATING
75/10"	75 BLOWS DROVE SAMPLER 10" AFTER INITIAL 6" SEATING
50/PR	PENETRATION REFUSAL OF SAMPLER AFTER INITIAL 6" SEATING

SAMPLING SYMBOLS

ST:	UNDISTURBED SAMPLE
SS:	SPLIT SPOON SAMPLE
CORE:	ROCK CORE SAMPLE
AU:	AUGER OR BAG SAMPLE

SOIL PROPERTY SYMBOLS

N:	STANDARD PENETRATION, BPF
M:	MOISTURE CONTENT %
LL:	LIQUID LIMIT %
PI:	PLASTICITY INDEX %
Qp:	POCKET PENETROMETER VALUE, TSF
Qu:	UNCONFINED COMPRESSIVE STRENGTH, TSF
DUW:	DRY UNIT WEIGHT, PCF

ROCK PROPERTIES

ROCK QUALITY DESIGNATION (RQD)

PERCENT	QUALITY
90 TO 100	EXCELLENT
75 TO 90	GOOD
50 TO 75	FAIR
25 TO 50	POOR
0 TO 25	VERY POOR

ROCK HARDNESS

VERY SOFT:	ROCK DISINTEGRATES OR EASILY COMPRESSES TO TOUCH: CAN BE HARD TO VERY HARD SOIL.
SOFT:	ROCK IS COHERANT BUT BREAKS EASILY TO THUMB PRESSURE AT SHARP EDGES AND CRUMBLES WITH FIRM HAND PRESSURE.
MODERATELY HARD:	SMALL PIECES CAN BE BROKEN OFF ALONG SHARP EDGES BY CONSIDERABLE HARD THUMB PRESSURE: CAN BE BROKEN BY LIGHT HAMMER BLOWS.
HARD:	ROCK CAN NOT BE BROKEN BY THUMB PRESSURE, BUT CAN BE BROKEN BY MODERATE HAMMER BLOWS.
VERY HARD:	ROCK CAN BE BROKEN BY HEAVY HAMMER BLOWS.

GEOServices, LLC-Geotechnical and Meteriels Engineers

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-1	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (2 inches)					
1.0	Lean CLAY (CL) with gravel and abandoned underground utilities - brown; moist; (FILL)	TNP @ 1'	29	19	10	26.8
2.0						
3.0		TNP @ 3'				
4.0	Observation Trench Refusal ranging from 3 to 4 Feet					
5.0						
6.0						
7.0						
8.0						
9.0						



Excavated test pit



Excavated material

Comments:

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-2	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By: Jacob Barber**	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (4 inches)					
1.0	Lean CLAY (CL) - brown; firm; moist; (RESIDUUM)	3-5-5 @ 1'				20.4
2.0						
3.0		TNP @ 3'				20.7
4.0						
5.0	Fat CLAY (CH) with trace weathered limestone - brown and light brown; moist; (RESIDUUM)	TNP @ 5'				
6.0						
7.0	Observation Trench Refusal ranging from 4 to 7 Feet					
8.0						
9.0						



Excavated test pit



Excavated material

Comments:

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-3	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (3 inches)					
1.0	Lean CLAY (CL) with gravel - brown; moist; (FILL)					
		TNP @ 1'				19.1
2.0	Lean CLAY (CL) with trace sand and weathered limestone slabs at depth - brown; moist; (RESIDUUM)					
3.0	Observation Trench Refusal at 3 Feet					
4.0						
5.0						
6.0						
7.0						
8.0						
9.0						



Excavated test pit



Excavated material

Comments: _____

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-4	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (3 inches)					
1.0	Fat CLAY (CH) with sand - brown; firm; moist; (RESIDUUM)	3-5-5 @ 1'				16.7
2.0						
3.0		TNP @ 3'				
4.0	Observation Trench Refusal ranging from 1 to 4 Feet					
5.0						
6.0						
7.0						
8.0						
9.0						



Excavated test pit



Excavated material

Comments:

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-5	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By: Jacob Barber**	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (3 inches)					
1.0	Fat CLAY (CH) with trace gravel, trace asphalt debris, and trace construction debris - brown; soft; moist; (FILL)	3-3-3 @ 1'				18.6
2.0						
3.0		TNP @ 3'				17.7
4.0	Lean CLAY (CL) with trace sand and trace black oxide nodules - brown and light brown; firm; moist; (RESIDUUM)					
5.0		7-6-7 @ 5'				20.6
6.0						
7.0	Fat CLAY (CH) with trace sand and trace black oxide nodules - brown and light brown; moist; (RESIDUUM)					
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: _____

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-6	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (12 inches)					
1.0	Lean CLAY (CL) with sand - brown; firm; moist; (RESIDUUM)	5-5-6 @ 1'				21.9
2.0						
3.0		TNP @ 3'				21.5
4.0	Fat CLAY (CH) with sand - brown; moist; (RESIDUUM)					
5.0		TNP @ 5'				33.3
6.0						
7.0						
8.0	Observation Trench Terminated at 7.5 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 3 feet below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-7	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (3 inches)					
1.0	Lean CLAY (CL) with abundance of chert fragments - reddish brown; soft; moist; (FILL)					
		5-5-4 @ 1'				23.2
2.0	Lean CLAY (CL) with trace sand and trace black oxide nodules - brown and light brown; firm; moist; (RESIDUUM)					
3.0						
		5-7-7 @ 3'				21.2
4.0						
5.0						
		7-8-7 @ 5'				
6.0						
	Fat CLAY (CH) with trace sand and trace black oxide nodules - brown and light brown; firm; moist; (RESIDUUM)					
7.0						
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 6.5 feet below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-8	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (6 inches)					
1.0	Lean CLAY (CL) with abundance of chert and limestone fragments and abandoned undergound utilities - reddish brown; moist; (FILL)	TNP @ 1'				21.6
2.0						
3.0		TNP @ 3'				20.6
4.0	Lean CLAY (CL) with sand - brown; moist; (RESIDUUM)					
5.0		TNP @ 5'				21.5
6.0						
7.0						
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 2 feet below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-9	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
1.0	Topsoil with gravel (18 inches)	TNP @ 1'				25.2
2.0	Lean CLAY (CL) with sand and chert fragments - brown and light brown; moist; (RESIDUUM)					
3.0		TNP @ 3'				24.9
4.0						
5.0		TNP @ 5'				
6.0						
7.0						
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 1 foot below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-10	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (2 inches)					
1.0	Fat CLAY (CH) with trace limestone fragments - brown and dark brown; very soft; very moist; (FILL)	1-1-1 @ 1'				22.4
2.0						
3.0		1-2-2 @ 3'	58	29	29	30.8
4.0						
5.0	Fat CLAY (CH) with black oxide nodules and trace chert fragments and boulders - light brown and brown; very soft to firm; moist; (RESIDUUM)	4-5-6 @ 5'				23.5
6.0						
7.0						
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 4 feet below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-11	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (4 inches)					
1.0	Lean CLAY (CL) - brown and dark brown; firm; moist; (FILL)					
		5-5-5 @ 1'				17.6
2.0						
3.0						
		6-6-7 @ 3'	33	19	14	20.2
4.0						
	Lean CLAY (CL) with trace black oxide nodules and sand at depth - brown and reddish brown; firm; moist; (RESIDUUM)					
5.0		8-8-9 @ 5'				19.6
6.0						
7.0						
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: _____

Proposed Mackenzie Place Townhomes Columbia, Tennessee GEOServices Project No. 31-231084	TEST PIT OBSERVATION RECORD Test Pit No.: OT-12	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
1.0	Lean CLAY (CL) with limestone fragments and boulders and abandoned underground utilities - brown; moist; (FILL)	TNP @ 1'				22.2
2.0						
3.0		TNP @ 3'				20.3
4.0						
5.0		TNP @ 5'				
6.0	Fat CLAY (CH) - brown; moist; (RESIDUUM) Observation Trench Refusal ranging from 1 to 6 Feet					
7.0						
8.0						
9.0						



Excavated test pit



Excavated material

Comments:

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-13	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (10 inches)					
1.0		TNP @ 1'				18.3
	Lean CLAY (CL) with limestone fragments - brown and dark brown; moist; (FILL)					
2.0						
3.0						
		3-4-4 @ 3'	55	29	26	32.9
4.0						
5.0	Fat CLAY (CH) with limestone fragments, black oxide nodules, and trace sand - brown; soft to firm; moist; (RESIDUUM)					
		6-8-8 @ 5'				26.9
6.0						
7.0						
8.0						
	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 3.5 feet below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-14	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (2 inches)					
1.0	Lean CLAY (CL) with gravel - reddish brown and dark brown; firm; moist; (FILL)	4-5-5 @ 1'				22.8
2.0						
3.0	Lean CLAY (CL) with sand - brown and light brown; soft to firm; moist; (RESIDUUM)	4-4-4 @ 3'				18.2
4.0						
5.0		5-6-6 @ 5'				19.6
6.0						
7.0						
8.0						
	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: A rock ledge was encountered approximately 2 feet below the existing ground surface elevation.

Proposed Mackenzie Place Townhomes Columbia, Tennessee	TEST PIT OBSERVATION RECORD Test Pit No.: OT-15	GEOServices, LLC-Geotechnical and Materials Engineers A Universal Engineering Sciences Company
GEOServices Project No. 31-231084		
Date Excavated: February 13, 2023	**Observed By:** Jacob Barber	

Depth (feet)	Material Description	DCP Values	LL	PL	PI	%M
	Topsoil (2 inches)					
1.0	Lean CLAY (CL) with chert fragments and gravel - reddish brown and dark brown; stiff; moist; (FILL)	9-9-10 @ 1'				26.4
2.0						
3.0	Lean CLAY (CL) - dark brown and dark gray; firm; moist; (FILL)	5-5-5 @ 3'				16.5
4.0						
5.0		4-4-5 @ 5'				20.6
6.0	Lean CLAY (CL) with sand and black oxide nodules and trace chert fragments at depth - brown; soft; moist; (RESIDUUM)					
7.0						
8.0	Observation Trench Terminated at 8 Feet					
9.0						



Excavated test pit



Excavated material

Comments: _____

GEOServices, LLC, Geotechnical and Materials Engineers

APPENDIX B

SOIL DATA SUMMARY
Proposed Mackenzie Place Townhomes - Columbia, Tennessee
GEOServices Project No. 31-231084
February 20, 2023

OT Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
OT-1	1	1	26.8%	29	19	10	CL
OT-2	1	1	20.4%				
	2	3	20.7%				
OT-3	1	1	19.1%				
OT-4	1	1	16.7%				
OT-5	1	1	18.6%				
	2	3	17.7%				
	3	5	20.6%				
OT-6	1	1	21.9%				
	2	3	21.5%				
	3	5	33.3%				
OT-7	1	1	23.2%				
	2	3	21.2%				
OT-8	1	1	21.6%				
	2	3	20.6%				
	3	5	21.5%				
OT-9	1	1	25.2%				
	2	3	24.9%				
OT-10	1	1	22.4%				
	2	3	30.8%	58	29	29	CH
	3	5	23.5%				
OT-11	1	1	17.6%				
	2	3	20.2%	33	19	14	CL
	3	5	19.6%				
OT-12	1	1	22.2%				
	2	3	20.3%				
OT-13	1	1	18.3%				
	2	3	32.9%	55	29	26	CH
	3	5	26.9%				
OT-14	1	1	22.8%				
	2	3	18.2%				
	3	5	19.6%				

SOIL DATA SUMMARY
Proposed Mackenzie Place Townhomes - Columbia, Tennessee
GEOServices Project No. 31-231084
February 20, 2023

OT Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
OT-15	1	1	26.4%				
	2	3	16.5%				
	3	5	20.6%				

GEOServices, LLC, Geotechnical and Materials Engineers

APPENDIX C

N



Photo: 6



Photo: 5



Photo: 1



Photo: 2



Photo: 3



Photo: 4



Notes:

1) Site Source Provided by: Client
2) Aerial Provided by: Google Earth Pro, (2022)

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Representative Photos
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023

GEOS Project No. 31-231084

FIGURE: 4

N



Photo: 12



Photo: 11



Photo: 7



Photo: 8



Photo: 9



Photo: 10



Notes:

1) Site Source Provided by: Client
2) Aerial Provided by: Google Earth Pro, (2022)

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Representative Photos
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023
GEOS Project No. 31-231084
FIGURE: 5

N



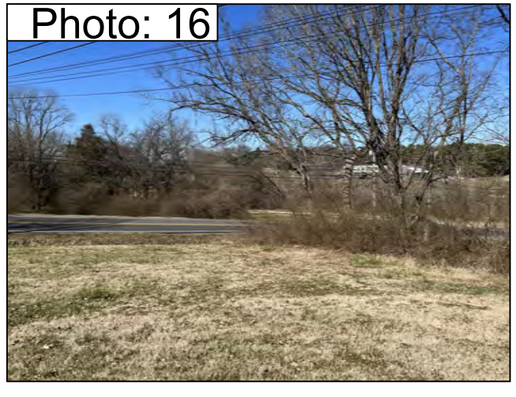












Notes:

1) Site Source Provided by: Client
2) Aerial Provided by: Google Earth Pro, (2022)

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Representative Photos
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023
GEOS Project No. 31-231084
FIGURE: 6

N



Photo: 24



Photo: 23



Photo: 19



Photo: 20



Photo: 21



Photo: 22



Notes:

1) Site Source Provided by: Client
2) Aerial Provided by: Google Earth Pro, (2022)

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Representative Photos
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023

GEOS Project No. 31-231084

FIGURE: 7

Columbia Fire & Rescue

Fire Flow Requirements

Water Purveyor: Columbia Power & Water System

Date: 11/14/22
Name: Brian Holcombe
Phone: 615-925-0851
Email: brian@m2groupllc.com
Address/Parcel ID: 220 Theta pike / 90B, 47.00
Property Type: (•) Residential ( ) Commercial ( ) Industrial
Construction Type: V-B
Enclosed Area (ft^2): 1,000

FILLED OUT BY COLUMBIA FIRE AND RESCUE

NFPA Sprinkler Type: NFPA 13D

Water System Demand without Sprinkler Credit

Fire flow Requirements (International Fire Code Appendix B)

Fire Flow: 1,000 gpm Duration: 1 hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

Maximum distance from frontage to hydrant: 250 ft.

Water System Demand with Sprinkler Credit

Fire flow requirements (International Fire Code Appendix B)

Fire Flow: 500 gpm Duration: 1/2 hours

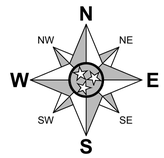
Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

Maximum distance from frontage to hydrant: 250 ft.

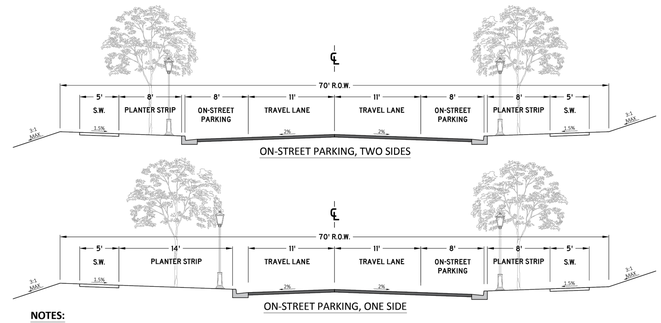
Fire Plan Reviewer: Brad Massey Date: 11/15/22



30' 0 30' 60'

GRAPHIC SCALE

SITE DATA TABLE		
ZONING	CD-4	
TOTAL LOT AREA	3.59	AC.
TOTAL NUMBER OF UNITS	34	EA.
DENSITY	9.47	UNITS / AC.
PARKING SPACES REQUIRED	68	EA.
PARKING SPACES PROVIDED	68	EA.
FRONT YARD SETBACK	6' - 20'	L.F.
SIDE YARD SETBACK	6	L.F.
REAR YARD SETBACK	6	L.F.



NOTES:

1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. CURB AND GUTTER, SEE SD-01
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD (NTS)	DATE 6/9/2022 DS-03

ZONING: RM-1 PUD
POLK PLACE - PHASE 1
PB 22, PG 214

ZONING: GCS



ZONING: RM-1
CEDAR POINTE TN, LP
MAP 90A, GROUP B, PARCEL 46.01
RB 2309, PG 827

ZONING: RM-1
CEDAR POINTE TN, LP
MAP 90A, GROUP B, PARCEL 46.01
RB 2309, PG 827

DESCRIPTION | DATE | REVISION #

DRAFT

SITE PLANS FOR:
MACKENZIE PLACE TOWNHOMES
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SITE LAYOUT PLAN
TOWNHOUSES WITH GARAGES

DATE : --
DRAWN BY : M2G
PROJECT NO. : --
CHECKED BY : MWB

SHEET NUMBER:
1

MPA - CONCEPT PLAN - TOWNHOMES - OPTION 7.DWG / Thursday, October 13, 2022 9:26:55 AM

CPWS

May 19, 2023

Mr. Brian Holcombe
M2 Group, LLC
P.O. Box 848
Franklin, TN 37065
Sent via email: brian@m2groupllc.com

RE: Water Availability Letter
Mackenzie Place Townhomes – 34 Units
220 Theta Pike
Tax Map 90B, Parcel 47.00
Columbia, Maury County, TN

Dear Mr. Holcombe:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 34 townhome units in 7 buildings. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 6-inch water main located on Theta Pike.
- Minimum size 8-inch water mains will be required throughout the development.

- Townhomes will be served via gang-meter vaults.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (34 SFUs)	$14,080.00

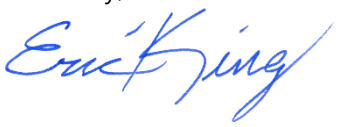
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $540 per 3/4" meter (34 meters)	$18,360.00
Impact Fee: $875 per 3/4" meter (34 meters)	$29,750.00
Total Meter and Impact Fees Due =	**$48,110.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact Mr. Jonathan Hardin or myself at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-005

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: Proposed DATE:

MODEL BY: Inflo Design Group, LLC SYS. DEMAND Max Day DURATION: 2 hrs.

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: Mackenzie Place

MODEL DATA

FLOW HYDRANT(S)	0	n/a	n/a
GPM:	**850**	0	0

TOTAL FLOW DURING SIMULATION: **850** GPM

GAUGE HYDRANT

HYDRANT # & LOCATION: J-25996

CONDITION 1

STATIC 107 PSI RESIDUAL: 85 PSI

CONDITION 2

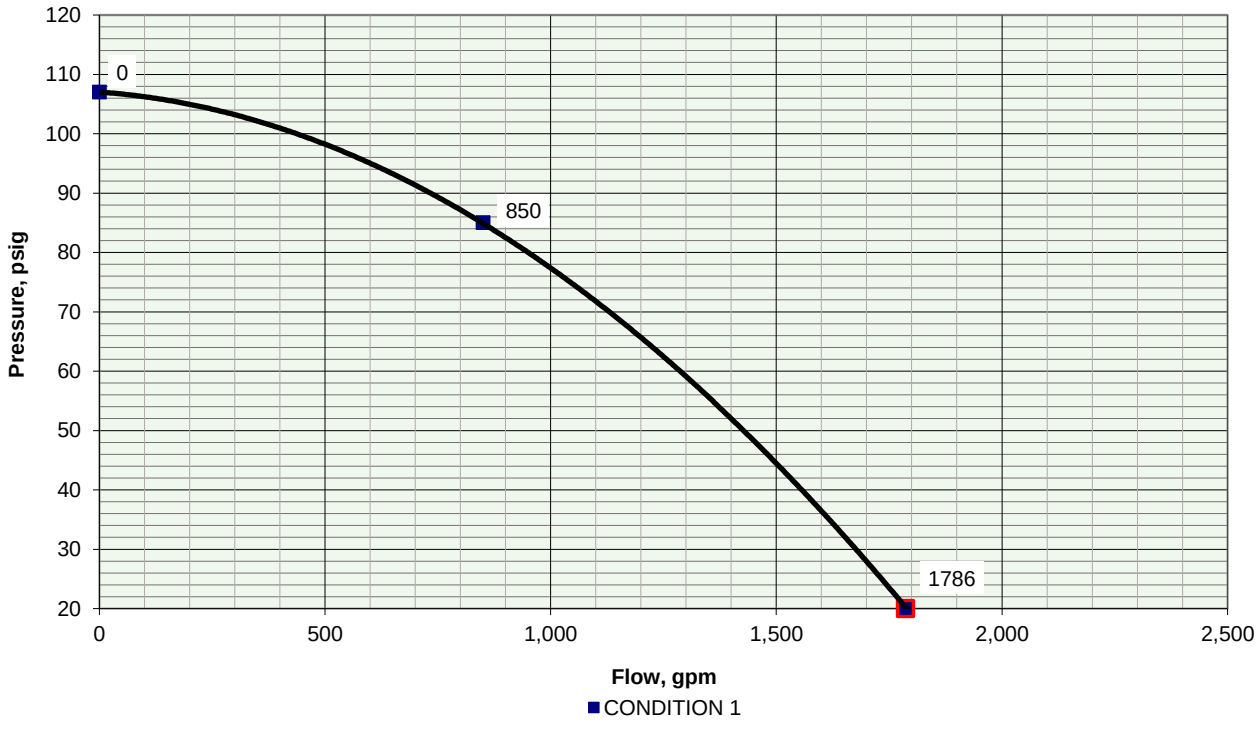
STATIC _____ PSI RESIDUAL: _____ PSI

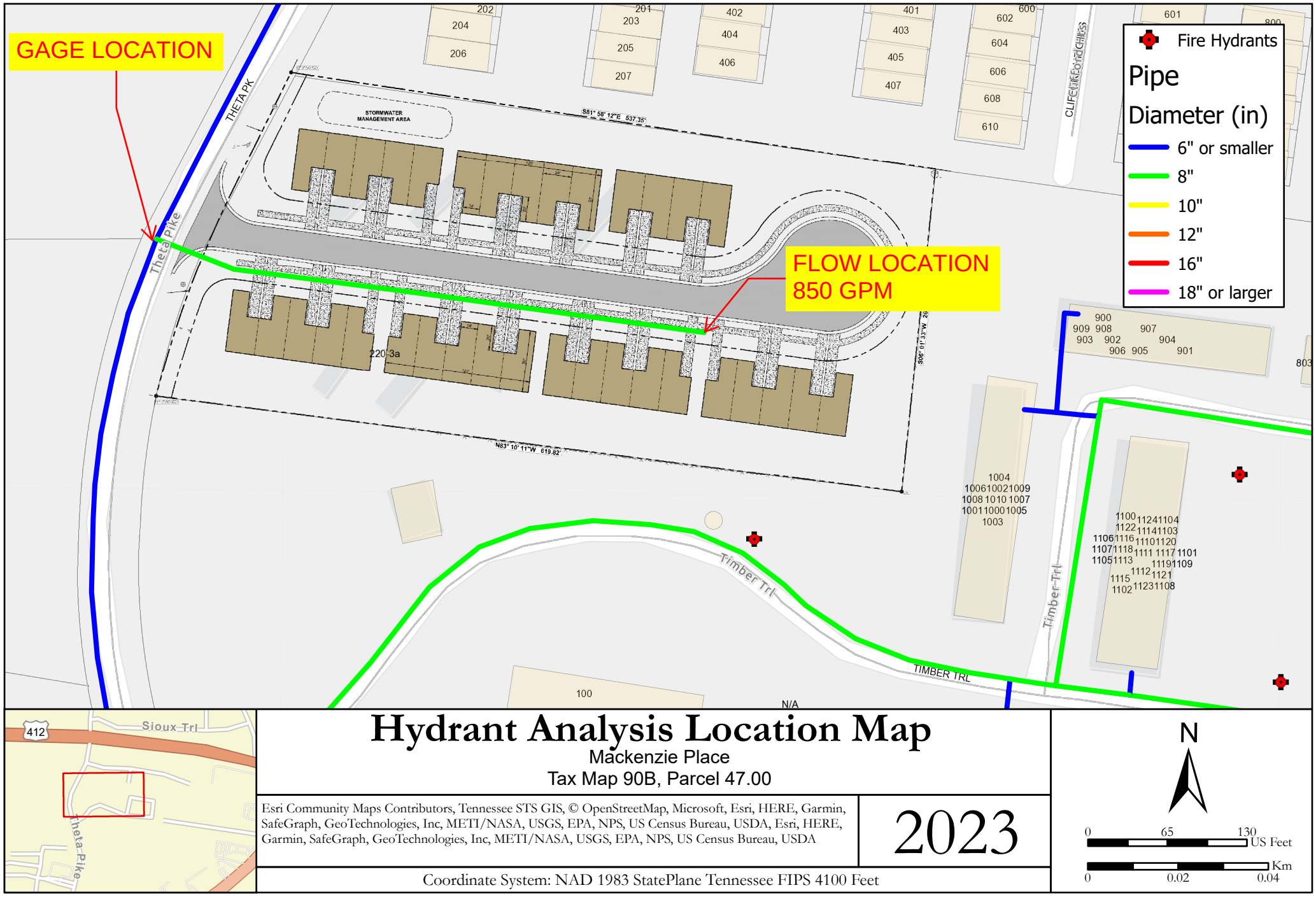
RESULTS: AT 20 PSI RESIDUAL

CONDITION 1 **1786** GPM

CONDITION 2 **---** GPM

REMARKS: Performance based on service elevation of 617' and current CPWS water infrastructure and does not account for additional losses associated with development piping.





Hydrant Analysis Location Map

Mackenzie Place

Tax Map 90B, Parcel 47.00

Esri Community Maps Contributors, Tennessee STS GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

2023

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

N

0 65 130 US Feet

0 0.02 0.04 Km

SITE PLAN FOR:

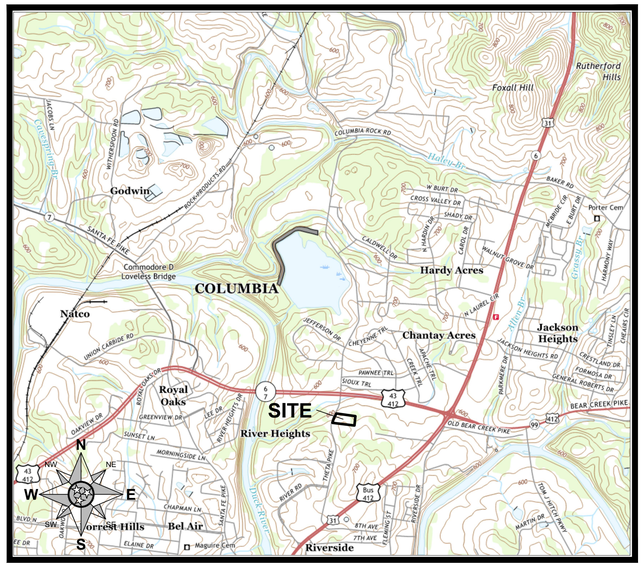
MACKENZIE PLACE

TAX MAP 90B, GROUP B, PARCEL 47.00

220 THETA PIKE

MAURY COUNTY, TENNESSEE

MAY 22, 2023



VICINITY MAP

SCALE: 1" = 2,000'

SOURCE: USGS

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PROJECT NOTES:

1. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
2. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
3. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
4. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
5. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

CONTACT LIST

OWNER/DEVELOPER

WAITS DEVELOPMENT GROUP, LLC
ADDRESS: PO BOX 111285
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UTILITY CONTACTS:

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ATMOS ENERGY CORPORATION
810 NASHVILLE HWY
COLUMBIA, TN 38401
(931) 388-9136

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYANT — REGISTERED ENGINEER — AGRICULTURE — COMMERCE & TECHNOLOGY — CERTIFICATE NO. 120681 — STATE OF TENNESSEE — 06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

COVER SHEET

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C000

MPA - COVER SHEET.DWG / Monday, June 19, 2023 3:50:42 PM

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION OR EARTH MOVING OPERATIONS. INFORM ENGINEER OF ANY CONFLICTS DETRIMENTAL TO THE DESIGN INTENT.
2. 72 HOURS BEFORE DIGGING IS TO COMMENCE, THE CONTRACTOR SHALL NOTIFY THE FOLLOWING AGENCIES: TENNESSEE 811 AND ALL OTHER AGENCIES THAT MAY HAVE UNDERGROUND UTILITIES INVOLVING THIS PROJECT AND ARE NON-MEMBERS OF TENNESSEE 811.
3. THE CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
4. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES TO PERSONNEL, EQUIPMENT AND/OR EXISTING FACILITIES OCCURRING IN THE COURSE OF THE DEMOLITION AND CONSTRUCTION DESCRIBED IN THE PLANS AND SPECIFICATIONS.
5. CONTRACTOR SHALL OBTAIN A PERMIT FOR ALL CONSTRUCTION ACTIVITIES AND PERFORM SAID ACTIVITIES IN ACCORDANCE WITH ALL LOCAL, STATE, FEDERAL & OSHA REGULATIONS.
6. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL APPLICABLE PERMITS, PAY ALL REQUIRED FEES AND ATTEND REQUIRED PRE-CONSTRUCTION MEETINGS WITH CITY AND UTILITY COMPANIES PRIOR TO BEGINNING WORK.
7. ANY WORK PERFORMED IN THE LOCAL RIGHT OF WAYS SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE NECESSARY PERMITS FOR THE WORK, SCHEDULE NECESSARY INSPECTIONS, AND PROVIDE THE NECESSARY TRAFFIC CONTROL MEASURES AND DEVICES, ETC., FOR WORK PERFORMED IN THE RIGHT OF WAYS.
8. THE CONTRACTOR IS TO PERFORM ALL INSPECTIONS AS REQUIRED BY THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC) FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND FURNISH OWNERS REPRESENTATIVE WITH WRITTEN REPORTS. OWNER WILL SUBMIT THE NOTICE OF INTENT (NOI) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN ORDER TO OBTAIN A NOTICE OF COVERAGE (NOC) UNDER THE STATE OF TENNESSEE NPDES PERMIT. THE CONTRACTOR WILL BE REQUIRED TO SIGN THE NOI AND SUBMIT UPDATED NOI TO THE STATE OF TENNESSEE UPON SELECTION TO COMPLETE THE CONSTRUCTION AND BE A PERMITTEE LISTED ON THE NOC.
9. CONTRACTOR SHALL IMPLEMENT ALL SOIL AND EROSION CONTROL, PRACTICES REQUIRED BY CITY OF COLUMBIA AND TDEC.
10. ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF CONSTRUCTION AND ARE TO FINAL GRADE AND ARE TO REMAIN SO, SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL IN ACCORDANCE WITH SPECIFICATIONS.
11. ALL WORK SHALL COMPLY WITH THE TENNESSEE DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, AND ALL CONSTRUCTION WORK SHALL BE DONE ACCORDING TO SAID SPECIFICATIONS AND IN ACCORDANCE WITH APPLICABLE STANDARDS OF CITY OF COLUMBIA SUBDIVISION REGULATIONS.
12. ALL WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE LATEST REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT.
13. CONTRACTOR SHALL REFER TO OTHER PLAN SHEETS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.
14. BEFORE INSTALLATION OF STORM OR SANITARY SEWER, OR OTHER UTILITY THE CONTRACTOR SHALL VERIFY ALL CROSSINGS, BY EXCAVATION WHERE NECESSARY, AND INFORM THE OWNER AND THE ENGINEER OF ANY CONFLICTS. THE ENGINEER WILL BE HELD HARMLESS IN THE EVENT THEY ARE NOT NOTIFIED OF DESIGN CONFLICTS PRIOR TO CONSTRUCTION.
15. WHERE CURB IS PRESENT, DIMENSIONS ARE SHOWN TO THE FACE OF CURB, OTHERWISE DIMENSIONS ARE SHOWN TO THE EDGE OF PAVEMENT OR AS NOTED.
16. SITE SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
17. CONCRETE WALKS SHALL BE 4" THICK OVER 4" COMPACTED GRAVEL WITH CONTROL JOINTS EQUALLY SPACED AT IN ACCORDANCE WITH ACI 330R-01 AND ACI 325R 9-91, ISOLATION JOINTS AT ALL FIXED STRUCTURES (MANHOLES, INLETS, WALLS, BUILDING, ETC.). ALL SIDEWALKS ARE TO BE BROOM FINISHED.
18. CONSTRUCTION OF ALL ROADWAYS AND SIDEWALKS SHALL MEET THE REQUIREMENTS OF CITY OF COLUMBIA ROADWAY CONSTRUCTION CRITERIA AND STANDARD DETAILS.
19. CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH STATE DEPARTMENT OF TRANSPORTATION REGULATIONS AND AS REQUIRED BY LOCAL AGENCIES WHEN WORKING IN AND/OR ALONG STREETS, ROADS, HIGHWAYS, ETC. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL AND COORDINATE WITH LOCAL AND/OR STATE AGENCIES REGARDING THE NEED, EXTENT AND LIMITATIONS ASSOCIATED WITH INSTALLING AND MAINTAINING TRAFFIC CONTROL MEASURES.
20. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL BE IN ACCORDANCE WITH ALL FEDERAL OSHA REGULATIONS. CONTRACTOR TO PAY PARTICULAR ATTENTION TO 29 CFR PART 1926, SUBPARTS M AND P.

DEMOLITION NOTES

1. CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD BY THE CONTRACTOR.
2. NO TREES SHALL BE REMOVED, NOR VEGETATION DISTURBED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
3. TREE PROTECTION FENCING SHALL BE IN ACCORDANCE WITH CITY OF COLUMBIA STANDARDS AND DETAILED DRAWINGS. DO NOT OPERATE OR STORE EQUIPMENT, NOR HANDLE OR STORE MATERIALS WITHIN THE DRIP LINES OF THE TREES SHOWN TO REMAIN.
4. PROTECTION OF EXISTING TREES AND VEGETATION: PROTECT EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN DRIP LINE, EXCESS FOOT OR VEHICULAR TRAFFIC, OR PARKING OF VEHICLES WITHIN DRIP LINE. PROVIDE TEMPORARY GUARDS TO PROTECT TREES AND VEGETATION TO BE LEFT STANDING.
5. ALL DEMOLITION WASTE AND CONSTRUCTION DEBRIS, OTHER THAN TOPSOIL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE IN A STATE APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. REPAIR DAMAGE ACCORDING TO THE APPROPRIATE UTILITY COMPANY STANDARDS AND AT THE CONTRACTOR'S EXPENSE.
6. ALL UTILITY DISCONNECTION, REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY / AGENCY. UTILITY CONTACTS ARE LISTED ON THE COVER SHEET.
7. THE BURNING OF CLEARED MATERIAL AND DEBRIS SHALL NOT BE ALLOWED UNLESS CONTRACTOR OBTAINS PRIOR WRITTEN AUTHORIZATION FROM THE LOCAL AUTHORITIES.
8. EROSION & SEDIMENT CONTROL MEASURES AROUND AREAS OF DEMOLITION SHALL BE PROPERLY INSTALLED AND FUNCTION PROPERLY PRIOR TO INITIALIZATION OF DEMOLITION ACTIVITIES.
9. HAZARDOUS MATERIALS ARE NOT EXPECTED, IF FOUND ON SITE, SUCH MATERIALS SHALL BE REMOVED BY A LICENSED HAZARDOUS MATERIALS CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IF HAZARDOUS MATERIALS ARE ENCOUNTERED.
10. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE, FEDERAL AND OSHA REGULATIONS DURING ALL DEMOLITION ACTIVITIES.
11. CONTRACTOR SHALL PROTECT ALL CORNER PINS, MONUMENTS, PROPERTY CORNERS AND BENCHMARKS DURING DEMOLITION ACTIVITIES. IF DISTURBED, CONTRACTOR SHALL HAVE DISTURBED ITEMS RESET BY A LICENSED SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
12. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND FEATURES TO REMAIN. ANY ITEMS TO REMAIN THAT HAVE BEEN DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
13. THE CONTRACTOR SHALL USE SUITABLE METHODS TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION ACTIVITIES.
14. ANY UTILITY AND STRUCTURE REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED AND PROPERLY DOCUMENTED BY A CERTIFIED PROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY COMPANY, MUNICIPALITY AND/OR AGENCY. DEMOLITION OF REGULATED ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO WELLS, ASBESTOS, UNDER GROUND STORAGE TANKS, SEPTIC TANKS AND ELECTRIC TRANSFORMERS. DEMOLITION CONTRACTOR SHALL REFER TO ANY ENVIRONMENTAL STUDIES FOR DEMOLITION RECOMMENDATIONS AND GUIDANCE AVAILABLE ENVIRONMENTAL STUDIES MAY INCLUDE, BUT ARE NOT LIMITED TO PHASE I ESA, PHASE II ESA, WETLAND AND STREAM DELINEATION AND ASBESTOS SURVEY. ALL APPLICABLE ENVIRONMENTAL STUDIES SHALL BE MADE AVAILABLE UPON REQUEST.

LAYOUT NOTES

1. THE CONTRACTOR SHALL CHECK EXISTING GRADES, DIMENSIONS, AND INVERTS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. RELOCATE EXISTING UTILITIES AS INDICATED, OR AS NECESSARY FOR CONSTRUCTION.
3. PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ALL UTILITIES; INCLUDING, BUT NOT LIMITED TO, ALL UTILITIES AND CROSSINGS PRIOR TO PAVEMENT INSTALLATION.
4. ALL DAMAGE TO EXISTING PAVEMENT TO REMAIN, WHICH RESULTS FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH LIKE MATERIALS AT THE CONTRACTOR'S EXPENSE.
5. SITE DIMENSIONS SHOWN ARE TO THE FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL MAINTAIN ONE SET OF AS-BUILT/RECORD DRAWINGS ON-SITE DURING CONSTRUCTION FOR DISTRIBUTION TO THE OWNER AND/OR OWNER'S REPRESENTATIVE UPON COMPLETION.
7. THIS SITE LAYOUT IS SPECIFIC TO THE APPROVALS NECESSARY FOR THE CONSTRUCTION IN ACCORDANCE WITH CITY OF COLUMBIA REQUIREMENTS. NO CHANGES TO THE SITE LAYOUT ARE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. CHANGES MADE TO THE SITE LAYOUT WITHOUT APPROVAL IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. CHANGES INCLUDE BUT ARE NOT LIMITED TO, INCREASED IMPERVIOUS PAVEMENT, ADDITION / DELETION OF PARKING SPACES, MOVEMENT OF CURB LINES, CHANGES TO DRAINAGE STRUCTURES AND PATTERNS, LANDSCAPING, ETC.
8. CONTRACTOR SHALL PERFORM A PROOF ROLL PER CITY OF COLUMBIA REQUIREMENTS PRIOR TO STONE AND PAVEMENT INSTALLATION.
9. ALL PAVEMENT MARKINGS SHALL BE INSTALLED USING WHITE OR YELLOW, REFLECTIVE TRAFFIC MATERIALS (SEE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
10. THE CITY WILL MEASURE THE CROSS SLOPE OF FINAL CONSTRUCTED ROADWAYS WITHIN THE SUBDIVISION. THE CROSS SLOPE OF THE FINAL CONSTRUCTED ROADWAYS SHALL BE PER THE ROADWAY SECTION SHOWN ON THE CONSTRUCTION PLANS OR IT SHALL BE REPAIRED AT NO COST TO THE CITY OR OWNER.
11. OWNER SHALL PROVIDE STAKING OF THE FRONT PROPERTY LINES OF EACH LOT AND WILL SET FINAL PROPERTY CORNERS. ALL OTHER STAKING/SURVEYING THAT IS REQUIRED TO CONSTRUCT THE IMPROVEMENTS SHOWN IN THESE CONSTRUCTION PLANS IS THE RESPONSIBILITY OF THE CONTRACTOR.
12. THE ENGINEER SHALL PROVIDE FILES IN COMPUTER-AIDED-DRAFTING (CAD) FORMAT TO THE CONTRACTOR. THE CONTRACTOR WILL BE BOUND BY THE TERMS IN THE ENGINEER'S "CAD FILES DISCLAIMER, WAIVER AND LIMITATION OF LIABILITY" AGREEMENT.

GRADING NOTES

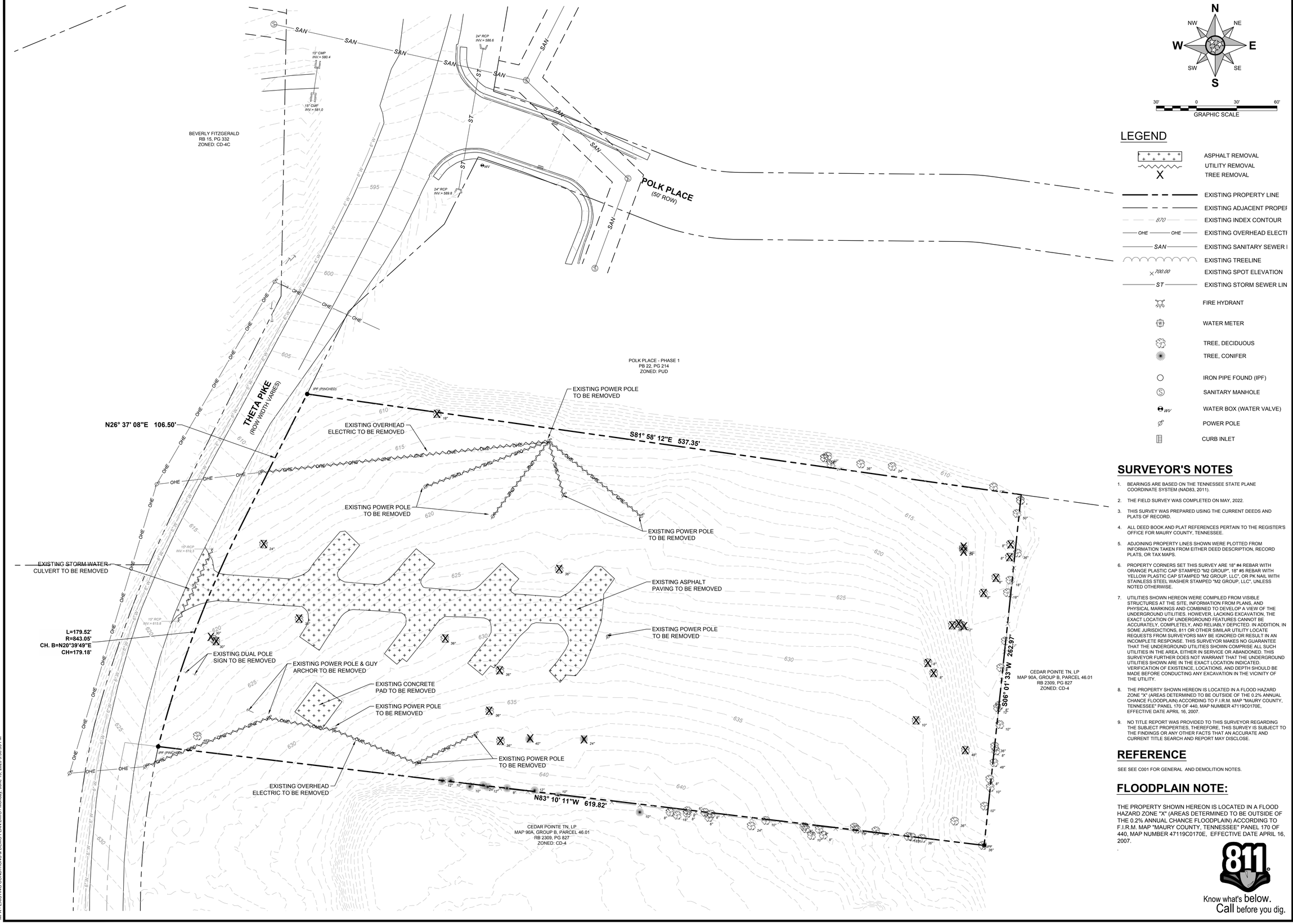
1. THE CONTRACTOR SHALL CHECK ALL EXISTING AND FINISHED GRADES, DIMENSIONS, ETC. PRIOR TO BEGINNING NOTIFY THE OWNERS REPRESENTATIVE OF ANY DISCREPANCIES AND/OR ERRORS IN THE PLANS PRIOR TO COMMENCING WORK.
2. ALL PROPOSED GRADES SHOWN ARE FINAL GRADES, TOP OF GROUND LEVEL, OR TOP OF PAVEMENT, OR GRATE ELEVATION AT THE DRAWDOWN POINT, UNLESS INDICATED OTHERWISE.
3. ALL ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS.
4. CONTRACTOR SHALL ADHERE TO THE EROSION & SEDIMENT CONTROL PLAN PREPARED FOR THIS PROJECT.
5. EARTHWORK SHALL INCLUDE CLEARING AND GRUBBING, STRIPPING AND STOCKPILING TOPSOIL, MASS GRADING, EXCAVATION, FILLING, UNDER CUT AND REPLACEMENT, IF REQUIRED, AND COMPACTION.
6. CONTRACTOR TO REFILL UNDERCUT AREAS (IF REQUIRED) WITH SUITABLE MATERIAL AND COMPACT AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
7. EXCAVATED SUBGRADES AND EACH LAYER OF FILL SHALL BE OF A QUALITY ACCEPTABLE TO THE OWNERS REPRESENTATIVE AND SHALL NOT INCLUDE ORGANIC MATERIAL, BOULDERS, DEBRIS, WET MATERIAL, ETC. CUT OR STRIPPED AREAS SHALL BE PROOF ROLLED PRIOR TO ANY FILLING. ALL GRADING ACTIVITY AND PLACEMENT OF MATERIAL SHALL BE MONITORED BY A QUALIFIED GEOTECHNICAL ENGINEER (OR THEIR REPRESENTATIVE), OR AS DIRECTED BY THE OWNERS REPRESENTATIVE. MATERIAL SHALL MEET OR EXCEED COMPACTION REQUIREMENTS SPECIFIED IN THE SPECIFICATIONS PUBLISHED BY CITY OF COLUMBIA.
8. PLACE TOPSOIL OVER THE SUBGRADE OF UNPAVED, DISTURBED AREAS TO A MINIMUM DEPTH OF 6". TOPSOIL SHALL BE FREE OF ROCK AND DEBRIS.
9. ALL SLOPES IN NON-PAVED AREAS SHALL BE 3:1 (HORIZONTAL:VERTICAL) MAXIMUM UNLESS NOTED OTHERWISE.
10. ALL AREAS NOT PAVED SHALL BE STABILIZED IN ACCORDANCE WITH THE EROSION & SEDIMENT CONTROL PLAN, UNLESS NOTED OTHERWISE.
11. ALL FILLS SHALL BE CONTROLLED, COMPACTED, AND INSPECTED BY AN APPROVED TESTING LABORATORY OR AN INSPECTOR FROM THE APPROPRIATE GOVERNMENTAL AGENCY.
12. ALL EXCESS SOIL MATERIALS, OTHER THAN TOPSOIL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE (INCLUDING ALL CHARTER COMMERCIAL, LLC PROPERTY OR FUTURE PHASES OF HIGH PARK HILL SUBDIVISION) AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE SITE EARTHWORK BY IMPORTING OR EXPORTING AS NECESSARY TO ACHIEVE DESIGN GRADES AND SPECIFICATIONS.
14. THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO ADJACENT PROPERTIES OCCURRING DURING CONSTRUCTION OF THIS PROJECT. NO WORK SHALL BE PERFORMED OUTSIDE THE PROJECT BOUNDARY WITHOUT PROPER AGREEMENTS WITH THE AFFECTED PROPERTY OWNERS.
15. THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES SHOWN HEREON ARE BASED ON UTILITY COMPANY RECORDS, AND WHERE POSSIBLE, FIELD MEASUREMENTS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 3 DAYS BUT NOT MORE THAN 10 DAYS PRIOR TO ANY EXCAVATION AND REQUEST FIELD VERIFICATION OF UTILITY LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES TO REMAIN. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGED UTILITIES ACCORDING TO LOCAL CODES AT THE CONTRACTORS EXPENSE.
16. THE GENERAL CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR JOB SITE CONDITIONS, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY DURING CONSTRUCTION. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
17. MATERIALS NOT SUITABLE FOR FILL OR REUSE SHALL BE DISPOSED OF OFFSITE IN ACCORDANCE WITH THE REQUIREMENTS OF CITY OF COLUMBIA AND AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE.
18. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT T.O.S.H.A. PROVISIONS AND THE MANUAL OF ACCIDENT PREVENTION AND CONSTRUCTION, ISSUED BY THE AGC OF AMERICA, INCORPORATED, AND THE SAFETY AND HEALTH REGULATIONS OF CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
19. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGH THE SITE DURING ALL PHASES OF CONSTRUCTION.
20. CONTRACTOR SHALL REMOVE FROM THE LIMITS OF DISTURBANCE ALL UNSUITABLE MATERIAL, DEBRIS, LARGER BOULDERS, DELETERIOUS MATERIAL, ETC. STOCKPILING OF ANY MATERIAL IN FUTURE PHASES OF THIS SUBDIVISION IS PROHIBITED WITHOUT THE EXPRESS WRITTEN CONSENT OF THE DEVELOPER AND THE ENGINEER OF RECORD. CONSENT TO PLACE ANY MATERIAL IN FUTURE PHASES OF THIS SUBDIVISION SHALL ONLY BE GRANTED UNDER THE FOLLOWING PROVISIONS:
    - IF THE AREA IS CLEARED, MAINTAINED AND PROPER EROSION CONTROL MEASURES INSTALLED TO PREVENT EROSION OR SEDIMENT DEPOSITION.
    - MATERIAL IS PLACED AND GRADED IN A PERMANENT LOCATION THAT WILL NOT BE REQUIRED TO BE MOVED IN A FUTURE PHASE OF THIS SUBDIVISION DEVELOPMENT AND PERMANENTLY STABILIZED IN ACCORDANCE WITH TDEC AND CITY REGULATIONS.
21. ALL SOILS, REGARDLESS OF THE CHARACTER OF SURFACE AND SUBSURFACE CONDITIONS ENCOUNTERED, ARE CONSIDERED TO BE UNCLASSIFIED. THE CONTRACTOR RECOGNIZES THAT THIS PROJECT IS LOCATED IN AN AREA WHERE ROCK ENCOUNTER IS LIKELY. THE CONTRACTOR IS RESPONSIBLE TO VISIT THE SITE, MAKE ANY TESTS, BORES, TEST PITS, SURVEYS, ETC. NECESSARY TO FAMILIARIZE HIMSELF WITH ALL SPECIFIC SITE CONDITIONS RELATED TO THIS PROJECT. NO CHANGES IN THE CONTRACT SUM OR THE CONTRACT TIME WILL BE AUTHORIZED FOR ANY ROCK ENCOUNTER, THE EXCAVATION/REMOVAL THEREOF, OR DISPOSAL OF ROCK/SOIL MIX AND/OR UNSUITABLE SOIL

STORM DRAINAGE NOTES

1. DISTANCES SHOWN ON PIPING ARE HORIZONTAL DISTANCES FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE, UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE INSTALLATION, INSPECTION, TESTING AND FINAL ACCEPTANCE OF ALL NEW STORMWATER MANAGEMENT FACILITIES CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE REGULATING AGENCIES CONCERNING INSTALLATION, INSPECTION AND APPROVAL OF THE STORM DRAINAGE SYSTEM CONSTRUCTION.
3. ALL STORMWATER MANAGEMENT FACILITIES, INCLUDING COLLECTION AND CONVEYANCE STRUCTURES, SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES AND REGULATIONS.
4. THE CONTRACTOR IS TO CONSTRUCT CURBS, CATCH BASINS, PIPING, ETC. AS REQUIRED TO CONVEY THE LANDSCAPED & PAVED SURFACE DRAINAGE THROUGH THE SITE.
5. STORM SEWER PIPE LABELED "RCP" SHALL BE REINFORCED CONCRETE PIPE. ALL STORM IS TO BE INSTALLED PER CITY OF COLUMBIA REQUIREMENTS AND SPECIFICATIONS.
6. STORM SEWER IS TO BE BEDDED WITH CLEAN GRANULAR MATERIAL (AGGREGATE) CONSISTING OF AASHTO #57 OR #67 STONE. BEDDING TO BE MINIMUM OF 6" BELOW & 12" ABOVE AND ON THE SIDES OF THE PIPE OR AS REQUIRED BY CITY OF COLUMBIA INSPECTOR.
7. ALL TRENCH SPOILS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
8. CONTRACTOR SHALL INCLUDE A LINE ITEM IN THEIR CONTRACT TO THE OWNER FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROL MEASURES AT THE END OF THE BOND PERIOD WITH CITY OF COLUMBIA.

EROSION AND SEDIMENT CONTROL NOTES

1. THE ISSUED NOTICE OF COVERAGE (NOC) OF THE PERMIT TO DISCHARGE CONSTRUCTION ACTIVITY STORMWATER SHALL BE POSTED NEAR THE SITE CONSTRUCTION ENTRANCE. THE CONTRACTOR SHALL HAVE THE SWPPP AND A SET OF APPROVED EPSC PLANS ON SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR WILL BE REQUIRED TO SIGN THE NOTICE OF INTENT (NOI) AND SUBMIT UPDATED NOI TO THE STATE OF TENNESSEE UPON SELECTION TO COMPLETE THE CONSTRUCTION AND BE A PERMITTEE LISTED ON THE NOC.
2. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
3. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
4. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY TDEC PRIOR TO ADDITIONAL DISTURBANCE.
5. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
6. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
7. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
8. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
9. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
10. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
11. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
12. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN TCP-10 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
13. FOR PERMANENT STABILIZATION OF DRAINAGE SWALES, INSTALL TURF REINFORCEMENT MATTING (TENSAR NORTH AMERICAN GREEN SC250 OR APPROVED EQUAL) PER MANUFACTURERS' RECOMMENDATIONS.
14. FOR PERMANENT STABILIZATION OF PERMANENT DETENTION POND, INSTALL SOD PER MANUFACTURERS' RECOMMENDATIONS. SOD SHALL BE AS FOLLOWS: SOD SHALL BE HIGH-QUALITY TURF TYPE TALL FESCUE OF KNOWN GENETIC ORIGIN. FREE OF NOXIOUS WEEDS, DISEASE, AND INSECT PROBLEMS. SOD SHALL APPEAR HEALTHY AND VIGOROUS, AND CONFORM TO ALL SPECIFICATIONS IN THE TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
15. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
16. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
17. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING PLANS. THE EQUIPMENT NECESSARY TO IMPLEMENT A CLEANUP SHALL BE MADE AVAILABLE TO FACILITY PERSONNEL. THE OPERATOR SHALL IMMEDIATELY NOTIFY THE DESIGNATED STATE AND LOCAL GOVERNMENT AGEN



LEGEND

- ASPHALT REMOVAL
- UTILITY REMOVAL
- TREE REMOVAL
- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPEF
- EXISTING INDEX CONTOUR
- EXISTING OVERHEAD ELECTI
- EXISTING SANITARY SEWER I
- EXISTING TREELINE
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER LIN
- FIRE HYDRANT
- WATER METER
- TREE, DECIDUOUS
- TREE, CONIFER
- IRON PIPE FOUND (IPF)
- SANITARY MANHOLE
- WATER BOX (WATER VALVE)
- POWER POLE
- CURB INLET

SURVEYOR'S NOTES

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. THE FIELD SURVEY WAS COMPLETED ON MAY, 2022.
3. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD.
4. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
5. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
6. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP". 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
7. UTILITIES SHOWN HEREON WERE COMPILED FROM VISIBLE STRUCTURES AT THE SITE, INFORMATION FROM PLANS, AND PHYSICAL MARKINGS AND COMBINED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. VERIFICATION OF EXISTENCE, LOCATIONS, AND DEPTH SHOULD BE MADE BEFORE CONDUCTING ANY EXCAVATION IN THE VICINITY OF THE UTILITY.
8. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.
9. NO TITLE REPORT WAS PROVIDED TO THIS SURVEYOR REGARDING THE SUBJECT PROPERTIES, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH AND REPORT MAY DISCLOSE.

REFERENCE

SEE SEE C001 FOR GENERAL AND DEMOLITION NOTES.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

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Know what's below.
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REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
REGISTERED LAND SURVEYOR
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

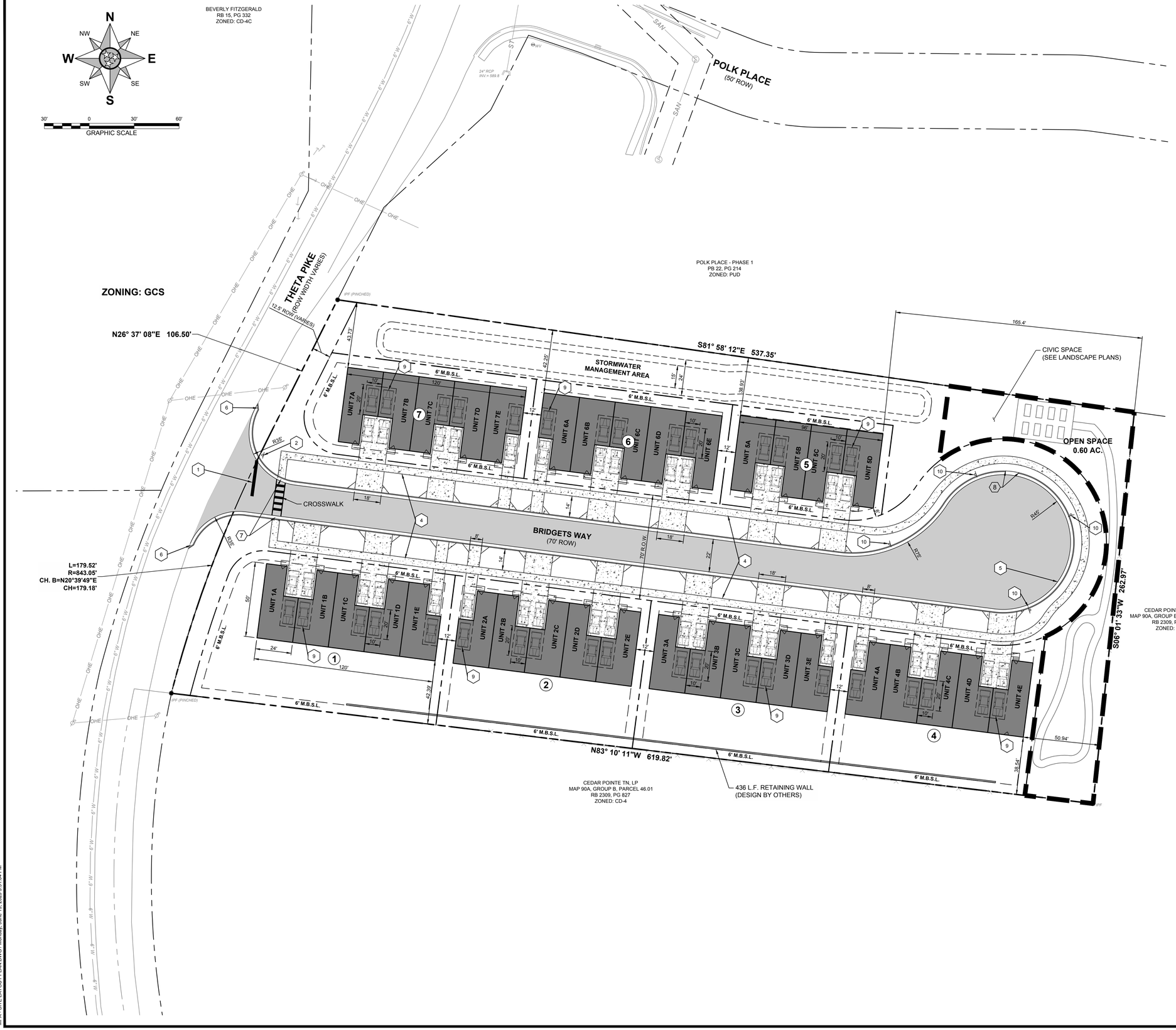
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

EXISTING CONDITIONS & DEMOLITION PLAN

DATE : MAY 22, 2023
PROJECT NO. : 22-085
DRAWN BY : M2G
CHECKED BY : MWB

SHEET NUMBER:
C100

MPA - EXISTING CONDITIONS & DEMO PLAN.DWG / Monday, June 19, 2023 3:50:55 PM



SITE PLAN KEY NOTES

1. 2' WIDE x 18' LONG THERMOPLASTIC STOP BAR
2. STOP / STREET SIGN (REF. SHEET C600)
3. PROPOSED LIGHT POLE/FIXTURE, SEE SITE PHOTOMETRICS PLAN
4. 5' CONCRETE SIDEWALK (REF SHEET C600)
5. CURB AND GUTTER (TYP.) (REF. SHEET C600)
6. CURB TAPER (REF. SHEET C6.0)
7. ADA RAMP (REF. SHEET C6.0)
8. 2' WIDE CURB CUT
9. UNIT PARKING (2 SPACES PER UNIT)
10. NO PARKING SIGN

LOCAL NOTE:

1. PROJECT IS INTENDED TO BE PLATTED AND RECORDED UNDER THE HORIZONTAL PROPERTY REGIME STANDARDS OF THE STATE OF TENNESSEE. THEREFORE A PRELIMINARY PLAT AND FINAL PLAT ARE NOT REQUIRED.
2. DURING FINAL ARCHITECTURAL / BUILDING PERMIT PHASE, PLAN WILL DEMONSTRATE MINIMUM INTERIOR DIMENSION TO MEET CITY STANDARDS.

SITE DATA TABLE		
ZONING	CD-4	
TOTAL LOT AREA	3.59	AC.
TOTAL NUMBER OF UNITS	34	EA.
DENSITY	9.47	UNITS / AC.
PARKING SPACES REQUIRED	68	EA.
PARKING SPACES PROVIDED	68*	EA.
FRONT YARD SETBACK	6' - 20'	L.F.
SIDE YARD SETBACK	6	L.F.
REAR YARD SETBACK	6	L.F.

* THE PROVIDED 68 PARKING SPACES MEET CITY REQUIREMENTS. HOWEVER, EACH UNIT CAN ACCOMMODATE 1 ADDITIONAL SPACE FOR GUEST PARKING BETWEEN SIDEWALK AND FACE OF BUILDNG.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED
ARCHITECT
COMMERCIAL
CERTIFICATE NO.
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2G GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

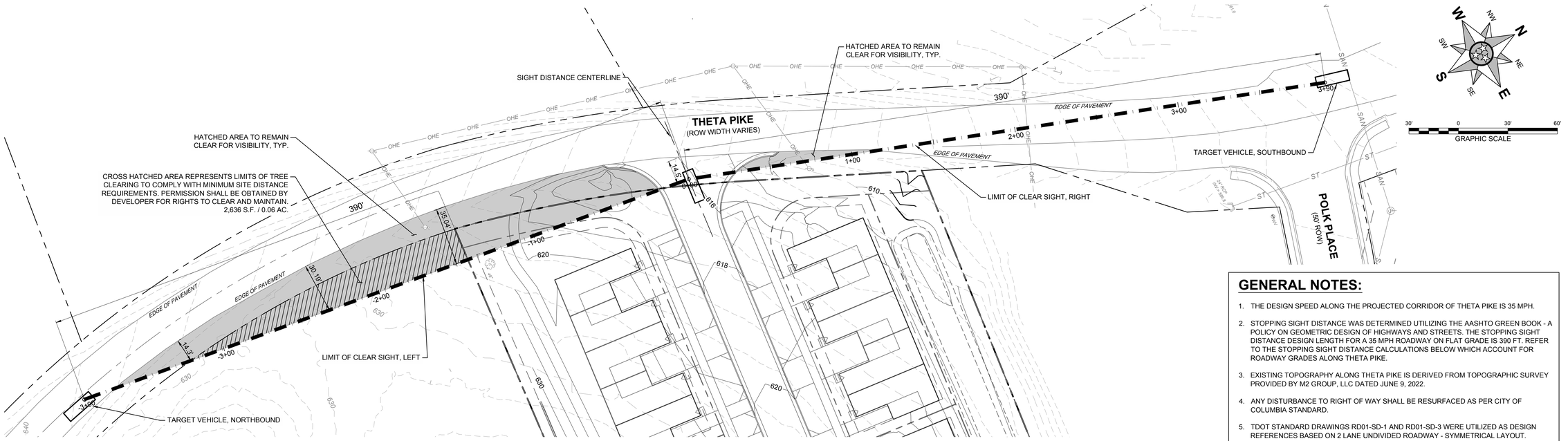
SITE LAYOUT PLAN

DATE :	MAY 22, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

SHEET NUMBER:
C200

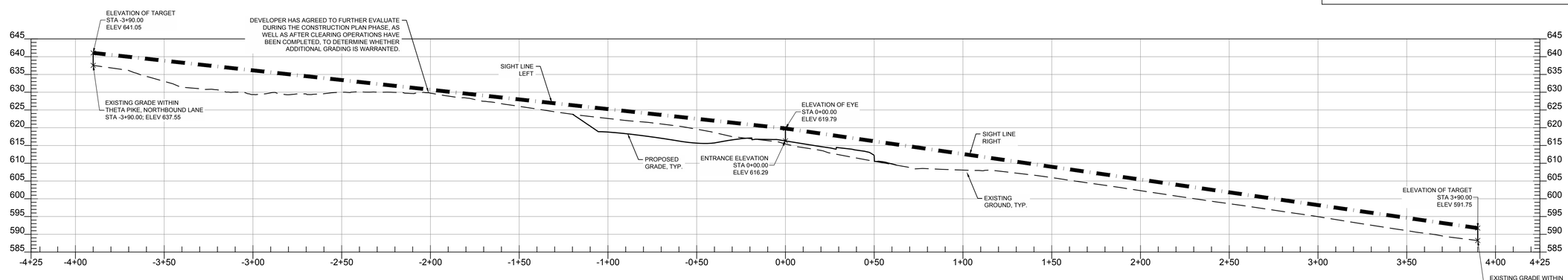
811 Know what's below. Call before you dig.

MPA - SITE LAYOUT PLAN.DWG / Monday, June 19, 2023 3:51:04 PM



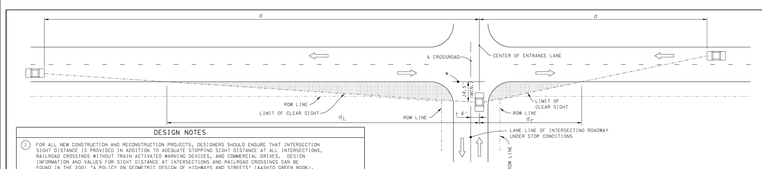
GENERAL NOTES:

1. THE DESIGN SPEED ALONG THE PROJECTED CORRIDOR OF THETA PIKE IS 35 MPH.
2. STOPPING SIGHT DISTANCE WAS DETERMINED UTILIZING THE AASHTO GREEN BOOK - A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS. THE STOPPING SIGHT DISTANCE DESIGN LENGTH FOR A 35 MPH ROADWAY ON FLAT GRADE IS 390 FT. REFER TO THE STOPPING SIGHT DISTANCE CALCULATIONS BELOW WHICH ACCOUNT FOR ROADWAY GRADES ALONG THETA PIKE.
3. EXISTING TOPOGRAPHY ALONG THETA PIKE IS DERIVED FROM TOPOGRAPHIC SURVEY PROVIDED BY M2 GROUP, LLC DATED JUNE 9, 2022.
4. ANY DISTURBANCE TO RIGHT OF WAY SHALL BE RESURFACED AS PER CITY OF COLUMBIA STANDARD.
5. TDOT STANDARD DRAWINGS RD01-SD-1 AND RD01-SD-3 WERE UTILIZED AS DESIGN REFERENCES BASED ON 2 LANE UNDIVIDED ROADWAY - SYMMETRICAL LAYOUT.



SIGHT DISTANCE PROFILE

SCALE H:1"=30'; V:1"=15'



ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD, STOP CONDITIONS

DEFINITIONS

- d =CLEAR LINE SIGHT DISTANCE
- d_R= CLEAR LINE OF SIGHT DISTANCE TO THE RIGHT
- d_L= CLEAR LINE OF SIGHT DISTANCE TO THE LEFT
- d_M= DISTANCE MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO A POINT ON THE MEDIAN CLEAR ZONE LIMIT OR HORIZONTAL CLEARANCE LIMIT FOR THE FAR SIDE ROADWAY OF THE MAJOR ROADWAY (SEE SHEET RD01-SD-1)

\# EDGE OF MAJOR ROAD TRAVELED WAY; THE TRAVELED WAY IS THE PORTION OF THE ROADWAY FOR THE MOVEMENT OF VEHICLES, EXCLUSIVE OF SHOULDERS, PARKING SPACES AND MARKED BICYCLE LANES.

DESIGN NOTES

1. FOR ALL NEW CONSTRUCTION AND RECONSTRUCTION PROJECTS, DESIGNERS SHOULD ENSURE THAT INTERSECTION SIGHT DISTANCE IS PROVIDED IN ADDITION TO STOPPING SIGHT DISTANCE AT ALL INTERSECTIONS, RAILROAD CROSSINGS WITHOUT TRAIN ACTUATED WARNING DEVICES, AND COMMERCIAL DRIVES. DESIGN INFORMATION AND VALUES FOR SIGHT DISTANCE AT INTERSECTIONS AND RAILROAD CROSSINGS CAN BE FOUND IN THE 2001 "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" (AASHTO GREEN BOOK), CHAPTER 9, INTERSECTIONS.
2. INTERSECTION SIGHT DISTANCE SHOULD ALSO BE PROVIDED AT ALL PRIVATE DRIVES AND FIELD ENTRANCES WHEN FEASIBLE. IN THE EVENT THAT INTERSECTION SIGHT DISTANCE CANNOT BE ACHIEVED, THE DESIGNER SHALL VERIFY THAT STOPPING SIGHT DISTANCE IS PROVIDED. INTERSECTION SIGHT DISTANCE SHOULD ALWAYS BE PROVIDED FOR A LEFT TURN MOVEMENT FROM THE MAJOR ROAD INTO A PRIVATE DRIVE OR FIELD ENTRANCE.
3. DESIGNERS SHOULD CONSIDER ALL FEATURES THAT COULD LIMIT ADEQUATE SIGHT DISTANCE INCLUDING BUILDINGS, PARKED VEHICLES, HIGHWAY STRUCTURES, ROADSIDE HARDWARE, HEDGES, TREES, BUSHES, UNMOWED GRASS, TALL CROPS, WALLS, FENCES, SLOPES, AND THE TERRAIN ITSELF. THE DETERMINATION OF WHETHER AN OBJECT CONSTITUTES A SIGHT OBSTRUCTION SHOULD CONSIDER THE HORIZONTAL AND VERTICAL ALIGNMENT OF BOTH INTERSECTING ROADWAYS, AS WELL AS THE HEIGHT AND POSITION OF THE OBJECT. IN MAKING THIS DETERMINATION, THE ASSUMED DRIVER'S EYE SHOULD BE 3.5 FT. ABOVE THE SURFACE OF THE INTERSECTING ROAD FOR PASSENGER CARS. FOR LANDSCAPING, THE MATURE SIZE OF THE ITEM SHALL BE USED.
4. IN AREAS OF LIMITED RIGHT-OF-WAY ACQUISITION SUCH AS A CURB AND GUTTER SECTION, ADDITIONAL RIGHT-OF-WAY MAY NEED TO BE ACQUIRED TO ENSURE THAT INTERSECTION SIGHT DISTANCE CAN BE ACHIEVED OR MAINTAINED. IN THE EVENT THAT IT IS NOT FEASIBLE TO OBTAIN MINIMUM INTERSECTION SIGHT DISTANCE, THE DESIGNER SHALL VERIFY THAT STOPPING SIGHT DISTANCE IS PROVIDED. IN THIS EVENT, THE PROJECT DESIGN MANAGER WILL DOCUMENT IN THE PROJECT FILE THE REASON AND STEPS TAKEN TO MITIGATE. INTERSECTION SIGHT DISTANCE IS NOT ONE OF THE THIRTEEN CONTROLLING ELEMENTS OF DESIGN AS DETAILED IN SECTION 3-110.00 OF THE ROADWAY DESIGN GUIDELINES. THEREFORE, DESIGN EXCEPTIONS NEED NOT BE SUBMITTED.
5. DESIGNERS SHALL SHOW SIGHT LINES FOR ALL INTERSECTIONS IN THE DESIGN CADD FILE. SIGHT LINES SHALL ONLY BE SHOWN ON THE PRESENT AND PROPOSED LAYOUT SHEETS WHEN RIGHT-OF-WAY IS REQUIRED FOR THE PURPOSE OF ESTABLISHING OR MAINTAINING INTERSECTION SIGHT DISTANCE. SIGHT LINES SHOULD ALSO BE SHOWN FOR ALL INTERSECTIONS AND DRIVES ON ALL LANDSCAPING PLANS.
6. THE MINIMUM DRIVER EYE SETBACK OF 14.5' FROM THE EDGE OF THE TRAVELED WAY MAY BE ADJUSTED ON ANY INTERSECTION LEG ONLY WHEN JUSTIFIED BY A SITE SPECIFIC FIELD STUDY OF VEHICLE STOPPING POSITION AND DRIVER EYE POSITION.
7. FOR SIGNALIZED INTERSECTIONS SIGHT DISTANCES SHOULD BE DEVELOPED BASED ON AASHTO "CASE D: INTERSECTIONS WITH TRAFFIC SIGNAL CONTROL". AT SIGNALIZED INTERSECTIONS, THE FIRST VEHICLE STOPPED ON ONE APPROACH SHOULD BE VISIBLE TO THE DRIVER OF THE FIRST VEHICLE STOPPED ON EACH OF THE OTHER APPROACHES. THIS WILL ENSURE THAT DRIVERS CAN SEE GAPS IN, AND QUEUES FROM, ONCOMING TRAFFIC AND COMPLETE LEFT TURNS. APART FROM THESE SIGHT CONDITIONS, THERE ARE GENERALLY NO OTHER APPROACH OR DEPARTURE SIGHT TRIANGLES NEEDED FOR SIGNALIZED INTERSECTIONS. HOWEVER, IF THE TRAFFIC SIGNAL IS TO BE PLACED ON TWO-WAY FLASHING OPERATION (I.E. FLASHING YELLOW ON THE MAJOR-ROAD APPROACHES AND FLASHING RED ON THE MINOR-ROAD APPROACHES) UNDER OFF-PEAK OR NIGHTTIME CONDITIONS, THE SIGHT TRIANGLES FOR STOP-CONTROLLED APPROACHES (SEE NOTE 6 AND FIGURE 9-13) AND FOR RIGHT TURNS SHOULD BE PROVIDED FOR THE MINOR-ROAD APPROACHES. IN ADDITION, IF RIGHT TURNS ON A RED SIGNAL ARE TO BE PERMITTED FROM ANY APPROACH, THEN THE APPROPRIATE DEPARTURE SIGHT TRIANGLE TO THE LEFT FOR CASE B2 SHOULD BE PROVIDED TO ACCOMMODATE RIGHT TURNS FROM THAT APPROACH.
8. WHERE CURVATURE, SUPERELEVATION, ADVERSE SPLIT PROFILES OR OTHER CONDITIONS PRECLUDE THE USE OF STANDARD TREE SIZES AND SPACING, PROOF OF VIEW AND SIGHT DISTANCE RESTRAINTS SHOULD BE DETAILED IN THE PLANS.
9. INTERSECTION SIGHT DISTANCE VALUES ARE PROVIDED FOR PASSENGER VEHICLES, SINGLE UNIT (SU) VEHICLES AND COMBINATION VEHICLES. INTERSECTION SIGHT DISTANCE BASED ON THE PASSENGER VEHICLE IS SUITABLE FOR MOST INTERSECTIONS. WHERE SUBSTANTIAL VOLUMES OF HEAVY VEHICLES ENTER THE MAJOR-ROAD, SUCH AS FROM RAMP TERMINALS WITH STOP CONTROL OR ROADWAYS SERVING TRUCK TERMINALS, THE USE OF TABULATED VALUES FOR I SU1 VEHICLES OR COMBINATION VEHICLES SHOULD BE CONSIDERED.
10. THE INFORMATION SHOWN IS INTENDED SOLELY FOR THE PURPOSE OF CLEAR SIGHT DEVELOPMENT AND MAINTENANCE AT INTERSECTING HIGHWAYS, ROADS AND STREETS, AND IS NOT INTENDED TO BE USED TO ESTABLISH ROADWAY AND ROADSIDE SAFETY EXCEPT AS RELATED TO INTERSECTION SIGHT CORRIDORS.
11. THE INTERSECTION SIGHT DISTANCE TABLES DO NOT SUPERCEDE AASHTO STOPPING SIGHT DISTANCE REQUIREMENTS. THE DESIGNER MUST ENSURE THAT STOPPING SIGHT DISTANCES ARE MET.
12. DETAILS ARE BASED ON THE AASHTO "A POLICY ON GEMETRIC DESIGN OF HIGHWAYS AND STREETS, 2001", CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B AND F, AND THE DEPARTMENT PRACTICES FOR CHANNELIZED MEDIAN OPENINGS (LEFT TURNS ON MAJOR ROADWAYS).

GENERAL NOTES

A. DETAILS APPLY TO BOTH RURAL AND URBAN INTERSECTIONS UNDER STOP SIGN CONTROL OR FLASHING BEACON CONTROL. FOR FULL SIGNAL CONTROLLED INTERSECTIONS SEE DESIGN NOTE NO 7.

B. INTERSECTION SIGHT DISTANCE (id) APPLIES TO NORMAL AND SKEWED INTERSECTIONS INTERSECTING ANGLES (I) BETWEEN 60° AND 120°. FOR SKEWED INTERSECTIONS WITH INTERSECTING ANGLES (I) LESS THAN PRESENT, SIGHT DISTANCE (id) IS MEASURED ALONG THE MAJOR ROADWAY FROM THE CENTER OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO THE CENTER OF THE NEAR APPROACH LANE (RIGHT OR LEFT) OF THE MAJOR ROADWAY. DISTANCES d_L AND d_R ARE MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE (VERSUS ROAD) OF THE MINOR ROADWAY TO A POINT ON THE EDGE OF THE NEAR SIDE OUTER TRAFFIC LANE ON THE MAJOR ROADWAY. DISTANCE d_M IS MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO A POINT ON THE MEDIAN CLEAR ZONE LIMIT OR HORIZONTAL CLEARANCE LIMIT FOR THE FAR SIDE ROADWAY OF THE MAJOR ROADWAY.

C. 1. THE LIMITS OF CLEAR SIGHT DEFINE A CORRIDOR THROUGHOUT WHICH A CLEAR LINE OF SIGHT MUST BE PRESERVED. SEE VERTICAL LIMITS OF CLEAR SIGHT DETAIL ON SHEET RD01-SD-2.
2. PROVISIONS FOR SIGHTING BETWEEN OPPOSING VEHICLES AT INTERSECTION STOP LOCATIONS AND VEHICLES ON THE MAJOR ROADWAY WITHIN DIMENSION "J".
3. SINCE OBSERVATIONS ARE MADE IN BOTH DIRECTIONS ALONG THE LINE OF SIGHT, THE REFERENCE DATUM BETWEEN ROADWAYS IS 3'-6" ABOVE RESPECTIVE PAVEMENTS.

D. BARRIER SYSTEMS WITHIN INTERSECTION SIGHT CORRIDORS, WHERE PENETRATION INTO THE CLEAR LINE OF SIGHT MIGHT OCCUR, SHALL BE LOCATED TO PROVIDE THE LEAST ADVERSE AFFECT PRACTICAL.

E. ALL PROPERTY NEEDED TO ACHIEVE SIGHT DISTANCE AT INTERSECTIONS SHOULD BE ACQUIRED AS RIGHT-OF-WAY.

F. SIGHT DISTANCE VALUES IN THESE STANDARD DRAWINGS ARE APPROXIMATE FOR GENERALLY FLAT AREAS WHERE THE ROADWAY GRADES ARE IN THE APPROXIMATE RANGE OF 10 TO 6%. FOR LOCATIONS WHERE ROADWAYS ARE CURVED OR WITH GRADES OUTSIDE THE 10 TO 6% RANGE, SIGHT DISTANCES SHOULD BE CALCULATED TO ENSURE THAT THEY COMPLY WITH AASHTO "A POLICY FOR GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" AS CURRENTLY ADOPTED BY TDOT.

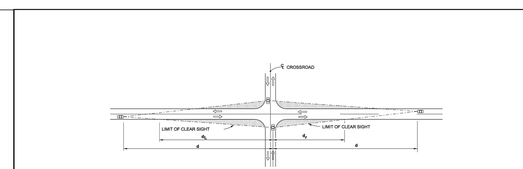
LEGEND

AREAS FREE OF SIGHT OBSTRUCTIONS

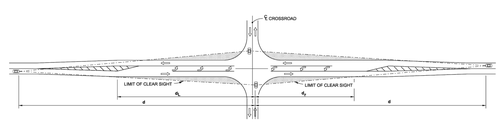
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

INTERSECTION SIGHT DISTANCE DESIGN AND GENERAL NOTES

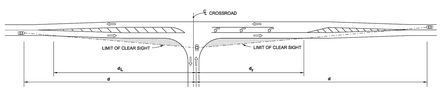
10-1-08 | RD01-SD-1 | NOT TO SCALE



2 LANE UNDIVIDED ROADWAY - SYMMETRICAL



FLARED FOR OPPOSING LEFT TURN CENTERED ON ALIGNMENT - 2 LANE 2 WAY



FLARED FOR SINGLE SIDE LEFT TURN CENTERED ON ALIGNMENT - 2 LANE 2 WAY

LEGEND

AREAS FREE OF SIGHT OBSTRUCTIONS

NOTE: SEE RD11-SD-1 FOR INTERSECTING ROADWAY ORIGIN OF CLEAR SIGHT AND QUADRANT CORNER CLIPS.

REV: reverse TEXT

THETA PIKE PROPOSED ENTRANCE DESIGN CRITERIA

DESIGN SPEED (MPH)	d_L (FT)	d_R (FT)	d_M (FT)
15	170	155	75
20	225	190	100
25	280	195	125
30	335	245	150
35	390	270	175
40	445	310	200
45	500	350	225
50	555	390	250
55	610	430	275
60	665	470	300
65	720	510	325
70	775	550	350

PASSENGER VEHICLE

DESIGN SPEED (MPH)	d_L (FT)	d_R (FT)	d_M (FT)
15	215	155	95
20	290	200	125
25	360	205	155
30	430	255	190
35	505	285	220
40	575	325	250
45	650	365	280
50	720	410	315
55	795	455	345
60	865	500	375
65	935	545	405
70	1010	595	440

SU VEHICLE

DESIGN SPEED (MPH)	d_L (FT)	d_R (FT)	d_M (FT)
15	250	155	115
20	335	200	150
25	420	205	185
30	510	260	225
35	595	300	260
40	680	350	300
45	765	395	340
50	850	455	380
55	935	510	415
60	1015	570	455
65	1100	630	490
70	1185	690	530

COMBINATION VEHICLE

2 LANE UNDIVIDED
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_R, d_L) (FEET)

DESIGN SPEED (MPH)	d_L (FT)	d_R (FT)	d_M (FT)
15	190	155	75
20	255	190	100
25	295	195	125
30	355	245	150
35	415	270	175
40	475	310	200
45	535	350	225
50	595	390	250
55	655	430	275
60	715	470	300
65	775	510	325
70	835	550	350

PASSENGER VEHICLE

DESIGN SPEED (MPH)	d_L (FT)	d_R (FT)	d_M (FT)
15	225	155	95
20	300	195	115
25	375	205	145
30	450	250	170
35	525	290	200
40	600	330	225
45	675	370	255
50	750	410	285
55	825	450	310
60	900	490	340
65	975	535	370
70	1050	575	400

SU VEHICLE

DESIGN SPEED (MPH)	d_L (FT)	d_R (FT)	d_M (FT)
15	270	155	135
20	360	200	140
25	450	205	170
30	540	295	205
35	630	345	240
40	720	395	270
45	810	445	305
50	900	495	340
55	990	540	375
60	1080	590	405
65	1170	640	440
70	1260	690	475

COMBINATION VEHICLE

2 LANE 2 WAY - FLARED FOR LEFT TURNS
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_R, d_L) (FEET)

SPECIAL NOTES

1. INTERSECTION SIGHT DISTANCE VALUES ARE PROVIDED FOR PASSENGER VEHICLES, SINGLE UNIT (SU) VEHICLES AND COMBINATION VEHICLES. INTERSECTION SIGHT DISTANCE BASED ON THE PASSENGER VEHICLE IS SUITABLE FOR MOST INTERSECTIONS. WHERE SUBSTANTIAL VOLUMES OF HEAVY VEHICLES ENTER THE MAJOR-ROAD, SUCH AS FROM RAMP TERMINALS WITH STOP CONTROL OR ROADWAYS SERVING TRUCK TERMINALS, THE USE OF TABULATED VALUES FOR I SU1 VEHICLES OR COMBINATION VEHICLES SHOULD BE CONSIDERED.
2. ALL PROPERTY NEEDED TO ACHIEVE SIGHT DISTANCE AT INTERSECTIONS SHOULD BE ACQUIRED AS RIGHT-OF-WAY. SEE STD DWG RD11-SD-1 FOR RIGHT-OF-WAY LINE PLACEMENT.

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

INTERSECTION SIGHT DISTANCE 2-LANE ROADWAYS

01-01-2019 | RD11-SD-3

NORTHBOUND STOPPING SIGHT DISTANCE ANALYSIS:

DESIGN SPEED, V: 35 MPH
GRADE, G: -6% (AVERAGE)

STOPPING SIGHT DISTANCE, S:
S = 1.47 * V * 2.5 + [V² / (30 * (0.347826 ± (G / 100)))]
S = 1.47 * 40 * 2.5 + [35² / (30 * (0.347826 + (-6 / 100)))]
S = 270.49 FT. = 271 FT.

SOUTHBOUND STOPPING SIGHT DISTANCE ANALYSIS:

DESIGN SPEED, V: 35 MPH
GRADE, G: +7% (AVERAGE)

STOPPING SIGHT DISTANCE, S:
S = 1.47 * V * 2.5 + [V² / (30 * (0.347826 ± (G / 100)))]
S = 1.47 * 35 * 2.5 + [35² / (30 * (0.347826 + (7 / 100)))]
S = 226.35 FT. = 227.00 FT.

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
REGISTERED ENGINEER
COMMERCIAL
CERTIFICATE NO. 120183
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

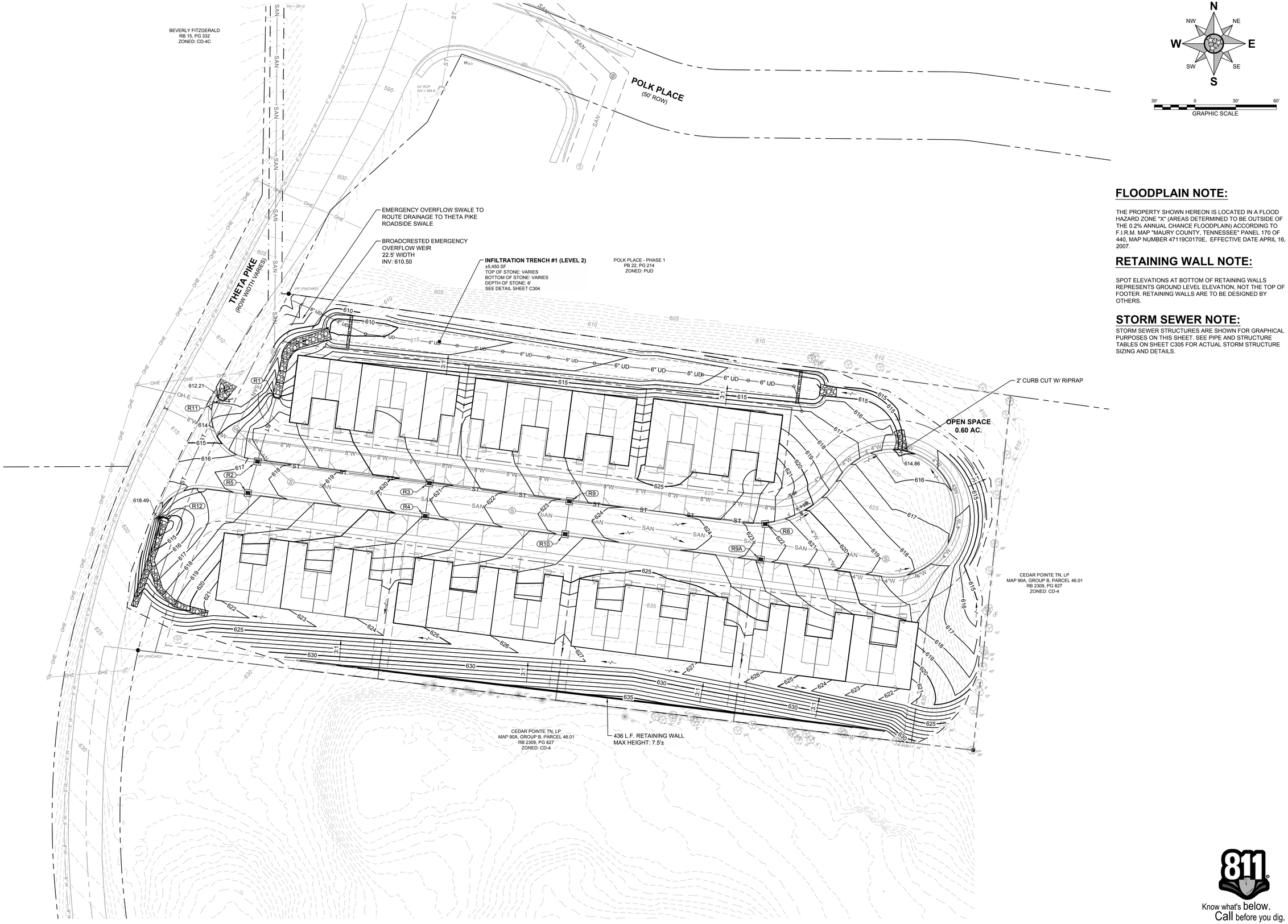
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

INTERSECTION SIGHT DISTANCE PLAN

DATE: MAY 22, 2023 | PROJECT NO. : 22-085 | DRAWN BY : M2G | CHECKED BY : MWB

SHEET NUMBER: C201

MPA - INTERSECTION SIGHT DISTANCE.DWG / Monday, June 19, 2023 3:51:15 PM



FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

RETAINING WALL NOTE:

SPOT ELEVATIONS AT BOTTOM OF RETAINING WALLS REPRESENTS GROUND LEVEL ELEVATION, NOT THE TOP OF FOOTER. RETAINING WALLS ARE TO BE DESIGNED BY OTHERS.

STORM SEWER NOTE:

STORM SEWER STRUCTURES ARE SHOWN FOR GRAPHICAL PURPOSES ON THIS SHEET. SEE PIPE AND STRUCTURE TABLES ON SHEET C305 FOR ACTUAL STORM STRUCTURE SIZING AND DETAILS.

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED LANDSCAPE ARCHITECT
COMMERCIAL
CERTIFICATE NO. 328
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

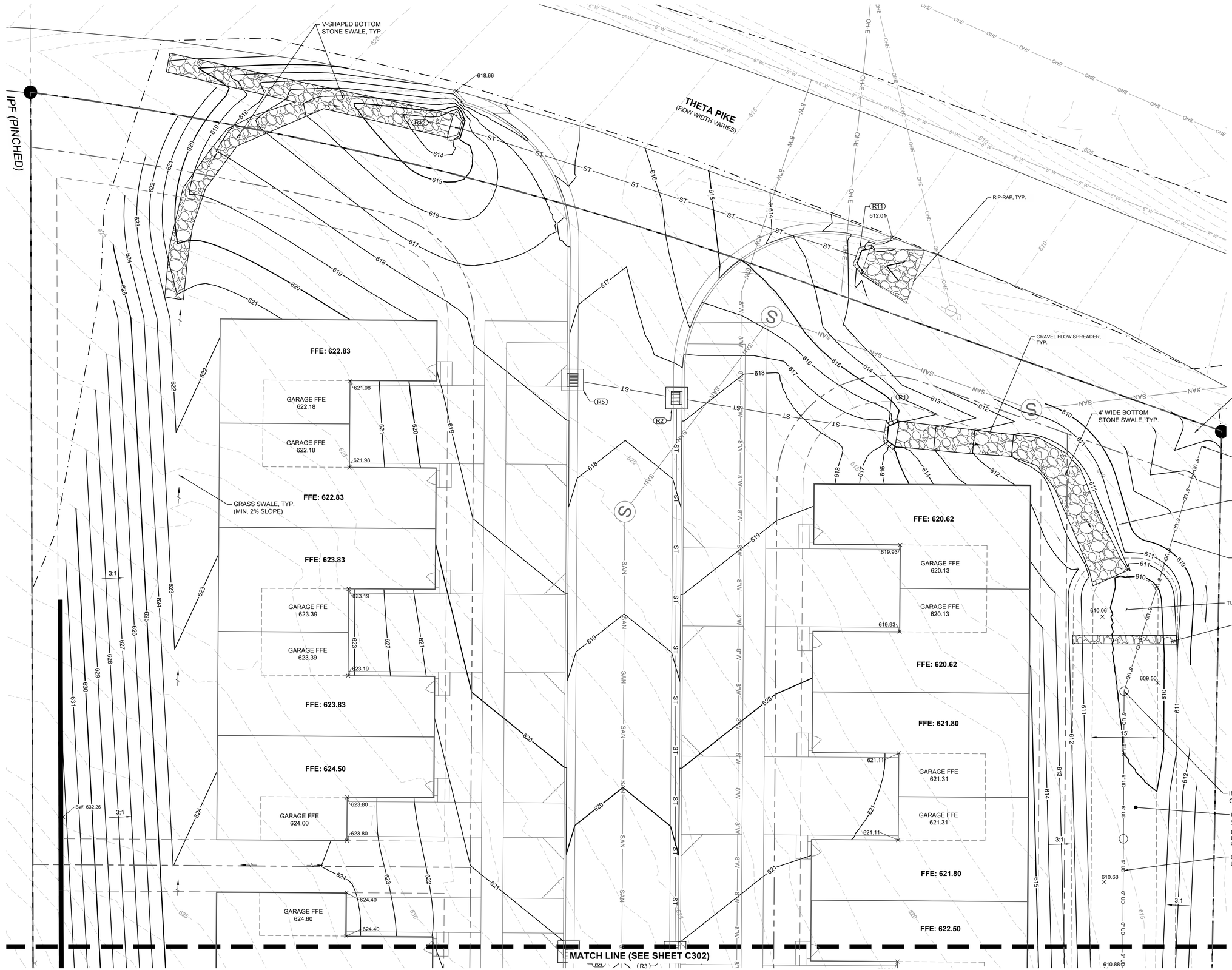
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

OVERALL GRADING & DRAINAGE PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C300

MPA - OVERALL GRADING & DRAINAGE PLAN.DWG | Monday, June 19, 2023 3:51:26 PM



REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED LANDSCAPE ARCHITECT
CERTIFICATE NO. 3301
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-086

SHEET NUMBER:
C301

811 Know what's below. Call before you dig.

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG | Monday, June 19, 2023 3:51:43 PM

MATCH LINE (SEE SHEET C301)

MATCH LINE (SEE SHEET C303)

FFE: 625.10
FFE: 626.00
GARAGE FFE 625.30
GARAGE FFE 625.30
625.10
625.10
GRASS SWALE, TYP. (MIN. 2% SLOPE)
FFE: 626.00
FFE: 627.00
GARAGE FFE 626.50
GARAGE FFE 626.50
626.30
626.30
FFE: 627.00
FFE: 628.50
GARAGE FFE 628.02
GARAGE FFE 628.02
627.82
627.82
FFE: 628.50
FFE: 628.50
GARAGE FFE 628.02
GARAGE FFE 628.02
627.82
627.82
FFE: 628.50
FFE: 622.50
GARAGE FFE 622.01
621.81
621.81
GARAGE FFE 622.81
622.61
622.61
FFE: 623.30
FFE: 624.50
GARAGE FFE 624.03
GARAGE FFE 624.03
623.83
623.83
FFE: 624.50
FFE: 625.68
GARAGE FFE 625.20
GARAGE FFE 625.20
625.00
625.00
FFE: 625.68
FFE: 626.00
GARAGE FFE 625.57
GARAGE FFE 625.57
625.37
625.37
FFE: 626.00
FFE: 625.40
HP: 627.72
GRADE BREAK
HP: 624.52
GRADE BREAK
BW: 633.09
BW: 633.93
BW: 634.77
BW: 635.56
3:1
OBSERVATION WELL, TYP.
INFILTRATION TRENCH #1 (LEVEL 2)
±5,450 SF
TOP OF STONE: VARIES
BOTTOM OF STONE: VARIES
DEPTH OF STONE: 6'
SEE DETAIL SHEET C304
6" CORRUGATED HDPE UNDERDRAIN AT 0.5% MIN. SLOPE
610.88
611.19
611.56
611.93
612.31
612.50
612.88
15'
GRAPHIC SCALE
10' 0 10' 20'

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO. 120,XXX
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MZG GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE:	MAY 22, 2023	DRAWN BY:	MZG
PROJECT NO.:	22-085	CHECKED BY:	MWB

SHEET NUMBER:
C302

811 Know what's below. Call before you dig.

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG | Monday, June 19, 2023 3:51:45 PM

MATCH LINE (SEE SHEET C302)

FFE: 628.50

FFE: 627.00

GARAGE FFE 626.52

626.32

626.32

FFE: 625.40

624.70

GARAGE FFE 624.90

624.70

GARAGE FFE 624.90

FFE: 625.40

GARAGE FFE 625.85

625.65

625.65

FFE: 626.50

FFE: 625.50

GARAGE FFE 623.81

623.61

GARAGE FFE 622.81

623.61

GRASS SWALE, TYP. (MIN. 2% SLOPE)

FFE: 625.50

FFE: 623.75

GARAGE FFE 622.33

622.13

GARAGE FFE 622.33

622.13

FFE: 623.75

BW: 634.51

BW: 633.51

BW: 632.51

3:1

3:1

3:1

R9A

R8

S

IPF

INFILTRATION TRENCH UNDERDRAIN CLEANOUT

2' CURB CUT W/ RIPRAP

614.86

OPEN SPACE
0.60 AC.

6" CORRUGATED HDPE UNDERDRAIN AT 0.5% MIN. SLOPE

15'

INFILTRATION TRENCH OBSERVATION WELL

PERMEABLE PRETREATMENT BERM
12" TALL
1:1 SIDE SLOPES

TURF OR STONE PRETREATMENT AREA

TRAPEZOIDAL SWALE
2' BOTTOM WIDTH
3:1 SIDE SLOPES

GRAPHIC SCALE
10' 0 10' 20'

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO. 120144
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

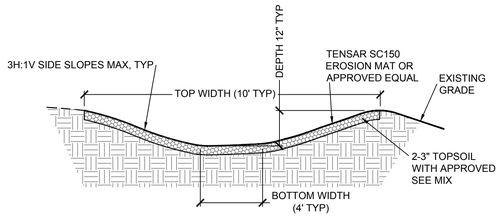
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE :	MAY 22, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

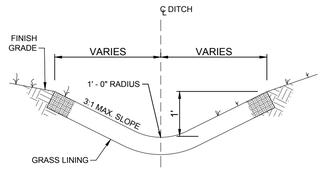
SHEET NUMBER:
C303

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG / Monday, June 19, 2023 3:51:46 PM



NORTH GRASS SWALE SECTION

N.T.S.

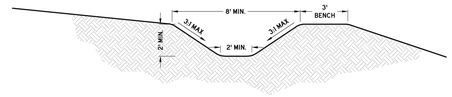


SOUTH GRASS SWALE SECTION

N.T.S.

TYPE	TDOT STANDARD DRAWING OR CASTING MODEL
CURB INLET CATCH BASINS	TDOT CB SERIES NOS. 10, 11, 12, 13, 14, 16, 17
CURB AND GUTTER INLET CASTINGS	JB&S 3080
EXTRUDED CURB INLET CASTINGS	JB&S 3103
AREA DRAIN CATCH BASINS	TDOT CB SERIES NOS. 38, 39, 40, 42, 43
AREA DRAIN CASTINGS	TDOT CBB-42
JUNCTION BOXES	TDOT JBS SERIES NOS. 1, 2, 3, 4, AND 5
MANHOLES	TDOT MH SERIES NOS. 2, 3, 4, 5, 6, 7 AND TDOT RF-1
TRENCH DRAINS	TDOT TD-1
CONCRETE PIPE INSTALLATION	TDOT PB-1
FLEXIBLE PIPE INSTALLATION	TDOT PB-2
OVAL AND ARCH PIPES	TDOT PO-1
SAFETY CROSS DRAIN ENDWALLS	TDOT PE SERIES
SAFETY SIDE DRAIN ENDWALLS	TDOT SEW SERIES AND TDOT MSE-1
PROTECTED ENDWALLS	TDOT PE, PEW SERIES
FLUMES	TDOT FLU-1

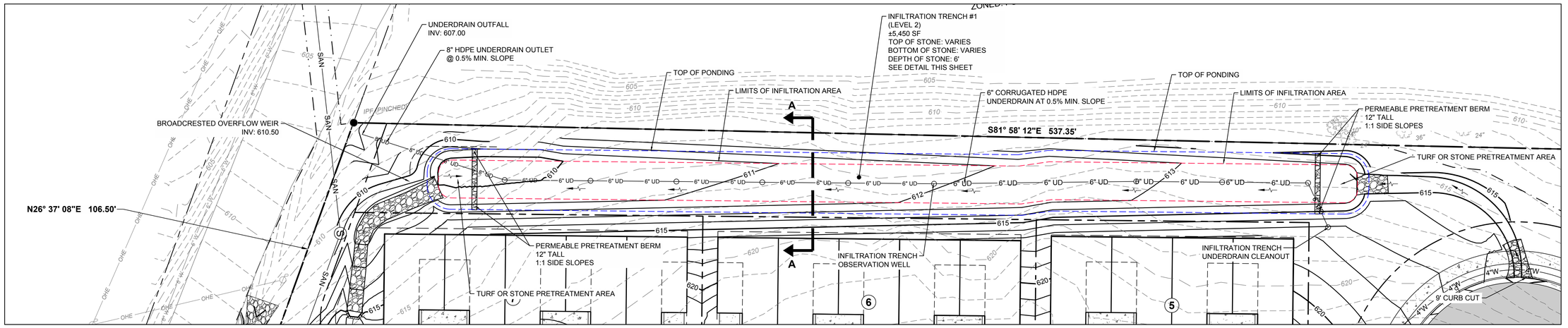
CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION	INLETS, CASTINGS, STRUCTURES, AND PIPES	DATE 6/9/2022
STANDARD DETAILS	(NTS)	DD-01



NOTES:

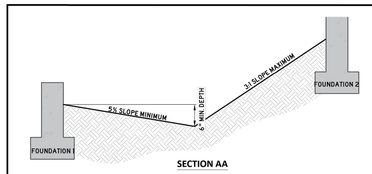
1. DITCHES SHALL BE STABILIZED WITH APPROPRIATELY DESIGNED SOFT ARMORING.
2. RIP-RAP OR OTHER HARD ARMORING TECHNIQUES ARE DISCOURAGED AND SHALL ONLY BE APPROVED WHEN ALL OTHER MEANS OF STABILIZATION ARE EXHAUSTED.
3. FLOW LINE GRADE SHALL NOT BE LESS THAN 1.0%
4. FLOW LINE GRADE SHALL NOT BE MORE THAN 7.5%
5. WHERE PLACED ON A SLOPE, A BENCH OF MINIMUM WIDTH OF 3 FEET SHALL BE PROVIDED.
6. A MINIMUM OF 6 INCHES OF FREEBOARD ABOVE THE DESIGN FLOW DEPTH SHALL BE PROVIDED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION	TRAPEZOIDAL DITCH	DATE 6/9/2022
STANDARD DETAILS	(NTS)	DD-03

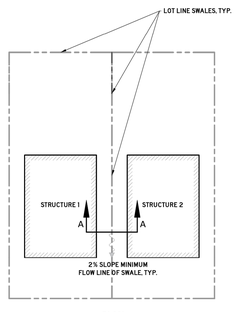


INFILTRATION TRENCH #1

SCALE: 1"=20'



SECTION AA

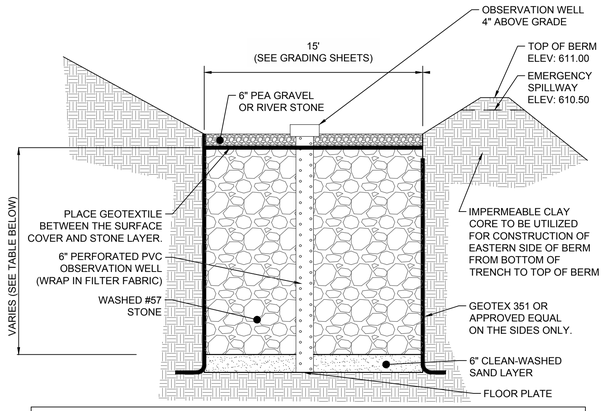


PLAN

NOTES:

1. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE. ALL AREAS WITHIN A LOT SHALL BE GRADED TO DRAIN TO AN APPROVED STORMWATER CONVEYANCE.
2. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATIONS.
   2.1. LOTS SHALL BE GRADED TO PROVIDE A MINIMUM OF 6 INCHES OF FALL WITHIN THE FIRST 10 FEET OF THE STRUCTURE ALONG THE DIRECTION OF FLOW.
   2.2. LOTS SHALL BE GRADED TO PROVIDE A MINIMUM OF 1V:20H OF FALL PERPENDICULAR TO THE FACE OF THE FOUNDATION WALL WITHIN THE FIRST 5 FEET.
   2.3. IMPERVIOUS SURFACES SHALL BE SLOPED AT A MINIMUM OF 2% AWAY FROM THE STRUCTURE.
3. SWALES SHALL BE LOCATED ALONG LOT LINES TO REDUCE LOT TO LOT DRAINAGE, AND DIRECT STORMWATER RUNOFF TOWARDS APPROVED STORMWATER CONVEYANCES.
4. SWALES SHALL HAVE A MINIMUM SLOPE OF 2%.
5. FOUNDATIONS SHALL BE AT MINIMUM 12 INCHES ABOVE ANY THE RIM ELEVATION OR HIGHEST FLOW LINE OF ANY PUBLIC STORMWATER INFRASTRUCTURE THAT SURFACE DRAINAGE FROM THE LOT IS DIRECTED TO.
6. NON-PUBLIC STORMWATER INFRASTRUCTURE SHALL NOT SUCH AS YARD DRAINS SHALL NOT ALLEVIATE THE REQUIREMENTS OF NOTES 2 AND 3.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION	RESIDENTIAL LOT GRADING AND DRAINAGE	DATE 6/9/2022
STANDARD DETAILS	(NTS)	DD-04



INFILTRATION TRENCH SUMMARY				
INFILTRATION TRENCH	INFILTRATION AREA (SF)	TOP OF STONE	STONE DEPTH (FT)	BOTTOM OF STONE
IT#1	5,450	609.5 (VARIES)	6	603.5 (VARIES)

INFILTRATION TRENCH
SECTION A - A

N.T.S.

REVISION #	DATE	DESCRIPTION
1	08-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRIAN
REGISTERED
ENGINEER
No. 120,143
COMMERCE & CONFIDENCE
CERTIFICATE No. 120143
STATE OF TENNESSEE
08/19/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

GRADING DETAILS

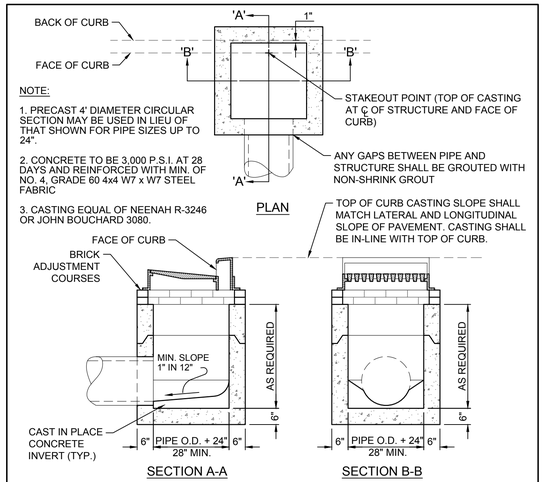
DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C304

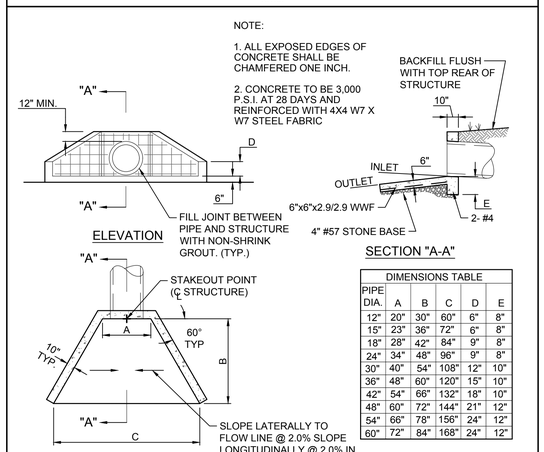
MPA - SITE DETAILS.DWG / Monday, June 19, 2023 3:52:01 PM

STRUCTURE TABLE		
NAME	INLET TYPE	DETAILS
R1	Headwall	INV IN = 613.965
R2	Single Curb Inlet	RIM = 617.470 INV IN = 614.210 INV IN = 614.208 INV OUT = 614.210
R3	Single Curb Inlet	RIM = 620.621 INV IN = 617.000 INV IN = 617.000 INV OUT = 617.000
R4	Single Curb Inlet	RIM = 620.622 INV OUT = 617.000
R5	Single Curb Inlet	RIM = 617.330 INV OUT = 614.330
R8	Single Curb Inlet	RIM = 622.006 INV IN = 619.235 INV OUT = 619.280
R9	Single Curb Inlet	RIM = 623.221 INV IN = 618.500 INV IN = 618.000 INV OUT = 618.000
R9A	Single Curb Inlet	RIM = 622.413 INV OUT = 619.557
R10	Single Curb Inlet	RIM = 623.220 INV OUT = 620.200
R11	Headwall	INV IN = 610.500
R12	Headwall	INV OUT = 613.050

PIPE TABLE				
NAME	MATERIAL	DIA.	APPROX. LENGTH	SLOPE
R1-R2	RCP	24"	49'	0.50%
R2-R3	RCP	18"	128'	2.18%
R2-R5	RCP	18"	24'	0.50%
R3-R4	RCP	18"	24'	0.00%
R3-R9	RCP	18"	104'	0.96%
R8-R9A	RCP	15"	26'	1.22%
R9-R8	RCP	18"	145'	0.88%
R9-R10	RCP	18"	25'	6.93%
R12-R11	RCP	18"	96'	2.66%

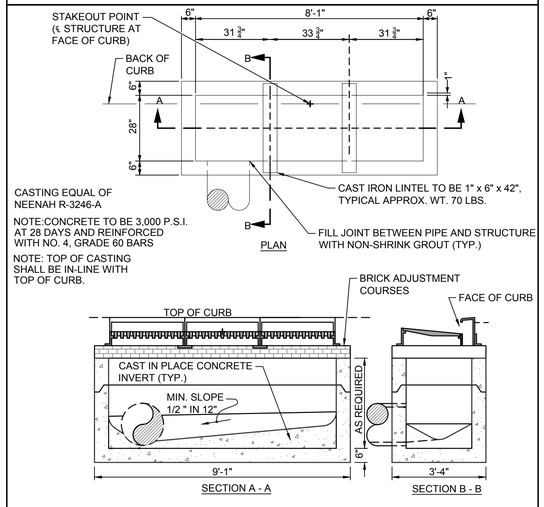


SINGLE PRECAST CURB INLET
N.T.S.



DIMENSIONS TABLE					
PIPE DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"

CONCRETE WINGED HEADWALL/ENDWALL
N.T.S.



TRIPLE PRECAST CURB INLET
N.T.S.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN — REGISTERED ENGINEER — AGRICULTURE & COMMERCE — CERTIFICATE NO. — STATE OF TENNESSEE — 06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

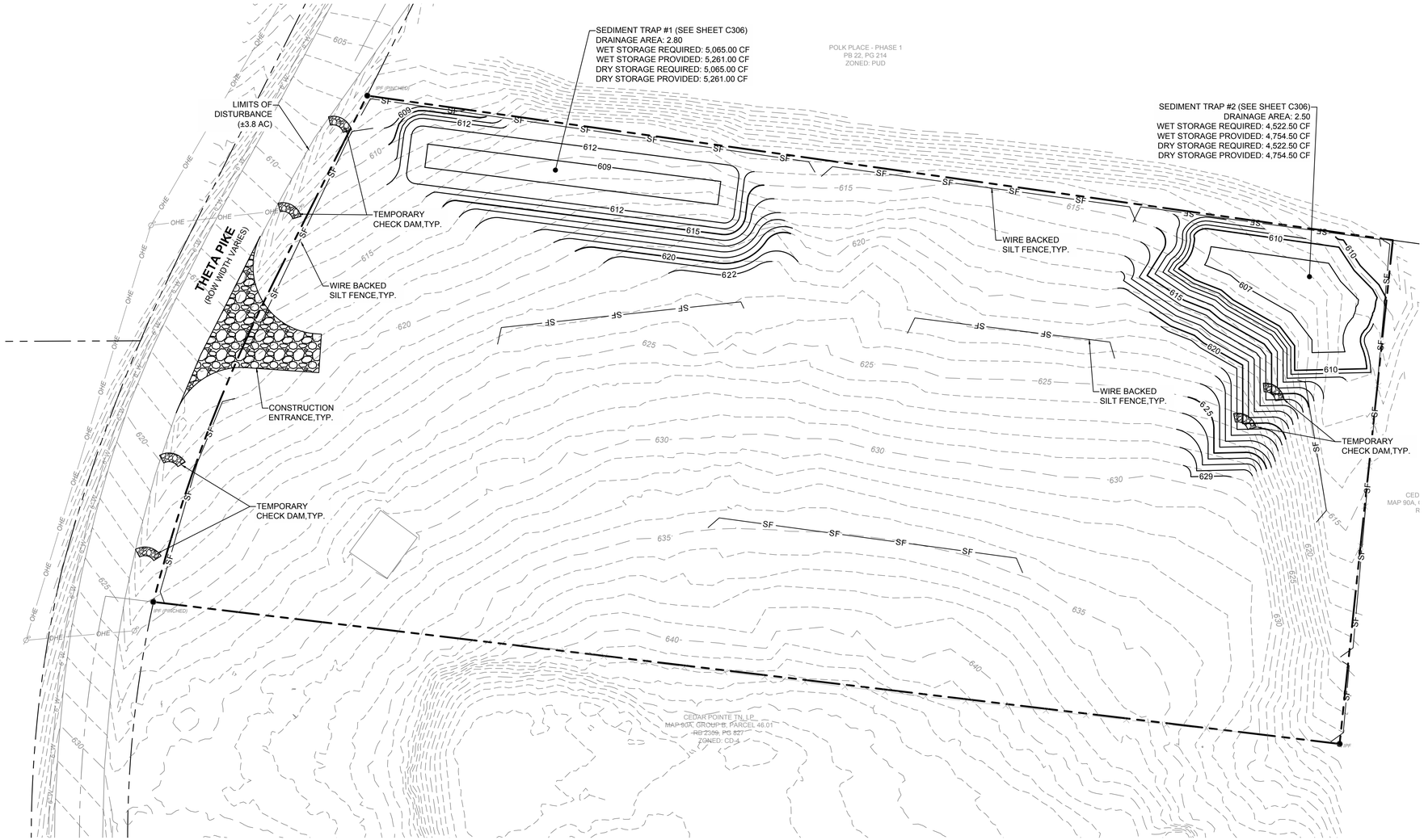
STORM SEWER DETAILS

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C305

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

MPA - SITE DETAILS.DWG | Monday, June 19, 2023 3:52:05 PM



SEDIMENT TRAP DESIGN		
	ST-1	ST-2
DRAINAGE AREA (AC.)	2.80	2.50
TOTAL VOL. REQUIRED (CF)	10,130.00	9,045.00
WET VOL. REQUIRED (CF)	5,065.00	4,522.50
DRY VOL. REQUIRED (CF)	5,065.00	4,522.50
WET STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TRAP BOTTOM ELEV. (FT)	607.00	607.00
TOP WET STORAGE ELEV. (FT)	608.50	608.50
SPILLWAY CREST ELEV. (FT)**	610.00	610.00
TOP EMBANKMENT ELEV. (FT)	610.00	610.00
SPILLWAY CREST LENGTH (FT)	15.00	15.00
SPILLWAY CREST WIDTH (FT)	5.00	5.00
EMBANKMENT TOP WIDTH (FT)	5.00	5.00
DRY STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TOTAL VOL. PROVIDED (CF)	**10,522.00**	**9,509.00**

* RUNOFF COEFFICIENT ASSUMED TO BE BARE SOIL CONDITION

** SPILLWAY CREST ELEVATION IS ALSO TOP OF DRY STORAGE ELEVATION

TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
2. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
3. THE APPROXIMATE TOTAL DISTURBED AREA OF THIS SITE IS 6.60 ACRES. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO ADDITIONAL DISTURBANCE.
4. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
5. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE CAUSE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT BASIN, IF REQUIRED
4. INSTALL WATER QUALITY BUFFER SIGNS, IF REQUIRED
5. INSTALL TREE PROTECTION FENCING
6. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
7. CLEAR, GRUB, AND GRADE THE SITE
8. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
9. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN — LICENSED LANDSCAPE ARCHITECT — AGRICULTURE — COMMERCIAL — RESIDENTIAL — CERTIFICATE NO. — STATE OF TENNESSEE

06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

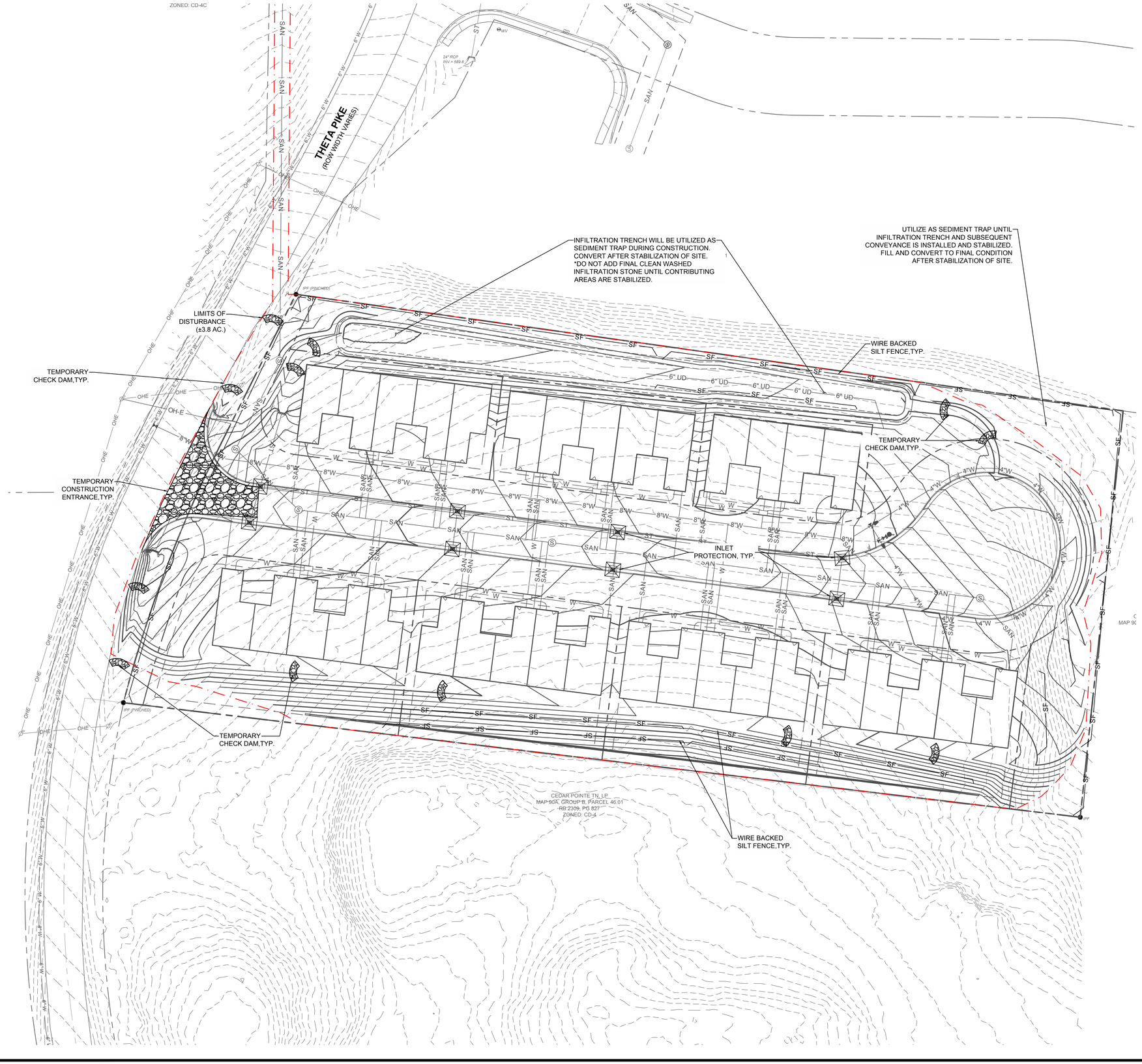
INITIAL EPSC PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:

C401

MPA - INITIAL EPSC PLAN.DWG | Monday, June 19, 2023 3:52:12 PM



TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

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6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE CAUSE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT TRAPS, IF REQUIRED
4. INSTALL TREE PROTECTION FENCING
5. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
6. CLEAR, GRUB, AND GRADE THE SITE
7. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
8. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRIAN
LICENSED ENGINEER
COMMERCIAL
CERTIFICATE NO. 120744
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

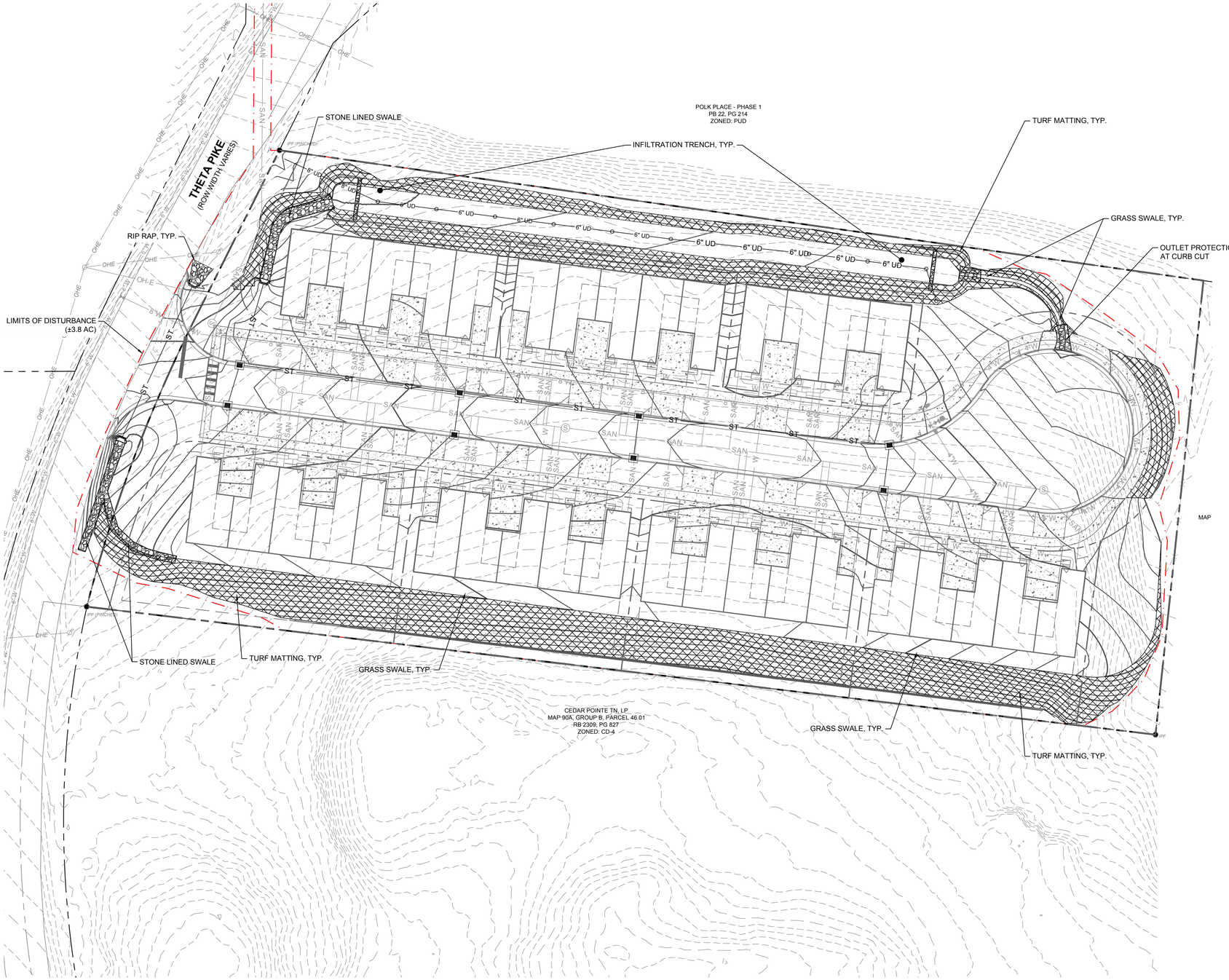
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

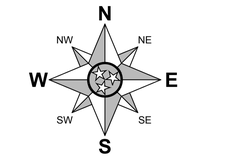
INTERMEDIATE EPSC PLAN

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C402

MPA - INTERMEDIATE EPSC PLAN.DWG / Monday, June 19, 2023 3:52:24 PM





TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
2. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
3. THE APPROXIMATE TOTAL DISTURBED AREA OF THIS SITE IS 6.60 ACRES. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO ADDITIONAL DISTURBANCE.
4. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
5. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP. FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT TRAPS
4. INSTALL TREE PROTECTION FENCING
5. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
6. CLEAR, GRUB, AND GRADE THE SITE
7. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
8. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN — REGISTERED ENGINEER — AGRICULTURE — COMMERCE — CORPORATE SEAL — STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

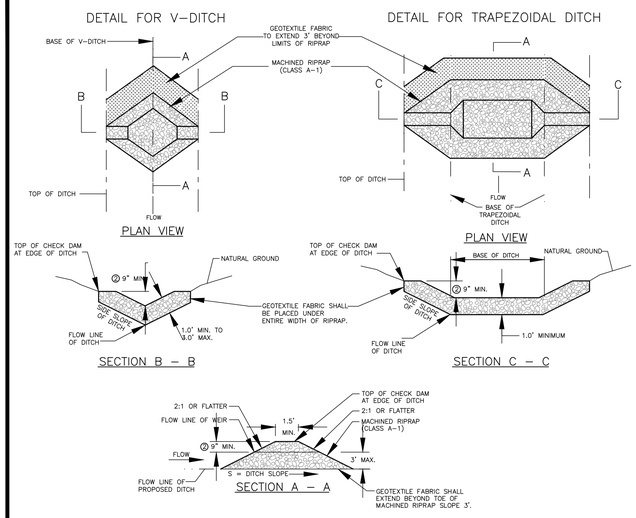
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

FINAL EPSC PLAN

DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

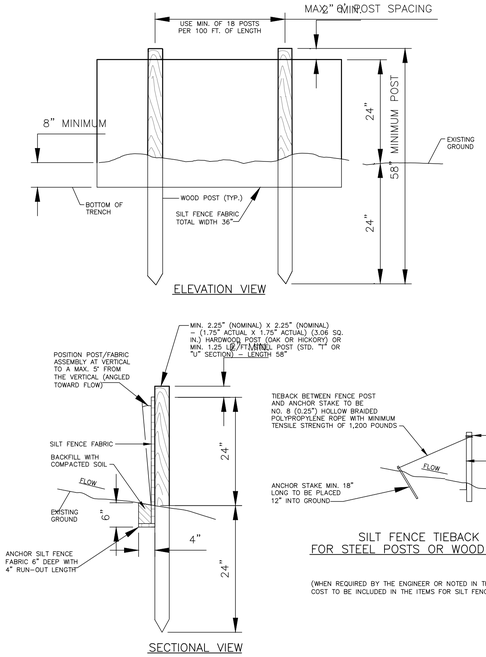
SHEET NUMBER:
C403

MPA - FINAL EPSC PLAN.DWG | Monday, June 19, 2023 3:52:34 PM



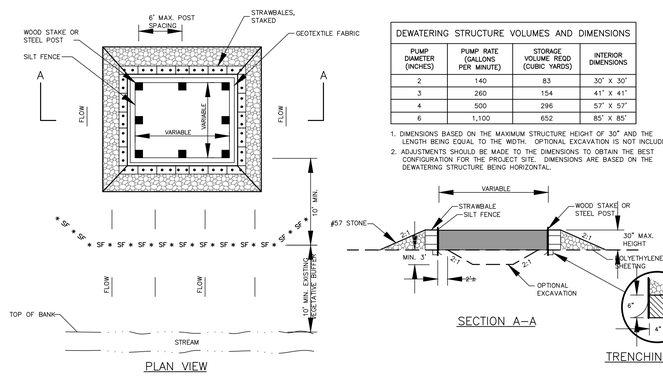
CHECK DAM

SCALE: N.T.S.



SILT FENCE

SCALE: N.T.S.



DEWATERING STRUCTURE VOLUMES AND DIMENSIONS			
PUMP DIAMETER (INCHES)	PUMP RATE (GALLONS PER MINUTE)	STORAGE VOLUME REQD (CUBIC YARDS)	INTERIOR DIMENSIONS
2	140	83	30' X 30'
3	260	154	41' X 41'
4	500	296	57' X 57'
6	1,100	652	85' X 85'

1. DIMENSIONS BASED ON THE MAXIMUM STRUCTURE HEIGHT OF 30" AND THE LENGTH BEING EQUAL TO THE WIDTH. OPTIONAL EXCAVATION IS NOT INCLUDED.
2. ADJUSTMENTS SHOULD BE MADE TO THE DIMENSIONS TO OBTAIN THE BEST CONFIGURATION FOR THE PROJECT SITE. DIMENSIONS ARE BASED ON THE DEWATERING STRUCTURE BEING HORIZONTAL.

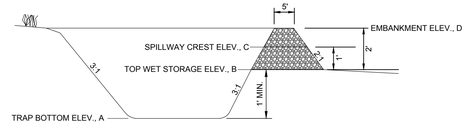
SILT FENCE & STRAW DEWATERING PIT

SCALE: N.T.S.

SEDIMENT TRAP ELEVATIONS, SEE DETAIL FOR REFERENCE → A, B, C, D

SEDIMENT TRAP DESIGN		
	ST-1	ST-2
DRAINAGE AREA (AC.)	2.80	2.50
TOTAL VOL. REQUIRED (CF)	10,130.00	9,045.00
WET VOL. REQUIRED (CF)	5,065.00	4,522.50
DRY VOL. REQUIRED (CF)	5,065.00	4,522.50
WET STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TRAP BOTTOM ELEV. (FT)	607.00	607.00
TOP WET STORAGE ELEV. (FT)	608.50	608.50
SPILLWAY CREST ELEV. (FT)**	610.00	610.00
TOP EMBANKMENT ELEV. (FT)	610.00	610.00
SPILLWAY CREST LENGTH (FT)	15.00	15.00
SPILLWAY CREST WIDTH (FT)	5.00	5.00
EMBANKMENT TOP WIDTH (FT)	5.00	5.00
DRY STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TOTAL VOL. PROVIDED (CF)	**10,522.00**	**9,509.00**

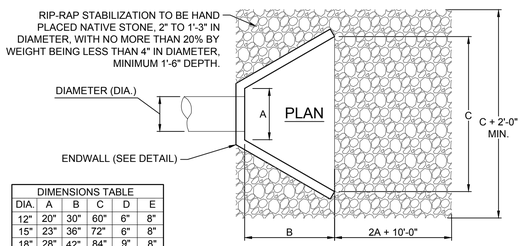
* RUNOFF COEFFICIENT ASSUMED TO BE BARE SOIL CONDITION
** SPILLWAY CREST ELEVATION IS ALSO TOP OF DRY STORAGE ELEVATION



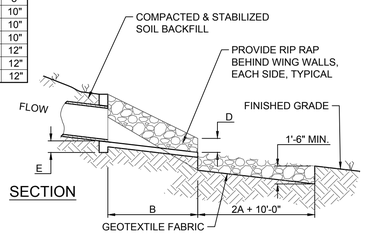
TEMPORARY SEDIMENT TRAP

N.T.S.

RIP-RAP STABILIZATION TO BE HAND PLACED NATIVE STONE, 2" TO 1'-3" IN DIAMETER, WITH NO MORE THAN 20% BY WEIGHT BEING LESS THAN 4" IN DIAMETER, MINIMUM 1'-6" DEPTH.



DIMENSIONS TABLE					
DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"



RIP RAP AT ENDWALL

N.T.S.

ACTIVITY: Geotextiles	PESC – 02

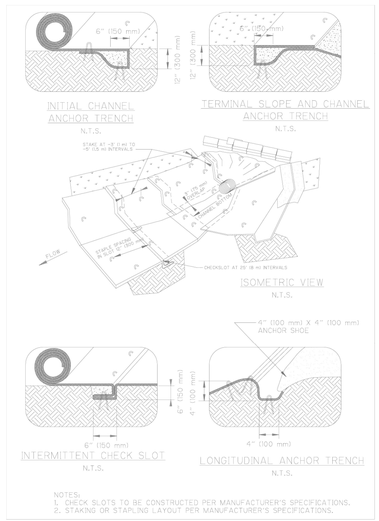


Figure PESC-02-1
Anchoring Geotextiles in Channels

Stormwater Best Management Practices – Permanent EP&SC | PESC-02-3 | January 2014

ACTIVITY: Geotextiles	PESC – 02

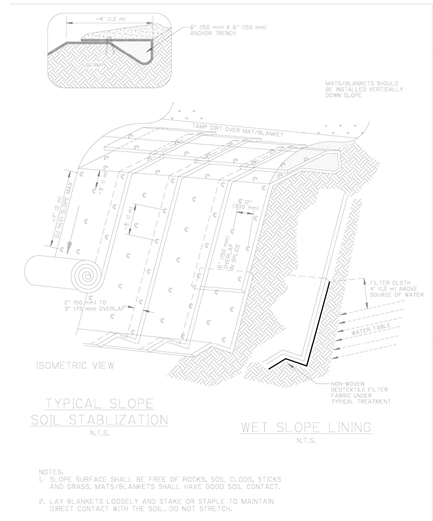
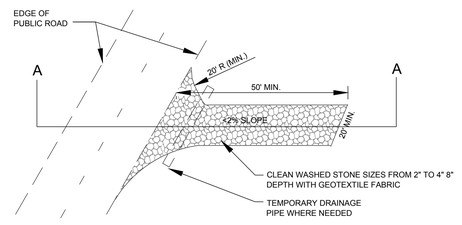


Figure PESC-02-2
Anchoring Geotextiles on Embankments

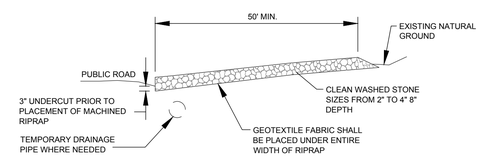
Stormwater Best Management Practices – Permanent EP&SC | PESC-02-4 | January 2014

TURF REINFORCEMENT MATTING DETAILS

SCALE: N.T.S.



PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



SECTION A-A

CONSTRUCTION EXIT

SCALE: N.T.S.

REVISION #	DATE	DESCRIPTION
1	08-18-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN — LICENSED PROFESSIONAL ENGINEER — CERTIFICATE No. — STATE OF TENNESSEE — 08/19/23

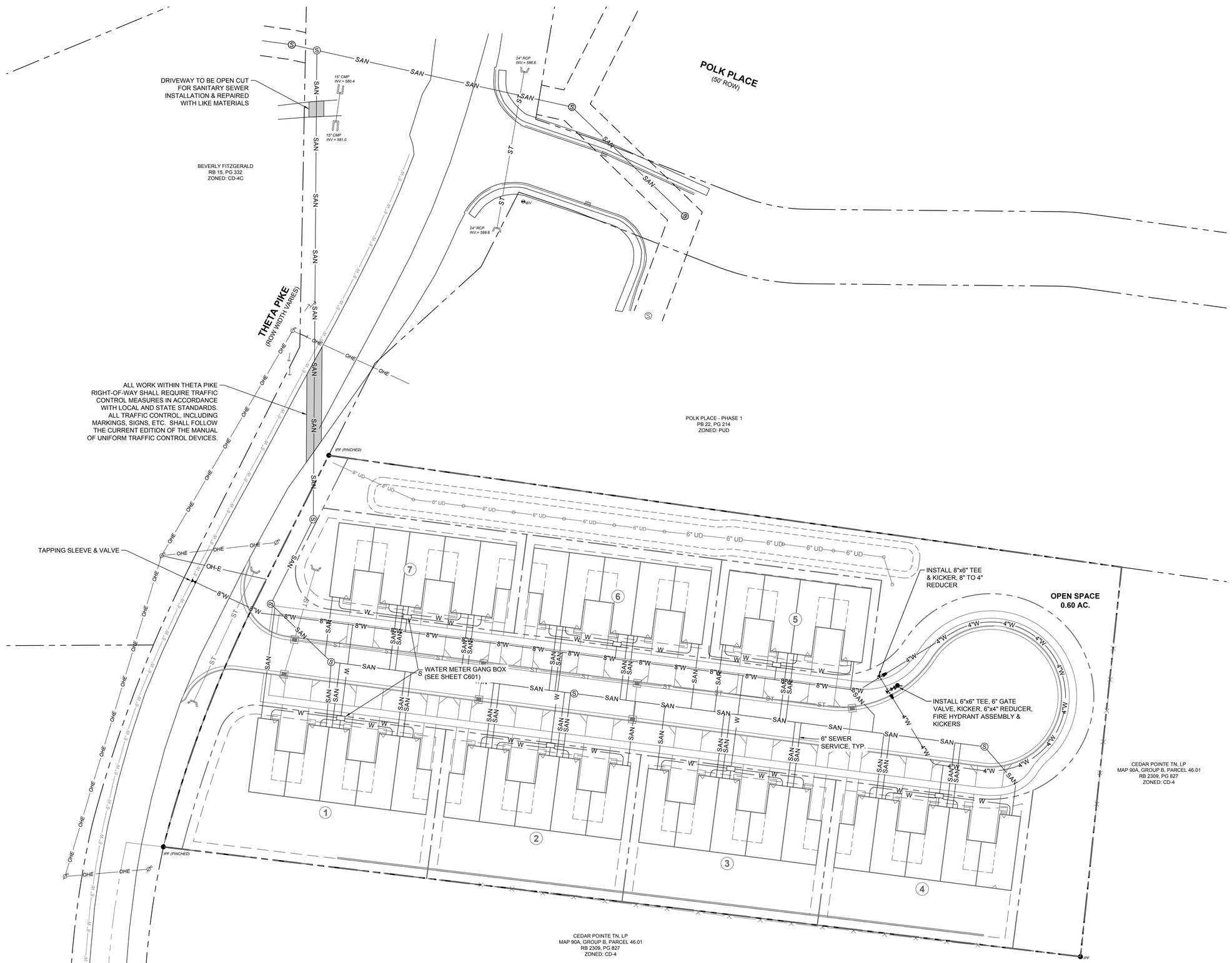
SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

EPSC DETAILS

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C404



LEGEND

SAN	SANITARY SEWER
OHE	OVERHEAD ELECTRIC
UG-E	UNDERGROUND ELECTRIC
8"W	8" WATERLINE
G	NATURAL GAS
ST	STORMWATER DRAINAGE PIPE
W	WATER SERVICE

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
AGRICULTURE
COMMERCE
CERTIFICATE No.
STATE OF TENNESSEE
06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

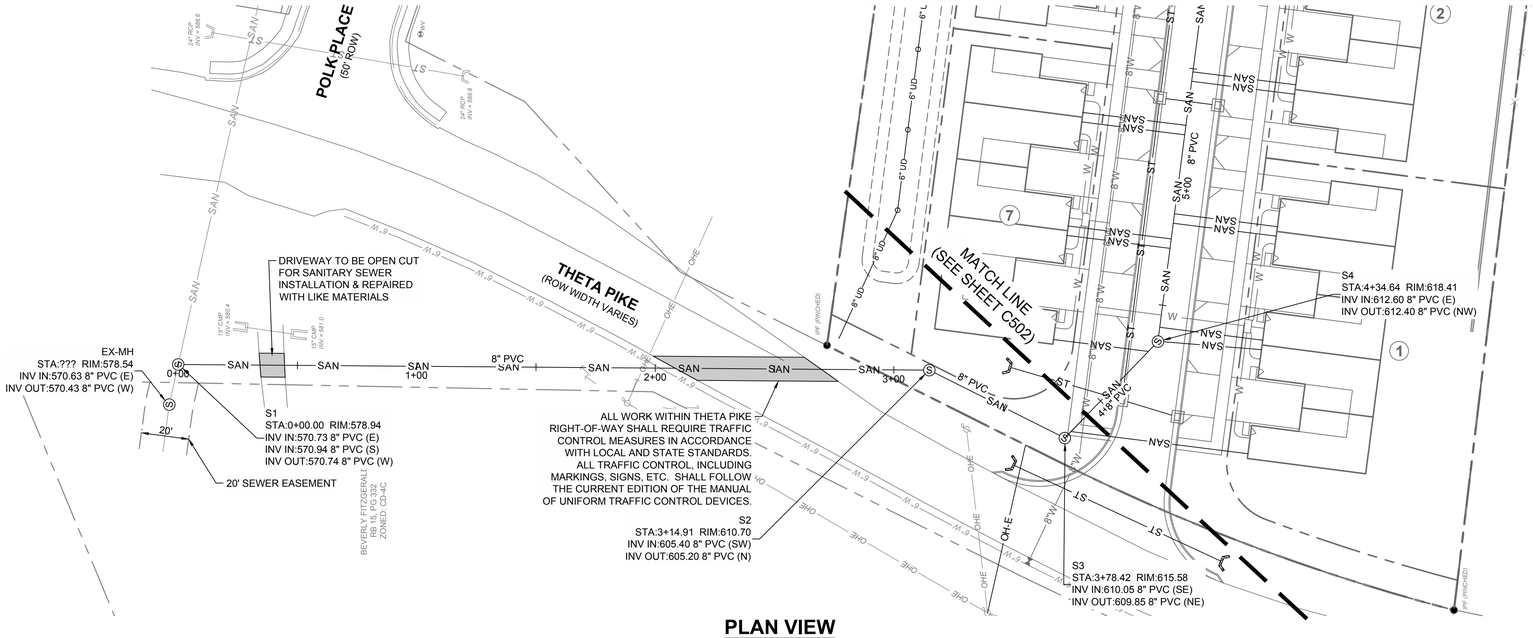
UTILITY PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C500

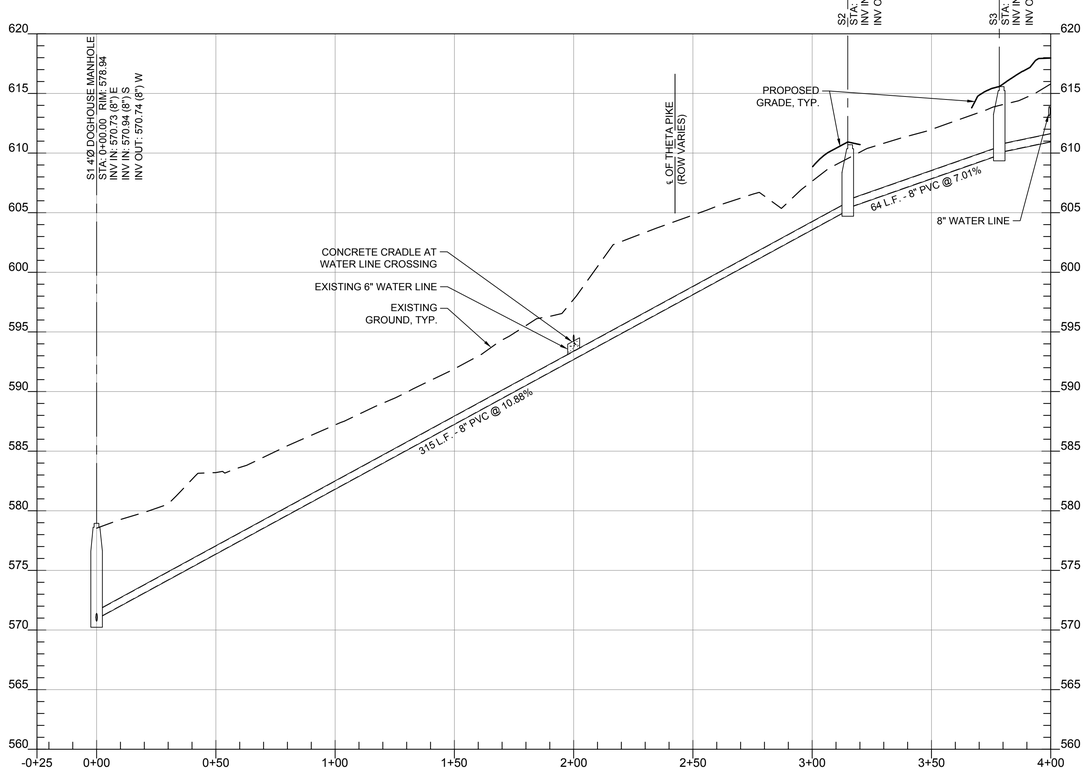
811 Know what's below. Call before you dig.

MPA - UTILITY PLAN.DWG | Monday, June 19, 2023 3:52:59 PM



PLAN VIEW

SCALE: 1" = 30'



PROPOSED OFFSITE SANITARY SEWER PROFILE

SCALE H:1"=30'; V:1"=6'

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
LICENSED
PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO.
STATE OF TENNESSEE
06/19/23

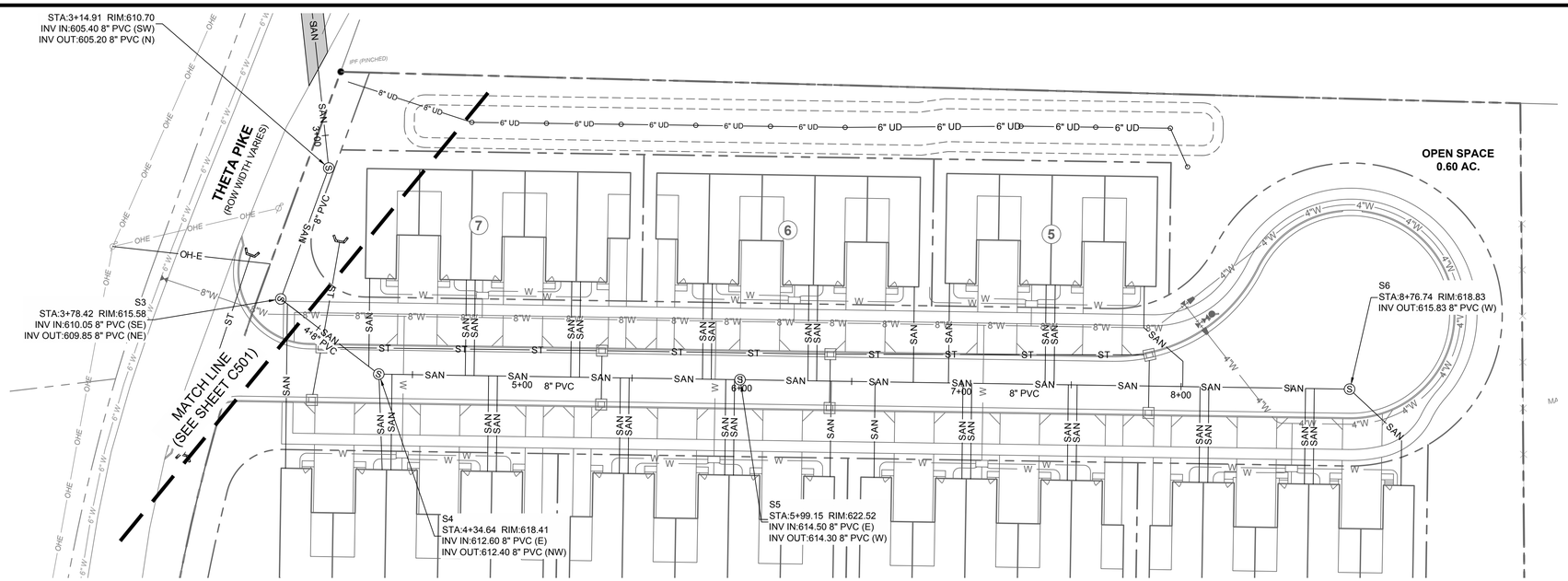
SITE PLANS FOR:
MACKENZIE PLACE
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220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
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OFFSITE SANITARY SEWER PLAN & PROFILE

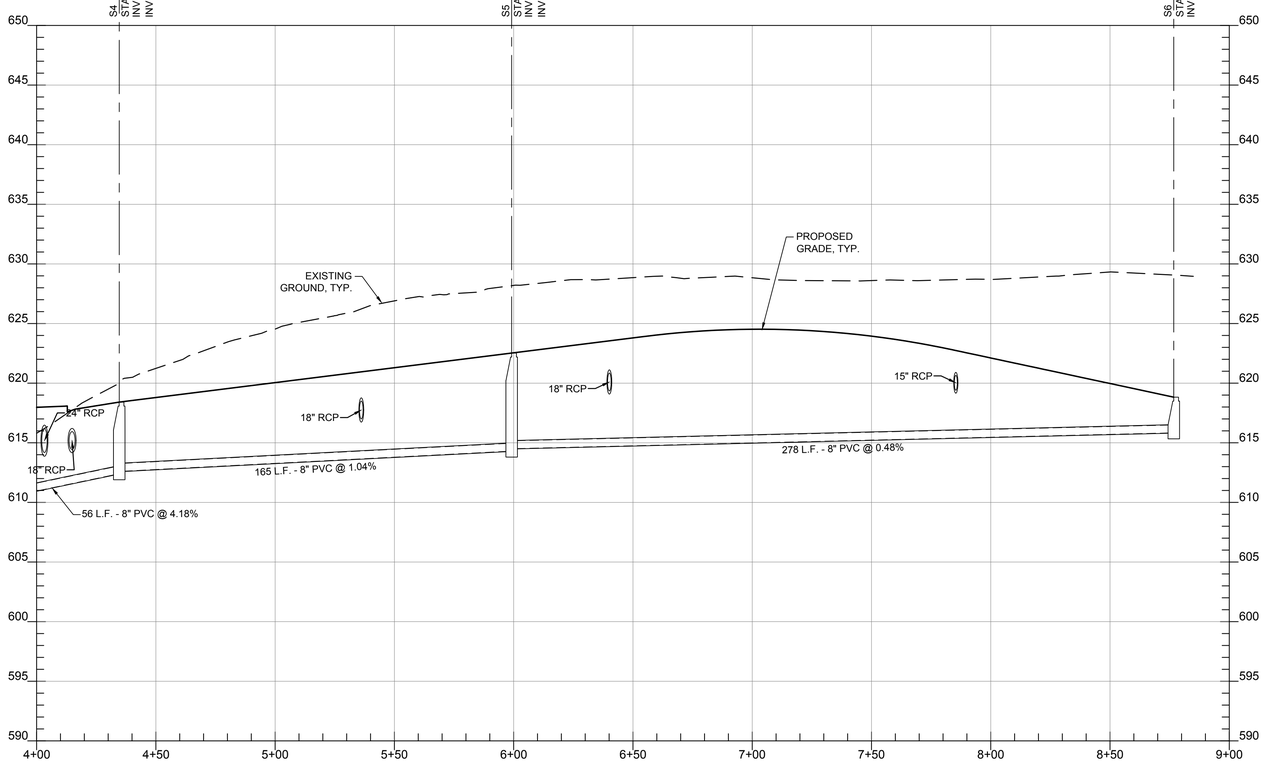
DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C501



PLAN VIEW

SCALE: 1" = 30'



PROPOSED SANITARY SEWER PROFILE

SCALE H:1"=30'; V:1"=6'

REVISION #	DATE	DESCRIPTION
1	06-19-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN — LICENSED PROFESSIONAL ENGINEER — 120143 — COMMERCIAL — CERTIFICATE NO. — STATE OF TENNESSEE — 06/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MZ GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

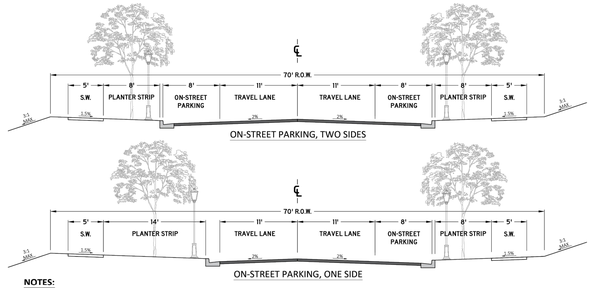
SANITARY SEWER PLAN & PROFILE

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C502

Know what's below. Call before you dig.

MPA - SANITARY SEWER PLAN & PROFILE.DWG / Monday, June 19, 2023 3:53:11 PM



NOTES:

1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. CURB AND GUTTER, SEE SD-01
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

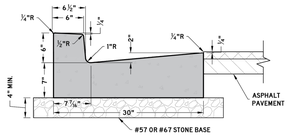
STANDARD DETAILS

CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD

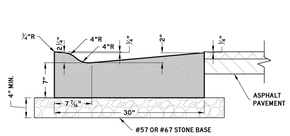
(NTS)

DATE 6/9/2022

DS-03



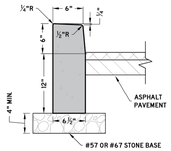
6-30 CONCRETE CURB AND GUTTER



LOWERED CONCRETE CURB AND GUTTER

NOTES:

1. BASED ON TDOT STANDARD DRAWING RP-VC-11
2. ONLY PERMITTED IN APPLICABLE ROADWAY SECTIONS
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. CLASS A 3000 PSI CONCRETE
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK
   - 5.2. A MAXIMUM SPACING OF 100 FEET
   - 5.3. AT TANGENTS OF ALL RADII OF CURVES
   - 5.4. BETWEEN CURBS AND ANY RIGID OBJECTS
   - 5.5. ALIGNED WITH ADJACENT EXPANSION JOINTS
   - 5.6. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1)
   - 5.7. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139)
6. CONTRACTION JOINTS SHALL BE AS FOLLOWS:
   - 6.1. A MAXIMUM SPACING OF 10 FEET
   - 6.2. A MINIMUM SPACING OF 6 FEET
   - 6.3. 1/4 INCH DEPTH, EITHER SAWCUT OR HAND GROOVED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



VERTICAL POST CURB

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

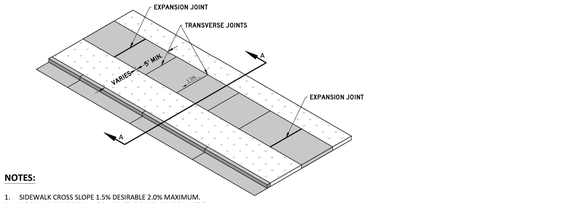
STANDARD DETAILS

CURB AND GUTTER AND POST CURB

(NTS)

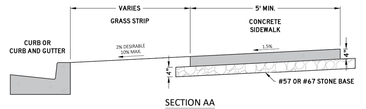
DATE 6/9/2022

SD-01



NOTES:

1. SIDEWALK CROSS SLOPE 1.5% DESIRABLE 2.0% MAXIMUM.
2. SIDEWALK GRADE SHALL FOLLOW THE ROAD GRADE WHERE POSSIBLE.
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. 4" MIN. THICKNESS CLASS A 3000 PSI CONCRETE WITH FIBER REINFORCEMENT, BROOM FINISHED.
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK
   - 5.2. A MAXIMUM SPACING OF 25 FEET
   - 5.3. AT TANGENTS OF ALL RADII OF CURVES
   - 5.4. BETWEEN CURBS AND ANY RIGID OBJECTS
   - 5.5. ALIGNED WITH ADJACENT EXPANSION JOINTS
   - 5.6. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1)
   - 5.7. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139)
6. PROVIDE TRANSVERSE JOINTS AS NEARLY AS SQUARE AS PRACTICABLE. ON SIDEWALKS GREATER THAN 8 FEET IN WIDTH, PROVIDE A LONGITUDINAL JOINT ALONG THE CENTERLINE OF THE SIDEWALK.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



SECTION AA

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

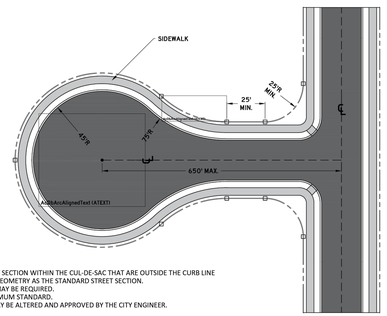
STANDARD DETAILS

CONCRETE SIDEWALK

(NTS)

DATE 6/9/2022

SD-10



NOTES:

1. ALL ELEMENTS OF THE STREET SECTION WITHIN THE CUL-DE-SAC THAT ARE OUTSIDE THE CURB LINE SHALL MAINTAIN THE SAME GEOMETRY AS THE STANDARD STREET SECTION.
2. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
3. DIMENSIONS REFLECT A MINIMUM STANDARD.
4. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

STANDARD DETAILS

CUL-DE-SAC

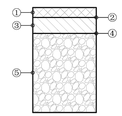
(NTS)

DATE 6/9/2022

SD-15

PAVEMENT SCHEDULE

①	**SURFACE @ 1.5" THICK** 411-01A ASPHALT CONCRETE MIX (PG64-22) (ACS) GRADING D (SURFACE), OR 411-01A ASPHALT CONCRETE MIX (PG64-22) (ACS) GRADING C ⓦ (SURFACE)
②	**TACK COAT (GENERAL USE)** 403-03 BITUMINOUS MATERIAL FOR TACK COAT (CC) (0.05 - 0.10 GAL/SY)
③	**BIT. BINDER @ 2" THICK** 307-01/08 ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2
④	**PRIME COAT** 402-10 BITUMINOUS MATERIAL FOR PRIME COAT (PC) -(0.30-0.35 GAL/SY) 403-02 AGGREGATE FOR COVER MATERIAL (PC) - (8-12 LB/SY)
⑤	**MINERAL AGGREGATE BASE @ 6" THICK** 303-01 MINERAL AGGREGATE, TYPE A BASE, GRADING D



CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

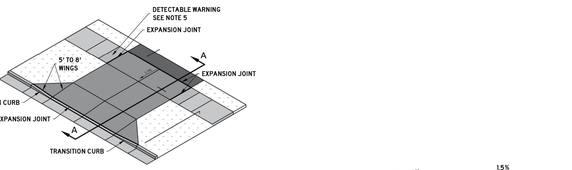
STANDARD DETAILS

PARKING LOT PAVEMENT SECTION

(NTS)

DATE 6/9/2022

MD-02



SECTION AA

NOTES:

1. SIDEWALK CROSS SLOPE 1.5% DESIRABLE 2.0% MAXIMUM.
2. APRON SLOPE 2.0% MIN. 10% MAX. MINIMUM OF 6" RISE ABOVE GUTTER LINE.
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. CLASS A 3000 PSI CONCRETE WITH FIBER REINFORCEMENT
   - 4.1. 6" MIN. THICKNESS RESIDENTIAL.
   - 4.2. 8" MIN. THICKNESS COMMERCIAL, MULTI-FAMILY, AND MIXED-USE.
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK.
   - 5.2. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1).
   - 5.3. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139).
6. DETECTABLE WARNINGS WHERE DRIVEWAY IS STOP CONTROLLED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

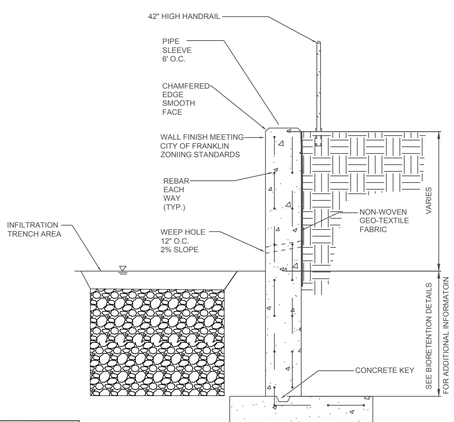
STANDARD DETAILS

DRIVEWAY APRON

(NTS)

DATE 6/9/2022

SD-12



NOTE: A FORMAL WALL SUBMITTAL PREPARED BY A LICENSED PROFESSIONAL WILL BE SUBMITTED WITH GUARDRAIL DETAILS PRIOR TO OBTAINING A BUILDING PERMIT.

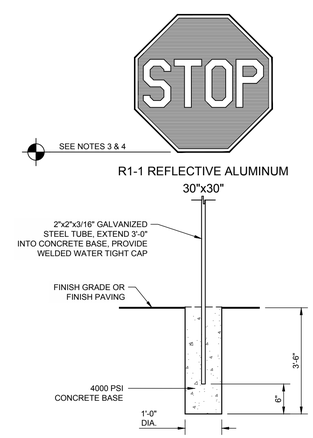
NOTE: RETAINING WALLS ADJACENT TO INFILTRATION TRENCH AREAS SHALL NOT RELY ON STONE DRAINAGE MEDIA FOR STABILITY OR LATERAL RESISTANCE. BOTTOM OF WALL/TOP OF FOOTING ELEVATION SHALL BE LOCATED AT OR BELOW BOTTOM OF LOWERMOST STONE DRAINAGE MEDIA.

RETAINING WALL ILLUSTRATIVE CROSS-SECTION

ADJACENT TO INFILTRATION TRENCH

FOR ILLUSTRATIVE PURPOSES ONLY, NOT TO BE USED FOR CONSTRUCTION

NO SCALE



R1-1 REFLECTIVE ALUMINUM 30"x30"

STOP SIGN/SPEED LIMIT SIGN

N.T.S.

NOTES:

1. SET POSTS IN CONCRETE TO A MINIMUM DEPTH OF 36". SIGN PANELS SHALL BE 0.100 ALUMINUM WITH RAISED OR SILKSCREEN COPY.
2. FOR POST MOUNTING, USE NON-CORROSIVE 3/8" MACHINE BOLTS W/ WASHERS, 2 PER SIGN; OR IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. ALL SIGNAGE IS TO BE INSTALLED WITH THE BOTTOM EDGE OF THE LOWEST SIGN AT LEAST 60" ABOVE FINISHED GRADE, WHERE NO PEDESTRIAN TRAFFIC IS POSSIBLE.
4. ALL SIGNAGE IS TO BE INSTALLED WITH THE BOTTOM EDGE OF THE LOWEST SIGN AT LEAST 84", WHERE PEDESTRIAN TRAFFIC IS POSSIBLE.
5. STOP SIGN TO BE HIGH INTENSITY GRADE.

REVISION #	DATE	DESCRIPTION
1	08-18-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRIAN — REGISTERED ENGINEER — CERTIFICATE No. 120144 — STATE OF TENNESSEE — 08/19/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SITE DETAILS

DATE : MAY 22, 2023
PROJECT NO. : 22-085
DRAWN BY : M2G
CHECKED BY : MWB

SHEET NUMBER:
C600

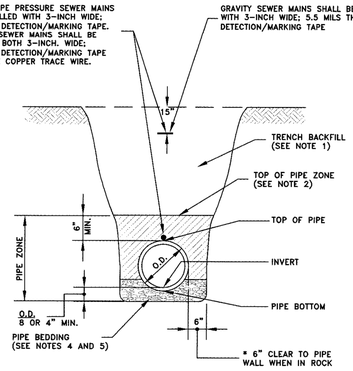
MPA - SITE DETAILS.DWG | Monday, June 19, 2023 3:53:24 PM

NOTES:

1. SEE PROJECT SPECIFICATIONS FOR BACKFILL REQUIREMENTS.
2. "PIPE ZONE" EXTENDS TO 6" ABOVE TOP OF PIPE AND BACKFILL IN TO BE CRUSHED STONE, GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE ENGINEER.
3. LIMIT TRENCH WIDTH AT TOP OF PIPE ZONE TO O.D. + 16", UNLESS PERMITTED OTHERWISE BY ENGINEER.
4. PIPE BEDDING IS TO BE CRUSHED GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY ENGINEER. DEPTH UNDER BOTTOM OF PIPE IS TO BE 1/8 OUTER DIAMETER (O.D.) OF PIPE OR 4", WHICHEVER IS GREATER.*
5. PIPE TO BE CONTINUOUSLY SUPPORTED ALONG LENGTH OF PIPE BARREL EXCEPT AT BELLS. BELL HOLES ARE REQUIRED SUCH THAT NO BEARING LOAD IS TAKEN BY THE BELL.

DUCTILE IRON PIPE PRESSURE SEWER MAINS SHALL BE INSTALLED WITH 3-INCH WIDE; 5.5 MILS THICK DETECTION/MARKING TAPE. PVC PRESSURE SEWER MAINS SHALL BE INSTALLED WITH BOTH 3-INCH WIDE; 5.5 MILS THICK DETECTION/MARKING TAPE AND #14 GAUGE COPPER TRACE WIRE.

GRAVITY SEWER MAINS SHALL BE INSTALLED WITH 3-INCH WIDE; 5.5 MILS THICK DETECTION/MARKING TAPE



TYPICAL SEWER INSTALLATION

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S1

8 Φ 5/8" DIA. T. & S. IN SLAB ON SHALLOW MANHOLES WHERE CONE IS OMITTED (SEE CONST. NOTES)

RESILIENT CONNECTOR

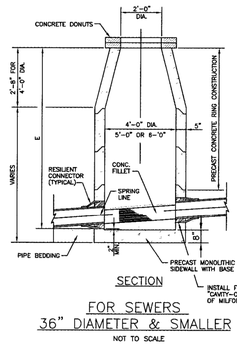
PLAN

NOTE: ALL MANHOLES SHALL BE MANUFACTURED WITH XYPEX ADMIX C-1000/C-2000 IN CONCRETE FOR WATERPROOFING AND PROTECTION AGAINST HYDROGEN SULFIDE DETERIORATION. XYPEX ADMIX SHALL BE AS SUPPLIED BY TOM WILLIAMS; 1231 ANTIOCH PIKE, NASHVILLE. PRECAST MANHOLES SHALL BE AS SUPPLIED BY CLOUD CONCRETE PRODUCTS OR ENGINEER APPROVED EQUAL.

CONSTRUCTION NOTES

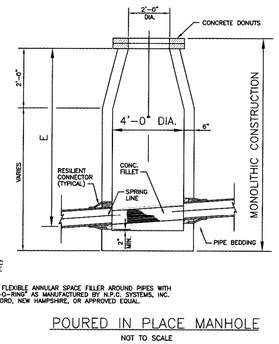
CYLINDRICAL AND CONICAL SECTIONS OF ALL MANHOLES SHALL BE CONSTRUCTED OF EITHER MONOLITHIC CONCRETE OR PRECAST CONCRETE RINGS AS DESIGNED IN THE PROJECT SPECIFICATIONS OF THE CONTRACT DOCUMENT.
CONCENTRIC CONES SHALL BE USED ON PRECAST CONCRETE AND MONOLITHIC CONCRETE UNITS.
DIMENSION "E" VARIES. WHEN LESS THAN 5-FEET OMIT CONE AND EXTEND CYLINDRICAL MANHOLE SIDEWALL SECTION TO AN ELEVATION 8-INCHES BELOW BOTTOM OF ADJUSTING BRICK. CONSTRUCT 8-INCH THICK CONCRETE SLAB ON TOP OF CYLINDRICAL SECTION REINFORCED WITH 5/8-INCH DIA. BARS AS SHOWN. PROVIDE 24-INCH DIAMETER OPENING IN SLAB FOR MANHOLE'S FRAME AND BRICK ADJUSTMENT RINGS AS ON CONED MANHOLE.
BENCH WALLS IN MANHOLE AT SEWERS 18-INCHES IN DIAMETER AND SMALLER TO BE BUILT UP TO THE LEVEL OF THE CROWN OF THE PIPE. FOR SEWERS 21-INCHES TO 30-INCHES IN DIAMETER, THE BENCH WIDTH ABOUT SEWERS TO SPRING LINE OF PIPE. NO BENCH WALLS REQUIRED IN DEAD END MANHOLES, ALTHOUGH BOTTOM TO BE PROPERLY DESHED.

NOTE: GRANULAR BACKFILL MATERIAL SHALL BE PLACED ADJACENT TO MANHOLE IN AREAS WHERE SWELLING CLAY EXIST.



SECTION

FOR SEWERS 36" DIAMETER & SMALLER
NOT TO SCALE

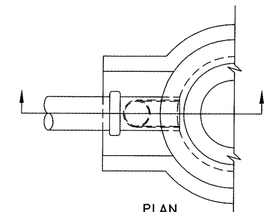


POURED IN PLACE MANHOLE
NOT TO SCALE

STANDARD MANHOLES

WMS# 15157

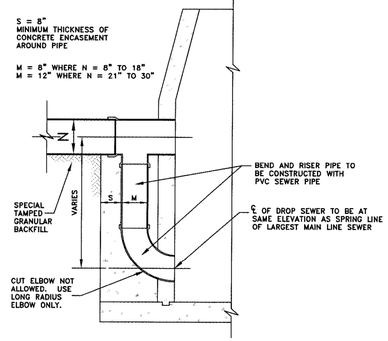
COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S2



PLAN

S = 8" MINIMUM THICKNESS OF CONCRETE ENCASEMENT AROUND PIPE

M = 8" WHERE N = 8" TO 18"
M = 12" WHERE N = 21" TO 30"



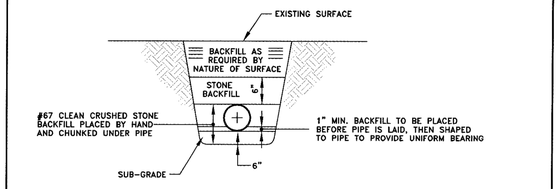
SECTION

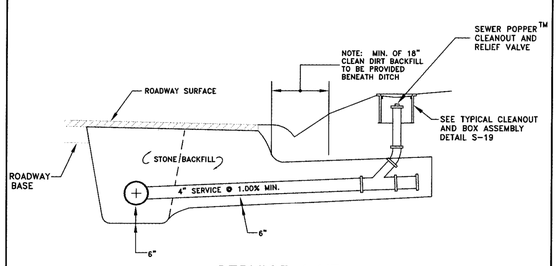
DROP PIPE FOR STANDARD MANHOLES

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S3



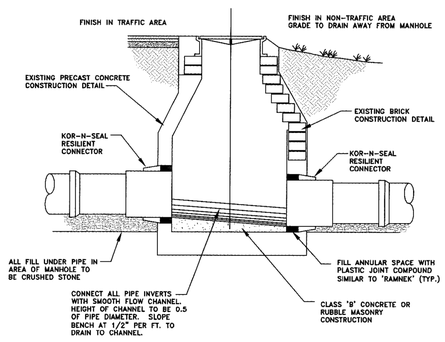


SERVICE LINE

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S4



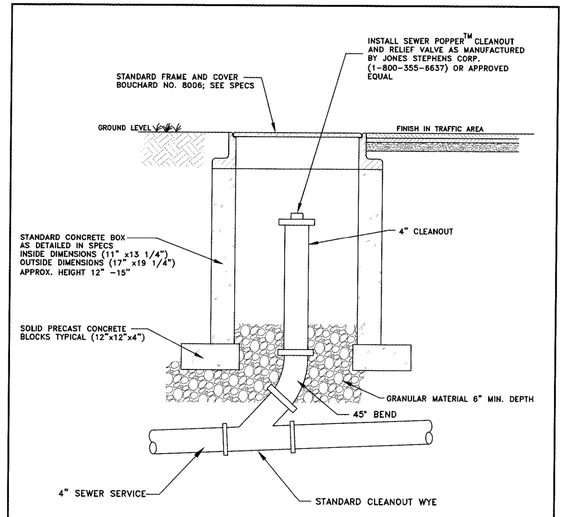
CONNECTION TO EXISTING MANHOLE

NOT TO SCALE

NOTE: THE CONTRACTOR SHALL NOT CONNECT TO EXISTING MANHOLE UNTIL ALL NEW SEWAGE FACILITIES HAVE BEEN INSTALLED, TESTED AND RELEASED FOR SERVICE.

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S5



TYPICAL CLEANOUT ASSEMBLY

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S19

REVISION #	DATE	DESCRIPTION
1	08-18-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

MATTHEW W. BRYAN
REGISTERED ENGINEER
No. 120168
COMMERCE & CONSUMER AFFAIRS
CERTIFICATE No.
STATE OF TENNESSEE
08/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

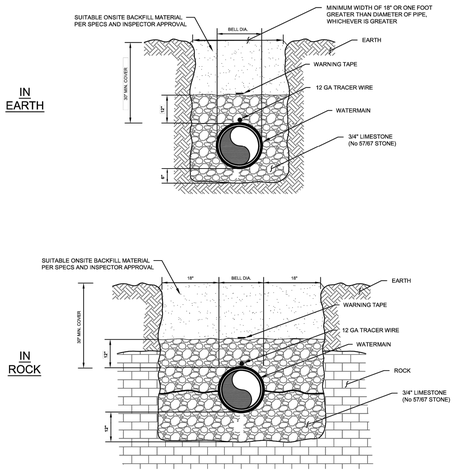
MZG GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

UTILITY DETAILS

DRAWN BY: MZG
CHECKED BY: MWB
DATE: MAY 22, 2023
PROJECT NO.: 22-085

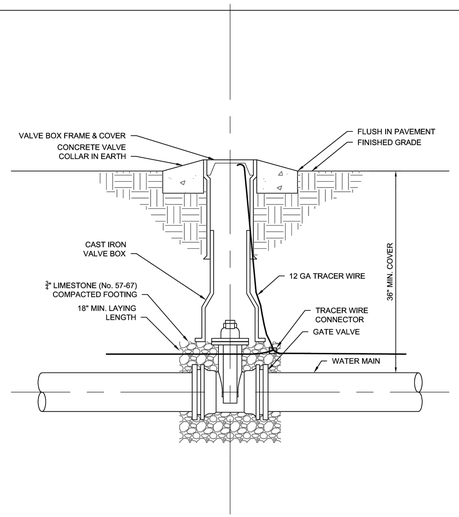
SHEET NUMBER:
C602

MPA - SITE DETAILS.DWG / Monday, June 19, 2023 3:53:28 PM



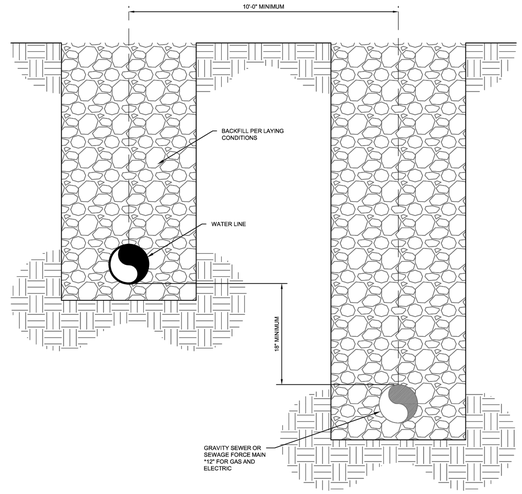
NOTES:
1. **30" MINIMUM COVER IN TRAFFIC AREAS.**
2. **UNSUITABLE EARTH MATERIALS MAY REQUIRE OVER-EXCAVATION AND GRAVEL BEDDING AND HAUNCHING.**

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: WATER LINE LAYING CONDITIONS IN ROCK OR EARTH | FIGURE NO.: CWS-1



NOTES:
1. ALL VALVE BOXES SHALL BE SET TO BE FLUSH WITH FINAL GRADES AND SHALL NOT BE COVERED WITH ANY PAVING, DIRT, SOD, GRASSING, AND/OR LANDSCAPING.
2. THIS DETAIL IS VALID FOR 16" AND SMALLER VALVE SIZES. FOR LARGER SIZES, SEE CONTRACT SPECS. OR CONFIRM WITH CPWS.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: LINE VALVE SETTING | FIGURE NO.: CWS-2



CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: UTILITY SEPARATION | FIGURE NO.: CWS-3

LENGTH TO BE RESTRAINED (L)							
PIPE SIZE	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS		VALVES OR DEAD ENDS
	11.25°	22.5°	45°	90°	UPPER	LOWER	
6"	3 FT	6 FT	13 FT	30 FT	23 FT	4 FT	66 FT
8"	4 FT	8 FT	16 FT	38 FT	30 FT	6 FT	86 FT
10"	5 FT	9 FT	19 FT	45 FT	36 FT	7 FT	103 FT
12"	6 FT	11 FT	22 FT	53 FT	43 FT	8 FT	121 FT
16"	7 FT	14 FT	28 FT	66 FT	55 FT	10 FT	154 FT
20"	8 FT	16 FT	33 FT	79 FT	66 FT	12 FT	185 FT
24"	8 FT	16 FT	33 FT	79 FT	77 FT	15 FT	204 FT

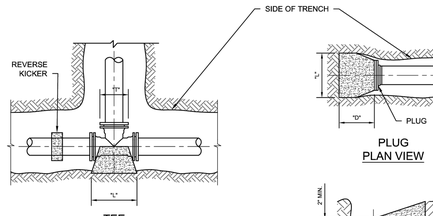
REDUCERS	
SIZE	L
6x4	34'
8x6	36'
8x4	62'
10x8	35'
10x6	63'
12x10	36'
12x8	64'
16x12	66'
16x10	92'
20x18	35'
20x16	66'
20x12	117'
24x20	56'
24x18	80'
24x16	101'

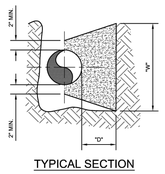
TEES		
RUN	BRANCH	L
4"	4"	F.O.
4"	6"	10'
	<6"	F.O.
8"	8"	29'
	<8"	F.O.
10"	10"	45'
	8"	13'
	<8"	F.O.
12"	12"	62'
	10"	32'
	<8"	F.O.
16"	16"	94'
	12"	39'
	10"	5'
	<10"	F.O.
20"	20"	125'
	16"	76'
	12"	14'
	<12"	F.O.
24"	24"	124'
	20"	84'
	16"	36'
	<16"	F.O.

F.O. = FITTING ONLY

NOTES:
1. PIPE TO BE INSTALLED IN TRENCH AS PER LINE LAYING CONDITION DETAIL.
2. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED AND SHALL BE PROVIDED WITH MECHANICAL JOINT THRUST RESTRAINTS AT ALL DIRECTION CHANGES, SIZE CHANGES, AND DEAD ENDS. ALL CONNECTIONS TO EXISTING PIPE SHALL BE MADE WITH RETAINER GLANDS.
3. MECHANICAL JOINT RESTRAINTS SHALL BE DUCTILE IRON IN ACCORDANCE WITH ASTM A536 - STANDARD SPECIFICATION FOR DUCTILE IRON CASTINGS.
4. CONTRACTOR SHALL FURNISH AND INSTALL MECHANICAL JOINT RESTRAINTS WITH ALL HARDWARE AND ACCESSORIES AS REQUIRED BY THE MANUFACTURER FOR PROPER INSTALLATION.
5. CONTRACTOR SHALL PROVIDE THE SERIES/MODEL OF JOINT RESTRAINT AS REQUIRED FOR THE PIPE SIZE, MATERIAL, AND FLANGED FITTING SHOWN ON THE PLANS.
6. RESTRAINT LENGTH CALCULATIONS WERE PERFORMED UNDER THE FOLLOWING CONDITIONS: PVC PIPE MATERIAL, GM SOIL TYPE, 1.5 SAFETY FACTOR, TYPE 3 TRENCH, 2.5 FT BURY DEPTH, 150 PSI TEST PRESSURE.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: PIPE JOINT RESTRAINT SCHEDULE | FIGURE NO.: CWS-4



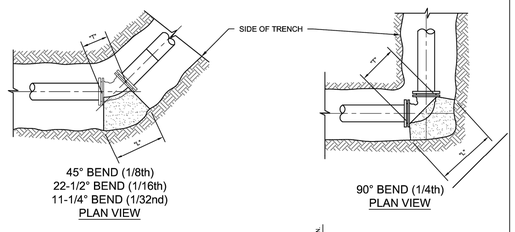


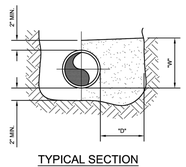
TEE							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	19"	25"	31"	38"	50"	75"	93"
"W"	19"	25"	31"	38"	50"	75"	93"
"T"	16"	16"	18"	18"	24"	36"	36"

PLUG							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	19"	25"	31"	38"	50"	75"	93"
"W"	19"	25"	31"	38"	50"	75"	93"
"T"	12"	12"	12"	12"	18"	30"	36"

NOTES:
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE AGAINST UNDISTURBED EARTH.
2. ALL BOLTS AND FITTINGS MUST BE WRAPPED IN MINIMUM THREE (3) MIL. PLASTIC.
3. LEAVE APPROXIMATELY 12" SEPARATION BETWEEN CONCRETE AND FITTING BELLS
4. THRUST BLOCK DIMENSIONS BASED ON 150 PSI OPERATING PRESSURE AND 50% ADDITIONAL SURGE PRESSURE
5. SOIL BEARING PRESSURE USED FOR THRUST BLOCK DIMENSIONS SHOWN IS 4,000 PSF. IF SOIL SURROUNDING THRUST BLOCK DOES NOT HAVE THIS CAPACITY, ADDITIONAL THRUST BLOCK VOLUME MAY BE REQUIRED.
6. CONCRETE TO BE USED FOR THRUST BLOCKS TO BE 3,500PSI CONCRETE.
7. LENGTH (L) AND WIDTH (W) DIMENSIONS CAN BE MODIFIED SLIGHTLY AS LONG AS TOTAL AREA DOES NOT CHANGE, BY WRITTEN DIRECTION OF CPWS ONLY TO MEET SITE SPECIFIC CONCERNS.
8. ELEVATION OF GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF THRUST BLOCK.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: CONCRETE BLOCKING DETAILS (TEES AND PLUGS) | FIGURE NO.: CWS-5





90° BEND (1/4th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	32"	42"	52"	63"	84"	125"	156"
"W"	16"	21"	26"	32"	42"	63"	78"
"T"	16"	16"	18"	18"	24"	36"	36"

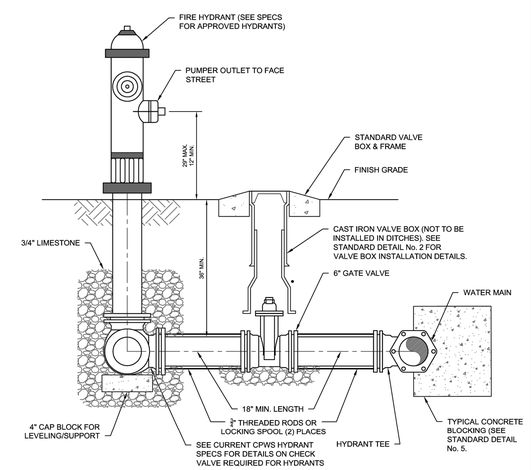
45° BEND (1/8th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	18"	24"	30"	36"
"L"	24"	31"	39"	46"	62"	92"	115"
"W"	12"	16"	20"	23"	31"	46"	58"
"T"	16"	16"	18"	18"	18"	24"	24"

22.5° BEND (1/16th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	12"	12"	18"	18"	24"	24"	24"
"L"	17"	23"	28"	33"	44"	66"	82"
"W"	9"	12"	14"	17"	22"	33"	41"
"T"	16"	16"	18"	18"	18"	24"	24"

11.25° BEND (1/32nd)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	12"	12"	18"	18"	24"	24"	24"
"L"	12"	16"	20"	24"	32"	47"	59"
"W"	6"	8"	10"	12"	16"	24"	30"
"T"	16"	16"	18"	18"	18"	24"	24"

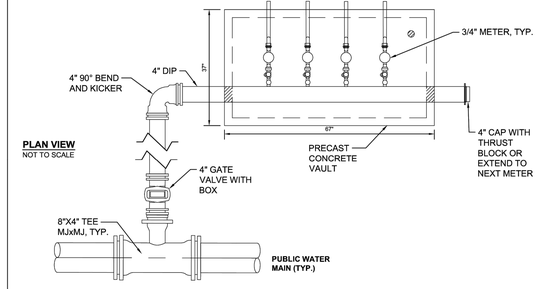
NOTES:
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE AGAINST UNDISTURBED EARTH.
2. ALL BOLTS AND FITTINGS MUST BE WRAPPED IN MINIMUM THREE (3) MIL. PLASTIC.
3. LEAVE APPROXIMATELY 12" CLEARANCE BETWEEN CONCRETE AND FITTING BELLS
4. THRUST BLOCK DIMENSIONS BASED ON 150 PSI OPERATING PRESSURE AND 50% ADDITIONAL SURGE PRESSURE.
5. SOIL BEARING PRESSURE USED FOR THRUST BLOCK DIMENSIONS SHOWN IS 4,000 PSF. IF SOIL SURROUNDING THRUST BLOCK DOES NOT HAVE THIS CAPACITY, ADDITIONAL THRUST BLOCK VOLUME MAY BE REQUIRED.
6. CONCRETE TO BE USED FOR THRUST BLOCKS TO BE 3,500PSI CONCRETE.
7. LENGTH (L) AND WIDTH (W) DIMENSIONS CAN BE MODIFIED SLIGHTLY AS LONG AS TOTAL AREA DOES NOT CHANGE, BY WRITTEN DIRECTION OF CPWS ONLY TO MEET SITE SPECIFIC CONCERNS.
8. ELEVATION OF GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF THRUST BLOCK.

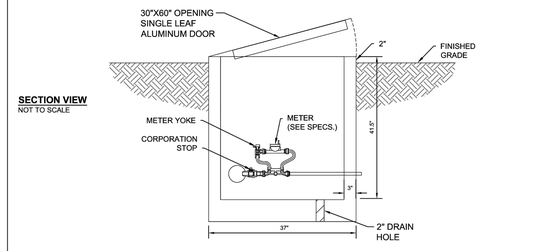
CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: CONCRETE BLOCKING (BENDS) | FIGURE NO.: CWS-6



NOTES:
1. FIRE HYDRANT SHALL BE INSTALLED SO THE PUMPER NOZZLE IS POINTED TOWARD THE STREET.
2. ALL M.J. FITTINGS TO INCLUDE WEDGE STYLE THRUST RESTRAINT.
3. FIRE HYDRANTS TO BE SAFETY YELLOW.
4. TRACER WIRE TO EXTEND TO VALVE AND HYDRANT.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: FIRE HYDRANT ASSEMBLY | FIGURE NO.: CWS-11





NOTES:
1. THE GANG VAULT MAY VARY FROM 3 TO 6 METERS DEPENDING ON CONDITIONS. VAULT SIZE WILL VARY ACCORDINGLY.
2. PRECAST VAULT TO COMPLY WITH ASTM C-857 & C-858.
3. TRACER WIRE TO EXTEND TO METER VAULT.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: GANG METER VAULT | FIGURE NO.: CWS-22

REVISION #	DATE	DESCRIPTION
1	08-18-23	REVISED BASED ON TECHNICAL REVIEW COMMENTS

TAMATHEW W. BRYAN — REGISTERED ENGINEER — MEDICAL LAKE — COMMERCE — CERTIFICATE No. — STATE OF TENNESSEE — 08/19/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MPAGROUPLLC.COM

UTILITY DETAILS

DRAWN BY :	CHECKED BY :
M2G	MWB

DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C601

MPA - SITE DETAILS.DWG / Monday, June 19, 2023 3:53:36 PM



LEGEND

- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPE
- EXISTING INDEX CONTOUR
- EXISTING OVERHEAD ELECTI
- EXISTING SANITARY SEWER I
- EXISTING TREELINE
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER LIN
- FIRE HYDRANT
- WATER METER
- TREE, DECIDUOUS
- TREE, CONIFER
- IRON PIPE FOUND (IPF)
- SANITARY MANHOLE
- WATER BOX (WATER VALVE)
- POWER POLE
- CURB INLET

GENERAL NOTES

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88, GEOID 18). CONTOURS ARE SHOWN AT 1-FOOT INTERVALS.
3. THE FIELD SURVEY WAS COMPLETED ON MAY, 2022.
4. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD.
5. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
6. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
7. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP", 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
8. UTILITIES SHOWN HEREON WERE COMPILED FROM VISIBLE STRUCTURES AT THE SITE, INFORMATION FROM PLANS, AND PHYSICAL MARKINGS AND COMBINED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. VERIFICATION OF EXISTENCE, LOCATIONS, AND DEPTH SHOULD BE MADE BEFORE CONDUCTING ANY EXCAVATION IN THE VICINITY OF THE UTILITY.
9. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.
10. NO TITLE REPORT WAS PROVIDED TO THIS SURVEYOR REGARDING THE SUBJECT PROPERTIES, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH AND REPORT MAY DISCLOSE.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE INFORMATION SHOWN HEREON IS TRUE AND ACCURATE TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND BELIEF. THE SURVEY SHOWN HEREON REPRESENTS A CATEGORY I SURVEY, HAVING A LINEAR ERROR OF CLOSURE WHICH IS EQUAL TO OR LESS THAN 1 FOOT PER 10,000 FEET OF LAND (1:10,000). THIS SURVEY WAS MADE IN COMPLIANCE WITH THE CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE.

SUBJECT PROPERTY INFORMATION:

- OWNER: BLAIR PROPERTY MANAGEMENT INC
- TAX MAP 90B, GROUP B, PARCEL 47.00
- TOTAL AREA = 3.61 AC.

N NW NE W E SW SE S

40' 0 40' 80'
GRAPHIC SCALE

REVISION #	DATE	DESCRIPTION

BOUNDARY & TOPOGRAPHIC SURVEY
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

DATE :	MAY, 2022	**DRAWN BY :**	BPH
MADE FOR :	WAITS DEVELOPMENT GROUP, LLC	**CHECKED BY :**	SVH

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SHEET NUMBER: SV-01

MPA - SURVEY.DWG / Monday, June 19, 2023 3:48:02 PM

June 19, 2023

City of Columbia, Tennessee
700 North Garden Street
Columbia, Tennessee 38401

RE: Agency Comment Responses
Site Plan Submittal
Item Number 23-0193
MacKenzie Place Townhomes - 220 Theta Pike

M2 Group, LLC (M2) has received the comments regarding the MacKenzie Place Townhomes Project per the Development Review Committee meeting on June 13, 2023. Please allow this letter to serve as a response to the review comments. A digital copy of the revised Site Plan has been included in this resubmittal.

Review Comments

Engineering

1. *Subject to construction plans.*
   So noted and acknowledged.
2. *Preliminary plat and final plat required for the infrastructure.*
   So noted and acknowledged.
3. *Geotechnical report will be required for evaluation of suitability of existing soils, slopes, and surcharge loading.*
   A geotechnical report has been provided for your review as requested.
4. *Engineering recommends instillation of yard drain system to allow for potential patios on the rear of the units.*
   A yard drain system will be evaluated during the construction plan phase and can be accommodated based on the final design parameters.
5. *Engineering is not approving stormwater calculations with this submittal. Though the inclusion, in this case, is appreciated.*
   So noted and acknowledged.
6. *Engineering would recommend some off-site grading work to allow for a minimum of 2.5 feet of clear visibility through the site distance triangle.*
   The site distance meets minimum requirements, and the developer has agreed to further evaluate this during the construction plan phase, as well as after clearing operations have been completed, to determine whether additional grading is warranted.
7. *Emergency spillway shall be directed and designed to discharge to roadside ditch of Theta Pike.*
   Emergency spillway is designed to flow directly to the roadside ditch of Theta Pike as requested, with additional details and label being provided on sheet C301.

Planning

12. *Please adjust lot/building site lines to show stormwater management area in common space rather than crossing multiple building sites. We understand that this community will utilize a horizontal property rights regime. However, bulk standards are applied to "building sites." The stormwater management area should be outside of the MBLS for any structure.*

    Lot lines have been adjusted as requested.

13. *All parking is provided by double parking vehicles in garage and driveway. Additional on-street parking is impractical due to the driveways. This meets the minimum parking ratio but is likely to invite use of the cul-de-sac as a parking area, limiting its functionality as a turnaround. In response to comments, please describe the plan for guest parking/additional vehicles.*

    The plan submitted meets the minimum parking requirements in the City Code. No Parking signage will be added in the cul-de-sac. There is room for additional guest parking in the driveway of each unit if it becomes necessary, but this is not shown on the plan.

14. *Please verify that all garage parking spaces conform to the minimum interior garage dimensions (10 ft. x 20 ft. per vehicle). Again, the staff is concerned that parking provided on the site meets only the minimum code requirement for number and dimensions. Please be ready to explain to the Planning Commission how the development will accommodate the real anticipated demand for parking and dimensions of typical passenger vehicles.*

    Sheet C200 of the plans indicates that each garage dimension is 10' x 20' per minimum requirements. Final architectural plans will confirm that this garage dimension meets City standards.

15. *Please provide a survey stamped by a State of Tennessee Licensed Professional Land Surveyor (see application checklist).*

    Stamped survey provided as requested.

16. *Retaining wall is noted as 7.5'. If the wall ends up supporting greater than 8', it must be setback at least 10' from the property line.*

    So noted and acknowledged.

17. *Note: As noted on elevations submitted, conformity with design standards of the Ordinance will be confirmed at the time of building permit.*

    So noted and acknowledged.

Maury County Schools

18. *Howell Elementary, Cox Middle School, Central High School. See attached capacity numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.*

    So noted and acknowledged.

Columbia Power

20. *Columbia Power System has an existing power line near your proposed development to be located near 194 Theta Pike. We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.*

    So noted and acknowledged.

21. *Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.*

    So noted and acknowledged.

Wastewater

24. *The last proposed manhole and 8" main (plus a 10-ft offset) encroaches upon the neighboring property. There may have to be a proposed doghouse manhole set on the existing main. In this case, Columbia Wastewater requires all sewer main easements to abide within the public right of way. Easement width depends on depth of sanitary sewer. We need to make certain that the nearby property (231 Theta Pike) will not be affected, and no easements will be required.*

    So noted and acknowledged. A doghouse manhole has been shown on the revised plans.

Columbia Water

25. *"A water availability letter was issued on 5-19-23 and is valid for 120 days. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements stated in the water availability letter are the responsibility of the developer/owner. All water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."*

    So noted and acknowledged.

If you have any questions, please feel free to contact me at 615.406.3415 or matt@m2groupllc.com.

Sincerely,

M2 Group, LLC
Matthew W. Bryant, P.E.

Enclosures
cc: John Waits, John Phillips

CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, June 13, 2023

ITEM NO.
23-0193

DESCRIPTION: Proposed multi-family townhome development consisting of 34 units, roadway with cul-de-sac, retaining wall, sanitary sewer extension, utilities, and storm water management area.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. Subject to construction plans.
2. Preliminary plat and final plat required for the instrastructure.
3. Geotechnical report will be required for evaluation of suitability of existing soils, slopes, and surcharge loading.
4. Engineering recommends instillation of yard drain system to allow for potential patios on the rear of the units.
5. Engineering is not approving stormwater calculations with this submittal. Though the inclusion, in this case, is appreciated.
6. Engineering would recommend some off-site grading work to allow for a minimum of 2.5 feet of clear visibility through the site distance triangle.
7. Emergency spillway shall be directed and designed to discharge to roadside ditch of Theta Pike.

Fire

8. No comments

Public Works

9. No comment Mackenzie Place will utilize private trashcan service.

Building

10. No comment.

Police

11. No comments provided.

Planning

12. Please adjust lot/building site lines to show stormwater management area in common space rather than crossing multiple building sites. We understand that this community will utilize a horizontal property rights regime. However, bulk standards are applied to "building sites." The stormwater management area should be outside of the MBLS for any structure.
13. All parking in provided by double parking vehicles in garage and driveway. Additional on street parking is impractical due to the driveways. This meets the minimum parking ratio but is likely to invite use of the cul-de-sac as a parking area, limiting its functionality as a turnaround. In response to comments, please describe the plan for guest parking/additional vehicles.
14. Please verify that all garage parking spaces conform to the minimum interior garage dimensions (10 ft. x 20 ft. per vehicle). Again, staff is concerned that parking provided on the site meets only the minimum code requirement for number and dimensions. Please be ready to explain to Planning Commission how the development will accommodate the real anticipated demand for parking and dimensions of typical passenger vehicles.
15. Please provide a survey stamped by a State of Tennessee Licensed Professional Land Surveyor (see application checklist).
16. Retaining wall is noted as 7.5'. If the wall ends up supporting greater than 8', it must be setback at least 10' from the property line.
17. Note: As noted on elevations submitted, conformity with design standards of the Ordinance will be confirmed at the time of building permit.

Maury County Schools

18. Howell Elementary, Cox Middle School, Central High School. See attached capacity numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Maury County E911

19. Bridgets Way has been reserved. Any changes contact: cgideon@maury911.org

Columbia Power

20. Columbia Power System has an existing power line near your proposed development to be located near 194 Theta Pike. We are willing to serve this new development subject to all

Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
• Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Maury County Highway Dept.

21. No comment. '

Atmos Energy

22. No comments provided.

Duck River Electric Membership Corp

23. No comments.

Wastewater

24. The last proposed manhole and 8" main (plus a 10-ft offset) encroaches upon the neighboring property. There may have to be a proposed doghouse manhole set on the existing main. In this case, Columbia Wastewater requires all sewer main easements to abide within the public right of way. Easement width depends on depth of sanitary sewer. We need to make certain that the nearby property (231 Theta Pike) will not be affected and no easements will be required.

Columbia Water

25. "A water availability letter was issued on 5-19-23 and is valid for 120 days. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements stated in the water availability letter are the responsibility of the developer/owner. All water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

ATT

26. No comments provided.

ATTACHMENTS: Site Development Plan

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

Current Enrollment / Capacity

	Facility Name	Date Constructed	Sq. Ft.	Acreage	Capacity	Current Enrollment	Capacity Used
Elementary	Baker	1960	43,920	12	340	325	95.6%
	Battle Creek	2019	90,000	30	700	609	87.0%
	Brown	1968	56,720	20	405	348	85.9%
	Highland	1986	47,800	4.5	380	304	80.0%
	Howell	1999	81,600	17.5	700	644	92.0%
	Mt. Pleasant	1978	80,021	22	630	566	89.8%
	Riverside	1984	71,150	14	500	413	82.6%
	Spring Hill	1984	69,000	10	540	439	81.3%
	Woodard	1990	76,200	17	600	567	94.5%
	Wright	2005	97,765	18	740	631	85.3%
					5535	***4846***	***87.6%***
Middle	Battle Creek	2019	125,000	45	900	693	77.0%
	Cox	1997	137,200	25	900	646	71.8%
	Mt. Pleasant	2001	113,938	29.2	550	414	75.3%
	Spring Hill	2010	158,106	39.49	950	524	55.2%
	Whitthorne	1979	175,600	17	1050	912	86.9%
					4350	***3189***	***73.3%***
High	Central	2016	296,740	55	1700	1402	82.5%
	Mt. Pleasant	1969	110,759	31	600	391	65.2%
	Spring Hill	1993	181,800	57	1200	1165	97.1%
					3500	***2958***	***84.5%***
Unit	Culleoka	1969	205,800	34	1020	903	88.5%
	Hampshire	1978	83,410	13.12	500	407	81.4%
	Santa Fe	1964	94,225	24	650	532	81.8%
					2170	***1842***	***84.9%***
Other	Central Office	1960	15,400	1.5			
	College Hill	1958	42,211	2.26			
	Maintenance	1987	9,400	4.7		209	
	McDowell		46,165	7			
			2,509,930	**550.27**	**15555**	**13044**	

PRELIMINARY PLAT FOR:

MACKENZIE PLACE

TAX MAP 90B, GROUP B, PARCEL 47.00

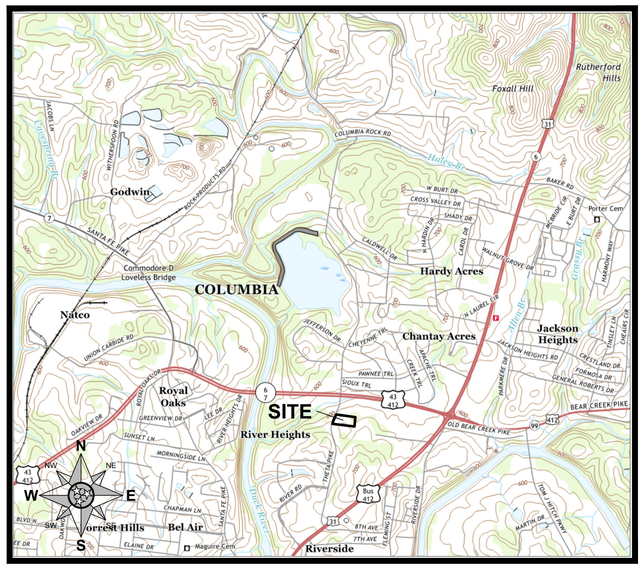
220 THETA PIKE

CITY OF COLUMBIA

MAURY COUNTY, TENNESSEE

JULY 17, 2023

Sheet List Table	
SHEET NUMBER	SHEET TITLE
PP-01	COVER SHEET
PP-02	EXISTING CONDITIONS
PP-03	PRELIMINARY PLAT
PP-04	PRELIMINARY PLAT



VICINITY MAP

SCALE: 1" = 2,000'

SOURCE: USGS

PROJECT NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
3. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
4. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
5. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
6. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
7. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

CONTACT LIST

OWNER/DEVELOPER

WAITS DEVELOPMENT GROUP, LLC
ADDRESS: PO BOX 111285
NASHVILLE, TENNESSEE 37222
PHONE NO.:615-498-4190
CONTACT NAME: JOHN WAITS

CIVIL ENGINEER

M2 GROUP, LLC
P.O. BOX 848
FRANKLIN, TN 37065
PHONE: (615) 406-3415
CONTACT: MATT W. BRYANT, P.E.
E-MAIL: matt@m2groupllc.com

UTILITY CONTACTS:

WATER SUPPLY:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

SANITARY SEWER
COLUMBIA WASTEWATER DEPARTMENT
1244 Treatment Plant Road
COLUMBIA, TN 38401
(931) 560-1001

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

GAS SERVICE
ATMOS ENERGY CORPORATION
810 NASHVILLE HWY
COLUMBIA, TN 38401
(931) 388-9136

Know what's below. Call before you dig.

REVISION # | DATE | DESCRIPTION

MATTHEW W. BRYANT — REGISTERED ENGINEER — AGRICULTURE — COMMERCE & INDUSTRY — ARCHITECTURE & ENGINEERING — STATE OF TENNESSEE

07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

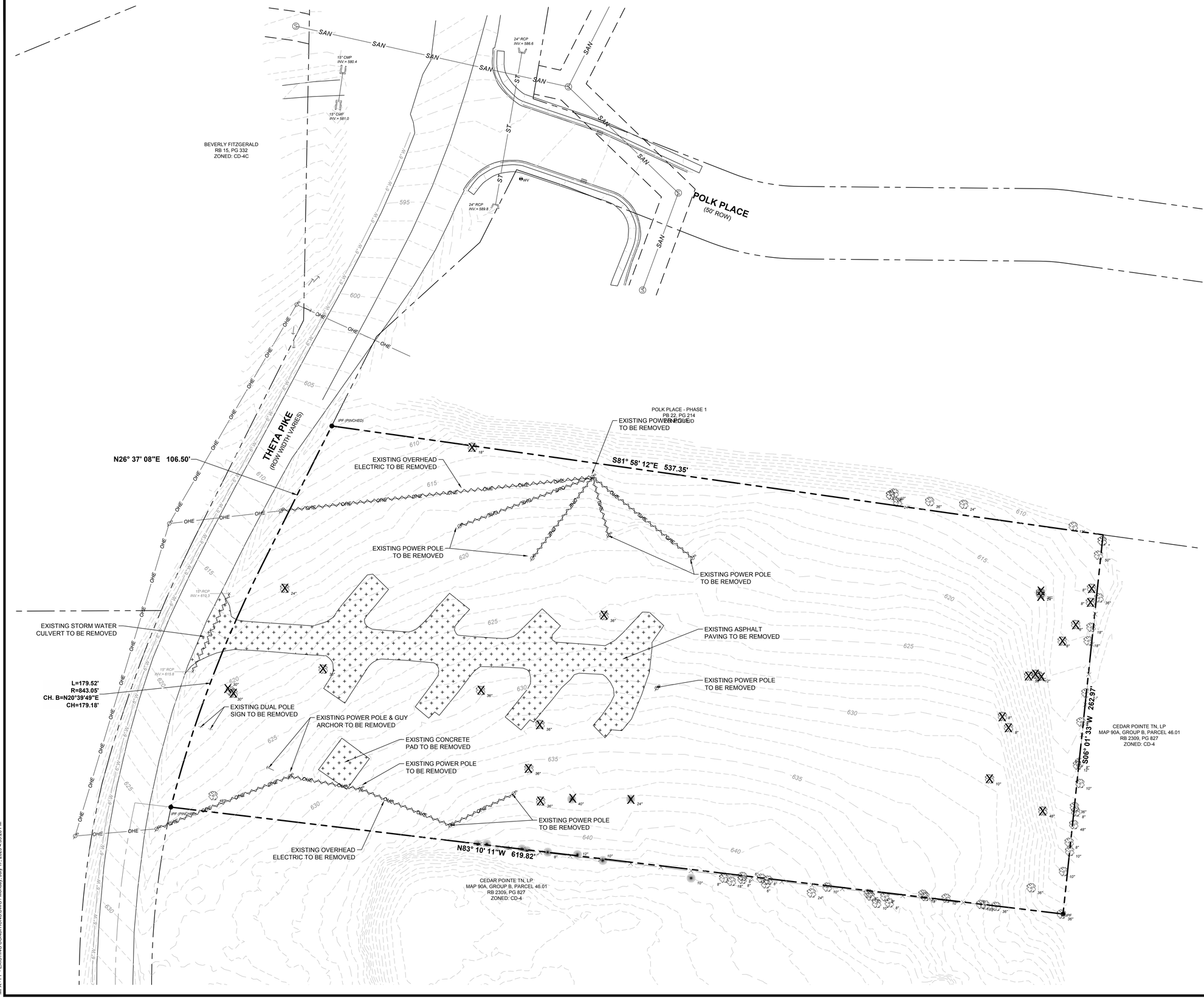
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

COVER SHEET

DATE: JULY 17, 2023 | DRAWN BY: M2G
PROJECT NO. : 22-085 | CHECKED BY : MWB

SHEET NUMBER:
PP-01

MPA - PP - COVER SHEET.DWG / Monday, July 17, 2023 4:35:22 PM



N
NW NE
W E
SW SE
S

30' 0 30' 60'
GRAPHIC SCALE

LEGEND

- ASPHALT REMOVAL
- UTILITY REMOVAL
- TREE REMOVAL
- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPEF
- EXISTING INDEX CONTOUR
- EXISTING OVERHEAD ELECTI
- EXISTING SANITARY SEWER I
- EXISTING TREELINE
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER LIN
- FIRE HYDRANT
- WATER METER
- TREE, DECIDUOUS
- TREE, CONIFER
- IRON PIPE FOUND (IPF)
- SANITARY MANHOLE
- WATER BOX (WATER VALVE)
- POWER POLE
- CURB INLET

SURVEYOR'S NOTES

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. THE FIELD SURVEY WAS COMPLETED ON MAY, 2022.
3. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD.
4. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
5. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
6. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP", 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
7. UTILITIES SHOWN HEREON WERE COMPILED FROM VISIBLE STRUCTURES AT THE SITE, INFORMATION FROM PLANS, AND PHYSICAL MARKINGS AND COMBINED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. VERIFICATION OF EXISTENCE, LOCATIONS, AND DEPTH SHOULD BE MADE BEFORE CONDUCTING ANY EXCAVATION IN THE VICINITY OF THE UTILITY.
8. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.
9. NO TITLE REPORT WAS PROVIDED TO THIS SURVEYOR REGARDING THE SUBJECT PROPERTIES, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH AND REPORT MAY DISCLOSE.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

.

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYANT
REGISTERED LAND SURVEYOR
STATE OF TENNESSEE
07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

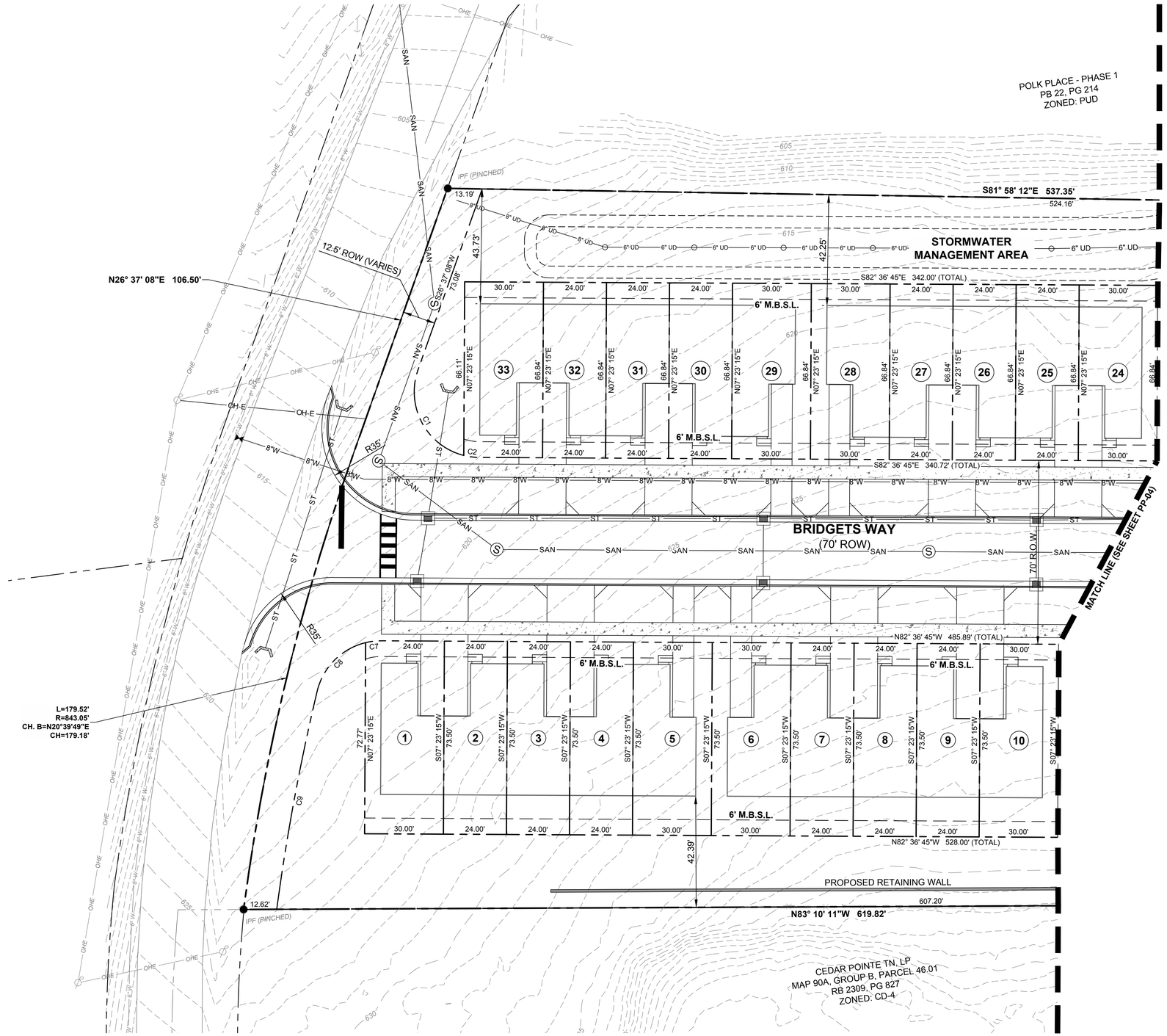
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

EXISTING CONDITIONS

DATE :	JULY 17, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
PP-02

MPA - PP - EXISTING CONDITIONS.DWG / Monday, July 17, 2023 4:35:28 PM



N NE E SE S SW W NW

20' 0 20' 40'
GRAPHIC SCALE

PROJECT NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
3. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
4. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
5. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
6. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
7. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

LOT AREA TABLE		
LOT #	AREA (S.F.)	AREA (AC.)
1	2,204	0.05
2	1,764	0.04
3	1,764	0.04
4	1,764	0.04
5	2,205	0.05
6	2,205	0.05
7	1,764	0.04
8	1,764	0.04
9	1,764	0.04
10	2,205	0.05
11	2,205	0.05
12	1,764	0.04
13	1,764	0.04
14	1,764	0.04
15	2,205	0.05
16	2,205	0.05
17	1,764	0.04

LOT AREA TABLE		
LOT #	AREA (S.F.)	AREA (AC.)
18	1,764	0.04
19	1,765	0.04
20	2,323	0.05
21	1,604	0.04
22	1,604	0.04
23	2,005	0.05
24	2,005	0.05
25	1,604	0.04
26	1,604	0.04
27	1,604	0.04
28	2,005	0.05
29	2,005	0.05
30	1,604	0.04
31	1,604	0.04
32	1,604	0.04
33	2,004	0.05

CURVE TABLE				
CURVE #	LENGTH	RADIUS	CHORD BRNG	CHORD LENGTH
C1	41.60	25.00	S21° 03' 13"E	36.97
C2	6.06	25.00	S75° 40' 09"E	6.04
C3	57.25	51.00	N65° 13' 38"E	54.29
C4	256.22	69.00	S40° 33' 12"E	132.40
C5	31.89	69.00	S79° 03' 54"W	31.60
C6	6.12	69.00	N85° 09' 17"W	6.12
C7	6.06	25.00	N89° 33' 21"W	6.04
C8	27.49	25.00	S52° 00' 19"W	26.12
C9	84.49	830.55	S17° 35' 42"W	84.46

Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYANT — LICENSED PROFESSIONAL ENGINEER — AGRICULTURE & LAND DEVELOPMENT — COMMERCE & CONSTRUCTION — TENNESSEE — STATE OF TENNESSEE — 07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

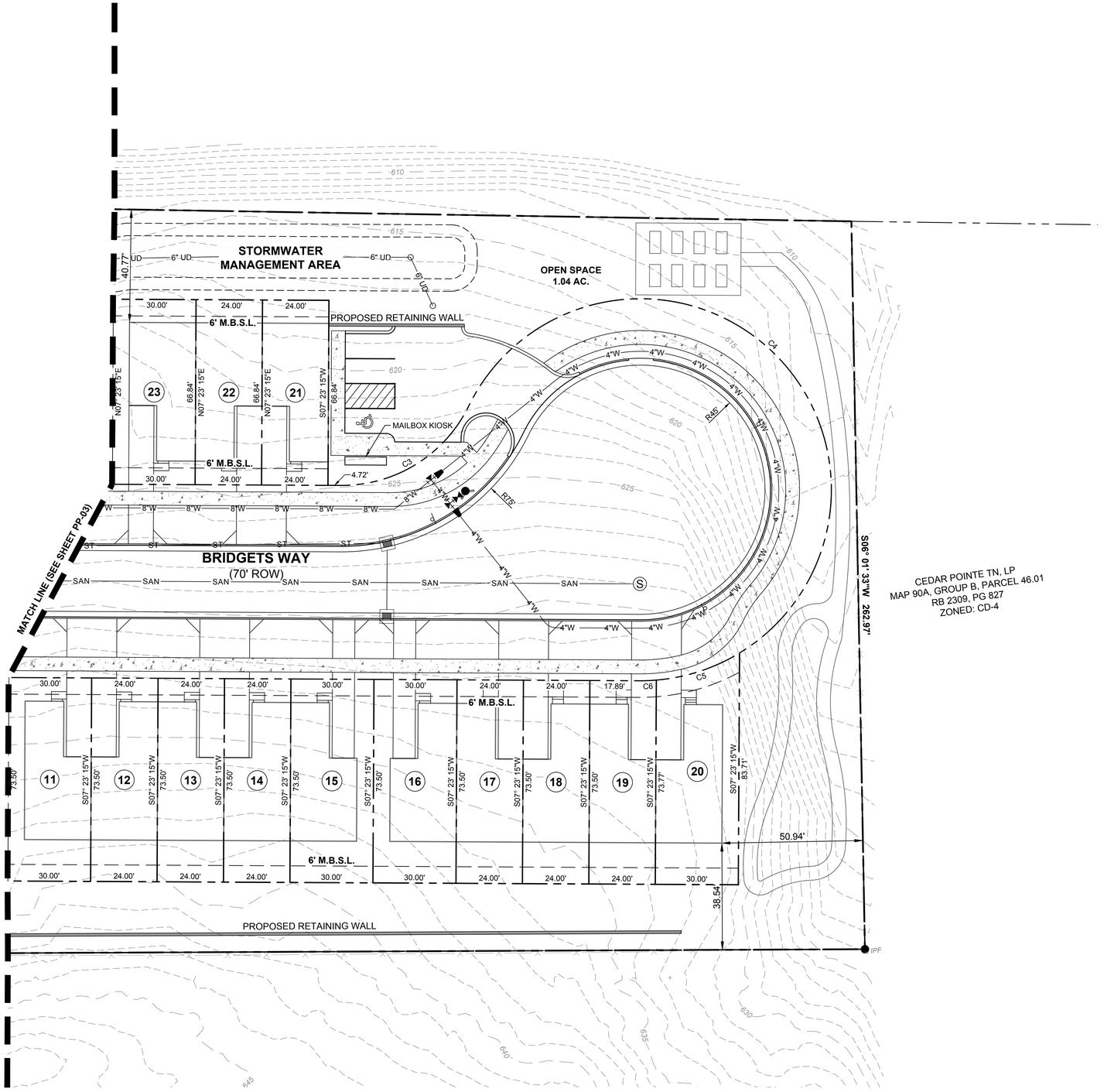
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

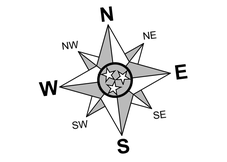
PRELIMINARY PLAT

DATE: JULY 17, 2023
PROJECT NO.: 22-085
DRAWN BY: M2G
CHECKED BY: MWB

SHEET NUMBER:
PP-03

MPA - PP - PRELIMINARY PLAT.DWG / Monday, July 17, 2023 4:35:41 PM





PROJECT NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
3. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
4. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
5. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
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7. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

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27	1,604	0.04
28	2,005	0.05
29	2,005	0.05
30	1,604	0.04
31	1,604	0.04
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33	2,004	0.05

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C9	84.46	830.55	S17° 35' 42"W	84.46

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYANT — LICENSED PROFESSIONAL ENGINEER — AGRICULTURE, COMMERCE & INDUSTRY, RETHROPE NO. 120 — STATE OF TENNESSEE — 07/17/23

PRELIMINARY PLAT FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

PRELIMINARY PLAT

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	JULY 17, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
PP-04

SITE PLAN FOR:

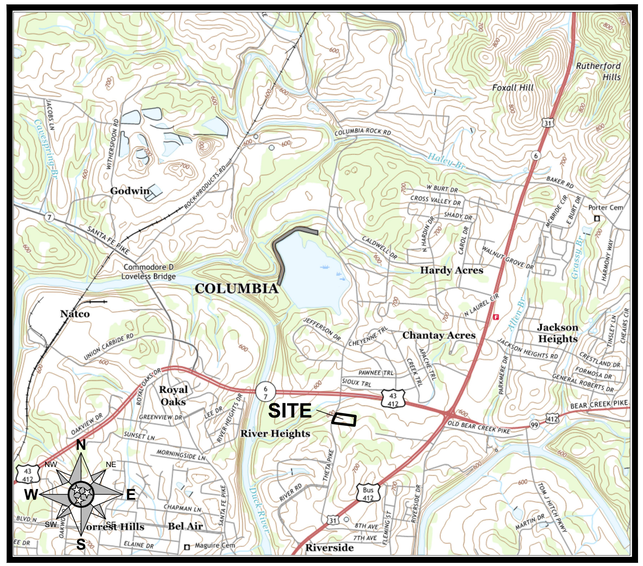
MACKENZIE PLACE

TAX MAP 90B, GROUP B, PARCEL 47.00

220 THETA PIKE

MAURY COUNTY, TENNESSEE

MAY 22, 2023



VICINITY MAP

SCALE: 1" = 2,000'

SOURCE: USGS

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C000	COVER SHEET
C001	GENERAL NOTES
C100	EXISTING CONDITIONS & DEMOLITION PLAN
C200	SITE LAYOUT PLAN
C201	INTERSECTION SIGHT DISTANCE PLAN
C300	OVERALL GRADING & DRAINAGE PLAN
C301	ENLARGED GRADING & DRAINAGE PLAN
C302	ENLARGED GRADING & DRAINAGE PLAN
C303	ENLARGED GRADING & DRAINAGE PLAN
C304	GRADING DETAILS
C305	STORM SEWER DETAILS
C401	INITIAL EPSC PLAN
C402	INTERMEDIATE EPSC PLAN
C403	FINAL EPSC PLAN
C404	EPSC DETAILS
C500	UTILITY PLAN
C501	OFFSITE SANITARY SEWER PLAN & PROFILE
C502	SANITARY SEWER PLAN & PROFILE
C600	SITE DETAILS
C601	UTILITY DETAILS
C602	UTILITY DETAILS
LP1.0	TREE PRESERVATION PLAN
LP2.0	LANDSCAPE PLAN
A0.0	ARCHITECTURAL ELEVATIONS
A0.1	ARCHITECTURAL ELEVATIONS
A1.0	ARCHITECTURAL FIRST FLOOR PLAN
A2.0	ARCHITECTURAL SECOND FLOOR PLAN
A3.0	ARCHITECTURAL RENDERING
A3.1	ARCHITECTURAL RENDERING
A3.2	ARCHITECTURAL RENDERING
A3.3	ARCHITECTURAL RENDERING
A3.4	ARCHITECTURAL RENDERING

PROJECT NOTES:

1. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
2. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
3. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
4. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
5. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

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CONTACT LIST

OWNER/DEVELOPER

WAITS DEVELOPMENT GROUP, LLC
ADDRESS: PO BOX 111285
NASHVILLE, TENNESSEE 37222
PHONE NO.:615-498-4190
CONTACT NAME: JOHN WAITS

CIVIL ENGINEER

M2 GROUP, LLC
P.O. BOX 848
FRANKLIN, TN 37065
PHONE: (615) 406-3415
CONTACT: MATT W. BRYANT, P.E.
E-MAIL: matt@m2groupllc.com

UTILITY CONTACTS:

WATER SUPPLY:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

SANITARY SEWER
COLUMBIA WASTEWATER DEPARTMENT
1244 Treatment Plant Road
COLUMBIA, TN 38401
(931) 560-1001

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(931) 388-4833

GAS SERVICE
ATMOS ENERGY CORPORATION
810 NASHVILLE HWY
COLUMBIA, TN 38401
(931) 388-9136

811 Know what's below. Call before you dig.

DESCRIPTION | DATE | REVISION #

MATTHEW W. BRYANT — REGISTERED ENGINEER — COMMERCIAL — CERTIFICATE No. — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

COVER SHEET

DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C000

MPA - COVER SHEET.DWG / Monday, May 22, 2023 2:10:37 PM

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION OR EARTH MOVING OPERATIONS. INFORM ENGINEER OF ANY CONFLICTS DETRIMENTAL TO THE DESIGN INTENT.
2. 72 HOURS BEFORE DIGGING IS TO COMMENCE, THE CONTRACTOR SHALL NOTIFY THE FOLLOWING AGENCIES: TENNESSEE 811 AND ALL OTHER AGENCIES THAT MAY HAVE UNDERGROUND UTILITIES INVOLVING THIS PROJECT AND ARE NON-MEMBERS OF TENNESSEE 811.
3. THE CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
4. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES TO PERSONNEL, EQUIPMENT AND/OR EXISTING FACILITIES OCCURRING IN THE COURSE OF THE DEMOLITION AND CONSTRUCTION DESCRIBED IN THE PLANS AND SPECIFICATIONS.
5. CONTRACTOR SHALL OBTAIN A PERMIT FOR ALL CONSTRUCTION ACTIVITIES AND PERFORM SAID ACTIVITIES IN ACCORDANCE WITH ALL LOCAL, STATE, FEDERAL & OSHA REGULATIONS.
6. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL APPLICABLE PERMITS, PAY ALL REQUIRED FEES AND ATTEND REQUIRED PRE-CONSTRUCTION MEETINGS WITH CITY AND UTILITY COMPANIES PRIOR TO BEGINNING WORK.
7. ANY WORK PERFORMED IN THE LOCAL RIGHT OF WAYS SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE NECESSARY PERMITS FOR THE WORK, SCHEDULE NECESSARY INSPECTIONS, AND PROVIDE THE NECESSARY TRAFFIC CONTROL MEASURES AND DEVICES, ETC., FOR WORK PERFORMED IN THE RIGHT OF WAYS.
8. THE CONTRACTOR IS TO PERFORM ALL INSPECTIONS AS REQUIRED BY THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC) FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND FURNISH OWNERS REPRESENTATIVE WITH WRITTEN REPORTS. OWNER WILL SUBMIT THE NOTICE OF INTENT (NOI) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN ORDER TO OBTAIN A NOTICE OF COVERAGE (NOC) UNDER THE STATE OF TENNESSEE NPDES PERMIT. THE CONTRACTOR WILL BE REQUIRED TO SIGN THE NOI AND SUBMIT UPDATED NOI TO THE STATE OF TENNESSEE UPON SELECTION TO COMPLETE THE CONSTRUCTION AND BE A PERMITTEE LISTED ON THE NOC.
9. CONTRACTOR SHALL IMPLEMENT ALL SOIL AND EROSION CONTROL, PRACTICES REQUIRED BY CITY OF COLUMBIA AND TDEC.
10. ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF CONSTRUCTION AND ARE TO FINAL GRADE AND ARE TO REMAIN SO, SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL IN ACCORDANCE WITH SPECIFICATIONS.
11. ALL WORK SHALL COMPLY WITH THE TENNESSEE DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, AND ALL CONSTRUCTION WORK SHALL BE DONE ACCORDING TO SAID SPECIFICATIONS AND IN ACCORDANCE WITH APPLICABLE STANDARDS OF CITY OF COLUMBIA SUBDIVISION REGULATIONS.
12. ALL WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE LATEST REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT.
13. CONTRACTOR SHALL REFER TO OTHER PLAN SHEETS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.
14. BEFORE INSTALLATION OF STORM OR SANITARY SEWER, OR OTHER UTILITY THE CONTRACTOR SHALL VERIFY ALL CROSSINGS, BY EXCAVATION WHERE NECESSARY, AND INFORM THE OWNER AND THE ENGINEER OF ANY CONFLICTS. THE ENGINEER WILL BE HELD HARMLESS IN THE EVENT THEY ARE NOT NOTIFIED OF DESIGN CONFLICTS PRIOR TO CONSTRUCTION.
15. WHERE CURB IS PRESENT, DIMENSIONS ARE SHOWN TO THE FACE OF CURB, OTHERWISE DIMENSIONS ARE SHOWN TO THE EDGE OF PAVEMENT OR AS NOTED.
16. SITE SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
17. CONCRETE WALKS SHALL BE 4" THICK OVER 4" COMPACTED GRAVEL WITH CONTROL JOINTS EQUALLY SPACED AT IN ACCORDANCE WITH ACI 330R-01 AND ACI 325R 9-91, ISOLATION JOINTS AT ALL FIXED STRUCTURES (MANHOLES, INLETS, WALLS, BUILDING, ETC.). ALL SIDEWALKS ARE TO BE BROOM FINISHED.
18. CONSTRUCTION OF ALL ROADWAYS AND SIDEWALKS SHALL MEET THE REQUIREMENTS OF CITY OF COLUMBIA ROADWAY CONSTRUCTION CRITERIA AND STANDARD DETAILS.
19. CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH STATE DEPARTMENT OF TRANSPORTATION REGULATIONS AND AS REQUIRED BY LOCAL AGENCIES WHEN WORKING IN AND/OR ALONG STREETS, ROADS, HIGHWAYS, ETC. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL AND COORDINATE WITH LOCAL AND/OR STATE AGENCIES REGARDING THE NEED, EXTENT AND LIMITATIONS ASSOCIATED WITH INSTALLING AND MAINTAINING TRAFFIC CONTROL MEASURES.
20. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL BE IN ACCORDANCE WITH ALL FEDERAL OSHA REGULATIONS. CONTRACTOR TO PAY PARTICULAR ATTENTION TO 29 CFR PART 1926, SUBPARTS M AND P.

DEMOLITION NOTES

1. CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD BY THE CONTRACTOR.
2. NO TREES SHALL BE REMOVED, NOR VEGETATION DISTURBED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
3. TREE PROTECTION FENCING SHALL BE IN ACCORDANCE WITH CITY OF COLUMBIA STANDARDS AND DETAILED DRAWINGS. DO NOT OPERATE OR STORE EQUIPMENT, NOR HANDLE OR STORE MATERIALS WITHIN THE DRIP LINES OF THE TREES SHOWN TO REMAIN.
4. PROTECTION OF EXISTING TREES AND VEGETATION: PROTECT EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN DRIP LINE, EXCESS FOOT OR VEHICULAR TRAFFIC, OR PARKING OF VEHICLES WITHIN DRIP LINE. PROVIDE TEMPORARY GUARDS TO PROTECT TREES AND VEGETATION TO BE LEFT STANDING.
5. ALL DEMOLITION WASTE AND CONSTRUCTION DEBRIS, OTHER THAN TOPSOIL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE IN A STATE APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. REPAIR DAMAGE ACCORDING TO THE APPROPRIATE UTILITY COMPANY STANDARDS AND AT THE CONTRACTOR'S EXPENSE.
6. ALL UTILITY DISCONNECTION, REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY / AGENCY. UTILITY CONTACTS ARE LISTED ON THE COVER SHEET.
7. THE BURNING OF CLEARED MATERIAL AND DEBRIS SHALL NOT BE ALLOWED UNLESS CONTRACTOR OBTAINS PRIOR WRITTEN AUTHORIZATION FROM THE LOCAL AUTHORITIES.
8. EROSION & SEDIMENT CONTROL MEASURES AROUND AREAS OF DEMOLITION SHALL BE PROPERLY INSTALLED AND FUNCTION PROPERLY PRIOR TO INITIALIZATION OF DEMOLITION ACTIVITIES.
9. HAZARDOUS MATERIALS ARE NOT EXPECTED, IF FOUND ON SITE, SUCH MATERIALS SHALL BE REMOVED BY A LICENSED HAZARDOUS MATERIALS CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IF HAZARDOUS MATERIALS ARE ENCOUNTERED.
10. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE, FEDERAL AND OSHA REGULATIONS DURING ALL DEMOLITION ACTIVITIES.
11. CONTRACTOR SHALL PROTECT ALL CORNER PINS, MONUMENTS, PROPERTY CORNERS AND BENCHMARKS DURING DEMOLITION ACTIVITIES. IF DISTURBED, CONTRACTOR SHALL HAVE DISTURBED ITEMS RESET BY A LICENSED SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
12. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND FEATURES TO REMAIN. ANY ITEMS TO REMAIN THAT HAVE BEEN DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
13. THE CONTRACTOR SHALL USE SUITABLE METHODS TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION ACTIVITIES.
14. ANY UTILITY AND STRUCTURE REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED AND PROPERLY DOCUMENTED BY A CERTIFIED PROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY COMPANY, MUNICIPALITY AND/OR AGENCY. DEMOLITION OF REGULATED ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO WELLS, ASBESTOS, UNDER GROUND STORAGE TANKS, SEPTIC TANKS AND ELECTRIC TRANSFORMERS. DEMOLITION CONTRACTOR SHALL REFER TO ANY ENVIRONMENTAL STUDIES FOR DEMOLITION RECOMMENDATIONS AND GUIDANCE AVAILABLE ENVIRONMENTAL STUDIES MAY INCLUDE, BUT ARE NOT LIMITED TO PHASE I ESA, PHASE II ESA, WETLAND AND STREAM DELINEATION AND ASBESTOS SURVEY. ALL APPLICABLE ENVIRONMENTAL STUDIES SHALL BE MADE AVAILABLE UPON REQUEST.

LAYOUT NOTES

1. THE CONTRACTOR SHALL CHECK EXISTING GRADES, DIMENSIONS, AND INVERTS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. RELOCATE EXISTING UTILITIES AS INDICATED, OR AS NECESSARY FOR CONSTRUCTION.
3. PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ALL UTILITIES; INCLUDING, BUT NOT LIMITED TO, ALL UTILITIES AND CROSSINGS PRIOR TO PAVEMENT INSTALLATION.
4. ALL DAMAGE TO EXISTING PAVEMENT TO REMAIN, WHICH RESULTS FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH LIKE MATERIALS AT THE CONTRACTOR'S EXPENSE.
5. SITE DIMENSIONS SHOWN ARE TO THE FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL MAINTAIN ONE SET OF AS-BUILT/RECORD DRAWINGS ON-SITE DURING CONSTRUCTION FOR DISTRIBUTION TO THE OWNER AND/OR OWNER'S REPRESENTATIVE UPON COMPLETION.
7. THIS SITE LAYOUT IS SPECIFIC TO THE APPROVALS NECESSARY FOR THE CONSTRUCTION IN ACCORDANCE WITH CITY OF COLUMBIA REQUIREMENTS. NO CHANGES TO THE SITE LAYOUT ARE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. CHANGES MADE TO THE SITE LAYOUT WITHOUT APPROVAL IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. CHANGES INCLUDE BUT ARE NOT LIMITED TO, INCREASED IMPERVIOUS PAVEMENT, ADDITION / DELETION OF PARKING SPACES, MOVEMENT OF CURB LINES, CHANGES TO DRAINAGE STRUCTURES AND PATTERNS, LANDSCAPING, ETC.
8. CONTRACTOR SHALL PERFORM A PROOF ROLL PER CITY OF COLUMBIA REQUIREMENTS PRIOR TO STONE AND PAVEMENT INSTALLATION.
9. ALL PAVEMENT MARKINGS SHALL BE INSTALLED USING WHITE OR YELLOW, REFLECTIVE TRAFFIC MATERIALS (SEE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
10. THE CITY WILL MEASURE THE CROSS SLOPE OF FINAL CONSTRUCTED ROADWAYS WITHIN THE SUBDIVISION. THE CROSS SLOPE OF THE FINAL CONSTRUCTED ROADWAYS SHALL BE PER THE ROADWAY SECTION SHOWN ON THE CONSTRUCTION PLANS OR IT SHALL BE REPAIRED AT NO COST TO THE CITY OR OWNER.
11. OWNER SHALL PROVIDE STAKING OF THE FRONT PROPERTY LINES OF EACH LOT AND WILL SET FINAL PROPERTY CORNERS. ALL OTHER STAKING/SURVEYING THAT IS REQUIRED TO CONSTRUCT THE IMPROVEMENTS SHOWN IN THESE CONSTRUCTION PLANS IS THE RESPONSIBILITY OF THE CONTRACTOR.
12. THE ENGINEER SHALL PROVIDE FILES IN COMPUTER-AIDED-DRAFTING (CAD) FORMAT TO THE CONTRACTOR. THE CONTRACTOR WILL BE BOUND BY THE TERMS IN THE ENGINEER'S "CAD FILES DISCLAIMER, WAIVER AND LIMITATION OF LIABILITY" AGREEMENT.

GRADING NOTES

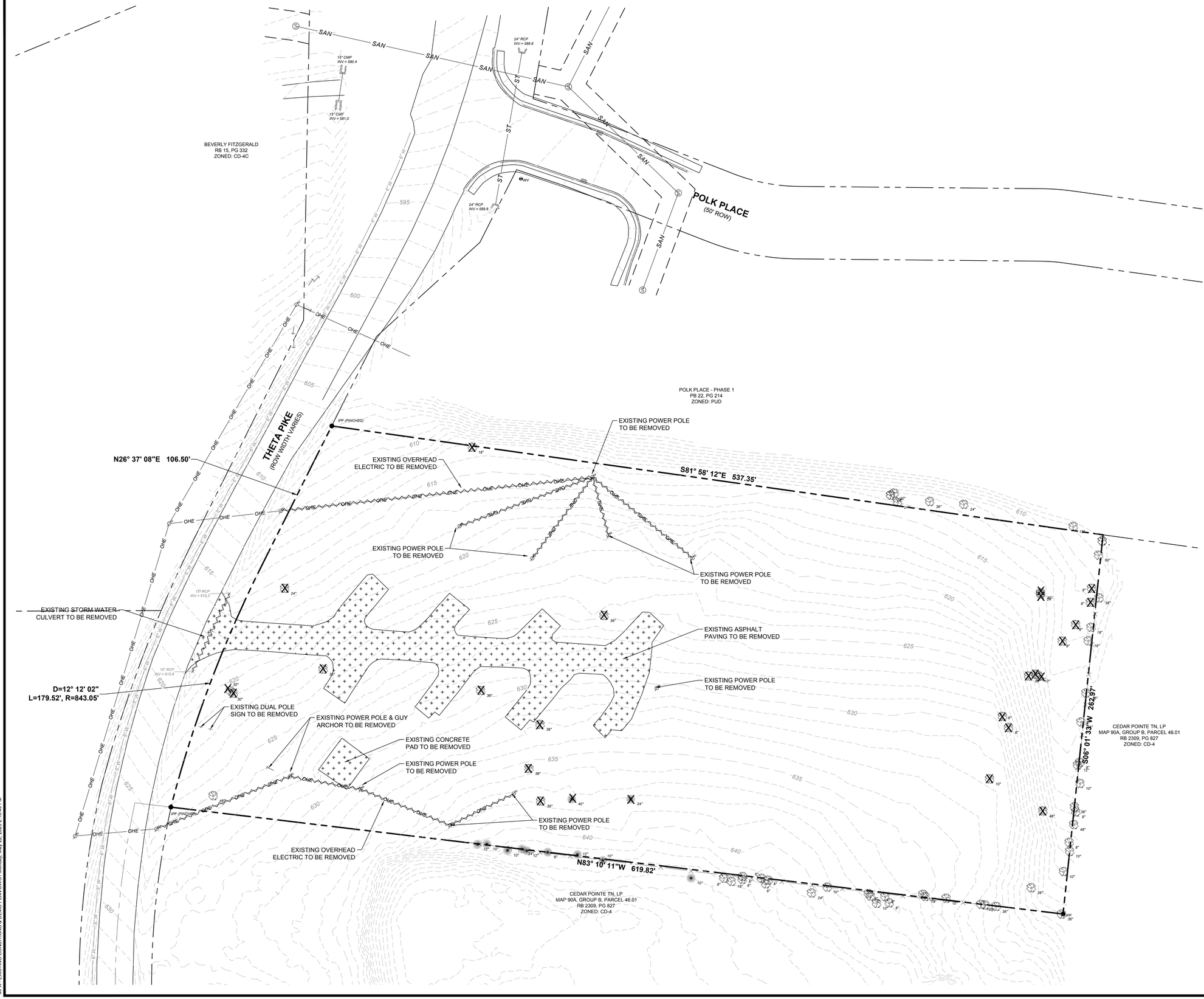
1. THE CONTRACTOR SHALL CHECK ALL EXISTING AND FINISHED GRADES, DIMENSIONS, ETC. PRIOR TO BEGINNING NOTIFY THE OWNERS REPRESENTATIVE OF ANY DISCREPANCIES AND/OR ERRORS IN THE PLANS PRIOR TO COMMENCING WORK.
2. ALL PROPOSED GRADES SHOWN ARE FINAL GRADES, TOP OF GROUND LEVEL, OR TOP OF PAVEMENT, OR GRATE ELEVATION AT THE DRAWDOWN POINT, UNLESS INDICATED OTHERWISE.
3. ALL ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS.
4. CONTRACTOR SHALL ADHERE TO THE EROSION & SEDIMENT CONTROL PLAN PREPARED FOR THIS PROJECT.
5. EARTHWORK SHALL INCLUDE CLEARING AND GRUBBING, STRIPPING AND STOCKPILING TOPSOIL, MASS GRADING, EXCAVATION, FILLING, UNDER CUT AND REPLACEMENT, IF REQUIRED, AND COMPACTION.
6. CONTRACTOR TO REFILL UNDERCUT AREAS (IF REQUIRED) WITH SUITABLE MATERIAL AND COMPACT AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
7. EXCAVATED SUBGRADES AND EACH LAYER OF FILL SHALL BE OF A QUALITY ACCEPTABLE TO THE OWNERS REPRESENTATIVE AND SHALL NOT INCLUDE ORGANIC MATERIAL, BOULDERS, DEBRIS, WET MATERIAL, ETC. CUT OR STRIPPED AREAS SHALL BE PROOF ROLLED PRIOR TO ANY FILLING. ALL GRADING ACTIVITY AND PLACEMENT OF MATERIAL SHALL BE MONITORED BY A QUALIFIED GEOTECHNICAL ENGINEER (OR THEIR REPRESENTATIVE), OR AS DIRECTED BY THE OWNERS REPRESENTATIVE. MATERIAL SHALL MEET OR EXCEED COMPACTION REQUIREMENTS SPECIFIED IN THE SPECIFICATIONS PUBLISHED BY CITY OF COLUMBIA.
8. PLACE TOPSOIL OVER THE SUBGRADE OF UNPAVED, DISTURBED AREAS TO A MINIMUM DEPTH OF 6". TOPSOIL SHALL BE FREE OF ROCK AND DEBRIS.
9. ALL SLOPES IN NON-PAVED AREAS SHALL BE 3:1 (HORIZONTAL:VERTICAL) MAXIMUM UNLESS NOTED OTHERWISE.
10. ALL AREAS NOT PAVED SHALL BE STABILIZED IN ACCORDANCE WITH THE EROSION & SEDIMENT CONTROL PLAN, UNLESS NOTED OTHERWISE.
11. ALL FILLS SHALL BE CONTROLLED, COMPACTED, AND INSPECTED BY AN APPROVED TESTING LABORATORY OR AN INSPECTOR FROM THE APPROPRIATE GOVERNMENTAL AGENCY.
12. ALL EXCESS SOIL MATERIALS, OTHER THAN TOPSOIL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE (INCLUDING ALL CHARTER COMMERCIAL, LLC PROPERTY OR FUTURE PHASES OF HIGH PARK HILL SUBDIVISION) AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE SITE EARTHWORK BY IMPORTING OR EXPORTING AS NECESSARY TO ACHIEVE DESIGN GRADES AND SPECIFICATIONS.
14. THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO ADJACENT PROPERTIES OCCURRING DURING CONSTRUCTION OF THIS PROJECT. NO WORK SHALL BE PERFORMED OUTSIDE THE PROJECT BOUNDARY WITHOUT PROPER AGREEMENTS WITH THE AFFECTED PROPERTY OWNERS.
15. THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES SHOWN HEREON ARE BASED ON UTILITY COMPANY RECORDS, AND WHERE POSSIBLE, FIELD MEASUREMENTS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 3 DAYS BUT NOT MORE THAN 10 DAYS PRIOR TO ANY EXCAVATION AND REQUEST FIELD VERIFICATION OF UTILITY LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES TO REMAIN. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGED UTILITIES ACCORDING TO LOCAL CODES AT THE CONTRACTORS EXPENSE.
16. THE GENERAL CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR JOB SITE CONDITIONS, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY DURING CONSTRUCTION. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
17. MATERIALS NOT SUITABLE FOR FILL OR REUSE SHALL BE DISPOSED OF OFFSITE IN ACCORDANCE WITH THE REQUIREMENTS OF CITY OF COLUMBIA AND AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE.
18. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT T.O.S.H.A. PROVISIONS AND THE MANUAL OF ACCIDENT PREVENTION AND CONSTRUCTION, ISSUED BY THE AGC OF AMERICA, INCORPORATED, AND THE SAFETY AND HEALTH REGULATIONS OF CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
19. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGH THE SITE DURING ALL PHASES OF CONSTRUCTION.
20. CONTRACTOR SHALL REMOVE FROM THE LIMITS OF DISTURBANCE ALL UNSUITABLE MATERIAL, DEBRIS, LARGER BOULDERS, DELETERIOUS MATERIAL, ETC. STOCKPILING OF ANY MATERIAL IN FUTURE PHASES OF THIS SUBDIVISION IS PROHIBITED WITHOUT THE EXPRESS WRITTEN CONSENT OF THE DEVELOPER AND THE ENGINEER OF RECORD. CONSENT TO PLACE ANY MATERIAL IN FUTURE PHASES OF THIS SUBDIVISION SHALL ONLY BE GRANTED UNDER THE FOLLOWING PROVISIONS:
    - IF THE AREA IS CLEARED, MAINTAINED AND PROPER EROSION CONTROL MEASURES INSTALLED TO PREVENT EROSION OR SEDIMENT DEPOSITION.
    - MATERIAL IS PLACED AND GRADED IN A PERMANENT LOCATION THAT WILL NOT BE REQUIRED TO BE MOVED IN A FUTURE PHASE OF THIS SUBDIVISION DEVELOPMENT AND PERMANENTLY STABILIZED IN ACCORDANCE WITH TDEC AND CITY REGULATIONS.
21. ALL SOILS, REGARDLESS OF THE CHARACTER OF SURFACE AND SUBSURFACE CONDITIONS ENCOUNTERED, ARE CONSIDERED TO BE UNCLASSIFIED. THE CONTRACTOR RECOGNIZES THAT THIS PROJECT IS LOCATED IN AN AREA WHERE ROCK ENCOUNTER IS LIKELY. THE CONTRACTOR IS RESPONSIBLE TO VISIT THE SITE, MAKE ANY TESTS, BORES, TEST PITS, SURVEYS, ETC. NECESSARY TO FAMILIARIZE HIMSELF WITH ALL SPECIFIC SITE CONDITIONS RELATED TO THIS PROJECT. NO CHANGES IN THE CONTRACT SUM OR THE CONTRACT TIME WILL BE AUTHORIZED FOR ANY ROCK ENCOUNTER, THE EXCAVATION/REMOVAL THEREOF, OR DISPOSAL OF ROCK/SOIL MIX AND/OR UNSUITABLE SOIL

STORM DRAINAGE NOTES

1. DISTANCES SHOWN ON PIPING ARE HORIZONTAL DISTANCES FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE, UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE INSTALLATION, INSPECTION, TESTING AND FINAL ACCEPTANCE OF ALL NEW STORMWATER MANAGEMENT FACILITIES CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE REGULATING AGENCIES CONCERNING INSTALLATION, INSPECTION AND APPROVAL OF THE STORM DRAINAGE SYSTEM CONSTRUCTION.
3. ALL STORMWATER MANAGEMENT FACILITIES, INCLUDING COLLECTION AND CONVEYANCE STRUCTURES, SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES AND REGULATIONS.
4. THE CONTRACTOR IS TO CONSTRUCT CURBS, CATCH BASINS, PIPING, ETC. AS REQUIRED TO CONVEY THE LANDSCAPED & PAVED SURFACE DRAINAGE THROUGH THE SITE.
5. STORM SEWER PIPE LABELED "RCP" SHALL BE REINFORCED CONCRETE PIPE. ALL STORM IS TO BE INSTALLED PER CITY OF COLUMBIA REQUIREMENTS AND SPECIFICATIONS.
6. STORM SEWER IS TO BE BEDDED WITH CLEAN GRANULAR MATERIAL (AGGREGATE) CONSISTING OF AASHTO #57 OR #67 STONE. BEDDING TO BE MINIMUM OF 6" BELOW & 12" ABOVE AND ON THE SIDES OF THE PIPE OR AS REQUIRED BY CITY OF COLUMBIA INSPECTOR.
7. ALL TRENCH SPOILS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
8. CONTRACTOR SHALL INCLUDE A LINE ITEM IN THEIR CONTRACT TO THE OWNER FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROL MEASURES AT THE END OF THE BOND PERIOD WITH CITY OF COLUMBIA.

EROSION AND SEDIMENT CONTROL NOTES

1. THE ISSUED NOTICE OF COVERAGE (NOC) OF THE PERMIT TO DISCHARGE CONSTRUCTION ACTIVITY STORMWATER SHALL BE POSTED NEAR THE SITE CONSTRUCTION ENTRANCE. THE CONTRACTOR SHALL HAVE THE SWPPP AND A SET OF APPROVED EPSC PLANS ON SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR WILL BE REQUIRED TO SIGN THE NOTICE OF INTENT (NOI) AND SUBMIT UPDATED NOI TO THE STATE OF TENNESSEE UPON SELECTION TO COMPLETE THE CONSTRUCTION AND BE A PERMITTEE LISTED ON THE NOC.
2. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
3. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
4. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY TDEC PRIOR TO ADDITIONAL DISTURBANCE.
5. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
6. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
7. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
8. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
9. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
10. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
11. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
12. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN TCP-10 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
13. FOR PERMANENT STABILIZATION OF DRAINAGE SWALES, INSTALL TURF REINFORCEMENT MATTING (TENSAR NORTH AMERICAN GREEN SC250 OR APPROVED EQUAL) PER MANUFACTURERS' RECOMMENDATIONS.
14. FOR PERMANENT STABILIZATION OF PERMANENT DETENTION POND, INSTALL SOD PER MANUFACTURERS' RECOMMENDATIONS. SOD SHALL BE AS FOLLOWS: SOD SHALL BE HIGH-QUALITY TURF TYPE TALL FESCUE OF KNOWN GENETIC ORIGIN. FREE OF NOXIOUS WEEDS, DISEASE, AND INSECT PROBLEMS. SOD SHALL APPEAR HEALTHY AND VIGOROUS, AND CONFORM TO ALL SPECIFICATIONS IN THE TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
15. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
16. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
17. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING PLANS. THE EQUIPMENT NECESSARY TO IMPLEMENT A CLEANUP SHALL BE MADE AVAILABLE TO FACILITY PERSONNEL. THE OPERATOR SHALL IMMEDIATELY NOTIFY THE DESIGNATED STATE AND LOCAL GOVERNMENT AGEN



N
NW NE
W E
SW SE
S

30' 0 30' 60'
GRAPHIC SCALE

LEGEND

- ASPHALT REMOVAL
- UTILITY REMOVAL
- TREE REMOVAL
- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPEF
- EXISTING INDEX CONTOUR
- EXISTING OVERHEAD ELECTI
- EXISTING SANITARY SEWER I
- EXISTING TREELINE
- EXISTING BUSHES
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER LIN
- FIRE HYDRANT
- WATER METER
- TREE, DECIDUOUS
- TREE, CONIFER
- IRON PIPE FOUND (IPF)
- SANITARY MANHOLE
- WATER BOX (WATER VALVE)
- POWER POLE
- CURB INLET

SURVEYOR'S NOTES

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. THE FIELD SURVEY WAS COMPLETED ON MAY, 2022.
3. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD.
4. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
5. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
6. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP". 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
7. UTILITIES SHOWN HEREON WERE COMPILED FROM VISIBLE STRUCTURES AT THE SITE, INFORMATION FROM PLANS, AND PHYSICAL MARKINGS AND COMBINED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. VERIFICATION OF EXISTENCE, LOCATIONS, AND DEPTH SHOULD BE MADE BEFORE CONDUCTING ANY EXCAVATION IN THE VICINITY OF THE UTILITY.
8. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.
9. NO TITLE REPORT WAS PROVIDED TO THIS SURVEYOR REGARDING THE SUBJECT PROPERTIES, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH AND REPORT MAY DISCLOSE.

REFERENCE

SEE SEE C001 FOR GENERAL AND DEMOLITION NOTES.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED LAND SURVEYOR
NUMBER 2609
COMMERCIAL
CERTIFICATE NO.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

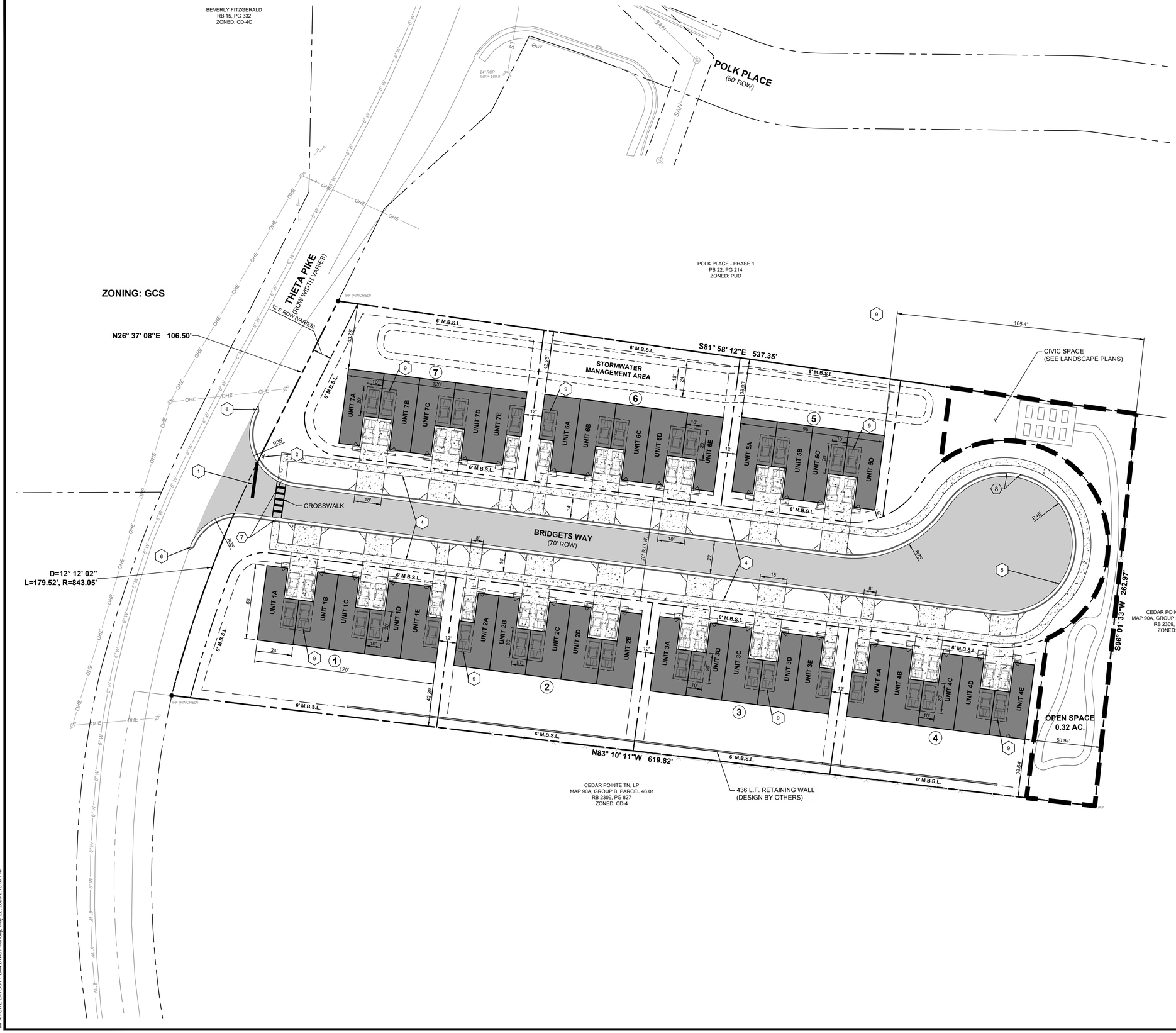
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

EXISTING CONDITIONS & DEMOLITION PLAN

DATE :	PROJECT NO. :	DRAWN BY :	CHECKED BY :
MAY 22, 2023	22-085	M2G	MWB

SHEET NUMBER:
C100

MPA - EXISTING CONDITIONS & DEMO PLAN.DWG / Monday, May 22, 2023 2:10:49 PM



SITE PLAN KEY NOTES

1. 2' WIDE x 18' LONG THERMOPLASTIC STOP BAR
2. STOP / STREET SIGN (REF. SHEET C600)
3. PROPOSED LIGHT POLE/FIXTURE, SEE SITE PHOTOMETRICS PLAN
4. 5' CONCRETE SIDEWALK (REF SHEET C600)
5. CURB AND GUTTER (TYP.) (REF. SHEET C600)
6. CURB TAPER (REF. SHEET C6.0)
7. ADA RAMP (REF. SHEET C6.0)
8. 2' WIDE CURB CUT
9. UNIT PARKING (2 SPACES PER UNIT)

LOCAL NOTE:

PROJECT IS INTENDED TO BE PLATTED AND RECORDED UNDER THE HORIZONTAL PROPERTY REGIME STANDARDS OF THE STATE OF TENNESSEE. THEREFORE A PRELIMINARY PLAT AND FINAL PLAT ARE NOT REQUIRED.

SITE DATA TABLE

ZONING	CD-4	
TOTAL LOT AREA	3.59	AC.
TOTAL NUMBER OF UNITS	34	EA.
DENSITY	9.47	UNITS / AC.
PARKING SPACES REQUIRED	68	EA.
PARKING SPACES PROVIDED	68	EA.
FRONT YARD SETBACK	6' - 20'	L.F.
SIDE YARD SETBACK	6	L.F.
REAR YARD SETBACK	6	L.F.

Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
AGRICULTURAL
COMMERCIAL
RESIDENTIAL
CERTIFICATE NO. 120,142
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

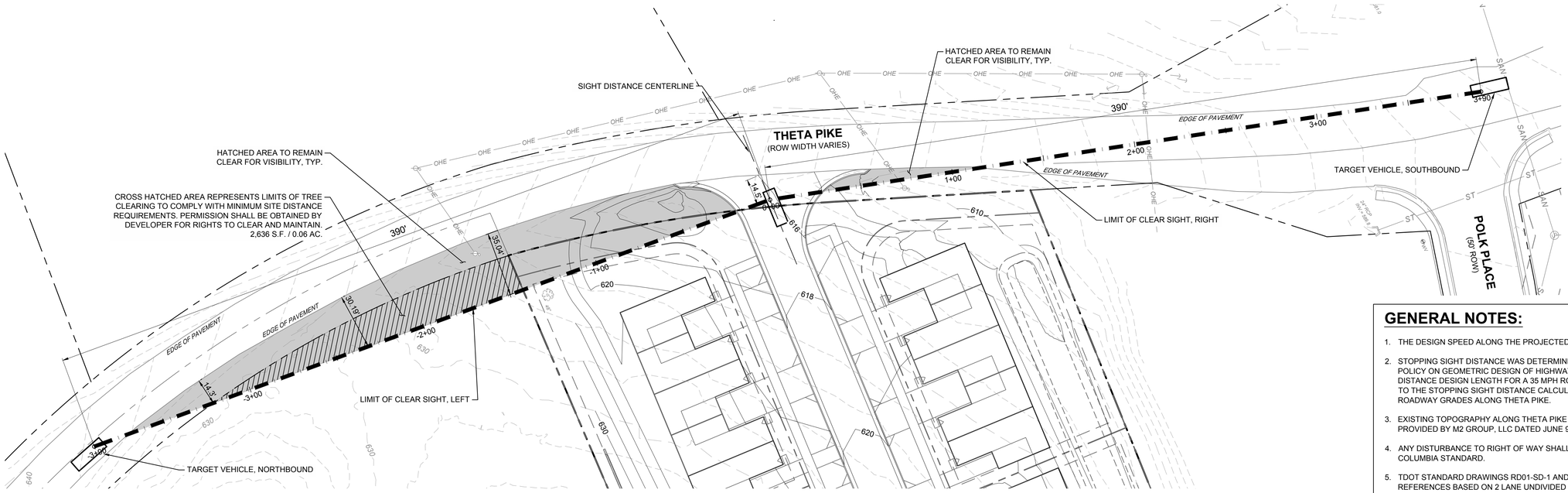
M2G GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SITE LAYOUT PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

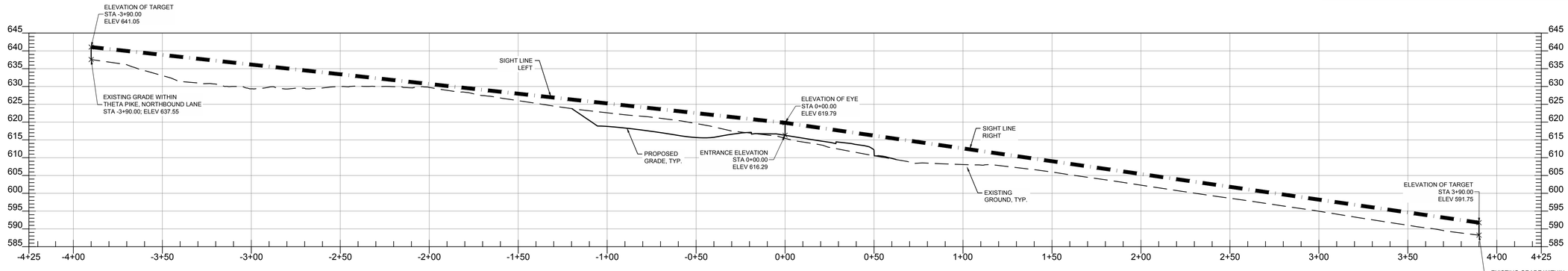
SHEET NUMBER:
C200

MPA - SITE LAYOUT PLAN.DWG | Monday, May 22, 2023 2:10:57 PM



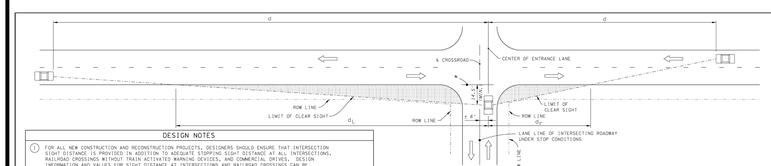
GENERAL NOTES:

1. THE DESIGN SPEED ALONG THE PROJECTED CORRIDOR OF THETA PIKE IS 35 MPH.
2. STOPPING SIGHT DISTANCE WAS DETERMINED UTILIZING THE AASHTO GREEN BOOK - A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS. THE STOPPING SIGHT DISTANCE DESIGN LENGTH FOR A 35 MPH ROADWAY ON FLAT GRADE IS 390 FT. REFER TO THE STOPPING SIGHT DISTANCE CALCULATIONS BELOW WHICH ACCOUNT FOR ROADWAY GRADES ALONG THETA PIKE.
3. EXISTING TOPOGRAPHY ALONG THETA PIKE IS DERIVED FROM TOPOGRAPHIC SURVEY PROVIDED BY M2 GROUP, LLC DATED JUNE 9, 2022.
4. ANY DISTURBANCE TO RIGHT OF WAY SHALL BE RESURFACED AS PER CITY OF COLUMBIA STANDARD.
5. TDOT STANDARD DRAWINGS RD01-SD-1 AND RD01-SD-3 WERE UTILIZED AS DESIGN REFERENCES BASED ON 2 LANE UNDIVIDED ROADWAY - SYMMETRICAL LAYOUT.



SIGHT DISTANCE PROFILE

SCALE H:1"=30'; V:1"=15'



ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD, STOP CONDITIONS

DEFINITIONS

- d =CLEAR LINE SIGHT DISTANCE
- d_R= CLEAR LINE OF SIGHT DISTANCE TO THE RIGHT
- d_L= CLEAR LINE OF SIGHT DISTANCE TO THE LEFT
- d_E= DISTANCE MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO A POINT ON THE MEDIAN CLEAR ZONE LIMIT OR HORIZONTAL CLEARANCE LIMIT FOR THE FAR SIDE ROADWAY OF THE MAJOR ROADWAY (SEE SHEET RD01-SD-3)

EDGE OF MAJOR ROAD TRAVELED WAY; THE TRAVELED WAY IS THE PORTION OF THE ROADWAY FOR THE MOVEMENT OF VEHICLES, EXCLUSIVE OF SHOULDERS, PARKING SPACES AND MARKED BICYCLE LANES.

DESIGN NOTES

1. FOR ALL NEW CONSTRUCTION AND RECONSTRUCTION PROJECTS, DESIGNERS SHOULD ENSURE THAT INTERSECTION SIGHT DISTANCE IS PROVIDED IN ADDITION TO STOPPING SIGHT DISTANCE AT ALL INTERSECTIONS, RAILROAD CROSSINGS WITHOUT TRAIN ACTUATED WARNING DEVICES, AND COMMERCIAL DRIVES. DESIGN INFORMATION AND VALUES FOR SIGHT DISTANCE AT INTERSECTIONS AND RAILROAD CROSSINGS CAN BE FOUND IN THE 2001 "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" (AASHTO GREEN BOOK), CHAPTER 9, INTERSECTIONS.
2. INTERSECTION SIGHT DISTANCE SHOULD ALSO BE PROVIDED AT ALL PRIVATE DRIVES AND FIELD ENTRANCES WHEN FEASIBLE. IN THE EVENT THAT INTERSECTION SIGHT DISTANCE CANNOT BE ACHIEVED, THE DESIGNER SHALL VERIFY THAT STOPPING SIGHT DISTANCE IS PROVIDED. INTERSECTION SIGHT DISTANCE SHOULD ALWAYS BE PROVIDED FOR A LEFT TURN MOVEMENT FROM THE MAJOR ROAD INTO A PRIVATE DRIVE OR FIELD ENTRANCE.
3. DESIGNERS SHOULD CONSIDER ALL FEATURES THAT COULD LIMIT ADEQUATE SIGHT DISTANCE INCLUDING BUILDINGS, PARKED VEHICLES, HIGHWAY STRUCTURES, ROADSIDE HARDWARE, HEDGES, TREES, BUSHES, UNMOWED GRASS, TALL CROPS, WALLS, FENCES, SLOPES, AND THE TERRAIN ITSELF. THE DETERMINATION OF WHETHER AN OBJECT CONSTITUTES A SIGHT OBSTRUCTION SHOULD CONSIDER THE HORIZONTAL AND VERTICAL ALIGNMENT OF BOTH INTERSECTING ROADWAYS, AS WELL AS THE WEIGHT AND POSITION OF THE OBJECT. IN MAKING THIS DETERMINATION, THE ASSUMED DRIVER'S EYE SHOULD BE 3.5 FT. ABOVE THE SURFACE OF THE INTERSECTING ROAD FOR PASSENGER CARS. FOR LANDSCAPING, THE MATURE SIZE OF THE ITEM SHALL BE USED.
4. IN AREAS OF LIMITED RIGHT-OF-WAY ACQUISITION SUCH AS A CURB AND GUTTER SECTION, ADDITIONAL RIGHT-OF-WAY MAY NEED TO BE ACQUIRED TO ENSURE THAT INTERSECTION SIGHT DISTANCE CAN BE ACHIEVED OR MAINTAINED. IN THE EVENT THAT IT IS NOT FEASIBLE TO OBTAIN MINIMUM INTERSECTION SIGHT DISTANCE, THE DESIGNER SHALL VERIFY THAT STOPPING SIGHT DISTANCE IS PROVIDED. IN THIS EVENT, THE PROJECT DESIGN MANAGER WILL DOCUMENT IN THE PROJECT FILE THE REASON AND STEPS TAKEN TO MITIGATE. INTERSECTION SIGHT DISTANCE IS NOT ONE OF THE THIRTEEN CONTROLLING ELEMENTS OF DESIGN AS DETAILED IN SECTION 3-110.02 OF THE ROADWAY DESIGN GUIDELINES. THEREFORE, DESIGN EXCEPTIONS NEED NOT BE SUBMITTED.
5. DESIGNERS SHALL SHOW SIGHT LINES FOR ALL INTERSECTIONS IN THE DESIGN CADD FILE. SIGHT LINES SHALL ONLY BE SHOWN ON THE PRESENT AND PROPOSED LAYOUT SHEETS WHEN RIGHT-OF-WAY IS REQUIRED FOR THE PURPOSE OF ESTABLISHING OR MAINTAINING INTERSECTION SIGHT DISTANCE. SIGHT LINES SHOULD ALSO BE SHOWN FOR ALL INTERSECTIONS AND DRIVES ON ALL LANDSCAPING PLANS.
6. THE MINIMUM DRIVER EYE SETBACK OF 14.5' FROM THE EDGE OF THE TRAVELED WAY MAY BE ADJUSTED ON ANY INTERSECTION LEG ONLY WHEN JUSTIFIED BY A SITE SPECIFIC FIELD STUDY OF VEHICLE STOPPING POSITION AND DRIVER EYE POSITION.
7. FOR SIGNALIZED INTERSECTIONS SIGHT DISTANCES SHOULD BE DEVELOPED BASED ON AASHTO "CASE D: INTERSECTIONS WITH TRAFFIC SIGNAL CONTROL". AT SIGNALIZED INTERSECTIONS, THE FIRST VEHICLE STOPPED ON ONE APPROACH SHOULD BE VISIBLE TO THE DRIVER OF THE FIRST VEHICLE STOPPED ON EACH OF THE OTHER APPROACHES. THIS ALLOWS DRIVERS TO SEE GAPS IN CROSS TRAFFIC AND JUDGE WHEN GAPS IN ONCOMING TRAFFIC ARE COMPLETE LEFT TURNS. APART FROM THESE SIGHT CONDITIONS, THERE ARE GENERALLY NO OTHER APPROACH OR DEPARTURE SIGHT TRIANGLES NEEDED FOR SIGNALIZED INTERSECTIONS. HOWEVER, IF THE TRAFFIC SIGNAL IS TO BE PLACED ON TWO-WAY FLASHING OPERATION (I.E. FLASHING YELLOW ON THE MAJOR ROAD APPROACHES AND FLASHING RED ON THE MINOR-ROAD APPROACHES) UNDER OFF-PEAK OR NIGHTTIME CONDITIONS, THE SIGHT TRIANGLES FOR STOP CONTROL SHOULD BE PROVIDED FOR THE MINOR ROAD. A RIGHT TURN ON RED SHOULD BE PROVIDED FOR THE MINOR-ROAD APPROACHES. IN ADDITION, IF RIGHT TURNS ON A RED SIGNAL ARE TO BE PERMITTED FROM ANY APPROACH, THEN THE APPROPRIATE DEPARTURE SIGHT TRIANGLE TO THE LEFT FOR CASE B2 SHOULD BE PROVIDED TO ACCOMMODATE RIGHT TURNS FROM THAT APPROACH.
8. WHERE CURVATURE, SUPERELEVATION, ADVERSE SPLIT PROFILES OR OTHER CONDITIONS PRECLUDE THE USE OF STANDARD TREE SIZES AND SPACING, PROOF OF VIEW AND SIGHT DISTANCE RESTRAINTS SHOULD BE DETAILED IN THE PLANS.
9. INTERSECTION SIGHT DISTANCE VALUES ARE PROVIDED FOR PASSENGER VEHICLES, SINGLE UNIT (SU) VEHICLES AND COMBINATION VEHICLES. INTERSECTION SIGHT DISTANCE BASED ON THE PASSENGER VEHICLE IS SUITABLE FOR MOST INTERSECTIONS. WHERE SUBSTANTIAL VOLUMES OF HEAVY VEHICLES ENTER THE MAJOR-ROAD, SUCH AS FROM RAMP TERMINALS WITH STOP CONTROL OR ROADWAYS SERVING TRUCK TERMINALS, THE USE OF TABULATED VALUES FOR I SU1 VEHICLES OR COMBINATION VEHICLES SHOULD BE CONSIDERED.
10. THE INFORMATION SHOWN IS INTENDED SOLELY FOR THE PURPOSE OF CLEAR SIGHT DEVELOPMENT AND MAINTENANCE AT INTERSECTING HIGHWAYS, ROADS AND STREETS, AND IS NOT INTENDED TO BE USED TO ESTABLISH ROADWAY AND ROADSIDE SAFETY EXCEPT AS RELATED TO INTERSECTION SIGHT CORRIDORS.
11. THE INTERSECTION SIGHT DISTANCE TABLES DO NOT SUPERCEDE AASHTO STOPPING SIGHT DISTANCE REQUIREMENTS. THE DESIGNER MUST ENSURE THAT STOPPING SIGHT DISTANCES ARE MET.
12. DETAILS ARE BASED ON THE AASHTO "A POLICY ON GEMETRIC DESIGN OF HIGHWAYS AND STREETS, 2001", CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B AND F, AND THE DEPARTMENT PRACTICES FOR CHANNELIZED MEDIAN OPENINGS (LEFT TURNS ON MAJOR ROADWAYS).

GENERAL NOTES

A. DETAILS APPLY TO BOTH RURAL AND URBAN INTERSECTIONS UNDER STOP SIGN CONTROL OR FLASHING BEACON CONTROL. FOR FULL SIGNAL CONTROLLED INTERSECTIONS SEE DESIGN NOTE NO 7.

B. INTERSECTION SIGHT DISTANCE (id) APPLIES TO NORMAL AND SKEWED INTERSECTIONS (INTERSECTING ANGLES FROM 60° TO 120°) WITH TWO-LANE HIGHWAYS. FOR SKEWED INTERSECTIONS WITH ANGLES LESS THAN 60° OR GREATER THAN 120°, SIGHT DISTANCE (id) IS MEASURED ALONG THE MAJOR ROADWAY FROM THE CENTER OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO THE CENTER OF THE NEAR APPROACH LANE (RIGHT OR LEFT) OF THE MAJOR ROADWAY. DISTANCES d_L AND d_R ARE MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE (CROSS ROAD) OF THE MINOR ROADWAY TO A POINT ON THE EDGE OF THE NEAR SIDE OUTER TRAFFIC LANE ON THE MAJOR ROADWAY. DISTANCE d_E IS MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO A POINT ON THE MEDIAN CLEAR ZONE LIMIT OR HORIZONTAL CLEARANCE LIMIT FOR THE FAR SIDE ROADWAY OF THE MAJOR ROADWAY.

C. 1. THE LIMITS OF CLEAR SIGHT DEFINE A CORRIDOR THROUGHOUT WHICH A CLEAR LINE OF SIGHT MUST BE PRESERVED. SEE VERTICAL LIMITS OF CLEAR SIGHT DETAIL ON SHEET RD01-SD-2.
2. PLANTINGS, FENCES, WALLS, EMBANKMENTS AND VEHICLES AT INTERSECTION STOP LOCATIONS AND VEHICLES ON THE MAJOR ROADWAY WITHIN DIMENSION "c".
3. SINCE OBSERVATIONS ARE MADE IN BOTH DIRECTIONS ALONG THE LINE OF SIGHT, THE REFERENCE DATUM BETWEEN ROADWAYS IS 3'-6" ABOVE RESPECTIVE PAVEMENTS.

D. BARRIER SYSTEMS WITHIN INTERSECTION SIGHT CORRIDORS, WHERE PENETRATION INTO THE CLEAR LINE OF SIGHT MIGHT OCCUR, SHALL BE LOCATED TO PROVIDE THE LEAST ADVERSE AFFECT PRACTICAL.

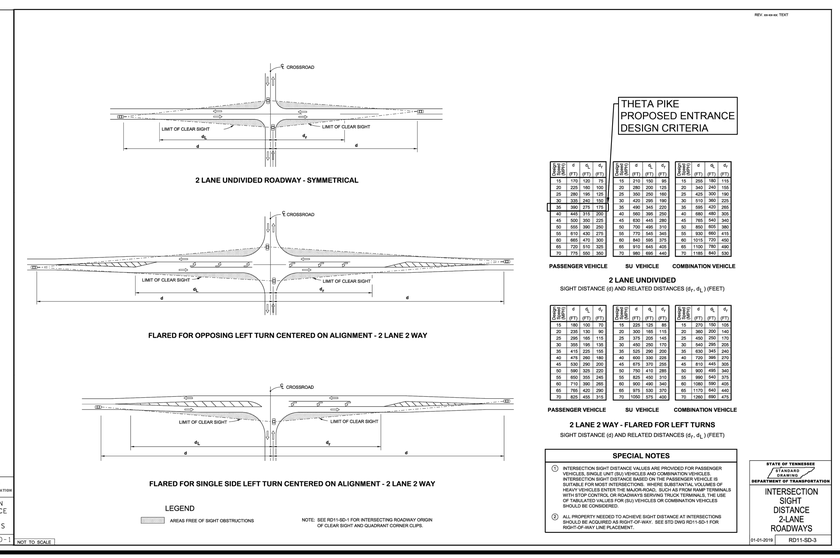
E. ALL PROPERTY NEEDED TO ACHIEVE SIGHT DISTANCE AT INTERSECTIONS SHOULD BE ACQUIRED AS RIGHT-OF-WAY.

F. SIGHT DISTANCE VALUES IN THESE STANDARD DRAWINGS ARE APPROXIMATE FOR GENERALLY FLAT AREAS WHERE THE ROADWAY GRADES ARE IN THE APPROXIMATE RANGE OF 0% TO 6%. FOR LOCATIONS WHERE ROADWAYS ARE CURVED OR WITH GRADES OUTSIDE THE 0% TO 6% RANGE, THE VALUES SHOULD BE ADJUSTED TO ENSURE THAT THEY COMPLY WITH AASHTO "A POLICY FOR GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" AS CURRENTLY ADOPTED BY TDOT.

LEGEND

AREAS FREE OF SIGHT OBSTRUCTIONS

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
INTERSECTION SIGHT DISTANCE DESIGN AND GENERAL NOTES
10-1-08 | RD01-SD-1 | NOT TO SCALE



THETA PIKE
PROPOSED ENTRANCE
DESIGN CRITERIA

2 LANE UNDIVIDED ROADWAY				2 LANE 2 WAY - FLARED FOR LEFT TURNS				2 LANE 2 WAY - FLARED FOR LEFT TURNS			
DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)	DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)	DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	170	105	75	15	215	150	95	15	215	150	95
20	225	160	105	20	280	200	125	20	280	200	125
25	280	195	135	25	350	255	165	25	350	255	165
30	335	245	170	30	420	295	190	30	420	295	190
35	390	310	205	35	485	345	220	35	485	345	220
40	445	372	240	40	555	405	255	40	555	405	255
45	500	355	225	45	630	445	280	45	705	540	340
50	555	390	250	50	700	495	310	50	850	655	395
55	610	430	275	55	770	545	345	55	930	660	415
60	665	470	300	60	840	590	375	60	1015	720	455
65	720	510	325	65	910	645	405	65	1100	780	490
70	775	550	350	70	980	695	440	70	1185	840	530
PASSENGER VEHICLE		SU VEHICLE		COMBINATION VEHICLE							

2 LANE UNDIVIDED
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_R, d_L) (FEET)

DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	190	105	75
20	235	130	80
25	280	165	115
30	350	195	135
35	410	235	150
40	475	260	180
45	530	290	205
50	590	325	225
55	650	355	245
60	710	390	265
65	765	420	290
70	825	455	315

DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	225	120	85
20	300	165	115
25	375	205	145
30	450	250	170
35	525	290	200
40	600	330	225
45	675	370	255
50	750	410	285
55	825	450	310
60	900	490	340
65	975	535	370
70	1050	575	400

DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	215	150	105
20	360	200	140
25	450	250	175
30	540	295	205
35	630	345	240
40	720	395	270
45	810	445	305
50	900	495	340
55	990	540	375
60	1080	590	405
65	1170	640	440
70	1260	690	475

PASSENGER VEHICLE | SU VEHICLE | COMBINATION VEHICLE

2 LANE 2 WAY - FLARED FOR LEFT TURNS
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_R) (FEET)

SPECIAL NOTES

1. INTERSECTION SIGHT DISTANCE VALUES ARE PROVIDED FOR PASSENGER VEHICLES, SINGLE UNIT (SU) VEHICLES AND COMBINATION VEHICLES. INTERSECTION SIGHT DISTANCE BASED ON THE PASSENGER VEHICLE IS SUITABLE FOR MOST INTERSECTIONS. WHERE SUBSTANTIAL VOLUMES OF HEAVY VEHICLES ENTER THE MAJOR-ROAD, SUCH AS FROM RAMP TERMINALS WITH STOP CONTROL OR ROADWAYS SERVING TRUCK TERMINALS, THE USE OF TABULATED VALUES FOR I SU1 VEHICLES OR COMBINATION VEHICLES SHOULD BE CONSIDERED.
2. ALL PROPERTY NEEDED TO ACHIEVE SIGHT DISTANCE AT INTERSECTIONS SHOULD BE ACQUIRED AS RIGHT-OF-WAY. SEE STD DWG RD11-SD-1 FOR RIGHT-OF-WAY LINE PLACEMENT.

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION
INTERSECTION SIGHT DISTANCE 2-LANE ROADWAYS
01-01-2019 | RD11-SD-3

NORTHBOUND STOPPING SIGHT DISTANCE ANALYSIS:

DESIGN SPEED, V: 35 MPH
GRADE, G: -6% (AVERAGE)

STOPPING SIGHT DISTANCE, S: $S = 1.47 * V * 2.5 + [V^2 / (30 * (0.347826 \pm (G / 100)))]$
$S = 1.47 * 40 * 2.5 + [35^2 / (30 * (0.347826 + (-6 / 100)))]$
$S = 270.49$ FT. = 271 FT.

SOUTHBOUND STOPPING SIGHT DISTANCE ANALYSIS:

DESIGN SPEED, V: 35 MPH
GRADE, G: +7% (AVERAGE)

STOPPING SIGHT DISTANCE, S: $S = 1.47 * V * 2.5 + [V^2 / (30 * (0.347826 \pm (G / 100)))]$
$S = 1.47 * 35 * 2.5 + [35^2 / (30 * (0.347826 + (7 / 100)))]$
$S = 226.35$ FT. = 227.00 FT.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED ENGINEER
CERTIFICATE NO. 120161
COMMERCIAL
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

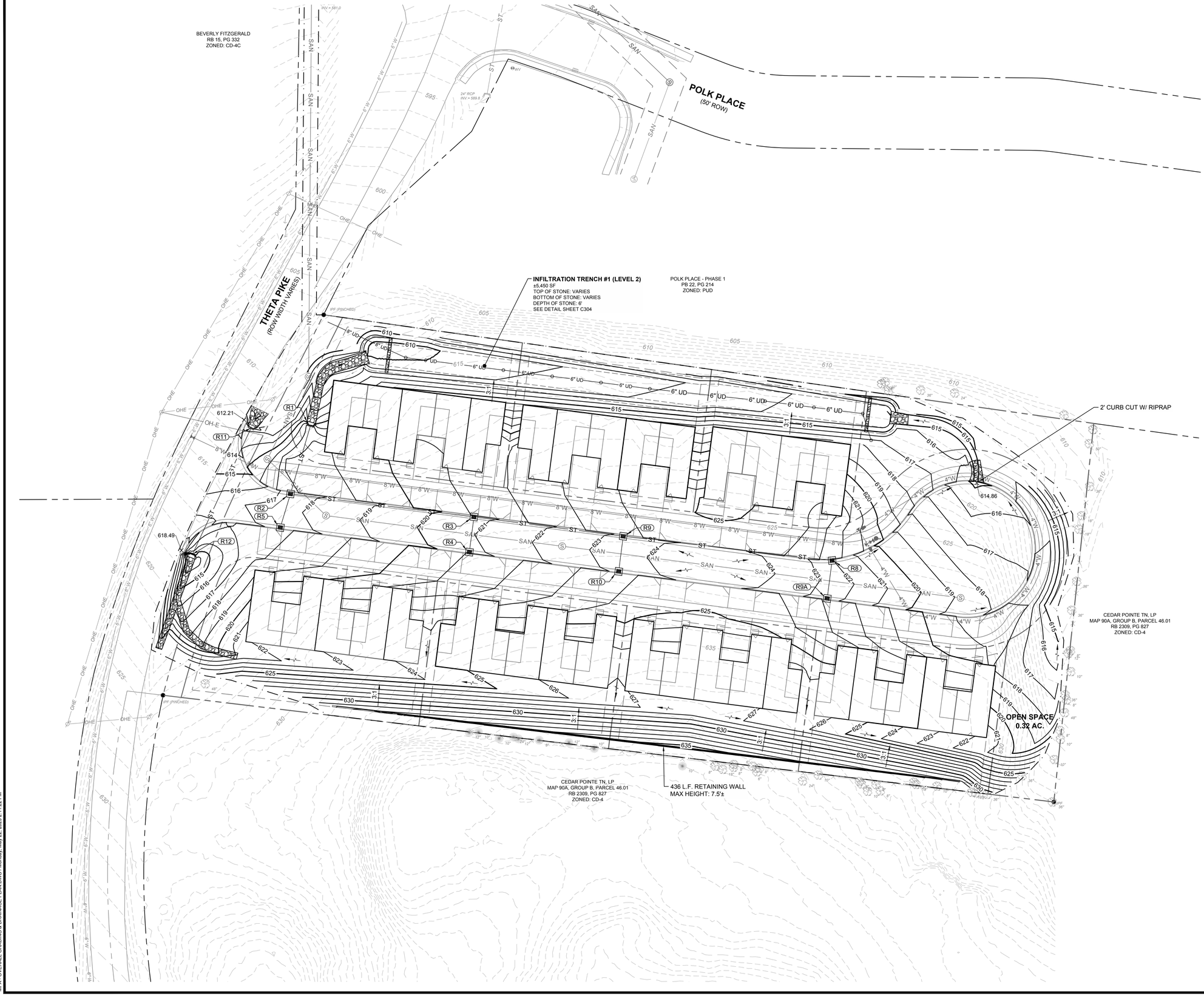
INTERSECTION SIGHT DISTANCE PLAN

DATE:	PROJECT NO. :	DRAWN BY :	CHECKED BY :
MAY 22, 2023	22-085	M2G	MWB

SHEET NUMBER:
C201

811 Know what's below. Call before you dig.

MPA - INTERSECTION SIGHT DISTANCE.DWG / Monday, May 22, 2023 2:11:09 PM



FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

RETAINING WALL NOTE:

SPOT ELEVATIONS AT BOTTOM OF RETAINING WALLS REPRESENTS GROUND LEVEL ELEVATION, NOT THE TOP OF FOOTER. RETAINING WALLS ARE TO BE DESIGNED BY OTHERS.

STORM SEWER NOTE:

STORM SEWER STRUCTURES ARE SHOWN FOR GRAPHICAL PURPOSES ON THIS SHEET. SEE PIPE AND STRUCTURE TABLES ON SHEET C305 FOR ACTUAL STORM STRUCTURE SIZING AND DETAILS.

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
LICENSED ENGINEER
AGRICULTURE
COMMERCIAL
RESIDENTIAL
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

OVERALL GRADING & DRAINAGE PLAN

DATE:	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C300

MPA - OVERALL GRADING & DRAINAGE PLAN.DWG / Monday, May 22, 2023 2:11:22 PM

THETA PIKE
(ROW WIDTH VARIES)

IPF (PINCHED)

618.66

V-SHAPED BOTTOM
STONE SWALE, TYP.

RIP-RAP, TYP.

R11
612.01

GRAVEL FLOW SPREADER,
TYP.

4' WIDE BOTTOM
STONE SWALE, TYP.

UNDERDRAIN OUTFALL
INV: 607.00

BROADCRESTED OVERFLOW WEIR
22.5' WIDTH
INV: 610.50

8" HDPE
UNDERDRAIN OUTLET @ 0.5% MIN. SLOPE

TURF OR STONE PRETREATMENT AREA

PERMEABLE PRETREATMENT BERM
12" TALL
1:1 SIDE SLOPES

INFILTRATION TRENCH
OBSERVATION WELL

INFILTRATION TRENCH #1 (LEVEL 2)
±5,450 SF
TOP OF STONE: VARIES
BOTTOM OF STONE: VARIES
DEPTH OF STONE: 6'
SEE DETAIL SHEET C304

6" CORRUGATED HDPE
UNDERDRAIN AT 0.5% MIN. SLOPE

GRASS SWALE, TYP.
(MIN. 2% SLOPE)

FFE: 622.83
GARAGE FFE 622.18
621.98
GARAGE FFE 622.18
621.98

FFE: 623.83
GARAGE FFE 623.39
623.19
GARAGE FFE 623.39
623.19

FFE: 623.83

FFE: 624.50
GARAGE FFE 624.00
623.80
623.80
GARAGE FFE 624.60
624.40
624.40

FFE: 620.62
GARAGE FFE 620.13
619.93
GARAGE FFE 620.13
619.93

FFE: 620.62

FFE: 621.80
GARAGE FFE 621.31
621.11
GARAGE FFE 621.31
621.11

FFE: 621.80

FFE: 622.50
610.88

610.06
609.50
610.68

BW: 632.26

3:1

MATCH LINE (SEE SHEET C302)

GRAPHIC SCALE
10' 0 10' 20'

Know what's below.
Call before you dig.

DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
AGRICULTURAL
COMMERCIAL
CORPORATE SEAL
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE :	PROJECT NO. :	CHECKED BY :	DRAWN BY :
MAY 22, 2023	22-085	MWB	M2G

SHEET NUMBER:
C301

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG | Monday, May 22, 2023 2:11:39 PM

MATCH LINE (SEE SHEET C301)

MATCH LINE (SEE SHEET C303)

FFE: 625.10
FFE: 626.00
GARAGE FFE 625.30
GARAGE FFE 625.30
625.10
625.10
GRASS SWALE, TYP. (MIN. 2% SLOPE)
FFE: 626.00
FFE: 627.00
GARAGE FFE 626.50
GARAGE FFE 626.50
626.30
626.30
FFE: 627.00
FFE: 628.50
GARAGE FFE 628.02
GARAGE FFE 628.02
627.82
627.82
FFE: 628.50
FFE: 628.50
GARAGE FFE 628.02
GARAGE FFE 628.02
627.82
627.82
FFE: 628.50
FFE: 622.50
GARAGE FFE 622.01
621.81
621.81
GARAGE FFE 622.81
622.61
622.61
FFE: 623.30
FFE: 624.50
GARAGE FFE 624.03
GARAGE FFE 624.03
623.83
623.83
FFE: 624.50
FFE: 625.68
GARAGE FFE 625.20
GARAGE FFE 625.20
625.00
625.00
FFE: 625.68
FFE: 626.00
GARAGE FFE 625.57
GARAGE FFE 625.57
625.37
625.37
FFE: 626.00
FFE: 625.40
BW: 633.09
BW: 633.93
BW: 634.77
BW: 635.56
HP: 627.72
GRADE BREAK
HP: 624.52
GRADE BREAK
3:1
3:1
3:1
3:1
R3
R4
R9
R10
610.88
611.19
611.59
611.56
612.31
612.50
612.82
OBSERVATION WELL, TYP.
INFILTRATION TRENCH #1 (LEVEL 2)
±5,450 SF
TOP OF STONE: VARIES
BOTTOM OF STONE: VARIES
DEPTH OF STONE: 6'
SEE DETAIL SHEET C304
6" CORRUGATED HDPE UNDERDRAIN AT 0.5% MIN. SLOPE
15'
10' 0 10' 20'
GRAPHIC SCALE
N NE E SE S SW W NW

Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN — LICENSED PROFESSIONAL ENGINEER — COMMERCIAL — CERTIFICATE NO. 120183 — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE :	MAY 22, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

SHEET NUMBER:
C302

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG | Monday, May 22, 2023 2:11:40 PM

MATCH LINE (SEE SHEET C302)

FFE: 628.50

FFE: 627.00

GARAGE FFE
626.52

626.32

626.32

FFE: 626.50

GARAGE FFE
625.85

625.65

625.65

FFE: 625.50

GARAGE FFE
623.81

623.61

GARAGE FFE
622.81

623.61

GRASS SWALE, TYP.
(MIN. 2% SLOPE)

FFE: 625.50

FFE: 623.75

GARAGE FFE
622.33

622.13

GARAGE FFE
622.33

622.13

FFE: 623.75

OPEN SPACE
0.32 AC.

FFE: 625.40

624.70

GARAGE FFE
624.90

624.70

GARAGE FFE
624.90

FFE: 625.40

BW: 634.51

BW: 633.51

BW: 632.51

3:1

3:1

3:1

R9A

R8

INFILTRATION TRENCH
UNDERDRAIN CLEANOUT

2' CURB CUT W/ RIPRAP

614.86

6" CORRUGATED HDPE
UNDERDRAIN AT 0.5% MIN. SLOPE

15'

INFILTRATION TRENCH
OBSERVATION WELL

PERMEABLE PRETREATMENT BERM
12" TALL
1:1 SIDE SLOPES

TURF OR STONE PRETREATMENT AREA

TRAPEZOIDAL SWALE
2' BOTTOM WIDTH
3:1 SIDE SLOPES

IPF

GRAPHIC SCALE
10' 0 10' 20'

Know what's below.
Call before you dig.

DESCRIPTION | DATE | REVISION #

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO. 120144
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

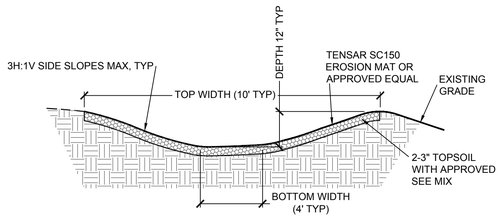
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE : MAY 22, 2023 | DRAWN BY : M2G
PROJECT NO. : 22-085 | CHECKED BY : MWB

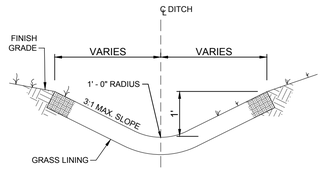
SHEET NUMBER:
C303

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG / Monday, May 22, 2023 2:11:42 PM



NORTH GRASS SWALE SECTION

N.T.S.

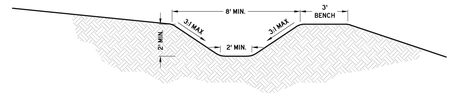


SOUTH GRASS SWALE SECTION

N.T.S.

TYPE	TDOT STANDARD DRAWING OR CASTING MODEL
CURB INLET CATCH BASINS	TDOT CB SERIES NOS. 10, 11, 12, 13, 14, 16, 17
CURB AND GUTTER INLET CASTINGS	JB&S 3080
EXTRUDED CURB INLET CASTINGS	JB&S 3103
AREA DRAIN CATCH BASINS	TDOT CB SERIES NOS. 38, 39, 40, 42, 43
AREA DRAIN CASTINGS	TDOT CBB-42
JUNCTION BOXES	TDOT JBS SERIES NOS. 1, 2, 3, 4, AND 5
MANHOLES	TDOT MH SERIES NOS. 2, 3, 4, 5, 6, 7 AND TDOT RF-1
TRENCH DRAINS	TDOT TD-1
CONCRETE PIPE INSTALLATION	TDOT PB-1
FLEXIBLE PIPE INSTALLATION	TDOT PB-2
OVAL AND ARCH PIPES	TDOT PO-1
SAFETY CROSS DRAIN ENDWALLS	TDOT PE SERIES
SAFETY SIDE DRAIN ENDWALLS	TDOT SEW SERIES AND TDOT MSE-1
PROTECTED ENDWALLS	TDOT PE, PEW SERIES
FLUMES	TDOT FLU-1

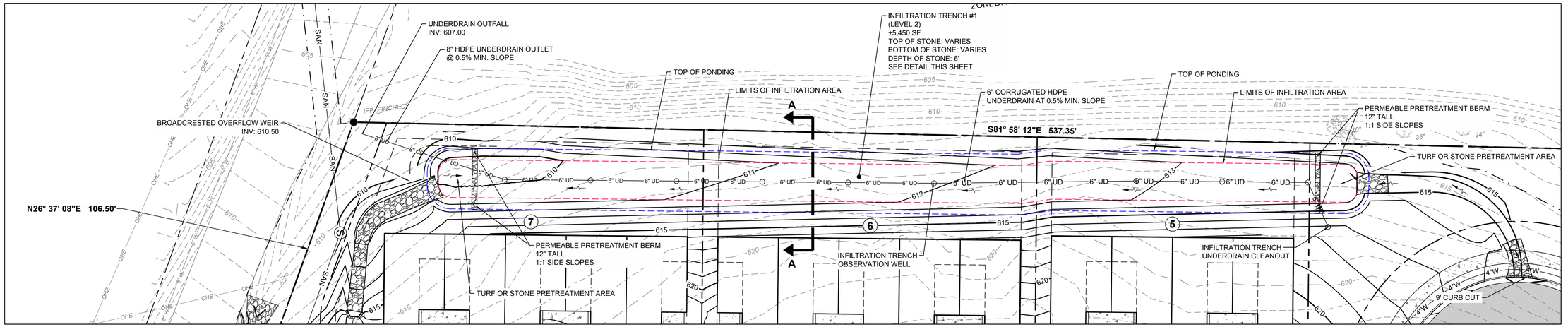
CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	INLETS, CASTINGS, STRUCTURES, AND PIPES (NTS)	DATE 6/9/2022 DD-01



NOTES:

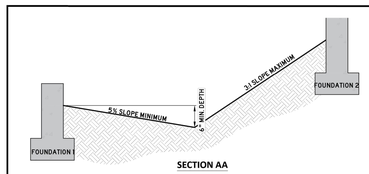
1. DITCHES SHALL BE STABILIZED WITH APPROPRIATELY DESIGNED SOFT ARMORING.
2. RIP-RAP OR OTHER HARD ARMORING TECHNIQUES ARE DISCOURAGED AND SHALL ONLY BE APPROVED WHEN ALL OTHER MEANS OF STABILIZATION ARE EXHAUSTED.
3. FLOW LINE GRADE SHALL NOT BE LESS THAN 1.0%
4. FLOW LINE GRADE SHALL NOT BE MORE THAN 7.5%
5. WHERE PLACED ON A SLOPE, A BENCH OF MINIMUM WIDTH OF 3 FEET SHALL BE PROVIDED.
6. A MINIMUM OF 6 INCHES OF FREEBOARD ABOVE THE DESIGN FLOW DEPTH SHALL BE PROVIDED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	TRAPEZOIDAL DITCH (NTS)	DATE 6/9/2022 DD-03

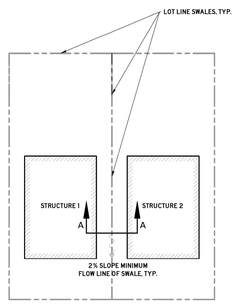


INFILTRATION TRENCH #1

SCALE: 1"=20'



SECTION AA

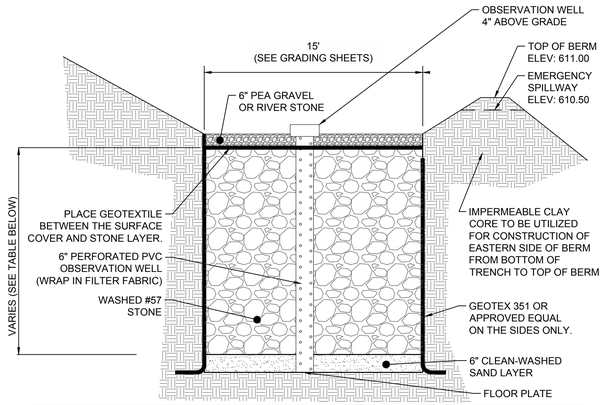


PLAN

NOTES:

1. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE, ALL AREAS WITHIN A LOT SHALL BE GRADED TO DRAIN TO AN APPROVED STORMWATER CONVEYANCE.
2. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATIONS.
   2.1. LOTS SHALL BE GRADED TO PROVIDE A MINIMUM OF 6 INCHES OF FALL WITHIN THE FIRST 10 FEET OF THE STRUCTURE ALONG THE DIRECTION OF FLOW.
   2.2. LOTS SHALL BE GRADED TO PROVIDE A MINIMUM OF 1V:20H OF FALL PERPENDICULAR TO THE FACE OF THE FOUNDATION WALL WITHIN THE FIRST 5 FEET.
   2.3. IMPERVIOUS SURFACES SHALL BE SLOPED AT A MINIMUM OF 2% AWAY FROM THE STRUCTURE.
3. SWALES SHALL BE LOCATED ALONG LOT LINES TO REDUCE LOT TO LOT DRAINAGE, AND DIRECT STORMWATER RUNOFF TOWARDS APPROVED STORMWATER CONVEYANCES.
4. SWALES SHALL HAVE A MINIMUM SLOPE OF 2%.
5. FOUNDATIONS SHALL BE AT MINIMUM 12 INCHES ABOVE ANY THE RIM ELEVATION OR HIGHEST FLOW LINE OF ANY PUBLIC STORMWATER INFRASTRUCTURE THAT SURFACE DRAINAGE FROM THE LOT IS DIRECTED TO.
6. NON-PUBLIC STORMWATER INFRASTRUCTURE SHALL NOT SUCH AS YARD DRAINS SHALL NOT ALLEVIATE THE REQUIREMENTS OF NOTES 2 AND 3.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	RESIDENTIAL LOT GRADING AND DRAINAGE (NTS)	DATE 6/9/2022 DD-04



INFILTRATION TRENCH SUMMARY				
INFILTRATION TRENCH	INFILTRATION AREA (SF)	TOP OF STONE	STONE DEPTH (FT)	BOTTOM OF STONE
IT#1	5,450	609.5 (VARIES)	6	603.5 (VARIES)

INFILTRATION TRENCH
SECTION A - A

N.T.S.

DESCRIPTION | DATE | REVISION #

MATTHEW W. BRIAN
REGISTERED ENGINEER
CERTIFICATE No. 121966
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

GRADING DETAILS

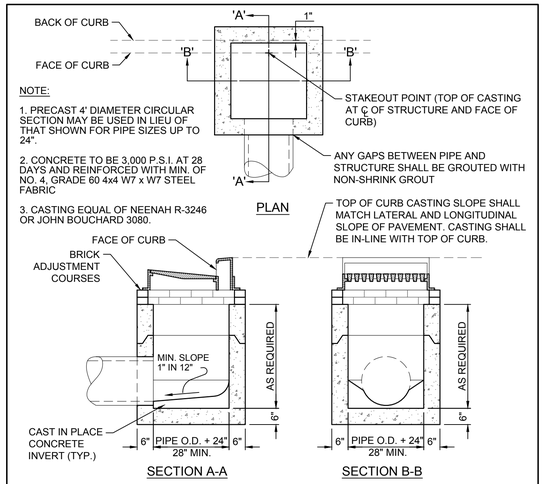
DATE: MAY 22, 2023 | DRAWN BY: M2G
PROJECT NO.: 22-085 | CHECKED BY: MWB

SHEET NUMBER:
C304

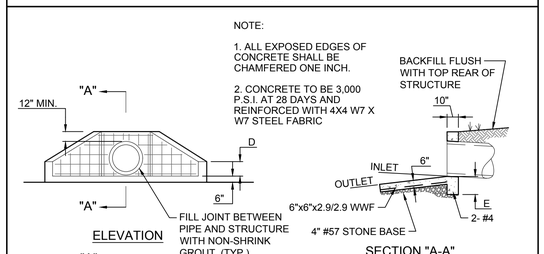
MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:11:59 PM

STRUCTURE TABLE		
NAME	INLET TYPE	DETAILS
R1	Headwall	INV IN = 613.965
R2	Single Curb Inlet	RIM = 617.470 INV IN = 614.210 INV IN = 614.208 INV OUT = 614.210
R3	Single Curb Inlet	RIM = 620.621 INV IN = 617.000 INV IN = 617.000 INV OUT = 617.000
R4	Single Curb Inlet	RIM = 620.622 INV OUT = 617.000
R5	Single Curb Inlet	RIM = 617.330 INV OUT = 614.330
R8	Single Curb Inlet	RIM = 622.006 INV IN = 619.235 INV OUT = 619.280
R9	Single Curb Inlet	RIM = 623.221 INV IN = 618.500 INV IN = 618.000 INV OUT = 618.000
R9A	Single Curb Inlet	RIM = 622.413 INV OUT = 619.557
R10	Single Curb Inlet	RIM = 623.220 INV OUT = 620.200
R11	Headwall	INV IN = 610.500
R12	Headwall	INV OUT = 613.050

PIPE TABLE				
NAME	MATERIAL	DIA.	APPROX. LENGTH	SLOPE
R1-R2	RCP	24"	49'	0.50%
R2-R3	RCP	18"	128'	2.18%
R2-R5	RCP	18"	24'	0.50%
R3-R4	RCP	18"	24'	0.00%
R3-R9	RCP	18"	104'	0.96%
R8-R9A	RCP	15"	26'	1.22%
R9-R8	RCP	18"	145'	0.88%
R9-R10	RCP	18"	25'	6.93%
R12-R11	RCP	18"	96'	2.66%

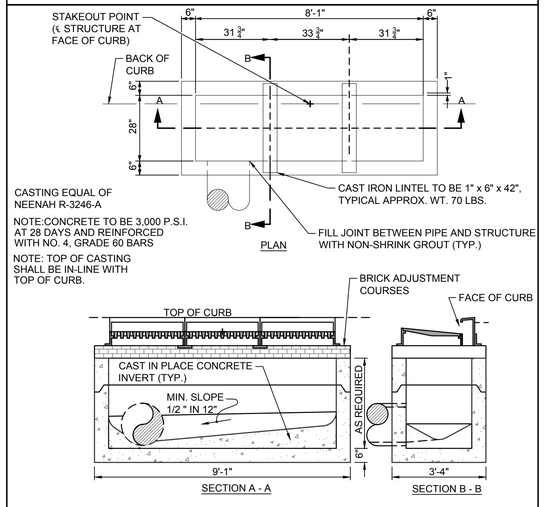


SINGLE PRECAST CURB INLET
N.T.S.



DIMENSIONS TABLE					
PIPE DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"

CONCRETE WINGED HEADWALL/ENDWALL
N.T.S.



TRIPLE PRECAST CURB INLET
N.T.S.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED ENGINEER
AGRICULTURE
COMMERCE & CONSUMER AFFAIRS
CERTIFICATE NO. 120,143
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

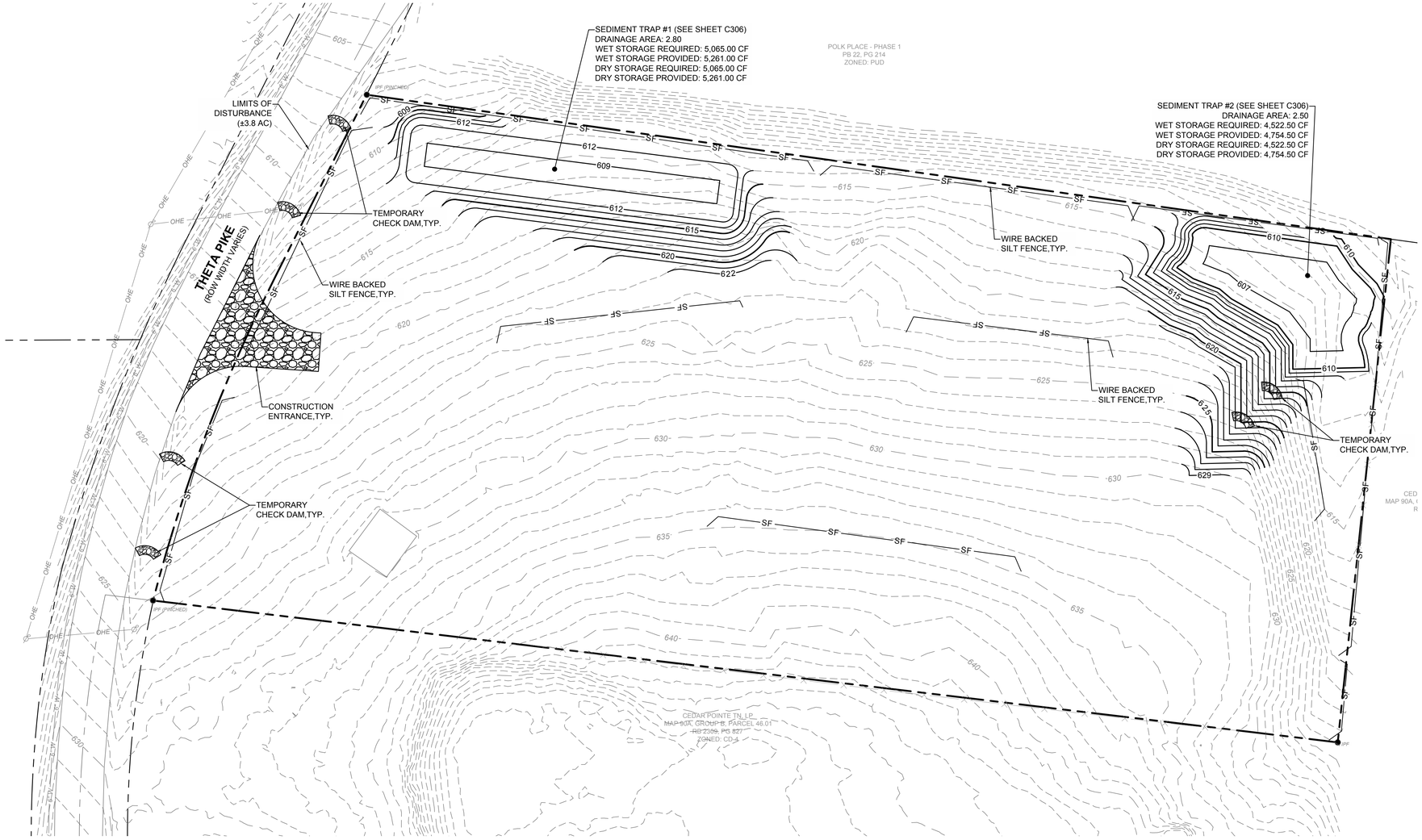
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

STORM SEWER DETAILS

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C305

SEDIMENT TRAP DESIGN		
	ST-1	ST-2
DRAINAGE AREA (AC.)	2.80	2.50
TOTAL VOL. REQUIRED (CF)	10,130.00	9,045.00
WET VOL. REQUIRED (CF)	5,065.00	4,522.50
DRY VOL. REQUIRED (CF)	5,065.00	4,522.50
WET STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TRAP BOTTOM ELEV. (FT)	607.00	607.00
TOP WET STORAGE ELEV. (FT)	608.50	608.50
SPILLWAY CREST ELEV. (FT)**	610.00	610.00
TOP EMBANKMENT ELEV. (FT)	610.00	610.00
SPILLWAY CREST LENGTH (FT)	15.00	15.00
SPILLWAY CREST WIDTH (FT)	5.00	5.00
EMBANKMENT TOP WIDTH (FT)	5.00	5.00
DRY STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TOTAL VOL. PROVIDED (CF)	**10,522.00**	**9,509.00**
* RUNOFF COEFFICIENT ASSUMED TO BE BARE SOIL CONDITION		
** SPILLWAY CREST ELEVATION IS ALSO TOP OF DRY STORAGE ELEVATION		



TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
2. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
3. THE APPROXIMATE TOTAL DISTURBED AREA OF THIS SITE IS 6.60 ACRES. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO ADDITIONAL DISTURBANCE.
4. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
5. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE CAUSE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT BASIN, IF REQUIRED
4. INSTALL WATER QUALITY BUFFER SIGNS, IF REQUIRED
5. INSTALL TREE PROTECTION FENCING
6. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
7. CLEAR, GRUB, AND GRADE THE SITE
8. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
9. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRIAN — REGISTERED ENGINEER — AGRICULTURE — COMMERCE & INDUSTRY — CERTIFICATE NO. — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

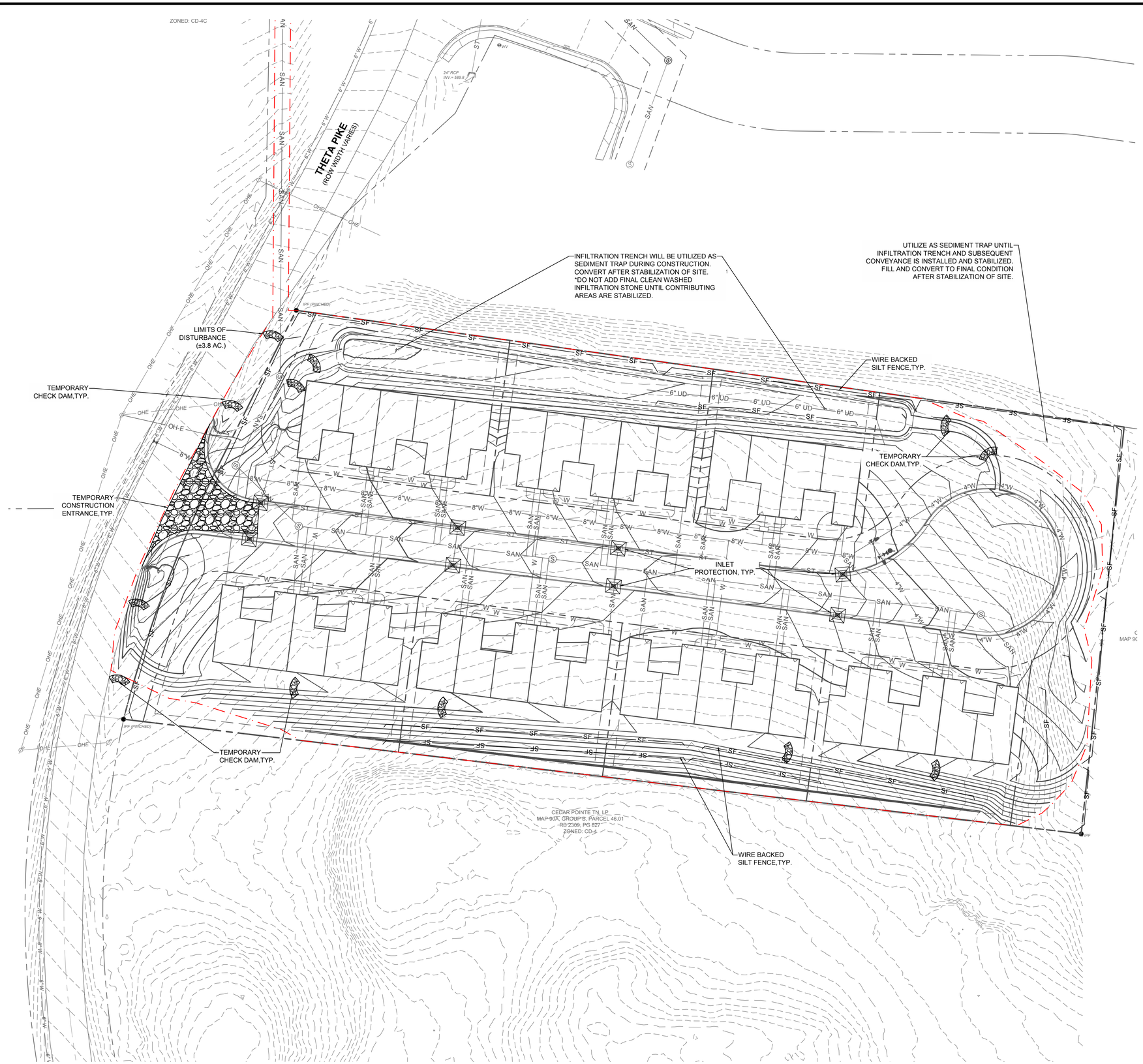
MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

INITIAL EPSC PLAN

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C401

MPA - INITIAL EPSC PLAN.DWG | Monday, May 22, 2023 2:12:10 PM



TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
2. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
3. THE APPROXIMATE TOTAL DISTURBED AREA OF THIS SITE IS 6.60 ACRES. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO ADDITIONAL DISTURBANCE.
4. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
5. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE CAUSE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
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16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT TRAPS, IF REQUIRED
4. INSTALL TREE PROTECTION FENCING
5. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
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EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRIAN
REGISTERED ENGINEER
COMMERCIAL
CERTIFICATE NO. 120,143
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

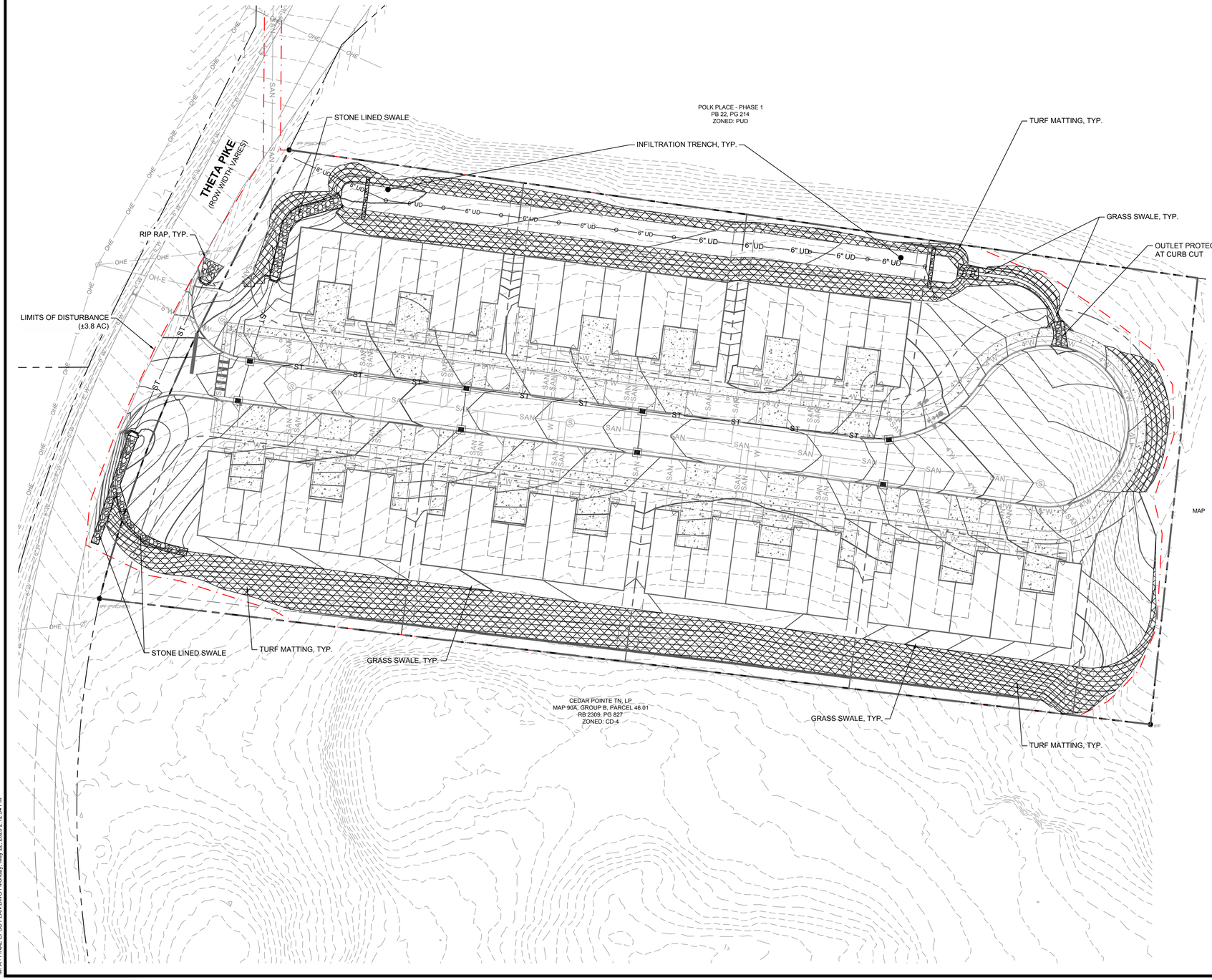
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

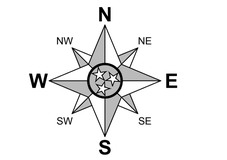
INTERMEDIATE EPSC PLAN

DRAWN BY :	M2G	DATE :	MAY 22, 2023
CHECKED BY :	MWB	PROJECT NO. :	22-085

SHEET NUMBER:
C402

MPA - INTERMEDIATE EPSC PLAN.DWG / Monday, May 22, 2023 2:12:22 PM





TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

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2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
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5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
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16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
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CONSTRUCTION SEQUENCE

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2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT TRAPS
4. INSTALL TREE PROTECTION FENCING
5. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
6. CLEAR, GRUB, AND GRADE THE SITE
7. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
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EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN — REGISTERED ENGINEER — AGRICULTURE — COMMERCE — CERTIFICATE NO. 120911 — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

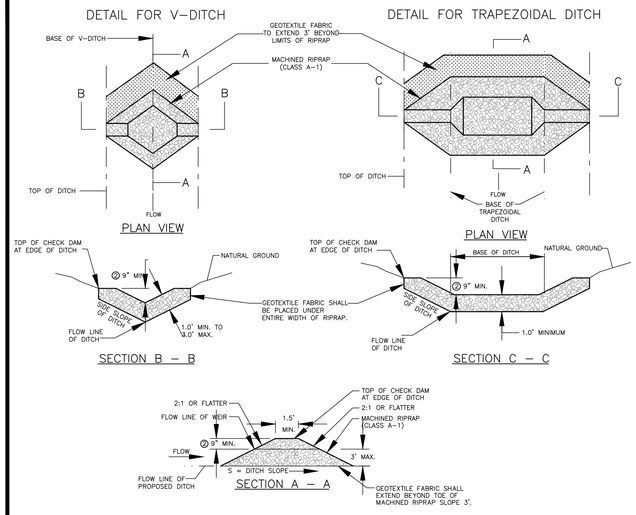
MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

FINAL EPSC PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

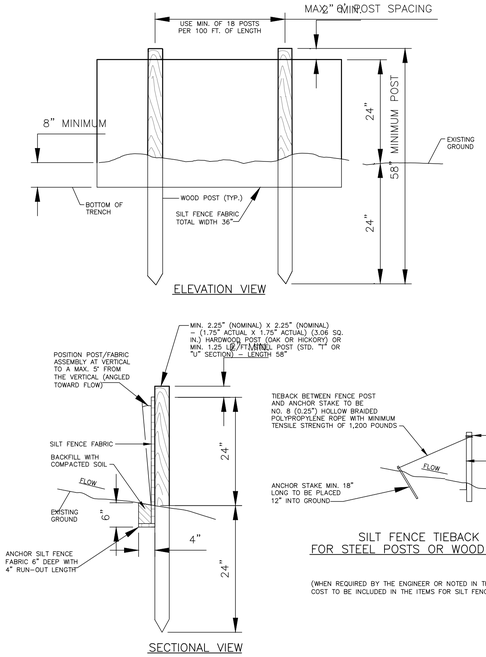
SHEET NUMBER:
C403

MPA - FINAL EPSC PLAN.DWG | Monday, May 22, 2023 2:12:34 PM



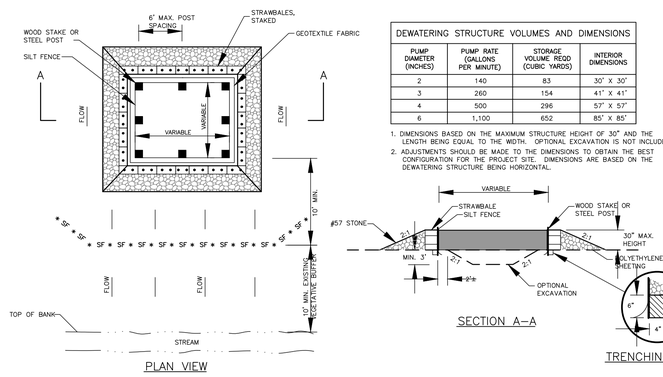
CHECK DAM

SCALE: N.T.S.



SILT FENCE

SCALE: N.T.S.



DEWATERING STRUCTURE VOLUMES AND DIMENSIONS			
PUMP DIAMETER (INCHES)	PUMP RATE (GALLONS PER MINUTE)	STORAGE VOLUME REQD (CUBIC YARDS)	INTERIOR DIMENSIONS
2	140	83	30' X 30'
3	260	154	41' X 41'
4	500	296	57' X 57'
6	1,100	652	85' X 85'

1. DIMENSIONS BASED ON THE MAXIMUM STRUCTURE HEIGHT OF 30" AND THE LENGTH BEING EQUAL TO THE WIDTH. OPTIONAL EXCAVATION IS NOT INCLUDED.
2. ADJUSTMENTS SHOULD BE MADE TO THE DIMENSIONS TO OBTAIN THE BEST CONFIGURATION FOR THE PROJECT SITE. DIMENSIONS ARE BASED ON THE DEWATERING STRUCTURE BEING HORIZONTAL.

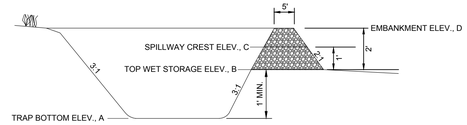
SILT FENCE & STRAW DEWATERING PIT

SCALE: N.T.S.

SEDIMENT TRAP ELEVATIONS, SEE DETAIL FOR REFERENCE → A, B, C, D

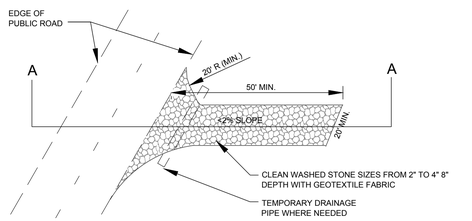
SEDIMENT TRAP DESIGN		
	ST-1	ST-2
DRAINAGE AREA (AC.)	2.80	2.50
TOTAL VOL. REQUIRED (CF)	10,130.00	9,045.00
WET VOL. REQUIRED (CF)	5,065.00	4,522.50
DRY VOL. REQUIRED (CF)	5,065.00	4,522.50
WET STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TRAP BOTTOM ELEV. (FT)	607.00	607.00
TOP WET STORAGE ELEV. (FT)	608.50	608.50
SPILLWAY CREST ELEV. (FT)**	610.00	610.00
TOP EMBANKMENT ELEV. (FT)	610.00	610.00
SPILLWAY CREST LENGTH (FT)	15.00	15.00
SPILLWAY CREST WIDTH (FT)	5.00	5.00
EMBANKMENT TOP WIDTH (FT)	5.00	5.00
DRY STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TOTAL VOL. PROVIDED (CF)	**10,522.00**	**9,509.00**

* RUNOFF COEFFICIENT ASSUMED TO BE BARE SOIL CONDITION
** SPILLWAY CREST ELEVATION IS ALSO TOP OF DRY STORAGE ELEVATION

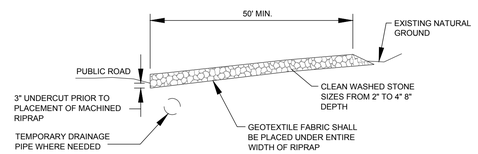


TEMPORARY SEDIMENT TRAP

N.T.S.



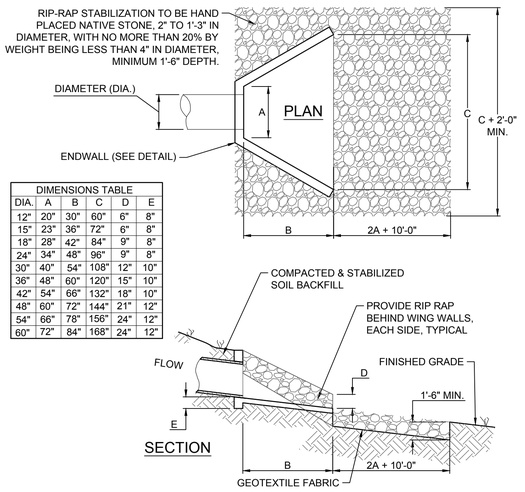
PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



SECTION A-A

CONSTRUCTION EXIT

SCALE: N.T.S.



DIMENSIONS TABLE					
DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"

RIP RAP AT ENDWALL

N.T.S.

ACTIVITY: Geotextiles	PESC – 02

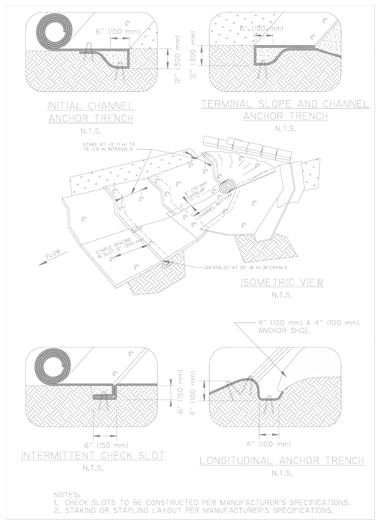


Figure PESC-02-1
Anchoring Geotextiles in Channels

Stormwater Best Management Practices – Permanent EP&SC | PESC-02-3 | January 2014

ACTIVITY: Geotextiles	PESC – 02

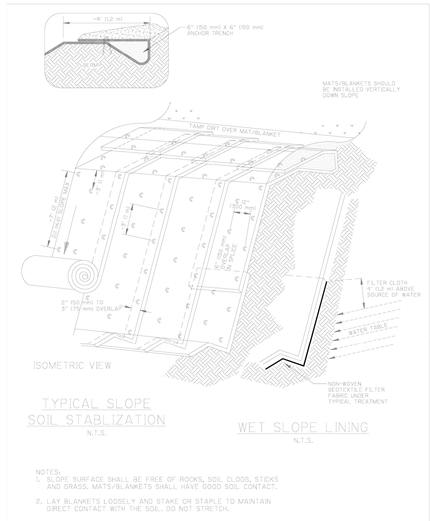


Figure PESC-02-2
Anchoring Geotextiles on Embankments

Stormwater Best Management Practices – Permanent EP&SC | PESC-02-4 | January 2014

TURF REINFORCEMENT MATTING DETAILS

SCALE: N.T.S.

DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYAN
REGISTERED ENGINEER
No. 120183
COMMERCE TENNESSEE
CERTIFICATE No.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

EPSC DETAILS

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE:	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C404

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:12:49 PM

DRIVEWAY TO BE OPEN CUT FOR SANITARY SEWER INSTALLATION & REPAIRED WITH LIKE MATERIALS

BEVERLY FITZGERALD
RB 15, PG 332
ZONED: CD-4C

THETA PIKE
(ROW WIDTH VARIES)

ALL WORK WITHIN THETA PIKE RIGHT-OF-WAY SHALL REQUIRE TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH LOCAL AND STATE STANDARDS. ALL TRAFFIC CONTROL, INCLUDING MARKINGS, SIGNS, ETC. SHALL FOLLOW THE CURRENT EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

TAPPING SLEEVE & VALVE

POLK PLACE
(50' ROW)

POLK PLACE - PHASE 1
PB 22, PG 214
ZONED: PUD

WATER METER GANG BOX
(SEE SHEET C601)

INSTALL 8"x6" TEE & KICKER, 8" TO 4" REDUCER

INSTALL 6"x6" TEE, 6" GATE VALVE, KICKER, 6"x4" REDUCER, FIRE HYDRANT ASSEMBLY & KICKERS

6" SEWER SERVICE, TYP.

OPEN SPACE
0.32 AC.

CEDAR POINTE TN, LP
MAP 90A, GROUP B, PARCEL 46.01
RB 2309, PG 827
ZONED: CD-4

CEDAR POINTE TN, LP
MAP 90A, GROUP B, PARCEL 46.01
RB 2309, PG 827
ZONED: CD-4

IPF (PINCHED)

15" CMP INV.= 580.4

15" CMP INV.= 581.0

24" RCP INV.= 586.6

24" RCP INV.= 589.8

N
NW NE
W E
SW SE
S

30' 0 30' 60'
GRAPHIC SCALE

LEGEND

SAN	SANITARY SEWER
OHE	OVERHEAD ELECTRIC
UG-E	UNDERGROUND ELECTRIC
8"W	8" WATERLINE
G	NATURAL GAS
ST	STORMWATER DRAINAGE PIPE
W	WATER SERVICE

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
AGRICULTURE
COMMERCE & CONSUMER AFFAIRS
CERTIFICATE No.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

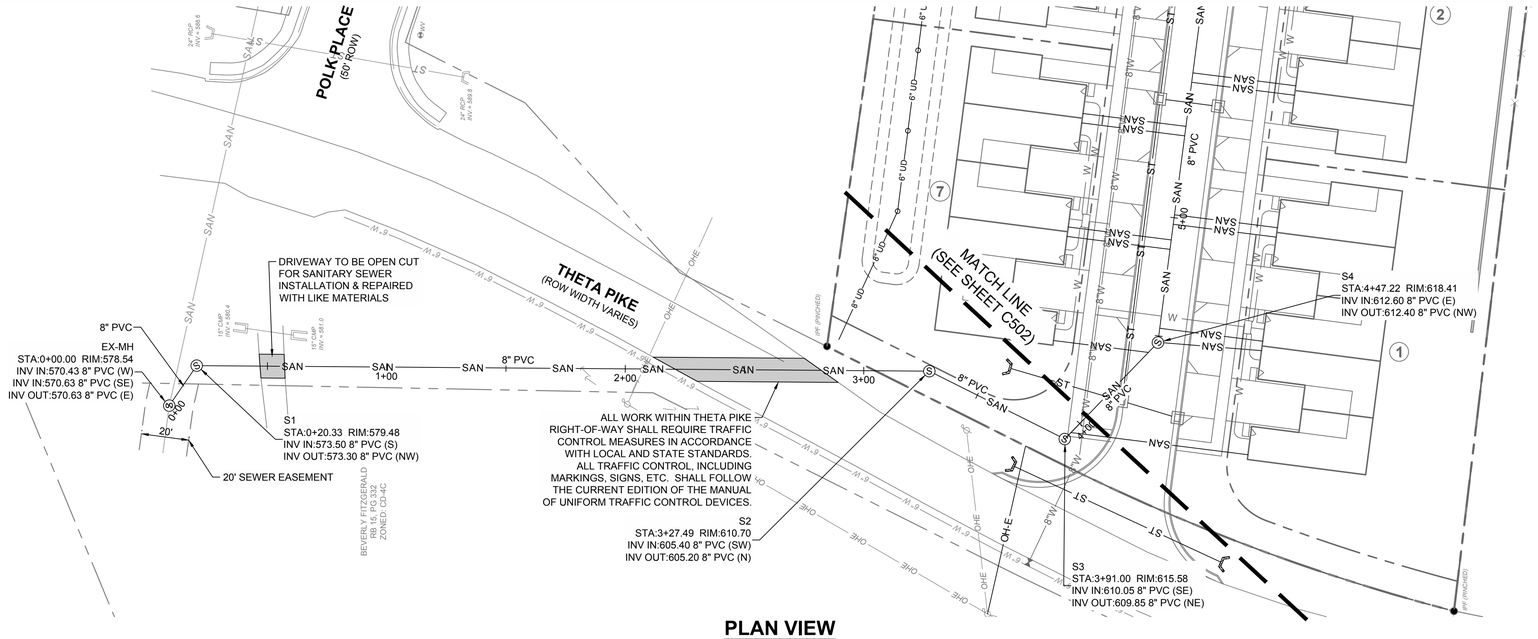
UTILITY PLAN

DATE :	MAY 22, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

SHEET NUMBER:
C500

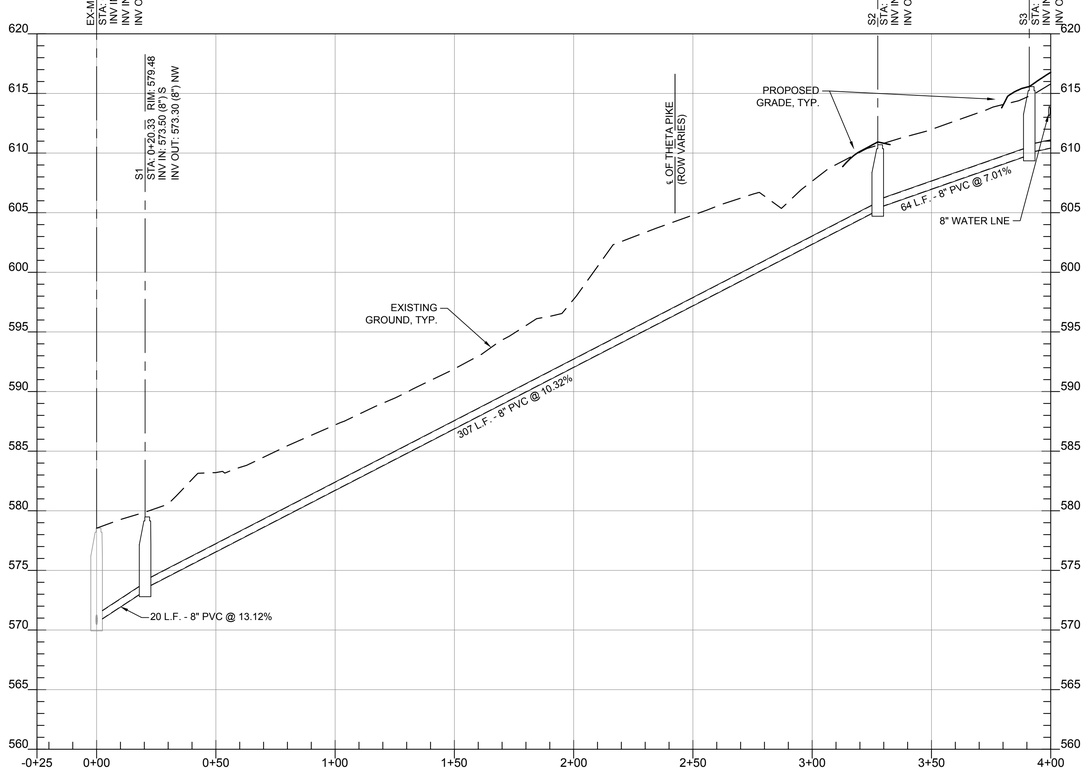
811 Know what's below. Call before you dig.

MPA - UTILITY PLAN.DWG | Monday, May 22, 2023 2:13:01 PM



PLAN VIEW

SCALE: 1" = 30'



PROPOSED OFFSITE SANITARY SEWER PROFILE

SCALE H:1"=30'; V:1"=6'

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
NUMBER 120144
COMMERCIAL
CERTIFICATE NO.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

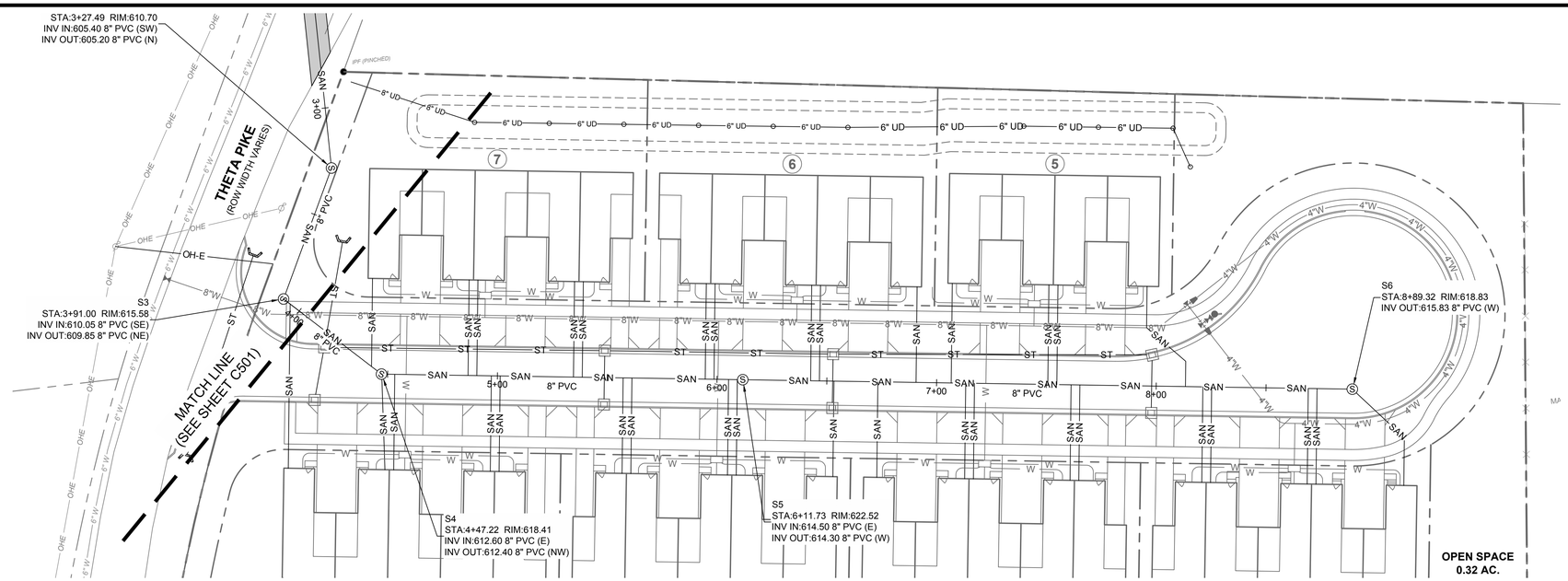
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

OFFSITE SANITARY SEWER PLAN & PROFILE

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

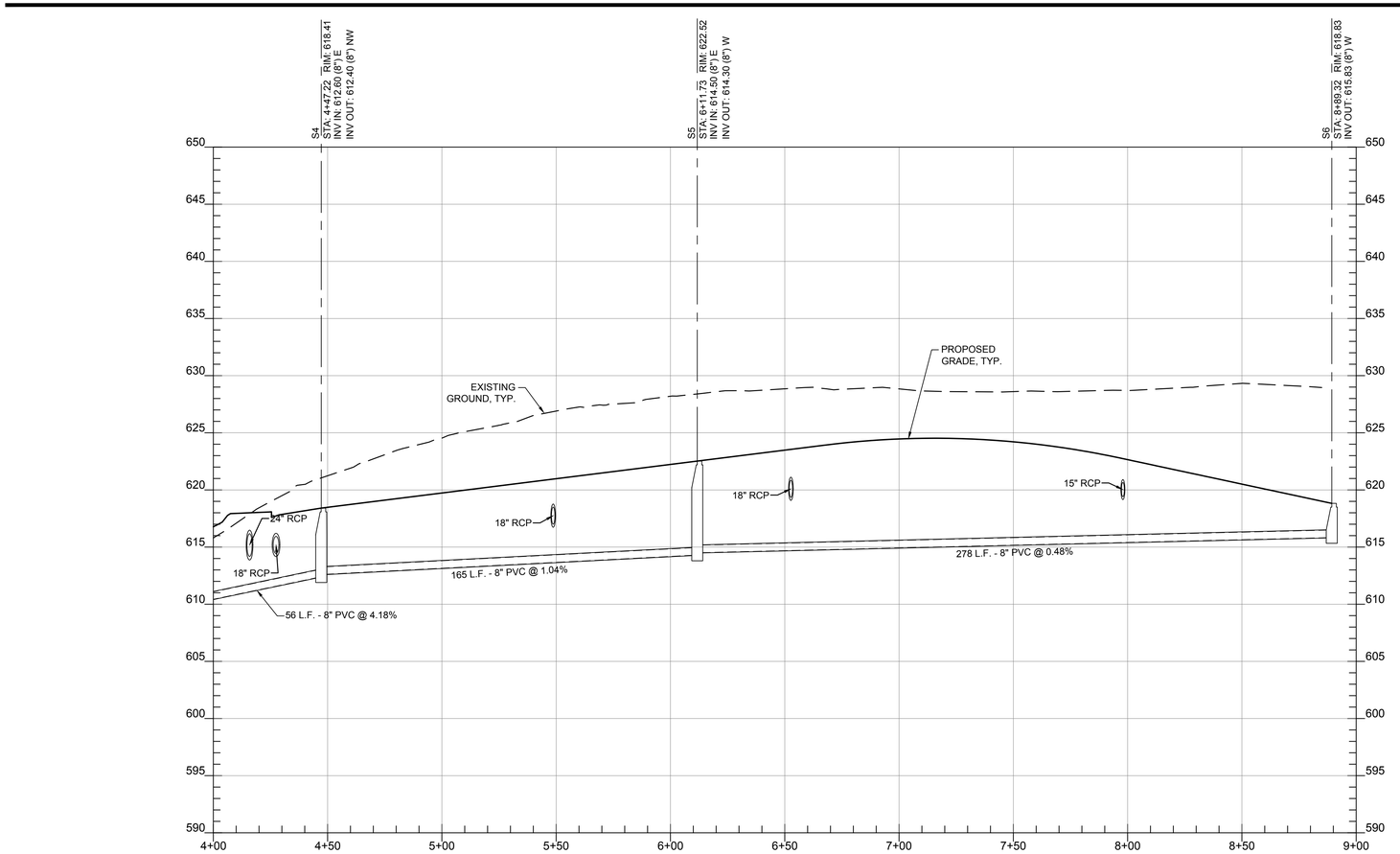
SHEET NUMBER:
C501

MPA - SANITARY SEWER PLAN & PROFILE.DWG | Monday, May 22, 2023 2:13:13 PM



PLAN VIEW

SCALE: 1" = 30'



PROPOSED SANITARY SEWER PROFILE

SCALE H:1"=30'; V:1"=6'

Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MATTHEW W. BRYAN
REGISTERED ENGINEER
COMMERCIAL
CERTIFICATE NO.
STATE OF TENNESSEE
05/22/23

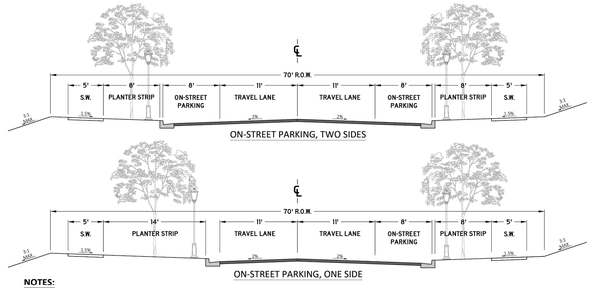
MZG GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

SANITARY SEWER PLAN & PROFILE

DATE :	MAY 22, 2023	DRAWN BY :	MZG
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C502

MPA - SANITARY SEWER PLAN & PROFILE.DWG / Monday, May 22, 2023 2:13:15 PM



NOTES:

1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. CURB AND GUTTER, SEE SD-01
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

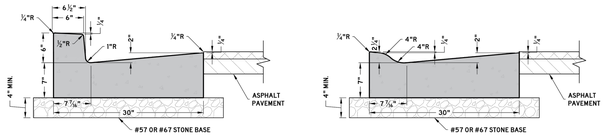
STANDARD DETAILS

CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD

(NTS)

DATE 6/9/2022

DS-03

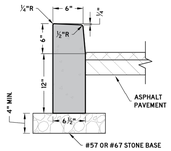


6-30 CONCRETE CURB AND GUTTER

LOWERED CONCRETE CURB AND GUTTER

NOTES:

1. BASED ON TDOT STANDARD DRAWING RP-VC-11
2. ONLY PERMITTED IN APPLICABLE ROADWAY SECTIONS
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. CLASS A 3000 PSI CONCRETE
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK
   - 5.2. A MAXIMUM SPACING OF 100 FEET
   - 5.3. AT TANGENTS OF ALL RADII OF CURVES
   - 5.4. BETWEEN CURBS AND ANY RIGID OBJECTS
   - 5.5. ALIGNED WITH ADJACENT EXPANSION JOINTS
   - 5.6. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1)
   - 5.7. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139)
6. CONTRACTION JOINTS SHALL BE AS FOLLOWS:
   - 6.1. A MAXIMUM SPACING OF 10 FEET
   - 6.2. A MINIMUM SPACING OF 6 FEET
   - 6.3. 1/4 INCH DEPTH, EITHER SAWCUT OR HAND GROOVED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



VERTICAL POST CURB

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

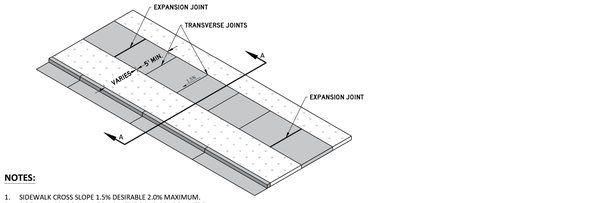
STANDARD DETAILS

CURB AND GUTTER AND POST CURB

(NTS)

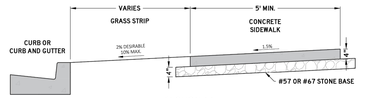
DATE 6/9/2022

SD-01



NOTES:

1. SIDEWALK CROSS SLOPE 1.5% DESIRABLE 2.0% MAXIMUM.
2. SIDEWALK GRADE SHALL FOLLOW THE ROAD GRADE WHERE POSSIBLE.
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. 4" MIN. THICKNESS CLASS A 3000 PSI CONCRETE WITH FIBER REINFORCEMENT, BROOM FINISHED.
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK
   - 5.2. A MAXIMUM SPACING OF 25 FEET
   - 5.3. AT TANGENTS OF ALL RADII OF CURVES
   - 5.4. BETWEEN CURBS AND ANY RIGID OBJECTS
   - 5.5. ALIGNED WITH ADJACENT EXPANSION JOINTS
   - 5.6. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1)
   - 5.7. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139)
6. PROVIDE TRANSVERSE JOINTS AS NEARLY AS SQUARE AS PRACTICABLE. ON SIDEWALKS GREATER THAN 8 FEET IN WIDTH, PROVIDE A LONGITUDINAL JOINT ALONG THE CENTERLINE OF THE SIDEWALK.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



SECTION AA

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

STANDARD DETAILS

CONCRETE SIDEWALK

(NTS)

DATE 6/9/2022

SD-10

NOTES:

1. ALL ELEMENTS OF THE STREET SECTION WITHIN THE CUL-DE-SAC THAT ARE OUTSIDE THE CURB LINE SHALL MAINTAIN THE SAME GEOMETRY AS THE STANDARD STREET SECTION.
2. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
3. DIMENSIONS REFLECT A MINIMUM STANDARD.
4. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

STANDARD DETAILS

CUL-DE-SAC

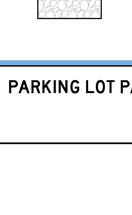
(NTS)

DATE 6/9/2022

SD-15

PAVEMENT SCHEDULE

①	**SURFACE @ 1.5" THICK** 411-01A ASPHALT CONCRETE MIX (PG64-22) (ACS) GRADING D (SURFACE), OR 411-01B ASPHALT CONCRETE MIX (PG64-22) (ACS) GRADING C ☻ (SURFACE)
②	**TACK COAT (GENERAL USE)** 403-03 BITUMINOUS MATERIAL FOR TACK COAT (CC) (0.05 - 0.10 GAL/SY)
③	**BIT. BINDER @ 2" THICK** 307-01B ASPHALT CONCRETE MIX (PG64-22) (DPW) HMC GRADING D MZ
④	**PRIME COAT** 402-10 BITUMINOUS MATERIAL FOR PRIME COAT (PC) (0.30-0.35 GAL/SY) 403-02 AGGREGATE FOR COVER MATERIAL (PC) (8-12 LB/SY)
⑤	**MINERAL AGGREGATE BASE @ 6" THICK** 303-01 MINERAL AGGREGATE, TYPE A BASE, GRADING D



CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

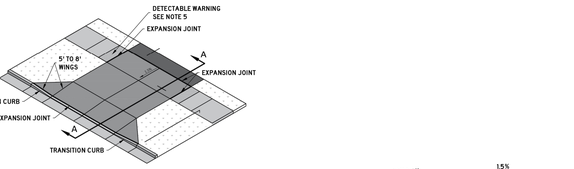
STANDARD DETAILS

PARKING LOT PAVEMENT SECTION

(NTS)

DATE 6/9/2022

MD-02



SECTION AA

NOTES:

1. SIDEWALK CROSS SLOPE 1.5% DESIRABLE 2.0% MAXIMUM.
2. APRON SLOPE 2.0% MIN. 10% MAX. MINIMUM OF 6" RISE ABOVE GUTTER LINE.
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. CLASS A 3000 PSI CONCRETE WITH FIBER REINFORCEMENT
   - 4.1. 6" MIN. THICKNESS RESIDENTIAL.
   - 4.2. 8" MIN. THICKNESS COMMERCIAL, MULTI-FAMILY, AND MIXED-USE.
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK.
   - 5.2. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1).
   - 5.3. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139).
6. DETECTABLE WARNINGS WHERE DRIVEWAY IS STOP CONTROLLED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

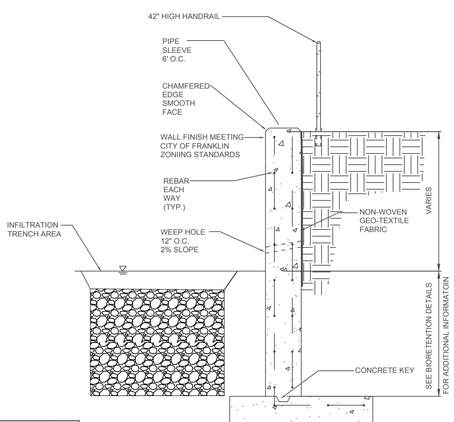
STANDARD DETAILS

DRIVEWAY APRON

(NTS)

DATE 6/9/2022

SD-12



NOTE: A FORMAL WALL SUBMITTAL PREPARED BY A LICENSED PROFESSIONAL WILL BE SUBMITTED WITH GUARDRAIL DETAILS PRIOR TO OBTAINING A BUILDING PERMIT.

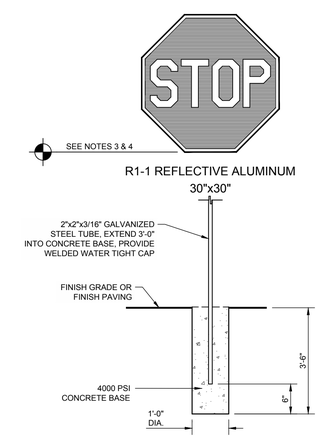
NOTE: RETAINING WALLS ADJACENT TO INFILTRATION TRENCH AREAS SHALL NOT RELY ON STONE DRAINAGE MEDIA FOR STABILITY OR LATERAL RESISTANCE. BOTTOM OF WALL/TOP OF FOOTING ELEVATION SHALL BE LOCATED AT OR BELOW BOTTOM OF LOWERMOST STONE DRAINAGE MEDIA.

RETAINING WALL ILLUSTRATIVE CROSS-SECTION

ADJACENT TO INFILTRATION TRENCH

FOR ILLUSTRATIVE PURPOSES ONLY, NOT TO BE USED FOR CONSTRUCTION

NO SCALE



R1-1 REFLECTIVE ALUMINUM 30"x30"

NOTES:

1. SET POSTS IN CONCRETE TO A MINIMUM DEPTH OF 36". SIGN PANELS SHALL BE 0.100 ALUMINUM WITH RAISED OR SILKSCREEN COPY.
2. FOR POST MOUNTING, USE NON-CORROSIVE 3/8" MACHINE BOLTS W/ WASHERS, 2 PER SIGN; OR IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. ALL SIGNAGE IS TO BE INSTALLED WITH THE BOTTOM EDGE OF THE LOWEST SIGN AT LEAST 60" ABOVE FINISHED GRADE, WHERE NO PEDESTRIAN TRAFFIC IS POSSIBLE.
4. ALL SIGNAGE IS TO BE INSTALLED WITH THE BOTTOM EDGE OF THE LOWEST SIGN AT LEAST 84", WHERE PEDESTRIAN TRAFFIC IS POSSIBLE.
5. STOP SIGN TO BE HIGH INTENSITY GRADE.

STOP SIGN/SPEED LIMIT SIGN

N.T.S.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRIAN — REGISTERED ENGINEER — CERTIFICATE No. 120144 — COMMERCE & CONSUMER AFFAIRS — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SITE DETAILS

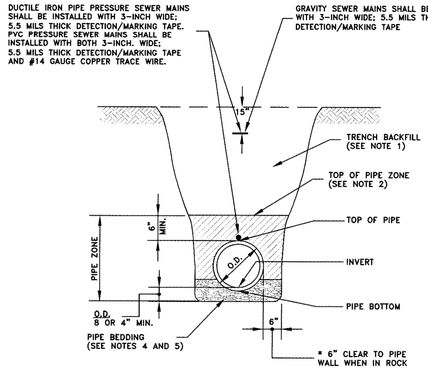
DATE : MAY 22, 2023
PROJECT NO. : 22-085
DRAWN BY : M2G
CHECKED BY : MWB

SHEET NUMBER:
C600

MPA - SITE DETAILS.DWG | Monday, May 22, 2023 2:13:31 PM

NOTES:

1. SEE PROJECT SPECIFICATIONS FOR BACKFILL REQUIREMENTS.
2. "PIPE ZONE" EXTENDS TO 6" ABOVE TOP OF PIPE AND BACKFILL IN TO BE CRUSHED STONE, GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE ENGINEER.
3. LIMIT TRENCH WIDTH AT TOP OF PIPE ZONE TO O.D. + 16", UNLESS PERMITTED OTHERWISE BY ENGINEER.
4. PIPE BEDDING IS TO BE CRUSHED GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY ENGINEER. DEPTH UNDER BOTTOM OF PIPE IS TO BE 1/8 OUTER DIAMETER (O.D.) OF PIPE OR 4", WHICHEVER IS GREATER.*
5. PIPE TO BE CONTINUOUSLY SUPPORTED ALONG LENGTH OF PIPE BARREL EXCEPT AT BELLS. BELL HOLES ARE REQUIRED SUCH THAT NO BEARING LOAD IS TAKEN BY THE BELL.



TYPICAL SEWER INSTALLATION

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S1

8 Φ 5/8" DIA. T. & B. IN SLAB ON SHALLOW MANHOLES WHERE CONE IS OMITTED (SEE CONST. NOTES)

RESILIENT CONNECTOR

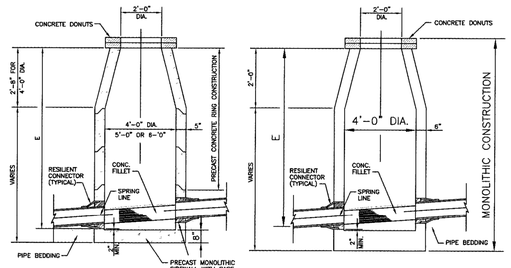
PLAN

NOTE: ALL MANHOLES SHALL BE MANUFACTURED WITH XYPEX ADMIX C-1000/C-2000 IN CONCRETE FOR WATERPROOFING AND PROTECTION AGAINST HYDROGEN SULFIDE DETERIORATION. XYPEX ADMIX SHALL BE AS SUPPLIED BY TOM WILLIAMS; 1231 ANTIOCH PIKE, NASHVILLE. PRECAST MANHOLES SHALL BE AS SUPPLIED BY CLOUD CONCRETE PRODUCTS OR ENGINEER APPROVED EQUAL.

CONSTRUCTION NOTES

CYLINDRICAL AND CONICAL SECTIONS OF ALL MANHOLES SHALL BE CONSTRUCTED OF EITHER MONOLITHIC CONCRETE OR PRECAST CONCRETE RINGS AS DESIGNED IN THE PROJECT SPECIFICATIONS OF THE CONTRACT DOCUMENT.
CONCENTRIC CONES SHALL BE USED ON PRECAST CONCRETE AND MONOLITHIC CONCRETE UNITS.
DIMENSION "E" VARIES. WHEN LESS THAN 5-FEET OMIT CONE AND EXTEND CYLINDRICAL MANHOLE SIDEWALL SECTION TO AN ELEVATION 8-INCHES BELOW BOTTOM OF ADJUSTING BRICK. CONSTRUCT 8-INCH THICK CONCRETE SLAB ON TOP OF CYLINDRICAL SECTION REINFORCED WITH 5/8-INCH DIA. BARS AS SHOWN. PROVIDE 24-INCH DIAMETER OPENING IN SLAB FOR MANHOLE'S FRAME AND BRICK ADJUSTMENT RINGS AS ON CONED MANHOLE.
BENCH WALLS IN MANHOLE AND SEWERS 18-INCHES IN DIAMETER AND SMALLER TO BE BUILT UP TO THE TOP OF THE LARGEST PIPE. FOR SEWERS 21-INCHES TO 30-INCHES IN DIAMETER, 1'-0" WIDE BENCH. LARGER SEWERS TO SPRING LINE. BENCH WALLS REQUIRED IN DEAD END MANHOLES, ALTHOUGH BOTTOM TO BE PROPERLY DISHED.

NOTE: GRANULAR BACKFILL MATERIAL SHALL BE PLACED ADJACENT TO MANHOLE IN AREAS WHERE SWELLING CLAY EXIST.



SECTION

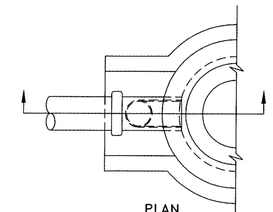
FOR SEWERS 36" DIAMETER & SMALLER
NOT TO SCALE

POURED IN PLACE MANHOLE
NOT TO SCALE

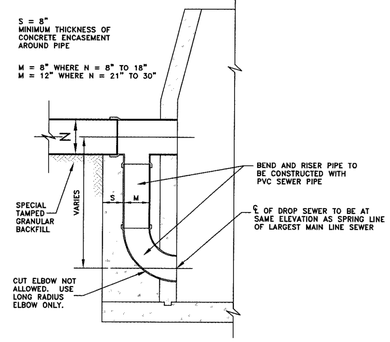
STANDARD MANHOLES

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S2



PLAN



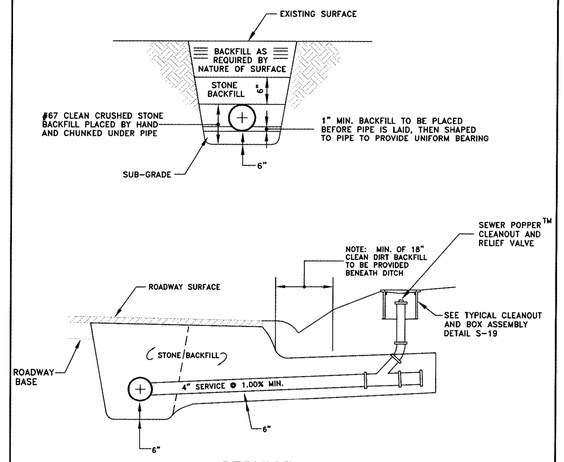
SECTION

DROP PIPE FOR STANDARD MANHOLES

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S3

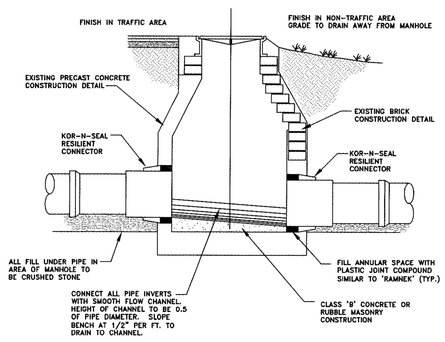


SERVICE LINE

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S4



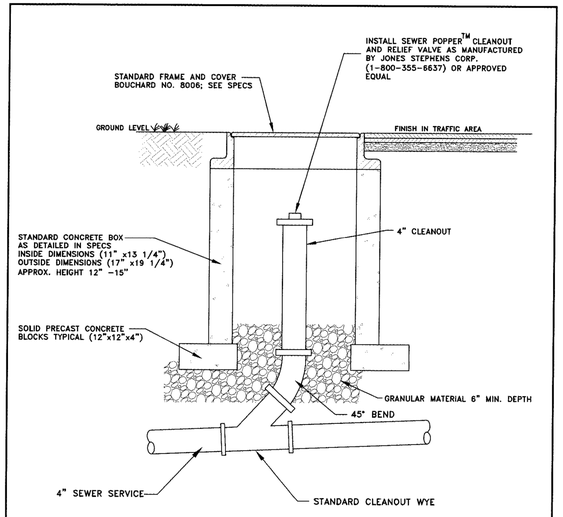
CONNECTION TO EXISTING MANHOLE

NOT TO SCALE

NOTE: THE CONTRACTOR SHALL NOT CONNECT TO EXISTING MANHOLE UNTIL ALL NEW SEWAGE FACILITIES HAVE BEEN INSTALLED, TESTED AND RELEASED FOR SERVICE.

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S5



TYPICAL CLEANOUT ASSEMBLY

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S19

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED ENGINEER
No. 120111
COMMERCE TENNESSEE
CERTIFICATE No.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

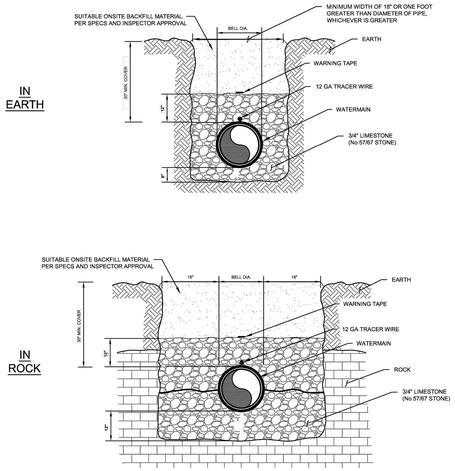
MZ GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

UTILITY DETAILS

DRAWN BY :	MZG
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

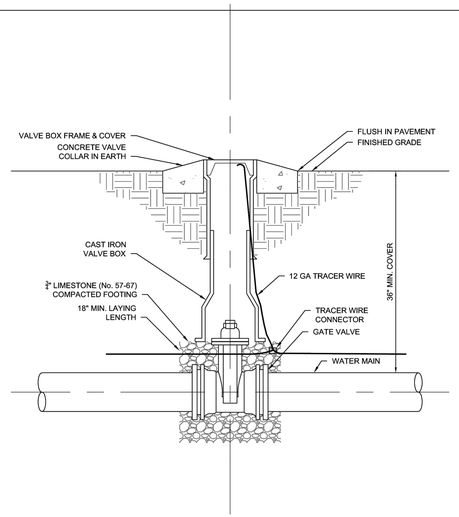
SHEET NUMBER:
C602

MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:13:35 PM



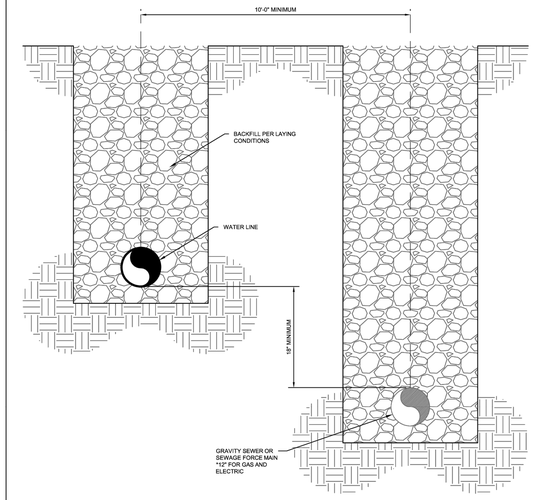
NOTES:
1. **30" MINIMUM COVER IN TRAFFIC AREAS.**
2. **UNSUITABLE EARTH MATERIALS MAY REQUIRE OVER-EXCAVATION AND GRAVEL BEDDING AND HAUNCHING.**

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | WATER LINE LAYING CONDITIONS IN ROCK OR EARTH | FIGURE NO.: CWS-1



NOTES:
1. ALL VALVE BOXES SHALL BE SET TO BE FLUSH WITH FINAL GRADES AND SHALL NOT BE COVERED WITH ANY PAVING, DIRT, SOD, GRASSING, AND/OR LANDSCAPING.
2. THIS DETAIL IS VALID FOR 16" AND SMALLER VALVE SIZES. FOR LARGER SIZES, SEE CONTRACT SPECS. OR CONFIRM WITH CPWS.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | LINE VALVE SETTING | FIGURE NO.: CWS-2



CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | UTILITY SEPARATION | FIGURE NO.: CWS-3

LENGTH TO BE RESTRAINED (L)							
PIPE SIZE	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS		VALVES OR DEAD ENDS
	11.25°	22.5°	45°	90°	UPPER	LOWER	
6"	3 FT	6 FT	13 FT	30 FT	23 FT	4 FT	66 FT
8"	4 FT	8 FT	16 FT	38 FT	30 FT	6 FT	86 FT
10"	5 FT	9 FT	19 FT	45 FT	36 FT	7 FT	103 FT
12"	6 FT	11 FT	22 FT	53 FT	43 FT	8 FT	121 FT
16"	7 FT	14 FT	28 FT	66 FT	55 FT	10 FT	154 FT
20"	8 FT	16 FT	33 FT	79 FT	66 FT	12 FT	185 FT
24"	8 FT	16 FT	33 FT	79 FT	77 FT	15 FT	204 FT

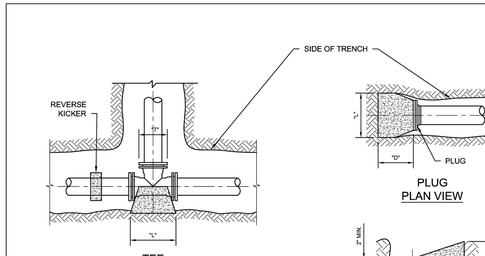
REDUCERS	
SIZE	L
6x4	34'
8x6	36'
8x4	62'
10x8	35'
10x6	63'
12x10	36'
12x8	64'
16x12	66'
16x10	92'
20x18	35'
20x16	66'
20x12	117'
24x20	56'
24x18	80'
24x16	101'

TEES		
RUN	BRANCH	L
4"	4"	F.O.
4"	6"	10'
	<6"	F.O.
8"	8"	29'
	<8"	F.O.
10"	10"	45'
	8"	13'
	<8"	F.O.
12"	12"	62'
	10"	32'
	<8"	F.O.
16"	16"	94'
	12"	39'
	10"	5'
	<10"	F.O.
20"	20"	125'
	16"	76'
	12"	14'
	<12"	F.O.
24"	24"	124'
	20"	84'
	16"	36'
	<16"	F.O.

F.O. = FITTING ONLY

NOTES:
1. PIPE TO BE INSTALLED IN TRENCH AS PER LINE LAYING CONDITION DETAIL.
2. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED AND SHALL BE PROVIDED WITH MECHANICAL JOINT THRUST RESTRAINTS AT ALL DIRECTION CHANGES, SIZE CHANGES, AND DEAD ENDS. ALL CONNECTIONS TO EXISTING PIPE SHALL BE MADE WITH RETAINER GLANDS.
3. MECHANICAL JOINT RESTRAINTS SHALL BE DUCTILE IRON IN ACCORDANCE WITH ASTM A536 - STANDARD SPECIFICATION FOR DUCTILE IRON CASTINGS.
4. CONTRACTOR SHALL FURNISH AND INSTALL MECHANICAL JOINT RESTRAINTS WITH ALL HARDWARE AND ACCESSORIES AS REQUIRED BY THE MANUFACTURER FOR PROPER INSTALLATION.
5. CONTRACTOR SHALL PROVIDE THE SERIES/MODEL OF JOINT RESTRAINT AS REQUIRED FOR THE PIPE SIZE, MATERIAL, AND FLANGED FITTING SHOWN ON THE PLANS.
6. RESTRAINT LENGTH CALCULATIONS WERE PERFORMED UNDER THE FOLLOWING CONDITIONS: PVC PIPE MATERIAL, GM SOIL TYPE, 1.5 SAFETY FACTOR, TYPE 3 TRENCH, 2.5 FT BURY DEPTH, 150 PSI TEST PRESSURE.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | PIPE JOINT RESTRAINT SCHEDULE | FIGURE NO.: CWS-4

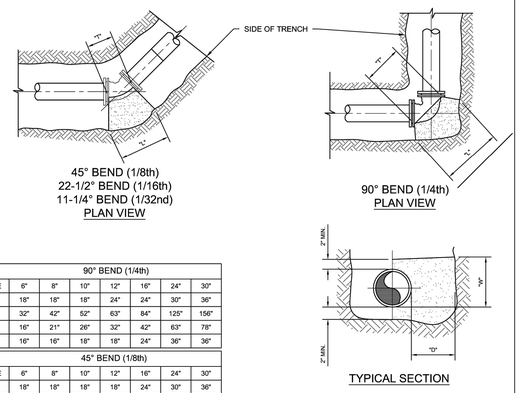


TEE							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	19"	25"	31"	38"	50"	75"	93"
"W"	19"	25"	31"	38"	50"	75"	93"
"T"	16"	16"	18"	18"	24"	36"	36"

PLUG							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	19"	25"	31"	38"	50"	75"	93"
"W"	19"	25"	31"	38"	50"	75"	93"
"T"	12"	12"	12"	12"	18"	30"	36"

NOTES:
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE AGAINST UNDISTURBED EARTH.
2. ALL BOLTS AND FITTINGS MUST BE WRAPPED IN MINIMUM THREE (3) MIL. PLASTIC.
3. LEAVE APPROXIMATELY 12" SEPARATION BETWEEN CONCRETE AND FITTING BELLS
4. THRUST BLOCK DIMENSIONS BASED ON 150 PSI OPERATING PRESSURE AND 50% ADDITIONAL SURGE PRESSURE
5. SOIL BEARING PRESSURE USED FOR THRUST BLOCK DIMENSIONS SHOWN IS 4,000 PSF. IF SOIL SURROUNDING THRUST BLOCK DOES NOT HAVE THIS CAPACITY, ADDITIONAL THRUST BLOCK VOLUME MAY BE REQUIRED.
6. CONCRETE TO BE USED FOR THRUST BLOCKS TO BE 3,500PSI CONCRETE.
7. LENGTH (L) AND WIDTH (W) DIMENSIONS CAN BE MODIFIED SLIGHTLY AS LONG AS TOTAL AREA DOES NOT CHANGE, BY WRITTEN DIRECTION OF CPWS ONLY TO MEET SITE SPECIFIC CONCERNS.
8. ELEVATION OF GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF THRUST BLOCK.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | CONCRETE BLOCKING DETAILS (TEES AND PLUGS) | FIGURE NO.: CWS-5



90° BEND (1/4th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	32"	42"	52"	63"	84"	125"	156"
"W"	16"	21"	26"	32"	42"	63"	78"
"T"	16"	16"	18"	18"	24"	36"	36"

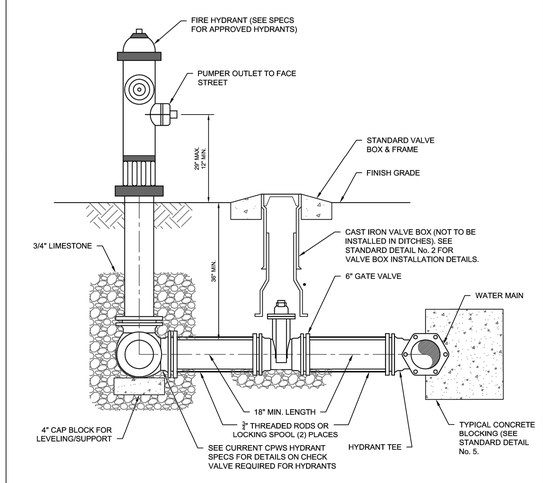
45° BEND (1/8th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	18"	24"	30"	36"
"L"	24"	31"	39"	46"	62"	92"	115"
"W"	12"	16"	20"	23"	31"	46"	58"
"T"	16"	16"	18"	18"	18"	24"	24"

22.5° BEND (1/16th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	12"	12"	18"	18"	24"	24"	24"
"L"	17"	23"	28"	33"	44"	66"	82"
"W"	9"	12"	14"	17"	22"	33"	41"
"T"	16"	16"	18"	18"	18"	24"	24"

11.25° BEND (1/32nd)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	12"	12"	18"	18"	24"	24"	24"
"L"	12"	16"	20"	24"	32"	47"	59"
"W"	6"	8"	10"	12"	16"	24"	30"
"T"	16"	16"	18"	18"	18"	24"	24"

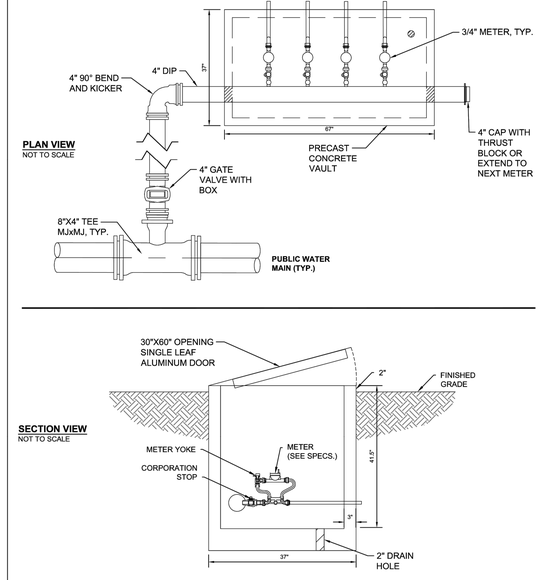
NOTES:
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE AGAINST UNDISTURBED EARTH.
2. ALL BOLTS AND FITTINGS MUST BE WRAPPED IN MINIMUM THREE (3) MIL. PLASTIC.
3. LEAVE APPROXIMATELY 12" CLEARANCE BETWEEN CONCRETE AND FITTING BELLS
4. THRUST BLOCK DIMENSIONS BASED ON 150 PSI OPERATING PRESSURE AND 50% ADDITIONAL SURGE PRESSURE.
5. SOIL BEARING PRESSURE USED FOR THRUST BLOCK DIMENSIONS SHOWN IS 4,000 PSF. IF SOIL SURROUNDING THRUST BLOCK DOES NOT HAVE THIS CAPACITY, ADDITIONAL THRUST BLOCK VOLUME MAY BE REQUIRED.
6. CONCRETE TO BE USED FOR THRUST BLOCKS TO BE 3,500PSI CONCRETE.
7. LENGTH (L) AND WIDTH (W) DIMENSIONS CAN BE MODIFIED SLIGHTLY AS LONG AS TOTAL AREA DOES NOT CHANGE, BY WRITTEN DIRECTION OF CPWS ONLY TO MEET SITE SPECIFIC CONCERNS.
8. ELEVATION OF GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF THRUST BLOCK.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | CONCRETE BLOCKING (BENDS) | FIGURE NO.: CWS-6



NOTES:
1. FIRE HYDRANT SHALL BE INSTALLED SO THE PUMPER NOZZLE IS POINTED TOWARD THE STREET.
2. ALL M.J. FITTINGS TO INCLUDE WEDGE STYLE THRUST RESTRAINT.
3. FIRE HYDRANTS TO BE SAFETY YELLOW.
4. TRACER WIRE TO EXTEND TO VALVE AND HYDRANT.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | FIRE HYDRANT ASSEMBLY | FIGURE NO.: CWS-11



NOTES:
1. THE GANG VAULT MAY VARY FROM 3 TO 6 METERS DEPENDING ON CONDITIONS. VAULT SIZE WILL VARY ACCORDINGLY.
2. PRECAST VAULT TO COMPLY WITH ASTM C-857 & C-858.
3. TRACER WIRE TO EXTEND TO METER VAULT.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL | GANG METER VAULT | FIGURE NO.: CWS-22

DESCRIPTION | DATE | REVISION #

I, MATTHEW W. BRYAN, REGISTERED ENGINEER, COMMERCE & CONSERVATION, CERTIFICATE No. 120, STATE OF TENNESSEE, 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MPAGROUPLLC.COM

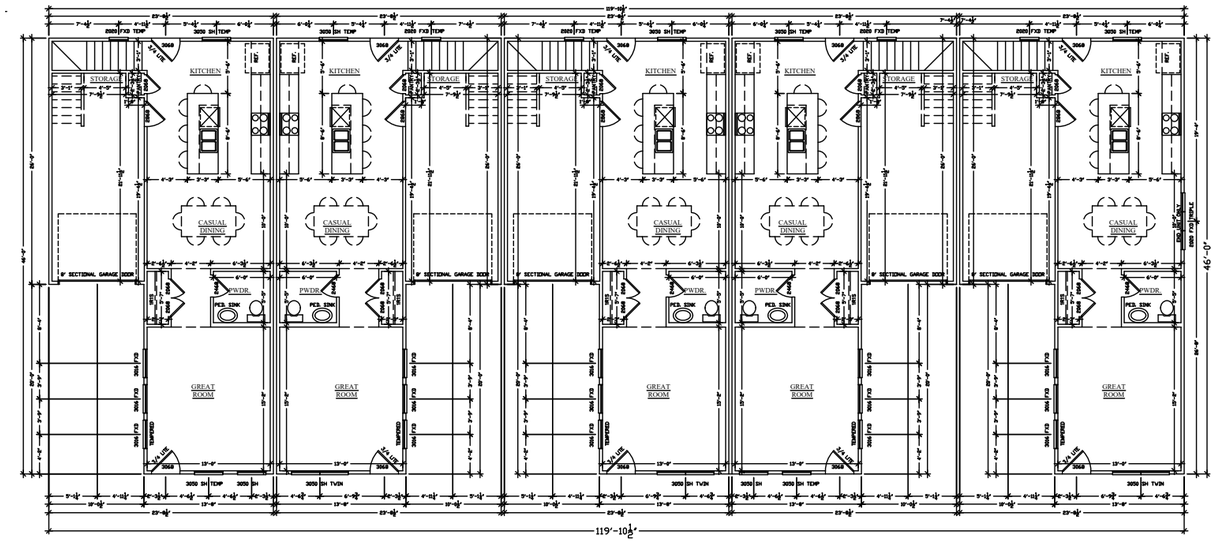
UTILITY DETAILS

DRAWN BY : MZG
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C601

MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:13:42 PM

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



STANDARD FIRST FLOORPLAN

1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

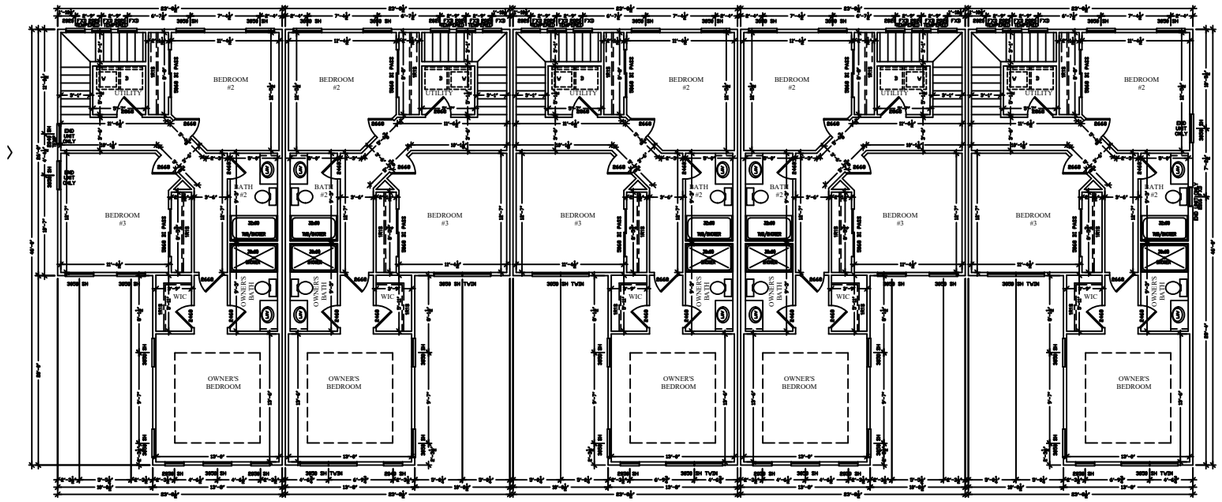
Scale: 1/16"=1'-0"

Date: XX/XX/XX

Revision Dates:

A1.0

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



STANDARD SECOND FLOORPLAN 1/16"=1'-0"

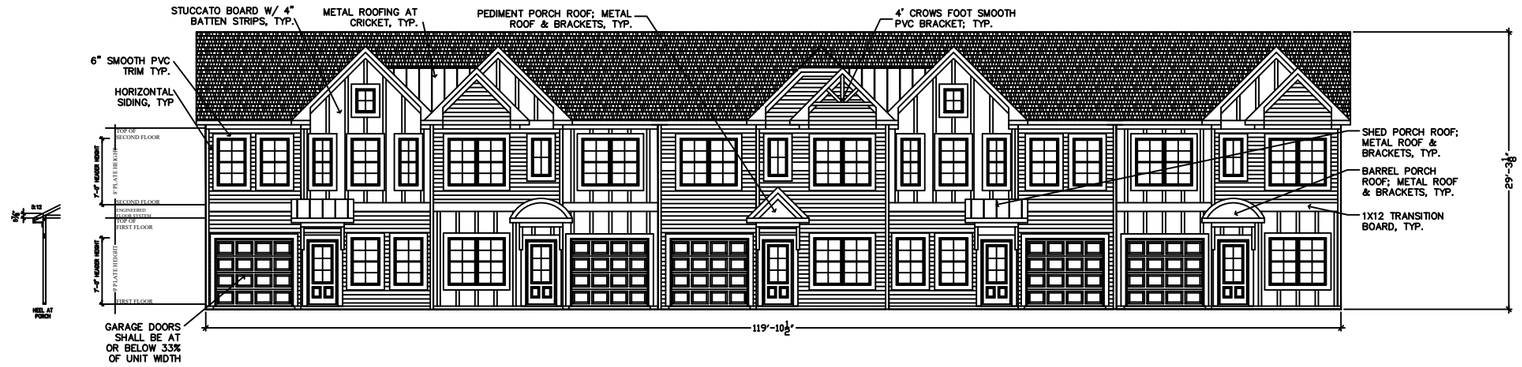
Project
TOWNHOME
Spec. Revision Date:
Lot # / Market Home or Home Owner
/ Name:
Plan Name:
PROPOSED
Sheet Name:
STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR
Scale: 1/16"=1'-0"
Date: XX/XX/XX
Revision Dates:

A2.0

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



FRONT ELEVATION: OPTION A



FRONT ELEVATION: OPTION B

ELEMENTS CHANGED PER INDIVIDUAL UNITS: PORCH ROOF STYLE, COLUMNS/ BRACKETS, EXTERIOR FINISHES: HORIZONTAL & VERTICAL SIDING, STUCATTO BOARD & BATTENS, VENTS, BRACKETS, ETC.

FRONT ELEVATIONS 1/16"=1'-0"

Project
TOWNHOME
Spec. Revision Date:
Lot # / Market Home or Home Owner
/ Name:
Plan Name:
PROPOSED
Sheet Name:
STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

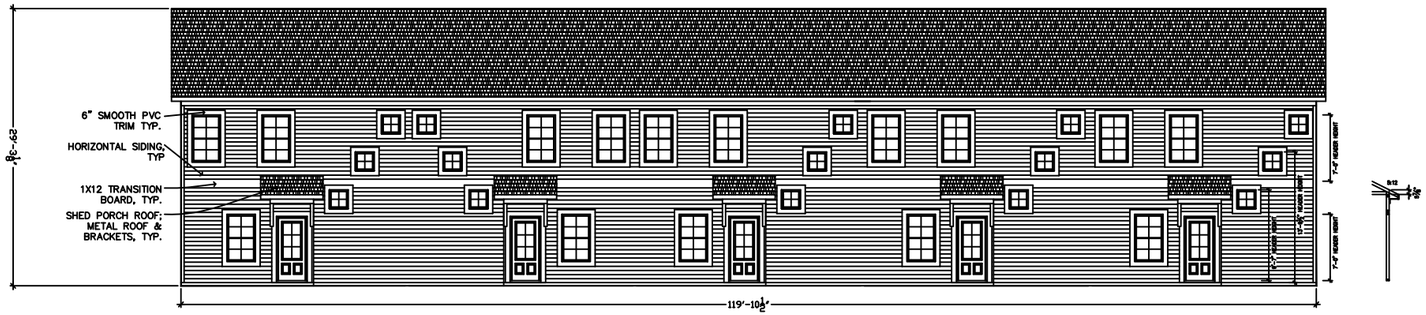
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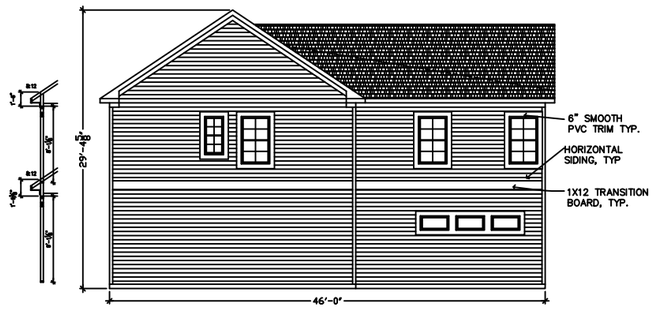
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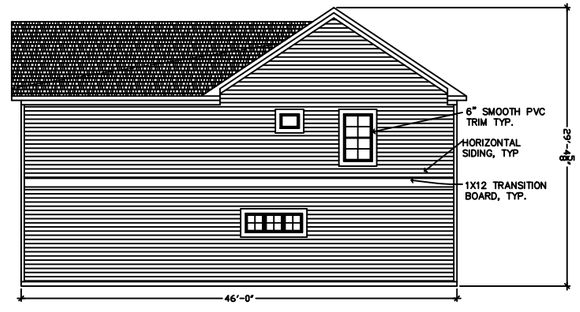
NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



REAR ELEVATION 1/16"=1'-0"



LEFT ELEVATION 1/16"=1'-0"



RIGHT ELEVATION 1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
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Revision Dates:

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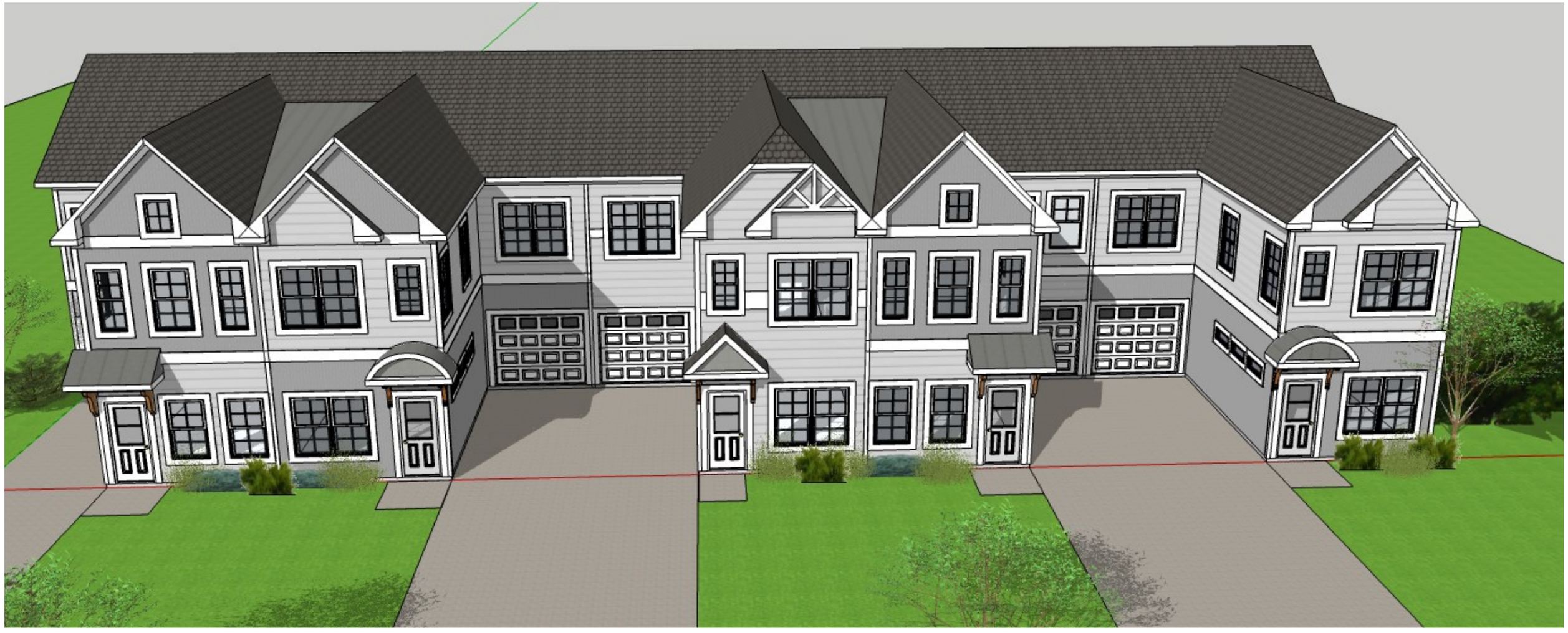
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TRAFFIC IMPACT STUDY

MACKENZIE PLACE APARTMENTS
COLUMBIA, TN

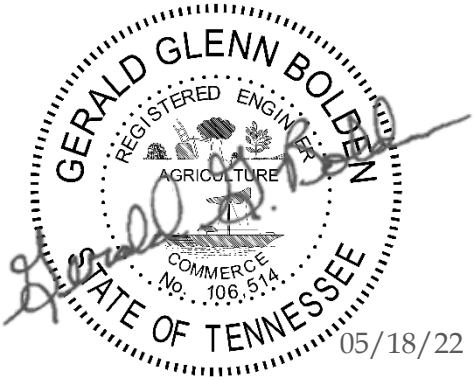
Prepared For: Waits Development Group, LLC

Prepared By: The Corradino Group, Inc.

May 2022

Traffic Impact Study
MacKenzie Place Apartment
Columbia, Tennessee

Prepared For:
Waits Development Group, LLC.



Prepared By:
The Corradino Group, Inc.
Franklin, TN

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Executive Summary

Project Description

This study will evaluate the traffic impacts of the proposed Mackenzie Place Apartment, a multifamily residential development located at 220 Theta Pike in Columbia, Tennessee. The site plan proposes 80 dwelling units accommodated in four two-story buildings. Access to the development is planned to be provided by a single access drive on Theta Pike. Surface parking is planned to accommodate the residential development. The purpose of this study is to analyze the access plan and the traffic impacts associated with this proposed development. For this study, it is assumed the development will be completed by 2024.

Existing Traffic Volumes

In order to analyze the roadway operations in the vicinity of the proposed development, typical weekday intersection turning movement counts were conducted at the following locations:

- Theta Pike and Highway 412/43
- Theta Pike and Timber Trail
- Theta Pike/8th Avenue and Nashville Highway

In addition, 24-hour bi-directional volume and speed tube counts were conducted along Theta Pike in the vicinity of the proposed development access.

Projection of Future Traffic Volumes

It is assumed that the traffic will continue to grow before the project is completed. Therefore, a historic growth rate was calculated and applied to the existing traffic counts. Additionally, traffic from two other approved developments were included in the background traffic volumes. Trips expected from the proposed multifamily residential development were added to background traffic in order to obtain the total projected traffic volumes for the study area. Finally, these trips were analyzed to determine the recommendations required for adequate roadway operations in the study.

Conclusions and Recommendations

The proposed Mackenzie Place development is located to the south of Hwy 412/43 and on the east side of Theta Pike in Columbia, Tennessee. According to the site engineer, the proposed development consists of approximately 80 multi-family dwelling units. The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project.

- The traffic operations in the study area for the Future Traffic Analysis are expected to continue to operate at the level currently being experienced or at the level of operation expected with the background traffic. To conclude, proposed development will have minimal impact on the nearby intersections thus requiring no improvement in terms of traffic signal and intersection geometry.

- The proposed site access should be designed such that the departure sight triangles, as specified by AASHTO and detailed in this study, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.

- The proposed site access on Theta Pike should be designed to include sufficient width for one entering lane and two exiting lanes as shown in the proposed site plan. This access should be stop controlled on the westbound approach for traffic exiting the site. STOP sign installation should be done based on TDOT sign guidelines.

- All intersection and roadway signing and pavement markings should be completed according to the Manual on Uniform Traffic Control Devices (MUTCD).

Introduction

This study aims to evaluate the traffic impacts of a proposed residential development located east of Theta Pike and south of Highway 412/43 in Columbia, Tennessee. The proposed development is within an area that is characterized by a mix of low to high density land uses, with multi-family residential developments immediately adjacent to the south, east and north of the project site. The site plan proposes 80 multi-family dwelling units. Access to the proposed development will create an intersection with Theta Pike. Access is located approximately 650 feet south of the intersection of Theta Pike and Highway 412/43 and 475 feet north of the Timber Trail.

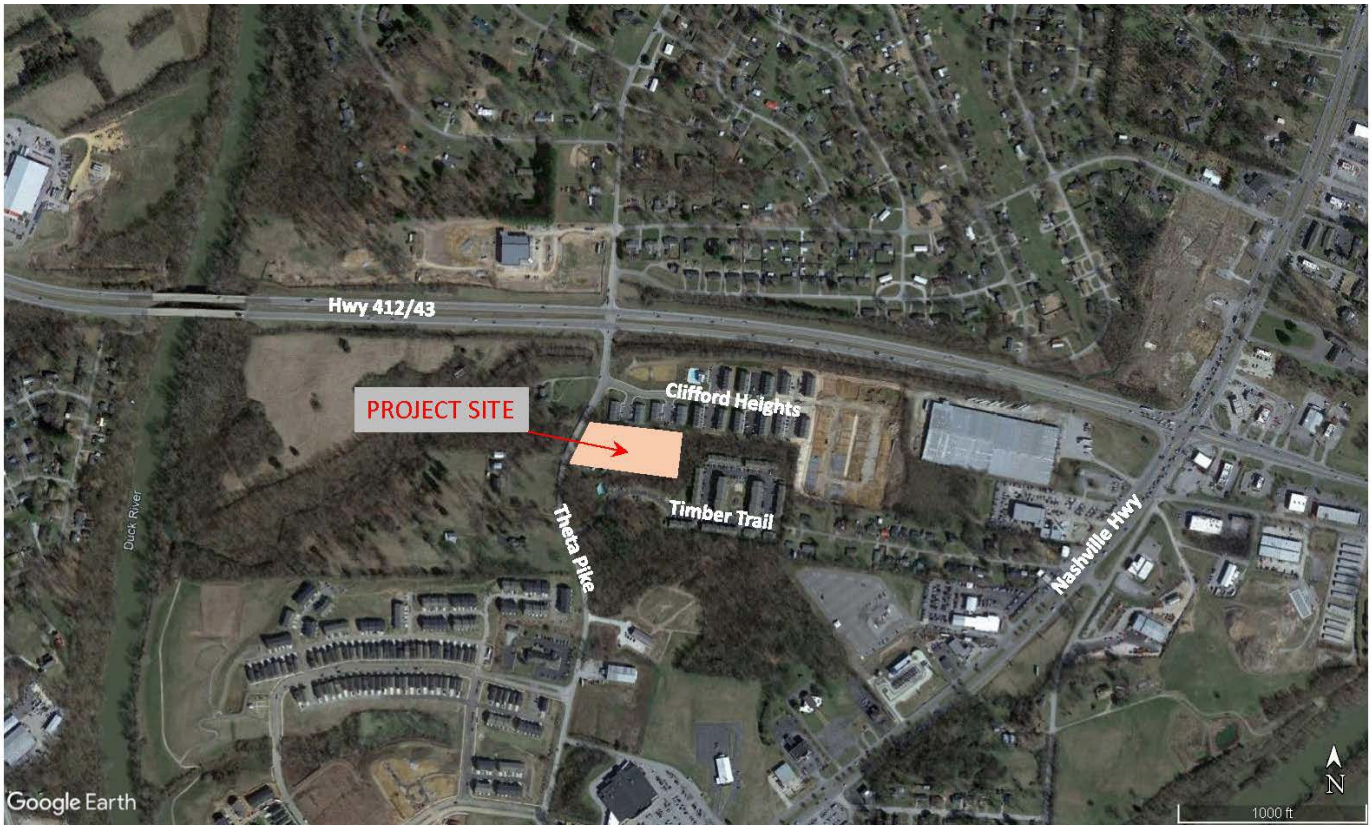
In this study existing operating conditions of the roadway network near the proposed development will be evaluated using traffic counts conducted along the study area roadways and intersections. The expected annual traffic growth will be determined based on historical traffic data. Using the estimated growth rate and trips generated by two other approved yet unbuild residential developments in the area, the background traffic volumes will be calculated. Trips generated by the proposed development will be determined and distributed to the roadway network to get the total projected traffic that will be present when the proposed development is completed.

Using the anticipated build-out final traffic, adjacent roadways and intersections will then be reevaluated to determine the anticipated traffic impacts of the proposed project. The project team will also conduct turn lane warrant analysis for the proposed access location. Industry standards will be used to analyze the traffic volumes and identify any necessary mitigation strategies to offset the decline (if any) in roadway operations resulting from the proposed development.

Project Description

The proposed residential development is located at 220 Theta Pike in Columbia, Tennessee. As shown on **Figure 1**, the development is located just east of Theta Pike, north of Timber Trail and south of south of Highway 412/43. The property is generally bounded on the south and north by multi-family housing, to the west by large lot single-family residential and on the east by multi-family housing and light industrial facilities. According to the site plan the property is intended to be zoned to RM-1 (High Density Residential).

As shown on the site plan provided in **Appendix A**, the development consists of 80 dwelling units accommodated in four two-story buildings. The proposed vehicular access point for the planned surface parking will be provided by an access drive on Theta Pike on the west side of the site. Access is located approximately in the mid-point between Timber Trail and Bancroft MI (Clifford Heights). The project is anticipated to be completed in 2024.



[Source: Google Earth]

Figure 1 Study Area

Existing Conditions

Existing Roadway Network

The existing roadway network, in the vicinity of the project site, includes Theta Pike, Highway 412/43 and Timber Trail. A description of this roadways and study intersections within the project vicinity is as follows:

Roadways

Theta Pike near the project site is a two-lane two-way undivided roadway with a posted speed limit of 35 mph. In the study area, this roadway runs in a north-south direction and provides a connection between Nashville Highway to the south and more rural areas of the county to the north. Based on Columbia's Transportation Master Plan, this roadway is classified as collector road. This road has 12-feet lane width in both directions along with open ditches and no shoulder. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Theta Pike.



Northbound Theta Pike – Near Proposed Access



Southbound Theta Pike - Near Proposed Access

Timber Trail is a two-lane local road mainly serving as an access to the Cedar Pointe residential establishment (located southeast of the proposed development). The roadway is approximately 24 feet wide with mountable curb along each side. There is no sidewalk facilities on this section of road. There is no posted speed limit.



Westbound Timber Trail

Highway 412/43, near the project site, is a four-lane median divided roadway with paved shoulders and a posted speed limit of 45 mph. This segment of roadway runs in an east-west direction and provides a bypass around the north side of Columbia. As a

whole, Highway 412/43 provides a connection to I-65. To the east of Nashville Highway, this roadway has partial access control. There is no on-street parking, sidewalk, transit, or bicycle facilities are provided on Highway 412/43.

Intersections

Theta Pike and Highway 412/43 form a four-legged, signalized intersection. On both southbound and northbound approaches of Theta Pike, there is a shared through/right-turn lane and exclusive left-turn lane. The northbound left-turn lane has approximately 90 feet of available storage while the southbound left has approximately 150 feet. These approaches include protected-permissive left turn signal phasing. Highway 412/43 has one through lane, one shared through/right-turn lane and one exclusive left-turn lane on both the eastbound and westbound approaches. The westbound left-turn lane has approximately 185 feet of available storage while the eastbound left has approximately 140 feet. The eastbound and westbound approaches on Highway 412/43 have protected only left turn signal phasing. No pedestrian facilities are provided at the intersection.



Eastbound Highway 412/43 @ Theta Pike



Westbound Highway 412/43 @ Theta Pike



Northbound Theta Pike @ Highway 412/43



Southbound Theta Pike @ Highway 412/43

Theta Pike and Timber Trail form a three-leg stop controlled intersection with Timber Trail having the stop condition. Timber Trail has one shared left-turn/right-turn lane. Northbound Theta Pike has one shared through/right-turn lane while southbound Theta Pike has one shared through/left-turn lane.



Westbound Timber Trail @ Theta Pike

Theta Pike/8th Avenue and Nashville Highway forms a four-legged signalized intersection. Southbound Theta Pike has an exclusive left-turn lane with approximately 75 feet of storage and a shared through/right-turn lane. Northbound 8th Avenue has one shared through/left-turn lane and one exclusive right turn lane with approximately 90 feet of storage. Both eastbound and westbound approaches of Nashville Highway have one through lane, one shared through/right-turn lane and one exclusive left-turn lane. The westbound left-turn lane has approximately 85 feet of storage and the eastbound left-turn lane has approximately 300 feet of storage. The northbound and southbound approaches of Theta Pike and 8th Avenue operate as permissive phasing. Protected-permissive left turn signal phasing is utilized for the eastbound and westbound approaches of Nashville Highway.



Southbound Theta Pike/8th Avenue @ Nashville Highway



Northbound Theta Pike/8th Avenue @ Nashville Highway



Eastbound Nashville Highway @ Theta Pike/8th Avenue



Westbound Nashville Highway @ Theta Pike/8th Avenue

Existing Traffic Volumes

In order to analyze the roadway operations in the vicinity of the proposed development, typical weekday intersection turning movement counts were conducted at the following locations:

- Theta Pike and Highway 412/43
- Theta Pike and Timber Trail
- Theta Pike/8th Avenue and Nashville Highway

The turning movement counts were collected on Tuesday, February 22, 2022, during the AM and PM peak periods while school was in full session. The AM count period was from 6:00 – 9:00 AM and the PM count period was from 3:00 – 6:00 PM, to be inclusive of the school arrival and dismissal periods. In addition, 24-hour bi-directional volume and speed tube counts were conducted along Theta Pike in the vicinity of the proposed development access. The raw turning movement counts and 24-hour bi-directional counts are included in **Appendix B**.

Existing Traffic Analysis

To determine the effects of the proposed development on the existing roadway network, analysis of the roadway network in the study area was conducted. The existing traffic volumes used are shown in **Figure 2**. The operational analysis results in a Level of Service (LOS) for each intersection during the AM and PM peak hours. The LOS is based on the industry standard outlined in the *Highway Capacity Manual* 2010. The LOS results range from an A to a F with A being the best and F the worst. For intersections, the LOS is based on the volume-to-capacity ratio and amount of delay experienced by each movement. For unsignalized intersections, the LOS is reported for critical turning movements based on delay and volume-to-capacity (v/c) ratio and for signalized intersections the LOS is reported for each approach and for the overall intersection based on delay, as shown in **Table 1**. The LOS for the existing traffic volumes at the study intersections is shown in **Table 2** and **Appendix C** contains the LOS reports.

TABLE 1
LEVEL OF SERVICE THRESHOLDS

LOS	CONTROL DELAY/VEHICLE (s/veh)	
	UNSIGNALIZED	SIGNALIZED
A	0 – 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

TABLE 2
EXISTING LEVEL OF SERVICE

Intersection	Movement	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Theta Pike and Highway 412/43	Eastbound Approach	B	19.2	C	21.6
	Westbound Approach	B	18.3	C	26.1
	Northbound Approach	D	46.1	D	39.5
	Southbound Approach	D	53.0	D	54.1
	Overall Intersection	**C**	***22.5***	**C**	***28.0***
Theta Pike and Nashville Highway	Eastbound Approach	A	7.3	A	8.2
	Westbound Approach	A	9.8	B	10.3
	Northbound Approach	C	33.1	C	32.8
	Southbound Approach	D	38.6	D	40.2
	Overall Intersection	**B**	***10.4***	***B***	***11.4***
Theta Pike and Timber Trail	Westbound Approach	A	9.8	B	11.6
	Southbound Left	A	7.4	A	7.9

The results show that overall, all intersections operate at acceptable levels of service (LOS D or better) during AM and PM peak hour. The LOS analysis reports are included in **Appendix C**.

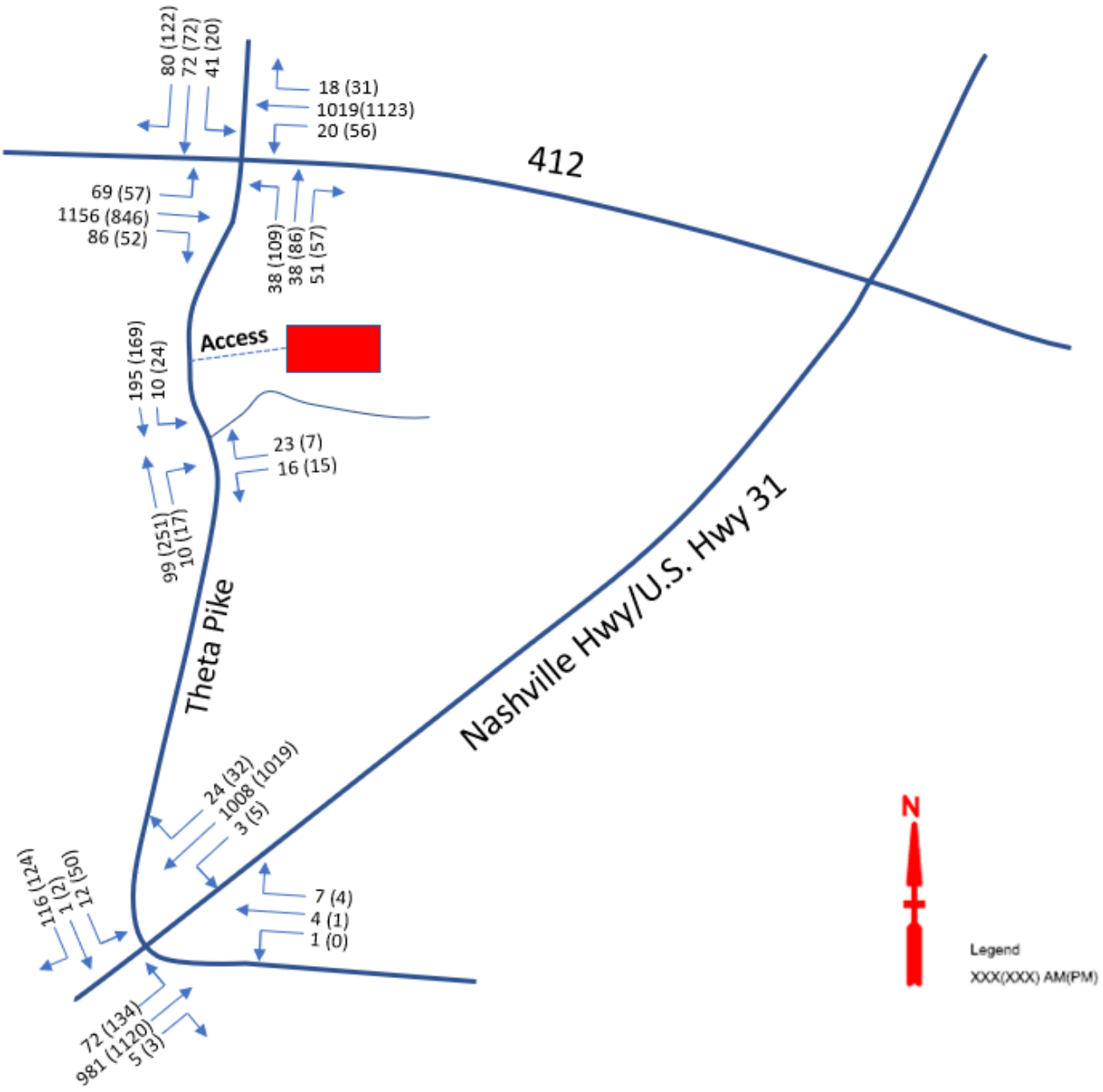


Figure 2 Existing Traffic Volumes

Background Traffic Volumes

Developing Historic Growth Rates

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. To develop the growth rate to be applied to the existing traffic volumes, historical daily traffic volumes were obtained from the TDOT count stations located on Highway 412/43, Theta Pike, and Nashville Highway in the vicinity of the project site. **Table 3** below shows the AADT for TDOT count Station. For these three-count station average linear growth rate from 2016 to 2021 is 4%. Through coordination with the City's traffic consultant and based on the historical count data, a 3.5% annual growth rate was used. Anticipated project build-out is 2024, so, percentage growth is calculated for 2-year period to represent the 2024 background traffic growth.

TABLE 3
TDOT COUNT STATION

TDOT Count Sta.60000043 Theta Pike		TDOT Count Sta. 60000202 New Lawrenceburg		TDOT Count Sta. 60000046 Nashville Hwy	
Year	**AADT**	**Year**	**AADT**	**Year**	**AADT**
2021	4,164	2021	32,654	2021	30,239
2020	3,809	2020	24,408	2020	27,741
2019	3,510	2019	24,166	2019	27,466
2018	3,060	2018	19,450	2018	26,893
2017	3,374	2017	28,345	2017	25,904
2016	3,440	2016	23,564	2016	26,101

There are two proposed developments, Theta Pike Cove & Taylor Landing, near the study area that is expected to affect the traffic volumes at the study intersections. Theta Pike Cove is a residential development of 162 townhome units. Taylor Landing, on the other hand, is a development consisting of 140 single family homes and 148 townhome units. For Taylor Landing, the traffic information provided by the city did not have trip distribution and assignment. The project team utilized the old distribution and assignment pattern to develop traffic for the updated trip generation. Traffic for both of these developments were included in the background growth. **Figure 3** shows the total background traffic volume for the study area which includes the 7% total ambient growth to account for the 2 years to buildout. The trip distribution and assignment figure for the approved developments are included in **Appendix D** for reference.

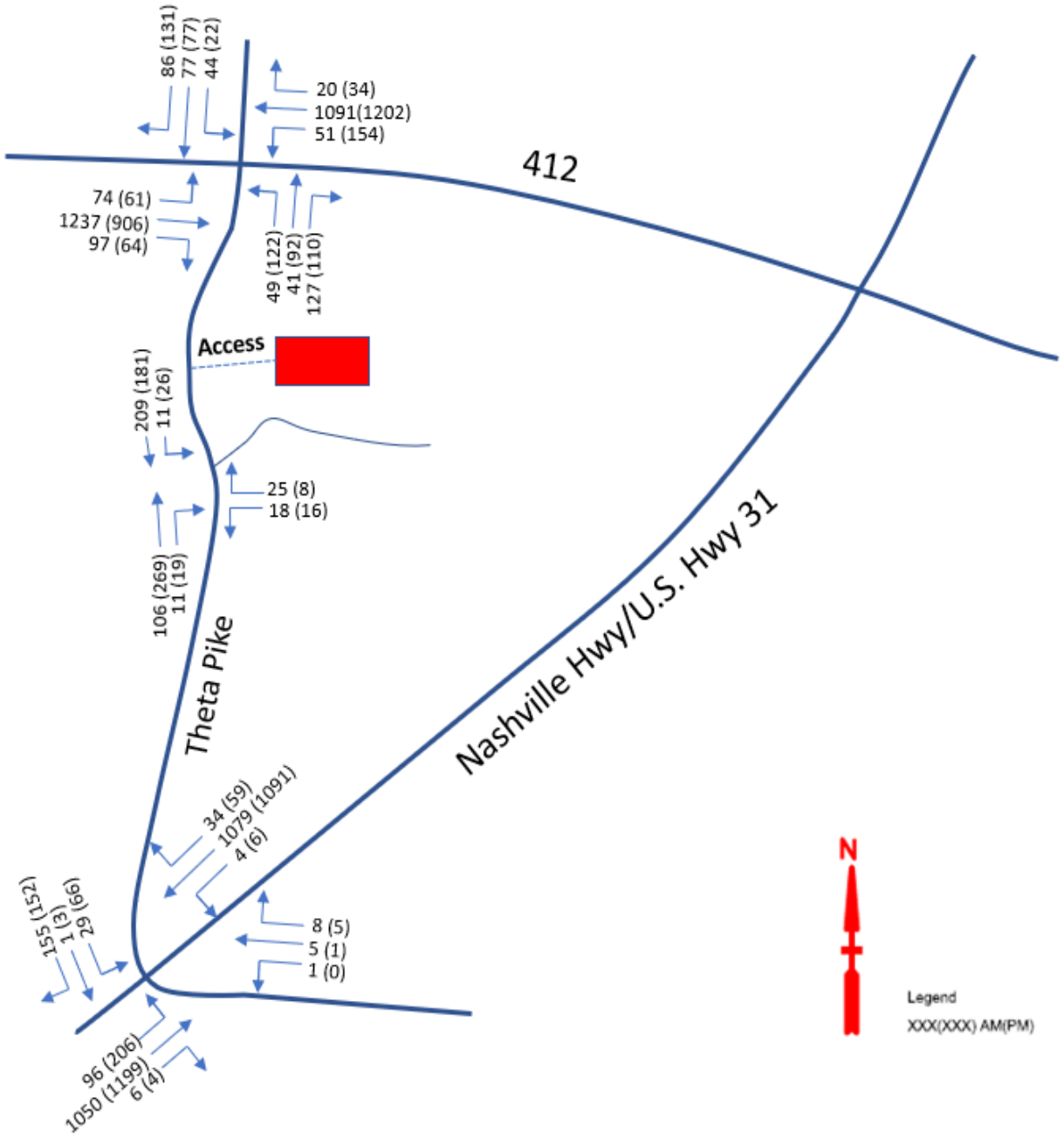


Figure 3 Background Traffic Volumes

Background Traffic Analysis

Using the background traffic volumes and the methodology outlined in the existing conditions, **Table 4** shows the results of the background traffic analysis. As shown, overall, all intersections in the study area are expected to operate at acceptable levels of service under background conditions similar to the existing condition. The LOS analysis reports are included in **Appendix C**.

TABLE 4
BACKGROUND LEVEL OF SERVICE

Intersection	Movement	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Theta Pike and Highway 412/43	Eastbound Approach	C	22.6	C	27.4
	Westbound Approach	C	21.0	D	45.0
	Northbound Approach	D	54.1	D	41.1
	Southbound Approach	D	51.7	D	54.2
	Overall Intersection	**C**	***26.2***	**D**	***39.2***
Theta Pike and Nashville Highway	Eastbound Approach	A	9.8	B	10.8
	Westbound Approach	B	13.3	B	13.8
	Northbound Approach	C	30.1	C	31.2
	Southbound Approach	D	40.9	D	44.5
	Overall Intersection	**B**	***13.9***	***B***	***14.8***
Theta Pike and Timber Trail	Westbound Approach	A	9.9	B	11.9
	Southbound Left	A	7.5	A	7.9

Proposed Development Impacts

Development Trip Generation

The proposed new development is expected to generate vehicular trips that will use the roadway network in the study area. To determine the expected amount of traffic to be generated from the residential development, *ITE Trip Generation Manual*, 11th Edition was used to calculate the daily trips, AM Peak hour trips, and PM peak hour trips. **Table 5** lists the calculated trips for the proposed development. **Appendix E** includes the trip generation calculations.

TABLE 5
TRIP GENERATION FOR PROPOSED DEVELOPMENT

Trip Generation Table							
Land Use	**LUC**	**Size**	**Daily Trips**	**AM Peak Hour Trips**		**PM Peak Hour Trips**	
				Enter	**Exit**	**Enter**	**Exit**
Multifamily Housing (Low-Rise)	220	80 units	588	12	36	35	20

Trip Distribution and Traffic Assignment

The trips generated by the proposed development will be distributed and assigned to the roadway network within the study area. The trip distribution is based on the existing traffic flow and attractors in the area and regionally. It is assumed the new traffic created by the Mackenzie Place development will travel in the same pattern through the study area roadway network to and from the proposed development as the existing traffic, given it is the same general land use. **Figures 4 and 5** show the trip distribution and traffic assignment for the proposed residential uses.

To determine the total amount of traffic traveling through the study area in 2024 when the development is complete, the trip assignment was added to the total background traffic volumes. The resulting total proposed traffic volumes are shown in **Figure 6**.

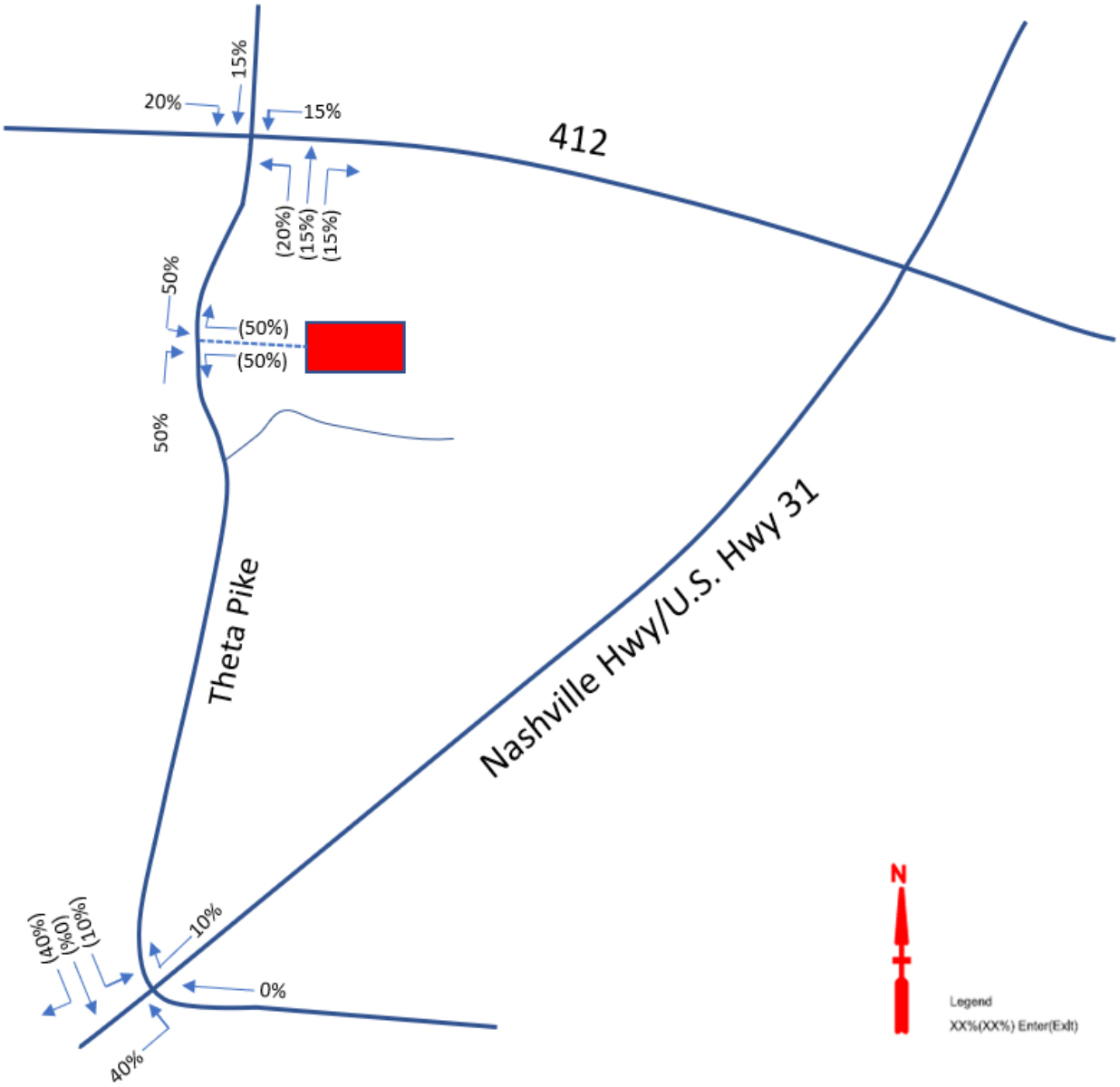


Figure 4 Peak Hour Traffic Distribution

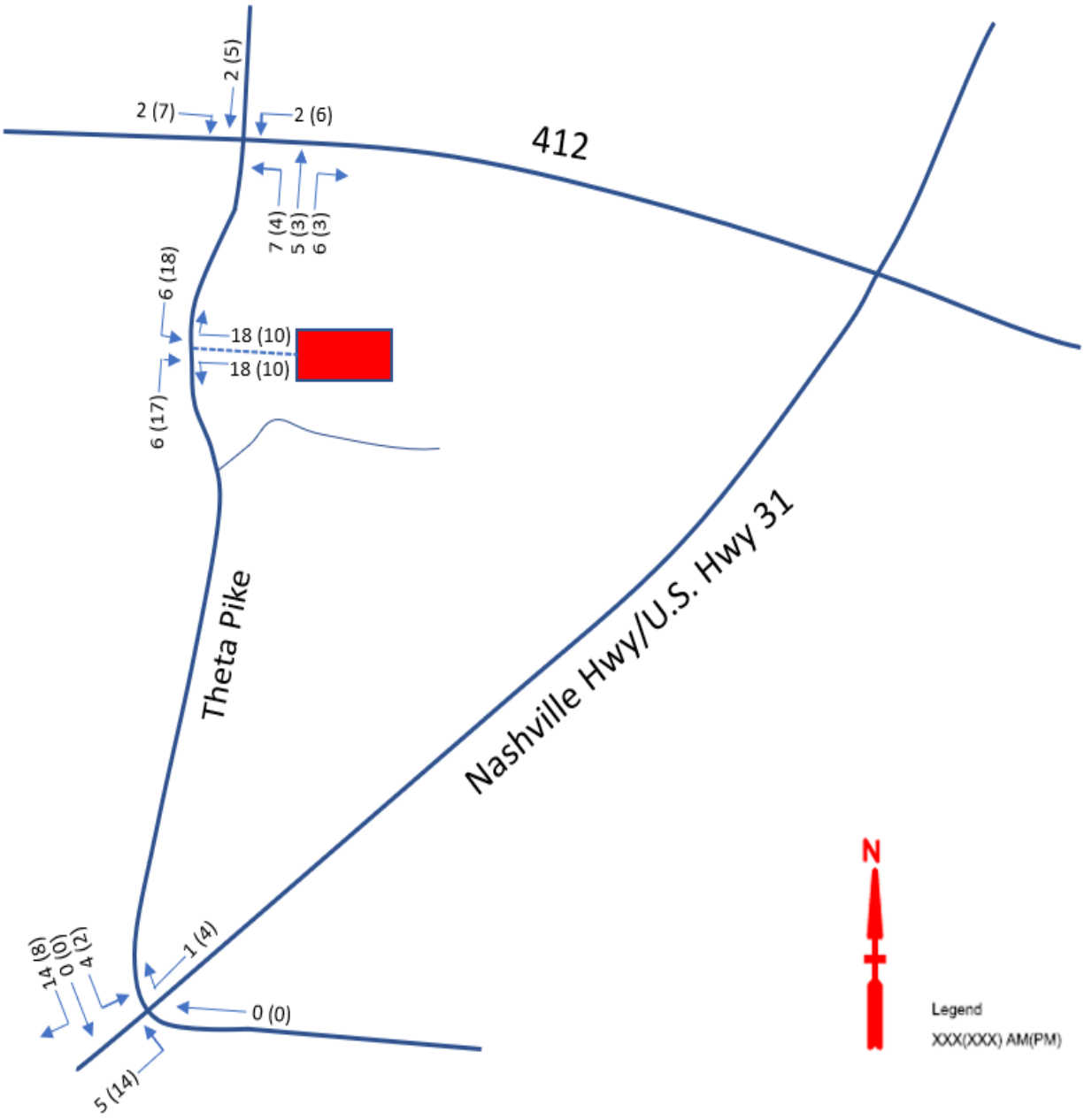


Figure 5 Peak Hour Traffic Assignment

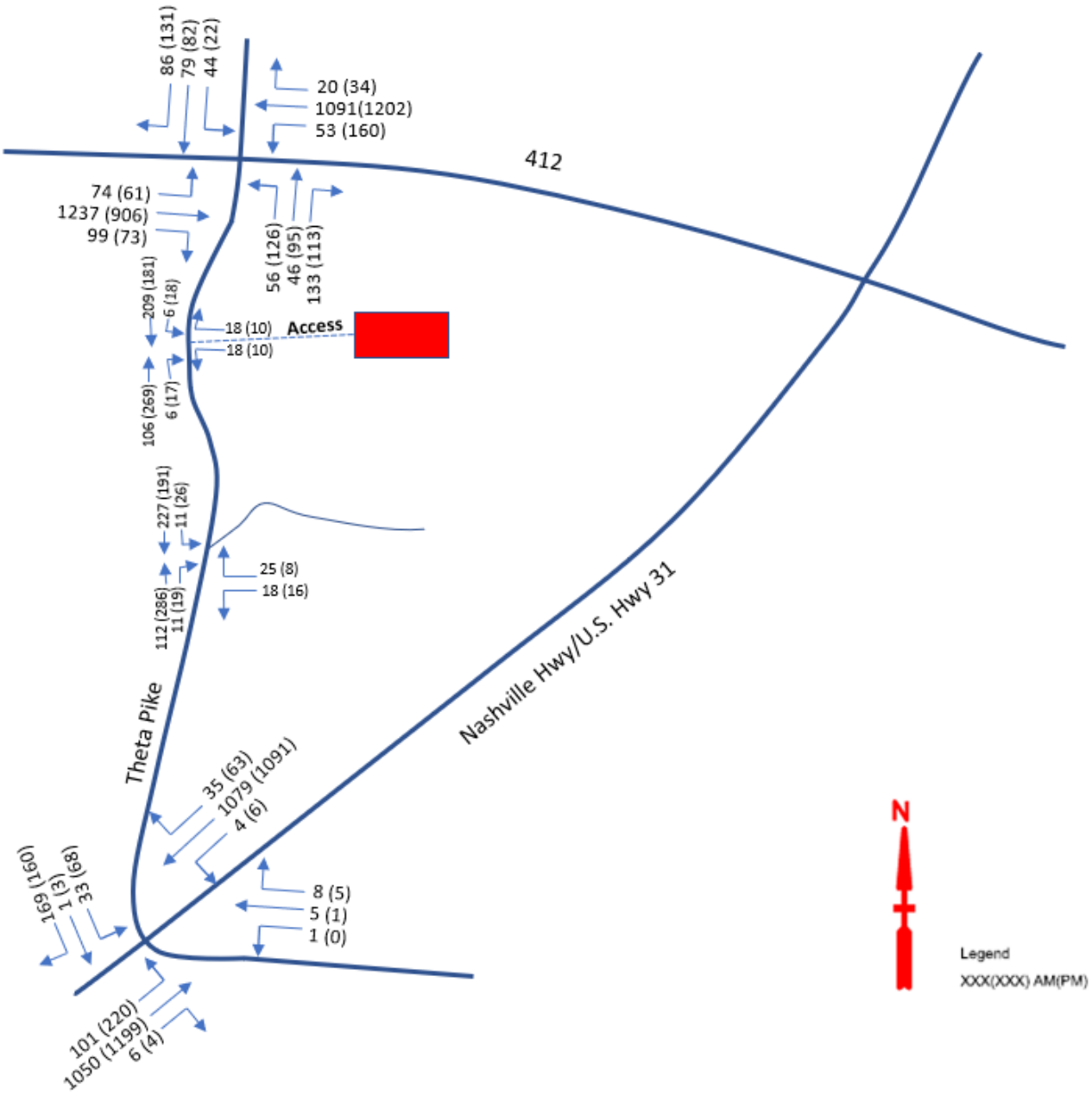


Figure 6 Total Projected Traffic Volumes Expected in Buildout Year

Future Traffic Analysis

Future traffic volumes were developed from the background traffic and proposed residential development. Capacity analyses were performed in order to determine the impact of the project on the study intersections. These capacity analyses were also used to evaluate the need for roadway and traffic control improvements at the intersections studied. For the analyses, the intersection configurations and signal timings were the same as the existing and background conditions. It was assumed the site access on Theta Pike will include one lane for entering traffic and two lanes for exiting traffic as shown in the site plan included in **Appendix A**.

Table 6 shows the resulting LOS for the intersections in the study area. According to the analysis under the projected conditions the capacity analyses indicate that the study intersections are expected to continue to operate at the same levels of service as under the background conditions with only slight increases in vehicular delay. All intersections are expected to continue to operate at acceptable levels of service. The LOS analysis reports are included in **Appendix C**.

TABLE 6
TOTAL PROJECTED LEVEL OF SERVICE

Intersection	Movement	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Theta Pike and Highway 412/43	Eastbound Approach	C	23.5	C	27.9
	Westbound Approach	C	21.7	D	47.9
	Northbound Approach	D	54.8	D	41.3
	Southbound Approach	D	51.2	D	54.6
	Overall Intersection	**C**	***27.2***	**D**	***40.8***
Theta Pike and Nashville Highway	Eastbound Approach	B	10.6	B	11.6
	Westbound Approach	B	14.3	B	14.6
	Northbound Approach	C	29.1	C	30.8
	Southbound Approach	D	41.6	D	45.7
	Overall Intersection	**B**	***14.9***	***B***	***15.6***
Theta Pike and Timber Trail	Westbound Approach	B	10.1	B	12.2
	Southbound Left	A	7.5	A	8.0
Theta Pike and Project Access	Westbound Left	B	11.1	B	12.8
	Westbound Right	A	9.1	B	10.0
	Southbound Left	A	7.5	A	7.9

Analysis of Site Plan

Turn Lane Analysis

The site access point on Theta Pike was evaluated for the need to provide a left turn lane based on the projected traffic volumes. This analysis was based on the procedures outlined in M.D. Harmelink's *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections*. The result of this analysis indicates that a left turn lane is not warranted by the projected traffic volumes at the study intersection. Details of the Harmelink analyses are included in **Appendix F**.

The site access point on Theta Pike was also evaluated for the need to provide a right turn lane based on the projected traffic volumes. According to the Intersection Channelization Design Guide (NCHRP 279), a full width right turn lane is not warranted at the site access point based on the projected peak hour traffic volumes. The right turn lane analysis is included in **Appendix F**.

Access Sight Distance

As previously mentioned, access to the proposed development will be provided by a single driveway on Theta Pike. Field investigations and sight distance measurements were conducted to determine if adequate sight distance would be available for motorists exiting the project site onto Theta Pike from the site access based on the current site plan. For a 35-mph speed, as posted on Theta Pike, the guidelines from *A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO), call for a minimum stopping sight distance of 250 feet as a design value. This is the distance required for a motorist to detect an object in the roadway necessitating a stop and be able to stop before reaching the object.

Subsequently, AASHTO also provides minimum design values for intersection sight distance. The intersection sight distance allows enough time gap for a motorist to turn from the site access onto Theta Pike without requiring a motorist on Theta Pike to significantly reduce speed. For a speed of 35 mph, the design value for intersection sight distance for a motorist turning left from a stop (Case B1) onto a two-lane roadway such as Theta Pike is 390 feet and for a motorist turning right from a stop (Case B2) is 335 feet.

The field investigations indicate that the sight distance available at the proposed intersection of the site access and Theta Pike will be more than adequate to the north of the access. However, intersection sight distance to the south of the access, for right turning vehicle, was measured at approximately 275 feet which falls below the required intersection sight distance. Currently, a "Theta Pike Residential" sign and trees are a hindrance for right-turning movement and limiting the available sight distance.

Construction of the site access should be completed such that a minimum of 390 feet of intersection sight distance is provided to the north for a left turn from the site access onto Theta Pike. In addition, a minimum of 335 feet of intersection sight distance should be provided to the south for a right turn from the site access onto Theta Pike.



Intersection Sight Distance for Right-Turning Vehicle: Existing Condition

Conclusions and Recommendations

The proposed Mackenzie Place development is located to the south of Hwy 412/43 and on the east side of Theta Pike in Columbia, Tennessee. According to the site engineer, the proposed development consists of approximately 80 multi-family dwelling units. The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project.

- The traffic operations in the study area for the Future Traffic Analysis are expected to continue to operate at the level currently being experienced or at the level of operation expected with the background traffic. To conclude, proposed development will have minimal impact on the nearby intersections thus requiring no improvement in terms of traffic signal and intersection geometry.

- The proposed site access should be designed such that the departure sight triangles, as specified by AASHTO and detailed in this study, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.

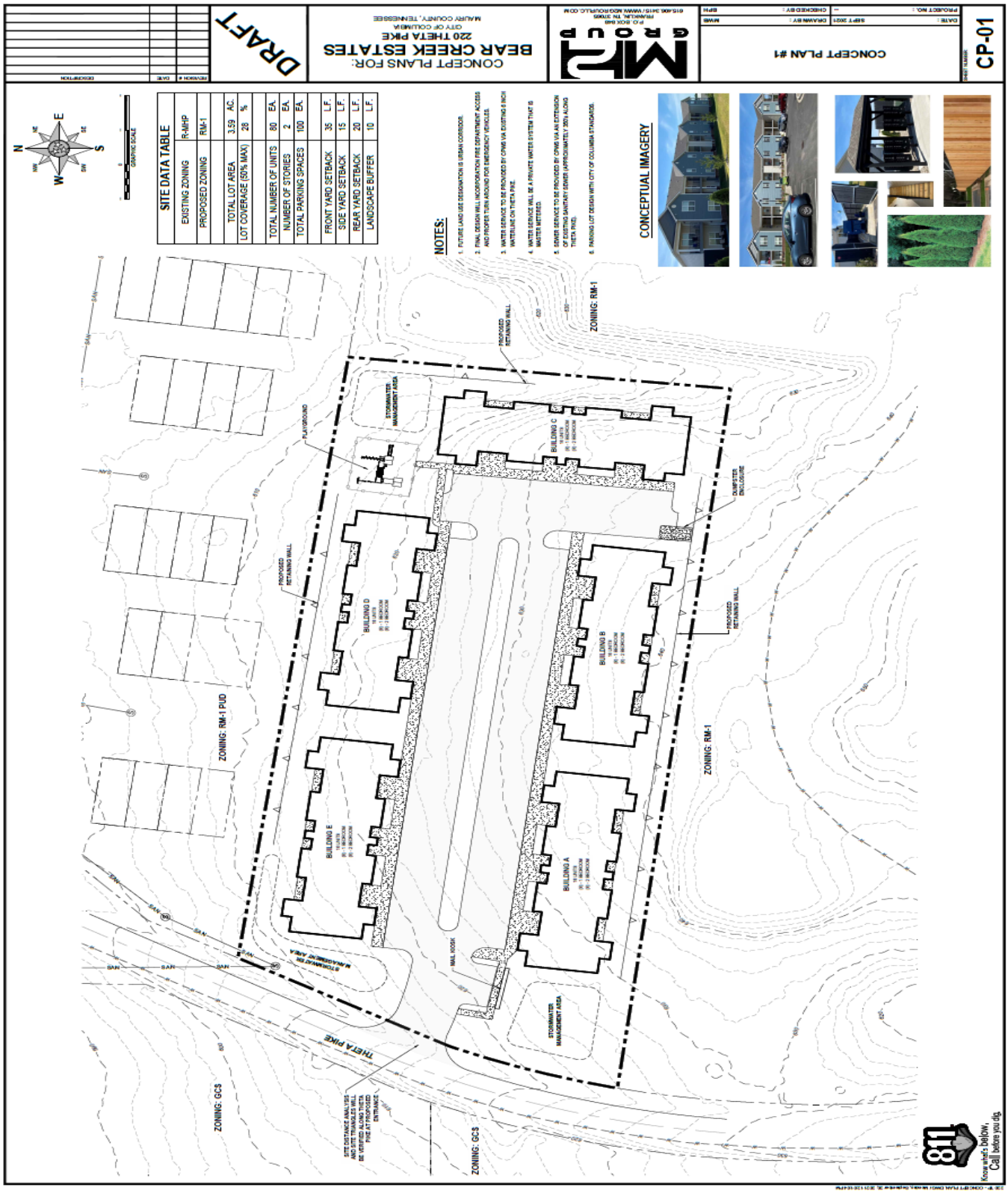
- The proposed site access on Theta Pike should be designed to include sufficient width for one entering lane and two exiting lanes as shown in the proposed site plan. This access should be stop controlled on the westbound approach for traffic exiting the site. STOP sign installation should be done based on TDOT sign guidelines.

- All intersection and roadway signing and pavement markings should be completed according to the Manual on Uniform Traffic Control Devices (MUTCD).

Appendix

A. Site Plan
B. Traffic Counts
C. Level of Service (LOS) Reports –
    Existing
    Background
    Projected
D. Background Traffic Data
E. Trip Generation
F. Turn Lane Analysis

A. Site Plan


CP-01
CONCEPT PLAN #1
DRAFT
CONCEPT PLANS FOR:
BEAR CREEK ESTATES
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE
GROUP
SITE DATA TABLE
EXISTING ZONING R-MHP
PROPOSED ZONING RM-1
TOTAL LOT AREA 3.59 AC.
LOT COVERAGE (50% MAX) 28 %
TOTAL NUMBER OF UNITS 80 EA.
NUMBER OF STORIES 2 EA.
TOTAL PARKING SPACES 100 EA.
FRONT YARD SETBACK 35 L.F.
SIDE YARD SETBACK 15 L.F.
REAR YARD SETBACK 20 L.F.
LANDSCAPE BUFFER 10 L.F.
NOTES:
CONCEPTUAL IMAGERY
ZONING: RM-1
ZONING: RM-1 PUD
ZONING: GCS
THETA PIKE
BUILDING A
BUILDING B
BUILDING C
BUILDING D
BUILDING E
PROPOSED RETAINING WALL
STORMWATER MANAGEMENT AREA
PLAYGROUND
DUMPSTER ENCLOSURE
811
Know what's below. Call before you dig.

B. Traffic Counts

Click here for Map

Peak Hour Turning Movement Count

Bear Creek Estates

Marr Traffic DATA COLLECTION

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All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0715 - 0730	10	8	5	0	23	12	13	24	0	49	17	321	17	0	355	6	235	1	0	242	669
0730 - 0745	16	8	15	0	39	10	22	17	0	49	25	301	20	0	346	10	295	5	0	310	744
0745 - 0800	6	13	14	0	33	13	27	29	0	69	19	304	35	0	358	11	232	7	0	250	710
0800 - 0815	6	9	17	0	32	6	10	10	0	26	8	230	14	1	253	20	257	5	0	282	593
Total	38	38	51	0	127	41	72	80	0	193	69	1156	86	1	1312	47	1019	18	0	1084	2716
Approach %	29.92	29.92	40.16	0.00	-	21.24	37.31	41.45	0.00	-	5.26	88.11	6.55	0.08	-	4.34	94.00	1.66	0.00	-	
PHF	0.59	0.73	0.75	0.00	**0.81**	0.79	0.67	0.69	0.00	**0.70**	0.69	0.90	0.61	0.25	**0.92**	0.59	0.86	0.64	0.00	**0.87**	**0.91**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0715 - 0730	10	7	4	0	21	12	13	23	0	48	17	306	16	0	339	6	215	1	0	222	630
0730 - 0745	16	8	15	0	39	8	22	17	0	47	25	280	20	0	325	10	265	5	0	280	691
0745 - 0800	6	13	14	0	33	12	27	28	0	67	19	287	34	0	340	11	209	7	0	227	667
0800 - 0815	5	9	17	0	31	6	10	10	0	26	7	213	13	1	234	20	222	4	0	246	537
Total	37	37	50	0	124	38	72	78	0	188	68	1086	83	1	1238	47	911	17	0	975	2525
Approach %	29.84	29.84	40.32	0.00	-	20.21	38.30	41.49	0.00	-	5.49	87.72	6.70	0.08	-	4.82	93.44	1.74	0.00	-	
PHF	0.58	0.71	0.74	0.00	**0.79**	0.79	0.67	0.70	0.00	**0.70**	0.68	0.89	0.61	0.25	**0.91**	0.59	0.86	0.61	0.00	**0.87**	**0.91**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0715 - 0730	0	1	1	0	2	0	0	1	0	1	0	4	0	0	4	0	10	0	0	10	17
0730 - 0745	0	0	0	0	0	2	0	0	0	2	0	14	0	0	14	0	16	0	0	16	32
0745 - 0800	0	0	0	0	0	1	0	1	0	2	0	8	1	0	9	0	14	0	0	14	25
0800 - 0815	1	0	0	0	1	0	0	0	0	0	1	11	1	0	13	0	24	1	0	25	39
Total	1	1	1	0	3	3	0	2	0	5	1	37	2	0	40	0	64	1	0	65	113
Approach %	33.33	33.33	33.33	0.00	-	60.00	0.00	40.00	0.00	-	2.50	92.50	5.00	0.00	-	0.00	98.46	1.54	0.00	-	
PHF	0.25	0.25	0.25	0.00	**0.38**	0.38	0.00	0.50	0.00	**0.63**	0.25	0.66	0.50	0.00	**0.71**	0.00	0.67	0.25	0.00	**0.65**	**0.72**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	11	1	0	12	0	10	0	0	10	22
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	14	0	0	14	21
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	9	0	0	9	18
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	11	0	0	11	17
Total	0	0	0	0	0	0	0	0	0	0	0	33	1	0	34	0	44	0	0	44	78
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	97.06	2.94	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.75	0.25	0.00	**0.71**	0.00	0.79	0.00	0.00	**0.79**	**0.89**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	1a	1b			Total	1c	1d			Total	1e	1f			Total	1g	1h			Total	Total
0715 - 0730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, February 22, 2022	
Period	1500 - 1800
Peak Hour	1615 - 1715

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1615 - 1630	34	23	22	0	79	5	25	44	0	74	14	203	10	0	227	11	267	5	0	283	663
1630 - 1645	33	16	12	0	61	2	15	27	0	44	10	242	16	0	268	15	320	6	0	341	714
1645 - 1700	20	17	10	0	47	6	19	32	0	57	15	205	13	1	234	15	268	8	0	291	629
1700 - 1715	22	30	13	0	65	7	13	19	0	39	18	196	13	0	227	15	268	12	0	295	626
Total	109	86	57	0	252	20	72	122	0	214	57	846	52	1	956	56	1123	31	0	1210	2632
Approach %	43.25	34.13	22.62	0.00	-	9.35	33.64	57.01	0.00	-	5.96	88.49	5.44	0.10	-	4.63	92.81	2.56	0.00	-	
PHF	0.80	0.72	0.65	0.00	**0.80**	0.71	0.72	0.69	0.00	**0.72**	0.79	0.87	0.81	0.25	**0.89**	0.93	0.88	0.65	0.00	**0.89**	**0.92**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1615 - 1630	33	23	22	0	78	5	25	44	0	74	14	195	10	0	219	10	255	5	0	270	641
1630 - 1645	33	16	12	0	61	2	14	27	0	43	10	233	16	0	259	14	309	6	0	329	692
1645 - 1700	20	17	10	0	47	6	19	32	0	57	15	187	13	1	216	15	265	8	0	288	608
1700 - 1715	22	30	13	0	65	7	12	19	0	38	18	185	13	0	216	15	260	12	0	287	606
Total	108	86	57	0	251	20	70	122	0	212	57	800	52	1	910	54	1089	31	0	1174	2547
Approach %	43.03	34.26	22.71	0.00	-	9.43	33.02	57.55	0.00	-	6.26	87.91	5.71	0.11	-	4.60	92.76	2.64	0.00	-	
PHF	0.82	0.72	0.65	0.00	**0.80**	0.71	0.70	0.69	0.00	**0.72**	0.79	0.86	0.81	0.25	**0.88**	0.90	0.88	0.65	0.00	**0.89**	**0.92**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1615 - 1630	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	1	7	0	0	8	11
1630 - 1645	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	1	6	0	0	7	11
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	3	0	0	3	7
1700 - 1715	0	0	0	0	0	0	1	0	0	1	0	5	0	0	5	0	4	0	0	4	10
Total	1	0	0	0	1	0	2	0	0	2	0	14	0	0	14	2	20	0	0	22	39
Approach %	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	9.09	90.91	0.00	0.00	-	
PHF	0.25	0.00	0.00	0.00	**0.25**	0.00	0.50	0.00	0.00	**0.50**	0.00	0.70	0.00	0.00	**0.70**	0.50	0.71	0.00	0.00	**0.69**	**0.89**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1615 - 1630	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	14
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	4	0	0	4	10
Total	0	0	0	0	0	0	0	0	0	0	0	32	0	0	32	0	14	0	0	14	46
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.57	0.00	0.00	**0.57**	0.00	0.70	0.00	0.00	**0.70**	**0.82**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1615 - 1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	1a	1b			Total	1c	1d			Total	1e	1f			Total	1g	1h			Total	Total
1615 - 1630	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1630 - 1645	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1645 - 1700	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1700 - 1715	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

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Bear Creek Estates

Site 1 of 3
Theta Pike (South)
Theta Pike (North)
TN-6 (West)
TN-6 (East)

Date
Tuesday, February 22, 2022

Lat/Long
35.637331°, -87.027785°

Weather
Cloudy
65°F

0600 - 0900 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0600 - 0615	3	3	5	0	11	3	4	3	0	10	7	248	3	0	258	3	98	2	0	103	382
0615 - 0630	3	2	9	0	14	3	5	6	0	14	7	322	3	0	332	1	162	2	0	165	525
0630 - 0645	5	4	12	0	21	4	7	9	0	20	10	291	7	0	308	0	171	3	1	175	524
0645 - 0700	9	3	11	0	23	2	12	14	0	28	9	281	8	0	298	3	179	4	0	186	535
Hourly Total	20	12	37	0	**69**	12	28	32	0	**72**	33	1142	21	0	**1196**	7	610	11	1	**629**	**1966**
0700 - 0715	11	6	7	0	24	9	11	14	0	34	12	258	10	0	280	5	220	7	0	232	570
0715 - 0730	10	8	5	0	23	12	13	24	0	49	17	321	17	0	355	6	235	1	0	242	669
0730 - 0745	16	8	15	0	39	10	22	17	0	49	25	301	20	0	346	10	295	5	0	310	744
0745 - 0800	6	13	14	0	33	13	27	29	0	69	19	304	35	0	358	11	232	7	0	250	710
Hourly Total	43	35	41	0	**119**	44	73	84	0	**201**	73	1184	82	0	**1339**	32	982	20	0	**1034**	**2693**
0800 - 0815	6	9	17	0	32	6	10	10	0	26	8	230	14	1	253	20	257	5	0	282	593
0815 - 0830	6	9	13	0	28	3	12	15	0	30	8	253	17	0	278	13	178	4	0	195	531
0830 - 0845	11	10	17	0	38	3	11	7	0	21	9	196	15	0	220	11	178	0	0	189	468
0845 - 0900	7	5	8	0	20	5	19	10	0	34	7	202	21	0	230	10	174	7	1	192	476
Hourly Total	30	33	55	0	**118**	17	52	42	0	**111**	32	881	67	1	**981**	54	787	16	1	**858**	**2068**
Grand Total	93	80	133	0	**306**	73	153	158	0	**384**	138	3207	170	1	**3516**	93	2379	47	2	**2521**	**6727**
Approach %	30.39	26.14	43.46	0.00	-	19.01	39.84	41.15	0.00	-	3.92	91.21	4.84	0.03	-	3.69	94.37	1.86	0.08	-	
Intersection %	1.38	1.19	1.98	0.00	4.55	1.09	2.27	2.35	0.00	5.71	2.05	47.67	2.53	0.01	52.27	1.38	35.36	0.70	0.03	37.48	
PHF	0.59	0.73	0.75	0.00	**0.81**	0.79	0.67	0.69	0.00	**0.70**	0.69	0.90	0.61	0.25	**0.92**	0.59	0.86	0.64	0.00	**0.87**	**0.91**

1500 - 1800 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1500 - 1515	21	23	11	0	55	12	15	23	0	50	31	275	21	0	327	17	224	9	0	250	682
1515 - 1530	26	29	13	0	68	13	23	22	0	58	42	258	22	1	323	13	223	16	0	252	701
1530 - 1545	20	32	19	0	71	4	11	15	0	30	33	243	20	0	296	19	244	7	0	270	667
1545 - 1600	29	26	13	0	68	3	12	21	0	36	10	177	15	1	203	6	236	3	2	247	554
Hourly Total	96	110	56	0	**262**	32	61	81	0	**174**	116	953	78	2	**1149**	55	927	35	2	**1019**	**2604**
1600 - 1615	26	21	12	0	59	8	25	31	0	64	14	167	9	0	190	13	286	7	1	307	620
1615 - 1630	34	23	22	0	79	5	25	44	0	74	14	203	10	0	227	11	267	5	0	283	663
1630 - 1645	33	16	12	0	61	2	15	27	0	44	10	242	16	0	268	15	320	6	0	341	714
1645 - 1700	20	17	10	0	47	6	19	32	0	57	15	205	13	1	234	15	268	8	0	291	629
Hourly Total	113	77	56	0	**246**	21	84	134	0	**239**	53	817	48	1	**919**	54	1141	26	1	**1222**	**2626**
1700 - 1715	22	30	13	0	65	7	13	19	0	39	18	196	13	0	227	15	268	12	0	295	626
1715 - 1730	22	20	10	0	52	5	24	25	0	54	9	195	14	0	218	7	256	5	0	268	592
1730 - 1745	13	27	7	0	47	9	13	18	0	40	17	148	11	0	176	12	238	8	0	258	521
1745 - 1800	16	22	5	0	43	5	10	14	0	29	9	140	14	0	163	11	179	13	0	203	438
Hourly Total	73	99	35	0	**207**	26	60	76	0	**162**	53	679	52	0	**784**	45	941	38	0	**1024**	**2177**
Grand Total	282	286	147	0	**715**	79	205	291	0	**575**	222	2449	178	3	**2852**	154	3009	99	3	**3265**	**7407**
Approach %	39.44	40.00	20.56	0.00	-	13.74	35.65	50.61	0.00	-	7.78	85.87	6.24	0.11	-	4.72	92.16	3.03	0.09	-	
Intersection %	3.81	3.86	1.98	0.00	9.65	1.07	2.77	3.93	0.00	7.76	3.00	33.06	2.40	0.04	38.50	2.08	40.62	1.34	0.04	44.08	
PHF	0.80	0.72	0.65	0.00	**0.80**	0.71	0.72	0.69	0.00	**0.72**	0.79	0.87	0.81	0.25	**0.89**	0.93	0.88	0.65	0.00	**0.89**	**0.92**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, February 22, 2022	
Period	0600 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
0715 - 0730	0	1	2	-	3	3	0	28	0	31	9	242	3	0	254	1	213	6	0	220	508
0730 - 0745	0	2	3	-	5	0	0	31	0	31	16	239	1	0	256	1	268	6	0	275	567
0745 - 0800	1	0	0	-	1	5	1	36	0	42	27	293	1	0	321	0	285	11	0	296	660
0800 - 0815	0	1	2	-	3	4	0	21	0	25	20	207	0	0	227	1	242	1	0	244	499
Total	1	4	7	0	12	12	1	116	0	129	72	981	5	0	1058	3	1008	24	0	1035	2234
Approach %	8.33	33.33	58.33	0.00	-	9.30	0.78	89.92	0.00	-	6.81	92.72	0.47	0.00	-	0.29	97.39	2.32	0.00	-	
PHF	0.25	0.50	0.58	0.00	**0.60**	0.60	0.25	0.81	0.00	**0.77**	0.67	0.84	0.42	0.00	**0.82**	0.75	0.88	0.55	0.00	**0.87**	**0.85**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
0715 - 0730	0	1	2	-	3	2	0	28	0	30	8	232	3	0	243	1	207	5	0	213	489
0730 - 0745	0	2	3	-	5	0	0	30	0	30	16	231	1	0	248	1	262	6	0	269	552
0745 - 0800	1	0	0	-	1	5	1	36	0	42	27	281	1	0	309	0	278	11	0	289	641
0800 - 0815	0	1	2	-	3	4	0	21	0	25	19	198	0	0	217	1	229	1	0	231	476
Total	1	4	7	0	12	11	1	115	0	127	70	942	5	0	1017	3	976	23	0	1002	2158
Approach %	8.33	33.33	58.33	0.00	-	8.66	0.79	90.55	0.00	-	6.88	92.63	0.49	0.00	-	0.30	97.41	2.30	0.00	-	
PHF	0.25	0.50	0.58	0.00	**0.60**	0.55	0.25	0.80	0.00	**0.76**	0.65	0.84	0.42	0.00	**0.82**	0.75	0.88	0.52	0.00	**0.87**	**0.84**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
0715 - 0730	0	0	0	-	0	0	0	0	0	0	1	8	0	0	9	0	5	1	0	6	15
0730 - 0745	0	0	0	-	0	0	0	1	0	1	0	5	0	0	5	0	5	0	0	5	11
0745 - 0800	0	0	0	-	0	0	0	0	0	0	0	11	0	0	11	0	5	0	0	5	16
0800 - 0815	0	0	0	-	0	0	0	0	0	0	1	8	0	0	9	0	8	0	0	8	17
Total	0	0	0	0	0	0	0	1	0	1	2	32	0	0	34	0	23	1	0	24	59
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	-	5.88	94.12	0.00	0.00	-	0.00	95.83	4.17	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	**0.25**	0.50	0.73	0.00	0.00	**0.77**	0.00	0.72	0.25	0.00	**0.75**	**0.87**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
0715 - 0730	0	0	0	-	0	1	0	0	0	1	0	2	0	0	2	0	1	0	0	1	4
0730 - 0745	0	0	0	-	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
0745 - 0800	0	0	0	-	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
0800 - 0815	0	0	0	-	0	0	0	0	0	0	0	1	0	0	1	0	5	0	0	5	6
Total	0	0	0	0	0	1	0	0	0	1	0	7	0	0	7	0	9	0	0	9	17
Approach %	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	**0.25**	0.00	0.58	0.00	0.00	**0.58**	0.00	0.45	0.00	0.00	**0.45**	**0.71**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
0715 - 0730	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	EB 2a	WB 2b			App Total	EB 2c	WB 2d			App Total	NB 2e	SB 2f			App Total	NB 2g	SB 2h			App Total	Int Total
0715 - 0730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, February 22, 2022	
Period	1500 - 1800
Peak Hour	1500 - 1600

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	1	1	-	2	9	0	40	0	49	33	307	1	1	342	0	282	10	2	294	687
1515 - 1530	0	0	3	-	3	13	0	34	0	47	38	305	2	1	346	3	264	7	1	275	671
1530 - 1545	0	0	0	-	0	12	1	23	0	36	31	262	0	0	293	1	248	8	2	259	588
1545 - 1600	0	0	0	-	0	16	1	27	0	44	32	246	0	1	279	1	225	7	1	234	557
Total	0	1	4	0	5	50	2	124	0	176	134	1120	3	3	1260	5	1019	32	6	1062	2503
Approach %	0.00	20.00	80.00	0.00	-	28.41	1.14	70.45	0.00	-	10.63	88.89	0.24	0.24	-	0.47	95.95	3.01	0.56	-	
PHF	0.00	0.25	0.33	0.00	**0.42**	0.78	0.50	0.78	0.00	**0.90**	0.88	0.91	0.38	0.75	**0.91**	0.42	0.90	0.80	0.75	**0.90**	**0.91**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	1	1	-	2	9	0	39	0	48	33	301	1	1	336	0	277	10	2	289	675
1515 - 1530	0	0	3	-	3	13	0	34	0	47	38	297	2	1	338	3	257	7	1	268	656
1530 - 1545	0	0	0	-	0	12	1	23	0	36	31	260	0	0	291	1	239	8	2	250	577
1545 - 1600	0	0	0	-	0	16	1	27	0	44	32	244	0	1	277	1	224	7	1	233	554
Total	0	1	4	0	5	50	2	123	0	175	134	1102	3	3	1242	5	997	32	6	1040	2462
Approach %	0.00	20.00	80.00	0.00	-	28.57	1.14	70.29	0.00	-	10.79	88.73	0.24	0.24	-	0.48	95.87	3.08	0.58	-	
PHF	0.00	0.25	0.33	0.00	**0.42**	0.78	0.50	0.79	0.00	**0.91**	0.88	0.92	0.38	0.75	**0.92**	0.42	0.90	0.80	0.75	**0.90**	**0.91**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	0	0	-	0	0	0	1	0	1	0	3	0	0	3	0	4	0	0	4	8
1515 - 1530	0	0	0	-	0	0	0	0	0	0	0	7	0	0	7	0	6	0	0	6	13
1530 - 1545	0	0	0	-	0	0	0	0	0	0	0	2	0	0	2	0	9	0	0	9	11
1545 - 1600	0	0	0	-	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
Total	0	0	0	0	0	0	0	1	0	1	0	14	0	0	14	0	20	0	0	20	35
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	**0.25**	0.00	0.50	0.00	0.00	**0.50**	0.00	0.56	0.00	0.00	**0.56**	**0.67**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	0	0	-	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
1515 - 1530	0	0	0	-	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
1530 - 1545	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.33	0.00	0.00	**0.33**	0.00	0.50	0.00	0.00	**0.50**	**0.38**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	EB 2a	WB 2b			App Total	EB 2c	WB 2d			App Total	NB 2e	SB 2f			App Total	NB 2g	SB 2h			App Total	Int Total
1500 - 1515	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1515 - 1530	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1530 - 1545	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1545 - 1600	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

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Bear Creek Estates

Site 2 of 3
8th Ave
Theta Pike
TN-99 Nashville Hwy (West)
TN-99 Nashville Hwy (East)

Date
Tuesday, February 22, 2022

Lat/Long
35.627192°, -87.029283°

Weather
Cloudy
65°F

0600 - 0900 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound				Southbound					Eastbound					Westbound					
	8th Ave				Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	2.1	2.2	2.3	Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0600 - 0615	0	1	3	4	0	0	5	1	6	2	141	0	0	143	0	69	0	0	69	222
0615 - 0630	0	0	0	0	0	0	6	0	6	2	156	0	0	158	1	105	0	0	106	270
0630 - 0645	0	0	4	4	0	0	9	0	9	10	193	1	0	204	0	114	2	0	116	333
0645 - 0700	3	0	1	4	3	0	13	0	16	3	195	0	0	198	1	134	0	0	135	353
Hourly Total	3	1	8	**12**	3	0	33	1	**37**	17	685	1	0	**703**	2	422	2	0	**426**	**1178**
0700 - 0715	0	0	4	4	2	0	14	0	16	14	195	1	0	210	1	154	0	0	155	385
0715 - 0730	0	1	2	3	3	0	28	0	31	9	242	3	0	254	1	213	6	0	220	508
0730 - 0745	0	2	3	5	0	0	31	0	31	16	239	1	0	256	1	268	6	0	275	567
0745 - 0800	1	0	0	1	5	1	36	0	42	27	293	1	0	321	0	285	11	0	296	660
Hourly Total	1	3	9	**13**	10	1	109	0	**120**	66	969	6	0	**1041**	3	920	23	0	**946**	**2120**
0800 - 0815	0	1	2	3	4	0	21	0	25	20	207	0	0	227	1	242	1	0	244	499
0815 - 0830	2	0	0	2	4	0	20	0	24	22	182	0	0	204	1	188	19	1	209	439
0830 - 0845	0	0	2	2	14	0	31	0	45	13	210	1	0	224	0	231	10	0	241	512
0845 - 0900	0	0	1	1	8	0	30	0	38	13	200	1	0	214	0	224	6	2	232	485
Hourly Total	2	1	5	**8**	30	0	102	0	**132**	68	799	2	0	**869**	2	885	36	3	**926**	**1935**
Grand Total	6	5	22	**33**	43	1	244	1	**289**	151	2453	9	0	**2613**	7	2227	61	3	**2298**	**5233**
Approach %	18.18	15.15	66.67	-	14.88	0.35	84.43	0.35	-	5.78	93.88	0.34	0.00	-	0.30	96.91	2.65	0.13	-	
Intersection %	0.11	0.10	0.42	0.63	0.82	0.02	4.66	0.02	5.52	2.89	46.88	0.17	0.00	49.93	0.13	42.56	1.17	0.06	43.91	
PHF	0.25	0.50	0.58	**0.60**	0.60	0.25	0.81	0.00	**0.77**	0.67	0.84	0.42	0.00	**0.82**	0.75	0.88	0.55	0.00	**0.87**	**0.85**

1500 - 1800 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound				Southbound					Eastbound					Westbound					
	8th Ave				Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	2.1	2.2	2.3	Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
1500 - 1515	0	1	1	2	9	0	40	0	49	33	307	1	1	342	0	282	10	2	294	687
1515 - 1530	0	0	3	3	13	0	34	0	47	38	305	2	1	346	3	264	7	1	275	671
1530 - 1545	0	0	0	0	12	1	23	0	36	31	262	0	0	293	1	248	8	2	259	588
1545 - 1600	0	0	0	0	16	1	27	0	44	32	246	0	1	279	1	225	7	1	234	557
Hourly Total	0	1	4	**5**	50	2	124	0	**176**	134	1120	3	3	**1260**	5	1019	32	6	**1062**	**2503**
1600 - 1615	0	0	0	0	11	1	20	0	32	23	255	1	2	281	4	322	10	2	338	651
1615 - 1630	0	1	0	1	5	0	31	0	36	25	217	2	0	244	4	264	17	2	287	568
1630 - 1645	0	0	0	0	6	1	40	0	47	19	252	0	0	271	4	219	0	2	225	543
1645 - 1700	1	0	2	3	4	1	27	0	32	28	243	0	1	272	5	365	5	0	375	682
Hourly Total	1	1	2	**4**	26	3	118	0	**147**	95	967	3	3	**1068**	17	1170	32	6	**1225**	**2444**
1700 - 1715	2	1	1	4	3	2	20	0	25	33	300	1	2	336	2	273	4	0	279	644
1715 - 1730	0	0	1	1	3	1	20	0	24	30	227	4	3	264	4	250	8	1	263	552
1730 - 1745	0	0	1	1	5	0	28	0	33	25	209	1	2	237	0	276	6	3	285	556
1745 - 1800	2	1	2	5	4	1	21	0	26	14	169	2	0	185	1	232	6	0	239	455
Hourly Total	4	2	5	**11**	15	4	89	0	**108**	102	905	8	7	**1022**	7	1031	24	4	**1066**	**2207**
Grand Total	5	4	11	**20**	91	9	331	0	**431**	331	2992	14	13	**3350**	29	3220	88	16	**3353**	**7154**
Approach %	25.00	20.00	55.00	-	21.11	2.09	76.80	0.00	-	9.88	89.31	0.42	0.39	-	0.86	96.03	2.62	0.48	-	
Intersection %	0.07	0.06	0.15	0.28	1.27	0.13	4.63	0.00	6.02	4.63	41.82	0.20	0.18	46.83	0.41	45.01	1.23	0.22	46.87	
PHF	0.00	0.25	0.33	**0.42**	0.78	0.50	0.78	0.00	**0.90**	0.88	0.91	0.38	0.75	**0.91**	0.42	0.90	0.80	0.75	**0.90**	**0.91**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, February 22, 2022	
Period	0600 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	19	1	0	20	0	38	0	0	38	0	0	0	0	0	3	0	7	0	10	68
0730 - 0745	0	27	2	0	29	0	51	0	0	51	0	0	0	0	0	2	0	10	0	12	92
0745 - 0800	0	29	2	0	31	5	67	1	0	73	0	0	0	0	0	4	0	1	0	5	109
0800 - 0815	0	24	5	0	29	5	39	0	0	44	1	0	0	0	1	7	0	5	0	12	86
Total	0	99	10	0	109	10	195	1	0	206	1	0	0	0	1	16	0	23	0	39	355
Approach %	0.00	90.83	9.17	0.00	-	4.85	94.66	0.49	0.00	-	100.00	0.00	0.00	0.00	-	41.03	0.00	58.97	0.00	-	
PHF	0.00	0.85	0.50	0.00	**0.88**	0.50	0.73	0.25	0.00	**0.71**	0.25	0.00	0.00	0.00	**0.25**	0.57	0.00	0.58	0.00	**0.81**	**0.81**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	17	1	0	18	0	37	0	0	37	0	0	0	0	0	3	0	7	0	10	65
0730 - 0745	0	27	2	0	29	0	51	0	0	51	0	0	0	0	0	2	0	10	0	12	92
0745 - 0800	0	29	2	0	31	5	66	1	0	72	0	0	0	0	0	4	0	1	0	5	108
0800 - 0815	0	23	5	0	28	5	39	0	0	44	1	0	0	0	1	7	0	5	0	12	85
Total	0	96	10	0	106	10	193	1	0	204	1	0	0	0	1	16	0	23	0	39	350
Approach %	0.00	90.57	9.43	0.00	-	4.90	94.61	0.49	0.00	-	100.00	0.00	0.00	0.00	-	41.03	0.00	58.97	0.00	-	
PHF	0.00	0.83	0.50	0.00	**0.85**	0.50	0.73	0.25	0.00	**0.71**	0.25	0.00	0.00	0.00	**0.25**	0.57	0.00	0.58	0.00	**0.81**	**0.81**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0800 - 0815	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Approach %	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.38	0.00	0.00	**0.38**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.50**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.25**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	3a	3b			Total	3c	3d			Total	3e	3f			Total	3g	3h			Total	Total
0715 - 0730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

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Tuesday, February 22, 2022	
Period	1500 - 1800
Peak Hour	1500 - 1600

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	52	4	0	56	8	46	0	0	54	0	0	0	0	0	3	0	3	0	6	116
1515 - 1530	0	65	3	0	68	8	46	0	0	54	0	0	0	0	0	7	0	2	0	9	131
1530 - 1545	0	68	5	0	73	4	42	0	0	46	0	0	0	0	0	3	0	1	1	5	124
1545 - 1600	0	66	5	0	71	4	35	0	0	39	0	0	0	0	0	2	0	1	0	3	113
Total	0	251	17	0	268	24	169	0	0	193	0	0	0	0	0	15	0	7	1	23	484
Approach %	0.00	93.66	6.34	0.00	-	12.44	87.56	0.00	0.00	-	0.00	0.00	0.00	0.00	-	65.22	0.00	30.43	4.35	-	
PHF	0.00	0.92	0.85	0.00	**0.92**	0.75	0.92	0.00	0.00	**0.89**	0.00	0.00	0.00	0.00	**0.00**	0.54	0.00	0.58	0.25	**0.64**	**0.92**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	50	4	0	54	6	46	0	0	52	0	0	0	0	0	2	0	2	0	4	110
1515 - 1530	0	65	3	0	68	7	46	0	0	53	0	0	0	0	0	7	0	2	0	9	130
1530 - 1545	0	68	5	0	73	4	42	0	0	46	0	0	0	0	0	3	0	1	1	5	124
1545 - 1600	0	66	5	0	71	4	35	0	0	39	0	0	0	0	0	2	0	1	0	3	113
Total	0	249	17	0	266	21	169	0	0	190	0	0	0	0	0	14	0	6	1	21	477
Approach %	0.00	93.61	6.39	0.00	-	11.05	88.95	0.00	0.00	-	0.00	0.00	0.00	0.00	-	66.67	0.00	28.57	4.76	-	
PHF	0.00	0.92	0.85	0.00	**0.91**	0.75	0.92	0.00	0.00	**0.90**	0.00	0.00	0.00	0.00	**0.00**	0.50	0.00	0.75	0.25	**0.58**	**0.92**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	2	0	0	2	2	0	0	0	2	0	0	0	0	0	1	0	1	0	2	6
1515 - 1530	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	3	0	0	0	3	0	0	0	0	0	1	0	1	0	2	7
Approach %	0.00	100.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	50.00	0.00	50.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	**0.25**	0.38	0.00	0.00	0.00	**0.38**	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.25	0.00	**0.25**	**0.29**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	3a	3b			Total	3c	3d			Total	3e	3f			Total	3g	3h			Total	Total
1500 - 1515	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1515 - 1530	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1530 - 1545	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1545 - 1600	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

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Bear Creek Estates

Site 3 of 3
Theta Pike (South)
Theta Pike (North)
Driveway
Timber Trail

Date
Tuesday, February 22, 2022

Lat/Long
35.624217°, -87.028542°

Weather
Cloudy
65°F

0600 - 0900 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0600 - 0615	0	13	0	0	13	0	8	0	0	8	0	0	0	0	0	1	0	0	0	1	22
0615 - 0630	0	8	1	0	9	1	8	0	0	9	0	0	0	0	0	3	0	3	0	6	24
0630 - 0645	0	15	2	0	17	2	12	0	0	14	0	0	0	0	0	1	0	2	0	3	34
0645 - 0700	0	14	0	0	14	1	20	0	0	21	0	0	0	0	0	2	0	5	0	7	42
Hourly Total	0	50	3	0	**53**	4	48	0	0	**52**	0	0	0	0	**0**	7	0	10	0	**17**	**122**
0700 - 0715	0	14	2	0	16	3	21	0	0	24	0	0	0	0	0	0	0	6	0	6	46
0715 - 0730	0	19	1	0	20	0	38	0	0	38	0	0	0	0	0	3	0	7	0	10	68
0730 - 0745	0	27	2	0	29	0	51	0	0	51	0	0	0	0	0	2	0	10	0	12	92
0745 - 0800	0	29	2	0	31	5	67	1	0	73	0	0	0	0	0	4	0	1	0	5	109
Hourly Total	0	89	7	0	**96**	8	177	1	0	**186**	0	0	0	0	**0**	9	0	24	0	**33**	**315**
0800 - 0815	0	24	5	0	29	5	39	0	0	44	1	0	0	0	1	7	0	5	0	12	86
0815 - 0830	0	21	2	0	23	3	36	0	0	39	0	0	0	0	0	0	0	1	0	1	63
0830 - 0845	0	29	2	0	31	1	38	0	0	39	0	0	0	0	0	4	0	7	0	11	81
0845 - 0900	0	18	4	0	22	1	46	0	0	47	0	0	0	0	0	2	0	2	0	4	73
Hourly Total	0	92	13	0	**105**	10	159	0	0	**169**	1	0	0	0	**1**	13	0	15	0	**28**	**303**
Grand Total	0	231	23	0	**254**	22	384	1	0	**407**	1	0	0	0	**1**	29	0	49	0	**78**	**740**
Approach %	0.00	90.94	9.06	0.00	-	5.41	94.35	0.25	0.00	-	100.00	0.00	0.00	0.00	-	37.18	0.00	62.82	0.00	-	
Intersection %	0.00	31.22	3.11	0.00	34.32	2.97	51.89	0.14	0.00	55.00	0.14	0.00	0.00	0.00	0.14	3.92	0.00	6.62	0.00	10.54	
PHF	0.00	0.85	0.50	0.00	**0.88**	0.50	0.73	0.25	0.00	**0.71**	0.25	0.00	0.00	0.00	**0.25**	0.57	0.00	0.58	0.00	**0.81**	**0.81**

1500 - 1800 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	52	4	0	56	8	46	0	0	54	0	0	0	0	0	3	0	3	0	6	116
1515 - 1530	0	65	3	0	68	8	46	0	0	54	0	0	0	0	0	7	0	2	0	9	131
1530 - 1545	0	68	5	0	73	4	42	0	0	46	0	0	0	0	0	3	0	1	1	5	124
1545 - 1600	0	66	5	0	71	4	35	0	0	39	0	0	0	0	0	2	0	1	0	3	113
Hourly Total	0	251	17	0	**268**	24	169	0	0	**193**	0	0	0	0	**0**	15	0	7	1	**23**	**484**
1600 - 1615	0	53	1	0	54	3	37	0	0	40	0	0	0	0	0	2	0	4	0	6	100
1615 - 1630	0	71	7	0	78	2	44	0	0	46	0	0	0	0	0	3	0	4	0	7	131
1630 - 1645	0	59	1	0	60	2	44	0	0	46	0	0	0	0	0	2	0	1	0	3	109
1645 - 1700	0	44	7	0	51	2	38	0	0	40	0	0	0	0	0	1	0	2	0	3	94
Hourly Total	0	227	16	0	**243**	9	163	0	0	**172**	0	0	0	0	**0**	8	0	11	0	**19**	**434**
1700 - 1715	0	61	6	0	67	1	35	0	0	36	0	0	0	0	0	1	0	4	0	5	108
1715 - 1730	0	46	2	0	48	0	48	0	0	48	0	0	0	0	0	3	0	4	0	7	103
1730 - 1745	0	54	2	0	56	1	35	0	0	36	0	0	0	0	0	3	0	0	0	3	95
1745 - 1800	0	38	0	0	38	4	26	0	0	30	0	0	0	0	0	2	0	0	0	2	70
Hourly Total	0	199	10	0	**209**	6	144	0	0	**150**	0	0	0	0	**0**	9	0	8	0	**17**	**376**
Grand Total	0	677	43	0	**720**	39	476	0	0	**515**	0	0	0	0	**0**	32	0	26	1	**59**	**1294**
Approach %	0.00	94.03	5.97	0.00	-	7.57	92.43	0.00	0.00	-	0.00	0.00	0.00	0.00	-	54.24	0.00	44.07	1.69	-	
Intersection %	0.00	52.32	3.32	0.00	55.64	3.01	36.79	0.00	0.00	39.80	0.00	0.00	0.00	0.00	0.00	2.47	0.00	2.01	0.08	4.56	
PHF	0.00	0.92	0.85	0.00	**0.92**	0.75	0.92	0.00	0.00	**0.89**	0.00	0.00	0.00	0.00	**0.00**	0.54	0.00	0.58	0.25	**0.64**	**0.92**

Bi-Directional Speed & Class Count || Graphical Analysis NB EB

Bear Creek Estates

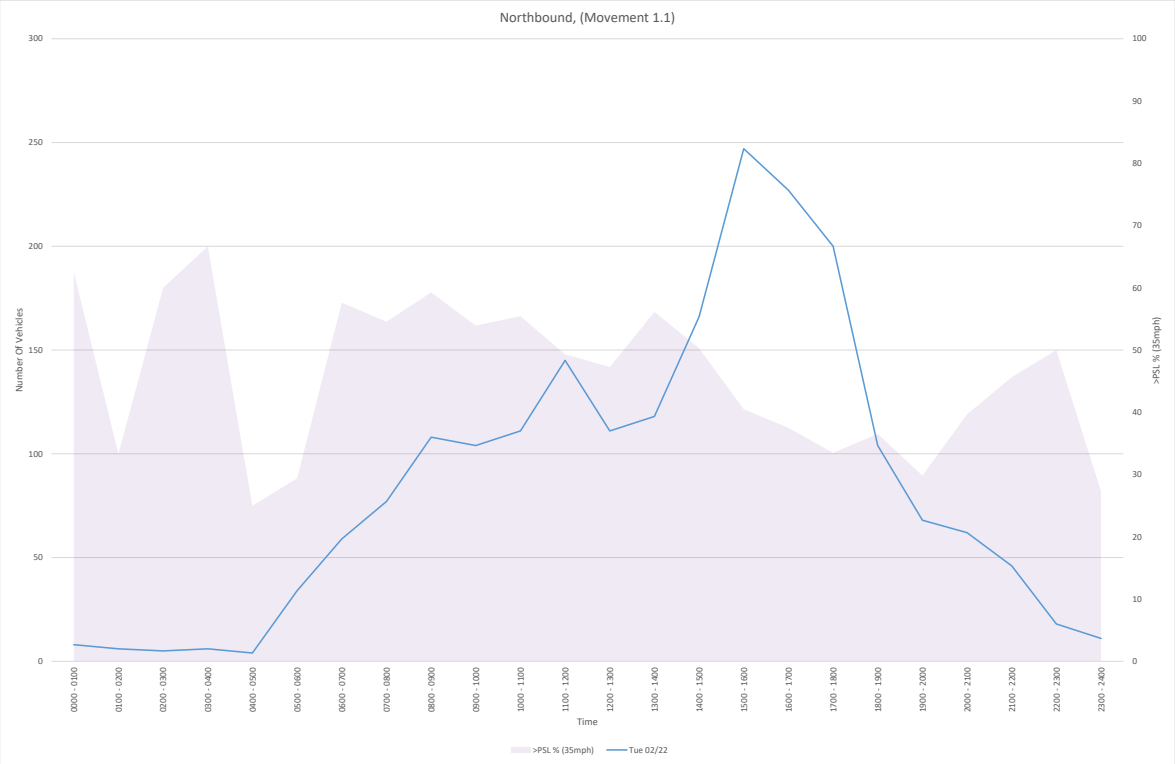
Marr Traffic DATA COLLECTION
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Site 1
Theta Pike,
south of Bancroft Ml

Lat/Long
35.635555°, -87.028507°

Click here for Map

0000 - 2400 (Weekday 24h Session)
Graphical Analysis NB EB



Bi-Directional Speed & Class Count || Graphical Analysis SB WB

Bear Creek Estates

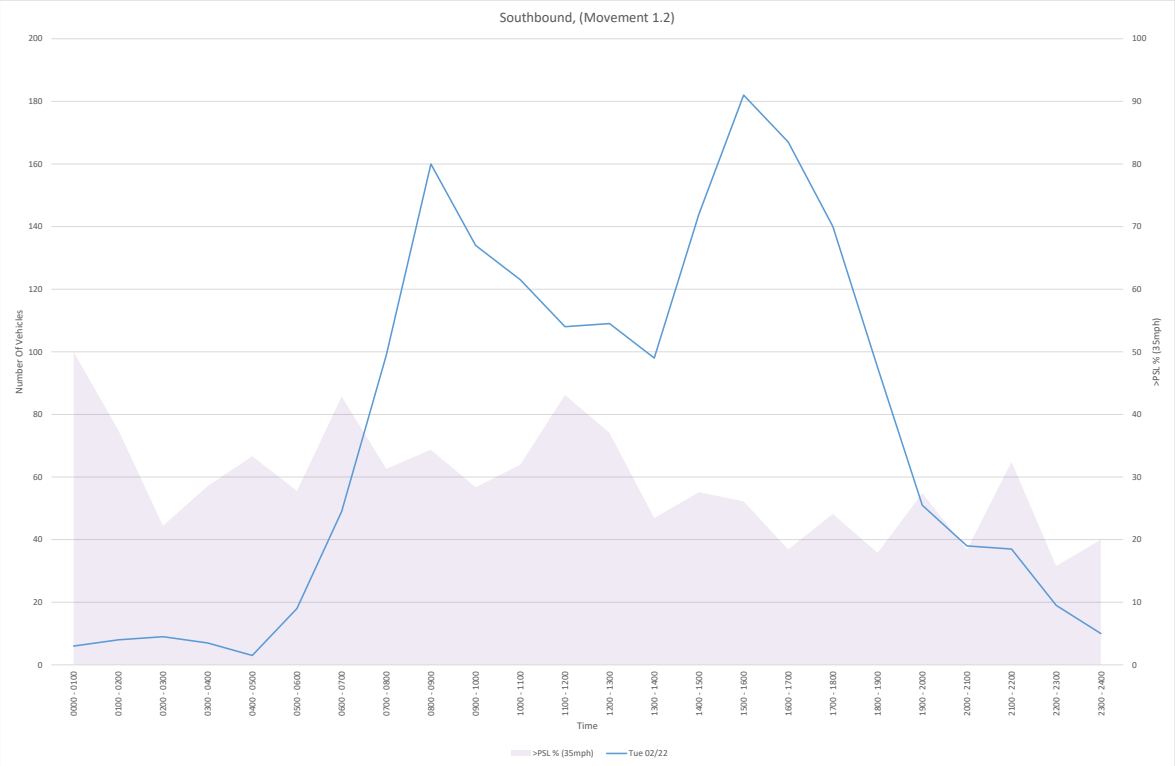
Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 1
Theta Pike,
south of Bancroft Ml

Lat/Long
35.635555°, -87.028507°

Click here for Map

0000 - 2400 (Weekday 24h Session)
Graphical Analysis SB WB



C. Level of Service

Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	1156	86	47	1019	18	38	38	51	41	72	80
Future Volume (veh/h)	69	1156	86	47	1019	18	38	38	51	41	72	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1870	1900
Adj Flow Rate, veh/h	76	1270	95	52	1120	20	42	42	56	45	79	88
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	97	1960	146	67	1955	35	151	85	113	199	96	107
Arrive On Green	0.05	0.61	0.61	0.04	0.59	0.59	0.03	0.12	0.12	0.03	0.12	0.12
Sat Flow, veh/h	1792	3217	240	1810	3302	59	1774	725	967	1691	810	902
Grp Volume(v), veh/h	76	672	693	52	557	583	42	0	98	45	0	167
Grp Sat Flow(s),veh/h/ln	1792	1705	1752	1810	1642	1718	1774	0	1692	1691	0	1711
Q Serve(g_s), s	4.7	28.2	28.4	3.2	23.2	23.3	2.3	0.0	6.0	2.6	0.0	10.6
Cycle Q Clear(g_c), s	4.7	28.2	28.4	3.2	23.2	23.3	2.3	0.0	6.0	2.6	0.0	10.6
Prop In Lane	1.00		0.14	1.00		0.03	1.00		0.57	1.00		0.53
Lane Grp Cap(c), veh/h	97	1039	1067	67	972	1017	151	0	198	199	0	202
V/C Ratio(X)	0.78	0.65	0.65	0.77	0.57	0.57	0.28	0.00	0.49	0.23	0.00	0.83
Avail Cap(c_a), veh/h	210	1039	1067	212	972	1017	229	0	305	302	0	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.8	14.0	14.0	53.0	14.0	14.0	41.5	0.0	45.9	41.3	0.0	47.8
Incr Delay (d2), s/veh	5.0	3.1	3.1	6.8	2.5	2.3	0.7	0.0	1.9	0.4	0.0	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	14.0	14.6	1.7	11.2	11.7	1.1	0.0	2.9	1.2	0.0	5.5
LnGrp Delay(d),s/veh	56.9	17.1	17.1	59.7	16.4	16.3	42.2	0.0	47.8	41.7	0.0	56.0
LnGrp LOS	E	B	B	E	B	B	D		D	D		E
Approach Vol, veh/h		1441			1192			140			212	
Approach Delay, s/veh		19.2			18.3			46.1			53.0	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	74.6	8.1	19.1	11.0	72.7	8.3	19.0
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	13.0	45.0	8.5	22.0	13.0	45.0	10.5	20.0
Max Q Clear Time (g_c+I1), s	5.2	30.4	4.3	12.6	6.7	25.3	4.6	8.0
Green Ext Time (p_c), s	0.0	11.1	0.0	0.5	0.0	12.0	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	846	52	56	1123	31	109	86	57	20	72	122
Future Volume (veh/h)	57	846	52	56	1123	31	109	86	57	20	72	122
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1794	1900	1900	1729	1900	1863	1863	1900	1776	1865	1900
Adj Flow Rate, veh/h	63	930	57	62	1234	34	120	95	63	22	79	134
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	81	1734	106	80	1732	48	223	209	138	242	93	157
Arrive On Green	0.05	0.53	0.53	0.04	0.53	0.53	0.07	0.20	0.20	0.02	0.15	0.15
Sat Flow, veh/h	1792	3264	200	1810	3266	90	1774	1046	694	1691	623	1056
Grp Volume(v), veh/h	63	486	501	62	620	648	120	0	158	22	0	213
Grp Sat Flow(s),veh/h/ln	1792	1705	1759	1810	1643	1714	1774	0	1740	1691	0	1678
Q Serve(g_s), s	3.9	20.7	20.7	3.8	31.6	31.7	6.3	0.0	8.9	1.1	0.0	13.7
Cycle Q Clear(g_c), s	3.9	20.7	20.7	3.8	31.6	31.7	6.3	0.0	8.9	1.1	0.0	13.7
Prop In Lane	1.00		0.11	1.00		0.05	1.00		0.40	1.00		0.63
Lane Grp Cap(c), veh/h	81	906	935	80	871	909	223	0	347	242	0	250
V/C Ratio(X)	0.78	0.54	0.54	0.77	0.71	0.71	0.54	0.00	0.46	0.09	0.00	0.85
Avail Cap(c_a), veh/h	129	906	935	147	871	909	230	0	408	334	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.4	17.0	17.0	52.5	19.7	19.7	37.0	0.0	39.1	34.4	0.0	46.0
Incr Delay (d2), s/veh	5.8	2.3	2.2	5.8	4.9	4.7	1.8	0.0	0.9	0.1	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	10.3	10.6	2.0	15.5	16.1	3.2	0.0	4.3	0.5	0.0	7.1
LnGrp Delay(d),s/veh	58.3	19.3	19.3	58.3	24.6	24.4	38.8	0.0	40.1	34.5	0.0	56.2
LnGrp LOS	E	B	B	E	C	C	D		D	C		E
Approach Vol, veh/h		1050			1330			278			235	
Approach Delay, s/veh		21.6			26.1			39.5			54.1	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	66.0	12.6	22.5	10.0	65.9	7.0	28.1
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	9.0	45.0	8.5	26.0	8.0	46.0	8.5	26.0
Max Q Clear Time (g_c+I1), s	5.8	22.7	8.3	15.7	5.9	33.7	3.1	10.9
Green Ext Time (p_c), s	0.0	11.1	0.0	0.8	0.0	9.2	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	12	1	116	1	4	7	72	981	5	3	1008	24
Future Volume (veh/h)	12	1	116	1	4	7	72	981	5	3	1008	24
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	14	1	136	1	5	8	85	1154	6	4	1186	28
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	129	1	185	59	182	197	387	2444	13	360	2255	53
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.05	0.69	0.69	0.01	0.64	0.64
Sat Flow, veh/h	1318	12	1589	85	1566	1615	1774	3542	18	1810	3499	83
Grp Volume(v), veh/h	14	0	137	6	0	8	85	566	594	4	594	620
Grp Sat Flow(s),veh/h/ln	1318	0	1601	1651	0	1615	1774	1736	1824	1810	1752	1830
Q Serve(g_s), s	0.9	0.0	7.0	0.0	0.0	0.4	1.2	12.7	12.7	0.1	15.5	15.5
Cycle Q Clear(g_c), s	7.9	0.0	7.0	7.0	0.0	0.4	1.2	12.7	12.7	0.1	15.5	15.5
Prop In Lane	1.00		0.99	0.17		1.00	1.00		0.01	1.00		0.05
Lane Grp Cap(c), veh/h	129	0	186	242	0	197	387	1198	1259	360	1129	1179
V/C Ratio(X)	0.11	0.00	0.73	0.02	0.00	0.04	0.22	0.47	0.47	0.01	0.53	0.53
Avail Cap(c_a), veh/h	201	0	273	337	0	284	515	1198	1259	574	1129	1179
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	36.3	33.3	0.0	32.9	5.8	6.1	6.1	5.7	8.1	8.1
Incr Delay (d2), s/veh	0.1	0.0	2.2	0.0	0.0	0.0	0.3	1.3	1.3	0.0	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.2	0.1	0.0	0.2	0.6	6.4	6.7	0.0	8.0	8.3
LnGrp Delay(d),s/veh	40.2	0.0	38.5	33.3	0.0	33.0	6.1	7.4	7.3	5.7	9.9	9.8
LnGrp LOS	D		D	C		C	A	A	A	A	A	A
Approach Vol, veh/h		151			14			1245			1218	
Approach Delay, s/veh		38.6			33.1			7.3			9.8	
Approach LOS		D			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	64.7		15.4	8.8	60.8		15.4
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	14.7		9.0	3.2	17.5		9.9
Green Ext Time (p_c), s	0.0	15.6		0.0	0.1	15.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	50	2	124	0	1	4	134	1120	3	5	1019	32
Future Volume (veh/h)	50	2	124	0	1	4	134	1120	3	5	1019	32
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	59	2	146	0	1	5	158	1318	4	6	1199	38
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	238	3	183	0	220	200	387	2443	7	311	2214	70
Arrive On Green	0.12	0.12	0.12	0.00	0.12	0.12	0.06	0.69	0.69	0.01	0.64	0.64
Sat Flow, veh/h	1326	22	1581	0	1900	1615	1774	3550	11	1810	3467	110
Grp Volume(v), veh/h	59	0	148	0	1	5	158	644	678	6	606	631
Grp Sat Flow(s),veh/h/ln	1326	0	1602	0	1900	1615	1774	1736	1825	1810	1752	1825
Q Serve(g_s), s	3.5	0.0	7.6	0.0	0.0	0.2	2.4	15.6	15.7	0.1	16.2	16.3
Cycle Q Clear(g_c), s	3.5	0.0	7.6	0.0	0.0	0.2	2.4	15.6	15.7	0.1	16.2	16.3
Prop In Lane	1.00		0.99	0.00		1.00	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	238	0	186	0	220	200	387	1195	1256	311	1119	1165
V/C Ratio(X)	0.25	0.00	0.80	0.00	0.00	0.03	0.41	0.54	0.54	0.02	0.54	0.54
Avail Cap(c_a), veh/h	310	0	273	0	324	288	504	1195	1256	521	1119	1165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	0.0	36.6	0.0	33.2	32.7	6.7	6.6	6.6	6.1	8.5	8.5
Incr Delay (d2), s/veh	0.2	0.0	5.6	0.0	0.0	0.0	0.7	1.8	1.7	0.0	1.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	3.7	0.0	0.0	0.1	1.3	7.9	8.3	0.1	8.3	8.7
LnGrp Delay(d),s/veh	35.0	0.0	42.2	0.0	33.2	32.8	7.4	8.3	8.2	6.1	10.4	10.3
LnGrp LOS	D		D		C	C	A	A	A	A	B	B
Approach Vol, veh/h		207			6			1480			1243	
Approach Delay, s/veh		40.2			32.8			8.2			10.3	
Approach LOS		D			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	64.5		15.3	9.4	60.3		15.3
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	17.7		2.2	4.4	18.3		9.6
Green Ext Time (p_c), s	0.0	16.9		0.0	0.2	15.5		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	23	99	10	10	195
Future Vol, veh/h	16	23	99	10	10	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	17	25	108	11	11	212

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	348	114	0	0	119	0
Stage 1	114	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	653	944	-	-	1482	-
Stage 1	916	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	648	944	-	-	1482	-
Mov Cap-2 Maneuver	648	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	795	1482	-
HCM Lane V/C Ratio	-	-	0.053	0.007	-
HCM Control Delay (s)	-	-	9.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	7	251	17	24	169
Future Vol, veh/h	15	7	251	17	24	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	16	8	273	18	26	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	518	282	0	0	291	0
Stage 1	282	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	521	762	-	-	1282	-
Stage 1	770	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	509	762	-	-	1282	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	569	1282	-
HCM Lane V/C Ratio	-	-	0.042	0.02	-
HCM Control Delay (s)	-	-	11.6	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Background

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	1237	97	51	1091	20	49	41	127	44	77	86
Future Volume (veh/h)	74	1237	97	51	1091	20	49	41	127	44	77	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1870	1900
Adj Flow Rate, veh/h	81	1359	107	56	1199	22	54	45	140	48	85	95
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	103	1887	148	73	1885	35	165	53	166	150	106	119
Arrive On Green	0.06	0.59	0.59	0.04	0.57	0.57	0.04	0.13	0.13	0.03	0.13	0.13
Sat Flow, veh/h	1792	3204	251	1810	3300	61	1774	400	1244	1691	808	903
Grp Volume(v), veh/h	81	721	745	56	597	624	54	0	185	48	0	180
Grp Sat Flow(s),veh/h/ln	1792	1705	1751	1810	1642	1718	1774	0	1643	1691	0	1711
Q Serve(g_s), s	5.0	33.4	33.8	3.4	27.1	27.2	2.9	0.0	12.2	2.7	0.0	11.3
Cycle Q Clear(g_c), s	5.0	33.4	33.8	3.4	27.1	27.2	2.9	0.0	12.2	2.7	0.0	11.3
Prop In Lane	1.00		0.14	1.00		0.04	1.00		0.76	1.00		0.53
Lane Grp Cap(c), veh/h	103	1004	1031	73	938	982	165	0	219	150	0	225
V/C Ratio(X)	0.78	0.72	0.72	0.77	0.64	0.64	0.33	0.00	0.84	0.32	0.00	0.80
Avail Cap(c_a), veh/h	210	1004	1031	212	938	982	236	0	341	206	0	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.6	16.2	16.3	52.8	16.0	16.0	40.2	0.0	47.0	40.2	0.0	46.8
Incr Delay (d2), s/veh	4.8	4.4	4.4	6.3	3.3	3.1	0.8	0.0	10.9	0.9	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	16.9	17.4	1.8	13.1	13.7	1.4	0.0	6.2	1.3	0.0	5.8
LnGrp Delay(d),s/veh	56.4	20.7	20.7	59.1	19.3	19.2	41.1	0.0	57.8	41.1	0.0	54.5
LnGrp LOS	E	C	C	E	B	B	D		E	D		D
Approach Vol, veh/h		1547			1277			239			228	
Approach Delay, s/veh		22.6			21.0			54.1			51.7	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	72.4	8.6	20.6	11.4	70.4	8.4	20.8
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	13.0	45.0	8.5	22.0	13.0	45.0	7.5	23.0
Max Q Clear Time (g_c+I1), s	5.4	35.8	4.9	13.3	7.0	29.2	4.7	14.2
Green Ext Time (p_c), s	0.0	7.8	0.0	0.6	0.0	10.9	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	906	64	154	1202	34	122	92	110	22	77	131
Future Volume (veh/h)	61	906	64	154	1202	34	122	92	110	22	77	131
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1865	1900
Adj Flow Rate, veh/h	67	996	70	169	1321	37	134	101	121	24	85	144
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	86	1554	109	147	1677	47	231	164	196	208	99	168
Arrive On Green	0.05	0.48	0.48	0.08	0.51	0.51	0.08	0.21	0.21	0.02	0.16	0.16
Sat Flow, veh/h	1792	3232	227	1810	3265	91	1774	773	926	1691	623	1056
Grp Volume(v), veh/h	67	525	541	169	664	694	134	0	222	24	0	229
Grp Sat Flow(s),veh/h/ln	1792	1705	1755	1810	1643	1713	1774	0	1699	1691	0	1679
Q Serve(g_s), s	4.1	25.7	25.7	9.0	36.6	36.7	6.9	0.0	13.1	1.2	0.0	14.8
Cycle Q Clear(g_c), s	4.1	25.7	25.7	9.0	36.6	36.7	6.9	0.0	13.1	1.2	0.0	14.8
Prop In Lane	1.00		0.13	1.00		0.05	1.00		0.55	1.00		0.63
Lane Grp Cap(c), veh/h	86	820	844	147	844	880	231	0	360	208	0	267
V/C Ratio(X)	0.78	0.64	0.64	1.15	0.79	0.79	0.58	0.00	0.62	0.12	0.00	0.86
Avail Cap(c_a), veh/h	129	820	844	147	844	880	231	0	398	312	0	408
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.2	21.6	21.6	51.0	22.0	22.0	36.2	0.0	39.7	33.7	0.0	45.5
Incr Delay (d2), s/veh	7.8	3.8	3.7	120.9	7.3	7.1	3.2	0.0	2.4	0.2	0.0	10.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	12.8	13.2	9.4	18.1	19.1	3.6	0.0	6.4	0.6	0.0	7.6
LnGrp Delay(d),s/veh	60.0	25.5	25.4	171.9	29.3	29.1	39.4	0.0	42.1	33.9	0.0	56.4
LnGrp LOS	E	C	C	F	C	C	D		D	C		E
Approach Vol, veh/h		1133			1527			356			253	
Approach Delay, s/veh		27.4			45.0			41.1			54.2	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	60.4	13.0	23.6	10.3	64.0	7.1	29.5
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	9.0	44.0	8.5	27.0	8.0	45.0	9.5	26.0
Max Q Clear Time (g_c+I1), s	11.0	27.7	8.9	16.8	6.1	38.7	3.2	15.1
Green Ext Time (p_c), s	0.0	9.8	0.0	0.9	0.0	5.3	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	29	1	155	1	5	8	96	1050	6	4	1079	34
Future Volume (veh/h)	29	1	155	1	5	8	96	1050	6	4	1079	34
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	34	1	182	1	6	9	113	1235	7	5	1269	40
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	149	1	251	61	247	265	336	2292	13	305	2078	65
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.65	0.65	0.01	0.60	0.60
Sat Flow, veh/h	1315	9	1592	78	1564	1615	1774	3540	20	1810	3468	109
Grp Volume(v), veh/h	34	0	183	7	0	9	113	606	636	5	641	668
Grp Sat Flow(s),veh/h/ln	1315	0	1600	1642	0	1615	1774	1736	1824	1810	1752	1825
Q Serve(g_s), s	2.1	0.0	9.2	0.0	0.0	0.4	1.9	16.0	16.1	0.1	19.6	19.7
Cycle Q Clear(g_c), s	11.4	0.0	9.2	9.2	0.0	0.4	1.9	16.0	16.1	0.1	19.6	19.7
Prop In Lane	1.00		0.99	0.14		1.00	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	149	0	252	307	0	265	336	1124	1181	305	1050	1094
V/C Ratio(X)	0.23	0.00	0.73	0.02	0.00	0.03	0.34	0.54	0.54	0.02	0.61	0.61
Avail Cap(c_a), veh/h	166	0	273	330	0	286	458	1124	1181	517	1050	1094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	0.0	34.1	30.3	0.0	29.9	8.5	8.1	8.1	7.5	10.8	10.8
Incr Delay (d2), s/veh	0.3	0.0	7.0	0.0	0.0	0.0	0.6	1.9	1.8	0.0	2.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	4.6	0.1	0.0	0.2	1.0	8.1	8.5	0.0	10.2	10.6
LnGrp Delay(d),s/veh	39.7	0.0	41.1	30.3	0.0	29.9	9.1	10.0	9.9	7.5	13.4	13.3
LnGrp LOS	D		D	C		C	A	A	A	A	B	B
Approach Vol, veh/h		217			16			1355			1314	
Approach Delay, s/veh		40.9			30.1			9.8			13.3	
Approach LOS		D			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	61.0		18.9	9.2	56.9		18.9
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	18.1		11.2	3.9	21.7		13.4
Green Ext Time (p_c), s	0.0	15.7		0.0	0.1	14.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	66	3	152	0	1	5	206	1199	4	6	1091	59
Future Volume (veh/h)	66	3	152	0	1	5	206	1199	4	6	1091	59
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1882	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	78	4	179	0	1	6	242	1411	5	7	1284	69
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	266	5	215	0	261	236	359	2362	8	272	2030	109
Arrive On Green	0.14	0.14	0.14	0.00	0.14	0.14	0.07	0.67	0.67	0.01	0.60	0.60
Sat Flow, veh/h	1325	35	1570	0	1900	1615	1774	3548	13	1810	3382	181
Grp Volume(v), veh/h	78	0	183	0	1	6	242	690	726	7	664	689
Grp Sat Flow(s),veh/h/ln	1325	0	1605	0	1900	1615	1774	1736	1825	1810	1752	1812
Q Serve(g_s), s	4.6	0.0	9.4	0.0	0.0	0.3	4.1	18.8	18.8	0.1	20.7	20.8
Cycle Q Clear(g_c), s	4.6	0.0	9.4	0.0	0.0	0.3	4.1	18.8	18.8	0.1	20.7	20.8
Prop In Lane	1.00		0.98	0.00		1.00	1.00		0.01	1.00		0.10
Lane Grp Cap(c), veh/h	266	0	220	0	261	236	359	1155	1215	272	1052	1088
V/C Ratio(X)	0.29	0.00	0.83	0.00	0.00	0.03	0.67	0.60	0.60	0.03	0.63	0.63
Avail Cap(c_a), veh/h	310	0	274	0	324	290	446	1155	1215	480	1052	1088
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	35.7	0.0	31.7	31.1	12.1	7.9	7.9	7.6	10.9	11.0
Incr Delay (d2), s/veh	0.2	0.0	13.3	0.0	0.0	0.0	2.9	2.3	2.2	0.0	2.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	5.0	0.0	0.0	0.1	3.8	9.6	10.0	0.1	10.8	11.2
LnGrp Delay(d),s/veh	33.9	0.0	49.0	0.0	31.7	31.1	15.0	10.2	10.1	7.6	13.8	13.8
LnGrp LOS	C		D		C	C	B	B	B	A	B	B
Approach Vol, veh/h		261			7			1658			1360	
Approach Delay, s/veh		44.5			31.2			10.8			13.8	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	62.6		17.2	10.8	57.0		17.2
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	20.8		2.3	6.1	22.8		11.4
Green Ext Time (p_c), s	0.0	16.6		0.0	0.3	14.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	25	106	11	11	209
Future Vol, veh/h	18	25	106	11	11	209
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	20	27	115	12	12	227

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	372	121	0	0	127	0
Stage 1	121	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	633	936	-	-	1472	-
Stage 1	909	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	627	936	-	-	1472	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	776	1472	-
HCM Lane V/C Ratio	-	-	0.06	0.008	-
HCM Control Delay (s)	-	-	9.9	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	8	269	19	26	181
Future Vol, veh/h	16	8	269	19	26	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	17	9	292	21	28	197

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	556	303	0	0	313	0
Stage 1	303	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	496	741	-	-	1259	-
Stage 1	754	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	741	-	-	1259	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	547	1259	-
HCM Lane V/C Ratio	-	-	0.048	0.022	-
HCM Control Delay (s)	-	-	11.9	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Projected

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	1237	99	53	1091	20	56	46	133	44	79	86
Future Volume (veh/h)	74	1237	99	53	1091	20	56	46	133	44	79	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1871	1900
Adj Flow Rate, veh/h	81	1359	109	58	1199	22	62	51	146	48	87	95
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	103	1857	148	75	1863	34	175	60	171	150	110	120
Arrive On Green	0.06	0.58	0.58	0.04	0.56	0.56	0.04	0.14	0.14	0.03	0.13	0.13
Sat Flow, veh/h	1792	3199	256	1810	3300	61	1774	426	1221	1691	819	894
Grp Volume(v), veh/h	81	722	746	58	597	624	62	0	197	48	0	182
Grp Sat Flow(s),veh/h/ln	1792	1705	1750	1810	1642	1718	1774	0	1647	1691	0	1713
Q Serve(g_s), s	5.0	34.2	34.6	3.5	27.6	27.6	3.3	0.0	13.0	2.7	0.0	11.4
Cycle Q Clear(g_c), s	5.0	34.2	34.6	3.5	27.6	27.6	3.3	0.0	13.0	2.7	0.0	11.4
Prop In Lane	1.00		0.15	1.00		0.04	1.00		0.74	1.00		0.52
Lane Grp Cap(c), veh/h	103	990	1016	75	927	970	175	0	231	150	0	230
V/C Ratio(X)	0.78	0.73	0.73	0.77	0.64	0.64	0.35	0.00	0.85	0.32	0.00	0.79
Avail Cap(c_a), veh/h	210	990	1016	212	927	970	238	0	341	206	0	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.6	16.9	17.0	52.7	16.5	16.5	39.7	0.0	46.6	39.7	0.0	46.5
Incr Delay (d2), s/veh	4.8	4.7	4.7	6.1	3.4	3.3	0.9	0.0	12.7	0.9	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	17.3	17.9	1.9	13.3	13.9	1.7	0.0	6.7	1.3	0.0	5.9
LnGrp Delay(d),s/veh	56.4	21.7	21.7	58.8	20.0	19.8	40.6	0.0	59.2	40.5	0.0	54.0
LnGrp LOS	E	C	C	E	B	B	D		E	D		D
Approach Vol, veh/h		1549			1279			259			230	
Approach Delay, s/veh		23.5			21.7			54.8			51.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	71.4	9.0	20.9	11.4	69.7	8.4	21.6
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	13.0	45.0	8.5	22.0	13.0	45.0	7.5	23.0
Max Q Clear Time (g_c+I1), s	5.5	36.6	5.3	13.4	7.0	29.6	4.7	15.0
Green Ext Time (p_c), s	0.0	7.2	0.0	0.6	0.0	10.6	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	906	73	160	1202	34	126	95	113	22	82	131
Future Volume (veh/h)	61	906	73	160	1202	34	126	95	113	22	82	131
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1866	1900
Adj Flow Rate, veh/h	67	996	80	176	1321	37	138	104	124	24	90	144
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	86	1529	123	147	1669	47	230	166	198	206	105	167
Arrive On Green	0.05	0.48	0.48	0.08	0.51	0.51	0.08	0.21	0.21	0.02	0.16	0.16
Sat Flow, veh/h	1792	3198	257	1810	3265	91	1774	775	924	1691	647	1036
Grp Volume(v), veh/h	67	531	545	176	664	694	138	0	228	24	0	234
Grp Sat Flow(s),veh/h/ln	1792	1705	1750	1810	1643	1713	1774	0	1700	1691	0	1683
Q Serve(g_s), s	4.1	26.2	26.2	9.0	36.8	36.9	7.1	0.0	13.5	1.2	0.0	15.0
Cycle Q Clear(g_c), s	4.1	26.2	26.2	9.0	36.8	36.9	7.1	0.0	13.5	1.2	0.0	15.0
Prop In Lane	1.00		0.15	1.00		0.05	1.00		0.54	1.00		0.62
Lane Grp Cap(c), veh/h	86	815	837	147	840	876	230	0	365	206	0	272
V/C Ratio(X)	0.78	0.65	0.65	1.20	0.79	0.79	0.60	0.00	0.63	0.12	0.00	0.86
Avail Cap(c_a), veh/h	129	815	837	147	840	876	230	0	398	311	0	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.2	21.9	22.0	51.0	22.3	22.3	36.1	0.0	39.5	33.5	0.0	45.3
Incr Delay (d2), s/veh	7.8	4.0	3.9	137.9	7.5	7.3	3.7	0.0	2.7	0.2	0.0	11.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	13.2	13.5	10.1	18.4	19.1	3.7	0.0	6.6	0.6	0.0	7.8
LnGrp Delay(d),s/veh	60.0	26.0	25.9	188.9	29.8	29.6	39.8	0.0	42.2	33.7	0.0	56.7
LnGrp LOS	E	C	C	F	C	C	D		D	C		E
Approach Vol, veh/h		1143			1534			366			258	
Approach Delay, s/veh		27.9			47.9			41.3			54.6	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	60.1	13.0	23.9	10.3	63.7	7.1	29.8
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	9.0	44.0	8.5	27.0	8.0	45.0	9.5	26.0
Max Q Clear Time (g_c+I1), s	11.0	28.2	9.1	17.0	6.1	38.9	3.2	15.5
Green Ext Time (p_c), s	0.0	9.7	0.0	0.9	0.0	5.1	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	40.8
HCM 2010 LOS	D

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	33	1	169	1	5	8	101	1050	6	4	1079	35
Future Volume (veh/h)	33	1	169	1	5	8	101	1050	6	4	1079	35
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	39	1	199	1	6	9	119	1235	7	5	1269	41
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	153	1	272	61	259	286	328	2246	13	296	2030	66
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.06	0.63	0.63	0.01	0.59	0.59
Sat Flow, veh/h	1315	8	1592	77	1518	1615	1774	3540	20	1810	3464	112
Grp Volume(v), veh/h	39	0	200	7	0	9	119	606	636	5	641	669
Grp Sat Flow(s),veh/h/ln	1315	0	1600	1594	0	1615	1774	1736	1824	1810	1752	1824
Q Serve(g_s), s	2.5	0.0	10.1	0.0	0.0	0.4	2.1	16.6	16.6	0.1	20.3	20.4
Cycle Q Clear(g_c), s	12.5	0.0	10.1	10.1	0.0	0.4	2.1	16.6	16.6	0.1	20.3	20.4
Prop In Lane	1.00		1.00	0.14		1.00	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	153	0	273	320	0	286	328	1102	1157	296	1026	1069
V/C Ratio(X)	0.25	0.00	0.73	0.02	0.00	0.03	0.36	0.55	0.55	0.02	0.62	0.63
Avail Cap(c_a), veh/h	153	0	273	320	0	286	449	1102	1157	508	1026	1069
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	0.0	33.4	29.4	0.0	28.9	9.2	8.7	8.7	8.0	11.5	11.5
Incr Delay (d2), s/veh	0.3	0.0	8.6	0.0	0.0	0.0	0.7	2.0	1.9	0.0	2.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	5.1	0.1	0.0	0.2	1.1	8.5	8.9	0.0	10.4	10.9
LnGrp Delay(d),s/veh	39.7	0.0	42.0	29.4	0.0	29.0	9.9	10.7	10.6	8.0	14.4	14.3
LnGrp LOS	D		D	C		C	A	B	B	A	B	B
Approach Vol, veh/h		239			16			1361			1315	
Approach Delay, s/veh		41.6			29.1			10.6			14.3	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	59.9		20.0	9.2	55.8		20.0
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	18.6		12.1	4.1	22.4		14.5
Green Ext Time (p_c), s	0.0	15.4		0.0	0.1	14.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	68	3	160	0	1	5	220	1199	4	6	1091	63
Future Volume (veh/h)	68	3	160	0	1	5	220	1199	4	6	1091	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1882	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	80	4	188	0	1	6	259	1411	5	7	1284	74
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	273	5	224	0	271	245	360	2343	8	269	1987	114
Arrive On Green	0.14	0.14	0.14	0.00	0.14	0.14	0.08	0.66	0.66	0.01	0.59	0.59
Sat Flow, veh/h	1325	33	1571	0	1900	1615	1774	3548	13	1810	3367	194
Grp Volume(v), veh/h	80	0	192	0	1	6	259	690	726	7	667	691
Grp Sat Flow(s),veh/h/ln	1325	0	1604	0	1900	1615	1774	1736	1825	1810	1752	1809
Q Serve(g_s), s	4.7	0.0	9.9	0.0	0.0	0.3	4.5	19.1	19.1	0.1	21.4	21.5
Cycle Q Clear(g_c), s	4.7	0.0	9.9	0.0	0.0	0.3	4.5	19.1	19.1	0.1	21.4	21.5
Prop In Lane	1.00		0.98	0.00		1.00	1.00		0.01	1.00		0.11
Lane Grp Cap(c), veh/h	273	0	229	0	271	245	360	1146	1205	269	1034	1068
V/C Ratio(X)	0.29	0.00	0.84	0.00	0.00	0.02	0.72	0.60	0.60	0.03	0.65	0.65
Avail Cap(c_a), veh/h	310	0	274	0	324	290	438	1146	1205	476	1034	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	35.5	0.0	31.3	30.7	13.3	8.1	8.1	7.9	11.5	11.6
Incr Delay (d2), s/veh	0.2	0.0	15.3	0.0	0.0	0.0	4.5	2.3	2.2	0.0	3.1	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	5.3	0.0	0.0	0.1	4.2	9.8	10.2	0.1	11.1	11.5
LnGrp Delay(d),s/veh	33.5	0.0	50.8	0.0	31.3	30.7	17.7	10.5	10.4	7.9	14.6	14.6
LnGrp LOS	C		D		C	C	B	B	B	A	B	B
Approach Vol, veh/h		272			7			1675			1365	
Approach Delay, s/veh		45.7			30.8			11.6			14.6	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	62.1		17.6	11.2	56.2		17.6
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	21.1		2.3	6.5	23.5		11.9
Green Ext Time (p_c), s	0.0	16.4		0.0	0.3	14.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	25	112	11	11	227
Future Vol, veh/h	18	25	112	11	11	227
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	20	27	122	12	12	247

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	399	128	0	0	134	0
Stage 1	128	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	611	927	-	-	1463	-
Stage 1	903	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	605	927	-	-	1463	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	758	1463	-
HCM Lane V/C Ratio	-	-	0.062	0.008	-
HCM Control Delay (s)	-	-	10.1	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	8	286	19	26	191
Future Vol, veh/h	16	8	286	19	26	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	17	9	311	21	28	208

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	586	322	0	0	332	0
Stage 1	322	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	476	724	-	-	1239	-
Stage 1	739	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	464	724	-	-	1239	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1239	-
HCM Lane V/C Ratio	-	-	0.05	0.023	-
HCM Control Delay (s)	-	-	12.2	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	18	131	6	6	220
Future Vol, veh/h	18	18	131	6	6	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	20	20	142	7	7	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	399	146	0	0	149	0
Stage 1	146	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	611	906	-	-	1445	-
Stage 1	886	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	607	906	-	-	1445	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	607	906	1445	-
HCM Lane V/C Ratio	-	-	0.032	0.022	0.005	-
HCM Control Delay (s)	-	-	11.1	9.1	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

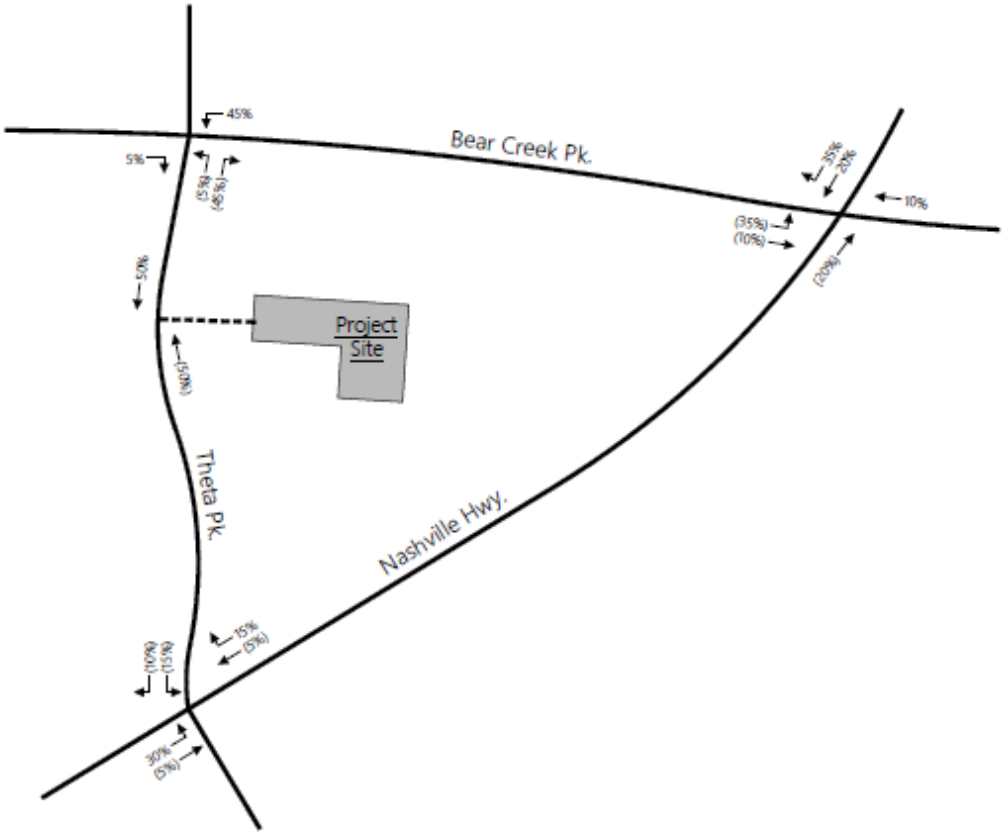
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	10	277	17	18	207
Future Vol, veh/h	10	10	277	17	18	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	11	11	301	18	20	225

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	575	310	0	0	319	0
Stage 1	310	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	483	735	-	-	1252	-
Stage 1	748	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	474	735	-	-	1252	-
Mov Cap-2 Maneuver	474	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	770	-	-	-	-	-

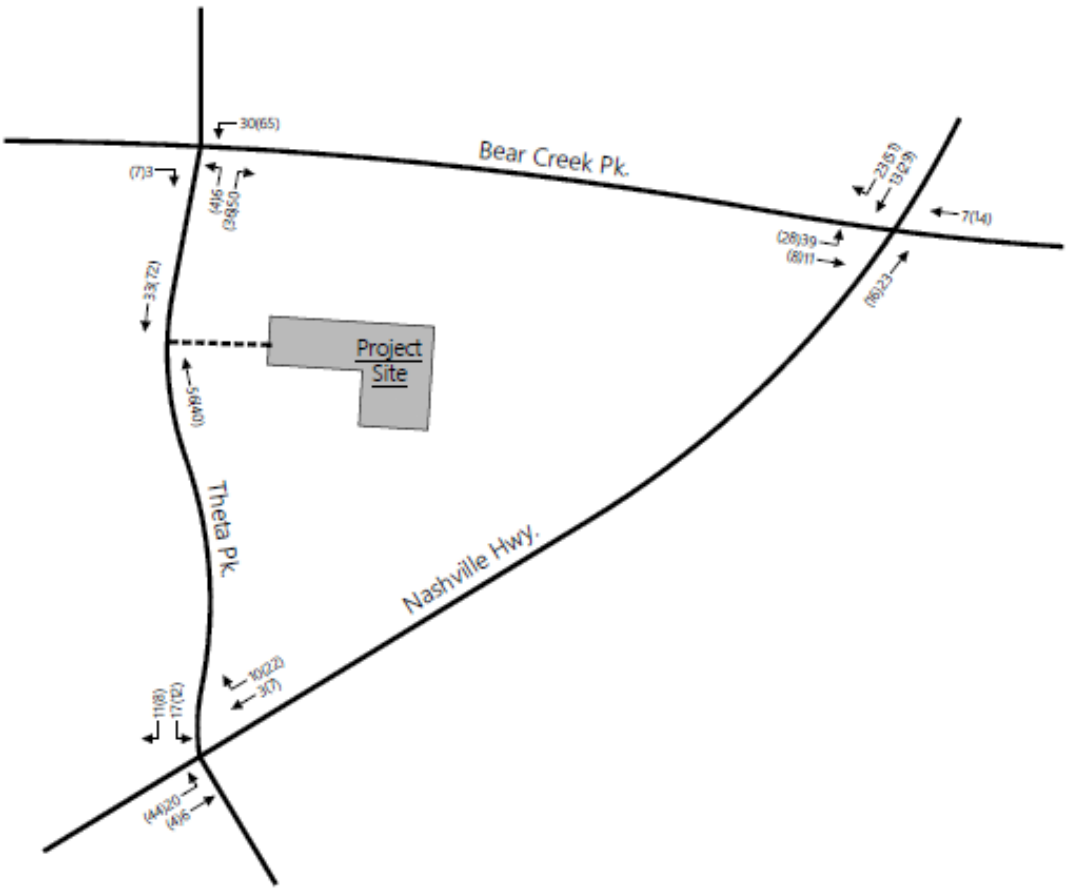
Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	474	735	1252	-
HCM Lane V/C Ratio	-	-	0.023	0.015	0.016	-
HCM Control Delay (s)	-	-	12.8	10	7.9	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

D. Background



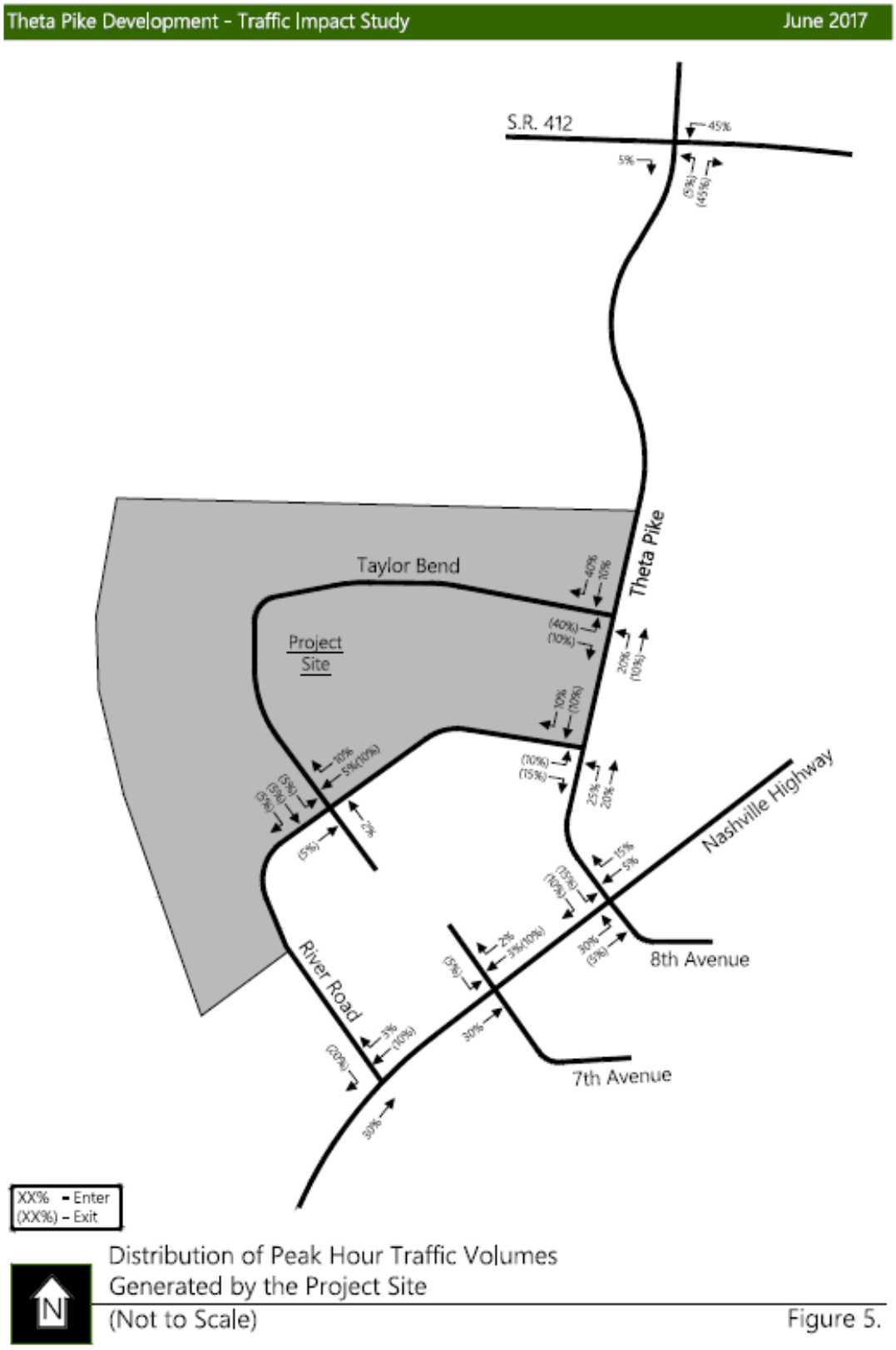
Distribution of Peak Hour Traffic Volumes
Generated by Theta Pike Residential
(Not to Scale) Figure F1.



XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

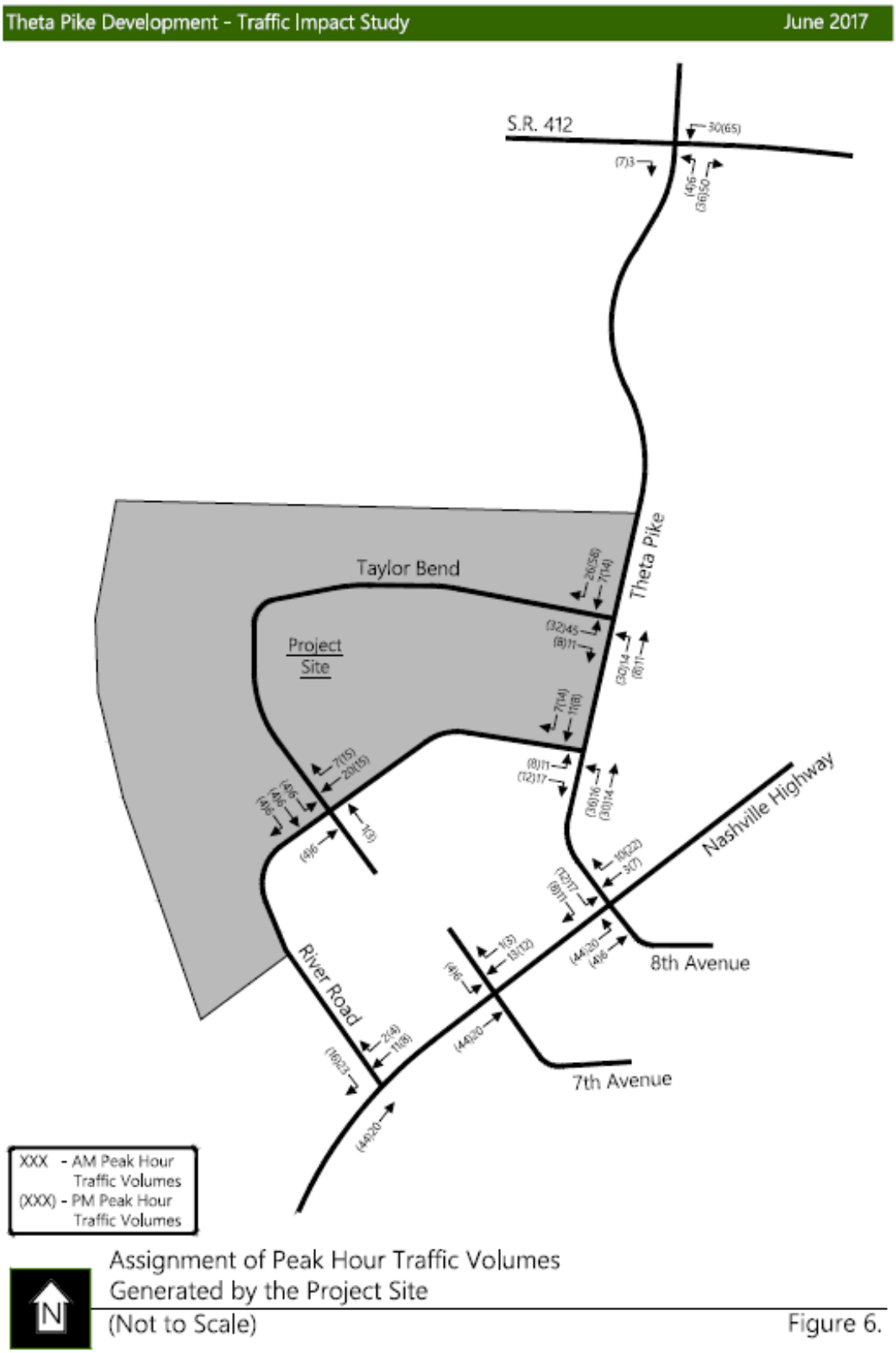
N

Assignment of Peak Hour Traffic Volumes Generated by Theta Pike Residential
(Not to Scale) Figure F2.



Distribution of Peak Hour Traffic Volumes
Generated by the Project Site
(Not to Scale)

Figure 5.



Assignment of Peak Hour Traffic Volumes Generated by the Project Site
(Not to Scale)

Figure 6.

E. Trip Generation

Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

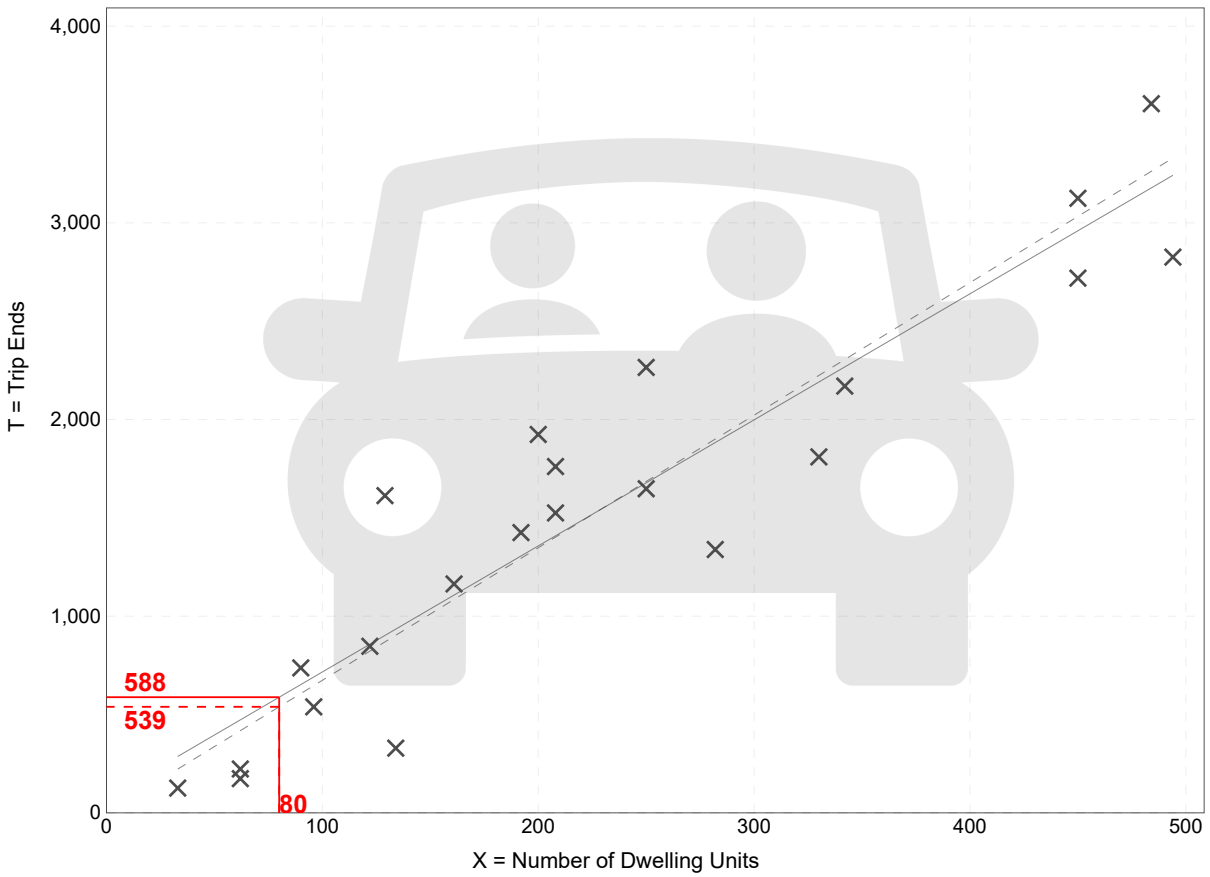
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

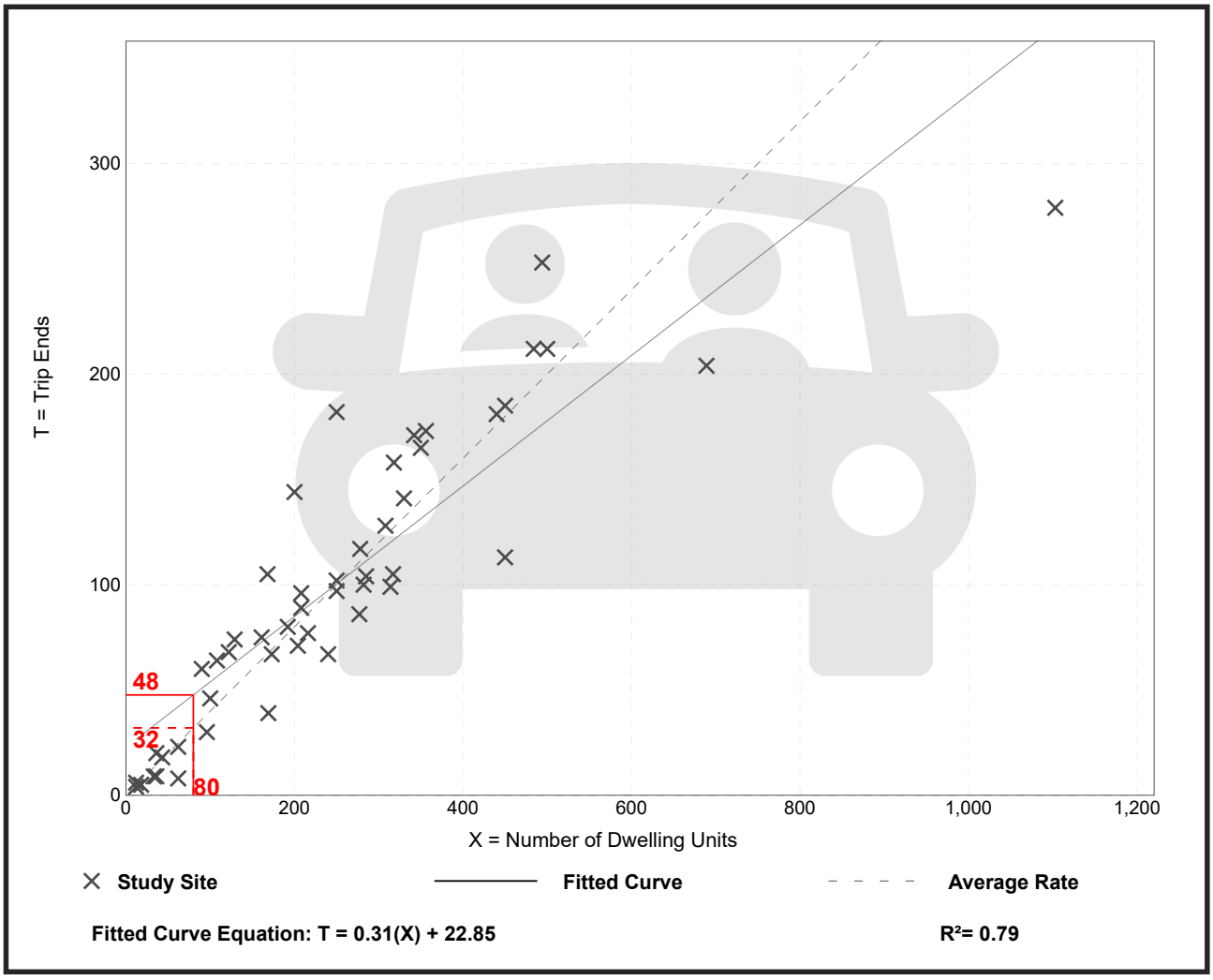
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 49
Avg. Num. of Dwelling Units: 249
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

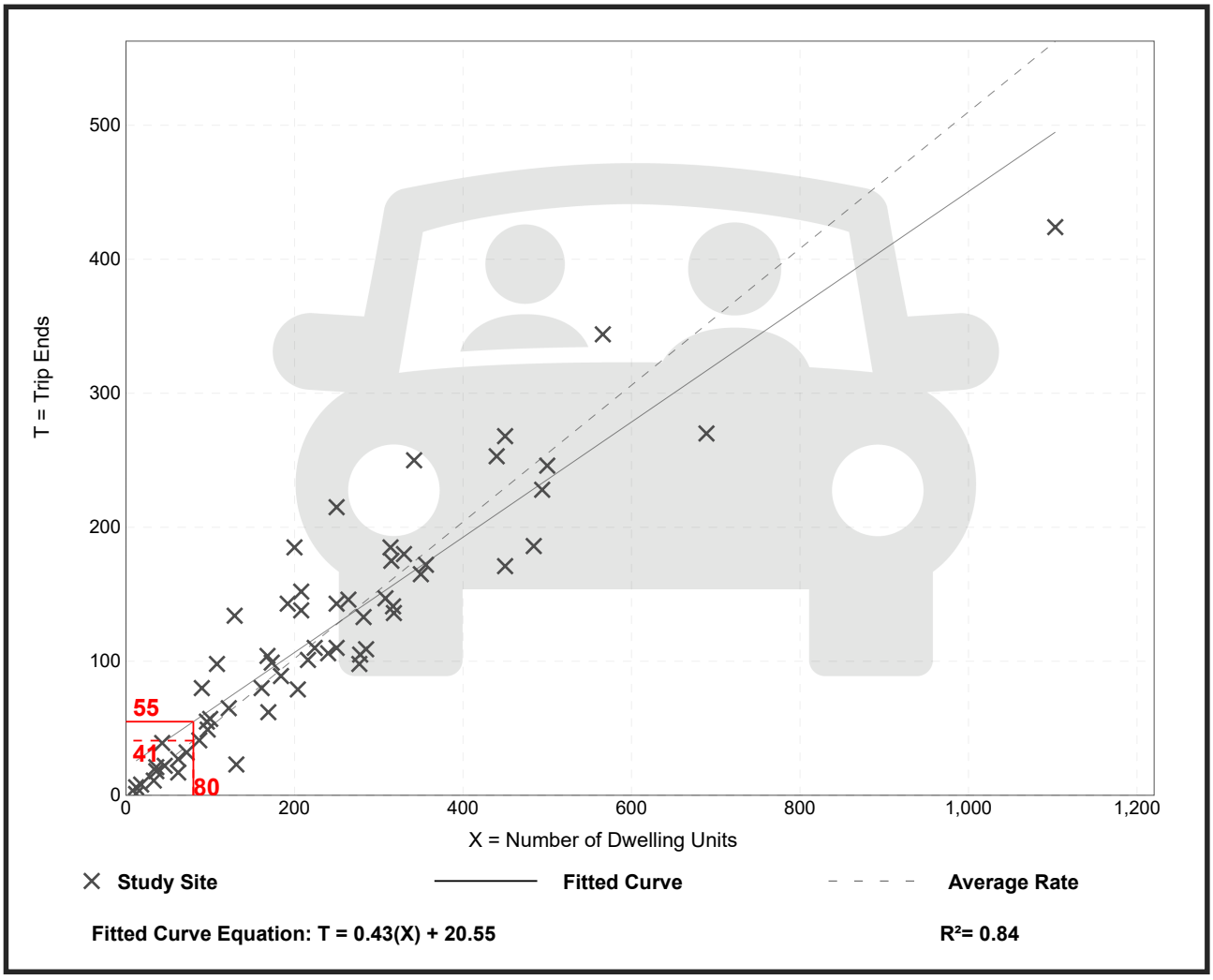
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



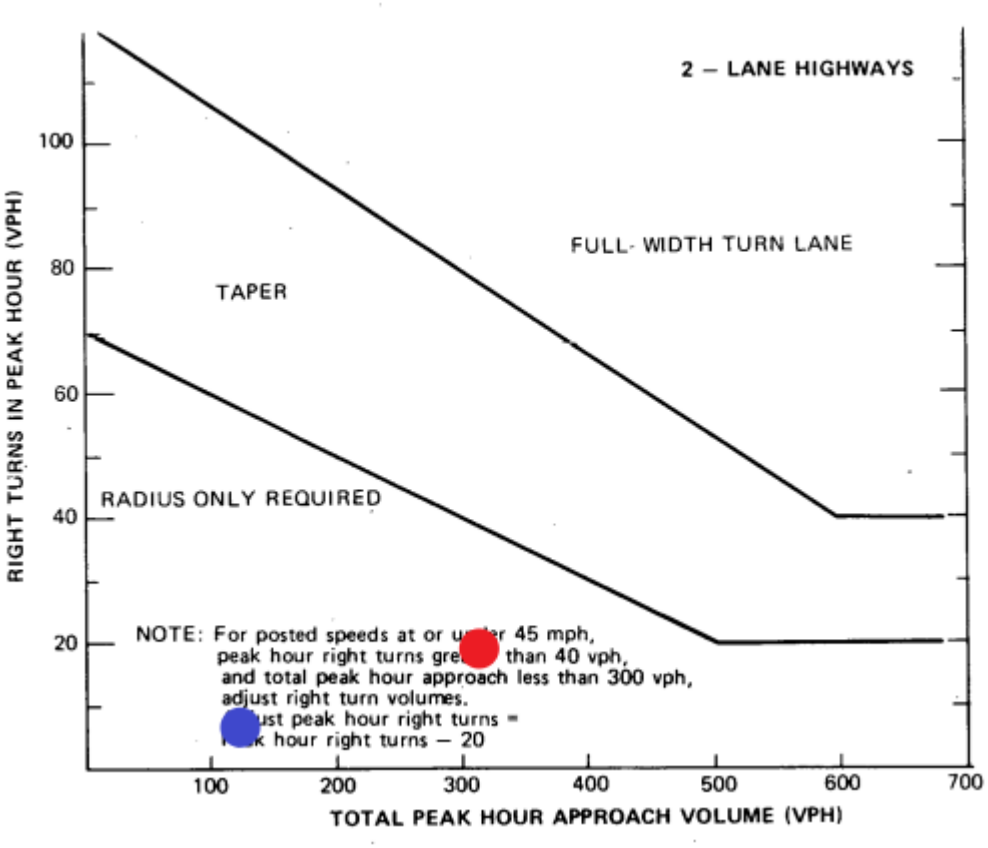
Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

F. Turn Lane Analysis

RIGHT TURN LANE WARRANT ANALYSES
(Based on Intersection Channelization Design Guide)

Intersection Approach	AM Peak			PM Peak		
	V_{R*}	V_{A*}	Warranted?	V_{R*}	V_{A*}	Warranted?
Northbound Theta Pike @ Site Access	6	118	No	17	303	No

*V_R = Right Turn Volumes, V_A = Advancing Volumes ** Adjusted right turn volumes



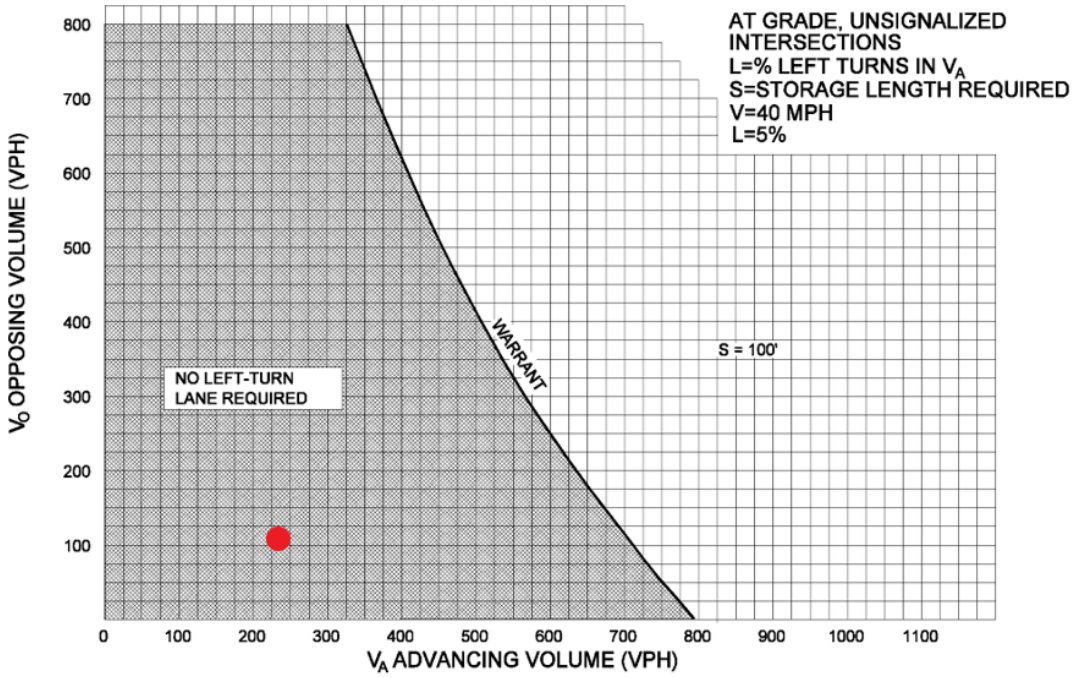
Under projected conditions, an exclusive right turn lane is not warranted on Theta Pike at the Site Access during either peak hour.

LEFT TURN LANE WARRANT ANALYSES
(Based on Harmelink Methodology)
Theta Pike and Site Access (AM Peak Hour)

2-lane roadway

Variable	Value
85th percentile speed, mph:	39
Percent of left turns in advancing volume (VA), %:	2.5%
Advancing volume (VA), veh/h:	233
Opposing volume (VO), veh/h:	118

HARMELINK CHARTS – 40 MPH



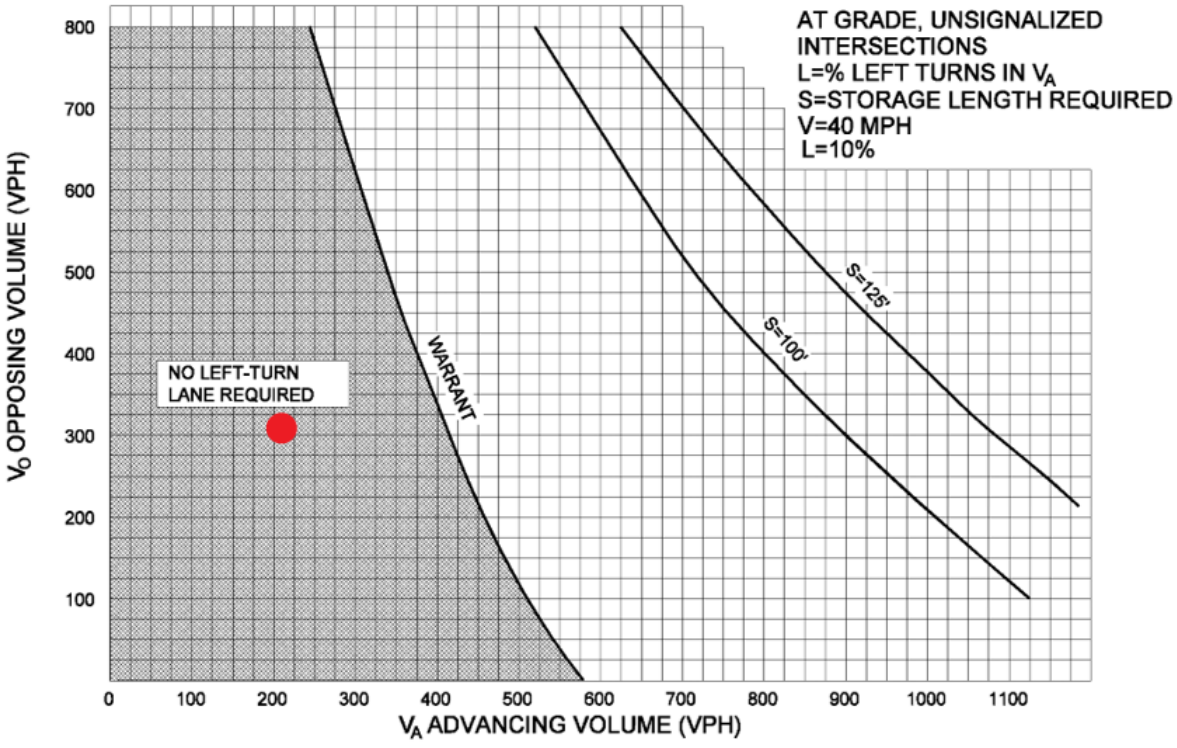
Warrant for 5% Left-Turn Storage Lanes at 40 mph

Under projected conditions, an exclusive **left turn lane is not warranted** on Theta Pike at the Site Access during **AM peak hour.**

LEFT TURN LANE WARRANT ANALYSES
(Based on Harmelink Methodology)
Theta Pike and Site Access (PM Peak Hour)

2-lane roadway

Variable	Value
85th percentile speed, mph:	39
Percent of left turns in advancing volume (VA), %:	8.5%
Advancing volume (VA), veh/h:	209
Opposing volume (VO), veh/h:	303



Warrant for 10% Left-Turn Storage Lanes at 40 mph

Under projected conditions, an exclusive **left turn lane is not warranted** on Theta Pike at the Site Access during **PM peak hour**.

May 22, 2023

City of Columbia, Tennessee
700 North Garden Street
Columbia, Tennessee 38401

Re: **Mackenzie Place Townhomes**
220 Theta Pike
Description of Proposed Project

To Whom it May Concern:

The Mackenzie Place Townhome project consists of 34 townhome units that will be constructed along a 560+/- LF roadway terminating with a cul-de-sac. Each unit will have two parking spaces: one within the garage itself and the other space located in the driveway.

Due to topography, a 436+/- LF retaining wall with varying heights (7.5' at its maximum) will be required along the south property line.

Storm water will be managed via an (level 2) infiltration trench which will satisfy the 80% target runoff reduction requirement. The infiltration trench has been oversized in order to reduce the post-development Curve Number (CN) to meet the stormwater requirements and ensure that post developed flows do not exceed the pre-developed flows.

Sanitary Sewer will be provided with a proposed extension of the existing network connecting at a manhole adjacent to the intersection of Theta Pike and Polk Place.

Water will be provided with the construction of a new 8" main that will connect to an existing main along Theta Pike.

Thank you for your consideration of this site plan submittal and please do not hesitate to reach out to us if have any questions, or need any further information.

Sincerely,

Brian Holcombe

DocuSign Envelope ID: A9390243-670C-4902-9842-71113075C10E

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	220 Theta Pike - Columbia, TN		
	TAX MAP: 90B	GROUP: B	PARCEL: 47.00
SUMMARY OF NATURE OF REQUEST AND WORK	34 town home units.		

DATE OF PRE-APPLICATION CONFERENCE	04/05/23	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ❑ Preliminary Plat ❑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ☑ Multi-Family Site Plan ❑ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) _____ ❑ Total Number of Lots _____ ❑ Total acreage _____

DocuSign Envelope ID: A9390243-670C-4902-9842-71113075C10E

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	M2 Group, LLC	PHONE	(615) 925-0851
ADDRESS	P.O. Box 848 - Franklin, TN 37064	EMAIL	brian@m2groupllc.com

PROPERTY OWNER NAME	Blair Property Management, LLC	PHONE	(615) 498-4190
ADDRESS	8217 VICTORY TRL BRENTWOOD TN 37027-7374	EMAIL	

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

M2 Group, LLC	DocuSigned by: Brian Holcombe 804B4D38BAE24F9...	01-17-2023 | 12:27:59 CST
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Blair Property Management, LLC	DocuSigned by: 5E3D27D00E42406...	01-17-2023 | 12:31:33 CST
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

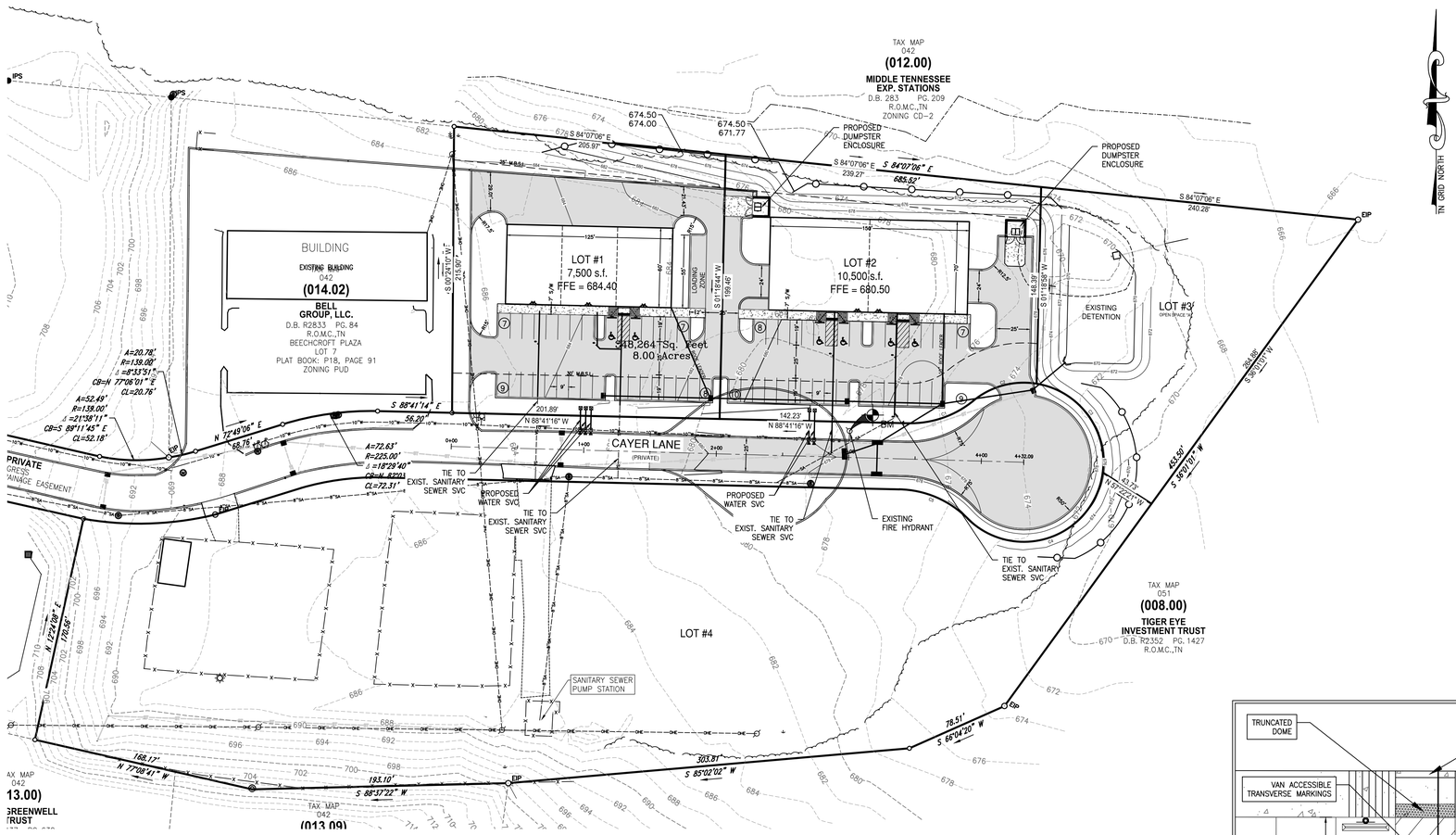
STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

FINAL MASTER DEVELOPMENT PLAN



CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	75.00'	53.23'	52.12'	S 70°58'52" W	40°39'45"
C2	60.00'	50.91'	49.40'	N 74°57'33" E	48°37'07"
C3	60.00'	92.29'	83.46'	S 36°39'59" E	88°07'50"
C4	60.00'	133.64'	107.68'	N 71°12'27" E	127°37'02"
C5	75.00'	57.21'	55.83'	S 66°50'09" E	43°42'14"

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50 ft.

BENCHMARK

BENCHMARK #1
'X' BOLT FIRE HYDRANT
N = 502,729.50
E = 1,680,532.76
ELEV = 679.64'
TENNESSEE STATE PLANE
COORDINATE SYSTEM
NAD 83 DATUM

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee811
Know what's below
Call before you dig.

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK		
TREE LINE		
STORM STRUCTURE LABEL		
ASPHALT		
CONCRETE		
# PARKING SPACES		

UTILITY COMPANIES:

UTILITIES SHOWN ARE BASED ON LIMITED DATA. THERE IS NO GUARANTEE AS TO THEIR LOCATION OR SIZE. PLEASE CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION. POSSIBLE CONTACTS IN THIS AREA INCLUDE:

MUNICIPALITY:
CITY OF COLUMBIA
707 NORTH MAIN ST.
COLUMBIA, TN 38401

ELECTRIC:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

CABLE TELEVISION:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

STORM WATER:
CITY OF COLUMBIA
ENGINEERING/INSPECTION
707 N. MAIN STREET
COLUMBIA, TN 38401
(931) 560-1530
Contact: Glenn Harper, P.E.

WATER:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

CABLE TELEVISION:
CHARTER COMMUNICATIONS
2008 S. MAIN STREET
COLUMBIA, TN 38401
(931) 388-1326

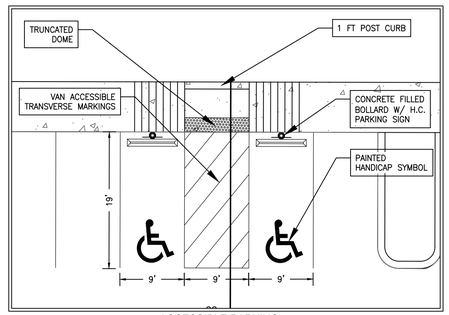
SANITARY:
CITY OF COLUMBIA
WASTEWATER SYSTEM
1244 TREATMENT PLANT RD.
COLUMBIA, TN 38401
(931) 560-1001
Donnie Boshers, Director

TELEPHONE:
AT&T
904 S. HIGH ST
COLUMBIA, TN 38401
JAMIE WHITFIELD
(615) 975-0505
jw0972@att.com

GAS:
ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
(888) 824-3434
NASHVILLE
(615) 872-5100

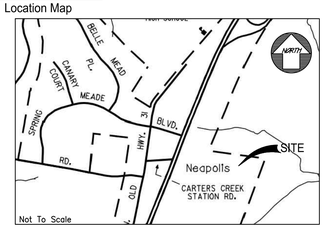
PROPOSED CONSTRUCTION SCHEDULE FOR THE YEAR 2023

ACTIVITY	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
TEMPORARY SEDIMENT STRUCTURES												
SEDIMENT BASINS												
DIVERSION DITCHES												
CLEARING & CHIPPING												
TOPSOIL STRIPPING AND STORAGE												
ROADWAY GRADING												
PERMANENT STORM SEWER												
UTILITIES												
TEMPORARY VEGETATION												
PAVING												
PERMANENT VEGETATION												
REMOVE TEMPORARY STRUCTURES												



ACCESSIBLE PARKING
N.T.S.

Location Map



SITE DATA:

OWNER: BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TN 37209

PARCEL NUMBER: TAX MAP 42 PARCEL 14.00
DEED BOOK: R2833, PG 86

SUBJECT PARCEL ZONING: PUD

ACREAGE OF SITE: TOTAL: 274,483.49 S.F. = 6.30 Ac.
LOT 1: 42,268.54 S.F. = 0.97Ac.
LOT 2: 43,655.75 S.F. = 1.00 Ac.
LOT 3: 33,779.34 S.F. = 0.78 Ac.
LOT 4: 154,779.86 S.F. = 3.55 Ac.

MINIMUM REQUIRED BUILDING SETBACKS:
30' FRONT
25' REAR
0' SIDE

PARKING: LOT 1:
OFFICE USE
1 SPACE PER 200 SF FLOOR SPACE
5,000 SF / 200 = 25 SPACES REQUIRED
WAREHOUSE RETAIL
1 SPACE PER 1,000 SF FLOOR SPACE
2,500 SF / 1,000 SF = 5 SPACES REQUIRED

LOT 2:
VEHICLE REPAIR/MAINTENANCE
1 SPACE PER 500 SF = 11 SPACES REQUIRED
PLUS 1 SPACE PER EMPLOYEE STATION = 4
WAREHOUSE RETAIL
1 SPACE PER 1,000 SF FLOORSPACE
5,250 SF / 1,000 SF = 6 SPACES REQUIRED

PARKING REQUIRED:
30 FOR LOT 1 PLUS 21 FOR LOT 2 = 51 TOTAL

PARKING PROVIDED:
57 STANDARD SPACES
6 ACCESSIBLE SPACES
63 TOTAL SPACES

UTILITY SERVICES: WATER SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

PURPOSE NOTE: SUBDIVIDE PROPERTY AND:
CONSTRUCT SITE FOR 18,000 S.F. MULTIPLE USE BUILDINGS. BUILDINGS WILL BE 25' HIGH (MAXIMUM).

NOTES:
1. ANY FUTURE REMOVAL OF TREES DEPICTED ON THIS PLAN WILL REQUIRE APPROVAL BY PLANNING COMMISSION.
2. LIGHTING AT FRONTAGE LINES PER APPROVED PUD STANDARDS.
3. DUMPSTER PAD ENCLOSURES PER CITY OF COLUMBIA STANDARD DETAIL MD-01.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN, IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:
W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THE PROPERTY IS NOT LOCATED WITHIN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS (FIRM's) MAP NUMBER 47119C0180E DATED APRIL 16, 2007.

GERALD W. LOVICK
REGISTERED ENGINEER
AGRICULTURE
No. 107415
STATE OF TENNESSEE
7-10-23

gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TENNESSEE 37209

DATE
REVISIONS

FLEX BUILDING

CAYER LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
FINAL MASTER DEVELOPMENT PLAN

Drawn: RP
Checked: GV
Approved: GV
Date: 04-17-2023

Job. no. 16583-21
Scale:
Vertical: 1"=50'
Horizontal:

1 of 1

FILE: J:\ WES_Engineers_Surveyors 2016\16583 - Coyer Lane - Rolnes\16583-21 Flex Bldg - Bell\Dwg\Engineering\16583-21 Flex Bldg_ALT 2 REV 7-10-23 base.dwg

July 17, 2023

City of Columbia
Development Services
700 North Garden Street
Columbia, TN 38401

RE: **Project Name: Flex Building – Cayer Lane – 23-0237**
City of Columbia Planning Commission Reubmittal

On behalf of Bell Group, LLC, the owner for the proposed development, **WES Engineers & Surveyors** would like to resubmit the preliminary plat to the City of Columbia for Planning Commission approval. Comments are addressed in green.

Planning

1. At resubmittal, please provide elevations conforming to the Architectural Design Review Team's recommendations. Please provide "sufficiently detailed information to indicate the ultimate operation and appearance of the Development, or applicable portion thereof" (8.5.21.O.4.a, p. 460).
   Building elevations have been provided with this submittal.

2. Provide copies of any proposed covenants or grants of Easement related to the lots (8.5.21.O.4.d, p. 460).
   There is no proposed covenants or grants related to the lots.

3. Confirm with the City Engineer whether a stub to the northern property line would be appropriate for connectivity.
   With discussions with City Engineer, a connection with the north property is not needed.

4. The Preliminary Plat document notes that a portion of the property is within a Flood Hazard Aare. FIRM panel 47117C0180E does not appear to show any portion of the subject property in Zone X, outside of the 1% and 0.2% risk areas. Please confirm and revise as necessary.
   FEMA FIRM panel 47119C0180E does not show this property in the flood plain. This note has been revised on the preliminary plat.

5. Please revise the portion of Note 2 which reads "lighting at frontage lines will not exceed 1.0 foot candle and on-site outdoor lighting will conform to the standards of the code" to "Per approved PUD standards."
   Note 2 has been changed on plans to read as stated above.

6. Lot 4 is currently utilized for outdoor storage. Please provide any information you have about when this use was established.
   When the current owner purchased the property, Lot 4 was being leased at its current use.

7. The Preliminary Plat document appear to utilize the parking ratio for vehicles sales and services (1:500sf + per employee work station + vehicle storage space + 1 per work bay) and related uses. What is the intended use of the property? Floor plans and elevations depict space suitable to retail with accessory warehouse space. The documents we have related to the CEG PUD approval indicate this part of the PUD would be utilized for Office/Retail and Warehouse uses. Please clarify the intended use and applicable parking ratios. Applying factors for office and retail uses the minimum required parking is between 36 and 90 spaces.
   We have revised the parking calculations based on usage. A more detailed breakdown for each lot and use can be found on the plans.

8. Please show loading areas. The applicable standard from Ordinance 3638 is 55x12, which can be adjusted by Zoning Administrator.
   A loading zone has been added between the drive aisle bisecting lot 1 and lot 2. See plans for more details.

9. Please provide dumpster enclosure detail conforming to MD-01 in the ESS.
   We have added a note 3 stating that the dumpster enclosure to conform to MD-01 standard.

10. Please provide a survey stamped by a PLS with all project boundaries, utilities, and existing streets and rights-of-way.
    A copy of the survey as has been attached with this submittal.

Engineering

11. Subject to construction plans
    We will coordinate with engineering department with the submittal of construction plans.

12. Parking lot for lot#2 encroaching into ROW/private street easement.
    We have revised the parking layout to remove the parking that was inside the private street easement. See plans for more details.

13. Label roadway as private.
    The private street has been labeled on the plans.

14. Provide survey stamped by registered land surveyor.
    A copy of the survey has been attached with this submittal.

Public Works

15. The current proposed angled dumpster locations do not provide enough clearance for a front load garbage truck to service. A 14 ft wide by 40 ft long straight and clear access approach to each dumpster for the truck is required. Please see attached dumpster guidelines and accessibility requirements.
    Dumpster pads have been oriented to provide 40' clear path to dumpsters. See plans for layout.

Police

16. No comments provided.

Building

17. No comment.

Columbia Power

18. Columbia Power System has an existing power line near your proposed development.
    We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
    • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.
    We understand that there are supply chain issues.

Fire

19. No Comments

Wastewater

20. The sanitary sewer service taps are at different locations than what is shown on the plans, including that one of the lots may not have a tap. This should be coordinated with Columbia Wastewater to ensure a tap is located and/or purchased in the building permit and planned prior to construction.
    We will coordinate construction plans with City of Columbia Wastewater department.

Maury County Schools

21. No comment.

Maury County E911

22. No comment.

ATT

23. ATT intends to serve.

Atmos Energy

24. No comment provided.

Duck River Electric Membership Corp

25. No comments provided.

Maury County Highway Dept.

26. No comments provided.

Columbia Water

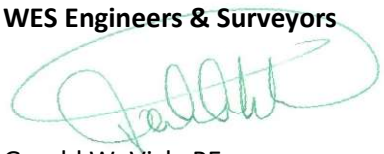
27. "A water availability letter was issued on 6-19-23 and is valid for 120 days. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements detailed in the availability letter are the responsibility of the developer/owner. All public water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."
    We understand and comply with the water availability letter.

ATTACHMENTS: Preliminary Plat and Final PUD

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

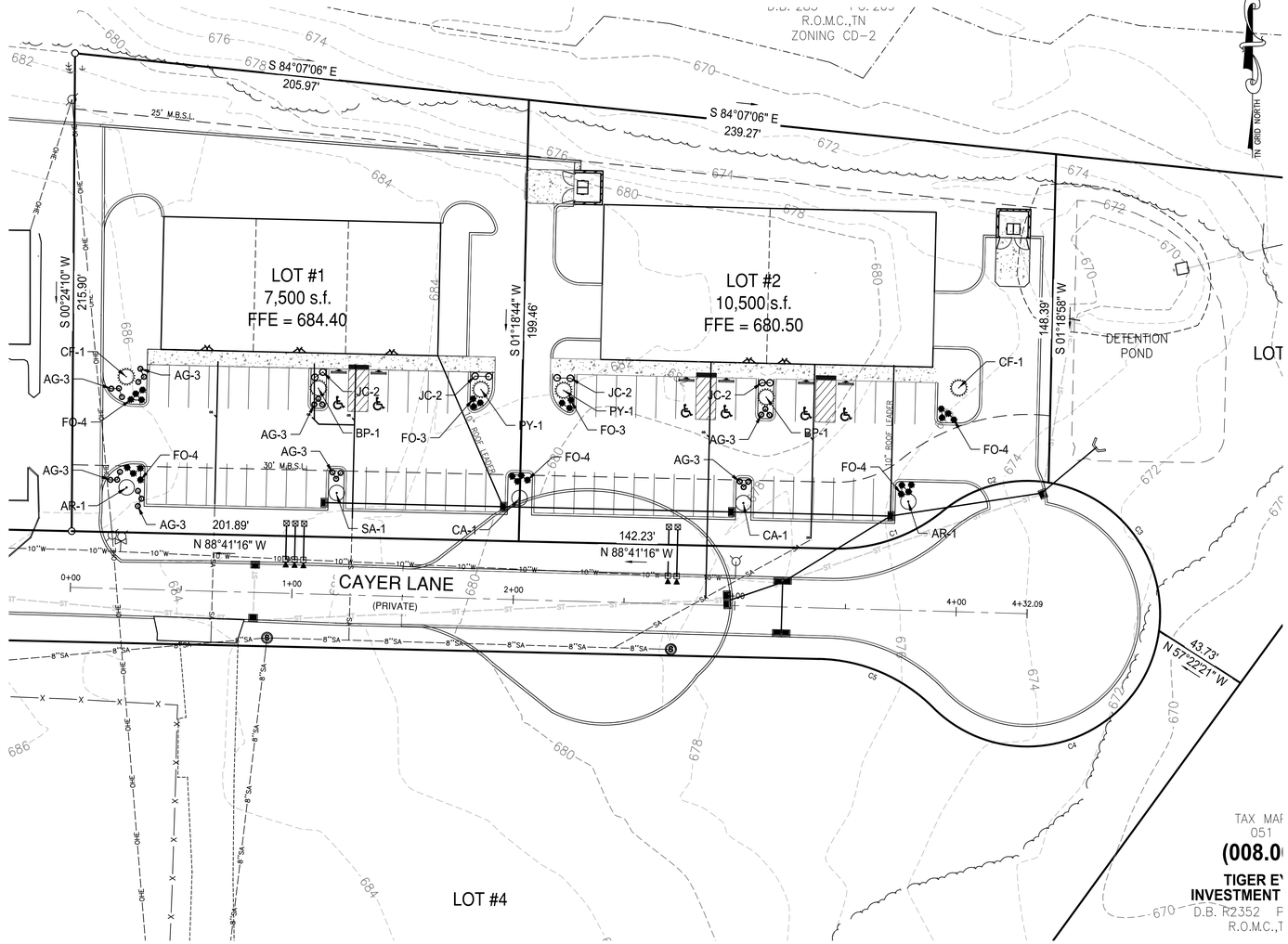
If you have any questions or comments with this submittal, please do not hesitate to contact me directly.

Sincerely,
WES Engineers & Surveyors



Gerald W. Vick, PE
Principal

LANDSCAPE PLAN



BENCHMARK

BENCHMARK #1
'X' BOLT FIRE HYDRANT
N = 502,729.50
E = 1,680,532.76
ELEV = 679.64'
TENNESSEE STATE PLANE
COORDINATE SYSTEM
NAD 83 DATUM

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee811 Know what's **below**. **Call** before you dig.

LEGEND

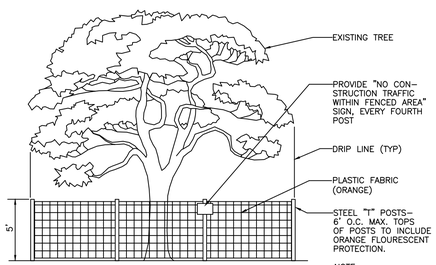
	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK		

TREE LINE
STORM STRUCTURE LABEL (P1)
ASPHALT
CONCRETE
PARKING SPACES (14)

LANDSCAPE LEGEND:

Proposed Plantings

Plant Identification AG-9
Removed Trees
Proposed Canopy Trees
Proposed Understory Trees
Proposed Screening
Proposed Shrubs



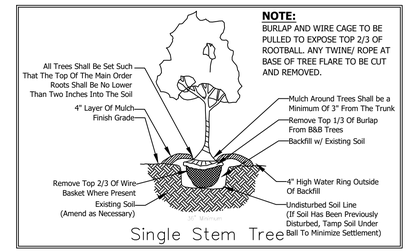
Tree Protection Fencing Detail

NOTE:
ALL TREE PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING DEMOLITION AND SHALL BE MAINTAINED IN GOOD WORKING ORDER UNTIL ALL CONSTRUCTION ACTIVITY IS COMPLETED. ANY REQUIRED EROSION CONTROL MEASURES SHALL BE PLACED OUTSIDE OF ANY TREE PROTECTION FENCING.

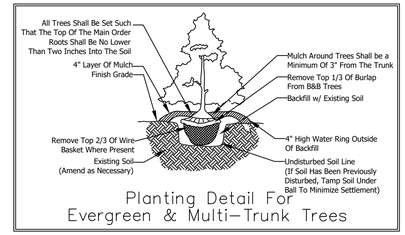
Landscape Notes:

1. The landscape contractor shall verify the exact location of all utilities and take necessary precautions to prevent damage to these utilities.
2. The landscape contractor shall coordinate all construction with the appropriate utility company and shall be responsible for and damage to utilities.
3. Plant materials and stumps indicated for removal shall be removed and disposed off-site by the contractor. Backfill holes with topsoil free of roots and rocks.
4. All planting and mulch beds shall be hand weeded or sprayed with round-up (contractor's option) prior to the installation of mulch.
5. The landscape contractor shall be responsible for the fine grading of all planting areas.
6. The landscape contractor shall verify all material quantities. In the event of a discrepancy, the quantities shown on the plan will take precedence.
7. The landscape contractor shall be responsible for completely maintaining the work (including but not limited to: watering, mulching, spraying, fertilizing, etc.) of all planting areas and lawns until total acceptance of the work by the owner.
8. The standards set forth in "American Standard for Nursery Stock" represent general guideline specifications only and will constitute minimum quality requirements for plant material. All plants must meet minimum size noted at the materials schedule. Trees shall be No. 1 grade specimen and shrubs shall be heavy well shaped specimens as well.
9. The landscape contractor shall completely guarantee all work for a period of one year beginning at the date of acceptance. The landscape contractor shall make all replacements promptly (as per direction of owner).
10. The landscape contractor shall provide the owner with written instructions on the proper care of all specified plant materials prior to final payment.
11. Existing trees to remain shall be protected from construction damage. Selectively prune dead wood.
12. All disturbed areas shall be planted with seed and mulched or turf as indicated on the materials schedule.
13. All deciduous trees, existing and proposed shall be pruned to provide 4' minimum clear trunk unless otherwise noted.
14. All Landscape materials to be selected by owner and must be in accordance to the Required Plant Speciesrequirements of the Zoning Ordinance. One tree for each 50 lineal feet of landscaped area required along parking area. Remaining areas to be surfaced with shrubs, ground cover, grass, or other landscape material (excluding rock). (Zoning Ordinance 10.5.5.C&D and 11.1.3.F)
15. Canopy trees shall be a minimum of ten feet in height with a four to five-foot spread and a 2-inch caliper trunk at time of planting. Accent trees shall be a minimum of eight feet in height with a three to four-foot spread and a 1½ -inch caliper trunk at time of planting.
16. Ten shrubs shall be planted for every 100 linear feet of building perimeter for nonresidential uses. All required shrubs shall be 20-inches in height in a minimum 3-gallon container. (Zoning Ordinance 11.1.3.F&I)
17. Deciduous trees shall have one dominant trunk with the tip of the leader on the main trunk left intact and the terminal bud on the central leader is at the highest point on the tree.
18. Trees with forked trunks are acceptable if all the following conditions are met:
A. The fork occurs in the upper ⅓ of the tree.
B. One fork is less than ⅔ the diameter of the dominant fork.
C. The top ⅓ of the smaller fork is removed at the time of planting.
19. No branch shall be greater than ⅔ the diameter of the trunk directly above the branch.
20. Several branches shall be larger in diameter and obviously more dominant.
21. Branching habit is to be more horizontal than vertical, and no branches are to be oriented nearly vertical to the trunk.
22. Branches are to be evenly distributed around the trunk with no more than one major branch located directly above another and the crown is to be full of foliage evenly distributed around the tree.
23. Stake all trees as shown in Planting on Slopes details.
24. Future removal of trees depicted on the plan will require approval by Planning Commission.

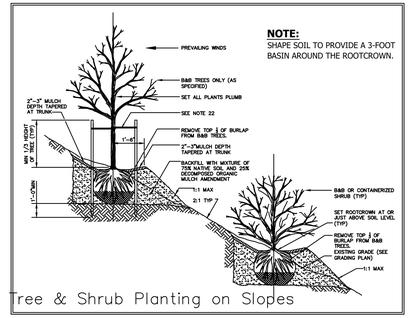
ATTENTION OWNER/ INSTALLER
This landscape plan has been designed to meet the minimum requirements of the Columbia, Tennessee zoning ordinance, the approval of the planning commission, and department policy. Relocating, substituting, resizing, reducing or deleting material may cause the site to no longer conform to the requirements. **Deviation from the approved landscape plan shall not be made without first obtaining approval from either the planning commission or the planning department.**



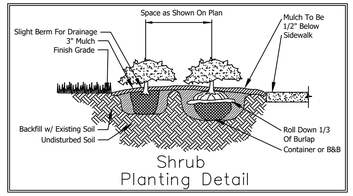
Single Stem Tree



Planting Detail For Evergreen & Multi-Trunk Trees



Tree & Shrub Planting on Slopes



Shrub Planting Detail

MATERIALS SCHEDULE

KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	TRUNK	REMARKS
CANOPY TREES							
CA	2	Carya cordiformis	Bitternut Hickory	10'-12'	4'-5'	3"	4' CLEAR TRUNK
AR	2	Acer Rubrum	Red Maple	10'-12'	4'-5'	3"	4' CLEAR TRUNK
QP	0	Quercus Phellos	Willow Oak	10'-12'	4'-5'	3"	4' CLEAR TRUNK
CL	0	Cupressocyparis leylandii	Leyland Cypress	8'-10'	4'-5'	3"	4' CLEAR TRUNK
SA	1	Sassafras albidum	Sassafras	10'-12'	4'-5'	3"	4' CLEAR TRUNK
UNDERSTORY TREES							
CF	2	Cornus Florida	White Flowering Dogwood	8'-10'	3'-4'	3"	4' CLEAR TRUNK
BP	2	Betula nigra 'Heritage'	Heritage River Birch	8'-10'	3'-4'	3"	MULTI-TRUNK
LI	0	Lagerstroemia indica	Crepemyrtle	8'-10'	3'-4'	3"	MULTI-TRUNK
PY	2	Prunus x yedoensis	Yoshino Cherry	8'-10'	3'-4'	3"	4' CLEAR TRUNK
IF	0	Ilex Attenuata 'Fosteri'	Foster Holly	8'-10'	3'-4'	3"	4' CLEAR TRUNK
TG	0	Thuja 'Green Giant'	Green Giant Arborvitae	6'-10'	3'-4'	3"	F.T.B.
SHRUBS							
KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	TRUNK	REMARKS
AG	24	Abelia hybrid 'Edward Goucher'	Pink Abelia	24"-30"	18"-24"	F.T.B.	
AK	0	Abelia x grandiflora 'Kaleidoscope'	Abelia Kaleidoscope	24"-30"	18"-24"	F.T.B.	
FO	23	Forsythia Intermedia	Forsythia	24"-30"	18"-24"	F.T.B.	
JC	8	Juniperus Chinesis 'Sea Green'	Sea Green Juniper	24"-30"	18"-24"	F.T.B.	
VB	0	Viburnum burkwoodii 'Mowhawk'	Burkwood Viburnum	24"-30"	18"-24"	F.T.B.	
VP	0	Viburnum Pragense	Prague Viburnum	24"-30"	18"-24"	F.T.B.	
VS	0	Viburnum davidii	Dwarf Viburnum	24"-30"	18"-24"	F.T.B.	
TURF							
SEED		Turf Mixture	Rebel III Turftype Fescue. Temporary seed all disturbed areas @ 8#1,000sf.				
SOD		Fine Bladed Fescue Sod	Rebel III Install 4' strip behind ALL curb grass areas & between building & curb.				
MISCELLANEOUS							
		Seasonal Color		Flower Beds for Seasonal Plantings.			
		Shredded Hardwood Bark Mulch		Minimum 3" depth throughout plant beds.			

NOTES
F.T.B. = Full To Base
EXISTING AREAS OUTSIDE OF THE PROPOSED LIMIT OF CONSTRUCTION TO REMAIN UNDISTURBED. SEE LIMIT OF CONSTRUCTION AS OUTLINED ON THIS PLAN.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

GERALD W. DEVICK
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 107415
STATE OF TENNESSEE
7-10-23

gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TENNESSEE 37209

REVISIONS	DATE

Drawn: RP
Checked: GV
Approved: GV
Date: 04-17-2023

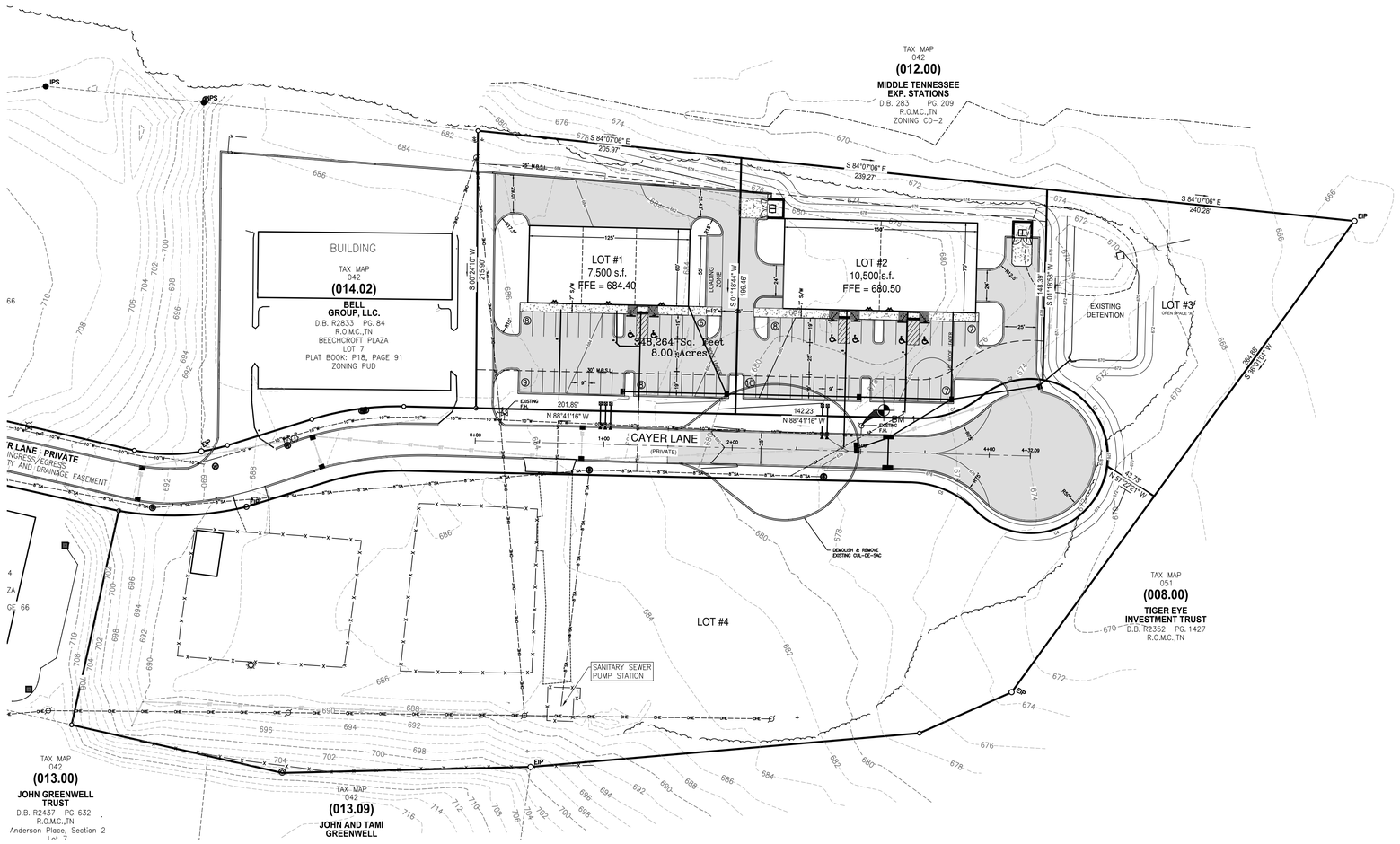
Job. no. 16583-21
Scale: Horizontal: 1"=30'
Vertical: ——

FLEX BUILDING
CAYER LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
LANDSCAPE PLAN

L-1.0

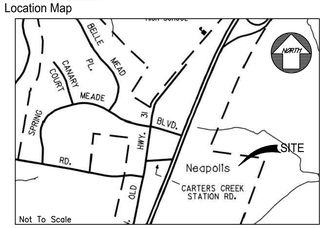
FILE: J:\ WES_Engineers_Surveyors 2016\16583 - Cayer Lane - Raines\16583-21 Flex Building - Bell\Dwg\Engineering\16583-21 Flex Bldg_ALT 2 REV 7-10-23 base.dwg

PRELIMINARY PLAT



TN GRID NORTH

Location Map



SITE DATA:

OWNER: BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TN 37209

PARCEL NUMBER: TAX MAP 42 PARCEL 14.00
DEED BOOK: R2833, PG 86

SUBJECT PARCEL ZONING: PUD

ACREAGE OF SITE: TOTAL: 274,483.49 S.F. = 6.30 Ac.
LOT 1: 42,268.54 S.F. = 0.97Ac.
LOT 2: 43,655.75 S.F. = 1.00 Ac.
LOT 3: 33,779.34 S.F. = 0.78 Ac.
LOT 4: 154,779.86 S.F. = 3.55 Ac.

MINIMUM REQUIRED BUILDING SETBACKS:
30' FRONT
25' REAR
0' SIDE

PARKING: LOT 1:
OFFICE USE
1 SPACE PER 200 SF FLOOR SPACE
5,000 SF / 200 = 25 SPACES REQUIRED
WAREHOUSE RETAIL
1 SPACE PER 1,000 SF FLOOR SPACE
2,500 SF / 1,000 SF = 5 SPACES REQUIRED

LOT 2:
VEHICLE REPAIR/MAINTENANCE
1 SPACE PER 500 SF = 11 SPACES REQUIRED
PLUS 1 SPACE PER EMPLOYEE STATION = 4
WAREHOUSE RETAIL
1 SPACE PER 1,000 SF FLOORSPACE
5,250 SF / 1,000 SF = 6 SPACES REQUIRED

PARKING REQUIRED:
30 FOR LOT 1 PLUS 21 FOR LOT 2 = 51 TOTAL

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2. LIGHTING AT FRONTAGE LINES PER APPROVED PUD STANDARDS.
3. DUMPSTER PAD ENCLOSURES PER CITY OF COLUMBIA STANDARD DETAIL MD-01.

CURVE TABLE

CURVE	RADIUS	ARC_LENGTH	CHORD_LENGTH	CHORD_BEARING	DELTA_ANGLE
C1	75.00'	53.23'	52.12'	S 70°58'52" W	40°39'45"
C2	60.00'	50.91'	49.40'	N 74°57'33" E	48°37'07"
C3	60.00'	92.29'	83.46'	S 36°39'59" E	88°07'50"
C4	60.00'	133.64'	107.68'	N 71°12'27" E	127°37'02"
C5	75.00'	57.21'	55.83'	S 66°50'09" E	43°42'14"

BENCHMARK

BENCHMARK #1
'X' BOLT FIRE HYDRANT
N = 502,729.50
E = 1,680,532.76
ELEV = 679.64'
TENNESSEE STATE PLANE
COORDINATE SYSTEM
NAD 83 DATUM

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee811
Know what's below. Call before you dig.

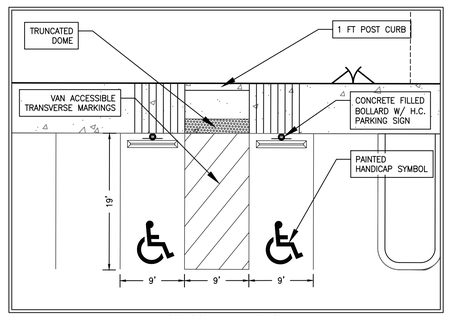
LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK		

TREE LINE
STORM STRUCTURE LABEL
ASPHALT
CONCRETE
PARKING SPACES

PROPOSED CONSTRUCTION SCHEDULE FOR THE YEAR 2023

ACTIVITY	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB
TEMPORARY SEDIMENT STRUCTURES												
SEDIMENT BASINS												
DIVERSION DITCHES												
CLEARING & CHIPPING												
TOPSOIL STRIPPING AND STORAGE												
ROADWAY GRADING												
PERMANENT STORM SEWER												
UTILITIES												
TEMPORARY VEGETATION												
PAVING												
PERMANENT VEGETATION												
REMOVE TEMPORARY STRUCTURES												



ACCESSIBLE PARKING
N.T.S.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN, IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

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BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:
W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THE PROPERTY IS NOT LOCATED WITHIN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS (FIRM's) MAP NUMBER 47119C0180E DATED APRIL 16, 2007.

GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

GERALD W. VICK
REGISTERED ENGINEER
AGRICULTURE
No. 107415
STATE OF TENNESSEE
7/12/23

geraldv@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TENNESSEE 37209

DATE
REVISIONS

FLEX BUILDING

CAYER LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
PRELIMINARY PLAT

Drawn: RP
Checked: GV
Approved: GV
Date: 04-17-2023

Job no. 16583-21
Scale: Vertical: 1"=50'
Horizontal:

1 of 1

FILE: J:\WES_Engineers_Surveyors 2016\16583 - Coyer Lane - Raines\16583-21 Flex Building - Bell\Dwg\Engineering\16583-21 Flex Bldg_ALT 2 REV 7-10-23 base.dwg

CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, July 11, 2023

ITEM NO.
23-0237

DESCRIPTION: This is Tax Map 44 Parcel 14.00 next to the property address indicated above.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Planning

1. At resubmittal, please provide elevations conforming to the Architectural Design Review Team's recommendations. Please provide "sufficiently detailed information to indicate the ultimate operation and appearance of the Development, or applicable portion thereof" (8.5.21.O.4.a, p. 460).
2. Provide copies of any proposed covenants or grants of Easement related to the lots (8.5.21.O.4.d, p. 460).
3. Confirm with the City Engineer whether a stub to the northern property line would be appropriate for connectivity.
4. The Preliminary Plat document notes that a portion of the property is within a Flood Hazard Aare. FIRM panel 47117C0180E does not appear to show any portion of the subject property in Zone X, outside of the 1% and 0.2% risk areas. Please confirm and revise as necessary.
5. Please revise the portion of Note 2 which reads "lighting at frontage lines will not exceed 1.0 foot candle and on-site outdoor lighting will conform to the standards of the code" to "Per approved PUD standards."
6. Lot 4 is currently utilized for outdoor storage. Please provide any information you have about when this use was established.
7. The Preliminary Plat document appear to utilize the parking ratio for vehicles sales and services (1:500sf + per employee work station + vehicle storage space + 1 per work bay) and related uses. What is the intended use of the property? Floor plans and elevations depict space suitable to retail with accessory warehouse space. The documents we have related to the CEG PUD approval indicate this part of the PUD would be utilized for Office/Retail and Warehouse uses. Please clarify the intended use and applicable parking ratios. Applying factors for office and retail uses the minimum required parking is between 36 and 90 spaces.
8. Please show loading areas. The applicable standard from Ordinance 3638 is 55x12, which can be adjusted by Zoning Administrator.
9. Please provide dumpster enclosure detail conforming to MD-01 in the ESS.
10. Please provide a survey stamped by a PLS with all project boundaries, utilities, and existing streets and rights-of-way.

Engineering

11. Subject to construction plans
12. Parking lot for lot#2 encroaching into ROW/private street easement.
13. Label roadway as private.
14. Provide survey stamped by registered land surveyor.

Public Works

15. The current proposed angled dumpster locations do not provide enough clearance for a front load garbage truck to service. A 14 ft wide by 40 ft long straight and clear access approach to each dumpster for the truck is required. Please see attached dumpster guidelines and accessibility requirements.

Police

16. No comments provided.

Building

17. No comment.

Columbia Power

18. Columbia Power System has an existing power line near your proposed development.
    We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
    • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Fire

19. No Comments

Wastewater

20. The sanitary sewer service taps are at different locations than what is shown on the plans, including that one of the lots may not have a tap. This should be coordinated with Columbia Wastewater to ensure a tap is located and/or purchased in the building permit and planned prior to construction.

Maury County Schools

21. No comment.

Maury County E911

22. No comment.

ATT

23. ATT intends to serve.

Atmos Energy

24. No comment provided.

Duck River Electric Membership Corp

25. No comments provided.

Maury County Highway Dept.

26. No comments provided.

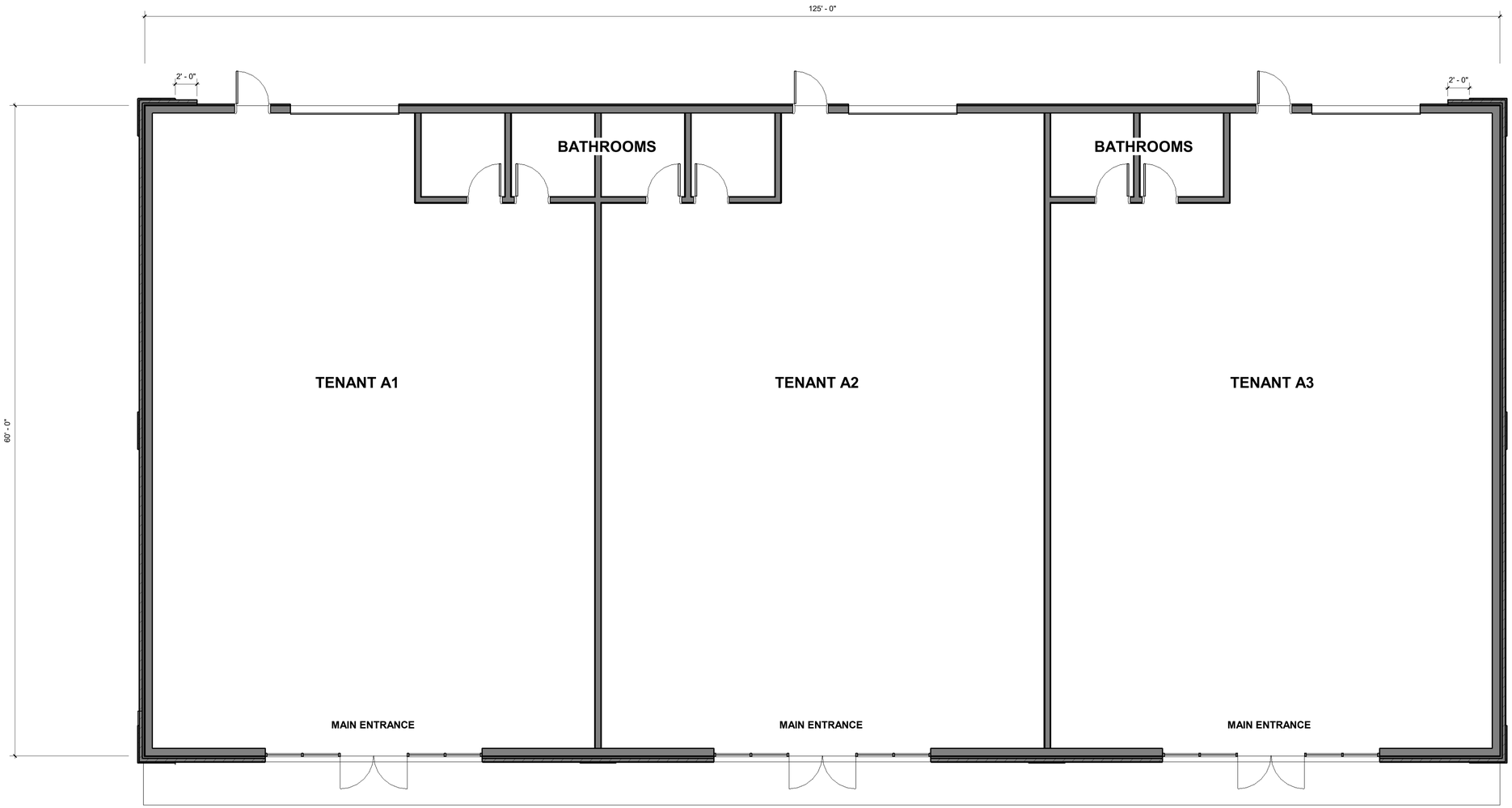
Columbia Water

27. "A water availability letter was issued on 6-19-23 and is valid for 120 days. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements detailed in the availability letter are the responsibility of the developer/owner. All public water system improvements are subject to the preparation and approval of detailed

construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

ATTACHMENTS: Preliminary Plat and Final PUD

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.



1 **FLOOR PLAN**
SCALE: 3/16" = 1'-0"

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TOMMY BROWN
ARCHITECTURE,
PLLC

Project No. T#####

FLOOR PLAN (BUILDING A)

Bell Group
New Construction
7425 Old Hickory Blvd.
Nashville, TN 37189

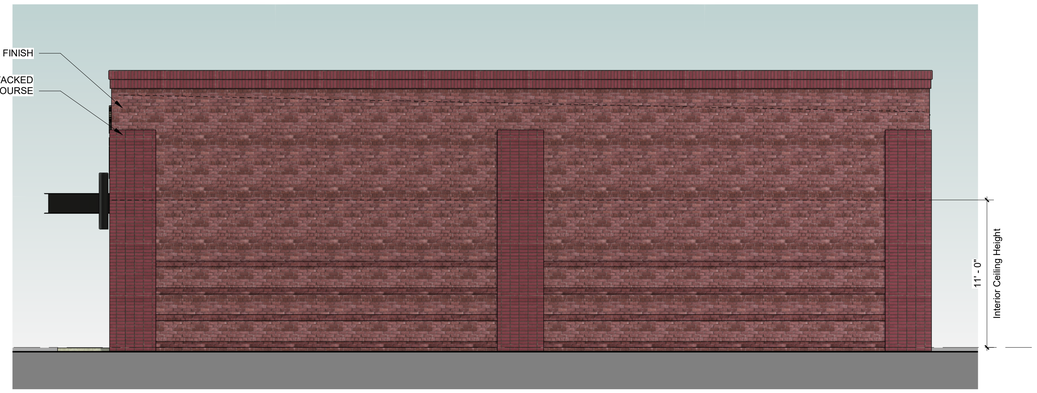
REV.	DESCRIPTION	DATE	CHK	DWG
	Elevations	4-14-23		
	Revised per PC Member Requests	6-19-23		

A1.1

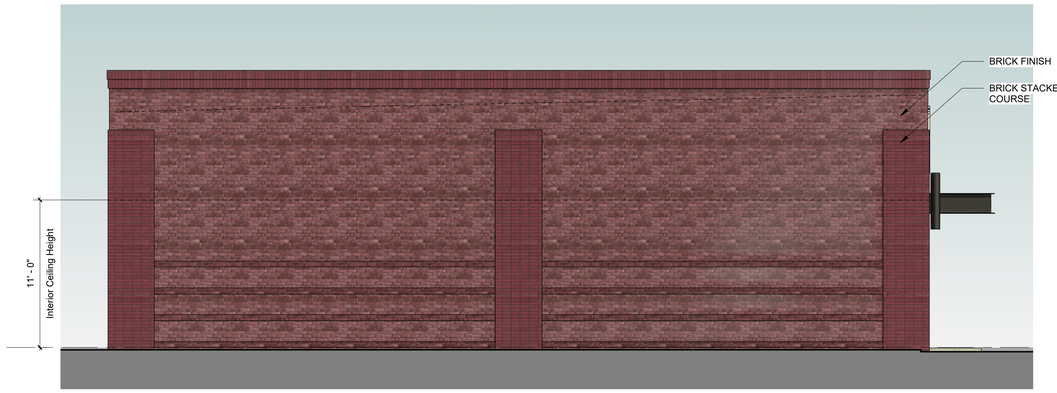


4 South Elevation
SCALE: 3/16" = 1'-0"

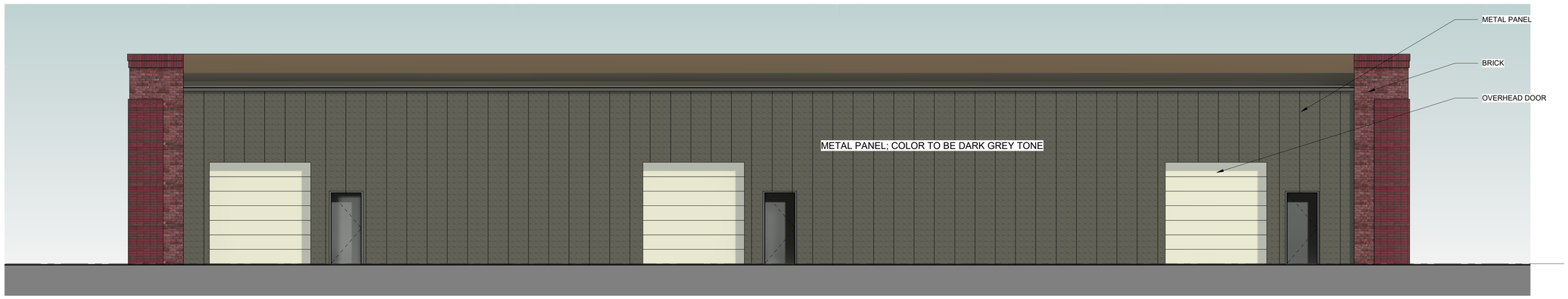
45% GLAZING



1 East Elevation
SCALE: 3/16" = 1'-0"



3 West Elevation
SCALE: 3/16" = 1'-0"



2 North Elevation
SCALE: 3/16" = 1'-0"

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TOMMY BROWN ARCHITECTURE, PLLC

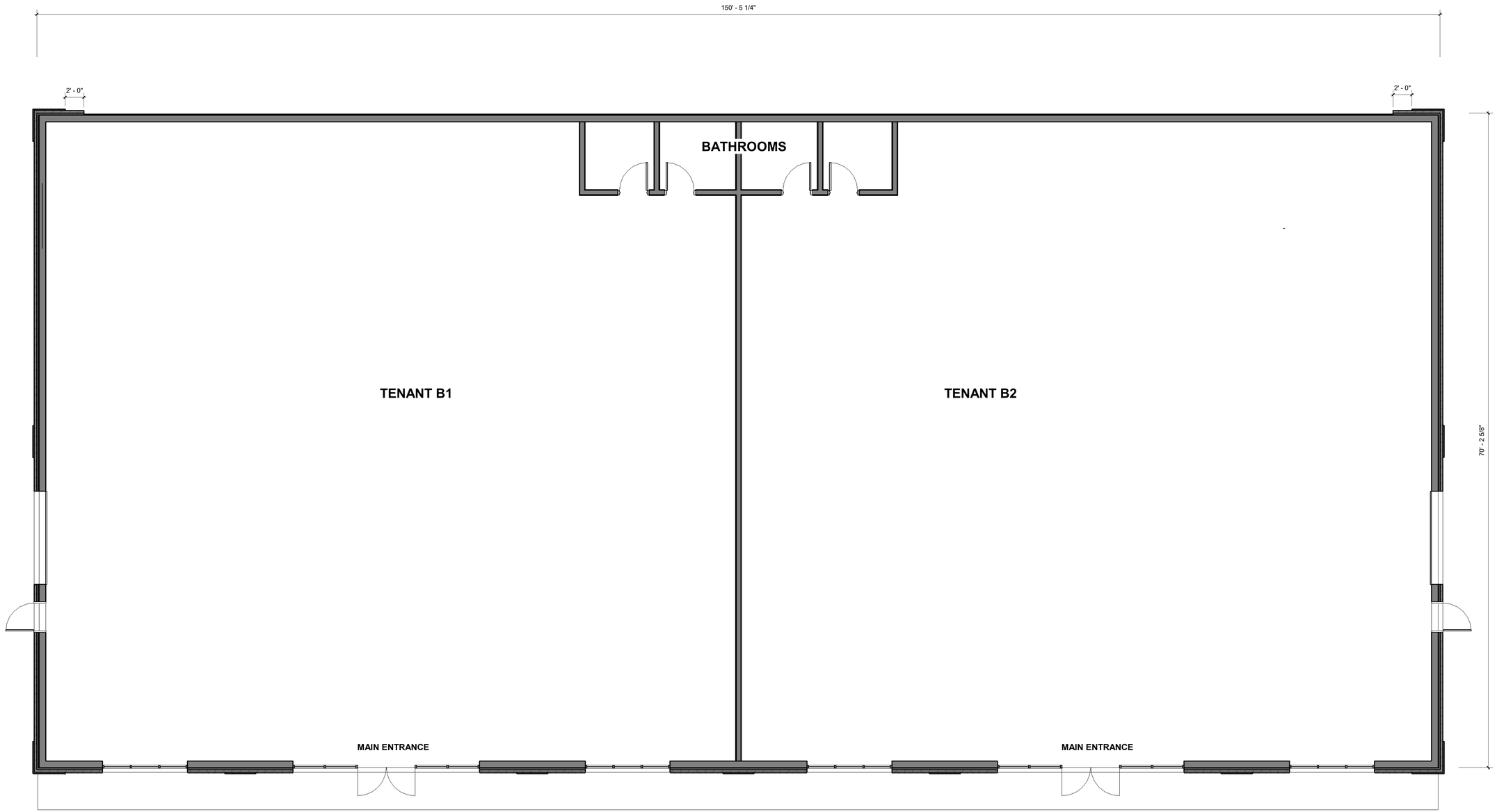
Project No. T#####

ELEVATIONS BUILDING A (60' X 125')

Bell Group
New Construction
7425 Old Hickory Blvd.
Nashville, TN 37189

REV.	DESCRIPTION	DATE	CHK	DWG
	Elevations	4-14-23		
	Revised per PC Member Requests	6-19-23		

A2.1



1 **FLOOR PLAN**
SCALE: 3/16" = 1'-0"

TOMMY BROWN
ARCHITECTURE,
PLLC

Project No. T#####

FLOOR PLAN (BUILDING B)

Bell Group
New Construction
7425 Old Hickory Blvd.
Nashville, TN 37189

REV.	DESCRIPTION	DATE	CHK	DWG
	Elevations	4-14-23		
	Revised Per P.C. Member Requests	6-19-23		

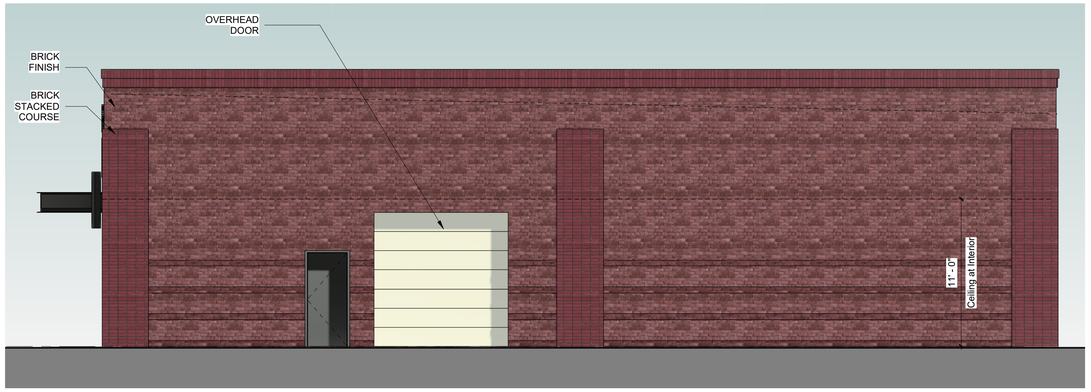
A1.2

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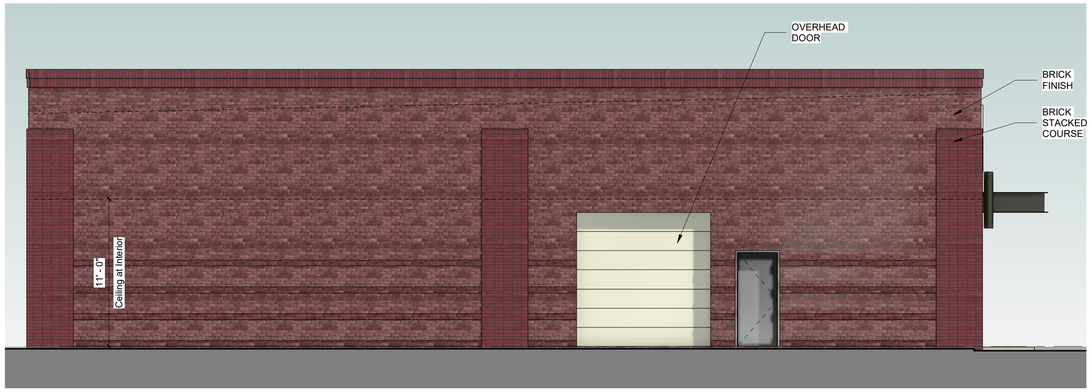


4 South Elevation
SCALE: 3/16" = 1'-0"

TOTAL GLAZING = 50%



1 East Elevation
SCALE: 3/16" = 1'-0"



3 West Elevation
SCALE: 3/16" = 1'-0"



2 North Elevation
SCALE: 3/16" = 1'-0"

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Project No. T#####

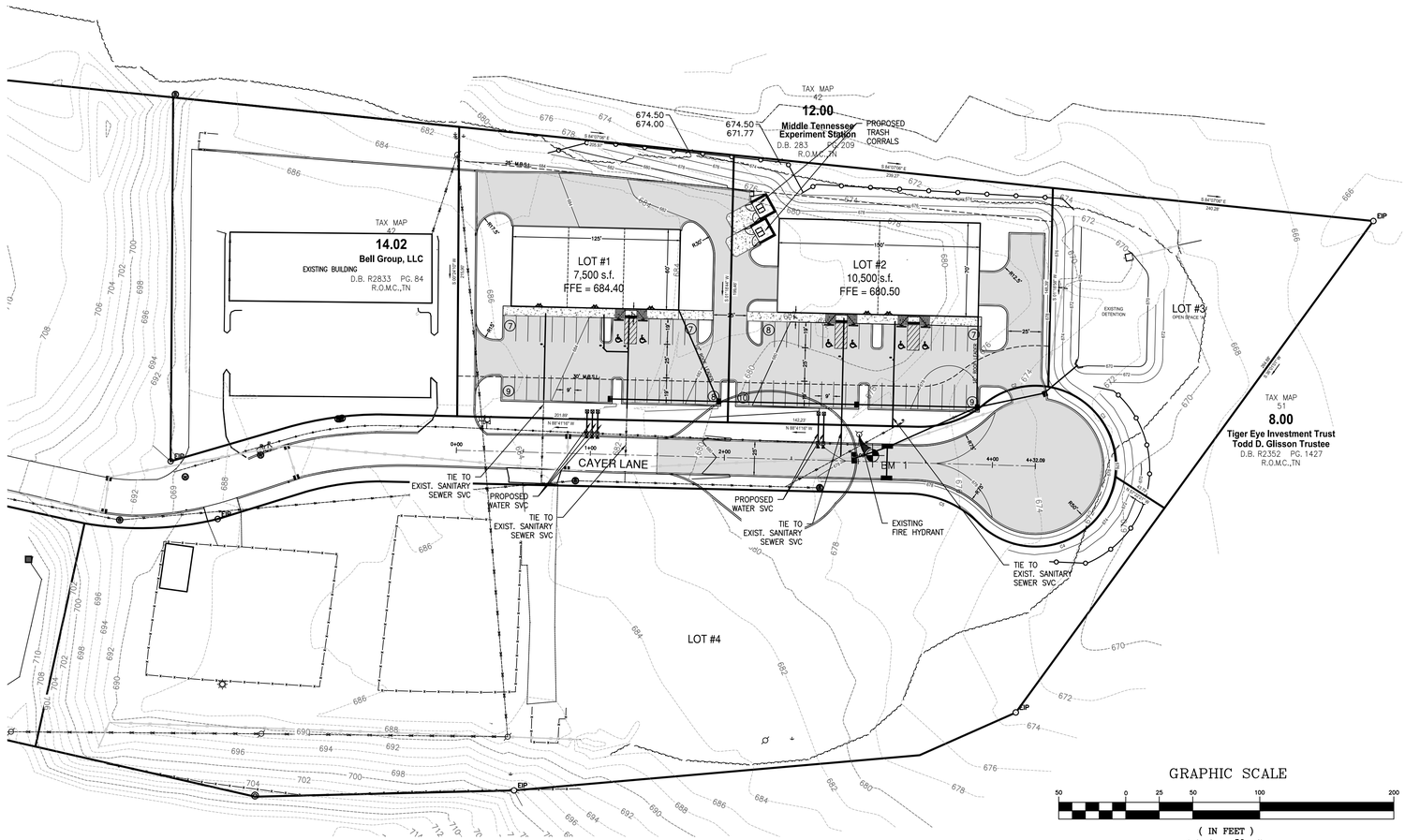
ELEVATIONS BUILDING B (150' x 70')

Bell Group
New Construction
7425 Old Hickory Blvd.
Nashville, TN 37189

REV.	DESCRIPTION	DATE	CHK	DWG
	Elevations	4-14-23		
	Revised Per P.C. Member Requests	6-19-23		

A2.2

FINAL MASTER DEVELOPMENT PLAN



CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	75.00'	53.23'	52.12'	S 70°58'52" W	40°39'45"
C2	60.00'	50.91'	49.40'	N 74°57'33" E	48°37'07"
C3	60.00'	92.29'	83.46'	S 36°39'59" E	88°07'50"
C4	60.00'	133.64'	107.68'	N 71°12'27" E	127°37'02"
C5	75.00'	57.21'	55.83'	S 66°50'09" E	43°42'14"

BENCHMARK

BENCHMARK #1
'X' BOLT FIRE HYDRANT
N = 502,729.50
E = 1,680,532.76
ELEV = 679.64'
TENNESSEE STATE PLANE
COORDINATE SYSTEM
NAD 83 DATUM

WARNING! UTILITY LINES!

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Tennessee811
Know what's **below**
Call before you dig.

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK		

TREE LINE
STORM STRUCTURE LABEL (S1)
ASPHALT
CONCRETE
PARKING SPACES (14)

UTILITY COMPANIES:

UTILITIES SHOWN ARE BASED ON LIMITED DATA. THERE IS NO GUARANTEE AS TO THEIR LOCATION OR SIZE. PLEASE CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION. POSSIBLE CONTACTS IN THIS AREA INCLUDE:

MUNICIPALITY:
CITY OF COLUMBIA
707 NORTH MAIN ST.
COLUMBIA, TN 38401

ELECTRIC:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

CABLE TELEVISION:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

STORM WATER:
CITY OF COLUMBIA
ENGINEERING/INSPECTION
707 N. MAIN STREET
COLUMBIA, TN 38401
(931) 560-1530
Contact: Glenn Harper, P.E.

WATER:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

CABLE TELEVISION:
CHARTER COMMUNICATIONS
2008 S. MAIN STREET
COLUMBIA, TN 38401
(931) 388-1326

SANITARY:
CITY OF COLUMBIA
WASTEWATER SYSTEM
1244 TREATMENT PLANT RD.
COLUMBIA, TN 38401
(931) 560-1001
Donnie Boshers, Director

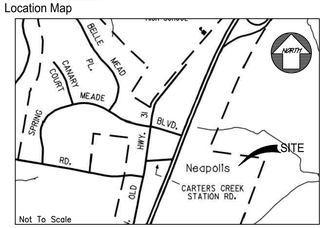
TELEPHONE:
AT&T
904 S. HIGH ST
COLUMBIA, TN 38401
JAMIE WHITFIELD
(615) 975-0505
jw0972@att.com

GAS:
ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
(888) 824-3434
NASHVILLE
(615) 872-5100

PROPOSED CONSTRUCTION SCHEDULE FOR THE YEAR 2023

ACTIVITY	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
TEMPORARY SEDIMENT STRUCTURES												
SEDIMENT BASINS												
DIVERSION DITCHES												
CLEARING & CHIPPING												
TOPSOIL STRIPPING AND STORAGE												
ROADWAY GRADING												
PERMANENT STORM SEWER												
UTILITIES												
TEMPORARY VEGETATION												
PAVING												
PERMANENT VEGETATION												
REMOVE TEMPORARY STRUCTURES												

Location Map



SITE DATA:

OWNER: BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TN 37209

PARCEL NUMBER: TAX MAP 42 PARCEL 14.00
DEED BOOK: R2833, PG 86

SUBJECT PARCEL ZONING: PUD

ACREAGE OF SITE: 85,924.29 S.F. = 1.97 ACRES

MINIMUM REQUIRED BUILDING SETBACKS:
30' FRONT
25' REAR
0' SIDE

PARKING:
1 SPACE PER 500 SF + 1 PER EMPLOYEE WORK STATION + VEHICLE STORAGE + 1 PER WORK BAY.
18,000 / 500sf = 36 SPACES
7 + 9 WORK STATIONS = 16 SPACES
REQUIRED: 52 SPACES

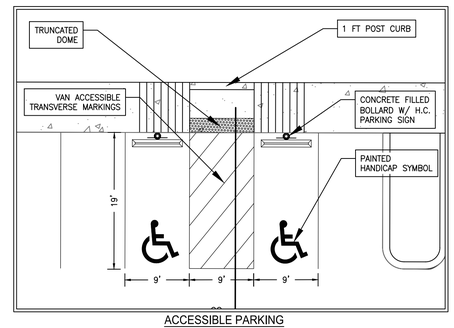
PROVIDED:
59 STANDARD SPACES
6 ACCESSIBLE SPACES
65 TOTAL SPACES

UTILITY SERVICES:
WATER SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

PURPOSE NOTE: CONSTRUCT SITE FOR 18,000 S.F. MULTIPLE USE BUILDINGS. BUILDINGS WILL BE 25' HIGH (MAXIMUM).

NOTES:
1. PER ZONING ORDINANCE 4.3.16.C.1, ANY FUTURE REMOVAL OF TREES DEPICTED ON THIS PLAN WILL REQUIRE APPROVAL BY PLANNING COMMISSION.
2. PER ZONING ORDINANCE 4.3.17.B, LIGHTING AT FRONTAGE LINES WILL NOT EXCEED 1.0 FOOT CANDLE AND ON-SITE OUTDOOR LIGHTING WILL CONFORM TO THE STANDARDS OF THE CODE.



ACCESSIBLE PARKING
N.T.S.

GEOTECHNICAL NOTE:

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BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

A PORTION OF THE PROPERTY IS LOCATED WITHIN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS (FIRM's) MAP NUMBER 47117C0180E DATED APRIL 16, 2007.

GERALD W. WICK III — LICENSED PROFESSIONAL ENGINEER — No. 107415 — STATE OF TENNESSEE — 4/17/23

gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TENNESSEE 37209

DATE
REVISIONS

FLEX BUILDING
CAYER LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
FINAL MASTER DEVELOPMENT PLAN

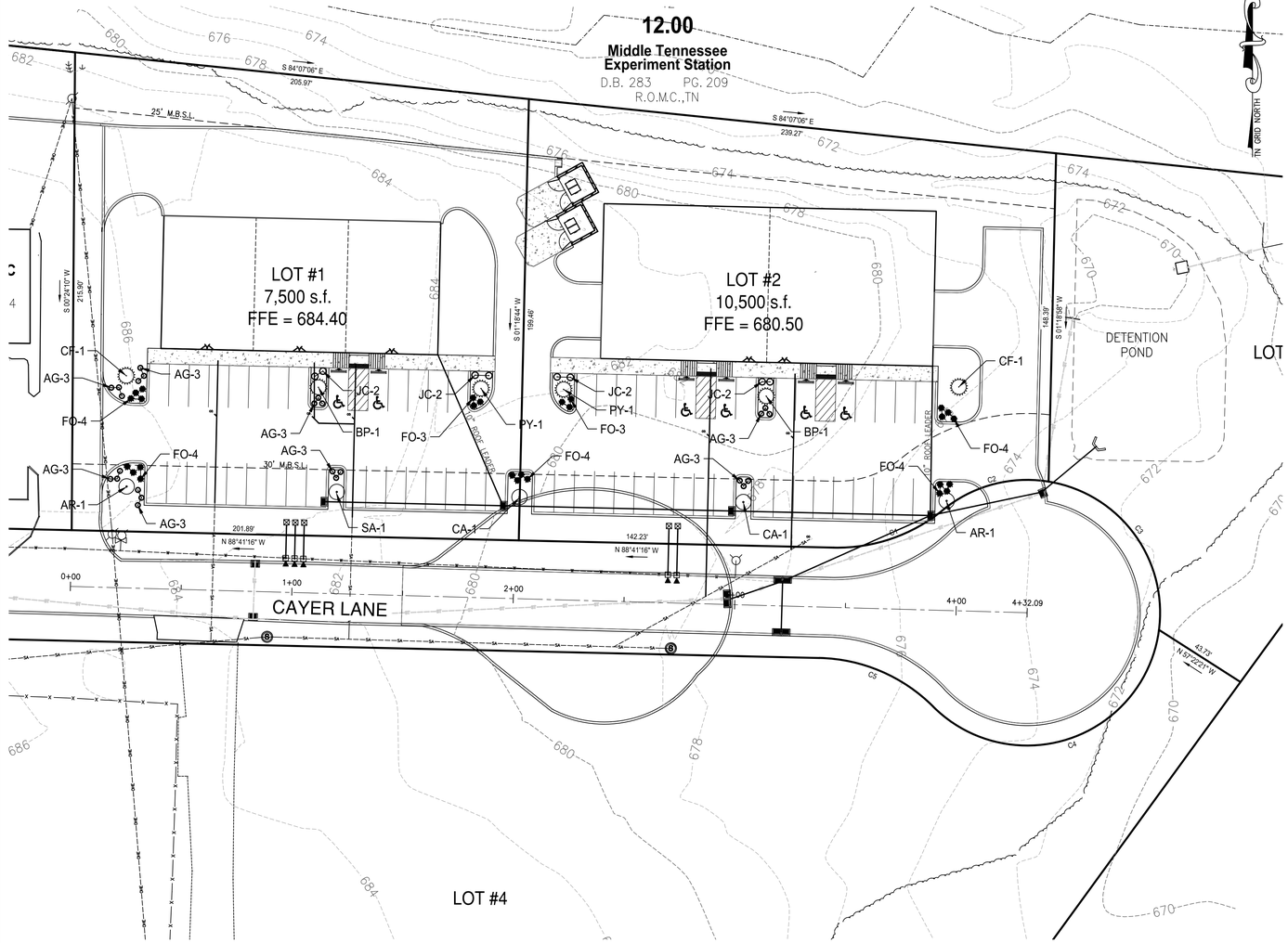
Drawn: RP
Checked: GW
Approved: GW
Date: 04-17-2023

Job. no. 16583-21
Scale:
Vertical: 1"=50'
Horizontal:

1 of 1

FILE:J:\ WES_Engineers_Surveyors 2016\16583 – Coyer Lane – Raines\16583–21 Flex Building – Bell\Dwg\Engineering\16583–21 Flex Bldg_ALT 2 base.dwg

LANDSCAPE PLAN



BENCHMARK

BENCHMARK #1
'X' BOLT FIRE HYDRANT
N = 502,729.50
E = 1,680,532.76
ELEV = 679.64'
TENNESSEE STATE PLANE
COORDINATE SYSTEM
NAD 83 DATUM

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee One Call
Know what's **below**. **Call** before you dig.

LEGEND

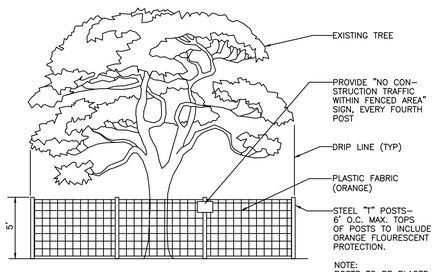
	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (P1)
ASPHALT
CONCRETE
PARKING SPACES (14)

LANDSCAPE LEGEND:

Proposed Plantings

Plant Identification AG-9
Removed Trees
Proposed Canopy Trees
Proposed Understory Trees
Proposed Screening
Proposed Shrubs



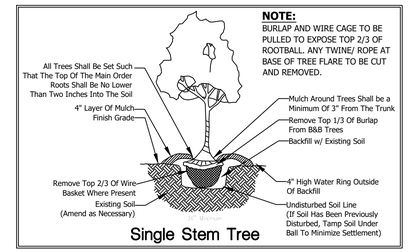
Tree Protection Fencing Detail

NOTE:
ALL TREE PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING DEMOLITION AND SHALL BE MAINTAINED IN GOOD WORKING ORDER UNTIL ALL CONSTRUCTION ACTIVITY IS COMPLETED. ANY REQUIRED EROSION CONTROL MEASURES SHALL BE PLACED OUTSIDE OF ANY TREE PROTECTION FENCING.

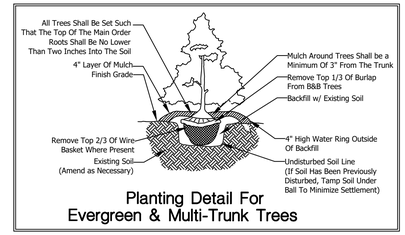
Landscape Notes:

1. The landscape contractor shall verify the exact location of all utilities and take necessary precautions to prevent damage to these utilities.
2. The landscape contractor shall coordinate all construction with the appropriate utility company and shall be responsible for and damage to utilities.
3. Plant materials and stumps indicated for removal shall be removed and disposed off-site by the contractor. Backfill holes with topsoil free of roots and rocks.
4. All planting and mulch beds shall be hand weeded or sprayed with round-up (contractor's option) prior to the installation of mulch.
5. The landscape contractor shall be responsible for the fine grading of all planting areas.
6. The landscape contractor shall verify all material quantities. In the event of a discrepancy, the quantities shown on the plan will take precedence.
7. The landscape contractor shall be responsible for completely maintaining the work (including but not limited to: watering, mulching, spraying, fertilizing, etc.) of all planting areas and lawns until total acceptance of the work by the owner.
8. The standards set forth in "American Standard for Nursery Stock" represent general guideline specifications only and will constitute minimum quality requirements for plant material. All plants must meet minimum size noted at the materials schedule. Trees shall be No. 1 grade specimen and shrubs shall be heavy well shaped specimens as well.
9. The landscape contractor shall completely guarantee all work for a period of one year beginning at the date of acceptance. The landscape contractor shall make all replacements promptly (as per direction of owner).
10. The landscape contractor shall provide the owner with written instructions on the proper care of all specified plant materials prior to final payment.
11. Existing trees to remain shall be protected from construction damage. Selectively prune dead wood.
12. All disturbed areas shall be planted with seed and mulched or turf as indicated on the materials schedule.
13. All deciduous trees, existing and proposed shall be pruned to provide 4' minimum clear trunk unless otherwise noted.
14. All Landscape materials to be selected by owner and must be in accordance to the Required Plant Speciesrequirements of the Zoning Ordinance. One tree for each 50 lineal feet of landscaped area required along parking area. Remaining areas to be surfaced with shrubs, ground cover, grass, or other landscape material (excluding rock). (Zoning Ordinance 10.5.5.C&D and 11.1.3.F)
15. Canopy trees shall be a minimum of ten feet in height with a four to five-foot spread and a 2-inch caliper trunk at time of planting. Accent trees shall be a minimum of eight feet in height with a three to four-foot spread and a 1½ -inch caliper trunk at time of planting.
16. Ten shrubs shall be planted for every 100 linear feet of building perimeter for nonresidential uses. All required shrubs shall be 20-inches in height in a minimum 3-gallon container. (Zoning Ordinance 11.1.3.F&I)
17. Deciduous trees shall have one dominant trunk with the tip of the leader on the main trunk left intact and the terminal bud on the central leader is at the highest point on the tree.
18. Trees with forked trunks are acceptable if all the following conditions are met:
A. The fork occurs in the upper ⅓ of the tree.
B. One fork is less than ⅔ the diameter of the dominant fork.
C. The top ⅓ of the smaller fork is removed at the time of planting.
19. No branch shall be greater than ⅔ the diameter of the trunk directly above the branch.
20. Several branches shall be larger in diameter and obviously more dominant.
21. Branching habit is to be more horizontal than vertical, and no branches are to be oriented nearly vertical to the trunk.
22. Branches are to be evenly distributed around the trunk with no more than one major branch located directly above another and the crown is to be full of foliage evenly distributed around the tree.
23. Stake all trees as shown in Planting on Slopes details.
24. Future removal of trees depicted on the plan will require approval by Planning Commission.

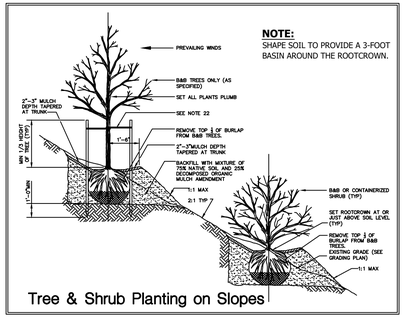
ATTENTION OWNER/ INSTALLER
This landscape plan has been designed to meet the minimum requirements of the Columbia, Tennessee zoning ordinance, the approval of the planning commission, and department policy. Relocating, substituting, resizing, reducing or deleting material may cause the site to no longer conform to the requirements. **Deviation from the approved landscape plan shall not be made without first obtaining approval from either the planning commission or the planning department.**



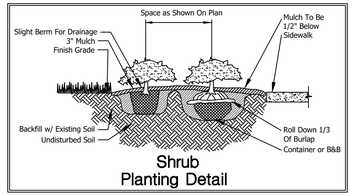
Single Stem Tree



Planting Detail For Evergreen & Multi-Trunk Trees



Tree & Shrub Planting on Slopes



Shrub Planting Detail

MATERIALS SCHEDULE

KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	TRUNK	REMARKS
CANOPY TREES							
CA	2	Carya cordiformis	Bitternut Hickory	10'-12'	4'-5'	3"	4' CLEAR TRUNK
AR	2	Acer Rubrum	Red Maple	10'-12'	4'-5'	3"	4' CLEAR TRUNK
QP	0	Quercus Phellos	Willow Oak	10'-12'	4'-5'	3"	4' CLEAR TRUNK
CL	0	Cupressocyparis leylandii	Leyland Cypress	8'-10'	4'-5'	3"	4' CLEAR TRUNK
SA	1	Sassafras albidum	Sassafras	10'-12'	4'-5'	3"	4' CLEAR TRUNK
UNDERSTORY TREES							
CF	2	Cornus Florida	White Flowering Dogwood	8'-10'	3'-4'	3"	4' CLEAR TRUNK
BP	2	Betula nigra 'Heritage'	Heritage River Birch	8'-10'	3'-4'	3"	MULTI-TRUNK
LI	0	Lagerstroemia indica	Crepemyrtle	8'-10'	3'-4'	3"	MULTI-TRUNK
PY	2	Prunus x yedoensis	Yoshino Cherry	8'-10'	3'-4'	3"	4' CLEAR TRUNK
IF	0	Ilex Attenuata 'Fosteri'	Foster Holly	8'-10'	3'-4'	3"	4' CLEAR TRUNK
TG	0	Thuja 'Green Giant'	Green Giant Arborvitae	6'-10'	3'-4'	3"	F.T.B.
SHRUBS							
KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	TRUNK	REMARKS
AG	24	Abelia hybrid 'Edward Goucher'	Pink Abelia	24"-30"	18"-24"	F.T.B.	
AK	0	Abelia x grandiflora 'Kaleidoscope'	Abelia Kaleidoscope	24"-30"	18"-24"	F.T.B.	
FO	23	Forsythia Intermedia	Forsythia	24"-30"	18"-24"	F.T.B.	
JC	8	Juniperus Chinesis 'Sea Green'	Sea Green Juniper	24"-30"	18"-24"	F.T.B.	
VB	0	Viburnum burkwoodii 'Mowhawk'	Burkwood Viburnum	24"-30"	18"-24"	F.T.B.	
VP	0	Viburnum Pragense	Prague Viburnum	24"-30"	18"-24"	F.T.B.	
VS	0	Viburnum davidii	Dwarf Viburnum	24"-30"	18"-24"	F.T.B.	
TURF							
SEED		Turf Mixture	Rebel III Turftype Fescue. Temporary seed all disturbed areas @ 8#1,000sf.				
SOD		Fine Bladed Fescue Sod	Rebel III Install 4' strip behind ALL curb grass areas & between building & curb.				
MISCELLANEOUS							
		Seasonal Color		Flower Beds for Seasonal Plantings.			
		Shredded Hardwood Bark Mulch		Minimum 3" depth throughout plant beds.			

NOTES
F.T.B. = Full To Base
EXISTING AREAS OUTSIDE OF THE PROPOSED LIMIT OF CONSTRUCTION TO REMAIN UNDISTURBED. SEE LIMIT OF CONSTRUCTION AS OUTLINED ON THIS PLAN.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

GERALD W. VICK II
REGISTERED LANDSCAPE ARCHITECT
No. 107415
STATE OF TENNESSEE

geraldv@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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WES E NGINEERS & S URVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TENNESSEE 37209

REVISIONS	DATE

Drawn: RP
Checked: GV
Approved: GV
Date: 04-17-2023

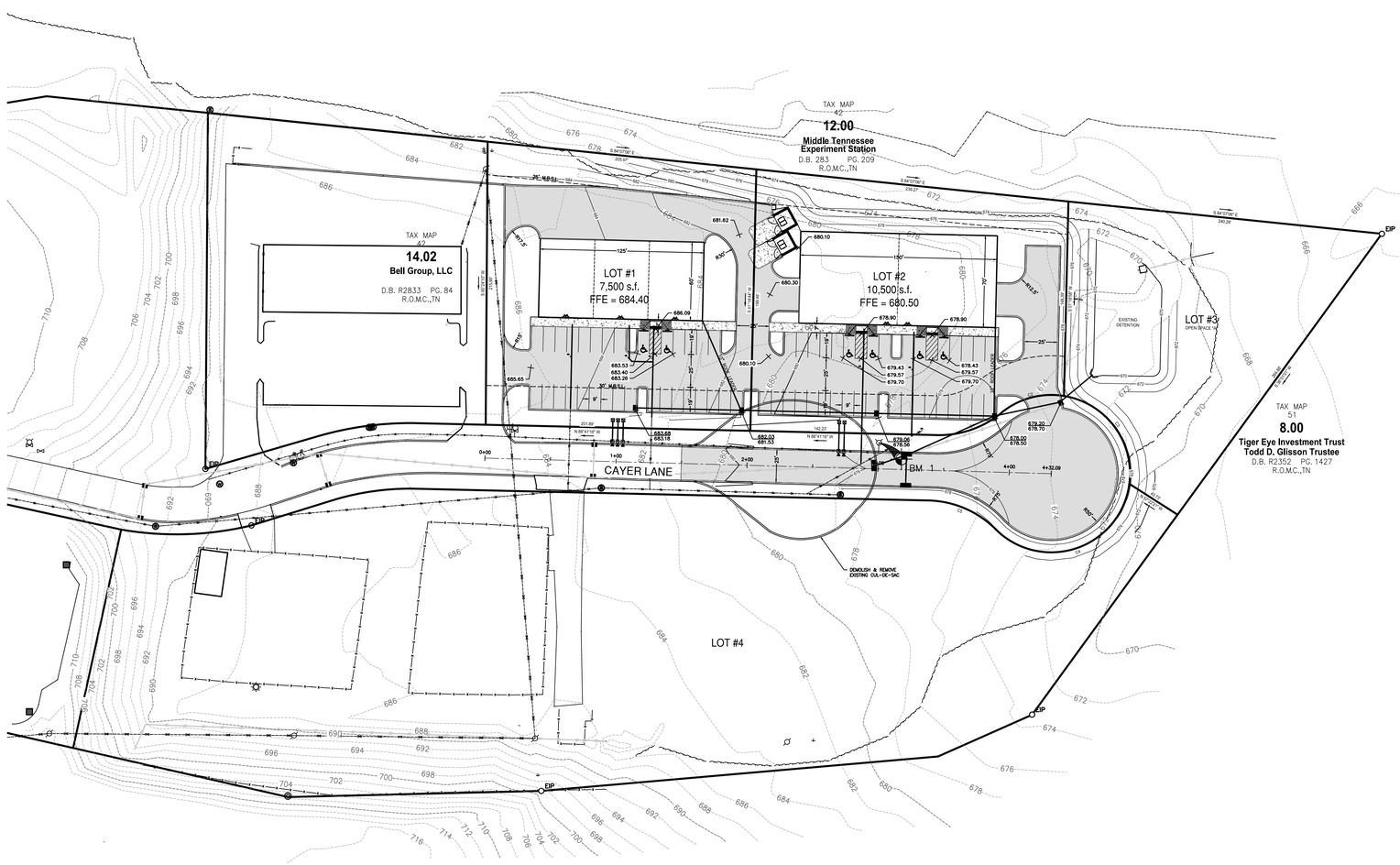
Job. no. 16583-21
Scale: Vertical: 1"=30' Horizontal:

FLEX BUILDING
CAYER LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
LANDSCAPE PLAN

L-1.0

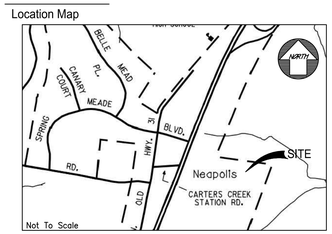
FILE: J:_WES_Engineers_Surveyors 2016\16583 - Cayer Lane - Raines\16583-21 Flex Building - Bell\Dwg\Engineering\16583-21 Flex Bldg_ALT 2 base.dwg

PRELIMINARY PLAT



TN GRID NORTH

Location Map



SITE DATA:

OWNER: BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TN 37209

PARCEL NUMBER: TAX MAP 42 PARCEL 14.00
DEED BOOK: R2833, PG 86

SUBJECT PARCEL ZONING: PUD

ACREAGE OF SITE: TOTAL: 274,483.49 S.F. = 6.30 Ac.
LOT 1: 42,268.54 S.F. = 0.97Ac.
LOT 2: 43,655.75 S.F. = 1.00 Ac.
LOT 3: 33,779.34 S.F. = 0.78 Ac.
LOT 4: 154,779.86 S.F. = 3.55 Ac.

MINIMUM REQUIRED BUILDING SETBACKS:
30' FRONT
25' REAR
0' SIDE

PARKING: 1 SPACE PER 500 SF + 1 PER EMPLOYEE
WORK STATION + VEHICLE STORAGE
+ 1 PER WORK BAY.
18,000 / 500sf = 36 SPACES
7 + 9 WORK STATIONS = 16 SPACES
REQUIRED: 52 SPACES

PROVIDED:
59 STANDARD SPACES
6 ACCESSIBLE SPACES
65 TOTAL SPACES

UTILITY SERVICES: WATER SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

PURPOSE NOTE: SUBDIVIDE PROPERTY AND:
CONSTRUCT SITE FOR 18,000 S.F. MULTIPLE USE BUILDINGS. BUILDINGS WILL BE 25' HIGH (MAXIMUM).

NOTES:
1. PER ZONING ORDINANCE 4.3.16.C.1, ANY FUTURE REMOVAL OF TREES DEPICTED ON THIS PLAN WILL REQUIRE APPROVAL BY PLANNING COMMISSION.
2. PER ZONING ORDINANCE 4.3.17.B, LIGHTING AT FRONTAGE LINES WILL NOT EXCEED 1.0 FOOT CANDLE AND ON-SITE OUTDOOR LIGHTING WILL CONFORM TO THE STANDARDS OF THE CODE.

© 2023

CURVE TABLE

CURVE	RADIUS	ARC_LENGTH	CHORD_LENGTH	CHORD_BEARING	DELTA_ANGLE
C1	75.00'	53.23'	52.12'	S 70°58'52" W	40°39'45"
C2	60.00'	50.91'	49.40'	N 74°57'33" E	48°37'07"
C3	60.00'	92.29'	83.46'	S 36°39'59" E	88°07'50"
C4	60.00'	133.64'	107.68'	N 71°12'27" E	127°37'02"
C5	75.00'	57.21'	55.83'	S 66°50'09" E	43°42'14"

BENCHMARK

BENCHMARK #1
'X' BOLT FIRE HYDRANT
N = 502,729.50
E = 1,680,532.76
ELEV = 679.64'
TENNESSEE STATE PLANE
COORDINATE SYSTEM
NAD 83 DATUM

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Tennessee811 Know what's **below**. **Call** before you dig.

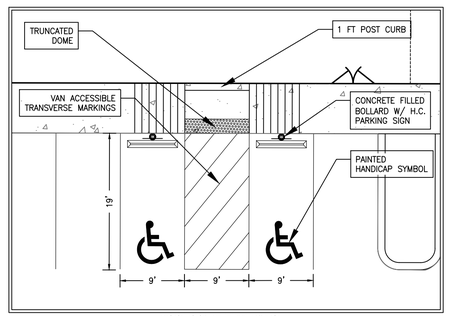
LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
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IRON PIN SET		EIP
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL
ASPHALT
CONCRETE
PARKING SPACES

PROPOSED CONSTRUCTION SCHEDULE FOR THE YEAR 2023

ACTIVITY	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB
TEMPORARY SEDIMENT STRUCTURES												
SEDIMENT BASINS												
DIVERSION DITCHES												
CLEARING & CHIPPING												
TOPSOIL STRIPPING AND STORAGE												
ROADWAY GRADING												
PERMANENT STORM SEWER												
UTILITIES												
TEMPORARY VEGETATION												
PAVING												
PERMANENT VEGETATION												
REMOVE TEMPORARY STRUCTURES												



ACCESSIBLE PARKING
N.T.S.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER, BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

A PORTION OF THE PROPERTY IS LOCATED WITHIN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS (FIRM's) MAP NUMBER 47117C0180E DATED APRIL 16, 2007.

GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

GERALD W. DOVICK 2023-12-13
REGISTERED ENGINEER
AGRICULTURE
No. 107415
STATE OF TENNESSEE

geraldd@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
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ENGINEERS & SURVEYORS

Client
BELL GROUP, LLC
5016 CENTENNIAL BLVD. SUITE 200
NASHVILLE, TENNESSEE 37209

DATE
REVISIONS

FLEX BUILDING
CAYER LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
PRELIMINARY PLAT

Drawn: RP
Checked: GV
Approved: GV
Date: 04-17-2023

Job no. 16583-21
Scale: Vertical: 1"=50'
Horizontal:

1 of 1

FILE: J:_WES_Engineers_Surveyors 2016\16583 – Cayer Lane – Raines\16583–21 Flex Building – Bell\Dwg\Engineering\16583–21 Flex Bldg_ALT 2 base.dwg

CPWS

June 19, 2023

Mr. Gerald W. Vick P.E.
WES Engineers & Surveyors
2486 Nashville Hwy
Columbia, TN 38401
Sent via email: gerald@wesengineers.com

RE: Water Availability Letter
Cayer Lane Flex Building
Tax Map 42, Parcel 14
Columbia, Maury County, TN

Dear Mr. Vick:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists is two "flex" buildings, one at 7,500 square feet and another at 10,500 square feet. CPWS has evaluated the projected water demands for the proposed development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,500 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 10-inch water main located on Cayer Lane.

- Each building will be served by a single master meter.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (40.8 SFUs)	$16,596.00

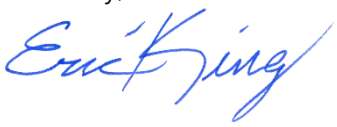
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $4,500 per 3" meter (2 meters)	$9,000.00
Impact Fee: $75,000 per 3" meter (2 meters)	$150,000.00
Total Meter and Impact Fees Due =	**$159,000.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 23-025

Columbia Fire & Rescue

Fire Flow Requirements

Water Purveyor: Columbia Power & Water System

Date: 3/21/23
Name: Gerald W. Vick, PE
Phone: 931-388-2329
Email: gerald@wesengineers.com
Address/Parcel ID: Cayer Lane - Tax Map 42 Parcel 14.00
Property Type: ○ Residential ◉ Commercial ○ Industrial
Construction Type: Type IIB (metal)
Enclosed Area (ft^2): 7,500 & 10,500

FILLED OUT BY COLUMBIA FIRE AND RESCUE

NFPA Sprinkler Type: NFPA 13

Water System Demand without Sprinkler Credit

Fire flow Requirements (International Fire Code Appendix B)

Fire Flow: 2,250 gpm Duration: 2 hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 2

Average spacing between hydrants: 450 ft.

Maximum distance from frontage to hydrant: 225 ft.

Water System Demand with Sprinkler Credit

Fire flow requirements (International Fire Code Appendix B)

Fire Flow: 1,500 gpm Duration: 2 hours

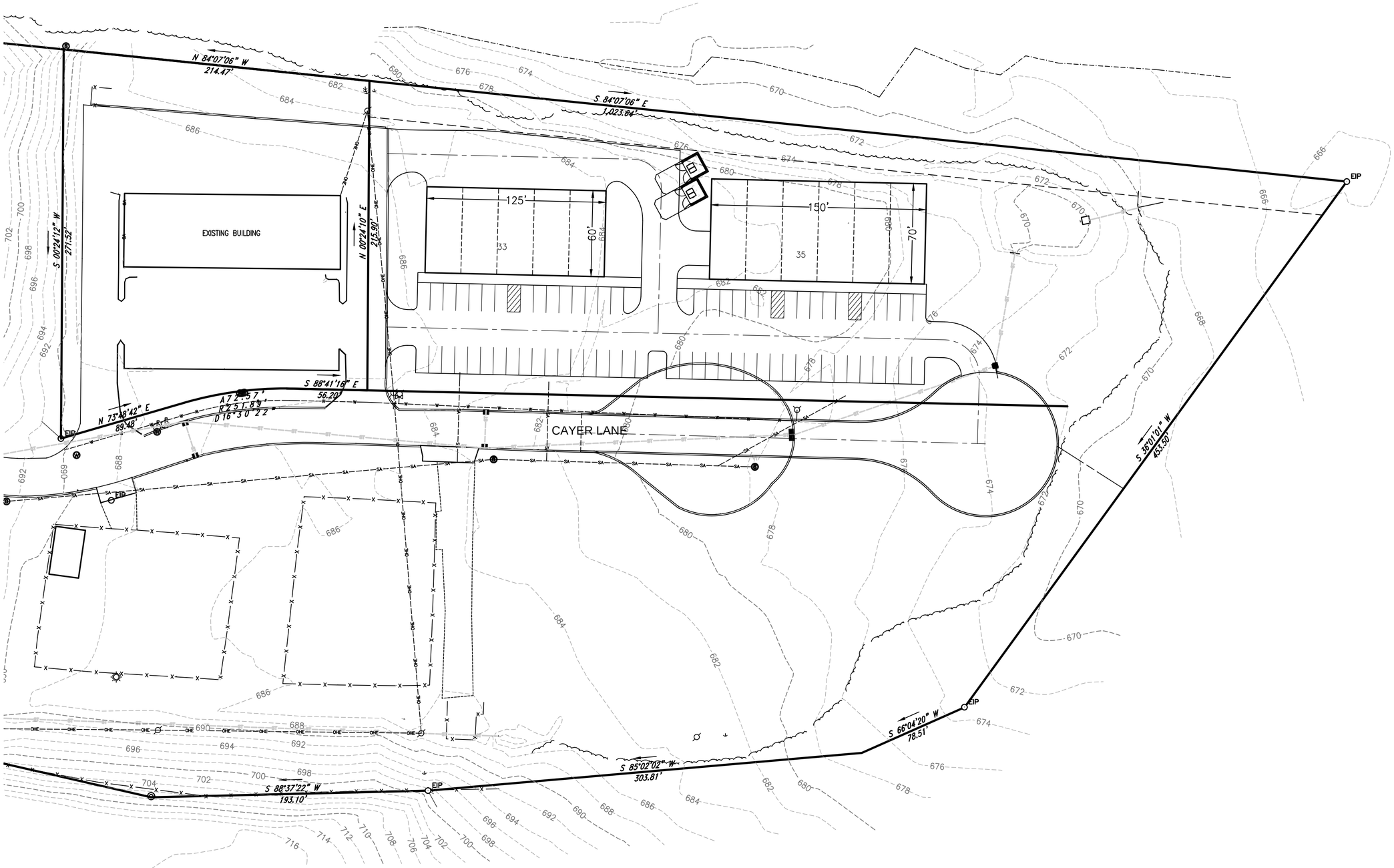
Fire Hydrant Location and Distribution (International Fire Code Appendix C)

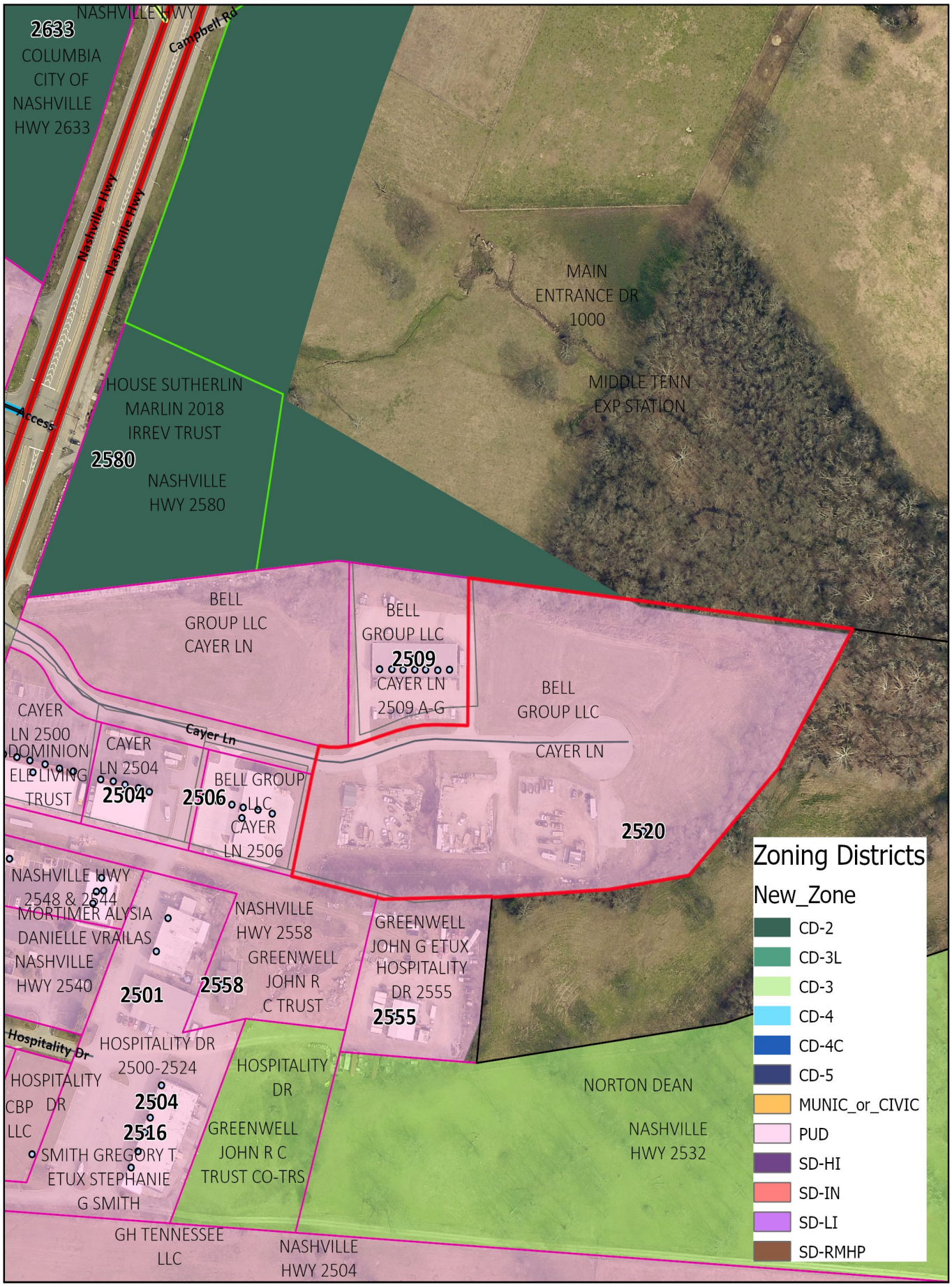
Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

Maximum distance from frontage to hydrant: 250 ft.

Fire Plan Reviewer: Brad Massey Date: 3-22-2023

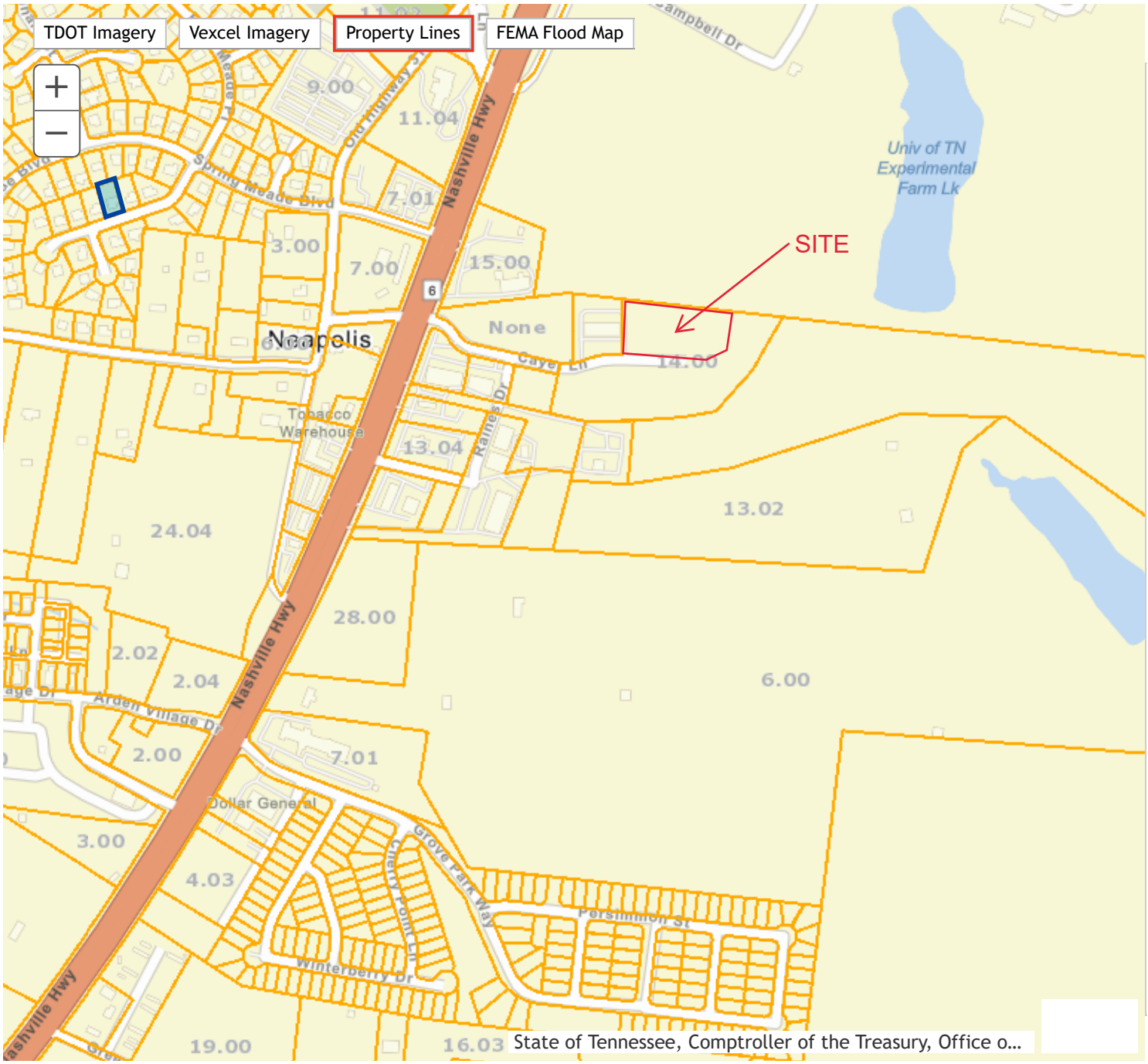

N 84°07'06" W
214.47'
S 84°07'06" E
1,023.64'
EIP
EXISTING BUILDING
S 00°24'12" W
277.32'
N 00°24'10" E
245.90'
125'
60'
33
150'
70'
35
CAYER LANE
S 88°41'16" E
56.20'
A 72.57'
R 251.89'
D 16°30'22"
N 73°48'42" E
89.48'
S 36°01'01" W
453.50'
S 66°04'20" W
78.51'
S 85°02'02" W
303.81'
S 88°37'22" W
193.10'



Case#23-0237
Beechcroft PUD
Cayer Lane

CITY OF COLUMBIA TENNESSEE
DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Tennessee Property Viewer



BK/PG: R2833/88-96
22007256

9 PGS:AL-TRUST DEED	
BECKY BATCH: 275065	04/11/2022 - 09:05 AM
VALUE	2975000.00
MORTGAGE TAX	3418.95
TRANSFER TAX	0.00
RECORDING FEE	45.00
ARCHIVE FEE	0.00
DP FEE	2.00
REGISTER'S FEE	1.00
TOTAL AMOUNT	3466.95

STATE OF TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS

Space Above This Line For Recording Data

This document was prepared by Cheryl Amos, FirstBank, 722 Columbia Ave, Franklin, TN 37064
The MAXIMUM PRINCIPAL INDEBTEDNESS for Tennessee Recording Tax Purposes is $2,975,000.00.

DEED OF TRUST

DATE AND PARTIES. The date of this Deed Of Trust (Security Instrument) is April 6, 2022. The parties and their addresses are:

GRANTOR:
BELL GROUP LLC
A Tennessee Limited Liability Company
a Limited Liability Company
5133 Harding Pike Ste B3
Nashville TN 37205-2887

TRUSTEE:
INVESTORS TITLE COMPANY
A Tennessee Corporation
211 Commerce Street, Suite 300
Nashville, TN 37201

LENDER:
FIRSTBANK
Organized and existing under the laws of Tennessee
211 Commerce Street
Suite 300
Nashville, TN 37201

1. DEFINITIONS. For the purposes of this document, the following term has the following meaning.

A. Loan. "Loan" refers to this transaction generally, including obligations and duties arising from the terms of all documents prepared or submitted for this transaction.

2. CONVEYANCE. For good and valuable consideration, the receipt and sufficiency of which is acknowledged, and to secure the Secured Debts and Grantor's performance under this Security Instrument, Grantor does hereby irrevocably grant, convey and sell to Trustee, in trust for the benefit of Lender, with power of sale, the following described property:

042 014.04 000

The property is located in Maury County at 2506 Cayer Ln, Columbia, Tennessee 38401.

The instrument constituting the source of the Borrower's interest in the foregoing described property was recorded at Book R2833, Page 84 - 86 under Instrument No. _____ in the Register's Office of _____ County, Tennessee.

Together with all rights, easements, appurtenances, royalties, mineral rights, oil and gas rights, all water and riparian rights, wells, ditches and water stock, crops, timber including timber to be cut now or at any time in the future, all diversion payments or third party payments made to crop producers and all existing and future improvements, structures, fixtures, and replacements that may now, or at any time in the future, be part of the real estate described (all referred to as Property). This Security Instrument will remain in effect until the Secured Debts and all underlying agreements have been terminated in writing by Lender.

3. SECURED DEBTS. The term "Secured Debts" includes and this Security Instrument will secure each of the following:

A. Specific Debts. The following debts and all extensions, renewals, refinancings, modifications and replacements. A promissory note or other agreement, dated April 6, 2022, from Grantor to Lender, with a loan amount of $2,975,000.00 and maturing on April 6, 2027.

B. Sums Advanced. All sums advanced and expenses incurred by Lender under the terms of this Security Instrument.

4. LIMITATIONS ON CROSS-COLLATERALIZATION. The Loan is not secured by a previously executed security instrument if a non-possessory, non-purchase money security interest is created in "household goods" in connection with a "consumer loan," as those terms are defined by federal law governing unfair and deceptive credit practices. The Loan is not secured by a previously executed security instrument if Lender fails to fulfill any necessary requirements or fails to conform to any limitations of the Real Estate Settlement Procedures Act, (Regulation X), that are required for loans secured by the Property or if, as a result, the other debt would become subject to Section 670 of the John Warner National Defense Authorization Act for Fiscal Year 2007.

The Loan is not secured by a previously executed security instrument if Lender fails to fulfill any necessary requirements or fails to conform to any limitations of the Truth in Lending Act, (Regulation Z), that are required for loans secured by the Property.

5. PAYMENTS. Grantor agrees that all payments under the Secured Debts will be paid when due and in accordance with the terms of the Secured Debts and this Security Instrument.

6. WARRANTY OF TITLE. Grantor warrants that Grantor is or will be lawfully seized of the estate conveyed by this Security Instrument and has the right to irrevocably grant, convey and sell the Property to Trustee, in trust, with power of sale. Grantor also warrants that the Property is unencumbered, except for encumbrances of record.

7. PRIOR SECURITY INTERESTS. With regard to any other mortgage, deed of trust, security agreement or other lien document that created a prior security interest or encumbrance on the Property, Grantor agrees:

A. To make all payments when due and to perform or comply with all covenants.

B. To promptly deliver to Lender any notices that Grantor receives from the holder.

C. Not to allow any modification or extension of, nor to request any future advances under any note or agreement secured by the lien document without Lender's prior written consent.

8. CLAIMS AGAINST TITLE. Grantor will pay all taxes, assessments, liens, encumbrances, lease payments, ground rents, utilities, and other charges relating to the Property when due. Lender may require Grantor to provide to Lender copies of all notices that such amounts are due and the receipts evidencing Grantor's payment. Grantor will defend title to the Property against any claims that would impair the lien of this Security Instrument. Grantor agrees to assign to Lender, as requested by Lender, any rights, claims or defenses Grantor may have against parties who supply labor or materials to maintain or improve the Property.

9. DUE ON SALE OR ENCUMBRANCE. Lender may, at its option, declare the entire balance of the Secured Debt to be immediately due and payable upon the creation of, or contract for the creation of, any lien, encumbrance, transfer or sale of all or any part of the Property. This right is subject to the restrictions imposed by federal law, as applicable.

10. TRANSFER OF AN INTEREST IN THE GRANTOR. If Grantor is an entity other than a natural person (such as a corporation, partnership, limited liability company or other organization), Lender may demand immediate payment if:

A. A beneficial interest in Grantor is sold or transferred.

B. There is a change in either the identity or number of members of a partnership or similar entity.

C. There is a change in ownership of more than 25 percent of the voting stock of a corporation, partnership, limited liability company or similar entity.

However, Lender may not demand payment in the above situations if it is prohibited by law as of the date of this Security Instrument.

11. WARRANTIES AND REPRESENTATIONS. Grantor makes to Lender the following warranties and representations which will continue as long as this Security Instrument is in effect:

A. Power. Grantor is duly organized, and validly existing and in good standing in all jurisdictions in which Grantor operates. Grantor has the power and authority to enter into this transaction and to carry on Grantor's business or activity as it is now being conducted and, as applicable, is qualified to do so in each jurisdiction in which Grantor operates.

B. Authority. The execution, delivery and performance of this Security Instrument and the obligation evidenced by this Security Instrument are within Grantor's powers, have been duly authorized, have received all necessary governmental approval, will not violate any provision of law, or order of court or governmental agency, and will not violate any agreement to which Grantor is a party or to which Grantor is or any of Grantor's property is subject.

C. Name and Place of Business. Other than previously disclosed in writing to Lender, Grantor has not changed Grantor's name or principal place of business within the last 10 years and has not used any other trade or fictitious name. Without Lender's prior written consent, Grantor does not and will not use any other name and will preserve Grantor's existing name, trade names and franchises.

12. PROPERTY CONDITION, ALTERATIONS, INSPECTION, VALUATION AND APPRAISAL. Grantor will keep the Property in good condition and make all repairs that are reasonably necessary. Grantor will not commit or allow any waste, impairment, or deterioration of the Property. Grantor will keep the Property free of noxious weeds and grasses. Grantor agrees that the nature of the occupancy and use will not substantially change without Lender's prior written consent. Grantor will not permit any change in any license, restrictive

covenant or easement without Lender's prior written consent. Grantor will notify Lender of all demands, proceedings, claims, and actions against Grantor, and of any loss or damage to the Property.

No portion of the Property will be removed, demolished or materially altered without Lender's prior written consent except that Grantor has the right to remove items of personal property comprising a part of the Property that become worn or obsolete, provided that such personal property is replaced with other personal property at least equal in value to the replaced personal property, free from any title retention device, security agreement or other encumbrance. Such replacement of personal property will be deemed subject to the security interest created by this Security Instrument. Grantor will not partition or subdivide the Property without Lender's prior written consent.

Lender or Lender's agents may, at Lender's option, enter the Property at any reasonable time and frequency for the purpose of inspecting, valuating, or appraising the Property. Lender will give Grantor notice at the time of or before an on-site inspection, valuation, or appraisal for on-going due diligence or otherwise specifying a reasonable purpose. Any inspection, valuation or appraisal of the Property will be entirely for Lender's benefit and Grantor will in no way rely on Lender's inspection, valuation or appraisal for its own purpose, except as otherwise provided by law.

13. AUTHORITY TO PERFORM. If Grantor fails to perform any duty or any of the covenants contained in this Security Instrument, Lender may, without notice, perform or cause them to be performed. Grantor appoints Lender as attorney in fact to sign Grantor's name or pay any amount necessary for performance. Lender's right to perform for Grantor will not create an obligation to perform, and Lender's failure to perform will not preclude Lender from exercising any of Lender's other rights under the law or this Security Instrument. If any construction on the Property is discontinued or not carried on in a reasonable manner, Lender may take all steps necessary to protect Lender's security interest in the Property, including completion of the construction.

14. ASSIGNMENT OF LEASES AND RENTS. Grantor irrevocably assigns, grants, conveys to Lender as additional security all the right, title and interest in the following (Property).

A. Existing or future leases, subleases, licenses, guaranties and any other written or verbal agreements for the use and occupancy of the Property, including but not limited to any extensions, renewals, modifications or replacements (Leases).

B. Rents, issues and profits, including but not limited to security deposits, minimum rents, percentage rents, additional rents, common area maintenance charges, parking charges, real estate taxes, other applicable taxes, insurance premium contributions, liquidated damages following default, cancellation premiums, "loss of rents" insurance, guest receipts, revenues, royalties, proceeds, bonuses, accounts, contract rights, general intangibles, and all rights and claims which Grantor may have that in any way pertain to or are on account of the use or occupancy of the whole or any part of the Property (Rents).

In the event any item listed as Leases or Rents is determined to be personal property, this Assignment will also be regarded as a security agreement. Grantor will promptly provide Lender with copies of the Leases and will certify these Leases are true and correct copies. The existing Leases will be provided on execution of the Assignment, and all future Leases and any other information with respect to these Leases will be provided immediately after they are executed. Grantor may collect, receive, enjoy and use the Rents so long as Grantor is not in default. Grantor will not collect in advance any Rents due in future lease periods, unless Grantor first obtains Lender's written consent. Upon default, Grantor will receive any Rents in trust for Lender and Grantor will not commingle the Rents with any other funds. When Lender so directs, Grantor will endorse and deliver any payments of Rents from the Property to Lender. Amounts collected will be applied at Lender's discretion to the Secured Debts, the costs of managing, protecting, valuating, appraising and preserving the Property, and other necessary expenses. Grantor agrees that this Security Instrument is immediately effective between Grantor and Lender and effective as to third parties on the recording of this Assignment. This Security Instrument will remain effective during any statutory redemption period until the Secured Debts are satisfied. As long as this Assignment is in effect, Grantor warrants and represents that no default exists under the Leases, and the parties subject to the Leases have not violated any applicable law on leases, licenses and landlords and tenants. Grantor, at its sole cost and expense, will keep, observe and perform, and require all other parties to the Leases to comply with the Leases and any applicable law. If Grantor or any party to the Lease defaults or fails to observe any applicable law, Grantor will promptly notify Lender. If Grantor neglects or refuses to enforce compliance with the terms of the Leases, then Lender may, at Lender's option, enforce compliance. Grantor will not sublet, modify, extend, cancel, or otherwise alter the Leases, or accept the surrender of the Property covered by the Leases (unless the Leases so require) without Lender's consent. Grantor will not assign, compromise, subordinate or encumber the Leases and Rents without Lender's prior written consent. Lender does not assume or become liable for the Property's maintenance, depreciation, or other losses or damages when Lender acts to manage, protect or preserve the Property, except for losses and damages due to Lender's gross negligence or intentional torts. Otherwise, Grantor will indemnify Lender and hold Lender harmless for all liability, loss or damage that Lender may incur when Lender opts to exercise any of its remedies against any party obligated under the Leases.

15. DEFAULT. Grantor will be in default if any of the following events (known separately and collectively as an Event of Default) occur:

A. Payments. Grantor fails to make a payment in full when due.

B. Insolvency or Bankruptcy. The death, dissolution or insolvency of, appointment of a receiver by or on behalf of, application of any debtor relief law, the assignment for the benefit of creditors by or on behalf of, the voluntary or involuntary termination of existence by, or the commencement of any proceeding under any present or future federal or state insolvency, bankruptcy, reorganization, composition or debtor relief law by or against Grantor, Borrower, or any co-signer, endorser, surety or guarantor of this Security Instrument or any other obligations Borrower has with Lender.

C. Business Termination. Grantor merges, dissolves, reorganizes, ends its business or existence, or a partner or majority owner dies or is declared legally incompetent.

D. Failure to Perform. Grantor fails to perform any condition or to keep any promise or covenant of this Security Instrument.

E. Other Documents. A default occurs under the terms of any other document relating to the Secured Debts.

F. Other Agreements. Grantor is in default on any other debt or agreement Grantor has with Lender.

G. Misrepresentation. Grantor makes any verbal or written statement or provides any financial information that is untrue, inaccurate, or conceals a material fact at the time it is made or provided.

H. Judgment. Grantor fails to satisfy or appeal any judgment against Grantor.

I. Forfeiture. The Property is used in a manner or for a purpose that threatens confiscation by a legal authority.

J. Name Change. Grantor changes Grantor's name or assumes an additional name without notifying Lender before making such a change.

K. Property Transfer. Grantor transfers all or a substantial part of Grantor's money or property. This condition of default, as it relates to the transfer of the Property, is subject to the restrictions contained in the DUE ON SALE section.

L. Property Value. Lender determines in good faith that the value of the Property has declined or is impaired.

M. Material Change. Without first notifying Lender, there is a material change in Grantor's business, including ownership, management, and financial conditions.

N. Insecurity. Lender determines in good faith that a material adverse change has occurred in Grantor's financial condition from the conditions set forth in Grantor's most recent financial statement before the date of this Security Instrument or that the prospect for payment or performance of the Secured Debts is impaired for any reason.

O. Death or Incompetency of a Guarantor. Any guarantor of payment of the Secured Debts dies or is declared legally incompetent.

P. Failure to Comply with Laws. Grantor fails to comply with all applicable laws, statutes, ordinances and governmental rules, regulations and orders to which Grantor is subject or which apply to Grantor's business, property or assets.

Q. Fraud. Grantor engages in fraud or material misrepresentation in connection with this transaction.

16. REMEDIES. On or after the occurrence of an Event of Default, Lender may use any and all remedies Lender has under state or federal law or in any document relating to the Secured Debts, including, without limitation, the power to sell the Property. Any amounts advanced on Grantor's behalf will be immediately due and may be added to the balance owing under the Secured Debts. Lender may make a claim for any and all insurance benefits or refunds that may be available on Grantor's default.

Subject to any right to cure, required time schedules or any other notice rights Grantor may have under federal and state law, Lender may make all or any part of the amount owing by the terms of the Secured Debts immediately due and foreclose this Security Instrument in a manner provided by law upon the occurrence of an Event of Default or anytime thereafter.

If there is an occurrence of an Event of Default, Trustee will, in addition to any other permitted remedy, at the request of Lender, advertise and sell the Property as a whole or in separate parcels at public outcry to the highest bidder for cash and convey a trustee's deed that conveys all right, title and interest to the Property that was sold to the purchaser(s) at such time and place as Trustee designates. Trustee will give notice of sale including the time, terms and place of sale and a description of the property to be sold as required by the applicable law in effect at the time of the proposed sale.

To the extent not prohibited by law, Trustee will apply the proceeds of the Property's sale in the following order: to all fees, charges, costs and expenses of exercising the power of sale and the sale; to Lender for all advances made for repairs, taxes, insurance, liens, assessments and prior encumbrances and interest thereon; to the Secured Debts' principal and interest; and paying any surplus as required by law. Lender or its designee may purchase the Property.

Upon any sale of the Property, Trustee will make and deliver a trustee's deed that conveys all right, title and interest to the Property that was sold to the purchaser(s). The recitals in any deed of conveyance will be prima facie evidence of the facts set forth therein.

All remedies are distinct, cumulative and not exclusive, and Lender is entitled to all remedies provided at law or equity, whether or not expressly set forth. The acceptance by Lender of any sum in payment or partial payment on the Secured Debts after the balance is due or is accelerated or after foreclosure proceedings are filed will not constitute a waiver of Lender's right to require full and complete cure of any existing default. By not exercising any remedy, Lender does not waive Lender's right to later consider the event a default if it continues or happens again.

17. COLLECTION EXPENSES AND ATTORNEYS' FEES. On or after the occurrence of an Event of Default, to the extent permitted by law, Grantor agrees to pay all expenses of collection, enforcement, valuation, appraisal or protection of Lender's rights and remedies under this Security Instrument or any other document relating to the Secured Debts. Grantor agrees to pay expenses for Lender to inspect, valuate, appraise and preserve the Property. Expenses include, but are not limited to, reasonable and actual attorneys' fees, court costs, and other legal expenses. These expenses are due and payable immediately. If not paid immediately, these expenses will bear interest from the date of payment until paid in full at the highest interest rate in effect as provided for in the terms of the Secured Debts. In addition, to the extent permitted by the United States Bankruptcy Code, Grantor agrees to pay the reasonable attorneys' fees incurred by Lender to protect Lender's rights and interests in connection with any bankruptcy proceedings initiated by or against Grantor.

18. ENVIRONMENTAL LAWS AND HAZARDOUS SUBSTANCES. As used in this section, (1) Environmental Law means, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act

(CERCLA, 42 U.S.C. 9601 et seq.), all other federal, state and local laws, regulations, ordinances, court orders, attorney general opinions or interpretive letters concerning the public health, safety, welfare, environment or a hazardous substance; and (2) Hazardous Substance means any toxic, radioactive or hazardous material, waste, pollutant or contaminant which has characteristics which render the substance dangerous or potentially dangerous to the public health, safety, welfare or environment. The term includes, without limitation, any substances defined as "hazardous material," "toxic substance," "hazardous waste," "hazardous substance," or "regulated substance" under any Environmental Law.

Grantor represents, warrants and agrees that:

A. Except as previously disclosed and acknowledged in writing to Lender, no Hazardous Substance has been, is, or will be located, transported, manufactured, treated, refined, or handled by any person on, under or about the Property, except in the ordinary course of business and in strict compliance with all applicable Environmental Law.

B. Except as previously disclosed and acknowledged in writing to Lender, Grantor has not and will not cause, contribute to, or permit the release of any Hazardous Substance on the Property.

C. Grantor will immediately notify Lender if (1) a release or threatened release of Hazardous Substance occurs on, under or about the Property or migrates or threatens to migrate from nearby property; or (2) there is a violation of any Environmental Law concerning the Property. In such an event, Grantor will take all necessary remedial action in accordance with Environmental Law.

D. Except as previously disclosed and acknowledged in writing to Lender, Grantor has no knowledge of or reason to believe there is any pending or threatened investigation, claim, or proceeding of any kind relating to (1) any Hazardous Substance located on, under or about the Property; or (2) any violation by Grantor or any tenant of any Environmental Law. Grantor will immediately notify Lender in writing as soon as Grantor has reason to believe there is any such pending or threatened investigation, claim, or proceeding. In such an event, Lender has the right, but not the obligation, to participate in any such proceeding including the right to receive copies of any documents relating to such proceedings.

E. Except as previously disclosed and acknowledged in writing to Lender, Grantor and every tenant have been, are and will remain in full compliance with any applicable Environmental Law.

F. Except as previously disclosed and acknowledged in writing to Lender, there are no underground storage tanks, private dumps or open wells located on or under the Property and no such tank, dump or well will be added unless Lender first consents in writing.

G. Grantor will regularly inspect the Property, monitor the activities and operations on the Property, and confirm that all permits, licenses or approvals required by any applicable Environmental Law are obtained and complied with.

H. Grantor will permit, or cause any tenant to permit, Lender or Lender's agent to enter and inspect the Property and review all records at any reasonable time to determine (1) the existence, location and nature of any Hazardous Substance on, under or about the Property; (2) the existence, location, nature, and magnitude of any Hazardous Substance that has been released on, under or about the Property; or (3) whether or not Grantor and any tenant are in compliance with applicable Environmental Law.

I. Upon Lender's request and at any time, Grantor agrees, at Grantor's expense, to engage a qualified environmental engineer to prepare an environmental audit of the Property and to submit the results of such audit to Lender. The choice of the environmental engineer who will perform such audit is subject to Lender's approval.

J. Lender has the right, but not the obligation, to perform any of Grantor's obligations under this section at Grantor's expense.

K. As a consequence of any breach of any representation, warranty or promise made in this section, (1) Grantor will indemnify and hold Lender and Lender's successors or assigns harmless from and against all losses, claims, demands, liabilities, damages, cleanup, response and remediation costs, penalties and expenses, including without limitation all costs of litigation and attorneys' fees, which Lender and Lender's successors or assigns may sustain; and (2) at Lender's discretion, Lender may release this Security Instrument and in return Grantor will provide Lender with collateral of at least equal value to the Property without prejudice to any of Lender's rights under this Security Instrument.

L. Notwithstanding any of the language contained in this Security Instrument to the contrary, the terms of this section will survive any foreclosure or satisfaction of this Security Instrument regardless of any passage of title to Lender or any disposition by Lender of any or all of the Property. Any claims and defenses to the contrary are hereby waived.

19. CONDEMNATION. Grantor will give Lender prompt notice of any pending or threatened action by private or public entities to purchase or take any or all of the Property through condemnation, eminent domain, or any other means. Grantor authorizes Lender to intervene in Grantor's name in any of the above described actions or claims. Grantor assigns to Lender the proceeds of any award or claim for damages connected with a condemnation or other taking of all or any part of the Property. Such proceeds will be considered payments and will be applied as provided in this Security Instrument. This assignment of proceeds is subject to the terms of any prior mortgage, deed of trust, security agreement or other lien document.

20. INSURANCE. Grantor agrees to keep the Property insured against the risks reasonably associated with the Property. Grantor will maintain this insurance in the amounts Lender requires. This insurance will last until the Property is released from this Security Instrument. What Lender requires pursuant to the preceding two sentences can change during the term of the Secured Debts. Grantor may choose the insurance company, subject to Lender's approval, which will not be unreasonably withheld.

All insurance policies and renewals shall include a standard "mortgage clause" (or "lender loss payable clause") endorsement that names Lender as "mortgagee" and "loss payee". If required by Lender, all insurance policies and renewals will also include an "additional insured" endorsement that names Lender as an "additional insured". If required by Lender, Grantor agrees to maintain comprehensive general liability

insurance and rental loss or business interruption insurance in amounts and under policies acceptable to Lender. The comprehensive general liability insurance must name Lender as an additional insured. The rental loss or business interruption insurance must be in an amount equal to at least coverage of one year's debt service, and required escrow account deposits (if agreed to separately in writing).

Grantor will give Lender and the insurance company immediate notice of any loss. All insurance proceeds will be applied to restoration or repair of the Property or to the Secured Debts, at Lender's option. If Lender acquires the Property in damaged condition, Grantor's rights to any insurance policies and proceeds will pass to Lender to the extent of the Secured Debts.

Grantor will immediately notify Lender of cancellation or termination of insurance. If Grantor fails to keep the Property insured, Lender may obtain insurance to protect Lender's interest in the Property and Grantor will pay for the insurance on Lender's demand. Lender may demand that Grantor pay for the insurance all at once, or Lender may add the insurance premiums to the balance of the Secured Debts and charge interest on it at the rate that applies to the Secured Debts. This insurance may include lesser or greater coverages than originally required of Grantor, may be written by a company other than one Grantor would choose, and may be written at a higher rate than Grantor could obtain if Grantor purchased the insurance. Grantor acknowledges and agrees that Lender or one of Lender's affiliates may receive commissions on the purchase of this insurance.

21. ESCROW FOR TAXES AND INSURANCE. Grantor will not be required to pay to Lender funds for taxes and insurance in escrow.

22. SUCCESSOR TRUSTEE. Lender, at Lender's option, may from time to time remove Trustee and appoint a successor without any other formality than the designation in writing. The successor trustee, without conveyance of the Property, will succeed to all the title, power and duties conferred upon Trustee by this Security Instrument and applicable law.

23. WAIVERS. Except to the extent prohibited by law, Grantor waives all appraisement, homestead exemption, and curtesy and dower rights relating to the Property. In addition, equitable and statutory rights of redemption by Grantor after foreclosure sale are expressly waived to the extent not prohibited by law.

24. USE OF PROPERTY. Grantor shall not use or occupy the Property in any manner that would constitute a violation of any state and/or federal laws involving controlled substances, even in a jurisdiction that allows such use by state or local law or ordinance. In the event that Grantor becomes aware of such a violation, Grantor shall take all actions allowed by law to terminate the violating activity.

In addition to all other indemnifications, obligations, rights and remedies contained herein, if the Lender and/or its respective directors, officers, employees, agents and attorneys (each an "Indemnitee") is made a party defendant to any litigation or any claim is threatened or brought against such Indemnitee concerning this Security Instrument or the related property or any part thereof or therein or concerning the construction, maintenance, operation or the occupancy or use of such property, then the Grantor shall (to the extent permitted by applicable law) indemnify, defend and hold each Indemnitee harmless from and against all liability by reason of said litigation or claims, including attorneys' fees and expenses incurred by such Indemnitee in connection with any such litigation or claim, whether or not any such litigation or claim is prosecuted to judgment. To the extent permitted by applicable law, the within indemnification shall survive payment of the Secured Debt, and/or any termination, release or discharge executed by the Lender in favor of the Grantor.

Violation of this provision is a material breach of this Security Instrument and thereby constitutes a default under the terms and provisions of this Security Instrument.

25. APPLICABLE LAW. This Security Instrument is governed by the laws of Tennessee, the United States of America, and to the extent required, by the laws of the jurisdiction where the Property is located, except to the extent such state laws are preempted by federal law.

26. JOINT AND SEVERAL LIABILITY AND SUCCESSORS. Each Grantor's obligations under this Security Instrument are independent of the obligations of any other Grantor. Lender may sue each Grantor severally or together with any other Grantor. Lender may release any part of the Property and Grantor will still be obligated under this Security Instrument for the remaining Property. Grantor agrees that Lender and any party to this Security Instrument may extend, modify or make any change in the terms of this Security Instrument or any evidence of debt without Grantor's consent. Such a change will not release Grantor from the terms of this Security Instrument. The duties and benefits of this Security Instrument will bind and benefit the successors and assigns of Lender and Grantor.

27. AMENDMENT, INTEGRATION AND SEVERABILITY. This Security Instrument may not be amended or modified by oral agreement. No amendment or modification of this Security Instrument is effective unless made in writing. This Security Instrument and any other documents relating to the Secured Debts are the complete and final expression of the agreement. If any provision of this Security Instrument is unenforceable, then the unenforceable provision will be severed and the remaining provisions will still be enforceable.

28. INTERPRETATION. Whenever used, the singular includes the plural and the plural includes the singular. The section headings are for convenience only and are not to be used to interpret or define the terms of this Security Instrument.

29. NOTICE, ADDITIONAL DOCUMENTS AND RECORDING FEES. Unless otherwise required by law, any notice will be given by delivering it or mailing it by first class mail or via a nationally recognized overnight courier to the appropriate party's address listed in the DATE AND PARTIES section, or to any other address designated in writing. Notice to one Grantor will be deemed to be notice to all Grantors. Grantor will inform Lender in writing of any change in Grantor's name, address or other application information. Grantor will provide Lender any other, correct and complete information Lender requests to effectively mortgage or convey the Property. Grantor agrees to pay all expenses, charges and taxes in connection with the preparation and recording of this Security Instrument. Grantor agrees to sign, deliver, and file any additional

documents or certifications that Lender may consider necessary to perfect, continue, and preserve Grantor's obligations under this Security Instrument and to confirm Lender's lien status on any Property, and Grantor agrees to pay all expenses, charges and taxes in connection with the preparation and recording thereof. Time is of the essence.

SIGNATURES. By signing, Grantor agrees to the terms and covenants contained in this Security Instrument. Grantor also acknowledges receipt of a copy of this Security Instrument.

GRANTOR:

Bell Group LLC

By_____

Derek Adam Bell, Owner

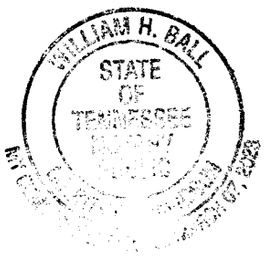
ACKNOWLEDGMENT.

STATE OF TENNESSEE, OF ss.

On this 6th day of April, 2022, before me appeared Derek Adam Bell, to me personally known (or proved to me on the basis of satisfactory evidence), who, being by me duly sworn or affirmed did say that he/she/they is/are the Owner of Bell Group LLC, a Limited Liability Company and that (the seal affixed to the instrument is the seal of the Limited Liability Company) (no seal has been procured by the Limited Liability Company) and that the instrument was signed and sealed, if applicable, in behalf of said Limited Liability Company by authority of its board of directors/partners/members (or other governing body), and said Derek Adam Bell, acknowledged the instrument to be the free act and deed of the Limited Liability Company.

My commission expires: March 7, 2025

(Notary Public)



Please return this document after recording to FirstBank, 722 Columbia Ave, Attn: Loan Exceptions, Franklin, TN 37064

EXHIBIT "A"

Tract One (As to Map/Parcel: 042-14.02):
SITUATE in the THIRD (3RD) Civil District of Maury County, Tennessee and being more particularly described as follows:
Lot 7 of the Beechcroft Plaza Subdivision as shown by a map or record in Plat Book P18, at page 91, in the Maury County, Tennessee, Register of Deeds Office, which is incorporated herein by reference for a more complete property description.
Also conveyed herein is a 50' wide ingress/egress utilities easement as shown on said recorded map.

Tract Two (As to Map/Parcel: 042-014.04):
SITUATE in the Third (3rd) Civil District of Maury County, Tennessee and being more particularly described as follows:
Lot 5 of Beechcroft Plaza as shown by a map of record in Plat Book P21, at Page 166, in the Maury County, Tennessee Register of Deeds Office, which is incorporated herein by reference for a more complete property description.

Tract Three (As to Map/Parcel: 042-014.00):
SITUATE in the THIRD (3RD) Civil District of Maury County, Tennessee, East of and adjacent to U. S. Highway 31, and being more particularly described as follows:

Beginning at an iron pin set in the East R.O.W. of U.S. Highway 31, said iron pin being the Northwest corner of Dino Roberts Homes as recorded in Deed Book R1424, Page 104, ROMCT and being the Southwest corner of the tract being described; thence leaving Dino Roberts Homes with said East R.O.W. North 17 degrees, 41 minutes, 57 seconds East 322.05 feet to an iron pin set, said iron pin being in the South margin of Mud Lane, said iron pin being the Northwest corner of the tract being described; thence leaving said East R.O.W. with said South margin of Mud Lane and a fence North 79 degrees, 35 minutes, 27 seconds East 418.80 feet to an iron pin set, North 77 degrees, 11 minutes, 29 seconds East 50.19 feet to a 24" hackberry tree, South 87 degrees, 30 minutes, 28 second East 1023.64 feet to an iron pin found, said iron pin being the Northern most Northwest corner of Robert Wright as recorded in Deed Book 1169, Page 30, ROMCT, and being the Northeast corner of the tract being described; thence leaving said South margin of Mud Lane with Wright and continuing with said fence South 32 degrees, 37 minutes, 39 seconds West 453.50 feet to an iron pin found, South 62 degrees, 40 minutes, 58 seconds West 78.51 feet to an iron in found, South 81 degrees, 38 minutes, 40 seconds West 303.81 feet to an iron pin found, said iron pin being the Westernmost Northwest corner of Wright and the Northeast corner of said Dino Roberts Homes; thence leaving Wright with said Dino Roberts Homes and continuing with said fence South 85 degrees, 14 minutes, 00 seconds West 193.10 feet to a fence post, North 80 degrees, 32 minutes, 03 seconds West, passing an iron pin found at 426.56 feet, in all 784.82 feet to the point of beginning and containing 14.26 acres as surveyed by Kenneth Carroll, R.L.S., Tennessee License Number 1335, April, 2000.

Exclusions in Book R2036, Page 979, Book R2041, Page 1004 and Book R2376, Page 406, Register's Office of Maury County, Tennessee.

BEING the same property conveyed to Bell Group, LLC, a Tennessee limited liability company, by Warranty Deed dated, April 6, 2022 from Charles Raines, a _____ man, Phil B. Cayer, a _____ man, and Beechcroft Plaza LLC, of record in Book R2833, Page 86 + 84, Register's Office for Maury County, Tennessee.

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Preliminary Plat, Site Development Plan, and PUD Checklist

Development: Cayer Lane Flex Use Buildings

This checklist shall be completed, and included with the submittal documents. If the submittal does not contain a completed checklist, it shall be deemed incomplete. All below listed items shall be included in the submittal documents and plans, as well as any further information required by the City of Columbia to evaluate compliance and to perform a full and complete review. See Zoning Ordinance Article 8 and Subdivision Regulations.

General

- ☑ Name of development
- ☑ Contact info for the owner and licensed design professional(s) preparing plan: name, address, email, phone
- ☑ Plan sealed by a Design Professional licensed in the State of Tennessee.
- ☑ North Arrow, legend, and site vicinity map
- ☑ Graphic Scale: between 1 in. = 10 ft. and 1 in. =100 ft.
- ☐ Survey stamped by a State of Tennessee Licensed Professional Land Surveyor, with all project boundaries including bearings and angles to the nearest hundredth, utilities, and existing streets and rights-of-way.
- ☑ Note referencing Tennessee State Plane Coordinate System, NAD 83 Datum
- ☐ All property boundaries, existing easements, and encumbrances
- ☑ Parcel identification, owner, and deed and plat references of adjoining properties
- ☑ Proposed phasing and timetable for all phases of development
- ☐ Traffic Impact Study, as required.
- ☐ The substance of all existing and proposed covenants, easements, or other restrictions.

Lots and Land-Use

- ☑ The size of total property to be developed in square feet and acres
- ☑ Lot numbers of all proposed lots, with dimensions, locations, and square footage
- ☐ A tabulation of the land area to be devoted to various uses and activities and overall densities.
- ☐ Typical lot layout depicting proposed setbacks, yards, and easements, where applicable

Structures

- ☑ Location and approximate dimensions of all existing and proposed structures.
- ☑ Location of all earth retaining structures, with approximate top and bottom of wall elevations.
- ☐ Existing and intended use of all buildings and structures on site, including the number of dwelling units and density, where applicable
- ☐ Location, type, and size of proposed signs
- ☑ Approximate height, bulk, and the utilization of structures including activities and the number of living units.

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Grading, Drainage, and Storm

- ☑ Existing conditions and contours at vertical intervals of not more than two (2) feet
- ☑ General proposed contours at vertical intervals of not more than two (2) feet
- ☑ FEMA Special Flood Hazard Area (SFHA), 100-year Floodplain (F-P), and Floodway (F-W) boundaries with elevations and the exact location of the nearest benchmark. Indicate the Flood Insurance Rate Map (FIRM) panel number, its effective date, and flood insurance zones
- ☐ Location and dimension of aquatic buffer zones
- ☑ General layout of the proposed storm drainage system including surface and subsurface drainage systems, areas for detention, and water quality devices.
- ☐ Identification of all critical lots

Streets, Parking, and Pedestrian Elements

- ☑ Proposed street and alley rights-of-way, typical sections, widths, classification, names, and proposed ownership and maintenance responsibility
- ☑ Proposed connections to existing and proposed streets (including classification) located outside the development
- ☐ Proposed improvements as identified in the Traffic Impact Study, as required
- ☑ Existing and proposed sidewalks, trails, and other pedestrian elements
- ☑ Existing and proposed on-street and off-street parking and loading areas
- ☑ Summary of all provided and required parking

Landscaping, Open Space, and Amenities

- ☑ Natural features on site including, but not limited to, wetlands, streams, ponds, springs, sinkholes, wells, rock outcroppings, excessive slopes, and forested areas
- ☑ Landscaped areas and buffers with details on proposed plantings, existing vegetation, and other features.
- ☐ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ☐ Any amenity features and structures for private or public benefit.
- ☑ Location, dimension, and materials of fences and walls
- ☐ Tree Canopy retention

Utilities

- ☑ General layout and location of existing and proposed utilities and utility features including, but not limited to potable water, fire hydrants, sanitary sewer, storm sewer, and power and communication facilities.
- ☐ Acknowledgement from water, sewer, and power utility providers that the proposed development may be adequately served with existing infrastructure, or if improvements are required to adequately serve the development, a general statement of the improvements.

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PUD Specific Items

- ❑ Legal Description of Property
- ❑ Owner's Affidavit
- ❑ List of all variances requested
- ❑ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ❑ Location and approximate dimensions of all existing and proposed structures including approximate height, bulk, and the utilization of structures including activities and the number of living units. Include architectural renderings of all proposed structures with materials listed.
- ❑ The substance of covenants, grants of easements or other restrictions to be imposed upon the use of the land, buildings and structures including proposed easements for public utilities on the property or documentation of off-site easements.
- ❑ Exterior lighting

If the application is deemed incomplete by the Zoning Administrator, a written request shall be made within ten days after the original submittal, for further information. In such case the application shall be held in abeyance until deemed complete for final review. No plan shall be formally presented for Planning Commission action until such plan is found complete, compliant with City standards, and ready for review.

Checklist Completed By:

Print Name	Signature	Date

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DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
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PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	Cayer Lane, Columbia		
	TAX MAP: 44	GROUP:	PARCEL: 14.00
SUMMARY OF NATURE OF REQUEST AND WORK	Proposed Final Master Development Plan and Preliminary Plat for proposed building 10 & 13 in the Beechcroft Plaza Master Plan.		

DATE OF PRE-APPLICATION CONFERENCE	1/25/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ☑ Preliminary Plat ❑ Final Plat ❑ PUD Preliminary Master Plan ☑ PUD Final Site Plan ❑ Multi-Family Site Plan ❑ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ☑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) Beechcroft Plaza Lot 10 & 13 ❑ Total Number of Lots _____ ❑ Total acreage _____

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	WES Engineers & Surveyors	PHONE	(931) 388-2329
ADDRESS	2486 Nashville Hwy, Columbia	EMAIL	gerald@wesengineers.com

PROPERTY OWNER NAME	Bell Group, LLC	PHONE	(615) 970-9611
ADDRESS	5133 Hardin Pike, Ste B3 Nashville, TN 37205	EMAIL	derek@bellgrouptn.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Derek Bell		4/16/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Derek Bell		4/16/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

Cayce Lane Rezoning

Project #:	23-0238	Location:	Map 101 Parcel 39.00
Applicant:	Wade Kincaid	Case Type(s):	Rezoning
Staff Planner:	Kevin C. McCarthy, AICP	Proposed Use:	Single Family Homes

PROJECT SUMMARY

The applicant requests to rezone a 30.76-acre parcel located on the east side of Cayce Lane from CD-2 (Rural Character District) to CD-3L (Neighborhood Large Lot Character District). Both the current and requested zoning designations are primarily residential in character. The Zoning Ordinance permits one dwelling unit per acre in CD-2 and two dwelling units per acre in CD-3L. The applicant previously requested to rezone the subject site to CD-3 (Neighborhood Character District) which permits four dwelling units per acre. The Planning Commission recommended approval; City Council ultimately denied the request.

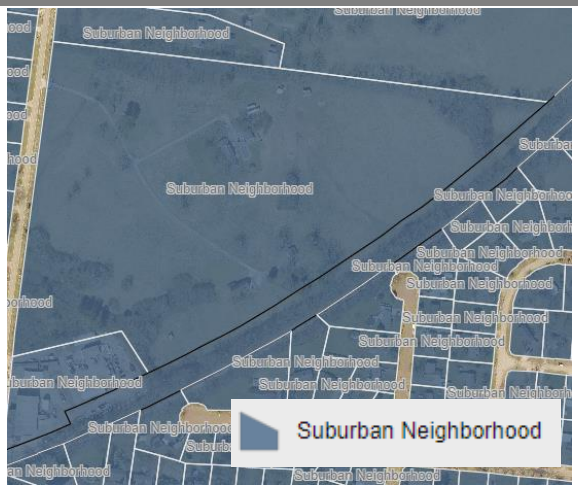
- The DRC reviewed this proposal at its July 2023 meeting.
- The request is consistent with Connect Columbia, the City's comprehensive plan.
- The concept plan generally indicates that it is possible to develop the site in conformity with the requested standards. However, greater detail will be required at the time of any subsequent Site Development Plan and Preliminary Plat.
- At the request of staff, the applicant provided specific responses to some of the rezoning criteria.
- The Planning Commission is a **recommending body** for rezoning requests.
- Templates are provided at the end of the report to assist the Planning Commission in crafting properly formatted motions.

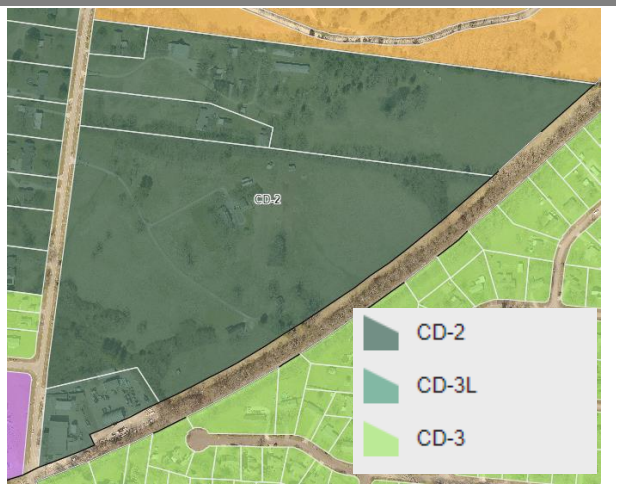
SITE INFORMATION

CURRENT ZONING	EXISTING USE	EXISTING IMP.	LAND AREA
CD-2	Residential	Single-Family Home	+/-30.76 Acres



FUTURE LAND USE MAP	ZONING MAP





SITE CONTEXT/ADJACENT PROPERTIES			
	Future Land Use	Zoning	Current Use
Subject Property	Suburban Neighborhood	CD-2	Single-Family
North	Suburban Neighborhood	CD-2	Single-Family
South	Suburban Neighborhood	CD-2	Vehicle Service/Civic
East	Suburban Neighborhood	CD-3	Single-Family
West	Suburban Neighborhood	CD-2/CD-3	Single-Family

Existing improvements on the property consist of a single-family home and various accessory structures. The home was constructed in 1960. Most of the subject site is bounded by Cayce Lane and railroad tracks. Large lot single family homes abut the site to the north. A Tennessee Department of Transportation facility borders the property on the south. The area is mostly a mix of CD-2 and CD-3 zoned residential property with the exception of the TDOT property and a self-storage facility. The future land use of the subject property and all adjacent properties is Suburban Neighborhood.

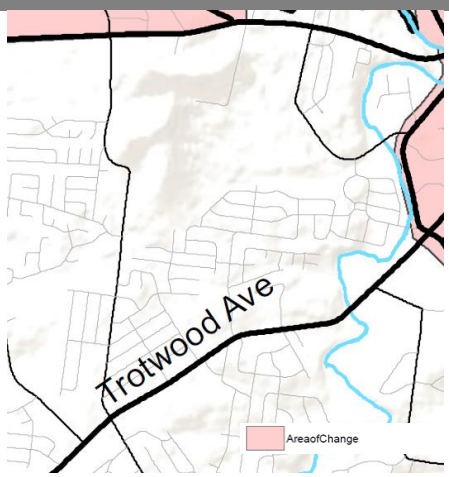
CONSISTENCY WITH CONNECT COLUMBIA

Suburban Neighborhood: The future land use of the subject site is Suburban Neighborhood. The Character Area is conducive to residential development and neighborhoods with limited intermixed and compatible civic uses (Connect Columbia, p. 22). The Future Land Use Plan indicates that "the general development pattern is defined by a single use activity on individual lots" (Connect Columbia, p. 22). Green space is largely incorporated on individual lots; neighborhood and community parks should be located within neighborhoods to enhance the quality of life. Development should emphasize connectivity and housing diversity (Connect Columbia, p. 23). The Character Area Matrix from page twenty-two of the Future Land Use Plan (excerpted below) is a guide to approving requests for zoning map amendments and Planned Unit Developments. The future land use classification is implemented by the CD-3L and CD-3 character districts, as well as PUDs.

CHARACTER AREA MATRIX				
	Development Pattern	**Zoning Category and Uses**	**Infrastructure**	**Design Standard**
SUBURBAN NEIGHBORHOOD	**Is the property in an Area of Change?** **No:** The development pattern is established. Changes to overall character of the area should rarely occur. **Yes:** The development pattern is evolving. Changes to the area are likely as development occurs. New development should respect both the natural environment and blend with existing, surrounding neighborhood assets.	**Residential Uses Zoning Category:** Low Density Residential District and Medium Residential. **Public and Civic Uses Zoning Category:** Religious Facilities, Government Facilities (low impact), and Educational Facilities.	**Not in an Area of Change:** Limited new services, with mostly in-fill enhancements to existing infrastructure. **Within an Area of Change:** Extensions to transportation, water, sewer, and other services should be expected. New service or extensive redevelopment of existing services should be vetted and reviewed by Planning Commission and City Council as a primary element of approval.	Scale: New dwellings and structures should be compatible with the established character of the area. Architecture: New developments should include a mix of architectural styles. Residential garages, if front-facing, should be recessed from the front façade of the structure. Civic use should respect the residential character, while providing architectural interest.

AREA OF CHANGE

The subject site **is not located** in an Area of Change (Connect Columbia Map 3). In 2017 the Planning Commission determined that the development pattern was established. Changes to overall character of the area should rarely occur. The designation does not necessarily mean that any particular development proposal is inconsistent with Connect Columbia. It does mean that the Planning Commission may pause to ensure the context of the area surrounding the subject property is considered fully in the review process. (Connect Columbia p. 14).

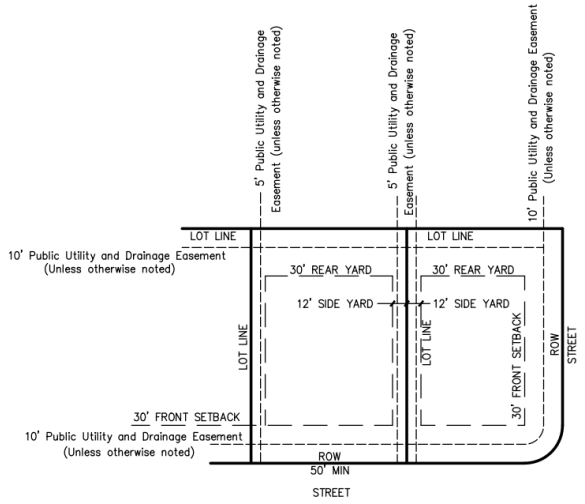


CONFORMITY WITH ZONING ORDINANCE

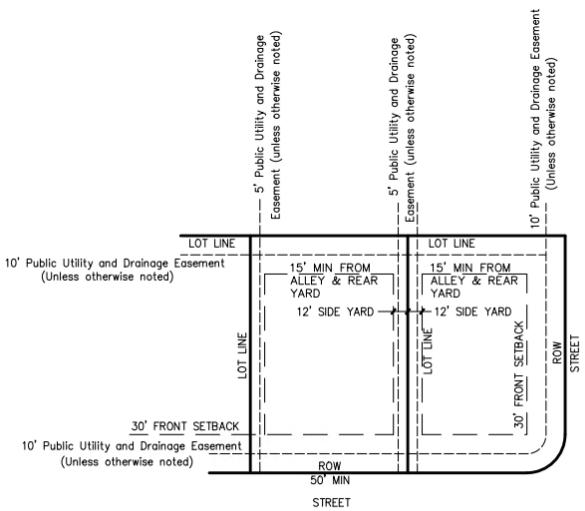
As required by **§ 8.5.19.F.3** of the Zoning Ordinance, the applicant provided a concept plan (i.e. "Sketch Development Plan") demonstrating that it is possible to develop the property in conformity with the standards applicable to the requested zoning designation. Any development plan/preliminary plat would be required to comply with Zoning Ordinance 4400, adopted on July 14th, 2022. This request for rezoning simply establishes entitlements under the zoning ordinance, not a vested right to develop the site as depicted in the concept plan.

Lots, Building Sites & Bulk Standards

- **The concept plan depicts single family lots which generally conform to the CD-3L bulk standards listed in Table 4.3.1-B of the Zoning Ordinance.**
    - The Ordinance requires a minimum lot width of 100'.
    - The Ordinance requires minimum setbacks of:
        - 30' front setback principal and secondary frontages;
        - 12' side setback; and
        - 30' rear setback, measured from the rear property line; or 15' from the centerline of rear alley as applicable.
    - The applicant's concept proposes two lot layouts, including a handful of lots served by rear alleys. Both conform to the CD-3L setbacks.



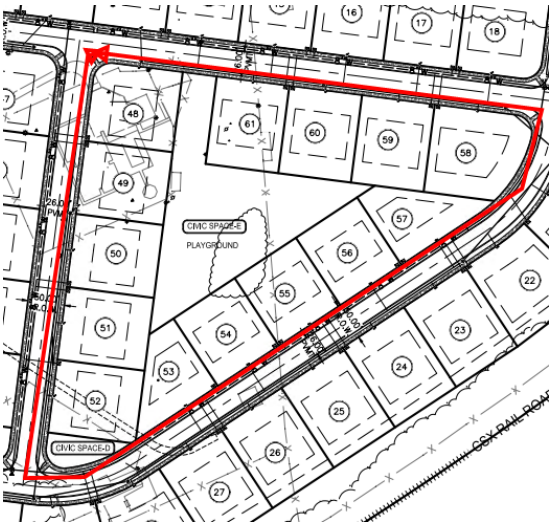
SUBDIVISION
TYPICAL LOT LAYOUT



SUBDIVISION
TYPICAL LOT LAYOUT
ALLEY LOADED

Blocks, Thoroughfares & Connectivity

- **The concept plan demonstrates that development of the site could conform to the applicable standard for block formation and size**.
    - The Zoning Ordinance requires that Thoroughfares on development sites by arranged to form blocks (**§ 5.2.2.D**, p.308).
    - Block formation allows the creation of lots with front-to-back discipline. This arrangement of public and private space (i.e. "Layers") is the animating principle of the Ordinance.
    - A block perimeter may not exceed 3,600 feet (Table **4.3.1-B**, p. 57; Table **5.2.2.D**, p. 308).
    - The largest block depicted in the concept plan has a perimeter of less than 2,200 feet. Lots along the northern edge of the property establish a block pattern which could be continued by subsequent development on adjacent parcels.
    - Lots on the edge of the property along the railroad track deviate from the block patter as permitted by **§ 5.2.2**.



Civic Spaces

- **The concept plan indicated that it is possible to develop the site with required Civic Space in the form of Playgrounds, Greens, and Pocket Parks dispersed throughout the development. Additional details will be required for any subsequent Site Development Plan or Preliminary Plat.**

- Section **5.3.1** of Zoning Ordinance requires any development parcel[1] to utilize at least 5% but no more than 20% of its gross acreage as Civic Space conforming to the standards of Table 5.3.3-A.
- The applicant proposes to dedicate 7.95 acres (25.8%) of the 30.76-acre site to Civic Space.
- Section **5.3.3** offers eight Civic Space types that include green space, natural areas, pocket parks, etc.
- Each Civic Space type has its own standards for intent, size, frontage, character, and typical facilities.
- Section **5.3.3.B** further requires civic space designed and equipped as a playground within 1,300 feet of each lot within a CD-3L development.
- The concept plan depicts eight Civic Spaces, primarily green space, throughout the development. Some of the spaces may not meet the Planning Commission's standards for the applicable Civic Space type. Conformity with the standards will be evaluated at Site Development Plan and Preliminary Plat.

Type	Number	Area
Playground	2	1.38 acres
Green	2	5.90 acres
Pocket Park	4	0.67 acres

Tree Preservation

- **Section 4.3.16 of the Zoning Ordinance requires a percentage of existing tree cover to be preserved based upon the existing canopy on the development site.**
  - The applicant has not provided a tree preservation plan, and is not required to do so as part of a concept plan.
  - Any subsequent Site Development Plan or Preliminary Plat will require a tree preservation plan.
  - The preservation of existing tree canopy may alter the site design.

[1] Development Parcel: a parcel of land: (1) which, either alone or together with one or more other parcels under a common Development scheme, program or plan, is ten (10) or more gross acres; (2) with respect to the Development of which any new Thoroughfare, Internal Drive, or extension or change of the design of any existing Thoroughfare or Internal Drive is required or will be made or proposed; or (3) with respect to which any District assignment or any Thoroughfare or Internal Drive or alignment thereof is proposed to be made or changed by a Zoning Map or Zoning Map amendment. (§ 9.3, p. 490).

REVIEW PROCESS

The Development Review Committee evaluated the proposed Annexation at its July 2023 meeting, as directed by section **8.3.7** of the Zoning Ordinance. Technical comments are provided in the agenda package.

Section **8.5.19** of the Zoning Ordinance directs the Planning Commission to review and make a recommendation on all proposed changes to the Official Zoning Map. The Planning Commission is the recommending body for rezonings under **§ 8.3.3.B.3** of the Zoning Ordinance.

Section **8.5.19.H.4** of the Zoning Ordinance establishes the review criteria for approval of all changes to the Official Zoning Map:

a. The Rezoning is consistent and not in conflict with the Comprehensive Plan or other applicable approved local plans for the area;
b. It has been determined that the legal purposes for which zoning exists, as set forth in Section 1.5 [, are not contravened]; [2]
c. It has been determined that there will be no adverse effect upon Adjoining property owners unless such effect can be justified by the overwhelming public good or welfare;
d. It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public;
e. It has been determined that conditions affecting the area have changed to a sufficient to warrant the Zoning Map Amendment or that the existing zoning of the property was the result of a mistake;
f. It has been determined that adequate school, road, parks, wastewater treatment, water supply, and stormwater drainage facilities are available

SUMMARY OF DEVELOPMENT REVIEW COMMITTEE COMMENTS

The DRC reviewed this proposal at its July 2023 meeting. A full list of comments, and the applicant's responses, is provided in the agenda packet. Some key comments are noted below.

- **Planning** asked the applicant to provide a narrative response to criterion **8.5.19.H.4(e)** explaining why the applicant believes conditions affecting the area have changed sufficiently to warrant the Zoning Map Amendment. This request is due to the failure of the applicant's recent request to rezone the subject site.

[2] Ordinance 4400 contains this incomplete sentence. The previous ordinance contained a nearly identical list of criteria at § 3.18.7.B. The corresponding criterion in Ordinance 3638 read "the legal purposes for which zoning exists are not contravened."

- Planning also made a number of advisory comments. Specifically, planning staff noted that although the Zoning Ordinance permits gravel driveways in CD-3L (**Table 4.3.1-B, p. 62**), they are not appropriate in a 61-lot subdivision within the urbanized area of Columbia. If this project progresses to Site Development Plan, staff will recommend that Planning Commission request that the developer provide restrictive covenant prohibiting installation of gravel driveways.
- Columbia Water System's (**CPWS**) consultant (Inflow) noted that a water availability letter was issued on May 8, 2023. The letter will remain valid for 120 days.
- **Maury County Schools** noted that the site is currently in the attendance zones of Woodard Elementary, Whitthorne Middle, and Central High School. New construction or realignment of school attendance zones may be necessary to accommodate new students. This is a standard comment from the school system.

COMMENTARY FROM PROFESSIONAL PLANNING STAFF

The requested CD-3L zoning is consistent with Connect Columbia. The subject site's future land use classification is Suburban Neighborhood. The future land use classification is implemented by the CD-3L and CD-3 character districts, as well as PUDs.

Planning Commission may study the possibility of adverse impacts on surrounding property owners. The previous rezoning request for this property garnered significant public comment. At the request of the Planning Commission, the applicant provided a traffic study (not usually required for a rezoning), safety study, and storm water analysis. Although no material adverse impacts to other properties are known to staff at this time, there is clearly concern in the community about compatibility of development. The reduced density of CD-3L may, or may not, be more appropriate than the CD-3 previously requested. The applicant makes this argument in the response to comments: "[l]ower density gives more green space for water issues, will have less traffic, and will fit more with the existing character of the small portion of Cayce Lane directly across from [the subject] property."

Conditions affecting the area may have changed to a sufficient degree to warrant the Zoning Map Amendment. In response to comments, the applicant makes two claims: 1) that increased demand for housing warrants the rezoning; and 2) that, upon adoption of Ordinance 4400, it was a mistake to assign the CD-2 designation to property previously zoned RS-40. Demand for housing has increased in Columbia, which may warrant rezoning of the subject property. However, critique of City Council's decision not to initiate a mass-rezoning of properties throughout the city without owners' consent does not address the criterion at 8.5.19.H.4(e).

SAMPLE MOTIONS

Approve:

Move to find, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.H** of the City of Columbia Zoning Ordinance have been satisfied and recommend approval of the proposed rezoning *[, subject to technical comments and other conditions presented by planning staff*].

Approve Subject to Conditions:

Move to find, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.H** of the City of Columbia Zoning Ordinance have been satisfied and recommend approval of the proposed rezoning, subject to the following conditions: [*list conditions of approval crafted by Planning Commission*].

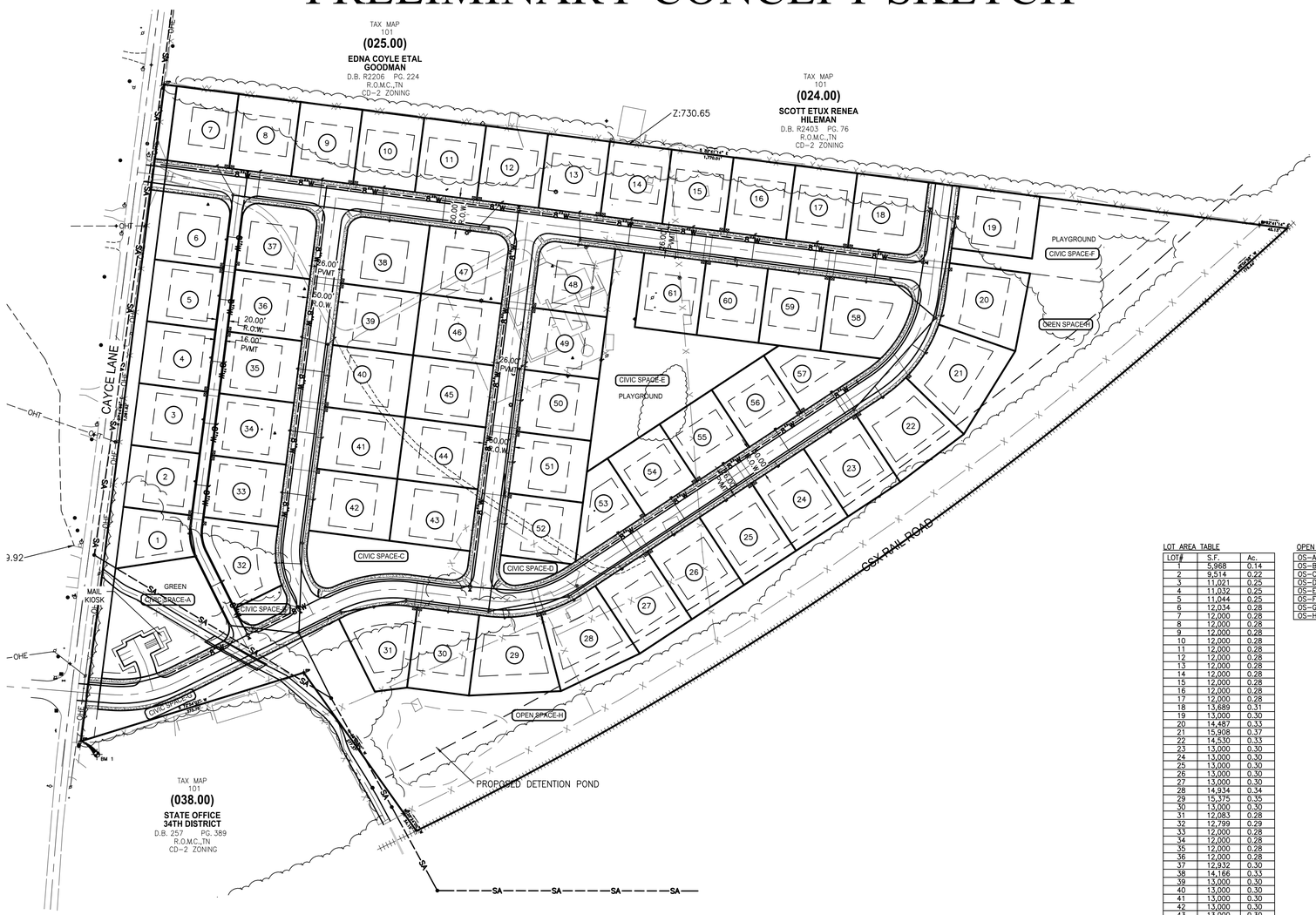
Deny:

Move to recommend denial of the requested rezoning having found, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.H** of the City of Columbia Zoning Ordinance are not satisfied [*list specific reasons for denial*].

Defer:

Move to find that there is insufficient information to decide, defer the matter to the next regularly scheduled meeting of the Planning Commission, and request that the [*applicant/staff*] provide: [*list additional information*] for review at a future meeting.

PRELIMINARY CONCEPT SKETCH


TAX MAP 101
(025.00)
EDNA COYLE ETAL GOODMAN
D.B. R2206 PG. 224
R.O.M.C.,TN
CD-2 ZONING
TAX MAP 101
(024.00)
SCOTT ETUX RENEA HILEMAN
D.B. R2403 PG. 76
R.O.M.C.,TN
CD-2 ZONING
Z:730.65
CAYCE LANE
OHT
OHE
OHE
9.92
MAIL KIOSK
GREEN
CIVIC SPACE-A
CIVIC SPACE-B
CIVIC SPACE-C
CIVIC SPACE-D
CIVIC SPACE-E
PLAYGROUND
PLAYGROUND
CIVIC SPACE-F
OPEN SPACE-G
OPEN SPACE-H
CIVIC SPACE-I
BM 1
CSX RAIL ROAD
PROPOSED DETENTION POND
TAX MAP 101
(038.00)
STATE OFFICE 34TH DISTRICT
D.B. 257 PG. 389
R.O.M.C.,TN
CD-2 ZONING
SA
SA
SA

July 17, 2023

City of Columbia
Development Services
700 North Garden Street
Columbia, TN 38401

RE: Project Name: 6218 Cayce Lane (Wade Kincaid) 22-0324
City of Columbia Planning Commission Submittal

On behalf of KCS Property, LLC, the owner for the proposed development, **WES Engineers & Surveyors** would like to request for rezoning and Concept Plan to the City of Columbia for Planning Commission approval. Comments are addressed in green.

Planning

1. Please provide a narrative response to criterion 8.5.19.H.4(e) explaining why the applicant believes conditions affecting the area have changed sufficiently to warrant the Zoning Map Amendment.
   See attached developer response letter.

2. The water availability letter is for a different nearby property (7,200 square-foot retail strip center). Also, it will expire before the August Planning Commission meeting date. Please provide the correct letter.
   We have attached the correct water availability letter for 6218 Cayce Lane. We apologize for the confusion.

3. Advisory: Gravel driveways are not appropriate in a 61-lot subdivision within the urbanized area of Columbia. If this project progresses to Site Development Plan, staff will recommend that Planning Commission request that the developer provide restrictive covenant prohibiting installation of gravel driveways (Table 4.3.1-B, p. 62).
   We have made the developer aware of this comment. We will discuss at preliminary plat.

4. Advisory: Playgrounds and other Civic Space types may need to be modified at the time of Site Development Plan to better conform to the standards at 5.3.3 of the Ordinance.
   We understand and will make sure that civic spaces conform at submittal of preliminary plat.

5. Advisory: Total of Civic Spaces ("Open Spaces) is 25.8 percent of the total site, which exceeds the 20% maximum in 5.3.1.A (p. 328). Excluding Open Space H, the total is 8.4 percent of the total site area. Please distinguish between Civic Spaces and other open spaces at the time of Site Development Plan.
   We understand and will make sure that civic spaces conform at submittal of preliminary plat.

6. Advisory: Open Space H as depicted in the concept plan will not meet the minimum standards for a Green in Table 5.3.3-B (p. 331).
   We understand and will make sure that civic spaces conform at submittal of preliminary plat.

7. Concept plan demonstrates feasibility of developing to the requested (CD-3L standard) actual development of the site will be controlled by any subsequent Site Development Plan and Preliminary Plat approval.
   We understand and will make sure that civic spaces conform at submittal of preliminary plat.

Engineering

8. No comments on rezoning

Columbia Power

9. Columbia Power System has an existing power line near your proposed development.
   We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
   • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Building

10. No comment.

Police

11. No comments provided.

Public Works

12. No comments.

Fire

13. No comments

Wastewater

14. Depth of all gravity mains should be minimized. Sewer should be located in the middle of the road.
    We understand, and will minimize depths of sewer mains at time of construction plans.

Maury County Schools

15. Woodard Elementary, Whitthorne Middle, Central High School
    See Attached Capacity Numbers
    The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Maury County E911

16. Contact Maury County 911 for application on street names and subdivision name request.

ATT

17. ATT intends to serve.

Columbia Water

18. "A water availability letter was issued on 5-8-23 and is valid for 120 days. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements detailed in the availability letter are the responsibility of the developer/owner. All public water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

Atmos Energy

19. No comment provided.

Duck River Electric Membership Corp

20. No comments provided.

Maury County Highway Dept.

21. No comment provided.

ATTACHMENTS: Concept Plan

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

If you have any questions or comments with this submittal, please do not hesitate to contact me directly.

Sincerely,
WES Engineers & Surveyors

Gerald W. Vick, PE
Principal

CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, July 11, 2023

ITEM NO.
23-0238

DESCRIPTION: Proposed rezoning from CD-2 to CD-3L

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Planning

1. Please provide a narrative response to criterion 8.5.19.H.4(e) explaining why the applicant believes conditions affecting the area have changed sufficiently to warrant the Zoning Map Amendment.
2. The water availability letter is for a different nearby property (7,200 square-foot retail strip center). Also, it will expire before the August Planning Commission meeting date. Please provide the correct letter.
3. Advisory: Gravel driveways are not appropriate in a 61-lot subdivision within the urbanized area of Columbia. If this project progresses to Site Development Plan, staff will recommend that Planning Commission request that the developer provide restrictive covenant prohibiting installation of gravel driveways (Table 4.3.1-B, p. 62).
4. Advisory: Playgrounds and other Civic Space types may need to be modified at the time of Site Development Plan to better conform to the standards at 5.3.3 of the Ordinance.
5. Advisory: Total of Civic Spaces ("Open Spaces) is 25.8 percent of the total site, which exceeds the 20% maximum in 5.3.1.A (p. 328). Excluding Open Space H, the total is 8.4 percent of the total site area. Please distinguish between Civic Spaces and other open spaces at the time of Site Development Plan.
6. Advisory: Open Space H as depicted in the concept plan will not meet the minimum standards for a Green in Table 5.3.3-B (p. 331).
7. Concept plan demonstrates feasibility of developing to the requested (CD-3L standard) actual development of the site will be controlled by any subsequent Site Development Plan and Preliminary Plat approval.

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• Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

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    The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

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Atmos Energy

19. No comment provided.

Duck River Electric Membership Corp

20. No comments provided.

Maury County Highway Dept.

21. No comment provided.

ATTACHMENTS: Concept Plan

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

Paul Keltner
Director of Development Services
700 North Garden St.
Columbia, Tn 38401

Mr. Keltner,

This letter serves as a response to the staff comments regarding the rezoning of 6218 Cayce Lane to CD-3L, specifically, Planning Comment 1. 8.5.19.h.4.(e). This criterion requires a determination that conditions affecting the area have sufficiently changed, warranting a Zoning Map Amendment or that the existing zoning was the result of a mistake.

Since 2010, Columbia has seen significant growth in population making our city and Maury County one of the fastest growing areas in Tennessee. Our available housing has not kept up with that growth and the cost of housing for both owners and tenants has dramatically outpaced both the population growth and the availability of homes within the city limits. This growth has primarily occurred on the north side of Columbia, but is now rolling through the center of the city and to the south, southeast and southwest parts of Columbia. The Comprehensive Plan identifies this area as Suburban Neighborhood, and indeed, this is a classification that has been applied, not just by the Comprehensive Plan, and not just to this parcel, but, to the entirety of Cayce Lane from Trotwood Avenue north to Hampshire Pike since the enactment of the Maury County Comprehensive Plan in 2011 and as it has been revised.

While the need for additional housing shows that conditions are sufficiently changed, the general policy of simply translating the prior zoning under the prior code to the existing zoning under the new code was a mistake for this parcel, and many others within the city limits of Columbia. CD-2 is a rural lot designation that is simply unsuitable for property within the city limits and especially for property with a future land use of Suburban Neighborhood. It has created an inconsistency with the majority of the neighborhoods surrounding and along Cayce Lane that should be remedied to place this parcel in compliance with the Comprehensive Plan and in accordance with 1.5.1.H and 1.5.1.K of the code.

This project is in its second iteration of a plan for development. The initial request for CD-3 was given a recommendation for approval by the planning staff, the Planning Commission recommended approval to City Council after determining that 8.5.19.H.4(e) was satisfied. Despite this, the City Council voted to deny the prior request. As requested by the Planning Commission for the prior request, we ordered a traffic and safety study, as well as a water study. We listened to the commentary of the neighbors, and the concerns of all affected parties. After much discussion, analysis of the data and feedback from City Council, we feel that CD-3L fits the needs of the community growth, as would CD-3, and that either zoning would bring this property into compliance with the Comprehensive Plan. Lower density gives more green space for water issues, will have less traffic, and will fit more with the existing character of the small portion of Cayce Lane directly across from our property. At this time, we request the rezoning of 6218 Cayce Lane to CD-3L. Should you have any questions, please feel free to contact us at any time.

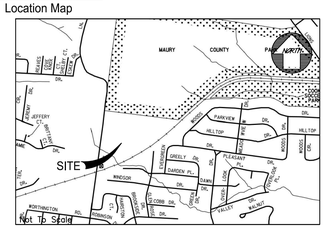
Thank you,

Wade Kincaid
KCS Property, LLC

PRELIMINARY CONCEPT SKETCH



Location Map



© 2023

SITE DATA:

OWNER: KCS PROPERTY, LLC
1985 RIDGECREST DRIVE
COLUMBIA, TN 38401

PARCEL NUMBER: TAX MAP 101 PARCEL 039.00
DEED BOOK: R2877, PG 600

SUBJECT PARCEL ZONING: CURRENT ZONING CD-2
PROPOSED ZONING CD-3L

ACREAGE OF SITE: 30.76 ACRES
(PROPOSED 222,599.31 S.F. - 5.11 Ac. RIGHT OF WAY DEDICATION)

MINIMUM REQUIRED BUILDING SETBACKS:

30' FRONT
30' REAR OR 15' REAR IF ALLEY LOADED
12' SIDE
30' SIDE SETBACK FOR CORNER LOTS

UTILITY SERVICES:

WATER SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

PURPOSE NOTE: CONSTRUCT 5,117.22 L.F. OF ROADWAY AND PROVIDE 61 RESIDENTIAL LOTS.

NOTES:

1. INSTALLATION OF HVAC EQUIPMENT IN P.U.D.E.'s WITH BURIED PIPES IS PROHIBITED.
2. ALL DRAINAGE SWALES AND BERMS TO BE MAINTAINED BY INDIVIDUAL HOMEOWNERS.

LOT AREA TABLE

LOT#	S.F.	Ac.
1	5,968	0.14
2	9,514	0.22
3	11,021	0.25
4	11,032	0.25
5	11,044	0.25
6	12,034	0.28
7	12,000	0.28
8	12,000	0.28
9	12,000	0.28
10	12,000	0.28
11	12,000	0.28
12	12,000	0.28
13	12,000	0.28
14	12,000	0.28
15	12,000	0.28
16	12,000	0.28
17	12,000	0.28
18	13,689	0.31
19	13,000	0.30
20	14,487	0.33
21	15,908	0.37
22	14,530	0.33
23	13,000	0.30
24	13,000	0.30
25	13,000	0.30
26	13,000	0.30
27	13,000	0.30
28	14,934	0.34
29	15,375	0.35
30	13,000	0.30
31	12,083	0.28
32	12,799	0.29
33	12,000	0.28
34	12,000	0.28
35	12,000	0.28
36	12,000	0.28
37	12,932	0.30
38	14,166	0.33
39	13,000	0.30
40	13,000	0.30
41	13,000	0.30
42	13,000	0.30
43	13,000	0.30
44	13,000	0.30
45	13,000	0.30
46	13,000	0.30
47	14,166	0.33
48	13,066	0.30
49	12,000	0.28
50	12,000	0.28
51	12,000	0.28
52	11,987	0.28
53	9,545	0.22
54	11,000	0.25
55	11,000	0.25
56	11,000	0.25
57	10,218	0.23
58	14,933	0.34
59	12,000	0.28
60	12,000	0.28
61	12,000	0.28

OPEN SPACE AREA TABLE

OS-A	22,695	0.52	GREEN SPACE
OS-B	3,004	0.07	POCKET PARK
OS-C	15,583	0.36	POCKET PARK
OS-D	3,551	0.08	POCKET PARK
OS-E	39,195	0.90	PLAYGROUND
OS-F	20,890	0.48	PLAYGROUND
OS-G	6,850	0.16	POCKET PARK
OS-H	224,400	5.38	GREEN SPACE

BENCHMARK

BENCHMARK #1
EXIST IRON PIN
ELEV = 691.10'
N = 464,418.94
E = 1,643,263.05
TN STATE PLANE
COORDINATE SYSTEM,
NAD 83 DATUM

WARNING! UTILITY LINES!

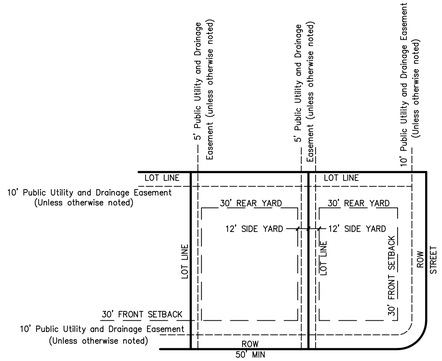
THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee811 Know what's below Call before you dig

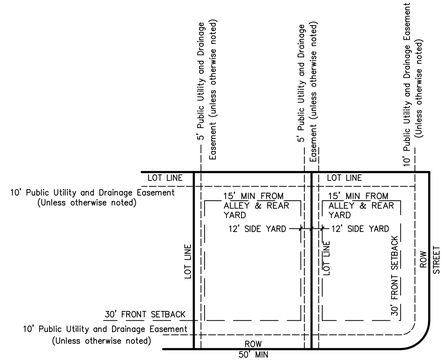
LEGEND

	EXISTING	PROPOSED
WATER MAIN	6" W	8" W
SANITARY SEWER	8" SA	8" SA
STORM SEWER	18" ST	18" ST
OVERHEAD	OHT	OHT
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		IPS
EXISTING IRON PIN	IP	
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (ST)
ASPHALT
CONCRETE
PARKING SPACES (14)



SUBDIVISION TYPICAL LOT LAYOUT



SUBDIVISION TYPICAL LOT LAYOUT ALLEY LOADED

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER, BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED. ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

WES ENGINEERS & SURVEYORS

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED WITHIN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS (FIRMs) MAP NUMBER 47117C0280E DATED APRIL 16, 2007.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

GERALD W. VICK III — 107415 — STATE OF TENNESSEE — REGISTERED ENGINEER — AGRICULTURAL & BIOSYSTEMS ENGINEER — COMMERCIAL

gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
KCS PROPERTY, LLC
1985 Ridgecrest Drive
Columbia, TN 38401

REVISIONS	DATE

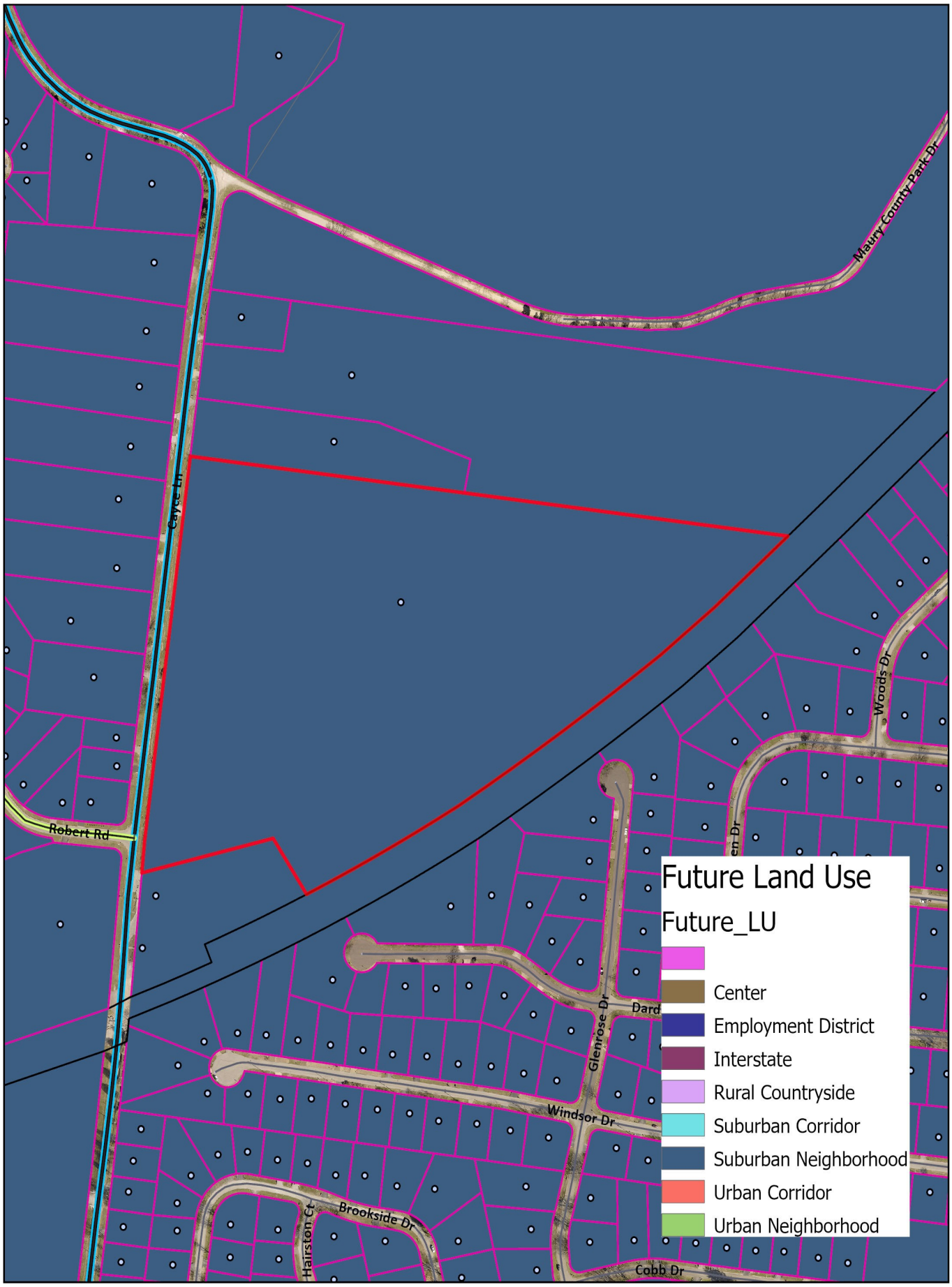
CAYCE LANE

6218 CAYCE LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
PRELIMINARY CONCEPT SKETCH

Drawn: RP | Checked: GV | Approved: GV | Date: Nov. 21, 2022

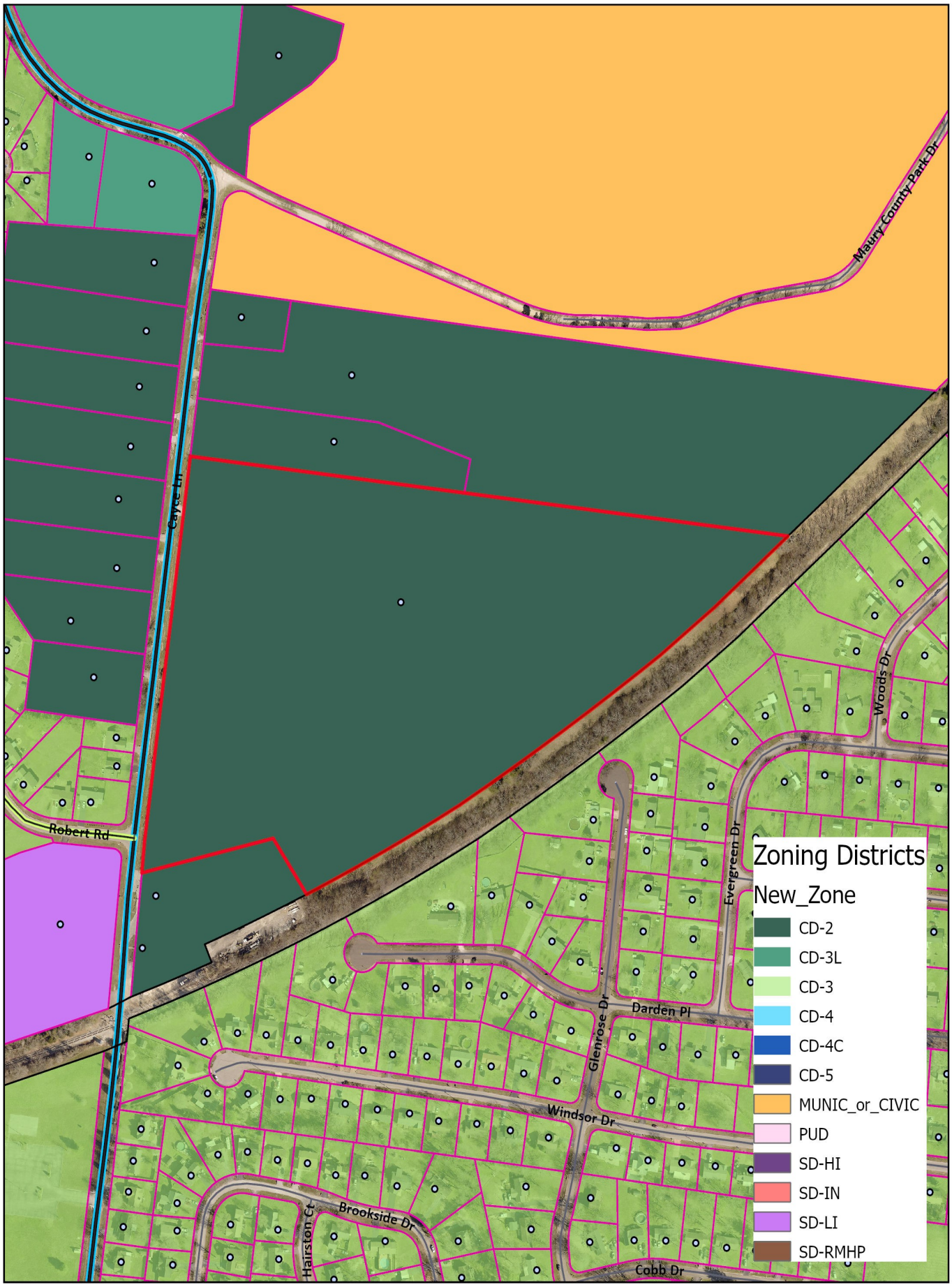
Job. no. 22569 | Scale: Vertical: 1"=100' Horizontal: | MP-1

FILE:J:\WES_Engineers_Surveyors 2022\22569 - 6218 Cayce Lane - KCS\Dwg\Engineering\22569 KCS Cayce LaneAlley Loaded_5_3L.dwg



Case#23-0238
6218 Cayce Lane

CITY OF COLUMBIA TENNESSEE
DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541



Case#23-0238
6218 Cayce Lane

CITY OF COLUMBIA TENNESSEE
DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

CPWS

May 8, 2023

Mr. Gerald W. Vick P.E.
WES Engineers & Surveyors
2486 Nashville Hwy
Columbia, TN 38401
Sent via email: gerald@wesengineers.com

RE: Water Availability Letter
6218 Cayce Lane – 107 Units
Tax Map 101, Parcel 39
Columbia, Maury County, TN

Dear Mr. Vick:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 107 units. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 12-inch water main located on Cayce Lane.
- Minimum size 8-inch, looped water mains will be required throughout the development.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (107 SFUs)	$41,090.00

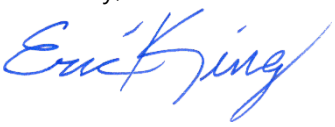
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $540 per 3/4" meter (107 meters)	$57,780.00
Impact Fee: $4,500 per 3/4" meter (107 meters)	$481,500.00
Total Meter and Impact Fees Due =	**$539,280.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-096

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: 892 6201 Cayce Ln DATE:

MODEL BY: Inflo Design Group, LLC SYS. DEMAND Max Day DURATION: 1 hrs.

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: 6218 Cayce Ln

MODEL DATA

FLOW HYDRANT(S)	892	n/a	n/a
GPM:	**850**	0	0

TOTAL FLOW DURING SIMULATION: **850** GPM

GAUGE HYDRANT

HYDRANT # & LOCATION: 601 6221 Cayce Ln

CONDITION 1

STATIC 54 PSI RESIDUAL: 47 PSI

CONDITION 2

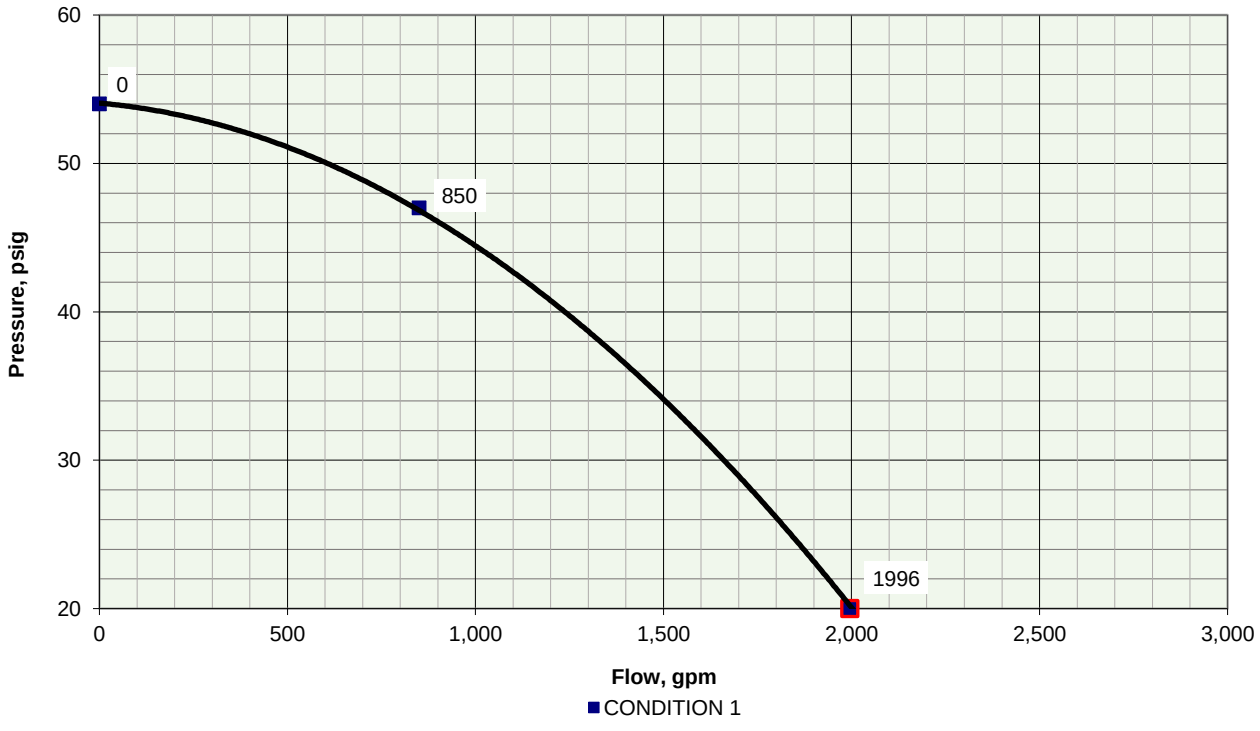
STATIC _____ PSI RESIDUAL: _____ PSI

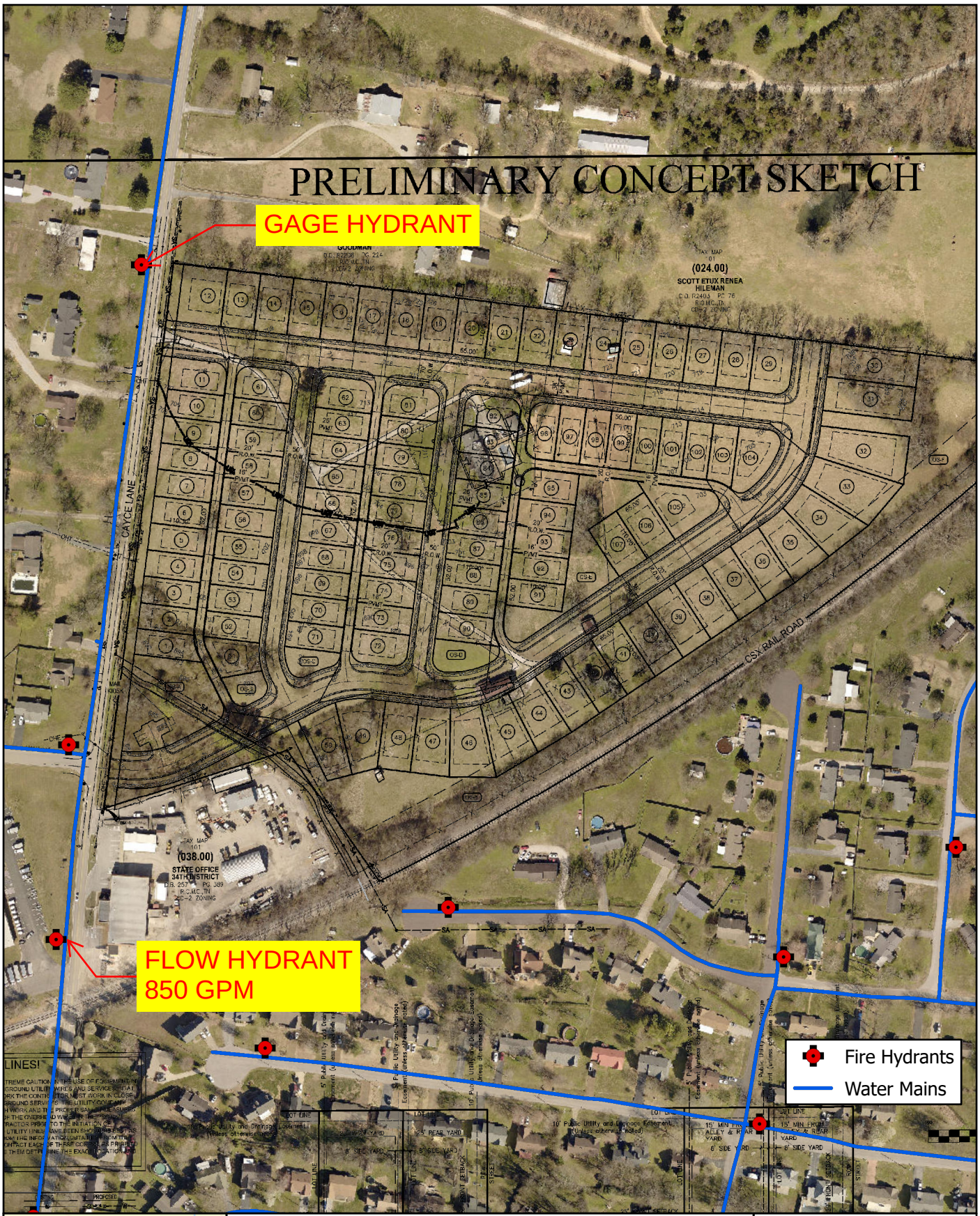
RESULTS: AT 20 PSI RESIDUAL

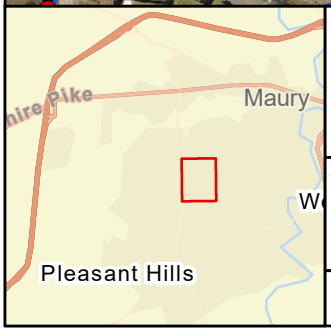
CONDITION 1 **1996** GPM

CONDITION 2 **---** GPM

REMARKS: Performance based on service elevation of 710' and current CPWS water infrastructure and do not account for additional losses associated with development piping.







Hydrant Analysis Location Map

6218 Cayce Lane

Tax Map 101, Parcel 039.00

Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

2022

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

N

0 0.03 0.05 Mi

0 0.05 0.1 Km

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750 Old Hickory Boulevard,
Suite 1-230
Brentwood, Tennessee 37027
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May 10, 2023

Glenn Harper, PE
City Engineer
City of Columbia
700 N Garden Street
Columbia, TN 38401

Re: Cayce Residential
Traffic Impact Study
Review Comments

Dear Glenn:

This memorandum provides the findings of the independent review of the Cayce Residential Traffic Impact Study (TIS). Our review includes the traffic projections and the operational analyses; evaluation of the proposed roadway network; review and evaluation of the recommended infrastructure improvements; and identification of any recommended modifications or additions to the recommended infrastructure improvements identified in the TIS.

General Project Information

The Cayce Residential TIS, dated May 2023, was completed by Fischbach Transportation Group, LLC for WES Engineers & Surveyors. The Cayce Residential development in Columbia, TN is proposed to be located on the east side of Cayce Lane, north of the existing railroad tracks. The development will consist of 104 single-family homes with two access points along Cayce Lane. The development is expected to be complete in three years, which is a 2026 horizon. Traffic counts were conducted by Fischbach Transportation Group, LLC on a typical weekday in in March 2023 for the intersections of Hampshire Pike and Cayce Lane and Cauce Lane and Eskew Drive. Counts from the 2020 Highlands development were used for the intersection of Williamsport Pike and Cayce Lane. Counts from the 2022 Highland Convenience Market development were used for the intersection of Trotwood Avenue and Cayce Lane/Sunnyside Lane. To account for background traffic, the existing traffic was grown by 2% per year for three years. Additionally, the traffic from previously approved developments, Trotwood & Foster, Crichton Property, Highland Convenience Market, and The Highlands, was included in the background growth.

Road Audit of Cayce Lane

In the vicinity of the project site, Cayce Lane includes negligible horizontal curvature and minimal vertical curvature. However, between Eskew Drive and the project site, there are two significant horizontal curves. The western of the two curves, immediately south of Eskew Drive, has a radius of approximately 600 feet, and the eastern curve has a radius of approximately 100 feet. Existing signage includes warning signs to mark intersections, sharp curves, reduced speed limits in advance of the curves, and retro-reflective chevron signs are provided through each of the curves. Fischbach Transportation Group, LLC

conducted a traffic count and speed study along Cayce Lane, south of Wellington Drive. The results indicate that this roadway segment accommodates approximately 4,300 vehicles per day with the AM and PM peak hours each representing approximately 9% of the total daily volume. The data indicates that approximately 71% of the vehicles along this segment are conventional passenger vehicles with an 85th percentile speed of 40mph. Crash data was obtained from the City of Columbia Police Department for the segment of Cayce Lane from Hampshire Pike to the exiting railroad tracks from January 1, 2018 through April 25, 2023. There were a total of 96 incidents along this roadway segment with 16 (16.7%) involving possible or suspected injuries. 12 of these 16 crashes occurred in the curves between Wellington Drive and the project access.

Trip Generation and Trip Distribution

Future trips generated by the Cayce Residential development were calculated using ITE's *Trip Generation*, 11th Edition based on the future land use. The land use used to determine the project-generated trips was 104 single-family detached homes. The total development is expected to produce 1,046 trips per day with 77 new trips in the AM peak hour and 103 new trips in the PM peak hour.

	Total Entering Trips	Total Exiting Trips
AM	19	58
PM	65	38

These trips were distributed throughout the study area based on a review of land uses and population densities in the area and the existing peak hour turning movement counts. The directional distribution assumes approximately 25% of the project-generated traffic will be oriented to the east along Hampshire Pike, 20% to the west along Williamsport Pike, 20% to the east along Trotwood Avenue, 15% to the south along Cayce Lane, 15% to the west along Hampshire Pike, and 5% to the west along Trotwood Avenue.

Capacity/Level of Service Analyses

The operational analyses for the intersections within the study area was completed utilizing *HCS 2023* software, which uses the methods from *Highway Capacity Manual 7th Edition*. The intersections were evaluated for the weekday AM and PM existing, background, and projected traffic conditions. Additionally, turn lane and sight distance analysis was completed.

Intersection Capacity Analysis

In the projected 2026 conditions, the analyses indicate that all of the critical turning movements are expected to operate at LOS D or better during both peak hours. Additionally, the signalized study intersections are expected to operate at LOS D or better during both peak hours.

Turn Lane Warrant Analysis

The intersections along Cayce Lane at both of the project access locations were evaluated for the need for a southbound left turn land and a northbound right turn lane based on methodology presented in *NCHRP report 457 – Evaluating Intersection Improvements: An Engineering Study Guide*. Based on the total projected peak hour traffic volumes presented in the TIS, neither a southbound left turn lane nor a

northbound right turn lane is warranted along Cayce Lane at the project access locations. *TDOT Design Guidelines should be utilized for determining if a turn lane is warranted as well as length required. NCHRP does not provide length.*

Intersection Sight Distance Analysis

The available intersection sight distance was evaluated for the intersection of Cayce Lane and Eskew Drive. The criteria for intersection sight distance is provided in the AASHTO *Policy on Geometric Design of Highways and Streets*, commonly known as the *Green Book*. The sight distance available to and from the north at the intersection of Cayce Lane and Eskew Drive is adequate. However, insufficient intersection sight distance is available to and from the south at the intersection of Cayce Lane and Eskew Drive due an existing curve.

Recommendations Identified in the TIS

The following conclusion and recommendations are included in the study and our response.

Williamsport Pike and Cayce Lane

- The analyses conducted for the purposes of this study indicate that all of the critical turning movements at this unsignalized intersection will operate at LOS C or better during both peak hours with existing, background, and total projected conditions. Therefore, no laneage or traffic control modification are recommended at this intersection in conjunction with the proposed project.
  Staff Response: *We agree that no additional improvements are needed at this intersection due to the Cayce Lane Residential development.*

Hampshire Pike and Cayce Lane

- The analyses conducted for the purposes of this study indicate that this signalized intersection operates at LOS D or better during both peak hours with existing, background, and total projected conditions. Therefore, no laneage or traffic control modifications are recommended at this intersection in conjunction with the proposed project.
  Staff Response: *We agree that no additional improvements are needed at this intersection due to the Cayce Lane Residential development.*

Cayce Lane and Eskew Drive

- The analyses conducted for the purpose of this study indicate that all of the critical turning movements at this unsignalized intersection will operate at LOS B or better during both peak hours with existing, background, and total projected conditions. Therefore, no laneage or traffic control modifications are recommended at this intersection in conjunction with the proposed project.
  Staff Response: *We agree that no additional improvements are needed at this intersection due to the Cayce Lane Residential development.*

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Brentwood, Tennessee 37027
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Trotwood Avenue and Cayce Lane/Sunnyside Lane

- The analyses conducted for the purpose of this study indicate that this signalized intersection operates at LOS D or better during both peak hours with existing, background, and total projected conditions. Therefore, no laneage or traffic control modifications are recommended at this intersection in conjunction with the proposed project.
  Staff Response: *We agree that no additional improvements are needed at this intersection due to the Cayce Lane Residential development.*

Cayce Lane and Northern Project Access

- The analyses conducted for the purposed of this study indicate that all of the critical turning movements at this unsignalized intersection will operate at LOS B or better during both peak hours with total projected conditions, and the average vehicle queues are expected to be low. Therefore, the project access should be constructed to include one eastbound entering lane and one westbound exiting lane.
- The analyses conducted for the purposes of this study indicate that the intersection of Cayce Lane and the northern project access will operate acceptably even without dedicated turn lanes on Cayce Lane. Also, the total projected traffic volumes at this intersection are below the thresholds that have been established to identify when dedicated turn lanes are warranted at unsignalized intersections. Therefore, the intersection of Cayce Lane and the northern project access should be constructed as shown in the figure included with these conclusions and recommendations.
  Staff Response: *We agree that this access should be constructed with one entering and one existing lane and that dedicated turn lanes along Cayce Lane are not warranted. Since Cayce Lane is an existing road, sight distance should have been measured in the field at the approximate access location. This access should be constructed according to MUTCD, AASHTO, TDOT, and City of Columbia standards, including providing sufficient sight distance.*

Cayce Lane and Southern Project Access

- The analyses conducted for the purposed of this study indicate that all of the critical turning movements at this unsignalized intersection will operate at LOS B or better during both peak hours with total projected conditions, and the average vehicle queues are expected to be low. Therefore, the project access should be constructed to include one eastbound entering lane and one westbound exiting lane.
- The analyses conducted for the purposes of this study indicate that the intersection of Cayce Lane and the northern project access will operate acceptably even without dedicated turn lanes on Cayce Lane. Also, the total projected traffic volumes at this intersection are below the thresholds that have been established to identify when dedicated turn lanes are warranted at unsignalized intersections. Therefore, the intersection of Cayce Lane and the northern project access should be constructed as shown in the figure included with these conclusions and recommendations.
  Staff Response: *We agree that this access should be constructed with one entering and one existing lane and that dedicated turn lanes along Cayce Lane are not warranted. Since Cayce Lane is an existing road, sight distance should have been measured in the field at the approximate*

access location. This access should be constructed according to MUTCD, AASHTO, TDOT, and City of Columbia standards, including providing sufficient sight distance.

Future Improvements to Cayce Lane

- Currently, Cayce Lane includes two significant horizontal curves between Eskew Drive and the project site. The western of these curves, immediately south of Eskew Drive, has a radius of approximately 600 feet, and the eastern curve has a radius of approximately 100 feet. Also, limited intersection sight distance is available for motorists on Eskew Drive, and these limitations are compounded by the existing grade on Eskew drive, which requires additional start-up time for motorists turning onto Cayce Lane. However, the vehicle speeds measured on Cayce Lane are reasonable, and ample warning signage is provided to notify motorists of upcoming intersections, sharp curves and reduced speed limits in advance of these curves. Also, retro-reflective chevron signs are provided through each of the two curves.
- In order to maximize safe and efficient operations on this segment of Cayce Lane, the following short-term and long-term modifications should be considered even if the proposed project is not constructed in order to address existing conditions on Cayce Lane.
  1. **Thermoplastic Rumble Strips**
     - Surface-mounted rumble strips are relatively low-cost treatments that provide auditory and palpable warning of upcoming conditions. Specifically, these treatments can encourage motorists to reduce speeds and remain alert. However, because these treatments rely on noise and vibration, they can disturb nearby residents and noise-sensitive habitats. Also, they require maintenance.
     - Currently, the *Manual on Uniform Traffic Control Devices (MUTCD)*, which was published in 2009 by the Federal Highway Administration, does not provide any guidance about the design and installation of transverse rumble strips. Therefore, if rumble strips are installed on Cayce Lane in advance of each of the two curves, the design and installation of these arrays should be consistent with industry standards and should be reviewed and approved by the City of Columbia Engineering Department.
     - Thermoplastic rumble strips are not specifically warranted by the proposed residential project and should be considered even if the proposed project is not constructed.
  2. **Clearing of Vegetation**
     - Currently, numerous utility poles are located on the north side of Cayce Lane, through and between the two existing curves. Also, stands of mature trees are located on both sides of the western curve and the inside of the eastern curve, limiting the sight distances available for motorists traveling through this roadway segment. Although some or all of these trees may be located outside the public right-of-way, consideration should be given to removing all of the trees within 10 feet of the edge of pavement between Eskew Drive and the gravel driveway located within the eastern curve.

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- The clearing of vegetation is not specifically warranted by the proposed residential project and should be considered even if the proposed project is not constructed.

3. **Realignment of Cayce Lane**
   - Should thermoplastic rumble strips and the clearing of vegetation not reduce the frequency of vehicle incidents on Cayce Lane within the two existing curves, the most effective way to reduce vehicle conflicts on this roadway segment would be to realign Cayce Lane to reduce the horizontal and vertical curvature between Eskew Drive and the proposed project site. This would not be a low-cost modification. However, it would provide optimum safe and efficient operations on this corridor.
   - The potential realignment of Cayce Lane is not specifically warranted by the proposed residential project and should be considered even if the proposed project is not constructed.

   Staff Response: *We agree that these suggested improvements to Cayce Lane would improve safety along Cayce Lane near the intersection with Eskew Drive. While the potential improvements to Cayce Lane are not needed due to the Cayce Lane Residential development, it is the City's discretion to ask the developer to cover a portion or all of the lower-cost alternatives (#1 and #2 above) as part of the development's construction. As traffic increases along Cayce Lane, the City should continue to monitor the crash rate and severity of crashes. Should the City decide to implement any of the improvements, they should be constructed according to MUTCD, AASHTO, TDOT, and City of Columbia standards.*

Additional Staff Response:

- *Sight distance should have been measured during the site visit at the approximate access locations. From our review it appears that there is sufficient distance at the proposed access locations.*

Conclusion

The Cayce Lane Residential Traffic Impact Study submitted May 2023 covers the typical required traffic impact study components and identifies several feasible and beneficial infrastructure improvements. It is recommended that Fischbach Transportation Group, LLC make a note of the comments identified above; however, we require no additional evaluation or analysis.

Should you have any questions or need additional information, please contact me.

Sincerely,

Dyan C. Damron, PE, PTP
Director of Traffic, Planning & ROW
Volkert, Inc.

BK/PG:R2877/600-603
22018670

4 PGS : WARRANTY DEED	
NANCY MCMEEN 289567 - 22018670	
09/30/2022 - 10:42 AM	
VALUE	1480000.00
MORTGAGE TAX	0.00
TRANSFER TAX	5476.00
RECORDING FEE	20.00
DP FEE	2.00
REGISTER'S FEE	1.00
TOTAL AMOUNT	5499.00

STATE of TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS

This Instrument Prepared By:
Thomas M. Hutto Esq.
Dale, Hutto & Lyle, PLLC
805 South Garden Street
P.O. Box 1017
Columbia, TN 38402-1017

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, this indenture entered into between **STORMY A. WALKER,** FIRST PARTY, which expression shall include heirs, assigns and personal representatives, and, **KCS PROPERTY LLC, A TENNESSEE LIMITED LIABILITY COMPANY,** SECOND PARTY, which expression shall include heirs, assigns and personal representatives.

WITNESSETH:

For the consideration of TEN DOLLARS ($10.00), and other good and valuable considerations, the receipt of all of which is hereby acknowledged, FIRST PARTY conveys to SECOND PARTY the following described property:

Being in the Ninth (9th) Civil District of Maury County Tennessee in the city limits of Columbia Tennessee.

Beginning at a point in the center of the CSX Railroad, said point is located S 40°41'33" W a distance of 115.2" from an old concrete mile marker post (235).

Thence with the center of the railroad S 48°04'58" W a distance of 176.44; Thence with a curve with an arc length of 1528.36 with a radius of 5674.41 with a chord bearing of S 56°08'55" W with a chord length of 1523.75 to a point in the center of the railroad; Thence leaving the railroad and running with the land of the TDOT 34th District N 35° 24'00" W a distance of 34.15 to a iron pin set in an old fence running parallel to the railroad; Thence N 35°24'00" W a distance of 277.37 to a 1 1/2" pipe; Thence S 72°54'07" W a distance of 373.75 to a iron pin set in the East line of Cayce Lane; Thence running with the east line of Cayce Lane N 07°14'55" E a distance of 1061.62 to a iron pin set. Thence leaving Cayce Lane and running with the line of Goodman S 82°42'14" E a distance of 1770.04 to a iron pin set at an old Wood Fence Post; Thence S 82°42'14"E a distance of 45.13 to the point of beginning having an area of 30.76.

Being the same property conveyed to Stormy A. Walker by deed recorded on September 23, 2016 in Book R2392, Page 1408, in the Maury County Register of Deeds

101-039.00

Legal description obtained from prior deed.

TO HAVE AND TO HOLD said real estate unto SECOND PARTY, together with all rights, titles, easements and appurtenances thereunto belonging, forever.

FIRST PARTY COVENANTS that it is lawfully seized and possessed of said real estate and that FIRST PARTY has a good and lawful right to convey the same, and that it is unencumbered, except for current year's property taxes; easement for private sewer line described in Deed Book 379, Page 427, Register's Office of Maury County, Tennessee; easements described in Deed Book 359, Page 205, Register's Office of Maury County, Tennessee; subject to charter right of way for CSX railroad; and any other matters of record.

FIRST PARTY FURTHER COVENANTS to forever warrant and defend the title to the above described property unto SECOND PARTY against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, this conveyance has been executed on this 30th day of September, 2022.

Stormy A. Walker

STATE OF TENNESSEE
COUNTY OF MAURY

On this 30 day of September, 2022, before me personally appeared **STORMY A. WALKER**, to me known to be the person (or persons) described in and who executed the foregoing instrument, and acknowledged that such person (or persons) executed the same as such person's (or persons') free act and deed.

Witness my hand, at office, this 30 day of September, 2022.

Notary Signature
My commission expires: June 20, 2023

BEVIN W. LYLE
STATE OF TENNESSEE NOTARY PUBLIC
MAURY COUNTY

STATE OF TENNESSEE - MAURY COUNTY

I hereby affirm that the actual consideration for this transfer or value of the property transferred, whichever is greater is **$1,480,000.00.**

Affiant

Sworn and subscribed to before me,

30th day of September, 2022.

Notary Public

My commission expires: 6/25/25

THOMAS M. HUTTO STATE OF TENNESSEE NOTARY PUBLIC MAURY COUNTY

PERSON OR AGENCY RESPONSIBLE FOR TAXES:

KCS PROPERTY LLC

1985 Ridgecrest Drive

Columbia, TN 38401

NAME AND ADDRESS OF PROPERTY OWNERS:

KCS PROPERTY LLC

1985 Ridgecrest Drive

Columbia, TN 38401

THIS DOCUMENT WAS E-RECORDED

COUNTY Maury

BOOK R2877

PAGE 0600

MAURY COUNTY
TITLE COMPANY, INC.
Real Estate. Real Attorneys. Real Simple.

805 South Garden Street
P.O. Box 2012
Columbia, TN 38402-2012
Phone (931) 388-4487
Fax (931) 381-3748
www.maurycountytitle.com

Tennessee Certification of Electronic Document

I, Brittany Brewer, do hereby make oath that I am a licensed attorney and/or the custodian of the original version of the electronic document tendered for registration herewith and that this electronic document is a true and exact copy of the original document executed and authenticated according to law on 09-30-2022 (date of document).

Affiant Signature

09-30-2022
Date

State of Tennessee
County of Maury

Sworn to and subscribed before me this 30th day of September, 2022.

THOMAS M. HUTTO
STATE OF TENNESSEE
NOTARY PUBLIC
MAURY COUNTY

NOTARY'S SEAL

Notary's Signature

My commission expires: 6/25/25

BK/PG:R2877/600-603
22018670

4 PGS : WARRANTY DEED	
NANCY MCMEEN 289567 - 22018670	
09/30/2022 - 10:42 AM	
VALUE	1480000.00
MORTGAGE TAX	0.00
TRANSFER TAX	5476.00
RECORDING FEE	20.00
DP FEE	2.00
REGISTER'S FEE	1.00
TOTAL AMOUNT	5499.00

STATE of TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS

This Instrument Prepared By:
Thomas M. Hutto Esq.
Dale, Hutto & Lyle, PLLC
805 South Garden Street
P.O. Box 1017
Columbia, TN 38402-1017

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, this indenture entered into between **STORMY A. WALKER,** FIRST PARTY, which expression shall include heirs, assigns and personal representatives, and, **KCS PROPERTY LLC, A TENNESSEE LIMITED LIABILITY COMPANY,** SECOND PARTY, which expression shall include heirs, assigns and personal representatives.

WITNESSETH:

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Being in the Ninth (9th) Civil District of Maury County Tennessee in the city limits of Columbia Tennessee.

Beginning at a point in the center of the CSX Railroad, said point is located S 40°41'33" W a distance of 115.2" from an old concrete mile marker post (235).

Thence with the center of the railroad S 48°04'58" W a distance of 176.44; Thence with a curve with an arc length of 1528.36 with a radius of 5674.41 with a chord bearing of S 56°08'55" W with a chord length of 1523.75 to a point in the center of the railroad; Thence leaving the railroad and running with the land of the TDOT 34th District N 35° 24'00" W a distance of 34.15 to a iron pin set in an old fence running parallel to the railroad; Thence N 35°24'00" W a distance of 277.37 to a 1 1/2" pipe; Thence S 72°54'07" W a distance of 373.75 to a iron pin set in the East line of Cayce Lane; Thence running with the east line of Cayce Lane N 07°14'55" E a distance of 1061.62 to a iron pin set. Thence leaving Cayce Lane and running with the line of Goodman S 82°42'14" E a distance of 1770.04 to a iron pin set at an old Wood Fence Post; Thence S 82°42'14"E a distance of 45.13 to the point of beginning having an area of 30.76.

Being the same property conveyed to Stormy A. Walker by deed recorded on September 23, 2016 in Book R2392, Page 1408, in the Maury County Register of Deeds

101-039.00

Legal description obtained from prior deed.

TO HAVE AND TO HOLD said real estate unto SECOND PARTY, together with all rights, titles, easements and appurtenances thereunto belonging, forever.

FIRST PARTY COVENANTS that it is lawfully seized and possessed of said real estate and that FIRST PARTY has a good and lawful right to convey the same, and that it is unencumbered, except for current year's property taxes; easement for private sewer line described in Deed Book 379, Page 427, Register's Office of Maury County, Tennessee; easements described in Deed Book 359, Page 205, Register's Office of Maury County, Tennessee; subject to charter right of way for CSX railroad; and any other matters of record.

FIRST PARTY FURTHER COVENANTS to forever warrant and defend the title to the above described property unto SECOND PARTY against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, this conveyance has been executed on this 30th day of September, 2022.

Stormy A. Walker

STATE OF TENNESSEE
COUNTY OF MAURY

On this 30 day of September, 2022, before me personally appeared **STORMY A. WALKER**, to me known to be the person (or persons) described in and who executed the foregoing instrument, and acknowledged that such person (or persons) executed the same as such person's (or persons') free act and deed.

Witness my hand, at office, this 30 day of September, 2022.

Notary Signature
My commission expires: June 20, 2023

BEVIN W. LYLE
STATE OF TENNESSEE NOTARY PUBLIC
MAURY COUNTY

STATE OF TENNESSEE - MAURY COUNTY

I hereby affirm that the actual consideration for this transfer or value of the property transferred, whichever is greater is **$1,480,000.00.**

Affiant

Sworn and subscribed to before me,

30th day of September, 2022.

Notary Public

My commission expires: 6/25/25

THOMAS M. HUTTO STATE OF TENNESSEE NOTARY PUBLIC MAURY COUNTY

PERSON OR AGENCY RESPONSIBLE FOR TAXES:

KCS PROPERTY LLC

1985 Ridgecrest Drive

Columbia, TN 38401

NAME AND ADDRESS OF PROPERTY OWNERS:

KCS PROPERTY LLC

1985 Ridgecrest Drive

Columbia, TN 38401

THIS DOCUMENT WAS E-RECORDED

COUNTY Maury

BOOK R2877

PAGE 0600

MAURY COUNTY
TITLE COMPANY, INC.
Real Estate. Real Attorneys. Real Simple.

805 South Garden Street
P.O. Box 2012
Columbia, TN 38402-2012
Phone (931) 388-4487
Fax (931) 381-3748
www.maurycountytitle.com

Tennessee Certification of Electronic Document

I, Brittany Brewer, do hereby make oath that I am a licensed attorney and/or the custodian of the original version of the electronic document tendered for registration herewith and that this electronic document is a true and exact copy of the original document executed and authenticated according to law on 09-30-2022 (date of document).

Affiant Signature

09-30-2022
Date

State of Tennessee
County of Maury

Sworn to and subscribed before me this 30th day of September, 2022.

THOMAS M. HUTTO
STATE OF TENNESSEE
NOTARY PUBLIC
MAURY COUNTY

NOTARY'S SEAL

Notary's Signature

My commission expires: 6/25/25

March 21, 2023

Mr. Gerald W. Vick P.E.
WES Engineers & Surveyors
2486 Nashville Hwy
Columbia, TN 38401
Sent via email: gerald@wesengineers.com

RE: Water Availability Letter
Cayce at Trotwood
5000 Trotwood Ave.
Tax Map 112, Parcel 4.05
Columbia, Maury County, TN

Dear Mr. Vick:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of a 7,200 square-foot retail strip center with 2-hour fire walls. CPWS has evaluated the projected water demands for the proposed commercial development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,500 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 12-inch water main located on the East boundary of the subject property.

- Rental/lease units will be served by a master meter. Any sub-metering for individual units is the responsibility of the applicant.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (16.3 SFUs)	$7,531.00

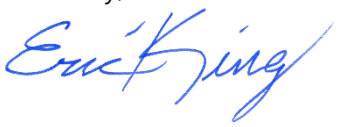
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $7,000 per 6" meter (1 meter)	$7,000.00
Impact Fee: $25,000 per 2" meter (1 meter equivalent)	$25,000.00
Total Meter and Impact Fees Due =	**$32,000.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact Mr. Jonathan Hardin or myself at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for sixty (60) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-095

CD-3L TABLE 4.3.1-B DISTRICT STANDARDS: NEIGHBORHOOD LARGE LOT CHARACTER DISTRICT



General Description

The CD-3L Neighborhood Large Lot Character District consists of primarily a low density single-family detached Residential area in which House is the predominant Building Type. It has large Lot or Building Sites, medium to deep front Setbacks and medium to wide side Setbacks. Its Thoroughfares and Internal Drives have curbs and may include Sidewalks and/or street trees, and form medium to large blocks. CD-3L is an appropriate District for the Suburban Neighborhood Character Area described in the Comprehensive Plan.

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CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Preliminary Plat, Site Development Plan, and PUD Checklist

Development: _____

This checklist shall be completed, and included with the submittal documents. If the submittal does not contain a completed checklist, it shall be deemed incomplete. All below listed items shall be included in the submittal documents and plans, as well as any further information required by the City of Columbia to evaluate compliance and to perform a full and complete review. See Zoning Ordinance Article 8 and Subdivision Regulations.

General

- ❑ Name of development
- ☒ Contact info for the owner and licensed design professional(s) preparing plan: name, address, email, phone
- ❑ Plan sealed by a Design Professional licensed in the State of Tennessee.
- ☒ North Arrow, legend, and site vicinity map
- ☒ Graphic Scale: between 1 in. = 10 ft. and 1 in. =100 ft.
- ❑ Survey stamped by a State of Tennessee Licensed Professional Land Surveyor, with all project boundaries including bearings and angles to the nearest hundredth, utilities, and existing streets and rights-of-way.
- ☒ Note referencing Tennessee State Plane Coordinate System, NAD 83 Datum
- ☒ All property boundaries, existing easements, and encumbrances
- ☒ Parcel identification, owner, and deed and plat references of adjoining properties
- ❑ Proposed phasing and timetable for all phases of development
- ❑ Traffic Impact Study, as required.
- ❑ The substance of all existing and proposed covenants, easements, or other restrictions.

Lots and Land-Use

- ☒ The size of total property to be developed in square feet and acres
- ❑ Lot numbers of all proposed lots, with dimensions, locations, and square footage
- ❑ A tabulation of the land area to be devoted to various uses and activities and overall densities.
- ☒ Typical lot layout depicting proposed setbacks, yards, and easements, where applicable

Structures

- ❑ Location and approximate dimensions of all existing and proposed structures.
- ❑ Location of all earth retaining structures, with approximate top and bottom of wall elevations.
- ❑ Existing and intended use of all buildings and structures on site, including the number of dwelling units and density, where applicable
- ❑ Location, type, and size of proposed signs
- ❑ Approximate height, bulk, and the utilization of structures including activities and the number of living units.

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Grading, Drainage, and Storm

- ❑ Existing conditions and contours at vertical intervals of not more than two (2) feet
- ❑ General proposed contours at vertical intervals of not more than two (2) feet
- ❑ FEMA Special Flood Hazard Area (SFHA), 100-year Floodplain (F-P), and Floodway (F-W) boundaries with elevations and the exact location of the nearest benchmark. Indicate the Flood Insurance Rate Map (FIRM) panel number, its effective date, and flood insurance zones
- ❑ Location and dimension of aquatic buffer zones
- ❑ General layout of the proposed storm drainage system including surface and subsurface drainage systems, areas for detention, and water quality devices.
- ❑ Identification of all critical lots

Streets, Parking, and Pedestrian Elements

- ❑ Proposed street and alley rights-of-way, typical sections, widths, classification, names, and proposed ownership and maintenance responsibility
- ❑ Proposed connections to existing and proposed streets (including classification) located outside the development
- ❑ Proposed improvements as identified in the Traffic Impact Study, as required
- ❑ Existing and proposed sidewalks, trails, and other pedestrian elements
- ❑ Existing and proposed on-street and off-street parking and loading areas
- ❑ Summary of all provided and required parking

Landscaping, Open Space, and Amenities

- ❑ Natural features on site including, but not limited to, wetlands, streams, ponds, springs, sinkholes, wells, rock outcroppings, excessive slopes, and forested areas
- ❑ Landscaped areas and buffers with details on proposed plantings, existing vegetation, and other features.
- ❑ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ❑ Any amenity features and structures for private or public benefit.
- ❑ Location, dimension, and materials of fences and walls
- ❑ Tree Canopy retention

Utilities

- ❑ General layout and location of existing and proposed utilities and utility features including, but not limited to potable water, fire hydrants, sanitary sewer, storm sewer, and power and communication facilities.
- ❑ Acknowledgement from water, sewer, and power utility providers that the proposed development may be adequately served with existing infrastructure, or if improvements are required to adequately serve the development, a general statement of the improvements.

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PUD Specific Items

- ❑ Legal Description of Property
- ❑ Owner's Affidavit
- ❑ List of all variances requested
- ❑ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ❑ Location and approximate dimensions of all existing and proposed structures including approximate height, bulk, and the utilization of structures including activities and the number of living units. Include architectural renderings of all proposed structures with materials listed.
- ❑ The substance of covenants, grants of easements or other restrictions to be imposed upon the use of the land, buildings and structures including proposed easements for public utilities on the property or documentation of off-site easements.
- ❑ Exterior lighting

If the application is deemed incomplete by the Zoning Administrator, a written request shall be made within ten days after the original submittal, for further information. In such case the application shall be held in abeyance until deemed complete for final review. No plan shall be formally presented for Planning Commission action until such plan is found complete, compliant with City standards, and ready for review.

Checklist Completed By:

Print Name	Signature	Date

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	6218 Cayce Lane		
	TAX MAP: 101	GROUP:	PARCEL: 39.00
SUMMARY OF NATURE OF REQUEST AND WORK	Request re-zoning from CD-2 to CD-3L. Project will construct +/-4,359 ft of public roadway and provide 61 residential lots on 30.76 acres		

DATE OF PRE-APPLICATION CONFERENCE	10/19/2022	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☐ Annexation ☑ Rezoning ☐ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☑ Written Legal Description copy ☑ Requested Zone Listed ☑ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☑ Plans and/or Plats conforming to City standards with check list completed ☑ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) _____ ☒ Total Number of Lots 61 ☒ Total acreage 30.76

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Wade Kincaid	PHONE	615-642-3478
ADDRESS	1985 Ridgecrest Drive Columbia, TN 38401	EMAIL	wade@kcsllc.com

PROPERTY OWNER NAME	KCS Property, LLC	PHONE	615-642-3478
ADDRESS	1985 Ridgecrest Drive Columbia, TN 38401	EMAIL	wade@kcsllc.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Wade Kincaid		10/19/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
KCS Property, LLC		10/19/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

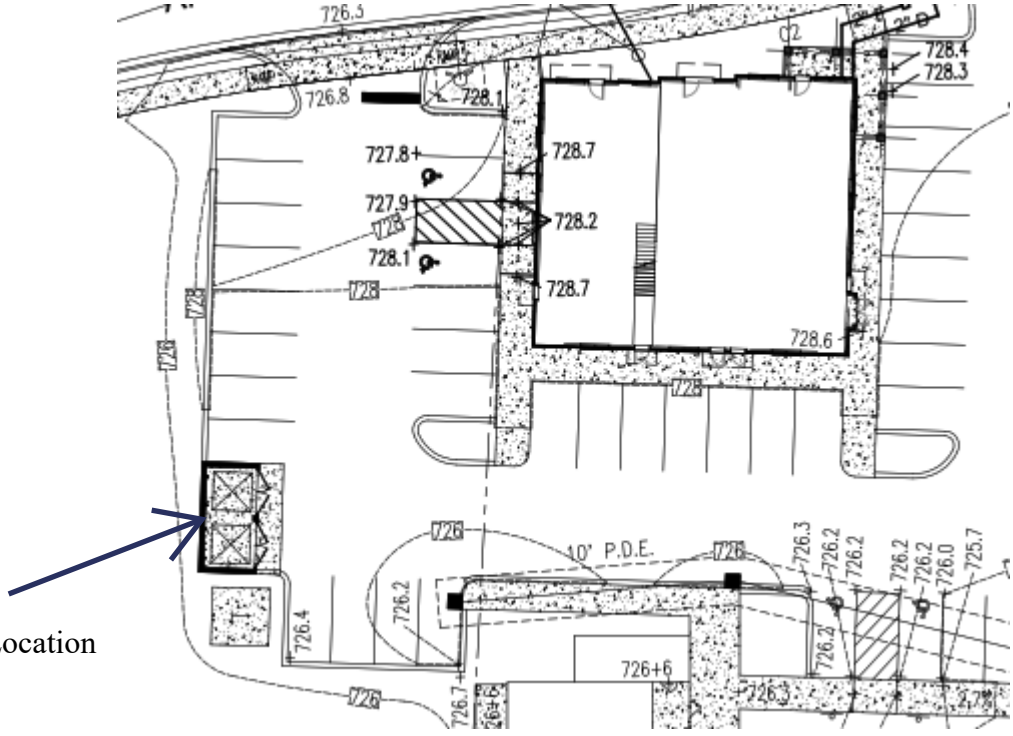
BOARD ACTION	

City of Columbia
700 N Garden Street
Columbia, TN 38401
July 17, 2023

Arden Village 210 A Development Review Committee Comment Response - 23-0244-PUD
To Whom it May Concern,

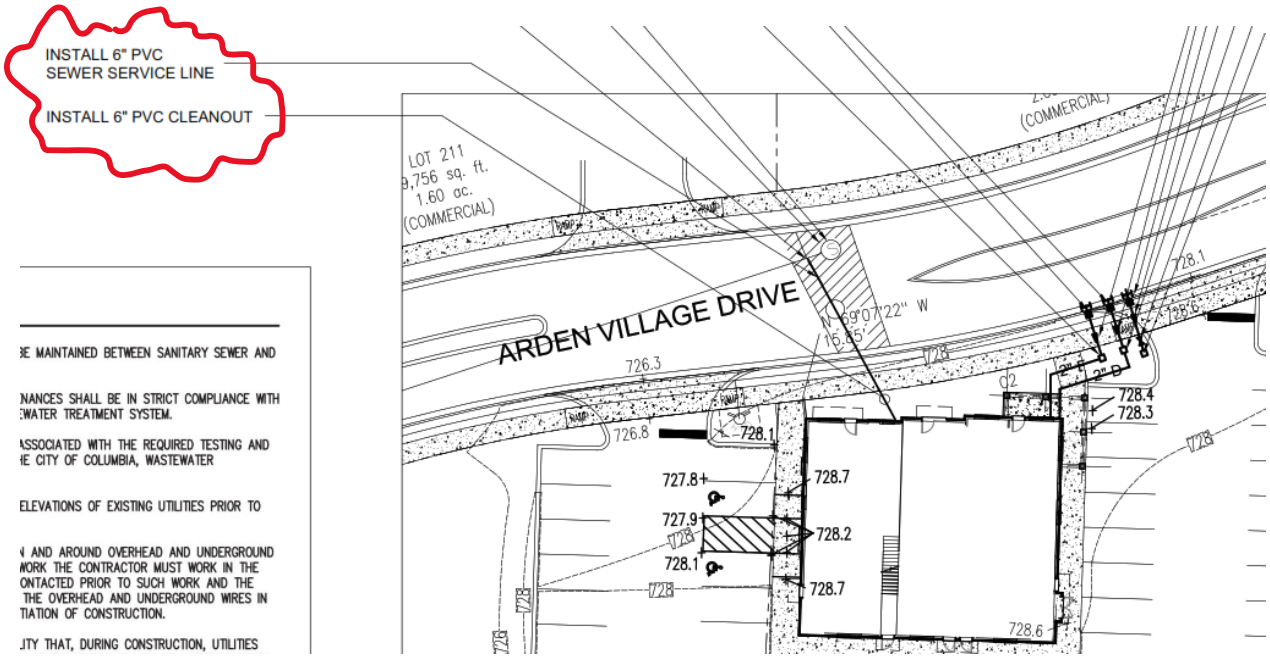
This letter is to address the comments presented in the Development Review Committee meeting of July 11th, 2023.

Public Work: Private trash service has already been established for this community, and provision has already been designed into these plans to provide clearance for garbage collection. Currently, the trash service is provided by Republic Services.



Trash Location

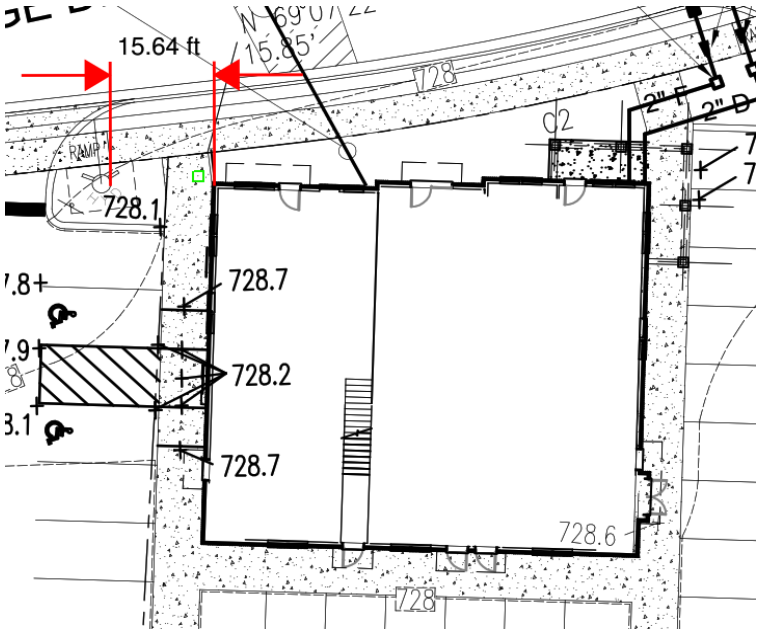
Wastewater: Sewer taps have not currently been installed for this portion of the development. It will be installed on the existing main on Arden Village Drive, as shown on the utilities plan. The relevant portion of that plan is shown below.



School Board: This project will be zoned for Spring Hill Elementary, Middle, and High Schools.

Planning: We have included a narrative description of the rationale for the revision in this submittal.

Fire Department: This building will be located within 16 feet of a fire hydrant and an approved NFPA 13 fire sprinkler system will be installed.



Thank you so much for taking this time to review this resubmittal.
Ben Sexton
Regent Homes
615-663-1203

City of Columbia
700 N Garden Street
Columbia, TN 38401
July 17, 2023

Narrative Response Letter for Arden Village Lot 210A - 23-0244-PUD

This letter is written to provide a rationale for the resubmission of our Arden Village Mixed-Use Building proposal, which was previously submitted in December of 2022. Our intention is to better convey the purpose of our proposed project and address the concerns raised during the previous review process.

Upon careful review, we have identified the need to make important modifications to our proposal. In the initial SP submission, we proposed a two-story commercial building spanning 3000 square feet. However, we have since realized that the cost of constructing a solely commercial building for this project is not economically feasible for us as builders. We acknowledge that the commercial cost of such a design would pose significant financial challenges.

Instead, we propose a mixed-use development that embraces the live/work concept present across the street. This approach aligns with the surrounding area and allows for a more diverse and integrated community. By incorporating an additional story of residential units, we can achieve the economic viability necessary for the project's success. This adjustment caters to the community's need for housing options while complimenting the existing Arden Village development.

One crucial objective of our revised proposal is to address the visual impact of the apartment buildings on lot 210A. By constructing proposed project, we aim to effectively screen the back of these apartments, significantly improving the overall aesthetic appeal of the area. Furthermore, this modification provides an opportunity to enhance the first-floor retail space by increasing the ceiling height by 2 feet. The expanded ceiling height will create a more inviting and viable retail environment, attracting potential tenants and contributing to the overall success of the Arden Village project.

In summary, we are resubmitting our Arden Village Mixed-Use Building proposal to better convey its purpose and address concerns raised during the previous review process. Our revised proposal eliminates the two-story commercial design due to cost constraints and instead proposes a mixed-use development that aligns with the live/work concept. The addition of an extra story of residential units ensures economic feasibility while fulfilling the community's housing needs. Additionally, our proposal addresses the visual impact and enhances the first-floor retail space by increasing the ceiling height.

We remain committed to collaborating closely with the Planning Department to address any concerns or requirements necessary for the successful approval of our revised proposal. Thank you for your attention to this matter, and we look forward to your favorable response.

Yours sincerely,
Benjamin Sexton
Permit Coordinator
Regent Homes
615-663-1203
Ben.sexton@regenthomes-tn.com

CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, July 11, 2023

ITEM NO.
23-0244

DESCRIPTION: Revision of Building A in area II, from office/retail to mixed use.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. No comments.

Public Works

2. Please reference the attached dumpster guidelines and accessibility requirements to ensure front load garbage truck has enough clearance to service proposed dumpsters.

Building

3. No comments.

Police

4. No comments Provided.

Columbia Power

5. Columbia Power System has an existing power line near your proposed development.
   We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
   • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Fire

6. A NFPA 13 sprinkler system will have to be installed
7. The FDC must be within 100' of a fire hydrant

Wastewater

8. The Wastewater Department should locate the sanitary sewer service for this lot to confirm its location. Please get into contact with the main office of the Wastewater Department to schedule a tap locate. 931-560-1001

Maury County Schools

9. Spring Hill Elementary, Spring Hill Middle School, Spring Hill High School
   See Attached Capacity Numbers
   The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Planning

10. In response to comments, please provide a narrative description of the rationale for the revision and explain what has changed since the previous review in 2022.

Maury County E911

11. No comment.

ATT

12. No comment.

Atmos Energy

13. No comments provided.

Duck River Electric Membership Corp

14. No comments provided.

Maury County Highway Dept.

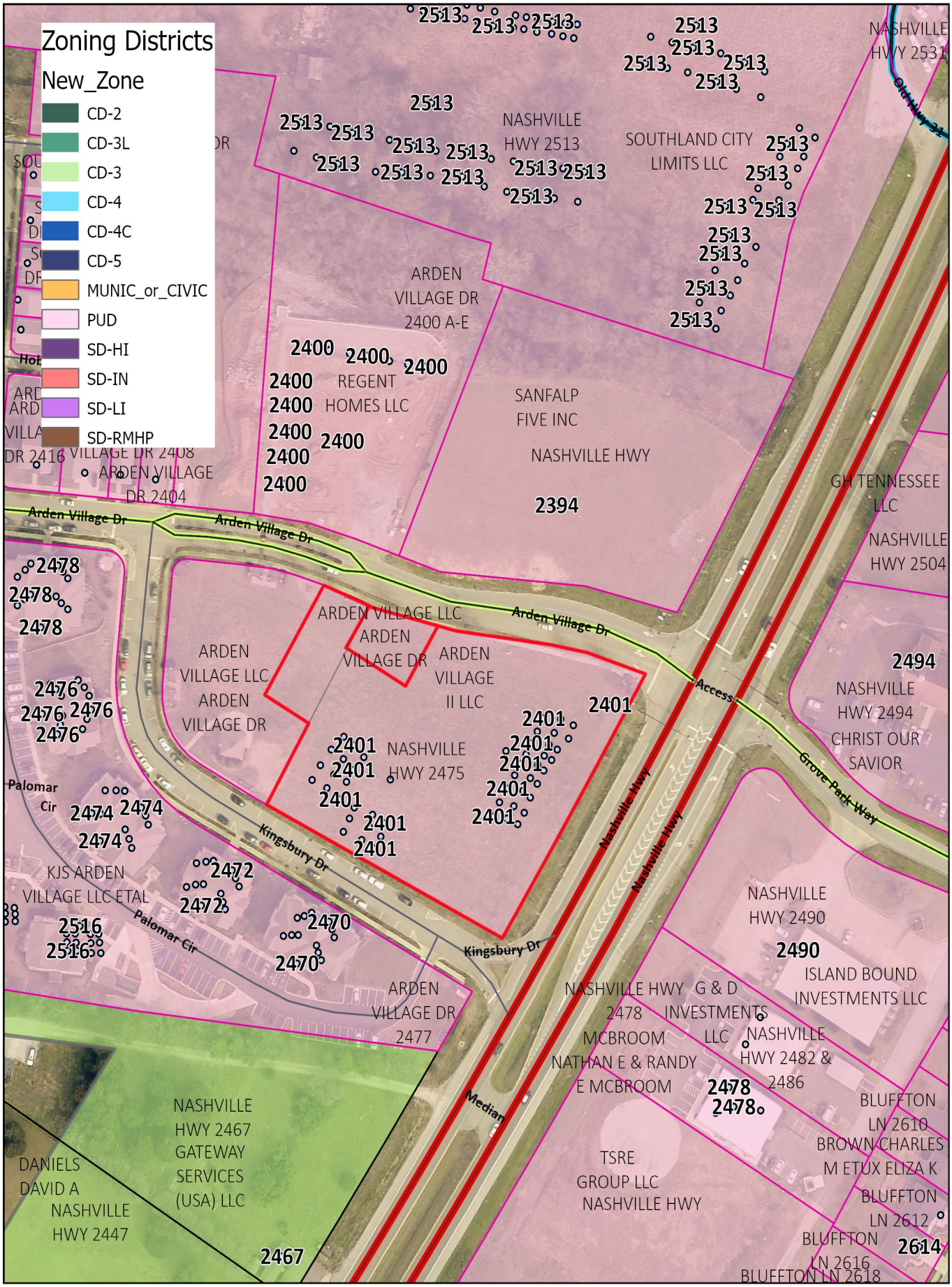
15. No comments provided.

Columbia Water

16. "A water availability letter was issued on 6-22-23 and is valid for 120 days. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements stated in the water availability letter are the responsibility of the developer/owner. All public water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

ATTACHMENTS: Preliminary PUD Master Plan

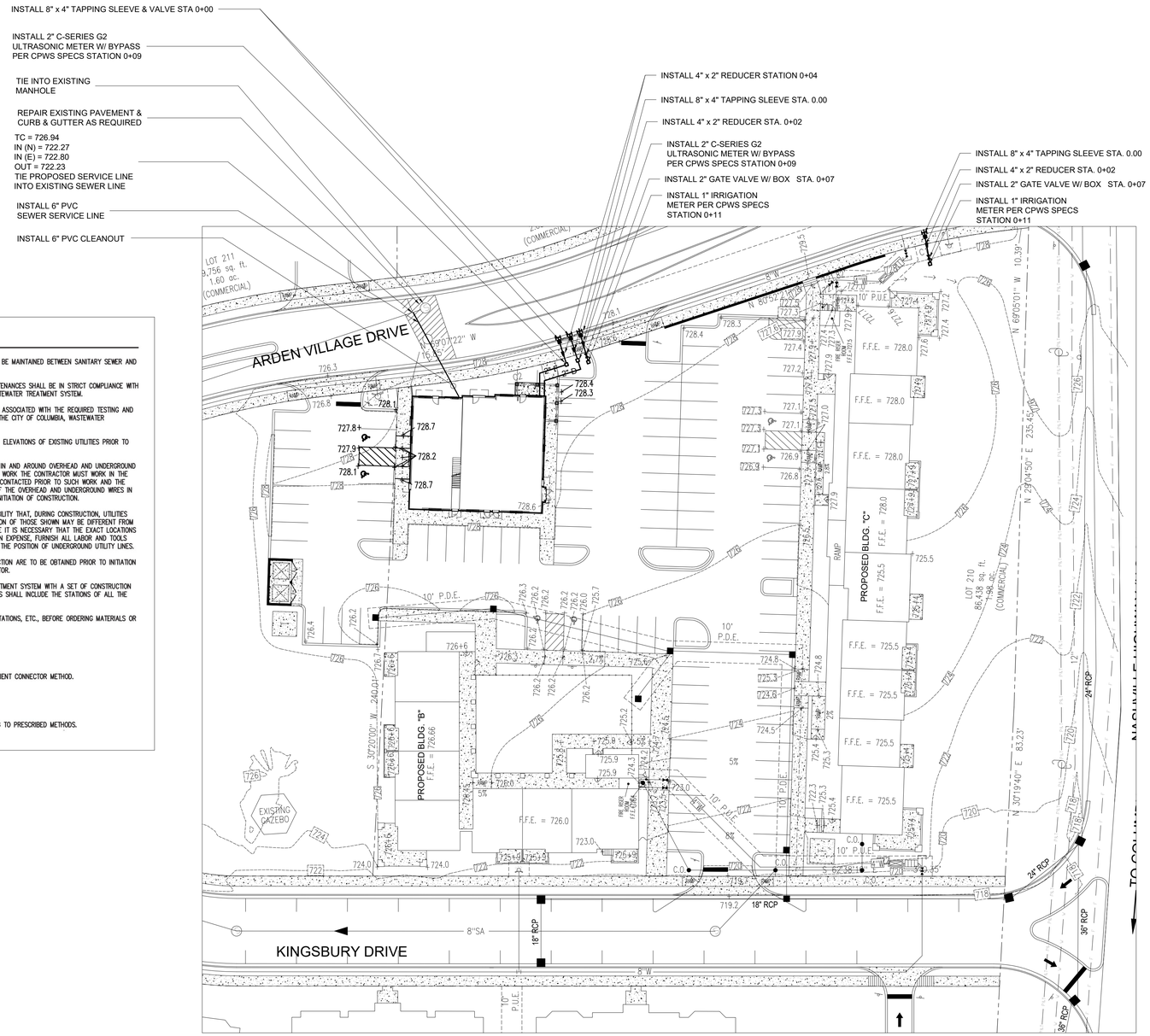
NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.



Case#23-0244
2475 Nashville Hwy.

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541



GENERAL SEWER NOTES

1. A 10-FOOT MINIMUM HORIZONTAL AND 18-INCH VERTICAL SEPARATION IS TO BE MAINTAINED BETWEEN SANITARY SEWER AND WATER LINES.
2. ALL MATERIALS AND WORKMANSHIP FOR SANITARY SEWER LINES AND APPURTENANCES SHALL BE IN STRICT COMPLIANCE WITH THE CURRENT SPECIFICATIONS AND DETAILS OF THE CITY OF COLUMBIA, WASTEWATER TREATMENT SYSTEM.
3. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING AND BEARING ANY COSTS ASSOCIATED WITH THE REQUIRED TESTING AND INSPECTION OF THE SANITARY SEWER LINES PRIOR TO THE ACCEPTANCE OF THE CITY OF COLUMBIA, WASTEWATER TREATMENT SYSTEM.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING THE ELEVATIONS OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
5. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND ELECTRICAL WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN THE PROXIMITY OF THE ABOVE-NOTED WIRES, THE ELECTRIC COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES SHALL BE TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD AND UNDERGROUND WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION.
6. THE OWNER AND ENGINEER DO NOT ASSUME RESPONSIBILITY FOR THE POSSIBILITY THAT, DURING CONSTRUCTION, UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT ACTUAL LOCATION OF THOSE SHOWN MAY BE DIFFERENT FROM THE LOCATIONS DESIGNATED ON THE CONTRACT DRAWINGS. IN AREAS WHERE IT IS NECESSARY THAT THE EXACT LOCATIONS BE KNOWN OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS NECESSARY TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE POSITION OF UNDERGROUND UTILITY LINES.
7. ANY AND ALL FEES, LICENSES AND PERMITS NECESSARY FOR THIS CONSTRUCTION ARE TO BE OBTAINED PRIOR TO INITIATION OF CONSTRUCTION AND THE COST OF SAME TO BE BORNE BY THE CONTRACTOR.
8. THE CONTRACTOR SHALL PROVIDE THE CITY OF COLUMBIA WASTEWATER TREATMENT SYSTEM WITH A SET OF CONSTRUCTION CUT SHEETS PRIOR TO THE PRECONSTRUCTION MEETING AND THE CUT SHEETS SHALL INCLUDE THE STATIONS OF ALL THE PROPOSED SERVICE CONNECTIONS.
9. THE CONTRACTOR SHALL CHECK AND VERIFY ALL MEASUREMENTS, LEVELS, STATIONS, ETC., BEFORE ORDERING MATERIALS OR BEGINNING WORK, AND IS RESPONSIBLE FOR SAME.
10. ALL SANITARY SEWER SERVICES ARE TO BE TEE CONNECTED.
11. ALL SEWER PIPE TO BE PVC (SDR-26) UNLESS OTHERWISE NOTED.
12. ALL CONNECTIONS TO EXISTING MANHOLE(S) SHALL BE BY CORING AND RESILIENT CONNECTOR METHOD.
13. ALL FILL AREAS TO BE COMPACTED AT 95% PROCTOR.
14. ALL SEWER PIPE NOTED AS DIP SHALL BE CLASS 52 DUCTILE IRON PIPE.
15. SEWER SERVICE LINE CLEAN-OUT ASSEMBLY SHALL BE INSTALLED ACCORDING TO PRESCRIBED METHODS.
16. ALL MANHOLES SHALL HAVE 24-INCH OPENINGS.

GENERAL UTILITY NOTES

1. ALL GAS, ELECTRIC, AND TELEPHONE SERVICE LINES AND EXTENSIONS ARE TO BE CONSTRUCTED TO THE RESPECTIVE UTILITY COMPANY SPECIFICATIONS. UTILITY CONNECTIONS TO BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY.
2. THE GENERAL CONTRACTOR IS PARTICULARLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES SHOWN HEREON ARE BASED ON UTILITY COMPANY RECORDS, AND WHERE POSSIBLE, FIELD MEASUREMENTS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL TENNESSEE ONE CALL OR THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION AND REQUEST FIELD VERIFICATION OF UTILITY LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO RELOCATE EXISTING UTILITIES CONFLICTING WITH IMPROVEMENTS SHOWN HEREON IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS.
3. BEFORE INSTALLATION OF STORM OR SANITARY SEWER, THE CONTRACTOR SHALL EXCAVATE AND VERIFY ALL CROSSINGS, AND INFORM THE CLIENT AND THE ENGINEER OF ANY CONFLICTS. THE ENGINEER WILL BE HELD HARMLESS IN THE EVENT HE IS NOT NOTIFIED OF DESIGN CONFLICTS PRIOR TO CONSTRUCTION.
4. REFER TO ARCHITECTURAL/MECHANICAL PLANS FOR EXACT BUILDING UTILITY ENTRANCE LOCATIONS AND TO VERIFY SERVICE LINE SIZES.
5. A 10-FOOT MINIMUM HORIZONTAL SEPARATION IS TO BE MAINTAINED BETWEEN WATER AND SANITARY SEWER LINES. 18" MIN. CLEARANCE FOR POTABLE WATER ABOVE SANITARY SEWER LINE.
6. ALL CONSTRUCTION OF WATER LINES AND APPURTENANCES AND SANITARY SEWER LINES AND APPURTENANCES SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST RECENTLY APPROVED STANDARD SPECIFICATIONS AND DETAILS OF COLUMBIA POWER AND WATER AND COLUMBIA WASTEWATER SYSTEMS.
7. BEFORE TYING INTO EXISTING LINES, THE NEW LINES ARE TO BE FLUSHED AND TESTED BY THE CONTRACTOR. ALL LINES TO BE TIED TO EXISTING WATER AND SANITARY SEWER LINES ARE TO BE INSPECTED PRIOR TO CONNECTION BY COLUMBIA POWER AND WATER AND COLUMBIA WASTEWATER SYSTEMS RESPECTIVELY.
8. THE CONTRACTOR SHALL PAY ANY APPLICABLE WATER AND SEWERAGE SERVICE INSPECTION FEES.
9. THE CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES, TAKING CARE TO PROTECT UTILITIES THAT ARE TO REMAIN, REPAIR ANY DAMAGE ACCORDING TO THE LOCAL STANDARDS AND AT THE CONTRACTOR'S EXPENSE, COORDINATE ALL CONSTRUCTION WITH THE APPROPRIATE UTILITY COMPANY.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SEQUENCING OF CONSTRUCTION FOR ALL UTILITY LINES SO THAT WATER LINES AND GAS LINES DO NOT CONFLICT WITH SANITARY SEWERS, SANITARY SEWER SERVICES OR STORM SEWERS.
11. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND ELECTRICAL WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THE WORK, THE CONTRACTOR MUST WORK IN THE PROXIMITY OF THE ABOVE-NOTED WIRES, THE ELECTRIC COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THROUGH EXAMINATION OF THE OVERHEAD AND UNDERGROUND WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION.
12. THE CONTRACTOR'S FIELD REPRESENTATIVE SHALL NOTIFY COLUMBIA WASTEWATER SYSTEMS PRIOR TO COMMENCING ANY WORK ON THE PROPOSED SEWER IMPROVEMENTS.
13. SEWER IMPROVEMENT CONSTRUCTION SHALL BE SUBJECT TO INSPECTION AND FINAL ACCEPTANCE OF COLUMBIA WASTEWATER SYSTEMS.
14. THE OWNER AND ENGINEER DO NOT ASSUME RESPONSIBILITY FOR THE POSSIBILITY THAT, DURING CONSTRUCTION UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT THE ACTUAL LOCATION OF THOSE SHOWN MAY BE DIFFERENT FROM THE LOCATION DESIGNATED ON THE CONTRACT DRAWINGS. IN AREAS WHERE IT IS NECESSARY THAT EXACT LOCATIONS BE KNOW OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS NECESSARY TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE POSITION OF UNDERGROUND UTILITY LINES.
15. AT LOCATIONS WHERE THE SEWER LINE OR WATER LINE IS UNDERNEATH PROPOSED PAVEMENT, THE TRENCH SHALL BE BACKFILLED TO SUBGRADE WITH CRUSHED STONE.
16. ANY AND ALL FEES, LICENSES AND PERMITS NECESSARY FOR THIS CONSTRUCTION ARE TO BE OBTAINED PRIOR TO INITIATION OF CONSTRUCTION AND THE COST OF SAME TO BE BORNE BY THE CONTRACTOR.
17. ALL SANITARY SEWER LINES, SHALL BE LOW PRESSURE AIR TESTED BY THE CONTRACTOR. THE TEST SHALL BE CONDUCTED IN THE PRESENCE OF A COLUMBIA WASTEWATER SYSTEMS REPRESENTATIVE.
18. ALL DRIVES SHALL BE CONSTRUCTED TO SUBGRADE, AND ALL PROPOSED FILLS SHALL BE MADE AND COMPACTED PRIOR TO CONSTRUCTION OF SANITARY SEWERS.
19. CONTRACTOR IS RESPONSIBLE FOR ALL HORIZONTAL AND VERTICAL BENDS, JOINTS, AND FITTINGS TO CONSTRUCT UTILITIES.
20. ALL SANITARY SEWER SERVICE LINES SHALL MAINTAIN A MINIMUM 1% SLOPE.

GENERAL WATER NOTES:

1. ALL MATERIALS AND WORKMANSHIP FOR WATER LINES AND APPURTENANCES SHALL BE IN STRICT ACCORDANCE WITH THE CURRENT SPECIFICATIONS OF THE COLUMBIA POWER AND WATER SYSTEMS.
2. REDUCED PRESSURE BACKFLOW PREVENTER (R.P.B.P.) OR DUAL CHECK WILL BE REQUIRED ON ALL TESTS AND FILL LINES (JUMPER) NEEDED FOR WATER MAIN CONSTRUCTION MUST BE APPROVED BY COLUMBIA POWER AND WATER SYSTEMS.
3. WATER METER SHALL BE NO DEEPER THAN 24" FROM THE TOP OF METER TO PROPOSED FINISH GRADE.
4. COMPLETE FIRE HYDRANT ASSEMBLY TO INCLUDE:
   A. APPROPRIATE SIZE TEE
   B. PIPE RUN FROM TEE TO HYDRANT
   C. 6" GATE VALVE AND BOX
   D. FIRE HYDRANT
   E. CONCRETE KICKER (BRACE)
   F. APPROPRIATE SIZE REDUCER (IF APPLICABLE)
5. ALL AND ANY FEES, LICENSES AND PERMITS NECESSARY FOR WATER LINE CONSTRUCTION ARE TO BE OBTAINED PRIOR TO INITIATION OF CONSTRUCTION AND THE COST OF SAME TO BE BORNE BY THE CONTRACTOR.
6. FOR CLARITY, CONCRETE THRUST BLOCKING/KICKERS HAVE NOT BEEN SHOWN HEREON. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING THRUST BLOCKING/KICKERS AT ALL LOCATIONS AS REQUIRED BY THE LATEST SPECIFICATIONS OF COLUMBIA POWER AND WATER SYSTEMS.
7. LOCATE WATER SERVICES 25' FROM SIDE PROPERTY LINE TO AVOID DRIVEWAYS.

UTILITY COMPANIES:

ELECTRIC:

COLUMBIA POWER AND WATER
P.O. BOX 379
201 PICKENS LANE
COLUMBIA, TN 38402
(931) 388-4833
CONTACT: BILL JACKSON, CHEIF ENGINEER

WATER & SANITARY SEWER:

COLUMBIA WASTEWATER SYSTEMS
1244 TREATMENT PLANT ROAD
COLUMBIA, TN 38401
(931) 388-2419
CONTACT: KELLY POWELL, SUPERINTENDENT

NATURAL GAS:

UNITED CITIES GAS COMPANY
P.O. BOX 1196
COLUMBIA, TENNESSEE 38401
(913) 388-9135
CONTACT: TIM BROWN

TELEPHONE:

BELLSOUTH

FOR ENGINEERING:
PARSONS TELECOM
904 SOUTH HIGH STREET
COLUMBIA, TENNESSE 38401
(931) 380-3441
CONTACT: DANNY LASATER, SPECIALIST, O.S.P.E.

FOR CONSTRUCTION:
757 ARMSTRONG LANE
COLUMBIA, TENNESSEE 38401
(931) 388-7393
CONTACT: CYNN RICE, SUPERVISOR OF CONSTRUCTION

LEGEND

- TAPPING SLEEVE AND VALVE (SEE PLAN FOR SIZE)
- GATE VALVE (SEE PLAN FOR SIZE)
- REDUCER (SEE PLAN FOR SIZE)
- 2"DW — PROPOSED DOMESTIC WATER LINE
- 8"SA — PROPOSED SANITARY SEWER LINE
- PROPOSED FIRE HYDRANT

MECHANICAL/PLUMBING ENGINEERS TO VERIFY SIZE

FIRE HYDRANT MUST BE WITHIN 100' OF A POST INDICATOR VALVE (PIV).

SEE SHEET C-8 FOR WATER & SEWER DETAILS.

ALL SANITARY SEWER LINES TO BE INSTALLED IN ACCORDANCE WITH COLUMBIA WASTE WATER SYSTEMS.

P.V.C. OIPE CLASS SDR 26

ALL SEWER SERVICES TO BE TEE CONNECTED (6" TEE)

ALL SEWER SERVICE TAPS TO BE SHALLOW 3'-4" IN DEPTH.

UTILITY PLAN
SCALE: 1" = 30'

NORTH
0' 15' 30' 60' 90'

BATSON & ASSOCIATES
Civil Engineering Consultants
401 HOLLOW SPRINGS DRIVE
BRENTWOOD, TENNESSEE 37027
(615) 424-4840 ● FAX (615) 370-9363
batsonengineering@comcast.net

ARDEN VILLAGE
BUILDING A
PHASE 2
LOTS 209 & 210
COLUMBIA, TN

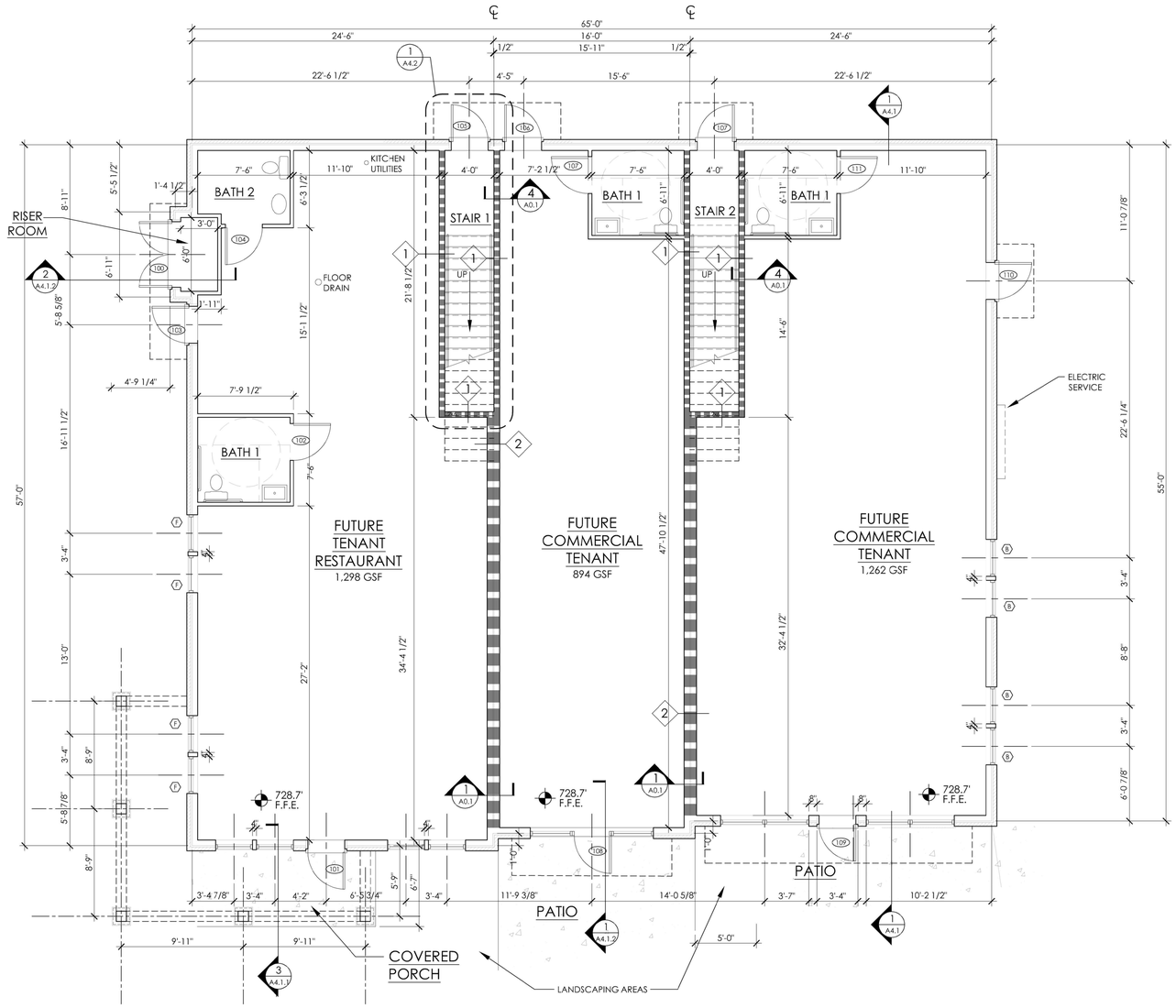
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UTILITY PLAN

C-2

SHEET 1 OF –

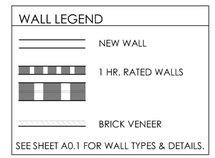


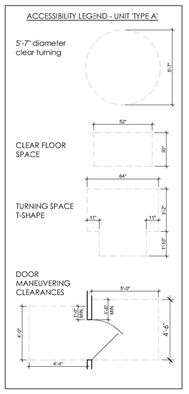
FIRST FLOOR PLAN

SCALE: 3/16" = 1'-0" 3,649 GSF (10,929 GSF BUILDING)

FRAMING & PLAN NOTES

1. DIMENSIONS TO OUTSIDE FACE OF CMU.
2. ALIGN CMU OR CONC. SLAB EDGE WITH OUTSIDE FACE OF STUD.
3. ALL INTERIOR WALL STUDS ARE 3 1/2" UNLESS OTHERWISE NOTED.
4. ELEVATIONS SHOWN IN ARCHITECTURAL ARE RELATIVE TO MEAN SEA LEVEL ELEVATION 0'-0". ACTUAL BUILDING ELEVATION ABOVE MEAN SEA LEVEL VARIES - REFER TO CIVIL DRAWINGS FOR ACTUAL BUILDING ELEVATION LEVELS, TYP.
5. REFER TO STRUCTURAL SLAB / FOUNDATION PLAN FOR CLARIFICATION OF SLAB AND CURB DIMENSIONS.
6. ORIENTATION OF THE BUILDING PLAN ILLUSTRATED MAY BE DIFFERENT THAN THE ORIENTATION OF THE CONSULTANT PLANS, NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
7. ALL MECHANICAL, ELECTRICAL, PLUMBING, SECURITY, UTILITY, CABLE TV, AND TELEPHONE EQUIPMENT SHALL BE INSTALLED SO AS NOT TO BE IN CONFLICT WITH ANY WINDOW OR DOOR, TYP. CENTER ELEC FIXTURES IN SPACES OR AS SHOWN ON ARCHITECTURAL PLANS.
8. PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING AT ALL SIDEWALKS, PATIOS, AND PORCHES.
9. SEE STRUCTURAL DRAWINGS FOR FOUNDATION PLAN & DETAILS.





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629.202.4170

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7376 ALTHORP WAY
NASHVILLE, TN 37211

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Arden Apartments II

STACKED FLATS "BLDG A/3"
LOTS 209 & 210
2401 ARDEN VILLAGE DRIVE
COLUMBIA, TN 38401

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NO.	REVISION/ISSUE	DATE
△	DESIGN REVIEW	05.03.2023
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FIRST FLOOR PLAN

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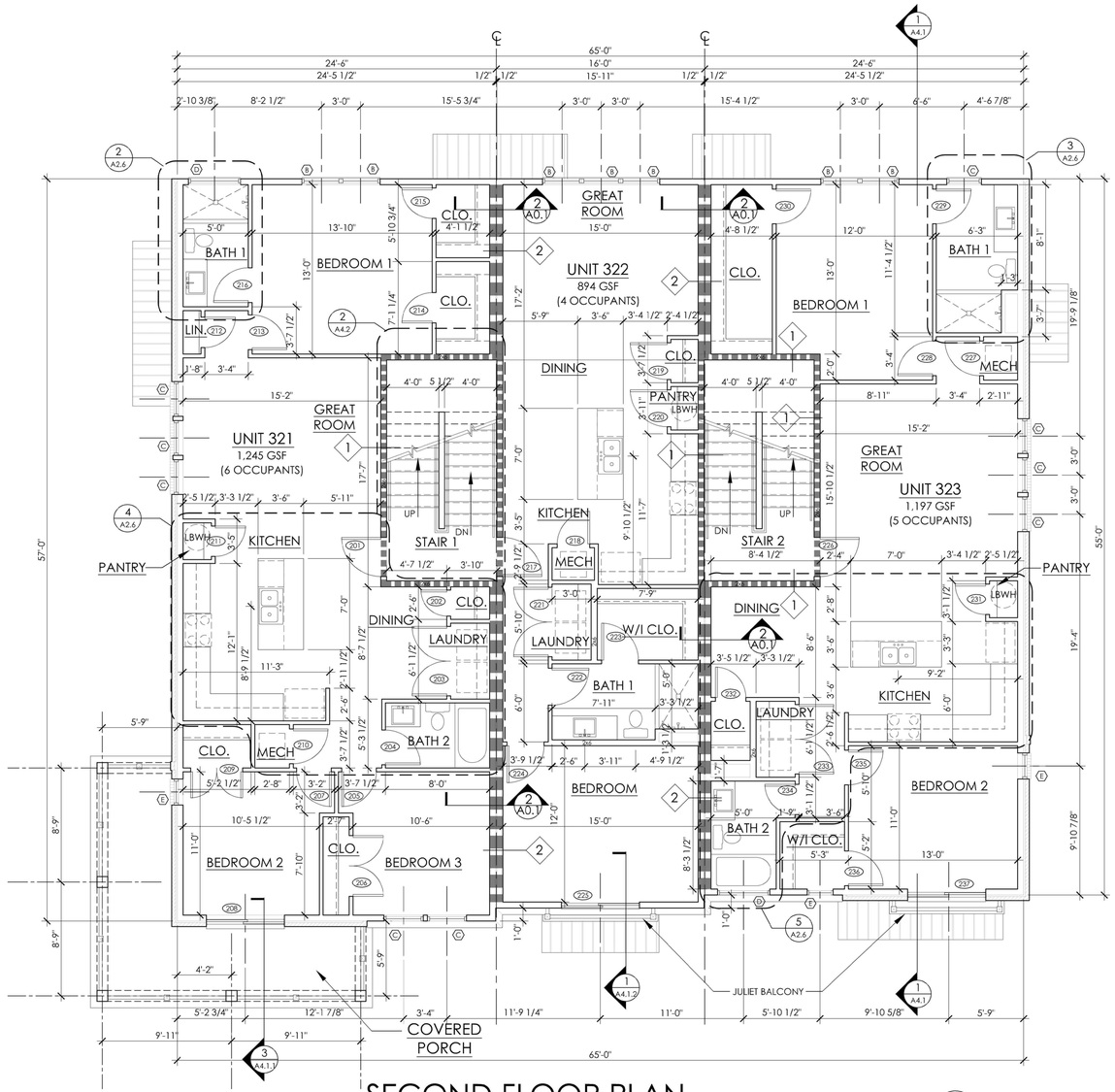
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8. PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING AT ALL SIDEWALKS, PATIOS, AND PORCHES.
9. SEE STRUCTURAL DRAWINGS FOR FOUNDATION PLAN & DETAILS.

WALL LEGEND

- NEW WALL
- 1 HR. RATED WALLS
- BRICK VENEER

SEE SHEET A0.1 FOR WALL TYPES & DETAILS.



SECOND FLOOR PLAN 3,640 GSF (10,929 GSF BUILDING)

SCALE: 3/16" = 1'-0"

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SECOND FLOOR PLAN

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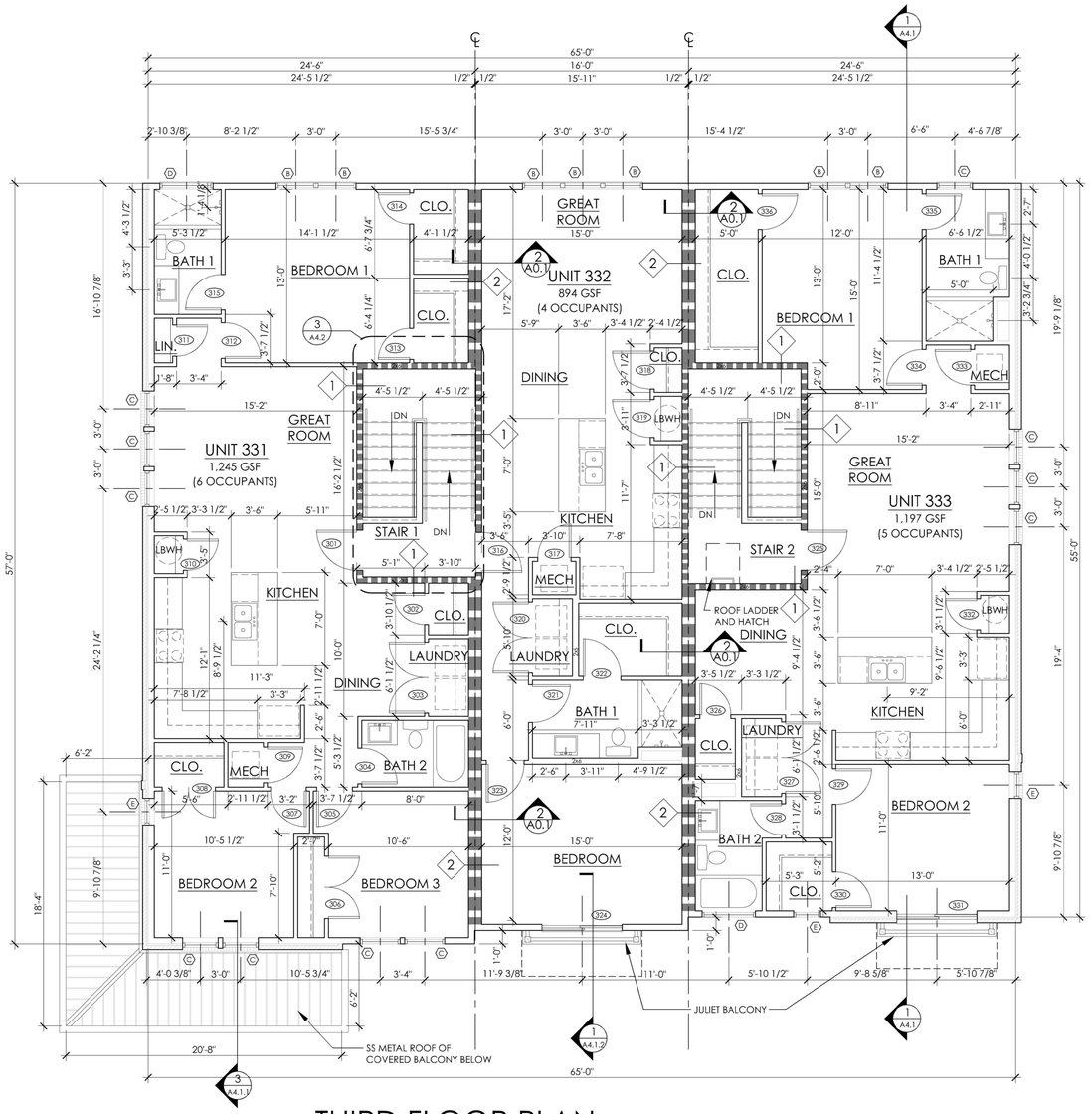
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WALL LEGEND

- NEW WALL
- 1 HR. RATED WALLS
- BRICK VENEER

SEE SHEET A0.1 FOR WALL TYPES & DETAILS.



THIRD FLOOR PLAN 3,640 GSF (10,929 GSF BUILDING)

SCALE: 3/16" = 1'-0"

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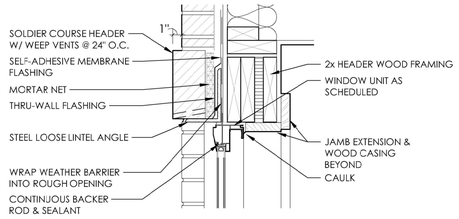
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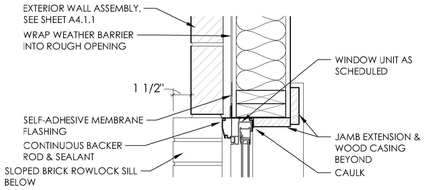
THIRD FLOOR PLAN

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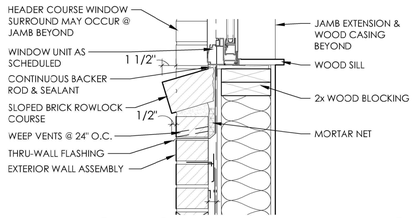
3 WINDOW HEADER DETAIL

SCALE: 1 1/2" = 1'-0"



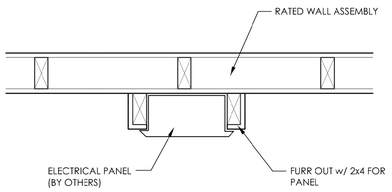
2 WINDOW JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



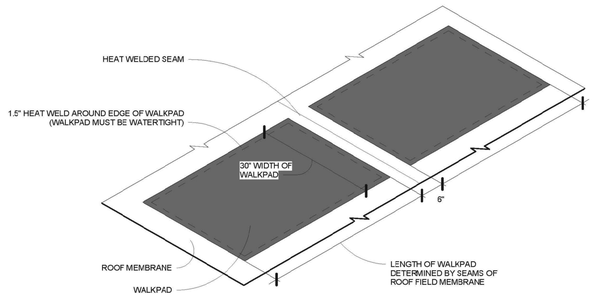
1 WINDOW SILL DETAIL - BRICK

SCALE: 1 1/2" = 1'-0"



4 ELECTRICAL PANEL MOUNTING @ RATED WALL DETAIL

SCALE: 1 1/2" = 1'-0"

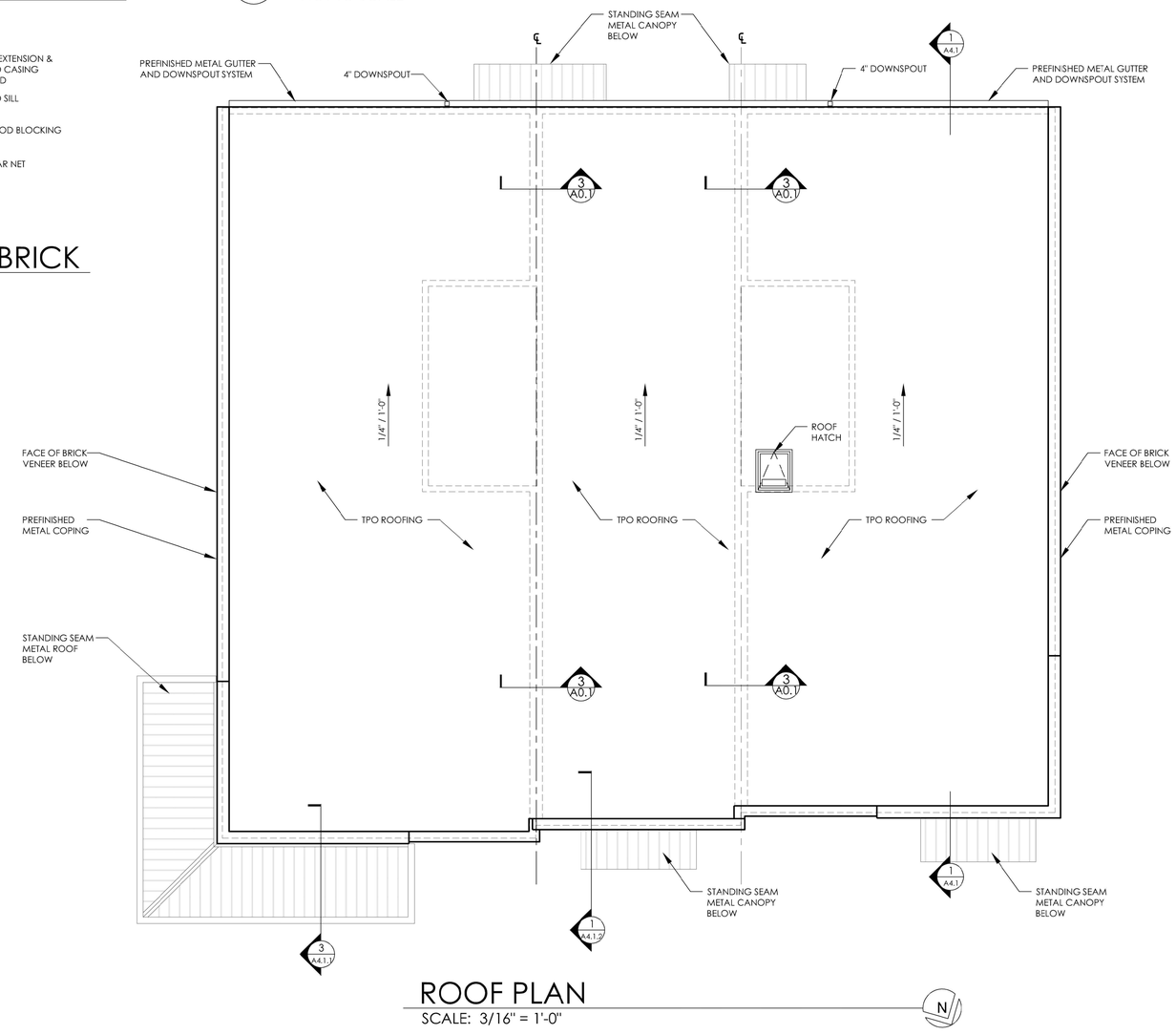


NOTES:

1. WALKPADS MUST BE ALLOWED TO RELAX IN THE SUN FOR 30 MINUTES PRIOR TO INSTALLATION.
2. THE WALKPADS MUST NOT BE INSTALLED OVER FIELD SEAMS AND FASTENER ROWS AND MUST BE GAPPED FROM THESE AREAS A MINIMUM OF 6".
3. FOR INSTALLATION OF FIELD TPO, REFER TO MANUFACTURER'S INSTALLATION DRAWINGS AND INSTRUCTIONS.

5 WALKPAD DETAIL

NOT TO SCALE



ROOF PLAN

SCALE: 3/16" = 1'-0"

ROOF PLAN NOTES

1. ROOF STRUCTURAL SYSTEM TO BE PRE-ENGINEERED TRUSSES @ 24" O.C. UNLESS OTHERWISE NOTED.
2. ROOF DESIGNED FOR 20 P.S.F. SNOW LOAD MINIMUM (CONFIRM W/ STRUCTURAL ENGINEER).
3. PROVIDE & INSTALL TPO ROOFING IN ACCORDANCE WITH THE MINIMUM IRC REQUIREMENTS OF SECTION R905.13 & PER MANUFACTURERS SPECIFICATIONS. REFER TO WALL SECTIONS FOR ADDITIONAL INFORMATION.
4. BALCONIES, LANDINGS, AND SIMILAR SURFACES EXPOSED TO WEATHER SHALL BE WATERPROOFED AND SLOPED A MINIMUM OF 1/4" PER FOOT (2%) FOR DRAINAGE.
5. ROOF SYSTEM TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS INCLUDING PERFORMANCE REQUIREMENTS AT WIND UPLIFT RESISTANCE COMPLYING WITH UL 580 FOR WIND UPLIFT RESISTANCE CLASS I-90.
6. COORDINATE LOCATION OF ALL GUTTERS WITH ARCHITECT.
7. ALL VENTS THRU ROOF TO MATCH ROOF COLOR/FINISH.
8. ALL ROOF AND PARAPET HEIGHTS ARE RELATIVE TO THE ELEVATIONS BENCHMARKS PROVIDED ON THE FLOOR PLANS AND ELEVATIONS.

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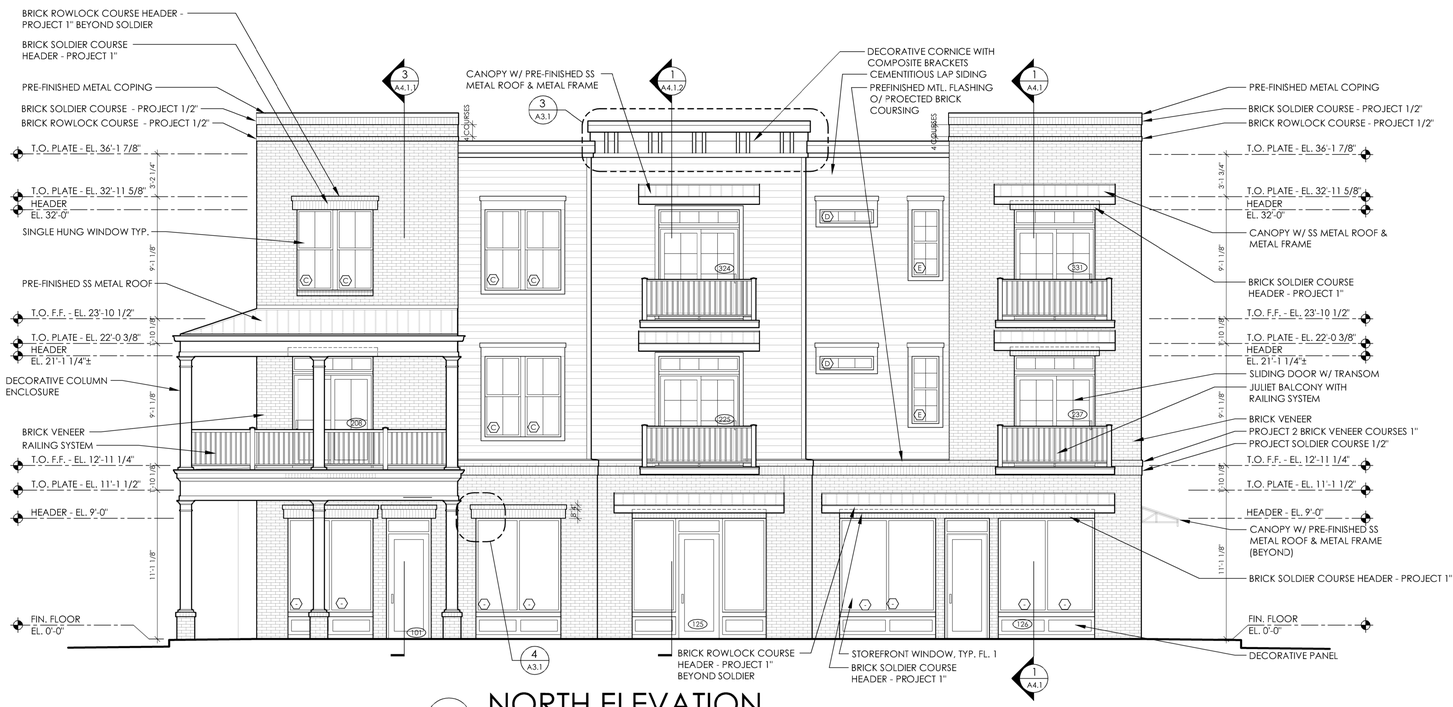
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ROOF PLAN, WINDOW SCHEDULE, DETAILS AND NOTES

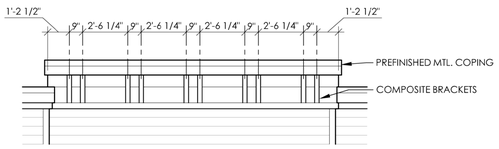
A2.4

ELEVATION NOTES

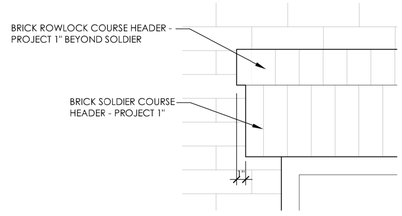
1. ALL EXTERIOR FINISH MATERIALS TO RETURN TO AN INSIDE CORNER UNLESS OTHERWISE NOTED.
2. ALL EXTERIOR TRIM TO MATCH ADJACENT MATERIALS COLOR UNLESS OTHERWISE NOTED.
3. ALL EXTERIOR PENETRATIONS, SUCH AS VENT COVERS, LOCATIONS TO BE FINALIZED W/ ARCHITECT AND ENGINEERS. ALL PENETRATIONS AND SUBSEQUENT TRIMS TO MATCH FIELD UNLESS OTHERWISE NOTED OR CONFIRMED W/ ARCHITECT.



1 NORTH ELEVATION
SCALE: 3/16" = 1'-0"



3 CORNICE DETAIL
SCALE: 1/4" = 1'-0"



4 WINDOW HEADER DETAIL
SCALE: 1-1/2" = 1'-0"



2 EAST ELEVATION
SCALE: 3/16" = 1'-0"

Purser White
architecture
2819 Columbine Place, Ste 5
Nashville, Tennessee 37204
terry@purserwhitearch.com
www.purserwhitearch.com
629.202.4170

Regent HOMES
7376 ALTHORP WAY
NASHVILLE, TN 37211

In the interest of continuous improvement, Regent Homes reserves the right to make modification in floor plans, exterior designs, architectural details, materials and specifications at any time without prior notice. All features, designs, and prices are subject to change without prior notice. Room dimensions are approximate and floor plans may vary with selected elevations. Please Consult working drawings for actual dimensions and information. c 2003 Regent Homes LLC.

Arden Apartments II
STACKED FLATS "BLDG A/3"
LOTS 209 & 210
2401 ARDEN VILLAGE DRIVE
COLUMBIA, TN 38401

THE DRAWINGS, SPECIFICATIONS, IDEAS, DESIGNS AND ARRANGEMENTS REPRESENTED THEREBY ARE AND SHALL REMAIN THE PROPERTY OF THE ARCHITECT. NO PART OF SHALL BE COPIED, DISCLOSED TO OTHERS OR USED IN CONJUNCTION WITH ANY WORK OR PROJECT OTHER THAN THE SPECIFIC PROJECT FOR WHICH THEY HAVE BEEN PREPARED AND DEVELOPED WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT. VISUAL CONTACT WITH THESE DRAWINGS OR SPECIFICATIONS SHALL CONSTITUTE CONCLUSIVE EVIDENCE OF ACCEPTANCE OF THESE RESTRICTIONS. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB SITE. AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS.

NO.	REVISION/ISSUE	DATE
1	DESIGN REVIEW	05.03.2023

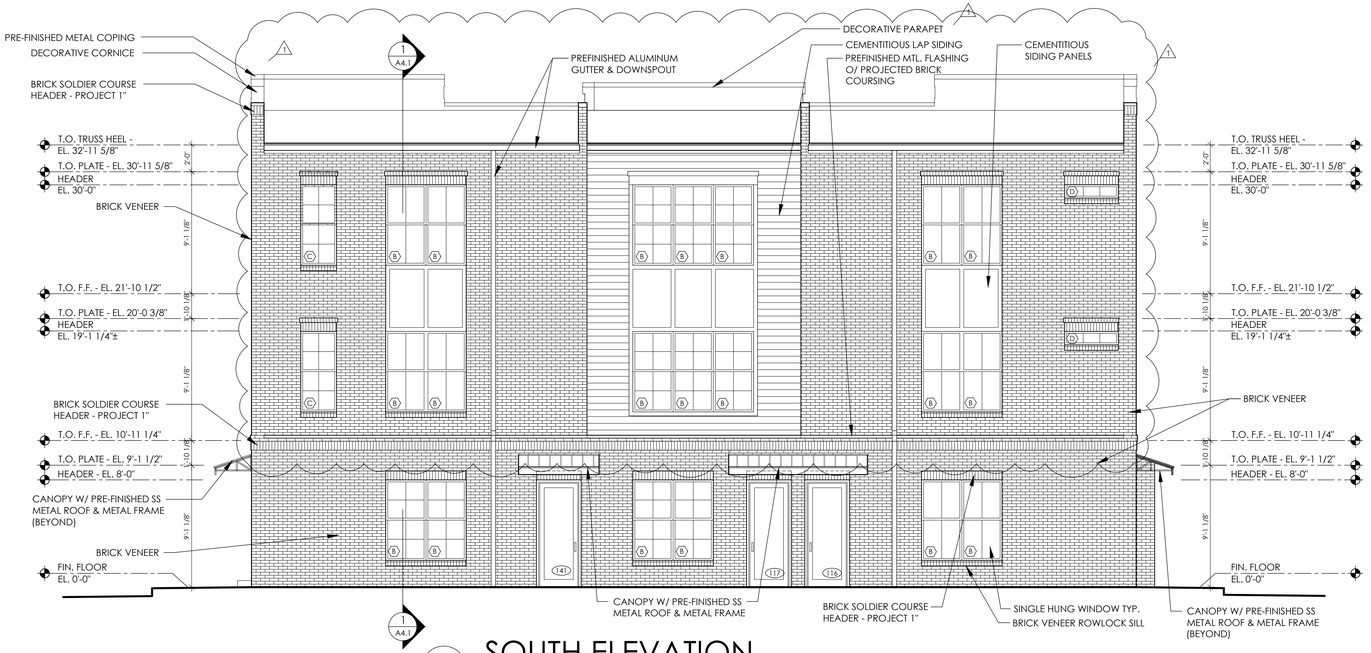
© 2022 PWA, PLLC

BUILDING ELEVATIONS

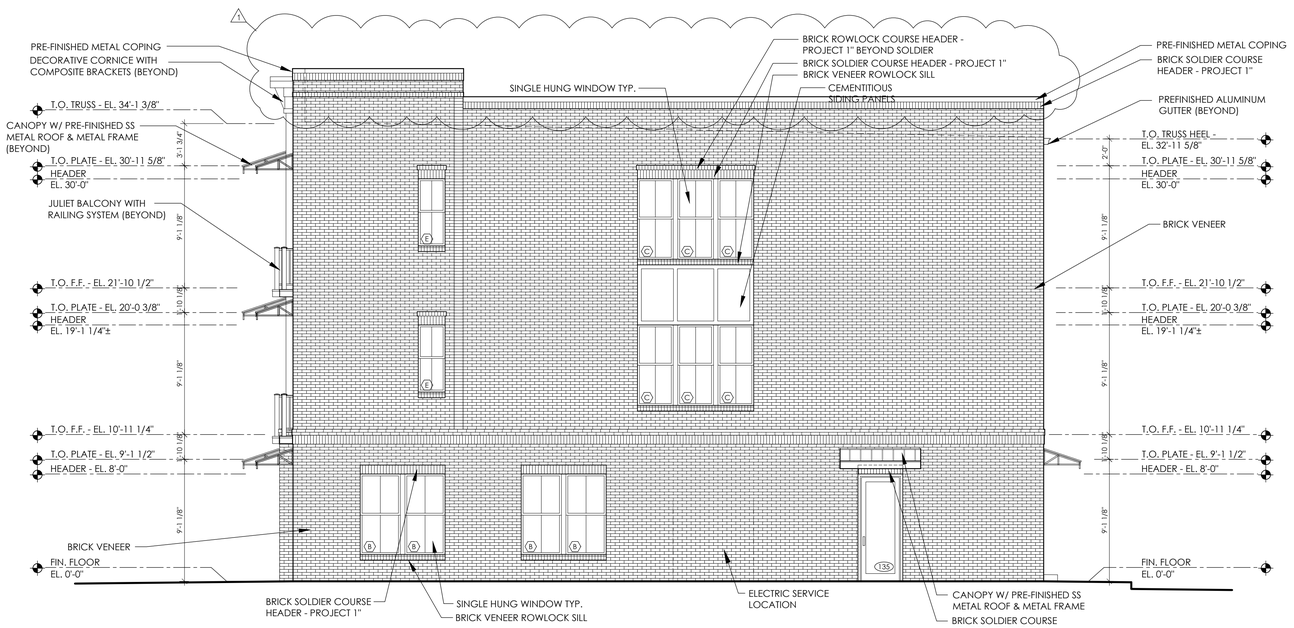
A3.1

ELEVATION NOTES

1. ALL EXTERIOR FINISH MATERIALS TO RETURN TO AN INSIDE CORNER UNLESS OTHERWISE NOTED.
2. ALL EXTERIOR TRIM TO MATCH ADJACENT MATERIALS COLOR UNLESS OTHERWISE NOTED.
3. ALL EXTERIOR PENETRATIONS, SUCH AS VENT COVERS, LOCATIONS TO BE FINALIZED W/ ARCHITECT AND ENGINEERS. ALL PENETRATIONS AND SUBSEQUENT TRIMS TO MATCH FIELD UNLESS OTHERWISE NOTED OR CONFIRMED W/ ARCHITECT.



1 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



2 WEST ELEVATION
SCALE: 3/16" = 1'-0"

Lynn White architecture
2819 Columbine Place
Nashville, Tennessee 37204
email: terry@LWarch.com
www.LWarch.com
330.322.3406

TERRY M. WHITE — REGISTERED ARCHITECT — No. 106807 — STATE OF TENNESSEE

09.21.2022

Regent HOMES
7376 ALTHORP WAY
NASHVILLE, TN 37211

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Arden Apartments II
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△	CHECK SET	07.22.2022
△	CHECK SET	08.08.2022
△	CONSTR DOCS	09.21.2022
1	REVISION 1 (PARAPETS)	
△		
△		
△		
△		

BUILDING ELEVATIONS

09.21.2022

A3.2


Revisions have been made since the original ARC submittal. Please refer to design review set for correct elevations.

CPWS

June 22, 2023

Mr. Garry Batson
Batson and Associates
401 Hollow Spring Ct
Brentwood, TN 37027
Sent via email: batsonengineering@comcast.net

RE: Water Availability Letter
Arden Village 209 & 210 Phase II
Arden Village Dr @ Highway 31
Tax Map 51, Parcel 2
Columbia, Maury County, TN

Dear Mr. Batson:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development is a three-story mixed-use building with 2 one-bedroom and 4 two-bedroom residential units and 3,454 square feet of unspecified commercial space. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Building will be served by a single master meter for domestic and fire protection needs. Sub-metering of rental/lease spaces will be the responsibility of the applicant.
- Waterline connection will be made to the existing 8-inch main on Arden Village Drive.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (15.1 SFUs)	$7,087.00

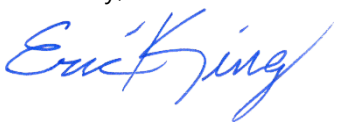
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $4,500 per 3" meter (1 meter)	$4,500.00
Impact Fee: $25,000 per 2" meter equivalent (1 equivalent)	$25,000.00
Total Meter and Impact Fees Due =	**$29,500.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 23-036

Columbia Fire & Rescue

Fire Flow Requirements

Water Purveyor: Columbia Power & Water System

Date: 11-29-30
Name: Garry Batson
Phone: 615-424-4840
Email: batsonengineering@comcast.net
Address/Parcel ID: Arden Village Lot 209 & 210 Map 51 Parcel 2
Property Type: ○ Residential ◉ Commercial ○ Industrial
Construction Type: wood Framing Sprir
Enclosed Area (ft^2): 1o,140 S.F>

FILLED OUT BY COLUMBIA FIRE AND RESCUE

NFPA Sprinkler Type: NFPA 13

Water System Demand without Sprinkler Credit

Fire flow Requirements (International Fire Code Appendix B)

Fire Flow: _____ gpm Duration: _____ hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: _____

Average spacing between hydrants: _____ft.

Maximum distance from frontage to hydrant: _____ ft.

Water System Demand with Sprinkler Credit

Fire flow requirements (International Fire Code Appendix B)

Fire Flow: 1,000 gpm Duration: 2 hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

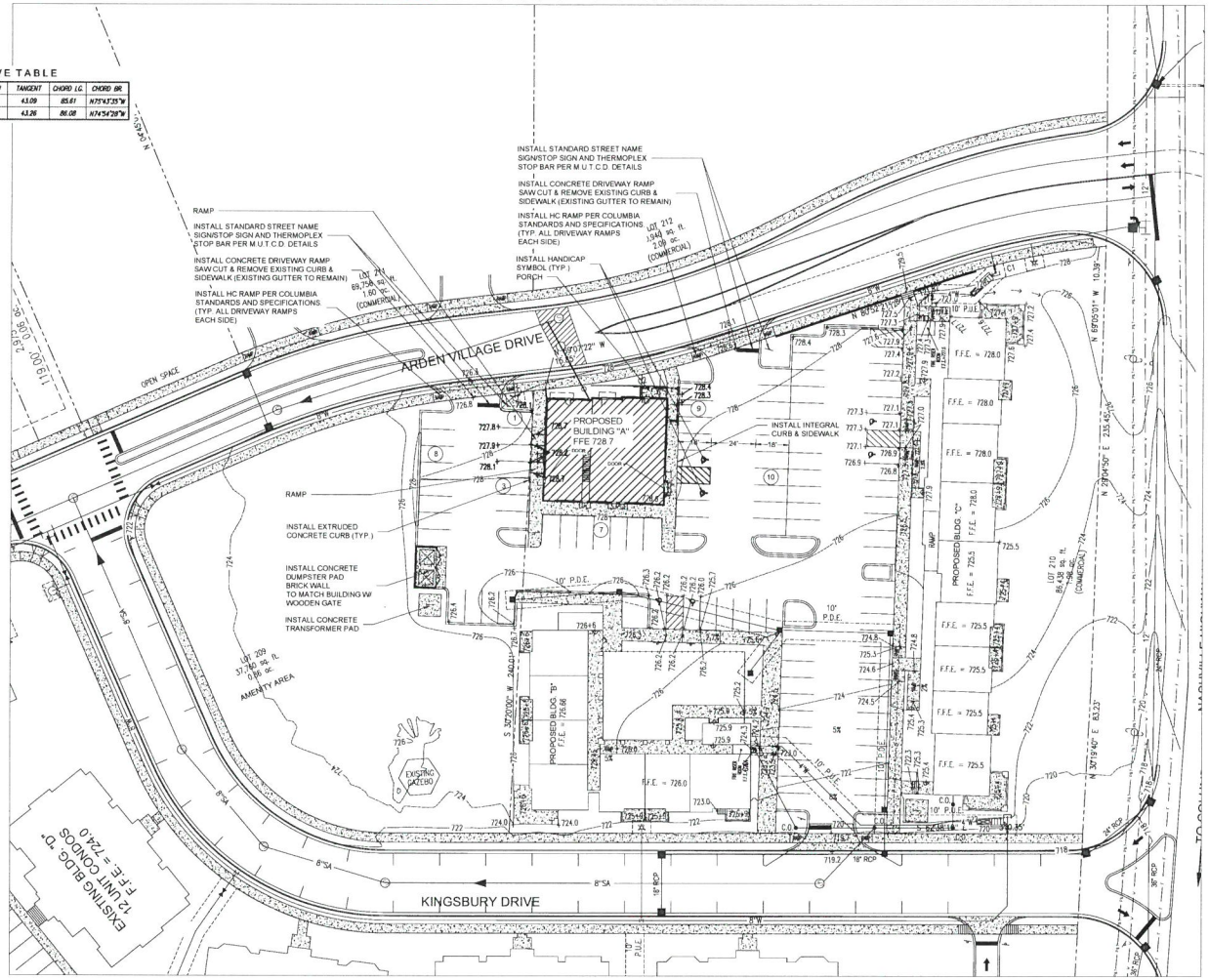
Maximum distance from frontage to hydrant: 250 ft.

Fire Plan Reviewer: Brad Massey Date: 11-30-2022

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JUN 20 2023
By: 23-0244

CURVE TABLE

C #	DELTA	RADIUS	LENGTH	TANGENT	CHORD LG	CHORD BR
C1	13°17'10"	370.00	85.80	43.09	85.61	N75°43'35"W
C2	11°34'31"	427.00	86.22	43.26	86.08	N74°54'28"W



GENERAL SITE NOTES:

1. DIMENSIONS SHOWN ARE TO THE FACE-OF-CURB UNLESS OTHERWISE NOTED.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT DIMENSIONS AND LOCATIONS OF UTILITY SERVICE ENTRY LOCATIONS, PORCHES, RAMPS, SIDEWALKS, AND PRECISE BUILDING DIMENSIONS.
3. ALL CURB RETURN RADII TO BE A MINIMUM OF 3 FEET UNLESS NOTED OTHERWISE HEREON.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL DEBRIS, MATERIAL AND RUBBISH RESULTING FROM THE PREVIOUS AND CURRENT DEMOLITION OPERATIONS. DISPOSAL PROCEDURES SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS.
5. THE LOCATION OF ALL PROPERTY LINES AND EXISTING UTILITIES, THE LEGAL DESCRIPTION, TOPOGRAPHIC CONTOURS, AND SPOT ELEVATIONS, AND ALL PHYSICAL FEATURES INCLUDING STRUCTURE LOCATIONS WERE PROVIDED BY:
   JAMES D. WEBB, PE, RLS
   233 EAST JAMES CAMPBELL BOULEVARD
   COLUMBIA, TN 38401
   PHONE: (931) 388-2329 FAX: (931) 381-8106
6. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES (INCLUDING STORM DRAINAGE PIPES OR STRUCTURES) BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION ISSUED BY AGC OF AMERICA, INC., AND THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
8. CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES AND OBTAIN ALL PERMITS.

SEE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS

LEGEND

- ASPHALT PAVEMENT
- CONCRETE SIDEWALK/PAVEMENT
- (24) INDICATES NUMBER OF PARKING SPACES IN ROW
- (2 / C-1) DETAIL "2" ON SHEET "C-1"
- SSWL 4" SINGLE SOLID WHITE LINE

LAYOUT PLAN
SCALE: 1" = 30'

NORTH

PARKING SUMMARY

94 PARKING SPACES
6 HANDICAP SPACES
100 TOTAL PARKING SPACES
96 REQUIRED PARKING SPACES

PARKING REQUIREMENTS
APARTMENT = 1.5 SPACE PER APARTMENT
(1.5 x 54 APARTMENTS) = 81 PARKING SPACES
3,649 S.F. OFFICE/RETAIL 1 SPACE/250 S.F. 15 SPACES

FUTURE RESERVED PARKING SPACES
MAX. 4 PARKING SPACES

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JUN 20 2023
By: .....

BATSON & ASSOCIATES
Civil Engineering Consultants
401 HOLLOW SPRINGS DRIVE
BRENTWOOD, TENNESSEE 37027
(615) 424-4840 ● FAX (615) 370-9363
batsonengineering@comcast.net

BARRY M. BATSON
REGISTERED ENGINEER
STATE OF TENNESSEE

ARDEN VILLAGE
BUILDING A
PHASE 2
LOTS 209 & 210
COLUMBIA, TN

DESCRIPTION	DATE

PROJECT NO. -
DATE
DRAWN BY BH
CHECKED BY

LAYOUT PLAN

C-1

SHEET 1 OF -

Columbia Power and Water Systems
Application for Water Service

This is an application to Columbia Power and Water Systems (CPWS) to evaluate the request for water service for the property set forth in this application, for any parcel of real property requiring new or increased service, or requiring a public water line extension.

This application package consists of this application form, a fire flow requirements letter from the Columbia Fire Marshall, and a digital copy of the site plan of the project (developed in CAD/GIS and submitted in PDF format, no hand-drawn plans will be accepted). All of these documents must be provided to CPWS before any action will be taken on this application.

Project Name: Arden Village 209 & 210 Phase II

Project Location: HWY 31 Arden Village Dr

Tax Map & Parcel Number(s): 51 : 2

Is this part of a larger development? ☒ YES

Located within City limits? ☒ YES

Annexation? ☐ YES

Approved by the Planning Commission? ☐ YES

Section/Phase number: 209 & 210 Phase II

Approximate date water service is desired: 3/1/23

Please indicate the primary contact for coordination with CPWS (provide contact info for all):

☐ Developer ☐ Owner ☒ Engineer

Developer Name: Regent Homes LLC

Authorized Representative: Garry Batson

Title: Engineer

Contact info for Authorized Representative

Address: 401 Hollow Spring Ct
Brentwood TN 37027

Telephone: 615-424-4840

Email: batsonengineering@comcast.net

Property Owner Name (if different): Regent Homes LLC

Authorized Representative: Andy Davidson

Title: Project Manager

Address: 7326 Althorp Way
Nashville TN 37211

Telephone: 615-981-0900

Email: andy.davidson@regenthomes-tn.com

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JUN 20 2023
By: 23-0244

Engineer/Company Name: Batson And Associates
Contact: Garry Batson
Title: President
Address: 401 Hollow Spring Ct
Brentwood TN 37027
Telephone: 615-424-4840
Email: batsonengineering@comcast.net

FOR RESIDENTIAL PROJECTS

Number of Single-Family units, this phase (townhome or SFD):

Total number of planned units (for multi-phase projects): 9

For Multi-Family Units Only

Number of 1-bedroom units: 2

Number of 2-bedroom units: 4

Number of 3-bedroom units:

Number of 4-bedroom units:

Please describe any additional amenities needing water service (pool house, irrigation for common areas, etc.):

The development consist of a 3 story, Type VB wood framed structure, sprinklered, containing 3 retail units totalling 3,454 S.F. of commercial on floor 1, and 6 residential units totalling 6,672 sf on floors 2 and 3

FOR COMMERCIAL/INSTITUTIONAL PROJECTS

Flow and residual pressure (PSI) required for each type of service: Fire:

Irrigation:

For each building, please indicate number of stories and square footage of each use type:

Floor 1- 3 units Retail/light commercial, Total 3,454 sf
Floor 2- 3 units Residential, (1-1BR, 2-2BR) Total 3,336 sf
Floor 3- 3 units Residential, (1-1BR, 2-2BR) Total 3,336 sf

CITY OF
COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Preliminary Plat, Site Development Plan, and PUD Checklist

Development: Arden Village PUD master

This checklist shall be completed, and included with the submittal documents. If the submittal does not contain a completed checklist, it shall be deemed incomplete. All below listed items shall be included in the submittal documents and plans, as well as any further information required by the City of Columbia to evaluate compliance and to perform a full and complete review. See Zoning Ordinance Article 8 and Subdivision Regulations.

General

- ☑ Name of development
- ☑ Contact info for the owner and licensed design professional(s) preparing plan: name, address, email, phone
- ☑ Plan sealed by a Design Professional licensed in the State of Tennessee.
- ☑ North Arrow, legend, and site vicinity map
- ☑ Graphic Scale: between 1 in. = 10 ft. and 1 in. =100 ft.
- ☑ Survey stamped by a State of Tennessee Licensed Professional Land Surveyor, with all project boundaries including bearings and angles to the nearest hundredth, utilities, and existing streets and rights-of-way. NA
- ☐ Note referencing Tennessee State Plane Coordinate System, NAD 83 Datum
- ☑ All property boundaries, existing easements, and encumbrances
- ☐ Parcel identification, owner, and deed and plat references of adjoining properties
- ☐ Proposed phasing and timetable for all phases of development
- ☐ Traffic Impact Study, as required.
- ☑ The substance of all existing and proposed covenants, easements, or other restrictions.

Lots and Land-Use

- ☑ The size of total property to be developed in square feet and acres
- ☑ Lot numbers of all proposed lots, with dimensions, locations, and square footage NA
- ☑ A tabulation of the land area to be devoted to various uses and activities and overall densities.
- ☐ Typical lot layout depicting proposed setbacks, yards, and easements, where applicable

Structures

- ☑ Location and approximate dimensions of all existing and proposed structures.
- ☑ Location of all earth retaining structures, with approximate top and bottom of wall elevations.
- ☑ Existing and intended use of all buildings and structures on site, including the number of dwelling units and density, where applicable NA
- ☐ Location, type, and size of proposed signs
- ☐ Approximate height, bulk, and the utilization of structures including activities and the number of living units.

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DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Grading, Drainage, and Storm

- ☐ Existing conditions and contours at vertical intervals of not more than two (2) feet
- ☐ General proposed contours at vertical intervals of not more than two (2) feet
- ☐ FEMA Special Flood Hazard Area (SFHA), 100-year Floodplain (F-P), and Floodway (F-W) boundaries with elevations and the exact location of the nearest benchmark. Indicate the Flood Insurance Rate Map (FIRM) panel number, its effective date, and flood insurance zones

NA

- ☐ Location and dimension of aquatic buffer zones
- ☐ General layout of the proposed storm drainage system including surface and subsurface drainage systems, areas for detention, and water quality devices.
- ☐ Identification of all critical lots

Streets, Parking, and Pedestrian Elements

- ☑ Proposed street and alley rights-of-way, typical sections, widths, classification, names, and proposed ownership and maintenance responsibility
- ☑ Proposed connections to existing and proposed streets (including classification) located outside the development

NA

- ☐ Proposed improvements as identified in the Traffic Impact Study, as required
- ☑ Existing and proposed sidewalks, trails, and other pedestrian elements
- ☑ Existing and proposed on-street and off-street parking and loading areas
- ☑ Summary of all provided and required parking

Landscaping, Open Space, and Amenities

- ☑ Natural features on site including, but not limited to, wetlands, streams, ponds, springs, sinkholes, wells, rock outcroppings, excessive slopes, and forested areas
- ☑ Landscaped areas and buffers with details on proposed plantings, existing vegetation, and other features.

NA

- ☑ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ☑ Any amenity features and structures for private or public benefit.
- ☐ Location, dimension, and materials of fences and walls
- ☐ Tree Canopy retention

Utilities

- ☐ General layout and location of existing and proposed utilities and utility features including, but not limited to potable water, fire hydrants, sanitary sewer, storm sewer, and power and communication facilities.

NA

- ☐ Acknowledgement from water, sewer, and power utility providers that the proposed development may be adequately served with existing infrastructure, or if improvements are required to adequately serve the development, a general statement of the improvements.

CITY OF
COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PUD Specific Items

- ☑ Legal Description of Property
- ☐ Owner's Affidavit
- ☐ List of all variances requested
- ☐ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ☑ Location and approximate dimensions of all existing and proposed structures including approximate height, bulk, and the utilization of structures including activities and the number of living units. Include architectural renderings of all proposed structures with materials listed.
- ☑ The substance of covenants, grants of easements or other restrictions to be imposed upon the use of the land, buildings and structures including proposed easements for public utilities on the property or documentation of off-site easements.
- ☐ Exterior lighting

If the application is deemed incomplete by the Zoning Administrator, a written request shall be made within ten days after the original submittal, for further information. In such case the application shall be held in abeyance until deemed complete for final review. No plan shall be formally presented for Planning Commission action until such plan is found complete, compliant with City standards, and ready for review.

Checklist Completed By:

Benjamin Sexton	Benjamin Sexton	6/20/23
Print Name	Signature	Date

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	2475 Nashville Hwy – Arden Village		
	TAX MAP:	GROUP:	PARCEL:
SUMMARY OF NATURE OF REQUEST AND WORK	THE REVISION OF "BLDG A" in AREA II, from OFFICE/RETAIL to MIXED USE. We propose 3 commercial tenant spaces on the 1st floor, while the second & third floors will accomodate a total of 6 res units. ARC approved in late 2022		

DATE OF PRE-APPLICATION CONFERENCE	10/5/22	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☐ Annexation ☐ Rezoning ☐ Preliminary Plat ☐ Final Plat ☑ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☑ Other: REVISION TO PUD UNIT STRUCTURE **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) Arden Village Area II ☐ Total Number of Lots ☐ Total acreage 44.69

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JUN 20 2023
By: 23-0244

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	DAVID MCGOWAN III	PHONE	615-533-8948
ADDRESS	7376 ALTHORP WAY 103 NASHVILLE, TN 37211	EMAIL	davecmcg3@gmail.com

PROPERTY OWNER NAME	David McGowan Jr.	PHONE	615-533-5566
ADDRESS	"	EMAIL	david.mcgowan@regenthomes-tn.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

David McGowan III		6/20/23
APPLICANT NAME	APPLICANT SIGNATURE	DATE
David McGowan Jr.		6/20/23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, July 11, 2023

ITEM NO.
23-0258

DESCRIPTION: Request from Steven Saenz for an Exception to Access Management at 107 S. James Campbell Blvd.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. See City Engineer's decision.
2. Subject to TDOT driveway permit.

Public Works

3. No comment on exception to access management but have included a copy of the City's dumpster guidelines and accessibility requirements.

Police

4. No comments provided.

Building

5. No comments.

Columbia Power

6. Columbia Power System has an existing power line near your proposed development.
   We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
   • Unfortunately, due to current supply chain challenges, no timeframe can be

guaranteed regarding the availability of meters or transformers appropriate for your development.

Fire

7. No Comments

Wastewater

8. Columbia Wastewater has no concern.

Maury County Schools

9. No comment.

Planning

1. Conformity with zoning ordinance to be determined during review of LDP/building permits. An exception to the Access Management Ordinance does not relieve any zoning requirement related to site design.

Maury County E911

10. No comment.

ATT

11. ATT intends to serve.

Atmos Energy

12. No comments provided.

Duck River Electric Membership Corp

13. No comments provided.

Maury County Highway Dept.

14. No comments provided.

Columbia Water

15. "No water system impact at this time, should the project move forward a water service availability application should be submitted. A flow diagram and instructions on how to submit the water availability request are available on the CPWS website or at the City Fire Marshall's website"

ATTACHMENTS: Concept Plan

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

SITE DATA TABLE

JURISDICTION:
CITY
ZONING:
CD-4C

REQUIRED BUILDING SETBACKS:
FRONT (S)=0'
REAR (N) = 0'
SIDE (W) = 6'
SIDE (E) = 3'

SITE ACREAGE:
PANDA EXPRESS = 43,768 SF / 1.00 ACRES

FLOOR AREA RATIO:
PANDA EXPRESS = 2,621 SF BLDG /
SITE AREA 43,768 = 5.99%

IMPERVIOUS SURFACE RATIO
SITE TOTAL SQ FEET = 43,768 SF
PAVEMENT/SIDEWALKS = 29,530 SF
TOTAL BUILDING = 2,621 SF
TOTAL PERVIOUS = 11,617 SF
TOTAL IMPERVIOUS = 32,151 SF / 43,768 = 73.46%

PARKING
1 SPACE PER 100 SF OF FLOOR AREA
PARKING REQUIRED = 26
TOTAL PARKING PROVIDED PANDA EXPRESS = 34

REQUIRED PARKING SETBACKS:
FRONT (N)= 0'
REAR (S) = 0'
SIDE (W) = 0'
SIDE (E) = 0'

FLOOD HAZARD:
F.I.R.M. MAP NO. 47119C0285E

IF EXISTING SIDEWALKS ARE DAMAGED, THESE MUST BE REPAIRED AT THE DEVELOPER'S EXPENSE.

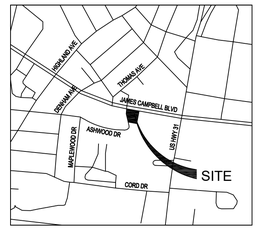
ALL DISTURBED AREAS SHALL BE STABILIZED PER THE LANDSCAPE PLAN.

PROPOSED SITE LEGEND

- (8) PARKING STALL COUNT - SEE PLANS
- LIGHT DUTY CONCRETE PAVING - SEE DETAIL SHEET SECTION (C03.1)
- HEAVY DUTY CONCRETE PAVING - SEE DETAIL SHEET SECTION (C03.1)
- CONCRETE SIDEWALK - SEE DETAIL SHEET (C03.1)
- CONCRETE PAVING AT DUMPSTER ENCLOSURE AND DRIVE THRU PER GEOTECHNICAL REPORT
- HANDICAP PARKING
- DIRECTIONAL ARROWS
- PROPOSED CURB AND GUTTER AT CONCRETE - MONOLITHIC AT CONCRETE PAVEMENT - SEE DETAIL SHEET (C03.1)
- LIGHT POLE - SEE PHOTO METRIC PLAN - SEE LIGHT POLE BASE ON DETAIL SHEET (C03.1)



LOCATION MAP



NOT TO SCALE

GENERAL NOTES

SEE NOTES ON SHEET C01.1

SITE KEY NOTES:

PAVEMENT AND CURBING

1. PROVIDE CURB AND GUTTER AT ASPHALT - MONOLITHIC CURB AT CONCRETE PAVEMENT - SEE DETAIL SHEET (C03.1)
2. PROVIDE CONCRETE SIDEWALKS PER DETAIL SHEET (C03.2) - PROVIDE CONCRETE SIDEWALK WITH INTEGRAL CURB AT BUILDING AND PARKING PER DETAIL SHEET (C03.1)
3. HEAVY DUTY CONCRETE PAVING AT DRIVE THRU ISLE - SEE DETAIL SHEET (C03.1) & GEOTECHNICAL REPORT (GRAY COLOR, LIGHT BROOM FINISH)
4. NEW HEAVY DUTY CONCRETE APRON AT DUMPSTER ENCLOSURE - SEE ARCHITECTURAL DETAIL SHEET - SEE DETAIL SHEET (C03.2)
5. LIGHT DUTY CONCRETE PAVING - SEE DETAIL SHEET (C03.1) & GEOTECHNICAL REPORT
6. HEAVY DUTY CONCRETE PAVING - SEE DETAIL SHEET (C03.1) & GEOTECHNICAL REPORT
7. SEALED CONC. SIDEWALK. (AQUA MIX SEALER'S CHOICE GOLD). CONCRETE TO BE LIGHT BROOM TEXTURE FINISH. PROVIDE UNDER SLAB TREATMENT PER SOIL REPORT. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. AND ALL SIDE WALKS.
8. EXPANSION JOINT - SEE GEOTECHNICAL REPORT FOR SPACING - SEE DETAIL SHEET (C03.2)
9. CONTROL JOINTS - SEE GEOTECHNICAL REPORT FOR SPACING - SEE DETAIL SHEET (C03.2)

PAVEMENT STRIPING / ADA FEATURES / TRAFFIC SIGNAGE

15. ADA ACCESSIBLE RAMP AT HANDICAP PARKING STALLS - SEE GRADING PLAN FOR ELEVATIONS - SEE HANDICAP PARKING ON DETAIL SHEET (C03.1)
16. ADA DETECTABLE WARNING AT EDGE OF PAVEMENT - SEE HANDICAP PARKING DETAIL ON DETAIL SHEET (C03.1)
17. HANDICAP AND VAN ACCESSIBLE PARKING LAYOUT, SIGNAGE, AND STRIPING - SEE DETAIL SHEET (C03.1)
18. ALL SITE DIRECTIONAL SIGNAGE, PAVEMENT STRIPING AND MARKINGS SHALL BE COORDINATED WITH PRG'S PROJECT MANAGER.
19. DO NOT ENTER SIGN PER MUTCD / LOCAL SPECS
20. 4" WIDE PARKING STRIPE PAINTED YELLOW PER CITY SPECS.
21. TRAFFIC ARROW PAINTED YELLOW - SEE DETAIL SHEET (C03.1)
22. STOP BAR PAINTED WHITE PER CITY SPECS.
23. "STOP" SIGN PER MUTCD/LOCAL MUNICIPALITY SPECIFICATIONS
24. 4" WIDE PARKING STRIPE, SPACED AT 2' O.C. AT 45° PAINTED YELLOW PER MUTCD SPECS.
25. BOLLARD PLAN - SEE DETAIL (C03.1)
26. CURB CUT AT BIORETENTION

PANDA EXPRESS SITE FEATURES

30. DRIVE THRU LANE SENSOR LOOP SEE DETAIL - SEE ARCH DETAIL SHEET
31. NEW PAINTED SWITCHGEAR LOCATION - SEE ELECTRICAL PLANS
32. ORDER CONFIRMATION BOARD - SEE ARCH DETAIL SHEET
33. DRIVE THROUGH MENU BOARD-INSTALLED BY GC. VERIFY WITH PANDA P.M. - SEE ARCH DETAIL SHEET
34. CLEARANCE BAR INSTALLED BY SIGN VENDOR - RE: ELECTRICAL DRAWING FOR REQUIREMENTS, G.C. TO COORDINATE LOCATION WITH PRG P.M.
35. WHEEL STOP - GNR TECHNOLOGIES, "PARK-IT" 6' PARKING CURB #16201R (BLACK AND YELLOW) OR OWNER APPROVED EQUAL
36. TRASH ENCLOSURE, CONFIRM BIN SIZE WITH LOCAL WASTE MANAGEMENT COMPANY. (TYP. 6 YARD BIN) - SEE ARCH DETAIL SHEET
37. NEW SIGN TO BE ADDED TO EXISTING POLE MOUNTED SIGN (SEE SIGN DESIGN BY OTHERS)
38. LIGHT POLE - SEE PHOTO METRIC PLAN - SEE LIGHT POLE BASE ON DETAIL SHEET (C03.2)
39. ROOF DRAIN AND OVERFLOW DRAIN FROM ROOF UNDER CONCRETE FLATWORK TO FACE OF CURB - SEE M.E.P. PLANS
40. EDGE OF CONCRETE SIDEWALK AT PLANTER BED - SEE LANDSCAPE PLAN (L01.0)
41. "THANK YOU / DO NOT ENTER" SIGN

ADDITIONAL SITE FEATURES

50. MATCH EXISTING GRADE
51. RETAINING WALL - SEE ELEVATIONS ON GRADING PLAN - SEE STRUCTURAL DETAILS
52. PROVIDE SIDEWALK WITH CURB AND GUTTER PER TDOT SPECS. - SEE DETAIL MM-SW1
53. BIORETENTION, LEVEL 2 - SEE DETAIL ON SHEET (C05.5)
54. HEAVY DUTY CONCRETE DRIVE ENTRANCE WITH HANDICAPP RAMPS PER TDOT SPECS - SEE TDOT DETAIL RP-D-16
55. THERMAL PLASTIC WHITE STOP BAR PER TDOT SPECS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

BM #1
TYPE: BENCHMARK
NORTHING: 458,789.90
EASTING: 1,658,056.24
ELEVATION: 687.76

FLOOD STATEMENT:
BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS IN ZONE X OF THE FLOOD INSURANCE RATE MAP NUMBER 47119C0285E WHICH BEARS AN EFFECTIVE DATE OF 04-16-2007 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE AND A FLOOD ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR A VARIANCE FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

Tennessee 811
Know what's below. Call before you dig.

PANDA EXPRESS, INC.
1683 Walnut Grove Ave.
Rosemead, California
91770
Telephone: 626.799.9898
Facsimile: 626.372.8288

All ideas, designs, arrangement and plans indicated or represented by this drawing are the property of Panda Express Inc. and were created for use on this specific project. None of these ideas, designs, arrangements or plans may be used by or disclosed to any person, firm, or corporation without the written permission of Panda Express Inc.

REVISIONS:

ISSUE DATE:

1ST	PERMIT/BID SET

DRAWN BY: RLP

PANDA PROJECT #: S8-24-D22761
PANDA STORE #: D22761

Civil Engineering Services
Engineering, Land Planning, and Environmental
7705 Spicer Farm Lane
Fairview, Tennessee
37062
Phone: (615) 533-0401
e-mail: ray@civilengineeringservices.net

PANDA EXPRESS

TRUE WARM & WELCOME
107 S JAMES M CAMPBELL BLVD
COLUMBIA, TN 38401

SITE PLAN

C03.0

ISSUE FOR CONSTRUCTION XX-XX-XXXX

City of Columbia, Tennessee
Attn. Glenn Harper
700 North Garden Street

June 16, 2023

RE: 107 S James M Campbell Blvd – Access Management Exception Request

Dear Mr. Harper,

I (Steven Saenz on behalf of Panda Express) would like to redefine driveway access at 107 S James M Campbell Blvd from an existing driveway, approximately 128 feet wide, to a defined 36' feet wide right-in-right-out access driveway to serve a proposed free standing drive-thru restaurant. The driveway access is off an existing 4-lane principal arterial road with a raised curb center median and a shoulder lane.

During site plan pre-check review the access management regulations were cited and would limit site access to only Ashwood Drive, a major local, non-residential roadway.

It was discussed during the pre-check meeting that site access off S James M Campbell Blvd might be considered if a driveway aligns with an existing medium curb cut fronting the adjacent property to the East, 105 S James M Campbell Blvd. Cross access with the adjacent property owner was granted, however the adjacent property owner would not grant unobstructed access due to the nature of their business, selling cars – cars will be parked along the front of their property thus blocking cross access.

Designing access off Ashwood Drive per the access management regulation, yielded a site design that was not conducive to a drive-thru restaurant for various reasons. The primary factor is the vast difference in topography (grades) from the required access on Ashwood and the finish floor elevation of the proposed building relative to S James Campbell. Other sites elements were considering in grading such as ADA pedestrian access, the drive-thru window, and ADA accessible parking. Access off Ashwood drive required allocating approximately 25% of the site for a dedicated access ramp to the building pad and other site elements. The slope of the ramp exceeds recommended slope for delivery trucks with a wheelbase of 50 feet, which is a Panda standard delivery truck. Several costly retaining walls would be required that overlap existing storm utilities, and parking minimum requirements could not be met.

The strict enforcement of the access management regulation would result in logistical difficulties and undue hardship. Paired with an adjacent property owner that will not grant unobstructed cross access for the foreseeable future, a dedicated driveway at 107 S James M Campbell Blvd should be considered.

I have attached a site plan showing the proposed driveway.

Thank you for your consideration on this matter.

Sincerely,

Steven Saenz

GENERAL AFFIDAVIT

I, Steven Saenz, personally appeared before the Undersigned Notary Public, and under affirmation make the following statement(s):

Regarding my letter dated 16 June 2023 to the City of Columbia, 107 S James M Campbell Blvd – Access Management Exception Request:

This affidavit is to affirm that the information provided in the Access Management Exception Request is true and correct.

Dated this 20th day of June, 2023

Steven Saenz

Subscribed and Sworn before me, this 20th day of June, 2023

COURTNEY BLACKMAN 06/20/23

Notary Public

COURTNEY BLACKMAN
Notary Public, State of Texas
Comm. Expires 12-17-2025
Notary ID 129656335

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	107 S James M Campbell BLVD Columbia, TN 38401		
	TAX MAP: 113E	GROUP: B	PARCEL: 005.00
SUMMARY OF NATURE OF REQUEST AND WORK	Request for exception to the City of Columbia's access management regulations for a commercial building by redefining an existing access of 128 feet to a 36 feet wide right-in-right-out access driveway.		

DATE OF PRE-APPLICATION CONFERENCE		*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ❑ Preliminary Plat ❑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ☒ Other: Access Management Exception **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) _____ ❑ Total Number of Lots _____ ❑ Total acreage _____

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Steven Saenz	PHONE	214-638-6800
ADDRESS		EMAIL	ssaenz@idgroupdallas.com

PROPERTY OWNER NAME		PHONE	
ADDRESS		EMAIL	

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Steven Saenz		6/20/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
		6/20/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

City of Columbia, Tennessee
Attn. Glenn Harper
700 North Garden Street

June 16, 2023

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Dated this 20th day of June, 2023

Steven Saenz

Subscribed and Sworn before me, this 20th day of June, 2023

COURTNEY BLACKMAN 06/20/23

Notary Public

COURTNEY BLACKMAN
Notary Public, State of Texas
Comm. Expires 12-17-2025
Notary ID 129656335

From: Glenn Harper <gharper@columbiatn.com>
Sent: Tuesday, June 20, 2023 3:09 PM
To: Lee Pennington
Cc: ray civilengineeringservices.net; Douglas Toney; Steven Saenz (ssaenz@idgroupdallas.com); Melissa Sanders; Paul Keltner; Kevin McCarthy
Subject: RE: Panda Express Columbia James Campbell Access Approval
Attachments: Panda Express Concept Plan.pdf; Panda Express Notraized Letter.pdf

Mr. Pennington,

Thank you for providing the required documentation to request this exception to the Access Management Ordinance. When a tract of land has access to multiple streets; the access shall be provided from the street with the lesser functional classification. In this case the proposed site has two street frontages; which are South James M Campbell Boulevard (arterial) and Nicholas Long Drive (local). Nicholas Long Drive is the lesser classified street of these frontages and would be the prescribed access location for compliance with the Access Management Ordinance. Further an access point along the South James M Campbell Boulevard frontage could not meet *Corner Clearance Requirements* or *Access and Driveway Spacing Requirements* of the Access Management Ordinance.

I am unable to support this request due to noncompliance with multiple sections of the access management ordinance as noted above. This site would be allowed to have an access location along Nicholas Long Drive with the centerline of that access being located a minimum 100’ from the right-of-way (or projected) line of South James M Campbell Boulevard. Staff could also support the site obtaining access through the property to the East (Map 113E, Group B, Parcel 6.00) with an access location along South James M Campbell Boulevard that aligns with the existing median opening for this adjacent eastern property.

Respectfully,

Glenn Harper, P.E.
City Engineer
700 North Garden St.
Columbia, TN 38401
(931)560-1560
CITY OF COLUMBIA
TENNESSEE

Wastewater Treatment Annexation

Project #:	23-0245	Location:	Map 88 Parcel 33.01
Applicant:	City of Columbia	Case Type(s):	Annexation Default Zoning
Staff Planner:	Kevin C. McCarthy, AICP	Proposed Use:	Utility Facility

PROJECT SUMMARY

The applicant requests annexation of 22 acres of land with the default zoning of CD-3L (Neighborhood Large Lot Character District). City Council has previously approved plans for expansion of the City's wastewater treatment plant and appropriated funds for the acquisition of land and capital costs. Property immediately adjacent to the existing treatment facility will accommodate the expansion. The expansion site is currently located outside of corporate limits of Columbia, in unincorporated Maury County. The Wastewater Department requests annexation of the subject site under the default zoning of CD-3L.

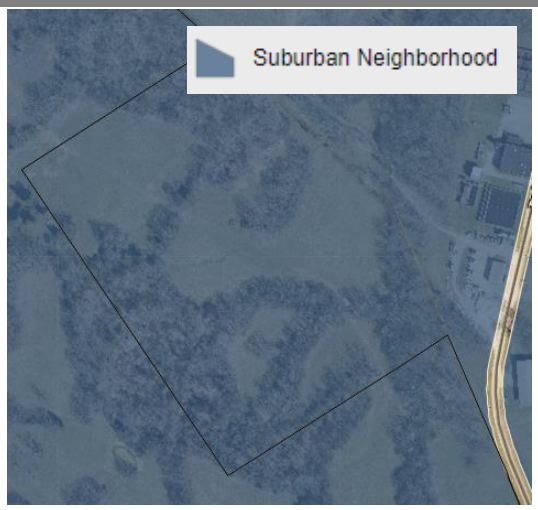
- The DRC reviewed this proposal at its July 2023 meeting.
- Development Services staff met with the Wastewater Department on July 19th to discuss the process of annexation.
- The request is consistent with the Connect Columbia, the City's comprehensive plan.
- CD-3L is an appropriate zoning designation for the subject site.
- The Planning Commission is a **recommending body** for annexation requests.
- Templates are provided at the end of the report to assist the Planning Commission in crafting properly formatted motions.

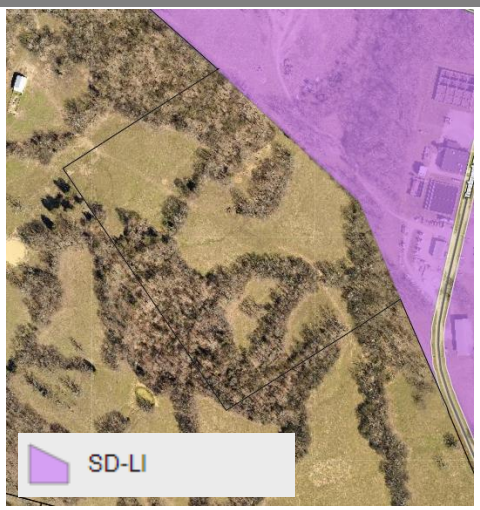
SITE INFORMATION

CURRENT ZONING	EXISTING USE	EXISTING IMP.	LAND AREA
Unincorporated	Vacant	Vacant	+/-22.00 Acres



FUTURE LAND USE MAP	ZONING MAP





SITE CONTEXT/ADJACENT PROPERTIES			
	Future Land Use	Zoning	Current Use
Subject Property	Suburban Neighborhood	Unincorporated	Single-Family
North	Suburban Neighborhood	SD-LI	Utility Facility
South	Suburban Neighborhood	Unincorporated	Single-Family
East	Suburban Neighborhood	SD-LI	Utility Facility
West	Suburban Neighborhood	Unincorporated	Single-Family

The subject site is located inside the Urban Growth Boundary (UGB) and immediately outside the corporate limits of Columbia. It is adjacent to the existing wastewater treatment facility. The property is bounded on the north and west by other portions of the facility. Existing large-lot residential property borders the property on the south and east. The future land use of the subject property and all adjacent properties is Suburban Neighborhood.

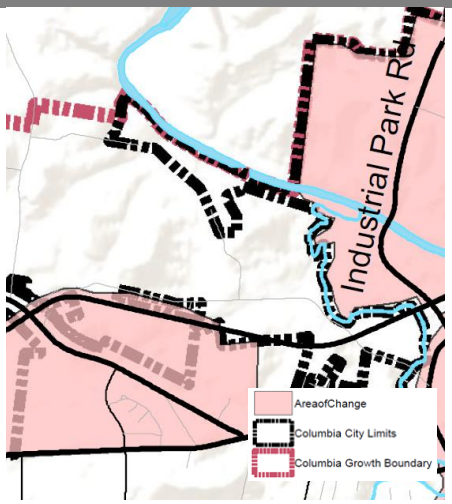
CONSISTENCY WITH CONNECT COLUMBIA

Suburban Neighborhood: The future land use of the subject site is Suburban Neighborhood. The Character Area is conducive to residential development and neighborhoods, with limited, intermixed and compatible civic uses (Connect Columbia, p. 22). The Future Land Use Plan indicates that "the general development pattern is defined by a single use activity on individual lots" (Connect Columbia, p. 22). Green space is largely incorporated on individual lots; neighborhood and community parks should be located within neighborhoods to enhance the quality of life. Development should emphasize connectivity and housing diversity (Connect Columbia, p. 23). The Character Area Matrix from page twenty-two of the Future Land Use Plan (excerpted below) is a guide to approving requests for zoning map amendments and Planned Unit Developments. The future land use classification is implemented by the CD-3L and CD-3 character districts, as well as PUDs.

CHARACTER AREA MATRIX				
	Development Pattern	**Zoning Category and Uses**	**Infrastructure**	**Design Standard**
SUBURBAN NEIGHBORHOOD	**Is the property in an Area of Change?** **No:** The development pattern is established. Changes to overall character of the area should rarely occur. **Yes:** The development pattern is evolving. Changes to the area are likely as development occurs. New development should respect both the natural environment and blend with existing, surrounding neighborhood assets.	**Residential Uses Zoning Category:** Low Density Residential District and Medium Residential. **Public and Civic Uses Zoning Category:** Religious Facilities, Government Facilities (low impact), and Educational Facilities.	**Not in an Area of Change:** Limited new services, with mostly in-fill enhancements to existing infrastructure. **Within an Area of Change:** Extensions to transportation, water, sewer, and other services should be expected. New service or extensive redevelopment of existing services should be vetted and reviewed by Planning Commission and City Council as a primary element of approval.	Scale: New dwellings and structures should be compatible with the established character of the area. Architecture: New developments should include a mix of architectural styles. Residential garages, if front-facing, should be recessed from the front façade of the structure. Civic use should respect the residential character, while providing architectural interest.

AREA OF CHANGE

The subject site **is not located** in an Area of Change (Connect Columbia Map 3). In 2017 the Planning Commission determined that the development pattern was established. Changes to overall character of the area should rarely occur. The designation does not necessarily mean that any particular development proposal is inconsistent with Connect Columbia. It does mean that the Planning Commission may pause to ensure the context of the area surrounding the subject property is considered fully in the review process. (Connect Columbia p. 14).



CONFORMITY WITH ZONING ORDINANCE

The applicant provided a concept plan with the request for annexation. The plan depicts a utility facility under a CD-3L zoning designation.

- Newly annexed properties shall have an initial zoning of CD-3L unless the applicant requests and the City Council approves, a different zoning classification consistent with Connect Columbia.
- The Zoning Ordinance permits utility facilities in every district (Table 4.3.9.A-1) subject to limited use standards listed in section **4.3.9.E**.

REVIEW PROCESS

The Development Review Committee evaluated the proposed Annexation at its July 2023 meeting, as directed by section **8.3.7** of the Zoning Ordinance. Technical comments are provided in the agenda package.

Section **8.5.19** of the Zoning Ordinance directs the Planning Commission to review and make a recommendation on all proposed changes to the Official Zoning Map. The Zoning Ordinance contains an apparent contradiction related to the zoning of newly annexed territory. Section **2.5** of the Ordinance indicates that "newly annexed properties shall have an initial zoning of CD-3L" unless that applicant makes a concurrent request for rezoning to any other district. Section **8.5.19.M** provides that "[w]henever new territory is added to the zoning jurisdiction of the City by any means, the Planning Commission shall recommend to the City Council appropriate zoning;" **§ 8.5.19.M** further indicates that "the area shall be temporarily unclassified" until City Council establishes the appropriate zoning.

The Planning Commission is recommending body for annexations and rezoning under **§ 8.3.3.B.3** of the Zoning Ordinance.

Section **8.5.19.H.4** of the Zoning Ordinance establishes the review criteria for approval of all changes to the Official Zoning Map:

a. The Rezoning is consistent and not in conflict with the Comprehensive Plan or other applicable approved local plans for the area;

b. It has been determined that the legal purposes for which zoning exists, as set forth in Section 1.5 [, are not contravened]; [1]

[1] Ordinance 4400 contains this incomplete sentence. The previous ordinance contained a nearly identical list of criteria at § 3.18.7.B. The corresponding criterion in Ordinance 3638 read "the legal purposes for which zoning exists are not contravened."

c. *It has been determined that there will be no adverse effect upon Adjoining property owners unless such effect can be justified by the overwhelming public good or welfare;*
d. *It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public;*
e. *It has been determined that conditions affecting the area have changed to a sufficient to warrant the Zoning Map Amendment or that the existing zoning of the property was the result of a mistake;*
f. *It has been determined that adequate school, road, parks, wastewater treatment, water supply, and stormwater drainage facilities are available*

SUMMARY OF DEVELOPMENT REVIEW COMMITTEE COMMENTS

The DRC reviewed this proposal at its July 2023 meeting. A full list of comments, and the applicant's responses, is provided in the agenda packet. Some key comments are noted below.

- **Planning** indicated that the eventual utility facility must conform to the limited use standards at **§ 4.3.9.E.6(a-k)** of the Zoning Ordinance.
- The **Office of the Fire Marshal** and Columbia Water System's (**CPWS**) consultant (Inflow) noted that the applicant would need to confirm water availability.
- Columbia Power (**CPWS**) noted that it is able to serve the site.

COMMENTARY FROM PROFESSIONAL PLANNING STAFF

CD-3L is an appropriate zoning designation for the subject site. As mentioned above, the Zoning Ordinance contains an apparent contradiction related to the zoning of newly annexed territory. Fortunately, Planning Commission can leave the apparent contradiction unresolved in this case. The CD-3L zoning is consistent with the Future Land Use classification and the Ordinance permits the intended use in all districts. The Planning Commission may simply recommend annexation with a zoning of CD-3L, thereby conforming to both **§ 2.5** and **§ 8.5.19.M**.

Approval of the requested annexation and rezoning is appropriate. The request satisfies the criteria of the Ordinance for a change to the Official Zoning Map, as described below. The only outstanding technical comment is that, prior to an official public hearing, CPWS will need to provide written verification that adequate water will be available at the site. Actual development of the site will be subject to subsequent administrative reviews. The applicable standards of the Ordinance will mitigate any negative impacts on surrounding neighbors.

The requested CD-3L zoning is consistent with Connect Columbia. The subject site's future land use classification is Suburban Neighborhood. The future land use classification is implemented

by the CD-3L and CD-3 character districts, as well as PUDs. The Zoning Ordinance allows the intended use in a CD-3L district.

Annexation and rezoning of the subject property do not contravene the purposes of zoning. In particular, annexation and development of the subject site will provide for the beneficial use of property through ought Columbia by improving wastewater treatment capacity.

There are no known adverse impacts on surrounding property owners. The only adjacent property owner is the previous owner of the property. No adverse impacts to other properties are known at this time. In the event that the proposed annexation and rezoning does impact other properties, approval, combined with efforts to mitigate the impacts, may be justified by the overwhelming public good of the proposed wastewater facility.

The proposed annexation and rezoning will benefit the city as a whole. No one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

Conditions affecting the area have changed to a sufficient to warrant the Zoning Map Amendment. The City has previously determined that an expansion of wastewater treatment capacity at the subject site is necessary in order to maintain the level of service for current and future residents. Annexation of the subject property is a condition precedent for expansion of the wastewater facility.

There will be sufficient infrastructure to support the property. The proposed use of the property is itself an expansion of wastewater infrastructure. Although the subject site does not presently have adequate water supply for fire protection, Columbia Power and Water intends to extend service to the site sufficient to provide fire flow and water for plant operations.

SAMPLE MOTIONS

Approve:

Move to find, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.M** of the City of Columbia Zoning Ordinance have been satisfied and recommend approval of the proposed annexation and rezoning *[, subject to technical comments and other conditions presented by planning staff*].

Approve Subject to Conditions:

Move to find, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.M** of the City of Columbia Zoning Ordinance have been satisfied and recommend approval of the proposed annexation and rezoning, subject to the following conditions: [*list conditions of approval crafted by Planning Commission*].

Deny:

Move to recommend denial the requested annexation and rezoning having found, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.M** of the City of Columbia Zoning Ordinance are not satisfied [*list specific reasons for denial*].

Defer:

Move to find that there is insufficient information to decide, defer the matter to the next regularly scheduled meeting of the Planning Commission, and request that the [*applicant/staff*] provide: [*list additional information*] for review at a future meeting.

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, July 11, 2023

ITEM NO.
23-0245

DESCRIPTION: Request from City of Columbia Wastewater Department for Annexation with a Plan of Services of a 22 acre portion of Tax Map 88 Parcel 33.07 off Estes Lane.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. No comments on annexation.

Building

2. No comments.

Police

3. No comments provided.

Public Works

4. Please see attached Plan of Services. If dumpsters will be needed in this development, please reference the attached dumpster guidelines and accessibility requirements.To: Development Services
   Subject: Annexation of 22 Acre Portion of Tax Map 88 Parcel 33.07 off Estes Lane for Wastewater Treatment Plant
   Date: July 11, 2023
   Streets and Drainage
   Upon acceptance by City Council and all warranties have expired, all streets and drainage systems will be
   maintained by Public Works. Services will include:
   - Street sweeping
   - Catch basin cleaning
   - Street and curb repair
   - Snow removal

- Drainage maintenance
- Sidewalk repair

Signage
Upon acceptance by City Council, all approved street signs will be maintained by Public Works.

Columbia Power

5. Columbia Power System has an existing power line near your proposed development.
   We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.
   • Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Fire

6. You need to get a required water letter from the Fire Marshal's office
7. Once you get the required water letter from the Fire Marshal's Office, you need to apply for a water availability letter from CPWS and include the require water letter

Wastewater

8. Columbia Wastewater approves.

Maury County Schools

9. No comment.

Planning

10. Utility facility must conform to the limited use standards at 4.3.9.E.6(ak) of the Zoning Ordinance.
11. Additional information may be required. Please schedule a meeting with Development Services/Fire Marshal and IDG.

Maury County E911

12. No comment.

ATT

13. No comment.

Atmos Energy

14. No comments provided.

Duck River Electric Membership Corp

15. No comments provided.

Maury County Highway Dept.

16. No comments provided.

Columbia Water

17. "A water availability application should be submitted. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. A flow diagram and instructions on how to submit the water availability request are available on the CPWS website or at the City Fire Marshall's website"

ATTACHMENTS: Concept Plan

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

N 476014.87;
E 1644574.10

TOMMY R. MAYBERRY
TAX MAP 088
PARCEL 33.07

N 33° 54' W – 1165'±

PROPOSED
SITE BOUNDARY
22± ACRES

N 476982.03;
E 1643924.00

N 57° 29' E – 730'±

S 57° 29' W – 820'±

FUTURE
FINAL CLARIFIER

FUTURE
OXIDATION DITCH

PROPOSED
OXIDATION DITCH

PROPOSED
ANAEROBIC
REACTORS

PROPOSED
FINAL CLARIFIER

PROPOSED
SCUM SPS

PROPOSED
DISTRIBUTION
STRUCTURE

PROPOSED
OXIDATION DITCH

PROPOSED
FINAL CLARIFIER

PROPOSED
LOCAL SPS

30" RAS

30" RAS

48"

48"

PROPOSED
ELECTRICAL /
CHEMICAL FEED

PROPOSED
UV DISINFECTION
STRUCTURE

TOMMY R. MAYBERRY
TAX MAP 088
PARCEL 33.07

PROPOSED
SITE BOUNDARY
22± ACRES

APPROXIMATE
100 YR. FLOOD
BOUNDARY

CITY OF COLUMBIA
TAX MAP 088
PARCEL 33.01

POINT OF BEGINNING
N 476455.66;
E 1645265.55

PROPOSED
2–48"ø CULVERTS

IRON PIN
N 476858.05;
E 1645094.77

437'±

758'±

PROPOSED
60'x80'
MAINTENANCE
BUILDING

TOMMY R. MAYBERRY
TAX MAP 088
PARCEL 33.07

PROPOSED
SITE BOUNDARY
22± ACRES

APPROXIMATE
100 YR. FLOOD
BOUNDARY

N 477374.44;
E 1644539.57

CITY OF COLUMBIA
TAX MAP 088
PARCEL 33.01

4:1

42"

54"

48"

DRAFT
12/13/2021

SHEET – OF –	WASTEWATER TREATMENT PLANT IMPROVEMENTS CONTRACT – –		
REVISION OR ISSUE			
– –	PROPOSED SITE BOUNDARY		
	FOR COLUMBIA, TENNESSEE		
PROJECT NUMBER 2111	SCALE 1"=40' DATE 12/6/2021	WAUFORD Nashville, Tennessee (615)883-3243 www.jrwauford.com	DESIGNED SCL DRAWN WZM CHECKED SCL

PLAN OF SERVICES

FOR ANNEXATION
Off Estes Lane PROPERTY
+/-22 ACRES,
BEING A Portion Of
TAX MAP 88 PARCEL 33.07

A. Water

"A water availability should be submitted. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. A flow diagram and instructions on how to submit the water availability request are available on the CPWS website or at the City Fire Marshal's website"

B. Sewer

Columbia Wastewater approves.

C. Police

The jurisdiction of the Columbia Police Department will be extended to the areas annexed immediately upon the effective date of annexation.

D. Fire and Rescue

Additional Potential Concerns: Road width and integrity. The safety of citizens and first responder compromised by the width and integrity of the roadway raises additional concerns. Ideally, Fire Department vehicles should have enough road space to maneuver through traffic without putting anyone at risk. In relation to road space, Cul-de-sacs should be constructed to 96' ft. diameter, allowing for fire apparatus to safely turn around and navigate without obstruction. Additionally, the roadway should be wide enough to allow citizens' vehicles to yield the right of way safely.

Scope of Services:

The City of Columbia Fire & Rescue Department provides an array of services to the citizens and visitors of the City of Columbia. These services include but may not be

limited to non-emergency services such as fire prevention and codes enforcement, pre-incident planning, public education programs, smoke alarm check/replacement, emergency management preparedness, and emergency services such as fire suppression, heavy rescue, emergency medical first response, and hazardous materials response. The City of Columbia Fire Department currently holds an Insurance Service Organization (ISO) Class 1 rating.

1. Columbia Fire & Rescue strives to provide all services in a timely, courteous, and professional manner. Due to the nature of emergency services, we strive to arrive at the incident scene as quickly as possible but without posing additional dangers to the residents/visitors we meet while responding to your location.

2. **Infrastructure**: The infrastructure put in place is like this foundation of your development. If the infrastructure is designed and constructed with the present needs and future plans in mind, your development will be prepared for the future.

   Water: Columbia Fire & Rescue requires that there be sufficient water provided through the municipal water system to meet the needed fire flow requirements for your facility. These flows are calculated by the Fire Marshal. These flows are based on many factors dealing with your buildings' construction type, fire load in the building, square footage, and etc. If you install fire sprinkler systems in your facilities, Columbia Fire & Rescue can drastically reduce fire flow requirements.

   Roadway and Bridges: Columbia Fire & Rescue serves the residents and visitors of our jurisdiction by utilizing highly trained firefighters and modern fire apparatus. A minimum response to a structure fire in your development will be four fire apparatus. One of the fire apparatus that will respond to your development will be a ladder truck with a gross vehicle weight rating of approximately 80,000 pounds. Roadways and bridges must be designed and constructed not only with light vehicle traffic in mind but with the emergency service vehicles that will be servicing your department.

   Damage Free Property Access: Columbia Fire & Rescue requires all gates automatic or manual that will be or may be locked to be equipped with Knox Rapid Entry system. You can research this product at www.knoxbox.com or your gate vendor will be familiar with the product. Our department would also be happy to work with you to find what Knox Rapid Entry product is best suited for your application.

   Damage Free Home/Facility Access: Currently, Columbia Fire & Rescue does not require residential occupancies to be equipped with the Knox Rapid Entry system. However, this product is a very wise

investment for your future development. The Knox Rapid Entry System products allow homes to be secured but also allow the Columbia Fire & Rescue Department access to your property and /or homes without any delay or property damage. The system has an armored key lock safe recess mounted to the exterior of the homes with the key to the residence inside. Firefighters access the residence key during an emergency to gain entry into the home without causing any property damage. Again, our department would be happy to provide you with information and education on this program and its many positive attributes.

3. **Emergency Response to Your Location:** The proposed annex will be located on 22 acre portion of Tax Map 88 Parcel 33.07 off Estes Lane in Columbia, Tennessee. This location is approximately 3.4 mile from Columbia Fire Station #2 located at 711 Lion Parkway, 3.9 miles from Columbia Fire Station #4 located at 5040 Trotwood Avenue, 4.9 miles from Fire Station #1 located at 1000 South Garden in downtown Columbia. These distances are used to calculate an estimated response time to your development for the different levels of emergency response that may be needed at your facilities.

4. **Medical Emergency Response:** Columbia Fire & Rescue normally responds a minimum of one fire apparatus from Station #2 to service your location for a medical emergency. From the time you dial 911 until the fire department will arrive at your location will be within 5.00 minutes. Should your property experience a mass casualty incident where additional fire apparatus/firefighters would need to respond, then Fire Station #2 could send an additional unit and arrive on-scene within 5.50 minutes of your 911 call.

5. **Fire Incident Response:** The Columbia Fire & Rescue Department recommends a multi-faceted fire suppression approach. First, future homes should be constructed to meet or exceed all applicable fire and life safety codes. Secondly, even if not required by building, fire, or life safety codes, we encourage the installation and use of fire sprinklers in future homes.

6. Columbia Fire & Rescue's normal fire incident response to a single family residential development is three fire apparatus with a minimum 15 firefighters and 1 Chief Officer. Response times will be similar to the times estimated in the emergency medical response section. Your first fire apparatus should be on-scene within approximately 5.00 minutes, the second fire apparatus should be on-scene within 5.5 0minutes, and the third/fourth apparatus should be on-scene within 6.0 minutes. Due to OSHA standards that require at least four firefighters to arrive on-scene

prior to initiating an interior fire attack and Columbia Fire & Rescue's minimum staffing policy, it could take the 5.50 minutes to get the minimum number of firefighters to the scene to begin an interior fire attack.

7. In summary, the members of the Columbia Fire & Rescue consider it an honor to serve the residents and visitors in our community each and every day. When an emergency occurs, time is our worst enemy. Columbia firefighters train to reduce every second while not posing any additional undue risk to firefighters and/or the public when responding to or working at an emergency incident. The times estimated in the referenced examples are a combination of averages and estimations. Our department has very little data to support incident responses to your location. The time estimations are based on the fire companies being at their regular station, time it takes for Maury 911 to process a 911 call, the time it takes for Columbia firefighters to board the apparatus and leave the station, and the travel time from the station to your location is an estimate based on road miles, probable traffic conditions, and road conditions. You can see by the examples referenced above that it will take time for Columbia Fire & Rescue to receive your call for help and then respond to your location. The roadways have considerable driveway/cross street connections, hills, curves, and reduced speed zones that contribute to a long response time for fire apparatus to arrive.

E. Development Services

1. The planning and zoning jurisdiction of the City will extend to the annexed areas immediately upon the effective date of the annexation.

2. The property shall be zoned CD-3L (Neighborhood Large Lot Character District) upon the effective date of the annexation.

3. The code administration jurisdiction of the City will extend to the annexed areas immediately upon the effective date of the annexation.

4. Upon the effective date of annexation, all development will be required to abide by the Columbia Zoning Ordinance.

5. Please schedule a meeting with Development Services/Fire Marshal and IDG.

F. Streets

1. Upon acceptance by City Council and all warranties have expired; all streets and drainage systems will be maintained by Public Works.

G. Parks and Recreation

Residents of the annexed areas may use all existing recreational facilities, parks, etc., on the effective date of annexation. The same standards and policies now used in the present City will be followed in expanding the recreational program and facilities in the enlarged City.

H. Refuse Collection

1.

Garbage Collection
Residential customers will be issued one 96-gallon garbage receptacle with the option to purchase up to two additional garbage receptacles. The Sanitation Department will provide weekly curbside garbage collection. Bi-weekly curbside recycling will be offered on a subscription basis. Brush collection will be provided on a bi-weekly basis. Residents are allotted three free bulk item pickups per year.

Street and Drainage
Upon acceptance by City Council and all warranties have expired; all streets and drainage systems will be maintained by Public Works. Service will include street sweeping, catch basin cleaning, street and curb repair, snow removal, drainage maintenance, and sidewalk repair.

Signage
Upon acceptance by City Council, all approved street signs will be maintained by Public Works.

Dumpster Standards SW1-3.A. General All requirements for collection and accessibility to containers apply, regardless of whether collection is public or private.

I. Power

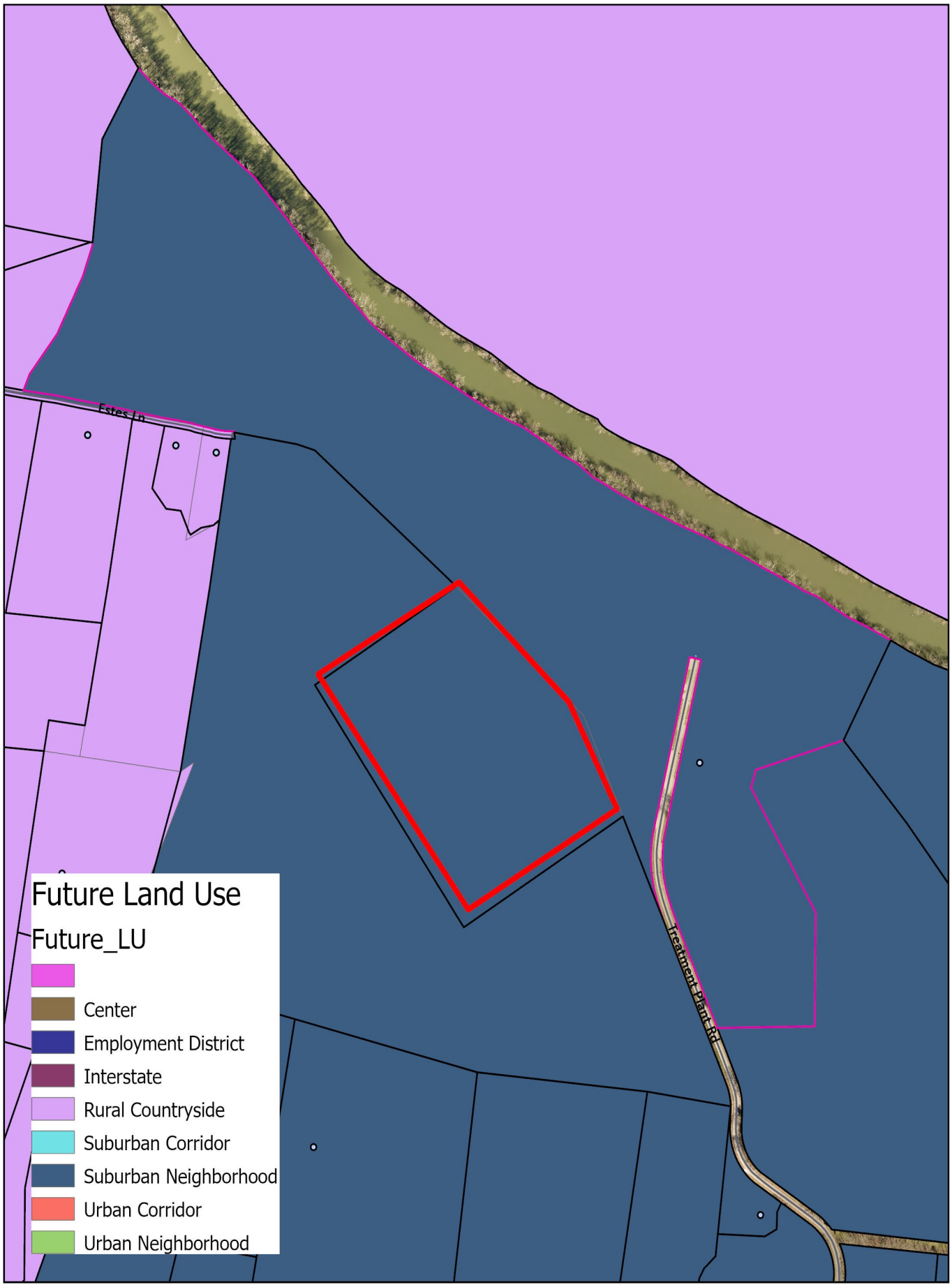
Columbia Power System has an existing power line near the proposed development. We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.

Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for development.

Off Estes Lane

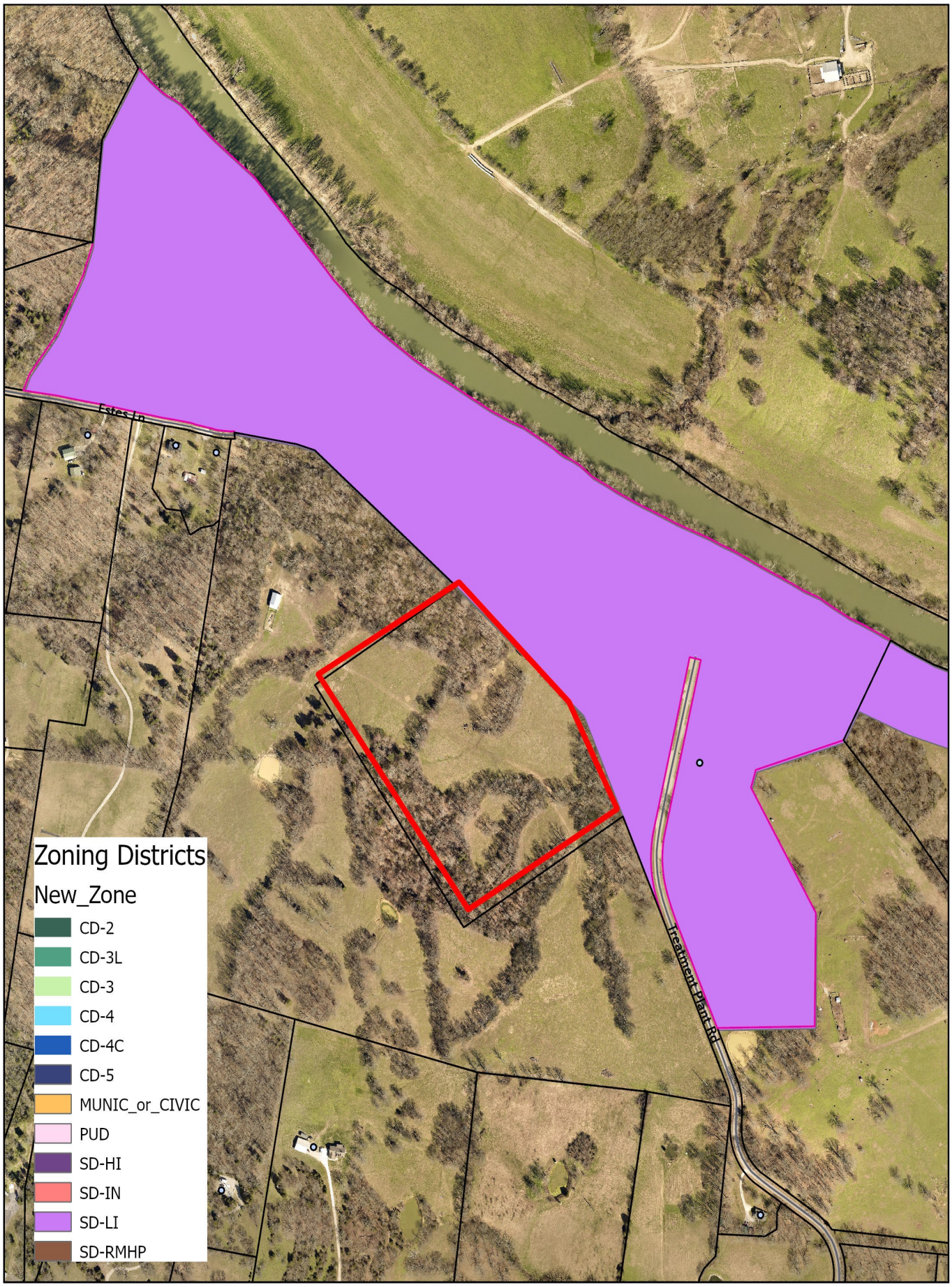
J. Schools

This property falls under the jurisdiction of Maury County Public School System.
The school system had no comments.



Case#23-0245
Estes Lane
22 acre portion of property

CITY OF COLUMBIA TENNESSEE
DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541



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TENNESSEE

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PHONE: (931) 560-1560
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DESCRIPTION OF SURVEY
TRACT 1
22.28 ACRES

Being a survey of TRACT 1 (22.28 Acres), being part and parcel of the east side of the property of Tommy R. Mayberry, Estes Lane, Columbia, TN 38401. Being recorded in Deed Book R2179, Page 1250 in the Register's Office of Maury County, Tennessee. Being part of Parcel 33.07 on Tax Map 88. Located south of Estes Lane and West of W Water Plant Road and in the Ninth (9th) Civil District of Maury County, Tennessee. Being more accurately described as follows:

Beginning at a CRB (Alexander) set, with a TSPC coordinances (N:476455.66',E:1645265.55') and lying North 18 degrees 01 minutes 29 seconds West 2826.85 feet from Old Williamsport Pike, marking the Southeast corner and the POINT OF BEGINNING for survey of TRACT 1 (22.28 Acres); thence on a new line run South 57 degrees 28 minutes 59 seconds West 820.00 feet, along the Northwest line of Tommy R. Mayberry (PARENT TRACT) per Deed Book R2179, Page 1250, to a CRB (Alexander) set with TSPC coordinances (N:476014.87',E:1644574.10'), marking the Southwest corner of this TRACT 1 (22.28 Acres); thence on a new line run North 33 degrees 54 minutes 29 seconds West 1165.34 feet, along the East line of Tommy R. Mayberry (PARENT TRACT), to a CRB (Alexander) set with TSPC coordinances (N:476982.03',E:1643924.00'), marking the Northwest corner of this TRACT 1 (22.28 Acres); thence on a new line run North 57 degrees 29 minutes 01 seconds East 730.01 feet, along the Southeast line of Tommy R. Mayberry (PARENT TRACT), to a CRB (Alexander) set, with TSPC coordinances (N:477374.44',E:1644539.57'), marking the Northeast corner of this TRACT 1 (22.28 Acres); thence run South 47 degrees 04 minutes 27 seconds East 758.23 feet, along the Southwest fence line of City of Columbia per Deed Book 587, Page 514 (R.O.M.C.T.), to a 1 inch iron pipe, with TSPC coordinances (N:476858.05',E:1645094.77'). thence run South 22 degrees 59 minutes 49 seconds East 437.13 feet, along the West fence line of City of Columbia, back to the POINT OF BEGINNING. Containing 22.28 acres, per survey by Glen W. Alexander, R.L.S. #2035, 2481 Mooresville PK, Culleoka, TN 38451, (931-698-2338), glenwood@bellsouth.net July 25, 2022.

This TRACT 1 (22.28 Acres) is subject to any, and all easements and rights of way that may exist, recorded and/or unrecorded. This TRACT 1 (22.28 acres) is removed from Mayberry (Parcel 33.07). and added to the adjoining property of the City of Columbia (Parcel 33.01).



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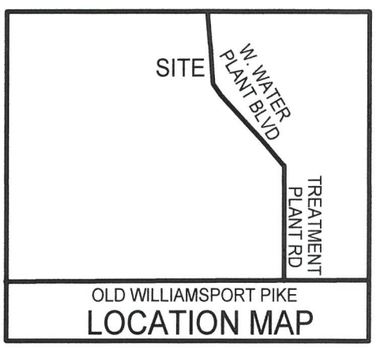
Beginning at a CRB (Alexander) set, with a TSPC coordinances (N:476455.66',E:1645265.55') and lying North 18 degrees 01 minutes 29 seconds West 2826.85 feet from Old Williamsport Pike, marking the Southeast corner and the POINT OF BEGINNING for survey of TRACT 1 (22.28 Acres); thence on a new line run South 57 degrees 28 minutes 59 seconds West 820.00 feet, along the Northwest line of Tommy R. Mayberry (PARENT TRACT) per Deed Book R2179, Page 1250, to a CRB (Alexander) set with TSPC coordinances (N:476014.87',E:1644574.10'), marking the Southwest corner of this TRACT 1 (22.28 Acres); thence on a new line run North 33 degrees 54 minutes 29 seconds West 1165.34 feet, along the East line of Tommy R. Mayberry (PARENT TRACT), to a CRB (Alexander) set with TSPC coordinances (N:476982.03',E:1643924.00'), marking the Northwest corner of this TRACT 1 (22.28 Acres); thence on a new line run North 57 degrees 29 minutes 01 seconds East 730.01 feet, along the Southeast line of Tommy R. Mayberry (PARENT TRACT), to a CRB (Alexander) set, with TSPC coordinances (N:477374.44',E:1644539.57'), marking the Northeast corner of this TRACT 1 (22.28 Acres); thence run South 47 degrees 04 minutes 27 seconds East 758.23 feet, along the Southwest fence line of City of Columbia per Deed Book 587, Page 514 (R.O.M.C.T.), to a 1 inch iron pipe, with TSPC coordinances (N:476858.05',E:1645094.77'). thence run South 22 degrees 59 minutes 49 seconds East 437.13 feet, along the West fence line of City of Columbia, back to the POINT OF BEGINNING. Containing 22.28 acres, per survey by Glen W. Alexander, R.L.S. #2035, 2481 Mooresville PK, Culleoka, TN 38451, (931-698-2338), glenwood@bellsouth.net July 25, 2022.

This TRACT 1 (22.28 Acres) is subject to any, and all easements and rights of way that may exist, recorded and/or unrecorded. This TRACT 1 (22.28 acres) is removed from Mayberry (Parcel 33.07). and added to the adjoining property of the City of Columbia (Parcel 33.01).



PLAT OF SURVEY





TOMMY R. MAYBERRY
TAX MAP 88, PARCEL 33.07
DEED BOOK R2179, PAGE 1250
PLAT BOOK P19, PAGE 254
+/-90 ACRES
-22.28 ACRES (TRACT 1)
+/-67.72 ACRES (REMAINING)

CRB (ALEX) (N:477374.44',E:1644539.57')

CITY OF COLUMBIA
TAX MAP 88, PARCEL 33.01
DEED BOOK 587, PAGE 514

N 57°29'01" E
730.01'

S 47°04'27" E
758.23'

CRB (ALEX) (N:476982.03',E:1643924.00')

1" IRON PIPE (N:476858.05',E:1645094.77')

TRACT 1
22.28 ACRES

TO BE REMOVED FROM PARCEL 33.07
AND ADDED TO PARCEL 22.01

S 22°59'49" E
437.13'

CITY OF COLUMBIA
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POB TRACT 1

N 18°01'29" W 2826.85' FROM OLD WILLIAMSPORT PK

S 57°28'59" W
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CRB (ALEX) (N:476014.87',E:1644574.10')

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W. WATER PLANT RD.

GLEN W. ALEXANDER
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
No. 2035
STATE OF TENNESSEE

7/25/22

7/25/22

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7/25/22 _____
Date Glen W. Alexander, TN RLS #2035

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Date_____Owner_____
CHARLES M. MOLDER
CITY OF COLUMBIA

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Date_____Owner_____
TOMMY R. MAYBERRY

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SET CORNERS (CRB-ALEX).....
DEED CORNERS (Not Re-Surveyed).....
FENCE LINES
POWER LINES
WATER LINES
SCALE: 1" ==========200'
200 FEET

SURVEYOR:

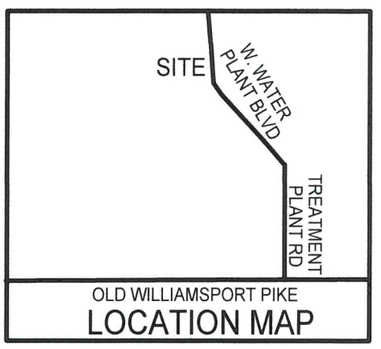
GLEN W. ALEXANDER
Registered Land Surveyor, TN # 2035
2481 Mooresville PK, Culleoka, TN 38451
PHONE: Office: 931-698-2338
EMAIL: glenwood@bellsouth.net

OWNER:

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P.O. BOX 1876
COLUMBIA, TN 38401
SITE ADDRESS:
ESTES ROAD
COLUMBIA, TN 38401
TAX MAP 88, PARCEL 33.07
DEED BOOK R2179, PAGE 1250
NINTH (9TH) CIVIL DISTRICT
MAURY COUNTY, TENNESSEE

PLAT OF SURVEY





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CHARLES M. MOLDER
CITY OF COLUMBIA

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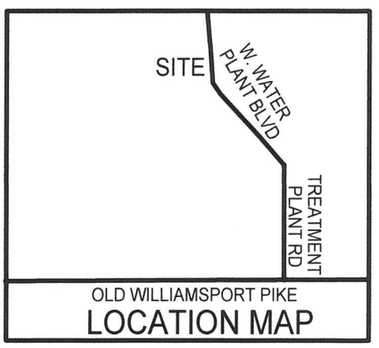
SURVEYOR:
GLEN W. ALEXANDER
Registered Land Surveyor, TN # 2035
2481 Mooresville PK, Culleoka, TN 38451
PHONE: Office: 931-698-2338
EMAIL: glenwood@bellsouth.net

OWNER:
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P.O. BOX 1876
COLUMBIA, TN 38401
SITE ADDRESS:
ESTES ROAD
COLUMBIA, TN 38401
TAX MAP 88, PARCEL 33.07
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NINTH (9TH) CIVIL DISTRICT
MAURY COUNTY, TENNESSEE

FOUND CORNERS.....
SET CORNERS (CRB-ALEX).....
DEED CORNERS (Not Re-Surveyed).....
FENCE LINES
POWER LINES
WATER LINES
SCALE: 1" ==========200'
200 FEET

PLAT OF SURVEY





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CHARLES M. MOLDER
CITY OF COLUMBIA

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SURVEYOR:

GLEN W. ALEXANDER
Registered Land Surveyor, TN # 2035
2481 Mooresville PK, Culleoka, TN 38451
PHONE: Office: 931-698-2338
EMAIL: glenwood@bellsouth.net

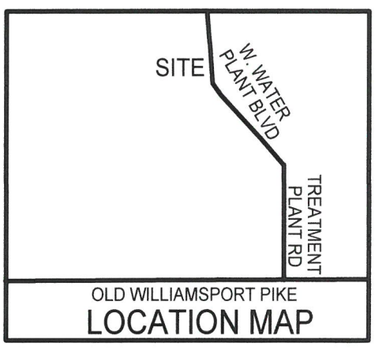
OWNER:

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P.O. BOX 1876
COLUMBIA, TN 38401
SITE ADDRESS:
ESTES ROAD
COLUMBIA, TN 38401
TAX MAP 88, PARCEL 33.07
DEED BOOK R2179, PAGE 1250
NINTH (9TH) CIVIL DISTRICT
MAURY COUNTY, TENNESSEE

FOUND CORNERS.....
SET CORNERS (CRB-ALEX).....
DEED CORNERS (Not Re-Surveyed.....
FENCE LINES
POWER LINES
WATER LINES
SCALE: 1" ==========200'
200 FEET

PLAT OF SURVEY





TOMMY R. MAYBERRY
TAX MAP 88, PARCEL 33.07
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GLEN W. ALEXANDER
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XVI
AGRICULTURE
COMMERCE
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7/25/22

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7/25/22 Glen W. Alexander
Date Glen W. Alexander, TN RLS #2035

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Date_____Owner_____
CHARLES M. MOLDER
CITY OF COLUMBIA

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Date_____Owner_____
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SURVEYOR:

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Registered Land Surveyor, TN # 2035
2481 Mooresville PK, Culleoka, TN 38451
PHONE: Office: 931-698-2338
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OWNER:

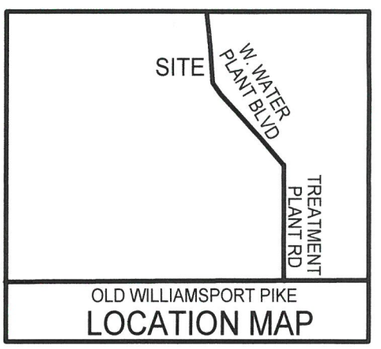
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COLUMBIA, TN 38401
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NINTH (9TH) CIVIL DISTRICT
MAURY COUNTY, TENNESSEE

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SET CORNERS (CRB-ALEX).....
DEED CORNERS (Not Re-Surveyed....
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POWER LINES
WATER LINES
SCALE: 1" ==========200'

200 FEET

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7/25/22
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NINTH (9TH) CIVIL DISTRICT
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SET CORNERS (CRB-ALEX)
DEED CORNERS (Not Re-Surveyed)
FENCE LINES
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WATER LINES
SCALE: 1" ==========200'
200 FEET

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	1244 Treatment Plant Rd.		
	TAX MAP: 88	GROUP: 33.01	PARCEL: 000
SUMMARY OF NATURE OF REQUEST AND WORK	Construct new Wastewater Treatment Facility		

DATE OF PRE-APPLICATION CONFERENCE		*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☒ Annexation ☐ Rezoning ☐ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) _____ ☐ Total Number of Lots _____ ☐ Total acreage 22

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Donald S. Boshers	PHONE	931-560-1011
ADDRESS	1244 Treatment Plant Rd	EMAIL	dboshers@columbiatn.com

PROPERTY OWNER NAME	City of Columbia	PHONE	
ADDRESS	700 N. Garden St.	EMAIL	

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

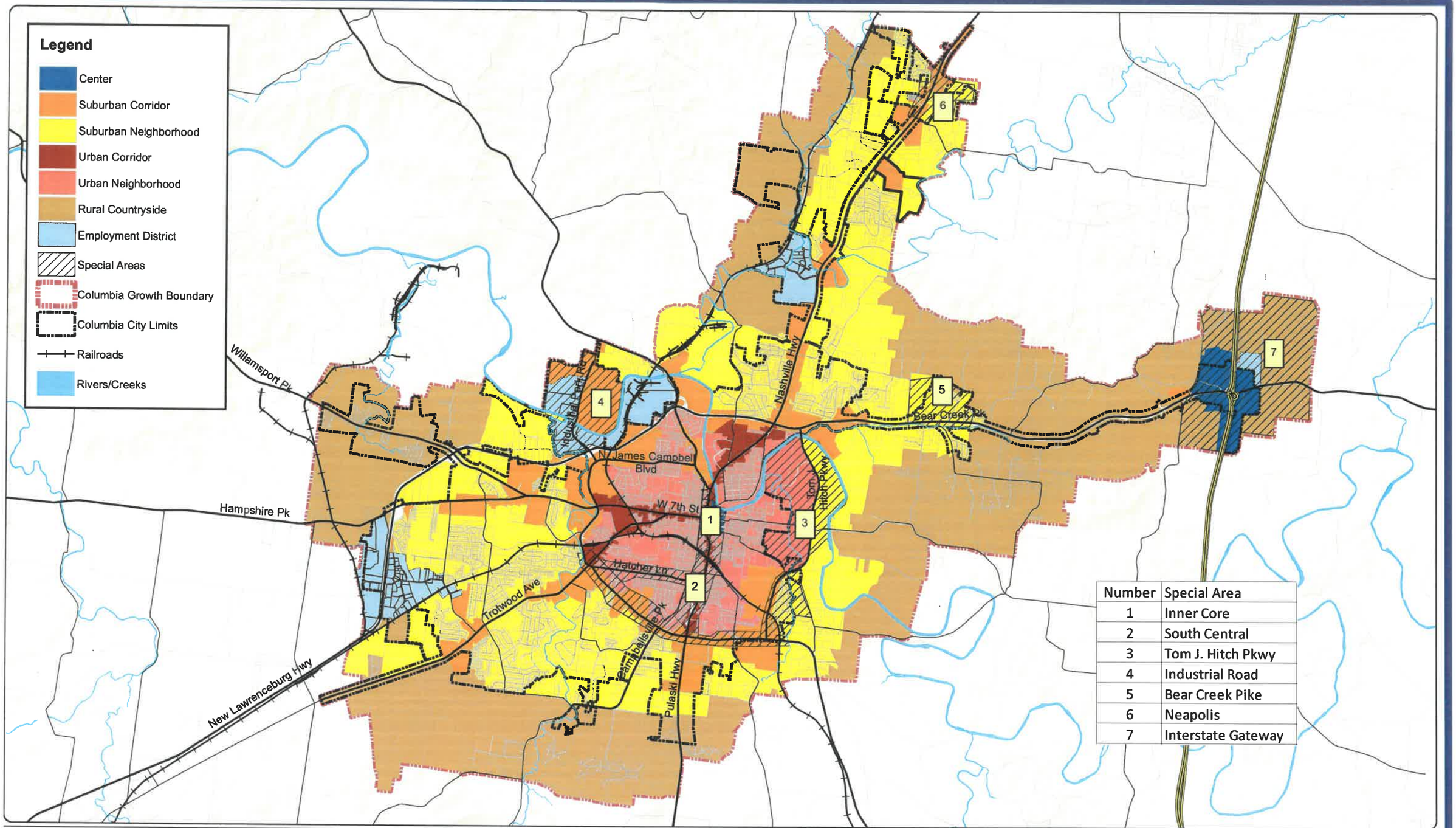
Donald S. Boshers		06/08/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	



Number	Special Area
1	Inner Core
2	South Central
3	Tom J. Hitch Pkwy
4	Industrial Road
5	Bear Creek Pike
6	Neapolis
7	Interstate Gateway

1925-2015 90 VOLKERT

CITY OF COLUMBIA TENNESSEE

ConnectColumbia

N W E S

0 0.5 1 2 3 4 Miles

Date: 11/8/2017

Map 4
Future Land Use Map & Special Areas

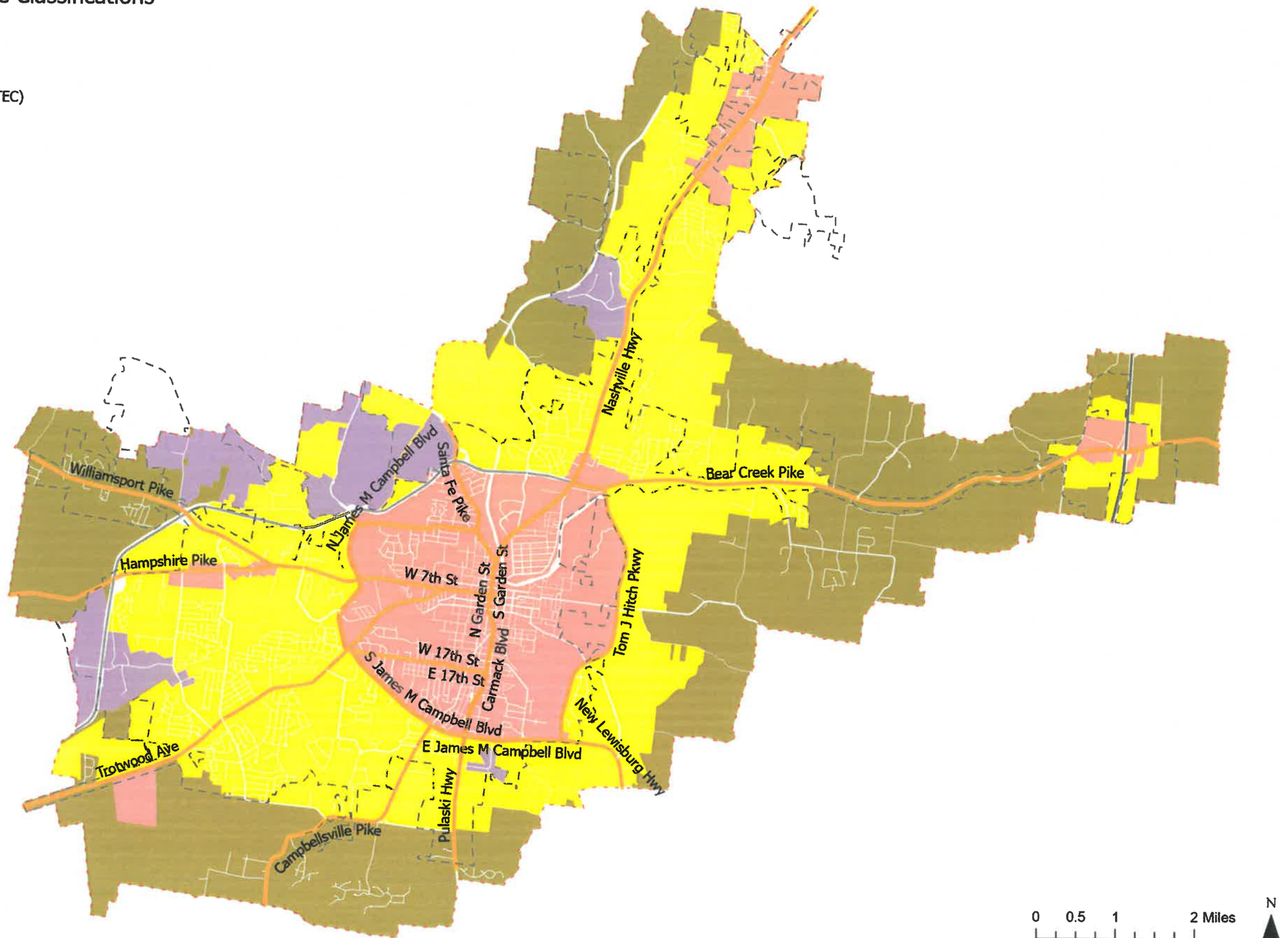
July 2023 DRAFT FLUM

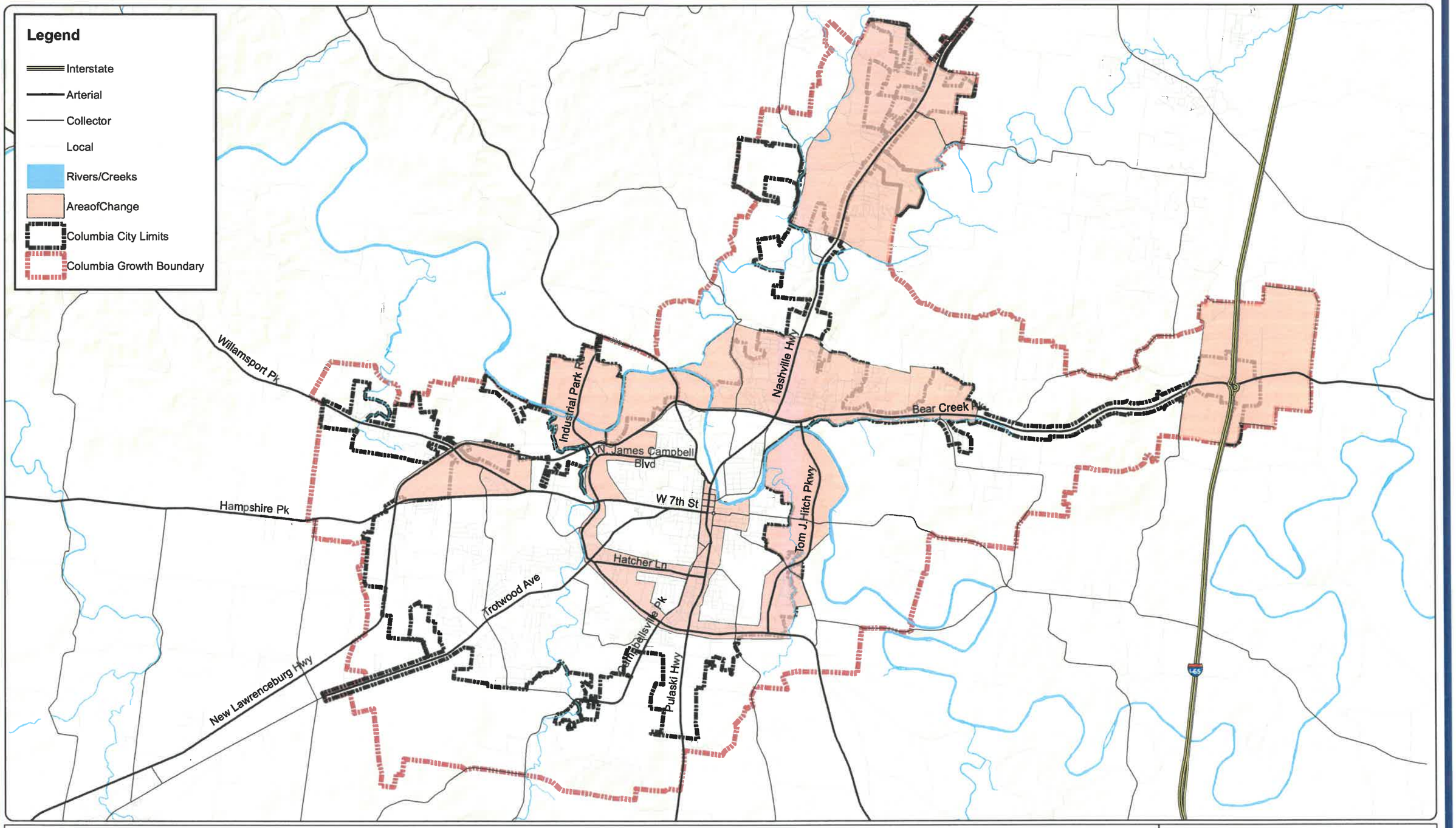
Proposed Future Land Use Classifications

- City Center Urban Village (CCUV)
- Suburban Neighborhoods (SN)
- Rural Transition (RT)
- Technology Employment Center (TEC)

Corridors

- Arterial
- Collector
- Freeway
- Interstate

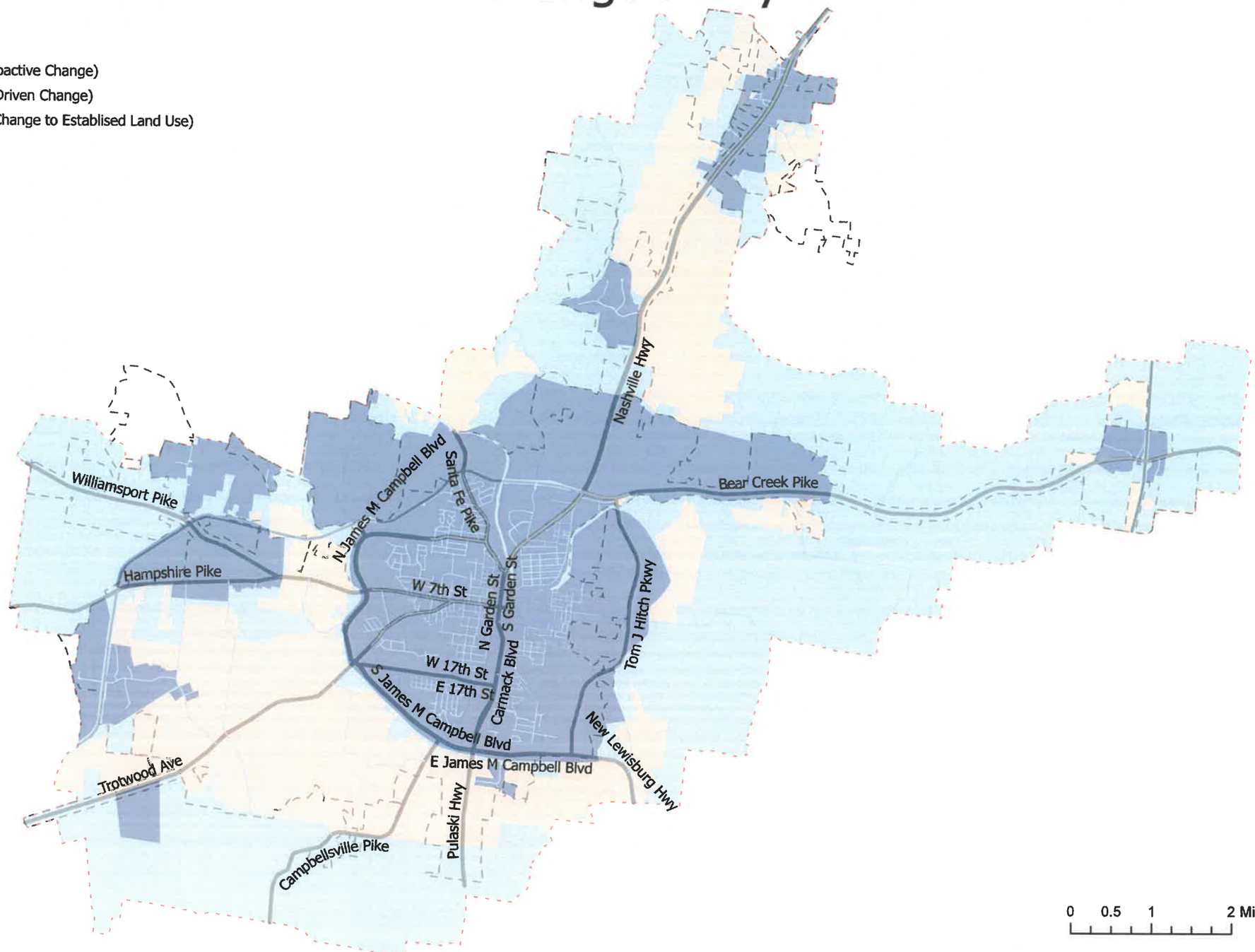



Legend
Interstate
Arterial
Collector
Local
Rivers/Creeks
AreaofChange
Columbia City Limits
Columbia Growth Boundary
Williamsport Pk
Hampshire Pk
New Lawrenceburg Hwy
Trotwood Ave
Industrial Park Rd
N. James Campbell Blvd
W 7th St
Hatcher Ln
Nashville Hwy
Bear Creek Pk
Tom J. Hitch Pkwy
Pulaski Hwy
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Miles
Date: 7/18/2017
Map 3
Future Land Use with
Areas of Change

July 2023 DRAFT
Area of Change Policy

Areas of Emphasis

- Activate (City Policies Foster Proactive Change)
- Sustain (City Facilitates Maket-Driven Change)
- Protect (City Policies Minimize Change to Establised Land Use)



City Center & Urban Village

CHARACTER & INTENT

The City Center & Urban Village (CCUV) future land use area comprises Columbia's iconic core and ancillary focal points. It includes the historic courthouse square and the places residents of Columbia associate with worship, commerce, the arts, community activities and government administration. The CCUV also supports the creation of urbanized nodes which provide identifiable commercial hubs for Columbia's emerging neighborhoods. Each development parcel should add to Columbia's existing sense of place and extend its established form and pattern to create a more interconnected community.

Primary Land Uses are horizontally and vertically mixed in a variety of structure types. The intensity and mix of uses is largely determined by context. New residential development provides a mixture of housing within walking distance of commercial and civic spaces. New non-residential development in established residential areas shall be comprised of low-intensity uses which serve residents' daily needs. Higher intensity uses should complement and extend the traditional pattern of development in Columbia's core, or establish identifiable centers for emerging nodes.

Future development should emphasize connectivity and continuity of the city as a whole. Additionally, new development shall create a pedestrian-friendly environment by filling gaps in sidewalks and enhancing multi-modal infrastructure. All new and infill development shall emphasize linkages to identifiable community anchors such as mixed-use commercial centers, schools, parks, or civic institutions.

LAND USE CONSIDERATIONS

Primary uses include government, civic uses, parks, religious facilities, offices, retail, and all forms of medium-density housing. Secondary land uses include utility facilities, institutional uses, low-density housing, and neighborhood retail. New industrial and warehouse uses are inappropriate.

FORM & PATTERN

The CCUV includes established and infill neighborhoods at medium to high densities organized along a well-connected transportation network. Infill development supports and extends the formation of blocks and eliminates gaps in the built environment. The CCUV future land use is distinguished from SN by the unambiguous prominence of public frontages. A high density of streets and thoroughfares with complete public frontages extends the public sphere outward from civic and commercial spaces. Implementing bulk and design standards clearly delineate the public and private realms though the application of layers and front-to-back discipline of lots. Bulk and design standards are occasionally modified to accommodate historic preservation, artistic innovation, redevelopment, and other place-based policies of the City. New development should accompany concurrent extension of complete urban services in places where they do not already exist. Parking is provided on an area-wide basis as a utility supplemented by private land users.

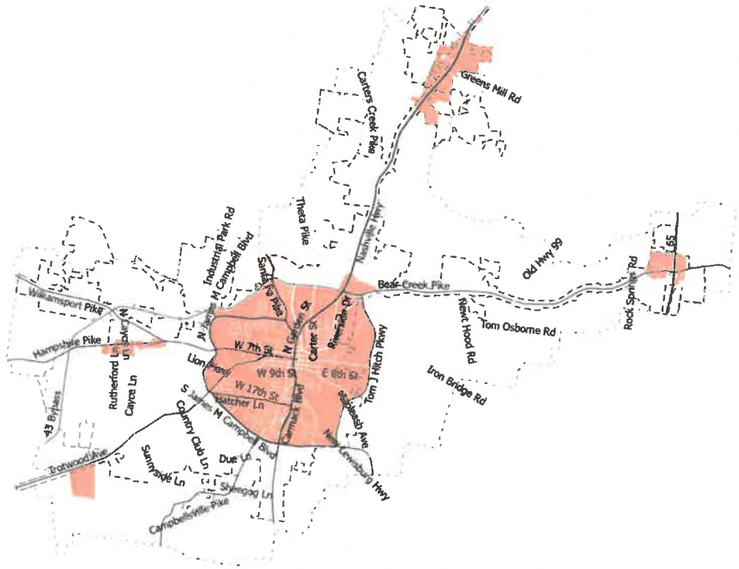
IMPLEMENTING DISTRICTS

General Urban	CD-4
Urban Center	CD-5
General Urban-Corridor	CD-4C (only along Arterial roadways)
Urban Center – Corridor	CD-5C (only along Arterial roadways)*
Mixed Use PUD	PUD-MU
Civic	CV

IMPLEMENTING STANDARDS

	Mixed Uses & Isolated Uses
General Development Pattern	
Density (density unites per ace)	≥ 12 du/ac
Building Height	1-5 stories
Open Space Elements	Civic Spaces Parks & Greenways

*CD-5C is a floating zone as of July 2023.









Suburban Neighborhoods

Character & Intent

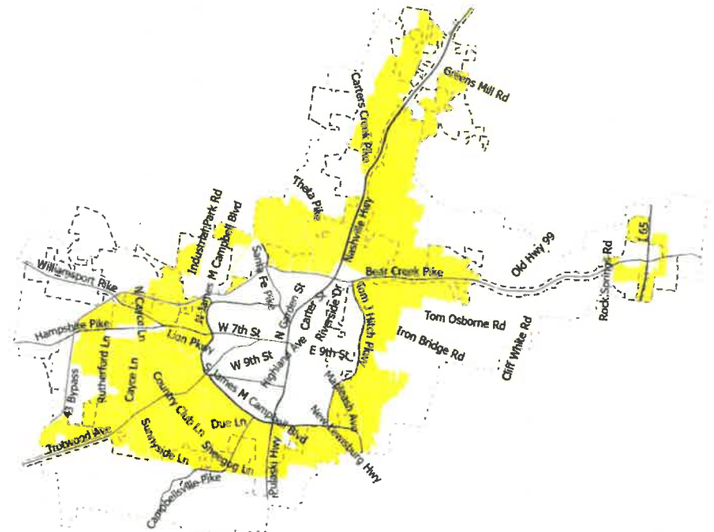
The intent of the Suburban Neighborhoods (SN) future land use is to enhance existing suburban areas and create new neighborhoods that will improve the quality of life in Columbia. Where appropriate, the SN future land use area also establishes mixed-use and commercial centers which serve residents' retail needs and provide a wider range of housing options. Each development parcel should add to Columbia's existing sense of place and extend the established form and pattern to create a more interconnected community. Future development should emphasize connectivity and continuity of the city as whole. The density and intensity of residential development increases in proximity to areas under the CCUV future land use classification. In the same way, density and intensity decrease in proximity to areas under the RT future land use classification. New development enhances pedestrian infrastructure with sidewalks and other multimodal routes. Public frontages may include sidewalks and street trees. Over time, new and infill development connects neighborhoods and community anchors such as libraries, neighborhood centers, health facilities, retail uses, parks, and schools.

Land Use Considerations

The primary land use is low-density detached housing. Along arterial roadways, primary uses may include offices, retail, and all forms of medium-density housing. Secondary land uses include accessory dwellings, two-family homes, civic uses, institutional uses, schools, religious facilities, utility facilities, parks and open space. New industrial and warehouse uses are inappropriate.

Form & Pattern

The SN future land use area is characterized by the organization of the built environment to extend a succession of large-lot neighborhoods and compact walkable neighborhoods. Development parcels extend established neighborhood patterns. Leap-frogging development is inappropriate. The SN future land use is distinguished from RT in the organization of lots and thoroughfares to form blocks. Physically separated developments which do not extend established block formation and roadway networks are inappropriate. The density of streets and blocks increases with proximity to CCUV and community anchors. Implementing bulk and design standards loosely delimit the public and domestic realms though the application of layers and front-to-back discipline of lots. Along arterial roadways, commercial corridors of varying intensities emerge over time with a high-quality built environment typified by a mix of building types and a balance between automobile-oriented and pedestrian-oriented design. The physical intensity of development along arterial corridors varies based on the surrounding residential density and the roadway's place in the transportation network. New development should accompany concurrent extension of complete urban services. Parking is provided on-site by private land users, supplemented by on-street spaces.



IMPLEMENTING DISTRICTS

Neighborhood-Large Lot	CD-3L
Neighborhood	CD-3
General Urban-Corridor	CD-4C (only along Arterial roadways)
Manufactured Home Park	SD-MHP
Residential PUD	PUD-R
Mixed Use PUD	PUD-MU
Civic	CV

IMPLEMENTING STANDARDS

General Development Pattern	Mixed Uses & Isolated Uses
Density (density unites per ace)	4 - 24 du/ac
Building Height	1 - 4 stories
Open Space Elements	Civic Spaces
	Parks & Greenways







Rural Transition

Character & Intent

The Rural Transition (RT) future land use classification is comprised of unincorporated areas within Columbia's UGB as well as areas of low-intensity development. The area is characterized by very low-density residential neighborhoods, large-lot semi-rural estates, open spaces, and legacy agricultural operations. The intent of the RT future land use classification is to create and maintain a discernable transition between agricultural uses in unincorporated Maury County and the suburban areas within Columbia.

Future development is limited and emphasizes the preservation of agricultural uses, open spaces, and the semi-rural character of areas adjacent to the city. Natural and scenic features, such as rolling hills, rivers, rock outcroppings, and historic homes should be preserved.

LAND USE CONSIDERATIONS

The primary land use is very low-density detached housing. Secondary land uses include accessory dwellings, low-intensity agricultural operations, utility facilities, civic spaces, parks, and open space. New mixed-use, medium-density residential, commercial, industrial and warehouse uses are inappropriate

FORM & PATTERN

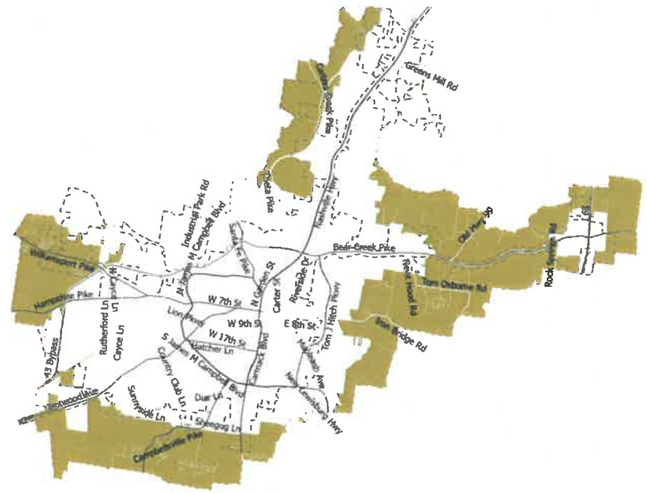
The RT future land use area is characterized by single-family detached residential areas and legacy agricultural operations. Implementing bulk and design standards prescribe large lots with very deep setbacks. In contrast to other areas, site and design requirements are minimal. Public frontages are insignificant and the delineation of public and private space is imprecise. Lots and roadways generally do not form blocks; however, large blocks become discernable in proximity to areas under other land use classifications. Complete urban services may not be available. Annexations and rezoning are inappropriate without concurrent extensions of urban services. Private land users provide their own parking.

IMPLEMENTING DISTRICTS

Rural Character District	CD-2
Civic	CV

IMPLEMENTING STANDARDS

General Development Pattern	Isolated Uses
Density (density unites per ace)	1 du/ac
Building Height	1-3 stories
Open Space Elements	Parks & Greenways Occasional Civic Spaces Private Yards









Technology & Employment Centers

Character & Intent

The Technology & Employment Centers (TEC) future land use classification accommodates a wide range of specialized uses which provide employment opportunities and economic vitality to Columbia. New development must conform to performance criteria. Site standards are unique to each use case. Identifiable negative externalities are reduced through implementing regulations.

Land Use Considerations

Primary land uses include light and heavy industrial uses as well as research facilities, utilities facilities, materials processing, flex space, warehouses, storage and other similar uses Secondary land uses include medium-density housing, civic and institutional uses, parks, and open space. New detached housing is inappropriate.

Form & Pattern

The TEC future land use area is characterized by unique sties, each designed to accommodate a specific use. Implementing bulk and design standards impose few standards. In contrast to other areas, site and design requirements are minimal. Structures are functional and flexible. Non-industrial uses incorporate the standards applicable under other future land use classifications. New development should accompany concurrent extension of complete urban services. Parking is generally provided on-site by private land users.

IMPLEMENTING DISTRICTS

Light Industrial	SD-LI
Heavy Industrial	SD-HI
Heavy Interstate	SD-INT
Mixed Use PUD	PUD-MU

IMPLEMENTING STANDARDS

General Development Pattern	Isolated Uses
Density (density unites per ace)	≥ 12 du/ac
Building Height	Varies









Hillsides & Natural Spaces

Character & Intent

The Hillsides & Natural Spaces (HNS) future land use classification is comprised of visually impactful and environmentally sensitive areas within Columbia's UGB. The area is characterized by parks, civic spaces, open spaces, and legacy agricultural operations. The intent of the HNS future land use classification is to protect riparian areas, hillsides with elevations greater than 775 feet, and other sensitive lands.

Land Use Considerations

Primary land uses are civic uses, conservation, and utility facilities.
Secondary land uses include agricultural uses and very-low-density housing.

Form & Pattern

Development within the HNS future land use classification should be limited and should emphasize the preservation of natural and scenic features. Legacy agricultural sites should be preserved but not expanded. Existing extractive operations should gradually phase out and cease. Future development is limited to park spaces, civic uses, and occasional detached single-family homes. Rolling hills, waterways, floodplains, historic rock outcroppings, and tree cover should be preserved. New development should provide benefits to the general public in the form of preservation, storm water facilities, communications infrastructure, municipal services, or increased access to natural and recreational amenities. Complete urban services may not be available. Where parking is necessary, it is provided on-site and designed to be minimally impactful.

IMPLEMENTING DISTRICTS

Rural Character District	CD-2
Civic	CV
Residential PUD	PUD-R

IMPLEMENTING STANDARDS

General Development Pattern	Isolated Uses
Density (density unites per ace)	1 du/ac
Building Height	Residential: 3 stories Other Uses: N/A
Open Space Elements	Parks & Greenways









July 2023 DRAFT
Special Areas

Potential Specia Areas

- CHADS (Commerce History & Arts Districts) Area
- East Columbia
- Hatcher Village
- Interstate Gateway
- James Campbell - Boulevard 2050 Plan
- Learning & Innovation Area
- Neapolis
- South Corridor

