

PLAN COMMISSION

Monday, October 19, 2020

7:00 PM

McFarland Municipal Center
Community Room

AGENDA

You are invited to this meeting through a Zoom webinar. The Public is strongly encouraged to watch and participate in these meetings remotely through either the webinar or telephone options listed below.

PLEASE CLICK THE LINK BELOW TO JOIN THE ZOOM WEBINAR:

<https://us02web.zoom.us/j/86544731984>

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Webinar ID: 865 4473 1984

1. CALL TO ORDER
2. PUBLIC APPEARANCES.
3. APPROVAL OF MINUTES.
 - a. Review and possible approval of the September 21, 2020 Plan Commission meeting minutes.
4. PUBLIC HEARING
 - a. Public hearing regarding Ordinance 2020-22, An Ordinance Amending Various Sections of the McFarland Municipal Code Including Chapter 47 Public Utilities, Chapter 56 Subdivisions, and Chapter 62 Zoning Relating to the Provisions of Storm and Sanitary Sewer Service.
5. BUSINESS.
 - a. Discussion and possible action on a site/design review application submitted by Rick & Susan Hubanks for an expansion of Angelo's Restaurant, 4706 Farwell Street.
 - b. Discussion and action to make a recommendation to the Village Board on a request by Veridian Homes Rosewood Fields LLC regarding Final Plat approval for Rosewood Fields Subdivision. Lands located west of CTH AB and north of the railroad in the NE 1/4 of the SE 1/4 and the SE 1/4 of the SE1/4 of Section 2, Township 6 North, Range 10 East, Village of McFarland, Dane County, Wisconsin.
 - c. Discussion and possible action to make a recommendation to the Village Board regarding Ordinance 2020-22, An Ordinance Amending Various Sections of the McFarland Municipal Code Including Chapter 47 Public Utilities, Chapter 56 Subdivisions, and Chapter 62 Zoning Relating to the Provisions of Storm and Sanitary Sewer Service.
 - d. Discussion and action to make a recommendation to the Village Board regarding possible updates to park impact fees.

6. STAFF REPORTS
 - a. Property maintenance report
 - b. Directors report
7. SCHEDULE NEXT MEETING DATE.
 - a. Monday, November 16, 2020 @ 7:00pm
8. ADJOURNMENT.

This meeting notice constitutes an official meeting of the above referenced group and was posted in accordance with all applicable laws related to Open Meetings Law. It is possible that members of and possibly a quorum of members of other governmental bodies of the municipality may be in attendance at the above stated meeting to gather information. No action will be taken by any governmental body at the above stated meeting other than the governmental body specifically referred to above in this notice. Upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals. For additional information or to request this service, contact the McFarland Municipal Center at (608) 838-3153 or cassandra.suettinger@mcfarland.wi.us.

Working Draft -Minutes Plan Commission Meeting

September 21, 2020

Members Present: Justin Rupert, Tom Rogers, Brad Czebotar, Bruce Fischer, Eric Green, Scott Peters, Peter Bloechl-Anderson (arriving at 7:09)

Members Absent:

Staff Present: Andrew Bremer, Brian Berquist; Town and Country Engineering, Karen Knoll

1. CALL TO ORDER

Czebotar called the meeting to order at 7:01 p.m.

2. PUBLIC APPEARANCES.

Chris St. Clair – 5602 Holscher Road – Indicated they have submitted letters on behalf of the Prairie Ridge Neighborhood Association, which consists of residents of Ridgeview, Juniper Ridge, Prairie Place and Prairie Stone neighborhoods. Currently 198 members, representing 115 households. Letters are only written when it is a significant representation of the neighborhood.

3. APPROVAL OF MINUTES.

a. Review and possible approval of the August 17, 2020 Plan Commission minutes.

Czebotar called the minutes from the August 17, 2020 approved by unanimous consent.

4. PUBLIC HEARING

a. Public hearing regarding a Conditional Use Permit (CUP), requested by CF Investments, LLC, for a 30 unit residential project on Lots 57 & 58 Prairie Place Subdivision, located in the 5500 Block of Holscher Road, McFarland WI.

Czebotar moved back to the order of the agenda - Czebotar opened the public hearing at 7: 34 p.m.

Craig Frank – representing CF Investments, LLC summarized the process they have gone through to date. They recently had a neighborhood meeting and feel they have

been able to address most of the neighbors' concerns, along with those from the Village.

Mike Calkins with Snyder and Associates reviewed the site plan for the proposal as submitted in packets. There will be three four-unit buildings set on Holscher Road, each unit having a two stall garage, and two stall parking in front of the unit, the two five unit buildings will also have a two stall garage and two parking spaces in front of each unit. Calkins reviewed the bio-retention basin location along with how it will work. Calkins also discussed the proposed walking path, a proposed gazebo and small gathering area on the site. Craig Frank indicated they are still looking to discuss the connection between their walking path and the Village's.

Cory Frank - reviewed the traffic impact study as provided in packets along with a brief overview of the proposal, consisting of a mix of two and three bedroom townhouses, totaling 30 units in six buildings ranging from 1280 – 2002 sq.ft. in size. All will have two car garages or underground parking with 114 stalls provided on the site, the project would have a private driveway within the property. The goal of the design is to complement the existing neighborhood. Frank reviewed how they feel the proposal fits in with the Comprehensive Plan, along with reviewing their proposal showing interior and exterior renderings of the proposal as submitted.

Frank reviewed the proposal and their evidence as to how it meets the standards and guidelines for a Conditional Use Permit.

Bridget Bell – 5608 N. Peninsula Way – in favor, has concerns over the walking path, the need for access for residents, the 15% grade, possible stairway and concerns over residents fall risk.

Tony Plourde indicated a question online through Zoom – How was the size of the bio-retention basin calculated, how will it fit on a slope, when will it be constructed, is there any plan to remediate them at any point during and/or after construction is completed.

Calkins replied the basin itself is in the flat area by the buildings, during construction they will initially be sediment traps, once the project is completed the sediment will be removed and it will be down to natural soil and plantings, initially with a silt fence added as protection during construction of the project.

Commissioners discussed the path access and possibilities of sloped access, stairs, and a slalom type approach along with potential locations for the access with the Village Engineer. Calkins indicated they are willing to look at all options and work with the Village Engineer on it.

Czebotar closed the public hearing at 8:16 p.m.

- b. Public hearing regarding a Condominium Plat and Declaration from CF Investments, LLC, for the property located on Lots 57 & 58 Prairie Place Subdivision creating The Condos at Prairie Place, consisting of 30 residential units.

Czebotar opened the public hearing at 8:17 p.m.

Frank reviewed the Condominium Plat and Declaration as submitted, there will be two independent associations, one for lot 57 and one for lot 58, and they will be phased in to meet financing guidelines. The condominiums will have private driveway agreements between them. They will have a management company handle the associations. Bremer requested Frank clarify whether there will be one condominium association for the whole development that is expandable or will there be two separate condominiums. Frank clarified that there will be one expandable condominium association.

Chris St. Clair – 5602 Holscher Road – confirmed the need for phasing of the condominiums for financing for buyers, and how it makes it easier for buyers. This will help to promote owner occupancy of the units.

Czebotar closed the public hearing at 8:31 p.m.

5. BUSINESS.

- a. Discussion and possible action on a site design/review application submitted by Maple Tree Restaurant, Gary Seiler, for a proposed expansion of the outdoor dining area of the existing restaurant located at 6010 Hwy. 51, McFarland, WI.

Without objections, Czebotar moved items 5 (a) and 5 (b) in front of the public hearings.

Bremer advised the Maple Tree Restaurant is looking to expand its current outdoor area. The current site is 360 sq.ft. moreover, they are requesting to expand it to 600 sq.ft.

The Planning Commission has approved similar requests this year due to the COVID19 circumstances.

Gary Sieler – owner of the Maple Tree, summarized they installed a 10 x 30 patio area previously, they would like to expand it to 30 x 20 and have a more open fence design, installed on a cement pad rather than the current blacktop. They have been in front of the Public Safety Committee, and it was requested to have the bollards spaced so a car could not fit between them. They will place them every five feet. This will give them the ability to have more people eat outdoors, and have a more open feel than they currently have. They likely will start the project in the spring of 2021.

Czebotar moved to approve a site design/review application submitted by Maple Tree Restaurant, Gary Seiler, for a proposed expansion of the outdoor dining area of the existing restaurant located at 6010 Hwy. 51, McFarland, WI conditioned upon the applicant providing protective bollards around the patio area sufficiently spaced to prevent passage by an average motor vehicle. Rupert seconded the motion. Motion carried 6-0

- b. Presentation and discussion of the Traffic Impact Analysis for Broadhead Street and Holscher Road.

Bremer summarized the village hired Lee Gibbs from SRF Consulting Group to do a traffic study of the Broadhead Street and Holscher Road intersection. A summary of the report findings was also presented to the Public Works Committee at their September 8th meeting.

Lee Gibbs –Traffic Engineer with SRF Consulting in Madison, WI. Gibbs indicated he was hired to do a study not only on current traffic concerns, but future with the proposed two developments and the proposed Public Safety Building. His report is supplied in packets and was reviewed on screen during the meeting. The study goes out ten years, looking at historical data along with the data collected. Gibbs reviewed his report with Commissioners along with discussing traffic signals, a round- about, all way stop and the current two way stop at the location. His recommendation is to maintain the two way stop, and if noted if the volume increases, it would be prudent to change to an all way stop.

- c. Discussion and possible action (action postponed from the June 15, 2020 meeting) on a Conditional Use Permit (CUP) requested by CF Investments, LLC, for a 30 unit residential project on Lots 57 & 58 Prairie Place Subdivision, located in the 5500 Block of Holscher Road, McFarland WI.

Czebotar reviewed and polled Commissioners if they felt the application provided by C.F. Frank Investments LLC, including the detailed written description and proof meeting the substantial evidence standards set forth in Sec. 62-111(a) through (h) were satisfied for the granting of a CUP under Sec. 62-111. Commissioners concurred they had.

Czebotar moved to approve a Conditional Use Permit (CUP) requested by CF Investments, LLC, for a 30 unit residential project on Lots 57 & 58 Prairie Place Subdivision, located in the 5500 Block of Holscher Road, McFarland WI. conditioned upon:

1. Addressing recommended conditions of approval as identified in the McFarland Fire & Rescue Department staff review letter dated September 15, 2020.

2. Addressing recommended conditions of approval as identified in the Village Engineer's staff review letter dated September 17, 2020.
3. Submittal of revised floor plans and building elevations for the four-unit and five-unit townhouses as provided in the Community Development Director's staff report.
4. Removal of the two visitor parking stalls shown between the four-unit townhouses and replacement with sod, turf grass, and perimeter curbing.
5. Provide on-site signage or pavement markings designating those stalls that are intended for common visitor parking use for all units.
6. Update the lighting/photometric plan, Sheet C1, to reflect the revised building layout.
7. Update Sheets L101, L200 and L201 to address the revised plan submittal.
8. Designating the internal drive as a private road for building addressing purposes; provide private road signage names at each driveway entrance to Holscher Road.

Peters seconded the motion. Motion carried 7-0.

- d. Discussion and possible action (action postponed from the June 15, 2020 meeting) on a Site/Design Review Permit, requested by CF Investments, LLC, for 30 unit residential project on Lots 57 & 58 Prairie Place Subdivision, located in the 5500 Block of Holscher Road, McFarland WI.

Bremer reviewed this is for the approval of the site plan, there is concern over the path or access point to the Village trail. Commissioners and Berquist discussed the need for this to be looked into, the grade, slope of a walkway, accessibility to residents wishing to use it, possibility of stairs, how it would be kept up in the winter.

Bremer indicated the elevation for one of the four units was missing in the original submittal, it has now been submitted. He has questions on the materials to be used on the exterior. Frank reviewed the proposed materials and color scheme with Bremer and Commissioners. Bremer inquired if they could run masonry trim on the sides of the garage doors on the interior side (east elevation) of each of the four unit buildings, to have the same look as the five unit buildings across from them. Frank agreed it would not be an issue, they will do that. Bremer asked for clarification on the wetland setback, and one unit, which appears to have the stairs in the setback. Calkins replied there would not be actual construction, but the support posts, similar to what some of the single-family homes have in the area.

Czebotar moved to approve a Site/Design Review Permit, requested by CF Investments, LLC, for 30-unit residential project on Lots 57 & 58 Prairie Place Subdivision, located in the 5500 Block of Holscher Road, McFarland WI, conditioned upon:

1. Addressing recommended conditions of approval as identified in the McFarland Fire & Rescue Department staff review letter dated September 15, 2020.
2. Addressing recommended conditions of approval as identified in the Village Engineer's staff review letter dated September 17, 2020.
3. Submittal of revised floor plans and building elevations for the four-unit and five-unit townhouses as provided in the Community Development Director's staff report, dated Monday September 21, 2020:
 - a. Sheet A2 incorrectly labels 6-unit instead of 4-unit.
 - b. There is an additional sheet marked Sheet A2 that shows a first-floor plan for 6 units, labeled as 4-unit. This sheet should be relabeled in the proper sequence and show correctly the first-floor plan for the five-unit building.
 - c. Sheet A3 is incorrectly labeled 4-unit. This sheet should be relabeled in the proper sequence, and show correctly the second floor plan for the five-unit structure.
 - d. Exterior elevations for the 4-unit and 5-unit buildings were not provided in the latest plan submittal. The exterior building materials are noted but there is no elevation drawing showing their location.
4. Removal of the two visitor parking stalls shown between the four-unit townhouses and replacement with sod, turf grass, and perimeter curbing.
5. Provide on-site signage or pavement markings designating those stalls that are intended for common visitor parking use for all units.
6. Update the lighting/photometric plan, Sheet C1, to reflect the revised building layout.
7. Update Sheets L101, L200 and L201 to address the revised plan submittal.
8. Designating the internal drive as a private road for building addressing purposes; provide private road signage names at each driveway entrance to Holscher Road.
9. Submit revised development plans to the Village Engineer for review and acceptance for a private path connecting the development site to the public path to the east with the private path to not exceed 8% grade.

10. Provide a base of culture stone on the rear of the four unit town houses to the same height as the stone provided on the front of the five unit town houses along the sides of the garages.

Rupert seconded the motion. Motion carried 7-0.

- e. Discussion and action to make a recommendation to the Village Board regarding a Condominium Plat and Declaration from CF Investments, LLC, for the property located at Lots 57 & 58 Prairie Place Subdivision creating The Condos at Prairie Place, consisting of 30 residential units.

Bremer reviewed his staff report with Commissioners and the comments from the Village Attorney as provided in packets.

Czebotar moved to recommend to the Village Board approval of a Condominium Plat and Declaration from CF Investments, LLC, for the property located at Lots 57 & 58 Prairie Place Subdivision creating The Condos at Prairie Place, consisting of 30 residential units conditioned upon:

1. Addressing recommended revisions to the Declaration of Condominium as identified by the Village Attorney in the copy dated September 8, 2020, as attached in the packet.
2. On the plat, the name of the condominium should match exactly with the name used in the declaration.
3. On the first page of the plat, the building on Lot 58 should be identified by unit numbers.
4. Note 2 on the plat, indicates that parking stalls are LCEs belonging to the unit to which they are appurtenant. The declaration does not state which units they are appurtenant to. Section 4.03(b) relies on the plat to determine whether a parking space is an LCE or not, so one or the other should be modified.
5. Addressing consistency between saying "Common Areas" (which by the terms of the Declaration include LCEs" and saying "Common Areas and Limited Common Areas" implying that the latter are not included in the former.)
6. Designating the internal drive as a private road or building addressing purposes; provide private road signage names at each driveway entrance to Holscher Road.

Peters seconded the motion. Motion carried 7-0.

- f. Discussion of a concept plan by Northpointe Development for multifamily Residential development on Lot 56 of Prairie Place subdivision, located at the corner of Holscher Road and Broadhead Street.

Bremer summarized this proposal was before the Plan Commission in June, and at that time representatives of Northpointe Development agreed to postpone action pending the completion of the traffic intersection analysis, the developer was also encouraged to meet with the neighborhood residents to discuss potential plan revisions. Developers did meet with the neighborhood association to discuss the revised 60-unit proposal, included in packets. Northpointe Development indicated last week they are considering a revised 50-unit project, a concept for that was also provided in packets. Northpointe Development requested having the originally scheduled public hearing for tonight be cancelled and it be a discussion only presentation to inform the Plan Commission and community on the changes to the development they have been working on after meetings with the neighborhood association.

Bremer indicated they did receive a letter of support from Tom Gannon. A letter from the McFarland Cemetery Association opposed to the development was received. On July 14, 2020 the Village received a petition of protest to the zoning map amendment, under 62 – 344(a) of the zoning code. This is signed by residents within 100 feet. Bremer explained per code if a valid petition is received from enough property owners within 100 feet, any rezone approval considered by the Village Board requires a $\frac{3}{4}$ vote in favor, which would need to be 6 – 1 in favor. Bremer indicated a letter from the Prairie Ridge Neighborhood Association was received in opposition to the 60-unit proposal. Bremer read the letter into record. A letter was received from McFarland Community members, which Bremer read into record, along with a letter from Jerry and Susan Dietzel in opposition. All correspondence received is in tonight's packet and was in regards to the 60-unit proposal.

Sean O'Brien representing Northpointe Development indicated last week when they noticed there was still considerable opposition they decided to pull their 60-unit request and come forward with a proposal for something which would be closer in density to what is allowed under a conditional use permit in the R-3 District.

O'Brien reviewed their previous proposal for a five building 80-unit development, and their proposal for a less dense three-building proposal of 60 units. They are now looking at a three building, 50-unit proposal for the site. They would reduce the townhomes from 16 units down to 12 affordable housing units, and the 44-unit affordable senior apartment would be reduced to 38 units. This would allow them to have more parking to meet the Village requirements for multi-family; they will look to see if they now have too much parking on the site. The reduction in size would also give them the ability to move the location of the building further away from the wetlands. It would be proposed as a three-story building but within the height requirements for the R-3 District.

O'Brien went over some possible architectural designs for the project. They do not have a complete submittal as this is for discussion only, to give an idea of what they

would be looking to build. It would be Wisconsin Greenbuilt Home certified. O'Brien reviewed their presentation of senior affordable housing for the proposal. It would be 38 units of senior affordable housing, 16 one bedroom and 22 two bedroom units, developers project it would house 44 total residents in a 38 unit building where only 2 – 4 of the households will be employed, 32 – 38 will have vehicles. Thus this being less impact on the neighborhood. They will collaborate with local organizations to provide what is needed for the residents, rideshare etc., and will have amenities on site for them, including the addition of a gazebo and playground.

O'Brien went through the concerns from neighbors, prior meetings, and the changes they have made to the proposal to address them, with the list provided in packets. They are putting a significant amount of money into the project through the tax credit program. They have to maintain the three stories if they want to maintain the senior component of the project. O'Brien also reviewed the differences between a rezone request versus a potential project under a conditional use permit request. With the PUD rezone, they may ask for an exception to the parking requirement if the Village feels they have too much parking, and the project would only have one unit more than allowed per zoning requirements for a conditional use permit in the R-3 District.

Commissioners discussed with O'Brien the possibility of solar, grant financing for the project, the options of pursuing a rezone to PUD versus a CUP for the project. O'Brien indicated if they scaled down to 49 units to meet the CUP maximum density in the R-3 District, they would possibly have to abandon the senior aspect of the proposal. Clarification on how the petition process works, how the feedback from neighbors is important on a proposal. O'Brien indicated having the senior component on the site would allow them to do a really expensive townhome design with underground parking, if not they would only be able to do more of a standard townhome with at-grade garages back on the site. O'Brien stated they would be able to have better exteriors to the townhomes with the senior aspect to the apartment building, with or without, the senior aspect to the project; the townhomes would be affordable housing units. Czebotar summarized it appears if they moved forward with the rezone, and the petition held, with the politics of the Village Board, it would appear the Plan Commission would be just spinning their wheels on the proposal. O'Brien indicated they would not move forward with the re-zone unless the neighbors rescinded their petition, they would then move forward with a conditional use. O'Brien hopes the neighbors see the newest change to 50-units as favorable.

Czebotar asked for Commissioner feedback on the project as proposed without the petition, what are the thoughts of the Commissioners if the neighborhood would go along with this most recent 50-unit design. Commissioners felt the new design was good, they did feel there might be some pushback from the neighborhood, but it would be a good type of diverse housing. Green indicated he did not have any

concerns, it is well thought out, meets the Village's housing needs and situated on the site well, and architectural fits. Rupert indicated the changes to date look good but there still might be some resistance from the neighborhood. Peters indicated he was glad they were trying to get senior units as part of the project so the site has a mixed of units, and they have done a good job interacting with the community and that they are going back again to the neighborhood association for further discussion on the 50-unit design. Fischer liked the aspect of the flat roof and possible solar power and felt it would benefit the whole neighborhood. Czebotar stated it would be up to O'Brien to convince the neighborhood that the 50-unit plan would be a good fit for all concerned. O'Brien indicated he would be meeting with the neighborhood steering committee to discuss the changes and keep staff apprised of what direction developers would be moving with the proposal.

7. STAFF REPORTS

- a. Property maintenance report – no comments
- b. Director's report – no comments

8. SCHEDULE NEXT MEETING DATE

- a. October 19, 2020 at 7:00 p.m.

9. ADJOURNMENT.

Rupert moved to adjourn, Fischer seconded the motion. Motion carried – meeting adjourned at 9:57 p.m.

Please publish in the
McFarland Thistle on
October 8, 2020 and October 15, 2020

**VILLAGE OF MCFARLAND
NOTICE OF PUBLIC HEARING
BEFORE THE VILLAGE BOARD**

NOTICE IS HEREBY GIVEN that there will be a public hearing before the Village Board on Monday, October 26, 2020 at 7:00 p.m. in the Community Room of the Municipal Center, 5915 Milwaukee St., McFarland, Wisconsin, at which time interested parties and citizens shall have an opportunity to be heard concerning the following:

Review and possible recommendation to the Village Board regarding Ordinance No. 2020-22, An Ordinance Amending Various Sections of the McFarland Municipal Code Including Chapter 47 Public Utilities, Chapter 56 Subdivisions, and Chapter 62 Zoning Related to Village Utilities.

Information regarding this request is available for review online at www.mcfarland.wi.us/activedevelopmentprojects or at the Village of McFarland Municipal Center lobby, 5915 Milwaukee Street, McFarland, WI 53558 (Monday-Friday, 8:00 a.m. to 4:30 p.m.).

COVID-19 RELATED INFORMATION

Due to the COVID-19 Pandemic, the Village recommends and **URGES** all residents to view the meeting that evening live on the Charter cable channel 982; TDS channel 1009 or online at mcfarlandcablechannel.com and those who wish to participate and provide public comment do so via Zoom(the Village's virtual meeting software). You can join the Zoom Webinar by visiting <https://us02web.zoom.us/j/84915697513>

Or Telephone: Dial (for higher quality, dial a number based on your current location): US: +1 (312) 626-6799 Webinar ID: Webinar ID: 849 1569 7513

Due to limitations from Dane County Public Health, only 10 non-employees are allowed in the Municipal Center at one time. **If you choose to attend the meeting in-person, the Village CANNOT GUARANTEE you will be allowed a spot inside the building to view the meeting.** Those who wish to provide public comment at the meeting will be ushered in and out of the building to accommodate the 10-person gathering limit.

If you cannot attend the meeting, please submit your written comments to the Village Board before October 26, 2020. The mailing address is:

Village of McFarland
Community Development Department
P.O. Box 110
McFarland, WI 53558

community.development@mcfarland.wi.us

Respectfully submitted by,

Andrew Bremer

Community and Economic Development Director



PLAN COMMISSION SUMMARY SHEET

MEETING DATE: Monday, October 19, 2020

SECTION: Business

DEPARTMENT: Community Development

CONTACT: Andrew Bremer, Comm & Eco Dev Director

AGENDA ITEM: Discussion and possible action on a site/design review application submitted by Rick & Susan Hubanks for an expansion of Angelo's Restaurant, 4706 Farwell Street.

PREVIOUS ACTION:

In June of 2020, the Plan Commission and Village Board approved Ordinance 2020-17 to rezone 4706 Farwell Street from C-H Commercial Highway to C-G Commercial General. This rezone petition was approved to enable future expansion of the property which would not have otherwise been allowed under the C-H Commercial Highway District due to minimum front yard setback requirements.

ISSUE SUMMARY:

Background and Request

The owners of Angelo's restaurant are seeking approval of a site/design permit to expand the restaurant and change the exterior facade along the front and sides of the building. The proposal would add 1,116 SF to the ground floor and reconfigure and reduce the existing outdoor consumption patio area to 420 SF. A copy of the application is included in the packet. The following provides a staff review of the key components of the site/design request.

Setbacks

The proposed expansion meets the minimum side and rear yard setbacks of the C-G District. Sec. 62-72, footnote 1, states that "the front yard setback can be reduced to zero, if parking is provided in the rear of the building." Staff interprets this code provision to mean that if parking is behind, or even to the side of a building, the front setback may be reduced to as low as zero with Plan Commission approval of a site/design application. In the case of the subject lot, there is existing parking in the side and rear yards. The existing building is 34 feet from the front property line. Staff worked with the applicant and his designer to consider what might be an appropriate minimum front setback for the expanded property. Attached within the packet is a copy of Map 7 of the Comprehensive Plan, 'Main Street' Vision, and a copy of the TID #5 Design Guidelines. The latter specifically notes under Building Orientation, "locate smaller buildings of one or two stories immediately adjacent to sidewalks (no setbacks)". In staff's opinion a zero front yard setback, especially for an entire facade, may not be the best fit for area given the context of other existing development. Zero front yard setbacks are more appropriate/common in a traditional downtown setting where there are also zero side yard setbacks. For a commercial corridor such as Farwell Street some building setback is appropriate to enable front yard landscaping, patio space, benches, bike racks, etc. The applicants site plan includes a front yard building setback ranging from 7-9 feet. Staff feels this is an appropriate setback for the site, noting that the PUD for The Atwater mixed-use development under construction across the street has a setback of 12-13'.



Staff request the inclusion of a bike rack and seating benches in the front yard which the applicant has provided. Staff also notes that the proposed design does a nice job of varying the front building plane. Ultimately the Plan Commission must determine if the proposed setbacks are appropriate, but staff recommends approval as submitted.

Adherence to TID #5 Design Guidelines

The packet includes a staff review of project compliance with the TID #5 design guidelines. The only item of concern by staff is the proposed ground mounted accent building lighting. The Plan Commission should determine whether this is necessary and acceptable.

Other Site/Design Standards

The packet includes a staff review of the development related to the site/design standards in Sec. 62-310(e).

- **Building Height.** Proposed building addition is within the maximum 40 feet building height requirements of Sec. 62-72 for C-G zoned properties.
- **Lot Coverage.** Sec. 62-72 limits total lot coverage (impervious area) to 90%. Current lot coverage is 100%. The proposed project would reduce the lot coverage by adding a landscaping bed to around the proposed addition.
- **Landscaping.** The application includes a site plan illustrating the proposed landscaping improvements including installation of a black/gray river rock planting bed with Raffinato edging on the west and south elevations of the building addition. Applicant proposing 17 total arborvitae bushes in these same areas as building foundation plantings along with ground level grasses. Sec. 62-72 requires 40 points per 100 feet of foundation and 10 points per 1,000 SF of gross floor area. The building addition includes 78' of new foundation and 1,116 SF of new gross floor area, thus requiring 51 landscaping points. The 17 arborvitae trees provide 102 landscaping points.
- **Patio Fencing.** The Fire & Rescue Department and the Public Safety Committee have recommended the addition of a second emergency only gate to the patio area, presumably to be located on the east side adjacent to the building. The revised patio fencing will need a building permit from the Building Inspector and the owner will need to securely mount to the concrete all fence posts. The owner may reuse the existing fence material or modify to include masonry columns to double as safety barriers.
- **Protective Bollards.** Unlike the recent application by the Maple Tree Restaurant, the Department is less concerned about the need for protective bollards around the entire perimeter of the redesigned outdoor patio. As opposed to the Maple Tree site, this location does not have any drive aisles immediately adjacent to the redesigned outdoor patio. There are two parking stalls perpendicular to the outdoor area. The Public Safety Committee met on October 14th and recommended either protective bollards or concrete planters or columns in the area of the fence in front of the two parking stalls. If bollards are used, they should be no taller than the height of the fence. The Department is not inclined to recommend bollards are warranted in front of the patio as traffic is parallel and more distant to the patio, there is an existing curb barrier, and there will be benches/bicycle racks and existing street light



poles in front of the patio. Also, bollards located in front of the patio will be aesthetically less pleasing and this site is more visible from the street than Maple Tree's location. A more aesthetically pleasing approach to the bollards would be the construction of stone/masonry columns integrated into the fence perimeter. The applicant is indicated they are open to this design consideration.

- Ingress/Egress and Parking. There are no proposed changes to site ingress or egress to the parking lot. While the remodeled building will be closer to the front lot line it will still be setback 7-9 feet from the front lot line and 17-19 feet from the back of curb providing for visibility for vehicles entering or exiting the site and adjacent properties. The applicant is also proposing to remove the existing freestanding sign which will also improve ingress/egress visibility at the adjacent Culver's driveway. The Zoning Code requires off-street parking spaces equal to 30% of the capacity in persons for taverns and restaurants, plus 4 additional spaces per 1,000 SF of gross leasable floor area. The applicant has indicated with the proposed improvements seating capacity of 106 persons (non-COVID impacts), which requires 32 parking spaces, plus 14 spaces for the GLFA. The current site has 30 parking stalls. When considering the off-street parking needs it is important to note the following:
 - The proposed expansion does not remove any existing parking spaces and is largely comprised of areas already dedicated for outdoor patio dining. There is no viable location on the property to add additional parking.
 - One of the reasons the applicant is seeking this expansion is to allow additional indoor seating to remain economically viable, particularly through the Wisconsin winters, as the business copes with the impacts of the COVID pandemic and the Dane County Health Department's required reduction in seating capacity.
 - There is on-street parking available adjacent to the property in front of the car wash. Approximately four spaces are available, and unlikely to be needed for use by patrons of the car wash business. Additional on-street parking is available further east along Farwell Street. On-street parking can supplement peak demand parking. In addition, shared parking is encouraged in the TID #5 design guidelines.
 - Not all patrons arrive by vehicle. The applicant has agreed to install bike racks in front of the patio. The completion of the Atwater mixed-use building across the street will provide an additional 47 residential units near the restaurant, in addition to those residential properties already within walking distance of the restaurant.
 - Providing an overabundance of parking is also not desirable aesthetically and sustainably (e.g. increase impervious surface and creating heat islands). The Village's parking regulations may be considered outdated with modern urban planning principals. Many communities are opting to revise parking standards to both lower minimum requirements and establish maximum requirements to address aesthetic and sustainable site development objectives. For example, restaurant uses in the City of Madison require minimum parking spaces equal to 15% of capacity of persons and a maximum of 40% capacity of persons.

FINANCIAL/BUDGET IMPACT:

The project will increase the assessed value of the property which will benefit future TID #5 increment collection.

**VILLAGE PLAN REFERENCE:**

Property is identified as Mixed Use/Flex Commercial in the Village's Comprehensive Plan. One of the goals of the plan is to increase and ease opportunities for businesses to grow in McFarland and expand dining. Improving business retention and expanding commercial development are also two of the strategies identified in the Village's 2020-2030 Strategic Plan. In addition, evaluation of ways to become more business friendly and flexible for economic growth is included as in objective of the 2019-2020 Village Board Goals.

ORDINANCE REFERENCE:

Sec. 62-71, Commercial District Permitted Use

Sec. 62-72, Commercial District Bulk Standards

Sec. 62-310, Site/Design Review

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Recommend approval with the following conditions:

1. Addition of a second emergency exit on the east side of the proposed patio.
2. Providing either protective bollards, concrete planters, or concrete/masonry columns in the area of the fence in front of the two parking stalls.
3. Obtaining all necessary building permits related to the building addition, revised site signage, and new patio fencing.
4. Removal of the proposed ground mounted building accent lighting.

ATTACHMENTS:

1. 10.19.20 PC - 4706 Farwell Street - Site Design Application (9.8.20)
2. 4706 Farwell Street Existing Facade
3. Sec. 62-310 Site Design Review_Angelos_10.16.2020
4. TID 5 Design Guidelines_Angelos_10.06.2020
5. 4706 Farwell Street_F&RD Memo_10.01.2020
6. Map 7 McFarland's 'Main Street' Vision

846
**Village of McFarland
Community Development Department**

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VILLAGE OF MCFARLAND

Plan Commission Application – 2020

~Application must be completed in full~

Applicant - Owner	<i>Rick + Susan Hebanks</i>	Applicant's Agent	
	<i>Angelo's McFarland</i>	Name	
Address	<i>4706 Farwell St</i>	Address	
Email	<i>AngelosMcFarland@yahoo.com</i>	Email	
Phone #	<i>(608) 577-0453</i>	Phone #	
Fax #		Fax #	

Parcel No(s). LOT 1 C.S.M. # 2949 Type of Proposal – Please check boxes below that apply

Requires Public Hearing (Class One)	FEES	Requires Public Hearing (Class Two)	FEES	Public Hearing Not required	FEES
☐ Preliminary Plat	\$500+AF	☐ Conditional Use	\$370+F	☐ Annexation	At cost
☐ Preliminary Plat (reapplication)	\$500+BF	☐ Rezoning (map)	\$405+	☐ Dev. Agreement Including Addendums	\$400 F
☐ Certified Survey Map	\$300+FG	☐ Zoning Amendment (text)	\$405 +F	☐ Final Plat	\$500 +CF
☐ Condominium	\$300+EF	☐ Variance-Board of Zoning Appeals	\$380+F	☐ Final Plat (reapplication)	\$400 +DF
☐ Comprehensive Plan Amendment	\$500+F			☒ Site/Design Review	\$400 + F

+ = Plus publication and notification charges

A = Plus \$50.00 per lot

B = Any preliminary plat which has previously been reviewed/revised within the last 36 months

C = Plus \$50.00 for each lot within the final plat

D = Any final plat which has been previously reviewed or/ revised within the last 36 months

E = Plus \$40.00 for each unit shown

F = Plus actual legal, engineering and financial consulting costs incurred by the Village

G = Plus \$25.00 per lot for two or more lots.

Escrow Deposits

(covers costs for outside consultants; e.g., engineers, attorneys, etc.)

☐ R-E, R-3 & PD (up to 50 acres)	\$5,000
☐ R-E, R-3 & PD (greater than 50 acres)	\$10,000
☐ Commercial Site/Design Review (5,000 sq. ft. or more)	\$2,000
☐ All Plats including condominiums	\$5,000

Nature of the development proposal: Must provide address of proposed development, legal description, current zoning and description of proposal. (Attach additional paper if needed)

*Addition to Angelo's McFarland 4706 Farwell St.
see Attached P&E Legal description*

What action is the applicant requesting of the Plan Commission?

Appeal of proposed addition to Angelo's McFarland

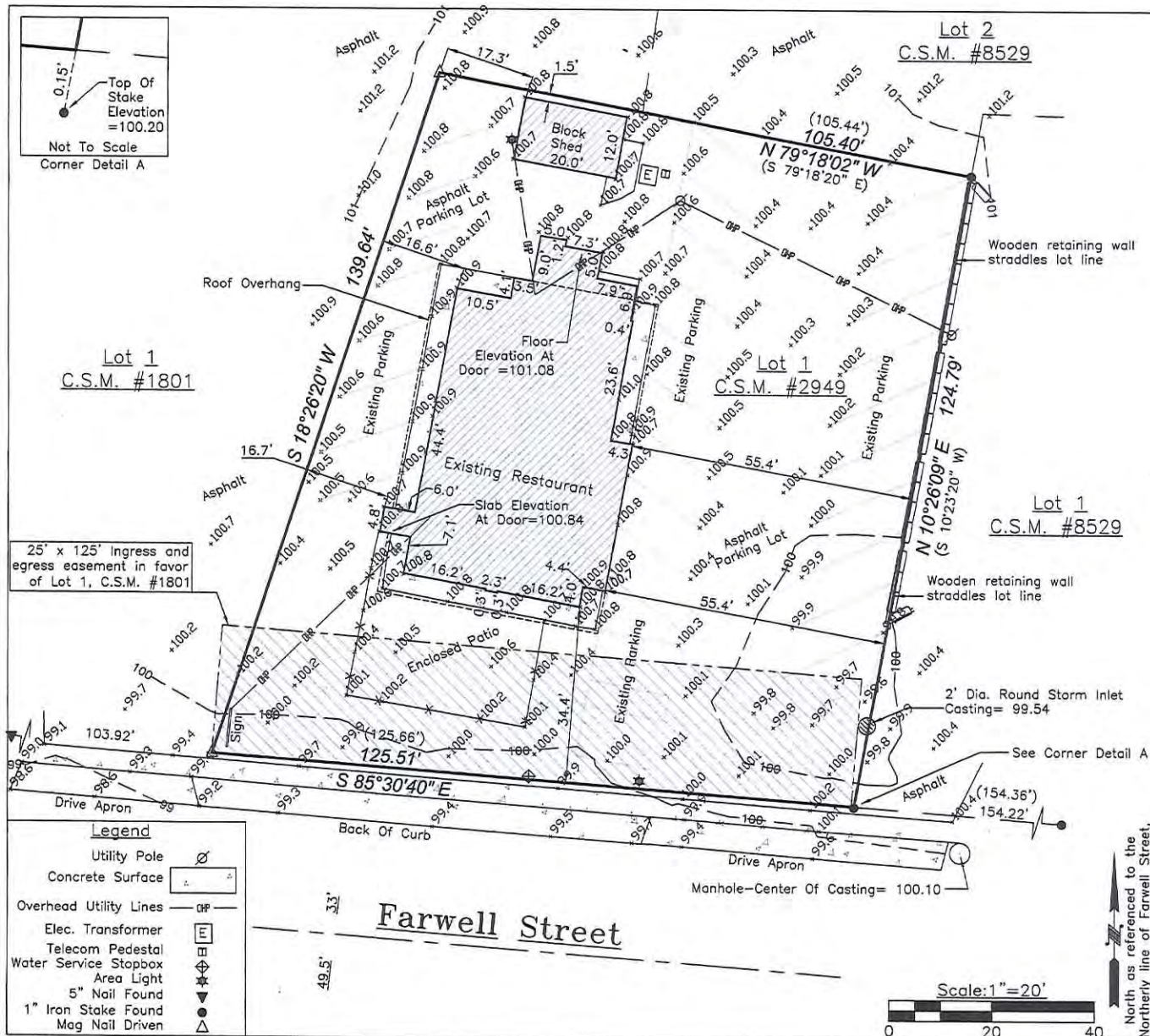
Has this specific proposal been previously discussed or acted upon by the Plan Commission?

☐ YES ☒ NO (If "yes" state the nature and the date(s) of the previous application.)

PLEASE READ AND SIGN AT THE BOTTOM ON THE REVERSE SIDE

Village of McFarland Plan Commission 2020 Schedule

9-3-20



TOPOGRAPHIC SURVEY AND PLAT OF SURVEY

Lot 1 of Certified Survey Map # 2949,
being a part of the SW 1/4 of the
NW 1/4 of Section 3, T 6 N, R 10 E,
Village of McFarland, Dane County,
Wisconsin.

Surveyor's Certificate

I, Timothy G. Radl, Professional Land Surveyor S-2959, hereby
certify I have surveyed, mapped, and monumented the lands
described herein; that such map correctly represents all
exterior boundaries of the land surveyed; and that this survey
is correct to the best of my knowledge and belief.
Dated this 24th day
of August, 2020.

Timothy G. Radl
8/24/2020
WISCONSIN
TIMOTHY G. RADL
S-2959
MADISON
LAND SURVEYOR

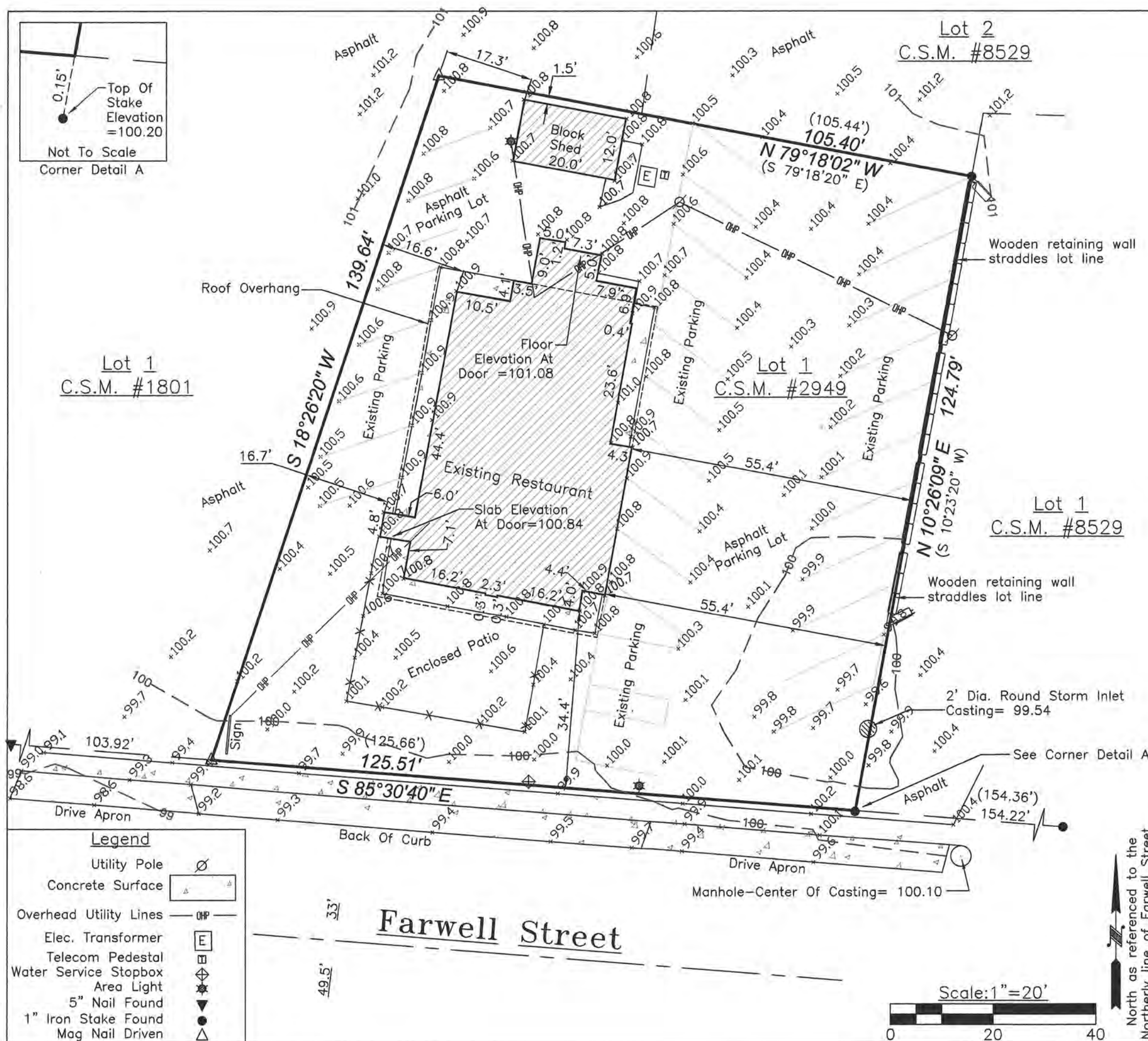
Timothy G. Radl S-2959 Professional Land Surveyor

Notes: Lot Area= 15,081 Sq.Ft.
Vertical Datum Assumed.
Contour Interval: 1 Foot.
Fieldwork performed August 21st, 2020.
Building offsets are to siding or concrete block.
No title report was furnished for this survey.
Only above-ground features have been located.
Previously recorded dimensions enclosed in parenthesis.
Wetlands or flood zones, if present, have not been delineated.
This survey subject to all agreements and easements recorded
and unrecorded.

Red Oak Land Surveying LLC

313 Waverly Pl. Madison, WI 53705 (608)233-3142 redoakls.com

DRAWN	DATE	Prepared for:
TGR	8/21/2020	Rick Hubanks
APPROVED	DATE	4706 Farwell St.
TGR	8/23/2020	McFarland, WI 53558
SCALE	SHEET	PROJECT NO.
1"=20'	1 of 1	2020077



TOPOGRAPHIC SURVEY AND PLAT OF SURVEY

Lot 1 of Certified Survey Map # 2949,
being a part of the SW 1/4 of the
NW 1/4 of Section 3, T 6 N, R 10 E,
Village of McFarland, Dane County,
Wisconsin.

Surveyor's Certificate
I, Timothy G. Radl, Professional Land Surveyor S-2959, hereby
certify I have surveyed, mapped, and monumented the lands
described herein; that such map correctly represents all
exterior boundaries of the land surveyed; and that this survey
is correct to the best of my knowledge and belief.
Dated this 28th day
of September, 2020.

[Signature]
9-28-2020
TIMOTHY G. RADL
S-2959
MADISON
WIS.
LAND SURVEYOR

Timothy G. Radl S-2959 Professional Land Surveyor
Revised 9/28/2020 to remove access easement in favor of
Lot 1 Certified Survey Map #1801, the following having now
been removed via Document #5639243.
Notes: Lot Area= 15,081 Sq.Ft.
Vertical Datum Assumed.
Contour Interval: 1 Foot.
Fieldwork performed August 21st, 2020.
Building offsets are to siding or concrete block.
No title report was furnished for this survey.
Only above-ground features have been located.
Previously recorded dimensions enclosed in parenthesis.
Wetlands or flood zones, if present, have not been delineated.
This survey subject to all agreements and easements recorded
and unrecorded.

Red Oak Land Surveying LLC
313 Waverly Pl. Madison, WI 53705 (608)233-3142 redoakls.com

DRAWN TGR	DATE 8/21/2020	Prepared for: Rick Hubanks 4706 Farwell St. McFarland, WI 53558
APPROVED TGR	DATE 8/23/2020	
SCALE 1"=20'	SHEET 1 of 1	PROJECT NO. 2020077

FARWELL STREET

BIKES

BENCH

21

10'
SETBACK

DINING

ADDITION

EXISTING

DINING

M

W

MECH

BAR

KITCHEN

PATIO
14 x 30

ENTRY

FLOOR PLAN
1/8" = 1'-0"

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VILLAGE OF MCFARLAND

Project: Angelo's McFarland
Susan & Rick Hubanks
4706 Farwell Street
McFarland, WI 53558

Designer: Chucky Geurink
2354 Hwy AB
McFarland, WI 53558
(608)345-4333
cggeurink@charter.net

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Issued: 9/8/20

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Angelo's McFarland
Seating Capacities

	Existing		Proposed	
	Pre/ COVID	COVID	COVID	Post/ COVID
Bar	28	18	30	34
Dining	55	24	42	48
Patio	35	48		24
Totals	118	90	72	106

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VILLAGE OF McFARLAND

Landscaping

All shaded area to be edged with Raffinato edging and filled with black/gray river rock. Holmstrup Arborvitae to be planted along the west and south corner walls. Fill in the rest of the area with bushes and grasses as needed to fill.
see attached for specs

Lighting

Variable lumen output low voltage 35 degree flood beam lighting to be placed behind arborvitae for up lighting on the west and south stone feature wall.
Vertical LED light bars to be installed On the upper stone corners on the south east corner and next to the patio door.
see attached for specs

Signage

Eliminate current pedestal sign. Proposed 2 LED backlit dimensional letter signs on the south and west corner of the stone feature wall.

Exterior finishes

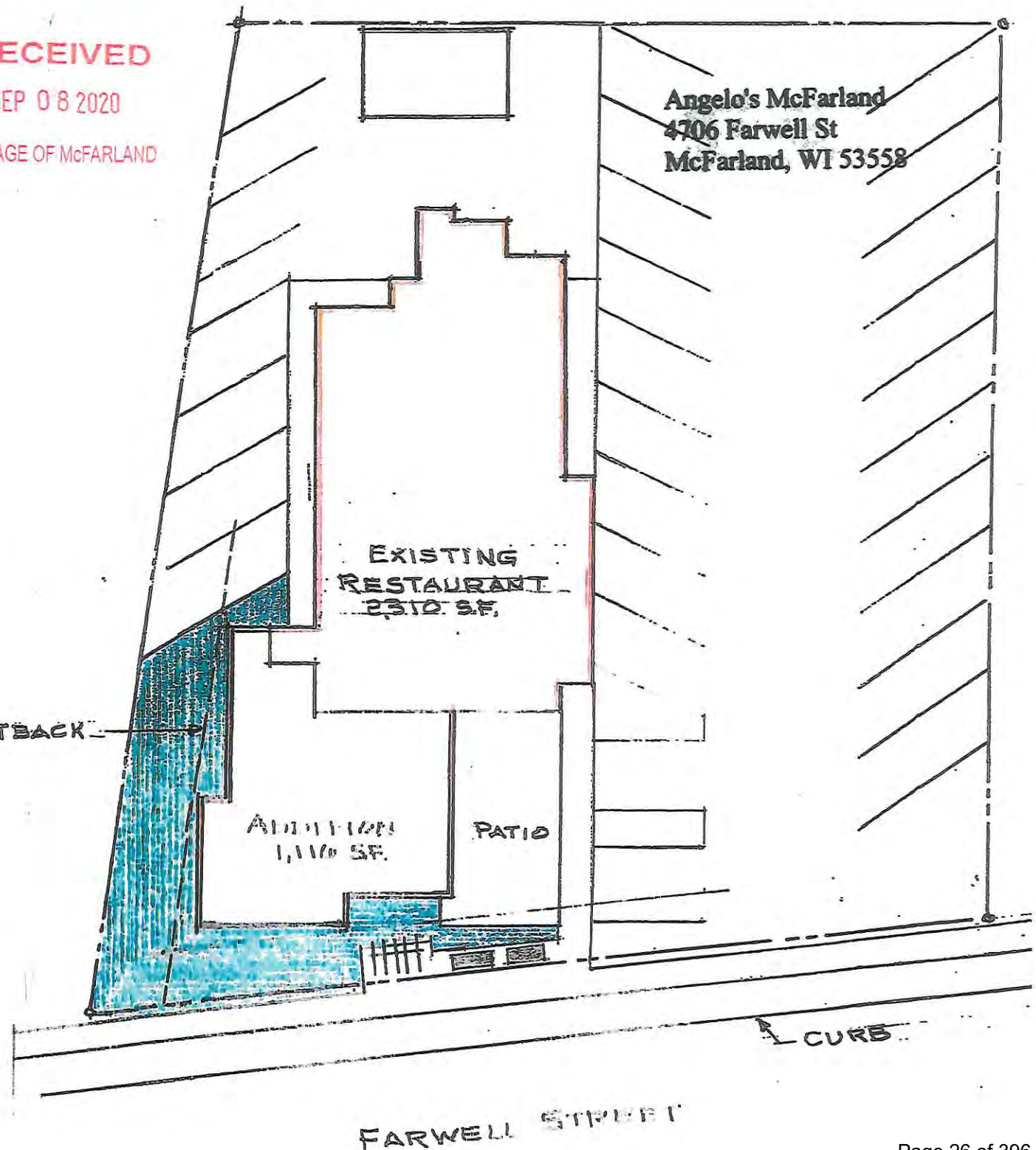
South and west feature corner walls and lower patio area walls to be dark stone veneer (similar to as spec) Upper patio area walls to be light larger format veneer stone.
Remainder of proposed addition and existing structure to be E.F.I.S.
Stucco finish (still working on final color)
Windows and exterior doors to be dark extruded aluminum cladding.

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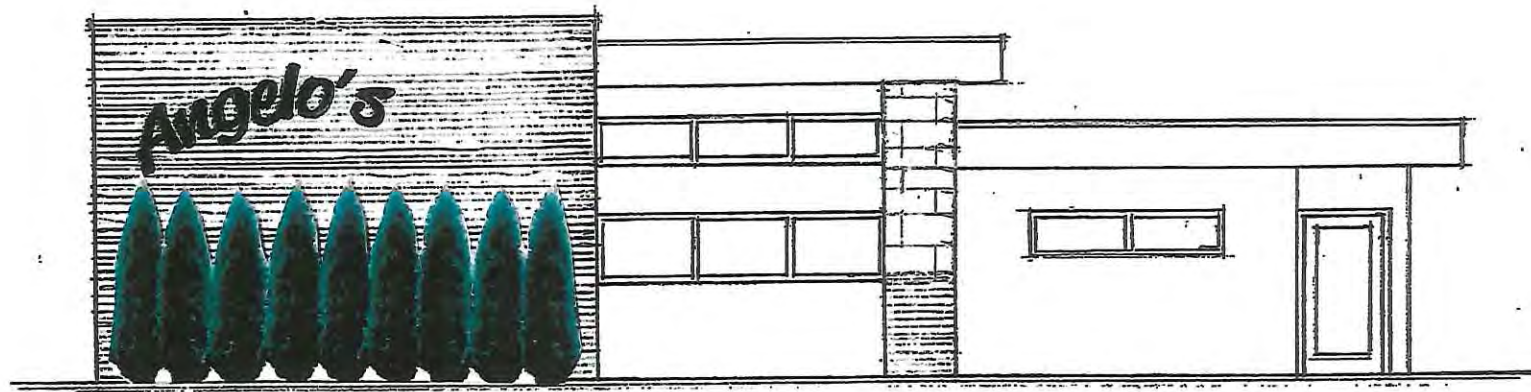
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VILLAGE OF MCFARLAND

Angelo's McFarland
4706 Farwell St
McFarland, WI 53558



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SOUTH ELEVATION

$1/2" = 1'-0"$

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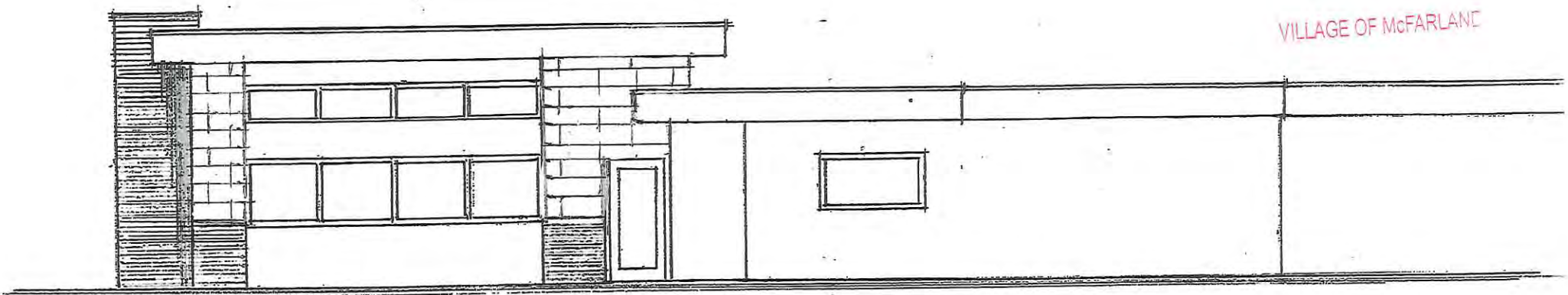


WEST ELEVATION
1/8" = 1'-0"

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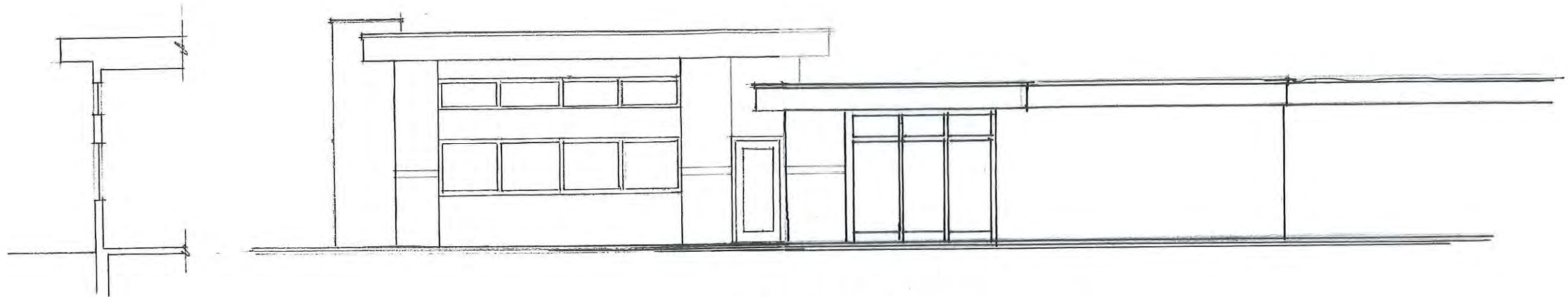
SEP 08 2020

VILLAGE OF McFARLAND

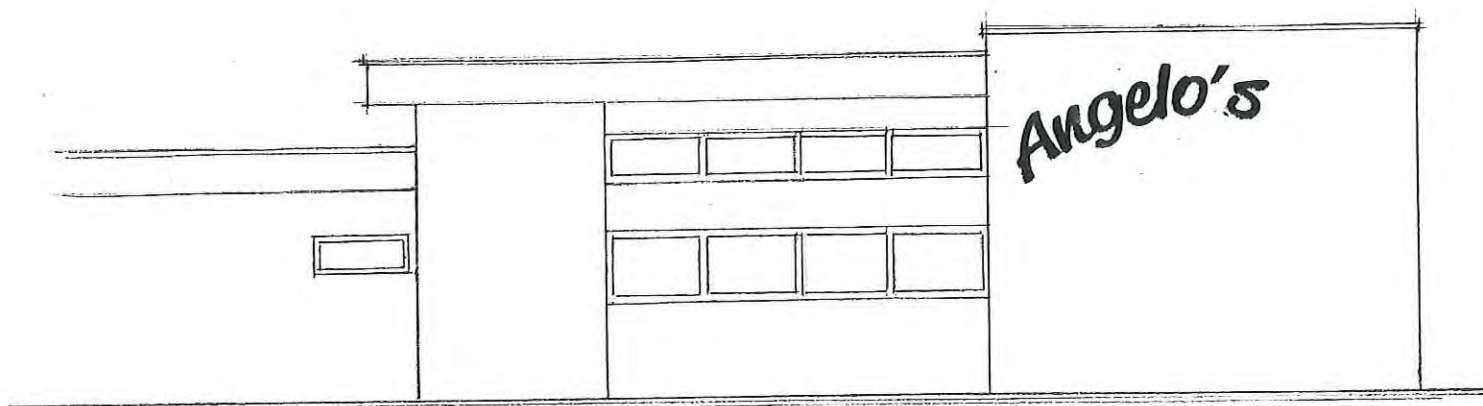


EAST ELEVATION

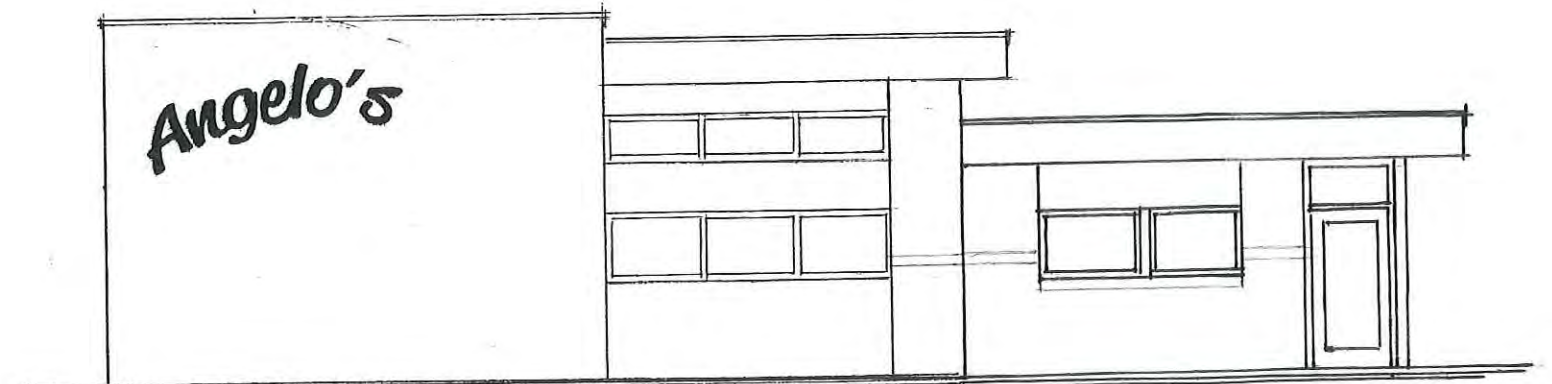
$1/8" = 1'-0"$



EAST ELEVATION
1/8" = 1'-0"



WEST ELEVATION
1/8" = 1'-0"



SOUTH ELEVATION
1/8" = 1'-0"

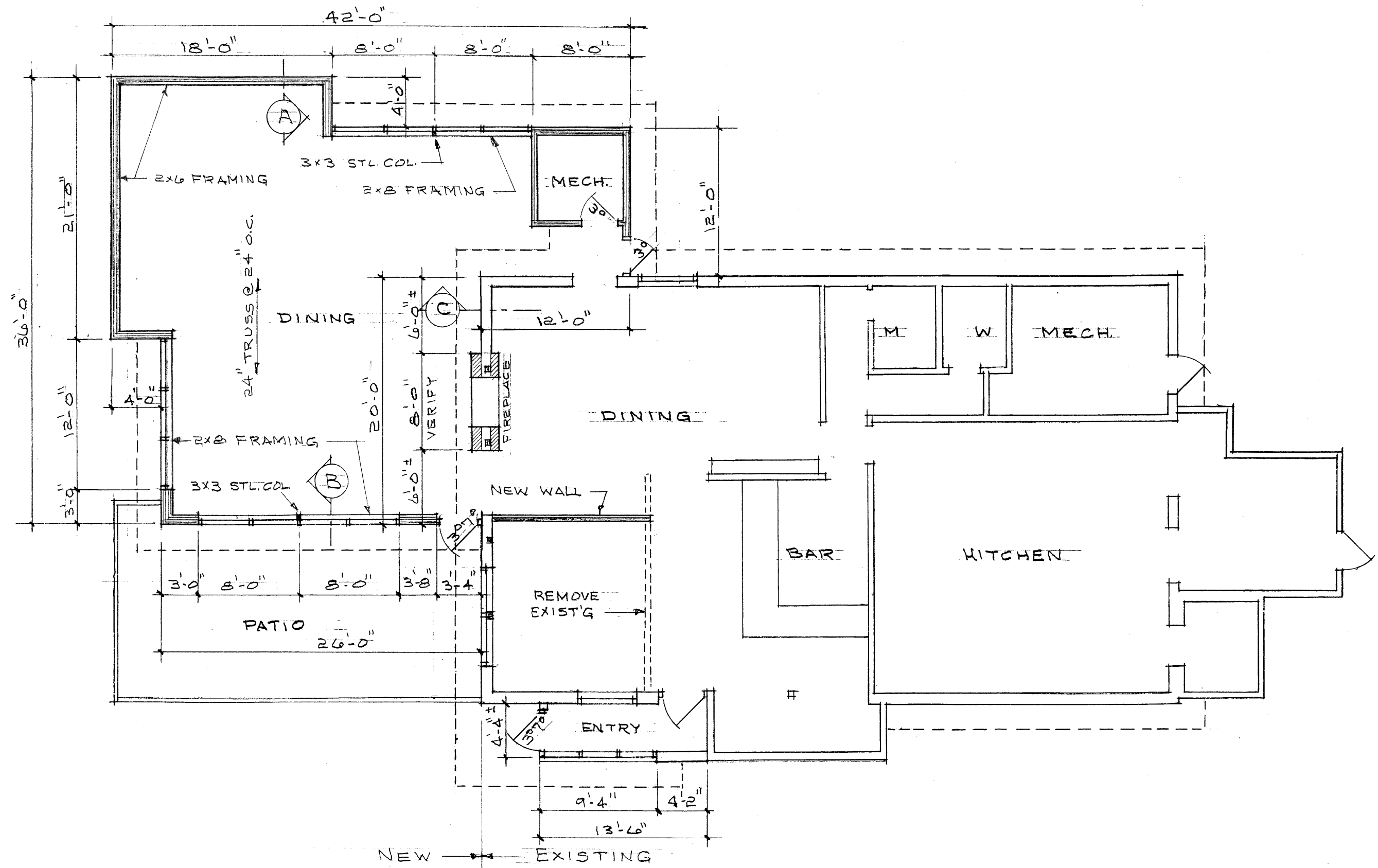
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VILLAGE OF MCFARLAND

Project: Angelo's McFarland
Susan & Rick Hubanks
4706 Farwell Street
McFarland, WI 53558

Designer: Chuck Geurink
2354 Hwy AB
McFarland, WI 53558
(608)345-4333
cggeurink@charter.net

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FLOOR PLAN

1/8" = 1'-0"

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cggeurink@charter.net

Note: Architectural layout plans only. Mechanical and structural engineering components to be verified by others.

REV. - 9/18/20
Issued: 9/17/20

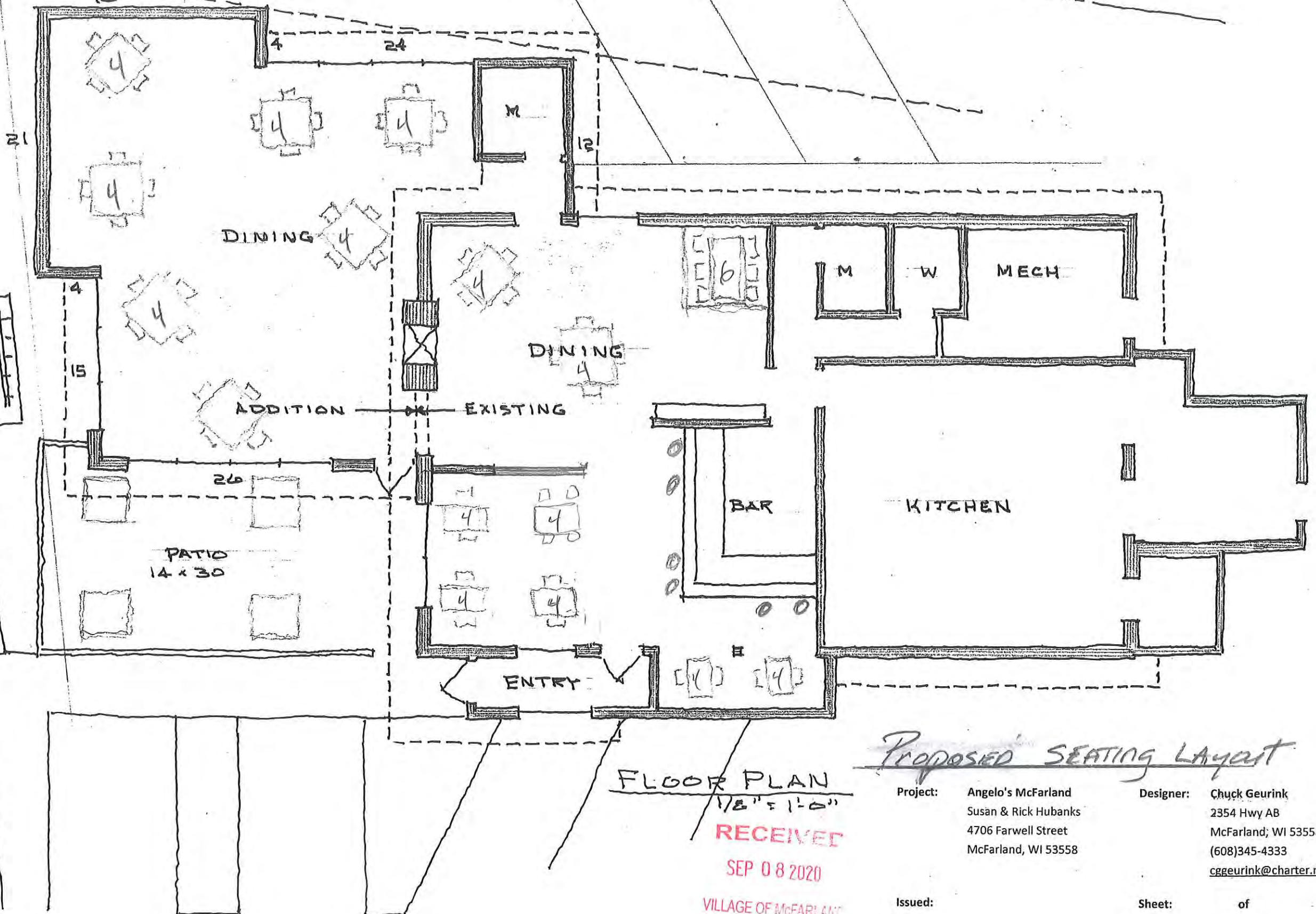
Sheet: 3 of 5

FARWELL STREET

BIKES

BENCH

10'
SETBACK



FLOOR PLAN
1/8" = 1'-0"

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VILLAGE OF MCFARLAND

Proposed Seating Layout

Project: Angelo's McFarland
Susan & Rick Hubanks
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McFarland, WI 53558

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cggeurink@charter.net

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of
Page 32 of 396



Holmstrup Arborvitae



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Photo credit: [Gammon Landscape Nursery](#)

The Holmstrup Arborvitae is an introduction from Denmark. It's a very compact, slow growing, pyramid with rich-green foliage. This evergreen does well in light shade and poor drainage. It's an excellent plant for smaller landscapes. Great year round color. Mature size is around 6-8' tall x 3-4' wide.

Holmstrup Arborvitae Quick Facts:

Color:	<i>Green</i>
Plant Size:	<i>Around 6-8' tall x 3-4' wide</i>
Sunlight:	<i>Full Sun to Partial Shade</i>
Soil Conditions:	<i>Normal, Sandy, Clay, Acidic, Wet</i>



Plant Addicts

Winecraft Black® Smokebush



Hirt's Gardens

Black Dragon Mondo Grass Plants - Ophiopogon nigrescens...



Bountiful Gardens

Carex (Japanese Sedge Grass) 'Ice Dance' | bountifulgarden

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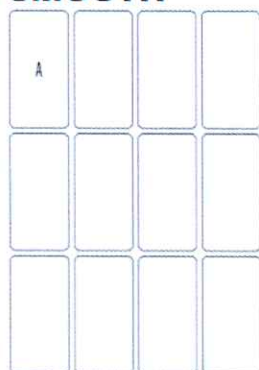
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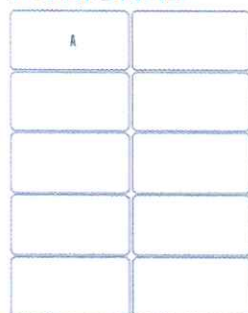
RAFFINATO 180 mm

DESCRIPTION: Edges TEXTURE: Smooth or Polished

PALLET OVERVIEW - 180 mm SMOOTH



PALLET OVERVIEW - 180 mm POLISHED



Specifications per pallet		Imperial	Metric
180 mm SMOOTH	Cubing	24 units	24 units
	Approx. Weight	1 529 lbs	694 kg
	Number of rows	2	



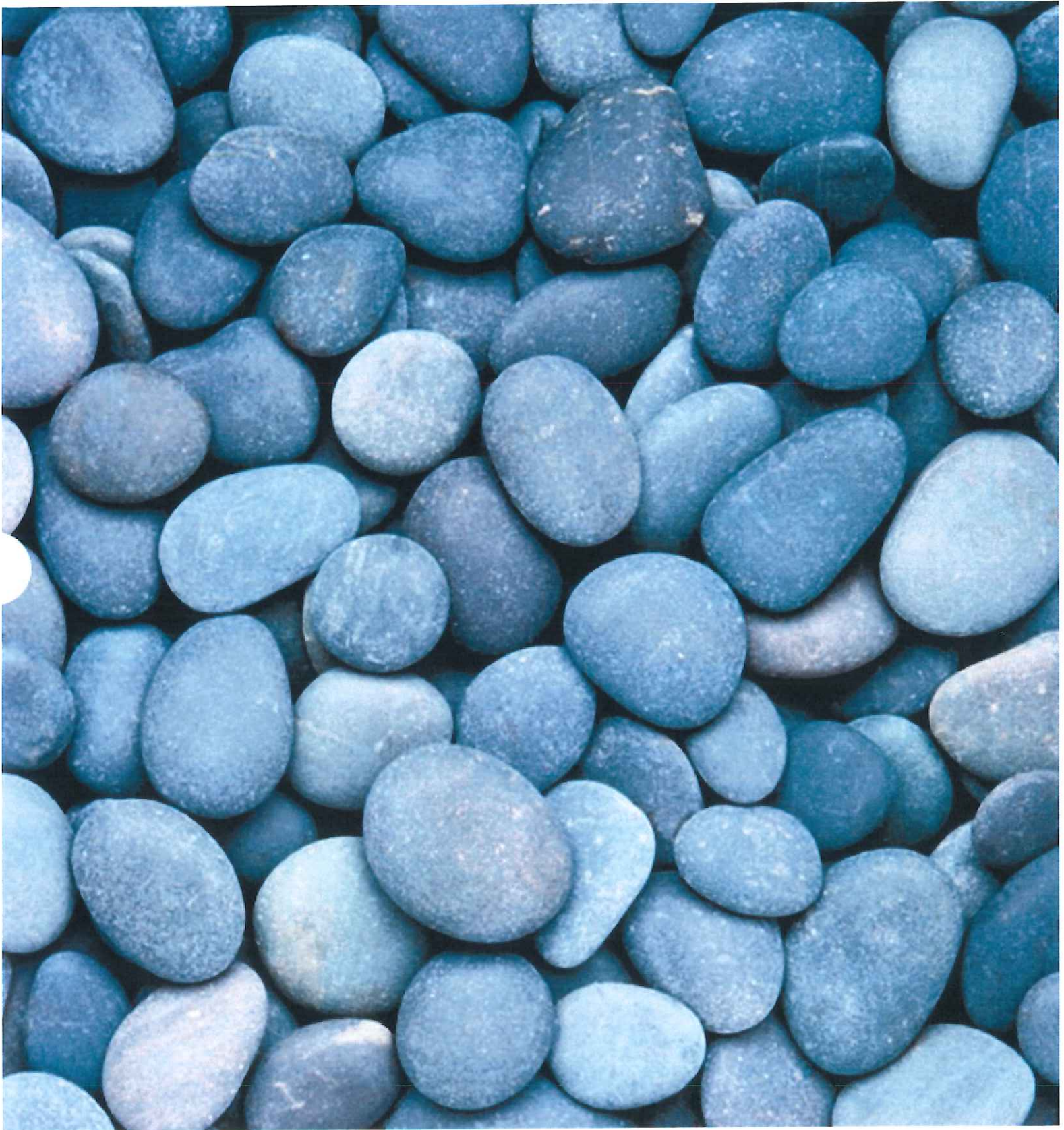
Unit dimensions	in	mm	Units/pallet
Height	7 1/16	180	24 units
Depth	9 13/16	249	
Length	14 1/8	359	

Specifications per pallet		Imperial	Metric
180 mm POLISHED	Cubing	20 units	20 units
	Approx. Weight	1 557 lbs	706 kg
	Number of rows	2	



Unit dimensions	in	mm	Units/pallet
Height	7 1/16	180	20 units
Depth	9 3/4	248	
Length	14 1/16	357	





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Is Bulbs Included: Yes

Finish: Polished Chrome

Certification: CCC

Certification: ce

Protection Level: IP65

Voltage: 85-265V

Item Type: Wall Lamps

Warranty: 3 years

Body Material: Aluminum

Power Source: AC

Style: Contemporary

Light Source: LED Bulbs

Usage: Industrial

Base Type: Wedge

Is Dimmable: Yes

Diffuser: Aluminum Alloy

30cm: 8W

60cm: 16W

80cm: 32W

120cm: 48W

150cm: 60W

170cm: 70W

200cm: 80W

240cm: 90W



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- 3 3/4" high x 2" wide x 4 1/2" deep. Weighs 1 lbs.
- Built-in non-dimmable 8 watt LED module. 3000K color temperature. 80 CRI.
- Variable Lumen Output (VLO) allows to easily switch between 100, 200 or 300 lumen without mechanically adjusting the settings on the fixture.
- VLO adjustable lumen energy-efficient LED landscape accent flood light from Kichler.
- Textured black finish over aluminum construction. Tempered glass lens.
- LED averages 50,000 hours at 3 hours per day.
- 35-degree flood beam angle.
- Advanced optics provide superb center to edge uniformity.
- Complete sealed system for improved reliability.
- Advanced ESD surge protection (6 kV).
- Low voltage - 12V.

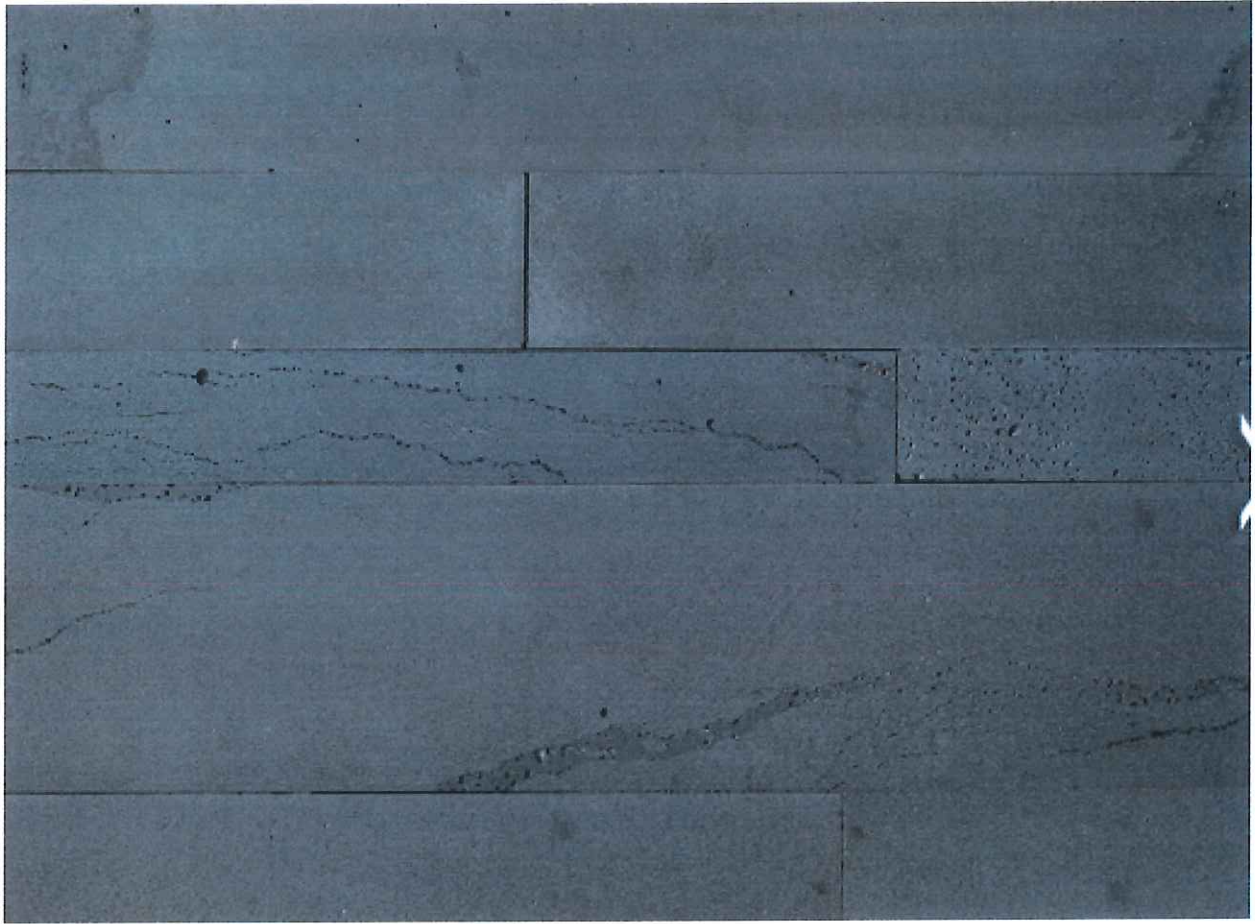
Norstone Graphite PLANCTM



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**4706 Farwell Street
Angelo's Restaurant
Existing Façade Image**



Sec. 62-310. - Site/design review.

- (a) *Purpose.* Site/design review is implemented under municipal authority to promote the public health, safety and welfare and under municipal zoning authority by the Plan Commission. Requirements for design review and approval apply to uses and developments regardless of the characterization of the use or development within this Chapter as a permitted use or conditional use.
- (b) *Scope of site/design review.*
 - (1) *Applicability.* The following developments shall be subject to site/design review by the Plan Commission:
 - a. Development of residential projects consisting of three or more dwelling units.
 - b. Any development in a Commercial District.
 - c. Any development in an Industrial District.
 - d. Any development for which the applicant is a public utility or governmental entity or religious organization.
 - e. Any parking area including five or more parking spaces.
 - (2) *Limit.* Site/design review shall be limited to development for which current application is made for an erosion control or building permit. This Section shall not be deemed to apply to any existing development or use of land that is not affected by current application for erosion control or building permit, nor shall this Section apply to any rehabilitation of an existing structure so long as the size of the rehabilitated structure is not increased.
 - (3) *Development.* Any new construction or exterior improvement to real property for which application for a building permit may be required by this Code.
 - (4) *Village planning consultant.* Any Village planning consultant appointed by the Village Board.
- (c) *Development to comply with site/design standards.* No development subject to site/design review shall occur unless such development complies with all applicable site/design review standards.
- (d) *Manner of site/design review.*
 - (1) Upon application for a building permit, the applicant shall be advised by the Zoning Administrator whether compliance with site/design review standards is required by this Section. If such compliance shall be required, the applicant shall be provided with a checklist and a site/design review application, which shall be in such form as the Zoning Administrator shall approve, and which shall be accompanied by such information as may be necessary to determine and provide for enforcement of this Section.
 - (2) The site/design review application shall be reviewed by the Zoning Administrator, who may consult with a planning consultant, if necessary.
 - (3) When the Zoning Administrator deems the application to be complete, review by the Plan Commission shall be scheduled.
 - (4) The Plan Commission's determination of compliance or noncompliance with this Section shall be issued by the Zoning Administrator, in writing, within ten business days of the determination and sent to the applicant via U.S. Mail. The written determination shall specifically describe all areas

of noncompliance and shall identify changes necessary to bring the proposed development into compliance.

- (5) No building permit shall be issued for any development until the Plan Commission has determined that the development is in compliance with site/design review standards. All construction and improvement subject to site/design review shall conform with approved site/design plans.
- (6) The determinations of the Plan Commission on site/design plan applications shall be appealable to the Village Board pursuant to the procedures set forth in Section 62-113.
- (e) *Site/design standards.* In reviewing plans for development the Plan Commission shall determine that the following standards are met:

No proposed grade changes



- (1) *Grading.* Grading shall insure a positive drainage consistent with established water runoff patterns in the area. All grading shall allow for the installation and maintenance of appropriate landscape materials. Respect for the natural topography in site development will be recommended as a means of capitalizing on the sloping terrain, and earth berms are required to screen out unpleasant views and accentuate pleasant views.

No proposed grade changes



- (2) *Landscaping.* Landscaping shall be required to be installed in accordance with an approved landscaping plan as a component of site and design review. The requirements for landscaping plans are set forth in Appendix B to this Chapter [Code], Village of McFarland Landscaping Standards. All references to the Village Forester shall have the same meaning as referenced in Section 59-20(d).



- (3) *Building relationships.*

- a. The structures shall be related to the site to enhance or maintain current contours. New development shall consider activities on adjacent properties with relation to access from abutting streets, parking areas, service areas, building setbacks, height of structures, and color and materials of adjacent or nearby buildings.
- b. In the development of the site, the existing quality vegetation should ordinarily be maintained in accordance with Section 59-29.



- (4) *Lighting.* The functions of exterior lighting on private property shall be:

- a. To illuminate building facades, especially those bearing business identification signs. Architectural lighting should be free from glare and of a type to complement the existing development in the district.
- b. To illuminate pedestrian walks and spaces. Security lighting should provide necessary levels of illumination to insure safety of the property and its residents, while not reflecting direct rays of light into adjacent property.
- c. To illuminate parking and service areas. Off-street parking area lighting should be so arranged as to conform with applicable provisions of Section 62-172. (The choice of equipment, design, quantity, and placement of on-site lighting shall relate to these functions. Lighting shall be adequate but not excessive. The height and number of lighting standards shall be appropriate to the building and its function and to the neighborhood.)

Refer to staff comments in TID #5 Design Guidelines document.



- (5) *Utility service.* It shall be a goal of the Village to eliminate overhead wiring within the Village. To

Project does not include changes to the existing overhead wiring in the rear of the building. There is no overhead wiring in the front.

this end, owners of property within the Village, working with the utilities servicing the Village shall, in all new development and major additions, make provision for underground service. This shall be accomplished during building development and construction. Sanitary sewer and water utility services shall comply with Village Standard Specifications.



(6) *Building design.* Buildings shall meet the following requirements:

- a. Materials shall be of a durable, low-maintenance type. The colors shall be harmonious with other buildings in the neighborhood.
- b. Mechanical elements on the roof or ground shall be screened from the view of adjacent properties and roadways.
- c. Buildings shall be designed with an architectural flavor that will complement and enrich the character of the Village.
- d. The overall design of the building shall be of high quality, considering the importance of the particular zoning district.
- e. With the exception of the M-IC Zoning District, the front, sides, and rear of all commercial and industrial buildings shall be entirely faced with nonmetallic or wood material. In the M-IC District, a minimum of 15 vertical feet of the front of all buildings shall be faced with nonmetallic or wood material extending across the full front of the building, and also extending a distance of not less than 20 feet on each side of the building. The portion of any building facing or backing onto public streets, or abutting a Residential Zoning District, shall be held to the same requirements as that of the front. These requirements may be waived in whole or in part by the Plan Commission.
- f. An addition shall relate to the existing building in terms of scale, materials and color.
- g. Structures should be designed to be compatible with the structures that are adjacent to them.
- h. Unbroken exterior facades exceeding 70 feet in length shall be avoided.
- i. All building elevations are of importance and should be carefully designed. Building should avoid blank facades.

- (f) *Recommendation of Village Plan Commission.* The Village Plan Commission may, during the site/design review process, suggest features of site/design, and construction, building and structural design, that are not a part of site/design standards but that, in the opinion of the Village Plan Commission, would be desirable to make the development a positive asset to the visual appearance of the community and a positive contribution to the growth and stability of the community tax base. Compliance with such recommendations shall not be required of the developer.
- (g) *Validity of site/design approval.* Where the Plan Commission has approved or conditionally approved an application for site/design approval, such approval shall become null and void within 12 months of the date of the Plan Commission's action unless construction is commenced or the current owner possesses a valid building permit under which construction is commenced within six months of the date of issuance and which shall not be renewed unless construction has commenced and is diligently pursued. No sooner than 60 days nor less than 45 days prior to the automatic revocation of such

Refer to staff comments in TID #5 Design Guidelines document.

site/design approval, the Zoning Administrator shall notify the property owner by certified mail of such revocation. Extensions of up to one year each may be granted by the Plan Commission for just cause, if application is made to the Village at least 30 days before the expiration of said permit.

- (h) *Fees.* The fee for review of a site/design review application shall be the fee established by the Village Board from time to time and provided in Appendix A to this Code, to be paid at the time of submission of the application.
- (i) *Penalties.* Violations of this Section shall be subject to Section 62-311, except that each day a violation continues shall not be deemed a separate violation until the 30 day notice period expires. Nothing herein shall preclude the Village from maintaining a separate action to prevent or abate or remove violations.

(Ord. No. 2011-06, § 1, 5-23-2011)

Editor's note— Section 1 of Ord. No. 2011-06, adopted May 23, 2011, repealed the former § 62-310, and enacted a new § 62-310 as set out herein. The former § 62-310 pertained to similar subject matter, and derived from the Code of 1998, § 13-1-224; Ord. No. 2003-03, § 1(13-1-224), adopted March 24, 2003; Ord. No. 2006-11, § 1, adopted June 26, 2006; and Ord. No. 2008-03, § 2, adopted Feb. 25, 2008.

DESIGN GUIDELINES TID #5

Approved August 13, 2018

In drafting design guidelines for TID # 5 we look to land uses which make-up our existing Farwell St. or "Main Street" corridor and is really the backbone of this TID. Today various businesses, civic uses, residences, open spaces, parking areas, streets and sidewalks all make-up land uses along the corridor. This thoroughfare primarily served as a commercial link to the Village populace. In more recent times, the corridor morphed to serve as a link to a bigger market area- namely Madison and Dane County.

Today, successful main st. environments really are a step back to a time when local businesses sought to locate along corridors with a pedestrian focus. Vehicular mobility is not ignored however; rather, new design ideas create a safe and mobile environment for pedestrian and vehicle movements. Incorporating the following design elements will create a unifying sense of place within an aesthetically pleasing environment that can create destinations that recapture the original intent of a main street.

BUILDING ORIENTATION

- ✓ Provide ample sidewalk locations and corridor widths of one to three people for ease of pedestrian mobility. Plan maintains a 36" walkway from front door to sidewalk
- ✓ Locate smaller buildings of one or two stories immediately adjacent to sidewalks (no setbacks). Building 7-9' setback, deemed appropriate by staff
- ✓ Locate parking to the side or rear of buildings. No changes to parking proposed
- ✓ Coordinate vehicles and pedestrian circulation with development on adjacent lots
- ✓ Install sidewalks on all streets, connect building entries to sidewalks, provide bicycle parking. There is existing connection to the sidewalk to remain, applicant to provide a front bicycle rack
- ✓ Locate service areas, mechanical equipment, and refuse containers to the rear of buildings and screen them. no changes to these features proposed
- ✓ Screen any roof and wall mounted mechanical equipment. plan will raise front elevation to help screen existing roof mechanicals
- ✓ Construct parking areas and landscape islands with curb and gutters at the edges
- ✓ Any onsite storm infiltration areas should be incorporated as site amenities. No changes to parking proposed
- ✓ Avoid deep building setbacks on buildings to avoid large expanses of parking lot or impervious surfaces.
- ✓ We encourage sustainable design and materials in construction projects.

Per Village Engineer: The project as proposed will not increase any imperviousness. The conversion from parking area to rooftop will actually reduce sediment loading, and the landscaped areas will slightly reduce imperviousness.

BUILDING DESIGN AND MATERIALS

- ✓ Design buildings between one and four stories in height
- ✓ Promote high quality design by architects and design exterior walls to appear at a min. 1 ½ stories in height. Building addition will be raised above the current roof line and stepped providing for the 1.5 story appearance. Proposing to use stonewood panels similar to Wahlburgers image in the packet, minus green colored trim. Final colors should be discussed with the Plan Commission
- ✓ Avoid stock building designs
- ✓ Discourage standardized franchise or corporate architecture and bright or highly contrasting color schemes. Applicant proposes south and west corner walls and lower patio area walls to be a dark stonewood veneer, upper patio area walls to be light stonewood veneer, remainder of proposed addition and existing struture to be EFIS, final color to be determined. Windows and exterior doors to be dark aluminium cladding.

- ✓ Continue the architectural theme, design, and detailing on all three sides of the building.
- ✓ Do not allow loading docks or overhead utility doors on street facing facades.
- ✓ Provide overhangs along front facades for pedestrian shelter.
- ✓ Design buildings so their height and scale are compatible with surrounding buildings or provide appropriate transitions for larger buildings to help reduce differences in scale.
- ✓ Use natural building materials such as stone, wood, brick, and glass.
- ✓ For larger buildings use techniques to reduce scale and monotony, such as window patterns, roof overhangs siding awnings moldings, fixtures, structural bays and articulated entryways. Proposed design uses a combination of vertical and horizontal articulation.
- ✓ We encourage sustainable practices with site development, design, and methods in building of any project. Proposed design reduces impervious area and add more front and side yard landscaping areas

LIGHTING

- ✓ Design pedestrian lighting in the front of buildings not to exceed 15ft. in height and parking lot lighting not to exceed 25 ft. in height. Select lighting to match or compliment any decorative lighting along the right-of-way.
- ✗ Use building mounted lighting to highlight architectural features or main building entrances. Avoid general floodlighting or neon outlining of the building façade.
- ✗ Use ninety degree down cast cutoff fixtures (without drop lenses) for all lighting.
- ✓ Avoid lighting “hot spots”.
- ✓ Keep lighting levels at lot lines to a max. of .5 foot-candles
- ✓ Provide use of energy efficient fixtures and bulbs

Applicant proposes using a vertical LED light bar on the southeast corner of the patio wall and ground mounted light fixtures on the west and south elevations of the proposed addition to accent the planned stonewood walls. The ground lights would be screened behind arborvitaes. In staff's opinion the ground lights may not be necessary given these two walls are planned for new LED backlight dimensional wall mounted letter signs.

PARKING

- ✓ Site parking to rear or side of main building. Screen from street light views to minimize visual impacts. No changes to parking proposed
- ✓ Encourage shared parking between nearby building, parcels, to minimize creation of excess paved areas. NA
- ✓ Provide safe pedestrian walkways from the parking lot as well as from any municipal sidewalks.
- ✓ We encourage natural green shielding over hardscaping where applicable.

SIGNAGE

- ✓ Use on-site monument type signs with exterior lighting and integrate with site landscaping. Screen exterior lighting from direct view of street, sidewalks or driveways with landscaping.
- ✓ With monument signs use base materials that are similar to main building materials.
- ✓ Encourage combining signage onto one ground monument sign where there is more than one business on a lot. NA

Applicant proposes to remove the existing freestanding dual post monument sign and erected a new wall mounted sign on the building addition. Staff prefers this approach as it reduces sign clutter along Farwell Street and will improve visibility for vehicles exiting the adjacent Culver's Restaurant.

GAS STATIONS AND CONVENIENCE STORES NA

- Limit the amount of unrelieved paved area on the site by using landscaping and other site design techniques.
- Designs should provide an attractive appearance to building that is comparable with the surrounding area.
- Design any on-site separate structures, canopy, car wash etc. with consistent materials and architectural details for a cohesive project.
- Carefully site any car wash facilities. No direct view should be visible from the street. Careful consideration should be given to off street noise, lighting, hours of operation, vacuum placement and vehicle stacking.



McFarland Fire & Rescue Department

5915 Milwaukee Street • PO Box 110 • McFarland, WI 53558-0110

(608) 838-3278 • Fax: (608) 838-3619

Emergency: 911

October 1, 2020

To: Public Safety Committee

From: Mitchell Sutter, Fire Inspector/Public Education Specialist

RE: Site Plan Review for Angelo's McFarland

I have reviewed the proposed change in the outdoor fenced area requested by Angelo's McFarland on September 8, 2020. The combined occupancy load of the current fenced-in area and the proposed addition, based on the square footage provided, would have a 102 person seating arrangement assuming adjustable seating.

It is the recommendation of the McFarland Fire & Rescue Department that the application be approved based on a second emergency exit be incorporated into the new fence, per the 2015 IBC:1006.2.1 **Egress based on occupant load and common path of egress travel distance.**

If you have any questions regarding the above, please contact me via phone at 608-838-3278 or via email at mitchell.sutter@mcfarland.wi.us

Sincerely,

Mitchell Sutter

Fire Inspector/Public Education Specialist

Cc: Chris Dennis, Fire & EMS Chief (McFarland Fire & Rescue Department)

Base Map Source: Dane County DCIMap

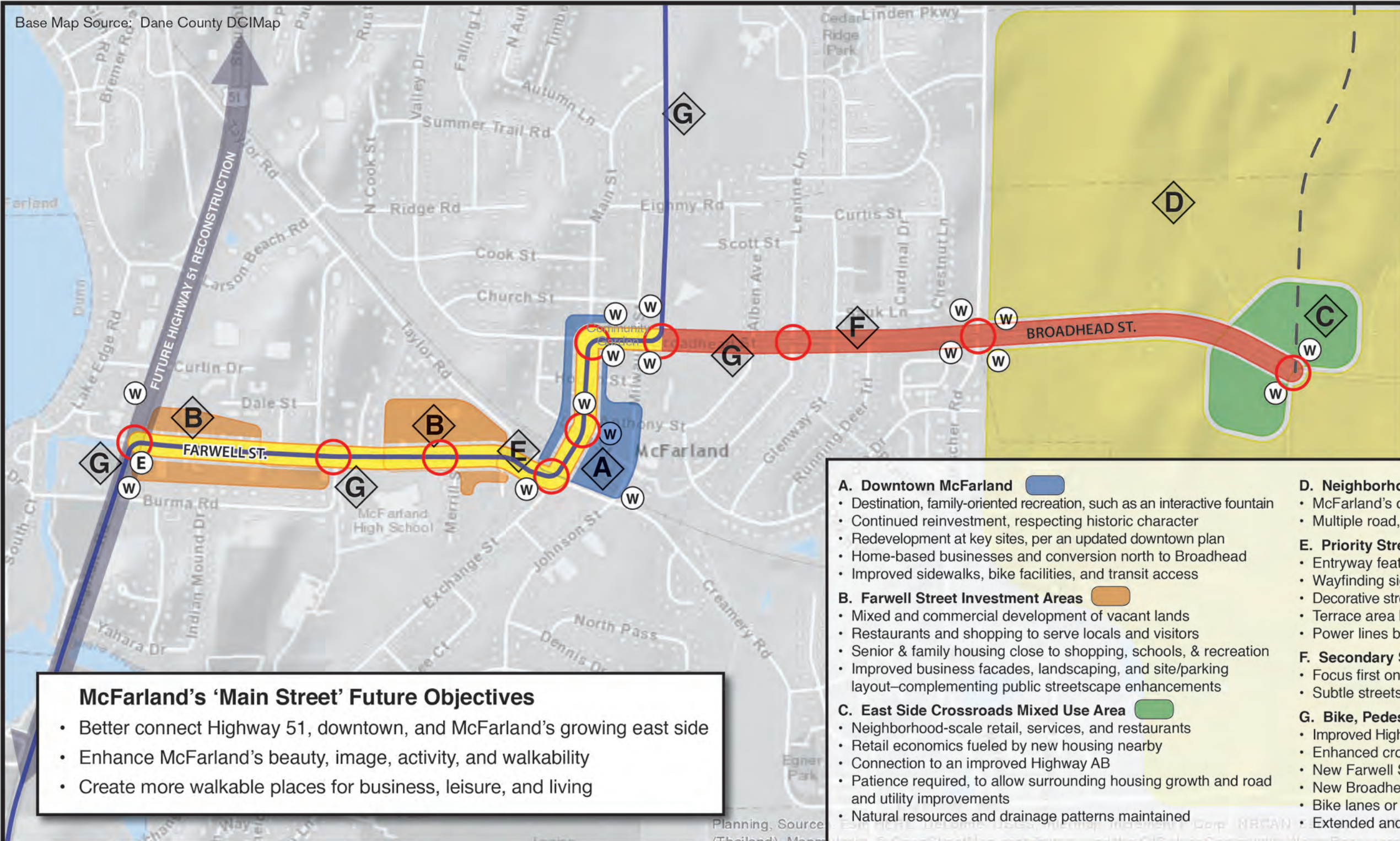
MAP 7
McFARLAND'S 'MAIN STREET' VISION



COMPREHENSIVE PLAN

LEGEND

- Enhanced crosswalks
- Entryway feature
- Wayfinding signage
- New and expanded local roads
- Potential future bus route



McFarland's 'Main Street' Future Objectives

- Better connect Highway 51, downtown, and McFarland's growing east side
- Enhance McFarland's beauty, image, activity, and walkability
- Create more walkable places for business, leisure, and living

- A. Downtown McFarland**
 - Destination, family-oriented recreation, such as an interactive fountain
 - Continued reinvestment, respecting historic character
 - Redevelopment at key sites, per an updated downtown plan
 - Home-based businesses and conversion north to Broadhead
 - Improved sidewalks, bike facilities, and transit access
- B. Farwell Street Investment Areas**
 - Mixed and commercial development of vacant lands
 - Restaurants and shopping to serve locals and visitors
 - Senior & family housing close to shopping, schools, & recreation
 - Improved business facades, landscaping, and site/parking layout—complementing public streetscape enhancements
- C. East Side Crossroads Mixed Use Area**
 - Neighborhood-scale retail, services, and restaurants
 - Retail economics fueled by new housing nearby
 - Connection to an improved Highway AB
 - Patience required, to allow surrounding housing growth and road and utility improvements
 - Natural resources and drainage patterns maintained
- D. Neighborhood Growth Area**
 - McFarland's only residential expansion area
 - Multiple road, bike, and pedestrian connections
- E. Priority Streetscape Improvement Corridor**
 - Entryway feature near Highway 51 to welcome visitors
 - Wayfinding signs, including along 51 near Farwell
 - Decorative street lighting, reflecting library-area lights
 - Terrace area landscaping and stormwater enhancements
 - Power lines buried where practical
- F. Secondary Streetscape Improvement Corridor**
 - Focus first on improved bike/ped connectivity
 - Subtle streetscaping to reflect residential setting
- G. Bike, Pedestrian, and Transit Enhancements**
 - Improved Highway 51 crossing at Farwell Street
 - Enhanced crosswalks at high school and other locations
 - New Farwell Street sidewalk between 51 and Burma
 - New Broadhead Street sidewalks from Main St to east
 - Bike lanes or paved shoulders for urban escape routes
 - Extended and/or express bus routes to Madison

FUTURE IMAGES



Better connections to and along corridor



Mixed use redevelopment along Farwell Street



Attractive and functional streetscaping



Neighborhood-scale retail and services



Family-oriented downtown destination



PLAN COMMISSION SUMMARY SHEET

MEETING DATE: Monday, October 19, 2020

SECTION: Business

DEPARTMENT: Community Development

CONTACT: Andrew Bremer, Comm & Eco Dev Director

AGENDA ITEM: Discussion and action to make a recommendation to the Village Board on a request by Veridian Homes Rosewood Fields LLC regarding Final Plat approval for Rosewood Fields Subdivision. Lands located west of CTH AB and north of the railroad in the NE 1/4 of the SE 1/4 and the SE 1/4 of the SE1/4 of Section 2, Township 6 North, Range 10 East, Village of McFarland, Dane County, Wisconsin.

PREVIOUS ACTION:

On May 18th, 2020 a Plan Commission meeting was held to review and provide a recommendation to the Village Board regarding the Preliminary Plat for Rosewood Fields. On May 20th, 2020, the Village Board conditionally approved the Preliminary Plat. The final plat has been conditionally recommended for approval by the Public Utility Committee on September 15th and the Public Works Committee on October 13th.

ISSUE SUMMARY:

Background and Meeting Purpose

Veridian Homes (VH Rosewood Fields LLC) has petitioned the Village for approval of a Final Plat for the proposed Rosewood Fields subdivision. The plat is approximately 36.29 acres in size and is located along the west side of CTH AB, north of the railroad. Veridian has an option to purchase the property from Utterback Limited Partnership.

Summary of Proposed Development

The packet includes a copy of the Final Plat, which consists of 117 residential lots, of which 107 will be for single family units and 10 will be for twin units (two attached dwellings separated by zero lot line). Twenty four (24) of the single family lots would have their driveways accessed by a private alley (Outlot 2) to be maintained by the Rosewood Fields Homeowners Association.

The final plat includes 138,198 square feet (3.17 acres) of land dedicated as public park space (Outlot 3). There is an additional 8.2 acres of wetland, stormwater, and passive open space in Outlots 1, 4 & 5. A proposed off-road trail would run through Outlots 1, 3, and 4, from Prairie Wood Drive to the railroad crossing at CTH AB. Future development of lands south of the railroad would provide continued off-road connections to the Lower Yahara River Trail. The proposed neighborhood park and trail will be developed as part of Phase 1 of the subdivision development. Build-out of all lots is anticipated to occur over a 5-6 year period based on market conditions. The packet includes a copy of Exhibits G and M which illustrate the master land use and phasing plan for the subdivision.



The final plat is generally consistent with the prior approved preliminary plat. There is a new private outlot proposed, Outlot 6, which consists of one-half of a 50-foot wide gas pipeline easement near lots 107-117. The preliminary plat had shown this area as an easement rather than an outlot.

Consistency with Village Subdivision Ordinances (Parkland)

The Parks Committee is scheduled to review and recommend the final plat and conceptual park development plan for Outlot 3 at its October 22 meeting. The packet includes Exhibit C of the draft Development Agreement for the proposed development. The Developer is requesting the Village include portions (16,507 total square feet) of the recreational trail in Outlots 1 & 4 to be counted toward the development's parkland dedication requirement. The remaining deficit in parkland dedication would be payable by the Developer to the Village as a parkland impact fee. This fee would be paid on a per phase basis prior to the commencement of construction on such phase at the rate in effect as of the date on which an amendment to the Development Agreement is entered into for the phase in question. By way of example for 2020, the total parkland impact fee would be \$158,527.44 with inclusion of trail dedication in Outlots 1 & 4, or \$189,217.07 without inclusion of Outlots 1 & 4, assuming all lots developed in 2020.

Park Development Plan (Utterback Park)

Enclosed within your packet is the conceptual site plan for the park development proposed within the Rosewood Fields Subdivision. The Developer has been working with the Parks Committee on the design of this park which will be discussed again at the October 22nd Parks Committee meeting.

Consistency with Village Subdivision Ordinances (Transportation Facilities)

Section 56-139(w) of the Village's Subdivision Ordinance requires right-of-way widths for collector streets of 70 feet, local streets of 60 feet, and alleys of 24 feet. The final plat increased the ROW along CTH AB from the preliminary plat, per the conditions of approval, by an additional two (2) feet to provide 35 feet from the highway centerline. The local roads are planned with a 60-foot ROW and the alley with a 26-foot ROW, both of which meet the Village subdivision ordinance requirements. Exhibit J and K of the Rosewood Fields Zoning Submittal.pdf includes a map of the ROW widths and cross section of the ROW designs for the proposed alley and local roadways, including the provision of 5-foot sidewalks along both sides of all local roads.

Consistency with Village Subdivision Ordinances (Utilities)

The packet includes a copy of the Engineering Plans, Storm Water Management Report, and Storm Sewer Sizing Report. The Village Engineer has reviewed these documents and provided a letter outlining recommend conditions of approval to address compliance with Village requirements, best management practices, and conditions of approval from the prior preliminary plat review. The developer has also provided a surface water analysis for a 150-year storm event assuming street stormsewers are plugged per the conditions of preliminary plat approval. The Public Utility Committee met on September 15th and recommended approval of the final plat conditioned on addresses the items in the Village Engineer's staff report dated September 11, 2020.

FINANCIAL/BUDGET IMPACT:

Coinciding with the development of this plat, the Village has been working on the design of a sewer interceptor to extend from Devils Lake Way through adjacent lands south of the railroad to and through this proposed



subdivision to serve additional developable lands. This project and associated costs are still being finalized for Village Board approval. The developer will be responsible for those portions of this project that benefit their property. The developer will also be responsible for paying for other utility, street, trail, and park improvements within the development. Assuming at least an average assessment value of \$325,000 for each lot would yield approximately \$250K in annual property tax payments to the Village upon full build-out of the plat. Additional revenue from park impact fees, library impact fees, and public water impact fees would be payable to the Village as well. Specific requirements will be addressed as part of a development agreement to be approved with the final plat.

VILLAGE PLAN REFERENCE:

Consistency with Village Land Use Plan

Included in the packet is a copy of the Village's East Side Neighborhood Growth Area Concept Development Plan, marked Exhibit C. This plan was adopted in 2008 and incorporated into the Village's 2017 Comprehensive Plan. The area of the final plat is outlined on the map. The ESNGA plan as developed in 2008, and identified the property for Traditional Residential Development, with a minimum of 4 units per acre; proposed net density is 4.7 units per acre. The neighborhood plan further identified the continuation of Tuscobia Trail to CTH AB, connectivity of new local streets to connect to undeveloped adjacent lands to the north, and the provision of park and stormwater management areas along the south side of Tuscobia Trail and on the west side of the property adjacent to the existing Park View Estates subdivision. The final plat is generally consistent with the Village's ESNGA plan.

ORDINANCE REFERENCE:

Chapter 56, Subdivisions

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Recommend approval of the Final Plat for Rosewood Fields with the following conditions:

1. Addressing those conditions as provided in the Village Engineer's Rosewood Fields Development - Zoning Submittal Review letter dated September 11, 2020.
2. Work with Village Staff on final landscaping design for the plat outlots.
3. Work with the Fire Chief and the Village planning staff with regards to phasing of the project and ability to move fire trucks through.
4. Review by the Village Attorney and approval by the Village Board of a development agreement and declaration of protective covenants, conditions, and restrictions for the development.

ATTACHMENTS:

1. Rosewood Fields Final Plat Village Engineer Ltr_09.11.2020
2. Utterback-Veridian Development Fire & Rescue Dept Postion Ltr_10.12.20
3. Exhibit G, Rosewood Fields Master Plan (August 25, 2020)
4. Exhibit J, Rosewood Fields ROW (August 25, 2020)
5. Exhibit K, Rosewood Fields Street Cross Sections (August 25, 2020)
6. Exhibit M, Rosewood Fields Phasing Plan (August 25, 2020)
7. Exhibit C from Rosewood Fields Development Agreement - clean 9-10-20



8. 02 - Utterback Park Concept 2020-10-15
9. 01 - Rosewood Fields Final Plat Submittal
10. 02 - RF Plan Commission Application 2020.08.24
11. 04 - RF - CCRs 2020.08.25
12. 05 - Title Commitment
13. 03 - RF Final Plat - Village Submittal 2020.08.24
14. 08 - RF Storm Sewer Sizing 2020.08.25
15. 07 - RF SWMP report 2020.08.25
16. 06 - RF Engineering Plan Set 2020.08.25
17. Rosewood 150yr stormwater analysis 2020.10.09
18. Rosewood Fields Development Agreement - clean 9-10-20

September 11, 2020

Mr. Andrew Bremer, AICP
Community & Economic Development Director
Village of McFarland
5915 Milwaukee Street
P.O. Box 110
McFarland, WI 53558

Subject: Rosewood Fields Development – Final Plat Submittal Review (updated)

Dear Andrew:

We have received the set of documents included in the August 27, 2020 Final Plat Submittal for proposed new residential development slightly south of CTH MN, north of the railroad tracks and west of CTH AB for a project called Rosewood Fields. The plans and stormwater management report have been reviewed from a public works perspective. Our comments are shown below, organized by the appropriate document and/or drawing sheet number.

General Items

Previous reviews have already discussed the desire to bring a sanitary sewer interceptor and transmission water main through the project to accommodate future development. The Village has typically reimbursed the developer for the invoiced costs of incremental upsizing in materials, and we would recommend that here.

Engineering Plans

Sheet 2

- There are several areas with overlapping contour labels. These should be spread out to make it easier to read.
- There have been resident concerns about the existing tress along the west property line of Outlot 1. The woodline is now shown, but it should more clearly identify which areas will require removal.

Sheet 3

- The proposed right-of-way width is 60 feet, consistent with Village minimum standards and also recent residential streets. This will allow for on-street parking on both sides of the street and ample (7.5 foot) terrace space for tree plantings, if desired.

Sheet 4

- The invert elevations of the existing culverts under the railroad and CTH AB should be labelled to ensure adequate drainage to those locations.
- The proposed sanitary sewer interceptor is shown. Depending on the Village's (and developer's) desired schedule, the Village may need to construct the interceptor prior to the developer's phasing.

Sheet 5

- The proposed path alignment between Lots 10 and 11 could be tough to snow plow. We recommend the path continue more generally north-south, with an additional connection to Drangonfly Way.

Sheet 6

- Some water main along the CTH AB corridor is shown, running from Tuscobia Trail to the south. However, none is shown north of Tuscobia Trail. Village practice has been to extend sewer and water mains along new development frontage. This is not as critical along this section of CTH AB because the east side is wetland (and undevelopable), however there are some parcels to the north. We recommend either an 8-inch line be extended north, or some escrow be created to fund future construction.

Sheet 8 through 26

- At mid-block lowpoints, we recommend two stormwater inlets on each side of the street along with depressing the sidewalk to minimize ponding depth when the inlets are plugged or overwhelmed.
- Sewer Manholes shown at 10 feet deep should be lowered 1 foot (to 11 feet deep) to better allow for basement drains.
- The actual inverts of the 12-inch interceptor sewer may need adjusting as the Village's sewer plans evolve. We will keep in touch with the developer on this.
- Manhole 29 should be shifted west to allow the Rosewood Drive watermain to better avoid the inlet.
- Sewer manholes should all be placed at the road centerline.
- The 10-inch sewer coming from Tuscobia Trail and going up Dragonfly Way should be constructed at minimum slopes to maximize depth for future needs.
- The intersection at CTH AB will need to be reviewed and approved by Dane County Highway Department. This will likely require bypass/acceleration/deceleration lanes and bike lanes.

Sheet 7 and 14

- Temporary street dead-ends should include a hammerhead turnaround and the temporary fire hydrants should utilize a 90 degree bend and be placed to the side for the roadway.

Certified Survey Map & Preliminary Plat

An easement to the Village is included on the west side CTH AB up to Tuscobia Trail. This will accommodate both the interceptor sewer route coming from Devil's Lake Way, and a path for recreation and future sewer maintenance. We will need to confirm that the overlapping easement (with Wisconsin Power and Light for a gas main) does not create any issues.

As mentioned above, additional dedication along CTH AB may be required by the Dane County Highway Department to accommodate the necessary turn/acceleration/deceleration lanes.

We recommend that mailbox locations be shown as easements on private properties. This eliminates the need for the Village to become involved in lawn mowing, snow removal, or future replacement of the boxes or concrete slabs underneath.

On Sheet 2 Prairie Wood Drive is mislabeled as Vintage Birch Way.

The label for Outlot 5 should also include "public bike path easement over the entire lot", similar to Outlots 1 & 4, along with "Village Utilities" to allow for potential water main there.

The note about lowest building opening elevations should be expanded to include all parcels that abut stormwater conveyance and management areas. Instead of referring to the approved stormwater management plan, the actual elevations for each affected lot should be shown on the plat itself to make it easier for future homeowners (and the Village) to confirm openings.

The Public Drainage Easement Detail refers to an incorrect note. This can be cleared up with note that states: "There shall be no changes in drainage or elevations with the easements for drainage purposes without the written approval of the Village of McFarland."

Stormwater Management Plan

The stormwater management design as proposed will meet the Village, County, and State performance standards. The previously requested cross-sections of the bypass channel have been provided. There are some outstanding items that are still needed prior to recommending Village approval:

- Inlet 204.2 and 300.3 are shown to have very high flow rates with significant flow bypassing it. The developer should confirm these are correct, or add additional inlets.
- An exhibit showing the extent of overland water flow during a 100-year storm and 150-year storm (as discussed at Village Committee meetings) with all storm sewers plugged must be provided to ensure water does not enter private properties.

- Lowest building opening elevations must be calculated for each lot adjacent to stormwater conveyance and management areas based on the 100-year storm water level, plus 2 feet of freeboard.

Please feel free to contact us with any questions or comments regarding this review.

Very truly yours,
TOWN & COUNTRY ENGINEERING, INC.



Brian R. Berquist, P.E.
President

cc: Mr. Jim Hessling, Director of Public Works, Village of McFarland (5915 Milwaukee Street, P.O. Box 110, McFarland, WI 53558)

Mr. Matthew Schuenke, Administrator, Village of McFarland (5915 Milwaukee Street, P.O. Box 110, McFarland, WI 53558)

Mr. Dan Day, Donofrio, Kottke & Associates, Inc. (7530 Westward Way, Madison, WI 53717)

BRB:brb

J:\JOB#S\McFarland\MC-171-M6 Veridian-Utterback Development\Admin\Review Letter 2.docx



McFarland Fire & Rescue Department

5915 Milwaukee Street • PO Box 110 • McFarland, WI 53558-0110

(608) 838-3278 • Fax: (608) 838-3619

Emergency: 911

October 12, 2020

Andrew Bremer
Village of McFarland Community Development
5915 Milwaukee St.
McFarland, WI 53558

RE: 20201001 submitted Site Plan Review for proposed Rosewood Fields - Veridian development

Dear Andrew,

We have reviewed the proposed Utterback-Veridian development on the east side of the Village of McFarland submitted on October 1, 2020. We found no additional issues. While we still would recommend home sprinklers too be installed in any home, understand the market in not allowing that. We did meet with Veridian and discussed the cost and possibility of installing home sprinkler systems. The pricing that Veridian received from their contractors was \$3.50 per square foot on average. To help encourage homebuyers, Veridian has agreed to market the home sprinklers by installing in the model home and providing marketing information to install home sprinkler systems. The marketing information will include the cost over a 30-year mortgage and the typical offsetting hazard insurance savings.

We reviewed the conceptual phasing plan dated 8/25/20 for the development. We do not recommend the phasing as submitted. The submitted phasing creates two sections of the same street. In the submitted phasing, the southeast end of Prairie Wood would be completed during phase 2, while the section of Prairie Wood Drive at Rosewood Drive would not be completed until phase 4. We experience delayed responses when roads are split into two sections. The situation occurred during the Juniper Ridge development with North Peninsula Way.

Proudly Serving the Communities of McFarland, Town of Dunn & Town of Pleasant Springs

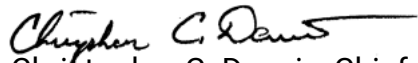
The McFarland Fire & Rescue Department does not observe any additional concerns with the proposed development. If you have any questions regarding the above, please contact me via phone at 608-838-3278 or via email at mitchell.sutter@mcfarland.wi.us

Sincerely,

A handwritten signature in black ink that reads "Mitchell Sutter". The script is cursive and fluid.

Mitchell Sutter

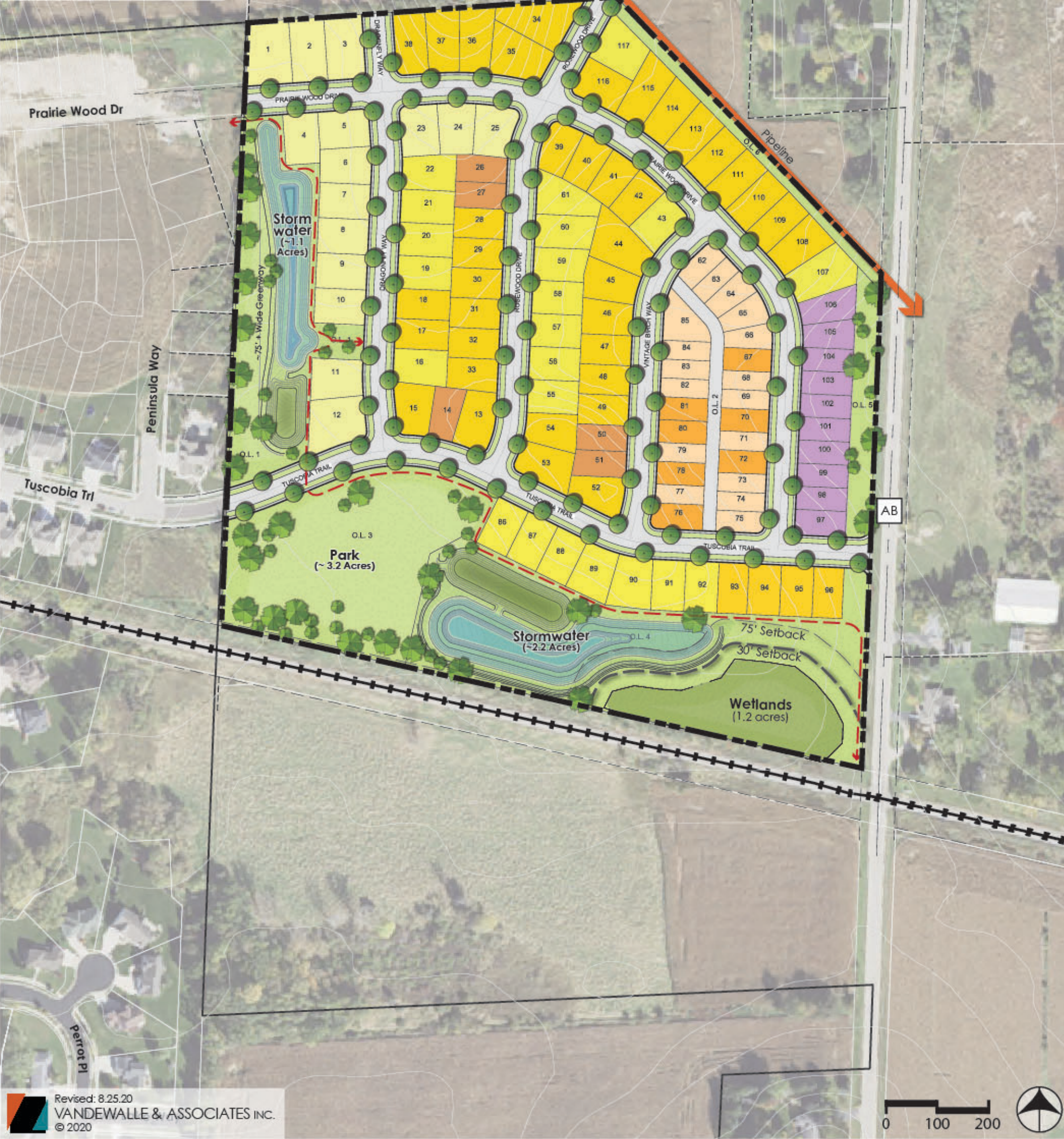
Fire Inspector/Public Education Specialist

A handwritten signature in black ink that reads "Christopher C. Dennis". The script is cursive and includes a long horizontal flourish at the end.

Christopher C. Dennis, Chief

LOT TYPE	UNITS	%
Proposed SF Units		
COTTAGE - 37	17	14.6%
VILLAGE - 45	7	6.0%
MEADOW - 51	5	4.3%
TERRACE - 59	41	35.0%
MANOR - 65	22	18.8%
ESTATE - 69	15	12.8%
TOTAL	107	91.5%
TWINS	10	8.5%
TOTAL UNITS	117	100%

PARK DEDICATION		
DEDICATED PARKS	~3.2 ACRES	
STORMWATER MANAGEMENT	~3.3 ACRES	



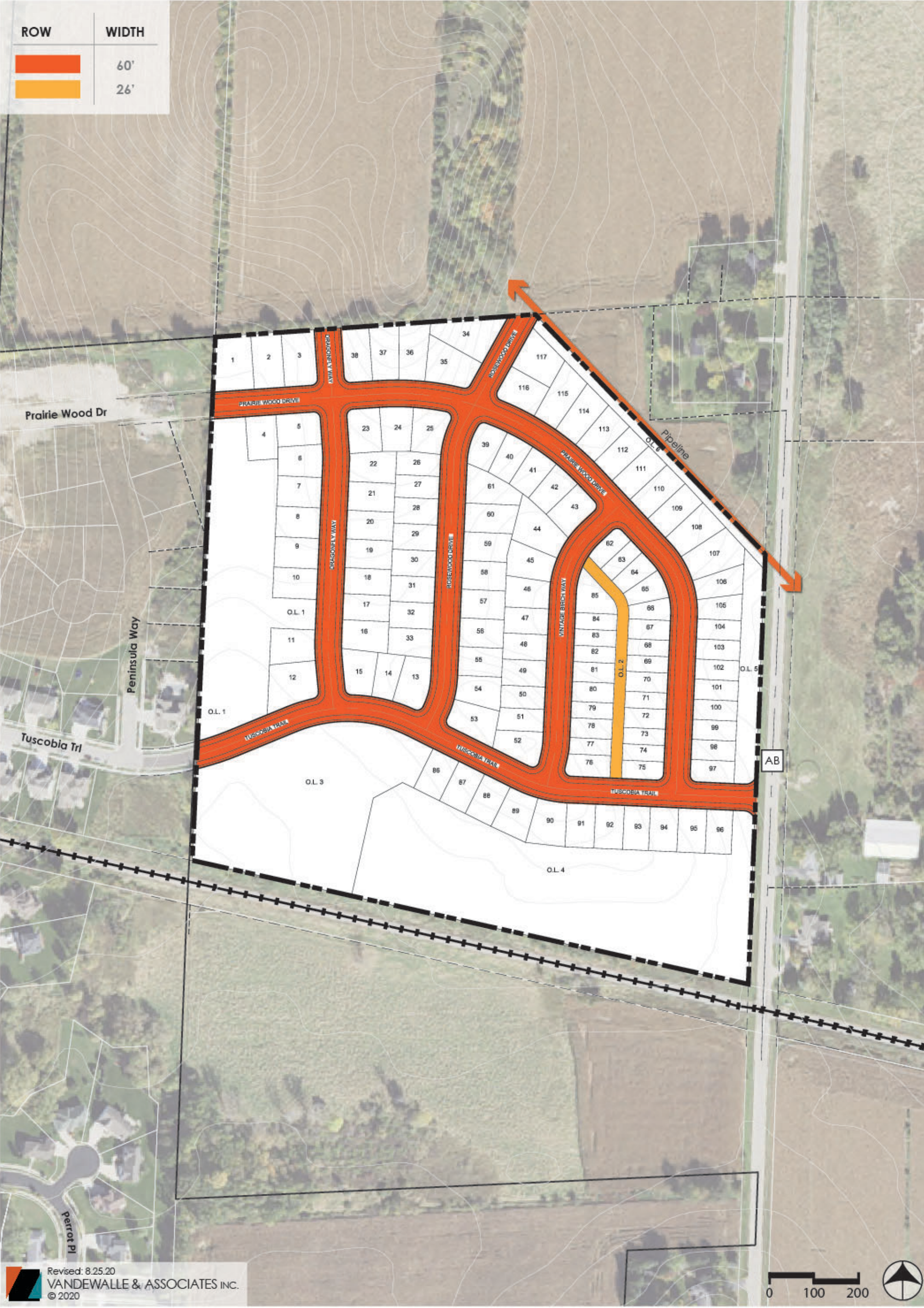
Revised: 8.25.20
 VANDEWALLE & ASSOCIATES INC.
 © 2020

EXHIBIT G:
MASTER
PLAN

ROSEWOOD FIELDS

MCFARLAND, WISCONSIN

VERIDIAN
HOMES

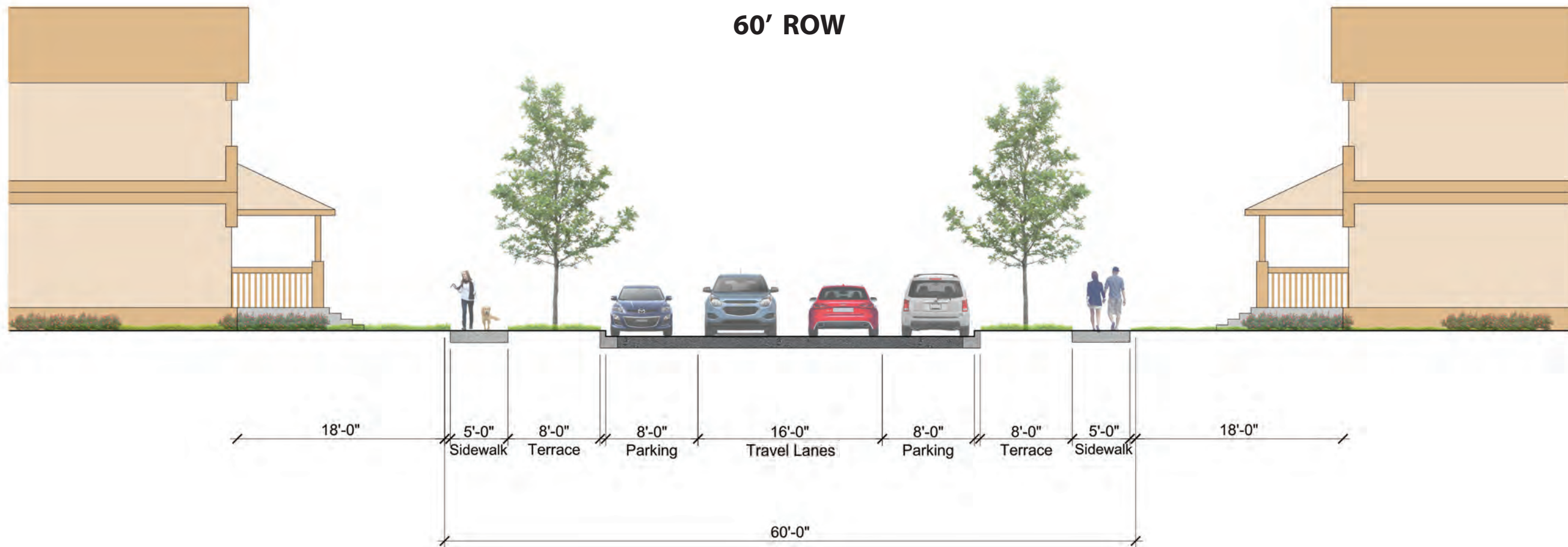
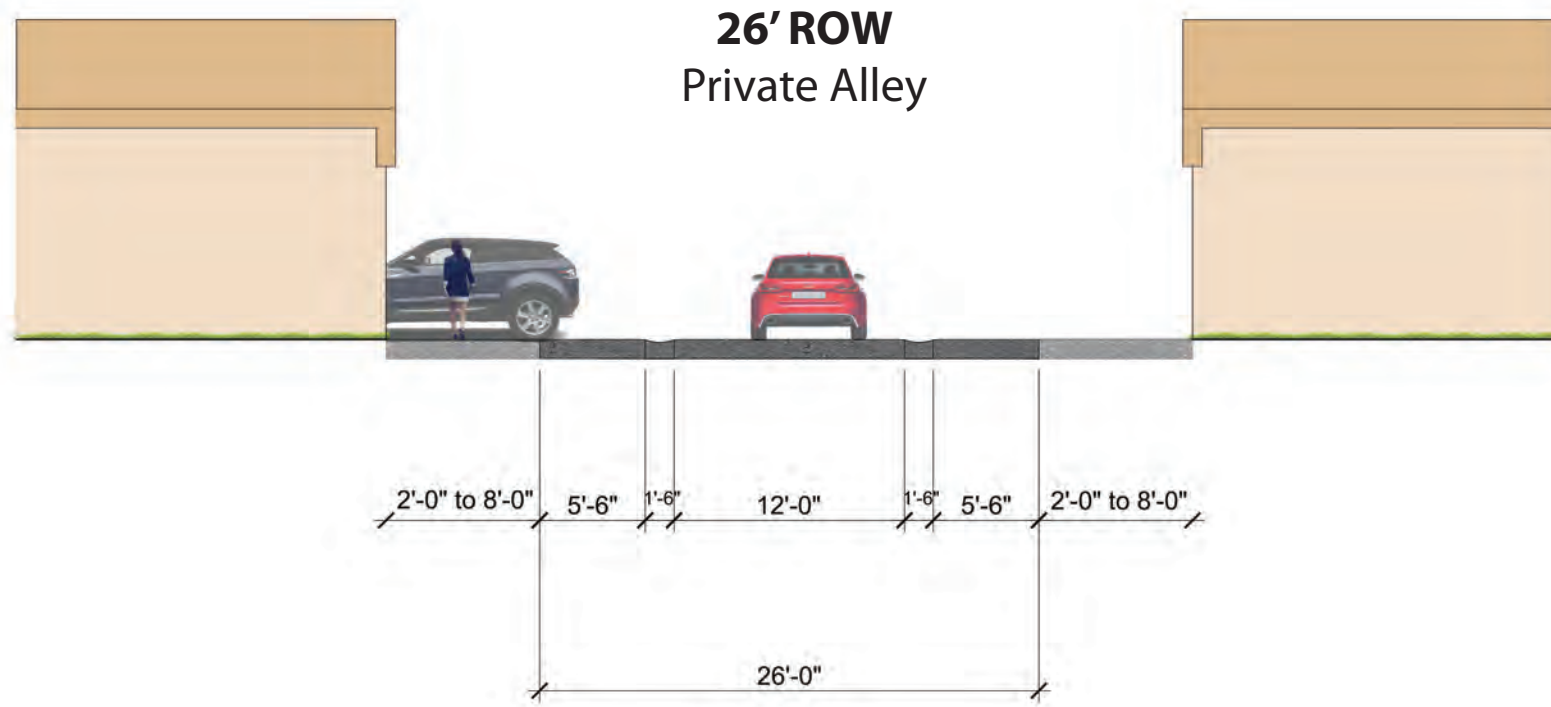


Revised: 8.25.20
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EXHIBIT J:
STREET
RIGHT-OF-WAY
WIDTH MAP

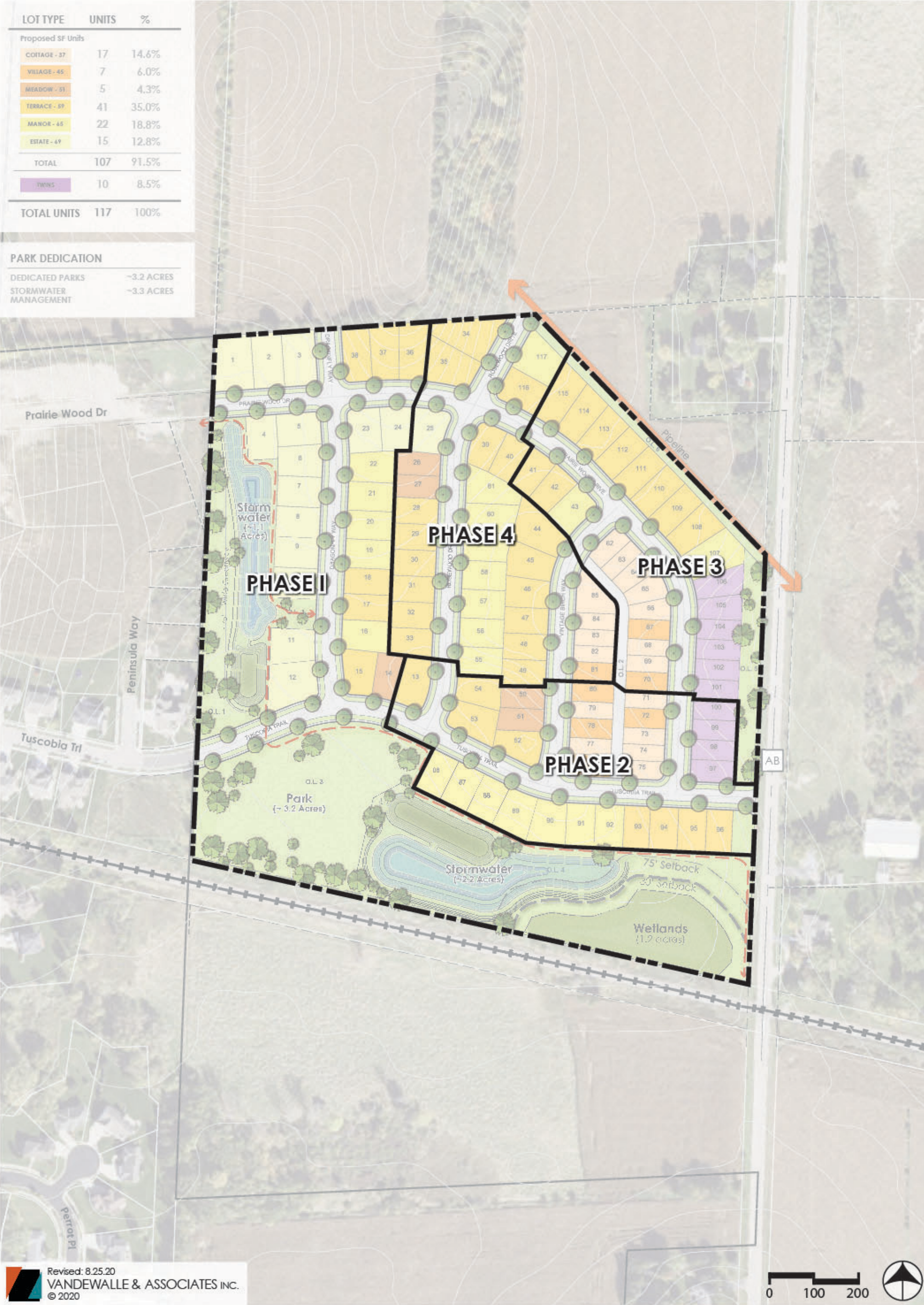
ROSEWOOD FIELDS
MCFARLAND, WISCONSIN





LOT TYPE	UNITS	%
Proposed SF Units		
COITAGE - 37	17	14.6%
VILLAGE - 45	7	6.0%
MEADOW - 51	5	4.3%
TERRACE - 59	41	35.0%
MANOR - 45	22	18.8%
ESTATE - 49	15	12.8%
TOTAL	107	91.5%
TWINS	10	8.5%
TOTAL UNITS	117	100%

PARK DEDICATION	
DEDICATED PARKS	~3.2 ACRES
STORMWATER MANAGEMENT	~3.3 ACRES



Revised: 8.25.20
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EXHIBIT “C”

Parkland Dedication and Fees in Lien of Dedication

1. Dedication requirement:

107 Single Family Dwelling Units (“SFDU”) @ 2,106 square feet/unit = 225,342 square feet

10 twin units (“MFDU”) @ 1,463 square feet/unit = 14,630 square feet

Total Required Dedication = 225,342 + 14,630 = 239,972 square feet or 5.51 acres

2. Dedication by plat:

Outlot 3 = 138,198 square feet

Outlot 1 (10 feet for path) = 8,460 square feet

Outlot 4 (10 feet for path) = 8,047 square feet

Total = 154,705 Square feet or 3.55 acres

3. Fee in lieu of dedication:

$239,972 - 154,705 = 85,267$ square feet

$85,267 / 239,972 = 35.53\%$

4. Fee in lieu of dedication by unit (by way of example for 2020):

SFDU: $.3553 \times \$3,915.46/\text{SFDU} = \$1,391.16 / \text{SFDU}$

MFDU: $.3553 \times \$2,719.90/\text{MFDU} = \$966.38 / \text{MFDU}$



D'ONOFRIO KOTTKE AND ASSOCIATES, INC.
7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

PRELIMINARY OVERALL SITE PLAN

**ROSEWOOD FIELDS
UTTERBACK PARK**

VILLAGE OF WALUNAKEE, DANE COUNTY, WISCONSIN

DATE: 09-17-20
REVISED: 10-15-2020

DRAWN BY: MS

FN: 19-07-114

Sheet Number:
L100

August 25, 2020

Andrew Bremer
Village of McFarland
5915 Milwaukee Street
McFarland, WI 53558

RE: Rosewood Fields
Final Plat Submittal

Dear Andrew:

We are pleased to submit the following information for the final plat of Rosewood Fields.

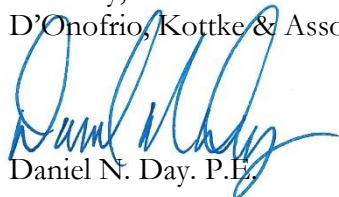
- Plan Commission Application
- Final Plat (20 copies – 22" x 30" and 1 copy – 11" x 17")
- Declaration of Protective Covenants, Conditions and Restrictions (1 copy)
- Title Work for the property (1 copy)
- Engineering Plans (12 copies – 11 x 17)
- Storm Water Management Report (pdf only)
- Storm Sewer Design Report (pdf only)
- Check in the amount of \$6,650.00 for application fees will be mailed separately from Veridian Homes to your mailing address

The updated General Development Plan will be submitted separately by Vandewalle Associates that reflects the details of the final plat and revisions required by the conditions of approval of the zoning.

The Final Plat and related documents are in substantial conformance with the Preliminary Plat and reflect the conditions of approval of the preliminary plat and zoning.

We look forward to working with the Village on the final approvals of this project. Please let us know if you have any questions or need further information.

Sincerely,
D'Onofrio, Kottke & Associates, Inc.



Daniel N. Day, P.E.

cc: Chris Ehlers, Veridian Homes
Brian Munson, Vandewalle Associates

U:\User\1907114\Surveying\Final Plat Submittal (8-25-20)\Rosewood Fields Final Plat Submittal.docx

**Village of McFarland
Community Development Department**

Plan Commission Application – 2020

~Application must be completed in full~

Applicant - Owner	VH Rosewood Fields LLC	Applicant's Agent	D'Onofrio Kottke & Assoc. Vandewalle Associates
	c/o Chris Ehlers	Name	c/o Dan Day c/o Brian Munson
Address	6801 South Towne Drive, Madison, WI	Address	7530 Westward Way Madison, WI 120 East Lakeside St. Madison, WI
Email	cehlers@veridianhomes.com	Email	dday@donofrio.cc bmunson@vandewalle.com
Phone #	608-226-3100	Phone #	608-833-7530 608-255-3988
Fax #		Fax #	

Parcel No(s). 0610-024-8070-0 **Type of Proposal – Please check boxes below that apply**

Requires Public Hearing (Class One)	FEES	Requires Public Hearing (Class Two)	FEES	Public Hearing Not required	FEES
☐ Preliminary Plat	\$500+AF	☐ Conditional Use	\$370+F	☐ Annexation	At cost
☐ Preliminary Plat (reapplication)	\$500+BF	☐ Rezoning (map)	\$405+	☐ Dev. Agreement Including Addendums	\$400 F
☐ Certified Survey Map	\$300+FG	☐ Zoning Amendment (text)	\$405 +F	☒ Final Plat	\$500 +CF
☐ Condominium	\$300+EF	☐ Variance-Board of Zoning Appeals	\$380+F	☐ Final Plat (reapplication)	\$400 +DF
☐ Comprehensive Plan Amendment	\$500+F			☐ Site/Design Review	\$400 + F

+ = Plus publication and notification charges Fee: \$500.00 + \$50.00(122) + \$405= \$7,005.00

A = Plus \$50.00 per lot

B = Any preliminary plat which has previously been reviewed/revised within the last 36 months

C = Plus \$50.00 for each lot within the final plat

D = Any final plat which has been previously reviewed or/ revised within the last 36 months

E = Plus \$40.00 for each unit shown

F = Plus actual legal, engineering and financial consulting costs incurred by the Village

G = Plus \$25.00 per lot for two or more lots.

Escrow Deposits (covers costs for outside consultants; e.g., engineers, attorneys, etc.)	
☒ R-E, R-3 & PD (up to 50 acres)	\$5,000
☐ R-E, R-3 & PD (greater than 50 acres)	\$10,000
☐ Commercial Site/Design Review (5,000 sq. ft. or more)	\$2,000
☐ All Plats including condominiums	\$5,000

Nature of the development proposal: Must provide address of proposed development, legal description, current zoning and description of proposal. (Attach additional paper if needed)

Residential development of Rosewood Fields. See attached final plat.

What action is the applicant requesting of the Plan Commission?

Approval of final plat

Has this specific proposal been previously discussed or acted upon by the Plan Commission?

☒ YES ☐ NO (If “yes” state the nature and the date(s) of the previous application.)

Village Committees and Board approved in April and May the preliminary plat and zoning for the project

PLEASE READ AND SIGN AT THE BOTTOM ON THE REVERSE SIDE

Village of McFarland Plan Commission 2020 Schedule

Document No.

**ROSEWOOD FIELDS
DECLARATION OF PROTECTIVE COVENANTS,
CONDITIONS AND RESTRICTIONS**

**VILLAGE OF MCFARLAND,
DANE COUNTY, WI.**

PREAMBLE

Return to:
**Angie Christensen
Veridian Homes
6801 South Towne Drive
Madison, WI 53713**

**See Exhibit "B"
(Parcel Identification Numbers)**

This Declaration of Protective Covenants, Conditions and Restrictions (the "**Declaration**") made this _____ day of _____, 20__, by VH Rosewood Fields LLC, a Wisconsin Limited Liability Company (collectively, hereinafter referred to as the "**Declarant**") and/or its successors and assigns.

WHEREAS, Declarant is the owner of real property legally described as the plat of Rosewood Fields (the "**Plat**") located in the Village of McFarland, Dane County, Wisconsin, more particularly described and depicted in Exhibit "A" attached hereto and incorporated herein by reference, and desires to build thereon a planned development with housing units (the "**Development**"); and

WHEREAS, Declarant desires to provide for the maintenance and enhancement of property values and amenities in said Development, and for the preservation of the properties and improvements thereon, as well as, for the preservation of said Development's distinctive style, and to prevent the erection, or maintenance of poorly designed or constructed improvements; and

WHEREAS, to the above end, Declarant desires to subject said real property, to the covenants, restrictions, easements, charges and liens hereinafter set forth, each and all of which is and are for the benefit of said property and each owner thereof; and

WHEREAS, Declarant has thought it desirable for the efficient maintenance and preservation of the values of said Development to create an Association to which should be delegated and assigned the powers of

owning, maintaining and administering the Common Property and facilities, as set forth below, and administering and enforcing the covenants and restrictions, and collecting and disbursing the Assessments and charges as hereinafter or in the future created or established, and promoting the health, welfare and recreation of the Development's residents. Declarant will incorporate the Rosewood Fields Homeowners Association, Inc. a non-profit, non-stock corporation, under the laws of the State of Wisconsin (the "**Association**") for such purposes;

NOW, THEREFORE, the Declarant declares that the following real property legally described and depicted in Exhibit "A", attached hereto and incorporated herein by reference, will and shall be sold, transferred and conveyed subject to the easements, covenants, restrictions, assessments, charges and liens hereinafter set forth.

PART A **ASSOCIATION MATTERS**

A-1) Definitions.

A) "Association" shall mean and refer to as Rosewood Fields Homeowners Association, Inc., and its successors and assigns.

B) "Common Property" shall mean those areas located in the Development which are not contained within a Lot and which the Declarant or the Association, as the case may be, shall be required to maintain in accordance with agreements between Declarant and the Village of McFarland, or pursuant to applicable Village of McFarland rules, regulations and ordinances, until such time as maintenance of such areas is turned over to the Village of McFarland and the Village of McFarland accepts such maintenance. Areas within the Development which will initially constitute Common Property include, but are not limited to, storm water management and park areas.

C) "Declarant" shall mean and refer to VH Rosewood Fields LLC; a Wisconsin Limited Liability Company and/or their successors and assigns.

D) "Lot" shall mean and refer to the lands described as Rosewood Fields as described and depicted in Exhibit "A", now owned by Declarant, but which Declarant in the future intends to convey to purchasers who shall thereupon become members of the Association. The term "Property" or "Properties" shall be synonymous with the term Lot.

E) "Owner" shall mean and refer to the record owner, whether one or more persons or entities, of the fee simple title to any of the Properties described in Exhibit "A". A purchaser of any of said Properties by land contract shall be referred to as "Owner" instead of the land contract vendor.

F) "Occupant" shall mean and refer to the occupant of any of the Properties who shall either be an Owner or a lessee who holds a written lease having an initial term of twelve months or more.

G) "Subdivision" shall refer to the lands described in Exhibit "A". The term "Subdivision" is synonymous with the term "Development".

A-2) Membership and Voting Rights.

A) Members. Declarant will incorporate the Association. Each Owner of a Lot shall automatically become a member of the Association. By acceptance of the Deed or other instrument of conveyance, the Owner(s) of each Lot consent to such Owner's membership in the Association whether or not specified on the deed to the Owner. Membership in the Association is appurtenant to each Lot. Each Owner of a Lot shall automatically be entitled to the benefits and subject to the burdens relating to such membership in the Association. The Association shall have authority to manage the Common Property. Persons or entities, including a land contract vendor, who hold an interest merely as security for the performance of an obligation, shall not be members of the Association. Tenants of Properties who are not Owners shall not be members of the Association. To the extent that Declarant owns any Lot, Declarant shall be a member of the Association until such ownership terminates.

B) Voting Rights.

1) Each member shall be entitled to one vote for each Lot owned except as set forth in A-2(B) (2) below.

2) When there is more than one Owner of a Lot, said Owners shall only be entitled to one collective vote for each Lot. There shall be no fractional votes or voting. When there is more than one Owner of any Lot, the vote attributable to such ownership must be cast unanimously by all the Owners of that Lot, or it shall not be considered for any purpose.

C) Proxies. Any Member may vote by proxy. All proxies shall be in writing and signed by the Owner or in cases where there is more than one Owner, by all Owners of the Lot.

D) Articles of Incorporation and By-Laws. The purposes and powers of the Association and the rights and obligations with respect to the members thereof, shall be governed by the Articles of Incorporation and By-Laws of the Association; provided, however, that such Articles of Incorporation and By-Laws shall be subject to, and shall not contravene, the terms, conditions, benefits and burdens set forth in this Declaration.

E) First Year's Operating Expenses. Commencing on the date established for the payment of assessments under Section A-4(B)(1), Declarant shall pay to the Association an amount equal to the estimated operating expenses of the Association for a period of one (1) year, less assessments on Lots owned by Declarant actually paid to the Association for the one (1) year period of time. Said payment may be made in a lump sum or in twelve (12) monthly installments, at Declarant's option. Prior to said date, Declarant shall be solely responsible for payment of all maintenance expenses.

A-3) Description.

A) Responsibility for Assessments. Declarant shall turn over to the Association, at the time control is turned over to the Members, any surplus received by the Association of income over expenses. Assessments shall be based on the number of assessment units (an "**Assessment Unit**"), which are assigned to Lots in the Development based upon their intended use at the present time. The number of Assessment Units for a particular Lot will be divided by the total number of Assessment Units in the Development to arrive at a particular Lot's percentage share ("**Percentage Interest**") of assessments for common area maintenance and other expenses, which the Association is permitted to assess to members

under the Declaration. The Declarant shall be responsible for payment of assessments on Lots owned by Declarant, only at such time as a Declarant owned Lot has been improved with street, utilities and such other improvements as are necessary to permit commencement of construction on such Lot. For the purposes of the following table, a single family residence shall be deemed a Dwelling Unit.

	<u>Use</u>	<u>Number of Assessment Units</u>
1)	Single Family:	One (1) per Dwelling Unit.
2)	Twins (2 unit residential)	One (1) per Dwelling Unit (each side defined as a dwelling unit)

B) Association Management. The Association is required to retain a professional property management company with the experience necessary to perform the duties of the Association (the "**Management Company**"). The Association shall enter into a management contract (the "**Management Contract**") with the Management Company on such terms and conditions as the Association and the Management Company shall agree. The initial Management Company is DSI Real Estate Group, Inc., a Wisconsin Corporation, which is affiliated with the Declarant by reason of common ownership. The Management Contract between DSI Real Estate Group, Inc. and the Association has not been negotiated on an arm's length basis.

C) General Fund. As used herein, the term "**Surplus**" shall mean the amount by which assessments collected by the Management Company on behalf of the Association to pay for common expenses relating to the Property exceed the common expenses for the fiscal year in question. The Management Company shall deposit and hold any Surplus in the Association's operating account maintained by the Management Company. The Surplus, in the discretion of the Association working in conjunction with the Management Company, may be applied to future Association expenses as they become due, but there shall be no obligation on either the Association's or the Management Company's part to return the Surplus to lot owners.

D) Percentage Interest for Condemnation or Insurance Proceeds. For the purposes of establishing an Owner's percentage of insurance proceeds or condemnation awards in the event any portion of the Common Property is completely destroyed or taken by eminent domain and is not reconstructed, each Owner shall have a percentage interest in the insurance or condemnation proceeds equal to the Percentage Interest of such Owner in the Common Property.

E) Conveyance, Lease or Encumbrance of Percentage Interest. Any deed, mortgage, lease or other instrument purporting to convey, encumber or lease for a period of time in excess of one (1) year (a "**Lease**") any Lot shall be deemed to include the Owner's Percentage Interest in the Common Property and in the insurance proceeds or condemnation awards even though such interest is not expressly described or referred to therein. The conveyance, encumbrance or Lease of an Owner's Percentage Interest in the Common Property independent of the appurtenant Lot and the conveyance, encumbrance or Lease of an appurtenant Lot independent of the Owner's Percentage Interest in the Common Property shall be prohibited.

F) Ownership. The Common Property is dedicated to the Village of McFarland for the purposes described in the Plat

G) Damage or Destruction of Common Property by Owner. In the event any Common Property is damaged or destroyed by an Owner or any of his guests, lessees, tenants, licensees, agents or member(s) of his family, including pets, said Owner does hereby irrevocably authorize the Association to

repair said damage. The Association shall repair and restore any damaged area to its former condition. The amount necessary for said repair shall become a special assessment upon the Property of said Owner.

A-4) Maintenance of Common Property

A) Maintenance Requirements.

1) **Responsible Party.** The Declarant or the Association shall provide for the care, operation, management, maintenance and repair of the Common Property, until maintenance obligations are assumed by the Village of McFarland. The Common Property shall be maintained in good and safe condition, in accordance with the agreements between Declarant and the Village, as well as applicable Village ordinances, rules and regulations.

2) **General Responsibilities.** Maintenance shall include, but not be limited to, responsibility for landscaping and lawn care, trash, snow removal including shoveling with particular attention being paid to cross walk ramps and islands, improvements to common areas, upkeep of storm water management facilities which may include detention basins and drainage swales, common property lighting and/or other common property utility charges and any special street design features or traffic calming features.

3) **Specific Responsibilities.** Certain streets within the Property may include special traffic islands and traffic calming measures within the public right-of-way. The Association shall be responsible, at the Association's sole cost and expense, for the maintenance and upkeep of such physical traffic measures. Such maintenance and upkeep shall be performed at the discretion of the Association except to the extent required by the Village of McFarland, and shall include landscaping, snow and ice removal. If the special street design features or landscaping are not maintained, the Village of McFarland will give notice to the Association that it is not being maintained. If the Association does not respond to the notice within sixty (60) days, the Village may modify the physical traffic measures to minimize maintenance needs; including replacing landscaped surfaces with asphalt. The Association and persons involved with the maintenance and upkeep of the special traffic measures shall indemnify and hold harmless the Village of McFarland and its boards and commissions, and their officers, agents and employees from and against all claims, demands, loss or liability of any kind, type or description, related to the maintenance and upkeep of the special traffic measures.

4) In order to carry out its maintenance obligations, the Association may enter into a contract with a reputable property management company ("**Management Company**"), pursuant to which contract the Management Company shall assume the maintenance obligations of the Association as provided herein.

5) Any and all expenses incurred by the Management Company, on behalf of and pursuant to its contract with the Association, in connection with the management and maintenance of the Common Property and administration of the Association shall be deemed to be common expenses ("**Common Expenses**"), including, without limitation, expenses incurred for: landscaping and lawn care; snow shoveling and plowing; improvements to the Common Property; common grounds security lighting; municipal utility services for Common Property enforcement of this Declaration (including attorneys' fees); and maintenance and management salaries and wages.

B) Assessments.

1) The Association, or the Management Company, on its behalf, shall levy annual general assessments (“**General Assessments**”) against each Lot beginning January 1, 2016 or the purpose of maintaining a fund from which Common Expenses may be paid. The General Assessments against each Lot shall be assessed according to their Percentage Interests in the Common Property. General Assessments shall be due in advance on the first day of each year, or in such other manner as the Association may set forth in the Bylaws. Any General Assessment not paid when due shall bear annual interest at a rate of ten percent (10%) until paid and, together with interest, collection costs, and reasonable attorneys’ fees, shall constitute a lien on the Lot on which it is assessed.

2) The Association, or the Management Company, on behalf of and pursuant to its contract with the Association, may, whenever necessary or appropriate, levy special assessments (“**Special Assessments**”) against the Lots for deficiencies in the case of destruction or condemnation, for defraying the cost of improvements to the Common Property or for any other purpose for which the Association and/or the Management Company may determine a Special Assessment is necessary or appropriate for the improvement or benefit of the Subdivision. Special Assessments shall be paid at such time and in such manner as the Association or the Management Company may determine. Any Special Assessment or installment not paid when due shall bear annual interest at a rate of ten percent (10%) until paid and, together with the interest, collection costs and reasonable attorneys' fees, shall constitute a lien on the Lot on which it is assessed.

3) The Association, or the Management Company, on behalf of and pursuant to its contract with the Association, shall have the right to collect all General and Special Assessments and such sums shall constitute a lien on such Lot. The Owner of a Lot, or any portion thereof, shall be personally obligated to pay such charges which were assessed or accrued upon the land owned during the period of Ownership. The Association or the Management Company, on behalf of and pursuant to its contract with the Association, may commence an action against any Owner personally obligated to pay the charges or to foreclose the lien for such charge against any Lots. Any such foreclosure action may be brought at the Association election, either in the same manner as an action to foreclose a real estate mortgage, or as a proceeding to enforce a statutory maintenance lien as provided in Section 779.70, Wis. Stats., to the extent said Section is applicable. Any lien in favor of the Association/Management Company securing unpaid charges arising by virtue of this Declaration shall be subject and subordinate to the lien of any mortgage whether the mortgage is executed or recorded prior to or after the creation of such lien.

C) Subordination of the Lien to Mortgages. The lien of the assessments provided for herein shall be subordinate to the lien of any first mortgage. Sale or transfer of any Property shall not release the assessment lien. However, the sale or transfer of any Property pursuant to mortgage foreclosure or any proceeding in lieu thereof shall extinguish the lien of such assessment(s) as to payments which become due prior to such sale or transfer. No sale or transfer pursuant to foreclosure or proceedings in lieu thereof shall relieve such Property from liability from any assessments thereafter becoming due or from the lien thereof.

D) Joint and Several Liabilities of Grantor and Grantee. Upon a voluntary conveyance, the grantee of a Property shall be jointly and severally liable with the grantor for all unpaid assessments against the grantor as provided in this Declaration up to the time of conveyance, without prejudice to the grantee's right to recover from the grantor the amount paid by the grantee therefore. However, any such grantee shall be entitled to a statement from the Association setting forth the amount of such unpaid assessment and any such grantee shall not be liable for, nor shall the Property conveyed be subject to a lien for,

any unpaid assessments against the grantor pursuant to this Declaration in excess of the amount therein set forth.

PART B

CONDITIONS, COVENANTS AND RESTRICTIONS

B-1) Applicability. The following provisions in this Part B shall apply to all Lots and Outlots, as described in Exhibit “A” and such other Lots or Outlots as may, in the future, be subjected to this Declaration, as the same may be amended from time to time, by Declarant in the sole exercise of Declarant’s discretion.

B-2) Land Use And Building Type. Only the following designated uses for all private Lots and Outlot 3 shall be permitted. The remaining Outlots are dedicated to the Village and uses are noted for informational purposes only.

A) Lots 1-96 and 107-117 shall be used for single family residential purposes. No building shall be erected, altered, placed or permitted to remain on any Lot other than one detached single family dwelling unit not to exceed two and one-half stories in height. Each dwelling unit shall have an attached or detached garage of a size to be approved by the Committee, as that term is defined below. The size of a dwelling unit to be constructed on specific Lots shall not be less than the minimum size to be established hereinafter.

B) Lots 97-106 shall be used for twin single family homes.

C) Outlots 1 is dedicated to the public for stormwater management and conveyance..

D) Outlot 2 shall be for private alley purposes and shall be maintained by the Association.

E) Outlot 3 is dedicated to the public for park purposes

F) Outlot 4 is dedicated to the public for storm water management and open space.

G) Outlot 5 and 6 are dedicated for private open space and shall be maintained by the Association.

H) Lease Requirements.

1) *Lease Requirements.* An Owner may rent its dwelling by written Lease (a “Lease”), provided that

a) The term of any such Lease shall not be less than six (6) months;

b) The Owner has obtained the prior written approval of the Association to the proposed tenant and the terms of the proposed Lease, and the written approval for any proposed extension of the Lease; and

- c) The Lease contains a statement obligating all tenants to abide by this Declaration, the Articles, the Bylaws, and the Rules and Regulations, providing that the Lease is subject and subordinate to those instruments; and
- d) The Lease provides that any default arising out of the tenant's failure to abide by the Declaration, the Articles, the Bylaws, and the Rules and Regulations shall be enforceable by the Association as a third-party beneficiary to the Lease and that the Association shall have, in addition to all rights and remedies provided under the Declaration, the Articles, the Bylaws and the Rules and Regulations, the right to evict the tenant and/or terminate the Lease should any such violation continue for a period of ten (10) days following delivery of written notice to the Owner and the tenant specifying the violation.

2) *Standard for Approval of Lease and Tenant.* The Association may withhold approval on any reasonable basis, including, but not limited to: the failure of the Lease terms to comply with all provisions of this Declaration, the Articles, the Bylaws, and the Rules and Regulations; the past failure of the Owner, the tenant or tenant's guests to abide by all provisions of this Declaration, the Articles, the Bylaws, and the Rules and Regulations; and the past use by Owner, the tenant or its invitees or guests of any part of the Lot in a manner offensive or objectionable to the Association or other occupants of the Property by reason of noise, odors, vibrations, or nuisance.

3) *Violations / Remedies.*

a) During the term of any Lease of all or any part of a Lot, each Owner of such Lot shall remain liable for the compliance of the Lot, such Owner and all tenants of the Lot with all provisions of this Declaration, the Bylaws, and the Rules and Regulations of the Association, and shall be responsible for securing such compliance from the tenants of the Lot. The Association may require that a copy of each Lease of all or any part of a Lot be filed with the Association.

b) In the event that an Owner leases out its dwelling or any portion of its Lot in violation of this provision, the Association may impose a daily fine up to the greater of (i) an amount equal to the daily rental amount being charged by Owner to its tenant and (ii) \$100 (this daily fine shall be adjusted up every five years by 5%).

In addition to any fines imposed under this Section, the Owner shall reimburse the Association for all costs incurred by the Association, including attorneys' fees, incurred to enforce this Section, any action the Association takes under this Section B-2)G) against Owner or Owner's tenant, and to collect any outstanding amounts owed by Owner to the Association."

Uses, other than the uses set forth in this section B-2, shall not be permitted on the Lots or Outlots, as applicable, without the prior written approval of the Declarant and Committee (defined in Section B-3 below), as appropriate. After Declarant control of the Association has terminated, approval from the Association and the Committee shall be required.

Except as otherwise provided herein, no buildings, signs or other structures incidental to the use of any Outlot, which have been approved in advance by the Committee, may be constructed on any Outlot.

All rights-of-way noted on the Plat shall be dedicated as permanent public streets and rights-of-way and shall be improved in accordance with agreements entered into between the Declarant and the municipality in which the Development is located.

B-3) Architectural Control. No building shall be erected, placed or altered on any Lot until the construction plans and specifications and a plan showing the location of the structure have been approved by a majority of the Architectural Control Committee (the “**Committee**”) as to quality of workmanship and materials, harmony of external design with existing structures, and as to location with respect to topography and finish grade elevation. There shall be a variation in building elevations on adjacent Lots. Approval shall be as provided below.

B-4) Dwellings and Landscaping. The landscaping to be installed on all Lots must meet or exceed the minimum number of points for foundation planting and cumulative total landscaping points, including foundation planting points as set forth hereafter as described in Exhibit “C”, attached hereto and incorporated herein by reference and further described in the Design Guidelines. The number of points attributable to various elements of the landscaping to be installed shall be determined by reference to Exhibit “D”, attached hereto and incorporated herein by reference and further referenced in the Design Guidelines. The structure and the minimum landscaping requirements shall be completed within nine (9) months after issuance of a building permit. Landscape installed by the Declarant may or may not meet the minimum number of required points. All driveways shall be of concrete and shall be installed within nine (9) months after substantial completion of the structure. No outbuilding or accessory building of any nature shall be erected on any Lot with the exception of detached garages approved by the Committee in advance of construction. No above-ground swimming pools shall be permitted. All Lot areas not used as a building site, or under cultivation as a family garden, shall be planted with grass seed or shall be sodded, and shall be maintained on a regular seasonal basis, including mowing of a frequency of not less than once every fourteen (14) days during the lawn growing season. Maintenance of all improvements on a Lot shall be performed by the Owner. Maintenance shall include, but not be limited to, watering, pruning and routine fertilizing and mulching of all plantings and plant beds, replacement of dead, dying and/or diseased trees and shrubs, prompt removal of weeds, trash and debris from plant beds and areas adjacent to shrubs and trees so as to keep said landscaping in a healthy, attractive and neat condition.

If the Owner of any Lot, after reasonable notice, fails or refuses to install landscaping as described herein, or maintain it as required above, the Committee, through its duly authorized agents or employees, shall have the right to enter upon said Lot at reasonable hours to perform said landscaping and/or maintenance. The costs of the materials and labor to perform such landscaping and/or maintenance shall be assessed against said Lot in accordance with the terms of Section A-4 (B)(2) above, which assessment may be foreclosed or collected in accordance with the terms hereof or collected as provided herein.

B-5) Vehicle and/or Equipment Storage. No inoperable, dilapidated or junk vehicles of any nature may be kept upon any Lot except in a fully enclosed garage. The exterior storage of boats, trailers, travel trailers, campers, motorcycles, recreational vehicles, automobiles or trucks, portable moving and storage containers, mini storage or on-site storage containers (collectively, without limitation by reason of enumeration “**Equipment**”), of any nature is prohibited whether or not screened from public view. No Equipment shall be parked or stored on lawns. The temporary storage of vehicles in a drive area for the purpose of loading or unloading for a period not to exceed twelve (12) hours is permitted. No commercial vehicles, including trucks, semi-trailers, trailers, may be stored or parked overnight on or in front of said Lots except in an enclosed garage

B-6) Construction On Adjoining Lots. Nothing contained herein shall be construed to prohibit the construction of a residential dwelling or private garage partially on one Lot and partially on an adjoining Lot without regard to side yards between adjoining Lots, provided that all such Lots are owned by the same person or persons.

B-7) Easements.

A) No structure, planting, or other materials shall be placed or permitted to remain within any easement of record (an **"Easement"**) if any, which may damage or interfere with the installation and maintenance of utilities, or which may change, obstruct or retard the flow of water or the direction of such flow through the Easement or through such other drainage channels or swales that may have been created by the Plat or otherwise. The Easements located on each Lot and all improvements therein shall be maintained continuously by the owner of the Lot, except for those improvements for which a public authority or utility company is responsible.

B) The Intra-block drainage Easement shall be graded with the construction of each principal structure in accordance with the approved Stormwater Drainage Plan on file with the Village Engineer and the Zoning Administration, as amended in accordance with the Village Ordinances.

C) Public utility easements six feet (6') wide (unless otherwise noted on the Plat). Utility easements as herein set forth on the Plat are for the use of public and private utilities having the right-of-way to serve the area.

D) All lots within this plat are subject to a non-exclusive easement for drainage purposes which shall be a minimum of six feet (6') in width measured from the property line to the interior of each lot except that the easement shall be twelve feet (12') in width on the perimeter of the Plat. Easements shall not be required on the property lines shared with greenways or public streets.

E) Temporary Construction Easement. Each Lot which has been made subject to this Declaration (for the purposes of this paragraph each Lot described herein shall be referred to as the **"Primary Lot"**) is hereby made subject to a temporary, non-exclusive easement over, under, upon, across and through so much of the side yards of the Primary Lot as may be necessary for the safe and code compliant construction of a basement, including but not limited to footings, foundation and basement walls, on the adjoining Lot (the **"Adjoining Lot"**). The purpose of this Temporary Construction Easement is to permit Declarant to adequately slope and provide lateral support to the walls of the basement excavation in question so as to protect against cave-ins and loss of lateral support, and it shall be broadly construed to effectuate such purpose. This Temporary Construction Easement shall remain in effect for so long as it is needed to permit construction of the basement on the Adjoining Lot in a safe and code compliant manner. After completion, Declarant shall backfill the excavated area, compact such backfill in accordance with good construction practices, and restore the area affected by this easement to the condition existing immediately preceding the excavation, including replacement of sod, trees, shrubs and other landscaping, at no expense to the Owner of the Adjoining Lot (collectively **"Restoration"**). This Temporary Construction Easement shall, without further notice, terminate upon completion of said Restoration.

F) Lots 97-106 shall be subject to a Declaration of Party Wall Agreement. The Lots described are proposed twin homes which are two homes that share a party wall and roof with each other.

G) Certain Lots will feature groped mailboxes (CBU – cluster box units) on each Lot and will have a recorded Multi-User Mailbox Easement for these Lots. The selected Lots for the CBU's will be determined by each constructed phase and will be noted in the Neighborhood Disclosure Addendum A for Buyer's notification at the time the Sales Contract is signed.

H) Outlots 1 and 4 are subject to a public bike path easement over the entire outlot.

I) Outlot 4 will be subject to a Sign and Landscaping Easement and will be maintained by the Association.

J) Outlot 5 is subject to a public stormwater easement over the entire outlot.

K) Outlot 6 will be subject to a 25 foot (25') wide gas pipeline easement in conjunction with a 25' foot (25') wide gas pipeline easement on the adjacent property.

L) Lots 89-90 and 94-95 will be subject to a 20 foot (20') wide (10' on each Lot) public storm sewer easement.

B-8) Slope and Swale Areas.

A) The graded slopes and swales as established by Declarant shall remain as permanent. Within these slopes and swales, no structure, planting or other material shall be placed or permitted to remain, or other activities undertaken which may damage or interfere with established slope and swale ratios, create erosion or sliding problems or which may change the direction of flow of drainage channels or obstruct or retard the flow of water through drainage channels. The slopes and swales of each Lot and all improvements in them shall be maintained continuously by the Owner of a Lot, at the Owner's sole expense, except for those improvements for which a public authority or utility company is responsible.

B) In order to control run off, all down spouts and down spout extenders are to drain into a permeable area such as grass or a planting bed.

C) Declarant and the Village of McFarland have agreed to a certain Storm Water Management Plan. In the event of conflict between any plans and such Storm Water Management Plan, the Storm Water Management Plan shall control. Declarant and the Association shall each have the right to enter upon any Lot at any time for the purpose of inspection, maintenance or correction of any drainage condition and the Lot Owner shall be responsible for the cost thereof.

D) Any disputes relating to drainage swales, drainage or other surface water issues, shall be resolved by the Board of Directors of the Association, which may seek the advice of the Village Engineer of the Village of McFarland. The Association shall establish procedures by which such decisions can be heard by the Board of Directors and decided by said Board.

B-9) Nuisances. No noxious or offensive activity shall be carried on upon any Lot, nor shall anything be done thereon which may be or may become an annoyance or nuisance to the neighborhood or which may have a detrimental effect on the value of other Lots and/or improvements.

B-10) Temporary Structures. No structure of a temporary character, trailer, basement, tent, shack, garage, barn or other outbuilding shall be used on any Lot at any time as a residence, either temporarily or permanently.

B-11) Signs. No sign of any kind shall be displayed to the public view on any Lot except, one professional sign of not more than one square foot, one sign of not more than six square feet advertising the property for sale or rent or signs without regard to size used by the Declarant, a builder or licensed real estate broker to advertise the property during the construction and sales period or to identify the subdivision and/or its Declarant.

B-12) Entrance Sign. It is contemplated there will be an entrance monument sign and associated easement in Outlot 4 of the Plat. The sign and easement associated with the sign will be owned by the Association. The Association will be responsible for the maintenance of said sign to include watering, mowing and basic landscape requirements. The Association is responsible for determining whether said signs shall remain in place and assess all owners in the neighborhood of any future replacement cost after Declarant turns over control of the Association to the Owners

B-13) Animals. No animals, livestock or poultry of any kind shall be raised, bred or kept on any Lot, except that dogs, cats or other household pets may be kept, provided that they are not kept, bred or maintained for any commercial purpose. No animal enclosure, house, pen or fences or similar device shall be placed on any Lot without the prior written approval of the Committee which may require special landscaping and screening.

B-14) Garbage and Refuse Disposal. No Lot shall be used or maintained as a dumping ground for rubbish. Trash, garbage or other waste shall not be kept except in sanitary containers. No incinerators shall be permitted. Other equipment for the storage or disposal of such material shall be kept in a clean and sanitary condition. No trash, building materials, debris, leaves, lawn clippings, rocks or earth shall be placed in any Outlot.

B-15) Sight Distance at Intersections. No fence, wall, hedge or shrub planting which obstructs sight lines at elevations between 30" and 72" above the roadways shall be placed or permitted to remain on any corner Lot within the triangular area formed by the street property lines and a line connecting them at points twenty five (25) feet from the intersection of the street lines, or in the case of a rounded property corner, from the intersection of the street property lines extended. The same sight-line limitations shall apply on any Lot within ten (10) feet from the intersection of a street property line with the edge of a driveway. No tree shall be permitted to remain within such distances of such intersections unless the foliage line is maintained at sufficient height to prevent obstruction of such sight lines.

B-16) Mailboxes and posts. Based on new, recently adopted requirements of the United States Postal Service, the Rosewood Fields platted lots will receive mail by using CBU's (cluster box units) instead of curb side mailboxes on newly constructed homesites. These new requirements will phase out curb side mailboxes nationwide solely at the Postal Service's discretion.

B-17) Notices to Owners. The following information is being put of record in order to give record notice to all Owners, mortgagees and other persons and entities having an interest in the Property:

A) Private: Private Alleys (collectively, "Alleys") are shown on the Plat as Outlots. Said Alley will be dedicated to the Association. The cost of the maintenance of the Alleys shall be the

responsibility of the Association. Certain Lots in the Development border Alleys, which are intended to serve as the access to such Lots. Restrictions on the Alleys are summarized as follows:

1) There will be no public trash, leaf or recycled material pick-up service in said Alleys, but instead, there will be one or more trash pick-up collection points designated by the Declarant to be used by Owners of a Lot bordering the Alleys in question. Trash pick-up may initially be provided by the Association and charged as an expense of the Association, but such arrangement may be changed to provide for public or some other method of trash pick-up at a future time as determined by the Declarant or the Association. All trash receptacles to include recycling receptacles must be removed from the Alleys within 24 hours after trash or recycled material pick-up.

2) Mailboxes for homes located on the Alleys may be clustered at one end of the Alleys in question or clustered at various locations along the public street. Location and placement of the mailboxes is the sole discretion of the United States Postal Service.

3) Snow removal, repair and replacement of Alleys will be the responsibility of the Association.

4) Homes with garage access to a private alley are required to have two (2) “coach” lights on each side of the garage door, which will be wired to a photo electric eye for automatic use from dusk to dawn. The lights have been pre-selected by Declarant. There are four (4) selections available. It is the Buyer’s responsibility to maintain the lights so that they are always operational.

B) Plantings, flower beds, and entry signs (including utility installations connected therewith) constructed and installed by Declarant, if any, shall be deemed a part of the Common Property. The Association is obligated to maintain any entry feature; maintenance shall include electrical charges (if any), sign repair and maintenance of the landscaping including mowing of all lawns and grass areas. The cost of maintenance of said Common Property shall be an assessment against all of the Property in the subdivision in accordance with the Declaration, for so long as such maintenance is necessary or required adversely affects the natural flow of surface or underground waters with in the area permitted.

C) Notice is hereby given that as of the date hereof there is an active railroad on certain lands in close proximity to the subdivision, and that the foregoing railroad operation may have an effect on the use, enjoyment and market value of Lots in the subdivision, and in particular, those Lots located in close proximity to the railroad. Each buyer should familiarize themselves with the location of their Lot and its proximity to the railroad operation.

B-18) Improvements Within Easements. Any improvements (for example, fences, landscaping) located within any part of a Lot which is subject to a utility easement is subject to removal at the Owner’s expense for utility maintenance and other reasons as determined by the party benefitted by the easement. Reinstallation of any improvement would be at the Owner’s cost and would also be subject to the discretion of the party benefitted by the easement and is subject to terms and conditions as set forth on the final plat.

PART C
ARCHITECTURAL CONTROL COMMITTEE

C-1) Membership. Declarant shall establish an Architectural Control Committee (the “Committee”) consisting of three (3) members. So long as Declarant has title to any Lot subject to this Declaration, the Committee shall be appointed by Declarant. After Declarant no longer has title to any Lot within the Development or at such earlier time as determined by the Declarant, the initial members of the Committee shall resign and the Association shall elect three (3) Owners to serve on the Committee. At any time, Declarant may elect to surrender the selection of the members of the Committee to the Association.

A majority of the Committee may designate a representative to act for it. In the event of the death or resignation of any member of the Committee, the remaining members shall have full authority to designate a successor.

The Committee appointed hereunder shall serve for the time period specified in paragraph C-10, below. Any Committee member may resign prior to said date. Such resignation shall be effective upon receipt. If a resignation shall occur, prior to turning over control of the Committee, then the remaining members of the Committee may appoint a replacement.

C-2) Architectural Control. No structure, whether residence, accessory building, tennis or sport court, swimming pool, decks, patios, antenna (whether located on a structure or on a Lot), flag pole, wall, fence, landscaping, recreational equipment or other improvements, including exterior colors and materials to be applied to said improvements, shall be constructed, maintained or performed upon any Lot and no alteration or repainting of the exterior of a structure shall be made unless complete Architectural Review Application (“Application”) Plans, specification and plot plans therefore shall have been submitted to and approved in writing by a majority of the Committee. Approval shall also be required for location of improvements with respect to topography and finish grade elevation. Said Application, plans, specifications and plot plans shall show the exterior design, height, building materials and color scheme thereof, the location of the structure plotted horizontally and vertically, the location and size of driveways, the plans for required landscaping, and the grading plan. A copy of such Application, plan specifications and plot plans as finally approved shall be deposited with the Committee. The Application can be found on the Veridian Homes website www.veridianhomes.com. Select Homeowner Resources (located on the top toolbar), select Architectural Control Committee and select the appropriate application for your request.

C-3) Plan Review. The Committee shall review said Application, plans and specifications as to quality of workmanship and materials, harmony of external design with existing or proposed structures and as to location with respect to topography and finish grade elevation. The Committee shall use the guidelines set forth in this Declaration as an aid in exercising its architectural control responsibilities hereunder, but nothing contained herein or therein shall limit the Committee’s discretion to grant variances from or make changes to, the guidelines, as they shall determine in the sole exercise of their discretion.

C-4) Procedure.

A) Neither the members of the Committee nor its designated representative shall be entitled to any compensation for services performed pursuant to this covenant for the initial approval of a residential structure. Thereafter, said Committee may charge a “request for action” or “approval” fee not to exceed Fifty and no/100 Dollars (\$50.00) for each such request or approval. The Committee’s approval

or disapproval, as required in these Covenants, shall be in writing. In the event the Committee fails to provide, in writing, approval or disapproval within thirty (30) days after application, plans and specifications or any other matters requiring approval have been submitted to it, the request shall be deemed denied.

B) A submission will not be complete, and the thirty (30)-day approval time, as applicable, set forth above shall not commence until all documents required herein have been submitted. All such submissions shall be made to the Committee at the address set forth in this Declaration or to such other address that the Committee may designate.

C) The Committee shall have the sole right to reject any Application and plans which, in the judgment and sole opinion of a majority of its members are not in conformity with this Declaration; or are not desirable for aesthetic reasons; or are not in harmony with buildings located on the surrounding Lots; or are not in conformity with the general purposes of this Declaration.

D) The Committee shall exercise its sole approval authority and discretion in good faith and each Owner, by acceptance of a deed to, or any other interest in, a Lot, agrees to hold the Committee harmless from any perceived discrepancies in the Committee's good-faith performance of its duties. Refusal of approval of plans by the Committee may be based on any grounds, including purely aesthetic grounds, which in the sole discretion of the Committee shall be deemed sufficient.

E) The Committee may set its own operating procedures consistent with this Declaration and any limitations hereafter imposed by the Association. The costs of operating the Committee shall be assessed by the Association as Common Property expenses, except as permitted below. The Committee may engage consultants (e.g., architects, engineers or attorneys) either on a general or on a case-by-case basis, and the costs thereof may be charged to an applicant. The members of the Committee shall not draw any compensation for serving thereon but may be reimbursed for expenses incurred in performing their duties. All funds relating to the Committee shall be handled by the Association.

C-5) Separate Village Approval. Matters which require approval of the Committee may also require approval of the Village of McFarland. Obtaining approval from the Committee and the Village of McFarland is solely the responsibility of the Owner desiring approval. Approval of Plans by the Committee shall not be deemed approval by the Village of McFarland and approval by the Village of McFarland shall not be deemed approval by the Committee.

C-6) Records. Until such time as a replacement Committee is designated, all plans, applications and requests shall be submitted to said Committee at the following address:

Rosewood Fields Homeowners Association, Inc.
Architectural Control Committee
6801 South Towne Drive
Madison, Wisconsin 53713

C-7) Committee Liability. Neither the Committee nor any member thereof shall be liable for damages to any person submitting request for approval or to any Owner of any Lot by reason of any action, failure to act, approval, disapproval or failure to approve or disapprove with regard to such requests. The Committee is not responsible for ensuring that the application and plans submitted by an Owner are in compliance with applicable laws, rules, regulations, ordinances or customary and typical building practices. The Committee does not review plans for structural design.

C-8) Indemnification. Each member or former member of the Committee, together with the personal representatives and heirs of each such person, shall be indemnified by the Association against all loss, costs, damages and expenses, including reasonable attorney's fees, asserted against, incurred by or imposed in connection with or resulting from any claim, action, suit or proceeding, including criminal proceedings, to which such person is made or threatened to be made a party by reason of service as a member thereof, except as to matters resulting in a final determination of gross negligence or willful misconduct on the part of such member. In the event of settlement of such proceeding, indemnification shall be provided only in connection with such matters covered by the settlement as to which the Association is advised by counsel that the person to be indemnified has not been guilty of gross negligence or willful misconduct in the performance of such person as a member in the matter involved. This right of indemnification shall be in addition to all other rights and defenses. All liabilities, losses, damages, costs and expenses incurred or suffered by the Association in connection with this indemnification shall be a Common Property expense. Nothing in this Section C-8 shall be deemed an indemnification of such person with respect to such person's status as an Owner, occupant or otherwise.

C-9) Variance. The Committee shall have the power and absolute discretion to authorize a variance from any of the requirements of this Declaration if it finds that the strict application thereof would, in its sole discretion and opinion, result in difficulties or undue hardship to the Lot owner or in the event the architecture of the proposed Lot improvement is such as to present, in its opinion, a particularly pleasing appearance compatible with other houses in the development.

C-10) Successor to Committee. Declarant may turn over control of the Committee to the Members of the Association at any time, and shall turn over control when Declarant no longer has any ownership interest in the Property. At such time as Declarant turns over Committee control, the Association's Board of Directors shall designate not less than three (3) or more than five (5) Members of the Association to serve and act as the Committee for all purposes hereunder.

PART D

DESIGN GUIDELINES

D-1) Single Family Dwelling Units.

A) Architectural Character. Architecture within the Development will be developed with a variety of American vernacular architectural styles in mind. These architectural styles, while not a comprehensive list, will offer a unique mixture of styles for the development, and will be applied with proportions and character in mind. The overall character of the development will be created so that the architectural styles are compatible and the overall cohesion of styles will help foster a unique setting without stifling the architectural creativity on the individual building level, creating a varied but integrated community. Identical floor plans with the same elevation style shall not be located within 7 sites to assure this variety. The following are examples of styles permitted:

Cottage	Craftsman	Four Square	Farmhouse	Salt Box
Prairie	Shingle	Traditional	Victorian	Southern Traditional

The requirements as itemized in the following section will be used as applicable to the context of the specific architectural style. Declarant reserves the right to grant variances in its sole discretion. Where Village zoning is more restrictive, such requirements will govern.

B) Front Porch. Usable front porches are encouraged as both visual and functional design elements.

1) A usable open front porch is defined as having a minimum depth of 6'-0", and a minimum width of 8'-0".

2) Porch post style should be consistent with the overall architectural style of the home. Minimum standard porch design details include the following; porch posts or alternate per plan, porch balustrades, when provided, of nominal 2" x 2" square wood at a maximum of six inches (6") on center; and newel posts that are compatible with the design of the column posts. Porch columns and railings shall be painted to match the trim color of the house.

C) Garage.

1) There shall be a minimum of a two (2) car, 20' x 20' garage per dwelling unit.

2) The maximum garage width exposed on the front elevation shall be no greater than fifty percent (50%) of the overall building width.

3) On homes with a front-entry garage face must be set back a minimum of 2'-0" from the front elevation unless applicable zoning ordinances require a greater setback.

4) Tandem, split or side entry garages are encouraged for three (3) or four (4) car garages. For three (3) car front entry garages, the third stall must have a minimum setback of the greater of 2' from the two-car garage line or as required by compatible roof design. Garage width must comply with zoning and the design guideline standards of 50% of overall building width.

5) The garage door shall be a raised panel design painted to match the siding on the home. The use of windows in the door, appropriate to the architectural style, is encouraged. The maximum single garage door size is 8' x 18".

D) Ornamental Design Elements.

1) Ornamental design elements, such as dormers, shutters, window wrap window grids, gable vents, pilasters, pediments, etc., shall be used in a manner consistent with the overall architectural style of the home and with emphasis on elevations exposed to public space.

2) Window wrap or shutters and window grids are required on front and other primary elevations facing a public space. Gable vents, 5" horizontal vinyl trim, and/or eyebrow roofs are required on front elevation gables greater than 10'-0" in width and are encouraged on other gables as deemed appropriate by the Architectural Control Committee.

3) The shutters shall be wood or polystyrene with colors as approved by the Architectural Control Committee or of other material or color as deemed acceptable by the Architectural Control Committee. Panel or louver design shutters shall be used as appropriate to home materials & style.

4) The window wrap and corner trim shall be a minimum 3½" vinyl or composite material as approved by the Architectural Control Committee and used with box outs or when part of the standard plan.

5) Gable vents shall be the NuWood triangle or peaked series or equivalent for the front elevation, and side elevations facing a public street, or other design approval by the Architectural Control Committee. Other gable ornamentation as appropriate to architectural style may be allowed or required by the Architectural Control Committee.

E) Roof/Facias/Soffits/Eaves.

1) Roof Standards:

- a) Roof design must be consistent with the overall architectural style of the home. Roof forms and pitches as established on individual styles may not be altered without approval by the Architectural Control Committee.
- b) Roof material shall be Owens Corning Oakridge 30 architectural shingle or equal and in colors as approved by the Architectural Control Committee.
- c) Use of an eyebrow roof or projecting gable is required at brick walls not extending into a gable and are encouraged, as appropriate, at double gable returns and porch column caps.
- d) Hip roof design, porches or other elements deemed appropriate by the Architectural Control Committee may be used in lieu of specific gable requirements.

2) Fascia, Soffit and Eave Standards:

- a) Facia shall be 6" minimum aluminum with colors as approved by the Architectural Control Committee, wood or composite material may be used when appropriate to the architectural style.
- b) Aluminum soffit and eave color shall match facia.
- c) A minimum 12" overhang is required at typical eaves and gable ends. However, 6" is allowable with projections less than 6'-0" in width, such as the fireplace chase and a small bay window, and beyond structure line at open porches. Larger overhangs may be required as appropriate to the architectural style.

F) Exterior Wall Surfaces.

1) Siding material shall be premium vinyl or composite material as approved by the Architectural Control Committee. Shingle or vertical board and batten siding is encouraged for accent areas appropriate to the style of the home. Colors shall be approved by the Architectural Control Committee.

2) Windows may be vinyl; vinyl clad, aluminum clad or wood with colors as approved by the Architectural Control Committee.

3) Variation of wall planes on primary elevations is encouraged as appropriate

to overall building style and massing.

4) Any elevations facing public streets or spaces shall have a minimum of three (3) windows with wrap trim or shutters and window grills as appropriate and one (1) gable vent at all gable ends.

5) The use of brick or stone is encouraged as appropriate to architectural style. When brick is used, it shall be on full wall surfaces from foundation to eaves or on a two-story elevation at least to the second floor windowsill line. When brick is used, a soldier course window heads and rowlock sills are required. Additional details (i.e. projecting belt course and projecting corner accents) are encouraged as appropriate. Stone may be used as full wall surfaces or as a base course to first floor sill line. Brick or stone facing must return a minimum of 2'-4" when terminated at an outside corner.

6) Brick or stone material and color selections shall be as approved by the Committee and harmonious with overall neighborhood palette, as well as with the specific home design.

D-2) Other Improvements.

A) **Fences** All fencing must receive prior written approval of the Committee and shall comply with any requirements set out below. The Committee may also require the installation and maintenance of landscape materials for screening and aesthetic purposes. All fence material shall be constructed of vinyl. Zoning approval and/or building permit from the Village of McFarland may be required to construct fencing. Committee approval does not supercede the need for any municipal approvals or permits.

1) Fencing may consist of vinyl. The fence style permitted is the PlyGem Stratford Vinyl, depicted in Exhibit "E".

- a) All fencing shall be erected finish side out (i.e. pickets on the outside of the rail facing the street or neighboring lot).
- b) Posts shall be spaced a minimum of 72" and a maximum of 96" on center. Rails shall be discontinuous and abut into the posts.
- c) Gates are permitted and shall be consistent with the fencing style. All gates shall open into the lot. Gates may be required for access to utility easements and access easements that are dedicated on the plat.
- d) Fencing color by PlyGem Fence/Railing of White is the only color allowed for vinyl material.

2) Appropriate uses of fencing:

- a) Fencing shall be limited to rear and side yards only.
- b) Fencing shall meet up with the corners of the home or garage and may not project past the front face of home or garage.

- c) Only one fence is permitted along adjoining properties. Corners of adjoining properties fencing shall intersect at common corners.
 - d) Fencing at side yards of corner lots shall be placed a minimum of 6 inches from the property line (approximately 1 foot from sidewalk) for all zoning classifications.
- 3) Inappropriate use of fencing:
- a) Fencing in front yards shall not be permitted.
 - b) Fencing shall not occur in freestanding segments or be placed arbitrarily.
 - c) Fencing shall not meet porch or deck corners.
 - d) Fencing shall not interfere with utility equipment. Your utility companies shall be consulted for current requirements and the most restrictive shall apply.

B) Decks. All decks must receive prior written approval of the Committee and shall comply with any requirements set out below. The Committee may also require the installation and maintenance of landscape materials for screening and aesthetic purposes. A zoning approval or building permit from the Village of McFarland may be required to construct a deck. Committee approval does not supercede the need for any municipal approvals or permits.

- 1) Appropriate deck design shall incorporate the following criteria:
 - a) Deck(s) shall be proportionate in size to the footprint of the dwelling
 - b) Deck(s) shall be proportionate in length and width
 - c) Deck(s) shall not project past the rear or side yard setbacks
 - d) Deck(s) at side yards of corner lots may not project past the corner of the home or garage for that side facing the street.
 - e) Deck(s) must be stained or painted
- 2) Inappropriate deck design:
 - a) Deck(s) in front yards shall not be permitted.
 - b) Deck(s) shall not occur in freestanding segments or be placed arbitrarily on the lot.
 - c) Deck(s) shall not interfere with utility equipment. Your utility companies shall be consulted for current requirements and the most restrictive shall apply.

C) Outbuildings. No outbuilding, shed or accessory building of any nature shall be erected on any Lot, with the exception of a detached garage that is the only garage on the lot and is

approved by the Committee prior to construction. Secondary units (granny flats) above detached garages may be allowed with prior written approval from the ACC.

D) Antennae/Wind Powered Electric Generators. No wind powered electric generators, exterior television, radio receiving or transmission antennae, satellite signal receiving station or dish shall be placed or maintained upon any portion of a Lot without prior written approval of the Committee.

1) Appropriate antennae or satellite dish placement:

a) Only one antennae or satellite dish shall be allowed per lot.

b) The location of the satellite dish can be any of the following and shall not be visible from the curb directly in front of the home:

i. On a pole in the backyard and located close to the home.

ii. Attached to the deck.

iii. On the rear roof line of the home.

1. A satellite dish shall not project past the uppermost roof ridgeline. This method is not recommended by the Committee as you may have water infiltration issues if the dish is not properly installed and roof repairs may not be covered under the applicable roof warranty.

2) Inappropriate antennae or satellite dish placement:

a) Antennae or satellite dish in front or side yards shall not be permitted.

b) Antennae or satellite dish shall not interfere with utility equipment.

E) Firewood Storage. No firewood or woodpile shall be kept on any lot unless it is neatly stacked, placed in the rear yard and screened from street view by plantings or a fence first approved in writing by the Committee.

F) Solar Collectors. No active solar collector or apparatus may be installed on any Lot unless such installation is first approved in writing by the Committee, which shall consider the aesthetic and sun reflection effects on neighboring structures. Solar collectors or apparatus installed flat against or parallel to the plane of the roof shall be preferred.

G) Lighting. Exterior lighting installed on any Lot shall either by indirect or of such controlled focus and intensity that such lighting will not disturb the residents of adjacent Lots.

H) Landscaping Requirements. Pursuant to Section B-4 of the Declaration of Conditions, Covenants and Restrictions, Developer hereby imposes upon all Lots described in Exhibit “A”, attached hereto and incorporated herein by reference, the requirement that the Owners thereof install landscaping on such Lots which meets or exceeds the minimum number of points for landscaping set forth

in Exhibit "C". The number of points attributable to various elements of the landscaping to be installed shall be determined by reference to Exhibit "D", attached hereto and incorporated herein by reference. All terms, covenants and conditions of Section B-4 of the Declaration of Conditions, Covenants and Restrictions, as amended herein, shall be applicable to the landscaping to be installed pursuant to the terms of this paragraph. Landscape installed by the Declarant may or may not meet the minimum number required.

PART E

GENERAL PROVISIONS

E-1) Term. This Declaration shall run with the Property and Common Property, and shall be binding on Declarant and all Members and their successors and assigns, and all persons claiming under them for a period of twenty-five (25) years from the date recorded, after which time said Declaration shall be extended automatically for successive periods of five (5) years each unless an instrument signed by a majority of the Members agreeing to change said Covenants in whole or in part or to terminate the same.

E-2) Enforcement. The Declarant (or either one of them if more than one), Architectural Control Committee or any Owner shall have the right to enforce by any proceedings at law or in equity all restrictions, conditions and covenants created or imposed herein, against any person or persons violating or attempting to violate any covenant, by any action to either restrain violation or to recover damages, or both including reasonable attorney fees. Failure to enforce any covenant, condition or restriction herein shall in no event be deemed a waiver of the right to do so thereafter. In the event of a violation of this Declaration the Committee shall have the right to assess and collect from the violating party a fine for such violation equal to the greater of (i) the actual damages suffered on account of the violation, or (ii) the sum of \$100.00 per day for each day the violation remains outstanding plus (iii) all costs of collection and enforcement, including actual attorney fees.

E-3) Severability. Invalidity of any one of these covenants by judgment or court order shall in no way affect any of the other provisions which shall remain in full force and effect.

E-4) Model Homes. So long as Declarant shall own any Lot in the Development, Declarant shall be permitted to maintain model homes in the Development, including therein a sales office for the purpose of sales and marketing of its homes.

E-5) Parade of Homes. So long as Developer shall own any Lots in the Development, or condominium units in any condominium located within the Development (collectively a "Lot/Unit"). Developer reserves the right to submit some or all of said Lots/Units as a site for the Parade of Home and/or the Parade of Condominiums of the Madison Area Builders Association (the "Parade"). In the event that some or all of said Lots/Units are selected as a site for a Parade, this Declaration of Protective Covenants, Conditions and Restrictions shall, as to the Lots/Units enrolled in the Parade, for a limited period of time ending 48 hours after the conclusion of the Parade, be deemed temporarily altered and modified, to the extent necessary, to permit the Madison Area Builders Association to hold its Parade in this Development pursuant to the then current Parade Rules and Checklist of the Madison Area Builders Association. All purchasers of Lots/Units, and/or their successors and assigns, shall take title subject to this specific reservation by the Developer and shall waive all rights to object to violations of this Declaration of Protective Covenants, Conditions and Restrictions by the Developer, the Madison Area Builders Association, or any of the builders or participants in the Parade for the period of the Parade as set forth above, including the closing of any public or private streets in the Parade area. All Lot/Unit owners

appoint the Developer their attorney-in-fact to execute all necessary petitions; applications and consents to facilitate said street closings for the Parade.

E-6) Governing Law. This Declaration shall be construed and enforced in accordance with the terms of the laws of the State of Wisconsin. The terms of this Declaration are not intended to replace or affect any applicable laws, ordinances, rules or regulations of the Village of McFarland.

E-7) Wet Basins. Wet Basins within the dedicated storm water management facilities may not permanently contain water due to weather conditions and will not be filled by the Village.

E-8) Notices.

A) Notices to Declarant shall be given to Declarant at the following address: 6801 South Towne Drive, Madison, WI 53713.

B) Notices to an Owner of any Lot within the Development shall be given in care of the street address of the Lot.

C) Any party may change its address by written notice given to the other parties. Party, its successors and/or assigns, may change said addresses by notice properly given hereunder.

E-9) Amendment and Release. At any time until Declarant conveys all of the Lots which comprise the entire Property, or turns control of the Association over to its Members, whichever occurs first, Declarant may modify, amend, alter and grant variances to this Declaration without the consent of any Member, Owner or Occupant, their Mortgagees or any other party, including the Association and its Board of Directors. These restrictions or any part thereof may be cancelled, released or amended in writing as to the entire Plat or any part thereof by the Declarant at any time until Declarant conveys all of the Lots or until the Declarant turns over control to the Committee, whichever comes first. After the Declarant has sold all of the Lots or otherwise released or assigned his right to enforce the Declaration, then this Declaration or any part thereof may be released, cancelled, amended or waived hereof. Notwithstanding the foregoing or anything else set forth herein, amendments to the following sections of this Declaration shall also require the approval of the Village of McFarland as restrictions for public benefit pursuant to §236.293 Wis. Stats., in order to be effective: Sections B-7, B-8, B-14, B-17, C-5, E-1 and this Section E-9.

E-10) No Waiver. Whenever a waiver, consent or approval is required or permitted herein, it must be express and in writing; no waiver, consent or approval shall be implied. Failure to enforce any provision of this Declaration shall not operate as a waiver of any such provision or any other provision of this Declaration.

E-11) Number and Gender. Whenever used herein, unless the context shall otherwise provide, the singular shall include the plural, the plural shall include the singular, and the use of any gender shall include all genders.

E-12) Including. Whenever used herein, the term “including” preceding a list of one or more items shall indicate that the list contains examples of a general principle and is not intended as an exhaustive listing.

E-13) Captions. The captions and article and section headings in this Declaration are intended for convenience and reference only and in no way define or limit the scope or intent of the various provisions hereof.

E-14) Remedies. All remedies herein are cumulative.

[Signature Page Follows]

IN WITNESS WHEREOF, the said VH Rosewood Fields LLC Wisconsin Limited Liability Companies
has caused these presents to be signed and sealed this day of , 20 .

VH Rosewood Fields LLC
By: VH Holdings, LLC, Its Sole Member

By: _____
Chris Ehlers, Authorized Signatory

ACKNOWLEDGMENT

STATE OF WISCONSIN)
) ss
COUNTY OF DANE)

Personally came before me this _____ day of _____, 20__, Chris Ehlers the Authorized Signatory of VH Rosewood Fields LLC a Wisconsin Limited Liability Company, to me know to be such persons and officers who executed the foregoing instrument and acknowledged that they executed the same as such officers, by its authority for the purposes therein contained.

Notary Public
Dane County, Wisconsin
My Commission Expires: _____, 20____

**CONSENT TO DECLARATION OF
COVENANTS AND RESTRICTIONS**

The undersigned, _____ Bank, hereby consents to the forgoing Declaration of Conditions, Covenants and Restrictions for the plat Rosewood Fields. This consent does not limit, restrict or affect in any way Mortgagee's rights, interest and remedies regarding Mortgagee's interest in the Property.

Dated at Madison, Wisconsin this _____ day of _____, 20__.

By: _____

ACKNOWLEDGMENT

STATE OF WISCONSIN)
) ss.
COUNTY OF DANE)

Personally came before me this _____ day of _____, 20__, the above named _____, to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

Notary Public
County of Dane, State of Wisconsin
My Commission Expires: _____

Exhibit “A”

Description of Rosewood Fields Lots

Lots 1-117, Outlots 1-6, Rosewood Fields, Village of McFarland, Dane County, Wisconsin

Exhibit “B”

PINs:

EXHIBIT “C”

Total Minimum Points for Landscaping

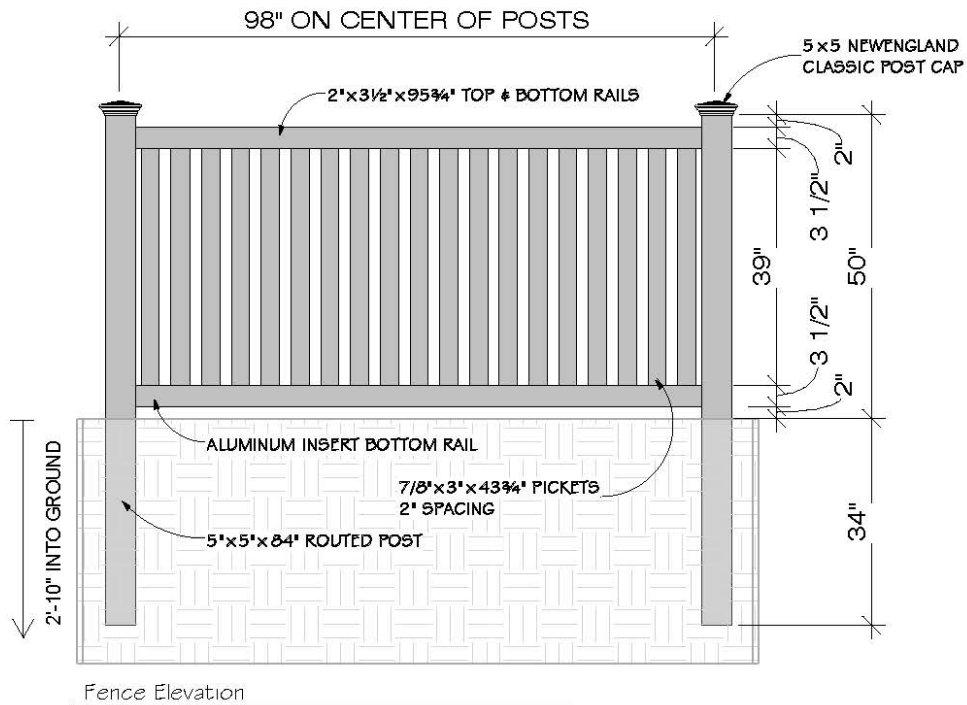
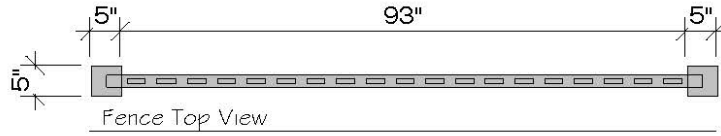
Lot(s)	Minimum Points for Foundation Plantings	Total Minimum Points for Landscaping
13, 15, 17-18, 28-42, 44-49, 52-54, 93-96, 108-116	350	500
1-12, 16, 19-25, 43, 55-61, 86-92, 107, 117	400	550

EXHIBIT "D"
Landscaping Elements

Elements	Point Schedule
A) <i>Small Shade Trees (balled and burlaped)</i> (1.5"-2" caliper at 6" from the roots)	50
B) <i>Medium Shade Trees (balled and burlaped)</i> (2"-3" caliper at 6" from the roots)	100
C) <i>Large Shade Trees (balled and burlaped)</i> (3"-4" caliper at 6" from the roots)	150
D) <i>Extra-Large Shade Trees (balled and burlaped)</i> (4" + caliper at 6" from the roots)	200
E) <i>Ornamental Trees (balled and burlaped)</i> (1.5"-2" caliper at 6" from the roots)	50
F) <i>Small Evergreen Trees</i> (3' to 4.5' when planted)	25
G) <i>Medium Evergree Trees</i> (5' to 6.5' when planted)	50
H) <i>Large Evergreen Trees</i> (7' + when planted)	100
I) <i>Evergreen Shrubs</i> (18" minimum diameter)	20
J) <i>Small Deciduous Shrubs</i> (18" to 35" in diameter)	10
K) <i>Medium Deciduous Shrubs</i> (35" to 60" in diameter)	15
L) <i>Large Deciduous Shrubs (balled and burlaped)</i> (60" or greater in diameter)	25
M) <i>Decorative Retaining Walls</i> (Points are per face foot. Boulders, timbers, and stones only – no concrete walls included.)	10
N) <i>Paver Stone Walks, Paths or Patios</i> (Points per square foot – no driveways included.)	1
O) <i>Planting Beds</i> (Points per square foot – must be decorative stone or mulch.)	1

The final point totals must consist of a balanced variety of the listed elements acceptable to the Architectural Control Committee. Existing vegetation, trees and shrubs may be included in the point totals if they are properly protected and maintained during the construction process and located as such on the landscape plans submitted to the Architectural Control Committee for approval.

STRATFORD



NOTE:

MANDATORY REQUIREMENTS (NO VARIANCE WILL BE ALLOWED)

- FENCE MUST BE VINYL
- VINYL COLOR: WHITE
- FENCE STYLE IS A PLYGEM PRODUCT (STRATFORD)

- CUSTOM BUILT ON THE JOBSITE
- INSTALLED WITH METAL BRACKETS THAT ATTACH TO POST AND SCREW INTO STRINGERS



6801 South Towne Drive
Madison, WI 53713
Phone 608.226.3100
Fax 608.226.0600

COMMITMENT FOR TITLE INSURANCE

Issued By
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

Transaction Identification Data for reference only:

Issuing Agent: Preferred Title, LLC
Issuing Office: 2728 Coho Street, Madison, WI 53713
ALTA® Universal ID:
Commitment No.: 119120204
Issuing Office File No.: 119120204
Property Address: Highway AB (Vacant Land 2-6-10), McFarland, WI 53558

SCHEDULE A

1. Commitment Date: **December 9, 2019 at 7:44 AM**
2. Policy to be issued:
 - a. ALTA Owner's Policy (6/17/06)
Proposed Insured: **VH Acquisitions LLC**
Proposed Policy Amount: **\$1,715,543.89**
3. The estate or interest in the Land described or referred to in this Commitment is **Fee Simple**.
4. The Title is, at the Commitment Date, vested in:

Utterback Limited Partnership

5. The Land is described as follows:

The East 1/2 of the Southeast 1/4 of Section 2, Township 6 North, Range 10 East, in the Town of Dunn, Dane County, Wisconsin; EXCEPT that parcel described as: Commencing at the Southeast corner thereof; thence West 80 rods to the 1/16 Section corner; thence North 38 rods; thence East to the Section line; thence South to the place of beginning and FURTHER EXCEPT that parcel described as : Beginning at the Northeast corner thereof; thence South 240 feet along the East line thereof; thence West 267 feet; thence North 240 feet; thence East 267 feet along the North line thereof to the place of beginning and ALSO EXCEPTING that part conveyed in Warranty Deed recorded as #4021154 and ALSO FURTHER EXCEPTING that part annexed to the Village of McFarland as contained in Ordinance 2019-20 recorded as #5537194 AND EXCEPTING all that part of the captioned premises lying within the Wisconsin and Southern Railroad right of way.

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Old Republic National Title Insurance Company



By: Raymond J. Abrams, Authorized Signatory

The tax parcel identification number(s) listed are provided solely for informational purposes, without warranty as to accuracy or completeness and are not hereby insured.

028-0610-024-8070-0
028-0610-024-9501-0

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SCHEDULE B, PART I Requirements

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

Warranty Deed from Utterback Limited Partnership to VH Acquisitions LLC; together with evidence that those who sign on behalf of the partnership are authorized to do so.

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SCHEDULE B, PART II Exceptions

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The Policy will not insure against loss or damage resulting from the terms and provisions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. **Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I - Requirements are met.**
2. **Special taxes or assessments, if any, payable with the taxes levied or to be levied for the current and subsequent years.**
3. **Liens, hook-up charges or fees, deferred charges, reserve capacity assessments, impact fees, or other charges or fees due payable on the development or improvement of the Land, whether assessed or charged before or after the Date of Policy.**
4. **Any lien, or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown by the public records.**
5. **Rights or claims of parties in possession not shown by the public records.**
6. **Any encroachment, encumbrance, violation or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the land.**
7. **Easements, claims of easements or encumbrances not shown by the public records.**
8. **Any claim of adverse possession or prescriptive easement.**

=====

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9. Taxes for 2019, payable in the amount of \$171.71. Payment cannot be determined at this time.
(Parcel #028-0610-024-8070-0)
Taxes for 2019, payable in the amount of \$79.63. Payment cannot be determined at this time.
(Underlying Retired Parcel #028-0610-024-9500-6)
Taxes for 2020, not yet due and payable.
10. Public or private rights in that part of the insured premises which may be laid out or used for highway purposes or rights of way.
11. The rights, if any, of the railroads and others in the sidetracks, switchgear, and related equipment which may be installed on the insured premises.
12. Conveyance of Land for Highway Purposes recorded in Vol. 246 of Misc., page 200, as #831822.
13. Easement to Wisconsin Power and Light Company recorded in Vol. 261 of Misc., page 161, as #859102.
14. Right of Way to Badger Pipe Line Company recorded in Vol. 267 of Misc., page 271, as #870241.
15. Easement to Wisconsin Power and Light Company recorded in Vol. 380 of Misc., page 99, as #1054653.

Note: The 2019 tax amount is \$171.71. (Parcel #028-0610-024-8070-0)
The 2019 tax amount is \$79.63. (Underlying Retired Parcel #028-0610-024-9500-6)

Note: The paragraph titled "ARBITRATION" in the Conditions of this Commitment/Policy are hereby deleted.

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COMMITMENT FOR TITLE INSURANCE

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NOTICE

IMPORTANT - READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I - Requirements; Schedule B, Part II - Exceptions; and the Commitment Conditions, Old Republic National Title Insurance Company, a(n) Florida corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured.

If all of the Schedule B, Part I - Requirements have not been met within 180 days after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

COMMITMENT CONDITIONS

1. DEFINITIONS

- (a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
- (b) "Land": The land described in Schedule A and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
- (c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
- (d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
- (e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
- (f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
- (g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.

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(h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I - Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.
3. The Company's liability and obligation is limited by and this Commitment is not valid without:
 - (a) the Notice;
 - (b) the Commitment to Issue Policy;
 - (c) the Commitment Conditions;
 - (d) Schedule A;
 - (e) Schedule B, Part I - Requirements; and
 - (f) Schedule B, Part II - Exceptions; and
 - (g) a counter-signature by the Company or its issuing agent that may be in electronic form.

4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY

- (a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
 - (i) comply with the Schedule B, Part I - Requirements;
 - (ii) eliminate, with the Company's written consent, any Schedule B, Part II - Exceptions; or
 - (iii) acquire the Title or create the Mortgage covered by this Commitment.
- (b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
- (c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
- (d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
- (e) The Company shall not be liable for the content of the Transaction Identification Data, if any.
- (f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I - Requirements have been met to the satisfaction of the Company.
- (g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

- (a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
- (b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.
- (c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
- (d) The deletion or modification of any Schedule B, Part II - Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.

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OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

- (e) Any amendment or endorsement to this Commitment must be in writing [and authenticated by a person authorized by the Company].
- (f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

8. PRO-FORMA POLICY

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. ARBITRATION

The Policy contains an arbitration clause. All arbitrable matters when the Proposed Policy Amount is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at <http://www.alta.org/arbitration>.

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by Old Republic National Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I - Requirements; and Schedule B, Part II - Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

12/19/2019, 02:27 PM
119120204 Page 8 of 8

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There are no objections to this plat with respect to
Secs. 236.15, 236.16, 236.20 and 236.21(1) and (2),
Wis. Stats. as provided by s. 236.12, Wis. Stats.

Certified _____, 20____

Department of Administration



ROSEWOOD FIELDS

LOT 2, CERTIFIED SURVEY MAP NO. _____

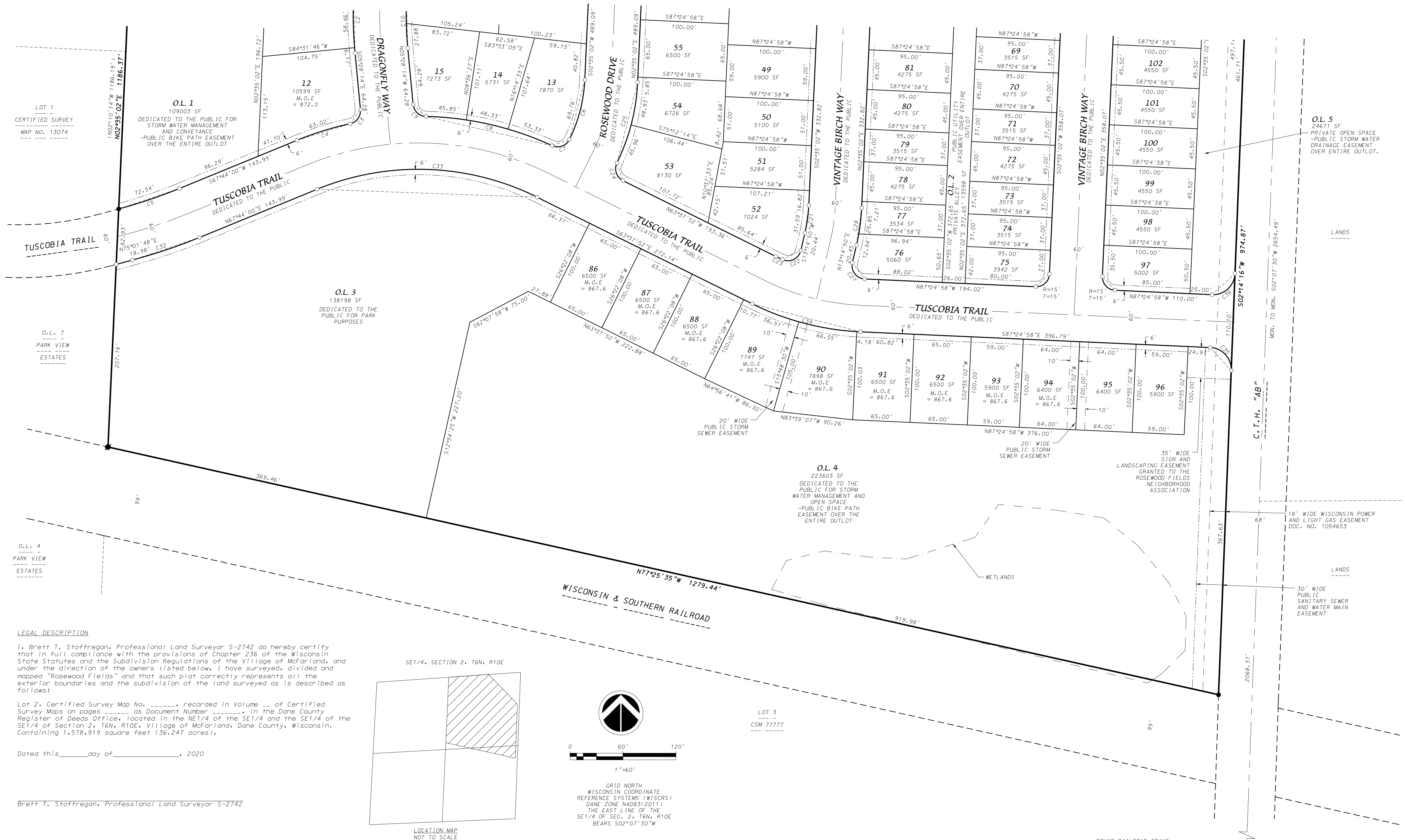
LOCATED IN NORTHEAST QUARTER OF THE SOUTHEAST QUARTER AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF THE
SECTION 2, TOWNSHIP 6 NORTH, RANGE 10 EAST, VILLAGE OF MCFARLAND, DANE COUNTY, WISCONSIN

Found 1-1/4" rebar
Found 1" iron pipe
Found 3/4" rebar

Placed 1-1/4" x 18" solid round iron rebar stakes, weighing
4.30 lbs/ft. All other lot and outlot corners are marked
with 3/4" x 18" solid round iron rebar stakes, weighing 1.50 lbs/ft.

Public utility easement (5' wide unless otherwise dimensioned).
Utility easements as herein set forth are for the use of PUBLIC
BODIES and PRIVATE UTILITIES having the right to serve the area.

Recorded as information



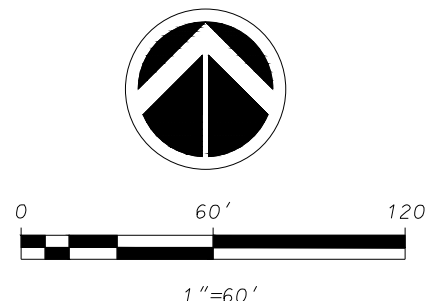
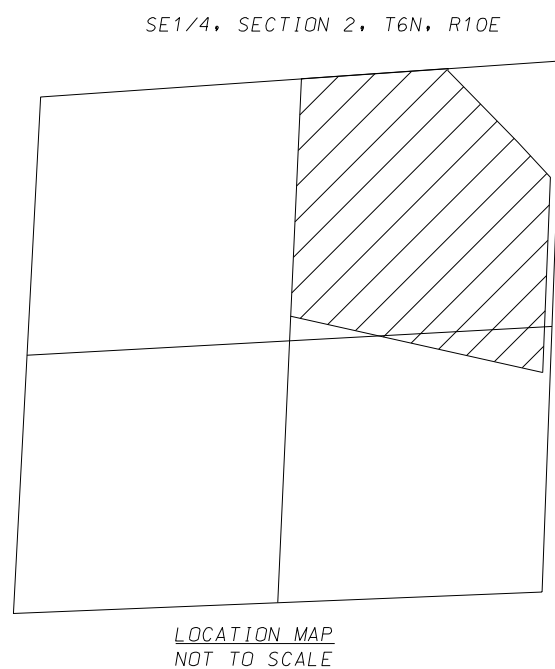
LEGAL DESCRIPTION

I, Brett T. Stoffregan, Professional Land Surveyor S-2742 do hereby certify that in full compliance with the provisions of Chapter 236 of the Wisconsin State Statutes and the Subdivision Regulations of the Village of McFarland, and under the direction of the owners listed below, I have surveyed, divided and mapped "Rosewood Fields" and that such plat correctly represents all the exterior boundaries and the subdivision of the land surveyed as is described as follows:

Lot 2, Certified Survey Map No. _____, Recorded in Volume ____ of Certified Survey Maps on pages _____ as Document Number _____ in the Dane County Register of Deeds Office, located in the NE1/4 of the SE1/4 and the SE1/4 of the SE1/4 of Section 2, T6N, R10E, Village of McFarland, Dane County, Wisconsin, Containing 1,578,919 square feet (36.247 acres).

Dated this _____ day of _____, 2020

Brett T. Stoffregan, Professional Land Surveyor S-2742



GRID NORTH
WISCONSIN COORDINATE
REFERENCE SYSTEMS (WISCRS)
DANE ZONE NAD83(2011)
THE EAST LINE OF THE
SE1/4 OF SEC. 2, T6N, R10E
BEARS S02°07'30"W

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.

7530 Westward Way, Madison, WI 53717

Phone: 608.833.7530 • Fax: 608.833.1089

YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

FN:19-07-114

SHEET 2 OF 3

There are no objections to this plat with respect to Secs. 236.15, 236.16, 236.20 and 236.21(1) and (2), Wis. Stats. as provided by s. 236.12, Wis. Stats.

Certified _____, 20____

Department of Administration



ROSEWOOD FIELDS

LOT 2, CERTIFIED SURVEY MAP NO. _____

LOCATED IN NORTHEAST QUARTER OF THE SOUTHEAST QUARTER AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 6 NORTH, RANGE 10 EAST, VILLAGE OF MCFARLAND, DANE COUNTY, WISCONSIN

OWNER'S CERTIFICATE

VH Rosewood Fields, LLC a limited liability company duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owner, does hereby certify that said limited liability company caused the land described on this plat to be surveyed, divided, mapped and dedicated as represented on this plat.

VH Rosewood Fields, LLC does further certify that this plat is required by S236.10 or S236.12 Wisconsin Statutes to be submitted to the following agencies for approval or objection:

Department of Administration
Village Board, Village of McFarland
Dane County Zoning and Land Regulation Committee

In witness whereof, VH Rosewood Fields, LLC has caused these presents to be signed by its official member(s) of said limited liability company at Madison, Wisconsin this _____ day of _____, 2020.

VH Rosewood Fields, LLC

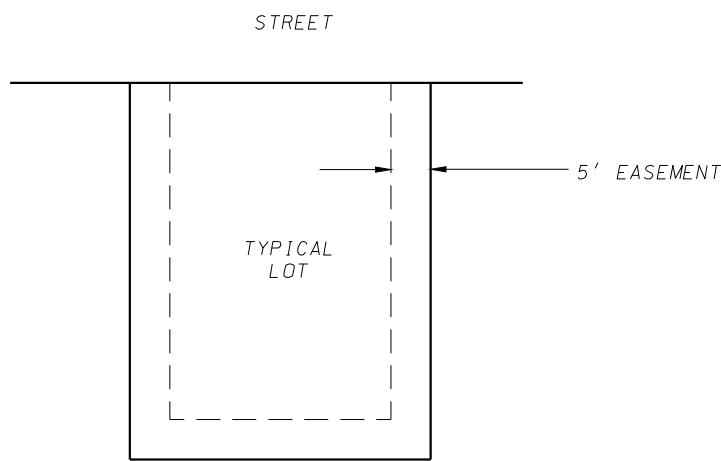
STATE OF WISCONSIN)
COUNTY OF DANE) S.S

Personally came before me this _____ day of _____, 2020, the above named member(s) of the above named MREC VH Juniper Ridge, LLC to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

My Commission expires _____ Notary Public, Dane County, Wisconsin

NOTES

- Lots 7-12 and 86-94 are subject to minimum unprotected building foundation opening elevations (M.O.E.). Said elevation is 2 feet above the peak water elevation during the 100-year storm event, based on the approved stormwater management plan.
- Lots 1-117 within this plat are subject to public easements for drainage purposes which shall be a minimum of 5 feet in width measured from the property line to the interior of each lot except that the easements shall be 12 feet in width on the perimeter of the plat. The common side lots line of Lots 97/98, 99/100, 101/102, 103/104 and 105/106 shall not be subject to said drainage easements. Easements shall not be required on property lines shared with greenways, alleys or public streets. No buildings, driveways, or retaining walls shall be placed in any easement for drainage purposes. Fences may be placed in the easement only if they do not impede the anticipated flow of water.
- Distances shown along curves are chord lengths.



- Easements are not required on lines shared with streets, alleys or greenways.

PUBLIC DRAINAGE EASEMENT DETAIL
NOT TO SCALE
SEE NOTE 1

VILLAGE BOARD RESOLUTION

Resolved that the plat of "Rosewood Fields" located in the Village of McFarland, Dane County, Wisconsin, having been approved by the Village Board, is hereby approved and that said resolution further provided for acceptance of those lands and rights dedicated by said "Rosewood Fields" to the Village for public use.

Cassandra Suettinger, Clerk, Village of McFarland, Dane County, Wisconsin

VILLAGE OF MCFARLAND TREASURER'S CERTIFICATE

I, Eric C. Rindfleisch, being the duly appointed, qualified, and acting Treasurer of the Village of McFarland, Dane County, Wisconsin, do hereby certify that, in accordance with the records in my office, there are no unpaid taxes or unpaid special assessments as of this _____ day of _____, 2020 on any of the lands included in the plat of "Rosewood Fields".

Cassandra Suettinger, Treasurer, Village of McFarland, Dane County, Wisconsin

COUNTY TREASURER'S CERTIFICATE

I, Adam Gallagher, being the duly elected, qualified, and acting treasurer of the County of Dane, do hereby certify that in accordance with the records in my office, there are no unpaid taxes or special assessments as of this _____ day of _____, 2015 affecting the land included in "Rosewood Fields".

Adam Gallagher, Treasurer, Dane County, Wisconsin

REGISTER OF DEEDS CERTIFICATE

Received for recording this _____ day of _____, 2020 at

o'clock ____ M. and recorded in Volume _____ of Plats on Pages _____ as

Document Number _____.

Kristi Chlebowski, Dane County Register of Deeds

CURVE TABLE							
CURVE NUMBER	LOT	RADIUS (FEET)	CHORD (FEET)	ARC (FEET)	CHORD BEARING	CENTRAL ANGLE	TANGENT BEARING
1	170.00	19.48	19.48	19.80	S00°42'05"W	06°34'14"	
2	460.00	64.61	64.67	64.67	S01°26'36"E	08°03'16"	
3	15.00	19.91	21.77	21.77	S36°06'41"W	83°09'50"	OUT-S77°41'36"W
4	363.00	63.02	63.10	63.10	S72°42'48"W	09°57'36"	
5	570.00	72.55	72.60	72.60	S71°22'55"W	07°17'48"	OUT-S75°01'50"W
6	170.00	69.76	70.26	70.26	S14°25'28"W	23°40'52"	OUT-S26°15'54"W
7	15.00	20.92	23.14	23.14	S70°27'59"W	88°24'10"	OUT-N65°19'56"W
8	363.00	146.61	147.63	147.63	N76°58'58"W	23°18'04"	OUT-N88°38'00"W
13	363.00	53.33	53.38	53.38	N69°32'42"W	08°25'32"	
14	363.00	48.33	48.37	48.37	N77°34'50"W	07°38'04"	
15	363.00	53.33	53.38	53.38	N69°32'42"W	08°25'32"	
9	15.00	19.91	21.77	21.77	N47°03'07"W	83°09'46"	
10	400.00	56.18	56.23	56.23	N01°26'36"W	08°03'16"	
15	400.00	27.88	27.89	27.89	N03°28'23"W	03°59'42"	
16	400.00	28.33	28.34	28.34	N00°33'15"W	04°03'34"	
11	230.00	26.36	26.38	26.38	N00°42'05"W	06°34'14"	
22	230.00	21.49	21.49	21.49	N00°05'35"W	05°21'14"	
23	230.00	4.88	4.88	4.88	N03°22'42"W	01°13'00"	
12	570.00	151.17	151.62	151.62	S86°21'59"E	15°14'26"	OUT-S78°44'46"E
23	570.00	0.31	0.31	0.31	S86°01'44"E	00°01'52"	
24	570.00	77.12	77.18	77.18	S89°55'24"E	07°45'28"	
25	570.00	74.08	74.13	74.13	S82°28'19"E	07°27'06"	
13	15.00	23.73	27.37	27.37	S26°28'16"E	104°33'00"	OUT-S25°48'14"E
14	230.00	92.57	93.21	93.21	S14°11'38"W	23°13'12"	
25	230.00	79.11	79.50	79.50	S15°54'04"W	19°48'20"	
26	230.00	13.70	13.71	13.71	S04°17'28"W	03°24'52"	
15	15.00	18.20	19.56	19.56	S66°25'17"W	74°41'46"	OUT-N76°13'50"W
16	630.00	172.70	173.25	173.25	N86°06'31"W	15°45'22"	
35	630.00	87.97	88.04	88.04	N80°14'02"W	08°00'24"	
36	630.00	59.00	59.02	59.02	N86°55'16"W	05°22'04"	
37	630.00	48.17	48.18	48.18	S88°12'15"W	04°22'54"	
17	170.00	85.19	86.10	86.10	N17°05'37"E	27°01'10"	OUT-N31°36'12"E
18	15.00	19.12	20.73	20.73	N71°11'24"E	79°10'24"	OUT-S69°13'24"E
19	570.00	257.25	259.48	259.48	S56°10'55"E	26°04'58"	
39	570.00	52.57	52.59	52.59	S60°37'16"E	05°17'10"	
40	570.00	65.94	65.98	65.98	S60°37'16"E	06°37'56"	
41	570.00	65.94	65.98	65.98	S53°59'20"E	06°37'56"	
42	570.00	65.94	65.98	65.98	S47°21'24"E	06°37'56"	
43	570.00	8.95	8.95	8.95	S43°35'26"E	00°54'00"	
20	230.00	173.34	177.73	177.73	S24°43'18"W	44°16'32"	
43	230.00	45.62	45.70	45.70	S41°10'03"W	11°23'02"	
44	230.00	52.00	52.11	52.11	S28°59'05"W	12°58'54"	
45	230.00	56.00	56.14	56.14	S18°30'05"W	13°59'06"	
46	230.00	23.77	23.78	23.78	S05°32'47"W	05°55'30"	
21	170.00	31.59	31.64	31.64	S07°54'56"W	10°39'48"	
22	15.00	23.18	26.49	26.49	S63°50'21"W	101°11'02"	OUT-N65°34'08"W
23	247.00	8.50	8.50	8.50	N64°35'00"W	01°58'16"	
24	15.00	21.19	23.53	23.53	N18°41'01"W	89°53'42"	OUT-N26°15'50"E
25	230.00	94.38	95.06	95.06	N14°25'26"E	23°40'48"	
53	230.00	45.96	46.03	46.03	N20°31'48"E	11°28'04"	
54	230.00	48.93	49.02	49.02	N08°41'24"E	12°12'44"	
26	170.00	132.10	135.67	135.67	S20°16'42"E	45°43'28"	
64	170.00	26.25	26.27	26.27	S38°42'46"E	08°51'20"	
65	170.00	67.36	67.36	67.36	S22°56'00"E	22°42'12"	
66	170.00	41.92	42.03	42.03	S04°29'56"E	14°09'56"	
27	15.00	23.09	26.35	26.35	N37°05'04"W	100°39'48"	
28	230.00	42.74	42.81	42.81	N07°54'56"E	10°39'48"	
76	230.00	12.94	12.94	12.94	N11°38'09"E	03°13'22"	
77	230.00	29.85	29.87	29.87	N06°18'15"E	07°26'26"	
29	170.00	128.12	131.37	131.37	N24°43'18"E	44°16'32"	
85	170.00	62.85	63.22	63.22	N13°14'14"E	21°18'24"	
OL2	170.00	27.39	27.42	27.42	N28°30'41"E	09°14'30"	
62	170.00	40.63	40.73	40.73	N39°59'45"E	13°43'38"	
30	76.00	59.05	60.65	60.65	N20°16'42"W	45°43'28"	
66	76.00	18.90	18.95	18.95	N04°33'38"W	14°17'20"	
65	76.00	29.50	29.69	29.69	N22°22'56"W	22°22'56"	
64	76.00	12.00	12.01	12.01	N38°36'50"W	09°03'12"	
31	50.00	38.85	39.90	39.90	S20°16'42"E	45°43'28"	
32	630.00	80.18	80.23	80.23	N71°22'54"E	07°17'48"	
33	303.00	249.55	257.20	257.20	S87°56'56"E	48°38'08"	
34	307.00	126.53	127.44	127.44	S75°31'25"E	23°47'06"	
89	307.00	56.51	56.59	56.59	S68°54'41"E	10°33'38"	
90	307.00	66.55	66.68	66.68	S80°24'49"E	12°26'38"	
91	307.00	4.18	4.18	4.18	S87°01'33"E	00°46'50"	
35	25.00	35.25	39.12	39.12	S42°35'21"E	89°39'14"	
36	25.00	35.46	39.42	39.42	S47°24'39"W	90°20'46"	
37	230.00	178.72	183.55	183.55	N20°16'42"W	45°43'28"	
105	230.00	38.91	38.95	38.95	N02°16'05"W	09°42'14"	
106	230.00	44.18	44.24	44.24	N12°37'51"W	11°01'18"	
107	230.00	59.80	59.97	59.97	N25°36'41"W	14°56'22"	
108	230.00	40.33	40.38	40.38	N38°06'39"W	10°03'34"	
38	630.00	271.99	274.14	274.14	N55°36'24"W	24°55'56"	OUT-N68°04'22"W
112	630.00	19.33	19.33	19.33	N44°01'11"W	01°45'30"	
113	630.00	57.19	57.21	57.21	N47°30'01"W	05°12'10"	
114	630.00	57.19	57.21	57.21	N52°42'11"W	05°12'10"	
115	630.00	57.04	57.05	57.05	N57°53'56"W	05°11'20"	
116	630.00	83.28	83.34	83.34	N64°16'59"W	07°34'46"	
39	15.00	22.49	25.43	25.43	N19°29'59"W	97°08'46"	

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.

7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089

YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

FN:19-07-114

SHEET 3 OF 3

**ROSEWOOD FIELDS
VILLAGE OF MCFARLAND
DANE COUNTY, WISCONSIN**

STORM SEWER SIZING REPORT

PREPARED BY
D'Onofrio, Kottke & Associates, Inc.
7530 Westward Way
Madison, Wisconsin 53717
608.833.7530

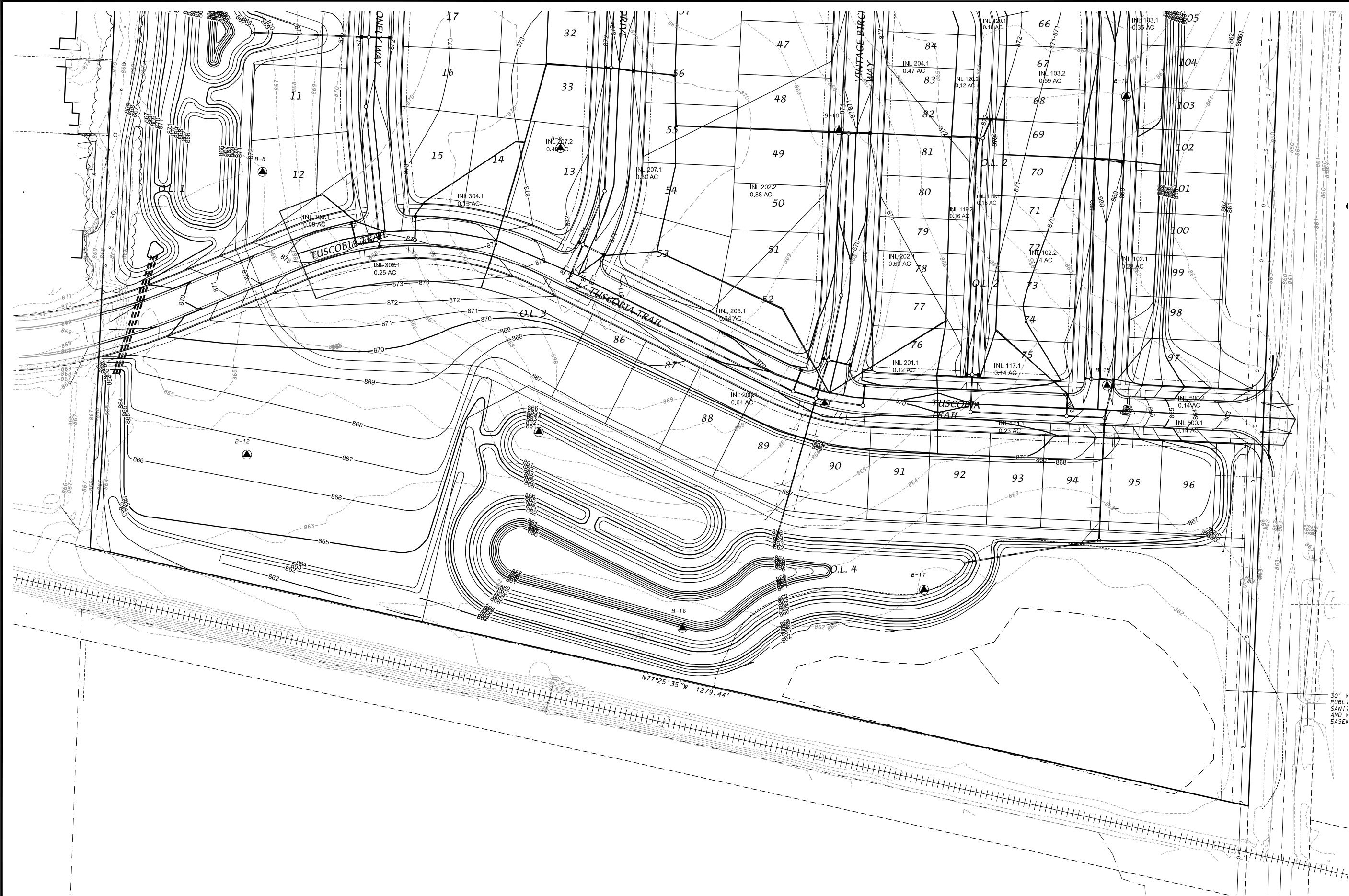
August 25, 2020

Storm sewer design calculations for Rosewood Fields were performed using the Hydraflow Storm Sewer Extensions software. Rainfall data was obtained from the NOAA Atlas 14 precipitations intensity data set. Drainage areas for each inlet are depicted in the attached storm sewer sizing maps.

Storm sewer pipes were designed to accommodate the 10-year storm event. The storm sewer network was modeled to keep the hydraulic grade line within the pipes for this event. The 100-year event is conveyed to the stormwater management ponds via the storm sewer system, roadway ROWs, and stormwater easements. Hydraflow output for storm sewer sizing using the 10-year storm event is attached.

Inlet and catch basin spacing was designed to meet the following criteria: For the 5-year storm event, maintain drive lanes in the center of the roadway. For the 25-year event, prevent stormwater from crossing the center line of the roadway. For the 100-year storm, contain the stormwater in the public ROW. Hydraflow outputs for inlet spread calculations for the 5-year, 25-year, and 100-year storms are attached.

The storm sewer system for Juniper Ridge is designed to meet the guidelines of the Village of McFarland. The attached calculations and exhibits support the storm sewer design.



D'ONOFRIO KOTKE AND ASSOCIATES, INC.
7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

ROSEWOOD FIELDS

VILLAGE OF MC FARLAND, DANE COUNTY, WISCONSIN

STORM SEWER SIZING

SCALE: 1" = 100'
(PAGE SIZE: 11x17)

0 50

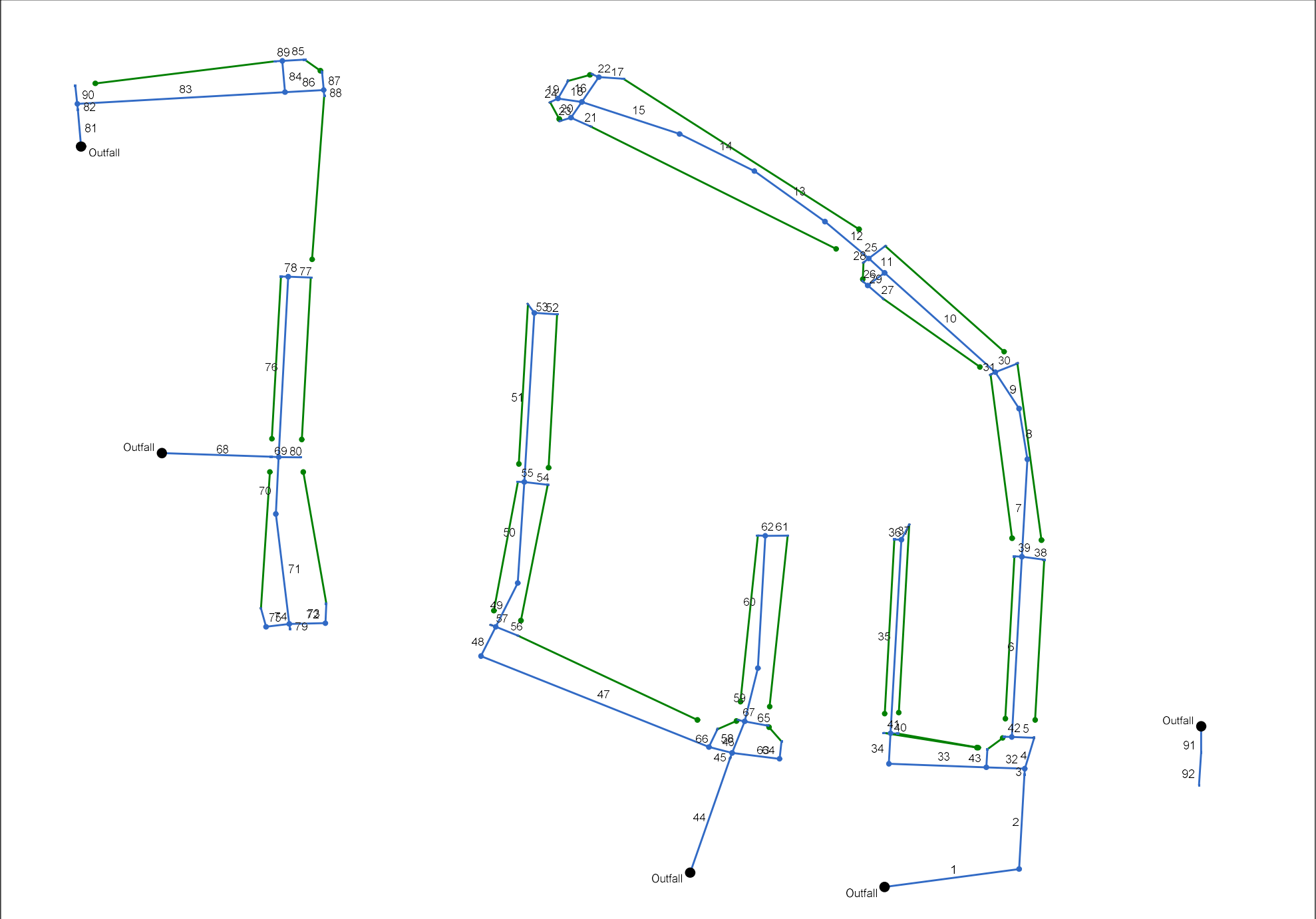
DATE: 08-25-20
REVISED:

DRAWN BY: KWB

FN: 20-05-132

Sheet Number:
2 OF 2

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: Rosewood Storm Sewer.stm	Number of lines: 92	Date: 8/25/2020
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Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB 100	Manhole	866.75	Cir	4.00	4.00	27	Cir	862.58	27	Cir	862.58
2	INL 101.1	Combination	869.01	Rect	3.00	2.00	27	Cir	863.08	24	Cir	863.33
3	CB 101	Manhole	870.42	Cir	4.00	4.00	24	Cir	863.38	24 12	Cir Cir	863.38 864.38
4	INL 102.1	Combination	869.50	Rect	3.00	2.00	24	Cir	863.57	24	Cir	863.57
5	CB 102	Manhole	868.74	Cir	4.00	4.00	24	Cir	863.68	24 12	Cir Cir	863.68 864.68
6	CB 103	Manhole	870.05	Cir	4.00	4.00	24	Cir	864.63	24 12 12	Cir Cir Cir	864.63 865.63 865.63
7	CB 104	Manhole	871.34	Cir	4.00	4.00	24	Cir	865.21	24	Cir	865.21
8	CB 105	Manhole	872.02	Cir	4.00	4.00	24	Cir	865.52	24	Cir	865.52
9	CB 106	Manhole	872.57	Cir	4.00	4.00	24	Cir	865.76	21 12 12	Cir Cir Cir	866.01 866.76 866.76
10	CB 107	Manhole	874.34	Cir	4.00	4.00	21	Cir	866.81	21 12	Cir Cir	866.81 867.56
11	CB 109	Manhole	874.59	Cir	4.00	4.00	21	Cir	866.93	18 12 12	Cir Cir Cir	867.18 867.68 867.68
12	CB 110	Manhole	875.28	Cir	4.00	4.00	18	Cir	867.49	18	Cir	867.49
13	CB 111	Manhole	875.75	Cir	4.00	4.00	18	Cir	867.94	18	Cir	867.94
14	CB 112	Manhole	876.69	Cir	4.00	4.00	18	Cir	868.41	18	Cir	868.41
15	CB 113	Manhole	877.82	Cir	4.00	4.00	18	Cir	868.97	12 12 12	Cir Cir Cir	869.47 869.47 869.47
16	CB 114	Manhole	878.19	Cir	4.00	4.00	12	Cir	869.66	12 12	Cir Cir	869.66 869.66
17	INL 114.1	Combination	879.46	Rect	3.00	2.00	12	Cir	869.79			
Project File: Rosewood Storm Sewer.stm							Number of Structures: 92			Run Date: 8/25/2020		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
18	CB 115	Manhole	878.08	Cir	4.00	4.00	12	Cir	869.62	12 12	Cir Cir	869.62 869.62
19	INL 115.1	Combination	879.33	Rect	3.00	2.00	12	Cir	869.75			
20	CB 116	Manhole	878.05	Cir	4.00	4.00	12	Cir	869.59	12 12	Cir Cir	869.59 869.59
21	INL 116.1	Combination	879.30	Rect	3.00	2.00	12	Cir	869.71			
22	INL 114.2	Combination	879.44	Rect	3.00	2.00	12	Cir	869.70			
23	INL 116.2	Combination	879.18	Rect	3.00	2.00	12	Cir	869.65			
24	INL 115.2	Combination	879.18	Rect	3.00	2.00	12	Cir	869.67			
25	INL 109.1	Combination	875.30	Rect	3.00	2.00	12	Cir	867.92			
26	CB 108	Manhole	874.04	Cir	4.00	4.00	12	Cir	867.81	12 12	Cir Cir	867.81 867.81
27	INL 108.1	Combination	875.29	Rect	3.00	2.00	12	Cir	868.05			
28	INL 109.2	Combination	875.13	Rect	3.00	2.00	12	Cir	867.76			
29	INL 108.2	Combination	875.13	Rect	3.00	2.00	12	Cir	867.89			
30	INL 106.1	Combination	873.29	Rect	3.00	2.00	12	Cir	867.02			
31	INL 106.2	Combination	873.09	Rect	3.00	2.00	12	Cir	866.82			
32	CB 117	Manhole	869.19	Cir	4.00	4.00	12	Cir	864.79	12 12	Cir Cir	864.79 864.79
33	CB 118	Manhole	869.87	Cir	4.00	4.00	12	Cir	865.83	12	Cir	865.83
34	CB 119	Manhole	870.48	Cir	4.00	4.00	12	Cir	866.24	12 12 12	Cir Cir Cir	866.24 866.24 866.24
35	CB 120	Manhole	871.19	Cir	4.00	4.00	12	Cir	867.53	12 12	Cir Cir	867.53 867.53
36	INL 120.1	Combination	872.10	Rect	3.00	2.00	12	Cir	867.64			
Project File: Rosewood Storm Sewer.stm							Number of Structures: 92			Run Date: 8/25/2020		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
37	INL 120.2	Combination	871.96	Rect	3.00	3.00	12	Cir	867.57			
38	INL 103.1	Combination	870.75	Rect	3.00	2.00	12	Cir	865.87			
39	INL 103.2	Combination	870.59	Rect	3.00	2.00	12	Cir	865.71			
40	INL 119.1	Combination	870.36	Rect	3.00	2.00	12	Cir	866.31			
41	INL 119.2	Combination	870.60	Rect	3.00	2.00	12	Cir	866.32			
42	INL 102.2	Combination	869.82	Rect	3.00	2.00	12	Cir	864.76			
43	INL 117.1	Combination	869.35	Rect	3.00	2.00	12	Cir	865.03			
44	INL 200.1	Combination	869.79	Rect	3.00	2.00	24	Cir	863.17	24	Cir	863.17
45	CB 200	Manhole	869.51	Cir	4.00	4.00	24	Cir	863.24	18 18 12	Cir Cir Cir	863.74 863.74 864.24
46	CB 205	Manhole	869.64	Cir	4.00	4.00	18	Cir	863.88	15 12	Cir Cir	864.13 864.48
47	CB 206	Manhole	871.21	Cir	4.00	4.00	15	Cir	866.69	15	Cir	866.69
48	CB 207	Manhole	870.74	Cir	4.00	4.00	15	Cir	867.10	15 12 12	Cir Cir Cir	867.10 867.35 867.35
49	CB 208	Manhole	871.12	Cir	4.00	4.00	15	Cir	867.41	15	Cir	867.41
50	CB 209	Manhole	871.79	Cir	4.00	4.00	15	Cir	868.08	12 12 12	Cir Cir Cir	868.33 868.33 868.33
51	CB 210	Manhole	872.95	Cir	4.00	4.00	12	Cir	869.45	12 12	Cir Cir	869.45 869.45
52	INL 210.1	Combination	874.20	Rect	3.00	2.00	12	Cir	869.60			
53	INL 210.2	Combination	874.09	Rect	3.00	2.00	12	Cir	869.52			
54	INL 209.1	Combination	872.06	Rect	3.00	2.00	12	Cir	868.58			
55	INL 209.2	Combination	872.08	Rect	3.00	2.00	12	Cir	868.40			
Project File: Rosewood Storm Sewer.stm							Number of Structures: 92			Run Date: 8/25/2020		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
56	INL 207.1	Combination	871.06	Rect	3.00	2.00	12	Cir	867.62			
57	INL 207.2	Combination	871.06	Rect	3.00	2.00	12	Cir	867.40			
58	CB 202	Manhole	869.03	Cir	4.00	4.00	18	Cir	864.29	18 12 12	Cir Cir Cir	864.29 865.18 865.18
59	CB 203	Manhole	869.47	Cir	4.00	4.00	18	Cir	864.80	18	Cir	864.80
60	CB 204	Manhole	870.48	Cir	4.00	4.00	18	Cir	865.68	12 15	Cir Cir	866.18 865.93
61	INL 204.1	Combination	870.75	Rect	3.00	2.00	12	Cir	866.42			
62	INL 204.2	Combination	869.50	Rect	3.00	2.00	15	Cir	866.01			
63	CB 201	Manhole	869.66	Cir	4.00	4.00	12	Cir	865.27	12	Cir	865.27
64	INL 201.1	Combination	869.91	Rect	3.00	2.00	12	Cir	865.73			
65	INL 202.1	Combination	869.32	Rect	3.00	2.00	12	Cir	865.43			
66	INL 205.1	Combination	869.93	Rect	3.00	2.00	12	Cir	864.73			
67	INL 202.2	Combination	869.32	Rect	3.00	2.00	12	Cir	865.25			
68	INL 300.2	Combination	871.38	Rect	3.00	2.00	18	Cir	867.93	18	Cir	867.93
69	CB 300	Manhole	870.46	Cir	4.00	4.00	18	Cir	868.00	12 15 15	Cir Cir Cir	868.50 868.25 868.25
70	CB 301	Manhole	871.22	Cir	4.00	4.00	12	Cir	868.88	12	Cir	868.88
71	CB 302	Manhole	872.15	Cir	4.00	4.00	12	Cir	869.62	12 12 12	Cir Cir Cir	869.62 869.62 869.62
72	CB 304	Manhole	875.41	Cir	4.00	4.00	12	Cir	869.82	12	Cir	869.82
73	INL 304.1	Combination	874.34	Rect	3.00	2.00	12	Cir	870.08			
74	CB 303	Manhole	872.40	Cir	4.00	4.00	12	Cir	869.75	12	Cir	869.75
Project File: Rosewood Storm Sewer.stm							Number of Structures: 92			Run Date: 8/25/2020		

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
75	INL 303.1	Combination	873.65	Rect	3.00	2.00	12	Cir	869.88			
76	CB 305	Manhole	872.31	Cir	4.00	4.00	15	Cir	869.46	12 12	Cir Cir	869.71 869.71
77	INL 305.1	Combination	873.56	Rect	3.00	2.00	12	Cir	869.95			
78	INL 305.2	Combination	873.39	Rect	3.00	2.00	12	Cir	869.79			
79	INL 302.1	Combination	873.22	Rect	3.00	2.00	12	Cir	869.69			
80	INL 300.3	Combination	871.15	Rect	3.00	2.00	15	Cir	868.43			
81	INL 400.2	Combination	874.72	Rect	3.00	2.00	12	Cir	869.92	12	Cir	869.92
82	CB 400	Manhole	874.46	Cir	4.00	4.00	12	Cir	870.00	12 12	Cir Cir	870.00 870.00
83	CB 401	Manhole	876.49	Cir	4.00	4.00	12	Cir	872.80	12 12	Cir Cir	872.80 872.80
84	CB 402	Manhole	877.95	Cir	4.00	4.00	12	Cir	874.30	12 12	Cir Cir	874.30 874.30
85	INL 402.1	Combination	878.22	Rect	3.00	2.00	12	Cir	874.54			
86	CB 403	Manhole	877.13	Cir	4.00	4.00	12	Cir	873.20	12 12	Cir Cir	873.20 873.20
87	INL 403.2	Combination	877.40	Rect	3.00	2.00	12	Cir	873.44			
88	INL 403.1	Combination	877.40	Rect	3.00	2.00	12	Cir	873.28			
89	INL 402.2	Combination	878.22	Rect	3.00	2.00	12	Cir	874.38			
90	INL 400.3	Combination	874.73	Rect	3.00	2.00	12	Cir	870.24			
91	STRUCT-(139)	Combination	862.50	Rect	3.00	2.00	12	Cir	870.25	12	Cir	870.25
92	STRUCT-(138)	Combination	862.50	Rect	3.00	2.00	12	Cir	870.50			
Project File: Rosewood Storm Sewer.stm							Number of Structures: 92			Run Date: 8/25/2020		

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 100	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	INL 101.1	0.74	0.00	0.70	0.03	Comb	4.0	3.00	0.00	3.00	2.00	0.034	2.00	0.050	0.020	0.013	0.13	3.58	0.04	0.84	0.0	Off
3	CB 101	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	INL 102.1	0.89	0.40	1.29	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.21	7.29	0.21	7.29	0.0	Off
5	CB 102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CB 103	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	CB 104	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CB 105	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	CB 106	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	CB 107	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	CB 109	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	CB 110	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
13	CB 111	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
14	CB 112	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
15	CB 113	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	CB 114	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	INL 114.1	0.64	0.00	0.56	0.08	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.60	0.08	1.69	0.0	25
18	CB 115	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	INL 115.1	1.92	0.00	1.32	0.60	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	9.17	0.17	5.43	0.0	22
20	CB 116	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	INL 116.1	0.26	0.00	0.25	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.13	3.37	0.03	0.61	0.0	28
22	INL 114.2	1.76	0.60	2.36	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.28	11.14	0.28	11.14	0.0	Off
23	INL 116.2	0.99	0.09	1.08	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.19	6.43	0.19	6.43	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	INL 115.2	0.67	0.00	0.58	0.09	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.74	0.09	1.76	0.0	23
25	INL 109.1	1.69	0.08	1.25	0.53	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	8.88	0.16	5.11	0.0	30
26	CB 108	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
27	INL 108.1	0.32	0.00	0.31	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.14	3.87	0.04	0.84	0.0	31
28	INL 109.2	1.92	0.01	1.32	0.60	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	9.18	0.17	5.44	0.0	29
29	INL 108.2	1.82	0.60	2.42	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.29	11.36	0.29	11.36	0.0	Off
30	INL 106.1	0.86	0.53	1.04	0.36	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.22	8.01	0.14	4.14	0.0	38
31	INL 106.2	1.05	0.01	0.84	0.23	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	7.12	0.12	3.11	0.0	39
32	CB 117	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	CB 118	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
34	CB 119	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
35	CB 120	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	INL 120.1	0.51	0.00	0.46	0.05	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	5.01	0.07	1.39	0.0	40
37	INL 120.2	0.38	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.30	0.05	1.05	0.0	41
38	INL 103.1	1.12	0.36	1.08	0.40	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.22	8.21	0.15	4.37	0.0	4
39	INL 103.2	1.89	0.23	1.42	0.70	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.25	9.54	0.18	5.84	0.0	42
40	INL 119.1	0.58	0.05	0.55	0.08	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.54	0.08	1.66	0.0	43
41	INL 119.2	0.51	0.02	0.48	0.06	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	5.13	0.07	1.45	0.0	43
42	INL 102.2	2.36	0.75	3.11	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.33	13.50	0.33	13.50	0.0	Off
43	INL 117.1	0.45	0.14	0.53	0.05	Comb	4.0	3.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.15	4.47	0.06	1.23	0.0	42
44	INL 200.1	2.05	0.00	2.05	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.26	10.09	0.26	10.09	0.0	Off
45	CB 200	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
46	CB 205	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	CB 206	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	CB 207	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	CB 208	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	CB 209	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	CB 210	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
52	INL 210.1	0.77	0.00	0.65	0.12	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	6.12	0.10	1.94	0.0	54
53	INL 210.2	1.66	0.00	1.18	0.48	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.63	0.16	4.84	0.0	55
54	INL 209.1	0.99	0.12	0.87	0.24	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	7.25	0.13	3.27	0.0	56
55	INL 209.2	1.37	0.48	1.29	0.57	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	9.04	0.17	5.28	0.0	57
56	INL 207.1	0.96	0.24	0.92	0.28	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.21	7.50	0.13	3.57	0.0	66
57	INL 207.2	1.53	0.57	2.10	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.27	10.28	0.27	10.28	0.0	Off
58	CB 202	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
59	CB 203	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
60	CB 204	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
61	INL 204.1	1.50	0.00	1.10	0.40	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.22	7.95	0.14	4.19	0.0	65
62	INL 204.2	5.08	0.00	2.66	2.42	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.32	13.12	0.25	9.72	0.0	67
63	CB 201	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
64	INL 201.1	0.38	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.30	0.05	1.05	0.0	65
65	INL 202.1	1.89	0.43	2.31	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.28	10.99	0.28	10.99	0.0	Off
66	INL 205.1	1.09	0.28	1.02	0.35	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.22	7.93	0.14	4.07	0.0	67
67	INL 202.2	2.81	2.77	5.58	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.46	19.97	0.46	19.97	0.0	Off
68	INL 300.2	1.95	0.19	2.14	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.27	10.40	0.27	10.40	0.0	Off
69	CB 300	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
70	CB 301	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
71	CB 302	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
72	CB 304	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
73	INL 304.1	0.48	0.00	0.44	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	4.85	0.07	1.31	0.0	80
74	CB 303	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
75	INL 303.1	0.26	0.00	0.25	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.13	3.37	0.03	0.61	0.0	68
76	CB 305	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
77	INL 305.1	2.14	0.00	1.47	0.68	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.22	8.12	0.15	4.72	0.0	80
78	INL 305.2	1.02	0.00	0.84	0.18	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.18	5.81	0.10	1.94	0.0	68
79	INL 302.1	0.80	0.00	0.80	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.16	5.16	0.16	5.16	0.0	Off
80	INL 300.3	5.15	0.72	5.86	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.46	19.97	0.46	19.97	0.0	Off
81	INL 400.2	0.83	0.00	0.83	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.17	5.31	0.17	5.31	0.0	Off
82	CB 400	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
83	CB 401	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
84	CB 402	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
85	INL 402.1	0.48	0.00	0.48	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.11	2.50	0.01	0.24	0.0	87
86	CB 403	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
87	INL 403.2	0.58	0.00	0.58	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.14	4.06	0.14	4.06	0.0	Off
88	INL 403.1	0.13	0.00	0.13	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.015	2.00	0.050	0.020	0.013	0.08	1.61	0.00	0.00	0.0	77
89	INL 402.2	0.26	0.00	0.26	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.09	1.74	0.00	0.00	0.0	90
90	INL 400.3	2.72	0.00	2.72	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.31	12.29	0.31	12.29	0.0	Off
91	STRUCT-(139)	0.45	0.00	0.41	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.67	0.06	1.23	0.0	Off
92	STRUCT-(138)	0.45	0.00	0.41	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.67	0.06	1.23	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Pipes

Line No.	Line ID	Drng Area	i Inlet	Flow Rate	Capac Full	Line Length	Line Slope	Invert Dn	Invert Up	HGL Dn	HGL Up	Line Size	
		(ac)	(in/hr)	(cfs)	(cfs)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(in)	
1	CB 100 TO AE 100.1	0.00	0.00	16.46	19.50	146.188	0.40	862.00	862.58	863.46	864.21	27	
2	INL 101.1 TO CB 100	0.23	6.39	16.77	19.56	125.345	0.40	862.58	863.08	864.65	864.93	27	
3	CB 101 TO INL 101.1	0.00	0.00	16.26	17.91	7.971	0.63	863.33	863.38	865.11	865.14	24	
4	INL 102.1 TO CB 101	0.28	6.39	14.60	15.16	42.294	0.45	863.38	863.57	865.62	865.79	24	
5	CB 102 TO INL 102.1	0.00	0.00	14.00	15.31	24.000	0.46	863.57	863.68	866.30	866.39	24	
6	CB 103 TO CB 102	0.00	0.00	12.76	14.24	239.500	0.40	863.68	864.63	866.70	867.46	24	
7	CB 104 TO CB 103	0.00	0.00	10.77	15.14	129.364	0.45	864.63	865.21	867.72	868.01	24	
8	CB 105 TO CB 104	0.00	0.00	10.92	15.29	67.855	0.46	865.21	865.52	868.05	868.21	24	
9	CB 106 TO CB 105	0.00	0.00	11.05	14.98	54.693	0.44	865.52	865.76	868.28	868.41	24	
10	CB 107 TO CB 106	0.00	0.00	9.83	10.64	177.385	0.45	866.01	866.81	868.61	869.29	21	
11	CB 109 TO CB 107	0.00	0.00	8.12	10.86	25.510	0.47	866.81	866.93	869.55	869.62	21	
12	CB 110 TO CB 109	0.00	0.00	5.24	7.10	67.780	0.46	867.18	867.49	869.79	869.96	18	
13	CB 111 TO CB 110	0.00	0.00	5.38	7.01	101.047	0.45	867.49	867.94	869.98	870.25	18	
14	CB 112 TO CB 111	0.00	0.00	5.51	7.42	94.114	0.50	867.94	868.41	870.28	870.54	18	
15	CB 113 TO CB 112	0.00	0.00	5.69	7.39	113.097	0.50	868.41	868.97	870.57	870.90	18	
16	CB 114 TO CB 113	0.00	0.00	2.31	2.53	37.697	0.50	869.47	869.66	871.06	871.22	12	
17	INL 114.1 TO CB 114	0.20	6.39	0.64	2.50	26.394	0.49	869.66	869.79	871.36	871.36	12	
18	CB 115 TO CB 113	0.00	0.00	2.56	2.71	25.906	0.58	869.47	869.62	871.06	871.19	12	
19	INL 115.1 TO CB 115	0.60	6.39	1.92	2.53	25.665	0.51	869.62	869.75	871.36	871.43	12	
20	CB 116 TO CB 113	0.00	0.00	1.15	2.53	23.787	0.50	869.47	869.59	871.06	871.09	12	
21	INL 116.1 TO CB 116	0.08	6.39	0.26	2.52	24.016	0.50	869.59	869.71	871.12	871.12	12	
22	INL 114.2 TO CB 114	0.55	6.39	1.76	2.52	8.000	0.50	869.66	869.70	871.36	871.37	12	
23	INL 116.2 TO CB 116	0.31	6.39	0.99	2.49	12.285	0.49	869.59	869.65	871.12	871.13	12	
Project File: Rosewood Storm Sewer.stm											Number of lines: 92		Date: 8/25/2020
NOTES: Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58 -- Return period = 10 Yrs. ; ** Critical depth													

Pipes

Line No.	Line ID	Drng Area	i Inlet	Flow Rate	Capac Full	Line Length	Line Slope	Invert Dn	Invert Up	HGL Dn	HGL Up	Line Size	
		(ac)	(in/hr)	(cfs)	(cfs)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(in)	
24	INL 115.2 TO CB 115	0.21	6.39	0.67	2.53	9.903	0.50	869.62	869.67	871.36	871.36	12	
25	INL 109.1 TO CB 109	0.53	6.39	1.69	3.55	24.188	0.99	867.68	867.92	869.79	869.85	12	
26	CB 108 TO CB 107	0.00	0.00	2.01	3.59	24.543	1.02	867.56	867.81	869.55	869.63	12	
27	INL 108.1 TO CB 108	0.10	6.39	0.32	3.56	24.000	1.00	867.81	868.05	869.73	869.73	12	
28	INL 109.2 TO CB 109	0.60	6.39	1.92	3.60	7.812	1.02	867.68	867.76	869.79	869.82	12	
29	INL 108.2 TO CB 108	0.57	6.39	1.82	3.56	8.000	1.00	867.81	867.89	869.73	869.75	12	
30	INL 106.1 TO CB 106	0.27	6.39	0.86	3.54	26.311	0.99	866.76	867.02	868.61	868.62	12	
31	INL 106.2 TO CB 106	0.33	6.39	1.05	3.59	5.904	1.02	866.76	866.82	868.61	868.61	12	
32	CB 117 TO CB 101	0.00	0.00	1.83	3.55	41.308	0.99	864.38	864.79	865.62	865.71	12	
33	CB 118 TO CB 117	0.00	0.00	1.54	3.55	104.464	1.00	864.79	865.83	865.80	866.36 j	12	
34	CB 119 TO CB 118	0.00	0.00	1.56	3.58	40.554	1.01	865.83	866.24	866.36	866.77	12	
35	CB 120 TO CB 119	0.00	0.00	0.86	2.52	257.148	0.50	866.24	867.53	866.77	867.92	12	
36	INL 120.1 TO CB 120	0.16	6.39	0.51	2.54	21.690	0.51	867.53	867.64	867.92	867.95	12	
37	INL 120.2 TO CB 120	0.12	6.39	0.38	2.60	7.500	0.53	867.53	867.57	867.92	867.92	12	
38	INL 103.1 TO CB 103	0.35	6.39	1.12	3.55	24.187	0.99	865.63	865.87	867.72	867.74	12	
39	INL 103.2 TO CB 103	0.59	6.39	1.89	3.56	8.000	1.00	865.63	865.71	867.72	867.74	12	
40	INL 119.1 TO CB 119	0.18	6.39	0.58	3.44	7.500	0.93	866.24	866.31	866.77	866.62	12	
41	INL 119.2 TO CB 119	0.16	6.39	0.51	3.68	7.500	1.07	866.24	866.32	866.77	866.62	12	
42	INL 102.2 TO CB 102	0.74	6.39	2.36	3.56	8.000	1.00	864.68	864.76	866.70	866.73	12	
43	INL 117.1 TO CB 117	0.14	6.39	0.45	3.56	24.000	1.00	864.79	865.03	865.80	865.81	12	
44	INL 200.1 TO AE 200.2	0.64	6.39	17.92	19.46	157.969	0.74	862.00	863.17	863.52	864.69	24	
45	CB 200 TO INL 200.1	0.00	0.00	16.28	22.39	7.142	0.98	863.17	863.24	864.69	864.69 j	24	
46	CB 205 TO CB 200	0.00	0.00	6.84	7.69	26.090	0.54	863.74	863.88	864.84	864.98	18	
Project File: Rosewood Storm Sewer.stm											Number of lines: 92		Date: 8/25/2020
NOTES: Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58 -- Return period = 10 Yrs. ; ** Critical depth													

Pipes

Line No.	Line ID	Drng Area	i Inlet	Flow Rate	Capac Full	Line Length	Line Slope	Invert Dn	Invert Up	HGL Dn	HGL Up	Line Size	
		(ac)	(in/hr)	(cfs)	(cfs)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(in)	
47	CB 206 TO CB 205	0.00	0.00	6.22	6.26	272.386	0.94	864.13	866.69	865.36	867.70 j	15	
48	CB 207 TO CB 206	0.00	0.00	6.27	6.38	42.042	0.98	866.69	867.10	868.23	868.63	15	
49	CB 208 TO CB 207	0.00	0.00	4.19	4.54	62.733	0.49	867.10	867.41	869.03	869.30	15	
50	CB 209 TO CB 208	0.00	0.00	4.33	4.56	134.287	0.50	867.41	868.08	869.37	869.97	15	
51	CB 210 TO CB 209	0.00	0.00	2.36	2.51	224.640	0.50	868.33	869.45	870.17	871.16	12	
52	INL 210.1 TO CB 210	0.24	6.39	0.77	2.78	24.568	0.61	869.45	869.60	871.30	871.31	12	
53	INL 210.2 TO CB 210	0.52	6.39	1.66	2.58	13.329	0.53	869.45	869.52	871.30	871.33	12	
54	INL 209.1 TO CB 209	0.31	6.39	0.99	3.54	25.263	0.99	868.33	868.58	870.17	870.19	12	
55	INL 209.2 TO CB 209	0.43	6.39	1.37	3.59	6.901	1.01	868.33	868.40	870.17	870.18	12	
56	INL 207.1 TO CB 207	0.30	6.39	0.96	3.59	26.533	1.02	867.35	867.62	869.03	869.05	12	
57	INL 207.2 TO CB 207	0.48	6.39	1.53	3.41	5.467	0.92	867.35	867.40	869.03	869.04	12	
58	CB 202 TO CB 200	0.00	0.00	10.37	11.74	44.015	1.25	863.74	864.29	864.84	865.53	18	
59	CB 203 TO CB 202	0.00	0.00	6.18	8.84	72.040	0.71	864.29	864.80	865.53	865.76 j	18	
60	CB 204 TO CB 203	0.00	0.00	6.49	7.43	175.860	0.50	864.80	865.68	865.89	866.77	18	
61	INL 204.1 TO CB 204	0.47	6.39	1.50	3.56	24.076	1.00	866.18	866.42	867.11	866.94	12	
62	INL 204.2 TO CB 204	1.59	6.39	5.08	6.47	7.965	1.00	865.93	866.01	867.11	866.92	15	
63	CB 201 TO CB 200	0.00	0.00	0.36	5.04	51.435	2.00	864.24	865.27	864.69	865.52 j	12	
64	INL 201.1 TO CB 201	0.12	6.39	0.38	5.03	23.075	1.99	865.27	865.73	865.52	865.99	12	
65	INL 202.1 TO CB 202	0.59	6.39	1.89	3.54	25.256	0.99	865.18	865.43	865.70	866.01	12	
66	INL 205.1 TO CB 205	0.34	6.39	1.09	3.54	25.246	0.99	864.48	864.73	865.36	865.17	12	
67	INL 202.2 TO CB 202	0.88	6.39	2.81	3.63	6.747	1.04	865.18	865.25	865.84	865.97	12	
68	INL 300.2 TO AE 300.1	0.61	6.39	9.21	9.37	116.877	0.80	867.00	867.93	868.17	869.17	18	
69	CB 300 TO INL 300.2	0.00	0.00	7.70	9.56	8.446	0.83	867.93	868.00	869.44	869.48	18	
Project File: Rosewood Storm Sewer.stm											Number of lines: 92		Date: 8/25/2020
NOTES: Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58 -- Return period = 10 Yrs. ; ** Critical depth													

Pipes

Line No.	Line ID	Drng Area (ac)	i Inlet (in/hr)	Flow Rate (cfs)	Capac Full (cfs)	Line Length (ft)	Line Slope (%)	Invert Dn (ft)	Invert Up (ft)	HGL Dn (ft)	HGL Up (ft)	Line Size (in)	
70	CB 301 TO CB 300	0.00	0.00	1.24	2.53	75.538	0.50	868.50	868.88	869.78	869.86	12	
71	CB 302 TO CB 301	0.00	0.00	1.32	2.53	146.689	0.50	868.88	869.62	869.87	870.17	12	
72	CB 304 TO CB 302	0.00	0.00	0.46	2.56	38.646	0.52	869.62	869.82	870.31	870.31	12	
73	INL 304.1 TO CB 304	0.15	6.39	0.48	3.55	26.198	0.99	869.82	870.08	870.33	870.37 j	12	
74	CB 303 TO CB 302	0.00	0.00	0.24	2.56	25.184	0.52	869.62	869.75	870.31	870.31	12	
75	INL 303.1 TO CB 303	0.08	6.39	0.26	2.57	24.911	0.52	869.75	869.88	870.31	870.31	12	
76	CB 305 TO CB 300	0.00	0.00	3.13	4.59	239.625	0.50	868.25	869.46	869.78	870.36	15	
77	INL 305.1 TO CB 305	0.67	6.39	2.14	3.55	24.191	0.99	869.71	869.95	870.53	870.57 j	12	
78	INL 305.2 TO CB 305	0.32	6.39	1.02	3.60	7.809	1.02	869.71	869.79	870.53	870.21	12	
79	INL 302.1 TO CB 302	0.25	6.39	0.80	3.54	7.069	0.99	869.62	869.69	870.31	870.06	12	
80	INL 300.3 TO CB 300	1.61	6.39	5.15	5.64	23.560	0.76	868.25	868.43	869.78	869.93	15	
81	INL 400.2 TO AE 400.1	0.26	6.39	4.05	8.71	48.815	5.98	867.00	869.92	867.81	870.77	12	
82	CB 400 TO INL 400.2	0.00	0.00	3.38	3.56	8.000	1.00	869.92	870.00	870.77	870.79	12	
83	CB 401 TO CB 400	0.00	0.00	1.30	3.99	223.129	1.25	870.00	872.80	870.79	873.28 j	12	
84	CB 402 TO CB 401	0.00	0.00	0.70	6.77	41.500	3.61	872.80	874.30	873.28	874.65 j	12	
85	INL 402.1 TO CB 402	0.15	6.39	0.48	3.56	24.000	1.00	874.30	874.54	874.65	874.83 j	12	
86	CB 403 TO CB 401	0.00	0.00	0.67	3.50	41.500	0.96	872.80	873.20	873.28	873.54 j	12	
87	INL 403.2 TO CB 403	0.18	6.39	0.58	3.56	24.000	1.00	873.20	873.44	873.54	873.75 j	12	
88	INL 403.1 TO CB 403	0.04	6.39	0.13	3.56	8.000	1.00	873.20	873.28	873.54	873.43	12	
89	INL 402.2 TO CB 402	0.08	6.39	0.26	3.56	8.000	1.00	874.30	874.38	874.65	874.59	12	
90	INL 400.3 TO CB 400	0.85	6.39	2.72	3.56	24.004	1.00	870.00	870.24	870.79	870.95 j	12	
91	CTH AB - 1	0.14	6.39	0.83	3.02	34.794	0.72	870.00	870.25	870.38	870.63	12	
92	CTH AB - 2	0.14	6.39	0.45	2.70	43.358	0.58	870.25	870.50	870.63	870.78	12	

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Date: 8/25/2020

NOTES: Intensity = 22.59 / (Inlet time + 3.70) ^ 0.58 -- Return period = 10 Yrs. ; ** Critical depth

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 100	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	INL 101.1	0.62	0.00	0.60	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.034	2.00	0.050	0.020	0.013	0.12	3.21	0.03	0.65	0.0	Off
3	CB 101	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	INL 102.1	0.76	0.28	1.03	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	6.21	0.18	6.21	0.0	Off
5	CB 102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CB 103	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	CB 104	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CB 105	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	CB 106	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	CB 107	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	CB 109	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	CB 110	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
13	CB 111	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
14	CB 112	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
15	CB 113	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	CB 114	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	INL 114.1	0.54	0.00	0.48	0.06	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	5.15	0.07	1.46	0.0	25
18	CB 115	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	INL 115.1	1.62	0.00	1.16	0.46	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.53	0.15	4.73	0.0	22
20	CB 116	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	INL 116.1	0.22	0.00	0.21	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.12	3.00	0.02	0.43	0.0	28
22	INL 114.2	1.48	0.46	1.94	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.25	9.73	0.25	9.73	0.0	Off
23	INL 116.2	0.84	0.06	0.90	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.17	5.63	0.17	5.63	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 5 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	INL 115.2	0.57	0.00	0.50	0.06	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.28	0.08	1.53	0.0	23
25	INL 109.1	1.43	0.06	1.09	0.40	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.22	8.23	0.15	4.39	0.0	30
26	CB 108	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
27	INL 108.1	0.27	0.00	0.26	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.13	3.48	0.03	0.67	0.0	31
28	INL 109.2	1.62	0.00	1.16	0.46	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.54	0.15	4.74	0.0	29
29	INL 108.2	1.54	0.46	2.00	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.26	9.92	0.26	9.92	0.0	Off
30	INL 106.1	0.73	0.40	0.88	0.25	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.21	7.29	0.13	3.32	0.0	38
31	INL 106.2	0.89	0.01	0.73	0.16	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.19	6.58	0.11	2.45	0.0	39
32	CB 117	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	CB 118	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
34	CB 119	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
35	CB 120	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	INL 120.1	0.43	0.00	0.40	0.03	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.58	0.06	1.19	0.0	40
37	INL 120.2	0.32	0.00	0.31	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.14	3.90	0.04	0.86	0.0	41
38	INL 103.1	0.94	0.25	0.92	0.28	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.21	7.48	0.13	3.54	0.0	4
39	INL 103.2	1.59	0.16	1.23	0.52	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	8.83	0.16	5.06	0.0	42
40	INL 119.1	0.49	0.03	0.47	0.05	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	5.04	0.07	1.41	0.0	43
41	INL 119.2	0.43	0.01	0.41	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.66	0.06	1.22	0.0	43
42	INL 102.2	2.00	0.55	2.54	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.29	11.74	0.29	11.74	0.0	Off
43	INL 117.1	0.38	0.09	0.44	0.03	Comb	4.0	3.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.14	3.93	0.05	0.95	0.0	42
44	INL 200.1	1.73	0.00	1.73	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.24	8.96	0.24	8.96	0.0	Off
45	CB 200	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
46	CB 205	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 5 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA	Q carry	Q capt	Q Byp	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
		(cfs)	(cfs)	(cfs)	(cfs)		Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	CB 206	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	CB 207	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	CB 208	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	CB 209	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	CB 210	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
52	INL 210.1	0.65	0.00	0.56	0.09	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.64	0.09	1.71	0.0	54
53	INL 210.2	1.40	0.00	1.04	0.36	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.22	8.02	0.14	4.17	0.0	55
54	INL 209.1	0.84	0.09	0.75	0.17	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.19	6.66	0.11	2.55	0.0	56
55	INL 209.2	1.16	0.36	1.11	0.42	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.31	0.15	4.49	0.0	57
56	INL 207.1	0.81	0.17	0.79	0.19	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	6.86	0.12	2.79	0.0	66
57	INL 207.2	1.29	0.42	1.71	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.24	8.90	0.24	8.90	0.0	Off
58	CB 202	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
59	CB 203	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
60	CB 204	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
61	INL 204.1	1.27	0.00	0.97	0.30	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.21	7.38	0.13	3.53	0.0	65
62	INL 204.2	4.29	0.00	2.36	1.92	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.31	12.26	0.24	8.83	0.0	67
63	CB 201	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
64	INL 201.1	0.32	0.00	0.31	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.14	3.90	0.04	0.86	0.0	65
65	INL 202.1	1.59	0.32	1.91	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.25	9.61	0.25	9.61	0.0	Off
66	INL 205.1	0.92	0.19	0.87	0.24	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	7.25	0.13	3.26	0.0	67
67	INL 202.2	2.37	2.17	4.54	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.41	17.51	0.41	17.51	0.0	Off
68	INL 300.2	1.65	0.13	1.77	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.24	9.13	0.24	9.13	0.0	Off
69	CB 300	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 5 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
70	CB 301	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
71	CB 302	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
72	CB 304	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
73	INL 304.1	0.40	0.00	0.38	0.03	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.43	0.06	1.11	0.0	80
74	CB 303	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
75	INL 303.1	0.22	0.00	0.21	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.12	3.00	0.02	0.43	0.0	68
76	CB 305	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
77	INL 305.1	1.81	0.00	1.30	0.51	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.21	7.55	0.14	4.04	0.0	80
78	INL 305.2	0.86	0.00	0.74	0.13	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.17	5.35	0.09	1.70	0.0	68
79	INL 302.1	0.67	0.00	0.67	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.15	4.56	0.15	4.56	0.0	Off
80	INL 300.3	4.34	0.54	4.88	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.43	18.40	0.43	18.40	0.0	Off
81	INL 400.2	0.70	0.00	0.70	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.15	4.69	0.15	4.69	0.0	Off
82	CB 400	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
83	CB 401	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
84	CB 402	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
85	INL 402.1	0.40	0.00	0.40	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.10	2.17	0.00	0.00	0.0	87
86	CB 403	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
87	INL 403.2	0.49	0.00	0.49	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.13	3.56	0.13	3.56	0.0	Off
88	INL 403.1	0.11	0.00	0.11	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.015	2.00	0.050	0.020	0.013	0.08	1.51	0.00	0.00	0.0	77
89	INL 402.2	0.22	0.00	0.22	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.08	1.63	0.00	0.00	0.0	90
90	INL 400.3	2.29	0.00	2.29	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.28	10.92	0.28	10.92	0.0	Off
91	STRUCT-(139)	0.38	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.26	0.05	1.03	0.0	Off
92	STRUCT-(138)	0.38	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.26	0.05	1.03	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 5 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 100	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	INL 101.1	0.89	0.00	0.82	0.07	Comb	4.0	3.00	0.00	3.00	2.00	0.034	2.00	0.050	0.020	0.013	0.14	4.01	0.05	1.07	0.0	Off
3	CB 101	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	INL 102.1	1.08	0.58	1.65	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.23	8.69	0.23	8.69	0.0	Off
5	CB 102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CB 103	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	CB 104	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CB 105	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	CB 106	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	CB 107	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	CB 109	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	CB 110	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
13	CB 111	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
14	CB 112	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
15	CB 113	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	CB 114	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	INL 114.1	0.77	0.00	0.65	0.12	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	6.13	0.10	1.95	0.0	25
18	CB 115	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	INL 115.1	2.31	0.00	1.51	0.79	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.26	9.90	0.18	6.22	0.0	22
20	CB 116	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	INL 116.1	0.31	0.00	0.30	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.14	3.78	0.04	0.80	0.0	28
22	INL 114.2	2.12	0.79	2.91	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.32	12.90	0.32	12.90	0.0	Off
23	INL 116.2	1.19	0.13	1.33	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.21	7.44	0.21	7.44	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 24.25 / (Inlet time + 2.80) ^ 0.56; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	INL 115.2	0.81	0.00	0.67	0.13	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.19	6.27	0.10	2.06	0.0	23
25	INL 109.1	2.04	0.12	1.44	0.72	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.25	9.64	0.18	5.93	0.0	30
26	CB 108	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
27	INL 108.1	0.38	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.30	0.05	1.05	0.0	31
28	INL 109.2	2.31	0.01	1.52	0.80	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.26	9.92	0.18	6.24	0.0	29
29	INL 108.2	2.19	0.80	2.99	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.32	13.15	0.32	13.15	0.0	Off
30	INL 106.1	1.04	0.72	1.24	0.52	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	8.84	0.16	5.07	0.0	38
31	INL 106.2	1.27	0.02	0.98	0.32	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.21	7.75	0.14	3.85	0.0	39
32	CB 117	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	CB 118	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
34	CB 119	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
35	CB 120	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	INL 120.1	0.62	0.00	0.54	0.08	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.50	0.08	1.64	0.0	40
37	INL 120.2	0.46	0.00	0.42	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	4.75	0.06	1.27	0.0	41
38	INL 103.1	1.35	0.52	1.29	0.58	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	9.07	0.17	5.32	0.0	4
39	INL 103.2	2.27	0.32	1.65	0.94	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.27	10.38	0.19	6.72	0.0	42
40	INL 119.1	0.69	0.08	0.65	0.12	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	6.13	0.10	1.95	0.0	43
41	INL 119.2	0.62	0.04	0.57	0.09	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.67	0.09	1.72	0.0	43
42	INL 102.2	2.85	1.04	3.88	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.37	15.73	0.37	15.73	0.0	Off
43	INL 117.1	0.54	0.21	0.65	0.09	Comb	4.0	3.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.16	5.10	0.08	1.55	0.0	42
44	INL 200.1	2.46	0.00	2.46	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.29	11.49	0.29	11.49	0.0	Off
45	CB 200	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
46	CB 205	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

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Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 24.25 / (Inlet time + 2.80) ^ 0.56; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

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Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	CB 206	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	CB 207	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	CB 208	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	CB 209	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	CB 210	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
52	INL 210.1	0.92	0.00	0.75	0.17	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.19	6.67	0.11	2.56	0.0	54
53	INL 210.2	2.00	0.00	1.36	0.64	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.25	9.33	0.17	5.61	0.0	55
54	INL 209.1	1.19	0.17	1.02	0.35	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.22	7.94	0.14	4.06	0.0	56
55	INL 209.2	1.65	0.64	1.51	0.79	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.26	9.88	0.18	6.19	0.0	57
56	INL 207.1	1.15	0.35	1.10	0.41	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.26	0.15	4.44	0.0	66
57	INL 207.2	1.85	0.79	2.63	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.30	12.03	0.30	12.03	0.0	Off
58	CB 202	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
59	CB 203	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
60	CB 204	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
61	INL 204.1	1.81	0.00	1.26	0.54	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.23	8.61	0.16	4.94	0.0	65
62	INL 204.2	6.12	0.00	3.03	3.09	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.34	14.12	0.28	10.75	0.0	67
63	CB 201	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
64	INL 201.1	0.46	0.00	0.42	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	4.75	0.06	1.27	0.0	65
65	INL 202.1	2.27	0.58	2.85	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.31	12.72	0.31	12.72	0.0	Off
66	INL 205.1	1.31	0.41	1.21	0.50	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.75	0.16	4.97	0.0	67
67	INL 202.2	3.39	3.59	6.98	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.46	19.97	0.46	19.97	0.0	Off
68	INL 300.2	2.35	0.27	2.62	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.30	11.98	0.30	11.98	0.0	Off
69	CB 300	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 24.25 / (Inlet time + 2.80) ^ 0.56; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
70	CB 301	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
71	CB 302	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
72	CB 304	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
73	INL 304.1	0.58	0.00	0.51	0.07	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.33	0.08	1.55	0.0	80
74	CB 303	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
75	INL 303.1	0.31	0.00	0.30	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.14	3.78	0.04	0.80	0.0	68
76	CB 305	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
77	INL 305.1	2.58	0.00	1.68	0.90	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.24	8.80	0.17	5.47	0.0	80
78	INL 305.2	1.23	0.00	0.97	0.26	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.19	6.35	0.11	2.57	0.0	68
79	INL 302.1	0.96	0.00	0.96	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	5.91	0.18	5.91	0.0	Off
80	INL 300.3	6.20	0.97	7.17	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.46	19.97	0.46	19.97	0.0	Off
81	INL 400.2	1.00	0.00	1.00	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	6.08	0.18	6.08	0.0	Off
82	CB 400	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
83	CB 401	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
84	CB 402	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
85	INL 402.1	0.58	0.00	0.57	0.01	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.12	2.88	0.02	0.47	0.0	87
86	CB 403	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
87	INL 403.2	0.69	0.01	0.70	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.15	4.69	0.15	4.69	0.0	Off
88	INL 403.1	0.15	0.00	0.15	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.015	2.00	0.050	0.020	0.013	0.09	1.73	0.00	0.00	0.0	77
89	INL 402.2	0.31	0.00	0.31	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.09	1.87	0.00	0.00	0.0	90
90	INL 400.3	3.27	0.00	3.27	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.34	13.98	0.34	13.98	0.0	Off
91	STRUCT-(139)	0.54	0.00	0.48	0.06	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	5.15	0.07	1.46	0.0	Off
92	STRUCT-(138)	0.54	0.00	0.48	0.06	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	5.15	0.07	1.46	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 24.25 / (Inlet time + 2.80) ^ 0.56; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB 100	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	INL 101.1	1.11	0.00	0.99	0.12	Comb	4.0	3.00	0.00	3.00	2.00	0.034	2.00	0.050	0.020	0.013	0.15	4.56	0.07	1.37	0.0	Off
3	CB 101	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	INL 102.1	1.35	0.90	2.25	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.28	10.78	0.28	10.78	0.0	Off
5	CB 102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
6	CB 103	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	CB 104	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	CB 105	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
9	CB 106	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	CB 107	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
11	CB 109	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	CB 110	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
13	CB 111	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
14	CB 112	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
15	CB 113	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	CB 114	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	INL 114.1	0.97	0.00	0.78	0.19	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	6.81	0.11	2.74	0.0	25
18	CB 115	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	INL 115.1	2.90	0.00	1.79	1.11	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.28	10.88	0.20	7.25	0.0	22
20	CB 116	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	INL 116.1	0.39	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.32	0.05	1.06	0.0	28
22	INL 114.2	2.66	1.11	3.77	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.37	15.42	0.37	15.42	0.0	Off
23	INL 116.2	1.50	0.21	1.71	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.24	8.89	0.24	8.89	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 29.05 / (Inlet time + 2.40) ^ 0.55; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	INL 115.2	1.02	0.00	0.81	0.21	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	6.96	0.12	2.92	0.0	23
25	INL 109.1	2.56	0.19	1.72	1.03	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.27	10.65	0.20	7.00	0.0	30
26	CB 108	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
27	INL 108.1	0.48	0.00	0.44	0.04	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.16	4.87	0.07	1.33	0.0	31
28	INL 109.2	2.90	0.02	1.80	1.12	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.28	10.91	0.21	7.28	0.0	29
29	INL 108.2	2.76	1.12	3.88	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.37	15.73	0.37	15.73	0.0	Off
30	INL 106.1	1.31	1.03	1.53	0.81	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.26	9.95	0.19	6.27	0.0	38
31	INL 106.2	1.60	0.04	1.17	0.47	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.58	0.16	4.79	0.0	39
32	CB 117	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	CB 118	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
34	CB 119	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
35	CB 120	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	INL 120.1	0.77	0.00	0.65	0.12	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	6.14	0.10	1.96	0.0	40
37	INL 120.2	0.58	0.00	0.51	0.07	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.34	0.08	1.56	0.0	41
38	INL 103.1	1.69	0.81	1.61	0.90	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.26	10.23	0.19	6.57	0.0	4
39	INL 103.2	2.85	0.47	1.98	1.35	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.29	11.48	0.22	7.88	0.0	42
40	INL 119.1	0.87	0.12	0.80	0.20	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.20	6.90	0.12	2.84	0.0	43
41	INL 119.2	0.77	0.07	0.70	0.15	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.19	6.39	0.10	2.21	0.0	43
42	INL 102.2	3.58	1.53	5.11	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.44	19.00	0.44	19.00	0.0	Off
43	INL 117.1	0.68	0.35	0.84	0.19	Comb	4.0	3.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.18	5.95	0.10	2.00	0.0	42
44	INL 200.1	3.10	0.00	3.10	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.33	13.46	0.33	13.46	0.0	Off
45	CB 200	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
46	CB 205	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 29.05 / (Inlet time + 2.40) ^ 0.55; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	CB 206	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	CB 207	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	CB 208	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	CB 209	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	CB 210	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
52	INL 210.1	1.16	0.00	0.90	0.26	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.21	7.39	0.13	3.43	0.0	54
53	INL 210.2	2.52	0.00	1.61	0.90	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.27	10.26	0.19	6.60	0.0	55
54	INL 209.1	1.50	0.26	1.24	0.53	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.24	8.85	0.16	5.08	0.0	56
55	INL 209.2	2.08	0.90	1.83	1.16	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.28	10.99	0.21	7.37	0.0	57
56	INL 207.1	1.45	0.53	1.35	0.63	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.25	9.28	0.17	5.56	0.0	66
57	INL 207.2	2.32	1.16	3.48	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.35	14.58	0.35	14.58	0.0	Off
58	CB 202	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
59	CB 203	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
60	CB 204	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
61	INL 204.1	2.27	0.00	1.50	0.78	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.25	9.48	0.18	5.89	0.0	65
62	INL 204.2	7.69	0.00	3.55	4.15	Comb	4.0	3.00	0.00	3.00	2.00	0.006	2.00	0.050	0.020	0.013	0.37	15.45	0.30	12.10	0.0	67
63	CB 201	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
64	INL 201.1	0.58	0.00	0.51	0.07	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.17	5.34	0.08	1.56	0.0	65
65	INL 202.1	2.85	0.84	3.70	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.36	15.21	0.36	15.21	0.0	Off
66	INL 205.1	1.65	0.63	1.50	0.78	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.26	9.84	0.18	6.15	0.0	67
67	INL 202.2	4.26	4.92	9.18	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.49	21.69	0.49	21.69	0.0	Off
68	INL 300.2	2.95	0.42	3.37	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.35	14.26	0.35	14.26	0.0	Off
69	CB 300	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: Rosewood Storm Sewer.stm

Number of lines: 92

Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 29.05 / (Inlet time + 2.40) ^ 0.55; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
70	CB 301	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
71	CB 302	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
72	CB 304	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
73	INL 304.1	0.73	0.00	0.62	0.11	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	5.96	0.09	1.87	0.0	80
74	CB 303	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
75	INL 303.1	0.39	0.00	0.36	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.15	4.32	0.05	1.06	0.0	68
76	CB 305	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
77	INL 305.1	3.24	0.00	1.97	1.27	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.25	9.68	0.19	6.44	0.0	80
78	INL 305.2	1.55	0.00	1.16	0.39	Comb	4.0	3.00	0.00	3.00	2.00	0.011	2.00	0.050	0.020	0.013	0.20	7.05	0.13	3.44	0.0	68
79	INL 302.1	1.21	0.00	1.21	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.20	6.96	0.20	6.96	0.0	Off
80	INL 300.3	7.79	1.38	9.17	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.49	21.63	0.49	21.63	0.0	Off
81	INL 400.2	1.26	0.00	1.26	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.20	7.16	0.20	7.16	0.0	Off
82	CB 400	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
83	CB 401	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
84	CB 402	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
85	INL 402.1	0.73	0.00	0.70	0.02	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.13	3.38	0.04	0.73	0.0	87
86	CB 403	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
87	INL 403.2	0.87	0.02	0.90	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.17	5.61	0.17	5.61	0.0	Off
88	INL 403.1	0.19	0.00	0.19	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.015	2.00	0.050	0.020	0.013	0.09	1.88	0.00	0.00	0.0	77
89	INL 402.2	0.39	0.00	0.39	0.00	Comb	4.0	3.00	0.00	3.00	2.00	0.040	2.00	0.050	0.020	0.013	0.10	2.08	0.00	0.00	0.0	90
90	INL 400.3	4.11	0.00	4.11	0.00	Comb	4.0	3.00	1.60	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.39	16.36	0.39	16.36	0.0	Off
91	STRUCT-(139)	0.68	0.00	0.58	0.09	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	5.76	0.09	1.77	0.0	Off
92	STRUCT-(138)	0.68	0.00	0.58	0.09	Comb	4.0	3.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.18	5.76	0.09	1.77	0.0	Off

Project File: Rosewood Storm Sewer.stm

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Run Date: 8/25/2020

NOTES: Inlet N-Values = 0.016; Intensity = 29.05 / (Inlet time + 2.40) ^ 0.55; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

**ROSEWOOD FIELDS
VILLAGE OF MCFARLAND
COUNTY HWY AB
DANE COUNTY, WISCONSIN**

STORM WATER MANAGEMENT REPORT

OWNER

**VH Rosewood Fields, LLC
c/o Chris Ehlers
6801 South Towne Drive
Madison, WI 53713**

August 24, 2020

PREPARED BY

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FN: 19-04-113

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- C. Infiltration Design
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INTRODUCTION

The intent of this report is to provide details on how the proposed “Rosewood Fields” residential plat will be developed so that it is constructed in accordance with applicable storm water management standards.

The proposed development is approximately a 36 acre residential plat located in the Village of McFarland. The site is located to the east of the Park View Estates plat, north of the Wisconsin and Southern railroad tracks and west of County Hwy AB in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 2 Township 06N, Range 10E. More specifically parcel number 0610-024-8070-0. A project location map can be found in Exhibit #1.

The existing layout of the site consists mostly of agricultural tilled land with surface water generally draining to the south and east sides of the site and eventually out of the plat. The drainage is split by a ridge running through the middle of the site from the north to south. In developed conditions the plat will create single family lots, 2-stormwater outlots and open space/parkland. The runoff from the plat will mostly be routed to wet detention/infiltration basin systems for stormwater treatment prior to leaving the site. The soil conditions on site consist of hydrologic soil group type B soils, with some type C soils. A site soils map can be found in Exhibit #2.

The proposed future improvements for this plat require land disturbing activity in excess of one acre and the future cumulative addition of 20,000 square feet of impervious surface area. Therefore, according to the Village of McFarland and State of Wisconsin ordinances, the site requires storm water management approvals and permits.

STANDARDS & RESULTS

The proposed development requires the following storm water management performance standards.

Sediment Control

Standard: Reduce, to the maximum extent practical, total suspended solids load leaving the site by eighty percent (80%) based on the average annual rainfall.

Design Results: Sediment from the site will be reduced by 80% by routing the site runoff through two wet detention basin/infiltration basin systems prior to leaving the site. A minimum of 60% of the sediment will be removed by the wet detention basins prior to entering the infiltration basins. WinSLAMM was used to model the sediment load reduction. The basin system was sized to compensate for any stormwater that drains directly offsite. See appendix B for sediment reduction calculations.

Temperature Control

Standard: For development of sites within thermally sensitive areas, provisions and practices to reduce the temperature of the storm water runoff shall be included.

Design Results: The proposed site does not fall within a defined thermally sensitive area.

Runoff Rate Control

Standard: For new developments, storm water management practices shall be designed and implemented to maintain post-development peak runoff discharge rates at predevelopment rates for the 1, 2, 10, 25 and 100 year-24 hour design storm events.

Design Results: The proposed detention basin system was designed to maintain the development's existing peak runoff rates for the 1, 2, 10, 25 and 100 year- 24 hour storm events. The peak flow comparison chart for the site can be found in the stormwater management measures section of this report and the HydroCAD output can be found within Appendix D. The soil curve number for the post development lawn areas has been dropped by a soil class to 71.

The existing and proposed runoff curve numbers used for this development are as follows:

Description	CN
Existing Type B Soil	58
Existing Type C Soil	71
Impervious Area	98
Proposed 60% Impervious Residential	87
Proposed 70% Impervious Residential	90
Proposed Park Area/ Assumed 10% Impervious	74
Proposed 10% Impervious Lightly Disturbed Areas	62

Along with analyzing the plat drainage information, the offsite stormwater draining through and around the site was also included in the model.

Infiltration

Standard: For new developments, design practices to infiltrate sufficient runoff volume so the post-development infiltration volume shall be at least 90% of the predevelopment infiltration volume.

Design Results: The proposed development was designed to meet the 90% stayon requirement for the plat through two infiltration basins. The infiltration basins were sized using WinSLAMM modeling software. A minimum of 60% sediment reduction will occur in the proposed wet detention basin cells prior to entering the designed infiltration basins. The basin system was sized to compensate for any stormwater that drains directly offsite. The infiltration design calculations can be found in Appendix C.

STORM WATER MANAGEMENT MEASURES

The proposed plat was modeled as five drainage areas in developed conditions and as two drainage areas in pre-developed conditions. The stormwater from the site will be treated by routing runoff to two wet detention/infiltration basin systems located at the west and southeast sides of the plat. Peak flow, sediment reduction, and stayon requirements will be met for the entire plat with this system.

HydroCAD Stormwater Modeling software has been used to analyze the stormwater runoff characteristics for the development. HydroCAD uses the TR-55 methodology for determining peak discharge rates. The model output shows the runoff leaving the site in existing and proposed conditions. The site was designed to utilize two combination wet detention basin and infiltration basin systems prior to leaving the site in proposed conditions. In these systems, the wet detention chamber in each basin will limit flow into the infiltration basin chamber for the 1yr-24hr storm event to remove sediment before entering the infiltration basin. During larger storms, the two chambers in the basin systems will act as one basin to limit peak flow from the site (see basin details in Appendix A). The detention and infiltration basins were modeled dynamically to better represent the elevations of the two chambers working together. The peak flow results from the stormwater modeling and basin design are shown in the chart on the next page. The chart shows the proposed results from each individual drainage area along with a comparison of the overall existing and proposed peak flows leaving at the edge of the site. The detention basin system will maintain the combined existing peak runoff rates leaving the plat on south, east and overall for the 1, 2, 10, 25 and 100 year- 24 hour storm events.

The offsite west, northeast and north drainage areas were also included in this model to show how the offsite water will be routed through the site. A bypass channel was sized to route this offsite water around the west side of the site, through three culverts under Tuscobia Trail and eventually to the south where it flows in existing conditions. The west drainage was analyzed to show that stormwater elevation draining through the bypass channel and across Tuscobia Trail will be 2' lower than the existing window sill openings along the western properties for a 100 year event. See exhibit 9 for cross-section information for this area.

Infiltration modeling for the site was calculated using WinSLAMM software and meets the 90% predevelopment standard per the ordinance. The infiltration basins will be implemented when at a minimum 75% of the plat area draining to the basin is complete. WinSLAMM was also used to perform the sediment reduction calculations for the proposed basin system. Appendix B contains the calculation results. The stormwater management system will provide 80% sediment removal for the plat.

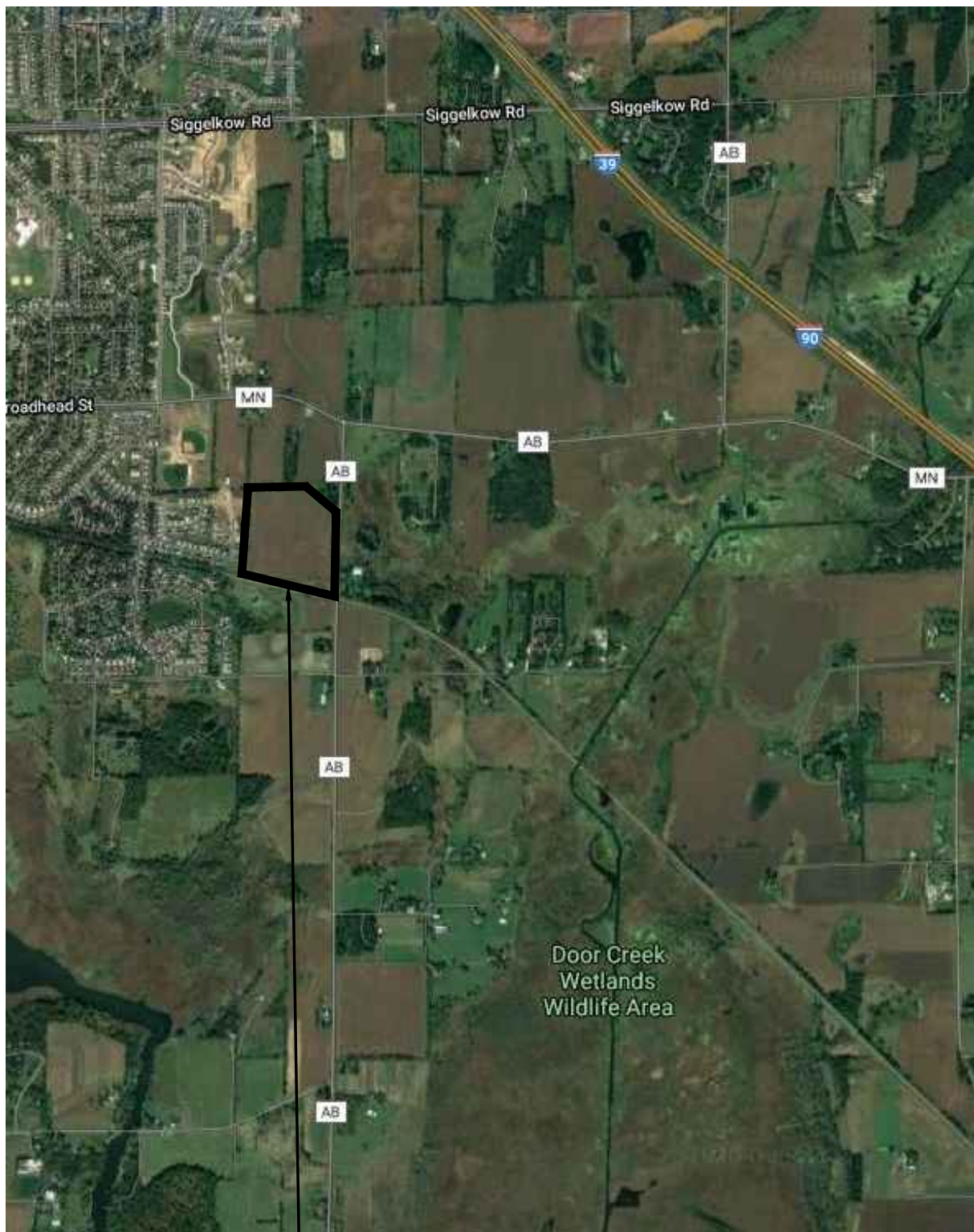
PEAK FLOW COMPARISION CHART

24-HR STORM EVENT (PEAK FLOW IN CFS)-PEAK FLOW COMPARISION					
	1YR	2YR	10YR	25YR	100YR
TOTAL EXISTING COMBINED FLOW THOUGH SITE	4.35	9.71	45.73	83.98	166.65
TOTAL PROPOSED COMBINED FLOW WITH BASIN TREATMENT	2.78	6.08	32.03	64.48	127.06
TOTAL PROPOSED COMBINED FLOW WITHOUT DETENTION	47.07	58.98	109.30	153.43	241.31
TOTAL EXISTING FLOW LEAVING SOUTH SIDE OF SITE	3.09	7.09	34.57	64.14	128.47
TOTAL PROPOSED/TREATED FLOW LEAVING SOUTH SIDE OF SITE	2.29	5.10	28.85	58.68	116.15
TOTAL EXISTING FLOW LEAVING EAST SIDE OF SITE	1.53	3.22	13.70	24.07	45.72
TOTAL PROPOSED FLOW LEAVING EAST SIDE OF SITE	1.07	2.09	7.66	12.86	23.52
OFFSITE FLOWS					
EXISTING WEST OFFSITE DRAINAGE	0.40	0.97	5.42	10.27	20.81
EXISTING NW OFFSITE DRAINAGE	1.34	3.20	16.34	30.61	61.96
EXISTING N OFFSITE DRAINAGE	0.59	1.00	2.96	4.70	8.21
EXISTING NE OFFSITE DRAINAGE	0.86	1.72	6.22	10.39	18.89
FLOW TO WEST BYPASS CHANNEL	1.68	4.02	20.37	38.23	77.65
PRO FLOWS DIRECTLY OFFSITE					
PRO SOUTH DIRECTLY OFFSITE	0.66	1.22	4.24	7.11	13.05
PRO EAST DIRECTLY OFFSITE	0.29	0.55	1.94	3.24	5.94
WEST WET DETENTION BASIN: OUTLET = 867.0, TOP OF BERM = 871.0					
PROPOSED FLOW INTO DETENTION	13.72	17.15	30.36	40.49	58.97
ROUTED DETENTION	0.44	0.50	4.06	11.60	22.34
ELEVATION	868.26	868.58	869.19	869.44	870.06
WEST INFILTRATION BASIN: BOTTOM = 866.0, OUTLET = 867.0, TOP OF BERM = 871.0					
ROUTED INFILTRATION OFFSITE	0.41	0.47	2.84	6.11	9.14
ELEVATION	867.27	867.30	867.88	868.74	869.97
TUSCOBIA TRAIL STREET CROSSING: STREET OVERFLOW LOW POINT= 869.55, 3-38"X24" CULVERTS INV = 865.00					
ROUTED THROUGH STREET CROSSING	1.77	4.10	20.61	42.99	85.20
ELEVATION	865.26	865.40	865.95	866.45	867.43
EAST WET DETENTION BASIN: OUTLET = 862.0, TOP OF BERM = 866.0					
PROPOSED FLOW INTO DETENTION	33.13	40.59	67.99	88.35	124.79
ROUTED DETENTION	1.85	2.11	16.76	25.39	58.85
ELEVATION	863.55	863.90	864.50	864.97	865.63
EAST INFILTRATION BASIN: BOTTOM = 861.0, OUTLET = 862.0, TOP OF BERM = 866.0					
ROUTED INFILTRATION OFFSITE	1.56	1.82	8.24	10.85	19.36
ELEVATION	862.54	862.60	863.64	864.35	865.58

CONCLUSIONS

As the results indicate, the storm water management system for the proposed development meets the Village of McFarland and State of Wisconsin Ordinances. The peak flow, sediment control and infiltration requirements will be met for this site at the time of development.

EXHIBITS



PROJECT LOCATION

LOCATION MAP

ROSEWOOD FIELDS

VILLAGE OF MCFARLAND, WISCONSIN

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.

7530 Westward Way, Madison, WI 53717

Phone: 608.833.7530 • Fax: 608.833.1089

YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

DRAWN BY: GVP

EXHIBIT 1



SOILS MAP

ROSEWOOD FIELDS

VILLAGE OF MCFARLAND, WISCONSIN

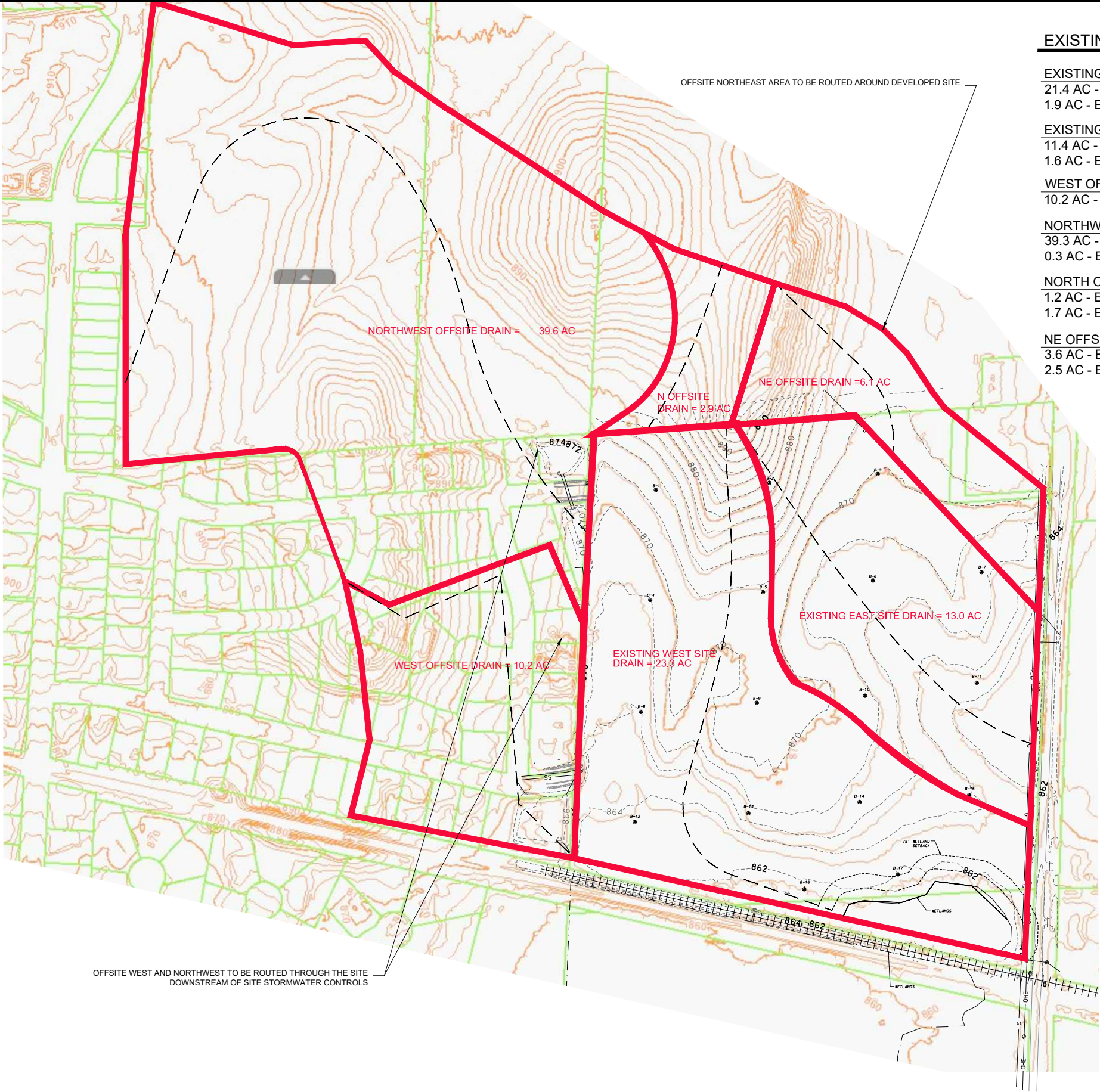
DRAWN BY: GVP

EXHIBIT 2

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EXISTING DRAINAGE BASIN INFORMATION

EXISTING WEST SITE DRAINAGE AREA = 23.3 AC	
21.4 AC - EXISTING TYPE B=	CN 58
1.9 AC - EXISTING TYPE C=	CN 71
EXISTING EAST SITE DRAINAGE AREA = 13.0 AC	
11.4 AC - EXISTING TYPE B=	CN 58
1.6 AC - EXISTING TYPE C=	CN 71
WEST OFFSITE DRAINAGE AREA = 10.2 AC	
10.2 AC - EXISTING TYPE B=	CN 58
NORTHWEST OFFSITE DRAINAGE AREA = 39.6 AC	
39.3 AC - EXISTING TYPE B=	CN 58
0.3 AC - EXISTING TYPE C=	CN 71
NORTH OFFSITE DRAINAGE AREA = 2.9 AC	
1.2 AC - EXISTING TYPE B=	CN 58
1.7 AC - EXISTING TYPE C=	CN 71
NE OFFSITE DRAINAGE AREA = 6.1 AC	
3.6 AC - EXISTING TYPE B=	CN 58
2.5 AC - EXISTING TYPE C=	CN 71

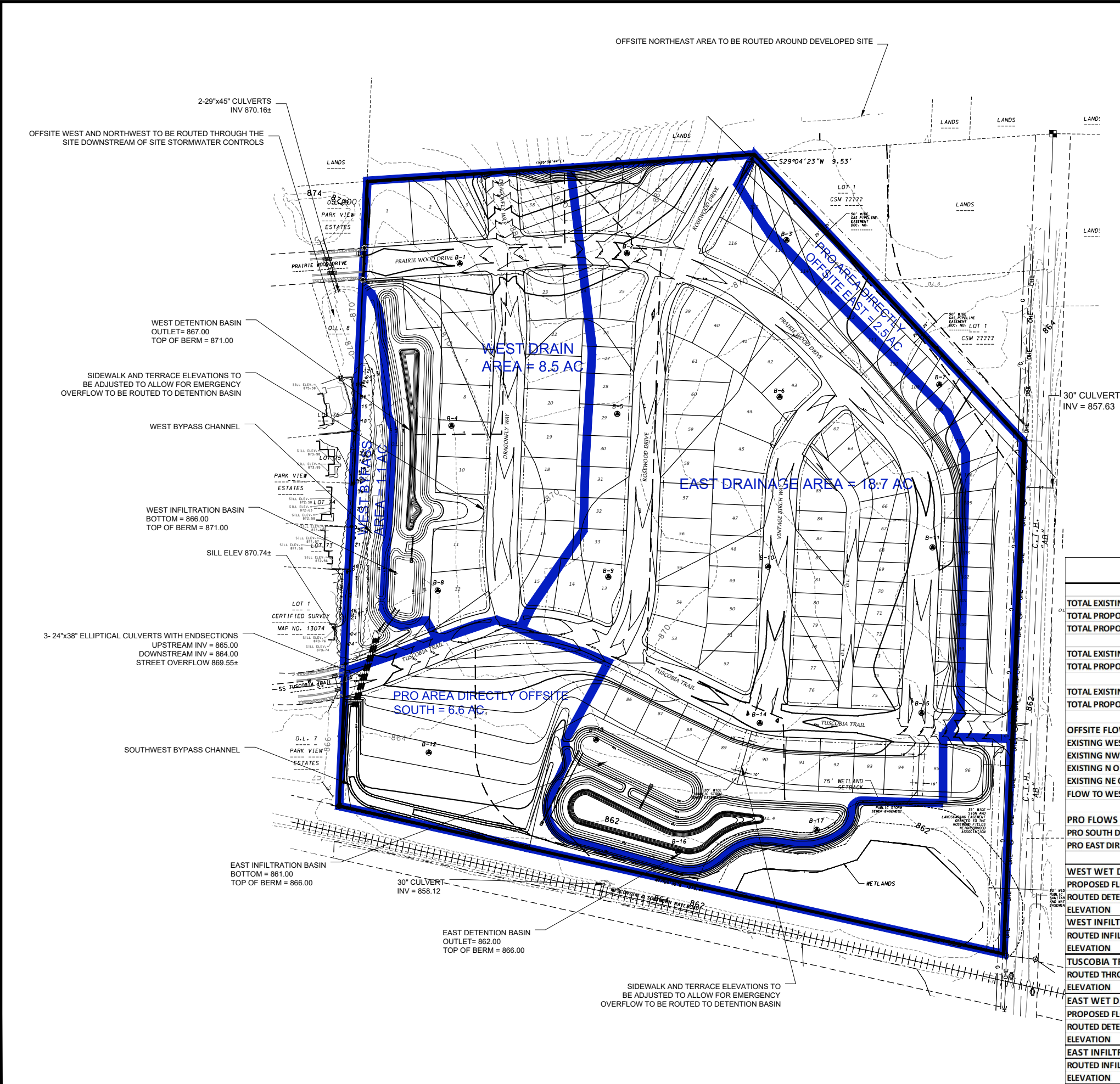
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7530 Westwood Way, Madison, WI 53717
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EXISTING REGIONAL DRAINAGE PLAN
ROSEWOOD FIELDS
COUNTY HWY AB
VILLAGE OF MCFARLAND, WISCONSIN



DATE: 08/24/20
REVISED:

DRAWN BY: GVP
FN: 19-04-114
Sheet Number:
Exhibit 3



EXISTING SITE DRAINAGE BASIN INFORMATION

EXISTING DRAINAGE AREA = 36.3 AC

32.8 AC - EXISTING TYPE B= CN 58
3.5 AC - EXISTING TYPE C= CN 71

PROPOSED SITE DRAINAGE BASIN INFORMATION

PROPOSED WEST DRAINAGE AREA = 7.4 AC.
6.0 AC - 60% IMPERVIOUS RESIDENTIAL = CN 87
1.2 AC - OUTLOT AREA (10% IMP) = CN 74
0.2 AC - WET BASIN = CN 98

PROPOSED WEST BYPASS AREA = 1.1 AC.
1.1 AC - OUTLOT AREA (10% IMP) = CN 74

PROPOSED EAST DRAINAGE AREA = 18.7 AC.
12.9 AC - 60% IMPERVIOUS RESIDENTIAL = CN 87
3.6 AC - 70% IMPERVIOUS ALLEY RESIDENTIAL = CN 90
1.5 AC - OUTLOT AREA (10% IMP) = CN 74
0.7 AC - WEST BASIN = CN 98

PROPOSED AREA DIRECTLY OFFSITE EAST = 2.5 AC.
2.4 AC - 10% IMP (LIGHTLY DISTURBED/DEEP TILL)= CN 62
0.1 AC - 70% IMP ROW AREA = CN 90

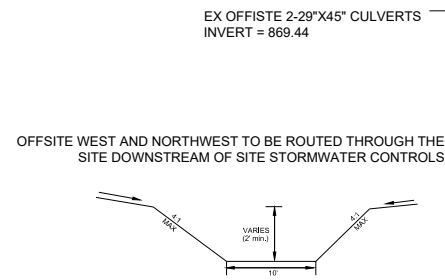
PROPOSED AREA DIRECTLY OFFSITE SOUTH = 6.6 AC.
6.2 AC - ASSUME 10% IMP (LIGHTLY DISTURBED)= CN 62
0.2 AC - 40% IMP YARD AREA= CN 82
0.2 AC - 70% IMP ROW AREA = CN 90

24-HR STORM EVENT (PEAK FLOW IN CFS)-PEAK FLOW COMPARISON					
	1YR	2YR	10YR	25YR	100YR
TOTAL EXISTING COMBINED FLOW THOUGH SITE	4.35	9.71	45.73	83.98	166.65
TOTAL PROPOSED COMBINED FLOW WITH BASIN TREATMENT	2.78	6.08	32.03	64.48	127.06
TOTAL PROPOSED COMBINED FLOW WITHOUT DETENTION	47.07	58.98	109.30	153.43	241.31
TOTAL EXISTING FLOW LEAVING SOUTH SIDE OF SITE	3.09	7.09	34.57	64.14	128.47
TOTAL PROPOSED/TREATED FLOW LEAVING SOUTH SIDE OF SITE	2.29	5.10	28.85	58.68	116.15
TOTAL EXISTING FLOW LEAVING EAST SIDE OF SITE	1.53	3.22	13.70	24.07	45.72
TOTAL PROPOSED FLOW LEAVING EAST SIDE OF SITE	1.07	2.09	7.66	12.86	23.52
OFFSITE FLOWS					
EXISTING WEST OFFSITE DRAINAGE	0.40	0.97	5.42	10.27	20.81
EXISTING NW OFFSITE DRAINAGE	1.34	3.20	16.34	30.61	61.96
EXISTING N OFFSITE DRAINAGE	0.59	1.00	2.96	4.70	8.21
EXISTING NE OFFSITE DRAINAGE	0.86	1.72	6.22	10.39	18.89
FLOW TO WEST BYPASS CHANNEL	1.68	4.02	20.37	38.23	77.65
PRO FLOWS DIRECTLY OFFSITE					
PRO SOUTH DIRECTLY OFFSITE	0.66	1.22	4.24	7.11	13.05
PRO EAST DIRECTLY OFFSITE	0.29	0.55	1.94	3.24	5.94
WEST WET DETENTION BASIN: OUTLET = 867.0, TOP OF BERM = 871.0					
PROPOSED FLOW INTO DETENTION	13.72	17.15	30.36	40.49	58.97
ROUTED DETENTION	0.44	0.50	4.06	11.60	22.34
ELEVATION	868.26	868.58	869.19	869.44	870.06
WEST INFILTRATION BASIN: BOTTOM = 866.0, OUTLET = 867.0, TOP OF BERM = 871.0					
ROUTED INFILTRATION OFFSITE	0.41	0.47	2.84	6.11	9.14
ELEVATION	867.27	867.30	867.88	868.74	869.97
TUSCUMBIA TRAIL STREET CROSSING: STREET OVERFLOW LOW POINT= 869.55, 3-38"X24" CULVERTS INV = 865.00					
ROUTED THROUGH STREET CROSSING	1.77	4.10	20.61	42.99	85.20
ELEVATION	865.26	865.40	865.95	866.45	867.43
EAST WET DETENTION BASIN: OUTLET = 862.0, TOP OF BERM = 866.0					
PROPOSED FLOW INTO DETENTION	33.13	40.59	67.99	88.35	124.79
ROUTED DETENTION	1.85	2.11	16.76	25.39	58.85
ELEVATION	863.55	863.90	864.50	864.97	865.63
EAST INFILTRATION BASIN: BOTTOM = 861.0, OUTLET = 862.0, TOP OF BERM = 866.0					
ROUTED INFILTRATION OFFSITE	1.56	1.82	8.24	10.85	19.36
ELEVATION	862.54	862.60	863.64	864.35	865.58

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PROPOSED SITE DRAINAGE PLAN
ROSEWOOD FIELDS
COUNTY HWY AB
VILLAGE OF MCFAIRLAND, WISCONSIN

0 100
DATE: 08/24/20
REVISED:
DRAWN BY: GYP
FN: 19-04-113
Sheet Number:
Exhibit 4



WEST BYPASS CHANNEL
SECTION @ 0.75%
NOT TO SCALE

WEST BYPASS CHANNEL

PROPOSED WEST DETENTION BASIN

TOP OF POND BERM - 871.00, AREA = 32,596 SQFT
TOP OF WET POND/OUTLET - 867.00, AREA = 15,467 SQFT
BOTTOM OF WET POND - 861.00

WEST DETENTION BASIN OUTLET STRUCTURES
ROUTED TO INFILTRATION BASIN:
48" STANDPIPE
RIM = 869.00
W/4" ORIFICE @ 867.00
18" OUTLET PIPE @ 866.00

30" EQUALIZATION BERM @ 869.75

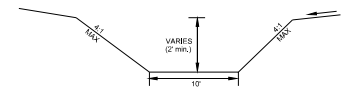
SIDEWALK AND TERRACE ELEVATIONS TO
BE ADJUSTED TO ALLOW FOR EMERGENCY
OVERFLOW TO BE ROUTED TO DETENTION BASIN

WEST INFILTRATION BASIN OUTLET STRUCTURES:
1-15" CULVERTS @ 867.00
5' OVERFLOW WEIR @ 870.00
8" CAPPED EMERGENCY DRAIN(DAYLIGHT) @ 866.00

PROPOSED WEST INFILTRATION BASIN W/ 12"
DEPRESSION ZONE

3,624 SQFT @ 866.00
10,466 SQFT (TOP OF BERM) @ 871.00

3- 24"x38" ELLIPTICAL CULVERTS WITH ENDSECTIONS
UPSTREAM INV = 865.00
DOWNSTREAM INV = 864.00
STREET OVERFLOW 869.55±
(100YR WATER ELEV (6.66" IN 24HRS) = 867.43)
(150 YR OVERFLOW ELEV (7.10 IN 24HRS) = 867.82)



SOUTHWEST BYPASS CHANNEL
SECTION @ 0.75%
NOT TO SCALE

SOUTHWEST BYPASS CHANNEL

EX OFFISTE 24" CULVERT
INV = 864.80

PROPOSED EAST INFILTRATION BASIN W/ 12"
DEPRESSION ZONE

8,400 SQFT @ 861.00
19,855 SQFT (TOP OF BERM) @ 866.00

INFILTRATION BASIN OUTLET STRUCTURES:
1-18" CULVERTS @ 862.00
8" CAPPED EMERGENCY DRAIN(DAYLIGHT) @ 861.00

4' OVERFLOW WEIR @ 865.00

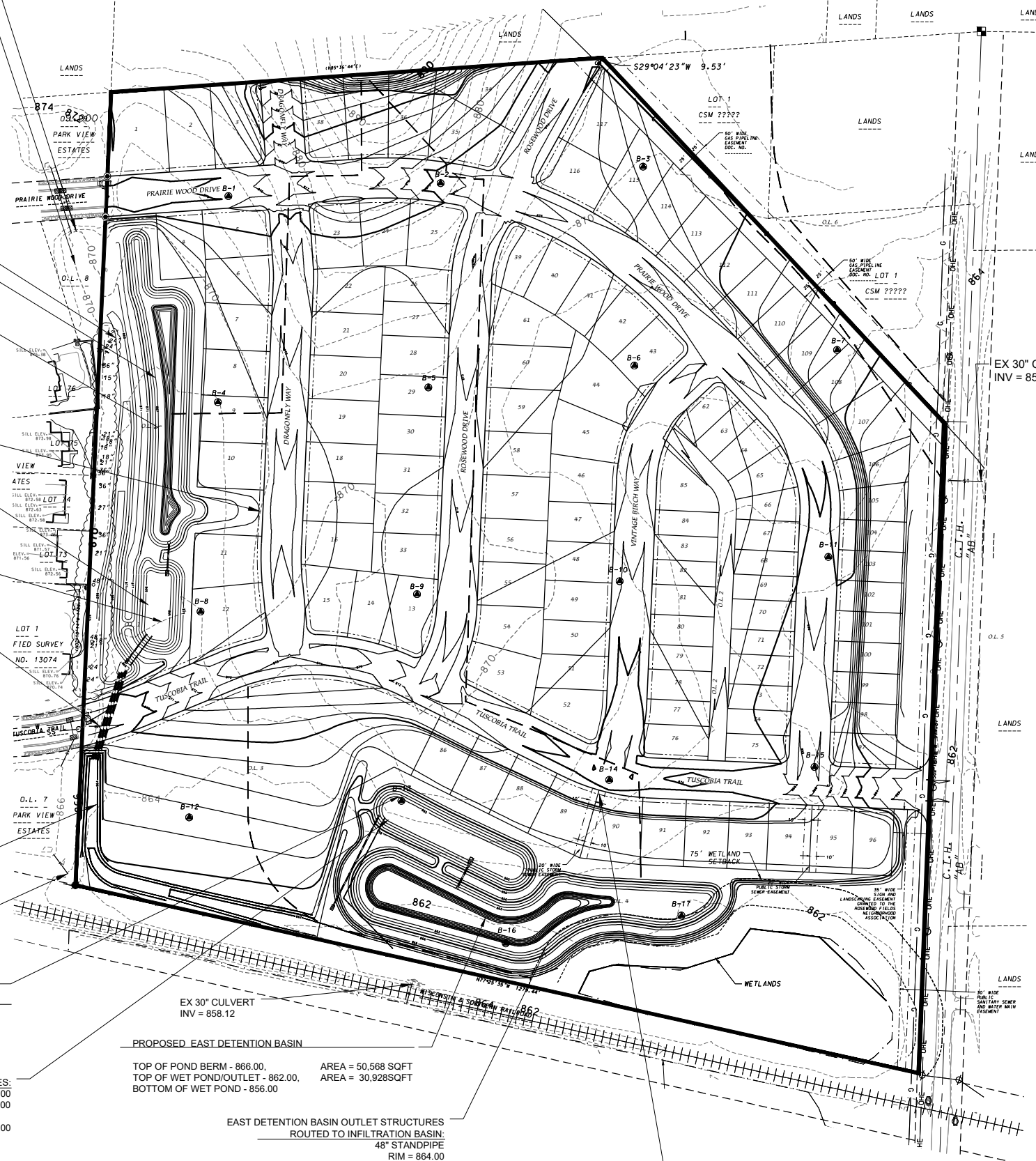
PROPOSED EAST DETENTION BASIN

TOP OF POND BERM - 866.00, AREA = 50,568 SQFT
TOP OF WET POND/OUTLET - 862.00, AREA = 30,928SQFT
BOTTOM OF WET POND - 856.00

EAST DETENTION BASIN OUTLET STRUCTURES
ROUTED TO INFILTRATION BASIN:
48" STANDPIPE
RIM = 864.00
W/8" ORIFICE @ 862.00
24" OUTLET PIPE @ 861.00

20" EQUALIZATION BERM @ 864.75

SIDEWALK AND TERRACE ELEVATIONS TO
BE ADJUSTED TO ALLOW FOR EMERGENCY
OVERFLOW TO BE ROUTED TO DETENTION BASIN



EX 30" CULVERT
INV = 857.63

DETENTION/INFILTRATION BASIN LAYOUT

ROSEWOOD FIELDS
COUNTY HWY AB

VILLAGE OF MCFARLAND, WISCONSIN



0 100

DATE: 08/24/20
REVISED:

DRAWN BY: GVP

FN: 19-04-113

Sheet Number:

Exhibit 5



AERIAL MAP

UTTERBACK PROPERTY

VILLAGE OF MCFARLAND, WISCONSIN

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.

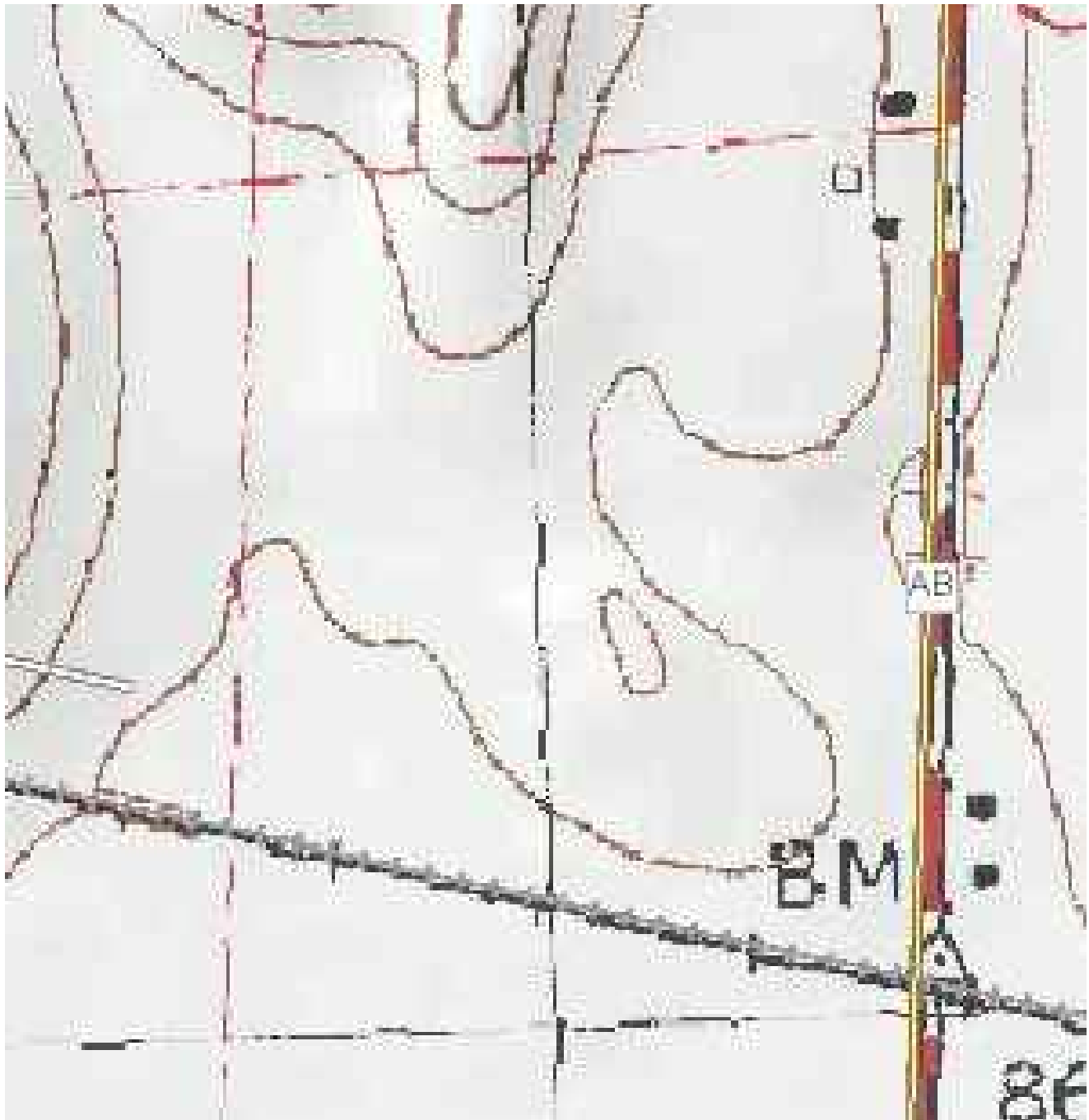
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EXHIBIT 6



USGS MAP

ROSEWOOD FIELDS

VILLAGE OF MCFARLAND, WISCONSIN

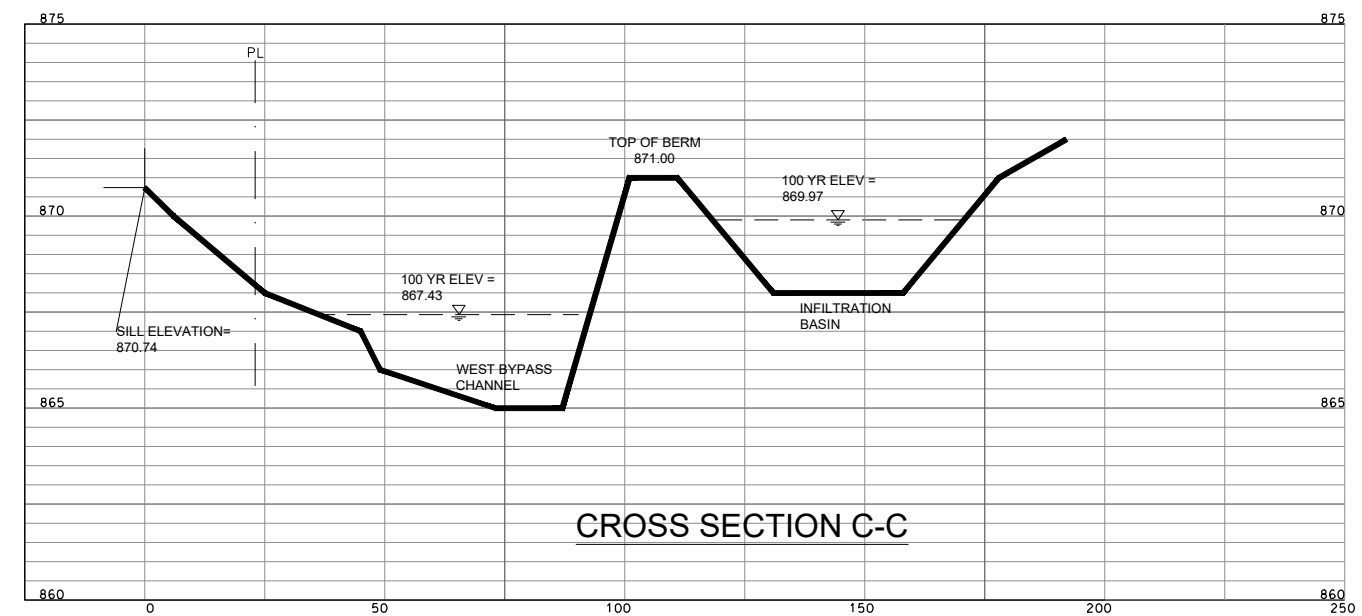
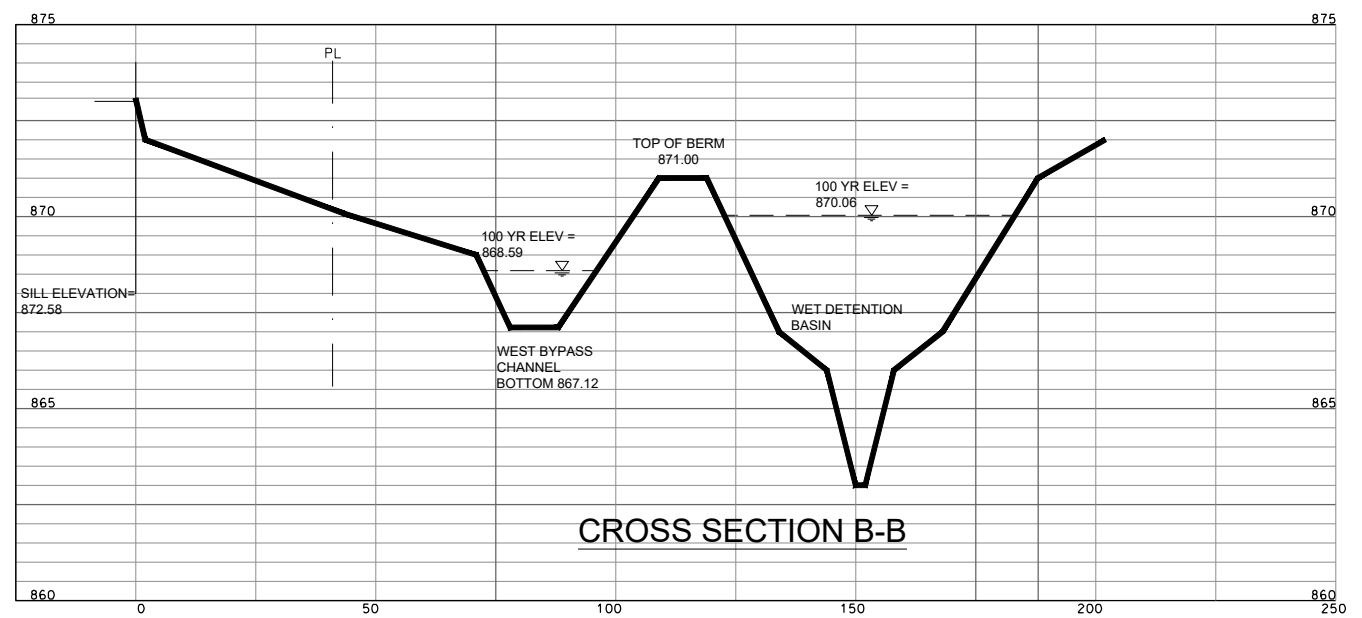
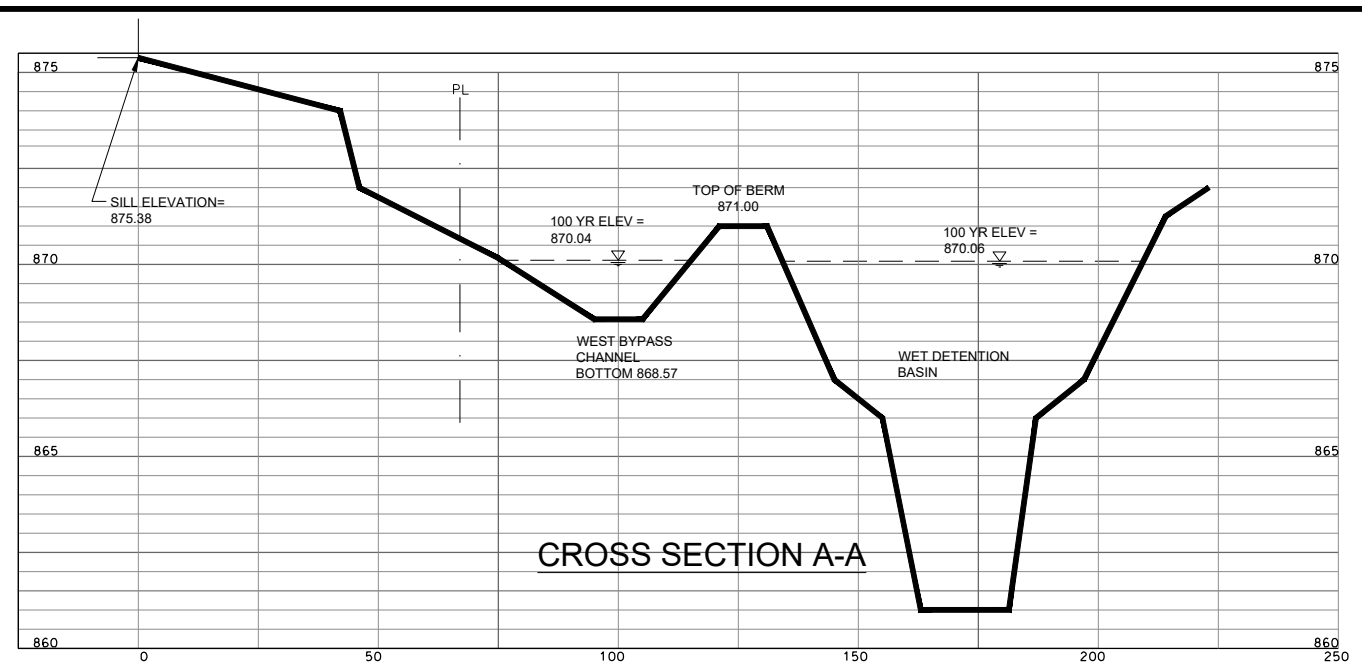
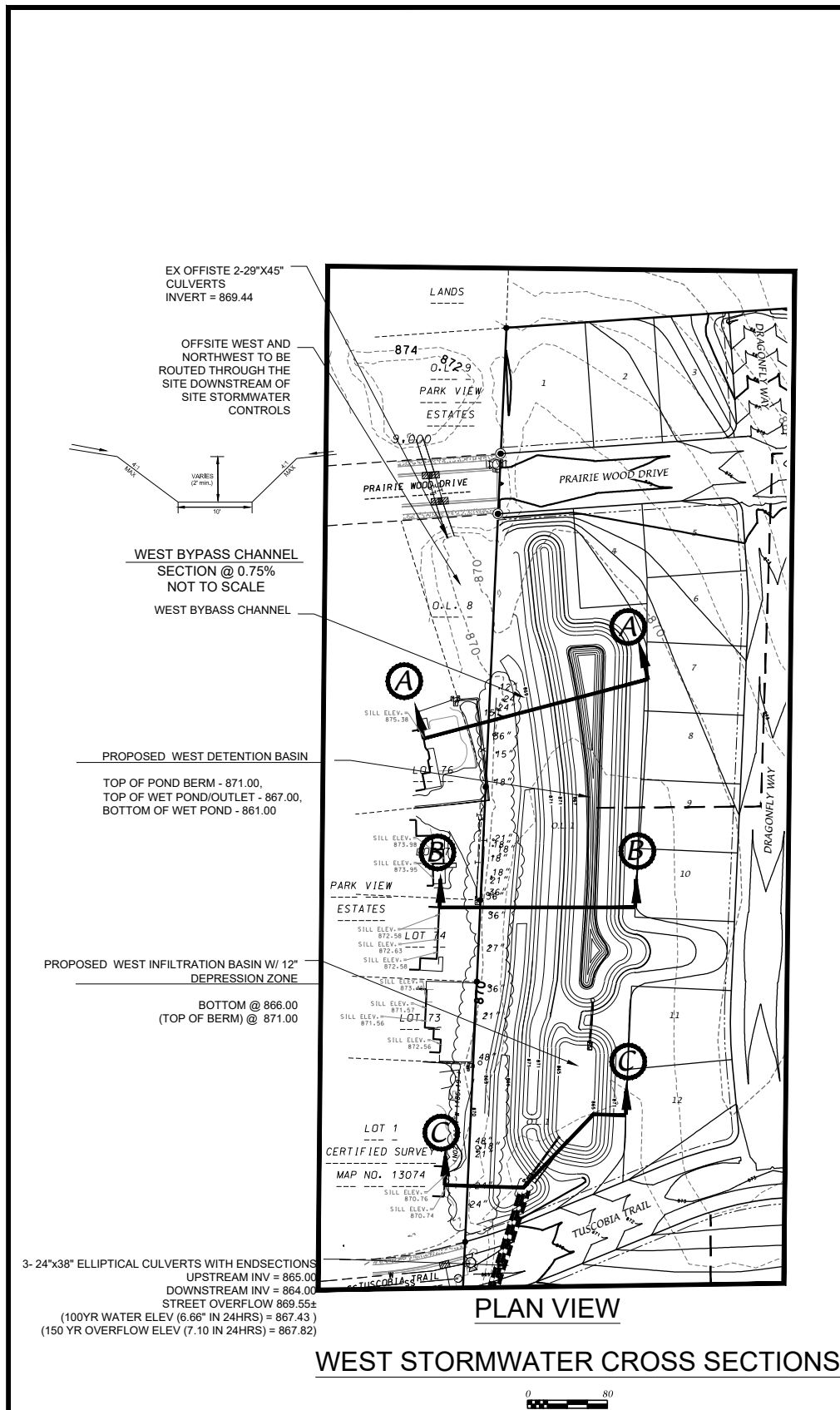
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YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

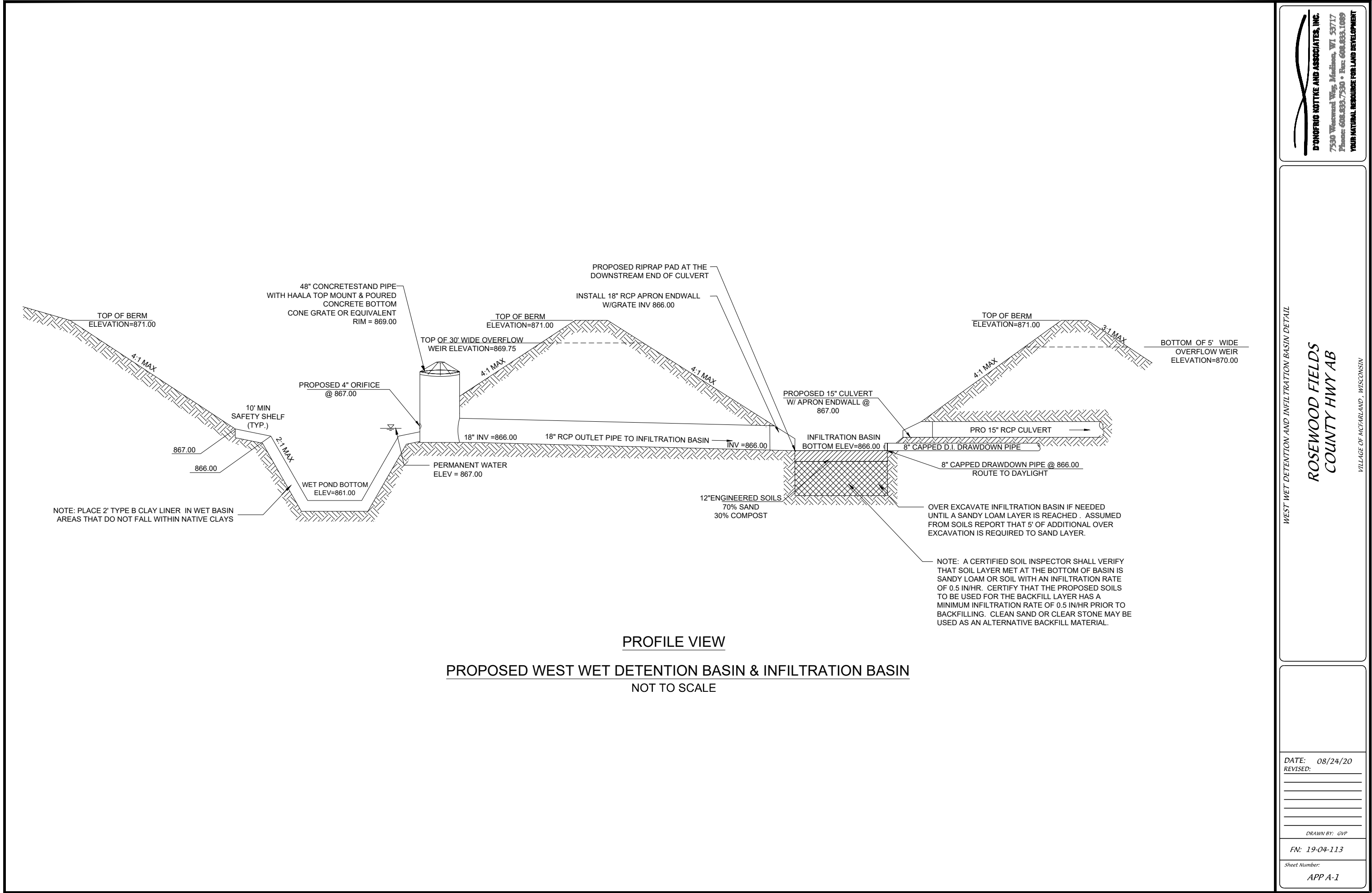
DRAWN BY: GVP

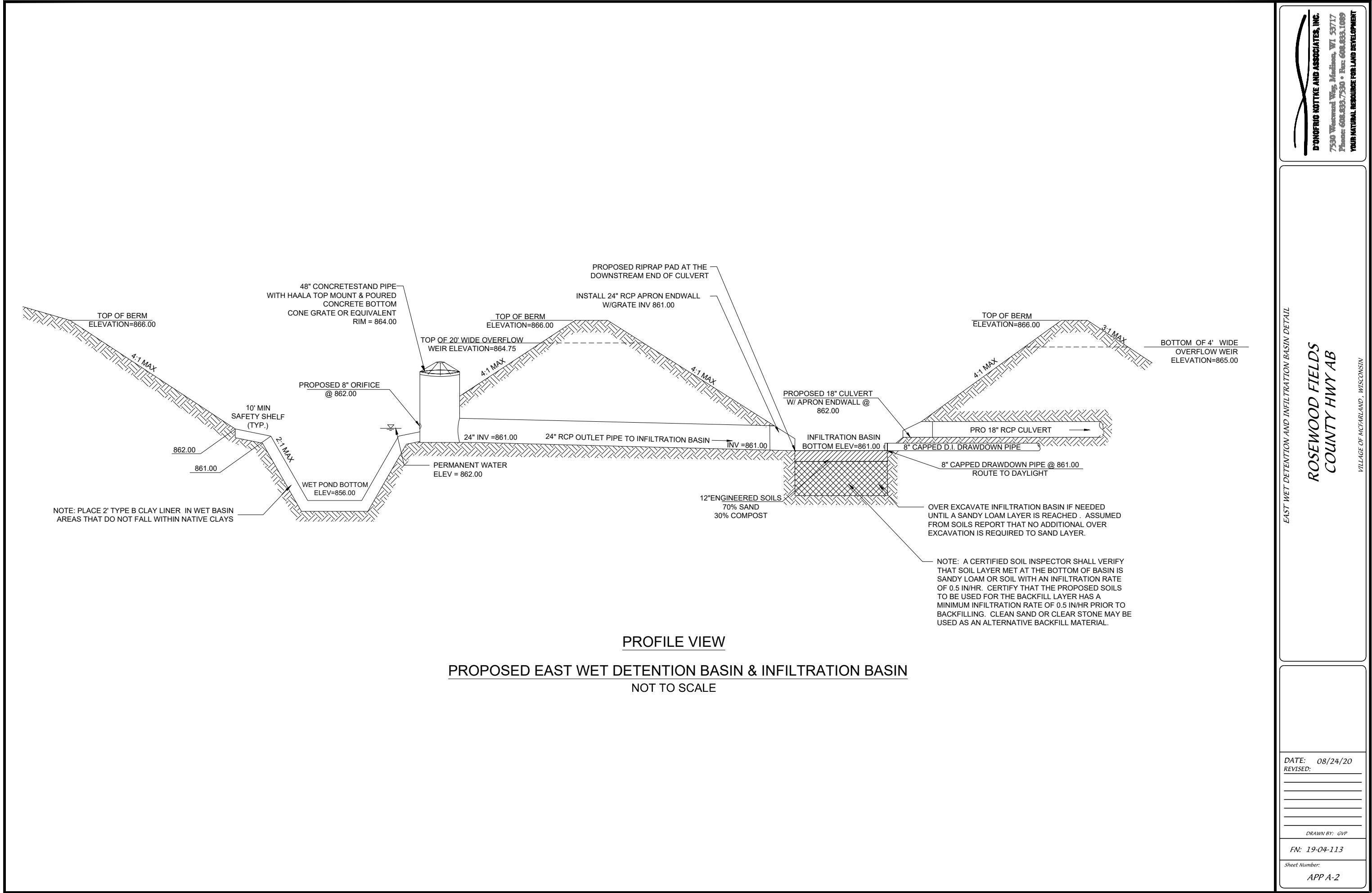
EXHIBIT 7



APPENDIX A

DETENTION POND & INFILTRATION BASIN DETAILS





APPENDIX B

SEDIMENT REDUCTION CALCULATIONS

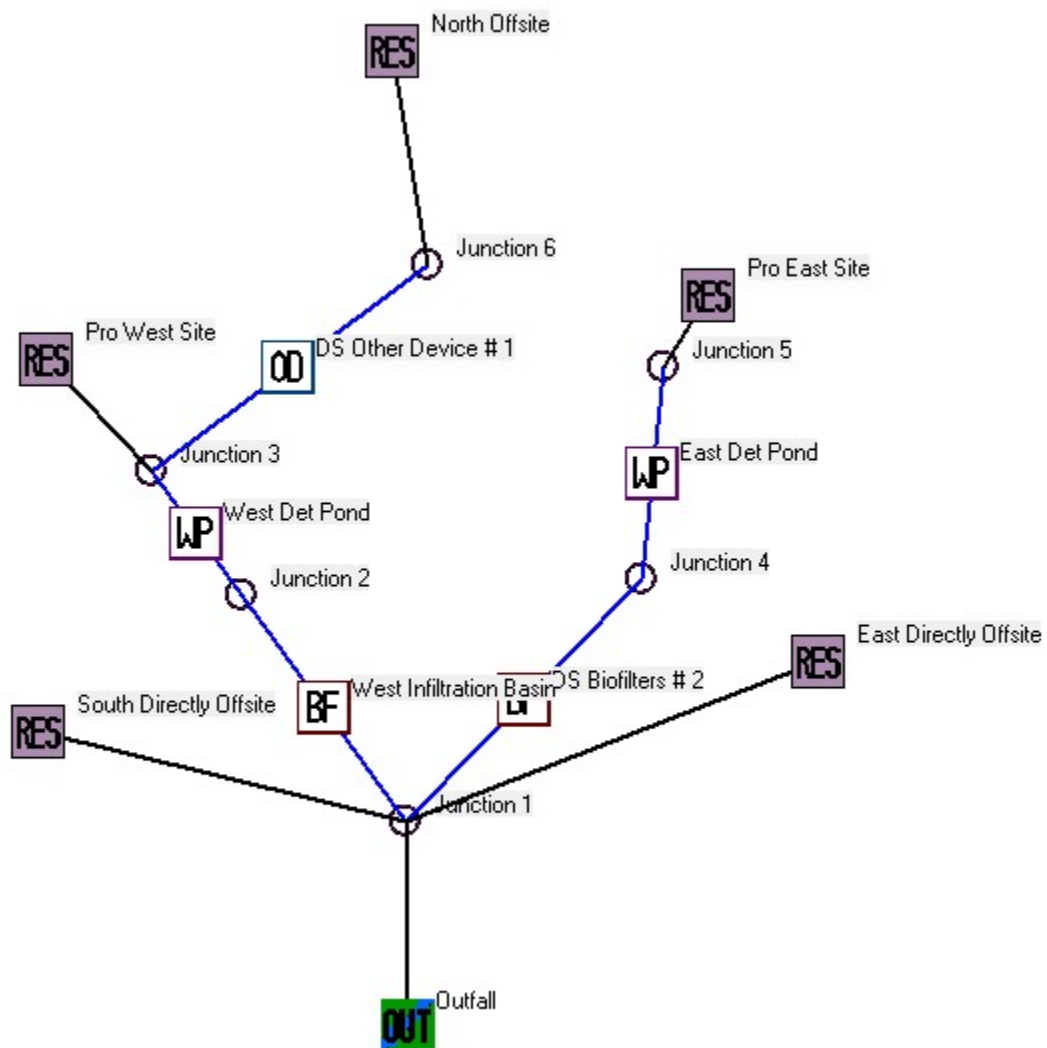
DETENTION BASIN SEDIMENTATION REDUCTION CALCULATIONS (WINSLAMM)

WinSlamm Design

The following WinSlamm design shows that 80% of sediment is being removed from the proposed site

Total site sediment reduction in developed conditions = 83.56%

Model Schematic:



Model Input Information:

Data file name: U:\User\1904113\Engineering\SWMP\Sed Pro Utterback Slamm.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 08-24-2020 Time: 16:48:39
Site information:

LU# 1 - Residential: Pro West Site Total area (ac): 8.500
1 - Roofs 1: 1.190 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.610 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.790 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.230 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 1.010 ac. Intermediate Street Length = 0.768 curb-mi Street Width (assuming two curb-mi per street mile) = 21.69922 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 4.180 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.490 ac. Source Area PSD File:

LU# 2 - Residential: Pro East Site Total area (ac): 18.700
1 - Roofs 1: 3.390 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 1.740 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 2.260 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.150 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 2.870 ac. Intermediate Street Length = 1.713 curb-mi Street Width (assuming two curb-mi per street mile) = 27.64448 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 7.390 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.900 ac. Source Area PSD File:

LU# 3 - Residential: South Directly Offsite Total area (ac): 6.600
1 - Roofs 1: 0.050 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.030 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.620 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.040 ac. Intermediate Street Length = 0.044 curb-mi Street Width (assuming two curb-mi per street mile) = 15 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 5.860 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: East Directly Offsite Total area (ac): 2.500
31 - Sidewalks 1: 0.240 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.070 ac. Intermediate Street Length = 0.044 curb-mi Street Width (assuming two curb-mi per street mile) = 26.25 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.190 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Residential: North Offsite Total area (ac): 2.900
45 - Large Landscaped Areas 1: 2.900 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - West Det Pond
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 6
Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 6

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 30
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 7.75

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	0.0195	0.00	0.00
2	1.00	0.0344	0.00	0.00
3	2.00	0.0569	0.00	0.00
4	3.00	0.0894	0.00	0.00
5	4.00	0.1220	0.00	0.00
6	5.00	0.1560	0.00	0.00
7	6.00	0.3550	0.00	0.00
8	7.00	0.4490	0.00	0.00
9	8.00	0.5470	0.00	0.00
10	9.00	0.6460	0.00	0.00
11	10.00	0.7480	0.00	0.00

Control Practice 2: Biofilter CP# 1 (DS) - West Infiltration Basin

1. Top area (square feet) = 10466
2. Bottom area (square feet) = 3624
3. Depth (ft): 5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.5
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5
2. Weir crest width (ft): 10
3. Height of datum to bottom of weir opening: 4

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1.25
2. Pipe invert elevation above datum (ft): 1
3. Number of surface pipe outlets: 1

Control Practice 3: Wet Detention Pond CP# 2 (DS) - East Det Pond

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 6

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.67
2. Number of orifices: 1
3. Invert elevation above datum (ft): 6

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 20
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.75

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 8

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	0.2030	0.00	0.00
2	1.00	0.2380	0.00	0.00
3	2.00	0.2750	0.00	0.00
4	3.00	0.3130	0.00	0.00
5	4.00	0.3520	0.00	0.00
6	5.00	0.3900	0.00	0.00
7	6.00	0.7100	0.00	0.00
8	7.00	0.8190	0.00	0.00
9	8.00	0.9310	0.00	0.00
10	9.00	1.0440	0.00	0.00
11	10.00	1.1610	0.00	0.00

Control Practice 4: Biofilter CP# 2 (DS) - DS Biofilters # 2

1. Top area (square feet) = 19855
2. Bottom area (square feet) = 8400
3. Depth (ft): 5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.5
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height of datum to bottom of weir opening: 4

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1.5
2. Pipe invert elevation above datum (ft): 1
3. Number of surface pipe outlets: 1

Control Practice 5: Other Device CP# 1 (DS) - DS Other Device # 1

Fraction of drainage area served by device (ac) = 1.00
 Particulate Concentration reduction fraction = 1.00
 Filterable Concentration reduction fraction = 0.00
 Runoff volume reduction fraction = 0

Output Sediment Reduction:

File Name:
U:\User\1904113\Engineering\SWMP\Sed Pro Utterback Slamm.mdb

Outfall Output Summary

	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	1.130E+06		0.25	132.2 (1)	9330 (1)	
Outfall Total with Controls	488981	56.73 %	0.11	51.62	1576	83.11 %

Current File Output: Annualized Total After Outfall Controls: 490324 Years in Model Run: 1.00 1580

(1) Values reduced to remove off-site loadings due to setting Other Control Device Concentration Reduction values to 1.

Total Area Modeled: 39.200

Total Control Practice

Capital Cost	N/A
Land Cost	N/A
Annual Maintenance	N/A
Present Value of All Costs	N/A
Annualized Value of All	N/A

Receiving Water Impacts Due To (CWP Impervious Cover Model)

	Calculated Rv	Approximate Urban Stream
Without Controls	0.25	Poor
With Controls	0.11	Good

Total site sediment reduction in developed conditions = 83.11%

Data File:	U:\User\1904113\Eng\slamm.mdb						
Rain File:	WisReg - Madison WI						
Date:	08-24-20	Time:	4:50:26 PM				
Site Description:							
Col. #:	2	4	5	6	7	8	9
Control Practice No.	Control Practice Type	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction
1	Wet Detention Pond	310884	311720	-0.269	2521	332.0	86.83
2	Biofilter	311720	115685	62.89	332.0	152.1	54.19
3	Wet Detention Pond	750693	752823	-0.284	5899	1091	81.51
4	Biofilter	752823	304609	59.54	1091	513.1	52.97
5	Other Device	18203	18203	0	258.0	0	100.0

The chart above shows that over 60% sediment reduction will occur prior to the infiltration basins.

APPENDIX C

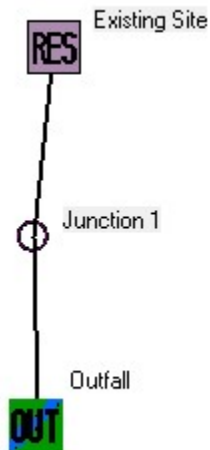
INFILTRATION DESIGN

INFILTRATION SIZING FOR THE PROPOSED PLAT

Methodology: To meet infiltration requirements, the following will show that the infiltration design will meet stayon requirements for the site. To establish the infiltration requirements, the site was modeled using WinSLAMM in existing conditions to establish an existing stayon value first. A target stayon value was established as 90% of the existing value per the ordinance. As shown in the following calculations; The site will meet the required infiltration performance standard in developed conditions

WinSLAMM Model to Establish Stayon Requirements

Model Schematic:



Model Input Information:

Data file name: U:\User\1904113\Engineering\SWMP\Ex Utterback Slamm.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 04-02-2020 Time: 16:48:49
Site information:

LU# 1 - Residential: Existing Site Total area (ac): 36.300
45 - Large Landscaped Areas 1: 36.300 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Output Existing Stayon From Plat:

Data File: U:\User\1904113\Engineering\SW\MP\Ex Utterback Slamm.mdb					
Rain File: WisReg - Madison WI 1981.RAN					
Date: 04-02-20 Time: 4:50:34 PM					
Site Description:					
Runoff Volume Total (cf) at the Outfall					
Rain Number	Start Date	Rain Total (in)	Outfall Total (cf)	Rv	Total Losses (in.)
73	08/28/81	0.04	0	0.000	0.04
74	08/31/81	0.03	0	0.000	0.03
75	08/31/81	1.52	10760	0.054	1.44
76	09/07/81	0.89	5048	0.043	0.85
77	09/11/81	0.08	0	0.000	0.08
78	09/16/81	0.03	0	0.000	0.03
79	09/21/81	0.45	1398	0.024	0.44
80	09/24/81	0.90	5117	0.043	0.86
81	09/26/81	0.12	0	0.000	0.12
82	09/28/81	0.10	0	0.000	0.10
83	09/29/81	0.16	0	0.000	0.16
84	09/30/81	0.36	825.6	0.017	0.35
85	10/01/81	0.01	0	0.000	0.01
86	10/04/81	0.15	0	0.000	0.15
87	10/05/81	0.04	0	0.000	0.04
88	10/05/81	0.02	0	0.000	0.02
89	10/09/81	0.14	0	0.000	0.14
90	10/13/81	1.20	8238	0.052	1.14
91	10/15/81	0.02	0	0.000	0.02
92	10/17/81	0.95	5464	0.044	0.91
93	10/18/81	0.06	0	0.000	0.06
94	10/21/81	0.06	0	0.000	0.06
95	10/21/81	0.01	0	0.000	0.01
96	10/24/81	0.01	0	0.000	0.01
97	10/31/81	0.01	0	0.000	0.01
98	11/05/81	0.04	0	0.000	0.04
99	11/15/81	0.07	0	0.000	0.07
100	11/18/81	0.05	0	0.000	0.05
101	11/19/81	0.26	230.8	0.007	0.26
102	11/23/81	0.18	0	0.000	0.18
103	11/25/81	0.89	5048	0.043	0.85
104	11/30/81	0.37	900.6	0.018	0.36
105	12/03/81	-	-	-	-
106	12/14/81	-	-	-	-
107	12/20/81	-	-	-	-
108	12/26/81	-	-	-	-
109	12/31/81	-	-	-	-
Minimum:		0.00	0	0.000	0.01
Maximum:		2.59	68256	0.200	2.07
Average:		0.26	2090	0.012	0.25
Total:		28.81	227858		27.09

The plat has **27.09** inches of stayon in existing conditions. 90% of 27.09 inches = **24.4 inches of stayon required** to meet stayon requirements for the plat.

Proposed Infiltration Design:

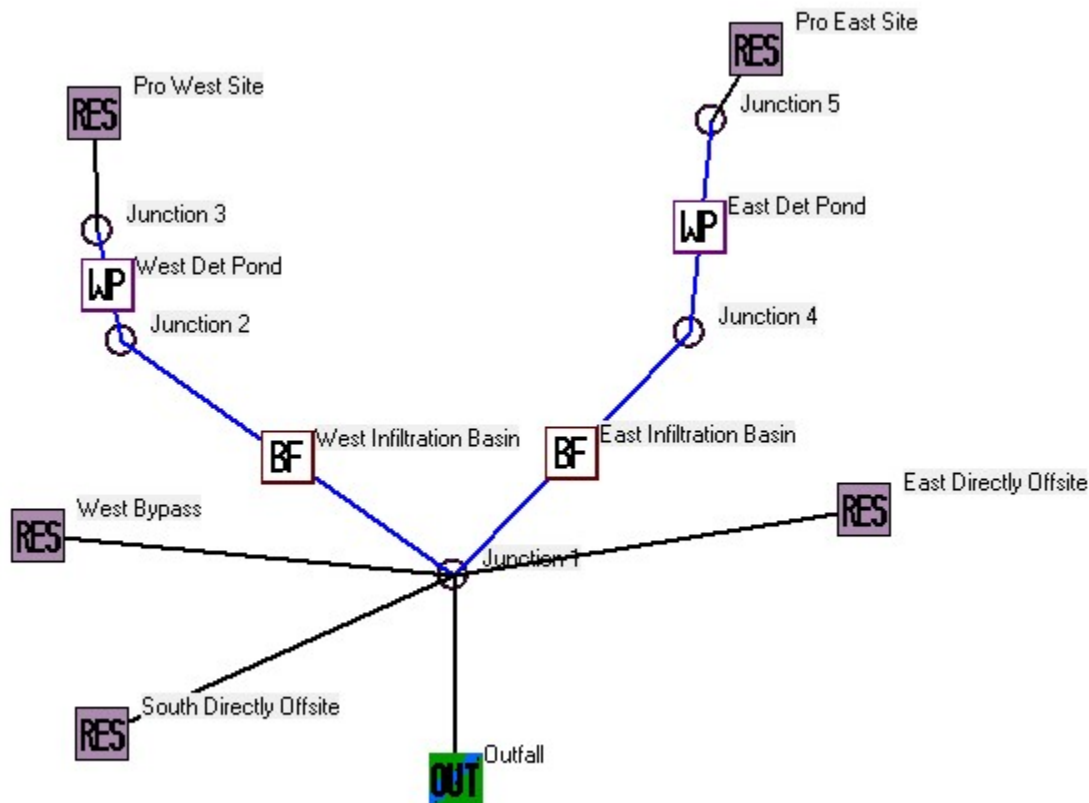
Proposed Site Infiltration Design:

Stayon Required = 24.4 inches

Note: Assume 0.5 in/hr infiltration can be attained

WinSlamm Design

Model Schematic:



Model Input Information:

Data file name: U:\User\1904113\Engineering\SWMP\Pro Utterback Slamm.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdxd
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:

Seed for random number generator: -42
 Study period starting date: 01/01/81 Study period ending date: 12/31/81
 Start of Winter Season: 12/02 End of Winter Season: 03/12
 Date: 04-02-2020 Time: 16:56:40
 Site information:

LU# 1 - Residential: Pro West Site Total area (ac): 7.400
 1 - Roofs 1: 1.190 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 2 - Roofs 2: 0.610 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 25 - Driveways 1: 0.790 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 31 - Sidewalks 1: 0.120 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 37 - Streets 1: 1.010 ac. Intermediate Street Length = 0.768 curb-mi Street Width (assuming two curb-mi per street mile) = 21.69922 ft
 Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 45 - Large Landscaped Areas 1: 3.190 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 70 - Water Body Areas: 0.490 ac. Source Area PSD File:

LU# 2 - Residential: Pro East Site Total area (ac): 18.700
 1 - Roofs 1: 3.390 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 2 - Roofs 2: 1.740 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 25 - Driveways 1: 2.260 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 31 - Sidewalks 1: 0.150 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 37 - Streets 1: 2.870 ac. Intermediate Street Length = 1.713 curb-mi Street Width (assuming two curb-mi per street mile) = 27.64448 ft
 Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 45 - Large Landscaped Areas 1: 7.390 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 70 - Water Body Areas: 0.900 ac. Source Area PSD File:

LU# 3 - Residential: South Directly Offsite Total area (ac): 6.600
 1 - Roofs 1: 0.050 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 2 - Roofs 2: 0.030 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 31 - Sidewalks 1: 0.620 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 37 - Streets 1: 0.040 ac. Intermediate Street Length = 0.044 curb-mi Street Width (assuming two curb-mi per street mile) = 15 ft
 Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 45 - Large Landscaped Areas 1: 5.860 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: East Directly Offsite Total area (ac): 2.500
 31 - Sidewalks 1: 0.240 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 37 - Streets 1: 0.070 ac. Intermediate Street Length = 0.044 curb-mi Street Width (assuming two curb-mi per street mile) = 26.25 ft
 Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 45 - Large Landscaped Areas 1: 2.190 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Residential: West Bypass Total area (ac): 1.100
 31 - Sidewalks 1: 0.110 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
 45 - Large Landscaped Areas 1: 0.990 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - West Det Pond
 Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 6
 Peak to Average Flow Ratio: 3.8
 Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 6

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 30
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 7.75

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	0.0190	0.00	0.00
2	1.00	0.0340	0.00	0.00

3	2.00	0.0560	0.00	0.00
4	3.00	0.0890	0.00	0.00
5	4.00	0.1220	0.00	0.00
6	5.00	0.1560	0.00	0.00
7	6.00	0.3550	0.00	0.00
8	7.00	0.4490	0.00	0.00
9	8.00	0.5470	0.00	0.00
10	9.00	0.6460	0.00	0.00
11	10.00	0.7480	0.00	0.00

Control Practice 2: Biofilter CP# 1 (DS) - West Infiltration Basin

1. Top area (square feet) = 10466
2. Bottom area (square feet) = 3624
3. Depth (ft): 5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.5
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5
2. Weir crest width (ft): 10
3. Height of datum to bottom of weir opening: 4

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1.25
2. Pipe invert elevation above datum (ft): 1
3. Number of surface pipe outlets: 1

Control Practice 3: Wet Detention Pond CP# 2 (DS) - East Det Pond

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 6

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.67
2. Number of orifices: 1
3. Invert elevation above datum (ft): 6

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 20
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.75

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 8

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	0.2030	0.00	0.00
2	1.00	0.2380	0.00	0.00
3	2.00	0.2750	0.00	0.00
4	3.00	0.3130	0.00	0.00
5	4.00	0.3520	0.00	0.00
6	5.00	0.3900	0.00	0.00
7	6.00	0.7100	0.00	0.00
8	7.00	0.8190	0.00	0.00
9	8.00	0.9310	0.00	0.00
10	9.00	1.0440	0.00	0.00
11	10.00	1.1610	0.00	0.00

Control Practice 4: Biofilter CP# 2 (DS) - East Infiltration Basin

1. Top area (square feet) = 19855
2. Bottom area (square feet) = 8400
3. Depth (ft): 5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.5
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 0
12. Engineered soil depth (ft) = 0
13. Engineered soil porosity = 0
14. Percent solids reduction due to flow through engineered soil = 0
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height of datum to bottom of weir opening: 4

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1.5
2. Pipe invert elevation above datum (ft): 1
3. Number of surface pipe outlets: 1

Proposed Infiltration Design:

Data File: U:\User\1904113\Engineering\SWMP\Pro Utterback Slamm.mdb					
Rain File: WisReg - Madison WI 1981.RAN					
Date: 04-02-20 Time: 4:59:15 PM					
Site Description:					
Runoff Volume Total (cf) at the Outfall					
Rain Number	Start Date	Rain Total (in)	Outfall Total (cf)	Rv	Total Losses (in.)
73	08/28/81	0.04	99.17	0.019	0.04
74	08/31/81	0.03	0.6224	0.000	0.03
75	08/31/81	1.52	34950	0.174	1.25
76	09/07/81	0.89	11971	0.102	0.80
77	09/11/81	0.08	21.02	0.002	0.08
78	09/16/81	0.03	0.6224	0.000	0.03
79	09/21/81	0.45	575.2	0.010	0.45
80	09/24/81	0.90	7729	0.065	0.84
81	09/26/81	0.12	40.53	0.003	0.12
82	09/28/81	0.10	30.18	0.002	0.10
83	09/29/81	0.16	55.90	0.003	0.16
84	09/30/81	0.36	370.6	0.008	0.36
85	10/01/81	0.01	0.06915	0.000	0.01
86	10/04/81	0.15	51.97	0.003	0.15
87	10/05/81	0.04	7.682	0.001	0.04
88	10/05/81	0.02	0.2766	0.000	0.02
89	10/09/81	0.14	48.10	0.003	0.14
90	10/13/81	1.20	27507	0.174	0.99
91	10/15/81	0.02	0.2766	0.000	0.02
92	10/17/81	0.95	19095	0.153	0.81
93	10/18/81	0.06	526.3	0.067	0.06
94	10/21/81	0.06	13.64	0.002	0.06
95	10/21/81	0.01	0.06915	0.000	0.01
96	10/24/81	0.01	0.06915	0.000	0.01
97	10/31/81	0.01	0.06915	0.000	0.01
98	11/05/81	0.04	7.682	0.001	0.04
99	11/15/81	0.07	17.14	0.002	0.07
100	11/18/81	0.05	10.48	0.002	0.05
101	11/19/81	0.26	161.0	0.005	0.26
102	11/23/81	0.18	63.94	0.003	0.18
103	11/25/81	0.89	7125	0.061	0.84
104	11/30/81	0.37	396.0	0.008	0.37
105	12/03/81	-	-	-	-
106	12/14/81	-	-	-	-
107	12/20/81	-	-	-	-
108	12/26/81	-	-	-	-
109	12/31/81	-	-	-	-
Minimum:		0.00	0	0.000	0.01
Maximum:		2.59	114005	0.334	1.72
Average:		0.26	4344	0.026	0.23
Total:		28.81	473485		25.23

25.2 inches of stayon attained on the site in proposed conditions. This exceeds 24.4 inches required in developed conditions

Note: DNR conservation practice standard 1003 states that ponding depth must infiltrate within the maximum allowable draw down period of 24 hours. From the DNR's technical note for sizing infiltration basins, drawdown time is calculated as a function of depression zone vs. infiltration rate.

Depth/kd = Drawdown Time

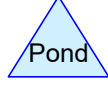
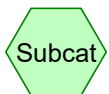
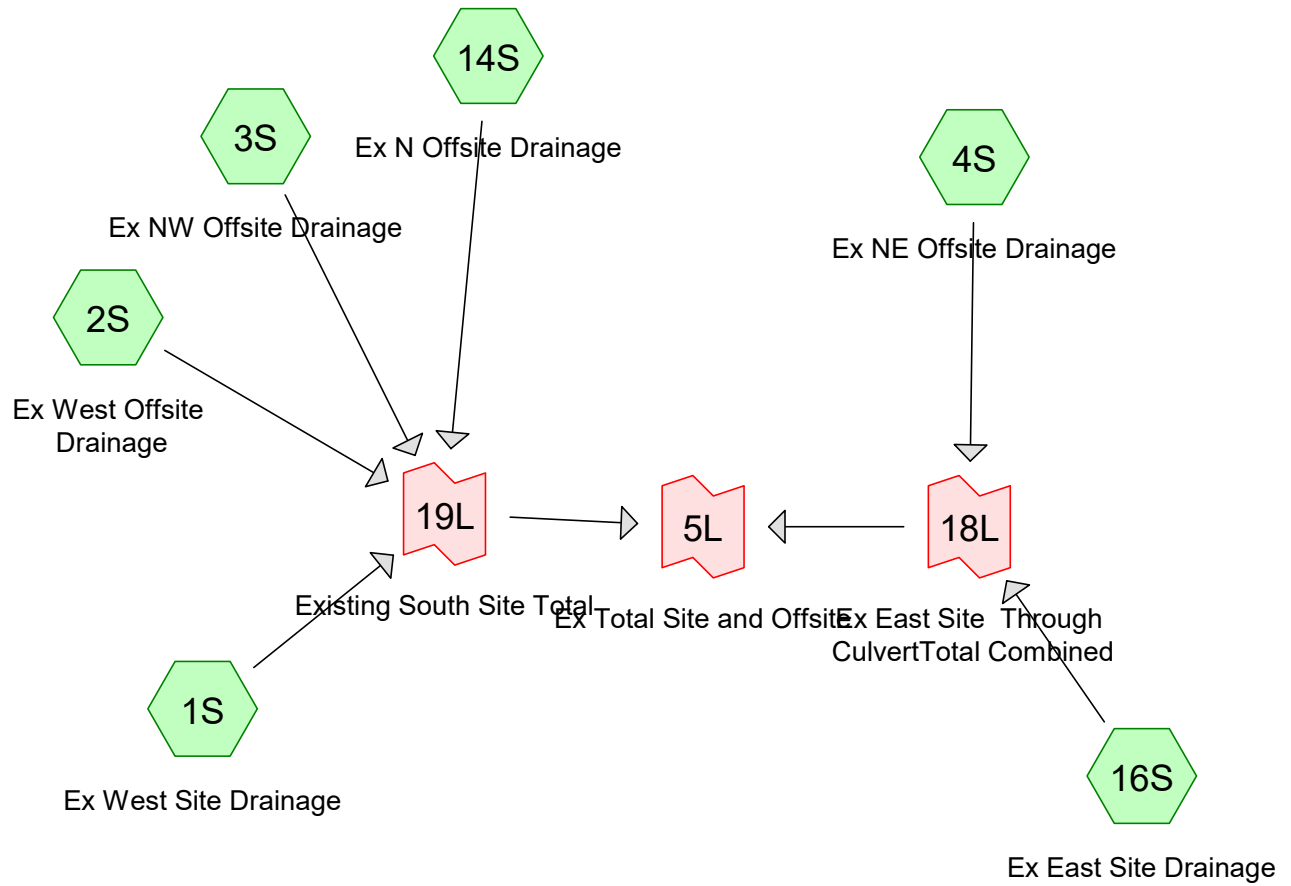
12" is maximum depression zone, and 0.5in/hr is the minimum infiltration rate within the infiltration basin.

12" depression zone/0.50 in/hr = 24 hours is the maximum drawdown after rainfall event.

APPENDIX D

HYDROCAD OUTPUT

Existing Hydrocad



Routing Diagram for 1904113 SWMP
 Prepared by HP Inc., Printed 8/24/2020
 HydroCAD® 10.10-4a s/n 02063 © 2020 HydroCAD Software Solutions LLC

1904113 SWMP

Prepared by HP Inc.

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Printed 8/24/2020

Page 2

Summary for Subcatchment 1S: Ex West Site Drainage

Runoff = 1.12 cfs @ 12.65 hrs, Volume= 0.292 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 21.400	58	Type B Soils
* 1.900	71	Type C Soils
23.300	59	Weighted Average
23.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
9.4	1,000	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.1	300	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
24.9	1,600	Total			

Summary for Subcatchment 2S: Ex West Offsite Drainage

Runoff = 0.40 cfs @ 12.62 hrs, Volume= 0.111 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Summary for Subcatchment 3S: Ex NW Offsite Drainage

Runoff = 1.34 cfs @ 12.85 hrs, Volume= 0.432 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 4S: Ex NE Offsite Drainage

Runoff = 0.86 cfs @ 12.31 hrs, Volume= 0.122 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Summary for Subcatchment 14S: Ex N Offsite Drainage

Runoff = 0.59 cfs @ 12.40 hrs, Volume= 0.078 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 16S: Ex East Site Drainage

Runoff = 0.84 cfs @ 12.54 hrs, Volume= 0.185 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 11.400	58	Type B Soils
* 1.600	71	Type C Soils
13.000	60	Weighted Average
13.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	300	0.0733	0.38		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
6.6	700	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
0.7	200	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.6	1,200	Total			

Summary for Link 5L: Ex Total Site and Offsite

Inflow Area = 95.100 ac, 0.00% Impervious, Inflow Depth = 0.15" for 1yr 24hr event
Inflow = 4.35 cfs @ 12.63 hrs, Volume= 1.221 af
Primary = 4.35 cfs @ 12.63 hrs, Volume= 1.221 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 18L: Ex East Site Through CulvertTotal Combined

Inflow Area = 19.100 ac, 0.00% Impervious, Inflow Depth = 0.19" for 1yr 24hr event
Inflow = 1.53 cfs @ 12.45 hrs, Volume= 0.308 af
Primary = 1.53 cfs @ 12.45 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 19L: Existing South Site Total

Inflow Area = 76.000 ac, 0.00% Impervious, Inflow Depth = 0.14" for 1yr 24hr event
Inflow = 3.09 cfs @ 12.71 hrs, Volume= 0.914 af
Primary = 3.09 cfs @ 12.71 hrs, Volume= 0.914 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

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MSE 24-hr 4 2yr 24hr Rainfall=2.84"

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Summary for Subcatchment 1S: Ex West Site Drainage

Runoff = 2.56 cfs @ 12.53 hrs, Volume= 0.486 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 21.400	58	Type B Soils
* 1.900	71	Type C Soils
23.300	59	Weighted Average
23.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
9.4	1,000	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.1	300	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
24.9	1,600	Total			

Summary for Subcatchment 2S: Ex West Offsite Drainage

Runoff = 0.97 cfs @ 12.49 hrs, Volume= 0.191 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

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MSE 24-hr 4 2yr 24hr Rainfall=2.84"

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Summary for Subcatchment 3S: Ex NW Offsite Drainage

Runoff = 3.20 cfs @ 12.70 hrs, Volume= 0.740 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 4S: Ex NE Offsite Drainage

Runoff = 1.72 cfs @ 12.28 hrs, Volume= 0.187 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

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MSE 24-hr 4 2yr 24hr Rainfall=2.84"

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Summary for Subcatchment 14S: Ex N Offsite Drainage

Runoff = 1.00 cfs @ 12.37 hrs, Volume= 0.114 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 16S: Ex East Site Drainage

Runoff = 1.85 cfs @ 12.43 hrs, Volume= 0.301 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 11.400	58	Type B Soils
* 1.600	71	Type C Soils
13.000	60	Weighted Average
13.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	300	0.0733	0.38		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
6.6	700	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
0.7	200	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.6	1,200	Total			

Summary for Link 5L: Ex Total Site and Offsite

Inflow Area = 95.100 ac, 0.00% Impervious, Inflow Depth = 0.25" for 2yr 24hr event
Inflow = 9.71 cfs @ 12.54 hrs, Volume= 2.019 af
Primary = 9.71 cfs @ 12.54 hrs, Volume= 2.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 18L: Ex East Site Through CulvertTotal Combined

Inflow Area = 19.100 ac, 0.00% Impervious, Inflow Depth = 0.31" for 2yr 24hr event
Inflow = 3.22 cfs @ 12.37 hrs, Volume= 0.488 af
Primary = 3.22 cfs @ 12.37 hrs, Volume= 0.488 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 19L: Existing South Site Total

Inflow Area = 76.000 ac, 0.00% Impervious, Inflow Depth = 0.24" for 2yr 24hr event
Inflow = 7.09 cfs @ 12.60 hrs, Volume= 1.531 af
Primary = 7.09 cfs @ 12.60 hrs, Volume= 1.531 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

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MSE 24-hr 4 10yr 24hr Rainfall=4.09"

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Summary for Subcatchment 1S: Ex West Site Drainage

Runoff = 12.44 cfs @ 12.42 hrs, Volume= 1.467 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 21.400	58	Type B Soils
* 1.900	71	Type C Soils
23.300	59	Weighted Average
23.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
9.4	1,000	0.0140	1.77		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.1	300	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
24.9	1,600	Total			

Summary for Subcatchment 2S: Ex West Offsite Drainage

Runoff = 5.42 cfs @ 12.36 hrs, Volume= 0.600 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 3S: Ex NW Offsite Drainage

Runoff = 16.34 cfs @ 12.56 hrs, Volume= 2.330 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 4S: Ex NE Offsite Drainage

Runoff = 6.22 cfs @ 12.24 hrs, Volume= 0.492 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

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MSE 24-hr 4 10yr 24hr Rainfall=4.09"

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Summary for Subcatchment 14S: Ex N Offsite Drainage

Runoff = 2.96 cfs @ 12.34 hrs, Volume= 0.276 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 16S: Ex East Site Drainage

Runoff = 8.43 cfs @ 12.35 hrs, Volume= 0.874 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 11.400	58	Type B Soils
* 1.600	71	Type C Soils
13.000	60	Weighted Average
13.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	300	0.0733	0.38		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
6.6	700	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
0.7	200	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.6	1,200	Total			

Summary for Link 5L: Ex Total Site and Offsite

Inflow Area = 95.100 ac, 0.00% Impervious, Inflow Depth = 0.76" for 10yr 24hr event
Inflow = 45.73 cfs @ 12.42 hrs, Volume= 6.038 af
Primary = 45.73 cfs @ 12.42 hrs, Volume= 6.038 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 18L: Ex East Site Through CulvertTotal Combined

Inflow Area = 19.100 ac, 0.00% Impervious, Inflow Depth = 0.86" for 10yr 24hr event
Inflow = 13.70 cfs @ 12.30 hrs, Volume= 1.365 af
Primary = 13.70 cfs @ 12.30 hrs, Volume= 1.365 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 19L: Existing South Site Total

Inflow Area = 76.000 ac, 0.00% Impervious, Inflow Depth = 0.74" for 10yr 24hr event
Inflow = 34.57 cfs @ 12.46 hrs, Volume= 4.673 af
Primary = 34.57 cfs @ 12.46 hrs, Volume= 4.673 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Subcatchment 1S: Ex West Site Drainage

Runoff = 22.79 cfs @ 12.40 hrs, Volume= 2.408 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 21.400	58	Type B Soils
* 1.900	71	Type C Soils
23.300	59	Weighted Average
23.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
9.4	1,000	0.0140	1.77		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.1	300	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
24.9	1,600	Total			

Summary for Subcatchment 2S: Ex West Offsite Drainage

Runoff = 10.27 cfs @ 12.34 hrs, Volume= 0.998 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 3S: Ex NW Offsite Drainage

Runoff = 30.61 cfs @ 12.53 hrs, Volume= 3.875 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 4S: Ex NE Offsite Drainage

Runoff = 10.39 cfs @ 12.23 hrs, Volume= 0.770 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

Summary for Subcatchment 14S: Ex N Offsite Drainage

Runoff = 4.70 cfs @ 12.33 hrs, Volume= 0.419 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 16S: Ex East Site Drainage

Runoff = 15.08 cfs @ 12.33 hrs, Volume= 1.416 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 11.400	58	Type B Soils
* 1.600	71	Type C Soils
13.000	60	Weighted Average
13.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	300	0.0733	0.38		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
6.6	700	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
0.7	200	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.6	1,200	Total			

Summary for Link 5L: Ex Total Site and Offsite

Inflow Area = 95.100 ac, 0.00% Impervious, Inflow Depth = 1.25" for 25yr 24hr event
Inflow = 83.98 cfs @ 12.40 hrs, Volume= 9.886 af
Primary = 83.98 cfs @ 12.40 hrs, Volume= 9.886 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 18L: Ex East Site Through CulvertTotal Combined

Inflow Area = 19.100 ac, 0.00% Impervious, Inflow Depth = 1.37" for 25yr 24hr event
Inflow = 24.07 cfs @ 12.29 hrs, Volume= 2.186 af
Primary = 24.07 cfs @ 12.29 hrs, Volume= 2.186 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 19L: Existing South Site Total

Inflow Area = 76.000 ac, 0.00% Impervious, Inflow Depth = 1.22" for 25yr 24hr event
Inflow = 64.14 cfs @ 12.43 hrs, Volume= 7.700 af
Primary = 64.14 cfs @ 12.43 hrs, Volume= 7.700 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

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MSE 24-hr 4 100yr 24hr Rainfall=6.66"

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Summary for Subcatchment 1S: Ex West Site Drainage

Runoff = 45.16 cfs @ 12.38 hrs, Volume= 4.413 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 21.400	58	Type B Soils
* 1.900	71	Type C Soils
23.300	59	Weighted Average
23.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
9.4	1,000	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.1	300	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
24.9	1,600	Total			

Summary for Subcatchment 2S: Ex West Offsite Drainage

Runoff = 20.81 cfs @ 12.32 hrs, Volume= 1.854 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

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MSE 24-hr 4 100yr 24hr Rainfall=6.66"

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Summary for Subcatchment 3S: Ex NW Offsite Drainage

Runoff = 61.96 cfs @ 12.50 hrs, Volume= 7.198 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 4S: Ex NE Offsite Drainage

Runoff = 18.89 cfs @ 12.23 hrs, Volume= 1.347 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

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MSE 24-hr 4 100yr 24hr Rainfall=6.66"

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Summary for Subcatchment 14S: Ex N Offsite Drainage

Runoff = 8.21 cfs @ 12.32 hrs, Volume= 0.710 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 16S: Ex East Site Drainage

Runoff = 29.14 cfs @ 12.32 hrs, Volume= 2.563 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 11.400	58	Type B Soils
* 1.600	71	Type C Soils
13.000	60	Weighted Average
13.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	300	0.0733	0.38		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
6.6	700	0.0140	1.77		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
0.7	200	0.0100	4.71	94.24	Channel Flow, Channel
					Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.6	1,200	Total			

Summary for Link 5L: Ex Total Site and Offsite

Inflow Area = 95.100 ac, 0.00% Impervious, Inflow Depth = 2.28" for 100yr 24hr event
Inflow = 166.65 cfs @ 12.38 hrs, Volume= 18.085 af
Primary = 166.65 cfs @ 12.38 hrs, Volume= 18.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 18L: Ex East Site Through CulvertTotal Combined

Inflow Area = 19.100 ac, 0.00% Impervious, Inflow Depth = 2.46" for 100yr 24hr event
Inflow = 45.72 cfs @ 12.28 hrs, Volume= 3.910 af
Primary = 45.72 cfs @ 12.28 hrs, Volume= 3.910 af, Atten= 0%, Lag= 0.0 min

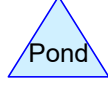
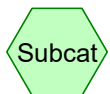
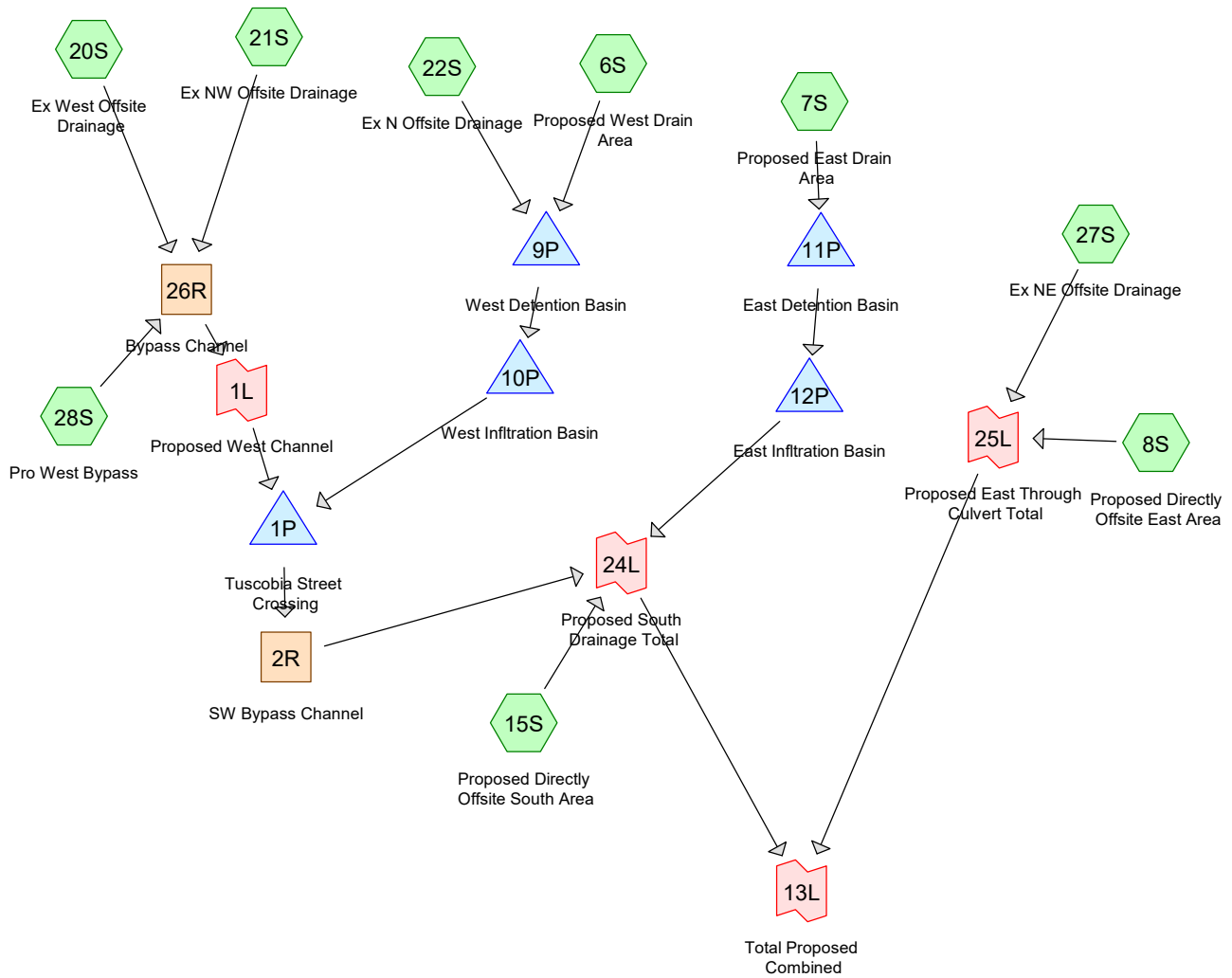
Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 19L: Existing South Site Total

Inflow Area = 76.000 ac, 0.00% Impervious, Inflow Depth = 2.24" for 100yr 24hr event
Inflow = 128.47 cfs @ 12.41 hrs, Volume= 14.176 af
Primary = 128.47 cfs @ 12.41 hrs, Volume= 14.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Proposed Hydrocad



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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Summary for Subcatchment 6S: Proposed West Drain Area

Runoff = 13.63 cfs @ 12.14 hrs, Volume= 0.722 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 6.000	87	60% Impervious Residential
* 1.200	74	10% Impervious OL Area
* 0.200	98	Wet Basin
7.400	85	Weighted Average
7.200		97.30% Pervious Area
0.200		2.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow
					Paved Kv= 20.3 fps
0.9	550	0.0180	9.66	30.35	Pipe Channel, Pipe
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.013
6.5	750	Total			

Summary for Subcatchment 7S: Proposed East Drain Area

Runoff = 33.13 cfs @ 12.18 hrs, Volume= 2.030 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 12.900	87	60% Impervious Residential
* 3.600	90	70% Impervious Residential
* 1.500	74	10% Impervious OL
* 0.700	98	Wet Basin
18.700	87	Weighted Average
18.000		96.26% Pervious Area
0.700		3.74% Impervious Area

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.0800	0.34		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
2.3	1,200	0.0150	8.82	27.71	Pipe Channel, Pipe 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
10.0	1,450	Total			

Summary for Subcatchment 8S: Proposed Directly Offsite East Area

Runoff = 0.29 cfs @ 12.49 hrs, Volume= 0.050 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 2.400	62	10% Impervious Lightly Disturbed/Restored
* 0.100	90	70% Imp ROW area
2.500	63	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	200	0.0100	0.16		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.3	400	0.0200	2.87		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
23.6	600	Total			

Summary for Subcatchment 15S: Proposed Directly Offsite South Area

Runoff = 0.66 cfs @ 12.64 hrs, Volume= 0.132 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 6.200	62	10% Impervious Lightly Disturbed/Restored
* 0.200	82	40% Imp yard area
* 0.200	90	70% Imp ROW area
6.600	63	Weighted Average
6.600		100.00% Pervious Area

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0100	0.17		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
3.3	400	0.0100	2.03		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
32.8	700	Total			

Summary for Subcatchment 20S: Ex West Offsite Drainage

Runoff = 0.40 cfs @ 12.62 hrs, Volume= 0.111 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 21S: Ex NW Offsite Drainage

Runoff = 1.34 cfs @ 12.85 hrs, Volume= 0.432 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 22S: Ex N Offsite Drainage

Runoff = 0.59 cfs @ 12.40 hrs, Volume= 0.078 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 27S: Ex NE Offsite Drainage

Runoff = 0.86 cfs @ 12.31 hrs, Volume= 0.122 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

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MSE 24-hr 4 1yr 24hr Rainfall=2.49"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

Summary for Subcatchment 28S: Pro West Bypass

Runoff = 1.00 cfs @ 12.14 hrs, Volume= 0.055 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

Area (ac)	CN	Description
* 1.100	74	OL Area 10% Imp
1.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Reach 2R: SW Bypass ChannelInflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth = 0.21" for 1yr 24hr event
Inflow = 1.77 cfs @ 12.97 hrs, Volume= 1.063 af
Outflow = 1.76 cfs @ 13.04 hrs, Volume= 1.063 af, Atten= 1%, Lag= 4.3 minRouting by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
Max. Velocity= 0.96 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 10.9 min

Peak Storage= 562 cf @ 13.04 hrs

Average Depth at Peak Storage= 0.17', Surface Width= 11.38'

Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.48 cfs

10.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 4.0 '/' Top Width= 26.00'

Length= 305.0' Slope= 0.0075 '/'

Inlet Invert= 864.00', Outlet Invert= 861.70'



Summary for Reach 26R: Bypass Channel

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 0.14" for 1yr 24hr event
 Inflow = 1.82 cfs @ 12.81 hrs, Volume= 0.599 af
 Outflow = 1.77 cfs @ 12.95 hrs, Volume= 0.599 af, Atten= 3%, Lag= 8.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Max. Velocity= 0.96 fps, Min. Travel Time= 9.2 min
 Avg. Velocity= 0.49 fps, Avg. Travel Time= 18.1 min

Peak Storage= 980 cf @ 12.95 hrs
 Average Depth at Peak Storage= 0.17' , Surface Width= 11.38'
 Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.54 cfs

10.00' x 2.00' deep channel, n= 0.040
 Side Slope Z-value= 4.0 ' / ' Top Width= 26.00'
 Length= 530.0' Slope= 0.0075 ' / '
 Inlet Invert= 869.00', Outlet Invert= 865.00'

**Summary for Pond 1P: Tuscobia Street Crossing**

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth = 0.21" for 1yr 24hr event
 Inflow = 1.77 cfs @ 12.95 hrs, Volume= 1.063 af
 Outflow = 1.77 cfs @ 12.97 hrs, Volume= 1.063 af, Atten= 0%, Lag= 1.1 min
 Primary = 1.77 cfs @ 12.97 hrs, Volume= 1.063 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 865.26' @ 12.97 hrs Surf.Area= 789 sf Storage= 129 cf

Plug-Flow detention time= 1.7 min calculated for 1.063 af (100% of inflow)
 Center-of-Mass det. time= 1.7 min (1,233.1 - 1,231.5)

Volume	Invert	Avail.Storage	Storage Description
#1	865.00'	51,515 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
865.00	194	0	0
866.00	2,455	1,325	1,325
867.00	5,342	3,899	5,223
868.00	9,972	7,657	12,880
869.00	15,610	12,791	25,671
870.00	36,077	25,844	51,515

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Device	Routing	Invert	Outlet Devices
#1	Primary	865.00'	38.0" W x 24.0" H, R=31.2" Elliptical RCP_Elliptical 38x24 X 3.00 L= 135.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 865.00' / 864.00' S= 0.0074 '/' Cc= 0.900 n= 0.013, Flow Area= 5.10 sf
#2	Primary	869.55'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 25.00 50.00 75.00 100.00 125.00 168.00 Elev. (feet) 870.14 869.96 869.75 869.55 869.56 869.69 870.14

Primary OutFlow Max=1.77 cfs @ 12.97 hrs HW=865.26' TW=864.17' (Dynamic Tailwater)

1=RCP_Elliptical 38x24 (Inlet Controls 1.77 cfs @ 1.46 fps)

2=Asymmetrical Weir (Controls 0.00 cfs)

Summary for Pond 9P: West Detention Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth = 0.93" for 1yr 24hr event
 Inflow = 13.72 cfs @ 12.14 hrs, Volume= 0.800 af
 Outflow = 0.44 cfs @ 15.14 hrs, Volume= 0.756 af, Atten= 97%, Lag= 180.2 min
 Primary = 0.44 cfs @ 15.14 hrs, Volume= 0.756 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Peak Elev= 868.26' @ 15.14 hrs Surf.Area= 20,686 sf Storage= 22,708 cf

Plug-Flow detention time= 669.3 min calculated for 0.756 af (94% of inflow)

Center-of-Mass det. time= 642.1 min (1,473.4 - 831.3)

Volume	Invert	Avail.Storage	Storage Description
#1	867.00'	95,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
867.00	15,467	0	0
868.00	19,599	17,533	17,533
869.00	23,831	21,715	39,248
870.00	28,163	25,997	65,245
871.00	32,596	30,380	95,625

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	18.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 866.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	867.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	869.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	869.75'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.44 cfs @ 15.14 hrs HW=868.26' TW=866.96' (Dynamic Tailwater)

- 1=Culvert (Passes 0.44 cfs of 7.94 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.44 cfs @ 5.03 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 10P: West Infiltration Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth > 0.88" for 1yr 24hr event
 Inflow = 0.44 cfs @ 15.14 hrs, Volume= 0.756 af
 Outflow = 0.41 cfs @ 18.56 hrs, Volume= 0.661 af, Atten= 8%, Lag= 205.4 min
 Discarded = 0.07 cfs @ 18.56 hrs, Volume= 0.197 af
 Primary = 0.34 cfs @ 18.56 hrs, Volume= 0.464 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 867.27' @ 18.56 hrs Surf.Area= 5,085 sf Storage= 5,517 cf

Plug-Flow detention time= 288.3 min calculated for 0.661 af (87% of inflow)
 Center-of-Mass det. time= 155.9 min (1,629.3 - 1,473.4)

Volume	Invert	Avail.Storage	Storage Description
#1	866.00'	34,052 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
866.00	3,624	0	0
867.00	4,745	4,185	4,185
868.00	6,000	5,373	9,557
869.00	7,386	6,693	16,250
870.00	8,876	8,131	24,381
871.00	10,466	9,671	34,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	866.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 860.00'
#2	Primary	867.00'	15.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 867.00' / 866.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Primary	870.00'	5.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.07 cfs @ 18.56 hrs HW=867.27' (Free Discharge)

- 1=Exfiltration (Controls 0.07 cfs)

Primary OutFlow Max=0.34 cfs @ 18.56 hrs HW=867.27' TW=865.18' (Dynamic Tailwater)

- 2=Culvert (Barrel Controls 0.34 cfs @ 2.59 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 11P: East Detention Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth = 1.30" for 1yr 24hr event
 Inflow = 33.13 cfs @ 12.18 hrs, Volume= 2.030 af
 Outflow = 1.85 cfs @ 13.66 hrs, Volume= 1.953 af, Atten= 94%, Lag= 89.0 min
 Primary = 1.85 cfs @ 13.66 hrs, Volume= 1.953 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 863.55' @ 13.66 hrs Surf.Area= 38,370 sf Storage= 53,718 cf

Plug-Flow detention time= 447.3 min calculated for 1.953 af (96% of inflow)
 Center-of-Mass det. time= 427.0 min (1,246.9 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	162,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
862.00	30,928	0	0
863.00	35,693	33,311	33,311
864.00	40,550	38,122	71,432
865.00	45,509	43,030	114,462
866.00	50,568	48,039	162,500

Device	Routing	Invert	Outlet Devices
#1	Primary	861.00'	24.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.00' / 861.00' S= 0.0000 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	862.00'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	864.75'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.85 cfs @ 13.66 hrs HW=863.55' TW=861.97' (Dynamic Tailwater)

1=Culvert (Passes 1.85 cfs of 13.93 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.85 cfs @ 5.31 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 12P: East Infiltration Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth > 1.25" for 1yr 24hr event
 Inflow = 1.85 cfs @ 13.66 hrs, Volume= 1.953 af
 Outflow = 1.56 cfs @ 16.50 hrs, Volume= 1.778 af, Atten= 16%, Lag= 170.3 min
 Discarded = 0.16 cfs @ 16.50 hrs, Volume= 0.447 af
 Primary = 1.39 cfs @ 16.50 hrs, Volume= 1.331 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

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Peak Elev= 862.54' @ 16.50 hrs Surf.Area= 11,691 sf Storage= 15,484 cf

Plug-Flow detention time= 254.6 min calculated for 1.777 af (91% of inflow)

Center-of-Mass det. time= 161.8 min (1,408.7 - 1,246.9)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	69,661 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.00	8,400	0	0
862.00	10,501	9,451	9,451
863.00	12,689	11,595	21,046
864.00	14,977	13,833	34,879
865.00	17,366	16,172	51,050
866.00	19,855	18,611	69,661

Device	Routing	Invert	Outlet Devices
#1	Discarded	861.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 855.00'
#2	Primary	862.00'	18.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 862.00' / 861.50' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Primary	865.00'	4.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.16 cfs @ 16.50 hrs HW=862.54' (Free Discharge)↑ **1=Exfiltration** (Controls 0.16 cfs)**Primary OutFlow** Max=1.39 cfs @ 16.50 hrs HW=862.54' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Barrel Controls 1.39 cfs @ 3.58 fps)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link 1L: Proposed West Channel**

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 0.14" for 1yr 24hr event
 Inflow = 1.77 cfs @ 12.95 hrs, Volume= 0.599 af
 Primary = 1.77 cfs @ 12.95 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 13L: Total Proposed Combined

Inflow Area = 95.100 ac, 0.95% Impervious, Inflow Depth = 0.34" for 1yr 24hr event
 Inflow = 2.78 cfs @ 12.91 hrs, Volume= 2.699 af
 Primary = 2.78 cfs @ 12.91 hrs, Volume= 2.699 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 24L: Proposed South Drainage Total

Inflow Area = 86.500 ac, 1.04% Impervious, Inflow Depth = 0.35" for 1yr 24hr event
Inflow = 2.29 cfs @ 17.08 hrs, Volume= 2.526 af
Primary = 2.29 cfs @ 17.08 hrs, Volume= 2.526 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 25L: Proposed East Through Culvert Total

Inflow Area = 8.600 ac, 0.00% Impervious, Inflow Depth = 0.24" for 1yr 24hr event
Inflow = 1.07 cfs @ 12.35 hrs, Volume= 0.173 af
Primary = 1.07 cfs @ 12.35 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

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Summary for Subcatchment 6S: Proposed West Drain Area

Runoff = 16.92 cfs @ 12.14 hrs, Volume= 0.897 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 6.000	87	60% Impervious Residential
* 1.200	74	10% Impervious OL Area
* 0.200	98	Wet Basin
7.400	85	Weighted Average
7.200		97.30% Pervious Area
0.200		2.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow
					Paved Kv= 20.3 fps
0.9	550	0.0180	9.66	30.35	Pipe Channel, Pipe
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.013
6.5	750	Total			

Summary for Subcatchment 7S: Proposed East Drain Area

Runoff = 40.59 cfs @ 12.18 hrs, Volume= 2.494 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 12.900	87	60% Impervious Residential
* 3.600	90	70% Impervious Residential
* 1.500	74	10% Impervious OL
* 0.700	98	Wet Basin
18.700	87	Weighted Average
18.000		96.26% Pervious Area
0.700		3.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.0800	0.34		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
2.3	1,200	0.0150	8.82	27.71	Pipe Channel, Pipe 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
10.0	1,450	Total			

Summary for Subcatchment 8S: Proposed Directly Offsite East Area

Runoff = 0.55 cfs @ 12.44 hrs, Volume= 0.077 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 2.400	62	10% Impervious Lightly Disturbed/Restored
* 0.100	90	70% Imp ROW area
2.500	63	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	200	0.0100	0.16		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.3	400	0.0200	2.87		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
23.6	600	Total			

Summary for Subcatchment 15S: Proposed Directly Offsite South Area

Runoff = 1.22 cfs @ 12.59 hrs, Volume= 0.202 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 6.200	62	10% Impervious Lightly Disturbed/Restored
* 0.200	82	40% Imp yard area
* 0.200	90	70% Imp ROW area
6.600	63	Weighted Average
6.600		100.00% Pervious Area

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MSE 24-hr 4 2yr 24hr Rainfall=2.84"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0100	0.17		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
3.3	400	0.0100	2.03		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
32.8	700	Total			

Summary for Subcatchment 20S: Ex West Offsite Drainage

Runoff = 0.97 cfs @ 12.49 hrs, Volume= 0.191 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 21S: Ex NW Offsite Drainage

Runoff = 3.20 cfs @ 12.70 hrs, Volume= 0.740 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

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MSE 24-hr 4 2yr 24hr Rainfall=2.84"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 22S: Ex N Offsite Drainage

Runoff = 1.00 cfs @ 12.37 hrs, Volume= 0.114 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 27S: Ex NE Offsite Drainage

Runoff = 1.72 cfs @ 12.28 hrs, Volume= 0.187 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

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MSE 24-hr 4 2yr 24hr Rainfall=2.84"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

Summary for Subcatchment 28S: Pro West Bypass

Runoff = 1.38 cfs @ 12.14 hrs, Volume= 0.074 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

Area (ac)	CN	Description
* 1.100	74	OL Area 10% Imp
1.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Reach 2R: SW Bypass Channel

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 0.32" for 2yr 24hr event
Inflow = 4.10 cfs @ 12.76 hrs, Volume= 1.650 af
Outflow = 4.07 cfs @ 12.81 hrs, Volume= 1.650 af, Atten= 1%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
Max. Velocity= 1.30 fps, Min. Travel Time= 3.9 min
Avg. Velocity= 0.54 fps, Avg. Travel Time= 9.5 min

Peak Storage= 958 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.28', Surface Width= 12.26'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.48 cfs

10.00' x 2.00' deep channel, n= 0.040
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 305.0' Slope= 0.0075 '/'
Inlet Invert= 864.00', Outlet Invert= 861.70'



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Summary for Reach 26R: Bypass Channel

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 0.24" for 2yr 24hr event
 Inflow = 4.22 cfs @ 12.66 hrs, Volume= 1.005 af
 Outflow = 4.11 cfs @ 12.74 hrs, Volume= 1.005 af, Atten= 3%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Max. Velocity= 1.30 fps, Min. Travel Time= 6.8 min
 Avg. Velocity= 0.56 fps, Avg. Travel Time= 15.7 min

Peak Storage= 1,673 cf @ 12.74 hrs
 Average Depth at Peak Storage= 0.28' , Surface Width= 12.27'
 Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.54 cfs

10.00' x 2.00' deep channel, n= 0.040
 Side Slope Z-value= 4.0 ' / ' Top Width= 26.00'
 Length= 530.0' Slope= 0.0075 ' / '
 Inlet Invert= 869.00', Outlet Invert= 865.00'

**Summary for Pond 1P: Tuscobia Street Crossing**

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 0.32" for 2yr 24hr event
 Inflow = 4.11 cfs @ 12.74 hrs, Volume= 1.651 af
 Outflow = 4.10 cfs @ 12.76 hrs, Volume= 1.650 af, Atten= 0%, Lag= 1.0 min
 Primary = 4.10 cfs @ 12.76 hrs, Volume= 1.650 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 865.40' @ 12.76 hrs Surf.Area= 1,105 sf Storage= 262 cf

Plug-Flow detention time= 1.5 min calculated for 1.650 af (100% of inflow)
 Center-of-Mass det. time= 1.3 min (1,216.8 - 1,215.4)

Volume	Invert	Avail.Storage	Storage Description
#1	865.00'	51,515 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
865.00	194	0	0
866.00	2,455	1,325	1,325
867.00	5,342	3,899	5,223
868.00	9,972	7,657	12,880
869.00	15,610	12,791	25,671
870.00	36,077	25,844	51,515

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Device	Routing	Invert	Outlet Devices
#1	Primary	865.00'	38.0" W x 24.0" H, R=31.2" Elliptical RCP_Elliptical 38x24 X 3.00 L= 135.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 865.00' / 864.00' S= 0.0074 '/' Cc= 0.900 n= 0.013, Flow Area= 5.10 sf
#2	Primary	869.55'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 25.00 50.00 75.00 100.00 125.00 168.00 Elev. (feet) 870.14 869.96 869.75 869.55 869.56 869.69 870.14

Primary OutFlow Max=4.10 cfs @ 12.76 hrs HW=865.40' TW=864.28' (Dynamic Tailwater)

1=RCP_Elliptical 38x24 (Inlet Controls 4.10 cfs @ 1.82 fps)

2=Asymmetrical Weir (Controls 0.00 cfs)

Summary for Pond 9P: West Detention Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth = 1.18" for 2yr 24hr event
 Inflow = 17.15 cfs @ 12.14 hrs, Volume= 1.011 af
 Outflow = 0.50 cfs @ 15.21 hrs, Volume= 0.950 af, Atten= 97%, Lag= 184.5 min
 Primary = 0.50 cfs @ 15.21 hrs, Volume= 0.950 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Peak Elev= 868.58' @ 15.21 hrs Surf.Area= 22,045 sf Storage= 29,569 cf

Plug-Flow detention time= 742.3 min calculated for 0.950 af (94% of inflow)

Center-of-Mass det. time= 711.9 min (1,538.3 - 826.4)

Volume	Invert	Avail.Storage	Storage Description
#1	867.00'	95,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
867.00	15,467	0	0
868.00	19,599	17,533	17,533
869.00	23,831	21,715	39,248
870.00	28,163	25,997	65,245
871.00	32,596	30,380	95,625

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	18.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 866.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	867.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	869.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	869.75'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.50 cfs @ 15.21 hrs HW=868.58' TW=867.12' (Dynamic Tailwater)

- 1=Culvert (Passes 0.50 cfs of 9.48 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.50 cfs @ 5.72 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 10P: West Infiltration Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth > 1.11" for 2yr 24hr event
 Inflow = 0.50 cfs @ 15.21 hrs, Volume= 0.950 af
 Outflow = 0.47 cfs @ 18.20 hrs, Volume= 0.847 af, Atten= 6%, Lag= 179.1 min
 Discarded = 0.07 cfs @ 18.20 hrs, Volume= 0.201 af
 Primary = 0.40 cfs @ 18.20 hrs, Volume= 0.645 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 867.30' @ 18.20 hrs Surf.Area= 5,117 sf Storage= 5,645 cf

Plug-Flow detention time= 250.6 min calculated for 0.846 af (89% of inflow)
 Center-of-Mass det. time= 129.0 min (1,667.3 - 1,538.3)

Volume	Invert	Avail.Storage	Storage Description
#1	866.00'	34,052 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
866.00	3,624	0	0
867.00	4,745	4,185	4,185
868.00	6,000	5,373	9,557
869.00	7,386	6,693	16,250
870.00	8,876	8,131	24,381
871.00	10,466	9,671	34,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	866.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 860.00'
#2	Primary	867.00'	15.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 867.00' / 866.50' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Primary	870.00'	5.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.07 cfs @ 18.20 hrs HW=867.30' (Free Discharge)

- 1=Exfiltration (Controls 0.07 cfs)

Primary OutFlow Max=0.40 cfs @ 18.20 hrs HW=867.30' TW=865.21' (Dynamic Tailwater)

- 2=Culvert (Barrel Controls 0.40 cfs @ 2.71 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 11P: East Detention Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth = 1.60" for 2yr 24hr event
 Inflow = 40.59 cfs @ 12.18 hrs, Volume= 2.494 af
 Outflow = 2.11 cfs @ 13.68 hrs, Volume= 2.409 af, Atten= 95%, Lag= 90.3 min
 Primary = 2.11 cfs @ 13.68 hrs, Volume= 2.409 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 863.90' @ 13.68 hrs Surf.Area= 40,085 sf Storage= 67,574 cf

Plug-Flow detention time= 476.8 min calculated for 2.407 af (97% of inflow)
 Center-of-Mass det. time= 459.0 min (1,274.0 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	162,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
862.00	30,928	0	0
863.00	35,693	33,311	33,311
864.00	40,550	38,122	71,432
865.00	45,509	43,030	114,462
866.00	50,568	48,039	162,500

Device	Routing	Invert	Outlet Devices
#1	Primary	861.00'	24.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.00' / 861.00' S= 0.0000 ' / Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	862.00'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	864.75'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.11 cfs @ 13.68 hrs HW=863.90' TW=862.15' (Dynamic Tailwater)

1=Culvert (Passes 2.11 cfs of 16.45 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 2.11 cfs @ 6.03 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 12P: East Infiltration Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth > 1.55" for 2yr 24hr event
 Inflow = 2.11 cfs @ 13.68 hrs, Volume= 2.409 af
 Outflow = 1.82 cfs @ 16.32 hrs, Volume= 2.216 af, Atten= 14%, Lag= 158.3 min
 Discarded = 0.17 cfs @ 16.32 hrs, Volume= 0.458 af
 Primary = 1.65 cfs @ 16.32 hrs, Volume= 1.759 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

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Peak Elev= 862.60' @ 16.32 hrs Surf.Area= 11,811 sf Storage= 16,128 cf

Plug-Flow detention time= 219.2 min calculated for 2.215 af (92% of inflow)

Center-of-Mass det. time= 135.0 min (1,409.0 - 1,274.0)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	69,661 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.00	8,400	0	0
862.00	10,501	9,451	9,451
863.00	12,689	11,595	21,046
864.00	14,977	13,833	34,879
865.00	17,366	16,172	51,050
866.00	19,855	18,611	69,661

Device	Routing	Invert	Outlet Devices
#1	Discarded	861.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 855.00'
#2	Primary	862.00'	18.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 862.00' / 861.50' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Primary	865.00'	4.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.17 cfs @ 16.32 hrs HW=862.60' (Free Discharge)↑ **1=Exfiltration** (Controls 0.17 cfs)**Primary OutFlow** Max=1.65 cfs @ 16.32 hrs HW=862.60' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Barrel Controls 1.65 cfs @ 3.72 fps)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link 1L: Proposed West Channel**

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 0.24" for 2yr 24hr event
 Inflow = 4.11 cfs @ 12.74 hrs, Volume= 1.005 af
 Primary = 4.11 cfs @ 12.74 hrs, Volume= 1.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 13L: Total Proposed Combined

Inflow Area = 95.100 ac, 0.95% Impervious, Inflow Depth > 0.49" for 2yr 24hr event
 Inflow = 6.08 cfs @ 12.72 hrs, Volume= 3.874 af
 Primary = 6.08 cfs @ 12.72 hrs, Volume= 3.874 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 24L: Proposed South Drainage Total

Inflow Area = 86.500 ac, 1.04% Impervious, Inflow Depth > 0.50" for 2yr 24hr event
Inflow = 5.10 cfs @ 12.77 hrs, Volume= 3.611 af
Primary = 5.10 cfs @ 12.77 hrs, Volume= 3.611 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 25L: Proposed East Through Culvert Total

Inflow Area = 8.600 ac, 0.00% Impervious, Inflow Depth = 0.37" for 2yr 24hr event
Inflow = 2.09 cfs @ 12.30 hrs, Volume= 0.264 af
Primary = 2.09 cfs @ 12.30 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Subcatchment 6S: Proposed West Drain Area

Runoff = 29.12 cfs @ 12.14 hrs, Volume= 1.565 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 6.000	87	60% Impervious Residential
* 1.200	74	10% Impervious OL Area
* 0.200	98	Wet Basin
7.400	85	Weighted Average
7.200		97.30% Pervious Area
0.200		2.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow
					Paved Kv= 20.3 fps
0.9	550	0.0180	9.66	30.35	Pipe Channel, Pipe
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.013
6.5	750	Total			

Summary for Subcatchment 7S: Proposed East Drain Area

Runoff = 67.99 cfs @ 12.17 hrs, Volume= 4.238 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 12.900	87	60% Impervious Residential
* 3.600	90	70% Impervious Residential
* 1.500	74	10% Impervious OL
* 0.700	98	Wet Basin
18.700	87	Weighted Average
18.000		96.26% Pervious Area
0.700		3.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.0800	0.34		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
2.3	1,200	0.0150	8.82	27.71	Pipe Channel, Pipe 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
10.0	1,450	Total			

Summary for Subcatchment 8S: Proposed Directly Offsite East Area

Runoff = 1.94 cfs @ 12.38 hrs, Volume= 0.201 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 2.400	62	10% Impervious Lightly Disturbed/Restored
* 0.100	90	70% Imp ROW area
2.500	63	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	200	0.0100	0.16		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.3	400	0.0200	2.87		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
23.6	600	Total			

Summary for Subcatchment 15S: Proposed Directly Offsite South Area

Runoff = 4.24 cfs @ 12.51 hrs, Volume= 0.532 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 6.200	62	10% Impervious Lightly Disturbed/Restored
* 0.200	82	40% Imp yard area
* 0.200	90	70% Imp ROW area
6.600	63	Weighted Average
6.600		100.00% Pervious Area

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MSE 24-hr 4 10yr 24hr Rainfall=4.09"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0100	0.17		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
3.3	400	0.0100	2.03		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
32.8	700	Total			

Summary for Subcatchment 20S: Ex West Offsite Drainage

Runoff = 5.42 cfs @ 12.36 hrs, Volume= 0.600 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 21S: Ex NW Offsite Drainage

Runoff = 16.34 cfs @ 12.56 hrs, Volume= 2.330 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

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MSE 24-hr 4 10yr 24hr Rainfall=4.09"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 22S: Ex N Offsite Drainage

Runoff = 2.96 cfs @ 12.34 hrs, Volume= 0.276 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 27S: Ex NE Offsite Drainage

Runoff = 6.22 cfs @ 12.24 hrs, Volume= 0.492 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

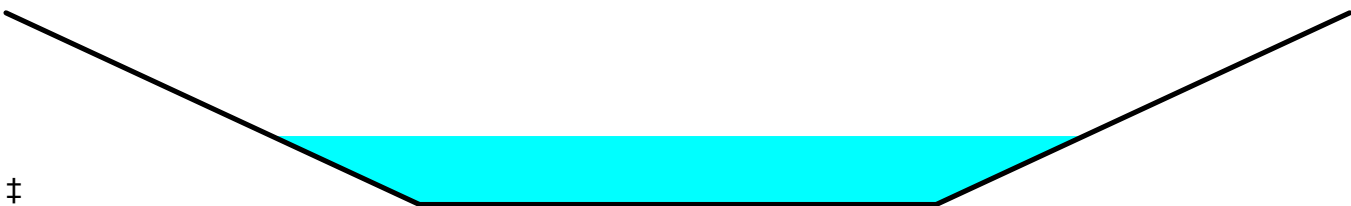
Summary for Subcatchment 28S: Pro West Bypass

Runoff = 2.94 cfs @ 12.13 hrs, Volume= 0.152 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

Area (ac)	CN	Description
* 1.100	74	OL Area 10% Imp
1.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Reach 2R: SW Bypass ChannelInflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 0.88" for 10yr 24hr event
Inflow = 20.61 cfs @ 12.59 hrs, Volume= 4.472 af
Outflow = 20.52 cfs @ 12.61 hrs, Volume= 4.470 af, Atten= 0%, Lag= 1.6 minRouting by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
Max. Velocity= 2.24 fps, Min. Travel Time= 2.3 min
Avg. Velocity= 0.69 fps, Avg. Travel Time= 7.3 minPeak Storage= 2,798 cf @ 12.61 hrs
Average Depth at Peak Storage= 0.71', Surface Width= 15.71'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.48 cfs10.00' x 2.00' deep channel, n= 0.040
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 305.0' Slope= 0.0075 '/'
Inlet Invert= 864.00', Outlet Invert= 861.70'

Summary for Reach 26R: Bypass Channel

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 0.73" for 10yr 24hr event
 Inflow = 20.89 cfs @ 12.52 hrs, Volume= 3.083 af
 Outflow = 20.64 cfs @ 12.57 hrs, Volume= 3.083 af, Atten= 1%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Max. Velocity= 2.24 fps, Min. Travel Time= 3.9 min
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 11.9 min

Peak Storage= 4,880 cf @ 12.57 hrs
 Average Depth at Peak Storage= 0.72' , Surface Width= 15.73'
 Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.54 cfs

10.00' x 2.00' deep channel, n= 0.040
 Side Slope Z-value= 4.0 ' / ' Top Width= 26.00'
 Length= 530.0' Slope= 0.0075 ' / '
 Inlet Invert= 869.00', Outlet Invert= 865.00'

**Summary for Pond 1P: Tuscobia Street Crossing**

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 0.88" for 10yr 24hr event
 Inflow = 20.64 cfs @ 12.57 hrs, Volume= 4.473 af
 Outflow = 20.61 cfs @ 12.59 hrs, Volume= 4.472 af, Atten= 0%, Lag= 1.0 min
 Primary = 20.61 cfs @ 12.59 hrs, Volume= 4.472 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 865.95' @ 12.59 hrs Surf.Area= 2,341 sf Storage= 1,203 cf

Plug-Flow detention time= 1.2 min calculated for 4.469 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (1,064.9 - 1,063.9)

Volume	Invert	Avail.Storage	Storage Description
#1	865.00'	51,515 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
865.00	194	0	0
866.00	2,455	1,325	1,325
867.00	5,342	3,899	5,223
868.00	9,972	7,657	12,880
869.00	15,610	12,791	25,671
870.00	36,077	25,844	51,515

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Device	Routing	Invert	Outlet Devices
#1	Primary	865.00'	38.0" W x 24.0" H, R=31.2" Elliptical RCP_Elliptical 38x24 X 3.00 L= 135.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 865.00' / 864.00' S= 0.0074 '/' Cc= 0.900 n= 0.013, Flow Area= 5.10 sf
#2	Primary	869.55'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 25.00 50.00 75.00 100.00 125.00 168.00 Elev. (feet) 870.14 869.96 869.75 869.55 869.56 869.69 870.14

Primary OutFlow Max=20.59 cfs @ 12.59 hrs HW=865.95' TW=864.71' (Dynamic Tailwater)

↑ **1=RCP_Elliptical 38x24** (Inlet Controls 20.59 cfs @ 2.87 fps)

↓ **2=Asymmetrical Weir** (Controls 0.00 cfs)

Summary for Pond 9P: West Detention Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth = 2.14" for 10yr 24hr event
 Inflow = 30.36 cfs @ 12.14 hrs, Volume= 1.841 af
 Outflow = 4.06 cfs @ 12.77 hrs, Volume= 1.718 af, Atten= 87%, Lag= 37.8 min
 Primary = 4.06 cfs @ 12.77 hrs, Volume= 1.718 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Peak Elev= 869.19' @ 12.78 hrs Surf.Area= 24,665 sf Storage= 43,914 cf

Plug-Flow detention time= 615.8 min calculated for 1.716 af (93% of inflow)

Center-of-Mass det. time= 583.2 min (1,397.0 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	867.00'	95,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
867.00	15,467	0	0
868.00	19,599	17,533	17,533
869.00	23,831	21,715	39,248
870.00	28,163	25,997	65,245
871.00	32,596	30,380	95,625

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	18.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 866.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	867.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	869.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	869.75'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.06 cfs @ 12.77 hrs HW=869.19' TW=867.17' (Dynamic Tailwater)

- 1=Culvert (Passes 4.06 cfs of 11.87 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.60 cfs @ 6.84 fps)
- 3=Orifice/Grate (Weir Controls 3.47 cfs @ 1.43 fps)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 10P: West Infiltration Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth > 2.00" for 10yr 24hr event
 Inflow = 4.06 cfs @ 12.77 hrs, Volume= 1.718 af
 Outflow = 2.84 cfs @ 13.46 hrs, Volume= 1.604 af, Atten= 30%, Lag= 41.7 min
 Discarded = 0.08 cfs @ 13.46 hrs, Volume= 0.214 af
 Primary = 2.75 cfs @ 13.46 hrs, Volume= 1.390 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 867.88' @ 13.46 hrs Surf.Area= 5,846 sf Storage= 8,830 cf

Plug-Flow detention time= 159.9 min calculated for 1.604 af (93% of inflow)
 Center-of-Mass det. time= 68.7 min (1,465.7 - 1,397.0)

Volume	Invert	Avail.Storage	Storage Description
#1	866.00'	34,052 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
866.00	3,624	0	0
867.00	4,745	4,185	4,185
868.00	6,000	5,373	9,557
869.00	7,386	6,693	16,250
870.00	8,876	8,131	24,381
871.00	10,466	9,671	34,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	866.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 860.00'
#2	Primary	867.00'	15.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 867.00' / 866.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Primary	870.00'	5.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.08 cfs @ 13.46 hrs HW=867.88' (Free Discharge)

- 1=Exfiltration (Controls 0.08 cfs)

Primary OutFlow Max=2.75 cfs @ 13.46 hrs HW=867.88' TW=865.66' (Dynamic Tailwater)

- 2=Culvert (Barrel Controls 2.75 cfs @ 4.21 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 11P: East Detention Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth = 2.72" for 10yr 24hr event
 Inflow = 67.99 cfs @ 12.17 hrs, Volume= 4.238 af
 Outflow = 16.76 cfs @ 12.49 hrs, Volume= 4.142 af, Atten= 75%, Lag= 18.8 min
 Primary = 16.76 cfs @ 12.49 hrs, Volume= 4.142 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 864.50' @ 12.50 hrs Surf.Area= 43,015 sf Storage= 92,201 cf

Plug-Flow detention time= 360.7 min calculated for 4.139 af (98% of inflow)
 Center-of-Mass det. time= 348.4 min (1,150.9 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	162,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
862.00	30,928	0	0
863.00	35,693	33,311	33,311
864.00	40,550	38,122	71,432
865.00	45,509	43,030	114,462
866.00	50,568	48,039	162,500

Device	Routing	Invert	Outlet Devices
#1	Primary	861.00'	24.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.00' / 861.00' S= 0.0000 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	862.00'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	864.75'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=16.75 cfs @ 12.49 hrs HW=864.50' TW=862.49' (Dynamic Tailwater)

1=Culvert (Passes 16.75 cfs of 21.17 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 2.38 cfs @ 6.81 fps)
 3=Orifice/Grate (Weir Controls 14.37 cfs @ 2.30 fps)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 12P: East Infiltration Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth > 2.66" for 10yr 24hr event
 Inflow = 16.76 cfs @ 12.49 hrs, Volume= 4.142 af
 Outflow = 8.24 cfs @ 13.21 hrs, Volume= 3.934 af, Atten= 51%, Lag= 43.4 min
 Discarded = 0.22 cfs @ 13.21 hrs, Volume= 0.489 af
 Primary = 8.02 cfs @ 13.21 hrs, Volume= 3.445 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

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Peak Elev= 863.64' @ 13.21 hrs Surf.Area= 14,163 sf Storage= 29,692 cf

Plug-Flow detention time= 147.0 min calculated for 3.934 af (95% of inflow)

Center-of-Mass det. time= 85.2 min (1,236.1 - 1,150.9)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	69,661 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.00	8,400	0	0
862.00	10,501	9,451	9,451
863.00	12,689	11,595	21,046
864.00	14,977	13,833	34,879
865.00	17,366	16,172	51,050
866.00	19,855	18,611	69,661

Device	Routing	Invert	Outlet Devices
#1	Discarded	861.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 855.00'
#2	Primary	862.00'	18.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 862.00' / 861.50' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Primary	865.00'	4.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.22 cfs @ 13.21 hrs HW=863.64' (Free Discharge)↑ **1=Exfiltration** (Controls 0.22 cfs)**Primary OutFlow** Max=8.02 cfs @ 13.21 hrs HW=863.64' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Barrel Controls 8.02 cfs @ 5.16 fps)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link 1L: Proposed West Channel**

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 0.73" for 10yr 24hr event
 Inflow = 20.64 cfs @ 12.57 hrs, Volume= 3.083 af
 Primary = 20.64 cfs @ 12.57 hrs, Volume= 3.083 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 13L: Total Proposed Combined

Inflow Area = 95.100 ac, 0.95% Impervious, Inflow Depth > 1.15" for 10yr 24hr event
 Inflow = 32.03 cfs @ 12.63 hrs, Volume= 9.139 af
 Primary = 32.03 cfs @ 12.63 hrs, Volume= 9.139 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 24L: Proposed South Drainage Total

Inflow Area = 86.500 ac, 1.04% Impervious, Inflow Depth > 1.17" for 10yr 24hr event
Inflow = 28.85 cfs @ 12.66 hrs, Volume= 8.446 af
Primary = 28.85 cfs @ 12.66 hrs, Volume= 8.446 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 25L: Proposed East Through Culvert Total

Inflow Area = 8.600 ac, 0.00% Impervious, Inflow Depth = 0.97" for 10yr 24hr event
Inflow = 7.66 cfs @ 12.26 hrs, Volume= 0.693 af
Primary = 7.66 cfs @ 12.26 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Subcatchment 6S: Proposed West Drain Area

Runoff = 38.28 cfs @ 12.13 hrs, Volume= 2.083 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 6.000	87	60% Impervious Residential
* 1.200	74	10% Impervious OL Area
* 0.200	98	Wet Basin
7.400	85	Weighted Average
7.200		97.30% Pervious Area
0.200		2.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow
					Paved Kv= 20.3 fps
0.9	550	0.0180	9.66	30.35	Pipe Channel, Pipe
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.013
6.5	750	Total			

Summary for Subcatchment 7S: Proposed East Drain Area

Runoff = 88.35 cfs @ 12.17 hrs, Volume= 5.574 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 12.900	87	60% Impervious Residential
* 3.600	90	70% Impervious Residential
* 1.500	74	10% Impervious OL
* 0.700	98	Wet Basin
18.700	87	Weighted Average
18.000		96.26% Pervious Area
0.700		3.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.0800	0.34		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
2.3	1,200	0.0150	8.82	27.71	Pipe Channel, Pipe 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
10.0	1,450	Total			

Summary for Subcatchment 8S: Proposed Directly Offsite East Area

Runoff = 3.24 cfs @ 12.37 hrs, Volume= 0.316 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 2.400	62	10% Impervious Lightly Disturbed/Restored
* 0.100	90	70% Imp ROW area
2.500	63	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	200	0.0100	0.16		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.3	400	0.0200	2.87		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
23.6	600	Total			

Summary for Subcatchment 15S: Proposed Directly Offsite South Area

Runoff = 7.11 cfs @ 12.50 hrs, Volume= 0.833 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 6.200	62	10% Impervious Lightly Disturbed/Restored
* 0.200	82	40% Imp yard area
* 0.200	90	70% Imp ROW area
6.600	63	Weighted Average
6.600		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0100	0.17		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
3.3	400	0.0100	2.03		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
32.8	700	Total			

Summary for Subcatchment 20S: Ex West Offsite Drainage

Runoff = 10.27 cfs @ 12.34 hrs, Volume= 0.998 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 21S: Ex NW Offsite Drainage

Runoff = 30.61 cfs @ 12.53 hrs, Volume= 3.875 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

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MSE 24-hr 4 25yr 24hr Rainfall=5.01"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 22S: Ex N Offsite Drainage

Runoff = 4.70 cfs @ 12.33 hrs, Volume= 0.419 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 27S: Ex NE Offsite Drainage

Runoff = 10.39 cfs @ 12.23 hrs, Volume= 0.770 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

Summary for Subcatchment 28S: Pro West Bypass

Runoff = 4.21 cfs @ 12.13 hrs, Volume= 0.217 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 25yr 24hr Rainfall=5.01"

Area (ac)	CN	Description
* 1.100	74	OL Area 10% Imp
1.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

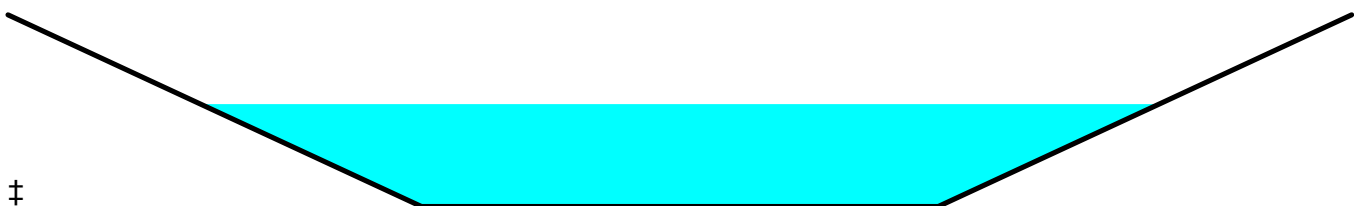
Summary for Reach 2R: SW Bypass Channel

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 1.40" for 25yr 24hr event
 Inflow = 42.99 cfs @ 12.57 hrs, Volume= 7.121 af
 Outflow = 42.88 cfs @ 12.59 hrs, Volume= 7.118 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Max. Velocity= 2.81 fps, Min. Travel Time= 1.8 min
 Avg. Velocity= 0.75 fps, Avg. Travel Time= 6.8 min

Peak Storage= 4,659 cf @ 12.59 hrs
 Average Depth at Peak Storage= 1.07', Surface Width= 18.56'
 Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.48 cfs

10.00' x 2.00' deep channel, n= 0.040
 Side Slope Z-value= 4.0 '/' Top Width= 26.00'
 Length= 305.0' Slope= 0.0075 '/'
 Inlet Invert= 864.00', Outlet Invert= 861.70'



Summary for Reach 26R: Bypass Channel

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 1.20" for 25yr 24hr event
 Inflow = 39.04 cfs @ 12.48 hrs, Volume= 5.091 af
 Outflow = 38.68 cfs @ 12.52 hrs, Volume= 5.091 af, Atten= 1%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Max. Velocity= 2.72 fps, Min. Travel Time= 3.2 min
 Avg. Velocity = 0.83 fps, Avg. Travel Time= 10.6 min

Peak Storage= 7,530 cf @ 12.52 hrs
 Average Depth at Peak Storage= 1.01' , Surface Width= 18.09'
 Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.54 cfs

10.00' x 2.00' deep channel, n= 0.040
 Side Slope Z-value= 4.0 ' / ' Top Width= 26.00'
 Length= 530.0' Slope= 0.0075 ' / '
 Inlet Invert= 869.00', Outlet Invert= 865.00'

**Summary for Pond 1P: Tuscobia Street Crossing**

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 1.40" for 25yr 24hr event
 Inflow = 43.11 cfs @ 12.55 hrs, Volume= 7.121 af
 Outflow = 42.99 cfs @ 12.57 hrs, Volume= 7.121 af, Atten= 0%, Lag= 1.3 min
 Primary = 42.99 cfs @ 12.57 hrs, Volume= 7.121 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 866.45' @ 12.57 hrs Surf.Area= 3,744 sf Storage= 2,709 cf

Plug-Flow detention time= 1.1 min calculated for 7.116 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (990.6 - 989.6)

Volume	Invert	Avail.Storage	Storage Description
#1	865.00'	51,515 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
865.00	194	0	0
866.00	2,455	1,325	1,325
867.00	5,342	3,899	5,223
868.00	9,972	7,657	12,880
869.00	15,610	12,791	25,671
870.00	36,077	25,844	51,515

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Device	Routing	Invert	Outlet Devices
#1	Primary	865.00'	38.0" W x 24.0" H, R=31.2" Elliptical RCP_Elliptical 38x24 X 3.00 L= 135.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 865.00' / 864.00' S= 0.0074 '/' Cc= 0.900 n= 0.013, Flow Area= 5.10 sf
#2	Primary	869.55'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 25.00 50.00 75.00 100.00 125.00 168.00 Elev. (feet) 870.14 869.96 869.75 869.55 869.56 869.69 870.14

Primary OutFlow Max=42.95 cfs @ 12.57 hrs HW=866.45' TW=865.07' (Dynamic Tailwater)

↑ **1=RCP_Elliptical 38x24** (Inlet Controls 42.95 cfs @ 3.65 fps)

↓ **2=Asymmetrical Weir** (Controls 0.00 cfs)

Summary for Pond 9P: West Detention Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth = 2.91" for 25yr 24hr event
 Inflow = 40.49 cfs @ 12.14 hrs, Volume= 2.502 af
 Outflow = 11.60 cfs @ 12.38 hrs, Volume= 2.367 af, Atten= 71%, Lag= 14.6 min
 Primary = 11.60 cfs @ 12.38 hrs, Volume= 2.367 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Peak Elev= 869.44' @ 12.51 hrs Surf.Area= 25,732 sf Storage= 50,125 cf

Plug-Flow detention time= 467.3 min calculated for 2.367 af (95% of inflow)

Center-of-Mass det. time= 439.6 min (1,246.9 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	867.00'	95,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
867.00	15,467	0	0
868.00	19,599	17,533	17,533
869.00	23,831	21,715	39,248
870.00	28,163	25,997	65,245
871.00	32,596	30,380	95,625

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	18.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 866.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	867.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	869.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	869.75'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.68 cfs @ 12.38 hrs HW=869.42' TW=867.48' (Dynamic Tailwater)

- 1=Culvert (Passes 11.68 cfs of 11.85 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.59 cfs @ 6.71 fps)
- 3=Orifice/Grate (Weir Controls 11.10 cfs @ 2.11 fps)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 10P: West Infiltration Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth > 2.76" for 25yr 24hr event
 Inflow = 11.60 cfs @ 12.38 hrs, Volume= 2.367 af
 Outflow = 6.11 cfs @ 13.14 hrs, Volume= 2.252 af, Atten= 47%, Lag= 45.5 min
 Discarded = 0.11 cfs @ 13.14 hrs, Volume= 0.222 af
 Primary = 6.00 cfs @ 13.14 hrs, Volume= 2.031 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 868.74' @ 13.14 hrs Surf.Area= 7,026 sf Storage= 14,377 cf

Plug-Flow detention time= 122.1 min calculated for 2.251 af (95% of inflow)
 Center-of-Mass det. time= 48.8 min (1,295.7 - 1,246.9)

Volume	Invert	Avail.Storage	Storage Description
#1	866.00'	34,052 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
866.00	3,624	0	0
867.00	4,745	4,185	4,185
868.00	6,000	5,373	9,557
869.00	7,386	6,693	16,250
870.00	8,876	8,131	24,381
871.00	10,466	9,671	34,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	866.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 860.00'
#2	Primary	867.00'	15.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 867.00' / 866.50' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Primary	870.00'	5.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.11 cfs @ 13.14 hrs HW=868.74' (Free Discharge)

- 1=Exfiltration (Controls 0.11 cfs)

Primary OutFlow Max=6.00 cfs @ 13.14 hrs HW=868.74' TW=866.00' (Dynamic Tailwater)

- 2=Culvert (Barrel Controls 6.00 cfs @ 4.89 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 11P: East Detention Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth = 3.58" for 25yr 24hr event
 Inflow = 88.35 cfs @ 12.17 hrs, Volume= 5.574 af
 Outflow = 25.39 cfs @ 12.36 hrs, Volume= 5.472 af, Atten= 71%, Lag= 11.1 min
 Primary = 25.39 cfs @ 12.36 hrs, Volume= 5.472 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 864.97' @ 12.47 hrs Surf.Area= 45,376 sf Storage= 113,247 cf

Plug-Flow detention time= 308.2 min calculated for 5.472 af (98% of inflow)
 Center-of-Mass det. time= 297.5 min (1,093.5 - 796.0)

Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	162,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
862.00	30,928	0	0
863.00	35,693	33,311	33,311
864.00	40,550	38,122	71,432
865.00	45,509	43,030	114,462
866.00	50,568	48,039	162,500

Device	Routing	Invert	Outlet Devices
#1	Primary	861.00'	24.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.00' / 861.00' S= 0.0000 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	862.00'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	864.75'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=25.38 cfs @ 12.36 hrs HW=864.93' TW=862.91' (Dynamic Tailwater)

1=Culvert (Inlet Controls 21.53 cfs @ 6.85 fps)
 2=Orifice/Grate (Passes < 2.39 cfs potential flow)
 3=Orifice/Grate (Passes < 36.93 cfs potential flow)
 4=Broad-Crested Rectangular Weir (Weir Controls 3.84 cfs @ 1.06 fps)

Summary for Pond 12P: East Infiltration Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth > 3.51" for 25yr 24hr event
 Inflow = 25.39 cfs @ 12.36 hrs, Volume= 5.472 af
 Outflow = 10.85 cfs @ 13.10 hrs, Volume= 5.259 af, Atten= 57%, Lag= 44.7 min
 Discarded = 0.26 cfs @ 13.10 hrs, Volume= 0.511 af
 Primary = 10.59 cfs @ 13.10 hrs, Volume= 4.748 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

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Peak Elev= 864.35' @ 13.10 hrs Surf.Area= 15,806 sf Storage= 40,219 cf

Plug-Flow detention time= 122.9 min calculated for 5.255 af (96% of inflow)

Center-of-Mass det. time= 72.3 min (1,165.8 - 1,093.5)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	69,661 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.00	8,400	0	0
862.00	10,501	9,451	9,451
863.00	12,689	11,595	21,046
864.00	14,977	13,833	34,879
865.00	17,366	16,172	51,050
866.00	19,855	18,611	69,661

Device	Routing	Invert	Outlet Devices
#1	Discarded	861.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 855.00'
#2	Primary	862.00'	18.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 862.00' / 861.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Primary	865.00'	4.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.26 cfs @ 13.10 hrs HW=864.35' (Free Discharge)↑ **1=Exfiltration** (Controls 0.26 cfs)**Primary OutFlow** Max=10.59 cfs @ 13.10 hrs HW=864.35' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Barrel Controls 10.59 cfs @ 5.99 fps)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link 1L: Proposed West Channel**

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 1.20" for 25yr 24hr event
 Inflow = 38.68 cfs @ 12.52 hrs, Volume= 5.091 af
 Primary = 38.68 cfs @ 12.52 hrs, Volume= 5.091 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 13L: Total Proposed Combined

Inflow Area = 95.100 ac, 0.95% Impervious, Inflow Depth > 1.74" for 25yr 24hr event
 Inflow = 64.48 cfs @ 12.57 hrs, Volume= 13.786 af
 Primary = 64.48 cfs @ 12.57 hrs, Volume= 13.786 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 24L: Proposed South Drainage Total

Inflow Area = 86.500 ac, 1.04% Impervious, Inflow Depth > 1.76" for 25yr 24hr event
Inflow = 58.68 cfs @ 12.59 hrs, Volume= 12.700 af
Primary = 58.68 cfs @ 12.59 hrs, Volume= 12.700 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 25L: Proposed East Through Culvert Total

Inflow Area = 8.600 ac, 0.00% Impervious, Inflow Depth = 1.52" for 25yr 24hr event
Inflow = 12.86 cfs @ 12.25 hrs, Volume= 1.086 af
Primary = 12.86 cfs @ 12.25 hrs, Volume= 1.086 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Subcatchment 6S: Proposed West Drain Area

Runoff = 54.75 cfs @ 12.13 hrs, Volume= 3.039 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 6.000	87	60% Impervious Residential
* 1.200	74	10% Impervious OL Area
* 0.200	98	Wet Basin
7.400	85	Weighted Average
7.200		97.30% Pervious Area
0.200		2.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow
					Paved Kv= 20.3 fps
0.9	550	0.0180	9.66	30.35	Pipe Channel, Pipe
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.013
6.5	750	Total			

Summary for Subcatchment 7S: Proposed East Drain Area

Runoff = 124.79 cfs @ 12.17 hrs, Volume= 8.027 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 12.900	87	60% Impervious Residential
* 3.600	90	70% Impervious Residential
* 1.500	74	10% Impervious OL
* 0.700	98	Wet Basin
18.700	87	Weighted Average
18.000		96.26% Pervious Area
0.700		3.74% Impervious Area

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MSE 24-hr 4 100yr 24hr Rainfall=6.66"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	150	0.0800	0.34		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
0.3	100	0.0600	4.97		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
2.3	1,200	0.0150	8.82	27.71	Pipe Channel, Pipe 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
10.0	1,450	Total			

Summary for Subcatchment 8S: Proposed Directly Offsite East Area

Runoff = 5.94 cfs @ 12.35 hrs, Volume= 0.552 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 2.400	62	10% Impervious Lightly Disturbed/Restored
* 0.100	90	70% Imp ROW area
2.500	63	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	200	0.0100	0.16		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.3	400	0.0200	2.87		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
23.6	600	Total			

Summary for Subcatchment 15S: Proposed Directly Offsite South Area

Runoff = 13.05 cfs @ 12.48 hrs, Volume= 1.457 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 6.200	62	10% Impervious Lightly Disturbed/Restored
* 0.200	82	40% Imp yard area
* 0.200	90	70% Imp ROW area
6.600	63	Weighted Average
6.600		100.00% Pervious Area

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MSE 24-hr 4 100yr 24hr Rainfall=6.66"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0100	0.17		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
3.3	400	0.0100	2.03		Shallow Concentrated Flow, Shallow Paved Kv= 20.3 fps
32.8	700	Total			

Summary for Subcatchment 20S: Ex West Offsite Drainage

Runoff = 20.81 cfs @ 12.32 hrs, Volume= 1.854 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 10.200	58	Type B Soils
10.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	300	0.0600	0.35		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
2.4	400	0.0350	2.81		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
3.9	1,100	0.0100	4.71	94.24	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.040
20.7	1,800	Total			

Summary for Subcatchment 21S: Ex NW Offsite Drainage

Runoff = 61.96 cfs @ 12.50 hrs, Volume= 7.198 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 39.300	58	Type B Soils
* 0.300	71	Type C Soils
39.600	58	Weighted Average
39.600		100.00% Pervious Area

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MSE 24-hr 4 100yr 24hr Rainfall=6.66"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	300	0.0167	0.21		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
8.3	1,000	0.0180	2.01		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
1.0	1,100	0.0100	18.85	376.98	Channel Flow, Channel Area= 20.0 sf Perim= 14.0' r= 1.43' n= 0.010
33.3	2,400	Total			

Summary for Subcatchment 22S: Ex N Offsite Drainage

Runoff = 8.21 cfs @ 12.32 hrs, Volume= 0.710 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 1.200	58	Type B Soils
* 1.700	71	Type C Soils
2.900	66	Weighted Average
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	300	0.0267	0.25		Sheet Flow, Sheet Range n= 0.130 P2= 2.84"
1.1	200	0.0400	3.00		Shallow Concentrated Flow, Shallow Grassed Waterway Kv= 15.0 fps
21.0	500	Total			

Summary for Subcatchment 27S: Ex NE Offsite Drainage

Runoff = 18.89 cfs @ 12.23 hrs, Volume= 1.347 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 3.600	58	Type B Soils
* 2.500	71	Type C Soils
6.100	63	Weighted Average
6.100		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	300	0.1000	0.43		Sheet Flow, Sheet
					Range n= 0.130 P2= 2.84"
2.2	200	0.0100	1.50		Shallow Concentrated Flow, Shallow
					Grassed Waterway Kv= 15.0 fps
13.9	500	Total			

Summary for Subcatchment 28S: Pro West Bypass

Runoff = 6.60 cfs @ 12.13 hrs, Volume= 0.343 af, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

Area (ac)	CN	Description
* 1.100	74	OL Area 10% Imp
1.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Reach 2R: SW Bypass Channel

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 2.48" for 100yr 24hr event

Inflow = 85.20 cfs @ 12.55 hrs, Volume= 12.646 af

Outflow = 85.08 cfs @ 12.57 hrs, Volume= 12.643 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Max. Velocity= 3.43 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 0.83 fps, Avg. Travel Time= 6.1 min

Peak Storage= 7,572 cf @ 12.57 hrs

Average Depth at Peak Storage= 1.54', Surface Width= 22.30'

Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.48 cfs

10.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 4.0 '/' Top Width= 26.00'

Length= 305.0' Slope= 0.0075 '/'

Inlet Invert= 864.00', Outlet Invert= 861.70'



Summary for Reach 26R: Bypass Channel

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 2.21" for 100yr 24hr event
 Inflow = 78.97 cfs @ 12.45 hrs, Volume= 9.395 af
 Outflow = 78.38 cfs @ 12.49 hrs, Volume= 9.395 af, Atten= 1%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Max. Velocity= 3.35 fps, Min. Travel Time= 2.6 min

Avg. Velocity= 0.95 fps, Avg. Travel Time= 9.3 min

Peak Storage= 12,405 cf @ 12.49 hrs

Average Depth at Peak Storage= 1.47', Surface Width= 21.78'

Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 142.54 cfs

10.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 4.0 ' Top Width= 26.00'

Length= 530.0' Slope= 0.0075 ' / '

Inlet Invert= 869.00', Outlet Invert= 865.00'

**Summary for Pond 1P: Tuscobia Street Crossing**

Inflow Area = 61.200 ac, 0.33% Impervious, Inflow Depth > 2.48" for 100yr 24hr event
 Inflow = 86.83 cfs @ 12.49 hrs, Volume= 12.646 af
 Outflow = 85.20 cfs @ 12.55 hrs, Volume= 12.646 af, Atten= 2%, Lag= 3.5 min
 Primary = 85.20 cfs @ 12.55 hrs, Volume= 12.646 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Peak Elev= 867.43' @ 12.55 hrs Surf.Area= 7,315 sf Storage= 7,919 cf

Plug-Flow detention time= 1.2 min calculated for 12.646 af (100% of inflow)

Center-of-Mass det. time= 1.1 min (932.9 - 931.8)

Volume	Invert	Avail.Storage	Storage Description
#1	865.00'	51,515 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
865.00	194	0	0
866.00	2,455	1,325	1,325
867.00	5,342	3,899	5,223
868.00	9,972	7,657	12,880
869.00	15,610	12,791	25,671
870.00	36,077	25,844	51,515

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Device	Routing	Invert	Outlet Devices
#1	Primary	865.00'	38.0" W x 24.0" H, R=31.2" Elliptical RCP_Elliptical 38x24 X 3.00 L= 135.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 865.00' / 864.00' S= 0.0074 '/' Cc= 0.900 n= 0.013, Flow Area= 5.10 sf
#2	Primary	869.55'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 25.00 50.00 75.00 100.00 125.00 168.00 Elev. (feet) 870.14 869.96 869.75 869.55 869.56 869.69 870.14

Primary OutFlow Max=85.18 cfs @ 12.55 hrs HW=867.43' TW=865.54' (Dynamic Tailwater)

↑ **1=RCP_Elliptical 38x24** (Inlet Controls 85.18 cfs @ 5.57 fps)

↓ **2=Asymmetrical Weir** (Controls 0.00 cfs)

Summary for Pond 9P: West Detention Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth = 4.37" for 100yr 24hr event
 Inflow = 58.97 cfs @ 12.14 hrs, Volume= 3.749 af
 Outflow = 22.34 cfs @ 12.31 hrs, Volume= 3.603 af, Atten= 62%, Lag= 10.6 min
 Primary = 22.34 cfs @ 12.31 hrs, Volume= 3.603 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

Peak Elev= 870.06' @ 12.38 hrs Surf.Area= 28,435 sf Storage= 66,980 cf

Plug-Flow detention time= 335.8 min calculated for 3.603 af (96% of inflow)

Center-of-Mass det. time= 314.7 min (1,113.5 - 798.8)

Volume	Invert	Avail.Storage	Storage Description
#1	867.00'	95,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
867.00	15,467	0	0
868.00	19,599	17,533	17,533
869.00	23,831	21,715	39,248
870.00	28,163	25,997	65,245
871.00	32,596	30,380	95,625

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	18.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 866.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	867.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	869.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	869.75'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=22.34 cfs @ 12.31 hrs HW=870.05' TW=868.65' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 10.05 cfs @ 5.69 fps)
- 2=Orifice/Grate (Passes < 0.50 cfs potential flow)
- 3=Orifice/Grate (Passes < 44.06 cfs potential flow)
- 4=Broad-Crested Rectangular Weir (Weir Controls 12.30 cfs @ 1.38 fps)

Summary for Pond 10P: West Infiltration Basin

Inflow Area = 10.300 ac, 1.94% Impervious, Inflow Depth > 4.20" for 100yr 24hr event
 Inflow = 22.34 cfs @ 12.31 hrs, Volume= 3.603 af
 Outflow = 9.14 cfs @ 12.73 hrs, Volume= 3.488 af, Atten= 59%, Lag= 25.0 min
 Discarded = 0.15 cfs @ 12.73 hrs, Volume= 0.237 af
 Primary = 9.00 cfs @ 12.73 hrs, Volume= 3.251 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 869.97' @ 12.73 hrs Surf.Area= 8,838 sf Storage= 24,158 cf

Plug-Flow detention time= 91.7 min calculated for 3.486 af (97% of inflow)
 Center-of-Mass det. time= 39.4 min (1,153.0 - 1,113.5)

Volume	Invert	Avail.Storage	Storage Description
#1	866.00'	34,052 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
866.00	3,624	0	0
867.00	4,745	4,185	4,185
868.00	6,000	5,373	9,557
869.00	7,386	6,693	16,250
870.00	8,876	8,131	24,381
871.00	10,466	9,671	34,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	866.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 860.00'
#2	Primary	867.00'	15.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 867.00' / 866.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Primary	870.00'	5.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.15 cfs @ 12.73 hrs HW=869.97' (Free Discharge)

- 1=Exfiltration (Controls 0.15 cfs)

Primary OutFlow Max=9.00 cfs @ 12.73 hrs HW=869.97' TW=867.08' (Dynamic Tailwater)

- 2=Culvert (Barrel Controls 9.00 cfs @ 7.33 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 11P: East Detention Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth = 5.15" for 100yr 24hr event
 Inflow = 124.79 cfs @ 12.17 hrs, Volume= 8.027 af
 Outflow = 58.85 cfs @ 12.29 hrs, Volume= 7.919 af, Atten= 53%, Lag= 7.3 min
 Primary = 58.85 cfs @ 12.29 hrs, Volume= 7.919 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2
 Peak Elev= 865.63' @ 12.62 hrs Surf.Area= 48,684 sf Storage= 144,018 cf

Plug-Flow detention time= 253.7 min calculated for 7.919 af (99% of inflow)
 Center-of-Mass det. time= 245.5 min (1,033.0 - 787.5)

Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	162,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
862.00	30,928	0	0
863.00	35,693	33,311	33,311
864.00	40,550	38,122	71,432
865.00	45,509	43,030	114,462
866.00	50,568	48,039	162,500

Device	Routing	Invert	Outlet Devices
#1	Primary	861.00'	24.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.00' / 861.00' S= 0.0000 ' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	862.00'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	864.75'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=58.59 cfs @ 12.29 hrs HW=865.58' TW=864.21' (Dynamic Tailwater)

1=Culvert (Inlet Controls 17.69 cfs @ 5.63 fps)
 2=Orifice/Grate (Passes < 1.97 cfs potential flow)
 3=Orifice/Grate (Passes < 70.78 cfs potential flow)
 4=Broad-Crested Rectangular Weir (Weir Controls 40.89 cfs @ 2.45 fps)

Summary for Pond 12P: East Infiltration Basin

Inflow Area = 18.700 ac, 3.74% Impervious, Inflow Depth > 5.08" for 100yr 24hr event
 Inflow = 58.85 cfs @ 12.29 hrs, Volume= 7.919 af
 Outflow = 19.36 cfs @ 12.67 hrs, Volume= 7.699 af, Atten= 67%, Lag= 22.4 min
 Discarded = 0.33 cfs @ 12.67 hrs, Volume= 0.550 af
 Primary = 19.04 cfs @ 12.67 hrs, Volume= 7.149 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs / 2

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Peak Elev= 865.58' @ 12.67 hrs Surf.Area= 18,806 sf Storage= 61,513 cf

Plug-Flow detention time= 101.8 min calculated for 7.699 af (97% of inflow)

Center-of-Mass det. time= 63.1 min (1,096.2 - 1,033.0)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	69,661 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
861.00	8,400	0	0
862.00	10,501	9,451	9,451
863.00	12,689	11,595	21,046
864.00	14,977	13,833	34,879
865.00	17,366	16,172	51,050
866.00	19,855	18,611	69,661

Device	Routing	Invert	Outlet Devices
#1	Discarded	861.00'	0.500 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 855.00'
#2	Primary	862.00'	18.0" Round Culvert L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 862.00' / 861.50' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Primary	865.00'	4.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.33 cfs @ 12.67 hrs HW=865.58' (Free Discharge)↑ **1=Exfiltration** (Controls 0.33 cfs)**Primary OutFlow** Max=19.03 cfs @ 12.67 hrs HW=865.58' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Inlet Controls 14.31 cfs @ 8.10 fps)↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 4.72 cfs @ 2.04 fps)**Summary for Link 1L: Proposed West Channel**

Inflow Area = 50.900 ac, 0.00% Impervious, Inflow Depth = 2.21" for 100yr 24hr event
 Inflow = 78.38 cfs @ 12.49 hrs, Volume= 9.395 af
 Primary = 78.38 cfs @ 12.49 hrs, Volume= 9.395 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 13L: Total Proposed Combined

Inflow Area = 95.100 ac, 0.95% Impervious, Inflow Depth > 2.92" for 100yr 24hr event
 Inflow = 127.06 cfs @ 12.53 hrs, Volume= 23.147 af
 Primary = 127.06 cfs @ 12.53 hrs, Volume= 23.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 24L: Proposed South Drainage Total

Inflow Area = 86.500 ac, 1.04% Impervious, Inflow Depth > 2.95" for 100yr 24hr event
Inflow = 116.15 cfs @ 12.56 hrs, Volume= 21.249 af
Primary = 116.15 cfs @ 12.56 hrs, Volume= 21.249 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

Summary for Link 25L: Proposed East Through Culvert Total

Inflow Area = 8.600 ac, 0.00% Impervious, Inflow Depth = 2.65" for 100yr 24hr event
Inflow = 23.52 cfs @ 12.24 hrs, Volume= 1.899 af
Primary = 23.52 cfs @ 12.24 hrs, Volume= 1.899 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs

APPENDIX E

SOILS REPORT



Construction • Geotechnical
Consulting Engineering/Testing

January 6, 2020
C19482

Mr. Chris Ehlers
VH Acquisitions, LLC
6801 South Towne Drive
Madison, WI 53713

Re: Geotechnical Exploration Report
Proposed Residential Development
Utterback Property – CTH AB
Town of Dunn, Dane County, Wisconsin

Dear Mr. Ehlers:

Construction • Geotechnical Consultants, Inc. (CGC) has completed the subsurface exploration program for the above-referenced project. The purpose of this exploration program was to evaluate the subsurface conditions within proposed roadways and stormwater management areas and to provide geotechnical recommendations regarding site preparation, utility and pavement design/construction. Preliminary stormwater and residential foundation design recommendations are also included. We are sending you an electronic copy of this report, and we can mail a paper copy upon request. An electronic copy is also being sent to Mr. Dan Day at D'Onofrio Kottke and Associates.

PROJECT AND SITE DESCRIPTIONS

We understand a residential development is proposed for an approximately 54-acre site on the west side of CTH AB, about 1,500 ft south of the intersection with CTH MN, in the Town of Dunn, Dane County, Wisconsin. The project area, which is currently farmland, is to be annexed into the Village of McFarland. Based on publicly-available topographic data (DCiMap, 1-ft contour lines), existing site grades generally slope from north-central parts of the site down towards the southeast, with current ground surface elevations ranging from about EL 896 to 862 ft. The site is bounded by railroad tracks to the south, and a lowland area is present to the south of the tracks, with lowest ground surface elevations in that area near EL 859 to 860 ft, based on DCiMap 1-ft contour lines.

Although in the early planning stages, we understand the project will include the construction of roads, utilities, stormwater management areas and, ultimately, single family homes. Proposed site grading information was not available at the time of this evaluation.

Mr. Chris Ehlers
VH Acquisitions, LLC
January 6, 2020
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SUBSURFACE CONDITIONS

Subsurface conditions for this study were explored by drilling 17 Standard Penetration Test (SPT) soil borings to planned depths between 15 and 20 ft below current site grades at locations selected and field-staked by D'Onofrio Kottke personnel, who also surveyed the ground surface elevations at the boring locations. The borings were conducted on December 11 and 12, 2019 by GeoServe (under subcontract to CGC), using a track-mounted (ATV) Geoprobe 7822DT rotary drill rig equipped with hollow stem augers and an automatic SPT hammer. Note that auger and split-spoon refusal occurred in Boring 15 at about 12.5 ft below the ground surface on apparent bedrock. The specific procedures used for drilling and sampling are described in Appendix A, and the boring locations are shown in plan on the Soil Boring Location Exhibit presented in Appendix B.

The subsurface profiles at the boring locations varied to some degree across the site, but the following strata were generally encountered (in descending order):

- About 12 to 36 in. of **topsoil**; followed by
- About 2 to 5.5 ft of generally stiff to very stiff **lean clay** and **sandy lean clay**, typically softening somewhat with depth or grading to loose to medium dense **clayey sand**; over
- Very loose to very dense **sand and gravel** strata, containing variable amounts of fines and scattered cobbles/boulders, to the maximum depths explored in the majority of the borings; except where
- Loose to medium dense **silt** and **silty to clayey sand** or medium stiff to very stiff **lean to silty clay** layers were present towards the bottom of Borings 5, 15, 16 and 17; underlain by
- Very dense, **probable highly weathered to weathered sandy dolomite bedrock** to the level of auger/split-spoon refusal in Boring 15.

Natural moisture contents in representative samples from the shallow lean clay layers ranged from 22.9% to 29.8%, while sandier lean clay specimens were determined to have natural moisture contents of 12.0% to 18.2%. A sample obtained from the deeper cohesive/fine-grained soils encountered in Boring 15 was tested for its liquid and plastic (Atterberg) limits to aid in its classification, with a liquid limit of 17% and a plasticity index of 1 corresponding to USCS classification of low-plasticity silt (ML). Based on natural moisture contents, pocket penetrometer readings (q_p ; an estimate of the unconfined compressive strength of cohesive soils) and SPT blow counts (N -values), the on-site cohesive and fine-grained soils should generally be considered slightly to moderately compressible.

In addition, particle size distribution (gradation) was determined on a sand sample from Boring 13. With a P200 ('fines') content of 3.5%, the sample classifies as poorly-graded sand (SP) and fine sand (FS) per the USCS and USDA classification systems, respectively.

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VH Acquisitions, LLC
January 6, 2020
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Note that occasional organic seams were found to be interbedded with the sand soils in Borings 15 and 17.

As mentioned above, probable highly weathered to weathered sandy dolomite bedrock was encountered below a depth of about 10.5 ft in Boring 15 (corresponding to approximately EL 853.6 ft), extending to the level of auger and split-spoon refusal on probable harder/more competent bedrock at about 12.5 ft below the ground surface (corresponding to approximately EL 851.6 ft). In addition, the clay soils encountered in Boring 5 below a depth of about 19 ft and the clayey/silty sand below about 13 ft in Boring 17 were classified as possible highly weathered/decomposed bedrock. It must be noted that the sampling procedure can disturb/degrade weathered bedrock, making it difficult to determine the depth to bedrock in some areas.

Groundwater was encountered in the majority of the borings during and upon the completion of drilling at depths between about 4 and 13 ft, corresponding to approximately EL 855 to 863 ft, with the average groundwater level at about EL 859 ft. Groundwater levels were also measured in Borings 13, 16 and 17 about one day after the completion of drilling, at which point the water was observed about 2.0 to 6.0 ft below current site grades, corresponding to approximately EL 859.2 to 861.3 ft. Note that the average groundwater level observed during drilling and the longer-term groundwater readings in Borings 13, 16 and 17 correspond fairly well with ground surface elevations in the lowland area south of the railroad tracks. Water levels can be expected to fluctuate based on seasonal variations in precipitation, infiltration, evapotranspiration, the levels in nearby waterbodies, as well as other factors. A more detailed description of the site soil and groundwater conditions is presented on the boring logs attached in Appendix B, which also contain the laboratory test results (including Particle Size Distribution Test Report), and on the WDSPS Soil and Site Evaluation – Storm form contained in Appendix F.

According to the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) *Web Soil Survey*, eight soil series are identified within the development area. Two major soil series, which constitute about three-quarters of the site, are Kegonsa silt loam (KeB; approximately 42% of area) and Plano silt loam (PoB; approximately 33% of area). Minor soils include Dodge silt loam (DnB) in the north and northeast, Grays silt loam (GsB) in the east, Kidder soils (KrD2) in the north-central portions (near the high point), Sable silty clay loam (SaA) and Elburn silty loam (EgA) in the south to southwest as well as Colwood silt loam (Co) in an isolated area at the eastern perimeter of the development area.

The vast majority of the site's soils (Kegonsa, Plano, Dodge and Kidder) are described as well-drained soils that formed from loess over loamy and/or gravelly/sandy outwash on outwash plains, or from glacial till or loess over loamy till on drumlins and moraines. A typical profile involves finer-grained soils, such as clay loam, silty clay loam, sandy clay loam, silt loam and loam, followed by coarser-grained soils like sandy loam, gravelly sandy loam, stratified gravelly sand and gravelly coarse sand. As an exception, the soil series Grays silt loam, formed from silty alluvium over stratified silt and fine sand lacustrine deposits on lake plains, typically involves silt loam and silty

Mr. Chris Ehlers
VH Acquisitions, LLC
January 6, 2020
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clay loam over very fine sandy loam to silt loam. In areas mapped as Kegonsa silt loam, Plano silt loam, Dodge silt loam, Grays silt loam and Kidder soils, the seasonally high groundwater table is expected to remain more than 80 in. below the ground surface.

In contrast to the soils described in the previous paragraph, the soil series Sable silty clay loam, Elburn silt loam and Colwood silt loam, mapped in small southern to southwestern and eastern sections of the site, are described as somewhat poorly-drained to poorly-drained soils that formed from loess on swales, loess over sandy and gravelly outwash on till plains, and from loamy glaciolacustrine deposits over stratified silt and fine sand glaciolacustrine deposits on lakebeds. Fairly deep finer-grained deposits (silty clay loam and silt loam) are common in areas mapped as Sable silty clay loam, with silty clay loam, sandy clay loam and silt loam over stratified very fine sand to silt, sandy loam and very gravelly coarse sand typically encountered in areas mapped as Elburn silt loam and Colwood silt loam. Where Sable silty clay loam, Elburn silt loam and Colwood silt loam are present, the seasonally high groundwater table should generally be expected within 0 to 12 in. of the ground surface, and frequent ponding may occur in areas mapped as Sable silty clay loam and Colwood silt loam.

The Soil Map for this site, which was generated by the USDA-NRCS *Web Soil Survey*, is attached in Appendix B. The soil profiles in the borings were in general agreement with the profiles from the soil mapping.

DISCUSSION AND RECOMMENDATIONS

Subject to the limitations discussed below and based on the subsurface exploration program, it is our opinion that this site is generally suitable for construction. However, some excavation below subgrade (EBS or undercutting/replacement) will likely be required during site grading and roadway construction, based on the presence of near-surface clay soils. In addition, some undercutting/replacement of marginal clay and/or clayey sand may be required below residential floor slabs and foundations, as well as utility inverts/structures in some portions of the site depending on structure and utility grades. Furthermore, bedrock excavation could potentially also be required during utility construction and building excavations in isolated portions of the site depending on utility and structure grades. Additionally, shallow groundwater and/or perched zones may impact utility and basement excavations in portions of the site, and groundwater levels should be considered when establishing basement grades.

Our recommendations for site preparation, roadway and utility design/construction are presented in the following subsections, along with preliminary stormwater infiltration and residential building design and construction considerations. Additional information regarding the conclusions and recommendations presented in this report is discussed in Appendix C.

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1. Site Preparation

We recommend that topsoil and vegetation be stripped at least 10 ft beyond the construction limits in areas to receive fill and where building and roadway construction is planned. The topsoil can be stockpiled on-site and later re-used as fill in landscape areas. Topsoil thicknesses typically ranged between 12 and 36 in. in the borings, but variable topsoil thicknesses should be expected between and beyond boring locations due to past agricultural activities. Trees and root zones should be removed in conjunction with topsoil stripping.

After topsoil removal, the exposed soils are generally expected to consist of stiff to very stiff clay. Granular soils exposed in areas at-grade or requiring fill (if any) should be recompacted with a vibratory smooth-drum roller, and cohesive/fine-grained subgrade soils should be statically compacted (without vibration) and then proof-rolled with a piece of heavy rubber-tire construction equipment, such as a loaded scraper or tri-axle dump truck, to check for soft/yielding areas. If soft/unstable clay soils are encountered, an attempt could be made to dry/recompact the cohesive soils to develop a stable subgrade, which will likely be the most economical alternative to improve marginal subgrade soils, but this approach will likely require more time than other alternatives and is also highly weather dependent. Several cycles of discing, drying and recompaction may be required during extended periods of favorable weather (i.e., dry, warm and windy conditions) before a firm subgrade is developed. If drying/recompaction is not effective or the construction schedule or weather does not allow for drying/recompaction, the unsuitable soils can be undercut and replaced with suitable backfill compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557). As an alternative, soft subgrade soils could be stabilized using coarse aggregate (e.g., 3-in. dense graded base, select crushed material, etc.) that is compacted into the subgrade until deflection ceases. Similarly, loose sands that do not improve with compaction should be undercut and replaced with suitable granular backfill. Note that some of the shallow clay soils encountered in the borings exhibited fairly high natural moisture contents, and zones of lower- to moderate strength clay and clayey sand were also encountered, so we anticipate that some undercutting/stabilization or discing/recompacting will be required, which could be fairly widespread depending on the time of the year when grading occurs. *We therefore recommend that the project budget include a generous contingency for undercutting/stabilization or discing/recompacting during site preparation (or roadway subgrade preparation if not addressed earlier in the project).*

After a stable subgrade has been developed, fill placement to establish site grades may then proceed. To the extent practical, we recommend using granular soils (i.e., sand and/or gravel, including on-site materials if selectively excavated and stockpiled) as fill in building areas, as well as within the upper several feet of roadways as these soils are generally easier to place and compact compared to cohesive/fine-grained soils, particularly in adverse weather conditions. It is our opinion that clay and silt soils excavated on-site are best used in landscaping, or potentially in lower portions of roadway embankments assuming that moisture conditioning will be completed to facilitate proper compaction. Moisture conditioning (drying) may require several cycles of discing and recompaction in order to develop adequate compaction, which could delay construction progress. Fill/backfill

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should be placed in accordance with the Recommended Compacted Fill Specifications presented in Appendix D. *Where placement of several feet of fill will be required to establish site grades (i.e., more than about 5 ft above existing), a time delay between fill placement and beginning roadway and/or residential construction should be considered to allow the slightly to moderately compressible cohesive and fine-grained soils generally encountered on this site to consolidate and settle under the weight of the new fill, with a delay time of about one to three months typically being adequate.* We can provide additional details once the grading plan is developed, if needed.

As discussed above, possible/probable bedrock was encountered in isolated borings, and the depth and consistency of bedrock should be expected to vary across the site. As a general “rule of thumb”, it has been our experience that excavation to the level of auger refusal in soil borings can typically be accomplished using conventional earthwork equipment and techniques, including a narrow bucket and ripping tooth. Excavations that extend below the level of auger refusal typically require special bedrock removal techniques, such as chiseling with an excavator-mounted rock chipper, blasting, etc. Rock excavation considerations are contained in Appendix E. *We recommend that a unit rate for rock excavation be established in the bidding documents. Note that rock excavation should be clearly defined in the project specifications.* It should also be noted that mass excavation with scrapers may not be able to extend into weathered bedrock to the same extent as using a large excavator (with appropriate bucket) and haul trucks. *Supplemental test pits are recommended to further explore the depth and consistency of the bedrock where deeper cuts are anticipated and the soil borings indicate the presence of bedrock.*

2. Roadway Pavement Design

The shallow cohesive soils encountered across the site are expected to control the pavement design, as we anticipate that the pavement subgrades (near existing site grades) will generally consist of stiff to very stiff clay soils, which could potentially also be used to raised site grades in some areas. Standard earthwork-related techniques that should be used during roadway construction after topsoil stripping include proof-rolling, undercutting/stabilization (excavation below subgrade – EBS) and compaction control of fill/backfill, as discussed in the Site Preparation section of this report.

Based on the borings, the shallow soil conditions in the borings generally appear suitable for pavement support. *However, because of the potential for shallow marginal clays (to clayey sands) at or below existing site grades/pavement subgrade levels, especially in southern, lower portions of the site, we recommend including a generous contingency for undercutting and stabilization with 3-in. dense graded base (or other coarse aggregate) in the project budget.* If long, continuous sections of soft/unstable soils are encountered, biaxial geogrid (e.g., Tensar Type 1 (BX 1100) or equivalent) or woven geotextile fabric (e.g., Mirafi 600X or equivalent) can be used to reduce the undercut depth and provide additional stabilization. It has been our experience that clay or silt soils with pocket penetrometer readings of less than about 1.5 tsf will likely require undercutting after proof-rolling, as described above. If roadway grades will be raised above existing grade, and well-compacted fill is

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placed above a firm subgrade during general site grading, the need for undercutting/stabilization will likely be reduced.

Based on the soil conditions encountered in the borings and assuming that on-site clays may be used to raise grade in some roadway areas, the pavement design will be controlled by the cohesive soils, and the following parameters should be used to develop the design pavement sections, which are based on a firm or adequately stabilized subgrade being developed:

USCS Soil Classification	CL
AASHTO Classification	A-6
Frost Group Index	F-3
Design Group Index	12
Soil Support Value	4.2
Subgrade Modulus, k (pci)	150

These design parameters are based on the following assumptions:

1. The subgrade has been closely monitored.
 2. The subgrade has been thoroughly and adequately compacted.
 3. Wet zones have been dried, drained or removed.
 4. Pockets of dissimilar material have been removed, replaced or mixed to achieve a homogeneous subgrade.
 5. Adequate subgrade drainage has been achieved.
- (Reference: WisDOT *Geotechnical Manual*)

Assuming traffic volumes of up to 100 cars and less than 5 trucks per day per design lane (i.e., Traffic Class II according to Wisconsin Asphalt Pavement Association (WAPA) recommendations for low-volume roadways and subdivision streets), a typical pavement section per WDOT Standard Specifications and following WAPA recommendations is 3.5 to 4.0 in. of asphalt pavement over 8 to 12 in. of compacted aggregate base course. Alternative pavement designs for different traffic count data (e.g., if high truck traffic loads are expected) are also acceptable provided they are based on the given design parameters. *Note that if the upper (surface) asphalt layer will not be installed immediately after the lower (binder) asphalt layer and construction traffic will travel on only the lower layer, consideration should be given to increasing the lower asphalt layer thickness to improve the durability of the lower layer.*

3. Utility Construction

Based on the available soil and groundwater information, it appears that utility construction can proceed using traditional open-cut methods. Dewatering may be required in some portions of the site, especially where shallow groundwater was encountered in the borings (predominantly southern, lower parts of the site) and the soil mapping indicates that the seasonal high water table may be

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within 1 ft of the ground surface during wet periods (southern/southwestern and eastern areas). Rock excavation may potentially also be required in some areas, depending on utility locations and depths. It is expected that excavation sidewalls will be sloped back for relatively shallow installations (i.e., less than 4 ft in depth) and that a trench shield and/or internal bracing will be used for deeper excavations. The following are our recommendations regarding trench excavation, dewatering, and backfilling:

- Excavation: Open cuts should be sloped and/or braced in accordance with OSHA guidelines. The softer clays, sand and gravel with low “fines” content (denoted as SP/SP-SM and GP/GP-GM on the boring logs), as well as loose sands with higher silt content (SM and SC) are generally classified as OSHA “Type C” soils, and slopes of 1.5H:1V or flatter are expected to be at least temporarily stable. At least medium stiff clays and denser silty to clayey sand soils above the water table are generally classified as OSHA “Type B” soils where slopes of 1H:1V are expected to be temporarily stable. Note that flatter side slopes may also be required where perched water is present that destabilizes the side slopes. *The appropriate utility trench excavation side slopes should be determined by a competent person completing the earthwork in accordance with OSHA slope guidelines.* Due to the presence of weak and marginal clays, clayey to silty sand and sand strata in some of the borings, a stone stabilization layer consisting of 6 to 12 in. of compacted crushed stone may be required below the bedding layer in some areas to adequately support utility piping, depending on utility grades.
- Dewatering: Groundwater was encountered at depths between about 2 and 13 ft below existing site grades. In addition, the soil mapping indicates that seasonally elevated groundwater may be within 1 ft of the ground surface in some portions of the site. Therefore, depending on the location and depth of the utility, as well as the time of year construction occurs, some dewatering may be required. In general, groundwater drawdowns of less than about 1 to 2 ft can typically be achieved using submersible pumps operating from filtered sump pits, which can also be used to remove seepage or precipitation. If groundwater drawdowns exceed about 2 ft, dewatering with vacuum well points or deep wells may be required. Dewatering means and methods are the responsibility of the utility contractor.
- Rock Removal: Possible/probable bedrock was encountered in isolated borings, as previously discussed. The depth to bedrock should be expected to vary across the site. Although rock excavation considerations were included in the Site Preparation section of this report, bedrock removal in narrow utility trenches will likely be more difficult than in mass cut areas, as it may be more difficult to locate and exploit fractures and weak zones in the bedrock. Rock excavation considerations are contained in Appendix E, and we recommend that a unit rate for rock excavation be established in the bidding documents for utility excavations. Supplemental test pits

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are recommended to further explore the depth and consistency of the bedrock along proposed utility alignments where possible/probable bedrock was encountered in the soil borings.

- **Backfilling:** Excavation backfilling may proceed using the following guidelines:
 - Although clayey and silty excavation spoils may be used to backfill the utility trenches above the pipe and associated granular bedding material, to the extent possible, we recommend that granular soils be used as backfill below paved areas because sand/gravel soils are relatively easy to place and compact in most weather conditions compared to cohesive soils. Silt and clay soils will likely require moisture conditioning prior to placement and compaction, which could delay construction progress. Granular soils containing cobbles and boulders should not be used in direct contact with utility lines.
 - Backfill material should be placed in accordance with Appendix D guidelines or applicable municipal requirements.
 - Compaction recommendations:
 - Within 10 ft of buildings: 95% modified Proctor (ASTM D1557);
 - Depths greater than 3 ft below grade in pavement areas: 90% modified Proctor;
 - Final 3 ft in pavement areas: 95% modified Proctor; and
 - Landscape areas: 85% modified Proctor.

4. Preliminary Stormwater Infiltration Potential

We understand that stormwater management areas are currently being considered in southern portions of the site near Borings 13, 16 and 17.

The subsurface conditions encountered in the southernmost Borings B-16 and B-17 were fairly consistent and included about 12 in. of topsoil, followed by lower-permeability clay loam and sandy clay loam strata, which were underlain, below a depth of about 6.5 ft, by more permeable fine sand and sand layers. However, groundwater was encountered during drilling at the bottom of the lower-permeability soils, and the shallow clay soils generally exhibited redoximorphic features (redox or mottling) and low-chroma/high-value (gray) dominant color, indicating the level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater. About one day after the completion of Borings B-16 and B-17, the groundwater had stabilized at about 2.0 to 2.5 ft below current site grades in these boreholes. Therefore, it is our opinion that the area near Borings B-16 and B-17 is not suitable for infiltrating significant quantities of stormwater.

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In Boring B-13, performed slightly further north and at a higher elevation, the shallow topsoil was underlain by lower-permeability sandy clay loam to a depth of about 3 ft, followed by more permeable granular strata to the maximum depth explored. Groundwater in this boring was encountered at a depth of about 8 ft during drilling and about 6 ft below the ground surface upon the completion of drilling. Provided the bottom of the infiltration system near B-13 extends through the lower-permeability soils (or lower-permeability soils are undercut below the bottom of the infiltration system and replaced with appropriate sandier soils) and adequate separation from groundwater can be achieved, it is our opinion that some stormwater infiltration in this area may potentially be feasible.

A gradation performed on a representative sand sample obtained above the apparent groundwater table in Boring B-13 showed a P200 content of 3.5%, and the particle size distribution test report is included in Appendix B. Per NR151, it may be necessary to include at least a 3-ft soil layer with a minimum of 20% fines or a 5-ft thick layer with a minimum of 10% fines below the bottom of the infiltration system to act as a filtering layer before the infiltrating stormwater reaches the groundwater table. *The inclusion of a filtering layer with higher fines content may control the infiltration rate of the infiltration system.*

As the soil conditions vary across the site, the Boring Logs and WDSPS Soil and Site Evaluation – Storm form attached in Appendices B and F, respectively, should be consulted for a description of the soil conditions at each boring location. Variability in the soil conditions should be expected across the site and within stormwater basins that could result in a wide range of undercut depths to reach soil suitable for the design infiltration rate.

Infiltration Potential: The following is a *preliminary* summary of the estimated infiltration rates for the soils encountered in Borings B-13, B-16 and B-17, per Table 2 of the WDNR Conservation Practice Standard 1002, *Site Evaluation for Storm Water Infiltration*. The estimated infiltration rates are as follows:

• Clay loam (CL)	0.03 in./hr
• Silty clay loam (SiCL)	0.04 in./hr
• Sandy clay loam (SCL)	0.11 in./hr
• Silt loam (SiL)	0.13 in./hr
• Fine sandy loam (FSL)	0.50 in./hr
• Gravelly sandy loam (GRSL)	0.50 in./hr
• Fine sand (FS)	0.50 in./hr
• Sand (S)	3.60 in./hr
• Extremely gravelly sand (XGRS)	3.60 in./hr

Note that the infiltration rates should be considered very approximate since they are merely based on soil texture and do not account for in-place soil density and other factors, which will affect the infiltration rate. We recommend that the soils at and

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several feet below the bottom of stormwater management systems be checked by a geotechnical engineer or certified soil tester *in conjunction with the basin designer* to document that the soils are appropriate for the design infiltration rate or recommend remedial measures, if necessary. The Wisconsin Department of Safety and Professional Services Soil and Site Evaluation – Storm form for Borings B-13, B-16 and B-17 is contained in Appendix F.

It must be cautioned that the results of the soil borings have limitations with regard to the evaluation of the on-site stormwater infiltration potential as actual soil horizon transitions may vary from those shown on the boring logs and infiltration form. The reviewing agency may require test pits be excavated at a later date prior to finalizing the stormwater design. *The results of the test pits may require revisions to the stormwater management design if the design has been based solely on the soil borings.*

Groundwater: Groundwater was encountered in the southernmost Stormwater Borings B-16 and B-17, about one day after the completion of drilling, at about 2.0 to 2.5 ft. In addition, the soil mapping indicates that the seasonally high groundwater table may be within 1 ft of the ground surface in southern to southwestern (and isolated eastern) portions of the site. Furthermore, redoximorphic features and low-chroma/high-value dominant color, which are indicative of the level of previous saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater, were generally noted in the cohesive soils. Slightly deeper groundwater levels were observed in Boring B-13, performed further north and at a higher ground surface elevation compared to B-16 and B-17. At the completion of B-13, the groundwater level was observed at about 6 ft below the ground surface.

Bedrock: Apparent bedrock was not encountered in the Stormwater Borings B-13 and B-16, but the soils below a depth of about 13 ft in B-17 were classified as possible highly weathered bedrock, and possible/probable bedrock was also encountered in isolated other borings performed on this site. The depth of bedrock should therefore be expected to vary across the site.

During construction, appropriate erosion control should be provided to prevent eroded soil from contaminating the stormwater management areas. Where appropriate, the stormwater system design should include pretreatment to remove fine-grained soils (silt/clay) and clogging materials (oils/greases) from stormwater prior to entering the infiltration areas. Additionally, a regular maintenance plan should be developed to remove silt/clay soils and clogging materials that may accumulate in the bottom of the stormwater management area over time. Failure to adequately control fine-grained soils and clogging materials from entering the infiltration area or failure to regularly remove fine-grained soils and clogging materials that accumulate at the base of the stormwater infiltration system will likely cause the stormwater management system to fail.

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Additionally, it is important that the soils in the bottom of the infiltration systems do not become compacted during construction or measures are taken to mitigate soils that are compacted during construction. Refer to WDNR Conservation Practice Standards 1002, 1003 and 1004, as well as NR151 for additional information.

5. Preliminary Foundation Design

Depending on building elevations, a combination of cohesive, fine-grained and granular soils could be encountered at foundation grades. If site grades are raised, footings may also bear on compacted granular fill, in which case it is important that the existing soils be carefully checked (including shallow test pits) to document the existing soils are suitable for building support prior to new fill placement. Bedrock excavation may potentially also be required for footing and basement excavations in isolated locations, depending on building grades.

It is our opinion that residential structures can generally be supported on conventional spread footing foundations bearing on suitable natural soils and engineered fill. Based on the range of soil conditions encountered, a bearing pressure in the range of 1,000 psf to 3,000 psf appears to be applicable over most of the site. However, depending on building locations and grades, some undercutting below footings (and floor slabs) due to lower-strength and marginal soils should generally be expected. The soil conditions in southern portions of the site generally appear to be the weakest and most compressible, which may potentially be problematic for building support, but fairly shallow undercutting will likely also be required in other portions of the site to develop suitable foundation and floor slab subgrades. There were also areas where denser sand/silt and harder clay were encountered, and higher bearing pressures could potentially be used.

Since residential structure loads are generally light, for preliminary design purposes, we recommend assuming an allowable bearing pressure of 1,500 psf, with the understanding that undercutting below footings could be required in various locations, depending on building and foundation grades. *Note that dewatering may potentially be required during basement, undercutting and backfilling operations, depending on building location and elevations, as well as the time of year construction occurs. We recommend that careful consideration be given to establishing basement grades where groundwater was encountered. Longer-term water level readings in monitoring wells may prove helpful in this determination. To the extent possible, we recommend establishing basement grade several feet above the seasonal high groundwater level to reduce the potential for dewatering being required below basements.*

The following parameters should be used for *preliminary* foundation design:

- Maximum net allowable bearing pressure: 1,500 psf
- Minimum foundation widths:
 - Continuous wall footings: 18 in.

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- Column pad footings: 30 in.
- Minimum footing depths:
 - Exterior/perimeter footings: 4 ft
 - Interior footings: no minimum requirement

Undercutting below footing grade will be required where loose or disturbed sand/silt soils or clay with q_p -readings of less than 0.75 tsf are encountered at or slightly below footing grade. As discussed above, some undercutting below footing grade should be expected, and an allowance for this operation should be included in the project budget. *Where medium stiff clays (i.e., pocket penetrometer readings of less than 1 tsf) are encountered that are especially susceptible to disturbance from construction traffic or weather, we recommend placing a 6-in. layer of clear stone below the footings immediately after excavation to act as a working platform.* Where undercutting is required, the base of the undercut excavation should be widened beyond the footing edges at least 0.5 ft in each direction for each foot of undercut depth for stress distribution purposes. Foundation grades above the water table can be restored with granular backfill compacted to at least 95% compaction (modified Proctor – ASTM D1557) or 3-in. dense graded base that is placed in maximum loose lifts of 12 in. and thoroughly compacted with a large vibratory compactor until deflection ceases. Below the water table, undercut excavations should be backfilled with crushed clear stone that is placed in loose lifts of 12 in. or less, which are subsequently compacted with a large vibratory plate compactor or excavator-mounted hoe-pack until deflection ceases. Where the total clear stone layer thickness exceeds 12 in., the clear stone should be wrapped in non-woven geotextile fabric (e.g. Mirafi 160N or equivalent) to prevent migration of fines into the void spaces of the clear stone.

Since the subsurface conditions vary across the site, CGC should be present during footing excavations to check whether subgrades are satisfactory for the design bearing pressure and to advise on corrective measures, where necessary. We recommend using a smooth-edged backhoe bucket for footing and undercut excavations in soil. A bucket with teeth is acceptable where excavation occurs in weathered bedrock, provided loosened rock is removed from the bottom of the excavation. Additionally, granular soils exposed at footing grade that are above the water table and not susceptible to disturbance from vibrations should be recompacted with a large vibratory plate compactor or an excavator-mounted hoe-pack prior to formwork/concrete placement to densify soils loosened during the excavation process. Soils potentially susceptible to disturbance from compaction (e.g., silty or clayey soils or granular soils close to or below the water table) should be hand trimmed and/or stabilized with clear stone, as appropriate. Provided the foundation design/construction recommendations discussed above are followed, we estimate that total and differential settlements should be on the order of 1.0 and 0.5 in., respectively.

Based on groundwater observations in the soil borings and indications in the soil mapping that shallow groundwater may be encountered in some portions of the site, a sub-floor dewatering system with sump pump may potentially be required for some residential structures to prevent groundwater

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from entering the lower level depending on the location and elevation. Depending on basement grades, seasonal dewatering could be fairly significant, and we recommend that careful consideration be given to establishing basement grades where groundwater was encountered. To the extent possible, we recommend establishing basement grade several feet above the seasonal high groundwater level to reduce the potential for dewatering being required below basements. Longer-term water level readings in monitoring wells may prove helpful in determining seasonally high groundwater levels, and we can provide additional information and recommendations if needed.

CONSTRUCTION CONSIDERATIONS

Due to variations in weather, construction methods and other factors, specific construction problems are difficult to predict. Soil related difficulties that could be encountered on the site are discussed below:

- Earthwork construction during the late fall through early spring could be complicated as a result of wet weather and freezing temperatures. During cold weather, exposed subgrades should be protected from freezing before and after footing construction. Fill should never be placed while frozen or on frozen ground.
- If the construction schedule requires that construction proceed during adverse weather, typically encountered during fall through spring, the contingency for undercutting disturbed soils should be increased.
- To the extent practical, traffic should be avoided on prepared subgrades to minimize further disturbance.
- Excavations extending greater than 4 ft in depth below the existing ground surface should be sloped or braced in accordance with current OSHA standards.
- Based on the soil mapping and water observations in the soil borings, groundwater infiltration into some utility, basement and footing excavations may occur, especially during wet seasons. Dewatering using submersible pumps operating from filtered sump pits, vacuum well points or deep wells may be required for groundwater control, as previously discussed, which should be evaluated by the contractor.
- The depth to bedrock is expected to vary across the site. In addition to potential bedrock removal during building excavations, some bedrock excavation may be required during utility construction. Supplemental test pits can be excavated to better determine if bedrock excavation may be required. See the Site Preparation and Utility Construction sections of the report, as well as Appendix E for additional information regarding rock excavation.

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RECOMMENDED CONSTRUCTION MONITORING

The quality of the residential building pads and pavement subgrades will largely be determined by the level of care exercised during site development. To check that earthwork and foundation construction proceeds in accordance with our recommendations, the following operations should be monitored by CGC:

- Topsoil stripping/removal and subgrade proof-rolling;
- Fill/backfill placement and compaction;
- Foundation excavation and subgrade preparation; and
- Concrete placement.

FOLLOW-UP EXPLORATION PROGRAMS

The exploration program described in this report is preliminary in nature and is not intended to provide sufficient detail on subsurface conditions for each individual lot or stormwater management area. Due to the variability in soil and bedrock conditions, especially the potential for undercutting of soft/loose soils below footing grade of some residential structures, shallow groundwater as well as possible bedrock excavation during utility and residential building construction, follow-up exploration by test pits or borings is recommended to provide lot-specific geotechnical recommendations. *Note that stormwater infiltration potential estimations based on soil borings are considered preliminary, and test pits will likely need to be performed in proposed stormwater management areas to develop final design infiltration rates. If the stormwater design is based on the soil borings performed during the subsurface exploration program summarized in this report, revisions to the design may be required depending on the findings in the test pits.* We can provide specific recommendations and a proposal for the additional geotechnical work at the appropriate time.

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It has been a pleasure to serve you on this project. If you have any questions or need additional consultation, please contact us.

Sincerely,

CGC, Inc.

A blue ink signature of Tim F. Gassenheimer, written in a cursive style.

Tim F. Gassenheimer, EIT, CST
Staff Engineer

A blue ink signature of Ryan J. Portman, written in a cursive style.

Ryan J. Portman, PE, CST
Consulting Professional

Encl: Appendix A - Field Exploration
Appendix B - Soil Boring Location Exhibit
Logs of Test Borings (17)
Particle Size Distribution Test Report (1)
Log of Test Boring-General Notes
Unified Soil Classification System
Web Soil Survey Map and Legend (3 Pages)
Appendix C - Document Qualifications
Appendix D - Recommended Compacted Fill Specifications
Appendix E - Rock Excavation Considerations
Appendix F - WDSPS Soil and Site Evaluation – Storm Forms (3 Borings)

Cc: Mr. Dan Day, D'Onofrio Kottke and Associates

APPENDIX A
FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

Subsurface conditions for this study were explored by drilling 17 Standard Penetration Test (SPT) soil borings to planned depths between 15 and 20 ft below current site grades at locations selected and field-staked by D’Onofrio Kottke personnel, who also surveyed the ground surface elevations at the boring locations. The borings were conducted on December 11 and 12, 2019 by GeoServe (under subcontract to CGC), using a track-mounted (ATV) Geoprobe 7822DT rotary drill rig equipped with hollow stem augers and an automatic SPT hammer. Note that auger and split-spoon refusal occurred in Boring 15 at about 12.5 ft below the ground surface on apparent bedrock.

Soil samples were generally obtained at 2.5-foot intervals to a depth of 10 ft and at 5-ft intervals thereafter. As an exception, the borings located in or near proposed stormwater management areas were sampled at 2.5-foot intervals to the final depth. The soil samples were obtained in general accordance with specifications for standard penetration testing, ASTM D 1586. The specific procedures used for drilling and sampling are described below.

1. Boring Procedures between Samples

The boring is extended downward, between samples, by a hollow stem auger.

2. Standard Penetration Test and Split-Barrel Sampling of Soils
(ASTM Designation: D 1586)

This method consists of driving a 2-inch outside diameter split-barrel sampler using a 140-pound weight falling freely through a distance of 30 inches. The sampler is first seated 6 inches into the material to be sampled and then driven 12 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the log of borings and is known as the Standard Penetration Resistance. Recovered samples are first classified as to texture by the driller.

During the field exploration, the driller visually classified the soil and prepared a field log. *Field screening of the soil samples for possible environmental contaminants was not conducted by the driller, as environmental site assessment activities is beyond CGC's work scope.* Water level observations were made in each boring during and after drilling and are shown at the bottom of each boring log. Upon completion of drilling, the boreholes were backfilled in accordance with WDNR regulations, and the soil samples were delivered to our laboratory for visual classification and laboratory testing. The soils were visually classified by a geotechnical engineer using the Unified Soil Classification System. The final logs prepared by the engineer, including the laboratory test results, along with a Soil Boring Location Exhibit and a description of the Unified Soil Classification System are presented in Appendix B.

APPENDIX B

SOIL BORING LOCATION EXHIBIT

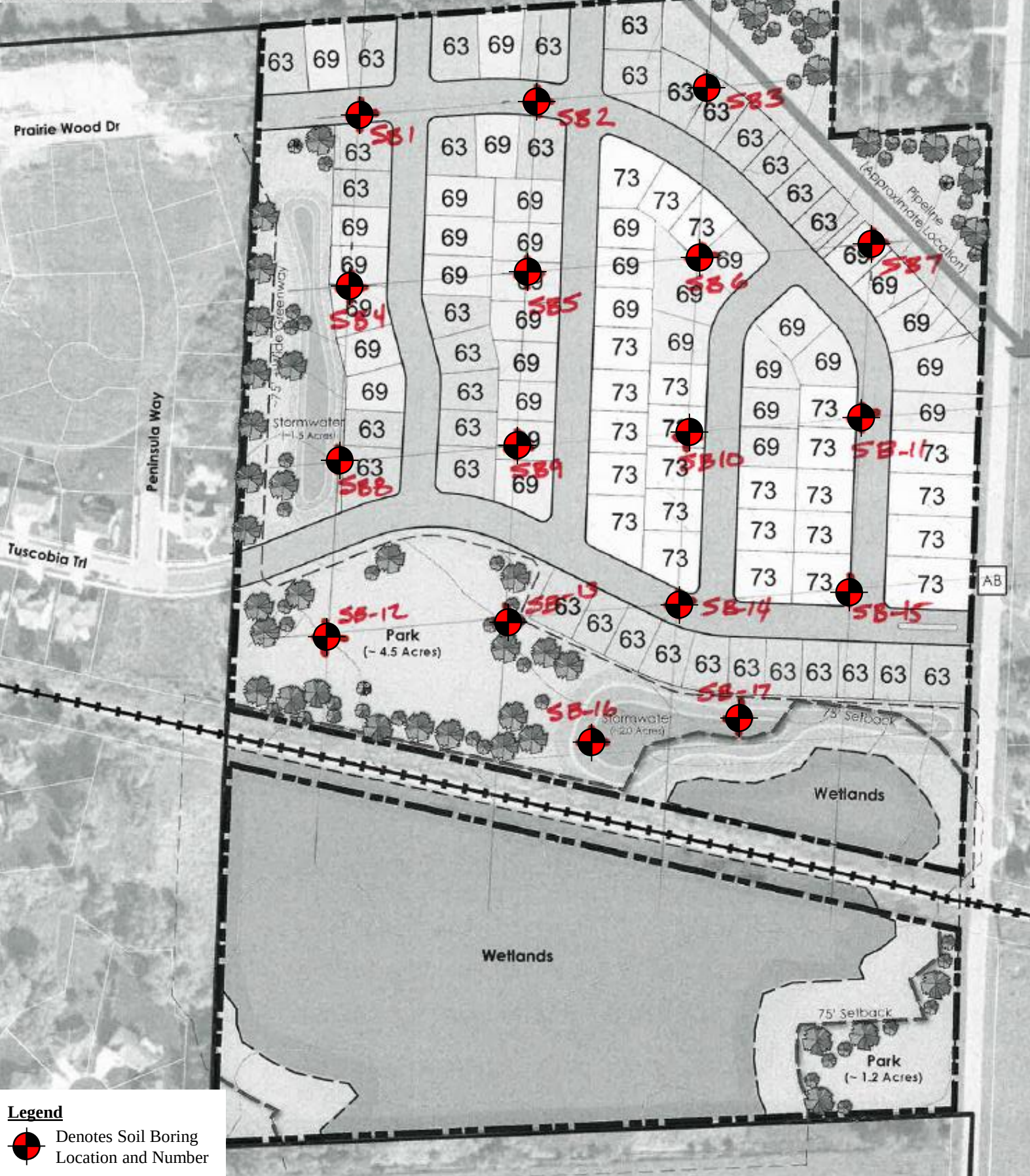
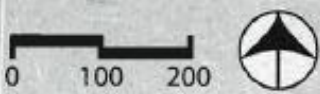
LOGS OF TEST BORINGS (17)

PARTICLE SIZE DISTRIBUTION TEST REPORT (1)

LOG OF TEST BORING-GENERAL NOTES

UNIFIED SOIL CLASSIFICATION SYSTEM

WEB SOIL SURVEY MAP AND LEGEND (3 PAGES)



Legend

 Denotes Soil Boring Location and Number

Notes

1. Borings were drilled by GeoServe on December 11 and 12, 2019.
2. Boring locations are approximate.
3. Base map was prepared by D'Onofrio Kottke and Associates.

Job No.: C19482		SOIL BORING LOCATION EXHIBIT Proposed Residential Development Utterback Property – CTH AB Town of Dunn, Dane County, Wisconsin
Date: 12/2019		



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **1**
 Surface Elevation (ft) **872.72**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		18	M	7			Very Stiff, Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL)	(2.5-3.25)	24.3			
2		18	M	4			Stiff, Brown Lean CLAY, Trace Sand (CL)	(1.0-1.75)	29.8			
					5							
3		18	M	29			Medium Dense to Very Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM/GP/GP-GM)					
4		18	M	60			Possible Cobble/Boulder near 9 ft					
					10							
							Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
5		8	W	16								
					15							
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					
					20							

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling ☒ 13.0' Upon Completion of Drilling _____
 Time After Drilling _____ 10 mins. _____
 Depth to Water _____ NW ☒
 Depth to Cave in _____ 11.0'

Start 12/12/19 End 12/12/19
 Driller GeoServe Chief Eddie Rig Geoprobe
 Logger Matt Editor TFG 7822DT
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **2**
Surface Elevation (ft) **881.14**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		18	M	8			Very Stiff, Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL)	(2.5-4.0)	25.8			
2		4	M	10			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.5)				
					5		Medium Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM/GP/GP-GM)					
3		18	M	12			Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
4		4	M	24								
					10							
							Medium Dense to Very Dense, Tan Fine to Medium SAND, Little to Some Gravel, Little Silt, Scattered Cobbles/Boulders (SP-SM)					
5		18	M	27								
					15							
6		12	M	102								
					20							
End of Boring at 20 ft												
Borehole Backfilled with Bentonite Chips												

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling ☒ NW Upon Completion of Drilling _____
Time After Drilling _____ 10 mins. _____
Depth to Water _____ NW ☒
Depth to Cave in _____ 17.0'

Start 12/12/19 End 12/12/19
Driller GeoServe Chief Eddie Rig Geoprobe
Logger Matt Editor TFG 7822DT
Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **3**
Surface Elevation (ft) **869.74**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
						12± in. TOPSOIL (OL)						
1		18	M	10		Very Stiff, Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL)	(3.0-3.25)	25.7				
2		18	M	6		Medium Stiff, Brown Sandy Lean CLAY, Trace Gravel (CL)	(0.75-1.0)	18.2				
3		12	M/W	7		Loose to Medium Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM/GP/GP-GM)						
4		16	W	28								
5		10	W	13								
End of Boring at 15 ft												
Borehole Backfilled with Bentonite Chips												

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling ∇ **6.5'** Upon Completion of Drilling _____
Time After Drilling _____ **10 mins.**
Depth to Water _____ **8.0'** ∇
Depth to Cave in _____ **9.0'**

Start **12/12/19** End **12/12/19**
Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
Logger **Matt** Editor **TFG** **7822DT**
Drill Method **2.25" HSA; Autohammer**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **4**
 Surface Elevation (ft) **867.88**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		16	M	6			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.5-2.75)	24.4			
2		18	M	20			Medium Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM/GP/GP-GM)					
					5							
3		18	W	22			Medium Dense, Tan Fine to Coarse SAND, Little Gravel, Trace Silt (SP)					
4		12	W	18			Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
					10							
							Medium Dense, Tan/Reddish Brown (Laminated) Silty Fine SAND to Sandy SILT (SM/ML)					
5		16	W	16								
					15							
						End of Boring at 15 ft						
						Borehole Backfilled with Bentonite Chips						
					20							

WATER LEVEL OBSERVATIONS

While Drilling ∇ **6.5'** Upon Completion of Drilling _____
 Time After Drilling _____ **10 mins.**
 Depth to Water _____ **8.0'** ∇
 Depth to Cave in _____ **8.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/12/19** End **12/12/19**
 Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
 Logger **Matt** Editor **TFG** **7822DT**
 Drill Method **2.25" HSA; Autohammer**



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **5**
Surface Elevation (ft) **871.59**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		18	M	7			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.5-2.75)	23.3			
2		18	M	6			Stiff, Brown Sandy Lean CLAY, Little Gravel (CL)	(1.0-2.0)				
					5		Loose, Brown Fine to Medium SAND, Little to Some Silt, Trace Gravel (SP-SM/SM)					
3		12	M	24			Medium Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM/GP/GP-GM)					
4		12	W	7	▽		Loose to Very Dense, Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Cobbles/Boulders (SM)					
					10							
					▽							
5		16	W	81			Probable Cobble/Boulder near 14 ft					
					15							
							Medium Dense to Very Dense, Tan Fine SAND, Trace to Little Silt (SP/SP-SM)					
6		18	W	95			Very Stiff, Reddish Brown Lean to Silty CLAY, Trace Gravel (CL/CL-ML - Possible Highly Weathered/Decomposed Bedrock)	(2.75-3.5)				
					20		End of Boring at 20 ft					
							Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

While Drilling ∇ **8.5'** Upon Completion of Drilling _____
Time After Drilling _____ **10 mins.**
Depth to Water _____ **11.0'** ∇
Depth to Cave in _____ **14.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/12/19** End **12/12/19**
Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
Logger **Matt** Editor **TFG** **7822DT**
Drill Method **2.25" HSA; Autohammer**



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **6**
Surface Elevation (ft) **866.29**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		12	M	6			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.0-2.5)	23.0			
2		16	M/W	3			Very Loose, Brown Fine to Medium SAND, Some Silt, Trace Gravel (SM)					
					5							
												
3		18	W	12			Medium Dense, Tan Fine to Coarse SAND, Little Gravel, Trace Silt (SP)					
4		18	W	6			Loose, Brown Fine to Medium SAND, Trace Silt and Gravel (SP)					
					10							
							Medium Dense, Grayish Brown Fine to Coarse SAND, Little Gravel, Trace Silt (SP)					
5		18	W	12								
					15							
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					
					20							

WATER LEVEL OBSERVATIONS

While Drilling ∇ **6.5'** Upon Completion of Drilling _____
Time After Drilling _____ **10 mins.**
Depth to Water _____ **6.0'** ∇
Depth to Cave in _____ **7.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/12/19** End **12/12/19**
Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
Logger **Matt** Editor **TFG** **7822DT**
Drill Method **2.25" HSA; Autohammer**

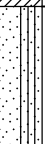


LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **7**
Surface Elevation (ft) **866.34**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		16	M	6			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.25-2.5)	24.0			
2		10	M/W	4			Soft, Brown Sandy Lean CLAY, Trace Gravel (CL)	(0.25-0.5)	17.5			
					5							
3		12	W	3			Very Loose, Brown Fine to Medium SAND, Little Silt, Trace Gravel (SP-SM)					
4		12	W	5			Loose, Tan Fine SAND, Little to Some Silt (SP-SM/SM)					
					10							
							Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
5		12	W	24								
					15							
						End of Boring at 15 ft						
						Borehole Backfilled with Bentonite Chips						
					20							

WATER LEVEL OBSERVATIONS

While Drilling ∇ **6.5'** Upon Completion of Drilling _____
Time After Drilling _____ **10 mins.**
Depth to Water _____ **6.0'** ∇
Depth to Cave in _____ **7.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/11/19** End **12/11/19**
Driller **GeoServe Chief Eddie Rig Geoprobe**
Logger **Matt Editor TFG 7822DT**
Drill Method **2.25" HSA; Autohammer**



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **8**
Surface Elevation (ft) **865.92**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		12	M	4			Stiff to Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.0)	25.9			
2		16	M	5			Stiff to Very Stiff, Gray/Brown (Mottled) Lean CLAY, Trace Sand (CL)	(1.75-3.0)	26.7			
					5							
3		12	W	20			Medium Dense, Tan Gravelly Fine to Coarse SAND, Trace Silt, Scattered Cobbles/Boulders (SP)					
4		12	W	15			Medium Dense, Tan Fine to Medium SAND, Some Gravel, Trace to Little Silt (SP/SP-SM)					
					10							
							Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
5		16	W	12								
					15							
End of Boring at 15 ft												
Borehole Backfilled with Bentonite Chips												
					20							

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling ∇ **6.5'** Upon Completion of Drilling _____
Time After Drilling _____ **10 mins.**
Depth to Water _____ **6.0'** ∇
Depth to Cave in _____ **7.0'**

Start **12/12/19** End **12/12/19**
Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
Logger **Matt** Editor **TFG** **7822DT**
Drill Method **2.25" HSA; Autohammer**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **9**
Surface Elevation (ft) **870.51**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		16	M	7			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(3.25-3.5)	23.4			
2		18	M	18			Medium Dense, Tan Fine to Coarse SAND, Some Gravel, Trace Silt, Scattered Cobbles/Boulders (SP)					
3		18	M	90	5		Dense to Very Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered to Numerous Cobbles/Boulders (SP/SP-SM/GP/GP-GM) Probable Cobble/Boulder near 6.5 ft					
4		0	M	34	10		No Recovery from 8.5 to 10 ft (Sample 4) - Sample Collected from Drill Cuttings					
5		12	W	10	15		Medium Dense to Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
6		18	W	45	20		Possible Cobble/Boulder near 19 ft					
							End of Boring at 20 ft					
							Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

While Drilling ☒ 13.0' Upon Completion of Drilling _____
Time After Drilling _____ 10 mins.
Depth to Water _____ 11.0' ☒
Depth to Cave in _____ 11.0'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/12/19 End 12/12/19
Driller GeoServe Chief Eddie Rig Geoprobe
Logger Matt Editor TFG 7822DT
Drill Method 2.25" HSA; Autohammer



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **10**
Surface Elevation (ft) **868.32**
Job No. **C19482**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		18	M	8			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.75-3.0)	23.7			
2		18	M	9								
					5		Loose, Tan Fine to Coarse SAND, Some Gravel, Trace Silt, Scattered Cobbles/Boulders (SP)					
3		18	M	40			Medium Dense to Dense, Tan Fine to Coarse SAND and GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM/GP/GP-GM) Possible Cobble/Boulder near 6.5 ft					
4		18	W	18								
					10							
							Loose to Medium Dense, Tan Fine to Coarse SAND, Trace Silt and Gravel (SP)					
5		12	W	10								
					15							
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					
					20							

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling ☒ 8.0' Upon Completion of Drilling _____
Time After Drilling _____ 10 mins. _____
Depth to Water _____ 8.0' ☒
Depth to Cave in _____ 8.0' _____

Start 12/12/19 End 12/12/19
Driller GeoServe Chief Eddie Rig Geoprobe
Logger Matt Editor TFG 7822DT
Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **11**
 Surface Elevation (ft) **862.88**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		6	M	6			Stiff, Brown/Gray (Lightly Mottled) Sandy Lean CLAY (CL)	(1.75-2.0)	12.0			
							Loose to Medium Dense, Brown Clayey Fine to Medium SAND (SC)					
2		12	M/W	18								
							Medium Dense, Tan Fine to Coarse SAND, Little Gravel, Trace Silt (SP)					
					5							
3		16	W	17			Medium Dense, Grayish Brown Gravelly Fine to Coarse SAND, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM)					
4		10	W	10			Loose, Gray to Brown Fine to Coarse SAND, Little Gravel, Trace Silt (SP)					
					10							
5		18	W	9								
					15							
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					
					20							

WATER LEVEL OBSERVATIONS

While Drilling ☒ **6.0'** Upon Completion of Drilling **10 mins.**
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start **12/11/19** End **12/11/19**
 Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
 Logger **Matt** Editor **TFG** **7822DT**
 Drill Method **2.25" HSA; Autohammer**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **12**
 Surface Elevation (ft) **863.41**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							18± in. TOPSOIL (OL)					
1		18	M	5			Stiff, Gray/Brown (Lightly Mottled) Lean CLAY, Trace to Little Sand (CL)	(1.0-1.25)	28.2			
2		18	M	7	▼		Stiff, Light Gray/Brown (Mottled) Lean CLAY, Little Sand (CL)	(1.25-1.75)				
					5							
3		18	W	4	▽		Loose, Brown Fine to Medium SAND, Trace Silt and Gravel (SP)					
4		18	W	36			Dense, Grayish Brown Gravelly Fine to Coarse SAND, Little Silt, Scattered Cobbles/Boulders (SP-SM)					
					10							
							Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
5		12	W	19								
					15							
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					
					20							

WATER LEVEL OBSERVATIONS

While Drilling ☒ **6.5'** Upon Completion of Drilling _____
 Time After Drilling _____ **10 mins.**
 Depth to Water _____ **4.0'** ☒
 Depth to Cave in _____ **8.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/11/19** End **12/11/19**
 Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
 Logger **Matt** Editor **TFG** **7822DT**
 Drill Method **2.25" HSA; Autohammer**

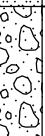


LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **13**
 Surface Elevation (ft) **867.25**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		12	M	5			Stiff/Loose, Brown to Yellowish Brown Sandy Lean CLAY to Clayey Fine SAND, Trace Gravel (CL/SC) <i>USDA: 10YR 5/3, 5/4 Sandy Clay Loam</i>	(1.0-1.5)	14.7			
2		16	M	12			Medium Dense, Very Pale Brown Fine to Medium SAND, Trace Silt and Gravel (SP) <i>USDA: 10YR 7/3 Fine Sand</i>		4.5			
					5		P200 (Sample 2 - 3.5 to 5 ft): 3.5%					
3		18	M/W	19			Medium Dense, Pale Brown Sandy Fine to Coarse GRAVEL, Trace Silt, Scattered Cobbles/Boulders (GP) <i>USDA: 10YR 6/3 Extremely Gravelly Sand</i>					
							Very Loose to Loose, Pale Brown Fine to Medium SAND, Little Gravel, Trace Silt (SP) <i>USDA: 10YR 6/3 Sand</i>					
					10							
5		18	W	11			Medium Dense, Pale Brown Silty Fine SAND, Trace Gravel (SM) <i>USDA: 10YR 6/3 Fine Sandy Loam</i>					
							Medium Dense, Pale Brown Fine Sand, Trace Silt and Gravel, Scattered Silt Seams (SP) <i>USDA: 10YR 6/3 Fine Sand, Silt Loam Seams</i>					
6		18	W	15								
					15		End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

While Drilling ☒ 8.0' Upon Completion of Drilling _____
 Time After Drilling _____ 1 Day _____ 10 mins. _____
 Depth to Water _____ NW _____ 6.0' ☒
 Depth to Cave in _____ 6.0' _____ 6.0'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/11/19 End 12/11/19
 Driller GeoServe Chief Eddie Rig Geoprobe
 Logger Matt Editor TFG 7822DT
 Drill Method 2.25" HSA; Autohammer

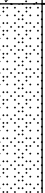


LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **14**
 Surface Elevation (ft) **866.81**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		14	M	7			Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.75-3.0)	24.0			
2		18	M/W	3			Very Loose, Brown Fine to Medium SAND, Little to Some Silt, Trace Gravel (SP-SM/SM)					
					5							
3		12	W	5			Loose, Grayish Brown Gravelly Fine to Coarse SAND, Little Silt, Scattered Cobbles/Boulders (SP-SM)					
4		12	W	3			Very Loose, Brown Fine to Medium SAND, Trace Silt and Gravel (SP)					
					10							
							Loose to Medium Dense, Tan Silty Fine SAND, Scattered Lean Clay Seams (SM)					
5		18	W	10								
					15							
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					
					20							

WATER LEVEL OBSERVATIONS

While Drilling ☒ **7.0'** Upon Completion of Drilling **10 mins.**
 Time After Drilling _____
 Depth to Water _____ **6.0'** ☒
 Depth to Cave in _____ **6.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/11/19** End **12/11/19**
 Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
 Logger **Matt** Editor **TFG** **7822DT**
 Drill Method **2.25" HSA; Autohammer**



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **15**
 Surface Elevation (ft) **864.13**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
					12± in. TOPSOIL (OL)					
1		18	M	6	Stiff, Brown Lean CLAY, Trace Sand (CL)	(1.75-2.0)	25.6			
2		12	M	4	Soft, Gray/Brown (Mottled) Lean CLAY to Sandy Lean CLAY, Trace Gravel (CL)	(0.25-0.5)	22.9			
3		18	M/W	23	Medium Dense, Tan Fine to Medium SAND, Little Gravel, Trace Silt, Scattered Organic Seams (SP)					
4		18	W	5	Loose, Brown SILT to Clayey SILT, Trace to Little Sand (ML)	(0.5-1.5)	21.3	17	16	
5		4	W	99/4"	Very Dense, Brown to Gray Clayey to Silty Fine to Coarse SAND, Some Gravel (SC/SM - Probable Highly Weathered to Weathered Sandy Dolomite Bedrock)					
6		0	-	99/0"	End of Boring/Auger and Split-Spoon Refusal on Apparent Sandy Dolomite Bedrock at 12.5 ft					
					Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

While Drilling ☒ 7.0' Upon Completion of Drilling _____
 Time After Drilling _____ 10 mins. _____
 Depth to Water _____ 6.0' ☒
 Depth to Cave in _____ 6.0' _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/11/19 End 12/11/19
 Driller GeoServe Chief Eddie Rig Geoprobe
 Logger Matt Editor TFG 7822DT
 Drill Method 2.25" HSA; Autohammer



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **16**
 Surface Elevation (ft) **861.45**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL	LI
							12± in. TOPSOIL (OL)					
1		12	M/W	3	▼		Medium Stiff to Stiff, Black to Very Dark Grayish Brown Organic to Silty CLAY, Little to Some Sand (OL/CL-ML - Probable Lower Horizon Topsoil in Upper Part of Layer)	(0.75-1.25)				
2		18	M	6			USDA: 10YR 2/1 to 3/2 Clay Loam Stiff, Gray/Light Olive Brown (Mottled) Sandy Lean CLAY, Trace Gravel (CL) USDA: 2.5Y 5/1 (Redox: c2d 2.5Y 5/3) Sandy Clay Loam	(1.5-1.75)				
3		18	W	12	▽		Medium Dense, Pale Brown Fine to Medium SAND, Little Gravel, Trace Silt (SP) USDA: 10YR 6/3 Sand					
4		18	W	18			Medium Dense, Pale Brown Fine Sand, Trace Silt and Gravel (SP) USDA: 10YR 6/3 Fine Sand					
5		18	W	11			Medium Dense, Fine Layers of Light Yellowish Brown Silty Fine SAND, Light Brown SILT and Brown Lean CLAY (SM/ML/CL) USDA: Stratified 10YR 6/4 Fine Sandy Loam, 7.5YR 6/3 Silt Loam and 7.5YR 5/4 Silty Clay Loam					
6		18	W	11			Medium Stiff to Very Stiff, Light Brown Lean to Silty CLAY, Trace Sand (CL/CL-ML) USDA: 7.5YR 6/3 Silty Clay Loam	(0.75-2.5)				
							End of Boring at 15 ft					
							Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

While Drilling ☒ 6.5' Upon Completion of Drilling _____
 Time After Drilling _____ 1 Day _____ 10 mins. _____
 Depth to Water _____ 2.0' _____ 6.0' ▼
 Depth to Cave in _____ 4.0' _____ 6.0' _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 12/11/19 End 12/11/19
 Driller GeoServe Chief Eddie Rig Geoprobe
 Logger Matt Editor TFG 7822DT
 Drill Method 2.25" HSA; Autohammer



LOG OF TEST BORING

Project **Proposed Residential Development**
Utterback Property - CTH AB
 Location **Town of Dunn, Dane County, Wisconsin**

Boring No. **17**
 Surface Elevation (ft) **861.70**
 Job No. **C19482**
 Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N			Depth (ft)	qu (qa) (tsf)	W	LL	PL
						 12± in. TOPSOIL (OL)					
1		18	M	5		 Stiff, Gray/Brown (Lightly Mottled) Sandy Lean CLAY, Trace Gravel (CL) <i>USDA: 10YR 5/1 (Redox: c1f 10YR 5/3) Sandy Clay Loam</i>	(1.25-1.5)				
2		18	M	4		 Medium Stiff to Stiff, Gray/Yellowish Brown (Mottled) Lean CLAY, Trace to Little Sand (CL) <i>USDA: 5Y 6/1 (Redox: c2d 10YR 5/4) Clay Loam</i>	(0.75-1.5)				
3		18	W	11		 Medium Dense, Pale Brown Fine Sand, Trace Silt and Gravel, Scattered Silt and Organic to Silty Clay Seams (SP) <i>USDA: 10YR 6/3 Fine Sand, Silt Loam and Silty Clay Loam Seams</i>					
4		18	W	17		 Stiff to Very Stiff, Light Brown/Brown (Laminated) Lean to Silty CLAY, Trace Sand (CL/CL-ML) <i>USDA: 7.5YR 6/3, 5/4 Silty Clay Loam</i>	(1.25-2.5)				
5		18	W	5		 Very Dense, Gray Clayey to Silty Fine to Coarse SAND, Some Gravel, Scattered Cobbles/Boulders (SC/SM - Possible Highly Weathered Bedrock) <i>USDA: 7.5YR 6/1 Gravelly Sandy Loam</i>					
6		8	W	50/2"		 Probable Cobble/Boulder near 14 ft End of Boring at 15 ft Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

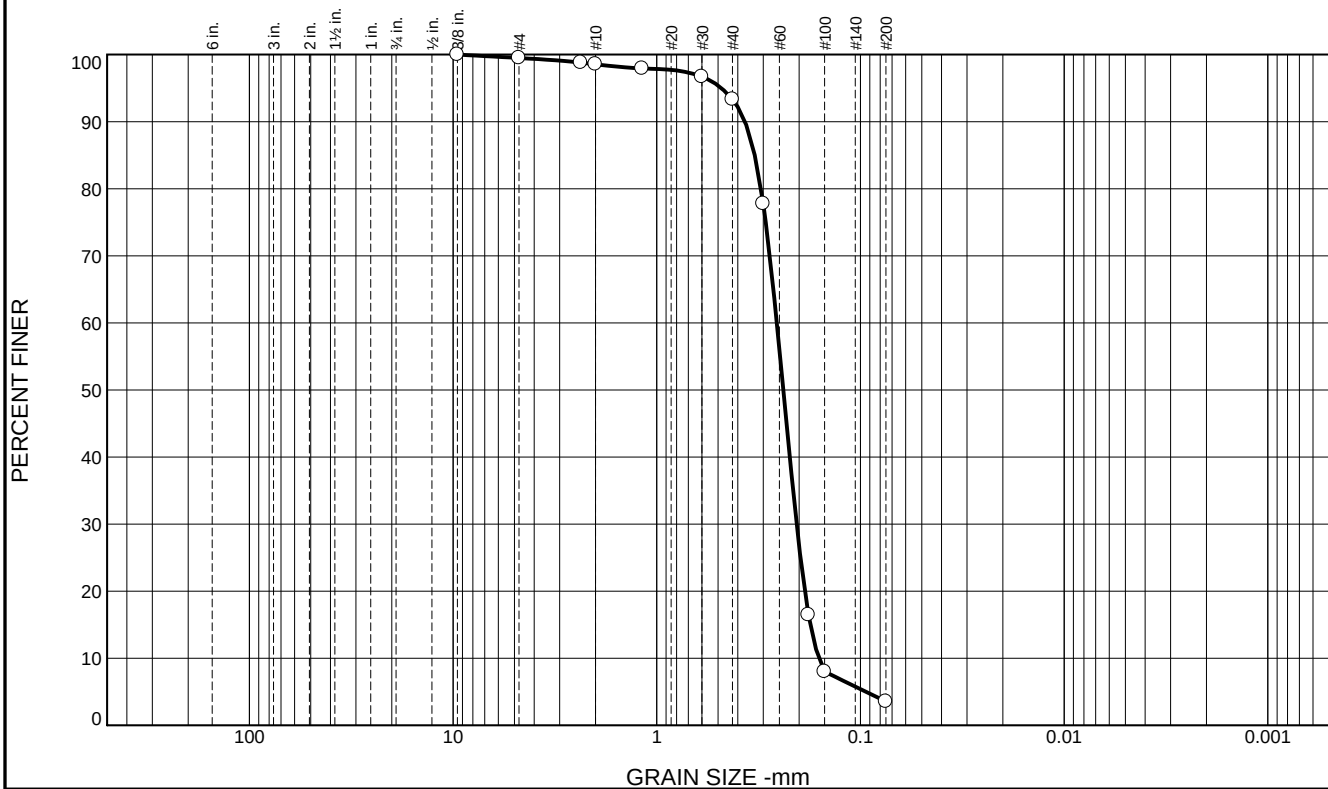
While Drilling ∇ **6.5'** Upon Completion of Drilling _____
 Time After Drilling **1 Day** **10 mins.**
 Depth to Water **2.5'** **6.0'** ∇
 Depth to Cave in **5.0'** **7.0'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **12/11/19** End **12/11/19**
 Driller **GeoServe Chief** **Eddie** Rig **Geoprobe**
 Logger **Matt** Editor **TFG** **7822DT**
 Drill Method **2.25" HSA; Autohammer**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.9	5.3	89.8	3.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	99.5		
#8	98.8		
#10	98.6		
#16	97.9		
#30	96.7		
#40	93.3		
#50	77.8		
#80	16.4		
#100	8.0		
#200	3.5		

* (no specification provided)

Material Description
Brown Fine to Medium Sand, Trace Silt and Gravel

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.3687 D₈₅= 0.3303 D₆₀= 0.2573
 D₅₀= 0.2391 D₃₀= 0.2057 D₁₅= 0.1764
 D₁₀= 0.1599 C_u= 1.61 C_c= 1.03

Classification
 USCS= SP AASHTO=

Remarks
 USDA: Fine Sand

Sample Number: Boring 13

Depth: 3.5 to 5 ft

Date: 12/27/19



Client: VH Acquisitions, LLC
 Project: Utterback Property Residential Development

Project No: C19482

Figure

Tested By: DRW

Checked By: TFG

LOG OF TEST BORING General Notes

DESCRIPTIVE SOIL CLASSIFICATION

Grain Size Terminology

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse.....	¾" to 3"	¾" to 3"
Fine	4.76 mm to ¾"	#4 to ¾"
Sand: Coarse.....	2.00 mm to 4.76 mm.....	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm.....	#200 to #40
Silt.....	0.005 mm to 0.074 mm.....	Smaller than #200
Clay.....	Smaller than 0.005 mm.....	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

General Terminology

Physical Characteristics
Color, moisture, grain shape, fineness, etc.
Major Constituents
Clay, silt, sand, gravel
Structure
Laminated, varved, fibrous, stratified,
cemented, fissured, etc.
Geologic Origin
Glacial, alluvial, eolian, residual, etc.

Relative Density

Term	"N" Value
Very Loose.....	0 - 4
Loose.....	4 - 10
Medium Dense.....	10 - 30
Dense.....	30 - 50
Very Dense.....	Over 50

Relative Proportions Of Cohesionless Soils

Proportional Term	Defining Range by Percentage of Weight
Trace.....	0% - 5%
Little	5% - 12%
Some.....	12% - 35%
And	35% - 50%

Consistency

Term	q _u -tons/sq. ft
Very Soft.....	0.0 to 0.25
Soft.....	0.25 to 0.50
Medium.....	0.50 to 1.0
Stiff.....	1.0 to 2.0
Very Stiff.....	2.0 to 4.0
Hard.....	Over 4.0

Organic Content by Combustion Method

Soil Description	Loss on Ignition
Non Organic.....	Less than 4%
Organic Silt/Clay.....	4 - 12%
Sedimentary Peat.....	12% - 50%
Fibrous and Woody Peat...	More than 50%

Plasticity

Term	Plastic Index
None to Slight.....	0 - 4
Slight.....	5 - 7
Medium.....	8 - 22
High to Very High ..	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

Drilling and Sampling

CS – Continuous Sampling
RC – Rock Coring: Size AW, BW, NW, 2"W
RQD – Rock Quality Designation
RB – Rock Bit/Roller Bit
FT – Fish Tail
DC – Drove Casing
C – Casing: Size 2 ½", NW, 4", HW
CW – Clear Water
DM – Drilling Mud
HSA – Hollow Stem Auger
FA – Flight Auger
HA – Hand Auger
COA – Clean-Out Auger
SS - 2" Dia. Split-Barrel Sample
2ST – 2" Dia. Thin-Walled Tube Sample
3ST – 3" Dia. Thin-Walled Tube Sample
PT – 3" Dia. Piston Tube Sample
AS – Auger Sample
WS – Wash Sample
PTS – Peat Sample
PS – Pitcher Sample
NR – No Recovery
S – Sounding
PMT – Borehole Pressuremeter Test
VS – Vane Shear Test
WPT – Water Pressure Test

Laboratory Tests

q_a – Penetrometer Reading, tons/sq ft
q_a – Unconfined Strength, tons/sq ft
W – Moisture Content, %
LL – Liquid Limit, %
PL – Plastic Limit, %
SL – Shrinkage Limit, %
LI – Loss on Ignition
D – Dry Unit Weight, lbs/cu ft
pH – Measure of Soil Alkalinity or Acidity
FS – Free Swell, %

Water Level Measurement

▽ - Water Level at Time Shown
NW – No Water Encountered
WD – While Drilling
BCR – Before Casing Removal
ACR – After Casing Removal
CW – Cave and Wet
CM – Caved and Moist

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

Unified Soil Classification System

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS

(more than 50% of material is larger than No. 200 sieve size)

GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size		Clean Gravels (Less than 5% fines)	
		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		Gravels with fines (More than 12% fines)	
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
		Clean Sands (Less than 5% fines)	
		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
		Sands with fines (More than 12% fines)	
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS

(50% or more of material is smaller than No. 200 sieve size.)

SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA

GW $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3

GP Not meeting all gradation requirements for GW

GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line or P.I. greater than 7	

SW $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3

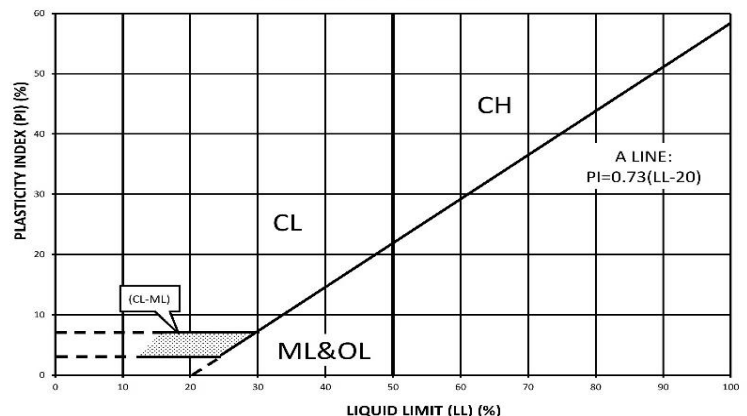
SP Not meeting all gradation requirements for GW

SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent GW, GP, SW, SP
More than 12 percent GM, GC, SM, SC
5 to 12 percent Borderline cases requiring dual symbols

PLASTICITY CHART



Soil Map—Dane County, Wisconsin
(Utterback Property)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

12/28/2019
Page 1 of 3
Page 301 of 396

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Dane County, Wisconsin

Survey Area Data: Version 18, Sep 10, 2019

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

Date(s) aerial images were photographed: Data not available.

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Co	Colwood silt loam, 0 to 2 percent slopes	0.1	0.2%
DnB	Dodge silt loam, 2 to 6 percent slopes	4.4	11.3%
EgA	Elburn silt loam, gravelly substratum, 0 to 3 percent slopes	0.3	0.9%
GsB	Grays silt loam, 2 to 6 percent slopes	3.4	8.7%
KeB	Kegonsa silt loam, 2 to 6 percent slopes	16.7	42.3%
KrD2	Kidder soils, 10 to 20 percent slopes, eroded	0.8	2.0%
PoB	Plano silt loam, gravelly substratum, 2 to 6 percent slopes	13.0	33.1%
SaA	Sable silty clay loam, 0 to 2 percent slopes	0.6	1.6%
Totals for Area of Interest		39.4	100.0%

APPENDIX C

DOCUMENT QUALIFICATIONS

APPENDIX C

DOCUMENT QUALIFICATIONS

I. GENERAL RECOMMENDATIONS/LIMITATIONS

CGC, Inc. should be provided the opportunity for a general review of the final design and specifications to confirm that earthwork and foundation requirements have been properly interpreted in the design and specifications. CGC should be retained to provide soil engineering services during excavation and subgrade preparation. This will allow us to observe that construction proceeds in compliance with the design concepts, specifications and recommendations, and also will allow design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction. CGC does not assume responsibility for compliance with the recommendations in this report unless we are retained to provide construction testing and observation services.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices and no other warranties are expressed or implied. The opinions and recommendations submitted in this report are based on interpretation of the subsurface information revealed by the test borings indicated on the location plan. The report does not reflect potential variations in subsurface conditions between or beyond these borings. Therefore, variations in soil conditions can be expected between the boring locations and fluctuations of groundwater levels may occur with time. The nature and extent of the variations may not become evident until construction.

II. IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you* - should apply the report for any purpose or project except the one originally contemplated.

READ THE FULL REPORT

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. *CGC cannot accept responsibility or liability for problems that occur because our reports do not consider developments of which we were not informed.*

SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL OPINION

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgement to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ - sometimes significantly - from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most

effective method of managing the risks associated with unanticipated conditions.

A REPORT'S RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the confirmation-dependent recommendations included in your report. *Those confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgement and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *CGC cannot assume responsibility or liability for the report's confirmation-dependent recommendations if we do not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical engineering report. Confront that risk by having CGC participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

DO NOT REDRAW THE ENGINEER'S LOGS

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

GIVE CONSTRUCTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

READ RESPONSIBILITY PROVISIONS CLOSELY

Some clients, design professionals, and constructors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic

expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineer's responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

OBTAIN PROFESSIONAL ASSISTANCE TO DEAL WITH MOLD

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention.*** ***Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

RELY ON YOUR GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE

Membership in the Geotechnical Business Council (GBC) of Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with CGC, a member of GBC, for more information.

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Geotechnical Business Council
of the Geoprofessional Business Association
8811 Colesville Road, Suite G 106
Silver Spring, MD 20910

APPENDIX D

RECOMMENDED COMPACTED FILL SPECIFICATIONS

APPENDIX D

CGC, INC.

RECOMMENDED COMPACTED FILL SPECIFICATIONS

General Fill Materials

Proposed fill shall contain no vegetation, roots, topsoil, peat, ash, wood or any other non-soil material which by decomposition might cause settlement. Also, fill shall never be placed while frozen or on frozen surfaces. Rock, stone or broken concrete greater than 6 in. in the largest dimension shall not be placed within 10 ft of the building area. Fill used greater than 10 ft beyond the building limits shall not contain rock, boulders or concrete pieces greater than a 2 sq ft area and shall not be placed within the final 2 ft of finish subgrade or in designated utility construction areas. Fill containing rock, boulders or concrete pieces should include sufficient finer material to fill voids among the larger fragments.

Special Fill Materials

In certain cases, special fill materials may be required for specific purposes, such as stabilizing subgrades, backfilling undercut excavations or filling behind retaining walls. For reference, WisDOT gradation specifications for various types of granular fill are attached in Table 1.

Placement Method

The approved fill shall be placed, spread and leveled in layers generally not exceeding 10 in. in thickness before compaction. The fill shall be placed at moisture content capable of achieving the desired compaction level. For clay soils or granular soils containing an appreciable amount of cohesive fines, moisture conditioning will likely be required.

It is the Contractor's responsibility to provide all necessary compaction equipment and other grading equipment that may be required to attain the specified compaction. Hand-guided vibratory or tamping compactors will be required whenever fill is placed adjacent to walls, footings, columns or in confined areas.

Compaction Specifications

Maximum dry density and optimum moisture content of the fill soil shall be determined in accordance with modified Proctor methods (ASTM D1557). The recommended field compaction as a percentage of the maximum dry density is shown in Table 2. Note that these compaction guidelines would generally not apply to coarse gravel/stone fill. Instead, a method specification would apply (e.g., compact in thin lifts with a vibratory compactor until no further consolidation is evident).

Testing Procedures

Representative samples of proposed fill shall be submitted to CGC, Inc. for optimum moisture-maximum density determination (ASTM D1557) prior to the start of fill placement. The sample size should be approximately 50 lb.

CGC, Inc. shall be retained to perform field density tests to determine the level of compaction being achieved in the fill. The tests shall generally be conducted on each lift at the beginning of fill placement and at a frequency mutually agreed upon by the project team for the remainder of the project.

Table 1
Gradation of Special Fill Materials

Material	WisDOT Section 311	WisDOT Section 312	WisDOT Section 305			WisDOT Section 209		WisDOT Section 210
	Breaker Run	Select Crushed Material	3-in. Dense Graded Base	1 1/4-in. Dense Graded Base	3/4-in. Dense Graded Base	Grade 1 Granular Backfill	Grade 2 Granular Backfill	Structure Backfill
Sieve Size	Percent Passing by Weight							
6 in.	100							
5 in.		90-100						
3 in.			90-100					100
1 1/2 in.		20-50	60-85					
1 1/4 in.				95-100				
1 in.					100			
3/4 in.			40-65	70-93	95-100			
3/8 in.				42-80	50-90			
No. 4			15-40	25-63	35-70	100 (2)	100 (2)	25-100
No. 10		0-10	10-30	16-48	15-55			
No. 40			5-20	8-28	10-35	75 (2)		
No. 100						15 (2)	30 (2)	
No. 200			2-12	2-12	5-15	8 (2)	15 (2)	15 (2)

Notes:

1. Reference: Wisconsin Department of Transportation *Standard Specifications for Highway and Structure Construction*.
2. Percentage applies to the material passing the No. 4 sieve, not the entire sample.
3. Per WisDOT specifications, both breaker run and select crushed material can include concrete that is 'substantially free of steel, building materials and other deleterious material'.

Table 2
Compaction Guidelines

Area	Percent Compaction (1)	
	Clay/Silt	Sand/Gravel
<u>Within 10 ft of building lines</u>		
Footing bearing soils	93 - 95	95
Under floors, steps and walks		
- Lightly loaded floor slab	90	90
- Heavily loaded floor slab and thicker fill zones	92	95
<u>Beyond 10 ft of building lines</u>		
Under walks and pavements		
- Less than 2 ft below subgrade	92	95
- Greater than 2 ft below subgrade	90	90
Landscaping	85	90

Notes:

1. Based on Modified Proctor Dry Density (ASTM D 1557)

APPENDIX E

ROCK EXCAVATION CONSIDERATIONS

APPENDIX E

ROCK EXCAVATION CONSIDERATIONS

In order to minimize probable "rock" excavation expenses during construction, we suggest that project specifications incorporate the following:

- A. It is assumed that all excavations to levels and dimensions required by the Contract Documents are earth excavation. Earth excavation includes removal and disposal of all materials encountered except rock/sound bedrock which is defined as natural materials which:
 - 1. Cannot be excavated with a minimum 3/4 cubic yard capacity backhoe without drilling and blasting;
 - 2. Cannot be economically removed with a one-tooth ripper on a D8 cat (or equivalent);
 - 3. Requires the use of special equipment such as a pneumatic hammer;
 - 4. Requires the use of explosives (after obtaining written permission of the owner).
- B. Examples of material classified as rock are boulders 1/2 cubic yard or more in volume, bedrock, rock in ledges, and rock-hard cementitious aggregate deposits.
- C. Do not proceed with rock excavation work until architect, engineer and/or testing firm (i.e., CGC) has taken the necessary measures to determine quantity of rock excavation required to complete the work. Measurements will be taken after properly stripped of earth by the contractor. Contractor will be paid the difference between the cost of rock and earth excavation based on an agreed upon unit price established prior to starting rock excavation.

A statement should also be included in the specifications to the effect that: "Stated models of earth excavation equipment are merely for purposes of defining the various excavation categories and are not intended to indicate the brand or type of equipment that is to be used."

APPENDIX F

WISCONSIN DEPARTMENT OF SAFETY & PROFESSIONAL SERVICES SOIL AND SITE EVALUATION – STORM FORM (3 BORINGS)



Attachment 2:

SOIL AND SITE EVALUATION - STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach a complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to nearest road

Please print all information

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]

County	Dane
Parcel I.D.	028/0610-024-8070-0
Reviewed by:	
Date:	

Property Owner Utterback LTD Partnership c/o Wayne Utterback	Property Location Govt. Lot NE 1/4 SE 1/4 S 02 T N 06 R 10 E				
Property Owner's Mail Address 4627 Prairie Fire Ct.	Lot # Block# Subd. Name or CSM #				
City DeForest	State WI	Zip Code 53532	Phone Number	☐ City ☐ Village ☒ Town Dunn	Nearest Road CTH AB
Drainage area sq ft acres	Hydraulic Application Test Method ☒ Morphological Evaluation ☐ Double Ring Infiltrometer ☐ Other: (specify)	Soil Moisture Date of soil borings: USDA-NRCS WETS Value: ☐ Dry = 1; ☐ Normal = 2; ☐ Wet = 3.			
Test site suitable for (check all that apply): ☐ Bioretention; ☐ Subsurface Dispersal System; ☐ Reuse; ☐ Irrigation; ☐ Other					

B-13	#OBS.	☐ Pit ☒ Boring	Ground surface elevation	867.3 ft.	Elevation of limiting factor	861.3 ft. (Groundwater)				
Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frgs.	% Fines	Hydraulic App Rate Inches/Hr
1	0-12	Topsoil (not sampled)								
2	12-36	10YR 5/3, 5/4	none	SCL	2mabk	mfi		<5		0.11
3	36-66	10YR 7/3	none	FS	0sg	ml		1	4	0.50
4	66-96	10YR 6/3	none	XGRS	0sg	ml		65-75		3.60
5	96-126	10YR 6/3	none	S	0sg	ml		<10		3.60
6	126-156	10YR 6/3	none	FSL	2msbk	mfr		<5		0.50
7	156-180	10YR 6/3	none	FS, SiL	0sg	ml		<5		0.13-0.50
Comments: Groundwater was encountered at about 8 ft during drilling and at about 6 ft shortly after the completion of drilling. About one day after the completion of drilling, the borehole had caved-in at about 6 ft, with no groundwater present above this depth. Infiltration potential appears limited based on fairly shallow groundwater.										

B-16	#OBS.	☐ Pit ☒ Boring	Ground surface elevation	861.5 ft.	Elevation of limiting factor	859.5 ft. (Groundwater)				
Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frgs.	% Fines	Hydraulic App Rate Inches/Hr
1	0-12	Topsoil (not sampled)								
2	12-36	10YR 2/1 to 3/2	none	CL	0m	mfi		<5		0.03
3	36-78	2.5Y 5/1	c2d 2.5Y 5/3	SCL	0m	mfi		<5		0.11
4	78-102	10YR 6/3	none	S	0sg	ml		<10		3.60
5	102-126	10YR 6/3	none	FS	0sg	ml		<5		0.50
6	126-156	10YR 6/4, 7.5YR 6/3, 7.5YR 5/4	none	Strat. FSL, SiL, SiCL	variable			<5		0.04
7	156-180	7.5YR 6/3	none	SiCL	0m	mvfi		<5		0.04
Comments: Groundwater was encountered at about 6.5 ft during drilling and at about 6 ft shortly after the completion of drilling. About one day after the completion of drilling, the borehole had caved-in at about 4 ft, with groundwater observed at about 2 ft. Infiltration potential appears very limited based on shallow groundwater.										

Name (Please Print)	Tim F. Gassenheimer	Signature		Credential Number	SP-011900004
Address	129 Milky Way, Madison, WI 53718	Date Evaluation Conducted	December 11, 2019	Telephone Number	(608) 288-4100

B-17

#OBS.

☐ Pit☒ BoringGround surface elevation 861.7 ft.Elevation of limiting factor 860.7 ft. (Redox)
859.2 ft. (Groundwater)

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frgs.	% Fines	Hydraulic App Rate Inches/Hr
1	0-12	Topsoil (not sampled)								
2	12-36	10YR 5/1	c1f 10YR 5/3	SCL	0m	mfi		<5		0.11
3	36-78	5Y 6/1	c2d 10YR 5/4	CL	0m	mfi		<5		0.03
4	78-126	10YR 6/3	none	FS, SiL/SiCL	0sg	ml		<5		0.04-0.50
5	126-156	7.5YR 6/3, 5/4	none	SiCL	0m	mvfi		<5		0.04
6	156-180	7.5YR 6/1	none	GRSL ⁽¹⁾	1cabk	mfr		20-30		0.50

Comments: Groundwater was encountered at about 6.5 ft during drilling and at about 6 ft shortly after the completion of drilling. About one day after the completion of drilling, the borehole had caved-in at about 5 ft, with groundwater observed at about 2.5 ft.

Infiltration potential appears very limited based on shallow low-chroma/high-value dominant color and redox, as well as groundwater.

⁽¹⁾ Horizon 6 was classified as possible bedrock.

Overall Site Comments: See Comments above and Stormwater Infiltration Potential section in Geotechnical Exploration Report.

APPENDIX F

WETLAND REPORT

APPENDIX G

DRAFT MAINTENANCE AGREEMENT

Maintenance provisions:

Detention Basin

Visual inspection of the detention basin and outlet structure shall be performed, at a minimum annually. The inspections shall include checking for potential problems such as: subsidence, erosion, tree growth in and around the embankment and outfall structure, sediment accumulation, clogging of outfall structure, and damage to the emergency spillway. Problems identified by the inspections shall be repaired as soon as practicable.

Sediment accumulations shall be removed by dredging when two (2) foot of siltation has occurred or as directed by the Village of Waunakee. The dredged material shall be removed and disposed of in accordance with NR 347.

The detention basin shall be mowed a minimum of twice per year. Mowing shall maintain a minimum grass height of 6 to 8 inches. Areas of sparse vegetation shall be reseeded. Additional fertilizer shall be applied as needed, per the results of a soil test.

Separate and distinct records shall be maintained by the owner to record the specific activities and costs thereof for the maintenance plan implementation. The records shall include the dates of maintenance visits and the specific work performed. Records shall be kept as required by local, state or federal law.

Infiltration Basin

Visual Inspection of the Infiltration Basin shall be performed, at a minimum, annually.

Maintenance shall be required when system shows standing water beyond 24 hours of rain event. Cleaning shall consist of removal of sediment, two (2) foot undercut, undercut replacement with material consisting of 15-30% compost and 70-85% sand and restoration in-kind.

Restoration of plant material shall be with native plugs or seed mixture tolerant of fluctuating water conditions. If a seed mixture is used steps shall be taken to assure vegetation establishes



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16 of 26	TUSCOBIA TRAIL
17 of 26	TUSCOBIA TRAIL
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ROSEWOOD FIELDS

АВТОРИТЕТ, ЧИТАТЕЛИ, НАУКА И ПОЛИТИКА

1 of 26



GRADING & EROSION CONTROL NOTES

1. INSTALL EROSION CONTROL MEASURES PRIOR TO ANY SITE WORK, INCLUDING GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIALS AS SHOWN ON PLAN.

2. EROSION CONTROL MEASURES SHALL BE INSTALLED PER THE VILLAGE OF MCFARLAND STANDARD SPECIFICATIONS.

3. EROSION CONTROL IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. EROSION CONTROL MEASURES AS SHOWN ON THE APPROVED PLAN SHALL BE CONSIDERED MINIMUM PRECAUTIONS THAT WILL BE ALLOWED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECOGNIZING AND CORRECTING EROSION PROBLEMS THAT ARE A RESULT OF CONSTRUCTION ACTIVITIES.

4. INSPECTIONS, REPORTING AND MAINTENANCE OF ALL EROSION CONTROL MEASURES SHALL BE PER THE VILLAGE OF MCFARLAND REQUIREMENTS TO ENSURE PROPER FUNCTION OF EROSION CONTROLS AT ALL TIMES. EROSION CONTROL MEASURES ARE TO BE IN WORKING ORDER AT THE END OF EACH WORK DAY.

5. INSPECT EROSION CONTROL MEASURES AFTER EACH 1/2" OR GREATER RAINFALL. REPAIR ANY DAMAGE OBSERVED DURING THE INSPECTION.
6. NO SITE GRADING OUTSIDE OF THE LIMITS OF DISTURBANCE OR DOWNSTREAM OF SILT FENCE.

7. EROSION CONTROL MEASURES SHALL BE REMOVED ONLY AFTER SITE CONSTRUCTION IS COMPLETE WITH ALL SOIL SURFACES HAVING AN ESTABLISHED VEGETATIVE COVER

8. INSTALL INLET PROTECTION IN ALL STORM SEWER INLETS AND CATCH BASINS THAT MAY RECEIVE RUNOFF FROM DISTURBED AREAS.

9. CUT AND FILL SLOPES SHALL BE NO GREATER THAN 3:1

10. SLOPES EXCEEDING 4:1 SHALL BE STABILIZED WITH CLASS I, TYPE B EROSION MATTING AND ALL DRAINAGE SWALES SHALL BE STABILIZED WITH CLASS II, TYPE B EROSION MATTING.

11. ALL INCIDENTAL MUD TRACKING OFF-SITE ONTO ADJACENT PUBLIC THOROUGHFARES SHALL BE CLEANED UP AND REMOVED BY THE END OF EACH WORKING DAY USING PROPER DISPOSAL METHODS.

12. PREVENT EXCESSIVE DUST FROM LEAVING THE CONSTRUCTION SITE IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.

13. INSTALL EROSION CONTROLS ON THE DOWNSTREAM SIDE OF STOCKPILES.
14. VELOCITY CHECKS SHALL BE PLACED AS SHOWN WHEN THE ROAD SUBGRADE IS ESTABLISHED. CHECKS SHALL BE BUILT PER DETAIL PROVIDED AND MAINTAINED THROUGH STABILIZATION. NUMBER AND LOCATION OF CHECKS SHOWN ON PLANS IS MINIMUM REQUIRED. FIELD CONDITIONS MAY WARRANT ADDITIONAL VELOCITY CHECKS AS REQUIRED BY VILLAGE INSPECTOR OR ENGINEER.

15. ALL DISTURBED AREAS SHALL RECEIVE A MINIMUM OF 6" OF TOPSOIL, FERTILIZER, SEED AND MULCH. SEED MIXTURE SHALL BE WISCONSIN DOT SEED MIX #40 OR EQUIVALENT APPLIED AT A RATE OF 5 POUNDS PER 1000 SQFT ON ALL DISTURBED AREAS. ANNUAL RYEGRASS AT A RATE OF 1 1/2 POUNDS PER 1000 SQFT SHALL BE ADDED TO THE MIXTURE. FERTILIZER SHALL BE PLACED PER A SOIL TEST. THE INFILTRATION AREA SHALL BE SEEDED WITH A SEED MIX TOLERANT OF FLUCTUATING WATER CONDITIONS.

16. DEWATERING, IF APPLICABLE, SHALL BE CONDUCTED PER WDNR STORM WATER MANAGEMENT TECHNICAL STANDARD 1061.

17. ADDITIONAL EROSION CONTROL MEASURES AS REQUESTED BY THE DNR, VILLAGE ENGINEER OR THE OWNERS REPRESENTATIVE SHALL BE INSTALLED WITHIN 24 HRS.

18. ANY CHANGES TO THIS EROSION CONTROL PLAN MUST BE APPROVED BY THE VILLAGE OF MCFARLAND.

LEGEND	
	2020 GRADING LIMITS
	PHASE LIMITS
	PLAT LIMITS
	RIGHT-OF-WAY
	LOT LINE
	EXISTING FENCE
	PROPOSED CONCRETE CURB & GUTTER
	EXISTING PAVEMENT
	EXISTING INDEX CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED INTERMEDIATE CONTOUR
	PROPOSED STORM SEWER
	SILT FENCE
	VELOCITY CHECK
	EARTHEN BERM
	STONE WEEPER
	EROSION MAT
	INLET PROTECTION

EROSION CONTROL TO BE DESIGNED WHEN PHASING IS DETERMINED.

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SITE GRADING PLAN

ROSEWOOD FIELDS

VILLAGE OF MCFARLAND, DANE COUNTY, WISCONSIN

SCALE: 1"= 100'
(PAGE SIZE: 11x17)

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DATE: 08-25-20

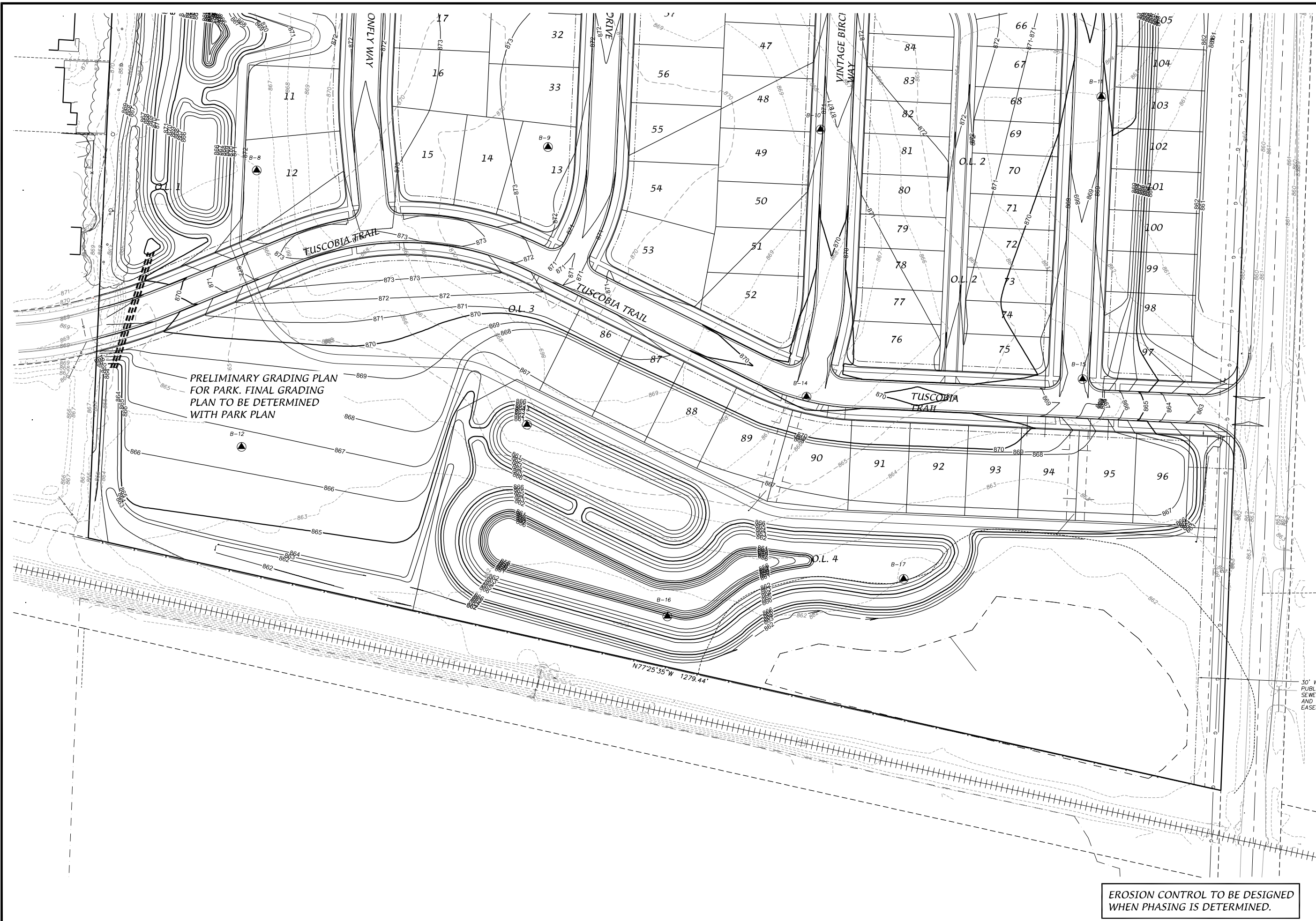
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FN: 20-05-132

Sheet Number:

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ROSEWOOD FIELDS

VILLAGE OF MC FARLAND, DANE COUNTY, WISCONSIN

SITE GRADING PLAN

SCALE: 1" = 100'
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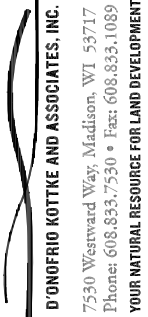
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DATE: 08-25-20
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DRAWN BY: KWB

FN: 20-05-132

Sheet Number:
4 of 26



UTILITY SCHEMATIC

VILLAGE OF MCFARLAND, DANE COUNTY, WISCONSIN



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(PAGE SIZE: 11x17)



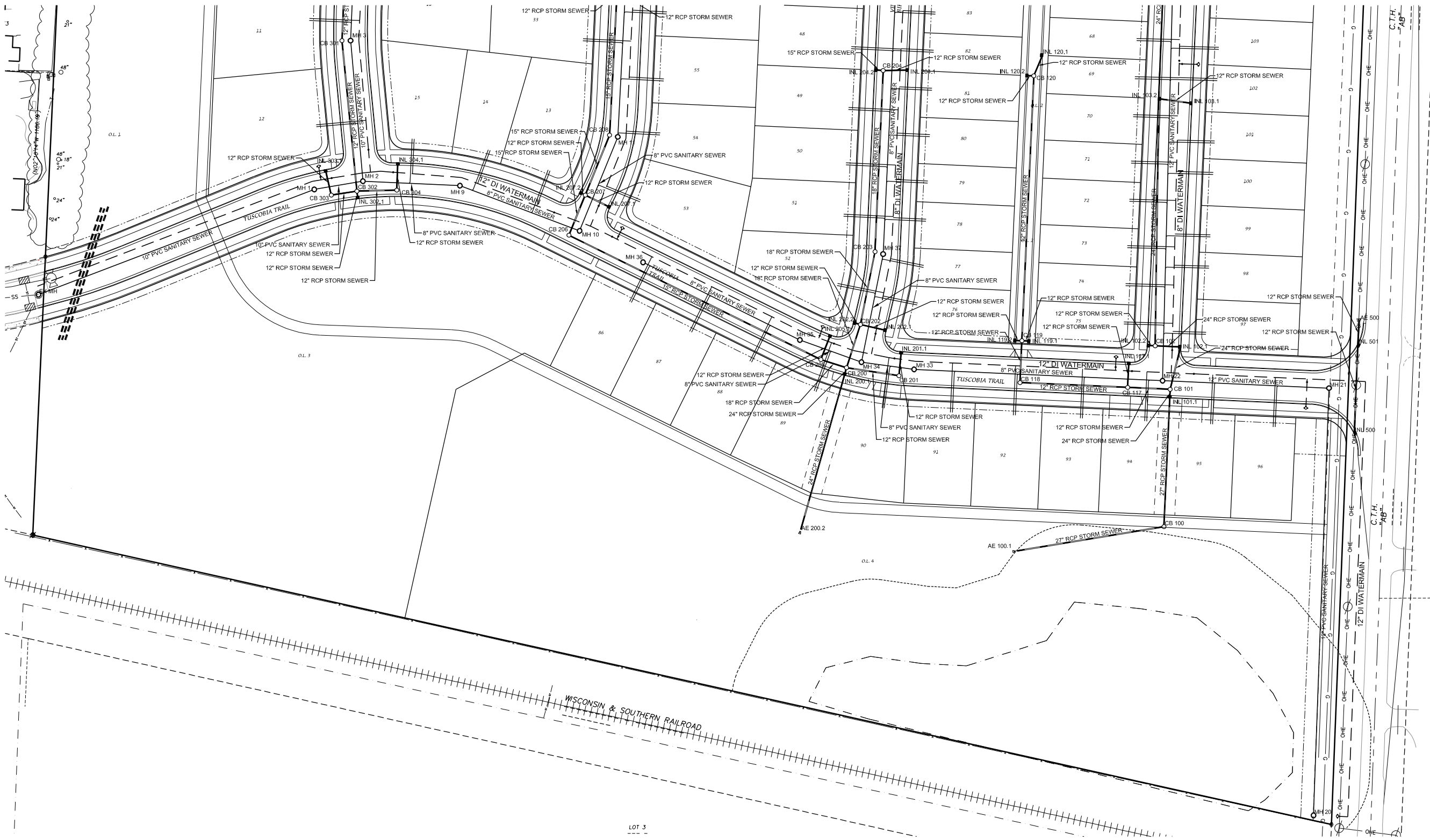
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UTILITY SCHEMATIC

ROSEWOOD FIELDS

VILLAGE OF MCARLAND, DANE COUNTY, WISCONSIN



SCALE: 1"= 100'
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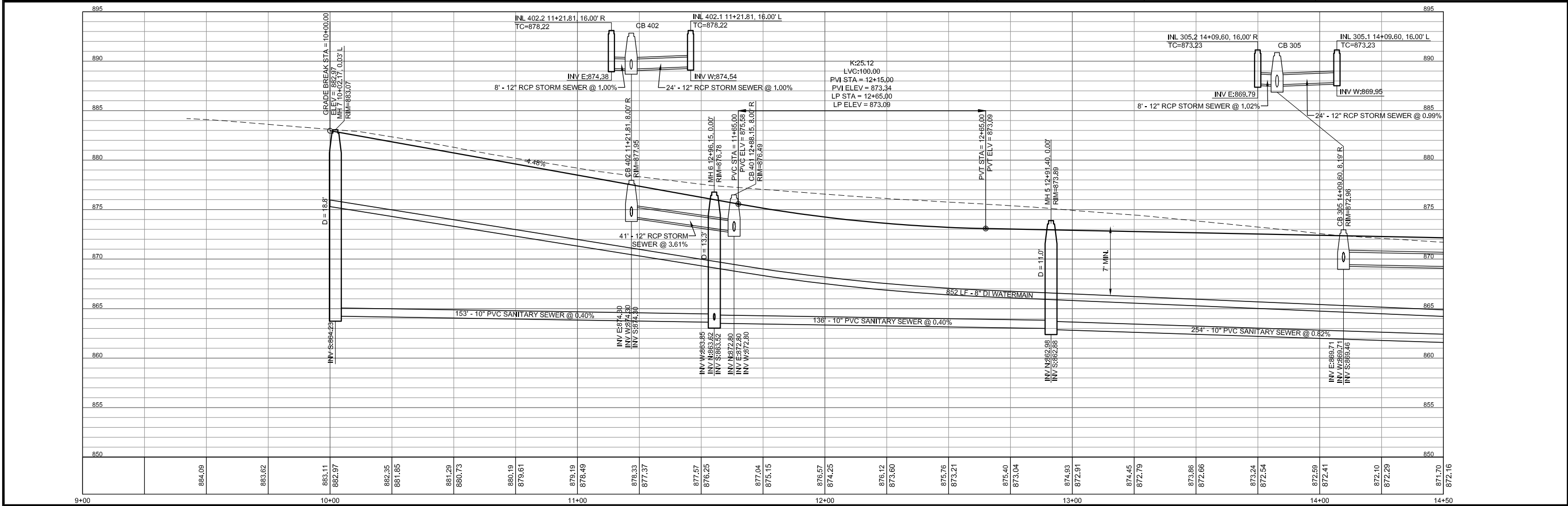
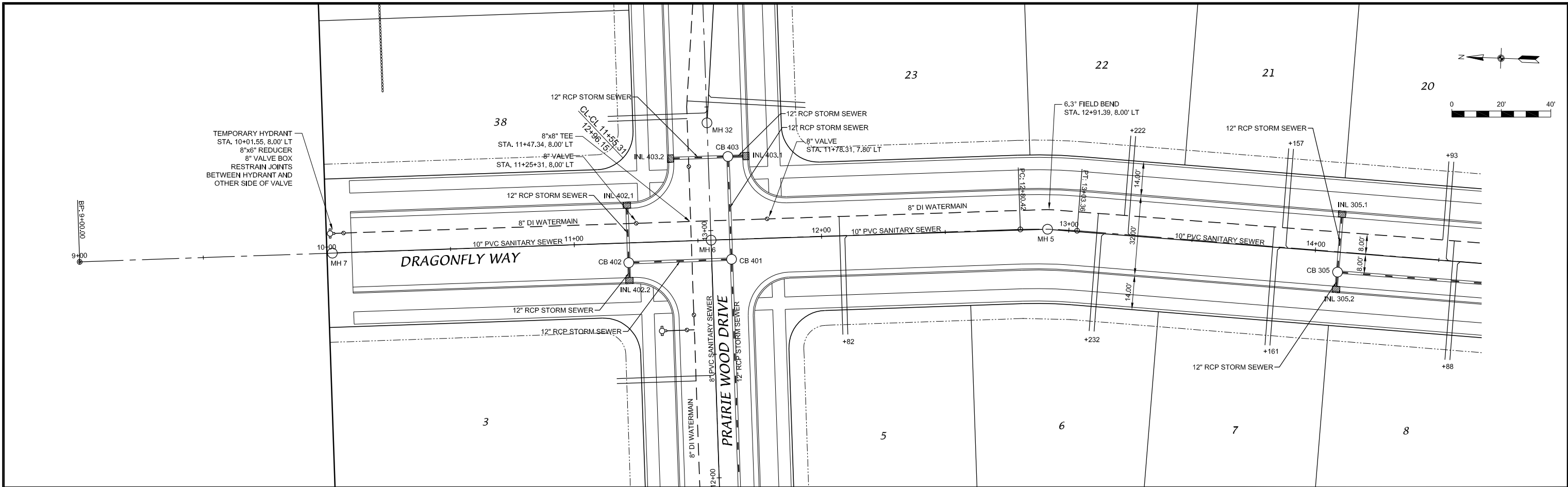


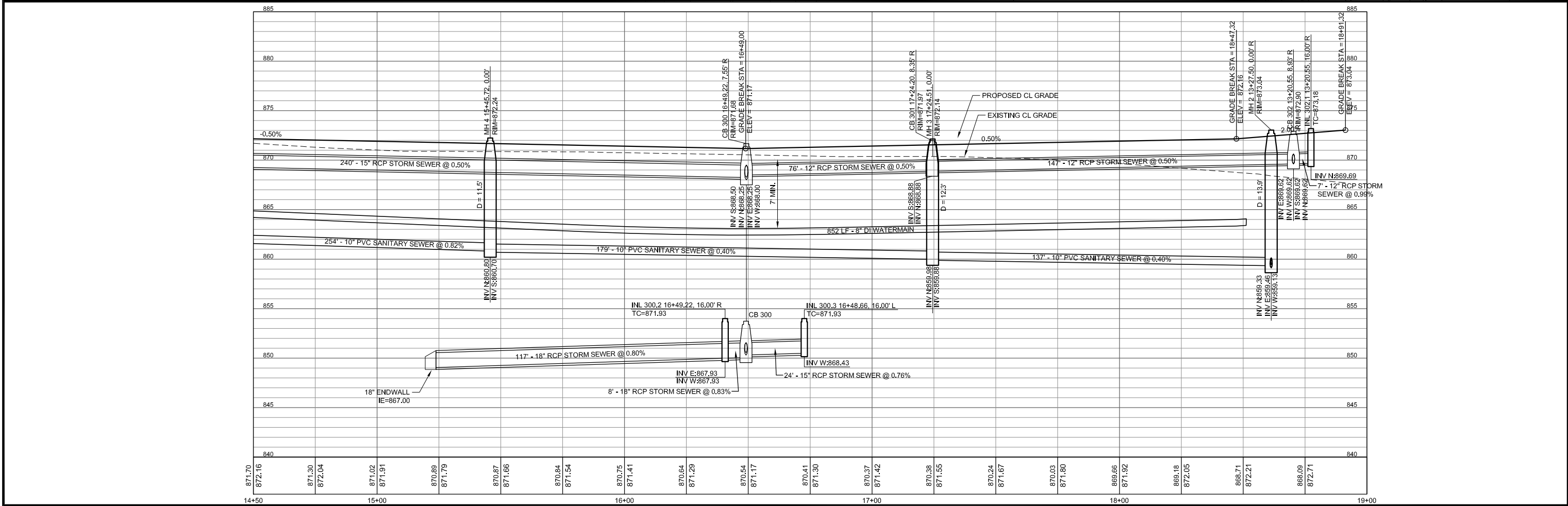
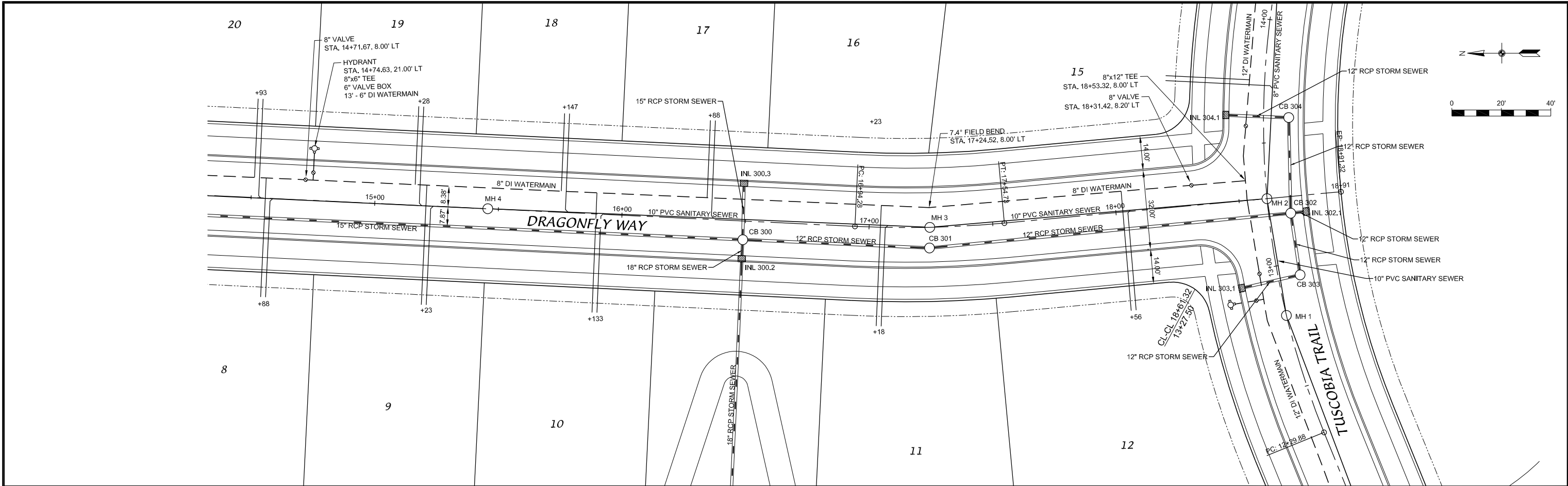
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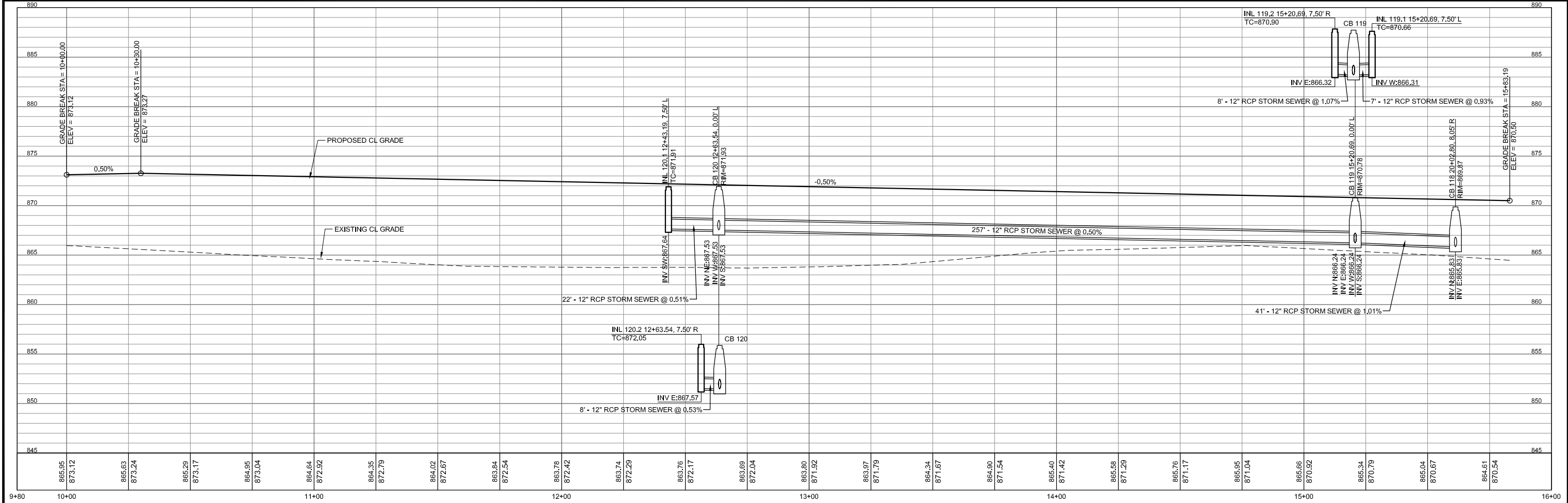
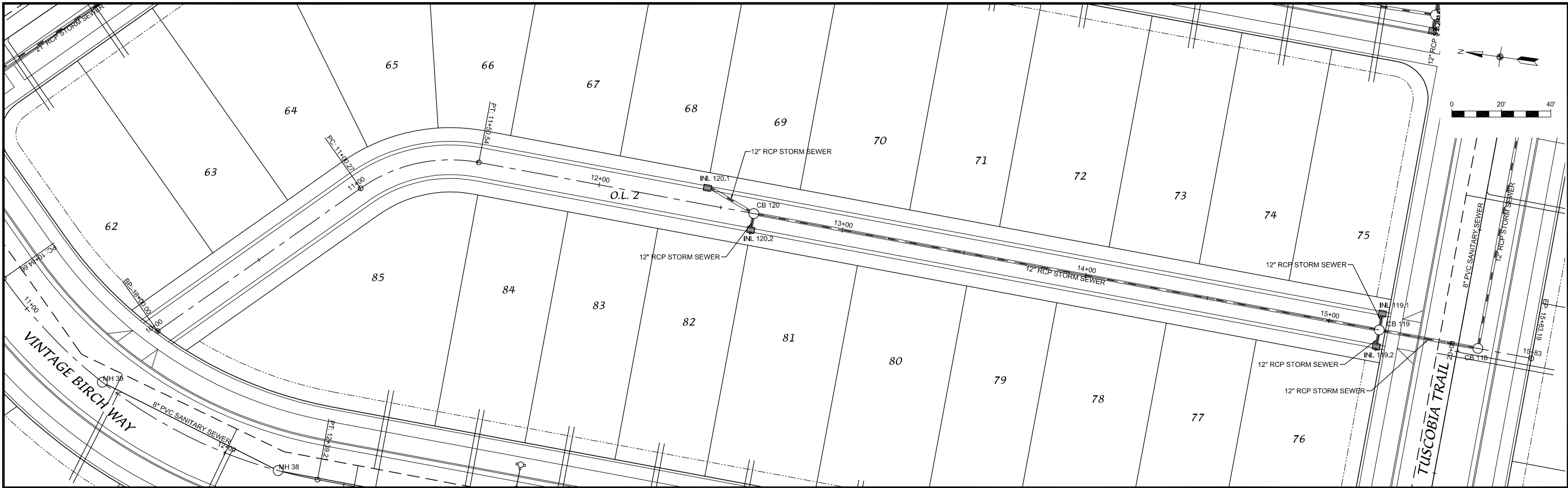
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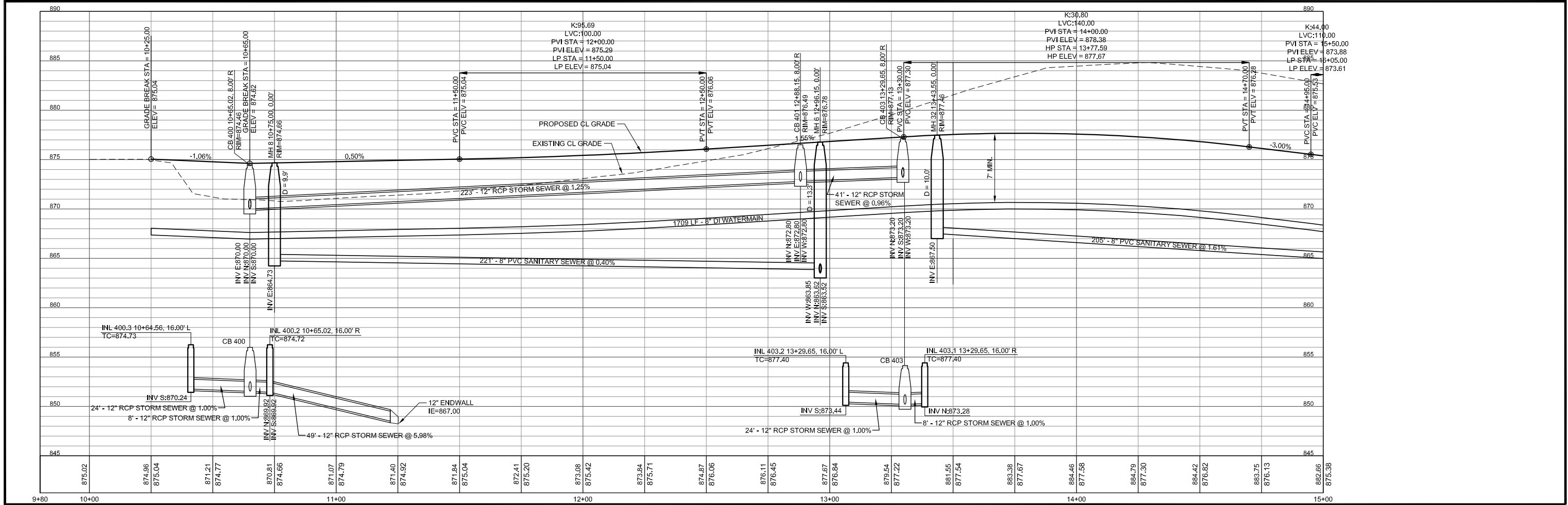
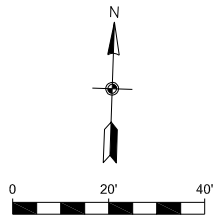
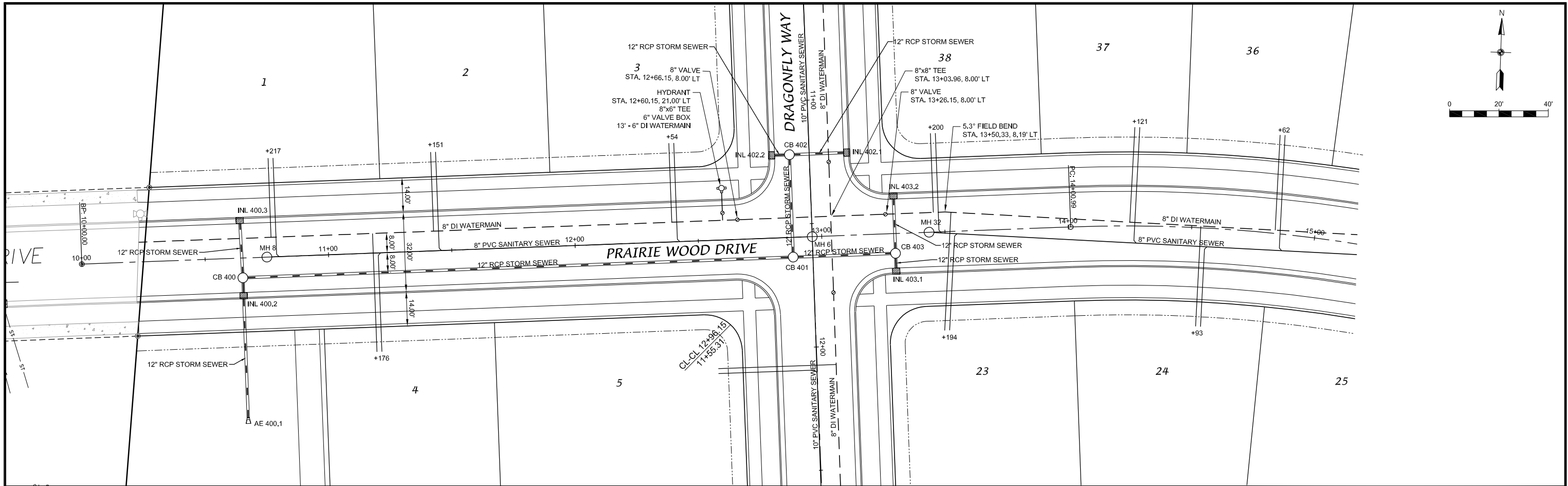
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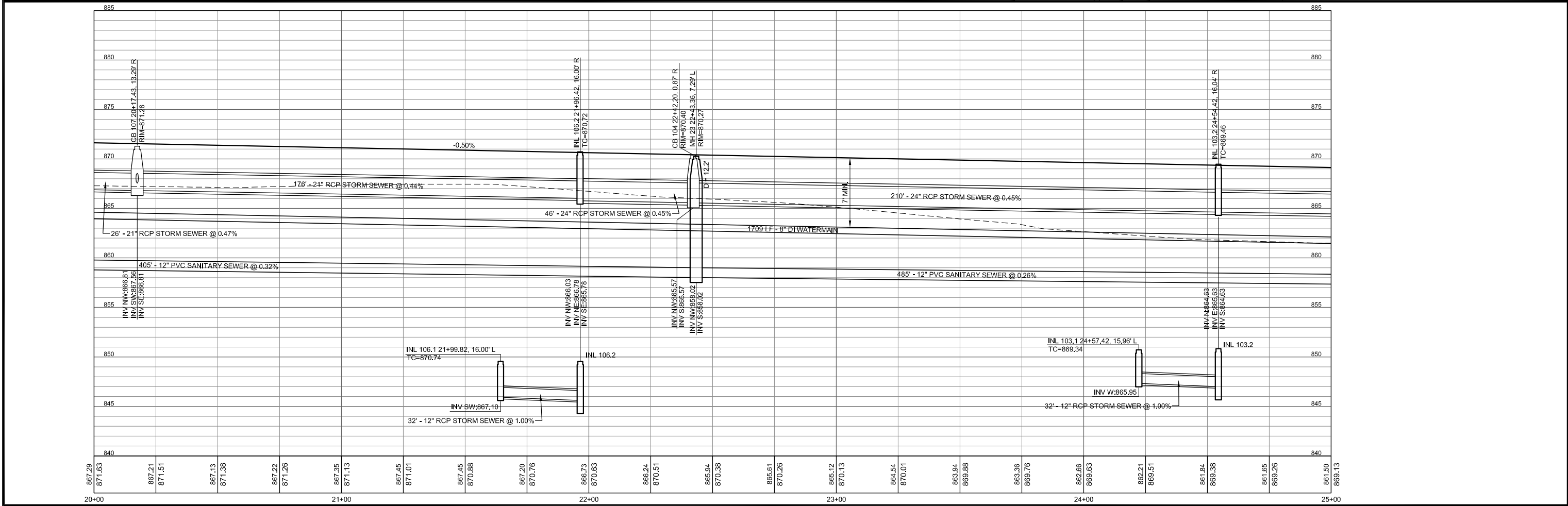
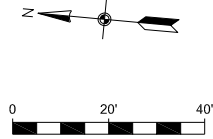
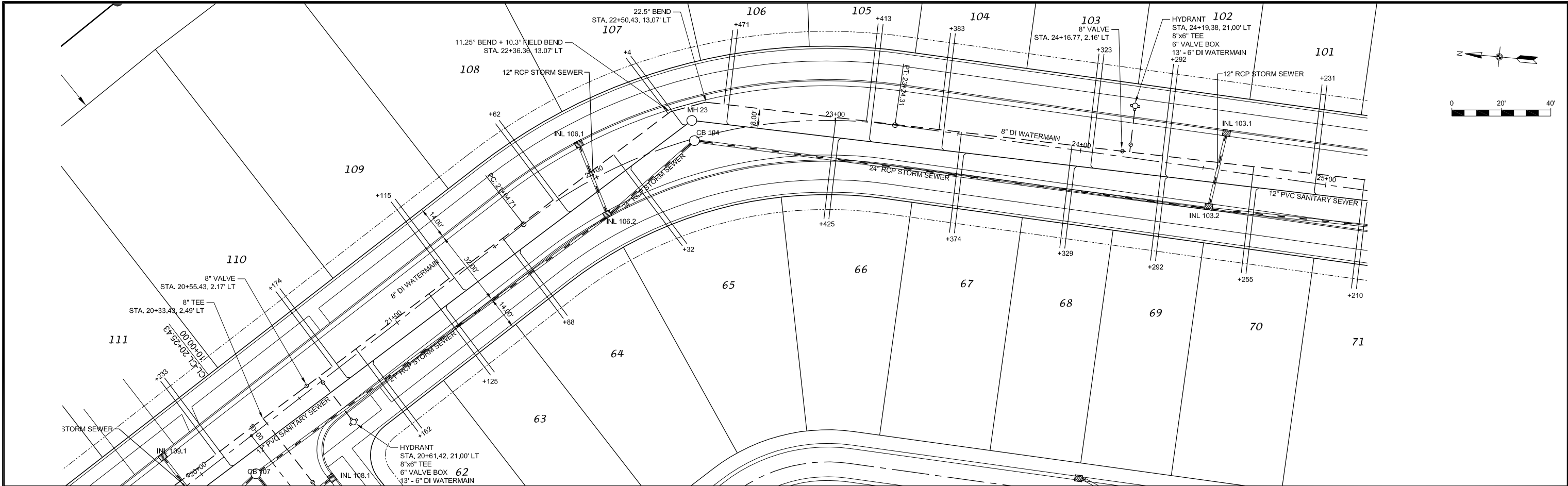
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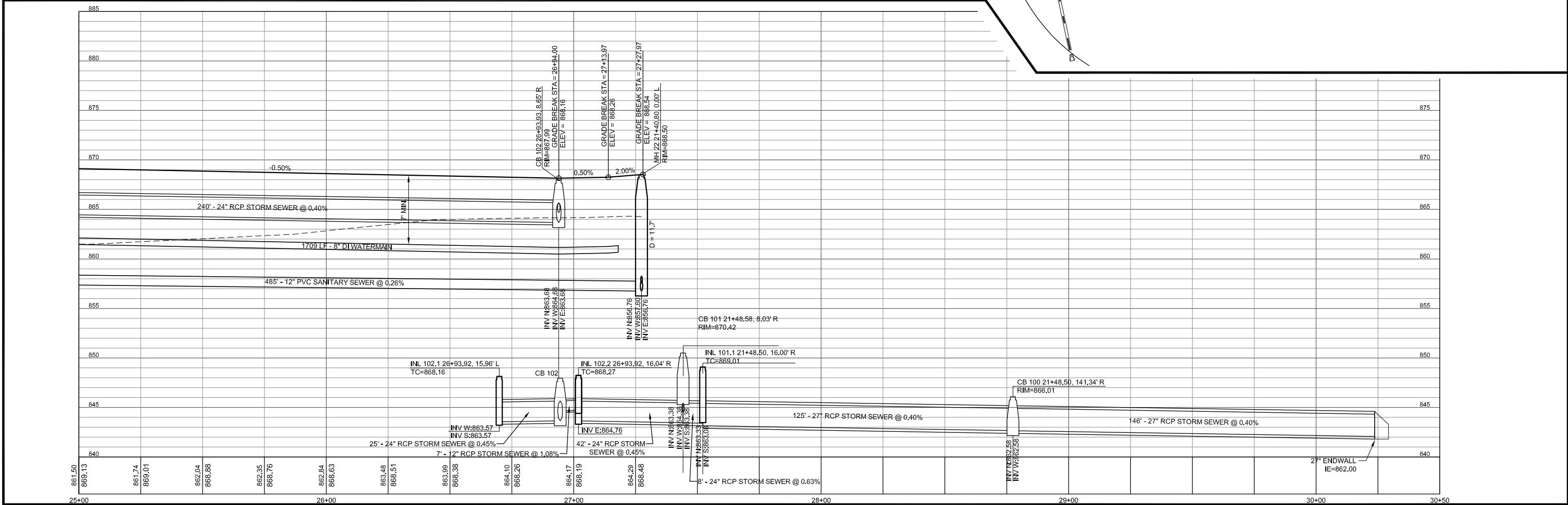
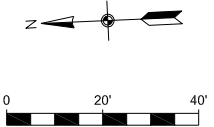
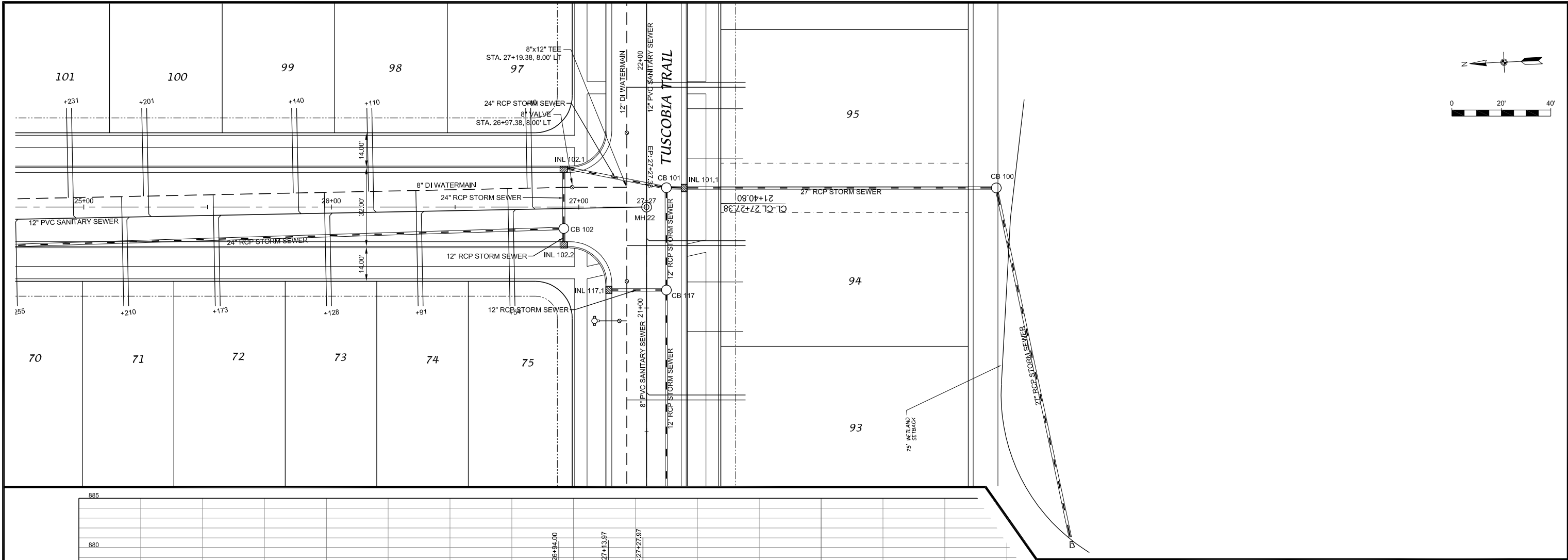


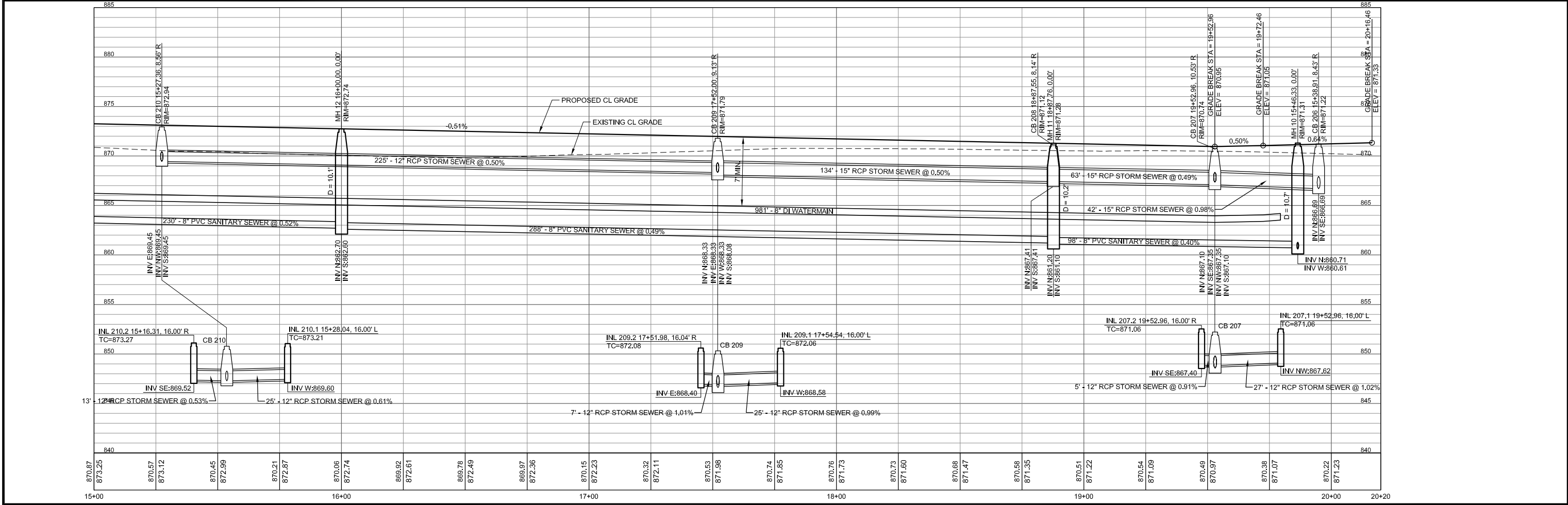
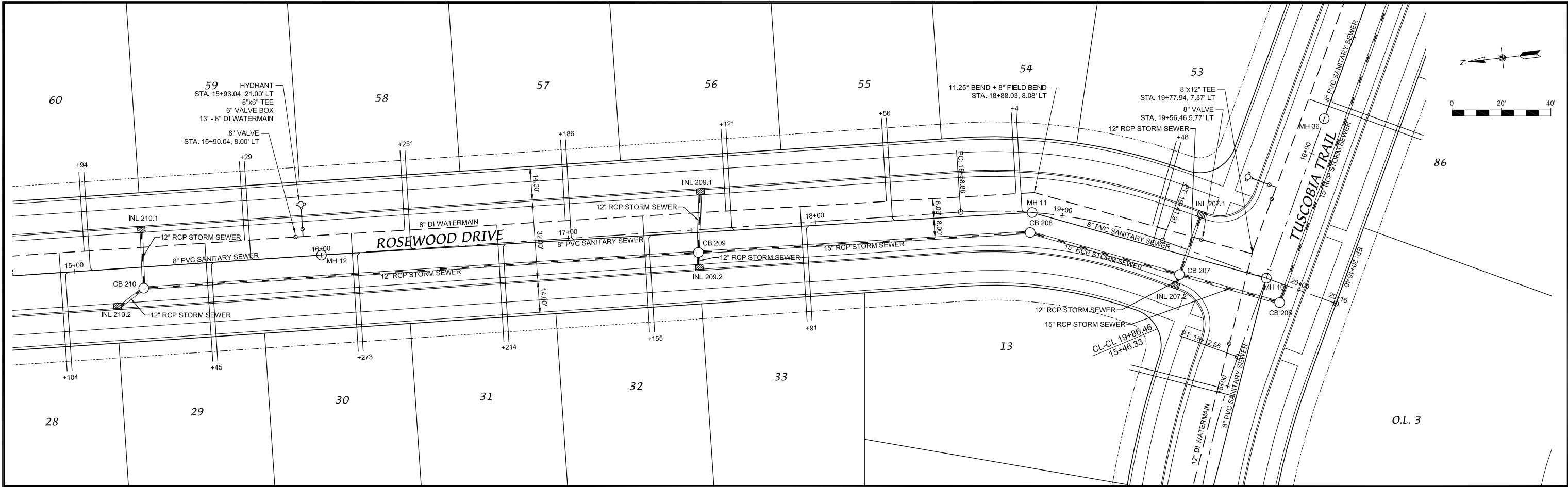


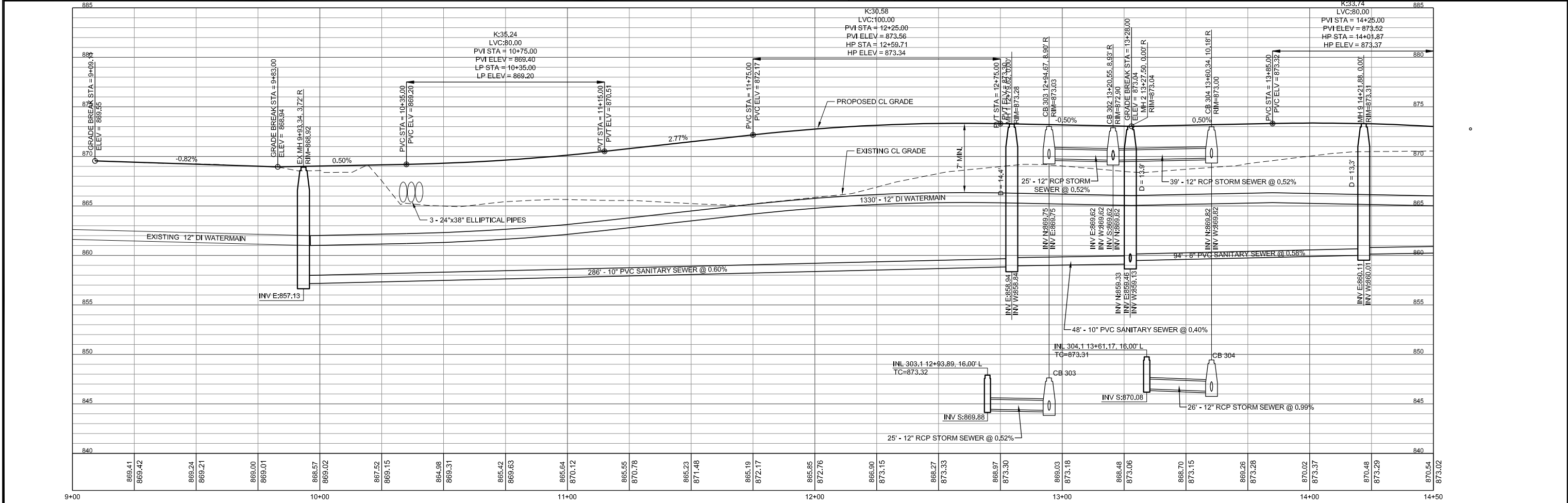
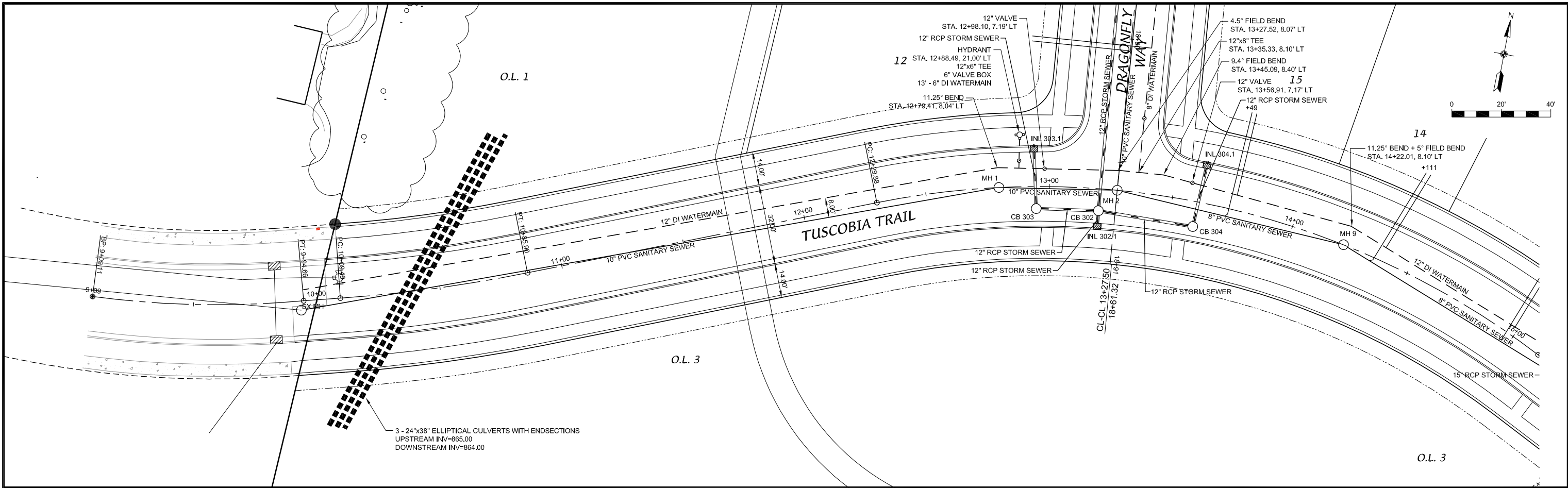


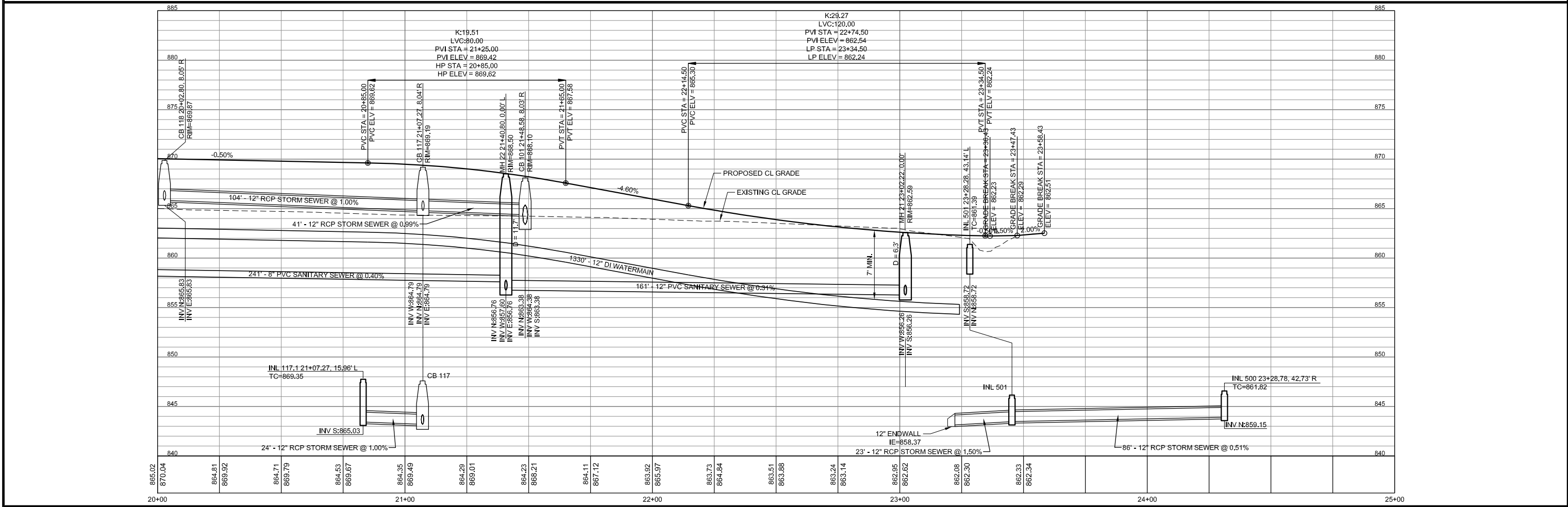
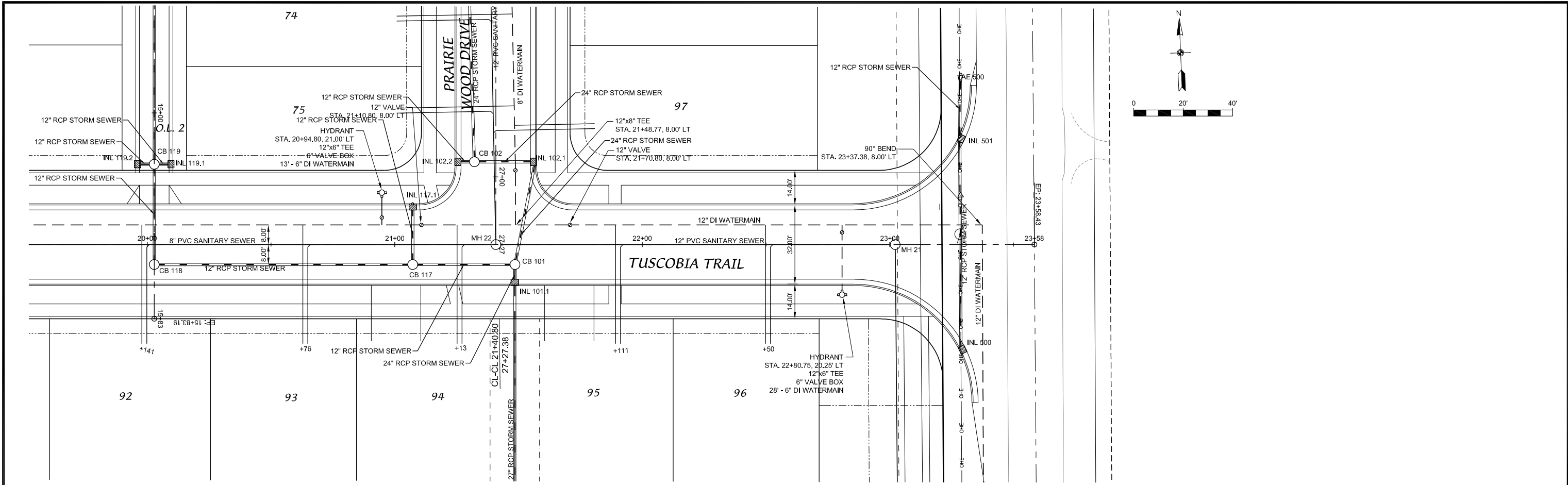


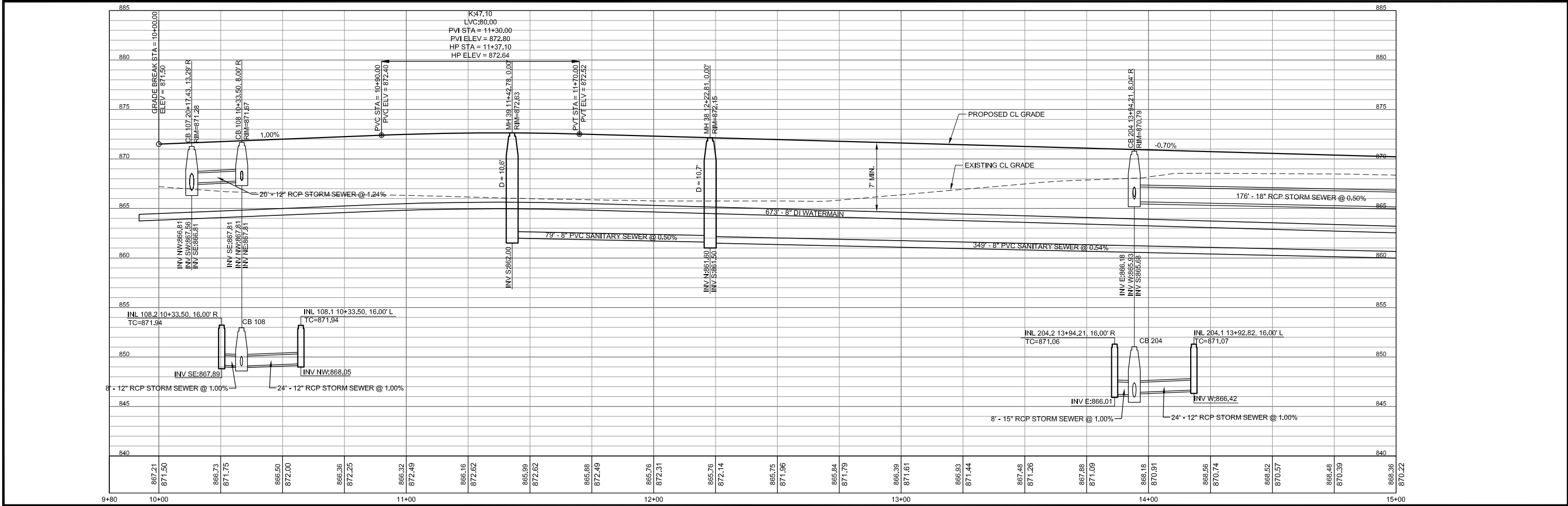
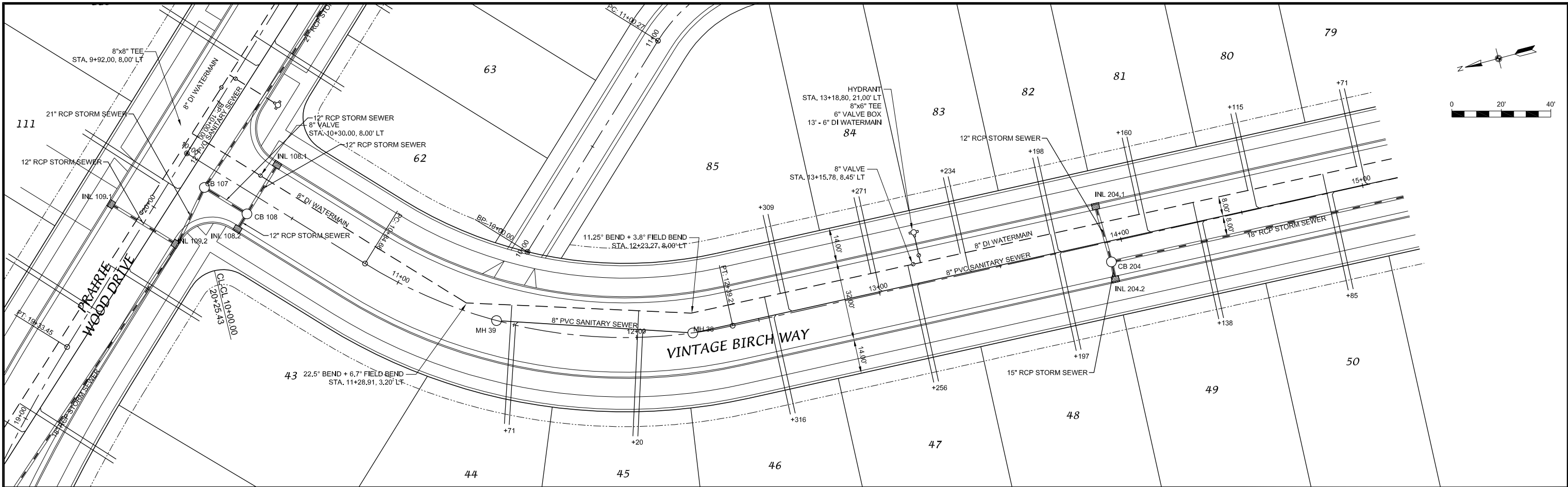


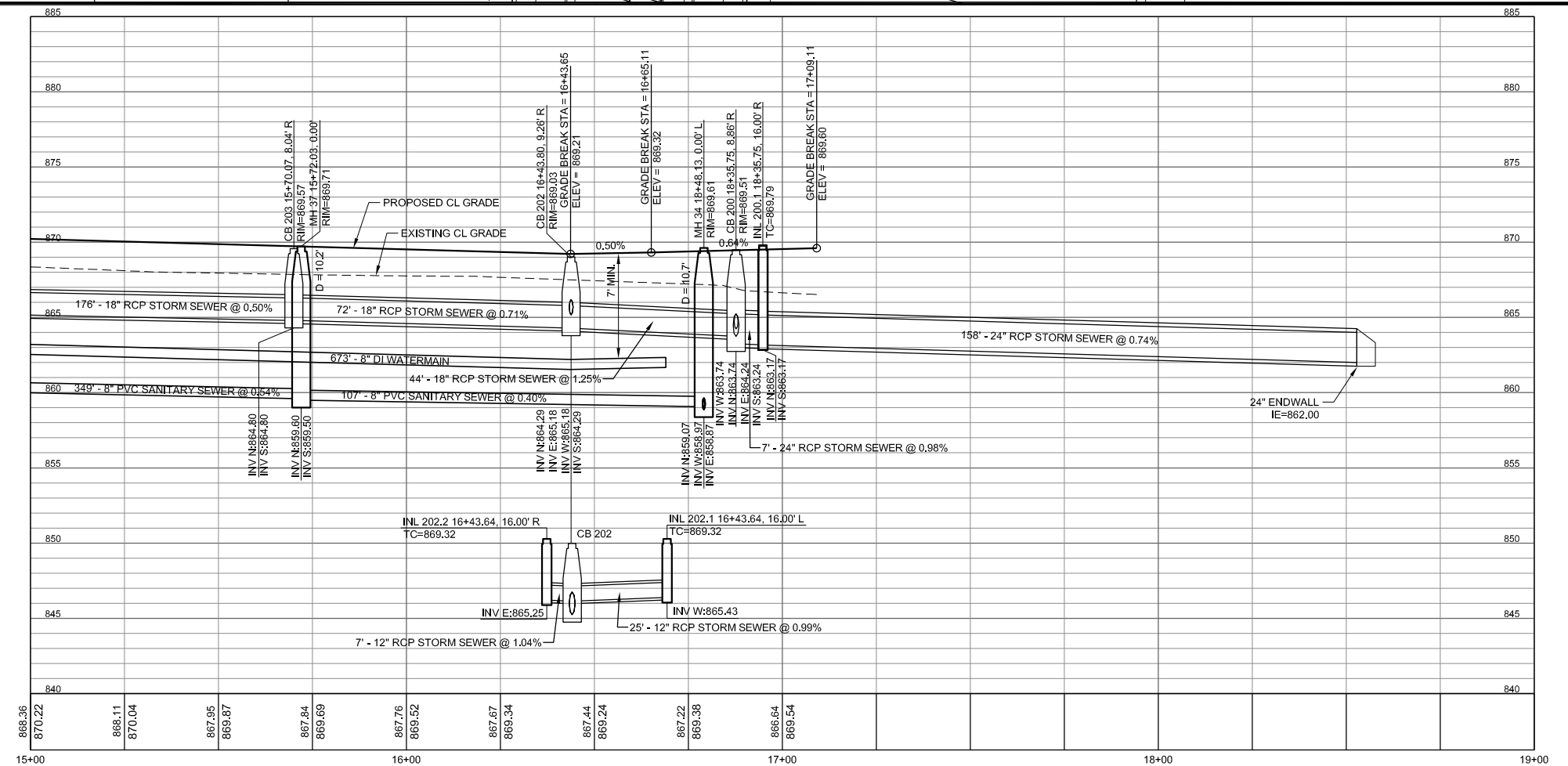
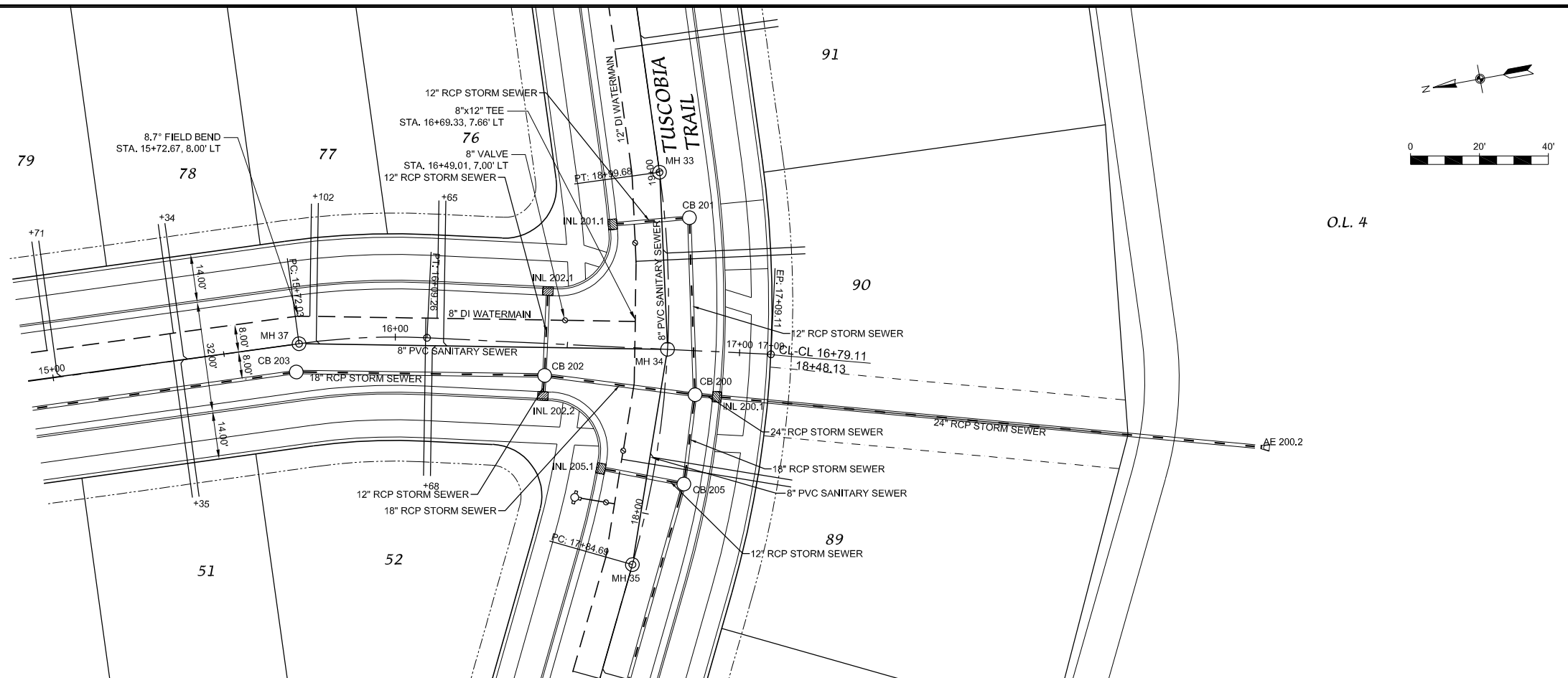


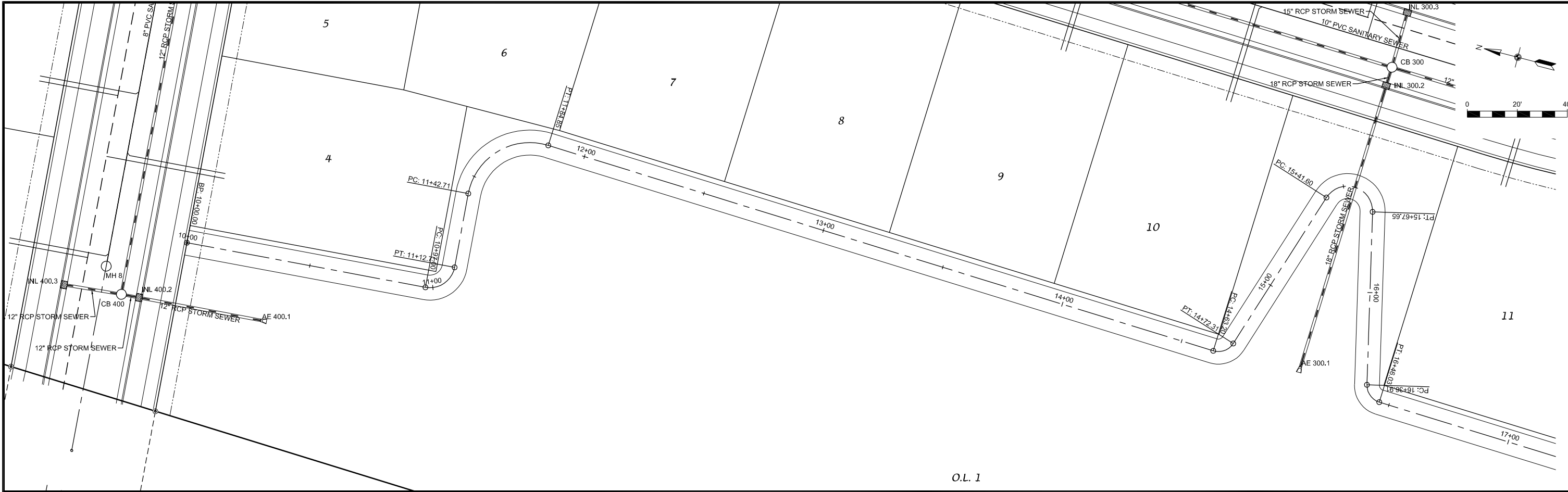




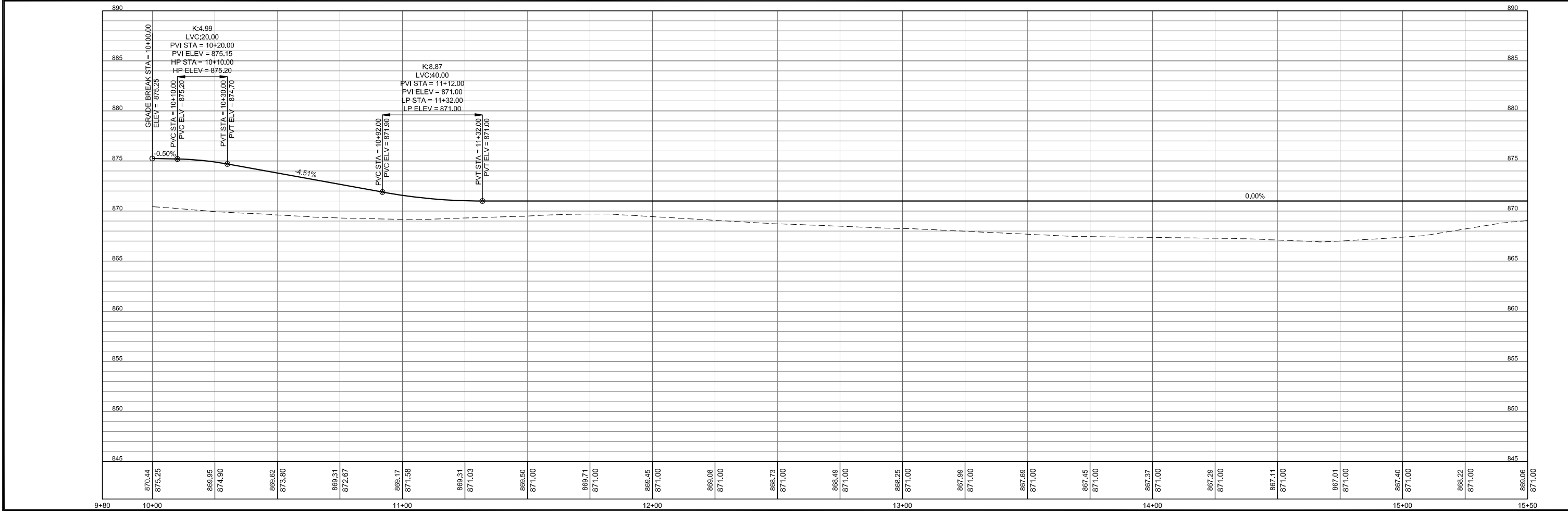


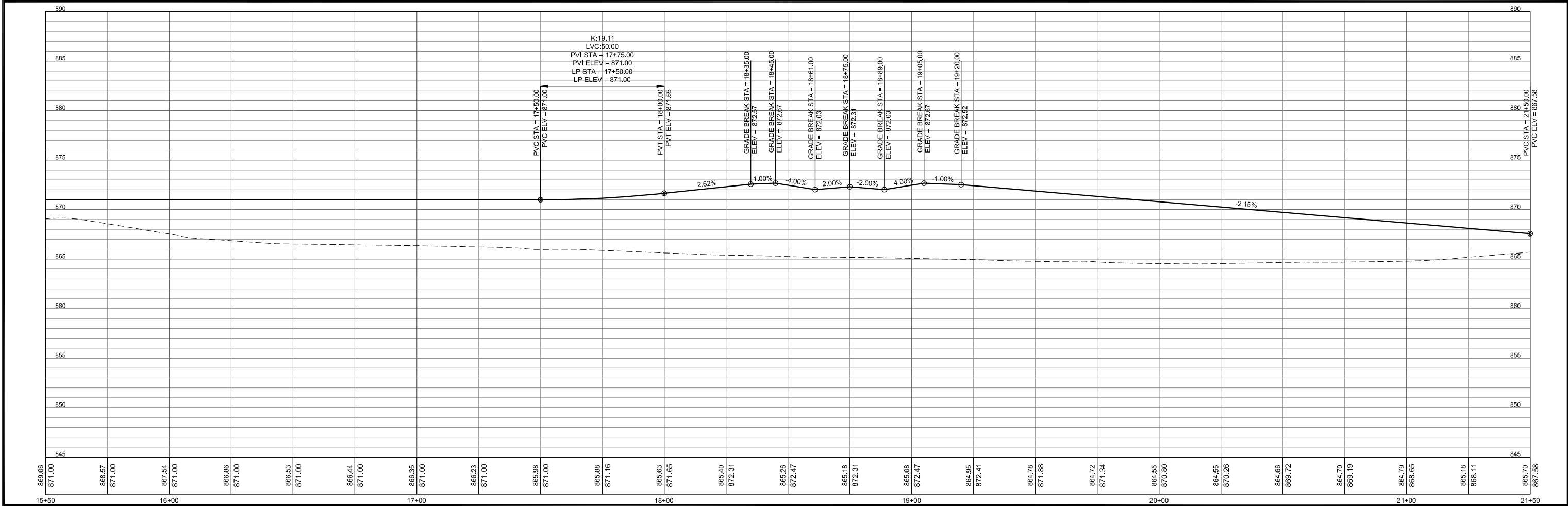
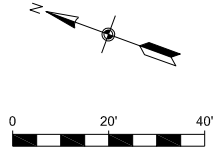
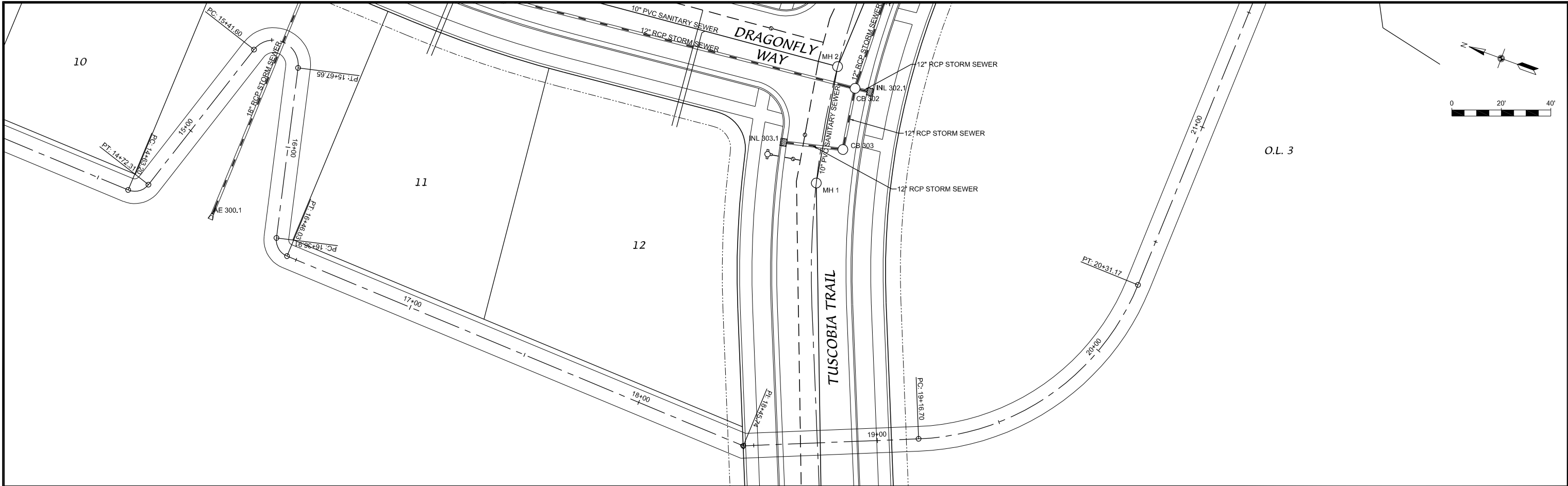


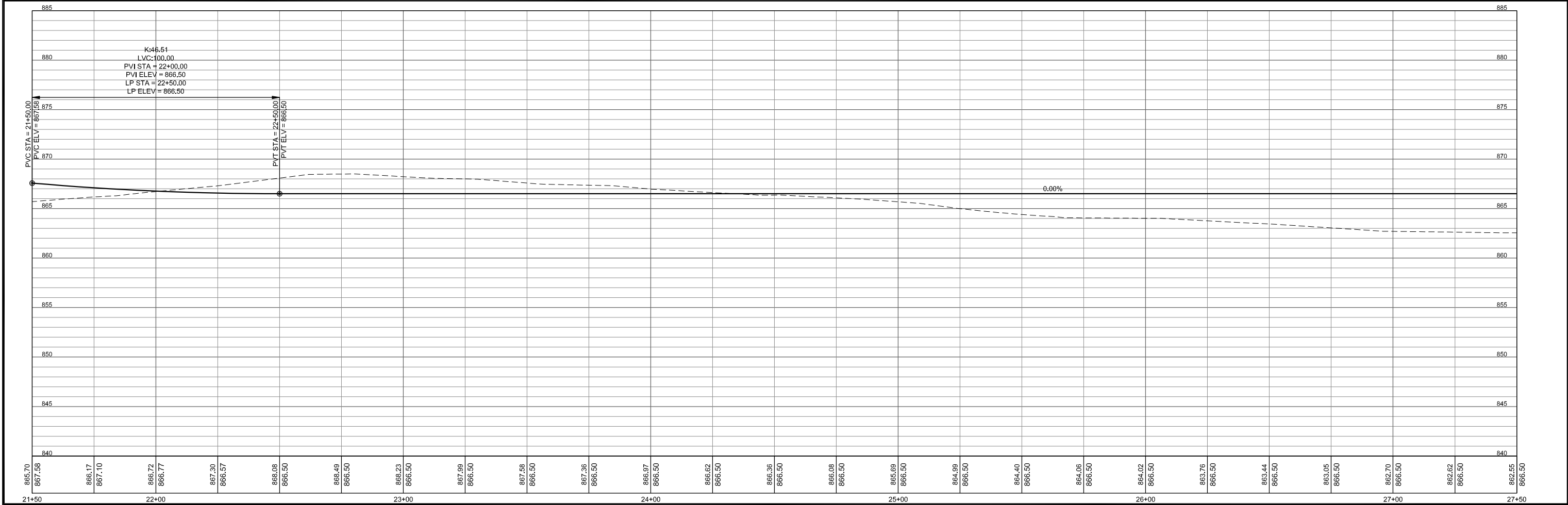
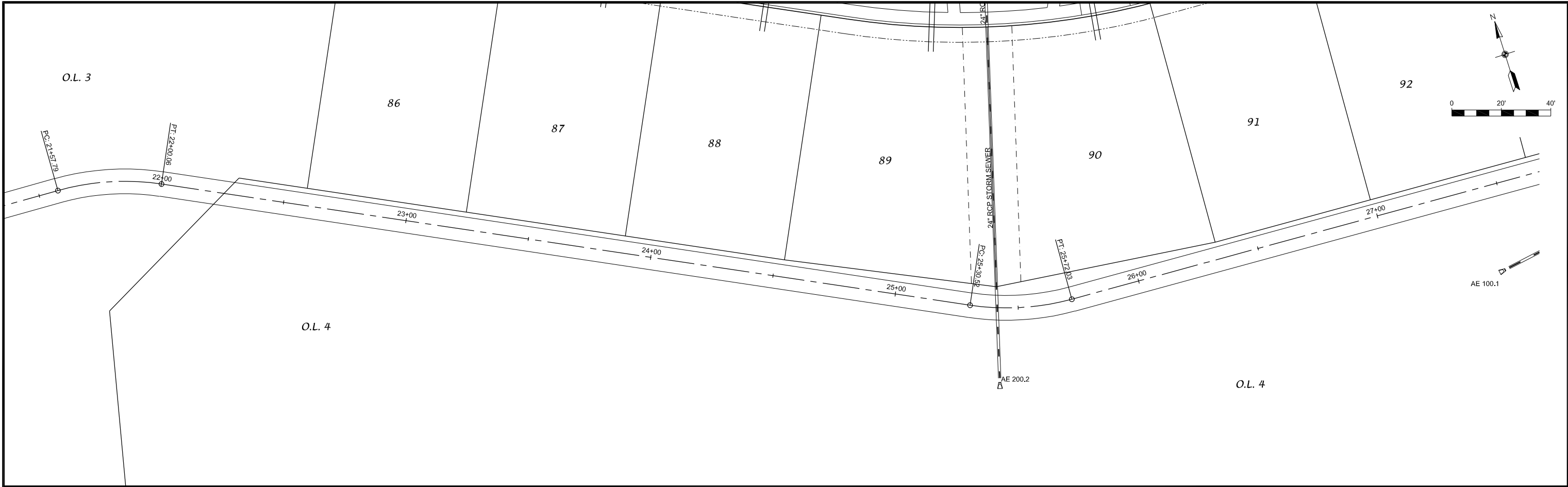


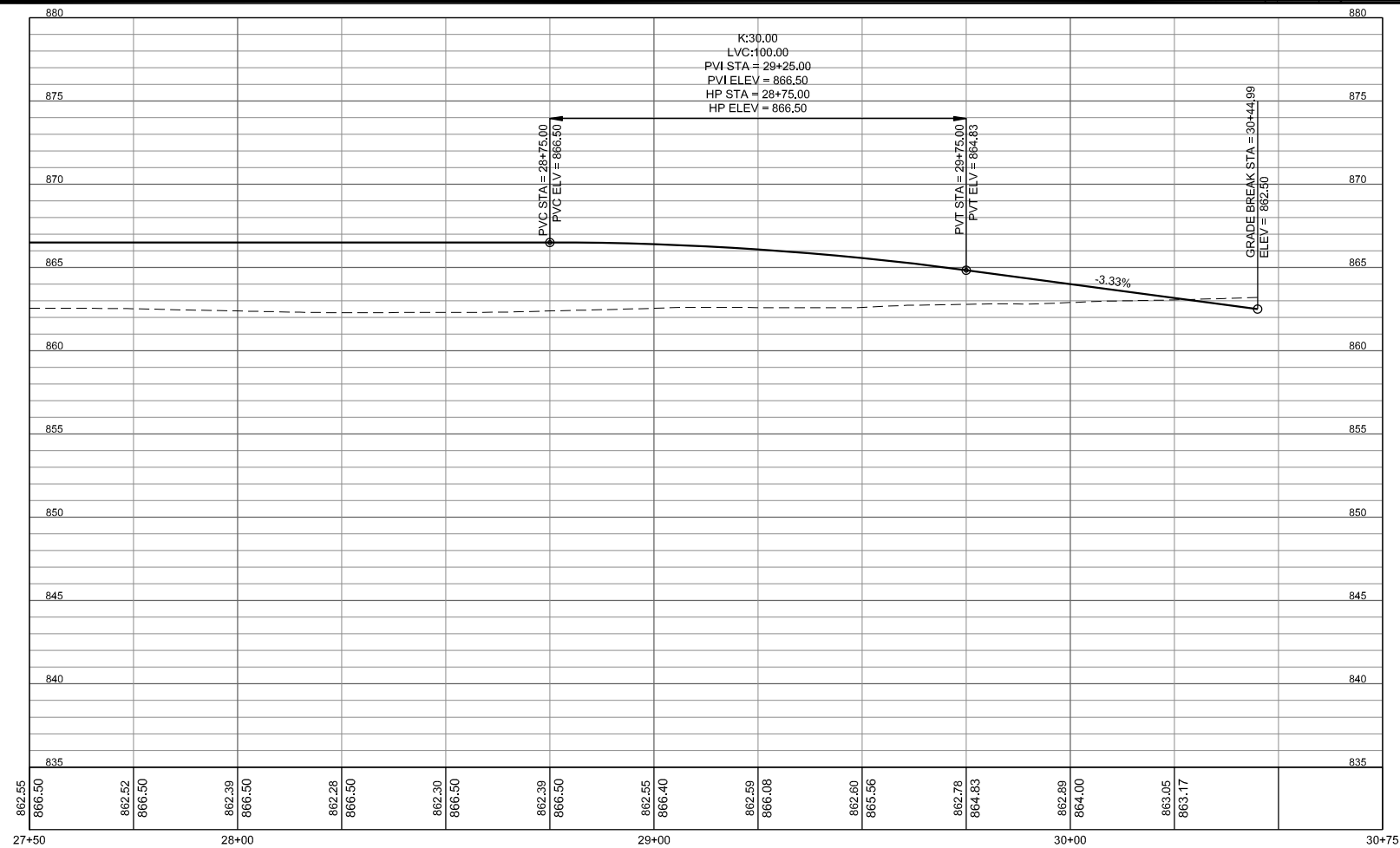
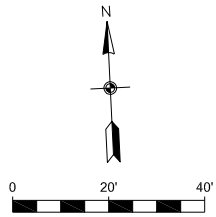
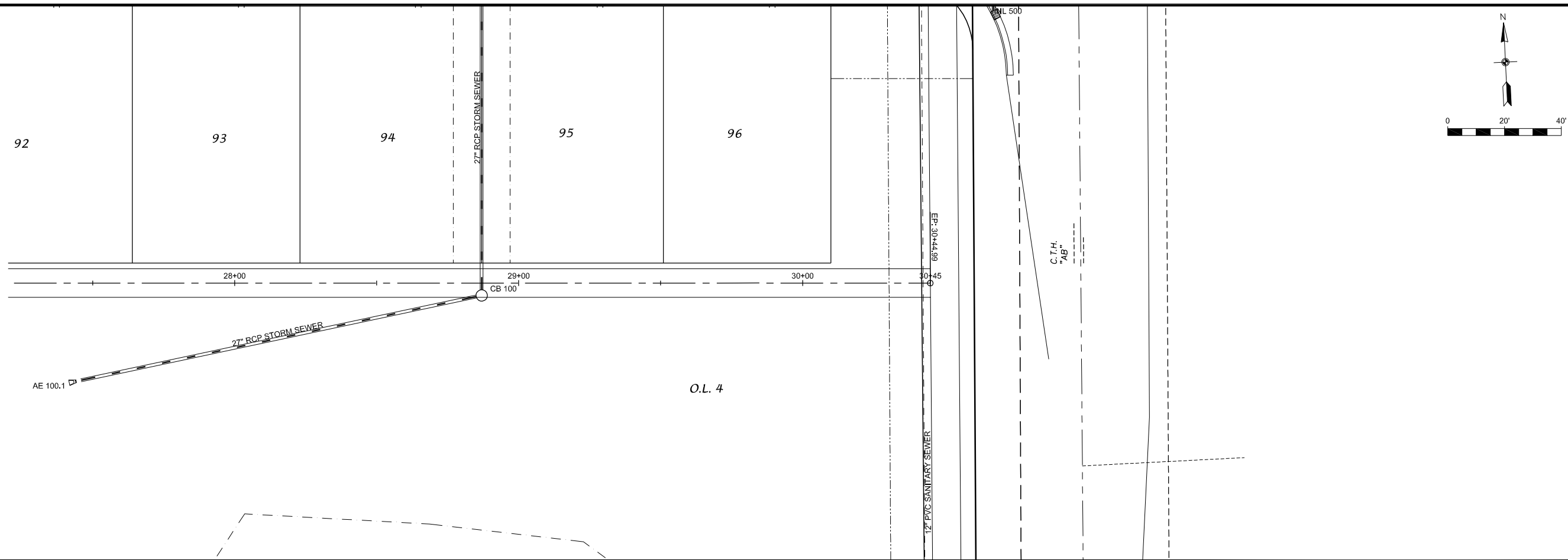


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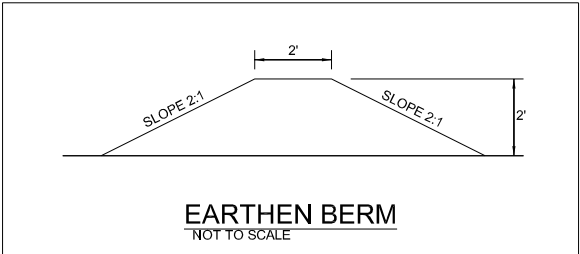
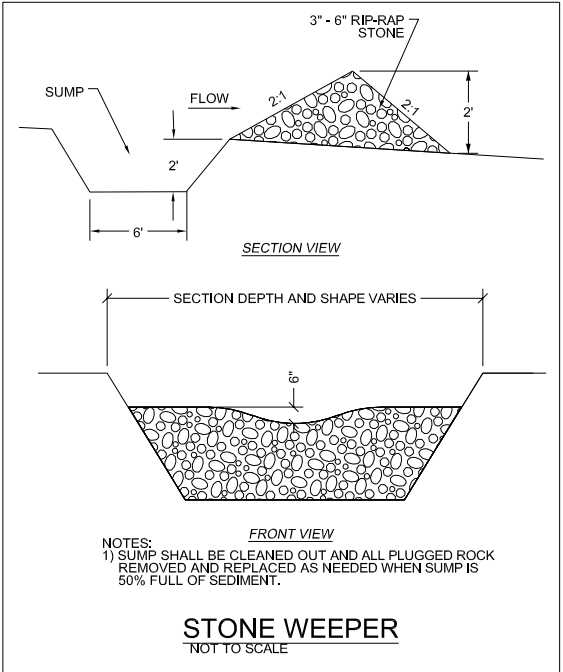
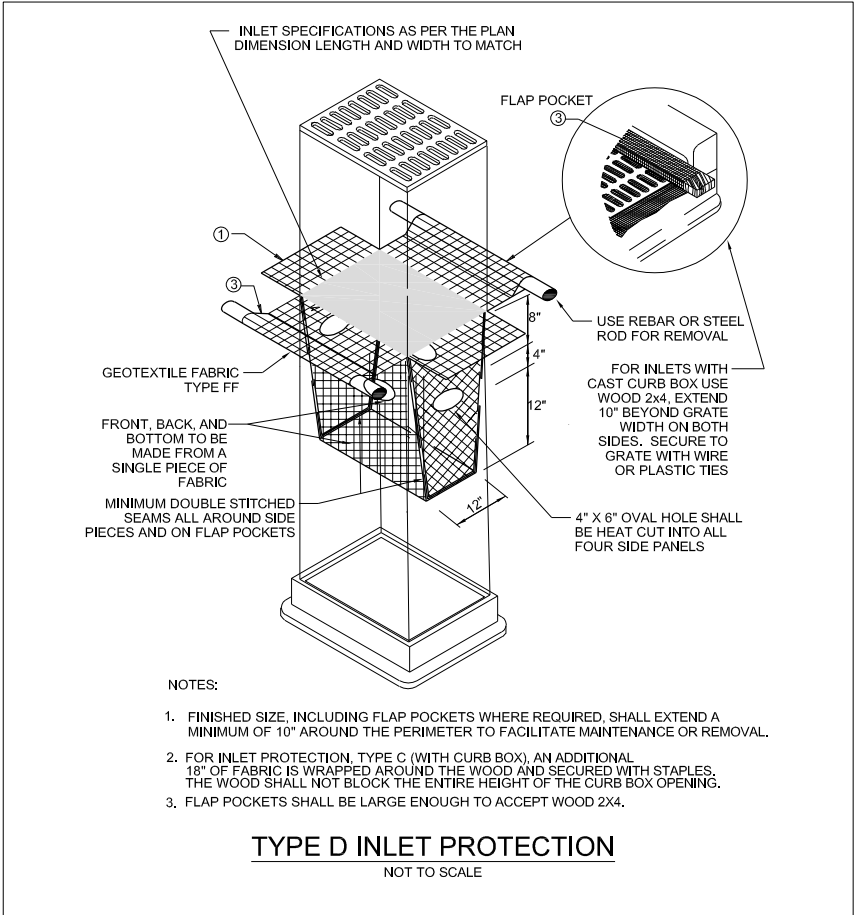
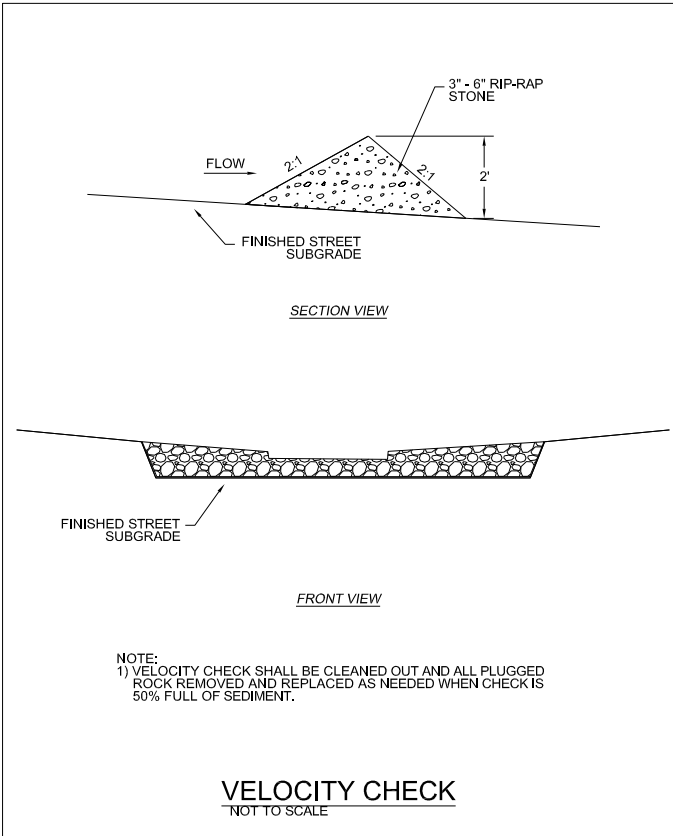
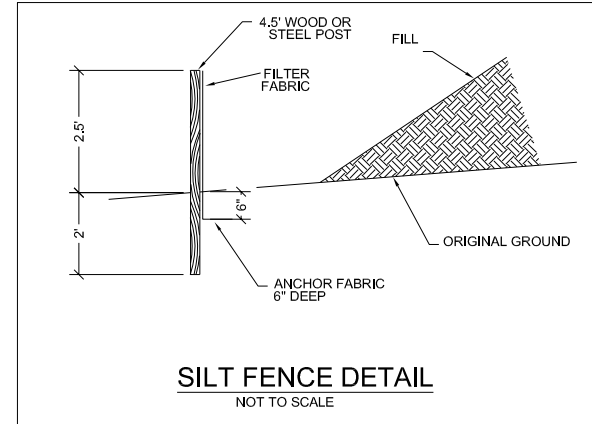
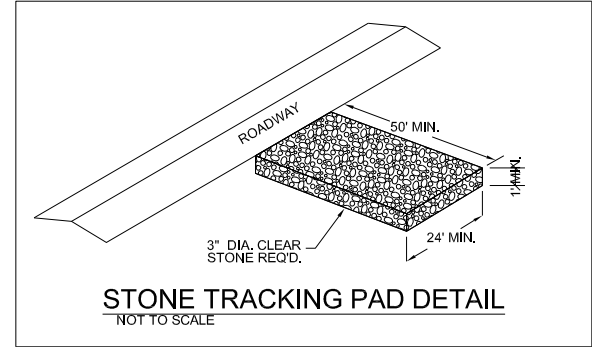
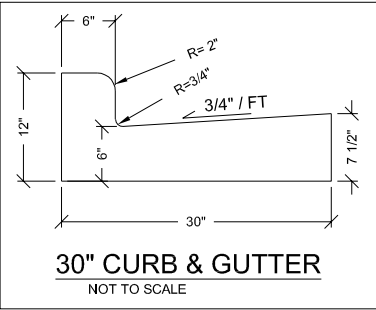
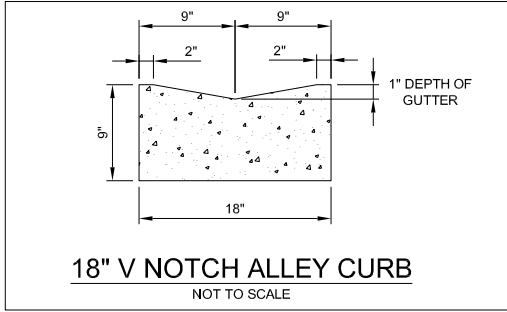
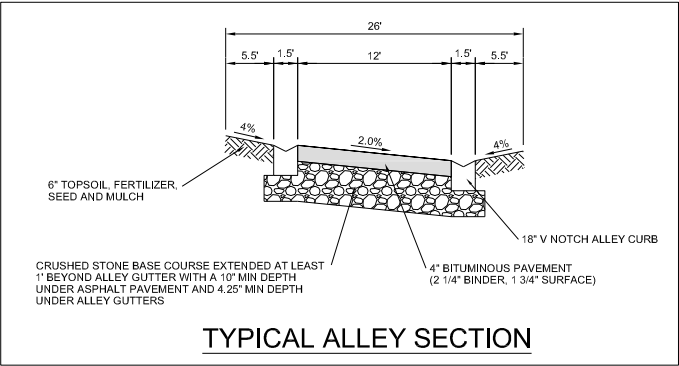
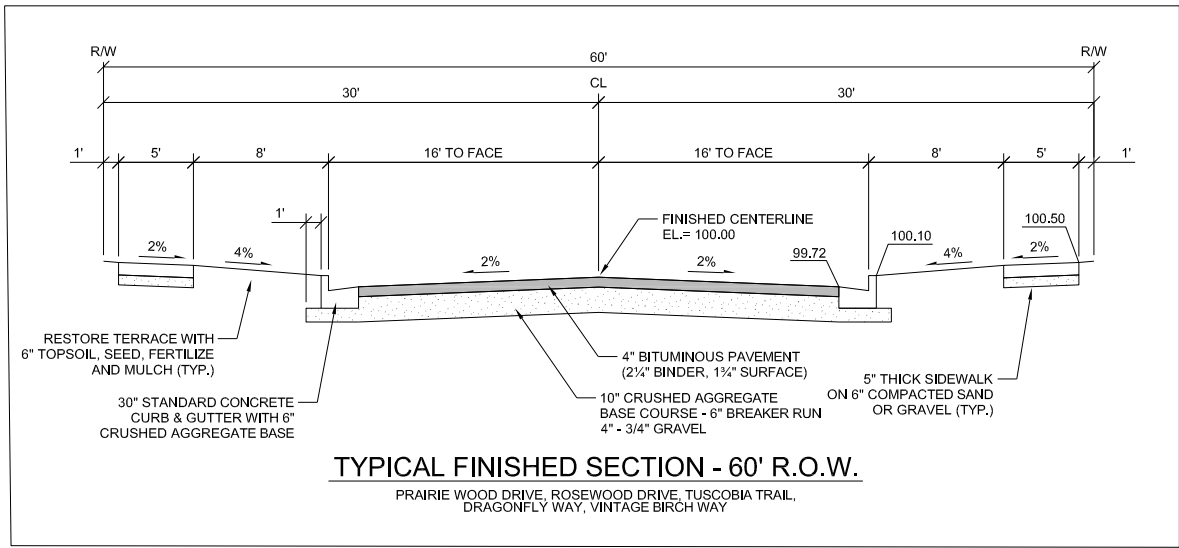


Diagram illustrating the construction details of a stone retaining wall:

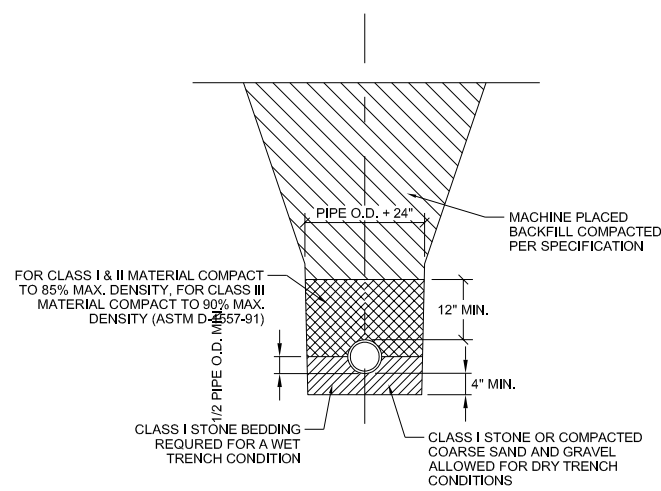
- LIMESTONE BOULDERS**: The main structure of the wall.
- 8" MIN.**: Minimum height of the boulder section.
- 6"** and **12"**: Dimensions of the boulder placement triangle.
- GRADE**: The finished ground level at the top of the wall.
- 3/4" CLEAR LIMESTONE BACKFILL, DO NOT BACKFILL W/ LIMESTONE LOWER THAN FINISHED GRADE AT FRONT OF WALL**: Backfill material above the boulder section.
- 4" DRAINAGE TILE (DAYLIGHT OR CONNECT TO DRAINAGE SYSTEM)**: Drainage system at the base of the wall.
- WOVEN FILTER FABRIC (TYP)**: Filter fabric at the base of the wall.
- VARIES (2.5" MIN.)**: Variable width of the wall base.

NOT TO SCALE

CLASS I MATERIAL: ANGULAR 1/4" TO 3/4" GRADED STONE

CLASS II MATERIAL: COARSE SANDS AND GRAVELS

CLASS III MATERIAL: FINE SAND AND CLAYEY GRAVELS,
INCLUDING FINE SANDS, SAND-CLAY MIXTURES AND
GRAVEL-CLAY MIXTURES



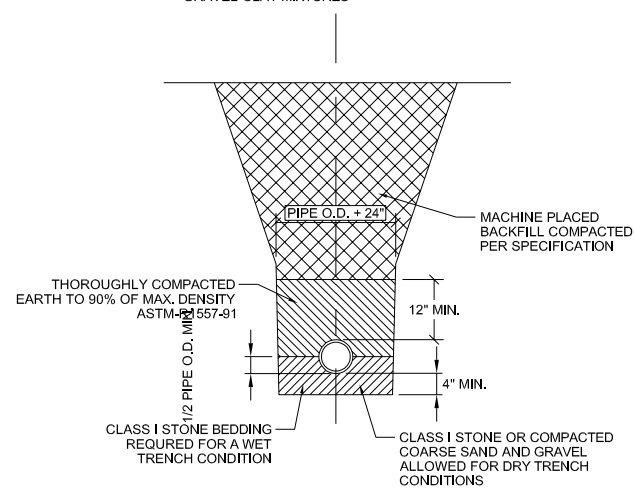
FLEXIBLE PIPE - PVC, ABS, HDPE. - ASTM D-3321
NOT TO SCALE

NOT TO SCALE

CLASS I MATERIAL: ANGULAR 1/4" TO 3/4" GRADED STONE

CLASS II MATERIAL: COARSE SANDS AND GRAVELS

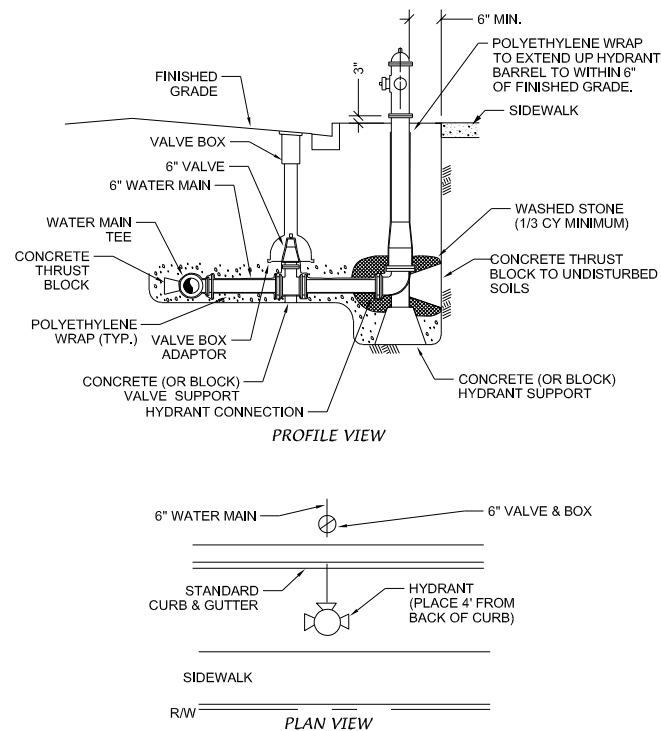
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GRAVEL-CLAY MIXTURES



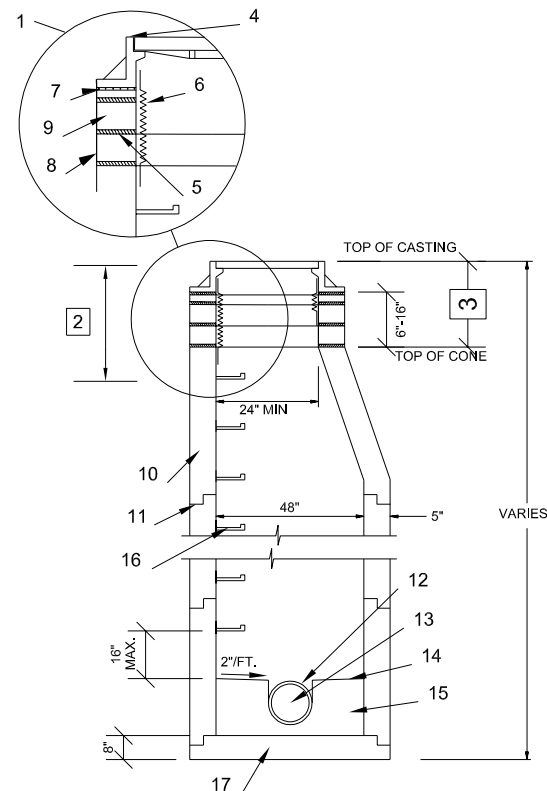
RIGID WALL PIPE - RCP, D.I., ETC. - ASTM C-12
NOT TO SCALE

NOT TO SCALE

1. HYDRANT SHALL BE WATEROUS PACER MODEL WB-67 OR MUELLER SUPER CENTURIAN A423.
2. HYDRANT BURY TO BE 7'-0".
3. HYDRANT TO BE LOCATED 4' FROM BACK OF CURB.
4. ALL JOINTS BETWEEN THE HYDRANT CONNECTION & WATER MAIN TEE TO BE RESTRAINED WITH MEGA-LUGS OR LOCKING GASKETS. HYDRANT CONNECTION TO BE MEGA LUGGED TO WATER MAIN.

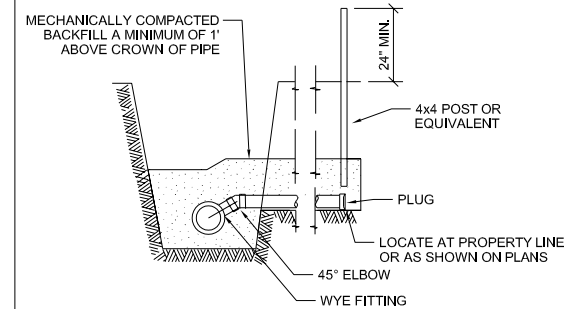


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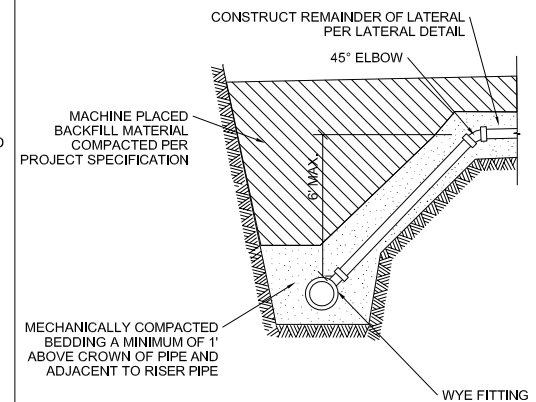
NOT TO SCALE

1. SEWER LATERAL TO BE PLACED AT 1/8 TO 1/4 INCH PER FOOT SLOPE.
2. SEWER LATERAL MATERIAL TO BE THE SAME AS THE MAIN LINE MATERIAL.
3. RISERS ARE REQUIRED WHERE SEWER LATERAL IS GREATER THAN 10 FEET DEEP.
4. TRACE WIRE IS REQUIRED. TRACE WIRE TO TERMINATE IN TRACE WIRE TERMINAL BOX LOCATED AT THE 4X4 TIMBER POST.



NOT TO SCALE

1. SEWER LATERAL WYE TO BE PLACED AT A 45° ANGLE FROM HORIZONTAL.
2. RISER TO BE CONSTRUCTED AT 45° ANGLE FROM HORIZONTAL TO THE PROPOSED ELEVATION OF THE SEWER LATERAL.
3. SEWER RISER MATERIAL TO BE THE SAME AS THE MAIN LINE MATERIAL.
4. TRACE WIRE IS REQUIRED. TRACE WIRE TO TERMINATE IN TRACE WIRE TERMINAL BOX LOCATED AT THE 4x4 TIMBER POST.



NOT TO SCALE

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.
7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

СЛОВО ДОМОВ

DATE: 08-25-20
REVISED:

DRAWN BY: KWB

N: 20-05-132

26 of 26

**ROSEWOOD FIELDS
VILLAGE OF MCFARLAND
COUNTY HWY AB
DANE COUNTY, WISCONSIN**

**150 YEAR WATER SURFACE ANALYSIS – ASSUMING STREET
STORMSEWER PLUGGED**

OWNER

**VH Rosewood Fields, LLC
c/o Chris Ehlers
6801 South Towne Drive
Madison, WI 53713**

October 09, 2020

PREPARED BY

**D'Onofrio, Kottke & Associates, Inc.
7530 Westward Way
Madison, Wisconsin 53717
608.833.7530**

FN: 19-04-113

Stormwater Supplement:

October 10, 2020

This summary is being submitted at the request of the Village to analyze the 150 year stormwater surface assuming that the proposed street stormsewer is completely plugged. This analysis addresses a worst case scenario for overland flow on the site. In normal working conditions a portion of the flow, shown on the street, would be continuously routed through stormsewer to the downstream ends of the developed site. The 150year stormwater was modeled using Hydrocad software.

The methodology used in this analysis, was to look at the site at four critical locations. The locations were chosen at the downstream ends of the site. That is where the most stormwater would collect in each drainage area. Along with studying these areas for street flow, the curb overflow condition was also calculated. The elevation of the stormwater in the basin was taken from the model submitted with stormwater report for this site. The hydrocad model used for plugged street flow can found in the appendix. Exhibit 1 shows the drainage areas analyzed along with critical flows and elevations. Exhibit 2 shows the elevation of the 150 year flow from these calculations. Below is chart showing a breakdown of information from the critical locations analyzed in this summary.

Critical Area Breakdown Chart:

ROSEWOOD FIELDS -150 YEAR SITE PLUGGED FLOW ANALYSIS						
Area	Total 150 Year Flow	Street Section		Elevation at	Overflow Depth	Channel Depth
Description	(CFS)	Depth (FT)	Note	Curb Overflow	Above Curb (Ft)	to Basin (ft)
North Area	11.77	0.29 (A-A)	Within ROW	875.03	0.31	4:1 Slope
West Area	24.37	0.42 (B-B)	Within ROW	871.57	0.3	0.35
South Area	66.39	0.64 (C-C)	Within ROW	870.23	0.52	1.53
East Street Area	59.67	0.63 (D-D)	Within ROW	NA	NA	NA

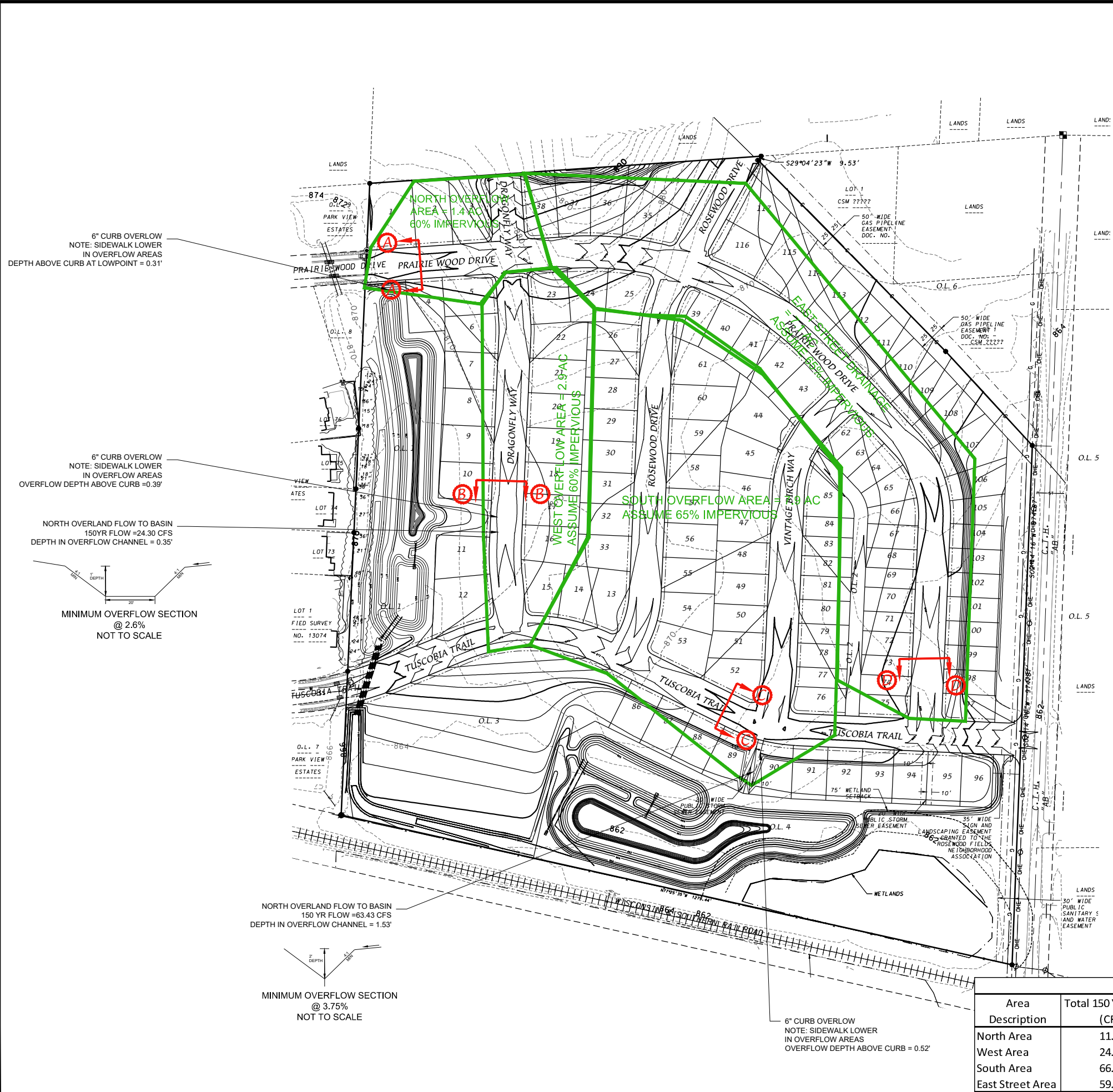
EXHIBITS

1. 150 Year Drainage Plan With Plugged Street Stormsewer
2. 150 Year Stormwater Surface With Plugged Street Stormsewer

APPENDICES

- A. Hydrocad Output

EXHIBITS

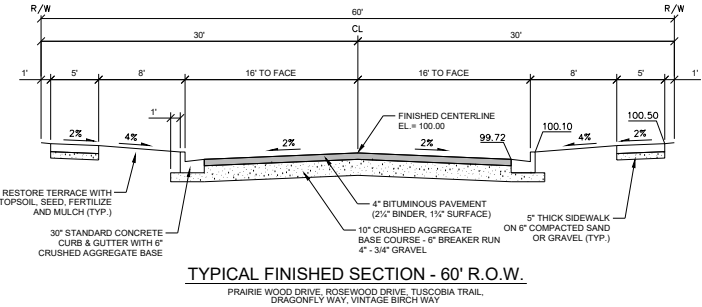


NOTES FOR 150YR STORMWATER ANALYSIS:

ASSUMES STREET STORMSEWER PLUGGED

150YR 24HR STORM EVENT = 7.1 INCHES (ASSUMED)

SIDEWALK LOWER THAN CURB IN OVERFLOW SECTIONS



ROSEWOOD FIELDS - 150 YEAR SITE PLUGGED FLOW ANALYSIS						
Area Description	Total 150 Year Flow (CFS)	Street Section Depth (FT)	Note	Elevation at Curb Overflow	Overflow Depth Above Curb (Ft)	Channel Depth to Basin (ft)
North Area	11.77	0.29 (A-A)	Within ROW	875.03	0.31	4:1 Slope
West Area	24.37	0.42 (B-B)	Within ROW	871.57	0.3	0.35
South Area	66.39	0.64 (C-C)	Within ROW	870.23	0.52	1.53
East Street Area	59.67	0.63 (D-D)	Within ROW	NA	NA	NA

DONOFRIO KOTTKE AND ASSOCIATES, INC.
7550 Westwood Way, Madison, WI 53717
Phone: 608.833.7550 • Fax: 608.833.1089
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150 YEAR DRAINAGE PLAN WITH PLUGGED STREET STORMSEWER

ROSEWOOD FIELDS
COUNTY HWY AB

VILLAGE OF MCFARLAND, WISCONSIN



DATE: 10/08/20
REVISED:

DRAWN BY: GYP

FN: 19-04-113

Sheet Number:

EXHIBIT 1



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7550 Westwood Way, Madison, WI 53717
Phone: 608.833.7550 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

150 YEAR STORMWATER SURFACE WITH PLUGGED STREET STORMSEWER

**ROSEWOOD FIELDS
COUNTY HWY AB**

VILLAGE OF MCFARLAND, WISCONSIN



0 100

DATE: 10/08/20
REVISED:

DRAWN BY: GVP

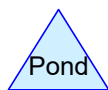
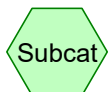
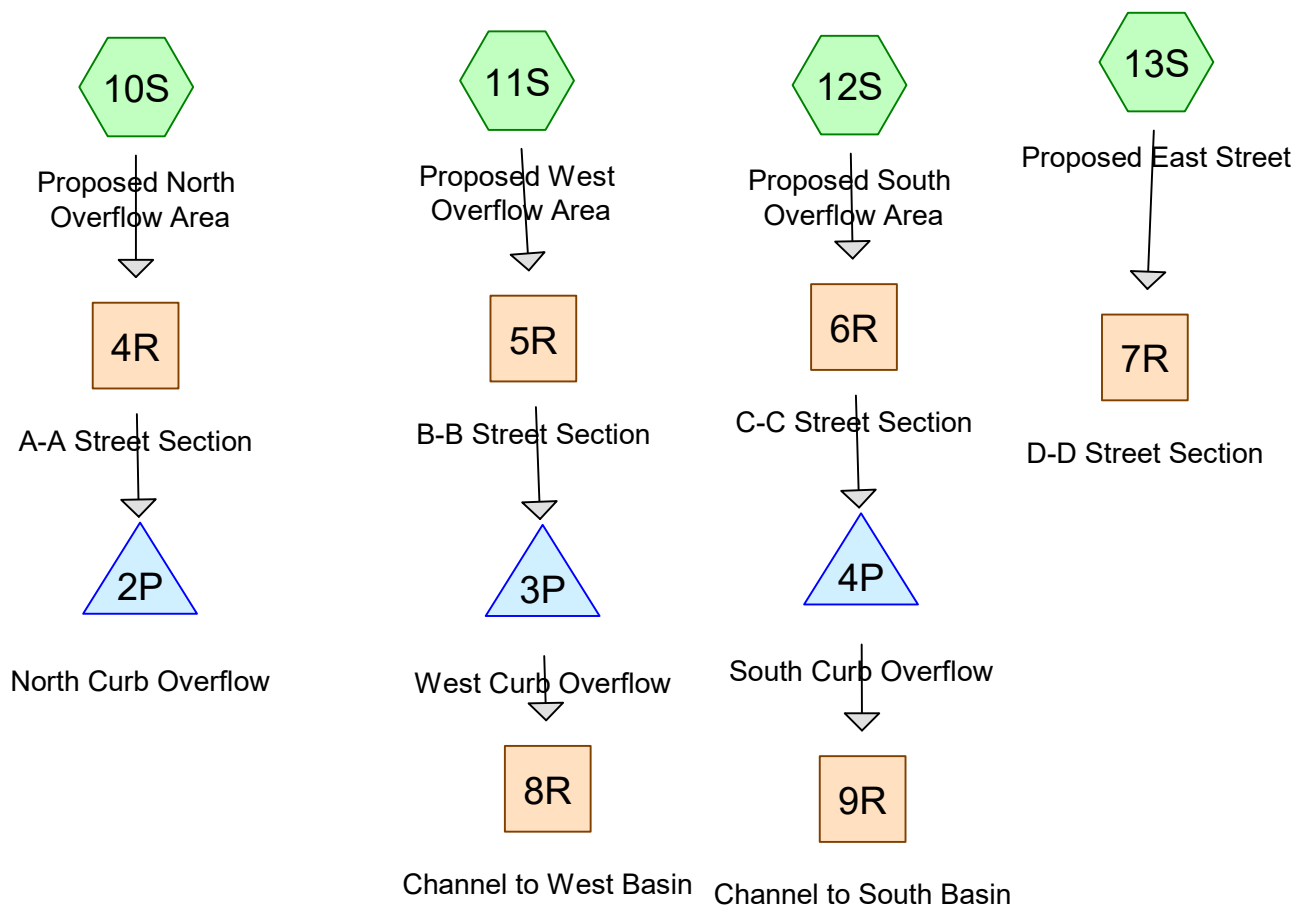
FN: 19-04-113

Sheet Number:

EXHIBIT 2

APPENDIX A

150 Year Plugged Street – Hydrocad Information



Routing Diagram for 150 yr check 1904113 SWMP
 Prepared by HP Inc., Printed 10/9/2020
 HydroCAD® 10.10-4a s/n 02063 © 2020 HydroCAD Software Solutions LLC

150 yr check 1904113 SWMP

MSE 24-hr 4 150yr 24hr Rainfall=7.10"

Prepared by HP Inc.

Printed 10/9/2020

HydroCAD® 10.10-4a s/n 02063 © 2020 HydroCAD Software Solutions LLC

Page 2

Summary for Subcatchment 10S: Proposed North Overflow Area

Runoff = 11.77 cfs @ 12.13 hrs, Volume= 0.651 af, Depth= 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 150yr 24hr Rainfall=7.10"

Area (ac)	CN	Description
* 1.400	87	60% Impervious Residential
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Subcatchment 11S: Proposed West Overflow Area

Runoff = 24.37 cfs @ 12.13 hrs, Volume= 1.348 af, Depth= 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 150yr 24hr Rainfall=7.10"

Area (ac)	CN	Description
* 2.900	87	60% Impervious Residential
2.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Subcatchment 12S: Proposed South Overflow Area

Runoff = 66.39 cfs @ 12.13 hrs, Volume= 3.671 af, Depth= 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 150yr 24hr Rainfall=7.10"

Area (ac)	CN	Description
* 7.900	87	60% Impervious Residential
7.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

Summary for Subcatchment 13S: Proposed East Street

Runoff = 59.67 cfs @ 12.13 hrs, Volume= 3.299 af, Depth= 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
MSE 24-hr 4 150yr 24hr Rainfall=7.10"

Area (ac)	CN	Description
* 7.100	87	60% Impervious Residential
7.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TC

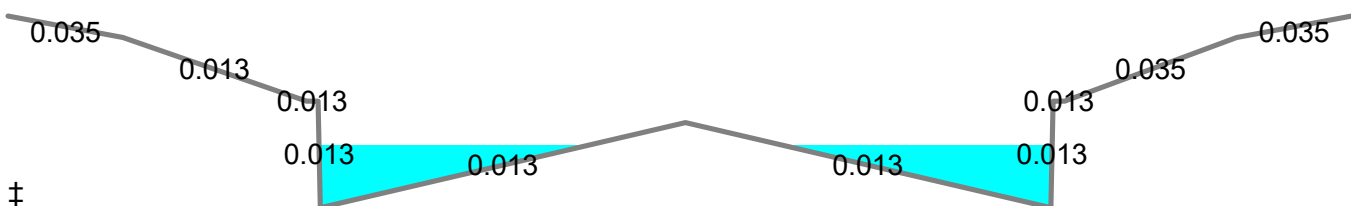
Summary for Reach 4R: A-A Street Section

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
Inflow = 11.77 cfs @ 12.13 hrs, Volume= 0.651 af
Outflow = 11.67 cfs @ 12.13 hrs, Volume= 0.651 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 1.4 min

Peak Storage= 345 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 23.48'
Bank-Full Depth= 0.90' Flow Area= 27.2 sf, Capacity= 218.45 cfs

Custom cross-section, Length= 100.0' Slope= 0.0116 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 875.78', Outlet Invert= 874.62'



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MSE 24-hr 4 150yr 24hr Rainfall=7.10"

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Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	876.68	0.00		
5.00	876.58	0.10	0.035	
13.00	876.28	0.40	0.013	
13.50	876.28	0.40	0.013	
13.60	875.78	0.90	0.013	
29.50	876.18	0.50	0.013	
45.40	875.78	0.90	0.013	
45.50	876.28	0.40	0.013	
46.00	876.28	0.40	0.013	
53.50	876.58	0.10	0.035	
58.50	876.68	0.00	0.035	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.40	6.4	32.6	31.8	639	26.65
0.50	9.6	33.8	32.7	959	51.36
0.80	21.8	49.3	48.5	2,182	160.81
0.90	27.2	59.3	58.5	2,716	218.45

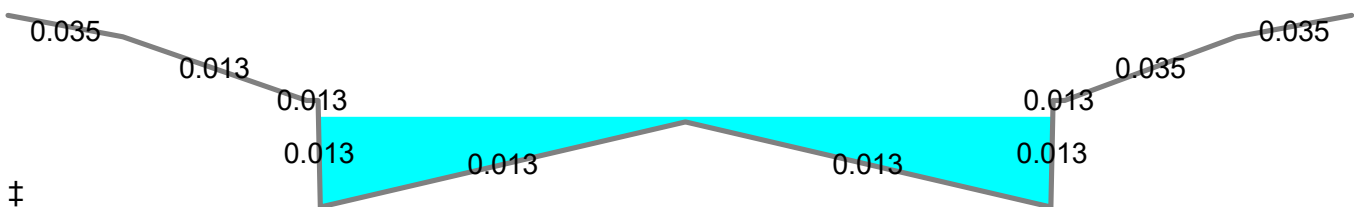
Summary for Reach 5R: B-B Street Section

Inflow Area = 2.900 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
 Inflow = 24.37 cfs @ 12.13 hrs, Volume= 1.348 af
 Outflow = 24.28 cfs @ 12.13 hrs, Volume= 1.348 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Max. Velocity= 3.40 fps, Min. Travel Time= 0.5 min
 Avg. Velocity= 1.14 fps, Avg. Travel Time= 1.5 min

Peak Storage= 715 cf @ 12.13 hrs
 Average Depth at Peak Storage= 0.42', Surface Width= 31.97'
 Bank-Full Depth= 0.90' Flow Area= 27.2 sf, Capacity= 166.02 cfs

Custom cross-section, Length= 100.0' Slope= 0.0067 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 871.84', Outlet Invert= 871.17'



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MSE 24-hr 4 150yr 24hr Rainfall=7.10"

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Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	872.74	0.00		
5.00	872.64	0.10	0.035	
13.00	872.34	0.40	0.013	
13.50	872.34	0.40	0.013	
13.60	871.84	0.90	0.013	
29.50	872.24	0.50	0.013	
45.40	871.84	0.90	0.013	
45.50	872.34	0.40	0.013	
46.00	872.34	0.40	0.013	
53.50	872.64	0.10	0.035	
58.50	872.74	0.00	0.035	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.40	6.4	32.6	31.8	639	20.25
0.50	9.6	33.8	32.7	959	39.04
0.80	21.8	49.3	48.5	2,182	122.21
0.90	27.2	59.3	58.5	2,716	166.02

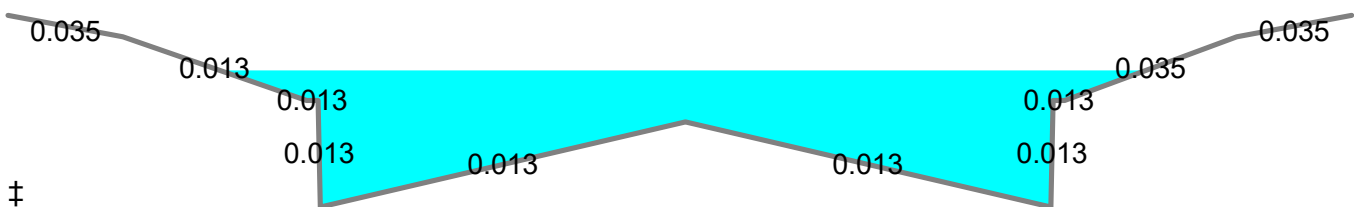
Summary for Reach 6R: C-C Street Section

Inflow Area = 7.900 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
 Inflow = 66.39 cfs @ 12.13 hrs, Volume= 3.671 af
 Outflow = 66.06 cfs @ 12.13 hrs, Volume= 3.671 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Max. Velocity= 4.47 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 1.37 fps, Avg. Travel Time= 1.2 min

Peak Storage= 1,478 cf @ 12.13 hrs
 Average Depth at Peak Storage= 0.64', Surface Width= 40.31'
 Bank-Full Depth= 0.90' Flow Area= 27.2 sf, Capacity= 151.78 cfs

Custom cross-section, Length= 100.0' Slope= 0.0056 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 870.17', Outlet Invert= 869.61'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	871.07	0.00		
5.00	870.97	0.10	0.035	
13.00	870.67	0.40	0.013	
13.50	870.67	0.40	0.013	
13.60	870.17	0.90	0.013	
29.50	870.57	0.50	0.013	
45.40	870.17	0.90	0.013	
45.50	870.67	0.40	0.013	
46.00	870.67	0.40	0.013	
53.50	870.97	0.10	0.035	
58.50	871.07	0.00	0.035	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.40	6.4	32.6	31.8	639	18.52
0.50	9.6	33.8	32.7	959	35.69
0.80	21.8	49.3	48.5	2,182	111.73
0.90	27.2	59.3	58.5	2,717	151.78

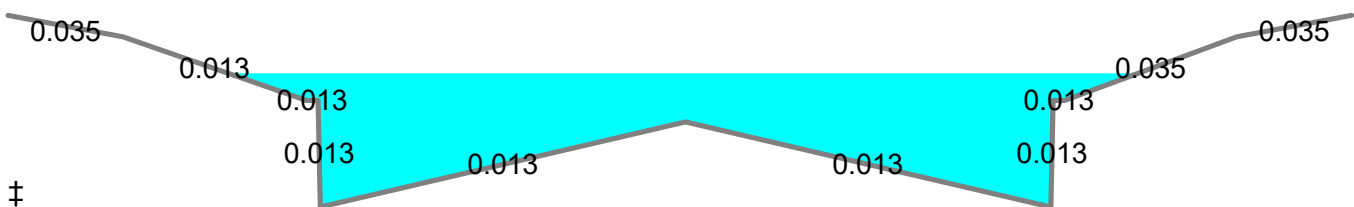
Summary for Reach 7R: D-D Street Section

Inflow Area = 7.100 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
Inflow = 59.67 cfs @ 12.13 hrs, Volume= 3.299 af
Outflow = 59.34 cfs @ 12.13 hrs, Volume= 3.299 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 1.3 min

Peak Storage= 1,425 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.63' , Surface Width= 39.63'
Bank-Full Depth= 0.90' Flow Area= 27.2 sf, Capacity= 143.42 cfs

Custom cross-section, Length= 100.0' Slope= 0.0050 '
Flow calculated by Manning's Subdivision method
Inlet Invert= 99.60', Outlet Invert= 99.10'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	100.50	0.00		
5.00	100.40	0.10	0.035	
13.00	100.10	0.40	0.013	
13.50	100.10	0.40	0.013	
13.60	99.60	0.90	0.013	
29.50	100.00	0.50	0.013	
45.40	99.60	0.90	0.013	
45.50	100.10	0.40	0.013	
46.00	100.10	0.40	0.013	
53.50	100.40	0.10	0.035	
58.50	100.50	0.00	0.035	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.40	6.4	32.6	31.8	639	17.50
0.50	9.6	33.8	32.7	959	33.72
0.80	21.8	49.3	48.5	2,182	105.58
0.90	27.2	59.3	58.5	2,717	143.42

Summary for Reach 8R: Channel to West Basin

Inflow Area = 2.900 ac, 0.00% Impervious, Inflow Depth = 5.51" for 150yr 24hr event
 Inflow = 24.12 cfs @ 12.14 hrs, Volume= 1.332 af
 Outflow = 24.03 cfs @ 12.14 hrs, Volume= 1.332 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Max. Velocity= 3.22 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 0.52 fps, Avg. Travel Time= 2.4 min

Peak Storage= 557 cf @ 12.14 hrs
 Average Depth at Peak Storage= 0.35', Surface Width= 22.78'
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 147.39 cfs

20.00' x 1.00' deep channel, n= 0.035
 Side Slope Z-value= 4.0 '/' Top Width= 28.00'
 Length= 75.0' Slope= 0.0260 '/'
 Inlet Invert= 871.27', Outlet Invert= 869.32'



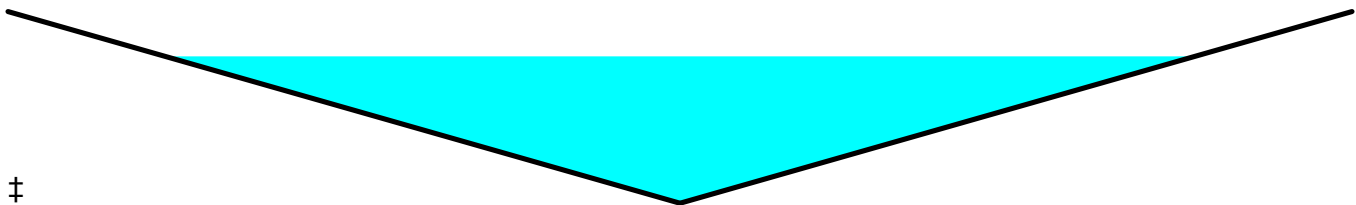
Summary for Reach 9R: Channel to South Basin

Inflow Area = 7.900 ac, 0.00% Impervious, Inflow Depth = 5.49" for 150yr 24hr event
 Inflow = 63.46 cfs @ 12.15 hrs, Volume= 3.616 af
 Outflow = 63.43 cfs @ 12.16 hrs, Volume= 3.616 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Max. Velocity= 6.74 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.46 fps, Avg. Travel Time= 0.9 min

Peak Storage= 752 cf @ 12.16 hrs
 Average Depth at Peak Storage= 1.53' , Surface Width= 12.26'
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 128.92 cfs

0.00' x 2.00' deep channel, n= 0.035
 Side Slope Z-value= 4.0 ' / ' Top Width= 16.00'
 Length= 80.0' Slope= 0.0375 ' / '
 Inlet Invert= 869.00', Outlet Invert= 866.00'



Summary for Pond 2P: North Curb Overflow

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
 Inflow = 11.67 cfs @ 12.13 hrs, Volume= 0.651 af
 Outflow = 11.90 cfs @ 12.15 hrs, Volume= 0.619 af, Atten= 0%, Lag= 1.2 min
 Primary = 11.90 cfs @ 12.15 hrs, Volume= 0.619 af

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Peak Elev= 875.03' @ 12.15 hrs Surf.Area= 8,593 sf Storage= 3,351 cf

Plug-Flow detention time= 52.7 min calculated for 0.618 af (95% of inflow)
 Center-of-Mass det. time= 27.7 min (810.6 - 782.9)

Volume	Invert	Avail.Storage	Storage Description
#1	874.22'	3,351 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
874.22	0	0	0
875.00	8,593	3,351	3,351

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 26.00 52.00 Height (feet) 0.78 0.50 0.78

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Primary OutFlow Max=11.62 cfs @ 12.15 hrs HW=875.02' (Free Discharge)

↑1=Asymmetrical Weir (Weir Controls 11.62 cfs @ 0.80 fps)

Summary for Pond 3P: West Curb Overflow

Inflow Area = 2.900 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
 Inflow = 24.28 cfs @ 12.13 hrs, Volume= 1.348 af
 Outflow = 24.12 cfs @ 12.14 hrs, Volume= 1.332 af, Atten= 1%, Lag= 0.4 min
 Primary = 24.12 cfs @ 12.14 hrs, Volume= 1.332 af

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Peak Elev= 871.57' @ 12.14 hrs Surf.Area= 4,329 sf Storage= 1,722 cf

Plug-Flow detention time= 15.2 min calculated for 1.332 af (99% of inflow)
 Center-of-Mass det. time= 7.8 min (790.7 - 782.9)

Volume	Invert	Avail.Storage	Storage Description
#1	870.77'	4,117 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
870.77	0	0	0
872.00	6,695	4,117	4,117

Device	Routing	Invert	Outlet Devices
#1	Primary	871.27'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 142.00 284.00 Height (feet) 1.23 0.50 1.23

Primary OutFlow Max=23.68 cfs @ 12.14 hrs HW=871.56' (Free Discharge)

↑1=Asymmetrical Weir (Weir Controls 23.68 cfs @ 0.71 fps)

Summary for Pond 4P: South Curb Overflow

Inflow Area = 7.900 ac, 0.00% Impervious, Inflow Depth = 5.58" for 150yr 24hr event
 Inflow = 66.06 cfs @ 12.13 hrs, Volume= 3.671 af
 Outflow = 63.46 cfs @ 12.15 hrs, Volume= 3.616 af, Atten= 4%, Lag= 1.2 min
 Primary = 63.46 cfs @ 12.15 hrs, Volume= 3.616 af

Routing by Stor-Ind method, Time Span= 1.00-48.01 hrs, dt= 0.03 hrs
 Peak Elev= 870.23' @ 12.15 hrs Surf.Area= 22,834 sf Storage= 10,366 cf

Plug-Flow detention time= 23.0 min calculated for 3.616 af (99% of inflow)
 Center-of-Mass det. time= 13.7 min (796.4 - 782.7)

Volume	Invert	Avail.Storage	Storage Description
#1	869.21'	17,643 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
869.21	0	0	0
870.00	15,055	5,947	5,947
870.50	31,729	11,696	17,643

Device	Routing	Invert	Outlet Devices
#1	Primary	869.71'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 158.00 316.00 Height (feet) 1.79 0.50 1.79

Primary OutFlow Max=62.53 cfs @ 12.15 hrs HW=870.23' (Free Discharge)

↑1=Asymmetrical Weir (Weir Controls 62.53 cfs @ 0.94 fps)

DEVELOPMENT AGREEMENT FOR ROSEWOOD FIELDS

This Development Agreement for Rosewood Fields (the **"Agreement"**) is made as of the ____ day of _____, 2020, by and between the Village of McFarland, a Wisconsin Municipal Corporation (**"Village"**) and VH Rosewood Fields, LLC, a Wisconsin limited liability company (**"Developer"**).

WITNESSETH:

WHEREAS, Developer is the fee simple owner of the real property described in Exhibit "A", attached hereto and incorporated herein by reference (the **"Property"**); and

WHEREAS, Developer wishes to develop the Property as a platted subdivision, to be known as Rosewood Fields (the **"Plat"**), for such purposes as may now or hereafter be permitted under the applicable zoning of the Property (the **"Development"**); and

WHEREAS, Developer agrees to construct the Development on the Property in accordance with this Agreement, and all applicable rules and regulations of any governmental authority having jurisdiction, including but not limited to applicable ordinances, rules and regulations of the Village (collectively the **"Laws and Ordinances"**); and

WHEREAS, it is the intention of the parties that this Agreement govern all future phases of the Development, the estimated extent of each such phase being described in Exhibit "A" (each as may be subsequently modified hereafter a **"Phase"** and collectively the **"Phases"**) with the understanding that the development of future Phases shall comply with the approved engineering plans described in Exhibit "B", attached hereto and incorporated herein by reference, and that future Phases are to be commenced only after notification to the Village and compliance with all applicable conditions of this Agreement; and

WHEREAS, Developer wishes to proceed with the installation of public improvements to serve the Development in conformance with Village requirements; and

WHEREAS, execution of the final Plat by the Village and the recording thereof is contingent upon the execution of this Agreement and the submittal of all documents required by this Agreement; and

WHEREAS, this Agreement contains the following exhibits provided for under this Agreement, all of which are incorporated herein as if fully set forth:

Exhibit "A": Legal description of plat and estimated phasing plan

Exhibit "B": Engineering plans

Exhibit "C": Parkland dedication and fees in lieu of dedication

Exhibit "D": Restriction as to future sale of lots

Exhibit "E": Public Improvement Costs Secured by Surety

NOW, THEREFORE, in accordance with the above recitals, the granting of approval for the development of the Property by the Village so as to permit Developer to sell lots (the "**Home Sites**") in the Development to third parties, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, it is agreed by and between the parties hereto as follows:

1) Covenant to Develop. Developer agrees to develop the Property in accordance with the terms, covenants and conditions of this Agreement, and all Laws and Ordinances.

2) Improvements. Developer agrees to fully comply with any and all provisions of the Village Subdivision Ordinances, whether or not specifically addressed in this Agreement, other than where the Village Board has granted variances to provisions of the Village Subdivision Ordinances. The Developer and the Village hereby specifically agree as follows:

A. Streets, Storm Sewer and Sidewalks.

(a) The Developer shall install curb and gutter, storm sewer and inlets, sidewalks and pavement on all streets within the Plat, to the established standards and/or specifications of the Village as specified in the engineering plans, on a Phase by Phase basis.

(b) Initial construction plans for the improvements described in subparagraph (A)(a), above, have been presented for approval by the Village.

B. Street Lights and Street Signs. The Developer shall pay for and install a street lighting system and street signs along public streets and ways within or adjoining the Property according to plans and specifications approved by the Village. If the Developer contemplates the use of street lights other than the Village standard, then the Developer shall present the nonstandard street light design to the Village for approval. The Developer or the Development subdivision association (the "**HOA**") shall bear all costs for installation and long-term maintenance of nonstandard street lights should the Village agree to their use.

C. Sanitary Sewer.

a) The Developer shall provide utility easements, construct, install and furnish a complete sewerage system, including public mains to serve the Plat, in accordance with the plans and specifications submitted to and approved by the Village and the State of Wisconsin Department of Natural Resources.

b) The cost of construction of the sewer system shall be paid by the Developer.

c) The incremental cost for pipe sizes greater than eight-inch (8") diameter shall be borne by the Village, and either credited or reimbursed to the Developer. The incremental cost shall be based only on the retail price of pipe and fittings.

D. Sewer Interceptor.

a) The Village at its cost will design and construct a sewer interceptor to the southeast corner of the Property north of the existing railroad tracks, to a point along Highway AB (the "**Sewer Interceptor**") on or before March 31, 2022.

E. Madison Metropolitan Sewerage District Sanitary Sewer and Treatment Plant Charges. The Developer shall pay to the Village the area sewer assessment and treatment plant charges as determined by the Madison Metropolitan Sewerage District ("**MMSD**"). The assessments to be charged by MMSD will be based on the land area contained within the plans submitted to MMSD. The parties agree that such plans shall be submitted on a Phase by Phase basis. Payment for any Phase shall be made prior to commencement of that Phase's construction. If notwithstanding submission of the plans on a Phase by Phase basis, MMSD shall charge assessments based on the entire Plat, or on a basis other than the lands contained within a Phase, Developer shall pay the Village the entire assessment which MMSD shall bill to the Village.

F. Water.

a) The Developer shall provide utility easements, construct, install and furnish a complete water distribution system, including public mains to service the Property, in accordance with the plans and specifications submitted to and approved by the Village and the State of Wisconsin Department of Natural Resources. When required by the Village Engineer, the water mains shall be provided in locations, sizes, and depths necessary to serve future subdivisions and Phases.

b) The cost of construction of the water system shall be paid by the Developer.

c) The incremental cost for pipe sizes greater than eight-inch (8") diameter shall be borne by the Village and either credited or reimbursed to the Developer. The incremental cost shall be based only on the retail price of pipe and fittings.

G. Stormwater/Surface Water Drainage. (a) The Developer shall construct, install, furnish and provide such facilities for storm and surface water drainage as are contemplated by the Engineering Plans and approved Storm Water Management Plan.

H. Erosion and Sedimentation Control. The Developer shall construct, install, furnish and provide adequate facilities for erosion and sedimentation control throughout the entire Property in accordance with the plans and specifications submitted to and approved by the Village.

I. Street Trees. The Developer shall submit a tree planting plan for approval by the Village. At Village's option Developer shall either:

a) Pay to the Village the estimated cost of the trees to be planted in each Phase of the Development at the same time as Developer submits to the Village the Amendment for the Phase in question. The Village shall be responsible for planting all trees within the Phase in accordance with a schedule agreed upon by Village and Developer in the reasonable exercise of their discretion in accordance with the approved plan; or

b) Plant the trees in accordance with the approved plan. In such event, the Developer shall post with the Village Clerk prior to commencing work on a Phase, Surety, as that term is defined below, in the appropriate amount for the tree planting plan approved by the Village for such Phase of the Plat prior to commencement of construction of any improvements for such Phase.

c) Trees shall have a minimum diameter of 1.5 inches per tree as measured at twelve (12) inches above ground level as required by Village Ordinances. It shall be the sole responsibility of the Village and home owners to maintain said tree plantings in accordance with the Ordinances.

J. Inspection and Acceptance of Work.

a) Compaction testing shall be performed by an independent testing laboratory at intervals determined by the Village on the backfill for all underground utility construction and in all fill areas within public road rights-of-way. The Village or its

designee shall be present during the performance of all required acceptance tests. The Village or its designated inspector, shall conduct a final inspection of all improvements and, if acceptable, certify such improvements as being in compliance with the standards and specifications of the Village whereupon the Village shall accept the improvements for maintenance by the Village.

b) The Village shall provide timely notice to the Developer whenever inspection reveals that an improvement does not conform to the Village's adopted standards and specifications or is otherwise defective. The Developer shall have 30 days from the issuance of such notice to correct or substantially correct the defect, unless a longer compliance time is specified in this Agreement. The Village shall not declare a default under this Agreement during the 30 days or otherwise specified correction period on account of such defect unless the Village determines that immediate action is required in order to remedy a situation which poses an imminent threat to health or public safety. The Developer shall have no obligation to correct defects in or the failure of any improvement found to exist or occurring after the one-year guarantee period expires.

K. Park Dedication and Parkland Improvement Fees.

a) The Developer agrees to dedicate, in partial fulfillment of the parkland dedication requirement for the Plat, that number of acres, and in addition, to pay the fee (the "**Park Dedication Fee**") in lieu of dedication for the Plat, as shown in Exhibit "C", attached hereto and incorporated herein by reference. The Park Dedication Fee shall be paid on a per Phase basis, prior to commencement of construction on such Phase, at the rate in effect as of the date on which an amendment to this Development Agreement is entered into for the Phase in question, with the total amount of the Park Dedication Fee being divided by the number of Dwelling Units in the entire Plat, and the resulting sum multiplied by the number of Dwelling Units in the Phase in question. The number of Dwelling Units shall be determined in accordance with the following table:

Single Family Residence = 1 Dwelling Unit

Multi-Family Apartments = 1 Dwelling Unit per Apartment Unit

Multi-Family Twin Home = 1 Dwelling Unit per Twin Unit or Condominium Unit

b) Park Improvement Impact Fees shall be paid upon the issuance of a building permit for each of the final ___ lots of the Development at the then current rate. In lieu of payment by Developer of Park Improvement Impact Fees for the initial ____ Lots receiving building permits, Developer shall provide improvements to the park planned for Outlot 3 of the Plat (the "**Park**") which have a value of \$_____. The proposed improvements shall be installed in their entirety with the first Phase of improvements in the Development and shall include such amenities and installations as recommended by the Village of McFarland Parks, Recreation and Natural Resource Committee and approved by the Village Board:

(i) Prior to construction Developer shall provide the Village with a detailed list of the planned improvements which Developer intends to install in the Parks, along with the estimated cost of all materials and installation relating to the planned improvements. Such costs shall be not less than \$_____. Village shall be deemed to have approved the same unless on or before thirty (30) days after receipt of the foregoing the Village shall notify Developer in writing of disapproval, which notice shall specify the reasons for disapproval. If disapproved, Developer shall resubmit said information to the Village and the same procedure shall be thereafter followed;

(ii) Upon substantial completion of the improvements to the Park, Developer will furnish evidence to the Village of completion, including a copy of all bills paid with respect to the improvements; and

(iii) Upon satisfaction of the foregoing conditions, the Village will accept the improvements in lieu of charging Park Improvement Impact Fees on all but the final ____ lots to be improved in the Plat.

c) Library Improvement Impact Fees, and a Water System Impact Fee, at the then current, rates charged by the Village, will be paid by Developer at the issuance of Building Permits.

L. Time of Completion. Developer shall submit to the Village an amendment to this Agreement specifying the requested phase (a **"Phase"**) of construction and such other matters as are required herein or as may be requested by Developer with respect to the particular Phase in question. The Developer shall not be restricted in the amount of improvements in any Phase. With respect to building permits, Developer shall be entitled to building permits for a model home, and for two (2) additional homes until Substantial Completion, as that term is defined below, but after Substantial Completion there shall be no limits on the number of building permits issued. As used herein, Substantial Completion shall mean construction by Developer of all improvements for a Phase through and including the binder course of asphalt. Developer agrees that Substantial Completion of a Phase shall occur on or before 18 months after execution of a Development Agreement or an amendment hereto for the Phase in question. The finish course of asphalt shall be constructed by Developer on or before 18 months after Substantial Completion of a Phase.

3) Reimbursement of Engineering, Inspections, Administrative and Miscellaneous Costs. Pursuant to the Village Subdivision Ordinance, the Developer agrees to reimburse the Village for engineering, inspections, administrative, legal and review fees incurred by the Village prior to and after the recording of the final Plat, at the times specified by the Village.

A. The Village shall provide the Developer with a monthly accounting of all costs incurred under this Section.

B. The Developer shall pay all outstanding engineering, inspection, legal and administrative fees prior to the Village signing the final Plat.

C. The Developer shall pay all Village engineering, inspection and administrative expenses incurred after the Village signs the Plat and through the end of all construction in the Development.

4) Roads, Sanitary Sewer, Water and Stormwater Guarantee. The Developer shall guarantee the improvements required under this Agreement to be constructed or installed by Developer, against defects due to faulty materials or workmanship which appear within a period of one (1) year from the date of acceptance by the Village as herein provided, and shall pay for any damages to Village property resulting from Developer's construction.

5) Method of Improvement. The Developer hereby agrees to engage contractors for all work covered by this Agreement who are qualified to perform the work and who shall be listed as qualified for such work by the Village, or by one of its Commissions in the event the Village or Commission has published lists of approved contractors prior to the date of this Agreement. The Developer further agrees to use materials and make the various installations in accordance with the approved plans and specifications made a part of this Agreement by reference, and including those standard specifications as the Village or its Commission may have adopted and published prior to this date.

6) As-Built Plans. Prior to final acceptance, the Developer shall provide the Village with as-built plans. As-built plans shall be provided in both an electronic format and in hard copy. As-built plans in electronic format and readable by AutoCAD must be provided showing all horizontal and vertical locations of public sanitary, water, and storm water utilities i.e. manholes, hydrants, water main bends and tee's, valves, sanitary and water lateral curb boxes, inlets, endwalls, etc. All vertical information shall be on NAVD88 datum. The profile drawings must also show the diameter, length and slope of all pipes. In addition, Developer shall provide to the Village as-built-plans showing the finished surface elevations at all lot corners demonstrating positive drainage between lot corners, and also showing the finished surface elevation of all stormwater management ponds, swales and infiltration areas for the Phase in question. The horizontal location of all water and sewer services shall be located as follows:

(i) Sewer laterals shall be located by the distance to the sewer 'wye' from the downstream manhole.

(ii) The ends of stubbed sewer laterals for future connection shall be located and the elevations determined and shown.

(iii) Water laterals shall be located by the distance from the nearest hydrant or valve on the main (whichever is closest) to the corporation stop.

(iv) The distance to the curb stop from the main shall also be provided.

Any bends in the water main shall be indicated by the length from the nearest main-line valve. For mapping purposes, a single electronic point file of the entire development describing the as-built surface features of the new sanitary sewer, water system and storm sewer system, i.e. manholes, hydrants, water main bends, lateral curb boxes, valves, inlets, endwalls, etc., on the Dane County Coordinate system must be provided. This point file must include; northing, easting, elevation (NAVD88), and a point description. The Village's engineer can obtain the electronic file for the surface features, at the Developer's cost, when requested by either the Village or the Developer, provided that the Developer locates these features in the field. The Village Engineer will update all applicable Village maps and computer water and stormwater models. The cost of updating of Village maps and computer water and stormwater models to incorporate this development shall be borne by the Developer.

All sanitary sewer mains shall be televised in accordance with the Village's standard specifications. A colored DVD of the televising as well as a written report of the location of laterals and lengths of pipe shall be provided to the Village before final acceptance of the sewer.

7) Issuance of Building Permits. Developer shall request from the Village Board the waiver required under Village Ordinances in order to permit Developer to construct a model home. Developer shall provide access to the model home by means of a gravel driveway from a public thoroughfare sufficient to provide emergency vehicle access to the model home. No occupancy permit shall be issued for the model home until completion of all infrastructure improvements. Issuance of building permits shall be governed by the terms of paragraph 2(L), above.

8) Responsibility of Village.

A. The Village will perform no repair, maintenance, or snow plowing on any improvement until accepted by the Village.

B. Except for the surface course of asphalt pavement, the Village shall accept the completed improvements upon satisfactory testing and inspection of the same in accordance with the Village's standard practices, and satisfactory placement of a binder course of asphalt pavement.

9) Inspection. The Village shall inspect the status of the work in progress to determine if the work is progressing in a workmanlike manner pursuant to the Village Subdivision Ordinance and accepted industry standards.

10) Surety.

A. The Developer agrees to furnish to the Village at Developer's option either a letter of credit or a surety bond (in either case the "**Surety**") for each Phase in the minimum amount of 120% of the cost of the infrastructure improvements for that Phase, in order to secure performance of this Agreement in accordance with the Village's Subdivision Ordinance. The amount of the Surety for Phase 1 shall include surety for completion of the Park improvements described in paragraph 2(K)(b), and in total shall be \$_____.

The Surety shall be payable to the Village at any time upon presentation of (i) notice to the surety of the amount which the Village is entitled to be paid pursuant to the terms of this Agreement; (ii) an affidavit executed by an authorized Village officer stating that the Developer is in default under this Agreement; and (iii) the original of the Surety (if required by the surety).

B. As work progresses on installation of improvements constructed as part of this Agreement, the Village Engineer, upon written request from the Developer from time to time, shall recommend a reduction in the amount of the Surety as hereinafter provided when portions of construction (water, sanitary sewer, street, sidewalk, greenway or other improvements) are completed by the Developer and determined acceptable by the Village Engineer. Upon such recommendation, the Village Engineer is authorized, upon submission of lien waivers by the Developer's contractors, to reduce the amount of the Surety. At no time during the construction shall the surety be reduced to less than fifteen percent (15%) of the original amount, plus any amount determined sufficient by the Village to cover all costs of any remaining construction.

C. Upon written request by the Developer and determination by the Village that the Developer has reached substantial completion of the public improvements for the Phase in question, the Village at its discretion, shall allow the Surety to be reduced to no less than fifteen percent (15%) of the original amount, which shall be held for a period of 12 months from the date of acceptance in accordance with paragraph 2(J)(a) of this Agreement, and then shall be released in its entirety by the Village

D. A similar Surety shall be provided by the Developer for each subsequent Phase of the development.

E. Exhibit "E", attached hereto and incorporated herein by reference, describes the Public Improvement Costs secured by the Surety furnished by the Developer to the Village for Phase 1 of the Plat. A similar exhibit shall be provided by the Developer for each subsequent Phase of the Development.

11) Miscellaneous.

A. The terms and conditions of the Agreement shall run with the land and be binding upon the parties, their heirs, successors and assigns.

B. The Developer will defend, indemnify and hold the Village and its officials, agents and employees harmless for all losses, claims, liabilities, expenses and costs arising from damages to property or injuries to the person occurring in connection with the making of the improvements under this contract, except for such damages or injuries caused by the willful misconduct of the Village and its officials, agents and employees.

C. Developer agrees to record, contemporaneously with the recording of the Rosewood Fields Plat that certain Restrictive Covenant (the "**Restriction**") restricting the sale of lots in future Phases without the prior written approval of the Village, a copy of which Restriction is attached hereto as Exhibit "D", and incorporated herein by reference.

[Signature page to follow]

Dated this ____ day of June, 2015.

VILLAGE OF MCFARLAND

By: _____

Print Name: _____

Print Title:

Attest:

Print Name: _____

Print Title:

STATE OF WISCONSIN)
)ss>
COUNTY OF DANE)

Personally came before me, _____, notary public for the above State and County, this ____ day of _____, 2020, the above named _____, to me known to be the person who executed the foregoing instrument and acknowledged the same in the capacity and for the purposes therein intended.

Print Name: _____

Notary Public, State of Wisconsin

My Commission expires:

VH Rosewood Fields, LLC

By: _____
Chris Ehlers, Authorized Signatory

STATE OF WISCONSIN)
)ss>
COUNTY OF DANE)

Personally came before me, _____, notary public for the above State and County, this ____ day of _____, 2020, the above named Chris Ehlers, to me known to be the person who executed the foregoing instrument and acknowledged the same in the capacity and for the purposes therein intended.

Print Name: _____
 Notary Public, State of Wisconsin
 My Commission expires: _____

EXHIBIT “A”

Page 1

Legal Description of Plat

Page 2

Phasing Plan

[To be determined.]

EXHIBIT “B”
ENGINEERING PLANS
[To be supplied.]

EXHIBIT “C”

Parkland Dedication and Fees in Lien of Dedication

1. Dedication requirement:

107 Single Family Dwelling Units (“SFDU”) @ 2,106 square feet/unit = 225,342 square feet

10 twin units (“MFDU”) @ 1,463 square feet/unit = 14,630 square feet

Total Required Dedication = 225,342 + 14,630 = 239,972 square feet or 5.51 acres

2. Dedication by plat:

Outlot 3 = 138,198 square feet

Outlot 1 (10 feet for path) = 8,460 square feet

Outlot 4 (10 feet for path) = 8,047 square feet

Total = 154,705 Square feet or 3.55 acres

3. Fee in lieu of dedication:

$239,972 - 154,705 = 85,267$ square feet

$85,267 / 239,972 = 35.53\%$

4. Fee in lieu of dedication by unit (by way of example for 2020):

SFDU: $.3553 \times \$3,915.46/\text{SFDU} = \$1391.16 / \text{SFDU}$

MFDU: $.3553 \times \$2,719.90/\text{MFDU} = \$966.38 / \text{MFDU}$

EXHIBIT “D”

RESTRICTION AS TO FUTURE SALE OF LOTS

See attached.

<i>Document Number</i>	Declaration of Conditions, Covenants and Restrictions Rosewood Fieldss, Village of McFarland, Dane County, WI <i>Title of Document</i>
WHEREAS, VH Rosewood Fields, LLC, a Wisconsin Limited Liability Company (“Owner”) owner of those lots described in Exhibit “A” attached hereto and incorporated herein by reference, (the “Lots”), will construct certain public work improvements in construction phases as authorized by the Village of McFarland to provide services to said Lots; and	
Name and Return Address: Gregory J. Paradise Mohs Widder, Paradise 20 North Carroll Street Madison, Wisconsin 53703	
<u>See Exhibit “A”</u> (Parcel Identification Number)	

WHEREAS, authority to construct said public work improvements in construction phases is contingent upon the Owner recording a deed restriction restricting the sale of Lots included in future construction phases without prior approval of the Village of McFarland.

NOW, THEREFORE, the undersigned Owner hereby declares and provides:

1) The Village of McFarland and Owner have entered into a Development Agreement for Rosewood Fields containing certain agreements of the parties with respect to construction and development of the Rosewood Fields Subdivision. Record notice is hereby given of such Development Agreement. A copy of the Development Agreement is maintained at the Offices of the Village of McFarland.

2) That the Lots shall not be sold or transferred until such time as an instrument is recorded by the Village of McFarland in the Dane County Register of Deeds office, approving the sale or transfer of said Lots. The Owner shall be entitled to a release of the restrictions contained herein at such time as surety is provided to the Village of McFarland to ensure the performance of the contract for subdivision improvements for any construction phase. This restriction shall not be in effect for those lots described in Exhibit “B”, attached hereto and incorporated herein by reference (the “**Phase 1 Lots**”).

Dated this _____ day of _____, 20_____.

VH ROSEWOOD FIELDS, LLC

By: _____
 Print Name: _____
 Print Title: _____

STATE OF WISCONSIN)
)ss>
COUNTY OF DANE)

Personally came before me, a notary public for the above State and County, this _____ day of _____, 20____, the above named _____, to me known to be the person who executed the foregoing instrument and acknowledged the same in the capacity and for the purposes therein intended.

Print Name: _____
Notary Public, State of Wisconsin
My Commission expires: _____

Drafted by:
Gregory J. Paradise

Exhibit "A" to Restriction

LOTS SUBJECT TO RESTRICTION

NOTE: To be supplied prior to recording Restriction

Exhibit “B” to Restriction

PHASE 1 LOTS

NOTE: To be supplied prior to recording Restriction.

EXHIBIT “E”

PUBLIC IMPROVEMENT COSTS SECURED BY SURETY

[To be attached.]



PLAN COMMISSION SUMMARY SHEET

MEETING DATE: Monday, October 19, 2020

SECTION: Business

DEPARTMENT: Community Development

CONTACT: Andrew Bremer, Comm & Eco Dev Director

AGENDA ITEM: Discussion and possible action to make a recommendation to the Village Board regarding Ordinance 2020-22, An Ordinance Amending Various Sections of the McFarland Municipal Code Including Chapter 47 Public Utilities, Chapter 56 Subdivisions, and Chapter 62 Zoning Relating to the Provisions of Storm and Sanitary Sewer Service.

PREVIOUS ACTION:

ISSUE SUMMARY:

Including within the packet is Ordinance 2020-22. A redline copy of the ordinance is presented to assist in tracking the proposed ordinance amendments. These amendments address various sections within Chapter 47 Public Utilities, Chapter 56 Subdivisions, and Chapter 62 Zoning. The purpose of these ordinance amendments are to update and clarify various ordinances to conform to current state and Madison Metropolitan Sewerage District charging systems and Village growth; and to include regulatory approval costs in the cost of sewer service extensions charged to benefitted properties. The Village Attorney and Village Engineer collaborated with the Community & Economic Development Director on the review and creation of Ordinance 2020-22.

Chapter 47 Amendments

These amendments primarily address/clarify the terms under which connections to the Village's sanitary sewer system are allowed and payment of connection fees, including CARPC and MMSD fees, to the Village. These amendments address code deficiencies Village staff have noticed over the past year while working on various CARPC, MMSD and Village sewer expansion projects. The amendments also include a revision to a portion of Chapter 47 which addresses stormwater utility credits. The circumstances related to this ordinance amendment were brought to Village staff's attention by a property owner. Avant Gardening and Landscaping, 3055 Siggelkow Road, annexed their properties to the Village as part of Ordinance 2019-13, approved on November 25, 2019. The Village established a stormwater utility in 2008, to which Avant's properties are now subject.

The utility generates revenue from customer fees to pay the costs of stormwater management. The amount of the fees charged by the stormwater utility for an individual property depends upon the amount of impervious, hard-surfaced areas that causes stormwater run-off from that property. Impervious surfaces include rooftops, parking lots, driveways, sidewalks, and areas of compacted gravel. The fee structure is based on the concept of an Equivalent Residential Unit (ERU), which has been determined to be 3,456 square feet of impervious



surface. Single-family residential properties are charged one ERU (currently \$14.3 per billing cycle).

Non-residential properties are typically charged more than one ERU, as they have more impervious surfaces than single-family homes. The total square footage of impervious surface in a non-residential property is divided by the Village's ERU (3,456 square feet) to determine the overall storm-water charge.

For the three Avant Gardening parcels annexed into the Village located at 3055 Siggelkow Road, the total square footage of impervious surface was calculated to be just under 130,000 square feet. This results in an ERU charge of 37.5 units, or a charge of \$556.13 per two-month billing cycle.

Sec. 47.272 provides various methods by which a property owner may receive a reduction of the stormwater fee chargeable to a given parcel. One such instance is for direct discharge if more than 50 percent of the parcel area drains directly to Lake Waubesa or Upper Mud Lake without passing through any portion of the stormwater collection and conveyance system operated or maintained by the Village or without crossing any public rights-of-way.

As the Village's municipal boundary continues to expand it stands to reason that Sec. 47-272(e) would be amended to include other significant waterways within the Village that would qualify for eligibility for a similar type of credit. Ordinance 2020-22 would add Lower Mud Lake, Yahara River, and Door Creek to the list of eligible waterways for which a credit may be applied for.

Per Sec. 47-272(i), the maximum available credit shall be applied only against the Variable Cost component of the stormwater fee. No credit is available against the Fixed Cost component of the stormwater fee. In no event may a credit reduce the stormwater fee below the charge for one ERU per year.

The proposed revision to Sec. 47-272(e) would then be applicable to Avant Gardening and Landscaping if they can demonstrate they qualify under the revised ordinance. The proposed revision would also remove a potential barrier for other property owners considering annexation to the Village and would generally be more equitable as it would include the other significant waterways in or near the Village.

Chapter 56 Amendments

These amendments primarily address/clarify the terms of payment for public improvements and dedication of easements for public utilities related to land divisions. These amendments also address changes in state law that limit a municipality's ability to impose any public improvement requirements under its extraterritorial subdivision review jurisdiction.

Chapter 62 Amendments

Sec. 62-68, Statement of Purpose, provides purpose statements for each of the Village's Zoning Districts. The lead-in paragraph provides that "public utility services are required as a prerequisite to development in all districts within the Village." This language conflicts with other code provisions that allow for consideration of the ability of the Village Board to approve private development on septic systems. It also conflicts with General Land Use Policy #4 and Figure 4.1, page 37, of the Village's Comprehensive Plan, which provides that within the Agricultural Preservation Future Land Use Category development may be served by private well and



septic. In addition, the location of this statement within the broader context of Sec. 62-68 seems oddly placed and the term "development" within the statement is so broadly defined within the Zoning Code to suggest any structure on a parcel of land requires public utility services even if the development in question does not require public services.

FINANCIAL/BUDGET IMPACT:

The Ordinance clarifies that regulatory approvals costs related to Village, CARPC and MMSD approvals necessary to serve lands proposed for annexation within these agency service areas shall be reimbursed by the applicant unless the Village Board determines to specially assess the costs against benefitted properties or to fund the costs through other available revenues. The Ordinance expands opportunities for non-single family or duplex properties that may be eligible for a stormwater utility fee credit. Under Sec. 47-272(e), in the event the Village grants any stormwater fee credits, the cost of any credits may be reallocated across other Village properties by increasing the amount of a single ERU so that the total revenue available to the Stormwater Utility shall not be reduced by the amount of the credits allowed.

VILLAGE PLAN REFERENCE:

Comprehensive Plan, General Land Use Policies #4, and Figure 4.1.

ORDINANCE REFERENCE:

Chapter 47 Public Utilities
Chapter 56 Subdivisions
Chapter 62 Zoning

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Ordinance 2020-22 is being presented to the Plan Commission and Public Utility Commission for recommendation to the Village Board.

ATTACHMENTS:

1. Ordinance 2020-22 Amendments to Chapters 47, 56, and 62 (redline 10-8-20)

ORDINANCE 2020-22

AN ORDINANCE AMENDING VARIOUS PROVISIONS OF THE McFARLAND MUNICIPAL CODE INCLUDING CHAPTER 47 PUBLIC UTILITIES, CHAPTER 56 SUBDIVISIONS, AND CHAPTER 62 ZONING RELATING TO THE PROVISION OF STORM AND SANITARY SEWER SERVICE.

Purpose: To update and clarify various ordinances to conform to current state law and Madison Metropolitan Sewerage District policies; to include regulatory approval costs in the cost of sewer service extensions charged to benefitted properties;

Sponsor: Andrew Bremer, Community & Economic Development Director

Recommended Referral: Plan Commission (required); Public Utilities Committee

Public Hearing: Required (preceded by Class 2 notice)

WHEREAS, the Village Staff have identified a number of provisions in the McFarland Municipal Code which require updating due to changes in state agency designations, Madison Metropolitan Sewerage District charging systems and Village growth as well as provisions which require clarification; and

WHEREAS, the extension of sanitary sewerage service into new development areas requires amendment of the Village's sewer service area by the Capital Area Regional Planning Commission and the Wisconsin Department of Natural Resource, and the annexation of the new lands into the Madison Metropolitan Sewerage District boundaries, all of which involve significant costs to the Village; and

WHEREAS, it is the policy of the Village to impose the cost of new development on the benefitting developers rather than paying those costs with general tax revenues; and

WHEREAS, the Village Board finds the proposed amendments to be in the public interest;

NOW, THEREFORE, the Village Board of the Village of McFarland, does ordain as follows:

Section 1. Section 47-~~104~~(c) of the McFarland Municipal Code is created to read as follows:

(c) *Service Area.* No connection shall be made to serve any property located outside of the corporate limits of the Village. No person shall allow the discharge of wastes generated outside the Village limits to be discharged into the Village's sanitary sewer system.

Section 2. Section 157 of the McFarland Municipal Code is amended to read as follows:

47-157. — ~~Additions to Madison Metropolitan Sewerage District.~~ Acquisition of Real Property Interests.

Whenever any real estate or any easement therein or use thereof shall in the judgment of the Public Utilities Committee be necessary to the sewer system, and whenever for any reason an agreement for purchase from the owners cannot be made, the Public Utilities Committee, after approval of the Village Board, shall proceed with all necessary steps in the name of the Village to take-acquire such ~~real-estate~~ easement or use-other interest by condemnation in accordance with the Wisconsin Statutes and any other applicable federal or state provisions.

Section 32. Section 47-159 of the McFarland Municipal Code is amended to read as follows:

47-159. - Connection fees.

~~(a) Madison Metropolitan Sewerage District charges. For each connection of a building sewer to a public sewer within the Village, there shall be paid a connection charge as determined pursuant to Section 4.7 of the Madison Metropolitan Sewerage District ordinance, as amended from time to time.~~

~~(b) Utility charges. For each connection of a building sewer to a public sewer within the Village there shall be paid connection charges. Such connection charges shall be assessed to the person seeking the connection and shall be paid as a condition precedent to the actual connection. The following connection charges shall apply: The amount of the connection charge shall be established by the Village Board from time to time and provided in Appendix A to this Code. for sewer hookup and lateral for new buildings.~~

~~(c) Failure to pay violation of Article. For purposes of this Article, the connection charges described in Subsections (a) and (b) of this Section are collectively referred to as "connection fees." The failure to pay any connection fee is a violation of this Article, and the Public Utilities Committee may pursue all rights and remedies provided for herein.~~

Section 43. Section 47-241 of the McFarland Municipal Code is amended to read as follows:

47-241. - Application and approval.

The extension of public sewer system to serve new customers/users is subject to the prior review and approval of the Public Utilities Committee and Village Board and any other governmental agency having appropriate jurisdiction. Any person seeking to develop real property and requiring have sewer service in connection with extended to serve new lands such development, shall make application to the Village for a public sewer main extension, if so required, in order to serve such development. ~~Such~~ The application shall be in writing and shall set forth the following information:

- (a) The name of development, the legal description of the property involved, the owner of the property if different than the applicant, and written consent of the owner must accompany application;
- (b) The plat map or Certified Survey Map or other map showing street layout and lot sizes;
- (c) The proposed plans and specifications for the sewers;
- (d) The name and address of the consulting engineer;
- (e) The number of housing units and/or other units to be constructed;
- (f) Such additional information as the Public Utilities Committee or Village Board may require.

Section 54. Section 47-243 of the McFarland Municipal Code is amended to read as follows:

47-243. - Contract for sewer improvements.

The Public Utilities Committee or Village may require the person filing an application pursuant to Section 47-241 to enter into a written development agreement with the Village as a condition of the approval of the public sewer system extension. Such agreement shall define the scope of the work, the obligations of the applicant to construct the sewer facilities, the requirement of security for performance of the applicant's obligations set forth therein, and such other matters as the Public Utilities Committee and/or Village may reasonably determine. The applicant shall reimburse the Public Utilities Committee or Village for all attorneys' and engineering fees incurred hereunder in connection with the preparation and approval of such agreements.

Section 65. Section 47-244 of the McFarland Municipal Code is amended to read as follows:

47-244. - Village sewer extension.

The ~~Public Utilities Committee or~~ Village may, on its own, cause any public sewer system to be extended at such time and under such conditions as the ~~Public Utilities Committee or~~ Village deems appropriate. The total cost of any extension project, including the costs identified in §47-245, may be levied against the benefitted properties by special assessments in accordance with applicable law. The Village Board may in its discretion, and as part of its assessment resolution, provide for deferral of such assessments against undeveloped properties until such time as development occurs or sanitary sewer service is provided.

Section 76. Section 47-245 of the McFarland Municipal Code is created to read as follows:

47-245. – Conditions on all Sewer Extensions.

(a) Urban Service Area. No sanitary sewers shall be extended to serve any lands not included in the designated sewer service area under the applicable water quality plans adopted pursuant to the Federal Clean Water Act. The costs incurred by the Village in obtaining approval of any map amendments or other approvals necessary to allow such service shall be deemed costs of the sewer system extension project authorized by such approval and shall be reimbursed to the Village by the applicant unless the Village Board determines to specially assess the costs against benefitted properties or to fund the costs through other available revenues.

(b) MMSD Annexation. No sanitary sewers shall be extended to serve any lands until such lands have been annexed into the Madison Metropolitan Sewerage District service area. All costs of such annexation shall be deemed costs of the sewer system extension for such lands and reimbursed to the Village by the applicant unless the Village Board determines to specially assess the costs against benefitted properties or to fund the costs through other available revenues.

(c) MMSD Charges. All connection charges, capacity charges or other charges (other than periodic collection, transmission and treatment charges) imposed on the Village by the Madison Metropolitan Sewerage District attributable to lands serviceable by any sanitary sewer extension shall be reimbursed to the Village by the property owner on or before the due date for payment to MMSD.

Section 87. Section 47-272(e) of the McFarland Municipal Code is amended to read as follows:

47-272. – Credits

(e) Direct discharge. Owners of developed parcels having impervious area with greater than one ERU assigned to such parcels and not containing single-family or duplex units may receive a credit against the stormwater fee calculated in accordance with Subsection (i) of this Section, arising from the portion of the stormwater fee related to impervious areas that are in excess of one ERU if the owner demonstrates as set forth in the Stormwater Credit Manual that more than 50 percent of the parcel area drains directly to Lake Waubesa, ~~or~~ Upper Mud Lake, Lower Mud Lake, Yahara River, or Door Creek without passing through any portion of the stormwater collection and conveyance system operated or maintained by the Village or without crossing any Village-owned public rights-of-way.

Section 98. Section 56-103(a) of the McFarland Municipal Code is amended to read as follows:

56-103. - Required.

(a) Payment for public improvements. The public improvements prescribed in this Chapter are required as a condition of approval of a land division. The required improvements described in this Chapter shall be installed, furnished and financed

at the sole expense of the subdivider. However, in ~~the any~~ case ~~of where the~~ required improvements ~~in a commercial, institutional or industrial area, provide~~ special benefits to a substantial area of land outside of the land division, the cost of such improvements may, at the sole discretion of the Village Board, be financed through special assessments.

Section 109. Section 56-103(c)(4) of the McFarland Municipal Code is amended to read as follows:

(4) That the subdivider dedicate easements for any public utilities installed on private lands and for the purpose of assuring the unobstructed flow of solar energy across adjacent lots in the ~~Subdivision of land~~ land division.

Section 110. Section 56-109 of the McFarland Municipal Code is amended to read as follows:

56-109. - Sanitary sewerage system.

~~(a) There shall be provided a sanitary sewerage system in conformity with the Village Comprehensive Plan of sewers as approved by the Village Board.~~

~~(b)~~ (a) The subdivider shall make adequate sewage disposal systems available to each lot within the Subdivision or Certified Survey Map parcel.

~~(c)~~ Subdivisions and Certified Survey Map parcels within the Village shall be served by public sewer facilities unless a variance allowing a private on-site waste disposal system is approved by the Village Board under Article VII of this Chapter. The size, type, and installation of all sanitary sewers proposed to be constructed shall be in accordance with plans and specifications approved by the Village. ~~No land lot shall be subdivided developed for residential use where an individual lift stations are is required for connection to public sewer or where on-site sewage disposal systems are required for the disposal of wastewater, except that on-site sewage disposal systems will be permitted in the extraterritorial area where land is being divided for the construction of housing for members of families of active farmers or for employees of active farmers.~~

~~(d)~~ (b) ~~The Village Board shall require the installation of~~ The subdivider or individual lot owner shall install, own and maintain sanitary sewer laterals to the ~~street lot~~ public main connection.

~~(e)~~ (c) The subdivider shall ~~assume be responsible for~~ the cost of installing all sanitary sewers, eight inches in diameter or less in size, including the bringing of the sanitary sewer from where it exists to the Subdivision or Certified Survey Map in question, as well as providing all sanitary sewer ~~work facilities~~ within the Subdivision or Certified Survey Map. If greater than eight inch diameter sewers are

required to handle the contemplated sewage flows from outside of the land division, the costs of such larger sewers shall be prorated in proportion to the ratio which the total area of the proposed Subdivision or Certified Survey Map is to the total drainage area to be served by such larger sewer and the excess cost either borne by the Village or assessed against the total tributary drainage area.

(d~~f~~) The subdivider shall install sanitary sewers in accordance with this Code and specifications of the Village Engineer where it is determined that the proposed Subdivision or Certified Survey Map lies within a public sanitary sewer service area and sanitary sewer facilities are programmed to be extended to the proposed Subdivision or Certified Survey Map within six years. Until such time as the public sewers within the Subdivision or Certified Survey Map can be connected to the community public sewer system, they shall be temporarily capped. No private or public use shall be connected to the sewers within the Subdivision or Certified Survey Map until such sewers are connected to the larger community system. ~~The subdivider shall indicate on the face of the plat or Certified Survey Map that t~~The owner of private uses within the Subdivision or Certified Survey Map shall connect such uses to the sewers in the Subdivision or Certified Survey Map at the time such sewers are connected to the community sewer system, and ~~that~~ the Village shall be held harmless for any damages or costs incurred to disconnect and abandon any on-side sanitary sewer disposal system then in place and any costs associated with connection to the public sewer mains- and a notation thereof shall be included on the face of the plat or Certified Survey Map.

Section 121. Section 62-68 (intro) of the McFarland Municipal Code is amended to read as follows:

Sec. 62-68. - Statement of purpose.

The district regulations are intended to govern the location intensity and method of development. The regulations of each district are designed to provide protection to the character of existing development while allowing new growth in accordance with specific development standards and objectives. ~~Public utility services are required as a prerequisite to development in all districts within the Village.~~

Subsections (a) through (r) remain unchanged.

Section 131. This Ordinance shall take effect on the day after publication hereof, or of an appropriate notice hereof, as provided by law.

The above and foregoing Ordinance was duly adopted at a regular meeting of the McFarland Village Board on the ____ day of _____, 2020.

APPROVED:

Brad Czebotar, Village President

ATTEST:

Cassandra Suettinger, Village Clerk-
Treasurer

ORDINANCE 2020 – 22	
MOTION	SECOND
ACTION	DATE
Adopted	
Referred	
Tabled	
Withdrawn	
Defeated	
Published	
INDIVIDUAL VOTING RECORD	
Rupert -	Kryzenske -
Brassington -	Flaherty -
Czebotar -	Utter -
Clow -	
VOTING RESULTS	
Motion Carried	
Motion Defeated:	



VILLAGE BOARD SUMMARY SHEET

MEETING DATE: Monday, October 19, 2020

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Andrew Bremer, Comm & Eco Dev Director

AGENDA ITEM: Discussion and action to make a recommendation to the Village Board regarding possible updates to park impact fees.

PREVIOUS ACTION:

January 27, 2020 the Village Board voted to accept the findings of the Park Impact Fee, Fee In Lieu of Land Dedication and Public Facility Needs Assessment

ISSUE SUMMARY:

On January 27, 2020 the Village Board voted to accept the findings of the Park Impact Fee, Fee In Lieu of Land Dedication and Public Facility Needs Assessment (Park Fee Study). As part of the motion to accept the Park Fee Study, the Village Board directed the park impact fee be increased incrementally over a five year period. Recall that the analysis from the Park Fee Study identified a recommended Park Improvement Impact Fee of \$2,572.37 for single family units, \$1,786.91 for multi-family units, and \$981.81 for group quarter units. The recommended fee adjustment represented a significant increase from the 2019 fees which were \$731.47 for SF and \$443.93 for MF/GQ. To dampen the impacts from these adjustments, the Village Board, upon recommendation from the Parks Committee and Plan Commission, opted to incrementally phase the recommended park improvement impact fee over a five year period beginning in 2020.

In addition, to the incremental adjustments to the park improvement impact fee, Sec. 8-464(e) also provides that unless modified further by the Village Board, the park improvement impact fee and the parkland impact fee shall be adjusted annually on January 1st by the Community Development Director utilizing the Consumer Price Index-All Urban Consumers-Midwest Region prepared by the United States Department of Labor.

This agenda item is being presented to the Parks Committee and Plan Commission for a recommendation to the Village Board to reaffirm the proposed adjustments to the park improvement impact fee and parkland impact fee for 2021. The packet includes Exhibit A which identifies the proposed park impact fees for 2021 based on the prior phasing plan and inflationary adjustments.

FINANCIAL/BUDGET IMPACT:



Park impact fees are collected at the time a development is approved or a building permit is applied for through the Community & Economic Development Department. These funds are placed in a dedicated fund and used by the Village to either acquire additional parkland/trails or to fund improvement projects within existing parks/trails.

VILLAGE PLAN REFERENCE:

Park Impact Fee, Fee In Lieu of Land Dedication and Public Facility Needs Assessment (1-27-2020) available at <https://www.mcfarland.wi.us/developmentplans>.

ORDINANCE REFERENCE:

Sec. 8-464, Park Impact Fees

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

This agenda item is being presented to the Parks Committee and Plan Commission for a recommendation to the Village Board to reaffirm the proposed adjustments to the park improvement impact fee and parkland impact fee for 2021.

ATTACHMENTS:

1. Exhibit A 2021 Park Impact Fee Adjustments_10.13.2020

Exhibit A: Park Impact Fee Adjustments for Year 2021

Park Improvement Impact Fee 5-Year Phasing Plan*					
Unit Type	2020	2021	2022	2023	2024
Single Family	\$ 1,099.65	\$ 1,467.82	\$ 1,836.00	\$ 2,204.17	\$ 2,572.35
Multi Family	\$ 712.52	\$ 981.11	\$ 1,249.71	\$ 1,518.30	\$ 1,786.89
Group Quarters	\$ 551.51	\$ 659.08	\$ 766.66	\$ 874.23	\$ 981.81

*Years 2021-2024 to also be adjusted annually utilizing Consumer Price Index-All Urban Consumes-Midwest Region prepared by the United States Department of Labor

Park Improvement Impact Fee Phasing + Inflation Adjustment for 2021*					
Unit Type	2020	2021	2022	2023	2024
Single Family	\$ 1,099.65	\$ 1,482.12			
Multi Family	\$ 712.52	\$ 990.38			
Group Quarters	\$ 551.51	\$ 666.25			

*Years 2022-2024 to also be adjusted annually utilizing Consumer Price Index-All Urban Consumes-Midwest Region prepared by the United States Department of Labor

Parkland Impact Fee Inflation Adjustment for 2021*					
Unit Type	2020	2021	2022	2023	2024
Single Family	\$ 3,915.46	\$ 3,966.36			
Multi Family	\$ 2,719.90	\$ 2,755.26			
Group Quarters	\$ 1,494.45	\$ 1,513.88			

*Years 2022-2024 to also be adjusted annually utilizing Consumer Price Index-All Urban Consumes-Midwest Region prepared by the United States Department of Labor

1.3% CPI-Midwest Inflation Sept 2019 to Sept 2020

Memorandum

To: McFarland Plan Commission

From: Community Development Department Staff

Date: October 15, 2020

Re: **September Property Maintenance Report**

Date	Address	Owner	Complaint Type	Complaint Comments	Status
9/2/2020	5725 Lake Edge Road	5 Ducks LLC	Other Property Maintenance	temp fence, vehicle on lawn	Letter Sent
9/3/2020	5005 Marsh Road	Metz	Work w/o Permit	new driveway	Resolved
9/8/2020	6119 Johnson Street	Deyoe	Inoperable Vehicle	Non-running - unlicensed vehicle on property	Ticket Issued
9/2/2020	5113 Cook Street	Bracey	Junk/Debris	furniture at curb	Resolved
9/10/2020	5911 Spartan Drive	NAK Development	Junk/Debris	more furniture at dumpster	Resolved
9/11/2020	5506 Valley Drive	Vogel	Excessive Vehicles	excessive vehicles/ trailers/unlicensed	Ticket Issued
9/15/2020	5861 Holscher Road	Blum	Other Property Maintenance	general property upkeep/signs in windows	Monitoring
9/17/2020	5413/5411 N. Cook Street	Westerhof Trust	Junk/Debris	Mattresses in side yard	Ticket Issued
9/21/2020	5579 Osborne Drive	Gannon	Other	Garbage cans at curb	Monitoring
9/21/2020	6403 Crestwood Circle	Dodge	Other Property Maintenance	Auto w/no current plates, fence, failing pool, weeds	Monitoring
9/23/2020	4605 Lake Edge Road	Walgreen	Lawn/Weeds	Weeds over 8" in height	Inspection Pending
9/24/2020	6208 Exchange Street	Hanson	Junk/Debris	furniture/mattress/ etc stored on site	Letter Sent
9/28/2020	5413/5411 N. Cook Street	Westerhof Trust	Vision Triangle	vegetation blocking vision	Letter Sent
9/28/2020	4516 Lakeview Avenue	Konkol & Atkinson	Junk/Debris	misc. debris in front yard and painting on home	Letter Sent
9/28/2020	5004 Falling Leaves lane	Franke	Vehicle Improperly Parked	trailer on lawn, # of vehicles	Letter Sent
9/28/2020	5706 Wisconsin Street	Frisch	Vehicle Improperly Parked	auto improperly parked, non-running, min maint, lawn	Letter Sent
9/30/2020	5311 Long Street	Smith	Vehicle Improperly Parked	vehicle/ trailer on lawn	Monitoring

Memorandum

To: McFarland Plan Commission & Community Development Authority Members

From: Andrew Bremer, AICP
Community & Economic Development Director

Date: October 12, 2020

Re: **September Community & Economic Development Department Highlights**

The following is a summary of new construction activity for the month of September and YTD, including permit numbers and associated revenues.

YTD New Construction Building Permits

Community Development Department, Number of Permits Issued									
	2019	5-Year	4-Year	3-Year	2020	2019	2018	2017	
Building Permits (new construction)	Actual	Average	Average	Average	Actual YTD	Actual YTD	Actual YTD	Actual YTD	
SF	67	52	60	66	38	42	54	41	
MF	8	3	4	4	2	7	11	11	
Com	1	3	3	3	2	0	4	6	
Total	76	58	67	74	42	49	69	58	

55 total building permits issued in September, including one new single-family dwellings. The effects of COVID-19 on consumer spending on new home construction will likely continue to lag 2017-19 YTD totals; however, these were very active construction years compared to the Village's prior 20-year average of 33 new SF residential units per year. The Village is currently on pace for 51 new SF home permits for 2020. The year started with 61 vacant SF lots in the active east-side subdivisions.

YTD Department Revenues

Community Development Department, Annual Revenues									
		2019	6-Year	4-Year	2-Year	2020	2020	YTD % of	2019
Account		Actual	Average	Average	Average	Budget	Actual YTD	Budget	Actual YTD
44300-101	Building Permit	\$ 107,314	\$ 73,920	\$ 94,578	\$ 115,945	\$ 100,000	\$ 71,035	71%	\$ 74,943
44300-102	HVAC Permit	\$ 31,034	\$ 27,285	\$ 36,095	\$ 40,340	\$ 45,000	\$ 24,259	54%	\$ 21,515
44300-103	Plumbing Permit	\$ 37,370	\$ 29,268	\$ 38,326	\$ 43,597	\$ 45,000	\$ 22,721	50%	\$ 22,959
44300-104	Electrical Permit	\$ 47,101	\$ 37,331	\$ 47,273	\$ 54,900	\$ 50,000	\$ 33,831	68%	\$ 29,930
44300-105	Sprinkler Fee	\$ 2,722	\$ 2,263	\$ 3,223	\$ 3,409	\$ 4,000	\$ 3,855	96%	\$ 935
44300-106	Fire Alarm Inspection Fee	\$ 4,515	\$ 2,093	\$ 3,111	\$ 5,473	\$ 2,000	\$ 1,790	90%	\$ 4,525
44300-108	CD Occupancy Inspection Fee	\$ 8,450	\$ 6,842	\$ 9,250	\$ 9,300	\$ 10,000	\$ 5,790	58%	\$ 4,805
44900-000	Misc. CD Permit Fees	\$ 104,710	\$ 103,794	\$ 142,423	\$ 147,591	\$ 100,000	\$ 85,064	85%	\$ 71,500
46800-000	Community Development Fees	\$ 9,777	\$ 9,130	\$ 9,840	\$ 9,324	\$ 10,000	\$ 20,971	210%	\$ 8,141
47210-000	City - Building Inspection	\$ -	\$ 24,802	\$ 19,456	\$ 3,440	\$ -	\$ -	0%	\$ -
	Total Revenue	\$ 352,993	\$ 316,728	\$ 357,574	\$ 433,317	\$ 366,000	\$ 269,316	73.6%	\$ 239,252
	Percent Change	-31.3%	x	x	x				

* As of 09/30, 75% through calendar year

Total C&ED deposits for the month of September were \$43,098.82. Prior year September totals were \$21,147.14 in 2019, \$75,788.68 in 2018, and \$89,728.46 in 2017. Through the first quarter of 2020, total C&ED revenues are 1.4% lower than the YTD percent of budget.

Summary of Department Activities:

- Village Board action on September C&ED related applications/projects:
 - Resolution 2020-16. Approved Village joining WDNR Green Tier.
 - 3365 Siggelkow Road. Approved new home on private septic and well.
 - 6010 US 51 (Maple Tree). Approved outdoor patio expansion.
 - Prairie Place Lot 57 & 58 (CF Investments). Approved condominium plat.
- Review and evaluation of proposals received in response to the McFarland Sustainability Plan RFP.
- Status update of larger development projects previously approved:
 - 4719 Farwell Street (The Atwater, mixed use). Construction on-going. Applied for reimbursement of \$250,000 WEDC Grant as part of Village's development incentive. Payment received. Phase II construction of the adjacent commercial development has been slowed due to COVID. Developer still working with perspective tenants. Phase 1 likely to be completed by the end of year ahead of schedule.
 - 4608 Siggelkow Road (Waubesa Village Phase 3). Expected to begin construction in October.
- Meetings, Webinars & Conferences attended by Department Director:
 - September 1st, Ad Hoc Sustainability Committee Meeting
 - September 14th, Board of Zoning Appeals Meeting
 - September 14th, Village Board Meeting
 - September 15th, Chamber Board Meeting
 - September 15th, Public Utilities Meeting
 - September 21st, Plan Commission Meeting
 - September 28th, Village Board Meeting
 - September 29th, Juniper Hollow LLC Neighborhood Meeting

Look ahead to potential November 4th CDA Agenda Applications:

- 5411 Bashford Street. Pre-application meeting for potential mixed-use development.

Look ahead to potential November 16th PC Agenda Applications:

- 5411 Bashford Street. Pre-application meeting for potential mixed-use development.
- 4845 Taylor Road & 4900 Larson Beach Road (Taylor Pointe Apartments). Request by MSP for a CSM to combine the lots.
- Review of draft Affordable Housing Study RFP.