



AGENDA

Rogers Planning Commission

June 2, 2025 - 7:00 PM

1. CALL TO ORDER AND PLEDGE OF ALLEGIANCE

2. APPROVE AGENDA

Council members may add items to the agenda for discussion purposes or staff direction only. The Council will not normally take official action on items added to the agenda.

3. CONSENT AGENDA

These items are considered to be routine and will be enacted by one motion. There will be no separate discussion of these items unless a Councilmember so requests, in which event the item will be removed from the Consent Agenda and placed elsewhere on the agenda.

3.1 Approve Minutes from May 5th, 2025.

4. PUBLIC HEARINGS

5. NEW BUSINESS

5.1 Consideration of a Site Plan Application by Franchise Concepts Unlimited, Inc. for the Property at Lot 1, Block 1, Uptown Rogers 3rd Addition (Little Caesars)

5.2 Review Concept Plan Application by Pulte Homes for the Hassan, Sand and Gravel Land at the Southeast Corner of Industrial Blvd and Edgewater Pkwy.

6. OTHER BUSINESS

7. CORRESPONDENCE AND REPORTS

7.1 Past Planning Commission Items Report

8. ADJOURN



STAFF REPORT
**ROGERS PLANNING
COMMISSION**

Meeting Date: June 2, 2025

Agenda Item: 3.1

Subject: Approve Minutes from May 5th, 2025.

Prepared By: Alec Henderson, City Planner

Recommended Council Action

Overview / Background / Analysis

Staff Recommendation

Motion to approve the minutes from May 5th, 2025.

Financial Impact: Not applicable.

Source Fund: Not applicable.

Budgeted? N/A

Supporting Documentation

A. 5-5-2025 Planning Commission Minutes

1. CALL TO ORDER AND PLEDGE OF ALLEGIANCE

The regular meeting of the Planning Commission of the City of Rogers was called to order by Chair Carlson on Monday, May 5, 2025, at 7:00 PM at Rogers Community Room, 21201 Memorial Drive, Rogers, MN, 55374 and online in the Zoom application.

Commissioners present: Brett Carlson, Clark Lohr, Seth Stiebinger, Peter Mullin, Aaron Sattersten, Adam Hunt, Sarah Larson
Commissioners excused:

Staff present: Brett Angell, Community Development Director; Alec Henderson, City Planner; Mike Albers, Assistant City Engineer.

Alternative Commissioners Present and not voting: Jan Cartwright and Todd Kussman.

2. APPROVE AGENDA

Commission Member Stiebinger moved, Commission Member Mullin seconded a motion to approve the agenda. Motion carried 7-0.

3. CONSENT AGENDA

No items on consent.

4. PUBLIC HEARINGS

4.1 Consideration of Wood Lane Villas Preliminary Plat and Planned Unit Development Applications by Benzinger Properties

City Planner Henderson summarized the applications. Benzinger Properties has submitted applications for a 17-lot single-family villa-style subdivision called Wood Lane Villas on a 5-acre parcel at 23415 Wood Lane, adjacent to the Skye Meadows development. The project requires a Planned Unit Development (PUD) to allow reduced lot sizes (~7,800 SF) and side setbacks (7.5 ft), which deviate from R2 zoning requirements. The proposed density of 3.4 units per acre aligns with the Low Density Residential land use guidance in the 2040 Comprehensive Plan. The development advances city goals related to housing diversity, infrastructure extension, and connectivity by extending local streets and sidewalks. Stormwater management is proposed in a city-owned outlot to the southeast. Staff recommended holding a public hearing and drafted conditions should approval of the PUD and preliminary plat be recommended to the Council, including park dedication, final HOA documents, stormwater approvals, and execution of a development agreement.

Chair Carlson opened the public hearing.

Todd Tousignant 23521 Wood Lane - directly west of outlet to the west of Benzinger

development. Tousignant voiced concerns with the 33 ft width of city property between his property and the development as it is overgrown. Would like to see a berm and trees planted. Wood Lane is now a thoroughfare and would like to see some screening to make the situation better for existing neighbors to the west.
Ruthan Gagne 23655 Wood Ln similar issues with traffic and development nearby.

Commission Member Lohr moved, Commission Member Stiebinger seconded a motion to close the public hearing. Motion carried 7-0.
Larson asked if there was a traffic study done for the development.

Henderson replied that no, due to the small size of the development, there was no demonstrated need for a traffic study. However traffic studies were done for the larger Skye Meadows development.

Lohr asked about the purpose of the west 33-ft and outlot.

Henderson replied that the west 33 ft is part of a larger outlot that contains stormwater and a city lift station. The 33 ft of land may have just been unusable property due to the exception parcels from Skye Meadows.

Mullin asked if there was a way to transition from the 33 ft to the development to improve that area.
The commission discussed if there were possibilities for either included the land to the west of better screening the development from more rural properties to the west.

Commission Member Stiebinger moved, Commission Member Mullin seconded a motion to recommend approval of the PUD and direct staff to draft the ordinance.
Motion carried 7-0.

Commission Member Carlson moved, Commission Member Mullin seconded a motion to recommend approval of the Preliminary Plat with staff conditions and added condition for privacy fence on the west side of block 1. Motion carried 7-0.

The Commission also requested that Council look into ways to improve the appearance of the city outlot with beaming or landscaping separate from the development.

4.2 Consideration of the Main Street Center 2nd Addition Preliminary and Final Plat by Duffy Development (Main Street Senior Affordable Development)

Angell summarized the requests by Duffy Development. Duffy Development seeks approval of the Main Street Center 2nd Addition preliminary and final plat to reconfigure two existing parcels at 13001 Main Street, previously part of a city redevelopment initiative for a mixed-use senior affordable housing project. The approved 2023 site plan includes a 40-unit senior apartment building with commercial space and a public senior center. The replat would create three lots and one outlot: Lot 1 for the former Canfield building (with adjusted boundaries), Lot 2 for the senior apartments and a portion of the parking, Lot 3 for future commercial development, and Outlot A for a public parking

area to be deeded to the city. No physical changes to the development are proposed; the replat supports financing and title requirements. Staff recommends opening the public hearing and approving the plat per the conditions in Resolution 2025-34.

Chair Carlson opened the public hearing.

Carlson asked if there were any concerns with the commercial lot and building with zero lot lines, or parking.

Angell responded that no, these were all reviewed and approved with the Site Plan and 2023. Angell also noted that closing on the property would occur near 1st of the July, with demo and early site work in early mid- summer.

Mark Robinson - owner 21305 and 25309 Church Ave voiced issues, crossing main street due to traffic. How many egress ingresses, and how much traffic. Crossing signal should be installed to improve the safety of pedestrian crossing.

Angell responded that 40 unit senior restricted likely with lower trip generation than a standard 40-unit market-rate apartment. Additionally the egresses were approved with the site plan.

City is working with the County. When Fletcher Bypass is constructed and turned over to the County, the County would turn back Main Street. Once the City controls Main Street, streetscape and traffic calming can be addressed.

Ashlie Waba - 13475 Red Fox Rd - development affects me the most and own three corners. Waba voiced he was excited that this is coming and that Duffy is close to closing and getting it done. Doran stepped up to improve lighting. Ashie also mentioned the issues with the County authorizing any improvements to Main Street prior to getting Fletcher done.

Commission Member Stiebinger moved, Commission Member Hunt seconded a motion to close the public hearing. Motion carried 7-0.

Commission Member Stiebinger moved, Commission Member Carlson seconded a motion to approve Preliminary and Final Plat with conditions listed in the staff report. Motion carried 6-0-1. Lohr abstains from the vote due to conflict of interest with his engineering firm.

5. NEW BUSINESS

5.1 Elm Creek Watershed 4th Generation Management Plan Presentation

Diane Spector (Stantec) with the Elm Creek Watershed Commission presented an overview of their upcoming Fourth Generation Watershed Management Plan (WMP), developed in collaboration with the seven member cities, including Rogers. The plan is updated every 10 years and aims to align local plans with watershed-wide goals. It outlines strategies for managing stormwater, maintaining water quality, and addressing impaired lakes and streams—six of which, including three in Rogers, are currently impaired. The plan emphasizes limiting runoff volumes and pollutants from new development, increasing voluntary best management practices (BMPs), and responding to climate change with adaptive infrastructure planning. Key components include continued education and outreach (over 22,000 students reached), \$4.8 million in

project funding, collaboration with Hennepin County for agricultural BMPs, and chloride management. The 2025–2034 goals focus on improving water resource quality, reducing flood risk, stakeholder engagement, and climate resiliency through modeling and adaptation strategies. Rogers-specific efforts noted include stormwater and stream stabilization projects. Recommendations included exploring soil enhancements and updating stormwater rules.

6. CORRESPONDENCE AND REPORTS

6.1 Past Planning Commission Items Review

7. ADJOURN

Commission Member Mullin moved, Commission Member Stiebinger seconded a motion to adjourn at 8:32 PM. Motion carried 7-0.

Respectfully Submitted,

Alec Henderson, City Planner



STAFF REPORT
ROGERS PLANNING
COMMISSION

Meeting Date: June 2, 2025
Agenda Item: 5.1

Subject: Consideration of a Site Plan by Franchise Concepts Unlimited Inc. for a Little Caesars at the Property at the Southeast Corner of Northdale Boulevard and County Road 144

Prepared By: Eric Burtness, Community Development Specialist

Recommended Council Action

Motion to recommend approval of the proposed Site Plan by Franchise Concepts Unlimited Inc. for the property located at the southeast corner of Northdale Boulevard and County Road 144, subject to the conditions as listed in the draft resolution.

Overview / Background / Analysis

Franchise Concepts Unlimited Inc. ("Applicant") has submitted a Site Plan application for the construction of a new Little Caesars restaurant on Lot 1, Block 1 of the Uptown Rogers 3rd Addition. The parcel is currently owned by the City of Rogers and is located at the southeast corner of County Road 144 and Northdale Boulevard, adjacent to KinderCare, Ripple Effect Brewing, and the future Ray J's American Grill.

The proposed project would construct a 1,061-square-foot freestanding quick-service restaurant with a walk-in pickup vestibule and a single-lane drive-through. The parcel is zoned RC – Regional Employment Center, which allows for restaurants with drive-thrus as a permitted use.

Property Details

The subject property is approximately 1 acre in size (43,375 square feet) and is currently undeveloped. It is guided for commercial use in the 2040 Comprehensive Plan and is located within a larger mixed-use commercial area. The proposed use is consistent with both zoning and comprehensive plan guidance.

Site Plan

The proposed development includes a compact Little Caesars restaurant with:

- A walk-in pickup lobby (149 square feet)
- A kitchen and food prep area (912 square feet)
- A drive-through lane with an escape lane
- Outdoor refuse enclosure
- Monument sign in the northwest corner
- One ADA-compliant parking stall and 15 additional stalls

All required 30-foot setbacks from County Road 144 and Northdale Boulevard have been met. Circulation for the drive thru through the site is one-way, entering from the southeast and exiting

to the southwest of the Subject property. The Developer is including a sidewalk from the entrance of the building to the internal access road to allow for potential pedestrians coming from the adjacent brewery use.

Access and Parking

The site is designed with a shared access point via a private drive running between the subject parcel and adjacent businesses. The drive-through allows for appropriate vehicle queuing without impeding traffic. A total of 16 parking spaces are proposed, in compliance with City Code Sec. 125-86: one space per 15 square feet of lobby plus sit-down restaurant requirements. One ADA stall is provided which meets the ADA requirements based on the total number of stalls.

Stormwater

Stormwater will flow to the south and discharge into the private storm sewer network and existing infiltration basin on site. The plan has been reviewed for conformance with City of Rogers and Elm Creek Watershed District requirements. Erosion control includes silt fencing, rock construction entrances, and temporary seeding/stabilization.

Landscaping

The applicant proposes a landscaping plan that includes a mix of native grasses and traditional plantings. However, per Sec. 125-90(a)(1-3), open spaces not used for buildings or parking must be landscaped with sod or irrigated vegetation.

Currently:

- A landscape plan is provided showing plantings and screening of the refuse area and speaker box.
- At least one tree per 17 parking stalls is required; the plan appears to meet this.
- Landscape islands meet the required 9' x 18' size and include trees.
- An irrigation system for grass areas is not explicitly noted, and further clarification is needed to ensure compliance with the code's sod/irrigation requirement.

Staff recommends confirming the use of sod and inclusion of irrigation in all required landscaped areas as a condition of approval.

Architecture

The building incorporates neutral tones with Little Caesars' signature orange accents and includes masonry finishes, fiber cement panels, and storefront glass. The design is consistent with the RC zoning district requirements and complements nearby developments like Ripple Effect Brewing.

Fire Review Comments

The Rogers Fire Department has reviewed the site plan and do not have concerns or additional requirements for the proposed plans.

Staff Recommendation

Motion to recommend approval of the Site Plan by Franchise Concepts Unlimited Inc. for the property at the southeast corner of Northdale Boulevard and County Road 144, subject to the

conditions listed in the draft resolution.

Draft Resolution 2025-42 is included in the packet.

Financial Impact: Not applicable.

Source Fund: Not applicable.

Budgeted? N/A

Supporting Documentation

- A. Draft Resolution 2025-XX
- B. Applicant Narrative
- C. Civil and Architectural Plans
- D. Landscaping Plan
- E. Location Map

RESOLUTION NO. 2025-42
APPROVING A SITE PLAN FOR LITTLE CAESARS PIZZA FOR THE PROPERTY
LOCATED AT LOT 1, BLOCK 1, UPTOWN ROGERS 3RD ADDITION

WHEREAS, Anderson Engineering of MN, LLC, on behalf of Brian Conneran (“Applicant”), has submitted an application to the City of Rogers (“City”) requesting approval of a Site Plan for the property located at Lot 1, Block 1, Uptown Rogers 3rd Addition (address currently unassigned). The proposed development includes a new 1,061-square-foot freestanding Little Caesars building and corresponding parking lot and drive-through improvements, as depicted in Exhibit B; and

WHEREAS, the property is 1.0 acre in size, zoned Regional Employment Center (RC), and located at the southeast intersection of Northdale Boulevard and County Road 144, legally described in Exhibit A (“Subject Property”) (PID: 14-120-23-21-0023); and

WHEREAS, Section 125-27 – Site Plan governs the procedures for site plan review, and subsection (b) states: “the Planning Commission shall evaluate the effects of the proposed site plans. This review shall be based upon, but not be limited to, compliance with the City’s Comprehensive Plan and provisions of this Ordinance”; and

WHEREAS, the subject property is served by a regional stormwater system for the entire Uptown Rogers development area; and

WHEREAS, the proposed use of the Subject Property as a single-tenant commercial building for Little Caesars Pizza is a permitted use in the RC zoning district (§125-50 Table 4E); and

WHEREAS, the proposed development generally meets zoning code requirements including setbacks and parking; landscaping and irrigation details are addressed through conditions of approval; and

WHEREAS, on June 2, 2025, the Planning Commission reviewed the Site Plan application and voted unanimously to recommend approval to the City Council, subject to the conditions listed in this resolution.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, that the Site Plan request from Franchise Concepts Unlimited Inc. is hereby approved for the development of a new 1,061-square-foot freestanding quick-service restaurant (Little Caesars Pizza) at Lot 1, Block 1, Uptown Rogers 3rd Addition, subject to the following conditions:

a. Applicant shall enter into all required agreements with the City prior to issuance of a building permit.

- b. All Engineering, Community Development, and Fire Department comments shall be satisfied prior to issuance of a building permit.
- c. Any necessary Elm Creek Watershed permitting and requirements shall be met prior to construction.
- d. SAC determination shall be submitted to the Metropolitan Council and all building and connection fees paid prior to issuance of the building permit.
- e. All landscaped areas shall be irrigated. Additional details related to the native planting area shall be provided to staff for approval, including a maintenance plan.
- f. Proposed monument sign and building signage shall require separate application and approval from the City of Rogers.
- g. Trash enclosure shall generally match the primary structure, and architectural details of the trash enclosure must be provided for approval.

Moved by Councilmember _____, seconded by Councilmember _____

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the City Clerk dated this 10th day of June, 2025.

Shannon Klick, Mayor

ATTEST:

Stacie Brown, City Clerk

EXHIBIT A
LEGAL DESCRIPTION

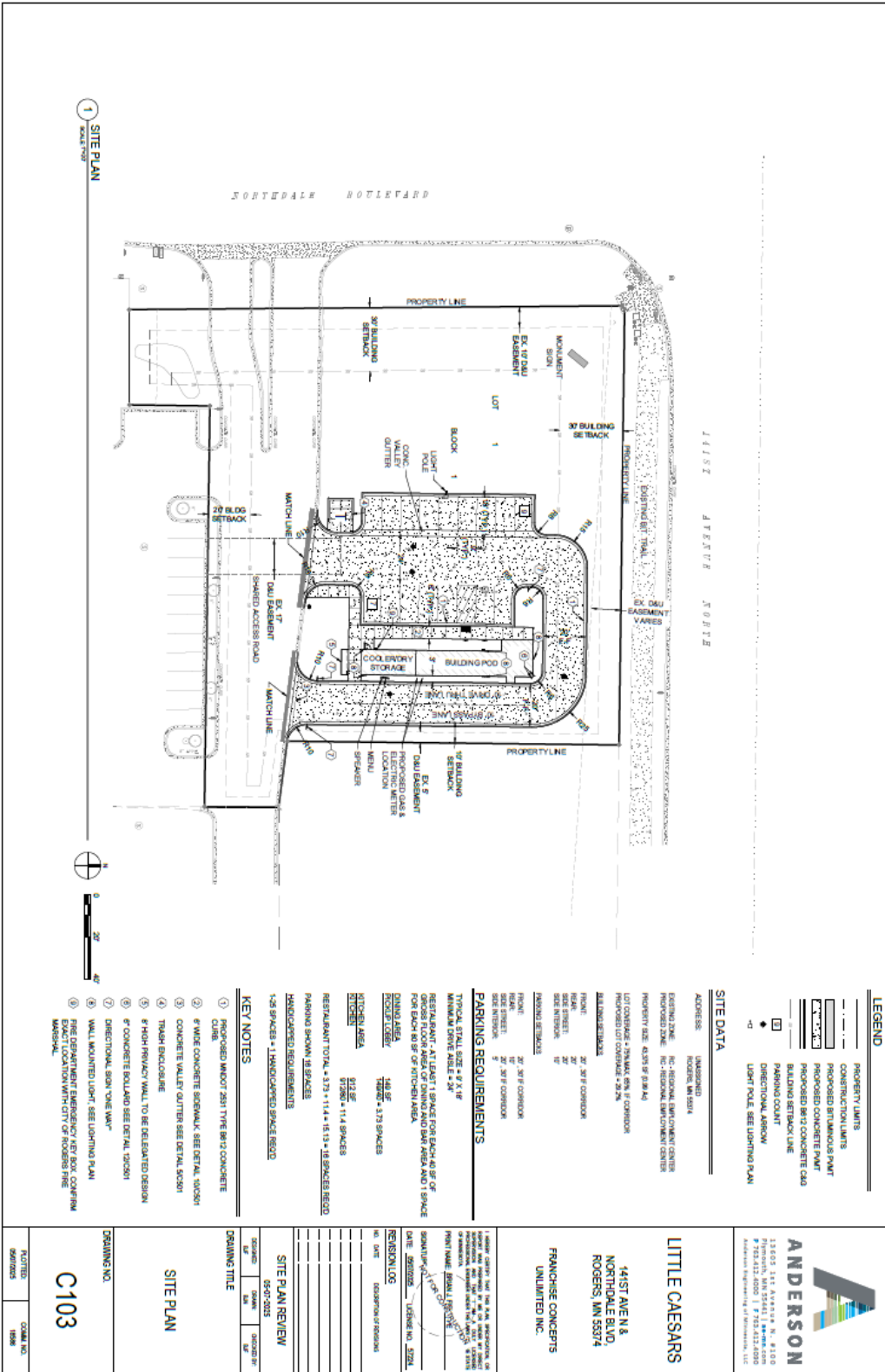
Subject Property

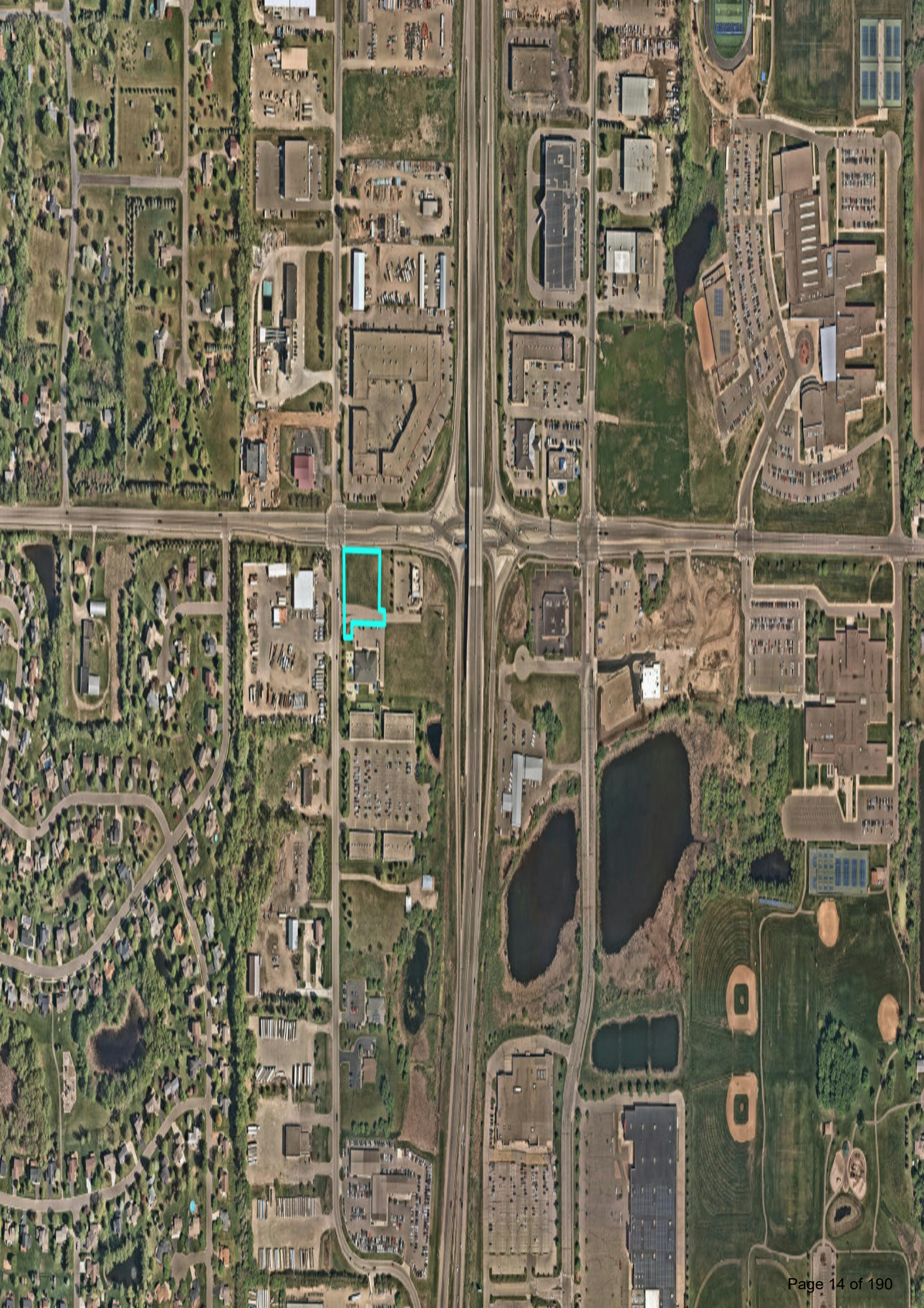
LOT 1, BLOCK 1, UPTOWN ROGERS 3RD ADDITION, HENNEPIN COUNTY,
MINNESOTA

Abstract Property

PID #14-120-23-21-0023

EXHIBIT B SITE PLAN







May 7, 2025

Rogers City Hall

Planning Department

Attn.: Brett Angell, Community Development Director

22350 S. Diamond Lake Rd

Rogers, MN 55374

Ph. 763-428-0915

bangell@rogersmn.gov

**Re: Franchise Concepts Unlimited
Proposed New Little Caesars**
SE Quadrant of 141st Ave N and Northdale Blvd
Rogers MN, 55374

Subject: Site Plan Approval Application

Lot: Lot 1, Block 1, UPTOWN ROGERS 3RD ADDITION

Below is a brief summary of the proposed operations, building design, image, and material selection.

NARRATIVE

Project Summary

Franchise Concepts Unlimited Inc. proposes the development of a new Little Caesars quick-service restaurant at the corner of 141st Avenue North and Northdale Boulevard in Rogers, Minnesota. The project will introduce a freestanding, 1,061-square-foot building to a currently vacant parcel within the Uptown Rogers 3rd Addition. Designed with convenience and efficiency in mind, the building will include a dedicated walk-in mobile order pickup vestibule and a single-lane drive-through, complete with an escape lane. This development will provide a new dining option for the community, activating a high-visibility location within a growing commercial corridor. The design of the proposed building provides an image that is consumer friendly, warm, and elegant that reflects Little Caesars corporate branding.

Site Description

The subject site encompasses approximately 0.99 acres (43,375 square feet) and is legally described as Lot 1, Block 1, Uptown Rogers 3rd Addition. The parcel is currently undeveloped and is located within a commercial site that includes a mix of commercial and restaurant uses. The site is zoned RC – Regional Employment Center, which permits the proposed use. The property has access to municipal utilities and public roadways and does not present known development constraints related to environmental features or topography.

Development Proposal

The proposed Little Caesars restaurant is designed as a compact, high-efficiency facility with modern branding and site enhancements. The development includes:

- A 1,061-square-foot building with a pickup lobby and kitchen area
- A drive-through lane with an escape lane for operational safety
- An outdoor refuse enclosure, monument signage, and a privacy wall adjacent to the speaker box
- 16 code-compliant parking spaces, including one ADA stall
- Paved walkways for safe pedestrian access and integration with surrounding infrastructure

Vehicular access will be provided via a shared access point with adjacent parcels, and circulation through the site is designed to promote traffic flow and minimize conflicts. The building architecture reflects the national Little Caesars branding and will include neutral tones with the company’s signature orange accents.

Building Area Summary

- Total Building Area: 1,061 square feet
 - Kitchen Area/cooler/dry storage: 912 square feet
 - Pickup Lobby (Dining/Waiting Area): 149 square feet

The building layout is optimized for efficient kitchen operations and quick customer service through the pickup vestibule and drive-through.

Fire Suppression System

The proposed Little Caesars restaurant will be equipped with a fully compliant fire suppression system designed in accordance with the Minnesota State Fire Code and NFPA standards. The commercial kitchen will be outfitted with a UL 300-compliant hood suppression system over all cooking equipment to mitigate grease fire risks. Fire department access routes have been incorporated into the site plan to ensure clear and safe emergency response access. All fire protection systems will be reviewed and approved by the local fire marshal prior to construction and final occupancy.

Zoning Compliance and Policy Alignment

The site is located in the RC (Regional Employment Center) zoning district and complies with all applicable zoning regulations.

- Meets required setbacks for front, side, and rear yards
- Provides appropriate parking ratios based on interior floor area (16 spaces required and provided)
- Maintains a lot coverage of only 29.2%, well below the district maximum of 65%–75%
- Conforms to site design and landscaping requirements set forth in the City’s zoning and design standards

This project supports the City of Rogers’ goals for economic development and infill of key commercial parcels and aligns with broader comprehensive planning goals for the area.

Utilities, Infrastructure, & Stormwater Management

The development will connect to existing municipal water and sanitary sewer systems, as illustrated on the utility and site plans. Stormwater will be managed through on-site grading and sheet flow south into the developments private storm sewer system network. It will then discharge into the existing (soon to be modified) infiltration basin located in the northeast corner of the development. Site grading and erosion control measures are outlined in detail on the construction drawings and have been designed in accordance with the City’s requirements, the Elm Creek Watershed District Rules, and MPCA guidelines. Erosion control practices include silt fences, construction entrances, and seeding/stabilization. No adverse stormwater impacts are anticipated

because of this development. Utility infrastructure for electric, gas, and telecom will be coordinated with service providers, with meters and cabinets to be located along the rear façade of the building for minimal visibility.

Signage

A sign permit application will be submitted at a later date.

Preliminary locations of Signage:

- Exterior wall mounted signage is proposed on the east, north, and west elevation of the building
- A monumental sign will be located in the northwest corner of the lot
- Site directional signs to help customers navigate the site are also anticipated.

Community Benefits

This project brings new job opportunities, a nationally recognized food brand, and increased service options to the community. The mobile order vestibule promotes quick in-and-out service, reducing idling time and traffic congestion. The compact building and lot coverage preserve open space while maintaining commercial density and functionality. Landscaping features include native vegetation to improve aesthetics and environmental performance.

Construction Timeline and Phasing

Construction is scheduled to begin in Summer 2025, pending approval of the Site Plan and associated permits. Project completion and grand opening are targeted for Fall 2025. The project will be developed in a single phase.

Public Engagement

While no formal neighborhood meetings have been required or held to date, the applicant is available to meet with city staff or adjacent property owners upon request. The design is consistent with surrounding commercial development and is not expected to generate concerns related to compatibility or traffic.

Conclusion

This proposed Little Caesars restaurant is a high-quality, code-compliant development that will contribute positively to the commercial landscape of Rogers. It supports local economic development, complements surrounding land uses, and introduces an efficient, modern restaurant concept to the area. We respectfully request Site Plan Approval and look forward to partnering with the City of Rogers to bring this project to successful completion.

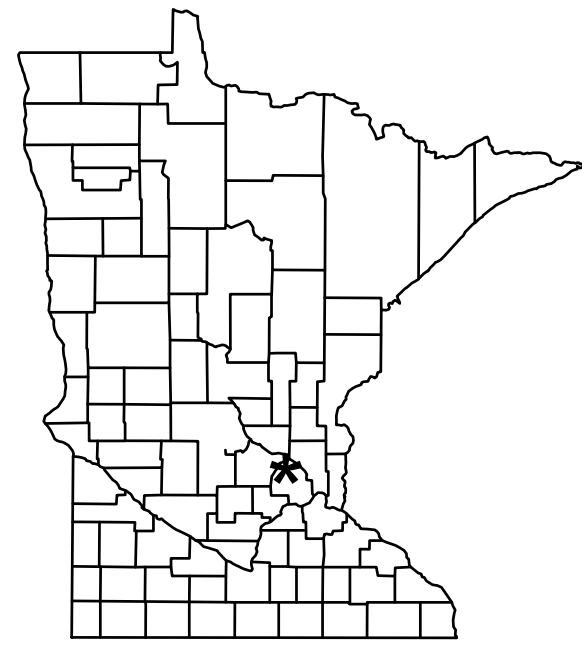
Enclosed you will find the Civil Engineering plans, Floor Plans and exterior elevations.

Please feel free to call me with any questions or concerns.

Sincerely,

Anderson Engineering of Minnesota, LLC

Brian J. Field P.E. (MN)
Project Manager



SITE PLAN REVIEW DOCUMENTS

FOR

LITTLE CAESARS

ROGERS, MN

OWNER

FRANCHISE CONCEPTS UNLIMITED
28 SANDY HILLS LANE
GRAND FORKS ND 58201

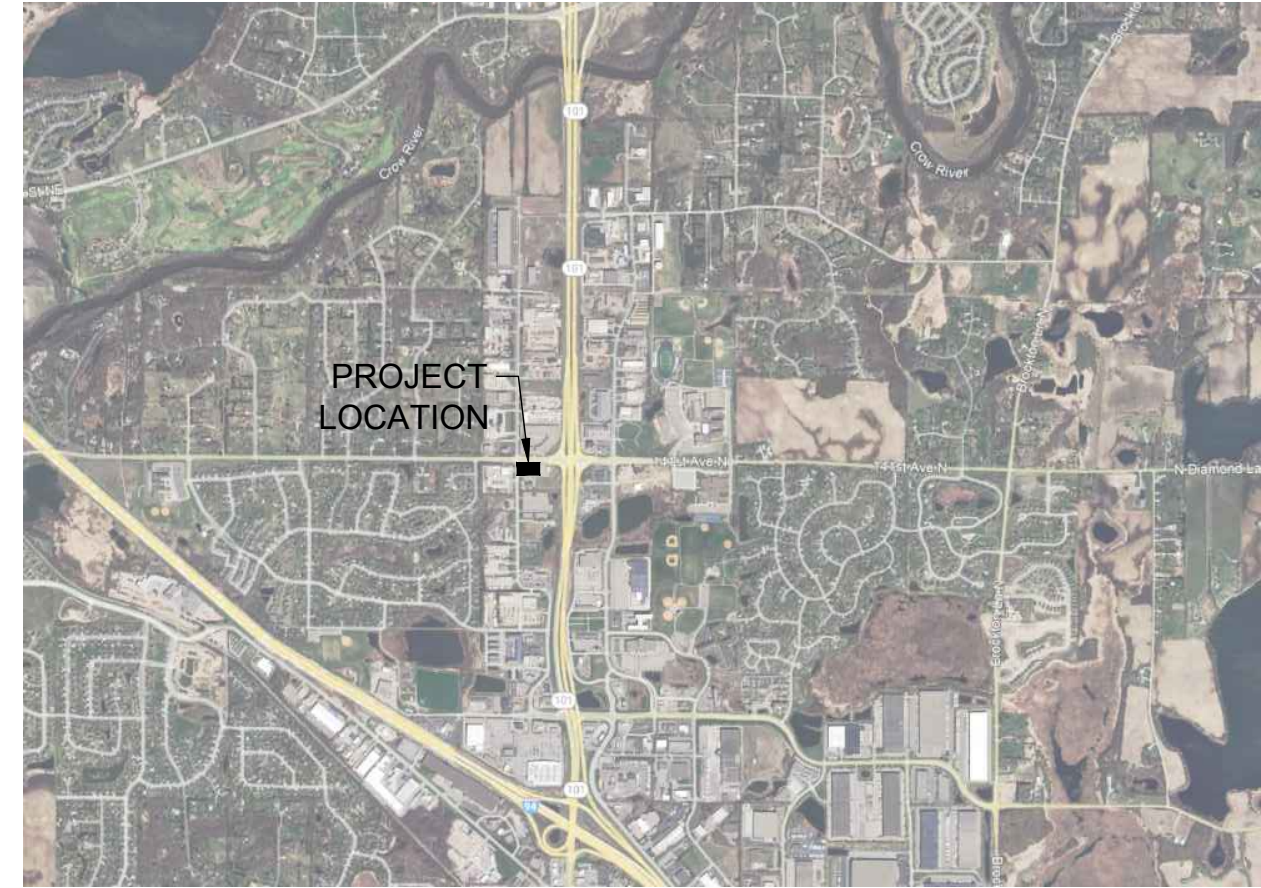
SURVEY / ENGINEER

ANDERSON ENGINEERING OF MN, LLC
13605 1ST AVENUE NORTH, SUITE 100
PLYMOUTH, MN 55441

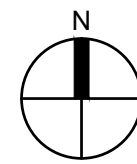


ANDERSON

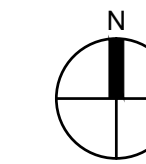
13605 1st Avenue N. #100
Plymouth, MN 55441 | ae-mn.com
P 763.412.4000 | F 763.412.4090
Anderson Engineering of Minnesota, LLC



1 SITE LOCATION MAP
SCALE: N.T.S.



2 VICINITY MAP
SCALE: N.T.S.



SHEET INDEX

SHEET	DESCRIPTION
C100	COVER SHEET
C101	EXISTING CONDITIONS
C102	DEMOLITION PLAN
C103	SITE PLAN
C104	GRADING AND DRAINAGE PLAN
C105	EROSION AND SEDIMENT CONTROL PLAN
C106	UTILITY PLAN
C501	SITE DETAILS
L101	LANDSCAPE PLAN
L102	LANDSCAPE NOTES & DETAILS
A1	EQUIPMENT PLAN
A2	BUILDING ELEVATIONS
E1	LIGHTING PLAN

LITTLE CAESARS

141ST AVE N &
NORTHDAL BLVD,
ROGERS, MN 55374

FRANCHISE CONCEPTS
UNLIMITED INC.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: BRIAN J. FISHER

SIGNATURE: [Signature]

DATE: 05/07/2025 LICENSE NO. 57224

PERMITS & TEST REPORTS

- OWNER WILL SECURE CITY ENTITLEMENTS PRIOR TO CONSTRUCTION
- CONTRACTOR RESPONSIBLE TO SECURE ALL FEDERAL, STATE, COUNTY AND CITY PERMITS NECESSARY FOR CONSTRUCTION INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING:
 - CITY PERMITS
 - DEMOLITION PERMITS
 - ROW PERMITS
 - MNDOT PERMITS
 - NPDES PERMIT
 - MINNESOTA DEPARTMENT OF HEALTH PERMITS

- ALL TEST RESULTS ARE TO BE SENT TO THE OWNER AND ENGINEER DIRECTLY FROM THE INDEPENDENT TESTING LABORATORY.
- TEST REPORTS PROVIDED ARE TO COMPLY WITH THE GEOTECHNICAL REPORT.
- RE-TESTING DUE TO FIELD TEST FAILURE ARE AT NO ADDITIONAL COST TO THE OWNER.
- GEOTECHNICAL/CONCRETE TESTING MUST BE COMPLETED BY THE OWNER'S GEOTECHNICAL ENGINEER/INDEPENDENT TESTING LABORATORY. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL REQUIRED GEOTECHNICAL TESTS AND INSPECTIONS WITH THE GEOTECHNICAL ENGINEER/INDEPENDENT TESTING LABORATORY.

APPLICABLE SPECIFICATIONS

- CITY OF ROGERS (CITY) STANDARD SPECIFICATIONS AND REQUIREMENTS.
- MINNESOTA DEPARTMENT OF TRANSPORTATION (MN/DOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION LATEST EDITION AND SUPPLEMENTS.
- CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS FOR UTILITIES LATEST EDITION.
- APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES
- 2020 MINNESOTA ACCESSIBILITY CODE

CONSTRUCTION OBSERVATIONS

- NOTIFY OWNER, ENGINEER, AND CITY IN WRITING A MINIMUM OF 5 BUSINESS DAYS IN ADVANCE OF THE FOLLOWING ACTIVITIES:
 - PRE-CONSTRUCTION MEETING
 - UNDERGROUND PIPING AND UTILITIES INSTALLATION
 - UTILITY TESTING
 - STRUCTURES INSTALLATION
 - SUBGRADE PREPARATION AND TESTING
 - BASE INSTALLATION
 - CURB INSTALLATION
 - PAVEMENT INSTALLATION
 - STORMWATER BMP INSTALLATION

GENERAL NOTES

- UNTIL THE REVISION BLOCK INDICATES "ISSUED FOR CONSTRUCTION," THE PLAN SET IS NOT CERTIFIED FOR CONSTRUCTION, AND THE CONTRACTOR ASSUMES ALL RISKS ASSOCIATED WITH BUILDING.
- BASED ON AN EXISTING CONDITIONS SURVEY CONDUCTED BY ANDERSON ENGINEERING IN MARCH 2025, THE EXISTING CONDITIONS PRESENTED ARE SUBJECT TO VARIATION. THE CONTRACTOR MUST VERIFY SITE CONDITIONS AND PROMPTLY COMMUNICATE ANY DISPARITIES IN WRITING TO THE ENGINEER.
- UTILITY QUALITY LEVEL C IS APPLIED TO THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN, DETERMINED ACCORDING TO C/ASCE 38-2 GUIDELINES. THE PRECISE LOCATION AND DEPTH OF SUBSURFACE UTILITIES, INCLUDING GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV, ARE UNKNOWN, AND THE INFORMATION SHOULD NOT BE RELIED UPON AS EXACT OR COMPLETE.
- PRIOR TO STARTING WORK, THE CONTRACTOR MUST CONTACT GOPHER STATE ONE CALL (1-800-252-1166) AT LEAST 48 HOURS IN ADVANCE (EXCLUDING HOLIDAYS AND WEEKENDS) TO DETERMINE THE LOCATIONS OF UNDERGROUND UTILITIES.
- PRIVATE UTILITY CONFLICTS SHOULD BE ANTICIPATED BY THE CONTRACTOR IN PROJECT SUBCUT AND TRENCH AREAS. THE CONTRACTOR MUST COORDINATE WITH UTILITY OWNERS FOR RELOCATION OR PROTECTION OF EXISTING UTILITIES, OR INSTALLATION OF NEW UTILITIES, WITH ALL ASSOCIATED COSTS BEING THE CONTRACTOR'S RESPONSIBILITY AND INCURRED WITH NO ADDITIONAL COST TO THE OWNER.
- QUANTITIES ARE APPROXIMATE AND MAY VARY TO ENSURE SUCCESSFUL COMPLETION OF THE WORK.
- COMPLIANCE WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES IS MANDATORY FOR ALL WORK AND MATERIALS.
- COORDINATION OF WORK WITH OTHER CONTRACTORS OPERATING AT OR NEAR THE SITE IS THE RESPONSIBILITY OF THE CONTRACTOR.
- THROUGHOUT CONSTRUCTION, THE CONTRACTOR MUST COORDINATE AND MAINTAIN ACCESS TO ADJACENT PROPERTIES.
- THE CONTRACTOR IS TASKED WITH COORDINATING AND MAINTAINING MAIL, GARBAGE, AND RECYCLING SERVICES TO PROPERTIES DURING CONSTRUCTION.
- RESPONSIBILITY FOR COORDINATING AND MAINTAINING STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION, BOTH PIPED AND OVERLAND FLOW, LIES WITH THE CONTRACTOR.
- COORDINATION AND MAINTENANCE OF WATER AND SANITARY FLOW TO AND FROM PROPERTIES ARE THE CONTRACTOR'S RESPONSIBILITY.
- THE CONTRACTOR MUST COORDINATE AND MAINTAIN UTILITY SERVICES TO ADJACENT PROPERTIES AT ALL TIMES. UTILITY SERVICE INTERRUPTION IS PERMITTED ONLY WITH APPROVAL FROM THE OWNER, CITY, AND ADJACENT PROPERTIES.
- COORDINATION WITH UTILITY SERVICES FOR SMALL UTILITY INSTALLATION FALLS UNDER THE CONTRACTOR'S RESPONSIBILITIES.
- UNLESS SHOWN OR NOTED OTHERWISE, CONSTRUCTION LIMITS EXTEND TO THE PROPERTY LINE. CONSTRUCTION ACTIVITIES MUST BE RESTRICTED TO DESIGNATED AREAS AS INDICATED ON THE PLANS.
- PRESERVATION AND PROTECTION OF EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., IS THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE INDICATED.
- THE CONTRACTOR MUST DOCUMENT EXISTING CONDITIONS THROUGH PHOTOS OR VIDEOS BEFORE CONSTRUCTION BEGINS. THIS INCLUDES ITEMS DESIGNATED TO REMAIN THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY CONSTRUCTION OPERATIONS. ADEQUATELY DETAILED PHOTOGRAPHS OR VIDEO RECORDINGS, ALONG WITH PLANS AND NOTATIONS, MUST BE SUBMITTED TO THE ENGINEER AND OWNER BEFORE CONSTRUCTION BEGINS. ANY DAMAGE TO EXISTING PAVEMENT, CURBING, STRIPING, OR OTHER SITE FEATURES MUST BE REPLACED BY THE CONTRACTOR TO THE OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR TAKING ALL NECESSARY PRECAUTIONS TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION.
- BEFORE COMMENCING WORK, THE CONTRACTOR MUST NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS. NO FIELD CHANGES OR DEVIATIONS ARE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY THE OWNER AND ENGINEER OF IDENTIFIABLE CONFLICTS BEFORE INSTALLATION RELIEVES THE OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
- ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS, INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT, SPECIAL CONDITIONS AND PROVISIONS, ETC., MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
- FULLY IMPLEMENTING AND ENFORCING SAFE WORK PRACTICES, INCLUDING BUT NOT LIMITED TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, SCAFFOLDING, MATERIALS HANDLING AND DRILLING, OPERATION OF EQUIPMENT, AND ENSURING PUBLIC SAFETY DURING WORK PROGRESS, IS THE CONTRACTOR'S RESPONSIBILITY.
- PLANNING FOR AND ENSURING PERSONNEL COMPLY WITH OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) IS PART OF THE CONTRACTOR'S RESPONSIBILITIES.
- INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS THROUGHOUT THE WORK PROJECT IS THE CONTRACTOR'S RESPONSIBILITY. ENSURING THE SAFETY OF EMPLOYEES ON THE PROJECT SITE AND OTHER AFFECTED PERSONS AND ORGANIZATIONS IS CRITICAL FOR THE CONTRACTOR. SAFETY DUTIES AND RESPONSIBILITIES EXTEND UNTIL ALL WORK IS COMPLETE, AND THE ENGINEER ISSUES NOTICE THAT THE WORK IS FINISHED.
- HAZARDOUS MATERIALS, SUCH AS OIL, GASOLINE, PAINT, AND OTHER HAZARDOUS SUBSTANCES, MUST BE PROPERLY STORED BY THE CONTRACTOR. THIS INCLUDES SECONDARY CONTAINMENTS TO PREVENT SPILLS, LEAKS, OR OTHER DISCHARGES. ACCESS TO STORAGE AREAS MUST BE RESTRICTED TO PREVENT VANDALISM. HAZARDOUS WASTE STORAGE AND DISPOSAL MUST COMPLY WITH MPCA REGULATIONS. IMMEDIATE REMOVAL OF SPILLS OF FUELS, OILS, OR OTHER CHEMICALS UPON DETECTION IS THE CONTRACTOR'S RESPONSIBILITY.

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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DRAWING TITLE

COVER SHEET

DRAWING NO.

C100

PLOTTED: 05/07/2025	COMM. NO. 18586
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EXISTING CONDITIONS OF SURVEY

ADDRESS:

141st Ave N & Northdale Blvd, Rogers, Minnesota 55.

LEGAL DESCRIPTION:

Lot 1, Block 1, UPTOWN ROGERS 3RD ADDITION, Hennepin County, Minnesota.

CERTIFICATION:

I hereby certify that this survey was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Dated: May 1, 2025

Anderson Engineering of Minnesota, LLC

by: Nicholas Hillmer
 Nicholas Hillmer
 Minnesota License No. 45774

SURVEY NOTES:

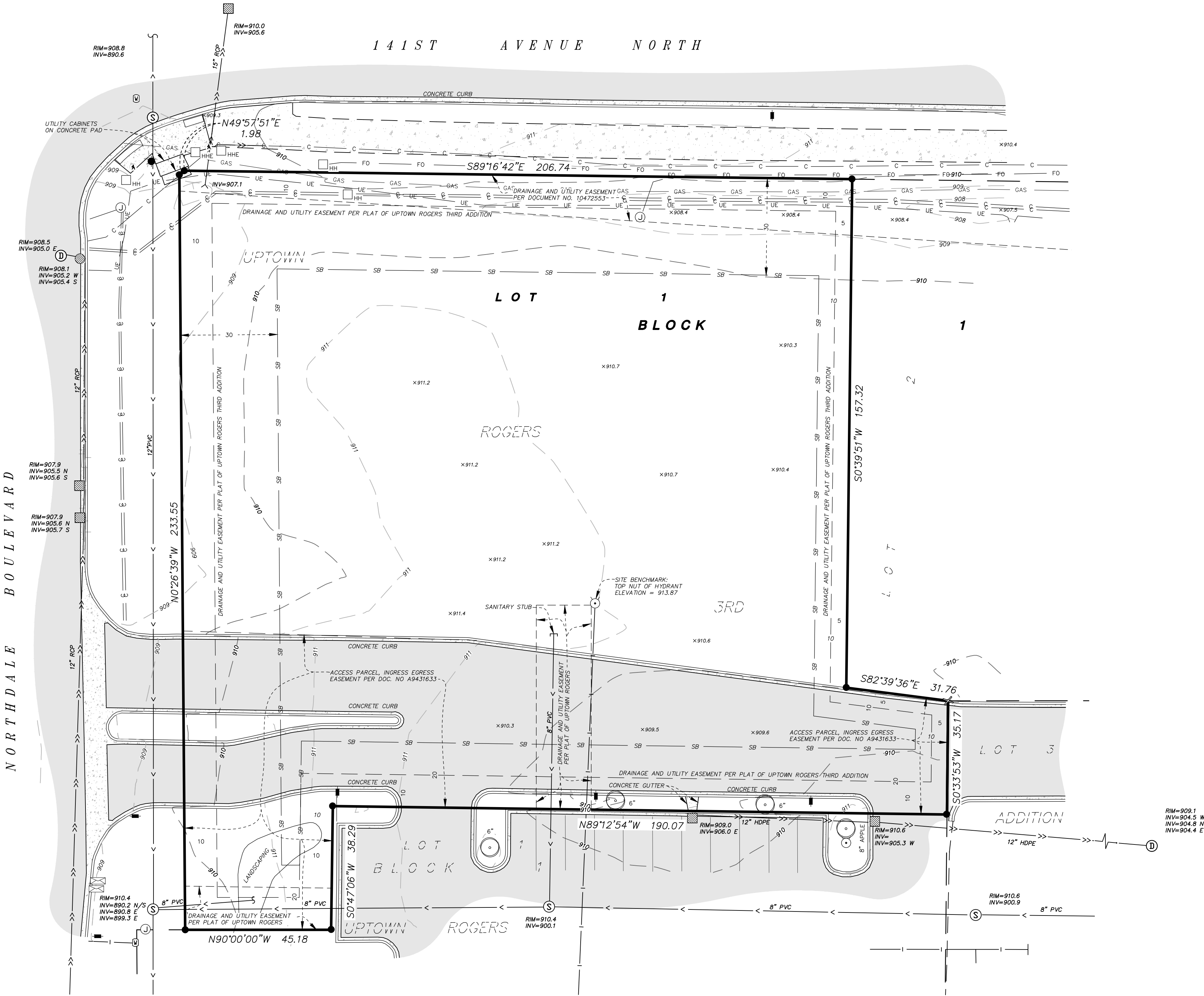
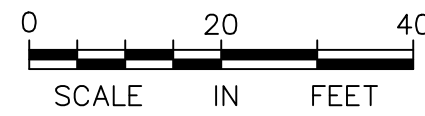
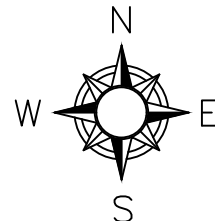
- The horizontal datum and bearings are based on the Hennepin County Coordinate System NAD83(2011).
- The vertical datum is NAVD 88. The site benchmark is the top nut of hydrant located 155ft East of Northdale Boulevard and 154ft South of 141st Ave N. Elevation = 913.87 feet.
- The area of the property described hereon is 43,375 square feet or 0.9958 acres.
- The location and extent of underground utilities, if shown, are based upon above ground evidence and Gopher State One Call markings per ticket number 250930077. Exclusive of excavation, there is no guarantee as to the accuracy or the completeness of this information. The size and location should be considered approximate. Additional underground utilities may be present. Verification of the existence and location of all utilities should be obtained from the utility owners prior to any planning or design. In accordance with State Statute, the location of utilities shall be confirmed prior to any demolition or construction.
- The tree information shown hereon was collected during the field survey by non-forestry trained Anderson Engineering of Minnesota survey personnel. Tree sizes are estimates and locations are accurate to plus or minus three feet.
- No title work was provided for the preparation of this survey to verify the legal description or the existence of any easements or encumbrances.
- The field work was completed in the month of April 2025.
- According to the City of Rogers, the subject property is zoned RC (Regional Employment Center) and has the building setback requirements listed below. It is recommended that the property owner obtain a zoning letter from the City to verify all conditions that affect the property through the city zoning ordinance. This survey does not purport to describe all conditions contained in said ordinance.

BUILDING SETBACKS

Front = 30ft
 Side (Street) = 30ft
 Side (Interior) = 10ft
 Rear = 20ft

LEGEND

- CATCH BASIN
- COMMUNICATION PEDESTAL
- COMMUNICATION MANHOLE
- HANDHOLE
- HANDHOLE ELECTRIC
- HYDRANT
- MAILBOX
- PUSH BUTTON WALK
- SANITARY MANHOLE
- SEMAPHORE
- SIGN
- WATER VALVE
- FOUND IRON MONUMENT
- SCRIBED "X" IN SURFACE
- BUILDING SETBACK
- COMMUNICATION
- FIBER OPTICS
- GAS MAIN
- SANITARY SEWER
- STORM SEWER
- UNDERGROUND ELECTRIC
- WATER MAIN
- BITUMINOUS SURFACE
- CONCRETE SURFACE
- TRUNCATED DOMES
- DECIDUOUS TREE





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P 763.412.4000 | F 763.412.4090
Anderson Engineering of Minnesota, LLC

LITTLE CAESARS

141ST AVE N &
NORTHDAL BLVD,
ROGERS, MN 55374

FRANCHISE CONCEPTS
UNLIMITED INC.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: BRIAN J. FISHER

SIGNATURE: NOT FOR CONSTRUCTION
DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED:	DRAWN:	CHECKED BY:
BJF	BJN	BJF

DRAWING TITLE

DEMOLITION PLAN

DRAWING NO.

C102

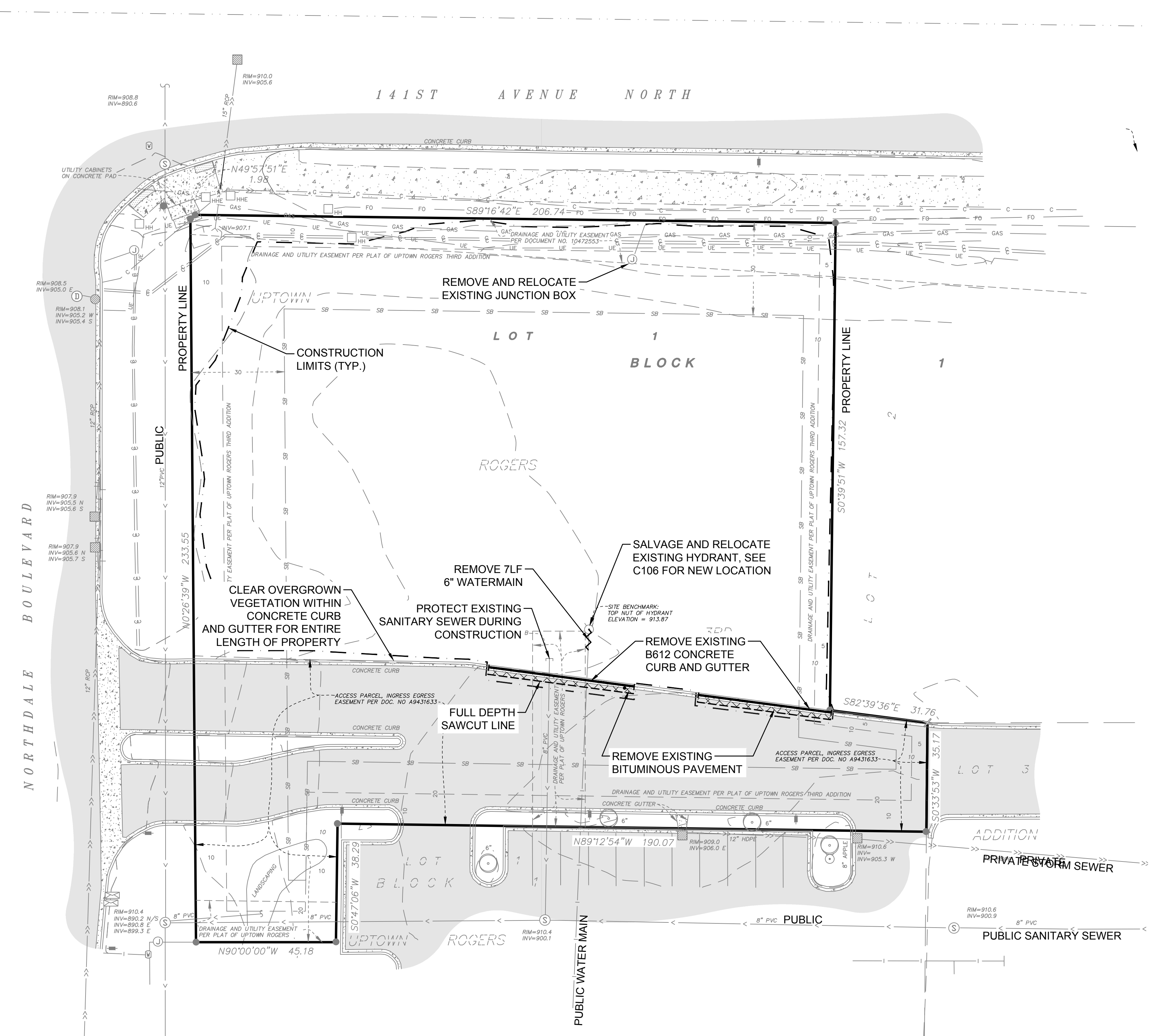
PLOTTED:	COMM. NO.
05/07/2025	18586

LEGEND

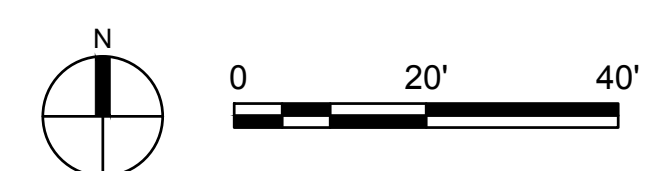
- PROPERTY LINE
- CONSTRUCTION LIMITS
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING STRM INLET
- EXISTING SAN/STRM MANHOLE
- EXISTING HYDRANT
- REMOVE EXISTING UTILITY
- EXISTING CONCRETE
- REMOVE EXISTING BITUMINOUS PAVEMENT
- REMOVE CONCRETE C&G
- EXISTING UNDERGROUND ELECTRIC
- EXISTING COMMUNICATIONS LINE
- EXISTING FIBER OPTIC LINE
- EXISTING GAS LINE

DEMOLITION NOTES

- THE CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS INDICATED OR DIRECTED BY THE ENGINEER. ANY DAMAGE TO SIGNS DURING CONSTRUCTION REQUIRES THE CONTRACTOR TO PROVIDE NEW SIGNS AT NO ADDITIONAL COST TO THE OWNER.
- COORDINATION OF UTILITY REMOVAL WORK MUST BE CARRIED OUT BY THE CONTRACTOR IN CONSULTATION WITH THE APPROPRIATE UTILITY OWNER.
- THE CONTRACTOR IS TO SAWCUT FULL DEPTH AT PAVEMENT REMOVAL LIMITS AND AS REQUIRED TO ENSURE A SMOOTH FIT/TRANSITION ALONG MATCHING PAVEMENT AREAS.
- CLEARING AND GRUBBING OPERATIONS MUST ADHERE TO THE FOLLOWING GUIDELINES:
 - PROTECT ALL TREES AND PLANTS NOT DESIGNATED FOR REMOVAL.
 - CONDUCT OPERATIONS TO AVOID DAMAGE TO PROTECTED TREES AND VEGETATION.
 - CUT, REMOVE, AND DISPOSE OF TREES, BRUSH, SHRUBS, WINDFALLS, LOGS, STUMPS, ROOTS, FALLEN TIMBER, AND OTHER VEGETATION.
 - DISPOSE OF DEBRIS ACCORDING TO APPLICABLE REGULATIONS.
 - NO BURYING OF CLEARED AND GRUBBED WASTE WITHIN THE CONSTRUCTION LIMITS.
- UNLESS OTHERWISE STATED, THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DEMOLITION WITHIN ALL AREAS OF PROPOSED IMPROVEMENTS. REMOVAL LIMITS AS INDICATED ON THE DRAWINGS IN ANTICIPATED LOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR REMOVALS NECESSARY TO CONSTRUCT NEW IMPROVEMENTS AND MEET DESIGN REQUIREMENTS. ALL FACILITIES TO BE REMOVED MUST BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE FILL MATERIAL, AS PER THE SPECIFICATIONS AND ENGINEER'S DIRECTIVES.
- THE CONTRACTOR MUST REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON THE PLAN TO DETERMINE SALVAGE OR REMOVAL THAT MAY CONFLICT WITH CONSTRUCTION, IN CONSULTATION WITH THE ENGINEER.
- THE CONTRACTOR IS REQUIRED TO OBTAIN PERMITS NECESSARY FOR DEMOLITION, REMOVAL, AND DISPOSAL.
- MATERIALS REMOVED OR DEMOLISHED BY THE CONTRACTOR BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE STATED. THE CONTRACTOR IS RESPONSIBLE FOR LOADING, HAULING, AND PROPERLY DISPOSING OF MATERIALS IN COMPLIANCE WITH APPLICABLE REGULATIONS. THE SITE MUST BE LEFT IN A CONDITION SATISFACTORY TO THE OWNER AND ENGINEER.
- THE CONTRACTOR MUST DOCUMENT EXISTING CONDITIONS THROUGH PHOTOS OR VIDEOS BEFORE CONSTRUCTION BEGINS. THIS INCLUDES ITEMS DESIGNATED TO REMAIN THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY CONSTRUCTION OPERATIONS. ADEQUATELY DETAILED PHOTOGRAPHS OR VIDEO RECORDINGS, ALONG WITH PLANS AND NOTATIONS, MUST BE SUBMITTED TO THE ENGINEER AND OWNER BEFORE CONSTRUCTION BEGINS. ANY DAMAGE TO EXISTING PAVEMENT, CURBING, STRIPING, OR OTHER SITE FEATURES MUST BE REPLACED BY THE CONTRACTOR TO THE OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.



1 DEMOLITION PLAN
SCALE: 1"=20'



CALL 48 HOURS BEFORE DIGGING:
GOPHER STATE ONE CALL
 TWIN CITY AREA (651)454-0002
 MINNESOTA TOLL FREE 1-800-252-1166

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PRINT NAME: BRIAN J. FISHER

SIGNATURE: NOT FOR CONSTRUCTION
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REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED:	DRAWN:	CHECKED BY:
BJF	BJN	BJF

DRAWING TITLE

SITE PLAN

DRAWING NO.

C103

PLOTTED:	COMM. NO.
05/07/2025	18586

LEGEND

- PROPERTY LIMITS
- CONSTRUCTION LIMITS
- PROPOSED BITUMINOUS PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED B612 CONCRETE C&G
- BUILDING SETBACK LINE
- PARKING COUNT
- DIRECTIONAL ARROW
- LIGHT POLE, SEE LIGHTING PLAN

SITE DATA

ADDRESS: UNASSIGNED
ROGERS, MN 55374

EXISTING ZONE: RC - REGIONAL EMPLOYMENT CENTER
PROPOSED ZONE: RC - REGIONAL EMPLOYMENT CENTER

PROPERTY SIZE: 43,375 SF (0.99 Ac)

LOT COVERAGE = 75% MAX, 65% IF CORRIDOR
PROPOSED LOT COVERAGE = 29.2%

BUILDING SETBACKS

FRONT: 20', 30' IF CORRIDOR
REAR: 20'
SIDE STREET: 20'
SIDE INTERIOR: 10'

PARKING SETBACKS

FRONT: 20', 30' IF CORRIDOR
REAR: 10'
SIDE STREET: 20', 30' IF CORRIDOR
SIDE INTERIOR: 5'

PARKING REQUIREMENTS

TYPICAL STALL SIZE = 9' X 18'
MINIMUM DRIVE AISLE = 24'

RESTAURANT - AT LEAST 1 SPACE FOR EACH 40 SF OF GROSS FLOOR AREA OF DINING AND BAR AREA AND 1 SPACE FOR EACH 80 SF OF KITCHEN AREA.

DINING AREA
PICKUP LOBBY 149 SF
149/40 = 3.73 SPACES

KITCHEN AREA
KITCHEN 912 SF
912/80 = 11.4 SPACES

RESTAURANT TOTAL = 3.73 + 11.4 = 15.13 = **16 SPACES REQ'D**

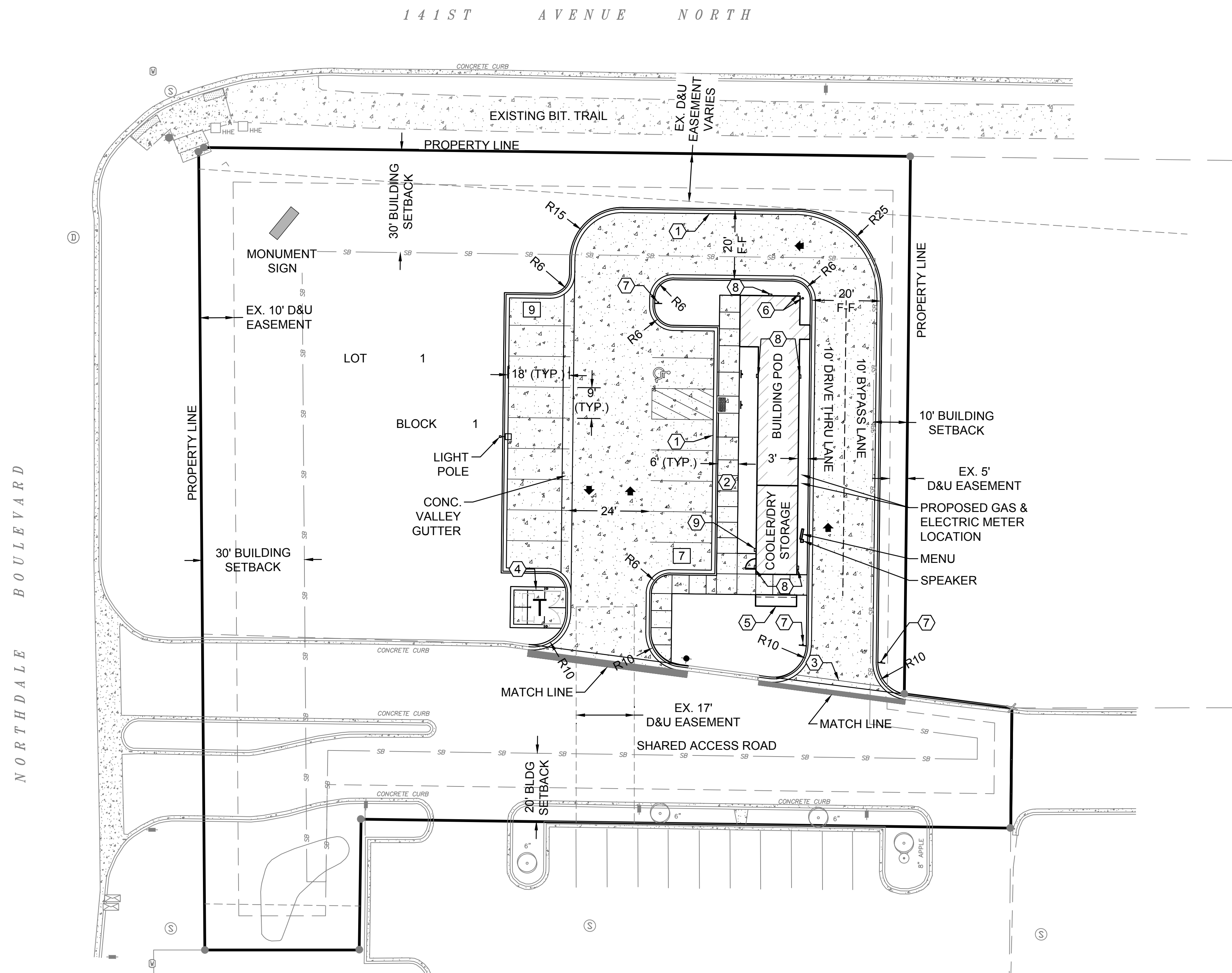
PARKING SHOWN **16 SPACES**

HANDICAPPED REQUIREMENTS

1-25 SPACES = **1 HANDICAPPED SPACE REQ'D**

KEY NOTES

- ① PROPOSED MNDOT 2531 TYPE B612 CONCRETE CURB.
- ② 6" WIDE CONCRETE SIDEWALK. SEE DETAIL 10/C501
- ③ CONCRETE VALLEY GUTTER SEE DETAIL 5/C501
- ④ TRASH ENCLOSURE
- ⑤ 8" HIGH PRIVACY WALL TO BE DELEGATED DESIGN
- ⑥ 6" CONCRETE BOLLARD SEE DETAIL 12/C501
- ⑦ DIRECTIONAL SIGN "ONE WAY"
- ⑧ WALL MOUNTED LIGHT, SEE LIGHTING PLAN
- ⑨ FIRE DEPARTMENT EMERGENCY KEY BOX. CONFIRM EXACT LOCATION WITH CITY OF ROGERS FIRE MARSHAL.



1 SITE PLAN
SCALE: 1"=20'



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ACCESSIBLE RAMP KEY NOTES

- 1 0" CURB HEIGHT AT PEDESTRIAN RAMP
- 2 FULL CURB HEIGHT
- 3 VARIABLE HEIGHT CURB
- 4 1/2" PREFORMED JOINT FILLER SHALL BE PLACED FLUSH WITH BACK OF CURB AND ADJACENT TO SIDEWALK.
- 5 RECTANGULAR DETECTABLE WARNING SHALL EXTEND 4' MIN. IN WIDTH AND 2' MIN. IN THE PATH OF TRAVEL. DETECTABLE WARNING SHALL BE SET FROM THE BACK OF CURB IN ACCORDANCE WITH THE 2010 ADA STANDARDS FOR ACCESSIBILITY.

- 6 5' BY 5' LANDING MIN WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
- 7 4" PAINTED DIAGONAL LINES 45° - 3" CENTER TO CENTER.
- 8 WHITE REFLECTIVE PAINT RECTANGLE CENTERED AROUND ACCESSIBILITY PARKING SYMBOL. LINE TO BE 3 INCHES WIDE, OVER A WIDTH OF 36 INCHES AND HEIGHT OF 41 INCHES PER 2010 ADA STANDARDS FOR ACCESSIBILITY.
- 9 HANDICAP STALL SIGN TO COMPLY WITH 2010 ADA STANDARDS FOR ACCESSIBILITY CODE 502.6. SEE DETAIL 3/C6.
- 10 NO PARKING SIGN TO COMPLY WITH 2010 ADA STANDARDS FOR ACCESSIBILITY CODE 502.6.

ACCESSIBILITY NOTES

- 1. PROPOSED SPOT ELEVATIONS ARE TO TOP OF FINISHED SURFACE UNLESS OTHERWISE NOTED IN LEGEND.
- 2. ALL CONSTRUCTION OF HANDICAP STALLS, ROUTES, & CURB RAMPS TO COMPLY WITH THE 2020 MN ACCESSIBILITY CODE.
- 3. CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS. ALL GRADE BREAKS SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
- 4. TO ENSURE RAMPS & LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY.
- 5. ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.
- 6. TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

LEGEND

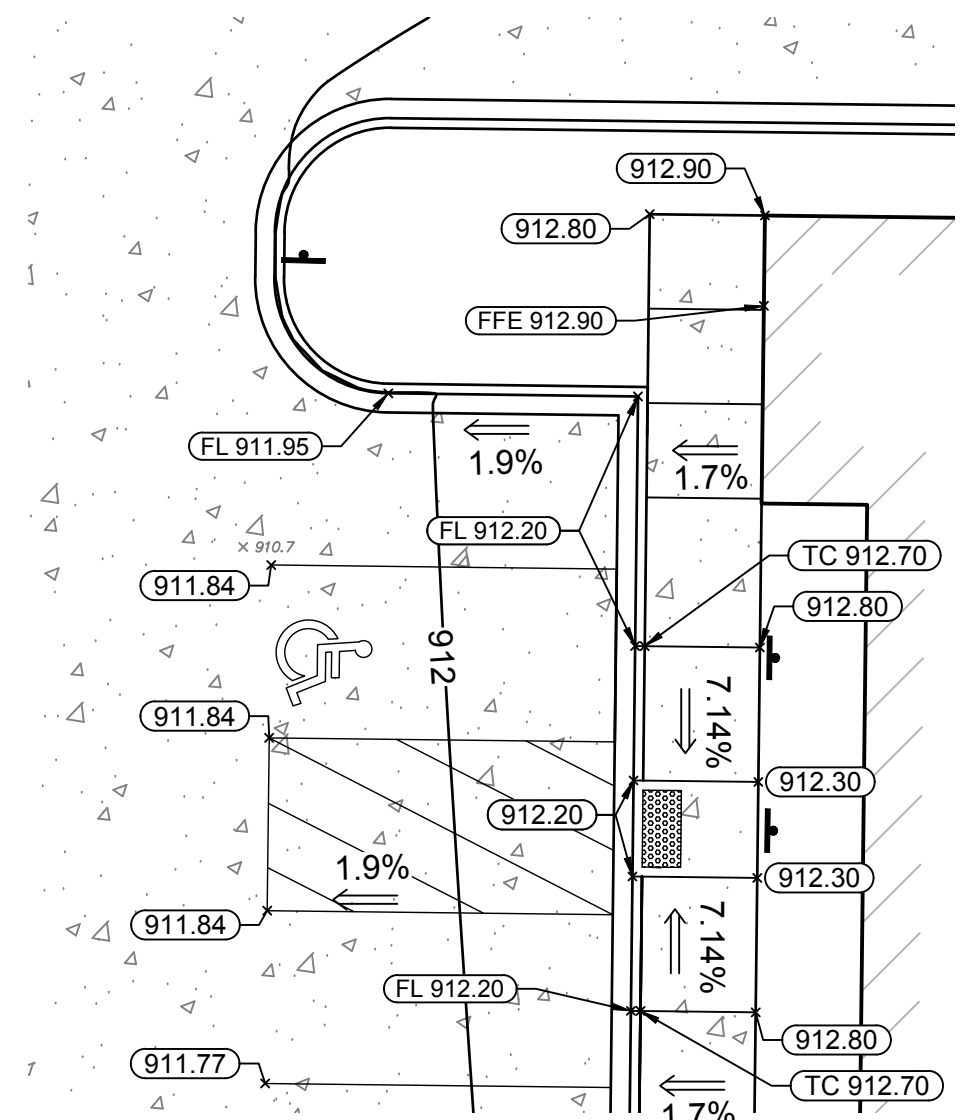
- — — — — PROPERTY LIMITS
- — — — — CONSTRUCTION LIMITS
- - - - - 958 EXISTING MINOR CONTOUR
- - - - - 960 EXISTING MAJOR CONTOUR
- — — — — 958 PROPOSED MINOR CONTOUR
- — — — — 960 PROPOSED MAJOR CONTOUR
- x 954.2 EXISTING SPOT ELEVATION
- DRAINAGE ARROW
- ===== PROPOSED CONCRETE C&G

SPOT ELEVATION KEY

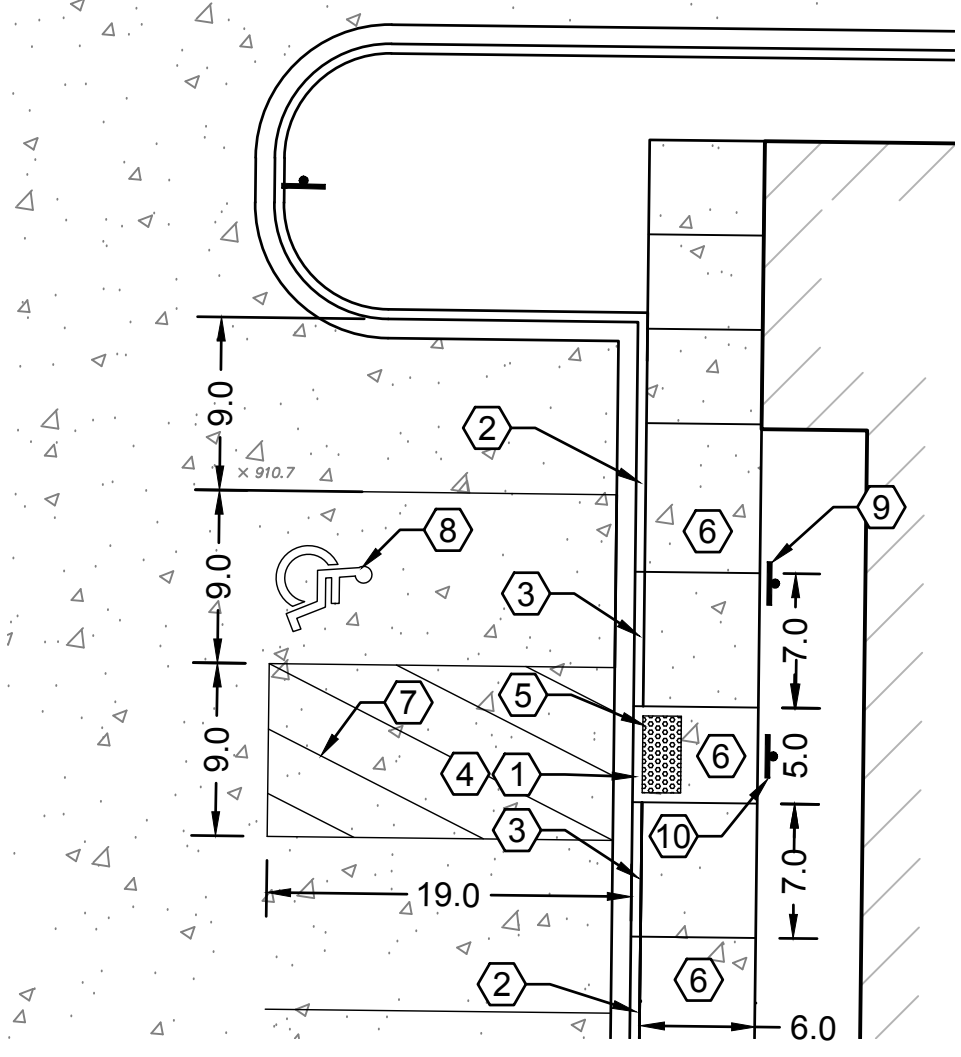
- ± EXISTING GRADE
- FL GUTTER FLOW LINE
- TC TOP OF CURB
- HP HIGH POINT ELEVATION
- R RIM ELEVATION
- EOF EMERGENCY OVERFLOW ELEVATION
- FFE FINISHED FLOOR ELEVATION

GRADING NOTES

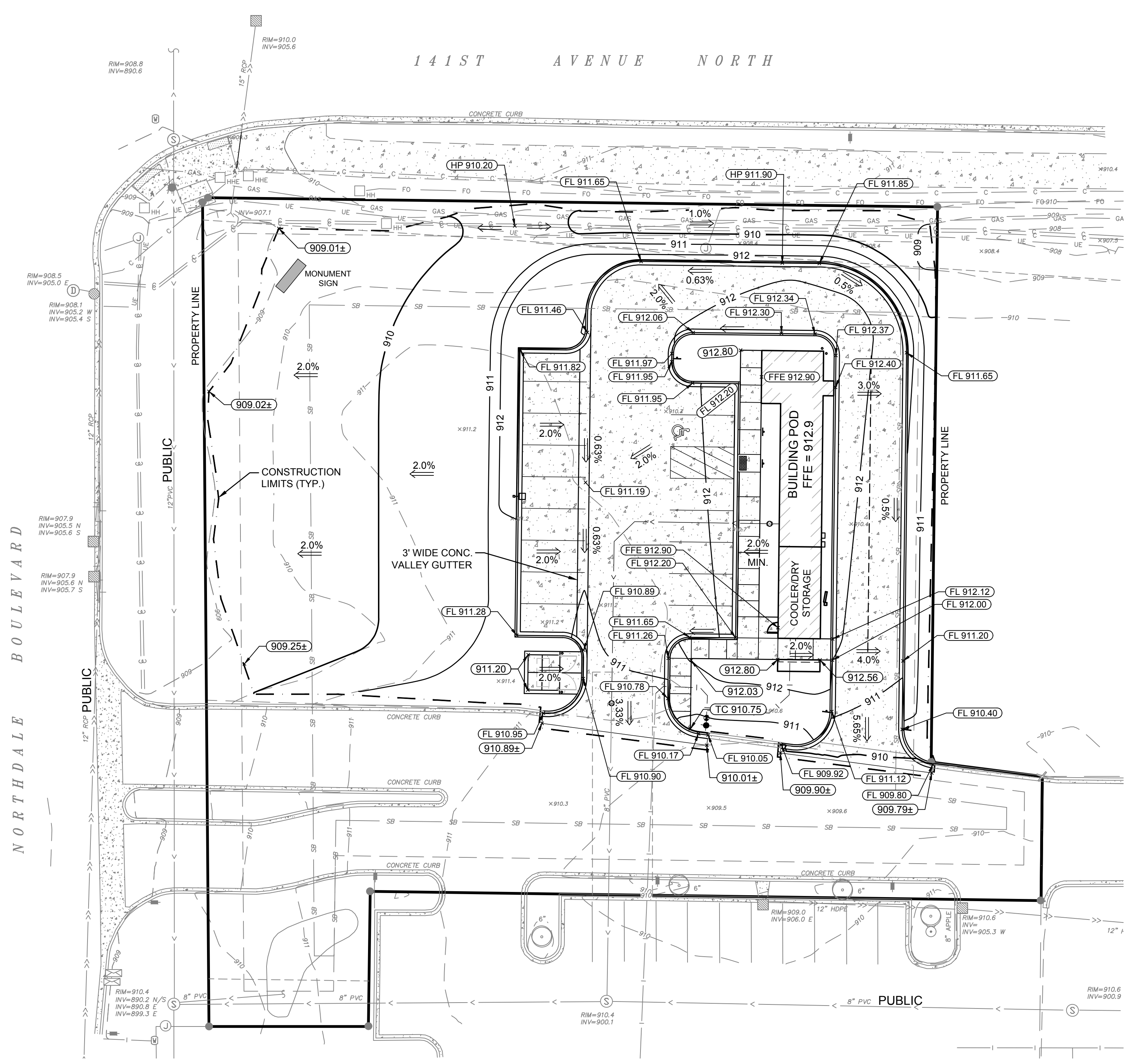
1. THE CONTRACTOR MUST CONSTRUCT/GRADE SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING CROSSING DRIVEWAYS, IN ACCORDANCE WITH CURRENT ADA STATE AND NATIONAL STANDARDS. IMMEDIATE WRITTEN NOTIFICATION TO THE ENGINEER IS REQUIRED IF ADA CRITERIA CANNOT BE MET AT ANY LOCATION.
2. IMPORTED SUITABLE FILL MATERIAL NEEDED MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER BEFORE BRINGING IT ON THE SITE.
3. THE CONTRACTOR MUST COORDINATE REQUIRED SOIL TESTS AND INSPECTIONS WITH THE GEOTECHNICAL ENGINEER.
4. THE CONTRACTOR IS RESPONSIBLE FOR EXCAVATING AND DISPOSING OF UNSUITABLE OR CONTAMINATED SOILS DISCOVERED ONSITE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
5. EXISTING TOPSOIL ON-SITE VARIES IN DEPTH. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SURFACE VEGETATION, TOPSOIL, AND OTHER UNSUITABLE MATERIAL FROM IMPERVIOUS AREAS AND OTHER DESIGNATED AREAS BEFORE PLACING SUITABLE FILL MATERIAL, AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
6. EXCAVATE, COMPACT EMBANKMENT/SUITABLE FILL, AND BACKFILL IN ACCORDANCE WITH MNDOT SPEC 2106 SPECIFIED DENSITY METHOD. THE CONTRACTOR MUST MEET MOISTURE CONTENT/CONTROL REQUIREMENTS IN ACCORDANCE WITH MNDOT 2106 AND SITE TESTING REQUIREMENTS.
7. ONSITE EMBANKMENT MATERIAL FREE OF ORGANIC SOIL AND DEBRIS MAY BE CONSIDERED FOR REUSE AS SUITABLE FILL MATERIAL IN PERVIOUS AREAS BUT MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER.
8. THE CONTRACTOR SHOULD PROMPTLY BACKFILL SUBGRADE AND TRENCH EXCAVATIONS AFTER EXCAVATION.
9. THE CONTRACTOR IS RESPONSIBLE FOR QUANTIFYING SOIL IMPORT OR EXPORT AND CONDUCTING THEIR OWN QUANTITY TAKEOFFS FROM THE DRAWINGS. ADDITIONAL ON-SITE EXCAVATION OR OFF-SITE IMPORT MAY BE NECESSARY TO ACHIEVE FINAL GRADES, AND THE CONTRACTOR MUST COORDINATE THESE ACTIONS WITH THE OWNER AND ENGINEER. THE SUITABILITY OF OFFSITE IMPORT MATERIAL MUST BE VERIFIED BY THE GEOTECHNICAL ENGINEER. ANY EXCESS MATERIAL, UNLESS NOTED OTHERWISE, BELONGS TO THE CONTRACTOR AND SHOULD BE MOVED AND DISPOSED OF OFFSITE IN ACCORDANCE WITH APPLICABLE LAWS.
10. GRADING DISCREPANCIES IN EXISTING OR PROPOSED GRADES MUST BE REPORTED IN WRITING TO THE ENGINEER BEFORE PLACING PAVEMENT. THE CONTRACTOR SHOULD OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING BEFORE PLACEMENT TO ENSURE ADEQUATE DRAINAGE.
11. EXISTING SPOT ELEVATIONS AT MATCH POINTS ARE BASED ON SITE SURVEY DATA. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING CONNECTION POINTS BEFORE INSTALLATION OF IMPROVEMENTS AND MUST NOTIFY THE ENGINEER IN WRITING OF ANY FIELD DISCREPANCIES. THE CONTRACTOR IS RESPONSIBLE FOR REWORK OF ANY DISCREPANCIES THAT ARE NOT COMMUNICATED TO THE ENGINEER IN WRITING AT NO ADDITIONAL COST TO THE OWNER.
12. THE PROPOSED CONTOURS PERTAIN TO THE FINISHED SURFACE GRADE, UNLESS OTHERWISE INDICATED.
13. THE CONTRACTOR IS RESPONSIBLE FOR MEETING GRADING/COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT AND SPECIFICATIONS FOR THE PROJECT.
14. IMPORTED SUITABLE FILL MATERIAL MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER BEFORE BRINGING IT ON THE SITE.
15. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DEWATERING MEASURES AS REQUIRED OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
16. COMPACTION TESTING SHALL FOLLOW THE FREQUENCY OUTLINED IN THE GEOTECHNICAL REPORT OR MNDOT SCHEDULE OF MATERIALS CONTROL. WHERE NO FREQUENCY IS PROVIDED, CONSULT THE ENGINEER FOR MINIMUM REQUIREMENTS.
17. GRADING ELEVATIONS SHALL CONFORM TO MNDOT SPEC 2106.3.I.



2 ACCESSIBLE GRADING
SCALE: 1"=10'



3 ACCESSIBLE DIMMENTIONAL
SCALE: 1"=10'



1 GRADING AND DRAINAGE PLAN
SCALE: 1"=20'

ANDERSON
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PRINT NAME: BRIAN J. FISHER
SIGNATURE: [Signature]
DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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DRAWING TITLE

GRADING AND DRAINAGE PLAN

DRAWING NO.

C104

PLOTTED: 05/07/2025	COMM. NO. 18586
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STORMWATER POLLUTION PREVENTION PLAN SCHEDULE OF INSTALLATION & MAINTENANCE

ITEM	INSTALLATION	INSPECTION & MAINTENANCE	REMOVAL
SILT FENCE	PRIOR TO COMMENCEMENT OF EARTHWORK OPERATIONS.	INSPECT & MAINT. AFTER EACH RUN-OFF EVENT. REMOVE SEDIMENTS AS REQUIRED.	AFTER TRIBUTARY DRAINAGE AREA IS RESTORED.
ROCK CONST. ENTRANCE	PRIOR TO COMMENCEMENT OF EARTHWORK OPERATIONS.	INSPECT REGULARLY. MAINTAIN AS NEEDED.	PRIOR TO PAVING.
OUTLET SKIMMER STRUCTURE	AFTER POND GRADING IS COMPLETED.	INSPECT REGULARLY. MAINTAIN AS NEEDED.	PERMANENT.
RIP-RAP & FILTER	UPON COMPLETION OF POND GRADING. CONC. SWALE CONST. AND OUTLET INSTALLATION.	INSPECT & MAINTAIN AT LEAST ANNUALLY AND AFTER HEAVY RAINFALL EVENT.	PERMANENT.
DETENTION POND	DURING EARTHWORK OPERATIONS.	AFTER HEAVY RAINFALL EVENTS. REMOVE SEDIMENTS AS NEEDED.	PERMANENT.
SEED & MULCH	AFTER POND GRADING IS COMPLETED.	INSPECT & MAINTAIN AFTER HEAVY RAINS. REPLACE WASH-OUT AREAS IMMEDIATELY.	NO REMOVAL NECESSARY.
INLET PROTECTION	UPON INLET CONSTRUCTING	WHEN 1/3 CAPACITY OF BMP IS REACHED	AFTER TRIBUTARY AREAS ARE FULLY RESTORED

KEY NOTES

- INSTALL AND MAINTAIN SILT FENCE PERIMETER SEDIMENT PROTECTION IN TURF AREAS. SEE DETAIL 2/C501. USE BIO-ROLLS AS NEEDED IN PAVED AREA PER MNDOT SPEC 3885.
- INSTALL AND MAINTAIN INLET SEDIMENT PROTECTION. SEE DETAIL 4/C501.
- INSTALL TEMP ROCK ENTRANCE OR HARD SURFACE ASPHALT/CONCRETE AT CONSTRUCTION INGRESS & EGRESS LOCATION PRIOR TO EXCAVATION. MAINTAIN THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. SEE DETAIL 3/C501.
- AREAS WITH SLOPES STEEPER THAN 4:1 TO HAVE EROSION CONTROL BLANKET AND SEED INSTALLED. EROSION CONTROL BLANKET TO BE CATEGORY 3 OR 3N PER MNDOT SPEC 3885.

LEGEND

- PROPERTY LIMITS
- CONSTRUCTION LIMITS
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- EXISTING SPOT ELEVATION
- DRAINAGE ARROW
- SILT FENCE
- INLET PROTECTION
- CONSTRUCTION ENTRANCE
- EROSION CONTROL BLANKET

EROSION CONTROL NOTES

- GRADING CONTRACTORS SHALL VERIFY LOCATIONS AND ELEVATIONS OF ALL UNDERGROUND UTILITIES WITH THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION.
- ALL EROSION CONTROL MEASURES CALLED FOR ON THESE PLANS AND SPECIFICATIONS, WHICH MAY INCLUDE SILT FENCE, SEDIMENTATION BASINS OR TEMPORARY SEDIMENT TRAPS, SHALL BE CONSTRUCTED AND SERVICEABLE IN THE FOLLOWING ORDER:
 - ROCK CONSTRUCTION ENTRANCES A MINIMUM OF 50 FEET
 - SILT FENCE
 - TEMPORARY CULVERTS
 - TEMPORARY SEDIMENTATION BASINS AND OUTFALL FACILITIES
 - STORMWATER POND CONSTRUCTION
 - COMMON EXCAVATION AND EMBANKMENT (GRADING)
 - SEEDS AND MULCH OR SO2
 - BIO-ROLL BARRIERS IN FINISHED GRADED AREAS
 - INLET AND OUTLET FACILITIES SUBSEQUENT TO STORM SEWER WORK
- GRADING CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL EROSION CONTROL MEASURES IN ACCORDANCE WITH CITY AND NPDES PHASE II PERMITTING REQUIREMENTS AS WELL AS EROSION CONTROL MEASURES AS MAY BE SHOWN ON THESE PLANS OR SPECIFICATIONS. GRADING CONTRACTOR SHALL IMPLEMENT ANY ADDITIONAL EROSION CONTROL MEASURES AS MAY BE REQUIRED TO PROTECT ADJACENT PROPERTY.
- ALL EROSION CONTROL FACILITIES SHALL BE MAINTAINED BY THE CONTRACTOR DURING GRADING OPERATIONS. ANY TEMPORARY FACILITIES WHICH ARE TO BE REMOVED AS CALLED FOR ON THESE PLANS AND SPECIFICATIONS SHALL BE REMOVED BY THE GRADING CONTRACTOR WHEN DIRECTED BY THE ENGINEER. THE GRADING CONTRACTOR SHALL RESTORE THE SUBSEQUENTLY DISTURBED AREA IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
- THE GRADING CONTRACTOR SHALL SCHEDULE THE SOILS ENGINEER SO THAT CERTIFICATION OF ALL CONTROLLED FILLS WILL BE FURNISHED TO THE OWNER DURING AND UPON COMPLETION OF THE PROJECT.
- ALL DISTURBED AREAS, EXCEPT AREAS TO BE PAVED AND/OR SPECIFICALLY DESIGNED BY A LANDSCAPE PLAN, SHALL BE COVERED WITH A MINIMUM 6" OF TOP SOIL OR AS INDICATED IN SPECIFICATIONS OR LANDSCAPING PLAN. ALL DISTURBED AREAS SHALL BE SEED & MULCHED AT THE PRESCRIBED RATES WITHIN 72 HOURS OF FINAL GRADING UNLESS OTHERWISE NOTED.

SEED MIX:	MNDOT - MESS IN/SLOPE	50# / ACRE
MULCH:	TYPE 1	2 TONS / ACRE (DISK ANCHORED)
FERTILIZER:	TYPE 3 22-5-10	350# / ACRE

ALL EXPOSED SOIL AREAS WITH A CONTINUOUS POSITIVE SLOPE WITHIN 200 LINEAL FEET OF ANY SURFACE WATER, MUST HAVE TEMPORARY EROSION PROTECTION OR PERMANENT COVER FOR THE EXPOSED SOIL AREAS YEAR ROUND, ACCORDING TO THE FOLLOWING TABLE OF SLOPES AND TIME FRAMES:

TYPE OF SLOPE	TIME (Maximum time an area can remain open when the area is not actively being worked)
STEEPER THAN 5:1	7 DAYS
10:1 TO 5:1	4 DAYS
FLATTER THAN 10:1	7 DAYS

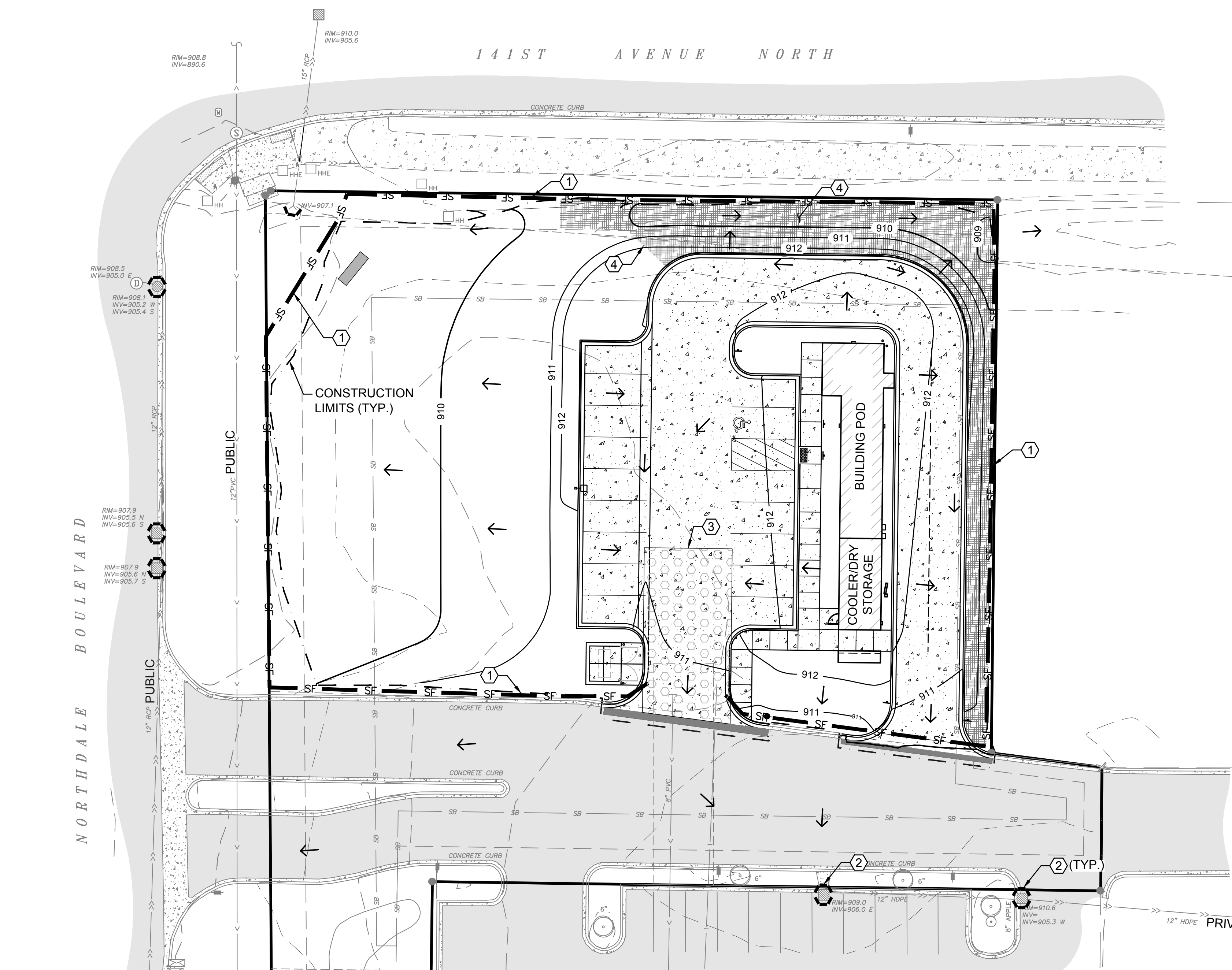
- THE EXISTING TOPOGRAPHY AND CONTOUR ELEVATIONS SHOWN ON THE PLAN WERE TAKEN FROM A PLAN FURNISHED BY OWNER.
- CONTRACTORS GRADING AND EROSION CONTROL OPERATIONS SHALL TAKE PLACE WITHIN THE CONSTRUCTION LIMITS.
- IT IS REQUIRED THAT SOILS TRACKED FROM THE SITE BY MOTOR VEHICLES BE CLEANED DAILY FROM PAVED ROADWAY SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.
- PROVIDE TEMPORARY SEDIMENTATION BASINS AS DIRECTED BY THE ENGINEER.
- ALL REQUIREMENTS OF THE LOCAL WATERSHED DISTRICT SHALL BE SATISFIED PER THE APPROVED PERMIT.
- ALL EROSION & SEDIMENT CONTROL MEASURES SHOWN ON THIS PLAN AND IMPLEMENTED IN THE FIELD AS DIRECTED BY THE ENGINEER SHALL CONFORM TO THE MPCA'S "PROTECTING WATER QUALITY IN URBAN AREAS: BEST MANAGEMENT PRACTICES FOR MINNESOTA".
- DEWATERING AND /OR BASIN DRAINING DISCHARGE SHALL BE DIRECTED TO SEDIMENTATION BASINS WHEREVER POSSIBLE. ALL DISCHARGE POINTS SHALL BE ADEQUATELY PROTECTED FROM EROSION & SCOUR THROUGH USE OF APPROVED ENERGY DISSIPATION DEVICES.
- ALL SOLID WASTE / CONSTRUCTION DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH MPCA REQUIREMENTS. HAZARDOUS MATERIALS SHALL BE STORED / DISPOSED OF IN COMPLIANCE WITH MPCA REGULATIONS.
- CONTRACTOR SHALL USE RAPID STABILIZATION METHODS PER MNDOT 2575 AS NEEDED DURING THE COURSE OF THE WORK TO MAINTAIN CONFORMANCE WITH THE CITY AND NPDES II PERMIT REQUIREMENTS. THIS WORK SHALL CONSIST OF OPERATIONS NECESSARY TO RAPIDLY STABILIZE SMALL CRITICAL AREA TO PREVENT OFF SITE SEDIMENTATION AND /OR TO COMPLY WITH PERMIT REQUIREMENTS. THE WORK MAY BE PERFORMED AT ANY TIME DURING THE CONTRACT AND DURING NORMAL WORKING HOURS. THIS WORK WILL BE CONDUCTED ON SMALL AREAS THAT MAY OR MAY NOT BE ACCESSIBLE WITH NORMAL EQUIPMENT. THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE MNDOT STANDARDS SPECIFICATIONS. THE DETAILS SHOWN IN THE PLANS, AND THE FOLLOWING:

THERE ARE FIVE STABILIZATION METHODS APPROVED FOR THESE OPERATIONS. THESE METHODS MAY BE CONDUCTED INDEPENDENTLY OR IN COMBINATION:

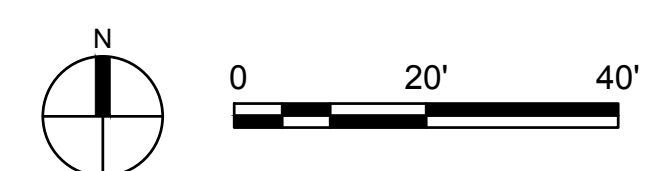
METHOD	RAPID STABILIZATION
1	TYPE 1 MULCH WITH DISC ANCHORING
2	TYPE 3 MULCH WITH TYPE HYDRAULIC MULCH
3	TYPE HYDRAULIC MULCH WITH SEED MIXTURE 22-11
4	CATEGORY 3 EROSION CONTROL BLANKET WITH SEED MIXTURE
5	RIPRAP CLASS II WITH GEOTEXTILE TYPE III

THESE EFFORTS WILL BE INCIDENTAL TO THE EROSION CONTROL BID ITEM.

- CHANGE OF COVERAGE: FOR STORM WATER DISCHARGES FROM CONSTRUCTION PROJECTS WHERE THE OWNER OR OPERATOR CHANGES, (E.G. AN ORIGINAL DEVELOPER SELLS PORTIONS OF THE PROPERTY TO VARIOUS BUILDERS) THE NEW OWNER OR OPERATOR MUST SUBMIT A SUBDIVISION REGISTRATION WITHIN 7 DAYS OF ASSUMING TRANSFERS, SALE OR CLOSING ON THE PROPERTY.
- INDIVIDUAL SITE BUILDERS SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY EROSION CONTROL MEASURES AS MAY BE REQUIRED. REQUIRED ECMS SHALL CONSIST OF BUT NOT BE LIMITED TO THE FOLLOWING:
 - STAKED FIBER LOG ROLLS AT BACK OF ALL CURB EXCEPT AT CONSTRUCTION / DRIVEWAY ENTRANCE.
 - SILT FENCE ON ALL DOWN GRADIENT SLOPES FROM CONSTRUCTION AREA. SILT FENCE SHALL HAVE THE BOTTOM DUG IN WITH SOIL FIRMLY COMPACTED.
 - ROCK CONSTRUCTION ENTRANCE HAVING 1" TO 2" CLEAR ROCK OVER GEOTEXTILE FABRIC.
 - STREET CLEANING AS MAY BE REQUIRED SHOULD VEHICLE TRACKING OCCUR.
- INDIVIDUAL SITE BUILDERS ARE REQUIRED TO MAINTAIN EROSION CONTROL MEASURES UNTIL SUCH TIME AS INDIVIDUAL YARDS/VEGETATION ARE ESTABLISHED.
- CONTRACTOR SHALL PROVIDE A TEMPORARY LINED SEDIMENTATION BASIN ON SITE FOR CONSTRUCTION WASH OUT USE. TEMPORARY BASIN SHALL BE LOCATED AS TO PROVIDE EASY ACCESS FOR CONSTRUCTION VEHICLES AND CONCRETE TRUCKS AS NECESSARY.
- INLET SEDIMENTATION CONTROL IS TO BE PROVIDED TO ALL STORM SEWER CATCH BASIN THROUGHOUT CONSTRUCTION. MEASURES APPLIED SHALL COMPLY WITH BEST MANAGEMENT PRACTICES FOR MINNESOTA AND APPLICATION OF NPDES PHASE II AS APPROPRIATE FOR PHASE OF CONSTRUCTION.
- CONTRACTOR SHALL PREVENT SOIL LOSS DURING CONSTRUCTION DUE TO WIND EROSION THROUGHOUT CONSTRUCTION. DUST SHALL BE SUPPRESSED THROUGH THE APPLICATIONS OF WATER, AS DEEMED NECESSARY BY THE CONTRACTOR, OR THROUGH EQUIVALENT BMPs AS APPROVED BY THE ENGINEER.
- IF LEED ACCREDITATION IS APPLICABLE, CONTRACTOR SHALL DOCUMENT THE IMPLEMENTATION OF THE EROSION AND SEDIMENTATION CONTROL PLAN THROUGH DATE-STAMPED PHOTOS AND INSPECTION LOGS / REPORTS. REPORTS SHALL INCLUDE AT A MINIMUM DESCRIPTION OF ALL EMPLOYED BMPs (INCLUDING BOTH MEASURES TO PREVENT SOIL LOSS DUE TO RAINFALL AND SOIL LOSS DUE TO WIND EROSION). BMPs DEEMED UNNECESSARY DUE TO SITE CONDITIONS, CORRECTIVE ACTIONS TAKEN IN RESPONSE TO PROBLEMS, AND ANY ADDITIONAL INFORMATION RELEVANT TO THE CONDITION OF THE EROSION AND SEDIMENT CONTROL PLAN AS IT WAS ESTABLISHED AT THE TIME OF CONSTRUCTION.



1 EROSION CONTROL PLAN
SCALE: 1"=20'



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PRINT NAME: BRIAN J. FJESTRUP
SIGNATURE: [Signature]
DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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DRAWING TITLE

EROSION AND
SEDIMENT
CONTROL PLAN

DRAWING NO.

C105

PLOTTED: 05/07/2025	COMM. NO. 18586
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UTILITY NOTES

- ALL CONSTRUCTION SHALL COMPLY WITH RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER AND PER THE GEOTECHNICAL REPORT UNLESS DIRECTED OTHERWISE.
- ALL CONSTRUCTION SHALL COMPLY WITH THE 2022 EDITION OF MNDOT SPECIFICATIONS, UNLESS DIRECTED OTHERWISE.
- THE CONTRACTOR IS REQUIRED TO ADHERE TO THE SPECIFICATIONS AND REGULATIONS SET FORTH BY THE CITY/UTILITY PROVIDER, CEAM, AND MINNESOTA PLUMBING CODE (MINNESOTA RULES CHAPTER 4714) CONCERNING THE MATERIALS, INSTALLATION, AND TESTING OF WATER AND SANITARY UTILITIES. VERIFY RECEIPT OF ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

- EXISTING TOPOGRAPHIC AND UTILITY INFORMATION PREPARED BY ANDERSON ENGINEERING. BE ADVISED THAT THE LOCATION AND TYPE OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE INFORMATION IS NOT WARRANTED TO BE ACCURATE OR COMPLETE. THE CONTRACTOR, IN COOPERATION WITH THE APPROPRIATE UTILITY COMPANY OR MUNICIPALITY, IS RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE, AND DEPTH OF ALL UNDERGROUND UTILITIES.
- WATER LINES ARE REQUIRED TO BE INSTALLED AT 7.5 FEET MINIMUM DEPTH AND PROVIDE MINIMUM 10' HORIZONTAL AND 24" VERTICAL SEPARATION OF ALL WATERMAIN CROSSINGS FROM STORM OR

- SANITARY SEWER. WATERMAIN TO BE INSULATED TO STATE SPECIFICATIONS, WHERE VERTICAL SEPARATION IS LESS THAN 36" OR COVER DEPTHS CANNOT BE ACHIEVED. CONTRACTOR SHALL CONTACT THE ENGINEER IF THERE ARE AREAS WHERE MINIMUM COVER DEPTH CANNOT BE MET.
- WATER SERVICE MATERIALS SHALL BE AWWA C900/C901 AS SHOWN. CONTRACTOR SHALL VERIFY SERVICE SIZE AND MATERIALS PRIOR TO CONSTRUCTION.
 - SANITARY SEWER PIPE MATERIALS SHALL BE PVC SDR 26. PIPE SHALL BE INSULATED PER STATE STANDARDS WHERE 7.5 FOOT COVER DEPTHS ARE NOT ACHIEVED.
 - ALL JOINTS AND CONNECTIONS IN THE STORM

SEWER SYSTEM SHALL BE WATER TIGHT. APPROVED RESILIENT RUBBER JOINTS MUST BE USED MEETING ASTM F2510 TO MAKE WATER TIGHT CONNECTIONS TO MANHOLES AND CATCH BASINS. DO NOT GROUT OVER FLEXIBLE CONNECTIONS TO MANHOLES.

LEGEND

- PROPERTY LIMITS
- CONSTRUCTION LIMITS
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- PROPOSED WATERMAIN
- PROPOSED SANITARY SEWER
- EXISTING STORM INLETS
- PROPOSED STORM INLETS
- PROPOSED SANITARY CLEANOUTS
- PROPOSED 6" HYDRANT W/ 6" GATE VALVE
- PROPOSED BITUMINOUS PAVEMENT
- PROPOSED CONCRETE PAVEMENT

KEY NOTES

- ① CONNECT TO EXISTING 6" WATER MAIN STUB.
- ② AWWA C901 2" DOMESTIC LINE
- ③ 6" PVC AWWA C900 WATERMAIN
- ④ 2" CURB STOP W/ SADDLE
- ⑤ 6" HYDRANT W/ 6" GATE VALVE
- ⑥ PROPOSED GAS METER
- ⑦ PROPOSED ELECTRIC METER
- ⑧ EXISTING SANITARY SEWER ASSUMED TO SLOPE @ 2.0% UP FROM MAIN. CONTRACTOR TO FIELD VERIFY INVERT ELEVATION PRIOR TO CONNECTION.

MN DOLI NOTES

- ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE 2020 MINNESOTA PLUMBING CODE, CHAPTER 4714. ALL PIPE, PIPE FITTINGS, TRAPS, FIXTURES, MATERIAL, AND DEVICES IN THE PLUMBING SYSTEM SHALL MEET THEIR RELEVANT CODE SECTION REQUIREMENTS INCLUDING:
 - 1.1. BE LISTED OR LABELED (THIRD PARTY CERTIFIED) BY A LISTING AGENCY
 - 1.2. COMPLY WITH THE APPROVED RECOGNIZED STANDARDS REFERENCED IN THE 2020 MINNESOTA PLUMBING CODE.
 - 1.3. BE FREE OF DEFECTS.
- PVC SANITARY SEWERS MUST MEET ASTM D1785, D2665, D3034, F794, F891, F949, OR F1488 WITH APPROVED FITTINGS. SOLVENT WELDED JOINTS MUST USE ASTM F656 PURPLE PRIMER AND ASTM D2564 CEMENT. THE SEWER MUST BE INSTALLED BY OPEN TRENCH ON A CONTINUOUS GRANULAR BED PER ASTM D2321.
- PE AND HDPE WATER SERVICES MUST MEET ASTM D2239, ASTM D2737, ASTM D3035, AWWA C901, OR CSA B137.1 INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS (SEE 2015 MN PLUMBING CODE TABLE 604.1, SECTION 605.7, AND INSTALLATION STANDARD 7). JOINTS MUST BE HEAT FUSED OR USE APPROVED INSERT FITTINGS WITH STAINLESS STEEL CLAMPS. AN ACCESSIBLE BLUE 18 AWG MINIMUM TRACER WIRE SUITABLE FOR DIRECT BURY MUST BE PROVIDED (SEE SECTION 604.9).
- STORM SEWERS WITHIN 10 FEET OF THE BUILDING OR WATER SERVICE MUST BE TESTED PER 2015 MN PLUMBING CODE SECTION 1109.0.
- HDPE STORM AND SANITARY SEWERS MUST MEET ASTM F714. WHEN APPROVED FOR USE AS A STORM OR SANITARY SEWER MATERIAL, INSTALLATION OF HDPE MUST MEET THE FOLLOWING REQUIREMENTS:
 - 5.1. WATER TIGHT JOINTS MUST BE USED AT ALL CONNECTIONS, INCLUDING STRUCTURES.
 - 5.2. INSTALLATION MUST BE BY OPEN TRENCH ON A CONTINUOUS GRANULAR BED PER ASTM D2321.
 - 5.3. THE CONNECTION BETWEEN HDPE TO A BUILDING SEWER OF DIFFERENT MATERIAL MUST BE MADE THROUGH AN APPROVED TRANSITION COUPLING FOR THE INTENDED MATERIALS.

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PRINT NAME: BRIAN J. FISHER
 SIGNATURE:
 DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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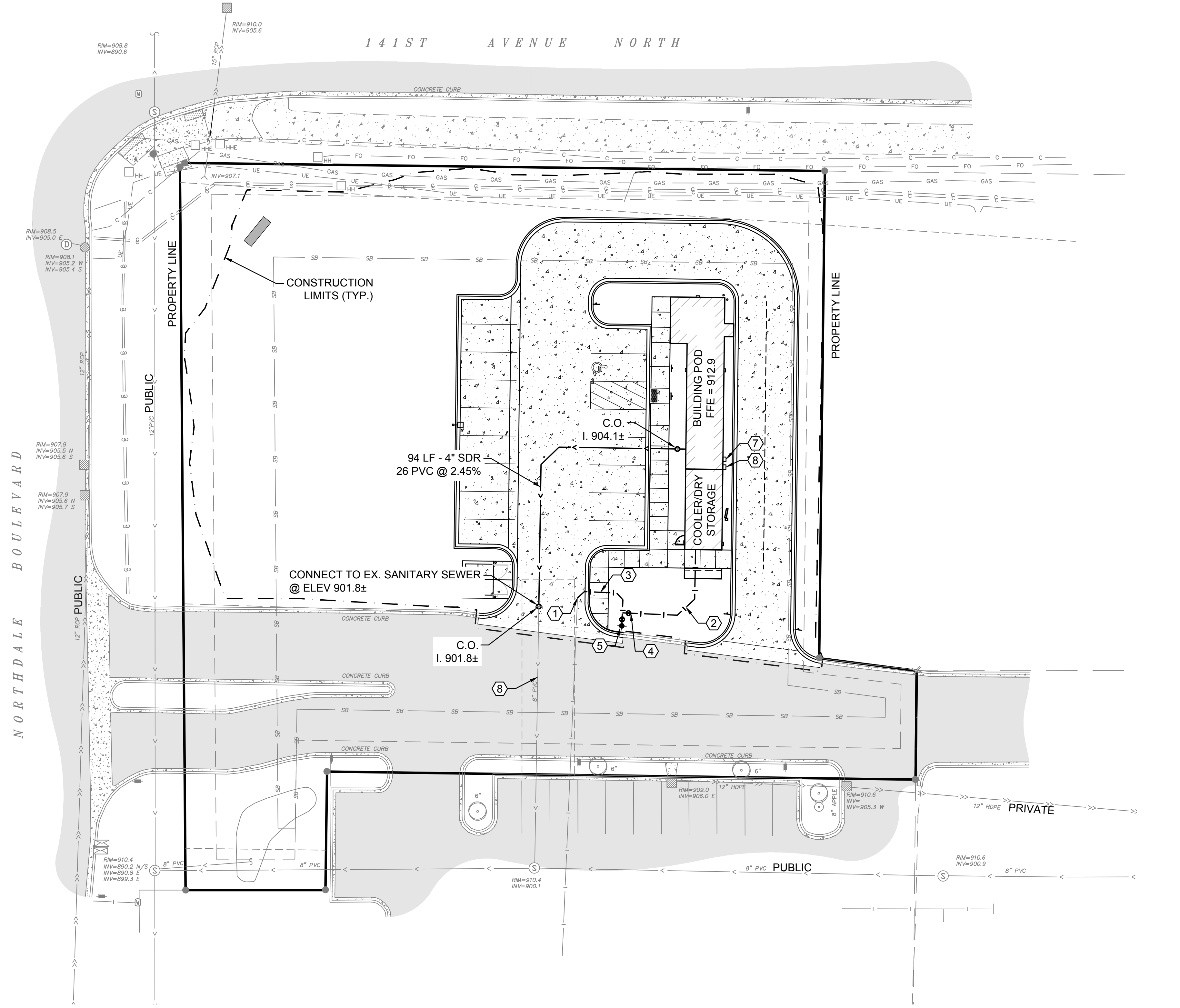
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UTILITY PLAN

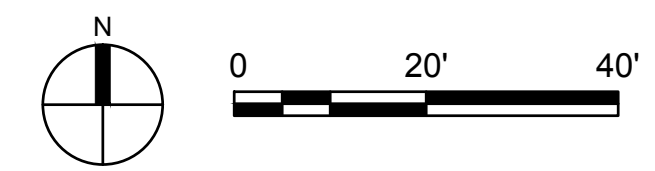
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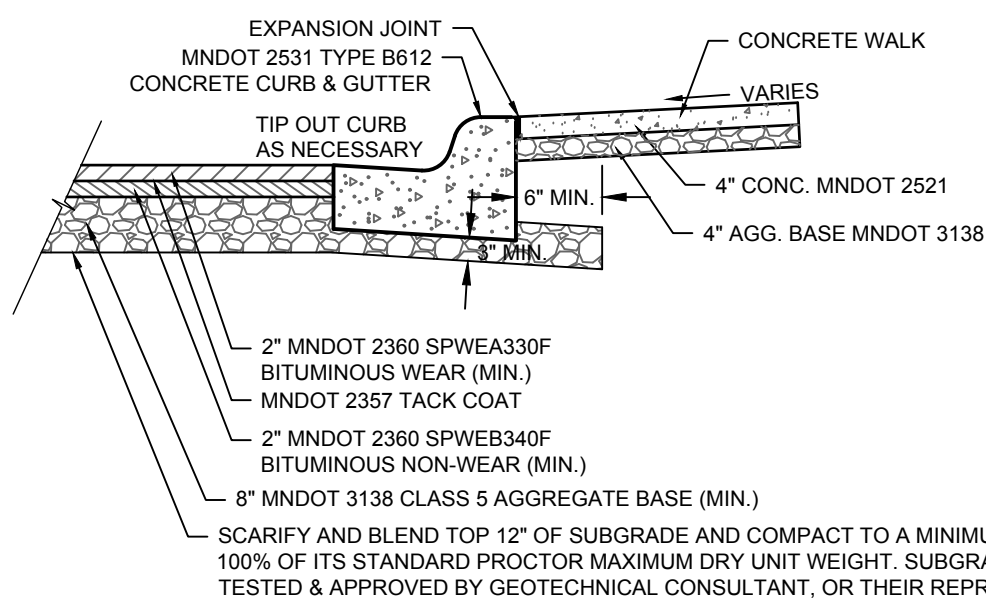
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UTILITY PLAN
 SCALE: 1"=20'



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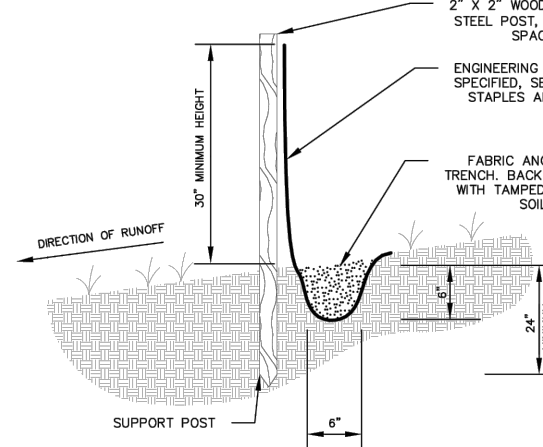


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BITUMINOUS PAVING & SIDEWALK SECTION

1



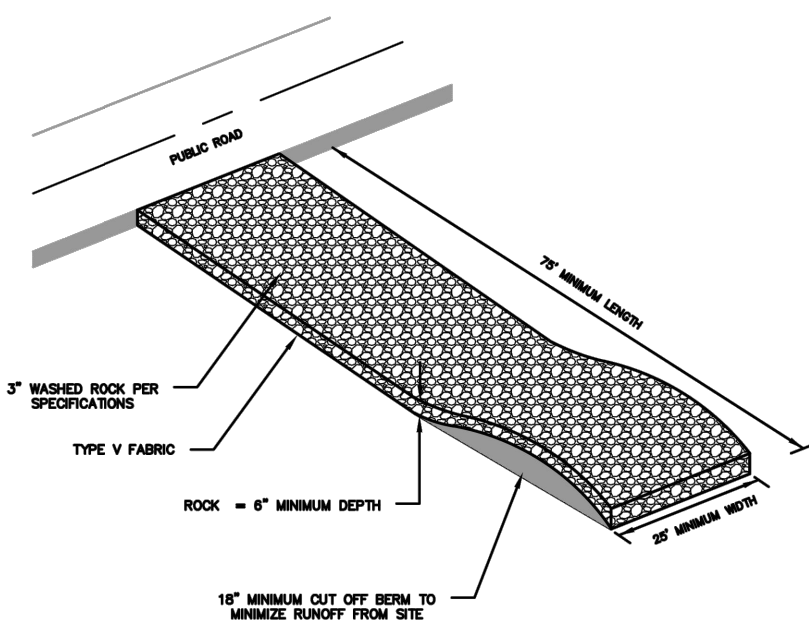
DOUBLE SILT FENCE TO BE REQUIRED NEAR WETLANDS



STANDARD SILT FENCE

Standard Details
REVISED SEPTEMBER, 2020
EROS-1

2



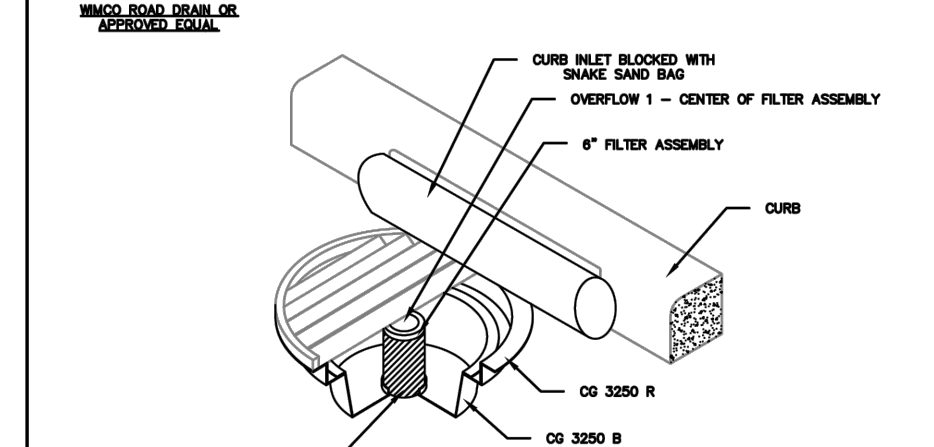
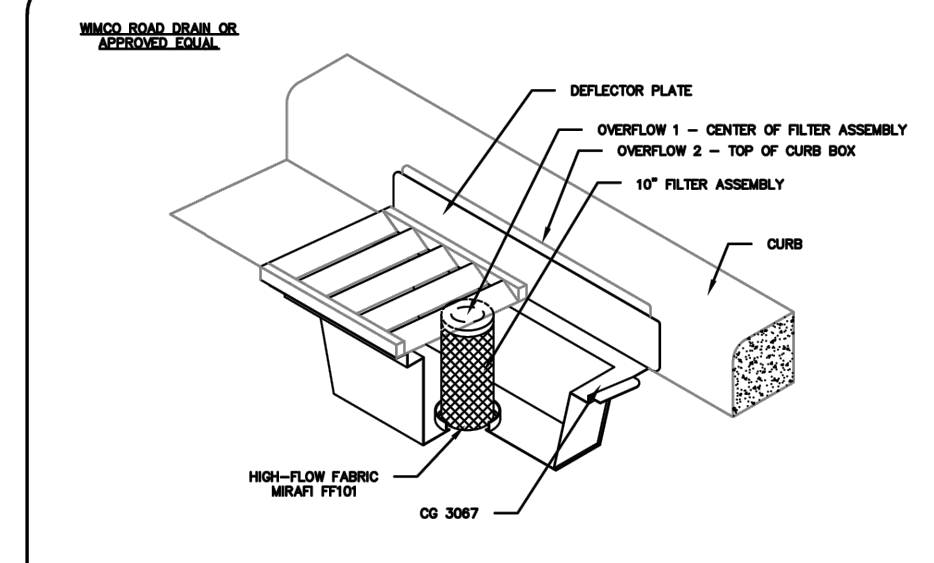
NOTE:
TYPE V FILTER FABRIC SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH MATERIAL. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF FLOWING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DRYOUT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
IN AREAS WITH CONCRETE WALK THERE SHALL BE 6" OF SAND PLACED OVERTOP THE SIDEWALK PRIOR TO PLACEMENT OF THE 3" WASHED ROCK.



CONSTRUCTION ROCK ENTRANCE

Standard Details
REVISED SEPTEMBER, 2020
EROS-10

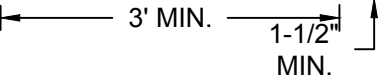
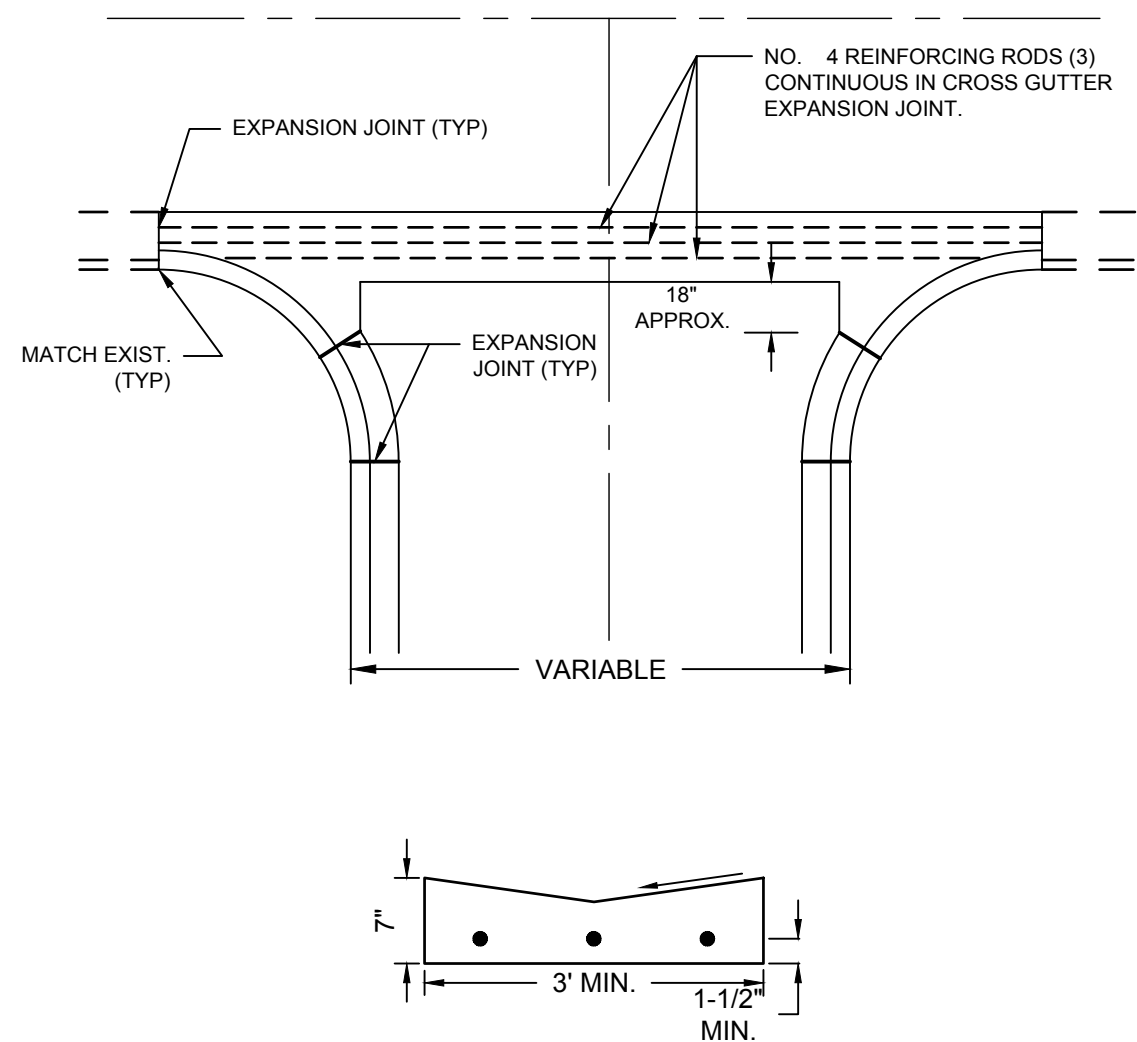
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CURB INLET PROTECTION

Standard Details
REVISED SEPTEMBER, 2020
EROS-15

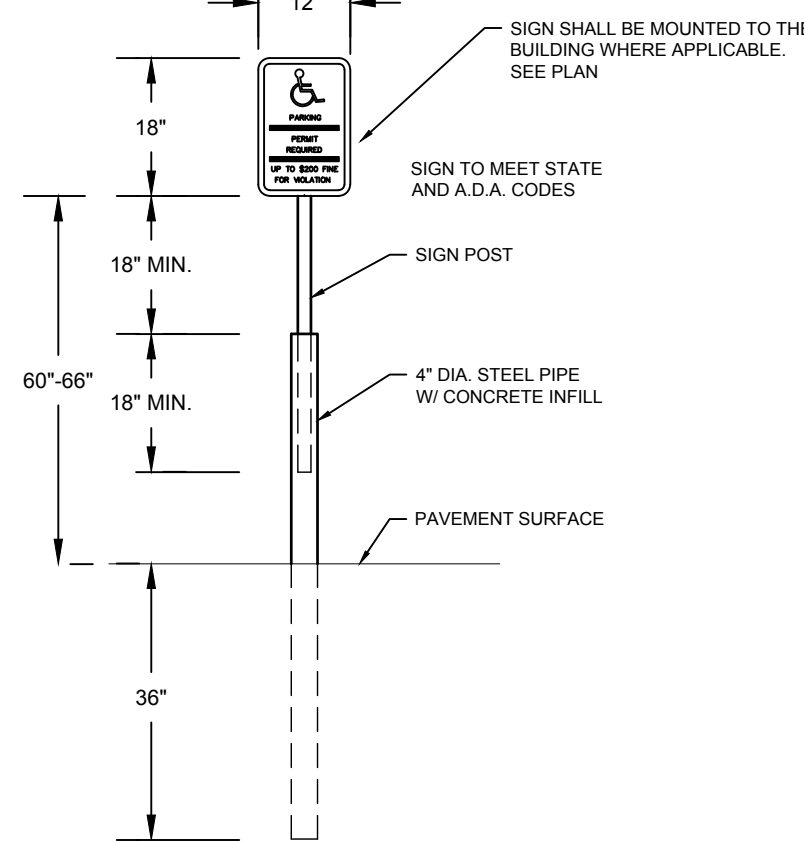
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CONCRETE VALLEY GUTTER

5

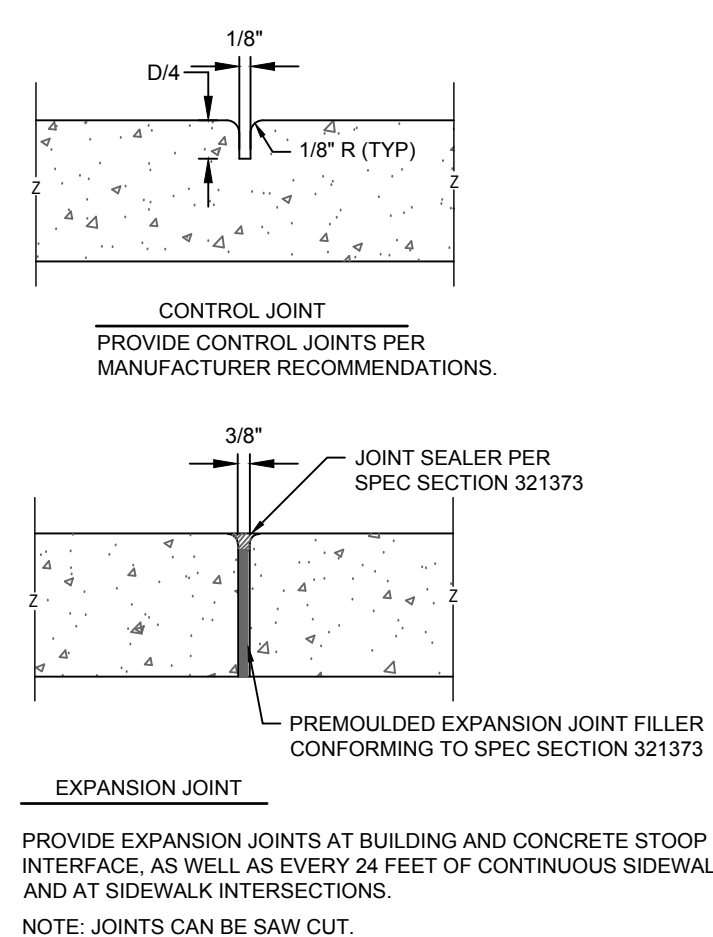


NOTES:
SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.
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HANDICAPPED SIGN

6

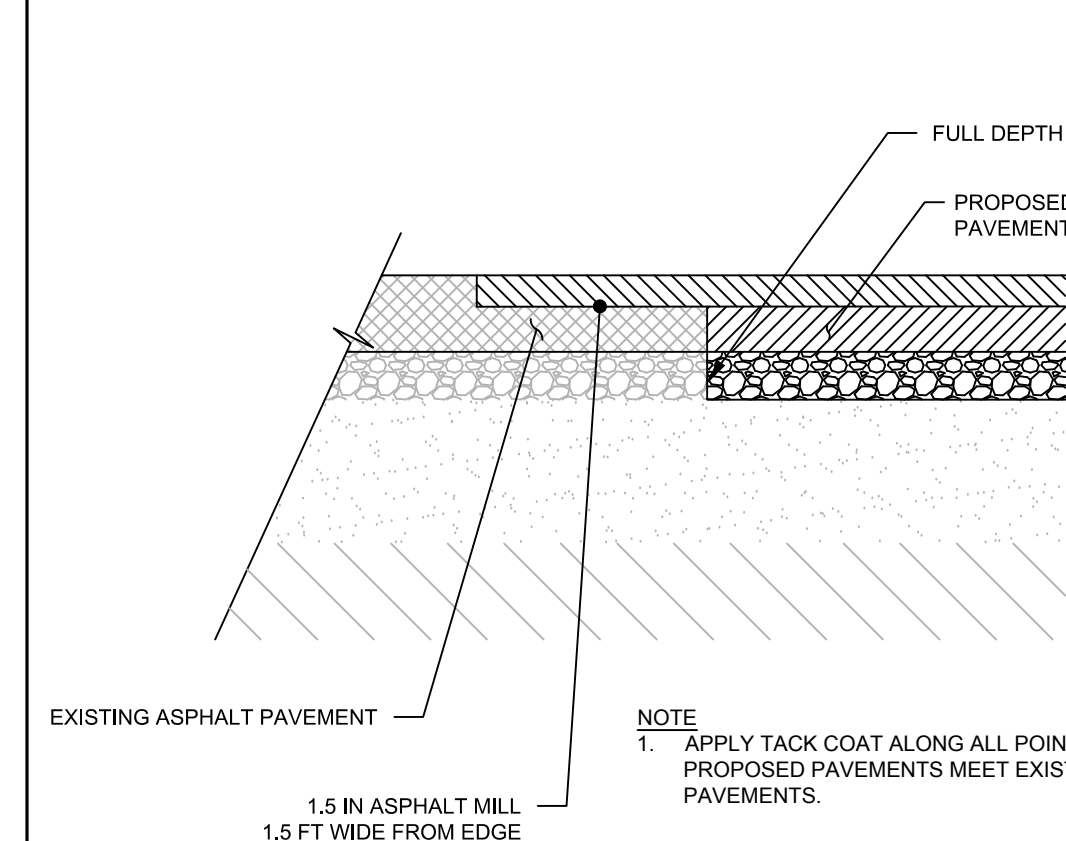


PROVIDE EXPANSION JOINTS AT BUILDING AND CONCRETE STOOP INTERFACE, AS WELL AS EVERY 24 FEET OF CONTINUOUS SIDEWALK AND AT SIDEWALK INTERSECTIONS.
NOTE: JOINTS CAN BE SAW CUT.

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JOINT DETAIL

7



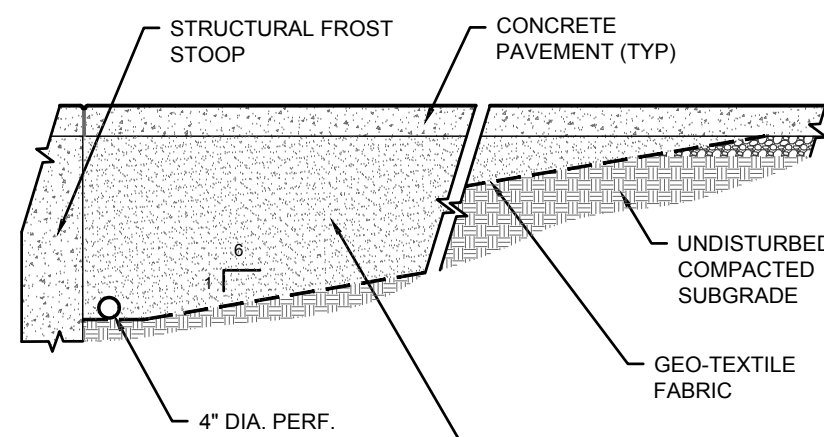
NOTE:
1. APPLY TACK COAT ALONG ALL POINTS WHERE PROPOSED PAVEMENTS MEET EXISTING PAVEMENTS.

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BITUMINOUS LAP JOINT

8

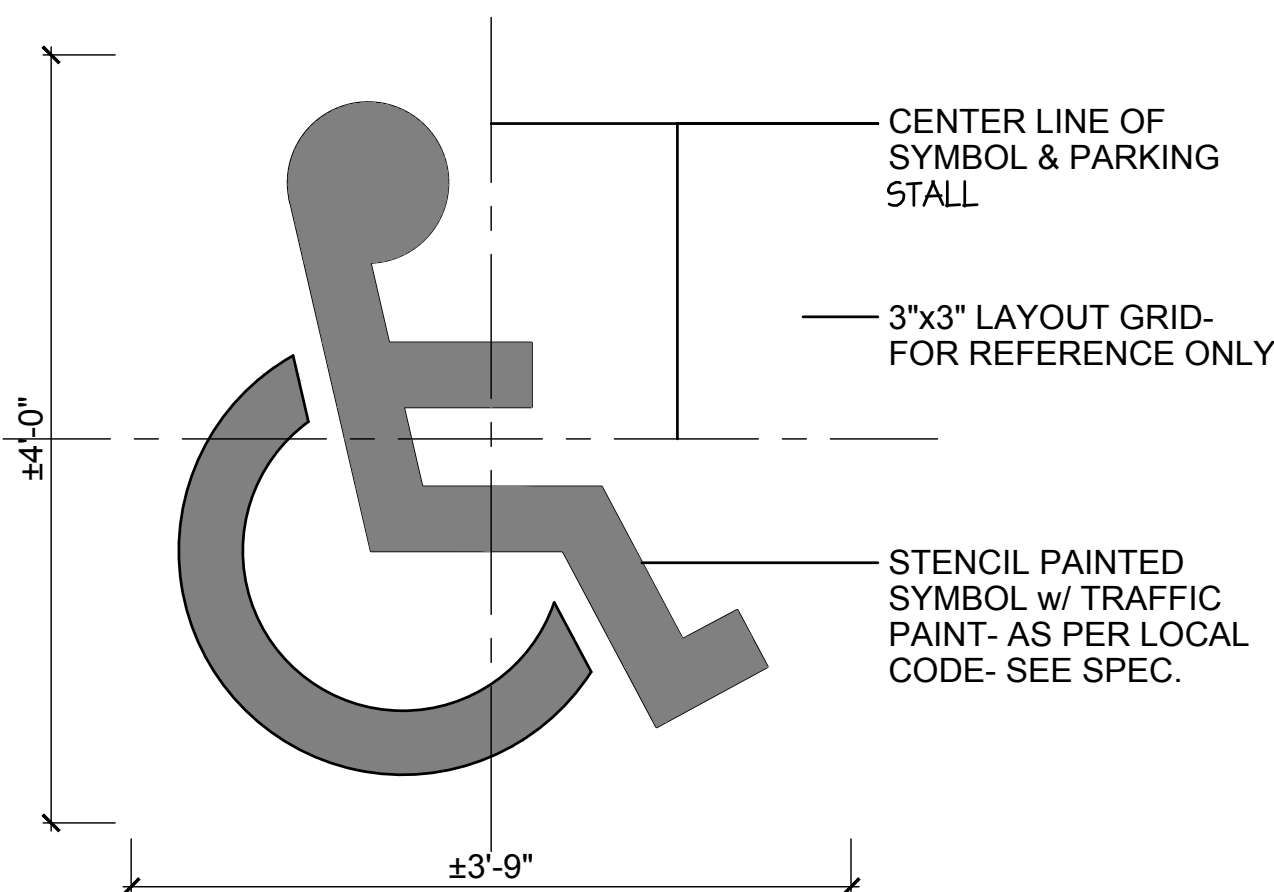


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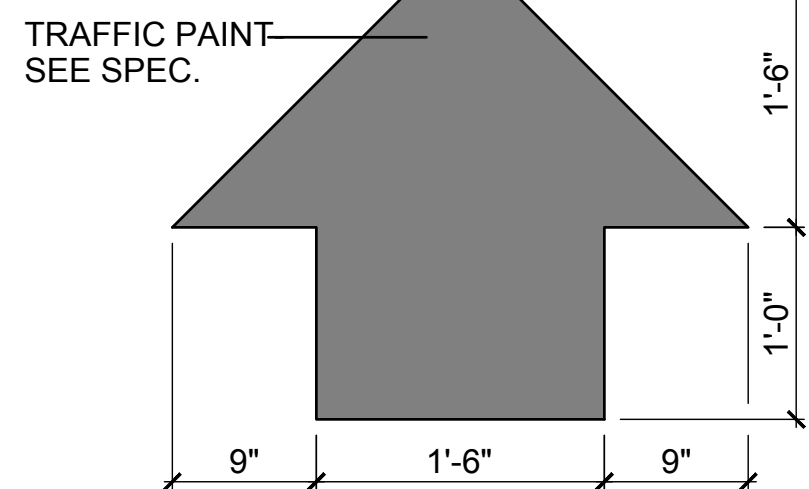
FROST STOOP DETAIL

9



HANDICAP PARKING SYMBOL

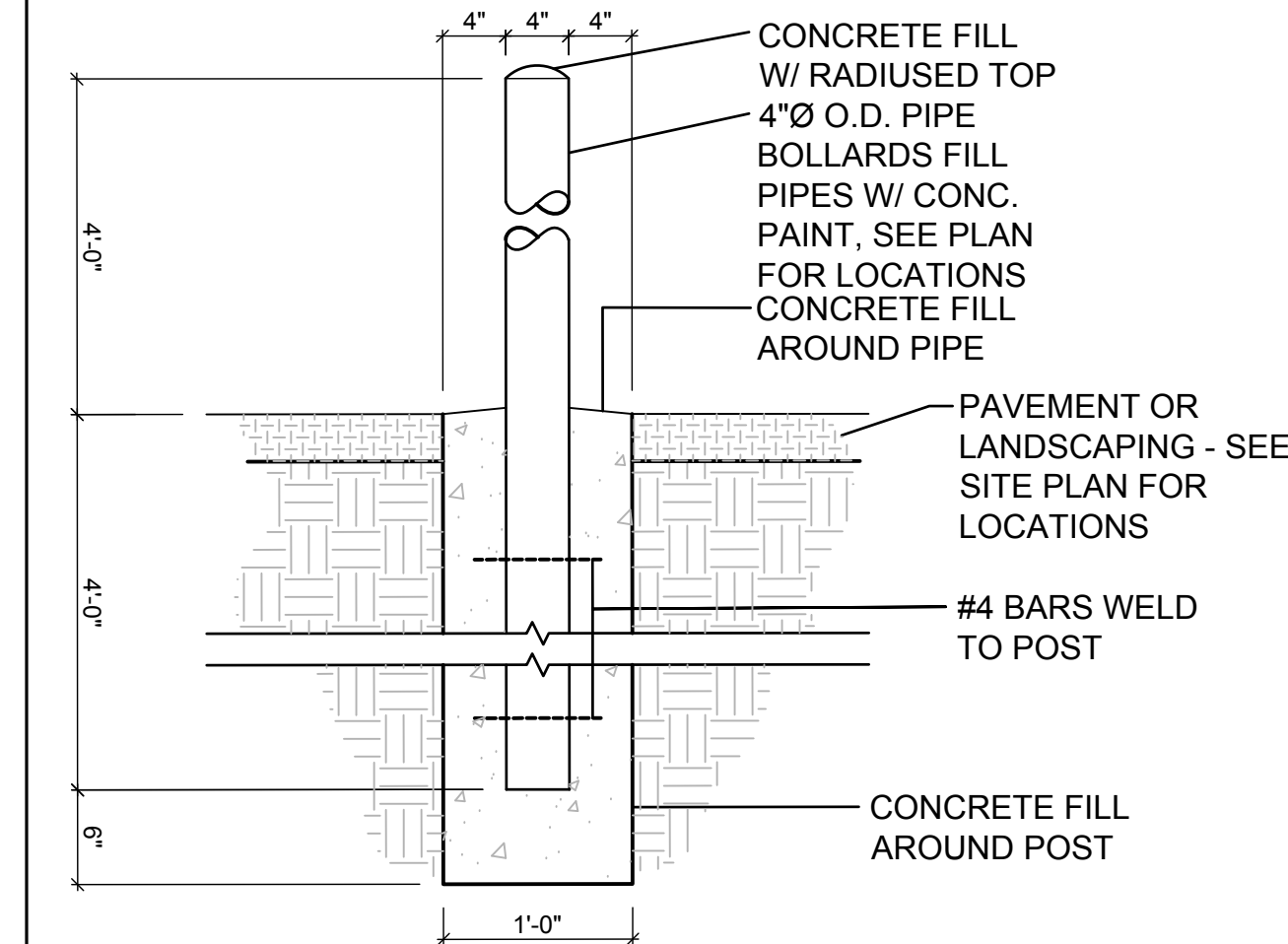
10



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DIRECTIONAL ARROW

11



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CONCRETE BOLLARD DETAIL

12



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LITTLE CAESARS

141ST AVE N &
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PRINT NAME: BRIAN J. FISHER

SIGNATURE: [Signature]
DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW
05-07-2025

DESIGNED:	DRAWN:	CHECKED BY:
BJF	BJN	BJF

DRAWING TITLE

CIVIL DETAILS

DRAWING NO.

C501

PLOTTED:	COMM. NO.
05/07/2025	18586

PLANT SCHEDULE

SYMBOL	CODE	QTY	COMMON / BOTANICAL NAME	CONT.	SIZE
DECIDUOUS TREES					
	Gi	1	SKYLINE® HONEY LOCUST GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	B&B	2 - 1/2" CAL.
	Tb	2	BOULEVARD AMERICAN LINDEN TILIA AMERICANA 'BOULEVARD'	B&B	2 - 1/2" CAL.
EVERGREEN TREES					
	Tb3	6	TECHNITO ARBORVITAE THUJA OCCIDENTALIS 'BAIL JOHN'	B&B	6' HT.
DECIDUOUS SHRUBS					
	Rg	7	GRO-LOW FRAGRANT SUMAC RHUS AROMATICA 'GRO-LOW'	CONT.	5 GAL.
PERENNIALS					
	Ck	27	KARL FOERSTER FEATHER REED GRASS CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	CONT.	3 GAL.
	Nw	7	WALKER'S LOW CATMINT NEPETA X FAASSENII 'WALKER'S LOW'	CONT.	1 GAL.

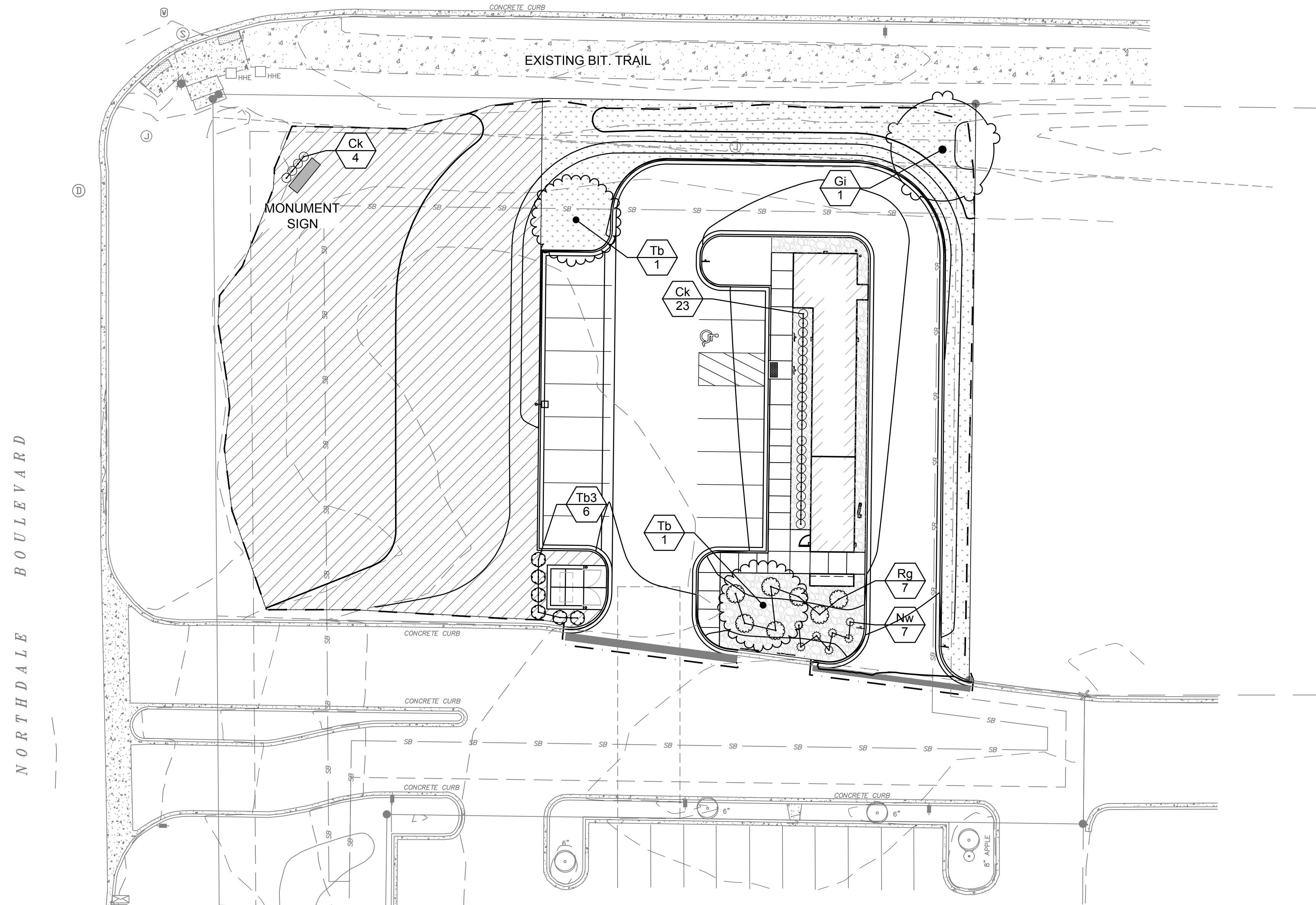
LEGEND

	PROPERTY LIMITS
	CONSTRUCTION LIMITS
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	SOD WITH IRRIGATION
	NATIVE GRASS SEED MIX
	WASHED RIVER ROCK MULCH

NOTES

- PER CITY OF ROGERS, IRRIGATION IS REQUIRED.
- IF A DISCREPANCY IS FOUND, THE PLANTING PLAN SHALL OVERRIDE THE PLANT SCHEDULE.
- SEE CIVIL FOR EROSION CONTROL BLANKET LOCATIONS.

141ST AVENUE NORTH



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PRINT NAME: CURT CLARKE

SIGNATURE:

DATE: 05/07/2025 LICENSE NO. 45613

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED:	DRAWN:	CHECKED BY:
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DRAWING TITLE

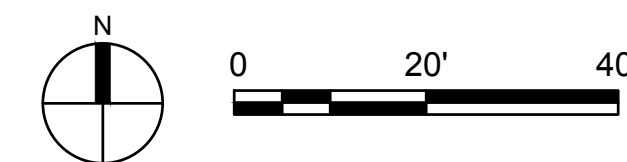
LANDSCAPE PLAN

DRAWING NO.

L101

PLOTTED: 05/07/2025	COMM. NO. 18586
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1 LANDSCAPE PLAN
SCALE: 1"=20'

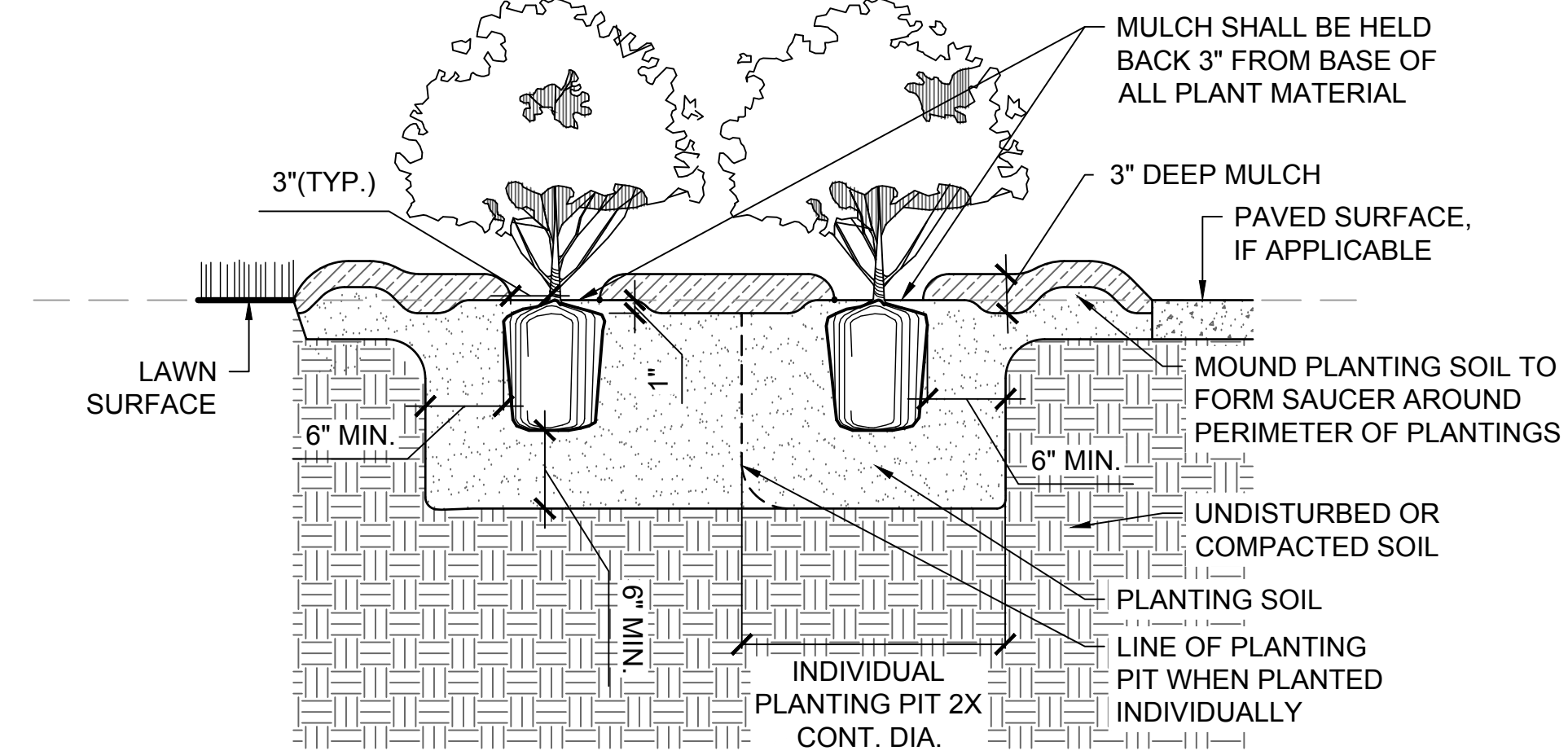


GENERAL LANDSCAPE NOTES:

- LANDSCAPE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO BECOME COMPLETELY FAMILIAR WITH SITE CONDITIONS.
- ALL ROUGH AND FINISH GRADING TO BE DONE BY OTHERS.
- NO PLANTING SHALL BE INSTALLED UNTIL ALL GRADING, BUILDING, CONSTRUCTION, UTILITY WORK & IRRIGATION (IF APPLICABLE) HAS BEEN COMPLETED IN THE AREAS TO BE PLANTED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY ALL UNDERGROUND CABLES, CONDUITS, WIRES, ETC., ON THE PROPERTY.
- IF THERE IS A DISCREPANCY BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLAN AND THE NUMBER OF PLANTS SHOWN IN THE PLANT LIST, THE NUMBER OF PLANTS SHOWN ON THE PLAN WILL TAKE PRECEDENCE.
- ALL PROPOSED PLANT MATERIAL SHALL BE LOCATED CAREFULLY AS SHOWN ON THE PLAN. IF THE CONTRACTOR BELIEVES AN ERROR HAS BEEN MADE REGARDING SPACING OR LOCATION OF THE PLANT MATERIAL INDICATED ON THE PLAN, NOTIFY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- THE CONTRACTOR IS RESPONSIBLE FOR COMPLETE MAINTENANCE OF THE PLANT MATERIAL (WATERING, SPRAYING, FERTILIZING, MOWING, ETC.) UNTIL THE WORK HAS BEEN ACCEPTED, BY THE OWNER.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS TO PROPERTY DAMAGE FROM PLANTING OPERATIONS AT NO COST TO THE OWNER.
- ALL NEWLY PLANTED PLANT MATERIAL SHALL BE GUARANTEED THROUGH ONE CALENDAR YEAR STARTING FROM THE DATE OF ACCEPTANCE ESTABLISHED BY THE OWNER.
- THE CONTRACTOR SHALL MEET WITH THE OWNER OR OWNERS REPRESENTATIVE ON SITE WHEN THEY FEEL THE PROJECT IS COMPLETE ACCORDING TO THE CONTRACT DOCUMENTS. IF ALL WORK IS SATISFACTORY AND COMPLETE ACCORDING TO THE CONDITIONS OF THE CONTRACT DOCUMENTS, THEN THE OWNER MUST DECLARE THE PROJECT COMPLETE. THIS DECLARATION WILL CONSTITUTE AS THE BEGINNING OF THE ONE (1) YEAR WARRANTEE PERIOD FOR ALL PLANT MATERIAL. THE OWNER SHALL PROVIDE A LETTER WITH SIGNATURE STATING THE DATE OF ACCEPTANCE.
- WIND BURN OR OTHERWISE DAMAGED PLANT MATERIAL WILL NOT BE ACCEPTED.
- THE PRACTICE OF STAKING SHOULD NOT ALLOW NAILS, SCREWS, WIRES, ETC. TO PENETRATE THE OUTER SURFACE OF THE TREES.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ALL TREE STAKES, GUYS, STRAPS AND TRUNK PROTECTION MEASURES FOLLOWING THE COMPLETION OF THE WARRANTEE PERIOD OR AS DIRECTED BY THE OWNER.
- LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE THE OWNER WITH MAINTENANCE INFORMATION DURING THE GUARANTEE PERIOD RELATING TO WATERING, FERTILIZING, PRUNING, PEST CONTROL, AND RELATED ITEMS. THIS WILL BE PREPARED AND DELIVERED TO THE OWNER AFTER PROVISIONAL INSPECTION APPROVAL HAS BEEN GIVEN BY THE OWNER AND/OR LANDSCAPE ARCHITECT.
- INSTALL CORRUGATED PLASTIC TREE GUARDS, WHITE IN COLOR, WITH THE SIZE OF TUBE 1" DIA. (MIN.) LARGER THAN THE CALIPER OF THE TREE TO BE PROTECTED.
- LANDSCAPE FABRIC (FILTER MAT) TO HAVE A COMBINED WEIGHT OF 4.5-5.5 OZ. PER S.Y. FABRIC SHOULD BE U.V. STABILIZED AND HAVE A FIVE YEAR MINIMUM WEATHERABILITY FACTOR IN FULL SUNLIGHT. FABRIC TO BE PHILLIPS DUON OR EQUIVALENT. SAMPLE REQUIRED FOR APPROVAL.
- 3" DEPTH SHREDDED HARDWOOD MULCH SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS THAT ARE ISOLATED FROM GROUND COVER AREAS AND GENERAL SHRUB MASSES.
- 3" DEPTH 1" TO 1-1/2" WASHED RIVER ROCK SHALL BE INSTALLED OVER LANDSCAPED FABRIC AS INDICATED ON THE PANS & DETAILS.
- CALIPER OF TREES UP TO AND INCLUDING 4" SHALL BE MEASURED AT 6" ABOVE GROUND LEVEL, AND 12" ABOVE GROUND LEVEL FOR LARGER SIZES.
- FOR BALLED & BURLAP PLANT MATERIAL, REMOVE THE TOP HALF OF THE BURLAP FROM THE ROOT BALL. WIRE CAGES, STRAPS, ETC. SHALL BE REMOVED FROM THE TOP HALF OF THE ROOTBALL BEFORE INSTALLATION.
- ALL CONTAINER MATERIAL SHALL HAVE BEEN GROWN IN CONTAINER FOR A MINIMUM OF 6 MONTHS PRIOR TO INSTALLATION.
- SHRUBS AND GROUND COVER SHALL BE PLANTED A MINIMUM OF ONE HALF THEIR ON-CENTER SPACING FROM PAVING EDGE UNLESS OTHERWISE NOTED.
- DECIDUOUS SHRUBS SHALL HAVE MINIMUM OF FIVE (5) CANES AT SPECIFIED HEIGHT UNLESS OTHERWISE NOTED IN PLANT SCHEDULE.
- ALL PERENNIAL BEDS TO RECEIVE ROCK MULCH SHALL HAVE LANDSCAPE FABRIC INSTALLED WITH HOLES FOR PLANTS CUT 2.5 TIMES THE DIAMETER OF THE CONTAINER.
- LANDSCAPE CONTRACTOR SHALL PROVIDE AND INSTALL NURSERY GROWN PLANT MATERIAL CONFORMING TO THE REQUIREMENTS AND RECOMMENDATIONS OF THE LATEST EDITION OF ANSI Z60.1 STANDARDS UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIFICATIONS.

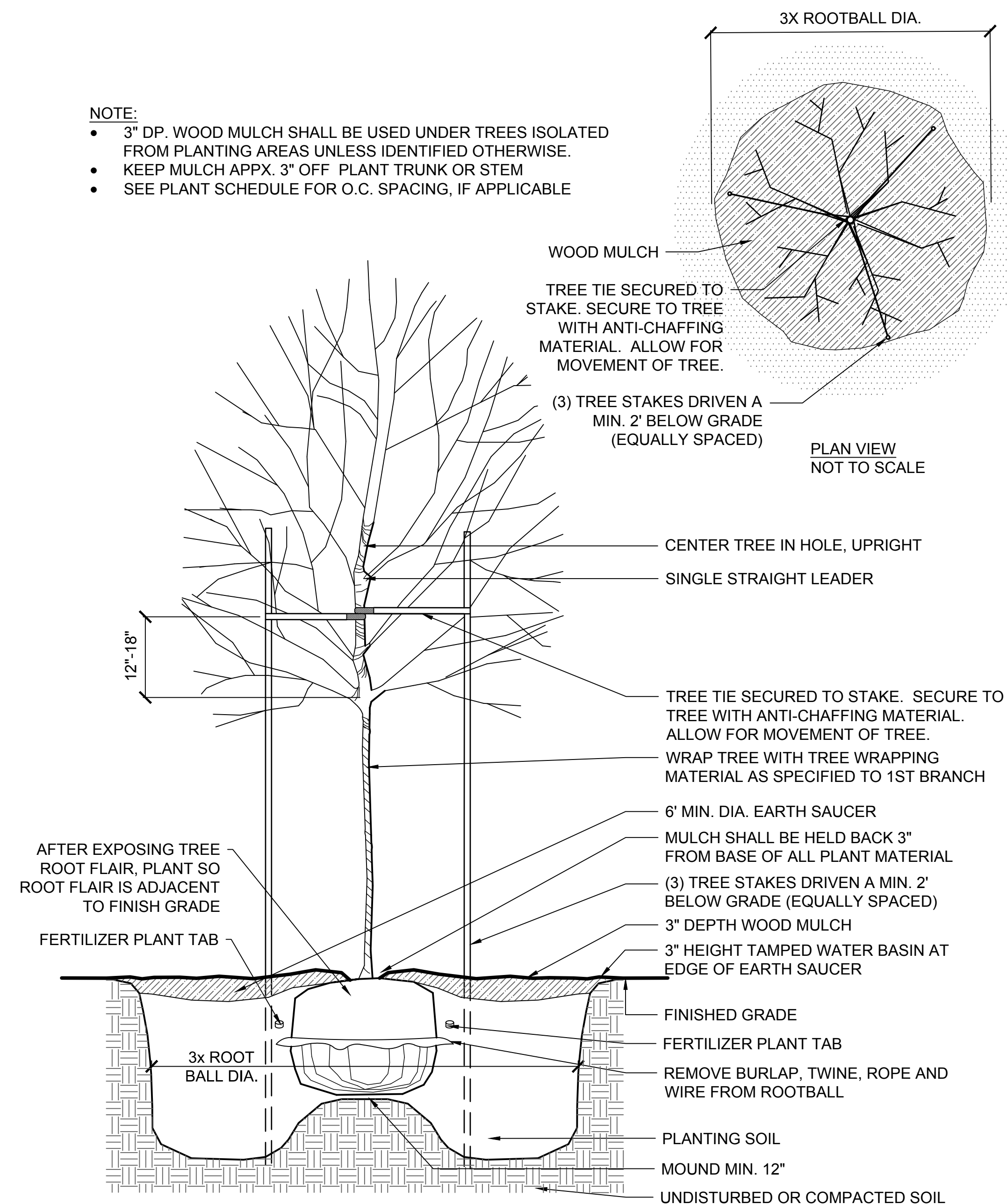
GENERAL IRRIGATION NOTES:

- PRIOR TO CONSTRUCTION, VERIFY WITH THE GENERAL CONTRACTOR AND ALL LOCAL UTILITY COMPANIES TO LOCATE EXACT LOCATIONS OF UNDERGROUND UTILITIES.
- THE IRRIGATION SHALL BE A DESIGN/BUILD SYSTEM BY THE CONTRACTOR. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN IRRIGATION LAYOUT PLAN AND SPECIFICATIONS AS PART OF THE SCOPE OF WORK WHEN BIDDING. THESE SHALL BE APPROVED BY THE OWNER PRIOR TO ORDER AND/OR INSTALLATION.
- VALVE AND CIRCUITS SHALL BE SEPARATED BASED ON WATER USE, SO THAT TURF AREAS ARE WATERED SEPARATELY FROM SHRUB AND GROUND COVER AREAS. IRRIGATION HEADS IN TURF AREAS SHALL BE VALVED SEPARATELY FROM SHRUB AND GROUND COVER AREAS. IT IS RECOMMENDED THAT FULL SUN AND SHADY AREAS TO BE VALVED SEPARATELY AS WELL AS HIGH RUN-OFF AND LOW RUN-OFF AREAS TO BE VALVED SEPARATELY.
- CONFIRM LIMITS OF IRRIGATION, EXISTING AND FUTURE HARDSCAPE AND BUILDING LOCATIONS PRIOR TO THE DESIGN OF THE IRRIGATION SYSTEM.
- CONTRACTOR SHALL VERIFY WATER SOURCE LOCATION AND PRESSURE AND SUPPLY A SYSTEM THAT PROVIDES FULL AND COMPLETE COVERAGE TO ALL AREAS TO BE IRRIGATED.
- SYSTEM SHOULD BE DESIGNED TO OPERATE AT UP TO 300 GPM @ 90 PSI TO COMPLETE WATER SCHEDULES WITHIN 12-HOURS MAXIMUM.
- RAIN SENSORS AND OTHER WATER SAVING TECHNOLOGIES SHALL BE INCLUDED WITHIN THE IRRIGATION DESIGN.
- PROVIDE THE OWNER WITH AN OPERATING SCHEDULE THAT WORKS WITH THE APPROVED LAYOUT PLAN AND IDENTIFY ANY FIELD ADJUSTMENTS PRIOR TO PROJECT COMPLETION.
- AVOID OVER-SPRAY ONTO ROADS, SIDEWALKS, SIGNS AND PARKING AREAS. SPRINKLER ARCS SHALL BE DETERMINED ON SITE BY THE IRRIGATION INSTALLER TO PROVIDE THE MAXIMUM COVERAGE POSSIBLE. CAREFULLY ADJUST THE ARCS AND RADIUS OF EACH SPRINKLER TO PROVIDE HEAD-TO-HEAD COVERAGE.
- LOCATE VALVE BOXES AWAY FROM ROAD/CURB SO THEY ARE LESS VISUAL WHERE APPLICABLE.
- DO NOT TRENCH THROUGH THE ROOT BALLS OF NEW PLANTINGS.
- MAINLINE PIPING BENEATH TRAFFIC AREAS SHALL BE INSTALLED WITH A MINIMUM EARTH COVER OF 30-INCHES FROM BOTTOM OF ROAD SUB-GRADE AND CONTAIN SLEEVES NOT LESS THAN TWO NOMINAL DIMENSIONS GREATER THAT THE PIPE PASSING THROUGH.
- IRRIGATION INSTALLER SHALL FURNISH AND INSTALL SLEEVE MATERIAL UNDER ALL ROADWAYS, WALKS AND DRIVEWAYS WHERE NECESSARY.
- TOP OF MAINLINES SHALL BE AT LEAST 30-INCHES BELOW GRADE IN TURF AREAS.
- TOP OF LATERAL LINES SHALL BE AT LEAST 18-INCHES BELOW GRADE.
- MAINLINE PRESSURE PIPE FITTINGS 3-INCHES AND LARGER SHALL BE PUSH ON GASKET JOINED AND SHALL HAVE MECHANICAL JOINT RESTRAINTS. MAINLINE PRESSURE PIPE FITTINGS 2.5-INCHES AND SMALLER SHALL BE GLUED AND SHALL HAVE CONCRETE THRUST BLOCKS AT FITTINGS THAT COMPRISE CHANGE IN DIRECTION.
- OTHERS SHALL FURNISH, INSTALL AND BRING 24-INCHES ABOVE GRADE A MUNICIPAL POTABLE STUB FOR IRRIGATION, COORDINATE WITH GENERAL CONTRACTOR.
- INSTALLER IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE BACKFLOW PREVENTOR, WATER METER AND BOOSTER PUMP, IF APPLICABLE.
- IRRIGATION CONTROL WIRE SHALL BE DIGITAL TWO-WIRE, UL LISTED FOR DIRECT BURIAL.
- CONNECT ALL ELECTRICAL WIRING IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL ELECTRIC UTILITY CODES INCLUDING:
 - ALL LOW VOLTAGE IRRIGATION CONTROL WIRE SHALL BE INSTALLED WITH THE MAINLINE PIPE WHERE POSSIBLE
 - DO NOT LOOP THE LOW VOLTAGE IRRIGATION CONTROL WIRE PATH.
 - SNAKE WIRE AT BOTTOM OF TRENCH BENEATH MAINLINE.
 - PROVIDE 18-INCH OF SLACK CONTROL WIRE AT ALL CHANGES IN DIRECTION.
 - PROVIDE 24-INCH OF SLACK CONTROL WIRE AT EACH REMOTE CONTROL VALVE COILED INSIDE VALVE BOX.
 - ALL WIRE SPLICES SHALL BE WATERTIGHT CONNECTORS AND CONTAINED IN VALVE BOX.
 - ALL WIRING BENEATH HARDSCAPES SHALL BE CONTAINED IN SLEEVING, SEPARATE FROM PIPING. ELECTRICAL SLEEVES ARE TO BE SIZED APPROPRIATELY FOR EASE OF WIRE INSTALLATION AND REPAIR.
 - ALL WIRING SHALL BE IDENTIFIED AT EACH END TO PROVIDE INDICATION AS TO WHICH LOCATION THE WIRE IS CONNECTED.
 - GROUNDING PER MANUFACTURER'S RECOMMENDATION OR LOCAL ELECTRICAL CODE.
- SCHEDULE AND PROGRAM CONTROLLER AND VALVES FOR APPROPRIATE LANDSCAPE WATER REQUIREMENTS.



1 DECIDUOUS SHRUB PLANTING DETAIL
SCALE: N.T.S.

- NOTE:**
- 3" DP. WOOD MULCH SHALL BE USED UNDER TREES ISOLATED FROM PLANTING AREAS UNLESS IDENTIFIED OTHERWISE.
 - KEEP MULCH APPX. 3" OFF PLANT TRUNK OR STEM
 - SEE PLANT SCHEDULE FOR O.C. SPACING, IF APPLICABLE



2 DECIDUOUS TREE PLANTING DETAIL
SCALE: N.T.S.

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Plymouth, MN 55441 | ae-mn.com
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Anderson Engineering of Minnesota, LLC

LITTLE CAESARS

141ST AVE N &
NORTHDAL BLVD,
ROGERS, MN 55374

FRANCHISE CONCEPTS
UNLIMITED INC.

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PRINT NAME: CURT CLARKE
SIGNATURE: [Signature]
DATE: 05/07/2025 LICENSE NO. 45613

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW
05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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DRAWING TITLE
LANDSCAPE NOTES & DETAILS

DRAWING NO.
L501
PLOTTED: 05/07/2025 COMM. NO. 18586

Y:\18586\18586 - FCU - LITTLE CAESARS - ROGERS.MN\07_Civil\01 CAD files\01 SHEETS\18586_L_PLANTING.dwg
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 May 06, 2025 - 10:12am
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Little Caesar's Enterprises, Inc.
 2211 Woodward Ave.
 Detroit, Michigan 48201-3400
 (313) 471-6000

Owner Review:
 03-12-2025

Date Issued:
 00-00-00

Revisions:
 00-00-00
 00-00-00

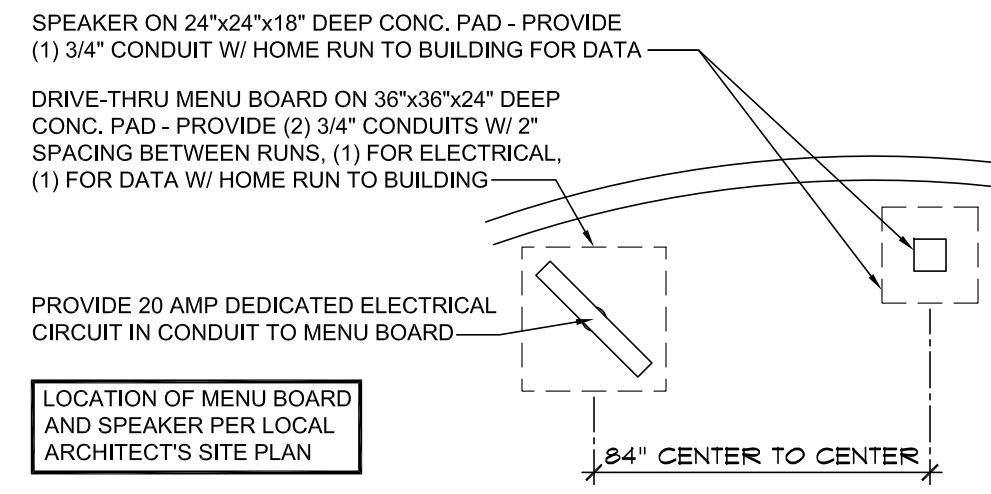
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 J.B.

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Job:
 Little Caesars

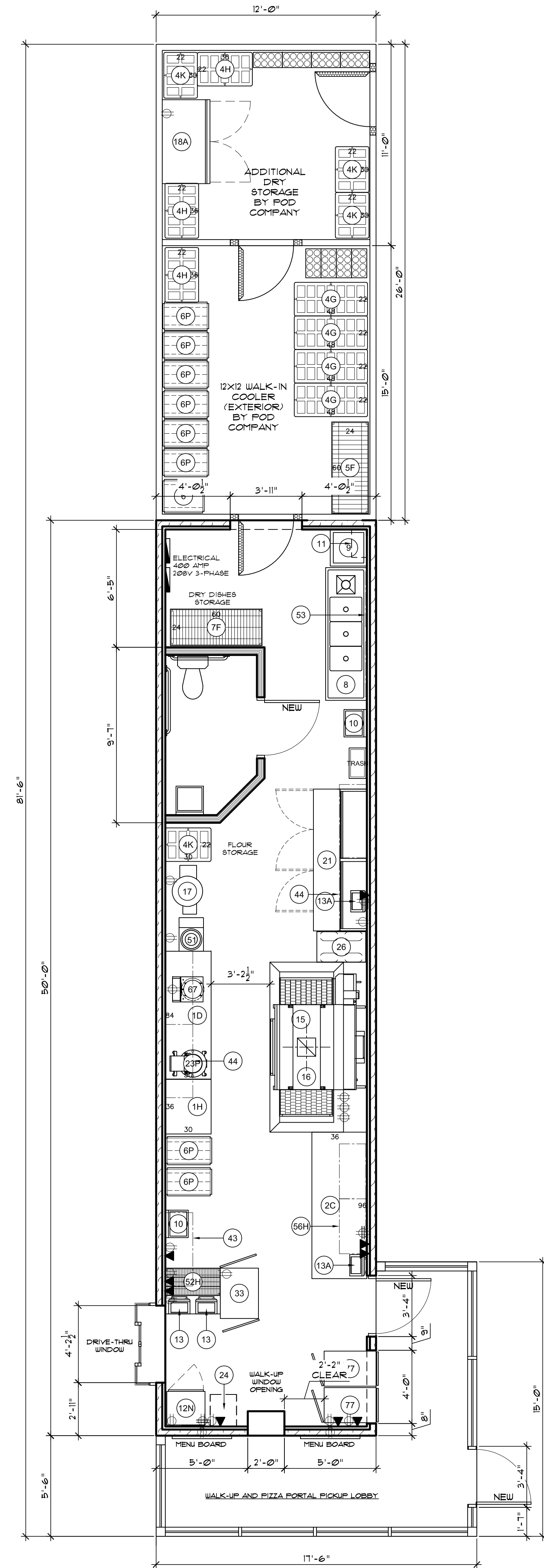
Name:
 1111-XXXX
 POD

Brian Conneran
 141st Ave N & Northdale
 Rogers, MN



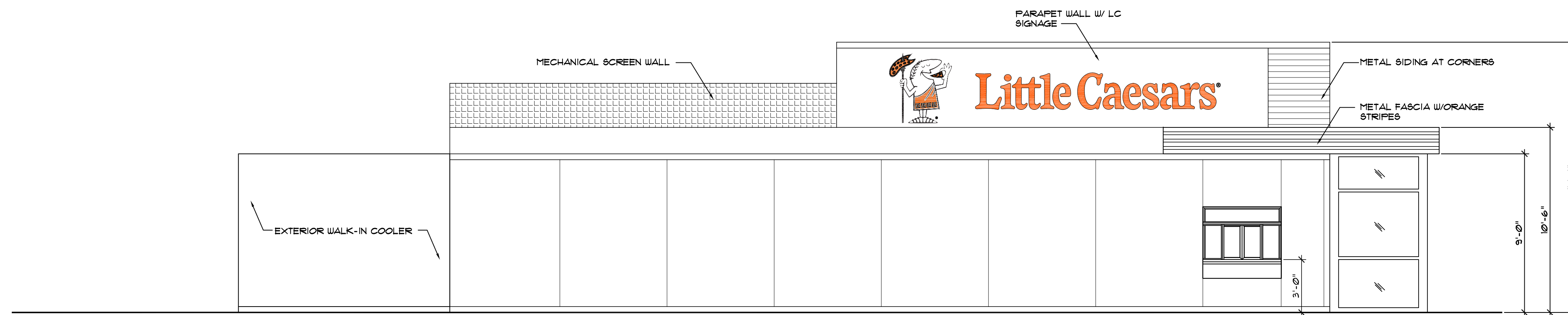
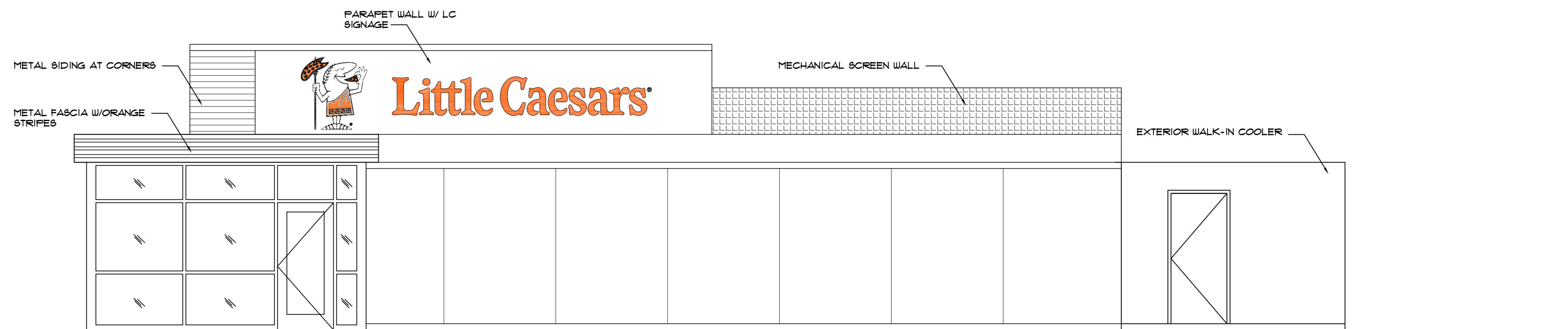
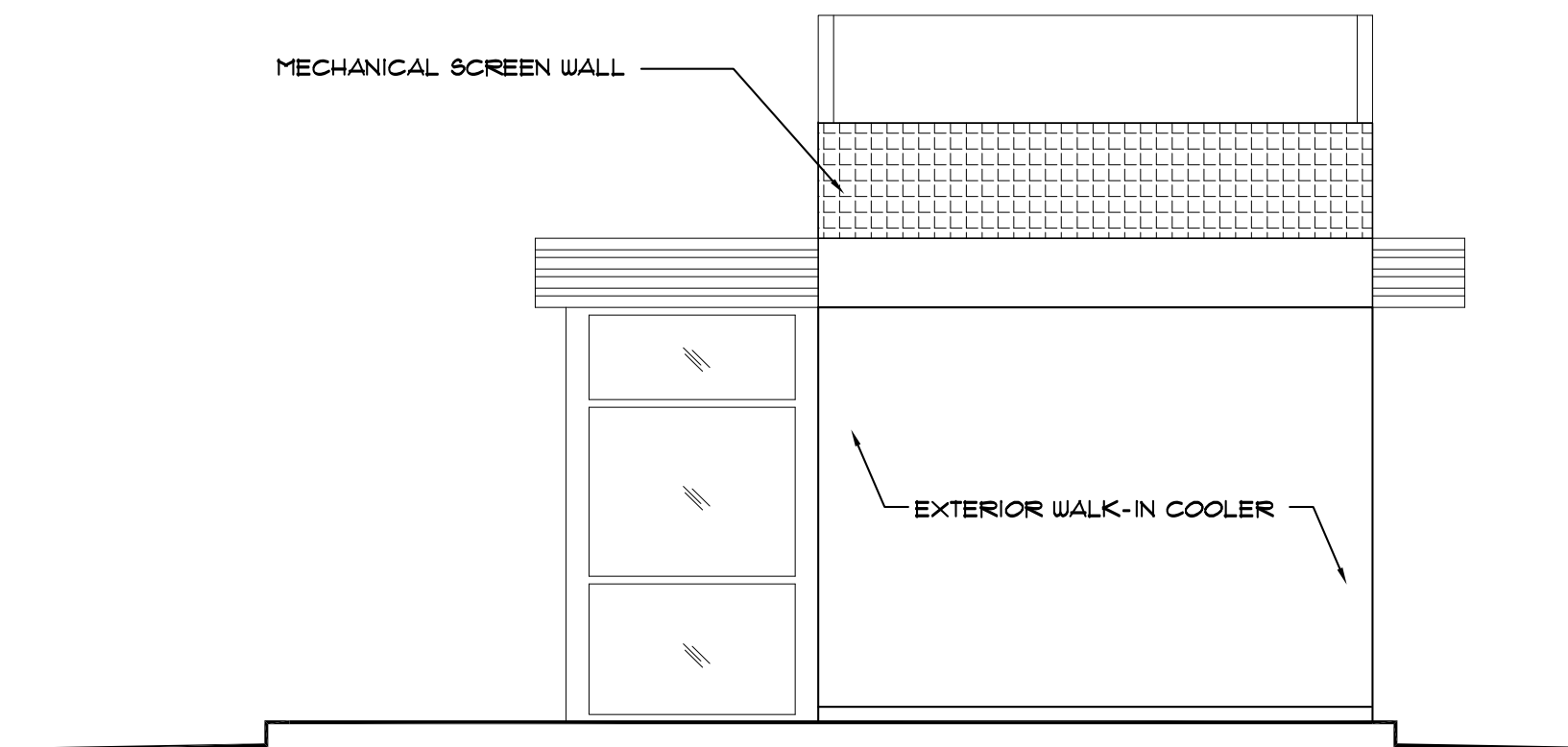
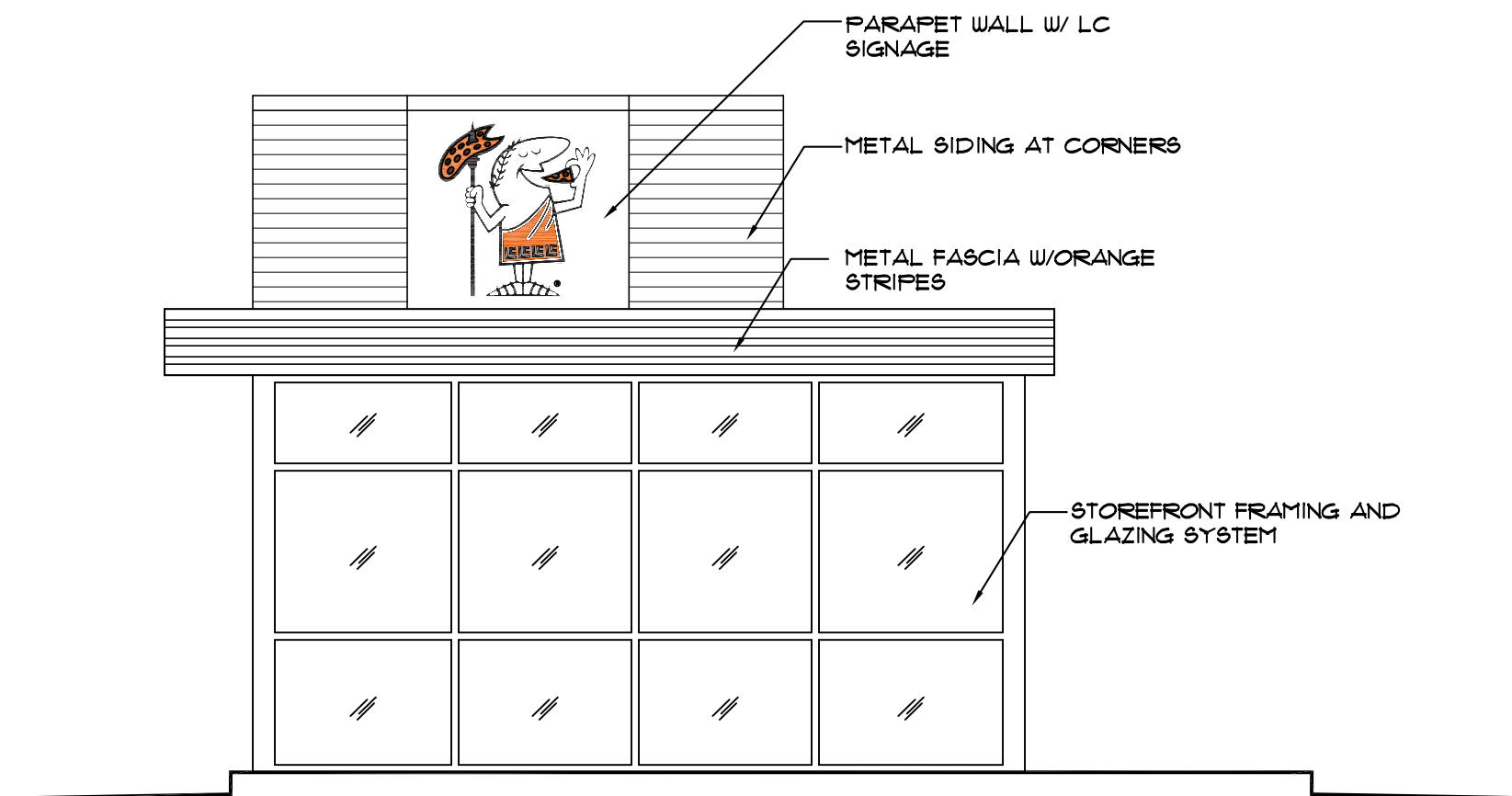
SPEAKER AND MENU BOARD
 SCALE: 1/4" = 1'-0"

#	DESCRIPTION	ELECTRICAL REQUIREMENTS						PLUMBING REQUIREMENTS					BLUELINE EQUIPMENT (800) 447-1933 (248) 448-6200 FAX: (248) 442-4657
		AMPS <small>(SEE NOTE)</small>	WATTS	HP	VOLTS	POLE	DIRECT	PLUG	WATER	DRAIN	GAS	BTU'S	
A.	120"	B.	108"	C.	96"	D.	84"	E.	72"				
F.	60"	G.	48"	H.	36"	J.	42"	K.	30"	L.	24"		
<small>NOTE: AMPS SHOWN ARE ACTUAL POWER USAGE.</small>													
<small>INDICATES EQUIPMENT CALLOUT</small>													
1D	S.S. WORK TABLE [30" x 84"]												WITH CASTERS
1H	S.S. WORK TABLE [30" x 36"]												WITH CASTERS
2C	S.S. LANDING TABLE [36" x 96"]												WITH CASTERS
4G	POLYMER DUNNAGE RACK [22" x 48"]												
4H	POLYMER DUNNAGE RACK [22" x 36"]												
4K	POLYMER DUNNAGE RACK [22" x 30"]												
5F	POLYPROPYLENE RACK [24" x 60"]												
6	DOUGH RACKS [22" x 27"]												
6P	PAN RACKS [18" x 30"]												
7F	SUPER ERRECTA WIRE RACK [24" x 60"]												METROSEAL 3 FINISH
8	3 COMP. POT SINK W/2 DRAINBOARDS [BY POD COMPANY]												COMPARTMENTS 16"W X 21" L X 14"D
10	HAND SINK [BY POD COMPANY]												
15	GAS CONVEYOR OVEN [3 DECK BOFI XLT-3255-TS]	4.8	1728		120	1		X					4.8 AMPS & 140,000 BTUH PER DECK
16	HOOD SYSTEM [XLT-3255-TS AVI]												SUPPLY FAN
	EXHAUST FAN [VENT TECH VT-DOUSHFA-AVI]	2.5	995	0.75	230	1		X					INTERLOCK WITH MAKE-UP AIR
	EXHAUST FAN ROOF CURB												ORDER PER ROOF TYPE & CODE
	TEMPERED SUPPLY FAN [AAON RO-006-8-V-FB09-352]	35	12594	1.0	208-240	3		X					INTERLOCK WITH EXHAUST FAN
	FAN ROOF CURB [XLT-3255-TS AAON]												ORDER PER ROOF TYPE & CODE
17	MIXER	27	9108	7.5	208-240	3		X					PROVIDE NON FUSED DISCONNECT
18A	FREEZER [53" 2 DOOR]	9	1080	3/4	120	1		X					NEMA 5-15P
21	PIZZA RETARDER [93"] W/OVERSHELF	7.1	816.5	3/4	115	1		X					NEMA 5-15P
23P	DOUGH PRESS												
24	SAFE												NEED 9V BATTERY
26	HOT & READY DOUBLE RACK												
33	HEATED HOLDING CABINET	16	1920		120	1		X					NEMA L5-20P
43	SINGLE WALL SHELVING UNIT [18" X 48"]												
44	DOUBLE WALL SHELVING UNIT [18" X 48"]												
47	4.5" x 9'-0" & 2" x 9'-0" STAINLESS STEEL END CAPS												
51	DOUGH ROUNDER	15	1800	1	120	1		X					AVAILABLE IN 3 PHASE
52H	36" BREAD STATION (DRIVE-THRU)												
53	DISHWASHING STATION STORAGE GRID												30" x 36" W/ACCESSORIES
56H	36" LANDING STATION SHELF & GRID												30" x 36" W/ACCESSORIES
67	PAN OILER	1.2	138		115	1		X					
77	PIZZA PORTAL	16			120	1		X					NEMA L5-20P, CAT-5 CABLE
EQUIPMENT BY OTHERS													
9	MOP SERVICE BASIN [BY POD COMPANY]									3/4"	3/4"	3"	
11	TANKLESS GAS WATER HEATER [RINNAI CU199]		84		120	1				3/4"	3/4"		NATIONAL PRICING (866-383-0707)
12N	REACH-IN SODA COOLER - GDM 12	5.0	600	1/5	120	1		X					NEMA 5-15P
13	P.O.S.												EMAIL: CVSALES@LCECORP.COM
13A	TOUCH SCREEN	0.3	36		120	1		X					EMAIL: CVSALES@LCECORP.COM
45	12' x 15' WALK-IN COOLER + STORAGE [BY POD COMPANY]	20	7197	3	208-230	3		X					



LITTLE CAESARS
EQUIPMENT PLAN
 SCALE: 1/4" = 1'-0"

NOTICE: Attention Little Caesars franchisees, architects and contractors. These design intent drawings represent the approved layout of equipment and finishes for this Little Caesars location. Any reconfiguration or modification requires written approval from Little Caesars Architecture and Design Department. Modification without such approval may result in reconstruction or default.



Little Caesar Enterprises, Inc.
 2211 Woodward Ave.
 Detroit, Michigan 48201-3400
 (313) 471-6000

Owner Review:
 00-00-00
Date Issued:
 02-16-2023
Revisions:
 00-00-00
 00-00-00
Drawn By:
 J.B.

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Job:
 Little Caesars
Name:
 Kitchen
 Podular

Address:



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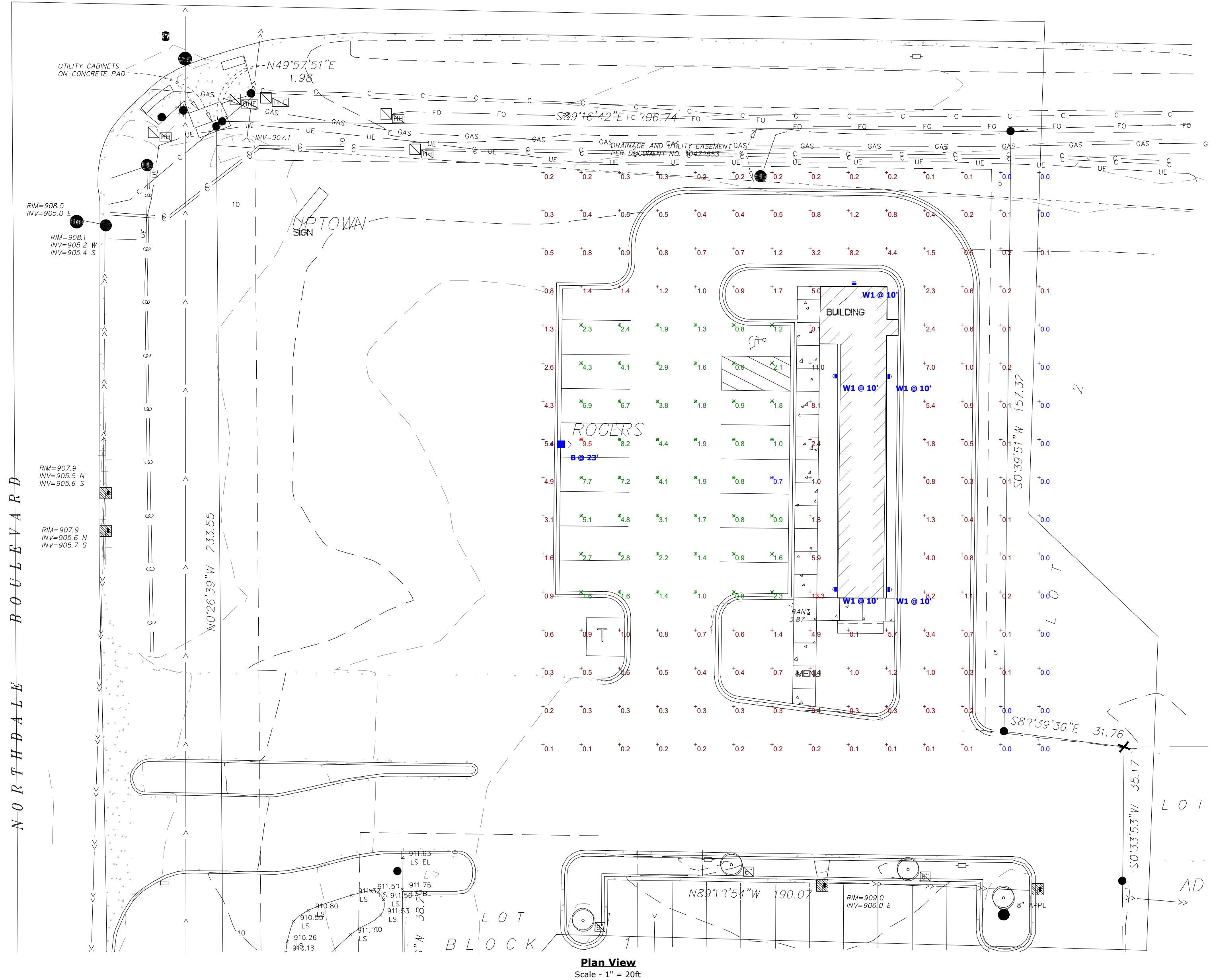
Schedule										
Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Number Lamps	Lumens per Lamp	LLF	Wattage	Polar Plot
	B	1	EVOLVE	EAP1150WLSCS_4000K_Type4_150W	Vertically Adjustable Roadway Pole Mount Aimed at Nadir w/ Type IV Acrylic Lens; Set to: 150W, 4000K	1	22942	0.9	145.14	
	W1	5	GE LIGHTING SOLUTIONS	EWLS02_70AF740-120-277V	EWLS02 WALL PACK	1	7000	0.9	52	

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking	✖	2.8 fc	9.5 fc	0.7 fc	13.6:1	4.0:1
Site	+	1.6 fc	13.3 fc	0.0 fc	N/A	N/A

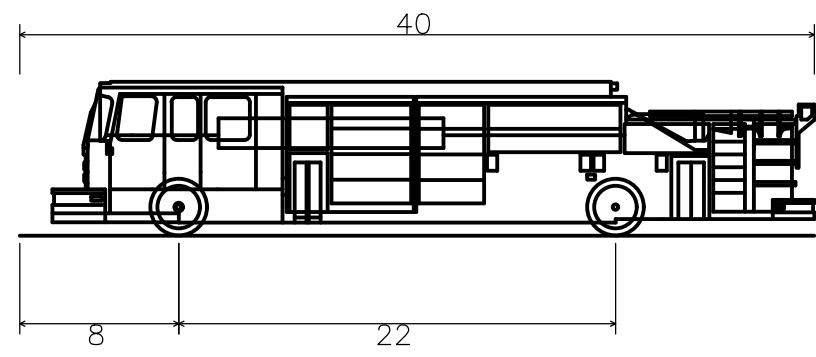
Note

1. Graybar Electric does not assume responsibility for the interpretation of this calculation, or State and City codes.
2. Calculation Points are taken at grade.
3. Fixture Type B is mounted on a pole with a 3'-0" base.



Little Caesars
Rogers, MN

Designer
MG
Date
04/25/2025
Scale
As Shown
Drawing No.
Summary



Pumper Fire Truck
 Overall Length 40.000ft
 Overall Width 8.167ft
 Overall Body Height 7.745ft
 Min Body Ground Clearance 0.656ft
 Track Width 8.167ft
 Lock-to-lock time 5.00s
 Max Wheel Angle 45.00°



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 Anderson Engineering of Minnesota, LLC

LITTLE CAESARS

141ST AVE N &
 NORTHDAL BLVD,
 ROGERS, MN 55374

FRANCHISE CONCEPTS
 UNLIMITED INC.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: BRIAN J. FINE

SIGNATURE: *[Signature]*

DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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DRAWING TITLE

FIRE TRUCK
 EXHIBIT

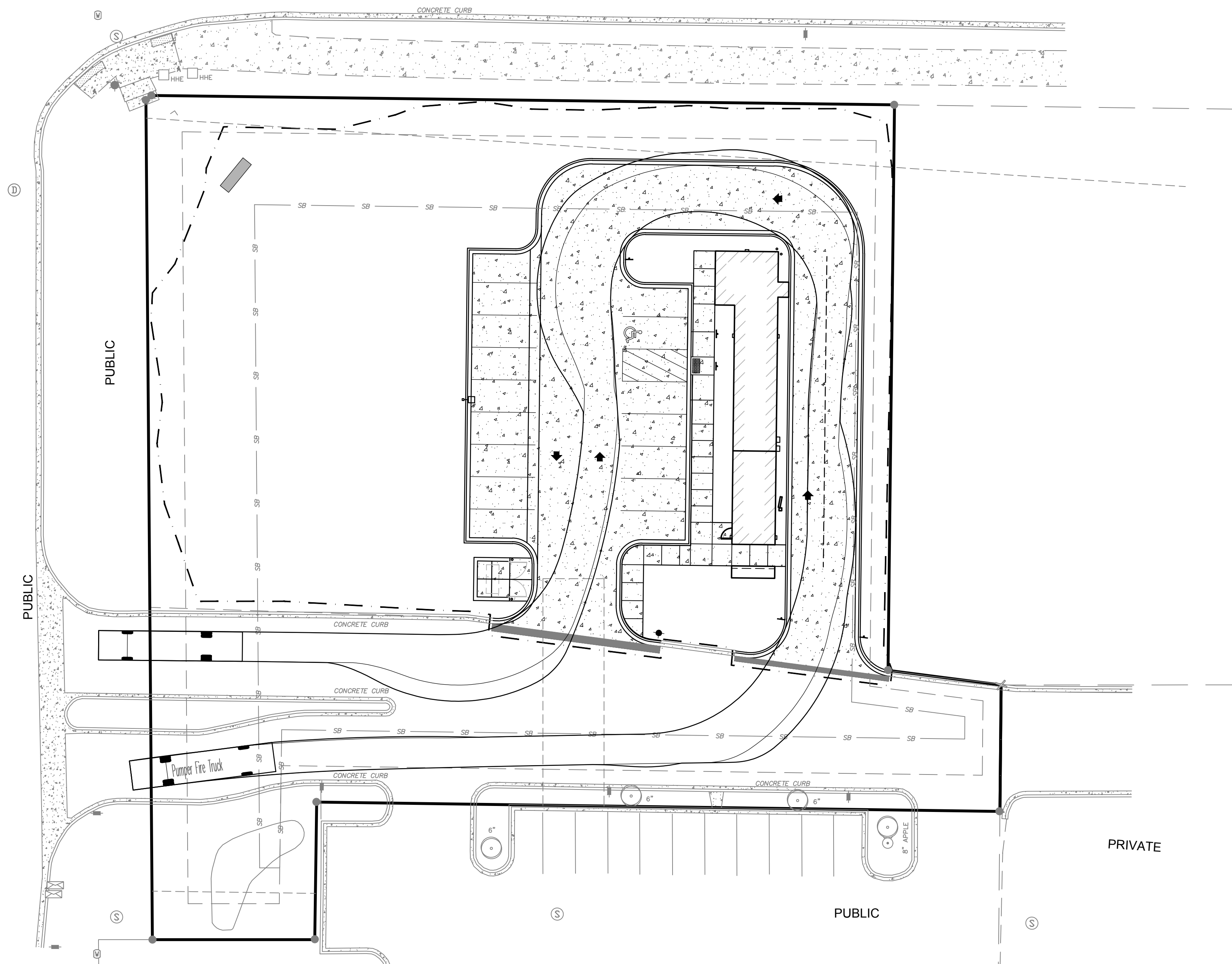
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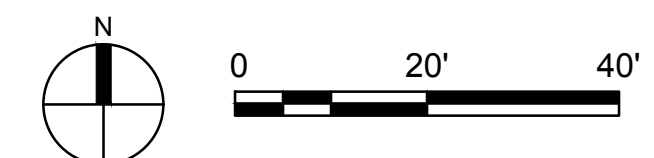
PLOTTED: 05/07/2025	COMM. NO. 18586
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141ST AVENUE NORTH

NORTHDAL BOULEVARD



1 FIRE TRUCK TURNING EXHIBIT
 SCALE: 1"=20'



Storm Water Management Plan
Calculations & Summaries

**Little Caesar's
Rogers, MN**

Project No. 18586

May 7, 2025

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Brian J. Field, P.E.

Reg. No. 57224

Prepared By:
Anderson Engineering of MN, LLC
13605 1st Avenue North, Suite 100
Plymouth, MN 55441
Ph: 763.412.4000
Fax: 763.412.4090

Prepared For:
Franchise Concepts Unlimited
28 Sandy Hills Lane
Grand Forks, ND 58201

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- C – Existing East Basin Drainage Map
- D – HydroCAD Report
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Project Overview

Franchise Concepts Unlimited is proposing to construct a new Little Caesars restaurant on Block 1, Lot 1 of the Uptown Rogers 3rd Addition Development in Rogers MN. The site is located at the corner of 141st Avenue North and Northdale Boulevard and encompasses approximately 0.99 acres in area. The new parking lot will have two access points connecting to the existing access road, including a dedicated lane for the drive through area. Utility services will be extended to the new building from the shared access road to the south.

The proposed Little Caesars restaurant is designed as a compact, high-efficiency facility with modern branding and site enhancements. The development includes:

- A 1,061-square-foot building with a pickup lobby and kitchen area
- A drive-through lane with an escape lane for operational safety
- An outdoor refuse enclosure, monument signage, and a privacy wall adjacent to the speaker box
- 16 code-compliant parking spaces, including one ADA stall
- Paved walkways for safe pedestrian access and integration with surrounding infrastructure

Vehicular access will be provided via a shared access point with adjacent parcels, and circulation through the site is designed to promote traffic flow and minimize conflicts. The building architecture reflects the national Little Caesars branding and will include neutral tones with the company's signature orange accents.

Existing Site Conditions

Lot 1 is part of a larger 6.29-acre development established in 2006. The site is bounded by 141st Avenue North to the north, retail property to the south, Northdale Boulevard to the west, and Highway 101 to the east. Of the four lots within the development, two have been built out: Rogers KinderCare to the south and Ripple Effect Brewing Company to the east.

A regional stormwater pond, constructed in 2006 with the Rogers KinderCare building, is located in the northeast corner of the site. This pond provides stormwater treatment for the entire development. It discharges via a 24-inch reinforced concrete pipe (RCP) that flows south along Highway 101. The pond's emergency overland outflow is situated near the intersection of 141st Avenue North and Highway 101.

Approximately 90% of the site drains into the existing pond. A small portion of the western area drains toward Northdale Boulevard, while a small eastern section drains directly into the Highway 101 ditch.

The southeast lot remains undeveloped but is planned for the construction of a Ray J's American Grill Restaurant, scheduled to begin in summer 2025. For the purposes of this report, this development will be referred to as "Phase 1 Construction."

Phase 1 Construction – Ray J's American Grill

The southeast lot of the development has been approved for construction by both the City and the Elm Creek Watershed District in early 2025. **The intent of this report is to update the existing SWMP developed by Anderson Engineering dated January 31, 2025.**

In 2006, the existing Kinder Care building was constructed. The regional stormwater pond was proposed as part of that project and was designed to be a NURP pond with retention capabilities. The historical SWMP can be found in **Exhibit H** (for reference only). The existing stormwater pond has been found to have soil that promotes infiltration.

Phase 1 Construction aims to convert the NURP pond into an infiltration basin to meet current stormwater rules. The bottom of the basin will be raised from an 896.0 elevation to an 899.40 elevation. All new building, parking lot, and other impervious areas will drain to the infiltration basin (11P), located in the northeast corner of the site. The **Phase 1 Drainage Map** can be found in the appendices of this report under **Exhibit A**.

For the purposes of this report for rate control and water quality, the pre-developed conditions prior to the 2006 development will be used. The previous Stormwater Management Plan by STS consultants can be seen in **Exhibit G** and existing drainage pattern can be seen in **Exhibit A** within the appendices of this report.

Phase 2 Construction – Little Caesars

“Phase 2 Construction” will be a new Little Caesars Restaurant located on the northwestern lot of the development. The construction will primarily be on the eastern side of said lot and will consist of a new 1,100SF restaurant, drive-through lane, and parking lot area. The existing lot’s drainage is generally split by a north/south Ridge that allows water to runoff to the east and west. The west side of the site drains to the Northdale Boulevard ditch and into a culvert draining north under 141st Ave N. The east side of the lot drains to the north and east into an existing basin located between the site and the existing brewery.

The Existing East Basin was not previously accounted for within the Anderson Engineering Stormwater Report developed for Phase 1 Construction and Anderson has not received any additional information regarding the basin. Therefore, the East Basin was not considered to provide long term treatment for the site. However, this report does provide modeling and calculations to ensure Phase 2 Construction does not cause any ill-effects to the East Basin. A summary of the East Basin can be found in the next section of this report.

The proposed site will have a high point located at the north end of the parking lot and drive through where surface drainage will sheet flow to the south and into the existing shared access drive. From there, stormwater will enter the local storm sewer network and outlet in the northeastern infiltration basin. The proposed drainage pattern can be seen in **Exhibit B: Phase 2 Drainage Map** within the appendices of this report.

The northeast infiltration basin has been sized to handle 72% impervious coverage of the remaining developable area on the lot. **Table 1** below is an area summary of Lot 1.

Table 1: Lot 1 Area Summary				
Total Lot Area	Remaining Buildable Area	72% Allowable Impervious	Phase 2 Impervious Surface	Allowable Future Imp.
1.0 AC	0.581 AC	0.418 AC	0.280 AC	0.138 AC

Rate control, volume control, and water quality for Phase 2 Construction will be compared to the established Phase 1 Construction thresholds provided in the Ray J’s Stormwater Management Plan. **The intent of this report is to update the existing SWMP developed by Anderson Engineering dated January 31, 2025.**

Existing East Basin

As previously mentioned in earlier sections, there is an existing basin to the east of the Phase 2 Construction site. Water from the existing brewery parking lot surface drains to a curb cut where it enters the basin. The basin does not have a piped outlet. The overflow of the basin is a curb low point in the southwestern corner of the brewery parking lot at an elevation of 908.60. From there, water is collected via the local storm sewer network and into the northeaster infiltration basin. The existing and proposed drainage pattern for the Eastern Basin can be seen in **Exhibit C** within the appendices of this report. Below is a summary of existing and proposed runoff rates and HWL of the existing East Basin.

Strom Event	Runoff Rate (CFS) 16P	Ex. HWL 16P	Runoff Rate (CFS) 26P	Proposed HWL 26P
2-year	0.00	907.59	0.00	907.53
10-year	0.00	908.13	0.00	907.99
100-year	0.33	908.72	0.00	908.57

Soils

Killo Engineering Performed 4 subsurface soil borings at Lot 1 in May of 2025. The results of the field exploration are still pending. In September of 2024, American Engineering Testing performed 6 soil borings at the Phase 2 Construction site. Soil boring B-6 was conducted at the bottom of the existing pond and shows there is an existing 3' layer of fill over fine to medium grained SP sand. The layer of fill within the infiltration basin limits are planned to be removed and replaced with suitable sand found on site. An infiltration rate of 1.63 in/hr will be used for design of the infiltration basin. The soil borings can be found in **Exhibit I** of this report.

Methodology

HydroCAD

The Hydrologic characteristics of the site were modeled using HydroCAD software. TR55/TR20 methods were utilized. Pre-development and proposed drainage areas were determined via review of the previous HydroCAD model, as-built data, current land survey data, and aerial photos.

The 2, 10, & 100-year frequency events were analyzed for peak runoff rate control in the existing and proposed conditions. The MSE-3 24-hr distribution was used in analysis. Depths for the 2, 10, & 100-year storms were found to be 2.86", 4.26", and 7.32" respectively.

Runoff from pervious and impervious surfaces were calculated together in order to simplify the model for the runoff volume from the site surfaces. Time of Concentrations have been calculated using the HydroCAD program individually for each sub-catchment. Results of this analysis are summarized below, and a report can be seen in **Exhibit D: HydroCAD Report**.

Stormwater Conveyance

The storm sewer network was designed based upon the 10-year storm event. The rational method was employed to determine the flowrate into the storm sewer; pipe diameter, inlet elevations, and slopes were designed to accommodate the ten-year flow through the devices. **Exhibit F: Storm Sewer Sizing Worksheet** attached in the Appendix shows the individual calculations for the storm network.

A Manning’s Coefficient of 0.013 was assumed, and overflow routes to drain low points along curb and gutter provide a minimum freeboard of 1 foot. All tributary area was considered for calculations.

Elm Creek Watershed District Rules

In addition to the rules described below, the proposed design and report will utilize those definitions and procedural requirements as described in Rule’s A & B of the Elm Creek Watershed District Rules. The construction and stormwater management plans have also been designed to meet general standards described within Rule’s C and J. **Table 3** below summarizes the watershed rules that are **not** applicable to this site and reasoning for exclusion:

Table 3: Non-Applicable Watershed Rules		
Rule F	Floodplain Alteration	Floodplain not located within construction site.
Rule G	Wetland Alteration	Wetland not located within construction site.
Rule H	Bridge and Culvert Crossing	Not Applicable.
Rule I	Buffer Strips	Wetland not located within construction site.
Rule K	Variances	Not applicable

Below is a summary of other applicable watershed rules and regulations that have been met for this project:

Rule D – Stormwater Management

3.b – Runoff Rate

Rate control was analyzed for the 2, 10, and 100-year storm event. The site was modeled with Phase 2 Construction conditions to get a baseline of runoff rate to be met by Phase 1 Construction. Phase 1 & Phase 2 rates were compared for the entire property area and at individual discharge points on the site. Runoff rates for Phase 2 Construction shall not exceed Phase 1 Construction rates for the 2, 10, and 100-year critical storm.

A full summary of the existing and proposed HydroCAD results can be found within **Exhibit D: HydroCAD Report** in the appendices of this report. Tabulations of peak runoff rates can be found in **Table 4.1. and 4.2** below:

Table 4.1: Phase 1 Rate Control			
Storm Event	Northdale Blvd (CFS) – 13S	HWY 101 (CFS) – 20R	Infiltration Basin 11P HWL
2-year	0.72	0.23	902.28
10-year	1.61	1.79	903.34
100-year	3.85	9.04	905.18

Table 4.2: Phase 2 Rate Control			
Storm Event	Northdale Blvd (CFS) – 26S	HWY 101 (CFS) – 30R	Stormwater Pond 21P - HWL
2-year	0.72	0.23	901.87
10-year	1.61	1.01	903.03
100-year	3.85	6.85	904.70

Storm Event	Δ Change In Rate (CFS)	Allowable Future CFS To 21P
2-year	0.00	0.00
10-year	-0.78	0.78
100-year	-2.19	2.19

3.b.i.3 – Low Floor Elevation – Infiltration Basin 21P

The proposed low floor elevation of the Phase 1 Building (Ray J’s) is 912.60. The existing adjacent Brewery building has a low floor elevation of 909.10. Per the Elm Creek Watershed District Rules and regulations, the HWL of the infiltration basin is to be at least 2’ below the finished floor of all adjacent buildings.

3.c.3.i – Runoff Volume

The Watershed requires a treatment volume of 1.1” over the total impervious surfaces of the development. Phase 1 Construction anticipated a total of 4.124 acres of impervious surface proposed for the whole development. Phase 2 Construction is anticipated to include 3.795 Acres of new impervious for the entire development. This will include existing, Phase 1, Phase 2, and all future impervious surfaces. The required treatment volume for Infiltration Basin 21P is therefore:

$$\text{Total Impervious Area (SF)} = 3.795(\text{AC}) \times 43,560(\text{CF}) = 165,311 (\text{SF})$$

$$\text{Required Abstraction (CF)} = 165,311 (\text{SF}) \times \frac{1.1(\text{in})}{12(\text{in})} = \mathbf{15,154 (CF)}$$

$$\text{Required Abstraction (AC)} = \frac{15,154 (CF)}{43,560 (SF)} = \mathbf{0.348 (AF)}$$

Phase 2 Construction Area Summary

Area (acres)	CN	Description (subcatchment-numbers)
2.495	61	>75% Grass cover, Good, HSG B (22S, 23S, 24S, 25S)
1.749	98	Existing Impervious (22S, 23S, 25S)
1.628	98	Phase 1 Impervious (22S, 24S)
0.138	98	Phase 2 Future Impervious (22S)
0.280	98	Phase 2 Impervious (22S)
6.290	83	TOTAL AREA

Proposed:

Infiltration of the treatment volume of 1.1” over the impervious area is feasible for this site. The primary release of stormwater from Infiltration Basin 21P will be via infiltration. A new 18” pipe will also allow the release of storm water leading to an outlet structure. See **Table 5** below summarizes the 21P’s storage volumes.

Table 5: Stormwater Pond (21P) Storage Summary			
Lowest Outlet	Volume Abstraction (AF)	Volume Abstraction (CF)	Available Volume to 21P (CF)
902.40	0.524	22,845	7691

Drawdown Time

Criteria: Design BMP’s to have a drawdown time of 48 hours or less

Infiltration Basin (21P) has been sized to allow a drawdown time of less than 48 hours. The hydroCAD modeled the drawdown time to show the outflow at 0 cfs stopped at hour 47.0 which can be shown using the hydrograph table in **Exhibit D: HydroCAD Report**.

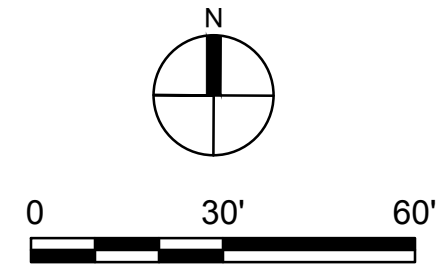
3.e.i – Water Quality

The proposed site met the pollution load reduction requirement through the infiltration practices provided by the Infiltration Basin (21P). Total Phosphorus (TP) and Total Suspended Solids (TSS) for Phase 1 Construction where compared to Phase 2 Construction. A full summary of the MIDS Calculator results can be found in **Exhibit E: MIDS Calculations** and a tabulation of pollutant loads can be found in **Table 5** below.

Table 5: MIDS Calculator Summary				
Pollutant	Removal Efficiency Proposed Conditions (%)	Pollutant Load Exiting Site		
		Phase 1 Conditions (lbs)	Phase 2 Conditions (lbs)	Net Difference (lbs)
TSS	84	225.2	142.2	83.0
Particulate Phosphorus	-	0.6814	0.4394	0.242
Dissolved Phosphorus	-	0.557	0.359	0.198
Total Phosphorus	84	1.2384	0.7984	0.44

Summary

The site layout and final grading is designed to take advantage of the existing terrain and impervious areas for drainage and will result in a gently rolling topography matching the surrounding landscape. Within the project boundary, some changes to the existing drainage patterns are expected due to the proposed structures and other site improvements. The project design does not propose making major changes to drainage divides.



ANDERSON






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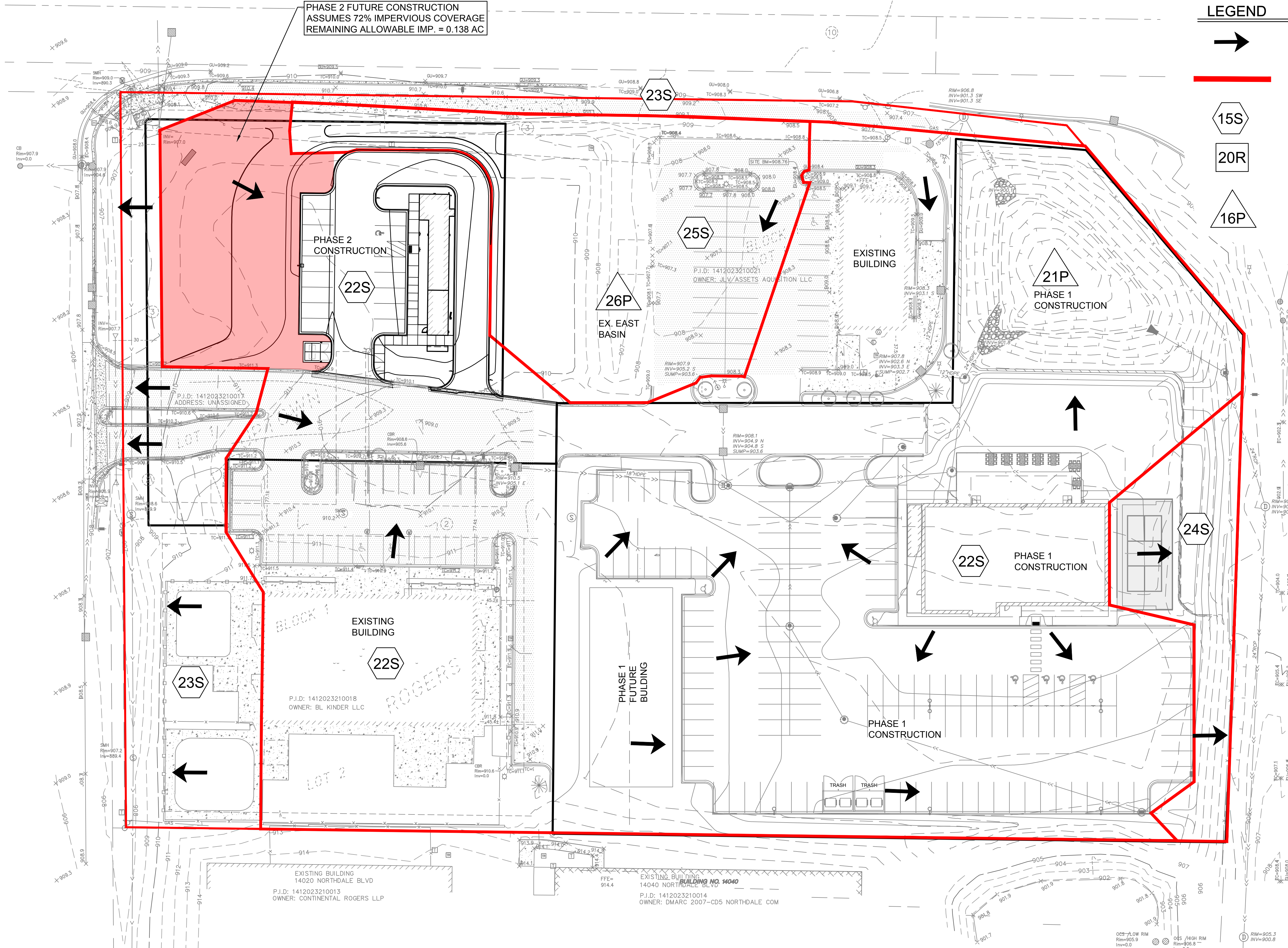
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FRANCHISE CONCEPTS
 UNLIMITED INC.

LEGEND

-  DRAINAGE ARROW DIRECTION
-  DRAINAGE AREA BOUNDARY
-  DRAINAGE AREA
-  DRAINAGE AREA REACH
-  BEST MANAGMENT PRACTICE (BMP)



REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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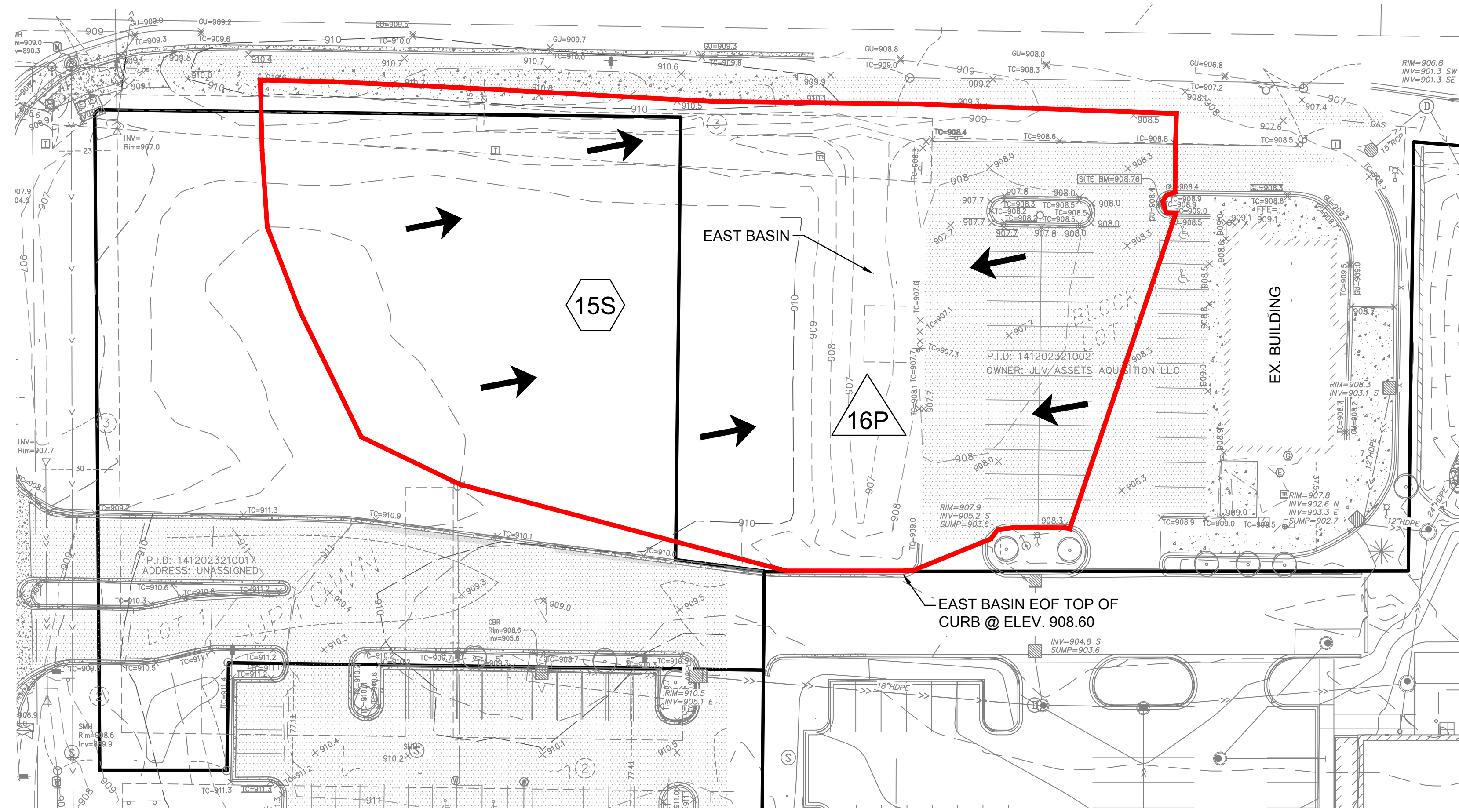
**PHASE 2
 CONSTRUCTION
 DRAINAGE MAP**

DRAWING NO.

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PLOTTED: 05/07/2025	COMM. NO. 18586
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1 EAST BASIN - EXISTING CONDITIONS
SCALE: 1"=30'

LEGEND

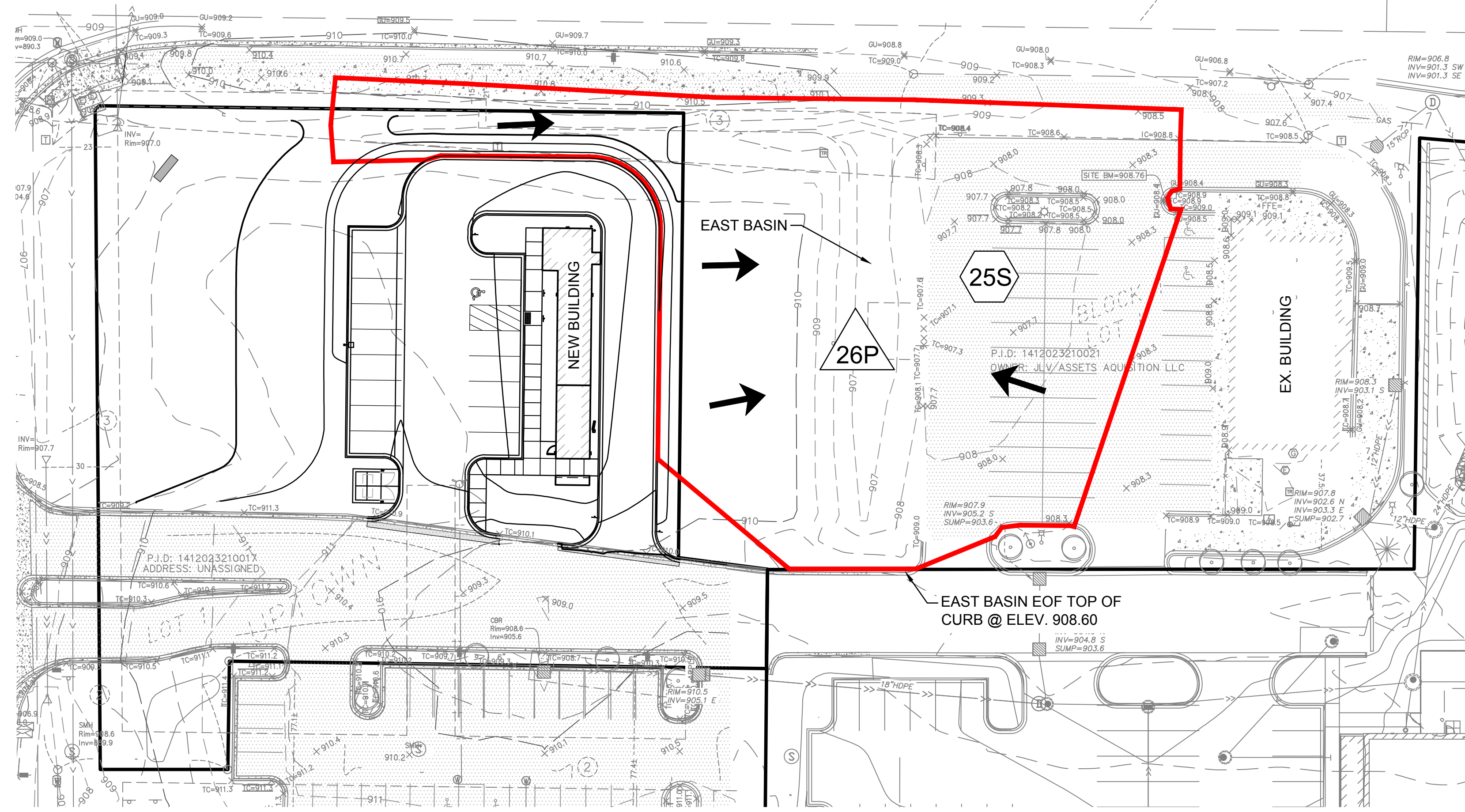
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- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA
- DRAINAGE AREA REACH
- BEST MANAGEMENT PRACTICE (BMP)

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1 EAST BASIN - PROPOSED CONDITIONS (PHASE 2)
SCALE: 1"=30'

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW
05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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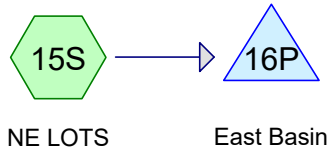
**EAST BASIN
DRAINAGE
MAP**

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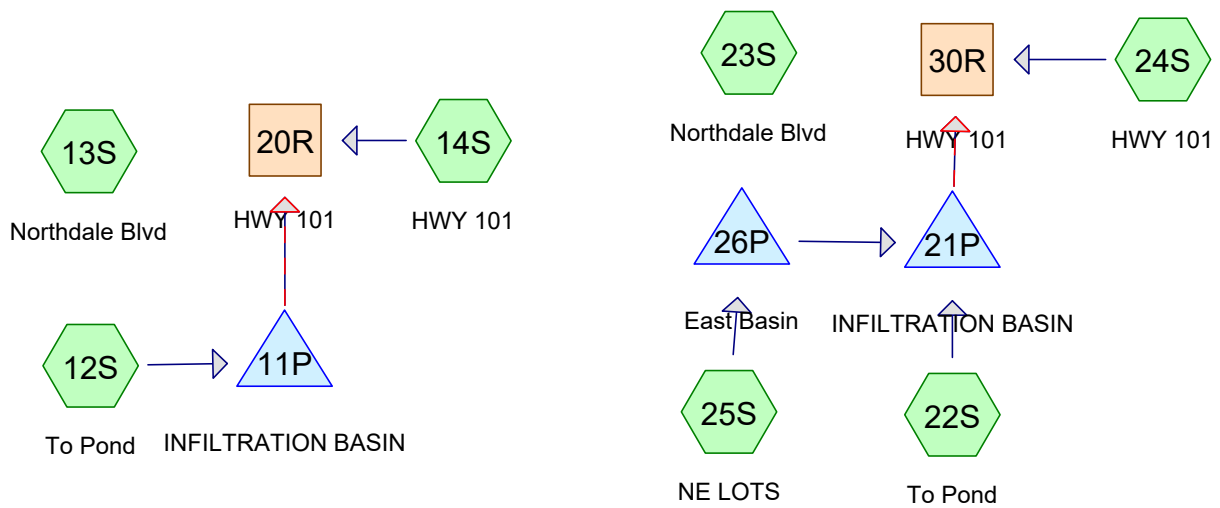
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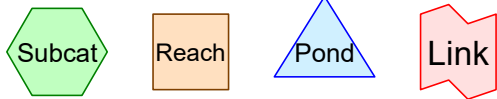


EXISTING EAST BASIN

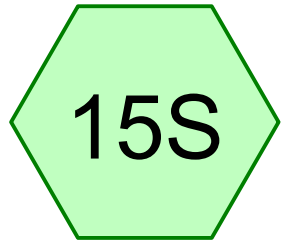


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CONSTRUCTION

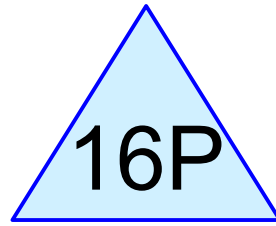
PHASE 2
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Routing Diagram for 18586_HydroCAD
 Prepared by Anderson Engineering Of MN, LLC, Printed 5/6/2025
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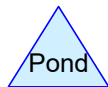
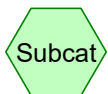


NE LOTS



East Basin

EXISTING EAST BASIN



Routing Diagram for 18586_HydroCAD
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18586_HydroCAD

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Printed 5/6/2025

Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.793	61	>75% Grass cover, Good, HSG B (15S)
0.243	98	Existing Impervious (15S)

18586_HydroCAD

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Printed 5/6/2025

Page 3

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.793	HSG B	15S
0.000	HSG C	
0.000	HSG D	
0.243	Other	15S

18586_HydroCAD

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Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.793	0.000	0.000	0.000	0.793	>75% Grass cover, Good	15S
0.000	0.000	0.000	0.000	0.243	0.243	Existing Impervious	15S

18586_HydroCAD

MSE 24-hr 3 2-Year Rainfall=2.86"

Prepared by Anderson Engineering Of MN, LLC

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Page 5

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 15S: NE LOTS

Runoff Area=1.036 ac 23.46% Impervious Runoff Depth=0.64"
Flow Length=100' Slope=0.0100 '/' Tc=20.1 min CN=70 Runoff=0.64 cfs 0.055 af

Pond 16P: East Basin

Peak Elev=907.59' Storage=0.023 af Inflow=0.64 cfs 0.055 af
Discarded=0.10 cfs 0.055 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.055 af

Summary for Subcatchment 15S: NE LOTS

Runoff = 0.64 cfs @ 12.34 hrs, Volume= 0.055 af, Depth= 0.64"
 Routed to Pond 16P : East Basin

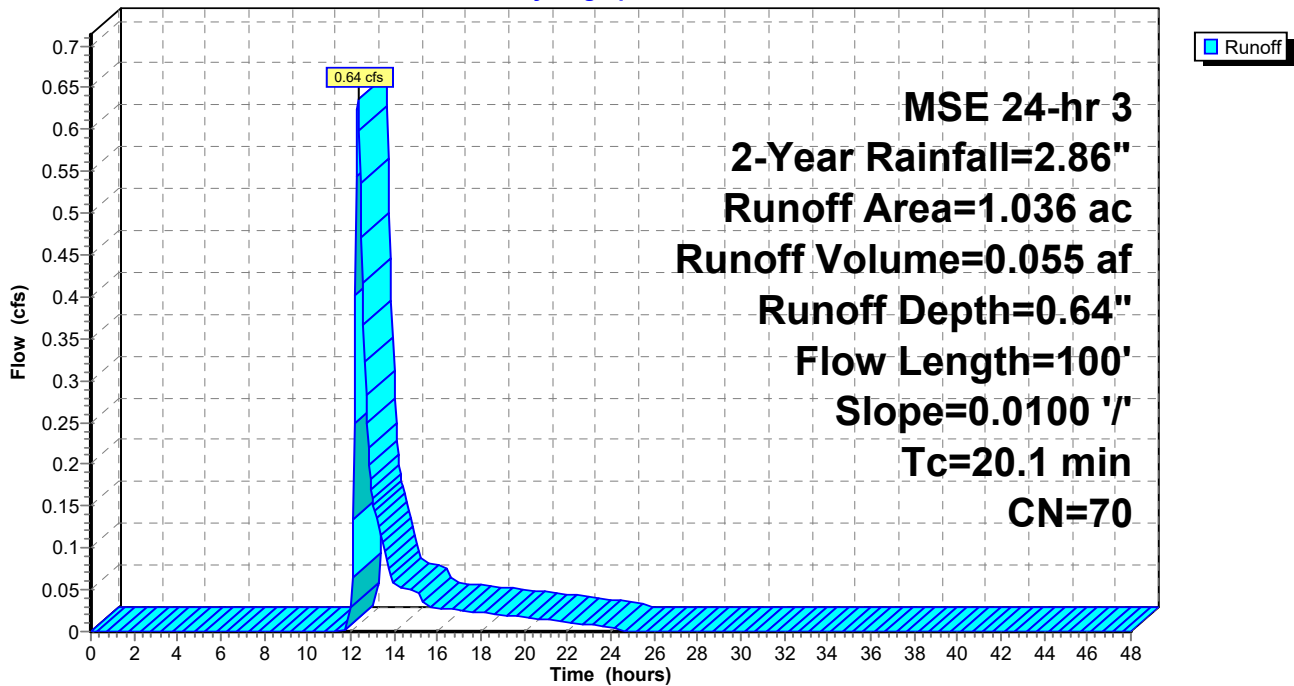
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.243	98	Existing Impervious
0.793	61	>75% Grass cover, Good, HSG B
1.036	70	Weighted Average
0.793		76.54% Pervious Area
0.243		23.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	100	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 15S: NE LOTS

Hydrograph



Summary for Pond 16P: East Basin

Inflow Area = 1.036 ac, 23.46% Impervious, Inflow Depth = 0.64" for 2-Year event
 Inflow = 0.64 cfs @ 12.34 hrs, Volume= 0.055 af
 Outflow = 0.10 cfs @ 13.54 hrs, Volume= 0.055 af, Atten= 84%, Lag= 72.3 min
 Discarded = 0.10 cfs @ 13.54 hrs, Volume= 0.055 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 907.59' @ 13.54 hrs Surf.Area= 0.061 ac Storage= 0.023 af

Plug-Flow detention time= 114.6 min calculated for 0.055 af (100% of inflow)
 Center-of-Mass det. time= 114.5 min (973.1 - 858.6)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	0.286 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
907.00	0.018	0.000	0.000
908.00	0.090	0.054	0.054
908.60	0.210	0.090	0.144
909.00	0.500	0.142	0.286

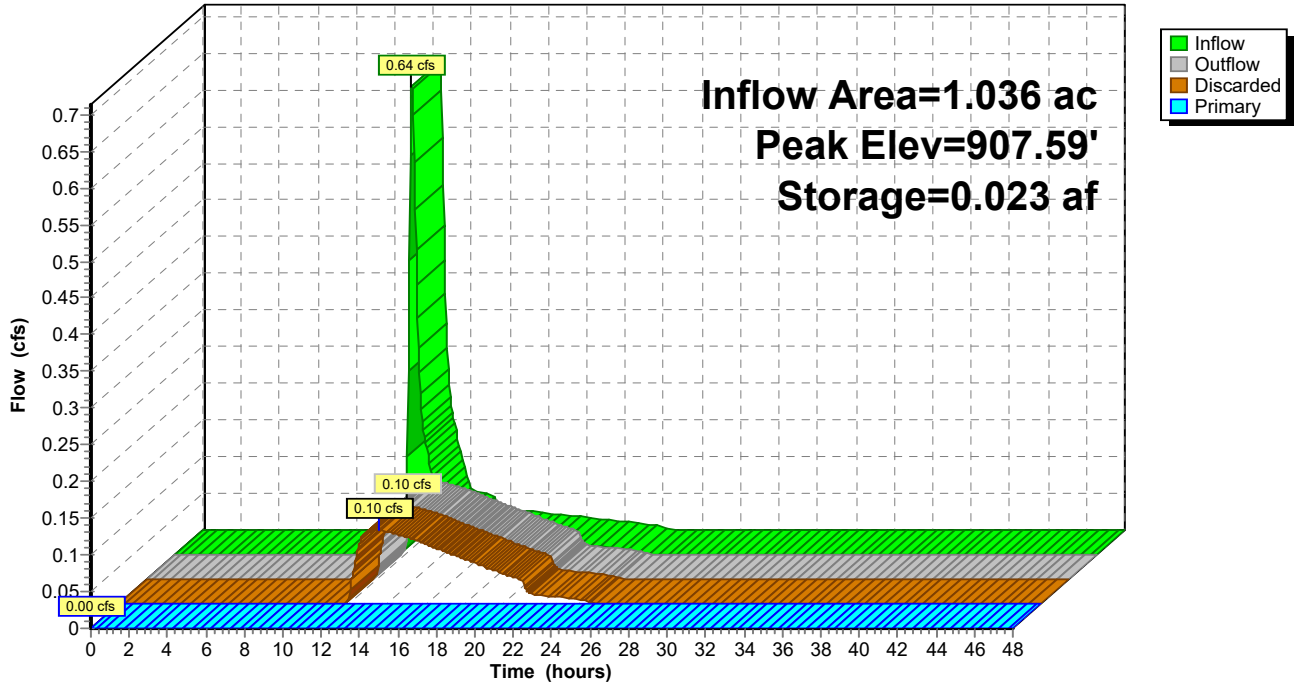
Device	Routing	Invert	Outlet Devices
#1	Primary	908.60'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	907.00'	1.630 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.10 cfs @ 13.54 hrs HW=907.59' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=907.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 16P: East Basin

Hydrograph



18586_HydroCAD

MSE 24-hr 3 10-Year Rainfall=4.26"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 15S: NE LOTS

Runoff Area=1.036 ac 23.46% Impervious Runoff Depth=1.51"
Flow Length=100' Slope=0.0100 '/' Tc=20.1 min CN=70 Runoff=1.68 cfs 0.130 af

Pond 16P: East Basin

Peak Elev=908.13' Storage=0.068 af Inflow=1.68 cfs 0.130 af
Discarded=0.19 cfs 0.130 af Primary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.130 af

Summary for Subcatchment 15S: NE LOTS

Runoff = 1.68 cfs @ 12.31 hrs, Volume= 0.130 af, Depth= 1.51"
 Routed to Pond 16P : East Basin

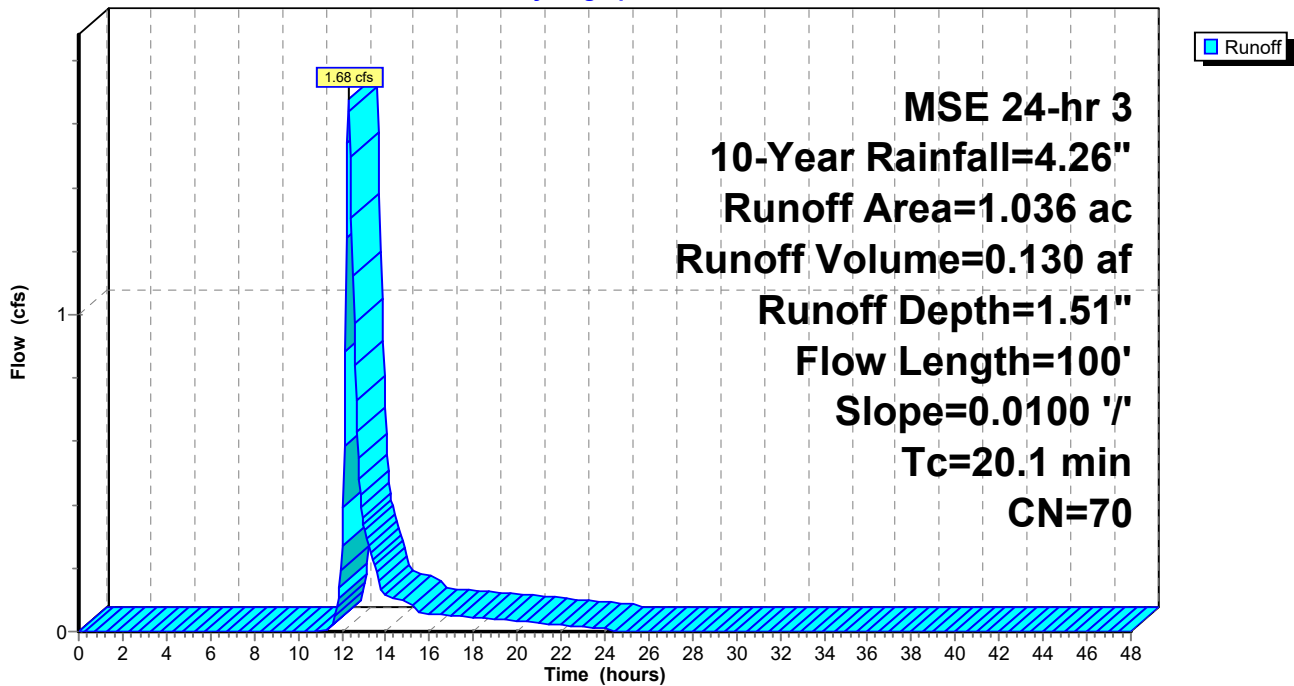
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.243	98	Existing Impervious
0.793	61	>75% Grass cover, Good, HSG B
1.036	70	Weighted Average
0.793		76.54% Pervious Area
0.243		23.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	100	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 15S: NE LOTS

Hydrograph



Summary for Pond 16P: East Basin

Inflow Area = 1.036 ac, 23.46% Impervious, Inflow Depth = 1.51" for 10-Year event
 Inflow = 1.68 cfs @ 12.31 hrs, Volume= 0.130 af
 Outflow = 0.19 cfs @ 13.60 hrs, Volume= 0.130 af, Atten= 89%, Lag= 76.9 min
 Discarded = 0.19 cfs @ 13.60 hrs, Volume= 0.130 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 908.13' @ 13.60 hrs Surf.Area= 0.117 ac Storage= 0.068 af

Plug-Flow detention time= 207.2 min calculated for 0.130 af (100% of inflow)
 Center-of-Mass det. time= 207.2 min (1,044.6 - 837.5)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	0.286 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
907.00	0.018	0.000	0.000
908.00	0.090	0.054	0.054
908.60	0.210	0.090	0.144
909.00	0.500	0.142	0.286

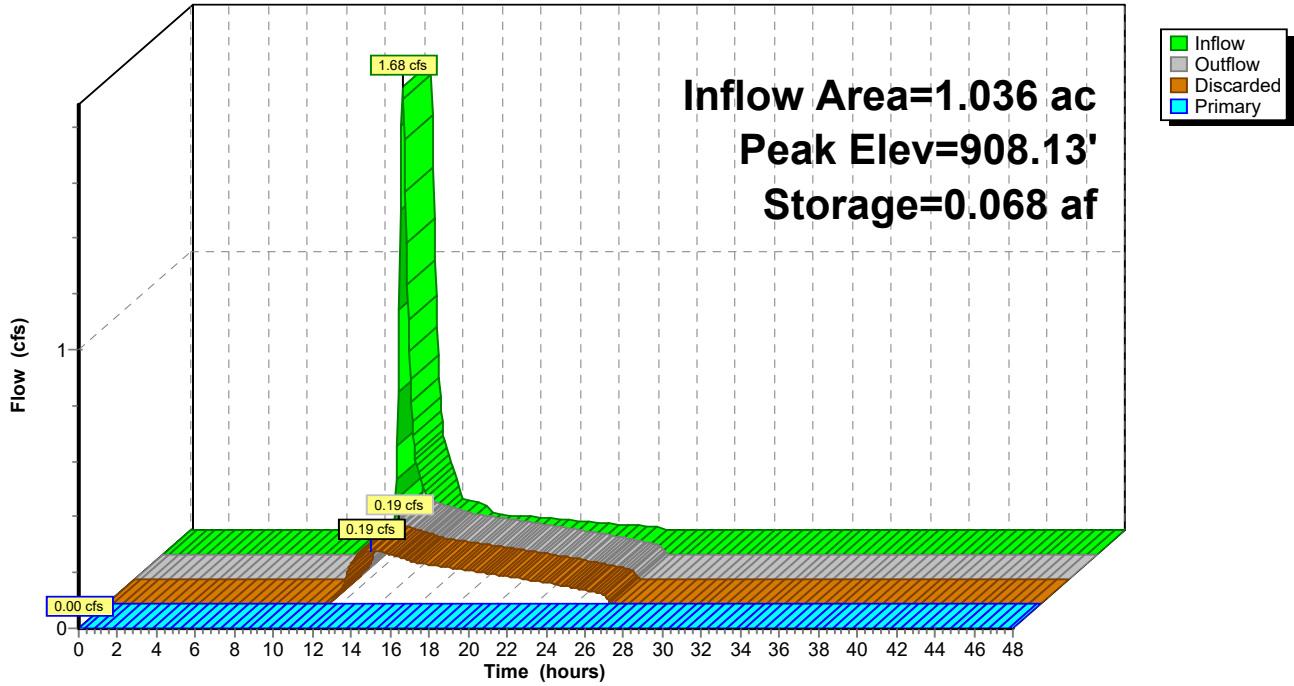
Device	Routing	Invert	Outlet Devices
#1	Primary	908.60'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	907.00'	1.630 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.19 cfs @ 13.60 hrs HW=908.13' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=907.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 16P: East Basin

Hydrograph



18586_HydroCAD

MSE 24-hr 3 100-Year Rainfall=7.32"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 15S: NE LOTS

Runoff Area=1.036 ac 23.46% Impervious Runoff Depth=3.89"
Flow Length=100' Slope=0.0100 '/' Tc=20.1 min CN=70 Runoff=4.49 cfs 0.335 af

Pond 16P: East Basin

Peak Elev=908.72' Storage=0.175 af Inflow=4.49 cfs 0.335 af
Discarded=0.49 cfs 0.304 af Primary=0.33 cfs 0.031 af Outflow=0.82 cfs 0.335 af

Summary for Subcatchment 15S: NE LOTS

Runoff = 4.49 cfs @ 12.30 hrs, Volume= 0.335 af, Depth= 3.89"
 Routed to Pond 16P : East Basin

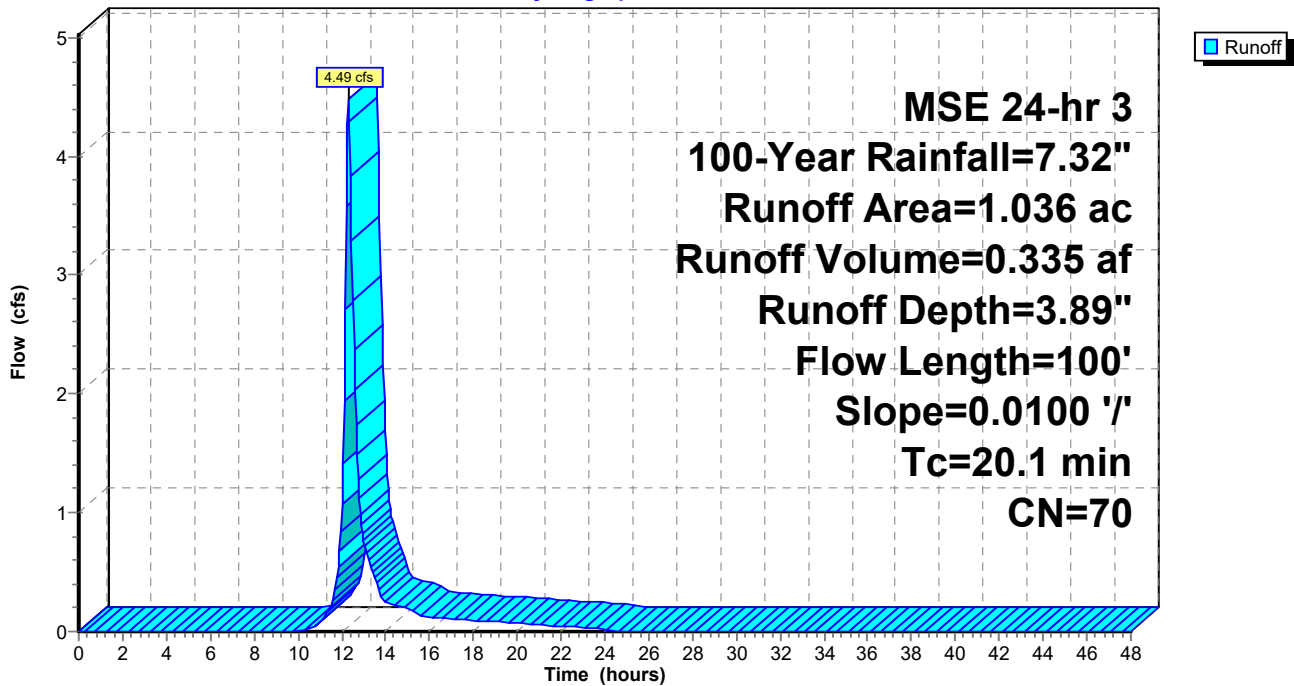
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.243	98	Existing Impervious
0.793	61	>75% Grass cover, Good, HSG B
1.036	70	Weighted Average
0.793		76.54% Pervious Area
0.243		23.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	100	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 15S: NE LOTS

Hydrograph



Summary for Pond 16P: East Basin

Inflow Area = 1.036 ac, 23.46% Impervious, Inflow Depth = 3.89" for 100-Year event
 Inflow = 4.49 cfs @ 12.30 hrs, Volume= 0.335 af
 Outflow = 0.82 cfs @ 12.96 hrs, Volume= 0.335 af, Atten= 82%, Lag= 39.3 min
 Discarded = 0.49 cfs @ 12.96 hrs, Volume= 0.304 af
 Primary = 0.33 cfs @ 12.96 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 908.72' @ 12.96 hrs Surf.Area= 0.299 ac Storage= 0.175 af

Plug-Flow detention time= 227.0 min calculated for 0.335 af (100% of inflow)
 Center-of-Mass det. time= 227.2 min (1,044.6 - 817.5)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	0.286 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
907.00	0.018	0.000	0.000
908.00	0.090	0.054	0.054
908.60	0.210	0.090	0.144
909.00	0.500	0.142	0.286

Device	Routing	Invert	Outlet Devices
#1	Primary	908.60'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	907.00'	1.630 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.49 cfs @ 12.96 hrs HW=908.72' (Free Discharge)

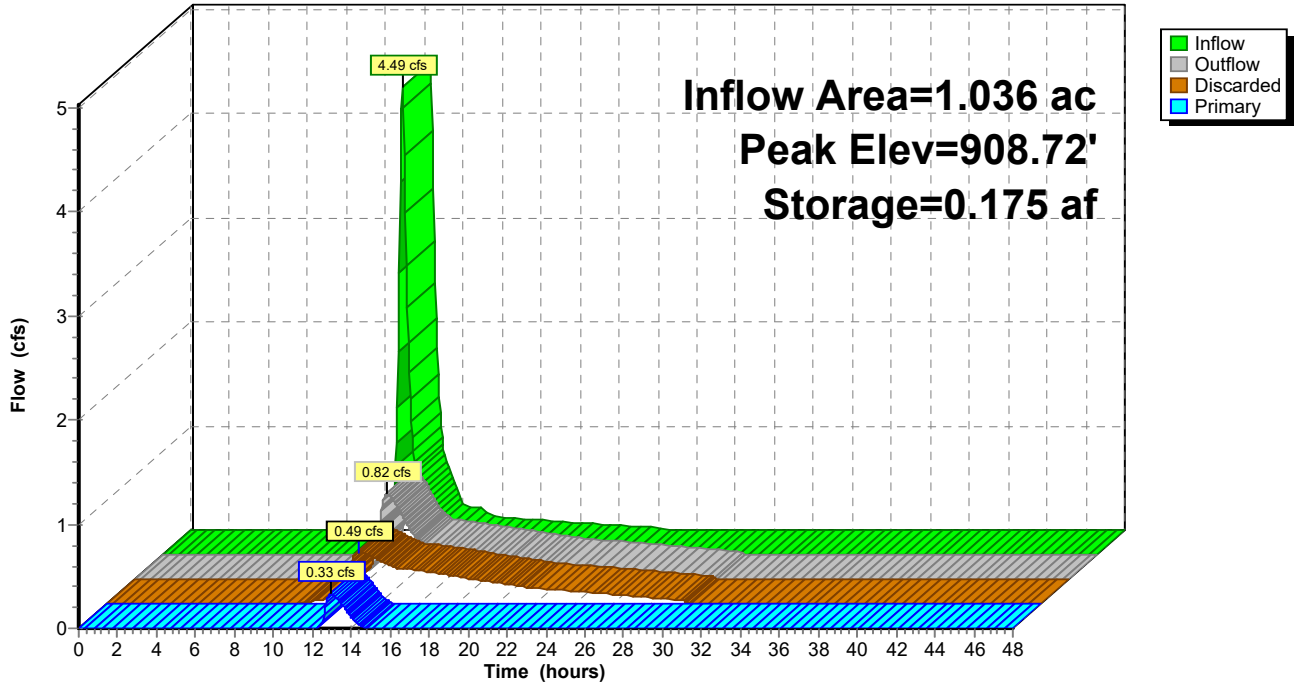
↑**2=Exfiltration** (Exfiltration Controls 0.49 cfs)

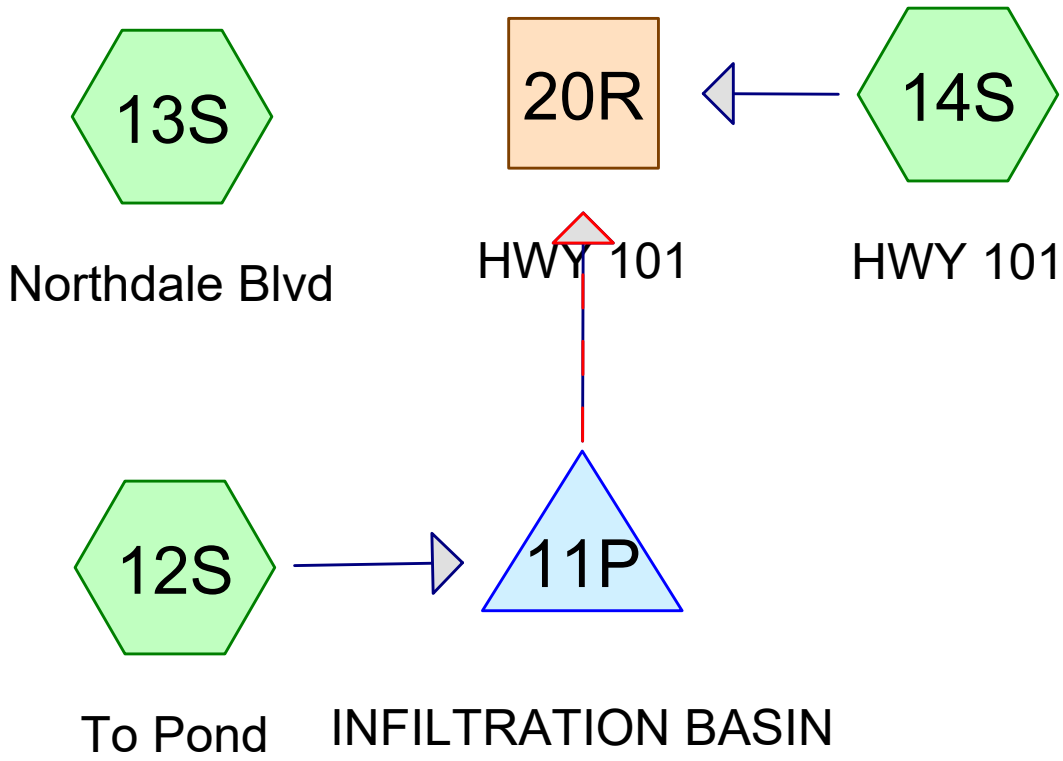
Primary OutFlow Max=0.33 cfs @ 12.96 hrs HW=908.72' (Free Discharge)

↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.33 cfs @ 0.89 fps)

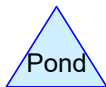
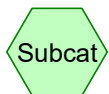
Pond 16P: East Basin

Hydrograph





PHASE 1
CONSTRUCTION



Routing Diagram for 18586_HydroCAD
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.166	61	>75% Grass cover, Good, HSG B (12S, 13S, 14S)
1.749	98	Existing Impervious (12S, 13S)
1.628	98	Phase 1 Impervious (12S, 14S)
0.747	98	Phase 2 Future Impervious (12S)

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.166	HSG B	12S, 13S, 14S
0.000	HSG C	
0.000	HSG D	
4.124	Other	12S, 13S, 14S

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.166	0.000	0.000	0.000	2.166	>75% Grass cover, Good	12S, 13S, 14S
0.000	0.000	0.000	0.000	1.749	1.749	Existing Impervious	12S, 13S
0.000	0.000	0.000	0.000	1.628	1.628	Phase 1 Impervious	12S, 14S
0.000	0.000	0.000	0.000	0.747	0.747	Phase 2 Future Impervious	12S

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	11P	902.20	901.80	81.0	0.0049	0.011	0.0	24.0	0.0	

18586_HydroCAD

MSE 24-hr 3 2-Year Rainfall=2.86"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: To Pond Runoff Area=5.397 ac 70.63% Impervious Runoff Depth=1.62"
Tc=15.0 min CN=87 Runoff=11.26 cfs 0.727 af

Subcatchment 13S: Northdale Blvd Runoff Area=0.655 ac 37.71% Impervious Runoff Depth=0.87"
Flow Length=90' Slope=0.0200 '/' Tc=14.0 min CN=75 Runoff=0.72 cfs 0.048 af

Subcatchment 14S: HWY 101 Runoff Area=0.238 ac 27.31% Impervious Runoff Depth=0.68"
Tc=10.0 min CN=71 Runoff=0.23 cfs 0.014 af

Reach 20R: HWY 101 Inflow=0.23 cfs 0.014 af
Outflow=0.23 cfs 0.014 af

Pond 11P: INFILTRATIONBASIN Peak Elev=902.28' Storage=21,632 cf Inflow=11.26 cfs 0.727 af
Discarded=0.38 cfs 0.727 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.727 af

Summary for Subcatchment 12S: To Pond

Runoff = 11.26 cfs @ 12.24 hrs, Volume= 0.727 af, Depth= 1.62"
 Routed to Pond 11P : INFILTRATION BASIN

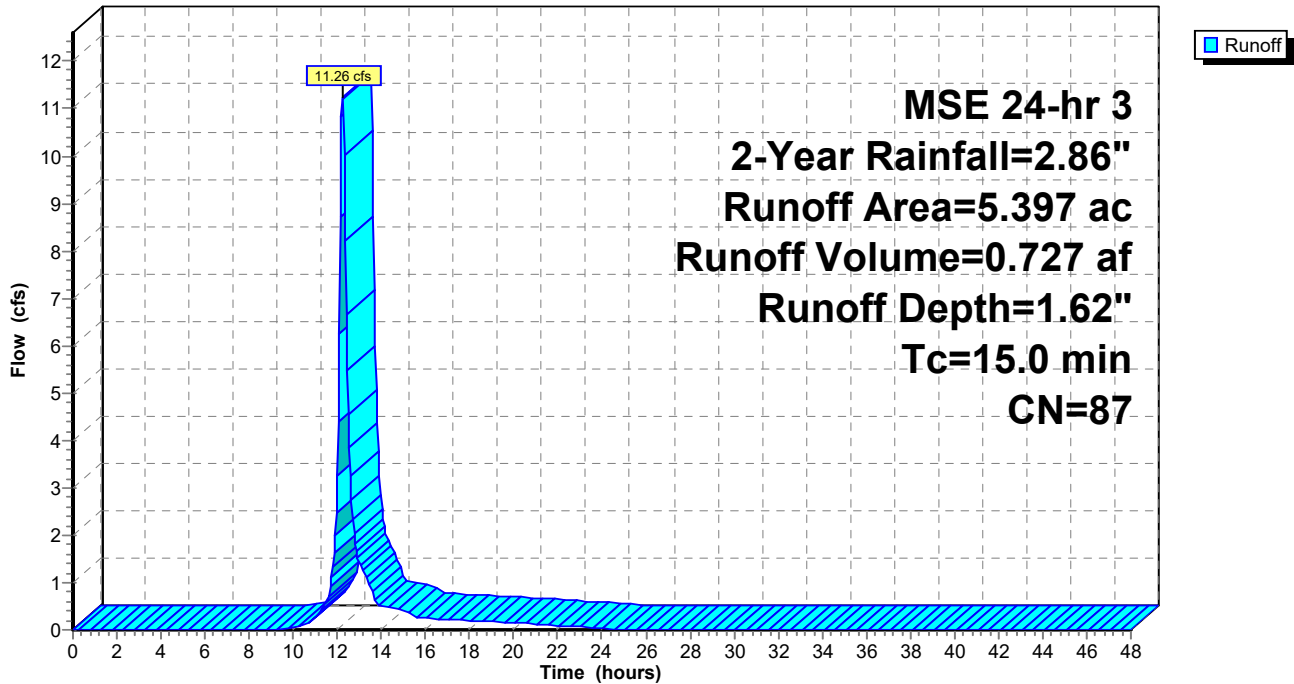
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 1.502	98	Existing Impervious
* 1.563	98	Phase 1 Impervious
* 0.747	98	Phase 2 Future Impervious
1.585	61	>75% Grass cover, Good, HSG B
5.397	87	Weighted Average
1.585		29.37% Pervious Area
3.812		70.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment 12S: To Pond

Hydrograph



Summary for Subcatchment 13S: Northdale Blvd

Runoff = 0.72 cfs @ 12.24 hrs, Volume= 0.048 af, Depth= 0.87"

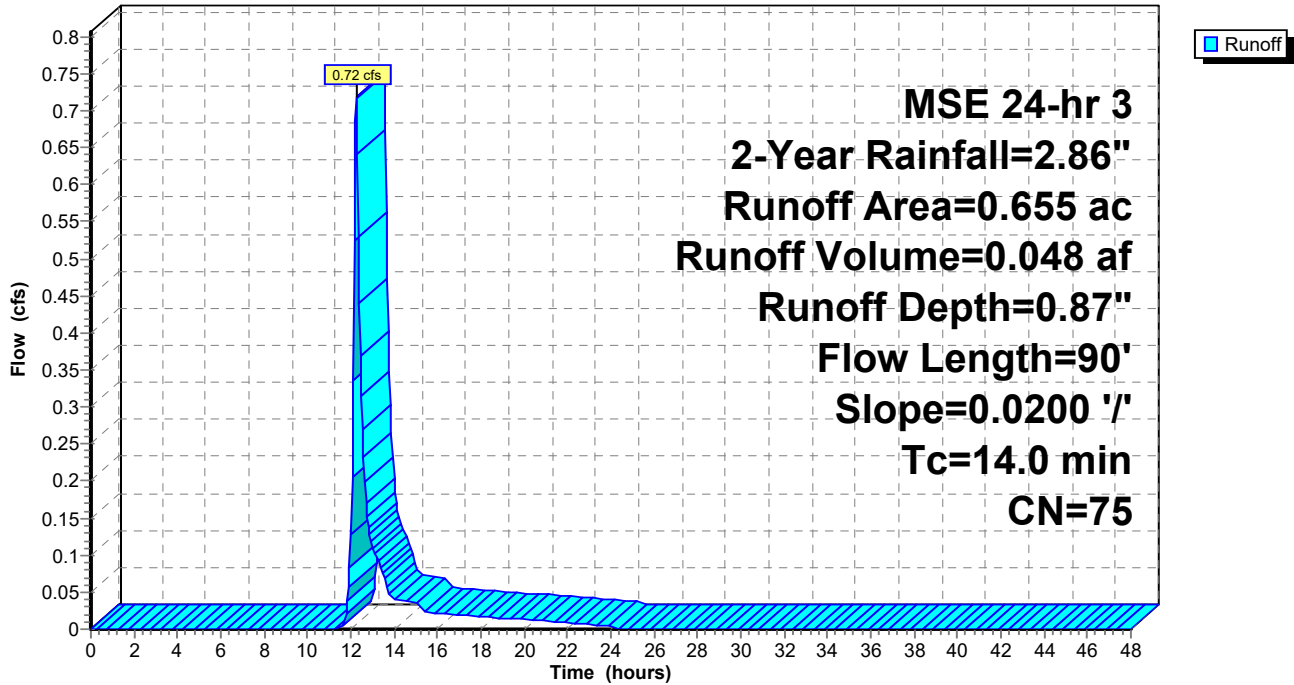
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.408	61	>75% Grass cover, Good, HSG B
* 0.247	98	Existing Impervious
0.655	75	Weighted Average
0.408		62.29% Pervious Area
0.247		37.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	90	0.0200	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 13S: Northdale Blvd

Hydrograph



Summary for Subcatchment 14S: HWY 101

Runoff = 0.23 cfs @ 12.20 hrs, Volume= 0.014 af, Depth= 0.68"
 Routed to Reach 20R : HWY 101

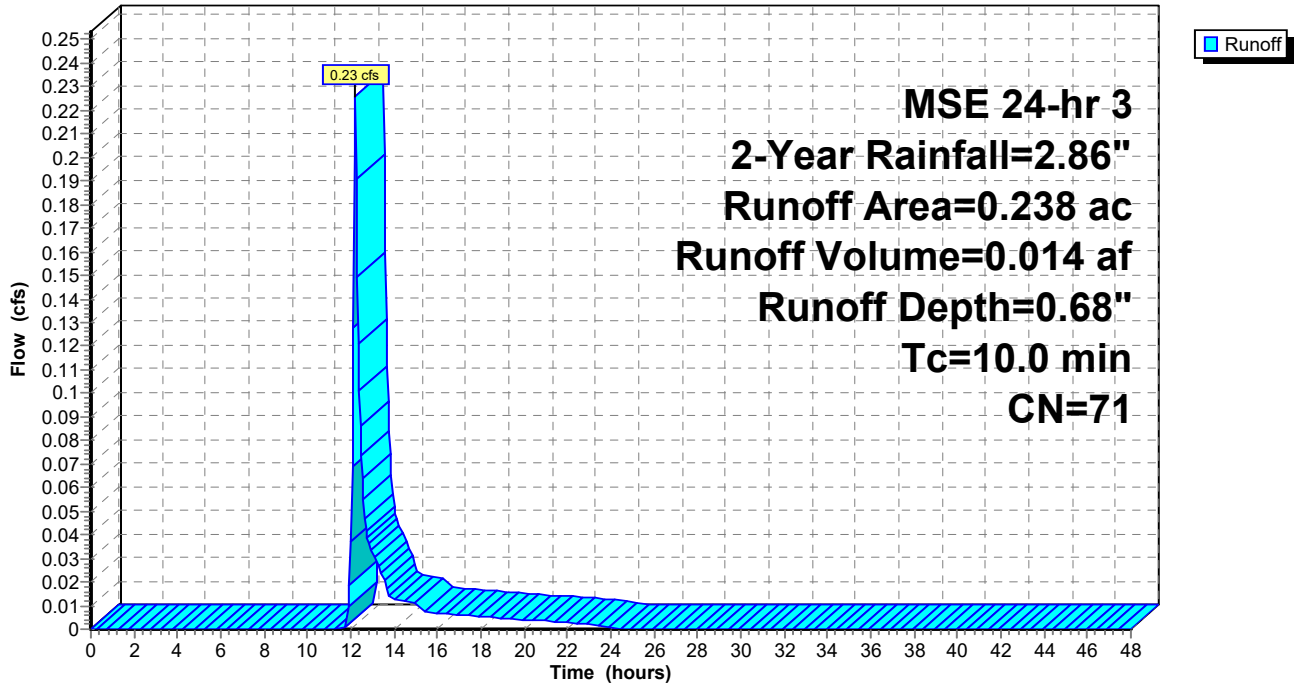
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.173	61	>75% Grass cover, Good, HSG B
* 0.065	98	Phase 1 Impervious
0.238	71	Weighted Average
0.173		72.69% Pervious Area
0.065		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 14S: HWY 101

Hydrograph



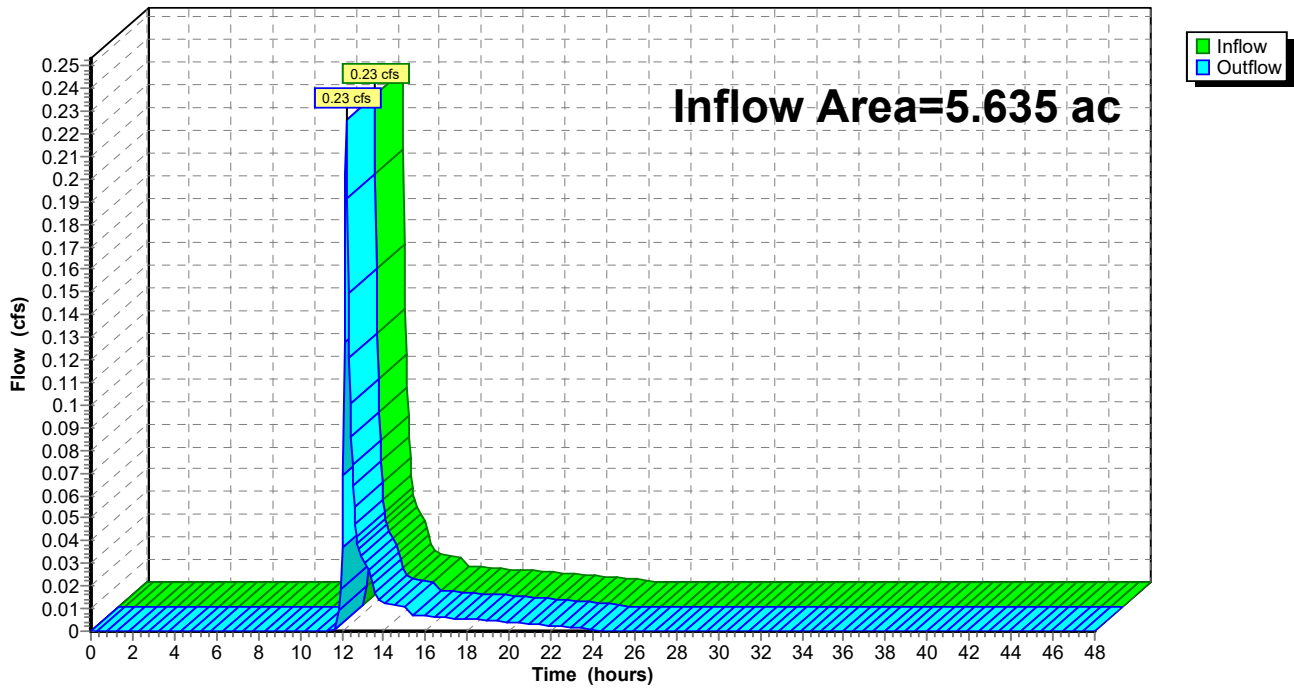
Summary for Reach 20R: HWY 101

Inflow Area = 5.635 ac, 68.80% Impervious, Inflow Depth = 0.03" for 2-Year event
Inflow = 0.23 cfs @ 12.20 hrs, Volume= 0.014 af
Outflow = 0.23 cfs @ 12.20 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 20R: HWY 101

Hydrograph



Summary for Pond 11P: INFILTRATION BASIN

Inflow Area = 5.397 ac, 70.63% Impervious, Inflow Depth = 1.62" for 2-Year event
 Inflow = 11.26 cfs @ 12.24 hrs, Volume= 0.727 af
 Outflow = 0.38 cfs @ 15.16 hrs, Volume= 0.727 af, Atten= 97%, Lag= 175.1 min
 Discarded = 0.38 cfs @ 15.16 hrs, Volume= 0.727 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 20R : HWY 101
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 20R : HWY 101

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 902.28' @ 15.16 hrs Surf.Area= 10,107 sf Storage= 21,632 cf

Plug-Flow detention time= 640.5 min calculated for 0.727 af (100% of inflow)
 Center-of-Mass det. time= 640.9 min (1,450.1 - 809.2)

Volume	Invert	Avail.Storage	Storage Description
#1	899.40'	72,675 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.40	5,453	0	0	5,453
900.00	6,032	3,444	3,444	6,054
901.00	7,660	6,830	10,274	7,708
902.00	9,558	8,592	18,865	9,634
903.00	11,580	10,553	29,418	11,689
904.00	14,085	12,812	42,230	14,226
905.00	15,245	14,661	56,891	15,463
906.00	16,328	15,783	72,675	16,634

Device	Routing	Invert	Outlet Devices
#1	Primary	902.20'	24.0" Round Culvert L= 81.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 902.20' / 901.80' S= 0.0049 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	905.40'	15.0' 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
#3	Discarded	899.40'	1.630 in/hr Exfiltration over Wetted area
#4	Device 1	902.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.00 3.00 6.00 Width (feet) 0.58 0.58 5.00 5.00

Discarded OutFlow Max=0.38 cfs @ 15.16 hrs HW=902.28' (Free Discharge)

↑3=Exfiltration (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)

↑1=Culvert (Controls 0.00 cfs)

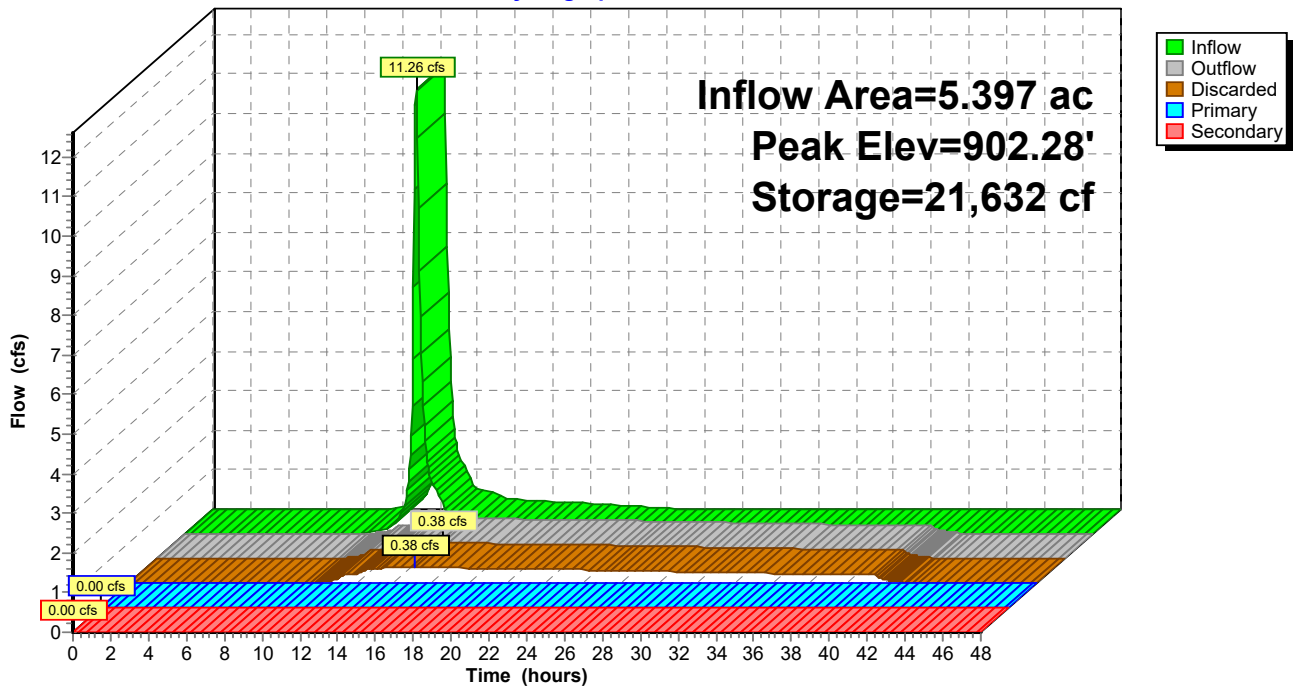
↑4=Custom Weir/Orifice (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)

↑2=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 11P: INFILTRATION BASIN

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.26"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: To Pond Runoff Area=5.397 ac 70.63% Impervious Runoff Depth=2.88"
Tc=15.0 min CN=87 Runoff=19.74 cfs 1.294 af

Subcatchment 13S: Northdale Blvd Runoff Area=0.655 ac 37.71% Impervious Runoff Depth=1.86"
Flow Length=90' Slope=0.0200 '/' Tc=14.0 min CN=75 Runoff=1.61 cfs 0.102 af

Subcatchment 14S: HWY 101 Runoff Area=0.238 ac 27.31% Impervious Runoff Depth=1.57"
Tc=10.0 min CN=71 Runoff=0.56 cfs 0.031 af

Reach 20R: HWY 101 Inflow=1.79 cfs 0.419 af
Outflow=1.79 cfs 0.419 af

Pond 11P: INFILTRATIONBASIN Peak Elev=903.34' Storage=33,460 cf Inflow=19.74 cfs 1.294 af
Discarded=0.47 cfs 0.906 af Primary=1.72 cfs 0.387 af Secondary=0.00 cfs 0.000 af Outflow=2.20 cfs 1.294 af

Summary for Subcatchment 12S: To Pond

Runoff = 19.74 cfs @ 12.23 hrs, Volume= 1.294 af, Depth= 2.88"
 Routed to Pond 11P : INFILTRATION BASIN

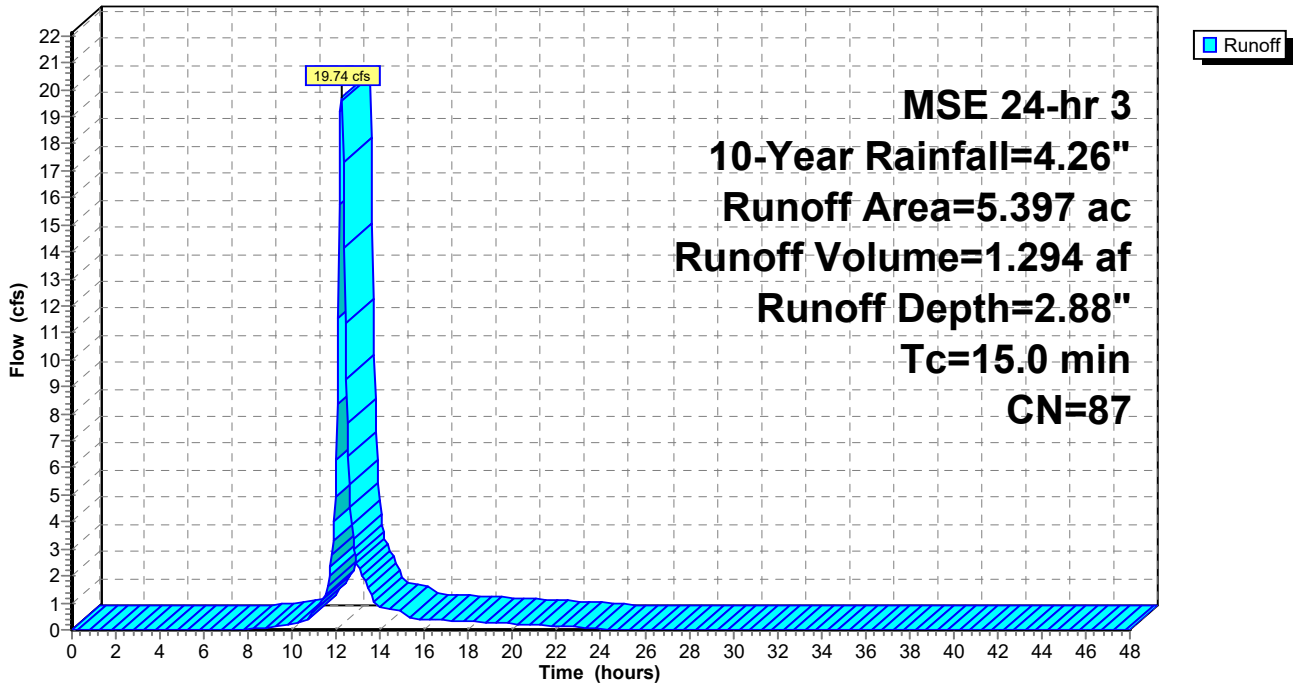
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 1.502	98	Existing Impervious
* 1.563	98	Phase 1 Impervious
* 0.747	98	Phase 2 Future Impervious
1.585	61	>75% Grass cover, Good, HSG B
5.397	87	Weighted Average
1.585		29.37% Pervious Area
3.812		70.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment 12S: To Pond

Hydrograph



Summary for Subcatchment 13S: Northdale Blvd

Runoff = 1.61 cfs @ 12.23 hrs, Volume= 0.102 af, Depth= 1.86"

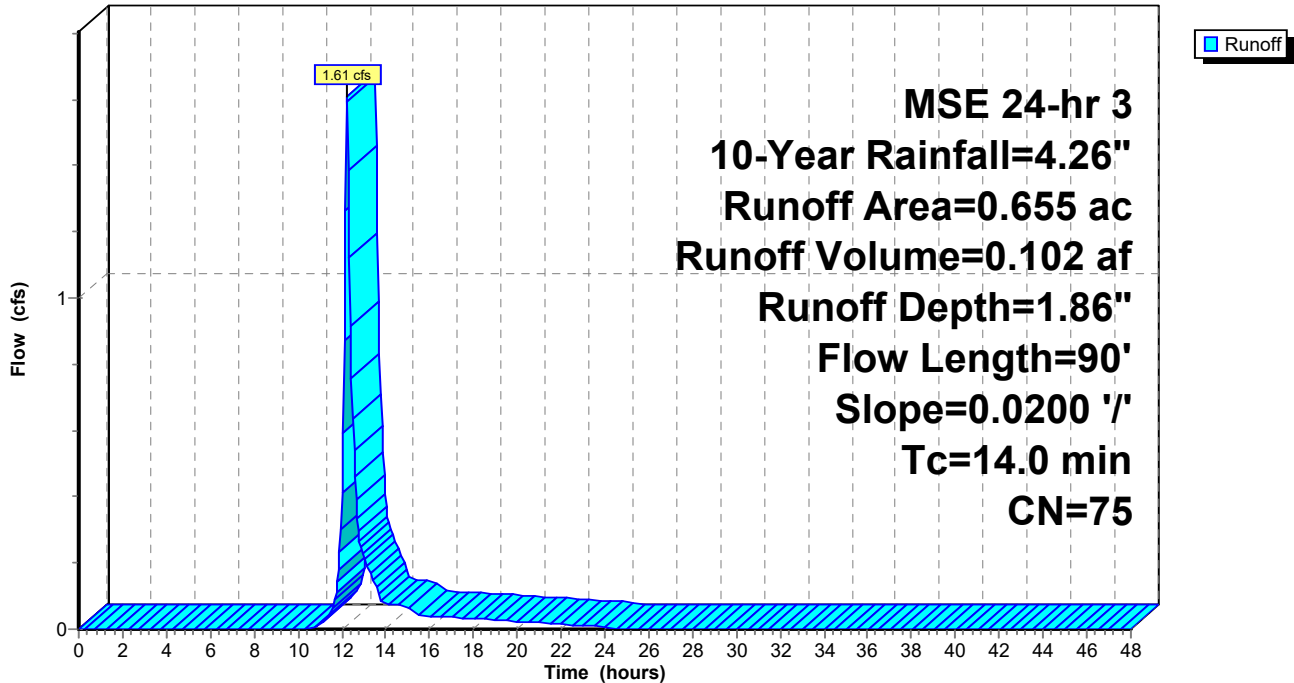
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.408	61	>75% Grass cover, Good, HSG B
* 0.247	98	Existing Impervious
0.655	75	Weighted Average
0.408		62.29% Pervious Area
0.247		37.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	90	0.0200	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 13S: Northdale Blvd

Hydrograph



Summary for Subcatchment 14S: HWY 101

Runoff = 0.56 cfs @ 12.19 hrs, Volume= 0.031 af, Depth= 1.57"
 Routed to Reach 20R : HWY 101

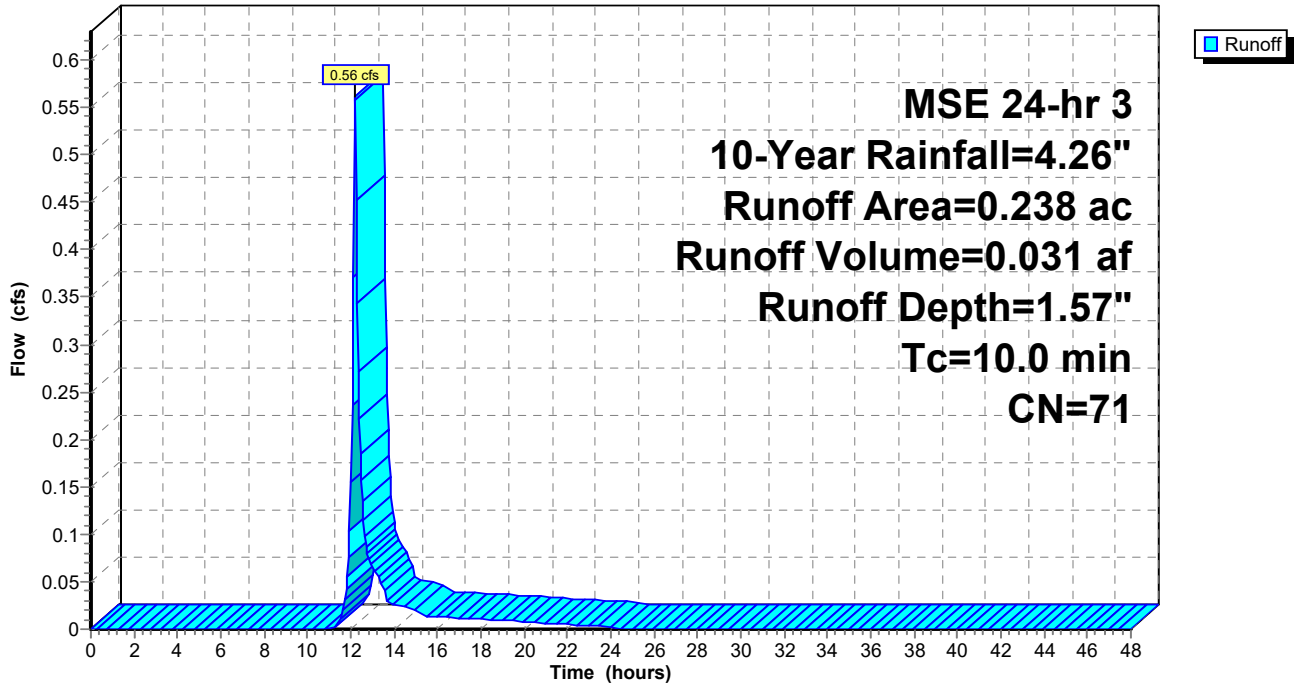
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.173	61	>75% Grass cover, Good, HSG B
* 0.065	98	Phase 1 Impervious
0.238	71	Weighted Average
0.173		72.69% Pervious Area
0.065		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 14S: HWY 101

Hydrograph



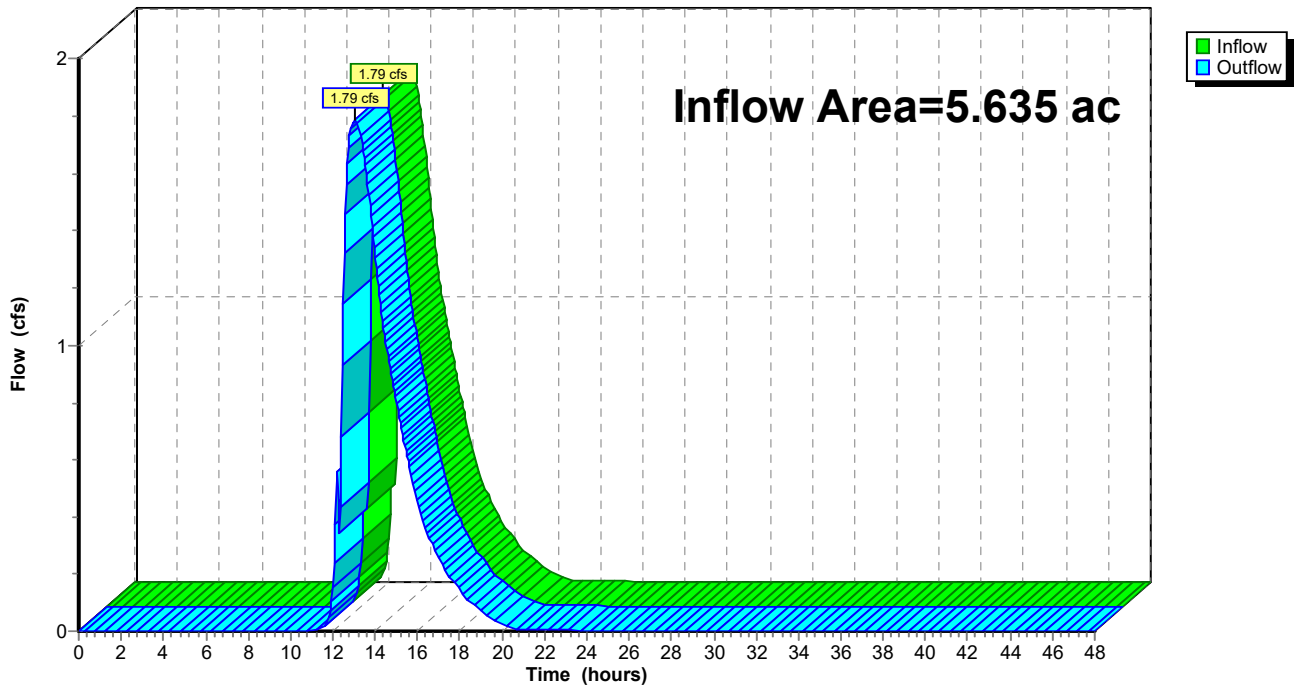
Summary for Reach 20R: HWY 101

Inflow Area = 5.635 ac, 68.80% Impervious, Inflow Depth = 0.89" for 10-Year event
Inflow = 1.79 cfs @ 13.03 hrs, Volume= 0.419 af
Outflow = 1.79 cfs @ 13.03 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 20R: HWY 101

Hydrograph



Summary for Pond 11P: INFILTRATION BASIN

Inflow Area = 5.397 ac, 70.63% Impervious, Inflow Depth = 2.88" for 10-Year event
 Inflow = 19.74 cfs @ 12.23 hrs, Volume= 1.294 af
 Outflow = 2.20 cfs @ 13.06 hrs, Volume= 1.294 af, Atten= 89%, Lag= 49.5 min
 Discarded = 0.47 cfs @ 13.06 hrs, Volume= 0.906 af
 Primary = 1.72 cfs @ 13.06 hrs, Volume= 0.387 af
 Routed to Reach 20R : HWY 101
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 20R : HWY 101

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 903.34' @ 13.06 hrs Surf.Area= 12,397 sf Storage= 33,460 cf

Plug-Flow detention time= 512.8 min calculated for 1.292 af (100% of inflow)
 Center-of-Mass det. time= 513.6 min (1,311.2 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1	899.40'	72,675 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.40	5,453	0	0	5,453
900.00	6,032	3,444	3,444	6,054
901.00	7,660	6,830	10,274	7,708
902.00	9,558	8,592	18,865	9,634
903.00	11,580	10,553	29,418	11,689
904.00	14,085	12,812	42,230	14,226
905.00	15,245	14,661	56,891	15,463
906.00	16,328	15,783	72,675	16,634

Device	Routing	Invert	Outlet Devices
#1	Primary	902.20'	24.0" Round Culvert L= 81.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 902.20' / 901.80' S= 0.0049 '/ Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	905.40'	15.0' 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
#3	Discarded	899.40'	1.630 in/hr Exfiltration over Wetted area
#4	Device 1	902.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.00 3.00 6.00 Width (feet) 0.58 0.58 5.00 5.00

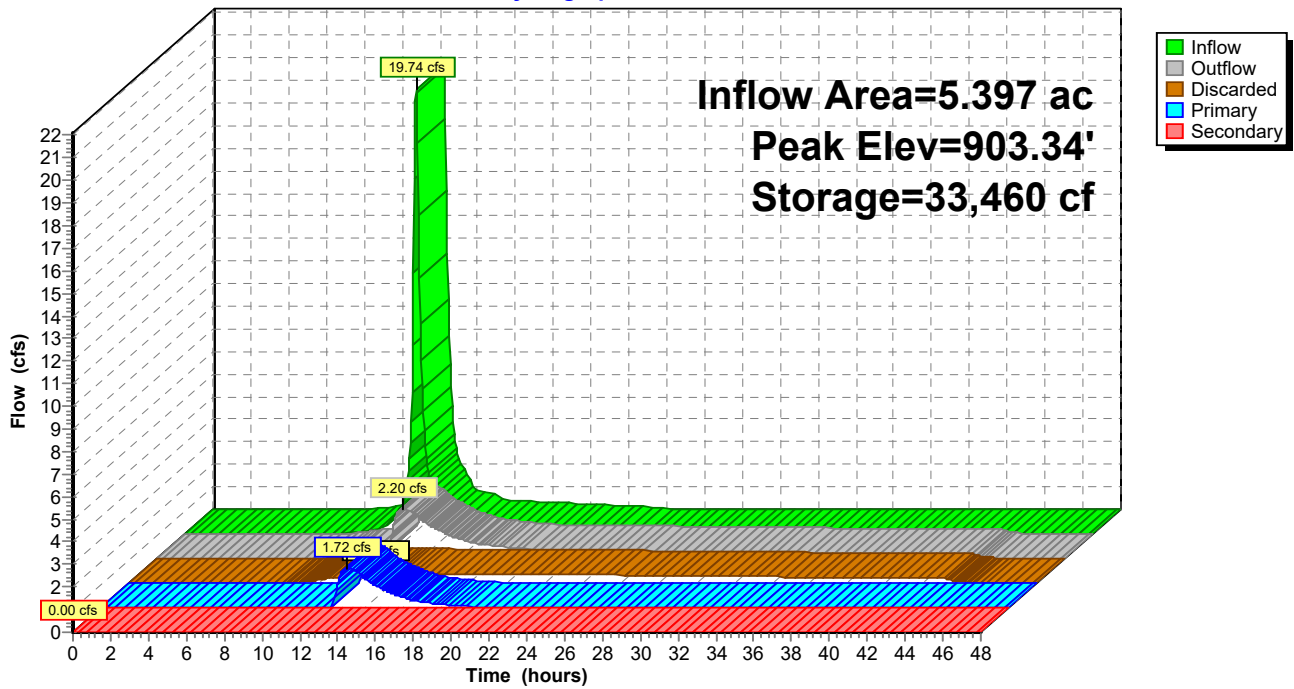
Discarded OutFlow Max=0.47 cfs @ 13.06 hrs HW=903.34' (Free Discharge)
↑3=Exfiltration (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=1.72 cfs @ 13.06 hrs HW=903.34' (Free Discharge)
↑1=Culvert (Passes 1.72 cfs of 5.33 cfs potential flow)
↑4=Custom Weir/Orifice (Weir Controls 1.72 cfs @ 3.17 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 11P: INFILTRATION BASIN

Hydrograph



18586_HydroCAD

MSE 24-hr 3 100-Year Rainfall=7.32"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 12S: To Pond Runoff Area=5.397 ac 70.63% Impervious Runoff Depth=5.79"
Tc=15.0 min CN=87 Runoff=38.48 cfs 2.604 af

Subcatchment 13S: Northdale Blvd Runoff Area=0.655 ac 37.71% Impervious Runoff Depth=4.43"
Flow Length=90' Slope=0.0200 '/' Tc=14.0 min CN=75 Runoff=3.85 cfs 0.242 af

Subcatchment 14S: HWY 101 Runoff Area=0.238 ac 27.31% Impervious Runoff Depth=3.99"
Tc=10.0 min CN=71 Runoff=1.44 cfs 0.079 af

Reach 20R: HWY 101 Inflow=9.04 cfs 1.635 af
Outflow=9.04 cfs 1.635 af

Pond 11P: INFILTRATIONBASIN Peak Elev=905.18' Storage=59,612 cf Inflow=38.48 cfs 2.604 af
Discarded=0.59 cfs 1.047 af Primary=8.79 cfs 1.556 af Secondary=0.00 cfs 0.000 af Outflow=9.38 cfs 2.604 af

Summary for Subcatchment 12S: To Pond

Runoff = 38.48 cfs @ 12.23 hrs, Volume= 2.604 af, Depth= 5.79"
 Routed to Pond 11P : INFILTRATION BASIN

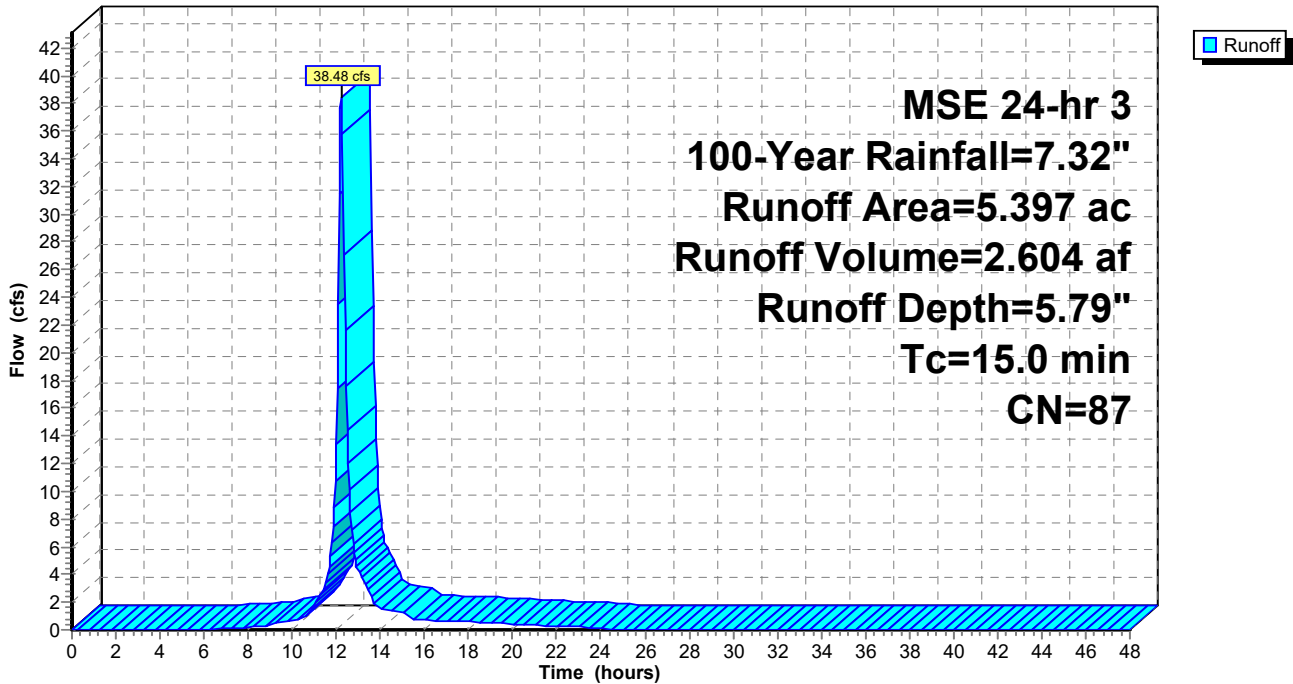
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 1.502	98	Existing Impervious
* 1.563	98	Phase 1 Impervious
* 0.747	98	Phase 2 Future Impervious
1.585	61	>75% Grass cover, Good, HSG B
5.397	87	Weighted Average
1.585		29.37% Pervious Area
3.812		70.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment 12S: To Pond

Hydrograph



Summary for Subcatchment 13S: Northdale Blvd

Runoff = 3.85 cfs @ 12.22 hrs, Volume= 0.242 af, Depth= 4.43"

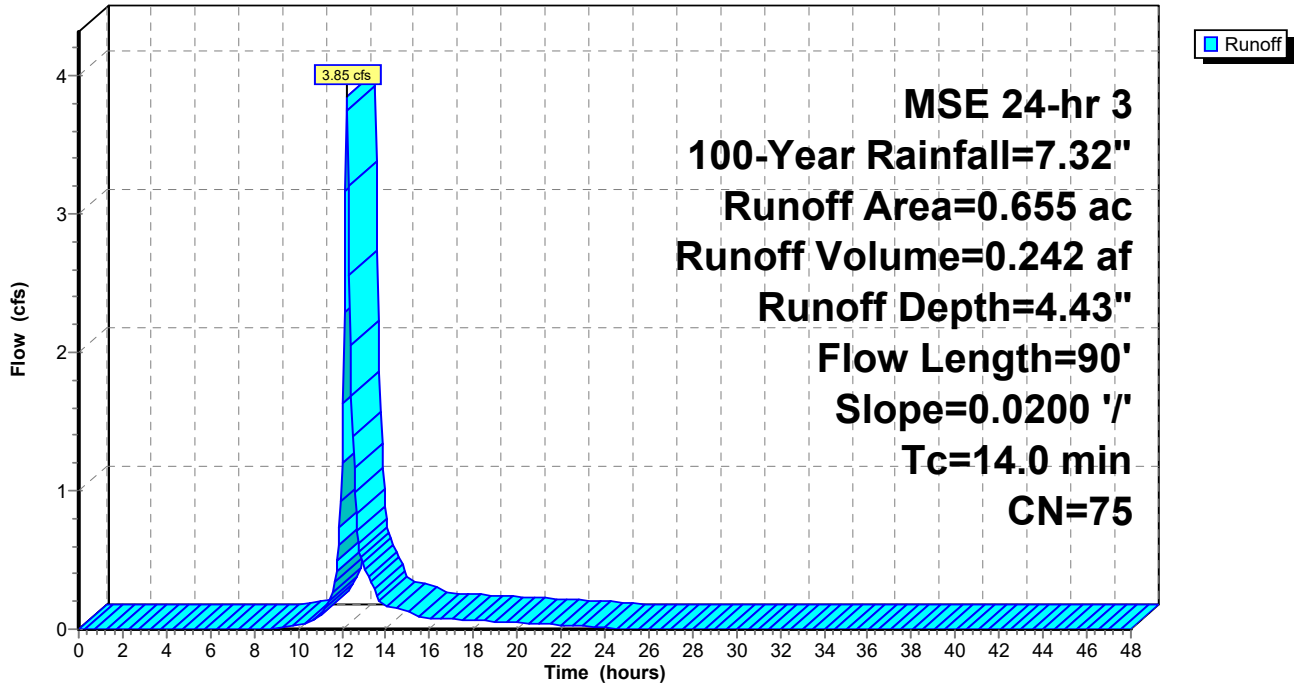
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.408	61	>75% Grass cover, Good, HSG B
* 0.247	98	Existing Impervious
0.655	75	Weighted Average
0.408		62.29% Pervious Area
0.247		37.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	90	0.0200	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 13S: Northdale Blvd

Hydrograph



Summary for Subcatchment 14S: HWY 101

Runoff = 1.44 cfs @ 12.18 hrs, Volume= 0.079 af, Depth= 3.99"
 Routed to Reach 20R : HWY 101

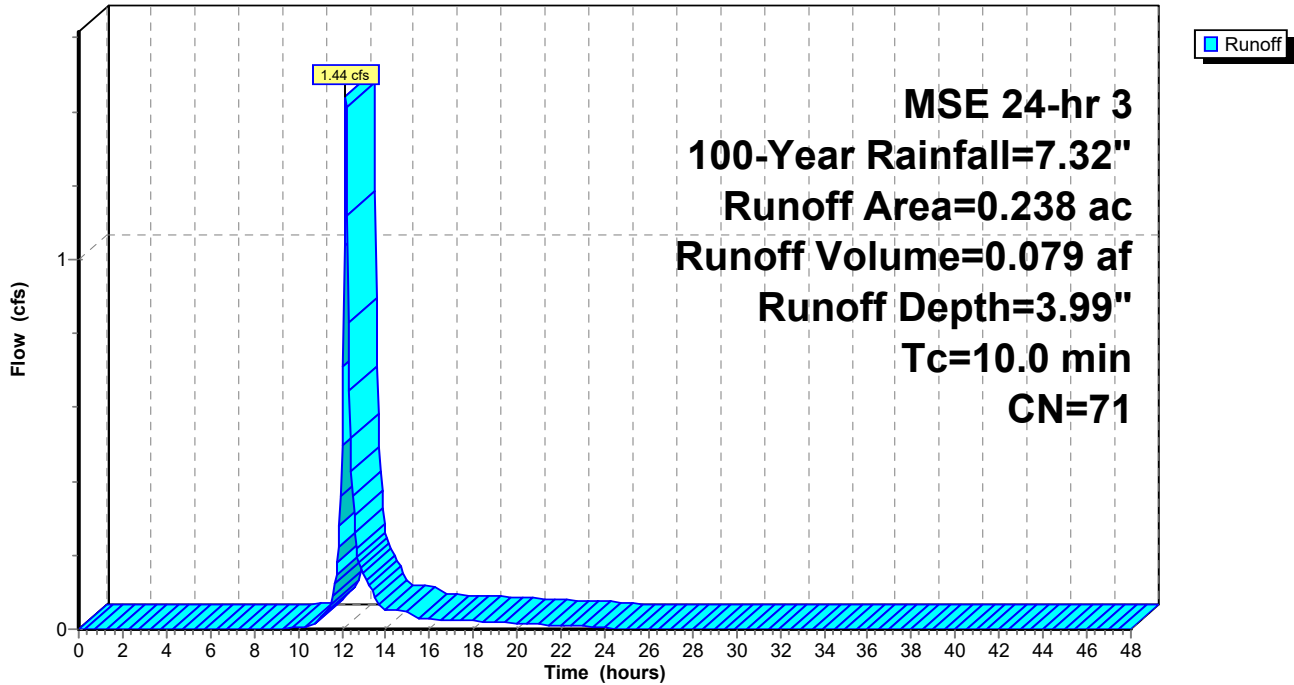
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.173	61	>75% Grass cover, Good, HSG B
* 0.065	98	Phase 1 Impervious
0.238	71	Weighted Average
0.173		72.69% Pervious Area
0.065		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 14S: HWY 101

Hydrograph



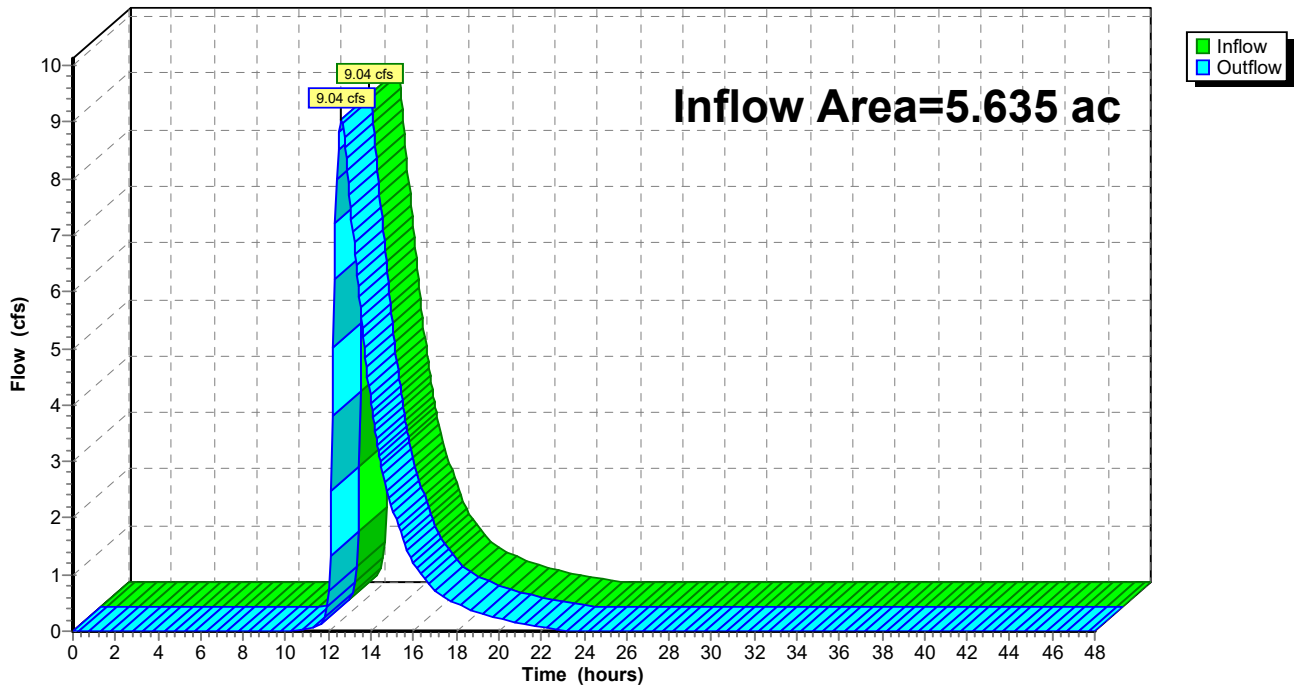
Summary for Reach 20R: HWY 101

Inflow Area = 5.635 ac, 68.80% Impervious, Inflow Depth = 3.48" for 100-Year event
Inflow = 9.04 cfs @ 12.60 hrs, Volume= 1.635 af
Outflow = 9.04 cfs @ 12.60 hrs, Volume= 1.635 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 20R: HWY 101

Hydrograph



Summary for Pond 11P: INFILTRATION BASIN

Inflow Area = 5.397 ac, 70.63% Impervious, Inflow Depth = 5.79" for 100-Year event
 Inflow = 38.48 cfs @ 12.23 hrs, Volume= 2.604 af
 Outflow = 9.38 cfs @ 12.62 hrs, Volume= 2.604 af, Atten= 76%, Lag= 23.6 min
 Discarded = 0.59 cfs @ 12.62 hrs, Volume= 1.047 af
 Primary = 8.79 cfs @ 12.62 hrs, Volume= 1.556 af
 Routed to Reach 20R : HWY 101
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 20R : HWY 101

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 905.18' @ 12.62 hrs Surf.Area= 15,434 sf Storage= 59,612 cf

Plug-Flow detention time= 320.2 min calculated for 2.604 af (100% of inflow)
 Center-of-Mass det. time= 320.1 min (1,103.9 - 783.8)

Volume	Invert	Avail.Storage	Storage Description
#1	899.40'	72,675 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.40	5,453	0	0	5,453
900.00	6,032	3,444	3,444	6,054
901.00	7,660	6,830	10,274	7,708
902.00	9,558	8,592	18,865	9,634
903.00	11,580	10,553	29,418	11,689
904.00	14,085	12,812	42,230	14,226
905.00	15,245	14,661	56,891	15,463
906.00	16,328	15,783	72,675	16,634

Device	Routing	Invert	Outlet Devices
#1	Primary	902.20'	24.0" Round Culvert L= 81.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 902.20' / 901.80' S= 0.0049 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	905.40'	15.0' 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
#3	Discarded	899.40'	1.630 in/hr Exfiltration over Wetted area
#4	Device 1	902.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.00 3.00 6.00 Width (feet) 0.58 0.58 5.00 5.00

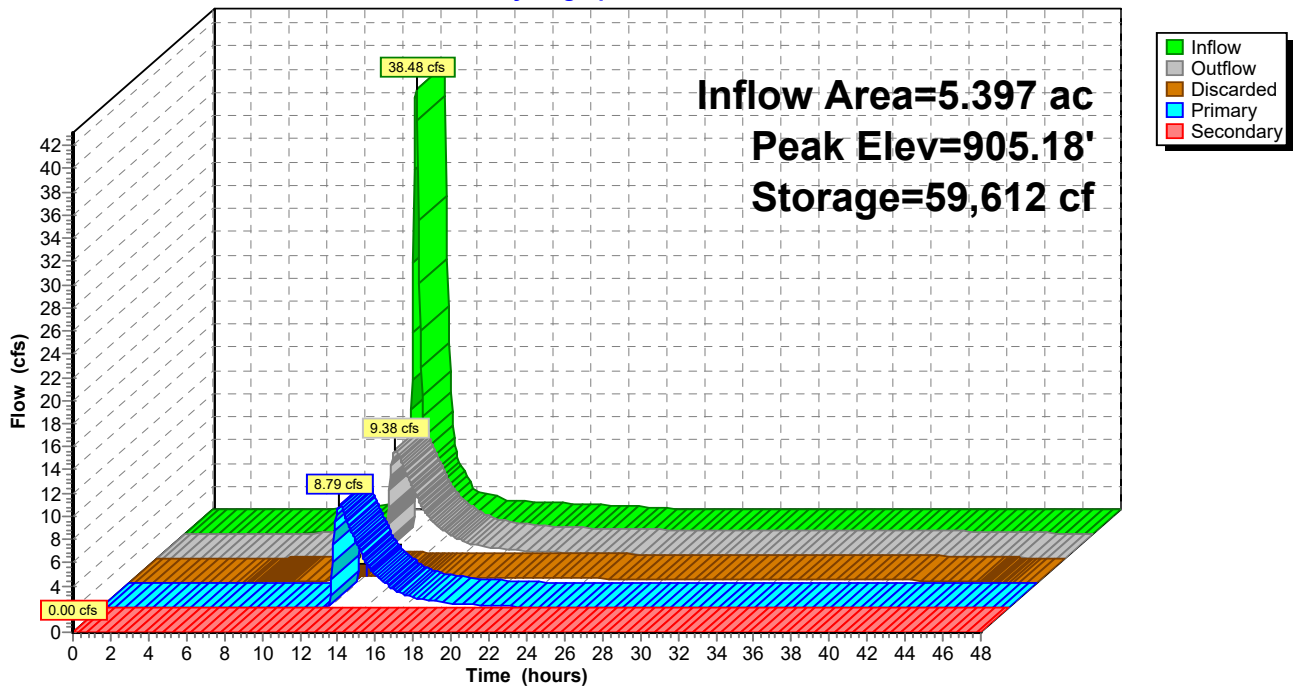
Discarded OutFlow Max=0.59 cfs @ 12.62 hrs HW=905.17' (Free Discharge)
 ↳3=Exfiltration (Exfiltration Controls 0.59 cfs)

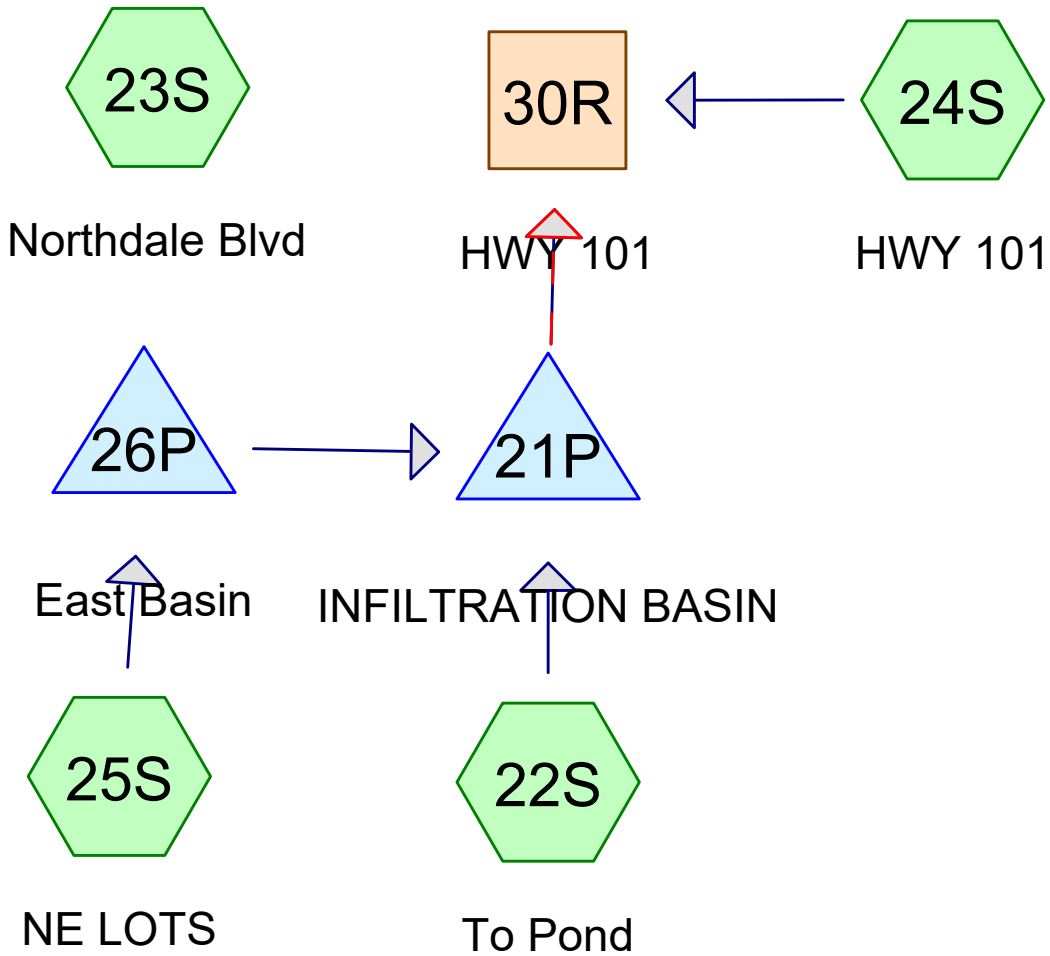
Primary OutFlow Max=8.78 cfs @ 12.62 hrs HW=905.17' (Free Discharge)
 ↳1=Culvert (Passes 8.78 cfs of 18.76 cfs potential flow)
 ↳4=Custom Weir/Orifice (Weir Controls 8.78 cfs @ 5.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)
 ↳2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

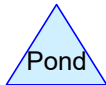
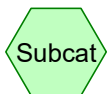
Pond 11P: INFILTRATION BASIN

Hydrograph





PHASE 2
CONSTRUCTION



Routing Diagram for 18586_HydroCAD
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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.495	61	>75% Grass cover, Good, HSG B (22S, 23S, 24S, 25S)
1.749	98	Existing Impervious (22S, 23S, 25S)
1.628	98	Phase 1 Impervious (22S, 24S)
0.138	98	Phase 2 Future Impervious (22S)
0.280	98	Phase 2 Impervious (22S)

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.495	HSG B	22S, 23S, 24S, 25S
0.000	HSG C	
0.000	HSG D	
3.795	Other	22S, 23S, 24S, 25S

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.495	0.000	0.000	0.000	2.495	>75% Grass cover, Good	22S, 23S, 24S, 25S
0.000	0.000	0.000	0.000	1.749	1.749	Existing Impervious	22S, 23S, 25S
0.000	0.000	0.000	0.000	1.628	1.628	Phase 1 Impervious	22S, 24S
0.000	0.000	0.000	0.000	0.138	0.138	Phase 2 Future Impervious	22S
0.000	0.000	0.000	0.000	0.280	0.280	Phase 2 Impervious	22S

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment22S: To Pond Runoff Area=4.722 ac 68.61% Impervious Runoff Depth=1.54"
Tc=15.0 min CN=86 Runoff=9.41 cfs 0.607 af

Subcatchment23S: Northdale Blvd Runoff Area=0.655 ac 37.71% Impervious Runoff Depth=0.87"
Flow Length=90' Slope=0.0200 '/' Tc=14.0 min CN=75 Runoff=0.72 cfs 0.048 af

Subcatchment24S: HWY 101 Runoff Area=0.238 ac 27.31% Impervious Runoff Depth=0.68"
Tc=10.0 min CN=71 Runoff=0.23 cfs 0.014 af

Subcatchment25S: NE LOTS Runoff Area=0.675 ac 36.00% Impervious Runoff Depth=0.82"
Flow Length=100' Slope=0.0100 '/' Tc=20.1 min CN=74 Runoff=0.58 cfs 0.046 af

Reach 30R: HWY 101 Inflow=0.23 cfs 0.014 af
Outflow=0.23 cfs 0.014 af

Pond 21P: INFILTRATIONBASIN Peak Elev=901.87' Storage=17,604 cf Inflow=9.41 cfs 0.607 af
Discarded=0.35 cfs 0.607 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.35 cfs 0.607 af

Pond 26P: East Basin Peak Elev=907.53' Storage=0.020 af Inflow=0.58 cfs 0.046 af
Discarded=0.09 cfs 0.046 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.046 af

Summary for Subcatchment 22S: To Pond

Runoff = 9.41 cfs @ 12.24 hrs, Volume= 0.607 af, Depth= 1.54"
 Routed to Pond 21P : INFILTRATION BASIN

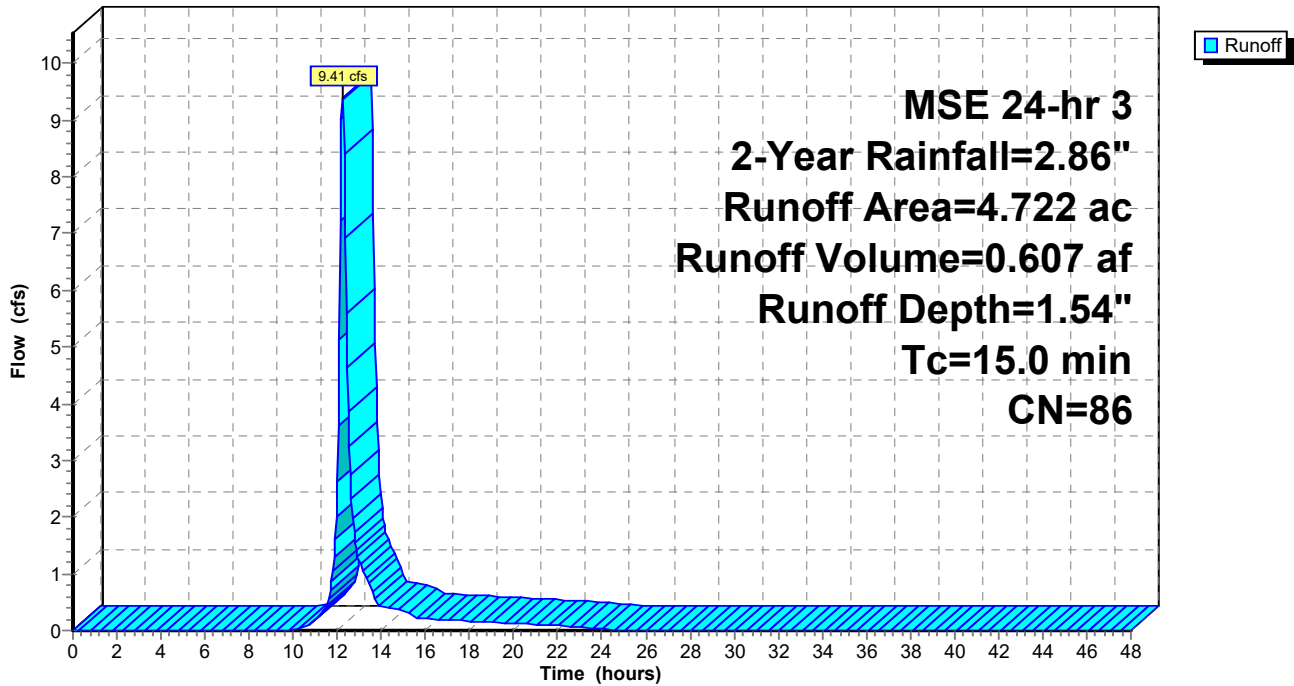
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 1.259	98	Existing Impervious
* 1.563	98	Phase 1 Impervious
* 0.280	98	Phase 2 Impervious
* 0.138	98	Phase 2 Future Impervious
1.482	61	>75% Grass cover, Good, HSG B
4.722	86	Weighted Average
1.482		31.39% Pervious Area
3.240		68.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment 22S: To Pond

Hydrograph



Summary for Subcatchment 23S: Northdale Blvd

Runoff = 0.72 cfs @ 12.24 hrs, Volume= 0.048 af, Depth= 0.87"

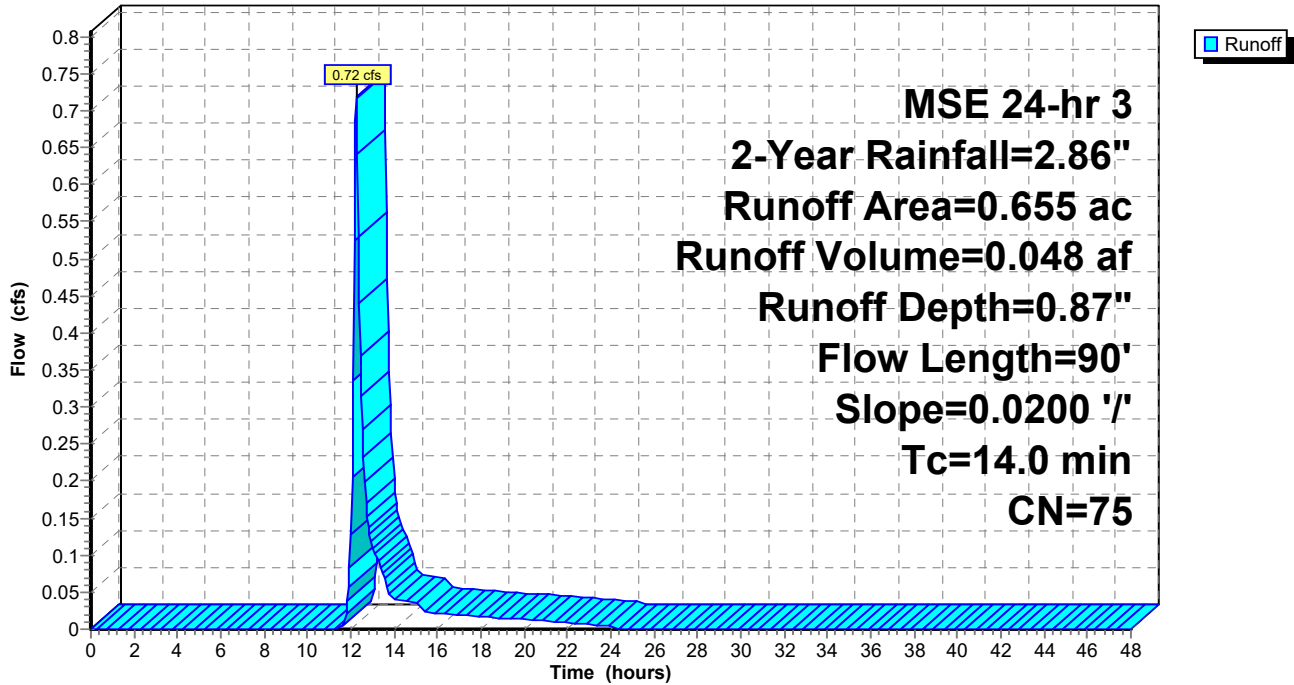
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.408	61	>75% Grass cover, Good, HSG B
* 0.247	98	Existing Impervious
0.655	75	Weighted Average
0.408		62.29% Pervious Area
0.247		37.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	90	0.0200	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 23S: Northdale Blvd

Hydrograph



Summary for Subcatchment 24S: HWY 101

Runoff = 0.23 cfs @ 12.20 hrs, Volume= 0.014 af, Depth= 0.68"
 Routed to Reach 30R : HWY 101

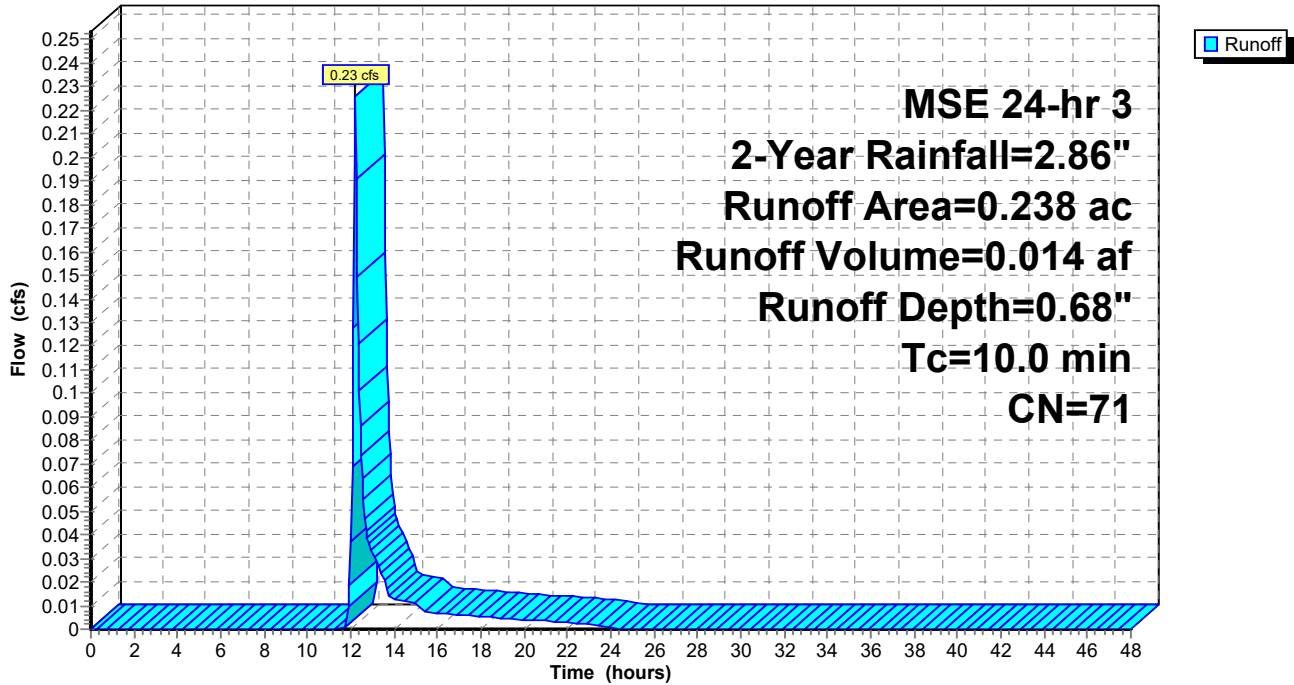
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.173	61	>75% Grass cover, Good, HSG B
* 0.065	98	Phase 1 Impervious
0.238	71	Weighted Average
0.173		72.69% Pervious Area
0.065		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 24S: HWY 101

Hydrograph



Summary for Subcatchment 25S: NE LOTS

Runoff = 0.58 cfs @ 12.32 hrs, Volume= 0.046 af, Depth= 0.82"
 Routed to Pond 26P : East Basin

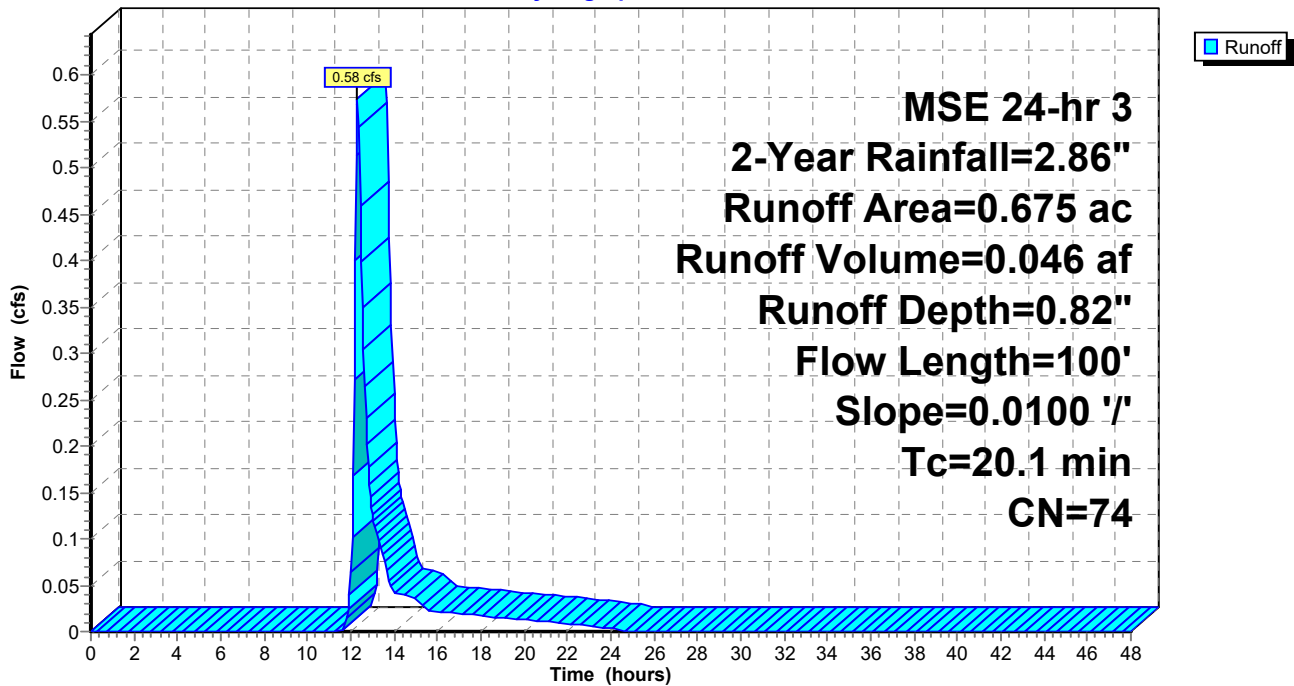
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.243	98	Existing Impervious
0.432	61	>75% Grass cover, Good, HSG B
0.675	74	Weighted Average
0.432		64.00% Pervious Area
0.243		36.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	100	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 25S: NE LOTS

Hydrograph



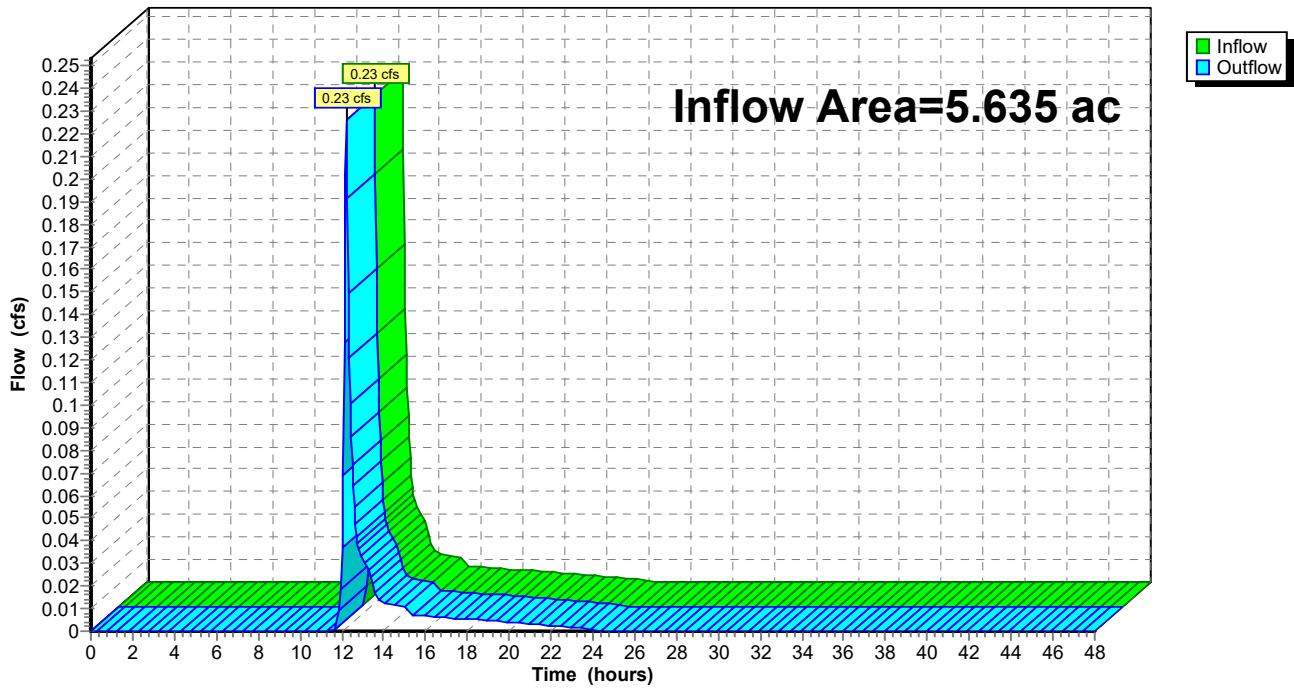
Summary for Reach 30R: HWY 101

Inflow Area = 5.635 ac, 62.96% Impervious, Inflow Depth = 0.03" for 2-Year event
Inflow = 0.23 cfs @ 12.20 hrs, Volume= 0.014 af
Outflow = 0.23 cfs @ 12.20 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 30R: HWY 101

Hydrograph



Summary for Pond 21P: INFILTRATION BASIN

Inflow Area = 5.397 ac, 64.54% Impervious, Inflow Depth = 1.35" for 2-Year event
 Inflow = 9.41 cfs @ 12.24 hrs, Volume= 0.607 af
 Outflow = 0.35 cfs @ 15.10 hrs, Volume= 0.607 af, Atten= 96%, Lag= 171.8 min
 Discarded = 0.35 cfs @ 15.10 hrs, Volume= 0.607 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 30R : HWY 101
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 30R : HWY 101

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 901.87' @ 15.10 hrs Surf.Area= 9,292 sf Storage= 17,604 cf

Plug-Flow detention time= 565.1 min calculated for 0.607 af (100% of inflow)
 Center-of-Mass det. time= 564.8 min (1,376.7 - 811.9)

Volume	Invert	Avail.Storage	Storage Description
#1	899.40'	72,675 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.40	5,453	0	0	5,453
900.00	6,032	3,444	3,444	6,054
901.00	7,660	6,830	10,274	7,708
902.00	9,558	8,592	18,865	9,634
903.00	11,580	10,553	29,418	11,689
904.00	14,085	12,812	42,230	14,226
905.00	15,245	14,661	56,891	15,463
906.00	16,328	15,783	72,675	16,634

Device	Routing	Invert	Outlet Devices
#1	Primary	902.20'	24.0" Round Culvert L= 81.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 902.20' / 901.80' S= 0.0049 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	905.40'	15.0' 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
#3	Discarded	899.40'	1.630 in/hr Exfiltration over Wetted area
#4	Device 1	902.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.00 3.00 6.00 Width (feet) 0.58 0.58 5.00 5.00

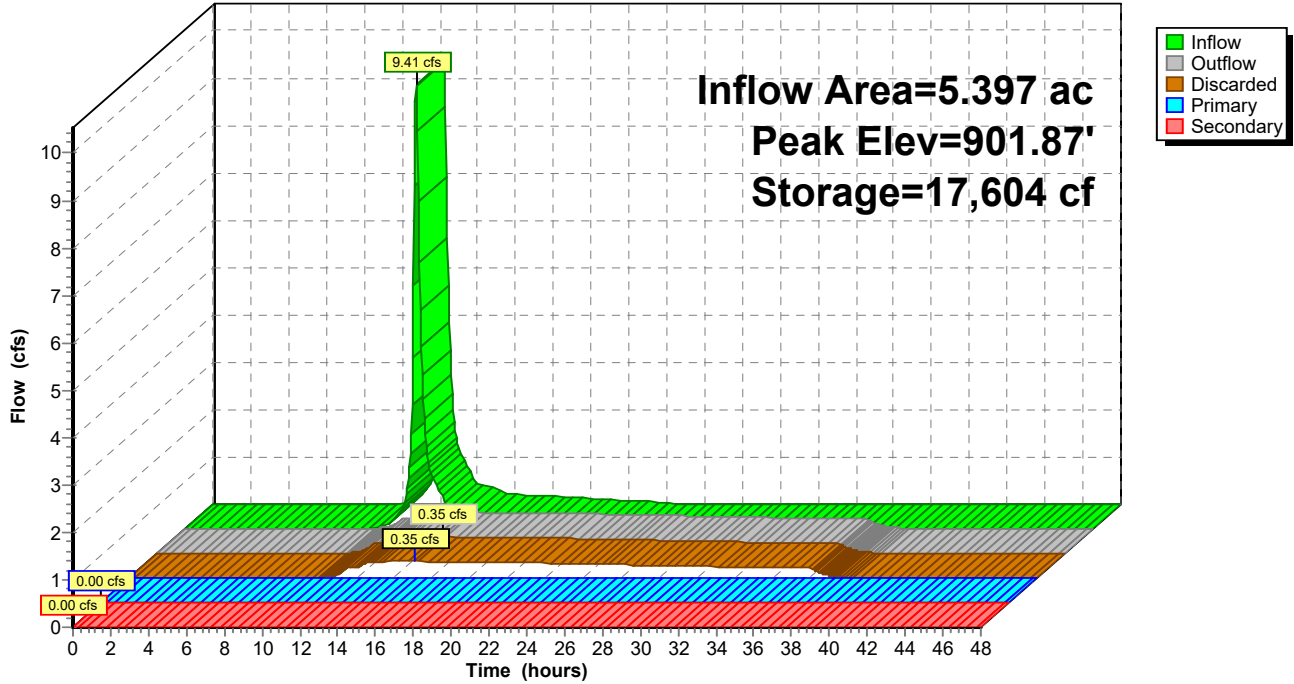
Discarded OutFlow Max=0.35 cfs @ 15.10 hrs HW=901.87' (Free Discharge)
↑3=Exfiltration (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)
↑1=Culvert (Controls 0.00 cfs)
↑4=Custom Weir/Orifice (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)
↑2=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 21P: INFILTRATION BASIN

Hydrograph



Summary for Pond 26P: East Basin

Inflow Area = 0.675 ac, 36.00% Impervious, Inflow Depth = 0.82" for 2-Year event
 Inflow = 0.58 cfs @ 12.32 hrs, Volume= 0.046 af
 Outflow = 0.09 cfs @ 13.34 hrs, Volume= 0.046 af, Atten= 84%, Lag= 60.9 min
 Discarded = 0.09 cfs @ 13.34 hrs, Volume= 0.046 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond 21P : INFILTRATION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 907.53' @ 13.34 hrs Surf.Area= 0.056 ac Storage= 0.020 af

Plug-Flow detention time= 102.0 min calculated for 0.046 af (100% of inflow)
 Center-of-Mass det. time= 101.9 min (948.9 - 847.0)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	0.266 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
907.00	0.018	0.000	0.000
908.00	0.090	0.054	0.054
908.60	0.210	0.090	0.144
909.00	0.400	0.122	0.266

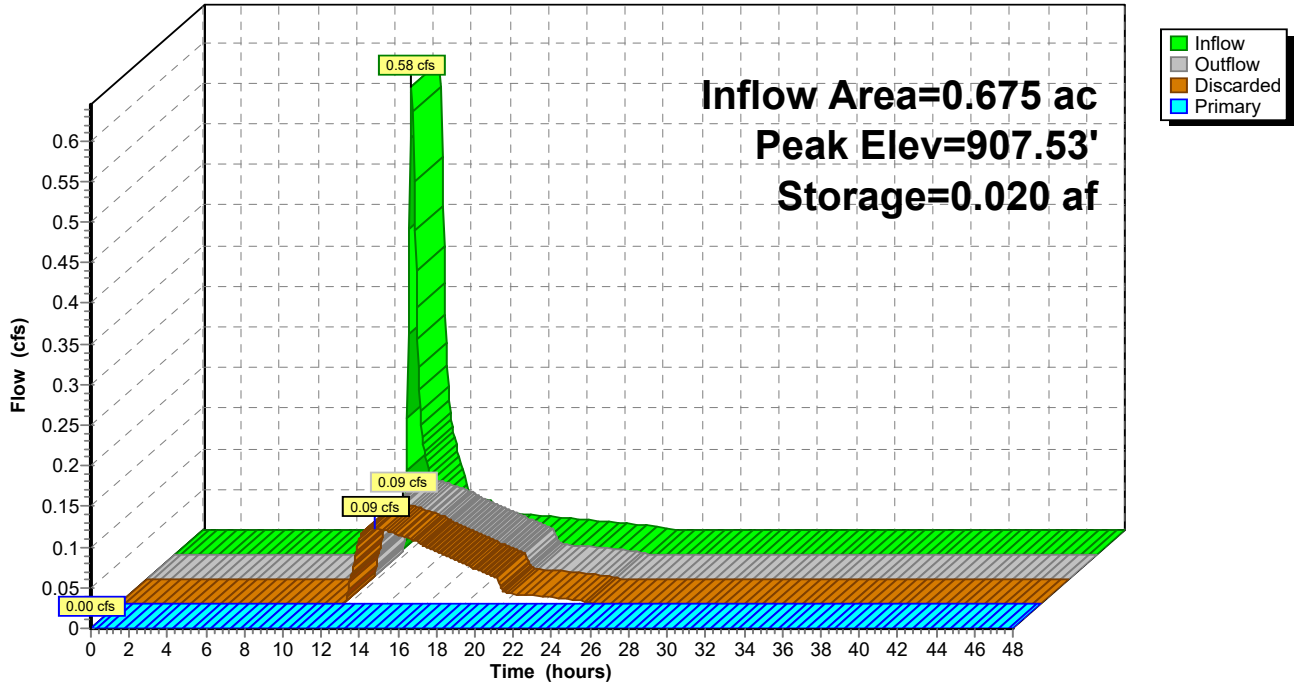
Device	Routing	Invert	Outlet Devices
#1	Primary	908.60'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	907.00'	1.630 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.09 cfs @ 13.34 hrs HW=907.53' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=907.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 26P: East Basin

Hydrograph



18586_HydroCAD

MSE 24-hr 3 10-Year Rainfall=4.26"

Prepared by Anderson Engineering Of MN, LLC

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment22S: To Pond Runoff Area=4.722 ac 68.61% Impervious Runoff Depth=2.78"
Tc=15.0 min CN=86 Runoff=16.78 cfs 1.095 af

Subcatchment23S: Northdale Blvd Runoff Area=0.655 ac 37.71% Impervious Runoff Depth=1.86"
Flow Length=90' Slope=0.0200 '/' Tc=14.0 min CN=75 Runoff=1.61 cfs 0.102 af

Subcatchment24S: HWY 101 Runoff Area=0.238 ac 27.31% Impervious Runoff Depth=1.57"
Tc=10.0 min CN=71 Runoff=0.56 cfs 0.031 af

Subcatchment25S: NE LOTS Runoff Area=0.675 ac 36.00% Impervious Runoff Depth=1.79"
Flow Length=100' Slope=0.0100 '/' Tc=20.1 min CN=74 Runoff=1.33 cfs 0.101 af

Reach 30R: HWY 101 Inflow=1.01 cfs 0.254 af
Outflow=1.01 cfs 0.254 af

Pond 21P: INFILTRATIONBASIN Peak Elev=903.03' Storage=29,813 cf Inflow=16.78 cfs 1.095 af
Discarded=0.44 cfs 0.872 af Primary=0.96 cfs 0.223 af Secondary=0.00 cfs 0.000 af Outflow=1.40 cfs 1.095 af

Pond 26P: East Basin Peak Elev=907.99' Storage=0.053 af Inflow=1.33 cfs 0.101 af
Discarded=0.15 cfs 0.101 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.101 af

Summary for Subcatchment 22S: To Pond

Runoff = 16.78 cfs @ 12.23 hrs, Volume= 1.095 af, Depth= 2.78"
 Routed to Pond 21P : INFILTRATION BASIN

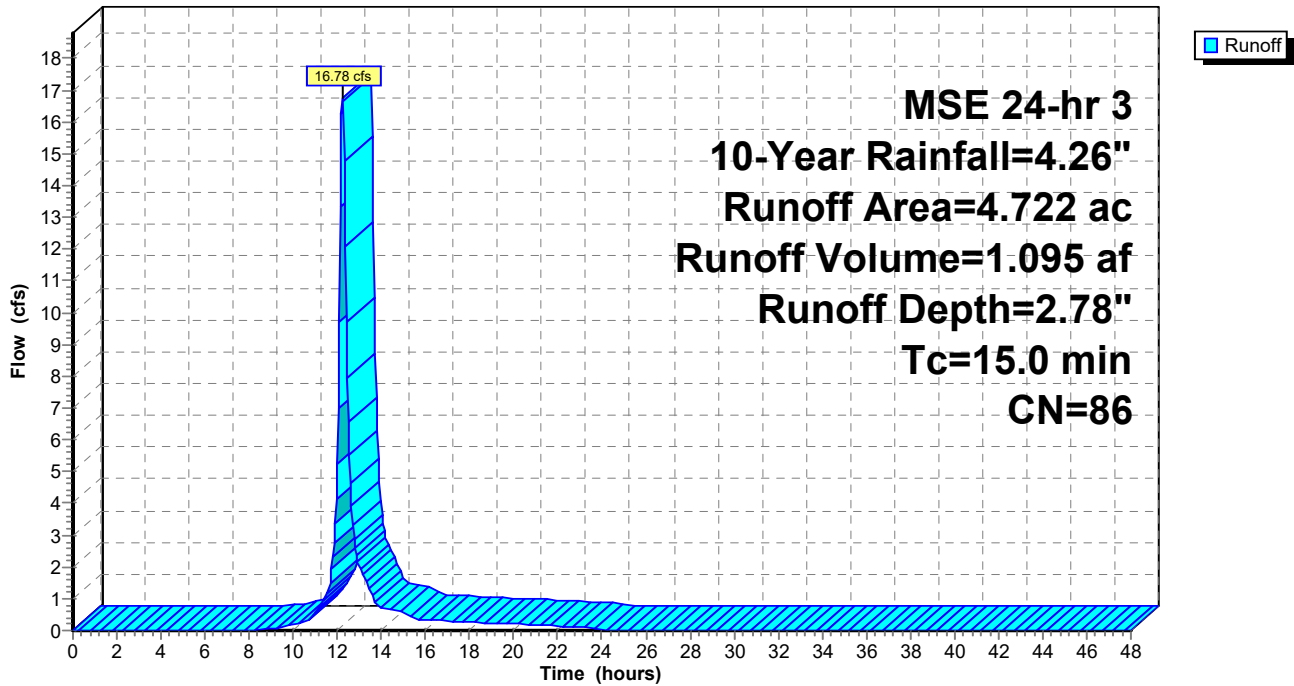
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 1.259	98	Existing Impervious
* 1.563	98	Phase 1 Impervious
* 0.280	98	Phase 2 Impervious
* 0.138	98	Phase 2 Future Impervious
1.482	61	>75% Grass cover, Good, HSG B
4.722	86	Weighted Average
1.482		31.39% Pervious Area
3.240		68.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment 22S: To Pond

Hydrograph



Summary for Subcatchment 23S: Northdale Blvd

Runoff = 1.61 cfs @ 12.23 hrs, Volume= 0.102 af, Depth= 1.86"

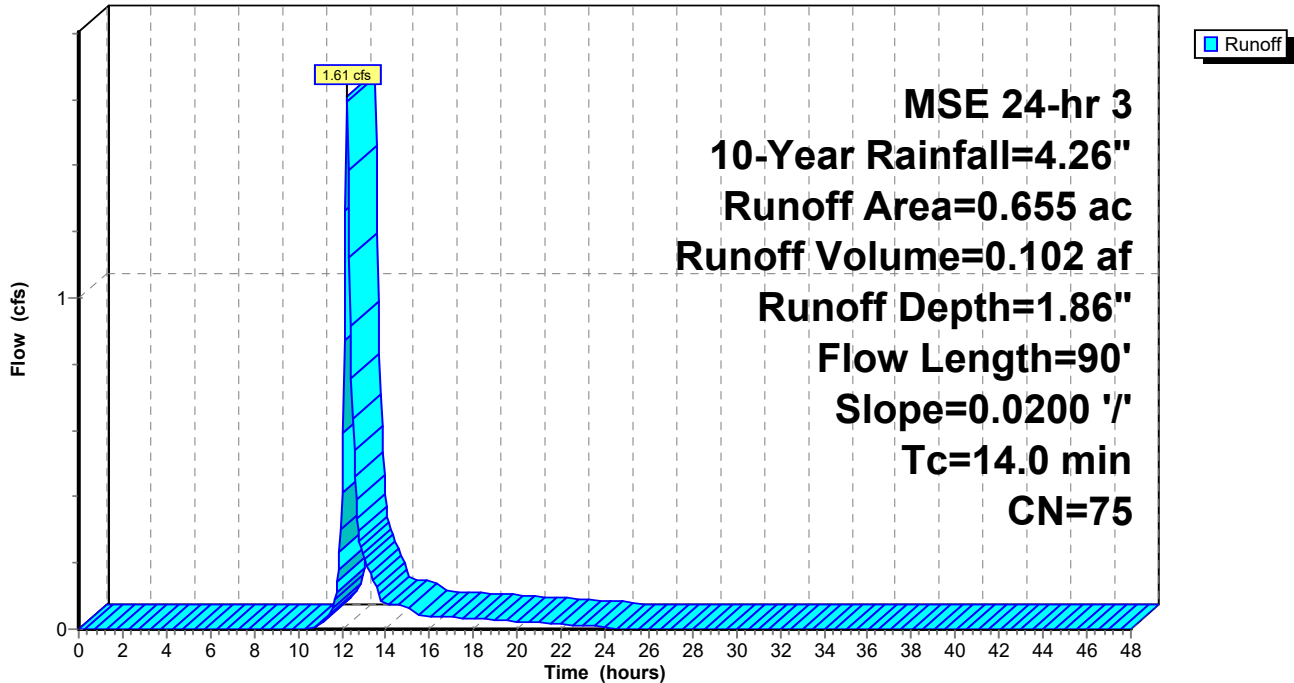
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.408	61	>75% Grass cover, Good, HSG B
* 0.247	98	Existing Impervious
0.655	75	Weighted Average
0.408		62.29% Pervious Area
0.247		37.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	90	0.0200	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 23S: Northdale Blvd

Hydrograph



Summary for Subcatchment 24S: HWY 101

Runoff = 0.56 cfs @ 12.19 hrs, Volume= 0.031 af, Depth= 1.57"
 Routed to Reach 30R : HWY 101

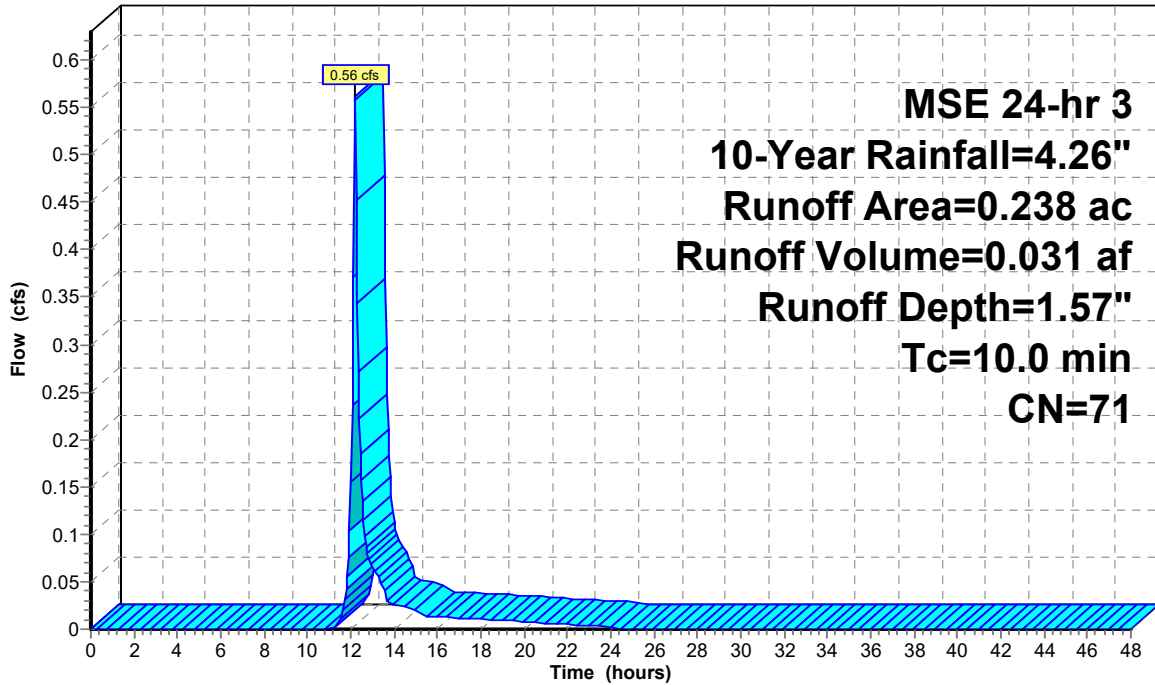
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.173	61	>75% Grass cover, Good, HSG B
* 0.065	98	Phase 1 Impervious
0.238	71	Weighted Average
0.173		72.69% Pervious Area
0.065		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 24S: HWY 101

Hydrograph



Summary for Subcatchment 25S: NE LOTS

Runoff = 1.33 cfs @ 12.31 hrs, Volume= 0.101 af, Depth= 1.79"
 Routed to Pond 26P : East Basin

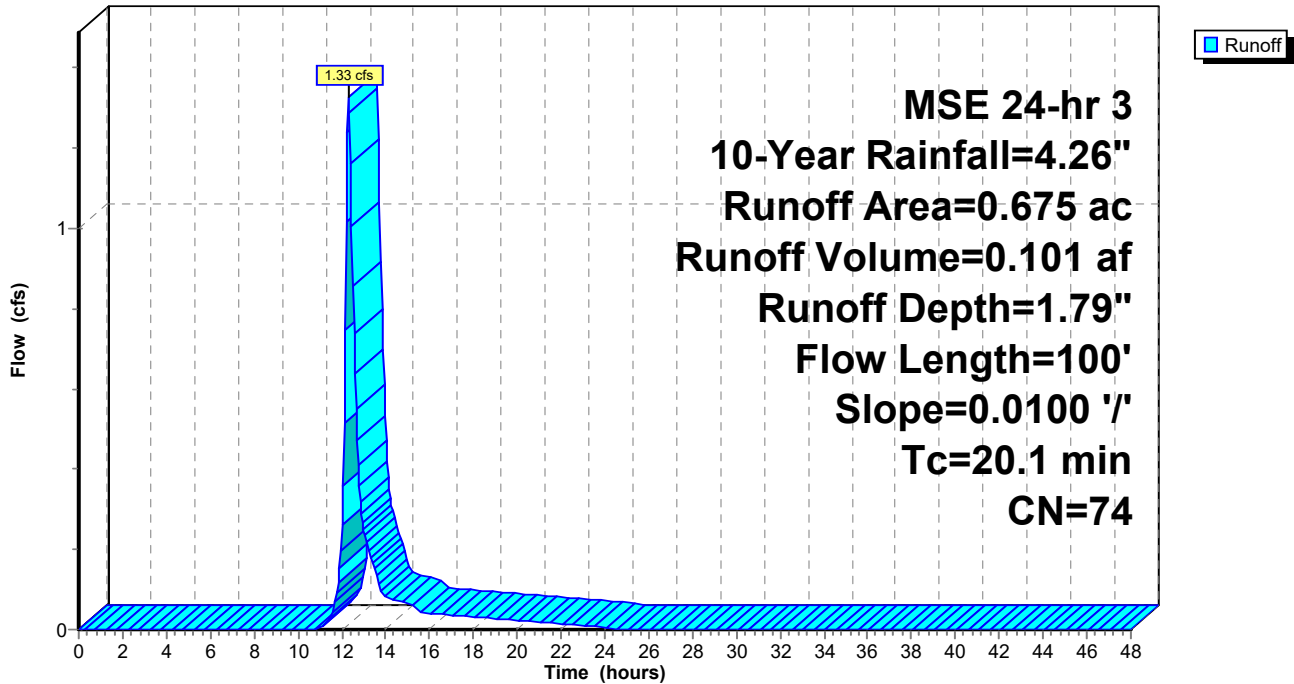
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.243	98	Existing Impervious
0.432	61	>75% Grass cover, Good, HSG B
0.675	74	Weighted Average
0.432		64.00% Pervious Area
0.243		36.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	100	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 25S: NE LOTS

Hydrograph



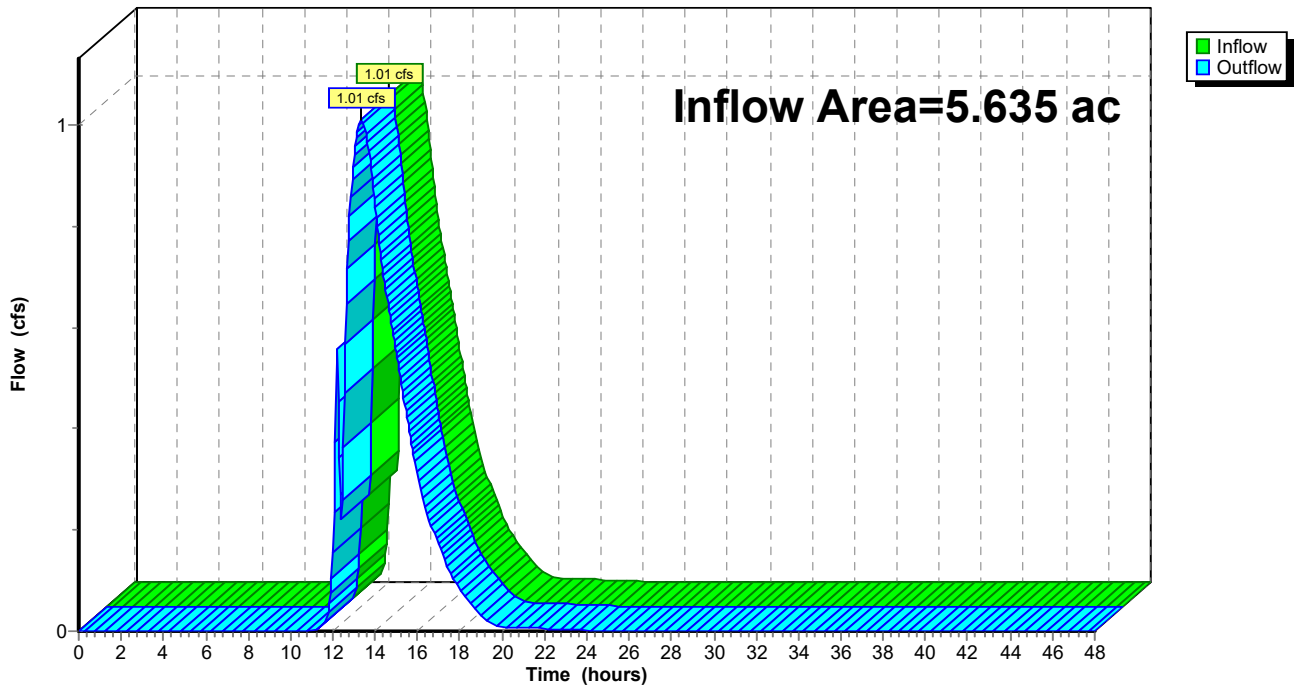
Summary for Reach 30R: HWY 101

Inflow Area = 5.635 ac, 62.96% Impervious, Inflow Depth = 0.54" for 10-Year event
Inflow = 1.01 cfs @ 13.36 hrs, Volume= 0.254 af
Outflow = 1.01 cfs @ 13.36 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 30R: HWY 101

Hydrograph



Summary for Pond 21P: INFILTRATION BASIN

Inflow Area = 5.397 ac, 64.54% Impervious, Inflow Depth = 2.43" for 10-Year event
 Inflow = 16.78 cfs @ 12.23 hrs, Volume= 1.095 af
 Outflow = 1.40 cfs @ 13.41 hrs, Volume= 1.095 af, Atten= 92%, Lag= 70.6 min
 Discarded = 0.44 cfs @ 13.41 hrs, Volume= 0.872 af
 Primary = 0.96 cfs @ 13.41 hrs, Volume= 0.223 af
 Routed to Reach 30R : HWY 101
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 30R : HWY 101

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 903.03' @ 13.41 hrs Surf.Area= 11,661 sf Storage= 29,813 cf

Plug-Flow detention time= 571.3 min calculated for 1.094 af (100% of inflow)
 Center-of-Mass det. time= 572.0 min (1,372.0 - 800.0)

Volume	Invert	Avail.Storage	Storage Description
#1	899.40'	72,675 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.40	5,453	0	0	5,453
900.00	6,032	3,444	3,444	6,054
901.00	7,660	6,830	10,274	7,708
902.00	9,558	8,592	18,865	9,634
903.00	11,580	10,553	29,418	11,689
904.00	14,085	12,812	42,230	14,226
905.00	15,245	14,661	56,891	15,463
906.00	16,328	15,783	72,675	16,634

Device	Routing	Invert	Outlet Devices
#1	Primary	902.20'	24.0" Round Culvert L= 81.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 902.20' / 901.80' S= 0.0049 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	905.40'	15.0' 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
#3	Discarded	899.40'	1.630 in/hr Exfiltration over Wetted area
#4	Device 1	902.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.00 3.00 6.00 Width (feet) 0.58 0.58 5.00 5.00

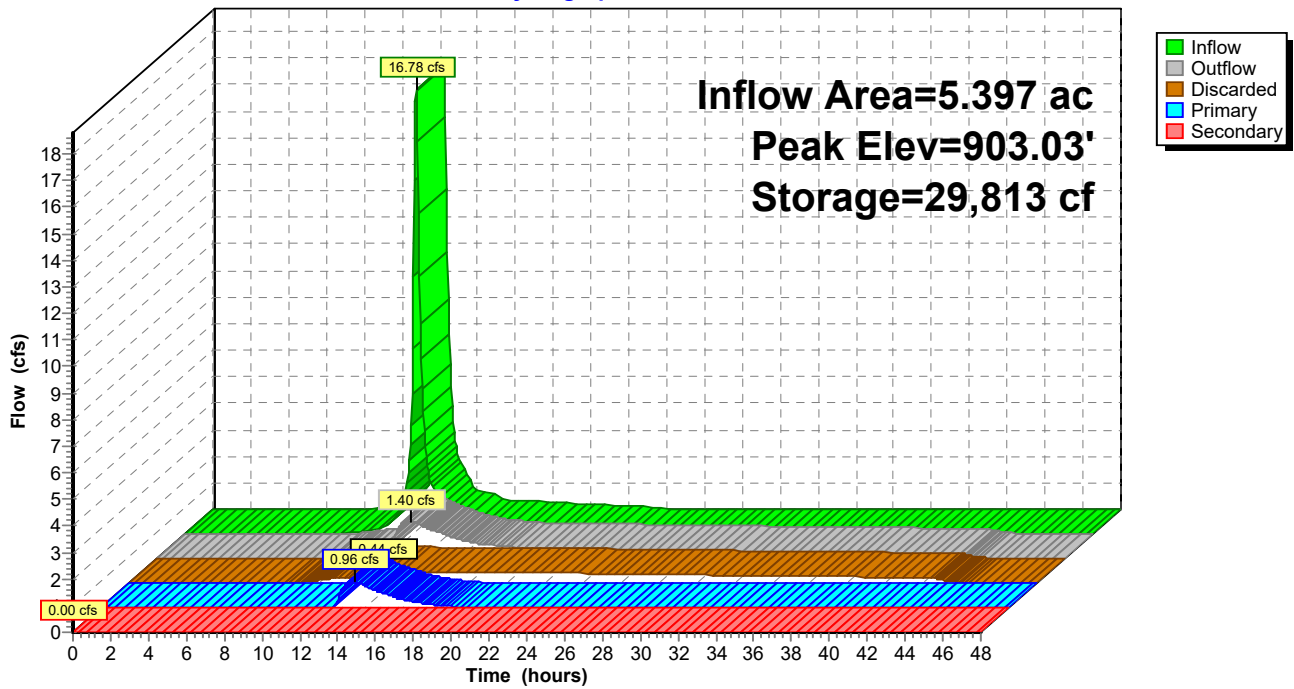
Discarded OutFlow Max=0.44 cfs @ 13.41 hrs HW=903.03' (Free Discharge)
↑3=Exfiltration (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=0.96 cfs @ 13.41 hrs HW=903.03' (Free Discharge)
↑1=Culvert (Passes 0.96 cfs of 3.11 cfs potential flow)
↑4=Custom Weir/Orifice (Weir Controls 0.96 cfs @ 2.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 21P: INFILTRATION BASIN

Hydrograph



Summary for Pond 26P: East Basin

Inflow Area = 0.675 ac, 36.00% Impervious, Inflow Depth = 1.79" for 10-Year event
 Inflow = 1.33 cfs @ 12.31 hrs, Volume= 0.101 af
 Outflow = 0.15 cfs @ 13.56 hrs, Volume= 0.101 af, Atten= 89%, Lag= 74.8 min
 Discarded = 0.15 cfs @ 13.56 hrs, Volume= 0.101 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond 21P : INFILTRATION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 907.99' @ 13.56 hrs Surf.Area= 0.089 ac Storage= 0.053 af

Plug-Flow detention time= 185.3 min calculated for 0.101 af (100% of inflow)
 Center-of-Mass det. time= 185.3 min (1,014.7 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	0.266 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
907.00	0.018	0.000	0.000
908.00	0.090	0.054	0.054
908.60	0.210	0.090	0.144
909.00	0.400	0.122	0.266

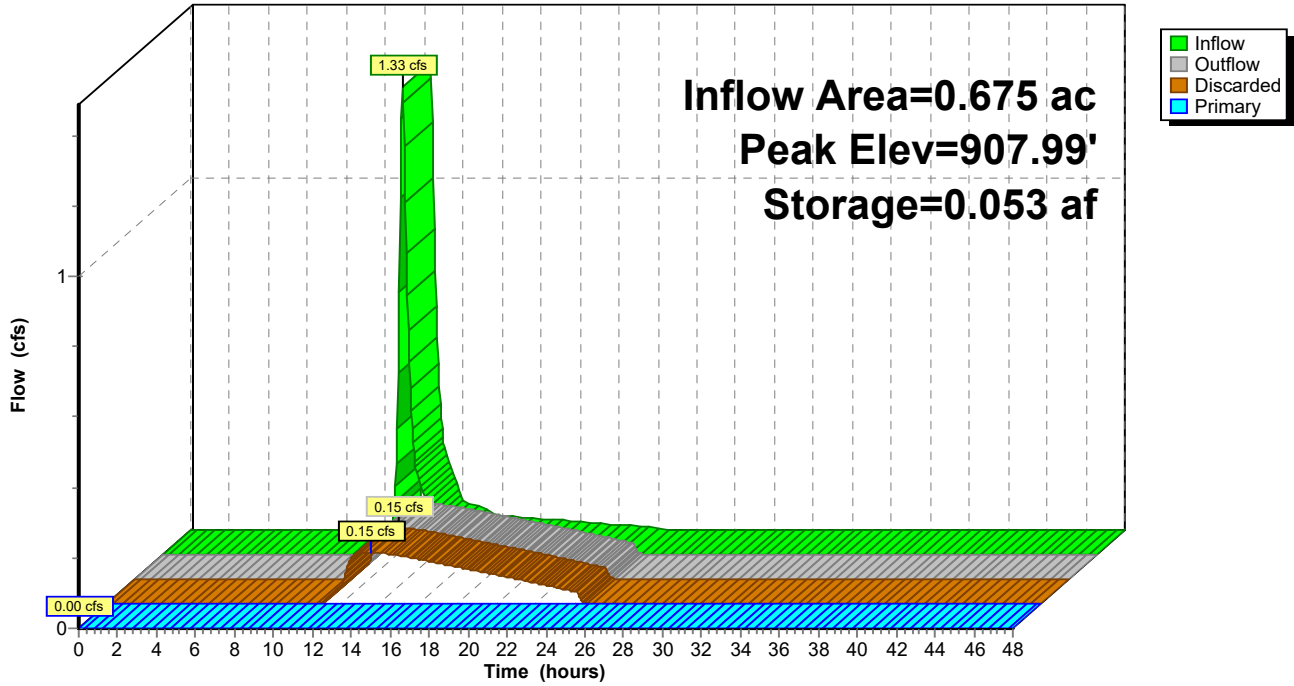
Device	Routing	Invert	Outlet Devices
#1	Primary	908.60'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	907.00'	1.630 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.15 cfs @ 13.56 hrs HW=907.99' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=907.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 26P: East Basin

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.32"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment22S: To Pond Runoff Area=4.722 ac 68.61% Impervious Runoff Depth=5.67"
Tc=15.0 min CN=86 Runoff=33.18 cfs 2.233 af

Subcatchment23S: Northdale Blvd Runoff Area=0.655 ac 37.71% Impervious Runoff Depth=4.43"
Flow Length=90' Slope=0.0200 '/' Tc=14.0 min CN=75 Runoff=3.85 cfs 0.242 af

Subcatchment24S: HWY 101 Runoff Area=0.238 ac 27.31% Impervious Runoff Depth=3.99"
Tc=10.0 min CN=71 Runoff=1.44 cfs 0.079 af

Subcatchment25S: NE LOTS Runoff Area=0.675 ac 36.00% Impervious Runoff Depth=4.32"
Flow Length=100' Slope=0.0100 '/' Tc=20.1 min CN=74 Runoff=3.25 cfs 0.243 af

Reach 30R: HWY 101 Inflow=6.85 cfs 1.295 af
Outflow=6.85 cfs 1.295 af

Pond 21P: INFILTRATIONBASIN Peak Elev=904.70' Storage=52,365 cf Inflow=33.18 cfs 2.233 af
Discarded=0.57 cfs 1.017 af Primary=6.62 cfs 1.215 af Secondary=0.00 cfs 0.000 af Outflow=7.19 cfs 2.233 af

Pond 26P: East Basin Peak Elev=908.57' Storage=0.139 af Inflow=3.25 cfs 0.243 af
Discarded=0.34 cfs 0.243 af Primary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.243 af

Summary for Subcatchment 22S: To Pond

Runoff = 33.18 cfs @ 12.23 hrs, Volume= 2.233 af, Depth= 5.67"
 Routed to Pond 21P : INFILTRATION BASIN

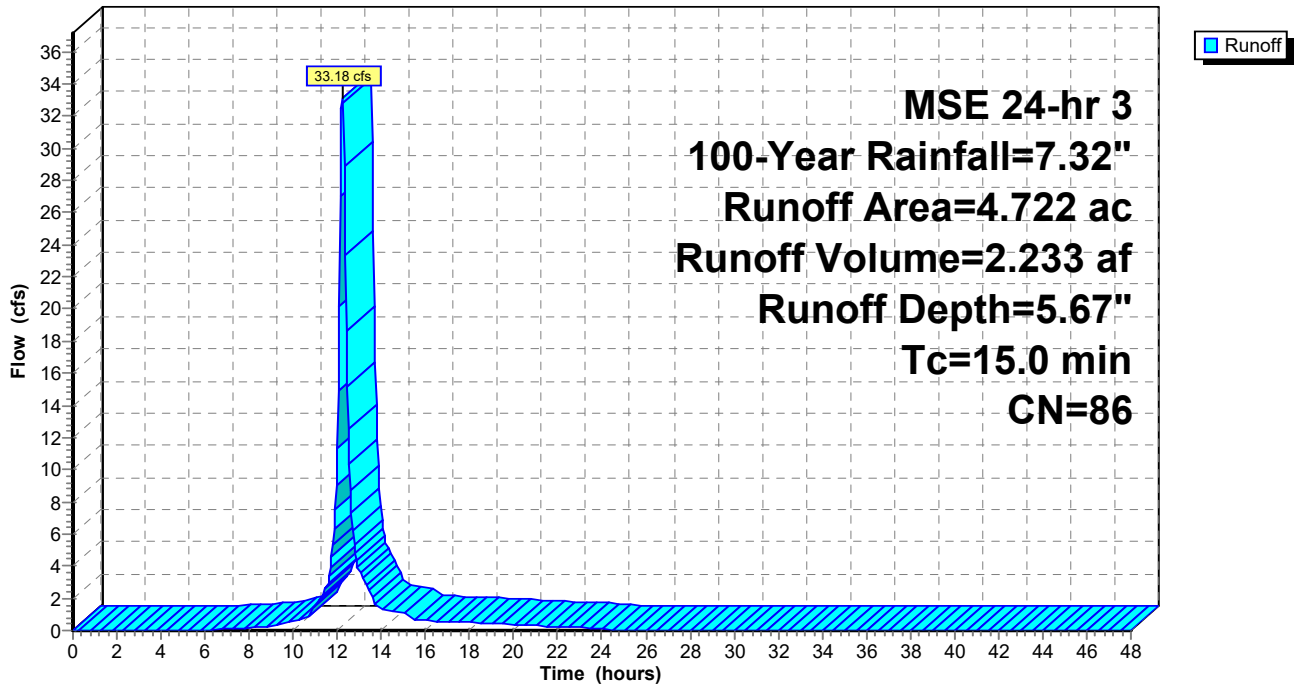
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 1.259	98	Existing Impervious
* 1.563	98	Phase 1 Impervious
* 0.280	98	Phase 2 Impervious
* 0.138	98	Phase 2 Future Impervious
1.482	61	>75% Grass cover, Good, HSG B
4.722	86	Weighted Average
1.482		31.39% Pervious Area
3.240		68.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment 22S: To Pond

Hydrograph



Summary for Subcatchment 23S: Northdale Blvd

Runoff = 3.85 cfs @ 12.22 hrs, Volume= 0.242 af, Depth= 4.43"

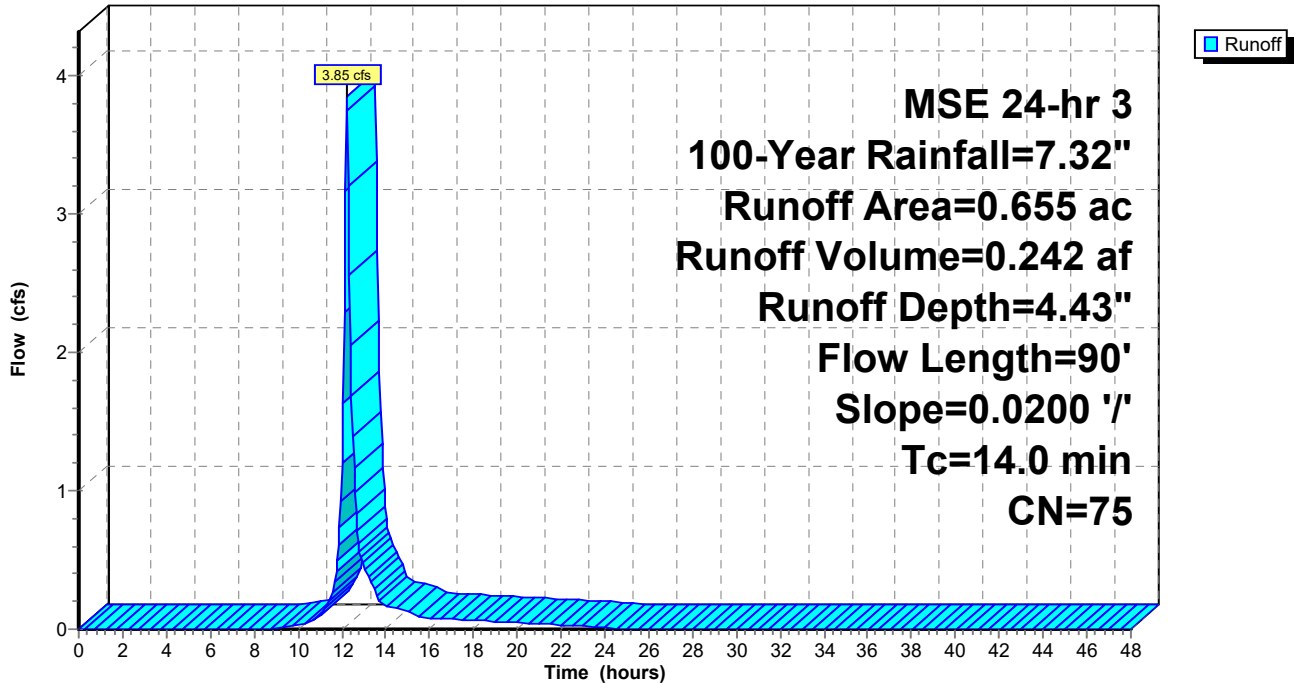
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.408	61	>75% Grass cover, Good, HSG B
* 0.247	98	Existing Impervious
0.655	75	Weighted Average
0.408		62.29% Pervious Area
0.247		37.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	90	0.0200	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 23S: Northdale Blvd

Hydrograph



Summary for Subcatchment 24S: HWY 101

Runoff = 1.44 cfs @ 12.18 hrs, Volume= 0.079 af, Depth= 3.99"
 Routed to Reach 30R : HWY 101

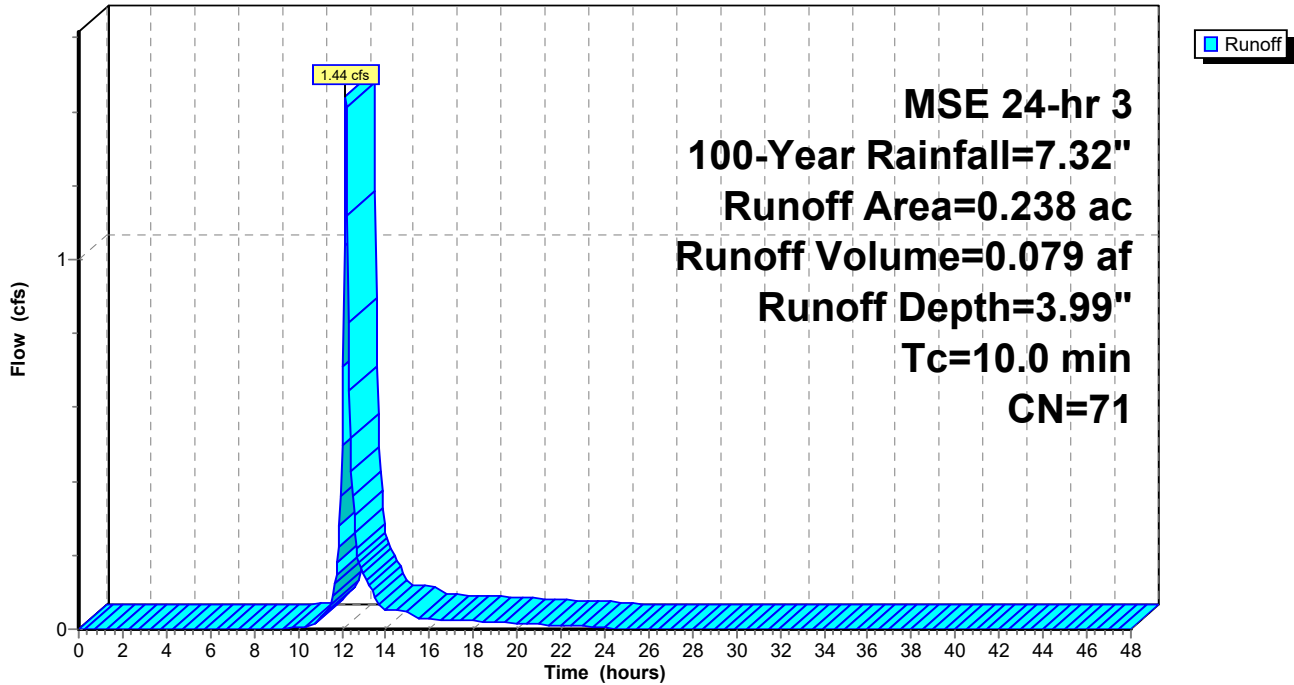
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.173	61	>75% Grass cover, Good, HSG B
* 0.065	98	Phase 1 Impervious
0.238	71	Weighted Average
0.173		72.69% Pervious Area
0.065		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 24S: HWY 101

Hydrograph



Summary for Subcatchment 25S: NE LOTS

Runoff = 3.25 cfs @ 12.30 hrs, Volume= 0.243 af, Depth= 4.32"
 Routed to Pond 26P : East Basin

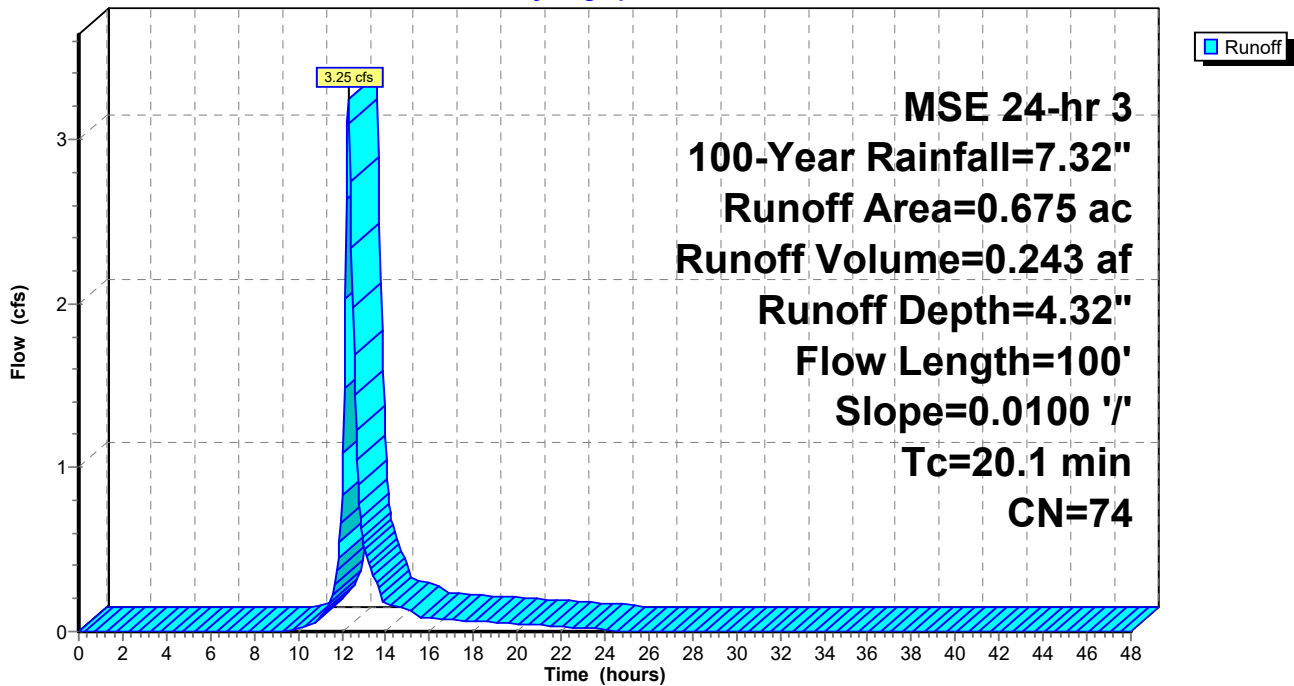
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.243	98	Existing Impervious
0.432	61	>75% Grass cover, Good, HSG B
0.675	74	Weighted Average
0.432		64.00% Pervious Area
0.243		36.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	100	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment 25S: NE LOTS

Hydrograph



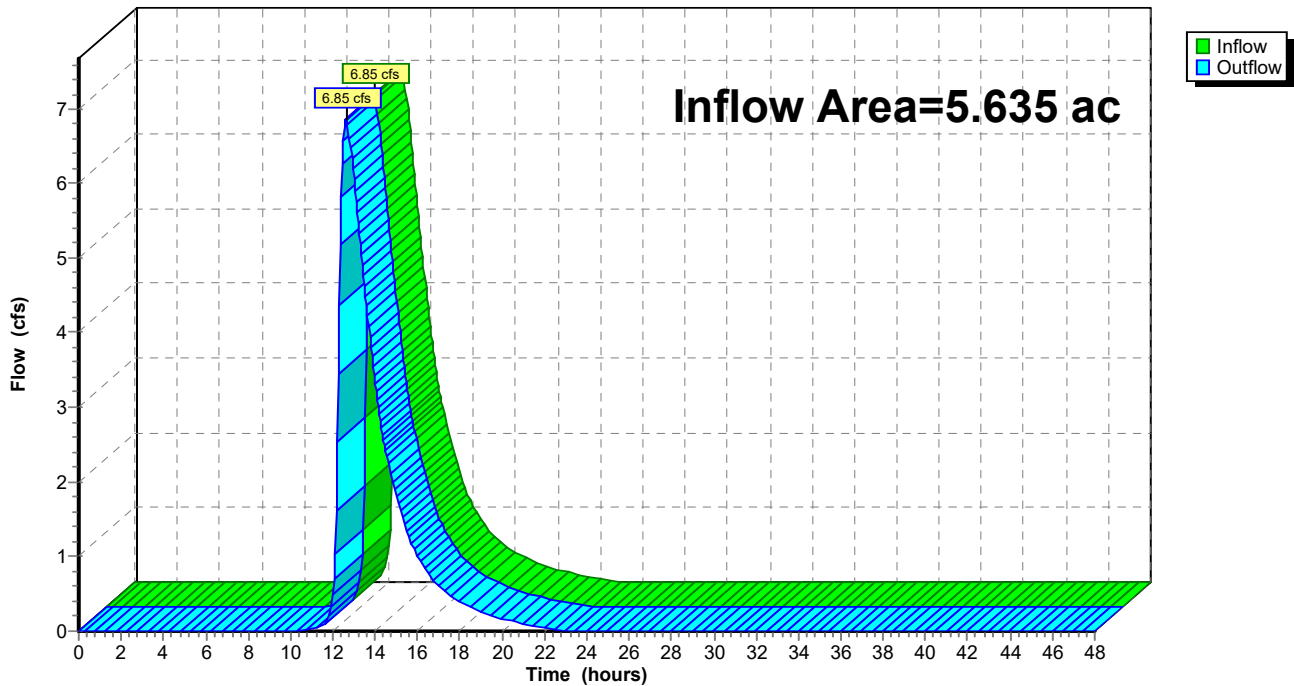
Summary for Reach 30R: HWY 101

Inflow Area = 5.635 ac, 62.96% Impervious, Inflow Depth = 2.76" for 100-Year event
Inflow = 6.85 cfs @ 12.63 hrs, Volume= 1.295 af
Outflow = 6.85 cfs @ 12.63 hrs, Volume= 1.295 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 30R: HWY 101

Hydrograph



Summary for Pond 21P: INFILTRATION BASIN

Inflow Area = 5.397 ac, 64.54% Impervious, Inflow Depth = 4.96" for 100-Year event
 Inflow = 33.18 cfs @ 12.23 hrs, Volume= 2.233 af
 Outflow = 7.19 cfs @ 12.66 hrs, Volume= 2.233 af, Atten= 78%, Lag= 25.8 min
 Discarded = 0.57 cfs @ 12.66 hrs, Volume= 1.017 af
 Primary = 6.62 cfs @ 12.66 hrs, Volume= 1.215 af
 Routed to Reach 30R : HWY 101
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 30R : HWY 101

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 904.70' @ 12.66 hrs Surf.Area= 14,892 sf Storage= 52,365 cf

Plug-Flow detention time= 353.8 min calculated for 2.230 af (100% of inflow)
 Center-of-Mass det. time= 354.8 min (1,140.7 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1	899.40'	72,675 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.40	5,453	0	0	5,453
900.00	6,032	3,444	3,444	6,054
901.00	7,660	6,830	10,274	7,708
902.00	9,558	8,592	18,865	9,634
903.00	11,580	10,553	29,418	11,689
904.00	14,085	12,812	42,230	14,226
905.00	15,245	14,661	56,891	15,463
906.00	16,328	15,783	72,675	16,634

Device	Routing	Invert	Outlet Devices
#1	Primary	902.20'	24.0" Round Culvert L= 81.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 902.20' / 901.80' S= 0.0049 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	905.40'	15.0' 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
#3	Discarded	899.40'	1.630 in/hr Exfiltration over Wetted area
#4	Device 1	902.40'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.00 3.00 6.00 Width (feet) 0.58 0.58 5.00 5.00

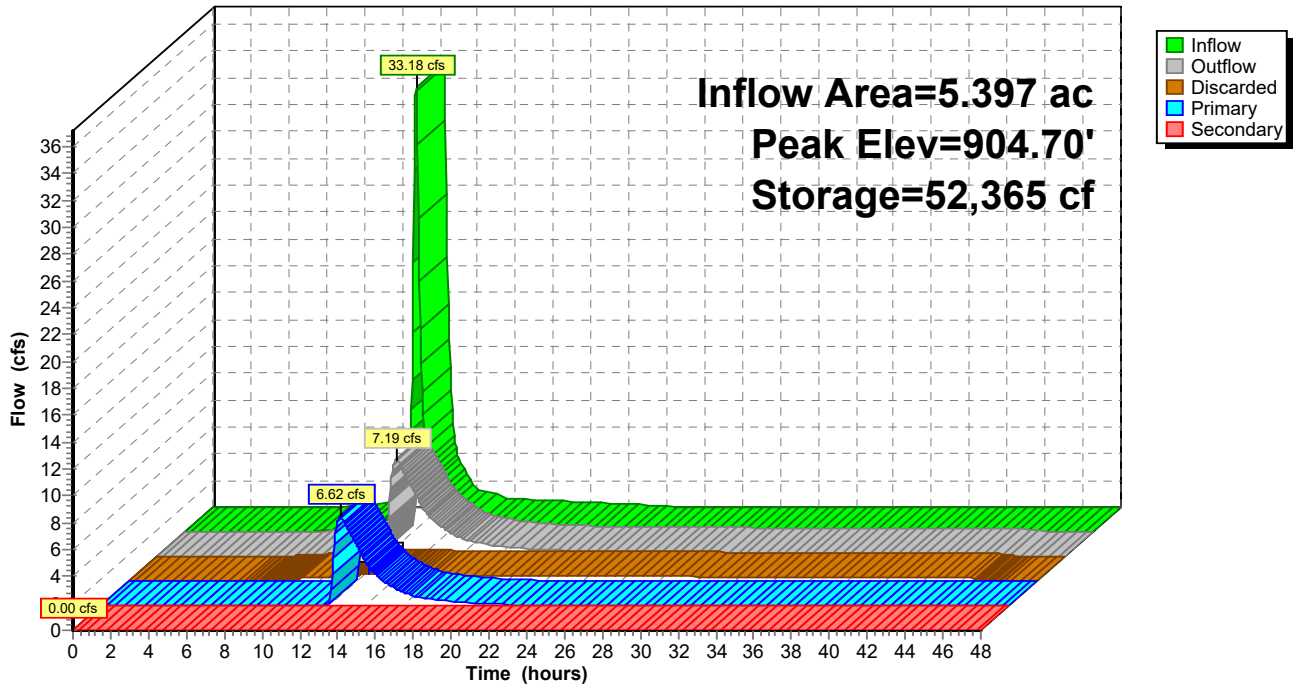
Discarded OutFlow Max=0.57 cfs @ 12.66 hrs HW=904.70' (Free Discharge)
↑3=Exfiltration (Exfiltration Controls 0.57 cfs)

Primary OutFlow Max=6.62 cfs @ 12.66 hrs HW=904.70' (Free Discharge)
↑1=Culvert (Passes 6.62 cfs of 16.34 cfs potential flow)
↑4=Custom Weir/Orifice (Weir Controls 6.62 cfs @ 4.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.40' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 21P: INFILTRATION BASIN

Hydrograph



Summary for Pond 26P: East Basin

Inflow Area = 0.675 ac, 36.00% Impervious, Inflow Depth = 4.32" for 100-Year event
 Inflow = 3.25 cfs @ 12.30 hrs, Volume= 0.243 af
 Outflow = 0.34 cfs @ 13.46 hrs, Volume= 0.243 af, Atten= 90%, Lag= 69.7 min
 Discarded = 0.34 cfs @ 13.46 hrs, Volume= 0.243 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond 21P : INFILTRATION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 908.57' @ 13.46 hrs Surf.Area= 0.205 ac Storage= 0.139 af

Plug-Flow detention time= 244.5 min calculated for 0.243 af (100% of inflow)
 Center-of-Mass det. time= 244.5 min (1,055.8 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	907.00'	0.266 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
907.00	0.018	0.000	0.000
908.00	0.090	0.054	0.054
908.60	0.210	0.090	0.144
909.00	0.400	0.122	0.266

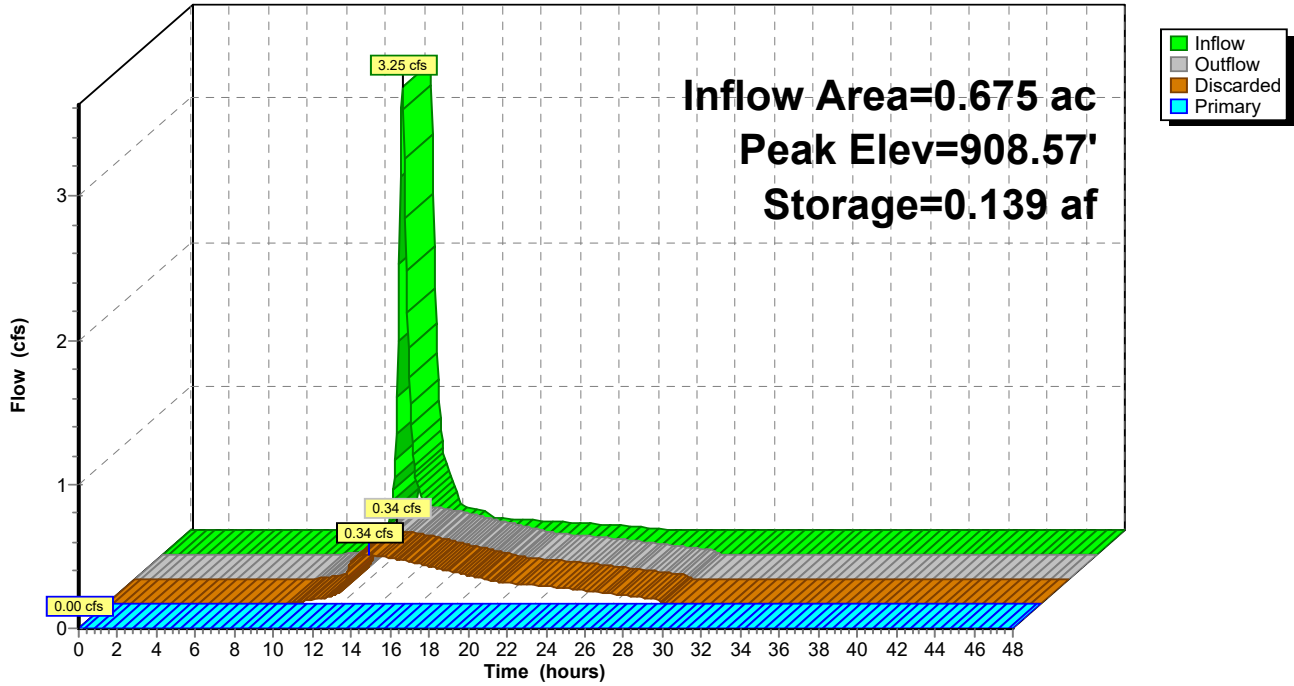
Device	Routing	Invert	Outlet Devices
#1	Primary	908.60'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	907.00'	1.630 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.34 cfs @ 13.46 hrs HW=908.57' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.34 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=907.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 26P: East Basin

Hydrograph



Hydrograph for Pond 21P: INFILTRATION BASIN

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	899.40	0.00	0.00	0.00	0.00
1.00	0.00	0	899.40	0.00	0.00	0.00	0.00
2.00	0.00	0	899.40	0.00	0.00	0.00	0.00
3.00	0.00	0	899.40	0.00	0.00	0.00	0.00
4.00	0.00	0	899.40	0.00	0.00	0.00	0.00
5.00	0.00	0	899.40	0.00	0.00	0.00	0.00
6.00	0.03	23	899.40	0.01	0.01	0.00	0.00
7.00	0.10	142	899.43	0.06	0.06	0.00	0.00
8.00	0.18	311	899.46	0.13	0.13	0.00	0.00
9.00	0.27	508	899.49	0.21	0.21	0.00	0.00
10.00	0.64	1,501	899.67	0.22	0.22	0.00	0.00
11.00	1.64	3,966	900.09	0.23	0.23	0.00	0.00
12.00	11.67	16,777	901.78	0.35	0.35	0.00	0.00
13.00	3.70	50,549	904.58	6.67	0.56	6.10	0.00
14.00	1.28	40,227	903.86	3.86	0.52	3.34	0.00
15.00	1.11	33,859	903.37	2.29	0.48	1.81	0.00
16.00	0.63	30,002	903.05	1.44	0.45	1.00	0.00
17.00	0.57	27,812	902.86	1.02	0.43	0.59	0.00
18.00	0.50	26,488	902.74	0.80	0.42	0.38	0.00
19.00	0.43	25,558	902.66	0.66	0.41	0.25	0.00
20.00	0.37	24,808	902.59	0.56	0.41	0.16	0.00
21.00	0.30	24,130	902.52	0.49	0.40	0.09	0.00
22.00	0.24	23,454	902.46	0.43	0.40	0.03	0.00
23.00	0.17	22,716	902.39	0.39	0.39	0.00	0.00
24.00	0.10	21,803	902.30	0.39	0.39	0.00	0.00
25.00	0.00	20,512	902.17	0.38	0.38	0.00	0.00
26.00	0.00	19,176	902.03	0.37	0.37	0.00	0.00
27.00	0.00	17,877	901.90	0.36	0.36	0.00	0.00
28.00	0.00	16,616	901.76	0.35	0.35	0.00	0.00
29.00	0.00	15,392	901.62	0.34	0.34	0.00	0.00
30.00	0.00	14,203	901.48	0.33	0.33	0.00	0.00
31.00	0.00	13,051	901.35	0.32	0.32	0.00	0.00
32.00	0.00	11,933	901.21	0.31	0.31	0.00	0.00
33.00	0.00	10,851	901.07	0.30	0.30	0.00	0.00
34.00	0.00	9,802	900.94	0.29	0.29	0.00	0.00
35.00	0.00	8,786	900.80	0.28	0.28	0.00	0.00
36.00	0.00	7,801	900.66	0.27	0.27	0.00	0.00
37.00	0.00	6,848	900.53	0.26	0.26	0.00	0.00
38.00	0.00	5,926	900.39	0.25	0.25	0.00	0.00
39.00	0.00	5,034	900.25	0.24	0.24	0.00	0.00
40.00	0.00	4,172	900.12	0.24	0.24	0.00	0.00
41.00	0.00	3,338	899.98	0.23	0.23	0.00	0.00
42.00	0.00	2,528	899.85	0.22	0.22	0.00	0.00
43.00	0.00	1,736	899.71	0.22	0.22	0.00	0.00
44.00	0.00	963	899.57	0.21	0.21	0.00	0.00
45.00	0.00	277	899.45	0.12	0.12	0.00	0.00
46.00	0.00	60	899.41	0.03	0.03	0.00	0.00
47.00	0.00	13	899.40	0.01	0.01	0.00	0.00
48.00	0.00	3	899.40	0.00	0.00	0.00	0.00

Stage-Area-Storage for Pond 21P: INFILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
899.40	5,453	5,453	0
899.60	5,643	5,650	1,110
899.80	5,836	5,850	2,257
900.00	6,032	6,054	3,444
900.20	6,342	6,369	4,681
900.40	6,660	6,692	5,981
900.60	6,985	7,023	7,346
900.80	7,319	7,362	8,776
901.00	7,660	7,708	10,274
901.20	8,023	8,076	11,842
901.40	8,394	8,453	13,484
901.60	8,774	8,838	15,200
901.80	9,162	9,232	16,994
902.00	9,558	9,634	18,865
902.20	9,947	10,029	20,816
902.40	10,344	10,432	22,845
902.60	10,748	10,843	24,954
902.80	11,160	11,262	27,144
903.00	11,580	11,689	29,418
903.20	12,061	12,176	31,782
903.40	12,553	12,674	34,243
903.60	13,054	13,181	36,804
903.80	13,564	13,698	39,466
904.00	14,085	14,226	42,230
904.20	14,313	14,469	45,070
904.40	14,543	14,715	47,956
904.60	14,775	14,962	50,888
904.80	15,009	15,211	53,866
905.00	15,245	15,463	56,891
905.20	15,459	15,694	59,962
905.40	15,674	15,926	63,075
905.60	15,890	16,160	66,231
905.80	16,108	16,396	69,431
906.00	16,328	16,634	72,675
906.20	16,328	16,634	72,675
906.40	16,328	16,634	72,675
906.60	16,328	16,634	72,675
906.80	16,328	16,634	72,675
907.00	16,328	16,634	72,675
907.20	16,328	16,634	72,675
907.40	16,328	16,634	72,675
907.60	16,328	16,634	72,675
907.80	16,328	16,634	72,675
908.00	16,328	16,634	72,675
908.20	16,328	16,634	72,675
908.40	16,328	16,634	72,675

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Ray J's American Grill - Rogers, MN
User Name / Company Name:	Doug Van Cura/ Anderson Engineering
Date:	1/14/2025
Project Description:	
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55374
Annual Rainfall (inches):	29.5
Phosphorus EMC (mg/l):	0.3
TSS EMC (mg/l):	54.5

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed		2.17			2.17
			Impervious Area (acres)		4.12
			Total Area (acres)		6.29

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed		1.585			1.585
			Impervious Area (acres)		3.81
			Total Area (acres)		5.395

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	16451	ft ³
Volume removed by BMPs towards performance goal:	14217	ft ³
Percent volume removed towards performance goal	86	%

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	9.62	acre-ft
Annual runoff volume removed by BMPs:	8.1009	acre-ft
Percent annual runoff volume removed:	84	%

Post development annual particulate P load:	4.3174	lbs
Annual particulate P removed by BMPs:	3.636	lbs
Post development annual dissolved P load:	3.532	lbs
Annual dissolved P removed by BMPs:	2.975	lbs
Total P removed by BMPs	6.611	lbs
Percent annual total phosphorus removed:	84	%

Post development annual TSS load:	1426.1	lbs
Annual TSS removed by BMPs:	1200.9	lbs
Percent annual TSS removed:	84	%

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft ³)	Volume Recieved (ft ³)	Volume Retained (ft ³)	Volume Outflow (ft ³)	Percent Retained (%)
Infiltration Basin (11P)	14217	15213	14217	996	93

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)
Infiltration Basin (11P)	8.7095	0	8.1009	0.6086000000	93

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (11P)	3.9088	0	3.6356	0.2732	93

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (11P)	3.1981	0	2.9746	0.2235	93

Total Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (11P)	7.1069	0	6.6102	0.4967	93

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (11P)	1291.1	0	1200.88	90.219999999	93

BMP Schematic



Infiltration Basin (11P)

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Little Caesar's - Rogers, MN
User Name / Company Name:	Benjamin Norheim/ Anderson Engineering
Date:	5/7/2025
Project Description:	
Construction Permit?:	No

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55374
Annual Rainfall (inches):	29.5
Phosphorus EMC (mg/l):	0.3
TSS EMC (mg/l):	54.5

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed		2.495			2.495
			Impervious Area (acres)		3.795
			Total Area (acres)		6.29

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed		1.914			1.914
			Impervious Area (acres)		3.483
			Total Area (acres)		5.397

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	15153	ft ³
Volume removed by BMPs towards performance goal:	14217	ft ³
Percent volume removed towards performance goal	86	%

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	9.0807	acre-ft
Annual runoff volume removed by BMPs:	8.1009	acre-ft
Percent annual runoff volume removed:	84	%

Post development annual particulate P load:	4.0754	lbs
Annual particulate P removed by BMPs:	3.636	lbs
Post development annual dissolved P load:	3.334	lbs
Annual dissolved P removed by BMPs:	2.975	lbs
Total P removed by BMPs	6.611	lbs
Percent annual total phosphorus removed:	84	%

Post development annual TSS load:	1346.1	lbs
Annual TSS removed by BMPs:	1200.9	lbs
Percent annual TSS removed:	84	%

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft ³)	Volume Recieved (ft ³)	Volume Retained (ft ³)	Volume Outflow (ft ³)	Percent Retained (%)
Infiltration Basin (21P)	14217	15213	14217	996	93

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)
Infiltration Basin (21P)	8.1678	0	7.597	0.5707999999	93

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (21P)	3.6657	0	3.6356	0.2732	99

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (21P)	2.9992	0	2.9746	0.2235	99

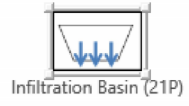
Total Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (21P)	6.6649	0	6.6102	0.4967	99

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
Infiltration Basin (21P)	1210.79	0	1200.88	90.219999999	99

BMP Schematic



Infiltration Basin (21P)

EXHIBIT F

Little Caecars - Rogers STORM SIZING WORK SHEET

AE PROJ # 18586 DATE: 5/7/2025

"C" Values

Imp. Per.
0.9 0.3

Project Location

Minnesota

Possible Regions

3,4

Designed For

Region Storm (yr)
3 10

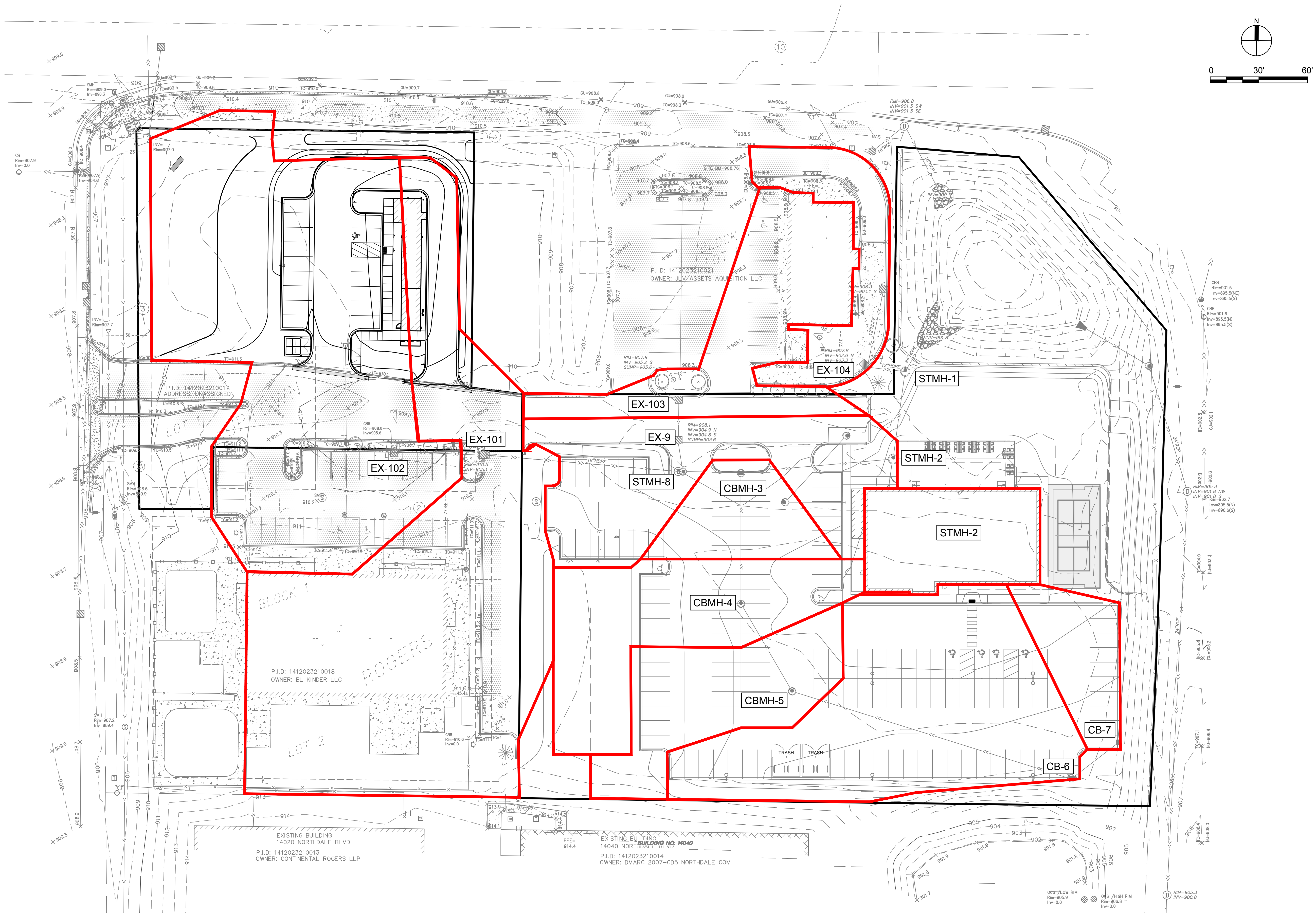
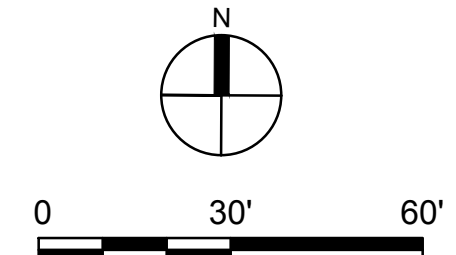
DESIGN CHECKS

Pipe Run					Flow Calculation								Pipe Sizing						Pipe Properties	Cover				Pipe Capacity			
					Per. Area	Imp. Area	Total Area	Area	Cumm. Area	Time of Conc (T _c)	Intensity	Q = cIA	Q cumm Q10	Pipe size	Pipe Material	slope	k	Pipe		Length of	Invert Upstream	Invert Downstream	Depth Upstream	Depth Downstream	Pipe inc Flow as Perc. of Capacity (%)	Flow Capacity Condition?	
Struc.	Rim	Struc.	Rim		(sf)	(sf)	(sf)	(acres)	"c" value	(min.)	l (in/24 hr)	(cfs)	(cfs)	(in.)	(material)	Slope (%)	Manning's	Capacity (cfs)	Velocity (fps)	Pipe Run (ft)	Upstream	(ft)	(ft)	(ft)			
CBMH	1	907.87	FES	0	901.80	0	0	0.00	-	7.00	5.67	0	17.53	24	RCP	0.80	226.2	20.23	6.48	20	902.80	902.64	5.07	-0.84	86.6%	GOOD	
CBMH	2	911.19	CBMH	1	907.87	0	6,600	6,600	0.15	0.90	7.00	5.67	0.77	16.91	24	HDPE	0.55	267.4	19.83	6.31	54	903.10	902.80	8.09	5.07	85.3%	GOOD
CBMH	3	908.50	CBMH	2	911.19	225	4,625	4,850	0.11	0.87	7.00	5.67	0.55	16.14	24	HDPE	0.50	267.4	18.91	6.02	94	903.57	903.10	4.93	8.09	85.4%	GOOD
CBMH	4	909.30	CBMH	3	908.50	144	11,916	12,060	0.28	0.89	7.00	5.67	1.40	5.10	15	HDPE	0.45	76.3	5.12	4.30	81	903.93	903.57	5.37	4.93	99.7%	GOOD
CBMH	5	909.04	CBMH	4	909.30	1,169	7,705	8,874	0.20	0.82	7.00	5.67	0.95	3.70	15	HDPE	0.30	76.3	4.18	3.46	63	904.12	903.93	4.92	5.37	88.6%	GOOD
CBMH	6	907.83	CBMH	5	909.04	2,314	18,688	21,002	0.48	0.83	7.00	5.67	2.28	2.76	12	HDPE	0.45	42.1	2.82	3.73	180	904.93	904.12	2.90	4.92	97.5%	GOOD
CB	7	908.21	CBMH	6	907.83	335	3,965	4,300	0.10	0.85	7.00	5.67	0.48	0.48	12	HDPE	1.00	42.1	4.21	3.06	37	905.30	904.93	2.91	2.90	11.3%	GOOD
CBMH	8	908.98	CBMH	3	907.92	0	0	0.00	-	10.00	5.15	0	10.49	18	HDPE	1.30	124.1	14.15	7.66	36	904.46	903.99	4.52	3.93	74.1%	GOOD	
EX	9	908.10	CBMH	8	908.98	2,243	11,202	13,445	0.31	0.80	7.00	5.67	1.40	3.12	12	HDPE	2.00	42.1	5.96	6.64	17	904.80	904.46	3.30	4.52	52.3%	GOOD
EX	101	910.50	CBMH	8	908.98	12,525	25,885	48,412	1.11	0.56	7.00	5.67	3.52	7.37	18	HDPE	0.50	124.1	8.78	4.94	123	905.10	904.49	5.40	4.50	84.0%	GOOD
EX	103	907.90	EX	9	908.10	11,344	10,883	22,227	0.51	0.59	7.00	5.67	1.72	1.72	12	HDPE	1.00	42.1	4.21	4.29	29	905.20	904.91	2.70	3.19	40.8%	GOOD
EX	104	907.80	CBMH	1	907.87	1,084	4,911	5,995	0.14	0.79	7.00	5.67	0.62	0.62	12	HDPE	3.00	42.1	7.29	4.78	23	903.40	902.71	4.40	5.16	8.5%	GOOD
EX	102	909.00	EX	101	910.50	6,063	30,871	5,995	0.14	4.94	7.00	5.67	3.85	3.85	12	HDPE	1.30	42.1	4.80	5.98	54	906.00	905.30	3.00	5.20	80.2%	GOOD



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LITTLE CAESARS

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NORTHDAL BLVD,
ROGERS, MN 55374

FRANCHISE CONCEPTS
UNLIMITED INC.

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW
05-07-2025

DESIGNED:	DRAWN:	CHECKED BY:
BJF	BJN	BJF

DRAWING TITLE

**STORM SIZING
MAP**

DRAWING NO.

F

PLOTTED: 05/07/2025	COMM. NO. 18586
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ACCESSIBLE RAMP KEY NOTES

- 1 0" CURB HEIGHT AT PEDESTRIAN RAMP
- 2 FULL CURB HEIGHT
- 3 VARIABLE HEIGHT CURB
- 4 1/2" PREFORMED JOINT FILLER SHALL BE PLACED FLUSH WITH BACK OF CURB AND ADJACENT TO SIDEWALK.
- 5 RECTANGULAR DETECTABLE WARNING SHALL EXTEND 4' MIN. IN WIDTH AND 2' MIN. IN THE PATH OF TRAVEL. DETECTABLE WARNING SHALL BE SET FROM THE BACK OF CURB IN ACCORDANCE WITH THE 2010 ADA STANDARDS FOR ACCESSIBILITY.

- 6 5' BY 5' LANDING MIN WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
- 7 4" PAINTED DIAGONAL LINES 45° - 3" CENTER TO CENTER.
- 8 WHITE REFLECTIVE PAINT RECTANGLE CENTERED AROUND ACCESSIBILITY PARKING SYMBOL. LINE TO BE 3 INCHES WIDE, OVER A WIDTH OF 36 INCHES AND HEIGHT OF 41 INCHES PER 2010 ADA STANDARDS FOR ACCESSIBILITY.
- 9 HANDICAP STALL SIGN TO COMPLY WITH 2010 ADA STANDARDS FOR ACCESSIBILITY CODE 502.6. SEE DETAIL 3/C6.
- 10 NO PARKING SIGN TO COMPLY WITH 2010 ADA STANDARDS FOR ACCESSIBILITY CODE 502.6.

ACCESSIBILITY NOTES

- 1. PROPOSED SPOT ELEVATIONS ARE TO TOP OF FINISHED SURFACE UNLESS OTHERWISE NOTED IN LEGEND.
- 2. ALL CONSTRUCTION OF HANDICAP STALLS, ROUTES, & CURB RAMPS TO COMPLY WITH THE 2020 MN ACCESSIBILITY CODE.
- 3. CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS. ALL GRADE BREAKS SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
- 4. TO ENSURE RAMPS & LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY.
- 5. ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.
- 6. TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

LEGEND

- — — — — PROPERTY LIMITS
- — — — — CONSTRUCTION LIMITS
- - - - - 958 EXISTING MINOR CONTOUR
- - - - - 960 EXISTING MAJOR CONTOUR
- — — — — 958 PROPOSED MINOR CONTOUR
- — — — — 960 PROPOSED MAJOR CONTOUR
- x 954.2 EXISTING SPOT ELEVATION
- DRAINAGE ARROW
- ===== PROPOSED CONCRETE C&G

SPOT ELEVATION KEY

- ± EXISTING GRADE
- FL GUTTER FLOW LINE
- TC TOP OF CURB
- HP HIGH POINT ELEVATION
- R RIM ELEVATION
- EOF EMERGENCY OVERFLOW ELEVATION
- FFE FINISHED FLOOR ELEVATION

GRADING NOTES

1. THE CONTRACTOR MUST CONSTRUCT/GRADE SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING CROSSING DRIVEWAYS, IN ACCORDANCE WITH CURRENT ADA STATE AND NATIONAL STANDARDS. IMMEDIATE WRITTEN NOTIFICATION TO THE ENGINEER IS REQUIRED IF ADA CRITERIA CANNOT BE MET AT ANY LOCATION.
2. IMPORTED SUITABLE FILL MATERIAL NEEDED MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER BEFORE BRINGING IT ON THE SITE.
3. THE CONTRACTOR MUST COORDINATE REQUIRED SOIL TESTS AND INSPECTIONS WITH THE GEOTECHNICAL ENGINEER.
4. THE CONTRACTOR IS RESPONSIBLE FOR EXCAVATING AND DISPOSING OF UNSUITABLE OR CONTAMINATED SOILS DISCOVERED ONSITE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
5. EXISTING TOPSOIL ON-SITE VARIES IN DEPTH. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SURFACE VEGETATION, TOPSOIL, AND OTHER UNSUITABLE MATERIAL FROM IMPERVIOUS AREAS AND OTHER DESIGNATED AREAS BEFORE PLACING SUITABLE FILL MATERIAL, AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
6. EXCAVATE, COMPACT EMBANKMENT/SUITABLE FILL, AND BACKFILL IN ACCORDANCE WITH MNDOT SPEC 2106 SPECIFIED DENSITY METHOD. THE CONTRACTOR MUST MEET MOISTURE CONTENT/CONTROL REQUIREMENTS IN ACCORDANCE WITH MNDOT 2106 AND SITE TESTING REQUIREMENTS.
7. ONSITE EMBANKMENT MATERIAL FREE OF ORGANIC SOIL AND DEBRIS MAY BE CONSIDERED FOR REUSE AS SUITABLE FILL MATERIAL IN PERVIOUS AREAS BUT MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER.
8. THE CONTRACTOR SHOULD PROMPTLY BACKFILL SUBGRADE AND TRENCH EXCAVATIONS AFTER EXCAVATION.
9. THE CONTRACTOR IS RESPONSIBLE FOR QUANTIFYING SOIL IMPORT OR EXPORT AND CONDUCTING THEIR OWN QUANTITY TAKEOFFS FROM THE DRAWINGS. ADDITIONAL ON-SITE EXCAVATION OR OFF-SITE IMPORT MAY BE NECESSARY TO ACHIEVE FINAL GRADES, AND THE CONTRACTOR MUST COORDINATE THESE ACTIONS WITH THE OWNER AND ENGINEER. THE SUITABILITY OF OFFSITE IMPORT MATERIAL MUST BE VERIFIED BY THE GEOTECHNICAL ENGINEER. ANY EXCESS MATERIAL, UNLESS NOTED OTHERWISE, BELONGS TO THE CONTRACTOR AND SHOULD BE MOVED AND DISPOSED OF OFFSITE IN ACCORDANCE WITH APPLICABLE LAWS.
10. GRADING DISCREPANCIES IN EXISTING OR PROPOSED GRADES MUST BE REPORTED IN WRITING TO THE ENGINEER BEFORE PLACING PAVEMENT. THE CONTRACTOR SHOULD OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING BEFORE PLACEMENT TO ENSURE ADEQUATE DRAINAGE.
11. EXISTING SPOT ELEVATIONS AT MATCH POINTS ARE BASED ON SITE SURVEY DATA. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING CONNECTION POINTS BEFORE INSTALLATION OF IMPROVEMENTS AND MUST NOTIFY THE ENGINEER IN WRITING OF ANY FIELD DISCREPANCIES. THE CONTRACTOR IS RESPONSIBLE FOR REWORK OF ANY DISCREPANCIES THAT ARE NOT COMMUNICATED TO THE ENGINEER IN WRITING AT NO ADDITIONAL COST TO THE OWNER.
12. THE PROPOSED CONTOURS PERTAIN TO THE FINISHED SURFACE GRADE, UNLESS OTHERWISE INDICATED.
13. THE CONTRACTOR IS RESPONSIBLE FOR MEETING GRADING/COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT AND SPECIFICATIONS FOR THE PROJECT.
14. IMPORTED SUITABLE FILL MATERIAL MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER BEFORE BRINGING IT ON THE SITE.
15. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DEWATERING MEASURES AS REQUIRED OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
16. COMPACTION TESTING SHALL FOLLOW THE FREQUENCY OUTLINED IN THE GEOTECHNICAL REPORT OR MNDOT SCHEDULE OF MATERIALS CONTROL. WHERE NO FREQUENCY IS PROVIDED, CONSULT THE ENGINEER FOR MINIMUM REQUIREMENTS.
17. GRADING ELEVATIONS SHALL CONFORM TO MNDOT SPEC 2106.3.1.

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LITTLE CAESARS

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 NORTHDAL BLVD,
 ROGERS, MN 55374

FRANCHISE CONCEPTS
 UNLIMITED INC.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: BRIAN J. FISK
 SIGNATURE: [Signature]
 DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED:	DRAWN:	CHECKED BY:
BJF	BJN	BJF

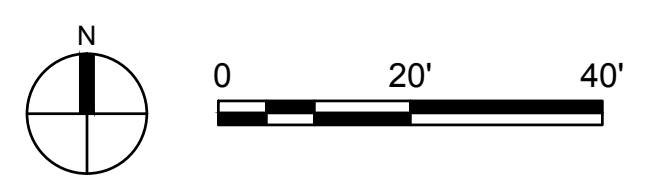
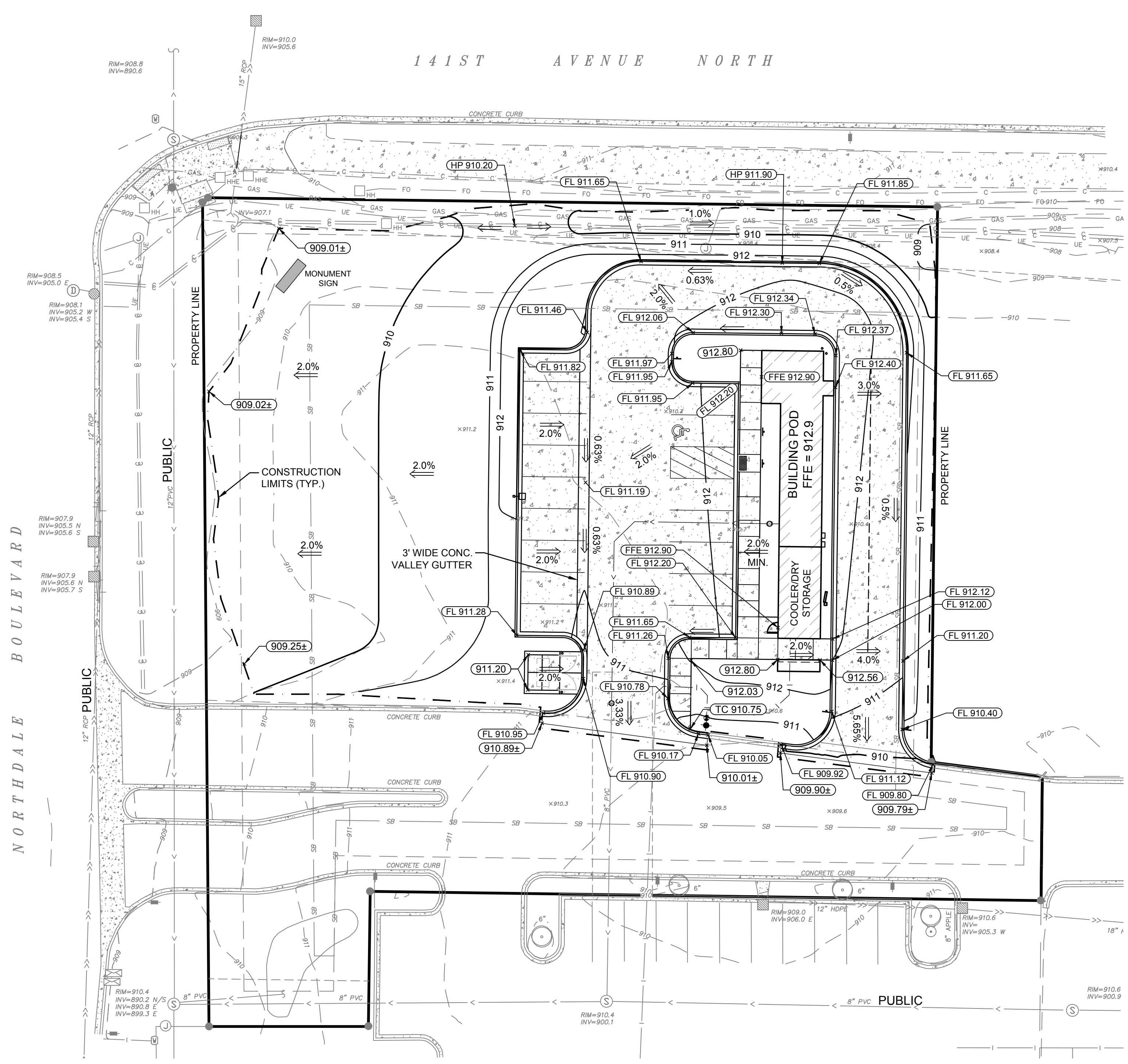
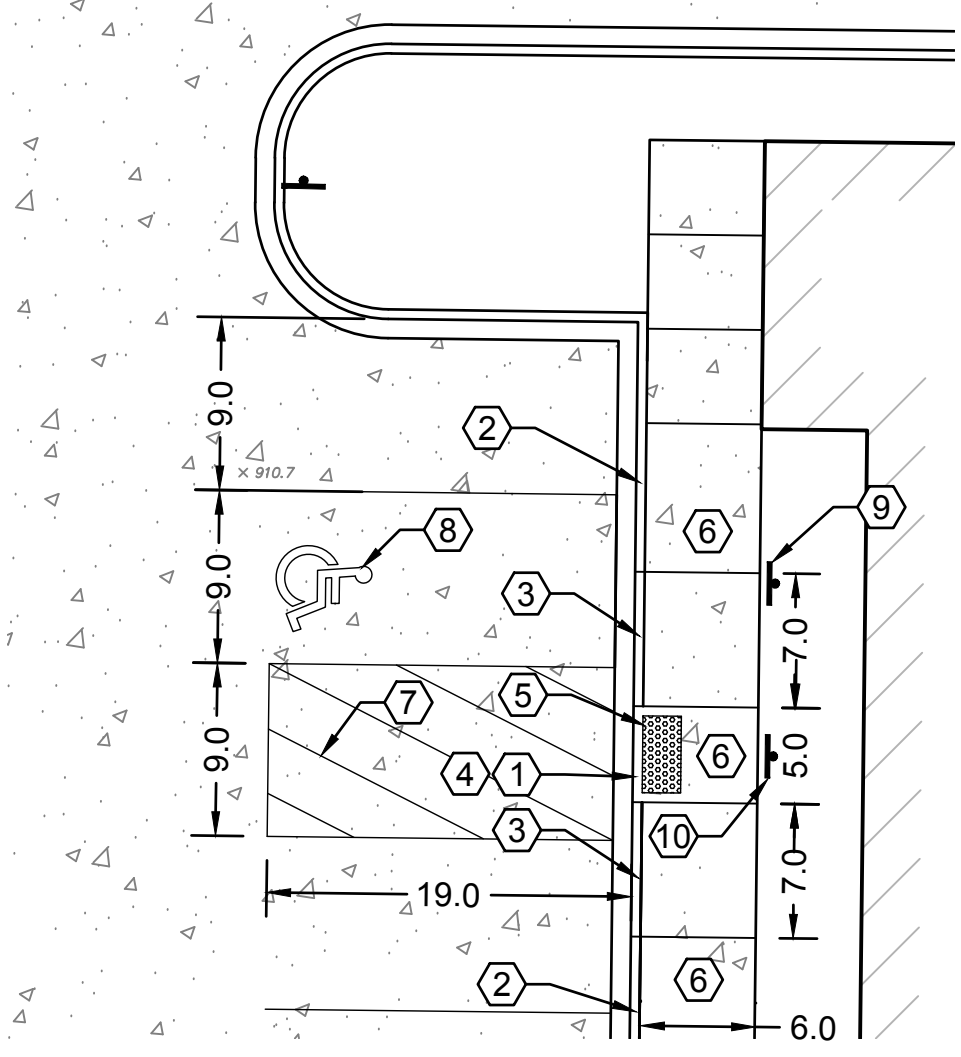
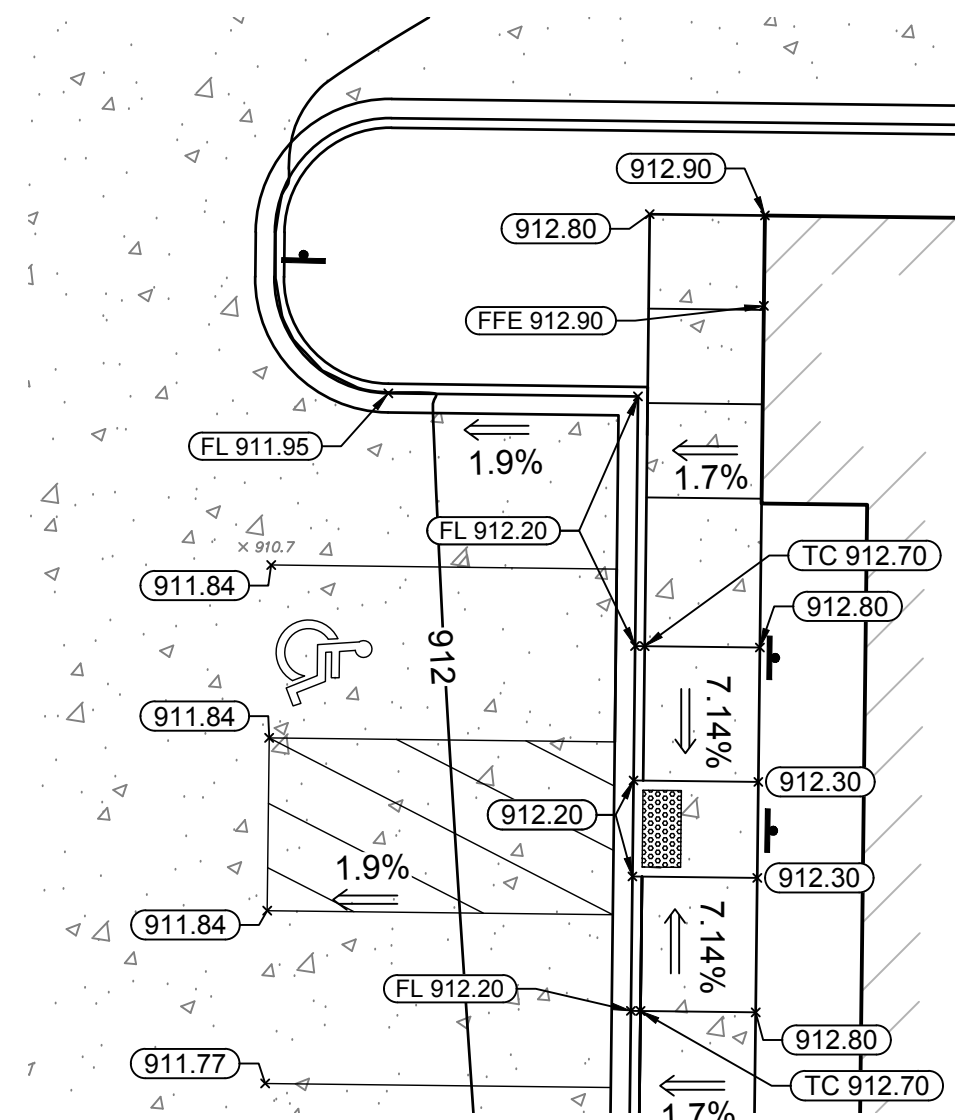
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GRADING AND DRAINAGE PLAN

DRAWING NO.

C104

PLOTTED:	COMM. NO.
05/07/2025	18586



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UTILITY NOTES

- ALL CONSTRUCTION SHALL COMPLY WITH RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER AND PER THE GEOTECHNICAL REPORT UNLESS DIRECTED OTHERWISE.
- ALL CONSTRUCTION SHALL COMPLY WITH THE 2022 EDITION OF MNDOT SPECIFICATIONS, UNLESS DIRECTED OTHERWISE.
- THE CONTRACTOR IS REQUIRED TO ADHERE TO THE SPECIFICATIONS AND REGULATIONS SET FORTH BY THE CITY/UTILITY PROVIDER, CEAM, AND MINNESOTA PLUMBING CODE (MINNESOTA RULES CHAPTER 4714) CONCERNING THE MATERIALS, INSTALLATION, AND TESTING OF WATER AND SANITARY UTILITIES. VERIFY RECEIPT OF ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

- EXISTING TOPOGRAPHIC AND UTILITY INFORMATION PREPARED BY ANDERSON ENGINEERING. BE ADVISED THAT THE LOCATION AND TYPE OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE INFORMATION IS NOT WARRANTED TO BE ACCURATE OR COMPLETE. THE CONTRACTOR, IN COOPERATION WITH THE APPROPRIATE UTILITY COMPANY OR MUNICIPALITY, IS RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE, AND DEPTH OF ALL UNDERGROUND UTILITIES.
- WATER LINES ARE REQUIRED TO BE INSTALLED AT 7.5 FEET MINIMUM DEPTH AND PROVIDE MINIMUM 10' HORIZONTAL AND 24" VERTICAL SEPARATION OF ALL WATERMAIN CROSSINGS FROM STORM OR

- SANITARY SEWER. WATERMAIN TO BE INSULATED TO STATE SPECIFICATIONS, WHERE VERTICAL SEPARATION IS LESS THAN 36" OR COVER DEPTHS CANNOT BE ACHIEVED. CONTRACTOR SHALL CONTACT THE ENGINEER IF THERE ARE AREAS WHERE MINIMUM COVER DEPTH CANNOT BE MET.
- WATER SERVICE MATERIALS SHALL BE AWWA C900/C901 AS SHOWN. CONTRACTOR SHALL VERIFY SERVICE SIZE AND MATERIALS PRIOR TO CONSTRUCTION.
 - SANITARY SEWER PIPE MATERIALS SHALL BE PVC SDR 26. PIPE SHALL BE INSULATED PER STATE STANDARDS WHERE 7.5 FOOT COVER DEPTHS ARE NOT ACHIEVED.
 - ALL JOINTS AND CONNECTIONS IN THE STORM

SEWER SYSTEM SHALL BE WATER TIGHT. APPROVED RESILIENT RUBBER JOINTS MUST BE USED MEETING ASTM F2510 TO MAKE WATER TIGHT CONNECTIONS TO MANHOLES AND CATCH BASINS. DO NOT GROUT OVER FLEXIBLE CONNECTIONS TO MANHOLES.

LEGEND

- PROPERTY LIMITS
- CONSTRUCTION LIMITS
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- PROPOSED WATERMAIN
- PROPOSED SANITARY SEWER
- EXISTING STORM INLETS
- PROPOSED STORM INLETS
- PROPOSED SANITARY CLEANOUTS
- PROPOSED 6" HYDRANT W/ 6" GATE VALVE
- PROPOSED BITUMINOUS PAVEMENT
- PROPOSED CONCRETE PAVEMENT

KEY NOTES

- ① CONNECT TO EXISTING 6" WATER MAIN STUB.
- ② AWWA C901 2" DOMESTIC LINE
- ③ 6" PVC AWWA C900 WATERMAIN
- ④ 2" CURB STOP W/ SADDLE
- ⑤ 6" HYDRANT W/ 6" GATE VALVE
- ⑥ PROPOSED GAS METER
- ⑦ PROPOSED ELECTRIC METER
- ⑧ EXISTING SANITARY SEWER ASSUMED TO SLOPE @ 2.0% UP FROM MAIN. CONTRACTOR TO FIELD VERIFY INVERT ELEVATION PRIOR TO CONNECTION.

MN DOLI NOTES

- ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE 2020 MINNESOTA PLUMBING CODE, CHAPTER 4714. ALL PIPE, PIPE FITTINGS, TRAPS, FIXTURES, MATERIAL, AND DEVICES IN THE PLUMBING SYSTEM SHALL MEET THEIR RELEVANT CODE SECTION REQUIREMENTS INCLUDING:
 - 1.1. BE LISTED OR LABELED (THIRD PARTY CERTIFIED) BY A LISTING AGENCY
 - 1.2. COMPLY WITH THE APPROVED RECOGNIZED STANDARDS REFERENCED IN THE 2020 MINNESOTA PLUMBING CODE.
 - 1.3. BE FREE OF DEFECTS.
- PVC SANITARY SEWERS MUST MEET ASTM D1785, D2665, D3034, F794, F891, F949, OR F1488 WITH APPROVED FITTINGS. SOLVENT WELDED JOINTS MUST USE ASTM F656 PURPLE PRIMER AND ASTM D2564 CEMENT. THE SEWER MUST BE INSTALLED BY OPEN TRENCH ON A CONTINUOUS GRANULAR BED PER ASTM D2321.
- PE AND HDPE WATER SERVICES MUST MEET ASTM D2239, ASTM D2737, ASTM D3035, AWWA C901, OR CSA B137.1 INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS (SEE 2015 MN PLUMBING CODE TABLE 604.1, SECTION 605.7, AND INSTALLATION STANDARD 7). JOINTS MUST BE HEAT FUSED OR USE APPROVED INSERT FITTINGS WITH STAINLESS STEEL CLAMPS. AN ACCESSIBLE BLUE 18 AWG MINIMUM TRACER WIRE SUITABLE FOR DIRECT BURY MUST BE PROVIDED (SEE SECTION 604.9).
- STORM SEWERS WITHIN 10 FEET OF THE BUILDING OR WATER SERVICE MUST BE TESTED PER 2015 MN PLUMBING CODE SECTION 1109.0.
- HDPE STORM AND SANITARY SEWERS MUST MEET ASTM F714. WHEN APPROVED FOR USE AS A STORM OR SANITARY SEWER MATERIAL, INSTALLATION OF HDPE MUST MEET THE FOLLOWING REQUIREMENTS:
 - 5.1. WATER TIGHT JOINTS MUST BE USED AT ALL CONNECTIONS, INCLUDING STRUCTURES.
 - 5.2. INSTALLATION MUST BE BY OPEN TRENCH ON A CONTINUOUS GRANULAR BED PER ASTM D2321.
 - 5.3. THE CONNECTION BETWEEN HDPE TO A BUILDING SEWER OF DIFFERENT MATERIAL MUST BE MADE THROUGH AN APPROVED TRANSITION COUPLING FOR THE INTENDED MATERIALS.

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FRANCHISE CONCEPTS
 UNLIMITED INC.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: BRIAN J. FISHER

SIGNATURE: [Signature]

DATE: 05/07/2025 LICENSE NO. 57224

REVISION LOG

NO.	DATE	DESCRIPTION OF REVISIONS

SITE PLAN REVIEW

05-07-2025

DESIGNED: BJF	DRAWN: BJN	CHECKED BY: BJF
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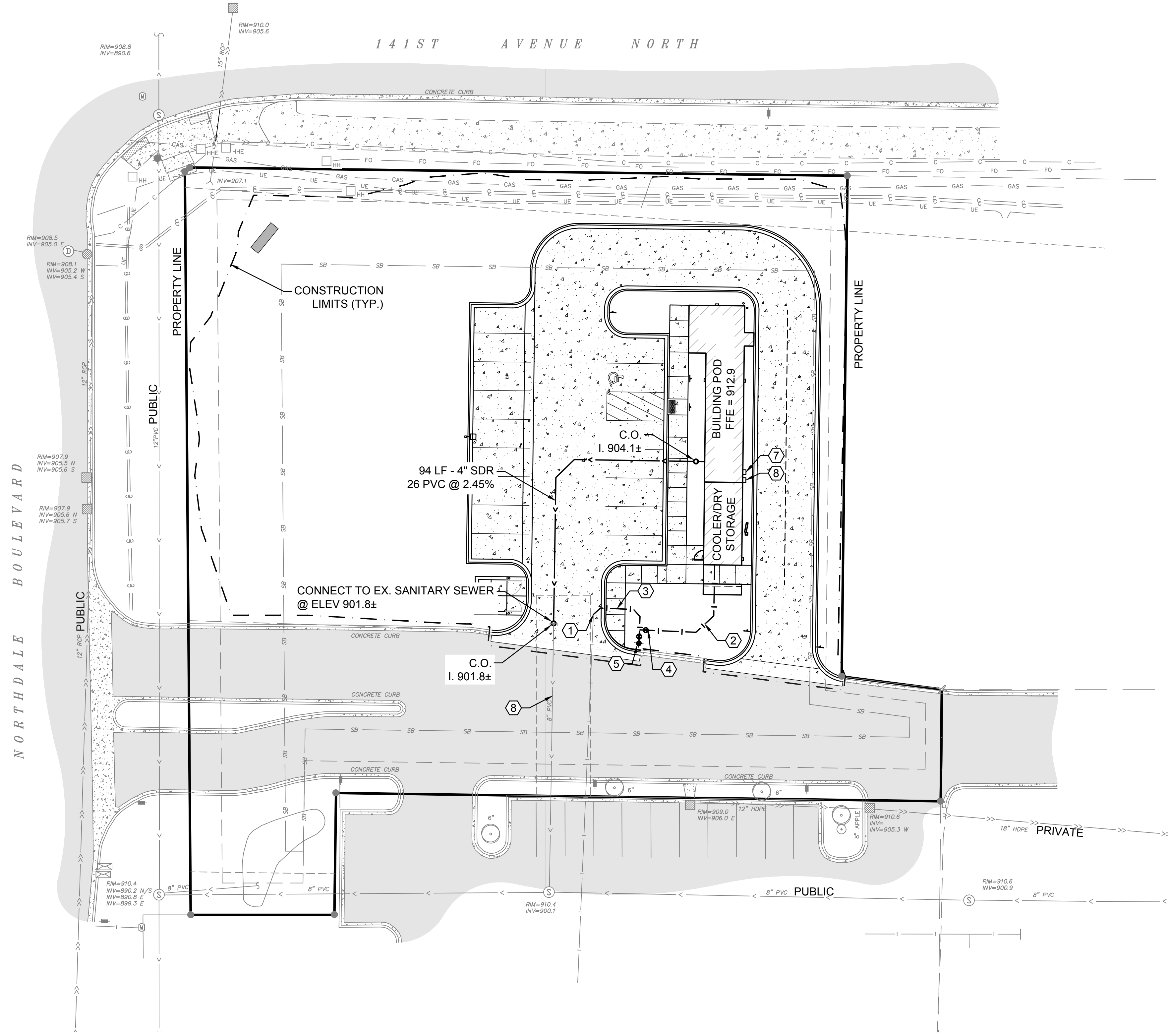
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UTILITY PLAN

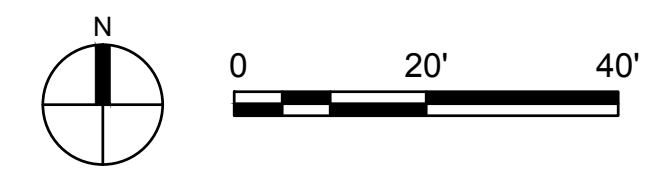
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PLOTTED: 05/07/2025	COMM. NO. 18586
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1 UTILITY PLAN
 SCALE: 1"=20'



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STS CONSULTANTS, LTD.



**Storm Water
Management Report**

Uptown Rogers @ 101
Hassan Township, Minnesota

STS Project 200604509





STS CONSULTANTS

STS Consultants, Ltd.
10900 - 73rd Ave. N., Suite 150
Maple Grove, MN 55369-5547
763-315-6300 Phone
763-315-1836 Fax

November 3, 2006

KLC Holdings, LLC

Re: STS Project 200604509

To Whom it May Concern:

Included in this attachment is the Storm Water Management Report for the Uptown Rogers at 101 site, which consists of a proposed KinderCare site and future development. The site is located at the southeast quadrant of Northdale Boulevard and 141st Avenue North.

This report describes the existing and proposed on-site hydrologic conditions and includes modeling data of anticipated storm water runoff rates before and after development. The results show that the proposed runoff rates will be less than or equal to existing runoff rates, and that there will be approximately 1.8 feet of freeboard above the 100-year high water elevation (HWE).

If you have any questions or concerns, feel free to call us at 763-315-6300.

Sincerely,

STS CONSULTANTS, LTD.

Ryan Menter, E.I.T.
Assistant Project Engineer

Barry C. Morgan, P.E.
Associate Engineer

RM/dn
Encs.



Table of Contents

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Table 2: Proposed Drainage Parameters	2
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Appendix A - HydroCAD Data

Appendix B - Existing and Proposed Drainage Basins

Appendix C - Graph of Existing Runoff and Proposed Runoff

KinderCare
 STS Project 200604509
 November 3, 2006

METHODOLOGY

The existing and proposed drainage parameters were calculated by first determining the individual sub-area boundaries along with their respective sizes, runoff curve numbers (CN), and times of concentration (T_c). The sub-area boundaries were defined by ground contours and drainage break points. The curve numbers were determined by the type of ground cover, hydrologic conditions and soil type. All soils for this project were assumed to be Group C soils.

Drainage analysis was performed to calculate the existing and proposed storm water runoff rates. Each sub-watershed was modeled using HydroCAD, which employs the methodology of the United States Soil Conservation Service Technical Release 55 Urban Hydrology for Small Watersheds. Technical Release 55, known as "TR-55," provides simplified procedures to calculate storm water runoff, peak rates of discharge, and required detention pond volumes. These procedures are applicable in watersheds less than 2000 acres, especially urbanizing watersheds. Using single-event rainfall data, TR-55 provides hydrologic analysis for watersheds with various land-use combinations. The HydroCAD data sheets for this project are found in Appendix A.

EXISTING CONDITIONS

The existing site is 6.31 acres, which is predominantly gradually sloping meadows with tall grass and small, sparse trees. It contains two drainage basins -- one that drains towards the west and one that drains towards the east. The west half drains into a ditch along Northdale Boulevard, where it then flows north into a culvert below 141st Avenue North. The east half of the existing site drains into a wetland adjacent to the site. A summary of the existing drainage parameters is shown in Table 1.

Table 1: Existing Conditions

Area I.D.	Area (ac.)	CN	T_c (min)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
E-1	3.33	70	32.4	1.35	3.78	7.35
E-2	2.96	70	24.7	1.46	4.04	7.81
TOTAL	6.29	70		2.7	7.58	14.76

KinderCare
 STS Project 200604509
 November 3, 2006

DEVELOPED CONDITIONS

The proposed site will be developed in phases. The initial phase will divide the site into two lots and one outlot. Lot 1 is located in the southwest corner of the site and will consist of a KinderCare facility. Lot 2 is proposed to include several commercial and retail buildings and paved parking areas. This conceptual plan was utilized in developing our model. The impervious surfaces such as the pavements and rooftops will greatly increase storm water volume and runoff from the site. A detention pond will be constructed in Outlot 1, on the east side of the property, to contain the additional runoff volume and reduce discharge flow rates.

Summaries of the proposed drainage parameters are shown in Table 2. The sum of the proposed peak discharge rates is less than the sum of the existing discharge rates.

Table 2: Proposed Drainage Parameters

Area I.D.	Area (ac.)	CN	T _c (min)	Q ₂ (cfs)	Q ₁₀ (cfs)	Q ₁₀₀ (cfs)
P-1	4.82	95	4.6	18.30	28.54	40.81
P-2	0.47	92	7.3	1.49	2.43	3.55
P-3	0.70	76	30.1	0.49	1.13	1.99
P-4	0.30	70	16.4	0.19	0.52	1.00
TOTAL	6.29			1.79	3.29	11.84

Table 3 shows a summary of pond elevations and outflow rates.

Table 3: Proposed Pond Parameters

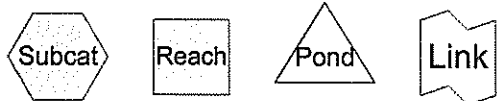
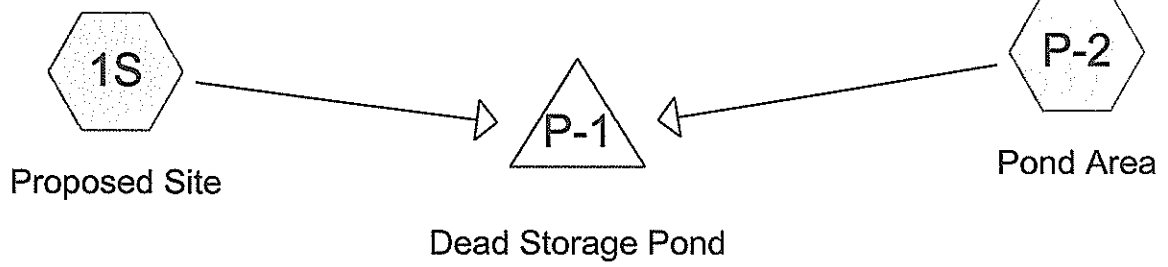
Rainfall Event	Water Elevation	Outflow Rate (cfs)
(NWL)	903.00	0.00
2-Yr	904.47	1.79
10-yr	905.25	3.29
100-yr (HWE)	905.91	11.84

APPENDIX

Appendix A - HydroCAD Model Data

Appendix B - Existing and Proposed Drainage Basins

Appendix C - Graph of Existing Runoff and Proposed Runoff



Drainage Diagram for Dead2
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Dead2

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Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
0.750	74	>75% Grass cover, Good, HSG C (1S,P-2)
4.220	98	Paved parking & roofs (1S)
0.320	100	Pond Area (P-2)
<hr/>		
5.290		

Dead2

Type II 24-hr 2.5 Inch Event Rainfall=2.50"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Proposed Site

Runoff Area=4.820 ac Runoff Depth>1.84"

Flow Length=480' Tc=4.8 min CN=95 Runoff=15.96 cfs 0.740 af

Subcatchment P-2: Pond Area

Runoff Area=0.470 ac Runoff Depth>1.58"

Flow Length=40' Slope=0.0200 '/' Tc=7.8 min CN=92 Runoff=1.27 cfs 0.062 af

Pond P-1: Dead Storage Pond

Peak Elev=902.29' Storage=34,901 cf Inflow=17.12 cfs 0.802 af

Outflow=0.00 cfs 0.000 af

Total Runoff Area = 5.290 ac Runoff Volume = 0.802 af Average Runoff Depth = 1.82"

14.18% Pervious Area = 0.750 ac 85.82% Impervious Area = 4.540 ac

Dead2

Type II 24-hr 2.5 Inch Event Rainfall=2.50"

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Subcatchment 1S: Proposed Site

[49] Hint: Tc<2dt may require smaller dt

Runoff = 15.96 cfs @ 11.95 hrs, Volume= 0.740 af, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2.5 Inch Event Rainfall=2.50"

Area (ac)	CN	Description
4.220	98	Paved parking & roofs
0.600	74	>75% Grass cover, Good, HSG C
4.820	95	Weighted Average
0.600		Pervious Area
4.220		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	300	0.0200	1.51		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.50"
1.5	180	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
4.8	480	Total			

Subcatchment P-2: Pond Area

Runoff = 1.27 cfs @ 11.99 hrs, Volume= 0.062 af, Depth> 1.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2.5 Inch Event Rainfall=2.50"

Area (ac)	CN	Description
0.320	100	Pond Area
0.150	74	>75% Grass cover, Good, HSG C
0.470	92	Weighted Average
0.150		Pervious Area
0.320		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	40	0.0200	0.09		Sheet Flow, Grass: Dense n= 0.240 P2= 2.50"

Pond P-1: Dead Storage Pond

[82] Warning: Early inflow requires earlier time span

Inflow Area = 5.290 ac, Inflow Depth > 1.82" for 2.5 Inch Event event
 Inflow = 17.12 cfs @ 11.95 hrs, Volume= 0.802 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Dead2

Type II 24-hr 2.5 Inch Event Rainfall=2.50"

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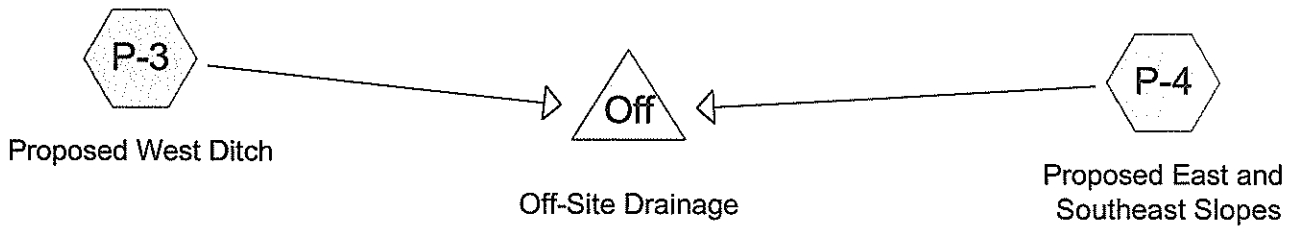
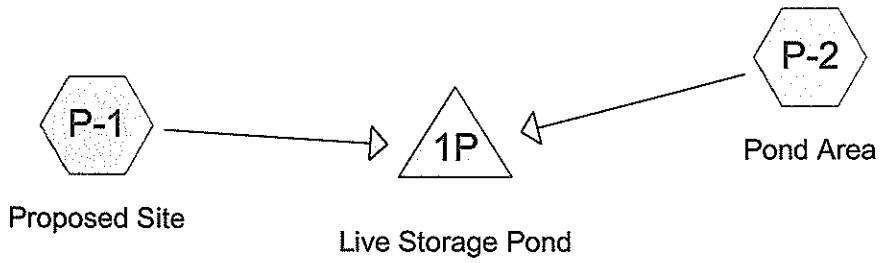
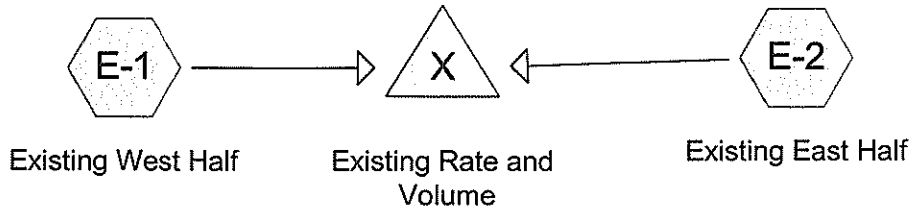
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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 902.29' @ 20.00 hrs Surf.Area= 10,297 sf Storage= 34,901 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	893.00'	43,558 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.00	230	0	0
894.00	560	395	395
895.00	1,147	854	1,249
896.00	1,800	1,474	2,722
897.00	2,618	2,209	4,931
898.00	3,626	3,122	8,053
899.00	4,720	4,173	12,226
900.00	5,928	5,324	17,550
901.00	7,259	6,594	24,144
902.00	8,712	7,986	32,129
903.00	14,145	11,429	43,558



Drainage Diagram for Drainage
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Drainage

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Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
6.590	70	Brush, Fair, HSG C (E-1,E-2,P-4)
1.390	74	>75% Grass cover, Good, HSG C (P-1,P-2,P-3)
4.280	98	Paved parking & roofs (P-1,P-3)
0.320	100	Pond Area (P-2)
<hr/>		
12.580		

Drainage

Type II 24-hr 2-Yr Rainfall=2.80"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Existing West Half

Runoff Area=3.330 ac Runoff Depth>0.53"
Flow Length=390' Tc=32.4 min CN=70 Runoff=1.35 cfs 0.146 af

Subcatchment E-2: Existing East Half

Runoff Area=2.960 ac Runoff Depth>0.53"
Flow Length=500' Tc=24.7 min CN=70 Runoff=1.45 cfs 0.131 af

Subcatchment P-1: Proposed Site

Runoff Area=4.820 ac Runoff Depth>2.11"
Flow Length=480' Tc=4.6 min CN=95 Runoff=18.30 cfs 0.849 af

Subcatchment P-2: Pond Area

Runoff Area=0.470 ac Runoff Depth>1.84"
Flow Length=40' Slope=0.0200 '/' Tc=7.3 min CN=92 Runoff=1.49 cfs 0.072 af

Subcatchment P-3: Proposed West Ditch

Runoff Area=0.700 ac Runoff Depth>0.79"
Flow Length=480' Tc=30.1 min CN=76 Runoff=0.49 cfs 0.046 af

Subcatchment P-4: Proposed East and Southeast Slopes

Runoff Area=0.300 ac Runoff Depth>0.53"
Flow Length=240' Slope=0.0375 '/' Tc=16.4 min CN=70 Runoff=0.19 cfs 0.013 af

Pond 1P: Live Storage Pond

Peak Elev=904.47' Storage=23,082 cf Inflow=19.68 cfs 0.922 af
Outflow=1.79 cfs 0.765 af

Pond Off: Off-Site Drainage

Inflow=0.62 cfs 0.059 af
Primary=0.62 cfs 0.059 af

Pond X: Existing Rate and Volume

Inflow=2.70 cfs 0.277 af
Primary=2.70 cfs 0.277 af

Total Runoff Area = 12.580 ac Runoff Volume = 1.258 af Average Runoff Depth = 1.20"
63.43% Pervious Area = 7.980 ac 36.57% Impervious Area = 4.600 ac

Drainage

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Type II 24-hr 2-Yr Rainfall=2.80"

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Subcatchment E-1: Existing West Half

Runoff = 1.35 cfs @ 12.32 hrs, Volume= 0.146 af, Depth > 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Yr Rainfall=2.80"

Area (ac)	CN	Description
3.330	70	Brush, Fair, HSG C
3.330		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.0	300	0.0090	0.16		Sheet Flow, Range n= 0.130 P2= 2.80"
1.4	90	0.0220	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
32.4	390	Total			

Subcatchment E-2: Existing East Half

Runoff = 1.45 cfs @ 12.22 hrs, Volume= 0.131 af, Depth > 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Yr Rainfall=2.80"

Area (ac)	CN	Description
2.960	70	Brush, Fair, HSG C
2.960		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0230	0.24		Sheet Flow, Range n= 0.130 P2= 2.80"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.7	500	Total			

Subcatchment P-1: Proposed Site

[49] Hint: Tc < 2dt may require smaller dt

Runoff = 18.30 cfs @ 11.95 hrs, Volume= 0.849 af, Depth > 2.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Yr Rainfall=2.80"

Drainage

Type II 24-hr 2-Yr Rainfall=2.80"

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Area (ac)	CN	Description
4.220	98	Paved parking & roofs
0.600	74	>75% Grass cover, Good, HSG C
4.820	95	Weighted Average
0.600		Pervious Area
4.220		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	300	0.0200	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"
1.5	180	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
4.6	480	Total			

Subcatchment P-2: Pond Area

Runoff = 1.49 cfs @ 11.98 hrs, Volume= 0.072 af, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Yr Rainfall=2.80"

Area (ac)	CN	Description
0.320	100	Pond Area
0.150	74	>75% Grass cover, Good, HSG C
0.470	92	Weighted Average
0.150		Pervious Area
0.320		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	40	0.0200	0.09		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment P-3: Proposed West Ditch

Runoff = 0.49 cfs @ 12.27 hrs, Volume= 0.046 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Yr Rainfall=2.80"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.060	98	Paved parking & roofs
0.700	76	Weighted Average
0.640		Pervious Area
0.060		Impervious Area

Drainage

Type II 24-hr 2-Yr Rainfall=2.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.9	300	0.0170	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
3.2	180	0.0040	0.95		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.1	480	Total			

Subcatchment P-4: Proposed East and Southeast Slopes

Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.013 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Yr Rainfall=2.80"

Area (ac)	CN	Description
0.300	70	Brush, Fair, HSG C
0.300		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	240	0.0375	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

Pond 1P: Live Storage Pond

[82] Warning: Early inflow requires earlier time span

Inflow Area = 5.290 ac, Inflow Depth > 2.09" for 2-Yr event
 Inflow = 19.68 cfs @ 11.95 hrs, Volume= 0.922 af
 Outflow = 1.79 cfs @ 12.40 hrs, Volume= 0.765 af, Atten= 91%, Lag= 27.2 min
 Primary = 1.79 cfs @ 12.40 hrs, Volume= 0.765 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 904.47' @ 12.40 hrs Surf.Area= 16,721 sf Storage= 23,082 cf

Plug-Flow detention time= 183.4 min calculated for 0.765 af (83% of inflow)
 Center-of-Mass det. time= 133.5 min (883.5 - 749.9)

Volume #1	Invert	Avail.Storage	Storage Description
	903.00'	69,095 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
903.00	14,145	0	0
904.00	16,478	15,312	15,312
905.00	16,996	16,737	32,049
906.00	18,507	17,752	49,800
907.00	20,082	19,295	69,095

Drainage

Type II 24-hr 2-Yr Rainfall=2.80"

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Device	Routing	Invert	Outlet Devices
#1	Primary	905.05'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Primary	903.00'	8.0" x 1.0' long Culvert CPP, square edge headwall, Ke= 0.500 Outlet Invert= 903.00' S= 0.0000 '/ Cc= 0.900 n= 0.011

Primary OutFlow Max=1.79 cfs @ 12.40 hrs HW=904.47' (Free Discharge)

└─1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

└─2=Culvert (Inlet Controls 1.79 cfs @ 5.13 fps)

Pond Off: Off-Site Drainage

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.000 ac, Inflow Depth > 0.71" for 2-Yr event
Inflow = 0.62 cfs @ 12.22 hrs, Volume= 0.059 af
Primary = 0.62 cfs @ 12.22 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond X: Existing Rate and Volume

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.290 ac, Inflow Depth > 0.53" for 2-Yr event
Inflow = 2.70 cfs @ 12.26 hrs, Volume= 0.277 af
Primary = 2.70 cfs @ 12.26 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage

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Type II 24-hr 10-yr Rainfall=4.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Existing West Half

Runoff Area=3.330 ac Runoff Depth>1.31"
Flow Length=390' Tc=32.4 min CN=70 Runoff=3.78 cfs 0.364 af

Subcatchment E-2: Existing East Half

Runoff Area=2.960 ac Runoff Depth>1.32"
Flow Length=500' Tc=24.7 min CN=70 Runoff=4.04 cfs 0.324 af

Subcatchment P-1: Proposed Site

Runoff Area=4.820 ac Runoff Depth>3.39"
Flow Length=480' Tc=4.6 min CN=95 Runoff=28.54 cfs 1.363 af

Subcatchment P-2: Pond Area

Runoff Area=0.470 ac Runoff Depth>3.10"
Flow Length=40' Slope=0.0200 '/' Tc=7.3 min CN=92 Runoff=2.43 cfs 0.122 af

Subcatchment P-3: Proposed West Ditch

Runoff Area=0.700 ac Runoff Depth>1.72"
Flow Length=480' Tc=30.1 min CN=76 Runoff=1.13 cfs 0.100 af

Subcatchment P-4: Proposed East and Southeast Slopes

Runoff Area=0.300 ac Runoff Depth>1.32"
Flow Length=240' Slope=0.0375 '/' Tc=16.4 min CN=70 Runoff=0.52 cfs 0.033 af

Pond 1P: Live Storage Pond

Peak Elev=905.25' Storage=36,346 cf Inflow=30.80 cfs 1.484 af
Outflow=3.29 cfs 1.259 af

Pond Off: Off-Site Drainage

Inflow=1.48 cfs 0.133 af
Primary=1.48 cfs 0.133 af

Pond X: Existing Rate and Volume

Inflow=7.58 cfs 0.688 af
Primary=7.58 cfs 0.688 af

Total Runoff Area = 12.580 ac Runoff Volume = 2.305 af Average Runoff Depth = 2.20"
63.43% Pervious Area = 7.980 ac 36.57% Impervious Area = 4.600 ac

Drainage

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Type II 24-hr 10-yr Rainfall=4.20"

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Subcatchment E-1: Existing West Half

Runoff = 3.78 cfs @ 12.29 hrs, Volume= 0.364 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.20"

Area (ac)	CN	Description
3.330	70	Brush, Fair, HSG C
3.330		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.0	300	0.0090	0.16		Sheet Flow, Range n= 0.130 P2= 2.80"
1.4	90	0.0220	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
32.4	390	Total			

Subcatchment E-2: Existing East Half

Runoff = 4.04 cfs @ 12.20 hrs, Volume= 0.324 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.20"

Area (ac)	CN	Description
2.960	70	Brush, Fair, HSG C
2.960		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0230	0.24		Sheet Flow, Range n= 0.130 P2= 2.80"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.7	500	Total			

Subcatchment P-1: Proposed Site

[49] Hint: Tc<2dt may require smaller dt

Runoff = 28.54 cfs @ 11.95 hrs, Volume= 1.363 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.20"

Drainage

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Type II 24-hr 10-yr Rainfall=4.20"

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Area (ac)	CN	Description
4.220	98	Paved parking & roofs
0.600	74	>75% Grass cover, Good, HSG C
4.820	95	Weighted Average
0.600		Pervious Area
4.220		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	300	0.0200	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"
1.5	180	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
4.6	480	Total			

Subcatchment P-2: Pond Area

Runoff = 2.43 cfs @ 11.98 hrs, Volume= 0.122 af, Depth> 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.20"

Area (ac)	CN	Description
0.320	100	Pond Area
0.150	74	>75% Grass cover, Good, HSG C
0.470	92	Weighted Average
0.150		Pervious Area
0.320		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	40	0.0200	0.09		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment P-3: Proposed West Ditch

Runoff = 1.13 cfs @ 12.25 hrs, Volume= 0.100 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.20"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.060	98	Paved parking & roofs
0.700	76	Weighted Average
0.640		Pervious Area
0.060		Impervious Area

Drainage

Type II 24-hr 10-yr Rainfall=4.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.9	300	0.0170	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
3.2	180	0.0040	0.95		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.1	480	Total			

Subcatchment P-4: Proposed East and Southeast Slopes

Runoff = 0.52 cfs @ 12.10 hrs, Volume= 0.033 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.20"

Area (ac)	CN	Description
0.300	70	Brush, Fair, HSG C
0.300		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	240	0.0375	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

Pond 1P: Live Storage Pond

[82] Warning: Early inflow requires earlier time span

Inflow Area = 5.290 ac, Inflow Depth > 3.37" for 10-yr event
 Inflow = 30.80 cfs @ 11.95 hrs, Volume= 1.484 af
 Outflow = 3.29 cfs @ 12.30 hrs, Volume= 1.259 af, Atten= 89%, Lag= 20.9 min
 Primary = 3.29 cfs @ 12.30 hrs, Volume= 1.259 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 905.25' @ 12.30 hrs Surf.Area= 17,374 sf Storage= 36,346 cf

Plug-Flow detention time= 189.1 min calculated for 1.259 af (85% of inflow)
 Center-of-Mass det. time= 142.4 min (884.1 - 741.7)

Volume #1	Invert	Avail.Storage	Storage Description
	903.00'	69,095 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
903.00	14,145	0	0
904.00	16,478	15,312	15,312
905.00	16,996	16,737	32,049
906.00	18,507	17,752	49,800
907.00	20,082	19,295	69,095

Drainage

Type II 24-hr 10-yr Rainfall=4.20"

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Device	Routing	Invert	Outlet Devices
#1	Primary	905.05'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Primary	903.00'	8.0" x 1.0' long Culvert CPP, square edge headwall, Ke= 0.500 Outlet Invert= 903.00' S= 0.0000 '/' Cc= 0.900 n= 0.011

Primary OutFlow Max=3.29 cfs @ 12.30 hrs HW=905.25' (Free Discharge)

1=Broad-Crested Rectangular Weir (Weir Controls 0.96 cfs @ 1.20 fps)

2=Culvert (Inlet Controls 2.33 cfs @ 6.67 fps)

Pond Off: Off-Site Drainage

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.000 ac, Inflow Depth > 1.60" for 10-yr event
Inflow = 1.48 cfs @ 12.19 hrs, Volume= 0.133 af
Primary = 1.48 cfs @ 12.19 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond X: Existing Rate and Volume

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.290 ac, Inflow Depth > 1.31" for 10-yr event
Inflow = 7.58 cfs @ 12.24 hrs, Volume= 0.688 af
Primary = 7.58 cfs @ 12.24 hrs, Volume= 0.688 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage

Type II 24-hr 100-Yr Rainfall=5.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Existing West Half

Runoff Area=3.330 ac Runoff Depth>2.47"

Flow Length=390' Tc=32.4 min CN=70 Runoff=7.35 cfs 0.687 af

Subcatchment E-2: Existing East Half

Runoff Area=2.960 ac Runoff Depth>2.48"

Flow Length=500' Tc=24.7 min CN=70 Runoff=7.81 cfs 0.612 af

Subcatchment P-1: Proposed Site

Runoff Area=4.820 ac Runoff Depth>4.94"

Flow Length=480' Tc=4.6 min CN=95 Runoff=40.81 cfs 1.985 af

Subcatchment P-2: Pond Area

Runoff Area=0.470 ac Runoff Depth>4.65"

Flow Length=40' Slope=0.0200 '/' Tc=7.3 min CN=92 Runoff=3.55 cfs 0.182 af

Subcatchment P-3: Proposed West Ditch

Runoff Area=0.700 ac Runoff Depth>3.02"

Flow Length=480' Tc=30.1 min CN=76 Runoff=1.99 cfs 0.176 af

Subcatchment P-4: Proposed East and Southeast Slopes

Runoff Area=0.300 ac Runoff Depth>2.49"

Flow Length=240' Slope=0.0375 '/' Tc=16.4 min CN=70 Runoff=1.00 cfs 0.062 af

Pond 1P: Live Storage Pond

Peak Elev=905.91' Storage=48,065 cf Inflow=44.13 cfs 2.168 af

Outflow=11.84 cfs 1.887 af

Pond Off: Off-Site Drainage

Inflow=2.69 cfs 0.239 af

Primary=2.69 cfs 0.239 af

Pond X: Existing Rate and Volume

Inflow=14.76 cfs 1.299 af

Primary=14.76 cfs 1.299 af

Total Runoff Area = 12.580 ac Runoff Volume = 3.705 af Average Runoff Depth = 3.53"

63.43% Pervious Area = 7.980 ac 36.57% Impervious Area = 4.600 ac

Drainage

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Type II 24-hr 100-Yr Rainfall=5.90"

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Subcatchment E-1: Existing West Half

Runoff = 7.35 cfs @ 12.28 hrs, Volume= 0.687 af, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.90"

Area (ac)	CN	Description
3.330	70	Brush, Fair, HSG C
3.330		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.0	300	0.0090	0.16		Sheet Flow, Range n= 0.130 P2= 2.80"
1.4	90	0.0220	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
32.4	390	Total			

Subcatchment E-2: Existing East Half

Runoff = 7.81 cfs @ 12.19 hrs, Volume= 0.612 af, Depth> 2.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.90"

Area (ac)	CN	Description
2.960	70	Brush, Fair, HSG C
2.960		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	300	0.0230	0.24		Sheet Flow, Range n= 0.130 P2= 2.80"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.7	500	Total			

Subcatchment P-1: Proposed Site

[49] Hint: Tc<2dt may require smaller dt

Runoff = 40.81 cfs @ 11.95 hrs, Volume= 1.985 af, Depth> 4.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.90"

Drainage

Type II 24-hr 100-Yr Rainfall=5.90"

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Area (ac)	CN	Description
4.220	98	Paved parking & roofs
0.600	74	>75% Grass cover, Good, HSG C
4.820	95	Weighted Average
0.600		Pervious Area
4.220		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	300	0.0200	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"
1.5	180	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
4.6	480	Total			

Subcatchment P-2: Pond Area

Runoff = 3.55 cfs @ 11.98 hrs, Volume= 0.182 af, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.90"

Area (ac)	CN	Description
0.320	100	Pond Area
0.150	74	>75% Grass cover, Good, HSG C
0.470	92	Weighted Average
0.150		Pervious Area
0.320		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	40	0.0200	0.09		Sheet Flow, Grass: Dense n= 0.240 P2= 2.80"

Subcatchment P-3: Proposed West Ditch

Runoff = 1.99 cfs @ 12.25 hrs, Volume= 0.176 af, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.90"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.060	98	Paved parking & roofs
0.700	76	Weighted Average
0.640		Pervious Area
0.060		Impervious Area

Drainage

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Type II 24-hr 100-Yr Rainfall=5.90"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.9	300	0.0170	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
3.2	180	0.0040	0.95		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.1	480	Total			

Subcatchment P-4: Proposed East and Southeast Slopes

Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.90"

Area (ac)	CN	Description
0.300	70	Brush, Fair, HSG C
0.300		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	240	0.0375	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

Pond 1P: Live Storage Pond

[82] Warning: Early inflow requires earlier time span

Inflow Area = 5.290 ac, Inflow Depth > 4.92" for 100-Yr event
Inflow = 44.13 cfs @ 11.95 hrs, Volume= 2.168 af
Outflow = 11.84 cfs @ 12.09 hrs, Volume= 1.887 af, Atten= 73%, Lag= 8.8 min
Primary = 11.84 cfs @ 12.09 hrs, Volume= 1.887 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 905.91' @ 12.09 hrs Surf.Area= 18,365 sf Storage= 48,065 cf

Plug-Flow detention time= 155.6 min calculated for 1.887 af (87% of inflow)
Center-of-Mass det. time= 113.2 min (849.8 - 736.6)

Volume #1	Invert	Avail.Storage	Storage Description
	903.00'	69,095 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
903.00	14,145	0	0
904.00	16,478	15,312	15,312
905.00	16,996	16,737	32,049
906.00	18,507	17,752	49,800
907.00	20,082	19,295	69,095

Drainage

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Type II 24-hr 100-Yr Rainfall=5.90"

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Device	Routing	Invert	Outlet Devices
#1	Primary	905.05'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Primary	903.00'	8.0" x 1.0' long Culvert CPP, square edge headwall, Ke= 0.500 Outlet Invert= 903.00' S= 0.0000 '/' Cc= 0.900 n= 0.011

Primary OutFlow Max=11.78 cfs @ 12.09 hrs HW=905.90' (Free Discharge)

1=Broad-Crested Rectangular Weir (Weir Controls 9.09 cfs @ 2.66 fps)

2=Culvert (Inlet Controls 2.69 cfs @ 7.72 fps)

Pond Off: Off-Site Drainage

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.000 ac, Inflow Depth > 2.86" for 100-Yr event
Inflow = 2.69 cfs @ 12.17 hrs, Volume= 0.239 af
Primary = 2.69 cfs @ 12.17 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min

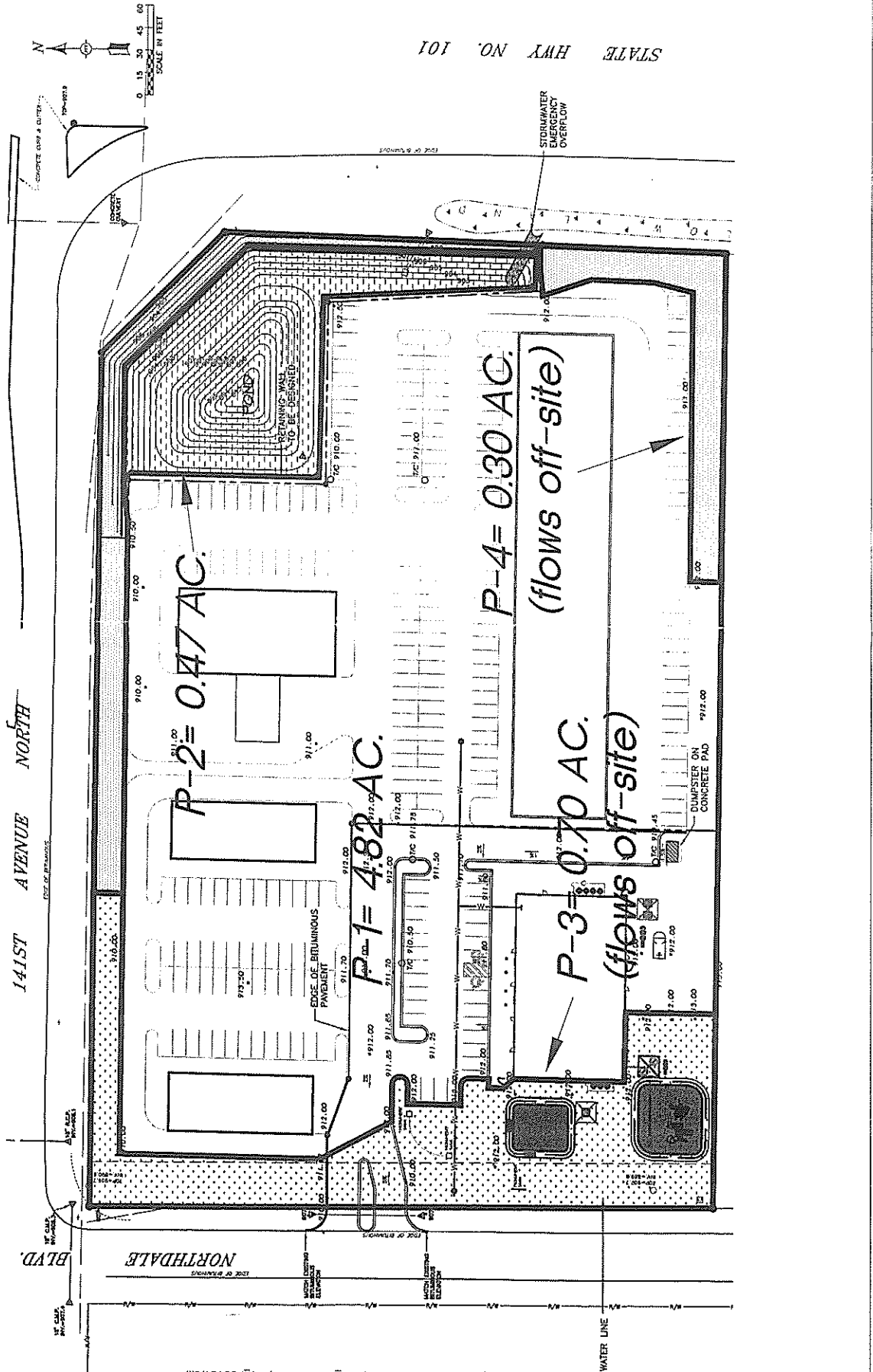
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

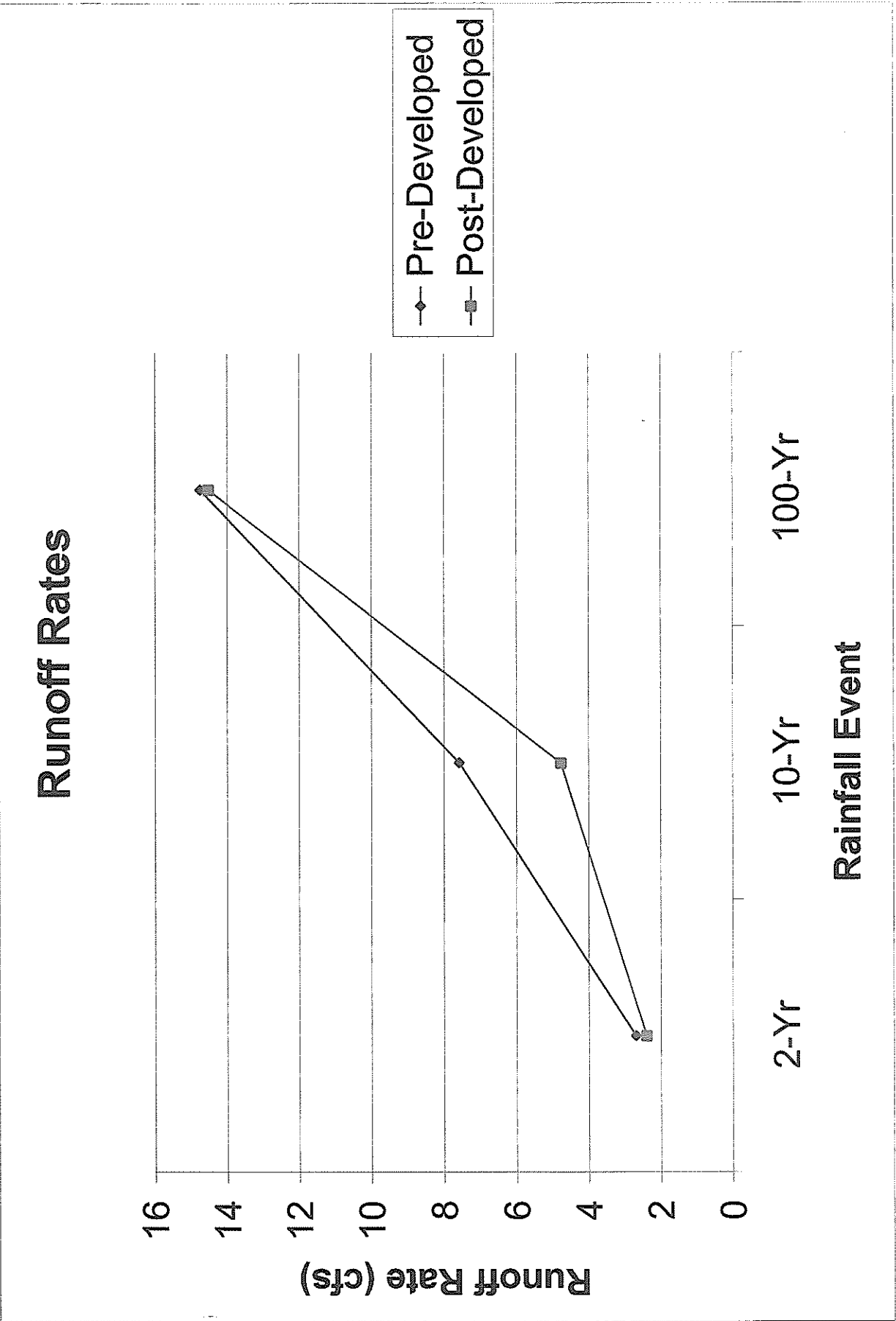
Pond X: Existing Rate and Volume

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.290 ac, Inflow Depth > 2.48" for 100-Yr event
Inflow = 14.76 cfs @ 12.22 hrs, Volume= 1.299 af
Primary = 14.76 cfs @ 12.22 hrs, Volume= 1.299 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs







Boring ID	Latitude	Longitude
B-1	45.209296	-93.554236
B-2	45.209471	-93.554505
B-3	45.209441	-93.553806
B-4	45.209546	-93.553442
B-5	45.209703	-93.553577
B-6	45.209957	-93.553541

Legend

 Approximate Boring Locations



Map Reference:
MnGeo 2023

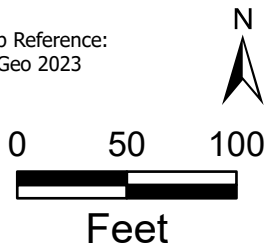
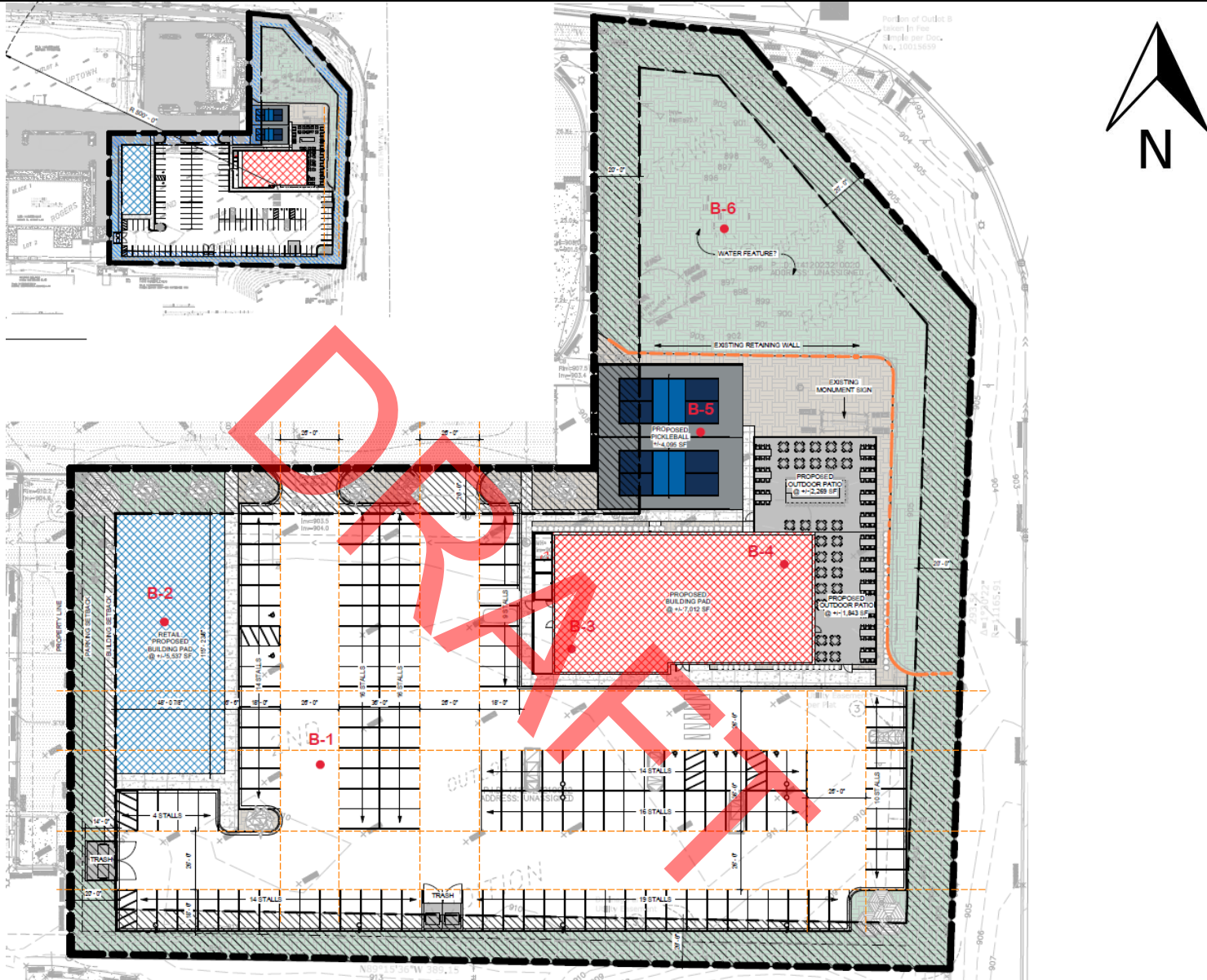



Figure 1
Boring Location Map

Ray J's Site Development
Rogers, MN 55374

Date: 10/4/2024 AET Project No. P-0036458



Note: Image obtained from the Preliminary Conceptual Site Plan prepared by Thielen & Green Architects on July 15, 2024

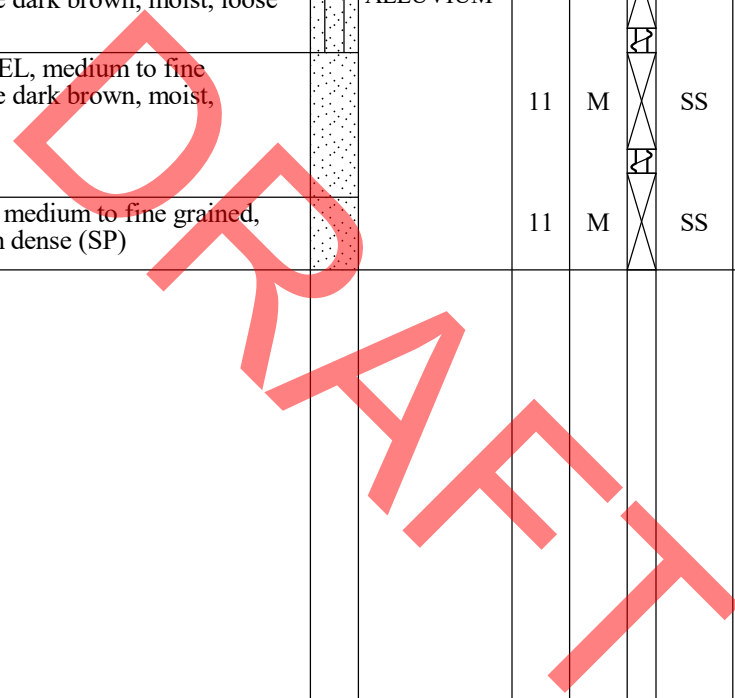
	PROJECT: Ray J's Site Development – 14070 Northdale Boulevard; Rogers, MN		AET NO. P-0036458
	SUBJECT: Proposed Site Layout		DATE: October 15, 2024
	SCALE: Shown	DRAWN BY: JRO	CHECKED BY: RLF



SUBSURFACE BORING LOG

AET No: **P-0036458** Log of Boring No. **B-1 (p. 1 of 1)**
 Project: **Ray J's Grill; 14070 Northdale Blvd.; Rogers, MN**

DEPTH IN FEET	Surface Elevation <u>911.0</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel, trace roots, dark brown	FILL	10	M	SS	24					
2	FILL, mixture of silty sand and sand, a little gravel, brown										
3			16	M	SS	24	11	1.4			
4	CLAYEY SAND, a little gravel, dark brown to brown, very stiff to stiff (SC) (possible fill)	TOPSOIL OR FILL									
5	SILTY SAND WITH GRAVEL, medium to fine grained, brown, a little dark brown, moist, loose (SM)	COARSE ALLUVIUM	9	M	SS	24					
6											
7	SAND WITH GRAVEL, medium to fine grained, brown, a little dark brown, moist, medium dense (SM)			11	M	SS	20				
8											
9											
10	SAND, a little gravel, medium to fine grained, brown, moist, medium dense (SP)		11	M	SS	17					
11	END OF BORING										



AET_CORP P-0036458 RAY JS GRILL ROGERS MN.GPJ AET+CPT+WELL.GDT 10/15/24

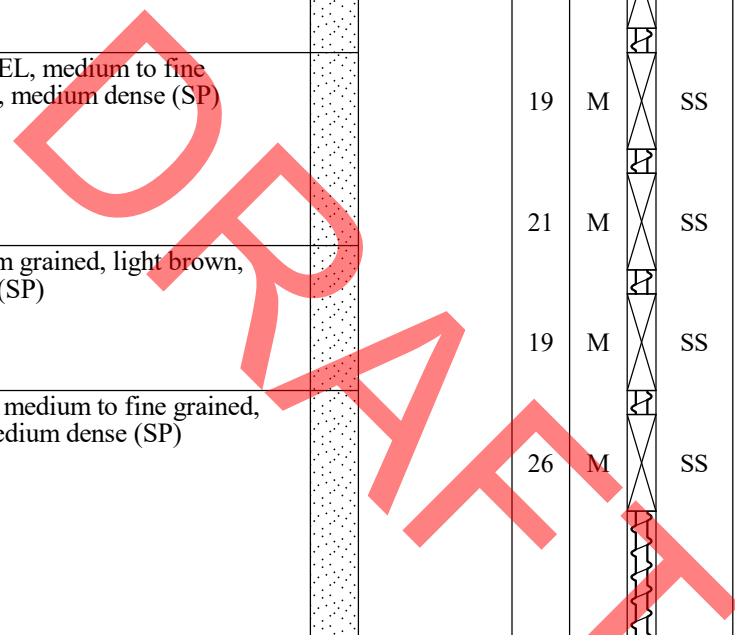
DEPTH: 0-9½'	DRILLING METHOD: 3.25" HSA	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
		9/19/24	1:20	11.5	9.5	11.5			None
BORING COMPLETED: 9/19/24									
DR: SB LG: SD Rig: 1C									



SUBSURFACE BORING LOG

AET No: **P-0036458** Log of Boring No. **B-2 (p. 1 of 1)**
 Project: **Ray J's Grill; 14070 Northdale Blvd.; Rogers, MN**

DEPTH IN FEET	Surface Elevation <u>911.0</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, trace roots, dark brown	FILL	11	M	SS	18					
2	FILL, mostly silty sand, brown										
3	SAND WITH GRAVEL, fine to medium grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	15	M	SS	18					
4											
5	SAND, a little gravel, medium to fine grained, brown, moist, medium dense (SP)										
6											
7											
8	SAND WITH GRAVEL, medium to fine grained, brown, moist, medium dense (SP)										
9			19	M	SS	19					
10											
11											
12	SAND, fine to medium grained, light brown, moist, medium dense (SP)		19	M	SS	19					
13											
14	SAND, a little gravel, medium to fine grained, light brown, moist, medium dense (SP)		26	M	SS	20					
15											
16											
17			26	M	SS	20					
18											
19			26	M	SS	20					
20											
21			22	M	SS	18					
22											
23											
24											
25											
26											
END OF BORING											



AET_CORP P-0036458 RAY JS GRILL ROGERS MN.GPJ AET+CPT+WELL.GDT 10/15/24

DEPTH: 0-24½'	DRILLING METHOD: 3.25" HSA	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
		9/18/24	10:29	26.5	24.5	26.0			None
BORING COMPLETED: 9/18/24									
DR: SB LG: TL/JR Rig: 1C									



SUBSURFACE BORING LOG

AET No: **P-0036458** Log of Boring No. **B-3 (p. 1 of 1)**
 Project: **Ray J's Grill; 14070 Northdale Blvd.; Rogers, MN**

DEPTH IN FEET	Surface Elevation <u>910.5</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand, trace roots, dark brown	FILL	12	M	SS	21					
2	FILL, mostly sand with silt with gravel, brown										
3	FILL, mostly silty sand, brown and dark brown										
4											
5											
6											
7											
8	SAND WITH GRAVEL, medium to fine grained, brown, moist, loose (SP)	COARSE ALLUVIUM	5	M	SS	18		1.7			
9											
10	SAND, a little gravel, medium to fine grained, brown, moist, loose (SP)										
11											
12											
13											
14											
15											
16											
17											
18	SAND WITH GRAVEL, medium grained, brown, moist, medium dense (SP)		25	M	SS	19					
19											
20											
21											
22											
23											
24	SAND, a little gravel, medium to fine grained, brown, moist, medium dense (SP)										
25											
26											
END OF BORING											

DRAFT

AET_CORP P-0036458 RAY JS GRILL ROGERS MN.GPJ AET+CPT+WELL.GDT 10/15/24

DEPTH: 0-24½'	DRILLING METHOD: 3.25" HSA	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
		9/18/24	11:42	26.5	24.5	26.1			None
BORING COMPLETED: 9/18/24									
DR: SB LG: TL/JR Rig: 1C									



SUBSURFACE BORING LOG

AET No: **P-0036458** Log of Boring No. **B-4 (p. 1 of 1)**
 Project: **Ray J's Grill; 14070 Northdale Blvd.; Rogers, MN**

DEPTH IN FEET	Surface Elevation <u>910.0</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel, trace roots, dark brown	FILL	8	M	SS	20					
2	FILL, mostly sand with silt with gravel, brown										
3	FILL, mostly silty sand, dark brown and brown		17	M	SS	22					24
4											
5	SILTY SAND, fine grained, brown, moist, very loose to loose (SM) (possible fill)	COARSE ALLUVIUM OR FILL	4	M	SS	18					
6											
7				6	M	SS	23				
8											
9											
10	SAND WITH GRAVEL, fine to medium grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	14	M	SS	20					
11											
12				15	M	SS	13				
13											
14				15	M	SS	16				
15											
16											
17											
18	SAND, fine grained, light brown, moist, medium dense (SP)										
19											
20			15	M	SS	22					
21											
22											
23	SAND, fine to medium grained, brown, moist, medium dense (SP)										
24											
25											
26			26	M	SS	19					
END OF BORING											

AET_CORP P-0036458 RAY JS GRILL ROGERS MN.GPJ AET+CPT+WELL.GDT 10/15/24

DEPTH: 0-24½'	DRILLING METHOD: 3.25" HSA	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE: 9/18/24	TIME: 1:20	SAMPLED DEPTH: 26.5	CASING DEPTH: 24.5	CAVE-IN DEPTH: 26.0	DRILLING FLUID LEVEL:	WATER LEVEL: None	
BORING COMPLETED: 9/18/24									
DR: SB LG: TL/JR Rig: 1C									



SUBSURFACE BORING LOG

AET No: **P-0036458** Log of Boring No. **B-5 (p. 1 of 1)**
 Project: **Ray J's Grill; 14070 Northdale Blvd.; Rogers, MN**

DEPTH IN FEET	Surface Elevation <u>909.0</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel, trace roots, dark brown	FILL	15	M	SS	21		1.6			
2	FILL, mostly silty sand, brown and dark brown										
3			15	M	SS	24					13
4											
5	SILTY SAND, fine grained, brown mottled, moist, very loose (SM) (possible fill)	COARSE ALLUVIUM OR FILL	4	M	SS	16					
6											
7	SAND WITH GRAVEL, medium to fine grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	12	M	SS	19					
8											
9											
10	SAND, a little gravel, medium grained, brown, moist, medium dense to loose, a lens of sand with silt at about 13' (SP)		11	M	SS	15					
11											
12											
13			10	M	SS	18					
14											
15	GRAVELLY SAND, medium to fine grained, brown, moist, medium dense (SP)		22	M	SS	14					
16											
END OF BORING											

AET_CORP P-0036458 RAY JS GRILL ROGERS MN.GPJ AET+CPT+WELL.GDT 10/15/24

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG			
0-14½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL				
		9/18/24	2:10	16.5	14.5	16.0		None			
BORING COMPLETED: 9/18/24											
DR: SB LG: TL/JR Rig: 1C											



SUBSURFACE BORING LOG

AET No: **P-0036458** Log of Boring No. **B-6 (p. 1 of 1)**
 Project: **Ray J's Grill; 14070 Northdale Blvd.; Rogers, MN**

DEPTH IN FEET	Surface Elevation 902.0 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly lean clay, trace roots, dark brown	FILL		M	HA		25				
2	FILL, mostly silty sand, a piece of concrete, brown				M	HA					
3	FILL, mixture of sand with silt and silty sand, a little gravel, brown	COARSE ALLUVIUM		M	HA						
4	SAND, fine to medium grained, light brown, moist (SP)				M	HA					4
5	SAND WITH GRAVEL, medium to fine grained, brown, moist (SP)				M	HA					
6											
7	END OF BORING										

DRAFT

AET_CORP P-0036458 RAY JS GRILL ROGERS MN.GPJ AET+CPT+WELL.GDT 10/15/24

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
0-7'	Hand Auger	9/19/24	2:03	7.0	0.0	7.0			None
BORING COMPLETED: 9/19/24									
DR: SB LG: SD Rig: HA									



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: June 2, 2025

Agenda Item: 5.2

Subject: Review Concept Plan Application by Pulte Homes for the Hassan, Sand and Gravel Land at the Southeast Corner of Industrial Blvd and Edgewater Pkwy.

Prepared By: Alec Henderson, City Planner

Recommended Council Action

Overview / Background / Analysis

Pulte Homes has submitted a Concept Plan application for review of a proposed single-family residential subdivision located on the Hassan Sand and Gravel property—specifically identified as PID 16-120-23-14-0078. The subject site is approximately 26.85 acres and located near Industrial Boulevard and Edgewater Parkway. The applicant proposes 57 single-family lots on 55-foot wide parcels. The site does contain steep slopes and the applicant proposes avoiding

The property is currently zoned R-4 and guided for Mixed Residential use under the Comprehensive Plan. Pulte is requesting to re-guide the site to Low Density Residential and rezone to PUD deviating from base R2 standards. Key site constraints include steep slopes (approximately 8.13 acres), existing fill and grading challenges.

Primary Issues to Consider

1. Land Use and Zoning
2. Net Density Compliance
3. Engineering and Access Requirements
4. Planned Unit Development Eligibility
5. Environmental and Slope Management

Analysis of Primary Issues

1. Land Use and Zoning; Housing Types

The site is guided for Mixed Residential use and zoned R4 Mixed Density Residential District. The purpose of the R4 district, as outlined in Section 125-55(d), is to provide a diverse range of housing types—including smaller single-family dwellings, twin homes, stacked townhomes, lofts, and apartments—that support lifecycle housing and are located near transportation networks, parks, trails, and services. The allowed net density range under this designation is 4.0 to 15.0 units per acre, and developments are encouraged to utilize a PUD to achieve a diverse mix of residential forms.

The applicant is requesting re-guidance to Low Density Residential and rezoning to PUD deviating from R2 base standards. After netting out steep slopes (>25%), the net

developable acreage is approximately 18.72 acres, resulting in a proposed net density of roughly 3.0 units/acre. While the density is below the minimum for R4, the applicant argues that the proposed development aligns better with the surrounding neighborhood context, which includes predominantly single-family homes.

The proposed change will require a Comprehensive Plan Amendment, subject to Metropolitan Council review.

Lot Performance Standards

Pulte is proposing 57 single-family lots with a minimum lot width of 55 feet and a minimum lot depth of 125 feet. The proposed front yard setback is 25 feet, increasing to 30 feet for lots fronting Industrial Boulevard. Corner side yard setbacks are set at 25 feet, while interior side yard setbacks are proposed at 10 feet. Rear yard setbacks are proposed at 20 feet. These standards reflect a denser single-family pattern compared to traditional R2 requirements, yet they aim to balance spatial efficiency with adequate private yard areas.

Home Types and Market Positioning

Pulte's narrative indicates homes will be 1,565 to 2,169 sq. ft., priced from the low to high \$400,000s, with 2-4 bedrooms and 2-car garages. Pulte emphasizes energy efficiency (HERS scores 47–53) and intends to serve the single-family buyer market segment.

2. Site and Engineering Considerations

The Engineering Department identified several deviations from City standards:

- Street width is shown as 28 feet BB with a 50-foot right-of-way; City requires 32 feet and 60 feet, respectively.
- Cul-de-sac radii are proposed at 45 feet; City requires 50 feet.
- Sewer, water, and storm connections are available but will require looping and rear yard drainage considerations near steep slopes.
- Two access points for stormwater ponding are recommended.

3. Planned Unit Developments

Pulte is requesting a Planned Unit Development due to deviations from lot width and street standards. Under Section 125-29 of the Zoning Ordinance, PUDs must demonstrate public benefit, such as:

- Integration of open space through retention of steep slope areas
- Preservation of natural topography
- High energy efficiency home construction
- Transitional housing types aligned with lifecycle housing goals

City Council will be required to determine whether the proposed design merits approval under a PUD framework.

4. Environmental and Landscape Comments

The following were identified for future applications and submittals as it relates to steep slopes and landscape plans:

- Landscape Plans will be required with preliminary plat submittal.
- Steep slope areas are present and should be evaluated. Areas with 25% grade or higher should be placed into an outlot and excluded from density calculations.
- Staff suggests noise mitigation landscaping or fencing for lots adjacent to Industrial Boulevard and the water feature near Lots 5 and 6.

Staff Recommendation

As this is a Concept Plan, no formal action is requested at this time. Planning Commission is encouraged to provide feedback on:

- Appropriateness of re-guidance to Low Density Residential
- Justification for deviations under PUD request
- Stormwater and slope management strategies; or co-locating amenities for multi-purpose functions
- Integration with adjacent neighborhoods and infrastructure

Future applications will need to address preliminary plat, rezoning, and comp plan amendment processes.

Financial Impact: NA

Source Fund: NA

Budgeted? N/A

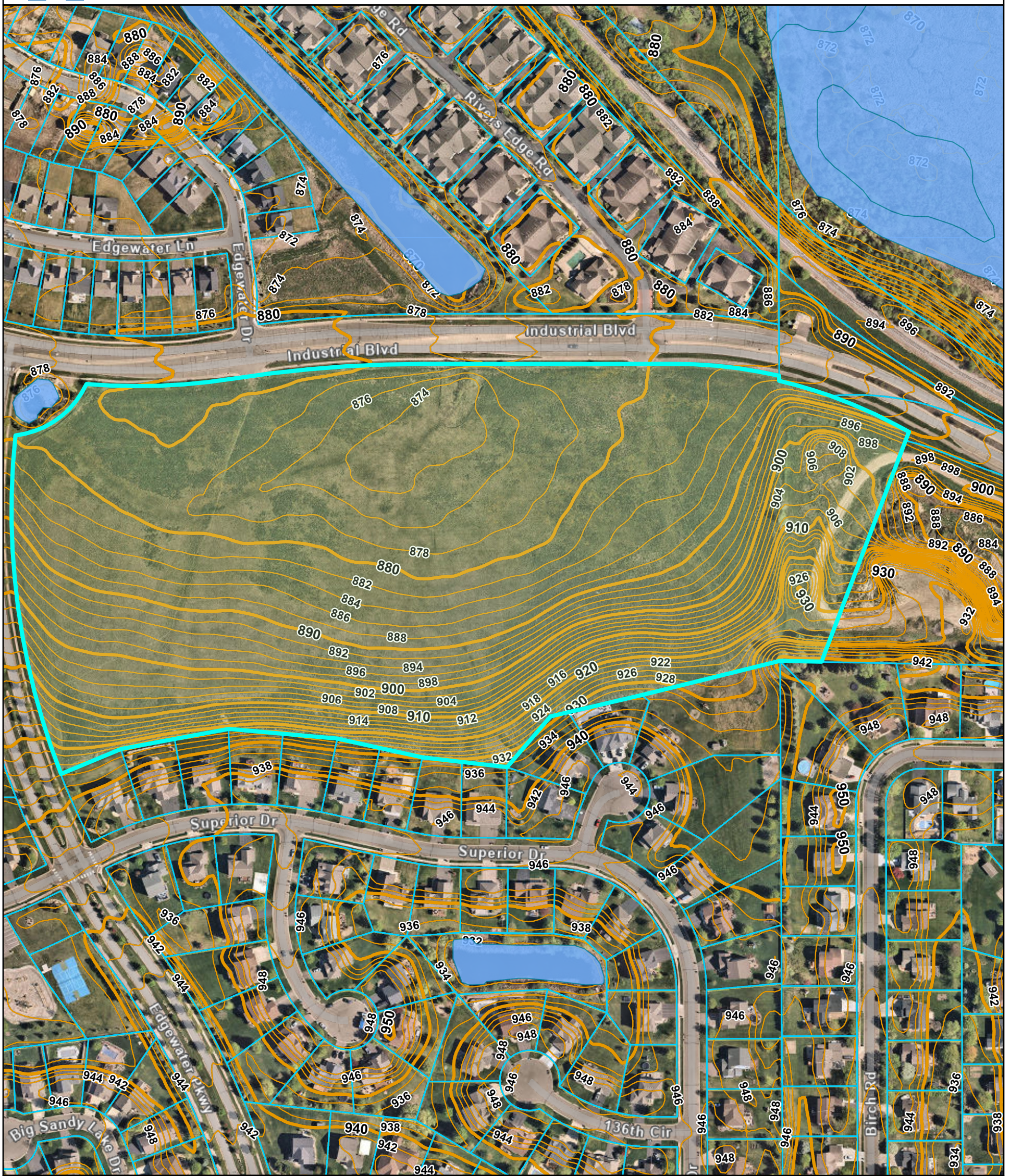
Supporting Documentation

- A. Aerial
- B. Pulte Concept - Developer Narrative
- C. Hassan - Concept B_5-5-25_Aerial
- D. Hassan - Concept B_5-5-25
- E. Hassan - Concept B_5-5-25 CD Markup
- F. Pulte Concept - Staff Comments



Hennepin County Natural Resources Map

Date: 5/29/2025



Legend

- National Wetlands Inventory
- Parcels

2 Foot Elevation Contours

- Index
- Intermediate

Text

Portion of Outlot B Edgewater
 PID 1612023140078
 Hassan Sand & Gravel -
 Reclaimed mine

Comments:

Text

1:2,400



This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

Aerial imagery flown 2021

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Rogers Hassan Sand

**APPLICATION FOR:
CONCEPT PLAN**

**ROGERS, MINNESOTA
May 3, 2025**

Introduction

Pulte Homes of Minnesota, LLC ("Pulte") is pleased to be submitting this application.

Our company mission statement is "***Building Incredible Places Where People Can Live Their Dreams.***" We currently operate under three distinct brands of homebuilding throughout the country: Pulte Homes, Centex Homes, and Del Webb. The office for Pulte's Minnesota Division is in Bloomington. We will sell and build over 700 homes in the Twin Cities a year under the Pulte Homes and Del Webb brands.

Pulte will act as both developer of the property and builder of the homes. The primary contact for Pulte is:

Dean R. Lotter, Director of Land Planning & Entitlement
1650 West 82nd Street
Suite 300
Bloomington, MN 55431
952-219-9082
Dean.Lotter@PulteGroup.com

The owners of the property:

(1) Dale and Marlene Scherber Family Limited Partnership
Attention Kevin Scherber
13405 Mardale Drive
Rogers, MN 55374
Telephone: 612-597-6243
Email: kevin@hassanssand.com

The planner, surveyor, civil engineer, and landscape architect are:

Alliant Engineering, Attn: Mark Rausch
733 S Marquette Ave, Unit 700
Minneapolis, MN 55402
612-767-9339
mrausch@alliant-inc.com

The Property

Legal Description:

Outlot B, Edgewater Second Addition, according to the recorded plat thereof, Hennepin County, Minnesota;

LESS AND EXCEPT that portion as conveyed in that certain Warranty Deed filed of record on November 1, 2023 as Document No. 11242623.

Property Identification Number

(1) 16-120-23-14-0058

Key Facts

- Existing zoning R4
- Guided zoning Medium Density Residential
- Proposed Comp Plan Guidance Low Density Residential
- Proposed zoning PUD R2
- Proposed use 57 single family homes

- Gross calculations:
 - Gross area 26.85 acres
 - Gross density 2.19 units/acre
 - Net Area 26.85 acres
 - Net Density 2.19 units/acre

- Dimensions/Setbacks – 55' Single Family Lots
 - Front setback 25 feet
 - Front setback Industrial Blvd. 30 feet
 - Corner setback 25 feet
 - Rear setback 20 feet
 - Side setback 10 feet and 10 feet
 - Minimum lot width 55 feet
 - Minimum lot depth 125 feet

The Homes

Pulte Homes is known for the extraordinary steps that we take to ensure that we are designing and building homes that meet the needs and desires of home buyers. You can click on this link to learn more about Pulte's homebuilding process <https://www.pulte.com/design/life-tested>. We continually reach out to home buyers and Pulte homeowners to get feedback to improve our home designs. It is what we call Life Tested®. Through this intensive process, we have conceived of and incorporated innovative features such as the Pulte Planning Center, the Everyday Entry, Super Laundry, Oversized Pantry, and the Owner's Retreat. This exhaustive process has played a major part in Pulte's success in "***Building Incredible Places Where People Can Live Their Dreams.***"

In striving to continually be in lock step with the home buying public, we update the design of our homes frequently. These changes are driven by the desires and tastes of the home buying public through the process described above. The homes that will be built are outlined below. They will range in price from the low \$400k's to the high \$400k's for the single family homes.

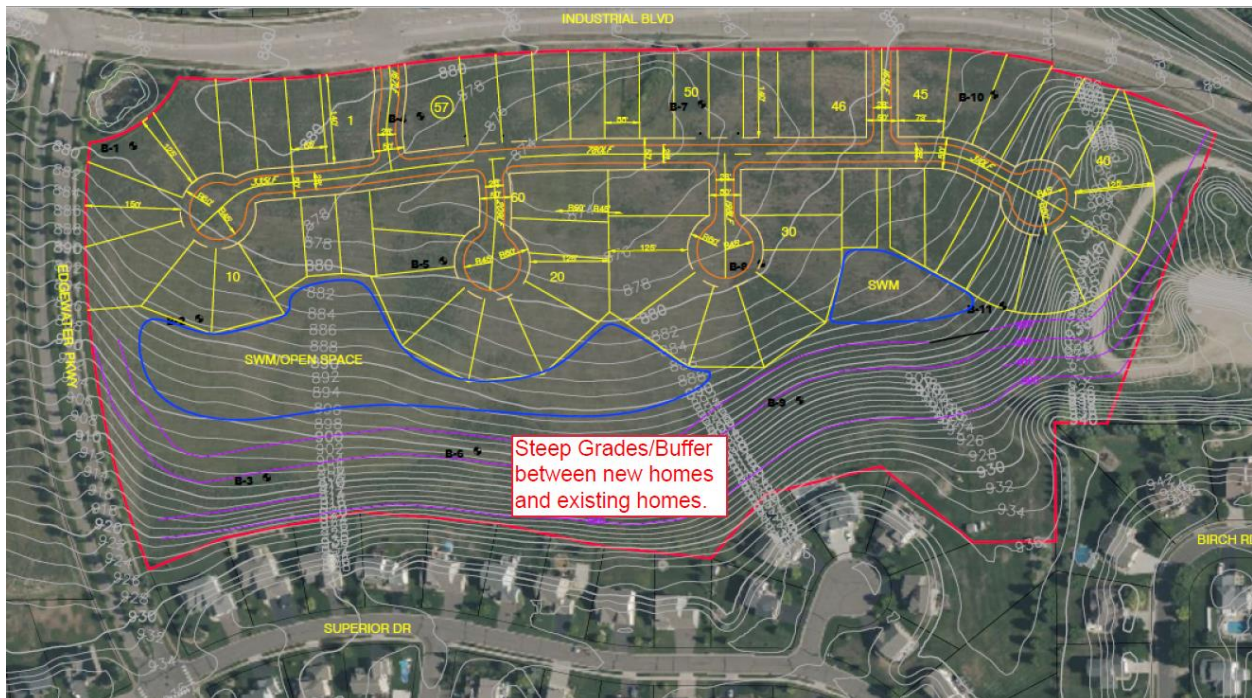
Single Family – 55' Lots

- Base square footage: 1,565 to 2,169
- Bedrooms: 2 to 4
- Bathrooms: 2 to 2.5
- 2-stall garages
- basements

The Site Plan

Pulte's proposed site plan attempts to thread the needle on a variety of issues and challenges. This site was previously mined and then had fill brought into the site that range from structural to non-structural soils. Pulte has reviewed the previous Geotech work performed by AET and this information has helped inform the site plan's layout. Pulte will do additional geotechnical work. Dramatic grade changes from south to north on this site have also been contemplated in our site layout. Pulte is proposing to build 57 single family homes on the northern half of this site.

There are existing homes to the south and our site plan proposes to leave the southern half of our site to stormwater ponding/open space. Additionally, the steeply graded land on the southern half of our site will be left undeveloped and provide for a buffer between the new Pulte homes and the existing single family.



Additional thoughts to consider about the site plan. Industrial Boulevard runs along the north side of the site. North of Industrial Boulevard are single family homes on 50' wide lots. What Pulte is proposing fits in with the nature of existing neighborhoods to the north and south in terms of housing type which is single family. Medium density residential is how the site Hassan Sand Site is guided in the City's comprehensive plan. Pulte would be respectfully asking for this guidance to be changed to low density residential. Pulte would also be asking for a rezoning to PUD with R2 zoning be used as the underlying zoning.

Comp Plan Amendment

Currently guided as medium density residential, Pulte would be respectfully asking for a comprehensive plan amendment to re-guide the site to low density residential. This site does have single family homes to the north and to the south. It seems a more consistent use for the site is single family residential.

Rezoning

Pulte's proposal for this site is to build single family homes. Our plan is to have 55' wide lots that will have 10'/10' side yard setbacks. Staff has informed us that having 10'/10' side yard setbacks is important to the City Council so we have designed our plan accordingly.

Park Dedication

While our site plan provides a significant amount of open space, we would plan on meeting our park dedication obligations through payment of park dedication fees.

Environmental Due Diligence

We plan to do the necessary site due diligence regarding wetlands and endangered species. We have already had the site surveyed, phase 1 is complete, and a Phase 2 will be completed soon, and we are working on getting additional Geotech work done on the site.

Energy Efficiency

The homes that Pulte will be constructing will have extremely high energy efficiency. Each home is tested using the Home Energy Rating System (HERS) index, which is the industry standard for measuring energy efficiency. Heating, cooling, and water heating constitute the largest cost of homeownership outside of the mortgage. The U.S. Department of Energy has determined that a typical resale home scores 130 on the HERS Index while a home built to the 2004 International Energy Conservation Code is awarded a rating of 100 (lower is more energy efficient). Pulte Homes measures the HERS score of every new home constructed. The average HERS score for our homes runs in the range of 47 to 53. We are building extremely energy efficient homes that dramatically exceed the International Energy Conservation Code threshold.

Phasing & Schedule

The City of Roger's application schedule suggests that staff review, and possible planning commission and council consideration would occur as follows:

Concept Plan Review	June 2025
Preliminary plat approval	September/October 2025
Site development	Spring 2026
Model home opens	late 2026
Full build of homes	early 2029

Conceptual Home Elevations

Macalester



Dayton

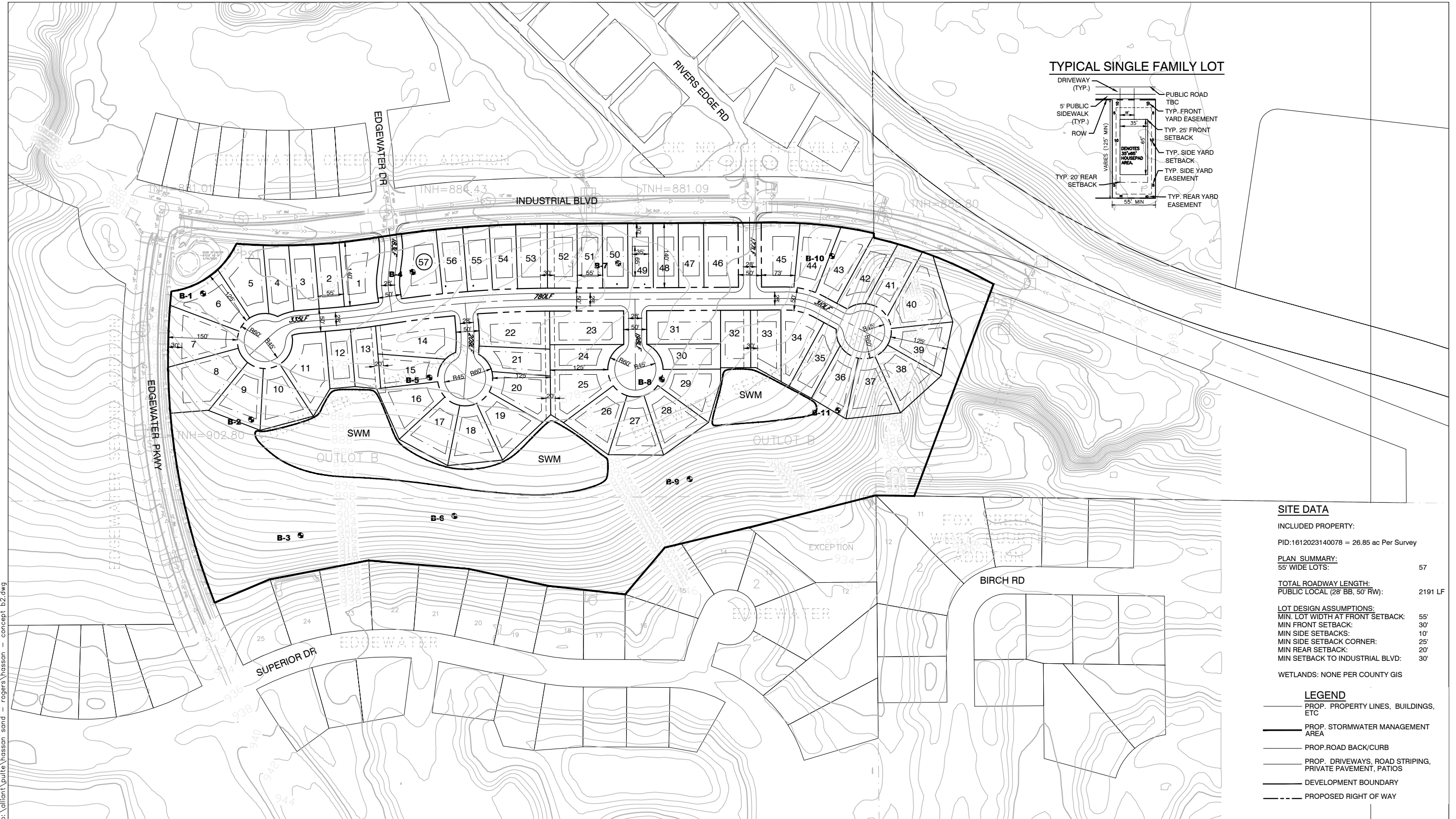


Merriam



Lowry

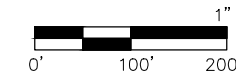




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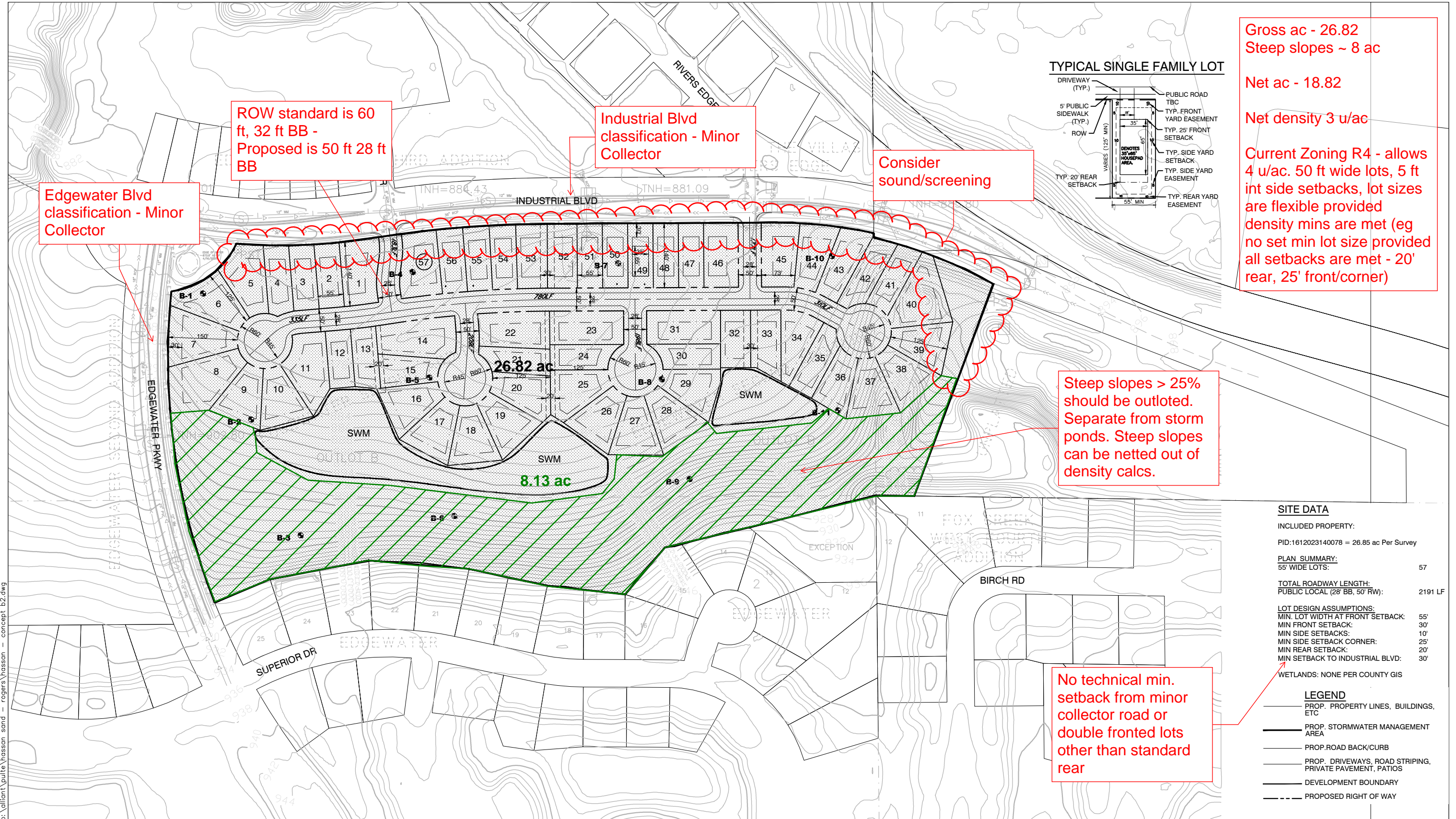
HASSAN SAND PROPERTY
ROGERS, MN

CONCEPT B



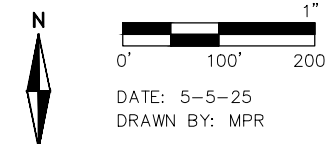
DATE: 5-5-25
 DRAWN BY: MPR





HASSAN SAND PROPERTY
ROGERS, MN

CONCEPT B



To: Dean Lotter, Pulte Homes

Re: Pulte Homes Residential Concept Plan – Scherber Property – City Staff Review
Comments

Engineering Department

1. Concept plan shows a street width of 28 feet from curb-to-curb. City of Rogers requires a 32 feet street width.
2. Concept plan shows the total street right-of-way at 50'. City of Rogers requires 60 feet minimum right-of-way.
3. Concept plan shows a cul de sac radius of 45 feet. City of Rogers requires a minimum of 50 feet.
4. Sewer (8") is in the east drive at an invert of 857.47' which has the depth to serve the site with gravity.
5. Water (8") is in both drives and will be required to be looped
6. Storm sewer (24") is in between drives at an invert of 869.3 feet.
7. Access to the stormwater ponding areas is a concern. With the adjacent steep slopes, consider adding two access points.
8. Steep slope outlot area will be required to be placed into an outlot maintained by the development.
9. Drainage in the rear yards abutting steep slopes can often be an issue. Ensure proper drainage of homes abutting the sloped area.

Planning Department

1. Steep slope area can be netted out of the overall density of the development. Please review the overall net density to determine if a re-guidance and rezoning of the property would be required.
2. Comprehensive plan amendment would require the review and approval of the Metropolitan Council.
3. Consider the inclusion of additional trees, landscaping, and/or fencing in the rear yards of lots 5 and 6 to mitigate the noise of the adjacent fountain. Additionally, consider the same noise mitigation measures for the properties abutting Industrial Blvd.
4. If using R2 standards, the minimum lot width would require a variance or PUD in order to accomplish the proposed widths. If the property is able to meet the density ranges for R3 or R4 following removal of steep slopes from the density calculation, proposed lot standards should all meet code.
5. Proposed home elevations meet all code requirements.

Fire Department Comments

1. Fire hydrant spacing is recommended to be at 300 feet spacing. Additionally, each cul-de-sac will require a hydrant at the end.



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: June 2, 2025

Agenda Item: 7.1

Subject: Past Planning Commission Items Report

Prepared By: Brett Angell, Community Development Director

Recommended Council Action

Overview / Background / Analysis

The Planning Commission last met on Monday, May 5th and held two public hearings and heard one presentation from the Elm Creek Watershed District. Said items went before the City Council the following week in May and the information below is reflective of the council's action on each of the items. Additionally, the Cowley Lake Preserve residential development PUD and Preliminary Plat applications were continued at the May 27th meeting,

Main Street Center 2nd Addition Plat

On May 5th, the Planning Commission reviewed a preliminary and final plat related to the previously approved Duffy 40-unit senior affordable development along Main Street. The Commission unanimously recommended approval of the proposed plat. The City Council reviewed this item at the May 13th meeting and unanimously approved the proposed plat. This plat will not be recorded until after a closing were to occur.

Wood Lane Villas - PUD and Preliminary Plat

On May 5th, the Planning Commission reviewed a 17-lot villa development along Wood Lane which would complete a section of the previously developed Skye Meadows area. The Commission recommended approval of this item with an added condition related to screening of the adjacent larger lot properties. The Commission also made a recommendation that the Council explore general outlot maintenance and screening requirements. The Council ultimately voted to approve the PUD and Preliminary Plat requests with the added condition of adding a screening fence. Additional review of outlot maintenance and screening is ongoing.

Cowley Lake Preserve - PUD and Preliminary Plat

At the April 22nd meeting, the City Council tabled the discussion and consideration of the 169-lot residential subdivision named Cowley Lake. This item was originally considered and recommended for approval by a split vote by the Planning Commission on April 7th. The item was brought back to the City Council on May 27th. After an extensive review of the development plans, the Council gave direction to staff to prepare resolutions for denial. This decision was based upon concerns related to varying from city code and anticipated traffic volume impacts on the area.

Other Relevant Items

Some other relevant items as it pertains to planning items which have recently been acted upon by the City Council are as follows:

Northview Preserve Final Plat

On May 27th, the final plat for Northview Preserve was approved on the consent agenda by the City Council. Northview Preserve is a 75-lot single-family residential development between Territorial and Wood Lane which was a by-right plat, meaning the proposed lot met code requirements for setbacks and sizing. The preliminary plat was previously approved in 2025. This development is being completed in one phase.

Northdale Light Industrial Final Plat

On May 27th, the final plat for the three-lot light industrial subdivision on the north end of Northdale Blvd was approved by the City Council on the consent agenda. The final plat included the southern two lots, which are anticipated to begin construction in the coming months. The third building will be constructed in the future following completion of the first two buildings and will require additional city approvals.

Civic Campus Architect

On May 27th, the City Council approved a contract with Leo A Daly for architecture services related to the planned civic campus on the former Boyer Trucks site, which the City acquired at the end of 2023. A request for proposals was issued for the project and the city received three proposals from different firms. All RFP responses were discussed and reviewed internally and with the facilities task force. With the architect now approved, work will begin related to planning the future city hall and police department facility.

Staff Recommendation

No action required.

Financial Impact: Not applicable.

Source Fund: Not applicable.

Budgeted? N/A

Supporting Documentation

None