Planning Commission
November 24, 2025
7:00PM
City Hall, 6090 Woodson Street

AGENDA

I. Call to Order

II. Introduction of Senior Planner, Taylor Cunningham

III. Approval of Minutes from April 28, 2025

IV. New Business

1. Public Hearing Case #25-07 – Rezoning of Properties from "MS-2" to "DND" - 5200 Block of Martway Street.
2. Public Hearing Case #25-08 – Preliminary Development Plan for a 180-Unit, Multi-Family Development Project with Associated Parking Structure – 5200 Block of Martway.
3. Case #25-09 – Non-Conforming Situation Permit for Royal Shine Car Wash – 5960 Barkley Street.

V. Old Business

VI. Planning Commission Comments

VII. Staff Updates

- Joint City Council / Planning Commission Work Session on Thursday, December 4th at 6:00 P.M. for Presentation of the Zoning Code Audit by Orion Planning and Design
- Rock Creek Corridor Study Phase II
- Safe Streets for All Study
- Complete Streets Policy Development

Questions concerning this meeting may be addressed to the staff contact, Brian Scott Deputy City Administrator, at (913) 676-8353 or bscott@miwssionks.org

CITY OF MISSION PLANNING COMMISSION

April 28, 2025
7:00 PM
Mission City Hall - 6090 Woodson

Members Present:
Cynthia Smith
Megan Cullinane
Kevin Schmidt
Kelsey Brown
Amy Richards
Robin Dukelow (Vice Chair)
Mike Lee (Chair)

Staff Present:
Brian Scott - Deputy City Manager
Laura Smith - City Administrator

Members Absent:
Stuart Braden
Wayne Snyder

(City of Mission Planning Commission Meeting Called to Order at 7:00 p.m.)

I. CALL TO ORDER

(The first part of the meeting was not recorded – Minutes are from notes)

Chairman Lee called the meeting to order. Roll call was taken. Planning Commissioners Stuart Braden, Ward 1, and Wayne Snyder, Ward I were absent. All other Commissioners were present in person.

II. APPROVAL OF MINUTES FROM MARCH 24, 2025

The minutes were approved as submitted.

Motion 1: **Robin Dukelow - Ward IV/Kevin Schmidt - Ward III:** Approve the Planning Commission March 24, 2025, Meeting Minutes as presented. **The motion carried 5-0-1 with Commissioner Richards - Ward IV abstaining.**

III. NEW BUSINESS

1. Public Hearing Case #25-03 – Special Use Permit to Operate and Dog Daycare and Boarding Operation - 5918 Broadmoor Street.

Mr. Scott provided the staff report for Case #25-03. He stated that this was an application for a special use permit to operate a dog daycare and overnight boarding operation at 5918 Broadmoor. Mr. Scott stated that this property is currently owned by Unleashed Pet Rescue and Adoption and utilized as an animal shelter. The property has been for sale or lease for the past several months, almost a year. and the applicant, Mr. Damien Hicks, has now expressed an interest in purchasing the property for the purpose of operating a dog daycare and overnight boarding operation to be know as Playful Pack.

Mr. Scott explained that the property is currently zoned “M1” General Industrial. While Veterinarian Hospitals are permitted in this zoning district, animal day care and overnight boarding operations are not. The uses seem similar in nature, so it seems logical to permit the dog daycare operation in this zoning district. Staff suggested that the use be permitted as a special use with conditions. Conditions are, admittedly, some what based on experience and lessons learned from the current owner of the property.

In particular, there is a hard surface pad on the north side of the building that the current owner has utilized as an outdoor exercise area for dogs that are being kept for adoption. There have been issues in the past with the volunteers washing the dog waste out on to the sidewalk and street in front. This animal waste eventually makes its way to the storm sewer system, which can be harmful to the environment and in violation of the City’s permit with the state to operate the storm sewer system. For this reason, staff has discussed with the applicant the installation of a “K-9 Grass” system in this area. The “K-9 Grass System” is an astro turf surface with a mesh backing that is placed over a sub-base of gravel. This is better for the dogs and allows for storm-water and the occasional hosing to drain through the grass system and into the ground naturally. It will not be connected to the City’s storm water sewer system, but instead just percolate into the ground. Animal waste must be picked-up and disposed of in a proper manner ad the area cleaned immediately. The system will have to be vacuumed occasionally to remove leaves and grit.

Other conditions pertain the safe disposal of animal waste, the need to maintain a kennel operator’s licenses as required by the Kansas Pet Animal Act, and general provisions for upgrades to the building.

Commissioner Cullinane inquired about the previous improvements to the property that Unleashed had proposed.

Mr. Scott explained that Unleashed had submitted plans a few years ago for improvements to the property that would allow them to use the pad on the north side of building, but they never followed through with these plans.

Commissioner Dukelow asked about the roof of the current building.

Mr. Scott stated that the roof had been replaced a few years ago by Unleashed.

Commissioner Richards asked about the location of the dumpster.

Mr. Scott stated that the dumpster is presently in front of the building. By code the dumpster should really be at the back of the property, but access to the back is limited. Staff has suggested that Mr. Hicks work with the neighboring property to the north to have a shared dumpster arrangement.

Commission Richards asked if the applicant has done this.

Mr. Hicks responded that he has inquired with the owner of the Planet Sub building about using their dumpster and the owner of the property is animable to that if Mr. Hicks pays for their own dumpster or a pro-rated share for a shared dumpster.

Commission Dukelow asked about the screening around the dumpster.

Mr. Scott responded that City code does require screening around the dumpsters. Staff has tried to work with property owners to secure that, but screening, especially the dumpster enclosures made of CMU, can be expensive.

Mr. Bryson Banks stepped forward to provide testimony. He stated that he is the manager of Mission Pet Mart, which is around the corner on Martway, from the location of the proposed dog daycare. He does not really want to speak to the notion of competition is more concerned about the operations of the dog daycare and if they will be good neighbors. In particular, the current owner of the property will walk the animals down the street to the park, and they do not pick-up after the dogs. He has had to pick-up animal waste in front of his business that he knows was left by animals from Unleashed.

Mr. Hicks responded that they will not really walk the dogs in the neighborhood, but rather everything will be within the building or on the property.

Mr. Scott state condition "D" speaks to that very concern.

> "The owner/operator will ensure that procedures are in place and followed requiring employees to clean-up all animal feces that may be deposited outdoors (including the activity areas) so that no feces can potentially be washed into the City's storm water sewer system."

This would mean that if any dog was being walked and deposited waste, it would need to be cleaned-up.

Mr. Banks asked how that would be enforced.

Mr. Scott responded that it will mostly be on a complaint basis. If someone sees this occurring, then they would need to notify the City, and city staff would follow-up the applicant.

Commissioner Richards asked about how many dogs may be at this location at any given time.

Mr. Hicks responded that he did not have a firm handle on that yet. His intention is that if he were to get the special use permit, then he would have his design team start work on drawings for interior renovations. This would then provide him with an idea of how many play areas, separation areas, room for kenneling, etc. He is thinking that he may be able to have as many as 35 to 50 dogs at one time. The vast majority would be just day care and maybe for a few hours at a time.

(Recording Begins)

MS. DUKELOW: Question, Mr. Chair.

MR. LEE: Sure.

MS. DUKELOW: Is it part of the business model to sell any type of animal care product, supplies?

MR. HICKS: It is not.

MS. DUKELOW: Anything like that?

MR. HICKS: No ma'am.

MS. DUKELOW: Thank you, Mr. Chairman.

MR. LEE: Okay. Then at this stage of the game, we'll close the public hearing. Do we have comments?

MS. BROWN: I'll just make a comment that, you know, hearing the concerns about dogs in front, I'm sure that you'll address that in the training that you do with staff, just to -- just to, you know, make good neighbors and, you know, train staff if there were ever issues with dogs or animals out front getting off leash or, you know, things like that. So, I just wanted to make a comment that that's something to consider in your training as you -- as you move forward.

MR. HICKS: Yes, ma'am.

MS. BROWN: Yeah.

MR. HICKS: Thank you.

MR. LEE: Any other comments? If not, then we'd entertain a motion.

MS. CULLINANE: Mr. Chair, I move to recommend approval of Case 25-03; Special Use Permit to KCK9 doing business as Playful Pack to operate a dog daycare and boarding operation at 5918 Broadmoor with conditions A through L as outlined in the staff report.

MS. BROWN: Second.

MR. LEE: Call the roll, please.

MS. DUKELOW: Mr. Chair.

MR. SCOTT: Kelsey, second.

MS. DUKELOW: Can I offer an amendment?

MR. LEE: Yep.

MS. CULLINANE: I made it.

MS. BROWN: I seconded, but there's an amendment.

MS. CULLINANE: Oh.

MS. DUKELOW: I'd like to offer an amendment that Mr. Hicks work with the City staff and the neighbor, of course, to resolve and accommodate the dumpster enclosure to the north side of the building.

MR. SCOTT: Okay. So, that'll be an additional condition. So, we'll need to vote on that first, then we can vote on the motion.

MR. LEE: A second?

MS. CULLINANE: Do you need a second for that? I second it.

MR. LEE: Call the roll.

MR. SCOTT: To Megan, second. Okay. Cullinane.

MS. CULLINANE: Aye.

MR. SCOTT: Dukelow.

MS. DUKELOW: Aye.

MR. SCOTT: Lee.

MR. LEE: Aye.

MR. SCOTT: Richards.

MS. RICHARDS: Aye.

MR. SCOTT: Schmidt.

MR. SCHMIDT: Aye.

MR. SCOTT: Brown.

MS. BROWN: Aye,

MR. SCOTT: I got everybody. So, that passed.

Motion 2: **Robin Dukelow - Ward IV/Megan Cullinane - Ward III:** Approve the amendment to add a condition requesting applicant to work with City staff and the neighbor to resolve and accommodate the dumpster enclosure to the north side of the building. **The motion carried 6-0-0.**

MR. SCOTT: So, now we'll go back to the original motion.

MR. LEE: Original motion. Call the roll.

MR. SCOTT: Okay. The original motion as amended. Dukelow.

MS. DUKELOW: Aye.

MR. SCOTT: Lee.

MR. LEE: Aye.

MR. SCOTT: Richards.

MS. RICHARDS: Aye.

MR. SCOTT: Schmidt.

MR. SCHMIDT: Aye.

MR. SCOTT: Brown.

MS. BROWN: Aye.

MR. SCOTT: Okay. Cullinane.

MS. CULLINANE: Aye.

MR. SCOTT: Passes.

MR. HICKS: Thank you.

MR. LEE: Thank you.

Motion 3: **Megan Cullinane- Ward III/Kelsey Brown - Ward III:** Approve Case 25-03; Special Use Permit to KCK9 doing business as Playful Pack to operate a dog daycare and boarding operation at 5918 Broadmoor as amended. **The motion carried 6-0-0.**

2. ***Case #25-07 – Conformance of the Tax Increment Financing Redevelopment Project Plan for Rock Creek Redevelopment District No. 4 with the Tomorrow Together Mission 2040 Comprehensive Land Use Plan – 6025 – 6045 Martway Street***

MR. LEE: Okay. Item 2 is Conformance of the TIF Project Plan for the Rock Creek Redevelopment District No. 4 with the Tomorrow Together Mission 2040 Comprehensive Land Use Plan.

MS. SMITH: Hi. Good evening. Thank you, Chairman Lee and members of the Planning Commission, for the opportunity to be here with you this evening.

This is a little bit different take on a TIF project plan. Typically, you see a TIF project plan that comes forward from a developer in connection with a private development project. State statute also allows for cities to be the submitter of a TIF project plan. And so that's what you have before you this evening.
In my tenure with the City, the City has been the applicant, actually on the establishment of the Rock Creek TIF District back in 2006 based on the flooding that was occurring along the Rock Creek Channel. And since that time, we have really been dealing with the distinct smaller districts within the larger Rock Creek District and project plans within that.

This project plan is being presented this evening by the City in connection, in part, with a current development project, which is the Mission Beverly Project being developed by Milhaus, located on the eight parcels between Dearborn and Beverly, both on the north and south sides of Martway Street.

Three of those parcels where the Martway office buildings were previously located are in the TIF district. The parcels on the north side of Martway are not actually located in a TIF district, so this is focused on what we have identified as TIF District 4. And in the project plan, we've highlighted those -- there are approximately 12 parcels that are included in TIF District 4.

So, what happens when a TIF district is formed, and this district was established back in 2006, is that over time, even without a specific project plan in the area, there is TIF increment which is generated and collected by the county and distributed to the city. And it's held until such time as a specific project plan comes along. So, TIF District No. 4 has been generating a small amount of increment since 2006. There's approximately $145,000 or so currently in TIF District No. 4. And we expect that by January of 2026, there might be approximately $220,000 or so available.

So, the developer of the Mission Beverly Project negotiated a tax abatement. It was approved for a tax abatement, a 10-year, 75 percent tax abatement back in 2004. And so, they did not bring forward a TIF project plan that you all considered at that time. And they went the tax abatement route anticipating that they would eventually -- you can't layer tax and TIF abatement together. And so once approved and once we got ready to issue the industrial revenue bonds that provide the abatement vehicle at the conclusion of the construction of the project, the three parcels on the south side of Martway would be removed from the TIF District at that time.

When they brought the project forward and negotiated their incentive package with the City Council, they were anticipating about $1.1 million in infrastructure relocation costs. And at that point, that number was being driven by sanitary sewer relocation. And since we don't have the PowerPoint currently -- there's a sanitary or a sanitary line that runs -- it has to be relocated along the north side of the property.

MR. SCOTT: Stormwater.

MS. SMITH: There's sanitary there that connects --

MR. SCOTT: Oh, on the north side of the property, yeah.

MS. SMITH: -- the north side of the property and has some very complicated connections with some of the buildings there along 59th Street.

There's also a storm sewer that essentially runs down the property lines between the parcels on the north side of Martway between Beverly and Dearborn. And that storm sewer line will have to be relocated out into the street into Beverly. So, those were accounted for in the developer's project budget.

As they began to really get into construction, drawings and design, it was determined that the water line was not in the location that neither WaterOne nor the developer understood it to be with the plans, the preliminary development plan was approved. There's a significantly sized 24-inch transmission main that runs down Dearborn. And it is essentially located underneath the sidewalk on the west side of Dearborn Street. So, we've gone through several iterations with the developer to look at redesign of the project. I think one of the things in our conversations with WaterOne and ongoing conversations with WaterOne is now that we are building to the street, it has some

significant impacts for where their facilities or other public infrastructure facilities may be located.

In this case, the water line relocation, the developer has been successful in working with WaterOne to advance a water line relocation. They are also some conflicts, water line conflicts that run along Martway. So, that transmission line comes down Dearborn, turns to the west on Martway, goes over to Lamar, and then essentially serves a large portion of southern Johnson County. So, that's the main that comes out of the facilities up at 53rd at Waterworks Park. There was a line on Outlook you may recall that experienced a failure about a year and a half ago, and WaterOne came in and replaced that line. So those lines work in concert.

The water line relocations, which were not anticipated initially, are trending right now in the neighborhood of about another 500 to $750,000 for this project. So, the developer came back to the City to brainstorm and look at some options. We, or the Council, has not expressed an interest in reopening the tax abatement percentage calculation. If they would, they would be looking at renegotiating attainable housing and sustainability requirements with that developer.

So, as we looked at what options and what might make sense there, and we looked at future redevelopment of this entire TIF district, one of the things that we can do through the project plan submitted by the City is to allocate those resources. In this case, we would anticipate those would be allocated to infrastructure that would not exclusively serve the Milhaus project. It would obviously allow that project to proceed, but then we would have conflicts for water, sewer, and storm sewer out of the way for any future development in that area. And based on where we now know those lines to be, that will be the case. If it's not Milhaus, the next developer that likely comes along would encounter that. So, the City Council, they have tentatively indicated that they are willing to consider the use of the TIF increment that has been generated to date and through -- will be generated through January of 2026, to reimburse the developer for those infrastructure related costs. Not an ongoing TIF. Not an ongoing reimbursement. So, we're looking at probably a maximum of $220,000 that would help offset that and be the investment into that infrastructure.

As you know, when we have a TIF project plan that comes forward, it comes forward to you all to find whether or not that plan is in conformance with our Comprehensive Land Use Plan. While again, the Mission Beverly project did not come forward on a TIF basis, as we looked at the preliminary development plan and the staff report that was provided, there were several factors related to that plan, and it was included in your packet, that were supported or supported narrative and goals and objectives in our Tomorrow Together plan.

In addition, the infrastructure improvements that would be anticipated to be reimbursed through this also contribute to Goal 3B of the Economic Revitalization chapter, which is addressed by supporting businesses with increased residential capacity and as a catalyst in the area for future business growth. And we believe that this investment that serves multiple parcels would align with that goal.

And additionally, in Goal 4 of the Transportation and Mobility chapter, it talks about tying current and future mobility plans to the City's economic development strategy and neighborhood stabilization. Specifically, Goal 4A recommends using the Future Land Use Plan to support higher-density, mixed-use developments where appropriate.

This is an area that is zoned MS-2. You may recall in the preliminary development plan this -- the Milhaus developers did work to transition a lower height in Building B that was adjacent to or across the creek channel from the single-family neighborhood.

And so again, we feel that the project plan that we've submitted for your consideration, it does, in fact, conform with the Comprehensive Plan.

The exhibit that I just handed out this evening shows you generally over a 20-year life, the TIF project term would be essentially negotiated in a separate redevelopment agreement with Milhaus, that the Council would consider should you all find the project plan in conformance with the Comprehensive Plan. It is not anticipated that we would run this TIF for that developer or that development project for 20 years. Again, the intent would be to take what has already been accumulated and apply that. The developer would have to incur the expense initially, certify the expense, and then they would be eligible to be reimbursed. And I would be happy to answer any questions.

MS. CULLINANE: I have two questions right off the bat. So, they would be reimbursed 100 percent, right?

MS. SMITH: No. They're going to incur -- so, when we look at the 1.1 million that they were already anticipating and an additional 550,000 to $750,000 all in, they would only be getting probably a maximum of 220,000 of those total costs reimbursed.

MS. CULLINANE: Okay. [Inaudible].

MS. SMITH: So, they are going to bear the remainder of all of the infrastructure investment.

MS. CULLINANE: Okay. So, about 220. That was my other question.

MS. SMITH: Uh-huh. Yeah. And the sanitary, or the stormwater line, pardon me, is estimated currently at about $750,000. That's sanitary or that storm sewer, when it's moved into Beverly, will be the City's responsibility to maintain and replace in the future. That system is currently rated at a 4.7 on a 5-point scale in terms of our asset inventory. And 5 is the worst condition that we can have. So, we also look at this as an opportunity to partner with the developer to pay for a portion of an asset that we will be responsible for maintaining from this point forward.

MS. RICHARDS: How much did they give us for Beverly Park?

MS. SMITH: So, the development agreement anticipates half a million dollars for acquisition of Beverly Park. So, the -- and that is still -- the Council is not willing to negotiate that piece.

MS. RICHARDS: Higher than [inaudible].

MS. DUKELOW: Question. Regarding the -- so, I understand that this 145K that's been collected by the county to date is for just the three parcels that are part of the current redevelopment project, Mission Beverly or Mission [inaudible].

MS. SMITH: Right.

MS. DUKELOW: It's just those three parcels. That's the value today in TIF for those three parts of this.

MS. SMITH: No, that's all.

MS. DUKELOW: That's the whole.

MS. SMITH: That's the whole district. So, that's everything that's been generated by the whole district. Because ultimately, the water line or the storm sewer line is going to serve multiple parcels within that district, not just those three parcels.

MS. DUKELOW: In the event -- so, once that's done, then this TIF district in it's entirety is done, closed, there's no more available.

MS. SMITH: That's absolutely an option for the Council. So, they do not anticipate allocating any more than what is currently, will currently be generated by the TIF district by January of 2026. The Council could, they will have to remove those three parcels from the TIF district if the tax abatement moves forward. They could keep in place TIF District No. 4 and wait for another project plan to come along. But I don't anticipate, I mean, there's some opportunities when you look at, you know, what occurs along Martway there to the west of where the office buildings were. There's some potential for redevelopment. But I think, again, I can't speak for the Council. I think -- my guess would be that they would be inclined to terminate this, this TIF district, getting ready to terminate. I mean, that's sort of been their plan. We're getting ready to terminate next month the TIF District at Mission Crossing because it paid off about five years early. So, I think they're very sensitive to, you know, the community's perceptions and feelings about some of those incentives.

The benefit I will tell you of looking at these revenues that have accumulated into -- in districts that do not have projects, because we had the same situation occurring along TIF districts, pardon me, District No. 3, kind of in that area for The Lanes, Phase I and Phase II, Mission Mart Shopping Center. There are no specific plans for those, but that is an opportunity potentially for funds there to be used to accomplish some of the things included in the Rock Creek Corridor Study, and the enhancements and improvements. So, it has to be public improvements. But those dollars coupled with, you know, the Council has not in the last couple of years granted TIFs that provided 100 percent of the increment to the developer. There's always been a city public-private sharing. And so, those funds can also be used for stormwater improvement, sidewalks, and any of those things. And I think that's at least where the preliminary conversations have been in other districts for, for the Council. So, very focused on things that will benefit the larger community and not just one particular development.

MS. DUKELOW: Thank you. Beyond what you're asking us --

MS. SMITH: Right.

MS. DUKELOW: -- that's outside of our --

MS. SMITH: Well, but this is -- yes. And as I mentioned --

MS. DUKELOW: [inaudible].

MS. SMITH: Yeah.

MR. LEE: Additional questions?

MS. RICHARDS: I have, I think I'm just a little confused about what you presented to us because my understanding is that what you're asking is if we would approve the amount that has accumulated up through January of 2026.

MS. SMITH: That's not -- that's not your -- that will be an approval by the City Council.

MS. RICHARDS: Okay.

MS. SMITH: So, your -- what's before you this evening is finding the project plan, in general, consistent with the Comprehensive Plan. If you do that, then the City Council, the next step for the City Council, is to pass a resolution to call a public hearing on the TIF project plan. Then it's at least 30 days following the passage of that resolution they call the public hearing. We would have to negotiate a redevelopment agreement that would then -- through that redevelopment agreement, indicate the amount of TIF increment to be provided to the Milhaus developer. It's confusing with the projection that had to be included as exhibit, Exhibit E, I believe it is. But it is -- it has been made very clear to the developer, the developer's team. And the direction given by the City Council was to limit it to what's been collected.

MS. BROWN: Through January.

MS. SMITH: Uh-huh.

MS. BROWN: Right.

MS. RICHARDS: I guess my confusion is then why -- why does this go out starting at 2025 up through 2045? Is that for what would be projected with those three parcels removed then or --

MS. SMITH: No. This is -- I don't think we removed those. So, this, and we can redo that exhibit. This is just really an illustration of currently without any other development in this district. You're not generating a lot of revenue annually for that.

MS. RICHARDS: Okay.

MS. SMITH: And I can certainly, I mean, our --

MR. SCOTT: The project plan is for a 20-year period.

MS. RICHARDS: Right.

MR. SCOTT: So, we look at where we would be without the project occurring for a 20-year period, and then where would it be if the project did occur.

MS. RICHARDS: Okay.

MR. SCOTT: In this case we're just kind of focusing on what's already accumulated in the TIF district to this date given what the impact would be if that money were to be given to the developer to help pay for their cost, so.

MS. RICHARDS: Got it. Okay. Thank you.

MR. SCOTT: Yeah. It's a little one off.

MS. SMITH: It's not -- it's -- it is --

MR. SCOTT: It's a bit different than what you've seen.

MS. SMITH: Absolutely. And I'm learning a lot about this as we go through it, so.

MS. DUKELOW: Mr. Chair, if there are no comments or questions, I'll make a motion. I move to approve the Resolution, 25-03, stating that the proposed Tax Increment Finance Redevelopment Plan for the Rock Creek Redevelopment District, No. 4, is in conformance with the Tomorrow Together Mission 2040 Comprehensive Land Use Plan.

MS. BROWN: Second.

MR. LEE: Brian, can you call the roll?

MR. SCOTT: Okay. Richards.

MS. RICHARDS: Aye.

MR. SCOTT: Schmidt.

MR. SCHMIDT: Aye.

MR. SCOTT: Brown.

MS. BROWN: Aye.

MR. SCOTT: Cullinane.

MS. CULLINANE: Aye.

MR. SCOTT: Dukelow.
MS. DUKELOW: Aye.

MR. SCOTT: Lee.

MR. LEE: Aye.

MR. SCOTT: Okay. Motion passes.

MS. SMITH: Thank you all for your time this evening.

MR. LEE: Thank you.

Motion 4: **Robin Dukelow - Ward IV/Kelsey Brown - Ward III:** Approve Case #25-07, finding that the Tax Increment Financing Redevelopment Project Plan for Rock Creek Redevelopment

District No. 4 is in conformance with the Tomorrow Together Mission 2040 Comprehensive Land Use Plan – 6025 – 6045 Martway Street. **The motion carried 6-0-0.**

V. OLD BUSINESS

MR. LEE: Do we have any Old Business tonight?

MR. SCOTT: No, we don't, Mr. Chairman.

VI. PLANNING COMMISSION COMMENTS

MR. LEE: Staff comments?

MR. SCOTT: You want to do Planning Commission comments first or staff comments?

MR. LEE: Which would you rather do?

MR. SCOTT: I can entertain questions or --

MR. LEE: Let's do any Commission comments first.

MS. BROWN: I have random questions about things.

MR. SCOTT: You have random questions about things.

MS. BROWN: When is Swig opening?

MR. SCOTT: Not soon enough.

MS. BROWN: Okay. The second thing is I have a picture of it, but Rock Creek Trail. As you're walking from Woodson back behind the buildings and you cross a couple streets. But this particular stretch right here, there is wood slats that separate the trail from the businesses and there's a couple areas where the wood slats are on the ground and it's an opening. And I'm wondering, like, is that the business owner, or is that us for creek upkeep?

MS. SMITH: Last week, I noticed exactly the same thing.

MS. BROWN: [Inaudible].

MS. SMITH: And I have asked for -- I did not have the chance today, but I'm passing that along to our Public Works Department. I believe it is likely connected to survey work that is occurring for the design of the Rock Creek Channel work that is slated from Woodson to Maple in 2026. Because there are also some chain link fence sections that are down and removed. But I have noted that, so I will pass that along and we'll get the fence back up.

MS. BROWN: The materials are just kind of on the ground.

MS. SMITH: They're just sitting. It's like someone took them out, and I'm wondering if there wasn't a piece of equipment that they needed to get through there --

MS. BROWN: Right.

MS. SMITH: -- and they just didn't take the time to put them back into place, or they're coming back with it, so.

MS. BROWN: Right. I just don't, you know.

MS. SMITH: Yes.

MS. BROWN: I wanted to find out about that and see if that is on someone's radar that that's just open and doesn't look right.

MR. SCOTT: The City Administrator alluded to -- we're going to start basically redoing that entire section. So, we've entered into a contract with Olsson Engineering to do a lot of design work over the next year to basically reconstruct that entire channel from Woodson all the way back to Maple. And then once that work is done and it's reviewed by staff and the City Council and bids are accepted for that work, then we'll be actually reconstructing the channel probably in ’27 or something like that.

MS. SMITH: ’26.

MR. SCOTT: ’26? Okay. And that’s soon. Yeah. So, you'll be seeing a lot of activity along that stretch over the next few years.

MR. LEE: Any other comments?

MR. SCOTT: So, Swig is like dangerously close to being finished. I think we're going to do a final inspection next week and probably issue an occupancy, certificate of occupancy.

Popeye’s, we had a grand opening a couple weeks ago, so that's up and running.

MS. BROWN: It looks good.
MR. SCOTT: We issued a certificate of occupancy, I believe last week or the week before for Mission Vale. Those are the townhomes at Nall and 58th Street or 58th Terrace that's now complete.

And we had a ribbon cutting a few weeks ago for The Lanes. So, that is now complete.

So, a lot of projects are coming to completion now.

MS. BROWN: Can you clarify, like I don't think it resonated with me when he was in here about the work that they're doing across the street. Does anyone know about that?

MR. SCOTT: The Lanes?

MS. BROWN: The improvements that they were making?

MS. SMITH: [Inaudible; talking off mic]

MS. BROWN: Yeah.

MS. SMITH: [Inaudible; talking off mic]

MS. BROWN: Yeah. And the mall there.

MR. SCOTT: So, the --

MS. BROWN: Is that related to this project? If feels like it's --

MR. SCOTT: There's a lot of moving parts going on in the east end of town. And so, the developer of The Lanes, Sunflower Development Group, has become a part owner of the shopping center.

MS. BROWN: Okay. That's the connection.

MR. SCOTT: And they approached the City about creating a Community Improvement District, which would be an additional 1 percent sales tax that's generated in the shopping center. That was recently approved by the City Council. It'll go into effect sometime this summer. But that would generate an additional source of revenue that the developer, now slash, part owner could use to make some façade improvements to the building as well some mechanical equipment upgrades and landscaping and things like that, so.

MS. BROWN: Any bites on the gas station?

MR. SCOTT: No. But I think the sale is going to go through. One of our staff members was talking the other day with the current owner and the sale that's been pending is about to go through. So, that'll be purchased here pretty soon by Block Real Estate Company. One of the two Block companies here in town.

MS. BROWN: Is it the same one that did the development?

MR. SCOTT: Different one.
MS. BROWN: Okay.

MR. SCOTT: Yeah. Different one. Yeah. David Block and Ken Block. And they're cousins, and they each have a real estate company, and it gets confusing.

MS. BROWN: Yeah.

MR. SCOTT: So, but it's a reputable developer in town. I think they'll try to find a good use for that property.

VII. STAFF UPDATES

MR. SCOTT: Staff-wise, we hired a young lady to replace Kim Steffens, who was our Planning Commission Secretary. She started a couple weeks ago. Her name is Lauren Galvin. She's right there at the window. So, if you're coming to City Hall you can say hi to Lauren.

And then we hired a building official. He started today. His name is Kortney Capello. And he has about 30 years of experience, all pretty much with Wichita, Sedgwick

County. So, he was the Assistant Director of their Metropolitan Building Department. They have a combined county-city building department, and he was the assistant director of that. So, he's pretty much seen it all, done at all. He's got a lot of experience. We're looking forward to picking his brain and utilizing his experience and there's still a lot going on that we need help with.

MS. BROWN: A busy building official.

MR. SCOTT: Yeah. Uh-huh. And then we're still looking for a planner. So, we've been interviewing candidates. Interviewed a few last week and did a second interview -- or two weeks ago. We did a second interview last week and then had a couple résumés trickle in this morning that looked pretty good, so I'll give them a call and see if I can get an interview set up. So, hoping to get somebody on board soon. That's all that I know.

MS. BROWN: Do we have a May meeting?

MR. SCOTT: No May meeting. No June meeting.

MS. BROWN: That's all of the questions.

MR. SCOTT: You get two months off, yeah.

MS. CULLINANE: When's Hawaii?

MR. SCOTT: Hawaii will be in May. So, that's part of the reason why we're not having a May meeting, so. We haven't gotten any applications. Things are kind of starting to slow down a little bit in terms of applications and so forth, so.

MS. SMITH: [Inaudible; talking off mic].

MR. SCOTT: Yeah. So, the Mayor is planning to appoint Scott Wingert --
MS. SMITH: Aaron.

MR. SCOTT: Aaron Wingert. Excuse me. Aaron Wingert to the Planning Commission. Aaron has been on our BZA for several years now. He just lives literally at the end of the street, so. That'll be with the advice and consent of the City Council. That'll be at our April meeting is when they're going to make the appointment.

MS. SMITH: We already passed it.

MR. SCOTT: May meeting. So, yeah. I've lost track of the calendar.

MS. SMITH: [Inaudible; talking off mic] quality control. Lives on Lamar and 61st in the house he grew up in.

VIII. ADJOURNMENT

MR. LEE: Do we have a motion?

MS. CULLINANE: Mr. Chair, I move to adjourn.

MR. LEE: Second?

MS. DUKELOW: Second.

MR. LEE: Call the roll.

MR. SCOTT: Who seconded?

MS. DUKELOW: I seconded.

MR. SCOTT: Okay. Okay. Schmidt.

MR. SCHMIDT: Aye.

MR. SCOTT: Brown.

MS. BROWN: Aye.

MR. SCOTT: Cullinane.

MS. CULLINANE: Aye.

MR. SCOTT: Dukelow.

MS. DUKELOW: Aye.

MR. SCOTT: Lee.

MR. LEE: Aye.

MR. SCOTT: Richards.

MS. RICHARDS: Aye.

MR. SCOTT: Okay. Motion carries. Thank you all. We will see you sometime this summer probably.

Motion 5: **Megan Cullinane - Ward III/Robin Dukelow - Ward IV:** Adjourn. **The motion carried 6-0-0.**

(Mission Planning Commission Meeting Adjourned.)

CERTIFICATE

I certify that the foregoing is a transcript to the best of my ability from the electronic sound recording of the proceedings in the above-entitled matter.

/das May 14, 2025

Deborah A. Sweeney

APPROVED BY:

_____

Brian Scott, Planning Commission Secretary

Staff Report

Planning Commission Meeting

November 24, 2025

Agenda Item Number	1
Project Number/Title	Case #25-07 - Encore Rezoning Request
Request	Approval of a rezoning from MS-2 to DND
Location	5200 Block of Martway and 5900 Roeland Drive
Tax Parcel ID	KP38000000 0007 KP38000000 0023B KP38000000 0024 KP38000000 0025 KP38000000 0025A
Applicant/Owner	Applicant: Mark McHugh, Encore Land, LLC Owner: Jason Swords, Sunflower Development Group, LLC Owner: City of Mission
Staff Contact	Taylor Cunningham, Senior Planner
Advertisement	The Legal Record November 4, 2025
Public Hearing	Required November 24, 2025

Background and Property Information

Sunflower Development recently completed The Lanes at Mission Bowl, a multi-family residential apartment complex at 5399 Martway. They have long been interested in developing a second project on the large parking lot to the immediate east of The Lanes.

Two preliminary development plans (PDPs) for the large parking lot formerly associated with the Mission Bank Building have been considered by the Planning Commission in the past few years. The first PDP was for a 90-unit multi-family residential building that was to serve as Phase II of The Lanes. This was heard by the Planning Commission at the July 24, 2023 meeting where the commission voted 7-0 to recommend approval to the City Council. The Council approved the PDP (Ordinance 1588) with conditions at their August 16, 2023 meeting. A revised PDP for the same project was heard by the Planning Commission at the March 24, 2025 meeting as Case #25-04. The Planning Commission voted 7-0- (with one abstention) to recommend approval to the City Council. The Council subsequently approved the revised PDP (Ordinance 1630) at the April 16, 2025 meeting.

Since these approvals, the applicant has decided to abandon the Phase II project in favor of a larger development project that comprises all five parcels from The Lanes going east to Roeland Drive. This new development will be a 180-unit multi-family development project to be known as Encore. Sunflower Development has acquired both the large parking lot parcel and the former Wendy's restaurant parcel. They are in preliminary discussions with the City about acquiring the park-and-ride lot.

The proposed apartment building will be four-story, wood construction and consists of 180 units totaling 173,320 square feet. There will be a five-level, stand-alone parking structure between The Lanes and Encore. This parking structure will contain 241 parking spaces totaling 94,400 square feet. There will be a mixture of studio and one- and two-bedroom units in the proposed apartment building along with other amenities including a pool, work out facilities, and conference/office area.



A preliminary development plan (Case #25-08) for the proposed apartment building and parking structure is to be considered this evening along with this request for rezoning.

The site for the proposed development project comprises five (5) parcels of land between The Lanes at Mission Bowl and Roeland Drive. These parcels include the parking lot formerly associated with the Mission Bank Building on Johnson Drive, the City-owned transit park-and-ride lot, and the former Wendy's property. The entire site is approximately 3.3 acres.



Most of these parcels used to be in the 100-year flood plain until improvements were made to the Rock Creek stormwater channel in 2020/2021. After the improvements were completed, a Letter of Map Revision (LOMR) was issued on September 14, 2022 revising the National Flood Insurance Program (NFIP) map to show that the majority of these parcels were removed from the flood plain. A small area on the large parking lot still remains in the flood plain, though.

Though zoned Main Street 2 ("MS-2"), which is intended for commercial use, these parcels have remained underutilized for many years. This is most likely due to the fact that not only have they been in a flood plain for many years, but the parcels are relatively shallow (little depth) making them unsuitable for any meaningful development and the associated

parking that comes with that development. Both the large parking lot and the City owned park-and-ride transit lot have very few, if any, cars parked on them during the day. This has been the case for many years. The Wendy's restaurant, which was opened in the early 1980s when the Mission Mall was still in existence closed in April of 2024.

Zoning and Future Land Use

All five parcels of the subject property are currently zoned "MS-2," Main Streed District 2. Section 410.100(A) of the Mission Municipal Code, which defines the purpose and intent of the zoning district states:

> "The zoning of property as "MS2" Main Street District 2 is intended to provide development opportunities consistent with the existing character surrounding the core of downtown Mission. The objectives for this district are similar to "MS1", except residential and office uses are permitted on the ground floor level of mixed-use buildings or complexes in order to support the businesses in the downtown area. This district promotes multi-story structures with top-floor setbacks as described by the Mission/Rock Creek Redevelopment Masterplan."

Under "MS-2" zoning, the intent is to provide a mixed use of commercial, retail, and residential uses to complement the more active "MS-1" zoning along Johnson Drive. However, the applicant does not feel that the market supports retail or commercial in this area at this time.

The applicant is also the developer for The Lanes at Mission Bowl, which is currently zoned "MS-2." To meet the intent of the "MS-2" zoning, the applicant incorporated seven (7) live-work units into this primarily residential development. These units allow a resident to work where they live. To date, the applicant has had difficulty in leasing out these units.

Phase II of The Lanes that was originally proposed by the applicant did have a small retail component. This was incorporated into the proposed development to, again, meet the intent of the "MS-2" zoning. However, the applicant has expressed hesitancy to do this given there is vacant commercial property in Mission and more affordable and sought-after locations on Johnson Drive.

As stated previously, the Wendy's Restaurant at the corner of Martway and Roeland Drive was opened in the early 1980s when the Mission Mall was still in existence and active. The restaurant has had several years of diminished sales since the mall closed in the early 2000s. The restaurant closed in 2024. Since then, the restaurant building has been

actively marketed, however a provision in the "MS-2" zoning that prohibits the sale of food through a drive-up window has discouraged any potential users.

The applicant believes that these parcels are more suited for residential development that can support the existing retail and commercial uses along Johnson Drive. Therefore, the applicant is seeking a rezoning to Downtown Neighborhood District ("DND") to allow for a better and higher use of the parcels. The "DND" will also provide a transitional buffer between housing to the south of Martway and commercial development to the north.

The intent of "DND" zoning is to "encourage private and public investment, unique living environments, a variety of housing styles that support the downtown business district, and to stabilize single-family neighborhoods." "DND" zoning permits a variety of residential uses including single-family homes, townhomes, and multi-family housing. "DND" permits multi-family structures to a height of three stories or to a maximum 45-foot height, and a lot area coverage of 50 units per acre. The "DND" zoning district is ideally suited for this location and the proposed development project.

Surrounding properties are zoned and developed as follows:

- North: "MS-2," Main Street District 2 – Walz Tetrick Advertising, Mission Wild Oats (vacant)
- East: "MXD," Planned Mixed-Use District – Former Gateway Site (vacant)
- South: "RP-3," Multi-Family Residential – Roeland Court Townhomes
  "RP-1," Single-Family Residential – Mission Village Subdivision
- West: "MS-2," Main Street District 2 – The Lanes at Mission Bowl

Mission's Comprehensive Plan, Tomorrow Together 2040, designates these parcels as High Density Residential and Mixed-Use Medium Density. It falls within the boundaries of the East Gateway Redevelopment Area and is subject to the Johnson Drive Design Guidelines.

Rezoning Golden Rule Analysis

In the case of Golden v. City of Overland Park (1978), the Kansas Supreme Court provided a set of 14 criteria by which to consider a rezoning case. These criteria have become the legal standard for evaluating rezoning matters and is cited in Section 440.140 of the Mission Municipal Code.

1. The character of the neighborhood.

Analysis: The subject property is immediately adjacent to The Lanes at Mission Bowl, another multi-family residential apartment complex. Mission Mart shopping center is to the

north across Martway Street. There is a residential area to the south that is comprised of moderate-density townhomes next to single-family residential homes and separated by the Rock Creek channel.

The neighborhood is very mixed-use and made up of residential and commercial uses. The proposed Encore development would serve as a transition between the low- and moderate-density homes to the south and commercial areas to the north.

2. **The zoning and uses of nearby properties and the extent to which the proposed use would be in harmony with such zoning and uses.**

Analysis: According to Section 410.270 of the Mission Municipal Code, the Downtown Neighborhood District intends to encourage private and public investment in neighborhoods surrounding the commercial core of downtown Mission. The intent is to offer a unique living environment that offers a variety of housing styles, that supports downtown businesses and acts to stabilize the surrounding single-family neighborhoods. Johnson Drive is a block north of the properties proposed to be rezoned. Properties along Johnson Drive are zoned "MS-1", which is intended to support retail and commercial activity. Properties to the south are zoned for low- and moderate-density residential uses. The "DND" zone is an ideally suited transition between these two uses. The suitability of the property for the uses to which it has been restricted under the applicable zoning district regulations.

3. **The suitability of the property for the uses to which it has been restricted under the applicable zoning district regulations.**

Analysis: The subject property is currently zoned "MS-2," Main Street District 2. The intent of this zoning district is to promote mixed-use development that includes commercial, retail, and residential space. Over the last five years, there has been a decrease in office uses due to work-from-home cultural shifts and reduced retail land use due to increased online shopping. There is an excess of commercial property that is sitting vacant not only in Mission, but all across the metro. Changing demographics and retail markets have also driven development towards multi-family housing in recent years as supply has been much lower than demand. For these reasons, the applicant believes that multi-family housing without a retail or commercial component would be the best and most feasible use of the property. A rezoning to DND, with its focus on transitional residential housing between land uses, is appropriate for this site.

4. **The extent to which approval of the application would detrimentally affect nearby properties.**

Analysis: The former Wendy's has been vacant since it closed in April of 2024. The three parcels that make up the city owned park-and-ride lot were acquired in 2008. The western parking lot (the large parking lot) has been used for many years as overflow parking for the bank building on Johnson Drive. The adjacent apartment complex was developed by the same applicant and matches the land use and density of the proposed Encore apartments. The addition of the Encore development would not have a detrimental effect on nearby properties based on any of the use of these properties and would increase the value and use of the current parking lots and vacant Wendy's. In fact, the additional residential population that will come with the proposed land use of "DND" will help to support retail businesses at the nearby Mission-Mart Shopping Center and other businesses along Johnson Drive. The proximity to the existing transit center will also help to encourage greater use of the existing bus service as an alternative form of transportation.

5. **The length of time the property has remained vacant as zoned.**

Analysis: The former Wendy's has been vacant since it closed in April of 2024. The three parcels that make up the city owned park-and-ride lot were acquired through eminent domain by the City of Mission from Wendy's in 2008 and developed into parking at that time. The large parking lot has been in existence since at least the early 1980s.

6. **The relative benefit to the public health, safety and welfare by retaining applicable restrictions on the property as compared to the destruction of the value of the property or hardship to the owner association with denying its request.**

Analysis: The existing properties are underutilized given their relative location and connection to Mission's downtown and adjacent apartment development. The vacant Wendy's and parking lots are not the highest and best potential use of this property. A rezoning to "DND" which allows for a variety of residential type uses will allow the parcels to achieve a greater value through redevelopment, not only land value, but value to the community.

7. **The Master Plan or Comprehensive Plan.**

Analysis: Mission's Comprehensive Plan, Tomorrow Together 2040, designates these parcels as High Density Residential and Mixed-Use Medium Density. High Density Residential is defined as "vertically attached residential apartments and condos" with a density of 12 or more dwelling units per acre.

The Tomorrow Together plan also discusses the need for greater transitional land uses between areas that are more commercially active, such as Johnson Drive, and area that are more low-density residential.

The proposed rezoning to "DND" will fullfil the intent of the Tomorrow Together comprehensive plan.

8. **The extent to which the proposed use would adversely affect the capacity or safety of that portion of the road network influenced by the use or present parking problems in the vicinity of the property.**

Analysis: Both the large parking lot that was associated with the bank building and the park-and-ride lot have been an existence for many years. Though these lots offer a combined total of over 160 parking spaces, they are seldom used but for a handful of vehicles.

The bank building was recently sold to Walz Tetrick Advertising and the large parking lot sold to the applicant. As part of the sale to Walz Tetrick, arrangements were made to expand the parking on the bank building property to accommodate additional parking needs. There are no existing parking problems in the vicinity of the subject parcels.

The applicant is proposing to build a 241-space parking structure as part of their development project. This will meet the required number of parking spaces (200) for the apartment building with additional parking available. There will be 23 parking spaces on the first level of the parking structure use by the those utilizing the transit center bus service. In addition to the parking structure, there will also be 12 on-street parking spaces. The parking structure and on-street parking should be more than adequate to fulfill the parking needs of the area.

The proposed rezoning to DND will limit land use to residential. This type of land use has traffic patterns that usually peak either in the morning or evenings. The vehicular traffic would be similar to the existing traffic generated by The Lanes. The applicant has provided a Traffic Impact Study in accordance with City of Mission's Traffic Impact Study Requirements. This study has been reviewed and approved by City staff and the City's consulting engineer and shows that there will be little impact to the overall road network in the area.

9. **The recommendation of the professional staff.**

Analysis: The City of Mission Community Development staff believes that the requested rezoning to DND is appropriate for the proposed use and will be in harmony with the surrounding zoning and land uses.

10. The extent to which utilities and services, including, but not limited to, sewers, water service, Police and fire protection and parks and recreation facilities, are available and adequate to serve the proposed use.

Analysis: The proposed rezoning to DND will not have an adverse impact on existing utilities or city services according to studies conducted by engineering professionals and reviewed by City staff and consulting engineers.

11. The extent to which the proposed use would create excessive stormwater runoff, air pollution, water pollution, noise pollution or other environmental harm.

Analysis: The subject property is currently used for surface parking with most of the area being impervious. The Stormwater Impact Study conducted by Renaissance Infrastructure Consulting demonstrates that the impervious surface area will decrease from 2.16 acres to 1.95 acres. Additionally, the applicant will be adding compensatory stormwater storage on the south side of the development. Noise or air pollution is not expected to increase with DND zoning.

12. The extent to which there is a need for the use in the community.

There is a high demand for multi-family housing in the Kansas City area. This demand is driven by several factors including a growing number of single or two-person households without children, a growing number of individuals who are choosing to relocate to the mid-west due to lower cost of living and employment opportunities, and a growing number of individuals that prefer to rent rather than own a home. According to the Mid-America Regional Council's (MARC) Housing Data Hub, the City of Mission has a 6.1% vacancy rate across both rental and owner-occupied units. This near-capacity scenario suggests a high demand for quality housing like the proposed development.

13. The economic impact of the proposed use on the community.

Analysis: The proposed rezoning to DND will allow a higher and better use for the subject property. The appraised value of the proposed multi-family development will be higher than the current appraised value. Furthermore, the additional population density will be an economic catalyst for the community through additional sales tax dollars from businesses

in the community that they frequent, including small businesses along nearby Johnson Drive.

14. The ability of the applicant to satisfy any requirements applicable to the specific use imposed pursuant to the zoning district regulations.

Analysis: With the recent completion of The Lanes at Mission Bowl, the applicant has demonstrated the capacity to successfully complete the proposed development project. The project as proposed meets the requirements set forth in DND zoning regulations.

Staff Recommendation

Staff recommends that the Planning Commission recommend approval to the City Council of Case #25-07.

Planning Commission Action

The Planning Commission hear Case #25-07 at its November 24, 2025 public hearing.

City Council Action

The City Council will hear Case #25-07 at its January 14, 2025 public hearing.

Staff Report

Planning Commission Meeting

November 24, 2025

Agenda Item Number	2
Project Number/Title	Case #25-08 – Encore Multi-Family Development
Request	Preliminary Development Plan for 180-Unit Multi-Family Residential Development Project
Location	5200 Block of Martway and 5900 Roeland Drive
Tax Parcel ID	KP38000000 0007 KP38000000 0023B KP38000000 0024 KP38000000 0025 KP38000000 0025A
Current Land Use	Parking Lot and Vacant Fast-Food Restaurant
Proposed Land Use	High-Density Residential
Current Zoning	Main Street 2 - "MS-2"
Proposed Zoning	Downtown Neighborhood District - "DND" (separate application)
Applicant(s)	Mark McHugh, Sunflower Development Group D/B/A Encore Land, LLC
Current Owner(s)	Jason Swords, Sunflower Development Group, LLC City of Mission
Staff Contact	Taylor Cunningham, Senior Planner
Legal Notice	The Legal Record - November 4, 2025
Public Hearing	Required - November 24, 2025

Property Information

The site for the proposed development project comprises five (5) parcels of land between The Lanes at Mission Bowl and Roeland Drive. These parcels include the parking lot formerly associated with the Mission Bank Building on Johnson Drive, the City-owned transit park-and-ride lot, and the former Wendy's restaurant property. The entire site is approximately 3.3 acres.

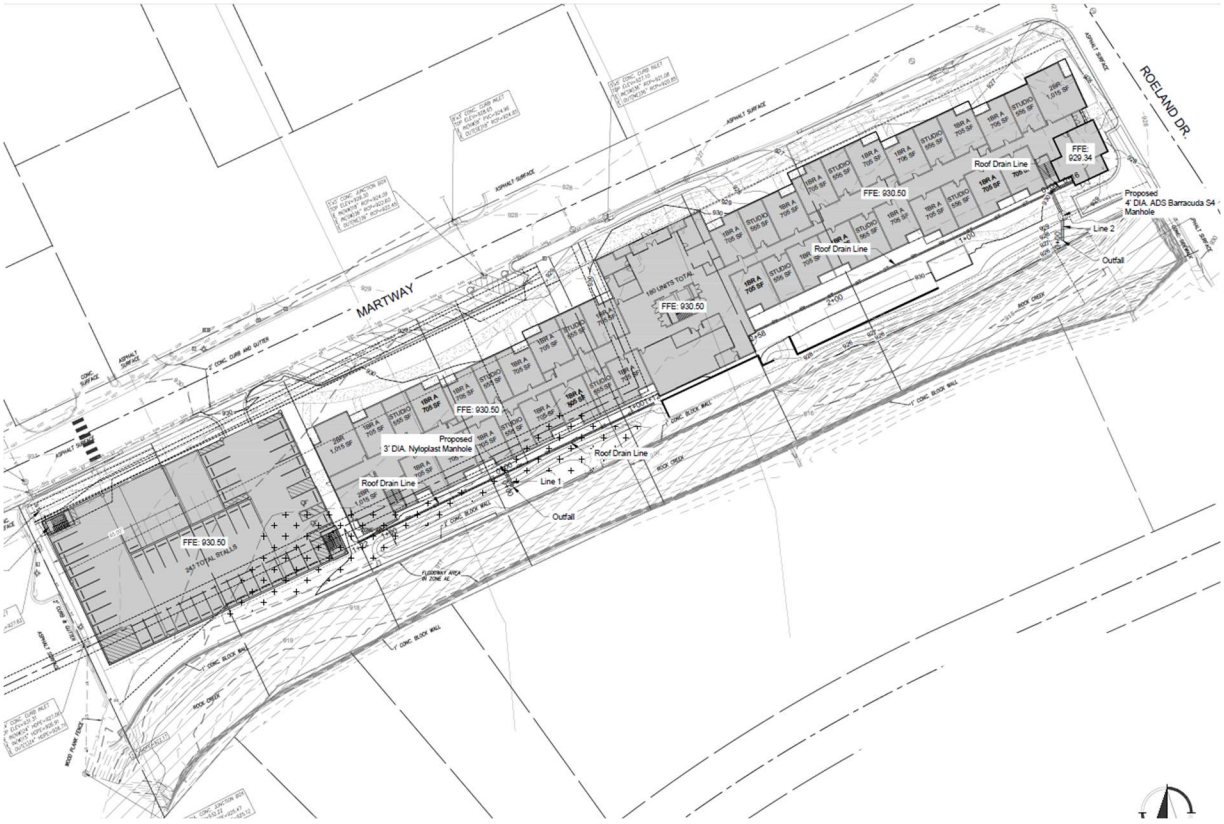


Stormwater generally drains north to south and west to east uncontrolled into Rock Creek. Most of these parcels used to be in the 100-year flood plain until improvements were made to the Rock Creek stormwater channel in 2020/2021. After the improvements were completed, a Letter of Map Revision (LOMR) was issued on September 14, 2022 revising the National Flood Insurance Program (NFIP) map to show that the majority of these parcels were no longer in the flood plain. A small area on the large parking lot remains in the flood plain, though.

Two preliminary development plans (PDPs) for the large parking lot formerly associated with the Mission Bank Building have been considered by the Planning Commission in the

past few years. The first PDP was for a 90-unit multi-family residential building that was to serve as Phase II of The Lanes, the multi-family residential building directly to the west. This was heard by the Planning Commission at the July 24, 2023 meeting where the commission voted 7-0 to recommend approval to the City Council. The Council approved the PDP (Ordinance 1588) with conditions at their August 16, 2023 meeting. A revised PDP for the same project was heard by the Planning Commission at the March 24, 2025 meeting as Case #25-04. The Planning Commission voted 7-0- (with one abstention) to recommend approval to the City Council. The Council subsequently approved the revised PDP (Ordinance 1630) at the April 16, 2025 meeting.

Since these approvals, the applicant has decided to abandon the Phase II project in favor of a larger development project that comprises all five parcels from The Lanes going east to Roeland Drive. This new development project will be a 180-unit multi-family residential building to be known as Encore. Sunflower Development has acquired both the large parking lot parcel and the former Wendy's restaurant parcel. They are in preliminary discussions with the City about acquiring the park-and-ride lot parcels.



Zoning and Future Land Use

All five parcels of the subject development site are currently zoned “MS-2” - Main Street District 2. Section 410.100(A) of the Mission Municipal Code, which defines the purpose and intent of the zoning district states:

> “The zoning of property as "MS2" Main Street District 2 is intended to provide development opportunities consistent with the existing character surrounding the core of downtown Mission. The objectives for this district are similar to "MS1", except residential and office uses are permitted on the ground floor level of mixed-use buildings or complexes in order to support the businesses in the downtown area. This district promotes multi-story structures with top-floor setbacks as described by the Mission/Rock Creek Redevelopment Masterplan.”

Surrounding properties are zoned and developed as follows:

- North: “MS-2,” Main Street District 2 – Walz Tetrick Advertising, Mission Wild Oats (vacant)
- East: “MXD,” Planned Mixed-Use District – Former Gateway Site (vacant)
- South: “RP-3,” Multi-Family Residential – Roeland Court Townhomes
  “RP-1,” Single-Family Residential – Mission Village Subdivision
- West: “MS-2,” Main Street District 2 – The Lanes at Mission Bowl

Mission’s Comprehensive Plan, Tomorrow Together 2040, designates these parcels as High Density Residential and Mixed-Use Medium Density. These uses are reflective of the proposed Phase II of The Lanes and the Wendy’s restaurant when the plan was approved in December of 2023. The applicant is requesting a rezoning from “MS-2” (Main Street District 2) to “DND” (Downtown Neighborhood District) in a separate application. This would be consistent with the High-Density Residential land use category in the recently adopted comp plan and The Lanes development to the west.

This development site also falls within the boundaries of the East Gateway Redevelopment Area and is subject to the Johnson Drive Design Guidelines.

Project Proposal

Sunflower Development recently completed The Lanes at Mission Bowl, a multi-family residential apartment building immediately west of the subject development site. They are now interested in building a second apartment building and parking structure to the east of The Lanes to be known as Encore.



The proposed apartment building will be four-story, wood construction consisting of 180 units totaling 173,320 square feet. There will be a mixture of studio (48), one-bedroom (112) and two-bedroom (20) units. The building will offer the usual compliment of amenities that we have come to see with these projects including a leasing office, fitness and workout facility, conference room and temporary office space. There will be a large, outdoor terrace located in the middle of the building on the top floor. A dog park will be located south of the main entrance and lobby between the building and the Rock Creek channel. An outdoor pool will be located behind the building as well, just east of the dog park. Trash pick-up and tenant move-in area will be located on the east side of the property off of Roeland Drive.

The parking garage will be a five level, stand-alone structure on the west side of the building, directly across the street from the existing transit center. The garage will have perforated screening on the north side, fronting Martway. The other three sides will be open air to allow for proper ventilation with a knee wall that screens any headlights.

The garage will contain 241 parking spaces totaling 96,400 square feet. The city's zoning code stipulates one parking space for every bedroom. This equates to 200 parking spaces. The applicant is proposing 241 parking spaces, with 23 spaces on the first level being open to general public use and 218 secured parking spaces on the upper level reserved for residents. The 23 public parking spaces on the first level will serve as the transit-center park-and-ride during the day, and then excess parking for visitors and patrons of nearby businesses at the Mission Mart Shopping Center during the evening and weekends. The applicant is also proposing twelve (12) on-street parking spaces located on Martway Street for use by the general public including potential tenants visiting the leasing office.

The proposed development plan includes water quality and stormwater improvements. The developer will install a hydraulic separator to remove suspended solids, trash, and debris from the stormwater before it enters the Rock Creek channel. Additionally, compensatory storage will be provided on site behind the west wing of the complex as shown in site development plans submitted with this preliminary development application. This will serve to address the existing portion of the parking lot that is still in the flood plain.

The applicant will require two variances for this proposed development.

Analysis

Municipal Code and Comprehensive Plan

The proposed development will have a density of 54 units per acre. This is comparable to other multi-family developments that have recently been approved and/or completed – Mission-Beverly is 61 units /acre, the Block development at 5665 Foxridge is 62 units/acre, and the recently completed Lanes is 56 units per acre.

The applicant has requested a rezoning of the subject property from "MS-2" (Main Street District 2) to "DND" (Downtown Neighborhood District). For properties zoned "MS-2," Section 410.240 of the zoning code states that multi-family dwellings may have up to 35 units per acre. The proposed development exceeds this limit by 19 units per acre. For properties zoned "DND," Section 410.290 of the zoning code states that multi-family dwellings may have up to 50 units per acre. The proposed development would then exceed the limit by 4 units per acre. In either zoning designation, this PDP will require a variance from the maximum dwelling units per acre that is permitted.

Analysis: Both the Comprehensive Plan and the East Gateway Redevelopment Plan call for higher densities on and around Johnson Drive, including properties along Martway Street. This variance is in alignment with the goals of both plans for increasing density and available housing in the City of Mission.

The zoning code states in sections 410.240 and 410.290 that the maximum height of buildings for both the MS-2 and DND zoning designations is three (3) stories and not exceeding 45 feet. The proposed development is four (4) stories and 58 feet tall. Approval of this PDP will require a variance from the height regulations in either zoning designation.

Analysis: The adjacent apartment complex (The Lanes) is a five-story structure, which exceeds the maximum height limits. The former Mission Bank Building across the street is six stories. The East Gateway Redevelopment Plan recommends a three-story minimum and eight-story maximum for this area. A four-story structure would be consistent with development patterns in the area and in conformance with the East Gateway Plan.

Section 410.250 of the zoning code states that for residential uses, there must be one (1) parking space per studio unit, one (1) parking space per one-bedroom unit, and two (2) parking spaces per two-bedroom unit. Encore will have 48 studio units, 112 one-bedroom units, and 20 two-bedroom units. 200 total private, off-street parking spaces will be required. In the proposed parking garage, there are 218 private spaces on the upper levels

that are reserved for residents and 23 public spaces on the first level that are for general public parking. Additionally, there will be 12 on-street spaces along Martway in front of the leasing office. The Americans with Disabilities Act (ADA) requires five (5) accessible parking spaces for parking structures with 201-300 spaces. The garage will include five (5) ADA spaces and there will be two (2) ADA spaces on the street.

Analysis: the Encore development meets parking requirements of the ADA and the Mission Municipal Code.

Section 415.030 of the zoning code requires that screening for trash bins must be provided so that it is not visible from the pedestrian realm or off site, and the enclosure shall be constructed of masonry or frame. All roof mounted equipment shall be screened from adjacent property or street level.

Analysis: The trash enclosure is to be located inside the building at the east end off of Roeland Drive. Rooftop mechanical equipment will be screened by a parapet along the font of the building and screening along the back.

Landscaping requirements are outlined in section 415.090 of the zoning code and stipulate that one tree is required for every 50 feet of street frontage. There is 747 linear feet of street frontage on Martway Street resulting in 15 required trees. There is 164 linear feet of frontage on Roeland Drive, requiring 4 street trees. Additionally, one tree for each 3,000 square feet of open spaces is required. The site has 71,495 square feet of open space, requiring 24 trees. The development requires 43 tree plantings total.

Analysis: the Preliminary Development Plan shows 48 trees being planted on the site and meets the requirements of the Mission Municipal Code.

Johnson Drive Design Guidelines

Materials in accordance with the Johnson Drive Design Guidelines (referenced in the municipal code as the City-Wide Design Guidelines) shall be neutral beige, tan, and yellow tones and shall be of durable, high quality such as brick and stone. Each façade shall be addressed to provide a 360-degree design. The pedestrian realm is a priority and should provide adequate connections for improved walkability.

Analysis: The materials and overall architectural design is in conformance with the Johnson Drive Design Guidelines and provides a comprehensive design that is in context with surrounding properties. The retention of the Rock Creek Trail connection provides improved walkability that is inviting and safe for pedestrians.

Rock Creek Trail

There currently exists a bicycle/pedestrian trail easement along on the south side of Martway that extends the entire block. The applicant intends to keep this easement in place and provide an eight (8) foot wide trail that has a slight curvature. This curvature along with landscaping will enhance the trail experience for the user. There will also be direct access from the ground floor units facing Martway to the trail to enhance the activation of the trail and street. Staff has requested that the applicant consider dedication of right-of-way that would include the trail and on-street parking in front of the building. Such dedication would be done with the approval of the final plat at a later date.

Traffic Impact

The development site is currently comprised of two parking lots and a vacant fast-food restaurant. The two parking lots have a total of 168 spaces, which are severely under-utilized. There are four access points along Martway and one along Roeland Drive. The proposed development will have one access point on Martway at the garage, approximately 650 feet west of Roeland Drive. There will be a delivery access point off Roeland Drive, approximately 120 feet south of Martway.

Expected trip generation for the morning peak hours (7:00 am to 9:00 am) is 68 vehicle trips, while the expected trip generation for the afternoon peak hours (4:00 pm to 6:00 pm) is 71 vehicle trips as determined by the Institute of Traffic Engineers Trip Generation Manual 11th Edition. This equates to approximately one vehicle every two minutes. This should have little impact on the overall traffic patterns in the immediate area and no improvements to road facilities are suggested.

A cross-walk with rapid flashing indicators (RFI) are suggested for the mid-block portion of Martway between the parking garage and the transit center along with ADA accessible ramps. This will allow for safe pedestrian access between the parking garage and the transit center and the Mission Mart Shopping Center. Long-term, the City is intending to make improvements to Martway to possibly include a sidewalk along the northside of Martway.

The traffic impact study also recommends ADA accessibility improvements be made to the southwest and northwest corner of Martway and Roeland Drive to include ADA accessible ramps at the curb and pedestrian pushbuttons to activate the crosswalk lights.

Stormwater Impact

A storm water impact study was completed for this site. The study shows that the amount of existing impervious area will be reduced slightly (11%) in favor of green areas around the building, especially in front of the building. Furthermore, the site is broken into three sub-basins. The first sub-basin is the area in front of the building along Martway and includes the on-street parking area, trail, and landscaping space. This subbasin will drain to an existing inlet located in the street. The second sub-basin includes the west wing of the building and the area behind the building. This sub-basin will drain by roof-drains to a point behind the building and into the Rock Creek Channel. The third sub-basin is the east wing of the building and will drain through roof drains to a Barracuda separator before draining into the Rock Creek channel.

As noted earlier, improvements to the Rock Creek Channel were made in 2020 and 2021 to address severe erosion of the channel walls. These improvements involved the placement of large pre-cast stone blocks forming a continuous wall on both sides of the channel. The City was unable to get the necessary easements from Wendy's corporate to do this work on the portion of the wall that abutted their property. Staff has requested that the applicant complete the wall along the Wendy's property to ensure that the ground is stable and suitable for development.

At the time these improvements were made, the city acquired additional easements along the north side of the channel for future access to make repairs. Staff has worked with the applicant to ensure that these easements remain in place. These will have to be re-established with the final plat for this development.

Staff Recommendation

Staff recommends that the Planning Commission recommend approval to the City Council of Case #25-08, the preliminary development plan for Encore, with the following conditions:

1. A variance for density has been granted allowing for up to 54 units per acre for this preliminary development application (Case #25-08).
2. A variance for height has been granted to allow the apartment building and parking structure to be 58 feet tall for this preliminary development application (Case #25-08).

3. All landscaping shall be native to NE Kansas according to the Kansas Forestry Service/Kansas State Extension Office and details provided in a final development plan.
4. The parking structure shall have screening as indicated in the preliminary development plan so that vehicles are concealed from view along Martway Street and headlights are concealed from the west, south and east sides of the garage.
5. A preliminary plat shall be submitted to the City for the Planning Commission's consideration. The plat shall indicate the final placement of all structures on the property. The plat shall indicate an additional 14.5 feet of right-of-way along Martway dedicated to the City of Mission so that said right-of-way dedication includes the on-street parking proposed for Martway and the Rock Creek Trail along Martway. The plat shall indicate public access easements for that portion of the Rock Creek Trail that is not within the right-of-way dedication. The plat shall also indicate a drainage easement dedication to the City of Mission along the back of portion of the property that conforms to the existing drainage easement. The preliminary plat shall show all other necessary utility easements as required by respective providers. The preliminary plat shall be in conformance with all other requirements for such as outlined in the City of Mission's municipal code.
6. A final plat shall be submitted to the City in accordance with requirements for such as outlined in the City of Mission's municipal code for the Planning Commission's consideration and adoption by the City Council prior to the issuance of any building permit. The final plat shall be recorded in the office of the Johnson County, Kansas Register of Deeds.
7. Private Sign Criteria for all signage associated with the development project should be submitted at the time the final plat is submitted. This will required Planning Commission approval.
8. A maintenance agreement is required for all site improvements on the property, including landscaping, sidewalks/trails, and on-street parking. The maintenance agreement shall be recorded in the office of the Johnson County, Kansas Register of Deeds prior to recording of the final plat and the referenced book number applied to the final plat.
9. A permanent 40' wide easement on the west side of the Mission Mart Third Plat shall be granted to the City of Mission to ensure access to the back of this subject property and above referenced drainage easement. Said easement shall be recorded with in the office of the Johnson County, Kansas Register of Deeds prior to the issuance of any building permits.

10. A final development plan will be submitted to the City and approved by the Planning Commission prior to the issuance of any building permits. The final development plan shall be in conformance with the preliminary development plan including but not limited to architectural features and details, materials used, and amenities, and all aspects of the City of Mission's municipal code. Said final development plan shall include final dimensions of the site and building; final design elements of the apartment building and parking structure to include materials and color; final landscaping plan; and a photometric study of the site and lighting plan for all exterior and courtyard light fixtures based on International Dark Sky Association standards.
11. The applicant shall submit a final site plan and construction documents to the City for review and approval prior to the issuance of a building permit.
12. The applicant shall be responsible for applying for a land disturbance permit with the City of Mission. Such permit application shall include a stormwater pollution prevention plan (SWPPP) and notice of intent filed with the Kansas Department of Health and Environment (KDHE). Evidence of acceptance by KDHE is required prior to issuance of a building permit.
13. The applicant will be responsible for completing the remaining portion of the Rock Creek storm channel wall that abuts the former Wendy's restaurant property.
14. Engineering and grading on the south property shall be designed and implemented to obtain a no-rise certificate from the city's consulting floodplain manager. It is anticipated that the applicant will apply for Letter of Map Revision with the U.S. Federal Emergency Management Administration at the completion of the project.
15. Buildings shall be a minimum two feet above base flood elevation (BFE).
16. The applicant shall obtain all approvals from the Consolidated Fire District No. 2 prior to building permit issuance.
17. The applicant shall obtain all approvals from Johnson County Wastewater and Johnson County Water District #1 prior to building permit issuance.
18. All construction drawings shall be approved by the Building Official of City of Mission prior to the issuance of a building permitting.
19. The applicant shall be responsible for all damage to existing City infrastructure, including roads, curbs, and sidewalks during construction. Repairs shall be of a quality like or better than existing conditions before final Certificate of Occupancy issuance.

20. The applicant shall provide a two (2) year warranty bond on all public infrastructure installed as part of this Preliminary Development Plan; bond(s) will be placed on file with the City of Mission Community Development Department.
21. This Preliminary Development Plan approval shall lapse in five (5) years from the effective date of this ordinance if construction on the project has not begun; provided, however, that the applicant may request a hearing before the City Council to request an extension of this time period for up to 12 months.

Planning Commission Action

The Planning Commission will hear Case #25-08 at its November 24, 2025 public hearing.

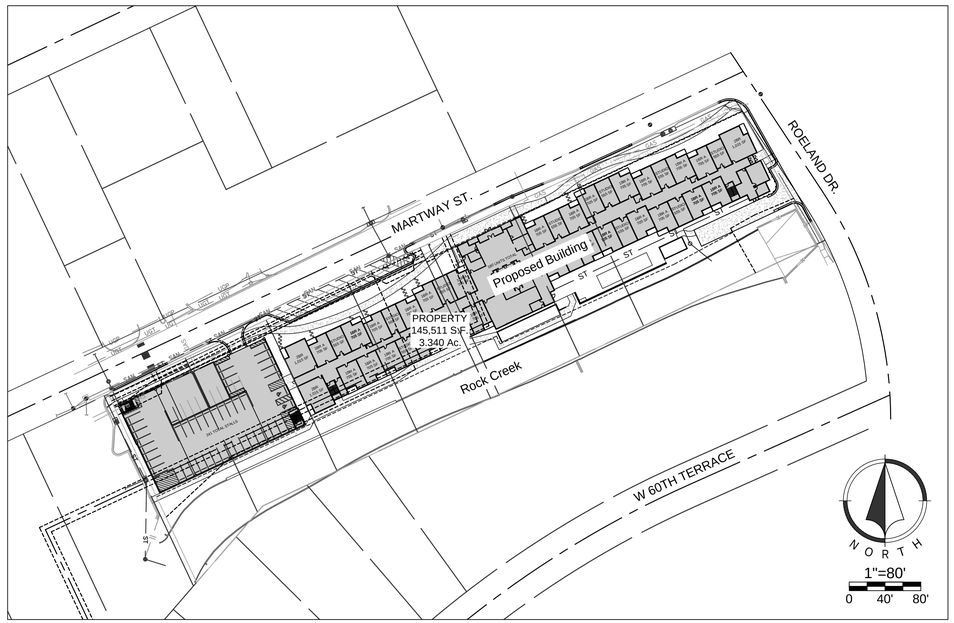
City Council Action

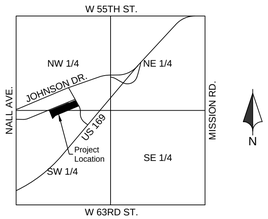
The City Council will hear Case #25-08 at its January 21, 2025 meeting.

Encore Land

Mission, Johnson County, KS
Section 9, Township 12 South, Range 25 East

Preliminary Developement Plans





LOCATION MAP
SECTION 9-T12S-R25E
Scale 1" = 2000'

LEGAL DESCRIPTION:

LOTS 21, 22, 23, 24, 25, 26 AND THE EAST 95 FEET OF LOT 20, MISSION VILLAGE, BLOCK 5, A SUBDIVISION IN THE CITY OF MISSION, JOHNSON COUNTY, KANSAS.

FLOOD PLAIN NOTE

1. BY GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES IN FLOODWAY AREAS IN ZONE AE, ZONE AE AND UNSHADED ZONE X OF THE FLOOD INSURANCE RATE MAP, COMMUNITY NO. 200170, LOMR EFFECTIVE SEPTEMBER 14, 2022, MAP NUMBER 20091C0024G, VERSION NO. 2.1.3.0, WHICH BEARS AN EFFECTIVE DATE OF AUGUST 03, 2009 AND IS PARTIALLY IN A SPECIAL FLOOD HAZARD AREA, AS SHOWN ON THE FEMA WEBSITE (http://msc.fema.gov). 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.

The information concerning locations of underground utilities shown hereon which are not visible from the surface, has been taken from the records and field locations of the various utility companies and has not been field verified by this company. These locations are not to be construed as accurate or exact.

811 Know what's **below.** **Call** before you dig.

LEGEND

	Existing Section Line		Proposed Right-of-Way
	Existing Right-of-Way Line		Proposed Property Line
	Existing Lot Line		Proposed Lot Line
	Existing Easement Line		Proposed Easement
	Existing Curb & Gutter		Proposed Curb & Gutter
	Existing Sidewalk		Proposed Sidewalk
	Existing Storm Sewer		Proposed Storm Sewer
	Existing Storm Structure		Proposed Storm Structure
	Existing Waterline		Proposed Fire Hydrant
	Existing Gas Main		Proposed Waterline
	Existing Sanitary Sewer		Proposed Sanitary Sewer
	Existing Sanitary Manhole		Proposed Sanitary Manhole
	Existing Contour Major		Proposed Contour Major
	Existing Contour Minor		Proposed Contour Minor
			Future Curb and Gutter
U/E	Utility Easement		
SS/E	Sanitary Sewer Easement	A/E	Access Easement
D/E	Drainage Easement	T/E	Temporary Easement

Sheet List Table

Sheet Number	Sheet Title
C01	Title Sheet
C02	Existing Conditions
C03	General Layout
C04	Site Plan
C05	Drainage Map
C06	Storm Plan
L01	Landscape Plan
L02	Landscape Details

Project Manager:
Renaissance Infrastructure Consulting
Andy Gabbert, Vice President
8653 Penrose Lane, Lenexa, KS 66218
(816) 800-0950

Surveyor:
Renaissance Infrastructure Consulting
5015 NW Canal Street, Suite 100
Riverside, MO 64150
816-800-0950

Architect:
CT Design+Development
Hayden Donaldson
800 New Hampshire St., Suite 151
Lawrence, KS 66044
592-7264 Ext. 7264

Prepared For:
Encore Land, LLC
Banks Floodman
1125 Grand Blvd, Suite 202, Kansas City, MO 64106

RENAISSANCE INFRASTRUCTURE CONSULTING:

Andy Gabbert , PLA — Date

APPROVED:

City Engineer — Date

APPROVED FOR ONE YEAR FROM THIS DATE

Preliminary Developement Plans
25-0108
Encore Land
Mission, Johnson County, KS

Title Sheet

NO.	DATE	REVISION
2	11/17/2025	City Comments
1	10/29/2025	City Comments
	9/19/2025	Initial Submittal

DRAWN BY AFB — CHECKED BY AG

Renaissance Infrastructure Consulting
132 ABBIE AVENUE
KANSAS CITY, KANSAS 64108
913.317.9500
www.RIC-CONSULT.COM
MO Certificate of Authority: E-2010033630

Sheet
C01

bgrotewold
Nov 17, 2025-10:41am
Z:\RIC Design\2025\25-0108\Dwg\Sheets\PDP\25-0108 PDP-TITLE-01.dwg



Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

Existing Conditions

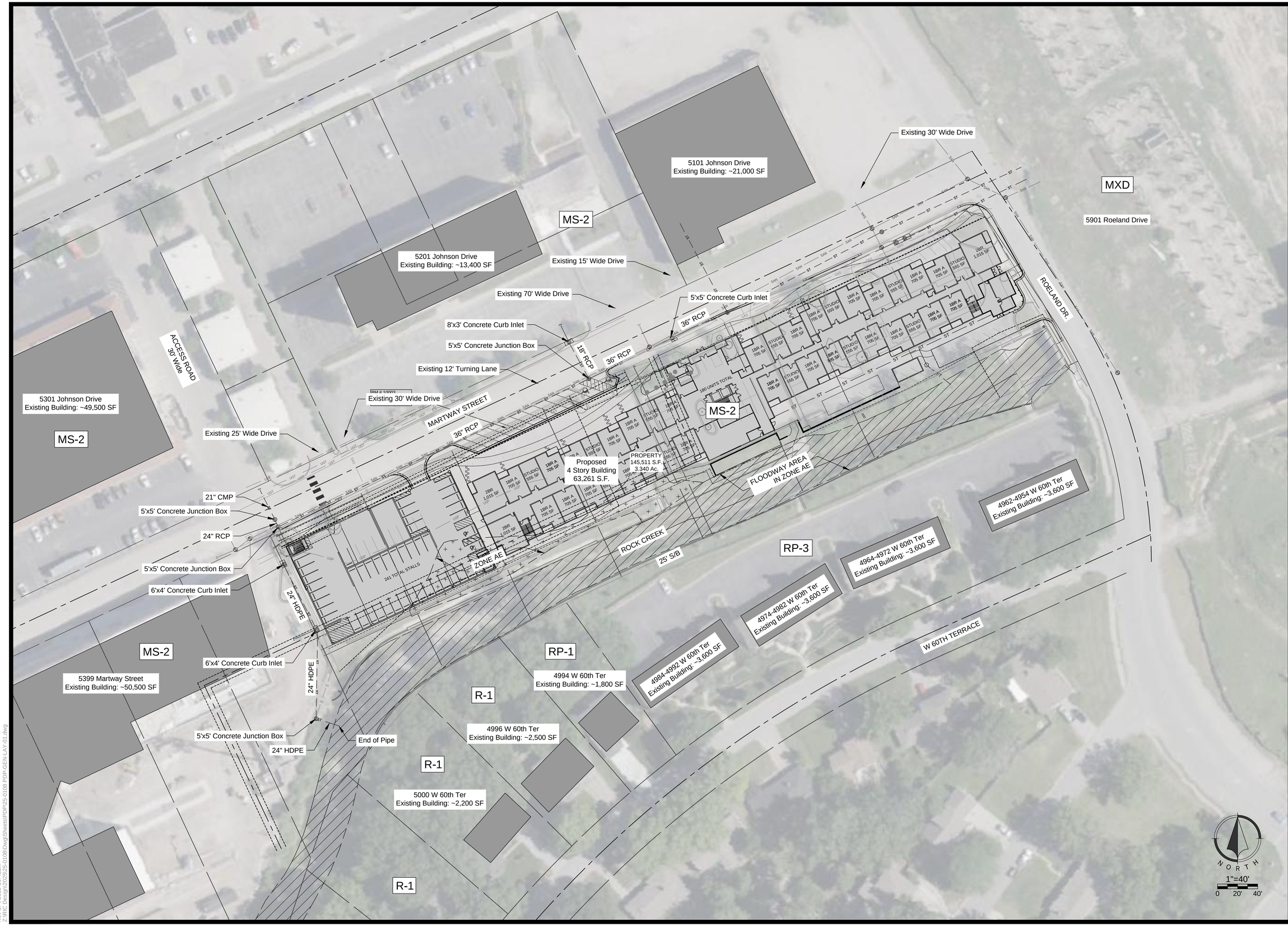
NO.	DATE	REVISION
2	11/17/2025	City Comments
1	10/29/2025	City Comments
	9/19/2025	Initial Submittal

DRAWN BY	CHECKED BY
AFB	AG

Renaissance Infrastructure Consulting
132 Abbie Avenue
Kansas City, Kansas 64108
913.317.9500
www.ric-consult.com
MO Certificate of Authority: E-2010033630

Sheet
C02

bgrotewold
Nov 17, 2025-10:42am
Z:\RIC Design\2025\25-0108\Dwg\Sheets\PDP\25-0108 PDP-EX-COND-01.dwg



Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

General Layout

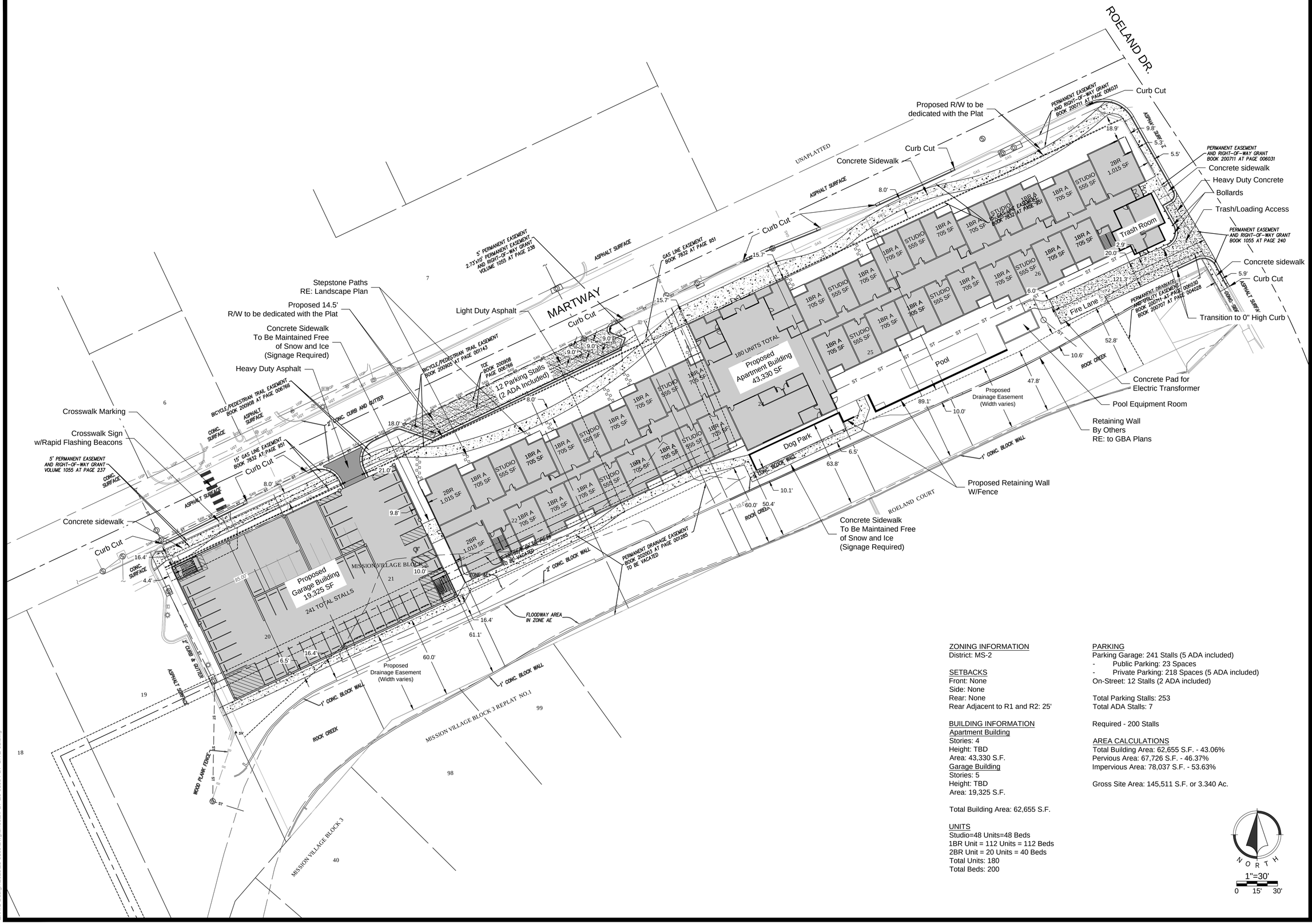
NO.	DATE	REVISION
2	11/17/2025	City Comments
1	10/29/2025	City Comments
	9/19/2025	Initial Submittal

DRAWN BY AFB | CHECKED BY AG

Renaissance Infrastructure Consulting
132 Abbie Avenue
Kansas City, Kansas 64108
913.317.9500
www.RIC-CONSULT.COM
MO Certificate of Authority: E-2010033630

Sheet
C03

bgrotewold
Nov 17 , 2025 10:42am
Z:\RIC Design\025\25-0108\DwgSheets\PDP\25-0108 PDP-GEN-LAY-01.dwg



ZONING INFORMATION
District: MS-2

SETBACKS
Front: None
Side: None
Rear: None
Rear Adjacent to R1 and R2: 25'

BUILDING INFORMATION
Apartment Building
Stories: 4
Height: TBD
Area: 43,330 S.F.
Garage Building
Stories: 5
Height: TBD
Area: 19,325 S.F.

Total Building Area: 62,655 S.F.

UNITS
Studio=48 Units=48 Beds
1BR Unit = 112 Units = 112 Beds
2BR Unit = 20 Units = 40 Beds
Total Units: 180
Total Beds: 200

PARKING
Parking Garage: 241 Stalls (5 ADA included)
- Public Parking: 23 Spaces
- Private Parking: 218 Spaces (5 ADA included)
On-Street: 12 Stalls (2 ADA included)

Total Parking Stalls: 253
Total ADA Stalls: 7

Required - 200 Stalls

AREA CALCULATIONS
Total Building Area: 62,655 S.F. - 43.06%
Pervious Area: 67,726 S.F. - 46.37%
Impervious Area: 78,037 S.F. - 53.63%

Gross Site Area: 145,511 S.F. or 3.340 Ac.

Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

Site Plan

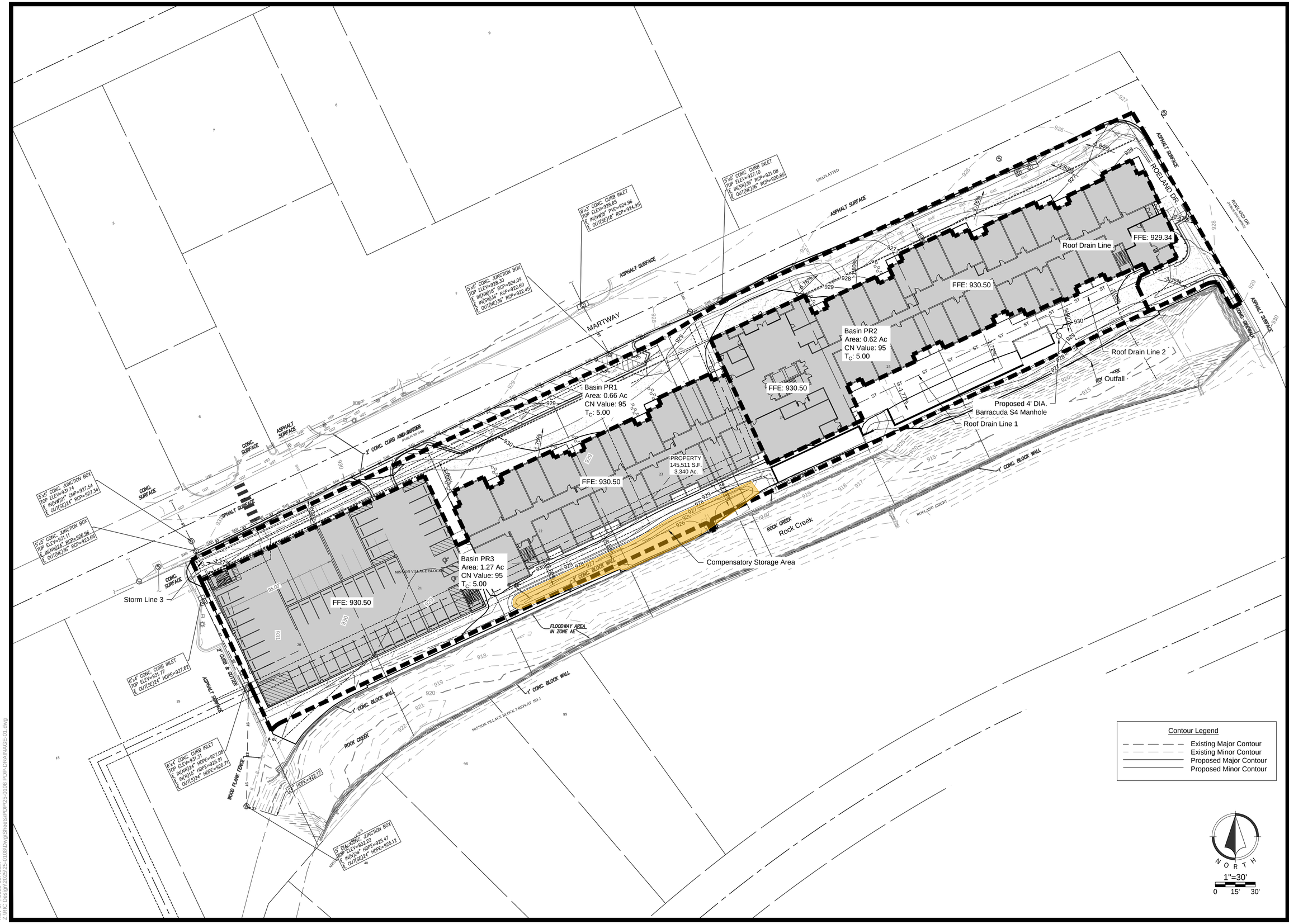
NO.	DATE	REVISION
	9/19/2025	Initial Submittal
1	10/29/2025	City Comments
2	11/17/2025	City Comments

DRAWN BY AFB | CHECKED BY AG

Renaissance Infrastructure Consulting
913.317.9500
WWW.RIC-CONSULT.COM
432 Abbie Avenue
Kansas City, Kansas 64108
MO Certificate of Authority: E-2010033630

Sheet
C04

bgrotewold
Nov 17, 2025 - 10:42am
Z:\RIC Design\2025\25-0108\DwgISheets\PDP\25-0108 PDP-SITE-01.dwg



Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

Drainage Map

NO.	DATE	REVISION
2	11/17/2025	City Comments
1	10/29/2025	City Comments
	9/19/2025	Initial Submittal

DRAWN BY AFB

CHECKED BY AG

Renaissance Infrastructure Consulting
913.317.9500
www.RIC-CONSULT.COM
132 ABBIE AVENUE
KANSAS CITY, KANSAS 64108
MO Certificate of Authority, E-2010033630

Sheet
C05

bgrotewold
Nov 17, 2025 - 10:43am
Z:\RIC Design\2025\25-0108\Dwg\Sheets\PDP\C05_01(0) PDP DRAINAGE 01.dwg

bgrotewold
Nov 17, 2025-10:43am
Z:\RIC Design\2025\25-0108\Dwg\Sheets\PDP\25-0108 PDP-STRM-LAYOUT-01.dwg



Renaissance Infrastructure Consulting
132 Abbie Avenue
Kansas City, Kansas 64108
913.317.9500
www.ric-consult.com

MO Certificate of Authority: E-2010033630

NO.	DATE	REVISION
1	9/23/2025	Initial Submittal
2	11/17/2025	City Comments

DRAWN BY: AEB
CHECKED BY: AG

Storm Plan

Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

Sheet C06

LANDSCAPE NOTES

1. LOCATE UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. ALL TREES SHALL BE FIELD POSITIONED AS TO AVOID CONFLICTS WITH EXISTING AND PROPOSED UTILITIES. NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS OR OBSTRUCTIONS.
2. CONTRACTOR SHALL STAKE ALL PLANTING AREAS IN THE FIELD PRIOR TO PLANTING FOR APPROVAL OF THE OWNER OR THEIR REPRESENTATIVE.
3. QUANTITIES SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES PRIOR TO BIDDING AND SHALL BE RESPONSIBLE FOR ALL QUANTITIES FOR THEIR BID. ANY DISCREPANCIES WITH THE PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. THE PLAN QUANTITIES SHALL SUPERCEDE SCHEDULED QUANTITIES.
4. PLANT SYMBOLS ON LANDSCAPE PLAN ARE SHOWN AT FULL MATURE SIZE. ACTUAL PLANT SIZES AT INSTALLATION MAY BE SMALLER AND SHALL BE THE MINIMUM PLANTING SIZE SPECIFIED IN PLANT SCHEDULE.
5. ALL PLANT MATERIAL SHALL BE SPECIMEN QUALITY AND SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 THE 'AMERICAN STANDARD FOR NURSERY STOCK'.
6. ALL PLANTING BEDS & NATIVE GRASS STANDS SHALL BE EDGED AS SHOWN IN PLAN.
7. PREPARE PLANTING BEDS AND INCORPORATE AMENDMENTS ACCORDING TO PLANS.
8. SHREDDED HARDWOOD MULCH, PER SPECIFICATIONS SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL PLANTING BEDS AND AROUND ALL TREES. SINGLE TREES AND SHRUBS SHALL BE MULCHED TO THE OUTSIDE EDGE OF THE SAUCER OR LANDSCAPE ISLAND.
9. ALL TREES SHALL BE STAKED PER DETAIL.
10. ALL PLANT MATERIAL SHALL BE INSTALLED TO ALLOW A ONE FOOT (1') CLEARANCE BETWEEN PLANT AND ADJACENT PAVEMENT.
11. THE LANDSCAPE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE SITE IS FREE OF DEBRIS CAUSED BY ON-GOING CONSTRUCTION OPERATIONS. REMOVAL OF DEBRIS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. LANDSCAPE WORK SHALL NOT BEGIN UNTIL THE LANDSCAPE ARCHITECT AND OWNER HAVE GIVEN WRITTEN APPROVAL FOR SUCH. THERE SHALL BE NO DELAYS DUE TO LACK OF COORDINATION FOR THIS ACTIVITY.
12. THE LANDSCAPE ARCHITECT AND OWNER SHALL APPROVE GRADES AND CONDITION OF SITE PRIOR TO SODDING/SEEDING OPERATIONS.
13. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED FOR OTHER PLANTINGS OR HARDSCAPE SHALL BE SODDED WITH TURF TYPE FESCUE.
14. ALL LANDSCAPE AREAS SHALL BE IRRIGATED. TURF AREAS SHALL BE IRRIGATED BY SPRAY OR ROTOR. PLANT BEDS SHALL BE IRRIGATED BY DRIP IRRIGATION. IRRIGATION SYSTEM SHALL INCLUDE AUTOMATIC RAIN-SENSOR DEVICE. IRRIGATION SHOP DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR FOR APPROVAL PRIOR TO CONSTRUCTION.
15. ALL DECORATIVE GRAVEL SHALL BE INSTALLED OVER GEOTEXTILE FABRIC (MIRAFI 140N OR APPROVED EQUAL).

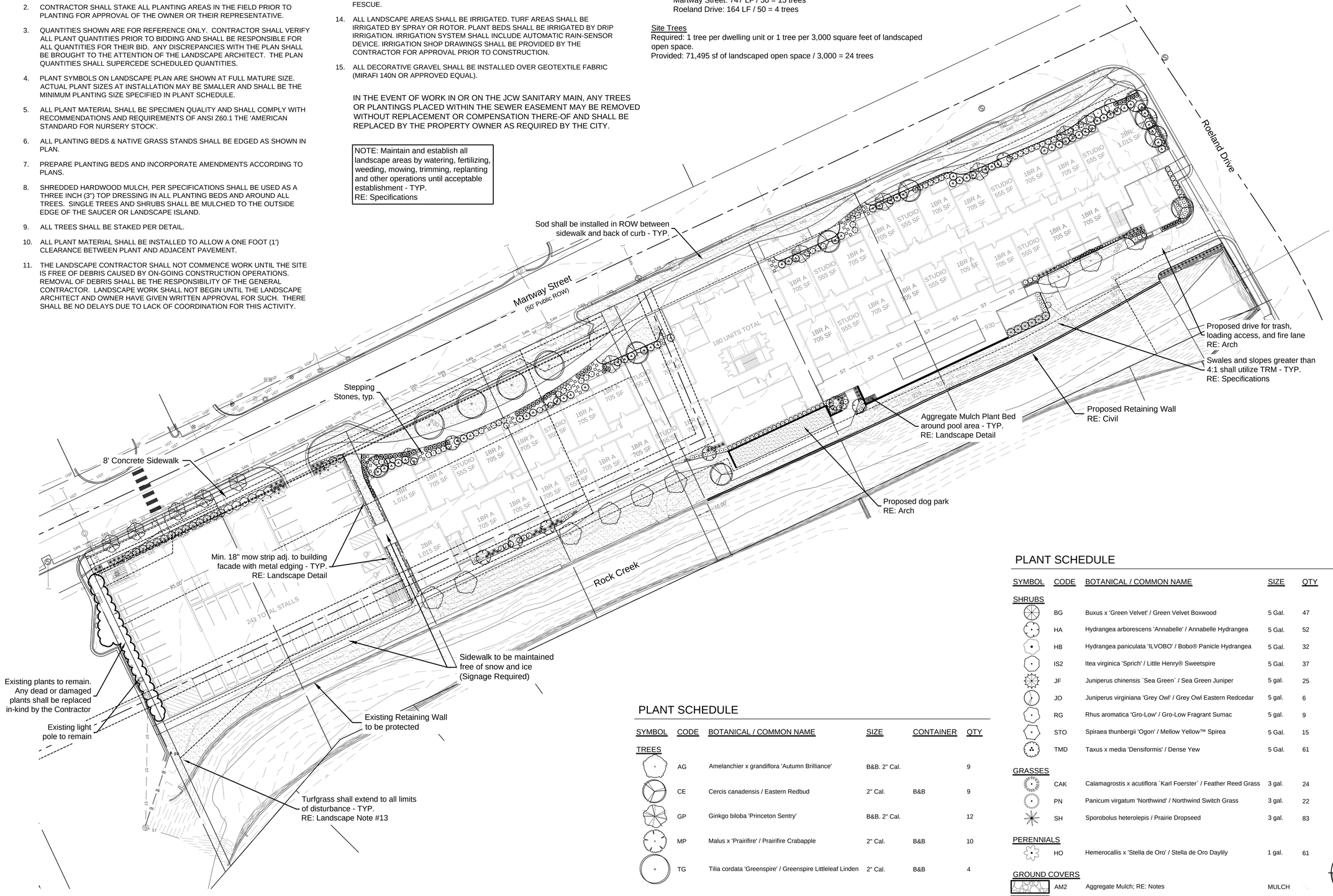
IN THE EVENT OF WORK IN OR ON THE JCW SANITARY MAIN, ANY TREES OR PLANTINGS PLACED WITHIN THE SEWER EASEMENT MAY BE REMOVED WITHOUT REPLACEMENT OR COMPENSATION THERE-OF AND SHALL BE REPLACED BY THE PROPERTY OWNER AS REQUIRED BY THE CITY.

NOTE: Maintain and establish all landscape areas by watering, fertilizing, weeding, mowing, trimming, replanting and other operations until acceptable establishment - TYP.
RE: Specifications

MISSION, KANSAS - LANDSCAPE CALCULATIONS

Street Trees
Martway Street
Required:1 tree per 50 LF of street frontage
Provided:
Martway Street: 747 LF / 50 = 15 trees
Roeland Drive: 164 LF / 50 = 4 trees

Site Trees
Required: 1 tree per dwelling unit or 1 tree per 3,000 square feet of landscaped open space.
Provided: 71,495 sf of landscaped open space / 3,000 = 24 trees



PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
TREES					
	AG	Amelanchier x grandiflora 'Autumn Brilliance'	B&B. 2" Cal.		9
	CE	Cercis canadensis / Eastern Redbud	2" Cal.	B&B	9
	GP	Ginkgo biloba 'Princeton Sentry'	B&B. 2" Cal.		12
	MP	Malus x 'Prairifire' / Prairifire Crabapple	2" Cal.	B&B	10
	TG	Tilia cordata 'Greenspire' / Greenspire Littleleaf Linden	2" Cal.	B&B	4

Note: Quantities shown are for reference only. Contractor shall verify all plant and turf quantities prior to bidding.

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	QTY
SHRUBS				
	BG	Buxus x 'Green Velvet' / Green Velvet Boxwood	5 Gal.	47
	HA	Hydrangea arborescens 'Annabelle' / Annabelle Hydrangea	5 Gal.	52
	HB	Hydrangea paniculata 'ILVOBO' / Bobo® Panicle Hydrangea	5 Gal.	32
	IS2	Itea virginica 'Sprich' / Little Henry® Sweetspire	5 Gal.	37
	JF	Juniperus chinensis `Sea Green` / Sea Green Juniper	5 gal.	25
	JO	Juniperus virginiana 'Grey Owl' / Grey Owl Eastern Redcedar	5 gal.	6
	RG	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	5 gal.	9
	STO	Spiraea thunbergii 'Ogon' / Mellow Yellow™ Spirea	5 Gal.	15
	TMD	Taxus x media 'Densiformis' / Dense Yew	5 Gal.	61
GRASSES				
	CAK	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	3 gal.	24
	PN	Panicum virgatum 'Northwind' / Northwind Switch Grass	3 gal.	22
	SH	Sporobolus heterolepis / Prairie Dropseed	3 gal.	83
PERENNIALS				
	HO	Hemerocallis x 'Stella de Oro' / Stella de Oro Daylily	1 gal.	61
GROUND COVERS				
	AM2	Aggregate Mulch; RE: Notes	MULCH	
	TF	Turfgrass Sod Fescue Mix; RE: Notes / Fescue Sod	SOD	

NORTH
1"=30'
0 15' 30'

Preliminary Developement Plans
25-0108
Encore Land
Mission, Johnson County, KS

Landscape Plan

NO.	DATE	REVISION
2	11/17/2025	City Comments
1	10/29/2025	City Comments
	9/19/2025	Initial Submittal

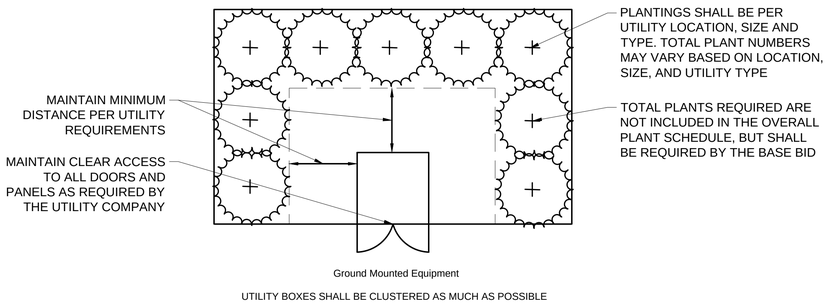
DRAWN BY: AEL
CHECKED BY: AML

Renaissance Infrastructure Consulting
816.800.0950
www.ric-consult.com
400 17th Street
Kansas City, Missouri 64108
MO Certificate of Authority: E-2010033830

Sheet
L01

bgrotewold
Nov 17, 2025-10:43am
Z:\RIC Design\P2025\25-0108\Dwg\Sheets\PDP\25-0108 PDP-LND-01.dwg

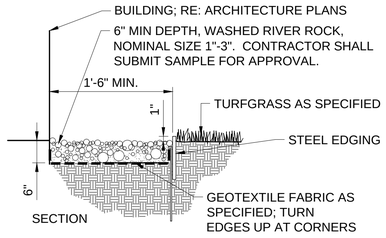
NOTE: FINAL SCHEDULE OF PLANTS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION



Ground Mounted Equipment

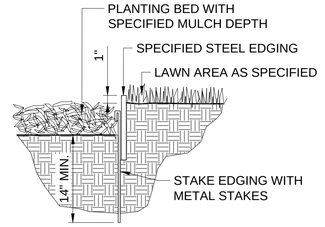
UTILITY BOXES SHALL BE CLUSTERED AS MUCH AS POSSIBLE

UTILITY BOX SCREENING DETAILS - NTS



NOTES:
1. SET ALL EDGING 1" ABOVE FINISH GRADE AS SHOWN.
2. EDGING SHALL ABUT ALL CONCRETE CURBS AND WALKS PERPENDICULAR AND FLUSH WITH TOP OF CONCRETE
3. ALL JOINTS SHALL BE SECURELY STAKED
4. CONTRACTOR SHALL CUT TOP EDGES AS NEEDED TO BE PARALLEL WITH GRADE.
5. ALL GRAVEL SHALL BE INSTALLED OVER A GEOTEXTILE FABRIC (MIRAFI 140N OR APPROVED EQUAL).
6. GRAVEL SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION. FILTER FABRIC SHALL NOT BE VISIBLE AFTER GRAVEL INSTALLATION.

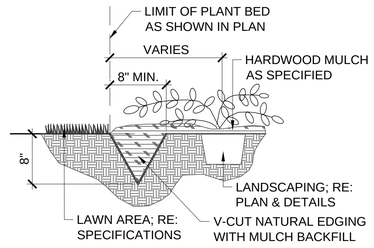
MOW EDGE DETAIL - NTS



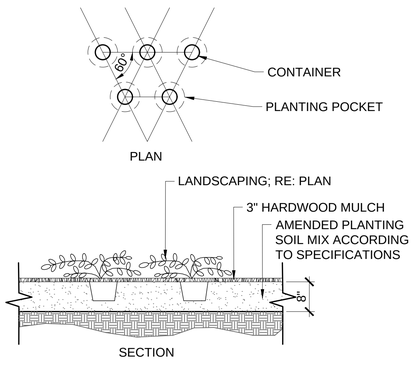
NOTES:
1. EDGING PER SPECIFICATIONS. SET ALL EDGING 1" ABOVE FINISH GRADE (TURF) SURFACE AS SHOWN.
2. EDGING SHALL ABUT ALL CONCRETE CURBS AND WALKS PERPENDICULAR AND FLUSH WITH TOP OF CONCRETE.
3. ALL JOINTS SHALL BE SECURELY STAKED.
4. FINISH SHALL BE POWDER COAT; COLOR: GREEN. CONTRACTOR SHALL SUBMIT COLOR SAMPLE TO OWNERS REPRESENTATIVE PRIOR TO PURCHASE.
5. CONTRACTOR SHALL LOCATE AND MARK ALL PLANT BED LOCATIONS PRIOR TO INSTALLATION OF STEEL FOR FINAL APPROVAL BY OWNER OR LANDSCAPE ARCHITECT.

STEEL EDGING DETAIL - NTS

NOTES:
1. CONTRACTOR SHALL LOCATE AND MARK ALL PLANTBED LOCATIONS PRIOR TO EXCAVATING FOR FINAL APPROVAL BY OWNER OR LANDSCAPE ARCHITECT.
2. TRANSITION TO MULCH CONTAINMENT DETAIL AT ALL LOCATIONS ADJACENT TO CURBS & SIDEWALKS. RE: DETAIL, THIS SHEET.
3. CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS PRIOR TO TRENCHING OR LANDSCAPE INSTALLATION.

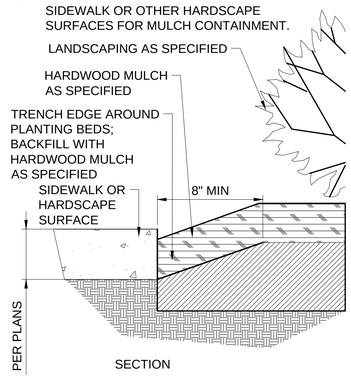


V-CUT NATURAL EDGE DETAIL - NTS

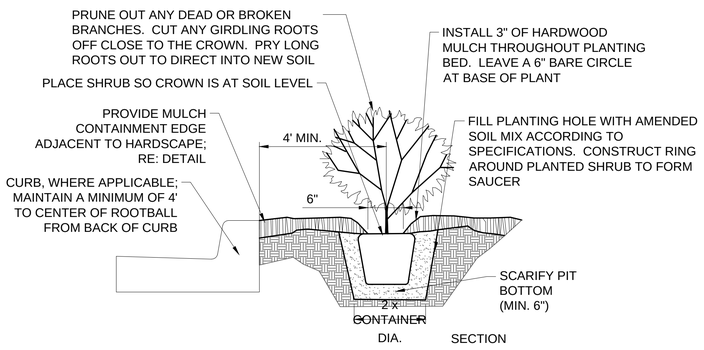


CONTAINER PLANTING DETAIL - NTS

NOTES:
1. TRENCH ALL EDGES ADJACENT TO SIDEWALK OR OTHER HARDSCAPE SURFACES FOR MULCH CONTAINMENT.



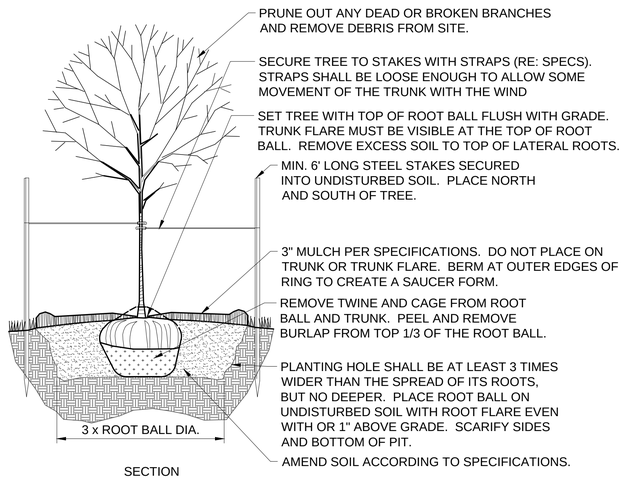
MULCH CONTAINMENT DETAIL - NTS



NOTES:
1. REFER TO SPECIFICATIONS FOR TOPSOIL BACKFILL MIX.
2. CONTRACTOR TO WATER THOROUGHLY AFTER PLANTING
3. INSTALLATION TO BE IN ACCORDANCE WITH PLANTING SPECIFICATIONS
4. WHERE ADJACENT TO CURB, MAINTAIN THE MINIMUM OFFSET SHOWN. FOR SHRUBS LARGER THAN 4' MATURE DIAMETER, PROVIDE A GREATER OFFSET EQUAL TO 1/2 OF THE MATURE DIAMETER MINIMUM.

SHRUB PLANTING DETAIL - NTS

NOTES:
1. TREES THAT DO NOT MEET THE SIZE REQUIREMENT WILL BE REJECTED
2. TREES SHALL BE INSPECTED BY OWNERS REPRESENTATIVE PRIOR TO INSTALLATION.



DECIDUOUS TREE PLANTING DETAIL - NTS

Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

Landscape Details

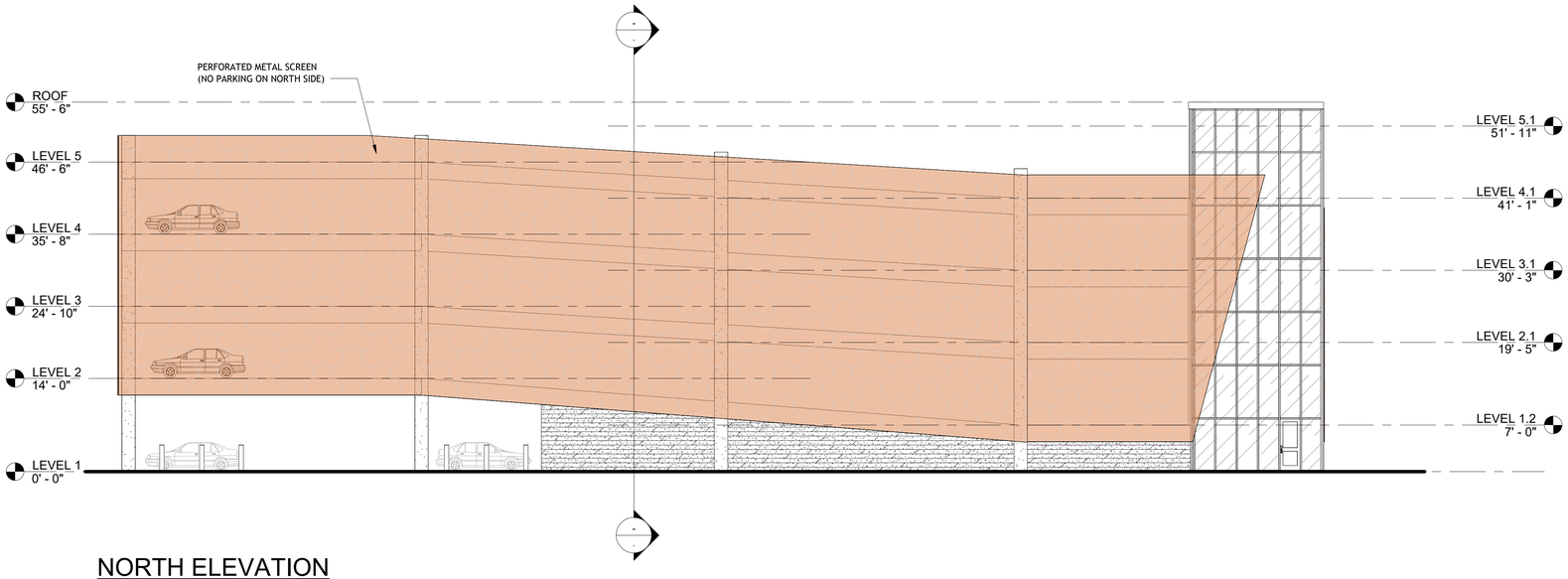
NO.	DATE	REVISION
2	11/17/2025	City Comments
1	10/29/2025	City Comments
	9/19/2025	Initial Submittal

DRAWN BY AEL | CHECKED BY AML

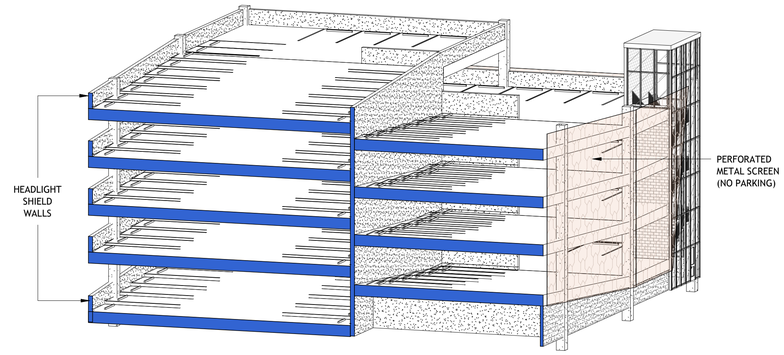
Renaissance Infrastructure Consulting
4,00 I77 TREET KANSAS CITY, ISSOURI 64108
816.800.0950
www.RIC-CONSULT.com
MO Certificate of Authority: E-2010033630

Sheet
L02

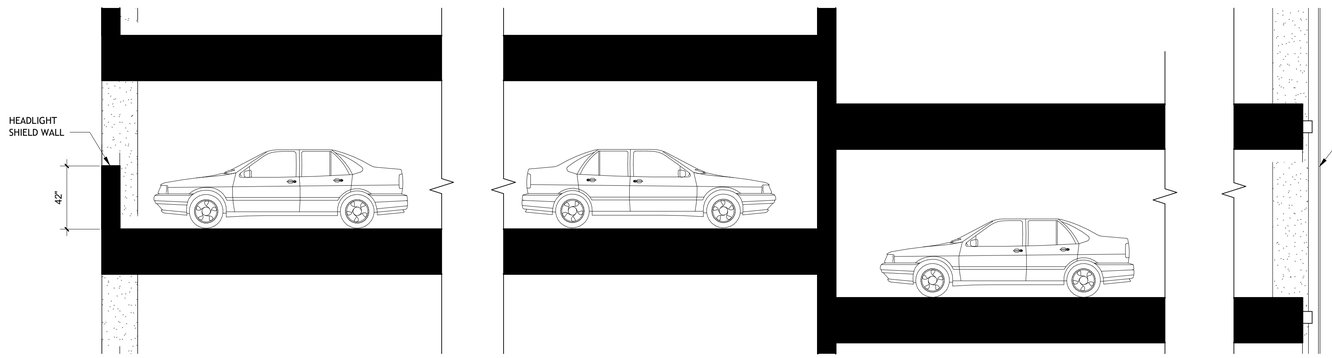
bgrotewold
Nov 17, 2025- 10:44am
Z:\RIC Design\2025\25-0108\Dwg\Sheets\PDP\25-0108 PDP-LND-01.dwg



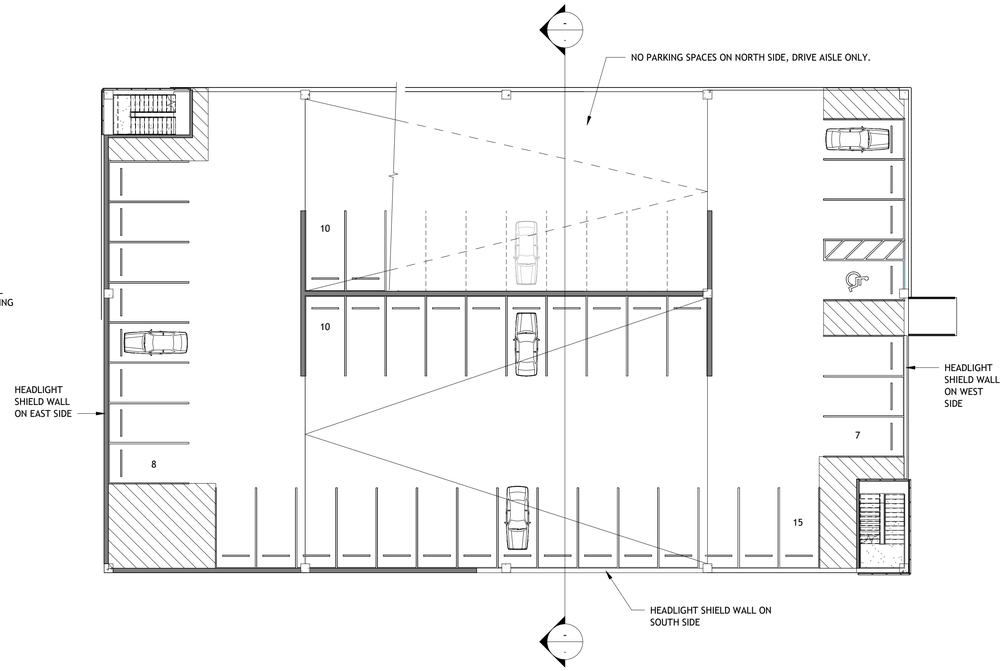
NORTH ELEVATION



3D SECTION



ENLARGED SECTION



TYPICAL FLOOR PLAN

ENCORE

Parking Garage

11/14/25

C.T DESIGN + DEVELOPMENT

Renaissance Infrastructure Consulting

100% EMPLOYEE OWNED

Traffic Impact Study

5300 Martway Street
Mission, KS



Prepared For:

Encore Land, LLC

Prepared By:

Renaissance Infrastructure Consulting
October 2025

October 29, 2025

Encore Land, LLC
Attn: Banks Floodman

RE: The Encore – 5300 Martway – Trip Generation Analysis
Mission, KS

Dear Mr. Floodman,

In response to your request, RIC has completed a Traffic Impact Study for a proposed development south of Martway Street and west of Roeland Drive in Mission, Kansas. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The following report documents our analysis and recommendations.

Please do not hesitate to contact us should you have any questions.

Sincerely,

Renaissance Infrastructure Consulting

Grant Niehus, PE, PTOE
Traffic Engineer

1 Introduction

Renaissance Infrastructure Consulting (RIC) has prepared the following traffic study for a proposed development which is located south of Martway Street and west of Roeland Drive in Mission, Kansas. The study was conducted in accordance with the Transportation Impact Study Guidelines of Mission, Kansas for Tasks 1-5. The purpose of this study was to assess the impact of the proposed development on the existing roadway network based on the proposed access points. To evaluate the increase of traffic on adjacent streets, the number of trips was estimated using the 11th Edition of the ITE Trip Generation Handbook.

Figure 1 – Project Location

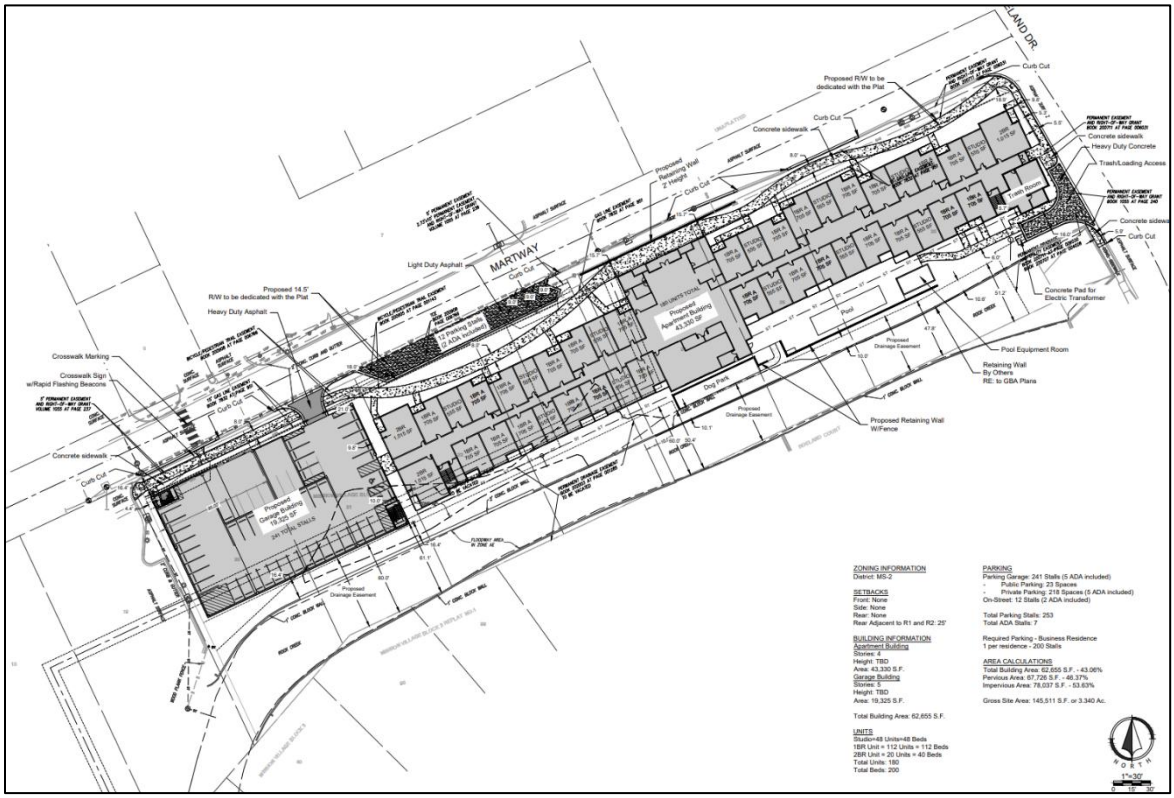


2 Proposed Development Plan

A 4-story residential building is proposed south of Martway Street and west of Roeland Drive in Mission, Kansas. It is comprised of 180 apartment units and a garage building consisting of 220 parking stalls plus public parking. It is bound by Martway Street to the north, Roaland Drive to the east, Rock Creek to the south, and the Residence at Rock Creek to the west.

One access point is proposed for the development along Martway Street. It is located approximately 650 feet west of Roeland Drive measured center to center. The proposed site plan for the development is included below in **Figure 2** and in **Appendix A**.

Figure 2 – Proposed Site Plan



There is an existing crosswalk located on the east side of "Access Drive". A curb ramp with detectable warning surface will be constructed on the south side of Martway Avenue to connect the existing crosswalk to the proposed development.

3 Existing Conditions

The site is currently developed as two parking lots with 144 spaces and 24 spaces and a Wendy's fast-food restaurant. The site's existing and proposed zoning is Main Street District 2 Multi-Use (MS2). According to the **Tomorrow Together: 2040 Mission Comprehensive Plan**, the existing land use for the site is categorized as *commercial* and *office* and the future land use is changed to *high-density residential* and *mixed-use medium density*. The site is serviced by the signalized intersections of Martway Street & Nall Avenue and Martway Street & Roeland Avenue. All three streets are considered main trafficways by the City of Mission whose primary function is the movement of traffic between areas of concentrated activity.

Martway Street runs east/west and is located to the north of the proposed site. It is a three-lane roadway with a posted speed limit of 25 mph and has curb and gutters on both sides of the roadway, and a sidewalk on the south side of the roadway. There is one through lane in each direction with a two-way left-turn lane. The Mission Comprehensive Plan classifies Martway Street

as an arterial street.

Roeland Drive, located east of the proposed site, is a three-lane roadway that runs in a north/south direction. There is a posted speed limit of 25 mph, curb and gutter on both sides, and a sidewalk on the west side of the roadway. There is one through lane in each direction with a two-way left-turn lane. The Mission Comprehensive Plan classifies Roeland Drive as an arterial street.

Nall Avenue runs north/south and is the nearest main road to the west of the proposed site. It is a three-lane roadway with a posted speed limit of 30 mph, has curb and gutters on both sides of the roadway, and a sidewalk on the west side of the roadway. The Mission Comprehensive Plan classifies Nall Avenue as an arterial street.

It should be noted that the signal at Martway Street and Roeland Avenue is currently operating in "Flash" mode rather than signal control mode and operates as a two-way-stop-controlled intersection rather than fully signalized.

4 Access Management

The site is currently serviced by five entrances: two entrances for the parking lot with 144 spaces, one entrance for the parking lot with 24 spaces, and two entrances for the Wendy's on the corner of Martway Street & Roeland Drive. Under the proposed development plan, all driveways will be removed and replaced by one access drive and one drive for a loading area. The AASHTO's *"A Policy on Geometric Design of Highways and Street" (2018),* Martway Street and Roeland Drive require sight distances of 280 feet for left turns and 240 feet for right turns.

One access point is proposed for the development along Martway Street to service the parking garage. It is a 21-foot-wide entrance, measured at back of curb, located approximately 650 feet west of Roeland Drive, measured center-to-center. Two driveways on the opposite side of Martway Street are within 100 feet of the proposed driveway and the Access Road that connects to Johnson Drive is approximately 175 feet west. Imagery along Martway Street indicates that the proposed access point along Martway Street is on a flat tangent section and has no sight distance restrictions.

The access point along Roeland Drive is 16 feet wide, measured at back of curb, and approximately 150 feet south of Martway Street, measured center-to-center. West 60th Terrace is located approximately 260 feet south of the proposed driveway. The roadway segment of Roeland Drive north of the driveway is relatively flat, while the vertical profile rises to a higher elevation toward the south. No sight distance issues were observed in either direction. There is a concrete headwall directly to the south of the driveway, however the raised profile of the road to the south provides a visible sight triangle above the headwall.

5 Trip Generation

Trip generation estimates developed for this study are based on the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). The Manual is the most widely used industry resource for this type of data. The trip generation data are organized by land use types, with more than 170 different categories of land uses. For each category, the manual provides a data set for use in estimating the number of vehicle and person trips generated by a site based on its characteristics such as physical size or intensity. Trips may be estimated by direction (entering or exiting the site) and for time periods typically pertaining to a full day (weekday or weekend), peak hours of the adjacent roadway, and peak hours of the particular land use. Used properly, the Trip Generation Manual provides an objective basis for estimating trips generated by a proposed development.

The previous traffic study for the Residence at Rock Creek Phase II had a mix of Mid-Rise Multifamily Housing and High-Turnover, Sit-Down Restaurant to project traffic volumes. The study also summarized for the trips generated from Phase I which was categorized as Multifamily Housing (Mid-Rise) land use. An average of 799 vehicles per day was projected as summarized in **Table 4.1**.

Table 4.1 – Surrounding Development Trip Generation

Land Use	Intensity	ITE Code	Weekday Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
The Lanes at Mission Bowl Luxury Apartments	176 Units	221	799	15	51	66	42	27	69

The Multifamily Housing (Mid-Rise) land use code was used to project traffic volumes for the proposed development. Both the AM and PM Peak hour trips were estimated based on the fitted curve projections from various studies included in ITE's Trip Generation Manual for the hours of 7-9 am & 4-6 pm, respectively. An average of 803 vehicles per day are expected to access the proposed development as summarized in **Table 4.2**.

Table 4.2 – Proposed Trip Generation

Land Use	Intensity	ITE Code	Weekday Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	180 Units	221	812	16	52	68	43	28	71

6 Public Improvement Recommendations

The existing pedestrian infrastructure at Martway Street & Roeland Drive does not meet ADA requirements. Specifically, the pedestrian pushbuttons are not located in accessible locations on the southwest and northwest corners. It is recommended that the curb ramps and pedestrian signals be modified to meet ADA requirements.

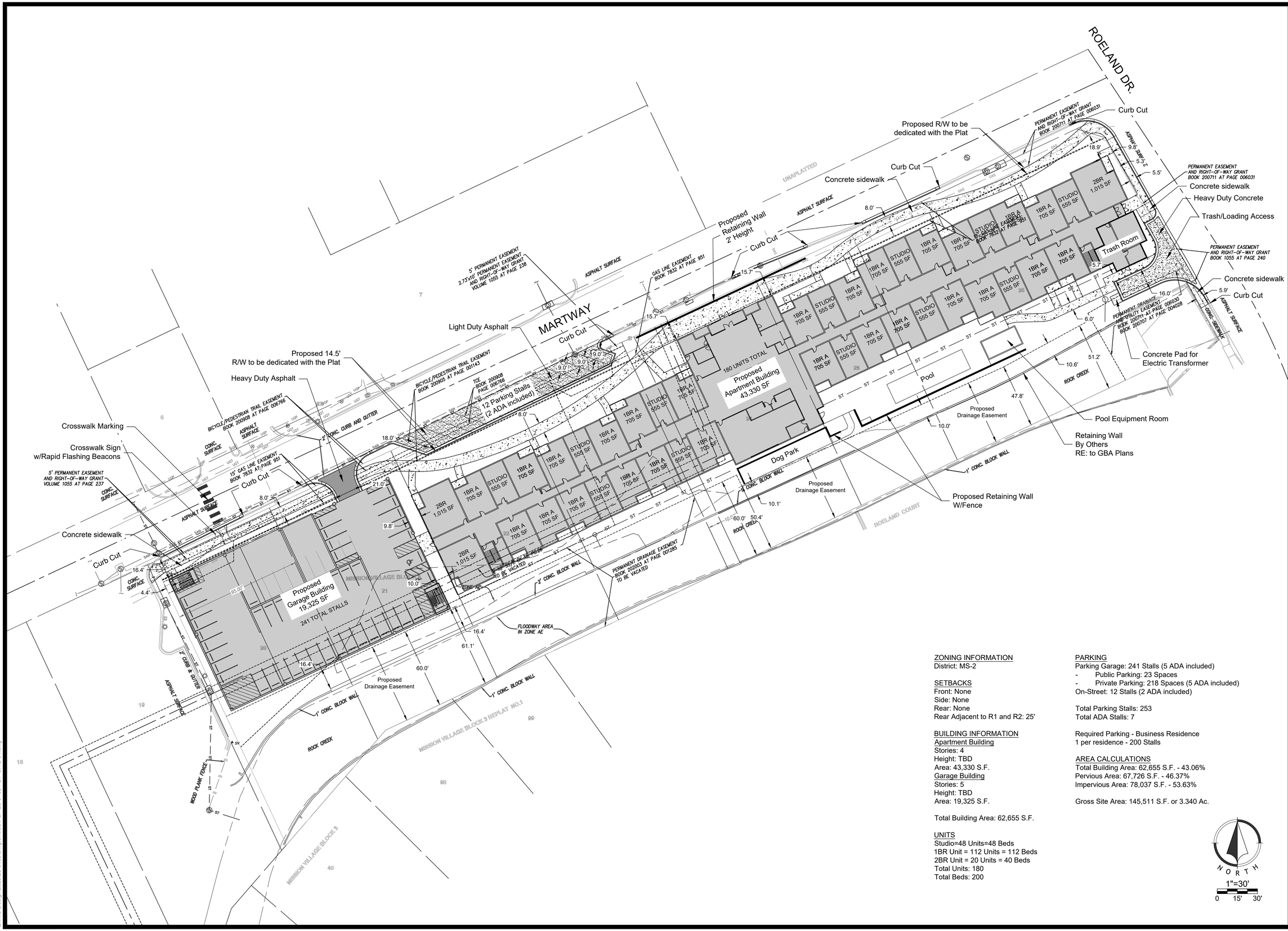
7 Summary

RIC completed the preceding analysis to project the traffic impacts associated with a proposed residential development located south of Martway Street and west of Roeland Drive in Mission, Kansas. Based on the traffic analysis completed, the following summary is provided:

- Two drives will service the proposed development. One, on Martway Street, will provide access to the parking garage and the other, on Roeland Drive, will provide access to loading and deliveries.
- The proposed development is estimated to generate a total of 812 new trips on an average weekday including 68 new trips for AM peak hour and 71 new trips in the PM peak hour.
- It is recommended that improvements to Martway Street & Roeland Drive be made on the southwest and northwest corner to meet ADA curb ramp and pedestrian pushbutton requirements.

Please do not hesitate to contact us should you have any questions.

Appendix A – Proposed Site Plan



ZONING INFORMATION
District: MS-2

SETBACKS
Front: None
Side: None
Rear: None
Rear Adjacent to R1 and R2: 25'

BUILDING INFORMATION
Apartment Building
Stories: 4
Height: TBD
Area: 43,330 S.F.
Garage Building
Stories: 5
Height: TBD
Area: 19,325 S.F.

Total Building Area: 62,655 S.F.

UNITS
Studio=48 Units=48 Beds
1BR Unit = 112 Units = 112 Beds
2BR Unit = 20 Units = 40 Beds
Total Units: 180
Total Beds: 200

PARKING
Parking Garage: 241 Stalls (5 ADA included)
- Public Parking: 23 Spaces
- Private Parking: 218 Spaces (5 ADA included)
On-Street: 12 Stalls (2 ADA included)

Total Parking Stalls: 253
Total ADA Stalls: 7

Required Parking - Business Residence
1 per residence - 200 Stalls

AREA CALCULATIONS
Total Building Area: 62,655 S.F. - 43.06%
Pervious Area: 67,726 S.F. - 46.37%
Impervious Area: 78,037 S.F. - 53.63%

Gross Site Area: 145,511 S.F. or 3.340 Ac.

NORTH
1"=30'
0 15' 30'

Preliminary Developement Plans

25-0108
Encore Land
Mission, Johnson County, KS

Site Plan

NO.	DATE	REVISION
	9/19/2025	Initial Submittal

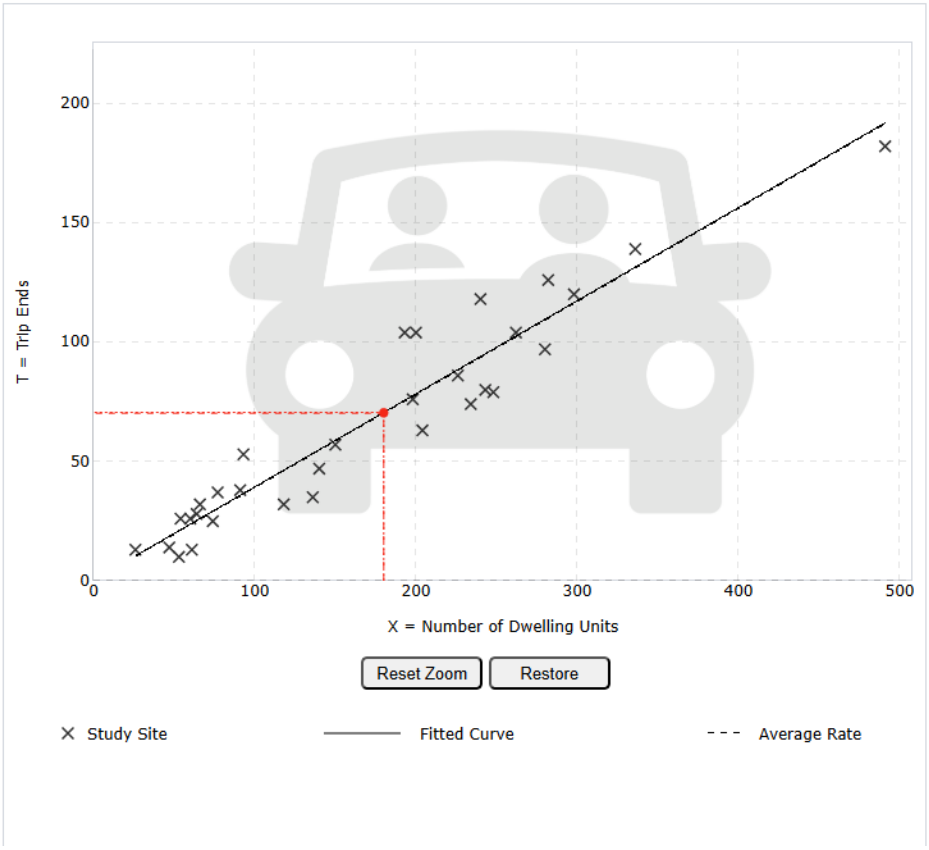
DRAWN BY AFB | CHECKED BY AG

Renaissance Infrastructure Consulting
132 Abbie Avenue
Kansas City, Kansas 64108
913.317.9500
www.ric-consult.com
MO Certificate of Authority: E-2010033630

Sheet
C04

afernandezbeato
Oct 29 , 2025 - 2:18pm
Z:\RIC Design\2025\25-0108\DwgISheets\PDP\25-0108 PDP-SITE-01.dwg

Data Plot and Equation



DATA STATISTICS

Land Use:
Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) Click for Description and Data Plots

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
31

Avg. Num. of Dwelling Units:
169

Average Rate:
0.39

Range of Rates:
0.19 - 0.57

Standard Deviation:
0.08

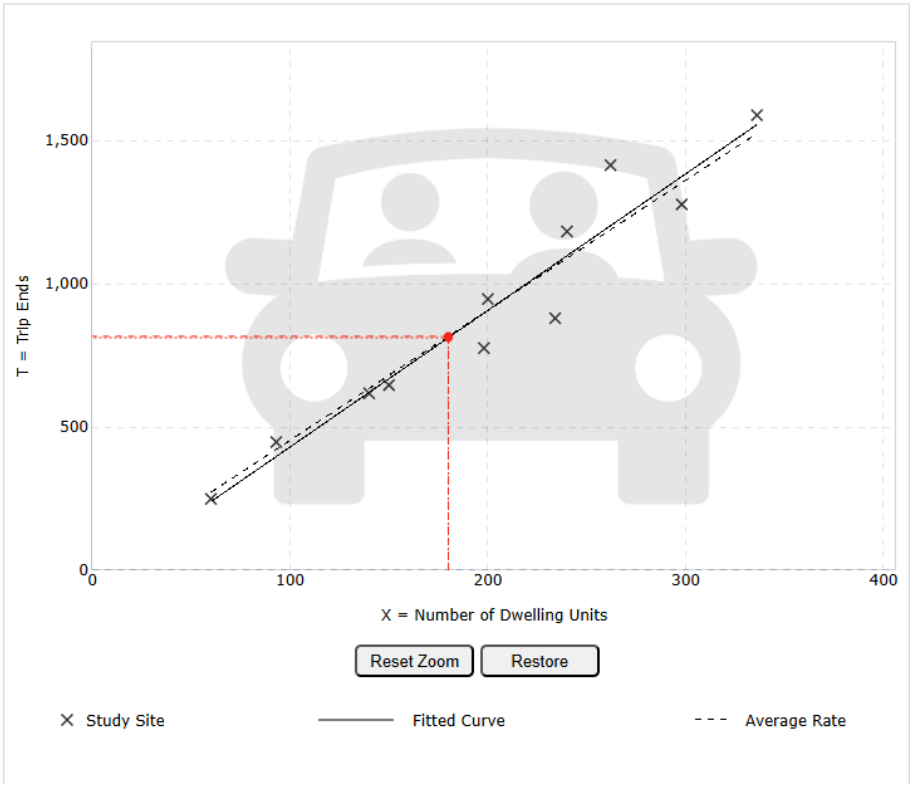
Fitted Curve Equation:
T = 0.39(X) + 0.34

R^2:
0.91

Directional Distribution:
61% entering, 39% exiting

Calculated Trip Ends:
Average Rate: 70 (Total), 43 (Entry), 27 (Exit)
Fitted Curve: 71 (Total), 43 (Entry), 28 (Exit)

Data Plot and Equation



DATA STATISTICS

Land Use:
Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) Click for Description and Data Plots

Independent Variable:
Dwelling Units

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
11

Avg. Num. of Dwelling Units:
201

Average Rate:
4.54

Range of Rates:
3.76 - 5.40

Standard Deviation:
0.51

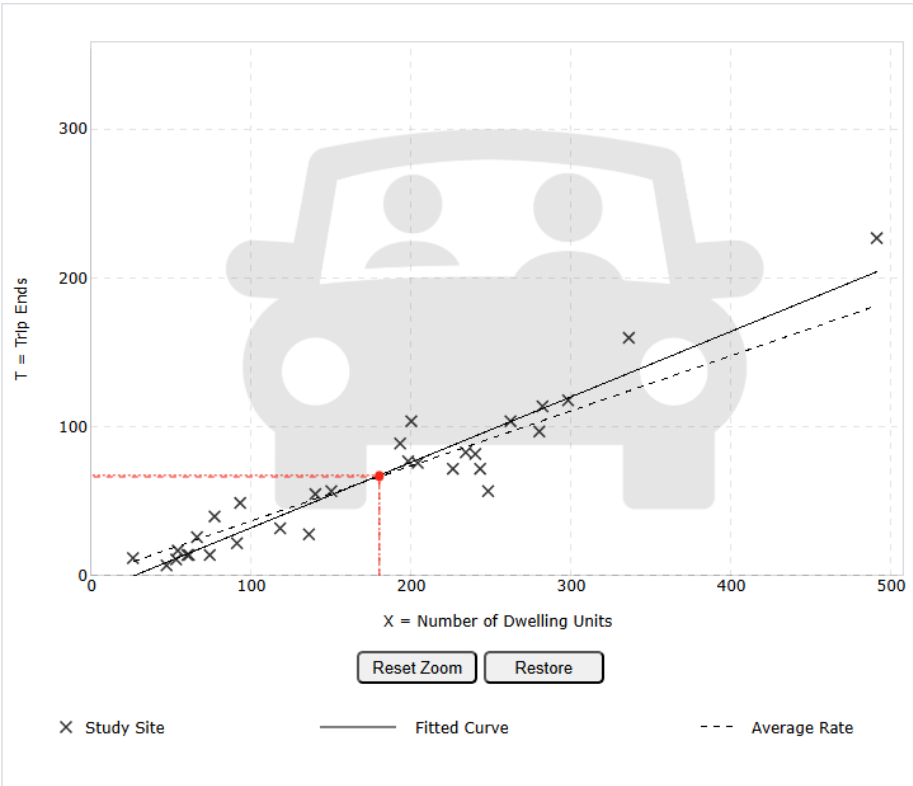
Fitted Curve Equation:
T = 4.77(X) - 46.46

R^2:
0.93

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 817 (Total), 409 (Entry), 408 (Exit)
Fitted Curve: 812 (Total), 406 (Entry), 406 (Exit)

Data Plot and Equation



DATA STATISTICS

Land Use:
Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) Click for Description and Data Plots

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
30

Avg. Num. of Dwelling Units:
173

Average Rate:
0.37

Range of Rates:
0.15 - 0.53

Standard Deviation:
0.09

Fitted Curve Equation:
T = 0.44(X) - 11.61

R^2:
0.91

Directional Distribution:
23% entering, 77% exiting

Calculated Trip Ends:
Average Rate: 67 (Total), 15 (Entry), 52 (Exit)
Fitted Curve: 68 (Total), 16 (Entry), 52 (Exit)



Revised
Trip Generation Analysis
for
Residence at Rock Creek
Phase II
Development

Martway Street, approx. 450 ft. west of Roeland Drive
Mission, Kansas

Prepared
for
CT Design + Development

Prepared
By

MGS
MGineering Solutions

Serving Communities Through Excellence
Missouri | Kansas | Michigan | California

MEHRDAD GIVECHI
LICENSED
14522
07/07/2023
KANSAS
PROFESSIONAL ENGINEER

Mehrdad Givechi, P.E., PTOE

July 2023

According to the *City of Mission's Transportation Impact Study Guidelines*, preparation of a traffic impact study is required for all land development and redevelopment applications. Different levels of traffic study are warranted at certain thresholds depending on the number of trips that the development generates and/or its deviation from the comprehensive plan. For developments generating under 100 trip-ends during the peak-hour of a typical weekday, the study should address the first five tasks listed in the guidelines. The information presented in this document is compiled to fulfill these requirements for the proposed *Phase II of the Residence at Rock Creek* development located on the south side of Martway Street approximately 400 ft. west of Roeland Drive in Mission, Kansas (See *Location Map,* ***Figure 1*** of ***Appendix I***).

1. ***Proposed Development Plan*** - The project site is bounded by Martway Street on the north, an approved multifamily residential development *(Phase I of the Residence at Rock Creek)* on the west, Rock Creek on the south, and a fast-food restaurant with drive through lane *(Wendy's)* on the east. The site is currently a surface parking lot with 144 marked stalls. Under the proposed development plan, the parking lot will be replaced by a 5-story building with the top 4 floors consisting of 96 dwelling units of multifamily residential development (24 units per floor comprised of studio, 1-bedroom and 2-bedroom units). The Ground Level has a small retail area of 1,750 sq. ft. that is available for lease as well as built storage rooms that will be available for use by the tenants of the building. The building is built as a podium style structure and thus covers 48 resident parking stalls on the ground level, which will be secured by fencing and garage doors. The remainder of the parking will be surface parking outside of the building's footprint with 50 more marked stalls on-site and 7 more on-street spaces. Overall, the number of parking spaces for the project is 197 for *Phase I* and 105 for *Phase II*. The residents of the *Phase II* building will be granted access to the *Phase I* building Amenity spaces, such as pool, workout rooms, yoga, etc. (See the Site Plan, ***Figure 2*** of ***Appendix I***.)

2. ***Zoning, Lan Use and Roadway Classifications –*** The existing and proposed zoning is MS-2. According to the *Comprehensive Plan 2007 with updates adopted March 16, 2011*, the

existing land use for the project site is *commercial* and the future land use is *parks and pathways.* The *Linkage Map* of the same document indicates that Martway Street is designated as a *proposed trail* facility.

According to the *City Traffic Code, Schedule III, Table III-A, Ordinance No. 1109,* Nall Avenue, Roeland Drive and Martway Street are designated main trafficway whose primary function are the movement of through traffic between areas of concentrated activity within the city limits or between such areas within the city limits and traffic facilities outside the city limits performing the function of a main trafficway.

According to the *East Gateway Long-Range Development Plan, June 2006,* Nall Avenue is a primary north/south street, Roeland Drive is a secondary north/south street, and Martway Street is a primary east/west Street.

3. ***Roadway Characteristics*** **-** Near the project site:
   - Martway Street and Roeland Drive are 3-lane roadways with one through lane in each direction, a two-way center left-turn lane and posted speed limit of 25 mph.
   - Nall Avenue is a 3-lane roadway with one through lane in each direction, a two-way center left-turn lane and posted speed limit of 30 mph.
   - The intersections of Martway Street with Roeland Drive and Nall Avenue are controlled by traffic signals.

4. ***Proposed Site Access Characteristics –*** The site is currently served by two driveways near the east and west property lines. Under the proposed development plan, the west driveway will be eliminated, and the east driveway will be modified to serve as the only access point to the site as shown on the site plan in ***Appendix I***.

   Field investigations indicate that the proposed access drive to the site is on a flat and tangent section of Martway Street with no sight distance restriction.

5. ***Site Generated Traffic*** **-** Trip generation of a proposed land development project is typically estimated using trip generation rates suggested by the latest edition of the *Institute of Transportation Engineers, Trip Generation Manual (Currently, the 11th Edition).* For this analysis, ITE land use codes 221 *(Mid-Rise Multifamily Housing)* with *number of dwelling units* as the independent variable; and 932 (High-Turnover, Sit-Down Restaurant) with *gross floor area* as the independent variable are selected for the residential and retail components of the project, respectively. For each use, both *weighted average rate* and *regression equation* methods were examined and the method with higher trip numbers was selected,

Results, as shown in the ***Appendix II***, indicate that the proposed *Phase II of the Residence at Rock Creek* development will generate the following *unadjusted* trips during peak-hours of a typical weekday as described below:

- On average, 53 trip-ends (17 inbound – 36 outbound) during morning peak-hour of the *adjacent street network*.
- On average, 54 trip-ends (33 inbound – 21 outbound) during afternoon peak-hour of the *adjacent street network*.
- On average, 624 trips-ends during a 24-hour period.

The proposed development project consists of a mix of residential and retail components with potential for internal trip capture that is typically estimated using the information published in the *ITE Trip Generation Handbook, 3rd Edition* and the *NCHRP 684 Internal Trip Capture Estimation Tool*. The internal trip capture for this project, as shown in ***Appendix II*** is:

- 8% total (12% inbound – 6% outbound) during morning peak-hour
- 7% total (6% inbound – 10% outbound) during afternoon peak-hour

Furthermore, the project site is approximately 360 ft. south of Johnson Drive, which is designated as *a local transit route* according to the City's Comprehensive Plan. It is, therefore, anticipated that a portion of the external trips generated by the development project will be

utilized by the public transportation and non-motorized modes. For this analysis, a value of 5% for each mode is assumed as a reasonable mode share.

The results of the analysis indicate that the proposed *Phase II of the Residence at Rock Creek* development project generates less than 100 external trip-ends during peak-hours of adjacent street network as follows:

- On average, 47 trip-ends (15 inbound – 32 outbound) during morning peak-hour of the *adjacent street network*.
- On average, 46 trip-ends (29 inbound – 17 outbound) during afternoon peak-hour of the *adjacent street network*.

Further analysis indicates that the approved *Phase I of the Residence at Rock Creek* development consisting of 176 dwelling units generates the following trip numbers:

- On average, 66 trip-ends (15 inbound – 51 outbound) during morning peak-hour of the *adjacent street network*.
- On average, 69 trip-ends (42 inbound – 27 outbound) during afternoon peak-hour of the *adjacent street network*.
- On average, 799 trips-ends during a 24-hour period.

In summary, the entire residence at Rock Creek development, at build out, will generate the following *external* trips:

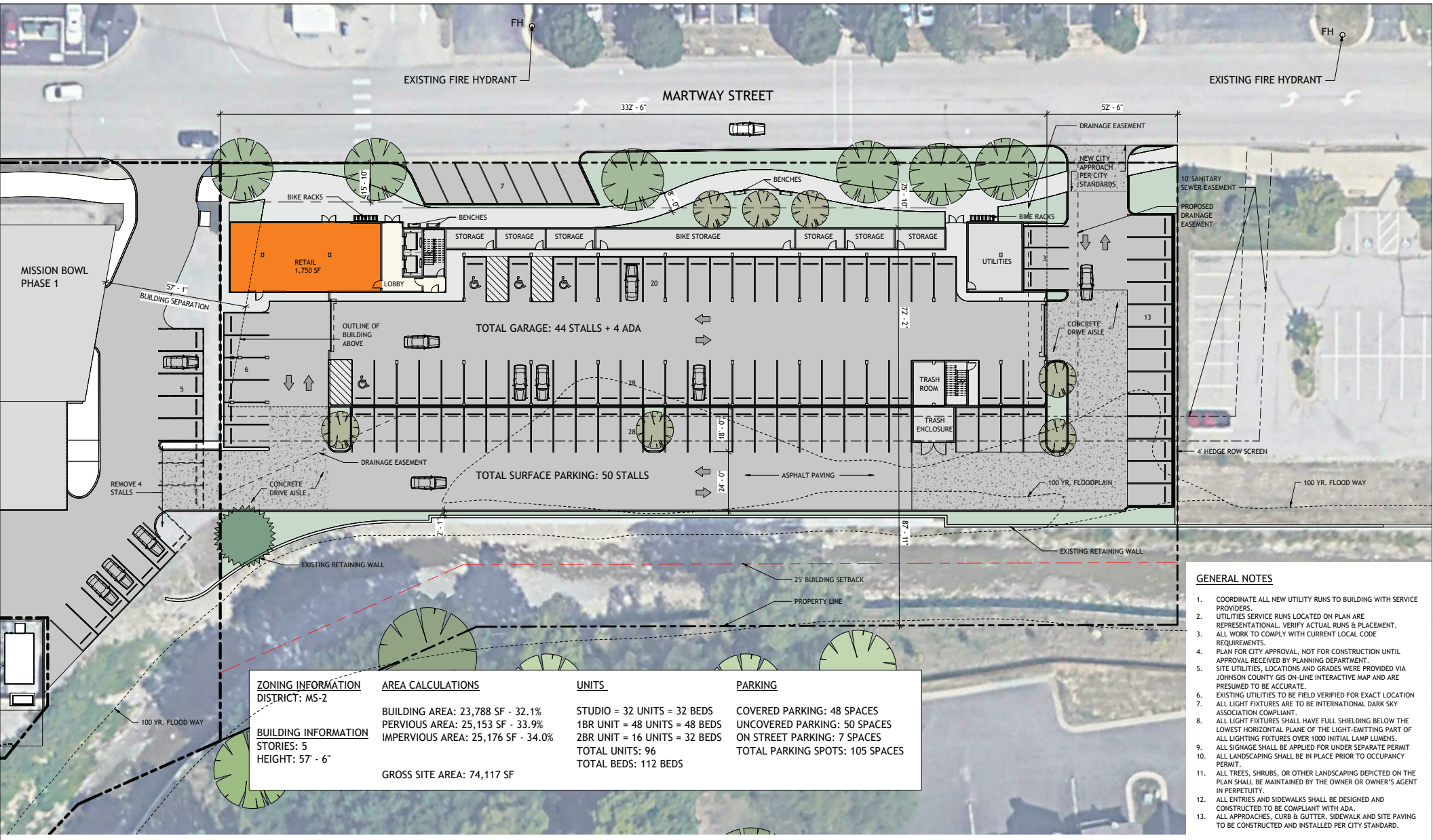
- On average, 113 trip-ends (30 inbound – 83 outbound) during morning peak-hour of the *adjacent street network*.
- On average, 115 trip-ends (71 inbound – 44 outbound) during afternoon peak-hour of the *adjacent street network*.
- On average, 1,423 *unadjusted* trips-ends during a 24-hour period.

APPENDIX I

Figures



Figure 1 - Location Map



ZONING INFORMATION
DISTRICT: MS-2

BUILDING INFORMATION
STORIES: 5
HEIGHT: 57' - 6"

AREA CALCULATIONS

BUILDING AREA: 23,788 SF - 32.1%
PERVIOUS AREA: 25,153 SF - 33.9%
IMPERVIOUS AREA: 25,176 SF - 34.0%

GROSS SITE AREA: 74,117 SF

UNITS

STUDIO = 32 UNITS = 32 BEDS
1BR UNIT = 48 UNITS = 48 BEDS
2BR UNIT = 16 UNITS = 32 BEDS
TOTAL UNITS: 96
TOTAL BEDS: 112 BEDS

PARKING

COVERED PARKING: 48 SPACES
UNCOVERED PARKING: 50 SPACES
ON STREET PARKING: 7 SPACES
TOTAL PARKING SPOTS: 105 SPACES

GENERAL NOTES

1. COORDINATE ALL NEW UTILITY RUNS TO BUILDING WITH SERVICE PROVIDERS.
2. UTILITIES SERVICE RUNS LOCATED ON PLAN ARE REPRESENTATIONAL. VERIFY ACTUAL RUNS & PLACEMENT.
3. ALL WORK TO COMPLY WITH CURRENT LOCAL CODE REQUIREMENTS.
4. PLAN FOR CITY APPROVAL, NOT FOR CONSTRUCTION UNTIL APPROVAL RECEIVED BY PLANNING DEPARTMENT.
5. SITE UTILITIES, LOCATIONS AND GRADES WERE PROVIDED VIA JOHNSON COUNTY GIS ON-LINE INTERACTIVE MAP AND ARE PRESUMED TO BE ACCURATE.
6. EXISTING UTILITIES TO BE FIELD VERIFIED FOR EXACT LOCATION
7. ALL LIGHT FIXTURES ARE TO BE INTERNATIONAL DARK SKY ASSOCIATION COMPLIANT.
8. ALL LIGHT FIXTURES SHALL HAVE FULL SHIELDING BELOW THE LOWEST HORIZONTAL PLANE OF THE LIGHT-EMITTING PART OF ALL LIGHTING FIXTURES OVER 1000 INITIAL LAMP LUMENS.
9. ALL SIGNAGE SHALL BE APPLIED FOR UNDER SEPARATE PERMIT
10. ALL LANDSCAPING SHALL BE IN PLACE PRIOR TO OCCUPANCY PERMIT.
11. ALL TREES, SHRUBS, OR OTHER LANDSCAPING DEPICTED ON THE PLAN SHALL BE MAINTAINED BY THE OWNER OR OWNER'S AGENT IN PERPETUITY.
12. ALL ENTRIES AND SIDEWALKS SHALL BE DESIGNED AND CONSTRUCTED TO BE COMPLIANT WITH ADA.
13. ALL APPROACHES, CURB & GUTTER, SIDEWALK AND SITE PAVING TO BE CONSTRUCTED AND INSTALLED PER CITY STANDARD.

RESIDENCE AT ROCK CREEK - PHASE 2

06/28/23

SHEET 400 - PDP SITE PLAN - LEVEL 1

1/16" = 1'-0"

C.T DESIGN + DEVELOPMENT

APPENDIX II

Results of Trip Generation Analysis
Using
ITE Trip Generation Manual, 11th Edition

PHASE II

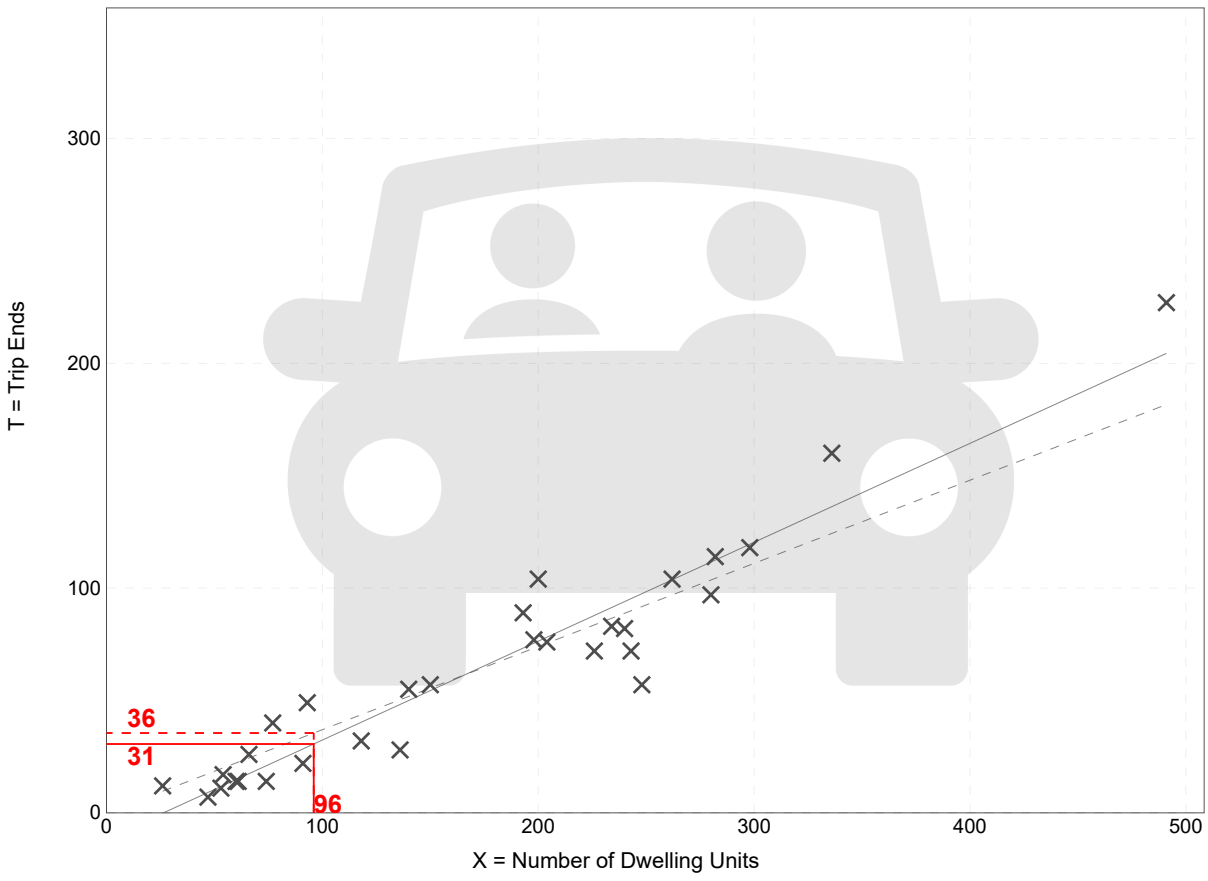
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

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: 30
Avg. Num. of Dwelling Units: 173
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Fitted Curve Equation: T = 0.44(X) - 11.61

R^2= 0.91

PHASE II

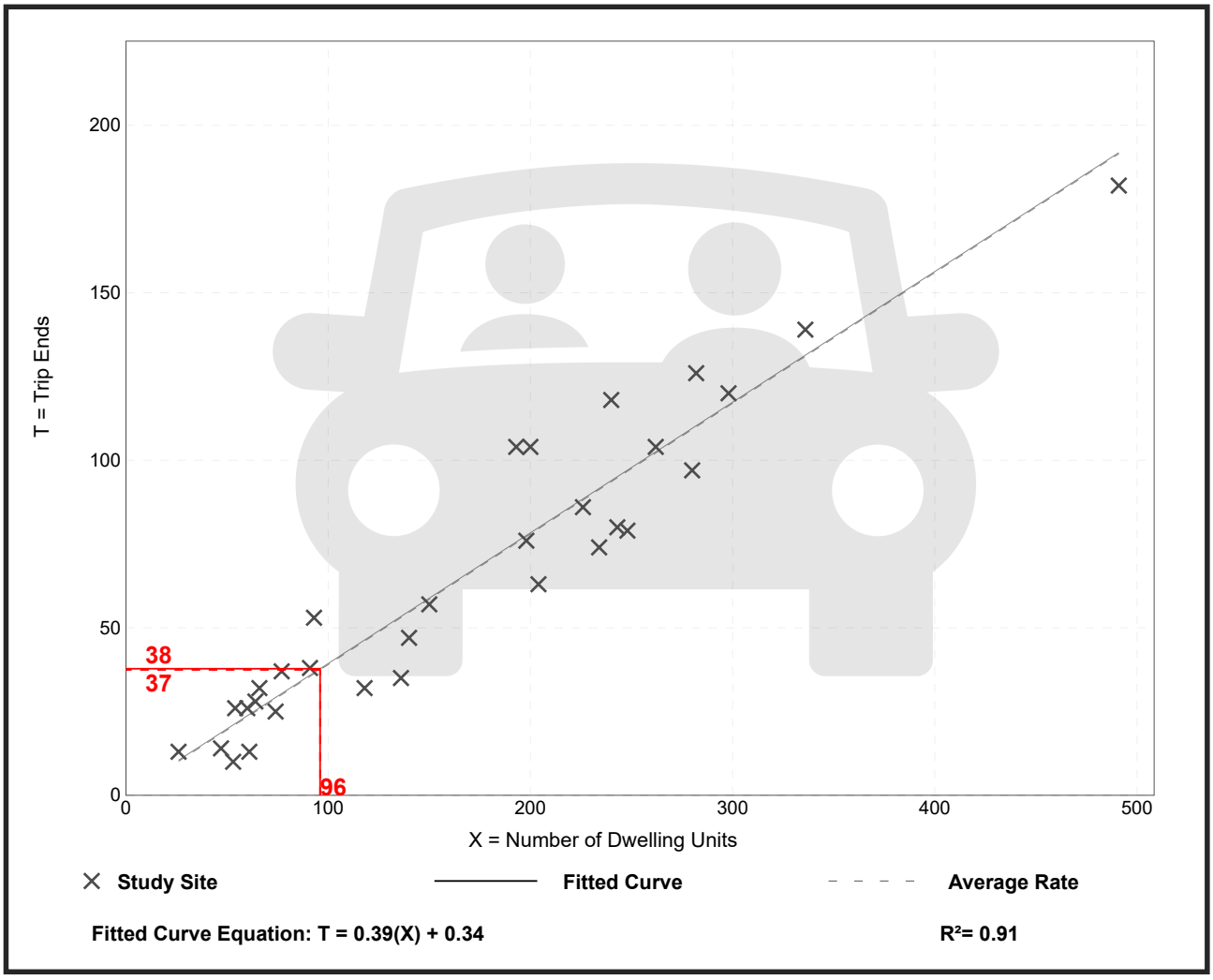
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

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: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



PHASE II

Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

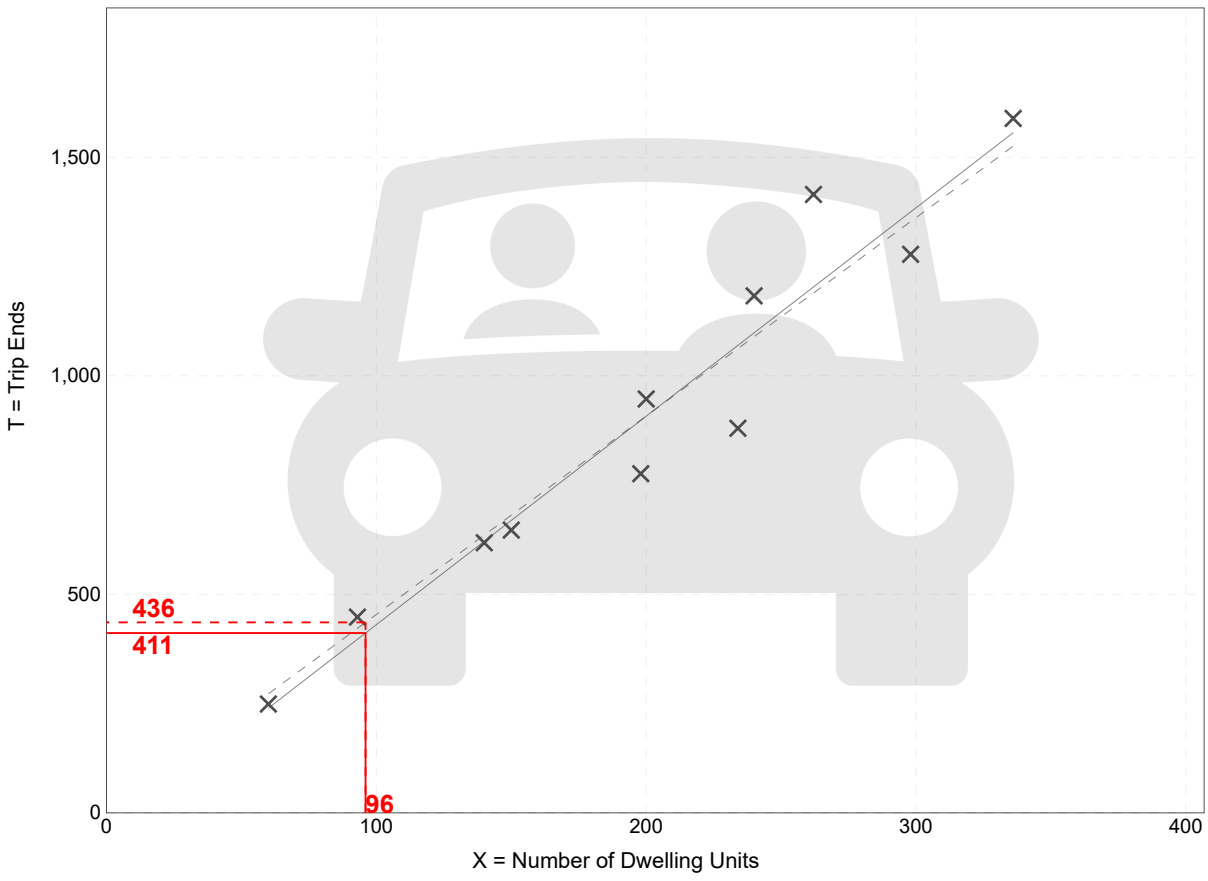
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 11
Avg. Num. of Dwelling Units: 201
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



Fitted Curve Equation: T = 4.77(X) - 46.46

R^2= 0.93

PHASE II

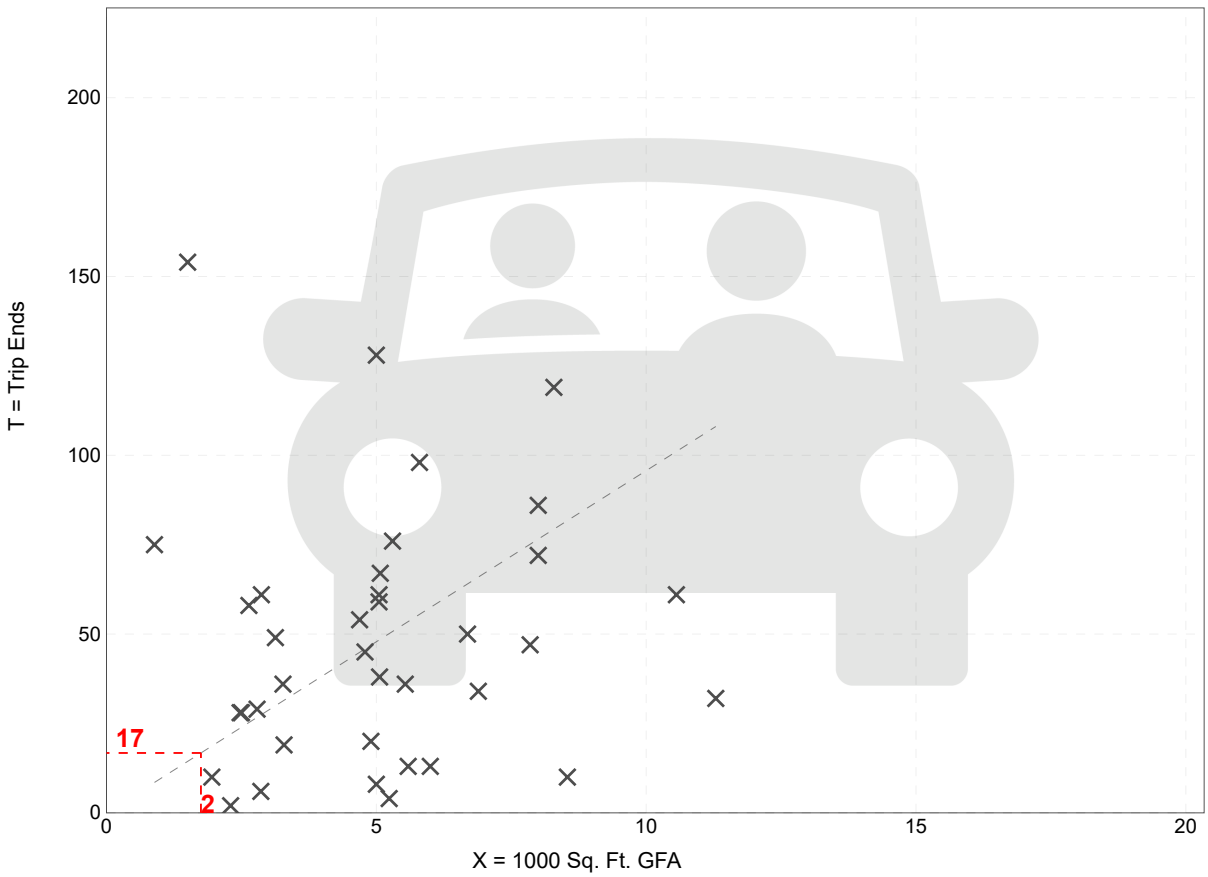
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
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: 37
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.57	0.76 - 102.39	11.61

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

PHASE II

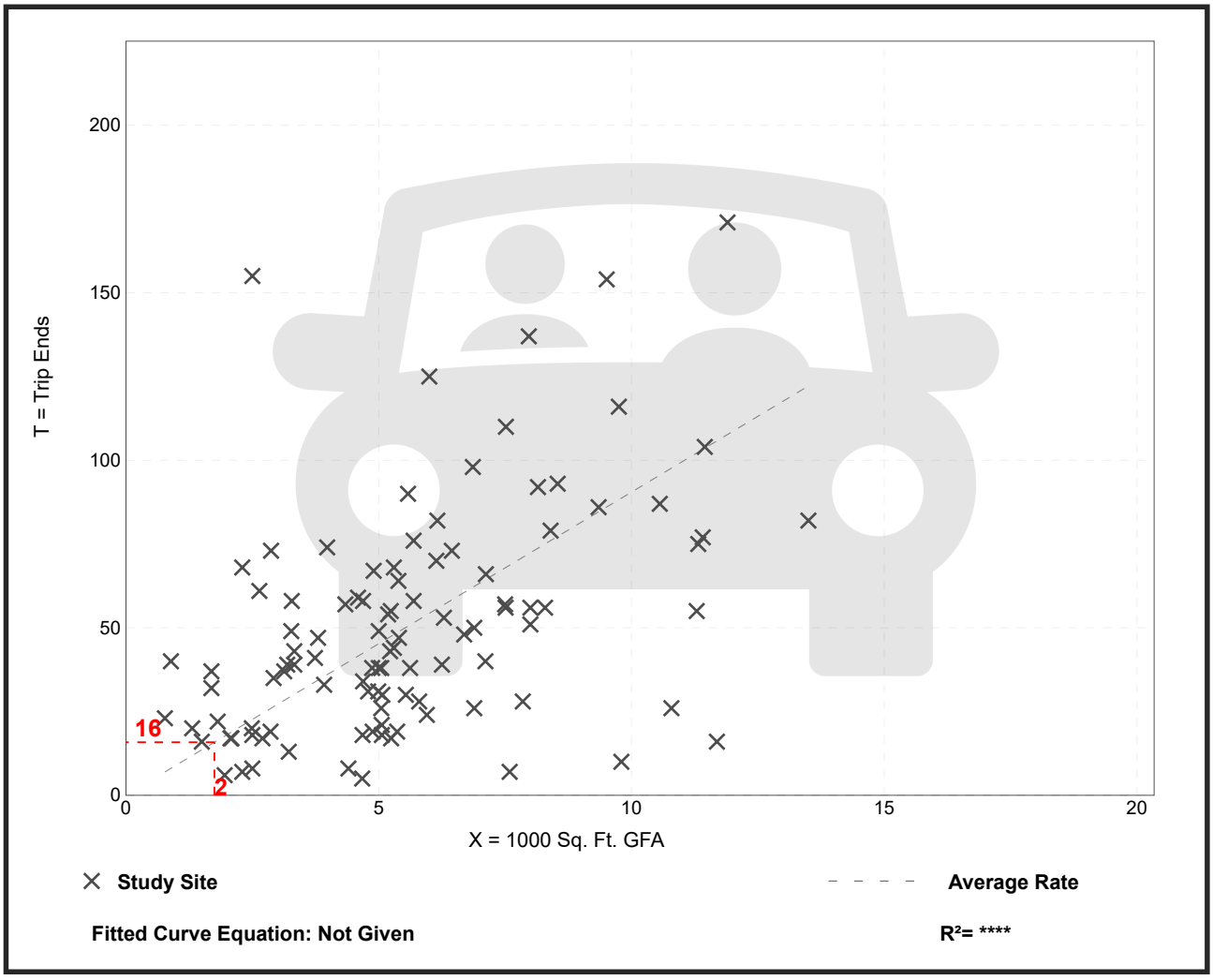
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
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: 104
Avg. 1000 Sq. Ft. GFA: 6
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.05	0.92 - 62.00	6.18

Data Plot and Equation



PHASE II

High-Turnover (Sit-Down) Restaurant
(932)

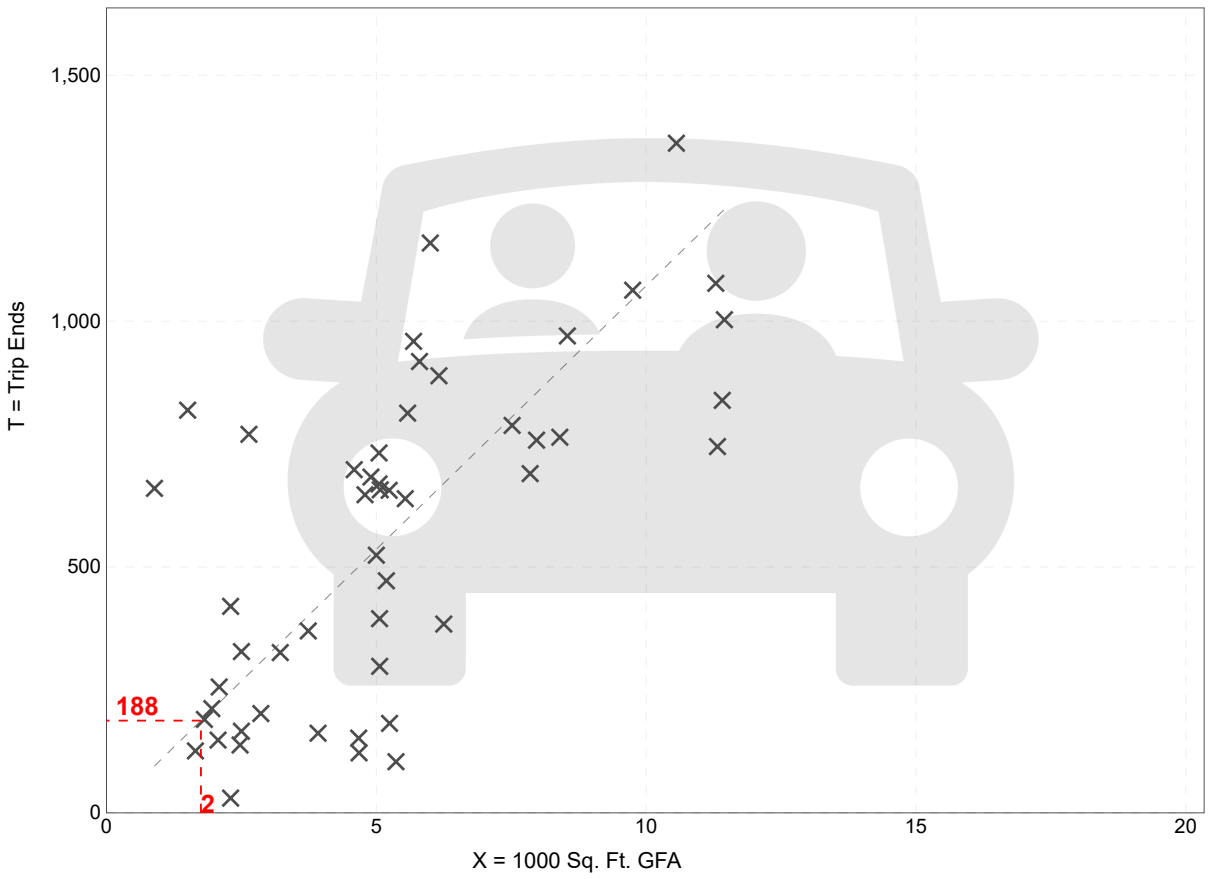
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
107.20	13.04 - 742.41	66.72

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Residence at Rock Creek, Phase II	**Organization:**	MGS
Project Location:	Mission, KS	**Performed By:**	MG
Scenario Description:	Project at Build-Out	**Date:**	7/7/2023
Analysis Year:	2023	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932	1,750	sq. ft. (GFA)	17	9	8
Cinema/Entertainment				0		
Residential	221	96	dwelling units	36	8	28
Hotel				0		
All Other Land Uses[2]				0		
Total				53	17	36

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant	1.00	5%	5%	1.00	5%	5%
Cinema/Entertainment						
Residential	1.00	5%	5%	1.00	5%	5%
Hotel	1.00	0%	5%	1.00	0%	5%
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	2	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	53	17	36
Internal Capture Percentage	8%	12%	6%
External Vehicle-Trips[3]	47	15	32
External Transit-Trips[4]	1	0	1
External Non-Motorized Trips[4]	1	0	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	22%	0%
Cinema/Entertainment	N/A	N/A
Residential	0%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Residence at Rock Creek, Phase II
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	9	9	1.00	8	8
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	8	8	1.00	28	28
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	2	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	6	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	2	0	0	0
Retail	0		5	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	2	0		0
Hotel	0	0	1	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	2	7	9	7	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	8	8	8	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	0	8	8	8	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	26	28	24	1	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Residence at Rock Creek, Phase II	**Organization:**	MGS
Project Location:	Mission, KS	**Performed By:**	MG
Scenario Description:	Project at Build-Out	**Date:**	7/7/2023
Analysis Year:	2023	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932	1,750	sq. ft. (GFA)	16	10	6
Cinema/Entertainment				0		
Residential	221	96	dwelling units	38	23	15
Hotel						
All Other Land Uses[2]				0		
Total				54	33	21

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant	1.00	5%	5%	1.00	5%	5%
Cinema/Entertainment						
Residential	1.00	5%	5%	1.00	5%	5%
Hotel	1.00	0%	5%	1.00	0%	5%
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					200	
Restaurant						
Cinema/Entertainment						
Residential		200				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	54	33	21
Internal Capture Percentage	7%	6%	10%
External Vehicle-Trips[3]	46	29	17
External Transit-Trips[4]	2	1	1
External Non-Motorized Trips[4]	2	1	1

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	10%	17%
Cinema/Entertainment	N/A	N/A
Residential	4%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Residence at Rock Creek, Phase II
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	0	0	1.00	0	0
Restaurant	1.00	10	10	1.00	6	6
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	23	23	1.00	15	15
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	6	3	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	1	0
Retail	0		3	0	11	0
Restaurant	0	0		0	4	0
Cinema/Entertainment	0	0	0		1	0
Residential	0	0	1	0		0
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	1	9	10	9	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	22	23	20	1	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	0	0	0	0	0
Restaurant	1	5	6	5	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	14	15	12	1	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

This Page Left Blank Intentionally

PHASE I

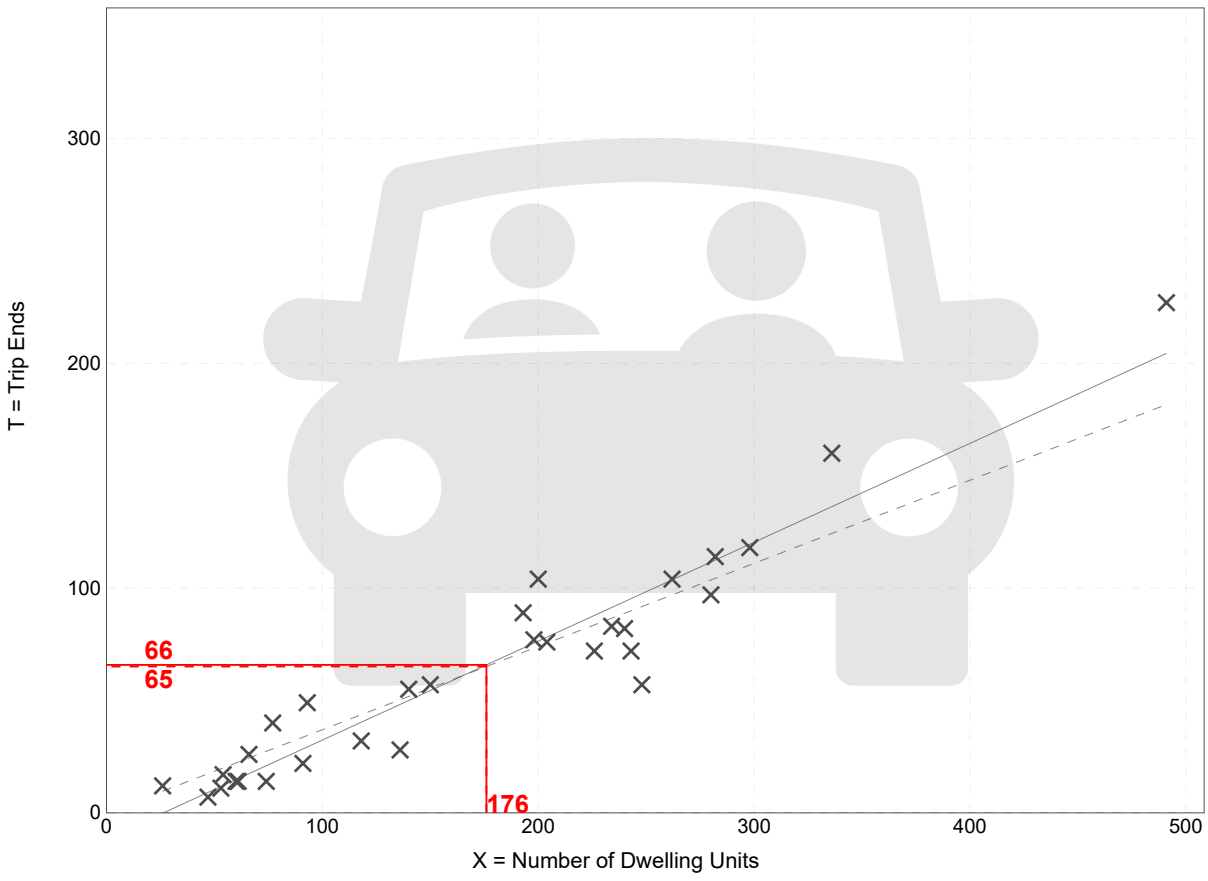
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

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: 30
Avg. Num. of Dwelling Units: 173
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Fitted Curve Equation: T = 0.44(X) - 11.61

R^2= 0.91

PHASE I

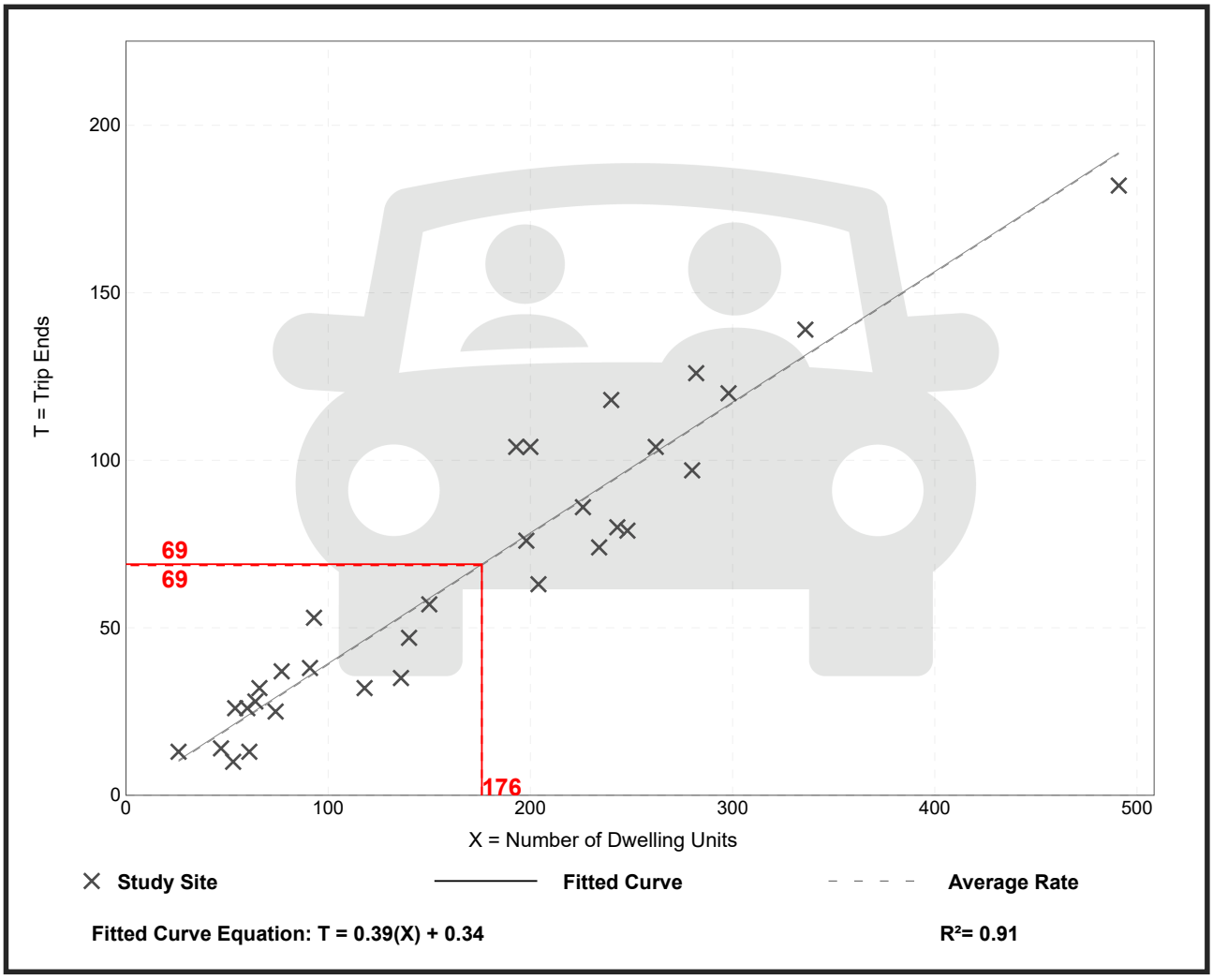
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

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: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



PHASE I

Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

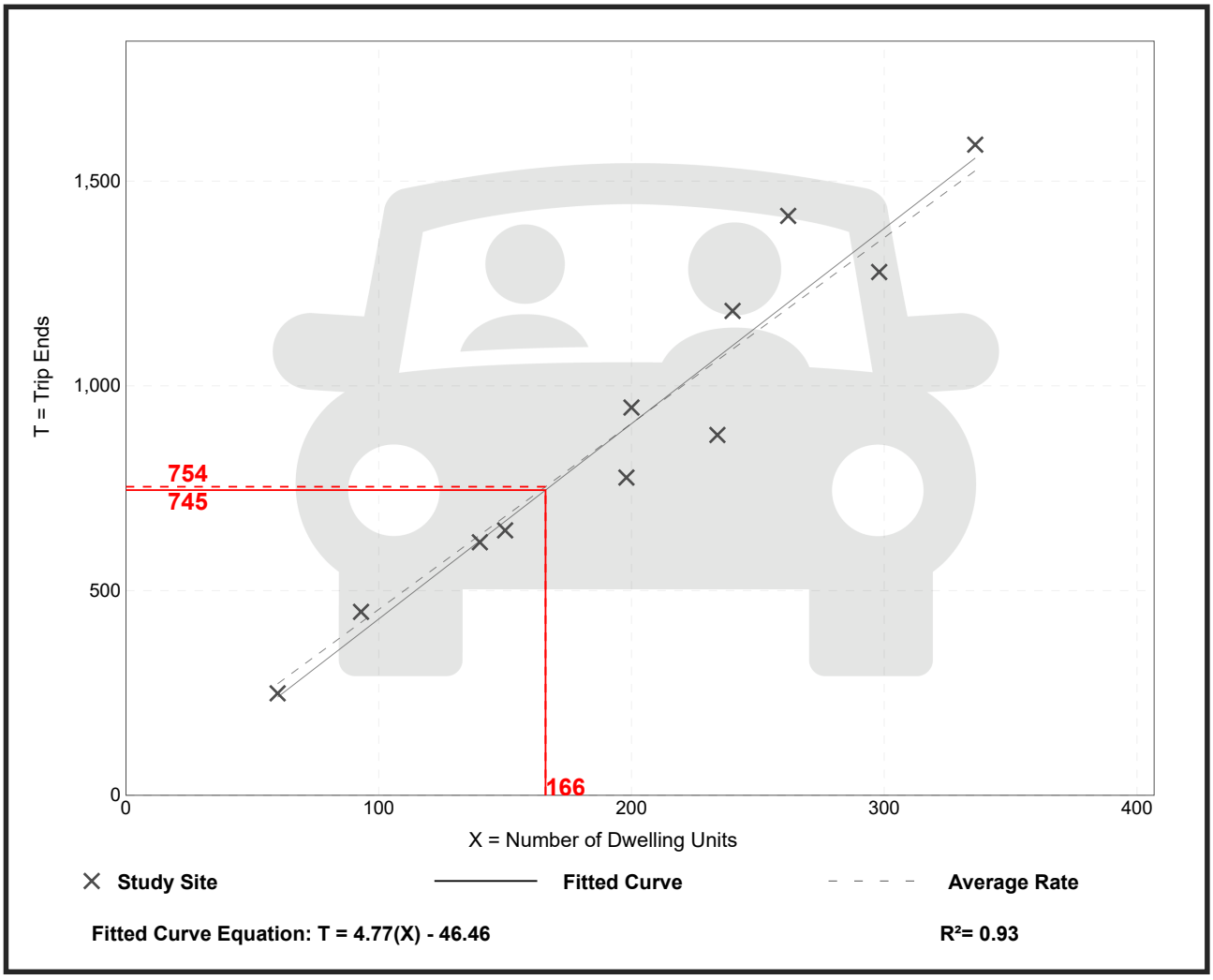
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 11
Avg. Num. of Dwelling Units: 201
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



Fitted Curve Equation: T = 4.77(X) - 46.46

R^2= 0.93

Encore
Stormwater Management Study

Section 09, Township 12 South, Range 25 East

Mission, Johnson County, Kansas

1st Submittal: September 2025

2nd Submittal: October 2025

Prepared For:

Sunflower Development Group, LLC

1125 Grand Blvd, Suite 202

Kansas City, MO 64106

Contact: Banks Floodman

Prepared By:

Renaissance Infrastructure Consulting

5015 NW Canal St Suite 100

Riverside, MO 64150

Contacts:

Dustin Burton, PE
dburton@ric-consult.com

Ashley Cronin, PE
acronin@ric-consult.com

913.317.9500

Table of Contents

Encore 1

Stormwater Management Study 1

Table of Contents 2

I. Project Information 3

A. Purpose 3

B. Location 3

C. Description of Property 3

II. Drainage Design Criteria 4

A. Development Criteria Reference 4

B. Hydrologic Criteria 4

III. Existing Conditions Analysis 5

IV. Proposed Conditions Analysis 6

V. Floodplain Analysis 6

A. Existing Floodplain information 6

B. Modeling 7

C. Compensatory Storage 7

D. Floodplain Summary 7

VI. Water Quality, Level of Service, and Value Rating 7

VII. Site Outfall Summary 8

VIII. Summary and Conclusions 8

IX. Appendices 9

A. Site Location Map 9

B. References 9

C. Hydrology and Hydraulics 9

D. Existing Conditions Analysis 9

E. Proposed Conditions Analysis 9

F. Floodplain Analysis 9

G. Water Quality, Level of Service, and Value Rating Analysis 9

H. Existing and Proposed Drainage Maps 9

I. Project Information

A. Purpose

The purpose of this Stormwater Management Study for Encore is to describe the onsite and offsite drainage patterns, existing and proposed storm infrastructure, and safe routing of developed stormwater to adequate outfalls. This report includes hydrologic and hydraulic calculations, tables, graphs, and exhibits showing drainage basins, routing, and proposed storm improvements.

B. Location

1. *City, County and Local Streets within and Adjacent to the Site*

Encore improvements consist of a mixed-use retail and residential apartment building. The project is located in the City of Mission, Johnson County, Kansas. It is bounded to the north by Martway Street, to the west by Mission Bowl Apartments Phase I, to the east by Roeland Drive, and to the south by Rock Creek.

2. *Township, Range and Section*

Encore is within Section 09, Township 12 South, Range 25 East.

3. *Site location map*

A location map is presented in Appendix A.

C. Description of Property

1. *Proposed Development*

The Encore property is approximately 3.3 total acres. The proposed development consists of a mixed-use retail and residential apartment building, along with associated parking and walks.

2. *Existing topography, vegetation and drainage*

The site currently consists of existing parking lot area, one existing building, and minimal existing landscape. The site generally drains from west to east, and north to south, uncontrolled into Rock Creek. On site elevations range from 931'-927' with an approximate slope of 1 percent.

There are no wetlands located on the site.

On the south side of the site, Rock Creek flows from west to east.

There are no known downstream system deficiencies. The site drains to Rock Creek, which passes under Roeland Drive and continues to the east.

3. *Floodplain Information*

The property is located within the 100-year flood plain. The FIRM map included in Appendix B was revised to reflect a Letter of Map Revision (LOMR), effective September 14, 2022. The map shows the base flood elevations through the site ranging from 930.0 on the west side of the site, to 926.0 on the east side of the site.

4. *Soils*

The USDA Natural Resources Conservation Service Web Soil survey was consulted to approximate site soil conditions. Soil types found on site are shown in Table 1 below. See Appendix B for the Soil Map.

Table 1: Site Soil Conditions			
Map Unit Symbol	Map Unit Name	HSG	Percent of Site Area
7545	Sharpsburg-Urban land complex, 4 to 8 percent slopes	C	100.0%

II. Drainage Design Criteria

A. Development Criteria Reference

This Final Drainage Report is based on the criteria set forth in the following reference manuals:

- APWA Section 5600 – Storm Drainage Systems and Facilities, adopted August 2005, by the Kansas City Metropolitan Chapter of the American Public Works Association (APWA)
- Section 5100 – Erosion and Sediment Control, adopted August 2003, by the Kansas City Metropolitan Chapter of the APWA
- Manual of Best Management Practices for Stormwater Quality (August 2012), MARC
- SCS (now NRCS) Technical Release No. 55 "Urban Hydrology for Small Watersheds" (2nd Edition, June 1986)

B. Hydrologic Criteria

1. *Design Rainfall*

Runoff calculations were performed using the Type II 24-hour storm distribution for 1% (100 year), 10% (10 year) and 100% (1 year) annual probability storm events. Rainfall values used in this study are included in Table 2 below. The NOAA Rainfall data is included in Appendix C.

Table 2: Rainfall Values		
Return Period (Year)	Design Storm (%)	Rainfall Depth (in)
1	100%	3.08
10	10%	5.50
100	1%	8.85

2. *Runoff Calculation Method*

Pre and post development runoff was determined using the curve number method described in SCS (now NRCS) Technical Release No. 55 "Urban Hydrology for Small Watersheds" (2nd Edition, June 1986) as specified in APWA Section 5602.2B. Curve numbers (CN) used in the TR55 analysis were taken from Table 4.1 of the APWA MARC BMP Manual (August 2012), which is included in Appendix C.

III. Existing Conditions Analysis

The existing site is composed of four sub-basins and consists mostly of an existing parking lot and an existing building. A map of the existing sub-basins is presented in Appendix H.

The existing curve numbers, time of concentration values, and basin flow descriptions used for this analysis are provided in Table 3 below.

Table 3: Existing Condition Analysis

Sub-Basin	Area (ac)	CN*	Time of Concentration (min)	Basin Description
EX1	1.11	94	5.00	Basin is comprised of an existing parking lot with minimal landscaping. Flows drain to the east and into a concrete flume that conveys flows uncontrolled into Rock Creek.
EX2	0.17	94	5.00	Basin is comprised of the entrance drives to the parking lot, some streetscape, and curb and gutter on the south side of Martway Street. Flows are captured by the curb and gutter in Martway Street and conveyed to the east and offsite.
EX3	0.54	94	5.00	Basin is comprised of an existing parking lot and an existing Wendy's site with associated infrastructure. Flows are captured by an inlet on Martway Street and conveyed to Rock Creek.
EX4	0.72	94	5.00	Basin is comprised of an existing Wendy's site with associated infrastructure. Flows drain to the south and uncontrolled into Rock Creek via a flume on the south side of the basin.

* CN determined from Table 4.1 of the APWA MARC BMP Manual for Commerical, business type C soil.

Table 4 below summarizes the peak outflow from each design storm in the existing condition at the outfall point.

Table 4: Existing Peak Outflow

Outfall Description	Q_1 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
Ex_Rock_Creek_Outfall (EX2 and EX3)	6.72	12.77	21.00
Ex_Martway_St_Outfall (EX1 and EX4)	2.61	4.95	8.20

Detailed results of this analysis can be found in Appendix D.

IV. Proposed Conditions Analysis

The developed site has three sub-basins. A map of the proposed sub-basins is presented in Appendix H.

Table 5 provides a summary of the results of the proposed conditions analysis. Detailed results of this analysis can be found in Appendix E.

Table 5: Proposed Condition Analysis

Sub-Basin	Area (ac)	CN *	T_C (min)	Basin Description
PR1	0.66	95	5.00	Basin is comprised of street parking, sidewalk, and landscape between Martway Street and the new buildings. Flows will be captured by an existing inlet on Martway Street and into Rock Creek.
PR2	0.62	95	5.00	Basin is comprised of a portion of the Encore Building. Flows from the building drain to the south and into the roof drain connection. Water will be treated by a Barracuda Hydrodynamic Separator before being released into Rock Creek.
PR3	1.27	95	5.00	Basin is comprised of a portion of the Encore Building, parking structure, sidewalk, and landscape area. Flows from the building drain to the south and into the roof drain connection. Flows will be routed into Rock Creek.

* Post development HSG is assumed to be one group higher in runoff than predevelopment. CN determined from Table 4.1 of the APWA MARC BMP Manual for Commerical, business type D soil.

Table 6 below summarizes the peak outflow from each design storm in the proposed condition at the outfall point.

Table 6: Proposed Peak Outflow

Outfall Description	Q_1 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
Rock_Creek_Outfall	6.84	12.98	21.31
Martway_St_Outfall	2.44	4.56	7.48

Detailed results of this analysis can be found in Appendix E.

V. Floodplain Analysis

A. Existing Floodplain information

The property is located within the 100-year flood plain. The current FEMA Current Effective Map Information is provided below:

Table 7: FEMA Current Effective Map Information

FEMA FIRM Number	20091C0024G
Effective Date	August 3, 2009
Project Flood Zone Designation	AE
Flooding Source	Rock Creek

The FIRM map included in Appendix B was revised to reflect a Letter of Map Revision (LOMR) 21-07-1200P, effective September 14, 2022. The map shows the base flood elevations through the site ranging from 930.0 on the west side of the site, to 926.0 on the east side of the site.

B. Modeling

The effective HEC-RAS model was obtained through a FEMA Electronic Data Request through the FEMA digital library, however the model provided by the FEMA library did not reflect the 21-07-1200P LOMR. Therefore, RIC went through the State of Kansas Department of Agriculture Base Flood Elevation Portal and received the effective LOMR model. This Model included the original Effective, Duplicate Effective, Corrected Effective, Proposed, and As-Built Models. The As-Built model reflected the results of the 2022 LOMR. For the purposes of this study, RIC removed all models except the As-Built models and renamed them to be the new effective models.

1. *Effective Model*

The As-Built model was renamed as the Effective model. The Effective model was then run to confirm the water surface elevations matched the existing 21-07-1200P LOMR.

2. *Proposed Conditions*

After confirming the accuracy of the Effective model, the geometry file was then copied to create the Proposed model. The proposed model keeps the same channel geometry as the effective model. However, the left overbank for cross sections 2.189, 2.225, 2.264, 2.285, & 2.309 were updated according to the proposed grading.

A hydraulic workmap of the site is included in Appendix F of this study.

A summary of WSEL comparison tables for all modeling is included in Appendix F of this study.

C. Compensatory Storage

In accordance with the City Code on Compensatory Storage, the existing storage was analyzed based on the topo survey and Effective HEC-RAS model flood elevations. Based on this analysis, the existing condition provides 73 CY of storage during the 100-year flood event. The proposed grading for the project provides 122 CY of storage on the south side of the property. See Appendix F for an exhibit showing the existing and compensatory storage areas and calculations.

D. Floodplain Summary

The proposed conditions model results show that the proposed development does not create a rise compared to the effective model and meets the compensatory storage requirements. The results of a no-rise are in accordance with the FEMA requirements for ZONE AE flood hazard areas. RIC requests approval of the associated floodplain development permit.

VI. Water Quality, Level of Service, and Value Rating

The level of service calculations are based on the MARC BMP Manual for previously developed sites. The LOS calculations are provided in Appendix G. The existing site had an impervious area of 2.16 acres, while the proposed site has an impervious area of 1.95 acres. Since there is a reduction of impervious area with the proposed Encore development, no additional stormwater treatment is required. Existing and Proposed Impervious Maps are included in Appendix G.

The City of Mission has requested that an element of stormwater treatment be included with the site improvements. Stormwater treatment improvements will capture pollutants and contaminants and improve stormwater quality.

A total of 0.62 acres will be treated by the hydrodynamic separator. An ADS Barracuda S4 has been selected to be used for stormwater treatment. The device is sized to treat the "first flush" treatment value. Additional runoff will bypass the treatment area and continue to Rock Creek. The system should be inspected for maintenance every 2-3 years. ADS Barracuda S4 information is included in Appendix G.

Compared to the existing conditions, where 2.55 acres drained uncontrolled into Rock Creek, the proposed improvements for Encore will be treating 0.62 acres and reducing the uncontrolled runoff to 1.93 acres.

VII. Site Outfall Summary

Table 6 provides a summary of the pre vs. post development release rates from the overall site. Detailed results of this analysis can be found in Appendix D and E.

Table 8: Peak Outflow Comparison

Outfall Description	Storm Event Outfall Rate (cfs)	Existing Conditions (Ex_Rock_Creek_Outfall)	Proposed Conditions (Rock_Creek_Outfall)
Rock Creek	Q_1	6.72	6.84
	Q_{10}	12.77	12.98
	Q_{100}	21.00	21.31
Martway Street	Q_1	2.61	2.44
	Q_{10}	4.95	4.56
	Q_{100}	8.20	7.48

VIII. Summary and Conclusions

The storm drainage design of the Encore has a decrease in imperviousness. Following 5601.3 from APWA Section 5600, the site is excluded from the general requirements based on the site being improved and an increase in imperviousness of less than 10 percent.

Water quality is proposed with site improvements to minimize any downstream impacts.

No negative impacts on downstream properties, channel depths, velocities, and erosion rates, or regional detention facilities are expected.

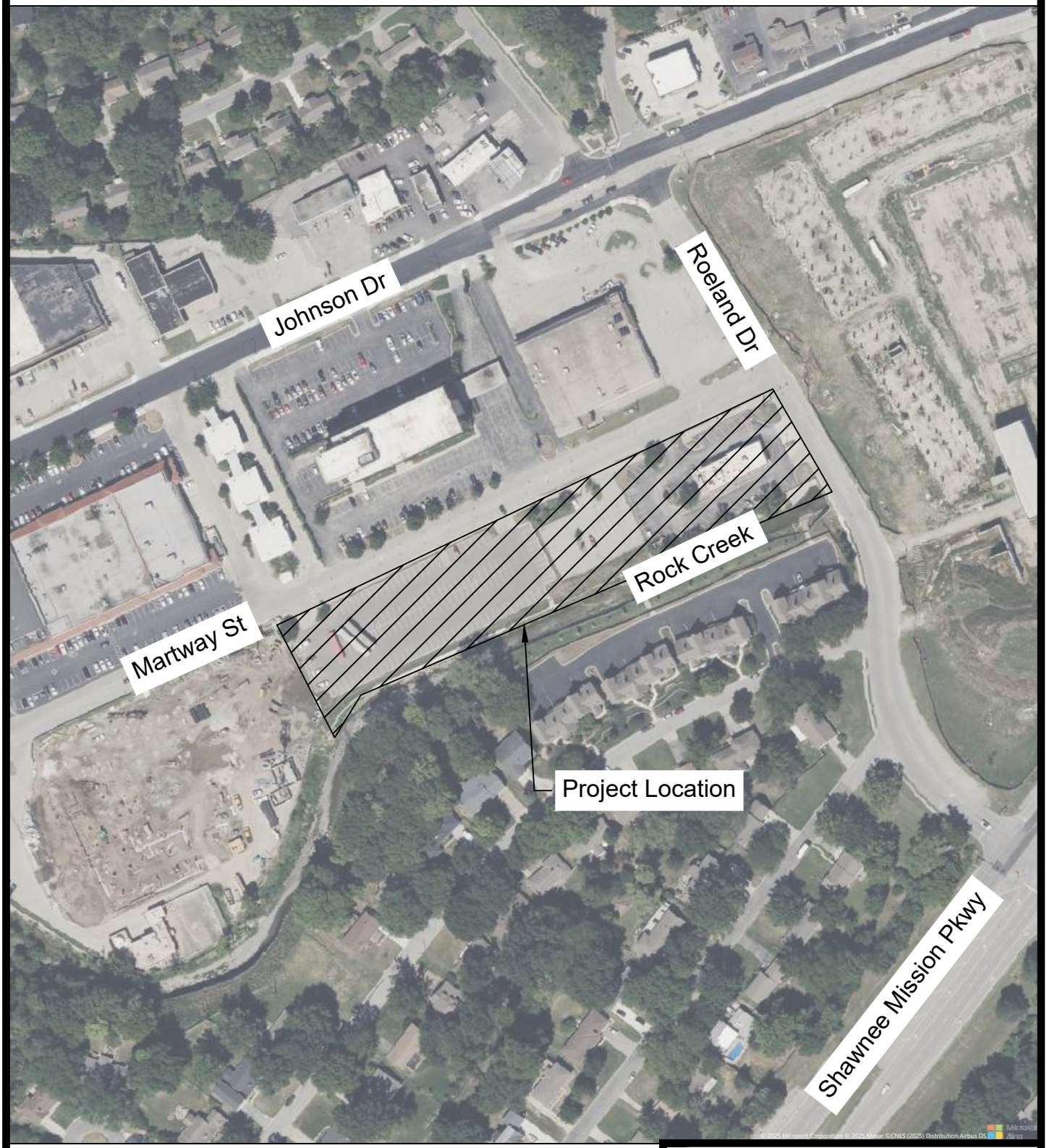
IX. Appendices

A. Site Location Map
B. References
C. Hydrology and Hydraulics
D. Existing Conditions Analysis
E. Proposed Conditions Analysis
F. Floodplain Analysis
G. Water Quality, Level of Service, and Value Rating Analysis
H. Existing and Proposed Drainage Maps

Appendix A
Site Location Map

Project Location Map

Exhibit A



Scale: 1" = 200'

Sheet 1 of 1
25-0108
Prepared: 02/17/2025

Renaissance Infrastructure Consulting
5015 NW Canal Street, Suite 100
Riverside, Missouri 64150
816.800.0950
www.ric-consult.com

acronin
Sep 16 , 2025-12:36pm
Z:\RIC Design\2025\25-0108\Dwg\Exhibits\SWR\25-0108 Project Location Map.dwg

Appendix B
References

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Mission Johnson County Kansas	CHANNELIZATION	1D HYDRAULIC ANALYSIS FLOODWAY UPDATED TOPOGRAPHIC DATA
	COMMUNITY NO.: 200170		
IDENTIFIER	Rock Creek in Mission, Kansas	APPROXIMATE LATITUDE & LONGITUDE: 39.022, -94.646 SOURCE: Other DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 20091C0024G DATE: August 3, 2009	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 03, 2009 PROFILE: 344P FLOODWAY DATA TABLE: 6

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map

FLOODING SOURCE(S) & REVISED REACH(ES)

Rock Creek – from approximately 1,450 feet downstream of confluence with Rock Creek Tributary F to the confluence with Rock Creek Tributary F

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Rock Creek	BFEs*	BFEs	YES	YES
	Floodway	Floodway	YES	YES
	Zone AE	Zone AE	YES	YES

* BFEs – Base (1-percent-annual-chance) Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

21-07-1200P 102-I-A-C

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Catherine Sanders
Director, Mitigation Division
Federal Emergency Management Agency, Region VII
9221 Ward Parkway, Suite 300
Kansas City, MO 64114-3323
(816) 283-7003

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below, and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/bfe_status/bfe_main.asp

LOCAL NEWSPAPER

Name: *The Legal Record*

Dates: May 10, 2022 and May 17, 2022

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised flood hazard determination presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION				
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	EXISTING CONDITIONS (FEET NAVD)	FUTURE CONDITIONS (FEET NAVD)	EXISTING CONDITIONS WITHOUT FLOODWAY (FEET NAVD)	EXISTING CONDITIONS WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCK CREEK (CONTINUED)									
H	10,977[1]	60	432	10.4	927.8	*	927.8	927.8	0.0
I	12,294[1]	52	378	8.3	935.7	*	935.7	935.7	0.0
J	13,674[1]	137	426	6.1	948.0	*	948.0	928.0	0.0
K	15,110[1]	39	167	12.5	956.9	*	956.9	957.0	0.1
ROCK CREEK TRIBUTARY A									
A	605[2]	90	738	2.0	893.0	*	893.0	893.4	0.4
B	1,672[2]	54	102	7.7	902.4	*	902.4	902.5	0.1
C	2,716[2]	83	138	3.6	924.5	*	924.5	924.7	0.2
ROCK CREEK TRIBUTARY B									
A	1,008[2]	25	30	5.6	913.9	*	913.9	914.0	0.1
B	1,667[2]	17	25	6.7	932.2	*	932.2	932.6	0.4
ROCK CREEK TRIBUTARY D									
A	322[3]	36	100	6.9	932.8	*	932.8	932.8	0.0
B	916[3]	60	212	3.3	944.5	*	944.5	945.1	0.6
C	2,208[3]	98	312	2.2	961.1	*	961.1	961.5	0.4

REVISED DATA

[1]Feet above confluence with Brush Creek
[2]Feet above confluence with Rock Creek
[3]Feet above West 55th Street
*Data not available

REVISED TO REFLECT LOMR EFFECTIVE: September 14, 2022

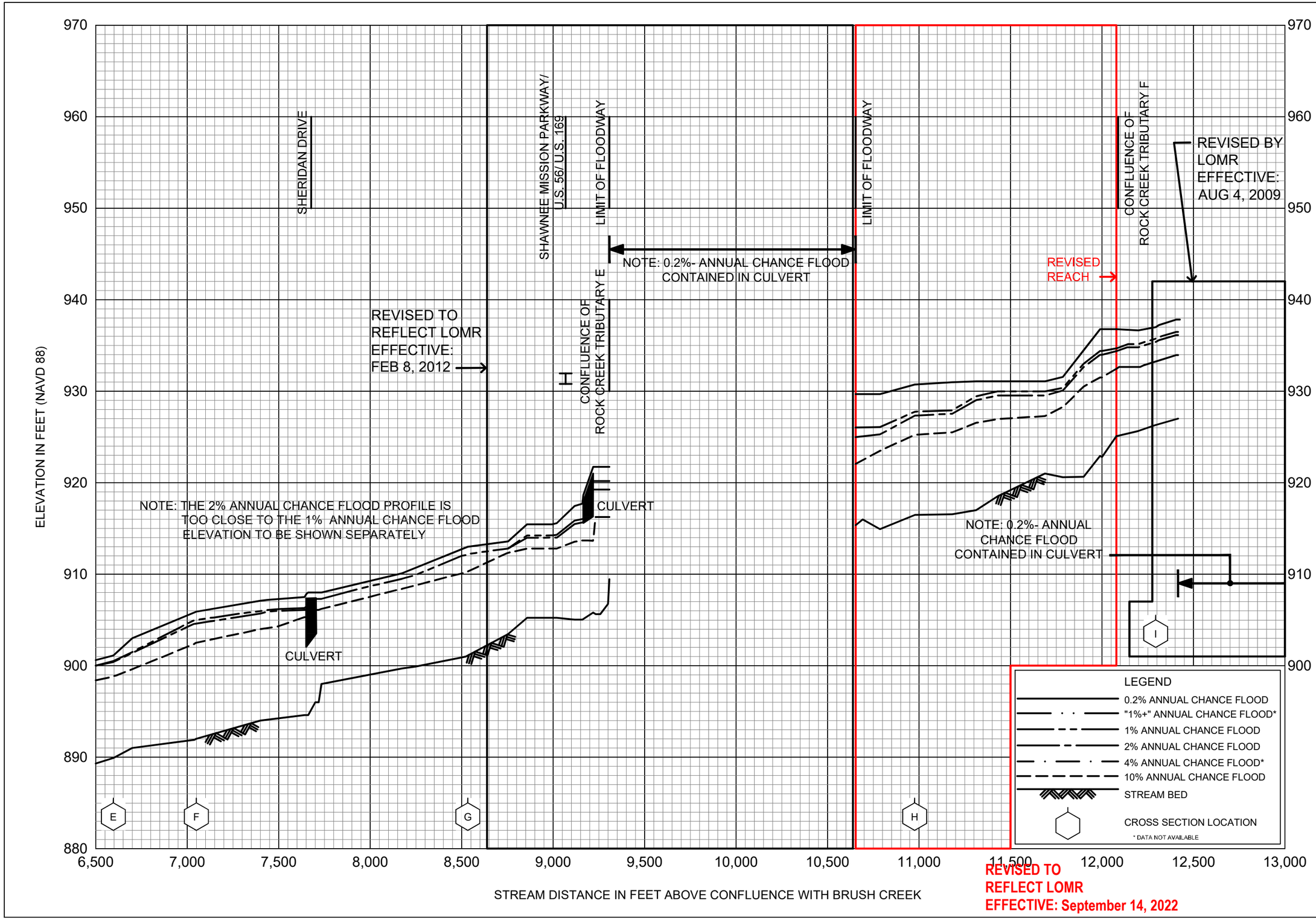
TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

JOHNSON COUNTY, KS
AND INCORPORATED AREAS

FLOODWAY DATA

ROCK CREEK – ROCK CREEK TRIBUTARY A – ROCK CREEK TRIBUTARY B – ROCK CREEK TRIBUTARY D



REVISED TO
REFLECT LOMR
EFFECTIVE: September 14, 2022

FLOOD PROFILES

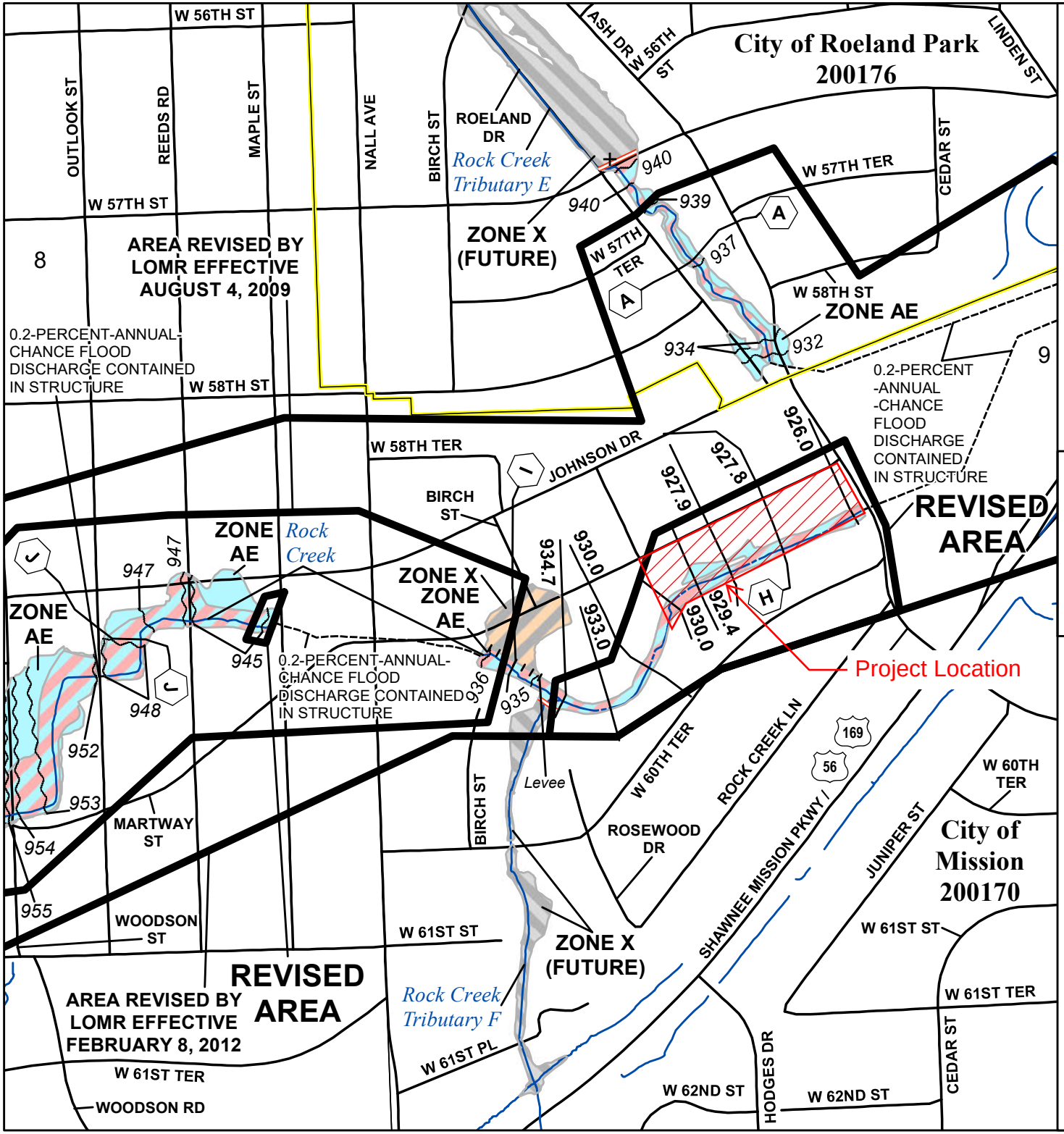
ROCK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JOHNSON COUNTY, KS

AND INCORPORATED AREAS

344P



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 25 EAST.

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*

SCALE

Map Projection:
NAD 1983 StatePlane Kansas North FIPS 1501 Feet;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 1,000 Feet

0 75 150 300 Meters

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

JOHNSON COUNTY, KANSAS
and Incorporated Areas

PANEL 24 OF 161

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRWAY, CITY OF	205185	0024	G
MISSION, CITY OF	200170	0024	G
MISSION HILLS, CITY OF	200171	0024	G
OVERLAND PARK, CITY OF	200174	0024	G
PRAIRIE VILLAGE, CITY OF	200175	0024	G
ROELAND PARK, CITY OF	200176	0024	G

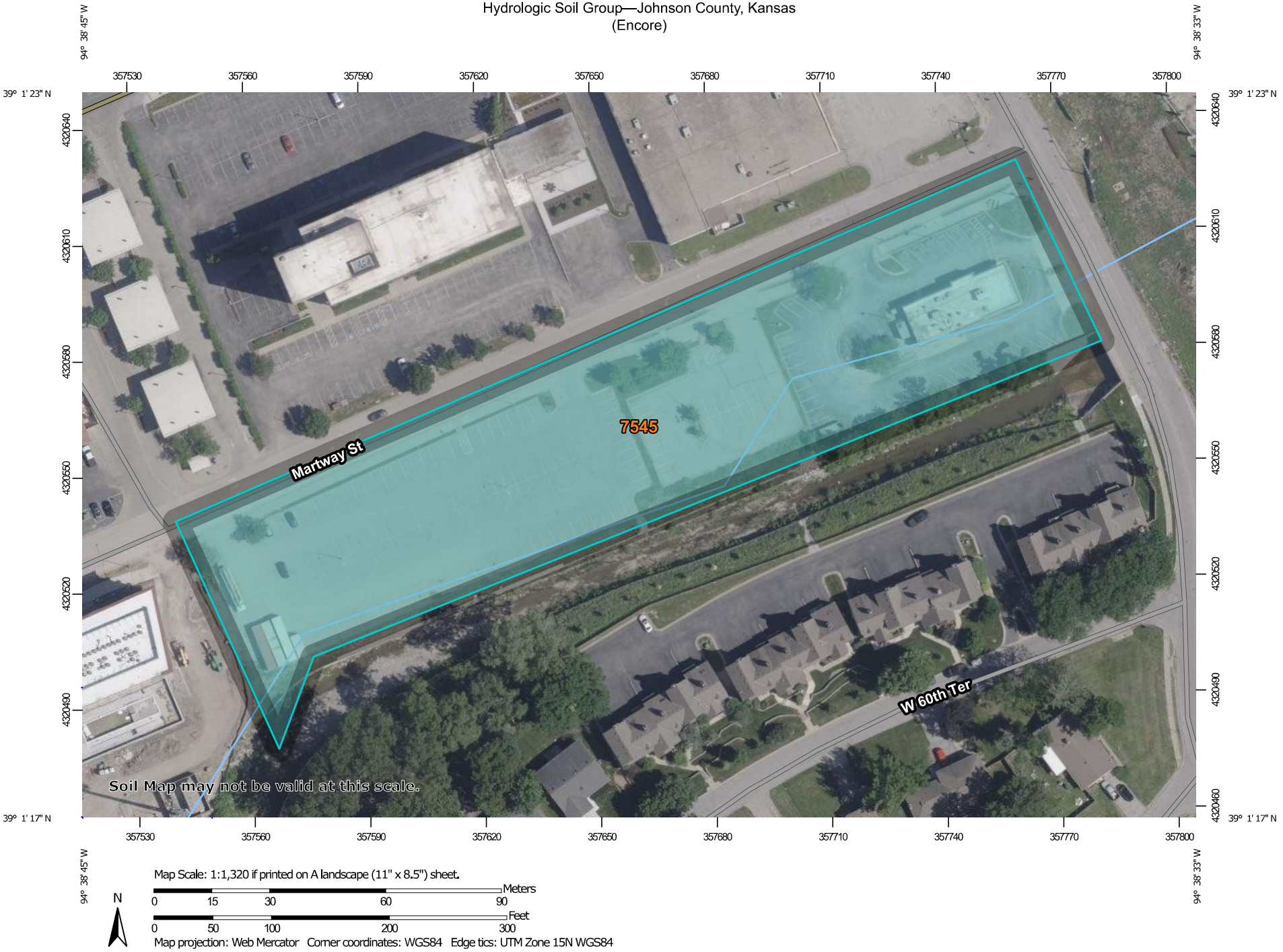
REVISED TO REFLECT LOMR EFFECTIVE: September 14, 2022

VERSION NUMBER
2.1.3.0

MAP NUMBER
20091C0024G

MAP REVISED
AUGUST 3, 2009

Hydrologic Soil Group—Johnson County, Kansas
(Encore)



MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:24,000.

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: Johnson County, Kansas
Survey Area Data: Version 23, Sep 5, 2024

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

Date(s) aerial images were photographed: Mar 1, 2024—Jul 1, 2024

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
7545	Sharpsburg-Urban land complex, 4 to 8 percent slopes	C	2.9	100.0%
Totals for Area of Interest			**2.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


N
Johnson Dr
Martway St
60th Ter
Rock Creek Ln
Roeland Dr
Shawnee Mission Pkwy
Shawnee Mission Pkwy
56
169
60th St
0
100
200ft
©2025 Johnson Co. AIMS - aims.jocogov.org

Appendix C
Hydrology and Hydraulics

NOAA Atlas 14, Volume 8, Version 2
Location name: Mission, Kansas, USA*
Latitude: 39.0223°, Longitude: -94.6448°
Elevation: 930 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.401** (0.321-0.509)	**0.471** (0.376-0.597)	**0.588** (0.469-0.747)	**0.689** (0.546-0.877)	**0.832** (0.639-1.08)	**0.946** (0.710-1.24)	**1.06** (0.772-1.41)	**1.19** (0.827-1.60)	**1.35** (0.908-1.86)	**1.48** (0.970-2.05)
10-min	**0.587** (0.470-0.745)	**0.689** (0.551-0.875)	**0.861** (0.686-1.09)	**1.01** (0.799-1.28)	**1.22** (0.936-1.59)	**1.38** (1.04-1.82)	**1.56** (1.13-2.07)	**1.74** (1.21-2.34)	**1.98** (1.33-2.72)	**2.17** (1.42-3.00)
15-min	**0.716** (0.573-0.908)	**0.841** (0.672-1.07)	**1.05** (0.837-1.34)	**1.23** (0.974-1.57)	**1.48** (1.14-1.94)	**1.69** (1.27-2.22)	**1.90** (1.38-2.52)	**2.12** (1.48-2.86)	**2.42** (1.62-3.31)	**2.65** (1.73-3.66)
30-min	**1.01** (0.807-1.28)	**1.18** (0.948-1.50)	**1.48** (1.18-1.89)	**1.74** (1.38-2.22)	**2.11** (1.62-2.75)	**2.40** (1.80-3.15)	**2.70** (1.96-3.59)	**3.01** (2.10-4.07)	**3.44** (2.31-4.72)	**3.78** (2.47-5.22)
60-min	**1.32** (1.06-1.68)	**1.56** (1.25-1.98)	**1.97** (1.57-2.50)	**2.32** (1.84-2.95)	**2.82** (2.18-3.69)	**3.23** (2.43-4.25)	**3.66** (2.66-4.88)	**4.11** (2.87-5.55)	**4.72** (3.18-6.49)	**5.21** (3.41-7.19)
2-hr	**1.64** (1.32-2.06)	**1.94** (1.56-2.44)	**2.45** (1.96-3.09)	**2.90** (2.31-3.66)	**3.54** (2.75-4.60)	**4.07** (3.08-5.31)	**4.62** (3.38-6.11)	**5.20** (3.66-6.98)	**6.01** (4.07-8.19)	**6.64** (4.38-9.10)
3-hr	**1.85** (1.50-2.32)	**2.19** (1.77-2.75)	**2.78** (2.24-3.49)	**3.30** (2.64-4.15)	**4.06** (3.17-5.25)	**4.68** (3.56-6.08)	**5.33** (3.92-7.02)	**6.02** (4.26-8.05)	**6.98** (4.75-9.48)	**7.74** (5.12-10.6)
6-hr	**2.23** (1.82-2.77)	**2.66** (2.16-3.30)	**3.39** (2.75-4.22)	**4.04** (3.26-5.04)	**5.00** (3.92-6.41)	**5.77** (4.42-7.45)	**6.59** (4.88-8.62)	**7.46** (5.31-9.90)	**8.67** (5.94-11.7)	**9.63** (6.42-13.0)
12-hr	**2.63** (2.16-3.24)	**3.15** (2.58-3.88)	**4.03** (3.29-4.97)	**4.81** (3.90-5.95)	**5.94** (4.69-7.55)	**6.86** (5.29-8.77)	**7.82** (5.84-10.1)	**8.84** (6.34-11.6)	**10.3** (7.08-13.7)	**11.4** (7.64-15.3)
24-hr	**3.08** (2.54-3.76)	**3.66** (3.01-4.46)	**4.64** (3.81-5.68)	**5.50** (4.50-6.75)	**6.76** (5.38-8.52)	**7.78** (6.04-9.86)	**8.85** (6.65-11.4)	**9.98** (7.21-13.0)	**11.5** (8.04-15.3)	**12.8** (8.66-17.0)
2-day	**3.61** (3.00-4.37)	**4.19** (3.48-5.07)	**5.19** (4.30-6.30)	**6.08** (5.00-7.39)	**7.38** (5.92-9.24)	**8.45** (6.62-10.6)	**9.57** (7.26-12.2)	**10.8** (7.85-14.0)	**12.4** (8.73-16.4)	**13.8** (9.40-18.2)
3-day	**3.97** (3.31-4.78)	**4.54** (3.79-5.47)	**5.54** (4.61-6.69)	**6.43** (5.32-7.78)	**7.74** (6.24-9.64)	**8.82** (6.94-11.0)	**9.95** (7.58-12.6)	**11.2** (8.17-14.4)	**12.9** (9.07-16.8)	**14.2** (9.75-18.7)
4-day	**4.26** (3.57-5.12)	**4.84** (4.05-5.82)	**5.85** (4.87-7.03)	**6.74** (5.59-8.13)	**8.05** (6.50-9.97)	**9.12** (7.20-11.4)	**10.3** (7.83-13.0)	**11.5** (8.42-14.7)	**13.1** (9.30-17.2)	**14.5** (9.97-19.0)
7-day	**5.02** (4.23-5.98)	**5.64** (4.74-6.73)	**6.70** (5.62-8.00)	**7.62** (6.35-9.12)	**8.94** (7.26-11.0)	**10.0** (7.94-12.4)	**11.1** (8.54-13.9)	**12.3** (9.08-15.7)	**13.9** (9.90-18.0)	**15.2** (10.5-19.8)
10-day	**5.69** (4.80-6.75)	**6.38** (5.38-7.57)	**7.54** (6.34-8.96)	**8.52** (7.13-10.2)	**9.92** (8.06-12.1)	**11.0** (8.77-13.5)	**12.2** (9.36-15.1)	**13.3** (9.88-16.9)	**14.9** (10.7-19.2)	**16.2** (11.3-21.0)
20-day	**7.59** (6.46-8.93)	**8.54** (7.26-10.1)	**10.1** (8.56-11.9)	**11.4** (9.59-13.4)	**13.1** (10.7-15.8)	**14.5** (11.6-17.5)	**15.8** (12.2-19.4)	**17.1** (12.7-21.4)	**18.9** (13.5-24.0)	**20.2** (14.2-26.0)
30-day	**9.19** (7.85-10.8)	**10.4** (8.84-12.1)	**12.2** (10.4-14.3)	**13.7** (11.6-16.1)	**15.7** (12.9-18.8)	**17.3** (13.8-20.8)	**18.7** (14.5-22.9)	**20.2** (15.1-25.1)	**22.0** (15.9-27.9)	**23.4** (16.5-30.0)
45-day	**11.2** (9.65-13.1)	**12.6** (10.8-14.7)	**14.8** (12.7-17.3)	**16.6** (14.1-19.4)	**18.9** (15.5-22.3)	**20.5** (16.5-24.5)	**22.1** (17.2-26.9)	**23.7** (17.7-29.2)	**25.6** (18.5-32.1)	**26.9** (19.1-34.3)
60-day	**13.0** (11.2-15.1)	**14.6** (12.5-16.9)	**17.0** (14.6-19.8)	**18.9** (16.1-22.0)	**21.4** (17.5-25.1)	**23.1** (18.6-27.5)	**24.7** (19.3-29.9)	**26.3** (19.8-32.3)	**28.2** (20.4-35.2)	**29.4** (20.9-37.4)

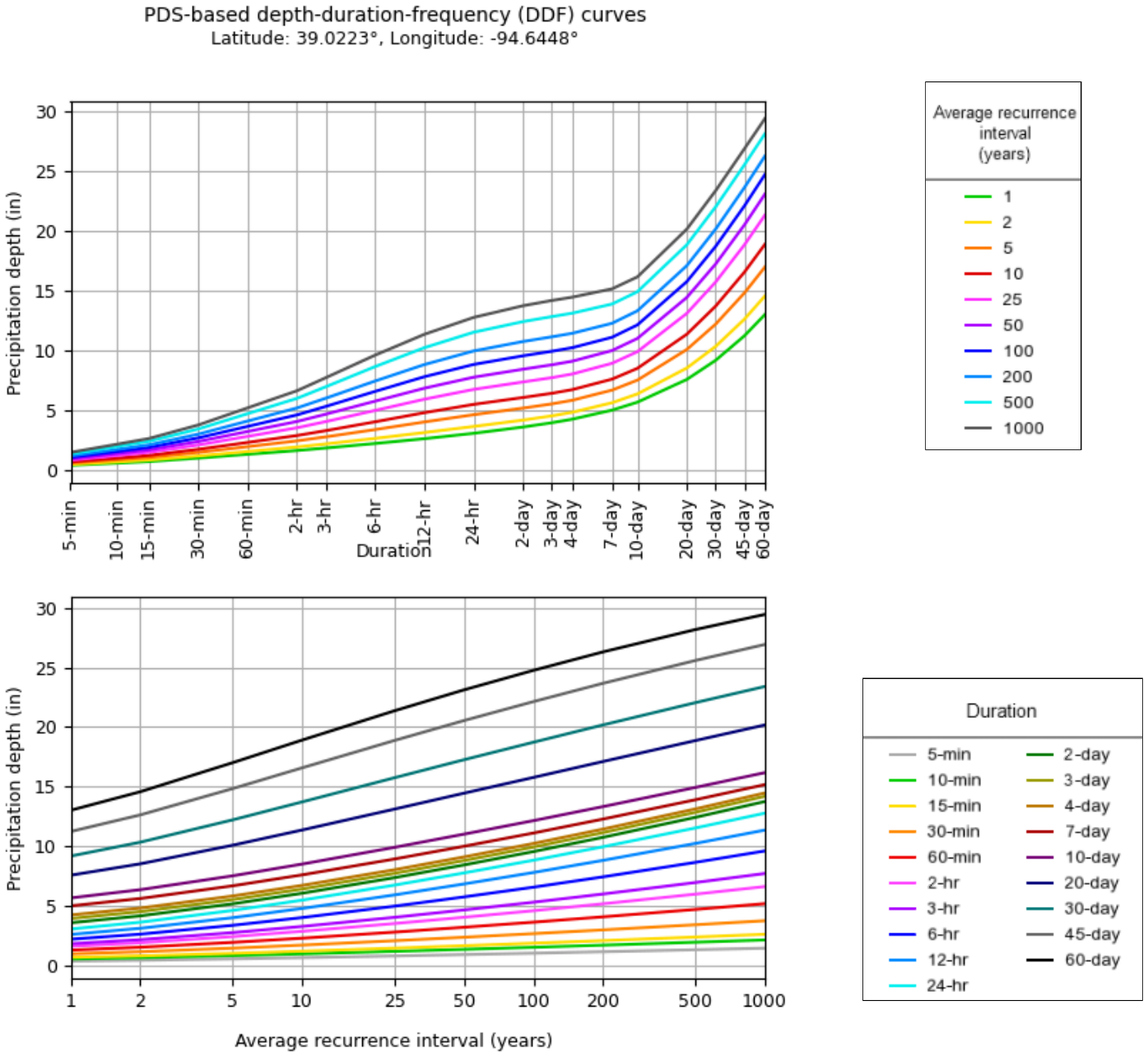
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



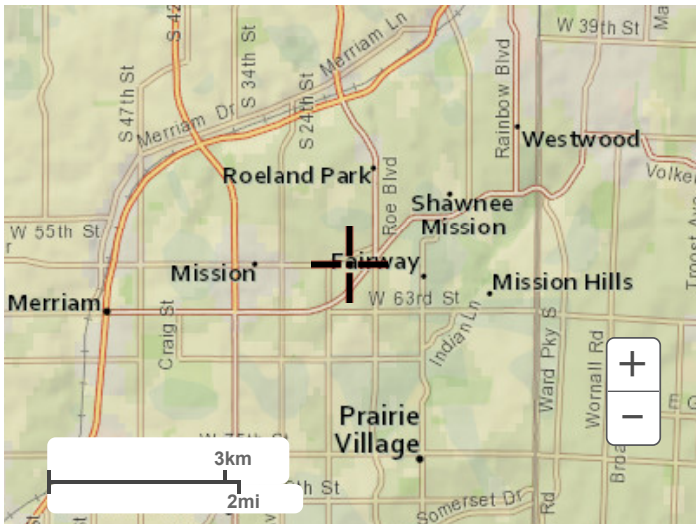
NOAA Atlas 14, Volume 8, Version 2

Created (GMT): Wed Feb 19 00:48:04 2025

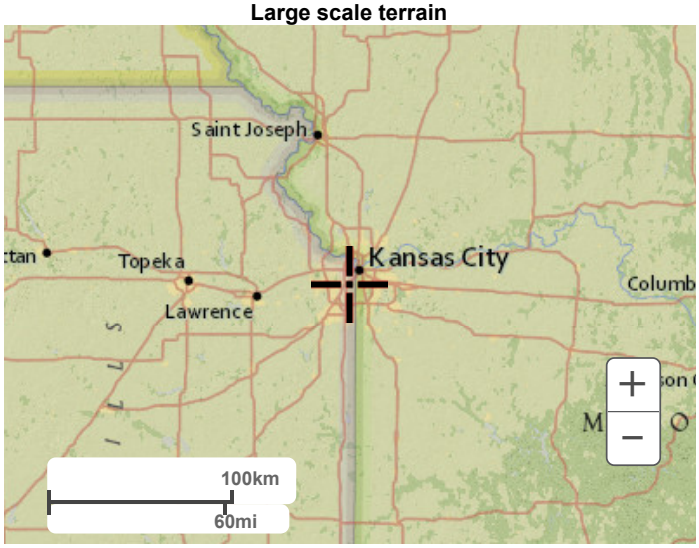
Back to Top

Maps & aerials

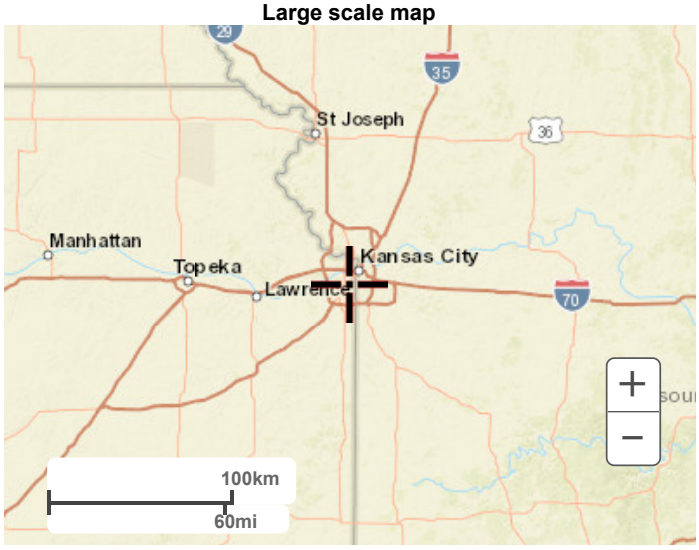
Small scale terrain



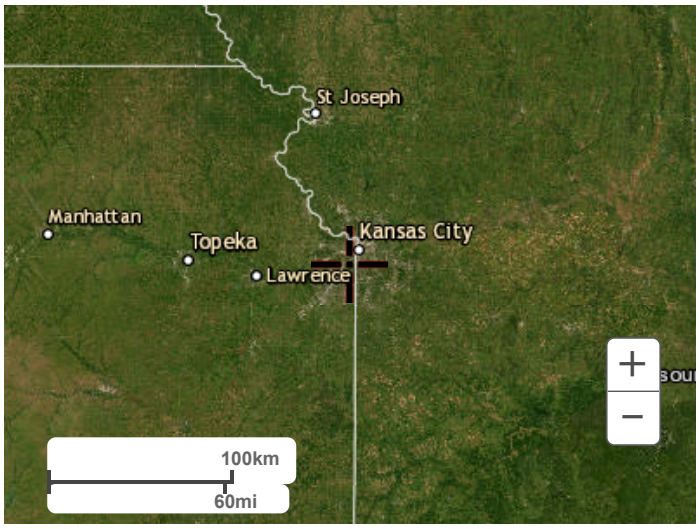
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

TABLE 4.1
Common Cover Types and Curve Numbers

How To Use This Table:

1. This table presents the cover types that a site planner is most likely to encounter, but is not all-encompassing. See TR-55 for additional information.
2. Site planners may substitute curve numbers from APWA 5602.3 or other local regulations, if applicable, to be consistent with hydrology calculations.
3. "Undeveloped" cover types may be used on portions of developed sites where preexisting cover is preserved and protected from disturbance.
4. Postdevelopment HSG is assumed to be one group higher in runoff than predevelopment, unless soil treatment plan is provided to document otherwise. See Appendix A for soil preservation guidance.

UNDEVELOPED

Cover Type	Condition	CN by Hydrologic Soil Group (HSG) B	C	D
Fallow, bare soil		86	91	94
Fallow, crop residue	Poor	85	90	93
Fallow, crop residue	Good	83	88	90
Straight row crops	Good	78	85	89
Contoured crops	Good	75	82	86
Contoured and terraced crops	Good	71	78	81
Pasture	Poor	79	86	89
Pasture	Fair	69	79	84
Pasture	Good	61	74	80
Woods-grass	Poor	67	77	83
Woods-grass	Fair	65	76	82
Woods-grass	Good	55	70	77
Woods	Poor	66	77	83
Woods	Fair	60	73	79
Woods	Good	55	70	77
Meadow		58	71	78
Brush-weeds-grass	Poor	67	77	83
Brush-weeds-grass	Fair	56	70	77
Brush-weeds-grass	Good	48	65	73

DEVELOPED

Existing Site

Proposed Site

Cover Type	CN by HSG B	C	D
Parking lots, roofs, streets with sewer, water, etc.	98	98	98
Commercial, business	92	94	95
Streets: paved, open ditch	89	92	93
Industrial (or office park)	88	91	93
Newly graded areas	86	91	94
Streets: gravel	85	89	91
Streets: dirt	82	87	89
Residential, 1/8-acre	85	90	92
Residential, 1/4-acre	75	83	87
Residential, 1/3-acre	72	81	86
Residential, 1/2-acre	70	80	85
Residential, 1-acre	68	79	84
Residential, 2-acre	65	77	82
Open space (turf), poor	79	86	89
Open space (turf), fair	69	79	84
Open space (turf), good	61	74	80
Native grass	58	71	78
Native grass, shrubs and forbs (formal plantings)	56	70	77
Native grass, shrubs and forbs (informal plantings)	48	65	73

Source: U.S. Department of Agriculture, Natural Resource Conservation Service Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55; 1986)

Appendix D
Existing Conditions Analysis

Autodesk® Storm and Sanitary Analysis 2024 - Version 13.6.323 (Build 0)

****
Project Description
****
File Name ..... 25-0108 Existing Drainage.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, wetted area
Starting Date FEB-19-2025 00:00:00
Ending Date FEB-20-2025 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 4
Number of nodes 3
Number of links 1

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min

Existing 1-Yr, 24-hr Storm Event

Rain Gage-01	1-YR	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
EX1	1.11	484.00
EX2	0.17	484.00
EX3	0.54	484.00
EX4	0.72	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Ex_Martway_Inlet	JUNCTION	920.85	927.10	0.00	
Ex_Martway_St_Outfall	OUTFALL	918.00	921.00	0.00	
Ex_Rock_Creek_Outfall	OUTFALL	919.00	919.00	0.00	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Ex_Martway_Pipe	Ex_Martway_Inlet	Ex_Martway_St_Outfall	CONDUIT	5.0	57.0000	0.0150

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Ex_Martway_Pipe	CIRCULAR	3.00	3.00	1	7.07	0.75	436.42

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	0.660	3.118
Surface Runoff	0.051	0.242
Continuity Error (%)	-0.000	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.512	0.167
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	-0.000	

****
Composite Curve Number Computations Report
****

Subbasin EX1

Soil/Surface Description	Area (acres)	Soil Group	CN

-	1.11	-	94.00
Composite Area & Weighted CN	1.11		94.00

Subbasin EX2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.12	-	94.00
Composite Area & Weighted CN	0.12		94.00

Subbasin EX3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.54	-	94.00
Composite Area & Weighted CN	0.54		94.00

Subbasin EX4

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.72	-	94.00
Composite Area & Weighted CN	0.72		94.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin EX1

User-Defined TOC override (minutes): 5.00

Subbasin EX2

User-Defined TOC override (minutes): 5.00

Subbasin EX3

User-Defined TOC override (minutes): 5.00

Subbasin EX4

User-Defined TOC override (minutes): 5.00

****
Subbasin Runoff Summary
****

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
EX1	3.08	2.43	4.07	94.000	0	00:05:00
EX2	3.08	2.42	0.63	94.000	0	00:05:00
EX3	3.08	2.43	1.97	94.000	0	00:05:00
EX4	3.08	2.43	2.66	94.000	0	00:05:00

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Flooded Time minutes	Retention Time hh:mm:ss
Ex_Martway_Inlet	0.02	0.17	921.02	0	12:00	0	0	0:00:00
Ex_Martway_St_Outfall	0.02	0.17	918.17	0	12:00	0	0	0:00:00
Ex_Rock_Creek_Outfall	0.00	0.00	919.00	0	00:00	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm

Ex_Martway_Inlet	JUNCTION	2.61	2.61	0	12:00	0.00
Ex_Martway_St_Outfall	OUTFALL	0.00	2.61	0	12:00	0.00
Ex_Rock_Creek_Outfall	OUTFALL	6.72	6.72	0	12:00	0.00

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Ex_Martway_St_Outfall	82.89	0.09	2.61
Ex_Rock_Creek_Outfall	83.72	0.22	6.72
System	83.30	0.31	9.32

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time	Reported Condition minutes Surcharged

Ex_Martway_Pipe	CONDUIT	0	12:00	16.84	1.00	2.61	436.42	0.01	0.06
0 Calculated									

****
Highest Flow Instability Indexes
****
All links are stable.

Analysis began on: Thu Sep 18 16:48:10 2025
Analysis ended on: Thu Sep 18 16:48:11 2025
Total elapsed time: 00:00:01

Existing 10-Yr, 24-hr Storm Event

Autodesk® Storm and Sanitary Analysis 2024 - Version 13.6.323 (Build 0)

****
Project Description
****
File Name ..... 25-0108 Existing Drainage.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, wetted area
Starting Date FEB-19-2025 00:00:00
Ending Date FEB-20-2025 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 4
Number of nodes 3
Number of links 1

****
Raingage Summary
****

Existing 10-Yr, 24-hr Storm Event

Gage ID	Data Source	Data Type	Recording Interval min
Rain Gage-01	10-YR	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
EX1	1.11	484.00
EX2	0.17	484.00
EX3	0.54	484.00
EX4	0.72	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Ex_Martway_Inlet	JUNCTION	920.85	927.10	0.00	
Ex_Martway_St_Outfall	OUTFALL	918.00	921.00	0.00	
Ex_Rock_Creek_Outfall	OUTFALL	919.00	919.00	0.00	

****
Link Summary
****

Existing 10-Yr, 24-hr Storm Event

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Ex_Martway_Pipe	Ex_Martway_Inlet	Ex_Martway_St_Outfall	CONDUIT	5.0	57.0000	0.0150

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Ex_Martway_Pipe	CIRCULAR	3.00	3.00	1	7.07	0.75	436.42

********** Runoff Quantity Continuity **********	Volume acre-ft	Depth inches
Total Precipitation	1.179	5.568
Surface Runoff	0.101	0.479
Continuity Error (%)	-0.000	

********** Flow Routing Continuity **********	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	1.013	0.330
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	-0.000	

Existing 10-Yr, 24-hr Storm Event

****
Composite Curve Number Computations Report
****

Subbasin EX1

Soil/Surface Description	Area (acres)	Soil Group	CN
-	1.11	-	94.00
Composite Area & Weighted CN	1.11		94.00

Subbasin EX2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.12	-	94.00
Composite Area & Weighted CN	0.12		94.00

Subbasin EX3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.54	-	94.00
Composite Area & Weighted CN	0.54		94.00

Subbasin EX4

	Area	Soil

Existing 10-Yr, 24-hr Storm Event

Soil/Surface Description	(acres)	Group	CN
-	0.72	-	94.00
Composite Area & Weighted CN	0.72		94.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin EX1

User-Defined TOC override (minutes): 5.00

Subbasin EX2

User-Defined TOC override (minutes): 5.00

Subbasin EX3

User-Defined TOC override (minutes): 5.00

Subbasin EX4

User-Defined TOC override (minutes): 5.00

****
Subbasin Runoff Summary
****

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
EX1	5.50	4.80	7.72	94.000	0	00:05:00
EX2	5.50	4.80	1.21	94.000	0	00:05:00
EX3	5.50	4.80	3.75	94.000	0	00:05:00
EX4	5.50	4.80	5.04	94.000	0	00:05:00

****
Node Depth Summary
****

Existing 10-Yr, 24-hr Storm Event

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Ex_Martway_Inlet	0.03	0.22	921.07	0	12:00	0	0	0:00:00
Ex_Martway_St_Outfall	0.03	0.22	918.22	0	12:00	0	0	0:00:00
Ex_Rock_Creek_Outfall	0.00	0.00	919.00	0	00:00	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Ex_Martway_Inlet	JUNCTION	4.95	4.95	0	12:00	0.00		
Ex_Martway_St_Outfall	OUTFALL	0.00	4.95	0	12:00	0.00		
Ex_Rock_Creek_Outfall	OUTFALL	12.77	12.77	0	12:00	0.00		

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs

Ex_Martway_St_Outfall	90.00	0.16	4.95
Ex_Rock_Creek_Outfall	90.32	0.41	12.77
System	90.16	0.57	17.72

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence	Maximum Velocity Attained	Length Factor	Peak Flow during Analysis	Design Flow Capacity	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time	Reported Condition
		days hh:mm	ft/sec		cfs	cfs				minutes Surcharged
Ex_Martway_Pipe	CONDUIT	0 12:00	20.55	1.00	4.95	436.42	0.01	0.07	0	Calculated

****
Highest Flow Instability Indexes
****
All links are stable.

Analysis began on: Thu Sep 18 16:48:36 2025

Existing 10-Yr, 24-hr Storm Event

Analysis ended on: Thu Sep 18 16:48:37 2025
Total elapsed time: 00:00:01

Autodesk® Storm and Sanitary Analysis 2024 - Version 13.6.323 (Build 0)

****
Project Description
****
File Name ..... 25-0108 Existing Drainage.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, wetted area
Starting Date FEB-19-2025 00:00:00
Ending Date FEB-20-2025 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 4
Number of nodes 3
Number of links 1

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min

Existing 100-Yr, 24-hr Storm Event

Rain Gage-01	100-YR	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
EX1	1.11	484.00
EX2	0.17	484.00
EX3	0.54	484.00
EX4	0.72	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Ex_Martway_Inlet	JUNCTION	920.85	927.10	0.00	
Ex_Martway_St_Outfall	OUTFALL	918.00	921.00	0.00	
Ex_Rock_Creek_Outfall	OUTFALL	919.00	919.00	0.00	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Ex_Martway_Pipe	Ex_Martway_Inlet	Ex_Martway_St_Outfall	CONDUIT	5.0	57.0000	0.0150

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Ex_Martway_Pipe	CIRCULAR	3.00	3.00	1	7.07	0.75	436.42

********** Runoff Quantity Continuity **********	Volume acre-ft	Depth inches
Total Precipitation	1.896	8.959
Surface Runoff	0.172	0.811
Continuity Error (%)	-0.000	

********** Flow Routing Continuity **********	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	1.715	0.559
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Composite Curve Number Computations Report
****

Subbasin EX1

Soil/Surface Description	Area (acres)	Soil Group	CN

-	1.11	-	94.00
Composite Area & Weighted CN	1.11		94.00

Subbasin EX2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.12	-	94.00
Composite Area & Weighted CN	0.12		94.00

Subbasin EX3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.54	-	94.00
Composite Area & Weighted CN	0.54		94.00

Subbasin EX4

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.72	-	94.00
Composite Area & Weighted CN	0.72		94.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin EX1

User-Defined TOC override (minutes): 5.00

Subbasin EX2

User-Defined TOC override (minutes): 5.00

Subbasin EX3

User-Defined TOC override (minutes): 5.00

Subbasin EX4

User-Defined TOC override (minutes): 5.00

****
Subbasin Runoff Summary
****

Existing 100-Yr, 24-hr Storm Event

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
EX1	8.85	8.13	12.70	94.000	0	00:05:00
EX2	8.85	8.13	1.98	94.000	0	00:05:00
EX3	8.85	8.13	6.17	94.000	0	00:05:00
EX4	8.85	8.13	8.30	94.000	0	00:05:00

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Flooded Time minutes	Retention Time hh:mm:ss
Ex_Martway_Inlet	0.04	0.29	921.14	0	12:00	0	0	0:00:00
Ex_Martway_St_Outfall	0.04	0.28	918.28	0	12:00	0	0	0:00:00
Ex_Rock_Creek_Outfall	0.00	0.00	919.00	0	00:00	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm

Existing 100-Yr, 24-hr Storm Event

Ex_Martway_Inlet	JUNCTION	8.15	8.15	0	12:00	0.00
Ex_Martway_St_Outfall	OUTFALL	0.00	8.20	0	12:00	0.00
Ex_Rock_Creek_Outfall	OUTFALL	21.00	21.00	0	12:00	0.00

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Ex_Martway_St_Outfall	93.47	0.26	8.20
Ex_Rock_Creek_Outfall	93.72	0.66	21.00
System	93.60	0.92	29.19

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time	Reported Condition minutes Surcharged

Ex_Martway_Pipe	CONDUIT	0	12:00	23.83	1.00	8.20	436.42	0.02	0.10
0 Calculated									

****
Highest Flow Instability Indexes
****
All links are stable.

Analysis began on: Thu Sep 18 16:47:27 2025
Analysis ended on: Thu Sep 18 16:47:28 2025
Total elapsed time: 00:00:01

Appendix E
Proposed Conditions Analysis

Autodesk® Storm and Sanitary Analysis 2024 - Version 13.6.323 (Build 0)

****
Project Description
****
File Name ..... 25-0108 Proposed Drainage.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, wetted area
Starting Date FEB-19-2025 00:00:00
Ending Date FEB-20-2025 00:00:00
Report Time Step 00:02:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 3
Number of nodes 3
Number of links 1

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min

Proposed 1-Yr, 24-hr Storm Event

Rain Gage-01	1-YR		CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
PR1	0.66	484.00
PR2	0.62	484.00
PR3	1.27	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Jun-01	JUNCTION	922.32	930.00	0.00	
Martway_St_Outfall	OUTFALL	928.00	928.00	0.00	
Rock_Creek_Outfall	OUTFALL	922.32	922.32	0.00	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Link-05	Jun-01	Rock_Creek_Outfall	DIRECT	29.9	0.0033	0.0150

****

Cross Section Summary

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Link-05	DUMMY	0.00	0.00	1	0.00	0.00	0.00

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	0.654	3.078
Surface Runoff	0.066	0.309
Continuity Error (%)	-0.001	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.525	0.171
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

Composite Curve Number Computations Report

Subbasin PR1

Soil/Surface Description	Area (acres)	Soil Group	CN

-	0.66	-	95.00
Composite Area & Weighted CN	0.66		95.00

Subbasin PR2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.62	-	95.00
Composite Area & Weighted CN	0.62		95.00

Subbasin PR3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	1.27	-	94.00
Composite Area & Weighted CN	1.27		94.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Proposed 1-Yr, 24-hr Storm Event

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin PR1

User-Defined TOC override (minutes): 5.00

Subbasin PR2

User-Defined TOC override (minutes): 5.00

Subbasin PR3

User-Defined TOC override (minutes): 5.00

****
Subbasin Runoff Summary
****

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
PR1	3.08	2.53	2.49	95.000	0	00:05:00
PR2	3.08	2.53	2.34	95.000	0	00:05:00
PR3	3.08	2.43	4.65	94.000	0	00:05:00

****
Node Depth Summary
****

Proposed 1-Yr, 24-hr Storm Event

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Flooded Time minutes	Retention Time hh:mm:ss
Jun-01	0.00	0.00	922.32	0	00:00	0	0	0:00:00
Martway_St_Outfall	0.00	0.00	928.00	0	00:00	0	0	0:00:00
Rock_Creek_Outfall	0.00	0.00	922.32	0	00:00	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Jun-01	JUNCTION	6.84	6.84	0	11:58	0.00		
Martway_St_Outfall	OUTFALL	2.44	2.44	0	11:56	0.00		
Rock_Creek_Outfall	OUTFALL	0.00	6.84	0	11:58	0.00		

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Martway_St_Outfall	86.13	0.08	2.44
Rock_Creek_Outfall	85.99	0.23	6.84

System	86.06	0.31	9.28

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Reported Time Condition minutes Surcharged
Link-05	DIRECT	0 11:58			6.84				

****
Highest Flow Instability Indexes
****
All links are stable.

WARNING 004 : Minimum elevation drop used for Conduit Link-05.

Analysis began on: Thu Sep 18 16:42:38 2025
Analysis ended on: Thu Sep 18 16:42:39 2025
Total elapsed time: 00:00:01

Proposed 10-Yr, 24-hr Storm Event

Autodesk® Storm and Sanitary Analysis 2024 - Version 13.6.323 (Build 0)

****
Project Description
****
File Name ..... 25-0108 Proposed Drainage.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, wetted area
Starting Date FEB-19-2025 00:00:00
Ending Date FEB-20-2025 00:00:00
Report Time Step 00:02:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 3
Number of nodes 3
Number of links 1

****
Raingage Summary
****

Proposed 10-Yr, 24-hr Storm Event

Gage ID	Data Source	Data Type	Recording Interval min
Rain Gage-01	10-YR	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
PR1	0.66	484.00
PR2	0.62	484.00
PR3	1.27	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Jun-01	JUNCTION	922.32	930.00	0.00	
Martway_St_Outfall	OUTFALL	928.00	928.00	0.00	
Rock_Creek_Outfall	OUTFALL	922.32	922.32	0.00	

****
Link Summary
****

Link	From Node	To Node	Element	Length	Slope	Manning's

Proposed 10-Yr, 24-hr Storm Event

ID		Type	ft	%	Roughness
Link-05	Jun-01	Rock_Creek_OutfallDIRECT	29.9	0.0033	0.0150

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Link-05	DUMMY	0.00	0.00	1	0.00	0.00	0.00

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	1.168	5.496
Surface Runoff	0.129	0.606
Continuity Error (%)	-0.001	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	1.030	0.336
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****

Composite Curve Number Computations Report

****

Subbasin PR1

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.66	-	95.00
Composite Area & Weighted CN	0.66		95.00

Subbasin PR2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.62	-	95.00
Composite Area & Weighted CN	0.62		95.00

Subbasin PR3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	1.27	-	94.00
Composite Area & Weighted CN	1.27		94.00

****

SCS TR-55 Time of Concentration Computations Report

****

Proposed 10-Yr, 24-hr Storm Event

Sheet Flow Equation

$$Tc = (0.007 * ((n * Lf)^{0.8})) / ((P^{0.5}) * (Sf^{0.4}))$$

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin PR1

User-Defined TOC override (minutes): 5.00

Subbasin PR2

User-Defined TOC override (minutes): 5.00

Subbasin PR3

User-Defined TOC override (minutes): 5.00

****

Proposed 10-Yr, 24-hr Storm Event

Subbasin Runoff Summary

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
PR1	5.50	4.92	4.65	95.000	0	00:05:00
PR2	5.50	4.92	4.38	95.000	0	00:05:00
PR3	5.50	4.80	8.84	94.000	0	00:05:00

Node Depth Summary

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Flooded Time minutes	Retention Time hh:mm:ss
Jun-01	0.00	0.00	922.32	0	00:00	0	0	0:00:00
Martway_St_Outfall	0.00	0.00	928.00	0	00:00	0	0	0:00:00
Rock_Creek_Outfall	0.00	0.00	922.32	0	00:00	0	0	0:00:00

Node Flow Summary

Node	Element	Maximum	Peak	Time of	Maximum Time of Peak

Proposed 10-Yr, 24-hr Storm Event

ID	Type	Lateral Inflow cfs	Inflow cfs	Peak Inflow Occurrence days	Peak Inflow Occurrence hh:mm	Flooding Overflow cfs	Flooding Occurrence days	Flooding Occurrence hh:mm
Jun-01	JUNCTION	12.98	12.98	0	11:56	0.00		
Martway_St_Outfall	OUTFALL	4.56	4.56	0	11:56	0.00		
Rock_Creek_Outfall	OUTFALL	0.00	12.98	0	11:56	0.00		

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Martway_St_Outfall	91.82	0.15	4.56
Rock_Creek_Outfall	91.82	0.42	12.98
System	91.82	0.57	17.54

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow	Maximum Velocity	Length Factor	Peak Flow during	Design Flow	Ratio of Maximum	Ratio of Maximum Time	Reported Condition

```
                                        Proposed 10-Yr, 24-hr Storm Event
                                   Occurrence  Attained           Analysis    Capacity   /Design      Flow
Surcharged
                                   days hh:mm    ft/sec               cfs         cfs      Flow     Depth
minutes

-------------------------------------------------------------------------------------------------------------
--------------
  Link-05              DIRECT       0  11:56                       12.98


  ********************************
  Highest Flow Instability Indexes
  ********************************
  All links are stable.

  WARNING 004 : Minimum elevation drop used for Conduit Link-05.

  Analysis began on:  Thu Sep 18 16:42:14 2025
  Analysis ended on:  Thu Sep 18 16:42:15 2025
  Total elapsed time: 00:00:01
```

Proposed 100-Yr, 24-hr Storm Event

Autodesk® Storm and Sanitary Analysis 2024 - Version 13.6.323 (Build 0)

****
Project Description
****
File Name ..... 25-0108 Proposed Drainage.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Constant rate, wetted area
Starting Date FEB-19-2025 00:00:00
Ending Date FEB-20-2025 00:00:00
Report Time Step 00:02:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 3
Number of nodes 3
Number of links 1

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min
Rain Gage-01	100-YR	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin	Total Area	Peak Rate Factor

Proposed 100-Yr, 24-hr Storm Event

ID	acres	
PR1	0.66	484.00
PR2	0.62	484.00
PR3	1.27	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Jun-01	JUNCTION	922.32	930.00	0.00	
Martway_St_Outfall	OUTFALL	928.00	928.00	0.00	
Rock_Creek_Outfall	OUTFALL	922.32	922.32	0.00	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Link-05	Jun-01	Rock_Creek_Outfall	DIRECT	29.9	0.0033	0.0150

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Link-05	DUMMY	0.00	0.00	1	0.00	0.00	0.00

Proposed 100-Yr, 24-hr Storm Event

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	1.879	8.844
Surface Runoff	0.217	1.022
Continuity Error (%)	-0.001	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	1.736	0.566
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

Composite Curve Number Computations Report

Subbasin PR1

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.66	-	95.00
Composite Area & Weighted CN	0.66		95.00

Subbasin PR2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.62	-	95.00

Proposed 100-Yr, 24-hr Storm Event

Composite Area & Weighted CN	0.62	95.00

Subbasin PR3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	1.27	-	94.00
Composite Area & Weighted CN	1.27		94.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin PR1

User-Defined TOC override (minutes): 5.00

Subbasin PR2

User-Defined TOC override (minutes): 5.00

Subbasin PR3

User-Defined TOC override (minutes): 5.00

****
Subbasin Runoff Summary
****

Subbasin ID	Total Precip	Total Runoff	Peak Runoff	Weighted Curve	Time of Concentration

	Proposed 100-Yr, 24-hr Storm Event					
	in	in	cfs	Number	days	hh:mm:ss
PR1	8.85	8.25	7.60	95.000	0	00:05:00
PR2	8.85	8.25	7.16	95.000	0	00:05:00
PR3	8.85	8.13	14.54	94.000	0	00:05:00

****
Node Depth Summary
****

Node ID	Average Depth Attained	Maximum Depth Attained	Maximum HGL Attained	Time of Max Occurrence		Total Flooded Volume	Total Flooded Time	Retention Time
	ft	ft	ft	days	hh:mm	acre-in	minutes	hh:mm:ss
Jun-01	0.00	0.00	922.32	0	00:00	0	0	0:00:00
Martway_St_Outfall	0.00	0.00	928.00	0	00:00	0	0	0:00:00
Rock_Creek_Outfall	0.00	0.00	922.32	0	00:00	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow	Peak Inflow	Time of Peak Inflow Occurrence		Maximum Flooding Overflow	Time of Peak Flooding Occurrence	
		cfs	cfs	days	hh:mm	cfs	days	hh:mm

Jun-01	JUNCTION	21.31	21.31	0	11:56	0.00
Martway_St_Outfall	OUTFALL	7.48	7.48	0	11:56	0.00
Rock_Creek_Outfall	OUTFALL	0.00	21.31	0	11:56	0.00

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Martway_St_Outfall	94.74	0.24	7.48
Rock_Creek_Outfall	94.67	0.68	21.31
System	94.71	0.92	28.79

****
Link Flow Summary
****

Link ID	Element Type	Time of Maximum Occurrence days hh:mm	Maximum Peak Flow cfs	Length Velocity ft/sec	Peak Flow Factor	Design Flow cfs	Ratio of Maximum Flow /Design	Ratio of Reported Maximum Flow	Total Time during Analysis Surcharged minutes	Condition
Link-05	DIRECT	0 11:56	21.31							

****
Highest Flow Instability Indexes
****
All links are stable.

WARNING 004 : Minimum elevation drop used for Conduit Link-05.

Proposed 100-Yr, 24-hr Storm Event

Analysis began on: Thu Sep 18 16:39:29 2025
Analysis ended on: Thu Sep 18 16:39:31 2025
Total elapsed time: 00:00:02

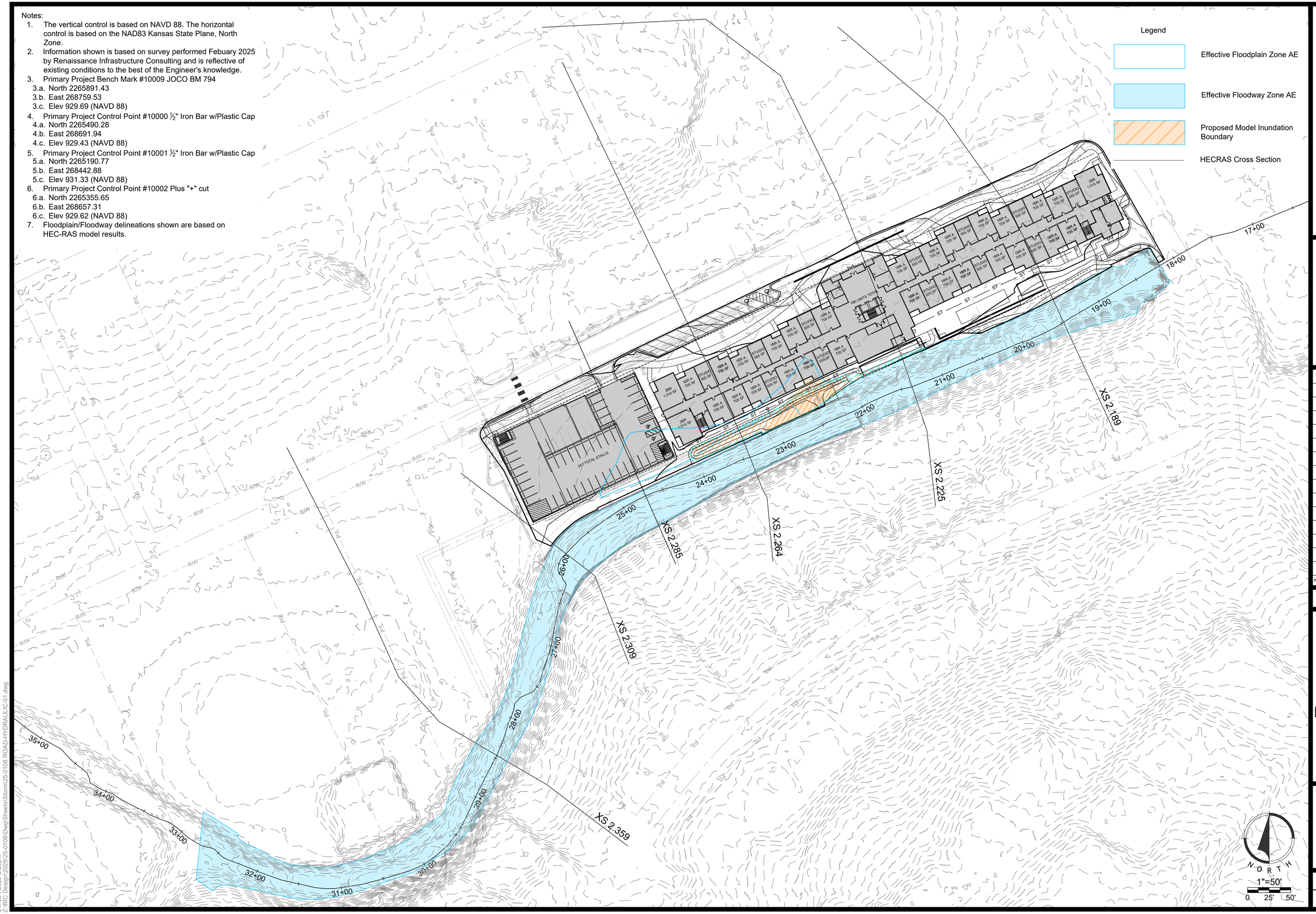
Appendix F
Floodplain Analysis

Notes:

1. The vertical control is based on NAVD 88. The horizontal control is based on the NAD83 Kansas State Plane, North Zone.
2. Information shown is based on survey performed Febuary 2025 by Renaissance Infrastructure Consulting and is reflective of existing conditions to the best of the Engineer's knowledge.
3. Primary Project Bench Mark #10009 JOCO BM 794
   - 3.a. North 2265891.43
   - 3.b. East 268759.53
   - 3.c. Elev 929.69 (NAVD 88)
4. Primary Project Control Point #10000 ½" Iron Bar w/Plastic Cap
   - 4.a. North 2265490.28
   - 4.b. East 268691.94
   - 4.c. Elev 929.43 (NAVD 88)
5. Primary Project Control Point #10001 ½" Iron Bar w/Plastic Cap
   - 5.a. North 2265190.77
   - 5.b. East 268442.88
   - 5.c. Elev 931.33 (NAVD 88)
6. Primary Project Control Point #10002 Plus "+" cut
   - 6.a. North 2265355.65
   - 6.b. East 268657.31
   - 6.c. Elev 929.62 (NAVD 88)
7. Floodplain/Floodway delineations shown are based on HEC-RAS model results.

Legend

- Effective Floodplain Zone AE
- Effective Floodway Zone AE
- Proposed Model Inundation Boundary
- HECRAS Cross Section



Flood Plan

25-0108
Mission Bowl Apartments
Mission, Johnson County, Kansas

Hydraulic Work Map

NO.	DATE	REVISION

DRAWN BY	CHECKED BY
DAD	AS

Renaissance Infrastructure Consulting
5015 CANAL STREET, SUITE 100
RAVENSWOOD, MISSOURI 64150
816.800.0950
WWW.RIC-CONSULT.COM

MO Certificate of Authority: E-2010033630

Sheet 2 of 2

dschneider
Oct 07, 2025 2:29pm
Z:\RIC Design\2025\25-0108\Dwg\Sheets\Storm\25-0108 ROAD-HYDRAULIC-01.dwg

River Sta	Profile	Plan	Q Total (cfs)	W.S. Elev (ft)	Difference
2.654	100	Effective Results	2773	942.6	0.00
2.654	100	Prop Results	2773	942.6	
2.588	100	Effective Results	3116	941.17	0.00
2.588	100	DE Results	3116	941.17	
2.586	100	Effective Results	3116	940.96	0.00
2.586	100	Prop Results	3116	940.96	
2.550 Nall Ave and Mar	0	Effective Results	Culvert	0	0.00
2.550 Nall Ave and Mar	0	Prop Results	Culvert	0	
2.504	100	Effective Results	3116	936.21	0.00
2.504	100	Prop Results	3116	936.21	
2.502	100	Effective Results	3116	936.28	0.00
2.502	100	Prop Results	3116	936.28	
2.474	100	Effective Results	3116	935.67	0.00
2.474	100	Prop Results	3116	935.67	
2.470	100	Effective Results	3116	935.44	0.00
2.470	100	Prop Results	3116	935.44	
2.452	100	Effective Results	3116	934.17	0.00
2.452	100	Prop Results	3116	934.17	
2.427	100	Effective Results	3116	934.67	0.00
2.427	100	Prop Results	3116	934.67	
2.412	100	Effective Results	3116	934.21	0.00
2.412	100	Prop Results	3116	934.21	
2.410	100	Effective Results	3116	934.4	0.00
2.410	100	Prop Results	3116	934.4	
2.397	100	Effective Results	4231	933.01	0.00
2.397	100	Prop Results	4231	933.01	
2.378	100	Effective Results	4231	930.38	0.00
2.378	100	Prop Results	4231	930.38	
2.359	100	Effective Results	4231	929.14	0.00
2.359	100	Prop Results	4231	929.14	
2.309	100	Effective Results	4231	929.97	-0.03
2.309	100	Prop Results	4231	929.94	
2.285	100	Effective Results	4231	929.45	-0.04
2.285	100	Prop Results	4231	929.41	
2.264	100	Effective Results	4475	927.91	0.00
2.264	100	Prop Results	4475	927.91	

Max Increase	**0.00**
Max Decrease	**-0.04**

River Sta	Profile	Plan	Q Total (cfs)	W.S. Elev (ft)	Difference
2.225	100	Effective Results	4475	927.76	0.00
2.225	100	Prop Results	4475	927.76	
2.189	100	Effective Results	4475	926.08	0.00
2.189	100	Prop Results	4475	926.08	
2.171	100	Effective Results	4475	926.05	0.00
2.171	100	Prop Results	4475	926.05	
2.159 Roeland Dr	0	Effective Results	Culvert	0	0.00
2.159 Roeland Dr	0	Prop Results	Culvert	0	
2.001	100	Effective Results	4475	923.84	0.00
2.001	100	Prop Results	4475	923.84	
1.996	100	Effective Results	4475	924.16	0.00
1.996	100	Prop Results	4475	924.16	
1.939	100	Effective Results	4475	923.02	0.00
1.939	100	Prop Results	4475	923.02	
1.843	100	Effective Results	4475	920.72	0.00
1.843	100	Prop Results	4475	920.72	
1.760	100	Effective Results	4475	919.33	0.00
1.760	100	Prop Results	4475	919.33	
1.759	100	Effective Results	5434	920.18	0.00
1.759	100	Prop Results	5434	920.18	
1.751	100	Effective Results	5434	920.19	0.00
1.751	100	Prop Results	5434	920.19	
1.747	100	Effective Results	5434	920.18	0.00
1.747	100	Prop Results	5434	920.18	
1.74 Ramp to Roe Ave	0	Effective Results	Culvert	0	0.00
1.74 Ramp to Roe Ave	0	Prop Results	Culvert	0	
1.733	100	Effective Results	5434	916.06	0.00
1.733	100	Prop Results	5434	916.06	
1.710	0	Effective Results	Bridge	0	0.00
1.710	0	Prop Results	Bridge	0	
1.697	100	Effective Results	5434	913.82	0.00
1.697	100	Prop Results	5434	913.82	
1.676	100	Effective Results	5434	914.23	0.00
1.676	100	Prop Results	5434	914.23	

Existing Compensatory Storage Calculation

POND VOLUME CALCULATIONS - STAGE / STORAGE

Pond Volume = **Prismoidal Formula**

Volume Equation = (A1+A2+SQRT(A1*A2)*D/3

Stage / Storage Input Table

ELEVATION ft	DEPTH (D) ft	AREA (A1) ft^2	WEIGHTED AVG AREA (A2) ft^2	INCREMENTAL VOLUME ft^3	CUMMULATIVE VOLUME ft^3
927.0		147			0
927.5	0.5	1,094	621	274	274
927.9	0.4	8,746	4,920	1,724	1,998
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME

Top of Pond

927.9	0.9	**TOTAL VOLUME**	**1,998 cf**	73 cy

Proposed Compensatory Storage Calculation

POND VOLUME CALCULATIONS - STAGE / STORAGE

Pond Volume = **Prismoidal Formula**

Volume Equation = (A1+A2+SQRT(A1*A2)*D/3

Stage / Storage Input Table

ELEVATION ft	DEPTH (D) ft	AREA (A1) ft^2	WEIGHTED AVG AREA (A2) ft^2	INCREMENTAL VOLUME ft^3	CUMMULATIVE VOLUME ft^3
926.0		304			0
927.0	1.0	2,260	1,282	1,131	1,131
927.8	0.8	3,156	2,708	2,156	3,287
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME
	DELETE ME		DELETE ME	DELETE ME	DELETE ME

Top of Pond

927.8	1.8	**TOTAL VOLUME**	**3,287 cf**	122 cy

Appendix G
Water Quality, Level of Service, and Value Rating Analysis

Renaissance Infrastructure Consulting

BMP Required Level of Service - Previously Developed Site

Project:	25-0108 Encore
Location:	Mission, Kansas
Option:	LS for previously developed Site
Date:	September 18, 2025
By:	ANC

Worksheet 1: Required Level of Service - Developed Site

1 Required Treatment Area

A **Total Disturbed Area by Redevelopment Activity (ac)**

Disturbed Area Description	Acres
Building, Parking, Associated Walks, Landscape	2.55
"1A" Total:	2.55

B **Existing Impervious Area Inside Disturbed Area (ac)**

Existing Impervious Area Description	Acres
Parking Lots, Wendy's Building, Associated Walks, Landscape	2.20
"1B" Total:	2.20

C **Required Treatment Area (ac)**

"1A" Total Less "1B" Total "1C": 0.35

2 Percent Impervious in Postdevelopment Condition and Level of Service (LS)

A **Total Postdevelopment Impervious Area Inside Disturbed Area (ac)**

Postdevelopment Impervious Area Description	Acres
Building, Parking, Associated Walks, Landscape	1.84
"2A" Total:	1.84

B **Existing Impervious Area Inside Disturbed Area (ac)**

Existing Impervious Area Description	Acres
Parking Lots, Wendy's Building, Associated Walks, Landscape	2.20
"1B" Total:	2.20

C **Net increase in Impervious Area (ac)**

"2A Total Less "1B" Total "2C": -0.36

D **Percent Impervious**

Net Increase in Impervious Area / Required Treatment Area

"2C"/"1C": -1.03

E **Level of Service**

Use Percent Impervious to Enter Table XX **LS = N/A**

Stormwater Study

25-0108
Encore Land
Mission, Johnson County, KS

Existing Impervious Area

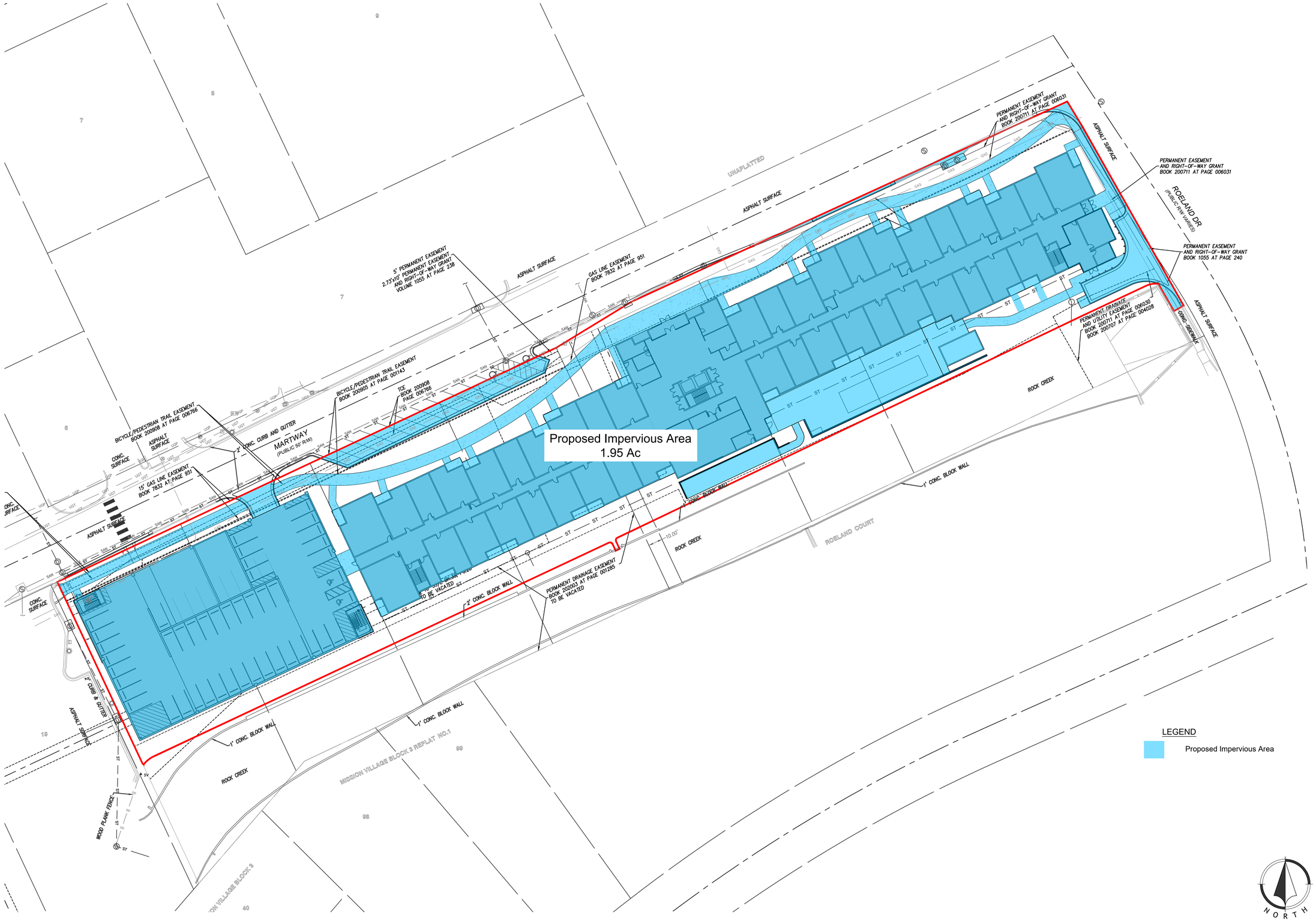
NO.	DATE	REVISION

DRAWN BY	CHECKED BY
AC	AG

Renaissance Infrastructure Consulting
720.702.0090
WWW.RIC-CONSULT.COM
1800 A EE, UITE 374
ENVER, OLORA 0 80202
CO Statement of Foreign Entity Authority: 20191570579

Sheet
1

acronin
Oct 29 , 2025- 10:58am
Z:\RC Design\2025\25-0108\Dwg\Exhibits\SWRI\Existing Imp Cates.dwg



Stormwater Study

25-0108
Encore Land
Mission, Johnson County, KS

Proposed Impervious Area

NO.	DATE	REVISION

DRAWN BY	CHECKED BY
AC	AG

Renaissance Infrastructure Consulting
1800 A EE. UTE 374
ENVER, COLORA O 80202
720.702.0090
WWW.RIC-CONSULT.COM

CO Statement of Foreign Entity Authority: 20191570579

Sheet
2

acronin
Oct 29, 2025-2:31pm
Z:\RIC Design\2025\25-0108\Dwg\Exhibits\SWR\Proposed Imp Calcs.dwg

Hydrodynamic Separator Performance According to the MARC Manual

Introduction:

In October 2012 the Kansas City Mid America Regional Council (MARC) released the Manual of Best Management Practices for Storm Water Quality. This manual goes on to describe a variety of construction BMP's Advantages, disadvantages, design considerations, and maintenance practices. One BMP discussed is a Hydrodynamic Separator (Section 8.12 Hydro Dynamic Separation).

As per the MARC Manual:

Hydrodynamic separators, also known as swirl concentrators or vortex separators, describe a wide variety of proprietary devices that have been developed in recent years. They are modifications of traditional oil/particle separators that typically target coarse solids and large oil droplets. While most of these systems utilize vortex enhanced sedimentation, others use circular screening systems or engineered cylindrical sedimentation. Vortex separation was originally developed for use in combined sewer overflows.

ADS promotes three hydrodynamic separators in the MARC manual regulated area. The selection of which hydrodynamic separator to use on a project varies based on the factors of treatment flow rate, maximum flow rate, configuration of the units (inline vs offline) and cost. The Baysaver Barracuda, Hydro International (HIL) Downstream Defender and HIL First Defense High Capacity would be included under the MARC manual's classification of a hydrodynamic separator.

Value Rating system:

In order to assess the effectiveness of a particular BMP relative to another, the MARC manual outlines a 10 point value rating system. This 10 point rating system is based on 4 criteria: Water Quality Value, Volume Reduction, Temperature Reduction, Oils/Floatables Reduction. Water Quality Value is assessed on a scale of 1-5 by the expected median concentration (mg/L) of Total Suspended Solids (TSS). Volume reduction is assessed on a scale of 0-2 with significant infiltration or evaporation scoring full marks. Temperature Reduction is assessed on a scale of -1 through 1. A device that increases runoff temperature scores a -1, a device that does not change the runoff temp scores a 0, and a device that reduces runoff temperature scores a 1. Finally the device is awarded a score of 0-2 with respect to its ability to significantly reduce oils and floatable debris. Adding these scores up for the specific BMP will lead to a value between 0-10 points.

ADS Hydrodynamic Separator Value Rating Calculation as determined by the MARC manual.

TABLE 4.5
Value Rating Calculations

A	Water Quality Value Rating System	0	1	2	3	4+
	Median Concentration of TSS in Effluent (milligrams per liter)	> 100 mg/L	50 - 100 mg/L	20 - 50 mg/L	10 - 20 mg/L	<10 mg/L
B	Volume Reduction Rating System	0	1		2	
		Little or no volume reduction	Moderate infiltration or evaporation		Significant infiltration and evaporation	
C	Temperature Reduction Rating System	-1	0		1	
		Runoff temperature increases	Runoff temperature is unchanged		Runoff temperature decreases	
D	Oils/Floatables Reduction Rating System	0	1		2	
		Little or no oils/floatables reduction	Moderate capture or reduction of oils/floatables		Significant capture or reduction of oils/floatables	

Note:
Value Rating Calculation: VR = A + B + C + D

Table 1: Value Rating Calculations as taken from the MARC Manual.

Water Quality Value: Water quality rating is assessed by analyzing the median concentration of TSS as sampled from the devices effluent discharge [Table 4.5. Manual of Best Management Practices for Storm Water Quality, 4-11]. Each hydrodynamic separator has their own respective test reports for hydraulic loading and particle size iterations. A nationally recognized and accepted organization that has standardized the testing procedure, particle size and loading for hydrodynamic separators is New Jersey Department of Environmental Protection (NJDEP). NJDEP works in conjunction with New Jersey Corporation of Advanced Technology (NJCAT) to provide a listing of NJCAT Laboratory verified and NJDEP certified devices. When viewing NJCAT and NJDEP's respective website, the verified/certificate devices list could be observed as well as the specific test reports that are linked in the table. Please note that New Jersey utilizes a standardized particle size that is typically smaller (lower number of microns) particle size than what is shown on MARC Manual Reports. The Water Quality Value Rating will generally show a VR of 3 or 4 points for hydrodynamic separators from these test reports. The MARC Manual caps the hydrodynamic separator unit currently at 3 points of VR for Water Quality however, so these test results would correspond to a **Water Quality Value Rating of 3 points**.

Volume Reduction Rating: Not applicable for separators. **Volume Reduction Rating of 0 point**.

Temperature Reduction Rating: Not applicable for separators. Allow this BMP device is an underground unit, due to the short amount of time that the stormwater is in the separator unit, no temperature reduction is generally awarded to this device. **Temperature Reduction Rating of 0 point**.

Oils/Floatables Reduction Rating: The Oils/Floatables reduction is determined on a sliding scale of 0-2. Hydrodynamic separators are widely known to be one of the premier devices for the removal of oil and floatables. The separators were commonly referred to as oil / sand separators prior to the renaming of the device as a hydrodynamic separator. In the technical test reports, oil capacity (i.e. the storage potential for oils) could be determined. The storage potential for floatables could be determined as well. The basis for removing oils and floatables would be reliant on a practical maintenance interval and then the requirement for this category would be met for the service life of the device. Third party technical reports, such as NJCAT/NJDEP, could show these results based on which device is being specified. This corresponds to a **Oils/Floatables Reduction Rating of 2 points.**

MARC VALUE Rating: Per Table 1, MARC values are determined by the following formula

$$VR = A + B + C + D$$

Where

A = Water quality value
B = Volume reduction
C = Temperature reduction
D = Oil and floatables reduction

In the case of the ADS hydrodynamic separators:

$$VR = 3 + 0 + 0 + 2 = 5$$

Per the MARC manual, the three stated ADS hydrodynamic separators should be assessed a **5 point** value rating**.**

Maintenance Guide

BaySaver Barracuda™

July 2017

One of the advantages of the BaySaver Barracuda is the ease of maintenance. Like any system that collects pollutants, the BaySaver Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes from 2 to 4 hours, depending on the size of the system, the captured material, and the capacity of the vacuum truck.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and thereafter on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

BaySaver Barracuda Storage Capacities

Model	Manhole Diameter	Treatment Chamber Capacity	Standard Sediment Capacity (20" depth)	NJDEP Sediment Capacity (50% of standard depth)
S3	36"	212 gallons	0.44 cubic yards	0.22 cubic yards
S4	48"	564 gallons	0.78 cubic yards	0.39 cubic yards
S5	60"	881 gallons	1.21 cubic yards	0.61 cubic yards
S6	72"	1269 gallons	1.75 cubic yards	0.88 cubic yards
S8	96"	3835 gallons	3.10 cubic yards	1.55 cubic yards
S10	120"	7496 gallons	4.85 cubic yards	2.43 cubic yards

Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. You'll access this area through the 10" diameter access cylinder.

©ADS 2017

2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment and trash at an approved facility.
   - Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
   - Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
   - Additional local regulations may apply to the maintenance procedure.

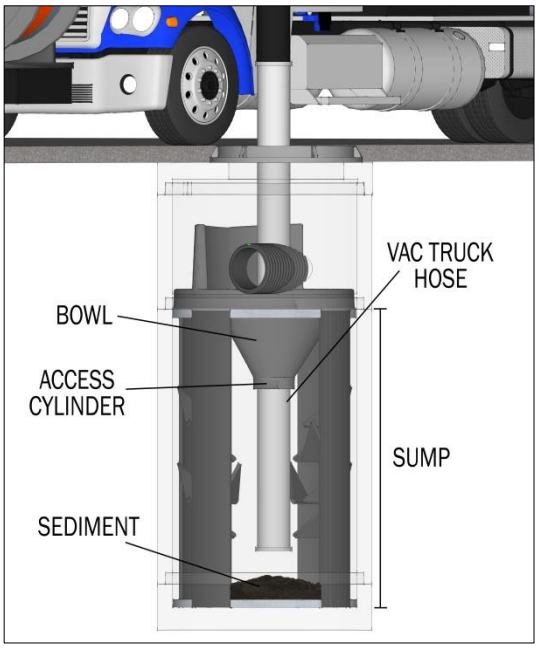


Figure 1

©ADS 2017

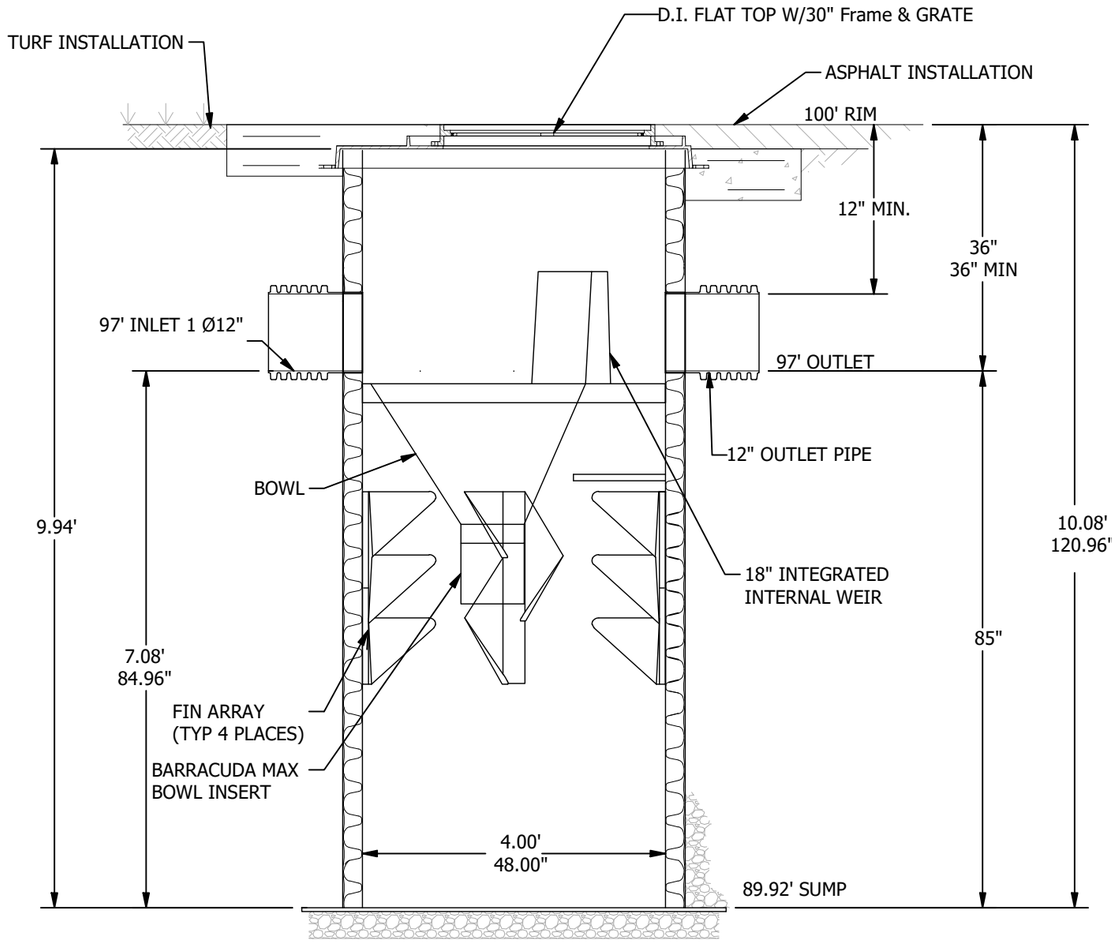
BARRACUDA MAX S4	
UNIT ID	Barracuda Manhole
PEAK FLOW RATE (CFS)	N/A
TREATMENT FLOW RATE (CFS)	1.34

ATTENTION

THIS TREATMENT UNIT WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON GROUNDWATER LEVELS. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE GROUNDWATER LEVEL RELATIVE TO THE BURIED DEPTH OF THE UNIT. IF THE GROUNDWATER DEPTH ABOVE THE BOTTOM OF THE SUMP EXCEEDS ONE-THIRD THE DEPTH OF THE UNIT, CONTACT ADS FOR SOLUTIONS. SEE TECHNICAL NOTE 5.22 FOR GUIDANCE.

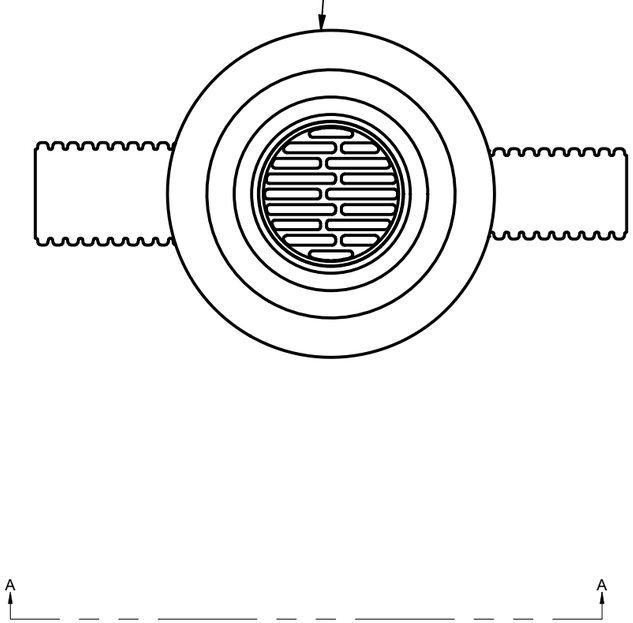
PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 mg/L INFLUENT CONCENTRATION. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.
  -OR -
  THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH d/50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.
  -OR -
  THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS PER PREVIOUS 2013 NJDEP/NJCAT HDS PROTOCOL.



SECTION VIEW A-A
N.T.S.

Pipe 1 12" INLET PIPE AT 0 DEG
Pipe 2 12" OUTLET PIPE AT 180 DEG
Pipe 3
Pipe 4



PLAN VIEW
N.T.S.

ENCORE
MISSION-KS
DATE: 9/18/25
PROJECT #:
DRAWN:
CHECKED: XX

DATE	DRWN	CHKD	DESCRIPTION

Barracuda Max
Stormwater Separator

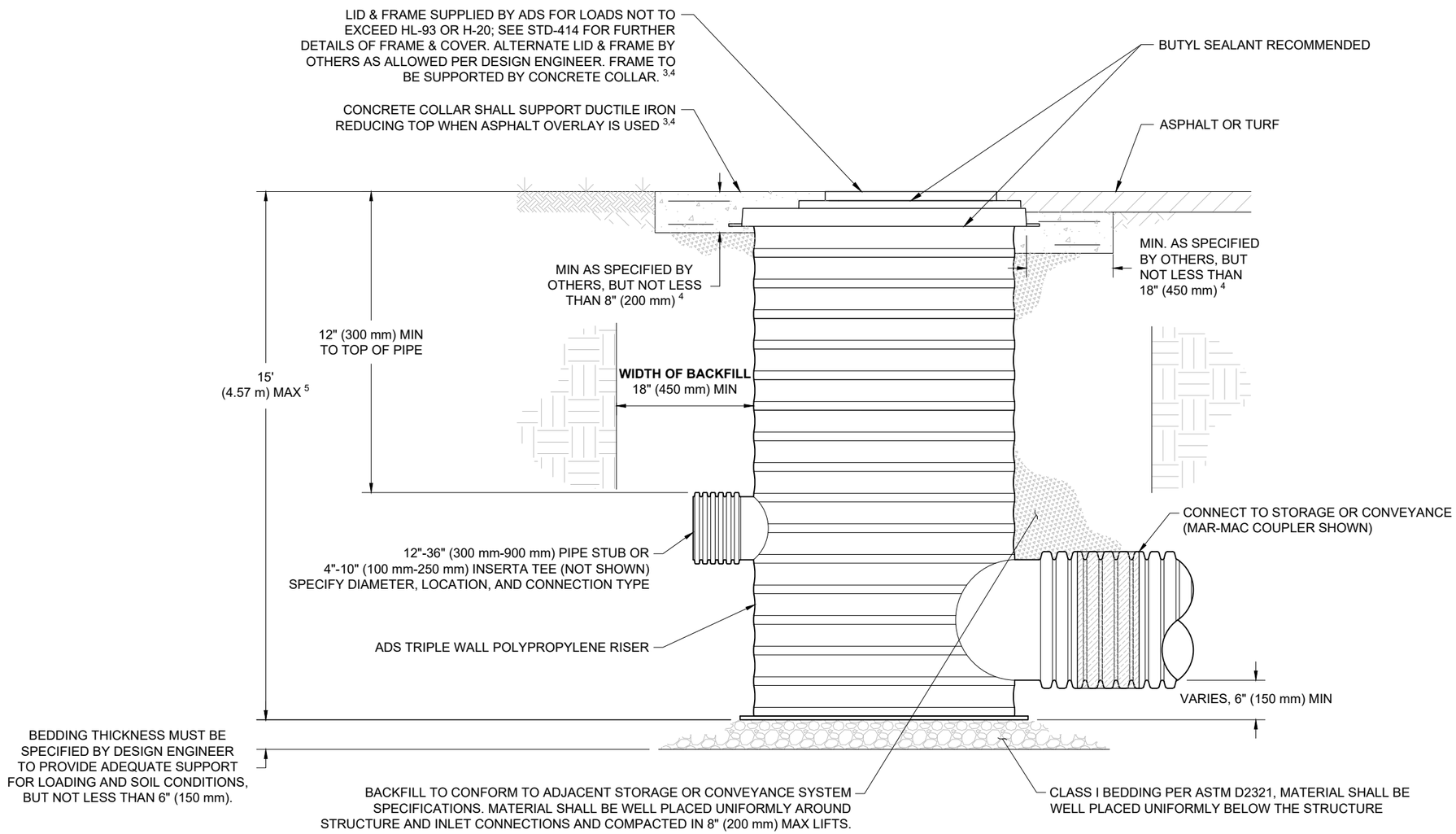
4640 TRUEMAN BLVD
HILLIARD, OH 43026

NOT TO SCALE

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

HP MANHOLE W/DUCTILE IRON FLAT FRAME INSTALLATION

NTS



NOTES:

1. ADS POLYPROPYLENE BASINS ARE TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
2. ADAPTERS CAN BE MOUNTED ON ANGLES 0° TO 359°. TO DETERMINE MAXIMUM ANGLE BETWEEN ADAPTERS, SEE DRAWING NO. 7009-110-026
3. AVOID CONSTRUCTION LOADING ON REDUCING PLATE AND STRUCTURE PRIOR TO CONCRETE COLLAR INSTALLATION
4. CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, AND OTHER APPLICABLE DESIGN FACTORS.
5. FOR BURIAL DEPTHS GREATER THAN 15' (4.57 m), OR WHERE GROUNDWATER WILL BE ENCOUNTERED, CONTACT ADS ENGINEERING.
6. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
7. FRAMES & REDUCING PLATE SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.

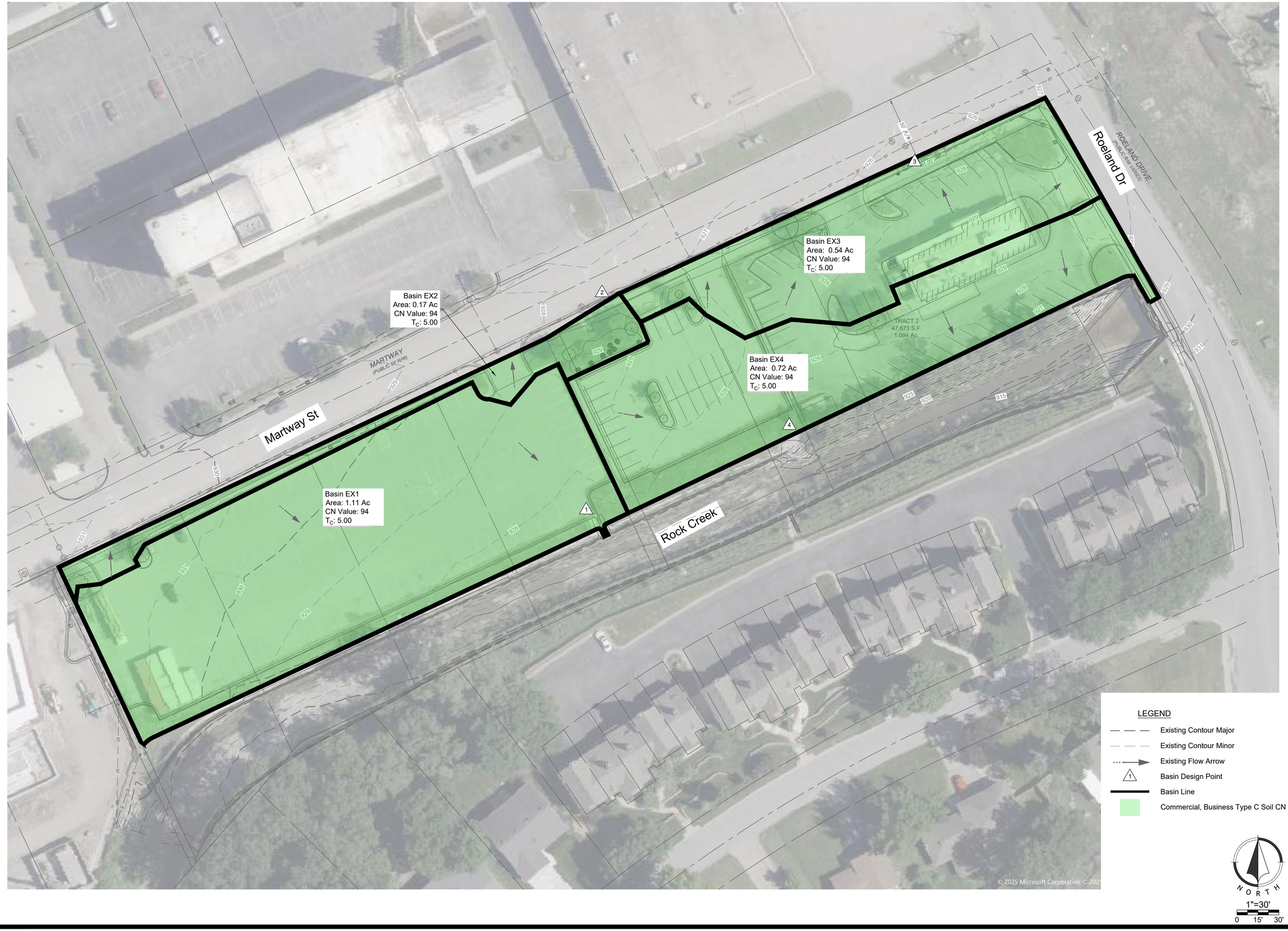
DATE: | DRAWN: | CHECKED:
PROJECT #:

DATE	DRWN	CHKD	DESCRIPTION

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECTS ENGINEER OF RECORD ('EOR') OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE EOR'S PRIOR APPROVAL. EOR SHALL REVIEW THIS DRAWING PRIOR TO BIDDING AND/OR CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

Nyloplast®
770-932-2443 | WWW.NYLOPLAST-US.COM
4640 TRUEMAN BLVD
HILLIARD, OH 43026
ADS

Appendix H
Existing and Proposed Drainage Maps



LEGEND

- Existing Contour Major
- Existing Contour Minor
- Existing Flow Arrow
- Basin Design Point
- Basin Line
- Commercial, Business Type C Soil CN = 94

NORTH

1"=30'

0 15' 30'

Stormwater Study

25-0108
Encore Land
Mission, Johnson County, KS

Existing Drainage Exhibit

NO.	DATE	REVISION

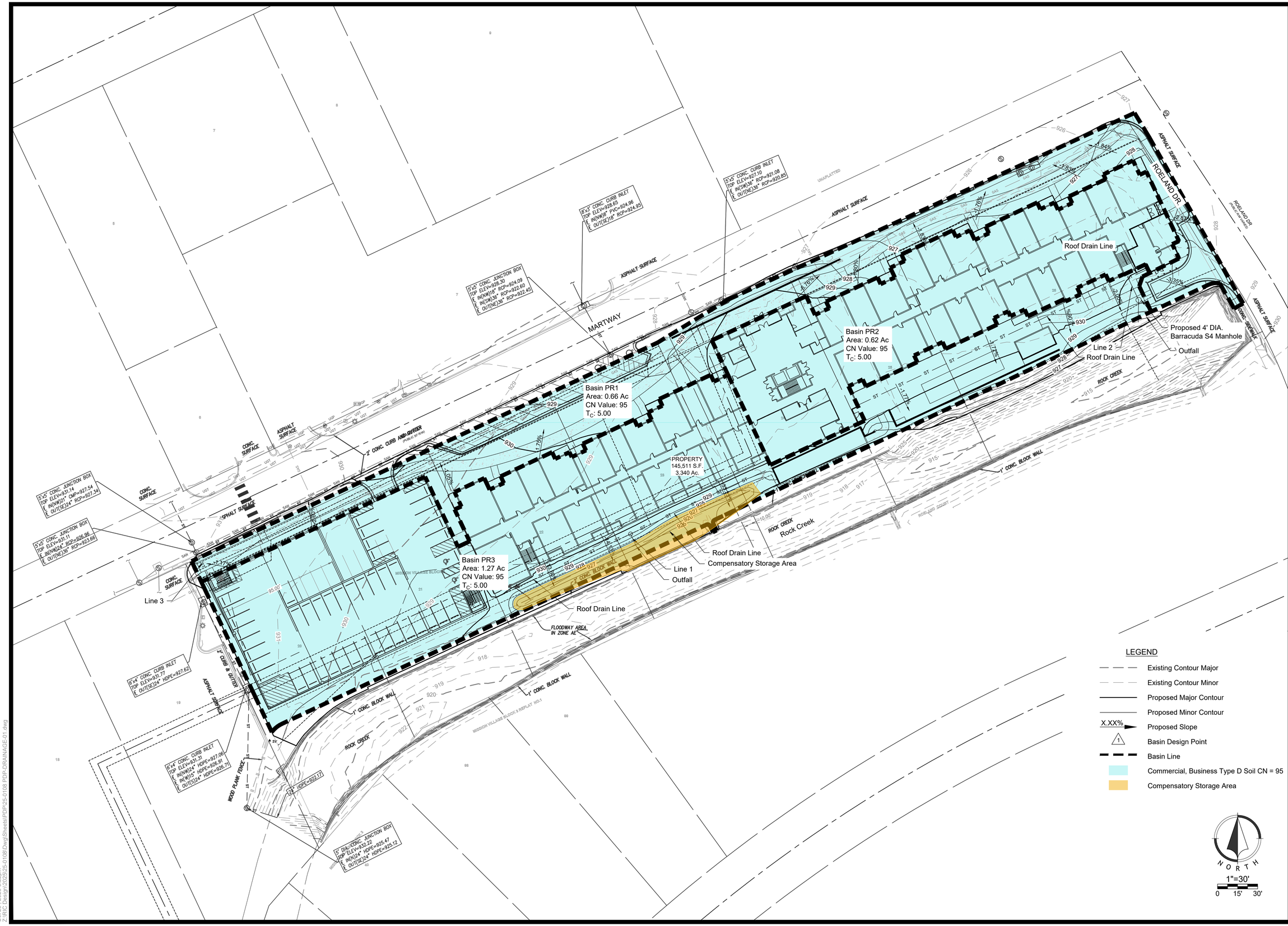
DRAWN BY: AC
CHECKED BY: AG

Renaissance Infrastructure Consulting
1800 A EE, UTE 374
ENVER, COLORA O 80202
720.702.0090
WWW.RIC-CONSULT.COM

CO Statement of Foreign Entity Authority: 20191570579

Sheet
1

acronin
Oct 29 , 2025- 10:53am
Z:\RIC Design\2025\25-0108\Dwg\Exhibits\SWR\Existing Drainage Exhibit.dwg



Stormwater Study

25-0108
Encore Land
Mission, Johnson County, KS

Proposed Drainage Exhibit

NO.	DATE	REVISION
	9/19/2025	Initial Submittal

DRAWN BY: AFB
CHECKED BY: AG

Renaissance Infrastructure Consulting
913.317.9500
www.RIC-CONSULT.com
132 ABBIE AVENUE
KANSAS CITY, KANSAS 64108
MO Certificate of Authority: E-2010033830

Sheet
2

acronin
Oct 29 , 2025- 3:22pm
Z:\RIC Design\2025\25-0108\Dwg\Sheets\PDP\25-0108 PDP-DRAINAGE-01.dwg

Staff Report

Planning Commission Meeting

November 24, 2025

Agenda Item Number	3
Project Number/Title	Case #25-09
Request	Non-Conforming Situation Permit
Location	5960 Barkley Street
Property Tax ID	KF251208-2071
Applicant **Owner**	Alex Glenn, Custom Car Wash DBA Royal Shine Diamond Finish Car Waah, LLC
Staff Contact	Taylor Cunningham, Senior Planner
Advertisement	Not required
Public Hearing	Not required

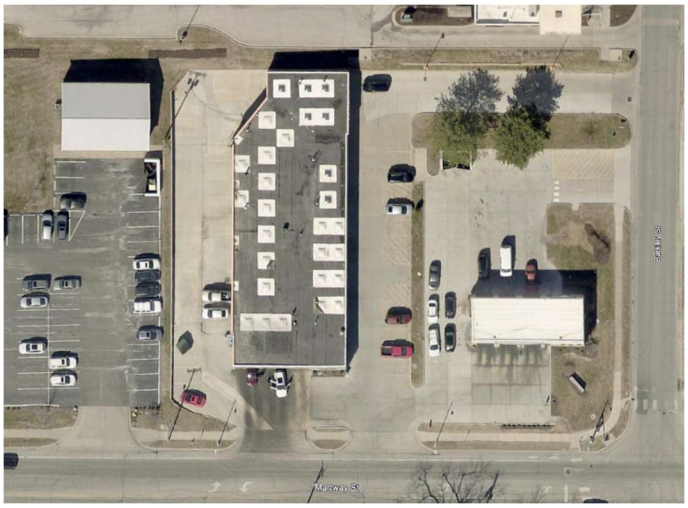
Property Information

This property is located at the northwest corner of Martway Street and Barkley Street and is addressed as 5960 Barkley Street. It is directly west of Valvoline and currently operates as Diamond Finish Car Wash & Detail Center. The current facility is approximately 9400 square feet. The applicant, Alex Glenn, is purchasing the property with the intent of improving the facility for continued use as a car wash. The applicant owns Royal Shine Car Wash, which has two branches in the metro area in Shawnee, Kansas and Liberty, Missouri. This site would be the third location for Royal Shine.

The applicant is proposing a remodel of the existing Diamond Finish Car Wash and Detail in order to operate a Royal Shine Car Wash. The proposed improvements include the addition of:

- Seven (7) tankless vacuum stations on the east side of the building
- New stucco band around the top of the building for signage
- New roof with solar panels to provide electricity for the site
- Water reclamation system

Additionally, the applicant proposes changes to the circulation of the car wash , having vehicles enter from Barkley and drive around the west side of the building to enter the wash tunnel from the south end and exit on the north end. Currently, there are two access points on Martway Street. The applicant plans to close the western access point and add new curbs, sidewalk, and turf to match existing conditions to the west. Customers will enter from Barkley Street and exit either onto Martway Street or back onto Barkley Street after using the vacuums.



Zoning and Future Land Use

The subject property is zoned CP-2B, Retail and Service District. Section 410.100(A) of the Mission Municipal Code, which defines, the purpose, intent, and permitted uses of the zoning district states:

> "This business district is for the purpose of permitting, regulating and encouraging retail and service establishments which serve a broad section of the general public. Products and services offered are of the type where the consumer enters one (1) or more places of business to accomplish his/her purpose or where he/she may remain in an automobile while conducting business. Customer and employee parking is commonly on the premises. The sale and servicing of motor vehicles may be permitted including auto parts, gasoline service stations, car washes and quick-lube shops. In addition, this district is suitable for such non-pedestrian-oriented businesses as plumbing and heating shops, repair shops and supermarkets.

A car wash is an allowable use in this zoning district. Surrounding properties are zoned and developed as follows:

- North: C-2B, Retail and Service District – Cornerstone Commons
- East: C-2B, Retail and Service District – Valvoline Instant Oil
- South: C-2B, Retail and Service District – USPS parking lot, Sonic
- West: C-2B, Retail and Service District – Stem Body and Hair Salon

Tomorrow Together, Mission's Comprehensive Plan, designates the property as "future commercial." This property is in Block S of the West Gateway Form Based Code (FBC) district.

Non-Conforming Situations

The FBC allows for mid-rise buildings (2–4 stories) and high-rise buildings (5 or more stories), with parking structures placed in the center of the block away from streets and corners. When the FBC was adopted, this property no longer met one or more of the new zoning rules. Because of that, it is now considered a legal non-conforming property.

The City of Mission recognizes three types of non-conforming situations:

1. Use – how the property is used
2. Lot area – the size or shape of the lot

3. Site improvements – features like parking, stormwater systems, sidewalks, or landscaping

This property falls under the site improvements category, meaning the new owner/applicant is proposing site improvements to a legal non-conforming property. This requires a Non-Conforming Situation Permit. Section 410.340(C)(1) of the Mission Municipal Code states:

> "C. There is hereby incorporated herein by this reference the "Form Based Code for the West Gateway Study Area" ("Form Based Code"), copies of which are on file in the City offices. The Form Based Code shall be applicable to the West Gateway District."
>
> 1. Designs and uses set forth in the Form Based Code shall govern all facets of the development or redevelopment in the West Gateway Study Area, except as indicated in Sections 420.130 through 420.230."

Analysis

The subject property conforms to the CP-2B District Regulations for Purpose and Intent and Permitted Uses. However, it does not conform to the West Gateway Form Based Code's appropriate building types for this block. Any improvements to the structure would necessitate compliance with the Form Based Code except for those improvements that fall within the parameters of Section 420.130 through Section 420.230 of the Mission Municipal Code to non-conformities. In this case, Section 420.190 applies specifically to the non-conforming site:

> A. On lots with non-conforming site improvements, no additions to or repairs or renovations of any structure or site improvement may be made without first either bringing the non-conforming site improvements into complete conformity with the regulations applicable to the zoning district in which the lot is located, or obtaining a non-conforming situation permit pursuant to this Section. Provided however, that this Section shall not apply to the following circumstances:
>
> 1. Repairs or restoration of a structure pursuant to Subsection (B) of Section 420.170; or
>
> 2. Minor repairs or renovation of a structure or site improvement.

B. For purposes of this Section, *"minor repairs or renovation"* shall mean repairs or renovation costs which do not exceed ten percent (10%) of the structural value of a structure or site improvement.

C. When an addition to or repairs or renovation of any structure or site improvement is proposed on a lot with a non-conforming site improvement(s), the Board of Zoning Appeals (in the case of a conventional zoning district) or the Planning Commission (in the case of a planned zoning district) may approve a non-conforming situation permit allowing such addition or repairs or renovation if it finds that:

1. The non-conforming site improvement(s) is the only non-conforming situation pertaining to the property.

2. Compliance with the site improvement requirements applicable to the zoning district in which the property is located is not reasonably possible.

3. The property can be developed as proposed without any significant adverse impact on surrounding properties or the public health or safety.

D. For purposes of Subsection **(C)**, mere financial hardship does not constitute grounds for finding that compliance with the site improvement requirements is not reasonably possible.

For 2025, the Johnson County Appraiser's Office values the structure at $1,197,950. Minor repairs or renovation of a structure is defined as anything less than 10% of the value of the structure. For this property, the minor repair threshold is $119,795. Site improvements proposed by the applicant are anticipated to be higher than 10% of the appraised value. Therefore, Section 420.190(C) is applicable.

Suggested Findings of Fact

The Planning Commission may make the following findings of fact in granting a Non-Conforming Situation permit to the applicant for the property located at 5960 Barkley Street:

1. The non-conforming site improvement(s) is the only non-conforming situation pertaining to the property.

   The existing structure is the primary non-conforming situation on the property. The Form Based Code stipulates a mid-rise structure with a minimum height of two (2) stories. The existing structure is one story. Full compliance with the Form Based

Code would necessitate substantial renovation or the demolition and rebuilding of the structure, which is not reasonably possible or economically feasible.

2. Compliance with the site improvement requirements applicable to the zoning district in which the property is located is not reasonably possible.

   Full compliance with the Form Based Code would necessitate substantial renovation or the demolition and re-building of the structure which is not reasonably possible.

3. The property can be developed as proposed without any significant adverse impact on surrounding properties or the public health and safety.

   The existing structure operates with the same land use in its current capacity without adverse impact to surrounding properties or public health and safety. It is a similar use to Valvoline, which is located directly east. The proposed improvements would not only improve the building's appearance. The closure of one entrance on Martway and addition of sidewalks and curbs would greatly improve access management on Martway Street. A new roof with solar panels to supply power to the business also aligns with the City of Mission's sustainability goals. The use of the property complies with the permitted uses under the Mission Municipal Code.

Staff Recommendation

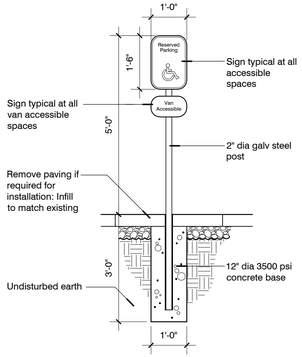
Staff recommend the Planning Commission adopt the findings of fact contained in this staff report and grant a non-conforming situation permit for Case #25-09.

Planning Commission Action

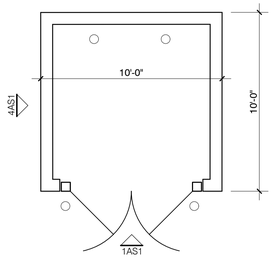
The Planning Commission will meet on Monday, November 24, 2025 to consider this application.

City Council Action

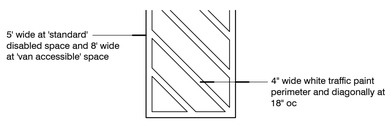
No City Council action is required.



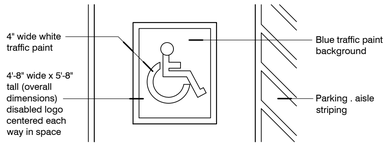
disabled
7 Parking Sign
1/2" = 1'-0"



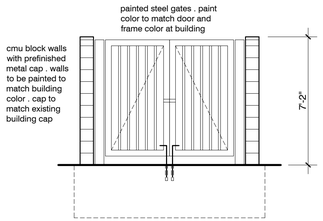
proposed
3 Trash Enclosure Plan
1/4" = 1'-0"



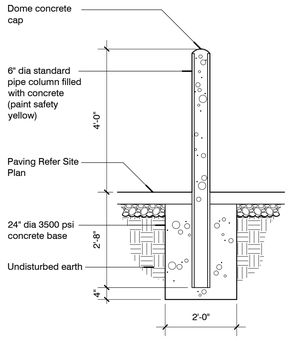
disabled
8 Painted Aisle
1/4" = 1'-0"



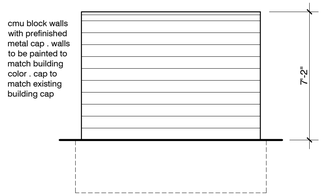
disabled
9 Painted Logo
1/4" = 1'-0"



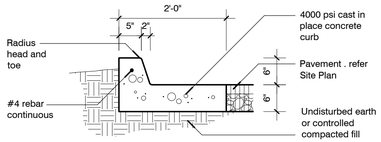
proposed
4 Trash Front Elevation
1/4" = 1'-0"



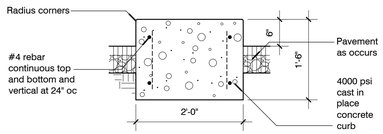
steel
10 Pipe Bollard
1/2" = 1'-0"



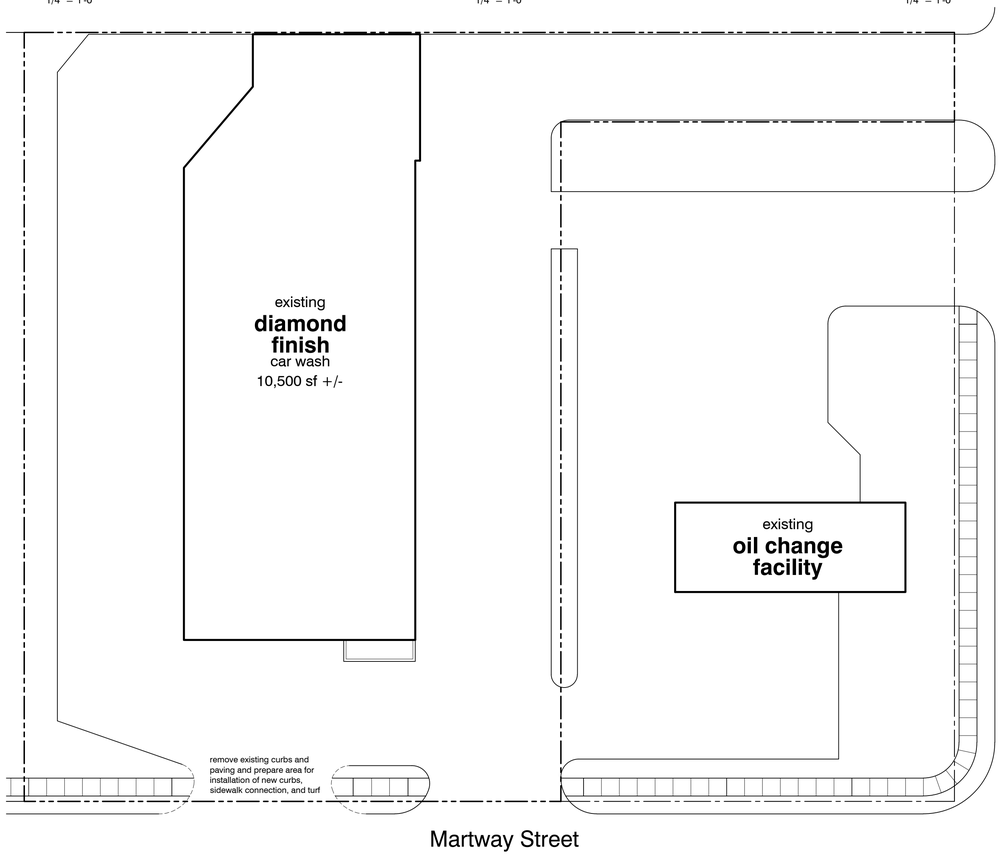
proposed
5 Trash Typ Side Elevation
1/4" = 1'-0"



typical
11 Concrete Curb
3/4" = 1'-0"



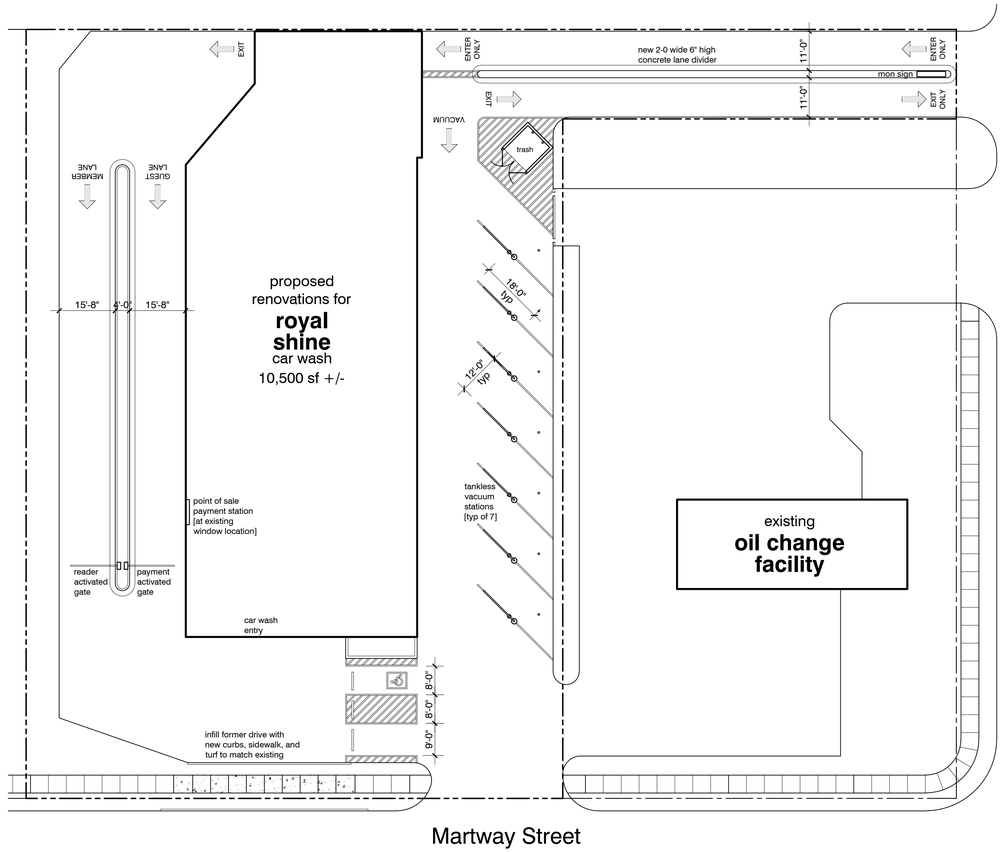
lane divider
12 Concrete Curb
3/4" = 1'-0"



N
1 existing Site Demo Plan
1" = 20'-0"
0 10 20 40

Note All existing landscaping to remain . protect as required during construction

Note All elements not specifically noted are existing to remain



N
2 proposed Site Plan
1" = 20'-0"
0 10 20 40

Note All existing landscaping to remain . protect as required during construction

Note All elements not specifically noted are existing to remain

Site . Building Renovations for
Royal Shine
Car Wash
5960 Barkley Street
Mission . Kansas

Planning Submittal Set
7 October 2025

Project Description
Minor site reconfiguration and updates to exterior finishes of an existing car wash facility

Project scope includes updated exterior finishes, installation of new vacuum bays, installation of new directional curbs for proper site circulation, restriping of existing lot and related incidental elements.

Project Code Data
All work, assemblies, and installations shall comply with applicable Codes, Ordinances and Regulations of governing jurisdictional bodies

Building Code
International Building Code 2018

Electrical Code
National Electrical Code 2017

Mechanical Code
International Mechanical Code 2018

Plumbing Code
Uniform Plumbing Code 2018

Fire Code
International Fire Code 2018

Accessibility
Americans with Disabilities Act Design Guidelines ADADG . 2010
ANSI 117.1 . 2009

Site Information
Site Acreage	34,411 square feet [0.79 acres]
Building Size	10,500 square feet nominal
Zoning	CP-2B [planned retail and service]

JOE STEWART
ARCHITECT
205 Kibler Road
Excelsior Springs . MO 64024
joe@jsa-kc.com
816 . 830 . 2754

Drawings and/or Specifications are original proprietary work and property of the Architect intended for the specifically titled project. Use of items contained herein without consent of Architect for titled or other projects is prohibited. Drawings illustrate best information available to Architect. Field verification of actual elements, conditions, and dimensions is required.

JOSEPH RAY STEWART LICENSED 6930 KANSAS ARCHITECT

signed 6 October 2025

Project Number 509.01

ADA Compliance Certification
To best of my professional knowledge, the facility as indicated is in compliance with the Americans with Disabilities Act, including the current ADA Title III Design Guidelines.

Joseph Ray Stewart
Kansas Architect 6930

Revisions

site . building renovations for
Royal Shine Car Wash
5960 Barkley Street
Mission Kansas

sheet
AS1
Site Demo Plan
Proposed Site Plan
planning
7 October 2025



existing exterior
1 South Elevation
not to scale

0 5 10 20

all building elements shown are existing to remain



proposed exterior
2 South Elevation Rendering
not to scale

0 5 10 20

all building elements shown are existing to remain . rendering is for color purposes only

Note: North Elevation is similar in scope and color . no sign is proposed on North Elevation



existing exterior
3 East Elevation
not to scale

0 5 10 20

all building elements shown are existing to remain



proposed exterior
4 East Elevation Rendering
not to scale

0 5 10 20

all building elements shown are existing to remain . rendering is for color purposes only

Note: West Elevation is similar in scope and color . no sign is proposed on West

Exterior Finish Schedule

BRK1 Existing Modular Brick
Prime and paint 'Sherwin Williams' *RGB 224 226 222*
[field]

SPS1 Synthetic Plaster System
Class PB 'Dryvit' Sandpebble Finish *575 Dutch Blue*
[cornice . trim]

PNT1 Eggshell Alkyd Enamel
'Sherwin Williams' *RGB 14 79 129*
[Metal doors and frames]

JOE STEWART
ARCHITECT
205 Kibler Road
Excelsior Springs . MO 64024
joe@jsa-kc.com
816 . 830 . 2754

Drawings and/or Specifications are original proprietary work and property of the Architect intended for the specifically titled project. Use of items contained herein without consent of Architect for titled or other projects is prohibited. Drawings illustrate best information available to Architect. Field verification of actual elements, conditions, and dimensions is required.

JOSEPH RAY STEWART LICENSED 6930 KANSAS ARCHITECT

signed 6 October 2025

Project Number 509.01

ADA Compliance Certification

To best of my professional knowledge, the facility as indicated is in compliance with the Americans with Disabilities Act, including the current ADA Title III Design Guidelines.

Joseph Ray Stewart
Kansas Architect 6930

Revisions

site . building renovations for

Royal Shine Car Wash

5960 Barkley Street
Mission . Kansas

sheet
A1

Exterior
Building Elevations

planning
7 October 2025