VILLAGE OF WILLIAMS BAY

250 Williams Street | PO Box 580 | Williams Bay | WI | 53191 | vi.williamsbay.wi.gov
Phone: 262-245-2700

NOTICE

PLAN COMMISSION MEETING

TUESDAY, DECEMBER 2, 2025 AT 6:30 PM

Village Hall Council Room
250 Williams Street
Williams Bay, WI 53191

There may be a quorum of Village Trustees present, no board business will be conducted.

AGENDA

The following agenda items may be considered for Discussion, Consideration, or Action

I. Call to Order

II. Roll Call

III. Pledge of Allegiance

IV. Minutes

A. Plan Commission Meeting Minutes of November 4, 2025

V. Other Items for Discussion, Consideration, or Action

A. Approval of the Meeting Schedules for Plan Commission for Year 2026

VI. Recommendation and Possible Action for a Temporary Use Permit

A. APPLICANT: Mike Condron and John Dwyer (Applicants)
TAX KEY: WOP 00008 and WWUP 00088
STREET ADDRESS: 105 N. Walworth Street and Lakefront Area, Williams Bay, Wisconsin 53191
The applicant is requesting a Temporary Use Permit per Section 390.208 “Temporary Use Permit” and Section 390.0316.B Temporary Outdoor Sales for a food vending cart.

VII. Recommendation and Possible Action for a Site Plan Review and Conditional Use Permit

A. APPLICANT: Yerkes Future Foundation Inc. (Owner)
TAX KEY: WA518500001
STREET ADDRESS: 373 W Geneva Street, Williams Bay, WI 53191
The applicant requests a site plan review and conditional use permit per Section 390-0223 Conditional Use Permit, and Section 390-0223(C) (14) Large Developments, for the construction of a new playground space; and a pavilion building that includes a patio area, two family restrooms, and nursing/sensory room.

VIII. Recommendation and Possible Action for a Site Plan Review in the Extra Territorial Zoning District (ETZ)

A. APPLICANT: Brandon Flunker (Applicant), Paloma Ridge Commercial LLC (Owner), Lodge Geneva National (Project)
TAX KEY: JLGR 05011
STREET ADDRESS: W4240 Highway 50, Lake Geneva, WI 53147

The applicant requests site plan approval per Section 390-1206 and 390-1704 to modify and expand an existing parking lot.

IX. Recommendation and Possible Action for a Final Plat and Temporary Zoning Designation Upon Direct Annexation

A. APPLICANT: Land and Lakes Company (Applicant and Owner), Willabay Meadows (Project)
TAX KEY: IL 500005, WWUP 00084, and JG 3100009A
STREET ADDRESS: Vacant Land off E Geneva Street and Highway 50, Williams Bay, WI 53191
The applicant requests final plat approval per Section 375, Article 3, Article 5, and Section 375-0304, and temporary zoning designation approval upon direct annexation per Section 390-0205 for two parcels, one located in the Town of Linn, and one located in the Town of Geneva.

X. Adjournment

Adam Jaramillo
Chairman

Requests from persons with disabilities, who need assistance to participate in this meeting or hearing, should be made to the Village Clerk's office in advance so the appropriate accommodations can be made.

Posted: 11/26/2025 5:00 PM

VILLAGE OF WILLIAMS BAY

250 Williams Street | PO Box 580 | Williams Bay | WI | 53191 | vi.williamsbay.wi.gov

Phone: 262-245-2700

UNOFFICIAL MINUTES
PLAN COMMISSION MEETING 11-4-2025 MEETING
TUESDAY, NOVEMBER 4, 2025 AT 6:30 PM
VILLAGE HALL COUNCIL ROOM
250 WILLIAMS STREET
WILLIAMS BAY, WI 53191

THERE MAY BE A QUORUM OF VILLAGE TRUSTEES PRESENT, NO BOARD BUSINESS WILL BE CONDUCTED.

I. Call to Order

President Jaramillo called the meeting to order at 06:30pm.

II. Roll Call

Present: President Adam Jaramillo Commissioners Maggie Gage, Marianne Klemke, Matt Robbins, Mike Fieweger, and Jess Haak
Also Present: Zoning Administrator Allison Schwark, Clerk Tina Kolls
Excused: Trustee Lowell Wright

III. Pledge of Allegiance

The Pledge of Allegiance was recited by all.

IV. Minutes

A. Plan Commission Meeting Minutes of October 7, 2025

The motion to approve the Plan Commission Meeting Minutes of October 7, 2025 was initiated by Commissioner Robbins and seconded by Commissioner Klemke. Unanimously carried.

V. Recommendation and Possible Action for Evaluation of 30-Day Architectural Review Deadline

A. APPLICANT: Dancing Dudes, LLC (Owner)
TAX KEY: WOP 00088
STREET ADDRESS: 77 N. Walworth Ave, Williams Bay, WI 53191
The applicant previously requested a recommendation to the Village Board for approval for an architectural design alteration to remove the window shutters and to have black metal awnings on the upper level and black cloth awnings on the lower level at the May 13, 2025 Plan Commission Meeting. A motion to recommend a 90-day architectural review on the building to determine whether the shutters will or will not need to be included and installed, whether or not planter boxes need to be installed, as well as review a written opinion as to the feasibility of the shielding of the vent from the north side of the property. Following the 90-day deadline Plan Commission and Village Board voted to extend the deadline by 30 days to have the planter boxes ordered/installed, and the metal awnings ordered/installed.

The motion to recommend Village Board approval of the request for an architectural design alteration to remove the

window shutters and to have black metal awnings on the upper level and black cloth awnings on the lower level was initiated by President Jaramillo and seconded by Commissioner Fieweger. Unanimously carried.

VI. Adjournment

The motion to adjourn was initiated by Commissioner Haak and seconded by Commissioner Klemke at 06:38pm. Unanimously carried.

/s/ Tina Kolls, Village Clerk

These are not official Minutes until approved by the Governing Body.

2026
Village of Williams Bay
Plan Commission
Regularly Scheduled Meeting Dates*

January 6, 2026
February 3, 2026
March 3, 2026
April 7, 2026
May 5, 2026
June 2, 2026
July 7, 2026
August 4, 2026
September 9, 2026**
October 6, 2026
November 3, 2026
December 8, 2026

*The Plan Commission typically meets at 6:30 on the 2nd Tuesday of each month.
**Regularly Scheduled meeting date is moved due to a Federal Holiday.

Planning Request Application
Village of Williams Bay

250 Williams Street • PO Box 580 • Williams Bay, WI 53191
Phone: 262-245-2700 • Fax: 262-245-2705

Request:
Please check all that apply.

- ☐ **Site Plan** [§18.1206] - $200.00 plus $.04/sf floor area
- ☐ **Conditional Use Permit (CUP)** [§18.1207] - $500.00
- ☐ **Certificate of Compliance** [§18.1211] - $200.00
- ☒ **Temporary Use Permit** [§18.1208] - $200.00
- ☐ **Preliminary Plat** - $200.00 plus $20.00 per lot
- ☐ **Certified Survey Map (CSM)** - $200.00 plus $20.00 per lot
- ☐ **Final Plat** - $100.00 plus $10.00 per lot
- ☐ **Planned Development Overlay (PDO)** [§18.0709] - $500.00
- ☐ **Planned Development Amendment** - $500.00
- ☐ **Zoning Text or Map Amendment** [§18.1204] - $500.00
- ☐ **Project Concept Review** - $200.00
- ☐ **Land Use Plan Amendment** - $500.00
- ☐ **Interpretation** [§18.1216] - $200.00
- ☐ **Appeal** [§18.1217] - $500.00
- ☐ **Other:** _____ Fee: _____

Date application was received:

Fee Paid:

Physical Address of Site: Williams Bay Beach - East Geneva St; Dip in the Bay - 105 N Walworth Ave, Williams Bay, WI 53191

Tax Parcel Number: Beach - WWWP00088; Dip in the Bay - WOP0008

Project or Development Name: N/A

Applicant
Name: Mike Condron and John Dwyer dba Dip in the Bay
Mailing Address: 105 N Walworth Ave
Williams Bay, WI 53191
eMail: Dubin@Dubindogs.com
Phone: 847-815-8086 (Mike's cell); 262-949-7550 (John's cell)

Owner of Site
Name: Beach - Village of Williams Bay; Dip in the Bay - Mike Condron
Mailing Address: Beach - 250 Williams St, Williams Bay, WI 53191
Dip in the Bay - 105 N Walworth Ave, Williams Bay, WI 53191
eMail: Dubin@Dubindogs.com
Phone: 847-815-8086 (Mike's cell); 262-949-7550 (John's cell)

Legal Representative
Name: N/A
Mailing Address: _____
eMail: _____
Phone: _____

Architect, Engineer, Contractor
Name: N/A
Mailing Address: _____

eMail: _____
Phone: _____

Legal Description of Site (Attach separate sheet if additional space is needed):
Beach - Outside Beach House entrance on lawn.
Dip in the Bay - parking lot to the South of Dip in the Bay Ice Cream Shop, owned by Dip in the Bay.

Please answer all applicable. Missing or incomplete information may deem this application "incomplete," delaying or prohibiting a review.

Current Zoning of Site: Beach - P&R; Dip in the Bay - VC **Current Overlay Districts of Site:** N/A

Proposed Zoning of Site: N/A

Proposed type of structure of use: N/A

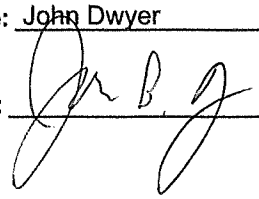
Proposed use of structure or site: N/A

Statement of proposed use of property, with pertinent facts regarding the size of area involved, extent of development, type of operation, etc. (Attach separate sheet if additional space is needed):
N/A

Statement showing compatibility of proposed zoning district and/or proposed use to the Village Comprehensive Plan: (Attach separate sheet if additional space is needed)
N/A

Statement showing compatibility of proposed zoning district and/or proposed use with adjacent properties and neighborhoods (Attach separate sheet if additional space is needed):
N/A

Print Applicant's Name: John Dwyer

Signature of Applicant:  **Date:** 10/24/2025

APPLICATION FOR A TEMPORARY USE PERMIT

(Requirements per Zoning Ordinance Section 18.1208)

Applicant name: Mike Condron and John Dwyer dba 'Dip in the Bay'

Applicant address: 105 N. Walworth Ave, Williams Bay, WI 53191

Applicant phone number: (847) 815-8086 (Mike's cell); 262-949-7550 (John's cell)

Address of subject site: 105 N. Walworth Ave portable to public areas at lakefront

Zoning district of subject site: VC (Village Center); P&R (Parks and Recreation)

Describe proposed temporary use, including activities and/or structures (or attach as a separate sheet):

See attached sheet

Requirements

☐ Map of the subject property at a scale of not less than 1" equals 800 feet showing:

- Current zoning of the subject property and lands within 200 feet of the subject property and the jurisdiction(s) that maintains that control.
- All lot dimensions of the subject property.
- Graphic scale and a north arrow.

☐ The Zoning Administrator may require a site plan of the subject property, in which case see Site Plan application requirements

Dated this 28th day of October, 20 25

Respectfully submitted,

(Signature of Applicant)

Record of Administrative Procedures for Village Use

☐	Application form filed with Village Clerk	Date: _____	By: ____
☐	Application fee of $_____ received by Village Clerk	Date: _____	By: ____
☐	Reimbursement of professional consultant costs agreement executed	Date: _____	By: ____
☐	Certification that application is complete by Zoning Administrator	Date: _____	By: ____
☐	Evaluation report prepared by Zoning Administrator	Date: _____	By: ____
☐	Review and recommendation by Village Plan Commission	Date: _____	By: ____
☐	Review and action by Village Board	Date: _____	By: ____

DIP IN THE BAY, LLC

105 Walworth Avenue
PO Box 254
Williams Bay WI 53191
262-607-3032

Dip in the Bay, in conjunction with **Dubin Dogs** Mobile Food Cart is seeking to re-new our temporary use permit to allow us to continue to serve our delicious meals, ice cream, and souvenirs at the Williams Bay Beach during the 2026 season.

After six years of offering our concessions to beachgoers and park visitors, we feel as though we have become a 'staple' at the beach. Our customers are always extremely happy to see us at the beginning of beach season. And at the end of beach season, they tell us how hopeful they are that we'll be back the next year. And we certainly feel the same way about our customers.

We are proud to serve quality products at very affordable prices. Many of our customers express their gratitude that we are there to help make their time at the beach or their stroll in the park a much more enjoyable experience. We hear from so many people that we are a beloved fixture at Williams Bay Beach, and they would love to have us back every year.

Dip in the Bay...which has been in Williams Bay since 2012, delivering fresh, hand dipped ice cream to residents and guests alike...and **Dubin Dogs** are hopeful that we can be back this year to serve our delicious Hot Dogs, Brats and Ice Cream at the Williams Bay Beach.

We also ask to continue the sale of non-food items such as t-shirts, lake/beach souvenirs and various sundries, such as sunscreen and lip balm, that could be helpful to beachgoers and people who are out strolling. Many people were quite pleased that they had the opportunity to purchase t-shirts with the Williams Bay name on it. Or a shirt that helped them show off their accomplishment of 'Conquering the Path'.

Our location in front of the Beach House has worked out very well the past six years. It was a convenient spot for the beachgoers and did not hinder anyone from entering or exiting. We are hoping to return to that spot for the 2026 season, if feasible. We will, again, be sure to not operate at times that would interfere with any municipally sanctioned events that may be happening near the lakefront.

We are eager to continue to partner with the Village to offer this amenity while responsibly expanding our brands.

In addition to the beachfront, we ask that the permit to also include the Dip in the Bay location at 105 Walworth Avenue (our parking lot), so that we can operate the cart near our shop for various events.

Thank you for your consideration.

VILLAGE OF WILLIAMS BAY

Office of Zoning Administrator

Evaluation Report
Plan Commission Meeting
December 2, 2025

November 26, 2025

APPLICANT: Mike Condron and John Dwyer dba Dip in the Bay
TAX KEY: WOP 00008 and WWUP 00088
STREET ADDRESS: 105 N. Walworth Street and Lakefront Area, Village of Williams Bay

The applicant is requesting approval of a Temporary Use Permit per Section 390.0208, *Temporary Use Permit* and Section 390.0316B *Temporary Outdoor Sales* for a food, souvenir, and sundries vending cart.
Two possible locations are proposed, including the Williams Bay beachfront and the Dip in the Bay parking lot.
This temporary use permit has been approved as presented in past years.

Per Section 390.0208A(1), Temporary uses are those uses that have the potential to create undesirable impacts on nearby properties if allowed to develop simply under the general requirements of this Chapter. In addition to such potential, temporary uses also have the potential to create undesirable impacts on nearby properties that potentially cannot be determined except on a case-by-case basis. In order to prevent this from occurring, all temporary uses are required to meet certain procedural requirements applicable only to temporary uses, in addition to the general requirements of this Chapter and the requirements of the zoning district in which the subject property is located.

Per Section 390.0208E(1), The Plan Commission, in its consideration of the submitted application, may make findings on each of the following criteria to determine whether the Temporary Use Permit shall be approved, approved with modification, or denied:

a) All standards of this Chapter and other applicable Village, state, and federal regulations are met.
b) The public health and safety is not endangered.
c) Adequate public facilities, utilities, and open space areas are provided.
d) Adequate control of stormwater and erosion are provided and the disruption of existing topography, drainage patterns, and vegetative cover is maintained insofar as is practical.
e) Appropriate traffic control and parking are provided.
f) Applicable performance standards, per Section 18.0800, are met.

Staff recommend the Village Plan Commission recommend **approval** to the Village Board for a temporary use permit for 2026 operations at both locations included in the enclosed application more precisely identified by the following tax keys: WOP 00008 and WWUP 00088

Respectfully submitted,

Allison Schwark
Zoning Administrator

250 Williams Street | PO Box 580 | Williams Bay | WI | 53191 | USA | williamsbay.org
Email: inspector@williamsbay.org | Phone: 262-245-2704 | Fax: 262-245-2705

Planning Request Application
Village of Williams Bay

250 Williams Street • PO Box 580 • Williams Bay, WI 53191
Phone: 262-245-2700 • Fax: 262-245-2705

Request:
Please check all that apply.

- [x] **Site Plan** [§390.1206] - $200.00 plus $.04/sf floor area
- [x] **Conditional Use Permit (CUP)** [§390.1207] - $500.00
- [ ] **Certificate of Compliance** [§390.1211] - $200.00
- [ ] **Temporary Use Permit** [§390.1208] - $200.00
- [ ] **Preliminary Plat** - $200.00 plus $20.00 per lot
- [ ] **Certified Survey Map (CSM)** - $200.00 plus $20.00 per lot
- [ ] **Final Plat** - $100.00 plus $10.00 per lot
- [ ] **Planned Development Overlay (PDO)** [§390.0709] - $500.00
- [ ] **Planned Development Amendment** - $500.00
- [ ] **Zoning Text or Map Amendment** [§390.1204] - $500.00
- [ ] **Project Concept Review** - $200.00
- [ ] **Land Use Plan Amendment** - $500.00
- [ ] **Interpretation** [§390.1216] - $200.00
- [ ] **Appeal** [§390.1217] - $500.00
- [ ] **Other:** _____ Fee: _____

Date application was received:

Fee Paid:
$722.00 via CC

Physical Address of Site: 373 W. Geneva St, Williams Bay 53191

Tax Parcel Number: WA518500001

Project or Development Name: 1a. Play/Space playground, 1b. Pavilion building, 1c. Building relocation

Applicant
Name: Yerkes Future Foundation
Mailing Address: 373 W. Geneva St, Williams Bay 53191
eMail: dkois@yerkesobservatory.org
Phone: 262-245-5555

Owner of Site
Name: (same)
Mailing Address:
eMail:
Phone:

Legal Representative
Name: n/a
Mailing Address:
eMail:
Phone:

Architect, Engineer, Contractor
Name: SEE ATTACHED SUPPLEMENT
Mailing Address:
eMail:
Phone:

Legal Description of Site (Attach separate sheet if additional space is needed):
NE 1/4, NW 1/4, SE 1/4, SW 1/4 of SECTION 1, T.01N, R.16E, IN THE VILLAGE OF WILLIAMS BAY, WALWORTH CTY., WI.

Please answer all applicable. Missing or incomplete information may deem this application "incomplete," delaying or prohibiting a review.

Current Zoning of Site: P&I **Current Overlay Districts of Site:** _____

Proposed Zoning of Site: (Same)

Proposed type of structure of use: 1a. - Playground, 1b. - Restroom facility, 1c. - office + program space.

Proposed use of structure or site: 1a. - accessible playground, 1b. - restroom for Yerkes site visitors, 1c. - programs space for education, office space.

Statement of proposed use of property, with pertinent facts regarding the size of area involved, extent of development, type of operation, etc. (Attach separate sheet if additional space is needed):
SEE ATTACHED SUPPLEMENT

Statement showing compatibility of proposed zoning district and/or proposed use to the Village Comprehensive Plan: (Attach separate sheet if additional space is needed)
SEE ATTACHED SUPPLEMENT

Statement showing compatibility of proposed zoning district and/or proposed use with adjacent properties and neighborhoods (Attach separate sheet if additional space is needed):
SEE ATTACHED SUPPLEMENT

Print Applicant's Name: Dennis Kois, Exec. Director **Date:** 9/2/25

Signature of Applicant:

Site Plan + Conditional Use Permit Application – Supplement (7 pages)

Applicant: **Yerkes Future Foundation**

Project(s): 1a. Play/Space playground
1b. Pavilion building
1c. Building relocation from former GWC campus

Architect, Engineer, Contractor

Saiki Design Inc. (Play/Space, landscape, utilities)
1110 S Park St, Madison, WI 53715
Abbie Moilien, Principal
amoilien@saiki.design
608-405-8149

Abacus Architects (pavilion, building relocation, utilities)
640 N Vel R. Phillips Ave Ste. 210, Milwaukee, WI 53203
Eric Halbur, President/CEO
ehalbur@abacusarch.com
262-994-3769

Mead & Hunt (engineers - Play/Space playground, landscape, utilities)
2440 Deming Way, Middleton, WI 53562
Anne Anderson, PE
anne.anderson@meadhunt.com

Statement of proposed use of property, with pertinent facts regarding the size of area involved, extent of development, type of operation, etc.:

Project 1a

Play/Space Playground

The proposed playground is a custom-designed project created by Monstrum (Copenhagen Denmark) and will be one of only 19 Monstrum-designed playgrounds in the United States to date. The nearest playground designed by the firm will open in 2027 at the Obama Center in Chicago.

The playground consists of **three play areas** and a small building embedded in the forest to the SE of Yerkes with a combined total site boundary of 38,300 square feet (0.88 acre).

Overall:

- The playground meets all ASTM safety standards and be ASTM certified.
- The playground significantly exceeds ADA (Americans with Disabilities Act) standards, providing integrated mixed play for children of all ages and abilities.
- The playground has been designed for year-round use.
- The playground and amenities have been designed for a maximum capacity of 80 children in simultaneous use.
- The playground contains illustrations and/or texts sharing basic concepts of astronomy, science and space.
- The play areas are installed over a foundation comprised of a mix of compressed gravel, poured concrete and compacted earth.
- The play surfaces are covered with a mix of permeable surfacing (details below) and integrate landscaping utilizing native Wisconsin species and reflecting aesthetics derived from the historic Olmsted garden designs for Yerkes.
- The three play areas are connected via ADA compliant ramps, stone stairs, scramble stones for children, a child-scaled bridge and a hidden forest path.
- The playground drains to two engineered, planted detention ponds to mitigate runoff and help clean stormwater of any surface contaminants through natural filtration.
- The design includes low cast-in-place concrete walls with integrated wood benches along with stone block seating and shaded picnic tables.
- An irrigation line for manual hose and sprinkler connections will be installed.
- A fence with a latched gate will limit small children's ability to leave the site through the trail leading downhill (southeast) without their parent's knowledge.
- Based on a GPS survey of trees, the project has been designed and the location altered significantly to minimize the number of desirable trees requiring removal or put at risk.

The three play areas:

The Blair Family Foundation Supernova

A 28' high play structure made of certified sustainable hardwood and stainless steel resting on a permeable poured-in-place rubber surface. The main structure includes a raised "stage," climbing elements, transfer platforms, stairs, a bridge, an internal maze and three slides. Also included are

bounce platforms, monkey bars, climbing posts, and a seating area for 32 for visiting class and home-schooling groups. This area is designed primarily for children aged 6-13.

The Planetary Zone
A series of planetary shapes small children can play on, in and around, situated on a combination of poured-in-place rubber and ADA compliant engineered wood chips. Included are a walk-in, low-fi planetarium showing star patterns from Williams Bay, a sun with interactive elements, two climbing planets, and climbing posts. This area is designed primarily for children aged 3-7.

The Nature Zone
A forested child-configurable play area consisting of moveable natural elements including stumps, branches, sticks and materials, along with a 6-bay swing-set, situated primarily on ADA compliant engineered wood chips with a poured-in-place rubber pathway to mark the route to the accessible swing(s). This area is designed for all ages.

Operations
The playground has been designed for a maximum capacity of 80 children and will operate on a set schedule identical to that implemented for the landscape overall (currently expected to be from 8am to dusk (summer) and 9am – 5pm (winter)). If necessitated by demand during peak periods YFF plans to further control access by requiring patrons arriving by car to book one of a limited number of AM or PM daily time slots to utilize the playground.

Fees
In order to ensure its ongoing financial sustainability as a non-profit YFF anticipates that in the coming years it will implement an admission charge to the park, akin to that seen at most botanic gardens, historic sites, arboretums, or sculpture parks in the United States. YFF has stated previously and remains committed to providing significantly reduced-fee or free access for all Williams Bay residents to the outdoor offerings at Yerkes. How that commitment may be implemented once an admission charge is introduced has yet to be determined.

Parking
Initially, parking for Play/Space will be provided by the existing 55 stall Yerkes visitor lot, which YFF believes meets the requirements for parking spots stipulated in Village of Williams Bay ordinances §390-0308 A (Indoor Institutional) and §390-0309 B.4 (Recreational Land Uses/Outdoor Active Recreation), based on observed patterns of parking usage and data from the past four years of public visitation:

> *Maximum regular visitation at Yerkes is 40 persons for any single tour, equating to a requirement for 13.33 parking spaces (one car per 3 visitors per village ordinance). While multiple tours occur daily, they are scheduled such that parking demand does not overlap. Additionally, visitor data indicates less than 5% of Yerkes tour visitors bring a child between 3-13, the age range for the playground.*

Hence we do not anticipate a significant increase in tour visitors staying parked at Yerkes for longer periods in order to utilize the playground before/after a tour.

<u>Peak visitation</u> for onsite parking during special events is currently 70 visitors for public talks or concerts, equating to a requirement for 23.33 parking spaces (one car per 3 visitors per village ordinance). For events with attendance over 70 Yerkes parks visitors offsite and arranges shuttle service from Williams Bay HS.

<u>Yerkes staff</u> are served by 10 staff parking spaces elsewhere on the property (staff lot to east of building, maintenance shed lot).

Thus YFF believes that for the purposes of both maximum regular visitation and peak visitation during special events the existing 55 spot parking lot fulfills the number of parking spots required by Village of Williams Bay ordinance(s).

Maximum Regular Visitation	**Peak Visitation (Special Event)**
40 tour visitors = 13.33 spots	70 attendees = 23.33 spots
80 playground users = 26.66 spots	80 playground users = 26.66 spots
Total required: 40 spots	Total required: 50 spots

It should be noted that the use of the existing parking lot is an interim step. The Yerkes Site and Facility Master Plan calls for the addition of an additional 95 parking spots in the coming years, which integrates the future need driven by increased visitation for landscape use and additional programming.

Project 1b

<u>Pavilion building</u>

The proposed structure is a concrete masonry unit (CMU) building on slab of ~535 SF with a patio slab of ~1,100 SF. The building contains two enclosed family restrooms and a nursing room, all of which serve all outdoor visitors to Yerkes—trail walkers, playground users, dog walkers, and casual visitors.

- The building and all amenities are ADA compliant.
- Building heat will be provided by a radiant heating system embedded in the slab. The building is vented in summer, but does not have AC.
- Electric service will be connected underground.
- Natural gas will be used for hot water and the radiant heat.
- Sewer connection will be made to the existing site sewer lines/lift stations.
- The building contains four spaces:
    - two identical ADA compliant family restrooms with changing tables.
    - one combined sensory break room/nursing room with seating, a sink, a quiet play table, and windows providing visibility to the playground and to the woods.
    - a mechanical closet
- The exterior patio will provide shade to 6-9 picnic tables.

- All interior and exterior lighting will be dark-sky compliant.
- The building exterior includes a water bottle filling station, drinking fountain, pet water station, and a cell phone charging locker system.
- The patio will be covered for rain protection, with runoff directed to the detention ponds.

Operations

The restrooms and sensory/nursing room will only be accessible during regular site hours (currently expected to be from 8am to dusk (summer) and 9am – 5pm (winter)). The restrooms will be locked outside of the posted hours.

The sensory/nursing room will remain locked at all times. Visitors wishing to use the space will text a posted SMS short code to receive an automated reply with the current keycode to unlock the door. The code will be changed periodically. As is current YFF practice, the building will be secured and alarmed when not in use.

Project 1c

Building relocation from former GWC campus

The proposed building relocation would move a structure formerly known as "the chapel" (currently slated to be demolished to make way for The Preserve) from the former campus of George Williams College to Yerkes. The building—a single-room structure of ~1,000 s/f which does not currently contain a restroom—would be donated by The Preserve. Funding for the move and relocation is being raised by a group of interested community members.

Should those community members be successful in raising the required funds the building would have to be relocated to Yerkes on extremely short notice (as little as 30 days) to avoid demolition. Hence YFF is applying prospectively for approval for the relocation along with the addition of a single ADA-compliant restroom and small utility and furniture storage closet, bringing the total building after relocation to 1,370-1,500 s/f. with a ~1,200 s/f on-grade patio.

- The existing building would be moved to Yerkes and reinstalled on a new on-grade foundation at the site of the current "student dome" buildings on the Yerkes campus, to the SW of the observatory. These buildings are already slated for demolition in YFF's Site and Facility Master Plan.
- A single family restroom of ~220 s/f would be added.
- A utility closet of ~150 s/f would be added for HVAC and furniture storage.
- An on-grade flagstone or pea-gravel deck would be added on the north side, providing views of the main observatory dome.
- Electrical, water, natural gas and sewer connections would be made to the existing underground lines (the student dome building to be demolished contains a restroom)

Operations

The relocated building would fulfill a number of uses for Yerkes, including providing educational programs space, space for small events, and potentially temporary office space for YFF during future construction or building restoration. As is current YFF practice, the building would be secured and alarmed when not in use.

Statement showing compatibility of proposed zoning district and/or proposed use to the Village Comprehensive Plan:

YFF believes the proposed projects supports the Village of Williams Bay Comprehensive Plan in a number of ways. The Play/Space and associated buildings will:

1. provide a unique and high-quality playground for local children and a world-class community amenity to Village residents,
2. accent the cultural offerings of the village,
3. bring visitors to the Village who will support local businesses before and after a visit to Yerkes, bringing economic benefit and growth to village businesses,
4. help to ensure Yerkes – which is in and of itself a significant cultural and historic institution— remains financially healthy and sustainable by helping support the implementation of a future admission charge.

We believe the playground and associated building projects tangibly support the following specific goals, taken directly from the Comprehensive Plan:

Overall Goals

- *Preserve, enhance, and promote the Village's unique historic character and cultural offerings.*
- *Offer park and recreation facilities that are accessible to all Village residents as well as visitors.*
- *Promote appropriate economic development that complements and helps support the Village's predominately residential character, relates to the Village's focus on outdoor recreation and education, helps serve the daily needs of residents, and enhances the Village as a desirable place to live and visit.*

Cultural Resources

- *Support community events and destination uses to provide year-round cultural attractions.*
- *Partner with community institutions and foundations to market the community including the Yerkes Future Foundation, George Williams College of Aurora University ("George Williams College"), and the Women's Leadership Center among others.*

Economic Development

- *Develop and implement a downtown revitalization strategy and plan.*
- *Work with local businesses and institutional uses to promote tourism and economic growth.*

Statement showing compatibility of proposed zoning district and/or proposed use with adjacent properties:

YFF does not propose to change the zoning district for the Observatory from the existing P&I.

We believe that the playground and associated buildings are compatible with the adjacent residential properties (to the North and Northeast of Yerkes) and the adjacent commercial properties (to the South and Southeast) because the project(s):

1. are located as far from all residential neighbors as possible,
2. provide outdoor restrooms and amenities that will benefit neighborhood residents, dog walkers, and families utilizing the site,
3. provide neighbors (and other Williams Bay residents) with reduced-fee or free access to a historically significant landscape undergoing constant improvement and a new world-class playground,
4. take a considered and careful approach to visitation and parking,
5. will have controlled access as part of a considered master plan for Yerkes' future,
6. will help drive economic benefit to Village businesses through the visitors they bring to Williams Bay, and assist in growing a healthy mix of downtown businesses our neighbors can access,
7. will help sustain and increase property values in the Village by helping attract new families to make Williams Bay,
8. will help ensure that Yerkes remains a viable non-profit organization not at future risk of closure and residential development (as was proposed in the past, which would certainly not be beneficial for adjacent properties).

YERKES OBSERVATORY - PLAY/SPACE

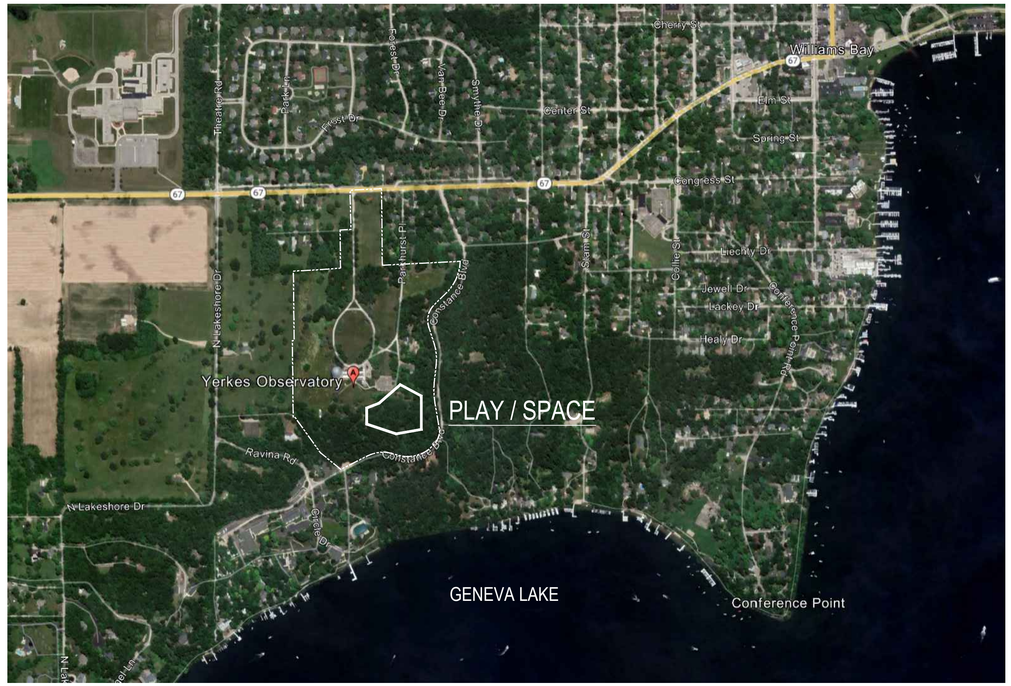
WILLIAMS BAY, WI

SHEET INDEX

C000	COVER SHEET
C100	GENERAL
C110	EXISTING CONDITIONS PLAN
C111	DEMO PLAN
C112	TREE PROTECTION AND DEMOLITION PLAN
C210	EROSION CONTROL PLAN
C300	OVERALL SITE GRADING PLAN
C301	GRADING PLAN ENLARGEMENT
C302	GRADING PLAN ENLARGEMENT
C400	SITE UTILITY PLAN
C500	SITE DETAILS
C501	SITE DETAILS
L100	SITE PLAN OVERVIEW
L101	SITE PLAN - ZONE 1
L102	SITE PLAN - ZONE 2
L103	SITE PLAN - ZONE 3
L104	SITE PLAN - ZONE 4
L200	LANDSCAPE PLAN OVERVIEW
L201	LANDSCAPE PLAN - ZONE 1
L202	LANDSCAPE PLAN - ZONE 2
L203	LANDSCAPE PLAN - ZONE 3
L204	LANDSCAPE PLAN - ZONE 4
L500	LANDSCAPE DETAILS
L501	SITE DETAILS
L502	SITE DETAILS
L503	SITE DETAILS
S100	STRUCTURAL PLAN
S200	STRUCTURAL DETAILS

PROJECT INFORMATION

PROPERTY ADDRESS: 373 W. GENEVA ST.
WILLIAMS BAY, WI



PROFESSIONAL SEALS

OWNER'S REPRESENTATIVE
CONTACT: DENNIS KOIS
PHONE: 917-572-2426

LANDSCAPE ARCHITECT OF RECORD
SAIKI DESIGN
CONTACT: ABBIE MOILIEN
PHONE: 608-405-8149

CIVIL ENGINEER OF RECORD
MEAD & HUNT
CONTACT: ANNE ANDERSON
PHONE: 608-443-0491

STRUCTURAL ENGINEER OF RECORD
MEAD & HUNT
CONTACT: ISAAC PANTTI
PHONE: 608-443-0499

saiki DESIGN

Mead & Hunt

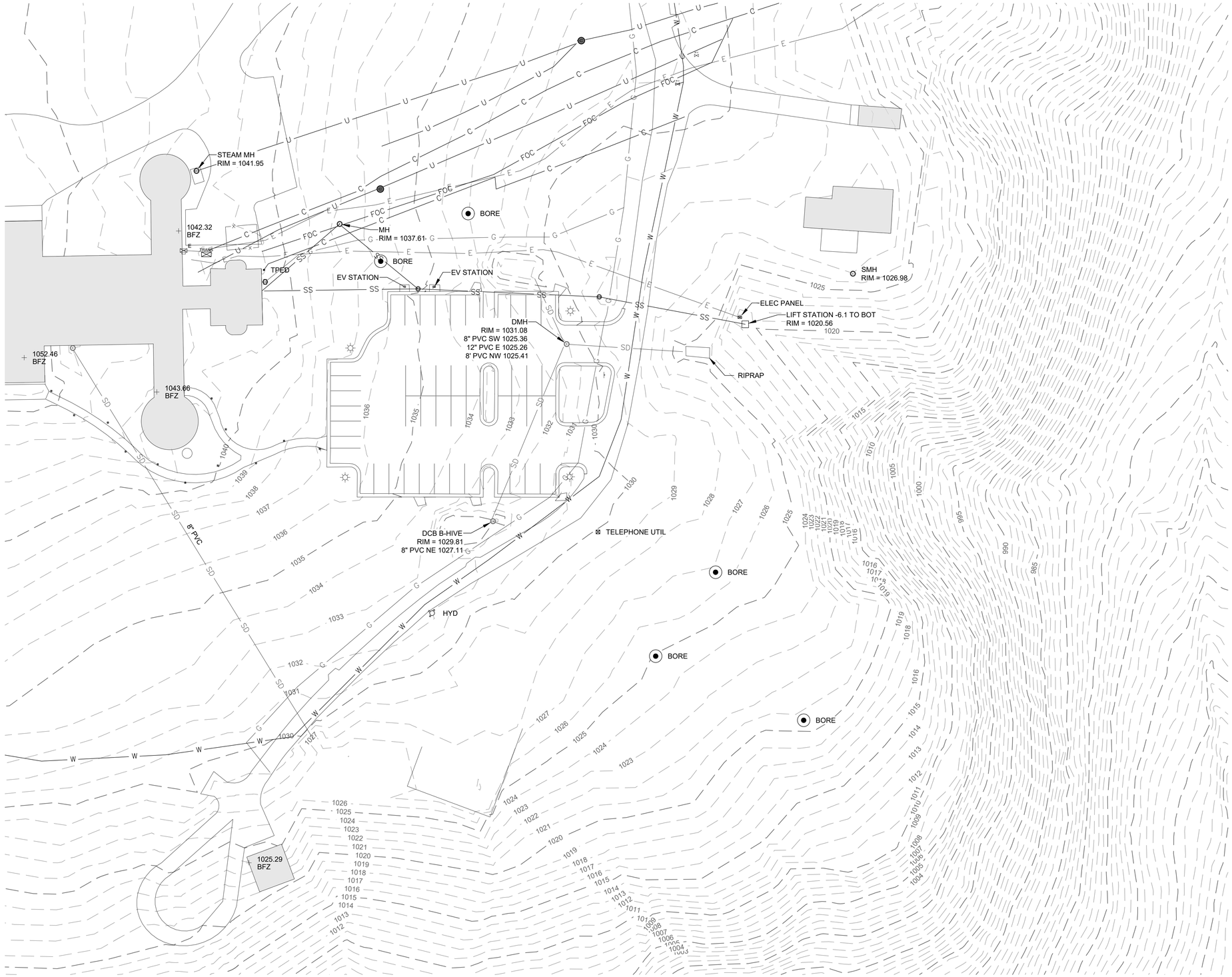
PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

COVER SHEET

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L000



LEGEND:

- BENCHMARK
- BOLLARD
- CONTROL POINT
- CLEANOUT,
- ELECTRICAL / COMMUNICATIONS PEDESTAL
- ELECTRICAL TRANSFORMER BOX
- ELECTRICAL SERVICE PANEL
- FIRE HYDRANT
- GAS METER
- INLET, ROUND
- PATH LIGHT
- LIGHT POLE
- MANHOLE, FIBER OPTIC
- MANHOLE, SANITARY SEWER
- MANHOLE, STORM DRAIN
- POWER POLE
- SIGN
- SOIL BORING
- WATER VALVE
- GAS
- ELECTRIC, OVERHEAD
- ELECTRIC, UNDERGROUND
- EXISTING CONTOUR LINES
- FENCE
- FIBER OPTIC CABLE
- SANITARY SEWER
- STORM DRAIN
- SWALE
- COMMUNICATIONS
- TELEPHONE
- UNKNOWN UNDERGROUND UTILITY
  ASSUMED ABANDONED STEAM TUNNEL
- WATER

1 **EXISTING CONDITIONS PLAN**
1" = 30'

0 15 30 60

NORTH

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PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

EXISTING CONDITIONS PLAN

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C110

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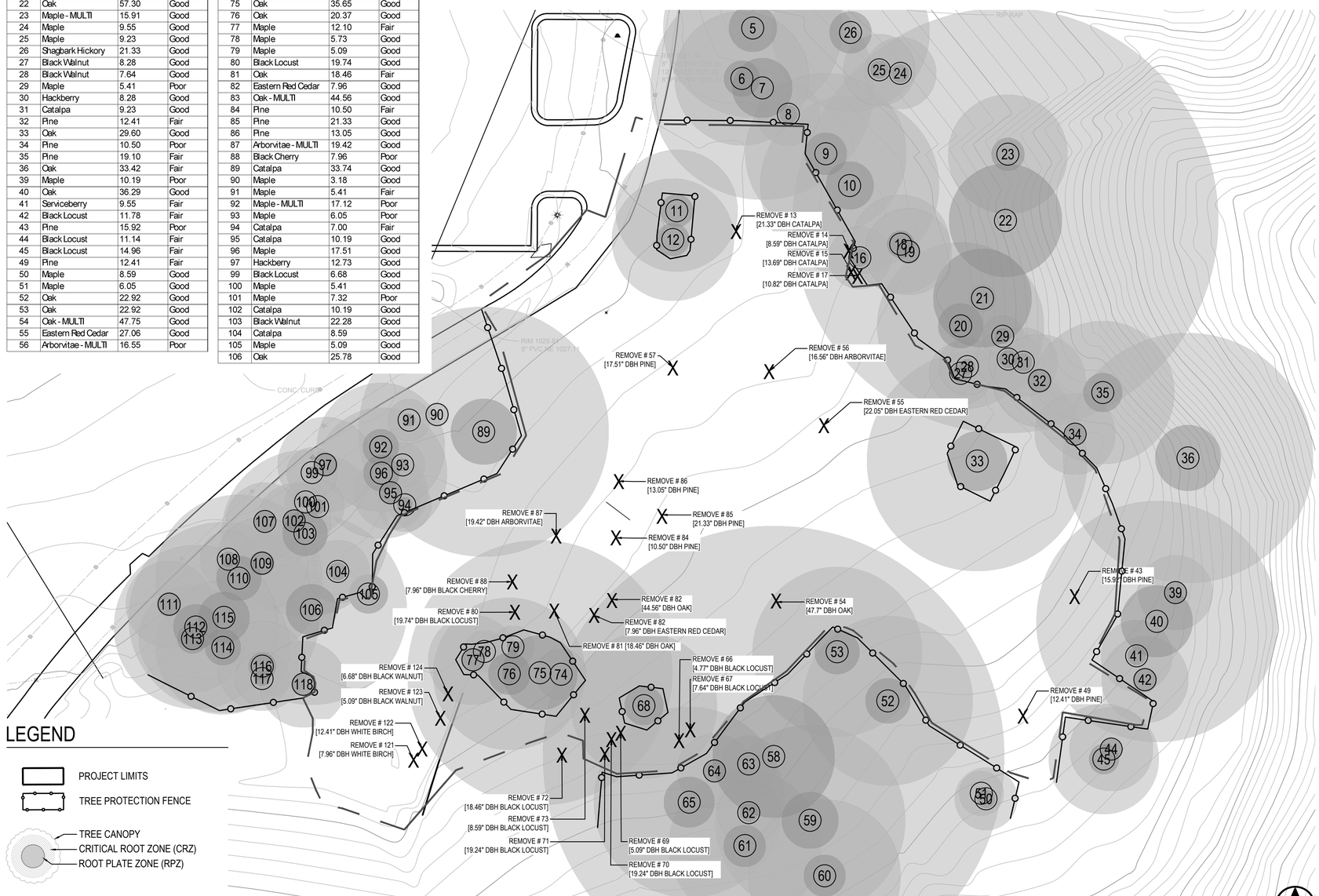
EXISTING TREE INVENTORY

Tree ID	Species	Caliper (in)	Quality
5	Oak	24.18	Fair
6	Oak	18.14	Fair
7	Oak	29.92	Good
8	Maple	8.27	Good
9	Oak - MULTI	21.64	Fair
10	Oak	24.19	Good
11	Maple	16.55	Good
12	Maple	16.55	Good
13	Catalpa - MULTI	21.33	Good
14	Catalpa	8.59	Fair
15	Catalpa	13.69	Good
16	Maple	8.59	Poor
17	Maple	10.82	Good
18	Maple - MULTI	13.37	Poor
19	Maple	11.46	Fair
20	Oak	22.28	Good
21	Hackberry	13.37	Good
22	Oak	57.30	Good
23	Maple - MULTI	15.91	Good
24	Maple	9.55	Good
25	Maple	9.23	Good
26	Shagbark Hickory	21.33	Good
27	Black Walnut	8.28	Good
28	Black Walnut	7.64	Good
29	Maple	5.41	Poor
30	Hackberry	8.28	Good
31	Catalpa	9.23	Good
32	Pine	12.41	Fair
33	Oak	29.60	Good
34	Pine	10.50	Poor
35	Pine	19.10	Fair
36	Oak	33.42	Fair
39	Maple	10.19	Poor
40	Oak	36.29	Good
41	Serviceberry	9.55	Fair
42	Black Locust	11.78	Fair
43	Pine	15.92	Poor
44	Black Locust	11.14	Fair
45	Black Locust	14.96	Fair
49	Pine	12.41	Fair
50	Maple	8.59	Good
51	Maple	6.05	Good
52	Oak	22.92	Good
53	Oak	22.92	Good
54	Oak - MULTI	47.75	Good
55	Eastern Red Cedar	27.06	Good
56	Arborvitae - MULTI	16.55	Poor
57	Pine	17.51	Good
58	Oak - MULTI	54.43	Fair
59	Oak	28.33	Good
60	Black Locust	21.33	Good
61	Oak	20.37	Good
62	Black Locust	8.59	Fair
63	Maple	7.64	Good
64	Maple	9.87	Poor
65	Oak	25.47	Good
66	Black Locust	4.77	Fair
67	Black Locust	7.64	Good
68	Oak	19.74	Good
69	Black Locust	5.09	Good
70	Black Locust	19.42	Good
71	Black Locust	5.09	Fair
72	Black Locust	18.46	Good
73	Black Locust	8.59	Poor
74	Maple	6.68	Poor
75	Oak	35.65	Good
76	Oak	20.37	Good
77	Maple	12.10	Fair
78	Maple	5.73	Good
79	Maple	5.09	Good
80	Black Locust	19.74	Good
81	Oak	18.46	Fair
82	Eastern Red Cedar	7.96	Good
83	Oak - MULTI	44.56	Good
84	Pine	10.50	Fair
85	Pine	21.33	Good
86	Pine	13.05	Good
87	Arborvitae - MULTI	19.42	Good
88	Black Cherry	7.96	Poor
89	Catalpa	33.74	Good
90	Maple	3.18	Good
91	Maple	5.41	Fair
92	Maple - MULTI	17.12	Poor
93	Maple	6.05	Poor
94	Catalpa	7.00	Fair
95	Catalpa	10.19	Good
96	Maple	17.51	Good
97	Hackberry	12.73	Good
99	Black Locust	6.68	Good
100	Maple	5.41	Good
101	Maple	7.32	Poor
102	Catalpa	10.19	Good
103	Black Walnut	22.28	Good
104	Catalpa	8.59	Good
105	Maple	5.09	Good
106	Oak	25.78	Good
107	Maple	10.50	Good
108	American Elm	7.64	Good
109	Black Walnut	12.41	Good
110	Black Walnut	22.28	Good
111	Maple	11.46	Fair
112	Oak - MULTI	21.96	Fair
113	Oak	14.32	Good
114	Oak	17.83	Good
115	Oak	25.47	Good
116	Maple	12.10	Good
117	Maple	7.32	Good
118	Maple	11.46	Good
121	White Birch	7.96	Fair
122	White Birch	12.41	Fair
123	Black Walnut	5.09	Fair
124	Black Walnut	6.68	Fair

NOTES:

1. ALL TREES SHOWN TO BE RETAINED WITHIN THE LIMITS OF CONSTRUCTION ON THE PLANS SHALL BE PROTECTED DURING CONSTRUCTION WITH FENCING.
2. PROTECT TREE CANOPIES FROM OVERHEAD DAMAGE.
3. TEMPORARY TREE PROTECTION FENCES FOR DEMOLITION PHASE SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE DEMOLITION OR PREPARATION WORK (CLEARING, GRUBBING, OR GRADING). AFTER DEMOLITION ACTIVITIES ARE COMPLETE FENCES SHALL BE RELOCATED TO PERMANENT CONSTRUCTION PHASE LOCATIONS AND SHALL BE MAINTAINED THROUGHOUT REMAINDER OF THE CONSTRUCTION PROJECT.
4. DO NOT INSTALL FENCING ANY CLOSER THAN 5' FROM THE TRUNK OF ANY TREE.
5. NO STORAGE OF CONSTRUCTION MATERIALS, EQUIPMENT, OR SUPPLIES PERMITTED WITHIN TREE PROTECTION ZONES.
6. NO DISPOSAL OF CONSTRUCTION MATERIALS, BYPRODUCTS, OR SOLUTIONS PERMITTED WITHIN TREE PROTECTION ZONES.
7. TRUNK DIAMETER AT BREAST HEIGHT (DBH) MEASURED AT 4'-6" ABOVE THE GROUND.



LEGEND

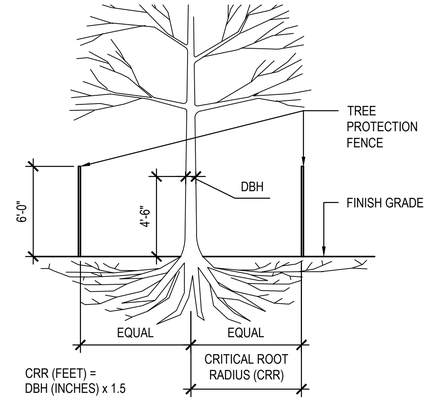
- PROJECT LIMITS
- TREE PROTECTION FENCE
- TREE CANOPY
- CRITICAL ROOT ZONE (CRZ)
- ROOT PLATE ZONE (RPZ)

1 TREE PROTECTION AND DEMOLITION PLAN

SCALE: 1"=20'-0"

0 20' 40'
1" = 20'-0"

NORTH



2 TREE PROTECTION FENCE

SCALE: NTS

NOTES

1. FIELD VERIFY SITE CONDITIONS AND UTILITIES PRIOR TO STARTING WORK. ANY DAMAGE CAUSED TO EXISTING UTILITIES, EITHER SHOWN OR NOT, SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.
2. CONTACT DIGGER'S HOTLINE & CITY OF FITCHBURG TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO STARTING WORK.
3. PROTECT OR RELOCATE BENCHMARKS. RELOCATED BENCHMARKS TO BE INCLUDED WITH CONTRACTOR AS-BUILTS.
4. DO NOT BLOCK ANY DRIVES, WALKS, OR ENTRANCES WITH TREE PROTECTION FENCING, EQUIPMENT, OR MATERIALS UNLESS RECEIVING WRITTEN APPROVAL FOR CLOSURES FROM A PROJECT REPRESENTATIVE.
5. ALL TREES SHOWN TO BE RETAINED WITHIN THE LIMITS OF CONSTRUCTION SHALL BE PROTECTED WITH TREE PROTECTION FENCING. ALL TREE PROTECTION FENCING SHALL BE IN PLACE PRIOR TO ANY DEMOLITION OR SITE STABILIZATION / MOBILIZATION FOR CONSTRUCTION. SEE SPECIFICATION SECTION 31 13 00 "SELECTIVE TREE AND VEGETATION PROTECTION AND REMOVALS" FOR PROTECTION REQUIREMENTS AND ADDITIONAL GENERAL REQUIREMENTS RELATED TO TREE PROTECTION AND REMOVALS. TREE PROTECTION FENCE TO BE INSTALLED WITH EXTRA CARE TO NOT OVERLY COMPACT THE SOIL OR TRAMPLE SHRUBS AND GROUND LAYER PLANTS AT THE FENCE LINE.
6. TAKE PRECAUTIONS DURING CONSTRUCTION TO NOT DISFIGURE, SCAR OR IMPAIR THE HEALTH OF ANY TREE, INCLUDING CITY STREET TREES. EQUIPMENT SHALL BE OPERATED IN A MANNER AS TO NOT DAMAGE THE BRANCHES OF THE TREE(S). THIS MAY REQUIRE USING SMALLER EQUIPMENT AND LOADING AND UNLOADING MATERIAL IN A DESIGNATED SPACE AWAY FROM TREES ON THE CONSTRUCTION SITE. ANY DAMAGE OR INJURY (EITHER ABOVE OR BELOW GROUND) TO EXISTING TREES SHALL BE REPORTED IMMEDIATELY TO THE PROJECT REPRESENTATIVE. REMEDIATION WILL BE REQUIRED. PENALTIES MAY BE ASSESSED.
7. THE STORAGE OF PARKED VEHICLES, CONSTRUCTION EQUIPMENT, BUILDING MATERIALS, REFUSE, EXCAVATED SPOILS OR DUMPING OF POISONOUS MATERIALS ON OR AROUND TREES AND ROOTS WITHIN THE TREE PROTECTION ZONE IS PROHIBITED.
8. ALL PRUNING SHALL FOLLOW THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A300-PART 1, STANDARDS FOR PRUNING.
9. MAINTENANCE WITHIN TREE PROTECTION FENCING IS REQUIRED INCLUDING MOWING, WEEDING, WATERING, TRASH, AND SNOW REMOVAL. MAINTAIN HEALTH OF ALL EXISTING VEGETATION TO REMAIN. SEE SPECIFICATION SECTION 31 13 00 "SELECTIVE TREE AND VEGETATION PROTECTION AND REMOVALS" FOR ADDITIONAL INFORMATION.
10. PRESERVE 1 OF THE FOLLOWING BLACK LOCUST TREES TO PRODUCE 8-12 STUMPS, 12"-18" DIAMETER AND 12"-18" HEIGHT: #70, #72, #801. UTILIZE REMAINING 6"-9" DIAMETER SECTIONS TO PRODUCE LOGS.
11. PRESERVE 1 OF THE FOLLOWING BLACK LOCUST TREES TO PRODUCE 4-8 LOGS, 6"-9" DIAMETER AND 5'-8' LENGTH: #67 OR #62
12. CONTRACTOR SHALL REFERENCE AND FOLLOW RECOMMENDATIONS OUTLINES IN THE REPORT, "GEOTECHNICAL EXPLORATION - PROPOSED YERKES OBSERVATORY PLAY SPACE AND BUILDING ADDITION", PREPARED BY CGC, INC., AND DATED JULY 28, 2025 (REPORT AVAILABLE FROM OWNER UPON REQUEST) AT ALL TIMES PRIOR TO AND DURING CONSTRICTION.

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Mead & Hunt

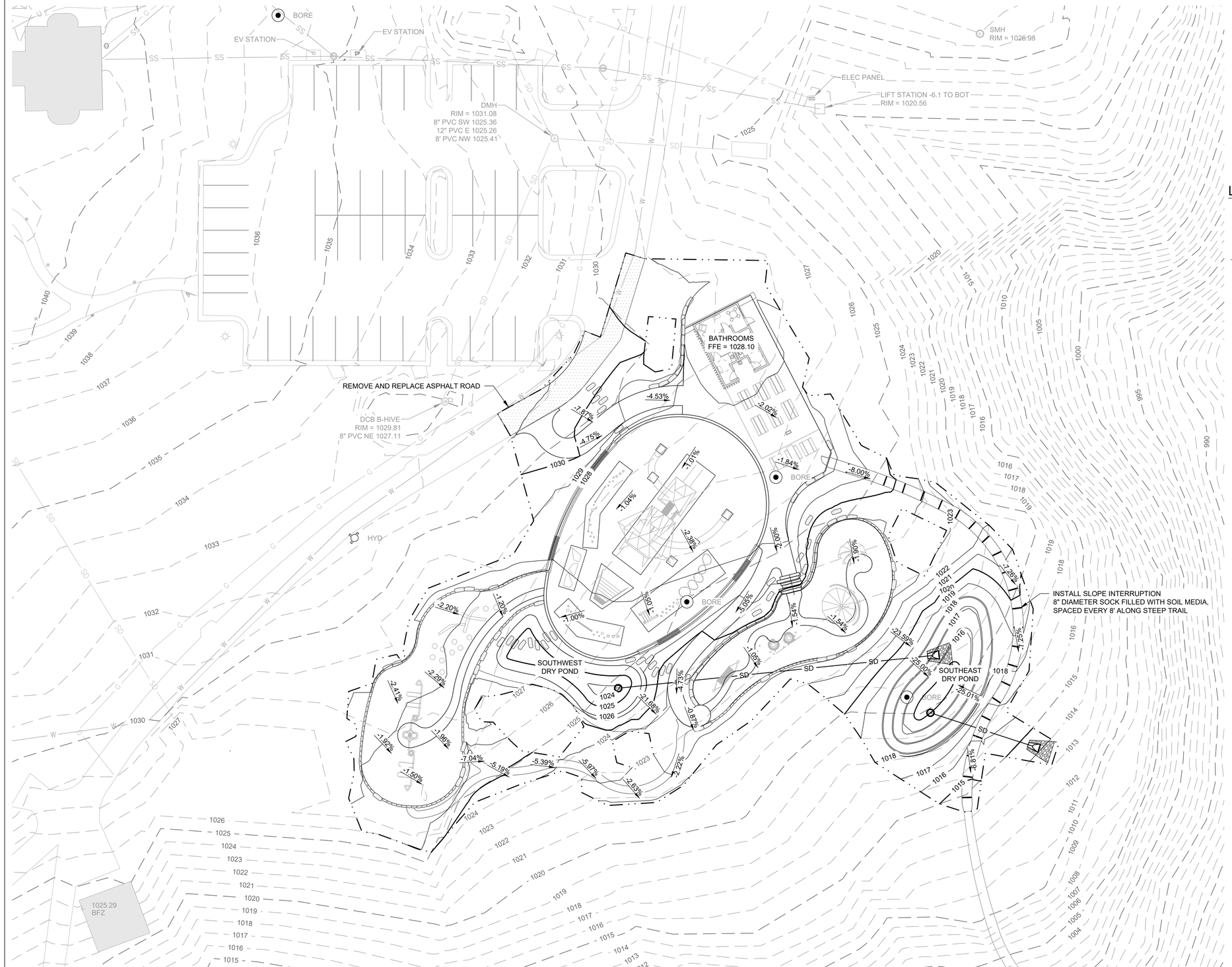
PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

TREE PROTECTION AND DEMOLITION PLAN

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	C112



LEGEND:

- ASPHALT
- EXISTING CONTOUR LINES
- PROPOSED CONTOUR LINES
- GRADING LIMITS
- FINISHED / PROPOSED SPOT ELEVATION
- FINISHED / PROPOSED SLOPE

1 **OVERALL SITE GRADING PLAN**
1" = 20'

0 10 20 40

NORTH

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

OVERALL SITE GRADING PLAN

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C300

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1 PLAY SPACE GRADING PLAN ENLARGEMENT

1" = 10'

0 5 10 20

NORTH

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

PLAY SPACE GRADING PLAN ENLARGEMENT

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C301

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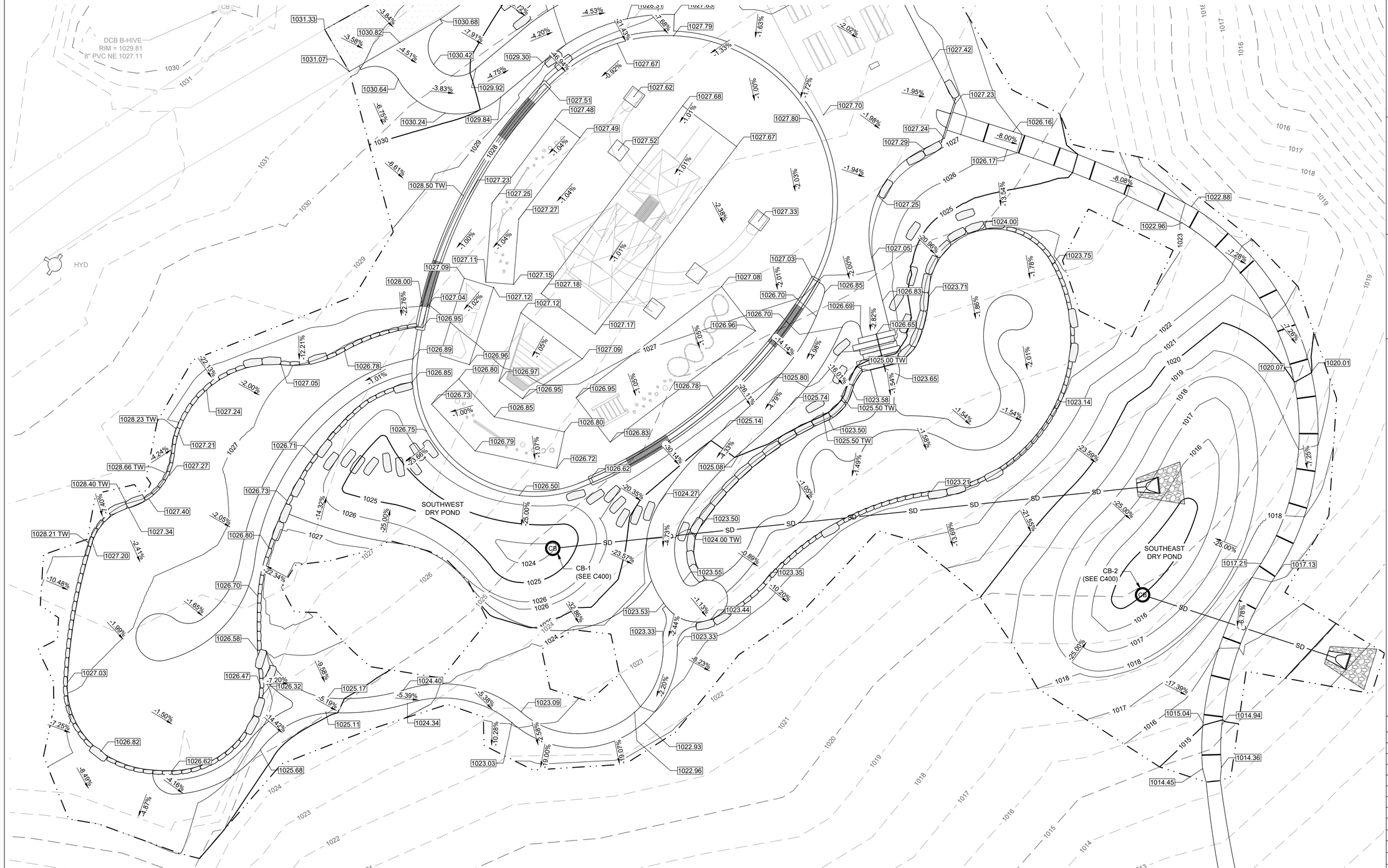

1 **PLAY SPACE GRADING PLAN ENLARGEMENT**
1" = 10'

0 5 10 20

NORTH

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Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

PLAY SPACE GRADING PLAN ENLARGEMENT

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C302

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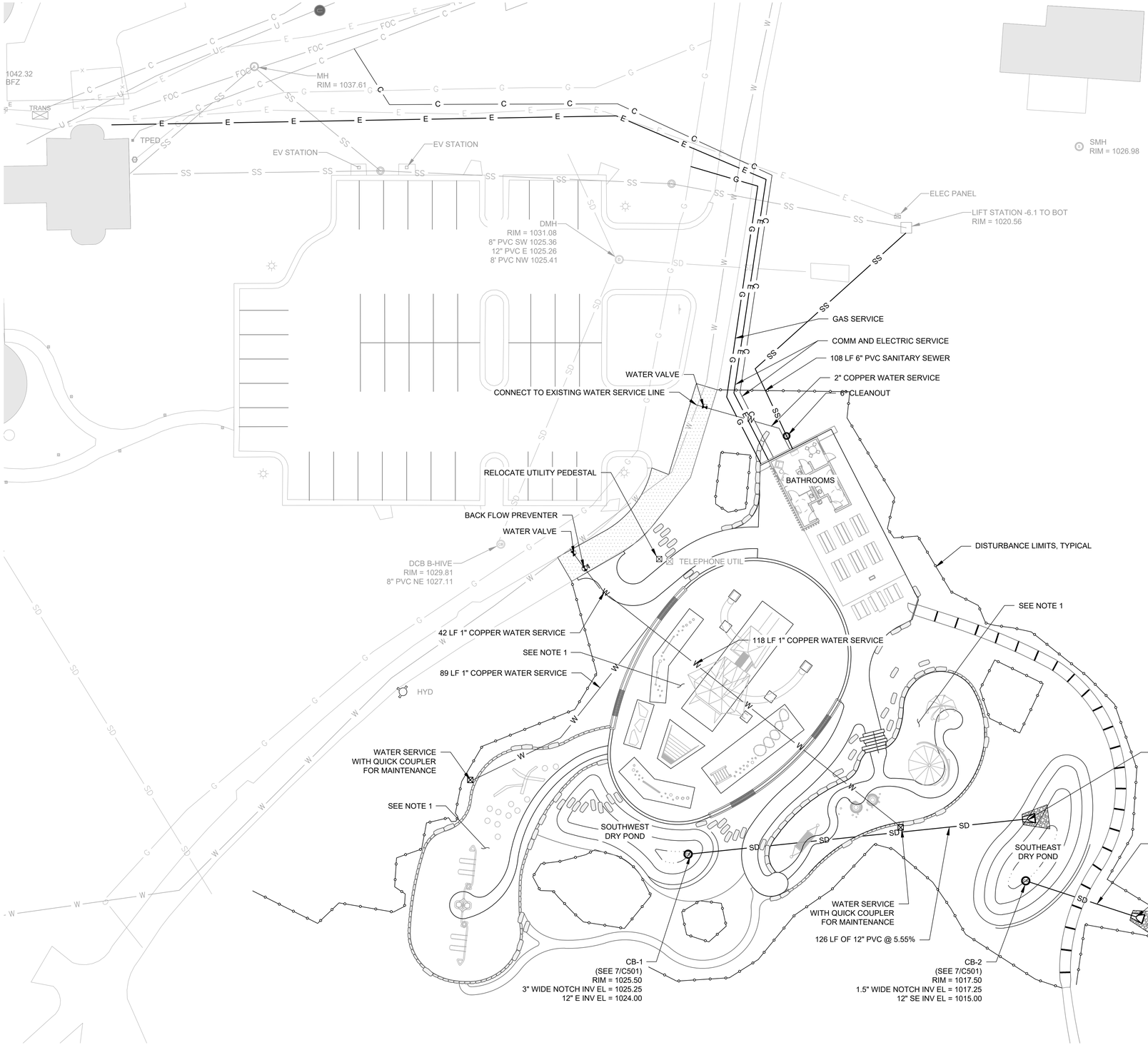
SITE UTILITY PLAN NOTES:

1. INSTALL 2,800 LF OF 6" DRAIN TILE UNDER PLAYGROUND SURFACES.



LEGEND:

- RIPRAP OUTFALL
- CB — STORM DRAINAGE OVERFLOW STRUCTURE
- FLARED APRON END SECTION
- WV — WATER VALVE
- E — ELECTRIC, UNDERGROUND
- G — GAS
- SS — SANITARY SEWER
- SD — STORM DRAIN PIPE
- UD — UNDERDRAIN
- W — WATER

1 **SITE UTILITY PLAN**
1" = 20'

0 10 20 40

NORTH

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Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE UTILITY PLAN

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C400

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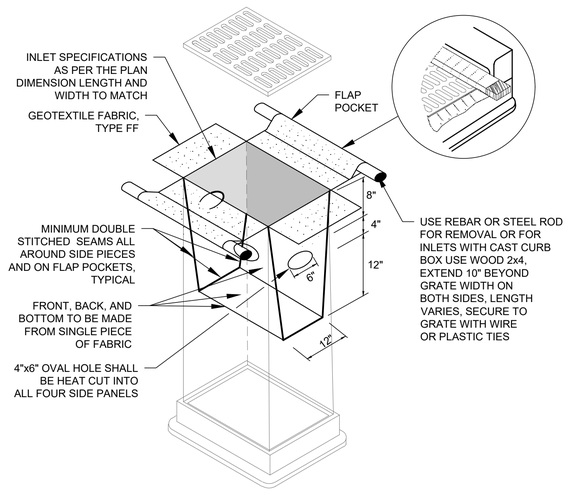
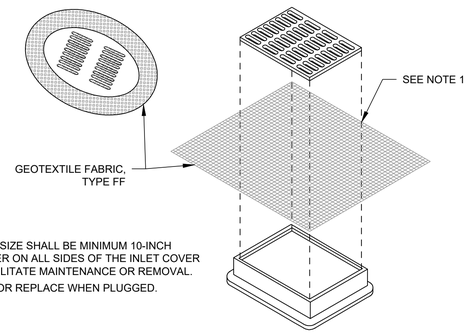


5 INLET PROTECTION DETAIL, TYPE D

NOT TO SCALE

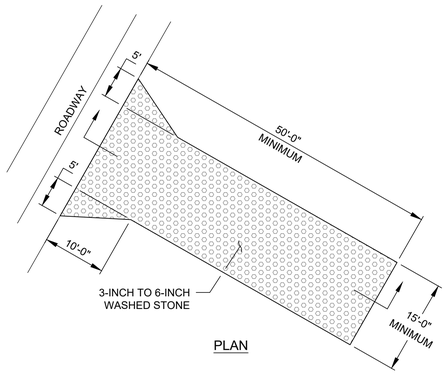


NOTES:

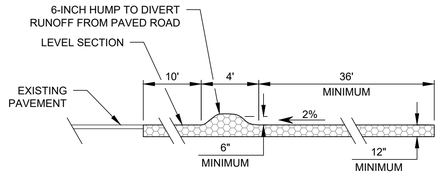
1. FABRIC SIZE SHALL BE MINIMUM 10-INCH GREATER ON ALL SIDES OF THE INLET COVER TO FACILITATE MAINTENANCE OR REMOVAL.
2. CLEAN OR REPLACE WHEN PLUGGED.

6 INLET PROTECTION DETAIL , TYPE B

NOT TO SCALE



PLAN



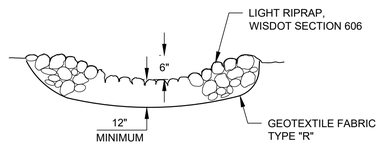
SECTION

NOTES:

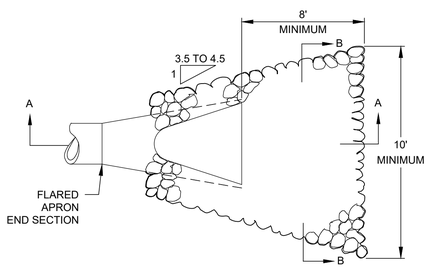
1. MAINTAIN THE TRACKING PAD IN A CONDITION TO PREVENT SEDIMENT FROM LEAVING THE SITE. SHOULD MUD BE TRACKED OR WASHED ONTO EXISTING PAVEMENT, IT MUST BE REMOVED IMMEDIATELY.

3 TRACKING PAD DETAIL

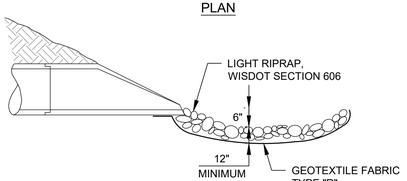
NOT TO SCALE



SECTION B-B



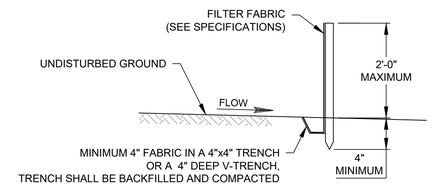
PLAN



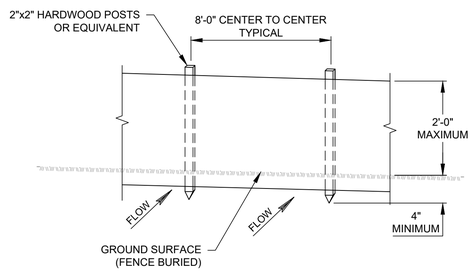
SECTION A-A

4 RIPRAP OUTFALL DETAIL

NOT TO SCALE



SECTION



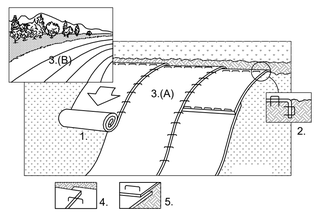
PERSPECTIVE VIEW

NOTES:

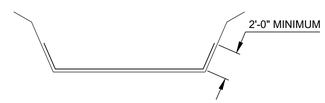
1. ENDS OF FENCE SHALL BE TURNED UPSLOPE 1 TO 2 FEET IN ELEVATION TO PREVENT FLANKING.
2. STAPLE FABRIC WITH MINIMUM 1/2 INCH STAPLES TO THE UPSLOPE SIDE OF THE POSTS.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.

1 SILT FENCE DETAIL

NOT TO SCALE



SLOPE INSTALLATION



CHANNEL INSTALLATION

NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING SEED.
2. BEGIN AT THE TOP OF THE SLOPE OR CHANNEL BY ANCHORING THE BLANKET IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS 3.(A) DOWN OR 3.(B) HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS SHALL BE STAPLED WITH 4" OVERLAP. USE ONLY BIODEGRADABLE STAPLES.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE OR CHANNEL, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH 6" OVERLAP. STAPLE APPROXIMATELY 12" APART.
6. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SLOPE OR CHANNEL BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS RECOMMENDED BY THE MANUFACTURER.
7. USE EROSION CONTROL REVEGETATIVE MAT (ECRM) CLASS-1, TYPE-B.

2 EROSION MAT INSTALLATION DETAIL

NOT TO SCALE

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE DETAILS

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C500

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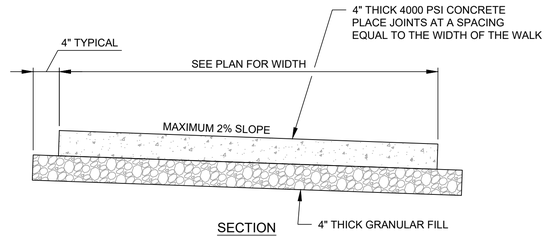


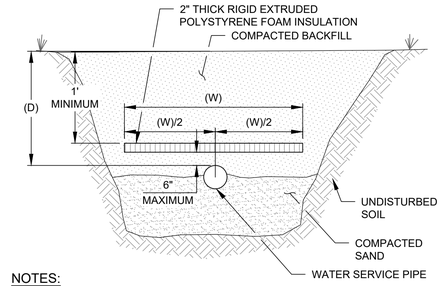
SECTION

NOTES:

1. PROVIDE 3/4" FIBER EXPANSION JOINT WHERE NEW WALK ABUTS EXISTING WALK OR CURB.
2. FINISH GRADE ADJACENT TO SIDEWALK - 1/2" TO 1" BELOW TOP OF SIDEWALK.

5 CONCRETE SIDEWALK DETAIL

NOT TO SCALE



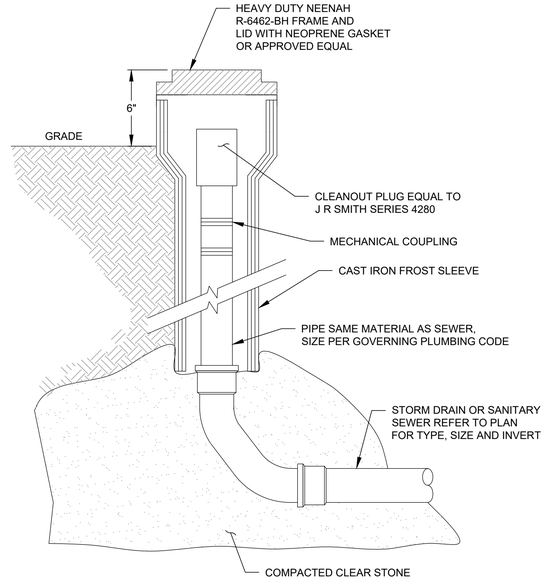
NOTES:

1. WHERE TOP OF WATER SERVICE PIPE IS LOCATED LESS THAN 6'-0" BELOW THE GROUND SURFACE OR STORM SEWER CROSSES ABOVE MAIN OR LATERAL PROVIDE INSULATION AS SHOWN ON DETAIL.

WATER SERVICE DEPTH (D)	2'-0"	2'-6"	3'-0"	3'-6"	4'-0" TO 6'-0"	MORE THAN 6'-0"
INSULATION WIDTH (W)	8'-0"	7'-0"	6'-0"	5'-0"	4'-0"	0'-0"

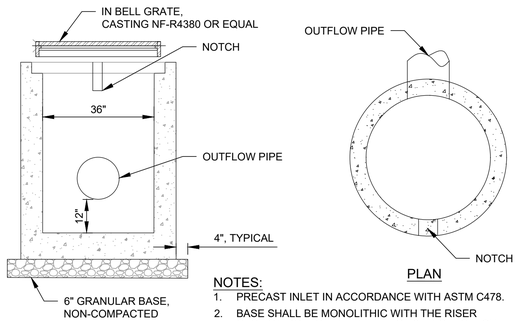
1 WATER LINE INSULATION DETAIL

NOT TO SCALE



6 CLEANOUT DETAIL

NOT TO SCALE



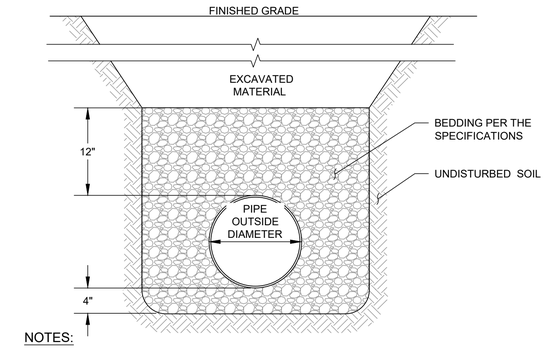
NOTES:

1. PRECAST INLET IN ACCORDANCE WITH ASTM C478.
2. BASE SHALL BE MONOLITHIC WITH THE RISER SECTION BOTTOM A MINIMUM OF 24 INCHES HIGH.
3. COVER SHALL BE RATED FOR HS-20 LOADING.

	RIM ELEVATION	NOTCH WIDTH	NOTCH INVERT ELEVATION	OUTFLOW PIPE SIZE	OUTFLOW PIPE INVERT ELEVATION
CB-1	1025.50	3"	1025.25	12"	1024.00
CB-2	1017.50	1.5"	1017.25	12"	1015.00

7 DRY POND CATCH BASIN DETAIL

NOT TO SCALE

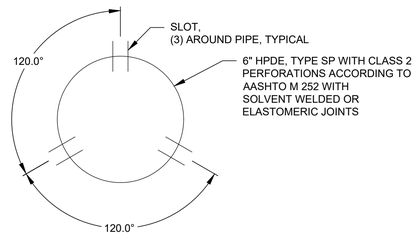


NOTES:

1. BOTTOM OF TRENCH SHALL BE THE PIPE OUTSIDE DIAMETER PLUS 16 INCHES.

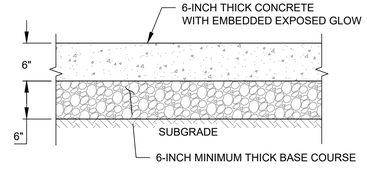
2 PVC PIPE BEDDING DETAIL

NOT TO SCALE



3 DRAIN TILE DETAIL

NOT TO SCALE



SECTION

NOTES:

1. PROVIDE 3/4" FIBER EXPANSION JOINT WHERE NEW PAVEMENT ABUTS EXISTING CONCRETE PAVEMENT, OR CURB.

4 CONCRETE APRON PAVEMENT DETAIL

NOT TO SCALE

Saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE DETAILS

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	8/1/2025
Sheet Number	C501

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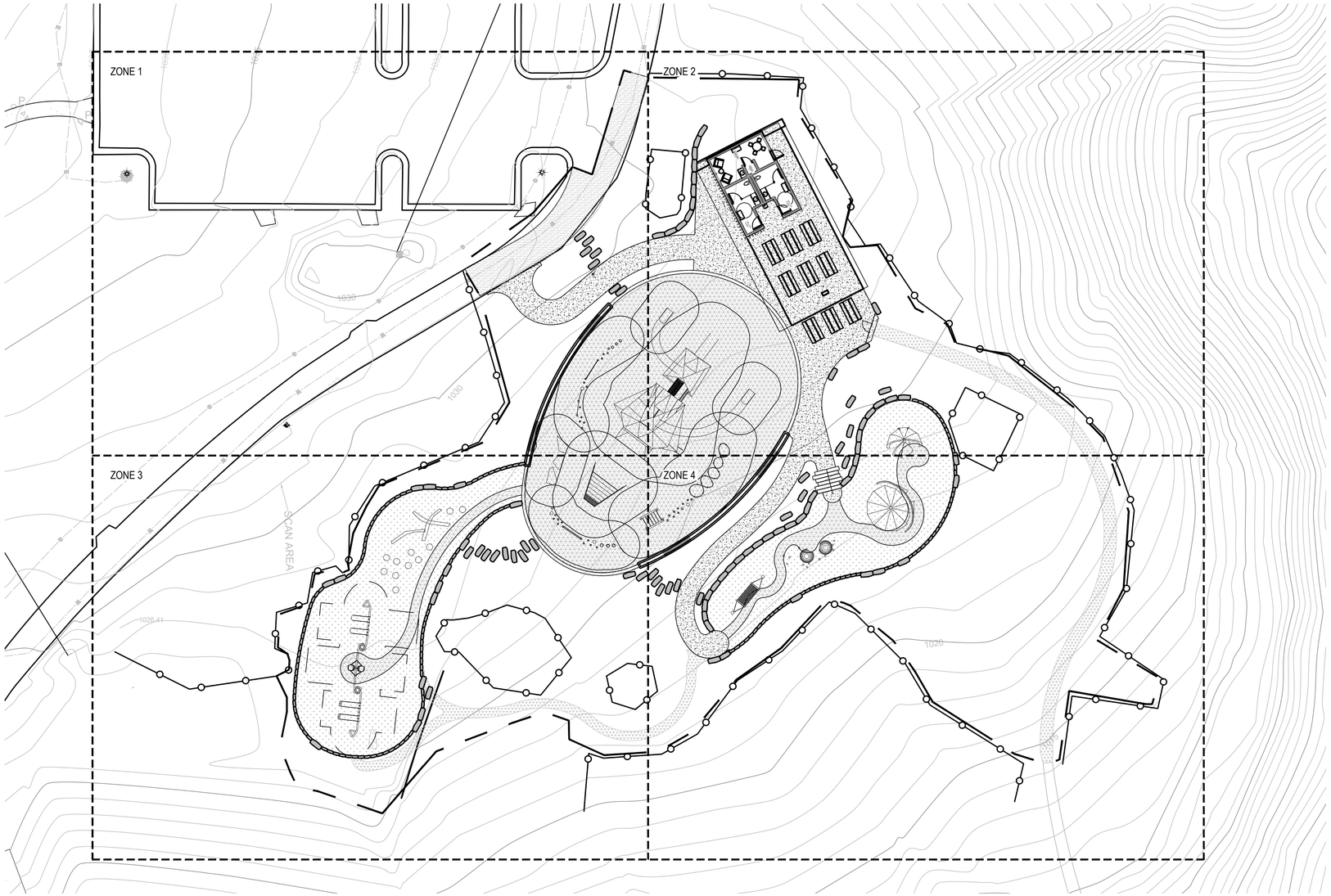
NOTES

1. FIELD VERIFY SURVEY INFORMATION, EXISTING SITE CONDITIONS, AND UTILITIES PRIOR TO STARTING WORK. REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE.
2. CONTACT IOWA ONE CALL TO LOCATE ALL UTILITIES PRIOR TO STARTING WORK.
3. VERIFY ALL DIMENSIONS IN FIELD. ANY DEVIATION FROM OR MODIFICATIONS OF LAYOUT AND DIMENSIONS SHOWN ON THIS PLAN SHALL REQUIRE APPROVAL BY THE OWNER'S REPRESENTATIVE.
4. CONTRACTOR IS RESPONSIBLE FOR STAKING SITE FOR HORIZONTAL AND VERTICAL ALIGNMENT.
5. CONTRACTOR SHALL ARRANGE FOR LAYOUT APPROVAL WITH OWNER'S REPRESENTATIVE PROVIDING A MINIMUM OF TWO (2) WORKING DAYS NOTICE PRIOR TO ANY EXECUTION OF WORK.
6. PROTECT ALL EXISTING SITE FEATURES: PAVING, FURNISHINGS, LANDSCAPING, ETC. TO REMAIN FROM CONSTRUCTION ACTIVITIES. REPLACE IN KIND AND QUANTITY ANY EXISTING SITE FEATURES, INCLUDING THOSE BEYOND PROJECT LIMITS SHOWN ON PLANS, DAMAGED BY CONSTRUCTION RELATED ACTIVITIES AT COMPLETION OF WORK TO PRE-DISTURBANCE STANDARDS AT NO ADDITIONAL COST TO OWNER.
7. CONCRETE CONTROL JOINTS SHOWN FOR DESIGN INTENT. PLACE ALL JOINTS PER PLAN. SEE SECTION 32 10 00 - PAVING FOR ADDITIONAL INFORMATION.
8. PROVIDE FINISHED COLD JOINT WHERE NEW CONCRETE TIES INTO EXISTING CONCRETE. ENSURE FLUSH TRANSITION BETWEEN WEARING SURFACES.
9. ALL WORK IN CITY RIGHT OF WAY SHALL CONFORM TO CITY STANDARDS, SPECIFICATIONS, PERMITTING, AND ORDINANCES.
10. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
11. IDENTIFICATION OF PREFABRICATED PLAY EQUIPMENT FALL ZONES ARE THE RESPONSIBILITY OF THE MANUFACTURER. APPROPRIATE LAYOUT OF THE PLAY EQUIPMENT TO ENSURE FALL ZONE PROTECTION IS THE RESPONSIBILITY OF THE MANUFACTURER.



1 SITE PLAN OVERVIEW
SCALE: 1" = 20'-0"

0 20' 40'
1" = 20'-0"

NORTH

LEGEND

- PROJECT LIMITS
- TREE PROTECTION FENCE
- PLAY EQUIPMENT FALL ZONE
- STANDARD CONCRETE
- STANDARD CONCRETE WITH GLOW STONES - YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
- POURED IN PLACE RUBBER SURFACING
- ENGINEERED WOOD FIBER
- MULCH PATH
- STANDARD ASPHALT PAVEMENT

REFERENCE SCHEDULE

1. MATCH INTO EXISTING ASPHALT PAVEMENT
2. STANDARD CONCRETE PAVING - 1/L501
3. STANDARD CONCRETE PAVING WITH GLOW STONES - 1/L501 (YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
4. PIP SURFACING OVER TYPE 1 BASE - 4/L501 (11 COLOR MIXES, 1-3 COLORS PER MIX, SEE 3/L502)
5. PIP SURFACING OVER TYPE 2 BASE - 6/L501 (1 COLOR MIX, 3 COLORS PER MIX)
6. WOOD CHIP PATH - 5/L501
7. MATCH INTO EXISTING WOOD CHIP PATH
8. ENGINEERED WOOD FIBER - 2/L501
9. CONCRETE STAIR WITH PRECAST TREADS AND HANDRAIL - 1/L502
10. CAST-IN-PLACE CONCRETE SEAT WALL WITH PRECAST CAP - 7/L501
11. WOOD BENCH TOP - 6/L501
12. STONE TYPE 1 WALL - 1/L503
13. STONE TYPE 1 SCRAMBLE - 2/L503
14. OFOI PICNIC TABLE
15. SWING SET & FALL ZONE - 2/L502
16. OFOI MONSTRUM PLAY ELEMENTS
17. OFOI SALVAGED STUMPS
18. OFOI SALVAGED LOGS
19. STONE TYPE 2 EDGE - 2/L501
20. STONE TYPE 1 SEAT - 3/L503
21. STANDARD ASPHALT PAVEMENT
22. CUSTOM METAL FENCE AND GATE - 4/L503

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Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE PLAN OVERVIEW

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L100

NOTES

1. FIELD VERIFY SURVEY INFORMATION, EXISTING SITE CONDITIONS, AND UTILITIES PRIOR TO STARTING WORK. REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE.
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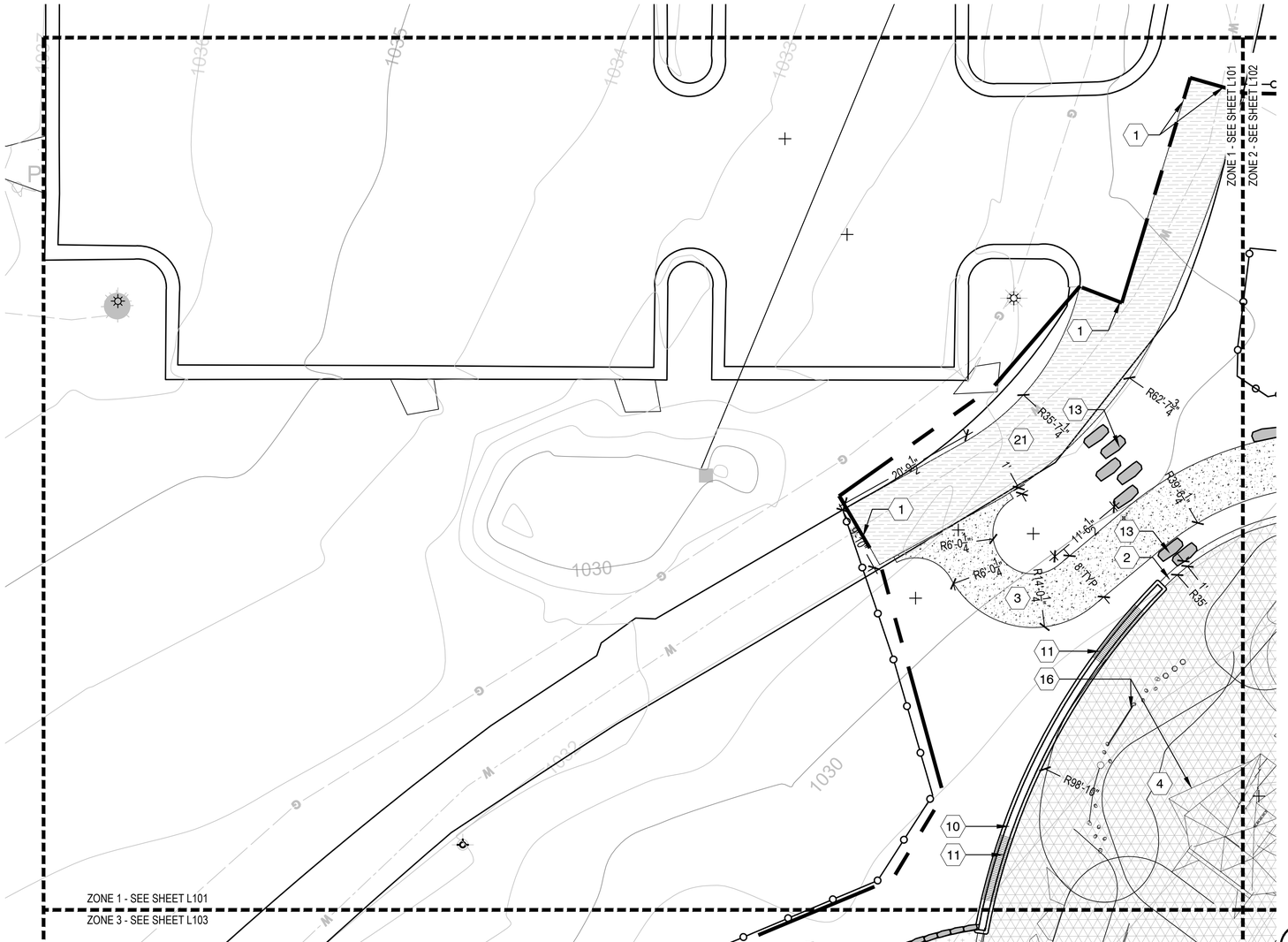

1 SITE PLAN ZONE 1
SCALE: 1" = 10'-0"

LEGEND

- PROJECT LIMITS
- TREE PROTECTION FENCE
- PLAY EQUIPMENT FALL ZONE
- STANDARD CONCRETE
- STANDARD CONCRETE WITH GLOW STONES - YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
- POURED IN PLACE RUBBER SURFACING
- ENGINEERED WOOD FIBER
- MULCH PATH
- STANDARD ASPHALT PAVEMENT

REFERENCE SCHEDULE

1. MATCH INTO EXISTING ASPHALT PAVEMENT
2. STANDARD CONCRETE PAVING - 1/L501
3. STANDARD CONCRETE PAVING WITH GLOW STONES - 1/L501 (YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
4. PIP SURFACING OVER TYPE 1 BASE - 4/L501 (11 COLOR MIXES, 1-3 COLORS PER MIX, SEE 3/L502)
5. PIP SURFACING OVER TYPE 2 BASE - 6/L501 (1 COLOR MIX, 3 COLORS PER MIX)
6. WOOD CHIP PATH - 5/L501
7. MATCH INTO EXISTING WOOD CHIP PATH
8. ENGINEERED WOOD FIBER - 2/L501
9. CONCRETE STAIR WITH PRECAST TREADS AND HANDRAIL - 1/L502
10. CAST-IN-PLACE CONCRETE SEAT WALL WITH PRECAST CAP - 7/L501
11. WOOD BENCH TOP - 6/L501
12. STONE TYPE 1 WALL - 1/L503
13. STONE TYPE 1 SCRAMBLE - 2/L503
14. OFOI PICNIC TABLE
15. SWING SET & FALL ZONE - 2/L502
16. OFOI MONSTRUM PLAY ELEMENTS
17. OFOI SALVAGED STUMPS
18. OFOI SALVAGED LOGS
19. STONE TYPE 2 EDGE - 2/L501
20. STONE TYPE 1 SEAT - 3/L503
21. STANDARD ASPHALT PAVEMENT
22. CUSTOM METAL FENCE AND GATE - 4/L503

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE PLAN ZONE 1

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L101

NOTES

1. FIELD VERIFY SURVEY INFORMATION, EXISTING SITE CONDITIONS, AND UTILITIES PRIOR TO STARTING WORK. REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE.
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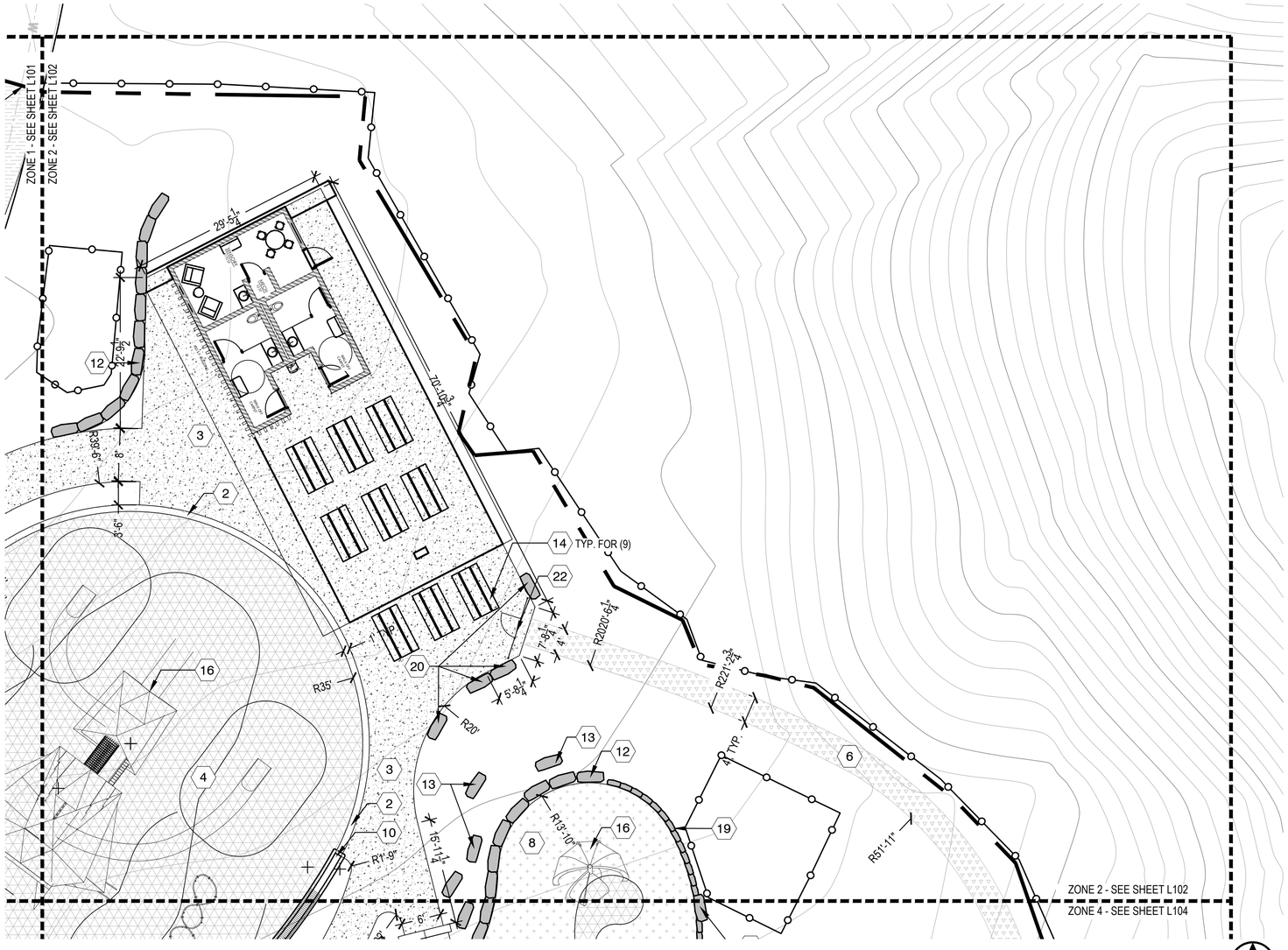

1 SITE PLAN ZONE 2
SCALE: 1" = 10'-0"

0 10' 20'
1" = 10'-0"
NORTH

LEGEND

- PROJECT LIMITS
- TREE PROTECTION FENCE
- PLAY EQUIPMENT FALL ZONE
- STANDARD CONCRETE
- STANDARD CONCRETE WITH GLOW STONES - YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
- POURED IN PLACE RUBBER SURFACING
- ENGINEERED WOOD FIBER
- MULCH PATH
- STANDARD ASPHALT PAVEMENT

REFERENCE SCHEDULE

1. MATCH INTO EXISTING ASPHALT PAVEMENT
2. STANDARD CONCRETE PAVING - 1/L501
3. STANDARD CONCRETE PAVING WITH GLOW STONES - 1/L501 (YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
4. PIP SURFACING OVER TYPE 1 BASE - 4/L501 (11 COLOR MIXES, 1-3 COLORS PER MIX, SEE 3/L502)
5. PIP SURFACING OVER TYPE 2 BASE - 6/L501 (1 COLOR MIX, 3 COLORS PER MIX)
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7. MATCH INTO EXISTING WOOD CHIP PATH
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9. CONCRETE STAIR WITH PRECAST TREADS AND HANDRAIL - 1/L502
10. CAST-IN-PLACE CONCRETE SEAT WALL WITH PRECAST CAP - 7/L501
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12. STONE TYPE 1 WALL - 1/L503
13. STONE TYPE 1 SCRAMBLE - 2/L503
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15. SWING SET & FALL ZONE - 2/L502
16. OFOI MONSTRUM PLAY ELEMENTS
17. OFOI SALVAGED STUMPS
18. OFOI SALVAGED LOGS
19. STONE TYPE 2 EDGE - 2/L501
20. STONE TYPE 1 SEAT - 3/L503
21. STANDARD ASPHALT PAVEMENT
22. CUSTOM METAL FENCE AND GATE - 4/L503

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE PLAN ZONE 2

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L102

NOTES

1. FIELD VERIFY SURVEY INFORMATION, EXISTING SITE CONDITIONS, AND UTILITIES PRIOR TO STARTING WORK. REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE.
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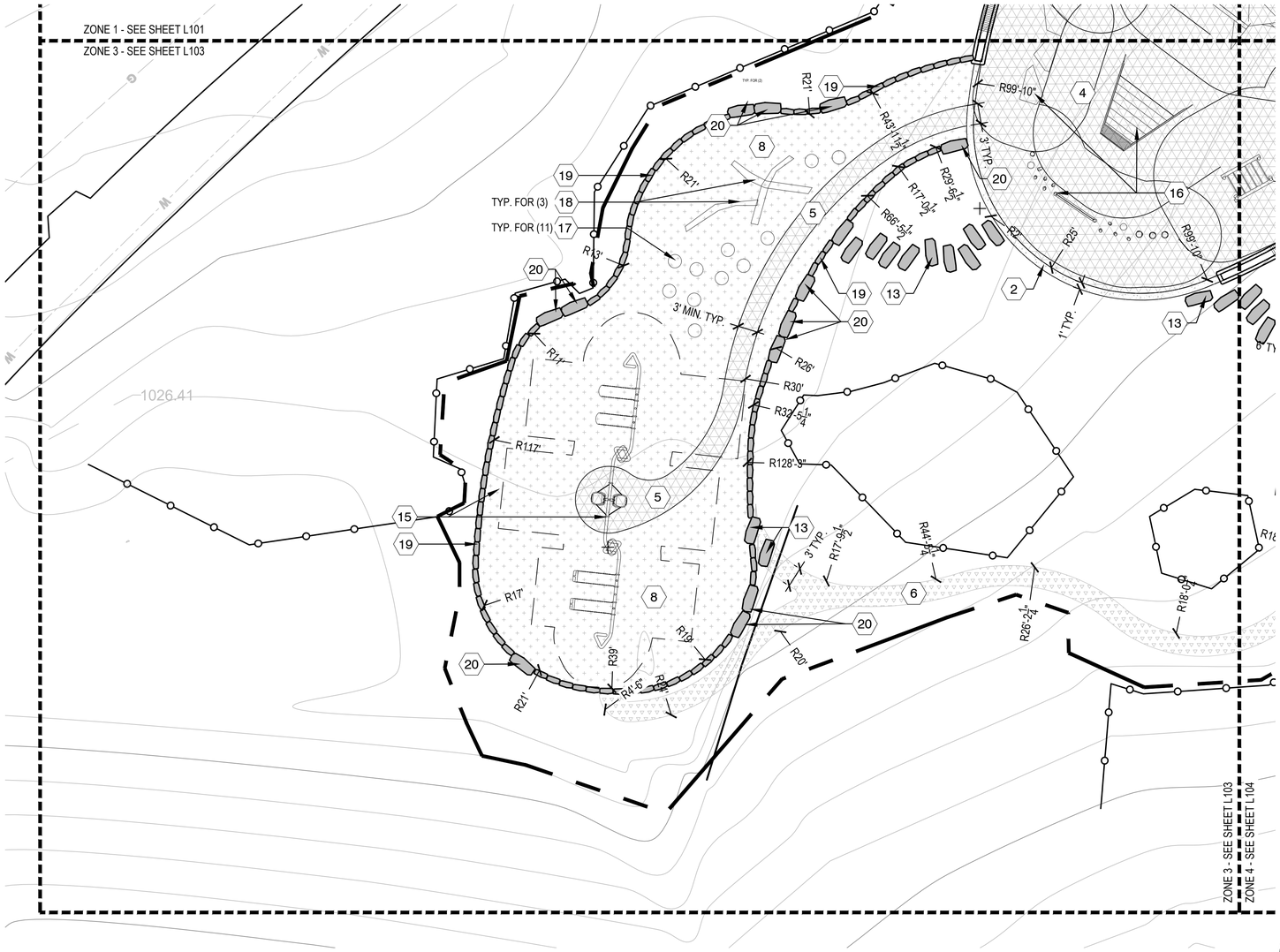


1 SITE PLAN ZONE 3
SCALE: 1" = 10'-0"

0 10' 20'
1" = 10'-0"
NORTH

LEGEND

- PROJECT LIMITS
- TREE PROTECTION FENCE
- PLAY EQUIPMENT FALL ZONE
- STANDARD CONCRETE
- STANDARD CONCRETE WITH GLOW STONES - YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
- POURED IN PLACE RUBBER SURFACING
- ENGINEERED WOOD FIBER
- MULCH PATH
- STANDARD ASPHALT PAVEMENT

REFERENCE SCHEDULE

1. MATCH INTO EXISTING ASPHALT PAVEMENT
2. STANDARD CONCRETE PAVING - 1/L501
3. STANDARD CONCRETE PAVING WITH GLOW STONES - 1/L501 (YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
4. PIP SURFACING OVER TYPE 1 BASE - 4/L501 (11 COLOR MIXES, 1-3 COLORS PER MIX, SEE 3/L502)
5. PIP SURFACING OVER TYPE 2 BASE - 6/L501 (1 COLOR MIX, 3 COLORS PER MIX)
6. WOOD CHIP PATH - 5/L501
7. MATCH INTO EXISTING WOOD CHIP PATH
8. ENGINEERED WOOD FIBER - 2/L501
9. CONCRETE STAIR WITH PRECAST TREADS AND HANDRAIL - 1/L502
10. CAST-IN-PLACE CONCRETE SEAT WALL WITH PRECAST CAP - 7/L501
11. WOOD BENCH TOP - 6/L501
12. STONE TYPE 1 WALL - 1/L503
13. STONE TYPE 1 SCRAMBLE - 2/L503
14. OFOI PICNIC TABLE
15. SWING SET & FALL ZONE - 2/L502
16. OFOI MONSTRUM PLAY ELEMENTS
17. OFOI SALVAGED STUMPS
18. OFOI SALVAGED LOGS
19. STONE TYPE 2 EDGE - 2/L501
20. STONE TYPE 1 SEAT - 3/L503
21. STANDARD ASPHALT PAVEMENT
22. CUSTOM METAL FENCE AND GATE - 4/L503

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE PLAN ZONE 3

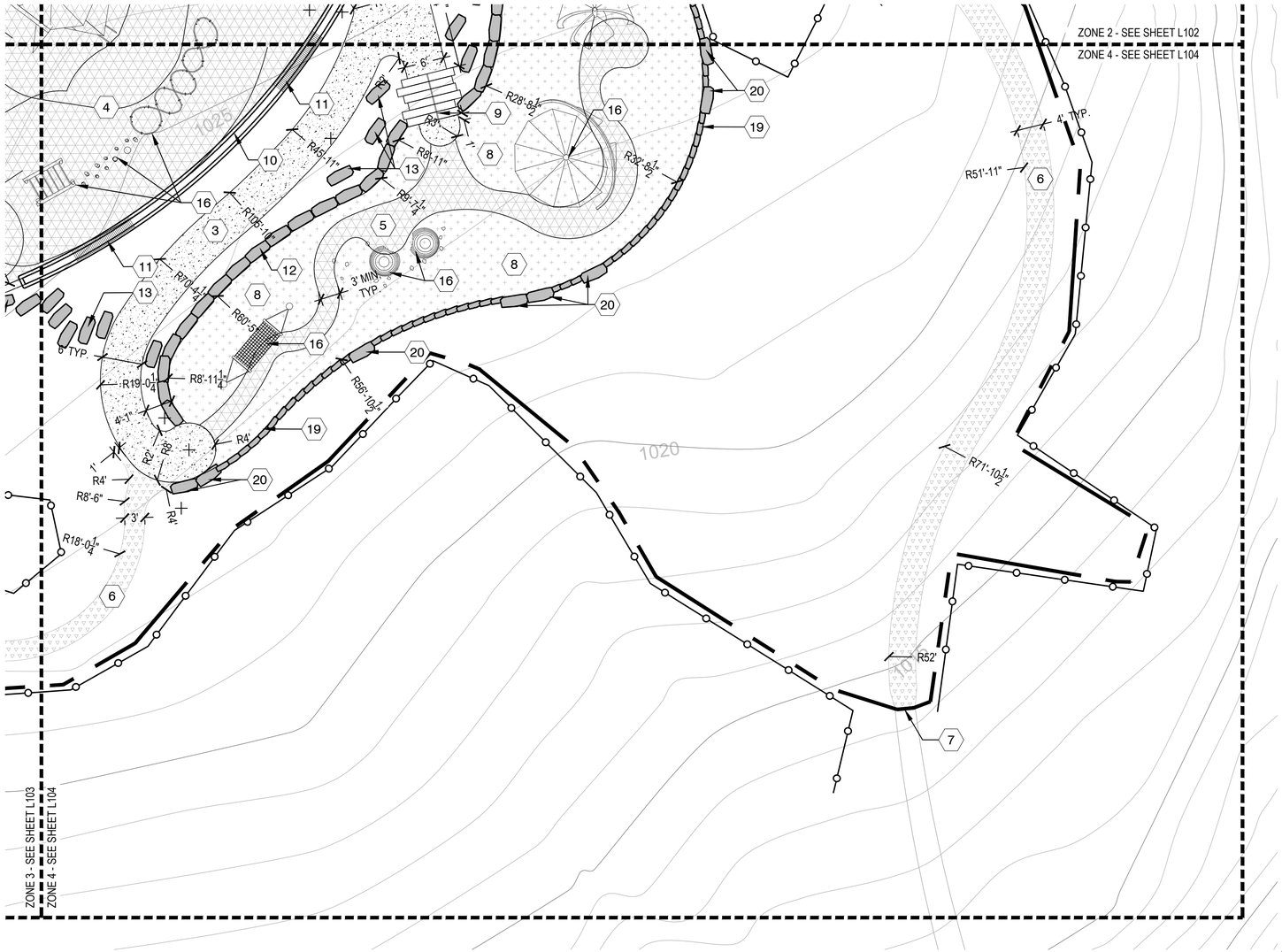
Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L103

NOTES

1. FIELD VERIFY SURVEY INFORMATION, EXISTING SITE CONDITIONS, AND UTILITIES PRIOR TO STARTING WORK. REPORT ANY DISCREPANCIES TO OWNER'S REPRESENTATIVE.
2. CONTACT IOWA ONE CALL TO LOCATE ALL UTILITIES PRIOR TO STARTING WORK.
3. VERIFY ALL DIMENSIONS IN FIELD. ANY DEVIATION FROM OR MODIFICATIONS OF LAYOUT AND DIMENSIONS SHOWN ON THIS PLAN SHALL REQUIRE APPROVAL BY THE OWNER'S REPRESENTATIVE.
4. CONTRACTOR IS RESPONSIBLE FOR STAKING SITE FOR HORIZONTAL AND VERTICAL ALIGNMENT.
5. CONTRACTOR SHALL ARRANGE FOR LAYOUT APPROVAL WITH OWNER'S REPRESENTATIVE PROVIDING A MINIMUM OF TWO (2) WORKING DAYS NOTICE PRIOR TO ANY EXECUTION OF WORK.
6. PROTECT ALL EXISTING SITE FEATURES: PAVING, FURNISHINGS, LANDSCAPING, ETC. TO REMAIN FROM CONSTRUCTION ACTIVITIES. REPLACE IN KIND AND QUANTITY ANY EXISTING SITE FEATURES, INCLUDING THOSE BEYOND PROJECT LIMITS SHOWN ON PLANS, DAMAGED BY CONSTRUCTION RELATED ACTIVITIES AT COMPLETION OF WORK TO PRE-DISTURBANCE STANDARDS AT NO ADDITIONAL COST TO OWNER.
7. CONCRETE CONTROL JOINTS SHOWN FOR DESIGN INTENT. PLACE ALL JOINTS PER PLAN. SEE SECTION 32 10 00 - PAVING FOR ADDITIONAL INFORMATION.
8. PROVIDE FINISHED COLD JOINT WHERE NEW CONCRETE TIES INTO EXISTING CONCRETE. ENSURE FLUSH TRANSITION BETWEEN WEARING SURFACES.
9. ALL WORK IN CITY RIGHT OF WAY SHALL CONFORM TO CITY STANDARDS, SPECIFICATIONS, PERMITTING, AND ORDINANCES.
10. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
11. IDENTIFICATION OF PREFABRICATED PLAY EQUIPMENT FALL ZONES ARE THE RESPONSIBILITY OF THE MANUFACTURER. APPROPRIATE LAYOUT OF THE PLAY EQUIPMENT TO ENSURE FALL ZONE PROTECTION IS THE RESPONSIBILITY OF THE MANUFACTURER.



LEGEND

- PROJECT LIMITS
- TREE PROTECTION FENCE
- PLAY EQUIPMENT FALL ZONE
- STANDARD CONCRETE
- STANDARD CONCRETE WITH GLOW STONES - YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
- POURED IN PLACE RUBBER SURFACING
- ENGINEERED WOOD FIBER
- MULCH PATH
- STANDARD ASPHALT PAVEMENT

REFERENCE SCHEDULE

1. MATCH INTO EXISTING ASPHALT PAVEMENT
2. STANDARD CONCRETE PAVING - 1/L501
3. STANDARD CONCRETE PAVING WITH GLOW STONES - 1/L501 (YERKES STAFF TO FINALIZE GLOW STONE DESIGN AND LAYOUT WITH CONTRACTOR)
4. PIP SURFACING OVER TYPE 1 BASE - 4/L501 (11 COLOR MIXES, 1-3 COLORS PER MIX, SEE 3/L502)
5. PIP SURFACING OVER TYPE 2 BASE - 6/L501 (1 COLOR MIX, 3 COLORS PER MIX)
6. WOOD CHIP PATH - 5/L501
7. MATCH INTO EXISTING WOOD CHIP PATH
8. ENGINEERED WOOD FIBER - 2/L501
9. CONCRETE STAIR WITH PRECAST TREADS AND HANDRAIL - 1/L502
10. CAST-IN-PLACE CONCRETE SEAT WALL WITH PRECAST CAP - 7/L501
11. WOOD BENCH TOP - 6/L501
12. STONE TYPE 1 WALL - 1/L503
13. STONE TYPE 1 SCRAMBLE - 2/L503
14. OFOI PICNIC TABLE
15. SWING SET & FALL ZONE - 2/L502
16. OFOI MONSTRUM PLAY ELEMENTS
17. OFOI SALVAGED STUMPS
18. OFOI SALVAGED LOGS
19. STONE TYPE 2 EDGE - 2/L501
20. STONE TYPE 1 SEAT - 3/L503
21. STANDARD ASPHALT PAVEMENT
22. CUSTOM METAL FENCE AND GATE - 4/L503

1 SITE PLAN ZONE 4
SCALE: 1" = 10'-0"

0 10' 20'
1" = 10'-0"

NORTH

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE PLAN ZONE 4

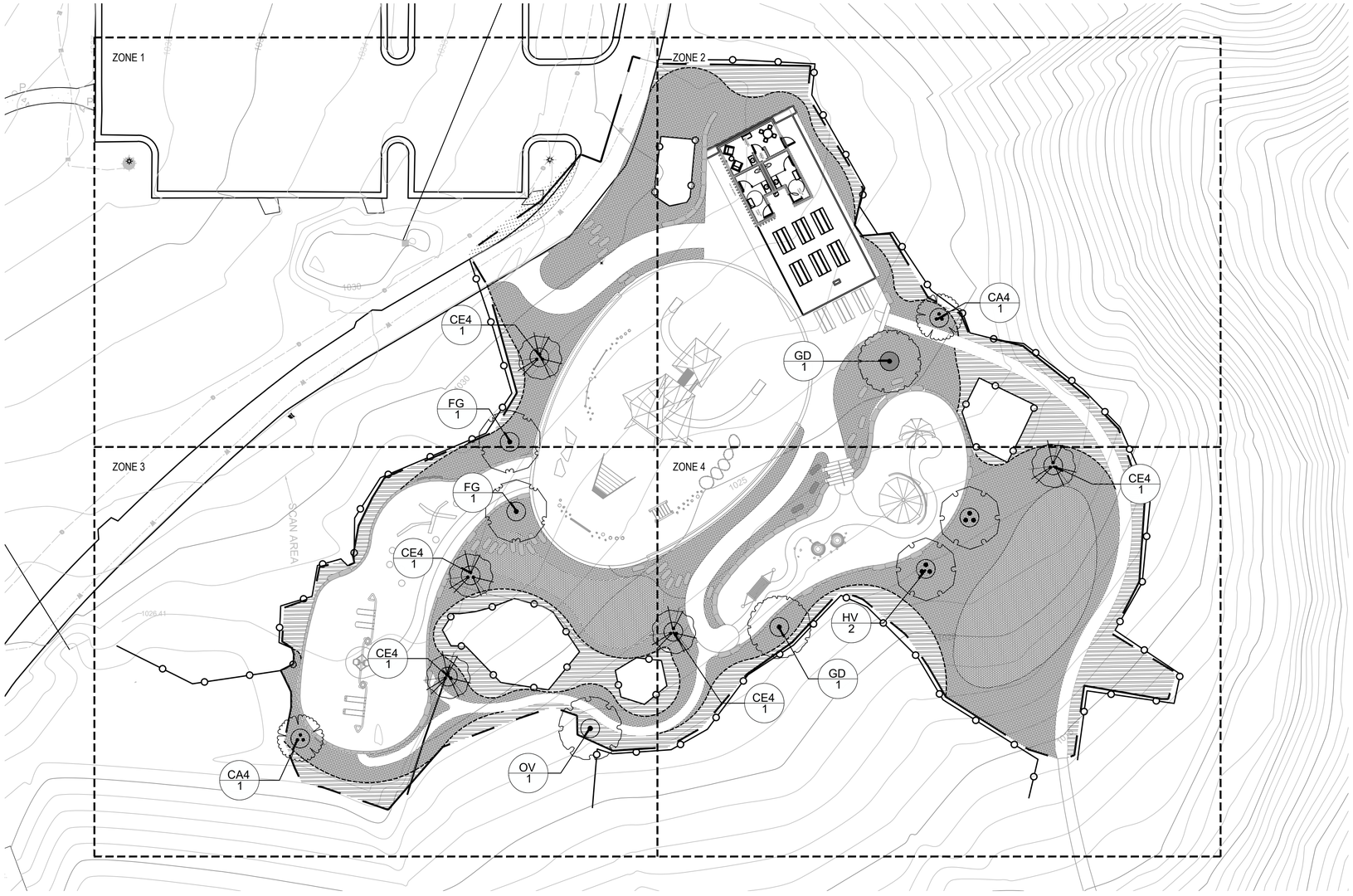
Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L104

PLANT SCHEDULE - TREES

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT.	SIZE	QTY
DECIDUOUS TREES					
	FG	Fagus grandifolia / American Beech	B&B	2.5" Cal (MIN)	2
	GD	Gymnocladus dioicus 'Espresso' / Kentucky Coffeetree	B&B	2.5" Cal (MIN)	2
	OV	Ostrya virginiana / American Hophornbeam	B&B	2.5" Cal (MIN)	1
ORNAMENTAL TREES					
	CE4	Cercis canadensis / Eastern Redbud Multi-trunk	B&B	6` HT. MULTI-STEM	5
	CA4	Cornus alternifolia / Pagoda Dogwood	15 gal	6` HT. MULTI-STEM	2
	HV	Hamamelis virginiana / Common Witch Hazel	B&B	6` HT. MULTI-STEM	2



LEGEND

- PROJECT LIMITS
- LAWN
- NATIVE WOODLAND SEEDING
- MULCHED PLANTING AREA
- BIORETENTION MIX
- SHOVEL CUT EDGE
- MULCHED TREE RING

NOTES

1. FIELD VERIFY SURVEY INFORMATION PRIOR TO START OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO OWNER REPRESENTATIVE.
2. CONTACT DIGGER'S HOTLINE TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO STARTING WORK.
3. FIELD VERIFY ALL EXISTING SITE CONDITIONS AND UTILITIES PRIOR TO STARTING WORK. ANY DAMAGE CAUSED TO UTILITIES, EITHER SHOWN OR NOT, SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.
4. PROTECT ALL BENCHMARKS.
5. PROTECT ALL EXISTING PAVEMENTS, CURBS, UTILITIES, VEGETATION, AND OTHER IMPROVEMENTS (TO REMAIN) FROM CONSTRUCTION ACTIVITIES. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION RELATED ACTIVITIES TO EXISTING CONDITIONS AT COMPLETION OF WORK UNLESS SHOWN OTHERWISE ON PLANS.
6. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
7. RESTORE ANY AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.

1 LANDSCAPE PLAN OVERVIEW
SCALE: 1" = 20'-0"

0 20' 40'
1" = 20'-0"

NORTH

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

LANDSCAPE PLAN OVERVIEW

Revisions:

No.	Date:	Description:

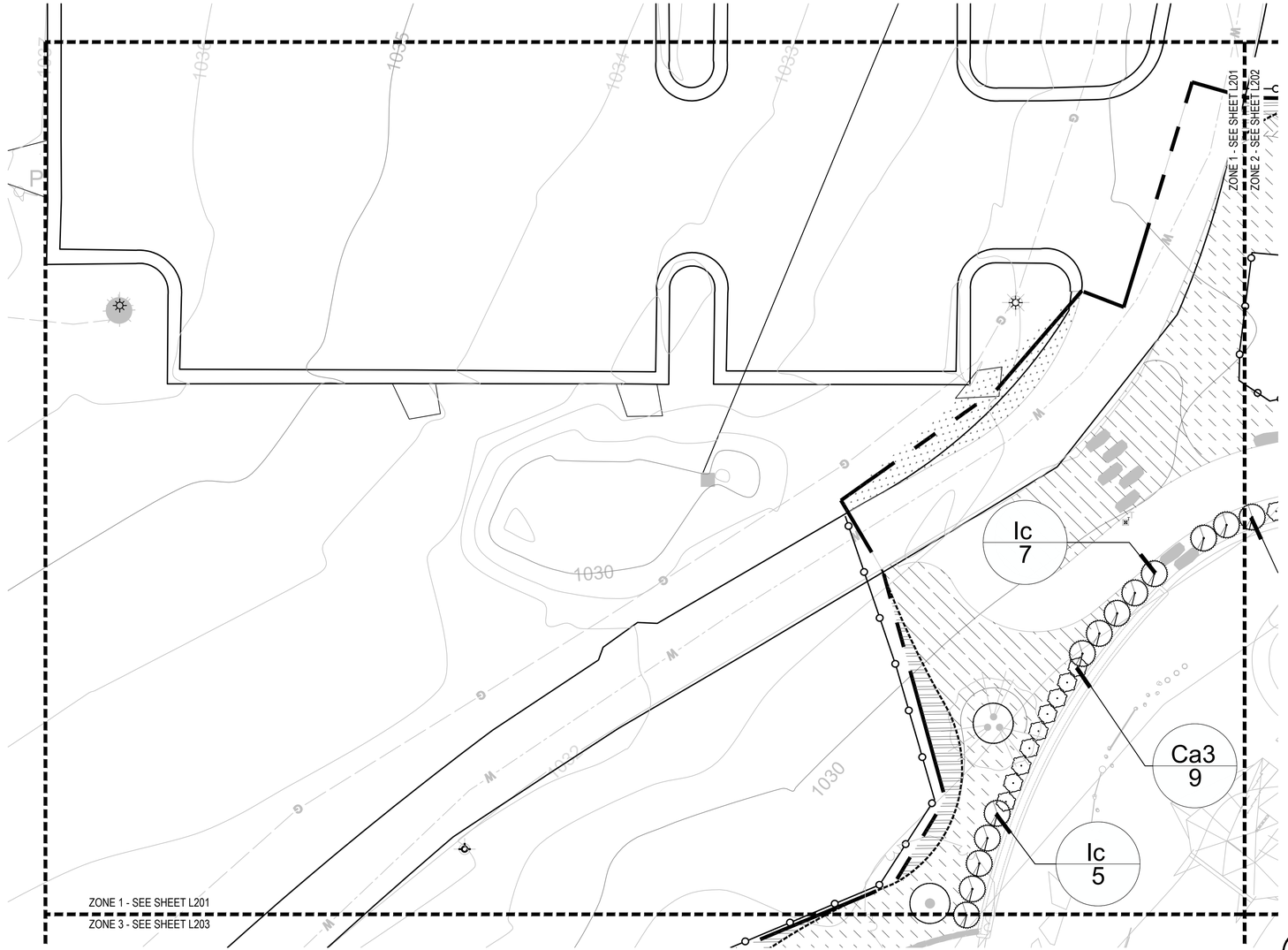
Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L200

LEGEND

- PROJECT LIMITS
- LAWN
- NATIVE WOODLAND SEEDING
- SHOVEL CUT EDGE
- MULCHED TREE RING

NOTES

1. FIELD VERIFY SURVEY INFORMATION PRIOR TO START OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO OWNER REPRESENTATIVE.
2. CONTACT DIGGER'S HOTLINE TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO STARTING WORK.
3. FIELD VERIFY ALL EXISTING SITE CONDITIONS AND UTILITIES PRIOR TO STARTING WORK. ANY DAMAGE CAUSED TO UTILITIES, EITHER SHOWN OR NOT, SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.
4. PROTECT ALL BENCHMARKS.
5. PROTECT ALL EXISTING PAVEMENTS, CURBS, UTILITIES, VEGETATION, AND OTHER IMPROVEMENTS (TO REMAIN) FROM CONSTRUCTION ACTIVITIES. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION RELATED ACTIVITIES TO EXISTING CONDITIONS AT COMPLETION OF WORK UNLESS SHOWN OTHERWISE ON PLANS.
6. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
7. RESTORE ANY AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.



1 PLANTING PLAN ZONE 1
SCALE: 1" = 10'-0"

PLANT SCHEDULE - SHRUBS AND PERENNIAL MIXES

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
DECIDUOUS SHRUBS						
	Ah	Amelanchier humilis / Low Serviceberry	5 gal	24" HT. (MIN.)	84" o.c.	6
	Ca3	Ceanothus americanus / New Jersey Tea	3 gal	18" HT (MIN.)	36" o.c.	38
	Co2	Cephalanthus occidentalis / Buttonbush	3 gal	18" HT (MIN.)	72" o.c.	13
	Ca5	Corylus americana / American Hazelnut	5 gal	18" HT (MIN.)	96" o.c.	2
	Hp	Hypericum prolificum / Shrubby St. John's Wort	3 gal	18" HT (MIN.)	48" o.c.	20
EVERGREEN SHRUBS						
	Ic	Ilex glabra 'Chamzin' / Nordic™ Inkberry Holly	3 gal	18" HT (MIN.)	48" o.c.	18

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
GROUND COVERS						
		PART SHADE MIX				3,290 sf
	Af	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	As	Allium stellatum / Prairie Onion	1 qt	12" HT (MIN.)	7% @ 12" o.c.	238
	Ac	Anemone canadensis / Canadian Anemone	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	An	Antennaria neglecta / Field Pussytoes	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	Ac2	Aquilegia canadensis / Eastern Columbine	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Al	Artemisia ludoviciana / White Sagebrush	1 gal	12" HT (MIN.)	6% @ 18" o.c.	92
	At	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
	Ba	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Cb	Carex bicknellii / Prairie Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ce	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Cg	Carex grayi / Gray's Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ep	Eragrostis pectinacea / Tufted Lovegrass	1 gal	12" HT (MIN.)	5% @ 12" o.c.	171
	Gt	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Lp	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Pv	Pycnanthemum virginianum / Mountain Mint	1 qt	12" HT (MIN.)	6% @ 12" o.c.	205
	Rh	Rudbeckia hirta / Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
		PART SHADE STORMWATER MIX				2,305 sf
	Af2	Agastache foeniculum / Blue Giant Hyssop	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Ac3	Allium cernuum / Nodding Onion	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Cb2	Carex bicknellii / Prairie Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Co	Carex brevior / Oval Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Cs	Carex sprengelii / Sprengel's Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Dm	Dodecatheon meadia / Shooting Star	2 1/2" plug	6" HT. (MIN.)	6% @ 12" o.c.	144
	Ep2	Echinacea purpurea / Coneflower	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Ev	Elymus villosus / Silky Wild Rye	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Lg	Liatris pycnostachya / Prairie Gayfeather	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Mv	Mertensia virginica / Virginia Bluebells	2 1/2" plug	6" HT. (MIN.)	7% @ 12" o.c.	167
	Mb	Monarda fistulosa / Bergamot	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Pl	Penstemon laevigatus / Eastern Smooth Beardtongue	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Rt	Rudbeckia triloba / Brown Eyed Susan	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	So	Solidago ohioensis / Ohio Goldenrod	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Su	Symphyotrichum urophyllum / Arrow-leaved Aster	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Za	Zizia aurea / Golden Alexander	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
		FULL SHADE MIX				2,809 sf
	Aa	Adiantum aethiopicum / Maidenhair Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ac5	Aquilegia canadensis / Eastern Columbine	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ae	Aruncus dioicus / Goat's Beard	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Ac4	Asarum canadense / Wild Ginger	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ae2	Asclepias exaltata / Poke Milkweed	1 qt	12" HT (MIN.)	6% @ 12" o.c.	175
	Al2	Aster lateriflorus / Calico Aster	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Am	Aster macrophyllus / Bigleaf Aster	1 gal	12" HT (MIN.)	6% @ 18" o.c.	77
	Af3	Athyrium filix-femina / Common Lady Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ca	Campanula americana / Tall Bellflower	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ca2	Carex albicans / White-tinged Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Ce2	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp2	Carex plantaginea / Plantain-leaved Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Gm	Geranium maculatum / Spotted Geranium	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ms	Maianthemum stellatum / False Lily of the Valley	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Mp	Matteuccia pennsylvanica / Ostrich Fern	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Pa	Packera aurea / Golden Groundsel	1 qt	12" HT (MIN.)	5% @ 12" o.c.	145
	Ph	Penstemon hirsutus / Hairy Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
		FULL SUN MIX				2,099 sf
	Af4	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ac6	Allium cernuum / Nodding Onion	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Al2	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ba3	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	Bc	Bouteloua curtipendula / Side Oats Grama	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ce3	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Cp3	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Ep3	Echinacea purpurea / Coneflower	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ey	Eryngium yuccifolium / Rattlesnake Master	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Gt2	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	132
	Lg2	Liatris pycnostachya / Prairie Gayfeather	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Lp2	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Pd	Penstemon digitalis / Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Rs	Rudbeckia subtomentosa / Sweet Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	So2	Solidago ohioensis / Ohio Goldenrod	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Sh	Sporobolus heterolepis / Prairie Dropseed	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

LANDSCAPE PLAN ZONE 1

Revisions:

No.	Date:	Description:

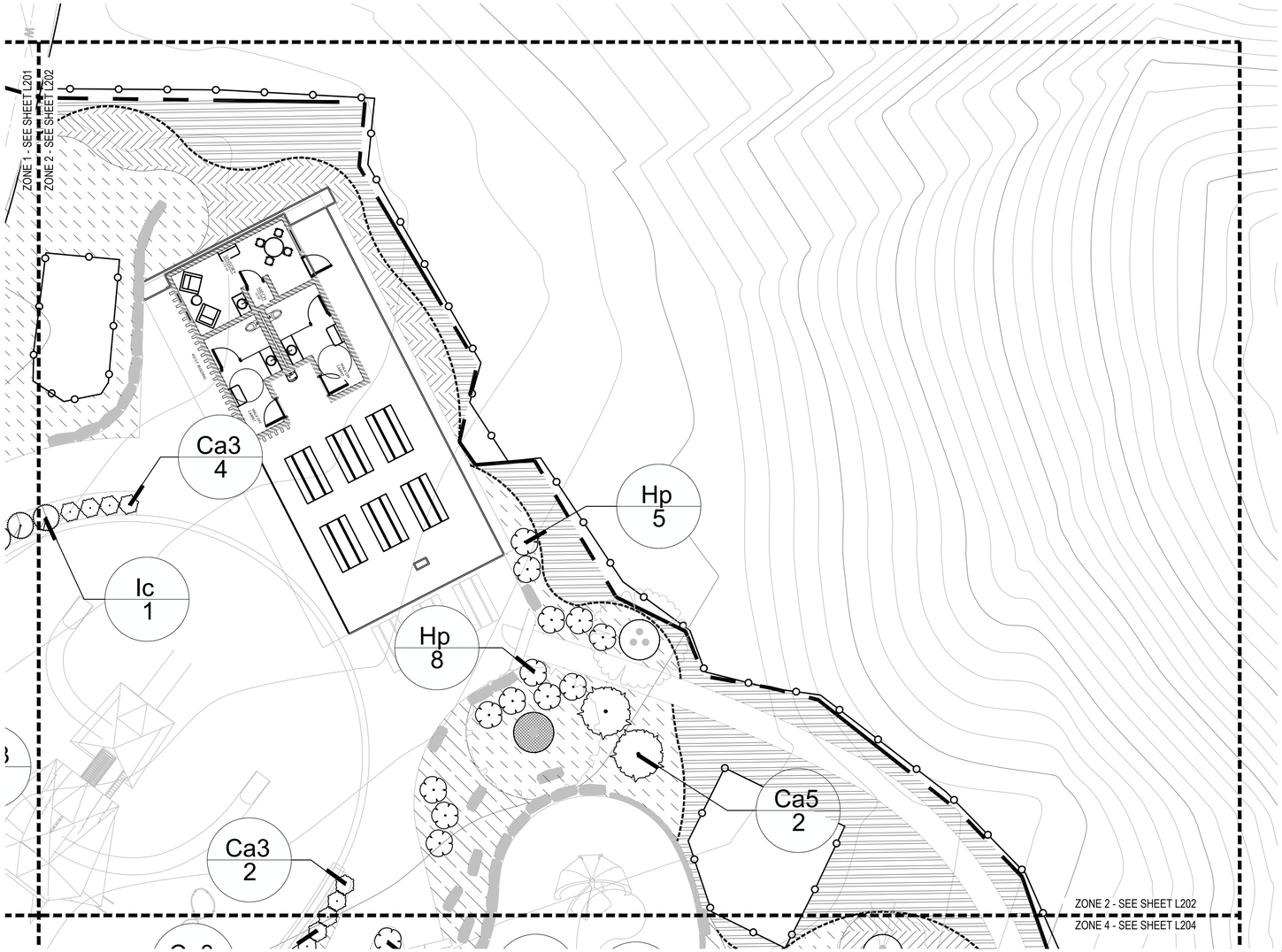
Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L201

LEGEND

- PROJECT LIMITS
- LAWN
- NATIVE WOODLAND SEEDING
- SHOVEL CUT EDGE
- MULCHED TREE RING

NOTES

1. FIELD VERIFY SURVEY INFORMATION PRIOR TO START OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO OWNER REPRESENTATIVE.
2. CONTACT DIGGER'S HOTLINE TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO STARTING WORK.
3. FIELD VERIFY ALL EXISTING SITE CONDITIONS AND UTILITIES PRIOR TO STARTING WORK. ANY DAMAGE CAUSED TO UTILITIES, EITHER SHOWN OR NOT, SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.
4. PROTECT ALL BENCHMARKS.
5. PROTECT ALL EXISTING PAVEMENTS, CURBS, UTILITIES, VEGETATION, AND OTHER IMPROVEMENTS (TO REMAIN) FROM CONSTRUCTION ACTIVITIES. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION RELATED ACTIVITIES TO EXISTING CONDITIONS AT COMPLETION OF WORK UNLESS SHOWN OTHERWISE ON PLANS.
6. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
7. RESTORE ANY AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.



1 PLANTING PLAN ZONE 2
SCALE: 1" = 10'-0"

0 10' 20'
1" = 10'-0"

PLANT SCHEDULE - SHRUBS AND PERENNIAL MIXES

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
DECIDUOUS SHRUBS						
	Ah	Amelanchier humilis / Low Serviceberry	5 gal	24" HT. (MIN.)	84" o.c.	6
	Ca3	Ceanothus americanus / New Jersey Tea	3 gal	18" HT (MIN.)	36" o.c.	38
	Co2	Cephalanthus occidentalis / Buttonbush	3 gal	18" HT (MIN.)	72" o.c.	13
	Ca5	Corylus americana / American Hazelnut	5 gal	18" HT (MIN.)	96" o.c.	2
	Hp	Hypericum prolificum / Shrubby St. John's Wort	3 gal	18" HT (MIN.)	48" o.c.	20
EVERGREEN SHRUBS						
	Ic	Ilex glabra 'Chamzin' / Nordic™ Inkberry Holly	3 gal	18" HT (MIN.)	48" o.c.	18
SYMBOL	**CODE**	**BOTANICAL / COMMON NAME**	**CONT**	**SIZE**	**SPACING**	**QTY**
GROUND COVERS						
		PART SHADE MIX				3,290 sf
	Af	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	As	Allium stellatum / Prairie Onion	1 qt	12" HT (MIN.)	7% @ 12" o.c.	238
	Ac	Anemone canadensis / Canadian Anemone	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	An	Antennaria neglecta / Field Pussytoes	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	Ac2	Aquilegia canadensis / Eastern Columbine	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Al	Artemisia ludoviciana / White Sagebrush	1 gal	12" HT (MIN.)	6% @ 18" o.c.	92
	At	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
	Ba	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Cb	Carex bicknellii / Prairie Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ce	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Cg	Carex grayi / Gray's Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ep	Eragrostis pectinacea / Tufted Lovegrass	1 gal	12" HT (MIN.)	5% @ 12" o.c.	171
	Gt	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Lp	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Pv	Pycnanthemum virginianum / Mountain Mint	1 qt	12" HT (MIN.)	6% @ 12" o.c.	205
	Rh	Rudbeckia hirta / Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
		PART SHADE STORMWATER MIX				2,305 sf
	Af2	Agastache foeniculum / Blue Giant Hyssop	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Ac3	Allium cernuum / Nodding Onion	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Cb2	Carex bicknellii / Prairie Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Co	Carex brevior / Oval Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Cs	Carex sprengelii / Sprengel's Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Dm	Dodecatheon meadia / Shooting Star	2 1/2" plug	6" HT. (MIN.)	6% @ 12" o.c.	144
	Ep2	Echinacea purpurea / Coneflower	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Ev	Elymus villosus / Silky Wild Rye	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Lg	Liatris pycnostachya / Prairie Gayfeather	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Mv	Mertensia virginica / Virginia Bluebells	2 1/2" plug	6" HT. (MIN.)	7% @ 12" o.c.	167
	Mb	Monarda fistulosa / Bergamot	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Pl	Penstemon laevigatus / Eastern Smooth Beardtongue	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Rt	Rudbeckia triloba / Brown Eyed Susan	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	So	Solidago ohioensis / Ohio Goldenrod	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Su	Symphyotrichum urophyllum / Arrow-leaved Aster	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Za	Zizia aurea / Golden Alexander	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
		FULL SHADE MIX				2,809 sf
	Aa	Adiantum aethiopicum / Maidenhair Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ac5	Aquilegia canadensis / Eastern Columbine	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ae	Aruncus dioicus / Goat's Beard	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Ac4	Asarum canadense / Wild Ginger	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ae2	Asclepias exaltata / Poke Milkweed	1 qt	12" HT (MIN.)	6% @ 12" o.c.	175
	Al2	Aster lateriflorus / Calico Aster	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Am	Aster macrophyllus / Bigleaf Aster	1 gal	12" HT (MIN.)	6% @ 18" o.c.	77
	Af3	Athyrium filix-femina / Common Lady Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ca	Campanula americana / Tall Bellflower	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ca2	Carex albicans / White-tinged Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Ce2	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp2	Carex plantaginea / Plantain-leaved Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Gm	Geranium maculatum / Spotted Geranium	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ms	Maianthemum stellatum / False Lily of the Valley	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Mp	Matteuccia pennsylvanica / Ostrich Fern	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Pa	Packera aurea / Golden Groundsel	1 qt	12" HT (MIN.)	5% @ 12" o.c.	145
	Ph	Penstemon hirsutus / Hairy Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
		FULL SUN MIX				2,099 sf
	Af4	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ac6	Allium cernuum / Nodding Onion	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	At2	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ba3	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	Bc	Bouteloua curtipendula / Side Oats Grama	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ce3	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Cp3	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Ep3	Echinacea purpurea / Coneflower	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ey	Eryngium yuccifolium / Rattlesnake Master	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Gt2	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	132
	Lg2	Liatris pycnostachya / Prairie Gayfeather	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Lp2	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Pd	Penstemon digitalis / Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Rs	Rudbeckia subtomentosa / Sweet Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	So2	Solidago ohioensis / Ohio Goldenrod	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Sh	Sporobolus heterolepis / Prairie Dropseed	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

LANDSCAPE PLAN ZONE 2

Revisions:

No.	Date:	Description:

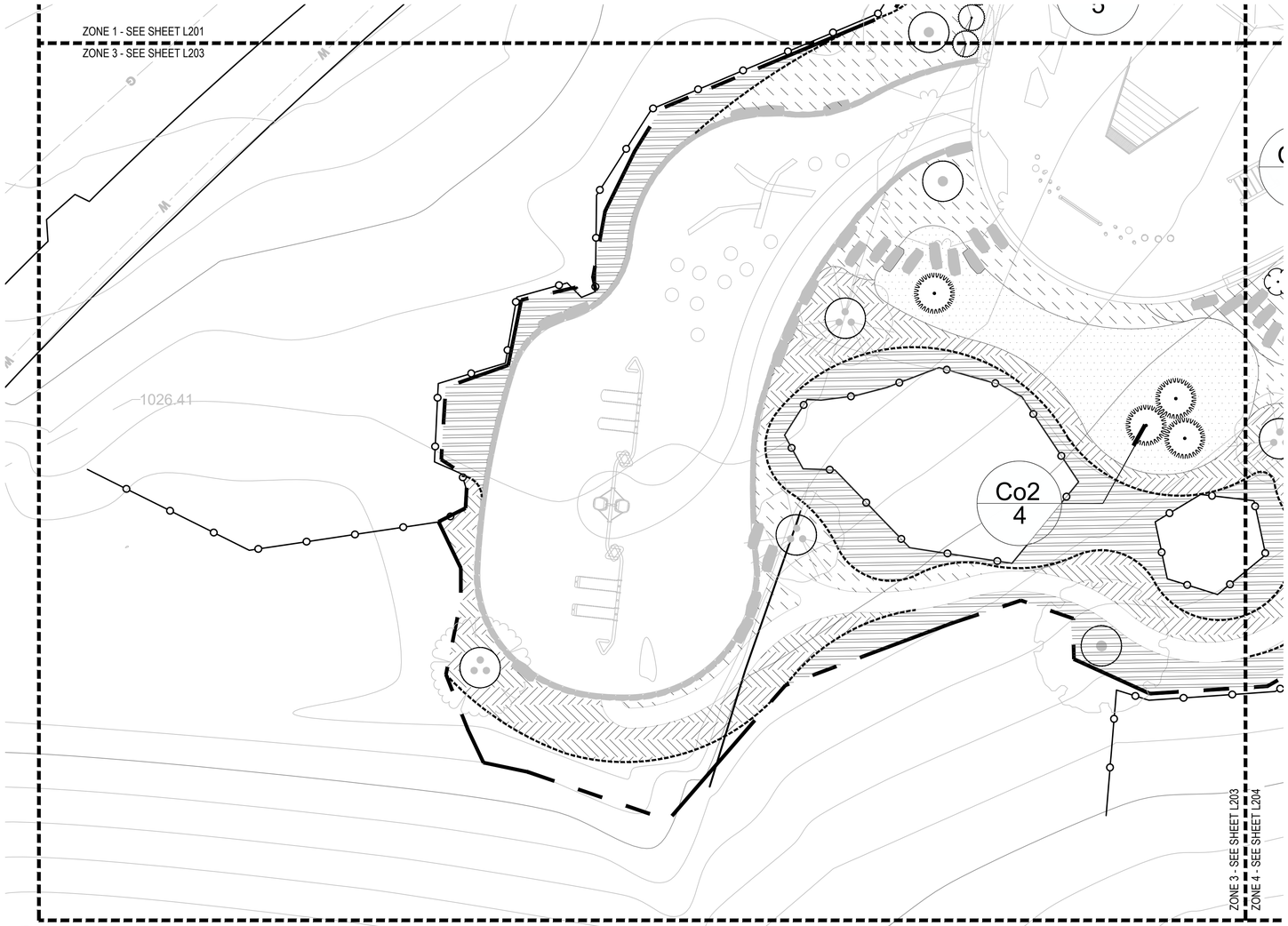
Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L202

LEGEND

- PROJECT LIMITS
- LAWN
- NATIVE WOODLAND SEEDING
- SHOVEL CUT EDGE
- MULCHED TREE RING

NOTES

1. FIELD VERIFY SURVEY INFORMATION PRIOR TO START OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO OWNER REPRESENTATIVE.
2. CONTACT DIGGER'S HOTLINE TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO STARTING WORK.
3. FIELD VERIFY ALL EXISTING SITE CONDITIONS AND UTILITIES PRIOR TO STARTING WORK. ANY DAMAGE CAUSED TO UTILITIES, EITHER SHOWN OR NOT, SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.
4. PROTECT ALL BENCHMARKS.
5. PROTECT ALL EXISTING PAVEMENTS, CURBS, UTILITIES, VEGETATION, AND OTHER IMPROVEMENTS (TO REMAIN) FROM CONSTRUCTION ACTIVITIES. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION RELATED ACTIVITIES TO EXISTING CONDITIONS AT COMPLETION OF WORK UNLESS SHOWN OTHERWISE ON PLANS.
6. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
7. RESTORE ANY AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.



1 PLANTING PLAN ZONE 3
SCALE: 1" = 10'-0"

0 10' 20'
1" = 10'-0"

NORTH

PLANT SCHEDULE - SHRUBS AND PERENNIAL MIXES

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
DECIDUOUS SHRUBS						
	Ah	Amelanchier humilis / Low Serviceberry	5 gal	24" HT. (MIN.)	84" o.c.	6
	Ca3	Ceanothus americanus / New Jersey Tea	3 gal	18" HT (MIN.)	36" o.c.	38
	Co2	Cephalanthus occidentalis / Buttonbush	3 gal	18" HT (MIN.)	72" o.c.	13
	Ca5	Corylus americana / American Hazelnut	5 gal	18" HT (MIN.)	96" o.c.	2
	Hp	Hypericum prolificum / Shrubby St. John's Wort	3 gal	18" HT (MIN.)	48" o.c.	20
EVERGREEN SHRUBS						
	Ic	Ilex glabra 'Chamzin' / Nordic™ Inkberry Holly	3 gal	18" HT (MIN.)	48" o.c.	18

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
GROUND COVERS						
		PART SHADE MIX				3,290 sf
	Af	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	As	Allium stellatum / Prairie Onion	1 qt	12" HT (MIN.)	7% @ 12" o.c.	238
	Ac	Anemone canadensis / Canadian Anemone	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	An	Antennaria neglecta / Field Pussytoes	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	Ac2	Aquilegia canadensis / Eastern Columbine	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Al	Artemisia ludoviciana / White Sagebrush	1 gal	12" HT (MIN.)	6% @ 18" o.c.	92
	At	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
	Ba	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Cb	Carex bicknellii / Prairie Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ce	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Cg	Carex grayi / Gray's Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ep	Eragrostis pectinacea / Tufted Lovegrass	1 gal	12" HT (MIN.)	5% @ 12" o.c.	171
	Gt	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Lp	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Pv	Pycnanthemum virginianum / Mountain Mint	1 qt	12" HT (MIN.)	6% @ 12" o.c.	205
	Rh	Rudbeckia hirta / Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
		PART SHADE STORMWATER MIX				2,305 sf
	Af2	Agastache foeniculum / Blue Giant Hyssop	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Ac3	Allium cernuum / Nodding Onion	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Cb2	Carex bicknellii / Prairie Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Co	Carex brevior / Oval Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Cs	Carex sprengelii / Sprengel's Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
	Dm	Dodecatheon meadia / Shooting Star	2 1/2" plug	6" HT. (MIN.)	6% @ 12" o.c.	144
	Ep2	Echinacea purpurea / Coneflower	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Ev	Elymus villosus / Silky Wild Rye	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Lg	Liatris pycnostachya / Prairie Gayfeather	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Mv	Mertensia virginica / Virginia Bluebells	2 1/2" plug	6" HT. (MIN.)	7% @ 12" o.c.	167
	Mb	Monarda fistulosa / Bergamot	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Pl	Penstemon laevigatus / Eastern Smooth Beardtongue	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Rt	Rudbeckia triloba / Brown Eyed Susan	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	So	Solidago ohioensis / Ohio Goldenrod	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Su	Symphyotrichum urophyllum / Arrow-leaved Aster	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Za	Zizia aurea / Golden Alexander	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
		FULL SHADE MIX				2,809 sf
	Aa	Adiantum aethiopicum / Maidenhair Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ac5	Aquilegia canadensis / Eastern Columbine	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ae	Aruncus dioicus / Goat's Beard	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Ac4	Asarum canadense / Wild Ginger	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ae2	Asclepias exaltata / Poke Milkweed	1 qt	12" HT (MIN.)	6% @ 12" o.c.	175
	Al2	Aster lateriflorus / Calico Aster	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Am	Aster macrophyllus / Bigleaf Aster	1 gal	12" HT (MIN.)	6% @ 18" o.c.	77
	Af3	Athyrium filix-femina / Common Lady Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ca	Campanula americana / Tall Bellflower	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ca2	Carex albicans / White-tinged Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Ce2	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp2	Carex plantaginea / Plantain-leaved Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Gm	Geranium maculatum / Spotted Geranium	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ms	Maianthemum stellatum / False Lily of the Valley	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Mp	Matteuccia pennsylvanica / Ostrich Fern	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Pa	Packera aurea / Golden Groundsel	1 qt	12" HT (MIN.)	5% @ 12" o.c.	145
	Ph	Penstemon hirsutus / Hairy Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
		FULL SUN MIX				2,099 sf
	Af4	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ac6	Allium cernuum / Nodding Onion	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	At2	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ba3	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	Bc	Bouteloua curtipendula / Side Oats Grama	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ce3	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Cp3	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Ep3	Echinacea purpurea / Coneflower	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ey	Eryngium yuccifolium / Rattlesnake Master	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Gt2	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	132
	Lg2	Liatris pycnostachya / Prairie Gayfeather	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Lp2	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Pd	Penstemon digitalis / Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Rs	Rudbeckia subtomentosa / Sweet Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	So2	Solidago ohioensis / Ohio Goldenrod	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Sh	Sporobolus heterolepis / Prairie Dropseed	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58

saiki DESIGN

Mead & Hunt

PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

LANDSCAPE PLAN ZONE 3

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L203

LEGEND

- PROJECT LIMITS
- LAWN
- NATIVE WOODLAND SEEDING
- SHOVEL CUT EDGE
- MULCHED TREE RING

NOTES

1. FIELD VERIFY SURVEY INFORMATION PRIOR TO START OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO OWNER REPRESENTATIVE.
2. CONTACT DIGGER'S HOTLINE TO LOCATE ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO STARTING WORK.
3. FIELD VERIFY ALL EXISTING SITE CONDITIONS AND UTILITIES PRIOR TO STARTING WORK. ANY DAMAGE CAUSED TO UTILITIES, EITHER SHOWN OR NOT, SHALL BE REPAIRED AND PAID FOR AT THE CONTRACTOR'S EXPENSE.
4. PROTECT ALL BENCHMARKS.
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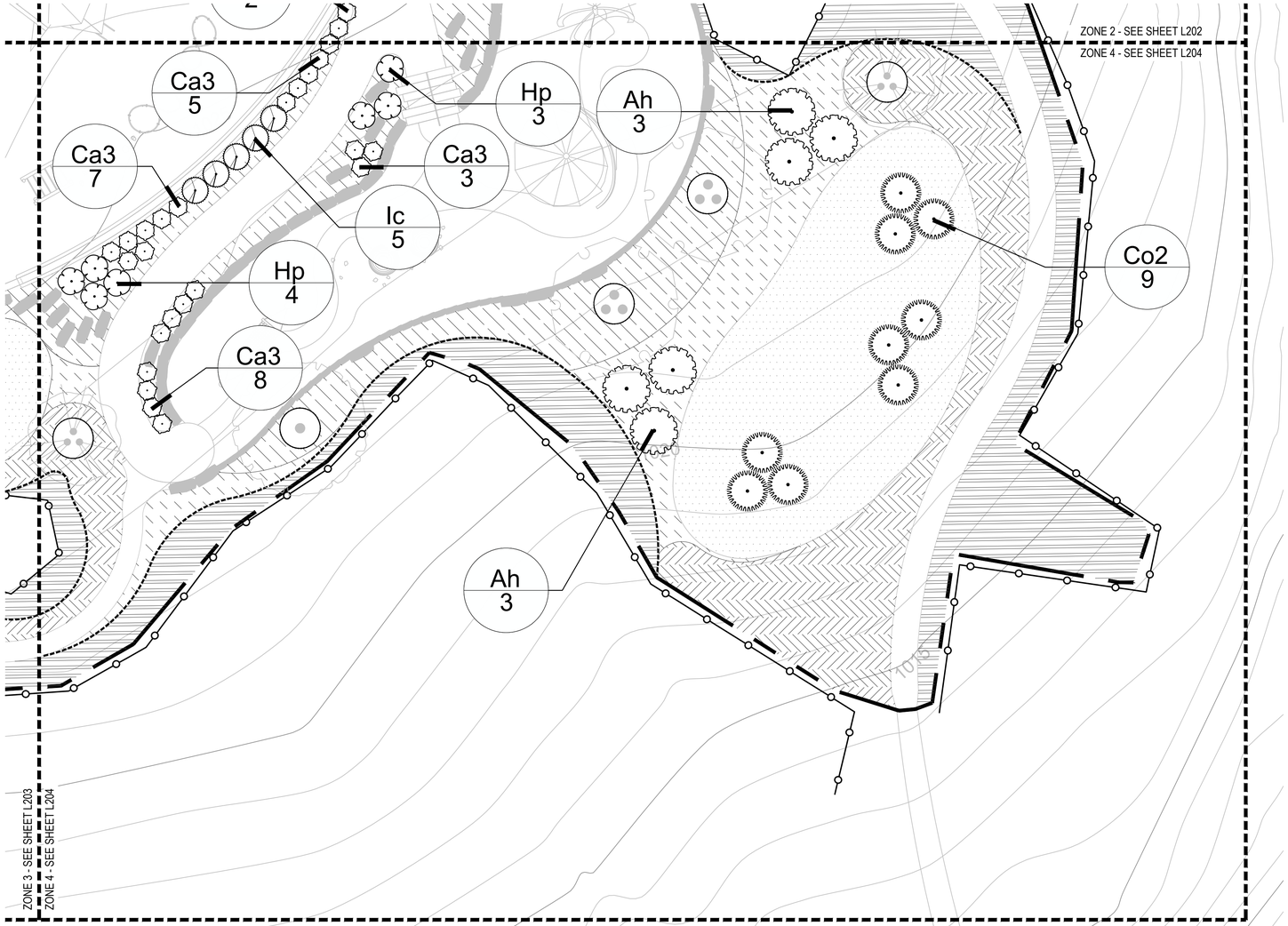
6. SEE PROJECT MANUAL SECTION "SPECIAL PROVISIONS" FOR INFORMATION REGARDING SHPO EXCAVATION REQUIREMENTS.
7. RESTORE ANY AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.



1 PLANTING PLAN ZONE 4

SCALE: 1" = 10'-0"

0 10' 20'

1" = 10'-0"

NORTH

PLANT SCHEDULE - SHRUBS AND PERENNIAL MIXES

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
DECIDUOUS SHRUBS						
	Ah	Amelanchier humilis / Low Serviceberry	5 gal	24" HT. (MIN.)	84" o.c.	6
	Ca3	Ceanothus americanus / New Jersey Tea	3 gal	18" HT (MIN.)	36" o.c.	38
	Co2	Cephalanthus occidentalis / Buttonbush	3 gal	18" HT (MIN.)	72" o.c.	13
	Ca5	Corylus americana / American Hazelnut	5 gal	18" HT (MIN.)	96" o.c.	2
	Hp	Hypericum prolificum / Shrubby St. John's Wort	3 gal	18" HT (MIN.)	48" o.c.	20
EVERGREEN SHRUBS						
	Ic	Ilex glabra 'Chamzin' / Nordic™ Inkberry Holly	3 gal	18" HT (MIN.)	48" o.c.	18

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	SIZE	SPACING	QTY
GROUND COVERS						
		PART SHADE MIX				3,290 sf
	Af	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	As	Allium stellatum / Prairie Onion	1 qt	12" HT (MIN.)	7% @ 12" o.c.	238
	Ac	Anemone canadensis / Canadian Anemone	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	An	Antennaria neglecta / Field Pussytoes	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	205
	Ac2	Aquilegia canadensis / Eastern Columbine	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
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	Ba	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
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	Ce	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Cg	Carex grayi / Gray's Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	171
	Ep	Eragrostis pectinacea / Tufted Lovegrass	1 gal	12" HT (MIN.)	5% @ 12" o.c.	171
	Gt	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	7% @ 12" o.c.	238
	Lp	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	7% @ 18" o.c.	106
	Pv	Pycnanthemum virginianum / Mountain Mint	1 qt	12" HT (MIN.)	6% @ 12" o.c.	205
	Rh	Rudbeckia hirta / Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 12" o.c.	238
		PART SHADE STORMWATER MIX				2,305 sf
	Af2	Agastache foeniculum / Blue Giant Hyssop	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
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	Cb2	Carex bicknellii / Prairie Sedge	2 1/2" plug	6" HT. (MIN.)	5% @ 12" o.c.	120
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	Dm	Dodecatheon meadia / Shooting Star	2 1/2" plug	6" HT. (MIN.)	6% @ 12" o.c.	144
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	Pl	Penstemon laevigatus / Eastern Smooth Beardtongue	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	Rt	Rudbeckia triloba / Brown Eyed Susan	2 1/2" plug	12" HT (MIN.)	7% @ 12" o.c.	167
	So	Solidago ohioensis / Ohio Goldenrod	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Su	Symphyotrichum urophyllum / Arrow-leaved Aster	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
	Za	Zizia aurea / Golden Alexander	2 1/2" plug	12" HT (MIN.)	6% @ 12" o.c.	144
		FULL SHADE MIX				2,809 sf
	Aa	Adiantum aethiopicum / Maidenhair Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ac5	Aquilegia canadensis / Eastern Columbine	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ae	Aruncus dioicus / Goat's Beard	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Ac4	Asarum canadense / Wild Ginger	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ae2	Asclepias exaltata / Poke Milkweed	1 qt	12" HT (MIN.)	6% @ 12" o.c.	175
	Al2	Aster lateriflorus / Calico Aster	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Am	Aster macrophyllus / Bigleaf Aster	1 gal	12" HT (MIN.)	6% @ 18" o.c.	77
	Af3	Athyrium filix-femina / Common Lady Fern	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ca	Campanula americana / Tall Bellflower	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
	Ca2	Carex albicans / White-tinged Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Ce2	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Cp2	Carex plantaginea / Plantain-leaved Sedge	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Gm	Geranium maculatum / Spotted Geranium	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	175
	Ms	Maianthemum stellatum / False Lily of the Valley	1 qt	6" HT. (MIN.)	5% @ 12" o.c.	145
	Mp	Matteuccia pennsylvanica / Ostrich Fern	1 gal	12" HT (MIN.)	5% @ 18" o.c.	65
	Pa	Packera aurea / Golden Groundsel	1 qt	12" HT (MIN.)	5% @ 12" o.c.	145
	Ph	Penstemon hirsutus / Hairy Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	175
		FULL SUN MIX				2,099 sf
	At4	Agastache foeniculum / Blue Giant Hyssop	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ac6	Allium cernuum / Nodding Onion	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	At2	Asclepias tuberosa / Butterfly Milkweed	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ba3	Baptisia australis / Blue Wild Indigo	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	Bc	Bouteloua curtipendula / Side Oats Grama	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Ce3	Carex eburnea / Bristleleaf Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Cp3	Carex pensylvanica / Pennsylvania Sedge	1 qt	6" HT. (MIN.)	6% @ 12" o.c.	132
	Ep3	Echinacea purpurea / Coneflower	1 gal	12" HT (MIN.)	7% @ 12" o.c.	153
	Ey	Eryngium yuccifolium / Rattlesnake Master	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Gt2	Geum triflorum / Prairie Smoke	1 gal	6" HT. (MIN.)	6% @ 12" o.c.	132
	Lg2	Liatris pycnostachya / Prairie Gayfeather	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Lp2	Lupinus perennis / Wild Lupine	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58
	Pd	Penstemon digitalis / Beardtongue	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Rs	Rudbeckia subtomentosa / Sweet Black-eyed Susan	1 gal	12" HT (MIN.)	7% @ 18" o.c.	68
	So2	Solidago ohioensis / Ohio Goldenrod	1 gal	12" HT (MIN.)	6% @ 12" o.c.	132
	Sh	Sporobolus heterolepis / Prairie Dropseed	1 gal	12" HT (MIN.)	6% @ 18" o.c.	58

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Mead & Hunt

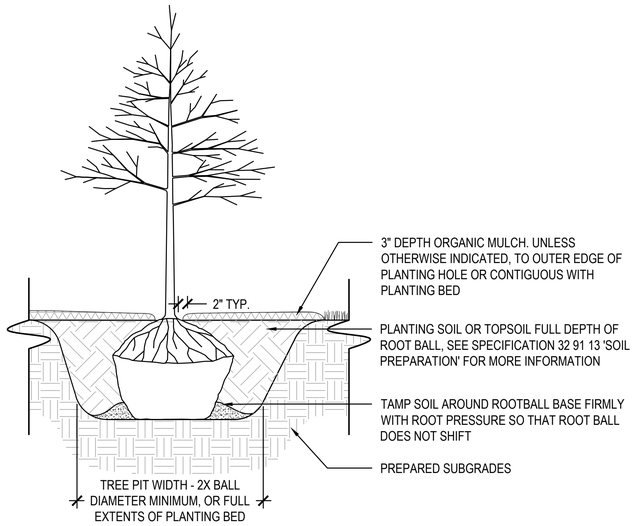
PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

LANDSCAPE PLAN ZONE 4

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L204

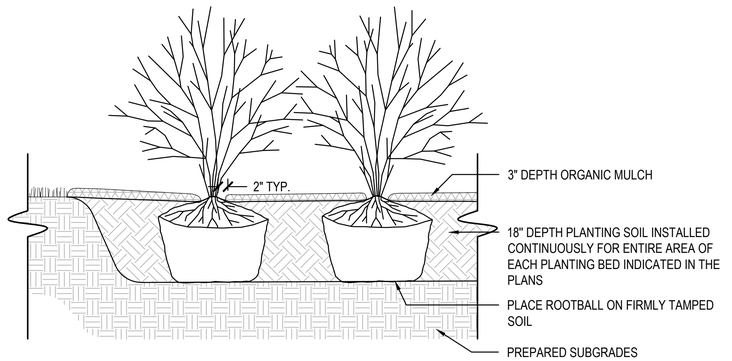


NOTES:

1. PLANT EACH TREE SUCH THAT THE ROOT FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.
2. DEPTH OF THE PLANTING HOLE SHOULD BE DETEMINED AND DUG AFTER THE ROOT FLARE IS LOCATED. PLANTING HOLE MUST BE NO DEEPER THAN THE HEIGHT OF THE ROOT BALL.
3. IF PLANT IS SHIPPED WITH A WIRE BASKET AROUND THE ROOT BALL, CUT AND REMOVE THE WIRE BASKET. REMOVE ALL TWINE, ROPE, AND BURLAP FROM ALL ROOT BALLS.
4. PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
5. DO NOT PLACE MULCH IN CONTACT WITH STEMS.
6. WATER ALL PLANTS AT TIME OF PLANTING, PRIOR TO BACKFILLING COMPLETELY.
7. PRUNE ONLY AS NECESSARY TO REMOVE UNHEALTHY BRANCHES. DO NOT REMOVE MORE THAN ⅓ OF THE ORIGINAL PLANT MASS.

1 TYPICAL TREE PLANTING

SCALE:NTS

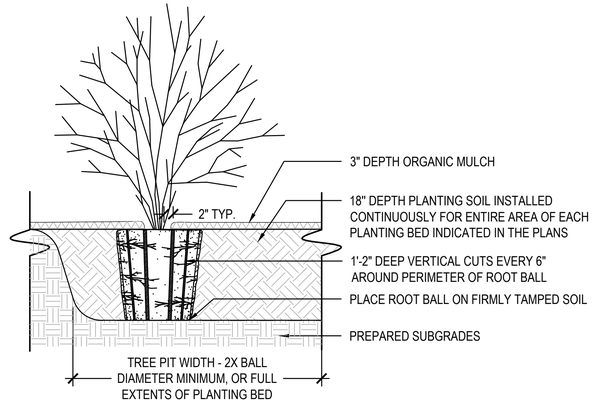


NOTES:

1. PLANT EACH SHRUB SUCH THAT THE ROOT FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.
2. DEPTH OF THE PLANTING HOLE SHOULD BE DETERMINED AND DUG AFTER THE ROOT FLARE IS LOCATED. PLANTING HOLE MUST BE NO DEEPER THAN THE HEIGHT OF THE ROOT BALL.
3. IF PLANT IS SHIPPED WITH A WIRE BASKET AROUND THE ROOT BALL, CUT AND REMOVE THE WIRE BASKET. REMOVE ALL TWINE, ROPE, AND BURLAP FROM ALL ROOT BALLS.
4. DO NOT PLACE MULCH IN CONTACT WITH STEMS.
5. WATER ALL PLANTS AT TIME OF PLANTING, PRIOR TO BACKFILLING COMPLETELY.
6. PRUNE ONLY AS NECESSARY TO REMOVE UNHEALTHY BRANCHES. DO NOT REMOVE MORE THAN ⅓ OF THE ORIGINAL PLANT MASS.

2 TYPICAL SHRUB PLANTING

SCALE:NTS

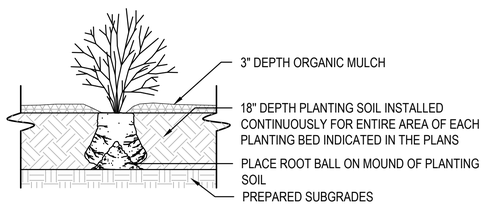


NOTES:

1. FOR 3 TO 10 GALLON CONTAINERS: MAKE 1" TO 2" DEEP VERTICAL CUTS EVERY 6" AROUND THE CIRCUMFERENCE OF THE ROOT BALL BEFORE PLANTING.
2. PLANT EACH SHRUB OR PERENNIAL SUCH THAT THE ROOT FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.
3. PLANTING HOLE MUST NOT BE DEEPER THAN THE HEIGHT OF THE ROOT BALL.
4. PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
5. DO NOT PLACE MULCH IN CONTACT WITH STEMS.
6. WATER ALL PLANTS AT TIME OF PLANTING, PRIOR TO BACKFILLING COMPLETELY.
7. PRUNE ONLY AS NECESSARY TO REMOVE UNHEALTHY BRANCHES. DO NOT REMOVE MORE THAN ⅓ OF THE ORIGINAL PLANT MASS.

3 LARGE CONTAINER PLANTING

SCALE:NTS

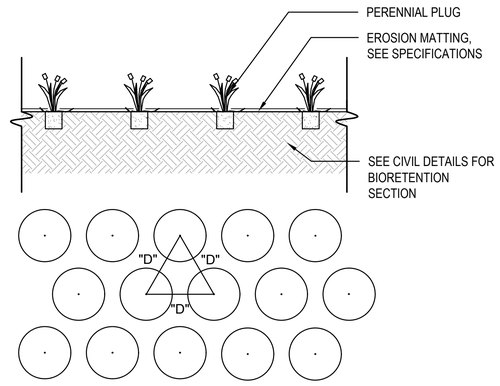


NOTES:

1. FOR 1 TO 2 GALLON CONTAINERS: BUTTERFLY ROOT BALL. SEVER LOWER ¼ TO ½ OF ROOT BALL WITH SINGLE CUT. SPREAD OPEN SEVERED ROOT BALL AND PLACE AGAINST BOTTOM OF MOUNDED PLANTING HOLE.
2. PLANT EACH SHRUB OR PERENNIAL SUCH THAT THE ROOT FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.
3. PLANTING HOLE MUST NOT BE DEEPER THAN THE HEIGHT OF THE ROOT BALL.
4. DO NOT PLACE MUCH IN CONTACT WITH STEMS.
5. WATER ALL PLANTS WITHIN 2 HOURS OF INSTALLATION.
6. PRUNE ONLY AS NECESSARY TO REMOVE UNHEALTHY BRANCHES. DO NOT REMOVE MORE THAN ⅓ OF THE ORIGINAL PLANT MASS.

4 SMALL CONTAINER PLANTING

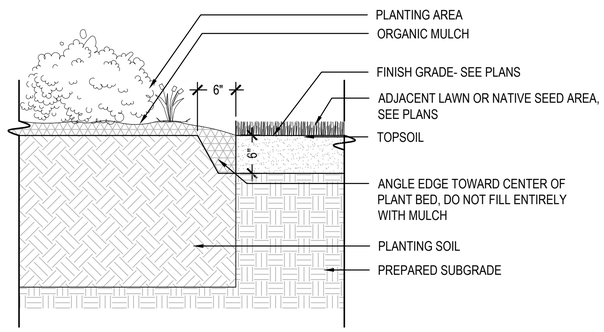
SCALE:NTS



D=DIMENSION OF PLUG SPACING AS INDICATED ON PLANT SCHEDULE

5 BIOBASIN PLANTING

SCALE:NTS



6 SHOVEL CUT EDGE

SCALE:NTS

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PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

LANDSCAPE DETAILS

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
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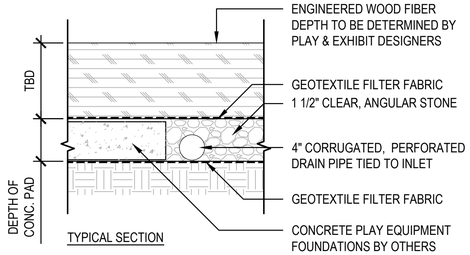
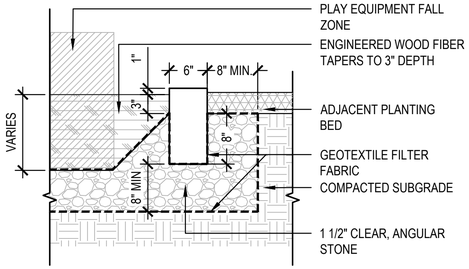
Sheet Number	L500



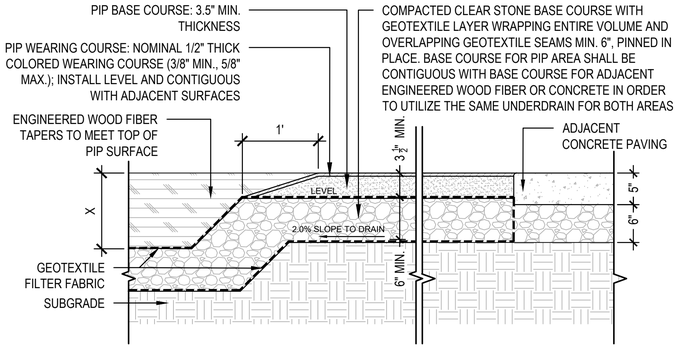
TYPICAL SECTION



TRANSITION TO STONE TYPE 2 EDGE

NOTES:

1. ALLOW FOR UP TO 25% SETTLING OF EWF. ALL DIMENSIONS PROVIDED ARE FINISH DEPTH.
2. EWF MUST MAINTAIN APPROPRIATE DEPTH THROUGHOUT FALL ZONE.
3. TRANSITIONS FROM EWF TO PLANTING BED MAY ONLY HAPPEN OUTSIDE OF FALL ZONE.

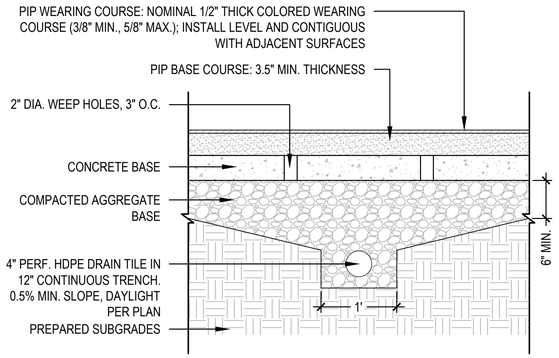


TRANSITION TO ENGINEERED WOOD FIBER

TRANSITION TO CONCRETE PAVEMENT

1 STANDARD CONCRETE PAVING

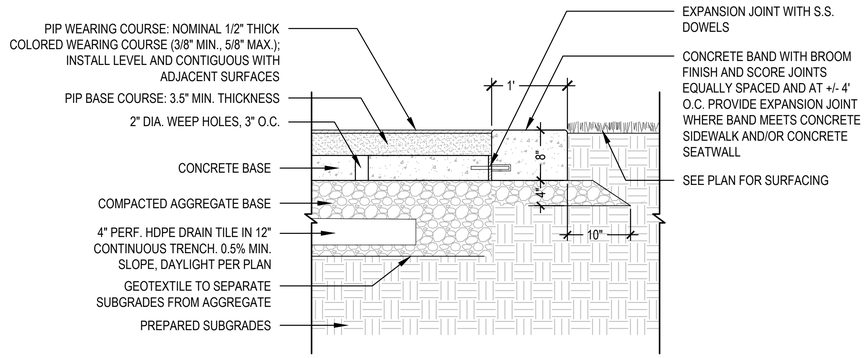
SCALE:NTS



TYPICAL PROFILE WITH UNDERDRAIN

2 ENGINEERED WOOD FIBER

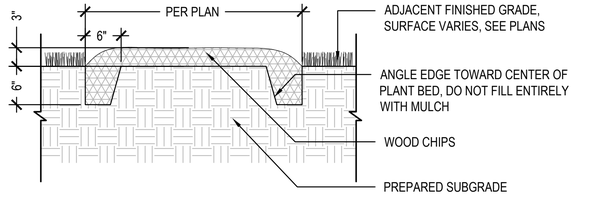
SCALE:NTS



CONCRETE BAND EDGE CONDITION

3 PIP SURFACING OVER TYPE 2 BASE

SCALE:NTS

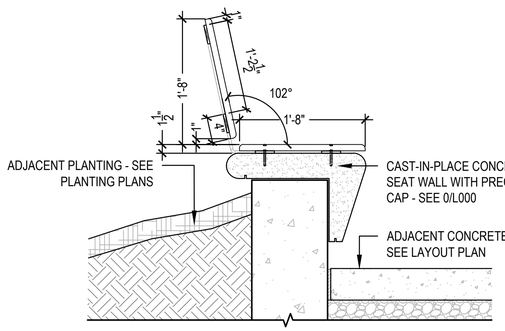


5 WOOD CHIP PATH

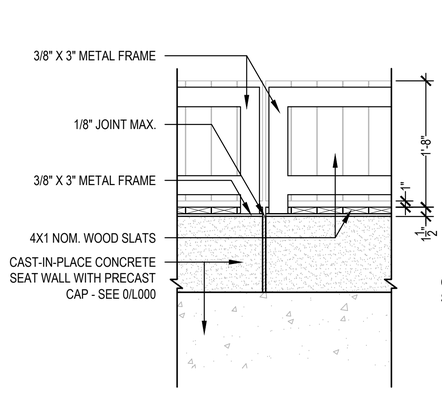
SCALE:NTS

4 PIP SURFACING OVER TYPE 1 BASE

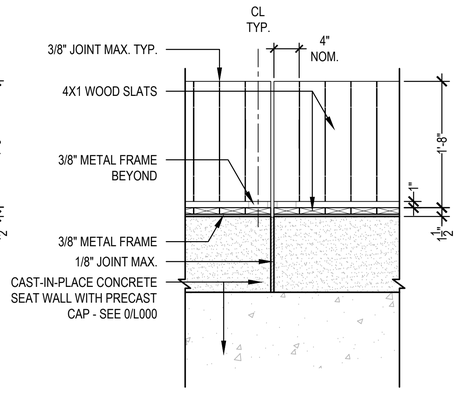
SCALE:NTS



TYPICAL SECTION



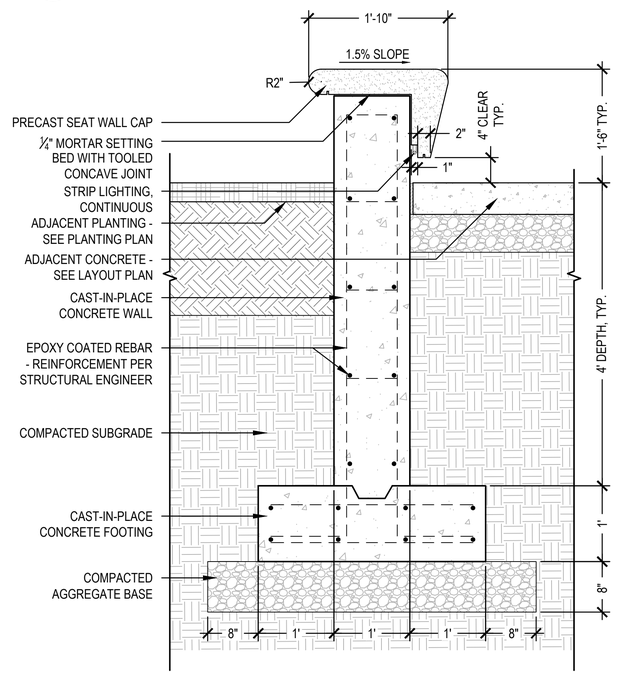
REAR ELEVATION



FRONT ELEVATION

6 WOOD BENCH TOP

SCALE:NTS



C.I.P CONCRETE SEAT WALL WITH PRECAST CAP (OPTIONAL STRIP LIGHTING)

7 C.I.P. CONCRETE SEAT WALL WITH PRECAST CAP

SCALE:NTS

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PLAY/SPACE
YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE DETAILS

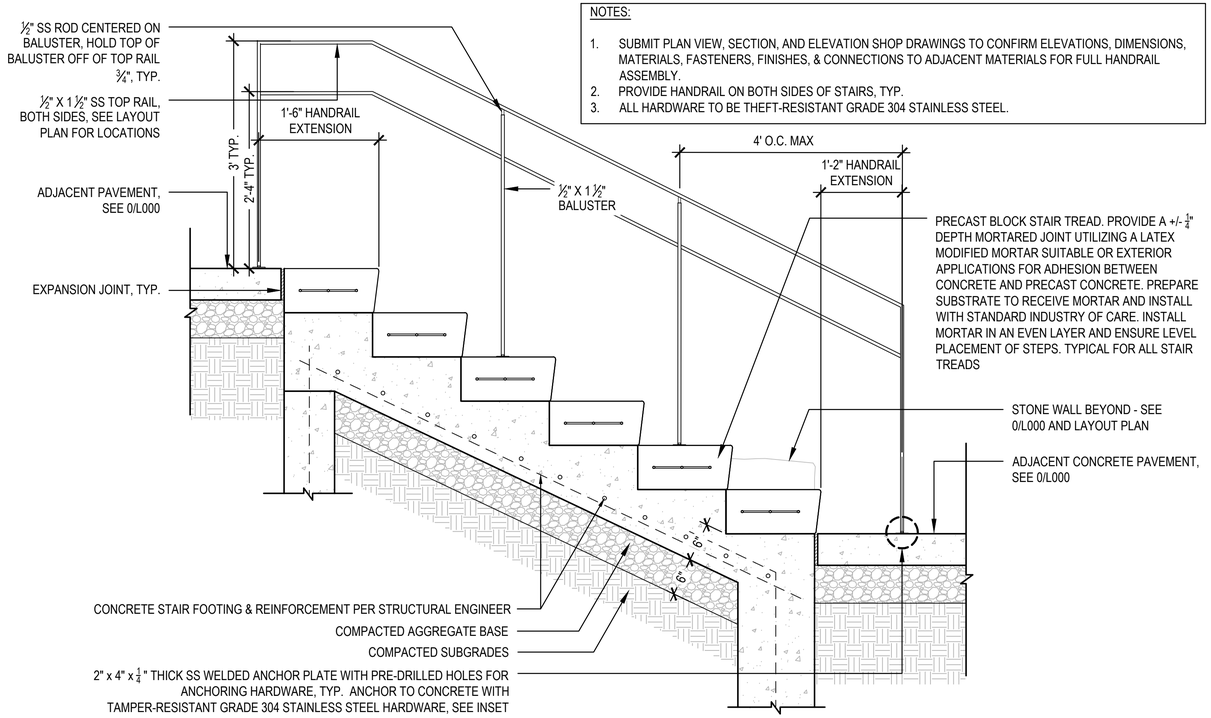
Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L501

NOTES:

1. SUBMIT PLAN VIEW, SECTION, AND ELEVATION SHOP DRAWINGS TO CONFIRM ELEVATIONS, DIMENSIONS, MATERIALS, FASTENERS, FINISHES, & CONNECTIONS TO ADJACENT MATERIALS FOR FULL HANDRAIL ASSEMBLY.
2. PROVIDE HANDRAIL ON BOTH SIDES OF STAIRS, TYP.
3. ALL HARDWARE TO BE THEFT-RESISTANT GRADE 304 STAINLESS STEEL.

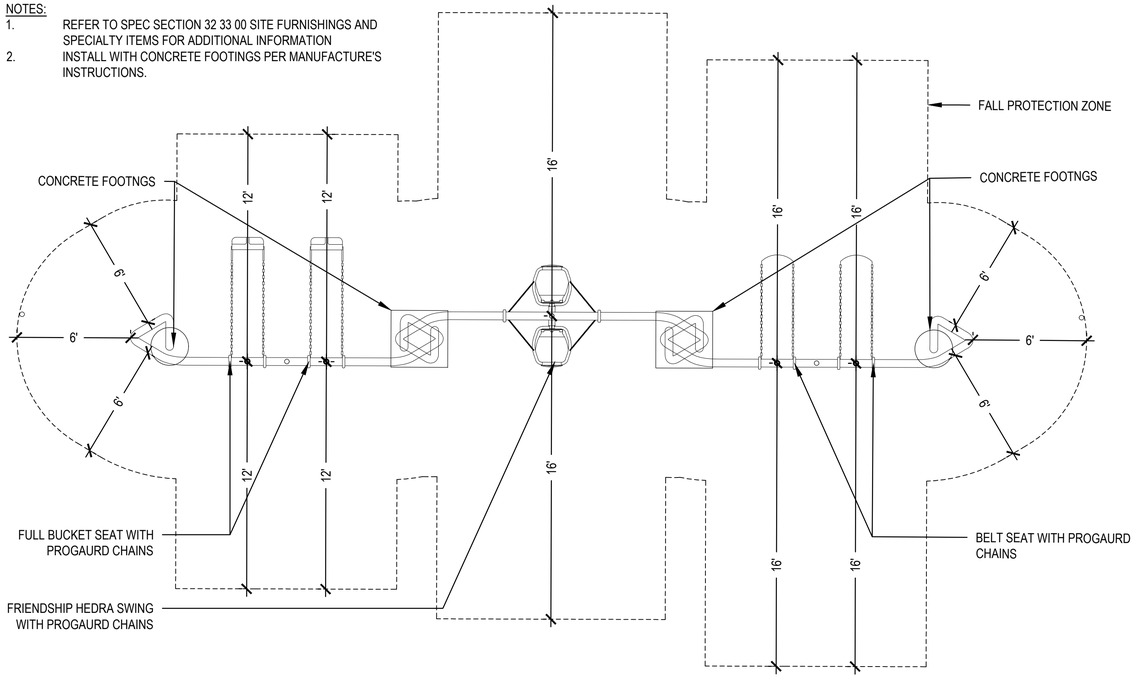


1 CONCRETE STAIR WITH PRECAST BLOCK TREADS AND HANDRAIL

SCALE:NTS

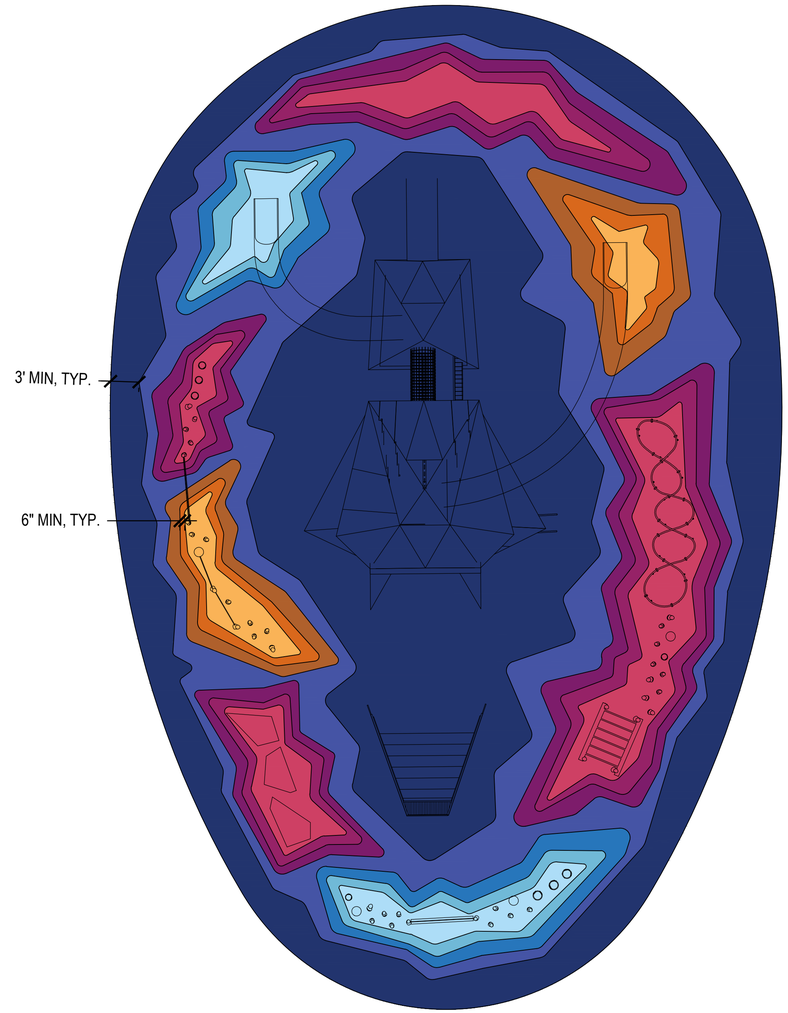
NOTES:

1. REFER TO SPEC SECTION 32 33 00 SITE FURNISHINGS AND SPECIALTY ITEMS FOR ADDITIONAL INFORMATION
2. INSTALL WITH CONCRETE FOOTINGS PER MANUFACTURE'S INSTRUCTIONS.



2 SWINGSET

SCALE:NTS



LEGEND

COLOR 1	COLOR 7
COLOR 2	COLOR 8
COLOR 3	COLOR 9
COLOR 4	COLOR 10
COLOR 5	COLOR 11
COLOR 6	

3 PIP ENLARGEMENT

SCALE:NTS

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SITE DETAILS

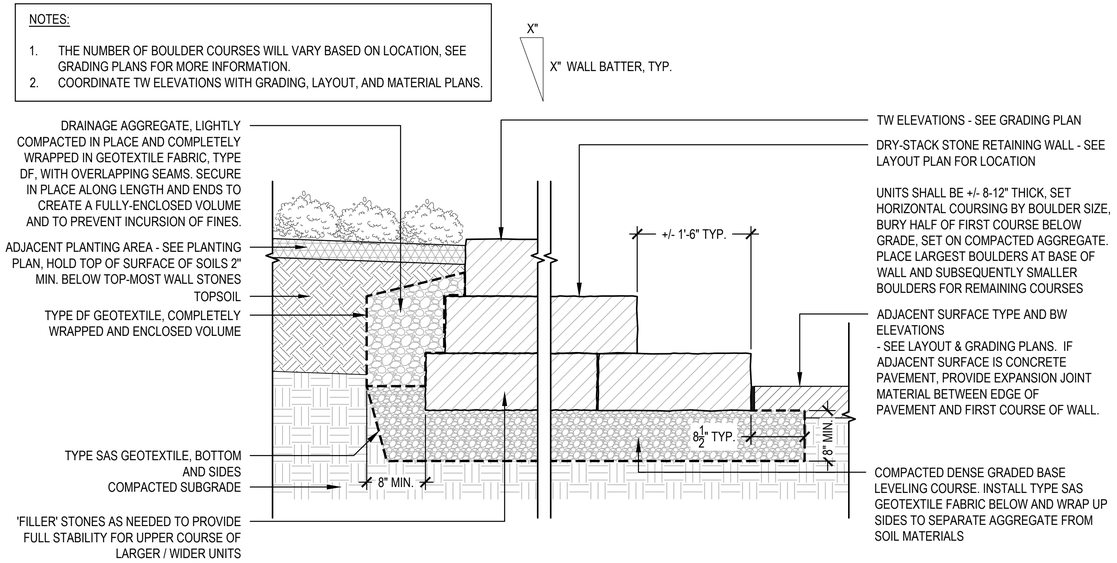
Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L502

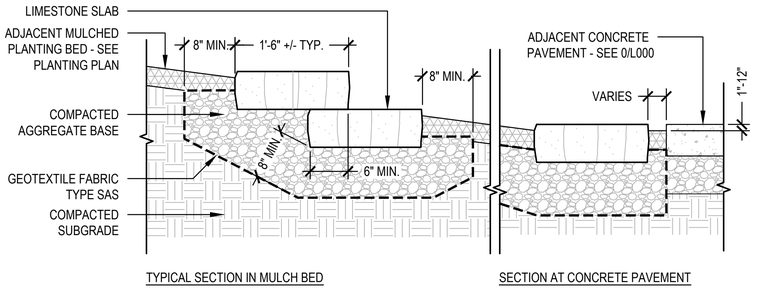
NOTES:

1. THE NUMBER OF BOULDER COURSES WILL VARY BASED ON LOCATION, SEE GRADING PLANS FOR MORE INFORMATION.
2. COORDINATE TW ELEVATIONS WITH GRADING, LAYOUT, AND MATERIAL PLANS.



1 STONE TYPE 1 WALL

SCALE:NTS



TYPICAL SECTION IN MULCH BED

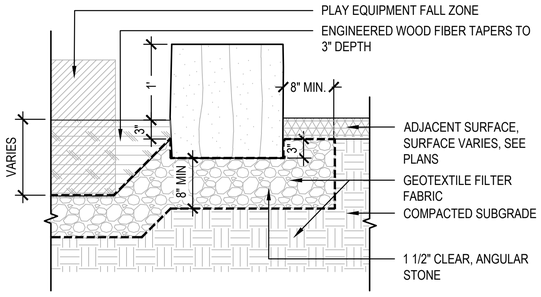
SECTION AT CONCRETE PAVEMENT

NOTES:

1. SOME STONES SHALL BE UN-TIERED, STAND ALONE PIECES, SEE LAYOUT PLAN FOR LOCATION AND ORIENTATION.
2. HOLD MULCH 1" TYP. FROM TOP OF STONE.
3. SEE SECTION 00 00 00 FOR MORE INFORMATION.

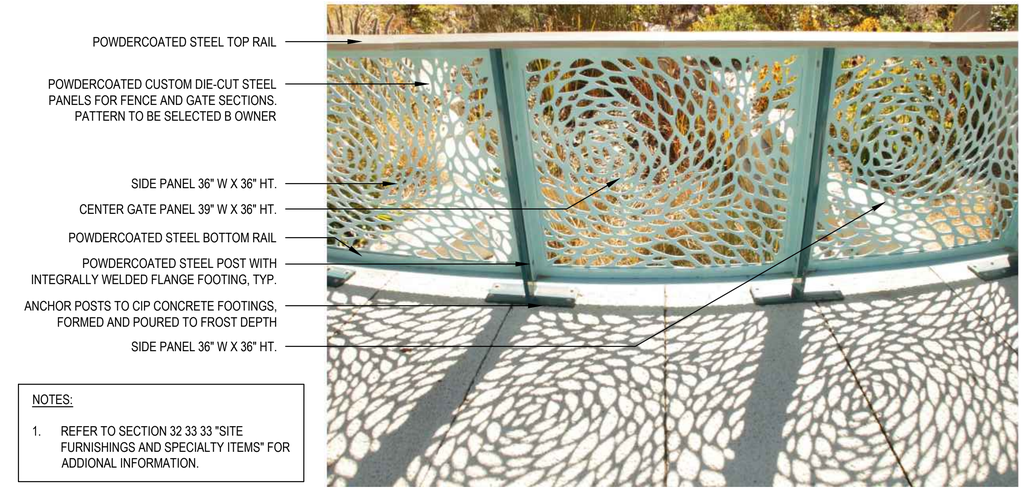
2 STONE TYPE 1 SCRAMBLE

SCALE:NTS



3 STONE TYPE 1 SEAT

SCALE:NTS



NOTES:

1. REFER TO SECTION 32 33 33 "SITE FURNISHINGS AND SPECIALTY ITEMS" FOR ADDIONAL INFORMATION.

4 CUSTOM METAL FENCE AND GATE

SCALE:NTS

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YERKES OBSERVATORY
WILLIAMS BAY
WALWORTH COUNTY, WI

SITE DETAILS

Revisions:

No.	Date:	Description:

Set Type	DESIGN DEVELOPMENT
Date Issued	08/01/2025
Sheet Number	L503

NEW BUILDING:

YERKES FAMILY PAVILION

WILLIAMS BAY, WI

ARCHITECTURAL

ABACUS ARCHITECTS, INC.
1135A MICHIGAN AVENUE
SHEBOYGAN, WISCONSIN 53081
P: 920-452-4444

STRUCTURAL

COMPANY NAME
STREET ADDRESS
CITY, STATE, ZIP
PHONE:

A1	SHEET NAME
A 101	TITLE SHEET
A 102	WALL TYPES, ABBREVIATIONS, AND SYMBOLS
A 301	FLOOR PLAN
A 401	SCHEDULES
A 501	EXTERIOR ELEVATIONS
A 601	BUILDING SECTIONS

PROJECT INFORMATION

CLIENT SIGN-OFF

PRINT NAME:	DATE:
SIGNATURE	
PRINT NAME:	DATE:
SIGNATURE:	

BY SIGNING THIS DOCUMENT, I ACKNOWLEDGE THAT I HAVE RECEIVED THE DESIGN INTENT DELIVERABLES FOR THIS PHASE OF THE PROJECT.

PROJECT NOTES

EXTENT OF WORK

THE INTENT OF THE CONTRACT DOCUMENTS IS TO INCLUDE ALL ITEMS NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK BY THE CONTRACTOR. PERFORMANCE BY THE CONTRACTOR SHALL BE REQUIRED TO THE EXTENT CONSISTENT WITH THE CONTRACT DOCUMENTS AND REASONABLY INFERABLE FROM THEM AS BEING NECESSARY TO PRODUCE THE INTENDED RESULTS.

SITE VISIT

THE CONTRACTOR SHALL VISIT THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND CORRELATE PERSONAL OBSERVATIONS WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.

NOTICE TO BIDDERS

BIDDERS SHALL REVIEW ALL DRAWINGS AND ALL SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK.

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REVISIONS:

	DATE	ISSUE

NOTICE TO BIDDERS
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ISSUE DATE: 04-28-2025

NEW BUILDING:

YERKES FAMILY PAVILION

WILLIAMS BAY, WI

1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (920) 452-4444 | 640 N VEL R. PHILLIPS AVE. SUITE 210. MILWAUKEE, WI 53203

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWN BY: EH

CHECKED BY: EH

TITLE SHEET

A
101

PROJ. NO. 2025-51

ABBREVIATIONS

A.B.	ANCHOR BOLT
A.D.A.	AMERICAN WITH DISABILITIES ACT
A.F.F.	ABOVE FINISHED FLOOR
A/C	AIR CONDITIONING
ACOUS	ACOUSTIC(AL)
ADD	ADDITION
ADJ	ADJUSTABLE
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
ATTEN	ATTENUATION
AUTO	AUTOMATED
B.L.	BORROWED LITE
B.M.	BENCH MARK
B.O.	BOTTOM OF
B.T.U.	BRITISH THERMAL UNIT
BD	BOARD
BLDG	BUILDING
BLK(G)	BLOCK(ING)
BOT	BOTTOM
BRG	BEARING
C.B.	CATCH BASIN, CHALK BOARD
C.F.	CUBIC FEET
C.G.	CORNER GUARD
C.J.	CONTROL JOINT
C.L.	CENTER LINE
C.M.P.	CORRUGATED METAL PIPE
C.O.	CLEAN OUT
C.W.	COLD WATER
CAB	CABINET
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPOSITION, COMPACT
CONC	CONCRETE
CONT	CONTINUOUS
CORR	CORRIDOR, CORRUGATED
CPT	CARPET
D	DEPTH
D.F.	DRINKING FOUNTAIN
D.L.	DEAD LOAD
DBL	DOUBLE
DEG	DEGREE
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DW	DRYWALL
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
E.J.	EXPANSION JOINT
E.W.	EACH WAY
E.W.C.	ELECTRIC WATER COOLER
EA	EACH
EL, ELEV	ELEVATION, ELEVATOR
ELEC	ELECTRIC
EMER	EMERGENCY
ENCL	ENCLOSED
ENG	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EXCAV	EXCAVATE
EXIST. (EX)	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
F.A.C.E.	FAMILY AND CONSUMER EDUCATION
F.C.O.	FLOOR CLEAN OUT
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.F.	FINISHED FLOOR
FAB	FABRICATED
FDN	FOUNDATION
FIN	FINISH
FL	FLOOR
FT	FOOT, FEET
FTG	FOOTING
FURN	FURNACE, FURNITURE
FURR	FURRING
G	GAS
G.B.	GRAB BAR
G.C.	GENERAL CONTRACTOR
G.M.	GAS METER
GA	GAUGE
GALV	GALVANIZED
GYP. BD.	GYPSUM BOARD
H. HGT	HEIGHT
H.B.	HOSE BIBB
H.M.	HOLLOW METAL
H.V.A.C.	HEATING, VENTILATION AND AIR CONDITIONING
H.W.	HOT WATER
HC	HANDICAPPED
HD	HEAD
HDR	HEADER
HDWR	HARDWARE
HORIZ	HORIZONTAL
HR	HOUR
HTR	HEATER
I.D.	INSIDE DIAMETER
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
J.B.	JOIST BEARING
JAN	JANITOR
JST	JOIST
JT	JOINT
K.O.	KNOCK OUT
KIP	ONE THOUSAND POUNDS
KIT	KITCHEN
L	LENGTH
L.H.	LEFT HAND
L.L.	LIVE LOAD
LAM	LAMINATE(D)
LAV	LAVATORY
LB	POUND
LOUV	LOUVER
M.B.	MARKER BOARD
M.O.	MASONRY OPENING
MACH	MACHINE
MAINT	MAINTENANCE
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MULL	MULLION
N	NORTH
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NO	NUMBER
NOM	NOMINAL
O.C., O/C	ON CENTER
O.D.	OUTSIDE DIAMETER
OH	OVERHEAD
P.LAM.	PLASTIC LAMINATE
PL	PLATE
PLAS	PLASTIC
PLBG	PLUMBING
PLYWD	PLYWOOD
PR	PAIR
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT, P.T.	POINT, PORCELAIN TILE, PAINT, PRESSURE TREATED
Q.T.	QUARRY TILE
R	RADIUS, RISER
R.C.	ROOF CONDUCTOR
R.D.	ROOF DRAIN
R.H.	RIGHT HAND
R.O.	ROUGH OPENING
REF	REFERENCE
REG	REGISTER
REINF	REINFORC(ING,MENT)
REQ'D	REQUIRED
RESIL	RESILIENT
REV	REVISION
RM	ROOM
S.C.	SOLID CORE
S.S.	STAINLESS STEEL
SAN	SANITARY SEWER
SECT	SECTION
SECUR	SECURITY
SERV	SERVICE
SHT	SHEET
SIM	SIMILAR
SPEC(S)	SPECIFICATION(S)
SPKLR	SPRINKLER
SQ	SQUARE
ST. STORE	STORAGE
STD	STANDARD
STL	STEEL
STRM	STORM SEWER
STRUCT	STRUCTURAL
SUSP	SUSPENDED
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T.B.	TACK BOARD
T.O.	TOP OF
T.O.B.	TOP OF BEAM
T.O.F.	TOP OF FOOTING
T.O.M.	TOP OF MASONRY
T.O.P.	TOP OF PIER
T.O.S.	TOP OF STEEL
T.S.	TUBE STEEL
T.W.	TACK WALL
TEL	TELEPHONE
TEMP	TEMPERED
TERR	TERRAZZO
THK	THICK
TOT	TOTAL
TV	TELEVISION
TYP	TYPICAL
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITIES
V	VINYL
V.B.	VINLY BASE
V.C.T.	VINYL COMPOSITION TILE
VENT	VENTILATION
VERT	VERTICAL
VEST	VESTIBULE
VOL	VOLUME
W	WIDTH, WATER
W.C.	WATER CLOSET, WATER COOLER
W.C.O.	WALL CLEAN OUT
W.H.	WATER HEATER
W/	WITH
W/O	WITH OUT
WD	WOOD
WT	WEIGHT
WWM	WELDED WIRE MESH
YD	YARD

MATERIALS AND SYMBOLS

- ROUGH LUMBER
- FINISH LUMBER
- STRUCTURAL STEEL
- BRICK
- CONCRETE MASONRY UNIT
- POURED-IN-PLACE CONCRETE
- METAL / WOOD STUD WALL
- GLAZING
- SPRAYED FOAM INSULATION
- BATT INSULATION
- RIGID INSULATION
- PLYWOOD / PARTICLE BOARD
- SAND / MORTAR / GYPSUM BOARD
- COMPACTED DRAINAGE FILL
- COMPACTED STRUCTURAL FILL
- TOPSOIL
- NON-STRUCTURAL FILL
- EXISTING CONSTRUCTION / MATERIAL
- CENTER LINE, ℄
- PROPERTY LINE
- NEW CONTOURS
- EXISTING CONTOURS

ELEVATION NAME
ELEV. XXX'-XX"
ELEVATION MARKER

XX / XXX — XXX
ELEVATION REFERENCE

XXX — XX / XXX
BUILDING SECTION REFERENCE

XXX — XX / XXX
WALL SECTION REFERENCE

XXX — XX / XXX
PLAN / DETAIL REFERENCE

CEILING TYPE
X'-XX" A.F.F.
CEILING TAG

XXX
DOOR TAG

X
WALL TYPE TAG

X
WINDOW TAG

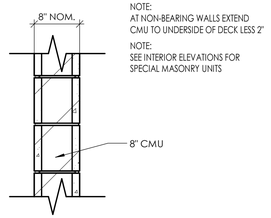
X
PLAN NOTE TAG

X
DEMOLITION NOTE TAG

X
COLUMN GRID

1
REVISION TAG

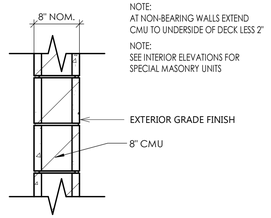
VIEW NAME
SCALE: X/X" = X'-XX"
XX / XXX
VIEW / DETAIL IDENTIFICATION



NOTE:
AT NON-BEARING WALLS EXTEND CMU TO UNDERSIDE OF DECK LESS 2"

NOTE:
SEE INTERIOR ELEVATIONS FOR SPECIAL MASONRY UNITS

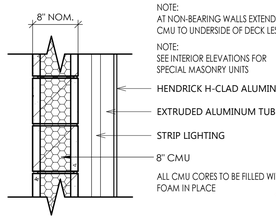
WALL TYPE "C"



NOTE:
AT NON-BEARING WALLS EXTEND CMU TO UNDERSIDE OF DECK LESS 2"

NOTE:
SEE INTERIOR ELEVATIONS FOR SPECIAL MASONRY UNITS

WALL TYPE "B"



NOTE:
AT NON-BEARING WALLS EXTEND CMU TO UNDERSIDE OF DECK LESS 2"

NOTE:
SEE INTERIOR ELEVATIONS FOR SPECIAL MASONRY UNITS

ALL CMU CORES TO BE FILLED WITH FOAM IN PLACE

WALL TYPE "A"

PRELIMINARY

WALL TYPES

SCALE: 1" = 1'-0"

ABACUS ARCHITECTS

REVISIONS:

△	DATE	ISSUE

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ISSUE DATE: 04-28-2025

NEW BUILDING:

YERKES FAMILY PAVILION

WILLIAMS BAY, WI

1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (920) 452-4444 | 640 N VEL R. PHILLIPS AVE, SUITE 210. MILWAUKEE, WI 53203

PRELIMINARY - NOT FOR CONSTRUCTION

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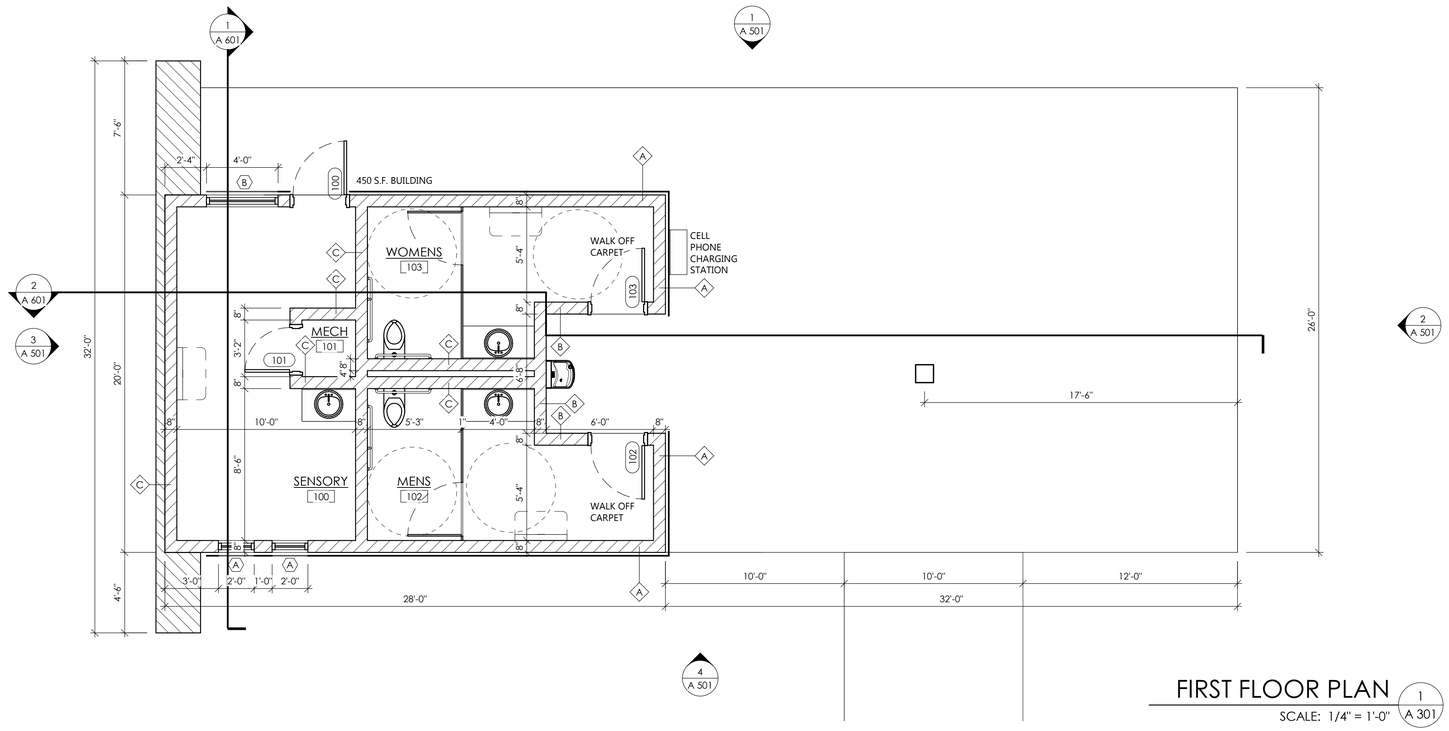
WALL TYPES, ABBREVIATIONS, AND SYMBOLS

A
102

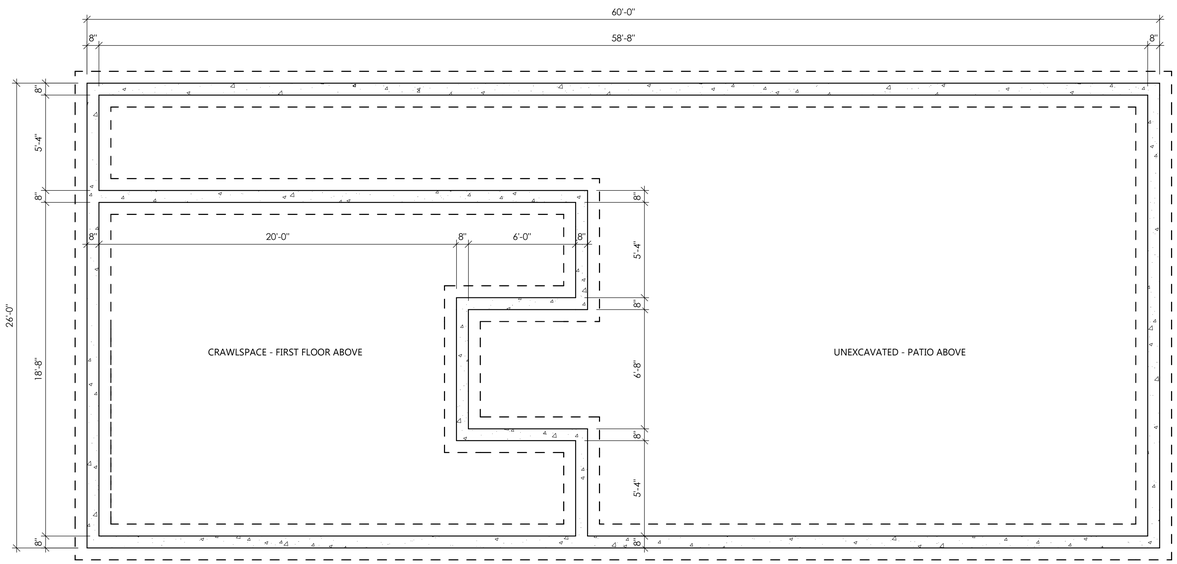
PROJ. NO. 2025-51



FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

1 A 301



FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

2 A 301

GENERAL PLAN NOTES

- ALL LOOSE FURNISHINGS SHOWN ON PLANS ARE NOT IN CONTRACT AND ARE SHOWN FOR REFERENCE PURPOSES ONLY. ANY DEVICES OR EQUIPMENT TO BE LOCATED BASED UPON LOCATION OR CONFIGURATION OF LOOSE FURNISHINGS SHALL BE VERIFIED WITH THE OWNER PRIOR TO INSTALLATION.
- INTERIOR DIMENSIONS ARE TAKEN FROM FACE OF STUD TO FACE OF STUD.

PRELIMINARY

FLOOR PLAN KEYNOTES

NO.	DESCRIPTION

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YERKES FAMILY PAVILION

NEW BUILDING:

WILLIAMS BAY, WI

ISSUE DATE: 04-28-2025

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CHECKED BY: EH

FLOOR PLAN

A 301

PROJ. NO. 2025-51

N W E S

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL FINISH / MATERIAL NORTH	WALL FINISH / MATERIAL EAST	WALL FINISH / MATERIAL SOUTH	WALL FINISH / MATERIAL WEST	CEILING	CEILING HEIGHT	FEROUS METALS	WOOD TRIM	REMARKS
100	SENSORY											
101	MECH											
102	MENS											
103	WOMENS											

GENERAL FINISH NOTES

- .

PRELIMINARY

COLOR AND MATERIAL LEGEND

CODE	PRODUCT	MANUFACTURER	STYLE/SIZE	COLOR

ROOM FINISH REMARKS

NO.	DESCRIPTION

ROOM FINISH LEGEND

KEY	DESCRIPTION
ACT-1	ACOUSTIC CEILING TILE - 24" x 24"
ACT-2	VINYL FACED GYPSUM BOARD - 24" x 24"
CMU	CONCRETE MASONRY UNIT
CONC.	CONCRETE
CPT	CARPET
ES	EXPOSED STRUCTURE
EX	EXISTING FINISH
GYP	GYPSUM BOARD
HM	HOLLOW METAL
P-	PAINT FINISH
PT	PORCELAIN TILE
PTB	PORCELAIN TILE BASE
SC	SEALED CONCRETE
VB	VINYL BASE
VCT	VINYL COMPOSITION TILE
WD	WOOD

DOOR SCHEDULE

DOOR NO.	DOOR SIZE	DOOR ELEV.	DOOR MAT'L	DOOR GLASS TYPE	HARDWARE SET NO.	FRAME ELEV.	FRAME MAT'L	FRAME DEPTH	FRAME JAMB DETAIL	FRAME HEAD DETAIL	FIRE RATING	REMARKS
100	3'-0" x 6'-8"	D-2	ALUM	1		F-1	ALUM	8 3/4"				
101	2'-6" x 6'-8"	D-1	WD	-		F-1	ALUM	8 3/4"				
102	3'-0" x 6'-8"	D-2	ALUM	1		F-1	ALUM	8 3/4"				
103	3'-0" x 6'-8"	D-2	ALUM	1		F-1	ALUM	8 3/4"				

GENERAL DOOR NOTES

- .

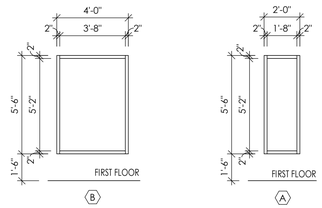
PRELIMINARY

DOOR REMARKS

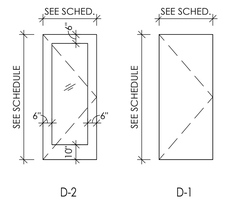
NO.	DESCRIPTION

GLASS TYPES

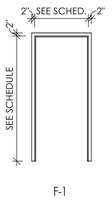
1	1" TEMPERED INSULATED LOW-E GLASS
2	1" INSULATED LOW-E GLASS
3	1/4" TEMPERED GLASS
4	1/4" FLOAT GLASS
5	FIRE RATED SAFETY GLASS



WINDOW TYPES



DOOR TYPES



FRAME TYPES

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YERKES FAMILY PAVILION

WILLIAMS BAY, WI

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SCHEDULES

A
401

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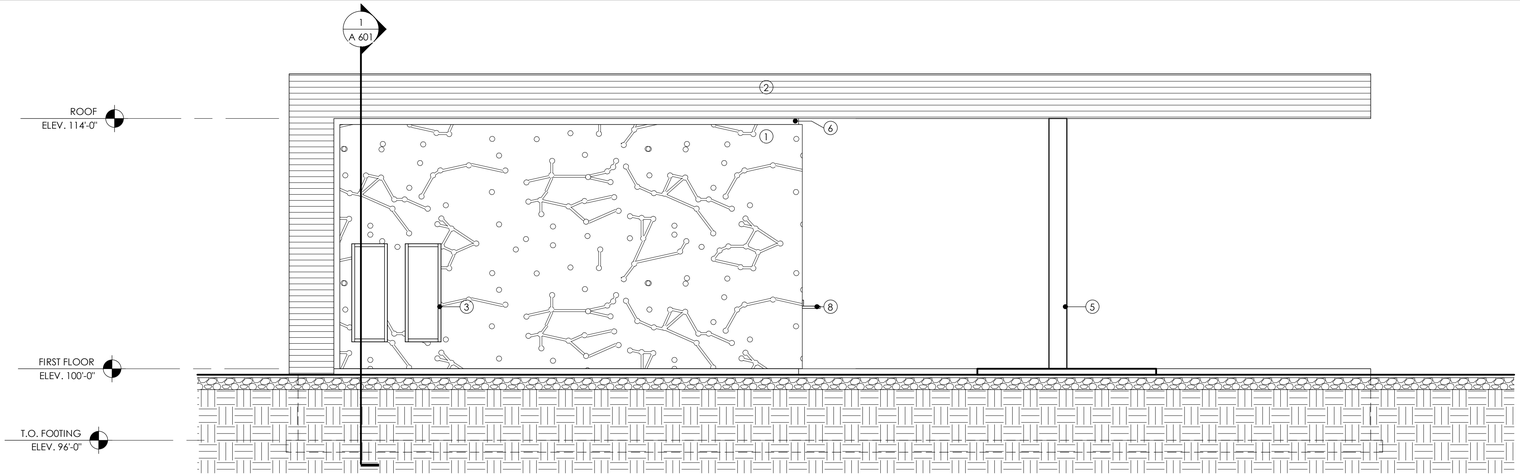
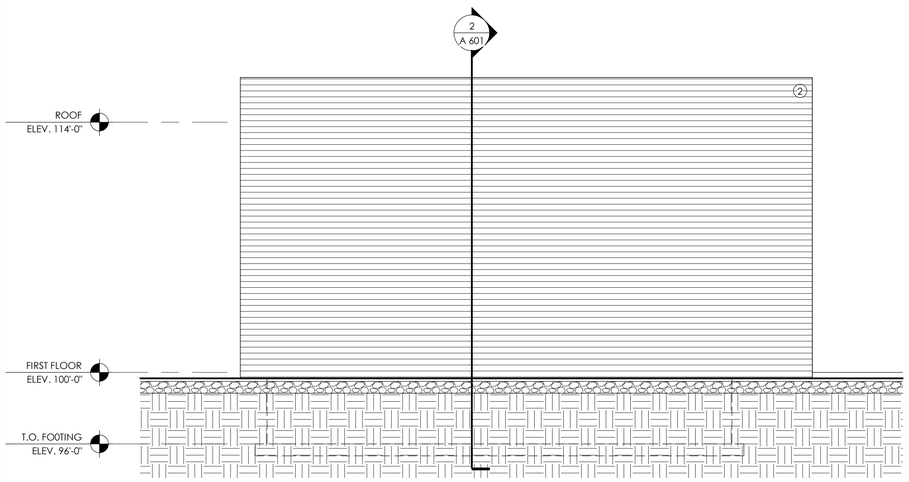
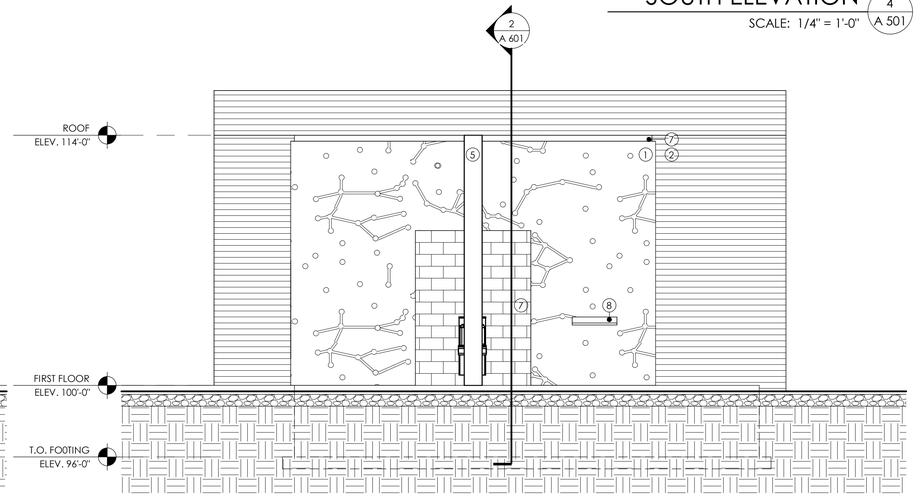


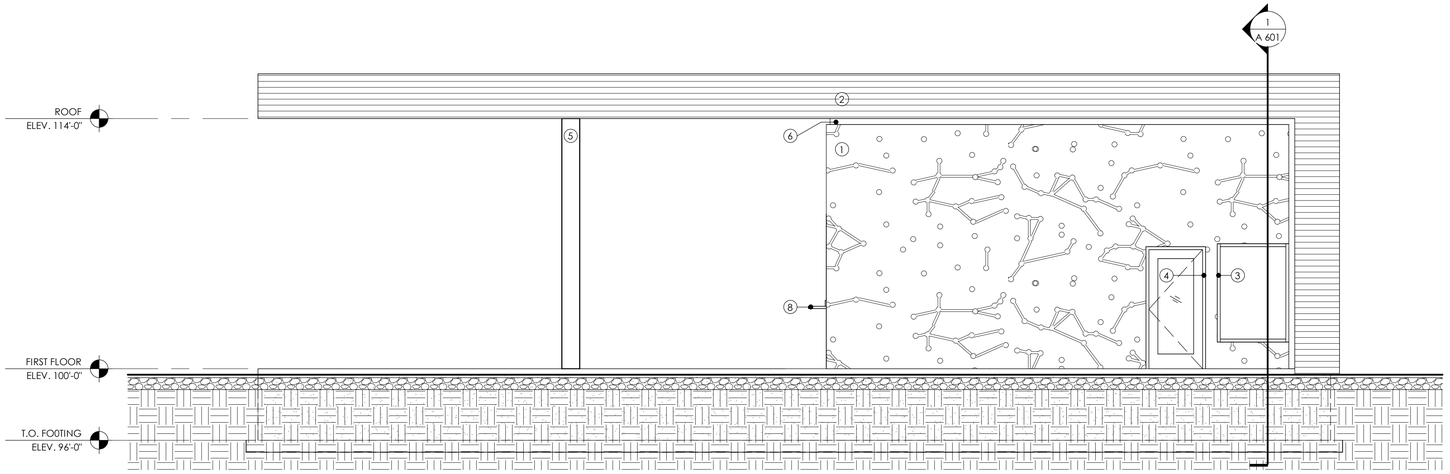
SOUTH ELEVATION
SCALE: 1/4" = 1'-0"
4 / A 501



WEST ELEVATION
SCALE: 1/4" = 1'-0"
3 / A 501



EAST ELEVATION
SCALE: 1/4" = 1'-0"
2 / A 501



NORTH ELEVATION
SCALE: 1/4" = 1'-0"
1 / A 501

GENERAL EXTERIOR ELEVATION NOTES

- ALL EXPOSED MISC. EXTERIOR STEEL SHALL BE PAINTED WITH PAINT FINISH E-1.
- MASONRY COURSING SHOWN FOR MATERIAL REPRESENTATION ONLY. ACTUAL COURSING MAY VARY.
- MASONRY CONTROL JOINTS SHALL BE LOCATED AT ALL MASONRY HEIGHT CHANGES, WINDOW OPENINGS, DOOR OPENINGS, 5' MAX. FROM BUILDING CORNERS, AND 25' MAX. AT CONTINUOUS WALL LOCATIONS.

PRELIMINARY

ELEVATION KEYNOTES

NO.	DESCRIPTION
1	ALUMINUM PANELS, CUSTOM HENDRICK H-CLAD
2	WOOD VENEER
3	ALUMINUM FRAMED WINDOW
4	ALUMINUM FRAMED DOOR
5	PRE FINISHED ALUMINUM COLUMN COVER
6	CMU BLOCK w/ BACK LIGHTING
7	CMU BLOCK
8	CELL PHONE CHARGING STATION

ABACUS ARCHITECTS

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YERKES FAMILY PAVILION
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EXTERIOR ELEVATIONS

A
501

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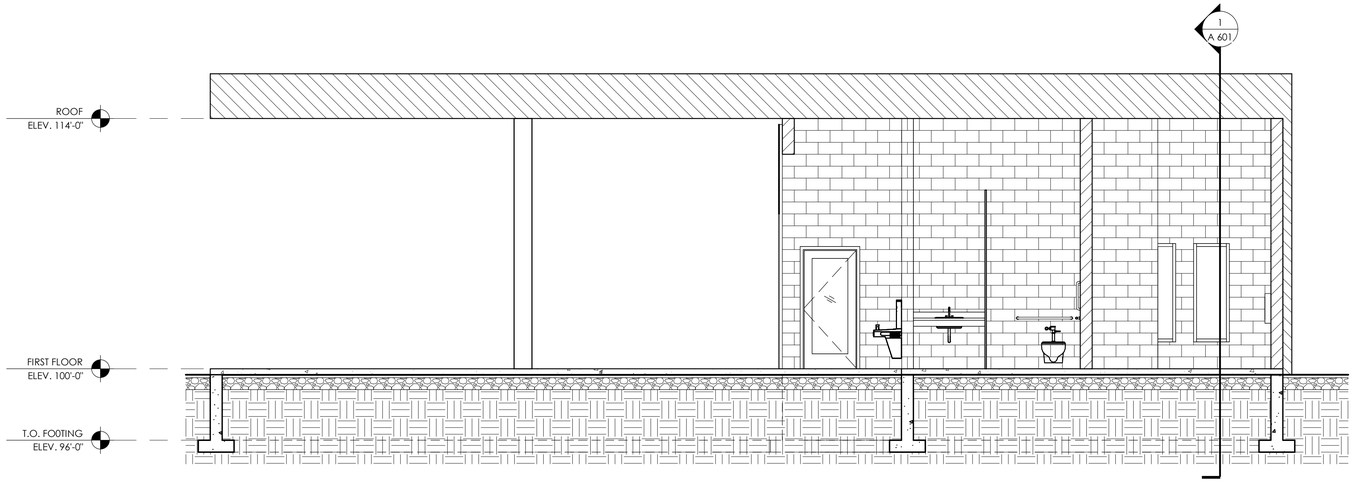
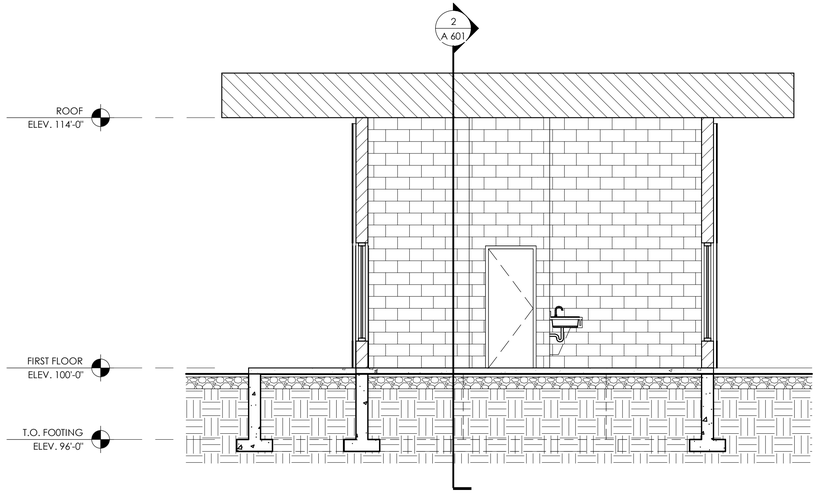


PAVILION SECTION

SCALE: 1/4" = 1'-0"

2
A 601



BUILDING SECTION

SCALE: 1/4" = 1'-0"

1
A 601

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BUILDING SECTIONS

A
601

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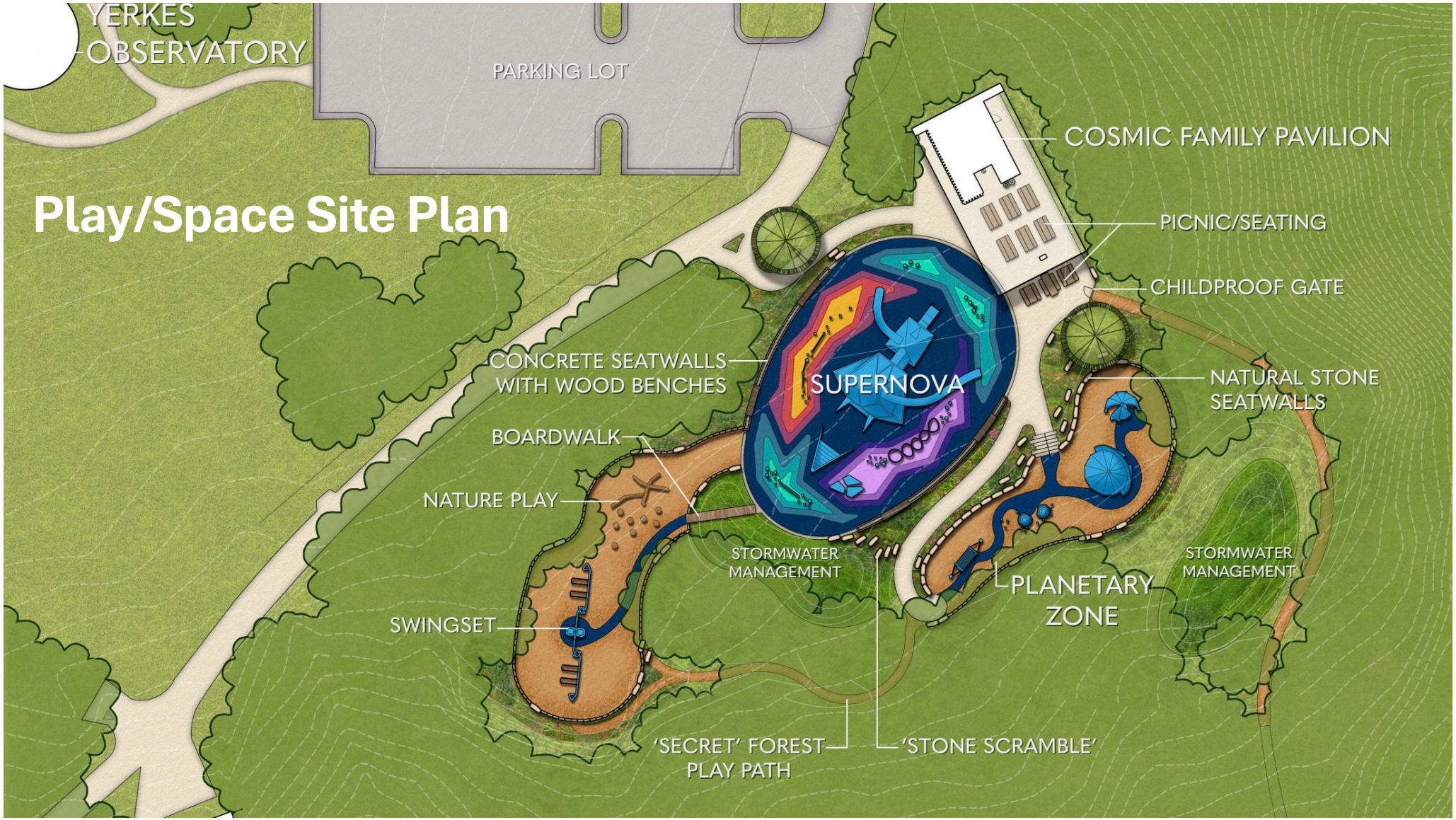

YERKES OBSERVATORY
PARKING LOT
Play/Space Site Plan
COSMIC FAMILY PAVILION
PICNIC/SEATING
CHILDPROOF GATE
CONCRETE SEATWALLS WITH WOOD BENCHES
SUPERNOVA
NATURAL STONE SEATWALLS
BOARDWALK
NATURE PLAY
STORMWATER MANAGEMENT
STORMWATER MANAGEMENT
PLANETARY ZONE
SWINGSET
'SECRET' FOREST PLAY PATH
'STONE SCRAMBLE'

Planetary Zone
Ages 3 - 7
YERKES OBSERVATORY
MONSTRUM

Blair Family Foundation Supernova
Ages 5-12

Cosmic Family Pavilion

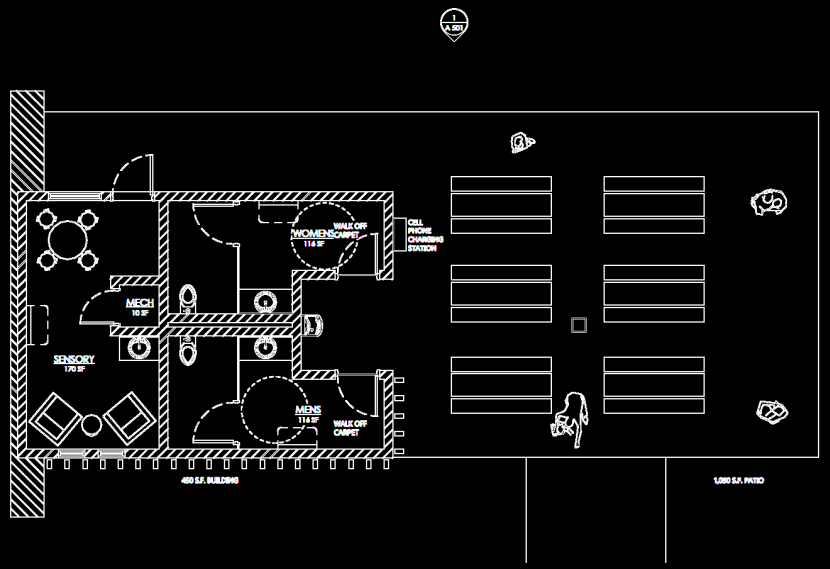
Visitor amenities for all: Play/Space families, trail walkers, pets

Two family restrooms

Water fountain, free phone charging station, picnic tables

Private-access quiet room doubles as:

- A nursing room for new moms, with space for other children to play
- A sensory break room for children with autism or sensory processing challenges



YERKES OBSERVATORY

Play/Space Supplementary Information

Submitted November 14, 2025.

This supplementary information has been submitted to provide Village officials context and answer some questions Yerkes has received regarding our current application to build the Play/Space playground.

This document addresses:

1. **Construction traffic** (page 2)
2. **Overview of the Site and Facility Master Plan** (pages 2-4)
3. **Parking for the Play/Space playground** (pages 4-5)
4. **Overview visuals of the Master Plan** (pages 6-9)
5. **The complete 40-page Site and Facility Master Plan** (attached)

Please note: Yerkes is not seeking approval of the Master Plan. It is provided informationally in support of our application to build the Play/Space playground.

1. When would construction of the playground begin?

As soon as possible. Yerkes has planned to open the Play/Space playground by Fall 2026.

2. How will construction traffic be routed?

Construction traffic will enter and leave via Observatory place during construction.

This is possible because construction traffic will enter and leave before or after public open hours. No construction traffic will enter or leave via Parkhurst.

3. What is the Site and Facility Master Plan?

The plan describes the overall development of the Yerkes property and facilities from 2025 to 2034.

4. Why are you sharing the Master Plan with us?

Because the planning committee has asked questions about Play/Space and the Pavilion that relate to—or are directly addressed by— Yerkes' future plans, we have provided this overview document as well as a copy of the full plan.

5. Has this Master Plan been shared with the public?

Yes. It's been widely shared, and we will continue to do so. So far Yerkes has:

- ✓ Invited all neighbors living on Observatory, Parkhurst, and Constance to see an early preview of the Master Plan and offer feedback. Approximately 35 attended these two meetings, and some suggestions made have been added to the Plan.
- ✓ Mailed invitations to every Williams Bay household for a public meeting at the Barrett Library to hear about the plan. Approximately 40 attended the October meeting.
- ✓ Maintained a stack of printed plans at Village Hall, free for the taking, since August.
- ✓ Posted the full plan on the Yerkes website starting in August, where it can be viewed or printed.

- ✓ Placed announcements about the plan and how to learn more on community bulletin boards (at the Green Grocer, library, community bulletin boards, etc).

- ✓ Posted links to the plan on community social media pages, on Yerkes social media, and in our e-newsletter, which goes to 9,500 recipients.

- ✓ Invited WBBA members to a 'lunch and learn' to hear about the plan. Approximately 35 attended.

- ✓ Placed copies of the plan in all Village board member and committee mailboxes in September.

- ✓ Offered a one-on-one meeting for every Village Trustee to see a presentation about the plan and discuss it with YFF Director Dennis Kois.

6. What were the guiding principles for the plan?

1. Create a world-class institution offering experiences that bring together science, nature, history and the arts.
2. Amplify Yerkes' renowned scientific legacy through contemporary contributions to astronomical research.
3. Preserve key elements of the historic Olmsted landscape, while making the changes needed for future programming, visitation, and financial sustainability.
4. Be a positive addition to the community.

7. How was this plan developed?

YFF worked with Saiki Design, a landscape design and planning firm based in Madison.

Saiki led a planning group made up of YFF staff and trustees. The planning group also involved outside experts such as architects, leaders of other botanic gardens, traffic consultants, and experts in historic Olmsted properties. The plan took seven months to develop.

8. Where can the public see the complete Plan?

It has also been posted on the Yerkes website since August 2025. From the Yerkes homepage click on "About" and then select "Reports and Financials."

9. The Plan says Yerkes will add parking in the future. When?

The expanded parking is planned for 2028, dependent on fundraising.

10. How will parking for the playground be handled until then?

Using existing parking. As described in our planning application, Yerkes' existing parking capacity meets the Village of Williams Bay requirements as described in ordinances §390-0308 A (Indoor Institutional) and §390-0309 B.4 (Recreational Land Uses/Outdoor Active Recreation). Our analysis is based on tour and event capacity, playground capacity, and observed patterns of parking usage.

Yerkes existing parking (a total of 67 public and staff parking spots) meets the Village requirement of one parking spot per three visitors, and one per staff member, in all cases.

	Visitor Situation	# of visitors parking @ Yerkes	# of parking spaces required by WB code
1.	Sold-out building tour *	40	13
2.	Sold-out evening public event	70	23
3.	Playground at 100% capacity	80	27
4.	Playground at 100% capcacity + sold-out building tour	120	40
5.	Playground at 100% capacity + sold-out evening public event	150	50

**Maximum tour capacity* at Yerkes is 40 persons. While multiple tours occur daily, they are scheduled such that parking demand does not overlap.*
Maximum visitation for special events is 70 persons. For events with attendance over 70 Yerkes parks all attendees offsite and provides shuttle service from Williams Bay HS.
Yerkes staff are served by 15 staff parking spaces (lot east of building, maintenance shed lot).

Thus for the purposes of both maximum regular visitation and peak visitation, we believe the existing Yerkes parking (67 spots in total) fulfills the number of parking spots required within both Village of Williams Bay ordinances §390-0308 A (Indoor Institutional) and §390-0309 B.4 (Recreational Land Uses/Outdoor Active Recreation).

11. What else can Yerkes do to ensure adequate parking capacity for the playground?

While we believe our current parking fully meet Village code requirements for Play/Space, Yerkes plans to take a “better safe than sorry” approach to parking for the playground.

Yerkes will:

- **A)** **Gate the park** each night to discourage after-hours playground use.
- **B)** **Retain a temporary overflow lot** for 25-30 additional cars as a backup.
- **C)** Institute an **access control plan** to ensure playground use does not exceed capacity.

A) Gating the park.

Yerkes has already installed new gates at both the Observatory Place and Parkhurst driveways, which will be used to close the site each evening. This will reduce the likelihood that the playground will be used after-hours and cause annoyance to neighbors or the community. New turnarounds are being installed to ensure after-hour arrivals do not use neighbor driveways to turn around.

B) Temporary overflow lot.

During the construction of Play/Space Yerkes will construct a temporary gravel lot north of the current lot, accommodating an additional 25-30 vehicles. This lot is needed during construction because construction equipment will occupy a portion of the existing lot. Yerkes plans to keep this gravel temporary lot in place when the playground opens. This will allow us to gauge visitor demand and patterns of use, ensuring we have adequate overflow parking as a backup, until such time that it is proved it is not needed, or the new Yerkes parking lot expansion is built.

C) Access control plan.

Yerkes will initially require all visitors to the playground to have a timed reservation (morning, or afternoon). The number of reservations available each morning and afternoon will be limited to 80, ensuring it does not exceed capacity. Yerkes will widely promote the requirement families make reservations when the playground opens, and staff will welcome and monitor arriving visitors. We will assess the need for ongoing access control based on experience.

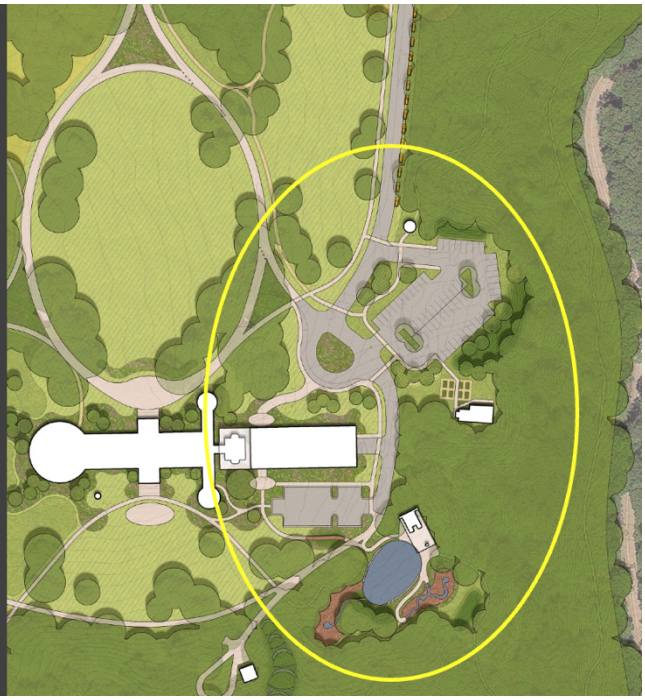
Images of future changes described by the Master Plan are below, for easy reference.

Highlights: North Entry

1. Retains a one-way entry from Geneva St.
2. Turnaround added and new gatehouse/admission point added (location on driveway tbd).
3. Olmsted-inspired garden 'rooms' and plantings.
4. Restored native prairies and plants; added garden and arboretum interpretation
5. Viewshed of neighbors is screened with plantings at edges of property.
6. Sites and vistas for sculpture.

Highlights: Arrival Zone

1. Focuses visitor amenities into 6 acres.
2. New Education + Visitor Center connects to historic building through a grand entry.
3. Play/Space playground.
4. Cosmic Family Pavilion for landscape users.
5. Maintenance building relocated to NE.
6. Historic houses remain for scientist and artist residencies.
7. Parking capacity increases from 55 to 150 (90 paved, 20 covered staff spots, 40 "peak need" green parking along exit drive).
8. Play/Space parking kept separate.



Highlights: Southwest Prairie

1 Completion of 1905 Olmsted trail loop extends ADA access around full site.

2 Stargazing Deck for programs and research makes telescopes accessible to all for the first time in 128 years.

3 Expanded native plantings and landscape features.

4 New South entry patio for small events.

5 Legacy GWC structure relocated from The Preserve to SW campus.

6 Restored native prairies; added garden and arboretum interpretation, sites for sculpture.

Highlights: Western Grasslands

1 Open viewshed expands the perceived scale of Yerkes landscape.

2 Restoration of native prairies and plants.

3 Expanded trails and connection to the adjacent 90-acre Preserve property, creating a 140 acre Landscape Scale conservation site overall.

4 Access for Yerkes visitors to the planned Preserve snack shack.

5 Sites and vistas for sculpture.

Highlights: Oak Savana Exit

1 Maintenance building and fenced yard relocated to site edge, screened by plantings.

2 Driveway exits to Constance via a drive recessed into the landscape to reduce vehicle visibility.

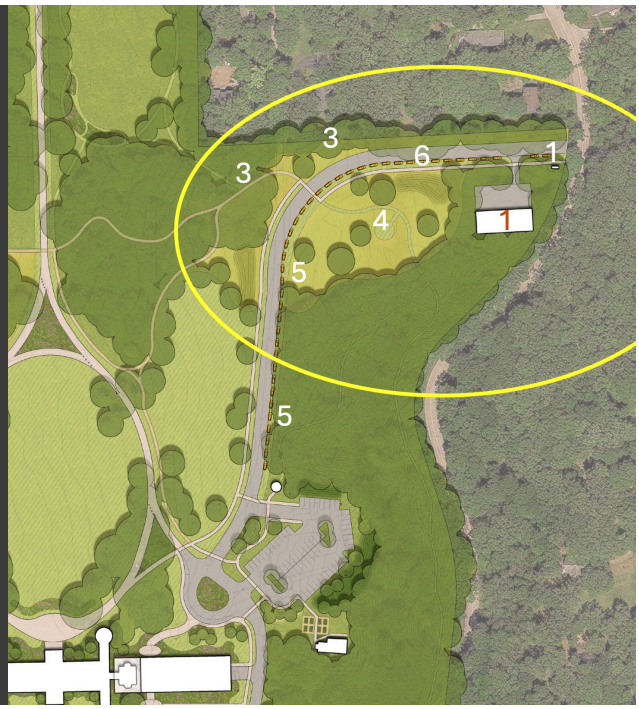
3 Mounded berm and plantings to shield neighbors to the North from vehicles and noise.

4 Restored Oak Savana; only 0.01% of these native landscapes in Wisconsin remain.

5 'Green' overflow parking along exit drive disappears when not in use.

6 One-way drive, but if needed can accommodate two-way traffic for occasional special events.

* WI DNR: 500 acres of native Oak Savana remain of 5.5 million acres.



Please see the attached Site and Facility Master Plan for more complete information.

YERKES
OBSERVATORY

SITE DEVELOPMENT PLAN

Yerkes Observatory advances humankind's understanding of the universe and our place within it, igniting curiosity, facilitating exploration, and nurturing a deep sense of connection with our planet and each other.

saiki DESIGN

Figure 1: Yerkes at Dusk

NOTE FROM DRECTOR DENNIS KOIS

Yerkes is at a crossroads. Having seen revolutionary and rapid growth over our first five years, the staff and board have found ourselves in need of a roadmap to help navigate how the transformational vision for Yerkes described in our 2024-2034 Strategic Plan will be supported by our future site and facilities. This Site Development Plan maps that path.

In creating it we've attempted to balance the needs of Yerkes' passionate constituents--our community, current and future visitors, donors, neighbors, staff and board--with our responsibility to thoughtfully steward the 128-year legacy of discovery and scientific leadership on which we stand. I thank the committee, consultants and our partners at Saiki who helped create it.

The Yerkes of the future--enabled by the ongoing $106 million Grow Our Galaxy Campaign--brings together astronomy, the arts and the landscape to transform our visitors... and hopefully the world. Yerkes will inspire future generations of scientists, astronauts, artists and explorers, who will carry its spirit of discovery and innovation into a future we cannot foresee.

In order to succeed in creating that future Yerkes, we must establish an accessible, innovative and sustainable campus today. One that will support our mission and growth, and magnify our impacts. Both now, and for the centuries ahead.

COMMITTEE MEMBERS

Amanda Bauer
Julie Brandt
Bill Brownell
Robin Culbertson
Dana Hagenah
Dennis Kois
Tom Nickols
Aaron Rankin
Marc Stanek

Consultants:
Jeff Epping, Epping Design & Consulting
Eric Halbur, Abacus Architects
Abbie Moilien, Saiki Design
Lydia DeBauche, Saiki Design

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20 CONCEPT DEVELOPMENT

24 THE NEW SITE DEVELOPMENT PLAN

34 MOOD BOARDS

40 REFERENCE MATERIALS

Figure 2: Golden Hour on the South Lawn

EXECUTIVE SUMMARY

Figure 3: Research Dome

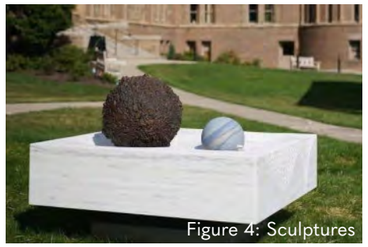


Figure 4: Sculptures

Figure 5: Event Day

VISION AND APPROACH

The Yerkes Observatory Site Development Plan outlines a transformative vision that honors the site's historic legacy while supporting its evolving mission as a center for science, education, and culture. Rooted in the Observatory's 2024–2034 Strategic Plan, the development framework reflects Yerkes' core values, including discovery, accessibility, collaboration, and creativity, by shaping a landscape that invites exploration, fosters learning, and connects people of all ages with both history and nature.

The plan builds on the Olmsted Brothers' original design, preserving defining features such as the Ellipse, framed views, and formal geometries, while enhancing the site's capacity to serve contemporary programming needs and blending these needs into the naturalistic character of the site. Informed by detailed site analysis, the plan responds to topography, drainage, and natural site features, guiding new additions that are ecologically sound and sensitive to the site's layered history.

Ecological stewardship is central to the plan's goals. The extent of high-maintenance turf is significantly reduced in favor of expanded native plant communities, including oak savannas, meadows, and prairies, which support biodiversity, reduce maintenance, and create immersive natural experiences. Restoration of degraded forested areas further reinforces long-term sustainability and educational opportunity.

Circulation systems are reimagined to support accessibility and functional clarity, maintaining the historic one-way drive around the Ellipse while relocating the exit to Constance Boulevard to improve traffic flow. A new pedestrian path hierarchy using stabilized aggregate, mown paths, and a variety of trails accommodates diverse uses and visitor experiences. The new Visitor Center is strategically located adjacent to the Observatory to enhance connectivity and visibility, while the relocated maintenance facility creates a more efficient and discreet operational hub. Plazas placed in central nodes foster interaction, observation, and engagement amongst all site users.

Together, these strategies result in a landscape framework that is functionally integrated, ecologically resilient, and culturally expressive. The plan provides Yerkes Observatory with a revitalized setting that advances its mission to inspire curiosity, foster connection, and cultivate lifelong learning, ensuring that the site remains a vibrant place of discovery for generations to come.

PLAN HIGHLIGHTS

HISTORIC INTEGRITY, MODERN VISION

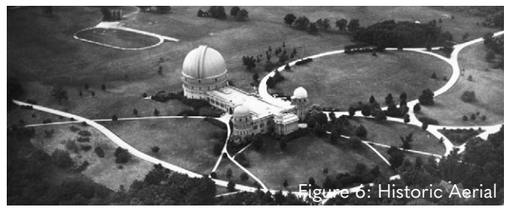
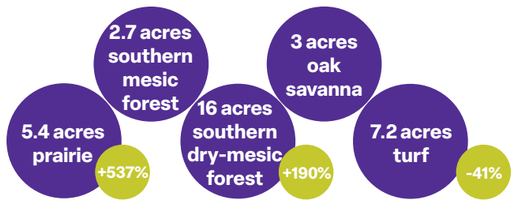


Figure 6: Historic Aerial

- **Key Olmsted features preserved**, including the grand Ellipse and framed views of the Observatory
- **Underutilized areas reimagined** to support new program needs
- **Historic overlay analysis** guided design decisions
  - Identified what remains intact
  - Highlighted areas for restoration
  - Informed opportunities for thoughtful reinterpretation

RESTORING ECOLOGY



- **Over 32 acres of native plant communities**, including oak savannas, mesic prairies, and open meadows, will take root across the site, enriching its ecological diversity and reducing maintenance
- **10 Acres of degraded woodland restored** through understory clearing and replanting
- **0.33 Acres of bioretention areas filter** runoff and manage stormwater and protect slopes from erosion
- **Turf reduced by 41% site wide**

PATHWAYS AND PLACE

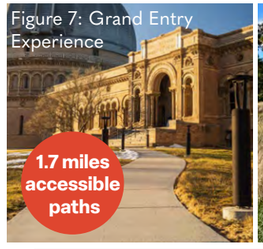
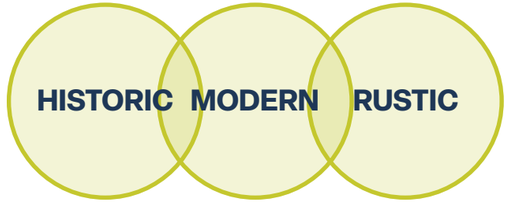


Figure 8: Mown Path

- **Circulation is reimagined** to support both movement and experience
- **Historic one-way ellipse preserved**; new exit at Constance Boulevard realizes Olmsted circulation vision
- **1.67 miles of ADA-accessible paths and 1.8 miles of natural surface trails** guide visitors through restored landscapes
- **Program elements,** including the Visitor Center and parking lots, are placed to support intuitive navigation and meaningful engagement

CURATING A UNIFIED LANDSCAPE IDENTITY



- **The plan blends historic character, scientific heritage, and natural beauty** into a landscape that invites curiosity, reflection, and discovery
- **Framed views, outdoor rooms, and native plantings** reinforce the site's educational mission
- **Mood boards and material palettes** unify rustic, traditional, and modern design elements

PROJECT DESCRIPTION & OBJECTIVES

PROJECT BACKGROUND

Yerkes Observatory, home to the world's largest refracting telescope, has been a center of astrophysical research and discovery for over 120 years.

Building on a comprehensive strategic planning process, the 2024–2034 Yerkes Observatory Strategic Plan presents an ambitious vision: to deepen our understanding of the universe by weaving together science, art, and culture, while inspiring future generations through education, discovery, and public engagement.

Aligned with this vision, this Yerkes Site Development Plan integrates the Observatory's evolving mission with its storied scientific legacy and historic landscape.

GOALS AND OBJECTIVES

INSPIRE CURIOSITY | FACILITATE EXPLORATION | PROMOTE LIFELONG LEARNING | PROMOTE COMMUNITY CONNECTION | ENHANCE MEANINGFUL ENGAGEMENT

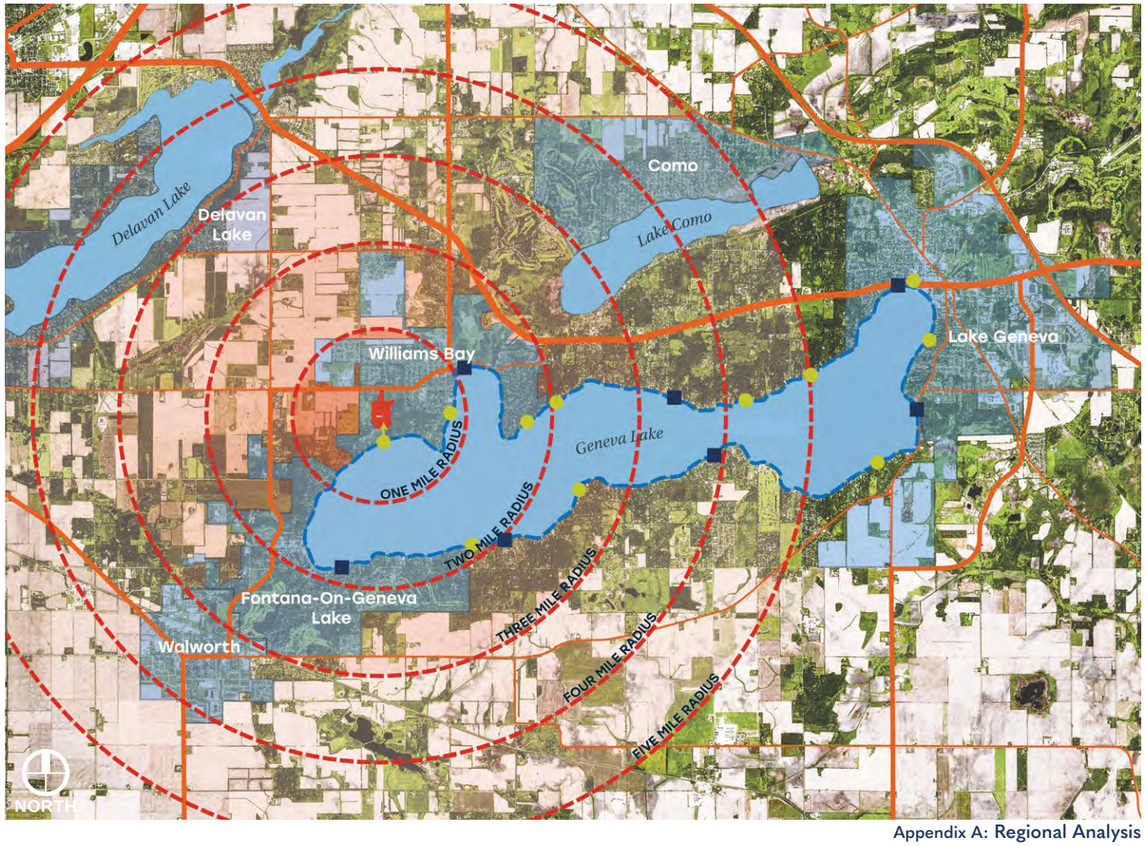
YERKES LANDSCAPE ELEMENT	PRIMARY GOALS
APIARY	
OBSERVATION DECK	
HERITAGE & LAND PRESERVATION	
PLAY/SPACE	
PARKING	
STORMWATER MANAGEMENT	
NATIVE LANDSCAPE	
NATURE TRAILS	
GARDEN	
ART	

SITE INVENTORY AND ANALYSIS

Figure 9: Yerkes Bird's Eye

SITE INVENTORY & ANALYSIS

REGIONAL SITE CONTEXT



Appendix A: Regional Analysis

MAP KEY

- Yerkes Observatory
- Geneva Lake Shore Path
- Lake Shore Path Destination
- Lake Shore Path Access Point

Yerkes Observatory sits high upon a bluff overlooking Williams Bay and Geneva Lake. The lake, 5,400 acres large, is surrounded by a 21-mile public Lakeshore path, connecting visitors and residents of communities like Lake Geneva and Williams Bay with scenic views. In addition to many historic estates along the path, Yerkes Observatory is listed as a Lakeshore path destination, with hopes to encourage even more visitors to explore the site in the future.

EXISTING CONDITIONS

Figure 10: South Lawn

Figure 11: Peering Through Prairie at the Great Dome

Figure 12: Artfully Painted Apiary

Figure 13: South Entrance to Yerkes

Figure 14: Great Dome in the Landscape

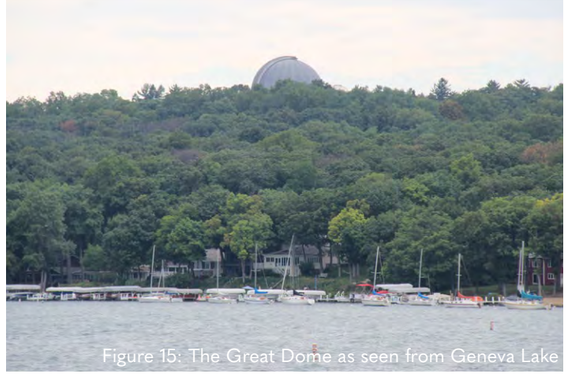
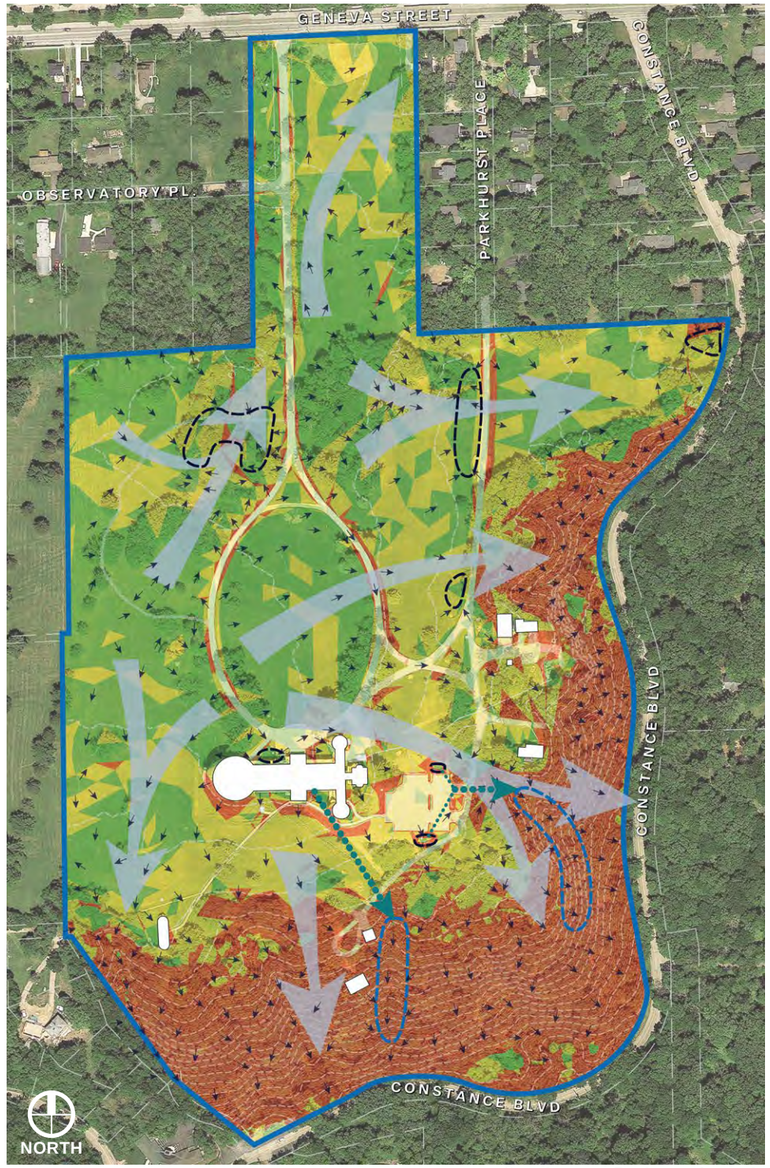


Figure 15: The Great Dome as seen from Geneva Lake

GRADING & DRAINAGE

In order to determine the most suitable locations for site features, a grading and drainage diagram compiles grading and drainage opportunities and constraints. Areas shaded in green indicate the most shallow slopes at 0-3%, yellow indicates intermediate slopes at 3-8%, and red indicates the most steep slopes at 8%+. Pathways less than 5% slope do not require handrails, and pathways 5-8% require handrails according to ADA. While development in areas with steep slopes is possible, there can be significant cost savings when building on tempered terrain. The diagram highlights natural low points that are less suitable for development and provide opportunities for stormwater infiltration. Erosion issues are present in the locations where storm sewer outfalls occur at the top of steep slopes.



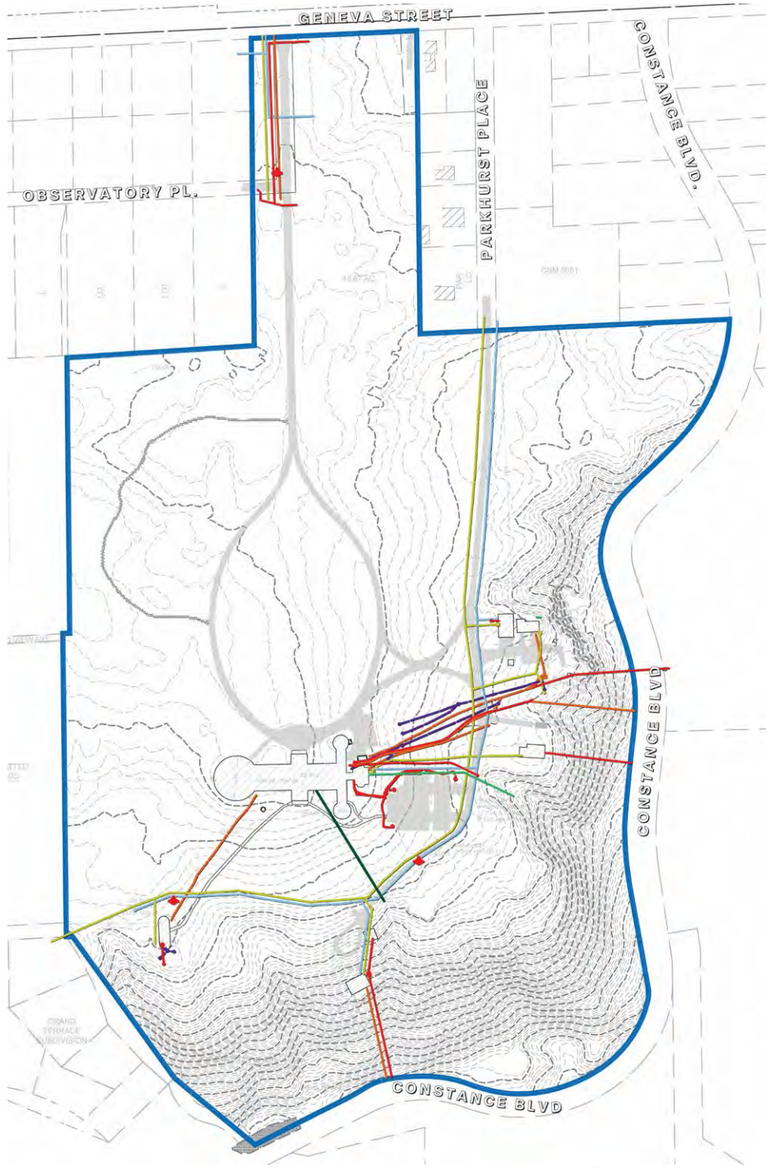
MAP KEY

- 0-3% Slope
- 3-8% Slope
- 8% + Slope
- Drainage Direction
- Overall Drainage Movement
- Low Point
- Erosion Present
- Storm Sewer

Appendix B: **Grading and Drainage Analysis**

UTILITIES

The utility plan highlights the centralized corridor, which stretches from the Observatory east towards the historic location of the power house, the site occupied by the maintenance facility today. Due to incomplete survey information, much of this existing utility information is based on observation and should not be relied upon for construction purposes. Many steam lines which once connected to the powerhouse are now abandoned, and are likely the 'unknown' category in this diagram.



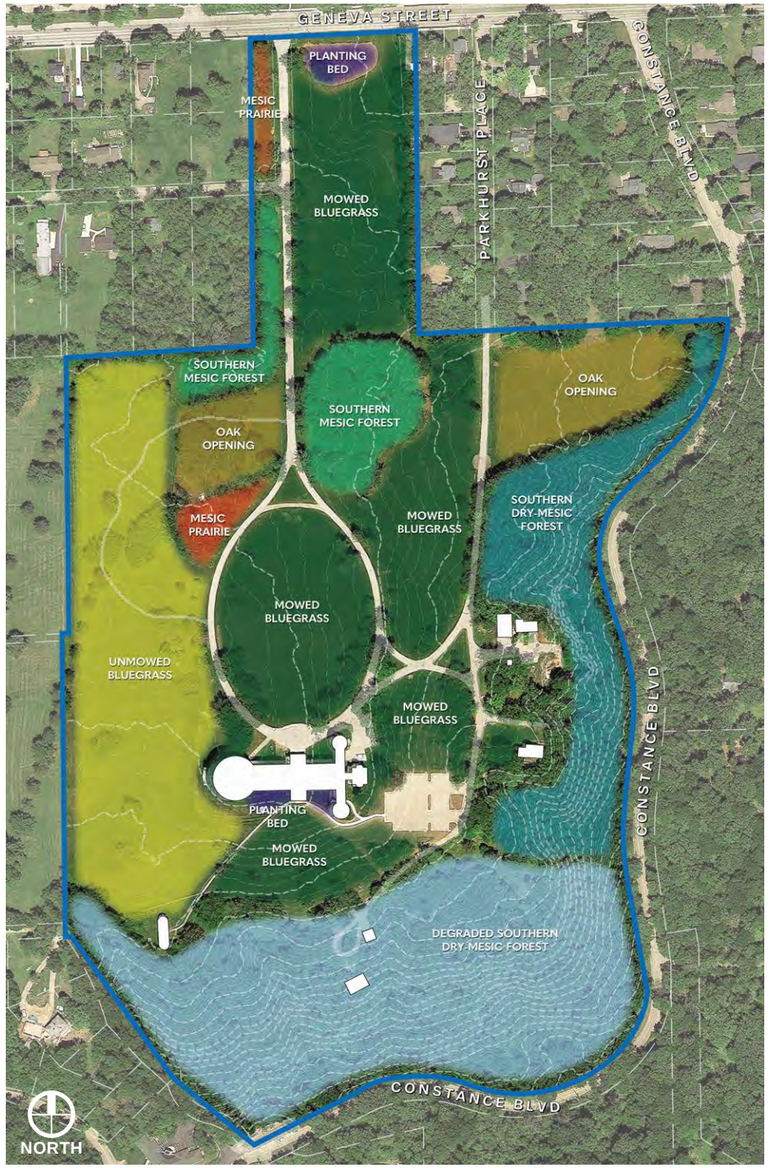
MAP KEY

- Communication
- Electrical
- Gas
- Sanitary
- Water
- Storm
- Unknown
- Hydrant

Appendix C: **Existing Site Utilities**

PLANT COMMUNITIES

The existing condition of the Yerkes site reflects ongoing collaboration with renowned horticulturists, arborists, and dedicated volunteers who have helped reimagine and implement diverse planting efforts. Building upon and refining the historic Olmsted design, the landscape now includes a mix of natural plant communities, such as oak savannas, mesic prairies, and meadow-like areas, alongside maintained open spaces. Over 30% of the site remains high-maintenance mowed bluegrass. The site development plan builds on these efforts, aiming to reduce the extent of mowed lawn, expand native plant communities, and propose key areas for new planting installations—advancing a sustainable, educational, and contemporary interpretation of the Olmsted vision.



MAP KEY

- Planting Bed
- Mesic Prairie
- Oak Opening
- Southern Mesic Forest
- Southern Dry-Mesic Forest
- Degraded Southern Dry-Mesic Forest
- Unmown Lawn
- Mowed Lawn

Appendix D: Existing Plant Communities

Figure 16: Welcome Gardens
Planting Bed

Figure 17: Prairie Signage
Mesic Prairie

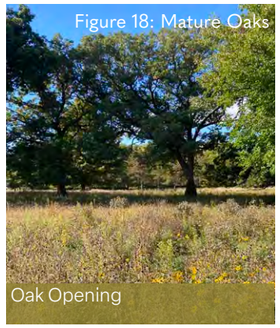


Figure 18: Mature Oaks
Oak Opening

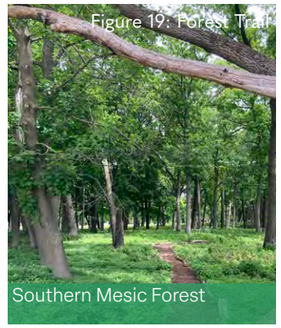


Figure 19: Forest Trail
Southern Mesic Forest

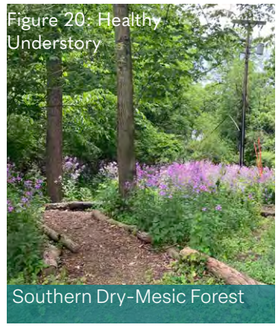


Figure 20: Healthy Understory
Southern Dry-Mesic Forest

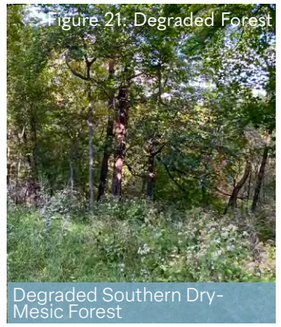


Figure 21: Degraded Forest
Degraded Southern Dry-Mesic Forest

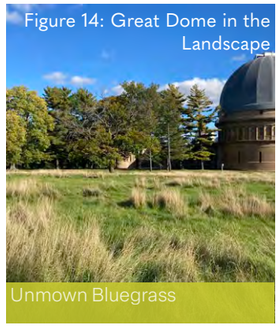


Figure 14: Great Dome in the Landscape
Unmown Bluegrass

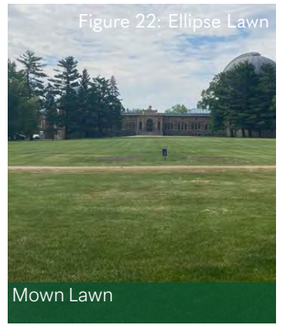
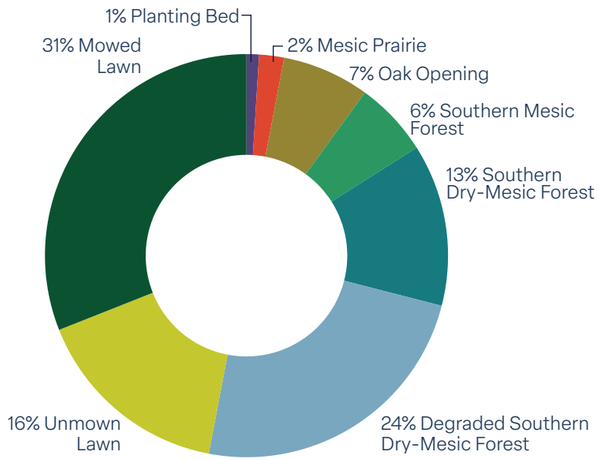


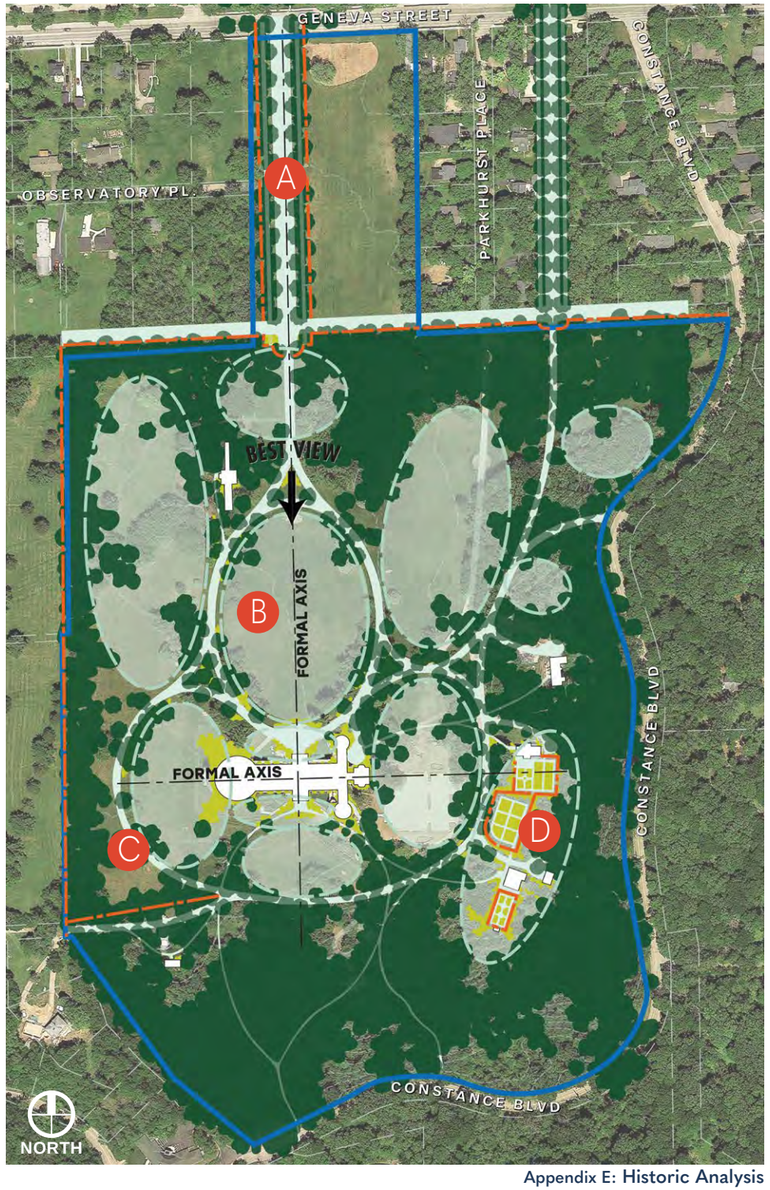
Figure 22: Ellipse Lawn
Mown Lawn



Forests currently cover nearly 40% of the site. However, 24% of the site, roughly two-thirds of the forested area, is considered 'degraded' due to overgrown under story of primarily invasive species. The site development plan will highlight the desire to restore these degraded areas, while also aiming to reduce the amount of mowed lawn, expanding native plant communities, and will propose key areas for planting installations.

HISTORIC ANALYSIS

The Olmsted plan is overlaid on the present-day site plan, revealing which parts of the plan were implemented and how elements have adapted over time. The original plan focused on creating path circuits and establishing formal geometries with the main goal of creating framed views of the pinnacle of the landscape, the observatory itself. Additionally, the Olmsted Brothers' design introduced a pastoral, park-like arrangement of trees and shrubs that defined a series of outdoor rooms across the site, as illustrated in the diagram. While many of these rooms remain visible in the landscape, the site development plan offers opportunities to enhance existing ones and create new spatial experiences in keeping with the original vision.



Appendix E: Historic Analysis

MAP KEY

- Proposed Olmsted Plan Shrub Areas/ Planting Beds
- Proposed Olmsted Plan Tree Canopy
- Olmsted Plan Paths
- Olmsted "Rooms"
- Approximate Site Fence Location

Figure 23: Proctor Park
gateway at Proctor Park

Figure 24: Central Park
allée of trees along the mall at Central Park

A AVENUE & GATEWAY

The Olmsted vision begins with a formal tree-lined avenue featuring a 40-foot roadway flanked by two 8-foot gravel walking paths. This design creates a cathedral-like experience, with inner rows of elms arching overhead to form a vaulted canopy, while the outer rows of maples evoke stained glass windows, enclosing the space with layered texture and seasonal color.

Figure 9: Yerkes Bird's Eye
ellipse today

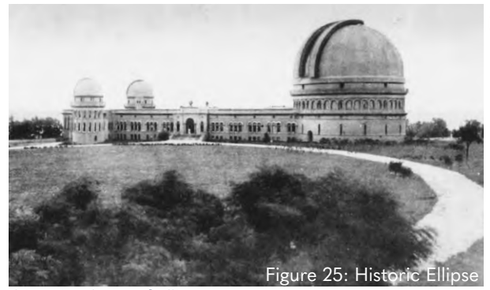


Figure 25: Historic Ellipse
historic photo of ellipse

B THE ELLIPSE

The formal drive splits into an elliptical loop, creating a meadow-like foreground that frames the most iconic view of the observatory—positioned along the building's main axis and set at a thoughtful distance to enhance its grandeur and visual impact.

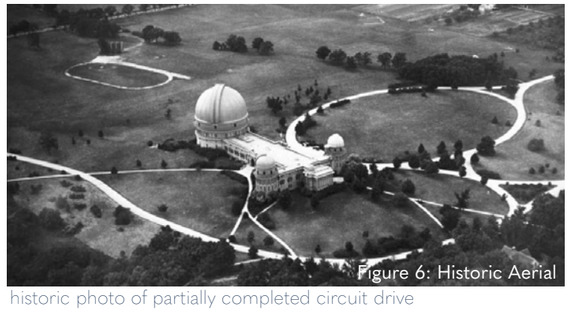


Figure 6: Historic Aerial
historic photo of partially completed circuit drive

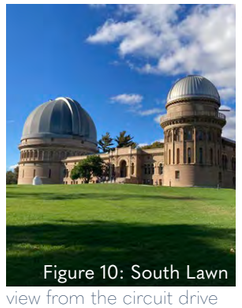


Figure 10: South Lawn
view from the circuit drive

C CIRCUIT DRIVE

Originally proposed as a vehicular path, this route was intended to offer scenic views of the observatory from an ideal distance while defining the edge of the surrounding woods. However, it was never completed due to concerns that vehicle headlights would interfere with astronomical observations.

Figure 26: Modern Planting
foundation planting today

Figure 27: Historic Planting
historic photo of Olmsted planing plan

D PLANTING PLAN

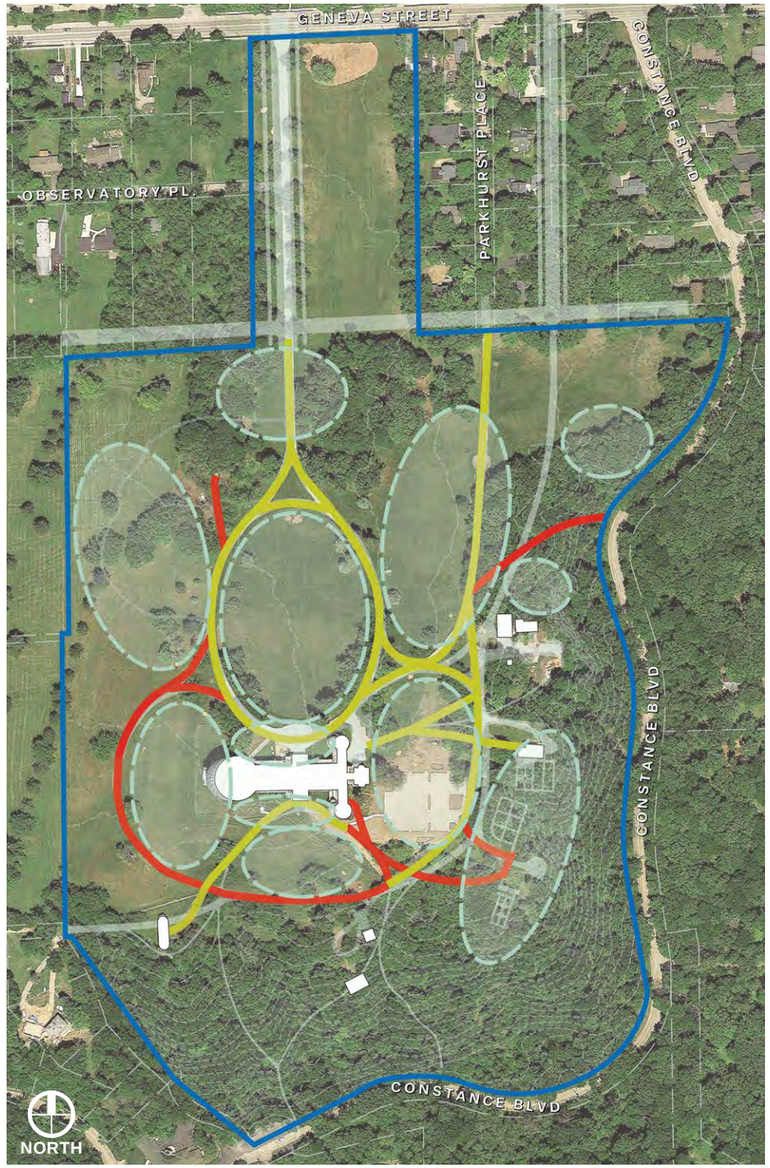
The planting plan primarily emphasizes trees, noting that shade-tolerant understory shrubs should be introduced once the canopy matures. Additionally, it originally included foundation plantings around the observatory and formal gardens adjacent to the director's house.

OLMSTED PLAN CIRCULATION

While many of the formal geometries and major pathways from the original Olmsted plan were implemented, this diagram highlights several missing links. Many of the Olmsted paths, shaded in light blue, have been completed but at a slightly shifted position compared to the proposed plan. An example of this includes the connection to Parkhurst Place, which was built further to the west than the Olmsted plan anticipated. Since the intent of the Olmsted paths was to frame views of the Observatory, restoring key connections will be a priority in the site development plan, such as the circuit drive and connection to Constance Boulevard. The concept development process explores how the historic path network can guide the placement of key site features and shape circulation patterns. At the same time, areas of the site that diverge from the original plan offer opportunities for thoughtful development and adaptation without compromising historic integrity.

MAP KEY

- Incomplete Olmsted Path
- Completed Olmsted Path
- Olmsted Plan Paths
- Olmsted "Rooms"



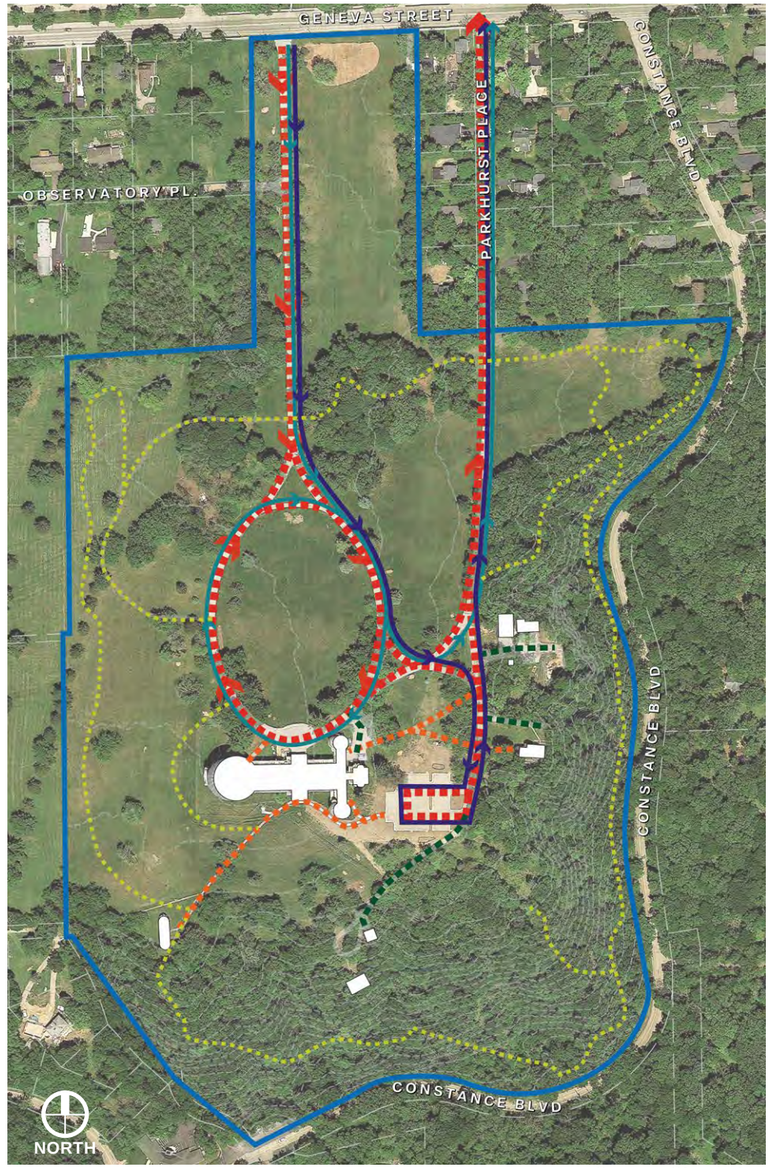
Appendix F: Olmsted Plan Circulation Analysis

CURRENT CIRCULATION

To establish a new circulation pattern, current movement through the site was carefully studied. The entry drive to the ellipse functions as a one-way route, with vehicles exiting onto Parkhurst Place, and circulation around the grand Olmsted Ellipse is typically reserved for special event drop-offs. While a few paved paths are in place, most pedestrian circulation occurs along gravel paths, mowed routes, or woodland trails. The concept development phase explored a new hierarchy of pedestrian and vehicular circulation to better support access and functionality across the site.

MAP KEY

- Primary Vehicular
- Service Vehicular
- Primary/Paved Pedestrian
- Secondary/Gravel/Mowed Pedestrian
- Visitor Circulation
- Special Event Circulation



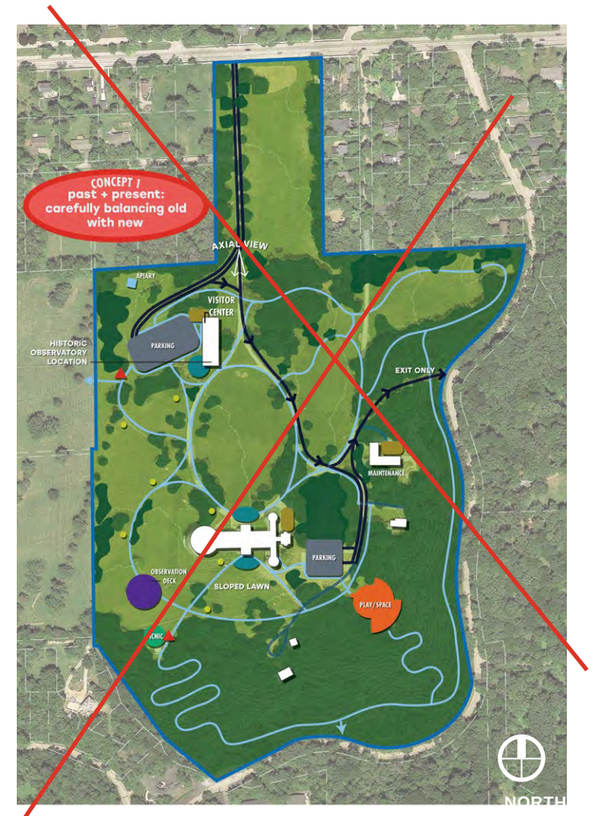
Appendix G: Current Circulation

CONCEPT DEVELOPMENT

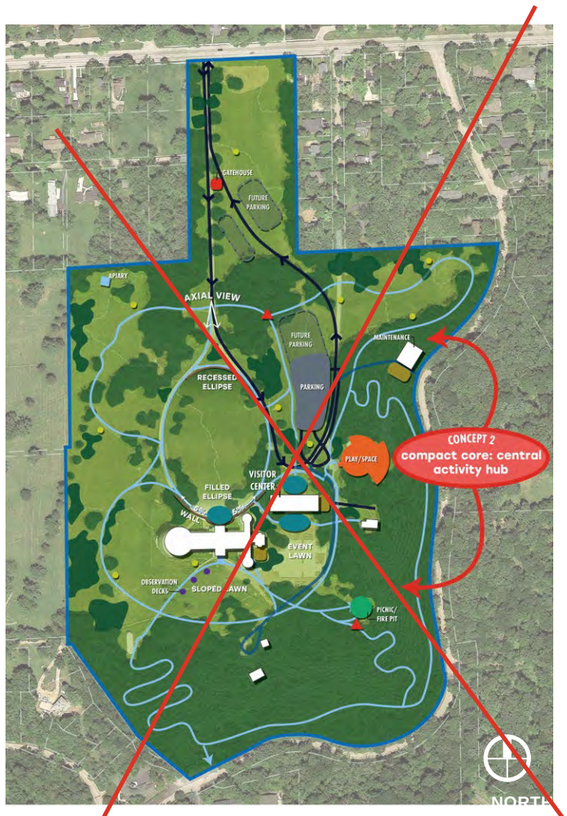
Figure 28: Night Time Observations

EARLY STUDIES

A GALLERY OF BAD IDEAS



Appendix H: EARLY STUDY, VISITOR CENTER TO NORTH1



Appendix I: EARLY STUDY, EXIT TO GENEVA ST

Appendix J: EARLY STUDY, CONSTRUCTION TO NORTH EAST

These early ideas--ultimately abandoned--helped inform our guiding principles:

- **Preserve the historic character of the Olmsted Ellipse and support pedestrian safety by maintaining one-way traffic**
- **Relocate the site exit to Constance Boulevard to better accommodate traffic flow**
- **Connect the Visitor Center to the Observatory to enhance function and user experience**

Multiple possible site layouts were considered (and discarded) as the Yerkes team examined how each program element relates to one another and to existing site features in terms of space, circulation, function, and user experience.

These diagrammatic explorations help ensure that the site development plan considered a range of possible solutions to meet Yerkes goals.

Designers utilized 3-D models to explore the relationship between key site features, such as the Play/Space, and the Observatory.

THE NEW SITE DEVELOPMENT PLAN

Figure 30: Spring at Yerkes

Appendix K: Site Development Plan

FINAL PLAN AND OUTCOMES

The Yerkes Observatory Site Development Plan reflects the core values of the 2024–2034 Strategic Plan, prioritizing a future that unites science, art, culture, and landscape. Rooted in the legacy of the Olmsted Brothers' historic landscape, the plan preserves key features while accommodating the evolving needs of the site, balancing historic preservation with modern functionality.

The landscape framework focuses on enhancing ecological health and user experience. Natural plant communities including oak savannas, mesic prairies, and meadows are being expanded across site to a total of over 32 acres, reducing high-maintenance mowed bluegrass cover by 41%. While iconic lawn areas such as the Ellipse and south lawn are preserved, the plan emphasizes a contemporary interpretation of Olmsted's vision.

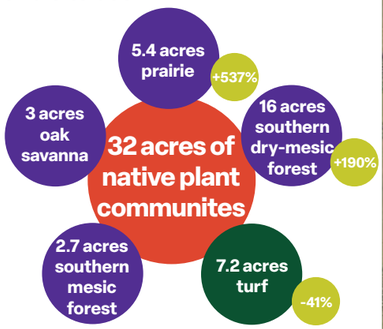
Circulation strategies address both vehicular and pedestrian movement across the site. One-way traffic will continue around the Ellipse to preserve its historic character and improve pedestrian safety, while exit circulation will be routed to Constance Boulevard to better handle increased traffic flow. This new exit route aligns with the Olmsted's vision for the site, which included a roadway to Constance; a connection that existed until the 1980's. Pedestrian pathways are reimagined with a new hierarchy of widths and materials based on seasonal use, volume, and accessibility. Stabilized granite paths will support accessibility in key areas, while mown trails offer a flexible, low-impact alternative.

Spatial planning for key program elements is based on careful studies of site relationships and user needs. The Visitor Center will connect to the Observatory while the maintenance facility will be relocated near Constance to separate operational functions from public areas. The primary parking lot is tucked into a wooded area for screening, gently guiding visitors through planted areas on their approach to the visitor center. The new site configuration will support peak parking for approximately 150 vehicles.

Overall, the plan honors the site's historic character while enabling Yerkes Observatory to serve its contemporary mission as a scientific, educational, and cultural destination.

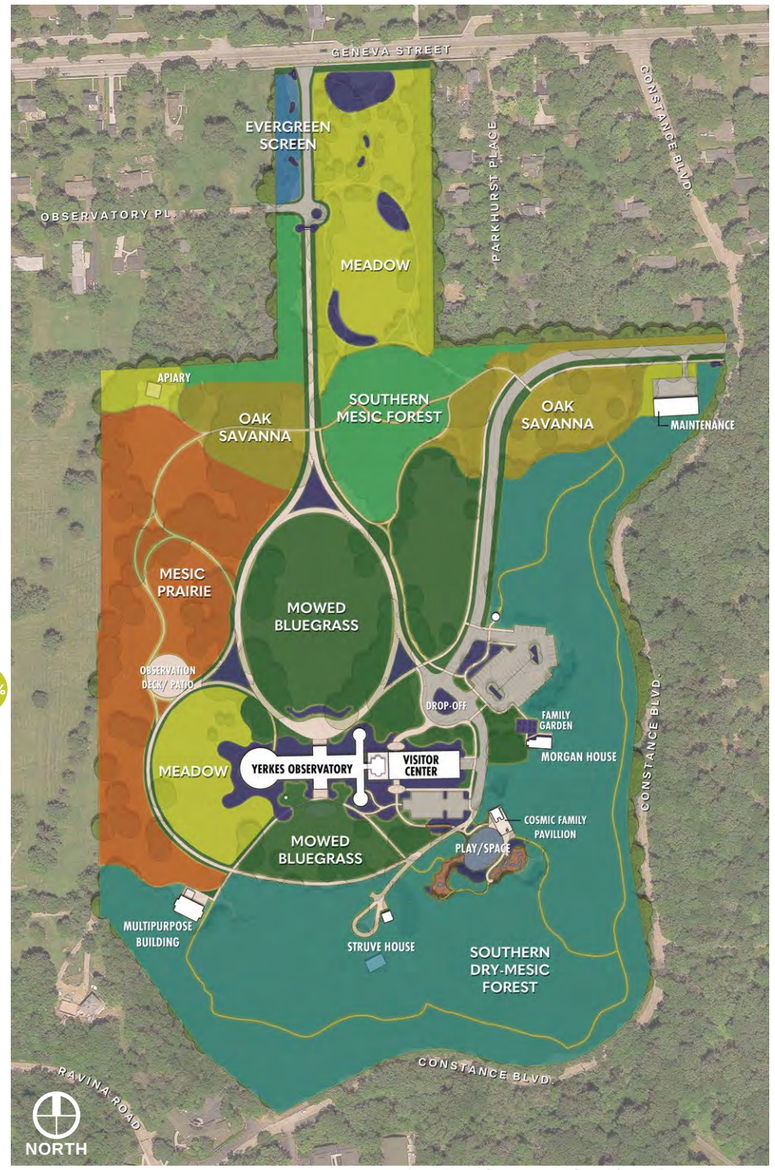
PLANT COMMUNITIES

By prioritizing a diverse range of communities, the site development plan enhances biodiversity, reinforces the natural site character, and supports long term stewardship goals. Placement of plant community types balances ecological function with aesthetic and experiential qualities, integrating restored forests, prairie expansions, and flexible-use areas. Circulation routes, gathering spaces, maintenance, and view sheds have all been considered to ensure a seamless relationship between planted environments and site use.



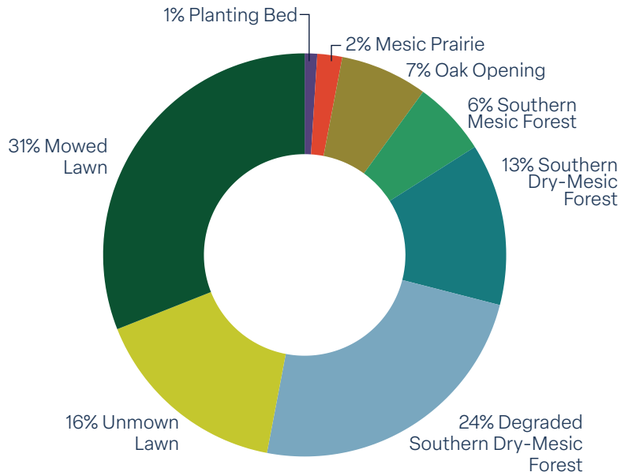
MAP KEY

- Planting Bed
- Mesic Prairie
- Oak Savanna
- Southern Mesic Forest
- Southern Dry-Mesic Forest
- Meadow
- Mowed Lawn
- Evergreen Screen



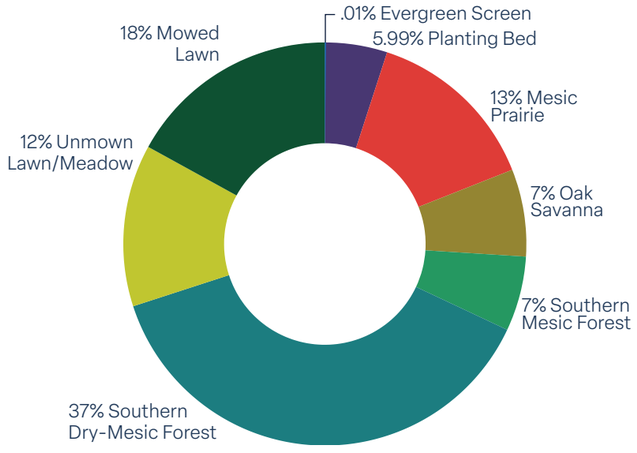
Appendix L: Site Development Plan Plant Communities

EXISTING CONDITIONS



The use of plant communities throughout the site aligns with Yerkes' core value of stewardship. The vision for the future expands these communities, while improving conditions in those already established, such as restoring degraded forested areas through the removal of understory and transitioning Oak Openings to Oak Savannas by increasing the diversity and density of native grasses, sedges, and forbs. The plan restores 10 acres of degraded woodland, a 190% increase. The site development plan expands plant communities and planted areas, reducing the amount of lawn. Native plant communities provide immense ecological value while the reduction of maintenance needed to upkeep mowed lawn reduces environmental impacts site wide.

PROPOSED



In the site development plan, mowed lawn is preserved high-activity areas where flexibility is key, and mow-edges have been added along naturalized areas to give a clean and crisp edge along key circulation routes. Unmowed lawn/meadow conditions are used in areas where a naturalistic appearance may be desired, but visibility to gardens and/or site structures is key, making a lower-growing meadow more suitable than a taller plant community. Prairie has greatly expanded across the site, a 537% increase, and will be tied-in seamlessly to the adjacent site in the future.

STORMWATER MANAGEMENT STRATEGIES

Stormwater management at Yerkes Observatory prioritizes protecting Geneva Lake and minimizing site erosion. New impermeable surfaces will be paired with bioretention areas to capture, filter, and infiltrate runoff on-site, reducing peak flows and preventing pollutants from reaching the lake. The plan also includes improvements to reduce erosion, particularly at stormwater outfall areas, where reinforced planting and grading strategies will stabilize soils and slow water movement. Overall, the goal is to manage stormwater sustainably, maintain site health, and protect the surrounding watershed.

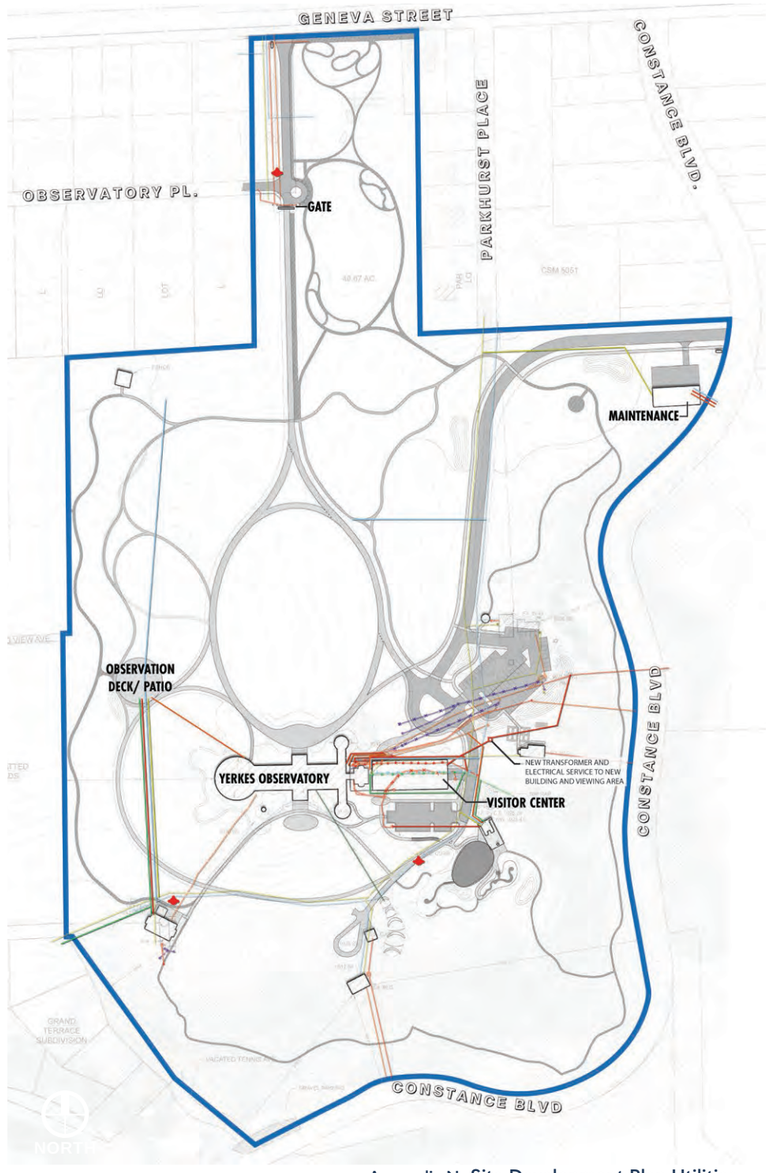
Appendix M: Site Development Plan Stormwater Management Strategies

MAP KEY

- Stormwater Basin
- Improved Drainageway

UTILITIES

The proposed site utilities plan is designed to connect key features, such as the observation deck and the relocated maintenance facility, while minimizing disruption to the landscape. Utility lines are strategically connected to existing infrastructure or exterior sources to avoid crossing through the site, reducing visual and environmental impact. Additional water lines have been placed throughout the site for easy access, especially as it relates to future and current planting projects.



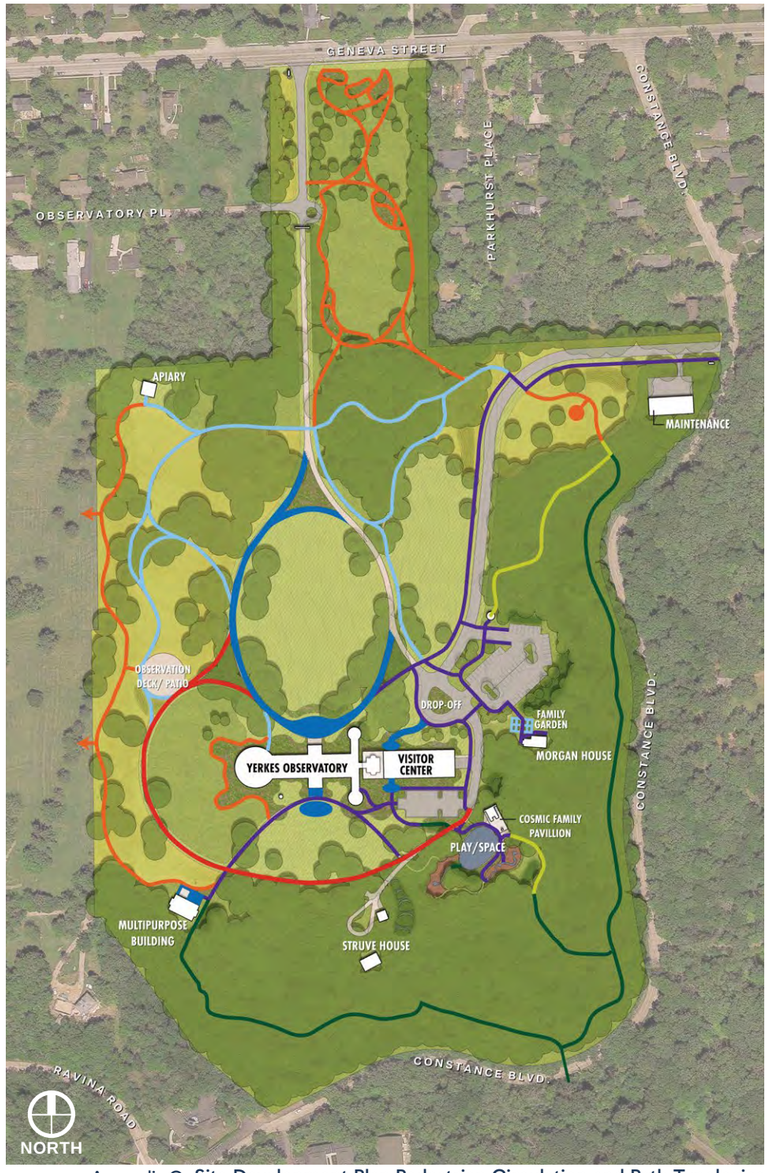
MAP KEY

- Proposed Communication
- Existing Communication
- Proposed Electrical
- Existing Electrical
- Proposed Gas
- Existing Gas
- Proposed Sanitary
- Existing Sanitary
- Proposed Water
- Existing Water
- Proposed Storm
- Existing Storm
- Existing Unknown
- Existing Hydrant
- Remove
- Relocate

Appendix N: Site Development Plan Utilities

PEDESTRIAN CIRCULATION AND PATH TYPOLOGIES

This diagram illustrates the proposed path widths and materials for pedestrian circulation, tailored to anticipated traffic volume, seasonal use, and accessibility requirements. Seasonal paths are designated as stabilized granite in areas where accessibility is a priority, and as mown paths where the intention is to maintain a trail-like experience with limited accessibility needs. Mown paths also offer flexibility for future adjustments. Path widths are carefully considered—not only to accommodate the number of users but also to determine which routes can support service vehicle access.



Appendix O: Site Development Plan Pedestrian Circulation and Path Typologies

MAP KEY

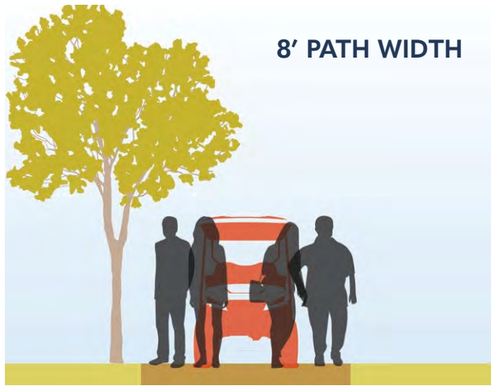
- Specialty Pedestrian Space - Width and Material Varies
- 8' Standard Concrete
- 6' Standard Concrete
- 6' Stabilized Granite Path
- 6' Mow Path
- 4' Woodland Trail
- Boardwalk/Stairs - Width Varies

Specialty Pedestrian Space

Figure 31: Darwin D. Martin House

Standard Concrete

Figure 13: South Entrance to Yerkes



Stabilized Aggregate

Figure 33: ADA Trail

Mow Path

Figure 8: Mow Path

Woodland Trail

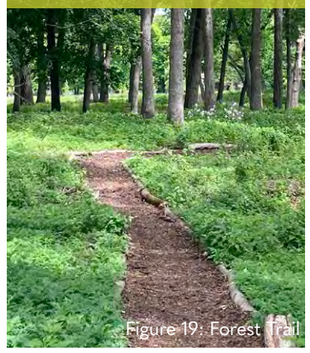


Figure 19: Forest Trail

Boardwalk/Stairs

Figure 32: Lost Creek Falls Stairs

MOOD BOARDS

Figure 34: A Winter's Sunset at Yerkes

MOOD BOARDS

This collection of mood boards captures the unique character of the Yerkes Observatory site through a curated blend of imagery that reflects its evolving identity. Showcasing architecture, site structures, furnishings, and planting palettes, these boards illustrate how the site transitions fluidly between traditional, modern, and rustic expressions. Together, they provide a visual framework for how the built and natural elements work in harmony to support the Observatory's mission, honor its history, and create a welcoming, timeless landscape experience.

ARCHITECTURE

TRADITIONAL ↑ MODERN ↓ RUSTIC

Figure 35: Momentous Building Signage

Figure 36: Morgan House

Figure 37: Traditional Style Modernized

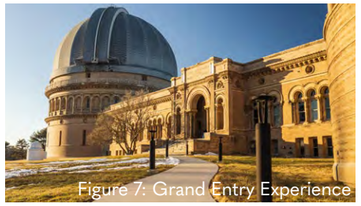


Figure 7: Grand Entry Experience

Figure 38: Detailed Ornamentation

Figure 39: History Meets Modernity

Figure 40: Architectural Harmony at the Swedish Institute

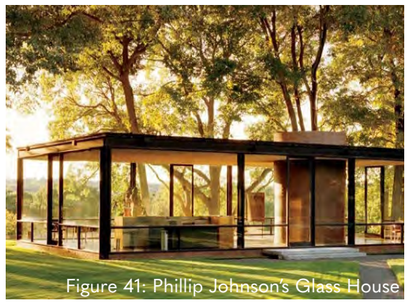

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Figure 42: Inviting Modern Design

Figure 43: Contemporary Park Architecture

Figure 44: Rustic Style Modernized

Figure 45: Struve House

Figure 46: Maintenance Facility at Storm King Art Center

SITE STRUCTURES

TRADITIONAL ↑ MODERN ↓ RUSTIC

Figure 47: Pergola at the Biltmore Estate

Figure 48: Biltmore Gatehouse

Figure 49: Ornamental Yerkes Gate

Figure 50: Welcome Sign at Yerkes

Figure 12: Artfully Painted Apiary

Figure 51: Play/Space Conceptual Rendering

Figure 52: Discovery Meadows Park Shelter

Figure 53: Sleek Shade Structure

Figure 54: Woven into the Forest

Figure 55: Artful Boardwalk

Figure 12: Lost Creek Falls Stairs

FURNISHINGS AND MATERIALS

TRADITIONAL

MODERN

RUSTIC

Figure 56: Bench with Architectural Motifs

Figure 57: Pavers at Olbrich Botanical Gardens

Figure 58: Hidden Faces in Yerkes Column

Figure 60: Rhythmic Formality

Figure 59: Traditional and Modern Blend

Figure 61: Contemporary Bench in Historic Setting

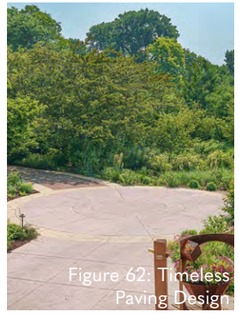
Figure 62: Timeless Paving Design

Figure 63: Organic Forms

Figure 64: Glow Stones

Figure 65: Comfortable Modern Seating

Figure 66: Organic Edge

Figure 67: Limestone Accent Seating

Figure 68: Modern-Rustic Council Ring

Figure 69: Rustic Bench

PLANTING

TRADITIONAL

MODERN

RUSTIC

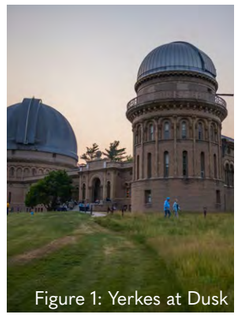
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Figure 71: Traditional Design at the Biltmore

Figure 72: Modern Take on Traditional Formal Gardens

Figure 73: Olmsted Vision for Yerkes Observatory

Figure 74: Modern Corten Accents

Figure 75: Contemporary Formality

Figure 16: Welcome Gardens

Figure 76: Textural Modern Planting Design

Figure 77: High-Contrast Contemporary Planting

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Photo by Phillip Bean Via www.olmsted.org "Olmsted City of Greater Utica"

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Photo Via www.architecturaldigrest.com "Architect Phillip Johnson's Glass House"

Figure 42: Inviting Modern Design • • • • • • • • • • • • • • 34

Photo Via www.mooool.com "The imperial Pearl by City Construction Design"

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Photo Via www.landscapeforms.com "Northport"

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Figure 62: Timeless Paving Design • • • • • • • • • • • • • 36

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Figure 70: Formal Olmsted Planting • • • • • • • • • • • • • 37

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Figure 74: Modern Corten Accents • • • • • • • • • • • • • • 37

Photo Via www.katieoglesby.com "Corten Garden"

Figure 75: Contemporary Formality • • • • • • • • • • • • • 37

Photo Via www.houseandgarden.co/uk "A garden on the Devon coast in tune with nature, ecology, and its surroundings"

Figure 76: Textural Modern Planting Design • • • • • • • • • 37

Photo Via www.northwindperennialfarm.com "Shedd Aquarium Oceanarium Chicago, Illinois"

Figure 77: High-Contrast Contemporary Planting • • • • • • 37

Figure 78: Colorful Prairie Landscape • • • • • • • • • • • • 37

Photo Via www.news.wisc.edu "UW–Madison Arboretum designated a National Historic Landmark"

Figure 79: Whimsical Woodland Planting • • • • • • • • • • 37

Photo Via www.perfectearthproject.org"Ask the Experts: The Native Plant Combinations the Pros Love"

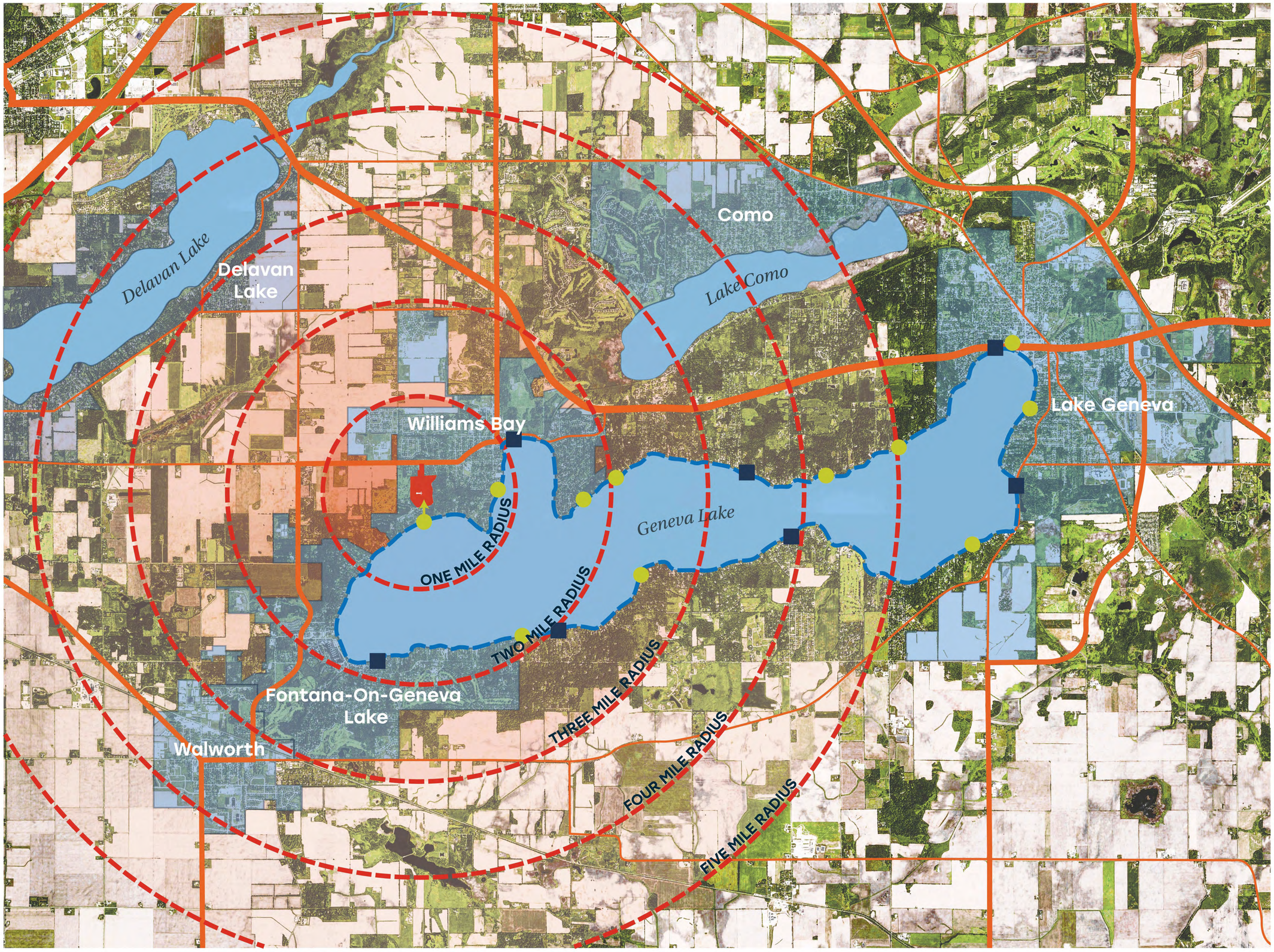
Figure 80: Lush Understory • • • • • • • • • • • • • • • • • 37

Photo Via www.goodoak.com "Woodland Restoration"

Figure 81: Yerkes Amongst the Stars • • • • • • • • • • • • • 39

APPENDIX

Appendix A: Regional Analysis • • •



MAP KEY

- Yerkes Observatory
- Geneva Lake Shore Path
- Lake Shore Path Destination
- Lake Shore Path Access Point

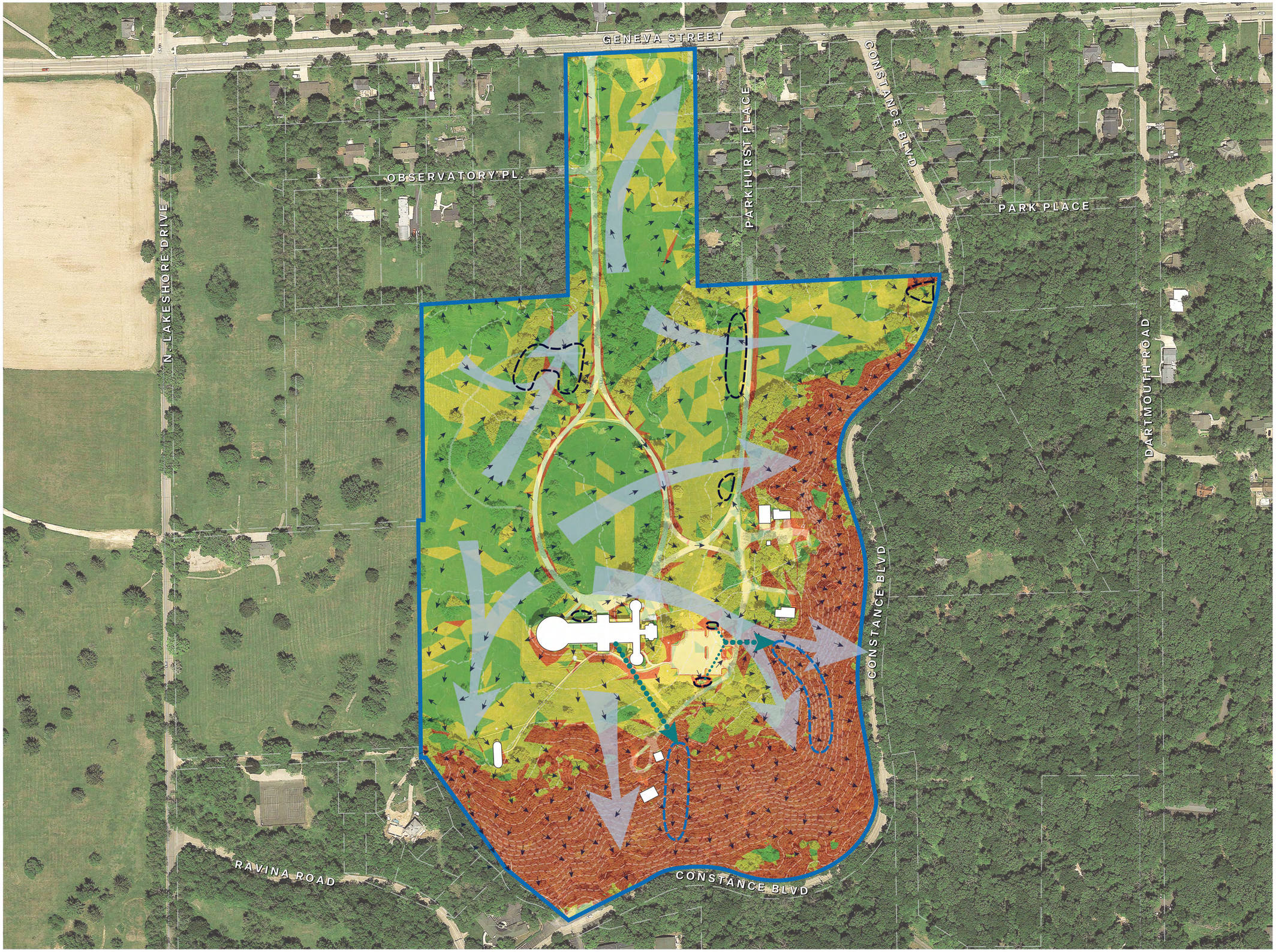
saiki DESIGN

REGIONAL ANALYSIS

yerkes observatory williams bay, wi

yerkes observatory site development plan

SITE ANALYSIS



MAP KEY

- 0-3% Slope
- 3-8% Slope
- 8%+ Slope
- Drainage Direction
- Overall Drainage Patterns
- Lowpoint/Drainage Concern
- Erosion Present
- Culvert

0’ 100’ 300’

NORTH

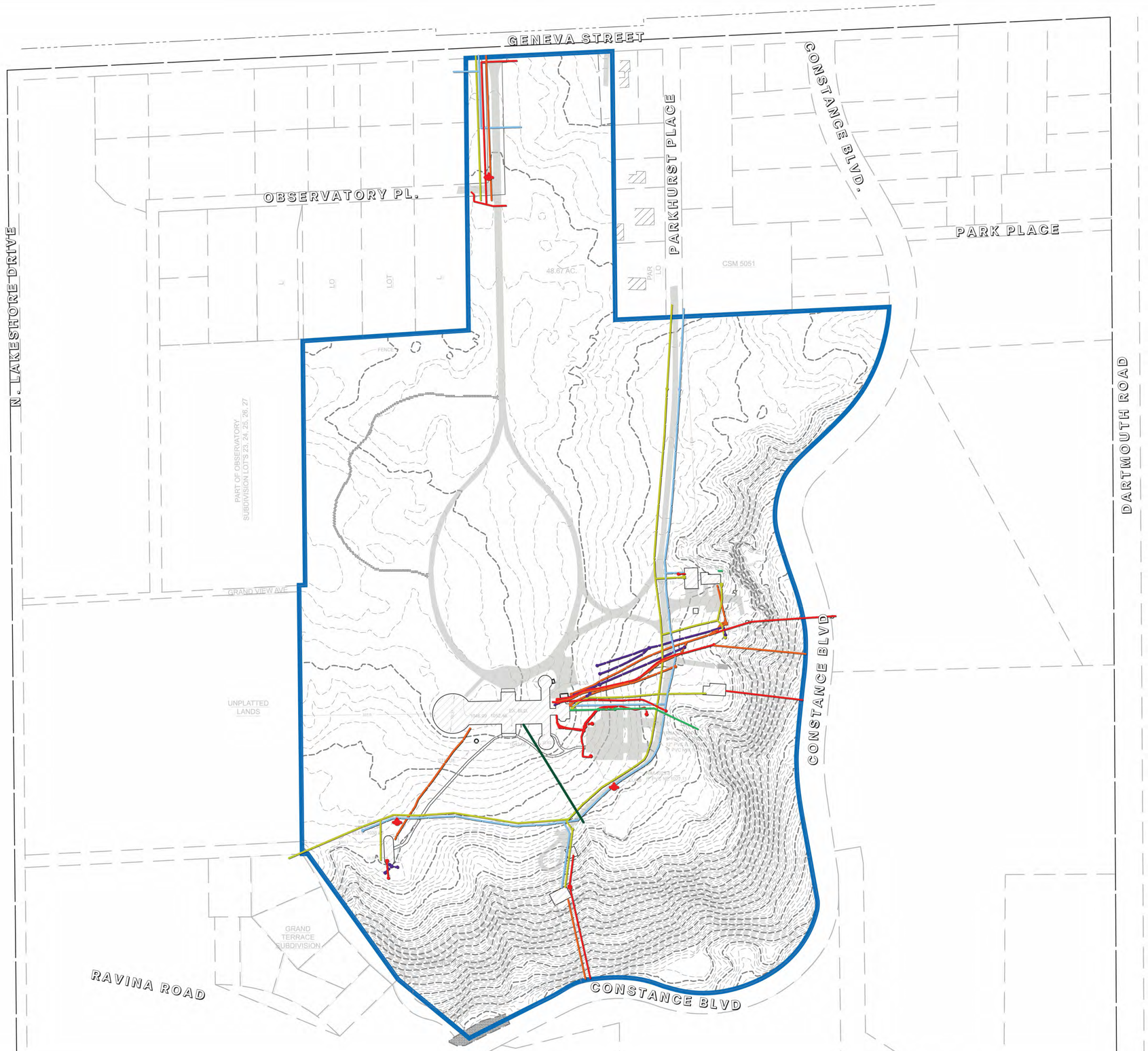
saiki DESIGN

GRADING AND DRAINAGE

yerkes observatory - williams bay, WI

yerkes observatory site development plan

SITE ANALYSIS



MAP KEY

- Communication
- Electrical
- Gas
- Sanitary
- Water
- Storm
- Unknown
- Fire Hydrant

0' 100' 300'

NORTH

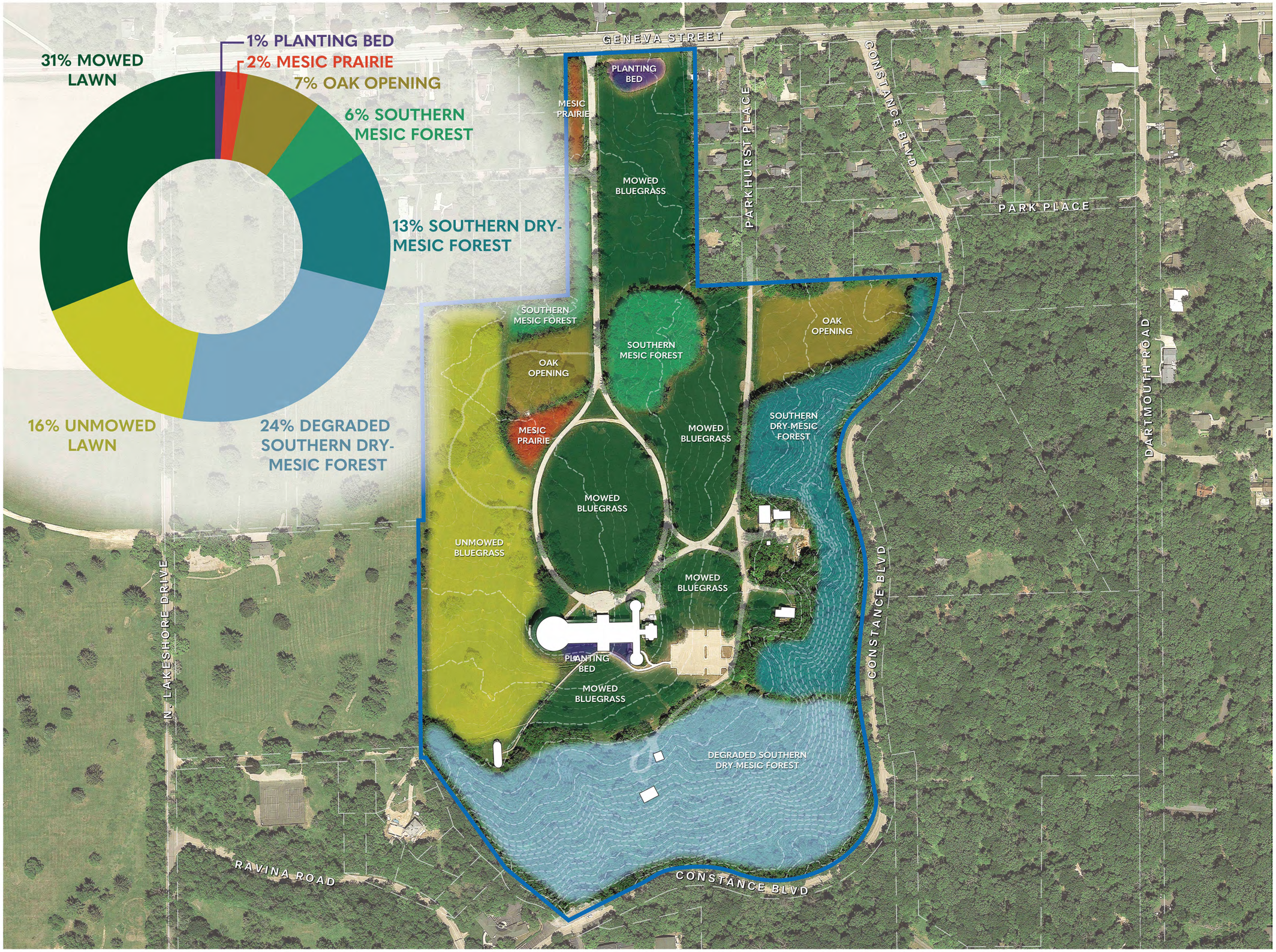
saiki DESIGN

EXISTING UTILITIES

yerkes observatory - williams bay, WI

yerkes observatory site development plan

SITE ANALYSIS



MAP KEY

- Planting Bed
- Mesic Prairie
- Oak Opening
- Southern Mesic Forest
- Southern Dry-Mesic Forest
- Degraded Southern Dry-Mesic Forest
- Unmowed Lawn
- Mowed Lawn

0’ 100’ 300’

NORTH

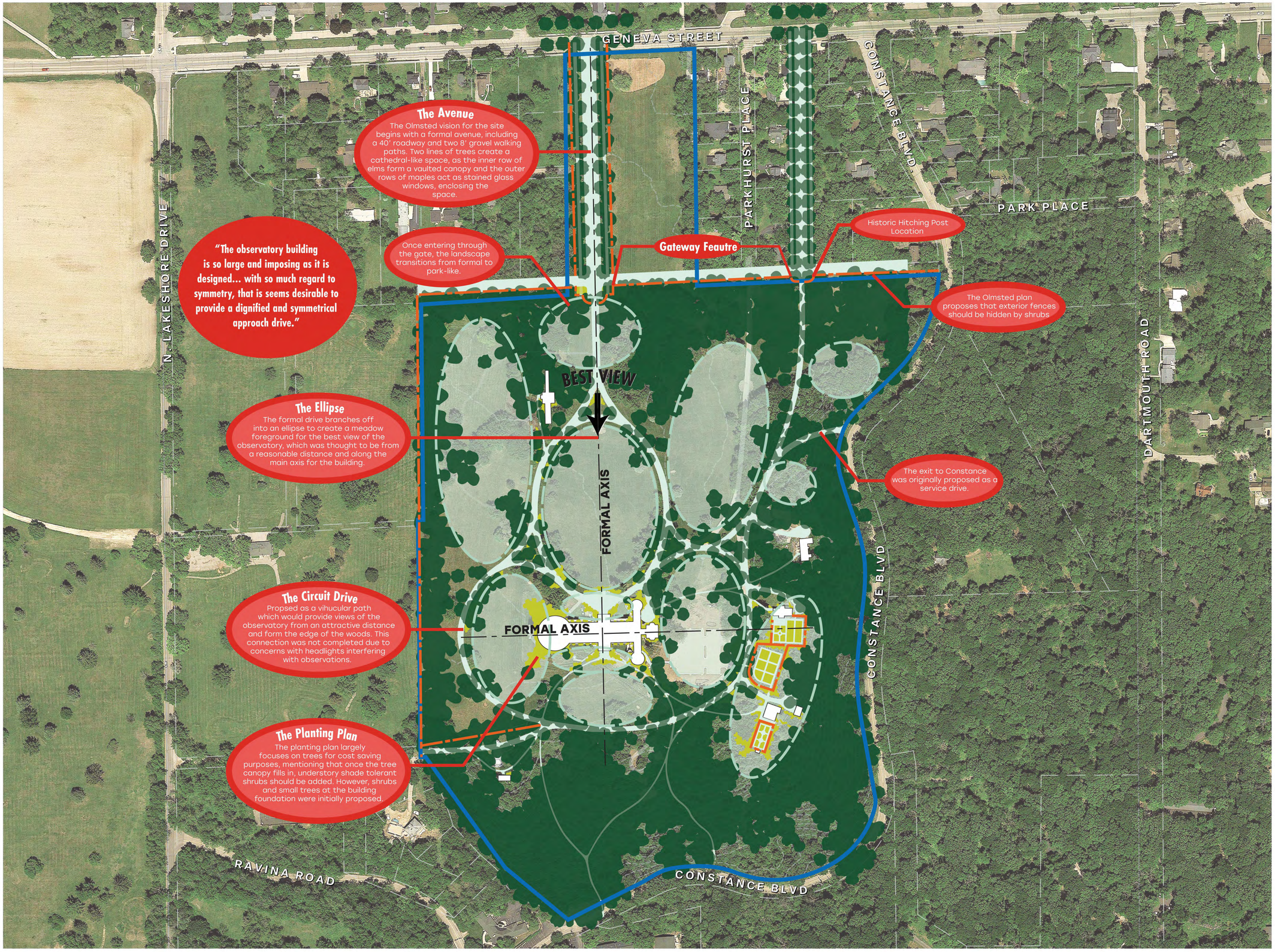
saiki DESIGN

EXISTING PLANT COMMUNITIES

yerkes observatory williams bay, wi

yerkes observatory site development plan

SITE ANALYSIS



MAP KEY

- Proposed Olmsted Plan Shrub Areas/Planting Beds
- Proposed Olmsted Plan Tree Canopy
- Olmsted Plan Paths
- Olmsted Plan "Rooms"
- Approximate Site Fence Location

0' 100' 300'

NORTH

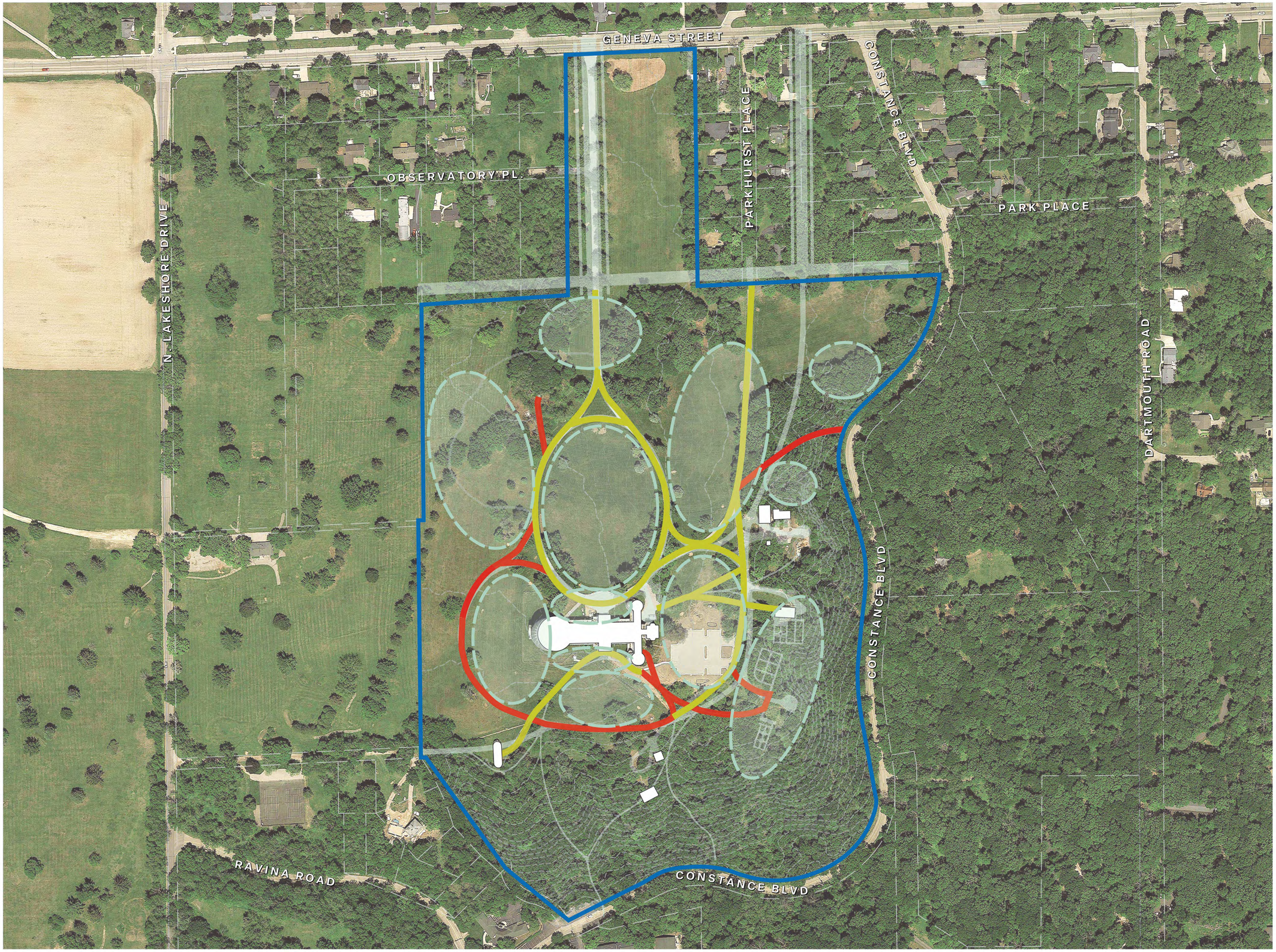
saiki DESIGN

HISTORIC ANALYSIS

yerkes observatory williams bay, wi

yerkes observatory site development plan

SITE ANALYSIS



MAP KEY

- Existing Olmsted Path
- Missing Olmsted Path
- Olmsted Plan Paths
- Olmsted Plan “Rooms”

0’ 100’ 300’

NORTH

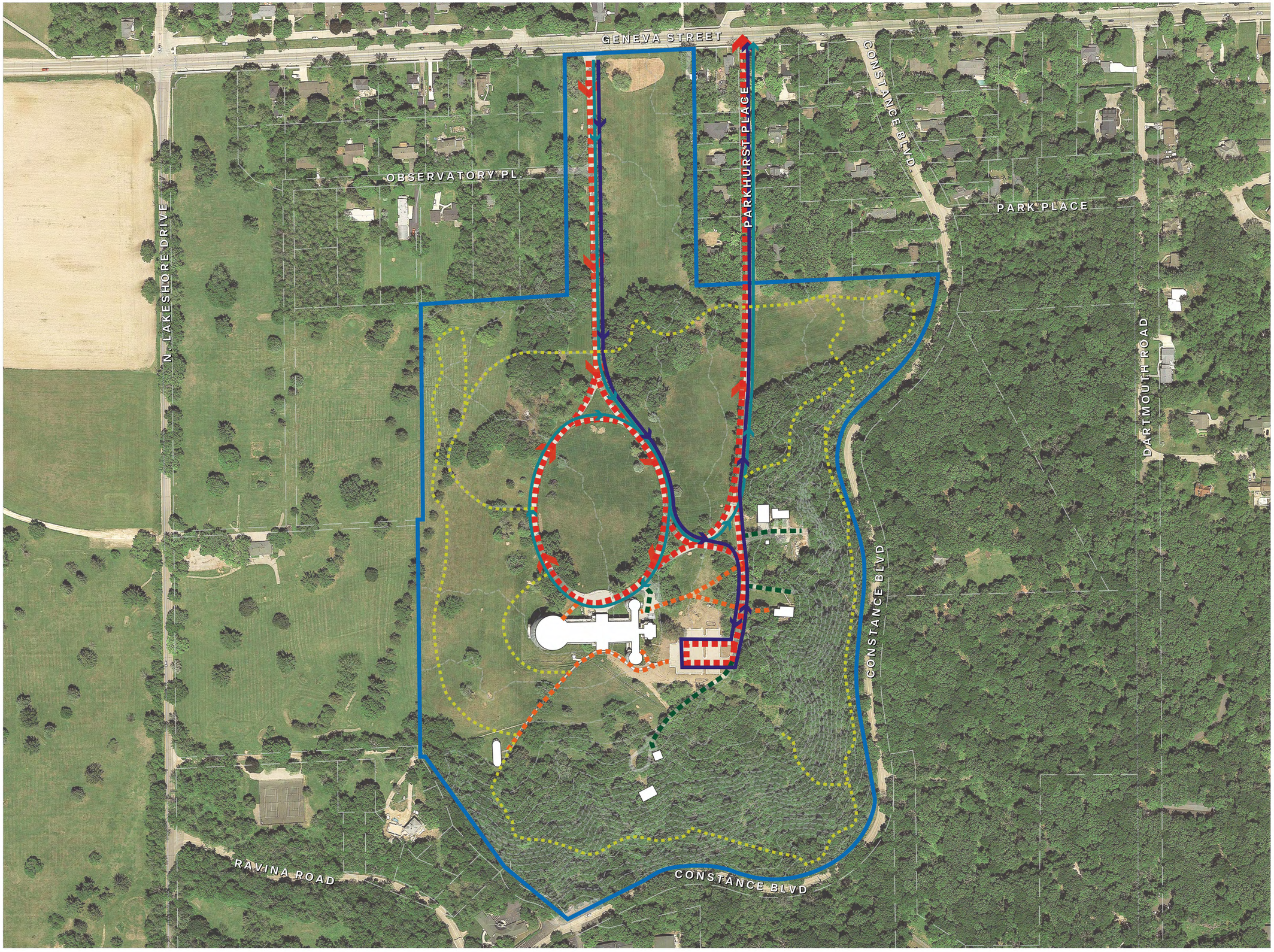
saiki DESIGN

OLMSTED PLAN CIRCULATION ANALYSIS

yerkes observatory williams bay, wi

yerkes observatory site development plan

SITE ANALYSIS



MAP KEY

- Primary Vehicular
- Service Vehicular
- Primary/Paved Pedestrian
- Secondary/Gravel/Mowed Pedestrian
- Visitor Circulation
- Special Event Circulation

0’ 100’ 300’

NORTH

saiki DESIGN

CURRENT CIRCULATION

yerkes observatory williams bay, wi

yerkes observatory site development plan

SITE ANALYSIS

MAP KEY

- Two-Way Vehicular
- One-Way Vehicular
- Two-Way Service Drive
- Pedestrian
- Proposed Canopy
- T railhead
- Art/Educational Installation
- Patio/Plaza
- Maintenance/Back Of House
- Observation Deck
- Play/Space
- Picnic Shelter
- Gate House
- Apiary

0’ 100’ 300’

NORTH

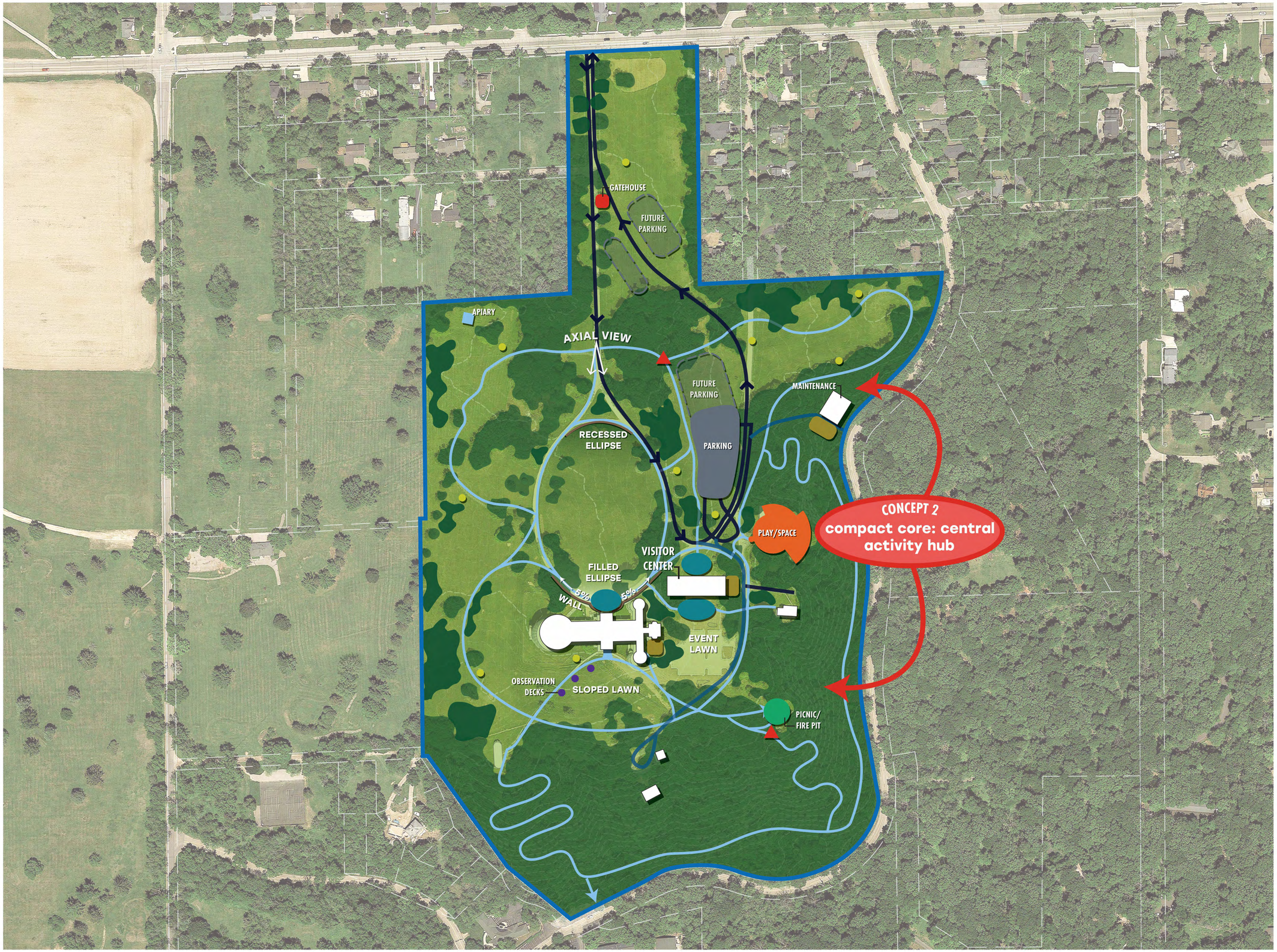
saiki DESIGN

CONCEPT 1

yerkes observatory williams bay, wi

yerkes observatory site development plan

SPATIAL RELATIONSHIP STUDIES



MAP KEY

- Two-Way Vehicular
- One-Way Vehicular
- Two-Way Service Drive
- Pedestrian
- Retaining Wall
- Proposed Canopy
- T railhead
- Art/Educational Installation
- Patio/Plaza
- Maintenance/Back Of House
- Observation Deck
- Play/Space
- Picnic Shelter
- Gate House
- Apiary

0’ 100’ 300’ NORTH

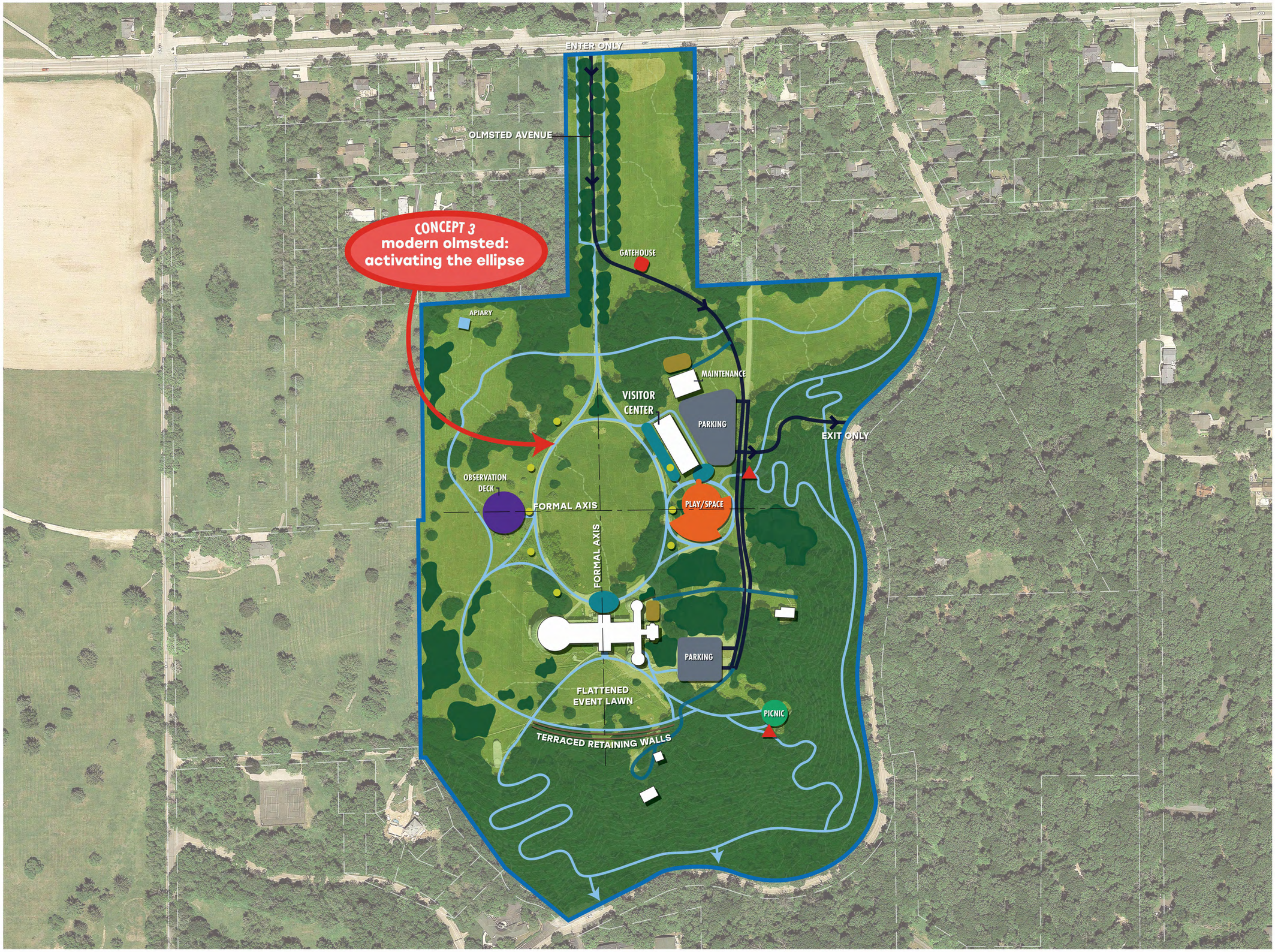
saiki DESIGN

CONCEPT 2

yerkes observatory williams bay, wi

yerkes observatory site development plan

SPATIAL RELATIONSHIP STUDIES



MAP KEY

- Two-Way Vehicular
- One-Way Vehicular
- Two-Way Service Drive
- Pedestrian
- Retaining Wall
- Proposed Canopy
- T railhead
- Art/Educational Installation
- Patio/Plaza
- Maintenance/Back Of House
- Observation Deck
- Play/Space
- Picnic Shelter
- Gate House
- Apiary

0’ 100’ 300’

NORTH

saiki DESIGN

CONCEPT 3

yerkes observatory williams bay, wi

yerkes observatory site development plan

SPATIAL RELATIONSHIP STUDIES

MAP KEY

- Communication - Existing
- Communication - Proposed
- Electrical - Existing
- Electrical - Proposed
- Gas - Existing
- Gas - Proposed
- Sanitary - Existing
- Sanitary - Proposed
- Water - Existing
- Water - Proposed
- Storm - Existing
- Storm - Proposed
- Unknown - Existing
- Fire Hydrant
- Removal
- Relocation

saiki DESIGN

UTILITY PLAN

yerkes observatory - williams bay, WI

yerkes observatory site development plan

VILLAGE OF WILLIAMS BAY

Office of Zoning Administrator

Evaluation Report
Plan Commission Meeting
December 2, 2025

Prepared: November 26, 2025

APPLICANT: Yerkes Future Foundation Inc. (Owner)
TAX KEYS: WA518500001
STREET ADDRESS: 373 W Geneva Street, Williams Bay, WI 53191

The applicant is requesting approval of a Site Plan Review per Section 390-1206, and a conditional use permit per Section 390-0223 Conditional Use Permit, and Section 390-0223(C) (14) Large Developments, for the construction of a new playground space; and a pavilion building that includes a patio area, two family restrooms, and nursing/sensory room. Originally the proposal also included the relocation of an existing building onto Yerke's property, however at this time the applicant has withdrawn this request and will no longer be considered as part of the submittal. Yerkes plans to request this again in the future as they continue to develop their Master Plan.

On October 7, 2025, the proposed project was tabled at the Plan Commission meeting and feedback was given that more information on the overall Master Plan for Yerkes should be provided in addition to more information on traffic, parking, and how construction traffic be controlled. It was suggested a traffic study be completed, and that the applicant address where individuals will park to utilize the newly constructed playground area.

Site Plan Review Procedure:

1. Review by the Zoning Administrator.
   (a) The Zoning Administrator shall determine whether the site plan application is complete and fulfills the requirements of this chapter. If the application is determined to be incomplete, the Zoning Administrator shall notify the applicant.
   (b) The Zoning Administrator shall review the application and evaluate the proposal for compliance with the following data sources:
      i. Official Zoning Map.
      ii. The Village of Williams Bay Comprehensive Plan.
      iii. Applicable FEMA and related floodplain maps.
      iv. Applicable federal and state wetland inventory maps.
   (c) The Zoning Administrator shall prepare a written report addressing items above and forward said report to the Plan Commission for the Commission's review and use in making its recommendation to the Village Board. If the Zoning Administrator determines that the proposal may be in conflict with the provisions of this chapter or the Comprehensive Plan, the Zoning Administrator shall note this determination in the report.
2. Review and recommendation by the Plan Commission.
   (a) The Plan Commission, in its consideration of the submitted application, shall take into account the basic intent of this chapter to ensure attractive, efficient, and appropriate development of land in the Village, and to ensure that every reasonable step has been taken to

avoid depreciating effects on surrounding property and the natural environment. In its review, the Plan Commission may require such additional measures and/or modifications as it deems necessary to accomplish this objective. If such additional measures and/or modifications are required, the Plan Commission may withhold approval of the site plan until revisions depicting such additional measures and/or modifications are submitted to the satisfaction of the Plan Commission, or may approve the application subject to the satisfaction of the Zoning Administrator. Such amended plans and conditions applicable to the proposed use shall be made part of the official record, and development activity on the subject property may not proceed until the revised application has been approved by one of the two above procedures as directed by the Plan Commission.

(b) It its review of the application, the Plan Commission may make findings on each of the following criteria to determine whether the site plan shall be approved, approved with modification, or denied:

i. All standards of this chapter and other applicable Village, state, and federal regulations are met.
ii. The public health and safety is not endangered.
iii. Adequate public facilities, utilities, and open space areas are provided.
iv. Adequate control of stormwater and erosion is provided and the disruption of existing topography, drainage patterns, and vegetative cover is minimized insofar as is practical.
v. Appropriate traffic control and parking are provided.
vi. Applicable performance standards, per Article 8, are met.

(c) The Plan Commission may make a written report to the Village Board and/or may state in the minutes its findings regarding Subsection E(7)(b) above and its recommendations regarding the application as a whole. Said report and/or minutes may include formal findings of fact developed and approved by the Plan Commission concerning the requirements of this section, and that the public benefits outweigh any and all potential adverse impacts of the proposed site plan.

3. Review and action by the Village Board.

(a) The Village Board shall consider the Plan Commission's recommendation regarding the proposed site plan. The Village Board may request additional information and/or reports from the Plan Commission, Zoning Administrator, and/or the applicant. The Board may take final action on the application at the time of its initial meeting, or may continue the proceedings.

(b) The Village Board may approve the site plan as originally proposed, may approve the proposed site plan with conditions (per the recommendations of the Zoning Administrator, the Plan Commission, authorized outside experts, or its own members), or may deny approval of the proposed site plan.

Conditional Use Review Procedure:

1. Review by the Zoning Administrator.

(a) The Zoning Administrator shall determine whether the application is complete and fulfills the requirements of this chapter. If the application is determined to be incomplete, the Zoning Administrator shall notify the applicant.

(b) The Zoning Administrator shall review the application and evaluate whether the proposed amendment meets the following criteria:

i. Is in harmony with the recommendations of the Comprehensive Plan. If the Zoning Administrator determines that the proposal may be in conflict with the provisions of the Comprehensive Plan, the Zoning Administrator shall note this determination in the report.
ii. Will not result in a substantial or undue adverse impact on nearby property, the character of the neighborhood, environmental factors, traffic factors, parking, public improvements, public property or rights-of-way, or other matters affecting the public

health, safety, or general welfare, either as they now exist or as they may in the future be developed as a result of the implementation of the provisions of this chapter, the Comprehensive Plan, or any other plan, program, map, or ordinance adopted or under consideration pursuant to official notice by the Village or other governmental agency having jurisdiction to guide development.

iii. Maintains the desired consistency of land uses, land use intensities, and land use impacts as related to the environs of the subject property.

iv. The conditional use is located in an area that will be adequately served by, and will not impose an undue burden on, any of the improvements, facilities, utilities, or services provided by public agencies serving the subject property.

v. The potential public benefits outweigh any and all potential adverse impacts of the proposed conditional use, after taking into consideration the applicant's proposal and any requirements recommended by the applicant to ameliorate such impacts.

2. The Zoning Administrator shall prepare a written report addressing items above, to be forwarded to the Plan Commission for the Commission's review and use in making its recommendation to the Village Board. If the Zoning Administrator determines that the proposal may be in conflict with the provisions of the Comprehensive Plan, the Zoning Administrator shall note this determination in the report.

The property located at 373 W Geneva Street is currently zoned P&I, Public and Institutional District. There are currently existing buildings on site along with parking areas for the facilities. As the property continues to be developed, each project shall meet the following criteria:

Figure 390-0223

Density, Intensity, and Bulk Regulations in the Public and Institutional Zoning District

Minimum lot area	12,000 square feet
Maximum building coverage of lot	30%
Minimum landscape surface ratio (LSR)	40%
Minimum lot width	90 feet
Minimum front and street side yard setback	30 feet 100 feet from the following streets: Geneva Street west of Dartmouth Road North Lakeshore Drive Theater Road Elkhorn Road north of Stark Street
Minimum shore yard (lake) setback	150 feet
Minimum shore yard (navigable stream or watercourse) setback	75 feet
Minimum interior side yard setback	15 feet
Minimum rear yard setback	30 feet
Maximum principal building height	35 feet 45 feet with conditional use permit
Minimum principal building separation (multi-structure developments on shared lots)	30 feet
Minimum pavement setback (lot line to pavement; excludes driveway entrances)	3 feet
Minimum off-street parking requirement	Per Article 3
Accessory structure interior side yard setback	5 feet
Accessory structure rear yard setback	5 feet
Maximum accessory structure height	15 feet

After a review of the submitted application and materials the proposed project appears to be in compliance with all of the following requirements of the P& I Zoning District.

Per Section 390-0309 pertaining to parking requirements the minimum required off-street parking is as follows: **One space per four expected patrons at maximum capacity for any use requiring over five spaces.**

It appears that there are currently approximately 46 parking spaces located on site, which would accommodate up to 184 patrons.

The P&I Zoning District requires a Conditional Use Permit for all Large Developments and Group Developments. Per Section 390-0821 a Large Development is defined as *Any institutional, business, or mixed residential and nonresidential development containing any single structure or combination of structures on one or more contiguous lots or building sites devoted to land uses on which the total combined gross floor area of all development exceeds 10,000 square feet. The calculation of gross floor area shall include indoor and outdoor storage and display areas.* The proposed development is required to adhere to all requirements set forth in Section 390-0821 including building style, architectural design, building color, traffic, parking, pedestrian access, landscaping, and lighting.

Respectfully submitted,

Allison Schwark
Zoning Administrator

Planning Request Application
Village of Williams Bay

250 Williams Street • PO Box 580 • Williams Bay, WI 53191
Phone: 262-245-2700 • Fax: 262-245-2705

Request:
Please check all that apply.

10,700SF

- [x] **Site Plan** [§390.1206] - $200.00 plus $.04/sf floor area
- [ ] **Conditional Use Permit (CUP)** [§390.1207] - $500.00
- [ ] **Certificate of Compliance** [§390.1211] - $200.00
- [ ] **Temporary Use Permit** [§390.1208] - $200.00
- [ ] **Preliminary Plat** - $200.00 plus $20.00 per lot
- [ ] **Certified Survey Map (CSM)** - $200.00 plus $20.00 per lot
- [ ] **Final Plat** - $100.00 plus $10.00 per lot
- [ ] **Planned Development Overlay (PDO)** [§390.0709] - $500.00
- [ ] **Planned Development Amendment** - $500.00
- [ ] **Zoning Text or Map Amendment** [§390.1204] - $500.00
- [ ] **Project Concept Review** - $200.00
- [ ] **Land Use Plan Amendment** - $500.00
- [ ] **Interpretation** [§390.1216] - $200.00
- [ ] **Appeal** [§390.1217] - $500.00
- [ ] **Other:** _____ Fee: _____

$628.00

Date application was received:

Fee Paid:

Physical Address of Site: W4240 WI-50, Lake Geneva, WI, 53147

Tax Parcel Number: W4240

Project or Development Name: Lodge Geneva National

Applicant
Name: Brandon Flunker - Vierbicher
Mailing Address: 600 W. Virginia Street, Suite 601, Milwaukee, WI 53204
eMail: bflu@vierbihcer.com
Phone: 262-408-5564

Owner of Site
Name: Paloma Ridge Commercial LLC
Mailing Address: 1221 Geneva National Ave S, Lake Geneva, WI, 53147
eMail: glchambers@destinationgn.com
Phone: 262-245-7000

Legal Representative
Name:
Mailing Address:
eMail:
Phone:

Architect, Engineer, Contractor
Name: Brandon Flunker - Vierbicher
Mailing Address: 600 W. Virginia Street, Suite 601, Milwaukee, WI 53204
eMail: bflu@vierbihcer.com
Phone: 262-408-5564

Legal Description of Site (Attach separate sheet if additional space is needed):
Walworth County Parcel 300439)

Please answer all applicable. Missing or incomplete information may deem this application "incomplete," delaying or prohibiting a review.

Current Zoning of Site: ETZ **Current Overlay Districts of Site:** N/A

Proposed Zoning of Site: ETZ

Proposed type of structure of use: Parking Lot

Proposed use of structure or site: Parking Lot

Statement of proposed use of property, with pertinent facts regarding the size of area involved, extent of development, type of operation, etc. (Attach separate sheet if additional space is needed):
The property owner is looking to expand the parking lot and modify several sections of the existing parking/drives.
The total proposal land disturbance is roughly 70,000 SF.

Statement showing compatibility of proposed zoning district and/or proposed use to the Village Comprehensive Plan: (Attach separate sheet if additional space is needed)
N/A

Statement showing compatibility of proposed zoning district and/or proposed use with adjacent properties and neighborhoods (Attach separate sheet if additional space is needed):
N/A

Print Applicant's Name: Brandon Flunker **Date:** 10.20.25

Signature of Applicant: BF

vierbicher
planners | engineers | advisors

600 W. Virginia Street, Suite 601
Milwaukee, Wisconsin 53204
(262) 875-5000 phone
www.vierbicher.com

October 21, 2025

Zoning Reviewer- Village of Williams Bay
250 Williams Street
Williams Bay, WI 53191

Re: Lodge Geneva National – Site Plan ReviewApplication

To Whom it May Concern:

On behalf of Paloma Ridge Commercial, LLC, the owner, we are submitting a Zoning Permit Application. Please note that a Stormwater and Erosion Control permit has also been submitted to Walworth County as well as the Town of Geneva. This submittal includes the following documents:

1.	Permit Application	x1
2.	$628 Check for Permit Application Fee	x1
3.	Project Plans	x7 copies

If you have any questions, please don't hesitate to call me at (262) 408-5564.

Sincerely,
Brandon Flunker; PE CFM

cc: Garth L. Chambers – Inns of Geneva National LLC

Village of Williams Bay
PO Box 580
250 Williams Street
Williams Bay WI 53191 (262) 245-2700

Receipt No: 13.017191 Oct 21, 2025

LICENSES AND PERMITS - LODGE GENEVA NATIONAL 100-43015 ZONING AND PLANNING FEES	628.00
Total:	628.00
CHECKS Check No: 98466 Payor: VIERBICHER	628.00
Total Applied:	628.00
Change Tendered:	.00

10/21/2025 10:52 AM

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LODGE GENEVA NATIONAL

NEW PARKING ADDITION & EXISTING PARKING LOT RENOVATION

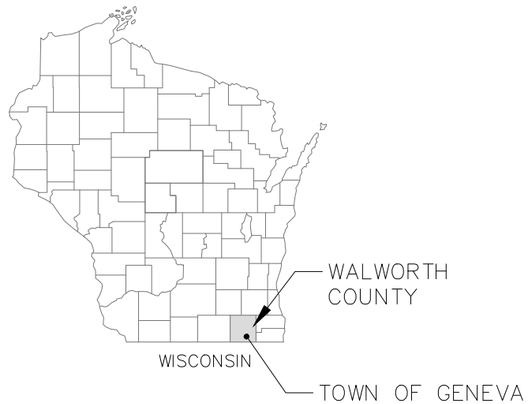
TOWN OF GENEVA, WISCONSIN

OWNER – LODGE GENEVA NATIONAL
1221 GENEVA NATIONAL AVENUE SOUTH
LAKE GENEVA, WI 53147

REP – GARTH L. CHAMBERS
262–245–7000
GLCHAMBERS@DESTINATIONGN.COM

CIVIL ENGINEER – VIERBICHER
600 W. VIRGINIA ST., STE 601
MILWAUKEE, WI 53204

REP – BRANDON FLUNKER
262–408–5564
BFLU@VIERBICHER.COM



DIGGERS HOTLINE
Dial 811 or (800) 242-8511
www.DiggersHotline.com

THE LOCATION OF EXISTING UTILITIES, BOTH UNDERGROUND AND OVERHEAD ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT, BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.

CALL DIGGER'S HOTLINE
1–800–242–8511

SHEET NO.	DESCRIPTION
C1.0	TITLE SHEET
C2.0	EXISTING CONDITIONS
C3.0	DEMOLITION PLAN
C4.0	SITE PLAN
C5.0	GRADING & EROSION CONTROL PLAN
C5.1	DETAILED GRADING PLAN
C5.2	DETAILED GRADING PLAN
C5.3	DETAILED GRADING PLAN
C5.4	DETAILED GRADING PLAN
C5.5	DETAILED GRADING PLAN
C6.0	UTILITY PLAN
C7.0	DETAILS
C7.1	DETAILS
C7.2	DETAILS
C7.3	DETAILS

NOT FOR CONSTRUCTION

vierbicher planners | engineers | advisors

TITLE SHEET
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

REVISIONS
NO. | DATE | REMARKS

REVISIONS
NO. | DATE | REMARKS

DATE 09/11/2025
DRAFTER JGRU
CHECKED SPAR
PROJECT NO. 240725

C1.0

20 Oct 2025 - 10:27a M:\Geneva National\240724_Lodge\CADD\240724 Details.dwg by: jgru

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GENERAL SURVEY NOTES:

1) This survey is based upon field work completed on February 10, 2025. Any changes in site conditions after February 10, 2025 are not reflected by this survey.

2) Surveyor has made no investigation or independent search for easements of record, encumbrances, restrictive covenants, ownership title evidence, or any other facts that the current title search may disclose.

3) No attempt has been made as a part of this survey to obtain or show data concerning size, depth, condition or capacity of any utility or municipal/public service facility. For information regarding these utilities or facilities contact the appropriate agencies.

4) Utility locations were field located based upon substantial, visible, above ground structures, upon maps provided to the surveyor, or upon markings on the ground placed by utility companies and/or their agents. No warranty is given to the utility markings by others or that all underground utilities affecting this property were marked and subsequently located for this survey. A locate request was sent to Digger's Hotline per Digger Hotline One-Call ticket numbers 20250204913 & 20250204914. Source information from plans and markings will be combined with observed evidence of utilities pursuant to Section 5.E.iv. to develop a view of the underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, in some jurisdictions, 811 or other similar utility locate requests from surveyors may be ignored or result in an incomplete response, in which case the surveyor shall note on the plat or map how this affected the surveyor's assessment of the location of the utilities. Where additional or more detailed information is required, the client is advised that excavation and/or a private utility locate request may be necessary.

TOPOGRAPHIC LINEWORK LEGEND

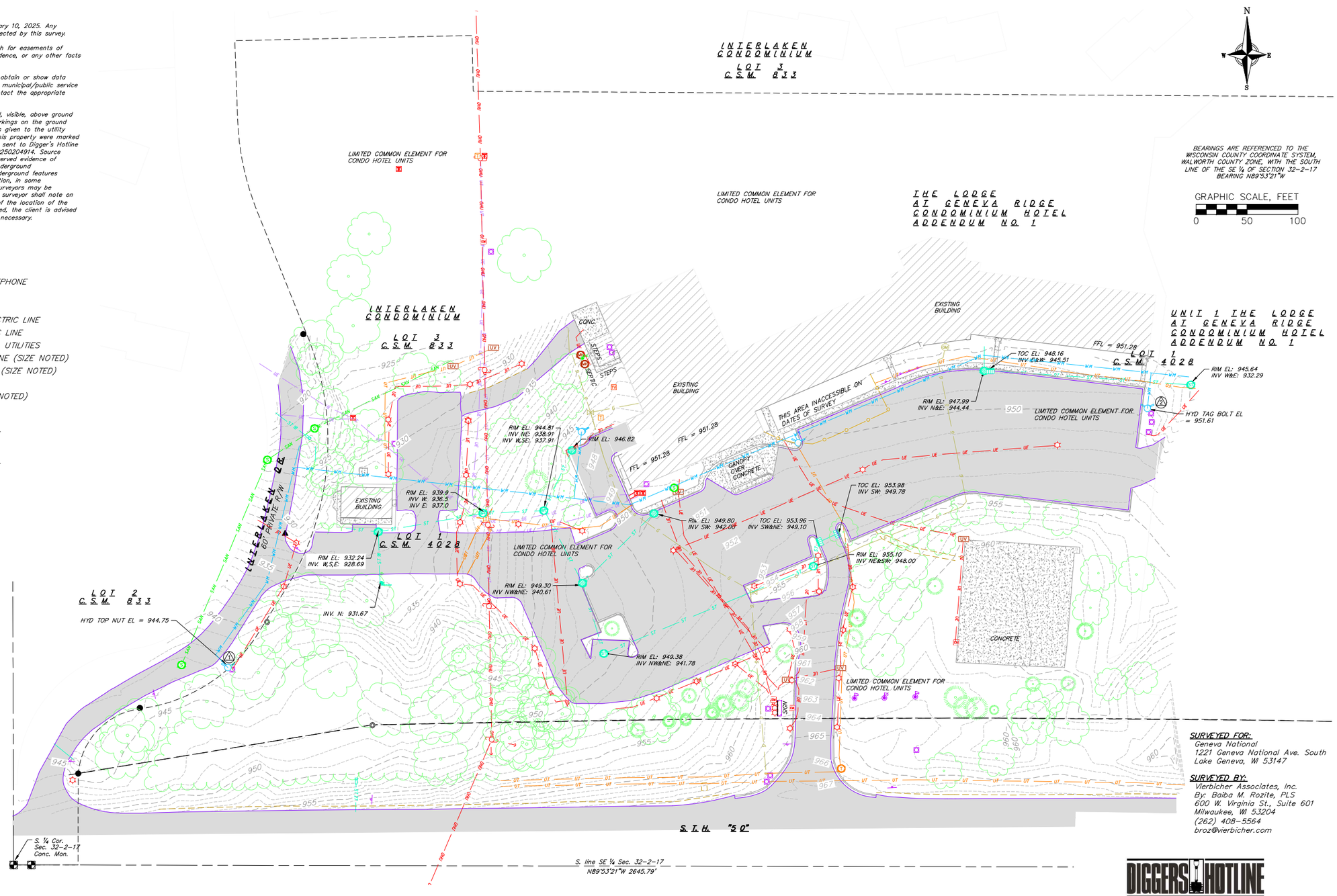
- EXISTING FIBER OPTIC LINE
- EXISTING UNDERGROUND TELEPHONE
- EXISTING CHAIN LINK FENCE
- EXISTING GAS LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING OVERHEAD GENERAL UTILITIES
- EXISTING SANITARY SEWER LINE (SIZE NOTED)
- EXISTING STORM SEWER LINE (SIZE NOTED)
- EXISTING EDGE OF TREES
- EXISTING WATER MAIN (SIZE NOTED)
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- EXISTING CONCRETE SURFACE
- EXISTING ASPHALT SURFACE

SURVEY LEGEND

- BENCHMARK
- PUBLIC LAND CORNER AS NOTED
- FOUND 1" ø IRON PIPE
- FOUND P.K. NAIL
- FOUND 3/4" ø IRON ROD

TOPOGRAPHIC SYMBOL LEGEND

- EXISTING FLAG POLE
- EXISTING POST
- EXISTING SIGN (TYPE NOTED)
- EXISTING CURB INLET
- EXISTING ENDWALL
- EXISTING FIELD INLET
- EXISTING ROOF DRAIN
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING SEPTIC VENT
- EXISTING FIRE HYDRANT
- EXISTING WATER MAIN VALVE
- EXISTING GAS VALVE
- EXISTING GAS METER
- EXISTING DOWN GUY
- EXISTING ELECTRIC PEDESTAL
- EXISTING TRANSFORMER
- EXISTING ELECTRIC METER
- EXISTING LIGHT POLE
- EXISTING GENERIC LIGHT
- EXISTING UTILITY POLE
- EXISTING TV PEDESTAL
- EXISTING TELEPHONE PEDESTAL
- EXISTING UNIDENTIFIED MANHOLE
- EXISTING UNIDENTIFIED UTILITY VAULT
- EXISTING SHRUB
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE



SURVEYED FOR:
Geneva National
1221 Geneva National Ave. South
Lake Geneva, WI 53147

SURVEYED BY:
Vierbicher Associates, Inc.
By: Baiba M. Rozite, PLS
600 W. Virginia St., Suite 601
Milwaukee, WI 53204
(262) 408-5564
broz@vierbicher.com

DIGGERS HOTLINE
Dial 811 or (800) 242-8511
www.DiggersHotline.com

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THE LOCATION OF EXISTING UTILITIES, BOTH UNDERGROUND AND OVERHEAD ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT, BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.

CALL DIGGER'S HOTLINE
1-800-242-8511

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EXISTING CONDITIONS
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

REVISIONS			
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NO.	DATE	REMARKS	

DATE 02/20/2025
DRAFTER BROZ
CHECKED SPAR
PROJECT NO. 240725

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GRAPHIC SCALE, FEET
0 30 60

DEMOLITION PLAN LEGEND
- CURB AND GUTTER REMOVAL
- ASPHALT REMOVAL
- CONCRETE REMOVAL
- TREE REMOVAL
- SAWCUT
- UTILITY STRUCTURE REMOVAL
- UTILITY LINE REMOVAL

CURB & GUTTER REMOVAL
CURB & GUTTER REMOVAL
ASPHALT REMOVAL (TYP.)
EXISTING LIGHT POLE REMOVAL & RELOCATION (TYP.)
CURB & GUTTER REMOVAL
CURB & GUTTER REMOVAL
REMOVE EXISTING STORM STRUCTURES
REMOVE EXISTING STORM SEWER
CURB & GUTTER REMOVAL
REMOVE EXISTING STORM SEWER
ASPHALT REMOVAL (TYP.)
CURB & GUTTER REMOVAL
TREE REMOVAL (TYP.)
EXISTING UTILITY VAULT REMOVAL & RELOCATION
CURB & GUTTER REMOVAL
E R L A E E N D R.
60' PRIVATE R/W
S. T. H. "5 0"

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DEMOLITION PLAN
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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PROJECT NO. 240725

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GRAPHIC SCALE, FEET

0 30 60

SITE PLAN LEGEND

- EXISTING CONCRETE SURFACE
- EXISTING ASPHALT SURFACE
- CURB AND GUTTER
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED RETAINING WALL
- PROPOSED LIGHT POLE
- PROPOSED SIGN
- PROPOSED WHEEL STOP

PARKING COUNTS

EXISTING TOTAL: 264
EXISTING ADA: 8

PROPOSED TOTAL: 264
PROPOSED ADA: 8

ALL ADA STALLS SHALL BE MARKED WITH PROPER SIGNAGE (TYP.)

ADA COMPLIANT SIDEWALK RAMP

ADA COMPLIANT SIDEWALK RAMP

SLOTTED CHANNEL DRAIN, NEENAH 4990EX TYPE P FRAMES AND GRATES WITH R-3262-4 OPENINGS

SLOTTED CHANNEL DRAIN, NEENAH 4990EX TYPE P FRAMES AND GRATES WITH R-3262-4 OPENINGS

SLOTTED CHANNEL DRAIN, NEENAH 4990EX TYPE P FRAMES AND GRATES WITH R-3262-4 OPENINGS

BIO-RETENTION BASIN

PROPOSED ONE WAY SIGN

PROPOSED DO NOT ENTER SIGN

APPROXIMATE LOCATION OF RELOCATED LIGHT POLE (TYP.)

APPROXIMATE LOCATION OF RELOCATED UTILITY VAULT

APPROXIMATE EXTENTS OF BURIAL SITE WL-0032

S. T. H. "5 0"

60' PRIVATE R/W

9 STALLS
9 STALLS
14 STALLS
15 STALLS
28 STALLS
13 STALLS
7 STALLS
6 STALLS
2 STALLS
16 STALLS
19 STALLS
18 STALLS
12 STALLS
4 STALLS
19 STALLS
27 STALLS
16 STALLS
12 STALLS

R80'

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SITE PLAN
LODGE GENEVA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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GRAPHIC SCALE, FEET
0 30 60

GRADING & EROSION CONTROL LEGEND

- 820 — EXISTING MAJOR CONTOURS
- 818 EXISTING MINOR CONTOURS
- 820 PROPOSED MAJOR CONTOURS
- 818 PROPOSED MINOR CONTOURS
- SILT FENCE
- DISTURBED LIMITS
- 1048.61 EXISTING SPOT ELEVATIONS
- 1048.61 PROPOSED SPOT ELEVATIONS
- INLET PROTECTION
- TRACKING PAD
- RIP RAP
- DRAINAGE DIRECTION
- EROSION MAT CLASS I, TYPE A

WATERLAKE N DR
60' PRIVATE R/W

EXISTING BUILDING
EXISTING BUILDING
EXISTING BUILDING
CONC.
STEPS
STEPS
SEPTIC
CANOPY OVER CONCRETE
CONCRETE
RIP RAP (TYP.)
INLET PROTECTION (TYP.)
CURB CUT
SILT FENCE (TYP.)
DISTURBED LIMITS (TYP.)
TRACKING PAD
SIGN
APPROXIMATE EXTENTS OF BURIAL SITE WL-0032
S. T. H. "5 0"

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GRADING & EROSION CONTROL PLAN

LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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GRAPHIC SCALE, FEET
0 5 10 20

GRADING LEGEND
- 820 — EXISTING MAJOR CONTOURS
- 818 — EXISTING MINOR CONTOURS
- 820 PROPOSED MAJOR CONTOURS
- 818 PROPOSED MINOR CONTOURS
- DISTURBED LIMITS
- 1048.61 EXISTING SPOT ELEVATIONS
- 1048.61 PROPOSED SPOT ELEVATIONS

ST
ST

938.08 TC
937.58 FL
939.27 TC
938.77 FL
940.40 TC
939.90 FL
943.00 TC
942.50 FL
944.50 TC
944.00 FL
945.96
938.08 TC
937.58 FL
945.40 TC
944.90 FL
946.12 TC
945.62 FL
941.60 TC
941.10 FL
944.50 TC
944.00 FL
942.00 TC
941.50 FL
MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS
939.94 TC
939.44 FL
939.22 TC
938.72 FL
939.12 TC
938.62 FL
941.06 TC
940.56 FL
939.52
940.31
938.25
939.25
944.00
941.63 TC
941.13 FL
941.08
940.25
939.25
944.90
945.56
945.00
947.13
942.34 TC
941.84 FL
941.50
941.84
940.70
940.25
941.00
945.40
MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS
943.12 TC
942.62 FL
942.55
943.78 TC
943.28 FL
943.24
943.25
943.00 TC
942.50 FL
942.50 TC
2.00 FL
943.25 TC
942.75 FL
945.25 TC
944.75 FL
946.00 TC
945.50 FL
947.2 TC
946.75 FL
947.82 TC
947.32 FL
947.82
943.90 TC
943.40 FL
944.00
943.85
944.65
946.85
947.35
945.00
945.75
945.95
947.00
946.65
947.15
949.20
948.25
948.60
949.15
950.40
950.50

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DETAILED GRADING PLAN

LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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GRAPHIC SCALE, FEET
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GRADING LEGEND

- 820 — EXISTING MAJOR CONTOURS
- 818 — EXISTING MINOR CONTOURS
- 820 — PROPOSED MAJOR CONTOURS
- 818 — PROPOSED MINOR CONTOURS
- DISTURBED LIMITS
- 1048.61 EXISTING SPOT ELEVATIONS
- 1048.61 PROPOSED SPOT ELEVATIONS

CAP OVER CONCRETE

951.10
951.72 TC
951.22 FL

951.08
951.72 TC
951.22 FL

950.78
951.44 TC
950.94 FL

951.68 TC
951.18 FL
951.31

951.54 TC
951.04 FL
950.90

951.86 TC
951.36 FL
951.20

951.80
952.19 TC
951.69 FL

952.87 TC
952.37 FL
952.51

952.24 TC
951.74 FL
951.87

952.34 TC
951.84 FL

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

951.87 TC
951.37 FL
951.49

951.59
951.98 TC
951.48 FL

952.18 TC
951.68 FL
951.82

949.19
949.29 TC
948.79 FL
949.50 TC
949.00 FL
949.78 TC
949.28 FL
949.99

945.05 TC
944.55 FL
944.58

948.57 TC
948.07 FL
948.23

948.48

946.64 TC
946.14 FL
946.31

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

948.85 TC
948.35 FL

948.91

948.79 TC
948.29 FL

948.10
948.75 TC
948.25 FL

948.83
949.21 TC
948.71 FL

NEENAH 4990EX TYPE P FRAMES AND GRATES WITH R-3262-4 OPENINGS

948.15 TC
947.65 FL
947.45

948.57

948.66

949.04 TC
948.54 FL

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

949.09 TC
948.59 FL

947.82
948.51 TC
948.01 FL

948.91 TC
948.41 FL
948.54

948.69

948.71

949.00

948.80

948.72
949.35 TC
948.85 FL

949.40 TC
948.90 FL

949.45 TC
948.95 FL

949.62 TC
949.12 FL

950.21 TC
949.71 FL

949.66 TC
949.16 FL
948.52

951.04

950.47 TC
949.97 FL

949.98 TC
949.48 FL
949.01

950.62 TC
950.12 FL
950.40

950.04

942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957

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DETAILED GRADING PLAN

LODGE GENEVA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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GRAPHIC SCALE, FEET
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GRADING LEGEND
- 820 — EXISTING MAJOR CONTOURS
- 818 — EXISTING MINOR CONTOURS
- 820 — PROPOSED MAJOR CONTOURS
- 818 — PROPOSED MINOR CONTOURS
- DISTURBED LIMITS
- 1048.61 EXISTING SPOT ELEVATIONS
- 1048.61 PROPOSED SPOT ELEVATIONS

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

953.32
954.00 TC
953.50 FL

954.31 TC
953.81 FL
953.68

953.37
954.04 TC
953.54 FL

953.35

953.14
953.79 TC
953.29 FL

952.97
953.62 TC
953.12 FL

955.03 TC
954.53 FL

955.33 TC
954.83 FL

955.58 TC
955.08 FL

955.15

955.40

955.58 TC
955.08 FL

952.78 TC
952.28 FL
952.42

953.64 TC
953.14 FL
952.99

952.17
952.81 TC
952.31 FL

952.02
952.66 TC
952.16 FL

952.91 TC
952.41 FL
952.55

953.68 TC
953.18 FL
953.03

953.60 TC
953.10 FL

956.38 TC
955.88 FL

956.65

956.45

953.47

955.24 TC
954.74 FL

957.44 TC
956.94 FL

951.91
952.56 TC
952.06 FL

953.60 TC
953.10 FL

956.20

957.27

955.66

952.80
953.45 TC
952.95 FL

953.75 TC
953.25 FL

955.39

956.75 TC
956.25 FL

958.34 TC
957.84 FL

958.70 TC
958.20 FL

958.53

958.70 TC
958.20 FL

954.09

955.44 TC
954.94 FL

957.50 TC
957.00 FL

957.80 TC
957.30 FL

955.48 TC
954.98 FL
954.81

957.55 TC
957.05 FL

957.63

957.80 TC
957.30 FL

959.22 TC
958.72 FL

960.59 TC
960.09 FL

959.04

960.11 TC
959.61 FL

959.22 TC
958.72 FL

960.63 TC
960.13 FL

960.41

959.94

960.59 TC
960.09 FL

960.61 TC
960.11 FL

962.47 TC
961.97 FL

962.74 TC
962.24 FL

962.28

963.04 TC
962.54 FL

962.28

UV

952 953 954 955 956 957 958 959 960 961 962 963

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DETAILED GRADING PLAN
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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GRAPHIC SCALE, FEET
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GRADING LEGEND
- 820 — EXISTING MAJOR CONTOURS
- 818 — EXISTING MINOR CONTOURS
- 820 — PROPOSED MAJOR CONTOURS
- 818 — PROPOSED MINOR CONTOURS
- DISTURBED LIMITS
- 1048.61 EXISTING SPOT ELEVATIONS
- 1048.61 PROPOSED SPOT ELEVATIONS

DEPRESSED CURB HEAD AND SIDEWALK. CONTRACTOR TO MATCH GRADES ALONG EXISTING CURB FLOW LINE

ADA COMPLIANT SIDEWALK RAMP 8.33% SLOPE MAX

ADA COMPLIANT SIDEWALK RAMP 8.33% SLOPE MAX

SLOTTED CHANNEL DRAIN, NEENAH 4990EX TYPE P FRAMES AND GRATES WITH R-3262-4 OPENINGS

CANOPY OVER CONCRETE

950.76
951.43 TC
950.93 FL

951.39 TC
950.89 FL
951.00

951.97 TC
951.47 FL
951.11

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

952.34
952.71 TC
952.21 FL

952.40
952.78 TC
952.28 FL

952.98 TC
952.48 FL
952.66

950.83
951.47 TC
950.97 FL

951.01
951.62 TC
951.12 FL

951.10
951.72 TC
951.22 FL

951.08
951.72 TC
951.22 FL

952.10
952.48 TC
951.98 FL

952.99 TC
952.49 FL
952.64

951.80
952.19 TC
951.69 FL

952.87 TC
952.37 FL
952.51

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

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DETAILED GRADING PLAN

LODGE GENEVA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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NO.	DATE	REMARKS

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GRADING LEGEND

- 820 — EXISTING MAJOR CONTOURS
- 818 EXISTING MINOR CONTOURS
- 820 PROPOSED MAJOR CONTOURS
- 818 PROPOSED MINOR CONTOURS
- DISTURBED LIMITS
- 1048.61 EXISTING SPOT ELEVATIONS
- 1048.61 PROPOSED SPOT ELEVATIONS

SLOTTED CHANNEL DRAIN, NEENAH 4990EX TYPE P FRAMES AND GRATES WITH R-3262-4 OPENINGS

949
947.96
948.41 TC
947.91 FL
948.48
948.85 TC
948.35 FL
949.38 TC
948.88 FL
949.06
949.36 TC
948.86 FL
949.04
948.53
948.89 TC
948.39 FL
948.12
948.49 TC
947.99 FL

951
949.97
950.64 TC
950.14 FL
950.70 TC
950.20 FL
950.32
950.72 TC
950.22 FL
950.34
949.96
950.63 TC
950.13 FL
951.43
951.81 TC
951.31 FL
952.14 TC
951.64 FL
951.81
951.44
951.78 TC
951.28 FL
952.11 TC
951.61 FL
951.78

952
950.65
951.33 TC
950.83 FL
951.37 TC
950.87 FL
951.00
951.37 TC
950.87 FL
951.00
952.50
952.88 TC
952.38 FL
953.15 TC
952.65 FL
952.81
952.50
952.88 TC
952.38 FL

953
952.68
953.34 TC
952.84 FL
953.34 TC
952.84 FL
952.96
952.70
953.36 TC
952.86 FL
953.42 TC
952.92 FL
953.06
954.00 TC
953.50 FL
953.63
954.03 TC
953.53 FL
953.67

950
955

MATCH EXISTING GRADES ALONG DISTURBANCE LIMITS

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DETAILED GRADING PLAN

LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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GRAPHIC SCALE, FEET
0 30 60

UTILITY LEGEND
- EXISTING STORM SEWER LINE
- EXISTING STORM MANHOLE
- EXISTING FIELD INLET
- STORM SEWER PIPE
- STORM SEWER CURB INLET
- STORM SEWER FIELD INLET
- STORM SEWER ENDWALL

LAKE EN DR.
60' PRIVATE R/W

CONNECT TO EXISTING INLET
IE=928.75 S

18" HDPE STORM SEWER
44 LF @ 0.50%

12" HDPE STORM SEWER
77 LF @ 1.00%

36" MANHOLE
RIM: 934.60
INV: 929.74

6" PERFORATED UNDER DRAIN IE=929.00

12" HDPE STORM SEWER
70 LF @ 8.00%

36" MANHOLE W/OPEN GRATE
RIM: 940.50
INV: 936.34

36" MANHOLE
RIM: 933.15
INV: 928.97

12" HDPE STORM SEWER
7 LF @ 0.50%

24" OUTLET CONTROL STRUCTURE
RIM: 933.75
INV: 929.00

18" EW
INV: 934.00

2'x3' CURB INLET
RIM: 937.75
INV: 934.75

12" HDPE STORM SEWER
8 LF @ 0.63%

36" MANHOLE
RIM: 938.25
INV: 934.70

12" HDPE STORM SEWER
35 LF @ 5.00%

2'x3' CURB INLET
RIM: 942.00
INV: 936.45

ADJUST RIM TO ELEVATION OF 950.00

ADJUST RIM TO ELEVATION OF 948.15

EXISTING STORM SEWER

12" HDPE STORM SEWER
24 LF @ 2.00%

12" HDPE STORM SEWER
77 LF @ 2.00%

2'x3' CURB INLET
RIM: 953.17
INV: 945.96

2'x3' CURB INLET
RIM: 954.83
INV: 947.98

2'x3' CURB INLET
RIM: 954.83
INV: 947.50

S. T. H. "5 0"

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UTILITY PLAN
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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EROSION CONTROL MEASURES

1. EROSION CONTROL SHALL BE IN ACCORDANCE WITH THE TOWN OF GENEVA EROSION CONTROL ORDINANCE AND CHAPTER NR 216 OF THE WISCONSIN ADMINISTRATIVE CODE.
2. CONSTRUCT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH WISCONSIN DNR TECHNICAL STANDARDS (http://dnr.wi.gov/runoff/stormwater/techstds.htm) AND WISCONSIN CONSTRUCTION SITE BEST MANAGEMENT PRACTICE HANDBOOK.
3. INSTALL SEDIMENT CONTROL PRACTICES (TRACKING PAD, PERIMETER SILT FENCE, SEDIMENT BASINS, ETC.) PRIOR TO INITIATING OTHER LAND DISTURBING CONSTRUCTION ACTIVITIES.
4. THE CONTRACTOR IS REQUIRED TO MAKE EROSION CONTROL INSPECTIONS AT THE END OF EACH WEEK AND WHEN 0.5 INCHES OF RAIN FALLS WITHIN 24 HOURS. INSPECTION REPORTS SHALL BE PREPARED AND FILED AS REQUIRED BY THE DNR AND/OR TOWN. ALL MAINTENANCE WILL FOLLOW AN INSPECTION WITHIN 24 HOURS.
5. EROSION CONTROL IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ACCEPTANCE OF THIS PROJECT. EROSION CONTROL MEASURES AS SHOWN SHALL BE THE MINIMUM PRECAUTIONS THAT WILL BE ALLOWED. ADDITIONAL EROSION CONTROL MEASURES, AS REQUESTED IN WRITING BY THE STATE OR LOCAL INSPECTORS, OR THE DEVELOPER'S ENGINEER, SHALL BE INSTALLED WITHIN 24 HOURS.
6. A 3" CLEAR STONE TRACKING PAD SHALL BE INSTALLED AT THE END OF ROAD CONSTRUCTION LIMITS TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE ADJACENT PAVED PUBLIC ROADWAY. SEDIMENT TRACKING PAD SHALL CONFORM TO WisDNR TECHNICAL STANDARD 1057. SEDIMENT REACHING THE PUBLIC ROAD SHALL BE REMOVED BY STREET CLEANING (NOT HYDRAULIC FLUSHING) BEFORE THE END OF EACH WORK DAY.
7. CHANNELIZED RUNOFF: FROM ADJACENT AREAS PASSING THROUGH THE SITE SHALL BE DIVERTED AROUND DISTURBED AREAS.
8. STABILIZED DISTURBED GROUND: ANY SOIL OR DIRT PILES WHICH WILL REMAIN IN EXISTENCE FOR MORE THAN 7-CONSECUTIVE DAYS, WHETHER TO BE WORKED DURING THAT PERIOD OR NOT, SHALL NOT BE LOCATED WITHIN 25-FEET OF ANY ROADWAY, PARKING LOT, PAVED AREA, OR DRAINAGE STRUCTURE OR CHANNEL (UNLESS INTENDED TO BE USED AS PART OF THE EROSION CONTROL MEASURES). TEMPORARY STABILIZATION AND CONTROL MEASURES (SEEDING, MULCHING, TARPING, EROSION MATTING, BARRIER FENCING, ETC.) ARE REQUIRED FOR THE PROTECTION OF DISTURBED AREAS AND SOIL PILES, WHICH WILL REMAIN UN-WORKED FOR A PERIOD OF MORE THAN 7-CONSECUTIVE CALENDAR DAYS. THESE MEASURES SHALL REMAIN IN PLACE UNTIL SITE HAS STABILIZED.
9. SITE DE-WATERING: WATER PUMPED FROM THE SITE SHALL BE TREATED BY TEMPORARY SEDIMENTATION BASINS OR OTHER APPROPRIATE CONTROL MEASURES. SEDIMENTATION BASINS SHALL HAVE A DEPTH OF AT LEAST 3 FEET, BE SURROUNDED BY SNOWFENCE OR EQUIVALENT BARRIER AND HAVE SUFFICIENT SURFACE AREA TO PROVIDE A SURFACE SETTLING RATE OF NO MORE THAN 750 GALLONS PER SQUARE FOOT PER DAY AT THE HIGHEST DEWATERING PUMPING RATE. WATER MAY NOT BE DISCHARGED IN A MANNER THAT CAUSES EROSION OF THE SITE, A NEIGHBORING SITE, OR THE BED OR BANKS OF THE RECEIVING WATER. POLYMERS MAY BE USED AS DIRECTED BY DNR TECHNICAL STANDARD 1061 (DE-WATERING).
10. SEE DETAIL SHEETS FOR RIP-RAP SIZING. IN NO CASE WILL RIP-RAP BE SMALLER THAN 3" TO 6".
11. INLET FILTERS ARE TO BE PLACED IN STORMWATER INLET STRUCTURES AS SOON AS THEY ARE INSTALLED. ALL PROJECT AREA STORM INLETS NEED WISCONSIN D.O.T. TYPE D INLET PROTECTION. THE FILTERS SHALL BE MAINTAINED UNTIL THE TOWN HAS ACCEPTED THE BINDER COURSE OF ASPHALT.
12. USE DETENTION BASINS AS SEDIMENT BASINS DURING CONSTRUCTION (DO NOT USE INFILTRATION AREAS). AT THE END OF CONSTRUCTION, REMOVE SEDIMENT AND RESTORE PER PLAN.
13. RESTORATION (SEED, FERTILIZE AND MULCH) SHALL BE PER SPECIFICATIONS ON THIS SHEET (NOTE: ADD SEEDING RATE STANDARD OF DETAIL BLOCK TO PLAN) UNLESS SPECIAL RESTORATION IS CALLED FOR ON THE LANDSCAPE PLAN OR THE DETENTION BASIN DETAIL SHEET.
14. TERRACES SHALL BE RESTORED WITH 6" TOPSOIL, PERMANENT SEED, FERTILIZER AND MULCH. LOTS SHALL BE RESTORED WITH 6" TOPSOIL, TEMPORARY SEED, FERTILIZER AND MULCH.
15. SEED, FERTILIZER AND MULCH SHALL BE APPLIED WITHIN 7 DAYS AFTER FINAL GRADE HAS BEEN ESTABLISHED. IF DISTURBED AREAS WILL NOT BE RESTORED IMMEDIATELY AFTER ROUGH GRADING, TEMPORARY SEED SHALL BE PLACED.
16. FOR THE FIRST SIX WEEKS AFTER RESTORATION (E.G. SEED & MULCH, EROSION MAT, SOD) OF A DISTURBED AREA, INCLUDE SUMMER WATERING PROVISIONS OF ALL NEWLY SEEDED AND MULCHED AREAS WHENEVER 7 DAYS ELAPSE WITHOUT A RAIN EVENT.
17. EROSION MAT (CLASS I, TYPE B URBAN PER WISCONSIN D.O.T. P.A.L.) SHALL BE INSTALLED ON THE BOTTOM (INVERT) OF ROADSIDE DITCHES/SWALES AS SHOWN ON THIS PLAN, 1 ROLL WIDTH.
18. SOIL STABILIZERS SHALL BE APPLIED TO DISTURBED AREAS WITH SLOPES BETWEEN 10% AND 3:1 (DO NOT USE IN CHANNELS). SOIL STABILIZERS SHALL BE TYPE B, PER WISCONSIN D.O.T. P.A.L. (PRODUCT ACCEPTABILITY LIST), OR EQUAL. APPLY AT RATES AND METHODS SPECIFIED PER MANUFACTURER. SOIL STABILIZERS SHALL BE RE-APPLIED WHENEVER VEHICLES OR OTHER EQUIPMENT TRACK ON THE AREA.
19. SILT FENCE OR EROSION MAT SHALL BE INSTALLED ALONG THE CONTOURS AT 100 FOOT INTERVALS DOWN THE SLOPE ON THE DISTURBED SLOPES STEEPER THAN 5% AND MORE THAN 100 FEET LONG THAT SHEET FLOW TO THE ROADWAY UNLESS SOIL STABILIZERS ARE USED.
20. SILT FENCE TO BE USED ACROSS AREAS OF THE LOT THAT SLOPE TOWARDS A PUBLIC STREET OR WATERWAY. SEE DETAILS.
21. SEDIMENT SHALL BE CLEANED FROM CURB AND GUTTER AFTER EACH RAINFALL AND PRIOR TO PROJECT ACCEPTANCE.
22. ACCUMULATED CONSTRUCTION SEDIMENT SHALL BE REMOVED FROM ALL PERMANENT BASINS TO THE ELEVATION SHOWN ON THE GRADING PLAN FOLLOWING THE STABILIZATION OF DRAINAGE AREAS.
23. ALL CONSTRUCTION ENTRANCES SHALL HAVE TEMPORARY ROAD CLOSED SIGNS THAT WILL BE IN PLACE WHEN THE ENTRANCE IS NOT IN USE AND AT THE END OF EACH DAY.
24. ANY PROPOSED CHANGES TO THE EROSION CONTROL PLAN MUST BE SUBMITTED AND APPROVED BY DANE COUNTY LAND CONSERVATION OR PERMITTING MUNICIPALITY.
25. THE TOWN, OWNER AND/OR ENGINEER MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES AT ANY TIME DURING CONSTRUCTION.

CONSTRUCTION SEQUENCE:

1. INSTALL SILT FENCE AND TRACKING PAD
2. STRIP TOPSOIL-DETENTION BASINS
3. ROUGH GRADE DETENTION BASINS
4. SEED DETENTION BASINS
5. STRIP TOPSOIL-DRIVES AND BUILDING PADS
6. ROUGH GRADE DRIVES AND BUILDING PADS
7. CONSTRUCT UNDERGROUND UTILITIES
8. INSTALL INLET PROTECTION
9. CONSTRUCT DRIVES (STONE BASE, CURB & GUTTER, AND SIDEWALK).
10. RESTORE TERRACES/OPEN SPACE
11. CONSTRUCT BUILDINGS
12. REMOVE TRACKING PAD, SILT FENCE AND DIVERSION BERM MEASURES AFTER DISTURBED AREAS ARE RESTORED

SEEDING RATES:

TEMPORARY:
1. USE ANNUAL OATS AT 3.0 LB./1,000 S.F. FOR SPRING AND SUMMER PLANTINGS.
2. USE WINTER WHEAT OR RYE AT 3.0 LB./1,000 SF FOR FALL PLANTINGS STARTED

AFTER SEPTEMBER 15.

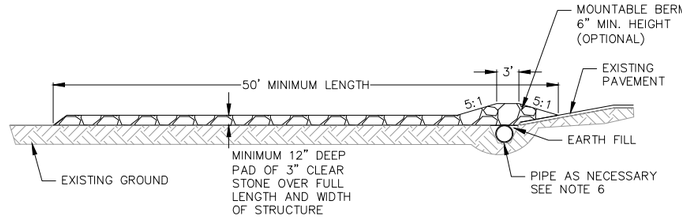
PERMANENT:
1. USE WISCONSIN D.O.T. SEED MIX #40 AT 2 LB./1,000 S.F.

FERTILIZING RATES:

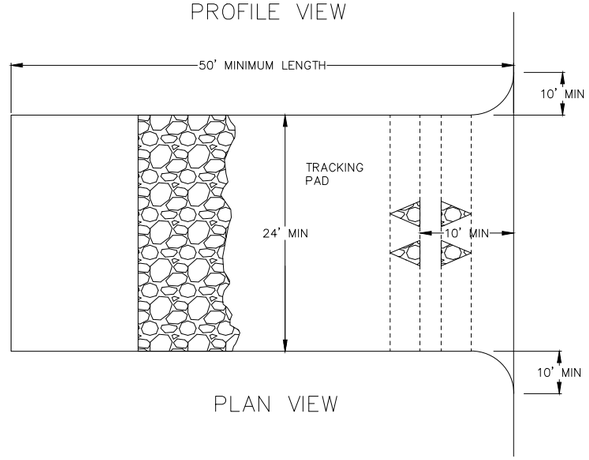
TEMPORARY AND PERMANENT:
USE WISCONSIN D.O.T. TYPE A OR B AT 7 LB./1,000 S.F.

MULCHING RATES:

TEMPORARY AND PERMANENT:
USE ½" TO 1-½" STRAW OR HAY MULCH, CRIMPED PER SECTION 607.3.2.3, OR OTHER RATE AND METHOD PER SECTION 627, WISCONSIN D.O.T. STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION



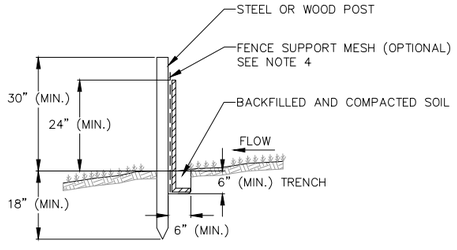
PROFILE VIEW



PLAN VIEW

1. FOLLOW WISCONSIN DNR TECHNICAL STANDARD 1057 FOR FURTHER DETAILS AND INSTALLATION.
2. LENGTH – MINIMUM OF 50'
3. WIDTH – 24' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
4. ON SITES WITH A HIGH GROUND WATER TABLE OR WHERE SATURATED CONDITIONS EXIST, GEOTEXTILE FABRIC SHALL BE PLACED OVER EXISTING GROUND PRIOR TO PLACING STONE. FABRIC SHALL BE WISDOT TYPE-HR GEOTEXTILE FABRIC.
5. STONE – CRUSHED 3" CLEAR STONE SHALL BE PLACED AT LEAST 12" DEEP OVER THE ENTIRE LENGTH AND WIDTH OF ENTRANCE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARDS CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE. MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND MINIMUM OF 6" STONE OVER THE PIPE. PIPE SHALL BE SIZED ACCORDING TO THE DRAINAGE REQUIREMENTS. WHEN THE ENTRANCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE SHALL NOT BE NECESSARY. THE MINIMUM PIPE DIAMETER SHALL BE 6". CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF SAID PIPE.
7. LOCATION – A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED WHERE CONSTRUCTION TRAFFIC ENTERS AND/OR LEAVES THE CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE TRACKING PAD.

1 / C7.0 TRACKING PAD
NOT TO SCALE



NOTES:

1. INSTALL SILT FENCE TO FOLLOW THE GROUND CONTOURS AS CLOSELY AS POSSIBLE.
2. CURVE THE SILT FENCE UP THE SLOPE TO PREVENT WATER FROM RUNNING AROUND THE ENDS.
3. POST SPACING WITH FENCE SUPPORT MESH = 10 FT. (MAX.)

   POST SPACING WITHOUT FENCE SUPPORT MESH = 6 FT. (MAX.)
4. SILT FENCE SUPPORT MESH CONSISTS OF 14-GAUGE STEEL WIRE WITH A MESH SPACING OF 6 IN. X 6 IN. OR PREFABRICATED POLYMERIC MESH OF EQUIVALENT STRENGTH

2 / C7.0 SILT FENCE
NOT TO SCALE

vierbicher planners engineers advisors

DETAILS
LODGE GENEVA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

REVISIONS			
NO.	DATE	REMARKS	
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DATE 09/11/2025
DRAFTER JGRU
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PROJECT NO. 240725

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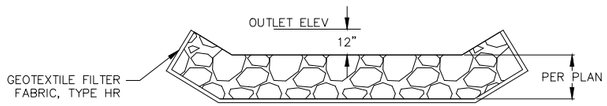
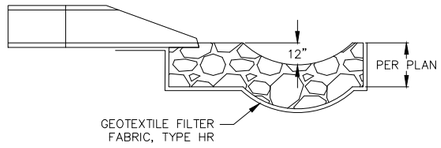
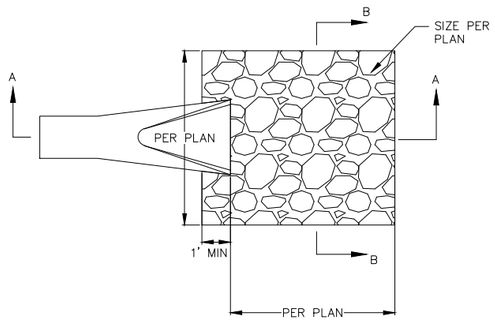


CROSS SECTION B–B

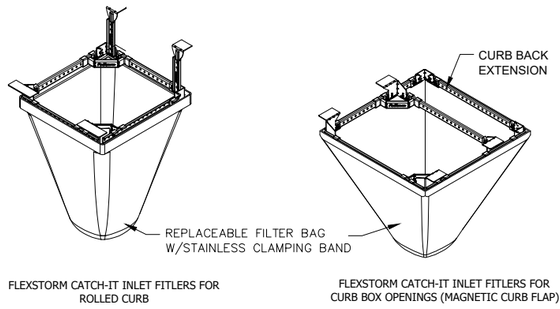


CROSS SECTION A–A



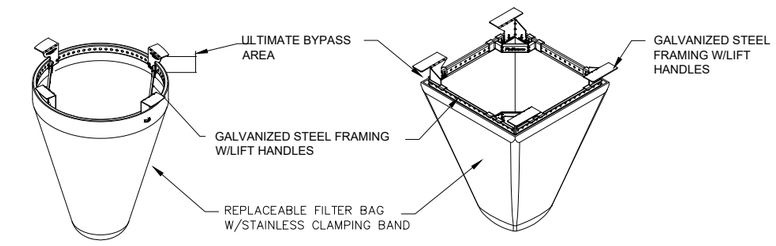
PLAN VIEW

1 / C7.1 RIP–RAP OUTLET
NOT TO SCALE



FLEXSTORM CATCH-IT INLET FITLERS FOR ROLLED CURB

FLEXSTORM CATCH-IT INLET FITLERS FOR CURB BOX OPENINGS (MAGNETIC CURB FLAP)



FLEXSTORM CATCH-IT INLET FILTERS FOR ROUND OPENINGS

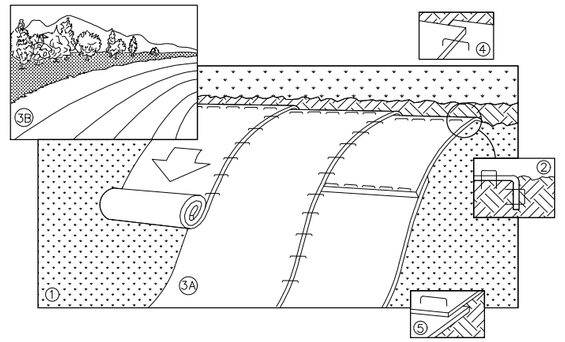
FLEXSTORM CATCH-IT INLET FITLERS FOR SQUARE/RECTANGULAR OPENINGS

NEENAH CASTING	INLET TYPE	GRATE SIZE	OPENING SIZE	ADS P/N
1040/1642/1733	ROUND	26	24	62MRDFX
3067 W/FLAP	CURB BOX	35.25 X 17.75	33.0 X 15.0	62LCBEXTFX
3067 EXTENDED BACK	CURB BOX	35.25 X 17.75	33.0 X 15.0	62LCBEXTFX
3246A	CURB BOX	35.75 X 23.875	33.5 X 21.0	62LCBFX
3030	SQUARE/RECT	23 X 16	20.5 X 13.5	62MCBFX
3067-C	SQUARE/RECT	35.25 X 17.75	33 X 15	62LSQFX

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

WHEN REMOVING OR MAINTAINING INLET PROTECTION, ANY TRAPPED MATERIAL THAT FALLS INTO THE INLET SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR.

2 / C7.1 FRAMED INLET PROTECTION
NOT TO SCALE



NOTE: REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF FERTILIZER AND SEED.
   NOTE: WHEN USING CELL–O–SEED, DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS <A.> DOWN, OR <B.> HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 4" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.
6. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SLOPE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS RECOMMENDED BY THE MANUFACTURER.

3 / C7.1 EROSION MAT
NOT TO SCALE

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DETAILS
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

REVISIONS	NO.	DATE	REMARKS

REVISIONS	NO.	DATE	REMARKS

DATE 09/11/2025
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CHECKED SPAR
PROJECT NO. 240725

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BIO–RETENTION AREA RESTORATION SPECIFICATIONS:
NOTE: BIO–RETENTION AREA MUST NOT BE CONSTRUCTED (INSTALLED) UNTIL THE SITE IS STABILIZED, I.E. THE GRASS COVER IS WELL ESTABLISHED.

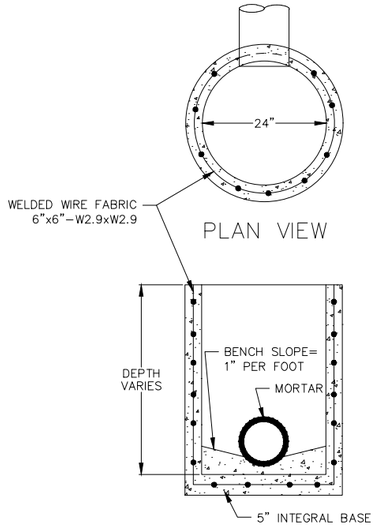
BIO–RETENTION AREA MUST CONFORM TO WISCONSIN DNR TECHNICAL STANDARD 1004 (BIORETENTION FOR INFILTRATION)

USE RAINWATER GARDEN LIVE NATIVE PLANT PLUGS FROM AGRECOL (SUNNY, SHORT, OR MEDIUM STATURE) – OR ENGINEER APPROVED EQUAL.

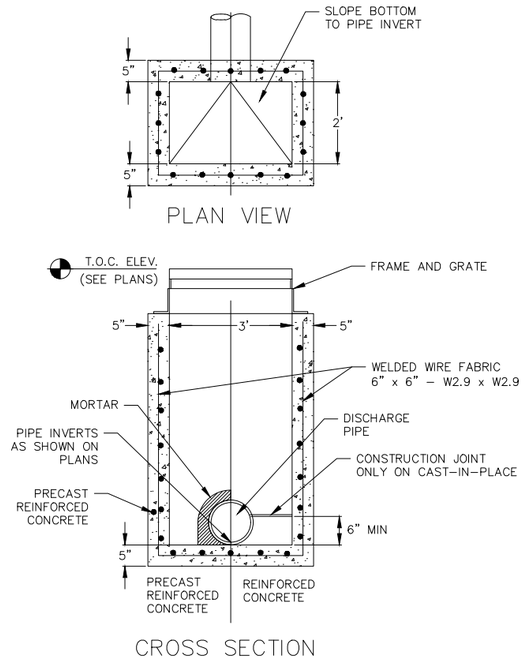
PLANT PLUGS AT 1 PER SQUARE FOOT.

PLANTING, MULCH, AND MAINTENANCE NOTES:
PLANTING SHOULD TAKE PLACE BETWEEN AVAILABILITY OF PLANTS IN SPRING AND JUNE 30TH, OR BETWEEN SEPTEMBER 1ST AND OCTOBER 15TH. IF PLANTED JULY 1ST THROUGH AUGUST 31ST, HEAVILY WATER THE PLANTS AT THE TIME THEY ARE PLANTED, AND EVERY OTHER DAY FOR A TOTAL OF 4 WATERINGS. A RAIN EVENT GREATER THAN 0.5 INCHES CONSTITUTES A WATERING. IF PLANTED SEPTEMBER 1ST THROUGH OCTOBER 15TH, PLACE CERTIFIED WEED–FREE STRAW MULCH AT 3" MINIMUM THICKNESS BETWEEN PLANTS TO HELP PREVENT FROST HEAVE. IF PLANTING IS TO OCCUR AFTER OCTOBER 15TH, IT MUST BE POSTPONED UNTIL THE FOLLOWING SPRING (MAY). FOR THE FIRST 3 YEARS AFTER PLANTING, SPOT TREAT THE AREA WITH HERBICIDE TO REMOVE WEEDS.

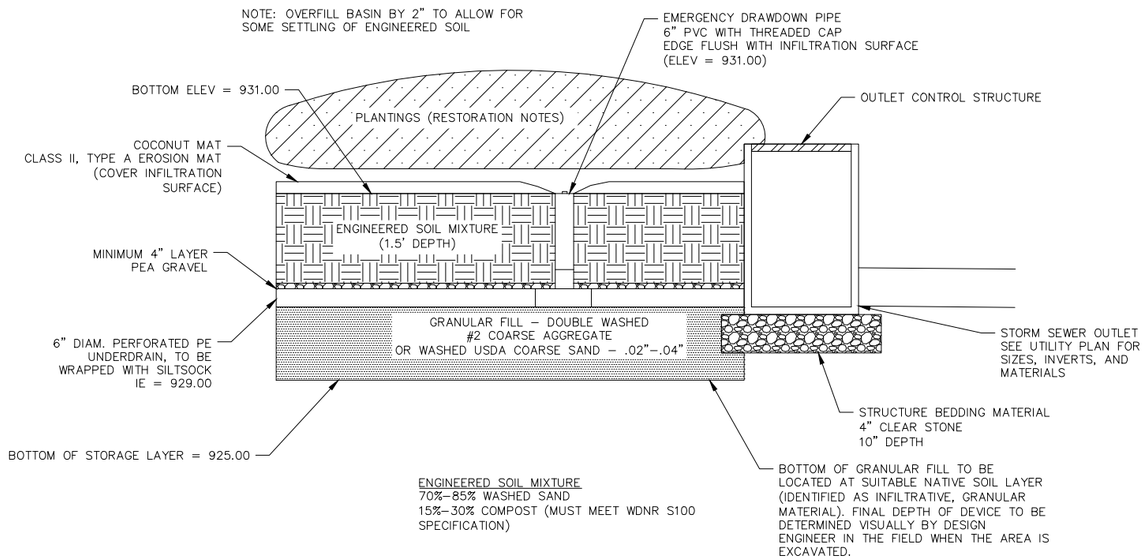
RESTORATION OF THE INFILTRATION AREA (NOT INCLUDING SIDE SLOPES):
1. OVER–EXCAVATE THE AREA TO INFILTRATIVE LAYER TO BE DETERMINED IN THE FIELD, DURING EXCAVATION, BY DESIGN ENGINEER.
2. CHISEL PLOW, OR ROTO–TILL THE BASE OF THE AREA TO BREAK UP ANY HARDPAN IN THE NATIVE SOIL LAYER.
3. PLACE WASHED SAND (FREE OF P200 PARTICLES) TO 46 INCHES BELOW GROUND SURFACE (IF REQUIRED).
4. PLACE 24 INCHES OF ENGINEERED SOIL, COMPRISED OF:
   70–85% WASHED SAND
   15–30% COMPOST (MUST MEET WDNR S100 SPECIFICATION
5. PLANT PLUG, MULCH, WATER, AND MAINTAIN AS DIRECTED ABOVE.



1 / C7.2 FIELD INLET (24" DIA. BASIN)
NOT TO SCALE



2 / C7.2 CURB INLET – TYPE 3, 2' x 3' BASIN
NOT TO SCALE



3 / C7.2 BIO–RETENTION BASIN
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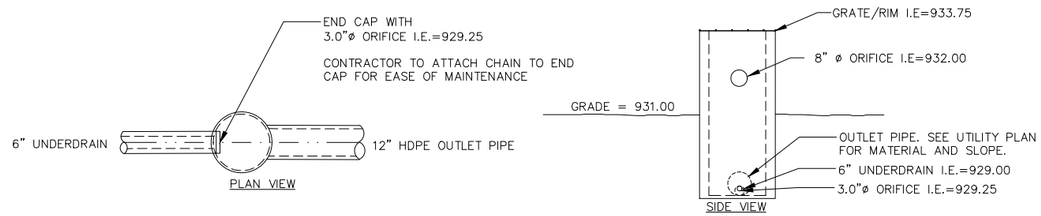

4 / C7.2 OUTLET_DETAIL
NOT_TO_SCALE

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DETAILS
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

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PROJECT NO. 240725

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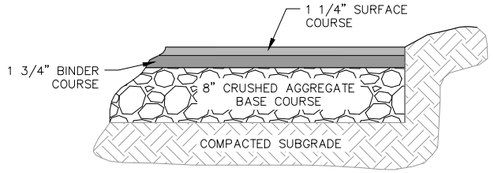
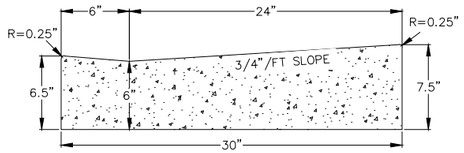
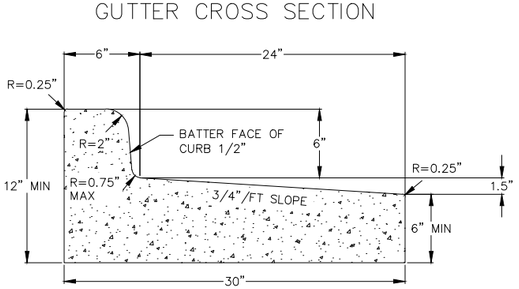


BITUMINOUS PAVEMENT
PARKING LOT

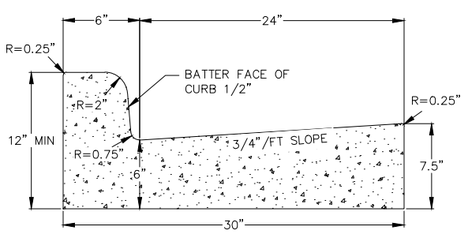
1 / C7.3 SITE PAVEMENT
NOT TO SCALE



HANDICAP RAMP
GUTTER CROSS SECTION



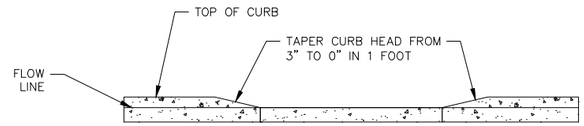
CURB AND GUTTER
REJECT SECTION



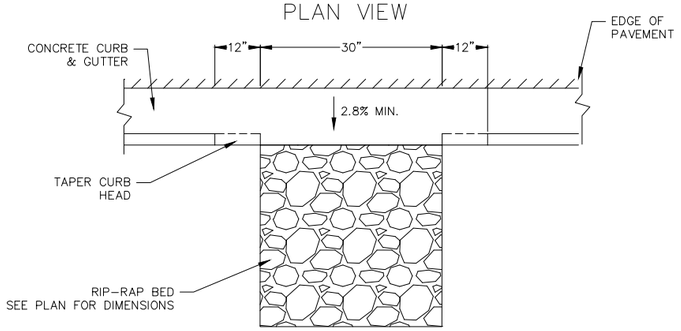
CURB AND GUTTER
CROSS SECTION

2 / 7.3 30" CONCRETE CURB AND GUTTER
NOT TO SCALE

PROFILE VIEW

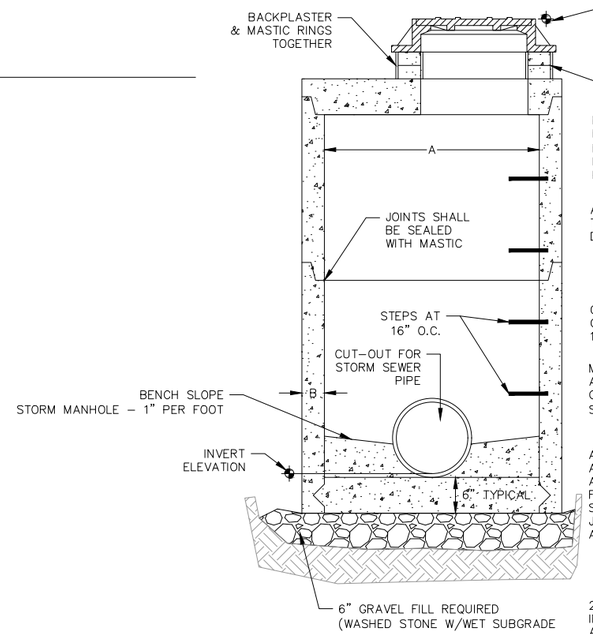


PLAN VIEW



CURB CUT
NOT TO SCALE

3 / 7.3 CURB CUT
NOT TO SCALE



MANHOLE CASTING SHALL BE HEAVY DUTY, NEENAH FOUNDRY CO. CATALOG LISTING NO. R–1550, WITH TYPE "B" NON–ROCKING LID, GASKET SEAL AND CONCEALED PICKHOLES

ADJUST FRAME TO GRADE WITH AT LEAST TWO PRECAST CONCRETE RINGS OF DIFFERENT THICKNESSES.

CONCRETE SHALL BE 4000 PSI, 28 DAY COMPRESSIVE STRENGTH, 6.5 BAG MIX WITH 1~2% AIR ENTRAINMENT.

MANHOLE STEPS SHALL CONFORM TO ASTM–C478 & SHALL BE NEENAH FOUNDRY CO. R–1981–N OR APPROVED EQUAL. STEPS SHALL BE SPACED 16" ON CENTER.

A MINIMUM OF 3" TO A MAXIMUM OF 9" OF ADJUSTING RINGS SHALL BE USED TO ADJUST THE MANHOLE CASTING TO THE FINISHED GRADE. ALL RINGS SHALL BE SEALED TOGETHER USING MASTIC AND ALL JOINTS SHALL BE BACK PLASTERED INSIDE AND OUT WITH CEMENT MORTAR.

2x3 OPENING IS REQUIRED FOR STORM INLET MANHOLES WITH CASTING AND RINGS AS SPECIFIED IN DETAIL 02721–A.

STORM MANHOLE DIMENSIONS

MANHOLE SIZE	DIMENSION	
	A	B (MIN.)
36"	36"	4"
48"	48"	5"
60"	60"	6"
72"	72"	7"
84"	84"	7"

4 / C7.3 STORM SEWER MANHOLE
NOT TO SCALE

vierbicher planners engineers advisors

DETAILS
LODGE GENENA NATIONAL
TOWN OF GENEVA
WALWORTH COUNTY, WISCONSIN

REVISIONS

NO.	DATE	REMARKS

REVISIONS

NO.	DATE	REMARKS

DATE 09/11/2025
DRAFTER JGRU
CHECKED CHECKED
PROJECT NO. 240725

C7.3

11 Sep 2025 - 9:30a M:\Geneva National\240724_Lodge\CADD\240724 Details.dwg by: jgru

VILLAGE OF WILLIAMS BAY

Office of Zoning Administrator

Evaluation Report
Plan Commission Meeting
December 2, 2025

Prepared: November 26, 2025

APPLICANT: Brandon Flunker (Applicant) , Paloma Ridge Commercial LLC (Owner), Lodge Geneva National (Project)
TAX KEY: JLGR 05011
STREET ADDRESS: W4240 Highway 50, Lake Geneva, WI 53147

The applicant is requesting approval of a Site Plan Review per Section 390-1206 and 390-1704 for a property located within the Village of Williams Bay ETZ boundary. Per Section 390-1704 site plan review shall be incorporated into the ETZ zoning ordinance, and all modifications to a commercial property shall require site plan review by the Village of Williams Bay Plan Commission.

The applicant is requesting to modify and expand an existing parking lot for the Lodge of Geneva National located in the Town of Geneva. The expansion shown in detail enclosed in your packet includes the addition of multiple new parking spaces, as well as a new proposed entry and exit design. All stormwater and erosion control will be reviewed by Walworth County. The total disturbance area is approximately 70,000 square feet.

Site Plan Review Procedure:

1. Review by the Zoning Administrator.
   (a) The Zoning Administrator shall determine whether the site plan application is complete and fulfills the requirements of this chapter. If the application is determined to be incomplete, the Zoning Administrator shall notify the applicant.
   (b) The Zoning Administrator shall review the application and evaluate the proposal for compliance with the following data sources:
      i. Official Zoning Map.
      ii. The Village of Williams Bay Comprehensive Plan.
      iii. Applicable FEMA and related floodplain maps.
      iv. Applicable federal and state wetland inventory maps.
   (c) The Zoning Administrator shall prepare a written report addressing items above and forward said report to the Plan Commission for the Commission's review and use in making its recommendation to the Village Board. If the Zoning Administrator determines that the proposal may be in conflict with the provisions of this chapter or the Comprehensive Plan, the Zoning Administrator shall note this determination in the report.
2. Review and recommendation by the Plan Commission.
   (a) The Plan Commission, in its consideration of the submitted application, shall take into account the basic intent of this chapter to ensure attractive, efficient, and appropriate development of land in the Village, and to ensure that every reasonable step has been taken to avoid depreciating effects on surrounding property and the natural environment. In its review,

the Plan Commission may require such additional measures and/or modifications as it deems necessary to accomplish this objective. If such additional measures and/or modifications are required, the Plan Commission may withhold approval of the site plan until revisions depicting such additional measures and/or modifications are submitted to the satisfaction of the Plan Commission, or may approve the application subject to the satisfaction of the Zoning Administrator. Such amended plans and conditions applicable to the proposed use shall be made part of the official record, and development activity on the subject property may not proceed until the revised application has been approved by one of the two above procedures as directed by the Plan Commission.

(b) It its review of the application, the Plan Commission may make findings on each of the following criteria to determine whether the site plan shall be approved, approved with modification, or denied:

i. All standards of this chapter and other applicable Village, state, and federal regulations are met.
ii. The public health and safety is not endangered.
iii. Adequate public facilities, utilities, and open space areas are provided.
iv. Adequate control of stormwater and erosion is provided and the disruption of existing topography, drainage patterns, and vegetative cover is minimized insofar as is practical.
v. Appropriate traffic control and parking are provided.
vi. Applicable performance standards, per Article 8, are met.

(c) The Plan Commission may make a written report to the Village Board and/or may state in the minutes its findings regarding Subsection E(7)(b) above and its recommendations regarding the application as a whole. Said report and/or minutes may include formal findings of fact developed and approved by the Plan Commission concerning the requirements of this section, and that the public benefits outweigh any and all potential adverse impacts of the proposed site plan.

3. Review and action by the Village Board.

(a) The Village Board shall consider the Plan Commission's recommendation regarding the proposed site plan. The Village Board may request additional information and/or reports from the Plan Commission, Zoning Administrator, and/or the applicant. The Board may take final action on the application at the time of its initial meeting, or may continue the proceedings.

(b) The Village Board may approve the site plan as originally proposed, may approve the proposed site plan with conditions (per the recommendations of the Zoning Administrator, the Plan Commission, authorized outside experts, or its own members), or may deny approval of the proposed site plan.

The property located at W4240 Highway 50 is zoned B-4 ETZ, Highway Business District.

After a review of the submitted application and materials the proposed project appears to be in full compliance with all of the following requirements of the B-4 ETZ Zoning District per Section 390-1703. Additionally, the proposal appears to be in full compliance with all requirements of Section 390-0805 pertaining to off street parking requirements.

Respectfully submitted,

Allison Schwark
Zoning Administrator

LAND AND LAKES

Land & Lakes Development Company
1400 East Touhy Avenue, Suite 220
Des Plaines, Illinois 60018
(847) 825.5000

August 4, 2025

Mr. David Lothspeich
Ms. Allison Schwark
Village of Williams Bay
250 Williams Street
Williams Bay, WI 53191

Federal Express
#8832 9016 9729

Re: Willabay Subdivision
Williams Bay, WI

Dear Mr. Lothspeich & Ms. Schwark:

Enclosed are the following original documents:

1. Original Petition for Annexation; and
2. Original Notice of Assignment of Development Agreement

Thank you,

LAND AND LAKES DEVELOPMENT CO.

Mary Margaret Cowhey
President

cc: David Patzelt
Chad Pollard

LAND AND LAKES

Land & Lakes Development Company
1400 East Touhy Avenue, Suite 220
Des Plaines, Illinois 60018
(847) 825.5000

August 4, 2025

Mr. David Lothspeich
Village Administrator
Village of Williams Bay
250 Williams Street
Williams Bay, WI 53191

Re: Notice of Assignment of Development Agreement between the Village of Williams Bay ("Village") and Land & Lakes Development Co. ("Developer) dated October 7, 2024

Dear Mr. Lothspeich,

Pursuant to Section 11.16 of the above-referenced Development Agreement (the "Agreement"), Developer hereby provides the Village written notice ("Notice") of its intention to assign the Agreement to Shodeen Homes, L.L.C. (the "Assignee"). The assignment will be effective no sooner than 30 days from the date of this Notice. The contact information for Shodeen Homes is as follows:

Mr. David Patzelt
Senior Vice President
Shodeen Home, L.L.C.
17 North First Street
Geneva, IL 60134
Email: dave@shodeen.com
Telephone: 630-444-8252

Please contact Mr. Patzelt directly to request information required to satisfy the Village that the Assignee may succeed to the Security (as defined in the Agreement) in such manner and form acceptable to the Village Attorney.

Sincerely,
LAND AND LAKES DEVELOPMENT CO.

Mary Margaret Cowhey
President

cc: David Patzelt
Chad Pollard

PETITION FOR DIRECT ANNEXATION BY UNANIMOUS CONSENT OF ELECTORS AND PROPERTY OWNERS OF TERRITORY LOCATED IN THE TOWN OF GENEVA, WALWORTH COUNTY, WISCONSIN, AND TOWN OF LINN, WALWORTH COUNTY, WISCONSIN TO THE VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN, PURSUANT TO WIS. STAT. § 66.0217(2)

TO: Village Board of Village of Williams Bay,
Walworth County, Wisconsin
c/o Jackie Pankau-Daniels, Village Clerk
Village Hall
250 Williams Street
Village of Williams Bay, WI 53191

Town Board of the Town of Geneva,
Walworth County, Wisconsin
c/o Debra Kirch, Town Clerk
Geneva Town Hall
N3496 Como Road
Lake Geneva, WI 53147

Town Board of the Town of Linn
Walworth County, Wisconsin
c/o Alyson Morris
Town Hall
W3728 Franklin Walsh St.
Zenda, WI 53195

Municipal Boundary Review
State of Wisconsin Department of Administration
P.O. Box 1645
Madison, WI 53701-1645

THIS PETITION of LAND & LAKES DEVELOPMENT CO. (f/k/a POPLAR RIDGE ESTATES DEVELOPMENT CO.), an Illinois corporation ("Petitioner"), as the owner of record of all of the real property in the territory sought to be annexed, such territory being more particularly described below, does respectfully state, represent, and show to the Village Board as follows:

1. Petitioner, whose address is Land and Lakes Development, 1400 E. Touhy Avenue Suite 220, Des Plaines IL 60018, Attention: Mary Margaret Cowhey, is the sole owner of record of the real property in the territory sought to be annexed, such property being located in Section 31 of the Town of Geneva, Walworth County, Wisconsin, and Section 5 of the Town of Linn, Walworth County Wisconsin, and more particularly described in the attached **Exhibit A** incorporated herein ("Subject Territory").

2. Petitioner respectfully requests all of the Subject Territory be annexed to the Village of Williams Bay, Walworth County, Wisconsin.

3. Attached hereto as **Exhibit B** and incorporated herein by reference are scale maps of the Subject Territory, in accordance with the provisions of Wis. Stat. §§ 66.0217(2) and 66.0217(5).

4. No electors reside in the Subject Territory sought to be annexed hereunder. The current population of the Subject Territory sought to be annexed hereunder is zero (0).

5. Petitioner will cause this Petition, the legal description, and the scale map of the Subject Territory to be annexed to be filed with the Village Clerk of the Village of Williams Bay, Walworth County, Wisconsin, the Town Clerk of the Town of Geneva, Walworth County, Wisconsin, the Town Clerk of the Town of Linn, Walworth County, Wisconsin, and the State of Wisconsin, Department of Administration, in accordance with the provisions of Wis. Stat. § 66.0217(2).

6. Petitioner requests the Subject Territory described herein be temporarily zoned as Suburban Residential (SF-3) Zoning District, in accordance with the attached **Exhibit C** incorporated herein. Petitioner's request for the assignment of temporary zoning is made pursuant to Wis. Stat § 66.0217(8).

7. Petitioner requests the Village of Williams Bay adopt an Annexation Ordinance, in substantial conformity with the attached **Exhibit D**, prior to any action by the village.

8. Petitioner believes this Petition and the Subject Territory sought to be annexed hereunder meet all legal requirements for annexation, and that such annexation is in the public interest.

Dated this 1st day of August, 2025.

LAND & LAKES DEVELOPMENT CO.,
an Illinois corporation

By: _____
Mary Margaret Cowhey, President

This instrument drafted by:
STUART, TOKARZ, SOBERALSKI & POLLARD LLC
Attorney Charles. W. Pollard
617 East Walworth Avenue
Delavan, Wisconsin 53115-0445
Phone: 262-728-9196
E-mail: cpollard@stsplaw.com

PETITION FOR DIRECT ANNEXATION

EXHIBIT A

Legal Descriptions

Geneva Property

LEGAL DESCRIPTION (TAX PARCEL J G 3100009A)

PART OF THE SOUTHEAST 1/4 AND SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6 S 88DEG 55MIN 28SEC W, 493.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE S 88DEG 55MIN 28SEC W, 1351.14 FEET TO THE NORTHWEST CORNER OF WILLABAY SHORES CONDOMINIUM; THENCE 752.66 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45DEG 10MIN 55SEC E, 748.10 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY, S 53DEG 04MIN 18SEC E, 610.59 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, S 67DEG 55MIN 31SEC E, 353.26 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, 5.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 63DEG 58MIN 27SEC E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 339,436 SQUARE FEET (7.79 ACRES) OF LAND, MORE OR LESS.

Town of Linn Property

LEGAL DESCRIPTION (TAX PARCELS I L 500005 AND I L 500005A)

PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6, BEARING S 02DEG 08MIN 37SEC E, 153.46 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE ALONG SAID HIGHWAY 231.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 88DEG 04MIN 38SEC E, 231.10 FEET; THENCE CONTINUE ALONG SAID HIGHWAY N 87DEG 40MIN 28SEC E, 182.42 FEET; THENCE CONTINUE ALONG SAID HIGHWAY S 47DEG 16MIN 54SEC E, 197.81 FEET TO A POINT ALONG THE WESTERLY RIGHT OF WAY BOUNDARY OF EAST GENEVA STREET; THENCE ALONG SAID STREET S 02DEG 09MIN 29SEC E, 353.43 FEET; THENCE S 88DEG 47MIN 41SEC W, 536.64 FEET TO A POINT ALONG THE BOUNDARY OF WILLABAY WOODS, A SUBDIVISION; THENCE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 02DEG 51MIN 46SEC E, 231.13 FEET; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 88DEG 50MIN 40SEC W, 36.91 FEET; THENCE N 02DEG 08MIN 37SEC W, 267.62 FEET TO THE POINT OF BEGINNING. CONTAINING 255,241 SQUARE FEET (5.86 ACRES) OF LAND, MORE OR LESS.

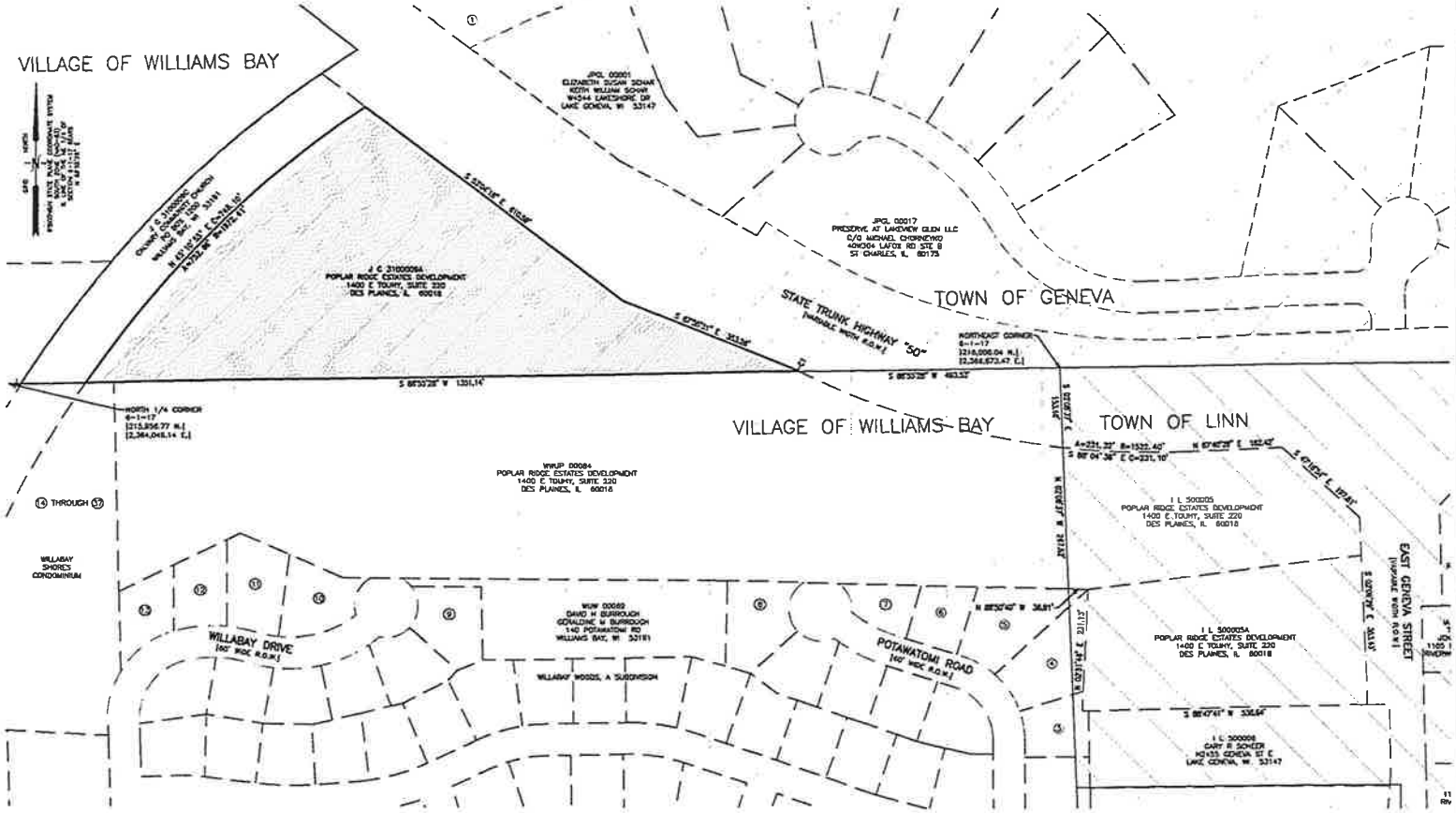
PETITION FOR DIRECT ANNEXATION

EXHIBIT B

Scale Maps

ANNEXATION MAP – TAX PARCEL: J G 3100009A

PART OF THE SE 1/4 AND SW 1/4 OF THE SE 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN



LIST OF ABUTTERS

14 WUS 000021A
MERCEDES M LOMBARDI TRUST
7120 N MILWAUKEE AVENUE #310
NILES, IL 60714

15 WUS 000021B
ELIZABETH W ARNEY
1 HIGHWOOD COURT, UNIT B
WILLIAMS BAY, WI 53191

16 WUS 000021C
THOMAS M KEGEL
SUSAN A KEGEL
1 HIGHWOOD COURT, UNIT C
WILLIAMS BAY, WI 53191

17 WUS 000021D
JOHN P MCNULTY TRUST
SHEILA M MCNULTY TRUST
3338 W AGATITE AVE
CHICAGO, IL 60630

18 WUS 000021A
LAWRENCE R HICKEY FAMILY TRUST
803 S GRAINTREE DR
SCHAUMBURG, IL 60193

19 WUS 000022B
TED E PLAYTON
15023 CAPITOL PEAK TRAIL
CYPRESS, TX 77433

20 WUS 000022C
PATRICK WARD TRUST
NANCY WARD TRUST
2208 SEDGE CT
WAUWATOSA, WI 53597

21 WUS 000022D
ROBERT SPOKAS
MARSHA B SPOKAS
23257 REBECCA CT
NAPERVILLE, IL 60564

22 WUS 000023A
BARBARA CZERNOCK
410 ELIZABETH DRIVE
WOOD DALE, IL 60191

23 WUS 000023B
JULIA IRENE WILSON-BURCH
3 HIGHWOOD COURT, UNIT B
WILLIAMS BAY, WI 53191

24 WUS 000023C
STEPHEN BERTOG TRUST
1941 N COLDSPRING
ARLINGTON HEIGHTS, IL 60004

25 WUS 000023D
DIANE M ESPINOSS
MICHAEL A ESPINOSS
3 HIGHWOOD CT, #B
WILLIAMS BAY, WI 53191

26 WUS 000024A
MICHALYN JACKSON
21137 W WALNUT LANE
PLAINFIELD, IL 60544

27 WUS 000024B
JOSEPH N SANSONE
DEANNA M SANSONE
1510 E GENEVA RD
WHEATON, IL 60187

28 WUS 000024C
LAURIE C MORRISSY
ANNE E MORRISSY
4C HIGHWOOD COURT
WILLIAMS BAY, WI 53191

29 WUS 000024D
PATRICK C MURRAY
ROBERTA A MURRAY
901 CARDENA DRIVE #476
DEL RAY BEACH, FL 33483

30 WUS 000025A
ELIZABETH JANE MALONEY
5 HIGHWOOD COURT, UNIT 5A
WILLIAMS BAY, WI 53191

31 WUS 000025B
MICHAEL A PIASECKI
PATRICIA A PIASECKI
2414 STONEHALL AVENUE
WOODRIDGE, IL 60517

32 WUS 000025C
3C PARTNERS LLC
PO BOX 1044
WILLIAMS BAY, WI 53191

33 WUS 000025D
MALONEY TRUST
62 TOURNAMONT DRIVE N
HAWTHORN WOODS, IL 60047

34 WUS 000026A
KIMBERLY ANN GENZ TRUST
PO BOX 110
FONTANA, WI 53125

35 WUS 000026B
GREGORY S MYERS
BERNADETTE MYERS, ETAL
13873 BRIAR PLACE
PALOS PARK, IL 60464

36 WUS 000026C
YNGVAR GUSTAFSSON
1345 N YALE
ARLINGTON HEIGHTS, IL 60004

37 WUS 000026D
ROBERT W HAWKINSON JR
SUSAN K HAWKINSON
2025 GLENDALE STREET
WHEATON, IL 60187

LIST OF ABUTTERS

1 J G 3100007
PALOMA GENEVA NATIONAL LLC
1221 GENEVA NATIONAL AVENUE S
LAKE GENEVA, WI 53147

2 W1248000021
W4419 HWY LLC LLC
1105 MILWAUKEE AVE
RIVERWOODS, IL 60015

3 WUW 00035
WILLIAM J HOLLISTER
121 POTAWATOMI DR
WILLIAMS BAY, WI 53191

4 WUW 00034
DANA L CATHART
123 POTAWATOMI DR
WILLIAMS BAY, WI 53191

5 WUW 00033
KIP L KOKESH
KIM M KOKESH
PO BOX 803
WILLIAMS BAY, WI 53191

6 WUW 00032
WUW 00068
FLORENC J HAUSNER
BRENDA M HAUSNER
133 POTAWATOMI RD
WILLIAMS BAY, WI 53191

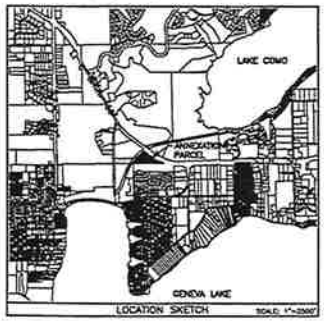
8 WUW 00031
DAVID M BURROUGH
GERALDINE M BURROUGH
140 POTAWATOMI RD
WILLIAMS BAY, WI 53191

9 WUW 00005
PAUL SCHNELL
LAURA SCHNELL
311 WILLABAY DR
WILLIAMS BAY, WI 53191

10 WUW 00004
MICHAEL J KELLY
JULIE A GRAGOVIC
4447 SASSAFRAS LANE
NAPERVILLE, IL 60564

11 WUW 00003
12 WUW 00002
MARK F BROMER
CYNTHIA L ROTH-BROMER
504 WILLABAY DR
WILLIAMS BAY, WI 53191

13 WUW 00001
JOHN LUX TRUST
MARILYNN LUX TRUST
500 WILLABAY DR
WILLIAMS BAY, WI 53191



CIVIL DIVISION INFORMATION PER WALWORTH COUNTY GIS MAPPING

= LANDS CURRENTLY IN THE VILLAGE OF WILLIAMS BAY

= LANDS CURRENTLY IN THE TOWN OF LINN

= LANDS CURRENTLY IN THE TOWN OF GENEVA

LEGAL DESCRIPTION (SEE PARCEL J G 3100009A)

PART OF THE SOUTHWEST 1/4 AND SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6 S 88°03'28" W, 483.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE S 69°06'E 33'48" 35'01" W, 1,351.14 FEET TO THE NORTHWEST CORNER OF WILLABAY SHORES CONDOMINIUM; THENCE 753.86 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45°00'E 10'00" 55'55" E, 748.10 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY, S 53°00'E 04'00" 48'55" E, 810.50 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, S 87°05'E 10'00" 37'55" E, 353.26 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, S 32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1,522.40 FEET AND A CHORD WHICH BEARS S 03°00'E 00'00" 32'00" E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 338,436 SQUARE FEET (7.79 ACRES) OF LAND, MORE OR LESS.

MAP SCALE IN FEET – ORIGINAL 1"=100'

– WORK ORDERED BY –
POPLAR RIDGE ESTATES DEVELOPMENT
1400 E. TOUHY, SUITE 220
DES PLAINES, IL 60018

ANNEXATION MAP
TOWN OF GENEVA, WALWORTH COUNTY, WISCONSIN

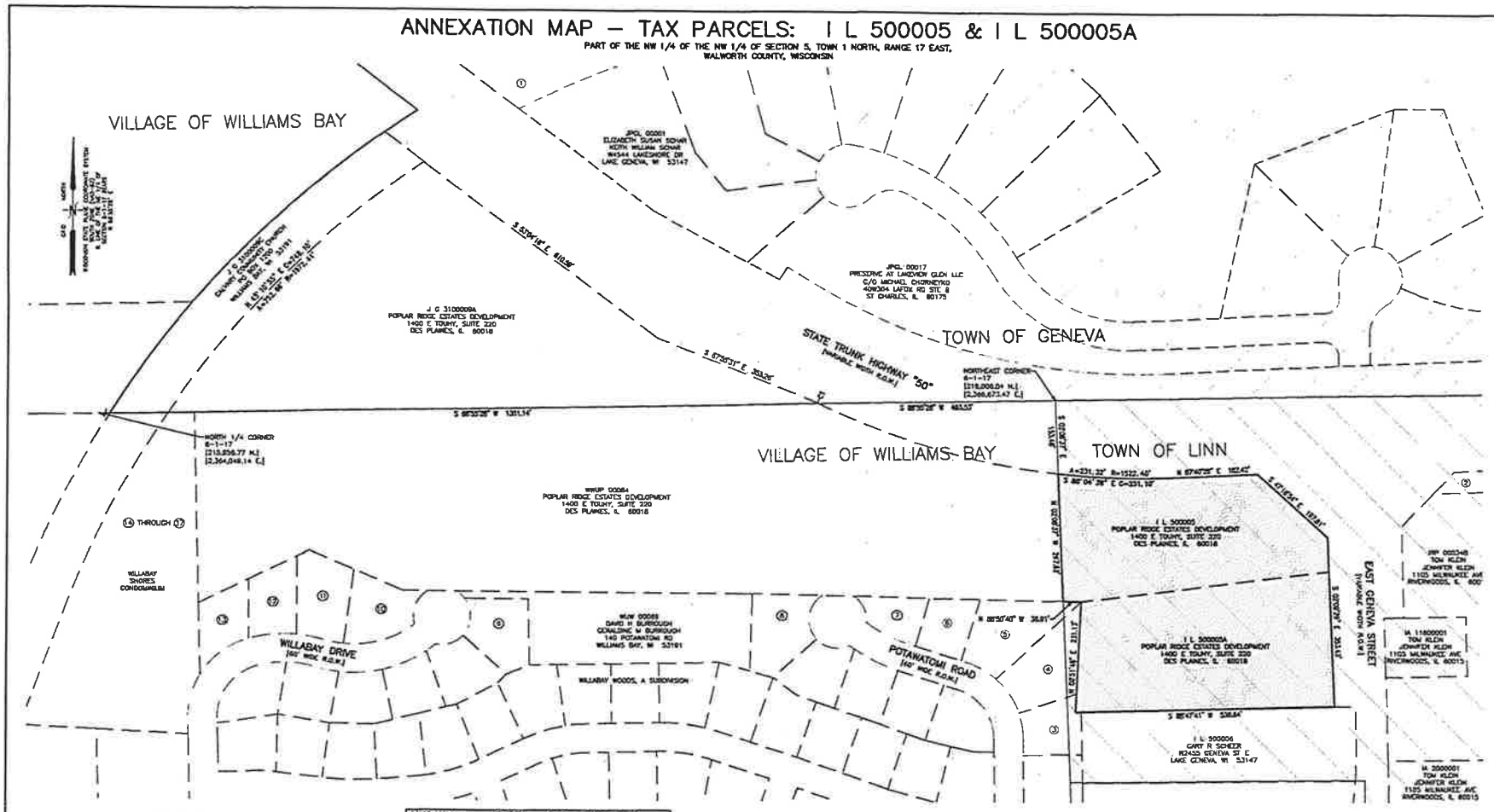
FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 ROGNEY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2068 FAX: (262) 723-5668

REVISIONS
1 (07/2025) – ADD. ABUTTERS
2 (08/2025) – SYNC. UPDATED ABUTTERS

PROJECT NO. 5536.17
DATE 03/01/2025
SHEET NO. 1 OF 1

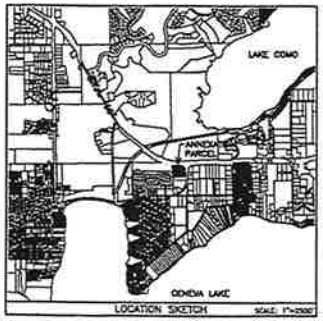
ANNEXATION MAP – TAX PARCELS: I L 500005 & I L 500005A

PART OF THE NW 1/4 OF THE NW 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST,
WALWORTH COUNTY, WISCONSIN



LIST OF ABUTTERS

1. J G 3100007
   PALOMA GENEVA NATIONAL LLC
   1221 GENEVA NATIONAL AVENUE S
   LAKE GENEVA, WI 53147
2. IA1260000001
   W4413 HWY LLC LLC
   1105 MILWAUKEE AVE
   RIVERWOODS, IL 60015
3. WUW 00035
   WILLIAM J HOLLISTER
   121 POTAWATOMI DR
   WILLIAMS BAY, WI 53191
4. WUW 00034
   DIANA L EAKHART
   125 POTAWATOMI DR
   WILLIAMS BAY, WI 53191
5. WUW 00033
   KIM L KOECKER
   KIM M KOECKER
   PO BOX 800
   WILLIAMS BAY, WI 53191
6. WUW 00032
7. WUW 00088
   FLORENC J HAUSNER
   BRENDA M HAUSNER
   133 POTAWATOMI RD
   WILLIAMS BAY, WI 53191
8. WUW 00031
   DAVID M BURROUGH
   DORALDINE M BURROUGH
   140 POTAWATOMI RD
   WILLIAMS BAY, WI 53191
9. WUW 00003
   PAUL SCHNELL
   LAURA SCHNELL
   311 WILLABAY DR
   WILLIAMS BAY, WI 53191
10. WUW 00004
    MICHAEL J KELLY
    JULIE A OBRADOVIC
    4447 SASSAFRAS LANE
    NAPERVILLE, IL 60564
11. WUW 00003
12. WUW 00002
    MARK F BROMER
    CYNTHIA L ROTH-BROMER
    304 WILLABAY DR
    WILLIAMS BAY, WI 53191
13. WUW 00001
    JOHN LUK TRUST
    MARILYNN LUK TRUST
    300 WILLABAY DR
    WILLIAMS BAY, WI 53191



LOCATION SKETCH SCALE: 1"=2000'

CIVIL DIVISION INFORMATION PER WALWORTH COUNTY GIS MAPPING

= LANDS CURRENTLY IN THE VILLAGE OF WILLIAMS BAY

= LANDS CURRENTLY IN THE TOWN OF LINN

= LANDS CURRENTLY IN THE TOWN OF GENEVA

LEGAL DESCRIPTION (FOR PARCELS I L 500005 AND I L 500005A)

PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE EAST LINE OF THE NORTHWEST 1/4 OF SAID SECTION 6, BEARING S 00D03' 33"E/C, 153.46 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE ALONG SAID HIGHWAY 331.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 11522.40 FEET AND A CHORD WHICH BEARS S 88D03' 04"E/C, 331.19 FEET; THENCE CONTINUE ALONG SAID HIGHWAY N 87D02' 48"E/C, 182.42 FEET; THENCE CONTINUE ALONG SAID HIGHWAY S 47D02' 59"E/C, 197.81 FEET TO A POINT ALONG THE WESTERLY RIGHT OF WAY BOUNDARY OF EAST GENEVA STREET; THENCE ALONG SAID STREET S 00D03' 33"E/C, 313.43 FEET; THENCE S 88D03' 47"W, 538.84 FEET TO A POINT ALONG THE BOUNDARY OF WILLABAY WOODS, A SUBDIVISION; THENCE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 00D03' 33"W/C, 234.15 FEET; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 88D03' 33"W, 36.81 FEET; THENCE N 00D03' 33"W, 343.83 FEET TO THE POINT OF BEGINNING. CONTAINING 253,241 SQUARE FEET [5.86 ACRES] OF LAND, MORE OR LESS.

MAP SCALE IN FEET – GRAPHIC 1"=100'

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 ROCHAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2000 FAX: (262) 723-5888

– WORK ORDERED BY –
POPLAR RIDGE ESTATES DEVELOPMENT
1400 E TOUHY SUITE 220
DES PLAINES, IL 60018

ANNEXATION MAP
TOWN OF LINN, WALWORTH COUNTY, WISCONSIN

REVISIONS

PROJECT NO. 5536.17
DATE 12/03/2021
SHEET NO. 1 OF 1

PETITION FOR DIRECT ANNEXATION

EXHIBIT C

Legal Description of
Suburban Residential (SF-3) Zoning District

Geneva Property

LEGAL DESCRIPTION (TAX PARCEL J G 3100009A)

PART OF THE SOUTHEAST 1/4 AND SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6 S 88DEG 55MIN 28SEC W, 493.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE S 88DEG 55MIN 28SEC W, 1351.14 FEET TO THE NORTHWEST CORNER OF WILLABAY SHORES CONDOMINIUM; THENCE 752.66 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45DEG 10MIN 55SEC E, 748.10 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY, S 53DEG 04MIN 18SEC E, 610.59 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, S 67DEG 55MIN 31SEC E, 353.26 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, 5.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 63DEG 58MIN 27SEC E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 339,436 SQUARE FEET (7.79 ACRES) OF LAND, MORE OR LESS.

Town of Linn Property

LEGAL DESCRIPTION (TAX PARCELS I L 500005 AND I L 500005A)

PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6, BEARING S 02DEG 08MIN 37SEC E, 153.46 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE ALONG SAID HIGHWAY 231.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 88DEG 04MIN 38SEC E, 231.10 FEET; THENCE CONTINUE ALONG SAID HIGHWAY N 87DEG 40MIN 28SEC E, 182.42 FEET; THENCE CONTINUE ALONG SAID HIGHWAY S 47DEG 16MIN 54SEC E, 197.81 FEET TO A POINT ALONG THE WESTERLY RIGHT OF WAY BOUNDARY OF EAST GENEVA STREET; THENCE ALONG SAID STREET S 02DEG 09MIN 29SEC E, 353.43 FEET; THENCE S 88DEG 47MIN 41SEC W, 536.64 FEET TO A POINT ALONG THE BOUNDARY OF WILLABAY WOODS, A SUBDIVISION; THENCE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 02DEG 51MIN 46SEC E, 231.13 FEET; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 88DEG 50MIN 40SEC W, 36.91 FEET; THENCE N 02DEG 08MIN 37SEC W, 267.62 FEET TO THE POINT OF BEGINNING. CONTAINING 255,241 SQUARE FEET (5.86 ACRES) OF LAND, MORE OR LESS.

PETITION FOR DIRECT ANNEXATION

EXHIBIT A

Legal Descriptions

Geneva Property

LEGAL DESCRIPTION (TAX PARCEL J G 3100009A)

PART OF THE SOUTHEAST 1/4 AND SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6 S 88DEG 55MIN 28SEC W, 493.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE S 88DEG 55MIN 28SEC W, 1351.14 FEET TO THE NORTHWEST CORNER OF WILLABAY SHORES CONDOMINIUM; THENCE 752.66 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45DEG 10MIN 55SEC E, 748.10 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY, S 53DEG 04MIN 18SEC E, 610.59 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, S 67DEG 55MIN 31SEC E, 353.26 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, 5.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 63DEG 58MIN 27SEC E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 339,436 SQUARE FEET (7.79 ACRES) OF LAND, MORE OR LESS.

Town of Linn Property

LEGAL DESCRIPTION (TAX PARCELS I L 500005 AND I L 500005A)

PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
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Planning Request Application
Village of Williams Bay

250 Williams Street · PO Box 580 · Williams Bay, WI 53191
Phone: 262-245-2700 · Fax: 262-245-2705

Request:
Please check all that apply.

- ☐ **Site Plan** [§390.1206] - $200.00 plus $.04/sf floor area
- ☐ **Conditional Use Permit (CUP)** [§390.1207] - $500.00
- ☐ **Certificate of Compliance** [§390.1211] - $200.00
- ☐ **Temporary Use Permit** [§390.1208] - $200.00
- ☐ **Preliminary Plat** - $200.00 plus $20.00 per lot
- ☐ **Certified Survey Map (CSM)** - $200.00 plus $20.00 per lot
- ☑ **Final Plat** - $100.00 plus $10.00 per lot
- ☐ **Planned Development Overlay (PDO)** [§390.0709] - $500.00
- ☐ **Planned Development Amendment** - $500.00
- ☐ **Zoning Text or Map Amendment** [§390.1204] - $500.00
- ☐ **Project Concept Review** - $200.00
- ☐ **Land Use Plan Amendment** - $500.00
- ☐ **Interpretation** [§390.1216] - $200.00
- ☐ **Appeal** [§390.1217] - $500.00
- ☐ **Other:** _____ Fee: _____

Date application was received:

Fee Paid:

Physical Address of Site: Vacant Land

Tax Parcel Number: WWUP 00084; J G 3100009A (Geneva); I L 50000005 (Linn)

Project or Development Name: Williabay Meadows

Applicant
Name: Land and Lakes Company
Mailing Address: 1400 E. Touhy Avenue, Suite 220
Des Plaines IL 60018
eMail: mmcowhey@land-and-lakes.com
Phone: 847-685-2122

Owner of Site
Name: Poplar Ridge Estates
Mailing Address: 1400 E. Touhy Avenue, Suite 220
Des Plaines IL 60018
eMail: mmcowhey@land-and-lakes.com
Phone: 847-685-2122

Legal Representative
Name: Attorney: Chad Pollard -- Stuart, Tokarz, Soberalski & Pollard LLC
Mailing Address: 617 E. Walworth Avenue
Delavan WI 53115
eMail: cpollard@stsplaw.com
Phone: 262-728-9196

Architect, Engineer, Contractor
Name: Farris, Hansen & Associates, Inc.
Mailing Address: P. O. Box 437
Elkhorn WI 53121
eMail: warren@farrishansen.com
Phone: 262-723-2098

Legal Description of Site (Attach separate sheet if additional space is needed):
See Attached

Please answer all applicable. Missing or incomplete information may deem this application "incomplete," delaying or prohibiting a review.

Current Zoning of Site: SF-3 (Wms Bay); A-3(Geneva); R-1 (Linn) **Current Overlay Districts of Site:** Town of Linn; Town of Geneva; Village of Williams Bay

Proposed Zoning of Site: SF-3

Proposed type of structure of use: single-family residential subdivision

Proposed use of structure or site: single-family residential

Statement of proposed use of property, with pertinent facts regarding the size of area involved, extent of development, type of operation, etc. (Attach separate sheet if additional space is needed):
See Attached

Statement showing compatibility of proposed zoning district and/or proposed use to the Village Comprehensive Plan: (Attach separate sheet if additional space is needed)
See Attached

Statement showing compatibility of proposed zoning district and/or proposed use with adjacent properties and neighborhoods (Attach separate sheet if additional space is needed):
See Attached

Print Applicant's Name: Mary Margaret Cowhey **Date:** August 7, 2025

Signature of Applicant: , President

STORMWATER MANAGEMENT PLAN

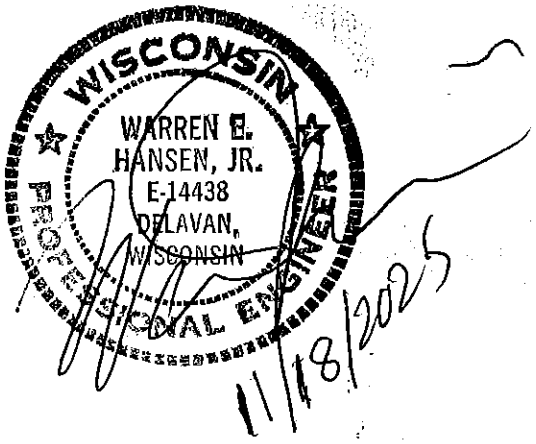
WILLABAY MEADOWS
WILLIAMS BAY, WALWORTH COUNTY,
WISCONSIN
JULY 2024
REVISED AUGUST 2025
REVISED SEPTERMBER 2025
REVISED NOVEMBER 2025

Prepared For:

Land and Lakes Development
Des Plaines IL, 60018

Prepared By:

Farris, Hansen & Associates, Inc.
Engineers, Architects & Surveyors
7 Ridgway Court
Elkhorn, WI 53121
Project No.: 5536.17



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COMPLIANCE WITH SECTION 26.10 OF WALWORTH COUNTY CODE OF ORDINACNES AND DEPARTMENT OF NATURAL RESOURCSE CHAPTER NR151 9
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Exhibits

Exhibit 1 Site Location Map
Exhibit 2 Custom Soils Report
Exhibit 3 Existing Conditions Drainage Area Map
Exhibit 4 Proposed Conditions Drainage Area Map

Appendix A Existing 1, 2, 10, and 100-Year TR-20 Hydrologic Model

Appendix B Proposed 1, 2, 10, and 100-Year TR-20 Hydrologic Model

Appendix C Source Loading Management Model (SLAMM)

Appendix D Operations and Maintenance Plan

Appendix E Soil Testing Results

Appendix F Sizing calculations for pipes

Appendix G Soil Loss and Discharge Calculation Tool

Appendix H TR-55 Table 2.2: CN Values for Soil Types

1. LOCATION AND PURPOSE

The ±30.8-acre watershed is located within the corporate limits of the Village of Williams Bay, and contains the 18.66 acre subject property. (See Exhibit 1: Site Location Map for overview.)

The purpose of this Stormwater Management Plan is to evaluate the existing 1, 2, 10, and 100-year watershed discharges and the proposed 1, 2, 10, and 100-year watershed discharges to support no increase in proposed downstream discharges. This was accomplished by analyzing the pre- and post-development conditions onsite using HydroCAD, which utilizes the SCS TR-20 methodology, and storing the runoff in wet detention basins on-site and releasing the water over time at a rate that would not exceed the existing conditions.

In order to evaluate the impact of the proposed site improvements, existing conditions were first considered. The attached Existing and Proposed Drainage Conditions Maps provide a breakdown of the drainage sub-catchment areas for the existing and proposed conditions drainage models. The HydroCAD Drainage Diagrams display the setup/routing of the existing and proposed condition models. Based on comparison of the pre- vs. post-development exhibits, it is estimated that there will be a net increase in impervious area on-site of approximately 10.6 acres assuming 34% impervious areas from the average 1/3+ acre lots. In order to evaluate this, the overall site has been analyzed and divided into a number of sub-catchments that contribute to the total runoff peak discharge of the site. The design and control practices provided are in compliance with Willams Bay Village Ordinance Chapter 178.

2. EXISTING DRAINAGE CONDITIONS

The entire watershed is ±30.8-acres consisting of lands that were used for agricultural purposes. Existing stormwater flow from the site can be seen in the existing conditions drainage area map. In general stormwater travels overland to the HWY 50 right of way to the northwest.

The entire site lies within Zone X (“Areas determined to be outside of the 0.2% chance flood plain” [Greater than 100-year flood plain]) as indicated on the October 2, 2009 National Flood Insurance Program Flood Insurance Rate Map No55127C0310D.

Upon review of the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey (See Exhibit 2), soils located on site are Miami silt loam (MyB, MyC, MyC2, MxC2), Radford silt loam (RaA), Griswold silt loam (GwA), Pella silt loam (Ph). Miami silt loams are classified as being well drained and are rated at hydraulic soil group B. Griswold silt loam, Pella silt loam and Radford silt loam are all classified as being well drained and is rated at hydraulic soil group B.

3. PROPOSED DRAINAGE CONDITIONS

For the proposed conditions or post-development hydrologic analysis, the storm water model was separated into five (5) sub-catchments to model the proposed improvements and design. The proposed improvements to the site consist of the construction of 3,000 feet of paved road and utilities to serve 42 single family lots. Overall, there will initially be land disturbance of 18.66 acres of land used presently for open agricultural land with row crops. In order to mitigate the increased runoff that is to be expected with the proposed site improvements, two (2) wet retention basins and two (2) bioretention basins are proposed. The stormwater basins were sized in accordance with Walworth County, Village of Williams Bay, and WDNR guidelines to detain the storm water flowing off the site and release it at a rate below required pre-development levels while reducing sediment load being carried off site.

The curve number (CN) for the undetained area in the post-development conditions has been set to 62. This composite CN is based on the land cover characteristics of the undetained areas, which are comprised of areas of 1/3 acre residential lots (CN 72), and undisturbed woodland conservation areas in good condition (CN 55). Additionally, when evaluating the overall site layout, the average lot size is approximately 0.734 acres, which exceeds one-third of an acre. Therefore, assigning a post-development CN 62 for the 3.2 acres of non-detained flows conservatively reflects the composite hydrologic response of the undetained areas under proposed conditions.

4. METHOD OF DRAINAGE ANALYSIS

The existing and proposed conditions stormwater runoff has been analyzed using the HydroCAD stormwater modeling computer program. This program utilizes the Natural Resource Conservation Service (formerly Soil Conservation Service, or SCS) method of analysis techniques outlined in Technical Release No. 55 (TR-55) and Technical Release No. 20 (TR-20) to predict Stormwater runoff for given design storms. Evaluations were performed based upon an MSE 3, 24-hour storm for the 1, 2, 10, and 100-year storm events. The SCS method of hydrology analysis utilizes the drainage area, hydraulic length, terrain slope, and soil conditions of a watershed or as input data to calculate peak flows and total volume of runoff for specific synthetic rain events. The analysis is performed by modeling the drainage area as sub- catchments, reaches and ponds. A sub-catchment is an area of land that produces runoff that drains to a reach or a pond. A reach is generally a uniform stream or concentrated storm flow and is often used as an analysis evaluation point. There are 3 separate analysis points accounting for the 3 separate drainage area site discharges that together account for the total site discharge. A pond is generally defined as either a pond, swamp or dam which impounds water from one or more sources.

Model sub-catchments have been delineated using Soil Conservation Service methods. Village of Williams Bay ordinance curve numbers and those contained in TR-55 are used to estimate the existing runoff volumes. The time of concentration for each of the sub-catchment, the type of development and soil classifications, and the runoff characteristics were used to estimate the peak stormwater runoff for each area. The 1-year, 2-year, 10-year, and 100-year statistical rain events were modeled for both the pre- and post-earth removal conditions. The total rainfall per a 24-hour period for the 1, 2, 10, and 100-year statistical rain events are 2.45”, 2.81”, 4.01” and 6.28”, respectively. Rainfall Data for (Walworth County) was taken from NRCS rainfall distribution MSE 3. Refer to Appendices A and B for details.

5. RESULTS

Table 1 represents the existing storm water peak runoff from sub-basins 1S+2S, 3S, 4S and the analysis points 1-3, which represent the total discharge from the site and discharges to the HWY 50 ROW.

Table 2 represents the proposed storm water peak runoff from sub-catchments 1- 4, basins 1-4 and analysis points (AP) 1-4. The discharge rates for the sub-basins will be used to compare computer- modeling results of storm water runoff for existing and proposed conditions. (See HydroCAD results)

Table 3
The discharge rates of storm water runoff for existing and proposed conditions are compared in Table 3 of this Plan. (See HydroCAD results.)

TABLE 1
Computed Pre-Construction Runoff Peak Discharges

Sub-basin	Area (Ac.)	Tc (Min.)	CN	Peak Discharge (cfs)				Remarks
				1-yr	2-yr	10-yr	100-yr	
1S+2S	16.36	20.0	58	0.73	1.82	9.42	33.41	Tributary area
1/OS	0.08	14.3	70	0.04	0.06	0.14	0.32	Offsite area
2/OS	1.58	11.8	68	0.61	1.01	2.62	6.41	Offsite area
3S	2.03	18.0	58	0.09	0.23	1.24	4.38	Tributary area
4S	6.76	15.0	58	0.32	0.81	4.51	16.10	Tributary area
4/OS	0.80	14.3	66	0.21	0.37	1.07	2.76	Offsite area
ND	3.22	0.0	58	0.18	0.70	3.86	12.86	Not detained area
AP	-	-	-	1.01	2.36	11.14	38.01	Site Discharge
3R	-	-	-	0.09	0.23	1.24	4.38	Site Discharge
4R	-	-	-	0.47	1.12	5.60	18.83	Site Discharge
TAP	30.83	-	-	1.68	3.95	18.75	63.30	Total Site Discharge

TABLE 2

Computed POST-Construction Runoff Peak Discharges

Sub-basin	Area (Ac.)	Tc (Min.)	CN	Peak Discharge (cfs)				Remarks
				1-yr	2-yr	10-yr	100-yr	
1S	10.85	17.5	74	6.66	9.49	20.49	44.43	Tributary area to Basin
1/OS	0.09	17.9	70	0.03	0.05	0.13	0.30	Offsite area
2S	5.51	15.4	74	3.63	5.17	11.06	23.89	Tributary area to Basin
2/OS	1.59	11.8	68	0.61	1.01	2.63	6.43	Offsite area
3S	2.03	10.4	72	1.34	1.97	4.41	9.82	Tributary area to Basin
4S	6.76	9.6	74	5.53	7.82	16.56	35.72	Tributary area to Basin
4/OS	0.80	14.3	66	0.21	0.37	1.07	2.76	Offsite area
1P	-	-	-	2.22	3.45	11.51	33.62	Stormwater Basin (Wet)
2P	-	-	-	0.24	0.30	0.47	11.78	Stormwater Basin (Wet)
3P	-	-	-	0.36	0.39	0.53	0.77	Stormwater Basin (Bio-filter)
4P	-	-	-	0.39	0.51	0.86	3.78	Stormwater Basin (Bio-filter)
AP	-	-	-	2.22	3.45	11.51	33.62	Site Discharge
3R	-	-	-	0.07	0.07	0.07	0.07	Site Discharge
4R	-	-	-	0.11	0.11	0.11	0.11	Site Discharge
ND	3.22	-	62	0.60	1.35	4.77	13.44	Not detained area
TAP	30.83	-	-	2.56	3.90	12.70	36.14	Total Site Discharge

TABLE 3

Net Watershed Peak Discharge compared to Existing

Sub-basin	Peak Discharge (cfs)				Remarks
	1-yr	2-yr	10-yr	100-yr	
AP	+0.88	-0.05	-6.05	-27.16	Total site discharge

7. CONCLUSIONS

Village Ordinance §178.19.B (1) requires: "post- development release rates from the two-, ten-, and 100-year twenty-four-hour storm events must be no greater than the predevelopment discharge from the site." It is not required that the 1-year post development release rate be lower than the pre-construction rate.

In compliance with Ordinance §178.16, Table 3 compares peak flows and volumes of Predevelopment Land Use Condition (as defined in the section) with conditions post development. This comparison uses the defined composite Predevelopment Land Use Condition runoff curve number of CN 58 for Group B soils.

The AP subbasin shown in Tables 4 is the sum of subbasins (1&2)AP, 3AP and 4AP. The overall decrease in peak discharge values on the subject property is due to the incorporation of the (4) four stormwater basins. The difference in the values of runoff that is not detained (ND=3.22 ac) and offsite runoff onto the site (OS=2.46 ac) is negligible. These areas offset and are excluded in the pre- and post- construction models.

These positive modeling results assume that the stormwater system will be constructed as shown on the proposed Final Engineering Plan Set last revised July 31, 2025 as prepared by Farris, Hansen & Associates. It is also assumed that system maintenance and cleaning or removal of leaves and other debris occurs on an as-need basis to ensure proper operation. It is understood that the Development Agreement for the subdivision places the maintenance of the storm water system on the homeowner association.

LIMITATIONS

The stormwater analysis was performed in accordance with standard civil engineering practice, and relies on information provided by others as well as published information. Areas of potential runoff analysis were limited to those areas within the bounds of property owned or believed to impact the property of concern or be part of a specific watershed or catchment.

In addition, Farris, Hansen & Associates shall not be responsible for construction or installation not conforming to the plans, nor shall Farris, Hansen & Associates be responsible for maintenance of the proposed Storm Water Management System.

It shall also be understood that the SCS Time Lag Method of drainage analysis was originally formulated to assist with the development of farmland and crop production. The SCS method has become one standard method of hydrologic analysis within civil engineering community, yet may be conservative for use on very small areas of modern development and provide runoff results that are greater or more conservative than actual conditions (pre- or post-construction).

COMPLIANCE WITH SECTION 26.10 OF WALWORTH COUNTY CODE OF ORDINACNES AND DEPARTMENT OF NATURAL RESOURCSE CHAPTER NR151

Section 26.10 of the Walworth County Code of Ordinances and the NR 151 set forth specific storm water management performance standards. The pertinent performance standards and the proposed project's compliance with these standards have been documented as follows:

Total Suspended Solids
Water quality calculations for the post-development drainage areas were performed using the Source Loading and Management Model, SLAMM. The particulate solids reduction for project site was established at 80.36%. This reduction meets the 80 percent reduction required for a new development site under NR 151.121.

Peak Discharge
As noted in the report above, the total peak discharges for the site post construction are less than the pre-construction peak discharges for the site for all storm events. The overall decrease in runoff for the rain events is due to the incorporation of four (4) stormwater basins onsite. In addition, the post Operation and Maintenance Plan included in Appendix D will be utilized on-site to ensure the proposed system functions as designed

Infiltration
No infiltration is proposed on-site as the site is expected to meet exemption criteria based on NR.151.124(4)1. Largely the site soils infiltration rates are below 0.6 in/hr. and meet exemption criteria under NR.151.124(4)1. Soil boring with acceptable infiltration rates had ground water seepage which would preclude infiltration.

Protective Areas
There are no protected areas located on or around this site.

Fueling and Vehicle Maintenance Areas
No fueling or vehicle maintenance area will be located on-site so no additional best management practices are specified.

Site Drainage
Site grading plans have been prepared according to acceptable engineering practices and standards to ensure proper site drainage, prevent property damage, and protect the public health and safety. Positive flows away from all buildings, parking lots, and driveways have been included as part of the proposed design. The practices implemented reduce the peak discharge from the site from existing conditions.

SUMMARY
As discussed in detail within the preceding sections of this Plan, the BMPs and structural controls proposed for this site development project include: four (4) stormwater basins. In addition, an appropriate Operation and Maintenance Plan is proposed. Altogether, the stormwater system is designed to mitigate peak storm flow rates and to provide Stormwater Treatment to the required levels.

EXHIBITS

1. SITE LOCATION MAP

2. CUSTOM SOILS REPORT

3. EXISTING CONDITIONS DRAINAGE AREA PLAN

4. PROPOSED CONDITIONS DRAINAGE AREA PLAN

Exhibit 1
SITE LOCATION MAP

SITE LOCATION

WALWORTH COUNTY, WISCONSIN

0 55 110 220 330 440 550 Feet

1:3,383

Author:

Map Produced on: 3/17/2025

Wisconsin State Plane Coordinate System, South Zone
Horizontal Datum: NAD83-2011

Walworth County Information Technology Department
Land Information Division
1800 County Trunk NN
Elkhorn, Wisconsin 53121-1001

DISCLAIMER: THE INFORMATION PROVIDED ON THIS MAP HAS BEEN PRODUCED AND PROCESSED FROM SOURCES BELIEVED TO BE RELIABLE. NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE REGARDING ACCURACY, ADEQUACY, COMPLETENESS, LEGALITY, RELIABILITY OR USEFULNESS OF THIS INFORMATION. THE INFORMATION CONTAINED HEREIN WILL NOT BE ACCEPTED AS AN OFFICIAL DOCUMENT.

Exhibit 2
CUSTOM SOILS REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Walworth County, Wisconsin

Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

88° 31'50"W
88° 31'5"W
42° 35'10"N
42° 34'48"N
374500
374600
374700
374800
374900
375000
375100
375200
375300
375400
4715900
4715800
4715700
4715600
4715500
4715400
GwA
Ph
RaA
Ht
MyB
MyC2
50
MyC2
MyC
MxC2
MxE2
MxD2
Ht
MyB
State Road 50
Wiswell Dr
Soil Map may not be valid at this scale.
Map Scale: 1:4,710 if printed on A landscape (11" x 8.5") sheet.
Meters
0 50 100 200 300
Feet
0 200 400 800 1200
N
Map projection: WebMercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Walworth County, Wisconsin
Survey Area Data: Version 20, Sep 8, 2023

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

Date(s) aerial images were photographed: Jul 30, 2022—Aug 18, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GwA	Griswold silt loam, mottled subsoil variant, 0 to 3 percent slopes	2.7	5.1%
Ht	Houghton muck, 0 to 2 percent slopes	1.4	2.6%
MxC2	Miami loam, sandy loam substratum, 6 to 12 percent slopes, eroded	2.7	5.2%
MxD2	Miami loam, sandy loam substratum, 12 to 20 percent slopes, eroded	6.9	13.2%
MxE2	Miami loam, sandy loam substratum, 20 to 35 percent slopes, eroded	1.1	2.1%
MyB	Miami silt loam, 2 to 6 percent slopes	28.5	54.2%
MyC	Miami silt loam, 6 to 12 percent slopes	6.0	11.4%
MyC2	Miami silt loam, 6 to 12 percent slopes, eroded	0.6	1.1%
Ph	Pella silt loam, 0 to 2 percent slopes	1.4	2.7%
RaA	Radford silt loam, 0 to 3 percent slopes	1.3	2.5%
Totals for Area of Interest		**52.6**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

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

Walworth County, Wisconsin

GwA—Griswold silt loam, mottled subsoil variant, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: g8wx
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Griswold Variant

Setting

Landform: Till plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Thin loess over calcareous loamy till

Typical profile

Ap,A,BE - 0 to 15 inches: silt loam
Bt1,2Bt2 - 15 to 26 inches: loam
2C - 26 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Forage suitability group: Mod AWC, high water table (G095BY004WI)
Other vegetative classification: Mod AWC, high water table (G095BY004WI)
Hydric soil rating: No

Minor Components

Elburn

Percent of map unit: 5 percent
Landform: Till plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F095XB002WI - Wet Floodplain
Hydric soil rating: No

Pella

Percent of map unit: 5 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Ht—Houghton muck, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2szff
Elevation: 600 to 1,090 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 124 to 192 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Houghton, Muck

Setting

Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material

Typical profile

Oap - 0 to 6 inches: muck
Oa - 6 to 79 inches: muck

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 5.95 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F089XY002WI - Mucky Swamps
Forage suitability group: Not suited, flooded or organics (G095BY010WI)
Other vegetative classification: Not suited, flooded or organics (G095BY010WI)
Hydric soil rating: Yes

Minor Components

Houghton, ponded

Percent of map unit: 4 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F089XY002WI - Mucky Swamps
Other vegetative classification: Not suited, flooded or organics (G095BY010WI)
Hydric soil rating: Yes

Palms

Percent of map unit: 2 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F089XY002WI - Mucky Swamps
Other vegetative classification: Not suited, flooded or organics (G095AY010WI)
Hydric soil rating: Yes

Adrian

Percent of map unit: 2 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F089XY002WI - Mucky Swamps
Hydric soil rating: Yes

Willette, muck

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F095XA001WI - Mucky Swamp
Hydric soil rating: Yes

Edwards

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F095XB001WI - Mucky Swamp
Hydric soil rating: Yes

MxC2—Miami loam, sandy loam substratum, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: g8xp
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Miami

Setting

Landform: Till plains
Parent material: Loamy lodgment till

Typical profile

Ap - 0 to 10 inches: loam
Bt - 10 to 36 inches: clay loam
C - 36 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

MxD2—Miami loam, sandy loam substratum, 12 to 20 percent slopes, eroded

Map Unit Setting
National map unit symbol: g8xq
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Not prime farmland

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

Description of Miami

Setting
Landform: Till plains
Parent material: Loamy lodgment till

Typical profile
A - 0 to 10 inches: loam
Bt - 10 to 36 inches: clay loam
C - 36 to 60 inches: gravelly sandy loam

Properties and qualities
Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained with limitations (G095BY006WI)
Other vegetative classification: Mod AWC, adequately drained with limitations (G095BY006WI)
Hydric soil rating: No

MxE2—Miami loam, sandy loam substratum, 20 to 35 percent slopes, eroded

Map Unit Setting

National map unit symbol: g8xr
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Miami

Setting

Landform: Till plains
Parent material: Loamy lodgment till

Typical profile

A - 0 to 10 inches: loam
Bt - 10 to 36 inches: clay loam
C - 36 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 20 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained with limitations (G095BY006WI)
Other vegetative classification: Mod AWC, adequately drained with limitations (G095BY006WI)
Hydric soil rating: No

MyB—Miami silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: g8xt
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Miami

Setting

Landform: Till plains
Parent material: Thin loess over loamy lodgment till

Typical profile

Ap - 0 to 10 inches: silt loam
Bt - 10 to 30 inches: clay loam
C - 30 to 60 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Other vegetative classification: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

MyC—Miami silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: g8xv
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Miami

Setting

Landform: Till plains
Parent material: Thin loess over loamy lodgment till

Typical profile

Ap - 0 to 10 inches: silt loam
Bt - 10 to 30 inches: clay loam
C - 30 to 60 inches: loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Other vegetative classification: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

MyC2—Miami silt loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: g8xw
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Miami

Setting

Landform: Till plains
Parent material: Thin loess over loamy lodgment till

Typical profile

Ap - 0 to 10 inches: silt loam
Bt - 10 to 30 inches: clay loam
C - 30 to 60 inches: loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Other vegetative classification: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

Ph—Pella silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t044
Elevation: 590 to 1,100 feet
Mean annual precipitation: 29 to 37 inches
Mean annual air temperature: 43 to 55 degrees F
Frost-free period: 124 to 178 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Pella and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pella

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty glaciofluvial deposits over calcareous lacustrine deposits and/or calcareous loamy till

Typical profile

Ap - 0 to 11 inches: silt loam
Bg - 11 to 38 inches: silty clay loam
2Cg - 38 to 79 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Forage suitability group: High AWC, high water table (G095BY007WI)
Other vegetative classification: High AWC, high water table (G095BY007WI)

Hydric soil rating: Yes

Minor Components

Kendall

Percent of map unit: 7 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Hydric soil rating: No

Lamartine

Percent of map unit: 6 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Hydric soil rating: No

Palms, muck

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F095XB001WI - Mucky Swamp
Hydric soil rating: Yes

RaA—Radford silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wpxr
Elevation: 500 to 1,100 feet
Mean annual precipitation: 33 to 37 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 190 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

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

Description of Radford

Setting

Landform: Drainageways, flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 9 inches: silt loam
C - 9 to 23 inches: silt loam
Ab - 23 to 36 inches: silt loam
Bgb - 36 to 56 inches: silt loam
Cgb - 56 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 1.98 in/hr)
Depth to water table: About 15 to 30 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F095XB002WI - Wet Floodplain
Forage suitability group: High AWC, high water table (G095BY007WI)
Other vegetative classification: High AWC, high water table (G095BY007WI)
Hydric soil rating: No

Minor Components

Otter

Percent of map unit: 4 percent
Landform: Drainageways, flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: F095XB002WI - Wet Floodplain
Hydric soil rating: Yes

Sable

Percent of map unit: 3 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Sebewa

Percent of map unit: 2 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Drummer

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F095XB004WI - Wet Loamy or Clayey Lowland
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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

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

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

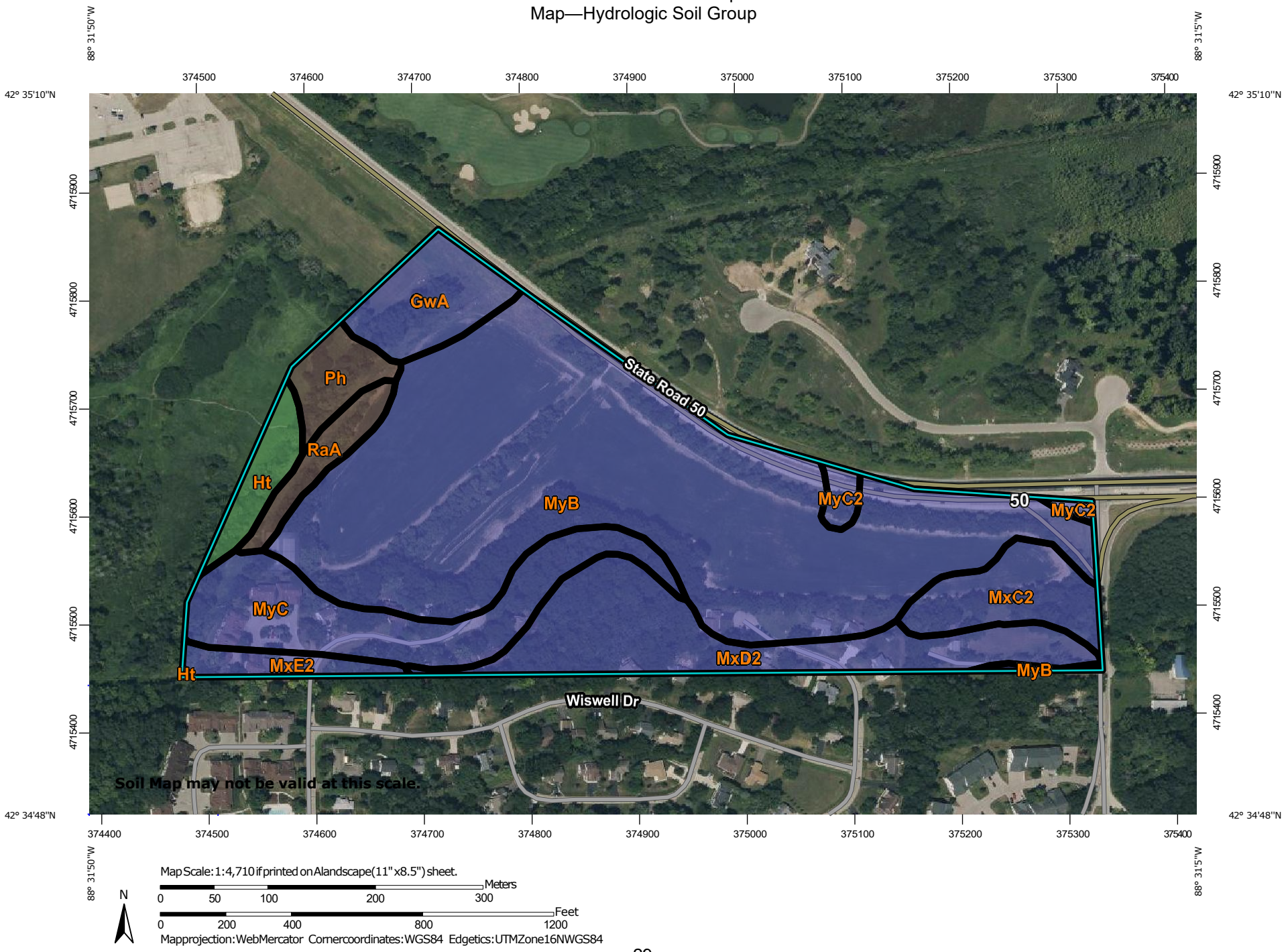
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

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

Map—Hydrologic Soil Group



Map Scale: 1:4,710 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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

MAP LEGEND

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

Soils

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Walworth County, Wisconsin
Survey Area Data: Version 20, Sep 8, 2023

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

Date(s) aerial images were photographed: Jul 30, 2022—Aug 18, 2022

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
GwA	Griswold silt loam, mottled subsoil variant, 0 to 3 percent slopes	B	2.7	5.1%
Ht	Houghton muck, 0 to 2 percent slopes	A/D	1.4	2.6%
MxC2	Miami loam, sandy loam substratum, 6 to 12 percent slopes, eroded	B	2.7	5.2%
MxD2	Miami loam, sandy loam substratum, 12 to 20 percent slopes, eroded	B	6.9	13.2%
MxE2	Miami loam, sandy loam substratum, 20 to 35 percent slopes, eroded	B	1.1	2.1%
MyB	Miami silt loam, 2 to 6 percent slopes	B	28.5	54.2%
MyC	Miami silt loam, 6 to 12 percent slopes	B	6.0	11.4%
MyC2	Miami silt loam, 6 to 12 percent slopes, eroded	B	0.6	1.1%
Ph	Pella silt loam, 0 to 2 percent slopes	B/D	1.4	2.7%
RaA	Radford silt loam, 0 to 3 percent slopes	B/D	1.3	2.5%
Totals for Area of Interest			**52.6**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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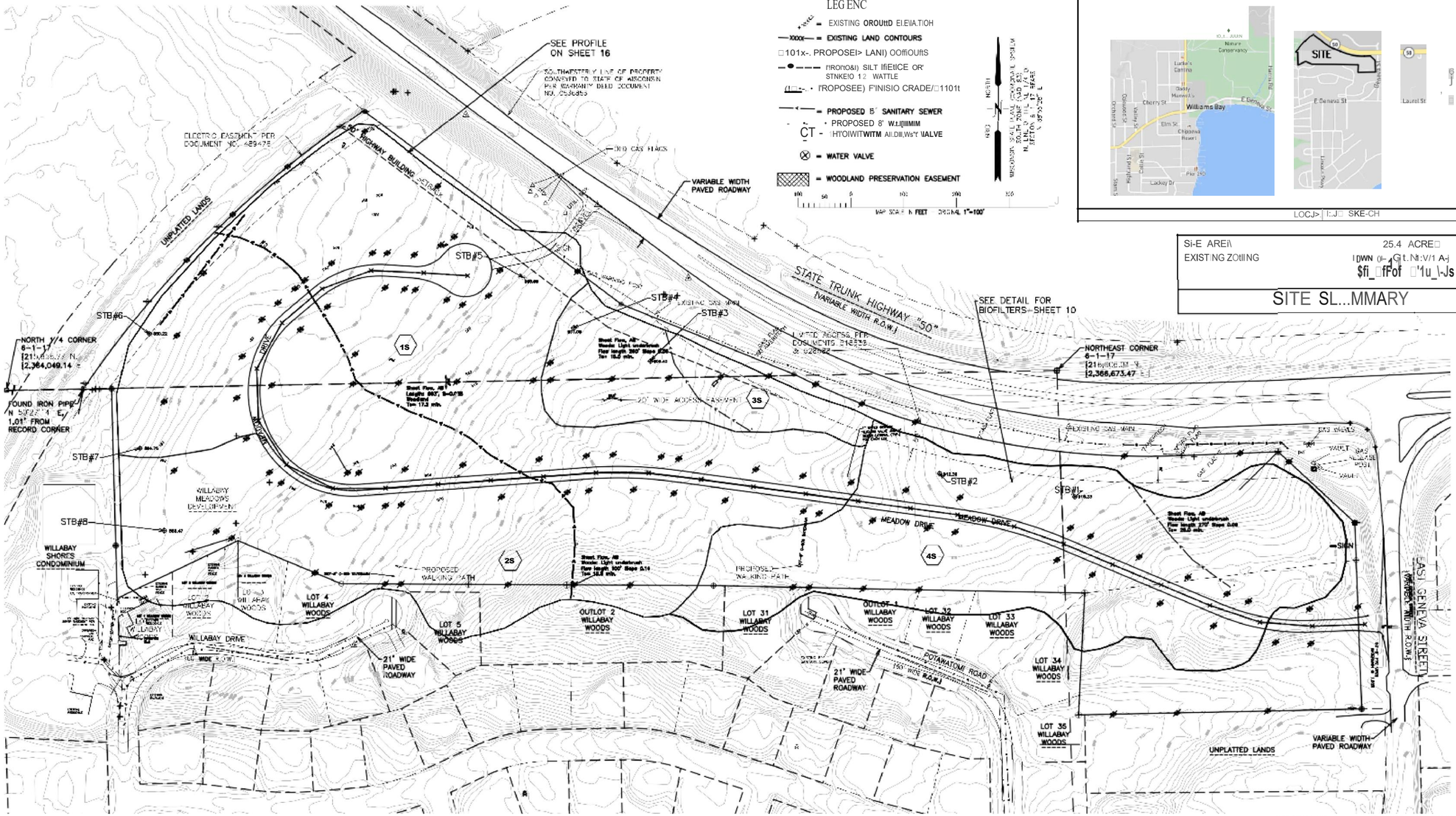
Exhibit 3
Existing Conditions Drainage Area Map

WILLABAY MEADOWS, A SUBDIVISION
EXISTING CONDITIONS DRAINAGE AREA MAP

FAR1 OF NE /4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN



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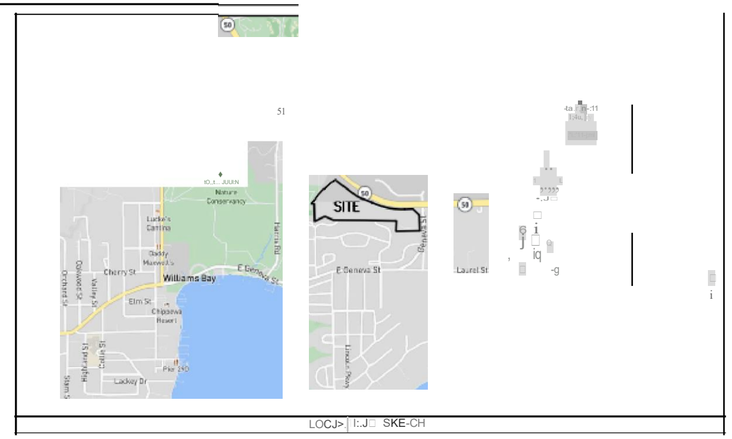
MAP SCALE IN FEET ORIGINAL 1"=100'



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11(;"-13C-" :51LTY C A.Y Ct.□.li

SB#?

0 7" SILTY GLAY LOA►/
7"- .,C)" -iiLTY C A.Y :'.J.□.tl
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..fl" - 1?-" {:R,.-,s/rl Y :=;,,;,\IDY C ',W I 6A,,
121"-15D" GI-tA'v'!:LY LOAMY J.AtD

::it:1Y,I

0-11" 2iIL1 I'i CL.A"'/ Ll'.A\i
11•-42" SILTY CLAY LC.A□
42" GI"" □IL CLP.Y L.I.;,,.,□
s,1•-14T I,lt;:A.'11::LL'7 □ANL.:'I I'.LJ.'7 Lt;,A\
0---10' SILT'! CLA'r IOAM
1C•· GO" □IL I Y CLA'/ ILUI\Ii
t:0"-:;iO' GR.I,,V:ciLY SANDf CLM LCA'v
iO'"-•49· Lit,:.□;u. Y □!\f1L/ Y LI,,;-V

SB,1'6

0 1/- SILT LIJJ..□
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4/"- .:1.3.. SJ..NJY. CA'! LOAM
fl.",- ,-I" G./.',\,":"I I" S1\IIDY I0."I
117" 150"::I.AN)Y I...,_AY LO#,i

SB#IB

O=g.· SILTY CLAY LC.A•□
9"'-3,)" □IL I'y \;LI"I Lt,;,'-=
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;,6" 144' CP.A•/;;W.'./ $A\IDf CLA.'r LOAM

0 13" SLT L.JAf/
13"'-92" ;R,"<V!:.LI'f $1\r,DY (j1Y LO.,,,,.
□□"- I-□" .::IL□.'VLL'r SLMI Y LOA\I
114• 1.'W'silt DY CL/\-. LOAM

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SHEE S 2-J	DETAILED SI E GRADIING., DRAJINAGE & EROSION CONTROL PLANS
SHEET 4	PROPOSE[) CONNECTION 0 EXISTING SANITARY SEWER

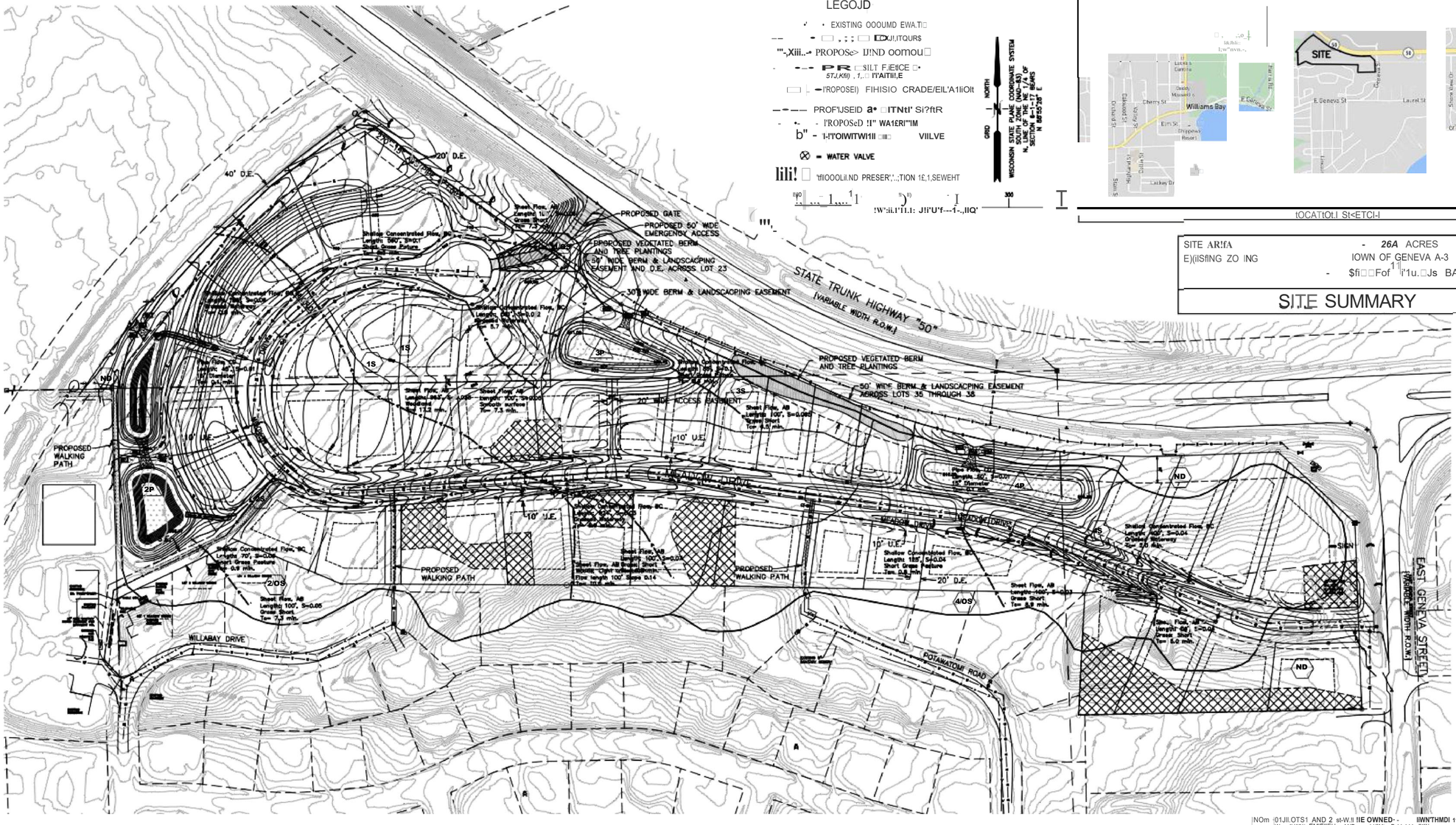
INDEX OF SHEETS

– WORK ORDERED BY –
LAND AND LAKES DEVELOPMENT
6400 SHAFER CT SUITE 325
ROSEMONT, IL 60018

Exhibit 4
Proposed Conditions Drainage Area Map

WILLAB.AY MIEAD,QWS, A S|U8DIVISI|ON
PROPOSED CONDITIONS DRAI|NAGE AR:EA MAP

PART OF NE 1/4 & NW 1/" OF liHE NE V◄ OF SfCTION 6, TOWN 1· NORIiH, RAINGE P EAST
VILLAG£ OF iMWAMS BAY. W□LWORTH COUNfi, □SOOiilSiN



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	- $fi□□For 1'i'1u.□Js BAY SF-3

SITE SUMMARY

- WORK ORDERED BY -
LAND AND LAKES DEVELOPMENT
6400 SHAFER CT SUITE 325
ROSEMONT, IL 60018

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING - ARCHITECTURE - SURVEYING

1. 08T;it1.i.lte.ti;. h;ii;.;.i4 **POiWi** ni.iiii.,wi· .st'NI.O&Ai\'iiiE.Ji!',ar **111"'.''"-** □OE$
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SEQUENCE OF CONSTRUCTION

SOIl BORIINGS

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0-10• SILTY CIAY LOAM	0-11" SILTY ·CLAY !IOAt.t	0-HI" Slii.TY CI.AV LOA□
10□-91i" GRA'iIi,i' 'SANDY'□'CI.AY iLO.AJ.I	11"-92" SIII' CLAY !LOAM	60"-90" SIL.AVEELA SA'NDY OLAY \LOAM
99" **-146"** GRA\iaL'i' SANDY LOAM	',W-147"' GRA□!.I,,.Y SIINOY CLAY !.0.A1,1	SO□-;.411□ GR:A\1::U.'I' S□NDY LO-'Jlf

s.aa

0-9" SILTY CIAY LOAM	0-1'4," SILT L OAM	0-13"' S!LJ I.Oil/□
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96"- 10" **GRA**li£LLY' SANIDY LOAM	83"- nr GR.AVELLY SA/NDY LOIAM 1u•-13o•sANDY CLAY LO.AM	
□10·-uo· SI!LTY CLAY LOAM	117"-,so· SANDY CI.AY LOAM	
:□	□	
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7'-3D" SiL:TY CLAY LOAt.il	g" - 3o"' Sil TY CLJ\Y ILO.I\M	
30"-3□· GR'.AVEU..Y SA,NDY OLAY LOAM	**30"'-5E!L.** CRAVEUY SANOY ·<CLAY !OAJ.1	
38"-1 21· GRJN'ELLY SANDY CLAY LOAM	S.el"-14114"** GRA\IEI:J.Y SANDY ·CLAY'LOAJ.I	
1:W =15or GA:A\-£LLY LOAMY SANO		

IINDEX OF SHEETS

SHEET 1	OVERALL S!TE. DEVELOPMENT PLAN
SHEETS 2-3	D□AILED SITE. GRADIING, ORAJINAGE & EROSION CONTROL PLANS
SHEET 4	PROPOSE[) CONNECTION TO EXISTING SANITARY SEWE:R

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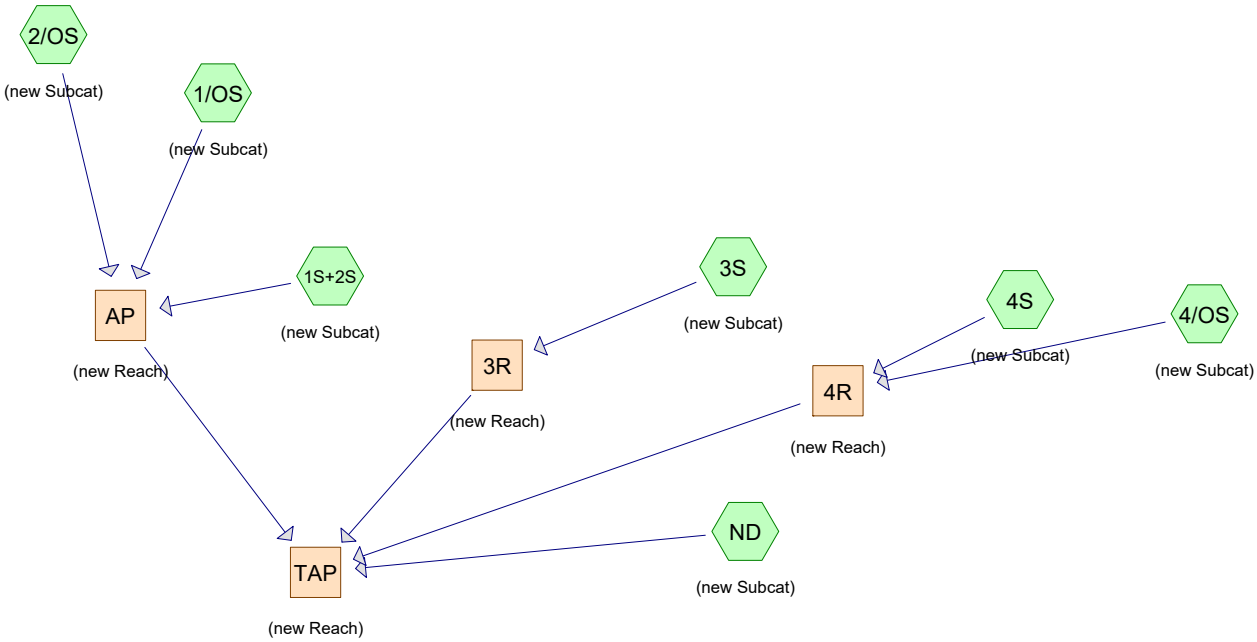
12/03/2020

APPENDIX A

EXISTING
1, 2, 10, AND 100-YEAR
HYDROCAD MODEL--CN 58



Subcat Reach Pond Link

Routing Diagram for 5536_EX - 11.11
Prepared by Farris, Hansen & Associates, Inc, Printed 11/15/2025
HydroCAD® 10.20-6a s/n 05638 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	3	Default	24.00	1	2.45	2
2	2-Year	MSE 24-hr	3	Default	24.00	1	2.81	2
3	10-Year	MSE 24-hr	3	Default	24.00	1	4.01	2
4	100-Year	MSE 24-hr	3	Default	24.00	1	6.28	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.080	70	(1/OS)
1.580	68	(2/OS)
12.010	58	(3S, 4S, ND)
0.800	66	(4/OS)
16.360	58	Row crops, SR + CR, Good, HSG B (1S+2S)
30.830	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
16.360	HSG B	1S+2S
0.000	HSG C	
0.000	HSG D	
14.470	Other	1/OS, 2/OS, 3S, 4/OS, 4S, ND
30.830		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	14.470	14.470		1/OS, 2/OS, 3S, 4/OS, 4S, ND
0.000	16.360	0.000	0.000	0.000	16.360	Row crops, SR + CR, Good	1S+2S
0.000	**16.360**	**0.000**	**0.000**	**14.470**	**30.830**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1/OS: (new Subcat) Runoff Area=0.080 ac 0.00% Impervious Runoff Depth>0.40"
Flow Length=100' Slope=0.0500 '/' Tc=14.3 min CN=70 Runoff=0.04 cfs 0.003 af

Subcatchment 1S+2S: (new Subcat) Runoff Area=16.360 ac 0.00% Impervious Runoff Depth>0.11"
Flow Length=475' Tc=20.0 min CN=58 Runoff=0.73 cfs 0.144 af

Subcatchment 2/OS: (new Subcat) Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>0.34"
Tc=11.8 min CN=68 Runoff=0.61 cfs 0.044 af

Subcatchment 3S: (new Subcat) Runoff Area=2.030 ac 0.00% Impervious Runoff Depth>0.11"
Flow Length=169' Slope=0.0800 '/' Tc=18.0 min CN=58 Runoff=0.09 cfs 0.018 af

Subcatchment 4/OS: (new Subcat) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>0.28"
Tc=14.3 min CN=66 Runoff=0.21 cfs 0.019 af

Subcatchment 4S: (new Subcat) Runoff Area=6.760 ac 0.00% Impervious Runoff Depth>0.11"
Flow Length=150' Slope=0.1000 '/' Tc=15.0 min CN=58 Runoff=0.32 cfs 0.060 af

Subcatchment ND: (new Subcat) Runoff Area=3.220 ac 0.00% Impervious Runoff Depth>0.11"
Tc=0.0 min CN=58 Runoff=0.18 cfs 0.029 af

Reach 3R: (new Reach) Inflow=0.09 cfs 0.018 af
Outflow=0.09 cfs 0.018 af

Reach 4R: (new Reach) Inflow=0.47 cfs 0.079 af
Outflow=0.47 cfs 0.079 af

Reach AP: (new Reach) Inflow=1.01 cfs 0.192 af
Outflow=1.01 cfs 0.192 af

Reach TAP: (new Reach) Inflow=1.68 cfs 0.317 af
Outflow=1.68 cfs 0.317 af

Total Runoff Area = 30.830 ac Runoff Volume = 0.317 af Average Runoff Depth = 0.12"
100.00% Pervious = 30.830 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1/OS: (new Subcat)

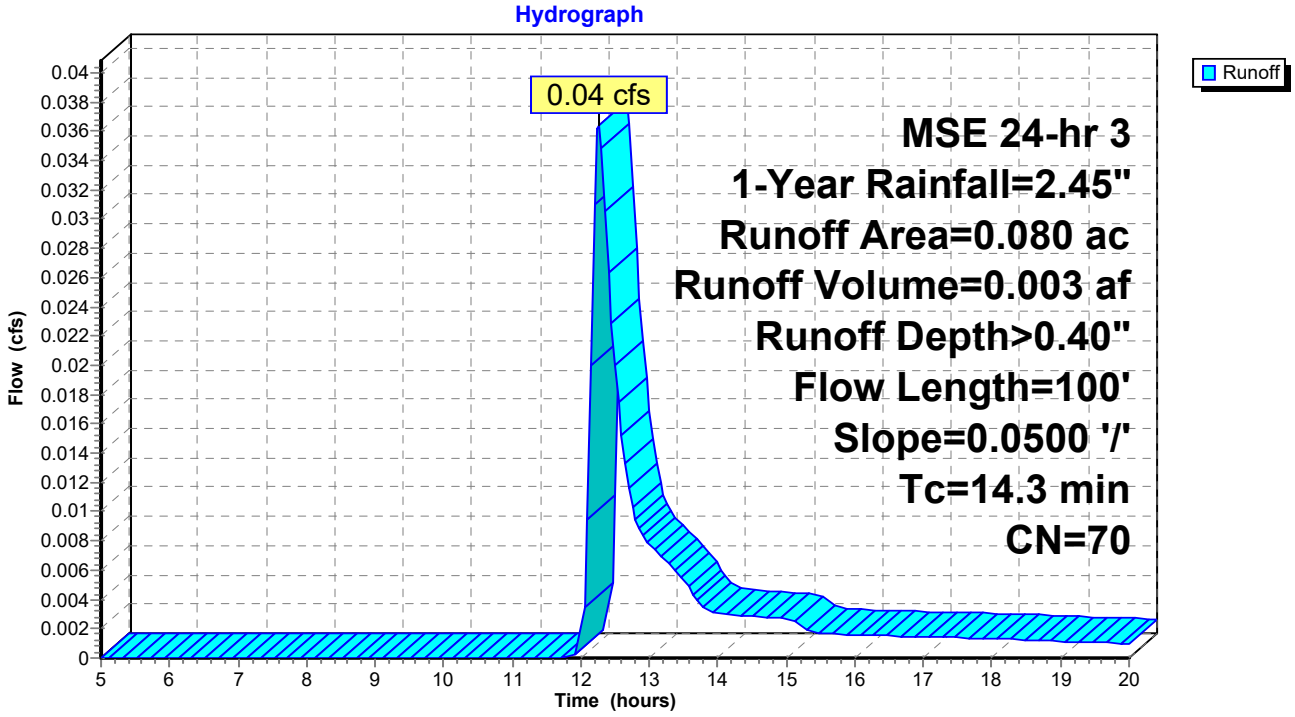
Runoff = 0.04 cfs @ 12.26 hrs, Volume= 0.003 af, Depth> 0.40"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	0.080	70	
	0.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0500	0.12		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 1/OS: (new Subcat)



Summary for Subcatchment 1S+2S: (new Subcat)

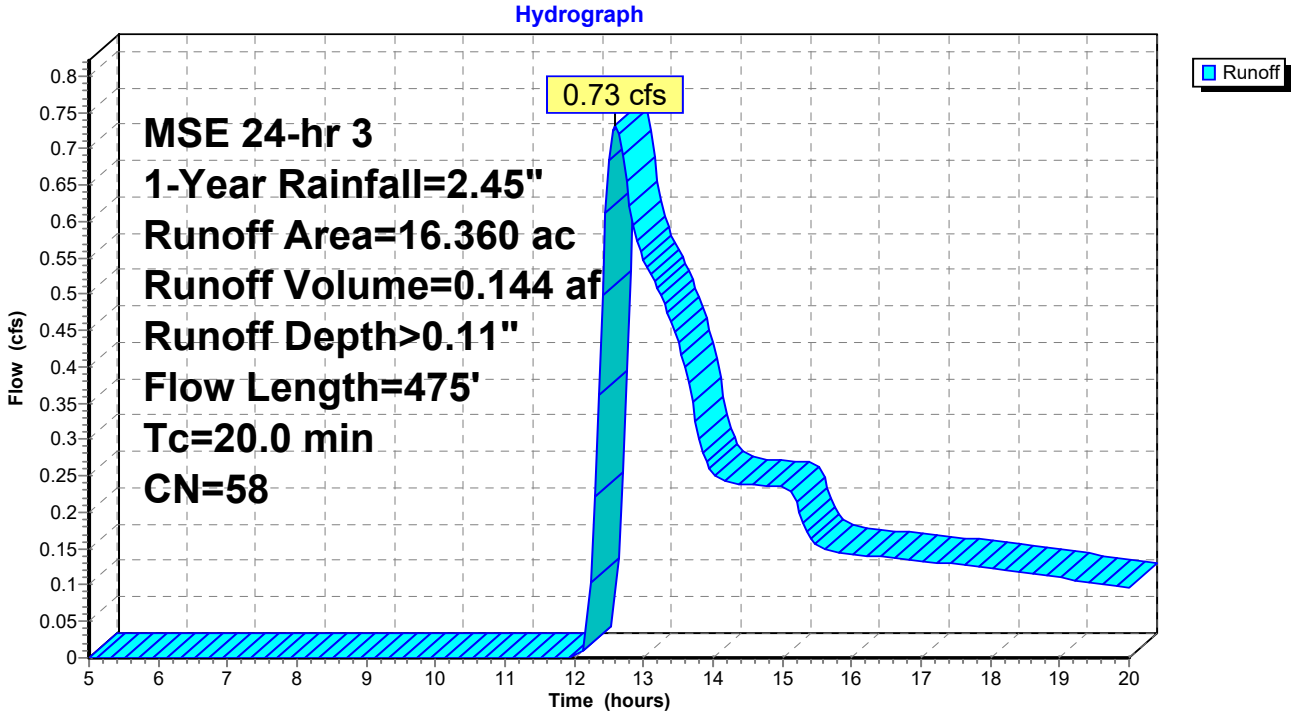
Runoff = 0.73 cfs @ 12.60 hrs, Volume= 0.144 af, Depth> 0.11"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	16.360	58	Row crops, SR + CR, Good, HSG B
	16.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	175	0.2000	0.23		**Sheet Flow, Sheet Flow** n= 0.350 P2= 2.80"
7.1	300	0.0800	0.71		**Shallow Concentrated Flow, Shallow Concentrated** Kv= 2.5 fps
20.0	475	Total			

Subcatchment 1S+2S: (new Subcat)



Summary for Subcatchment 2/OS: (new Subcat)

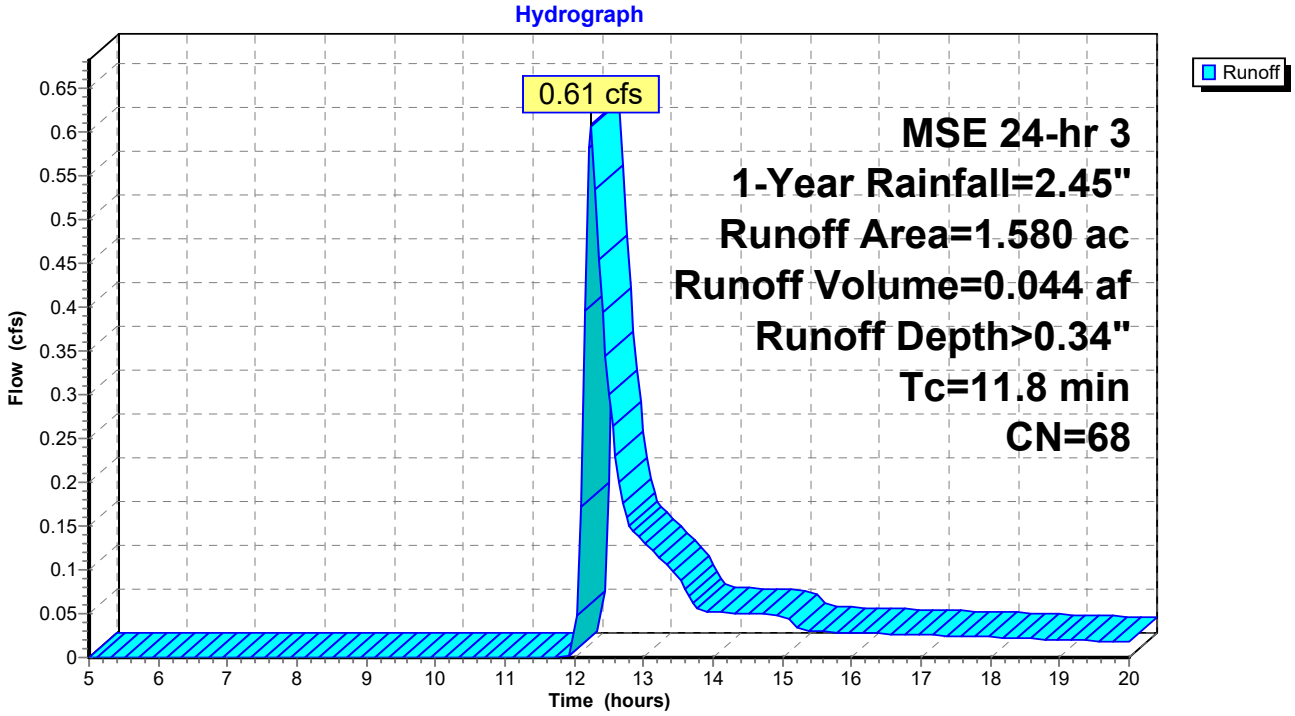
Runoff = 0.61 cfs @ 12.24 hrs, Volume= 0.044 af, Depth> 0.34"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	1.580	68	
	1.580		100.00% Pervious Area

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

Subcatchment 2/OS: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

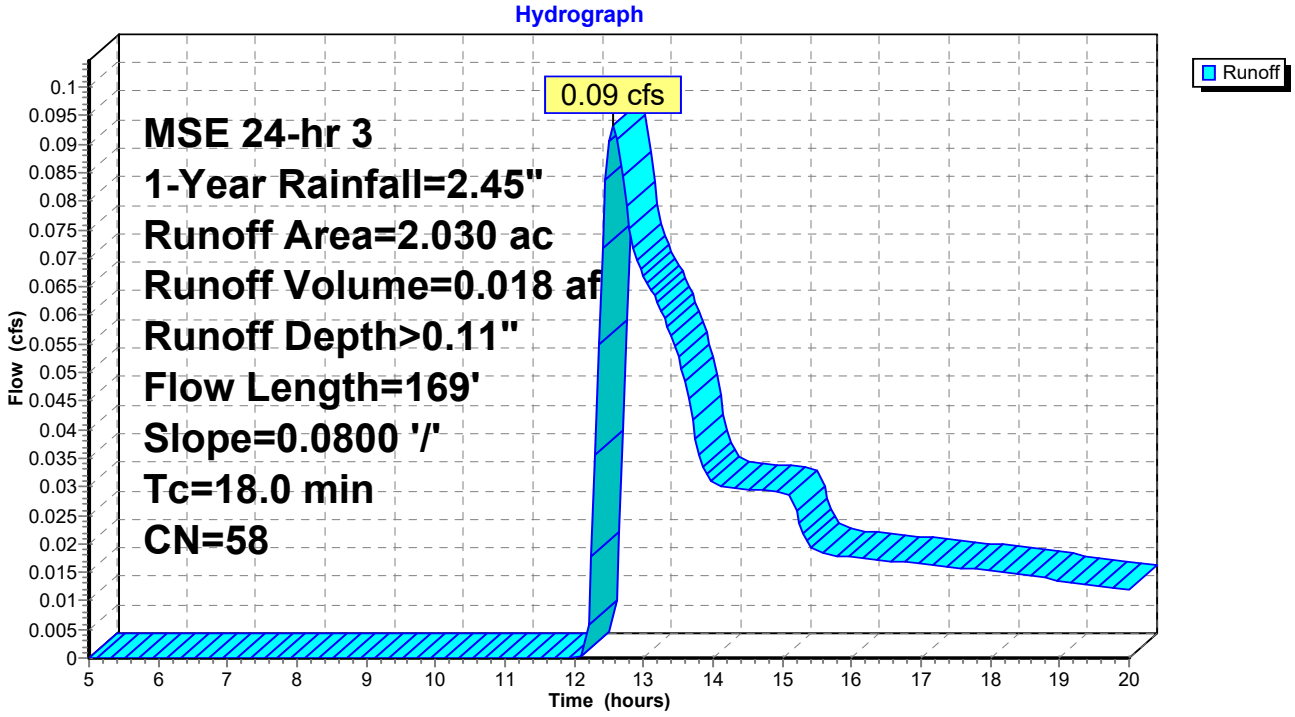
Runoff = 0.09 cfs @ 12.56 hrs, Volume= 0.018 af, Depth> 0.11"
Routed to Reach 3R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	2.030	58	
	2.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	169	0.0800	0.16		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (new Subcat)

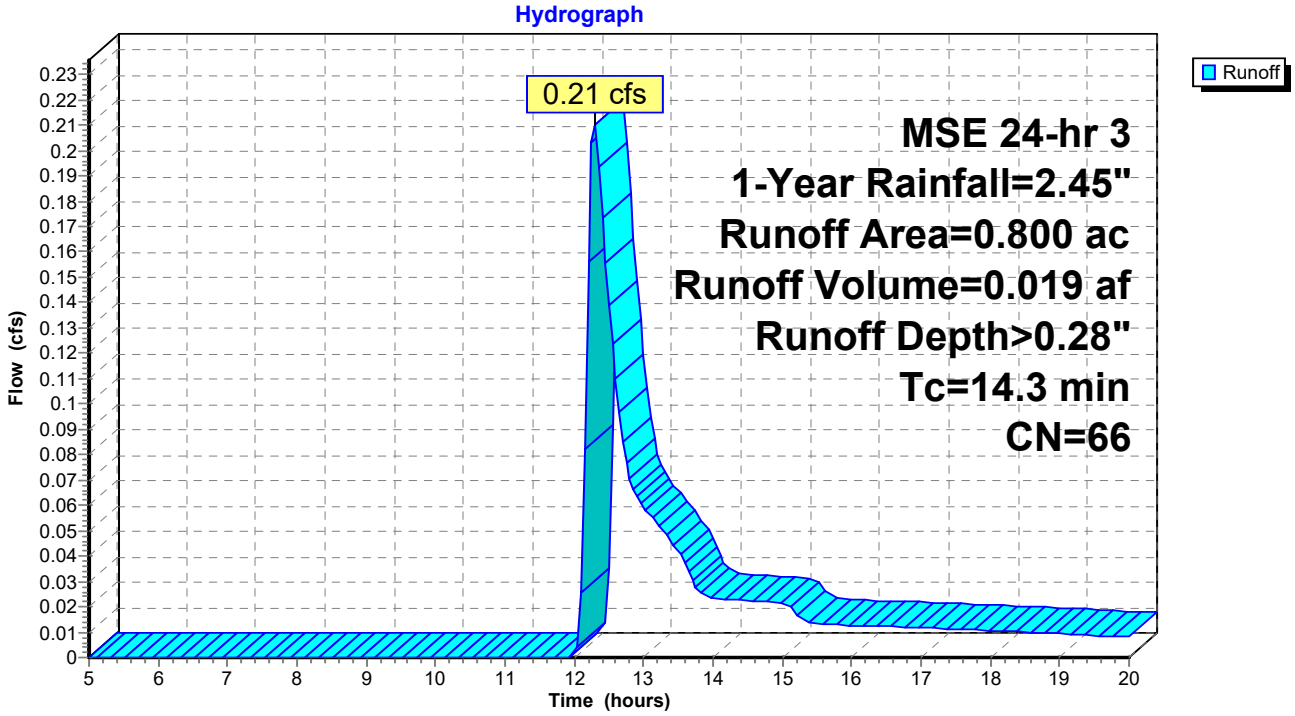
Runoff = 0.21 cfs @ 12.29 hrs, Volume= 0.019 af, Depth> 0.28"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	0.800	66	
	0.800		100.00% Pervious Area

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

Subcatchment 4/OS: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

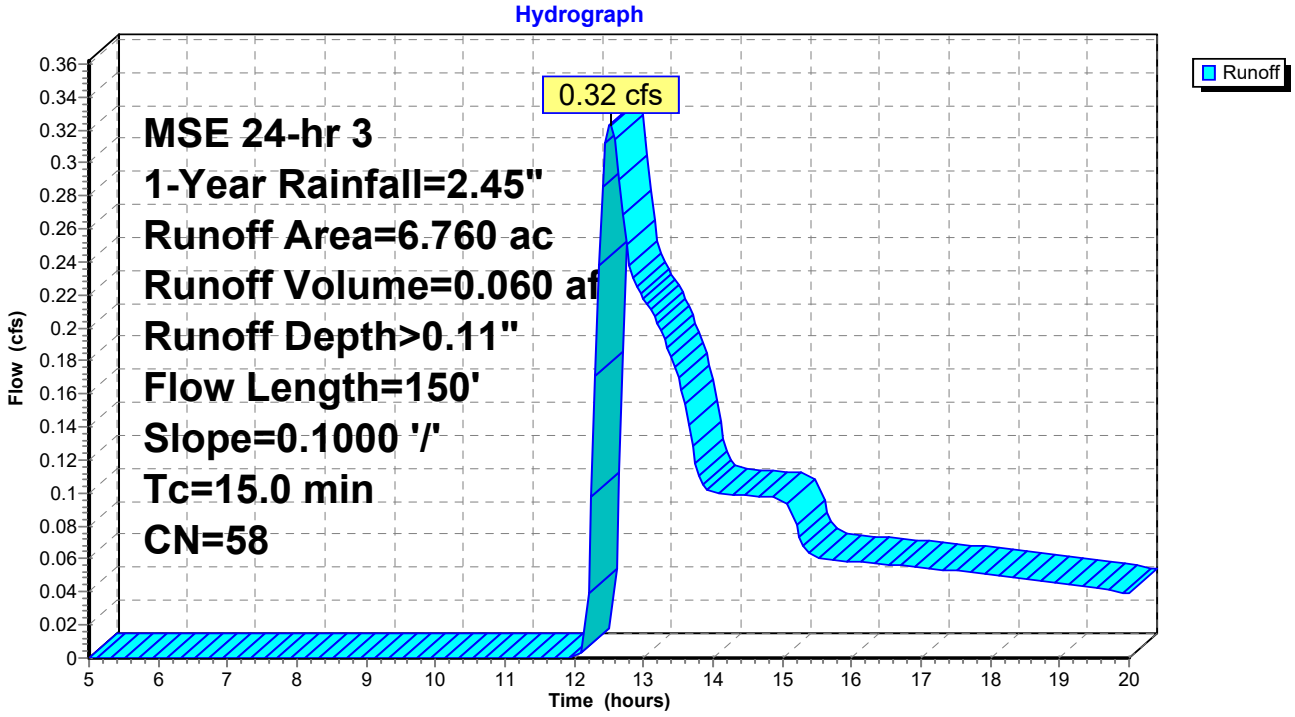
Runoff = 0.32 cfs @ 12.52 hrs, Volume= 0.060 af, Depth> 0.11"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	6.760	58	
	6.760		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	150	0.1000	0.17		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (new Subcat)

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

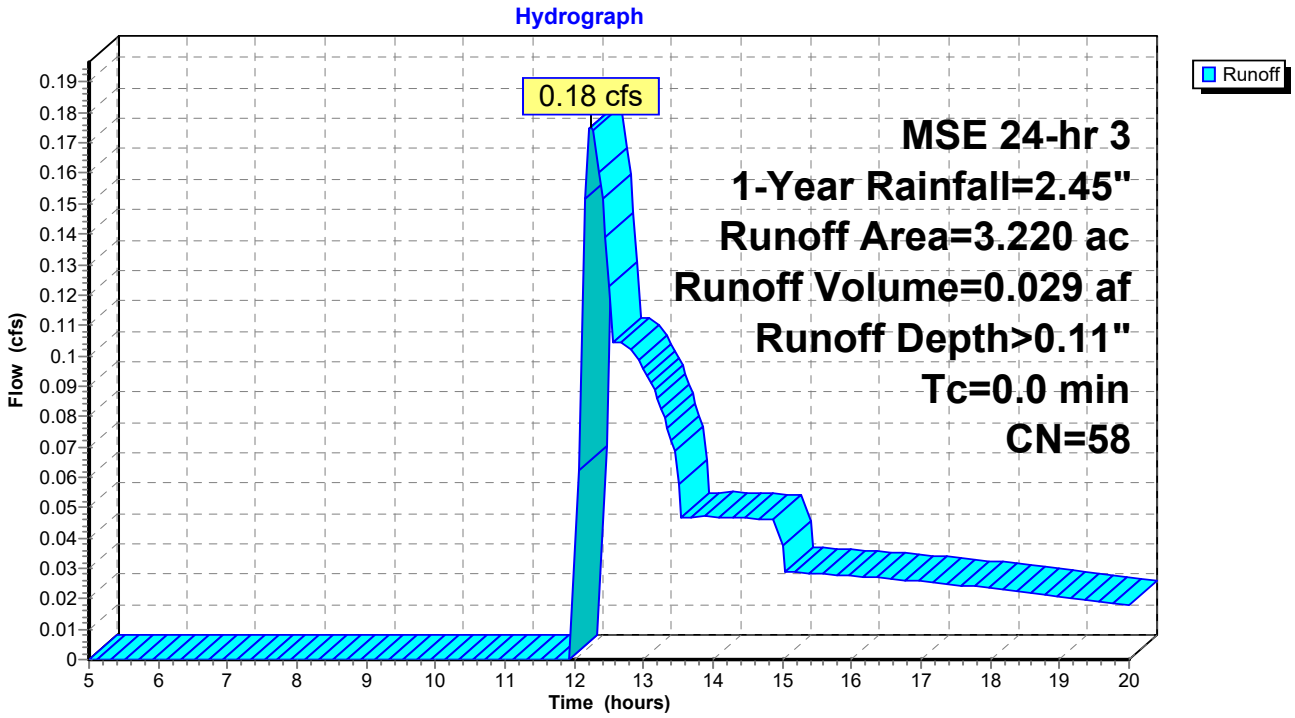
Runoff = 0.18 cfs @ 12.24 hrs, Volume= 0.029 af, Depth> 0.11"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	3.220	58	
	3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 5**

Subcatchment ND: (new Subcat)



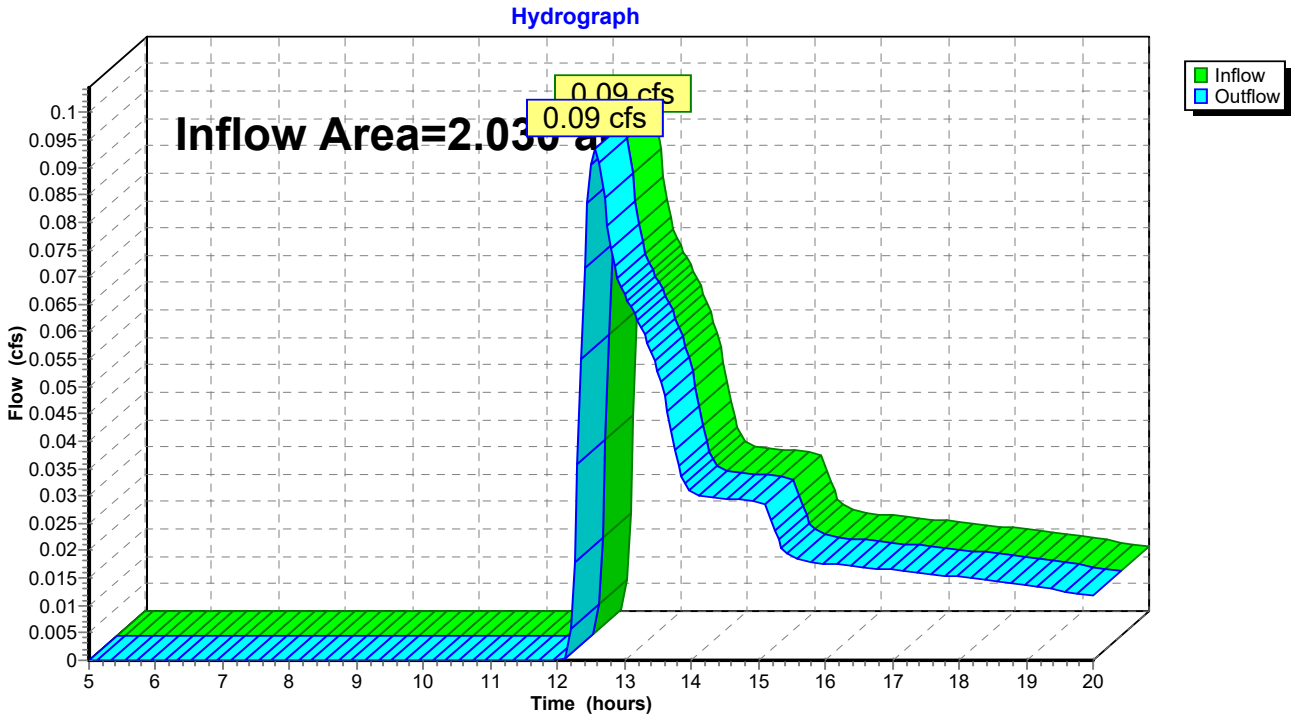
Summary for Reach 3R: (new Reach)

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

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 0.11" for 1-Year event
Inflow = 0.09 cfs @ 12.56 hrs, Volume= 0.018 af
Outflow = 0.09 cfs @ 12.56 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 3R: (new Reach)



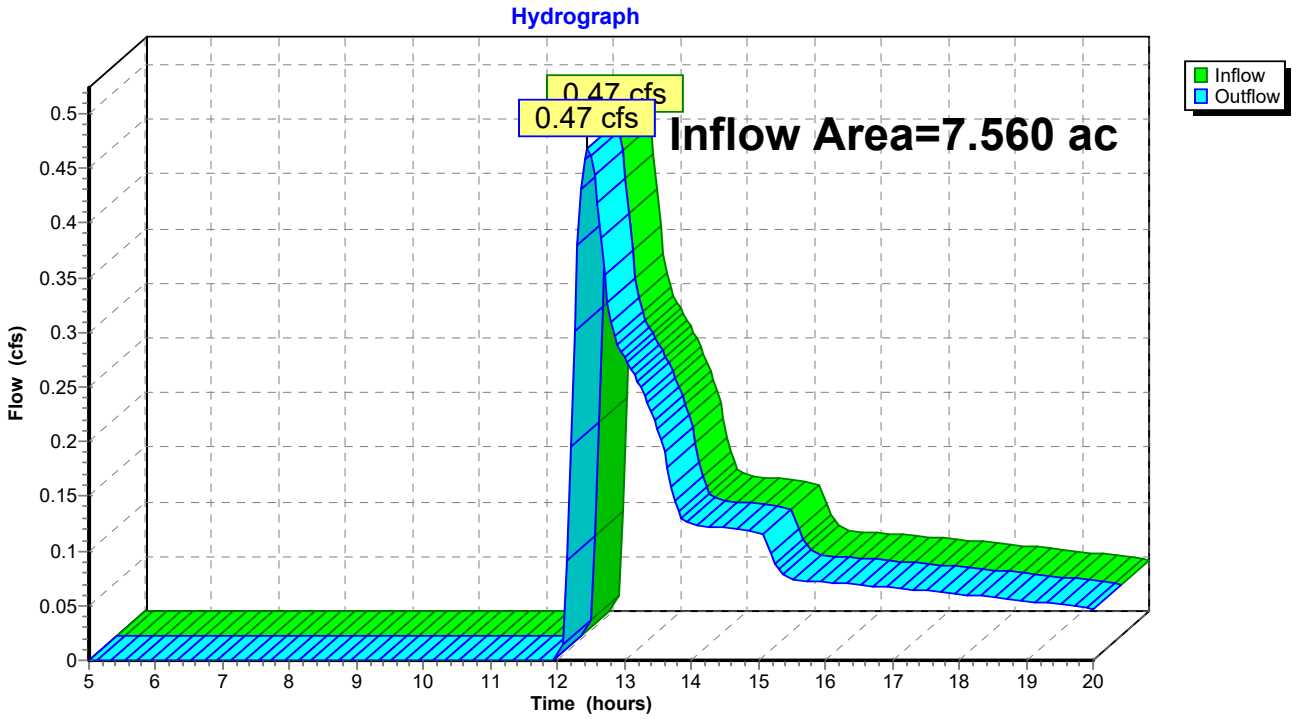
Summary for Reach 4R: (new Reach)

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

Inflow Area = 7.560 ac, 0.00% Impervious, Inflow Depth > 0.12" for 1-Year event
Inflow = 0.47 cfs @ 12.45 hrs, Volume= 0.079 af
Outflow = 0.47 cfs @ 12.45 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 4R: (new Reach)



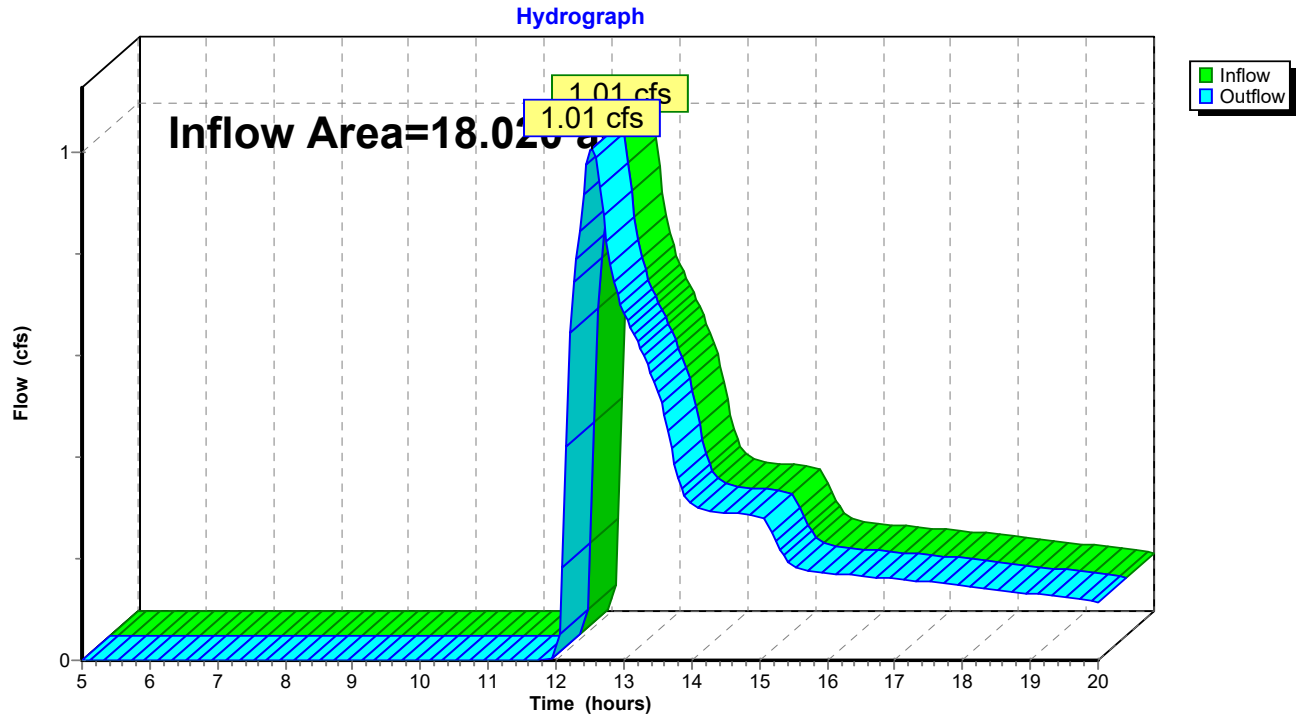
Summary for Reach AP: (new Reach)

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

Inflow Area = 18.020 ac, 0.00% Impervious, Inflow Depth > 0.13" for 1-Year event
Inflow = 1.01 cfs @ 12.52 hrs, Volume= 0.192 af
Outflow = 1.01 cfs @ 12.52 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach AP: (new Reach)



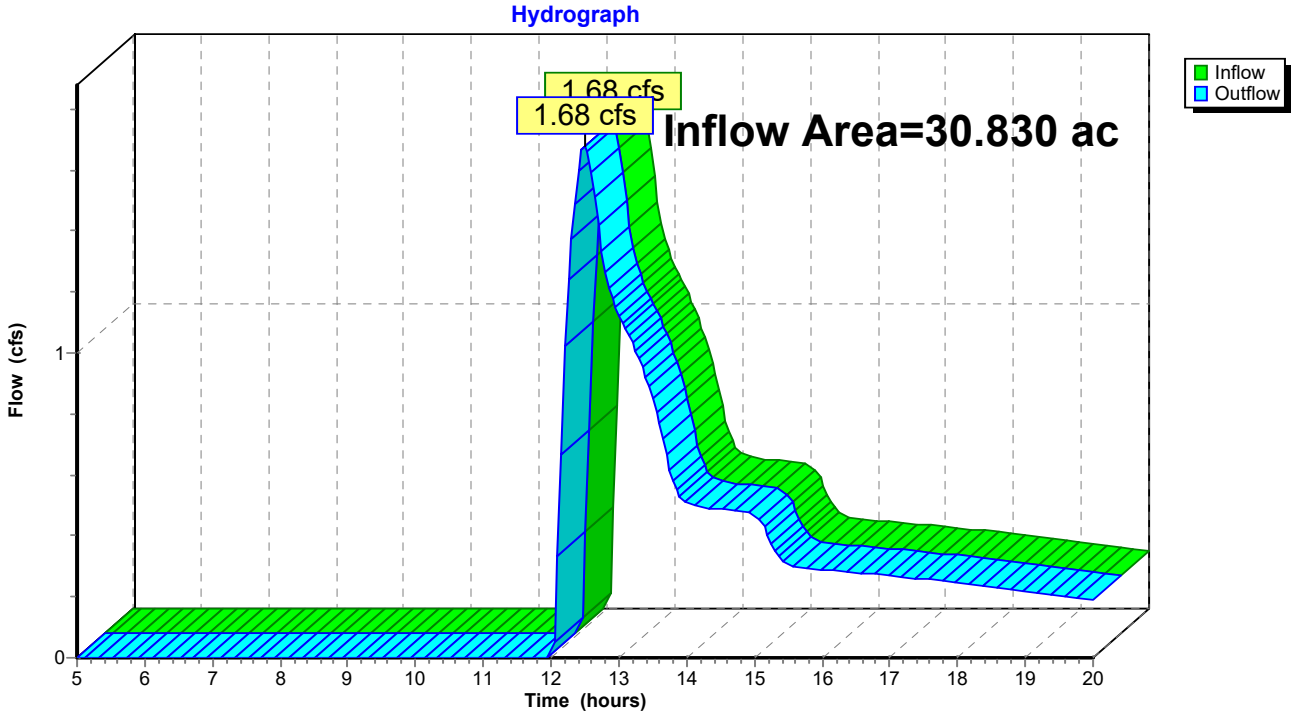
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.830 ac, 0.00% Impervious, Inflow Depth > 0.12" for 1-Year event
Inflow = 1.68 cfs @ 12.49 hrs, Volume= 0.317 af
Outflow = 1.68 cfs @ 12.49 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min

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

Reach TAP: (new Reach)



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1/OS: (new Subcat) Runoff Area=0.080 ac 0.00% Impervious Runoff Depth>0.57"
Flow Length=100' Slope=0.0500 '/' Tc=14.3 min CN=70 Runoff=0.06 cfs 0.004 af

Subcatchment 1S+2S: (new Subcat) Runoff Area=16.360 ac 0.00% Impervious Runoff Depth>0.19"
Flow Length=475' Tc=20.0 min CN=58 Runoff=1.82 cfs 0.262 af

Subcatchment 2/OS: (new Subcat) Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>0.49"
Tc=11.8 min CN=68 Runoff=1.01 cfs 0.065 af

Subcatchment 3S: (new Subcat) Runoff Area=2.030 ac 0.00% Impervious Runoff Depth>0.19"
Flow Length=169' Slope=0.0800 '/' Tc=18.0 min CN=58 Runoff=0.23 cfs 0.033 af

Subcatchment 4/OS: (new Subcat) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>0.42"
Tc=14.3 min CN=66 Runoff=0.37 cfs 0.028 af

Subcatchment 4S: (new Subcat) Runoff Area=6.760 ac 0.00% Impervious Runoff Depth>0.19"
Flow Length=150' Slope=0.1000 '/' Tc=15.0 min CN=58 Runoff=0.81 cfs 0.109 af

Subcatchment ND: (new Subcat) Runoff Area=3.220 ac 0.00% Impervious Runoff Depth>0.19"
Tc=0.0 min CN=58 Runoff=0.70 cfs 0.052 af

Reach 3R: (new Reach) Inflow=0.23 cfs 0.033 af
Outflow=0.23 cfs 0.033 af

Reach 4R: (new Reach) Inflow=1.12 cfs 0.137 af
Outflow=1.12 cfs 0.137 af

Reach AP: (new Reach) Inflow=2.36 cfs 0.331 af
Outflow=2.36 cfs 0.331 af

Reach TAP: (new Reach) Inflow=3.95 cfs 0.552 af
Outflow=3.95 cfs 0.552 af

Total Runoff Area = 30.830 ac Runoff Volume = 0.552 af Average Runoff Depth = 0.22"
100.00% Pervious = 30.830 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1/OS: (new Subcat)

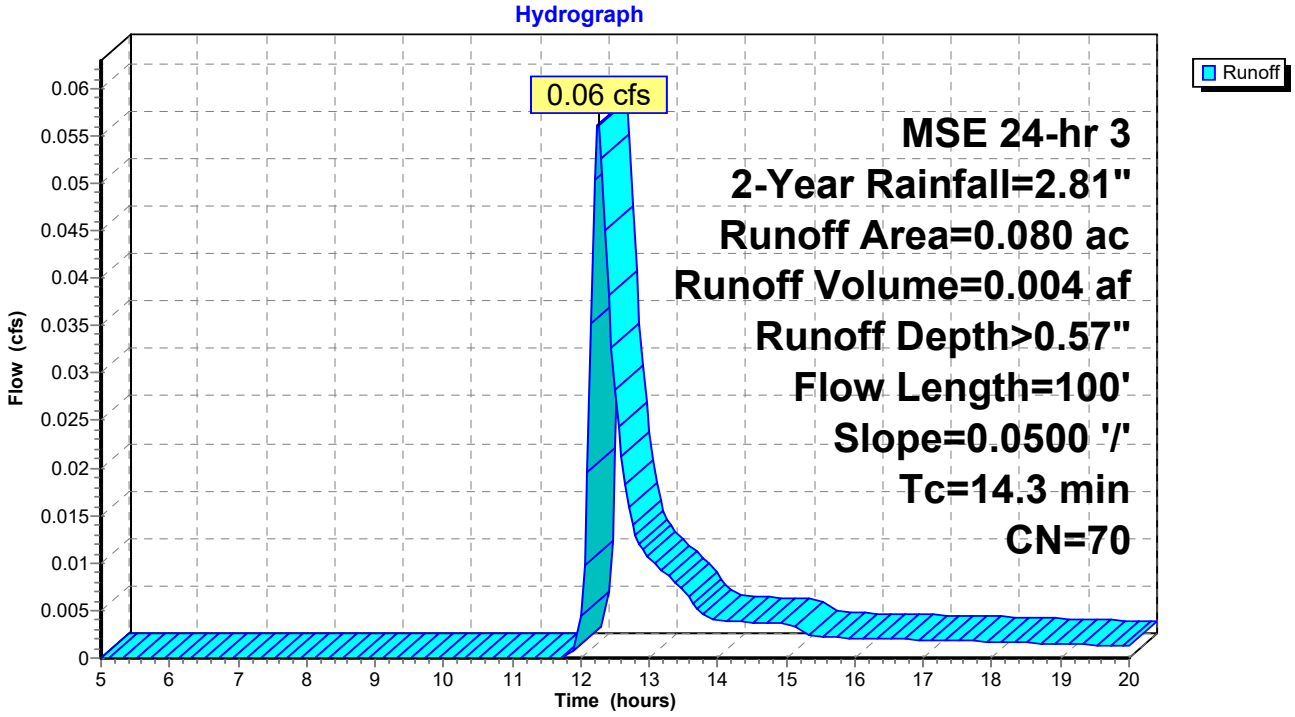
Runoff = 0.06 cfs @ 12.26 hrs, Volume= 0.004 af, Depth> 0.57"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	0.080	70	
	0.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0500	0.12		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 1/OS: (new Subcat)



Summary for Subcatchment 1S+2S: (new Subcat)

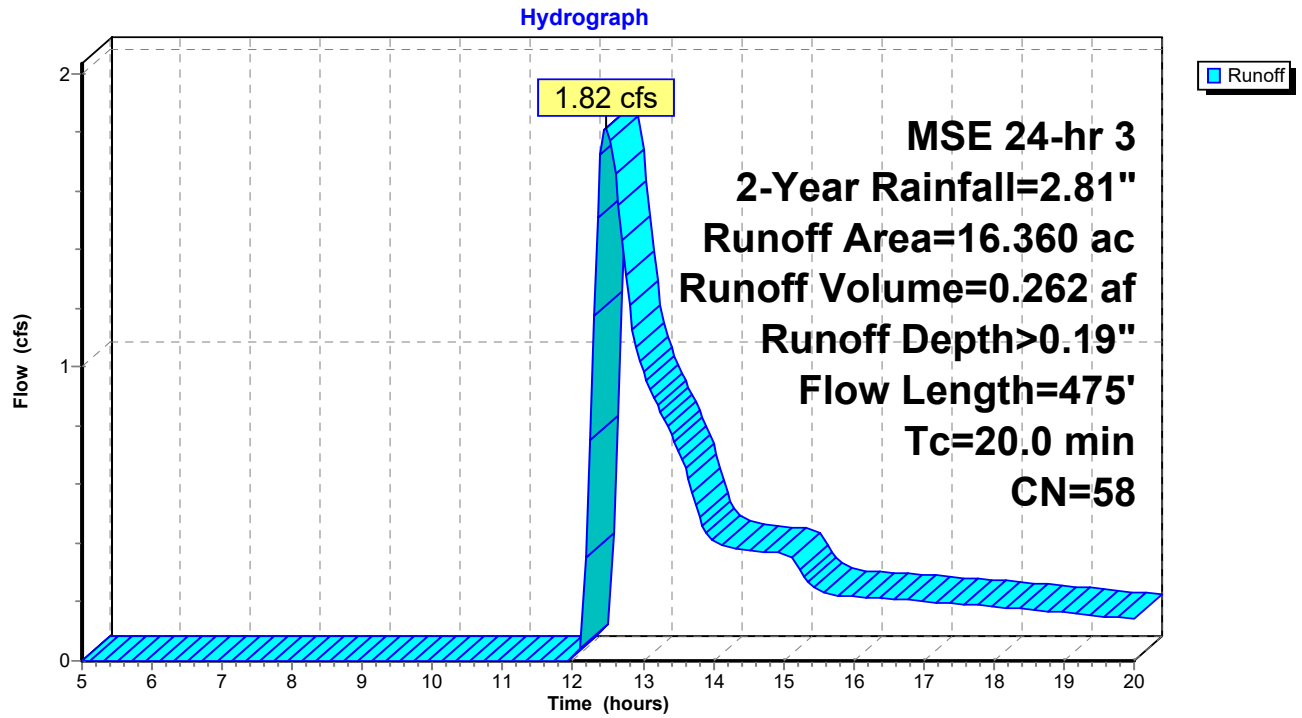
Runoff = 1.82 cfs @ 12.47 hrs, Volume= 0.262 af, Depth> 0.19"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	16.360	58	Row crops, SR + CR, Good, HSG B
	16.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	175	0.2000	0.23		**Sheet Flow, Sheet Flow** n= 0.350 P2= 2.80"
7.1	300	0.0800	0.71		**Shallow Concentrated Flow, Shallow Concentrated** Kv= 2.5 fps
20.0	475	Total			

Subcatchment 1S+2S: (new Subcat)



Summary for Subcatchment 2/OS: (new Subcat)

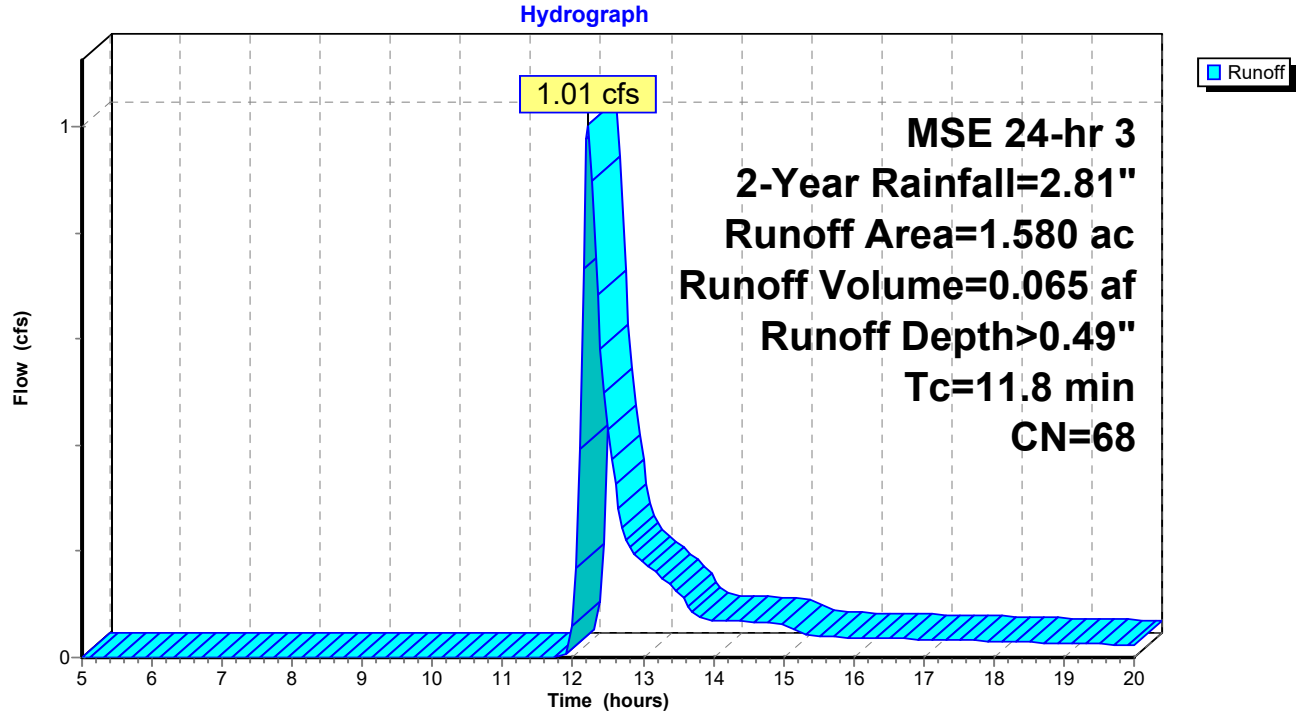
Runoff = 1.01 cfs @ 12.22 hrs, Volume= 0.065 af, Depth> 0.49"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	1.580	68	
	1.580		100.00% Pervious Area

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

Subcatchment 2/OS: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

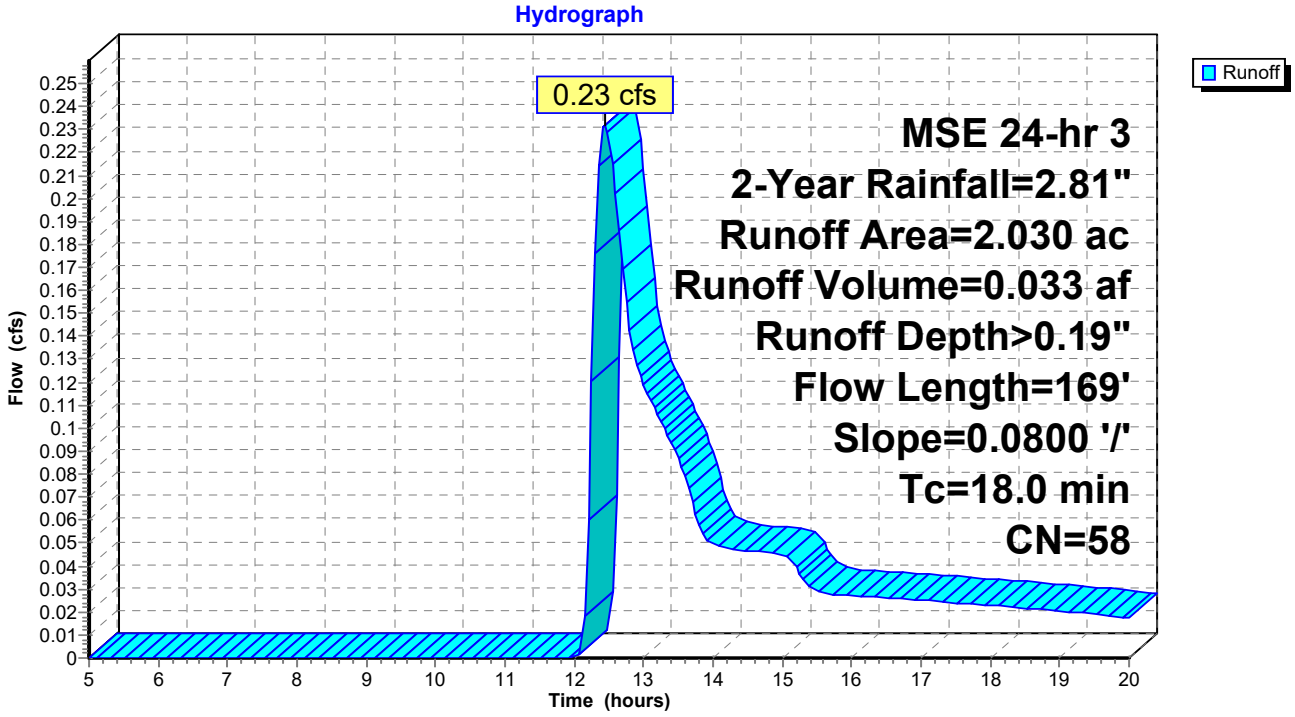
Runoff = 0.23 cfs @ 12.43 hrs, Volume= 0.033 af, Depth> 0.19"
Routed to Reach 3R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	2.030	58	
	2.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	169	0.0800	0.16		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (new Subcat)

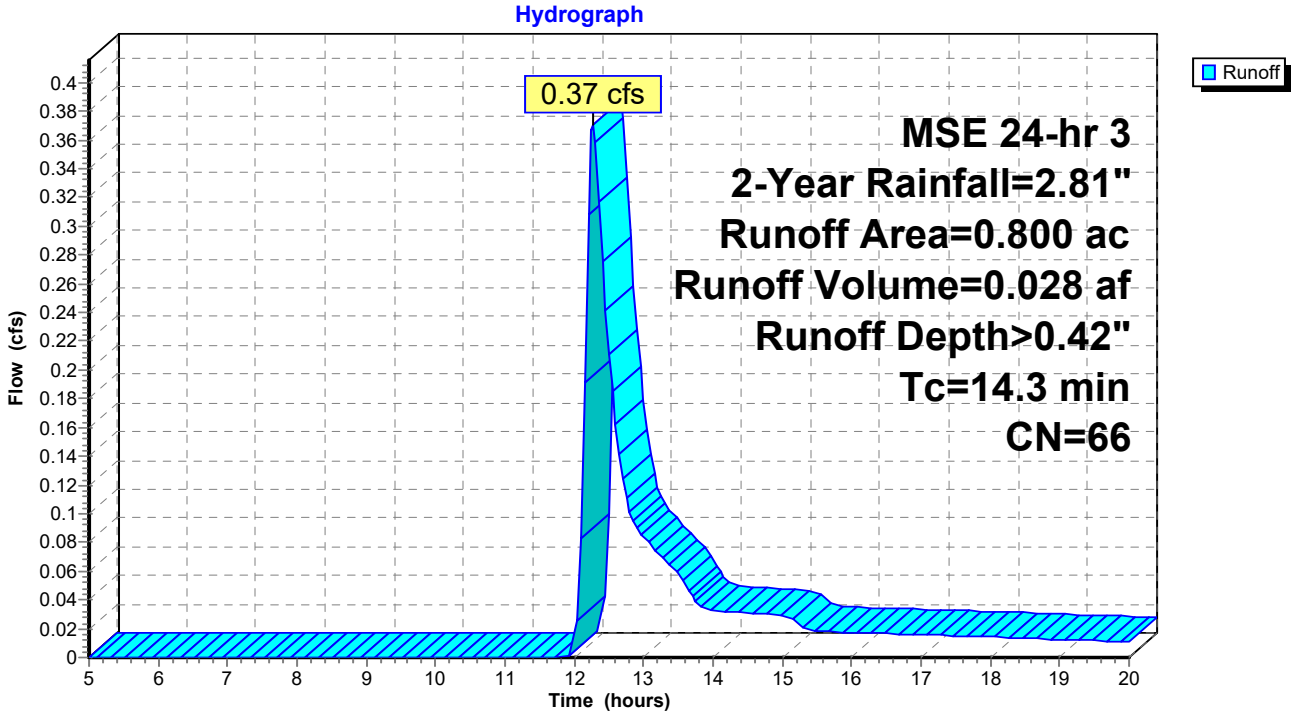
Runoff = 0.37 cfs @ 12.27 hrs, Volume= 0.028 af, Depth> 0.42"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	0.800	66	
	0.800		100.00% Pervious Area

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

Subcatchment 4/OS: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

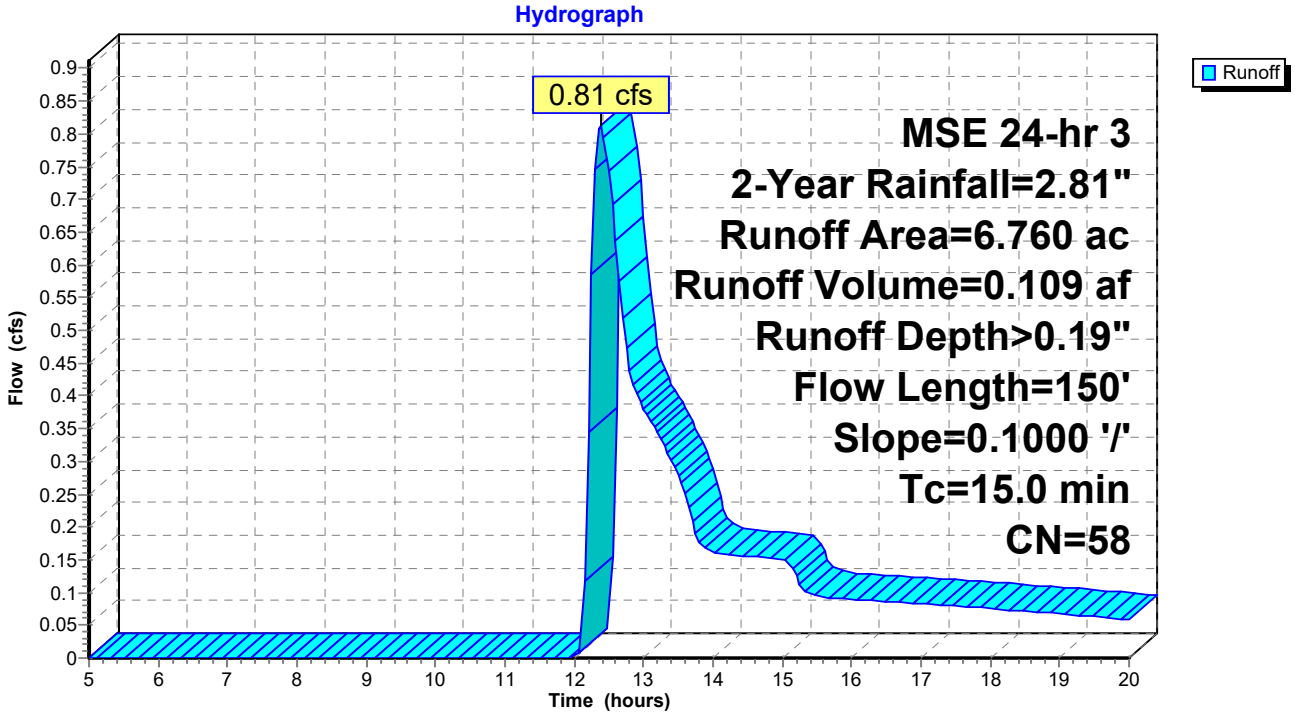
Runoff = 0.81 cfs @ 12.37 hrs, Volume= 0.109 af, Depth> 0.19"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	6.760	58	
	6.760		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	150	0.1000	0.17		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (new Subcat)

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

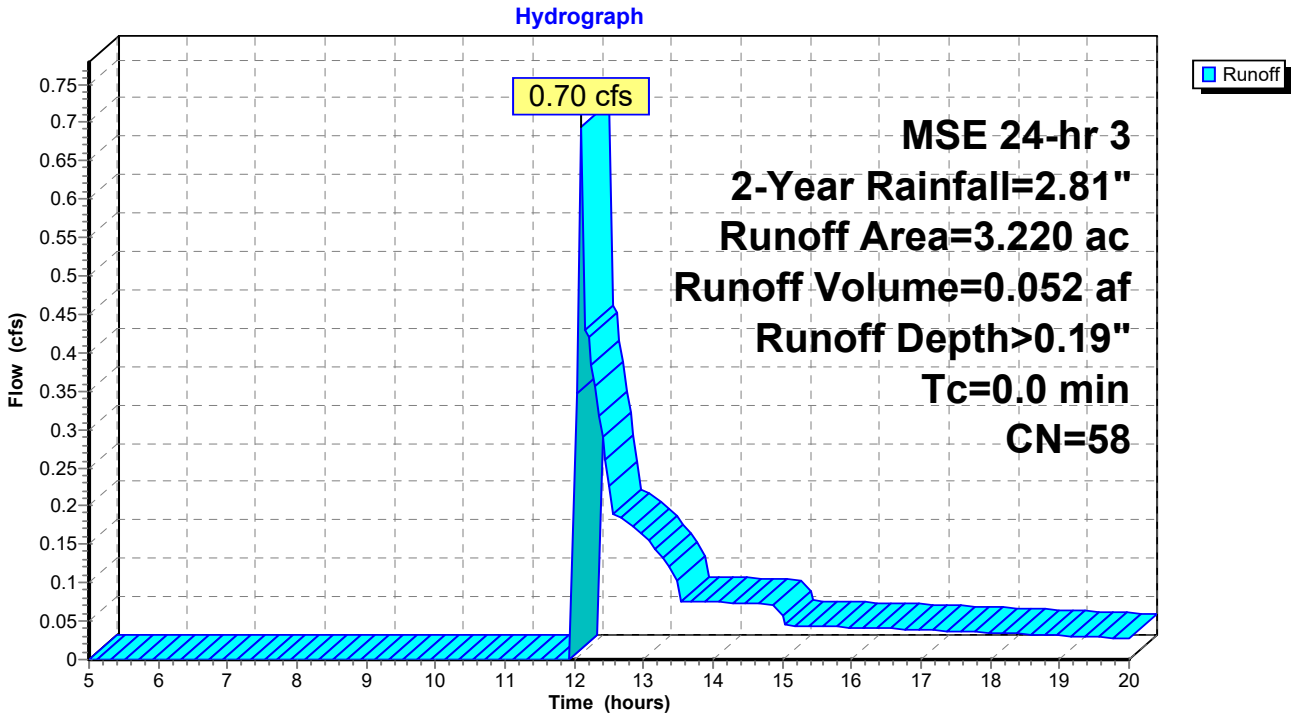
Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.052 af, Depth> 0.19"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	3.220	58	
	3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 5**

Subcatchment ND: (new Subcat)



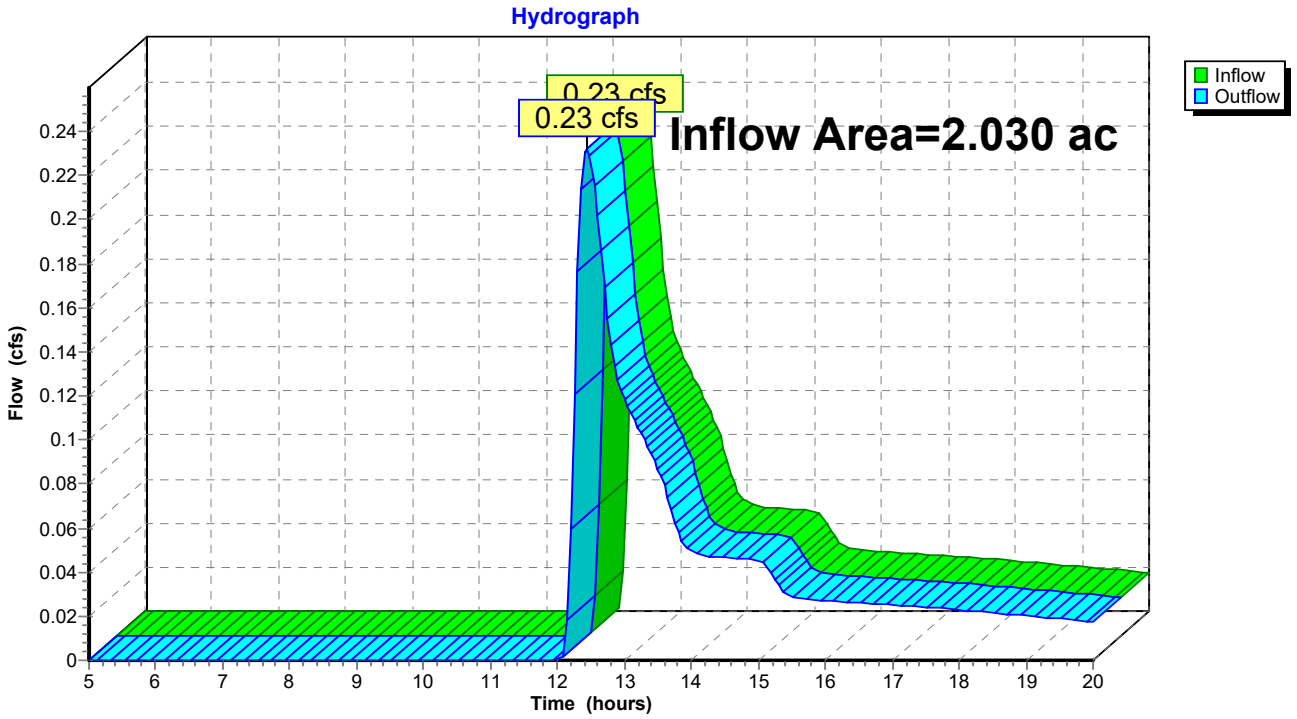
Summary for Reach 3R: (new Reach)

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

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 0.19" for 2-Year event
Inflow = 0.23 cfs @ 12.43 hrs, Volume= 0.033 af
Outflow = 0.23 cfs @ 12.43 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 3R: (new Reach)



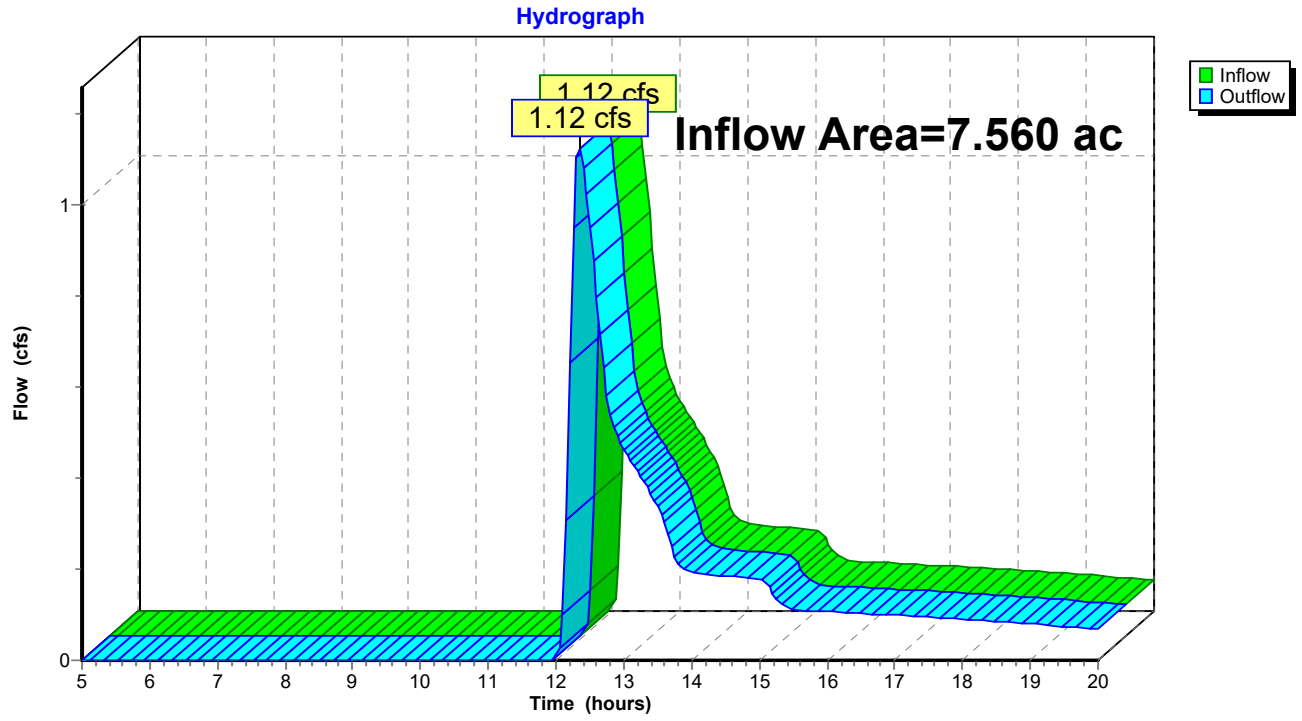
Summary for Reach 4R: (new Reach)

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

Inflow Area = 7.560 ac, 0.00% Impervious, Inflow Depth > 0.22" for 2-Year event
Inflow = 1.12 cfs @ 12.34 hrs, Volume= 0.137 af
Outflow = 1.12 cfs @ 12.34 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 4R: (new Reach)



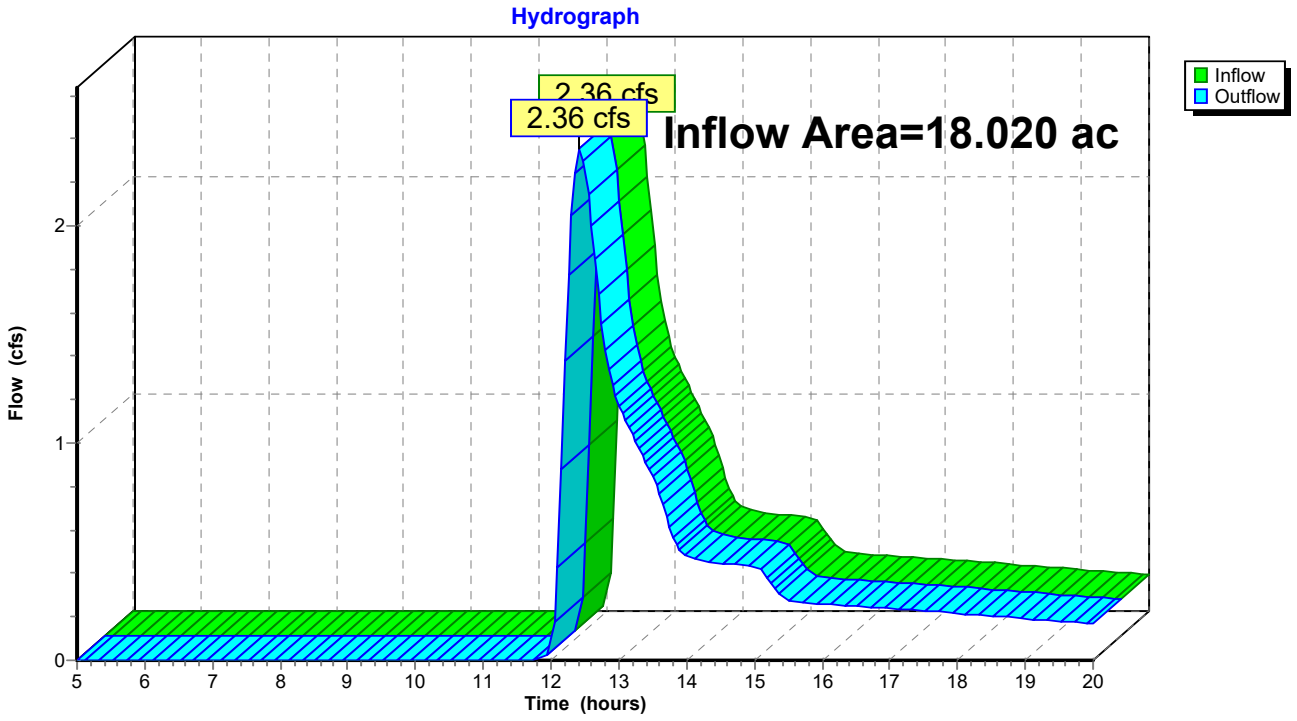
Summary for Reach AP: (new Reach)

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

Inflow Area = 18.020 ac, 0.00% Impervious, Inflow Depth > 0.22" for 2-Year event
Inflow = 2.36 cfs @ 12.42 hrs, Volume= 0.331 af
Outflow = 2.36 cfs @ 12.42 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach AP: (new Reach)



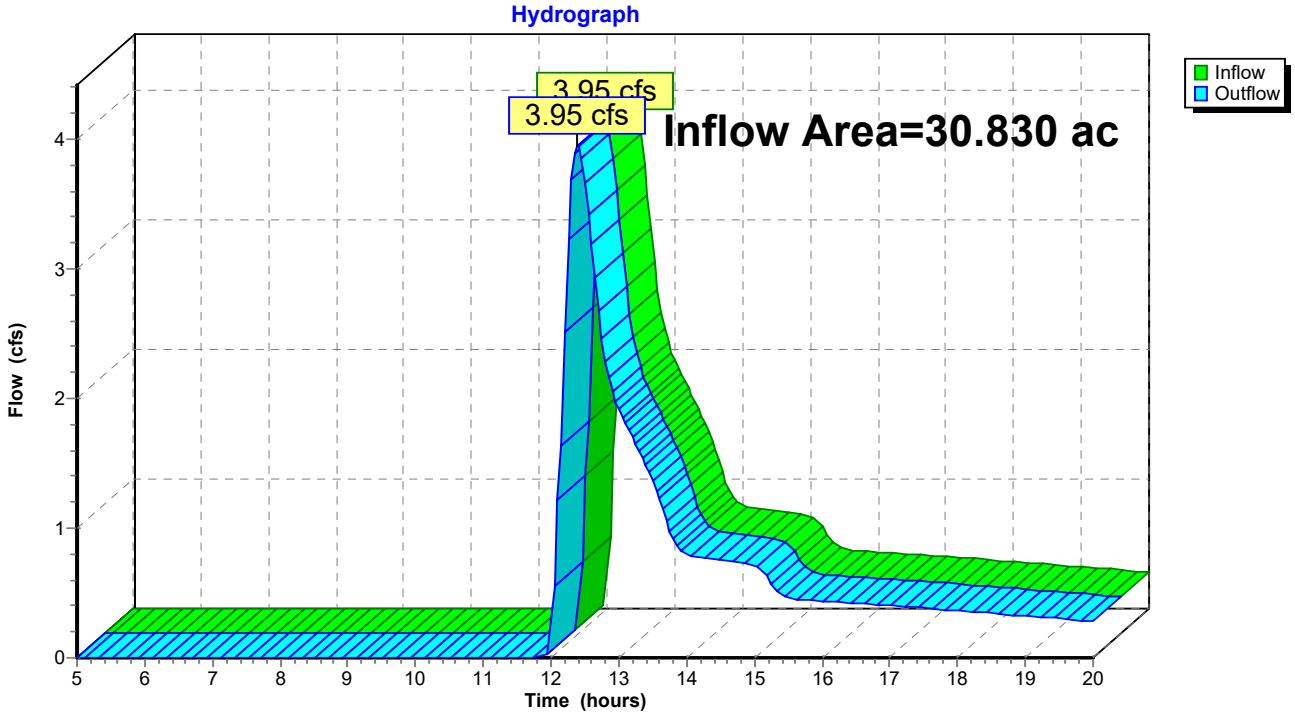
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.830 ac, 0.00% Impervious, Inflow Depth > 0.22" for 2-Year event
Inflow = 3.95 cfs @ 12.39 hrs, Volume= 0.552 af
Outflow = 3.95 cfs @ 12.39 hrs, Volume= 0.552 af, Atten= 0%, Lag= 0.0 min

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

Reach TAP: (new Reach)



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1/OS: (new Subcat) Runoff Area=0.080 ac 0.00% Impervious Runoff Depth>1.26"
Flow Length=100' Slope=0.0500 '/' Tc=14.3 min CN=70 Runoff=0.14 cfs 0.008 af

Subcatchment 1S+2S: (new Subcat) Runoff Area=16.360 ac 0.00% Impervious Runoff Depth>0.62"
Flow Length=475' Tc=20.0 min CN=58 Runoff=9.42 cfs 0.841 af

Subcatchment 2/OS: (new Subcat) Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>1.14"
Tc=11.8 min CN=68 Runoff=2.62 cfs 0.150 af

Subcatchment 3S: (new Subcat) Runoff Area=2.030 ac 0.00% Impervious Runoff Depth>0.62"
Flow Length=169' Slope=0.0800 '/' Tc=18.0 min CN=58 Runoff=1.24 cfs 0.104 af

Subcatchment 4/OS: (new Subcat) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>1.02"
Tc=14.3 min CN=66 Runoff=1.07 cfs 0.068 af

Subcatchment 4S: (new Subcat) Runoff Area=6.760 ac 0.00% Impervious Runoff Depth>0.62"
Flow Length=150' Slope=0.1000 '/' Tc=15.0 min CN=58 Runoff=4.51 cfs 0.348 af

Subcatchment ND: (new Subcat) Runoff Area=3.220 ac 0.00% Impervious Runoff Depth>0.62"
Tc=0.0 min CN=58 Runoff=3.86 cfs 0.167 af

Reach 3R: (new Reach) Inflow=1.24 cfs 0.104 af
Outflow=1.24 cfs 0.104 af

Reach 4R: (new Reach) Inflow=5.60 cfs 0.417 af
Outflow=5.60 cfs 0.417 af

Reach AP: (new Reach) Inflow=11.14 cfs 1.000 af
Outflow=11.14 cfs 1.000 af

Reach TAP: (new Reach) Inflow=18.75 cfs 1.688 af
Outflow=18.75 cfs 1.688 af

Total Runoff Area = 30.830 ac Runoff Volume = 1.688 af Average Runoff Depth = 0.66"
100.00% Pervious = 30.830 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1/OS: (new Subcat)

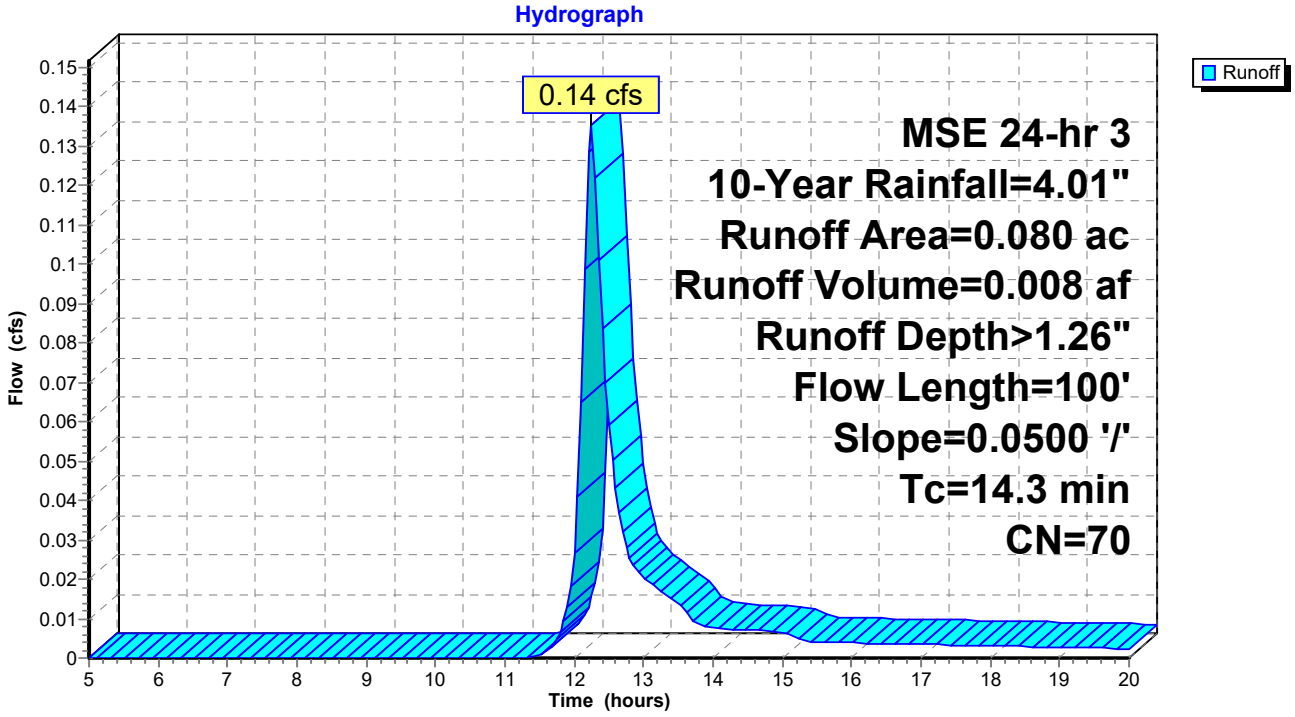
Runoff = 0.14 cfs @ 12.24 hrs, Volume= 0.008 af, Depth> 1.26"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	0.080	70	
	0.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0500	0.12		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 1/OS: (new Subcat)



Summary for Subcatchment 1S+2S: (new Subcat)

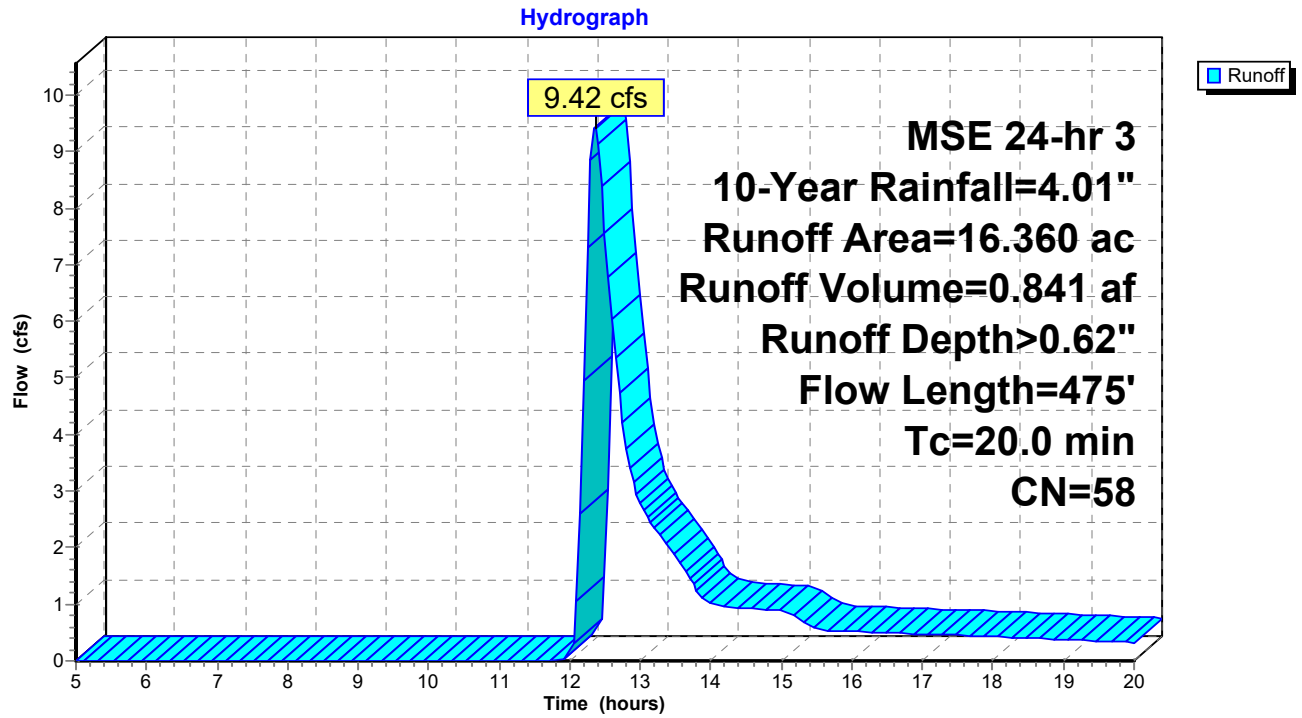
Runoff = 9.42 cfs @ 12.36 hrs, Volume= 0.841 af, Depth> 0.62"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	16.360	58	Row crops, SR + CR, Good, HSG B
	16.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	175	0.2000	0.23		**Sheet Flow, Sheet Flow** n= 0.350 P2= 2.80"
7.1	300	0.0800	0.71		**Shallow Concentrated Flow, Shallow Concentrated** Kv= 2.5 fps
20.0	475	Total			

Subcatchment 1S+2S: (new Subcat)



Summary for Subcatchment 2/OS: (new Subcat)

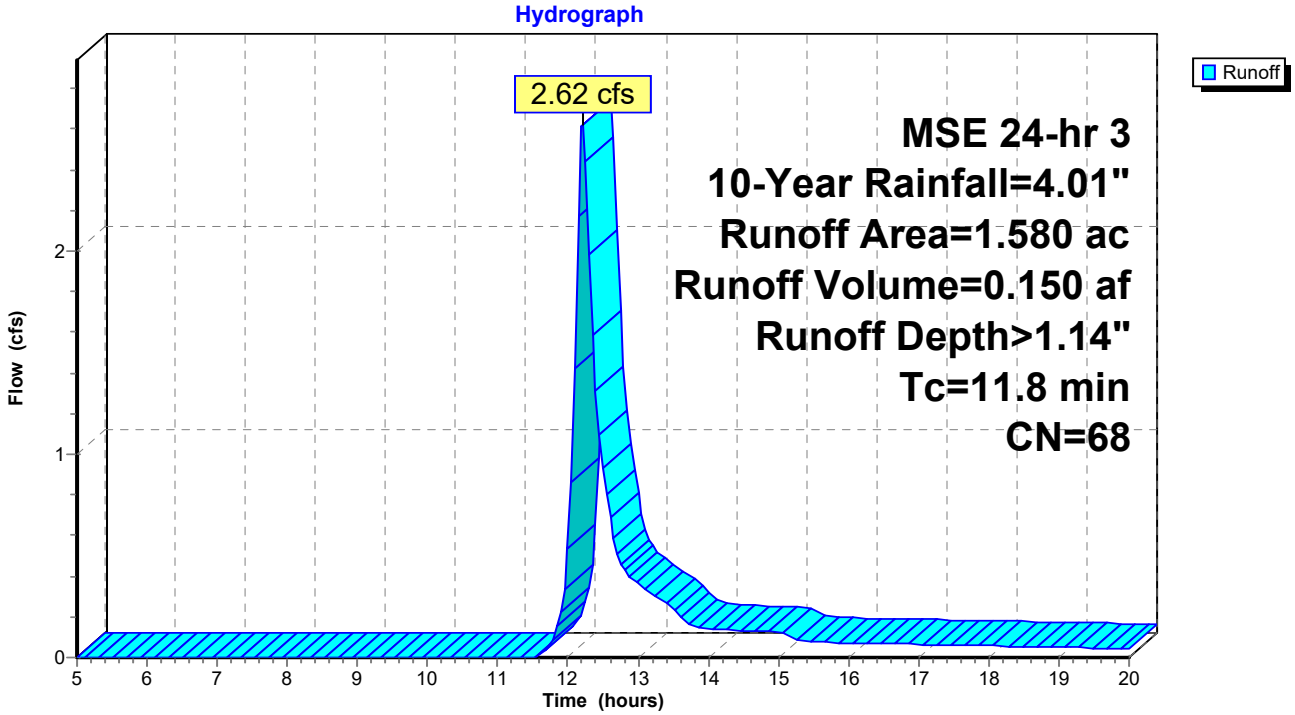
Runoff = 2.62 cfs @ 12.21 hrs, Volume= 0.150 af, Depth> 1.14"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	1.580	68	
	1.580		100.00% Pervious Area

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

Subcatchment 2/OS: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

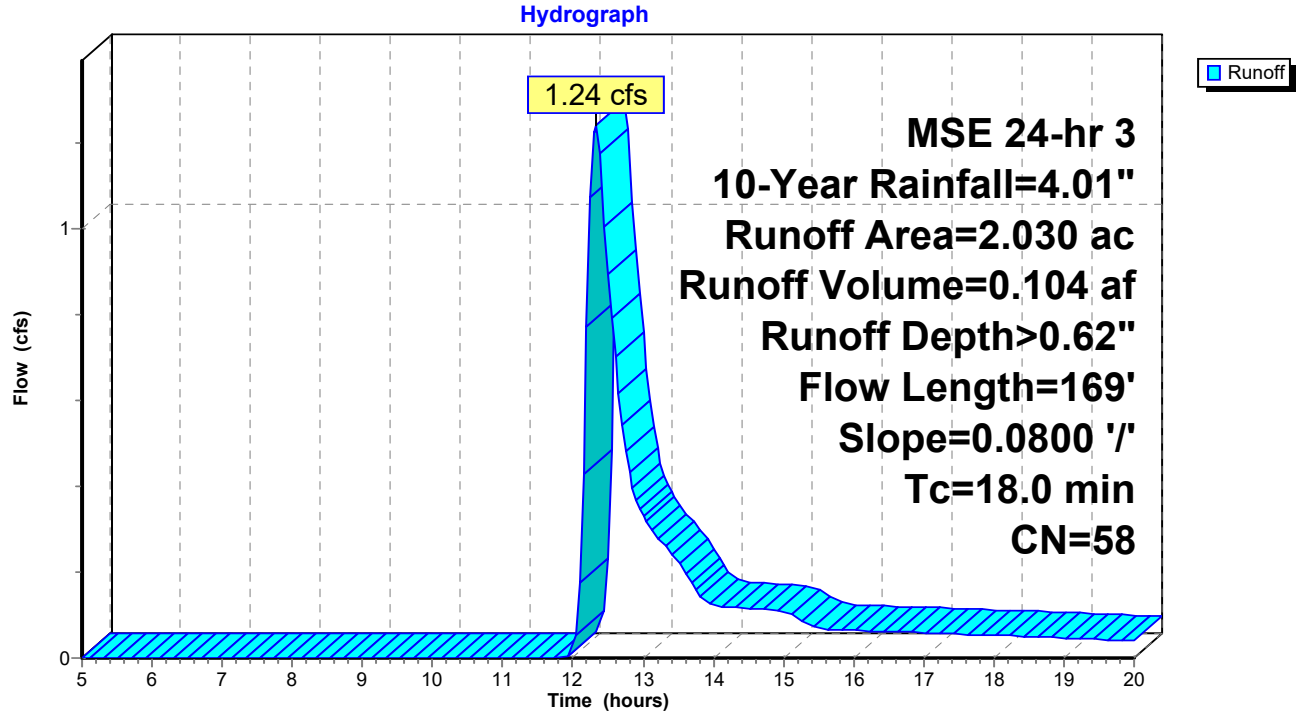
Runoff = 1.24 cfs @ 12.32 hrs, Volume= 0.104 af, Depth> 0.62"
Routed to Reach 3R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	2.030	58	
	2.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	169	0.0800	0.16		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (new Subcat)

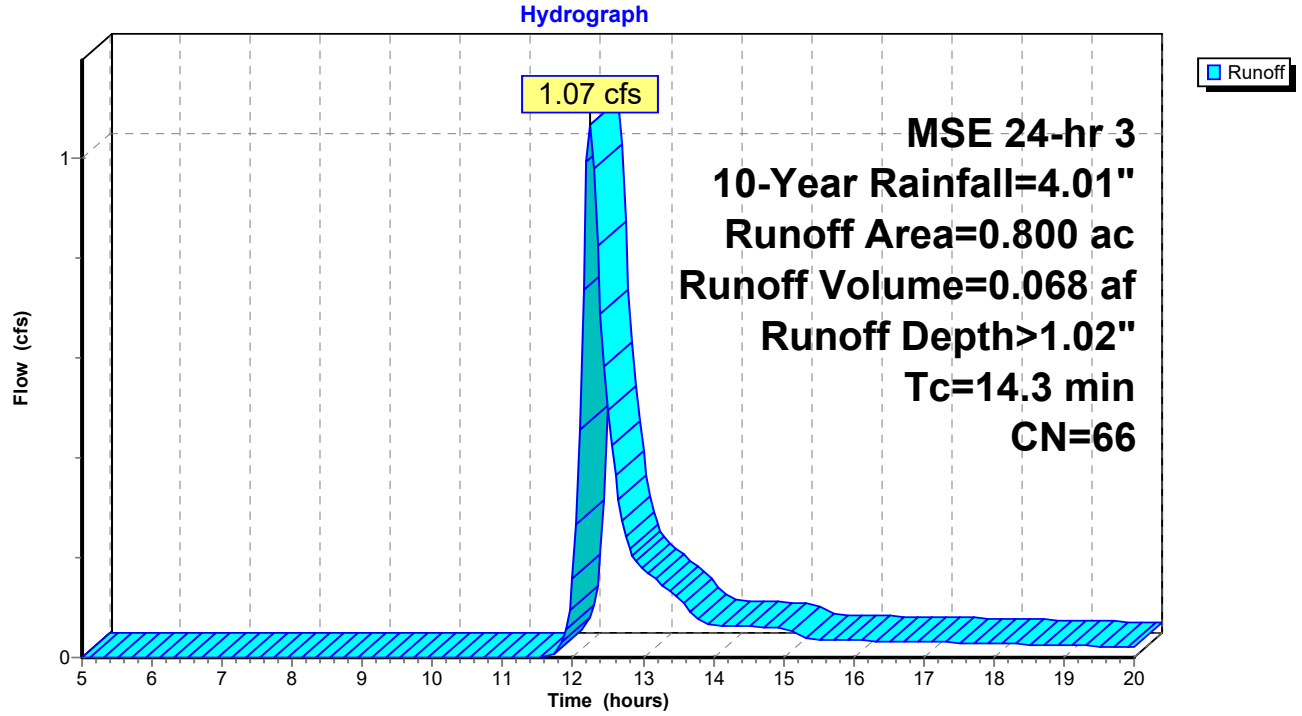
Runoff = 1.07 cfs @ 12.25 hrs, Volume= 0.068 af, Depth> 1.02"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	0.800	66	
	0.800		100.00% Pervious Area

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

Subcatchment 4/OS: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

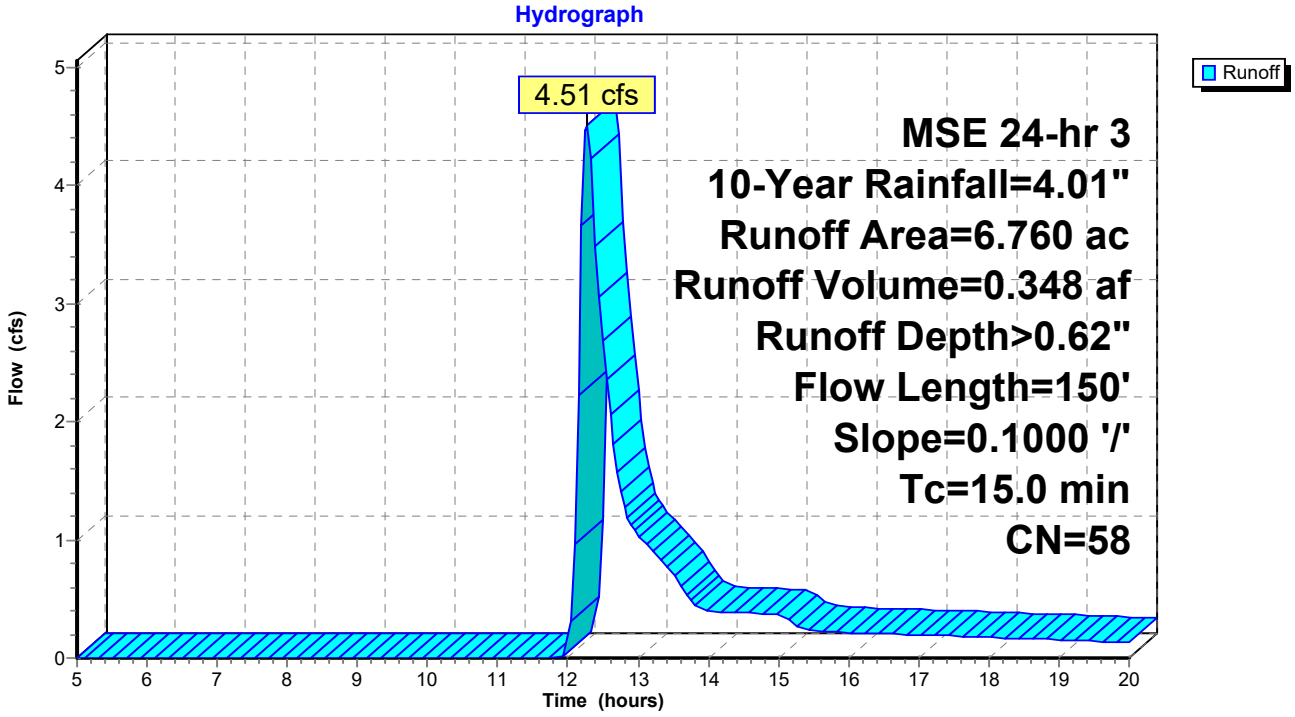
Runoff = 4.51 cfs @ 12.28 hrs, Volume= 0.348 af, Depth> 0.62"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	6.760	58	
	6.760		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	150	0.1000	0.17		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (new Subcat)

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

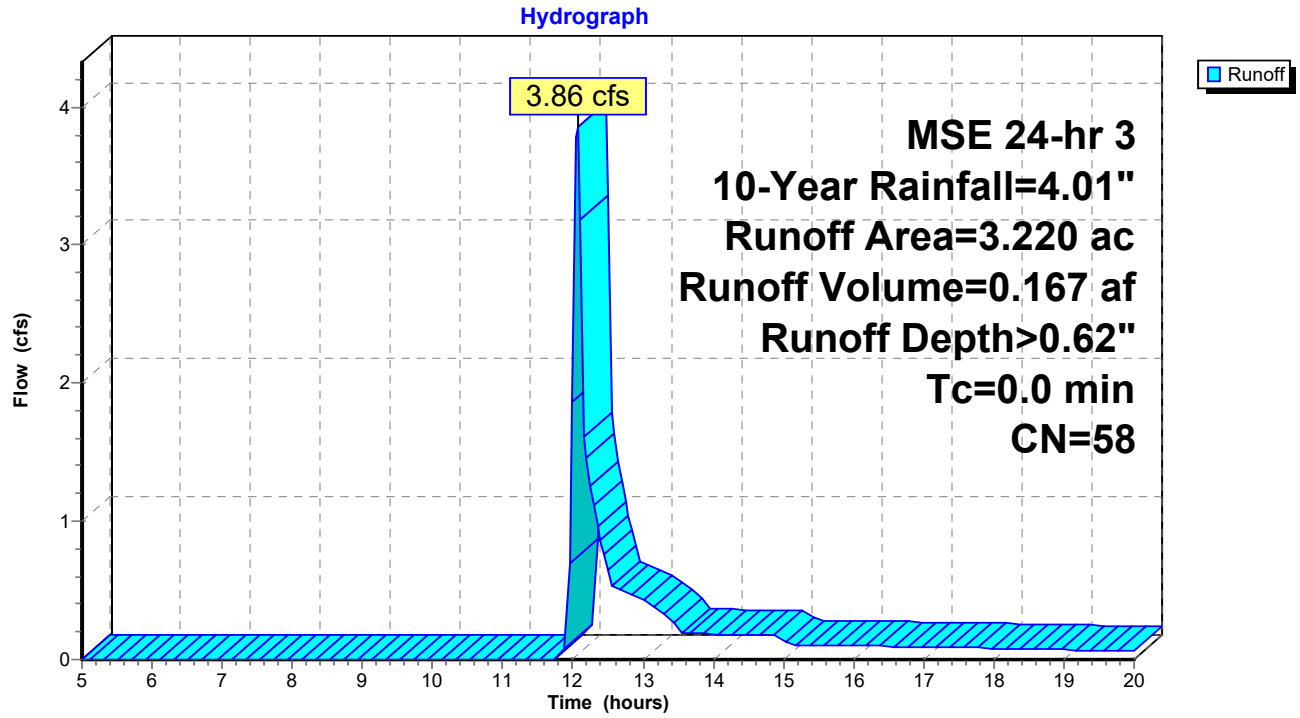
Runoff = 3.86 cfs @ 12.06 hrs, Volume= 0.167 af, Depth> 0.62"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	3.220	58	
	3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 5**

Subcatchment ND: (new Subcat)



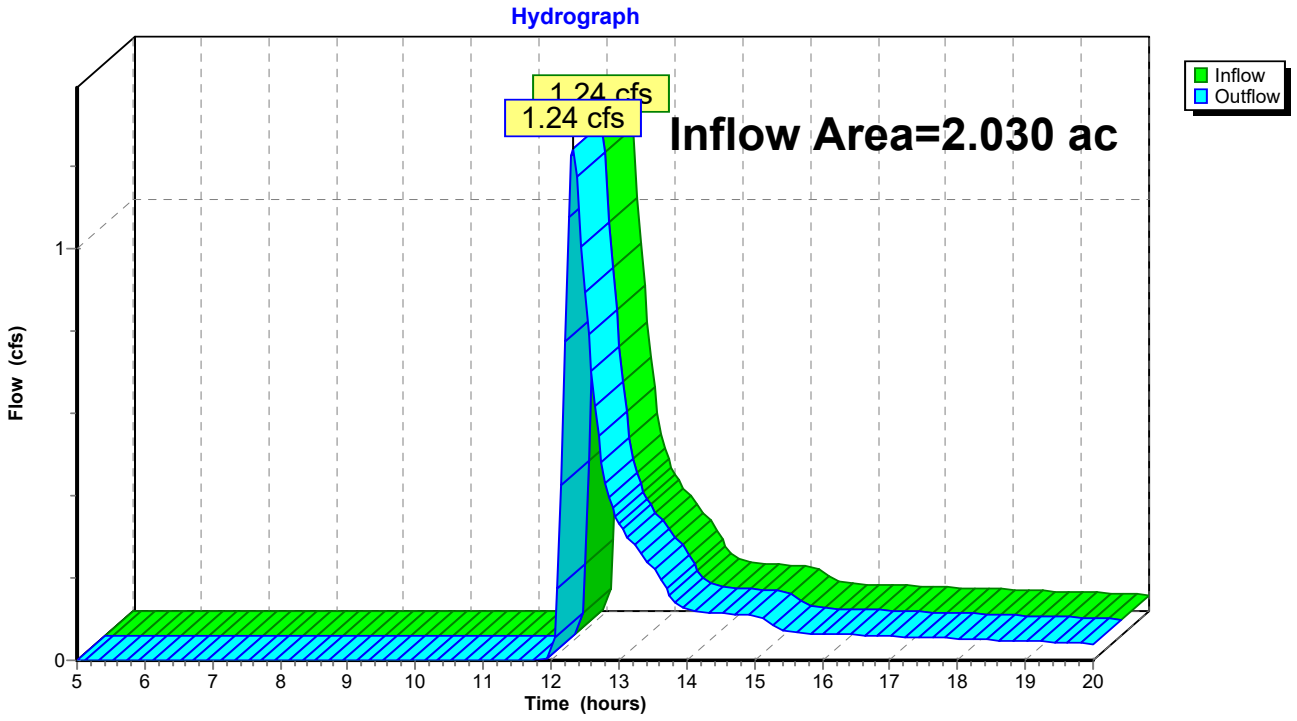
Summary for Reach 3R: (new Reach)

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

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 0.62" for 10-Year event
Inflow = 1.24 cfs @ 12.32 hrs, Volume= 0.104 af
Outflow = 1.24 cfs @ 12.32 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 3R: (new Reach)



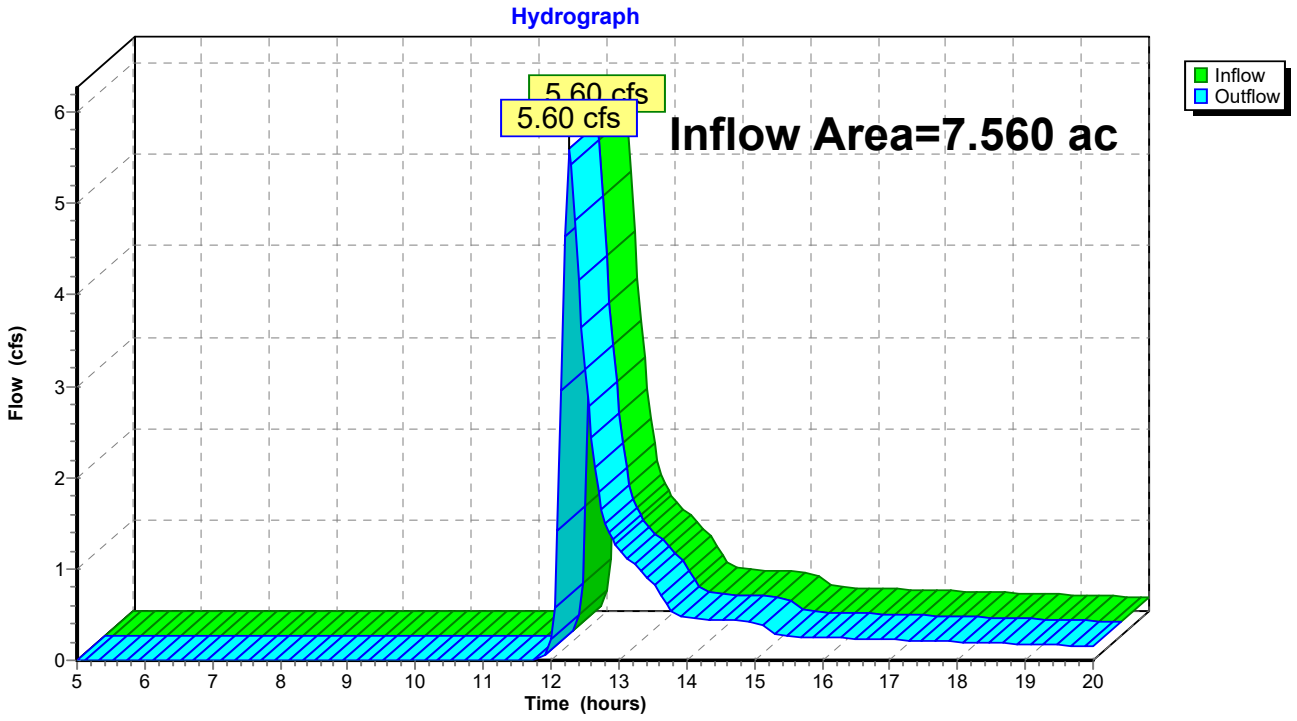
Summary for Reach 4R: (new Reach)

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

Inflow Area = 7.560 ac, 0.00% Impervious, Inflow Depth > 0.66" for 10-Year event
Inflow = 5.60 cfs @ 12.27 hrs, Volume= 0.417 af
Outflow = 5.60 cfs @ 12.27 hrs, Volume= 0.417 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 4R: (new Reach)



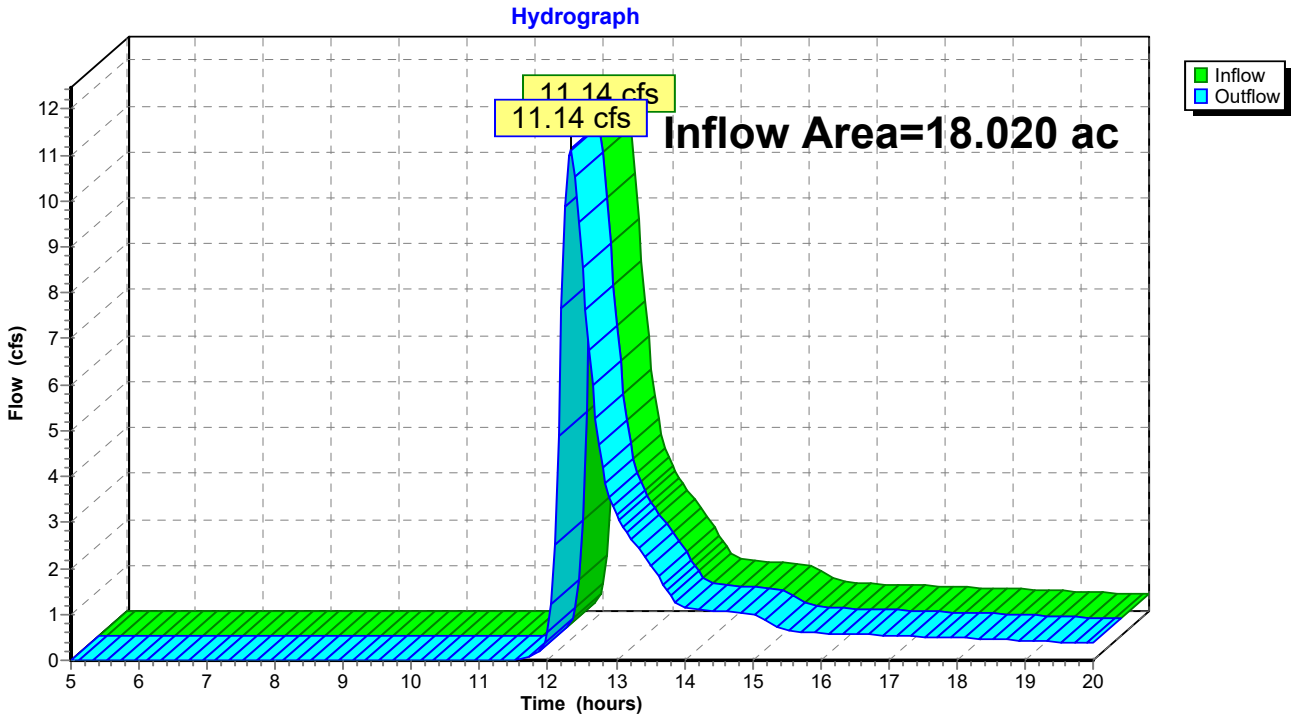
Summary for Reach AP: (new Reach)

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

Inflow Area = 18.020 ac, 0.00% Impervious, Inflow Depth > 0.67" for 10-Year event
Inflow = 11.14 cfs @ 12.33 hrs, Volume= 1.000 af
Outflow = 11.14 cfs @ 12.33 hrs, Volume= 1.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach AP: (new Reach)



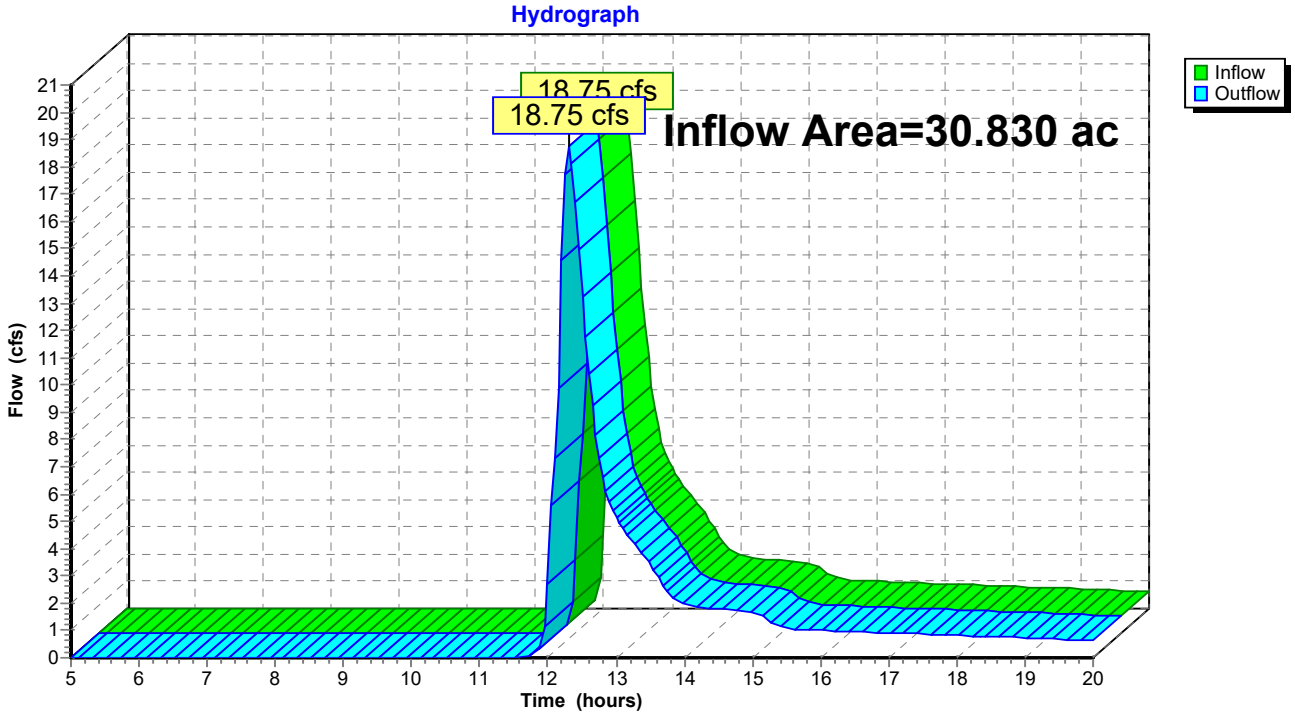
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.830 ac, 0.00% Impervious, Inflow Depth > 0.66" for 10-Year event
Inflow = 18.75 cfs @ 12.31 hrs, Volume= 1.688 af
Outflow = 18.75 cfs @ 12.31 hrs, Volume= 1.688 af, Atten= 0%, Lag= 0.0 min

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

Reach TAP: (new Reach)



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1/OS: (new Subcat) Runoff Area=0.080 ac 0.00% Impervious Runoff Depth>2.89"
Flow Length=100' Slope=0.0500 '/' Tc=14.3 min CN=70 Runoff=0.32 cfs 0.019 af

Subcatchment 1S+2S: (new Subcat) Runoff Area=16.360 ac 0.00% Impervious Runoff Depth>1.82"
Flow Length=475' Tc=20.0 min CN=58 Runoff=33.41 cfs 2.478 af

Subcatchment 2/OS: (new Subcat) Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>2.70"
Tc=11.8 min CN=68 Runoff=6.41 cfs 0.356 af

Subcatchment 3S: (new Subcat) Runoff Area=2.030 ac 0.00% Impervious Runoff Depth>1.82"
Flow Length=169' Slope=0.0800 '/' Tc=18.0 min CN=58 Runoff=4.38 cfs 0.308 af

Subcatchment 4/OS: (new Subcat) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>2.52"
Tc=14.3 min CN=66 Runoff=2.76 cfs 0.168 af

Subcatchment 4S: (new Subcat) Runoff Area=6.760 ac 0.00% Impervious Runoff Depth>1.82"
Flow Length=150' Slope=0.1000 '/' Tc=15.0 min CN=58 Runoff=16.10 cfs 1.026 af

Subcatchment ND: (new Subcat) Runoff Area=3.220 ac 0.00% Impervious Runoff Depth>1.83"
Tc=0.0 min CN=58 Runoff=12.86 cfs 0.491 af

Reach 3R: (new Reach) Inflow=4.38 cfs 0.308 af
Outflow=4.38 cfs 0.308 af

Reach 4R: (new Reach) Inflow=18.83 cfs 1.194 af
Outflow=18.83 cfs 1.194 af

Reach AP: (new Reach) Inflow=38.01 cfs 2.853 af
Outflow=38.01 cfs 2.853 af

Reach TAP: (new Reach) Inflow=63.30 cfs 4.845 af
Outflow=63.30 cfs 4.845 af

Total Runoff Area = 30.830 ac Runoff Volume = 4.845 af Average Runoff Depth = 1.89"
100.00% Pervious = 30.830 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1/OS: (new Subcat)

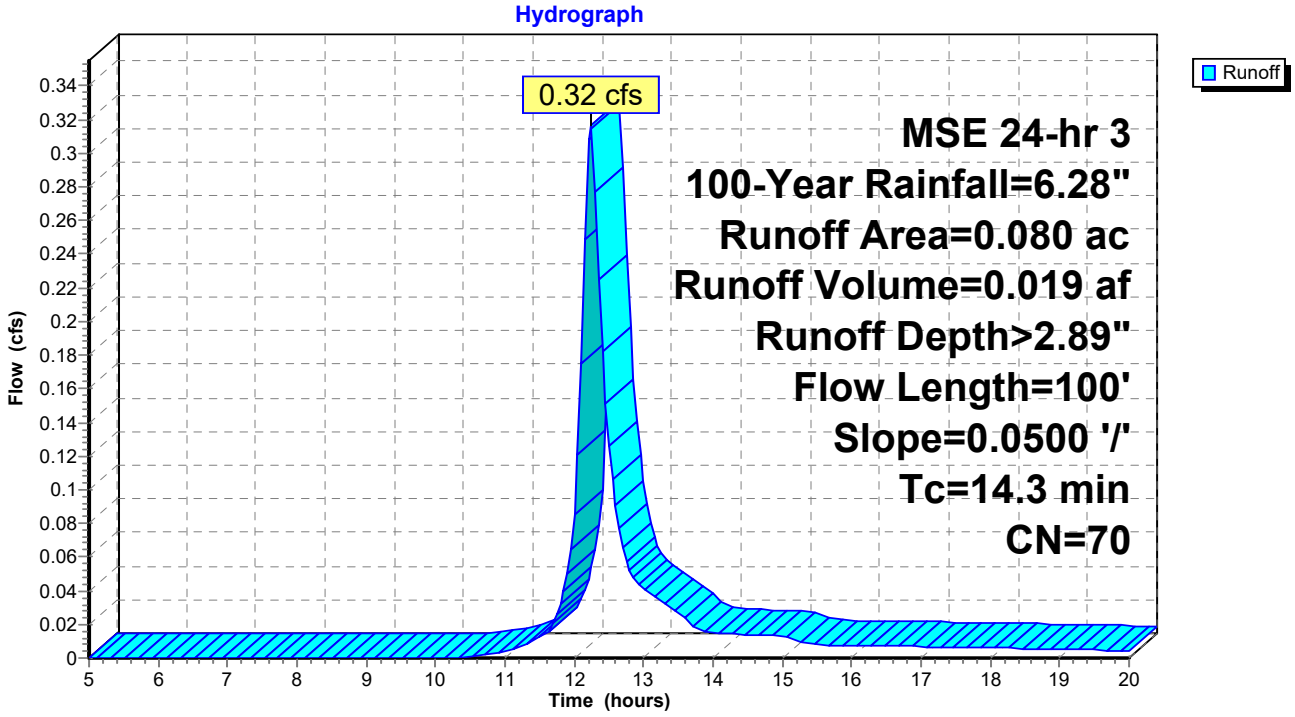
Runoff = 0.32 cfs @ 12.23 hrs, Volume= 0.019 af, Depth> 2.89"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	0.080	70	
	0.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0500	0.12		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 1/OS: (new Subcat)



Summary for Subcatchment 1S+2S: (new Subcat)

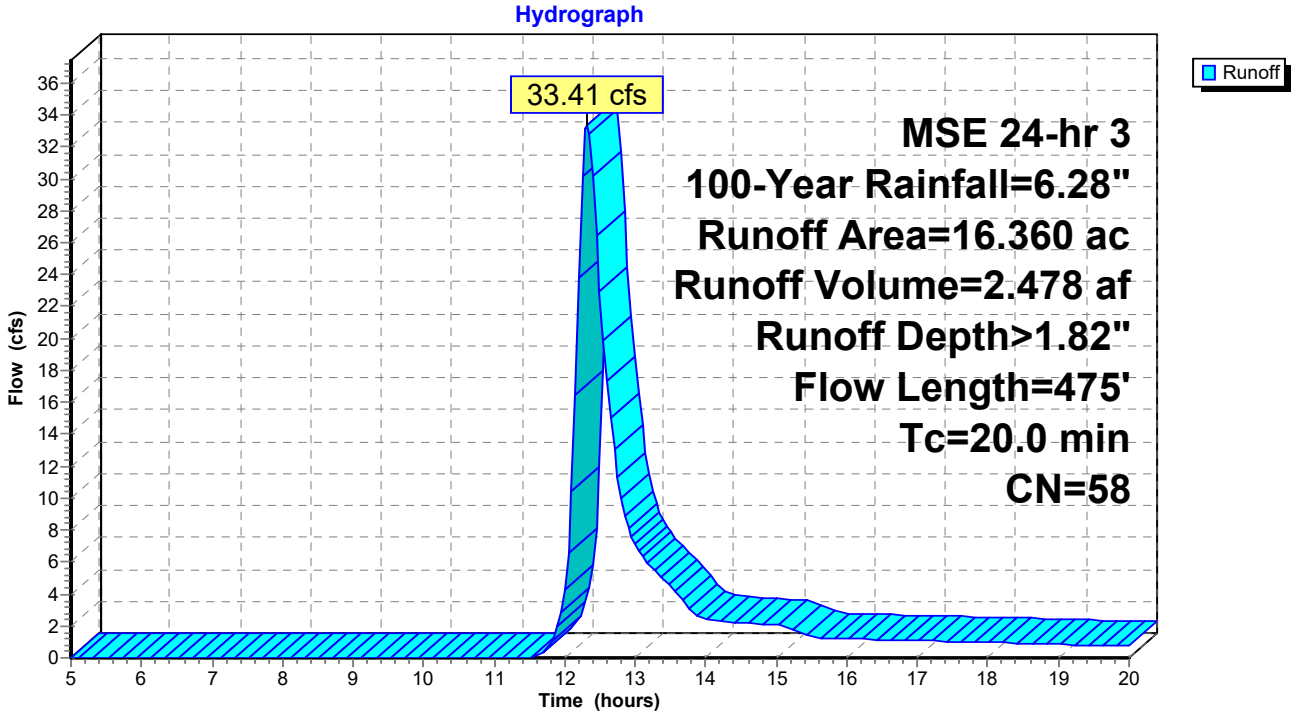
Runoff = 33.41 cfs @ 12.32 hrs, Volume= 2.478 af, Depth> 1.82"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	16.360	58	Row crops, SR + CR, Good, HSG B
	16.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	175	0.2000	0.23		**Sheet Flow, Sheet Flow** n= 0.350 P2= 2.80"
7.1	300	0.0800	0.71		**Shallow Concentrated Flow, Shallow Concentrated** Kv= 2.5 fps
20.0	475	Total			

Subcatchment 1S+2S: (new Subcat)



Summary for Subcatchment 2/OS: (new Subcat)

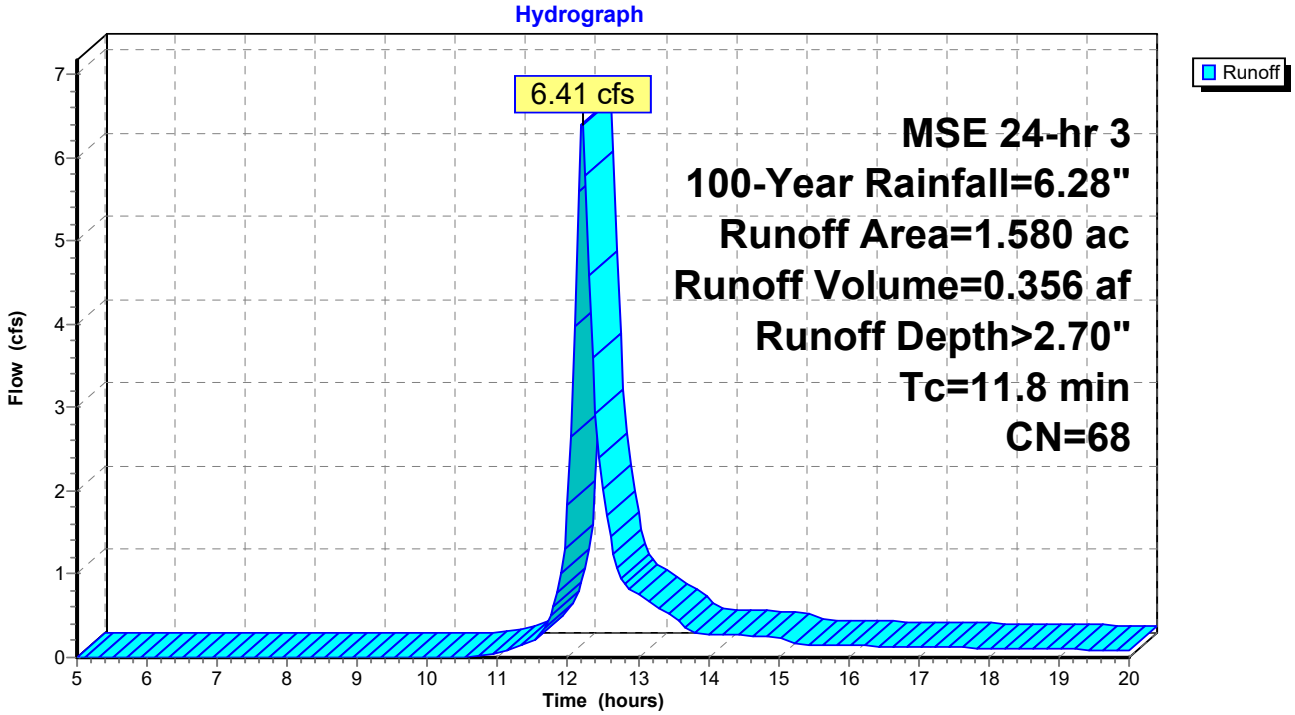
Runoff = 6.41 cfs @ 12.20 hrs, Volume= 0.356 af, Depth> 2.70"
Routed to Reach AP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	1.580	68	
	1.580		100.00% Pervious Area

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

Subcatchment 2/OS: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

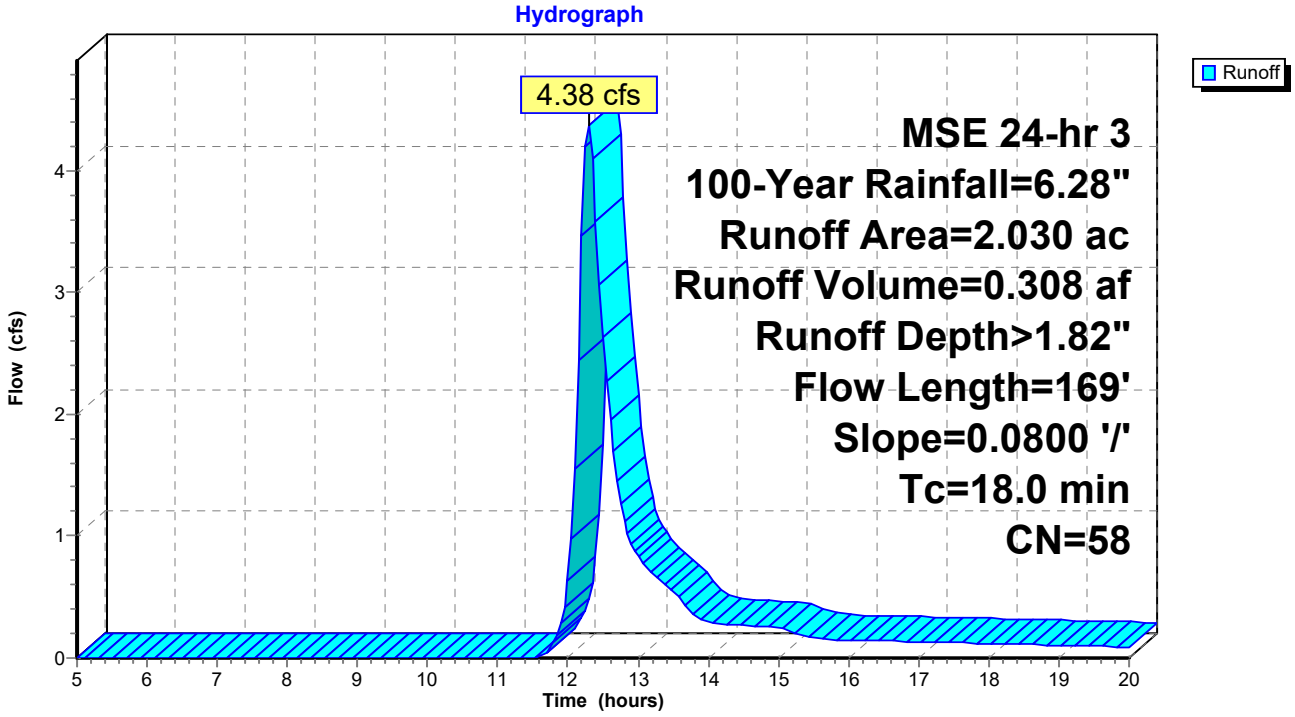
Runoff = 4.38 cfs @ 12.29 hrs, Volume= 0.308 af, Depth> 1.82"
Routed to Reach 3R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	2.030	58	
	2.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	169	0.0800	0.16		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (new Subcat)

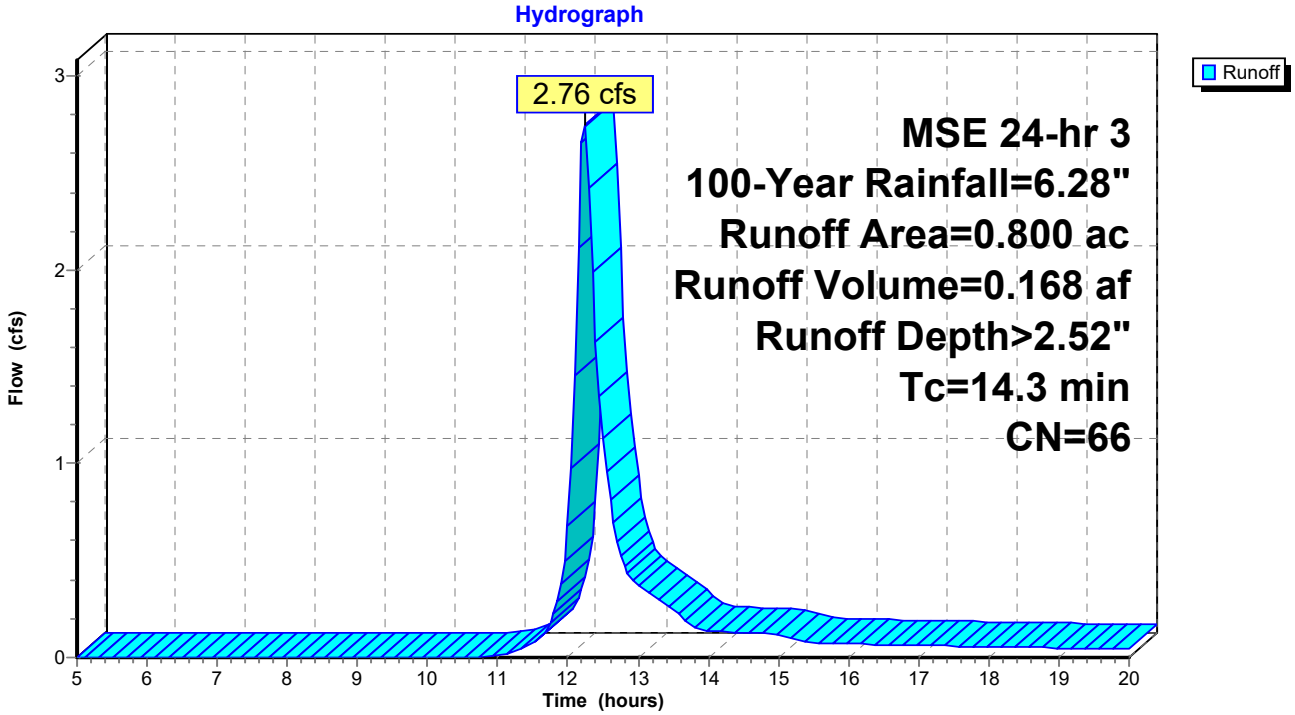
Runoff = 2.76 cfs @ 12.24 hrs, Volume= 0.168 af, Depth> 2.52"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	0.800	66	
	0.800		100.00% Pervious Area

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

Subcatchment 4/OS: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

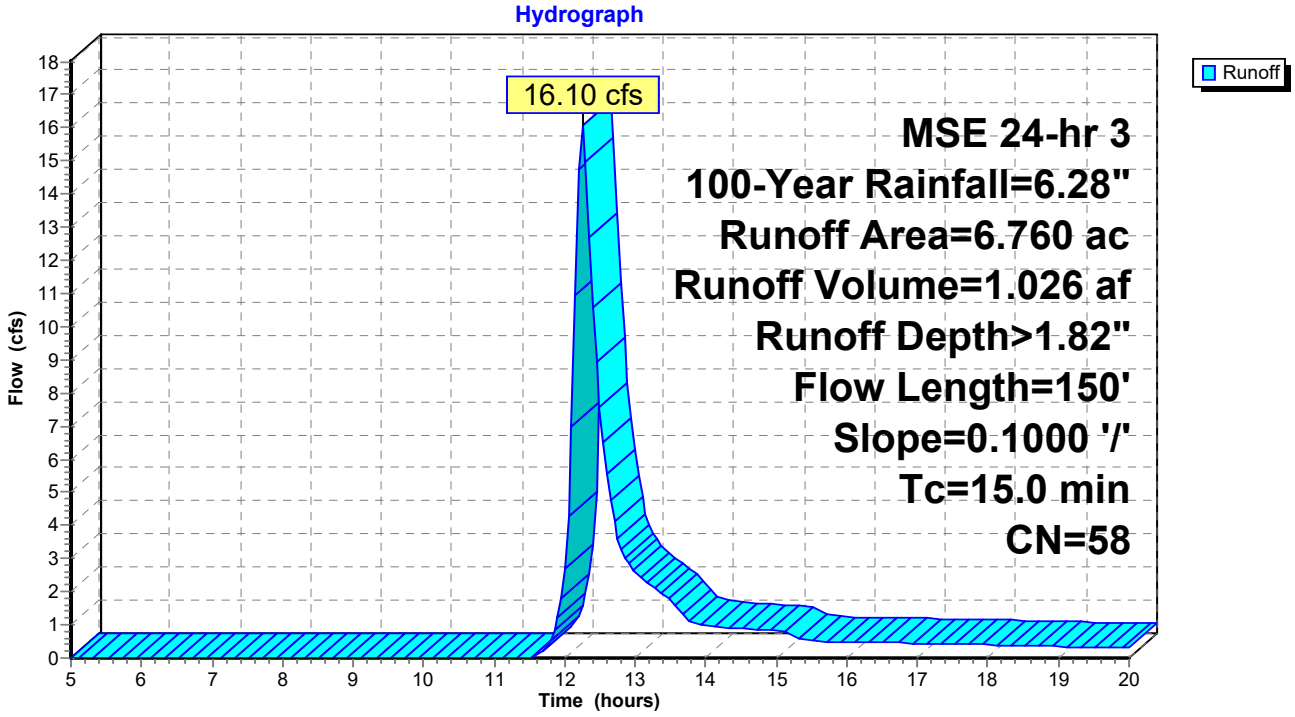
Runoff = 16.10 cfs @ 12.25 hrs, Volume= 1.026 af, Depth> 1.82"
Routed to Reach 4R : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	6.760	58	
	6.760		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	150	0.1000	0.17		**Sheet Flow,** n= 0.350 P2= 2.80"

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (new Subcat)

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

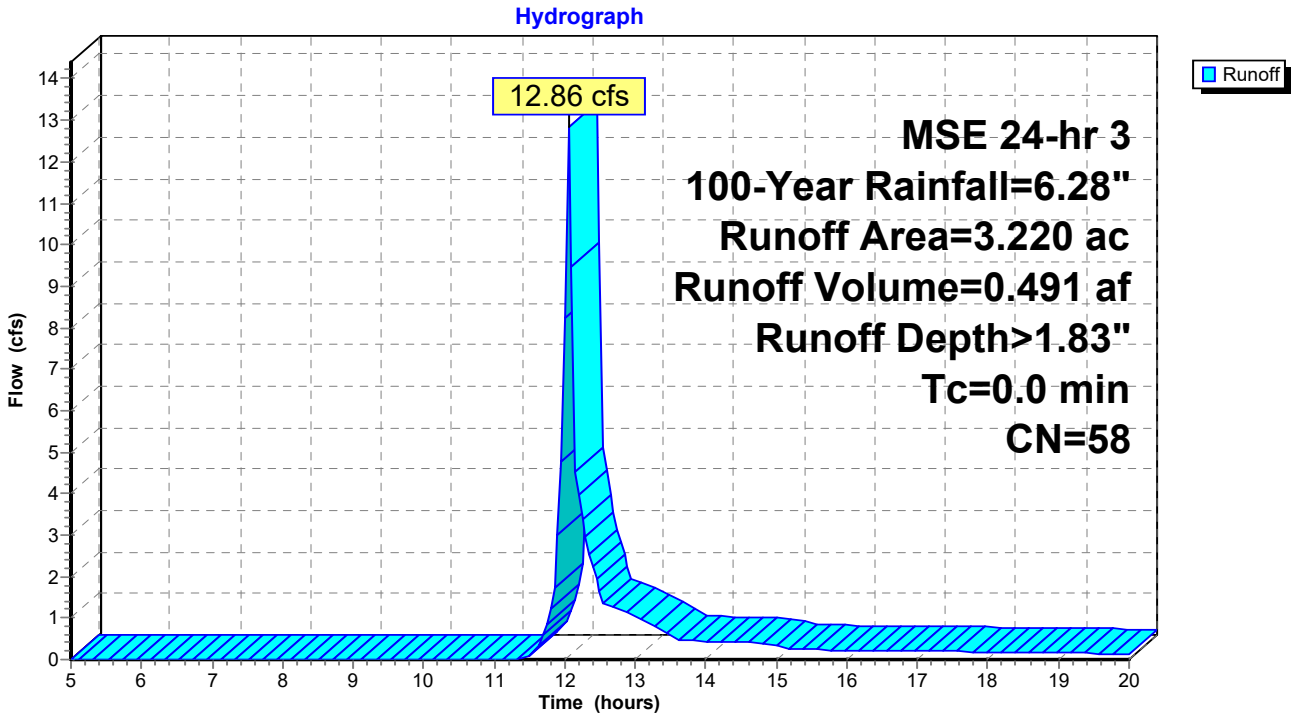
Runoff = 12.86 cfs @ 12.05 hrs, Volume= 0.491 af, Depth> 1.83"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	3.220	58	
	3.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 5**

Subcatchment ND: (new Subcat)



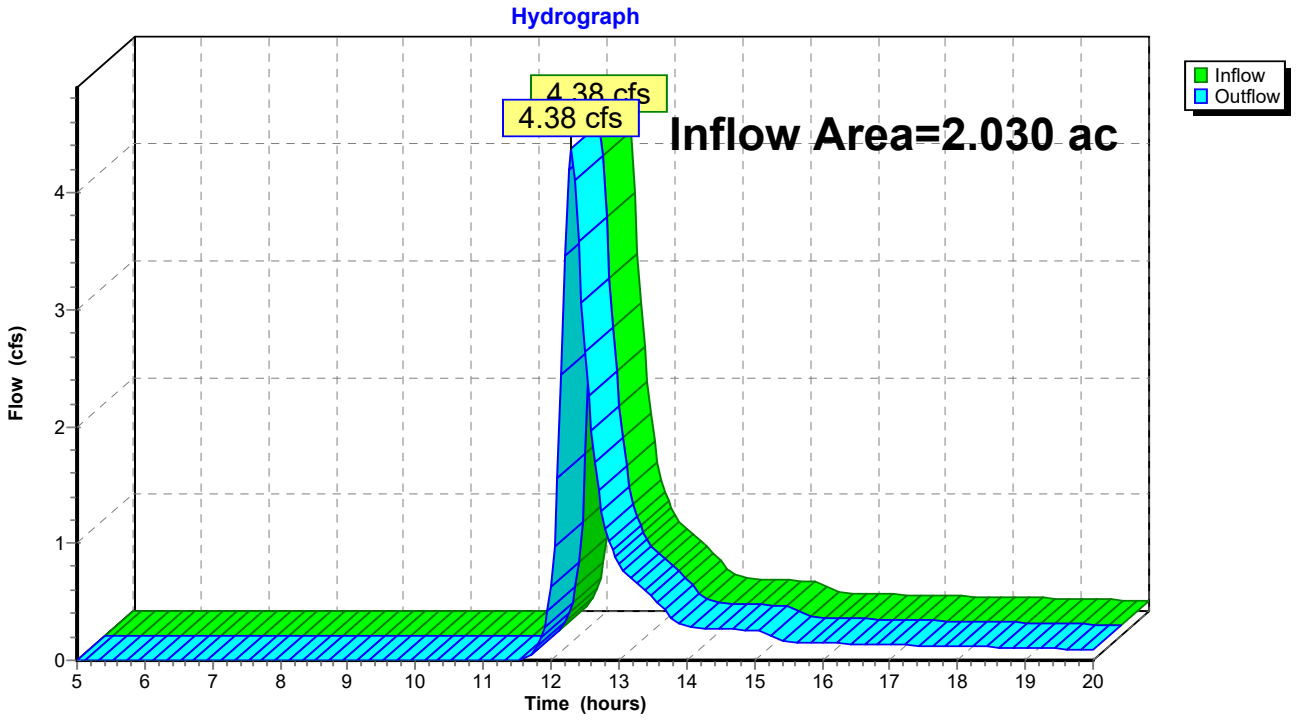
Summary for Reach 3R: (new Reach)

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

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 1.82" for 100-Year event
Inflow = 4.38 cfs @ 12.29 hrs, Volume= 0.308 af
Outflow = 4.38 cfs @ 12.29 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 3R: (new Reach)



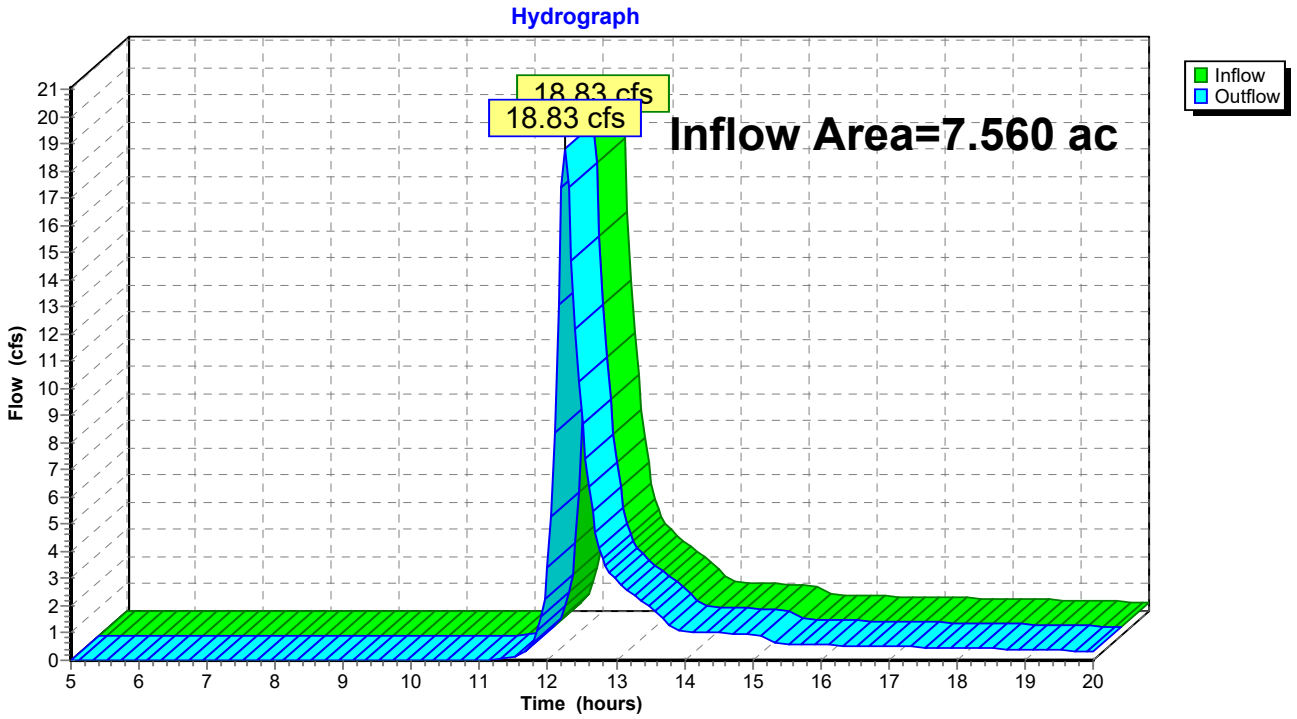
Summary for Reach 4R: (new Reach)

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

Inflow Area = 7.560 ac, 0.00% Impervious, Inflow Depth > 1.89" for 100-Year event
Inflow = 18.83 cfs @ 12.25 hrs, Volume= 1.194 af
Outflow = 18.83 cfs @ 12.25 hrs, Volume= 1.194 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach 4R: (new Reach)



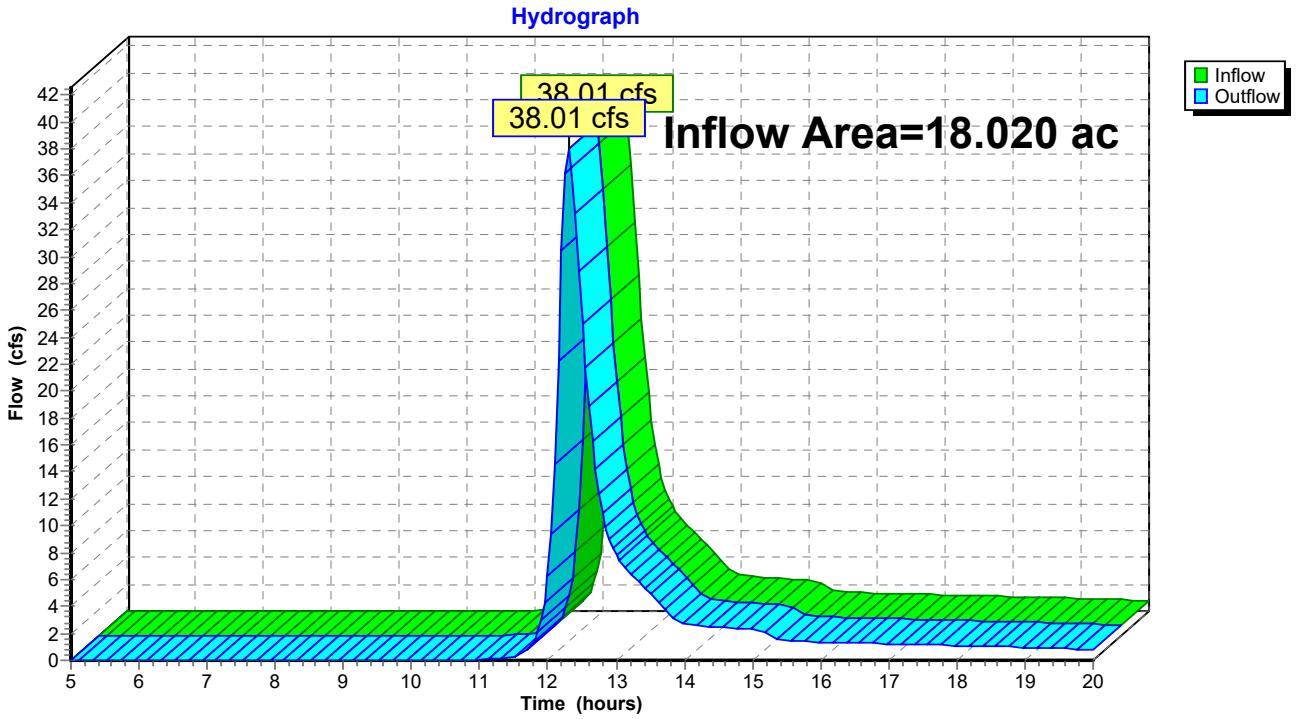
Summary for Reach AP: (new Reach)

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

Inflow Area = 18.020 ac, 0.00% Impervious, Inflow Depth > 1.90" for 100-Year event
Inflow = 38.01 cfs @ 12.30 hrs, Volume= 2.853 af
Outflow = 38.01 cfs @ 12.30 hrs, Volume= 2.853 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

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

Reach AP: (new Reach)



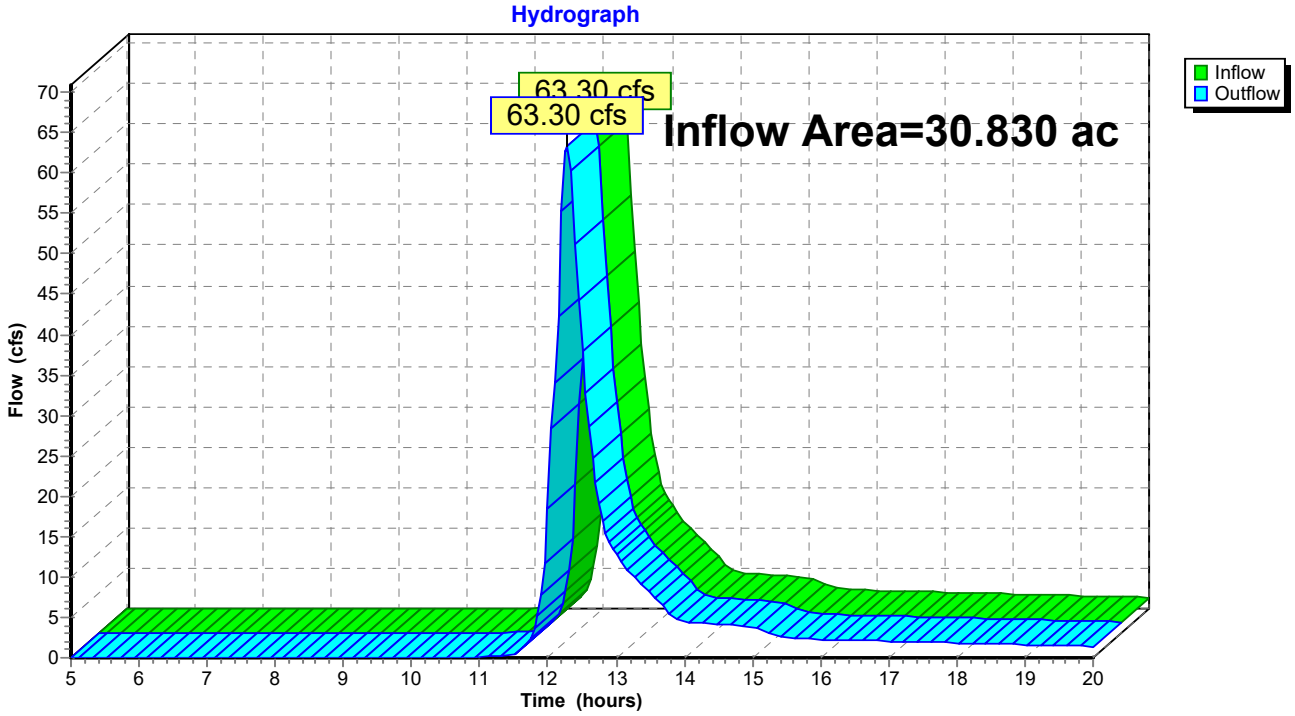
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.830 ac, 0.00% Impervious, Inflow Depth > 1.89" for 100-Year event
Inflow = 63.30 cfs @ 12.28 hrs, Volume= 4.845 af
Outflow = 63.30 cfs @ 12.28 hrs, Volume= 4.845 af, Atten= 0%, Lag= 0.0 min

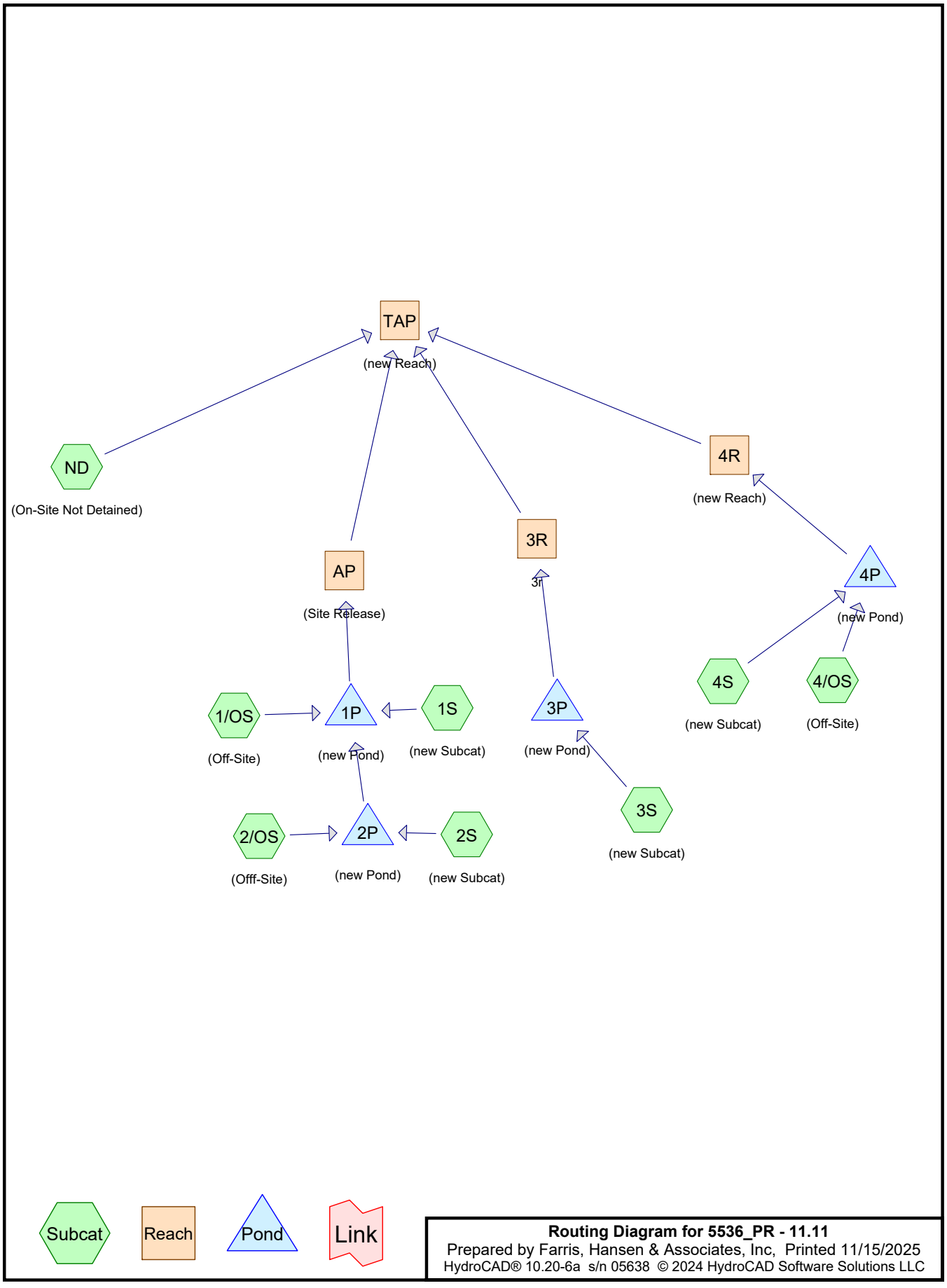
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach TAP: (new Reach)



APPENDIX B

PROPOSED
1, 2, 10, AND 100-YEAR
HYDROCAD MODEL



Routing Diagram for 5536_PR - 11.11
Prepared by Farris, Hansen & Associates, Inc, Printed 11/15/2025
HydroCAD® 10.20-6a s/n 05638 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	3	Default	24.00	1	2.45	2
2	2-Year	MSE 24-hr	3	Default	24.00	1	2.81	2
3	10-Year	MSE 24-hr	3	Default	24.00	1	4.01	2
4	100-Year	MSE 24-hr	3	Default	24.00	1	6.28	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.218	62	(ND)
23.349	72	1/3 acre lots, 30% imp, HSG B (1S, 2S, 3S, 4S)
1.502	98	Roadway (1S, 2S, 4S)
0.085	70	offsite (1/OS)
1.585	68	offsite (2/OS)
0.800	66	offsite (4/OS)
0.298	100	pond (1S, 2S)
30.837	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
23.349	HSG B	1S, 2S, 3S, 4S
0.000	HSG C	
0.000	HSG D	
7.488	Other	1/OS, 1S, 2/OS, 2S, 4/OS, 4S, ND
30.837		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	3.218	3.218		ND
0.000	23.349	0.000	0.000	0.000	23.349	1/3 acre lots, 30% imp	1S, 2S, 3S, 4S
0.000	0.000	0.000	0.000	1.502	1.502	Roadway	1S, 2S, 4S
0.000	0.000	0.000	0.000	2.470	2.470	offsite	1/OS, 2/OS, 4/OS
0.000	0.000	0.000	0.000	0.298	0.298	pond	1S, 2S
0.000	**23.349**	**0.000**	**0.000**	**7.488**	**30.837**	**TOTAL AREA**	

Pipe Listing (all 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	1S	0.00	0.00	45.0	0.0100	0.012	0.0	15.0	0.0	
2	4/OS	0.00	0.00	50.0	0.0100	0.012	0.0	15.0	0.0	
3	4S	0.00	0.00	50.0	0.0100	0.012	0.0	15.0	0.0	
4	3R	897.25	897.20	189.5	0.0003	0.006	0.0	4.0	0.0	
5	4R	910.20	910.00	286.0	0.0007	0.006	0.0	4.0	0.0	
6	1P	878.50	878.00	50.0	0.0100	0.025	0.0	18.0	0.0	
7	2P	883.50	881.00	50.0	0.0500	0.012	0.0	4.0	0.0	
8	3P	896.90	896.60	65.0	0.0046	0.012	0.0	12.0	0.0	
9	4P	910.00	909.80	40.0	0.0050	0.012	0.0	8.0	0.0	

Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 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 1/OS: (Off-Site) Runoff Area=0.085 ac 0.00% Impervious Runoff Depth=0.43"
Flow Length=846' Tc=17.9 min CN=70 Runoff=0.03 cfs 0.003 af

Subcatchment 1S: (new Subcat) Runoff Area=10.846 ac 35.71% Impervious Runoff Depth=0.58"
Flow Length=892' Tc=17.5 min CN=74 Runoff=6.66 cfs 0.525 af

Subcatchment 2/OS: (Offf-Site) Runoff Area=1.585 ac 0.00% Impervious Runoff Depth=0.37"
Flow Length=190' Tc=11.8 min CN=68 Runoff=0.61 cfs 0.048 af

Subcatchment 2S: (new Subcat) Runoff Area=5.510 ac 36.28% Impervious Runoff Depth=0.58"
Flow Length=1,024' Tc=15.4 min CN=74 Runoff=3.63 cfs 0.266 af

Subcatchment 3S: (new Subcat) Runoff Area=88,545 sf 30.00% Impervious Runoff Depth=0.50"
Flow Length=185' Tc=10.4 min CN=72 Runoff=1.34 cfs 0.085 af

Subcatchment 4/OS: (Off-Site) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=0.31"
Flow Length=221' Tc=14.3 min CN=66 Runoff=0.21 cfs 0.020 af

Subcatchment 4S: (new Subcat) Runoff Area=294,475 sf 34.35% Impervious Runoff Depth=0.58"
Flow Length=506' Tc=9.6 min CN=74 Runoff=5.53 cfs 0.327 af

Subcatchment ND: (On-Site Not Detained) Runoff Area=3.218 ac 0.00% Impervious Runoff Depth=0.20"
Tc=5.0 min CN=62 Runoff=0.60 cfs 0.055 af

Reach 3R: 3r Avg. Flow Depth=0.33' Max Vel=0.87 fps Inflow=0.34 cfs 0.082 af
4.0" Round Pipe n=0.006 L=189.5' S=0.0003 '/' Capacity=0.07 cfs Outflow=0.07 cfs 0.082 af

Reach 4R: (new Reach) Avg. Flow Depth=0.33' Max Vel=1.42 fps Inflow=0.16 cfs 0.197 af
4.0" Round Pipe n=0.006 L=286.0' S=0.0007 '/' Capacity=0.11 cfs Outflow=0.11 cfs 0.197 af

Reach AP: (Site Release) Inflow=2.22 cfs 0.813 af
Outflow=2.22 cfs 0.813 af

Reach TAP: (new Reach) Inflow=2.56 cfs 1.147 af
Outflow=2.56 cfs 1.147 af

Pond 1P: (new Pond) Peak Elev=879.30' Storage=26,844 cf Inflow=6.77 cfs 0.824 af
Outflow=2.22 cfs 0.813 af

Pond 2P: (new Pond) Peak Elev=884.08' Storage=52,283 cf Inflow=4.23 cfs 0.315 af
Outflow=0.24 cfs 0.296 af

Pond 3P: (new Pond) Peak Elev=899.16' Storage=948 cf Inflow=1.34 cfs 0.085 af
Discarded=0.02 cfs 0.003 af Primary=0.34 cfs 0.082 af Outflow=0.36 cfs 0.085 af

Pond 4P: (new Pond) Peak Elev=912.50' Storage=7,905 cf Inflow=5.68 cfs 0.347 af
Discarded=0.22 cfs 0.150 af Primary=0.16 cfs 0.197 af Outflow=0.39 cfs 0.347 af

Total Runoff Area = 30.837 ac Runoff Volume = 1.330 af Average Runoff Depth = 0.52"
71.45% Pervious = 22.033 ac 28.55% Impervious = 8.804 ac

Summary for Subcatchment 1/OS: (Off-Site)

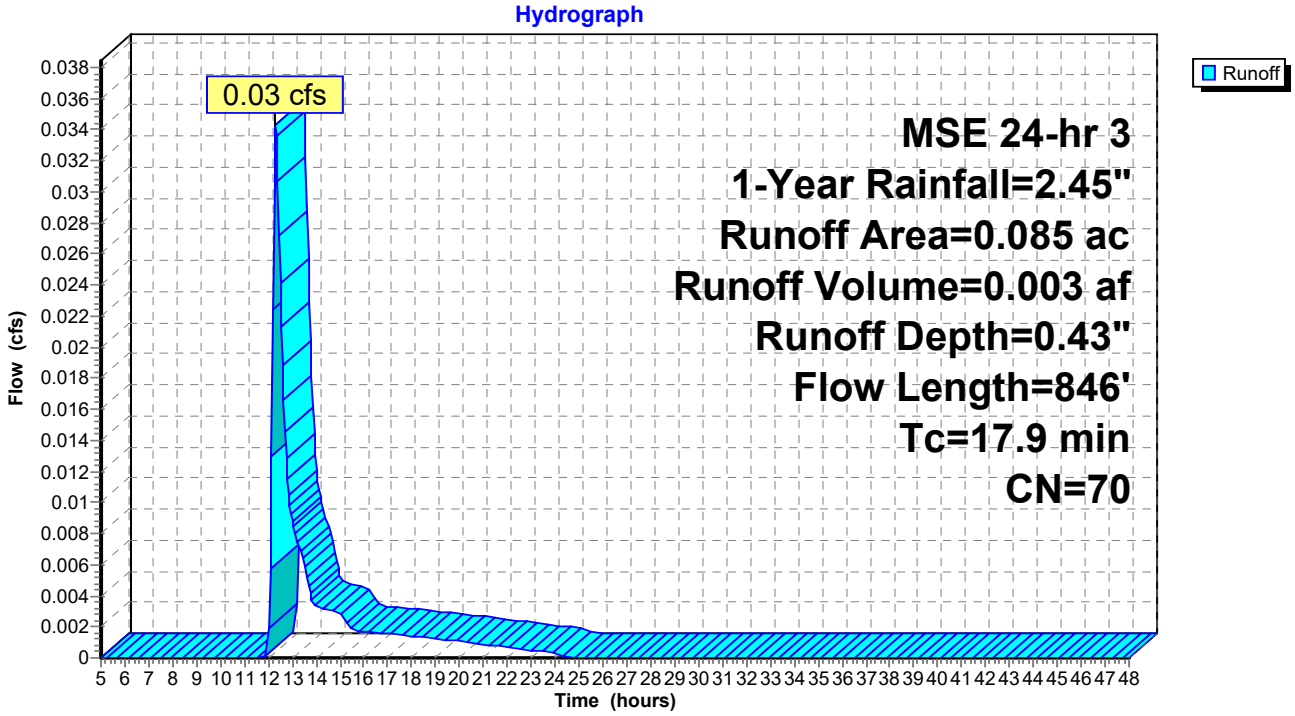
Runoff = 0.03 cfs @ 12.32 hrs, Volume= 0.003 af, Depth= 0.43"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	0.085	70	offsite
	0.085		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
6.2	560	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.9	846	Total			

Subcatchment 1/OS: (Off-Site)



Summary for Subcatchment 1S: (new Subcat)

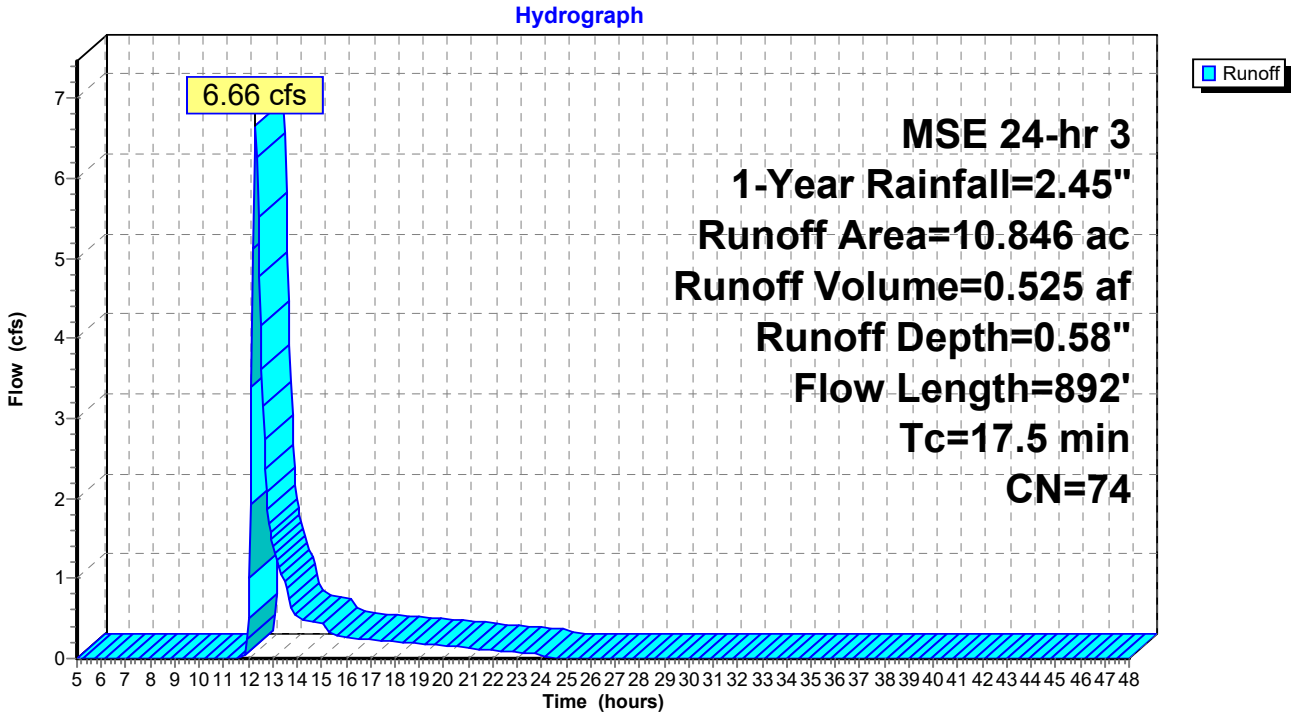
Runoff = 6.66 cfs @ 12.30 hrs, Volume= 0.525 af, Depth= 0.58"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
	9.961	72	1/3 acre lots, 30% imp, HSG B
*	0.790	98	Roadway
*	0.095	100	pond
	10.846	74	Weighted Average
	6.973		64.29% Pervious Area
	3.873		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
5.7	561	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	45	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.5	892	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2/OS: (Offf-Site)

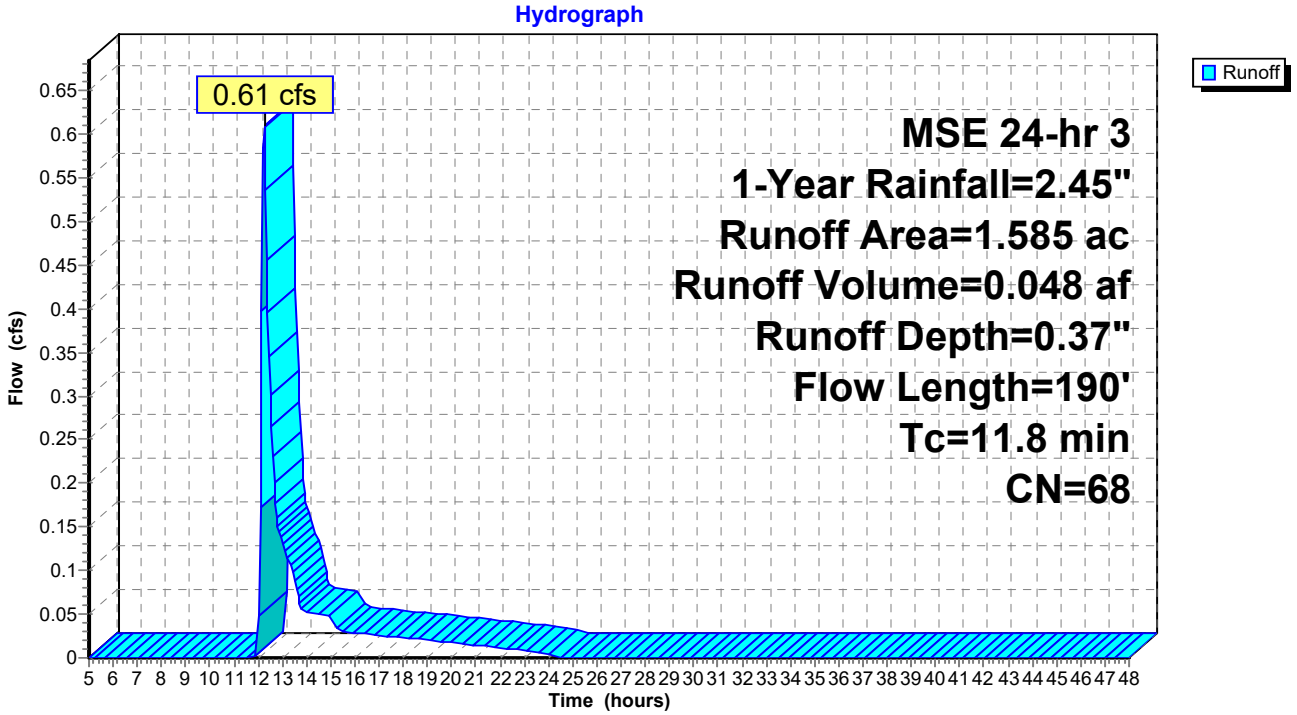
Runoff = 0.61 cfs @ 12.24 hrs, Volume= 0.048 af, Depth= 0.37"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	1.585	68	offsite
	1.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
0.9	90	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	190	Total			

Subcatchment 2/OS: (Offf-Site)



Summary for Subcatchment 2S: (new Subcat)

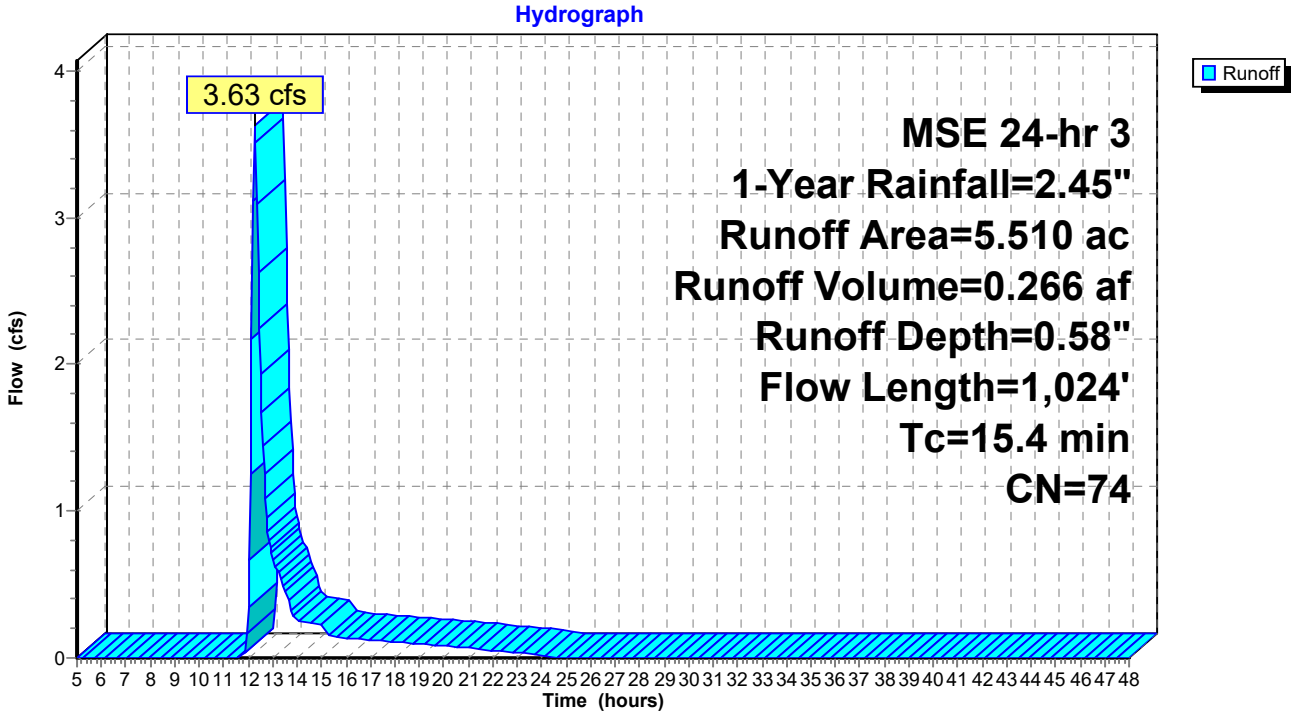
Runoff = 3.63 cfs @ 12.27 hrs, Volume= 0.266 af, Depth= 0.58"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
	5.016	72	1/3 acre lots, 30% imp, HSG B
*	0.291	98	Roadway
*	0.203	100	pond
	5.510	74	Weighted Average
	3.511		63.72% Pervious Area
	1.999		36.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0700	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
5.9	924	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.4	1,024	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

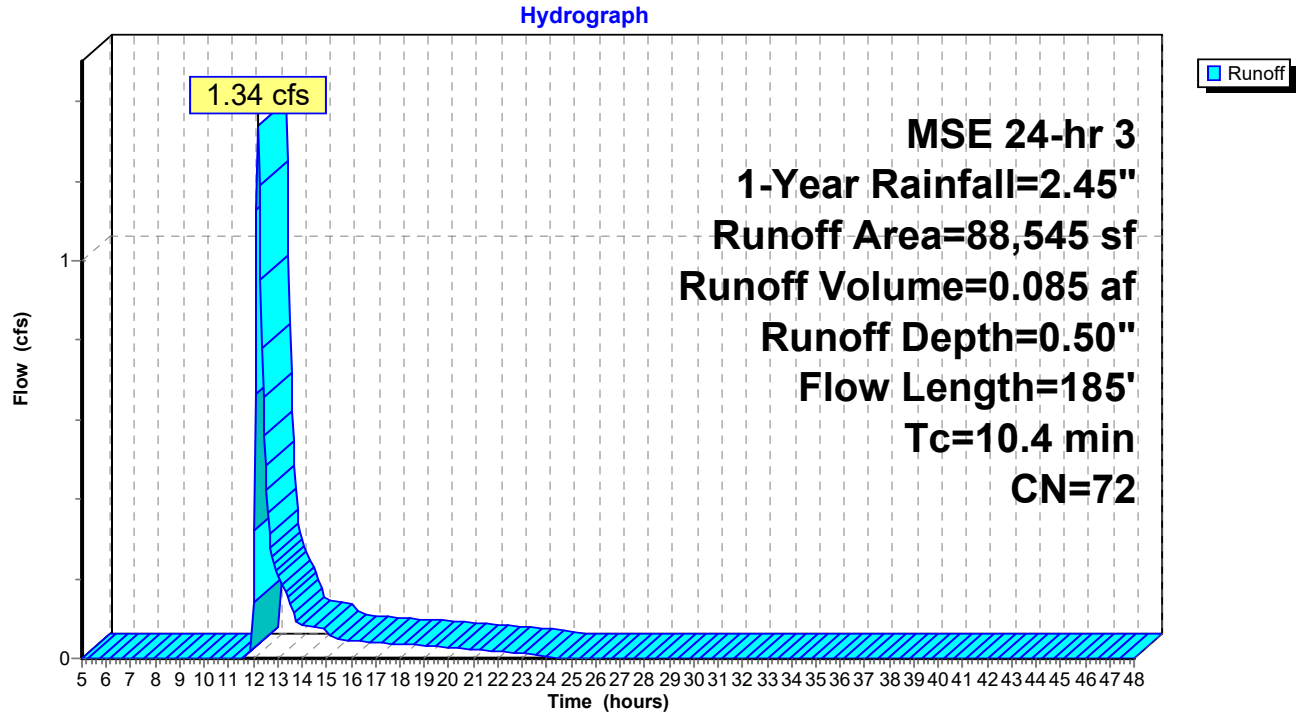
Runoff = 1.34 cfs @ 12.20 hrs, Volume= 0.085 af, Depth= 0.50"
Routed to Pond 3P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

Area (sf)	CN	Description
88,545	72	1/3 acre lots, 30% imp, HSG B
61,982		70.00% Pervious Area
26,564		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0650	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
0.6	85	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	185	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (Off-Site)

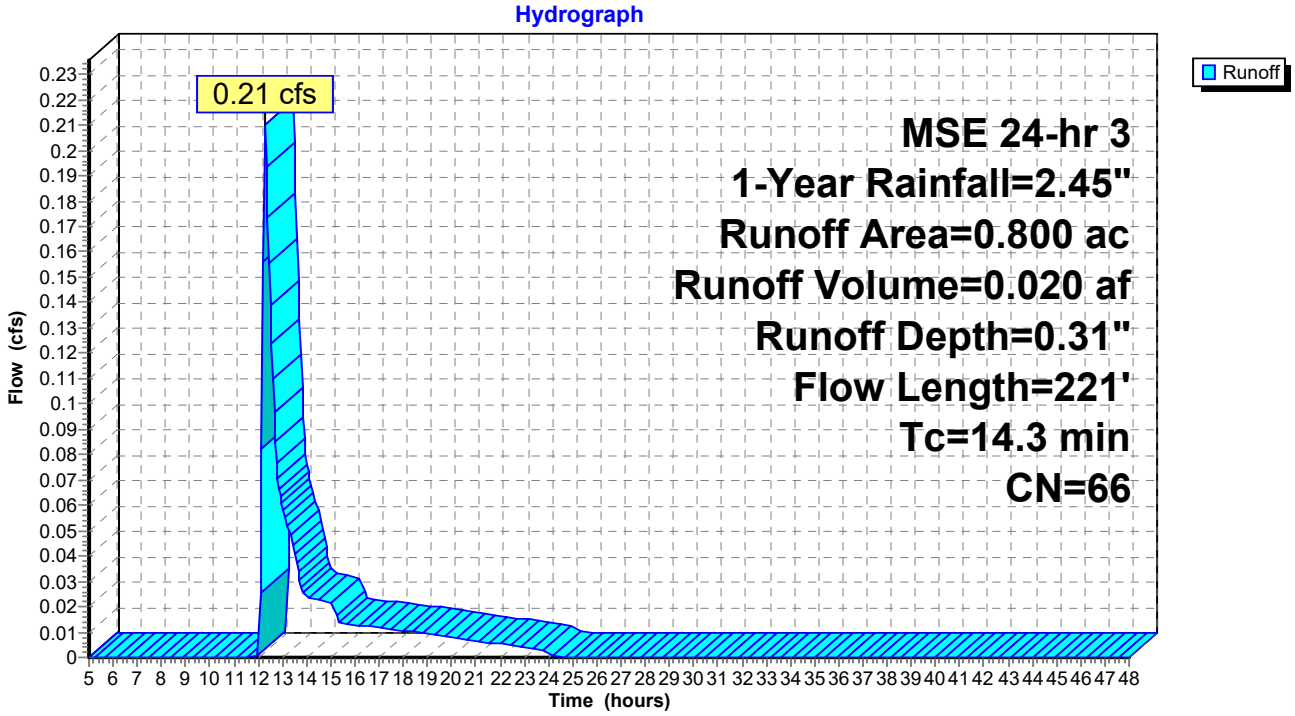
Runoff = 0.21 cfs @ 12.29 hrs, Volume= 0.020 af, Depth= 0.31"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	0.800	66	offsite
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0300	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
0.8	71	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
14.3	221	Total			

Subcatchment 4/OS: (Off-Site)



Summary for Subcatchment 4S: (new Subcat)

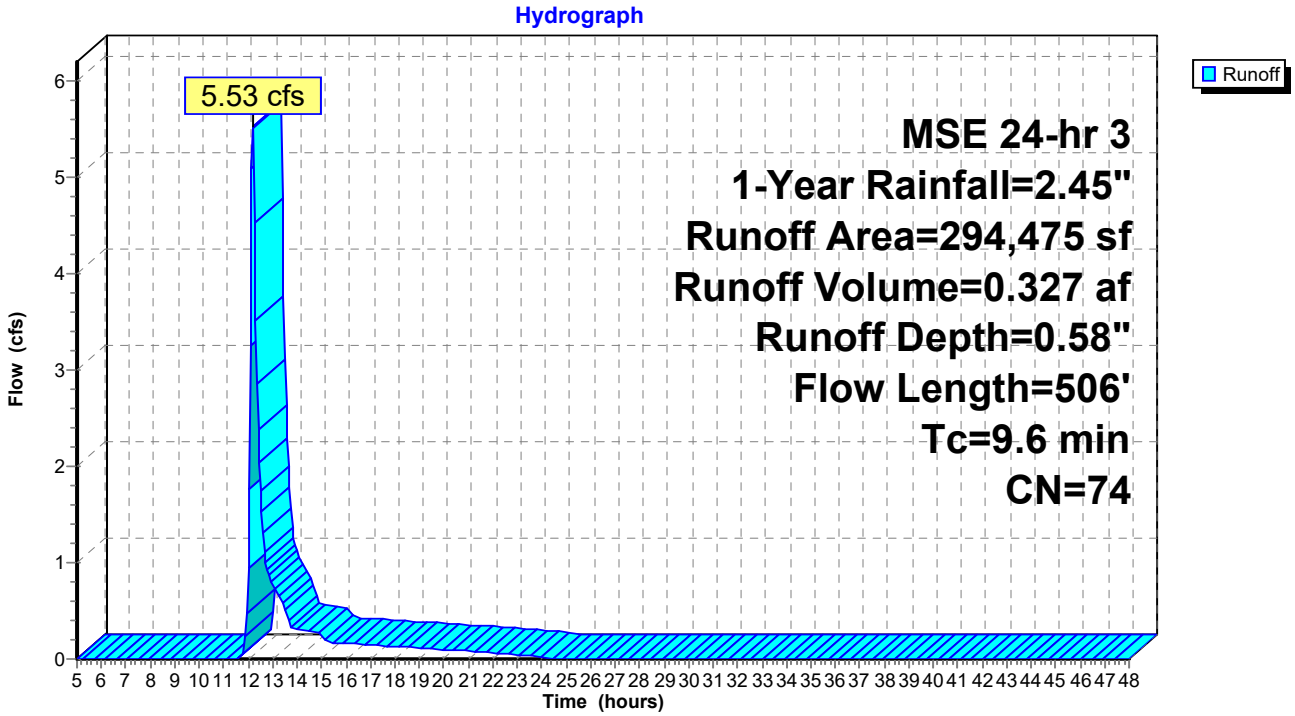
Runoff = 5.53 cfs @ 12.19 hrs, Volume= 0.327 af, Depth= 0.58"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (sf)	CN	Description
	276,158	72	1/3 acre lots, 30% imp, HSG B
*	18,317	98	Roadway
	294,475	74	Weighted Average
	193,311		65.65% Pervious Area
	101,164		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	56	0.0400	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
2.0	400	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
9.6	506	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (On-Site Not Detained)

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

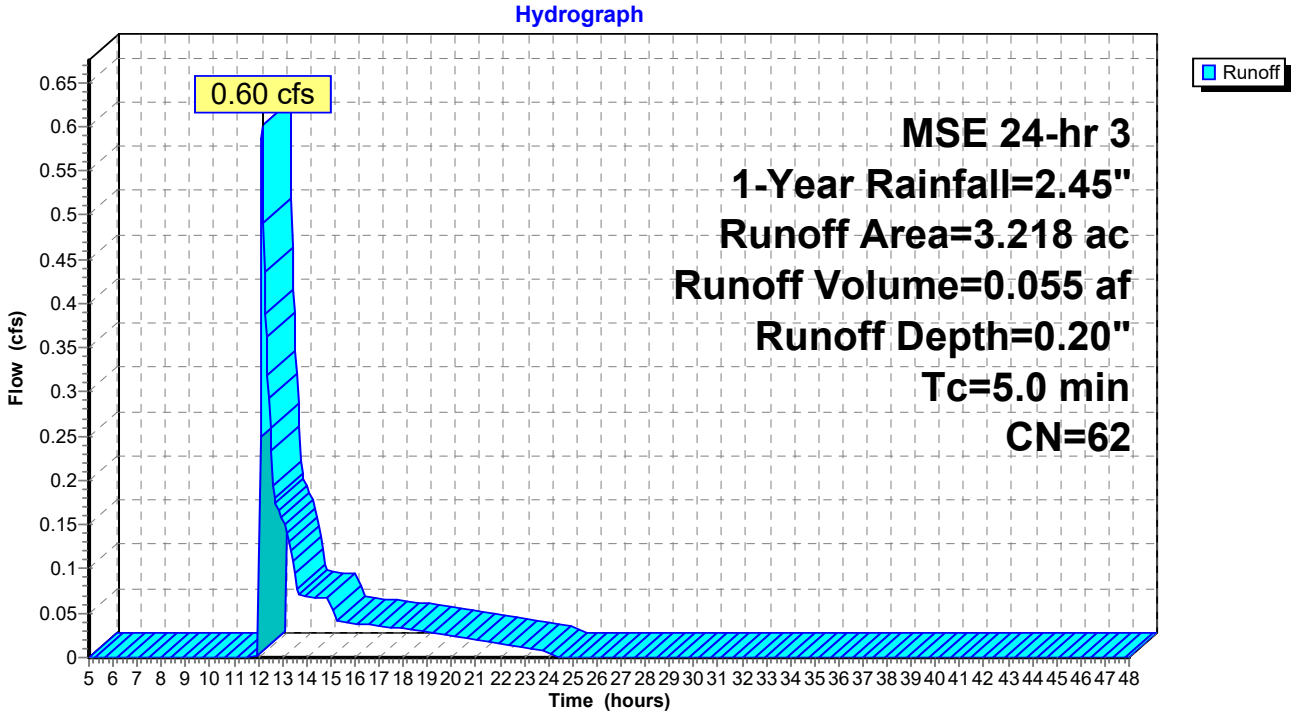
Runoff = 0.60 cfs @ 12.16 hrs, Volume= 0.055 af, Depth= 0.20"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.45"

	Area (ac)	CN	Description
*	3.218	62	
	3.218		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, (Assumed 5 minute minimum to be conservative)**

Subcatchment ND: (On-Site Not Detained)



Summary for Reach 3R: 3r

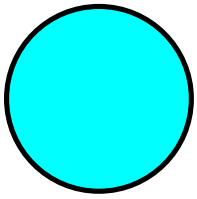
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 504% of Manning's capacity
[76] Warning: Detained 0.043 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 3P Primary device # 1 INLET by 0.68'

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 0.49" for 1-Year event
Inflow = 0.34 cfs @ 12.60 hrs, Volume= 0.082 af
Outflow = 0.07 cfs @ 26.84 hrs, Volume= 0.082 af, Atten= 79%, Lag= 854.0 min
Routed to Reach TAP : (new Reach)

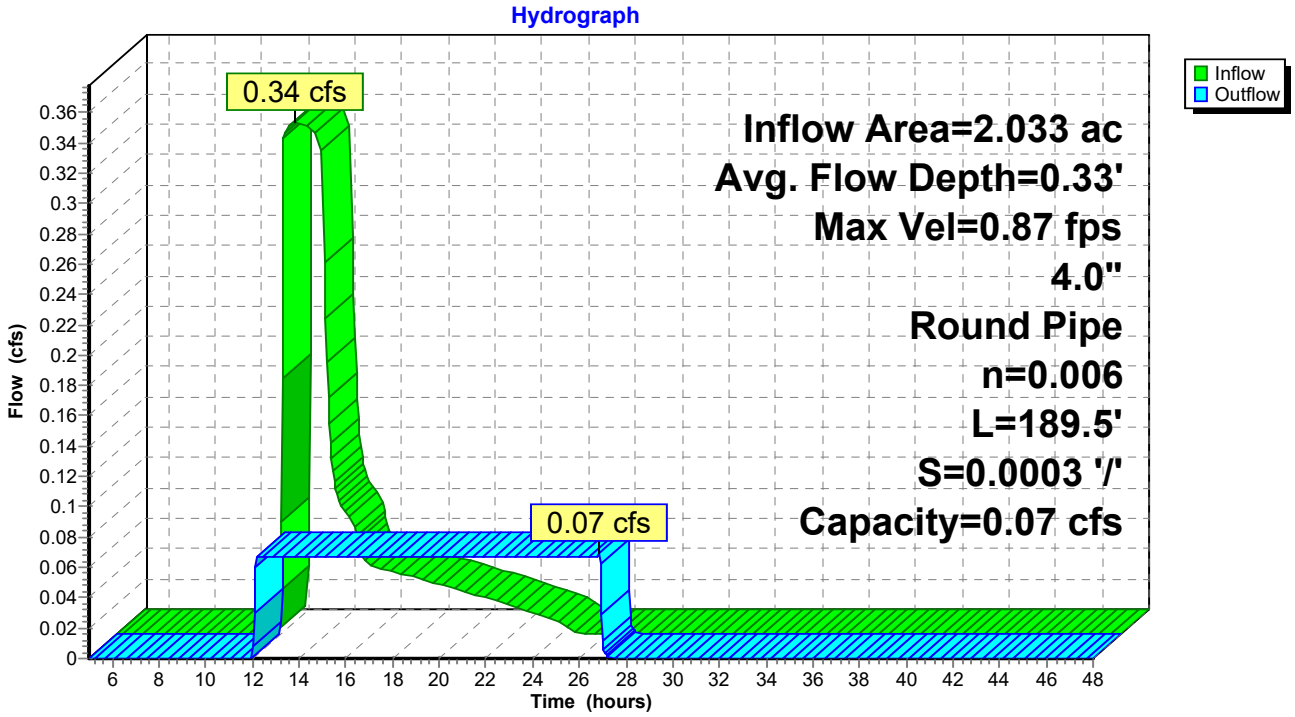
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 4.5 min

Peak Storage= 17 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.07 cfs

4.0" Round Pipe
n= 0.006
Length= 189.5' Slope= 0.0003 '/'
Inlet Invert= 897.25', Outlet Invert= 897.20'



Reach 3R: 3r


Hydrograph
0.34 cfs
0.07 cfs
Inflow Area=2.033 ac
Avg. Flow Depth=0.33'
Max Vel=0.87 fps
4.0"
Round Pipe
n=0.006
L=189.5'
S=0.0003 '/'
Capacity=0.07 cfs
Inflow
Outflow
Flow (cfs)
Time (hours)

Summary for Reach 4R: (new Reach)

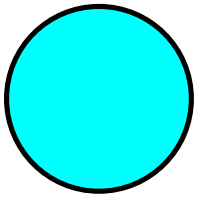
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 150% of Manning's capacity
[76] Warning: Detained 0.057 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.53'

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 0.31" for 1-Year event
Inflow = 0.16 cfs @ 13.69 hrs, Volume= 0.197 af
Outflow = 0.11 cfs @ 33.90 hrs, Volume= 0.197 af, Atten= 32%, Lag= 1,212.8 min
Routed to Reach TAP : (new Reach)

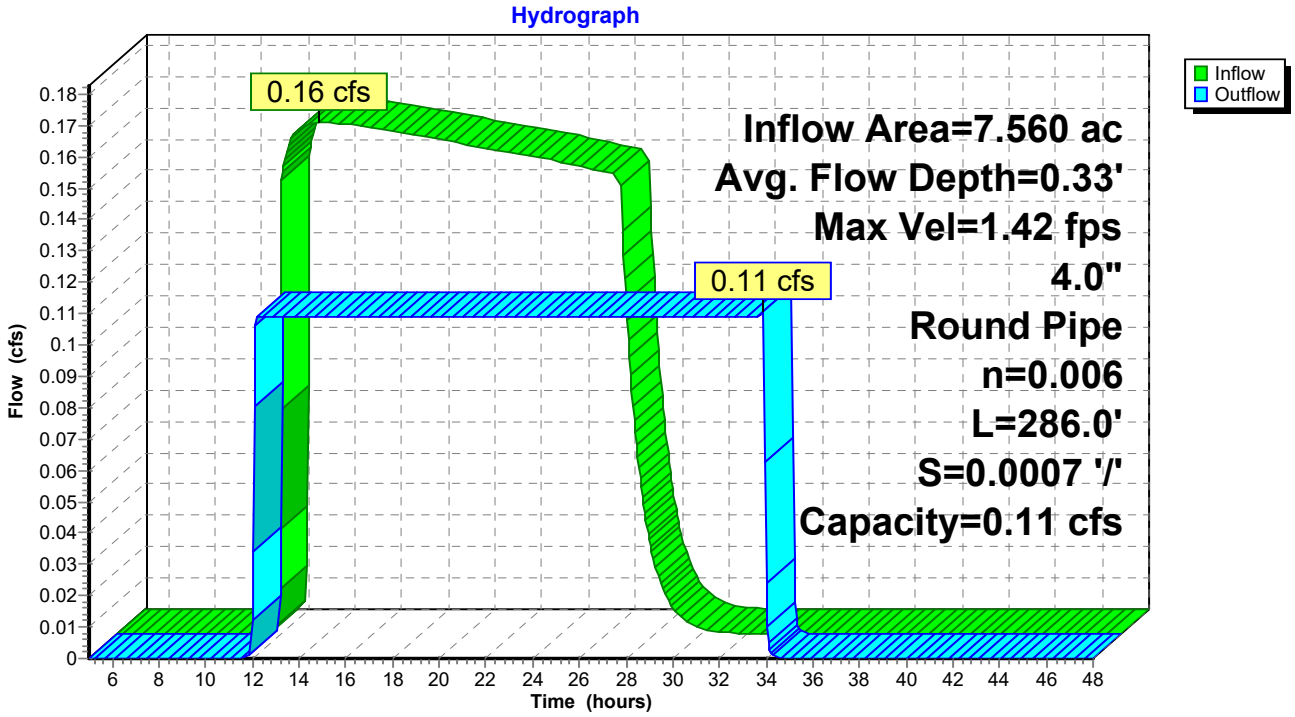
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.42 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 4.1 min

Peak Storage= 25 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.11 cfs

4.0" Round Pipe
n= 0.006
Length= 286.0' Slope= 0.0007 '/'
Inlet Invert= 910.20', Outlet Invert= 910.00'



Reach 4R: (new Reach)



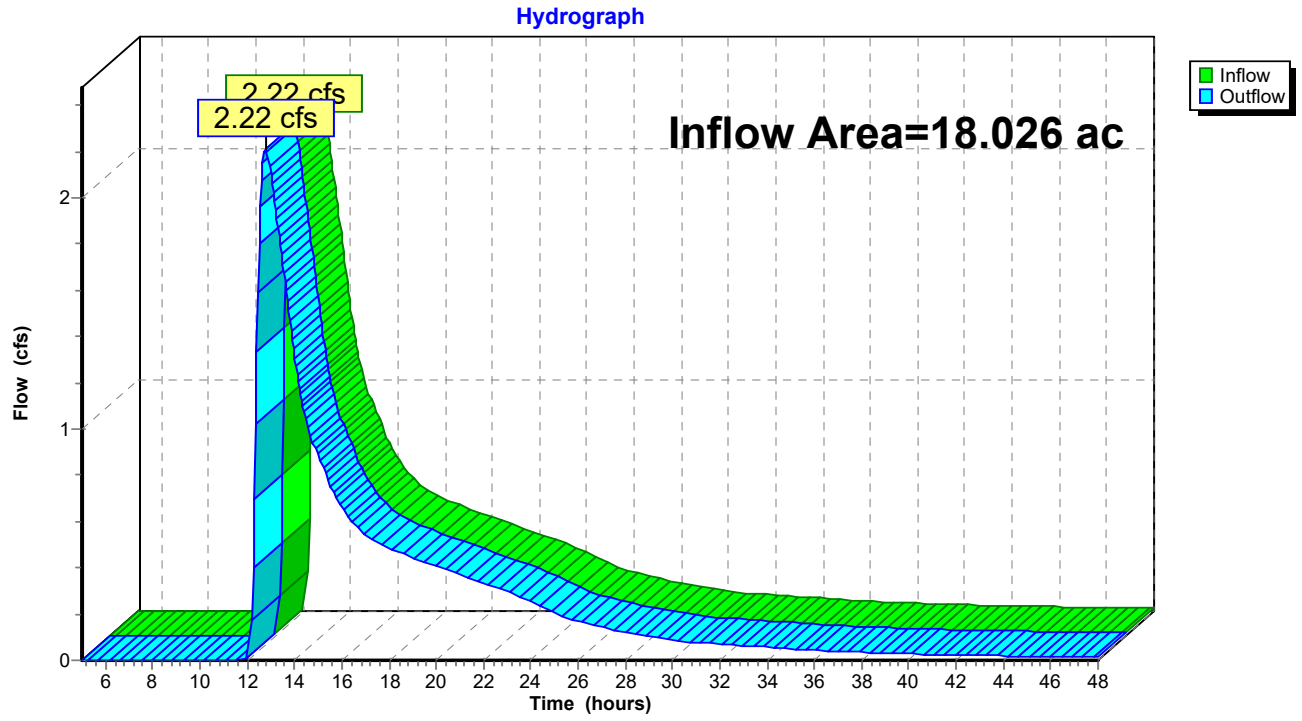
Summary for Reach AP: (Site Release)

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

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 0.54" for 1-Year event
Inflow = 2.22 cfs @ 12.77 hrs, Volume= 0.813 af
Outflow = 2.22 cfs @ 12.77 hrs, Volume= 0.813 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach AP: (Site Release)



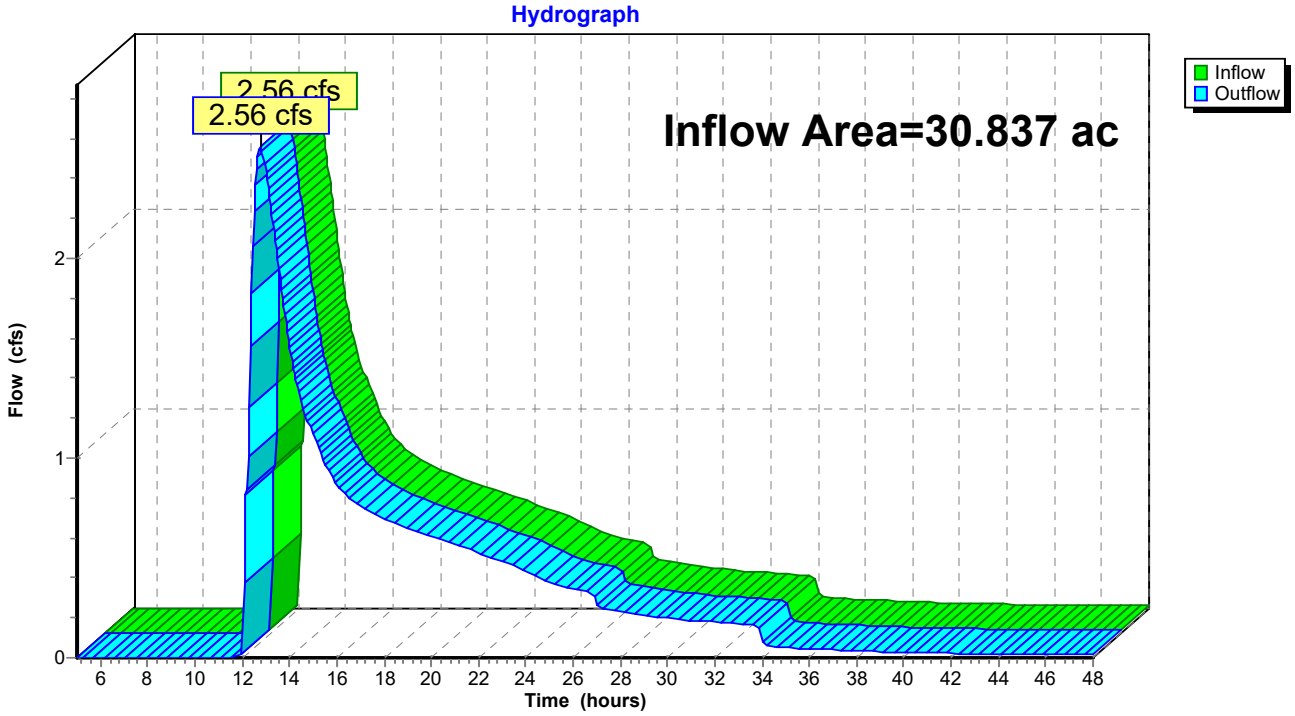
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.837 ac, 28.55% Impervious, Inflow Depth > 0.45" for 1-Year event
Inflow = 2.56 cfs @ 12.76 hrs, Volume= 1.147 af
Outflow = 2.56 cfs @ 12.76 hrs, Volume= 1.147 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach TAP: (new Reach)



Summary for Pond 1P: (new Pond)

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 0.55" for 1-Year event
Inflow = 6.77 cfs @ 12.30 hrs, Volume= 0.824 af
Outflow = 2.22 cfs @ 12.77 hrs, Volume= 0.813 af, Atten= 67%, Lag= 28.1 min
Primary = 2.22 cfs @ 12.77 hrs, Volume= 0.813 af
Routed to Reach AP : (Site Release)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 878.50' Surf.Area= 9,175 sf Storage= 18,894 cf
Peak Elev= 879.30' @ 12.77 hrs Surf.Area= 10,815 sf Storage= 26,844 cf (7,951 cf above start)

Plug-Flow detention time= 653.3 min calculated for 0.378 af (46% of inflow)
Center-of-Mass det. time= 86.7 min (1,105.7 - 1,019.0)

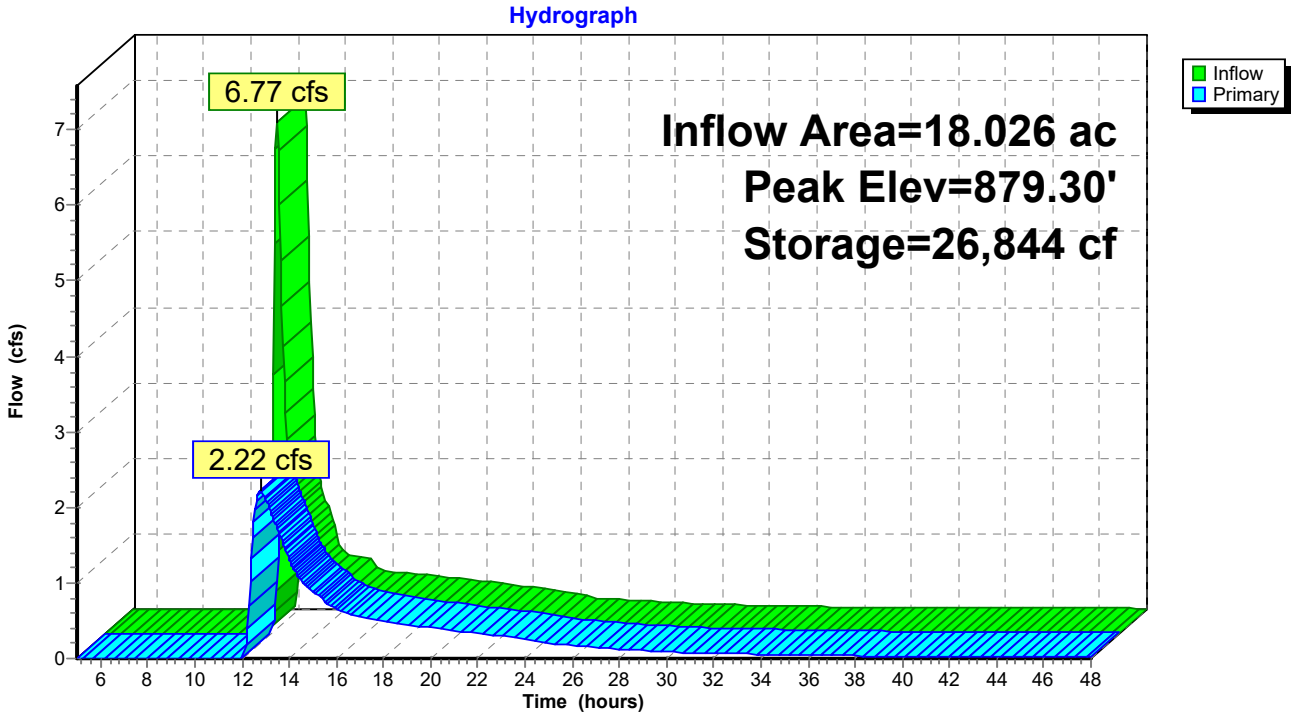
Volume	Invert	Avail.Storage	Storage Description
#1	874.50'	67,418 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
874.50	2,700	0	0
875.00	2,761	1,365	1,365
876.00	3,431	3,096	4,461
877.00	4,153	3,792	8,253
878.00	8,360	6,257	14,510
879.00	9,990	9,175	23,685
880.00	12,705	11,348	35,032
881.00	16,798	14,752	49,784
882.00	18,470	17,634	67,418

Device	Routing	Invert	Outlet Devices
#1	Primary	878.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	878.50'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 878.50' / 878.00' S= 0.0100 '/' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#3	Primary	879.60'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Primary OutFlow Max=2.21 cfs @ 12.77 hrs HW=879.30' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.34 cfs @ 3.84 fps)
- **2=Culvert** (Barrel Controls 1.88 cfs @ 2.83 fps)
- **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: (new Pond)



Summary for Pond 2P: (new Pond)

Inflow Area = 7.095 ac, 28.17% Impervious, Inflow Depth = 0.53" for 1-Year event
Inflow = 4.23 cfs @ 12.26 hrs, Volume= 0.315 af
Outflow = 0.24 cfs @ 15.17 hrs, Volume= 0.296 af, Atten= 94%, Lag= 174.2 min
Primary = 0.24 cfs @ 15.17 hrs, Volume= 0.296 af
Routed to Pond 1P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 883.50' Surf.Area= 13,472 sf Storage= 44,176 cf
Peak Elev= 884.08' @ 15.17 hrs Surf.Area= 14,334 sf Storage= 52,283 cf (8,107 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 459.8 min (1,314.1 - 854.3)

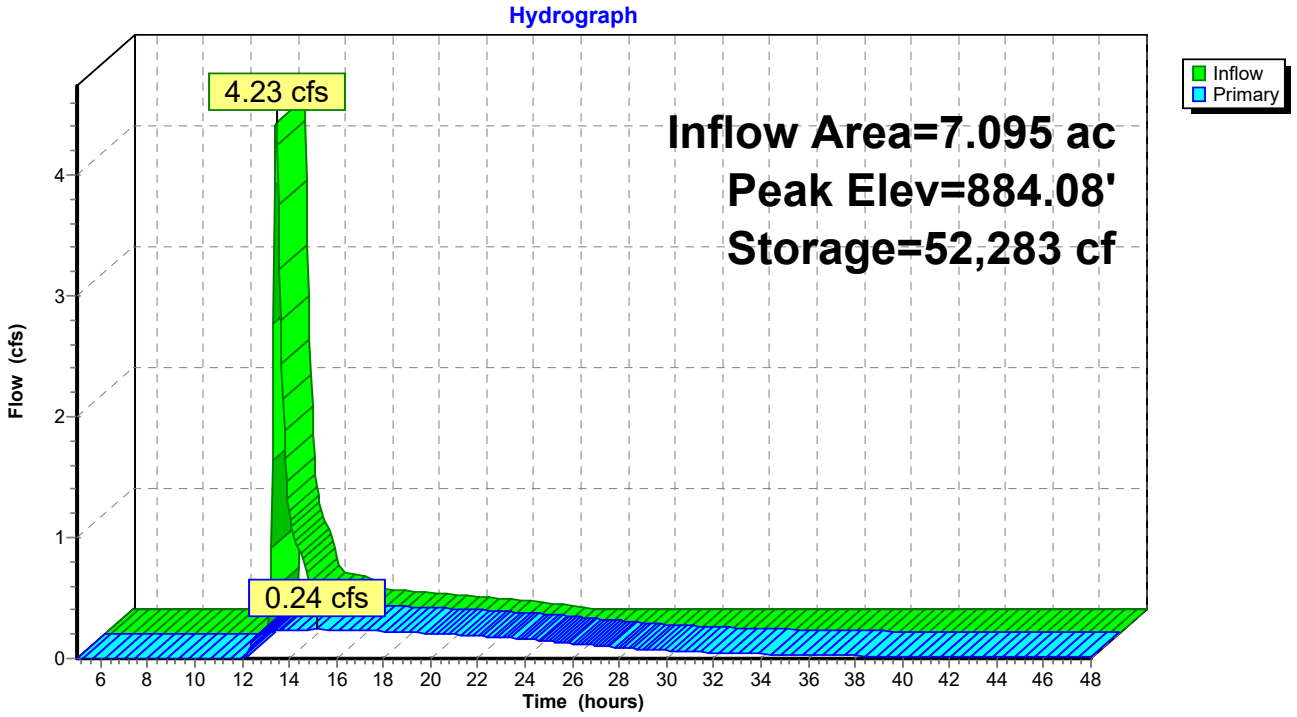
Volume	Invert	Avail.Storage	Storage Description
#1	878.00'	84,372 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
878.00	4,924	0	0
879.00	5,516	5,220	5,220
882.00	8,851	21,551	26,771
883.00	12,816	10,834	37,604
884.00	14,127	13,472	51,076
885.00	16,562	15,345	66,420
886.00	19,341	17,952	84,372

Device	Routing	Invert	Outlet Devices
#1	Primary	883.50'	**4.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 883.50' / 881.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.09 sf
#2	Primary	885.50'	**15.0' long x 45.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.24 cfs @ 15.17 hrs HW=884.08' (Free Discharge)
1=Culvert (Inlet Controls 0.24 cfs @ 2.75 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: (new Pond)



Summary for Pond 3P: (new Pond)

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 0.50" for 1-Year event
Inflow = 1.34 cfs @ 12.20 hrs, Volume= 0.085 af
Outflow = 0.36 cfs @ 12.60 hrs, Volume= 0.085 af, Atten= 73%, Lag= 24.0 min
Discarded = 0.02 cfs @ 12.60 hrs, Volume= 0.003 af
Primary = 0.34 cfs @ 12.60 hrs, Volume= 0.082 af
Routed to Reach 3R : 3r

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 899.16' @ 12.60 hrs Surf.Area= 6,080 sf Storage= 948 cf

Plug-Flow detention time= 23.3 min calculated for 0.085 af (100% of inflow)
Center-of-Mass det. time= 23.3 min (876.8 - 853.5)

Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	42,748 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

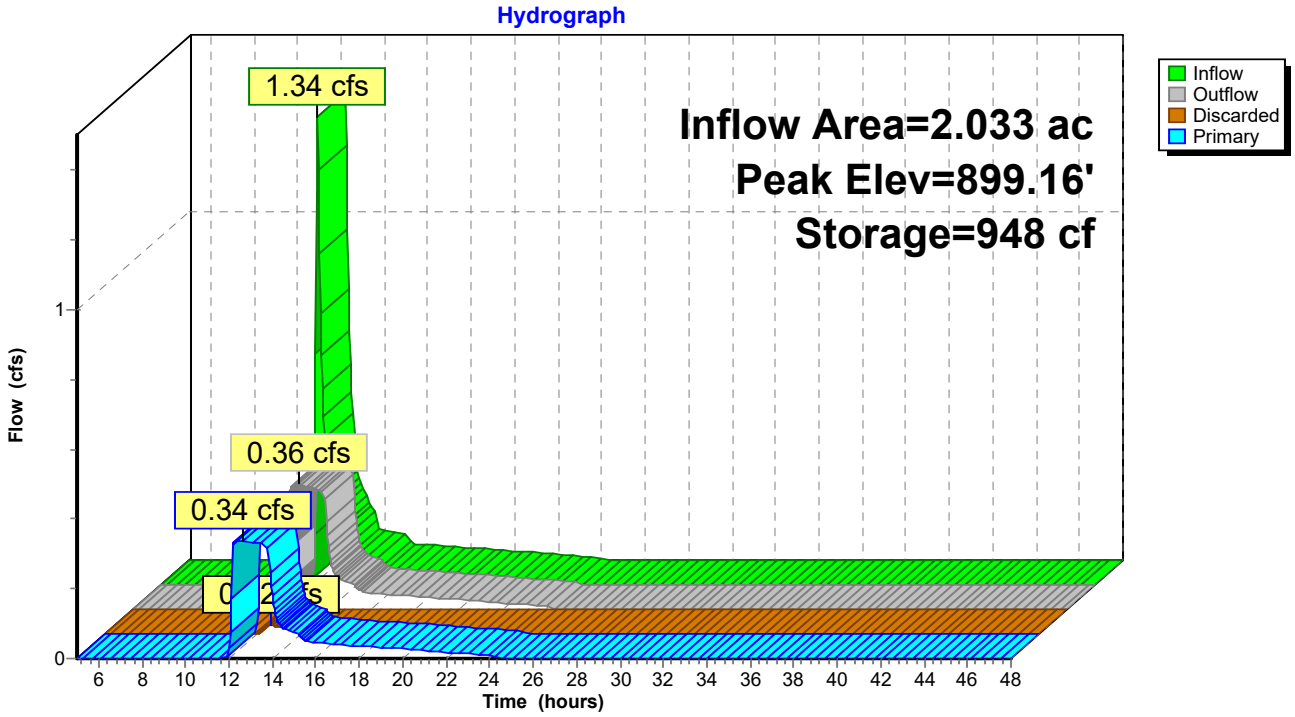
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
899.00	5,699	0	0
900.00	8,064	6,882	6,882
901.00	10,241	9,153	16,034
902.00	12,451	11,346	27,380
903.00	18,284	15,368	42,748

Device	Routing	Invert	Outlet Devices
#1	Primary	896.90'	**12.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.90' / 896.60' S= 0.0046 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	897.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	900.62'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	899.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 895.25' Phase-In= 1.00'
#5	Primary	902.00'	**30.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.02 cfs @ 12.60 hrs HW=899.16' (Free Discharge)
└**4=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.34 cfs @ 12.60 hrs HW=899.16' (Free Discharge)
├**1=Culvert** (Passes 0.34 cfs of 3.96 cfs potential flow)
│└**2=Orifice/Grate** (Orifice Controls 0.34 cfs @ 6.87 fps)
├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: (new Pond)



Summary for Pond 4P: (new Pond)

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 0.55" for 1-Year event
Inflow = 5.68 cfs @ 12.19 hrs, Volume= 0.347 af
Outflow = 0.39 cfs @ 13.69 hrs, Volume= 0.347 af, Atten= 93%, Lag= 89.7 min
Discarded = 0.22 cfs @ 13.69 hrs, Volume= 0.150 af
Primary = 0.16 cfs @ 13.69 hrs, Volume= 0.197 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 912.50' @ 13.69 hrs Surf.Area= 17,092 sf Storage= 7,905 cf

Plug-Flow detention time= 267.0 min calculated for 0.347 af (100% of inflow)
Center-of-Mass det. time= 267.1 min (1,115.2 - 848.1)

Volume	Invert	Avail.Storage	Storage Description
#1	912.00'	65,460 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

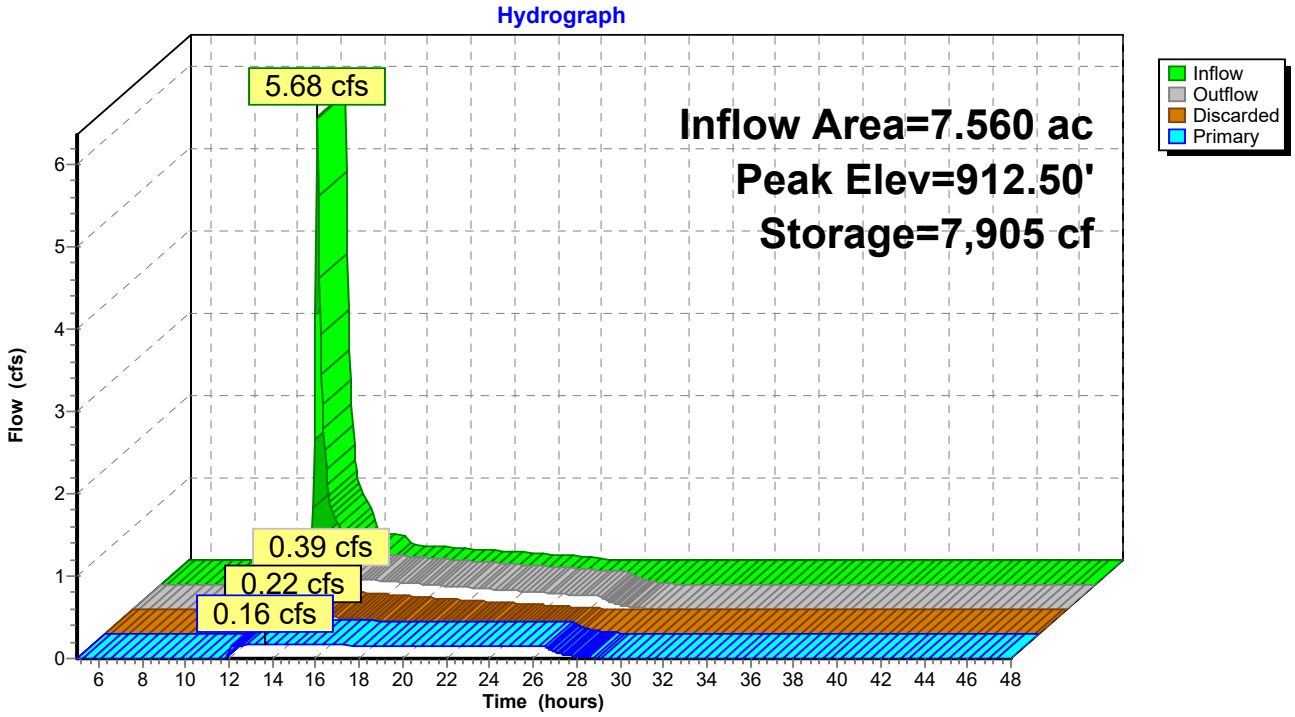
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
912.00	14,810	0	0
913.00	19,415	17,113	17,113
914.00	24,038	21,727	38,839
915.00	29,203	26,621	65,460

Device	Routing	Invert	Outlet Devices
#1	Primary	910.00'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 910.00' / 909.80' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#2	Primary	913.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	912.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 908.70' Phase-In= 1.00'
#4	Device 1	910.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	914.50'	**35.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.22 cfs @ 13.69 hrs HW=912.50' (Free Discharge)
└**3=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.16 cfs @ 13.69 hrs HW=912.50' (Free Discharge)
├**1=Culvert** (Passes 0.16 cfs of 1.95 cfs potential flow)
│└**4=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.48 fps)
├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: (new Pond)



Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 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 1/OS: (Off-Site) Runoff Area=0.085 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=846' Tc=17.9 min CN=70 Runoff=0.05 cfs 0.004 af

Subcatchment 1S: (new Subcat) Runoff Area=10.846 ac 35.71% Impervious Runoff Depth=0.79"
Flow Length=892' Tc=17.5 min CN=74 Runoff=9.49 cfs 0.714 af

Subcatchment 2/OS: (Offf-Site) Runoff Area=1.585 ac 0.00% Impervious Runoff Depth=0.53"
Flow Length=190' Tc=11.8 min CN=68 Runoff=1.01 cfs 0.070 af

Subcatchment 2S: (new Subcat) Runoff Area=5.510 ac 36.28% Impervious Runoff Depth=0.79"
Flow Length=1,024' Tc=15.4 min CN=74 Runoff=5.17 cfs 0.363 af

Subcatchment 3S: (new Subcat) Runoff Area=88,545 sf 30.00% Impervious Runoff Depth=0.70"
Flow Length=185' Tc=10.4 min CN=72 Runoff=1.97 cfs 0.118 af

Subcatchment 4/OS: (Off-Site) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=0.46"
Flow Length=221' Tc=14.3 min CN=66 Runoff=0.37 cfs 0.030 af

Subcatchment 4S: (new Subcat) Runoff Area=294,475 sf 34.35% Impervious Runoff Depth=0.79"
Flow Length=506' Tc=9.6 min CN=74 Runoff=7.82 cfs 0.445 af

Subcatchment ND: (On-Site Not Detained) Runoff Area=3.218 ac 0.00% Impervious Runoff Depth=0.33"
Tc=5.0 min CN=62 Runoff=1.35 cfs 0.087 af

Reach 3R: 3r Avg. Flow Depth=0.33' Max Vel=0.87 fps Inflow=0.35 cfs 0.111 af
4.0" Round Pipe n=0.006 L=189.5' S=0.0003 '/' Capacity=0.07 cfs Outflow=0.07 cfs 0.111 af

Reach 4R: (new Reach) Avg. Flow Depth=0.33' Max Vel=1.42 fps Inflow=0.17 cfs 0.230 af
4.0" Round Pipe n=0.006 L=286.0' S=0.0007 '/' Capacity=0.11 cfs Outflow=0.11 cfs 0.230 af

Reach AP: (Site Release) Inflow=3.45 cfs 1.117 af
Outflow=3.45 cfs 1.117 af

Reach TAP: (new Reach) Inflow=3.90 cfs 1.546 af
Outflow=3.90 cfs 1.546 af

Pond 1P: (new Pond) Peak Elev=879.56' Storage=29,669 cf Inflow=9.68 cfs 1.129 af
Outflow=3.45 cfs 1.117 af

Pond 2P: (new Pond) Peak Elev=884.33' Storage=55,833 cf Inflow=6.13 cfs 0.433 af
Outflow=0.30 cfs 0.410 af

Pond 3P: (new Pond) Peak Elev=899.27' Storage=1,651 cf Inflow=1.97 cfs 0.118 af
Discarded=0.04 cfs 0.007 af Primary=0.35 cfs 0.111 af Outflow=0.39 cfs 0.118 af

Pond 4P: (new Pond) Peak Elev=912.69' Storage=11,370 cf Inflow=8.10 cfs 0.476 af
Discarded=0.34 cfs 0.245 af Primary=0.17 cfs 0.230 af Outflow=0.51 cfs 0.476 af

Total Runoff Area = 30.837 ac Runoff Volume = 1.832 af Average Runoff Depth = 0.71"
71.45% Pervious = 22.033 ac 28.55% Impervious = 8.804 ac

Summary for Subcatchment 1/OS: (Off-Site)

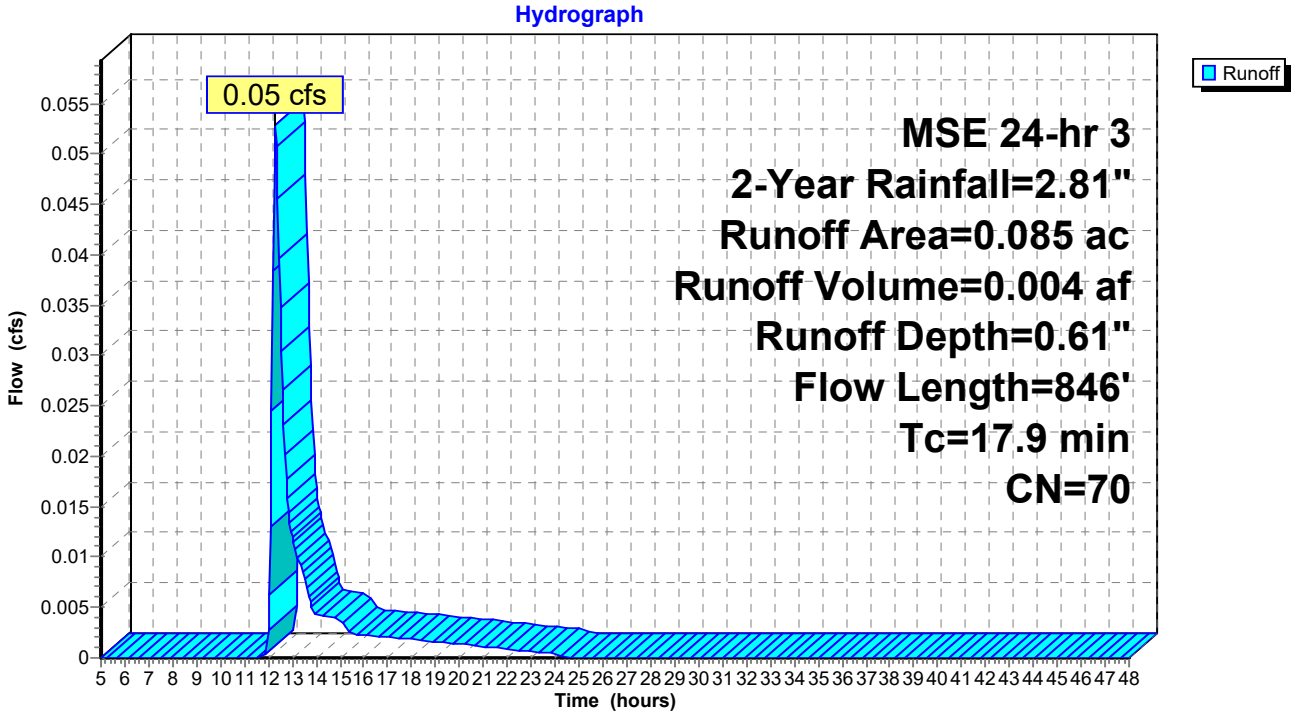
Runoff = 0.05 cfs @ 12.31 hrs, Volume= 0.004 af, Depth= 0.61"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	0.085	70	offsite
	0.085		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
6.2	560	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.9	846	Total			

Subcatchment 1/OS: (Off-Site)



Summary for Subcatchment 1S: (new Subcat)

[47] Hint: Peak is 136% of capacity of segment #3

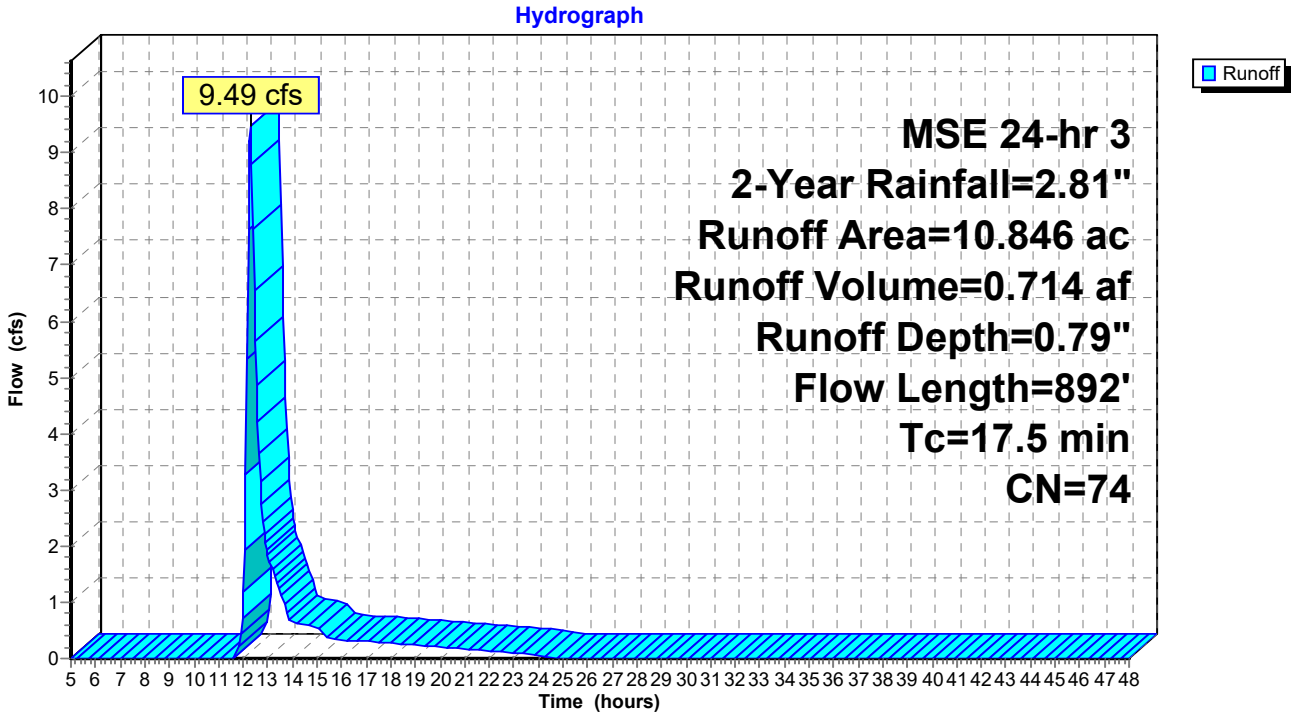
Runoff = 9.49 cfs @ 12.29 hrs, Volume= 0.714 af, Depth= 0.79"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
	9.961	72	1/3 acre lots, 30% imp, HSG B
*	0.790	98	Roadway
*	0.095	100	pond
	10.846	74	Weighted Average
	6.973		64.29% Pervious Area
	3.873		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
5.7	561	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	45	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.5	892	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2/OS: (Offf-Site)

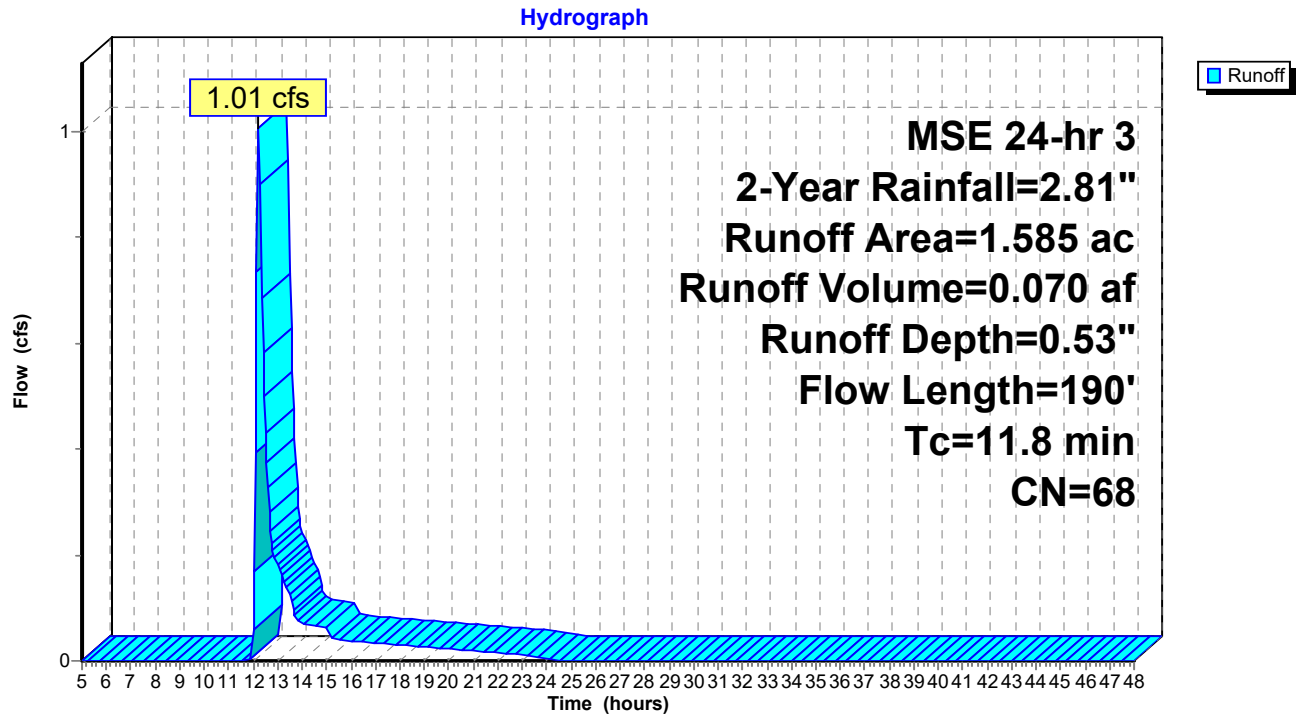
Runoff = 1.01 cfs @ 12.22 hrs, Volume= 0.070 af, Depth= 0.53"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	1.585	68	offsite
	1.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
0.9	90	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	190	Total			

Subcatchment 2/OS: (Offf-Site)



Summary for Subcatchment 2S: (new Subcat)

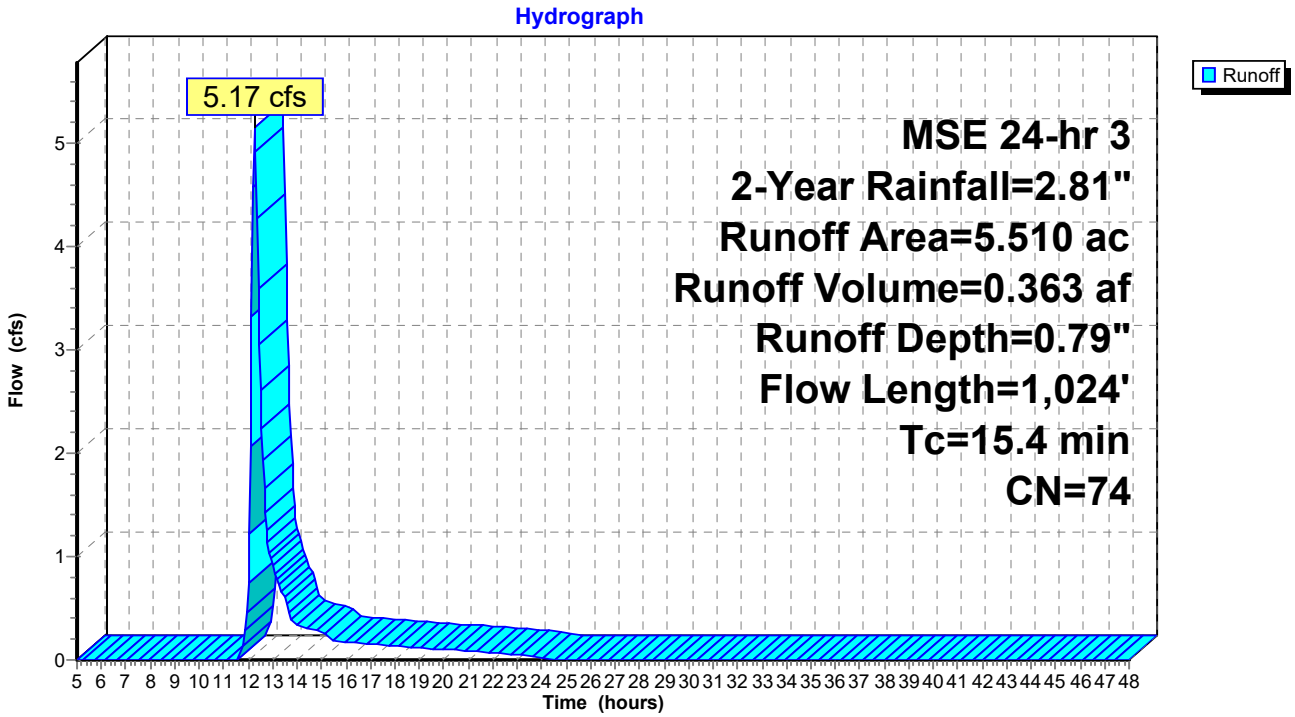
Runoff = 5.17 cfs @ 12.26 hrs, Volume= 0.363 af, Depth= 0.79"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
	5.016	72	1/3 acre lots, 30% imp, HSG B
*	0.291	98	Roadway
*	0.203	100	pond
	5.510	74	Weighted Average
	3.511		63.72% Pervious Area
	1.999		36.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0700	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
5.9	924	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.4	1,024	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

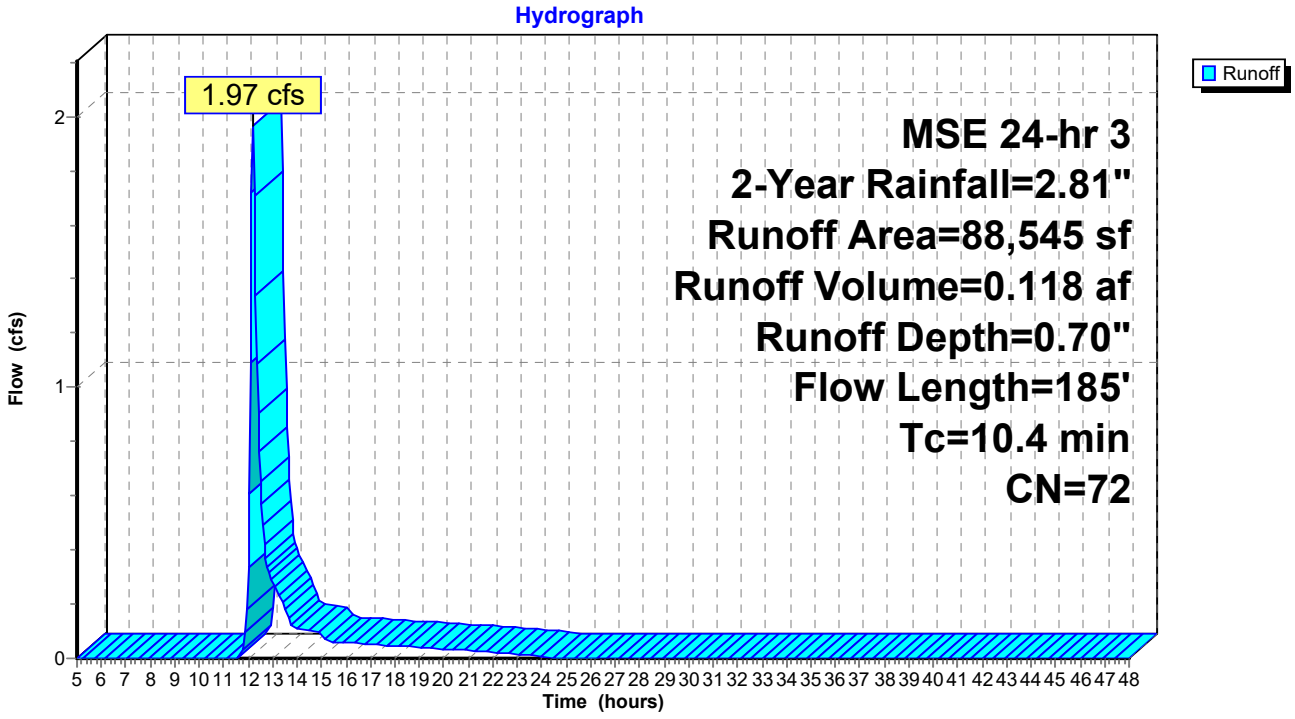
Runoff = 1.97 cfs @ 12.20 hrs, Volume= 0.118 af, Depth= 0.70"
Routed to Pond 3P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

Area (sf)	CN	Description
88,545	72	1/3 acre lots, 30% imp, HSG B
61,982		70.00% Pervious Area
26,564		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0650	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
0.6	85	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	185	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (Off-Site)

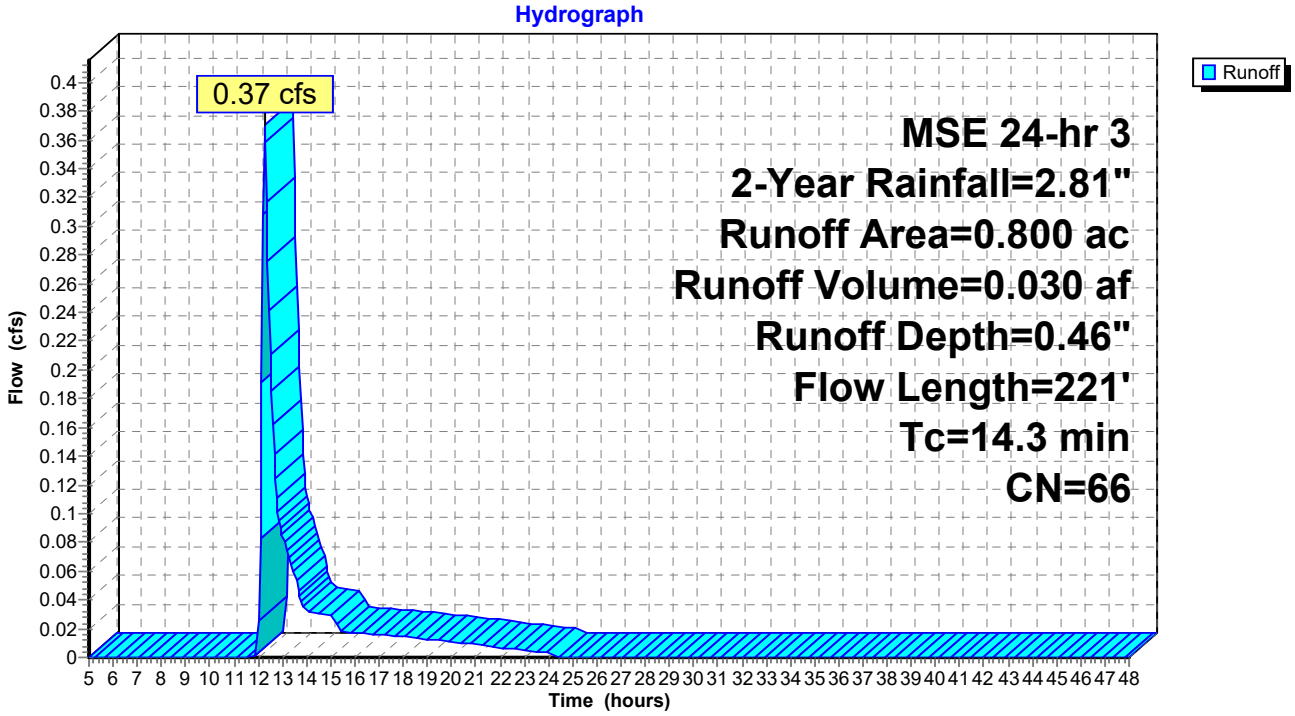
Runoff = 0.37 cfs @ 12.27 hrs, Volume= 0.030 af, Depth= 0.46"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	0.800	66	offsite
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0300	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
0.8	71	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
14.3	221	Total			

Subcatchment 4/OS: (Off-Site)



Summary for Subcatchment 4S: (new Subcat)

[47] Hint: Peak is 112% of capacity of segment #3

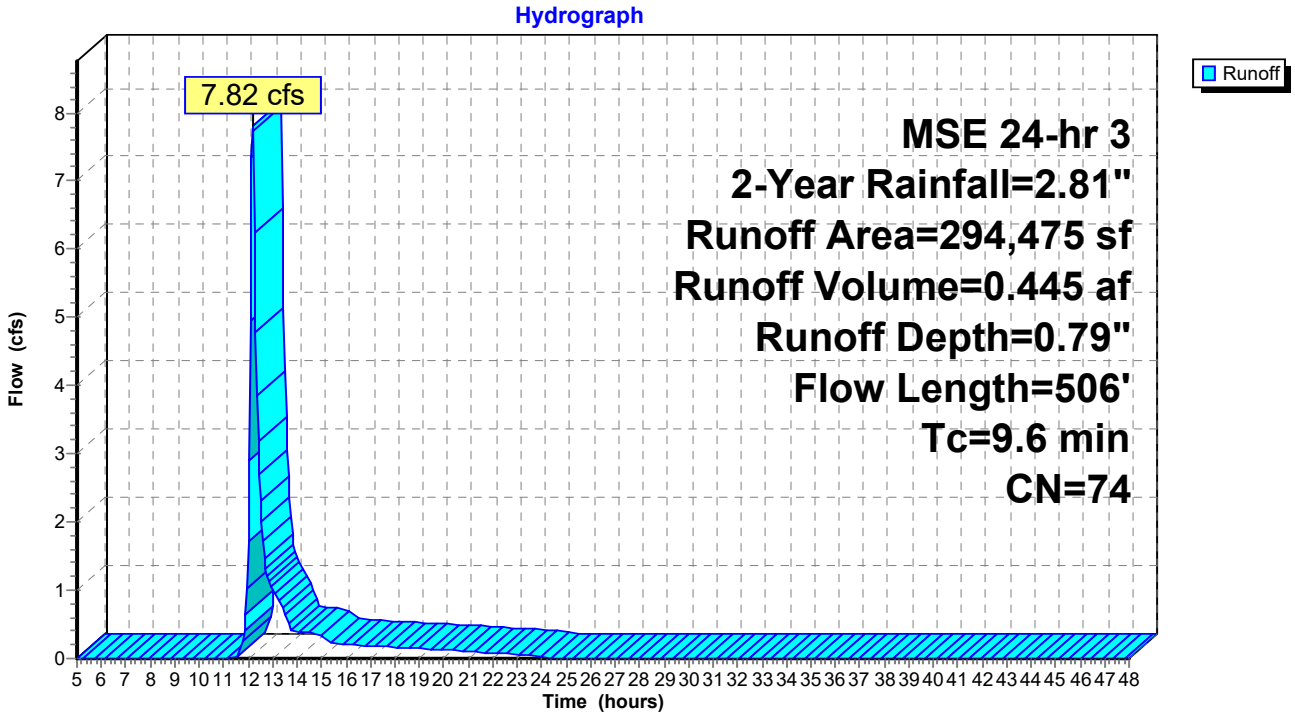
Runoff = 7.82 cfs @ 12.19 hrs, Volume= 0.445 af, Depth= 0.79"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (sf)	CN	Description
	276,158	72	1/3 acre lots, 30% imp, HSG B
*	18,317	98	Roadway
	294,475	74	Weighted Average
	193,311		65.65% Pervious Area
	101,164		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	56	0.0400	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
2.0	400	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
9.6	506	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (On-Site Not Detained)

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

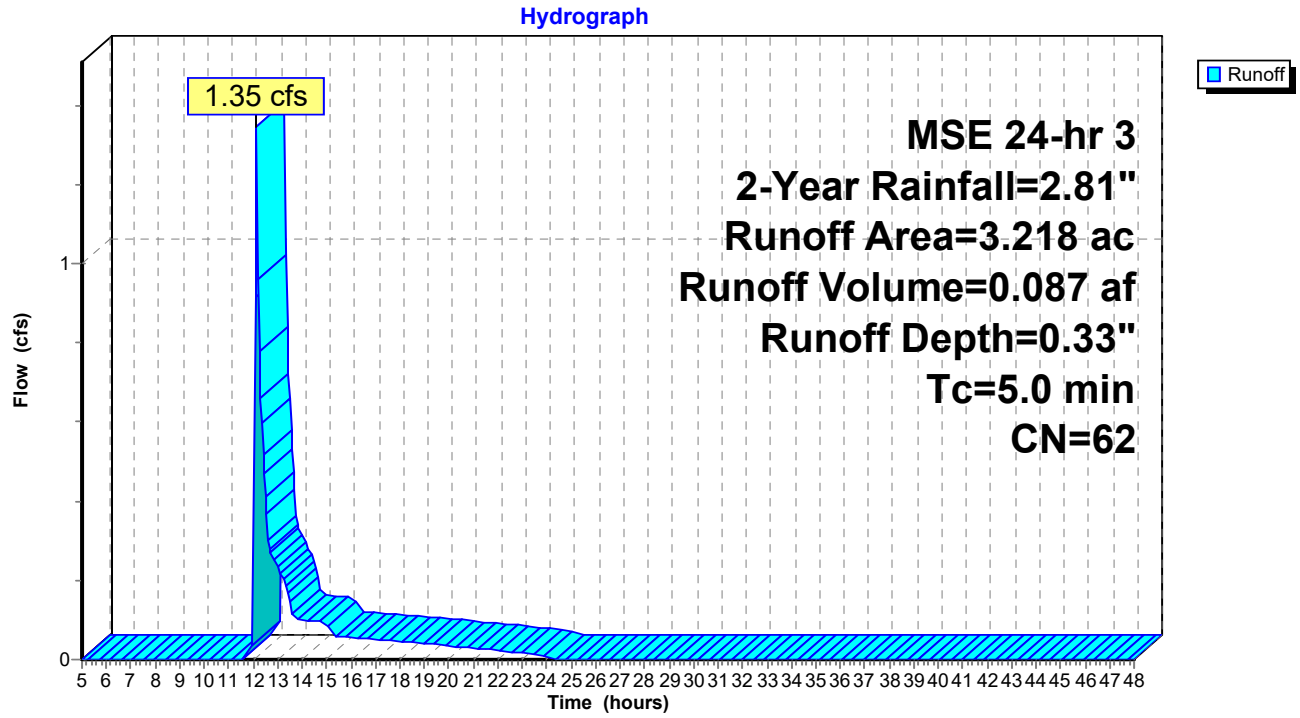
Runoff = 1.35 cfs @ 12.15 hrs, Volume= 0.087 af, Depth= 0.33"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.81"

	Area (ac)	CN	Description
*	3.218	62	
	3.218		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, (Assumed 5 minute minimum to be conservative)**

Subcatchment ND: (On-Site Not Detained)



Summary for Reach 3R: 3r

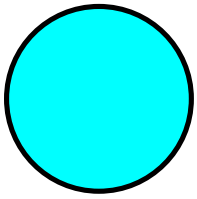
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 517% of Manning's capacity
[76] Warning: Detained 0.066 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 3P Primary device # 1 INLET by 0.68'

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 0.66" for 2-Year event
Inflow = 0.35 cfs @ 12.68 hrs, Volume= 0.111 af
Outflow = 0.07 cfs @ 32.05 hrs, Volume= 0.111 af, Atten= 80%, Lag= 1,162.3 min
Routed to Reach TAP : (new Reach)

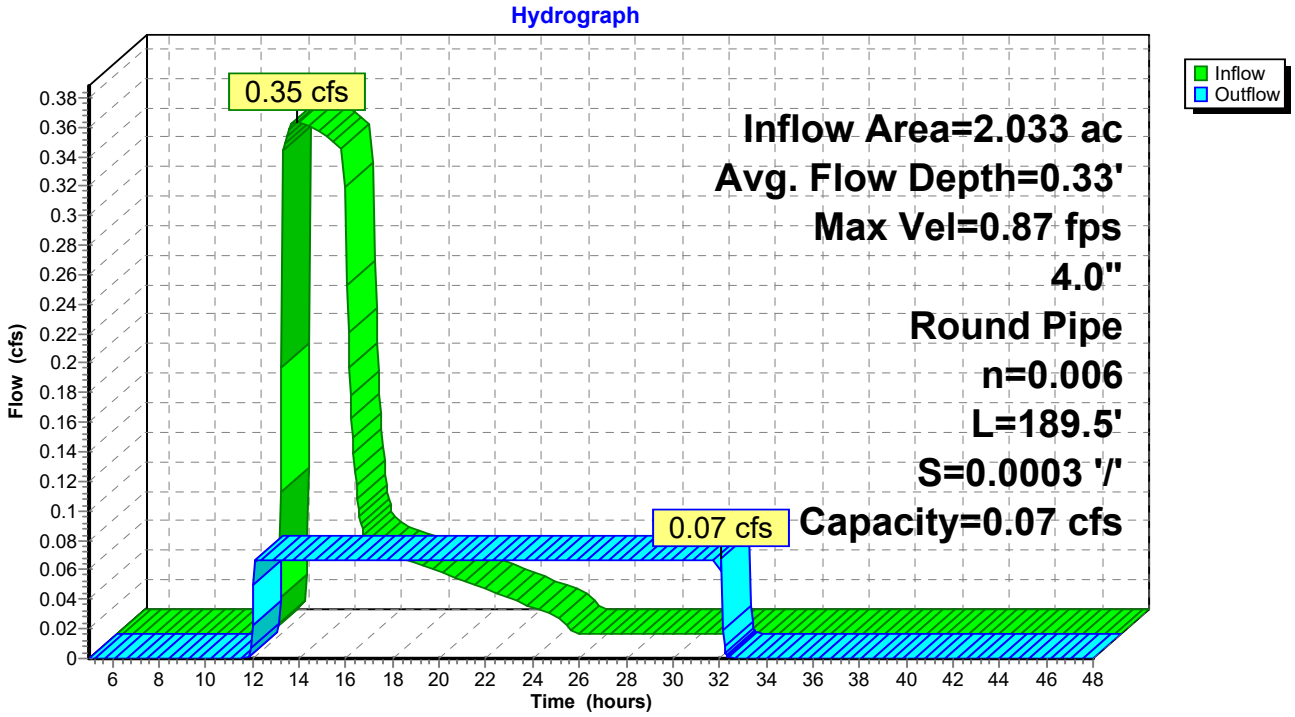
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 4.4 min

Peak Storage= 17 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.07 cfs

4.0" Round Pipe
n= 0.006
Length= 189.5' Slope= 0.0003 '/'
Inlet Invert= 897.25', Outlet Invert= 897.20'



Reach 3R: 3r


Hydrograph
Inflow
Outflow
0.35 cfs
0.07 cfs
Inflow Area=2.033 ac
Avg. Flow Depth=0.33'
Max Vel=0.87 fps
4.0"
Round Pipe
n=0.006
L=189.5'
S=0.0003 '/'
Capacity=0.07 cfs
Flow (cfs)
Time (hours)
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28 0.3 0.32 0.34 0.36 0.38
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Reach 4R: (new Reach)

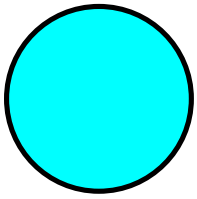
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 156% of Manning's capacity
[76] Warning: Detained 0.070 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.53'

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 0.37" for 2-Year event
Inflow = 0.17 cfs @ 13.67 hrs, Volume= 0.230 af
Outflow = 0.11 cfs @ 12.10 hrs, Volume= 0.230 af, Atten= 36%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

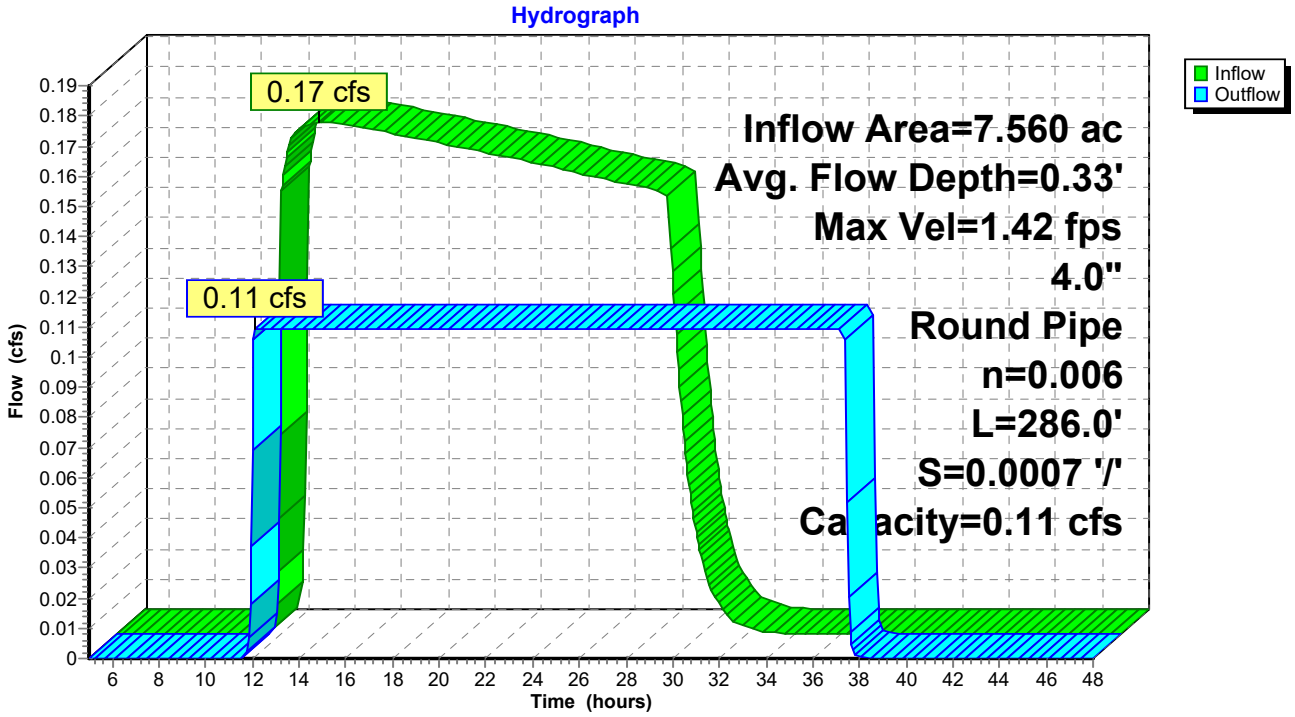
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.42 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 4.0 min

Peak Storage= 25 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.11 cfs

4.0" Round Pipe
n= 0.006
Length= 286.0' Slope= 0.0007 '/'
Inlet Invert= 910.20', Outlet Invert= 910.00'



Reach 4R: (new Reach)



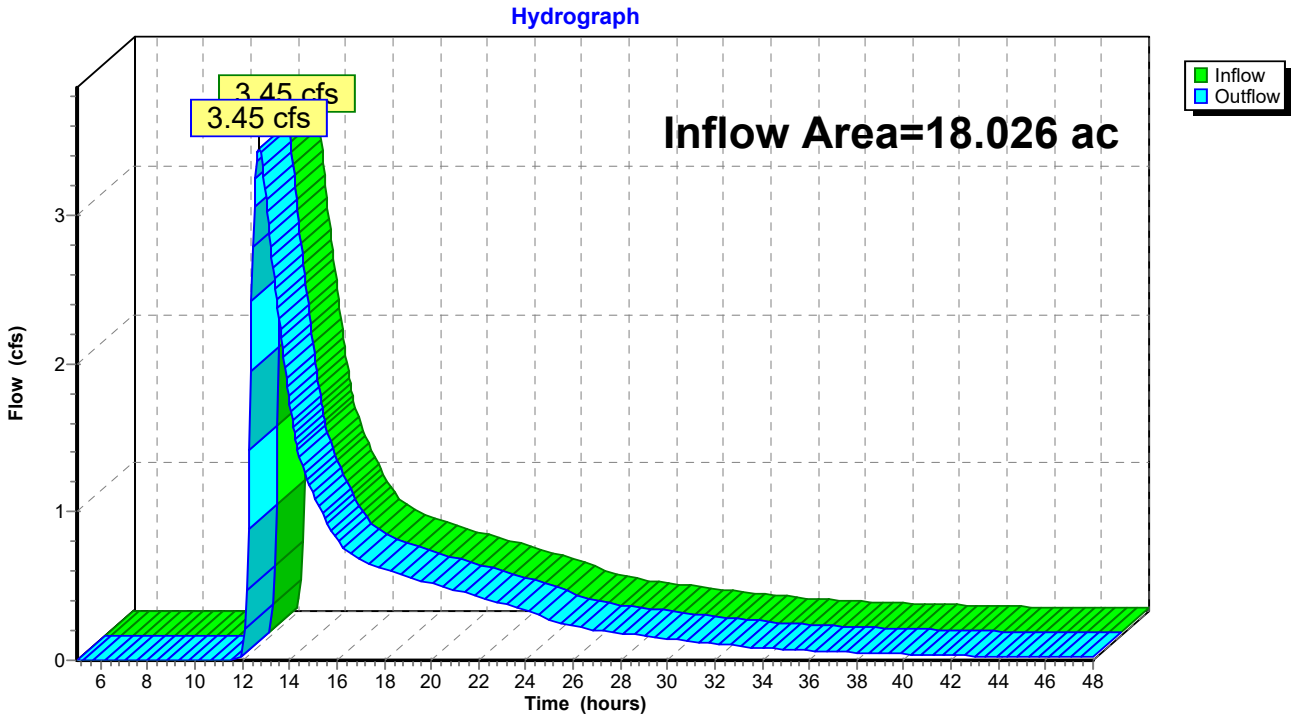
Summary for Reach AP: (Site Release)

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

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 0.74" for 2-Year event
Inflow = 3.45 cfs @ 12.70 hrs, Volume= 1.117 af
Outflow = 3.45 cfs @ 12.70 hrs, Volume= 1.117 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach AP: (Site Release)



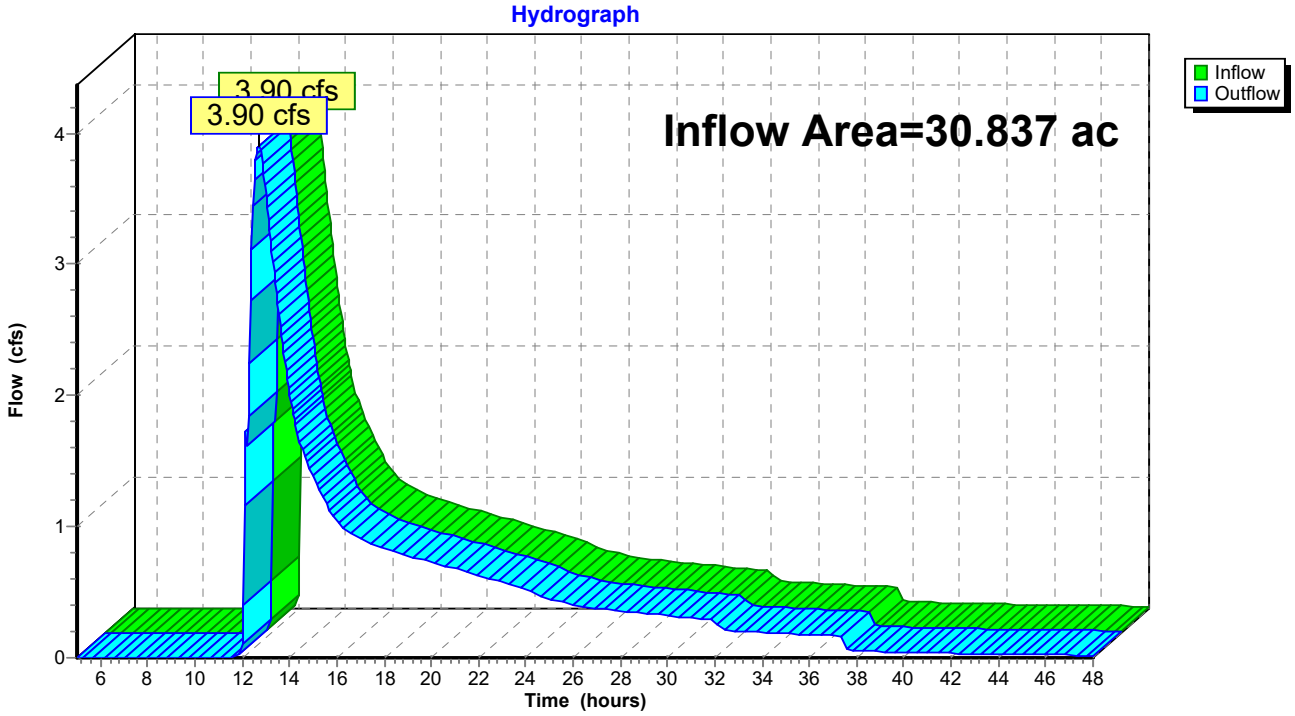
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.837 ac, 28.55% Impervious, Inflow Depth > 0.60" for 2-Year event
Inflow = 3.90 cfs @ 12.69 hrs, Volume= 1.546 af
Outflow = 3.90 cfs @ 12.69 hrs, Volume= 1.546 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach TAP: (new Reach)



Summary for Pond 1P: (new Pond)

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 0.75" for 2-Year event
Inflow = 9.68 cfs @ 12.29 hrs, Volume= 1.129 af
Outflow = 3.45 cfs @ 12.70 hrs, Volume= 1.117 af, Atten= 64%, Lag= 24.5 min
Primary = 3.45 cfs @ 12.70 hrs, Volume= 1.117 af
Routed to Reach AP : (Site Release)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 878.50' Surf.Area= 9,175 sf Storage= 18,894 cf
Peak Elev= 879.56' @ 12.70 hrs Surf.Area= 11,502 sf Storage= 29,669 cf (10,776 cf above start)

Plug-Flow detention time= 516.7 min calculated for 0.683 af (61% of inflow)
Center-of-Mass det. time= 78.6 min (1,105.9 - 1,027.3)

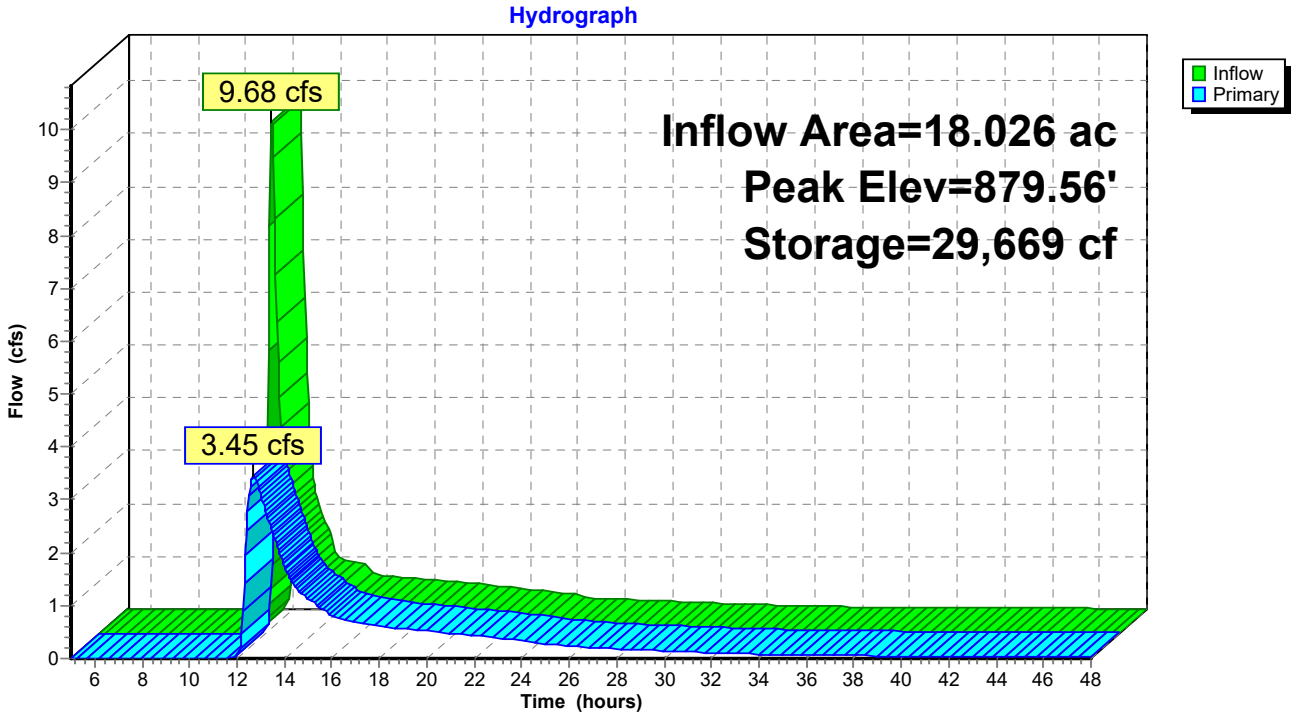
Volume	Invert	Avail.Storage	Storage Description
#1	874.50'	67,418 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
874.50	2,700	0	0
875.00	2,761	1,365	1,365
876.00	3,431	3,096	4,461
877.00	4,153	3,792	8,253
878.00	8,360	6,257	14,510
879.00	9,990	9,175	23,685
880.00	12,705	11,348	35,032
881.00	16,798	14,752	49,784
882.00	18,470	17,634	67,418

Device	Routing	Invert	Outlet Devices
#1	Primary	878.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	878.50'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 878.50' / 878.00' S= 0.0100 '/' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#3	Primary	879.60'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Primary OutFlow Max=3.45 cfs @ 12.70 hrs HW=879.56' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.40 cfs @ 4.54 fps)
- **2=Culvert** (Barrel Controls 3.06 cfs @ 3.23 fps)
- **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: (new Pond)



Summary for Pond 2P: (new Pond)

Inflow Area = 7.095 ac, 28.17% Impervious, Inflow Depth = 0.73" for 2-Year event
Inflow = 6.13 cfs @ 12.26 hrs, Volume= 0.433 af
Outflow = 0.30 cfs @ 15.18 hrs, Volume= 0.410 af, Atten= 95%, Lag= 175.4 min
Primary = 0.30 cfs @ 15.18 hrs, Volume= 0.410 af
Routed to Pond 1P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 883.50' Surf.Area= 13,472 sf Storage= 44,176 cf
Peak Elev= 884.33' @ 15.18 hrs Surf.Area= 14,925 sf Storage= 55,833 cf (11,657 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 499.5 min (1,345.5 - 846.0)

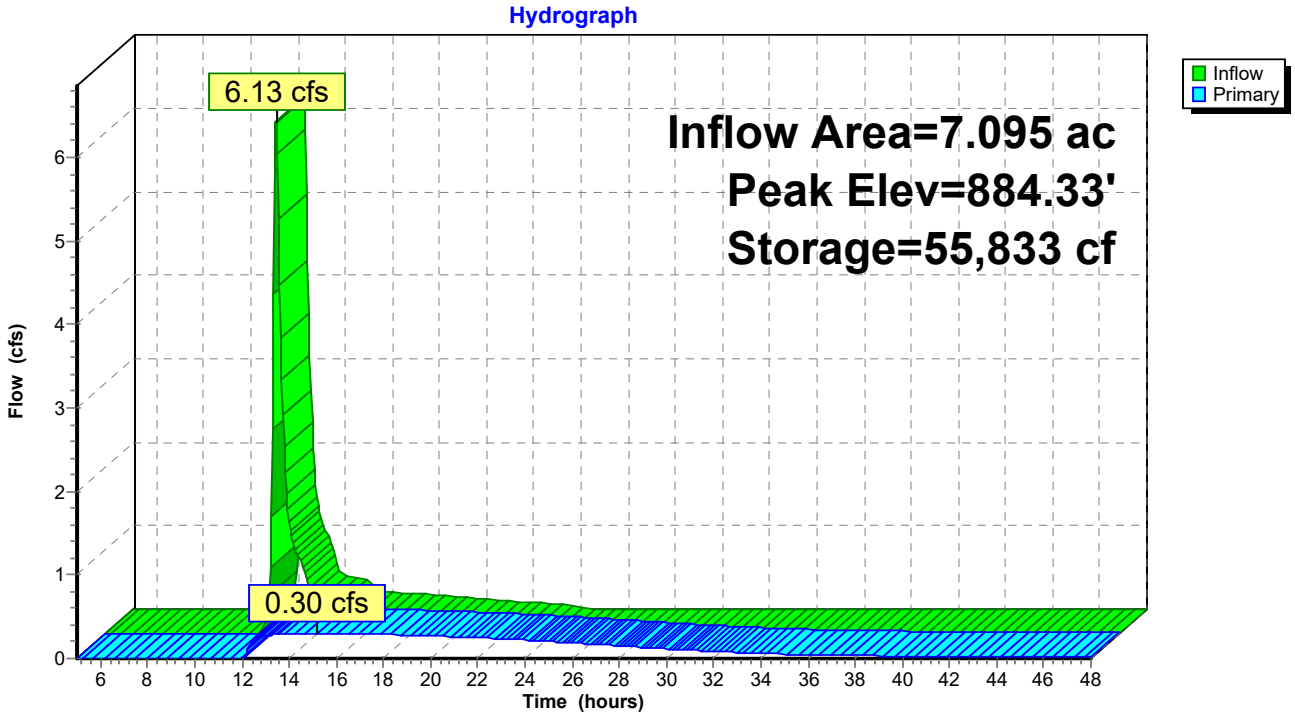
Volume	Invert	Avail.Storage	Storage Description
#1	878.00'	84,372 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
878.00	4,924	0	0
879.00	5,516	5,220	5,220
882.00	8,851	21,551	26,771
883.00	12,816	10,834	37,604
884.00	14,127	13,472	51,076
885.00	16,562	15,345	66,420
886.00	19,341	17,952	84,372

Device	Routing	Invert	Outlet Devices
#1	Primary	883.50'	**4.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 883.50' / 881.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.09 sf
#2	Primary	885.50'	**15.0' long x 45.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.30 cfs @ 15.18 hrs HW=884.33' (Free Discharge)
1=Culvert (Inlet Controls 0.30 cfs @ 3.45 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: (new Pond)



Summary for Pond 3P: (new Pond)

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 0.70" for 2-Year event
Inflow = 1.97 cfs @ 12.20 hrs, Volume= 0.118 af
Outflow = 0.39 cfs @ 12.68 hrs, Volume= 0.118 af, Atten= 80%, Lag= 28.8 min
Discarded = 0.04 cfs @ 12.68 hrs, Volume= 0.007 af
Primary = 0.35 cfs @ 12.68 hrs, Volume= 0.111 af
Routed to Reach 3R : 3r

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 899.27' @ 12.68 hrs Surf.Area= 6,347 sf Storage= 1,651 cf

Plug-Flow detention time= 37.8 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 37.8 min (882.4 - 844.6)

Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	42,748 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

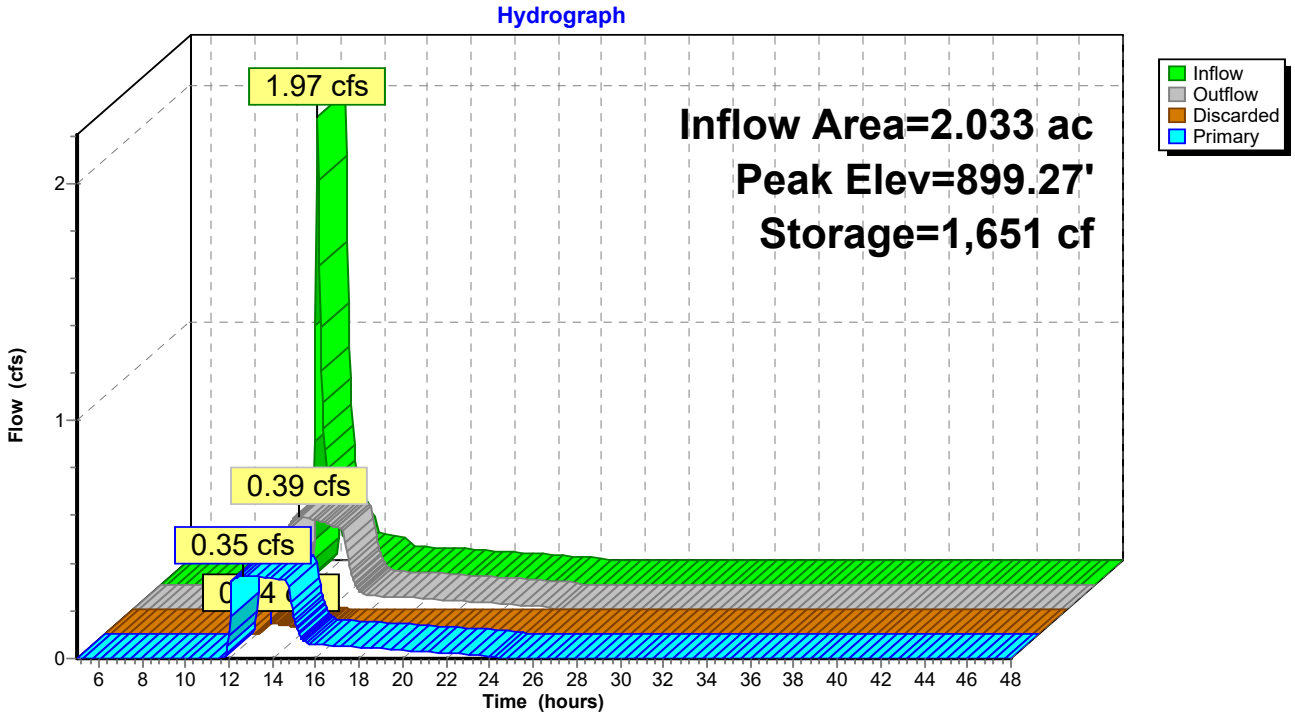
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
899.00	5,699	0	0
900.00	8,064	6,882	6,882
901.00	10,241	9,153	16,034
902.00	12,451	11,346	27,380
903.00	18,284	15,368	42,748

Device	Routing	Invert	Outlet Devices
#1	Primary	896.90'	**12.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.90' / 896.60' S= 0.0046 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	897.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	900.62'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	899.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 895.25' Phase-In= 1.00'
#5	Primary	902.00'	**30.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.04 cfs @ 12.68 hrs HW=899.27' (Free Discharge)
└**4=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.35 cfs @ 12.68 hrs HW=899.27' (Free Discharge)
├**1=Culvert** (Passes 0.35 cfs of 4.09 cfs potential flow)
│└**2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.06 fps)
├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: (new Pond)



Summary for Pond 4P: (new Pond)

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 0.75" for 2-Year event
Inflow = 8.10 cfs @ 12.19 hrs, Volume= 0.476 af
Outflow = 0.51 cfs @ 13.67 hrs, Volume= 0.476 af, Atten= 94%, Lag= 89.1 min
Discarded = 0.34 cfs @ 13.67 hrs, Volume= 0.245 af
Primary = 0.17 cfs @ 13.67 hrs, Volume= 0.230 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 912.69' @ 13.67 hrs Surf.Area= 18,002 sf Storage= 11,370 cf

Plug-Flow detention time= 304.0 min calculated for 0.476 af (100% of inflow)
Center-of-Mass det. time= 303.5 min (1,143.6 - 840.1)

Volume	Invert	Avail.Storage	Storage Description
#1	912.00'	65,460 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

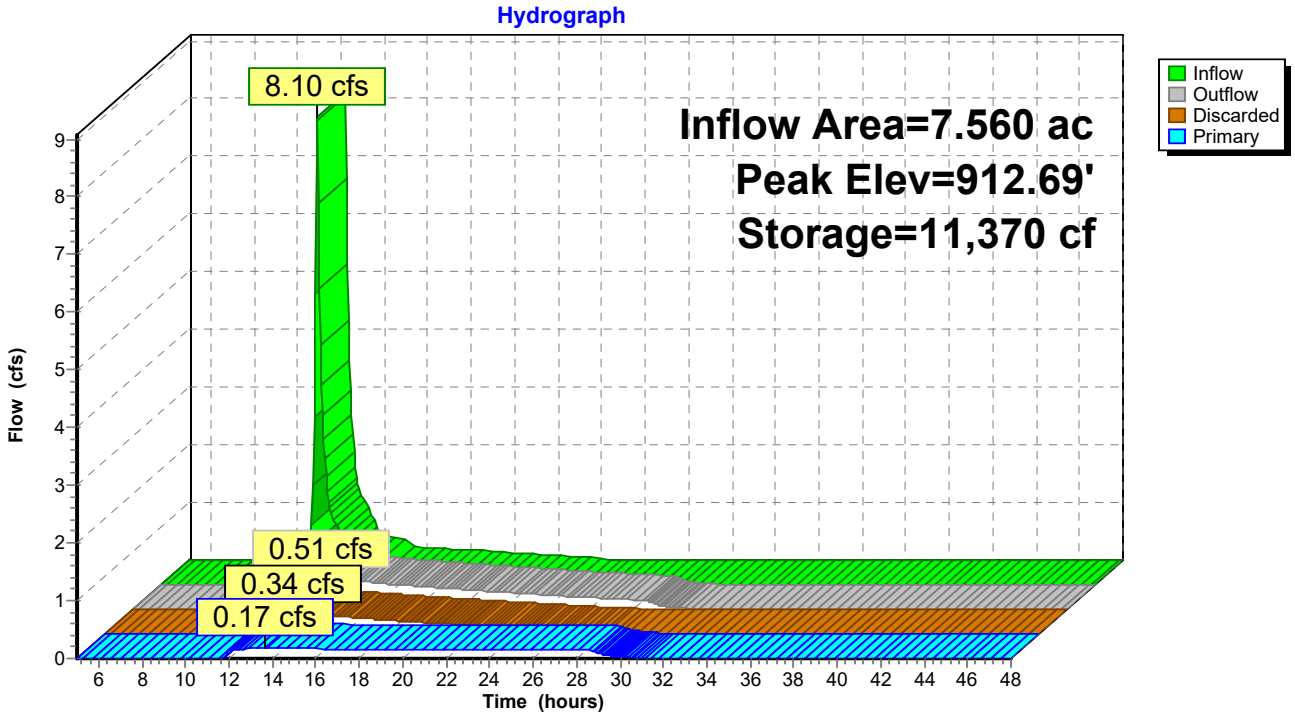
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
912.00	14,810	0	0
913.00	19,415	17,113	17,113
914.00	24,038	21,727	38,839
915.00	29,203	26,621	65,460

Device	Routing	Invert	Outlet Devices
#1	Primary	910.00'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 910.00' / 909.80' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#2	Primary	913.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	912.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 908.70' Phase-In= 1.00'
#4	Device 1	910.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	914.50'	**35.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.34 cfs @ 13.67 hrs HW=912.69' (Free Discharge)
└**3=Exfiltration** (Controls 0.34 cfs)

Primary OutFlow Max=0.17 cfs @ 13.67 hrs HW=912.69' (Free Discharge)
├**1=Culvert** (Passes 0.17 cfs of 2.04 cfs potential flow)
│└**4=Orifice/Grate** (Orifice Controls 0.17 cfs @ 7.78 fps)
├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: (new Pond)



Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 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 1/OS: (Off-Site) Runoff Area=0.085 ac 0.00% Impervious Runoff Depth=1.34"
Flow Length=846' Tc=17.9 min CN=70 Runoff=0.13 cfs 0.009 af

Subcatchment 1S: (new Subcat) Runoff Area=10.846 ac 35.71% Impervious Runoff Depth=1.60"
Flow Length=892' Tc=17.5 min CN=74 Runoff=20.49 cfs 1.449 af

Subcatchment 2/OS: (Offf-Site) Runoff Area=1.585 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=190' Tc=11.8 min CN=68 Runoff=2.63 cfs 0.160 af

Subcatchment 2S: (new Subcat) Runoff Area=5.510 ac 36.28% Impervious Runoff Depth=1.60"
Flow Length=1,024' Tc=15.4 min CN=74 Runoff=11.06 cfs 0.736 af

Subcatchment 3S: (new Subcat) Runoff Area=88,545 sf 30.00% Impervious Runoff Depth=1.47"
Flow Length=185' Tc=10.4 min CN=72 Runoff=4.41 cfs 0.249 af

Subcatchment 4/OS: (Off-Site) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=1.09"
Flow Length=221' Tc=14.3 min CN=66 Runoff=1.07 cfs 0.073 af

Subcatchment 4S: (new Subcat) Runoff Area=294,475 sf 34.35% Impervious Runoff Depth=1.60"
Flow Length=506' Tc=9.6 min CN=74 Runoff=16.56 cfs 0.903 af

Subcatchment ND: (On-Site Not Detained) Runoff Area=3.218 ac 0.00% Impervious Runoff Depth=0.87"
Tc=5.0 min CN=62 Runoff=4.77 cfs 0.233 af

Reach 3R: 3r Avg. Flow Depth=0.33' Max Vel=0.87 fps Inflow=0.38 cfs 0.209 af
4.0" Round Pipe n=0.006 L=189.5' S=0.0003 '/' Capacity=0.07 cfs Outflow=0.07 cfs 0.202 af

Reach 4R: (new Reach) Avg. Flow Depth=0.33' Max Vel=1.42 fps Inflow=0.19 cfs 0.325 af
4.0" Round Pipe n=0.006 L=286.0' S=0.0007 '/' Capacity=0.11 cfs Outflow=0.11 cfs 0.325 af

Reach AP: (Site Release) Inflow=11.51 cfs 2.289 af
Outflow=11.51 cfs 2.289 af

Reach TAP: (new Reach) Inflow=12.70 cfs 3.049 af
Outflow=12.70 cfs 3.049 af

Pond 1P: (new Pond) Peak Elev=880.22' Storage=37,922 cf Inflow=20.80 cfs 2.311 af
Outflow=11.51 cfs 2.289 af

Pond 2P: (new Pond) Peak Elev=885.27' Storage=70,918 cf Inflow=13.52 cfs 0.896 af
Outflow=0.47 cfs 0.852 af

Pond 3P: (new Pond) Peak Elev=899.72' Storage=4,737 cf Inflow=4.41 cfs 0.249 af
Discarded=0.14 cfs 0.039 af Primary=0.38 cfs 0.209 af Outflow=0.53 cfs 0.249 af

Pond 4P: (new Pond) Peak Elev=913.42' Storage=25,719 cf Inflow=17.47 cfs 0.976 af
Discarded=0.67 cfs 0.651 af Primary=0.19 cfs 0.325 af Outflow=0.86 cfs 0.976 af

Total Runoff Area = 30.837 ac Runoff Volume = 3.813 af Average Runoff Depth = 1.48"
71.45% Pervious = 22.033 ac 28.55% Impervious = 8.804 ac

Summary for Subcatchment 1/OS: (Off-Site)

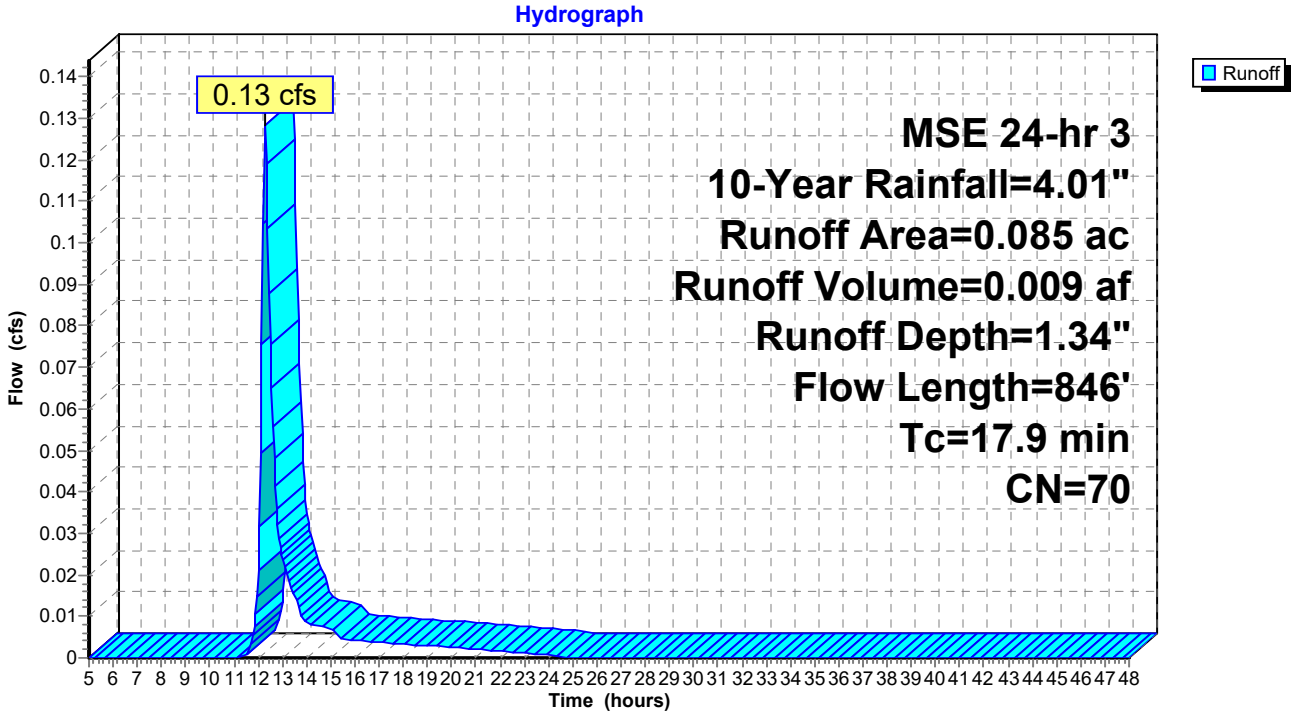
Runoff = 0.13 cfs @ 12.29 hrs, Volume= 0.009 af, Depth= 1.34"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	0.085	70	offsite
	0.085		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
6.2	560	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.9	846	Total			

Subcatchment 1/OS: (Off-Site)



Summary for Subcatchment 1S: (new Subcat)

[47] Hint: Peak is 293% of capacity of segment #3

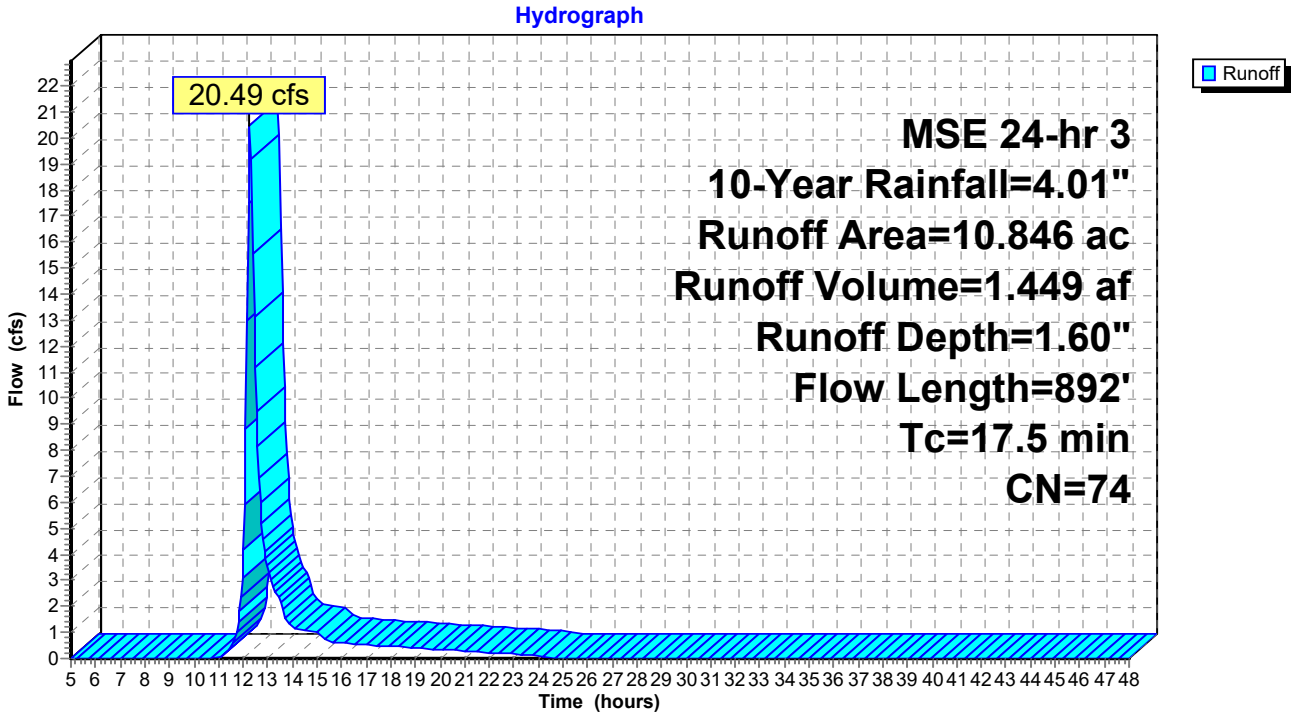
Runoff = 20.49 cfs @ 12.27 hrs, Volume= 1.449 af, Depth= 1.60"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
	9.961	72	1/3 acre lots, 30% imp, HSG B
*	0.790	98	Roadway
*	0.095	100	pond
	10.846	74	Weighted Average
	6.973		64.29% Pervious Area
	3.873		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
5.7	561	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	45	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.5	892	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2/OS: (Offf-Site)

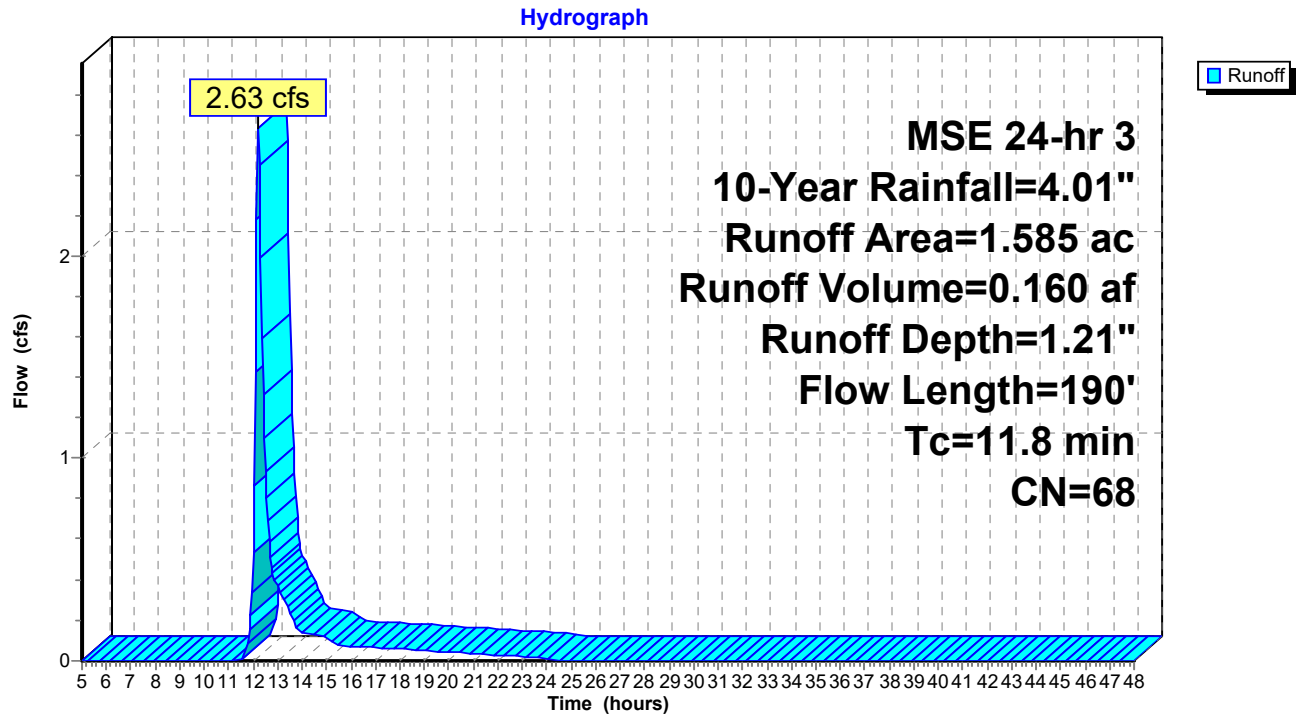
Runoff = 2.63 cfs @ 12.21 hrs, Volume= 0.160 af, Depth= 1.21"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	1.585	68	offsite
	1.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
0.9	90	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	190	Total			

Subcatchment 2/OS: (Offf-Site)



Summary for Subcatchment 2S: (new Subcat)

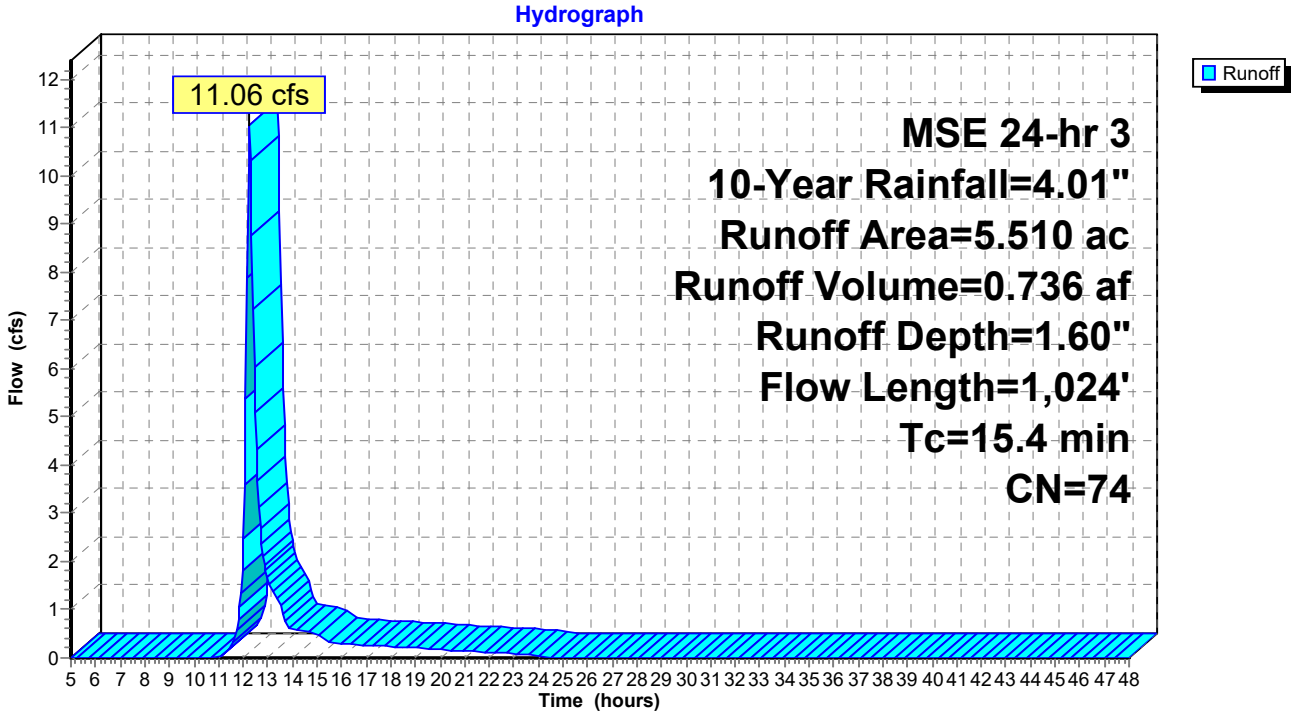
Runoff = 11.06 cfs @ 12.25 hrs, Volume= 0.736 af, Depth= 1.60"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
	5.016	72	1/3 acre lots, 30% imp, HSG B
*	0.291	98	Roadway
*	0.203	100	pond
	5.510	74	Weighted Average
	3.511		63.72% Pervious Area
	1.999		36.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0700	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
5.9	924	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.4	1,024	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

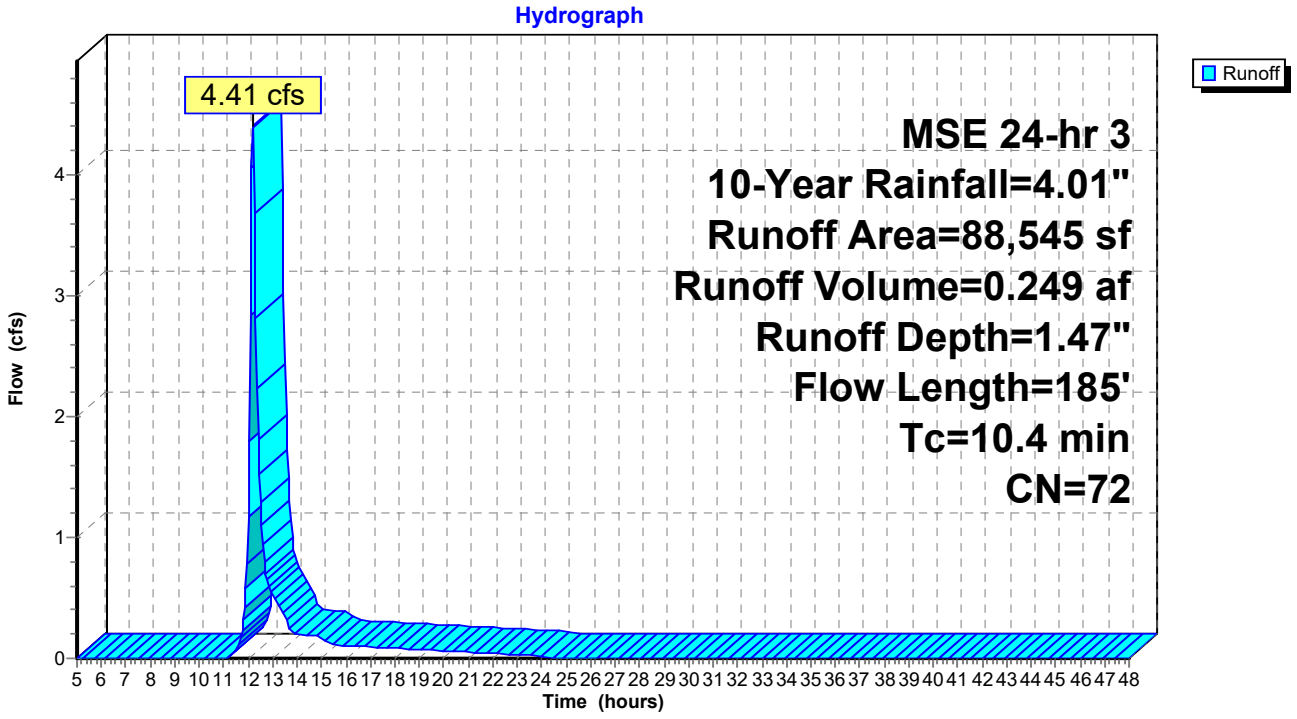
Runoff = 4.41 cfs @ 12.19 hrs, Volume= 0.249 af, Depth= 1.47"
Routed to Pond 3P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

Area (sf)	CN	Description
88,545	72	1/3 acre lots, 30% imp, HSG B
61,982		70.00% Pervious Area
26,564		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0650	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
0.6	85	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	185	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (Off-Site)

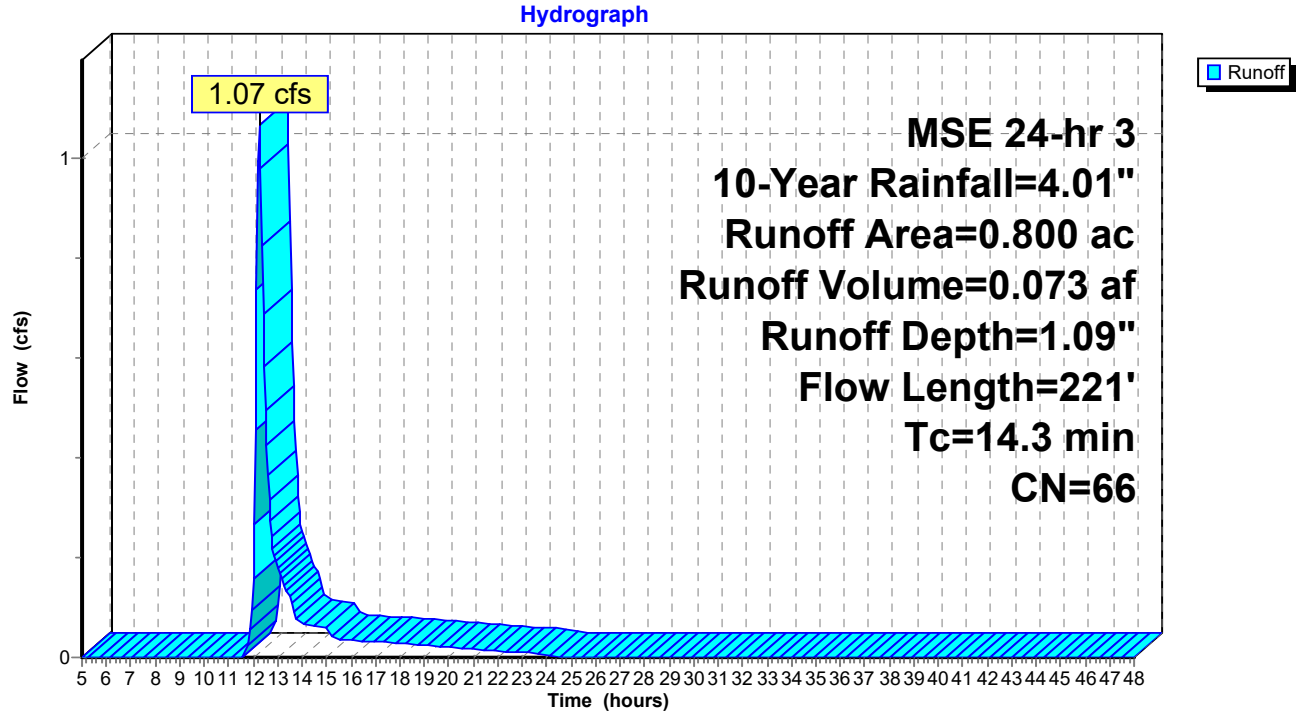
Runoff = 1.07 cfs @ 12.25 hrs, Volume= 0.073 af, Depth= 1.09"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	0.800	66	offsite
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0300	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
0.8	71	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
14.3	221	Total			

Subcatchment 4/OS: (Off-Site)



Summary for Subcatchment 4S: (new Subcat)

[47] Hint: Peak is 237% of capacity of segment #3

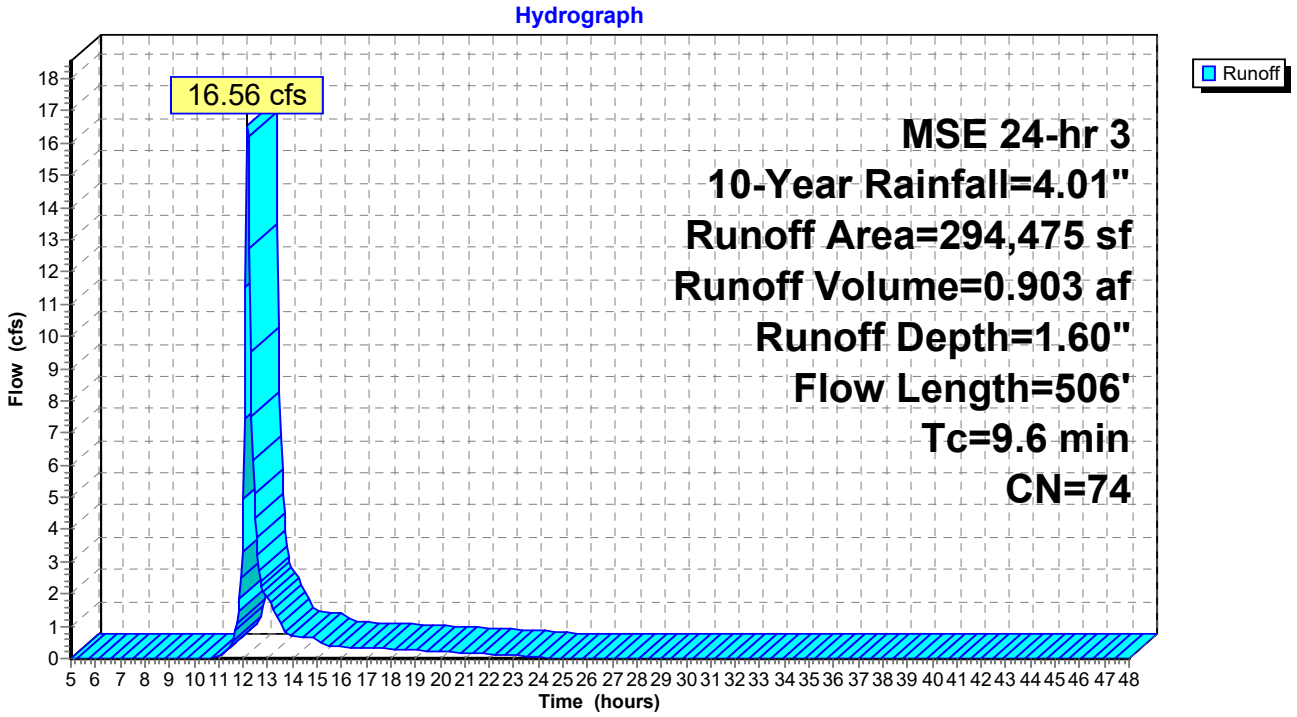
Runoff = 16.56 cfs @ 12.18 hrs, Volume= 0.903 af, Depth= 1.60"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (sf)	CN	Description
	276,158	72	1/3 acre lots, 30% imp, HSG B
*	18,317	98	Roadway
	294,475	74	Weighted Average
	193,311		65.65% Pervious Area
	101,164		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	56	0.0400	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
2.0	400	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
9.6	506	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (On-Site Not Detained)

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

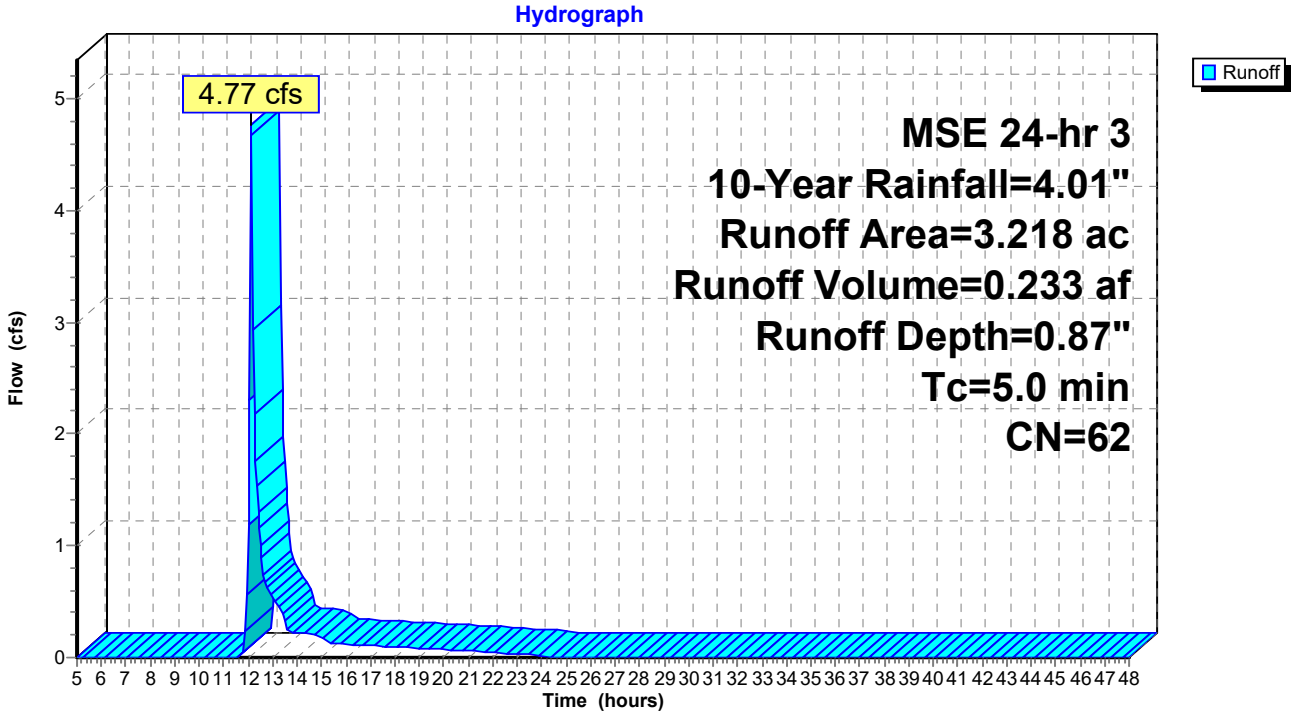
Runoff = 4.77 cfs @ 12.13 hrs, Volume= 0.233 af, Depth= 0.87"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.01"

	Area (ac)	CN	Description
*	3.218	62	
	3.218		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, (Assumed 5 minute minimum to be conservative)**

Subcatchment ND: (On-Site Not Detained)



Summary for Reach 3R: 3r

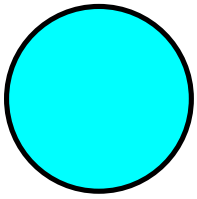
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 569% of Manning's capacity
[76] Warning: Detained 0.148 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 3P Primary device # 1 INLET by 0.68'

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 1.24" for 10-Year event
Inflow = 0.38 cfs @ 13.00 hrs, Volume= 0.209 af
Outflow = 0.07 cfs @ 11.80 hrs, Volume= 0.202 af, Atten= 82%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

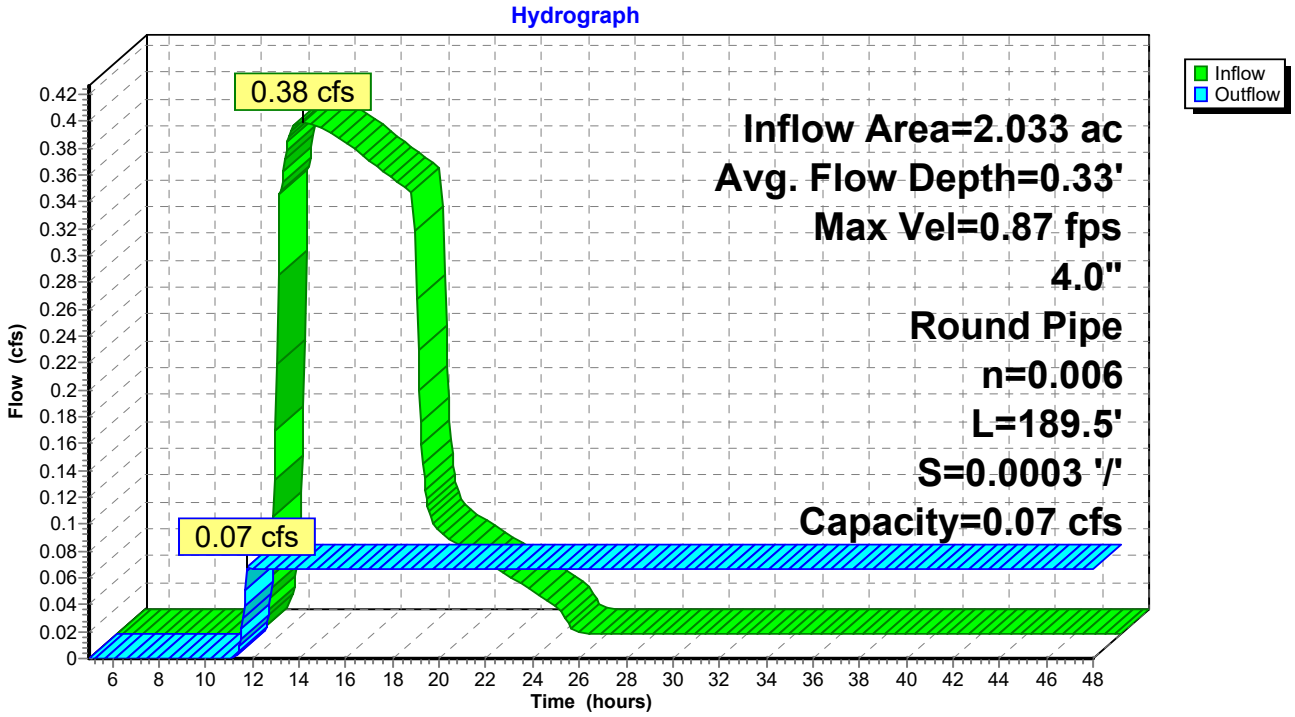
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 4.1 min

Peak Storage= 17 cf @ 11.75 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.07 cfs

4.0" Round Pipe
n= 0.006
Length= 189.5' Slope= 0.0003 '/'
Inlet Invert= 897.25', Outlet Invert= 897.20'



Reach 3R: 3r


Hydrograph
Inflow
Outflow
0.38 cfs
0.07 cfs
Inflow Area=2.033 ac
Avg. Flow Depth=0.33'
Max Vel=0.87 fps
4.0"
Round Pipe
n=0.006
L=189.5'
S=0.0003 '/'
Capacity=0.07 cfs
Flow (cfs)
Time (hours)

Summary for Reach 4R: (new Reach)

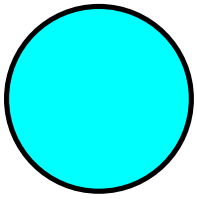
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 176% of Manning's capacity
[76] Warning: Detained 0.112 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.53'

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 0.52" for 10-Year event
Inflow = 0.19 cfs @ 13.72 hrs, Volume= 0.325 af
Outflow = 0.11 cfs @ 11.75 hrs, Volume= 0.325 af, Atten= 43%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

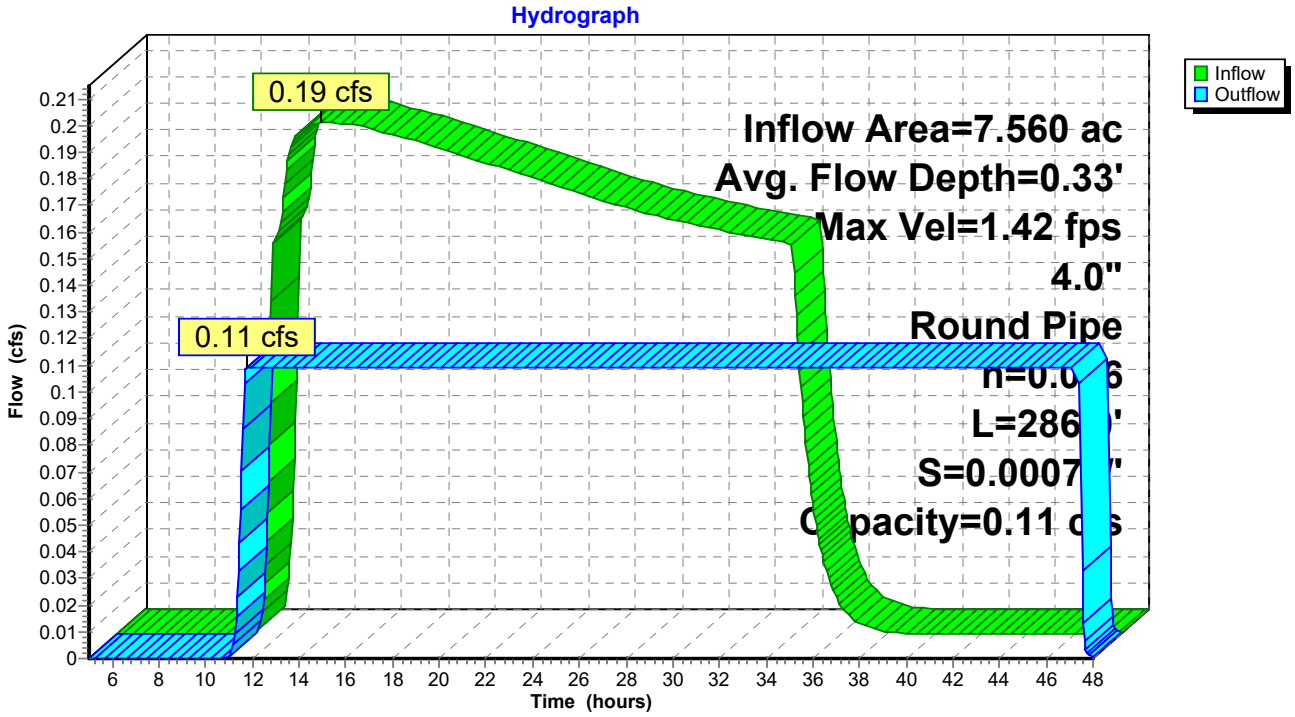
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.42 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 3.9 min

Peak Storage= 25 cf @ 11.65 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.11 cfs

4.0" Round Pipe
n= 0.006
Length= 286.0' Slope= 0.0007 '/'
Inlet Invert= 910.20', Outlet Invert= 910.00'



Reach 4R: (new Reach)



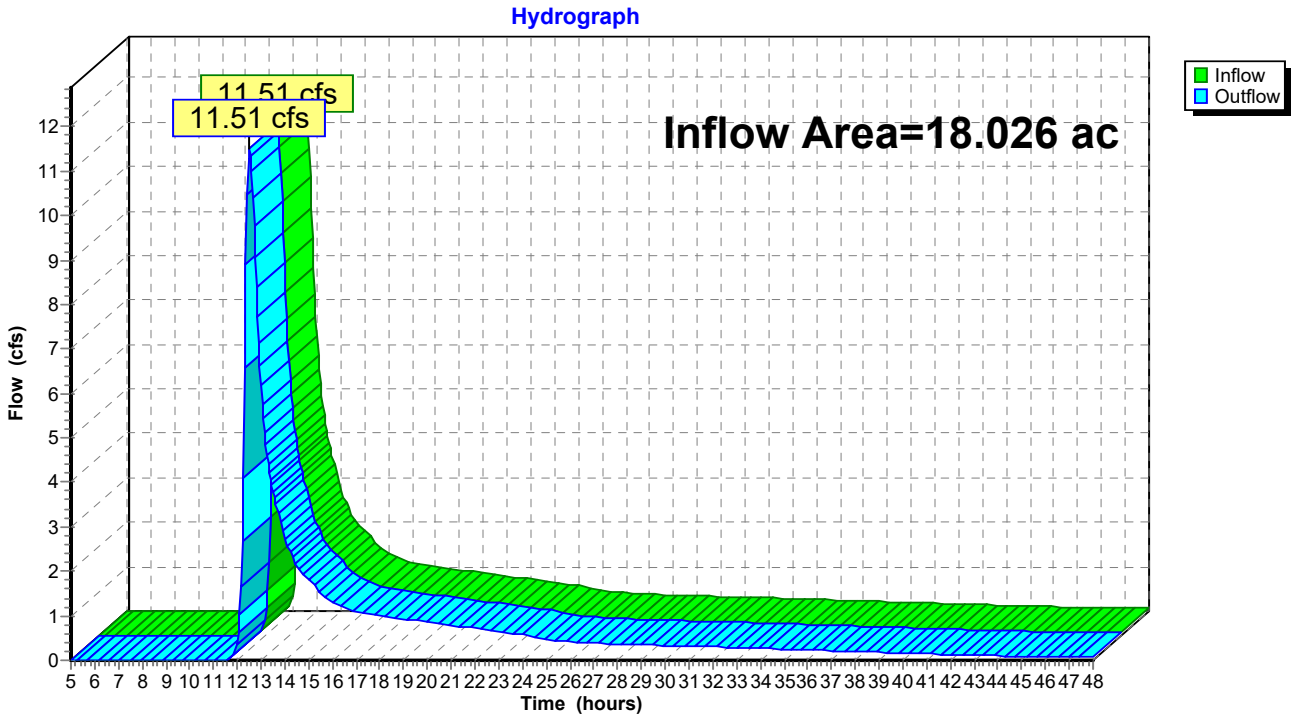
Summary for Reach AP: (Site Release)

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

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 1.52" for 10-Year event
Inflow = 11.51 cfs @ 12.51 hrs, Volume= 2.289 af
Outflow = 11.51 cfs @ 12.51 hrs, Volume= 2.289 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach AP: (Site Release)



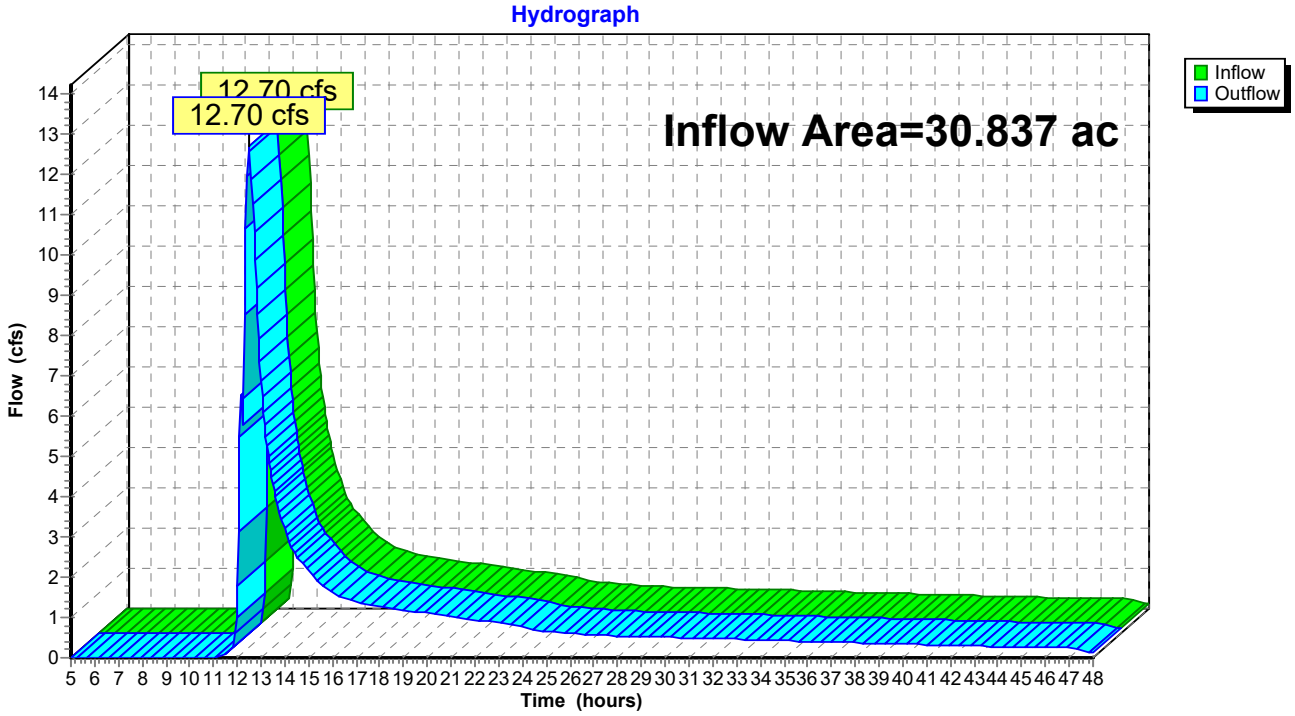
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.837 ac, 28.55% Impervious, Inflow Depth > 1.19" for 10-Year event
Inflow = 12.70 cfs @ 12.49 hrs, Volume= 3.049 af
Outflow = 12.70 cfs @ 12.49 hrs, Volume= 3.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach TAP: (new Reach)



Summary for Pond 1P: (new Pond)

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 1.54" for 10-Year event
Inflow = 20.80 cfs @ 12.28 hrs, Volume= 2.311 af
Outflow = 11.51 cfs @ 12.51 hrs, Volume= 2.289 af, Atten= 45%, Lag= 13.9 min
Primary = 11.51 cfs @ 12.51 hrs, Volume= 2.289 af
Routed to Reach AP : (Site Release)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 878.50' Surf.Area= 9,175 sf Storage= 18,894 cf
Peak Elev= 880.22' @ 12.51 hrs Surf.Area= 13,604 sf Storage= 37,922 cf (19,029 cf above start)

Plug-Flow detention time= 347.2 min calculated for 1.855 af (80% of inflow)
Center-of-Mass det. time= 56.5 min (1,133.4 - 1,076.9)

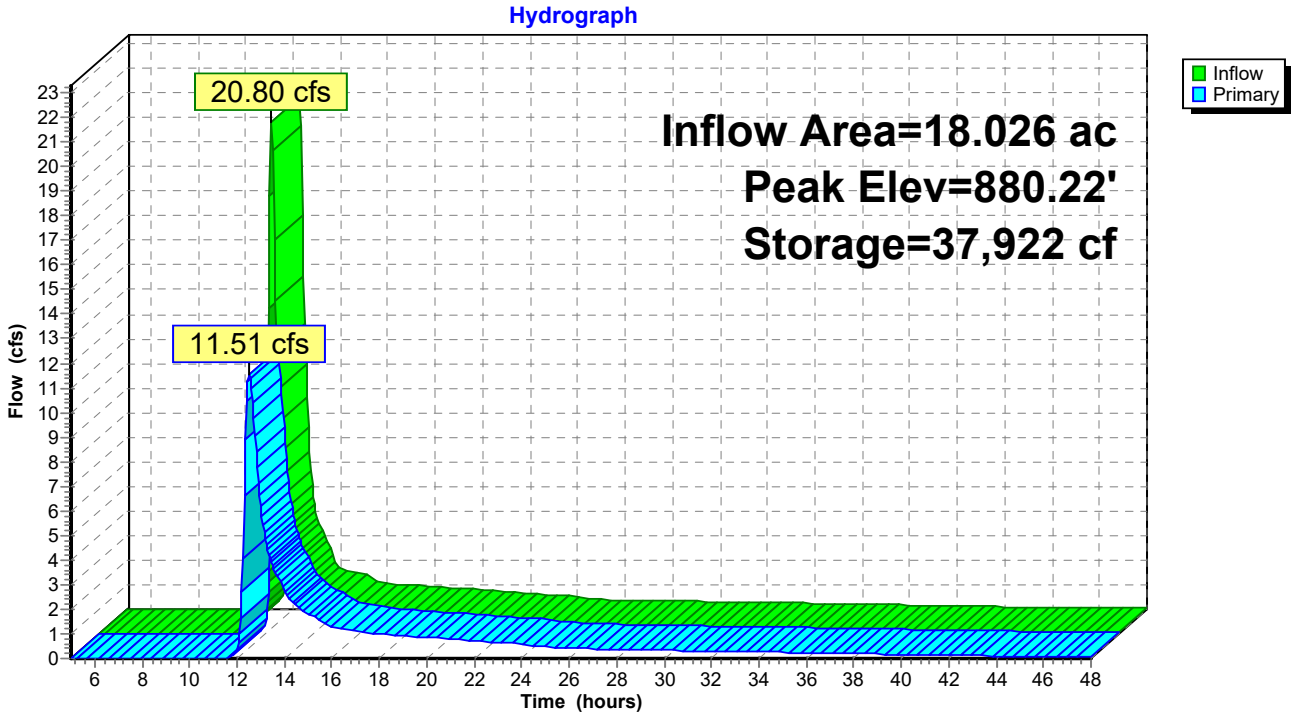
Volume	Invert	Avail.Storage	Storage Description
#1	874.50'	67,418 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
874.50	2,700	0	0
875.00	2,761	1,365	1,365
876.00	3,431	3,096	4,461
877.00	4,153	3,792	8,253
878.00	8,360	6,257	14,510
879.00	9,990	9,175	23,685
880.00	12,705	11,348	35,032
881.00	16,798	14,752	49,784
882.00	18,470	17,634	67,418

Device	Routing	Invert	Outlet Devices
#1	Primary	878.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	878.50'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 878.50' / 878.00' S= 0.0100 '/' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#3	Primary	879.60'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Primary OutFlow Max=11.48 cfs @ 12.51 hrs HW=880.22' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.52 cfs @ 6.00 fps)
- **2=Culvert** (Barrel Controls 6.16 cfs @ 3.81 fps)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 4.80 cfs @ 2.70 fps)

Pond 1P: (new Pond)



Summary for Pond 2P: (new Pond)

Inflow Area = 7.095 ac, 28.17% Impervious, Inflow Depth = 1.52" for 10-Year event
Inflow = 13.52 cfs @ 12.24 hrs, Volume= 0.896 af
Outflow = 0.47 cfs @ 15.26 hrs, Volume= 0.852 af, Atten= 97%, Lag= 180.9 min
Primary = 0.47 cfs @ 15.26 hrs, Volume= 0.852 af
Routed to Pond 1P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 883.50' Surf.Area= 13,472 sf Storage= 44,176 cf
Peak Elev= 885.27' @ 15.26 hrs Surf.Area= 17,300 sf Storage= 70,918 cf (26,742 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 671.3 min (1,500.4 - 829.1)

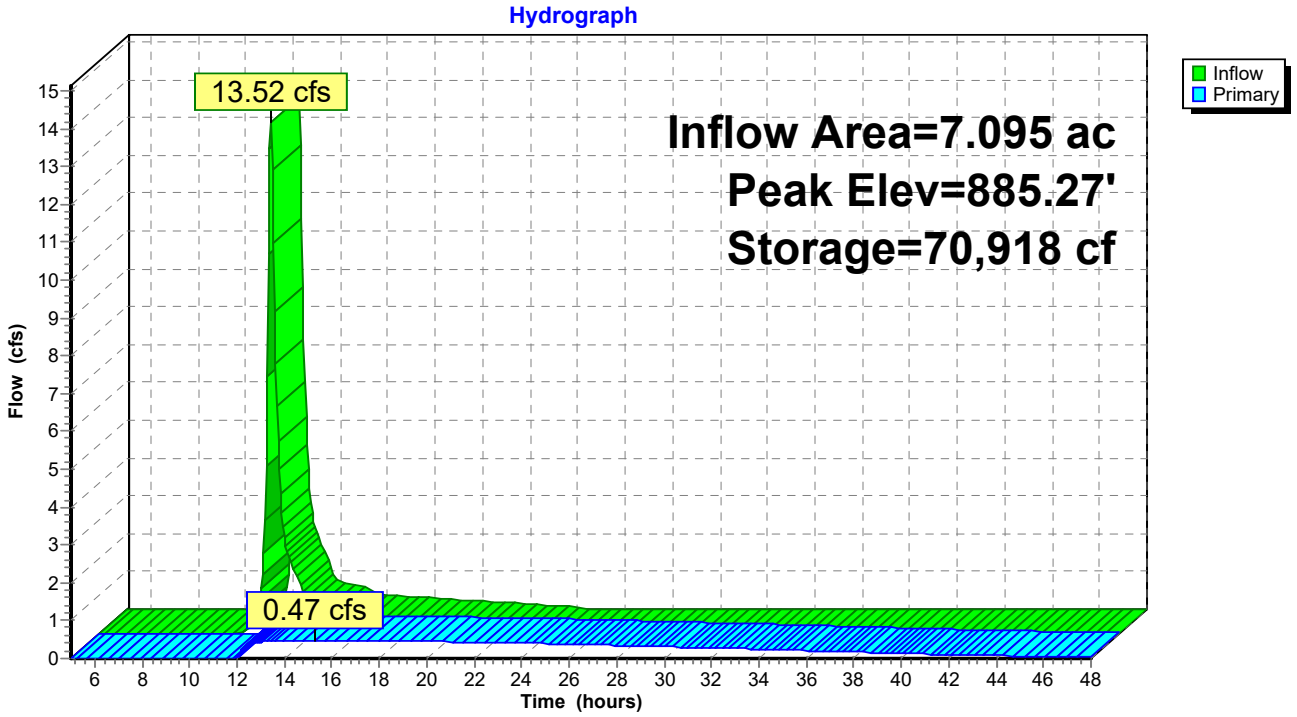
Volume	Invert	Avail.Storage	Storage Description
#1	878.00'	84,372 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
878.00	4,924	0	0
879.00	5,516	5,220	5,220
882.00	8,851	21,551	26,771
883.00	12,816	10,834	37,604
884.00	14,127	13,472	51,076
885.00	16,562	15,345	66,420
886.00	19,341	17,952	84,372

Device	Routing	Invert	Outlet Devices
#1	Primary	883.50'	**4.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 883.50' / 881.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.09 sf
#2	Primary	885.50'	**15.0' long x 45.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.47 cfs @ 15.26 hrs HW=885.27' (Free Discharge)
1=Culvert (Inlet Controls 0.47 cfs @ 5.37 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: (new Pond)



Summary for Pond 3P: (new Pond)

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 1.47" for 10-Year event
Inflow = 4.41 cfs @ 12.19 hrs, Volume= 0.249 af
Outflow = 0.53 cfs @ 13.00 hrs, Volume= 0.249 af, Atten= 88%, Lag= 48.7 min
Discarded = 0.14 cfs @ 13.00 hrs, Volume= 0.039 af
Primary = 0.38 cfs @ 13.00 hrs, Volume= 0.209 af
Routed to Reach 3R : 3r

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 899.72' @ 13.00 hrs Surf.Area= 7,408 sf Storage= 4,737 cf

Plug-Flow detention time= 91.3 min calculated for 0.248 af (100% of inflow)
Center-of-Mass det. time= 91.2 min (918.2 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	42,748 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

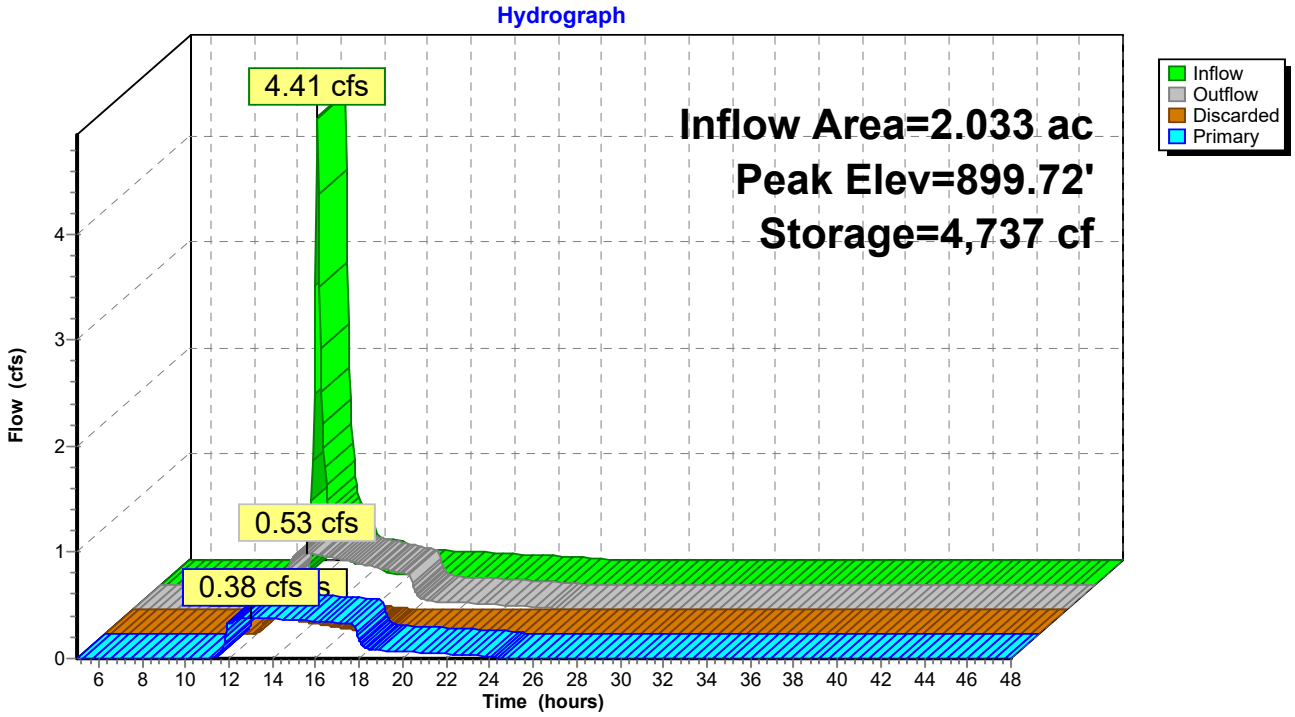
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
899.00	5,699	0	0
900.00	8,064	6,882	6,882
901.00	10,241	9,153	16,034
902.00	12,451	11,346	27,380
903.00	18,284	15,368	42,748

Device	Routing	Invert	Outlet Devices
#1	Primary	896.90'	**12.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.90' / 896.60' S= 0.0046 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	897.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	900.62'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	899.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 895.25' Phase-In= 1.00'
#5	Primary	902.00'	**30.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.14 cfs @ 13.00 hrs HW=899.72' (Free Discharge)
└**4=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.38 cfs @ 13.00 hrs HW=899.72' (Free Discharge)
├**1=Culvert** (Passes 0.38 cfs of 4.55 cfs potential flow)
│└**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.76 fps)
├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: (new Pond)



Summary for Pond 4P: (new Pond)

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 1.55" for 10-Year event
Inflow = 17.47 cfs @ 12.18 hrs, Volume= 0.976 af
Outflow = 0.86 cfs @ 13.72 hrs, Volume= 0.976 af, Atten= 95%, Lag= 92.2 min
Discarded = 0.67 cfs @ 13.72 hrs, Volume= 0.651 af
Primary = 0.19 cfs @ 13.72 hrs, Volume= 0.325 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 913.42' @ 13.72 hrs Surf.Area= 21,366 sf Storage= 25,719 cf

Plug-Flow detention time= 386.8 min calculated for 0.975 af (100% of inflow)
Center-of-Mass det. time= 387.2 min (1,210.8 - 823.7)

Volume	Invert	Avail.Storage	Storage Description
#1	912.00'	65,460 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

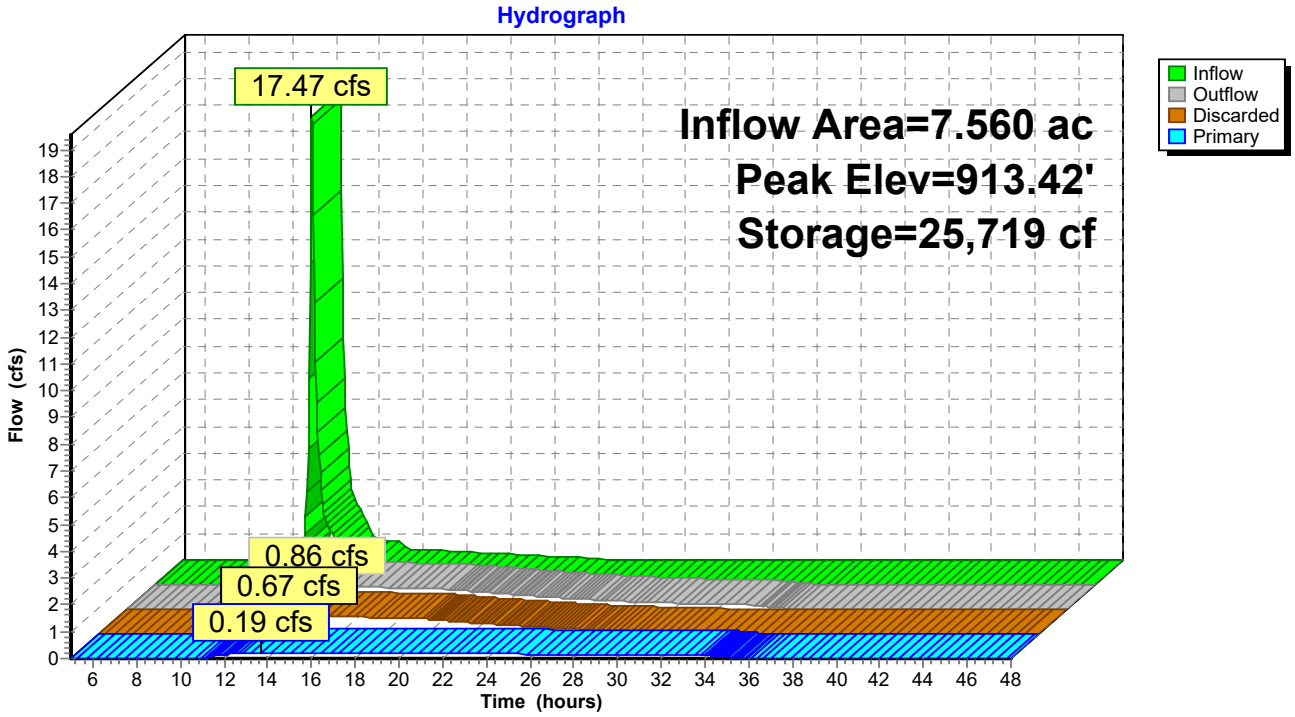
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
912.00	14,810	0	0
913.00	19,415	17,113	17,113
914.00	24,038	21,727	38,839
915.00	29,203	26,621	65,460

Device	Routing	Invert	Outlet Devices
#1	Primary	910.00'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 910.00' / 909.80' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#2	Primary	913.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	912.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 908.70' Phase-In= 1.00'
#4	Device 1	910.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	914.50'	**35.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.67 cfs @ 13.72 hrs HW=913.42' (Free Discharge)
└**3=Exfiltration** (Controls 0.67 cfs)

Primary OutFlow Max=0.19 cfs @ 13.72 hrs HW=913.42' (Free Discharge)
├**1=Culvert** (Passes 0.19 cfs of 2.33 cfs potential flow)
│└**4=Orifice/Grate** (Orifice Controls 0.19 cfs @ 8.80 fps)
├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: (new Pond)



Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 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 1/OS: (Off-Site) Runoff Area=0.085 ac 0.00% Impervious Runoff Depth=3.03"
Flow Length=846' Tc=17.9 min CN=70 Runoff=0.30 cfs 0.021 af

Subcatchment 1S: (new Subcat) Runoff Area=10.846 ac 35.71% Impervious Runoff Depth=3.42"
Flow Length=892' Tc=17.5 min CN=74 Runoff=44.43 cfs 3.093 af

Subcatchment 2/OS: (Offf-Site) Runoff Area=1.585 ac 0.00% Impervious Runoff Depth=2.84"
Flow Length=190' Tc=11.8 min CN=68 Runoff=6.43 cfs 0.375 af

Subcatchment 2S: (new Subcat) Runoff Area=5.510 ac 36.28% Impervious Runoff Depth=3.42"
Flow Length=1,024' Tc=15.4 min CN=74 Runoff=23.89 cfs 1.571 af

Subcatchment 3S: (new Subcat) Runoff Area=88,545 sf 30.00% Impervious Runoff Depth=3.22"
Flow Length=185' Tc=10.4 min CN=72 Runoff=9.82 cfs 0.546 af

Subcatchment 4/OS: (Off-Site) Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=2.65"
Flow Length=221' Tc=14.3 min CN=66 Runoff=2.76 cfs 0.177 af

Subcatchment 4S: (new Subcat) Runoff Area=294,475 sf 34.35% Impervious Runoff Depth=3.42"
Flow Length=506' Tc=9.6 min CN=74 Runoff=35.72 cfs 1.928 af

Subcatchment ND: (On-Site Not Detained) Runoff Area=3.218 ac 0.00% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=62 Runoff=13.44 cfs 0.613 af

Reach 3R: 3r Avg. Flow Depth=0.33' Max Vel=0.87 fps Inflow=0.48 cfs 0.385 af
4.0" Round Pipe n=0.006 L=189.5' S=0.0003 '/' Capacity=0.07 cfs Outflow=0.07 cfs 0.207 af

Reach 4R: (new Reach) Avg. Flow Depth=0.33' Max Vel=1.42 fps Inflow=2.83 cfs 1.093 af
4.0" Round Pipe n=0.006 L=286.0' S=0.0007 '/' Capacity=0.11 cfs Outflow=0.11 cfs 0.340 af

Reach AP: (Site Release) Inflow=33.62 cfs 4.963 af
Outflow=33.62 cfs 4.963 af

Reach TAP: (new Reach) Inflow=36.14 cfs 6.122 af
Outflow=36.14 cfs 6.122 af

Pond 1P: (new Pond) Peak Elev=881.41' Storage=56,774 cf Inflow=45.22 cfs 4.993 af
Outflow=33.62 cfs 4.963 af

Pond 2P: (new Pond) Peak Elev=885.93' Storage=82,932 cf Inflow=29.89 cfs 1.946 af
Outflow=11.78 cfs 1.879 af

Pond 3P: (new Pond) Peak Elev=900.66' Storage=12,709 cf Inflow=9.82 cfs 0.546 af
Discarded=0.30 cfs 0.161 af Primary=0.48 cfs 0.385 af Outflow=0.77 cfs 0.546 af

Pond 4P: (new Pond) Peak Elev=914.50' Storage=51,430 cf Inflow=38.10 cfs 2.104 af
Discarded=0.96 cfs 1.011 af Primary=2.83 cfs 1.093 af Outflow=3.78 cfs 2.104 af

Total Runoff Area = 30.837 ac Runoff Volume = 8.323 af Average Runoff Depth = 3.24"
71.45% Pervious = 22.033 ac 28.55% Impervious = 8.804 ac

Summary for Subcatchment 1/OS: (Off-Site)

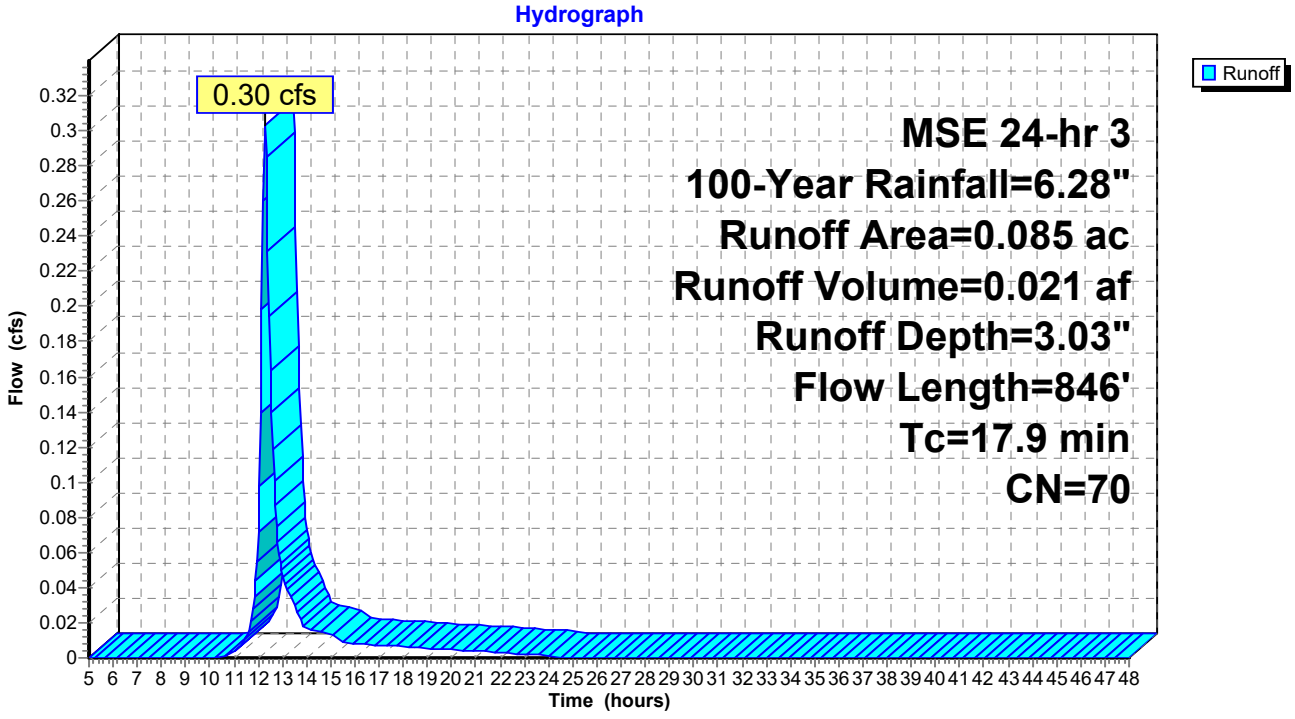
Runoff = 0.30 cfs @ 12.27 hrs, Volume= 0.021 af, Depth= 3.03"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	0.085	70	offsite
	0.085		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
6.2	560	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.9	846	Total			

Subcatchment 1/OS: (Off-Site)



Summary for Subcatchment 1S: (new Subcat)

[47] Hint: Peak is 635% of capacity of segment #3

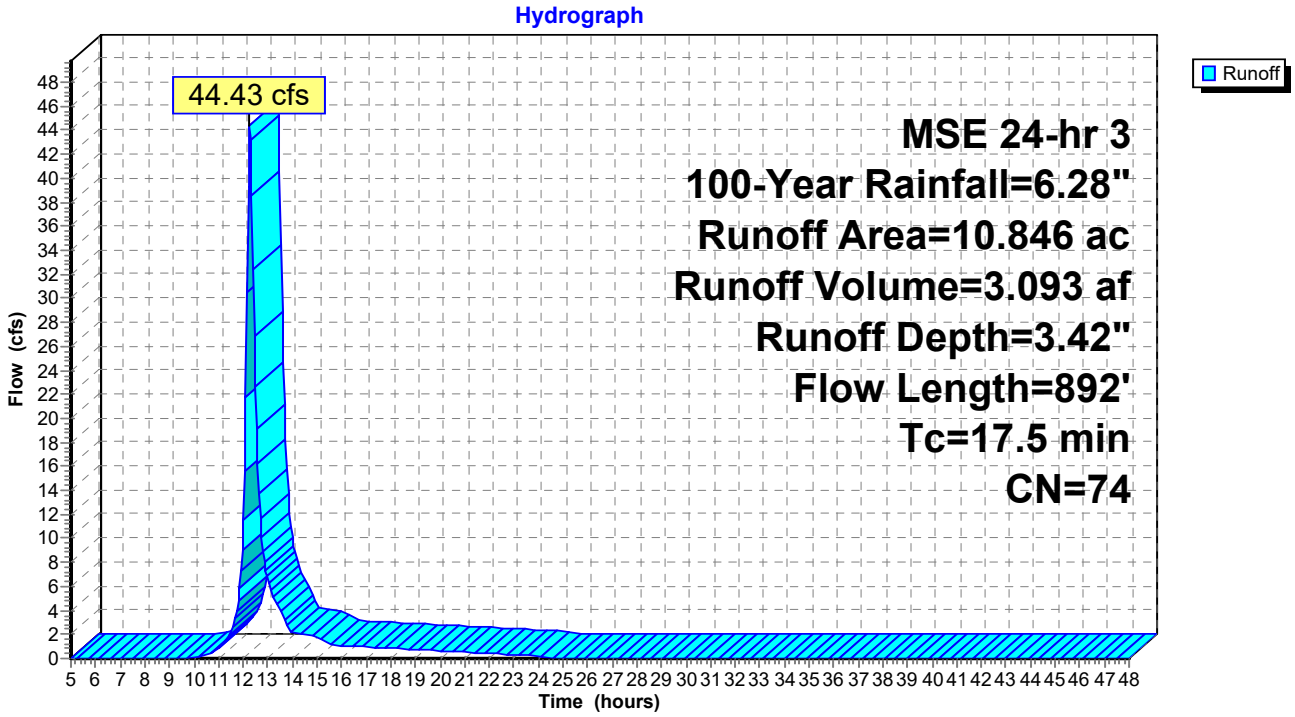
Runoff = 44.43 cfs @ 12.27 hrs, Volume= 3.093 af, Depth= 3.42"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
	9.961	72	1/3 acre lots, 30% imp, HSG B
*	0.790	98	Roadway
*	0.095	100	pond
	10.846	74	Weighted Average
	6.973		64.29% Pervious Area
	3.873		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
5.7	561	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	45	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
0.8	186	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.5	892	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2/OS: (Offf-Site)

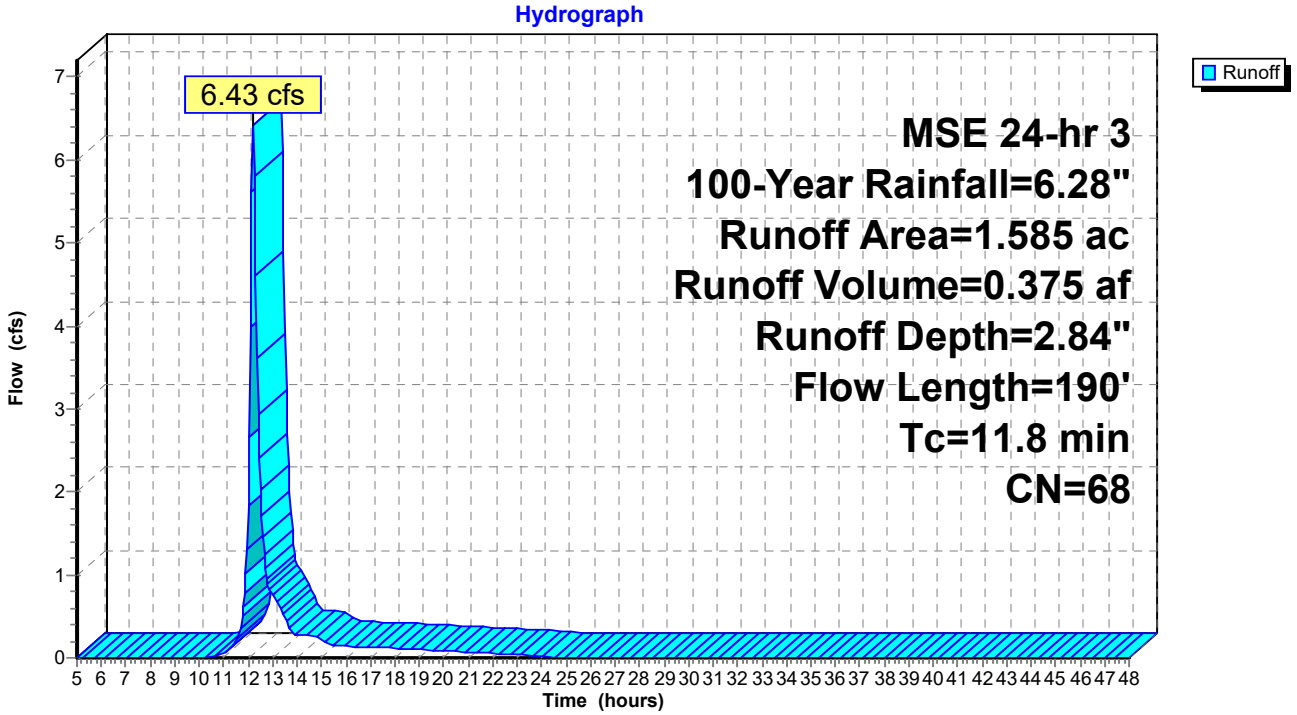
Runoff = 6.43 cfs @ 12.20 hrs, Volume= 0.375 af, Depth= 2.84"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	1.585	68	offsite
	1.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	100	0.0500	0.15		**Sheet Flow,** n= 0.250 P2= 2.80"
0.9	90	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	190	Total			

Subcatchment 2/OS: (Offf-Site)



Summary for Subcatchment 2S: (new Subcat)

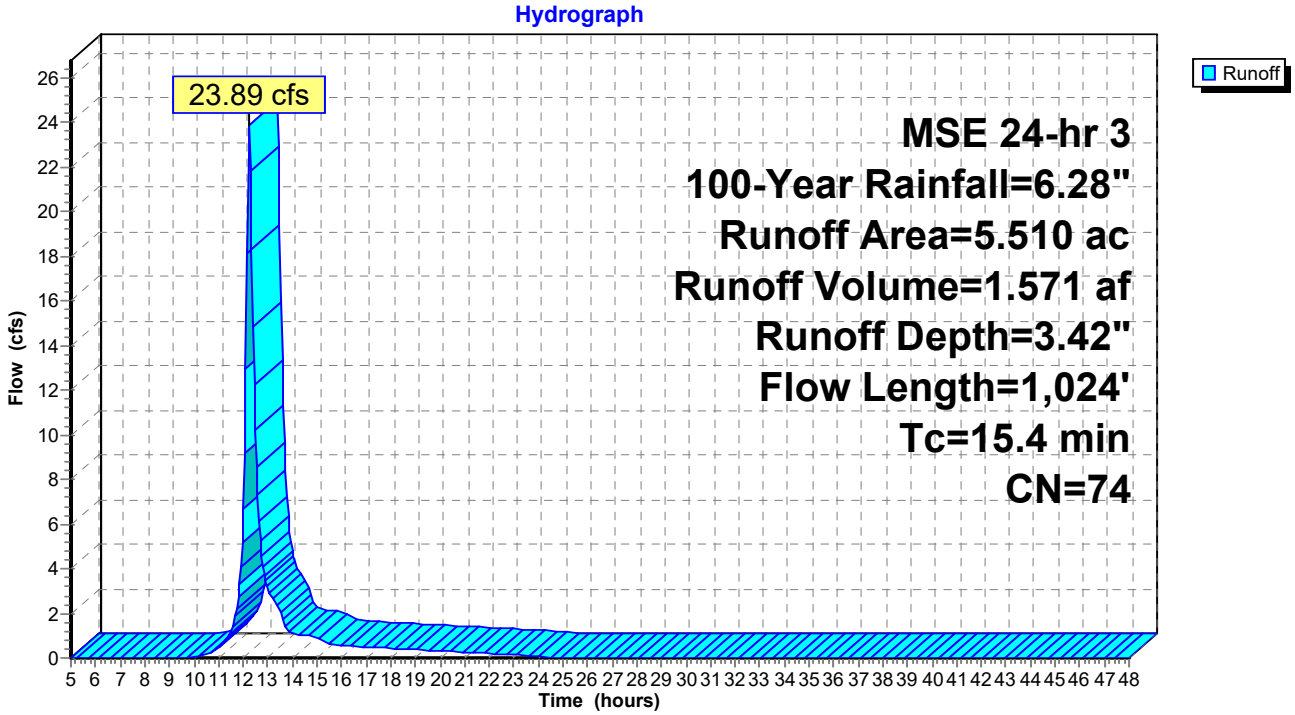
Runoff = 23.89 cfs @ 12.24 hrs, Volume= 1.571 af, Depth= 3.42"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
	5.016	72	1/3 acre lots, 30% imp, HSG B
*	0.291	98	Roadway
*	0.203	100	pond
	5.510	74	Weighted Average
	3.511		63.72% Pervious Area
	1.999		36.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0700	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
5.9	924	0.0300	2.60		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.4	1,024	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

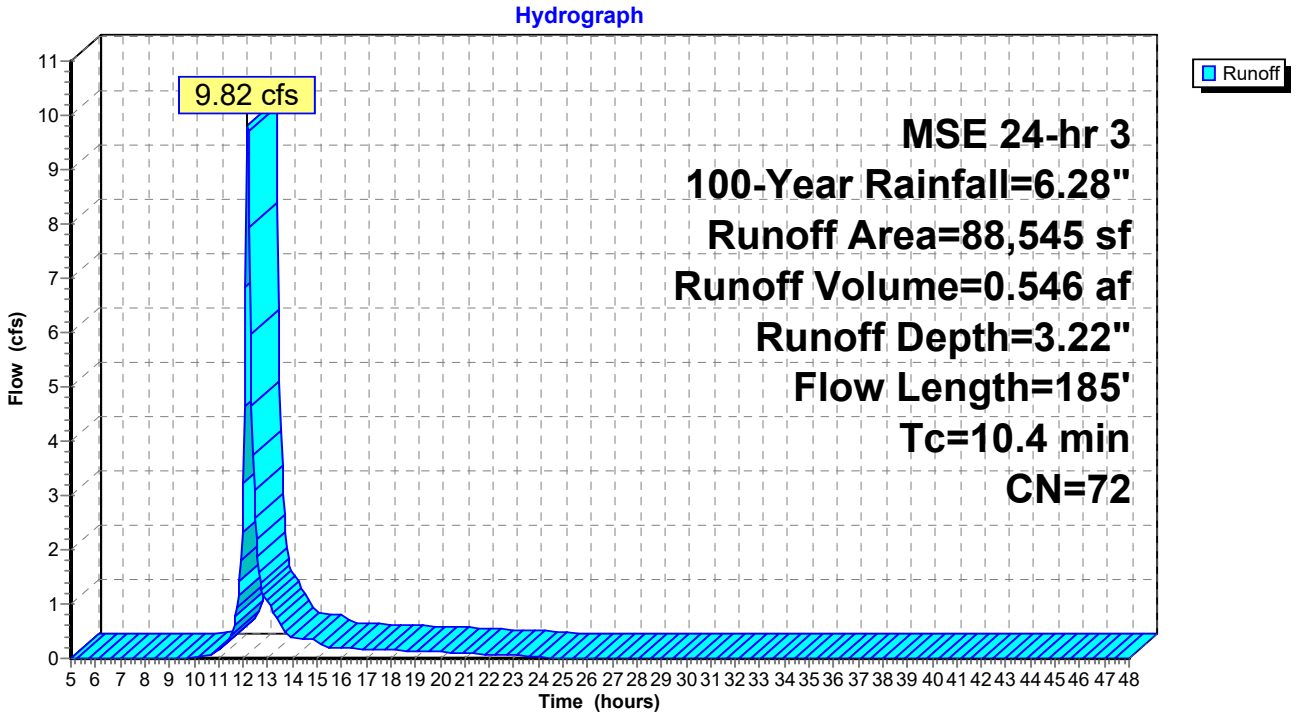
Runoff = 9.82 cfs @ 12.18 hrs, Volume= 0.546 af, Depth= 3.22"
Routed to Pond 3P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

Area (sf)	CN	Description
88,545	72	1/3 acre lots, 30% imp, HSG B
61,982		70.00% Pervious Area
26,564		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0650	0.17		**Sheet Flow,** n= 0.250 P2= 2.80"
0.6	85	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.4	185	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4/OS: (Off-Site)

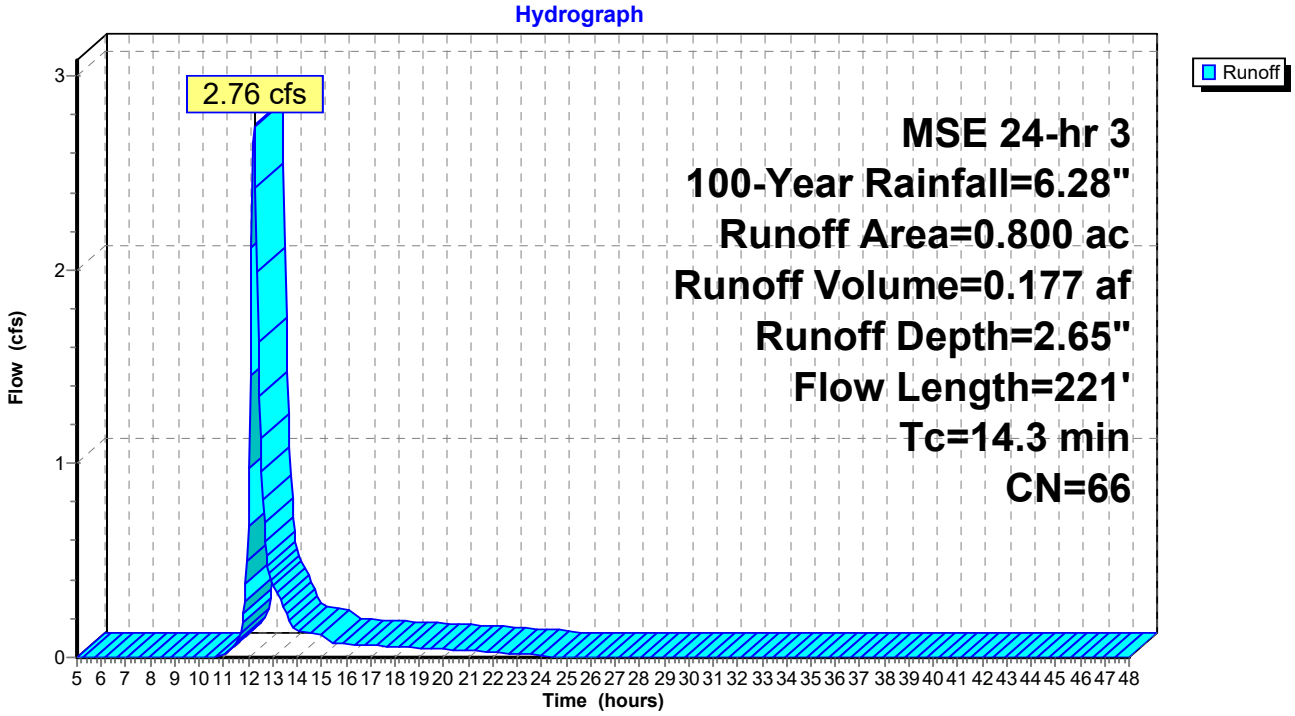
Runoff = 2.76 cfs @ 12.24 hrs, Volume= 0.177 af, Depth= 2.65"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	0.800	66	offsite
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0300	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
0.8	71	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
14.3	221	Total			

Subcatchment 4/OS: (Off-Site)



Summary for Subcatchment 4S: (new Subcat)

[47] Hint: Peak is 510% of capacity of segment #3

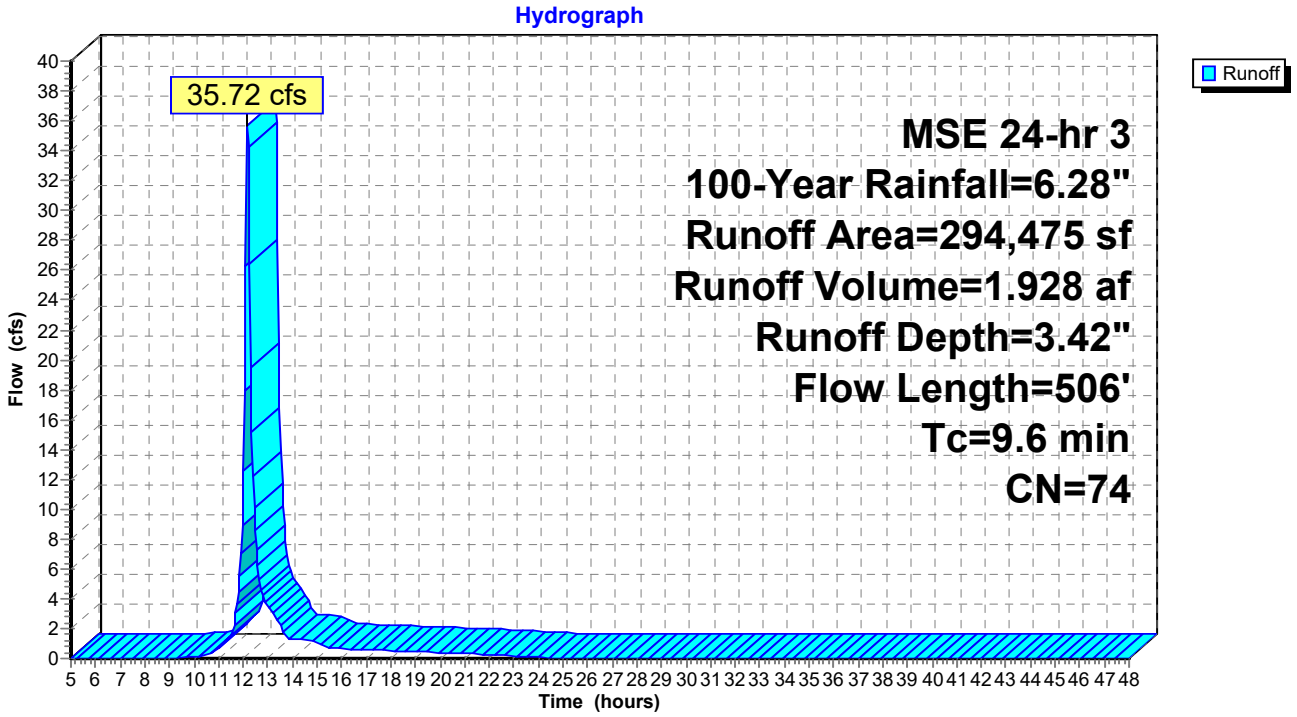
Runoff = 35.72 cfs @ 12.17 hrs, Volume= 1.928 af, Depth= 3.42"
Routed to Pond 4P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (sf)	CN	Description
	276,158	72	1/3 acre lots, 30% imp, HSG B
*	18,317	98	Roadway
	294,475	74	Weighted Average
	193,311		65.65% Pervious Area
	101,164		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	56	0.0400	0.12		**Sheet Flow,** n= 0.250 P2= 2.80"
2.0	400	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	50	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
9.6	506	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment ND: (On-Site Not Detained)

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

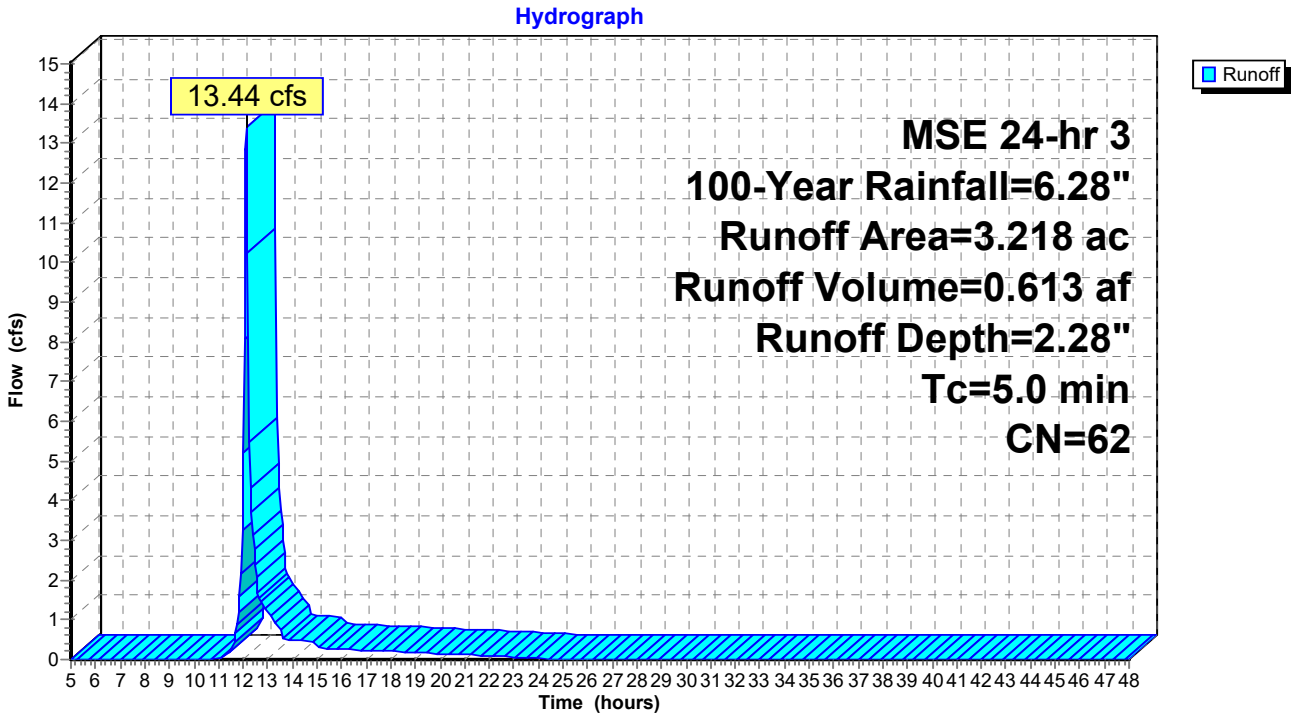
Runoff = 13.44 cfs @ 12.12 hrs, Volume= 0.613 af, Depth= 2.28"
Routed to Reach TAP : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=6.28"

	Area (ac)	CN	Description
*	3.218	62	
	3.218		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, (Assumed 5 minute minimum to be conservative)**

Subcatchment ND: (On-Site Not Detained)



Summary for Reach 3R: 3r

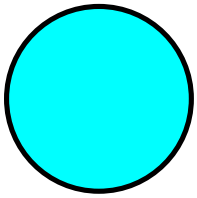
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 711% of Manning's capacity
[76] Warning: Detained 0.311 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 3P Primary device # 1 INLET by 0.68'

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 2.27" for 100-Year event
Inflow = 0.48 cfs @ 13.36 hrs, Volume= 0.385 af
Outflow = 0.07 cfs @ 10.97 hrs, Volume= 0.207 af, Atten= 85%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

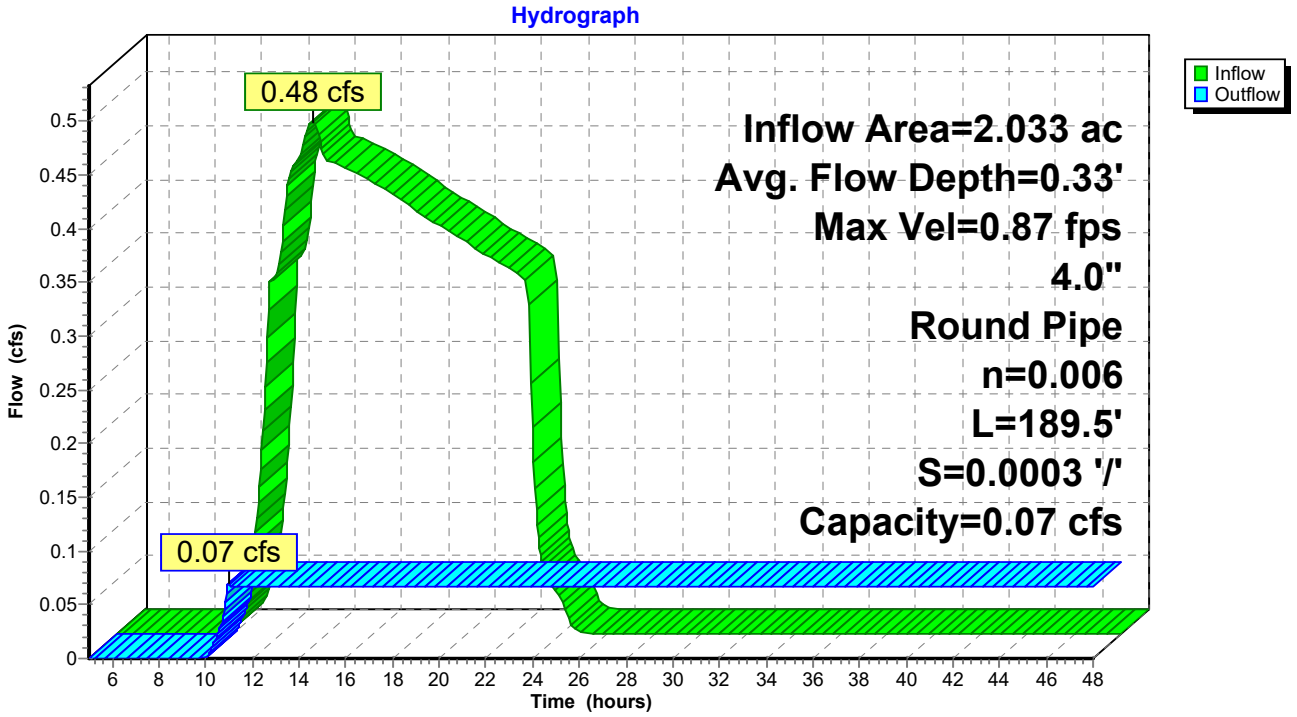
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 4.1 min

Peak Storage= 17 cf @ 10.95 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.07 cfs

4.0" Round Pipe
n= 0.006
Length= 189.5' Slope= 0.0003 '/'
Inlet Invert= 897.25', Outlet Invert= 897.20'



Reach 3R: 3r


Hydrograph
Inflow
Outflow
0.48 cfs
0.07 cfs
Inflow Area=2.033 ac
Avg. Flow Depth=0.33'
Max Vel=0.87 fps
4.0"
Round Pipe
n=0.006
L=189.5'
S=0.0003 '/'
Capacity=0.07 cfs
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
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Summary for Reach 4R: (new Reach)

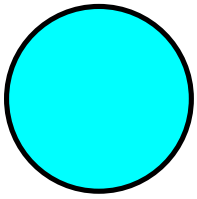
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 2593% of Manning's capacity
[76] Warning: Detained 0.834 af (Pond w/culvert advised)
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.53'

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 1.74" for 100-Year event
Inflow = 2.83 cfs @ 13.04 hrs, Volume= 1.093 af
Outflow = 0.11 cfs @ 10.75 hrs, Volume= 0.340 af, Atten= 96%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

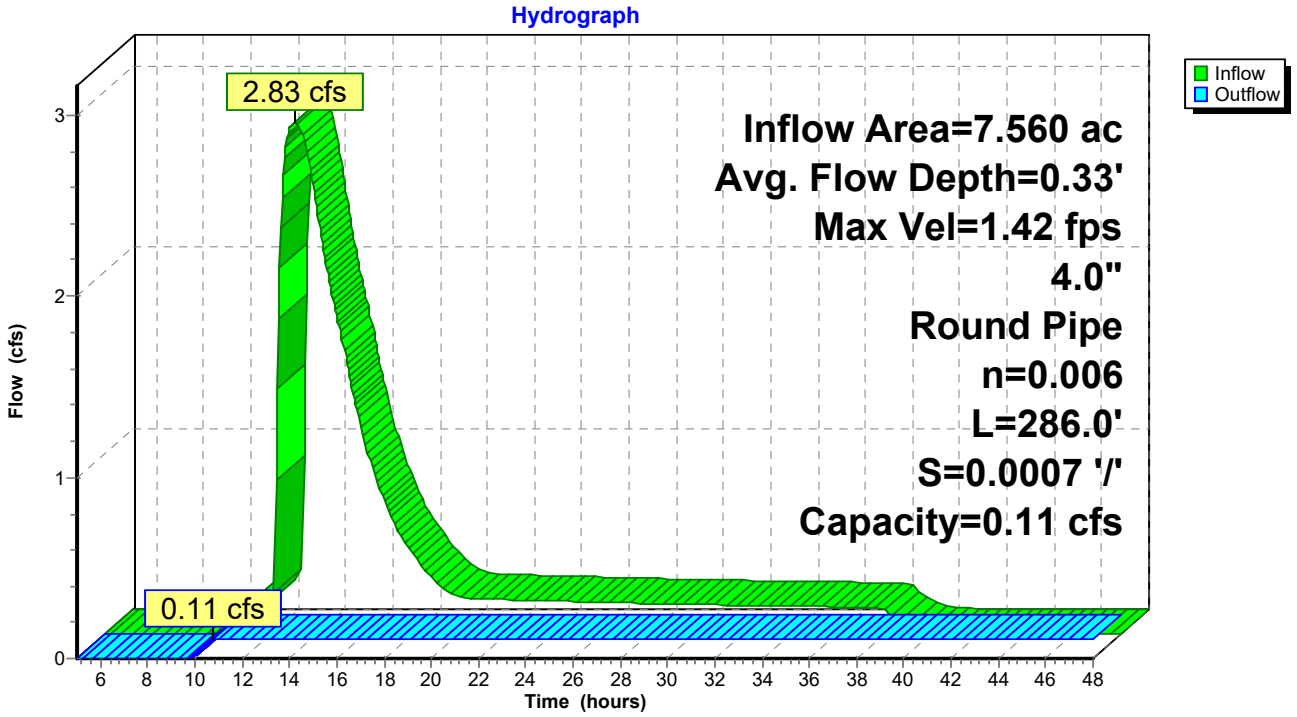
Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.42 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 3.8 min

Peak Storage= 25 cf @ 10.75 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.11 cfs

4.0" Round Pipe
n= 0.006
Length= 286.0' Slope= 0.0007 '/'
Inlet Invert= 910.20', Outlet Invert= 910.00'



Reach 4R: (new Reach)



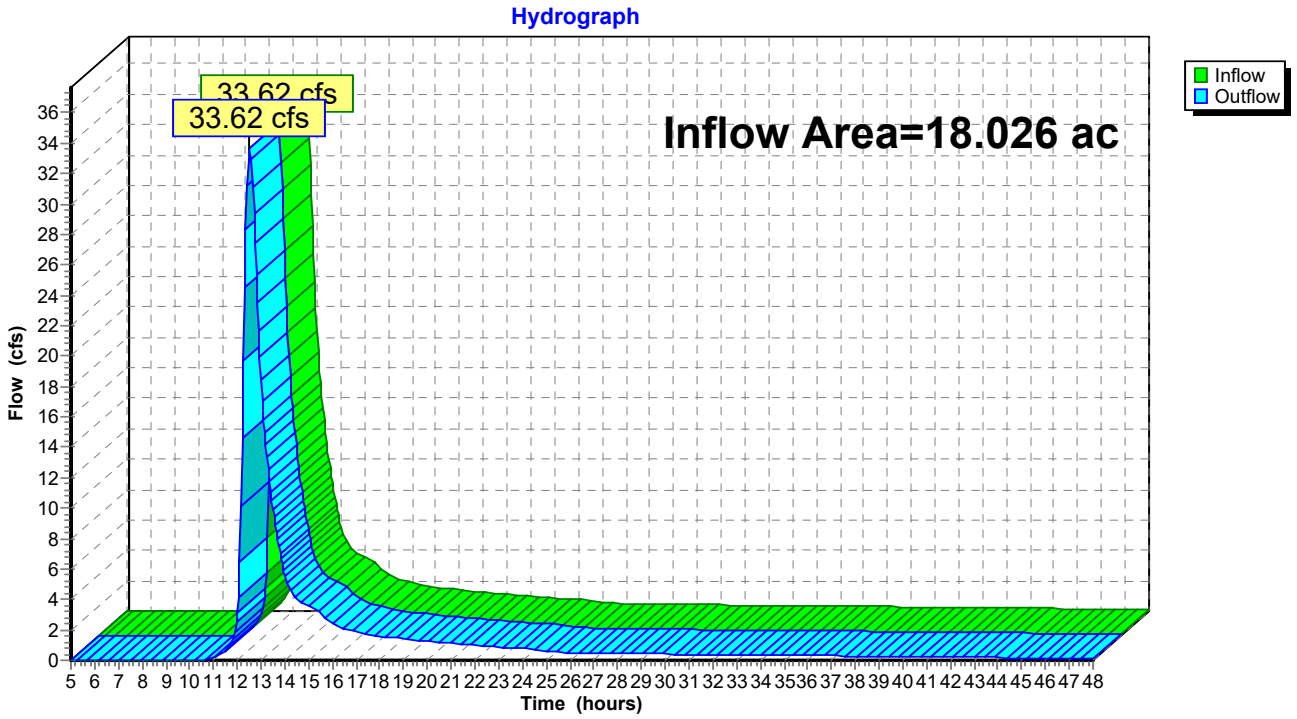
Summary for Reach AP: (Site Release)

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

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 3.30" for 100-Year event
Inflow = 33.62 cfs @ 12.51 hrs, Volume= 4.963 af
Outflow = 33.62 cfs @ 12.51 hrs, Volume= 4.963 af, Atten= 0%, Lag= 0.0 min
Routed to Reach TAP : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach AP: (Site Release)



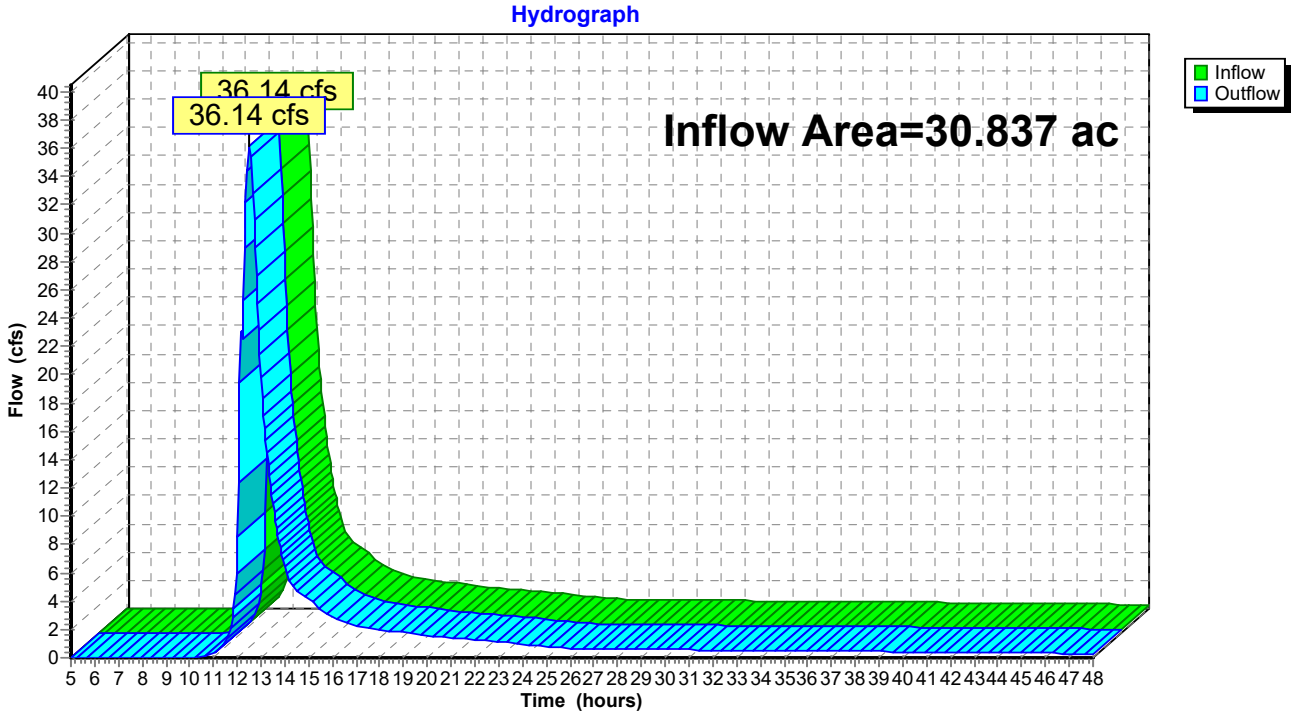
Summary for Reach TAP: (new Reach)

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

Inflow Area = 30.837 ac, 28.55% Impervious, Inflow Depth > 2.38" for 100-Year event
Inflow = 36.14 cfs @ 12.49 hrs, Volume= 6.122 af
Outflow = 36.14 cfs @ 12.49 hrs, Volume= 6.122 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs

Reach TAP: (new Reach)



Summary for Pond 1P: (new Pond)

[79] Warning: Submerged Pond 2P Primary device # 1 OUTLET by 0.41'

Inflow Area = 18.026 ac, 32.58% Impervious, Inflow Depth > 3.32" for 100-Year event
Inflow = 45.22 cfs @ 12.27 hrs, Volume= 4.993 af
Outflow = 33.62 cfs @ 12.51 hrs, Volume= 4.963 af, Atten= 26%, Lag= 14.8 min
Primary = 33.62 cfs @ 12.51 hrs, Volume= 4.963 af
Routed to Reach AP : (Site Release)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 878.50' Surf.Area= 9,175 sf Storage= 18,894 cf
Peak Elev= 881.41' @ 12.51 hrs Surf.Area= 17,480 sf Storage= 56,774 cf (37,880 cf above start)

Plug-Flow detention time= 177.9 min calculated for 4.524 af (91% of inflow)
Center-of-Mass det. time= 37.0 min (1,007.8 - 970.8)

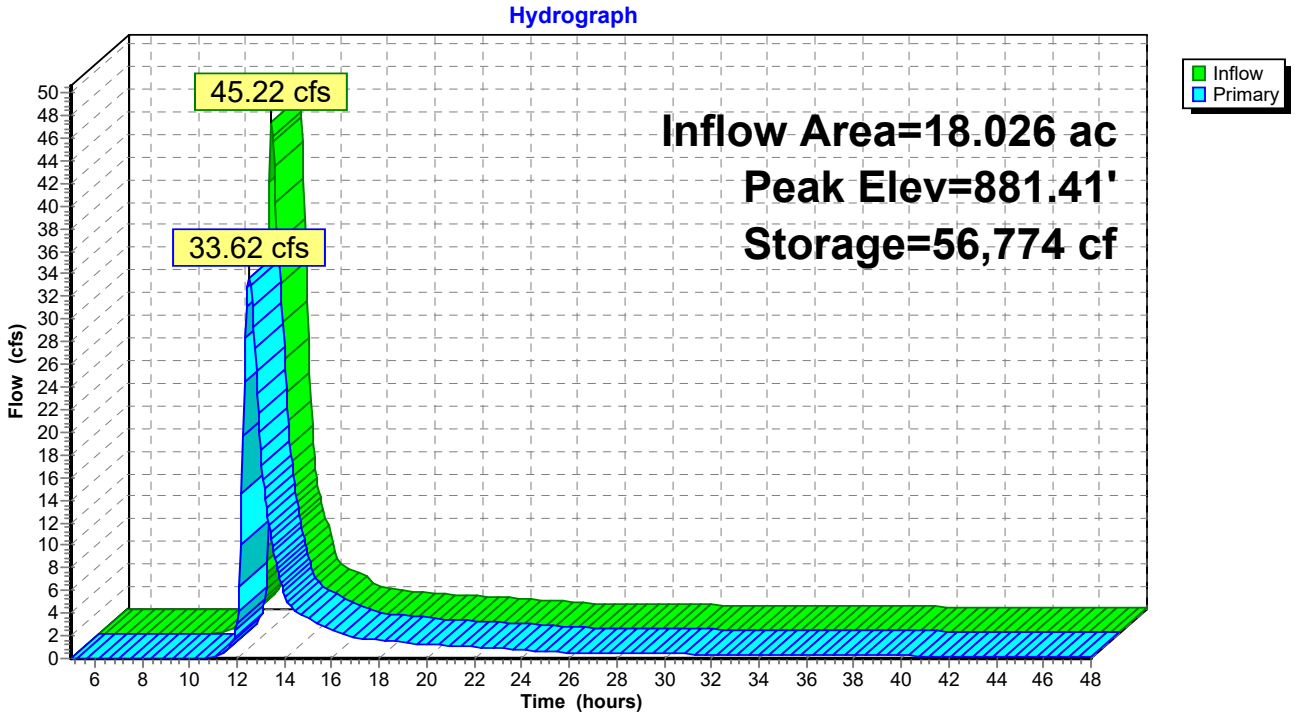
Volume	Invert	Avail.Storage	Storage Description
#1	874.50'	67,418 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
874.50	2,700	0	0
875.00	2,761	1,365	1,365
876.00	3,431	3,096	4,461
877.00	4,153	3,792	8,253
878.00	8,360	6,257	14,510
879.00	9,990	9,175	23,685
880.00	12,705	11,348	35,032
881.00	16,798	14,752	49,784
882.00	18,470	17,634	67,418

Device	Routing	Invert	Outlet Devices
#1	Primary	878.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	878.50'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 878.50' / 878.00' S= 0.0100 '/' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#3	Primary	879.60'	**3.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Primary OutFlow Max=33.54 cfs @ 12.51 hrs HW=881.40' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.70 cfs @ 7.97 fps)
- **2=Culvert** (Barrel Controls 8.86 cfs @ 5.01 fps)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 23.98 cfs @ 5.04 fps)

Pond 1P: (new Pond)



Summary for Pond 2P: (new Pond)

Inflow Area = 7.095 ac, 28.17% Impervious, Inflow Depth = 3.29" for 100-Year event
Inflow = 29.89 cfs @ 12.23 hrs, Volume= 1.946 af
Outflow = 11.78 cfs @ 12.52 hrs, Volume= 1.879 af, Atten= 61%, Lag= 17.0 min
Primary = 11.78 cfs @ 12.52 hrs, Volume= 1.879 af
Routed to Pond 1P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs / 3
Starting Elev= 883.50' Surf.Area= 13,472 sf Storage= 44,176 cf
Peak Elev= 885.93' @ 12.52 hrs Surf.Area= 19,133 sf Storage= 82,932 cf (38,756 cf above start)

Plug-Flow detention time= 1,000.9 min calculated for 0.865 af (44% of inflow)
Center-of-Mass det. time= 418.2 min (1,231.1 - 812.9)

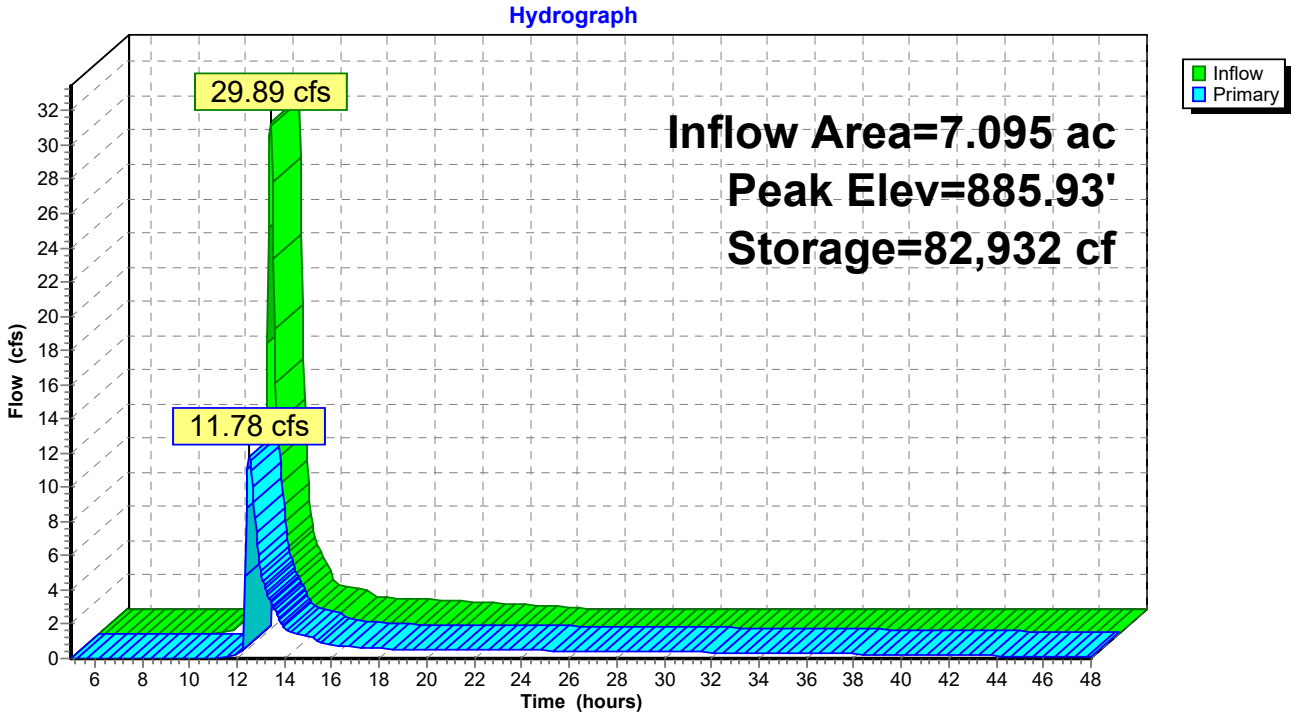
Volume	Invert	Avail.Storage	Storage Description
#1	878.00'	84,372 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
878.00	4,924	0	0
879.00	5,516	5,220	5,220
882.00	8,851	21,551	26,771
883.00	12,816	10,834	37,604
884.00	14,127	13,472	51,076
885.00	16,562	15,345	66,420
886.00	19,341	17,952	84,372

Device	Routing	Invert	Outlet Devices
#1	Primary	883.50'	**4.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 883.50' / 881.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.09 sf
#2	Primary	885.50'	**15.0' long x 45.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.68 cfs @ 12.52 hrs HW=885.92' (Free Discharge)
1=Culvert (Barrel Controls 0.55 cfs @ 6.28 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 11.13 cfs @ 1.76 fps)

Pond 2P: (new Pond)



Summary for Pond 3P: (new Pond)

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.033 ac, 30.00% Impervious, Inflow Depth = 3.22" for 100-Year event
Inflow = 9.82 cfs @ 12.18 hrs, Volume= 0.546 af
Outflow = 0.77 cfs @ 13.36 hrs, Volume= 0.546 af, Atten= 92%, Lag= 70.2 min
Discarded = 0.30 cfs @ 13.36 hrs, Volume= 0.161 af
Primary = 0.48 cfs @ 13.36 hrs, Volume= 0.385 af
Routed to Reach 3R : 3r

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 900.66' @ 13.36 hrs Surf.Area= 9,508 sf Storage= 12,709 cf

Plug-Flow detention time= 182.9 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 182.7 min (993.1 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	42,748 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

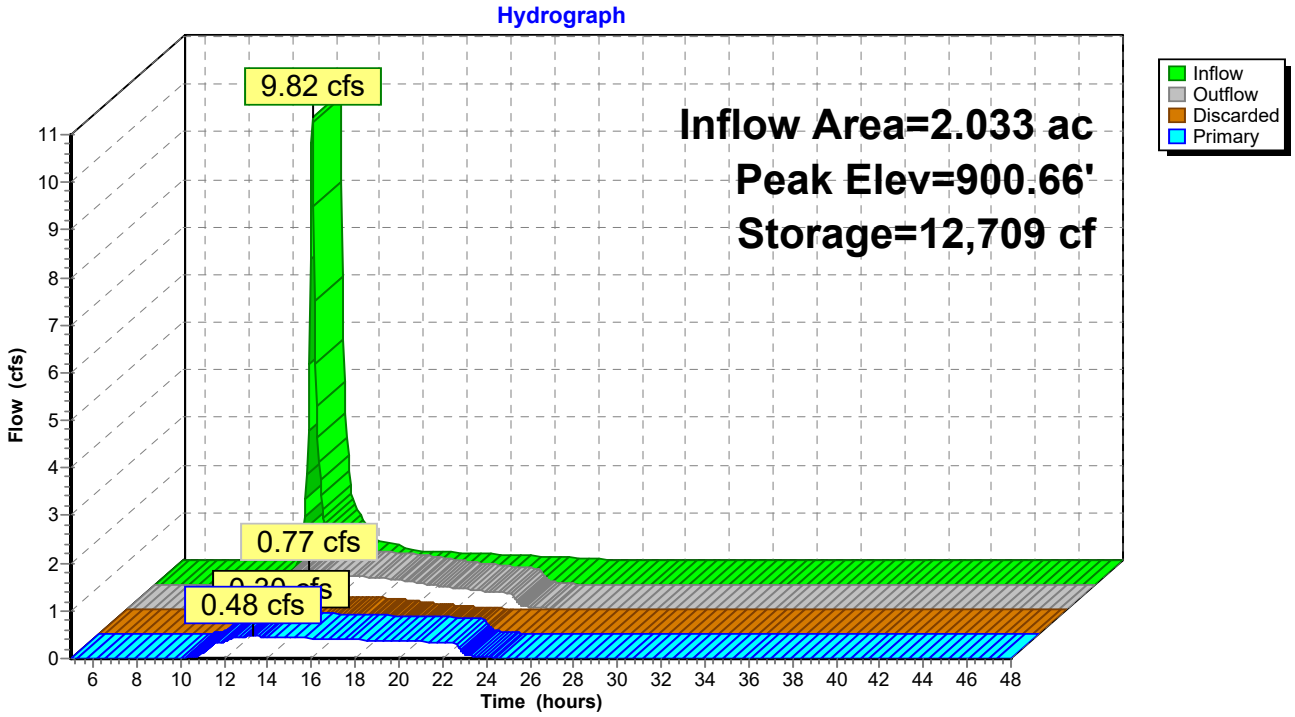
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
899.00	5,699	0	0
900.00	8,064	6,882	6,882
901.00	10,241	9,153	16,034
902.00	12,451	11,346	27,380
903.00	18,284	15,368	42,748

Device	Routing	Invert	Outlet Devices
#1	Primary	896.90'	**12.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.90' / 896.60' S= 0.0046 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	897.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	900.62'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	899.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 895.25' Phase-In= 1.00'
#5	Primary	902.00'	**30.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.30 cfs @ 13.36 hrs HW=900.66' (Free Discharge)
└**4=Exfiltration** (Controls 0.30 cfs)

Primary OutFlow Max=0.47 cfs @ 13.36 hrs HW=900.66' (Free Discharge)
├**1=Culvert** (Passes 0.44 cfs of 5.39 cfs potential flow)
│└**2=Orifice/Grate** (Orifice Controls 0.44 cfs @ 9.06 fps)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.03 cfs @ 0.68 fps)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: (new Pond)



Summary for Pond 4P: (new Pond)

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 7.560 ac, 30.72% Impervious, Inflow Depth = 3.34" for 100-Year event
Inflow = 38.10 cfs @ 12.17 hrs, Volume= 2.104 af
Outflow = 3.78 cfs @ 13.04 hrs, Volume= 2.104 af, Atten= 90%, Lag= 51.7 min
Discarded = 0.96 cfs @ 13.04 hrs, Volume= 1.011 af
Primary = 2.83 cfs @ 13.04 hrs, Volume= 1.093 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 914.50' @ 13.04 hrs Surf.Area= 26,606 sf Storage= 51,430 cf

Plug-Flow detention time= 331.8 min calculated for 2.104 af (100% of inflow)
Center-of-Mass det. time= 331.6 min (1,139.3 - 807.8)

Volume	Invert	Avail.Storage	Storage Description
#1	912.00'	65,460 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

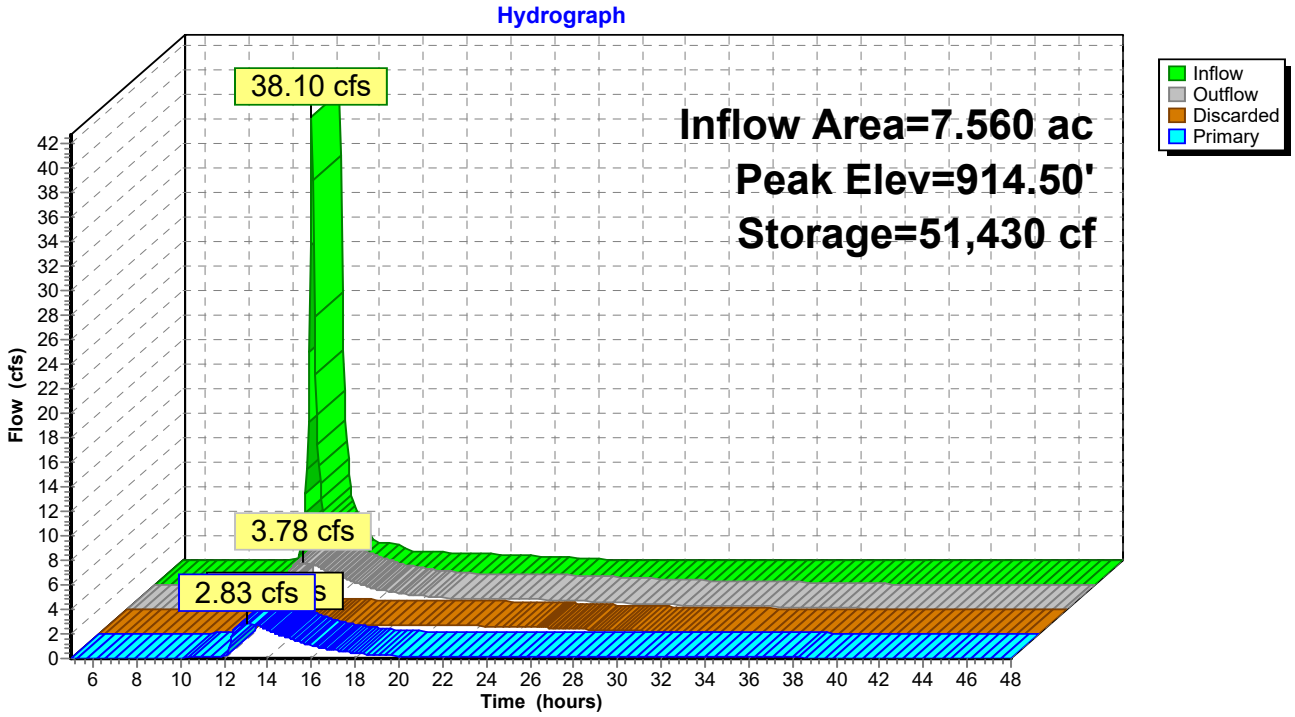
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
912.00	14,810	0	0
913.00	19,415	17,113	17,113
914.00	24,038	21,727	38,839
915.00	29,203	26,621	65,460

Device	Routing	Invert	Outlet Devices
#1	Primary	910.00'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 910.00' / 909.80' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#2	Primary	913.50'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	912.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 908.70' Phase-In= 1.00'
#4	Device 1	910.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	914.50'	**35.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.96 cfs @ 13.04 hrs HW=914.50' (Free Discharge)
└**3=Exfiltration** (Controls 0.96 cfs)

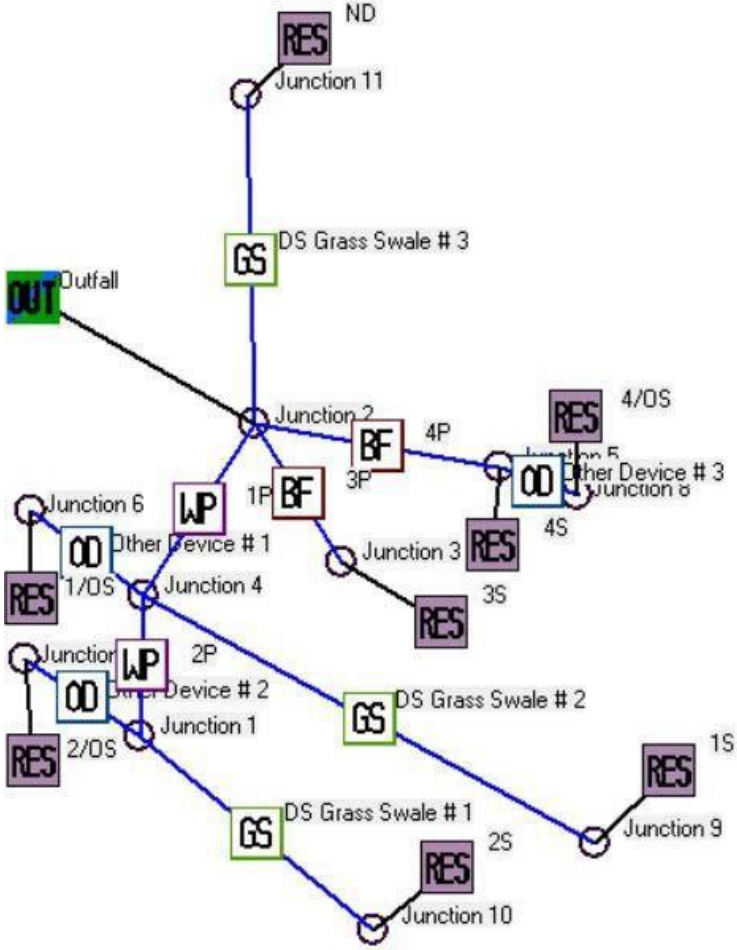
Primary OutFlow Max=2.83 cfs @ 13.04 hrs HW=914.50' (Free Discharge)
├**1=Culvert** (Passes 0.22 cfs of 2.71 cfs potential flow)
│└**4=Orifice/Grate** (Orifice Controls 0.22 cfs @ 10.12 fps)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.61 cfs @ 3.27 fps)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: (new Pond)



APPENDIX C

SOURCE LOADING AND MANAGEMENT MODEL (SLAMM)


ND
RES
Junction 11
GS
DS Grass Swale # 3
OUT
Outfall
Junction 2
BF
4P
3P
RES
4/OS
OD
Other Device # 3
Junction 8
4S
RES
Junction 3
3S
RES
BF
1P
WP
Junction 6
OD
Other Device # 1
RES
1/OS
Junction 4
WP
2P
OD
Other Device # 2
RES
2/OS
Junction 1
GS
DS Grass Swale # 2
RES
1S
Junction 9
GS
DS Grass Swale # 1
RES
2S
Junction 10

SLAMM for Windows Version 10.5.0
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Data file name: C:\Users\Nathan\Documents\Engineering\Farris Hansen\5536_Willabay Meadows_subdivison\9.03\FHA 5536 SLAMM.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 09-08-2025 Time of run: 13:12:18
Total Area Modeled (acres): 30.820
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	1.036E+06	-	125.7	8136	-
Outfall Total with Controls:	801254	22.66%	31.95	1598	80.36%
Annualized Total After Outfall Controls:	812382			1620	

Biofilter # 1 is expected to clog in 28.69 years. ..Percent Solids Reduction due to Engineered Media = 80
Biofilter # 2 is expected to clog in 11.88 years. ..Percent Solids Reduction due to Engineered Media = 80

Data file name: C:\Users\Nathan\Documents\Engineering\Farris Hansen\5536_Willabay Meadows_subdivison\9.03\FHA 5536 SLAMM.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 09-08-2025 Time: 13:10:39
Site information:

LU# 1 - Residential: 2/OS Total area (ac): 1.583
1 - Roofs 1: 0.237 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.237 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.109 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: 1/OS Total area (ac): 0.085
37 - Streets 1: 0.021 ac. Smooth Street Length = 0.008 mi Street Width = 21.65625 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.064 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: 1S Total area (ac): 10.838
1 - Roofs 1: 1.508 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.508 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.790 ac. Smooth Street Length = 0.2965 mi Street Width = 21.98145 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 7.032 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: 2S Total area (ac): 5.505
1 - Roofs 1: 0.782 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.782 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.291 ac. Smooth Street Length = 0.109 mi Street Width = 22.02523 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 3.650 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Residential: 3S Total area (ac): 2.031
1 - Roofs 1: 0.304 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.304 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.423 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 6 - Residential: 4S Total area (ac): 6.761
1 - Roofs 1: 0.951 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.951 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.421 ac. Smooth Street Length = 0.158 mi Street Width = 21.98259 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 4.438 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 7 - Residential: 4/OS Total area (ac): 0.800
1 - Roofs 1: 0.120 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.120 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.560 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 8 - Residential: ND Total area (ac): 3.217
1 - Roofs 1: 0.469 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.469 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.087 ac. Smooth Street Length = 0.0325 mi Street Width = 22.08462 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.192 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - 2P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 0
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5.5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 15
2. Weir crest width (ft): 45
3. Height from datum to bottom of weir opening: 8
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	0.0880	0.00	0.00
2	1.00	0.1300	0.00	0.00
3	7.00	0.3800	0.00	0.00
4	8.00	0.4400	0.00	0.00

5	9.00	0.4800	0.00	0.00

Control Practice 2: Biofilter CP# 1 (DS) - 3P
1. Top area (square feet) = 18284
2. Bottom aea (square feet) = 5699
3. Depth (ft): 7
4. Biofilter width (ft) - for Cost Purposes Only: 5
5. Infiltration rate (in/hr) = 0.02
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.01
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 1
10. Porosity of rock filled volume = 0.33
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 1.5
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil
User-Defined Media Type 1.000
Saturation water content (Porosity) = 0
Field capacity (fraction) = 0
Permanent Wilting Point (fraction) = 0
Infiltration rate (in/hr) = 3.6
Biofilter Outlet/Discharge Characteristics:
Outlet type: Sharp Crested Weir
1. Weir length (ft): 1
2. Invert elevation above datum (ft): 4.62

Outlet type: Broad Crested Weir
1. Weir crest length (ft): 30
2. Weir crest width (ft): 15
3. Height of datum to bottom of weir opening: 6

Outlet type: Drain Tile/Underdrain
1. Underdrain outlet diameter (ft): 0.33
2. Invert elevation above datum (ft): 1.5
3. Number of underdrain outlets: 2

Control Practice 3: Wet Detention Pond CP# 2 (DS) - 1P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 4.5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Sharp Crested Weir
1. Sharp crested weir length (ft): 3
2. Sharp crested weir height from invert: 1.9
3. Sharp crested weir invert elevation above datum (ft):

Outlet type: Orifice 1
1. Orifice diameter (ft): 0.33

2. Number of orifices: 1
3. Invert elevation above datum (ft): 4

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 35
2. Weir crest width (ft): 20
3. Height from datum to bottom of weir opening: 6.5

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0490	0.00	0.00
2	3.00	0.0950	0.00	0.00
3	4.00	0.1920	0.00	0.00
4	5.00	0.2290	0.00	0.00
5	6.00	0.2920	0.00	0.00
6	7.00	0.3860	0.00	0.00
7	7.50	0.4000	0.00	0.00
8	8.00	0.4240	0.00	0.00

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

1. Top area (square feet) = 29203
2. Bottom aea (square feet) = 10623
3. Depth (ft): 10
4. Biofilter width (ft) - for Cost Purposes Only: 5
5. Infiltration rate (in/hr) = 0.02
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.01
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 4.5
10. Porosity of rock filled volume = 0.33
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 1.5
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data Soil Type Fraction in Eng. Soil

User-Defined Media Type 1.000

Saturation water content (Porosity) = 0

Field capacity (fraction) = 0

Permanent Wilting Point (fraction) = 0

Infiltration rate (in/hr) = 3.6

Biofilter Outlet/Discharge Characteristics:

Outlet type: Sharp Crested Weir

1. Weir length (ft): 1
2. Invert elevation above datum (ft): 8.5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 35
2. Weir crest width (ft): 15
3. Height of datum to bottom of weir opening: 9.5

Outlet type: Drain Tile/Underdrain

1. Underdrain outlet diameter (ft): 0.33
2. Invert elevation above datum (ft): 5
3. Number of underdrain outlets: 2

Control Practice 5: Other Device CP# 1 (DS) - DS Other Device # 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 6: Other Device CP# 2 (DS) - DS Other Device # 2
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 7: Other Device CP# 3 (DS) - DS Other Device # 3
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 8: Grass Swale CP# 1 (DS) - DS Grass Swale # 1
Total drainage area (acres)= 5.505
Fraction of drainage area served by swales (ac) = 0.75
Swale density (ft/ac) = 48.44
Total swale length (ft) = 200
Average swale length to outlet (ft)= 200
Typical bottom width (ft) = 15.0
Typical swale side slope (_H:1V) = 10.0
Typical longitudinal slope (ft.H/ft.V) = 0.020
Swale retardance factor: D
Typical grass height (in) = 4.0
Swale dynamic infiltration rate (in/hr)= 0.020
Typical swale depth (ft) for cost analysis (optional) = 0.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True

Control Practice 9: Grass Swale CP# 2 (DS) - DS Grass Swale # 2
Total drainage area (acres)= 10.838
Fraction of drainage area served by swales (ac) = 0.75
Swale density (ft/ac) = 18.45
Total swale length (ft) = 200
Average swale length to outlet (ft)= 200
Typical bottom width (ft) = 15.0
Typical swale side slope (_H:1V) = 10.0
Typical longitudinal slope (ft.H/ft.V) = 0.020
Swale retardance factor: D
Typical grass height (in) = 4.0

Swale dynamic infiltration rate (in/hr)= 0.020
Typical swale depth (ft) for cost analysis (optional) = 0.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True

Control Practice 10: Grass Swale CP# 3 (DS) - DS Grass Swale # 3
Total drainage area (acres)= 3.217
Fraction of drainage area served by swales (ac) = 1.00
Swale density (ft/ac) = 0.00
Total swale length (ft) = 200
Average swale length to outlet (ft)= 200
Typical bottom width (ft) = 15.0
Typical swale side slope (_H:1V) = 10.0
Typical longitudinal slope (ft.H/ft.V) = 0.020
Swale retardance factor: D
Typical grass height (in) = 4.0
Swale dynamic infiltration rate (in/hr)= 0.150
Typical swale depth (ft) for cost analysis (optional) = 0.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True

APPENDIX D

OPERATION AND MAINTENANCE PLAN

OPERATION & MAINTENANCE PLAN
August 2025

WILLABAY MEADOWS
WILLIAMS BAY, WALWORTH COUNTY

It is anticipated that Willabay Meadows Homeowners Association will become responsible for the operation and maintenance of the stormwater system upon completion of construction. Until such time, the contractor will be responsible for operation and maintenance.

The contractor selected to complete the site work construction will be responsible for the operation and maintenance of the temporary erosion control measures during construction and the stormwater management system during the construction phase of the project. Erosion control measures shall be installed and maintained as shown on site plans for the project in accordance with details shown on the plan. Erosion control shall be maintained as detailed on the site plan.

The following maintenance and inspection recommendations are taken from WDNR's Technical Standards and shall become part of the operation and maintenance plan for the stormwater management system located on the site:

WET DETENTION AND WATER QUALITY PONDS

I. LONG TERM MAINTENANCE

ROUTINE

1. Mowing

   A. Side slopes, embankments, and emergency spillways that are not rock lined which have been planted with turf fescue grasses should be high mowed at least twice a year to prevent woody growth and control noxious weeds (if required). The pond edge shall be allowed to grow and establish a natural buffer along the safety shelf.

   A. Native fescue grasses should be mowed to a height of 6" during the first year to establish density. After they are densely grown in, no further mowing in subsequent growing seasons will be required.

2. Inspections

   A. Inspections of the pond shall be completed on an annual basis or after significant rainfall events.

   B. The inspections should be completed during wet weather conditions to determine if the pond is functioning properly.

   C. Inspection priorities shall be as follows:

      1. Inspect the embankments for subsidence, erosion, cracking and tree growth.

      2. Inspect the condition of the emergency spillway and overland flow path.

      3. Inspect the pond for accumulation of sediment.

4. Inspect the outlet control structure for clogs, debris and material failures.

5. Inspect upstream and downstream channels from an erosion perspective.

6. Inspect any modifications that may have been done to the pond following its initial construction.

7. Inspect the side slopes of the pond for erosion, slumping, cracking or woody plant materials.

D. As-built plans shall accompany the person responsible for the pond inspections.

E. Documentation of the inspections should be completed and filed. Documentation should include as a minimum:

1. Inspectors name, affiliation and professional credentials if applicable.

2. Date, time and weather conditions.

3. Approximate rainfall total over a 24 hour period if applicable.

4. Existing embankment, outlet and inlet conveyance systems and vegetation condition.

5. Sediment depth at the outlet pipe and at a minimum one other location.

6. Identification of potential structural failures and repair needs.

7. Other pond conditions such as vegetation growth, algae growth and emergency spillway conditions.

8. Repair recommendations.

3. Debris and Litter Removal

A. Debris and litter removal from the pond surface shall be completed at least once every three months.

B. Particular attention should be paid to debris accumulating around the riser pipe to prevent potential clogging.

4. Erosion Control

A. The pond side slopes, embankments and emergency spillways may suffer from periodic slumpage and erosion.

B. Corrective measures shall include regrading, filling and revegetation of the eroded or slumping areas.

C. Rip rap at the pond outlet and emergency spillways should be inspected for displacement or undermining. Repairs shall be made upon discovery.

5. Nuisance Control

A. Biological control of algae and mosquitoes is preferred over chemical control. Consultations with WDNR officials is recommended prior to the introduction of any biological control.

B. Maintaining the native grass perimeter will aide in the control of geese.

C. Mechanical controls should be used when feasible.

II. NON-ROUTING MAINTENANCE

1. Structural Repairs and Replacement

A. The outlet of the pond has been constructed utilizing ADS N-12 HPDE pipe. The estimate life of the concrete is over 50 years. Annual inspection of the outlet structure will disclose any potential structural problems. If structural problems appear, repair or replace the outlet structure.

B. Excessive or chronic drawdowns of the pond may cause leaks or seepage through the embankments. Excessive drawdowns should be avoided and thus corrective measures for leakage and seepage can be avoided.

2. Sediment Removal

A. A sediment clean out cycle of 10 to 15 years is recommended. Sediment removal may be necessary prior to 10 years if there is a substantial amount of land disturbance occurring within the contributory watershed. Annual inspections shall be made to insure that the design depth of the permanent water pool is maintained.

B. Sediment removed from the pond shall be hauled to an upland area, spread and stabilized with vegetative material.

C. It is recommended that the sediment be tested to determine if land filling is necessary. Contact the local DNR prior to sediment sampling and testing to insure compliance with State standards and regulations.

D. Surveyed depths of the permanent pool elevations shall be made immediately following the construction of the pond and recorded on the as-built plans. Annual inspections shall include measure downs to determine sediment elevations in relation to the permanent pool elevations.

III. MAINTENANCE OF BIOFILTERS (GRASSED SWALES)

1. Inspect drainage swales the first few months after construction to make sure that there is no rilling or gullying, and that vegetation in the swales is adequate.

2. Vegetation damaged by machinery, herbicides, or erosion must be repaired promptly.

3. Inspect grassed swales regularly at least twice a year for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation, especially following heavy rains. Fill, compact, and reseed damaged areas immediately.

4. Remove sediment deposits to maintain capacity of grassed swale. Avoid use of herbicides that would be harmful to the vegetation or pollinating insects in and adjacent to the swale area.

6. Regular maintenance tasks include mowing, fertilizing, liming, watering, pruning, weeding, and pest control.

7. Mow swales at least once per year. Do not cut the grass shorter than three to four inches. Keep grass height under 6 inches to maintain the design depth necessary to serve as a conveyance. Do not mow excessively, because it may increase the design flow velocity.

8. Remove sediment and debris manually at least once per year and properly dispose of all sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

9. Re-seed periodically to maintain the dense growth of grass vegetation.

IV. RESPONSIBLE PARTY & FINANCIAL FUNDING

1. The responsible party for the operation, inspection and maintenance of the wet pond shall be Willabay Meadows Homeowners Association.

2. It is recommended that Willabay Meadows Homeowners Association establishes a perpetual maintenance fund to insure that the pond are properly inspected, maintained and repaired.

V. ADDITIONAL CONSIDERATIONS TO IMPROVE POND WATER QUALITY AND REDUCE MAINTENANCE COSTS

1. General

   A. Improper disposal of yard wastes will affect the water quality of the wet pond and may cause clogging of the outlet structure.

   B. Improper fertilizer and pesticide application will affect the water quality of the wet pond and add to algae growth.

   C. Excess lawn watering will affect the water quality of the pond due to increased water runoff that may contain fertilizers and pesticides.

2. Yard Care

   A. It is recommended to consider routine yard care maintenance that is practical and environmentally sound.

   B. It is recommended that leaves and yard trimmings be properly disposed of.

   C. It is recommended to control fertilizer applications on lawn and gardens so as not to be detrimental to the water quality of the pond.

   D. Lawn and garden pesticides may pollute surface and ground water.

   E. Excess lawn watering will wash pollutants into the wet pond.

   F. Proper turf management will lower the amount of the chemicals that may runoff into the wet pond during rain events.

APPENDIX E

SOILS TESTING RESULTS

1002-TS-23
Division of **k'tdustry Services**
P.O. Box 2658
Madison, Wisconsin 53701
Scott Walker, Governor
Laura Gutierrez, Secretary

SOIL AND SITE EVALUATION -STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Pos:ie 1 of 3

Attach a complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to ne.arest road

County: Walworth
Parcell.D.:
Reviewed by:
Date:

***Please* print *all* information**

Pe11:onol infonnolionyou provide may be used forsecondary purposes [Privacy Low, s. 15.04(1)(ml]

Properly Owner: Lund and Lakes Development
Properly 0vmer Mo□Address:
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Cily State Zip Code Phone Number
'i<0Sc:m_o ""j "t-L.. /el:) 0

Properly localion
Govl. Loi k/ 1 .1 '/4 NE ¼ S 6 T 1 N R 17 (E)or) W
Lot # Block # Subd. Name or CSM #: Willa bay Meadows 1'
☐ City ☒ Village ☐ Town Nearest Road
Williams Bay Hwy 50
Hydraulic Application Test Method
Soil Moisture Date of soil borings:

Drainage area, 0 sq.ft O acres

Teslsile suitable for (check oll lholapply): 0 Sile not suitable:
0 Bioretention; 0 Subsurface Dispe11;ol System;
0 Reuse; 0 Irrigation; 0 0lher

.12MorPhotogical "eva1uation
0 Double Ring Infdtrometer
0 Other: (specify)

USDA-NRCS WETS Value:
0 Dry=1;
ONonnal=2;
OWet=3.

1 #OBS. 0 Pit ii Boring Ground surface elevation. fl. Elevation of limiting factor ft.

Horizo..	Depth in.	Dominant Color Munsell	RedoxDescriptton Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rocle Frogs	%Fines	Hydraulic App Rate Inches/Hr
1	0-10	10YR4/2		sicl	2-f-gr	mfr	cs	—	20	.04
2	10-43	10yr4/4		sicl	2-f-sbk	mfr	cs	—	20	.04
3	43-99	10yr4/4	C2d 7.5YR 4/4	grscl	1-m-sbk	mfr	cw	15	25	.04
4	99-148	7.5YR5/4	C2d 7.5YR 6/8	grsl	1-m-sbk	mfr	—	20	15	.50

Comments: horizon 4 was moist

2 #C #OBS. 0 Pit O Boring Ground surface elevation. fl ElevaHon of limiting facto □ ".

Horizo..	Depth in.	Dominant Color Munsell	RedoxDescriplion Qt... Sz. Conl. COlor	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
1	0-11	10YR4/2		sicl	2-f-sbk	mfr	cs	—	20	.04
2	11-42	10yr4/4		sicl	2-f-sbk	mfr	cs	—	24	.04
3	42-91	10yr4/3		sicl	f-f-sbk	mfr	cw	5	24	.04
4	91-147	7.5YR5/4	fff 7.5YR 6/8	grscl	f-m-sbk	mfr	—	20	20	.04

Comments: Horizon 1-4 moist

Jeme (Please Print) David P Duwe
Address 30 South Church St
Signature
Date Evaluation Conducted 12-19-22
redentiol Number b-112
Telephone Number 262-728-8063

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SBD-10793(R01/17)

WDNR
September 2017

'31 #OBS. 1J Pil O Boring Ground surface elevation. lt Elevation of timltlng factor ft. Page '2. of _:!

Horizon	Depth in.	Dominonl Color /11iU nsell	RedoxDescription Qu.Sz.Cont. Color	lexture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
1	0-10	10YR4/2		sicl	2-f-sbk	mfr	cs	—	20	.04
2	10-60	10YR4/6		sicl	2-f-sbk	mfr	cs	—	25	.04
3	60-90	10YR4/6		grscl	2-m-sbk	mfr	gs	15	.25	.04
4	90-144	7.5YR5/4		grsl	1-f-sbk	mfr	gs	20	15	.50

Commen1s: 'Be'$t Boring

#OBS. D Pit D Boring Ground surface elevatioo.. fl Elevation of limiting factor JL

Horizonfoepth in.	Dominant Color Munsell	RecfoxDescription Qu._Sz.Cont. Color	lexlure	Structure Gr. Sz. Sh.	Consistence	Boundary	%Rock Frogs.	%Fines	Hydraulic App Rate Inches/Hr
1 0-9	10YR4/2		sicl	2-f-gr	mfr	cs	—	25	.04
2 9-40	10YR4/4		sicl	2-f-sbk	mfr	cs	—	25	.04
3 40-96	7.5YR4/6		grsd	2-m-sbk	mfr	cs	15	25	.04
4 96-110	10YR 5/4	f1F 7.5YR6/6	grsl	1-f-sbk	mfr	cs	20	25	.50
5 110-130	10YR5/6	m2D 7.5YR6/6	sicl	om	mfi	—	—	30	.04

Commen1s:

#OBS: Il(Pit DBoring Ground surface elevation.. ft. Elevation of fimiting factor ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Cescripfion 9u.Sz.Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App Rate Inches/Hr
1	0-14	10YR3/2		sil	2-f-gr	mfr	cs	—	15	.13
2	14-47	10YR4/4		cl	2-f-sbk	mfr	cs	—	25	.03
3	47-83	7.5YR4/4		scl	2-m-sbk	mfr	cs	5	25	.09
4	83-117	7.5YR5/4	f1F 7.5YR6/6	grsl	1-f-sbk	mfi	gs	15	15	.50
5	117-150	7.5YR5/4	c.f 7.5YR6/6	scl	1-m-sbk	mfi	—	5	25	.04

Comments:

" #OBS. -Pil OBoring Ground surfaceelevation.. Jl. Elevation of Gmiting racto□ Jl.

Horizon	Depth in.	Dominant Color Munsell	RedoxDescription Qu.Sz. Cont. Color	Texture	Sfructure Gr. Sz. Sh.	Consistence	Boundary	%Rock □	%Fines	Hydraulic App Rate Inches/Hr
1	0-13	10YR 3/2		sil	2-f-gr	mfr	cs	—	15	.13
2	13-92	7.5YR5/4	m2d 7.5YR6/6	grscl	2-m-sbk	mfr	cs	20	20	.09
3	92-114	7.5YR5/4	m2d 7.5YR6/6	grsl	1-m-sbk	mfr	cs	21	25	.50
5	114-130	7.5YR5/4	mdd 7.5YR6/6	grls	0-sg	ml	—	20	10	1.63

Commenls: Believe seeping water □ .I"\"

Overall Site Comments:

□ □ Pcl--

1·2 □c,-z-z_

Property Owner LO.. 1/\.l o.r.□ lo..'vt.-e□ Parcel ID# _____ Page□ot_!_

r:;-IObs.# D Boring

L..!.J Iii Pit Ground surfaceelev. ___ ft. Depth to limiting factor _____in.

Horizon I	Depth I in.	Dominant Color Munsell	Redox Description au.Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	%Roel<! FraJ!:	Hydraulic App. Rate Inches/Hr
1	0-7	10 YR 4/2		s'iol	2-f-sbk	mufr	cs	—	.04
2	7-30	10 YR 4/6		s'cl	2-f-sbk	mfr	cs	—	.04
3	30-38	10 YR 4/6		grscl	2-m-sbk	mfr	gs	20%	.04
4	38-121	7.5 YR 5/4	M2d 7.5 YR 6/8	grscl	1-m-sbk	mfr	gs	20%	.04
5	121-150	7.5 YR 5/4	M2d 7.5 YR 6/6	grls	0-sg	ml	—	20%	1.63

DBoring

[!Jobs.# 1B Pit Ground surfa'- ..... .f.t. uepm ro ummng raccor In,

Horizon	Depth In.	Dominant Color Munsell	Redox Oescrlpllon au. Sz. Cont. Color	Texture	Structure Gr.Sz. Sh.	Consistence	Boundary	%Rock Frag.	Hydraulic App. Rate Inches/Hr
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Test Results and/or Summary Comments

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The Dept. of Sn.fety and Professional is an equal opportunity service provider and employer. Tfyou need assistance to access services or need material in an alternate format, contact the department at 608:266-3151 or TTY through Relay.

APPENDIX F

PIPE SIZE CALCULATIONS

Pipe Segment	Contributing Area (ac)	10-yr Flow Rate (Q) (ft^3/s)	Pipe Diameter (in)	Pipe Area (A) (ft^2)	Velocity (V) (ft/s)	Flow Depth (m)	Slope (%)	Material	Notes
P1	10.85	9.64	15.88	1.377	7.00	Full	1.0		Wet Basin
P2	5.51	0.48	3.54	0.069	7.00	Full	9.0		Wet Basin
P3	2.03	0.45	3.44	0.064	7.00	Full	0.5		Biofilter
P4	6.76	1.93	7.11	0.276	7.00	Full	0.5		Biofilter

Notes:

- **Q (Flow Rate)** calculated using Rational Method: Q=AV
- Pipes designed to a velocity of 7 ft/s
- All pipes flowing full under design storm event (10-year)

Pipe and Culvert Sizing – Oversizing and Uniformity Considerations

Driveway Culverts – 15" Diameter Standard

Driveway culverts throughout the project area have been standardized at a minimum diameter of 15 inches, even where hydrologic calculations indicate a smaller culvert may suffice. This design decision supports both constructability and long-term maintenance by:

- Reducing the risk of clogging from sediment, leaf litter, and debris in low-flow areas.
- Maintaining consistency across parcels, which simplifies installation and replacement over time.
- Ensuring capacity for minor blockages or future increases in runoff due to incremental development or climate variability.

The uniform 15" sizing also aligns with DOT and municipal standards that recommend or require minimum culvert sizes for residential access points to avoid frequent failures or maintenance concerns.

Roadway Crossing Culverts – 18" Diameter Standard

For roadway crossings, a minimum diameter of 18 inches has been adopted. While some crossings may only require a smaller culvert based on peak design flows (e.g., 10-year or 25-year storms), the 18" standard provides:

- Hydraulic redundancy for potential sedimentation or unforeseen blockage during storm events.
- Ease of maintenance access
- Design uniformity, which improves efficiency during construction and facilitates material procurement and cost estimation.

Additionally, the 18" standard complies with state and local transportation agency guidelines, which prioritize safety and resilience over strict capacity-based sizing.

General Oversizing Rationale

Across both culvert types, intentional oversizing serves multiple purposes beyond basic hydraulic adequacy:

- Futureproofing the infrastructure against land use changes, increased impervious surfaces, or intensified rainfall patterns.
- Reducing inlet and outlet velocities, helping to minimize downstream erosion and the need for energy dissipation.
- Improving constructability by using standard pipe sizes that are readily available and compatible with typical installation methods.

All culvert sizes were reviewed in accordance with HydroCAD analyses and local stormwater design criteria to ensure that the culverts remain within acceptable limits under design storm conditions.

Pipe sizing calculations for driveways and cross culverts
Rational Method Qr=ciA
C=0.5 ; i=0.167 in/hr
Mannings Equation Qm=(1.49/n)AR^(2/3)sqrt(S)
All culverts below are concrete; n=0.013

Pipe A:
A=0.677 acres; pipe diameter = 18”
Qr=ciA= 0.057 cfs
Qm=7.022 cfs

Pipe A meets requirement.

Pipe B:
A=4.279 acres; pipe diameter=18”
Qr=0.357 cfs
Qm=11.78 cfs

Pipe B meets requirement.

Pipe D:
A=1.547 acres; pipe diameter=18”
Qr=0.129 cfs
Qm=10.74 cfs

Pipe D meets requirement.

Pipe E:
A=4.219 acres; pipe diameter=18”
Qr=0.352 cfs
Qm=8.359 cfs

Pipe E meets requirement.

Pipe F:
A=2.156 acres; pipe diameter=18”
Qr= 0.18 cfs + (25 yr discharge from 3P= 0.07 cfs) = 0.25 cfs
Qm= 15.86 cfs

Pipe F meets requirement

APPENDIX G

SOIL LOSS & DISCHARGE

CALCULATION TOOL

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Willabay Meadows Homeowners Assocaition

Project: Willabay Meadows

Date: 06/18/25

County: Walworth

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	08/01/25	10/01/25	27.6%	140	Silt Loam	0.43	4.5%	690	1.24	1.00	20.6	1.117	Sediment Basin	4.6
Seeding	10/01/25	05/10/26	21.0%	140	Silt Loam	0.43	1.8%	661	0.33	0.40	1.7	1.227	Sediment Basin	0.4
End	05/10/26	-----	-----	-----	-------	-----	1.8%	661	0.33	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	1.8%	661	0.33	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	1.8%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**22.3**		**TOTAL**	**5.0**
													% Reduction Required	**0%**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/1-5/15	and	8/7-8/29	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	Farris, Hansen & Assoc.
Date	5/24/2025

X:\Projects\5536\5536_17\Drainage\NOI\5536_RUSLEmodel.xlsm

APPENDIX H

CURVE NUMBER TABLE

Select Curve Number

line	Description	Condition	A				Condensed Description
0	CN Values for Ia=0.20 S	!					
1	.Riii:v·"iivE·L PE·o··ci"FiiiAN AREAS	VegEst					
2	Open space (Lawns,parks etc.)						
3	grass cover< 50%	Poor	68	79	86	89	<50% Grass cover,Poor
4	grass cover 50% to 75%	Fair	49	69	79	84	50-75% Grass cover,Fair
5	grass cover> 75%	Good	39	61	74	80	>75% Grass cover, Good
W1	Pond andLake Surfaces						
W2	Classified asImpervious		98	98	98	98	WaterSurface
W3	Classified as Pervious	0%imp	98	98	98	98	WaterSurface, 0% imp
6	Impervious Areas						
7	Paved parkinglots, driveways		98	98	98	98	Paved parking
7a	Unconnected Impervious		98	98	98	98	Unconnectedpavement
7b	Roofs		98	98	98	98	Roofs
7c	Unconnected Impervious		98	98	98	98	Unconnectedroofs
8	Streets androads						
9	Paved; curbs and stormsewers		98	98	98	98	Paved roads w/curbs 8. sewers
10	Paved; open ditches[w/ROY:L]	50%imp	83	89	92	93	Paved roads w/open ditches, 5
11a	Gravel(w/oright-of-way)		96	96	96	96	Gravel surface
11	Gravel□/ right-of-way)		76	85	89	91	Gravel roads
12	Dirt [w/ right-of-way)		72	82	87	89	Dirtroads
13	Urban Districts	impervious					
14	Commercial 8.business	85%imp	89	92	94	95	Urban commercial, 85% imp
15	Industrial	72%imp	81	88	91	93	Urban industrial, 72% imp
16	Residential districts						
17	(Qy average lot size)	impervious					
18	1/8 acre(lgwn houses)	65%imp	77	85	90	92	1/8 acre lots, 65% imp
19	1/4 acre	38%imp	61	75	83	87	1/4 acre lots, 38% imp
20	1/3 acre	30%imp	57	72	81	86	1/3 acre lots, 30% imp
21	1/2acre	25%imp	54	70	80	85	1/2 acre lots, 25% imp
22	1 acre	20%imp	51	68	79	84	1 acre lots, 20% imp
23	2 acre	12%imp	46	65	77	82	2 acre lots, 12% imp
24	Western Desert Urban Areas						
25	Natural desert (pervious areas only)		63	77	85	88	Natural western desert
26	Artifical desert landscaping		96	96	96	96	Artifical desert landscape
29	DEVELOPING URBAN AREA	(lio Veg)					
30	Newlj, graded area (pervious only)		77	86	91	94	Newly graded area
31	CULTIVATEDAGRICULTURAL LAND						
32	Fallow						
33	Sare soil		77	86	91	94	Fallow, bare soil
34	Cropresidue(CR)	Poor	76	85	90	93	Fallow, cropresidue,Poor
35	Cropresidue(CR)	Good	74	83	88	90	Fallow, cropresidue, Good
36	Row crops						
37	Straight row(SR)	Poor	72	81	88	91	Row crops, straight row, Poor
38	Straight row(SR)	Good	67	78	85	89	Row crops, straight row, Good
39	SR + Crop residue	Poor	71	80	87	90	Row crops, SR + CR,Poor
40	SR + Crop residue	Good	64	75	82	85	Row crops, SR + CR,Good
41	Contoured (g	Poor	70	79	84	88	Row crops, contoured, Poor
42	Contoured (g	Good	65	75	82	86	Row crops, contoured, Good
43	C+ Crop residue	Poor	69	78	83	87	Row crops, C+ CR,Poor
44	C+ Crop residue	Good	64	74	81	85	Row crops, C+ CR,Good
45	Contoured t teuaced fCt Tl	Poor	66	74	80	82	Row croo• Ct T Poor

line	De:scri tion	Condition	A	B	C	D	Cond'emed Descric:ition
4'6	Conlou,ed & terra.ced (C&T)	Good	62	71	78	81	Rowcr,ops,CU. Good
47	C&T + Crop,re□idue	P,oor	65	73	79	81	Row cr,ops. CU +CR.Poor
□8	C&J + Crop,re□idue	Good	611	70	77	80	Row cr,ops. CU+ CR. Good
49	Small gra·n						
SO	Sltraight row(SR)	P,oor	65	76	84	88	Small grain. □lraight row. Poor
51	Sitraight row (SR)	Good	63	75	83	87	Small grain. □traight row. Good
52	SIR + Crop 1esid'.ue	P,oor	64	75	83	86	Small grain. SR+CR. Poor
53	SIR + Crop 1esidue	Good	60	72	80	84	Small grain.SR + CR.Good
54	Contou,ed [q	P,oor	63	7□	82	85	Small grain. conioured. Poor
95	Contou,ed (C)	Good	611	73	81	84	Small grain. conloured. Good
-56J	C + Crop 1esid'.ue	P,oor	62	73	81	84	Small grain. C +CR.Poor
57	C + Crop 1esidue	Good	60	72	80	83	Small grain. C + CR. Good
98	Conlou,ed & terraced (C&T)	P,oor	611	72	79	82	Small grain.CU. Poor
99	Conlou,ed & terraces (C&:T)	Good	59	70	78	81	Small grain.CU. Good
60	C&J + Crop,re□idue	P,oor	60	71	78	81	Small grain. CU+ CR. Poor
61	CU + Crop,re□idue	Good	58	169	77	80	Small grain. CU+ CR. Giooci
62	Close-seeded legumesirotat.meadow						
-6lJ	Sitraight row	P,oor	66	77	85	89	Legumes. straight row. Poor
64	Sitraight row	Good	58	72	81	85	Legumes. straight row, Good
65	Contou,ed	P,oor	64	75	83	85	L,egumes. conioured. Poor
66	Conlou,ed	Good	55	169	78	83	L,egumes. conloured. Good
67	Cont & terraced	P,oor	63	73	80	83	Legumes. CU. Poor
68	Cont &: terraced	Good	511	167	76	80	Legumes. C&T. Good
69	OTHIER AGRI CULTU RAL LAND						
ElJ	Pasiure. grassland or range	P,oor	68	79	86	89	Pasture/grassland/range. Poor
71		Fai,	49	169	79	84	Pasture/grassland/range, Fa"r
z2		Good	39	61	74	80	Pasture/grassland/range, Good
73	Meadow. cont. grass. non-grazed		30	'58	71	is	Meadow. non-grazed
74	Bru□h. brush/weed/grass mix	P,oor	48	67	77	83	Brush. Poor
75		Fai,	35	56	70	77	B1ush. Fair
;;,5		Good	30	48	65	73	Brush. Good
77	Woods/grass combination	Pnnr	"i7	:n	9?	9f::	Wnnd□lnrM:<_j•□r,mh P.-.!!lr
is		Fai,	43	65	76	82	Woodw rass comb.. Fair
79		Good	32	58	72	79	Woods/grass comb.. Giooci
BO	Woods	P,oor	45	166	77	83	Wood:s. Poor
BI		Fai,	36	160	73	79	Woods, Fa"r
82		Good	30	55	70	77	Woods, Good
83	Farmsleads		59	74	82	86	Farmsteads
84	ARID AND SEMIARIDRANGELAND						
85	He1baceous	P,oor		80	87	93	Herbaceous range. P'oor
_86J		Fair		71	81	89	Herbaceous range. Fair
B7		Good		162	74	85	Herbaceous range, Good
88	Oalk/aspen	P,oor		166	74	79	Oak/aspen range. Poor
89		Fair		48	57	63	Oak/aspen range. Fair
9□		Good		30	41	48	Oak/aspen range. G,ood
91	P"nyon/iuniper	P,oor		75	85	89	Pinyon/juniper range, Poor
s2		Fai,		'58	73	80	Pin on/juniper range, Fa"r
filJ		Good		41	61	71	Pinyon/juniper range, Good
94	Sa ebrush [w/grass und'erslory)	P,oor		167	80	85	Sagebrush range, Poor
95		Fai1		'51	63	;;,0	Sagebrush range, Fair
96		Good		35	47	95	Sagebrush range, Good
_SL	D sert shrub	P,oor		63	77	85	88 Desert shn.lb range, Poor
98		Fai,		55	72	81	86 Desert shrub range, Fa"r
_Sa_		Good		49	168	79	84 Desert shrub range. Good
LlO							

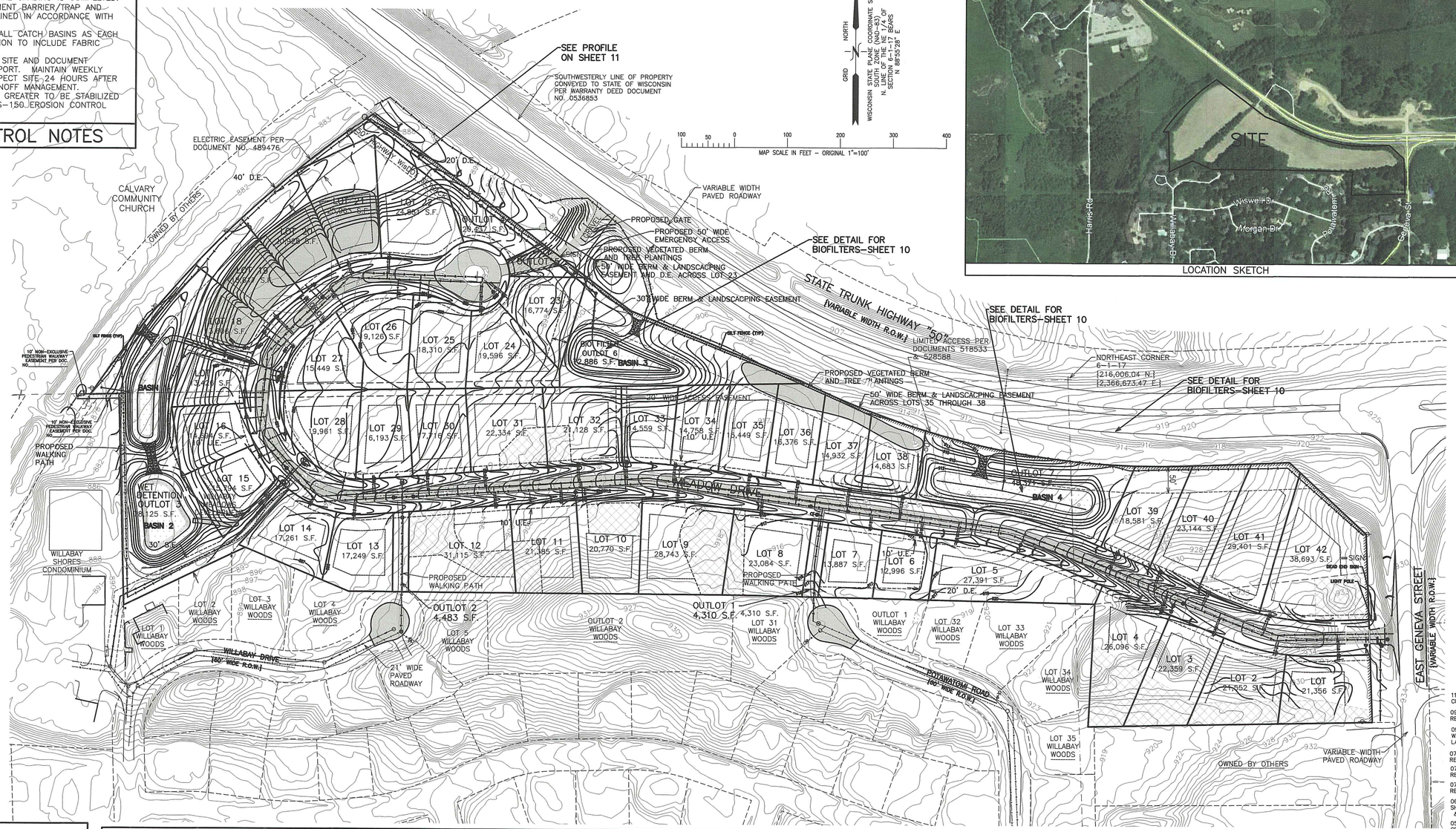
WILLABAY MEADOWS, A SUBDIVISION

SITE, GRADING, DRAINAGE, SANITARY SEWER, WATER MAIN, AND EROSION CONTROL PLANS

PART OF NE 1/4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN

1. INLET PROTECTION TO BE INSTALLED IN EXISTING CURB INLET STRUCTURES AND MAINTAINED THROUGHOUT DURRATION OF CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF LOCAL EROSION CONTROL PLANS AND/OR ORDINANCES.
3. INSPECT SWALES TO MEET SPECIFICATIONS ON PLAN AND WDNR TECHNICAL STANDARDS ON AN ON-GOING BASIS.
4. SEEDING AND EROSION CONTROL MATTING AS SPECIFIED ON PLAN FOR TEMPORARY SEDIMENT TRAP AND SWALES SHALL BEGIN WITHIN 7 DAYS AFTER FINAL GRADING IS COMPLETED.
5. SILT FENCE TO ACT AS A SEDIMENT BARRIER/TRAP AND SHALL BE CLEANED AND MAINTAINED IN ACCORDANCE WITH WDNR TECHNICAL STANDARDS.
6. PROVIDE INLET PROTECTION AT ALL CATCH BASINS AS EACH IS INSTALLED. INLET PROTECTION TO INCLUDE FABRIC BARRIERS UNDER CASTINGS.
7. INSPECT EROSION CONTROL ON SITE AND DOCUMENT FINDINGS IN AN INSPECTION REPORT. MAINTAIN WEEKLY INSPECTION SCHEDULE AND INSPECT SITE 24 HOURS AFTER EVERY RAINFALL EVENT FOR RUNOFF MANAGEMENT.
8. ALL DISTURBED SLOPES 3:1 OR GREATER TO BE STABILIZED WITH NORTH AMERICAN GREEN S-150 EROSION CONTROL BLANKET.

EROSION CONTROL NOTES



LOCATION SKETCH

1. REMOVE ALL BRUSH AND SCRUB TREES PRIOR TO STRIPPING OF TOPSOIL.
2. TOPSOIL STOCKPILE SHALL BE LOCATED WHERE SHOWN ON PLAN. INSTALL TEMPORARY SILT FENCE AROUND ENTIRE PERIMETER OF STOCKPILE PER WDNR TECHNICAL STANDARDS. SOIL LEFT UNDISTURBED FOR 14 DAYS MUST BE SEEDED AND STABILIZED.
3. ALL FILL PLACED SHALL BE ON PREPARED LEVELED SUBSOIL WITH FILL PLACED IN COMPACTED 8" TO 12" LIFTS BY DOZER AND SHEEPSFOOT COMPACTOR.
4. ANY DISTURBED OR DAMAGED ROADWAY SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
5. EAST GENEVA STREET TO BE KEPT FREE OF DIRT, MUD, DEBRIS, ETC. AT ALL TIMES.
6. ALL SITE CLEANING, EXCAVATION, GRADING, COMPACTION, SUBGRADE PREPARATION, SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE APPLICABLE SECTIONS OF "STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION," 2016 EDITION, STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE REQUIREMENTS OF ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL ORDINANCES.

GENERAL NOTES

SHEET 1	–	COVER
SHEETS 2	–	OVERALL SITE PLAN
SHEET 2A	–	OVERALL BUILDING GRADE CONCEPTS
SHEETS 3	–	GRADING (STA 0+00 – 12+00)
SHEET 3A	–	BUILDING GRADE CONCEPTS (STA 0+00 – 12+00)
SHEETS 4	–	GRADING (STA 12+00 – 28+00)
SHEET 4A	–	BUILDING GRADE CONCEPTS (STA 12+00 – 28+00)
SHEET 5	–	SEWER/WATER PLAN & PROFILE (STA 0+65 – 10+00
SHEET 6	–	SEWER/WATER PLAN & PROFILE (STA 10+00 – 20+00)
SHEET 7	–	SEWER/WATER PLAN & PROFILE (STA 20+00 – 28+00)
SHEET 8	–	PLAN & PROFILE SOUTH
SHEET 9	–	STORMWATER BASINS OUTLOT 3
SHEET 10	–	STORMWATER BASINS OUTLOT 6 & 7
SHEET 11	–	PLAN & PROFILE FOR STORM EASEMENTS
SHEETS 12 – 14	–	CONSTRUCTION DETAILS
SHEETS 15 – 16	–	ROAD CROSS SECTIONS
SHEETS 17 – 19	–	SPECIFICATIONS

WISCONSIN WARREN E. HANSEN, JR. E-14435 DELAVAN WISCONSIN PROFESSIONAL ENGINEER
11/18/2025

INDEX OF SHEETS

1. OBTAIN REQUIRED NR 216 PERMIT FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES BEFORE START OF ANY LAND DISTURBING ACTIVITY ON SITE. (BY ENGINEER)
2. HOLD PRE-CON TO ADDRESS ANY ISSUES WITH PLAN AND SEQUENCE. (BY ENGINEER)
3. INSTALL ALL APPROPRIATE EROSION CONTROL MEASURES ON SITE INCLUDING TEMPORARY SILT FENCE, STONE TRACKING PAD PER WDNR TECHNICAL STANDARDS.
4. BASINS SHALL BE PARTIALLY DUG AND USED AS TEMPORARY SEDIMENT TRAP. SWALES FROM SITE GRADING AREAS SHALL BE CREATED TO DIVERT RUNOFF WATERS AS MUCH AS POSSIBLE TO THE BASINS DURING EXCAVATION AND GRADING.
5. CLEAR AND GRUB ON SITE AREAS NECESSARY TO CONSTRUCT ROADWAY AND BASINS (SEE SPECIFICATIONS).
6. STRIP TOPSOIL FROM ACCESS ROADS AND IN PLANNED WORK AREAS ALONG WITH TEMPORARY SEDIMENT BASINS. STOCKPILE WHERE SHOWN ON PLAN. INSTALL TEMPORARY SILT FENCE AROUND ENTIRE PERIMETER OF STOCKPILE PER WDNR TECHNICAL STANDARDS. SOIL LEFT UNDISTURBED FOR 7 DAYS MUST BE SEEDED AND STABILIZED.
7. IMPORT FILL, PLACE AND COMPACT TO SUBGRADES.
8. PROVIDE FOR ALL SITE CUTS AND DISPOSAL OF MATERIAL IN FILL LOCATIONS.
9. CONSTRUCT ALL PUBLIC SEWER AND WATER AS SHOWN IN VILLAGE OF WILLIAMS BAY STANDARDS AND SPECIFICATIONS INCLUDING SERVICE LATERALS AND ALL APPURTENANCES.
10. GRADE AND COMPACT ROAD SUBGRADES AND PLACE CRUSHED STONE BASE ALLOWING FOR FUTURE 2" OF FINAL BASE BEFORE FIRST LEFT OF PAVEMENT.
11. STABILIZE ALL OTHER EXPOSED SOIL AREAS WITH PROPER SEEDING AND EROSION MATTING PER WDNR TECHNICAL STANDARDS WITHIN 7 DAYS OF FINAL GRADING.
12. COMPLETE FINAL GRADING OF DRAINAGE SWALES. INSPECT SWALES TO MEET SPECIFICATIONS ON PLAN AND WDNR TECHNICAL STANDARDS WASTING EXCESS SITE CUT IN FILL AREAS OF THE PROPERTY.
13. SEEDING AND EROSION MATTING AS SPECIFIED ON PLAN FOR TEMPORARY SEDIMENT BASINS & DRAINAGE SWALES SHALL BEGIN WITHIN 7 DAYS AFTER FINAL GRADING IS COMPLETED.
14. COMPLETE EXCAVATION OF BASINS. STABILIZE AS GRADES ARE FINALIZED.
15. ROUGH GRADE PROPOSED ROADS.
16. INSTALL CULVERTS AND END SECTIONS.
17. FINE GRADE ROAD SUBGRADES.
18. INSTALL ROAD BASE COURSE. ROAD SLOPES UP TO 10 PERCENT SHALL BE COMPLETED WITHIN 2.5 MONTHS OF INITIAL DISTURBANCE. ROAD SLOPES 10 PERCENT OR GREATER SHALL BE COMPLETED WITHIN 1 MONTH OF INITIAL DISTURBANCE.
19. COMPLETE CONSTRUCTION OF ALL ROADS BY INSTALLING BINDER PAVEMENT SURFACE COURSE MAY BE DELAYED UP TO 12 MONTHS.
20. RESTORE ALL REMAINING DISTURBED AREAS BY SEEDING WITH MULCH OR MATTING AS SHOWN.
21. IF SEDIMENT HAS ACCUMULATED WITHIN THE BASIN DURING CONSTRUCTION IT SHALL BE REMOVED AND PROPERLY DISPOSED OF ONSITE.
22. ONCE THE PROJECT IS NEARING COMPLETION AND ALL SURFACES ARE STABILIZED OR FINISHED, THE TEMPORARY BASINS SHALL BE CLEANED, CUT TO FINAL GRADES INCLUDING ALL OF THE FINAL SEEDING AND STABILIZATION WITH OUTFALL ADJUSTMENTS.
23. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON FINAL STABILIZATION OF DISTURBED SURFACES ONLY AFTER VEGETATION HAS 70% GROW-IN COVERAGE.

NOTE: ANY CHANGES TO OR VARIANCE OF SITE PLAN AND/OR CONSTRUCTION SEQUENCE DUE TO CONSTRUCTION MEANS AND METHODS SHOULD BE APPROVED BY THE ENGINEER AND OWNER PRIOR TO IMPLEMENTATION. THE ENGINEER SHALL NOTIFY THE DEPARTMENT OF NATURAL RESOURCES OF ANY CHANGES TO THE PLANS AT LEAST 5 DAYS PRIOR TO FIELD IMPLEMENTATION.

SEQUENCE OF CONSTRUCTION

WILLABAY MEADOWS
FINAL ENGINEERING PLANS
VILLAGE OF WILLIAMS BAY
WALWORTH COUNTY, WI

COVER SHEET

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
- 11/08/2025 –RS CULVERTS
- 09/23/2025 –RS REVISIONS
- 09/19/2025 –RS WATER MAIN LABELING
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS REVISIONS
- 07/18/2025 –RS REVISIONS
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 05/30/2025 –NK GEN. PLAN REV.
- 03/03/2022 – TS ADVANCE
- 04/08/2022 – TS ADVANCE
- 12/22/2022 – TS ADD SOIL BORING INFO
- 02/08/2023 EMERGENCY ACCESS
- 05/17/2023 –TS ADVANCE
- 11/6/2023 –TS ADVANCE
- 01/30/2024 –TS REVISE OUTLOTS
- 02/19/2024 –TS ADVANCE
- 02/23/2024 –TS ADVANCE
- 06/10/2024 –TS ADVANCE
- 12/18/2024 –NK PLAN & PROFILE
- 03/13/2025 –RS PLAN & PROFILE
- 05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 1 OF 19

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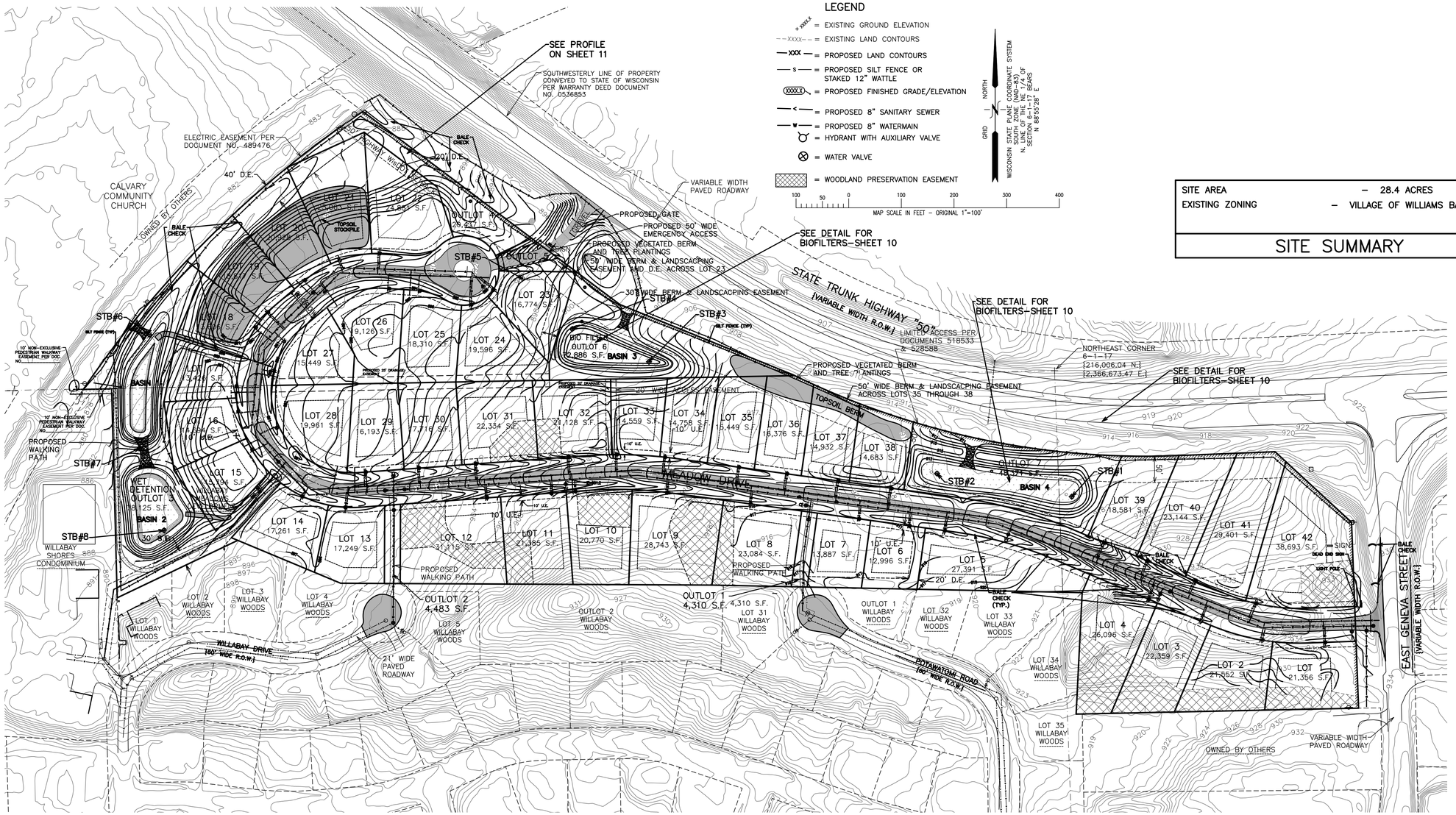
WILLABAY MEADOWS, A SUBDIVISION
FINAL ENGINEERING PLANS

PART OF NE 1/4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN



LEGEND

- x XXX.X = EXISTING GROUND ELEVATION
- XXXX = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- XXX.X = PROPOSED FINISHED GRADE/ELEVATION
- < = PROPOSED 8" SANITARY SEWER
- W = PROPOSED 8" WATERMAIN
- = HYDRANT WITH AUXILIARY VALVE
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

GRID NORTH — WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD-83) N. LINE OF THE NE 1/4 OF SECTION 6-1-17 BEARS N 88°55'26" E

100 50 0 100 200 300 400
MAP SCALE IN FEET – ORIGINAL 1"=100'

SITE AREA	– 28.4 ACRES
EXISTING ZONING	– VILLAGE OF WILLIAMS BAY SF-3

SITE SUMMARY

SOIL BORINGS

SB#1 GROUND=916.23

0–10"	SILTY CLAY LOAM
10"–43"	SILTY CLAY LOAM
43"–99"	GRAVELLY SANDY CLAY LOAM
99"–148"	GRAVELLY SANDY LOAM

SB#2 GROUND=912.39

0–11"	SILTY CLAY LOAM
11"–42"	SILTY CLAY LOAM
42"–91"	SILT CLAY LOAM
91"–147"	GRAVELLY SANDY CLAY LOAM

SB#3 GROUND=906.40

0–10"	SILTY CLAY LOAM
10"–60"	SILTY CLAY LOAM
60"–90"	GRAVELLY SANDY CLAY LOAM
90"–149"	GRAVELLY SANDY LOAM

SB#4 GROUND=901.09

0–9"	SILTY CLAY LOAM
9"–40"	SILTY CLAY LOAM
40"–96"	GRAVELLY SANDY CLAY LOAM
96"–10"	GRAVELLY SANDY LOAM
110"–130"	SILTY CLAY LOAM

SB#5 GROUND=896.69

0–14"	SILT LOAM
14"–47"	CLAY LOAM
47"–83"	SANDY CLAY LOAM
83"–117"	GRAVELLY SANDY LOAM
117"–150"	SANDY CLAY LOAM

SB#6 GROUND=880.22

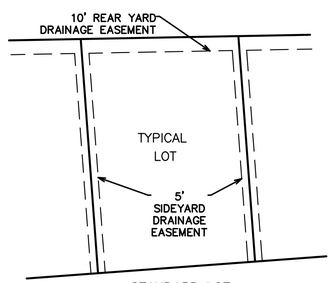
0–13"	SILT LOAM
13"–92"	GRAVELLY SANDY CLAY LOAM
92"–114"	GRAVELLY SANDY LOAM
114"–130"	SANDY CLAY LOAM

SB#7 GROUND=884.78

0–7"	SILTY CLAY LOAM
7"–30"	SILTY CLAY LOAM
30"–38"	GRAVELLY SANDY CLAY LOAM
38"–121"	GRAVELLY SANDY CLAY LOAM
121"–150"	GRAVELLY LOAMY SAND

SB#8 GROUND=888.47

0–9"	SILTY CLAY LOAM
9"–30"	SILTY CLAY LOAM
30"–58"	GRAVELLY SANDY CLAY LOAM
58"–144"	GRAVELLY SANDY CLAY LOAM



STANDARD LOT DRAINAGE EASEMENT DETAIL

NOTE!:

Contours for finished grading shown are not fully accurate for ditch grading on Meadow Drive because of the plan scale. Ditch shall be required to be a minimum of 2' in depth from finish shoulder grade as per standard cross sections shown.

11/08/2025 –RS CULVERTS
09/23/2025 –RS REVISIONS
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS
07/18/2025 –RS REVISIONS
06/13/2025 –RS SHEETS 2A, 3A, & 4A
05/30/2025 –NK GEN. PLAN REV.

REVISIONS
03/03/2022 – TS ADVANCE
04/08/2022 – TS REVISIONS
12/22/2022 – TS ADD SOIL BORING INFO
02/08/2023 EMERGENCY ACCESS
05/17/2023 –TS ADVANCE
11/6/2023 –TS ADVANCE
01/30/2024 –TS REVISE OUTLOTS
02/19/2024 –TS ADVANCE
02/23/2024 –TS ADVANCE
06/10/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/14/2025 –RS PLAN & PROFILE
05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 2 OF 19

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

OVERALL SITE GRADING

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

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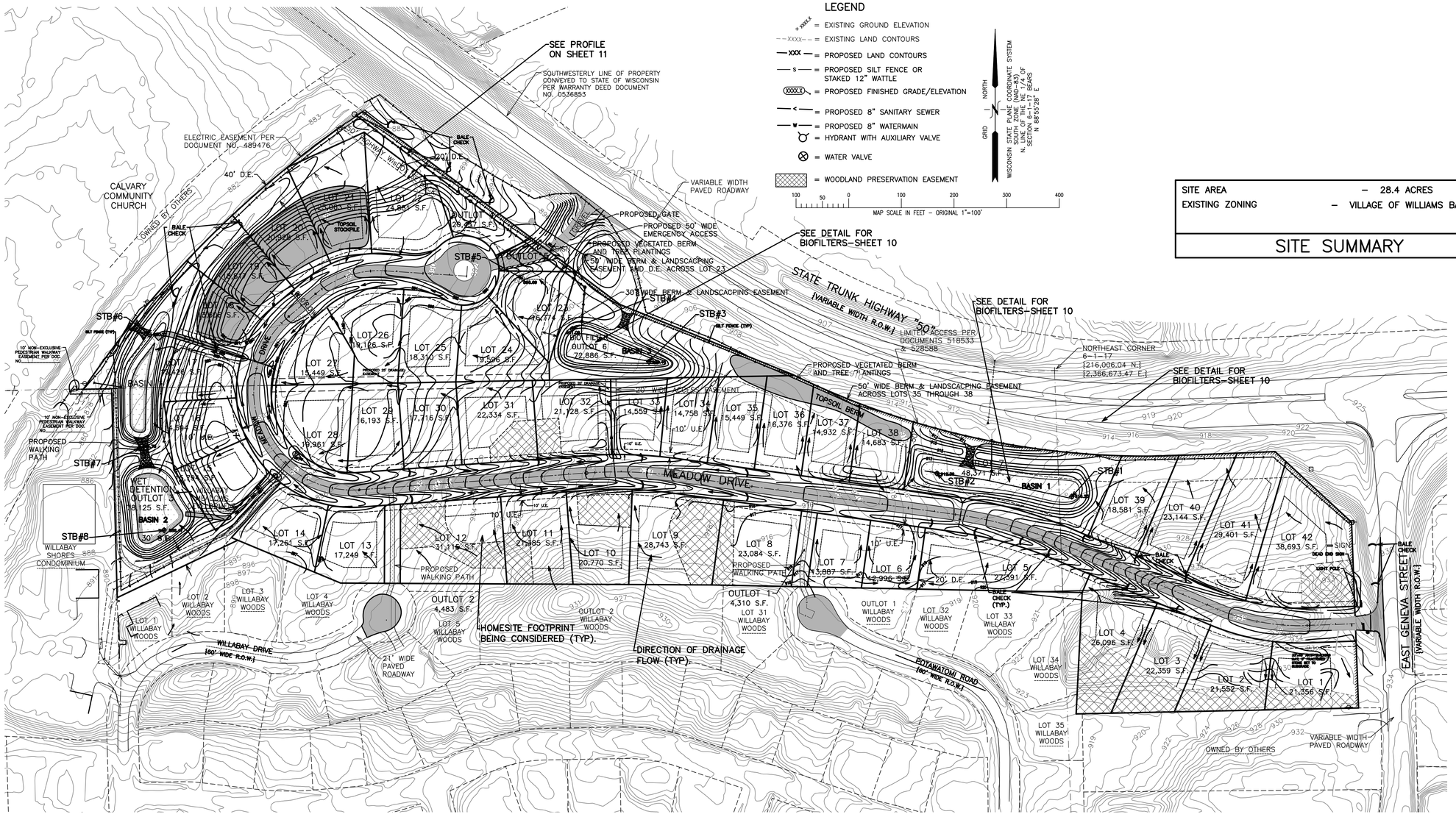
WILLABAY MEADOWS, A SUBDIVISION
FINAL ENGINEERING PLANS

PART OF NE 1/4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN



SITE AREA	– 28.4 ACRES
EXISTING ZONING	– VILLAGE OF WILLIAMS BAY SF–3

SITE SUMMARY

NOTE!:

Contours for finished grading shown are not fully accurate for ditch grading on Meadow Drive because of the plan scale. Ditch shall be required to be a minimum of 2' in depth from finish shoulder grade as per standard cross sections shown.

SOIL BORINGS

SB#1

0–10"	SILTY CLAY LOAM
10"–43"	SILTY CLAY LOAM
43"–99"	GRAVELLY SANDY CLAY LOAM
99"–148"	GRAVELLY SANDY LOAM

SB#2

0–11"	SILTY CLAY LOAM
11"–42"	SILTY CLAY LOAM
42"–91"	SILT CLAY LOAM
91"–147"	GRAVELLY SANDY CLAY LOAM

SB#3

0–10"	SILTY CLAY LOAM
10"–60"	SILTY CLAY LOAM
60"–90"	GRAVELLY SANDY CLAY LOAM
90"–149"	GRAVELLY SANDY LOAM

SB#4

0–9"	SILTY CLAY LOAM
9"–40"	SILTY CLAY LOAM
40"–96"	GRAVELLY SANDY CLAY LOAM
96"–10"	GRAVELLY SANDY LOAM
110"–130"	SILTY CLAY LOAM

SB#5

0–14"	SILT LOAM
14"–47"	CLAY LOAM
47"–83"	SANDY CLAY LOAM
83"–117"	GRAVELLY SANDY LOAM
117"–150"	SANDY CLAY LOAM

SB#6

0–13"	SILT LOAM
13"–92"	GRAVELLY SANDY CLAY LOAM
92"–114"	GRAVELLY SANDY LOAM
114"–130"	SANDY CLAY LOAM

SB#7

0–7"	SILTY CLAY LOAM
7"–30"	SILTY CLAY LOAM
30"–38"	GRAVELLY SANDY CLAY LOAM
38"–121"	GRAVELLY SANDY CLAY LOAM
121"–150"	GRAVELLY LOAMY SAND

SB#8

0–9"	SILTY CLAY LOAM
9"–30"	SILTY CLAY LOAM
30"–58"	GRAVELLY SANDY CLAY LOAM
58"–144"	GRAVELLY SANDY CLAY LOAM

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05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17

DATE 05/12/2025

SHEET NO. 2A OF 19

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

OVERALL SITE GRADING

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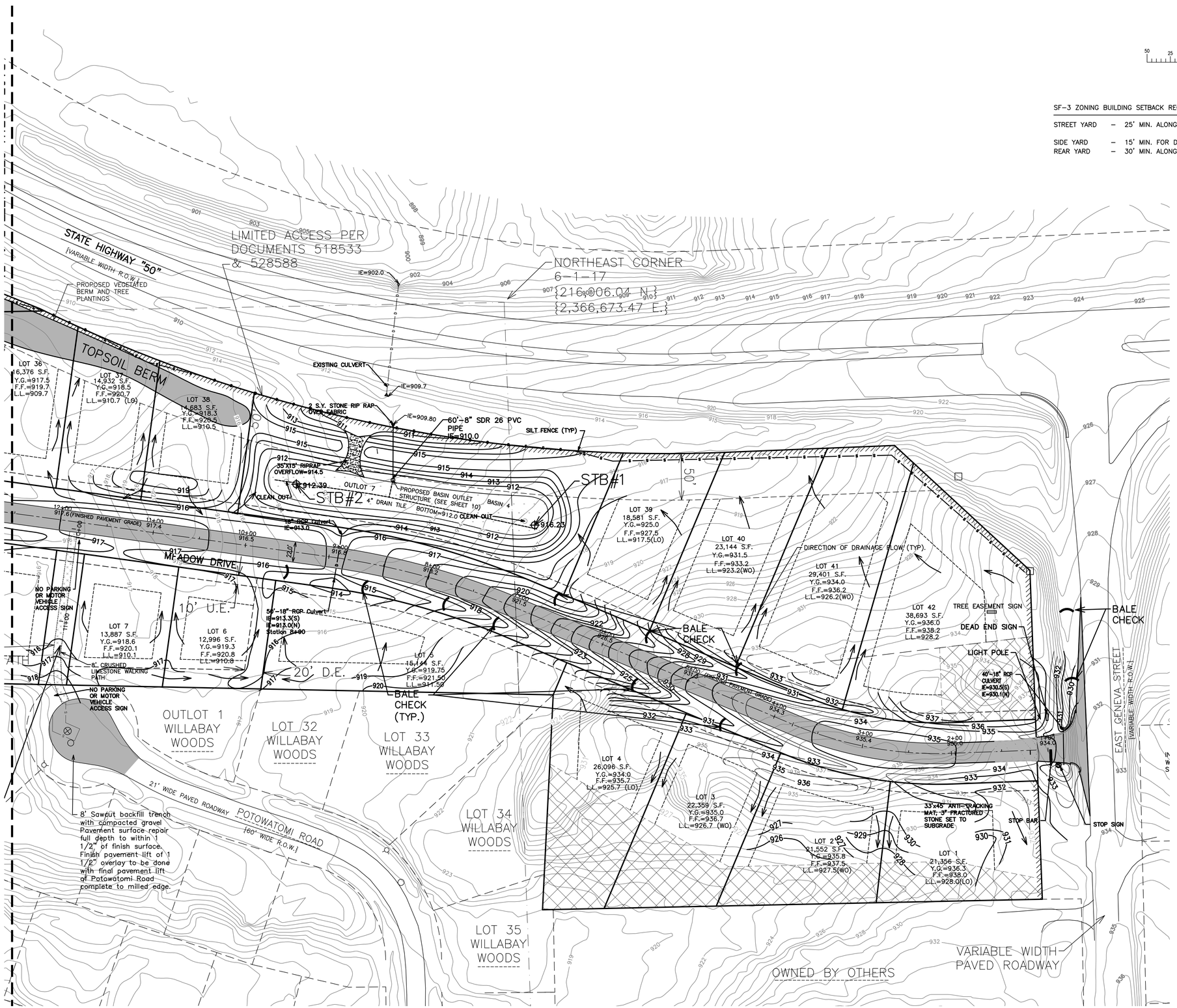

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

NOTE: The location and size of the underground structures and utilities shown hereon have been located to a reasonable degree of accuracy, but the Engineer and/or Surveyor does not guarantee their exact location or the location of others not shown. Contact Diggers Hotline, Inc., Etc.

CALL DIGGERS HOTLINE 811 OR 1–800–242–8511 TOLL FREE. WIS. STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE. MEMBER: ARCH – 414–259–1181

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

NOTE: BUILDING GRADES ARE SUGGESTED AND MAY BE ALTERED FOR CAUSE.

NOTE: ALL PLANS FOR INDIVIDUAL HOME SITES SHALL REQUIRE DETAILED TOPOGRAPHIC MAPPING OF THE LOT AREA TO BE GRADED WITH STREET GRADES, DITCH GRADES, LARGE SPECIMEN TREES LOCATED, BENCH MARK SET AND A DETAIL OF THE HOUSE FOOT PRINT MADE TO SET FINAL GRADES. GRADES SHOWN ON THE ENGINEERING PLANS FOR THE DEVELOPMENT ARE GUIDELINES ONLY, BUT LOT GRADING FOR BEST DRAINAGE SHALL BE SUBMITTED TO DEVELOPER FOR REVIEW WITH THE PLANS FOR ARCHITECTURE REVIEW.

WILLABAY MEADOWS
FINAL ENGINEERING PLANS

GRADING PLAN STATIONS 0+00 – 12+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
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ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

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11/08/2025 –RS CULVERTS
05/30/2025 –NK GEN. PLAN REV.

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 3 OF 19

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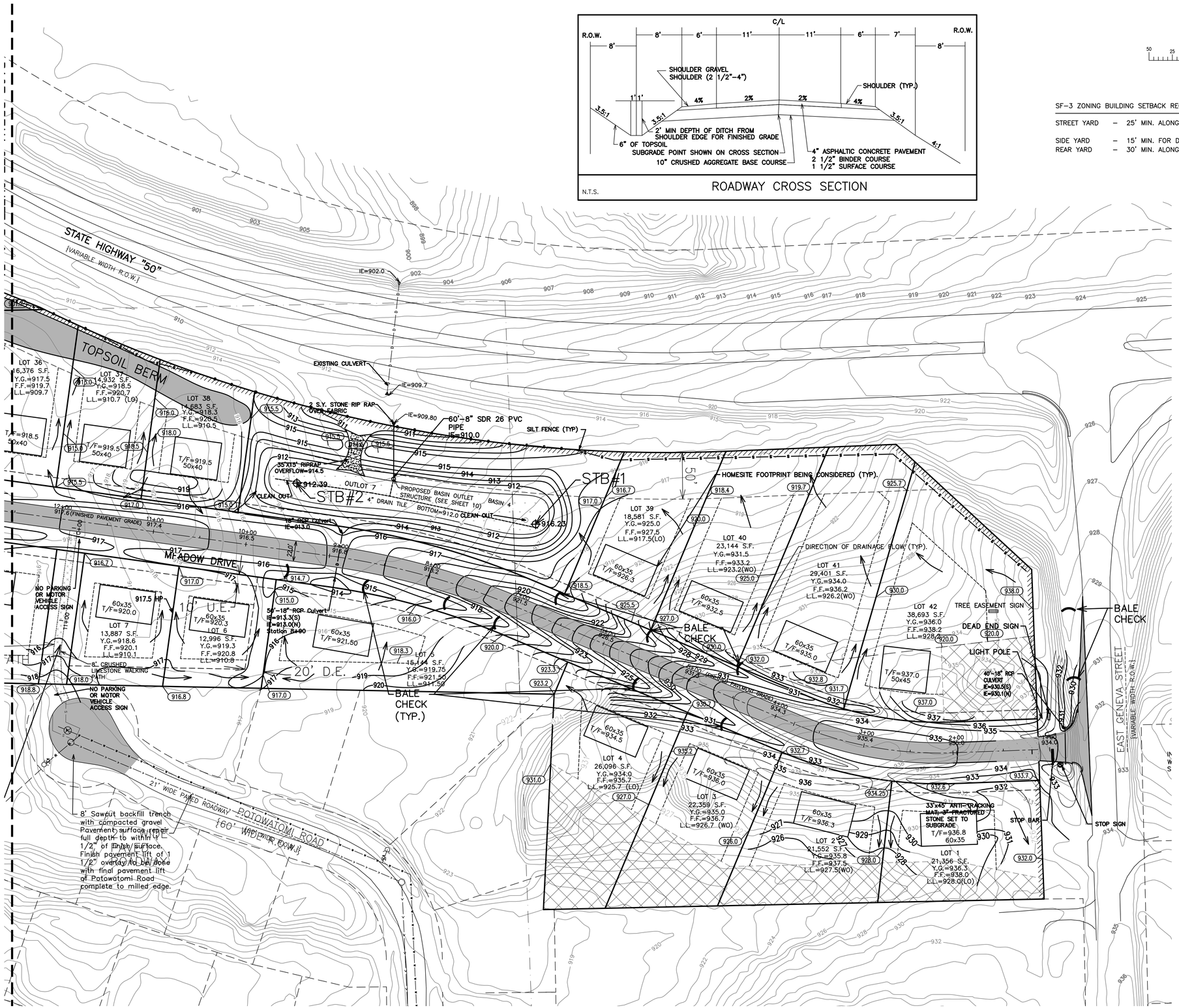

NOTE: BUILDING GRADES ARE SUGGESTED AND MAY BE ALTERED FOR CAUSE.

NOTE: ALL PLANS FOR INDIVIDUAL HOME SITES SHALL REQUIRE DETAILED TOPOGRAPHIC MAPPING OF THE LOT AREA TO BE GRADED WITH STREET GRADES, DITCH GRADES, LARGE SPECIMEN TREES LOCATED, BENCH MARK SET AND A DETAIL OF THE HOUSE FOOT PRINT MADE TO SET FINAL GRADES. GRADES SHOWN ON THE ENGINEERING PLANS FOR THE DEVELOPMENT ARE GUIDELINES ONLY, BUT LOT GRADING FOR BEST DRAINAGE SHALL BE SUBMITTED TO DEVELOPER FOR REVIEW WITH THE PLANS FOR ARCHITECTURE REVIEW.

NOTE: ON SLOPING LOTS, YARD GRADE IS SHOWN FOR HIGHEST CORNER OR SIDE OF HOMESITE. ALL GRADES ARE SUBJECT TO FINAL REVIEW AND ALTERATIONS WHEN BUILDING PLANS ARE DONE. DRAINAGE IS TO BE MAINTAINED WITHOUT NEGATIVE IMPACTS TO NEIGHBORS. DETAIL SITE AND GRADING PLANS ARE TO BE CREATED BY LICENSED ENGINEERS AT A SCALE OF EITHER 1"=10' OR 1"=20'

WILLABAY MEADOWS
FINAL ENGINEERING PLANS

GRADING PLAN STATIONS 0+00 - 12+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING - ARCHITECTURE - SURVEYING
7 RIDGWAY COURT P.O. BOX 437
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- 02/23/2024 -TS ADVANCE
- 05/10/2024 -TS ADVANCE
- 12/18/2024 -NK PLAN & PROFILE
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- 07/22/2025 -RS REVISIONS
- 06/13/2025 -RS SHEETS 2A, 3A, & 4A
- 06/12/2025 -RS BOXES AND TF'S
- 05/30/2025 -NK GEN. PLAN REV.

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 3A OF 19

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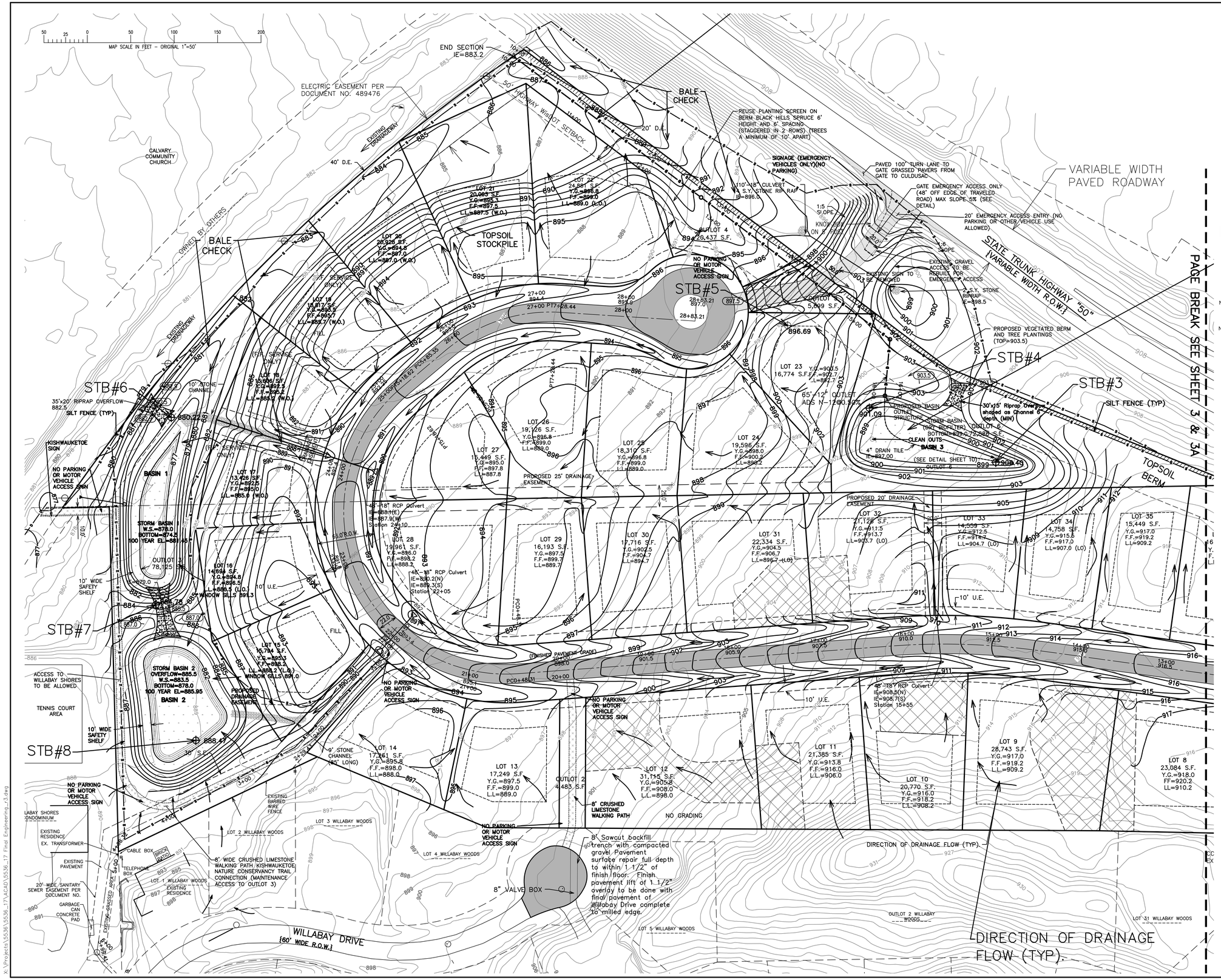
MAP SCALE IN FEET – ORIGINAL 1"=50'
END SECTION IE=883.2
ELECTRIC EASEMENT PER DOCUMENT NO. 489476
50' HIGHWAY W/SLOT SETBACK
BALE CHECK
REUSE PLANTING SCREEN ON BERM BLACK HILLS SPRUCE 6' HEIGHT AND 6' SPACING (STAGGERED IN 2 ROWS) (TREES A MINIMUM OF 10' APART)
SIGNAGE (EMERGENCY VEHICLES ONLY)(NO PARKING)
PAVED 100' TURN LANE TO GATE GRASSED PAVERS FROM GATE TO CULDUSAC
VARIABLE WIDTH PAVED ROADWAY
GATE EMERGENCY ACCESS ONLY (48' OFF EDGE OF TRAVELED ROAD) MAX SLOPE 5% (SEE DETAIL)
20' EMERGENCY ACCESS ENTRY (NO PARKING OR OTHER VEHICLE USE ALLOWED)
CALVARY COMMUNITY CHURCH
EXISTING DRIVEWAY
40' D.E.
20' D.E.
OWNED BY OTHERS
TOPSOIL STOCKPILE
110' 18" CULVERT S.S. STONE RIP RAP IE=896.0
1:5 SLOPE
KNOX BOX ON 5' POST
OUTLOT 4 26,437 S.F.
1:8 SLOPE
EXISTING GRAVEL ACCESS TO BE REBUILT FOR EMERGENCY ACCESS
EXISTING SIGN TO BE REMOVED
2 S.Y. STONE RIPRAP IE=898.5
STATE TRUNK HIGHWAY "50" (VARIABLE WIDTH R.O.W.)
PAGE BREAK SEE SHEET 3 & 3A
NO PARKING OR MOTOR VEHICLE ACCESS SIGN
STB#5
OUTLOT 5 5,699 S.F.
PROPOSED VEGETATED BERM AND TREE PLANTINGS (TOP=903.5)
STB#4
STB#3
STB#6
STB#7
STB#8
35'x20' RIPRAP OVERFLOW 882.5
SILT FENCE (TYP)
10' STONE CHANNEL
KISHWAUKETOE SIGN
BASIN 1
STORM BASIN 1 W.S.=878.0 BOTTOM=874.5 100 YEAR EL=881.45
OUTLOT 3 76,125 S.F.
STORM BASIN 2 OVERFLOW=885.5 W.S.=883.5 BOTTOM=878.0 100 YEAR EL=885.95 BASIN 2
PROPOSED DRAINAGE EASEMENT
ACCESS TO WILLABAY SHORES TO BE ALLOWED.
TENNIS COURT AREA
10' WIDE SAFETY SHELF
LABAY SHORES CONDOMINIUM
EXISTING RESIDENCE
EX. TRANSFORMER
EXISTING PAVEMENT
CABLE BOX
TELEPHONE BOX
BIRCH PATIO
20' WIDE SANITARY SEWER EASEMENT PER DOCUMENT NO.
GARBAGE CAN CONCRETE PAD
EXISTING GRASSED AREA
EXISTING BARBED WIRE FENCE
LOT 2 WILLABAY WOODS
LOT 3 WILLABAY WOODS
LOT 4 WILLABAY WOODS
LOT 1 WILLABAY WOODS
8' WIDE CRUSHED LIMESTONE WALKING PATH / KISHWAUKETOE NATURE CONSERVANCY TRAIL CONNECTION (MAINTENANCE ACCESS TO OUTLOT 3)
WILLABAY DRIVE (60' WIDE R.O.W.)
LOT 17 13,426 S.F. Y.G.=892.5 F.F.=895.0 L.L.=885.6 (W.O.)
LOT 18 15,606 S.F. Y.G.=893.3 F.F.=895.5 L.L.=885.2 (W.O.)
LOT 19 15,817 S.F. Y.G.=893.5 F.F.=895.7 L.L.=885.7 (W.O.)
LOT 20 26,326 S.F. Y.G.=894.8 F.F.=897.0 L.L.=887.0 (W.O.)
LOT 21 20,083 S.F. Y.G.=895.3 F.F.=897.5 L.L.=887.5 (W.O.)
LOT 22 24,881 S.F. Y.G.=895.8 F.F.=899.0 L.L.=889.0 (L.O.)
LOT 16 14,694 S.F. Y.G.=894.8 F.F.=896.5 L.L.=886.9 (L.O.) WINDOW SILLS 891.3
LOT 15 15,784 S.F. Y.G.=895.3 F.F.=898.0 L.L.=888.2 (L.O.) WINDOW SILLS 891.0
LOT 14 17,261 S.F. Y.G.=895.8 F.F.=898.0 L.L.=888.0
LOT 13 17,249 S.F. Y.G.=897.5 F.F.=899.0 L.L.=889.0
LOT 12 31,115 S.F. Y.G.=905.8 F.F.=908.0 L.L.=898.0
LOT 11 21,385 S.F. Y.G.=913.8 F.F.=916.0 L.L.=906.0
LOT 10 20,770 S.F. Y.G.=916.0 F.F.=918.2 L.L.=908.2
LOT 9 28,743 S.F. Y.G.=917.0 F.F.=919.2 L.L.=909.2
LOT 8 23,084 S.F. Y.G.=918.0 FF=920.2 LL=910.2
LOT 26 19,126 S.F. Y.G.=896.8 F.F.=899.0 L.L.=889.0
LOT 27 15,449 S.F. Y.G.=895.0 F.F.=897.8 L.L.=887.8
LOT 25 18,310 S.F. Y.G.=896.8 F.F.=899.0 L.L.=889.0
LOT 24 19,596 S.F. Y.G.=898.0 F.F.=900.2 L.L.=890.2
LOT 23 16,774 S.F. Y.G.=900.5 F.F.=902.7 L.L.=892.7
LOT 28 19,961 S.F. Y.G.=896.0 F.F.=898.2 L.L.=888.2
LOT 29 16,193 S.F. Y.G.=897.5 F.F.=899.7 L.L.=889.7
LOT 30 17,716 S.F. Y.G.=902.5 F.F.=904.7 L.L.=894.7
LOT 31 22,334 S.F. Y.G.=904.5 F.F.=906.7 L.L.=896.7 (LO)
LOT 32 21,128 S.F. Y.G.=911.5 F.F.=913.7 L.L.=903.7 (LO)
LOT 33 14,559 S.F. Y.G.=912.5 F.F.=914.7 L.L.=904.7 (LO)
LOT 34 14,758 S.F. Y.G.=915.8 F.F.=917.0 L.L.=907.0 (LO)
LOT 35 15,449 S.F. Y.G.=917.0 F.F.=919.2 L.L.=909.2
65' 12" OUTLET ADS N-12@0.50%
PROPOSED BASIN OUTLET STRUCTURE
STORM BASIN (DRY DETENTION) BOTTOM=899.0 7.2+888 S.F.
CLEAN OUTS
BASIN 3
4" DRAIN TILE IE=897.00
(SEE DETAIL SHEET 10)
OUTLOT 6
30'x15' Riprap swale shaped as Channel 6" depth (MIN)
OUTLOT 1 4,483 S.F.
OUTLOT 2 4,483 S.F.
PROPOSED 25' DRAINAGE EASEMENT
PROPOSED 20' DRAINAGE EASEMENT
48"-48" RCP Culvert IE=888.1(E) IE=887.9(W) Station 24+10
48"-18" RCP Culvert IE=890.2(N) IE=889.3(S) Station 22+05
60"-18Y RCP Culvert IE=908.5(N) IE=908.7(S) Station 15+55
(FINISHED PAVEMENT GRADE) 20+00 888.0
PCO=1+48.31
8" CRUSHED LIMESTONE WALKING PATH
8" Sawcut backfill trench with compacted gravel Pavement surface repair full depth to within 1 1/2" of finish floor. Finish pavement lift of 1 1/2" overlay to be done with final pavement of Willabay Drive complete to milled edge.
8" VALVE BOX
NO GRADING
DIRECTION OF DRAINAGE FLOW (TYP)
OUTLOT 2 WILLABAY WOODS
LOT 31 WILLABAY WOODS
LOT 5 WILLABAY WOODS
10' U.E.
SILT FENCE (TYP)
TOPSOIL BERM
NO PARKING OR MOTOR VEHICLE ACCESS SIGN
9' STONE CHANNEL (65' LONG)
(FOR STORAGE ONLY)
(FOR SERVICE ONLY)
FILL
PT=28.44
PCS=83.35
PT=7+83.21
PCS=8+02.35
PCO=48.31
PCO=1+48.31
896.69
897.5
897.0
901.09
901.5
903.5
888.47
887.0
880.25
885.5
885.78
889.0
889.5
888.0
888.2
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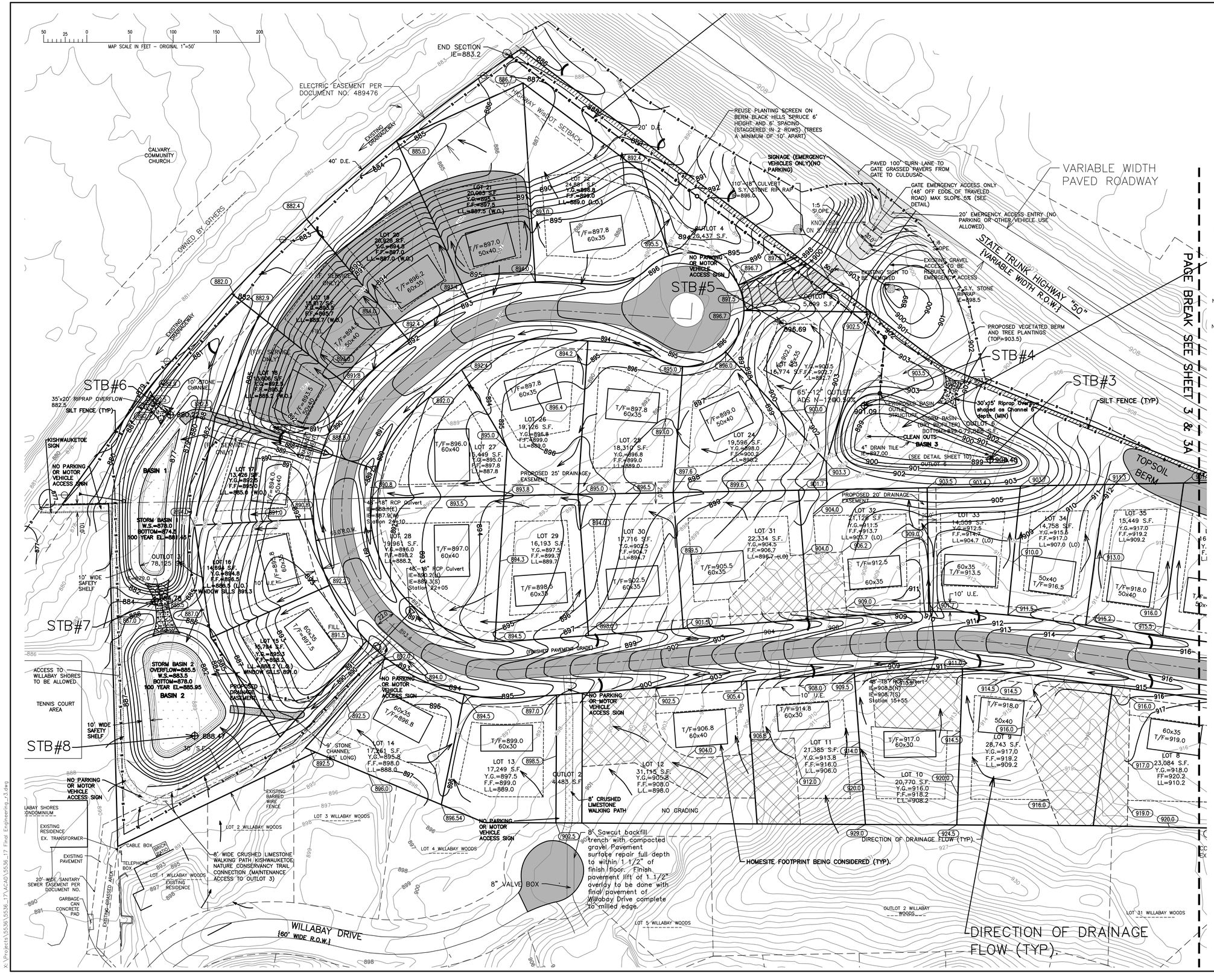

LEGEND

- x.xxx.x = EXISTING GROUND ELEVATION
- XXXX = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- XXXX.X = PROPOSED FINISHED GRADE/ELEVATION
- < = PROPOSED 8" SANITARY SEWER
- W = PROPOSED 8" WATERMAIN
- HYDRANT WITH AUXILIARY VALVE
- WATER VALVE
- WOODLAND PRESERVATION EASEMENT

W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE
L.O. = LOOKOUT BASEMENT (3.5' ABOVE L.L.)

NOTE: LOTS 16,17,18, AND 19 WILL HAVE FIRST FLOOR GRAVITY SEWER SERVICES ONLY

NOTE: ROAD TO BE BUILT FIRST LOT 15–22 TO BE FILLED AND COMPACTED FROM BASEMENT EXCAVATIONS AND SPOILS FROM TRENCH WORK.

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

NOTE: The location and size of the underground structures and utilities shown hereon have been located to a reasonable degree of accuracy, but the Engineer and/or Surveyor does not guarantee their exact location or the location of others not shown. Contact Diggers Hotline, Inc., Etc.

CALL DIGGERS HOTLINE 811 OR 1-800-242-8511 TOLL FREE
WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE
WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD–83) N 465°28' E 1317.39' FROM SE CORNER OF SECTION 21–41–17 BEARS N 88°52'28" E
GRID NORTH

NOTE: ALL PLANS FOR INDIVIDUAL HOME SITES SHALL REQUIRE DETAILED TOPOGRAPHIC MAPPING OF THE LOT AREA TO BE GRADED WITH STREET GRADES, DITCH GRADES, LARGE SPECIMEN TREES LOCATED, BENCH MARK SET AND A DETAIL OF THE HOUSE FOOT PRINT MADE TO SET FINAL GRADES. GRADES SHOWN ON THE ENGINEERING PLANS FOR THE DEVELOPMENT ARE GUIDELINES ONLY, BUT LOT GRADING FOR BEST DRAINAGE SHALL BE SUBMITTED TO DEVELOPER FOR REVIEW WITH THE PLANS FOR ARCHITECTURE REVIEW.

NOTE!:
Contours for finished grading shown are not fully accurate for ditch grading on Meadow Drive because of the plan scale. Ditch shall be required to be a minimum of 2' in depth from finish shoulder grade as per standard cross sections shown.

NOTE!:
Granular backfill and temporary crushed aggregate is required before the existing cul de sacs are re–paved.

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

GRADING PLAN STATIONS 14+00 – 28+00

FARRIS, HANSEN & ASSOCIATES, INC.
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- 11/06/2023 –TS ADVANCE
- 01/30/2024 –TS REVISE OUTLOTS
- 02/19/2023 –TS ADVANCE
- 02/23/2024 –TS ADVANCE
- 06/10/2024 –TS ADVANCE
- 12/18/2024 –NK PLAN & PROFILE
- 03/11/2025 –RS PLAN & PROFILE
- 05/12/2025 –RS PLAN & PROFILE
- 11/08/2025 –RS CULVERTS
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS REVISIONS
- 07/18/2025 –RS REVISIONS
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 06/12/2025 –RS BOXES & TF'S
- 05/30/2025 –NK GEN. PLAN REV.

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 4A OF 19

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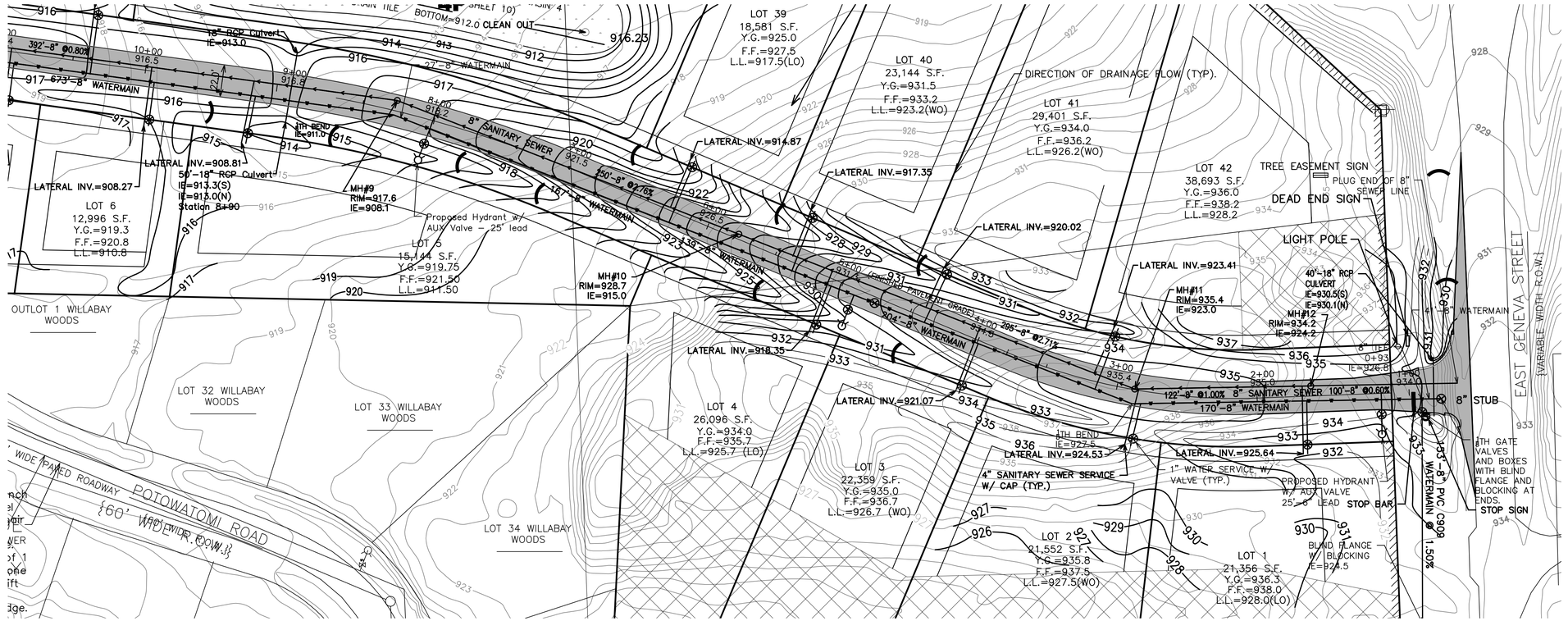

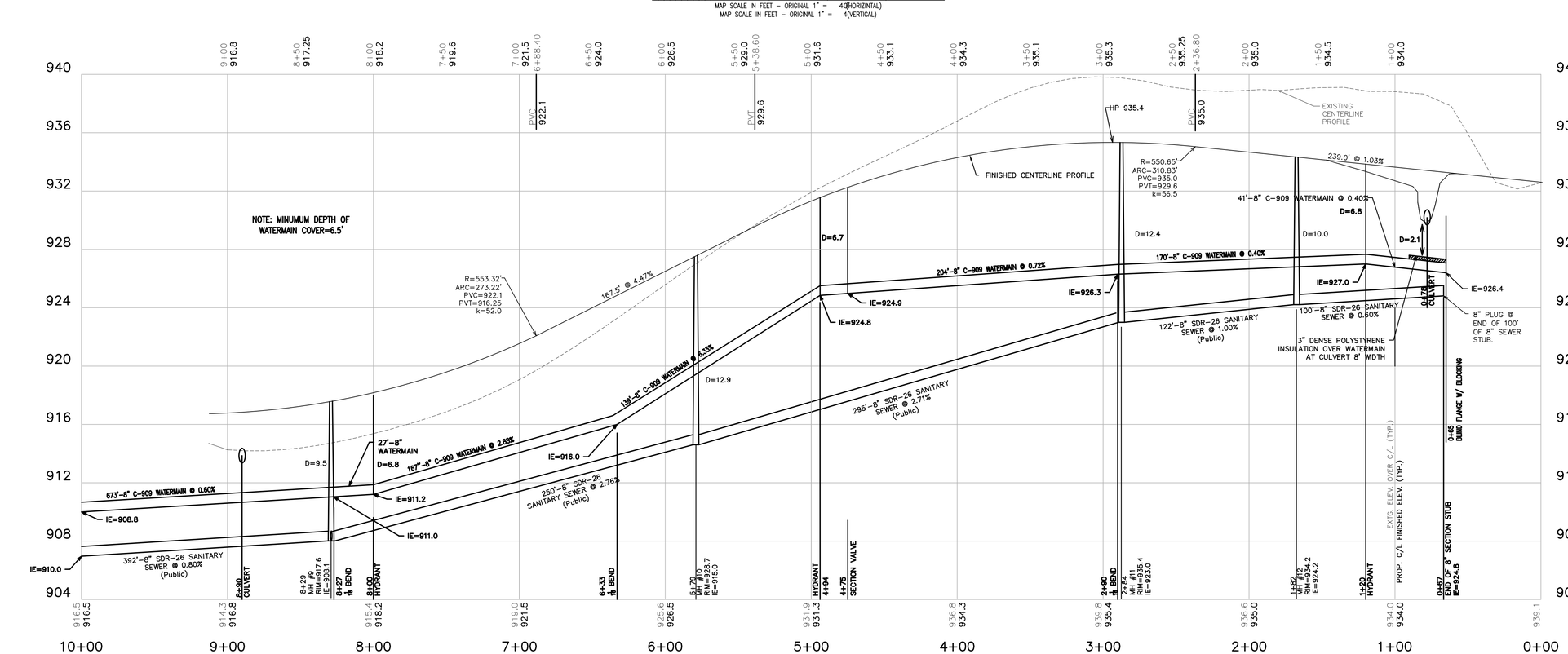

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

WILLABAY MEADOWS

FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 1+00 – 10+00

11/08/2025 –RS CULVERTS
09/29/2025 –RS REVISIONS
09/23/2025 –RS REVISIONS
09/19/2025 –RS WATER MAIN LABELING
09/16/2025 –RS ADDED 8" SEWER STUB TO STREET EDGE ORDERED BY VILLAGE.

REVISIONS
04/08/2022 – TS ADVANCE
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS
05/17/2023 –TS ADVANCE
07/18/2025 –RS REVISIONS
06/13/2025 –RS SHEETS 2A, 3A, & 4A
11/06/2023– TS ADVANCE
01/30/2024 –TS REVISE OUTLOTS
05/30/2025 –NK GEN. PLAN REV.
02/19/2023 –TS ADVANCE
02/23/2024 –TS ADVANCE
06/10/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/11/2024 –RS PLAN & PROFILE
05/12/2024 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 5 OF 19

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TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

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NOTE: The location and size of the underground structures and utilities shown hereon have been located to a reasonable degree of accuracy, but the Engineer and/or Surveyor does not guarantee their exact location or the location of others not shown. Contact Diggers Hotline, Inc., Etc.

CALL DIGGERS HOTLINE
811 OR 1-800-242-8511 TOLL FREE
WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE
MEMBER AREA 1-414-259-1181

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE.

CONSTRUCTION & INSPECTION NOTES

1. NO CONSTRUCTION, OR INSTALLATION OR IMPROVEMENTS SHALL COMMENCE UNTIL ARRANGEMENTS FOR INSPECTION BY THE VILLAGE ENGINEER HAVE BEEN MADE AND THE CITY ENGINEER HAS GIVEN WRITTEN AUTHORIZATION TO COMMENCE SAID CONSTRUCTION.
2. CONTRACTOR SHALL CONTACT THE CITY ENGINEER AT LEAST 72 HOURS PRIOR TO THE NEED FOR AS REQUIRED BY THE SPECIAL PROVISIONS ON SHEETS 10 & 11.
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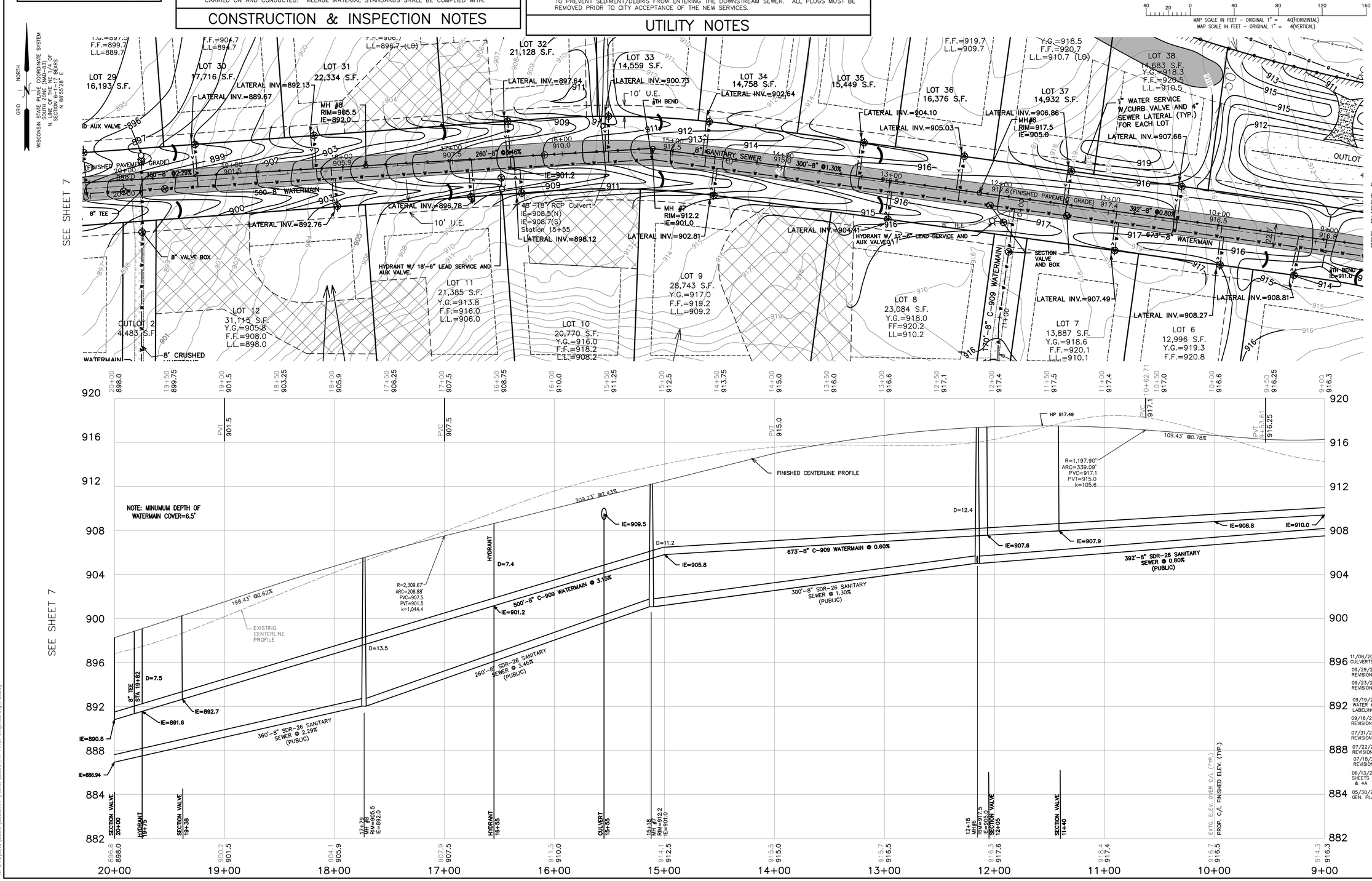

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 9+00 – 20+00

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- 12/18/2024 –NK PLAN & PROFILE
- 05/02/2025 –RS PLAN & PROFILE
- 05/30/2025 –NK GEN. PLAN REV.
- 11/08/2025 –RS CULVERTS
- 09/29/2025 –RS REVISIONS
- 09/23/2025 –RS REVISIONS
- 09/19/2025 –RS WATER MAIN LABELING
- 09/16/2025 –RS REVISIONS
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS ADVANCE
- 07/18/2025 –RS REVISIONS
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 03/11/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 6 OF 19

X:\Projects\5536\5536_17\ACAD\5536_17 Final Engineering_r3.dwg

SEE SHEET 6

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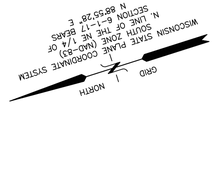
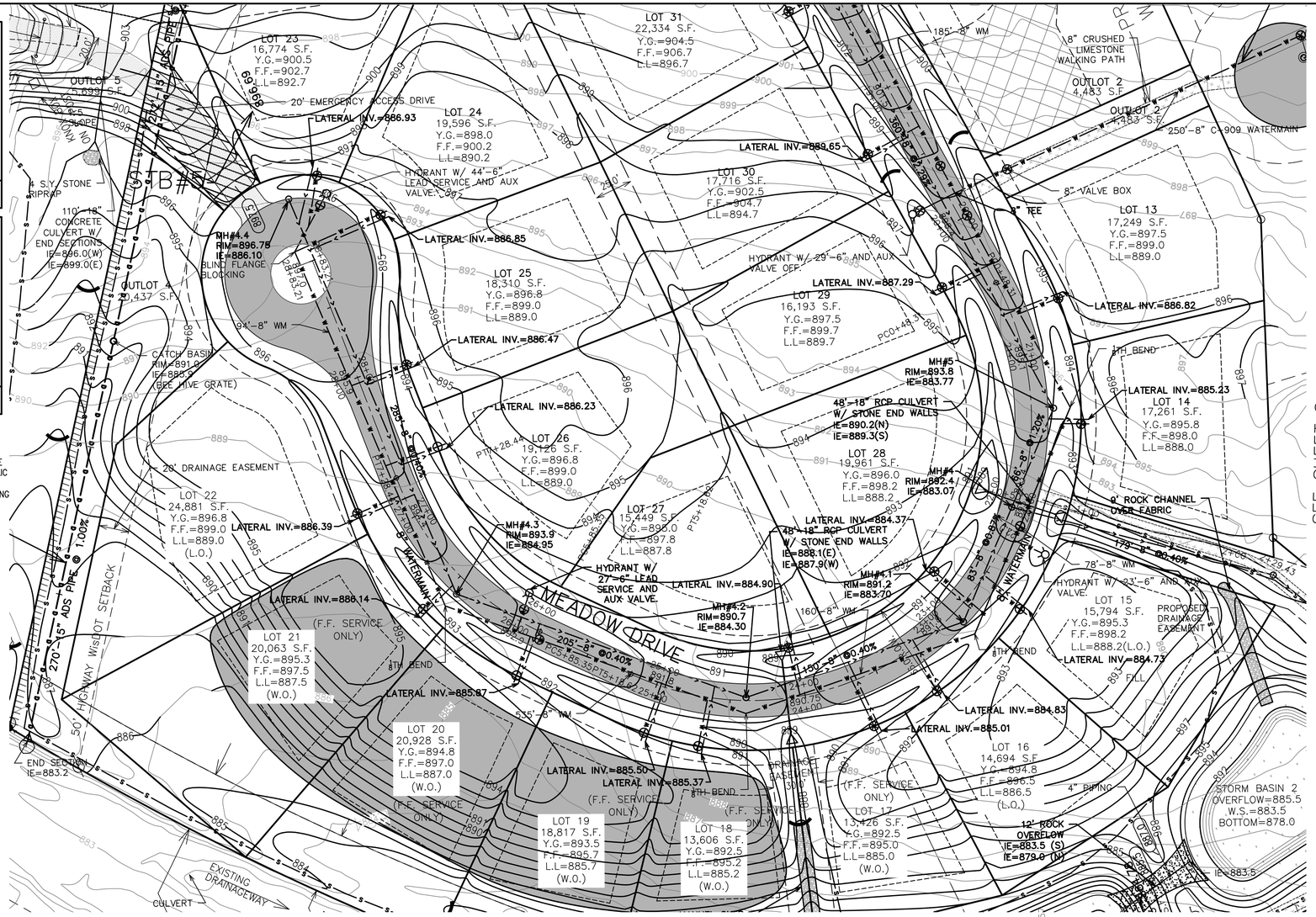


40 20 0 40 80 120 160
MAP SCALE IN FEET – ORIGINAL 1" = 4(HORIZONTAL)
MAP SCALE IN FEET – ORIGINAL 1" = 4(VERTICAL)


LOT 23 16,774 S.F. Y.G.=900.5 F.F.=902.7 L.L=892.7
LOT 31 22,334 S.F. Y.G.=904.5 F.F.=906.7 L.L=896.7
OUTLOT 5 4,039 S.F.
20' EMERGENCY ACCESS DRIVE
LOT 24 19,596 S.F. Y.G.=898.0 F.F.=900.2 L.L=890.2
LATERAL INV.=886.93
LATERAL INV.=889.65
HYDRANT W/ 44'-6" LEAD SERVICE AND AUX VALVE
LOT 30 17,716 S.F. Y.G.=902.5 F.F.=904.7 L.L=894.7
185'-8" WM
8" CRUSHED LIMESTONE WALKING PATH
OUTLOT 2 4,483 S.F.
250'-8" C-909 WATERMAIN
8" VALVE BOX
8" TEE
LOT 13 17,249 S.F. Y.G.=897.5 F.F.=899.0 L.L=889.0
9 S.Y. STONE RIPRAP
110'-18" CONCRETE CULVERT W/ END SECTIONS IE=886.0(W) IE=899.0(E)
MH#4.4 RIM=896.75 IE=886.10 BLIND FLANGE BLOCKING
OUTLOT 4 20,437 S.F.
94'-8" WM
LATERAL INV.=886.85
LOT 25 18,310 S.F. Y.G.=896.8 F.F.=899.0 L.L=889.0
HYDRANT W/ 29'-6" AND AUX VALVE OFF.
LATERAL INV.=887.29
LOT 29 16,193 S.F. Y.G.=897.5 F.F.=899.7 L.L=889.7
LATERAL INV.=886.82
LATERAL INV.=886.47
CATCH BASIN RIM=891.5 IE=888.0 (BEE HIVE GRATE)
MH#5 RIM=893.8 IE=883.77
48'-18" RCP CULVERT W/ STONE END WALLS IE=890.2(N) IE=889.3(S)
8TH BEND
LATERAL INV.=885.23
LOT 14 17,261 S.F. Y.G.=895.8 F.F.=898.0 L.L=888.0
LATERAL INV.=886.23
LOT 26 19,126 S.F. Y.G.=896.8 F.F.=899.0 L.L=889.0
28' DRAINAGE EASEMENT
LOT 28 19,961 S.F. Y.G.=896.0 F.F.=898.2 L.L=888.2
MH#1 RIM=882.4 IE=883.07
9" ROCK CHANNEL OVER FABRIC
LOT 22 24,881 S.F. Y.G.=896.8 F.F.=899.0 L.L=889.0 (L.O.)
LATERAL INV.=886.39
MH#4.3 RIM=893.9 IE=884.95
LOT 27 15,449 S.F. Y.G.=893.0 F.F.=897.8 L.L=887.8
LATERAL INV.=884.37
48'-18" RCP CULVERT W/ STONE END WALLS IE=888.1(E) IE=887.9(W)
HYDRANT W/ 27'-6" LEAD SERVICE AND AUX VALVE.
LATERAL INV.=884.90
MH#1.1 RIM=891.2 IE=883.70
MH#4.2 RIM=890.7 IE=884.30
MEADOW DRIVE
78'-8" WM
HYDRANT W/ 23'-6" AND AUX VALVE.
LOT 15 15,794 S.F. Y.G.=895.3 F.F.=898.2 L.L=888.2(L.O.)
PROPOSED DRAINAGE EASEMENT
8TH BEND
LATERAL INV.=884.73
LATERAL INV.=886.14
(F.F. SERVICE ONLY)
LOT 21 20,063 S.F. Y.G.=895.3 F.F.=897.5 L.L=887.5 (W.O.)
8TH BEND
LATERAL INV.=885.87
LATERAL INV.=884.83
LATERAL INV.=885.01
LOT 20 20,928 S.F. Y.G.=894.8 F.F.=897.0 L.L=887.0 (W.O.)
535'-8" WM
LOT 16 14,694 S.F. Y.G.=894.8 F.F.=896.5 L.L=886.5 (L.O.)
4" PIPING
LATERAL INV.=885.50
LATERAL INV.=885.37
(F.F. SERVICE ONLY)
8TH BEND
(F.F. SERVICE ONLY)
LOT 17 13,426 S.F. Y.G.=892.5 F.F.=895.0 L.L=885.0 (W.O.)
12" ROCK OVERFLOW IE=883.5 (S) IE=879.0 (N)
STORM BASIN 2 OVERFLOW=885.5 W.S.=883.5 BOTTOM=878.0
LOT 19 18,817 S.F. Y.G.=893.5 F.F.=895.7 L.L=885.7 (W.O.)
LOT 18 13,606 S.F. Y.G.=892.5 F.F.=895.2 L.L=885.2 (W.O.)
END SECTION IE=883.2
EXISTING DRAINAGEWAY
CULVERT
IE=883.5
HIGHWAY WisDOT SETBACK
270'-15" ADS PIPE @ 1.00%
285'-8" C-909 WATERMAIN
205'-8" @0.40%
150'-8" @0.40%
83'-8" @0.87%
179'-8" @0.40%
198'-8" @2.62%
360'-8" @2.29%
PC55+85.33
PT55+18.62
PC75+18.62
PT75+18.62
PVC 22+05
PVT 22+25
PVC 22+45
PVT 22+65
PVC 24+00
PVT 24+20
PVC 20+88.5
PVT 21+08.5
PVC 21+28.5
PVT 21+48.5
PVC 21+68.5
PVT 21+88.5
PVC 22+08.5
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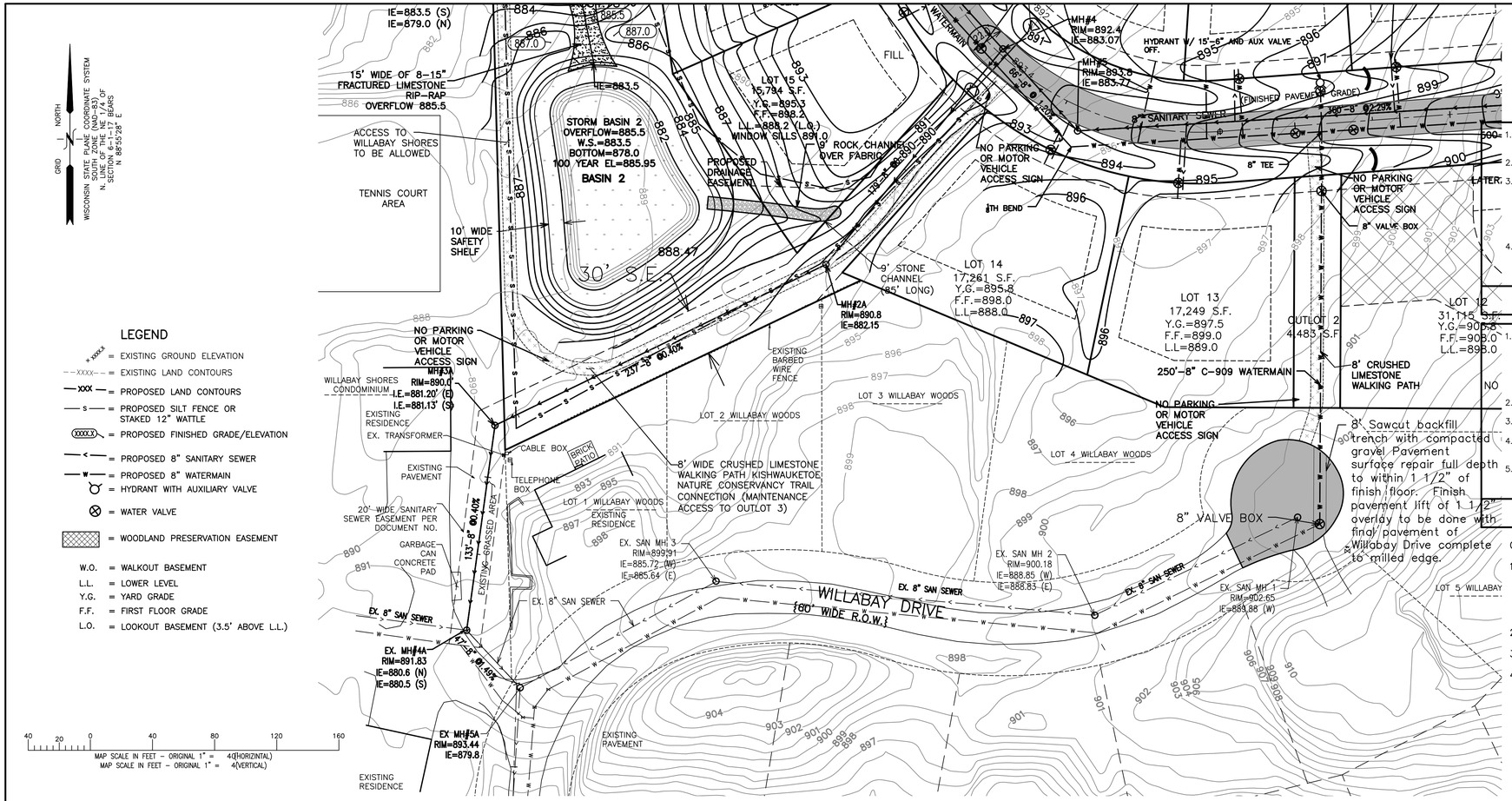
PVT 26+68.5
PVC



LEGEND

- XXX.X = EXISTING GROUND ELEVATION
- --XXXX-- = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- (XXXX.X) = PROPOSED FINISHED GRADE/ELEVATION
- = PROPOSED 8" SANITARY SEWER
- W = PROPOSED 8" WATERMAIN
- = HYDRANT WITH AUXILIARY VALVE
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE
L.O. = LOOKOUT BASEMENT (3.5' ABOVE L.L.)

40 20 0 40 80 120 160
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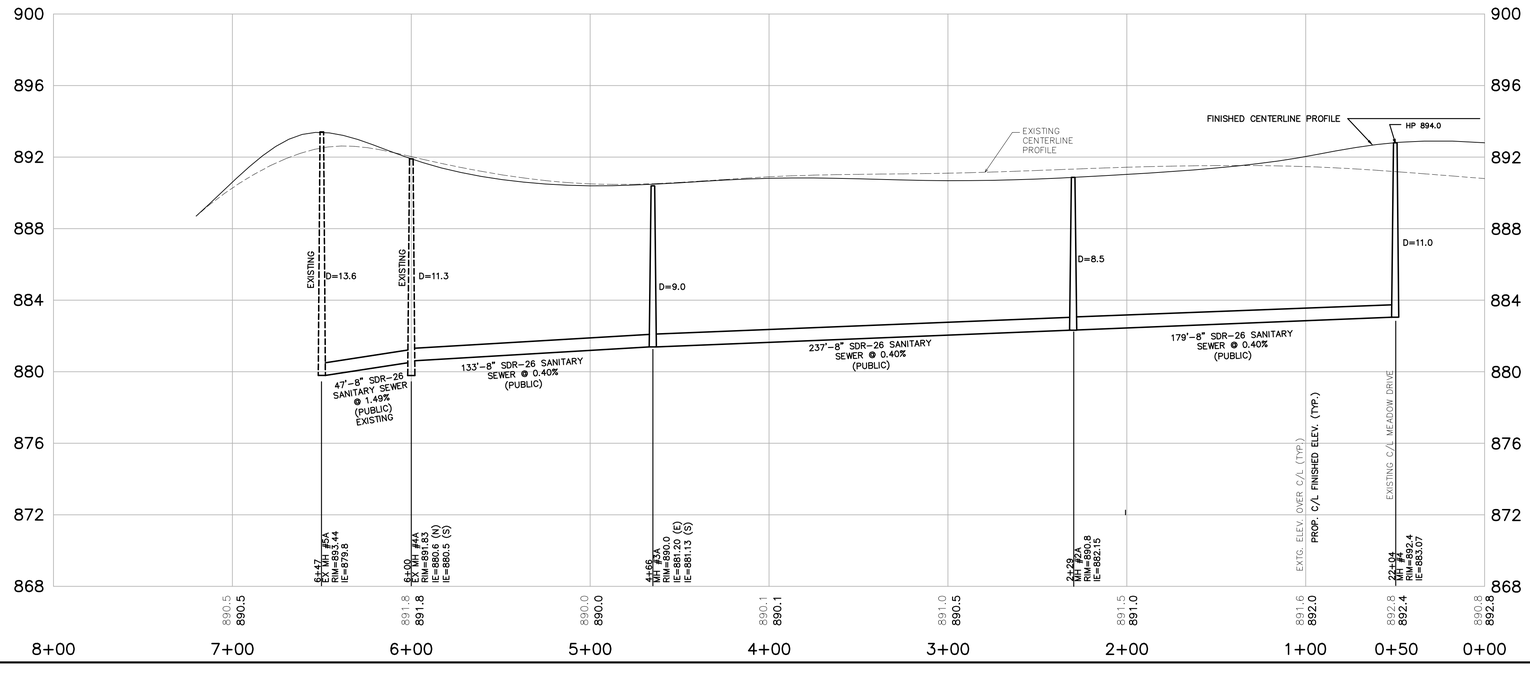

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MILW. AREA 1-414-259-1181

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

09/23/2025 –RS REVISIONS
09/16/2025 –RS REVISIONS
08/14/2025 –RS REVISIONS
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS
07/18/2025 –RS REVISIONS

REVISIONS
04/08/2022 –TS ADVANCE
02/19/2023 –TS ADVANCE
02/23/2024 –TS ADVANCE
06/10/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/08/2025 –RS EDITS AND REVIEW
05/02/2025 –RS EDITS AND REVIEW
05/12/2025 –RS EDITS AND REVIEW
05/30/2025 –NK GEN. PLAN REV.
06/13/2025 –RS SHEETS 2A, 3A, & 4A

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 0+00 – 7+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 8 OF 19

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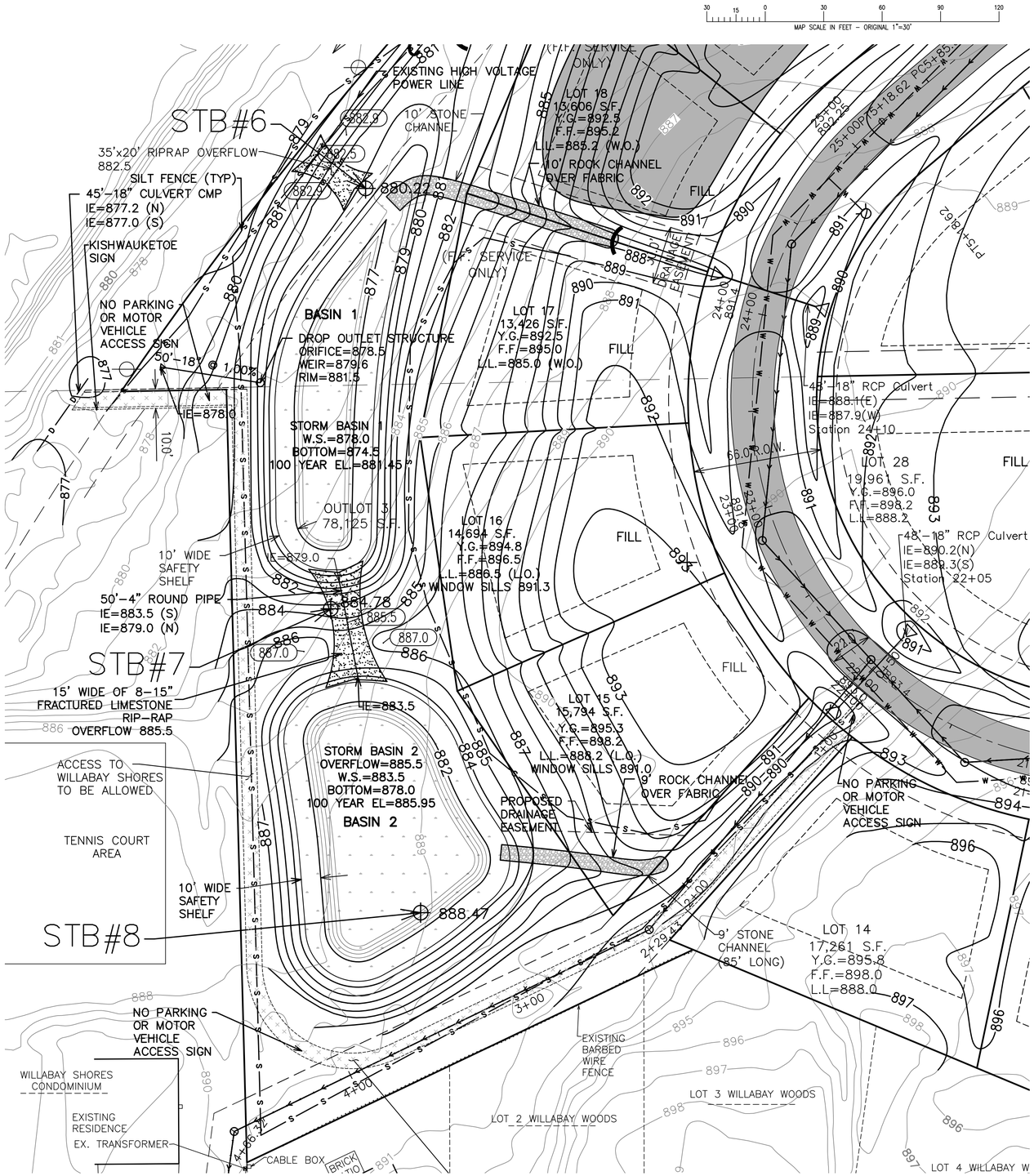

NORTH
GRID
WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD-83) N. LINE OF THE NE 1/4 OF SECTION 6-5-18 BEARS N 88°55'28" E

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

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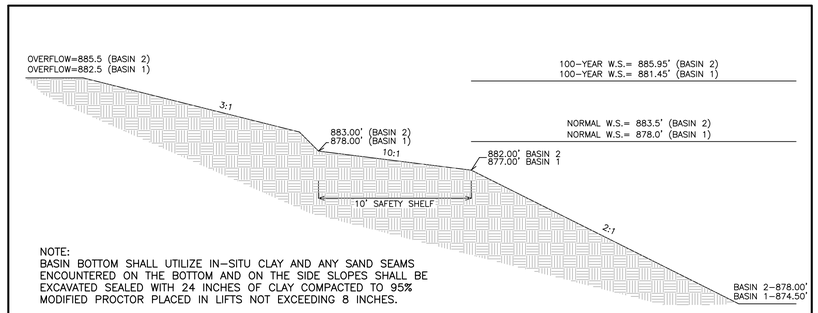
WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

LEGEND

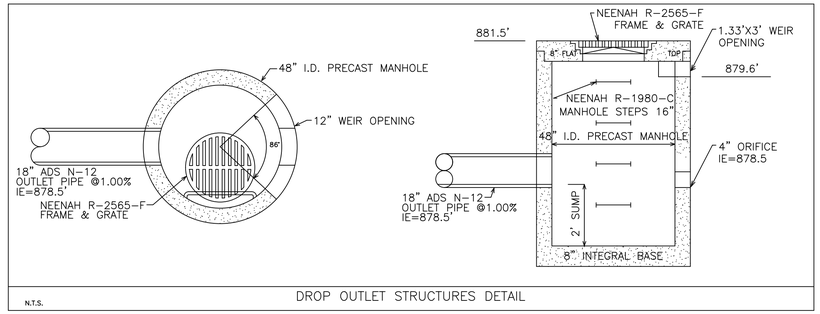
- XXX.X = EXISTING GROUND ELEVATION
- XXXX = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- XXX.X = PROPOSED FINISHED GRADE/ELEVATION
- < = PROPOSED 8" SANITARY SEWER
- W = PROPOSED 8" WATERMAIN
- HYDRANT WITH AUXILIARY VALVE
- WATER VALVE



NOTE:
BASIN BOTTOM SHALL UTILIZE IN-SITU CLAY AND ANY SAND SEAMS ENCOUNTERED ON THE BOTTOM AND ON THE SIDE SLOPES SHALL BE EXCAVATED SEALED WITH 24 INCHES OF CLAY COMPACTED TO 95% MODIFIED PROCTOR PLACED IN LIFTS NOT EXCEEDING 8 INCHES.

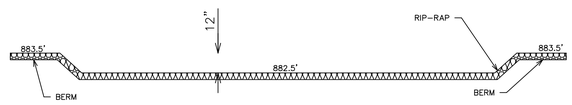
N.T.S.

WET POND CROSS SECTIONS BASINS 1 & 2

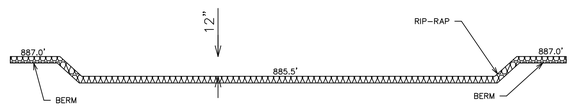


N.T.S.

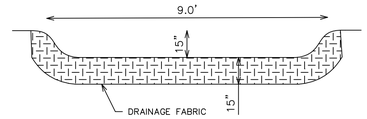
DROP OUTLET STRUCTURES DETAIL



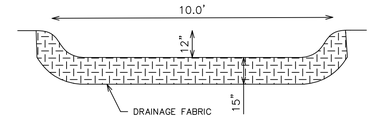
20' OVERFLOW DETAIL – BASIN 1



15' OVERFLOW DETAIL – BASIN 2



ROCK CHANNEL DETAIL (NTS)



ROCK OVERFLOW DETAIL (NTS)

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

STORM WATER BASINS OUTLET 3

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

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- 04/08/2022 –TS ADVANCE
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- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 07/18/2025 –RS REVISIONS
- 08/15/2025 –RS REVISIONS
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS REVISIONS
- 09/16/2025 –RS REVISIONS
- 09/23/2025 –RS REVISIONS
- 09/29/2025 –RS REVISIONS
- 11/08/2025 –RS CULVERTS

PROJECT NO. 5536.17
DATE 05/12/2025
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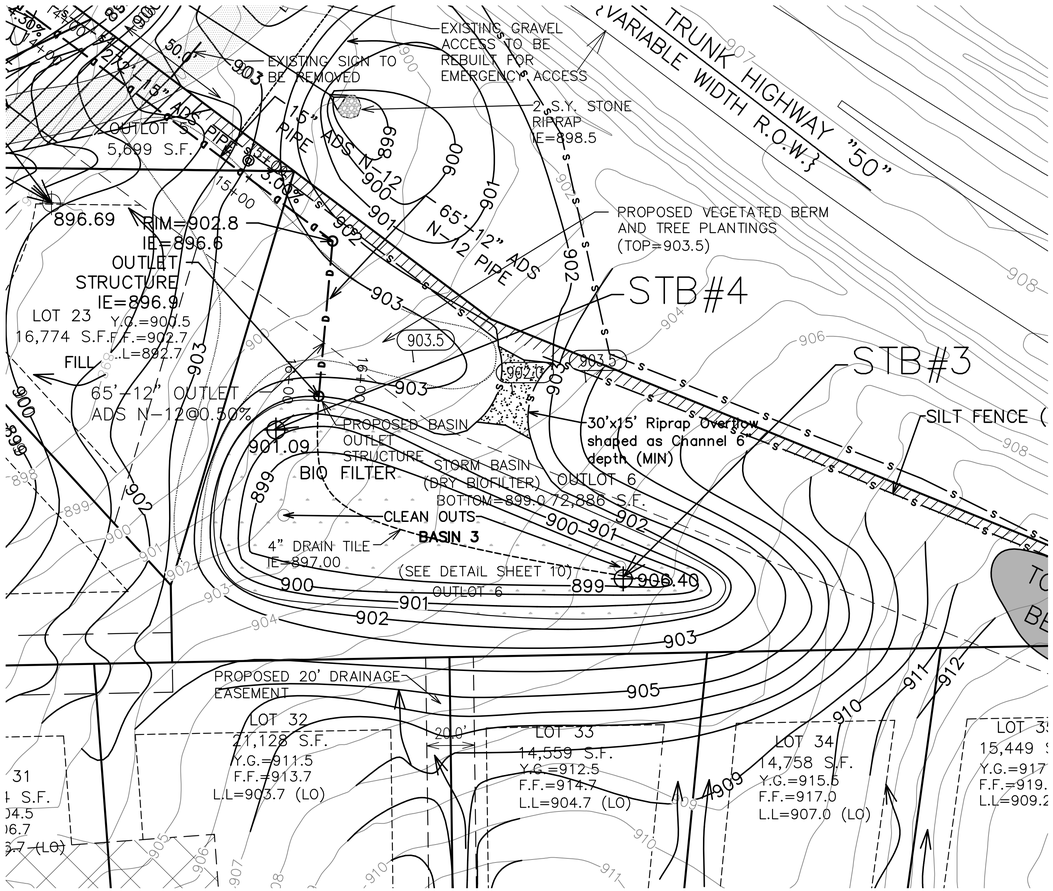

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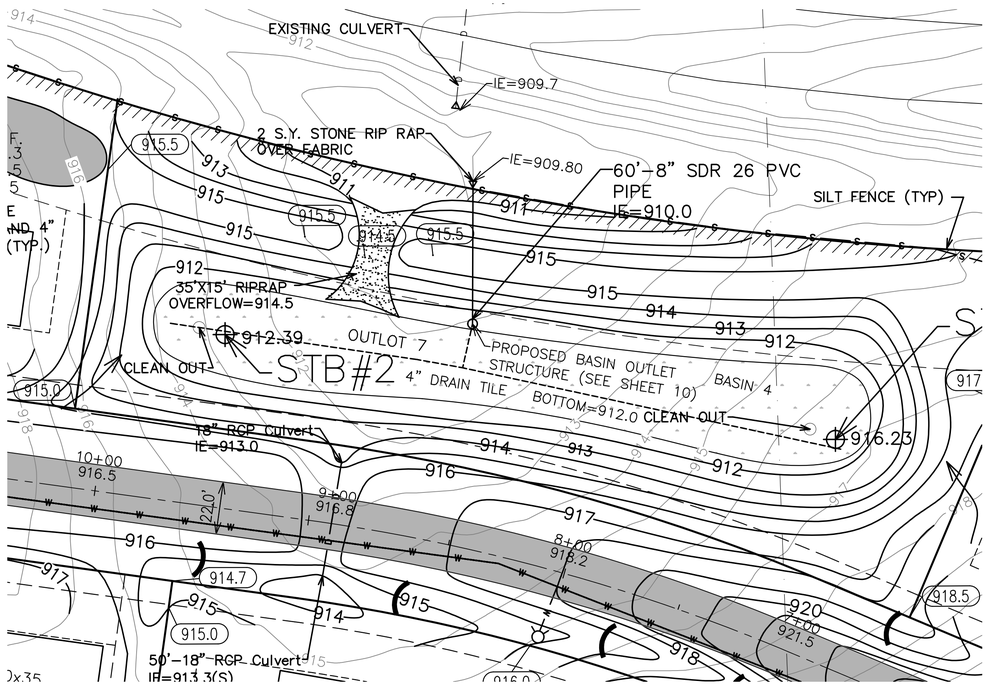
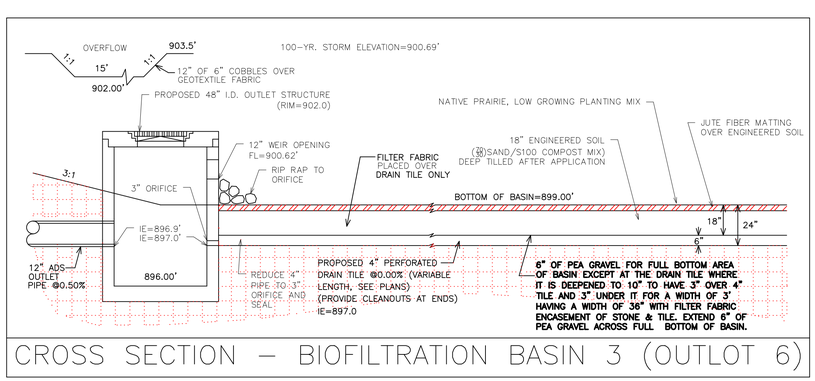
LEGEND

- x XXX.X = EXISTING GROUND ELEVATION
- --XXXX-- = EXISTING LAND CONTOURS
- —XXX— = PROPOSED LAND CONTOURS
- —S— = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- (XXXX.X) = PROPOSED FINISHED GRADE/ELEVATION
- —<— = PROPOSED 8" SANITARY SEWER
- —W— = PROPOSED 8" WATERMAIN
- = HYDRANT WITH AUXILIARY VALVE
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

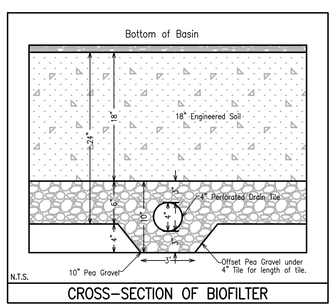
W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE



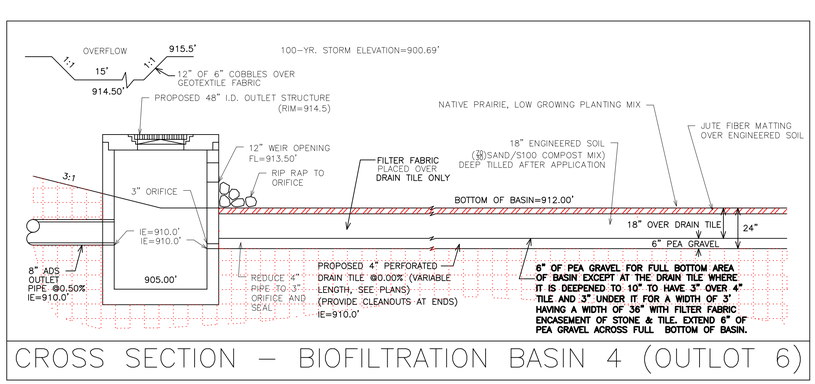
30 15 0 30 60 90 120
MAP SCALE IN FEET – ORIGINAL 1"=30'



CROSS SECTION – BIOFILTRATION BASIN 3 (OUTLOT 6)



CROSS-SECTION OF BIOFILTER



CROSS SECTION – BIOFILTRATION BASIN 4 (OUTLOT 6)

11/08/2025 –RS REVISIONS
09/29/2025 –RS REVISIONS
09/23/2025 –RS REVISIONS
09/16/2025 –RS REVISIONS
08/13/2025 –RS NOTE ON BIO FILTER BASINS
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

BASIN 3 & 4
OUTLOTS 6 & 7

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ENGINEERING – ARCHITECTURE – SURVEYING
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ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

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06/13/2025 –RS SHEETS 2A, 3A, & 4A
07/18/2025 –RS REVISIONS

PROJECT NO.
5536.17
DATE
05/12/2025
SHEET NO.
10 OF 19

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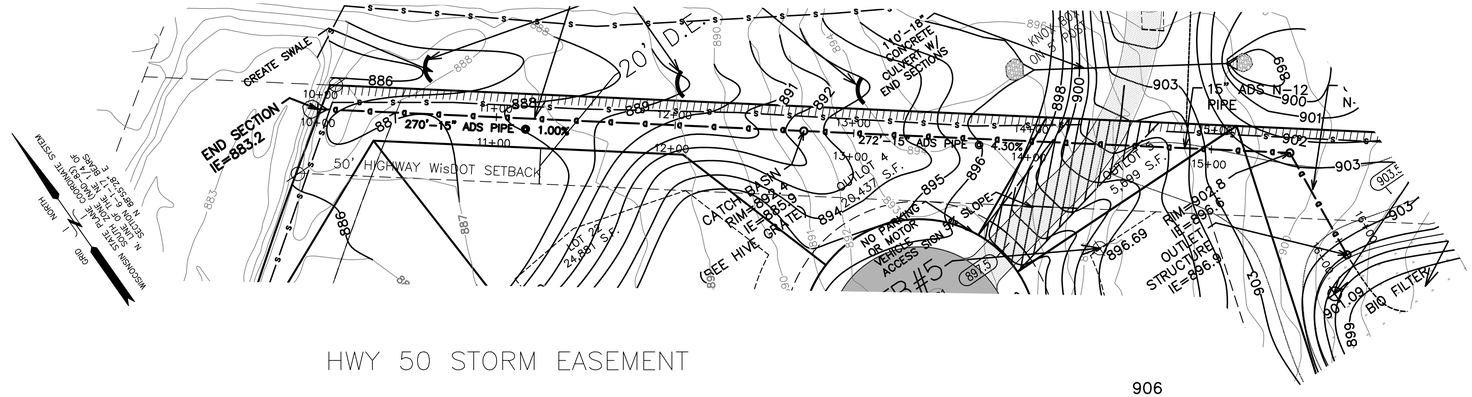

LEGEND

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- XXX = PROPOSED LAND CONTOURS
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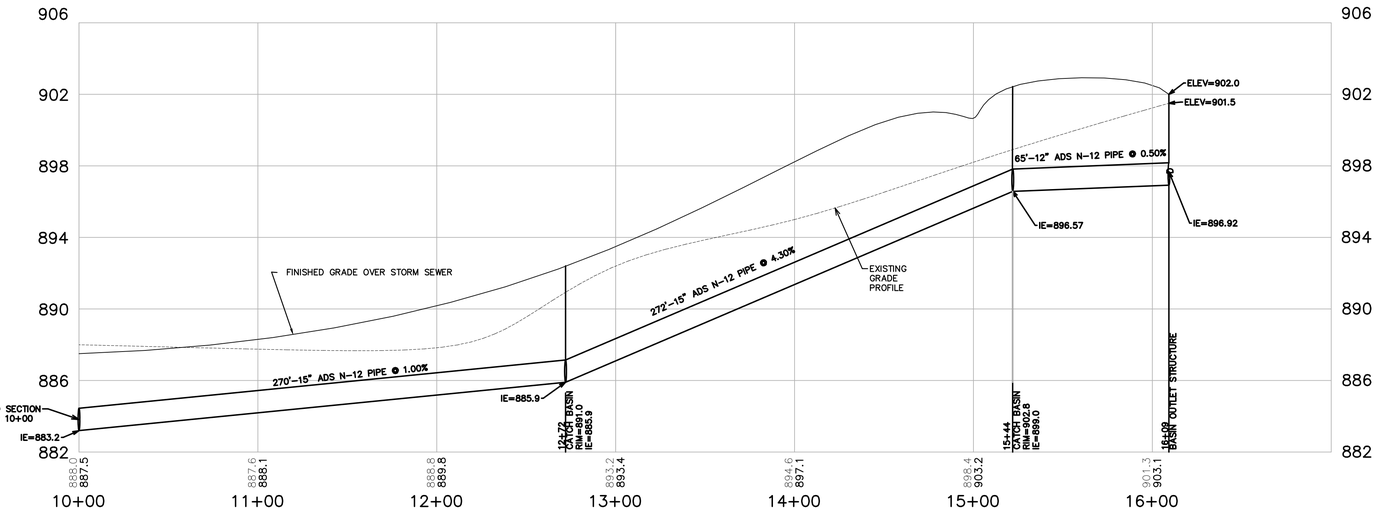
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

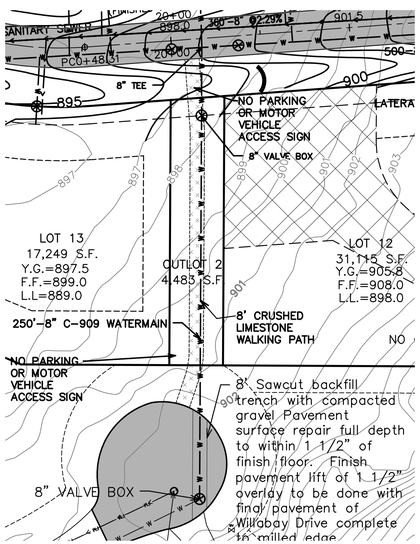
W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE
L.O. = LOOKOUT BASEMENT (3.5' ABOVE L.L.)

40 20 0 40 80 120 160
MAP SCALE IN FEET – ORIGINAL 1" = 40'(HORIZONTAL)
MAP SCALE IN FEET – ORIGINAL 1" = 4'(VERTICAL)

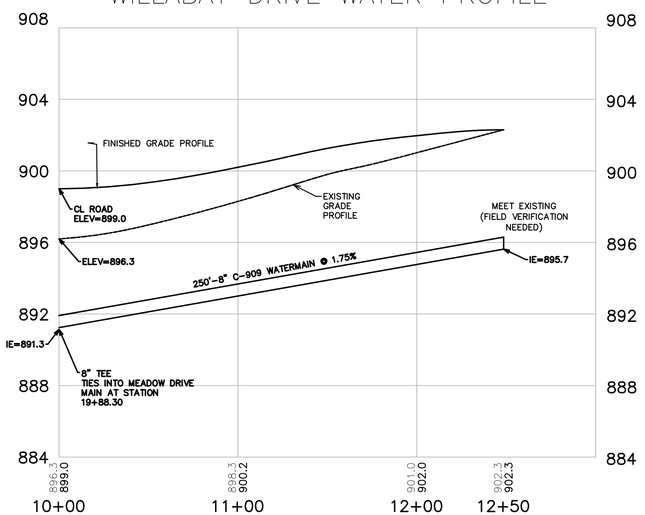
HWY 50 STORM EASEMENT

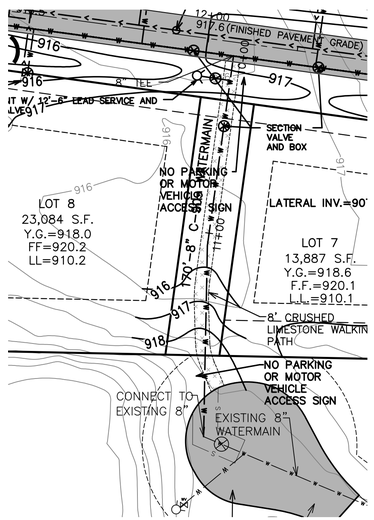


NOTE: MINUMUM DEPTH OF WATERMAIN COVER=6.5'

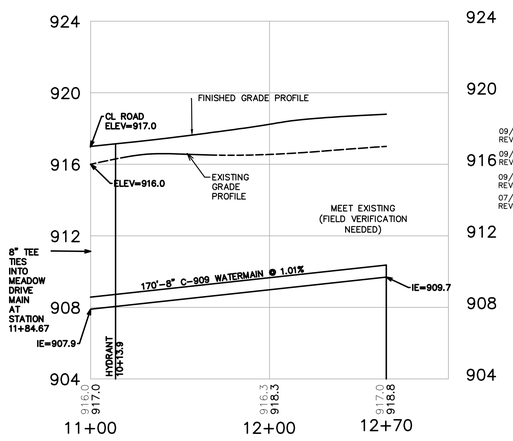


WILLABAY DRIVE WATER PROFILE





POTOWATOMI ROAD WATER PROFILE



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FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 0+00 – 7+00

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- 07/22/2025 –RS REVISIONS
- 09/29/2025 –RS REVISIONS
- 09/23/2025 –RS REVISIONS
- 09/16/2025 –RS REVISIONS
- 07/31/2025 –RS REVISIONS

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 11 OF 19

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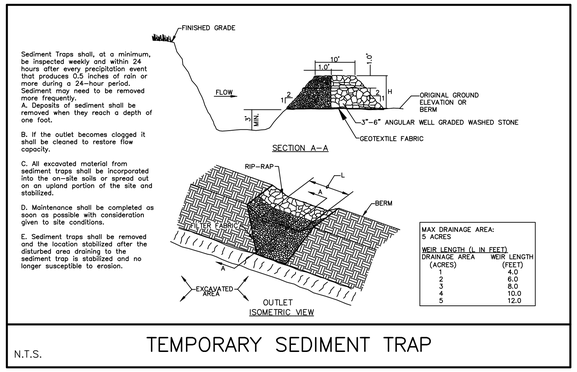
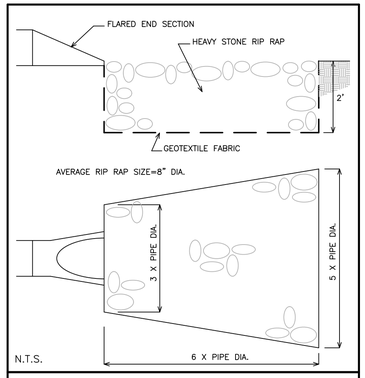


N.T.S.

TEMPORARY SEDIMENT TRAP



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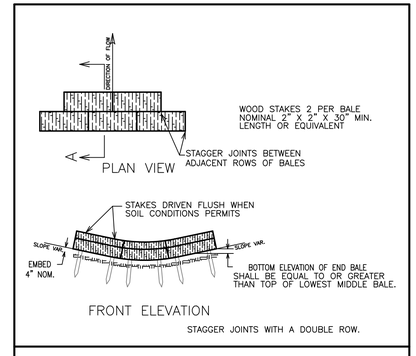
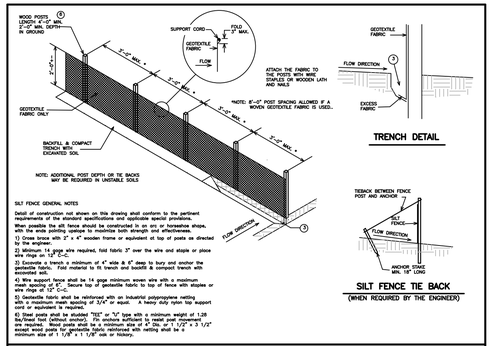
RIP RAP PLACEMENT DETAIL



N.T.S.

STRAW BALE DITCH CHECK



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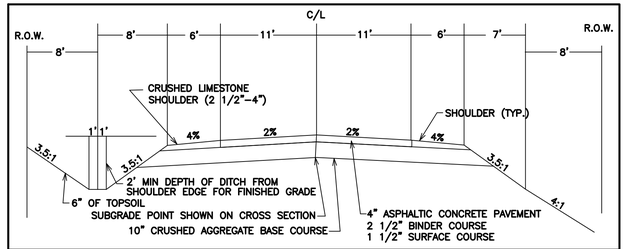
SILT FENCE (NON-REINFORCED) DETAIL



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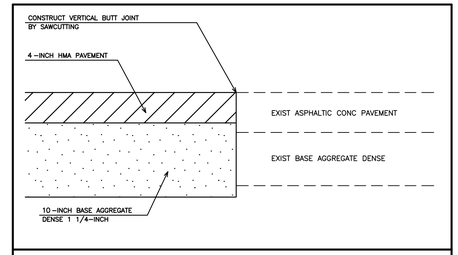
ROADWAY CROSS SECTION



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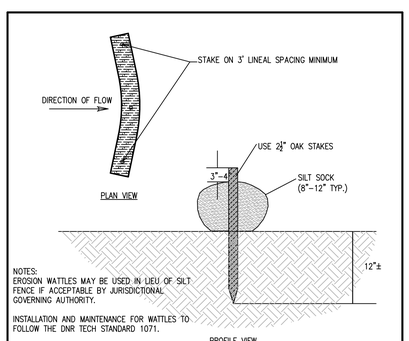
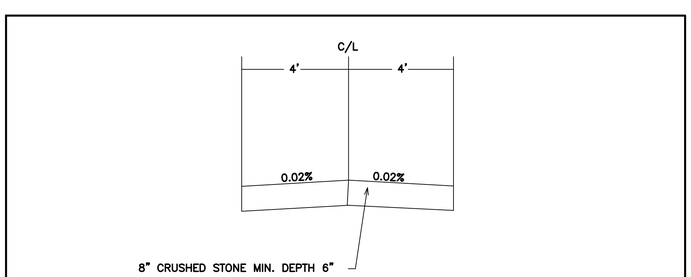
BUTT JOINT DETAIL



N.T.S.

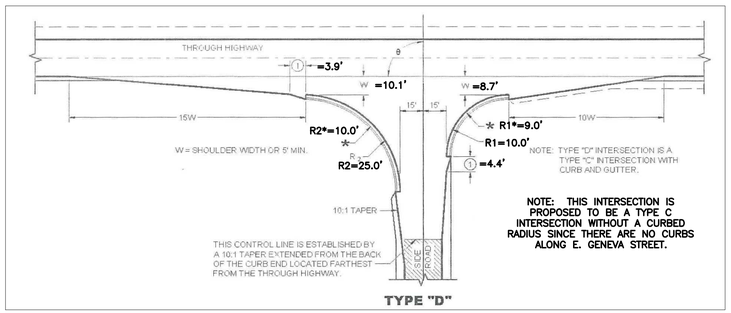
EROSION WATTLE



N.T.S.

WALKING PATH DETAIL

TO BE USED AT INTERSECTION OF E. GENEVA ST. & MEADOW DRIVE



WILLABAY MEADOWS
FINAL ENGINEERING PLAN

CONSTRUCTION DETAILS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING - ARCHITECTURE - SURVEYING
7 RIDGWAY COURT P.O. BOX 437
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OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
03/14/2025 -RS PLAN
05/12/2025 -RS DETAIL REVISION
05/30/2025 -NK GEN. PLAN REV.
07/18/2025 -RS REVISIONS
07/22/2025 -RS REVISIONS
07/31/2025 -RS REVISIONS
09/16/2025 -RS REVISIONS
09/23/2025 -RS REVISIONS

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 12 OF 19

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WILLABAY MEADOWS
FINAL ENGINEERING PLAN

MEADOW DRIVE
ROAD CROSS SECTIONS
STATIONS 1+00 – 14+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
PHONE (262) 723-2098 e-mail: office@farrishansen.com

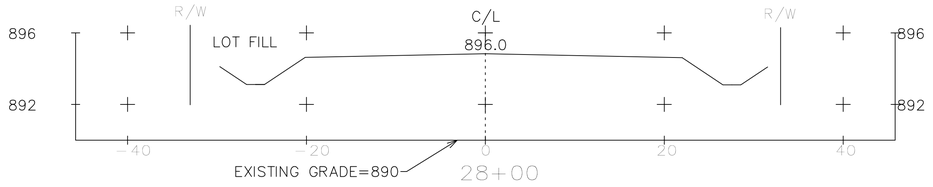
REVISIONS

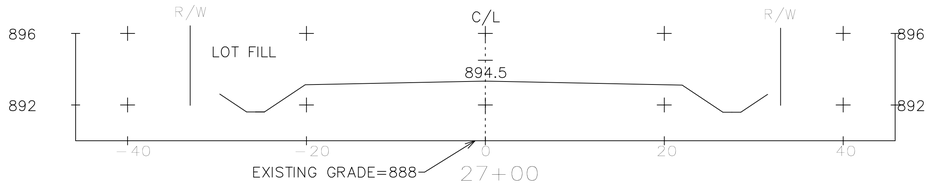
PROJECT NO.
5536.17

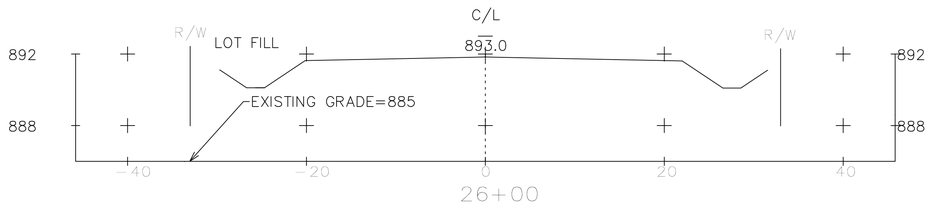
DATE
12/12/2024

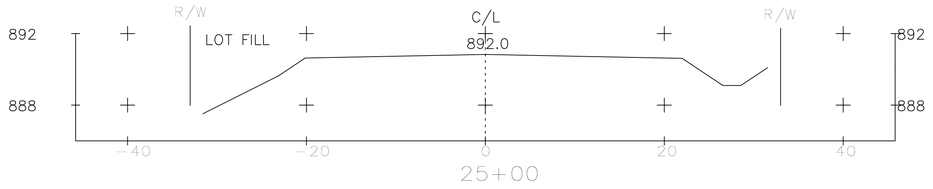
SHEET NO.
15 OF 19

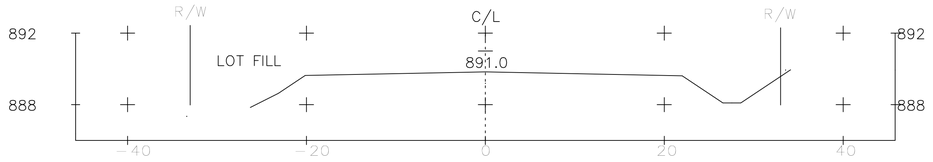
X:\Projects\5536\5536_17\ACAD\5536_17 Road Sections.dwg

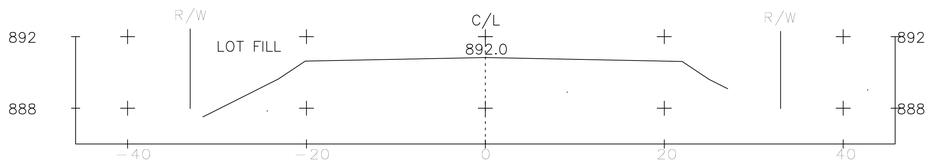


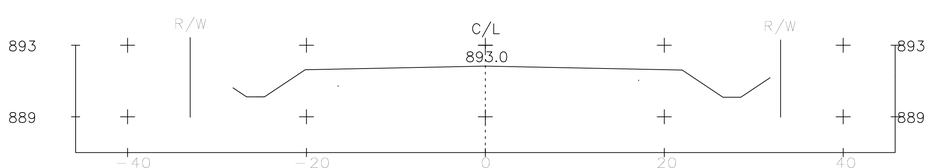


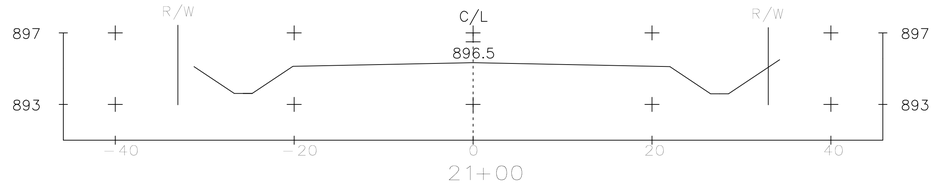


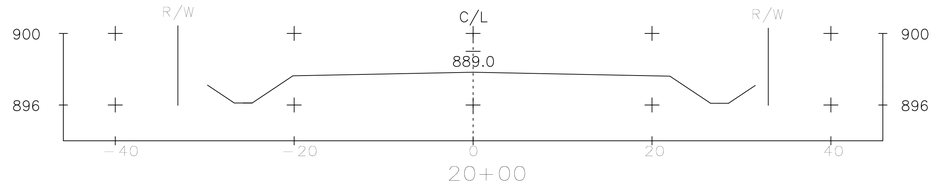


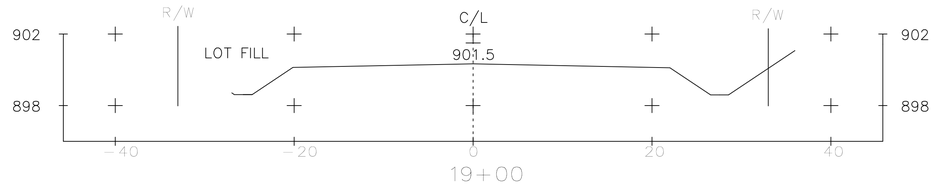


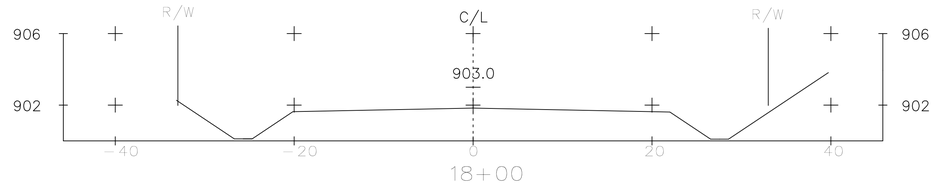


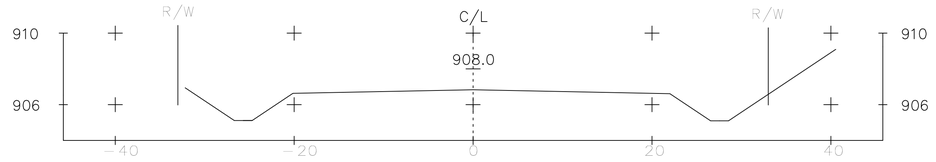


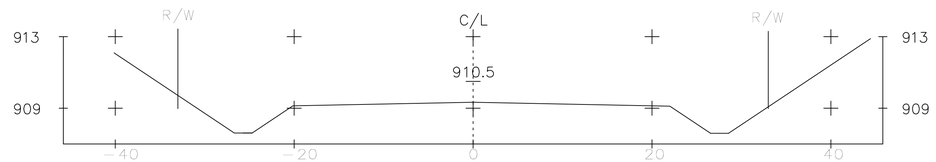


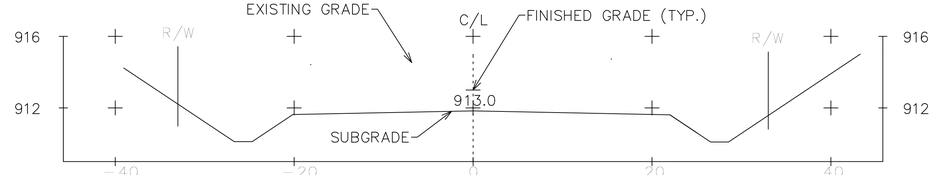












WILLABAY MEADOWS
FINAL ENGINEERING PLAN

MEADOW DRIVE
ROAD CROSS SECTIONS
STATIONS 15+00 – 28+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
PHONE: (262) 723-2098 e-mail: office@farrishansen.com

REVISIONS

PROJECT NO.
5536.17

DATE
12/12/2024

SHEET NO.
16 OF 19

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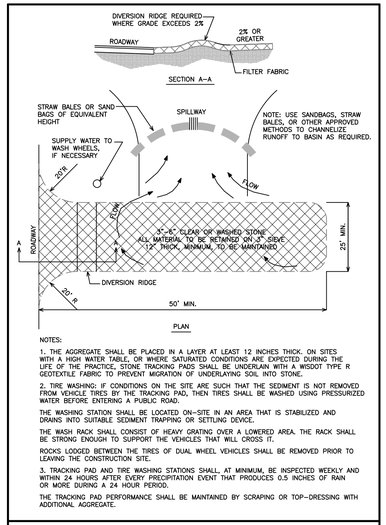


NOTES:

1. THE AGGREGATE SHALL BE PLACED IN A LAYER AT LEAST 12 INCHES THICK. ON SITES WITH A HIGH WATER TABLE, OR WHERE SATURATED CONDITIONS ARE EXPECTED DURING THE LIFE OF THE PRACTICE, STONE TRACKING PADS SHALL BE UNDERLAIN WITH A WISDOT TYPE R GEOTEXTILE FABRIC TO PREVENT MIGRATION OF UNDERLAYING SOIL INTO STONE.

2. TIRE WASHING: IF CONDITIONS ON THE SITE ARE SUCH THAT THE SEDIMENT IS NOT REMOVED FROM VEHICLE TIRES BY THE TRACKING PAD, THEN TIRES SHALL BE WASHED USING PRESSURIZED WATER BEFORE ENTERING A PUBLIC ROAD.

THE WASHING STATION SHALL BE LOCATED ON–SITE IN AN AREA THAT IS STABILIZED AND DRAINS INTO SUITABLE SEDIMENT TRAPPING OR SETTLING DEVICE.

THE WASH RACK SHALL CONSIST OF HEAVY GRATING OVER A LOWERED AREA. THE RACK SHALL BE STRONG ENOUGH TO SUPPORT THE VEHICLES THAT WILL CROSS IT.

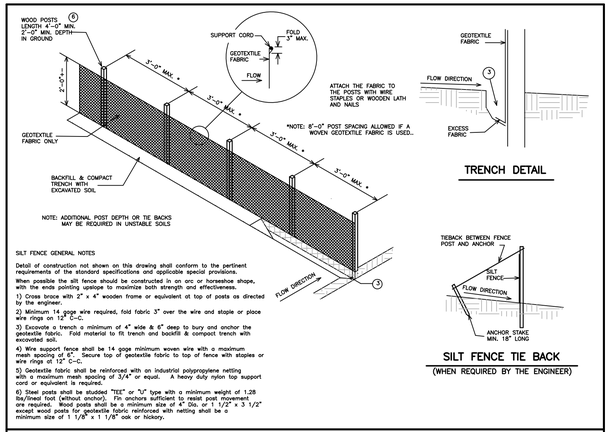
ROCKS LODGED BETWEEN THE TIRES OF DUAL WHEEL VEHICLES SHALL BE REMOVED PRIOR TO LEAVING THE CONSTRUCTION SITE.

3. TRACKING PAD AND TIRE WASHING STATIONS SHALL, AT MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24 HOUR PERIOD.

THE TRACKING PAD PERFORMANCE SHALL BE MAINTAINED BY SCRAPING OR TOP–DRESSING WITH ADDITIONAL AGGREGATE.

N.T.S.

ANTI–TRACKING MAT



SILT FENCE GENERAL NOTES

Detail of construction not shown on this drawing shall conform to the pertinent requirements of the standard specifications and applicable special provisions.

When possible the silt fence should be constructed in an arc or horseshoe shape, with the ends pointing upslope to maximize both strength and effectiveness.

1) Cross brace with 2" x 4" wooden frame or equivalent at top of posts as directed by the engineer.

2) Minimum 14 gage wire required, fold fabric 3" over the wire and staple or place wire rings on 12" C–C.

3) Excavate a trench a minimum of 4" wide & 6" deep to bury and anchor the geotextile fabric. Field material to fill trench and backfill & compact trench with excavated soil.

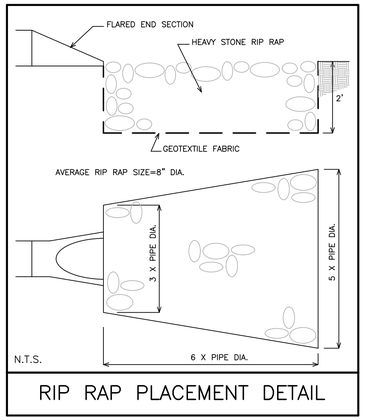
4) Wire support fence shall be 14 gage minimum woven wire with a maximum mesh spacing of 6". Secure top of geotextile fabric to top of fence with staples or wire rings at 12" C–C.

5) Geotextile fabric shall be reinforced with an industrial polypropylene netting with a maximum mesh spacing of 3/4" or equal. A heavy duty nylon top support cord or equivalent is required.

6) Steel posts shall be studded "TEE" or "L" type with a minimum weight of 1.28 lbs/lineal foot (without anchor). Fin anchors sufficient to resist post movement are required. Wood posts shall be a minimum size of 4" Dia. or 1 1/2" x 3 1/2" except wood posts for geotextile fabric reinforced with netting shall be a minimum size of 1 1/8" x 1 1/8" oak or hickory.

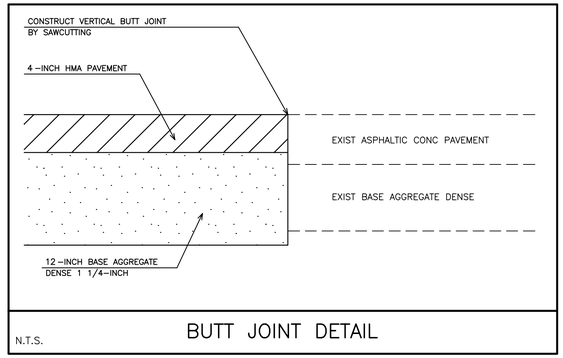
N.T.S.

SILT FENCE (NON–REINFORCED) DETAIL



N.T.S.

RIP RAP PLACEMENT DETAIL

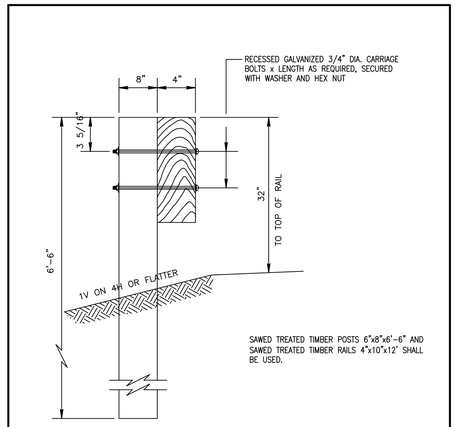


N.T.S.

BUTT JOINT DETAIL

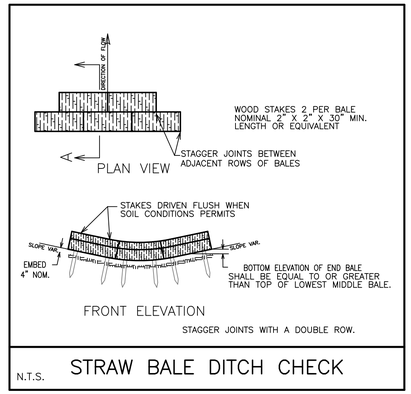
WILLABAY MEADOWS SUBDIVISION
UTILITY LOCATIONS BY COORDINATES

	NORTHING	EASTING	ELEVATION	DRIVEWAY CULVERT
LOT 1	936.0	937.7	927.7 (LO)	15"
LOT 2	935.8	937.5	927.5 (WO)	15"
LOT 3	935.0	936.7	926.7 (LO)	15"
LOT 4	934.0	935.7	925.7 (LO)	15"
LOT 5	917.8	920.0	910.0	15"
LOT 6	919.0	920.5	910.5	15"
LOT 7	918.6	920.1	910.1	15"
LOT 8	918.0	920.2	910.2	15"
LOT 9	917.0	919.2	909.2	15"
LOT 10	916.0	918.2	908.2	15"
LOT 11	913.8	916.0	906.0 (LO)	15"
LOT 12	905.8	908.0	898.0	15"
LOT 13	897.5	899.0	889.0	15"
LOT 14	895.8	898.0	888.0	15"
LOT 15	894.5	896.7	886.7 (LO)	15"
LOT 16	894.3	896.5	886.5 (LO)	15"
LOT 17	892.5	895.0	885.0 (WO)	15"
LOT 18	892.5	895.2	885.2 (WO)	15"
LOT 19	893.5	895.7	885.7 (WO)	15"
LOT 20	894.8	897.0	887.0 (WO)	15"
LOT 21	894.8	897.0	887.0 (WO)	15"
LOT 22	896.0	898.2	888.2 (LO)	15"
LOT 23	900.5	902.7	892.7	15"
LOT 24	898.6	900.2	890.2	15"
LOT 25	896.5	898.2	888.2	15"
LOT 26	895.8	898.0	888.0	15"
LOT 27	895.0	897.8	887.8	15"
LOT 28	894.5	896.7	886.7	15"
LOT 29	896.5	898.7	888.7	15"
LOT 30	902.5	904.7	894.7 (LO)	15"
LOT 31	904.5	906.7	896.7	15"
LOT 32	911.5	913.7	903.7 (LO)	15"
LOT 33	912.5	914.7	904.7 (LO)	15"
LOT 34	915.5	917.7	907.7 (LO)	15"
LOT 35	917.0	919.2	909.2	15"
LOT 36	917.5	919.7	909.7	15"
LOT 37	918.5	920.7	910.7 (LO)	15"
LOT 38	918.3	920.5	910.5	15"
LOT 39	925.0	927.5	917.5 (LO)	15"
LOT 40	931.5	933.2	923.2 (WO)	15"
LOT 41	934.0	936.2	926.2 (WO)	15"
LOT 42	936.0	938.2	928.2	15"



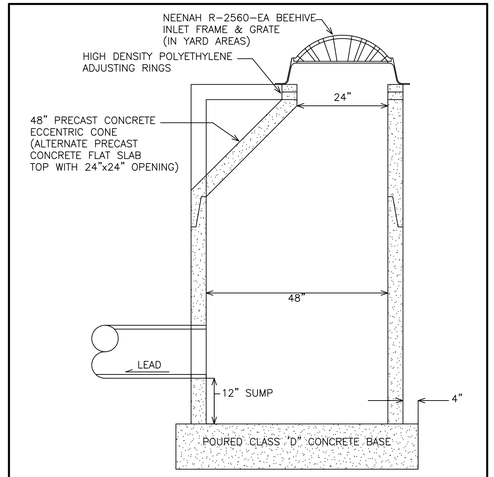
N.T.S.

SAWN WOOD POST GUARD RAIL



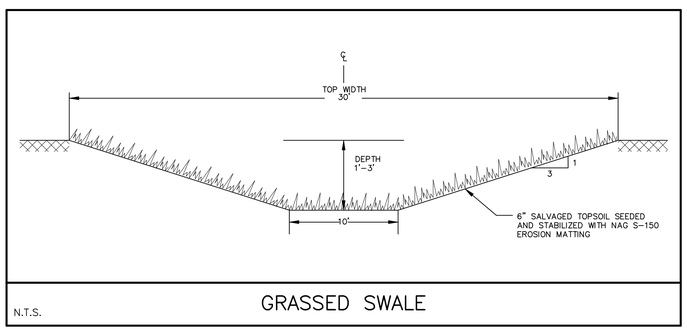
N.T.S.

STRAW BALE DITCH CHECK



N.T.S.

STANDARD AREA DRAIN



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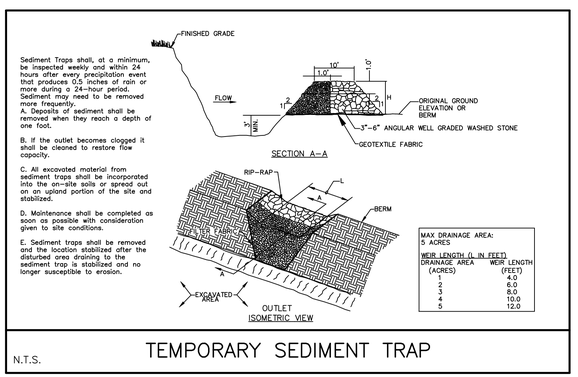
GRASSED SWALE



Sediment Traps shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24–hour period. Sediment may need to be removed more frequently.

A. Deposits of sediment shall be removed when they reach a depth of one foot.

B. If the outlet becomes clogged it shall be cleaned to restore flow capacity.

C. All excavated material from sediment traps shall be incorporated into the on–site soils or spread out on an upland portion of the site and stabilized.

D. Maintenance shall be completed as soon as possible with consideration given to site conditions.

E. Sediment traps shall be removed and the location stabilized after the disturbed area draining to the sediment trap is stabilized and no longer susceptible to erosion.

MAX DRAINAGE AREA: 5 ACRES

WEIR LENGTH (L IN FEET)

DRAINAGE AREA (ACRES)	WEIR LENGTH (FEET)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

N.T.S.

TEMPORARY SEDIMENT TRAP

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

CONSTRUCTION DETAILS

REVISIONS
12/18/2024 –NK PLAN & PROFILE
03/14/2025 –RS PLAN & PROFILE
05/12/2025 –RS PLAN & PROFILE
05/30/2025 –NK GEN. PLAN REV.
07/18/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS
07/31/2025 –RS REVISIONS
09/23/2025 –RS REVISIONS

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 13 OF 19

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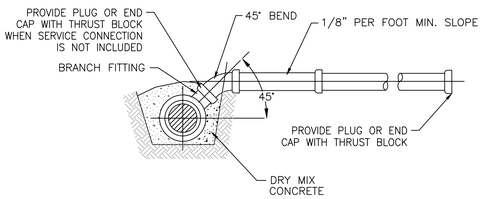
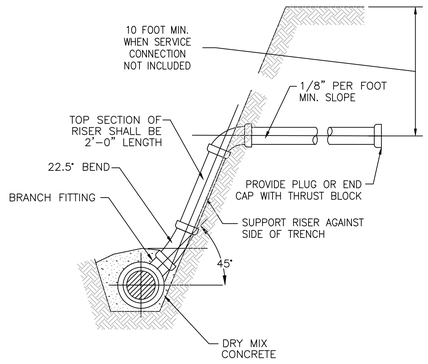


BUILDING SERVICE DETAIL

FOR SEWER INVERT DEPTHS TO 12 FEET



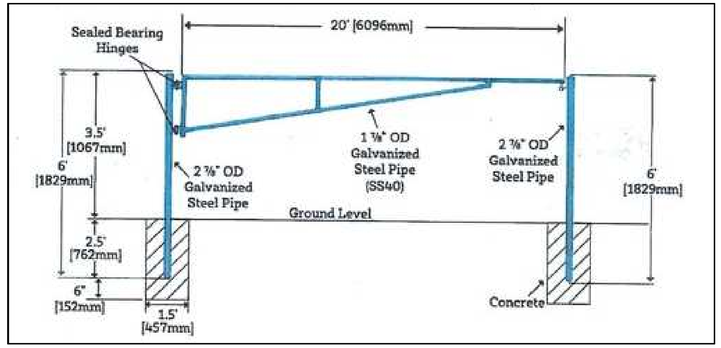
BUILDING SERVICE RISER DETAIL

FOR SEWER INVERT DEPTHS OVER 12 FEET

N.T.S.

SANITARY LATERAL

GATE DETAIL



Water Shut Off Location by Lot Number	Northing	Easting
1	215489.96	2367187.66
2	215494.02	2367068.77
3	215530.17	2366951.98
4	215571.77	2366852.78
5	215702.21	2366465.38
6	215711.47	2366398.14
7	215724.65	2366302.44
8	215753.05	2366096.2
9	215774.77	2365937.98
10	215776.84	2365763.36
11	215773.46	2365717.28
12	215764.94	2365595.65
13	215746.48	2365326.19
14	215767.78	2365243.99
15	215856.33	2365149.46
16	215929.21	2365123.05
17	215976.87	2365119.49
18	216088.54	2365156.45
19	216117.58	2365179.69
20	216178.41	2365249.77
21	216216.14	2365315.85
22	216229.1	2365391.87
23	216159.23	2365606.82
24	216131.86	2365565.47
25	216157.99	2365467.87
26	216162.17	2365409.67
27	216006.67	2365190.67
28	215815.02	2365309.34
29	215813.52	2365365.22
30	215821.07	2365466.31
31	215829.08	2365574.46
32	215842.11	2365750.59
33	215846.73	2365842.1
34	215841.72	2365933.73
35	215822.61	2366074.5
36	215810.29	2366165.61
37	215796.7	2366263.02
38	215782.66	2366363.35
39	215678.99	2366768.19
40	215644.44	2366850.29
41	215605.84	2366941.95
42	215563.61	2367056.57

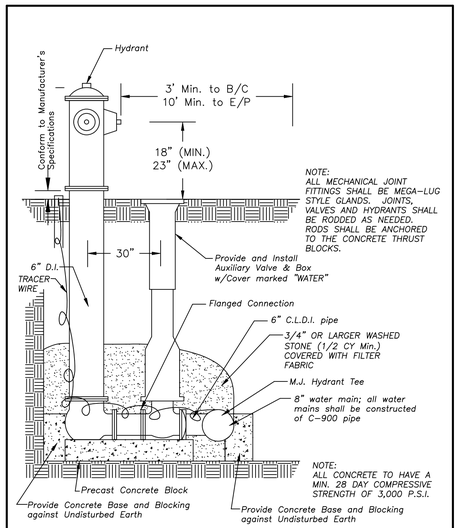
Structure Tables

Sewer Sturcture and Station	Northing	Easting	Invert Elevation	Rim Elevation
MH #12 @ 1+82	215529.83	2367189.83	924.2	934.2
MH #11 @ 2+90	215527.79	2367069.85	923	935.4
MH #10 @ 5+79	215633.37	2366800	915	928.7
MH #9 @ 8+29	215724.45	2366567.18	908.1	917.6
MH #6 @ 12+18	215777.06	2366179.33	905	917.5
MH #7 @ 15+18	215817.42	2365882.6	901	912.2
MH #8 @ 17+79	215801.69	2365621.62	892	905.5
MH #5 @ 21+38	215779.96	2365261.24	883.77	893.8
MH #4 @ 22+04	215832.72	2365213.14	882.87	892.4
MH #4.1 @ 22+88	215893.89	2365157.38	883.2	891.9
MH #4.2 @ 24+30	216046.12	2365172.38	883.8	891.5
MH #4.3 @ 26+40	216191.81	2365315.56	884.62	893.9
MH #4.4 @ 29+29	216182.88	2365600.6	885.76	896.4

Water Structure and Station	Northing	Easting	Invert Elevation	
Hydrant @ 1+20	215492.77	2367238.5	927	
Section Valve @ 4+75	215586.42	2366892.56	924.9	
Hydrant @ 5+00	215570.77	2366870.23	924.8	
Hydrant @ 8+00	215683.89	2366581.33	911.2	
Section Valve @ 11+40	215756.19	2366258.84	907.9	
Section Valve @ 12+05	215765.66	2366189.03	907.6	
Hydrant @ 16+55	215780.36	2365745.32	901.2	
Section Valve @ 19+38	215780.61	2365438.88	892.7	
Hydrant @ 19+75	215810.98	2365417.4	891.6	
Section Valve @ 20+00	215778.4	2365401.51	890.8	
Section Valve @ 21+75	215803.47	2365226.27	896	
Section Valve @ 22+10	215832.99	2365199.37	894.4	
Hydrant @ 22+25	215825.8	2365175.25	883.9	
Section Valve @ 25+75	216154.59	2365264.96	883.3	

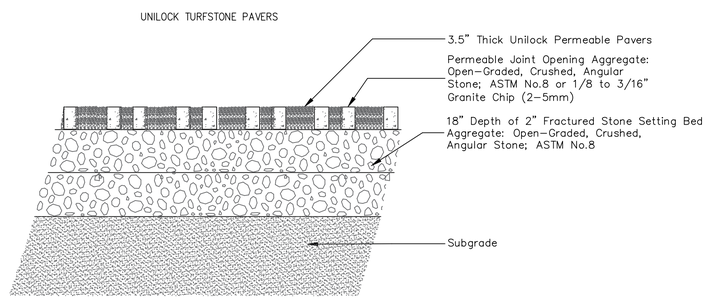
WILLABAY MEADOWS SUBDIVISION
BUILDING GRADES AND DRIVEWAY CULVERT SIZING

	YARD GRADE	FINISH FLOOR	LOWER LEVEL	DRIVEWAY CULVERT
LOT 1	936.3	938.0	928.0 (LO)	15"
LOT 2	935.8	937.5	927.5 (WO)	15"
LOT 3	935.0	936.7	926.7 (LO)	15"
LOT 4	934.0	935.7	925.7 (LO)	15"
LOT 5	919.75	921.5	911.5	15"
LOT 6	919.3	920.8	910.8	15"
LOT 7	918.6	920.1	910.1	15"
LOT 8	918.0	920.2	910.2	15"
LOT 9	917.0	919.2	909.2	15"
LOT 10	916.0	918.2	908.2	15"
LOT 11	913.8	916.0	906.0	15"
LOT 12	905.8	908.0	898.0	15"
LOT 13	897.5	899.0	889.0	15"
LOT 14	895.8	898.0	888.0	15"
LOT 15	895.3	898.2	888.2 (LO)	15"
LOT 16	894.8	896.5	886.5 (LO)	15"
LOT 17	892.5	895.0	885.0 (WO)	15"
LOT 18	892.5	895.2	885.2 (WO)	15"
LOT 19	895.5	895.7	885.7 (WO)	15"
LOT 20	894.8	897.0	887.0 (WO)	15"
LOT 21	895.3	897.5	887.5 (WO)	15"
LOT 22	896.8	898.2	888.2 (LO)	15"
LOT 23	900.5	902.7	892.7	15"
LOT 24	898.0	900.2	890.2	15"
LOT 25	896.8	899.0	889.0	15"
LOT 26	896.8	899.0	889.0	15"
LOT 27	895.0	897.8	887.8	15"
LOT 28	896.0	898.2	888.2	15"
LOT 29	897.5	899.7	889.7	15"
LOT 30	902.5	904.7	894.7	15"
LOT 31	904.5	906.7	896.7	15"
LOT 32	911.5	913.7	903.7 (LO)	15"
LOT 33	912.5	914.7	904.7 (LO)	15"
LOT 34	915.5	917.0	907.0 (LO)	15"
LOT 35	917.0	919.2	909.2	15"
LOT 36	917.5	919.7	909.7	15"
LOT 37	918.5	920.7	910.7 (LO)	15"
LOT 38	918.3	920.5	910.5	15"
LOT 39	925.0	927.5	917.5 (LO)	15"
LOT 40	931.5	933.2	923.2 (WO)	15"
LOT 41	934.0	936.2	926.2 (WO)	15"
LOT 42	936.0	938.2	928.2	15"

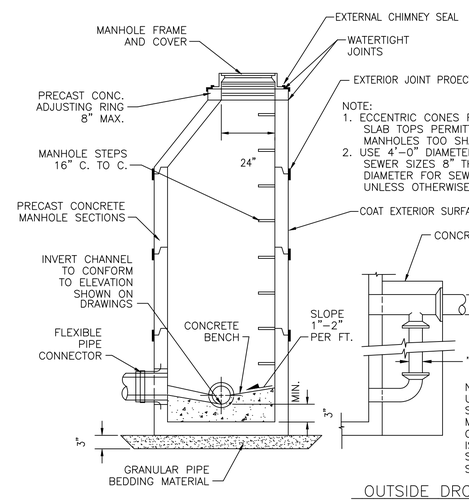


N.T.S.

STANDARD FIRE HYDRANT DETAIL



TURFSTONE PAVERS EMERGENCY ACCESS DETAIL



OUTSIDE DROP DETAIL

N.T.S.

SANITARY MANHOLE DETAIL

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

CONSTRUCTION DETAILS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
12/18/2024 -NK PLAN & PROFILE
03/14/2025 -RS PLAN & PROFILE
05/30/2025 -NK GEN. PLAN REV.
07/18/2025 -RS REVISIONS
07/22/2025 -RS REVISIONS
07/31/2025 -RS REVISIONS
09/16/2025 -RS REVISIONS
09/23/2025 -RS REVISIONS

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 14 OF 19

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SPECIFICATIONS FOR
ROADWAY, GRADING,
STORM SEWER CONSTRUCTION
SITE PREPARATION, DRAINAGE
AND EROSION CONTROL
VILLAGE OF WILLIAMS BAY
WALWORTH COUNTY, WISCONSIN

GENERAL DESCRIPTION

Land and Lakes Developers, or their assigns, defined as OWNER, will receive bids for all work as shown on the plans, indicated within a bid Proposal, and further described in the following Specifications complete, and in accordance with the "Standard Specifications for Sewer and Water Construction in Wisconsin" sixth edition, December 22, 2003 with Addendum No. 1, December 22, 2004, except Part I thereof, and its Addendums and the "Standard Specifications for Highway and Structure Construction," 2016 Edition, State of Wisconsin Department of Transportation, except Part I thereof.

Site Work Specifications on Sheet 19.

The project consists of all the roadways, storm sewer construction, site grading, and erosion control.

The work that shall be done under this Contract consists of furnishing all labor, tools, equipment, machinery and appliances, and all materials, except where definitely specified to the contrary, and construction complete, in working order, ready for use.

The ENGINEER, Farris, Hansen & Associates, Inc., will stake the work once at no expense to the CONTRACTOR; however, if the CONTRACTOR shall request re-staking, this work will be done at the expense of the CONTRACTOR. CONTRACTOR should make every attempt to notify ENGINEER a minimum of two (2) days prior to his commencing work requiring either line and/or grade stakes. Requests shall be made periodically as work proceeds.

PART 1 – STORM SEWER
1. STANDARD SPECIFICATIONS

All work under this project shall be done in accordance with the "Standard Specifications for the Sewer and Water Construction in Wisconsin," Sixth Edition, December 22, 2003, and its Addendums, hereinafter referred to as the "Standard Specifications," and its amendments and corrections. Specifications contained herein shall supersede these standard specifications as indicated only to modify, alter or extend them.

2. EXISTING UTILITIES

It shall be the responsibility of the CONTRACTOR to notify all public utilities such as telephone, power, gas, etc., prior to excavating to determine for himself the extent of existing underground utilities. In addition the CONTRACTOR shall be responsible for any costs involved with relocating or bracing any above ground utility poles or structures which may be weakened or on line of any proposed sewer construction.

3. ABOVE GROUND UTILITIES

It shall be the responsibility of the CONTRACTOR to notify any above ground utilities such as electric power utilities, phone companies, and telegraph companies to relocate or reinforce any poles, ties, or anchors, which may be on the line of the proposed sewer line, or weakened by excavation for the sewer line at no extra cost to the OWNER.

4. UNDERGROUND UTILITIES

The CONTRACTOR shall have located or verify all known underground utilities such as existing gas line, telephone lines, underground power lines, storm sewer, sanitary sewers or water mains, prior to requesting grades for any sewer line. If any other utility is on line or grade, the location of the sewer line will be relocated to clear such utility, if possible, or the underground utility will be relocated.

5. UTILITY CROSSINGS

The CONTRACTOR shall carefully expose, with hand tools, all utilities which cross the proposed storm sewer prior to construction in the immediate area of same, to allow the ENGINEER to check for conflicts. All utilities shall be protected from any disturbance throughout the project work and supported in accordance with Section 2.6.5 of the "Standard Specifications."

6. INTERFERENCE OF UNDERGROUND STRUCTURES

Section 2.1.1 of the "Standard Specifications" shall govern except as modified hereafter: All altered work shall be either negotiated between CONTRACTOR and OWNER or payment made by increasing or decreasing the bid item involved. Concrete encasement or capping of sewer when ordered shall be negotiated as an extra.

7. SURFACE REPLACEMENT

Sections 2.6.11, 2.6.12, 2.7.1 and 2.7.2 of the "Standard Specifications: shall be deleted and the following shall apply: The CONTRACTOR shall include within his unit price bid for utilities the cost of replacing all damaged or disturbed driveways, pavements, or other existing surface improvements. Replacement of all existing surface improvements shall meet or exceed the quality of the original materials or workmanship. Existing bituminous or concrete pavements shall be sawcut prior to excavating.

8. SEWER CONSTRUCTION

The appropriate provisions of Parts II and III of the "Standard Specifications" shall apply except as modified or amended hereinafter. Construction shall be in accordance with requirements contained within all permits obtained for the project, copies of which shall be furnished to the CONTRACTOR and made a part of these specifications.

All excavations within established roadways, shoulders or new roadways shall be backfilled with granular material conforming to Section 8.43.4. Consolidation of backfill within these established areas shall be by mechanical compaction as defined in Section 2.6.14. granular material in established roadways.
All excavations outside of existing pavement or shoulder areas may be backfilled with excavated material conforming to Section 8.46.5 unless the material is determined to be unsuitable. If determined unsuited at the time of construction, granular material conforming to Section 8.43.4 shall be substituted and paid for as an extra cost. Extra cost shall include wasting the unsuitable soils on site outside of building pad areas in designated fill areas as shown on the plans which have been stripped of topsoil preceding its placement. Cubic yard quantities shall be determined by using the factor 0.15 cubic yards per foot of trench depth per foot of trench length.

All bedding and cover materials used for sewer construction shall conform to materials as defined under Section 8.43.0 of the "Standard Specifications".

9. COMPACTION

Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D1557; and not less than the following percentages of relative density; determined in accordance with ASTM D2049; for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils):

a. Under Paving Areas: Compact top eight inches of existing ground surface and each layer of backfill or fill material to 98 percent maximum density for cohesive soils for 95 percent relative density for cohesionless soils.
b. Other Areas: Compact top eight inches of existing ground surface and each layer of backfill for fill material to 95 percent maximum density for cohesive soils or 90 percent relative density for cohesionless soils.

Compact the soil materials around piping and conduit with hand-operated tampers.

Do not allow heavy vehicles, equipment, or machinery to operate directly over piping and conduit until a minimum of 24 inches of backfill has been placed and compacted over it.

10. STORM SEWER PIPE MATERIALS

The CONTRACTOR shall furnish all new materials required to complete work as called for within these specifications and shown on the drawings. Reinforced concrete pipe shall be used throughout entire project unless specifically noted on the plans.

Reinforced concrete pipe used for storm sewers shall meet the requirements of ASTM C-76 with rubber gasket joints conforming to ASTM C-443 or Section 3.2.15 of the "Standard Specifications".

11. CATCH BASINS AND AREA DRAINS

The provisions of Section 3.6.1 of the "Standard Specifications" shall govern except as modified hereafter. Catch basins in driveway shall be 48" I.D., unless otherwise shown, and conform to details shown on this plan, castings shall be Neenah R-2560E with beehive grate. Catch basins shall be bid to include all costs associated with their construction complete including inlet castings and grates.

Backfill trenches within new roadways with granular material.

Area drains shall be 48 inches diameter precast concrete section with a top opening to accommodate the Neenah R-2560-E1 frame and grate.

It should be noted that placement of catch basins and area drains may be modified by Engineer prior to construction if conflicts or other conditions occur.

12. CLEANING OF SEWERS and APPURTENANCES

The interior of all sewers and appurtenances shall be kept clean throughout construction. The Work shall be freed from all dirt and extraneous materials of all types as the work progresses and left clean at the completion of work.

13. COORDINATION OF WORK

The CONTRACTOR shall coordinate his work effort with that of the Contractor for the site, grading and roadway construction. Stripping and stockpiling of topsoil and rough grading of roadway sub-grade shall be done by others ahead of installation of the underground utilities by this CONTRACTOR. After all sewer and construction for a given street or area is complete the CONTRACTOR for the roadway construction shall be responsible for the protection of all surface protruding appurtenances such as manhole frames and lids, area drains, catch basins, etc.

14. SURPLUS EXCAVATED MATERIALS

The provisions of Section 2.2.11 of the "Standard Specifications" shall be deleted and the following shall apply: The CONTRACTOR shall haul and dispose of surplus excavated material to designated fill areas on site. The cost of placing such surplus or disposing of material to the designated fill area shall be included in the bid for the work.

15. ADJUSTMENT OF SURFACE PROTRUSIONS

All catch basins, area drains, and other surface protrusions shall be adjusted at the request of the CONTRACTOR for Street Construction if found to be unreasonably high or low at the time of paving or doing other work which must meet elevations of the surface protrusions. This work shall be done promptly or the OWNER may cause others to do the work and charge this CONTRACTOR for the costs.

16. STAKING, STAKES AND LATH

Necessary stakes and lath shall be furnished by the ENGINEER for staking of line and grade. All line and grade shall be provided as required by the Project Engineer.

17. SURVEY POINTS

All reference stakes, horizontal and vertical control points, survey monuments and other points which are marked by lath crossed over the point and heavily ribboned shall be protected by the CONTRACTOR against being destroyed. If these points are destroyed by the CONTRACTOR'S work activity, they shall be replaced at the CONTRACTOR'S cost by the ENGINEER.

18. SUBSURFACE SOIL INVESTIGATION

Subsurface soil investigations have not been fully made. All CONTRACTORS who review shall make his own judgment pertaining to the character of existing subsurface materials of the site test pits were dug and are shown. The CONTRACTOR shall be responsible in formulating his own opinion of the soils to be encountered and to what extent testing or investigation is required for him to formulate his bid. The CONTRACTOR shall assume the responsibility of constructing all improvements for the bid prices. The only exception to this shall be as specified for ordering undercut and other specified extras or changes to work.

19. SCHEDULE OF WORK

It shall be the intent of the Owner to complete all grading for the sub-base of the roadways, drainage swales and underground pipe work as soon as possible. The CONTRACTOR shall submit a schedule for his work completion with his bid as contained within the proposal of the Contract Document.

20. TRAFFIC CONTROL

The Contractor shall maintain access to the existing residences at all times. Roads shall be maintained in a safe condition throughout the duration of the project. The Contractor shall take all precautions necessary to safely warn the public of the probable increased danger to travel due to construction of the work.

Whenever the Contractor's activities obstruct through traffic, there shall be sufficient flagmen on duty to guide the traffic, and the Contractor shall furnish and install all temporary signing and barricades required to safely direct the traveling public around the obstructed area. Traffic control shall be provided in accordance with the "Manual on Uniform Traffic Control Devices".

PART 2 -ROADWAY AND SITE WORK
1. STANDARD SPECIFICATIONS

All work as shown on the plans, indicated within the bid proposal, and further described in the following specifications, completed, and in accordance with "Standard Specifications for Highway and Structure Construction", Edition of 2016, State of Wisconsin Department of Transportation, except Part I thereof.

The ENGINEER will stake the work once at no expense to the CONTRACTOR; however, if CONTRACTOR shall request re-staking, this work will be done at the expense of the CONTRACTOR. CONTRACTOR should make every attempt to notify ENGINEER a minimum of two (2) days prior to his commencing work requiring either line and/or grade stakes. Requests shall be made periodically as work proceeds. All project areas shall be stripped, rough graded and brought to subgrades, as shown on the plans.

2. CLEARING AND GRUBBING

All clearing and grubbing will be in accordance with plan requirements and as directed by Engineer.

The CONTRACTOR shall clear, grub and dispose of all brush, trees, stumps, logs, etc. within all excavation limits in accordance with Section 201 of the "Standard Specifications". Clearing and grubbing shall be paid for on a lump sum basis. All brushy vegetation and limbs shall be chipped and blown over existing vegetated site in a maximum of one to two inches depth. Stumps are to be ground and logs to be hauled offsite.

3. UNCLASSIFIED EXCAVATION

Unclassified excavation shall consist of all excavations necessary to provide a subgrade at suitable elevations such that roadways, curb and gutter, and lands adjacent thereto can be constructed to finished elevations shown on the plans by application of stone base course and pavement or topsoil replacement as applicable.

Payment for the unclassified excavation shall be lump sum which shall include all required transportation and disposal costs of excess materials. All excess excavated materials shall be disposed of on site in designated areas shown on the plans as directed by either OWNER or ENGINEER. It should be noted that there is substantial fill shown for the road and adjacent lot from Station 23+00 to the Cul-De-Sac. The road will be required to be filled to grade but adjacent lots may not be due to the volume of fill needed. These lots will not initially be opened until fill from basement excavations or the off-site material becomes available. Excess topsoil may be used for fill outside of any future building area. Estimated quantity of unclaimed excavations is CY.

4. CUTS

All areas of grading work, particularly cut areas, shall be kept shaped and drained during construction. All roadway and drainage swales, pockets, depressions and, low areas shall drain effectively at all times. Graded areas shall be protected against erosion prior to the completion of the work by use of temporary traps, diversions, checks and other methods.

5. COMPACTION

Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D1557; and not less than the following percentages of relative density; determined in accordance with ASTM D2049; for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils):

A. Under Paving Areas: Compact top eight inches of existing ground surface and each layer of backfill or fill material to 98 percent maximum density for cohesive soils and90 percent relative density for cohesionless soils may be adjusted by building designer).

B. Other Areas: Compact top eight inches if existing ground surface and each layer of backfill for fill material to 95 percent maximum density for cohesive soils or 90 percent relative density for cohesionless soils.

Where soil materials must be moisture conditioned before compaction, uniformly apply water to the surface. Prevent free water from appearing on the surface of soil materials during or subsequent to compaction operations.

Remove, replace, or scarify all dry air soil materials that are too wet to permit compaction to the specified density.

All compaction tests and inspections shall be made by an independent testing laboratory acceptable to Engineer. Site contractor will assist the testing firm in the performance of their tests and inspections and be responsible for coordinating the tests and inspections. Soil testing reports and procedures shall be completed and followed. Copies are to be provided to the OWNER and Village upon request..

No fill shall be placed without inspection and approval of the subgrade and fill material composition by a representative of the testing laboratory or Engineer.

Method of test for density of soil in place shall be the Sand-Cone Method, ASTM D1556 or Nuclear Denosmeter. Method of test for moisture-density relations of soils shall be Modified Proctor, ASTM D-1557-78. Relative density of cohesionless soils shall be established by ASTM D-2049-69, 90 percent relative density. A geotehnical report on compaction from the lesser of 6 feet over installed pipe or road subgrade.

Excavated materials may be used for backfill provided all wood, roots and other deleterious materials are removed and subject to approval by the Construction Manager. Excavated material shall be placed into fill areas once dried to proper moisture content or determined to be suitable by site Engineer. Excavated site materials shall be inspected, placed and compacted in lifts as recommended by the testing firm.

6. FILL

Place the fill on surfaces stripped of topsoil and graded to subgraded by compaction surfaces to the grade indicated. Maintain optimum moisture content for compacting material during placement operations.
Provide, place and compact off site pit run granular material to supplement any site shortage of suitable material to bring to the site to subgrade if ordered by owner at a unit price per ton. Borrow site within the existing pond areas will be considered if suitable materials are found there. Otherwise the material will be hauled in from off-site or left for future basement spoils.

7. SUBGRADE INSPECTION

Upon completion of final subgrade work and prior to the placement of crushed aggregate base material, the roadway areas will be inspected by the Engineer to check that conformance to the proposed grades is maintained. In addition, all subgrade shall be test rolled with a loaded quad-axle truck with the VILLAGE ENGINEER present before base course placement is started.

8. CRUSHED AGGREGATE BASE COURSE

Crushed aggregate base course shall be ten inches (10") thick and placed in a minimum of two lifts and shall conform to Gradation No. 2 as specified in accordance with the "State Specifications" Section 305.2. All crushed aggregate base course shall be compacted with water truck, grader and vibrator roller.

The base course shall be crushed stone and shall be constructed in accordance with the requirements of Section 305 of the "State Specifications".

If undercut and compacted granular fill is ordered by the ENGINEER at the time of excavating for the subgrade, payment shall be made as an extra at the supplemental price bid per cubic yard. All subgrade shall be test rolled with loaded quad-axle truck with VILLAGE ENGINEER present before base course placement is started.

9. BITUMINOUS CONCRETE PAVEMENT

Bituminous concrete pavement shall be 4 LT 58-28 S – 2.25 inch thickness of binder course and a 5 LT 58-28 S – 1.75 inch thickness of surface course materials. The materials and methods used in application of the bituminous concrete pavement shall comply with the general requirements of Section 450 of the "State Specifications". Asphalt shall be Type MC complying with AASHTO M82 and aggregates to Sub-section 460.2.2 of the "State Specifications". No recycle.

All bituminous concrete paving operations shall be done under the observation of the Village Engineer.

10. TACK COAT

All existing paved surfaces which call for a surface lift of pavement shall be thoroughly cleaned and dry prior to paving with an emulsified asphalt tack coast applied at a rate of 0.05 – 0.15 gallons per square yard. For new pavements when a time delay between binder course and surface course is specified or ordered by the ENGINEER the first binder lift shall be thoroughly cleaned and dry with an emulsified asphalt tack coat applied at 0.04 – 0.08 gallons per square yard.

11. CONCRETE

All concrete used on this project, except for pavement, shall be air-entraining, 6-bag mix with a minimum 28 day compressive strength of 4,000 psi. All requirements of Section 501 of the 'State Specifications' shall apply unless otherwise modified herein or waived by the ENGINEER. Course aggregate shall be proportioned between Size No. 1 and No. 2 to provide suitable workability with a 6 percent air content plus or minus 1.5 percent.

12. TRAFFIC CONTROL

The Contractor shall maintain access to existing residences at all times. Roads shall be maintained in a safe condition throughout the duration of the project. The Contractor shall take all precautions necessary to safely warn the public of the probable increased danger to travel due to construction of the work.

Whenever the Contractor's activities obstruct through traffic, there shall be sufficient flagmen on duty to guide the traffic, and the Contractor shall furnish and install all temporary signing and barricades required to safely direct the traveling public around the obstructed area. Traffic control shall be provided in accordance with the 'Manual on Uniform Traffic Control Devices'.

13. DRAINAGE SWALES, OFF STREET GRADING & DITCHES

Drainage swales, ditches and off street grading shall be constructed in accordance with details of line, grade and configuration shown on the plans and as specified under Sub-section 205.3.6 of the "State Specifications". Temporary bale ditch checks, sediment basins, diversions, silt fence, erosion mats, etc., shall be used to minimize erosion throughout construction. Ditches over 5% grade shall have NAG P-300 erosion mats placed and staked.

All swales and off pavement grading shall be graded smooth to inlets of the storm sewer provided. If erosion control is found necessary, fabric, silt fencing, or other materials shall be provided as directed by the ENGINEER for the unit costs as listed in the proposal.

14. DELIVERY TICKETS

Delivery tickets for all items paid for on a unit price basis shall be provided by the CONTRACTOR at the time of delivery to the site. Tickets shall be dated, numbered and include all applicable pay quantities thereon with signature of scale operator as applicable. Provisions for required scale operations shall be provided by the CONTRACTOR. All items to be paid by weight shall be signed by the scale operator and all other quantities of volume or number shall be monitored by the Project Inspector.

15. SALVAGE, STOCKPILE & REPLACEMENT OF TOPSOIL

All topsoil on areas to be disturbed shall be stripped and stockpiled in areas as indicated on the plans or otherwise approved by the ENGINEER.

After excavating and rough grading of all required areas a minimum 6" topsoil shall be replaced and graded. All work shall be performed in accordance with the requirements of Section 625 of the "State Specifications". All excess topsoil shall remain the property of the OWNER and be placed in fill locations outside building site areas.

16. REMOVING MISCELLANEOUS MATERIALS

The CONTRACTOR shall remove and dispose of any old curb and gutter, bituminous pavement, masonry and manholes in accordance with the requirements of Subsection 204 of the "State Specifications". Payment for removal of miscellaneous structures shall be included in the Proposal for the work.

17. WASTE MATERIALS OR EXCESS EXCAVATION

All excess excavated materials resulting from construction of roadways and drainage courses shall be moved offsite or to designated fill areas on the site and there deposited in compacted 12 in. lifts as staked by the ENGINEER. This work shall be done only after stripping topsoil. All material shall be used on site. (See requirements for engineered fill under buildings and roadways.)

18. TIME PERIOD FOR PAVING

Installation of the binder course shall be done at as early a date as possible after initial placement of base course. The surface course shall not be constructed until one (1) year after installation of the binder course unless an earlier or later installation is approved by the Owner. The CONTRACTOR shall provide for any tack oil coat required. The delayed installation of the surface course shall not interfere with finalizing the Contract and payments for all other work. In addition the paving shall be disregarded in determining the time of completion.

Prior to the paving operation streets shall be regraded and additional crushed gravel provided and compacted to bring the base course to grades as shown on the plans. The ENGINEER shall stake centerline base course grades (red tops) once for CONTRACTORS use prior to the paving work as required. The base course shall be proof rolled before paving.

19. SEEDING, MULCHING & FERTILIZER

Preparation of all seed beds, sowing, and other requirements shall be in accordance with Section 630 of the "State Specifications". Seed Mixture shall be Seed Mixture No. 40, applied at a rate of 4 pounds per 1000 square feet of area. All seeded areas shall be mulched in accordance with Section 627 of the "State Specifications".

Fertilizer to be used shall be as defined under Sub-section 629.2.1 and applied at a rate of 7 pounds per 1000 square feet of area following procedures conforming to Sub-section 629.3 of the "State Specifications" for all areas seeded or sodded.

The street terraces, finished areas along boundary and sewer easements shall be seeded, mulched and fertilized except as may be otherwise noted on the plans. CONTRACTOR will provide a perennial rye cover crop over other disturbed or open lands. These disturbed areas on slopes shall be prepared and seeded with Seed Mixture No. 20 applied a rate of 5 pounds per 1000 square feet area or approved lawn turf mix.

Following any initial soil disturbance, permanent or temporary stabilization shall be completed within seven calendar days as to the surface of all slopes greater than 3:1. In addition, all other disturbed or graded areas shall be stabilized within fourteen calendar days.

20. DUST PALLIATIVE

The CONTRACTOR shall minimize the dispersion of dust from the sub-base, basecourse, drainage swales and other surface areas disturbed throughout construction until acceptance of work, by the applications of water or other approved dust control materials when surfaces are dry and travel over unfinished surfaces is required. No extra for water trucks and control will be paid. Calcium chloride, if used, shall be applied at a rate of 2 lbs. per square yard.

21. EROSION CONTROL

The Contractor shall use the current Wisconsin Department of National Resources Construction Site Erosion & Sediment Control Technical Standards as a reference and guide for erosion control practices.

The Contractor shall comply with the provisions of local erosion control plans and/or ordinances.

All erosion and sediment control measures should be constructed and maintained in accordance with these Standards. Sediment control measures should be adjusted to meet field conditions at the time of construction and installed prior to any grading or disturbance of existing surface materials. Periodic inspection and maintenance of all sediment control structures should be provided to ensure intended purpose is accomplished. Sediment control measures are to be in working condition at the end of each working day. After any significant rainfall, sediment control structures should be inspected for integrity. Any damaged structures should be corrected for integrity. Sediment control measures should not be removed until the areas served have established vegetative cover. Stone and gravel mats should be installed at all construction site exits to prevent tracking of soil. Any tracked soil should be collected from paved roads located near the construction site. Overland flow should be prevented from directly leaving the work site by routing through proposed sediment traps. Following the cessation of initial soil disturbance and work activities in the area, permanent or temporary stabilization shall be completed and stabilized within fourteen calendar days of work completion.

All disturbed areas shall be seeded with temporary dormant seed mix (oats, winter wheat, annual rye) if permanent seed cannot be completed by September 15, 2025, with appropriate follow-up to address erosion problems, wash-out, etc. Permanent seed mix must then be made by June 1, 2026. Seeding rates and mixes shall conform to Section 630 of the "State Specification". If lands are disturbed after October 30 additional stabilization may be required with anionic polymer over a cover crop of winter wheat, oats, or annual rye on all slopes 4:1 or greater.

22. EROSION MAT

The CONTRACTOR shall place erosion mat over all seeded areas with slopes over 4:1 as required to control erosion, including at the locations shown on the plans and/or as directed by the ENGINEER. Erosion mat shall be placed in accordance with the procedure recommended by the manufacturer and Section 628.3.2 of the "State Specification" or as directed by the engineer. The rear slopes o flots 15-22 and the slopes around Outlots 3-5 will be restored with erosion matting within 7 days of either being left inactive or final grading.

Erosion mat material shall be North American Green S-150 double net straw blanket or equal, as indicated on the plans.
23. SEDIMENT TRAPS

Sediment traps shall be constructed as indicated on the plans and shall be constructed as part of the initial BMPs whenever practical. An overflow weir must be incorporated at the outlet to discharge flow from the trap. Sediment traps shall be phased with the earthwork activity where practical. If sediment trap sizes shown on the grading plan cannot be constructed due to terrain, CONTRACTOR shall incorporate a 'Best Fit' sediment trap.

24. DEWATERING

All site or trench dewatering shall be done by acceptable methods in strict accordance with technical standards (Code No. 1061) WI DNR. Discharge shall be into storm water basins and sediment containment areas at rates that can be accommodated (ENGINEER to approve).

Any dewatering being pumped directly to storm sewer or offsite shall be done through geotextile bags. In general, dewatering shall be pumped to the storm water basin area for containment.

25. PERMITS

Contractor shall be responsible for all permit conditions concerning erosion control and Village site permit conditions along with the State NOI permits. Drainage that leaves the site must be controlled and erosion prevented. It will be very important to prevent tracking of mud or other materials off site onto the roadways. If this occurs it must be immediately cleaned by power brush or other acceptable means. Anti-tracking mats are to be created and maintained as shown.

WILLIABAY MEADOWS
FINAL ENGINEERING PLAN

SITE SPECIFICATIONS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
12/18/2024 -NK PLAN & PROFILE
03/13/2025 -RS PLAN & PROFILE
05/12/2025 -RS PLAN & PROFILE
05/30/2025 -NK GEN. PLAN REV.
07/31/2025 -RS REVISIONS
09/16/2025 -RS REVISIONS

PROJECT NO.
5536.17
DATE
05/12/2025
SHEET NO.
17 OF 19

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PUBLIC SANITARY SEWER AND WATER MAIN
STANDARD SPECIFICATIONS

The "Standard Specifications for Sewer and Water Construction in Wisconsin", Sixth Edition, December 22, 2003, with Addendum No. 1, "Standard Specifications" and The Village of Williams Bay Water and Sanitary Sewer Main Specifications dated January 7, 2019. Special Provisions Development Standards for Private Developments, "Special Provisions" will govern all public sanitary sewer and water main utility work performed on this project. Below are the relevant sections of the "Special Provisions". Village material specifications shall apply without exception and be complied with.

In the event of a discrepancy between the "Special Provisions" and the "Standard Specifications" the "Special Provisions" shall govern.

Copies of the "Standard Specifications" may be obtained by contacting:
Public Works Industry Improvement Program
2835 N. Mayfair Road, Suite 35
Milwaukee, WI 53222
Phone: (414) 778-1050

SANITARY SEWER CONSTRUCTION

A. Bedding and Cover Material
1. Sanitary sewer bedding and cover material shall conform to the appropriate sections of the "Standard Specifications", as specified and/or modified below:
a. PVC Pipe – Section 3.2.6(i), as modified below (Note that the bedding section is essentially Class "B" Bedding including placing a minimum of 12 inches of cover material over the top of the pipe.):
(1) Bedding material used for 18" diameter or smaller sewer pipes shall conform to either Table 32 (3/8" crushed stone chips containing at least 85% machine fractured particles) or Table 33 (3/4" crushed stone chips containing at least 65% machine fractured particles) of Section 8.43.2(a). Crushed pea gravel will not be allowed for use as bedding material. Cover material shall be the same material as used for bedding.

(2) Delete the following sentence from Paragraphs 3.2.6(b)2 and 3.2.6(i):

"If crushed stone chips or other materials conforming to Section 8.43.2(a) are used as cover material, no compaction or staging is required."

(3) Placement and Compaction.
(a) Place bedding material to the springline of the pipe and compact prior to placing cover material. Compaction of bedding material at the level of the pipe springline shall include working bedding material under the haunches of the pipe using shovels or other suitable methods. The Contractor shall take care to completely work bedding material under the haunches of the pipe to provide adequate side support.

(b) Place and compact cover material in one or more lifts after compacting bedding material. Place a minimum of 12 inches of cover material over the pipe.

(c) Refer to Subsection 607.B. of the "Special Provisions" for requirements for recompacting Class "B" bedding disturbed by trench boxes.

B. Laterals
1. Connections to the Main Sewer
a. Building sewer 4" diameter (lateral) connections to the main sewer 18" in diameter or less shall be made with gasketed wyes except as noted below. The ends of laterals shall be plugged in accordance with Paragraph 3.2.5(f) of the "Standard Specifications".

(1) All lateral connections to new flexible pipe shall be made with factory fabricated or injection molded in-line wyes unless otherwise approved by the Engineer.

b. Place wyes at a typical vertical angle of 45° to the horizontal except install wyes flat or level when the Plans state to install laterals as low as possible.

2. Grade
a. Install sewer laterals at a minimum 2.08% (1/4"/ft.) grade unless shown otherwise on the Plans.

3. Marker Stakes
a. The Contractor shall furnish and install a marker stake over the end of each lateral installed. The marker shall be a minimum 2" x 4" x 4' wooden plank or as approved by the Engineer. The marker shall be placed vertically with its top flush with the surface grade. Place a spike or other durable magnetic material in the top of the marker stake to aid in future relocation.

4. Risers
a. Risers on shallow flexible gravity sewer mains shall be constructed of flexible gravity sewer pipe in accordance with File No. 10E of the "Standard Specifications". Use File No. 10E for risers up to 6 feet in height and for mains not exceeding 16 feet in depth measured from the flowline of the sewer.

b. Riser connections shall be made with factory fabricated or injection molded in-line tees. Do not use saddles for riser connections.

5. Cleanouts
a. All laterals exceeding 100 feet in length shall have cleanouts installed on them. Cleanouts shall be placed at 100 foot maximum spacings as shown on the Plans or as directed by the Engineer. They shall be constructed in accordance with the details shown on the Plans.

C. Connections to Existing Manhole
1. Sewer connections to existing manholes shall be made in accordance with Section 3.5.7 of the "Standard Specifications". Field tapped holes for connecting sewer pipe to manholes shall be made by coring the manhole except that connections to brick or block manholes may be made by punching out the opening. Flexible pipe connections shall be made with flexible watertight connectors, Kor-N-Seal, Link-Seal or equal. All clamps, bolts, etc. of pipe to manhole seals shall be stainless steel. If Link-Seal connectors are used, the bolt heads shall be placed on the inside of manholes.

2. Form a new flow line(s) in the existing manhole(s) in accordance with File No. 13 of the "Standard Specifications".

3. For outside drop connection to existing manhole follow section 3.5.8(d)4, File 22 of the "Standard Specifications".

4. Plug Downstream Manhole
a. Place temporary plugs in all downstream (receiving) manholes to prevent groundwater and debris from entering the existing sewer system.

D. Pipe Flotation
1. Pipes installed below the groundwater elevation shall be protected against flotation. The Contractor shall lower the groundwater elevation until after adequate cover has been placed to secure pipes.

E. Insulation
1. Sewer lines shall be insulated where noted on the Plans and wherever the depth of cover is less than five (5) feet when so ordered by the Engineer. Insulation shall be in accordance with Chapter 4.17.0 of the "Standard Specifications" and the details in the Appendix of the "Special Provisions".

F. Deflection Testing
1. Polyvinyl chloride (PVC) sewer pipe shall be deflection tested with an approved go-no-go acceptance testing device. The test shall not be conducted until after all backfill has been placed and consolidated and after riser pipes and sewer laterals have been installed. The entire length of sewer pipe shall be tested.
a. PVC pipe shall be deflection tested in accordance with Paragraph 3.2.6(i)4. of the "Standard Specifications", as amended below:
(1) PVC pipe shall not be deflection tested until at least 14 days after all backfill has been placed, including backfilling of laterals and risers. Initial deflection testing shall be done using a 95% mandrel. The use of a 92.5% testing device will not be allowed for initial testing regardless of the time elapsed after backfilling.

(2) All sections failing to pass the test shall be repaired and retested, however, if at least 30 days have elapsed since the pipe was placed and backfilled, the Contractor will be allowed to retest the sewer line using a 92.5% mandrel.
2. Mandrels
a. Go-no go mandrels shall conform to the requirements of File No. 30 and 30A of the "Standard Specifications".

G. Leakage Testing
1. Low Pressure Air Test
a. Amend Paragraph 3.7.1 of the "Standard Specifications" to read in part: "Sanitary sewers less than or equal to 36 inches in diameter shall be tested for leakage using the low pressure air test. The length of laterals included in the test section shall be included in determining the test time."

H. Televising Sewers
1. The Contractor shall televise all sewers after successfully completing deflection and leakage testing.

2. The Contractor shall provide the Owner with a copy of the videotape and a written report by the video contractor. The report shall indicate all defects (i.e.; bad joints, cracked pipe, infiltration, standing water, etc.) and shall list locations of all laterals.

3. All defects shall be corrected and any dirt, gravel or foreign material removed from the sewer prior to acceptance by the Village.

SANITARY SEWER MATERIALS

A. Sanitary sewer pipe material shall be polyvinyl chloride (PVC) pipe conforming to the following:
1. Polyvinyl chloride (PVC) sewer pipe (4 inch through 15 inch diameter) meeting the requirements of ASTM D3034, SDR 26, with 115 psi integral bell type flexible elastomeric joints meeting the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477.

B. All lateral pipes shall be A and shall conform to the requirements of ASTM D3034, SDR 26.

SANITARY MANHOLES
A. Standard Manhole.
1. Sanitary manholes shall be constructed in accordance with Chapter 3.5.0 and File Nos. 12, 12A, 13, and 15 of the "Standard Specifications" and these Special Provisions.

a. Poured Manhole Base
(1) All manhole bases (benches) shall be poured in place in accordance with Subsection 3.5.5(b) of the "Standard Specifications". Precast manhole bases or precast integral base units will be allowed in accordance with Subsection 3.5.5(c), however, no precast base units with preformed benches are allowed. All manhole benches shall be poured in place.

2. Manholes shall be precast 48 inch inside diameter with eccentric offsets over the outgoing pipe.

a. Adjusting Rings
(1) A minimum of 4 inches to a maximum of 19 inches of adjusting rings shall be furnished for each manhole, unless shown otherwise on the Plans.

(2) Furnish manholes to minimize the chimney height required, so that chimney seal extensions will not be required. Note that a standard 9 inch seal covers a 6-1/2 inch chimney height.
(3) Material
(a) Adjusting rings shall be concrete, unless specified otherwise below, meeting the requirements of Subsection 8.39.11 of the "Standard Specifications".

(b) Rubber Adjusting Rings
l) The top adjusting ring on manholes subject to traffic loadings shall be rubber as manufactured by Infra-Risers, Adaptor, Inc., or equal. Use tapered adjusting rings alone or in combination to place the manhole casting truly parallel with the plane of the pavement. Install adjusting rings in accordance with the manufacturer's instructions using the recommended adhesive.

b. Manhole depths shown on the Plans are approximate only, unless the cover elevation is indicated. Manhole covers shall be placed to match the existing grade unless the finished elevation is shown on the Plans.

(l) Place manhole covers 1/4 inch below the pavement grade in roadways.

3. Manhole Frames and Covers
a. Manhole frames and covers shall be 1050 East Jordan Frame w/ 1020 Cover or equal In roadway; use 1020 East Jordan Frame off of roadway.

B. Frame/Chimney Joints
1. Type I - Modified
a. All sanitary manholes shall be constructed with Type I frame/chimney joints. Type I joints shall consist of the following:
(1) Adjusting rings shall be set with butyl rubber sealant troweled into a 1/4 inch thick layer over the entire surface area of all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal.

(2) Internal/External Chimney Seal

Type I joints shall be provided with an external manhole chimney seal (internal/external adaptor seal) as manufactured by Adaptor Inc., West Allis, Wisconsin. The internal/external manhole seal shall be installed in accordance with the manufacturer's instructions.
b. Furnish and install manhole seals to span (cover) the entire chimney height. Provide extensions as required.

2. Cone/Ring Dimensions
a. Manhole Cone Sections
(1) The top dimensions of cone sections shall be either 24 inches inside diameter by 36 inches outside diameter or 26 inches inside diameter by 38 inches outside diameter.

(2) The outside diameter of the top of the cone section shall be as large as or larger than the base flange of the manhole casting.

b. Adjusting Rings
(1) Adjusting ring dimensions shall match the dimensions of the top of the cone section; either 24" x 36" or 26" x 38".

(2) Adjusting rings shall have flat or even bearing surfaces providing bearing contact over the entire contact surfaces.

(3) Adjusting rings shall be as specified in Section 8.39.11 of the "Standard Specifications" or Subsection 210.A.2.a(3) of the "Special Provisions", except the dimensions shall be as specified above.

c. Center adjusting rings on manhole cones and center manhole castings on adjusting rings so that their surfaces will be flush whenever possible.

C. Manhole Riser Joints
1. Joints for precast manhole riser sections shall be made with rubber "O"-ring gaskets, a continuous ring of butyl rubber sealant (EZ-Stik or Kent-Seal in rope form) or equal. The butyl sealant shall be l inch diameter equivalent or as recommended by the manhole manufacturer.

2. Joints for precast manhole barrel sections including the joint with the bottom of the cone shall be wrapped with an external joint seal as manufactured by Mar Mac Construction Products Company; Cretex Specialty Products; CCI Pipeline Systems, LLC; or equal. The external manhole seal shall be installed in accordance with the manufacturer's instructions.
c. If external joint seals require steel strapping, it shall be a minimum 5/8" – 316 stainless steel with stainless steel "strap lock" fasteners.

D. Manhole Lifting Holes
1. All lifting holes in precast manhole sections shall be plugged using rubber plugs supplied by the manhole supplier, non-shrink grout or other approved method. Non-shrink grout shall fill the entire void and shall be troweled at each face to provide smooth surfaces. Cement mortar shall not be used to plug lifting holes.

E. Manhole Pipe Connections
1. Connections of pipes to manholes shall be made in accordance with Section 3.5.7 of the "Standard Specifications". All field tapped holes for connecting sewer pipe to manholes shall be made by coring.

2. All plastic pipe shall be connected to manholes by means of flexible watertight pipe to manhole seals in accordance with Subsection 3.5.7(c). Manhole seals shall be Kor-N-Seal, Link Seal or equal. All clamps, bolts, etc. of pipe to manhole seals shall be stainless steel. If Link Seal connectors are used, the bolt heads shall be placed on the inside of manholes.

F. Drop Manholes
1. All drop manholes, unless shown otherwise on the Plans, shall be constructed as "outside" drop manholes in accordance with Section 3.5.8(d) and File No. 19 or 20 of the "Standard Specifications" and the requirements of these Special Provisions.
a. Heights of manhole drops shown on the Plans are figured from the invert of the outgoing sewer to the invert of the incoming sewer.

G. Manhole Air Vents
1. The Contractor shall construct manhole air vents at the locations shown on the Plans and/or as directed by the Engineer. Manhole air vents shall be constructed in accordance with the details shown on the Plans or included in the Appendix of the "Special Provisions".

H. Manhole Vacuum Testing
1. Delete Section 3.7.6 of the "Standard Specifications" in its entirety and replace it with the following.

2. The Contractor shall vacuum test all sanitary sewer manholes for leakage, regardless of the sewer diameter, in accordance with the following:
d. The chimney and casting shall be in place prior to vacuum testing manholes.

b. All testing shall be done in the presence of the City Utility Engineer or his representative.

3. Isolate the manhole to be tested by plugging the inlet and outlet pipes with inflatable stoppers or other suitable test plugs. The plugs shall be securely braced to prevent the plugs from being drawn into the manhole.

4. The test head shall be placed at the top of the manhole in accordance with the manufacturer's recommendations.

a. Prior to starting the vacuum pump, determine the hydrostatic head on the lowest pipe connection to the manhole being tested.

b. If the hydrostatic head on the lowest pipe connection to the manhole is 12 feet or less, a vacuum pressure equal to 10 inches Hg (mercury) shall be applied to the manhole utilizing the vacuum pump.

c. When the pressure gage indicates 10 inches Hg, close the control valve, shut off the vacuum pump, and begin counting the seconds for the indicated pressure to drop one inch Hg. If the elapsed time is longer than the minimum time indicated in the following Table J, the manhole passes the test.

d. In the event the hydrostatic head is between 12 feet and 21 feet above the lowest connection to the manhole, the test vacuum pressure shall be reduced one inch Hg for each foot of hydrostatic head in accordance with the following Table II. If the hydrostatic head is greater than 22 feet, no vacuum test shall be performed.

e. If the test fails, repair or seal the manhole using non-shrink grout or other approved materials. Retest until an acceptable test is obtained.

f. Tests may be conducted before or after backfilling.

WATER MAIN CONSTRUCTION
A. Bedding and Cover Material
1. Polyvinyl Chloride (PVC) Pipe
a. Bedding and cover material shall be crushed stone chips conforming to either Table 32 (3/8" crushed stone chips containing at least 85% machine fractured particles) or Table 33 (3/4" crushed stone chips containing at least 65% machine fractured particles) of Section 8.43.2(a) of the "Standard Specifications". Crushed pea gravel will not be allowed for use as bedding or cover material.

2. Trench Section
a. The trench section shall conform to Section 4.3.3 and File No. 36 of the "Standard Specifications", as amended below:
(1) Bedding and cover shall be placed in a minimum of three separate lifts to ensure adequate compaction of these materials, with one lift of bedding material ending at or near the springline of the pipe. The Contractor shall take care to completely work bedding material under the haunch of the pipe to provide adequate side support.

(2) Amend Section 4.3.3 and File No. 36 of the "Standard Specifications" to require a minimum of 12 inches of cover material over the top of the pipe.

B. Polyethylene Wrap
1. Delete Section 4.4.4 and all references to polyethylene wrap from the "Standard Specifications". Polyethylene wrap is not required along the trunk water main unless the Engineer orders it to be installed.

2. Water mains installed within organic soil layers, former landfill areas or crossing cathodically protected pipe lines shall be wrapped as ordered by the Engineer.
a. Polyethylene wrap, if required, shall meet the requirements of AWWA Standard C-105 (ANSI A21.S) using Class C (black) polyethylene material and shall be installed as specified in Section 4.4.4 of the "Standard Specifications".
3. All fittings and valves are to be polyethylene wrapped. Polyethylene wrap shall meet the requirements of AWWA Standard C-105 (ANSI A21.S) using Class C (black) polyethylene material and shall be installed as specified in Section 4.4.4 of the "Standard Specifications".

C. Disinfecting Water Mains
1. Water mains shall be cleaned and disinfected in accordance with Sections 4.3.11 and 4.3.12 and Chapter 4.16.0 of the "Standard Specifications" and AWWA Standard C651. Place calcium hypochlorite tablets in the water main as specified in Section 4.3.12.

2. See Section 555 of the "Special Provisions" for water main flushing and sampling requirements.

D. Sewer Crossings
1. Center one full length of water main pipe on sewers wherever water main crosses over or under a sanitary or storm sewer so that both water main joints will be as far from the sewer as possible.

E. High Points in Water Main
1. The Contractor shall install water main at the grades shown on the Plans with no high points constructed in the main except at hydrants and as indicated on the Plans. If a high point which could trap air cannot be prevented, then an air release assembly shall be constructed at that point, if so ordered by the Engineer.
a. The Engineer reserves the right to order the Contractor to relay water main placed at the wrong grade. The cost of such relay work shall be paid for by the Contractor.

F. Joint Restraint
1. Restraining Fittings, Valves and Sleeves
a. MEGALUG Restrained Joints
(1) Restrain all fittings (bends, tees, caps and plugs), valves and sleeves using MEGALUG restrained joints as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas.

(2) Buttress all fittings, as required, in addition to joint restraint.

2. Restraining Vertical Bends and Offsets
a. Changes in the grade of the water main made by vertical bends or offsets shall be restrained.

3. Restrained Hydrant Leads
a. Hydrant leads shall be restrained in accordance with the "Special Provisions".

G. Concrete Blocking (Buttresses)
1. All horizontal bends, tees, caps and plugs shall be provided with concrete buttresses, in addition to joint restraint as specified in Paragraph F.1.a(l) above, in accordance with Section 4.3.13 and File Nos. 44, 44A, 45 and 46 of the "Standard Specifications".

H. Insulation
1. Water mains shall be insulated where noted on the Plans and wherever the depth of cover is less than five (5) feet when so ordered by the Engineer. Insulation shall be in accordance with Chapter 4.17.0 of the "Standard Specifications" and the details in the Appendix of the "Special Provisions".

I. Operation of Existing Valves
1. All existing valves will be operated by or under the supervision of the Williams Bay Public Work Department. Contact Wayne Edwards, DPW.

J. Water Service Disruption
1. The Contractor shall coordinate his work schedule with the Owner when connecting intersecting streets to the new water main in order to minimize inconvenience and disruption caused by the temporary discontinuance of water service. Water service to residences shall not be shut down for a period longer than eight (8) hours, nor after 4:30 p.m. or on weekends without approval of the Owner. Residential water service may only be shut down between the hours of 8:30 a.m. to 4:30 p.m., except that residential water services may be shut down outside of these hours with the Owner's permission. Water service to businesses shall not be shut down for a period longer than two (2) hours unless satisfactory arrangements are made with the businesses affected. The Contractor shall take whatever measures are necessary to return service at the end of each working day, including the use of temporary valves or plugs.
a. The Contractor shall notify homeowners and businesses at least 24 hours prior to shutting off any water service.

K. Water Main Offsets
1. Water mains shall be offset as shown on the Plans or as directed by the Engineer. Water main offsets shall be in accordance with File No. 47 of the "Standard Specifications" as modified below.
a. Place offsets to provide a minimum of six (6) feet of cover.
(1) Water main shall be offset down only (under the conflicting utility) to prevent high points being created in the offset.

b. Offset castings may be used when the change in grade is 24 inches or less.

c. Concrete buttresses shall be constructed as shown, however, optional restraining methods as specified in the section on Joint Restraint of this article shall be used in lieu of strapping.

L. Tracer Wire
a. PVC water main shall be provided with tracer wire, including stubs and nonmetallic services and dead-end mains.

b. Material. Tracer wire shall be single strand, single conductor, insulated copper wire, minimum thickness No. 10 AWG.

c. Installation. Place tracer wire at the springline of the main and tape to the pipe at five-foot intervals. Extend wire up all valve boxes and hydrants terminated in a Bingham & Taylor Pb200NFG12W2T box set behind each hydrant.

d. Testing. The contractor shall test tracer wire for electrical continuity prior to acceptance of the main.

WATER MAIN MATERIALS
A. Water main pipe material shall be ductile iron (DI) or polyvinyl chloride (PVC) pipe conforming to the following:

B. Tests
1. Pipe material delivered for use on this project shall conform to the requirements of the appropriate AWWA and ASTM Specifications noted herein. All pipe shall be marked in accordance with the requirements of the cited Specifications and each load delivered to the job site shall be accompanied by the manufacturer's certification of such compliance. Said certification to be delivered to the Engineer or his representative.

DUCTILE IRON PIPE
A. Ductile iron pipe meeting the requirements of AWWA Standard C151 (ANSI 21.51), cement mortar lined with internal and external bituminous coating and furnished with either push-on or mechanical joints with rubber gaskets. Do not furnish cable bonding or other methods of providing electrical conductivity.
1. Ductile iron pipe shall be furnished for the following minimum thickness classes:
a. Six (6) inch hydrant lead and 8 inch pipe shall be Class 52.

POLYVINYL CHLORIDE PIPE
A. Polyvinyl chloride (PVC) pipe (4 inch through 12 inch diameter) meeting the requirements of AWWA Standard C909, DRI8, with cast iron O.D. and integral elastomeric bell and spigot joints each 10ga Bluetracer wire and tracer wire access boxes.
1. Hydrant leads shall be ductile iron pipe.

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

SITE SPECIFICATIONS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
03/11/2025 RS
ADVANCE PLANS
05/12/2025 -RS
SPEC REVISIONS
05/30/2025 -NK
GEN. PLAN REV.
07/31/2025 -RS
REVISIONS

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FITTINGS (USED WITH DUCTILE IRON AND PVC PIPE)

A. Fittings shall be ductile iron or cast iron, cement mortar lined with internal and external bituminous coating and meeting the requirements of AWWA Standard C110 (ANSI 21.10). Fittings shall be supplied with mechanical joints with rubber gaskets.

1. Ductile iron mechanical joint fittings meeting the requirements of AWWA Standard C153 for "compact fittings", 3" through 24" size, may be used in place of the fittings specified above.

2. All fittings shall be North American made; Star Pipe Products, Tyler/Union and Sigma Corp. ONLY.

B. Bolts

1. All water main nuts and bolts, including connections to mains, fittings, valves and hydrants, shall be stainless steel or Cor-Blue T-Bolts as manufactured by NSS Industries or equal.

VALVES AND VALVE BOXES

A. Resilient-Seated Gate Valves

1. Resilient-seated gate valves shall meet the requirements of AWWA C-509 or AWWA C-515.
   a. Resilient-seated gate valves shall be furnished with mechanical joints with rubber gaskets, cast iron or ductile iron body, bronze mounted, resilient wedge, non-rising stem, "O"-ring stem seals, 2 inch square operating nut opening to the left (counterclockwise) and rated at 200 psi working pressure.

   b. All 4, 6, and 8 inch valves shall be resilient-seated gate valves unless shown otherwise on the Plans.

   c. Resilient-seated gate valves shall be Meuller A2361, (no substitutes).

B. Valve Boxes and Adapters

1. 664s Cast Iron two piece box (American Made)
2. Rubber Valve Box Adapters shall be Valbe Box Adapter II manufactired by Adaptor, Inc. (no substitutes)

C. Tapping Valves and Sleves

1. Tapping sleeves shall be supplied by the manufacturer of the tapping valves.

D. Cutting-In Valves and Sleeves

1. Cutting-in valves shall be similar to the AWWA gate valves specified in Subsection 510.A of the "Special Provisions" except that they shall be provided with special gaskets allowing assembly on various types of pipe.

2. Cutting-in sleeves shall be supplied by the manufacturer of the cutting-in valves.

Repair Clamps

3. Valve Box Depth

a. Valve box depths shown on the Plans are approximate only, unless the cover elevation is indicated. Valve box covers shall be placed to match the existing grade (¼ inch below pavement surface) unless the finished elevation is shown on the Plans.

E. Repair Clamps

1. Use only Smith Blair Clamps with stainless steel bolts and nuts.

F. Valve Boxes and Adapters

1. 664s Cast Iron two piece box (American Made)
2. Rubber Valve Box Adapter shall be Valbe Box Adapter II manufactured by Adaptor, Inc. (no substitutes)

HYDRANTS

A. Standard Hydrant

1. Hydrants shall be A423 Mueller Centurion, conforming to the following specifications: (no alternates allowed)
   a. Hydrants shall be compression type, with 5-1/4 inch bottom valve and 6 inch mechanical joint inlet connection 6" trench depth, 6" MJ Shoe, equipped with cable bonding, "O" -ring packing, safety flange construction, meeting the requirements of AWWA Standard C502 and meeting specifications for 300 PSI test pressure and 150 PSI working pressure.

   b. Hydrants shall have two 2-1/2 inch hose nozzles with National Standard fire hose coupling screw threads and nut type nozzle caps with gaskets and chains and one 5 inch pumper nozzle with STORZ-LOK 125 quick-connect fitting.

   c. Hydrants shall have 1-1/2 inch pentagon operating nut opening to the left (counter-clockwise).

   d. Hydrants, including barrel extensions, shall be painted red. All hydrant parts and extensions must be OM parts.

B. Barrel Extensions

1. Hydrants shall be furnished for 6-1/2 feet of bury unless the Plans show greater burial depths. Use bends in the hydrant lead to bring the hydrant to the proper burial depth. The distance from the ground line to the centerline of the lowest nozzle shall be from 18 to 23 inches.

2. Extensions
   a. Hydrant extensions may be used only where bends cannot be utilized to bring the hydrant to the desired depth and only with the Owner's approval. Hydrant extensions shall be compatible with hydrant barrel and stem sections and shall be installed at the top of the barrel section.

C. Valves and Valve Boxes

1. Hydrant valves and valve boxes shall conform to the requirements for gate valves and valve boxes specified.

D. Hydrant Leads

1. Hydrant leads shall be six (6) inch, Class 53, ductile iron pipe.

2. Restrain hydrants with thrust blocking and by anchoring to the main. Restrain all joints with MEGALUG restrained joints or anchoring pipe and anchoring fittings. Provide concrete thrust blocks for both hydrant and hydrant tee.

3. Restrain one full length of pipe on both sides of the hydrant tee.

E. Hydrant and Auxiliary Valve Locations

1. Place hydrants on the back slopes of ditches at road grade or greater, or on fill slopes within 3' of shoulder edge.

F. Temporary Hydrant Cover

1. Temporarily cover new hydrants during construction with polyethylene bags, securely fastened in place, until after the water main has been tested and placed in service.

WATER SERVICES

A. Installation

1. Water service piping shall be installed in accordance with Chapter 5.5.0 of the "Standard Specifications" and the following provisions:
   a. Do not connect services to the water main until after the main has been tested and a safe water sample obtained.

   b. Insert the corporation stop into the water main while the main is in service and under pressure.

   c. Don't backfill the water service trench until after the service has been checked for leaks and the service piping thoroughly flushed.

2. Cover
   a. Install water service piping with 6-1/2 feet minimum cover except provide 5 feet minimum cover at ditches.

3. Tapping PVC Water Main
   a. PVC water main shall be tapped using double strap service clamps. Corporation stops installed on PVC pipe shall be furnished with AWWA tapered threads conforming to AWWA C-800.

      (1) Service clamps shall have the following minimum total widths:
      (a) 3/4" and 1" services – 2" minimum width.
      (b) 1-1/4", 1-1/2" and 2" services – 3" minimum width.

   b. Taps shall be located at least 2 feet from the ends of pipe sections and at least 18 inches apart measured in a horizontal direction.

   c. Tap PVC pipe using a shell cutter with internal teeth. Do not use a standard drill and tap for direct tapping under pressure.

   d. Place teflon tape on corporation stop threads prior to installation. Corporation stops shall be torqued to a maximum of 35 ft.-lb. or as recommended by the manufacturer.

B. Curb Valve Location

1. Curb valves shall be placed, on the lot, six (6) inches to one (1) foot from the right-of-way line, unless shown otherwise on the Plans; with the residence side of the curb valve capped or plugged.

C. Water Service/Sanitary Sewer (Lateral) Separation

1. Horizontal Separation

   a. Install water services 2 inches or less in diameter at least 30 inches horizontally from sanitary sewer laterals.
      (1) Water services may be installed closer than 30 inches from a sewer lateral if the bottom of the water piping is at least 12 inches above the sewer.

   b. No water service may be installed within 6 inches of a storm sewer.

2. Vertical Separation
   a. Water main and water service piping crossing a sanitary sewer, including laterals, and located within 10 feet of the point of crossing shall be installed:
      (1) At least 12 inches above the top of the sewer, or
      (2) At least 18 inches below the bottom of the sewer from the top of the water piping, or
      (3) Within a waterproof sleeve, made of PVC (ASTM D3034 or ASTM D1785) or other acceptable material per Table 84.30-3 of the Plumbing Code – Department of Commerce.

B. Water Service Piping

1. Tubing
   a. Water service piping for shall be an SDR9 poly ethylene tubing (CTS) with stiffeners and 12ga TracerWire. 2500 PSI AWWA901.

C. Water Service Materials

1. The cost of water services shall include furnishing and installing corporation stop, service clamps if required, curb valve, valve box, and stationary rod as specified herein and as shown on the Plans.
   a. Corporation stops shall be Mueller 1" H-15008 compression fittings.
      (1) Install all stops on PVC pipe with double strap service clamps. Furnish saddles for PVC OD pipe.

   b. Curb valves shall be 1" Mueller H-15155.

   c. Curb boxes shall be extension type with Minneapolis pattern base; 6" Mueller H-10300 with stationary rod #84261.
      (1) Furnish curb boxes with stationary rod for 6-1/2 feet of bury. Stationary rods shall be 1"x39" in length (no alternates allowed)

   d. All water service fittings shall be compression type.

HYDROSTATIC TESTS

A. General Requirements

1. All tests shall be performed as specified in Chapter 4.15.0 of the "Standard Specifications", except that the water main shall pass three consecutive one-hour leakage tests. The City Utility Engineer or his Representative shall be present at all times during testing.

2. The Contractor shall furnish all labor, equipment and material to complete all testing.

3. Temporary Air-Release
   a. Trapped air shall be bled off (by tapping the main) when filling the main with water and/or removed by flushing through hydrants.

   b. Temporary air-release may be provided by tapping 1 inch corporation stops into the high points of pipe or into the plug on dead end lines. After flushing and testing is completed, the temporary taps shall be abandoned in place.

   c. The Contractor shall provide temporary flushing hydrants if required to flush dead end lines.

B. Test Sections

1. The Contractor has the option to test the entire new water main as one continuous test section or in segments per his discretion.

2. Connections to intersecting streets need not be tested, however, the Contractor shall sterilize and flush all connecting mains. The intersecting main(s) shall be subjected to line pressure and any visible defects repaired prior to backfilling.

DISINFECTION

A. General Requirements

1. The water main shall be disinfected in accordance with Section 4.3.12 and Chapter 4.16.0 of the "Standard Specifications".
   a. Amend paragraph 4.16.5 of the "Standard Specifications" to read:

      4.16.5 SAMPLING. The Contractor shall take all necessary samples of the water and provide any equipment necessary to take these samples at no cost to the Owner. The Contractor, accompanied by the Engineer or his representative, shall deliver the samples to an approved laboratory for testing.

B. Safe Samples

1. At least one (1) safe sample must be obtained from each of the segments hydrostatically tested. Additional samples may also be required from:
   a. Representative locations from each of the test sections to establish that all of the mains are free of contamination.

   b. Dead end lines.

   c. Connections to existing mains.

2. Water main segment(s) shall not be placed in service until after safe water sample(s) have been obtained.

C. Procedures for Disinfecting Connections to Existing Mains

The following procedures apply when existing mains are wholly or partially dewatered. Existing mains that are isolated by an existing valve require no disinfection. After the appropriate procedures have been completed, the existing main may be returned to service prior to completion of bacteriological testing to minimize disruption to service.

1. Apply liberal quantities of hypochlorite to wet trenches at or near the connection to the existing main. Use hypochlorite tablets if water is being pumped from the trench to prolong protection as hypochlorite is slowly released as the tablets dissolve.

2. Swab the interior of all pipe and fittings located between the connection to the existing main and the closest new valve (including connection pipe and fittings) with a one percent hypochlorite solution.

3. Flush the connection to the existing main, from both directions toward the connection if valve and locations permit, as soon as the connection has been completed and the nearest new valve installed and secured. Flush through the new main until all discolored water is eliminated.

4. Should the water main connection be severely contaminated by dirty water or other means, the existing main and connection shall be disinfected by slug chlorination in accordance with the procedure specified below:
   a. Continue to isolate the section of contaminated main.

   b. Shut off all service connections.

   c. Place hypochlorite tablets in the connection to the new main.

   d. Flush the main to remove particulates.

   e. Slowly dose the contaminated main with a 300 mg/l free chlorine concentration for a period of at least 15 minutes.

   f. Flush the main until the water is free of noticeable chlorine odor.

   g. Open service connections and return the main to service.

5. Take bacteriological samples to provide a record for determining the effectiveness of the procedure. Samples may be required from both sides of the connection.

If unsatisfactory tests are recorded, the City Utility Engineer will determine the necessary corrective action. Take daily samples until two consecutive safe samples have been recorded.

D. Rechlorination

1. Should any test prove unsatisfactory, the water main shall be sterilized by the Contractor by such methods as he deems necessary and samples taken until acceptable results are obtained.

E. Flushing

1. All water mains, including dead end mains and all hydrants, and all water services shall be flushed. Water services shall be flushed, with a minimum amount of water equivalent to the volume of the service pipe, until the water is visibly clean.
   a. Provisions shall be made to convey water used for flushing or testing to a suitable discharge point without damage to crops or cropland and without disruption of farming operations. No flushing water may be discharged on farmlands.

   b. The Contractor shall use suitable methods for disposing of flushing water to prevent surface erosion.

   c. The Contractor shall provide temporary flushing hydrants as required.

2. Water Furnished By the Village of Williams Bay
   a. Water for testing and flushing will be furnished by the Village of Williams Bay. The Contractor shall notify the Village DPW prior to commencing flushing and shall coordinate his operations with the Village in order not to deplete the water supply. Water usage may be restricted to periods of flow demand (night time or weekend hours) if water usage is high during normal working hours. All flushing of new mains and services shall be done under the direct supervision of the Engineer or his representative.

B. Swabbing Water Main.

1. All piping installed outside of water main test segments shall be disinfected by swabbing with a 1% hypochlorite solution and thoroughly flushed. The entire interior surfaces of all pipes and fittings shall be thoroughly swabbed. The diameter of swabs used in pipes shall match the interior pipe diameter and provide resistance when swabbing the pipes. Pipes shall be swabbed with a pumping motion with all surfaces wiped several times. The Contractor shall use extreme care to insure the cleanliness of all water main materials used.

Additional Construction Recommendations from the amended TSC geotechnical report (dated 8/14/25). These are in addition to the previous requirements and take precedence if and when they are not already implemented:

1. Grading operations shall include the complete stripping of topsoil/root-zone materials and proof-rolling of the exposed soils.

2. Exposed soils shall be reduced in moisture content and/or recompacted to provide a stable base for fill placement and/or pavement construction.

3. Compact all new fill and utility trench backfill to a minimum of 90% Modified Proctor density and compact the upper two feet of below pavement areas to 95% Modified Proctor density.

4. When soft/wet/unsuitable material is encountered in exposed soils, it shall be removed and replaced with dry engineered fill prior to commencing with fill placement.

5. Pavement base course materials shall conform to WisDOT specifications for 1 1/4"-inch dense graded base aggregate. The granular base shall be compacted to 95% Modified Proctor density (ASTM D1557) or 100 percent of the Standard Proctor (ASTM D698) maximum density value.

6. If soft/wet/unstable material is encountered at the base of utility excavations, it shall be removed and replaced with 12 to 24 inches of coarse aggregate backfill or additional bedding material.

7. Utility backfill within roadway areas shall be granular materials conforming to WisDOT specifications section 206 (Granular Backfill) or section 520.2.5.2 (Foundation Backfill).

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

SITE SPECIFICATIONS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS

03/11/2025 RS
FINAL ENGINEERING

05/30/2025 -NK
GEN. PLAN REV.

07/31/2025 -RS
REVISIONS

PROJECT NO.
5536.17

DATE
05/12/2025

SHEET NO.
19 OF 19

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*** PORTIONS OF THIS PLAT ARE NOT ACCURATE UNTIL ANNEXATION OCCURS ***

WILLABAY MEADOWS, A SUBDIVISION

PART OF THE NW 1/4 OF THE NW 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, PART OF NE 1/4 AND NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST, AND PART OF THE SE 1/4 AND SW 1/4 OF THE SE 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, ALL IN THE VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN

GRID NORTH
WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD 83) N. LINE NE 1/4 OF SECTION 6-1-17 BEARS N 88°55'28" E

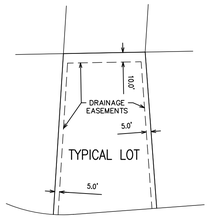
TRANS 233 NOTES

THERE SHALL BE NO IMPROVEMENTS OR STRUCTURES PLACED BETWEEN THE HIGHWAY AND THE SETBACK LINE WITHOUT A SPECIAL EXCEPTION FROM THE DEPARTMENT OF TRANSPORTATION. THIS SHALL BE A RESTRICTION FOR THE BENEFIT OF THE PUBLIC UNDER §236.293, STATS., AND SHALL BE ENFORCEABLE BY THE DEPARTMENT OF TRANSPORTATION.

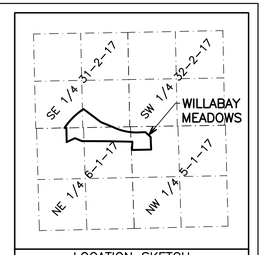
AS OWNER I HEREBY RESTRICT ALL LOTS AND BLOCKS (EXCEPT OUTLOTS 5, 6 AND 7) IN THAT NO OWNER, POSSESSOR, USER, NOR LICENSEE, NOR OTHER PERSON SHALL HAVE ANY RIGHT OF DIRECT VEHICULAR INGRESS OR EGRESS WITH STH '50' AS SHOWN ON THE PLAT; IT BEING EXPRESSLY INTENDED THAT THIS RESTRICTION SHALL CONSTITUTE A RESTRICTION FOR THE BENEFIT OF THE PUBLIC ACCORDING TO §236.293, STATS., AND SHALL BE ENFORCEABLE BY THE DEPARTMENT OF TRANSPORTATION.

THE LOTS OF THIS LAND DIVISION MAY EXPERIENCE NOISE AT THE LEVELS EXCEEDING THE LEVELS IN §TRANS 405.04, TABLE I. THESE LEVELS ARE BASED ON FEDERAL STANDARDS. THE DEPARTMENT OF TRANSPORTATION IS NOT RESPONSIBLE FOR ABATING NOISE FROM EXISTING STATE TRUNK HIGHWAYS OR CONNECTING HIGHWAYS, IN THE ABSENCE OF ANY INCREASE BY THE DEPARTMENT TO THE HIGHWAY'S THROUGH-LANE CAPACITY.

STANDARD DRAINAGE EASEMENT DETAIL
1:75 SCALE



MEADOW DRIVE



LOCATION SKETCH

LINE	BEARING	DISTANCE
L1	S 88°58'05" W	54.02'
L2	S 49°52'08" W	66.73'
L3	N 86°17'17" W	51.39'
L4	S 86°17'17" E	57.53'
L5	N 49°52'08" E	66.73'
L6	N 22°49'44" E	37.48'
L7	S 64°24'20" W	76.02'
L8	S 01°04'32" E	32.39'
L9	N 03°35'16" E	56.08'

NOTE: ALL LOTS 1 THRU 42 SHALL BE SUBJECT TO A 5 FOOT SIDE LOT DRAINAGE EASEMENT TO SERVE THE LOT AND ABUTTING LOTS TO COLLECT RUNOFF AND CARRY TO ESTABLISHED WATERWAYS IN THE REAR YARDS AS WELL AS THE EXISTING STREET DITCHES. REAR YARDS SHALL BE SUBJECT TO A 10 FOOT DRAINAGE EASEMENT.

OUTLOTS 1 AND 2 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AS PUBLIC WATERMAIN EASEMENTS AND WALKING PATH AREAS.

OUTLOTS 3 AND 4 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AS STORM WATER MANAGEMENT AND WALKING PATH AREAS.

OUTLOT 5 SHALL BE OWNED BY THE HOMEOWNER'S ASSOCIATION WITH MAINTENANCE.

OUTLOTS 6 AND 7 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AS STORM WATER MANAGEMENT AREAS.

LEGEND

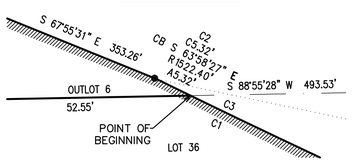
- ○ = FOUND IRON PIPE STAKE, 1 3/8" O.D.
- ● = FOUND IRON REBAR STAKE, 3/4" DIA.
- ⊡ = FOUND COUNTY MONUMENT WITH BRASS CAP
- ⊘ = SET SOLID IRON BAR STAKE, 1 5/16" x 18" x 4.60 lbs/ft
- {XXX} = RECORDED AS

ALL OTHER LOT & OUTLOT CORNERS ARE SET IRON REBAR STAKE, 3/4" x 18" x 1.13 lbs/ft

EASEMENT LEGEND

- XX' U.E. = UTILITY EASEMENT
- XX' S.E. = SANITARY SEWER EASEMENT
- XX' W.E. = WATERMAIN EASEMENT
- XX' D.E. = DRAINAGE EASEMENT
- = WOODLAND PRESERVATION EASEMENT

POINT OF BEGINNING DETAIL



FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT, PO BOX 437
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PROJ. NO.: 5536.17 | DATE: 11/11/2025 | SHEET 1 OF 3

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WILLABAY MEADOWS, A SUBDIVISION

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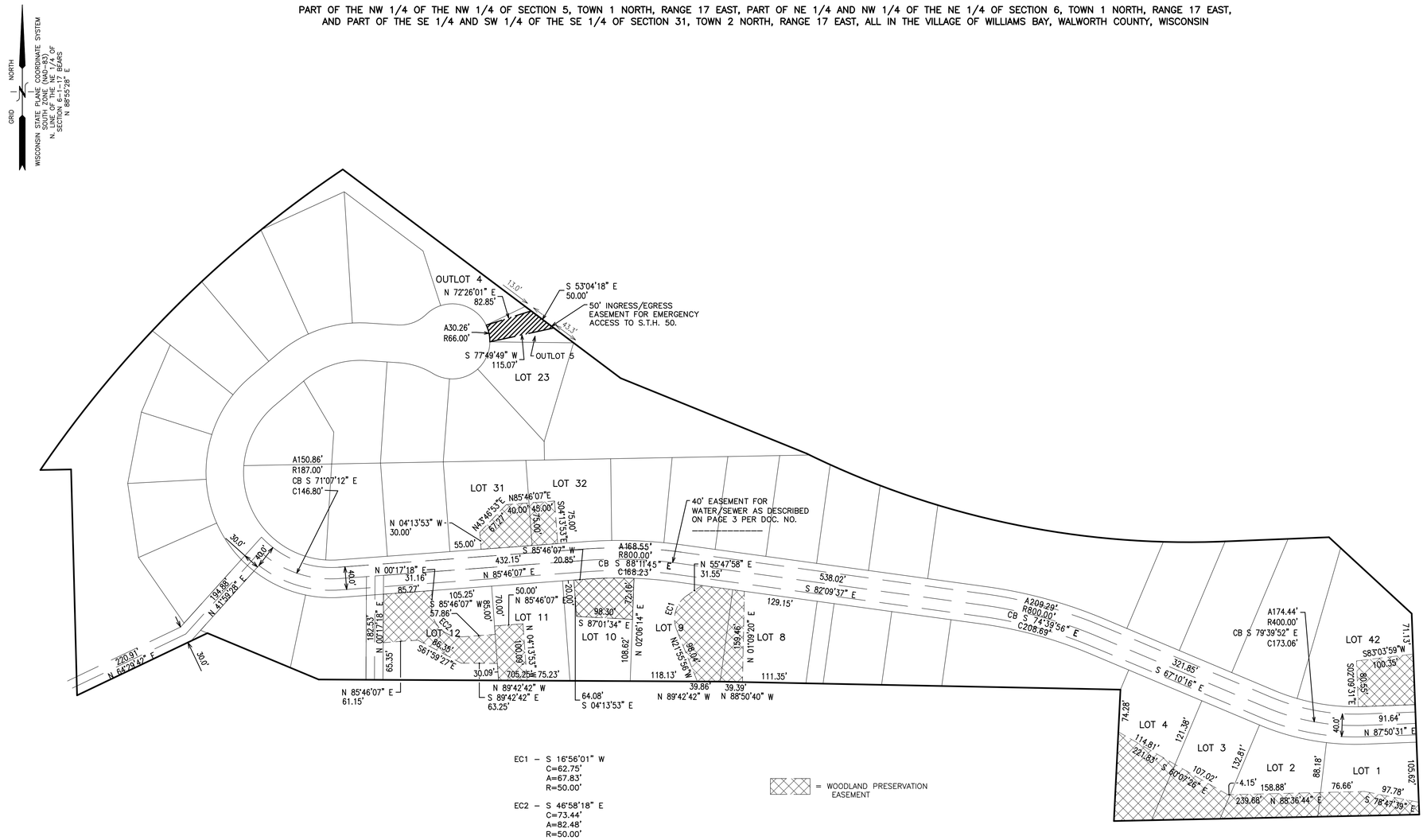

EC1 – S 16°56'01" W
C=62.75'
A=67.83'
R=50.00'

EC2 – S 46°58'18" E
C=73.44'
A=82.48'
R=50.00'

= WOODLAND PRESERVATION EASEMENT

100 50 0 100 200 300 400
MAP SCALE IN FEET – ORIGINAL 1"=100'

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WILLABAY MEADOWS, A SUBDIVISION

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SURVEYOR'S CERTIFICATE

I, CHRISTOPHER A. HODGES, PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT AT THE DIRECTION OF LAND & LAKES DEVELOPMENT CO., FORMERLY KNOWN AS POPLAR RIDGE ESTATE DEVELOPMENT, (OWNER), I HAVE SURVEYED, DIVIDED, AND MAPPED PART OF THE NW 1/4 OF THE NW 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, PART OF NE 1/4 AND NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST, AND PART OF THE SE 1/4 AND SW 1/4 OF THE SE 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, ALL IN THE VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6, S 88DEG 55MIN 28SEC W, 493.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE ALONG SAID HIGHWAY 753.45 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 78DEG 15MIN 08SEC E, 745.78 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG SAID HIGHWAY N 87DEG 40MIN 28SEC E, 182.42 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG SAID HIGHWAY S 47DEG 16MIN 54SEC E, 197.81 FEET TO AN IRON REBAR STAKE FOUND MARKING A POINT ALONG THE WESTERLY RIGHT OF WAY BOUNDARY OF EAST GENEVA STREET; THENCE ALONG SAID STREET S 02DEG 09MIN 29SEC E, 353.43 FEET TO AN IRON REBAR STAKE; THENCE S 88DEG 47MIN 41SEC W, 536.64 FEET TO AN IRON PIPE STAKE FOUND MARKING A POINT ALONG THE BOUNDARY OF WILLABAY WOODS, A SUBDIVISION; THENCE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 02DEG 51MIN 46SEC E, 231.13 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 88DEG 50MIN 40SEC W, 703.54 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 89DEG 42MIN 42SEC W, 705.25 FEET; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 67DEG 21MIN 05SEC W, 211.80 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, S 64DEG 29MIN 42SEC W, 253.70 FEET TO AN IRON PIPE STAKE FOUND MARKING A POINT ALONG THE EASTERLY BOUNDARY OF WILLABAY SHORES CONDOMINIUM; THENCE ALONG THE BOUNDARY OF SAID CONDOMINIUM N 01DEG 31MIN 25SEC W, 396.99 FEET TO AN IRON REBAR STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID CONDOMINIUM, S 88DEG 58MIN 55SEC W, 54.02 FEET; THENCE 753.83 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45DEG 09MIN 54SEC E, 749.25 FEET TO AN IRON REBAR STAKE FOUND MARKING A POINT ALONG THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY S 53DEG 04MIN 18SEC E, 610.59 FEET TO AN IRON REBAR STAKE; THENCE CONTINUE ALONG SAID HIGHWAY S 67DEG 55MIN 31SEC E, 353.26 FEET TO AN IRON REBAR STAKE; THENCE CONTINUE ALONG SAID HIGHWAY 5.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 63DEG 58MIN 27SEC E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 1,237,404 SQUARE FEET (28.41 ACRES) OF LAND, MORE OR LESS.

I ALSO CERTIFY THAT THIS PLAT IS A CORRECT REPRESENTATION OF ALL THE EXTERIOR BOUNDARIES OF THE LAND SURVEYED AND THE SUBDIVISION THEREOF AND THAT I HAVE FULLY COMPLIED WITH THE PROVISIONS OF CHAPTER 236 OF WISCONSIN STATUTES AND THE LAND DIVISION ORDINANCE FOR THE VILLAGE OF WILLIAMS BAY IN SURVEYING, DIVIDING, AND MAPPING THE LAND.

DATED: 11/11/2025

CHRISTOPHER A. HODGES PLS 2760

WISCONSIN — CHRISTOPHER A HODGES — 2760 — PALMYRA WIS. — LAND SURVEYOR

DEDICATED EASEMENT AS SHOWN ON SHEET 1 OF PLAT WITHIN MEADOW DRIVE EXTENDING THROUNG OUTLOT 3 TO WILLABAY SHORES CONDOMINIUM

LAND & LAKES DEVELOPMENT CO., (THE "GRANTOR"), DOES HEREBY GRANT TO THE VILLAGE OF WILLIAMS BAY, (THE "GRANTEE") AND ITS RESPECTIVE SUCCESSORS AND ASSIGNS, AN EASEMENT TO OPERATE, REPAIR, MAINTAIN, REPLACE, AND CONNECT TO EXISTING SANITARY SEWER AND WATER SERVICE IMPROVEMENTS CONSTRUCTED BY THE GRANTOR, OR ITS SUCCESSORS OR ASSIGNS, AND ACCEPTED BY THE VILLAGE, WITHIN 20 FEET ON EITHER SIDE OF THE CENTER LINE OF MEADOWS DRIVE FOR THE PURPOSES OF PROVIDING WATER SERVICE AND SANITARY SEWER SERVICE TO THE WILLABAY MEADOWS SUBDIVISION PROPERTY, AND FURTHER, PROVIDING THE RIGHT TO EXTEND THE WILLABAY MEADOWS PUBLIC UTILITIES FOR WATER AND SANITARY SEWER SERVICE EAST OF GENEVA STREET TO PROPERTY WHICH MAY BE ANNEXED TO THE VILLAGE AT A FUTURE DATE, PROVIDED, HOWEVER, THAT SUCH UTILITIES AND IMPROVEMENTS ARE INSTALLED AND MAINTAINED AS REQUIRED IN THE FINAL ENGINEERING PLANS APPROVED BY THE VILLAGE FOR WILLABAY MEADOWS SUBDIVISION. THIS GRANT IS MADE ONLY TO THE EXTENT THAT THE GRANTOR HAS THE RIGHT TO MAKE SUCH GRANT, AND ONLY TO THE EXTENT NOT ALREADY CONVEYED BY THE DEDICATION OF THE MEADOWS DRIVE PUBLIC RIGHT-OF-WAY. THIS GRANT SHALL NOT BE CONSTRUED TO PERMIT THE VILLAGE OR ITS SUCCESSORS OR ASSIGNS TO CONSTRUCT SANITARY SEWER AND WATER SERVICE IMPROVEMENTS WITHIN WILLABAY MEADOWS SUBDIVISION, EXCEPT AS PROVIDED IN THE FINAL ENGINEERING PLANS, AND AS PROVIDED FOR IN THE DEVELOPER'S AGREEMENT EXECUTED BETWEEN THE PARTIES.

UTILITY EASEMENT PROVISIONS

An easement for electric, gas and communication facilities is hereby granted by

LAND & LAKES DEVELOPMENT CO. , Grantor, to

ALLIANT ENERGY, a Wisconsin corporation, Grantee,

_____, Grantee, and

_____, Grantee

their respective successors and assigns, to construct, install, operate, repair, maintain and replace from time to time, facilities used in connection with overhead and underground transmission and distribution of electricity and electric energy for such purposes as the same is now or may hereafter be used and for sounds and signals. All in over, under, across, along and upon the property shown within those areas on the plat designated as "Utility Easement" and the property designated on the plat for streets and alleys, whether public or private, together with the right to install service connections upon, across, within and beneath the surface of each lot to serve improvements thereon, or on adjacent lots. Also included is the right of access to the easement. Also, the right to trim and cut down trees, brush and roots as may be reasonably required incident to the rights herein given. The Grantees agree to restore or cause to have restored, the property, as nearly as is reasonably possible, to the condition existing prior to such entry by the Grantees or their agents. This restoration, however, does not apply to the initial installation of said underground and/or above ground electrical facilities or communication facilities or to any trees, brush or roots which may be removed at any time pursuant to the rights herein granted. Buildings and planting of trees shall not be placed within the lines marked "Utility Easement" without the prior written consent of Grantees. After installation of any such facilities, the grade of the subdivided property shall not be altered by more than six inches without written consent of Grantees.

The Grant of easement shall be binding upon and inure to the benefit of the heirs, successors and assigns of all parties hereto.

VILLAGE OF WILLIAMS BAY APPROVAL

STATE OF WISCONSIN)
ss
COUNTY OF WALWORTH)

I, TINA KOLLS, BEING THE DULY APPOINTED, QUALIFIED, AND ACTING CLERK OF THE VILLAGE OF WILLIAMS BAY, WISCONSIN, DO

HEREBY CERTIFY THAT THE VILLAGE BOARD OF WILLIAMS BAY, WISCONSIN APPROVED ON _____, 2025, AUTHORIZING ME TO ISSUE A CERTIFICATE OF APPROVAL OF THE FINAL PLAT OF WILLABAY MEADOWS, A SUBDIVISION, LAND & LAKES DEVELOPMENT CO., OWNER.

DATED THIS _____ DAY OF _____, 2025.

_____
TINA KOLLS VILLAGE OF WILLIAMS BAY CLERK

CONSENT OF CORPORATE OWNER

LAND & LAKES DEVELOPMENT CO., FORMERLY KNOWN AS POPLAR RIDGE ESTATES DEVELOPMENT, A COMPANY DULY ORGANIZED AND EXISTING UNDER AND BY VIRTUE OF THE LAWS OF THE

STATE OF _____, OWNER OF THE LANDS DESCRIBED HEREON, DOES HEREBY CERTIFY THAT SAID COMPANY CAUSED THE LAND DESCRIBED ON THIS PLAT TO BE SURVEYED, DIVIDED, MAPPED, AND DEDICATED AS REPRESENTED ON THIS PLAT. THIS PLAT IS REQUIRED BY s.236.10 OR s.236.12 TO BE SUBMITTED TO THE FOLLOWING FOR OBJECTION OR APPROVAL:

DEPARTMENT OF ADMINISTRATION (STATE OF WISCONSIN)
DEPARTMENT OF TRANSPORTATION (STATE OF WISCONSIN)
VILLAGE OF WILLIAMS BAY

IN WITNESS WHEREOF, THE SAID LAND & LAKES DEVELOPMENT HAS CAUSED THESE PRESENTS TO BE SIGNED BY

_____, ITS REPRESENTATIVE, AT _____, _____ THIS _____ DAY OF

_____, 2025.

_____
MARY MARGARET COWHEY LAND & LAKES DEVELOPMENT CO.

STATE OF _____)
ss
COUNTY OF _____)

PERSONALLY CAME BEFORE ME THIS _____ DAY OF _____, 2025, _____, AUTHORIZED REPRESENTATIVE OF THE ABOVE NAMED COMPANY, TO ME KNOWN TO BE THE PERSON WHO EXECUTED THE FOREGOING INSTRUMENT AND TO ME KNOWN TO BE SUCH REPRESENTATIVE OF SAID COMPANY, AND ACKNOWLEDGED THAT THEY EXECUTED THE FOREGOING INSTRUMENT AS SUCH REPRESENTATIVE AS THE DEED OF SAID COMPANY, BY ITS AUTHORITY.

_____

_____
MY COMMISSION EXPIRES

NOTARY PUBLIC, _____, _____

CURVE	TANGENT BEARING-IN	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	TANGENT BEARING-OUT
C1	S 63°52'26" E	1522.40'	28°33'23"	S 78°09'08" E	750.94'	758.77'	N 87°34'11" E
C2	S 63°52'26" E	1522.40'	0°12'01"	S 63°58'27" E	5.32'	5.32'	S 64°04'27" E
C3	S 64°04'27" E	1522.40'	28°21'22"	S 78°15'08" E	745.78'	753.45'	N 87°34'11" E
C4	N 34°12'58" E	1972.41'	21°53'51"	N 45°09'54" E	749.25'	753.83'	N 56°06'49" E
C5	S 67°10'16" E	433.00'	24°59'13"	S 79°39'52" E	187.34'	188.83'	N 87°50'31" E
C6	S 82°09'37" E	767.00'	14°59'21"	S 74°39'56" E	200.08'	200.65'	S 67°10'16" E
C7	N 85°46'07" E	767.00'	12°04'16"	S 88°11'45" E	161.29'	161.59'	S 82°09'37" E
C8	S 49°52'08" W	220.00'	144°06'01"	S 22°10'52" E	418.58'	553.31'	N 85°46'07" E
C9	N 86°17'17" W	220.00'	43°50'35"	S 71°47'26" W	164.27'	168.35'	S 49°52'08" W
C10	S 45°50'28" W	66.00'	47°52'15"	S 69°46'36" W	53.55'	55.14'	N 86°17'17" W
C11	S 58°40'44" E	66.00'	255°28'48"	N 06°25'08" W	104.39'	294.29'	S 45°50'28" W
C12	S 86°17'17" E	132.00'	27°36'32"	S 72°29'00" E	62.99'	63.61'	S 58°40'44" E
C13	N 49°52'08" E	154.00'	43°50'35"	N 71°47'26" E	114.99'	117.84'	S 86°17'17" E
C14	S 85°46'07" W	154.00'	144°06'01"	N 22°10'52" W	293.01'	387.31'	N 49°52'08" E
C15	N 82°09'37" W	833.00'	12°04'16"	N 88°11'45" W	175.17'	175.50'	S 85°46'07" W
C16	N 67°10'16" W	833.00'	14°59'21"	N 74°39'56" W	217.30'	217.92'	N 82°09'37" W
C17	S 87°50'31" W	367.00'	24°59'13"	N 79°39'52" W	158.79'	160.05'	N 67°10'16" W
C18	S 83°18'42" E	433.00'	8°50'47"	S 87°44'06" E	66.79'	66.85'	N 87°50'31" E
C19	S 67°10'16" E	433.00'	16°08'26"	S 75°14'29" E	121.58'	121.98'	S 83°18'42" E
C20	S 87°53'46" E	767.00'	5°44'09"	S 85°01'41" E	76.75'	76.79'	S 82°09'37" E
C21	N 85°46'07" E	767.00'	6°20'07"	N 88°56'11" E	84.76'	84.81'	S 87°53'46" E
C22	S 78°11'29" E	220.00'	16°02'23"	S 86°12'41" E	61.39'	61.59'	N 85°46'07" E
C23	S 51°55'06" E	220.00'	26°16'23"	S 65°03'18" E	100.00'	100.88'	S 78°11'29" E
C24	S 44°05'57" E	220.00'	7°49'09"	S 48°00'32" E	30.00'	30.02'	S 51°55'06" E
C25	S 23°49'46" E	220.00'	20°16'11"	S 33°57'52" E	77.43'	77.83'	S 44°05'57" E
C26	S 03°05'24" E	220.00'	20°44'22"	S 13°27'35" E	79.20'	79.63'	S 23°49'46" E
C27	S 17°38'58" W	220.00'	20°44'22"	S 07°16'47" W	79.20'	79.63'	S 03°05'24" E
C28	S 38°23'21" W	220.00'	20°44'22"	S 28°01'09" W	79.20'	79.63'	S 17°38'58" W
C29	S 49°52'08" W	220.00'	11°28'48"	S 44°07'45" W	44.01'	44.08'	S 38°23'21" W
C30	S 65°30'33" W	220.00'	15°38'25"	S 57°41'21" W	59.87'	60.05'	S 49°52'08" W
C31	S 86°25'01" W	220.00'	20°54'28"	S 75°57'47" W	79.84'	80.28'	S 65°30'33" W
C32	N 86°17'17" W	220.00'	7°17'42"	N 89°56'08" W	27.99'	28.01'	S 86°25'01" W
C33	S 72°02'07" W	66.00'	26°11'39"	S 58°56'18" W	29.91'	30.17'	S 45°50'28" W
C34	N 25°35'40" W	66.00'	82°22'13"	N 66°46'47" W	86.92'	94.88'	S 72°02'07" W
C35	N 00°40'43" E	66.00'	26°16'23"	N 12°27'29" W	30.00'	30.26'	N 25°35'40" W
C36	N 47°29'51" E	66.00'	46°49'08"	N 24°05'17" E	52.44'	53.93'	N 00°40'43" E
C37	S 85°41'00" E	66.00'	46°49'08"	N 70°54'25" E	52.44'	53.93'	N 47°29'51" E
C38	S 58°40'44" E	66.00'	27°00'16"	S 72°10'52" E	30.82'	31.11'	S 85°41'00" E
C39	N 04°28'30" E	154.00'	45°23'39"	N 27°10'19" E	118.84'	122.01'	N 49°52'08" E
C40	N 86°24'44" W	154.00'	90°53'14"	N 40°58'07" W	219.47'	244.29'	N 04°28'30" E
C41	S 85°46'07" W	154.00'	7°49'09"	S 89°40'42" W	21.00'	21.02'	N 86°24'44" W
C42	S 89°14'54" W	833.00'	3°28'47"	S 87°30'31" W	50.58'	50.59'	S 85°46'07" W
C43	N 84°26'29" W	833.00'	6°18'37"	N 87°35'47" W	91.70'	91.74'	S 89°14'54" W
C44	N 82°09'37" W	833.00'	2°16'52"	N 83°18'03" W	33.16'	33.16'	N 84°26'29" W
C45	N 73°51'56" W	367.00'	6°41'40"	N 70°31'06" W	42.86'	42.88'	N 67°10'16" W
C46	S 87°50'31" W	367.00'	18°17'33"	N 83°00'43" W	116.67'	117.17'	N 73°51'56" W
C47	N 34°12'58" E	1972.41'	9°07'40"	N 38°46'48" E	313.90'	314.23'	N 43°20'38" E
C48	N 43°20'38" E	1972.41'	3°33'16"	N 45°07'17" E	122.34'	122.36'	N 46°53'55" E
C49	N 46°53'55" E	1972.41'	4°00'52"	N 48°54'21" E	138.17'	138.19'	N 50°54'46" E
C50	N 50°54'46" E	1972.41'	5°12'03"	N 53°30'48" E	178.98'	179.04'	N 56°06'49" E
C51	S 64°04'27" E	1522.40'	1°30'06"	S 64°49'30" E	39.90'	39.90'	S 65°34'34" E
C52	S 65°34'34" E	1522.40'	3°34'54"	S 67°22'01" E	95.15'	95.17'	S 69°09'28" E
C53	S 69°09'28" E	1522.40'	4°01'35"	S 71°10'15" E	106.96'	106.98'	S 73°11'03" E
C54	S 73°11'03" E	1522.40'	15°09'02"	S 80°45'33" E	401.39'	402.56'	S 88°20'04" E
C55	S 88°20'04" E	1522.40'	4°05'45"	N 89°37'03" E	108.81'	108.83'	N 87°34'11" E

CURVE DATA TABLE

WALWORTH COUNTY TREASURER'S CERTIFICATE

STATE OF WISCONSIN)
ss
COUNTY OF WALWORTH)

I, VALERIE ETZEL, BEING THE DULY ELECTED, QUALIFIED, AND ACTING TREASURER OF WALWORTH COUNTY, WISCONSIN, DO HEREBY CERTIFY THAT THE RECORDS IN MY OFFICE SHOW NO UNREDEEMED TAX SALES AND NO UNPAID TAXES OR SPECIAL ASSESSMENTS

AS OF _____ AFFECTING THE LANDS INCLUDED IN THE PLAT OF WILLABAY MEADOWS, A SUBDIVISION.

DATED THIS _____ DAY OF _____, 2025.

_____
VALERIE ETZEL WALWORTH COUNTY TREASURER

VILLAGE OF WILLIAMS BAY TREASURER'S CERTIFICATE

STATE OF WISCONSIN)
ss
COUNTY OF WALWORTH)

I, JENNIFER WIESE, BEING THE DULY ELECTED, QUALIFIED, AND ACTING TREASURER OF THE VILLAGE OF WILLIAMS BAY, WISCONSIN, DO HEREBY CERTIFY THAT THE RECORDS IN MY OFFICE SHOW NO UNREDEEMED TAX SALES AND NO UNPAID TAXES OR SPECIAL

ASSESSMENTS AS OF _____ AFFECTING THE LANDS INCLUDED IN THE PLAT OF WILLABAY MEADOWS, A SUBDIVISION.

DATED THIS _____ DAY OF _____, 2025.

_____
JENNIFER WIESE VILLAGE TREASURER

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT, PO BOX 437
ELKHORN, WISCONSIN 53121
PHONE: (262) 723-2098
FAX: (262) 723-5886

PROJ. NO.: 5536.17 | DATE: 11/11/2025 | SHEET 3 OF 3

X:\PROJECTS\5536\5536_17\ACAD\5536_17 Final Plat.dwg

Engineer's Comments and Requested Changes

Willabay Meadows Subdivision
November 6, 2025

Developer's Responses dated November 13, 2025

Each item listed in the Engineer's Review Comments dated November 6, 2025 is presented below in **bold**, followed by the Developer's Response.

We completed a review of the following attached documents, prepared by Farris, Hansen & Associates, related to a proposed residential subdivision near the intersection of East Geneva Street and State Highway 50:

- **Final Engineer Plans – Willabay Meadows, a Subdivision, revisions dated 09/23/25**
- **Stormwater Management Plan (SWMP) – Willabay Meadows, dated 09/19/2025 (Cover Page Only) [**Note: The entire 236-page plan was included in the Dropbox link provided to Baxter Woodman and the Village.]
- **Plat– Willabay Meadows, a Subdivision, revisions dated 09/09/2025**

Please submit revised documents with the following modifications prior to planning commission:

1. **Final versions of the documents listed above in paper and digital formats, bearing the preparing engineer's seal and signature of the cover sheet.**

   Response: The paper formats have been signed and sealed by either the engineer or surveyor, as appropriate.

   The following are transmitted:

   Paper Documents delivered by Farris Hansen & Associates (FHA) to Village:

   This memo
   1 full size set of engineering drawings, cover sheet signed and sealed by engineer
   1 full size paper version of the Final Plat, signed and sealed by the surveyor
   1 Storm Water Management Plan, cover sheet signed and sealed by engineer

   Paper Documents delivered by Land and Lakes Co. (LALC) via Federal Express to Village:

   10 copies of this memo
   10 copies 11 x 17 copies of the Final Plat
   10 copies 11 x 17 of the engineering plan set

   Digital Documents delivered to both Village and Baxter Woodman (BW):

   FHA is providing a digital link to all documents via DropBox

2. **Show the location(s) of the anti-tracking mat on the erosion control/grading plans.**

   Response: Anti-tracking mat is now labeled on Sheets 1, 2, 3 and 4.

3. **SWMP: Remove the offsite drainage areas from the pre-development peak rate totals, so the total area analyzed to establish them under both conditions is similar.**

   Response:

   The revised SWMP submitted to the Village meets all Village ordinance requirements. The SWMP is revised as follows: 1) the on-site drainage areas and the off-site drainage area are included in both the pre- and post- construction models, therefore, the areas analyzed pre- and post- construction are identical; and 2) the post-construction non-detained area of 3.22 acres consists of 2.19 acres of undisturbed woodland conservation easements (CN 55) and 1.03 acres of residential lots over 1/3 acre (CN 72), therefore, the non-detained area in the post-construction model is conservatively set at composite CN 62.

4. **Correct the differing invert elevations shown for sanitary manhole 4 on sheets 7 and 8.**

   Response: The incorrect invert shown in the profile view on Sheet 8 has been corrected**.**

5. **Correct the primary outlet culvert diameter in the biofiltration basin 4 cross section to 8-inch.**

   Response: The culvert diameter is corrected from 12 inches to 8 inches in the cross section view on Sheet 10.

6. **On the Turfstone Pavers Emergency Access Detail, show an aggregate sub-base of at least 12-inches and an aggregate base of at least 6-inches (18-inches total) to meet the recommendations of the paver manufacturer.**

   Response: The total sub-base and aggregate base are increased to 18 inches in the detail shown on Sheet 14**.**

7. **Chage the roadway crossing culverts near STA 0+75 and STA 15+75 to 18-inch diameter (or 18-inch diameter equivalent) to match the sizing calculations provided.**

   Response: These two culverts are increased corrected from 12" to 18" on Sheets 5 and 6.

8. **Lower roadway crossing culverts as needed to provide a minimum of 14-inches cover and be below the pavement section.**

   Response: All five culverts have been lowered. The three western culverts were lowered by 1 2/10 feet; the two eastern culverts were lowered by 2/10 feet.

9. **Provide a status update for the following:**

   a. ***WDNR NOI permit.***

Response: Permit WP-ADR-SE-2-23-65-X03-22T15-56-31 is approved. The NOI application is prepared but cannot be processed until the property is annexed.

b. WDOT Permit.

Response: WDOT has approved the permit in concept and has reviewed the engineering and plat. All their comments have been incorporated. The WDOT permit cannot be issued until after the property is annexed.

c. WDNR water main and sanitary sewer extension permits

Response: The WDNR permit application has been prepared but cannot be processed until after the property is annexed.

d. Recorded copies of the access, water main, and sanitary sewer easements needed for this development that are not part of the plat.

Response: The Meadow Drive R.O.W. is depicted on the Final Plat to be dedicated to the Village. Additionally, a 40' wide easement for water and sanitary sewer service on either side of the centerline of Meadow Drive is granted on the Final Plat with further description on Page 3 of the Final Plat. The following easements are depicted within the Note on Page 1 of the Final Plat: (i) drainage easements on lots 1-42; (ii) watermain and walking path easements on Outlots 1 and 2; (iii) stormwater management and walking path easements on Outlots 3 and 4; (iv) stormwater management easements on Outlots 6 and 7. The Final Plat on Page 1 also establishes the following: 50' Emergency Access Easement, (ii) drainage easements, (iii) access easements, (iv) landscaping easements, (v) conservation easements, (vi) walkway easements, (vii) sanitary easements; and (viii) utility easements.

The Non-Pedestrian Walkway Easement from Willabay Shores Condominium Association; Non-Pedestrian Walkway Easement Agreement from Wisconsin Power and Light, and Utility Easement Agreement (Sanitary Easement from Willabay Shores Condominium Association are all referenced on the face of the Final Plat. These documents have been approved by the Village and executed by the requisite parties with originals held by the Developer.

Section 2.4. F.1 of the Development Agreement requires that the easements be recorded prior to recordation of the Final Plat. This will occur in accordance with detailed escrow instructions. This mechanism has been reviewed and approved by the Village attorney.

e. Recorded copy of the easement needed to extend water and sanitary sewer to the property east *if the plat for this development is not recorded (emphasis added)*.

Response:

This Item 9.e. as drafted requests recording of the easement *regardless of approval and recording of* the Final Plat. This request is outside the scope of the engineer's review; was not negotiated into nor made a requirement of the Development Agreement; and would constitute an unlawful taking of Developer's real property interest without compensation. A request for additional consideration from the Developer after execution of the Developer's Agreement is a violation of its contractual duty of good faith and fair dealing. If the Village is currently in

discussions with third parties about connecting to the sewer and water improvements to be constructed for this subdivision, Developer requests that the Village consider recapture provisions for the Developer's costs of installing the same. However, even in that instance, the Village cannot deny or otherwise delay the approval of the Final Plat because of their desire for additional consideration from the Developer.

The requested water and sewer easement is provided on the Final Plat as referenced on Page 1 and Page 2 and further described on Page 3. The Village is also receiving a dedication of Meadow Drive, which grants fee simple title to the right-of-way, including rights to extend the use of the underlying water and sewer in accordance with the Developer's Agreement. As required in Section 2.4.Q of the Development Agreement the easement provides that the Village may connect future developments located to the east of Geneva Street to the Willabay Meadows sewer and water systems. The easement will be created upon Developer's recordation of the Final Plat.

BAXTER & WOODMAN Consulting Engineers

Memo

To: Allison Schwark, Zoning Administrator
Village of Williams Bay
250 Williams Street
Williams Bay, WI 53191
Delivered to: zoning@vi.williamsbay.wi.gov

Date: November 19, 2025
From: Douglas R. Snyder, PE
Project No.: 0210482

Subject: Willabay Meadows Subdivision – Conditional Approval Recommendation

We completed a review of the following attached documents, prepared by Farris, Hansen & Associates, for the proposed residential subdivision at the intersection of East Geneva Street and State Highway 50:

- Final Engineer Plans – Willabay Meadows, a Subdivision, revisions dated 11/08/25
- Stormwater Management Plan (SWMP) – Willabay Meadows, revised dated November 2025 (Cover Page Only)
- Plat– Willabay Meadows, a Subdivision, revisions dated 11/11/2025

We recommend approval of the documents contingent on receipt of the following items:

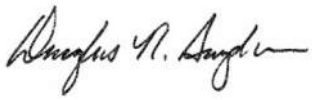
- WDNR NOI permit.
- WDOT approval for the emergency access to STH 50 and the intersection of Geneva Street and STH 50.
- WDNR water main and sanitary sewer extension permits.
- Recorded copies of the access, water main, and sanitary sewer easements needed for this development that were not included on the plat.
- A recorded copy of the easement needed to extend water and sanitary sewer to Geneva Street if the plat for this development is not recorded. This is a requirement of the developer agreement. It can be vacated at the time of recording of the plat.

Our review did not include field verification of existing conditions, elevations, grades and/or topography as shown on the plans. The developer and their consultants have the ultimate responsibility for the correct representation of existing field conditions, delineation of all recorded property lines and easements, as well as providing a design that complies with Village Ordinances and Standards.

Please call 262-492-1462 if you have any questions.

Sincerely,

BAXTER & WOODMAN, INC.
CONSULTING ENGINEERS



Douglas R. Snyder, P.E.

Copy by email to:

David Lothspeich, Village Administrator
Mary Margaret Cowhey, Land and Lakes Company
Dave Patzelt, Shodeen Group
Warren Hansen, Farris, Hansen & Associates

DRS/JDS

Attachments

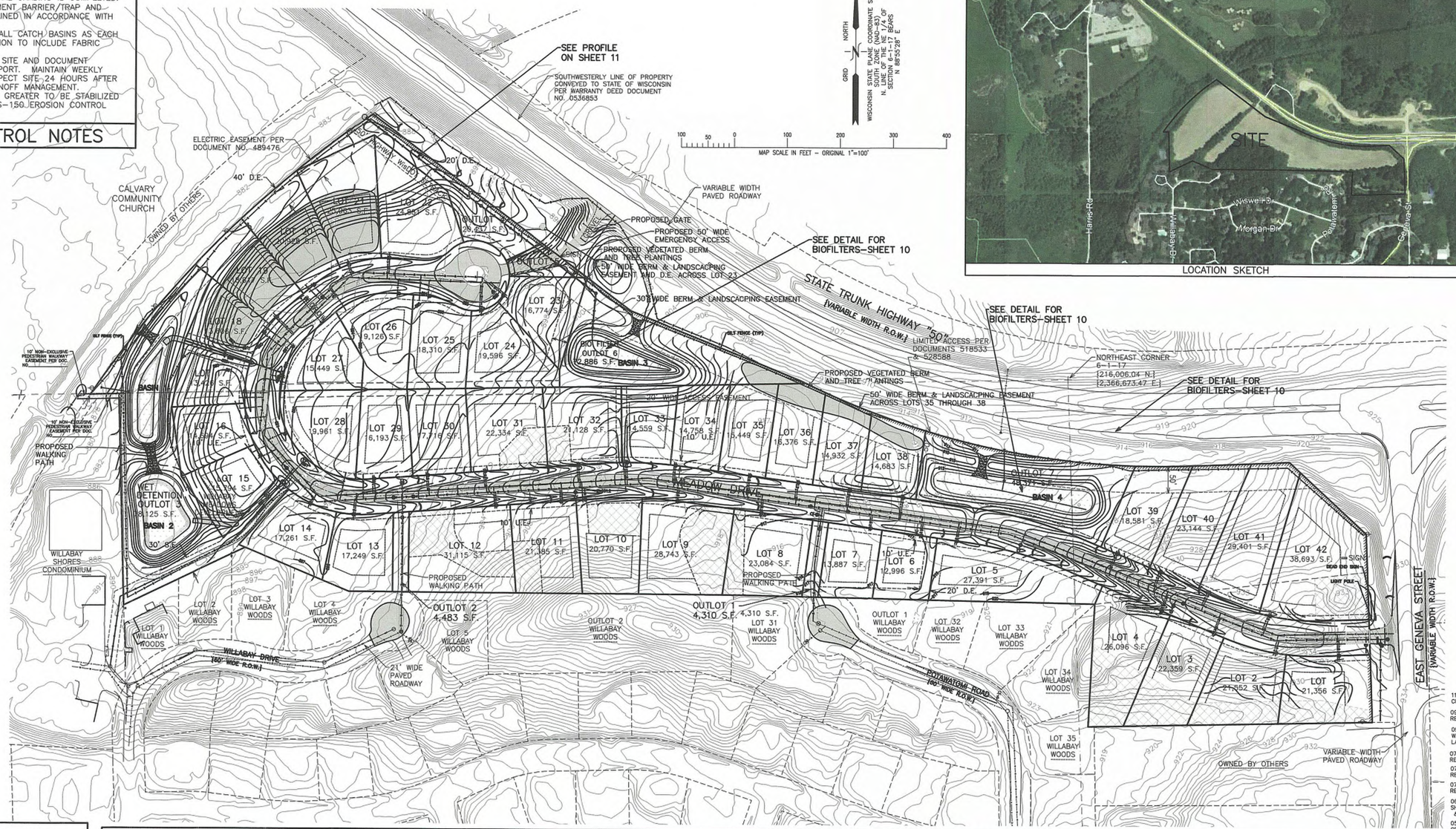
WILLABAY MEADOWS, A SUBDIVISION

SITE, GRADING, DRAINAGE, SANITARY SEWER, WATER MAIN, AND EROSION CONTROL PLANS

PART OF NE 1/4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN

1. INLET PROTECTION TO BE INSTALLED IN EXISTING CURB INLET STRUCTURES AND MAINTAINED THROUGHOUT DURRATION OF CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF LOCAL EROSION CONTROL PLANS AND/OR ORDINANCES.
3. INSPECT SWALES TO MEET SPECIFICATIONS ON PLAN AND WDNR TECHNICAL STANDARDS ON AN ON-GOING BASIS.
4. SEEDING AND EROSION CONTROL MATTING AS SPECIFIED ON PLAN FOR TEMPORARY SEDIMENT TRAP AND SWALES SHALL BEGIN WITHIN 7 DAYS AFTER FINAL GRADING IS COMPLETED.
5. SILT FENCE TO ACT AS A SEDIMENT BARRIER/TRAP AND SHALL BE CLEANED AND MAINTAINED IN ACCORDANCE WITH WDNR TECHNICAL STANDARDS.
6. PROVIDE INLET PROTECTION AT ALL CATCH BASINS AS EACH IS INSTALLED. INLET PROTECTION TO INCLUDE FABRIC BARRIERS UNDER CASTINGS.
7. INSPECT EROSION CONTROL ON SITE AND DOCUMENT FINDINGS IN AN INSPECTION REPORT. MAINTAIN WEEKLY INSPECTION SCHEDULE AND INSPECT SITE 24 HOURS AFTER EVERY RAINFALL EVENT FOR RUNOFF MANAGEMENT.
8. ALL DISTURBED SLOPES 3:1 OR GREATER TO BE STABILIZED WITH NORTH AMERICAN GREEN S-150 EROSION CONTROL BLANKET.

EROSION CONTROL NOTES



LOCATION SKETCH

1. REMOVE ALL BRUSH AND SCRUB TREES PRIOR TO STRIPPING OF TOPSOIL.
2. TOPSOIL STOCKPILE SHALL BE LOCATED WHERE SHOWN ON PLAN. INSTALL TEMPORARY SILT FENCE AROUND ENTIRE PERIMETER OF STOCKPILE PER WDNR TECHNICAL STANDARDS. SOIL LEFT UNDISTURBED FOR 14 DAYS MUST BE SEEDED AND STABILIZED.
3. ALL FILL PLACED SHALL BE ON PREPARED LEVELED SUBSOIL WITH FILL PLACED IN COMPACTED 8" TO 12" LIFTS BY DOZER AND SHEEPSFOOT COMPACTOR.
4. ANY DISTURBED OR DAMAGED ROADWAY SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
5. EAST GENEVA STREET TO BE KEPT FREE OF DIRT, MUD, DEBRIS, ETC. AT ALL TIMES.
6. ALL SITE CLEANING, EXCAVATION, GRADING, COMPACTION, SUBGRADE PREPARATION, SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE APPLICABLE SECTIONS OF "STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION," 2016 EDITION, STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE REQUIREMENTS OF ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL ORDINANCES.

GENERAL NOTES

SHEET 1	–	COVER
SHEETS 2	–	OVERALL SITE PLAN
SHEET 2A	–	OVERALL BUILDING GRADE CONCEPTS
SHEETS 3	–	GRADING (STA 0+00 – 12+00)
SHEET 3A	–	BUILDING GRADE CONCEPTS (STA 0+00 – 12+00)
SHEETS 4	–	GRADING (STA 12+00 – 28+00)
SHEET 4A	–	BUILDING GRADE CONCEPTS (STA 12+00 – 28+00)
SHEET 5	–	SEWER/WATER PLAN & PROFILE (STA 0+65 – 10+00
SHEET 6	–	SEWER/WATER PLAN & PROFILE (STA 10+00 – 20+00)
SHEET 7	–	SEWER/WATER PLAN & PROFILE (STA 20+00 – 28+00)
SHEET 8	–	PLAN & PROFILE SOUTH
SHEET 9	–	STORMWATER BASINS OUTLOT 3
SHEET 10	–	STORMWATER BASINS OUTLOT 6 & 7
SHEET 11	–	PLAN & PROFILE FOR STORM EASEMENTS
SHEETS 12 – 14	–	CONSTRUCTION DETAILS
SHEETS 15 – 16	–	ROAD CROSS SECTIONS
SHEETS 17 – 19	–	SPECIFICATIONS

WISCONSIN WARREN E. HANSEN, JR. E-14435 DELAVAN REGISTERED PROFESSIONAL ENGINEER
11/18/2025

INDEX OF SHEETS

1. OBTAIN REQUIRED NR 216 PERMIT FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES BEFORE START OF ANY LAND DISTURBING ACTIVITY ON SITE. (BY ENGINEER)
2. HOLD PRE-CON TO ADDRESS ANY ISSUES WITH PLAN AND SEQUENCE. (BY ENGINEER)
3. INSTALL ALL APPROPRIATE EROSION CONTROL MEASURES ON SITE INCLUDING TEMPORARY SILT FENCE, STONE TRACKING PAD PER WDNR TECHNICAL STANDARDS.
4. BASINS SHALL BE PARTIALLY DUG AND USED AS TEMPORARY SEDIMENT TRAP. SWALES FROM SITE GRADING AREAS SHALL BE CREATED TO DIVERT RUNOFF WATERS AS MUCH AS POSSIBLE TO THE BASINS DURING EXCAVATION AND GRADING.
5. CLEAR AND GRUB ON SITE AREAS NECESSARY TO CONSTRUCT ROADWAY AND BASINS (SEE SPECIFICATIONS).
6. STRIP TOPSOIL FROM ACCESS ROADS AND IN PLANNED WORK AREAS ALONG WITH TEMPORARY SEDIMENT BASINS. STOCKPILE WHERE SHOWN ON PLAN. INSTALL TEMPORARY SILT FENCE AROUND ENTIRE PERIMETER OF STOCKPILE PER WDNR TECHNICAL STANDARDS. SOIL LEFT UNDISTURBED FOR 7 DAYS MUST BE SEEDED AND STABILIZED.
7. IMPORT FILL, PLACE AND COMPACT TO SUBGRADES.
8. PROVIDE FOR ALL SITE CUTS AND DISPOSAL OF MATERIAL IN FILL LOCATIONS.
9. CONSTRUCT ALL PUBLIC SEWER AND WATER AS SHOWN IN VILLAGE OF WILLIAMS BAY STANDARDS AND SPECIFICATIONS INCLUDING SERVICE LATERALS AND ALL APPURTENANCES.
10. GRADE AND COMPACT ROAD SUBGRADES AND PLACE CRUSHED STONE BASE ALLOWING FOR FUTURE 2" OF FINAL BASE BEFORE FIRST LEFT OF PAVEMENT.
11. STABILIZE ALL OTHER EXPOSED SOIL AREAS WITH PROPER SEEDING AND EROSION MATTING PER WDNR TECHNICAL STANDARDS WITHIN 7 DAYS OF FINAL GRADING.
12. COMPLETE FINAL GRADING OF DRAINAGE SWALES. INSPECT SWALES TO MEET SPECIFICATIONS ON PLAN AND WDNR TECHNICAL STANDARDS WASTING EXCESS SITE CUT IN FILL AREAS OF THE PROPERTY.
13. SEEDING AND EROSION MATTING AS SPECIFIED ON PLAN FOR TEMPORARY SEDIMENT BASINS & DRAINAGE SWALES SHALL BEGIN WITHIN 7 DAYS AFTER FINAL GRADING IS COMPLETED.
14. COMPLETE EXCAVATION OF BASINS. STABILIZE AS GRADES ARE FINALIZED.
15. ROUGH GRADE PROPOSED ROADS.
16. INSTALL CULVERTS AND END SECTIONS.
17. FINE GRADE ROAD SUBGRADES.
18. INSTALL ROAD BASE COURSE. ROAD SLOPES UP TO 10 PERCENT SHALL BE COMPLETED WITHIN 2.5 MONTHS OF INITIAL DISTURBANCE. ROAD SLOPES 10 PERCENT OR GREATER SHALL BE COMPLETED WITHIN 1 MONTH OF INITIAL DISTURBANCE.
19. COMPLETE CONSTRUCTION OF ALL ROADS BY INSTALLING BINDER PAVEMENT SURFACE COURSE MAY BE DELAYED UP TO 12 MONTHS.
20. RESTORE ALL REMAINING DISTURBED AREAS BY SEEDING WITH MULCH OR MATTING AS SHOWN.
21. IF SEDIMENT HAS ACCUMULATED WITHIN THE BASIN DURING CONSTRUCTION IT SHALL BE REMOVED AND PROPERLY DISPOSED OF ONSITE.
22. ONCE THE PROJECT IS NEARING COMPLETION AND ALL SURFACES ARE STABILIZED OR FINISHED, THE TEMPORARY BASINS SHALL BE CLEANED, CUT TO FINAL GRADES INCLUDING ALL OF THE FINAL SEEDING AND STABILIZATION WITH OUTFALL ADJUSTMENTS.
23. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON FINAL STABILIZATION OF DISTURBED SURFACES ONLY AFTER VEGETATION HAS 70% GROW-IN COVERAGE.

NOTE: ANY CHANGES TO OR VARIANCE OF SITE PLAN AND/OR CONSTRUCTION SEQUENCE DUE TO CONSTRUCTION MEANS AND METHODS SHOULD BE APPROVED BY THE ENGINEER AND OWNER PRIOR TO IMPLEMENTATION. THE ENGINEER SHALL NOTIFY THE DEPARTMENT OF NATURAL RESOURCES OF ANY CHANGES TO THE PLANS AT LEAST 5 DAYS PRIOR TO FIELD IMPLEMENTATION.

SEQUENCE OF CONSTRUCTION

WILLABAY MEADOWS
FINAL ENGINEERING PLANS
VILLAGE OF WILLIAMS BAY
WALWORTH COUNTY, WI

COVER SHEET

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
11/08/2025 –RS CULVERTS
09/23/2025 –RS REVISIONS
09/19/2025 –RS WATER MAIN LABELING
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS
07/18/2025 –RS REVISIONS
06/13/2025 –RS SHEETS 2A, 3A, & 4A
05/30/2025 –NK GEN. PLAN REV.
03/03/2022 – TS ADVANCE
04/08/2022 – TS ADVANCE
12/22/2022 – TS ADD SOIL BORING INFO
02/08/2023 EMERGENCY ACCESS
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02/23/2024 –TS ADVANCE
06/10/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/13/2025 –RS PLAN & PROFILE
05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 1 OF 19

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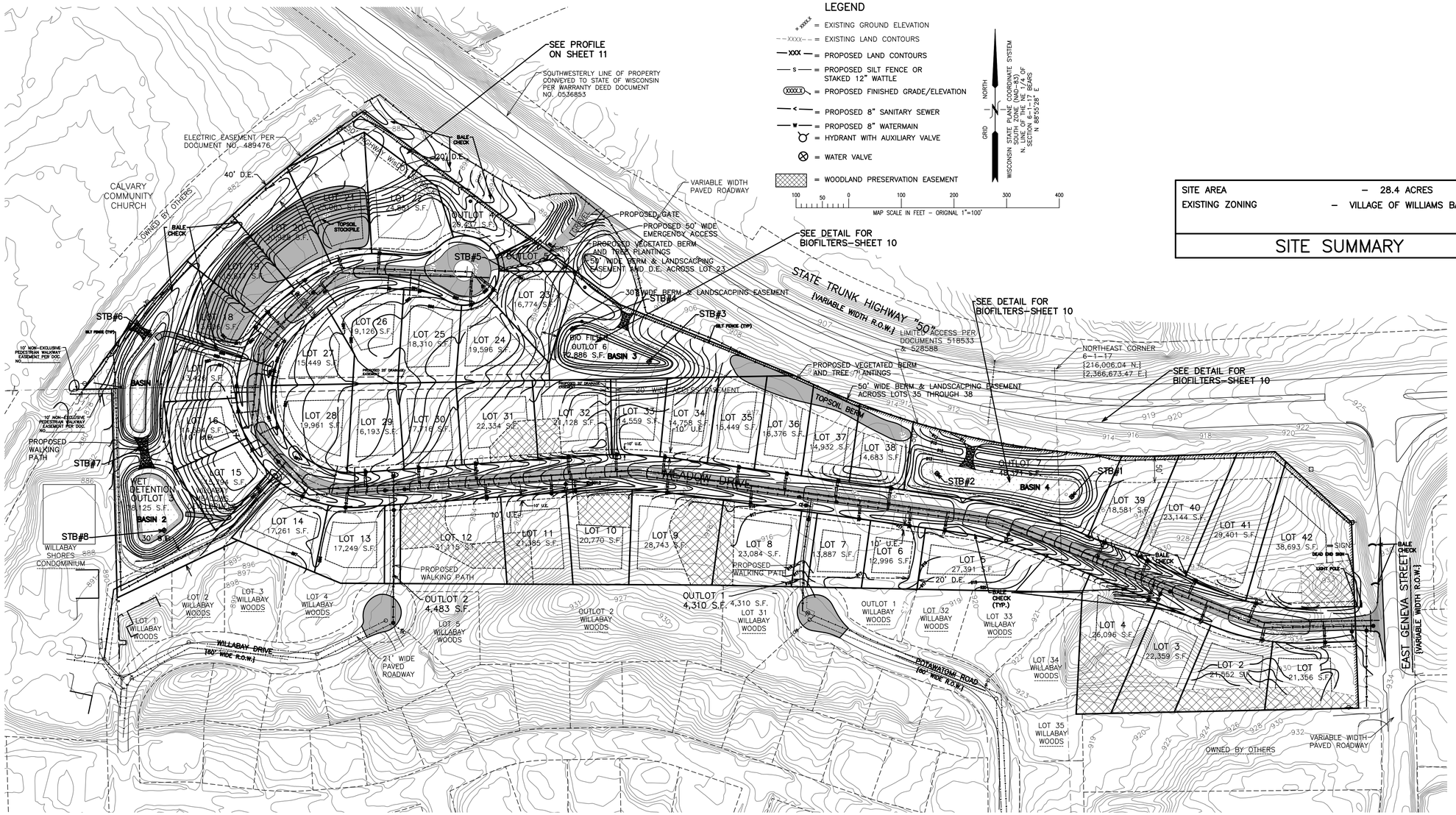
WILLABAY MEADOWS, A SUBDIVISION
FINAL ENGINEERING PLANS

PART OF NE 1/4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN



LEGEND

- x XXX.X = EXISTING GROUND ELEVATION
- XXXX = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- XXX.X = PROPOSED FINISHED GRADE/ELEVATION
- S = PROPOSED 8" SANITARY SEWER
- W = PROPOSED 8" WATERMAIN
- = HYDRANT WITH AUXILIARY VALVE
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

GRID NORTH — WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD-83) N. LINE OF THE NE 1/4 OF SECTION 6-1-17 BEARS N 88°55'26" E

100 50 0 100 200 300 400
MAP SCALE IN FEET – ORIGINAL 1"=100'

SITE AREA	– 28.4 ACRES
EXISTING ZONING	– VILLAGE OF WILLIAMS BAY SF-3

SITE SUMMARY

SOIL BORINGS

SB#1 GROUND=916.23

0–10"	SILTY CLAY LOAM
10"–43"	SILTY CLAY LOAM
43"–99"	GRAVELLY SANDY CLAY LOAM
99"–148"	GRAVELLY SANDY LOAM

SB#2 GROUND=912.39

0–11"	SILTY CLAY LOAM
11"–42"	SILTY CLAY LOAM
42"–91"	SILT CLAY LOAM
91"–147"	GRAVELLY SANDY CLAY LOAM

SB#3 GROUND=906.40

0–10"	SILTY CLAY LOAM
10"–60"	SILTY CLAY LOAM
60"–90"	GRAVELLY SANDY CLAY LOAM
90"–149"	GRAVELLY SANDY LOAM

SB#4 GROUND=901.09

0–9"	SILTY CLAY LOAM
9"–40"	SILTY CLAY LOAM
40"–96"	GRAVELLY SANDY CLAY LOAM
96"–10"	GRAVELLY SANDY LOAM
110"–130"	SILTY CLAY LOAM

SB#5 GROUND=896.69

0–14"	SILT LOAM
14"–47"	CLAY LOAM
47"–83"	SANDY CLAY LOAM
83"–117"	GRAVELLY SANDY LOAM
117"–150"	SANDY CLAY LOAM

SB#6 GROUND=880.22

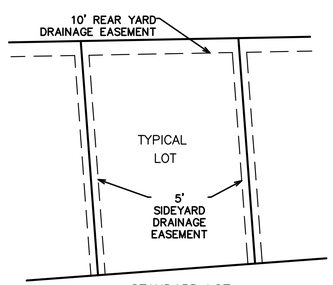
0–13"	SILT LOAM
13"–92"	GRAVELLY SANDY CLAY LOAM
92"–114"	GRAVELLY SANDY LOAM
114"–130"	SANDY CLAY LOAM

SB#7 GROUND=884.78

0–7"	SILTY CLAY LOAM
7"–30"	SILTY CLAY LOAM
30"–38"	GRAVELLY SANDY CLAY LOAM
38"–121"	GRAVELLY SANDY CLAY LOAM
121"–150"	GRAVELLY LOAMY SAND

SB#8 GROUND=888.47

0–9"	SILTY CLAY LOAM
9"–30"	SILTY CLAY LOAM
30"–58"	GRAVELLY SANDY CLAY LOAM
58"–144"	GRAVELLY SANDY CLAY LOAM



STANDARD LOT DRAINAGE EASEMENT DETAIL

NOTE!:

Contours for finished grading shown are not fully accurate for ditch grading on Meadow Drive because of the plan scale. Ditch shall be required to be a minimum of 2' in depth from finish shoulder grade as per standard cross sections shown.

11/08/2025 –RS CULVERTS
09/23/2025 –RS REVISIONS
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS
07/18/2025 –RS REVISIONS
06/13/2025 –RS SHEETS 2A, 3A, & 4A
05/30/2025 –NK GEN. PLAN REV.

REVISIONS
03/03/2022 – TS ADVANCE
04/08/2022 – TS REVISIONS
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02/23/2024 –TS ADVANCE
06/10/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/14/2025 –RS PLAN & PROFILE
05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 2 OF 19

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

OVERALL SITE GRADING

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

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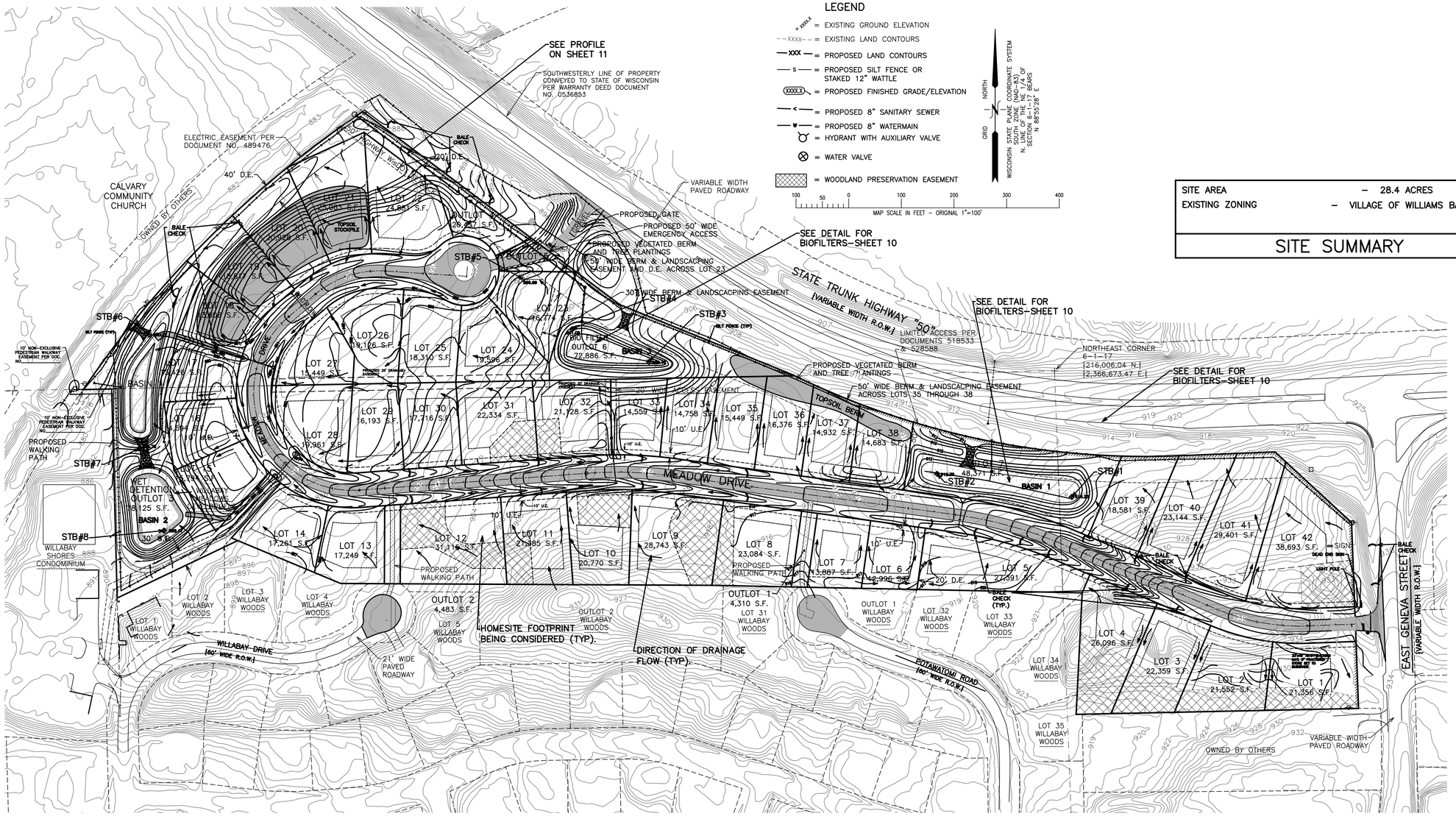
WILLABAY MEADOWS, A SUBDIVISION
FINAL ENGINEERING PLANS

PART OF NE 1/4 & NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST
, VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN



SITE AREA	– 28.4 ACRES
EXISTING ZONING	– VILLAGE OF WILLIAMS BAY SF–3

SITE SUMMARY

NOTE!:

Contours for finished grading shown are not fully accurate for ditch grading on Meadow Drive because of the plan scale. Ditch shall be required to be a minimum of 2' in depth from finish shoulder grade as per standard cross sections shown.

SOIL BORINGS

SB#1		SB#2		SB#3	
0–10"	SILTY CLAY LOAM	0–11"	SILTY CLAY LOAM	0–10"	SILTY CLAY LOAM
10"–43"	SILTY CLAY LOAM	11"–42"	SILTY CLAY LOAM	10"–60"	SILTY CLAY LOAM
43"–99"	GRAVELLY SANDY CLAY LOAM	42"–91"	SILT CLAY LOAM	60"–90"	GRAVELLY SANDY CLAY LOAM
99"–148"	GRAVELLY SANDY LOAM	91"–147"	GRAVELLY SANDY CLAY LOAM	90"–149"	GRAVELLY SANDY LOAM

SB#4		SB#5		SB#6	
0–9"	SILTY CLAY LOAM	0–14"	SILT LOAM	0–13"	SILT LOAM
9"–40"	SILTY CLAY LOAM	14"–47"	CLAY LOAM	13"–92"	GRAVELLY SANDY CLAY LOAM
40"–96"	GRAVELLY SANDY CLAY LOAM	47"–83"	SANDY CLAY LOAM	92"–114"	GRAVELLY SANDY LOAM
96"–10"	GRAVELLY SANDY LOAM	83"–117"	GRAVELLY SANDY LOAM	114"–130"	SANDY CLAY LOAM
110"–130"	SILTY CLAY LOAM	117"–150"	SANDY CLAY LOAM		

SB#7		SB#8	
0–7"	SILTY CLAY LOAM	0–9"	SILTY CLAY LOAM
7"–30"	SILTY CLAY LOAM	9"–30"	SILTY CLAY LOAM
30"–38"	GRAVELLY SANDY CLAY LOAM	30"–58"	GRAVELLY SANDY CLAY LOAM
38"–121"	GRAVELLY SANDY CLAY LOAM	58"–144"	GRAVELLY SANDY CLAY LOAM
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05/30/2025 –NK GEN. PLAN REV.

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

OVERALL SITE GRADING

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

REVISIONS
03/03/2022 – TS REVISIONS
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02/23/2024 –TS ADVANCE
06/10/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/14/2025 –RS PLAN & PROFILE
05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 2A OF 19

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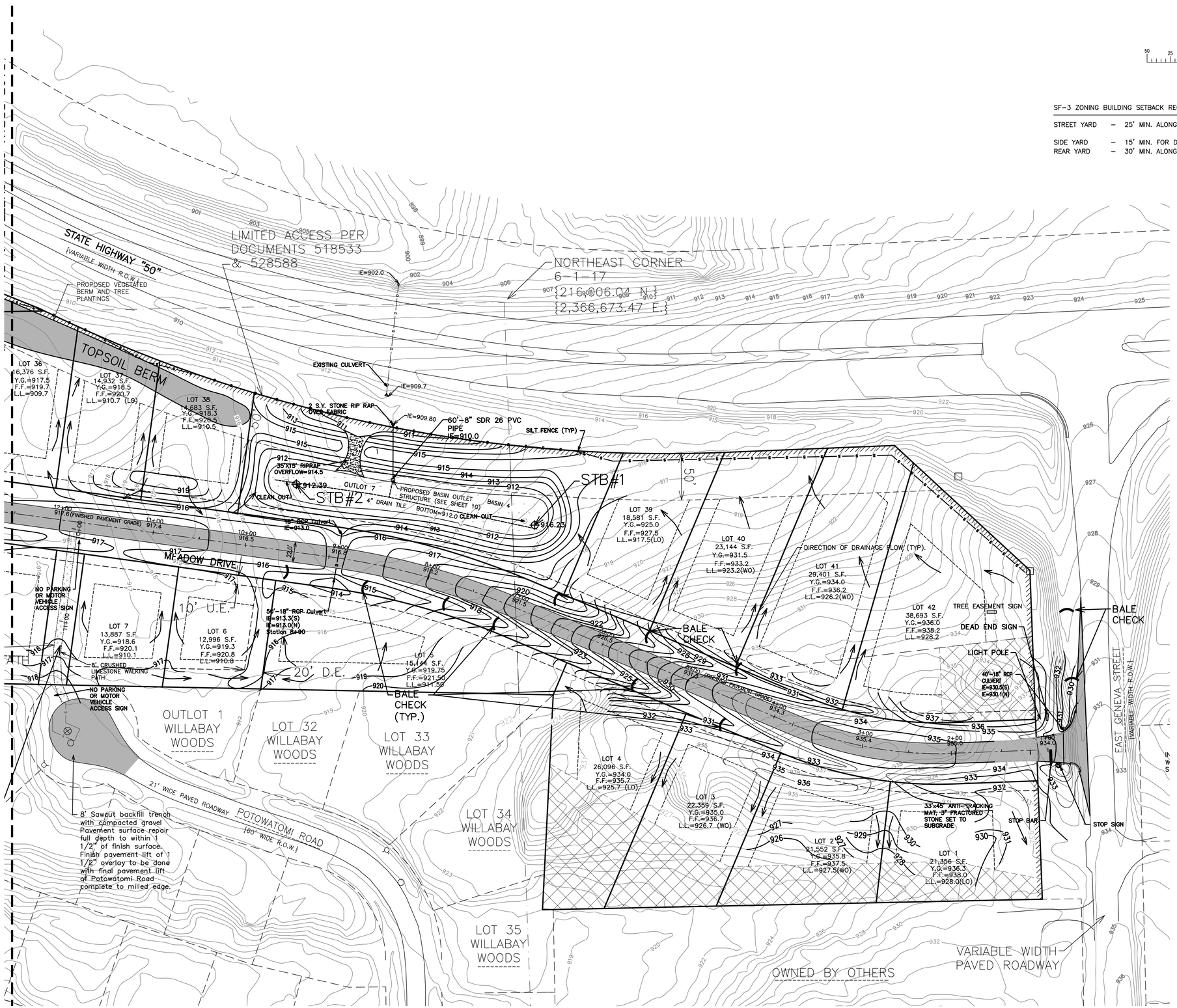

WILLABAY MEADOWS
FINAL ENGINEERING PLANS

GRADING PLAN STATIONS 0+00 – 12+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

REVISIONS
04/08/2022 – TS ADVANCE
05/17/2023 –TS ADVANCE
09/23/2025 –RS REVISIONS
07/31/2025 –RS REVISIONS
11/06/2023– TS ADVANCE
07/22/2025 –RS REVISIONS
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07/18/2025 –RS REVISIONS
06/13/2025 –RS SHEETS 2A, 3A, & 4A
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05/10/2024 –TS ADVANCE
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05/12/2024 –RS PLAN & PROFILE
11/08/2025 –RS CULVERTS
05/30/2025 –NK GEN. PLAN REV.

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 3 OF 19

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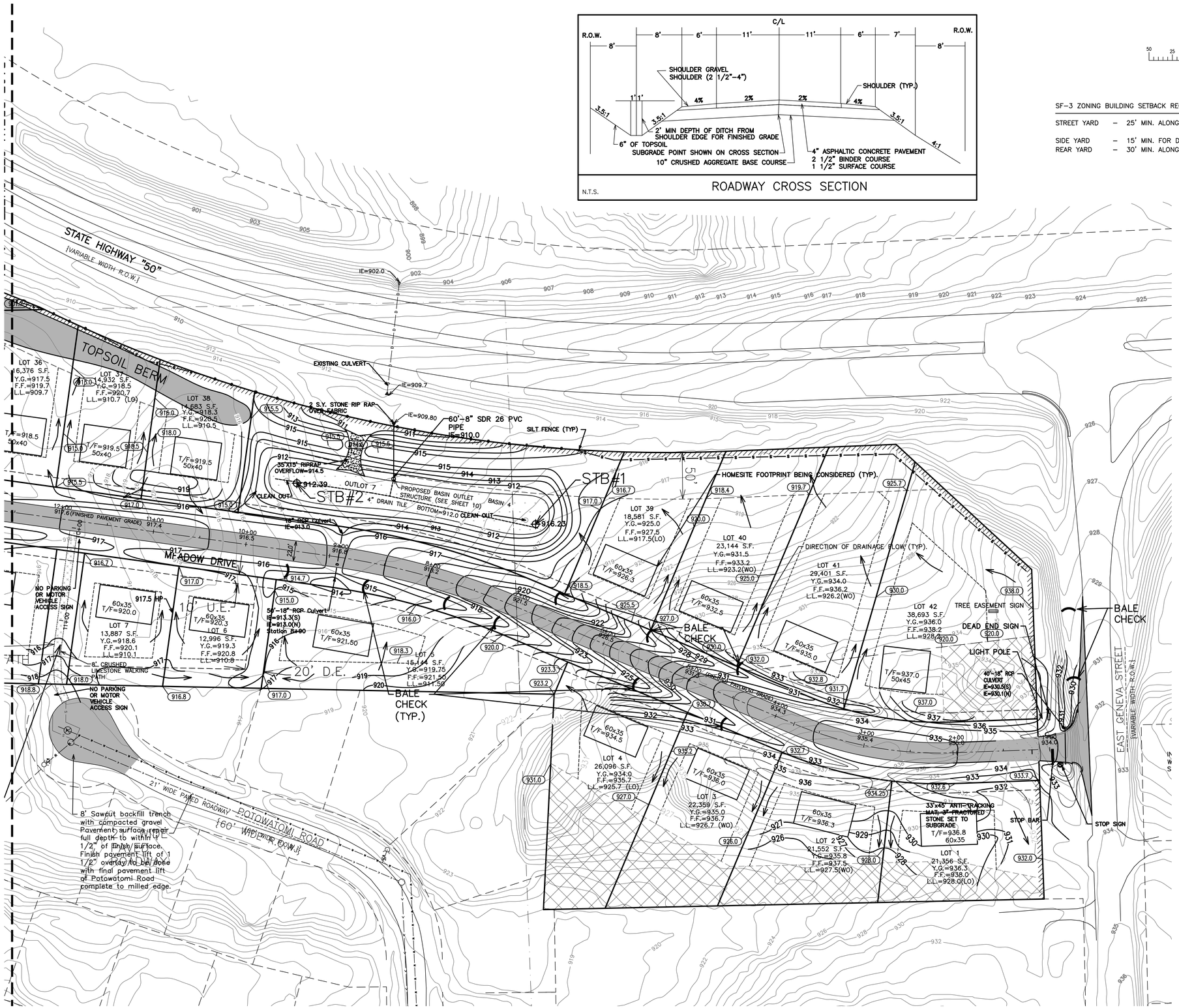

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

NOTE: The location and size of the underground structures and utilities shown hereon have been located to a reasonable degree of accuracy, but the Engineer and/or Surveyor does not guarantee their exact location or the location of others not shown. Contact Diggers Hotline, Inc., Etc.

CALL DIGGERS HOTLINE
811 OR 1-800-242-8511 TOLL FREE
WIS. STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE
MEMBER AREA 1-414-259-1181

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

NOTE: BUILDING GRADES ARE SUGGESTED AND MAY BE ALTERED FOR CAUSE.

NOTE: ALL PLANS FOR INDIVIDUAL HOME SITES SHALL REQUIRE DETAILED TOPOGRAPHIC MAPPING OF THE LOT AREA TO BE GRADED WITH STREET GRADES, DITCH GRADES, LARGE SPECIMEN TREES LOCATED, BENCH MARK SET AND A DETAIL OF THE HOUSE FOOT PRINT MADE TO SET FINAL GRADES. GRADES SHOWN ON THE ENGINEERING PLANS FOR THE DEVELOPMENT ARE GUIDELINES ONLY, BUT LOT GRADING FOR BEST DRAINAGE SHALL BE SUBMITTED TO DEVELOPER FOR REVIEW WITH THE PLANS FOR ARCHITECTURE REVIEW.

NOTE: ON SLOPING LOTS, YARD GRADE IS SHOWN FOR HIGHEST CORNER OR SIDE OF HOMESITE. ALL GRADES ARE SUBJECT TO FINAL REVIEW AND ALTERATIONS WHEN BUILDING PLANS ARE DONE. DRAINAGE IS TO BE MAINTAINED WITHOUT NEGATIVE IMPACTS TO NEIGHBORS. DETAIL SITE AND GRADING PLANS ARE TO BE CREATED BY LICENSED ENGINEERS AT A SCALE OF EITHER 1"=10' OR 1"=20'

WILLABAY MEADOWS
FINAL ENGINEERING PLANS

GRADING PLAN STATIONS 0+00 - 12+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING - ARCHITECTURE - SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
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- 02/23/2024 -TS ADVANCE
- 05/10/2024 -TS ADVANCE
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- 03/11/2024 -RS PLAN & PROFILE
- 05/12/2024 -RS PLAN & PROFILE
- 11/08/2025 -RS CULVERTS
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- 07/31/2025 -RS REVISIONS
- 07/22/2025 -RS REVISIONS
- 06/13/2025 -RS SHEETS 2A, 3A, & 4A
- 06/12/2025 -RS BOXES AND TF'S
- 05/30/2025 -NK GEN. PLAN REV.

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 3A OF 19

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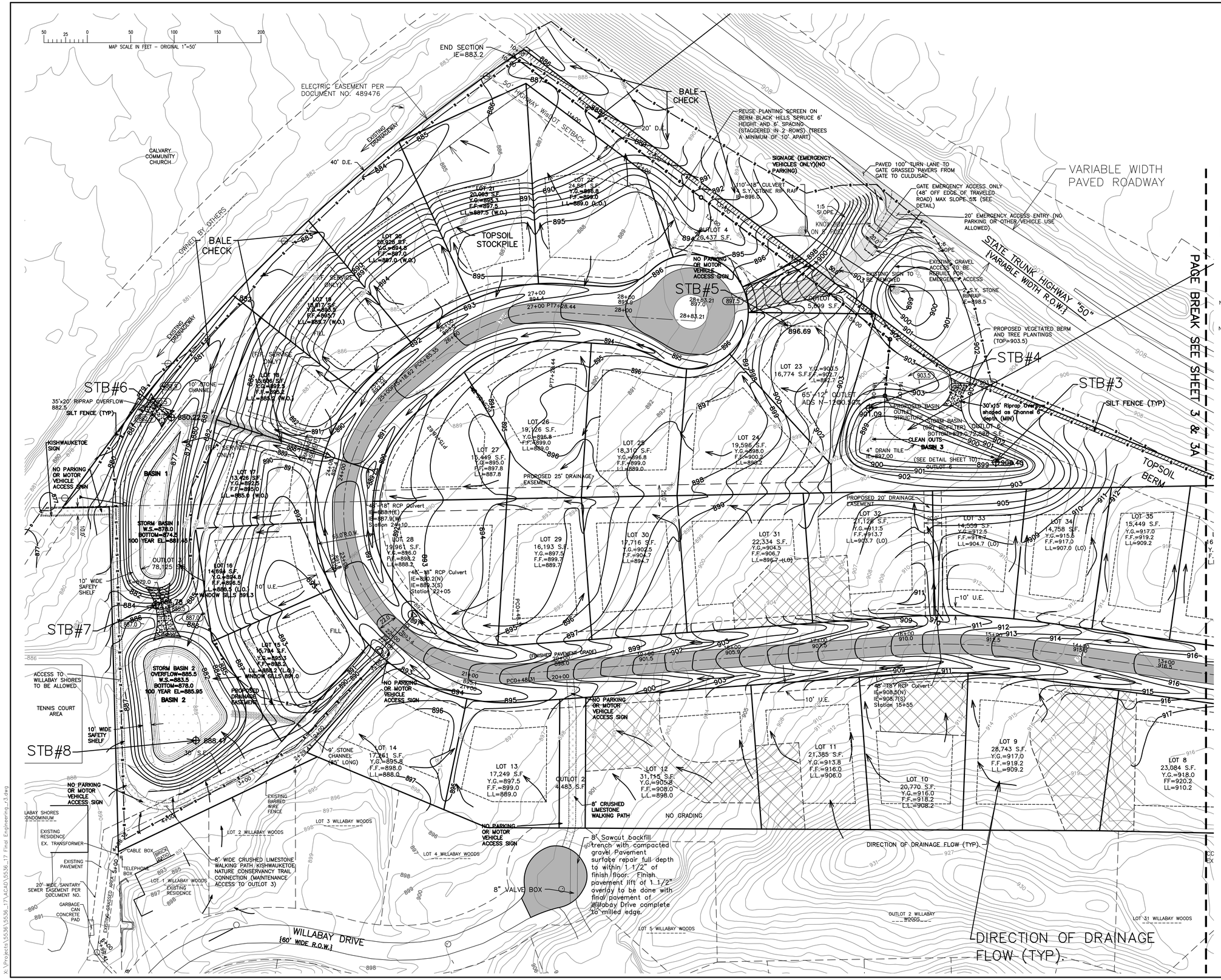

LEGEND

- x.xxx.x = EXISTING GROUND ELEVATION
- --xxxx-- = EXISTING LAND CONTOURS
- xxx = PROPOSED LAND CONTOURS
- s = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- (xxxx.x) = PROPOSED FINISHED GRADE/ELEVATION
- < = PROPOSED 8" SANITARY SEWER
- w = PROPOSED 8" WATERMAIN
- = HYDRANT WITH AUXILIARY VALVE
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE
L.O. = LOOKOUT BASEMENT (3.5' ABOVE L.L.)

NOTE: LOTS 16,17,18, AND 19 WILL HAVE FIRST FLOOR GRAVITY SEWER SERVICES ONLY

NOTE: ROAD TO BE BUILT FIRST LOT 15–22 TO BE FILLED AND COMPACTED FROM BASEMENT EXCAVATIONS AND SPOILS FROM TRENCH WORK.

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

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WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD–83) NORTH GRID — SECTION 6–T7N–R17E BEARS N 88°56'28" E

NOTE: ALL PLANS FOR INDIVIDUAL HOME SITES SHALL REQUIRE DETAILED TOPOGRAPHIC MAPPING OF THE LOT AREA TO BE GRADED WITH STREET GRADES, DITCH GRADES, LARGE SPECIMEN TREES LOCATED, BENCH MARK SET AND A DETAIL OF THE HOUSE FOOT PRINT MADE TO SET FINAL GRADES. GRADES SHOWN ON THE ENGINEERING PLANS FOR THE DEVELOPMENT ARE GUIDELINES ONLY, BUT LOT GRADING FOR BEST DRAINAGE SHALL BE SUBMITTED TO DEVELOPER FOR REVIEW WITH THE PLANS FOR ARCHITECTURE REVIEW.

NOTE!:

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- 03/11/2025 –RS PLAN & PROFILE
- 05/12/2025 –RS PLAN & PROFILE
- 11/08/2025 –RS CULVERTS
- 08/15/2025 –RS CULVERTS
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS REVISIONS
- 07/18/2025 –RS REVISIONS
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 05/30/2025 –NK GEN. PLAN REV.

PROJECT NO. 5536.17

DATE 05/12/2025

SHEET NO. 4 OF 19

WILLABAY MEADOWS

FINAL ENGINEERING PLAN

GRADING PLAN STATIONS 14+00 – 28+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
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MAP SCALE IN FEET – ORIGINAL 1"=50'

GRADING PLAN
STATIONS 14+00 – 28+00

PAGE BREAK SEE SHEET 3 & 3A

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- x.xxx.x = EXISTING GROUND ELEVATION
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Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE
L.O. = LOOKOUT BASEMENT (3.5' ABOVE L.L.)

NOTE: LOTS 16,17,18, AND 19 WILL HAVE FIRST FLOOR GRAVITY SEWER SERVICES ONLY

NOTE: ROAD TO BE BUILT FIRST LOT 15–22 TO BE FILLED AND COMPACTED FROM BASEMENT EXCAVATIONS AND SPOILS FROM TRENCH WORK.

TO OBTAIN LOCATIONS OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CONTACT...

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CALL DIGGERS HOTLINE
811 OR 1-800-242-8511 TOLL FREE
WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE
WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD–83)
N 25°00'00" E – 1" BEARS
SECTION 21–T7N–R7E
N 88°50'28" E

GRID NORTH

NOTE: ALL PLANS FOR INDIVIDUAL HOME SITES SHALL REQUIRE DETAILED TOPOGRAPHIC MAPPING OF THE LOT AREA TO BE GRADED WITH STREET GRADES, DITCH GRADES, LARGE SPECIMEN TREES LOCATED, BENCH MARK SET AND A DETAIL OF THE HOUSE FOOT PRINT MADE TO SET FINAL GRADES. GRADES SHOWN ON THE ENGINEERING PLANS FOR THE DEVELOPMENT ARE GUIDELINES ONLY, BUT LOT GRADING FOR BEST DRAINAGE SHALL BE SUBMITTED TO DEVELOPER FOR REVIEW WITH THE PLANS FOR ARCHITECTURE REVIEW.

NOTE!:
Contours for finished grading shown are not fully accurate for ditch grading on Meadow Drive because of the plan scale. Ditch shall be required to be a minimum of 2' in depth from finish shoulder grade as per standard cross sections shown.

NOTE!:
Granular backfill and temporary crushed aggregate is required before the existing cul de sacs are re–paved.

REVISIONS
- 04/08/2022 – TS ADVANCE
- 05/17/2023 – TS ADVANCE
- 11/06/2023 –TS ADVANCE
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- 06/10/2024 – TS ADVANCE
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- 03/11/2025 –RS PLAN & PROFILE
- 05/12/2025 –RS PLAN & PROFILE
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- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS REVISIONS
- 07/18/2025 –RS REVISIONS
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 06/12/2025 –RS BOXES & TF'S
- 05/30/2025 –NK GEN. PLAN REV.

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 4A OF 19

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

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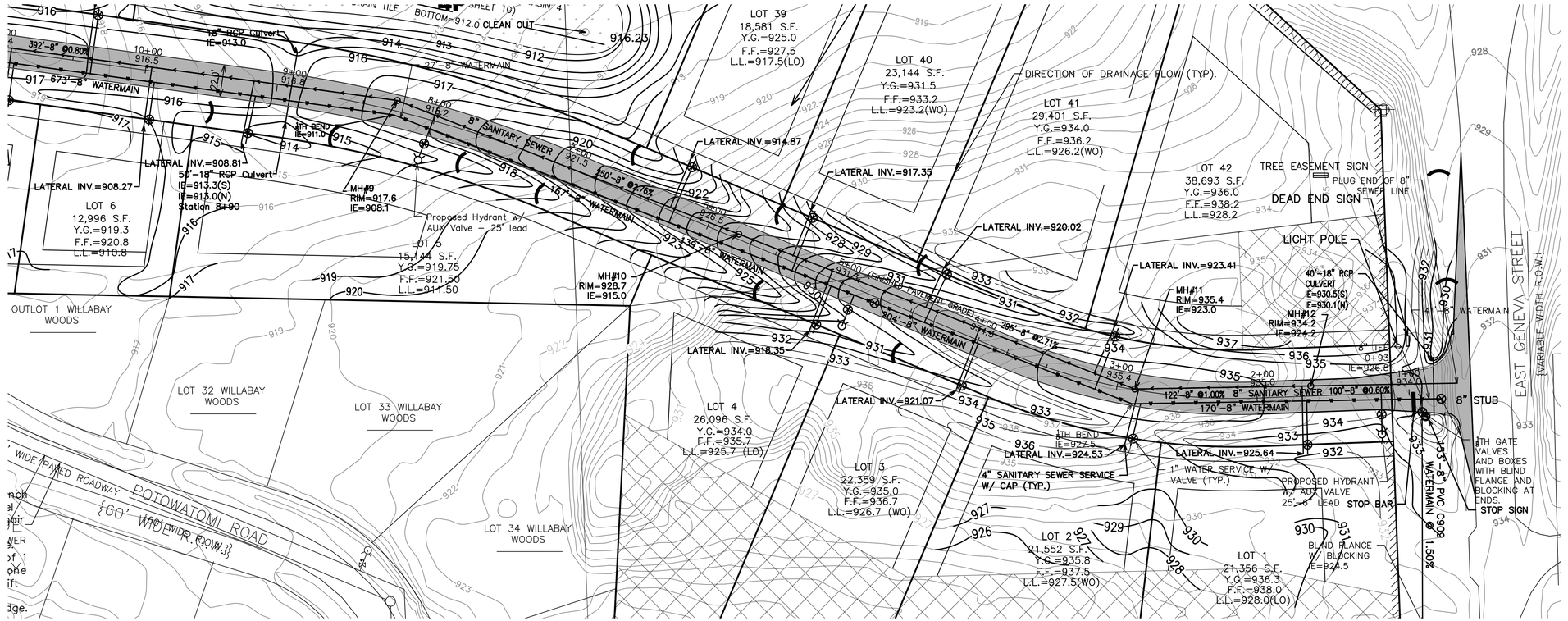
SEE SHEET 6
LOT 39
18,581 S.F.
Y.G.=925.0
F.F.=927.5
L.L.=917.5(LO)
LOT 40
23,144 S.F.
Y.G.=931.5
F.F.=933.2
L.L.=923.2(WO)
LOT 41
29,401 S.F.
Y.G.=934.0
F.F.=936.2
L.L.=926.2(WO)
LOT 42
38,693 S.F.
Y.G.=936.0
F.F.=938.2
L.L.=928.2
LOT 6
12,996 S.F.
Y.G.=919.3
F.F.=920.8
L.L.=910.8
LOT 5
15,144 S.F.
Y.G.=919.75
F.F.=921.50
L.L.=911.50
LOT 4
26,096 S.F.
Y.G.=934.0
F.F.=935.7
L.L.=925.7 (LO)
LOT 3
22,359 S.F.
Y.G.=935.0
F.F.=936.7
L.L.=926.7 (WO)
LOT 2
21,552 S.F.
Y.G.=935.8
F.F.=937.5
L.L.=927.5(WO)
LOT 1
21,356 S.F.
Y.G.=936.3
F.F.=938.0
L.L.=928.0(LO)
OUTLOT 1 WILLABAY WOODS
LOT 32 WILLABAY WOODS
LOT 33 WILLABAY WOODS
LOT 34 WILLABAY WOODS
POTOWATOMI ROAD
60' WIDE R.O.W.
WIDE PAVED ROADWAY
EAST GENEVA STREET
VARIABLE WIDTH R.O.W.
DIRECTION OF DRAINAGE FLOW (TYP).
TREE EASEMENT SIGN
PLUG END OF 8" SEWER LINE
DEAD END SIGN
LIGHT POLE
STOP SIGN
STOP BAR
8" STUB
4 GATE VALVES AND BOXES WITH BLIND FLANGE AND BLOCKING AT ENDS.
BLIND FLANGE W/ BLOCKING
PROPOSED HYDRANT W/ AUX VALVE
25'-6" LEAD
1" WATER SERVICE W/ VALVE (TYP.)
4" SANITARY SEWER SERVICE W/ CAP (TYP.)
Proposed Hydrant w/ AUX Valve - 25' lead
392'-8" @0.80%
673'-8" WATERMAIN
27'-8" WATERMAIN
18" RCP Culvert IE=913.0
50'-18" RCP Culvert IE=913.3(S) IE=913.0(N) Station 8+90
40'-18" RCP CULVERT IE=930.5(S) IE=930.1(N)
8" SANITARY SEWER
50'-8" @2.76%
18"-8" WATERMAIN
139'-8" WATERMAIN
204'-8" WATERMAIN
295'-8" @2.71%
122'-8" @1.00% 8" SANITARY SEWER
100'-8" @0.60%
170'-8" WATERMAIN
41'-8" WATERMAIN
1ST BEND IE=911.0
2ND BEND IE=927.5
3RD BEND IE=930.5
4TH BEND IE=927.5
MH#9 RIM=917.6 IE=908.1
MH#10 RIM=928.7 IE=915.0
MH#11 RIM=935.4 IE=923.0
MH#12 RIM=934.2 IE=924.2
LATERAL INV.=908.27
LATERAL INV.=908.81
LATERAL INV.=914.87
LATERAL INV.=917.35
LATERAL INV.=918.35
LATERAL INV.=920.02
LATERAL INV.=921.07
LATERAL INV.=923.41
LATERAL INV.=924.53
LATERAL INV.=925.64
8" WATERMAIN
8" PVC C909 WATERMAIN @ 1.50%
8" IE=926.8
IE=926.8
IE=927.5
IE=930.1
IE=934.10
IE=935.4
IE=935.8
IE=936.2
IE=936.8
IE=937.5
IE=938.0
IE=938.4
IE=939.0
IE=939.4
IE=939.8
IE=940.2
IE=940.6
IE=941.0
IE=941.4
IE=941.8
IE=942.2
IE=942.6
IE=943.0
IE=943.4
IE=943.8
IE=944.2
IE=944.6
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IE=945.4
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IE=946.6
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IE=947.4
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IE=948.2
IE=948.6
IE=949.0
IE=949.4
IE=949.8
IE=950.2
IE=950.6
IE=951.0
IE=951.4
IE=951.8
IE=952.2
IE=952.6
IE=953.0
IE=953.4
IE=953.8
IE=954.2
IE=954.6

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811 OR 1-800-242-8511 TOLL FREE
WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE
MEM. AREA 1-414-259-1181

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE.

CONSTRUCTION & INSPECTION NOTES

1. NO CONSTRUCTION, OR INSTALLATION OR IMPROVEMENTS SHALL COMMENCE UNTIL ARRANGEMENTS FOR INSPECTION BY THE VILLAGE ENGINEER HAVE BEEN MADE AND THE CITY ENGINEER HAS GIVEN WRITTEN AUTHORIZATION TO COMMENCE SAID CONSTRUCTION.
2. CONTRACTOR SHALL CONTACT THE CITY ENGINEER AT LEAST 72 HOURS PRIOR TO THE NEED FOR AS REQUIRED BY THE SPECIAL PROVISIONS ON SHEETS 10 & 11.
3. NO MATERIAL OF ANY KIND SHALL BE USED IN THE WORK UNTIL IT HAS BEEN INSPECTED AND ACCEPTED BY THE VILLAGE ENGINEER OR HIS INSPECTOR. THE VILLAGE ENGINEER MAY WAIVE THIS INSPECTION REQUIREMENT IN HIS SOLE DISCRETION. ALL REJECTED MATERIALS SHALL BE IMMEDIATELY REMOVED FROM THE PREMISES. ANY MATERIALS OR WORKMANSHIP FOUND AT ANY TIME TO BE DEFECTIVE SHALL BE REPLACED OR REMEDIED AT ONCE REGARDLESS OF PREVIOUS INSPECTION. INSPECTION OF MATERIALS SHALL BE PROMPTLY MADE, AND WHERE PRACTICABLE, AT THE SOURCE OF SUPPLY.
4. THE VILLAGE ENGINEER, HIS INSPECTORS, REPRESENTATIVES OR AGENTS SHALL, AT ALL TIMES, HAVE UNRESTRICTED ACCESS TO ALL PARTS OF THE WORK AND TO OTHER PLACES WHERE OR IN WHICH THE PREPARATION OF MATERIALS AND OTHER INTEGRAL PARTS OF THE WORK ARE BEING CARRIED ON AND CONDUCTED. VILLAGE MATERIAL STANDARDS SHALL BE COMPLIED WITH.

UTILITY NOTES

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5. A TEMPORARY PLUG MUST BE INSTALLED IN THE DOWNSTREAM MANHOLE DURING CONSTRUCTION TO PREVENT SEDIMENT/DEBRIS FROM ENTERING THE DOWNSTREAM SEWER. ALL PLUGS MUST BE REMOVED PRIOR TO CITY ACCEPTANCE OF THE NEW SERVICES.

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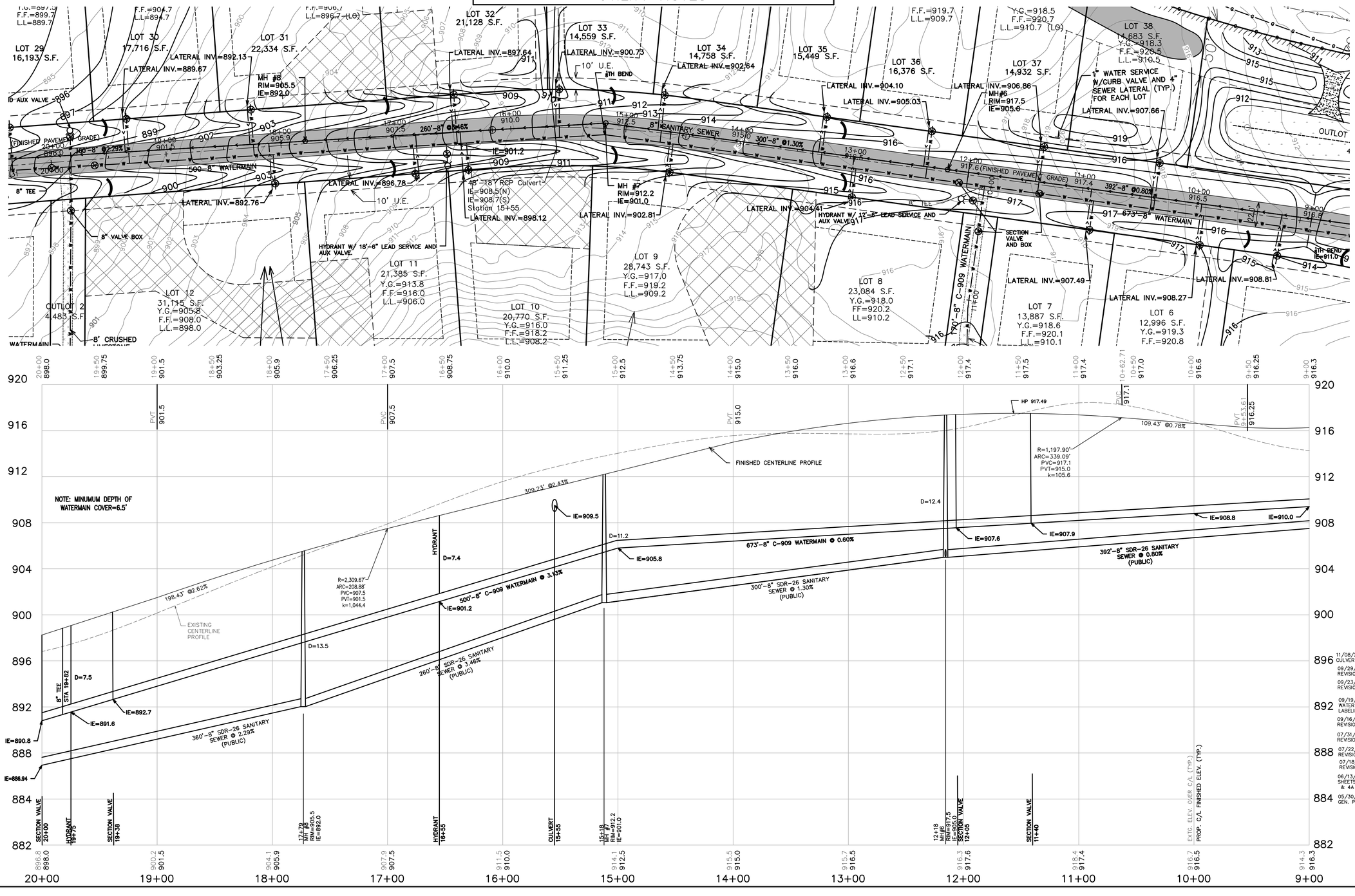
MAP SCALE IN FEET – ORIGINAL 1" = 4(HORIZINTAL)
MAP SCALE IN FEET – ORIGINAL 1" = 4(VERTICAL)

WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD-83) N. LINE OF THE NE 1/4 OF SECTION 19 T1N R15E BEARS N 88°53'28" E.



PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 9+00 – 20+00

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
- 04/08/2022 – TS ADVANCE
- 05/17/2023 –TS ADVANCE
- 11/06/2023– TS ADVANCE
- 01/30/2024 –TS REVISE OUTLOTS
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- 06/10/2024 –TS ADVANCE
- 12/18/2024 –NK PLAN & PROFILE
- 05/02/2025 –RS PLAN & PROFILE
- 05/30/2025 –NK GEN. PLAN REV.
- 11/08/2025 –RS CULVERTS
- 09/29/2025 –RS REVISIONS
- 09/23/2025 –RS REVISIONS
- 09/19/2025 –RS WATER MAIN LABELING
- 09/16/2025 –RS REVISIONS
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS ADVANCE
- 07/18/2025 –RS REVISIONS
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 03/11/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 6 OF 19

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SEE SHEET 6

1. NO CONSTRUCTION, OR INSTALLATION OR IMPROVEMENTS SHALL COMMENCE UNTIL ARRANGEMENTS FOR INSPECTION BY THE VILLAGE ENGINEER HAVE BEEN MADE AND THE CITY ENGINEER HAS GIVEN WRITTEN AUTHORIZATION TO COMMENCE SAID CONSTRUCTION.
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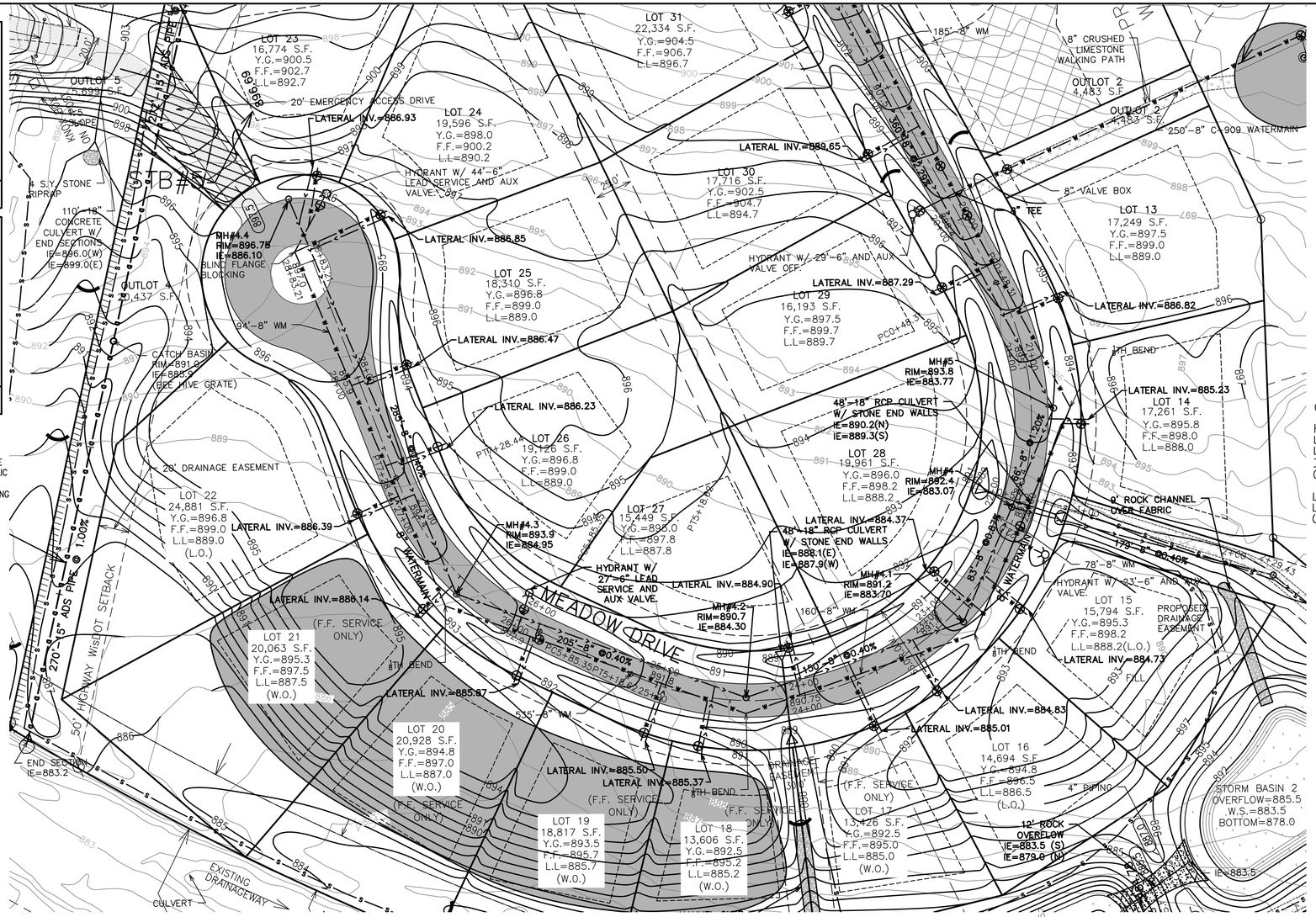
WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

WISCONSIN STATE PLANE COORDINATE SYSTEM
SOUTH ZONE NAD-83
N 85°55'38" E
GRID NORTH

40 20 0 40 80 120 160
MAP SCALE IN FEET – ORIGINAL 1" = 4(HORIZONTAL)
MAP SCALE IN FEET – ORIGINAL 1" = 4(VERTICAL)



SEE SHEET 8

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATION 20+00 – 29+00

FARRIS, HANSEN & ASSOCIATES, INC.
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11/08/2025 –RS CULVERTS
09/29/2025 –RS REVISIONS
09/23/2025 –RS REVISIONS
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06/19/2024 –TS ADVANCE
12/18/2024 –NK PLAN & PROFILE
03/14/2025 –RS PLAN & PROFILE
05/12/2025 –RS PLAN & PROFILE

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 7 OF 19

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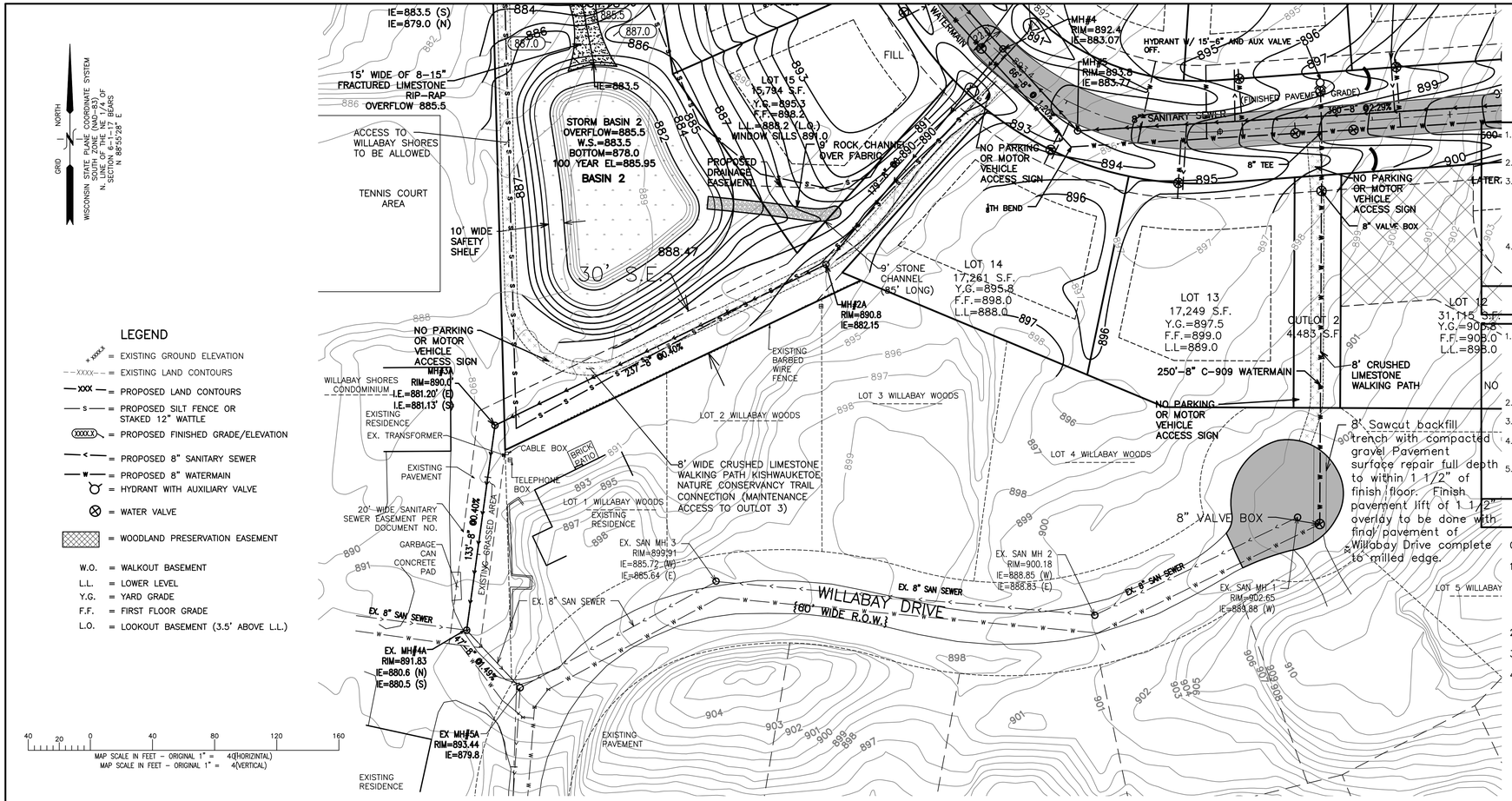

LEGEND

- XXX.X = EXISTING GROUND ELEVATION
- XXXX = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- XXXX.X = PROPOSED FINISHED GRADE/ELEVATION
- PROPOSED 8" SANITARY SEWER
- W PROPOSED 8" WATERMAIN
- HYDRANT WITH AUXILIARY VALVE
- WATER VALVE
- WOODLAND PRESERVATION EASEMENT
- W.O. = WALKOUT BASEMENT
- L.L. = LOWER LEVEL
- Y.G. = YARD GRADE
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4. EXISTING SEWERS NOTED.

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MILW. AREA 1-414-259-1181

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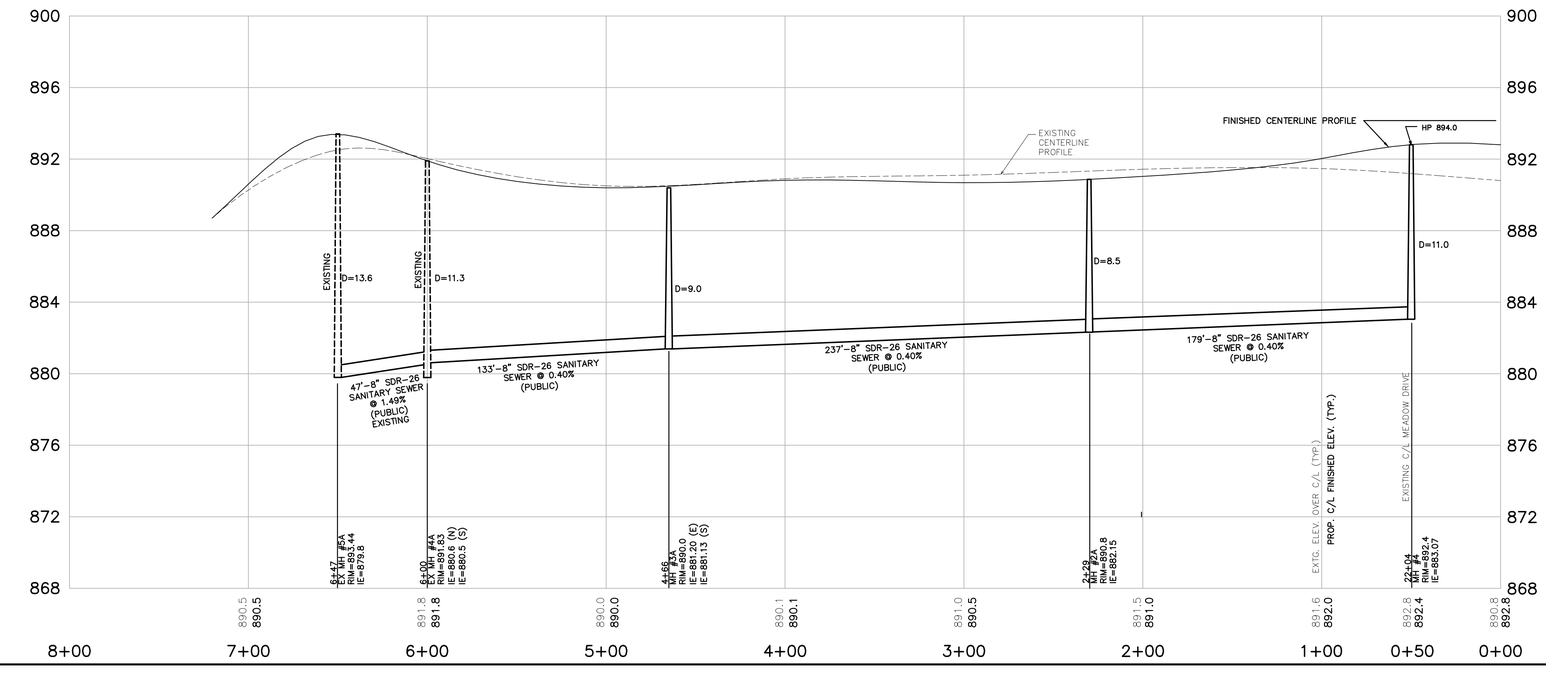

09/23/2025 -RS REVISIONS
09/16/2025 -RS REVISIONS
08/14/2025 -RS REVISIONS
07/31/2025 -RS REVISIONS
07/22/2025 -RS REVISIONS
07/18/2025 -RS REVISIONS

REVISIONS
04/08/2022 -TS ADVANCE
02/19/2023 -TS ADVANCE
02/23/2024 -TS ADVANCE
06/10/2024 -TS ADVANCE
12/18/2024 -NK PLAN & PROFILE
03/08/2025 -RS EDITS AND REVIEW
05/02/2025 -RS EDITS AND REVIEW
05/12/2025 -RS EDITS AND REVIEW
05/30/2025 -NK GEN. PLAN REV.
06/13/2025 -RS SHEETS 2A, 3A, & 4A

PROJECT NO.
5536.17
DATE
05/12/2025
SHEET NO.
8 OF 19

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 0+00 - 7+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING - ARCHITECTURE - SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

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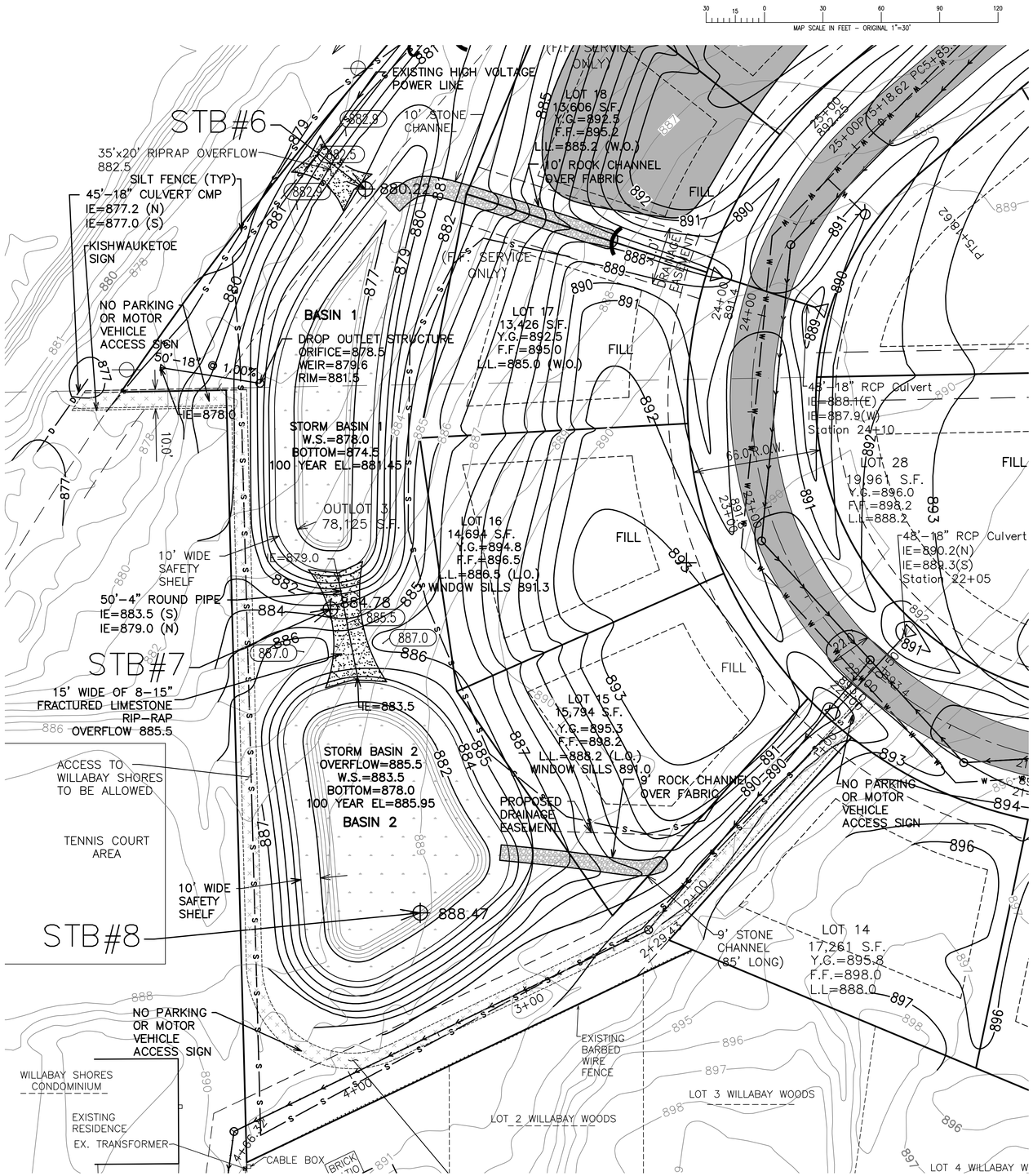

NORTH
GRID
WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD-83) N. LINE OF THE NE 1/4 OF SECTION 6-5-22 BEARS N 88°55'28" E

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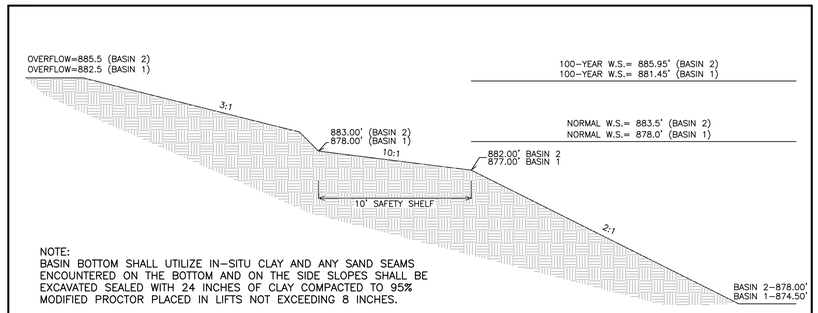
MEMB. AREA 1-414-259-1181

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

LEGEND

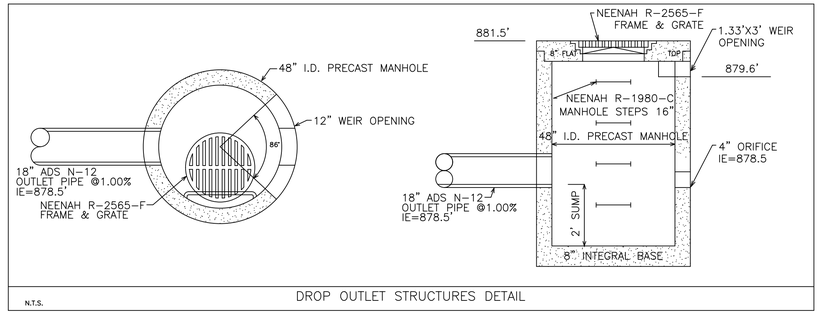
- +XXX.X = EXISTING GROUND ELEVATION
- --XXXX-- = EXISTING LAND CONTOURS
- XXX = PROPOSED LAND CONTOURS
- S = PROPOSED SILT FENCE OR STAKED 12" WATTLE
- XXXX.X = PROPOSED FINISHED GRADE/ELEVATION
- < = PROPOSED 8" SANITARY SEWER
- W = PROPOSED 8" WATERMAIN
- HYDRANT WITH AUXILIARY VALVE
- WATER VALVE



NOTE:
BASIN BOTTOM SHALL UTILIZE IN-SITU CLAY AND ANY SAND SEAMS ENCOUNTERED ON THE BOTTOM AND ON THE SIDE SLOPES SHALL BE EXCAVATED SEALED WITH 24 INCHES OF CLAY COMPACTED TO 95% MODIFIED PROCTOR PLACED IN LIFTS NOT EXCEEDING 8 INCHES.

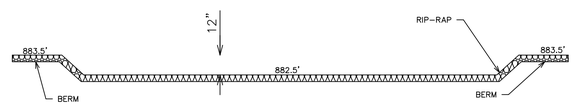
N.T.S.

WET POND CROSS SECTIONS BASINS 1 & 2

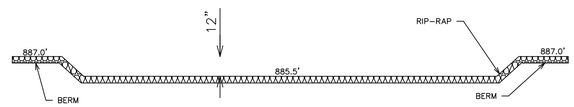


N.T.S.

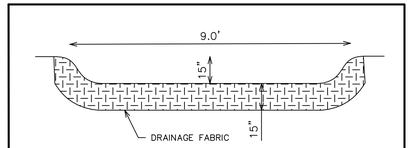
DROP OUTLET STRUCTURES DETAIL



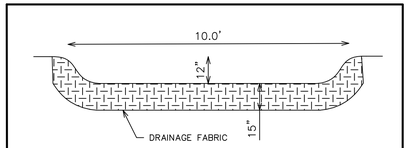
20' OVERFLOW DETAIL – BASIN 1



15' OVERFLOW DETAIL – BASIN 2



ROCK CHANNEL DETAIL (NTS)



ROCK OVERFLOW DETAIL (NTS)

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

STORM WATER BASINS OUTLET 3

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
- 04/08/2022 –TS ADVANCE
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- 05/30/2025 –NK GEN. PLAN REV.
- 06/13/2025 –RS SHEETS 2A, 3A, & 4A
- 07/18/2025 –RS REVISIONS
- 11/08/2025 –RS CULVERTS
- 09/29/2025 –RS REVISIONS
- 09/23/2025 –RS REVISIONS
- 09/16/2025 –RS REVISIONS
- 08/15/2025 –RS REVISIONS
- 07/31/2025 –RS REVISIONS
- 07/22/2025 –RS REVISIONS

PROJECT NO.
5536.17

DATE
05/12/2025

SHEET NO.
9 OF 19

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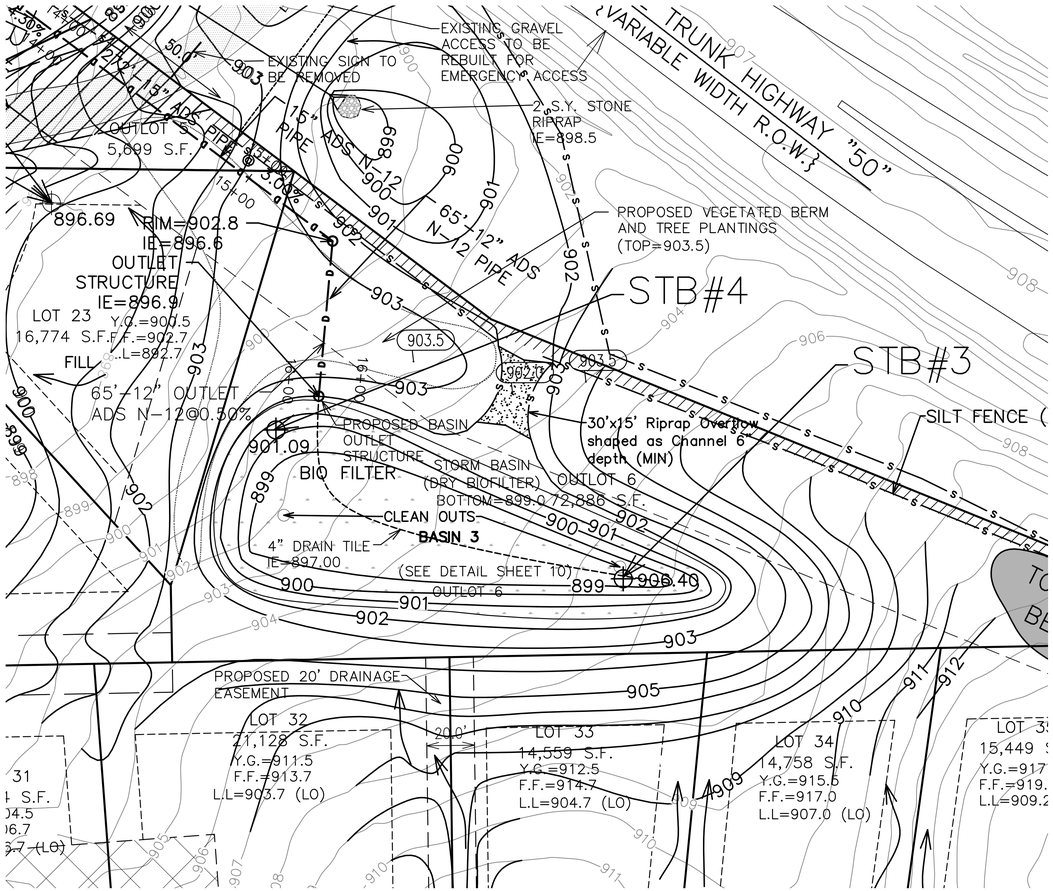

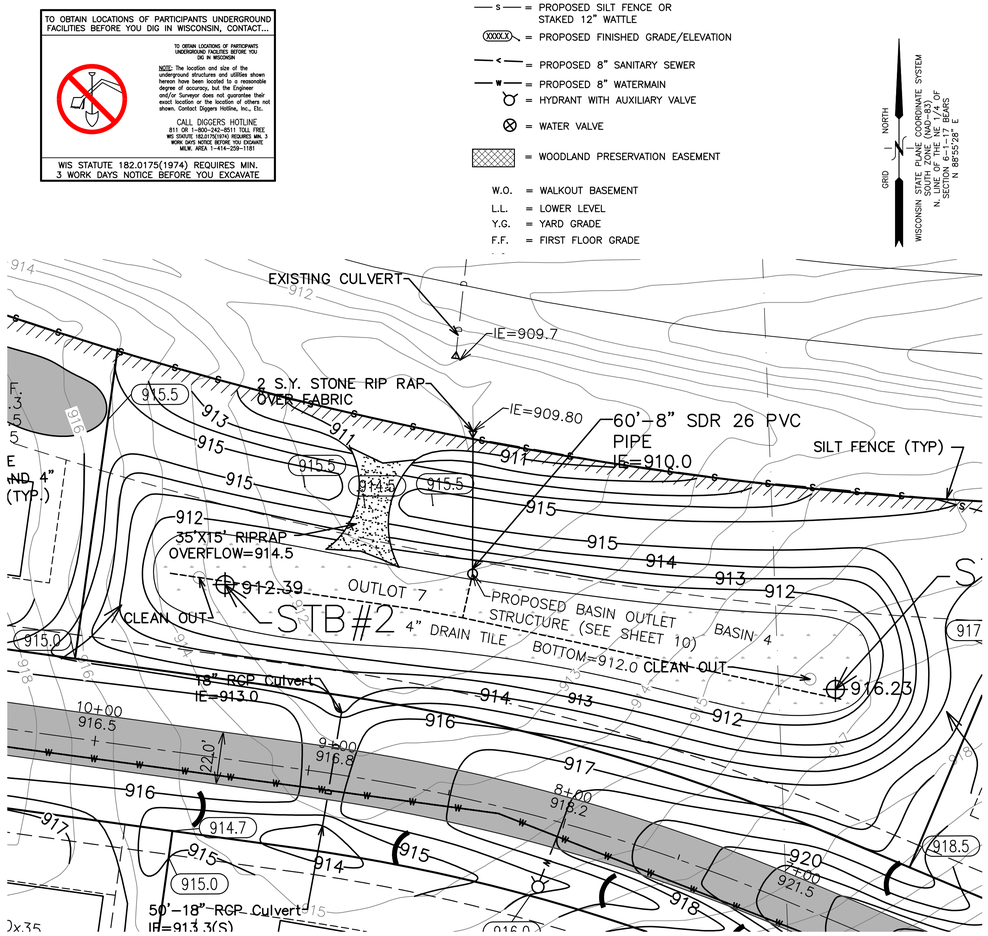

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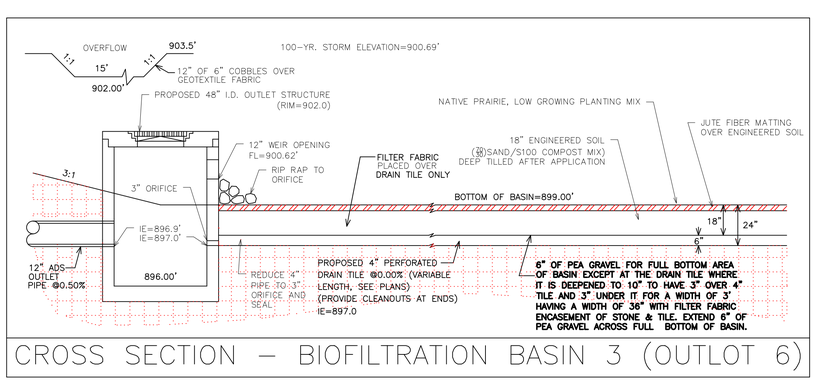
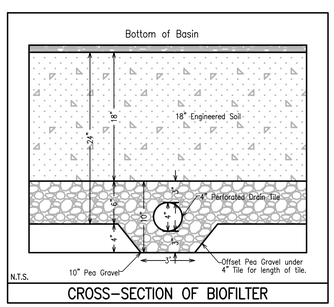
- W = PROPOSED 8" WATERMAIN
- = HYDRANT WITH AUXILIARY VALVE
- = WATER VALVE
- = WOODLAND PRESERVATION EASEMENT

W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE

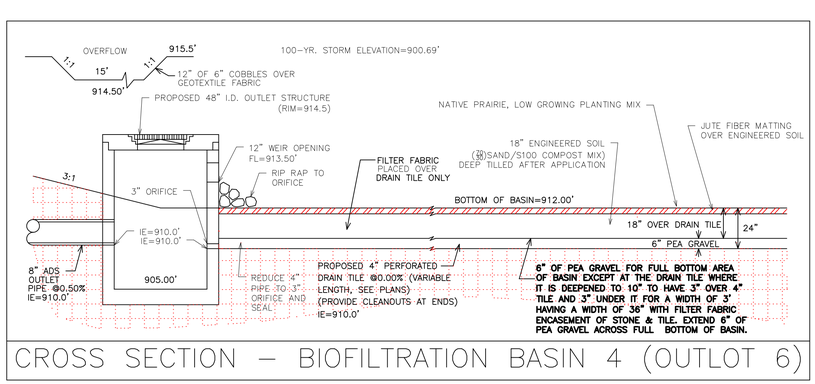
30 15 0 30 60 90 120
MAP SCALE IN FEET – ORIGINAL 1"=30'



CROSS SECTION – BIOFILTRATION BASIN 3 (OUTLOT 6)



CROSS-SECTION OF BIOFILTER



CROSS SECTION – BIOFILTRATION BASIN 4 (OUTLOT 6)

11/08/2025 –RS REVISIONS
09/29/2025 –RS REVISIONS
09/23/2025 –RS REVISIONS
09/16/2025 –RS REVISIONS
08/13/2025 –RS NOTE ON BIO FILTER BASINS
07/31/2025 –RS REVISIONS
07/22/2025 –RS REVISIONS

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

BASIN 3 & 4
OUTLOTS 6 & 7

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7 RIDGWAY COURT P.O. BOX 437
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07/18/2025 –RS REVISIONS

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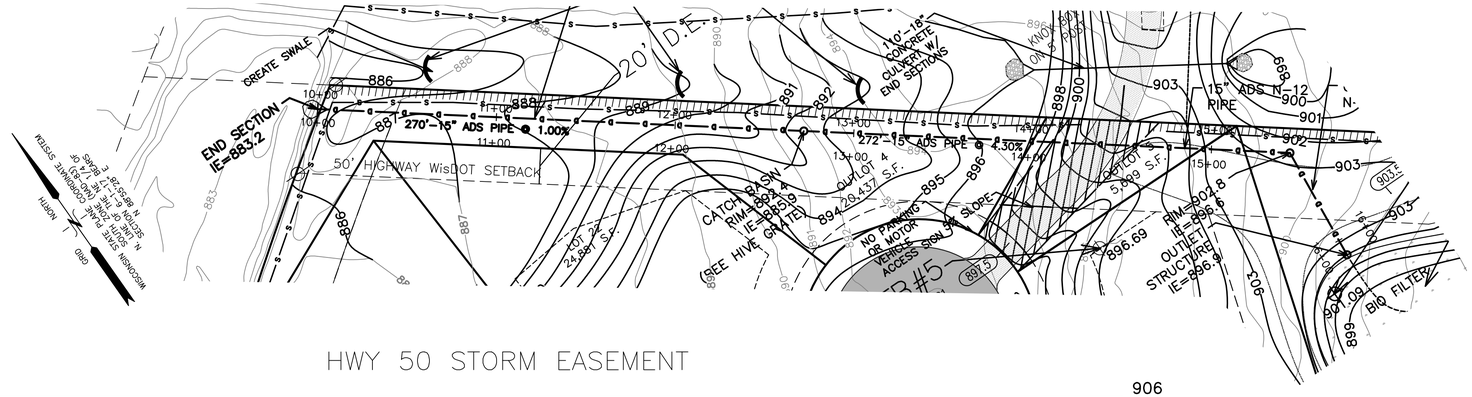

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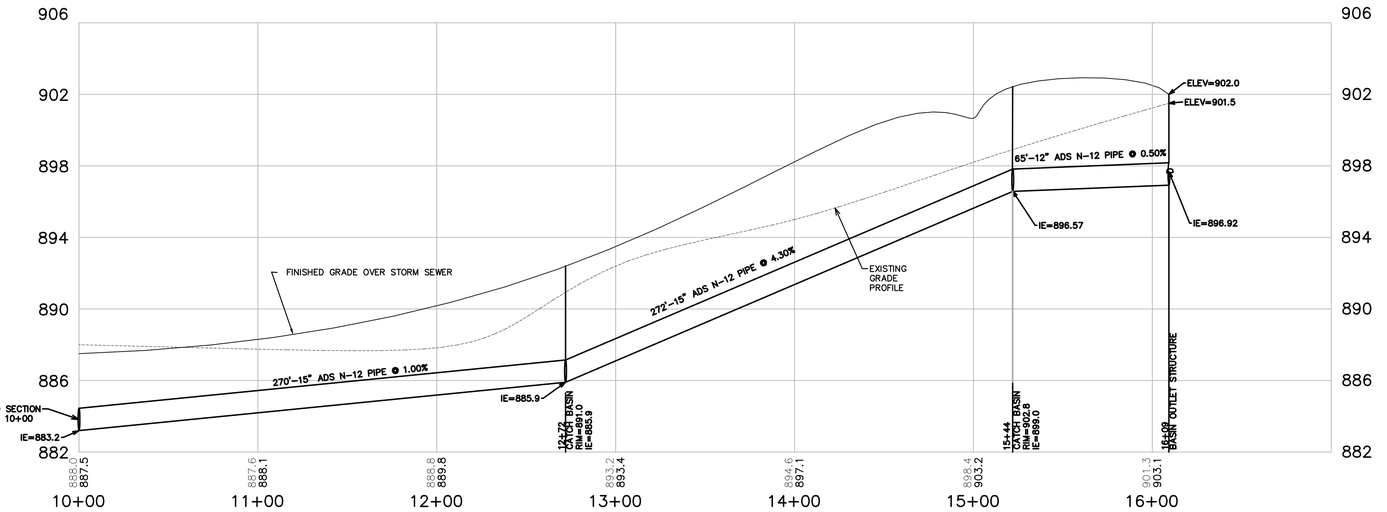
- = WOODLAND PRESERVATION EASEMENT

W.O. = WALKOUT BASEMENT
L.L. = LOWER LEVEL
Y.G. = YARD GRADE
F.F. = FIRST FLOOR GRADE
L.O. = LOOKOUT BASEMENT (3.5' ABOVE L.L.)

40 20 0 40 80 120 160
MAP SCALE IN FEET – ORIGINAL 1" = 40'(HORIZONTAL)
MAP SCALE IN FEET – ORIGINAL 1" = 4'(VERTICAL)

HWY 50 STORM EASEMENT



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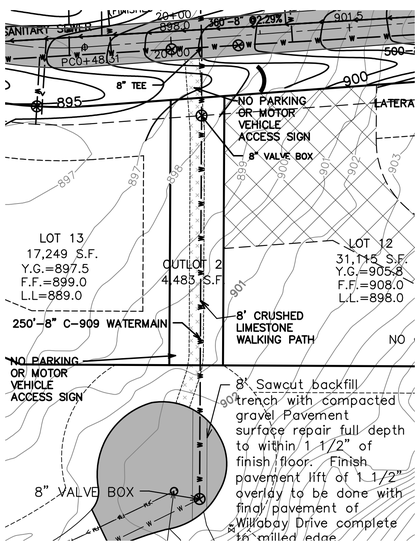
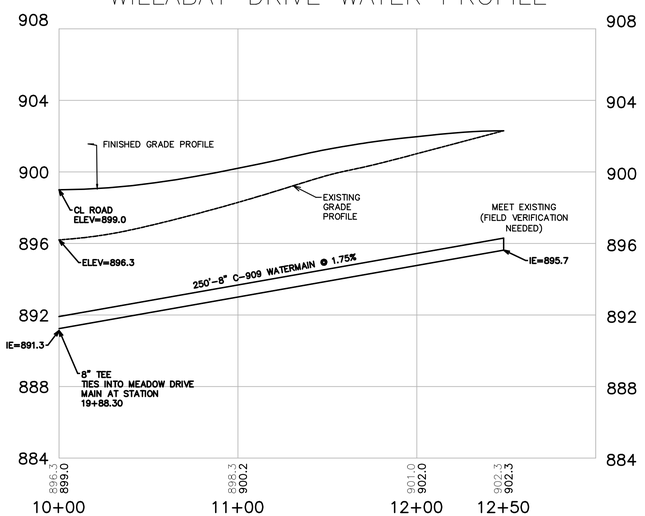
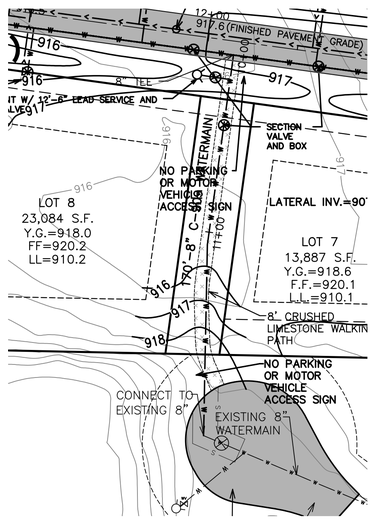


NOTE: MINUMUM DEPTH OF WATERMAIN COVER=6.5'

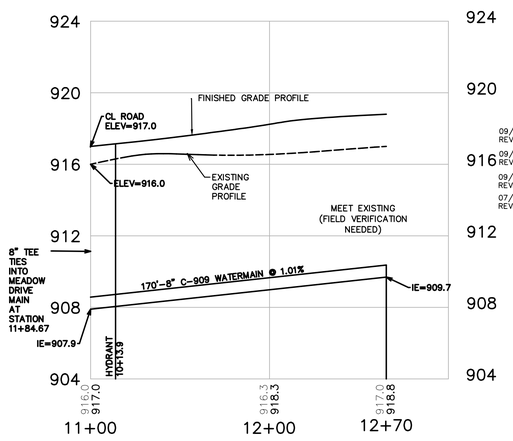
WILLABAY DRIVE WATER PROFILE



WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD-83) N. LINE OF THE NE 1/4 OF SECTION 6-1-17 BEARS N 88°55'28" E



POTOWATOMI ROAD WATER PROFILE



REVISIONS
04/08/2022 –TS ADVANCE
02/19/2023 –TS ADVANCE
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WILLABAY MEADOWS
FINAL ENGINEERING PLAN

PUBLIC SEWER & WATER PLAN & PROFILE STATIONS 0+00 – 7+00

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 11 OF 19

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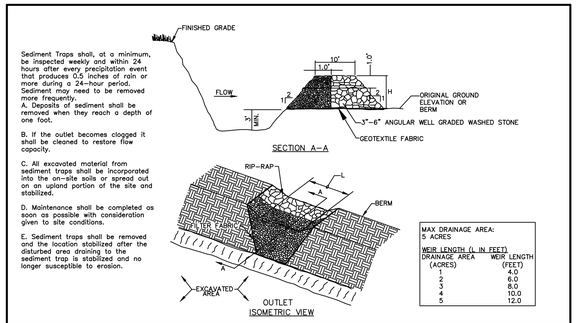
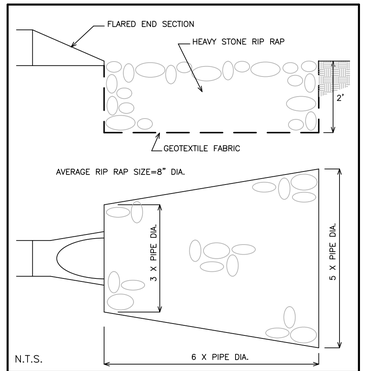


N.T.S.

TEMPORARY SEDIMENT TRAP



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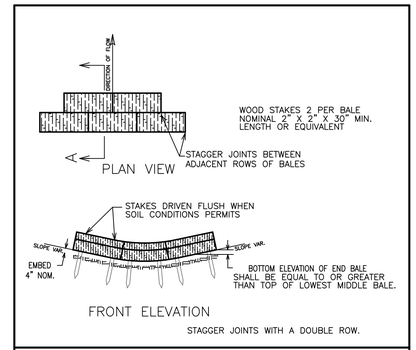
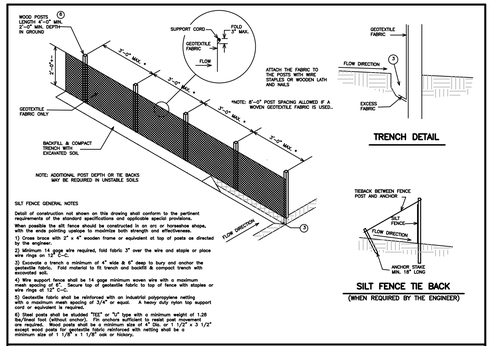
RIP RAP PLACEMENT DETAIL



N.T.S.

STRAW BALE DITCH CHECK



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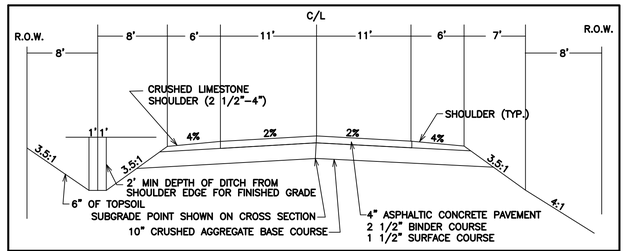
SILT FENCE (NON-REINFORCED) DETAIL



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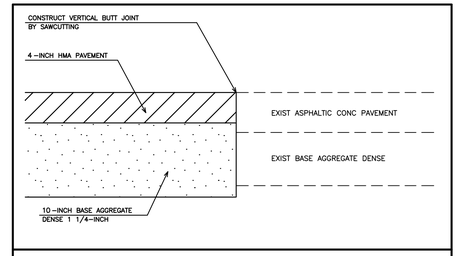
ROADWAY CROSS SECTION



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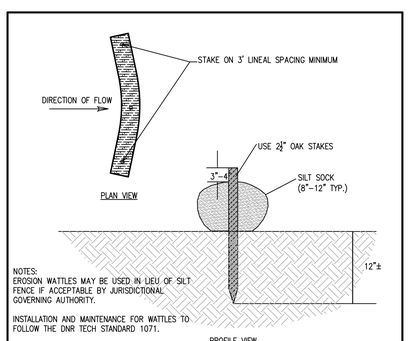
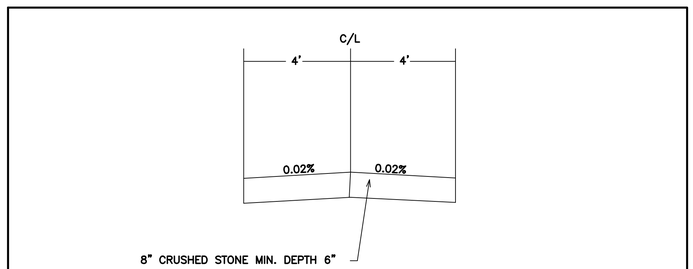
BUTT JOINT DETAIL



N.T.S.

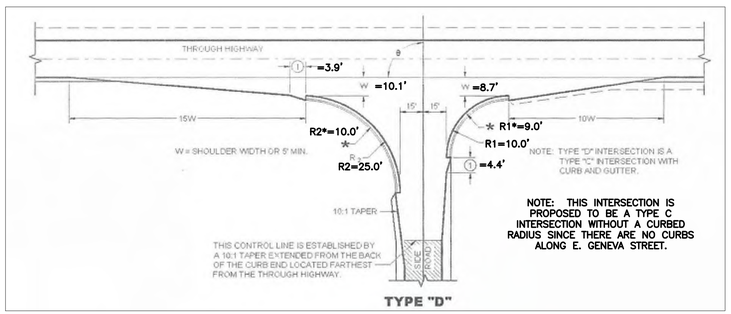
EROSION WATTLE



N.T.S.

WALKING PATH DETAIL

TO BE USED AT INTERSECTION OF E. GENEVA ST. & MEADOW DRIVE



WILLABAY MEADOWS
FINAL ENGINEERING PLAN

CONSTRUCTION DETAILS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING - ARCHITECTURE - SURVEYING
7 RIDGWAY COURT P.O. BOX 437
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OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
03/14/2025 -RS PLAN
05/12/2025 -RS DETAIL REVISION
05/30/2025 -NK GEN. PLAN REV.
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07/31/2025 -RS REVISIONS
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PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 12 OF 19

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WILLABAY MEADOWS
FINAL ENGINEERING PLAN

MEADOW DRIVE
ROAD CROSS SECTIONS
STATIONS 1+00 – 14+00

FARRIS, HANSEN & ASSOCIATES, INC.
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PHONE (262) 723-2098 e-mail: office@farrishansen.com

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SHEET NO.
15 OF 19

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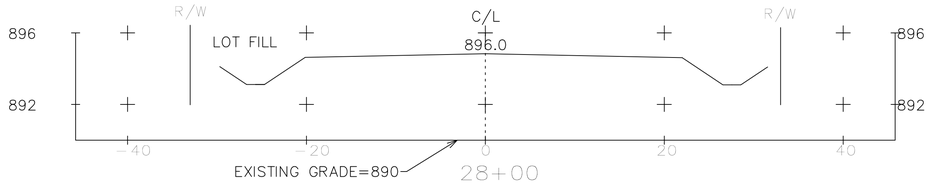

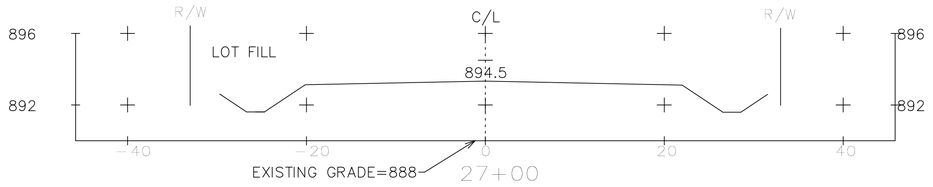

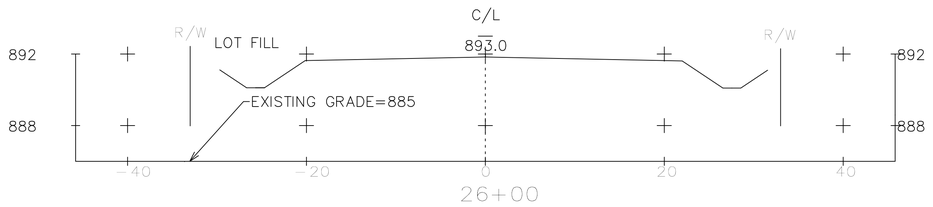

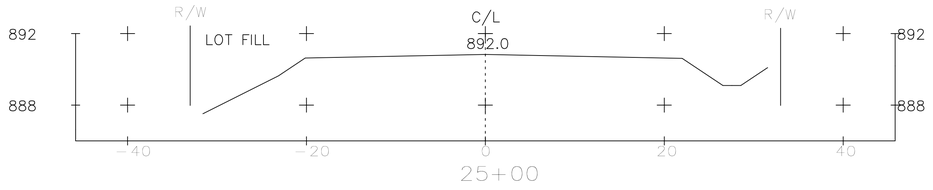

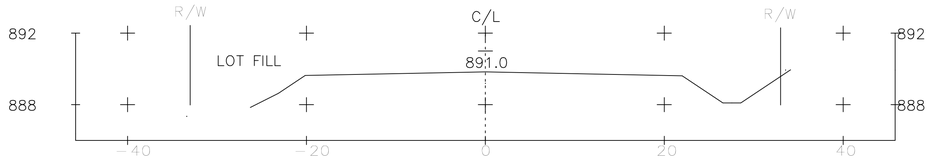

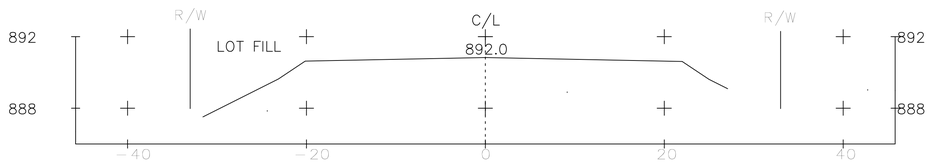

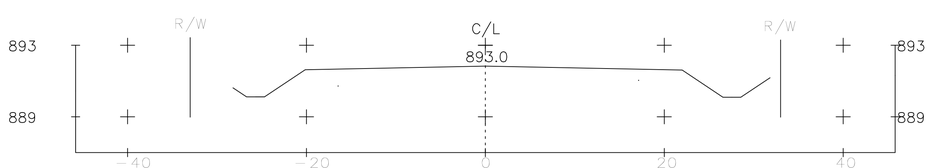

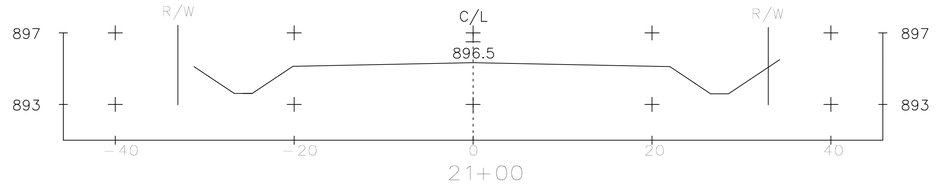

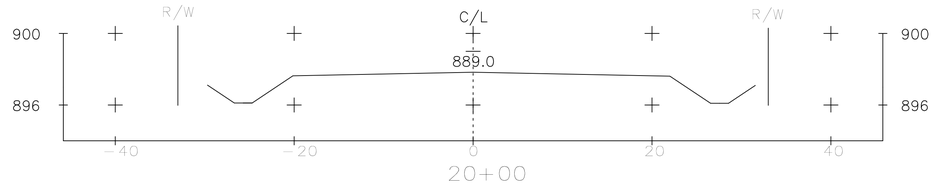

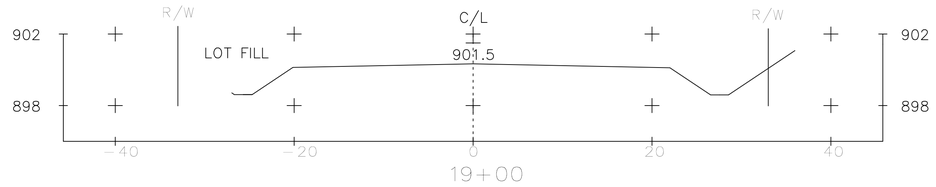

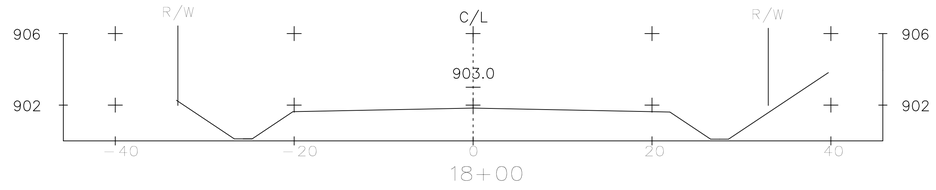

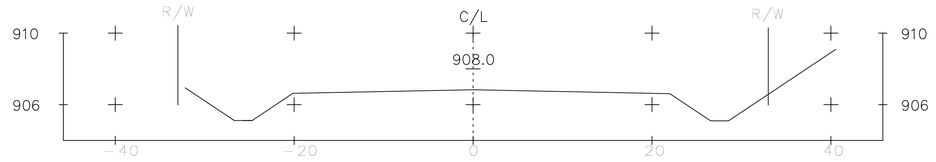

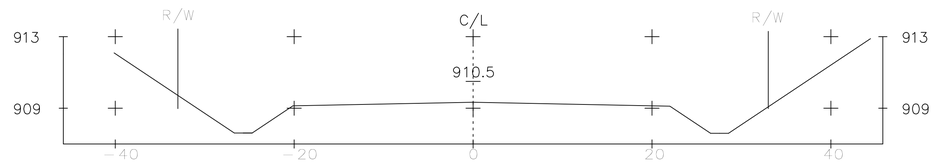

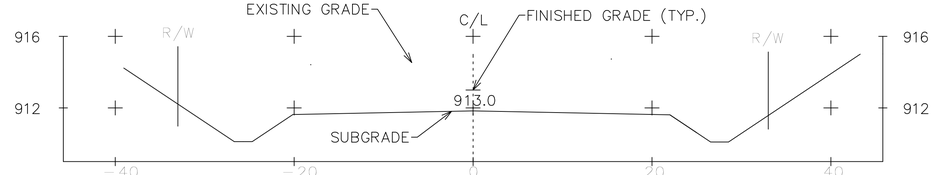

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

MEADOW DRIVE
ROAD CROSS SECTIONS
STATIONS 15+00 – 28+00

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
PHONE: (262) 723-2098 e-mail: office@farrishansen.com

REVISIONS

PROJECT NO.
5536.17

DATE
12/12/2024

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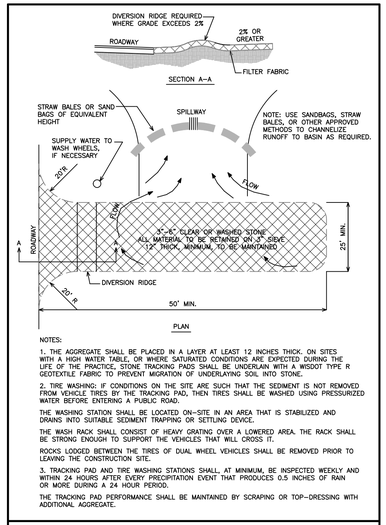


NOTES:

1. THE AGGREGATE SHALL BE PLACED IN A LAYER AT LEAST 12 INCHES THICK. ON SITES WITH A HIGH WATER TABLE, OR WHERE SATURATED CONDITIONS ARE EXPECTED DURING THE LIFE OF THE PRACTICE, STONE TRACKING PADS SHALL BE UNDERLAIN WITH A WISDOT TYPE R GEOTEXTILE FABRIC TO PREVENT MIGRATION OF UNDERLAYING SOIL INTO STONE.

2. TIRE WASHING: IF CONDITIONS ON THE SITE ARE SUCH THAT THE SEDIMENT IS NOT REMOVED FROM VEHICLE TIRES BY THE TRACKING PAD, THEN TIRES SHALL BE WASHED USING PRESSURIZED WATER BEFORE ENTERING A PUBLIC ROAD.

THE WASHING STATION SHALL BE LOCATED ON–SITE IN AN AREA THAT IS STABILIZED AND DRAINS INTO SUITABLE SEDIMENT TRAPPING OR SETTLING DEVICE.

THE WASH RACK SHALL CONSIST OF HEAVY GRATING OVER A LOWERED AREA. THE RACK SHALL BE STRONG ENOUGH TO SUPPORT THE VEHICLES THAT WILL CROSS IT.

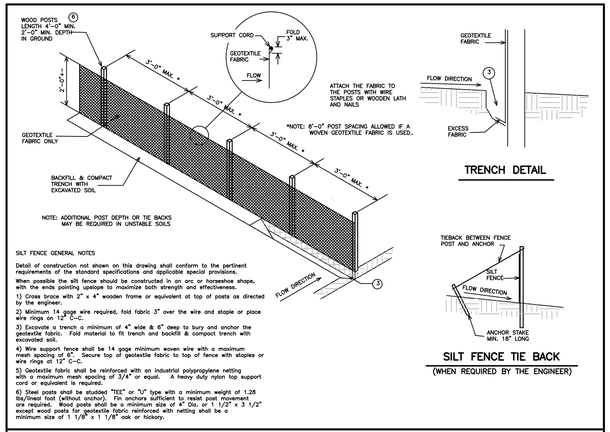
ROCKS LODGED BETWEEN THE TIRES OF DUAL WHEEL VEHICLES SHALL BE REMOVED PRIOR TO LEAVING THE CONSTRUCTION SITE.

3. TRACKING PAD AND TIRE WASHING STATIONS SHALL, AT MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24 HOUR PERIOD.

THE TRACKING PAD PERFORMANCE SHALL BE MAINTAINED BY SCRAPING OR TOP–DRESSING WITH ADDITIONAL AGGREGATE.

N.T.S.

ANTI–TRACKING MAT



SILT FENCE GENERAL NOTES

Detail of construction not shown on this drawing shall conform to the pertinent requirements of the standard specifications and applicable special provisions.

When possible the silt fence should be constructed in an arc or horseshoe shape, with the ends pointing upslope to maximize both strength and effectiveness.

1) Cross brace with 2" x 4" wooden frame or equivalent at top of posts as directed by the engineer.

2) Minimum 14 gage wire required, fold fabric 3" over the wire and staple or place wire rings on 12" C–C.

3) Excavate a trench a minimum of 4" wide & 6" deep to bury and anchor the geotextile fabric. Field material to fill trench and backfill & compact trench with excavated soil.

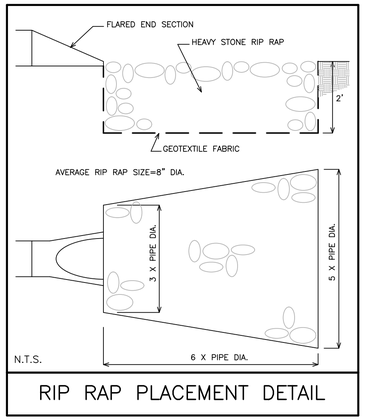
4) Wire support fence shall be 14 gage minimum woven wire with a maximum mesh spacing of 6". Secure top of geotextile fabric to top of fence with staples or wire rings at 12" C–C.

5) Geotextile fabric shall be reinforced with an industrial polypropylene netting with a maximum mesh spacing of 3/4" or equal. A heavy duty nylon top support cord or equivalent is required.

6) Steel posts shall be studded "TEE" or "L" type with a minimum weight of 1.28 lbs/lineal foot (without anchor). Fin anchors sufficient to resist post movement are required. Wood posts shall be a minimum size of 4" Dia. or 1 1/2" x 3 1/2" except wood posts for geotextile fabric reinforced with netting shall be a minimum size of 1 1/8" x 1 1/8" oak or hickory.

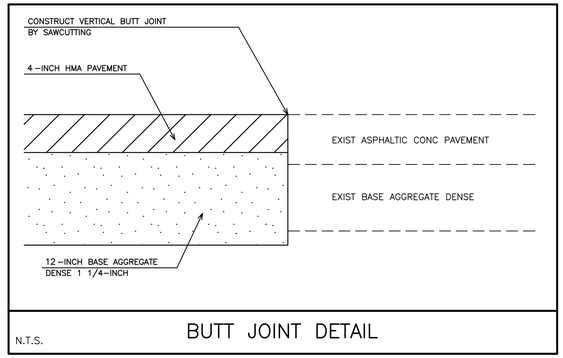
N.T.S.

SILT FENCE (NON–REINFORCED) DETAIL



N.T.S.

RIP RAP PLACEMENT DETAIL

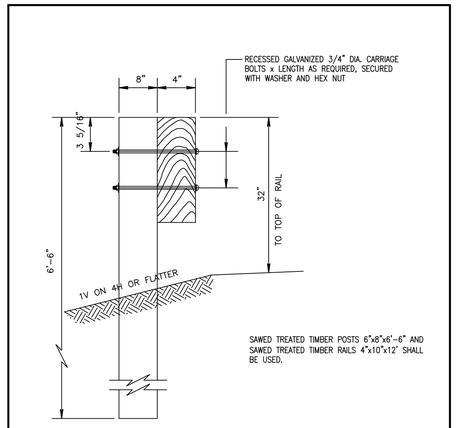


N.T.S.

BUTT JOINT DETAIL

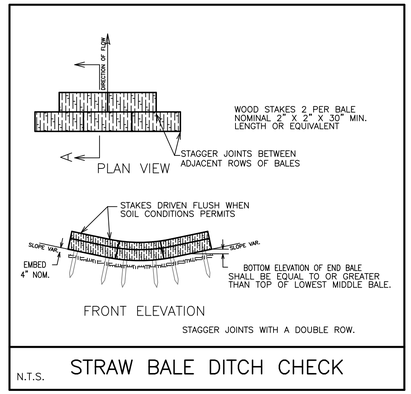
WILLABAY MEADOWS SUBDIVISION
UTILITY LOCATIONS BY COORDINATES

	NORTHING	EASTING	ELEVATION	DRIVEWAY CULVERT
LOT 1	936.0	937.7	927.7 (LO)	15"
LOT 2	935.8	937.5	927.5 (WO)	15"
LOT 3	935.0	936.7	926.7 (LO)	15"
LOT 4	934.0	935.7	925.7 (LO)	15"
LOT 5	917.8	920.0	910.0	15"
LOT 6	919.0	920.5	910.5	15"
LOT 7	918.6	920.1	910.1	15"
LOT 8	918.0	920.2	910.2	15"
LOT 9	917.0	919.2	909.2	15"
LOT 10	916.0	918.2	908.2	15"
LOT 11	913.8	916.0	906.0 (LO)	15"
LOT 12	905.8	908.0	898.0	15"
LOT 13	897.5	899.0	889.0	15"
LOT 14	895.8	898.0	888.0	15"
LOT 15	894.5	896.7	886.7 (LO)	15"
LOT 16	894.3	896.5	886.5 (LO)	15"
LOT 17	892.5	895.0	885.0 (WO)	15"
LOT 18	892.5	895.2	885.2 (WO)	15"
LOT 19	893.5	895.7	885.7 (WO)	15"
LOT 20	894.8	897.0	887.0 (WO)	15"
LOT 21	894.8	897.0	887.0 (WO)	15"
LOT 22	896.0	898.2	888.2 (LO)	15"
LOT 23	900.5	902.7	892.7	15"
LOT 24	898.6	900.2	890.2	15"
LOT 25	896.5	898.2	888.2	15"
LOT 26	895.8	898.0	888.0	15"
LOT 27	895.0	897.8	887.8	15"
LOT 28	894.5	896.7	886.7	15"
LOT 29	896.5	898.7	888.7	15"
LOT 30	902.5	904.7	894.7 (LO)	15"
LOT 31	904.5	906.7	896.7	15"
LOT 32	911.5	913.7	903.7 (LO)	15"
LOT 33	912.5	914.7	904.7 (LO)	15"
LOT 34	915.5	917.7	907.7 (LO)	15"
LOT 35	917.0	919.2	909.2	15"
LOT 36	917.5	919.7	909.7	15"
LOT 37	918.5	920.7	910.7 (LO)	15"
LOT 38	918.3	920.5	910.5	15"
LOT 39	925.0	927.5	917.5 (LO)	15"
LOT 40	931.5	933.2	923.2 (WO)	15"
LOT 41	934.0	936.2	926.2 (WO)	15"
LOT 42	936.0	938.2	928.2	15"



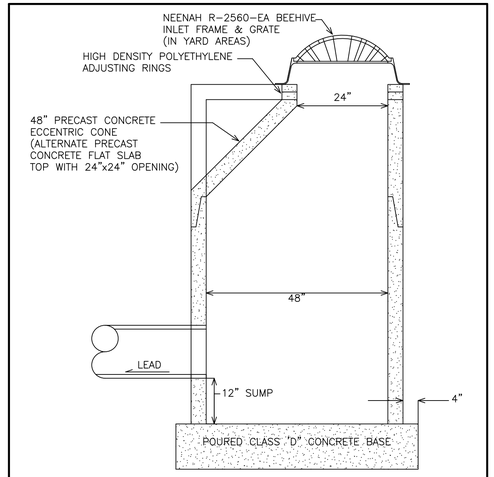
N.T.S.

SAWN WOOD POST GUARD RAIL



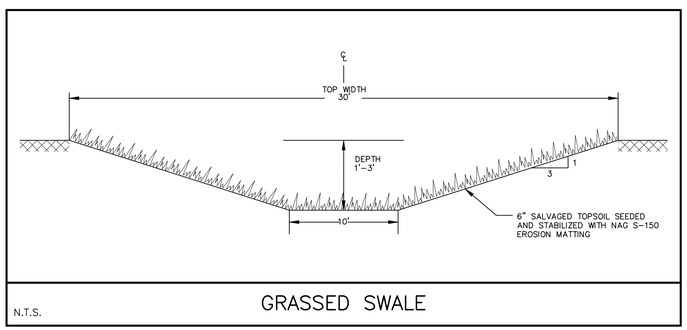
N.T.S.

STRAW BALE DITCH CHECK



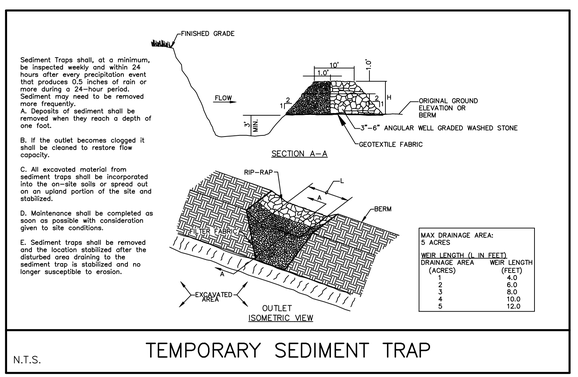
N.T.S.

STANDARD AREA DRAIN



N.T.S.

GRASSED SWALE



Sediment Traps shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24–hour period. Sediment may need to be removed more frequently.

A. Deposits of sediment shall be removed when they reach a depth of one foot.

B. If the outlet becomes clogged it shall be cleaned to restore flow capacity.

C. All excavated material from sediment traps shall be incorporated into the on–site soils or spread out on an upland portion of the site and stabilized.

D. Maintenance shall be completed as soon as possible with consideration given to site conditions.

E. Sediment traps shall be removed and the location stabilized after the disturbed area draining to the sediment trap is stabilized and no longer susceptible to erosion.

MAX DRAINAGE AREA: 5 ACRES

WEIR LENGTH (L IN FEET)

DRAINAGE AREA (ACRES)	WEIR LENGTH (FEET)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

N.T.S.

TEMPORARY SEDIMENT TRAP

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

CONSTRUCTION DETAILS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723–2098 FAX: (262) 723–5886

REVISIONS

12/18/2024 –NK
PLAN & PROFILE

03/14/2025 –RS
PLAN & PROFILE

05/12/2025 –RS
PLAN & PROFILE

05/30/2025 –NK
GEN. PLAN REV.

07/18/2025 –RS
REVISIONS

07/22/2025 –RS
REVISIONS

07/31/2025 –RS
REVISIONS

09/23/2025 –RS
REVISIONS

PROJECT NO.
5536.17

DATE
05/12/2025

SHEET NO.
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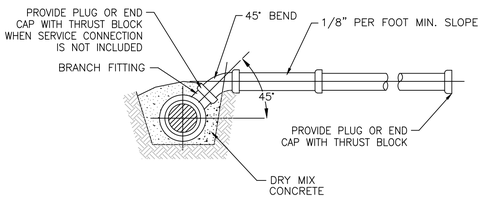
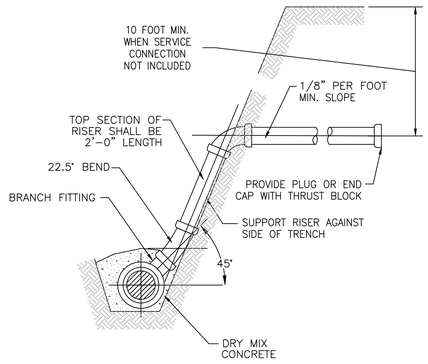


BUILDING SERVICE DETAIL

FOR SEWER INVERT DEPTHS TO 12 FEET



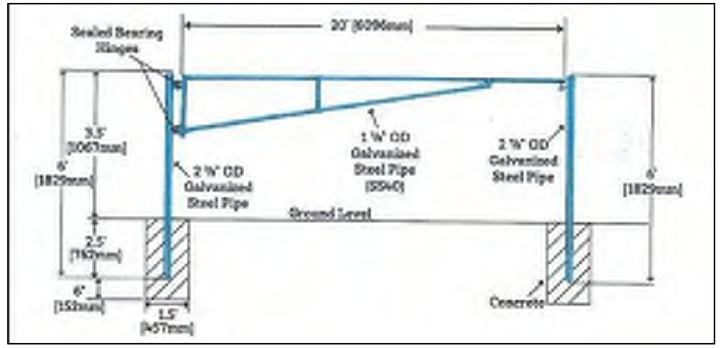
BUILDING SERVICE RISER DETAIL

FOR SEWER INVERT DEPTHS OVER 12 FEET

N.T.S.

SANITARY LATERAL

GATE DETAIL



Water Shut Off Location by Lot Number	Northing	Easting
1	215489.96	2367187.66
2	215494.02	2367068.77
3	215530.17	2366951.98
4	215571.77	2366852.78
5	215702.21	2366465.38
6	215711.47	2366398.14
7	215724.65	2366302.44
8	215753.05	2366096.2
9	215774.77	2365937.98
10	215776.84	2365763.36
11	215773.46	2365717.28
12	215764.94	2365595.65
13	215746.48	2365326.19
14	215767.78	2365243.99
15	215856.33	2365149.46
16	215929.21	2365123.05
17	215976.87	2365119.49
18	216088.54	2365156.45
19	216117.58	2365179.69
20	216178.41	2365249.77
21	216216.14	2365315.85
22	216229.1	2365391.87
23	216159.23	2365606.82
24	216131.86	2365565.47
25	216157.99	2365467.87
26	216162.17	2365409.67
27	216006.67	2365190.67
28	215815.02	2365309.34
29	215813.52	2365365.22
30	215821.07	2365466.31
31	215829.08	2365574.46
32	215842.11	2365750.59
33	215846.73	2365842.1
34	215841.72	2365933.73
35	215822.61	2366074.5
36	215810.29	2366165.61
37	215796.7	2366263.02
38	215782.66	2366363.35
39	215678.99	2366768.19
40	215644.44	2366850.29
41	215605.84	2366941.95
42	215563.61	2367056.57

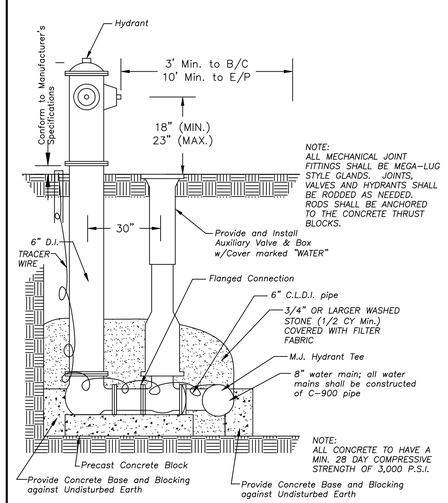
Structure Tables

Sewer Sturcture and Station	Northing	Easting	Invert Elevation	Rim Elevation
MH #12 @ 1+82	215529.83	2367189.83	924.2	934.2
MH #11 @ 2+90	215527.79	2367069.85	923	935.4
MH #10 @ 5+79	215633.37	2366800	915	928.7
MH #9 @ 8+29	215724.45	2366567.18	908.1	917.6
MH #6 @ 12+18	215777.06	2366179.33	905	917.5
MH #7 @ 15+18	215817.42	2365882.6	901	912.2
MH #8 @ 17+79	215801.69	2365621.62	892	905.5
MH #5 @ 21+38	215779.96	2365261.24	883.77	893.8
MH #4 @ 22+04	215832.72	2365213.14	882.87	892.4
MH #4.1 @ 22+88	215893.89	2365157.38	883.2	891.9
MH #4.2 @ 24+30	216046.12	2365172.38	883.8	891.5
MH #4.3 @ 26+40	216191.81	2365315.56	884.62	893.9
MH #4.4 @ 29+29	216182.88	2365600.6	885.76	896.4

Water Structure and Station	Northing	Easting	Invert Elevation	
Hydrant @ 1+20	215492.77	2367238.5	927	
Section Valve @ 4+75	215586.42	2366892.56	924.9	
Hydrant @ 5+00	215570.77	2366870.23	924.8	
Hydrant @ 8+00	215683.89	2366581.33	911.2	
Section Valve @ 11+40	215756.19	2366258.84	907.9	
Section Valve @ 12+05	215765.66	2366189.03	907.6	
Hydrant @ 16+55	215780.36	2365745.32	901.2	
Section Valve @ 19+38	215780.61	2365438.88	892.7	
Hydrant @ 19+75	215810.98	2365417.4	891.6	
Section Valve @ 20+00	215778.4	2365401.51	890.8	
Section Valve @ 21+75	215803.47	2365226.27	896	
Section Valve @ 22+10	215832.99	2365199.37	894.4	
Hydrant @ 22+25	215825.8	2365175.25	883.9	
Section Valve @ 25+75	216154.59	2365264.96	883.3	

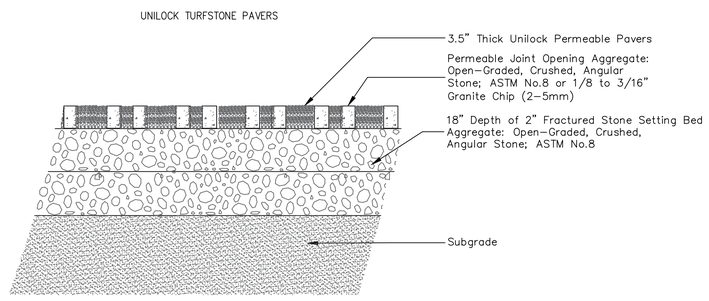
WILLABAY MEADOWS SUBDIVISION
BUILDING GRADES AND DRIVEWAY CULVERT SIZING

	YARD GRADE	FINISH FLOOR	LOWER LEVEL	DRIVEWAY CULVERT
LOT 1	936.3	938.0	928.0 (LO)	15"
LOT 2	935.8	937.5	927.5 (WO)	15"
LOT 3	935.0	936.7	926.7 (LO)	15"
LOT 4	934.0	935.7	925.7 (LO)	15"
LOT 5	919.75	921.5	911.5	15"
LOT 6	919.3	920.8	910.8	15"
LOT 7	918.6	920.1	910.1	15"
LOT 8	918.0	920.2	910.2	15"
LOT 9	917.0	919.2	909.2	15"
LOT 10	916.0	918.2	908.2	15"
LOT 11	913.8	916.0	906.0	15"
LOT 12	905.8	908.0	898.0	15"
LOT 13	897.5	899.0	889.0	15"
LOT 14	895.8	898.0	888.0	15"
LOT 15	895.3	898.2	888.2 (LO)	15"
LOT 16	894.8	896.5	886.5 (LO)	15"
LOT 17	892.5	895.0	885.0 (WO)	15"
LOT 18	892.5	895.2	885.2 (WO)	15"
LOT 19	895.5	895.7	885.7 (WO)	15"
LOT 20	894.8	897.0	887.0 (WO)	15"
LOT 21	895.3	897.5	887.5 (WO)	15"
LOT 22	896.8	898.2	888.2 (LO)	15"
LOT 23	900.5	902.7	892.7	15"
LOT 24	898.0	900.2	890.2	15"
LOT 25	896.8	899.0	889.0	15"
LOT 26	896.8	899.0	889.0	15"
LOT 27	895.0	897.8	887.8	15"
LOT 28	896.0	898.2	888.2	15"
LOT 29	897.5	899.7	889.7	15"
LOT 30	902.5	904.7	894.7	15"
LOT 31	904.5	906.7	896.7	15"
LOT 32	911.5	913.7	903.7 (LO)	15"
LOT 33	912.5	914.7	904.7 (LO)	15"
LOT 34	915.5	917.0	907.0 (LO)	15"
LOT 35	917.0	919.2	909.2	15"
LOT 36	917.5	919.7	909.7	15"
LOT 37	918.5	920.7	910.7 (LO)	15"
LOT 38	918.3	920.5	910.5	15"
LOT 39	925.0	927.5	917.5 (LO)	15"
LOT 40	931.5	933.2	923.2 (WO)	15"
LOT 41	934.0	936.2	926.2 (WO)	15"
LOT 42	936.0	938.2	928.2	15"

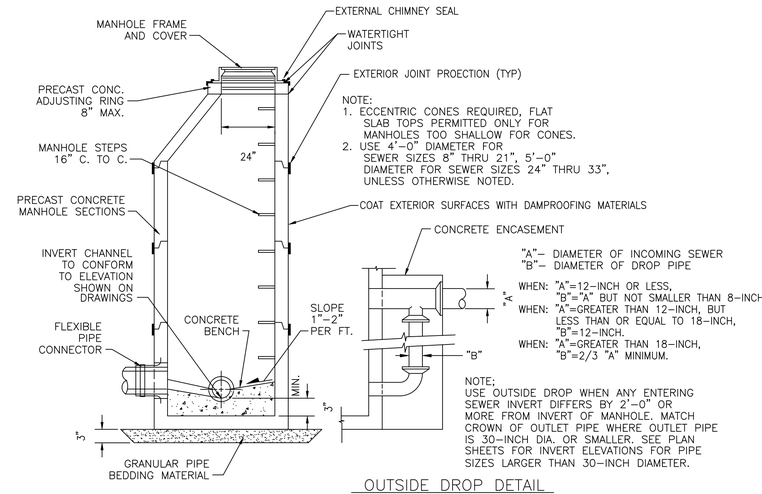


N.T.S.

STANDARD FIRE HYDRANT DETAIL



TURFSTONE PAVERS EMERGENCY ACCESS DETAIL



OUTSIDE DROP DETAIL

N.T.S.

SANITARY MANHOLE DETAIL

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

CONSTRUCTION DETAILS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
12/18/2024 -NK PLAN & PROFILE
03/14/2025 -RS PLAN & PROFILE
05/30/2025 -NK GEN. PLAN REV.
07/18/2025 -RS REVISIONS
07/22/2025 -RS REVISIONS
07/31/2025 -RS REVISIONS
09/16/2025 -RS REVISIONS
09/23/2025 -RS REVISIONS

PROJECT NO. 5536.17
DATE 05/12/2025
SHEET NO. 14 OF 19

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SPECIFICATIONS FOR
ROADWAY, GRADING,
STORM SEWER CONSTRUCTION
SITE PREPARATION, DRAINAGE
AND EROSION CONTROL
VILLAGE OF WILLIAMS BAY
WALWORTH COUNTY, WISCONSIN

GENERAL DESCRIPTION

Land and Lakes Developers, or their assigns, defined as OWNER, will receive bids for all work as shown on the plans, indicated within a bid Proposal, and further described in the following Specifications complete, and in accordance with the "Standard Specifications for Sewer and Water Construction in Wisconsin" sixth edition, December 22, 2003 with Addendum No. 1, December 22, 2004, except Part I thereof, and its Addendums and the "Standard Specifications for Highway and Structure Construction," 2016 Edition, State of Wisconsin Department of Transportation, except Part I thereof.

Site Work Specifications on Sheet 19.

The project consists of all the roadways, storm sewer construction, site grading, and erosion control.

The work that shall be done under this Contract consists of furnishing all labor, tools, equipment, machinery and appliances, and all materials, except where definitely specified to the contrary, and construction complete, in working order, ready for use.

The ENGINEER, Farris, Hansen & Associates, Inc., will stake the work once at no expense to the CONTRACTOR; however, if the CONTRACTOR shall request re-staking, this work will be done at the expense of the CONTRACTOR. CONTRACTOR should make every attempt to notify ENGINEER a minimum of two (2) days prior to his commencing work requiring either line and/or grade stakes. Requests shall be made periodically as work proceeds.

PART 1 – STORM SEWER
1. STANDARD SPECIFICATIONS

All work under this project shall be done in accordance with the "Standard Specifications for the Sewer and Water Construction in Wisconsin," Sixth Edition, December 22, 2003, and its Addendums, hereinafter referred to as the "Standard Specifications," and its amendments and corrections. Specifications contained herein shall supersede these standard specifications as indicated only to modify, alter or extend them.

2. EXISTING UTILITIES

It shall be the responsibility of the CONTRACTOR to notify all public utilities such as telephone, power, gas, etc., prior to excavating to determine for himself the extent of existing underground utilities. In addition the CONTRACTOR shall be responsible for any costs involved with relocating or bracing any above ground utility poles or structures which may be weakened or on line of any proposed sewer construction.

3. ABOVE GROUND UTILITIES

It shall be the responsibility of the CONTRACTOR to notify any above ground utilities such as electric power utilities, phone companies, and telegraph companies to relocate or reinforce any poles, ties, or anchors, which may be on the line of the proposed sewer line, or weakened by excavation for the sewer line at no extra cost to the OWNER.

4. UNDERGROUND UTILITIES

The CONTRACTOR shall have located or verify all known underground utilities such as existing gas line, telephone lines, underground power lines, storm sewer, sanitary sewers or water mains, prior to requesting grades for any sewer line. If any other utility is on line or grade, the location of the sewer line will be relocated to clear such utility, if possible, or the underground utility will be relocated.

5. UTILITY CROSSINGS

The CONTRACTOR shall carefully expose, with hand tools, all utilities which cross the proposed storm sewer prior to construction in the immediate area of same, to allow the ENGINEER to check for conflicts. All utilities shall be protected from any disturbance throughout the project work and supported in accordance with Section 2.6.5 of the "Standard Specifications."

6. INTERFERENCE OF UNDERGROUND STRUCTURES

Section 2.1.1 of the "Standard Specifications" shall govern except as modified hereafter: All altered work shall be either negotiated between CONTRACTOR and OWNER or payment made by increasing or decreasing the bid item involved. Concrete encasement or capping of sewer when ordered shall be negotiated as an extra.

7. SURFACE REPLACEMENT

Sections 2.6.11, 2.6.12, 2.7.1 and 2.7.2 of the "Standard Specifications: shall be deleted and the following shall apply: The CONTRACTOR shall include within his unit price bid for utilities the cost of replacing all damaged or disturbed driveways, pavements, or other existing surface improvements. Replacement of all existing surface improvements shall meet or exceed the quality of the original materials or workmanship. Existing bituminous or concrete pavements shall be sawcut prior to excavating.

8. SEWER CONSTRUCTION

The appropriate provisions of Parts II and III of the "Standard Specifications" shall apply except as modified or amended hereinafter. Construction shall be in accordance with requirements contained within all permits obtained for the project, copies of which shall be furnished to the CONTRACTOR and made a part of these specifications.

All excavations within established roadways, shoulders or new roadways shall be backfilled with granular material conforming to Section 8.43.4. Consolidation of backfill within these established areas shall be by mechanical compaction as defined in Section 2.6.14. granular material in established roadways.
All excavations outside of existing pavement or shoulder areas may be backfilled with excavated material conforming to Section 8.46.5 unless the material is determined to be unsuitable. If determined unsuited at the time of construction, granular material conforming to Section 8.43.4 shall be substituted and paid for as an extra cost. Extra cost shall include wasting the unsuitable soils on site outside of building pad areas in designated fill areas as shown on the plans which have been stripped of topsoil preceding its placement. Cubic yard quantities shall be determined by using the factor 0.15 cubic yards per foot of trench depth per foot of trench length.

All bedding and cover materials used for sewer construction shall conform to materials as defined under Section 8.43.0 of the "Standard Specifications".

9. COMPACTION

Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D1557; and not less than the following percentages of relative density; determined in accordance with ASTM D2049; for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils):

a. Under Paving Areas: Compact top eight inches of existing ground surface and each layer of backfill or fill material to 98 percent maximum density for cohesive soils for 95 percent relative density for cohesionless soils.
b. Other Areas: Compact top eight inches of existing ground surface and each layer of backfill for fill material to 95 percent maximum density for cohesive soils or 90 percent relative density for cohesionless soils.

Compact the soil materials around piping and conduit with hand-operated tampers.

Do not allow heavy vehicles, equipment, or machinery to operate directly over piping and conduit until a minimum of 24 inches of backfill has been placed and compacted over it.

10. STORM SEWER PIPE MATERIALS

The CONTRACTOR shall furnish all new materials required to complete work as called for within these specifications and shown on the drawings. Reinforced concrete pipe shall be used throughout entire project unless specifically noted on the plans.

Reinforced concrete pipe used for storm sewers shall meet the requirements of ASTM C-76 with rubber gasket joints conforming to ASTM C-443 or Section 3.2.15 of the "Standard Specifications".

11. CATCH BASINS AND AREA DRAINS

The provisions of Section 3.6.1 of the "Standard Specifications" shall govern except as modified hereafter. Catch basins in driveway shall be 48" I.D., unless otherwise shown, and conform to details shown on this plan, castings shall be Neenah R-2560E with beehive grate. Catch basins shall be bid to include all costs associated with their construction complete including inlet castings and grates.

Backfill trenches within new roadways with granular material.

Area drains shall be 48 inches diameter precast concrete section with a top opening to accommodate the Neenah R-2560-E1 frame and grate.

It should be noted that placement of catch basins and area drains may be modified by Engineer prior to construction if conflicts or other conditions occur.

12. CLEANING OF SEWERS and APPURTENANCES

The interior of all sewers and appurtenances shall be kept clean throughout construction. The Work shall be freed from all dirt and extraneous materials of all types as the work progresses and left clean at the completion of work.

13. COORDINATION OF WORK

The CONTRACTOR shall coordinate his work effort with that of the Contractor for the site, grading and roadway construction. Stripping and stockpiling of topsoil and rough grading of roadway sub-grade shall be done by others ahead of installation of the underground utilities by this CONTRACTOR. After all sewer and construction for a given street or area is complete the CONTRACTOR for the roadway construction shall be responsible for the protection of all surface protruding appurtenances such as manhole frames and lids, area drains, catch basins, etc.

14. SURPLUS EXCAVATED MATERIALS

The provisions of Section 2.2.11 of the "Standard Specifications" shall be deleted and the following shall apply: The CONTRACTOR shall haul and dispose of surplus excavated material to designated fill areas on site. The cost of placing such surplus or disposing of material to the designated fill area shall be included in the bid for the work.

15. ADJUSTMENT OF SURFACE PROTRUSIONS

All catch basins, area drains, and other surface protrusions shall be adjusted at the request of the CONTRACTOR for Street Construction if found to be unreasonably high or low at the time of paving or doing other work which must meet elevations of the surface protrusions. This work shall be done promptly or the OWNER may cause others to do the work and charge this CONTRACTOR for the costs.

16. STAKING, STAKES AND LATH

Necessary stakes and lath shall be furnished by the ENGINEER for staking of line and grade. All line and grade shall be provided as required by the Project Engineer.

17. SURVEY POINTS

All reference stakes, horizontal and vertical control points, survey monuments and other points which are marked by lath crossed over the point and heavily ribboned shall be protected by the CONTRACTOR against being destroyed. If these points are destroyed by the CONTRACTOR'S work activity, they shall be replaced at the CONTRACTOR'S cost by the ENGINEER.

18. SUBSURFACE SOIL INVESTIGATION

Subsurface soil investigations have not been fully made. All CONTRACTORS who review shall make his own judgment pertaining to the character of existing subsurface materials of the site test pits were dug and are shown. The CONTRACTOR shall be responsible in formulating his own opinion of the soils to be encountered and to what extent testing or investigation is required for him to formulate his bid. The CONTRACTOR shall assume the responsibility of constructing all improvements for the bid prices. The only exception to this shall be as specified for ordering undercut and other specified extras or changes to work.

19. SCHEDULE OF WORK

It shall be the intent of the Owner to complete all grading for the sub-base of the roadways, drainage swales and underground pipe work as soon as possible. The CONTRACTOR shall submit a schedule for his work completion with his bid as contained within the proposal of the Contract Document.

20. TRAFFIC CONTROL

The Contractor shall maintain access to the existing residences at all times. Roads shall be maintained in a safe condition throughout the duration of the project. The Contractor shall take all precautions necessary to safely warn the public of the probable increased danger to travel due to construction of the work.

Whenever the Contractor's activities obstruct through traffic, there shall be sufficient flagmen on duty to guide the traffic, and the Contractor shall furnish and install all temporary signing and barricades required to safely direct the traveling public around the obstructed area. Traffic control shall be provided in accordance with the "Manual on Uniform Traffic Control Devices".

PART 2 -ROADWAY AND SITE WORK
1. STANDARD SPECIFICATIONS

All work as shown on the plans, indicated within the bid proposal, and further described in the following specifications, completed, and in accordance with "Standard Specifications for Highway and Structure Construction", Edition of 2016, State of Wisconsin Department of Transportation, except Part I thereof.

The ENGINEER will stake the work once at no expense to the CONTRACTOR; however, if CONTRACTOR shall request re-staking, this work will be done at the expense of the CONTRACTOR. CONTRACTOR should make every attempt to notify ENGINEER a minimum of two (2) days prior to his commencing work requiring either line and/or grade stakes. Requests shall be made periodically as work proceeds. All project areas shall be stripped, rough graded and brought to subgrades, as shown on the plans.

2. CLEARING AND GRUBBING

All clearing and grubbing will be in accordance with plan requirements and as directed by Engineer.

The CONTRACTOR shall clear, grub and dispose of all brush, trees, stumps, logs, etc. within all excavation limits in accordance with Section 201 of the "Standard Specifications". Clearing and grubbing shall be paid for on a lump sum basis. All brushy vegetation and limbs shall be chipped and blown over existing vegetated site in a maximum of one to two inches depth. Stumps are to be ground and logs to be hauled offsite.

3. UNCLASSIFIED EXCAVATION

Unclassified excavation shall consist of all excavations necessary to provide a subgrade at suitable elevations such that roadways, curb and gutter, and lands adjacent thereto can be constructed to finished elevations shown on the plans by application of stone base course and pavement or topsoil replacement as applicable.

Payment for the unclassified excavation shall be lump sum which shall include all required transportation and disposal costs of excess materials. All excess excavated materials shall be disposed of on site in designated areas shown on the plans as directed by either OWNER or ENGINEER. It should be noted that there is substantial fill shown for the road and adjacent lot from Station 23+00 to the Cul-De-Sac. The road will be required to be filled to grade but adjacent lots may not be due to the volume of fill needed. These lots will not initially be opened until fill from basement excavations or the off-site material becomes available. Excess topsoil may be used for fill outside of any future building area. Estimated quantity of unclaimed excavations is CY.

4. CUTS

All areas of grading work, particularly cut areas, shall be kept shaped and drained during construction. All roadway and drainage swales, pockets, depressions and, low areas shall drain effectively at all times. Graded areas shall be protected against erosion prior to the completion of the work by use of temporary traps, diversions, checks and other methods.

5. COMPACTION

Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D1557; and not less than the following percentages of relative density; determined in accordance with ASTM D2049; for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils):

A. Under Paving Areas: Compact top eight inches of existing ground surface and each layer of backfill or fill material to 98 percent maximum density for cohesive soils and90 percent relative density for cohesionless soils may be adjusted by building designer).

B. Other Areas: Compact top eight inches if existing ground surface and each layer of backfill for fill material to 95 percent maximum density for cohesive soils or 90 percent relative density for cohesionless soils.

Where soil materials must be moisture conditioned before compaction, uniformly apply water to the surface. Prevent free water from appearing on the surface of soil materials during or subsequent to compaction operations.

Remove, replace, or scarify all dry air soil materials that are too wet to permit compaction to the specified density.

All compaction tests and inspections shall be made by an independent testing laboratory acceptable to Engineer. Site contractor will assist the testing firm in the performance of their tests and inspections and be responsible for coordinating the tests and inspections. Soil testing reports and procedures shall be completed and followed. Copies are to be provided to the OWNER and Village upon request..

No fill shall be placed without inspection and approval of the subgrade and fill material composition by a representative of the testing laboratory or Engineer.

Method of test for density of soil in place shall be the Sand-Cone Method, ASTM D1556 or Nuclear Denosmeter. Method of test for moisture-density relations of soils shall be Modified Proctor, ASTM D-1557-78. Relative density of cohesionless soils shall be established by ASTM D-2049-69, 90 percent relative density. A geotehnical report on compaction from the lesser of 6 feet over installed pipe or road subgrade.

Excavated materials may be used for backfill provided all wood, roots and other deleterious materials are removed and subject to approval by the Construction Manager. Excavated material shall be placed into fill areas once dried to proper moisture content or determined to be suitable by site Engineer. Excavated site materials shall be inspected, placed and compacted in lifts as recommended by the testing firm.

6. FILL

Place the fill on surfaces stripped of topsoil and graded to subgraded by compaction surfaces to the grade indicated. Maintain optimum moisture content for compacting material during placement operations.
Provide, place and compact off site pit run granular material to supplement any site shortage of suitable material to bring to the site to subgrade if ordered by owner at a unit price per ton. Borrow site within the existing pond areas will be considered if suitable materials are found there. Otherwise the material will be hauled in from off-site or left for future basement spoils.

7. SUBGRADE INSPECTION

Upon completion of final subgrade work and prior to the placement of crushed aggregate base material, the roadway areas will be inspected by the Engineer to check that conformance to the proposed grades is maintained. In addition, all subgrade shall be test rolled with a loaded quad-axle truck with the VILLAGE ENGINEER present before base course placement is started.

8. CRUSHED AGGREGATE BASE COURSE

Crushed aggregate base course shall be ten inches (10") thick and placed in a minimum of two lifts and shall conform to Gradation No. 2 as specified in accordance with the "State Specifications" Section 305.2. All crushed aggregate base course shall be compacted with water truck, grader and vibrator roller.

The base course shall be crushed stone and shall be constructed in accordance with the requirements of Section 305 of the "State Specifications".

If undercut and compacted granular fill is ordered by the ENGINEER at the time of excavating for the subgrade, payment shall be made as an extra at the supplemental price bid per cubic yard. All subgrade shall be test rolled with loaded quad-axle truck with VILLAGE ENGINEER present before base course placement is started.

9. BITUMINOUS CONCRETE PAVEMENT

Bituminous concrete pavement shall be 4 LT 58-28 S – 2.25 inch thickness of binder course and a 5 LT 58-28 S – 1.75 inch thickness of surface course materials. The materials and methods used in application of the bituminous concrete pavement shall comply with the general requirements of Section 450 of the "State Specifications". Asphalt shall be Type MC complying with AASHTO M82 and aggregates to Sub-section 460.2.2 of the "State Specifications". No recycle.

All bituminous concrete paving operations shall be done under the observation of the Village Engineer.

10. TACK COAT

All existing paved surfaces which call for a surface lift of pavement shall be thoroughly cleaned and dry prior to paving with an emulsified asphalt tack coast applied at a rate of 0.05 – 0.15 gallons per square yard. For new pavements when a time delay between binder course and surface course is specified or ordered by the ENGINEER the first binder lift shall be thoroughly cleaned and dry with an emulsified asphalt tack coat applied at 0.04 – 0.08 gallons per square yard.

11. CONCRETE

All concrete used on this project, except for pavement, shall be air-entraining, 6-bag mix with a minimum 28 day compressive strength of 4,000 psi. All requirements of Section 501 of the 'State Specifications'shall apply unless otherwise modified herein or waived by the ENGINEER. Course aggregate shall be proportioned between Size No. 1 and No. 2 to provide suitable workability with a 6 percent air content plus or minus 1.5 percent.

12. TRAFFIC CONTROL

The Contractor shall maintain access to existing residences at all times. Roads shall be maintained in a safe condition throughout the duration of the project. The Contractor shall take all precautions necessary to safely warn the public of the probable increased danger to travel due to construction of the work.

Whenever the Contractor's activities obstruct through traffic, there shall be sufficient flagmen on duty to guide the traffic, and the Contractor shall furnish and install all temporary signing and barricades required to safely direct the traveling public around the obstructed area. Traffic control shall be provided in accordance with the "Manual on Uniform Traffic Control Devices".

13. DRAINAGE SWALES, OFF STREET GRADING & DITCHES

Drainage swales, ditches and off street grading shall be constructed in accordance with details of line, grade and configuration shown on the plans and as specified under Sub-section 205.3.6 of the "State Specifications". Temporary bale ditch checks, sediment basins, diversions, silt fence, erosion mats, etc., shall be used to minimize erosion throughout construction. Ditches over 5% grade shall have NAG P-300 erosion mats placed and staked.

All swales and off pavement grading shall be graded smooth to inlets of the storm sewer provided. If erosion control is found necessary, fabric, silt fencing, or other materials shall be provided as directed by the ENGINEER for the unit costs as listed in the proposal.

14. DELIVERY TICKETS

Delivery tickets for all items paid for on a unit price basis shall be provided by the CONTRACTOR at the time of delivery to the site. Tickets shall be dated, numbered and include all applicable pay quantities thereon with signature of scale operator as applicable. Provisions for required scale operations shall be provided by the CONTRACTOR. All items to be paid by weight shall be signed by the scale operator and all other quantities of volume or number shall be monitored by the Project Inspector.

15. SALVAGE, STOCKPILE & REPLACEMENT OF TOPSOIL

All topsoil on areas to be disturbed shall be stripped and stockpiled in areas as indicated on the plans or otherwise approved by the ENGINEER.

After excavating and rough grading of all required areas a minimum 6" topsoil shall be replaced and graded. All work shall be performed in accordance with the requirements of Section 625 of the "State Specifications". All excess topsoil shall remain the property of the OWNER and be placed in fill locations outside building site areas.

16. REMOVING MISCELLANEOUS MATERIALS

The CONTRACTOR shall remove and dispose of any old curb and gutter, bituminous pavement, masonry and manholes in accordance with the requirements of Subsection 204 of the "State Specifications". Payment for removal of miscellaneous structures shall be included in the Proposal for the work.

17. WASTE MATERIALS OR EXCESS EXCAVATION

All excess excavated materials resulting from construction of roadways and drainage courses shall be moved offsite or to designated fill areas on the site and there deposited in compacted 12 in. lifts as staked by the ENGINEER. This work shall be done only after stripping topsoil. All material shall be used on site. (See requirements for engineered fill under buildings and roadways.)

18. TIME PERIOD FOR PAVING

Installation of the binder course shall be done at as early a date as possible after initial placement of base course. The surface course shall not be constructed until one (1) year after installation of the binder course unless an earlier or later installation is approved by the Owner. The CONTRACTOR shall provide for any tack oil coat required. The delayed installation of the surface course shall not interfere with finalizing the Contract and payments for all other work. In addition the paving shall be disregarded in determining the time of completion.

Prior to the paving operation streets shall be regraded and additional crushed gravel provided and compacted to bring the base course to grades as shown on the plans. The ENGINEER shall stake centerline base course grades (red tops) once for CONTRACTORS use prior to the paving work as required. The base course shall be proof rolled before paving.

19. SEEDING, MULCHING & FERTILIZER

Preparation of all seed beds, sowing, and other requirements shall be in accordance with Section 630 of the "State Specifications". Seed Mixture shall be Seed Mixture No. 40, applied at a rate of 4 pounds per 1000 square feet of area. All seeded areas shall be mulched in accordance with Section 627 of the "State Specifications".

Fertilizer to be used shall be as defined under Sub-section 629.2.1 and applied at a rate of 7 pounds per 1000 square feet of area following procedures conforming to Sub-section 629.3 of the "State Specifications" for all areas seeded or sodded.

The street terraces, finished areas along boundary and sewer easements shall be seeded, mulched and fertilized except as may be otherwise noted on the plans. CONTRACTOR will provide a perennial rye cover crop over other disturbed or open lands. These disturbed areas on slopes shall be prepared and seeded with Seed Mixture No. 20 applied a rate of 5 pounds per 1000 square feet area or approved lawn turf mix.

Following any initial soil disturbance, permanent or temporary stabilization shall be completed within seven calendar days as to the surface of all slopes greater than 3:1. In addition, all other disturbed or graded areas shall be stabilized within fourteen calendar days.

20. DUST PALLIATIVE

The CONTRACTOR shall minimize the dispersion of dust from the sub-base, basecourse, drainage swales and other surface areas disturbed throughout construction until acceptance of work, by the applications of water or other approved dust control materials when surfaces are dry and travel over unfinished surfaces is required. No extra for water trucks and control will be paid. Calcium chloride, if used, shall be applied at a rate of 2 lbs. per square yard.

21. EROSION CONTROL

The Contractor shall use the current Wisconsin Department of National Resources Construction Site Erosion & Sediment Control Technical Standards as a reference and guide for erosion control practices.

The Contractor shall comply with the provisions of local erosion control plans and/or ordinances.

All erosion and sediment control measures should be constructed and maintained in accordance with these Standards. Sediment control measures should be adjusted to meet field conditions at the time of construction and installed prior to any grading or disturbance of existing surface materials. Periodic inspection and maintenance of all sediment control structures should be provided to ensure intended purpose is accomplished. Sediment control measures are to be in working condition at the end of each working day. After any significant rainfall, sediment control structures should be inspected for integrity. Any damaged structures should be corrected for integrity. Sediment control measures should not be removed until the areas served have established vegetative cover. Stone and gravel mats should be installed at all construction site exits to prevent tracking of soil. Any tracked soil should be collected from paved roads located near the construction site. Overland flow should be prevented from directly leaving the work site by routing through proposed sediment traps. Following the cessation of initial soil disturbance and work activities in the area, permanent or temporary stabilization shall be completed and stabilized within fourteen calendar days of work completion.

All disturbed areas shall be seeded with temporary dormant seed mix (oats, winter wheat, annual rye) if permanent seed cannot be completed by September 15, 2025, with appropriate follow-up to address erosion problems, wash-out, etc. Permanent seed mix must then be made by June 1, 2026. Seeding rates and mixes shall conform to Section 630 of the "State Specification". If lands are disturbed after October 30 additional stabilization may be required with anionic polymer over a cover crop of winter wheat, oats, or annual rye on all slopes 4:1 or greater.

22. EROSION MAT

The CONTRACTOR shall place erosion mat over all seeded areas with slopes over 4:1 as required to control erosion, including at the locations shown on the plans and/or as directed by the ENGINEER. Erosion mat shall be placed in accordance with the procedure recommended by the manufacturer and Section 628.3.2 of the "State Specification" or as directed by the engineer. The rear slopes o flots 15-22 and the slopes around Outlots 3-5 will be restored with erosion matting within 7 days of either being left inactive or final grading.

Erosion mat material shall be North American Green S-150 double net straw blanket or equal, as indicated on the plans.
23. SEDIMENT TRAPS

Sediment traps shall be constructed as indicated on the plans and shall be constructed as part of the initial BMPs whenever practical. An overflow weir must be incorporated at the outlet to discharge flow from the trap. Sediment traps shall be phased with the earthwork activity where practical. If sediment trap sizes shown on the grading plan cannot be constructed due to terrain, CONTRACTOR shall incorporate a 'Best Fit'sediment trap.

24. DEWATERING

All site or trench dewatering shall be done by acceptable methods in strict accordance with technical standards (Code No. 1061) WI DNR. Discharge shall be into storm water basins and sediment containment areas at rates that can be accommodated (ENGINEER to approve).

Any dewatering being pumped directly to storm sewer or offsite shall be done through geotextile bags. In general, dewatering shall be pumped to the storm water basin area for containment.

25. PERMITS

Contractor shall be responsible for all permit conditions concerning erosion control and Village site permit conditions along with the State NOI permits. Drainage that leaves the site must be controlled and erosion prevented. It will be very important to prevent tracking of mud or other materials off site onto the roadways. If this occurs it must be immediately cleaned by power brush or other acceptable means. Anti-tracking mats are to be created and maintained as shown.

WILLIABAY MEADOWS
FINAL ENGINEERING PLAN

SITE SPECIFICATIONS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
12/18/2024 -NK
PLAN & PROFILE
03/13/2025 -RS
PLAN & PROFILE
05/12/2025 -RS
PLAN & PROFILE
05/30/2025 -NK
GEN. PLAN REV.
07/31/2025 -RS
REVISIONS
09/16/2025 -RS
REVISIONS

PROJECT NO.
5536.17
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PUBLIC SANITARY SEWER AND WATER MAIN
STANDARD SPECIFICATIONS

The "Standard Specifications for Sewer and Water Construction in Wisconsin", Sixth Edition, December 22, 2003, with Addendum No. 1, "Standard Specifications" and The Village of Williams Bay Water and Sanitary Sewer Main Specifications dated January 7, 2019. Special Provisions Development Standards for Private Developments, "Special Provisions" will govern all public sanitary sewer and water main utility work performed on this project. Below are the relevant sections of the "Special Provisions". Village material specifications shall apply without exception and be complied with.

In the event of a discrepancy between the "Special Provisions" and the "Standard Specifications" the "Special Provisions" shall govern.

Copies of the "Standard Specifications" may be obtained by contacting:
Public Works Industry Improvement Program
2835 N. Mayfair Road, Suite 35
Milwaukee, WI 53222
Phone: (414) 778-1050

SANITARY SEWER CONSTRUCTION

A. Bedding and Cover Material
1. Sanitary sewer bedding and cover material shall conform to the appropriate sections of the "Standard Specifications", as specified and/or modified below:
a. PVC Pipe – Section 3.2.6(i), as modified below (Note that the bedding section is essentially Class "B" Bedding including placing a minimum of 12 inches of cover material over the top of the pipe.):
(1) Bedding material used for 18" diameter or smaller sewer pipes shall conform to either Table 32 (3/8" crushed stone chips containing at least 85% machine fractured particles) or Table 33 (3/4" crushed stone chips containing at least 65% machine fractured particles) of Section 8.43.2(a). Crushed pea gravel will not be allowed for use as bedding material. Cover material shall be the same material as used for bedding.

(2) Delete the following sentence from Paragraphs 3.2.6(b)2 and 3.2.6(i):

"If crushed stone chips or other materials conforming to Section 8.43.2(a) are used as cover material, no compaction or staging is required."

(3) Placement and Compaction.
(a) Place bedding material to the springline of the pipe and compact prior to placing cover material. Compaction of bedding material at the level of the pipe springline shall include working bedding material under the haunches of the pipe using shovels or other suitable methods. The Contractor shall take care to completely work bedding material under the haunches of the pipe to provide adequate side support.

(b) Place and compact cover material in one or more lifts after compacting bedding material. Place a minimum of 12 inches of cover material over the pipe.

(c) Refer to Subsection 607.B. of the "Special Provisions" for requirements for recompacting Class "B" bedding disturbed by trench boxes.

B. Laterals
1. Connections to the Main Sewer
a. Building sewer 4" diameter (lateral) connections to the main sewer 18" in diameter or less shall be made with gasketed wyes except as noted below. The ends of laterals shall be plugged in accordance with Paragraph 3.2.5(f) of the "Standard Specifications".

(1) All lateral connections to new flexible pipe shall be made with factory fabricated or injection molded in-line wyes unless otherwise approved by the Engineer.

b. Place wyes at a typical vertical angle of 45° to the horizontal except install wyes flat or level when the Plans state to install laterals as low as possible.

2. Grade
a. Install sewer laterals at a minimum 2.08% (1/4"/ft.) grade unless shown otherwise on the Plans.

3. Marker Stakes
a. The Contractor shall furnish and install a marker stake over the end of each lateral installed. The marker shall be a minimum 2" x 4" x 4' wooden plank or as approved by the Engineer. The marker shall be placed vertically with its top flush with the surface grade. Place a spike or other durable magnetic material in the top of the marker stake to aid in future relocation.

4. Risers
a. Risers on shallow flexible gravity sewer mains shall be constructed of flexible gravity sewer pipe in accordance with File No. 10E of the "Standard Specifications". Use File No. 10E for risers up to 6 feet in height and for mains not exceeding 16 feet in depth measured from the flowline of the sewer.

b. Riser connections shall be made with factory fabricated or injection molded in-line tees. Do not use saddles for riser connections.

5. Cleanouts
a. All laterals exceeding 100 feet in length shall have cleanouts installed on them. Cleanouts shall be placed at 100 foot maximum spacings as shown on the Plans or as directed by the Engineer. They shall be constructed in accordance with the details shown on the Plans.

C. Connections to Existing Manhole
1. Sewer connections to existing manholes shall be made in accordance with Section 3.5.7 of the "Standard Specifications". Field tapped holes for connecting sewer pipe to manholes shall be made by coring the manhole except that connections to brick or block manholes may be made by punching out the opening. Flexible pipe connections shall be made with flexible watertight connectors, Kor-N-Seal, Link-Seal or equal. All clamps, bolts, etc. of pipe to manhole seals shall be stainless steel. If Link-Seal connectors are used, the bolt heads shall be placed on the inside of manholes.

2. Form a new flow line(s) in the existing manhole(s) in accordance with File No. 13 of the "Standard Specifications".

3. For outside drop connection to existing manhole follow section 3.5.8(d)4, File 22 of the "Standard Specifications".

4. Plug Downstream Manhole
a. Place temporary plugs in all downstream (receiving) manholes to prevent groundwater and debris from entering the existing sewer system.

D. Pipe Flotation
1. Pipes installed below the groundwater elevation shall be protected against flotation. The Contractor shall lower the groundwater elevation until after adequate cover has been placed to secure pipes.

E. Insulation
1. Sewer lines shall be insulated where noted on the Plans and wherever the depth of cover is less than five (5) feet when so ordered by the Engineer. Insulation shall be in accordance with Chapter 4.17.0 of the "Standard Specifications" and the details in the Appendix of the "Special Provisions".

F. Deflection Testing
1. Polyvinyl chloride (PVC) sewer pipe shall be deflection tested with an approved go-no-go acceptance testing device. The test shall not be conducted until after all backfill has been placed and consolidated and after riser pipes and sewer laterals have been installed. The entire length of sewer pipe shall be tested.
a. PVC pipe shall be deflection tested in accordance with Paragraph 3.2.6(i)4. of the "Standard Specifications", as amended below:
(1) PVC pipe shall not be deflection tested until at least 14 days after all backfill has been placed, including backfilling of laterals and risers. Initial deflection testing shall be done using a 95% mandrel. The use of a 92.5% testing device will not be allowed for initial testing regardless of the time elapsed after backfilling.

(2) All sections failing to pass the test shall be repaired and retested, however, if at least 30 days have elapsed since the pipe was placed and backfilled, the Contractor will be allowed to retest the sewer line using a 92.5% mandrel.
2. Mandrels
a. Go-no go mandrels shall conform to the requirements of File No. 30 and 30A of the "Standard Specifications".

G. Leakage Testing
1. Low Pressure Air Test
a. Amend Paragraph 3.7.1 of the "Standard Specifications" to read in part: "Sanitary sewers less than or equal to 36 inches in diameter shall be tested for leakage using the low pressure air test. The length of laterals included in the test section shall be included in determining the test time."

H. Televising Sewers
1. The Contractor shall televise all sewers after successfully completing deflection and leakage testing.

2. The Contractor shall provide the Owner with a copy of the videotape and a written report by the video contractor. The report shall indicate all defects (i.e.; bad joints, cracked pipe, infiltration, standing water, etc.) and shall list locations of all laterals.

3. All defects shall be corrected and any dirt, gravel or foreign material removed from the sewer prior to acceptance by the Village.

SANITARY SEWER MATERIALS

A. Sanitary sewer pipe material shall be polyvinyl chloride (PVC) pipe conforming to the following:
1. Polyvinyl chloride (PVC) sewer pipe (4 inch through 15 inch diameter) meeting the requirements of ASTM D3034, SDR 26, with 115 psi integral bell type flexible elastomeric joints meeting the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477.

B. All lateral pipes shall be A and shall conform to the requirements of ASTM D3034, SDR 26.

SANITARY MANHOLES
A. Standard Manhole.
1. Sanitary manholes shall be constructed in accordance with Chapter 3.5.0 and File Nos. 12, 12A, 13, and 15 of the "Standard Specifications" and these Special Provisions.

a. Poured Manhole Base
(1) All manhole bases (benches) shall be poured in place in accordance with Subsection 3.5.5(b) of the "Standard Specifications". Precast manhole bases or precast integral base units will be allowed in accordance with Subsection 3.5.5(c), however, no precast base units with preformed benches are allowed. All manhole benches shall be poured in place.

2. Manholes shall be precast 48 inch inside diameter with eccentric offsets over the outgoing pipe.

a. Adjusting Rings
(1) A minimum of 4 inches to a maximum of 19 inches of adjusting rings shall be furnished for each manhole, unless shown otherwise on the Plans.

(2) Furnish manholes to minimize the chimney height required, so that chimney seal extensions will not be required. Note that a standard 9 inch seal covers a 6-1/2 inch chimney height.
(3) Material
(a) Adjusting rings shall be concrete, unless specified otherwise below, meeting the requirements of Subsection 8.39.11 of the "Standard Specifications".

(b) Rubber Adjusting Rings
l) The top adjusting ring on manholes subject to traffic loadings shall be rubber as manufactured by Infra-Risers, Adaptor, Inc., or equal. Use tapered adjusting rings alone or in combination to place the manhole casting truly parallel with the plane of the pavement. Install adjusting rings in accordance with the manufacturer's instructions using the recommended adhesive.

b. Manhole depths shown on the Plans are approximate only, unless the cover elevation is indicated. Manhole covers shall be placed to match the existing grade unless the finished elevation is shown on the Plans.

(l) Place manhole covers 1/4 inch below the pavement grade in roadways.

3. Manhole Frames and Covers
a. Manhole frames and covers shall be 1050 East Jordan Frame w/ 1020 Cover or equal In roadway; use 1020 East Jordan Frame off of roadway.

B. Frame/Chimney Joints
1. Type I – Modified
a. All sanitary manholes shall be constructed with Type I frame/chimney joints. Type I joints shall consist of the following:
(1) Adjusting rings shall be set with butyl rubber sealant troweled into a 1/4 inch thick layer over the entire surface area of all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal.

(2) Internal/External Chimney Seal

Type I joints shall be provided with an external manhole chimney seal (internal/external adaptor seal) as manufactured by Adaptor Inc., West Allis, Wisconsin. The internal/external manhole seal shall be installed in accordance with the manufacturer's instructions.
b. Furnish and install manhole seals to span (cover) the entire chimney height. Provide extensions as required.

2. Cone/Ring Dimensions
a. Manhole Cone Sections
(1) The top dimensions of cone sections shall be either 24 inches inside diameter by 36 inches outside diameter or 26 inches inside diameter by 38 inches outside diameter.

(2) The outside diameter of the top of the cone section shall be as large as or larger than the base flange of the manhole casting.

b. Adjusting Rings
(1) Adjusting ring dimensions shall match the dimensions of the top of the cone section; either 24" x 36" or 26" x 38".

(2) Adjusting rings shall have flat or even bearing surfaces providing bearing contact over the entire contact surfaces.

(3) Adjusting rings shall be as specified in Section 8.39.11 of the "Standard Specifications" or Subsection 210.A.2.a(3) of the "Special Provisions", except the dimensions shall be as specified above.

c. Center adjusting rings on manhole cones and center manhole castings on adjusting rings so that their surfaces will be flush whenever possible.

C. Manhole Riser Joints
1. Joints for precast manhole riser sections shall be made with rubber "O"-ring gaskets, a continuous ring of butyl rubber sealant (EZ-Stik or Kent-Seal in rope form) or equal. The butyl sealant shall be l inch diameter equivalent or as recommended by the manhole manufacturer.

2. Joints for precast manhole barrel sections including the joint with the bottom of the cone shall be wrapped with an external joint seal as manufactured by Mar Mac Construction Products Company; Cretex Specialty Products; CCI Pipeline Systems, LLC; or equal. The external manhole seal shall be installed in accordance with the manufacturer's instructions.
c. If external joint seals require steel strapping, it shall be a minimum 5/8" – 316 stainless steel with stainless steel "strap lock" fasteners.

D. Manhole Lifting Holes
1. All lifting holes in precast manhole sections shall be plugged using rubber plugs supplied by the manhole supplier, non-shrink grout or other approved method. Non-shrink grout shall fill the entire void and shall be troweled at each face to provide smooth surfaces. Cement mortar shall not be used to plug lifting holes.

E. Manhole Pipe Connections
1. Connections of pipes to manholes shall be made in accordance with Section 3.5.7 of the "Standard Specifications". All field tapped holes for connecting sewer pipe to manholes shall be made by coring.

2. All plastic pipe shall be connected to manholes by means of flexible watertight pipe to manhole seals in accordance with Subsection 3.5.7(c). Manhole seals shall be Kor-N-Seal, Link Seal or equal. All clamps, bolts, etc. of pipe to manhole seals shall be stainless steel. If Link Seal connectors are used, the bolt heads shall be placed on the inside of manholes.

F. Drop Manholes
1. All drop manholes, unless shown otherwise on the Plans, shall be constructed as "outside" drop manholes in accordance with Section 3.5.8(d) and File No. 19 or 20 of the "Standard Specifications" and the requirements of these Special Provisions.
a. Heights of manhole drops shown on the Plans are figured from the invert of the outgoing sewer to the invert of the incoming sewer.

G. Manhole Air Vents
1. The Contractor shall construct manhole air vents at the locations shown on the Plans and/or as directed by the Engineer. Manhole air vents shall be constructed in accordance with the details shown on the Plans or included in the Appendix of the "Special Provisions".

H. Manhole Vacuum Testing
1. Delete Section 3.7.6 of the "Standard Specifications" in its entirety and replace it with the following.

2. The Contractor shall vacuum test all sanitary sewer manholes for leakage, regardless of the sewer diameter, in accordance with the following:
d. The chimney and casting shall be in place prior to vacuum testing manholes.

b. All testing shall be done in the presence of the City Utility Engineer or his representative.

3. Isolate the manhole to be tested by plugging the inlet and outlet pipes with inflatable stoppers or other suitable test plugs. The plugs shall be securely braced to prevent the plugs from being drawn into the manhole.

4. The test head shall be placed at the top of the manhole in accordance with the manufacturer's recommendations.

a. Prior to starting the vacuum pump, determine the hydrostatic head on the lowest pipe connection to the manhole being tested.

b. If the hydrostatic head on the lowest pipe connection to the manhole is 12 feet or less, a vacuum pressure equal to 10 inches Hg (mercury) shall be applied to the manhole utilizing the vacuum pump.

c. When the pressure gage indicates 10 inches Hg, close the control valve, shut off the vacuum pump, and begin counting the seconds for the indicated pressure to drop one inch Hg. If the elapsed time is longer than the minimum time indicated in the following Table J, the manhole passes the test.

d. In the event the hydrostatic head is between 12 feet and 21 feet above the lowest connection to the manhole, the test vacuum pressure shall be reduced one inch Hg for each foot of hydrostatic head in accordance with the following Table ll. If the hydrostatic head is greater than 22 feet, no vacuum test shall be performed.

e. If the test fails, repair or seal the manhole using non-shrink grout or other approved materials. Retest until an acceptable test is obtained.

f. Tests may be conducted before or after backfilling.

WATER MAIN CONSTRUCTION
A. Bedding and Cover Material
1. Polyvinyl Chloride (PVC) Pipe
a. Bedding and cover material shall be crushed stone chips conforming to either Table 32 (3/8" crushed stone chips containing at least 85% machine fractured particles) or Table 33 (3/4" crushed stone chips containing at least 65% machine fractured particles) of Section 8.43.2(a) of the "Standard Specifications". Crushed pea gravel will not be allowed for use as bedding or cover material.

2. Trench Section
a. The trench section shall conform to Section 4.3.3 and File No. 36 of the "Standard Specifications", as amended below:
(1) Bedding and cover shall be placed in a minimum of three separate lifts to ensure adequate compaction of these materials, with one lift of bedding material ending at or near the springline of the pipe. The Contractor shall take care to completely work bedding material under the haunch of the pipe to provide adequate side support.

(2) Amend Section 4.3.3 and File No. 36 of the "Standard Specifications" to require a minimum of 12 inches of cover material over the top of the pipe.

B. Polyethylene Wrap
1. Delete Section 4.4.4 and all references to polyethylene wrap from the "Standard Specifications". Polyethylene wrap is not required along the trunk water main unless the Engineer orders it to be installed.

2. Water mains installed within organic soil layers, former landfill areas or crossing cathodically protected pipe lines shall be wrapped as ordered by the Engineer.
a. Polyethylene wrap, if required, shall meet the requirements of AWWA Standard C-105 (ANSI A21.S) using Class C (black) polyethylene material and shall be installed as specified in Section 4.4.4 of the "Standard Specifications".
3. All fittings and valves are to be polyethylene wrapped. Polyethylene wrap shall meet the requirements of AWWA Standard C-105 (ANSI A21.S) using Class C (black) polyethylene material and shall be installed as specified in Section 4.4.4 of the "Standard Specifications".

C. Disinfecting Water Mains
1. Water mains shall be cleaned and disinfected in accordance with Sections 4.3.11 and 4.3.12 and Chapter 4.16.0 of the "Standard Specifications" and AWWA Standard C651. Place calcium hypochlorite tablets in the water main as specified in Section 4.3.12.

2. See Section 555 of the "Special Provisions" for water main flushing and sampling requirements.

D. Sewer Crossings
1. Center one full length of water main pipe on sewers wherever water main crosses over or under a sanitary or storm sewer so that both water main joints will be as far from the sewer as possible.

E. High Points in Water Main
1. The Contractor shall install water main at the grades shown on the Plans with no high points constructed in the main except at hydrants and as indicated on the Plans. If a high point which could trap air cannot be prevented, then an air release assembly shall be constructed at that point, if so ordered by the Engineer.
a. The Engineer reserves the right to order the Contractor to relay water main placed at the wrong grade. The cost of such relay work shall be paid for by the Contractor.

F. Joint Restraint
1. Restraining Fittings, Valves and Sleeves
a. MEGALUG Restrained Joints
(1) Restrain all fittings (bends, tees, caps and plugs), valves and sleeves using MEGALUG restrained joints as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas.

(2) Buttress all fittings, as required, in addition to joint restraint.

2. Restraining Vertical Bends and Offsets
a. Changes in the grade of the water main made by vertical bends or offsets shall be restrained.

3. Restrained Hydrant Leads
a. Hydrant leads shall be restrained in accordance with the "Special Provisions".

G. Concrete Blocking (Buttresses)
1. All horizontal bends, tees, caps and plugs shall be provided with concrete buttresses, in addition to joint restraint as specified in Paragraph F.1.a(l) above, in accordance with Section 4.3.13 and File Nos. 44, 44A, 45 and 46 of the "Standard Specifications".

H. Insulation
1. Water mains shall be insulated where noted on the Plans and wherever the depth of cover is less than five (5) feet when so ordered by the Engineer. Insulation shall be in accordance with Chapter 4.17.0 of the "Standard Specifications" and the details in the Appendix of the "Special Provisions".

I. Operation of Existing Valves
1. All existing valves will be operated by or under the supervision of the Williams Bay Public Work Department. Contact Wayne Edwards, DPW.

J. Water Service Disruption
1. The Contractor shall coordinate his work schedule with the Owner when connecting intersecting streets to the new water main in order to minimize inconvenience and disruption caused by the temporary discontinuance of water service. Water service to residences shall not be shut down for a period longer than eight (8) hours, nor after 4:30 p.m. or on weekends without approval of the Owner. Residential water service may only be shut down between the hours of 8:30 a.m. to 4:30 p.m., except that residential water services may be shut down outside of these hours with the Owner's permission. Water service to businesses shall not be shut down for a period longer than two (2) hours unless satisfactory arrangements are made with the businesses affected. The Contractor shall take whatever measures are necessary to return service at the end of each working day, including the use of temporary valves or plugs.
a. The Contractor shall notify homeowners and businesses at least 24 hours prior to shutting off any water service.

K. Water Main Offsets
1. Water mains shall be offset as shown on the Plans or as directed by the Engineer. Water main offsets shall be in accordance with File No. 47 of the "Standard Specifications" as modified below.
a. Place offsets to provide a minimum of six (6) feet of cover.
(1) Water main shall be offset down only (under the conflicting utility) to prevent high points being created in the offset.

b. Offset castings may be used when the change in grade is 24 inches or less.

c. Concrete buttresses shall be constructed as shown, however, optional restraining methods as specified in the section on Joint Restraint of this article shall be used in lieu of strapping.

L. Tracer Wire
a. PVC water main shall be provided with tracer wire, including stubs and nonmetallic services and dead-end mains.

b. Material. Tracer wire shall be single strand, single conductor, insulated copper wire, minimum thickness No. 10 AWG.

c. Installation. Place tracer wire at the springline of the main and tape to the pipe at five-foot intervals. Extend wire up all valve boxes and hydrants terminated in a Bingham & Taylor Pb200NFG12W2T box set behind each hydrant.

d. Testing. The contractor shall test tracer wire for electrical continuity prior to acceptance of the main.

WATER MAIN MATERIALS
A. Water main pipe material shall be ductile iron (DI) or polyvinyl chloride (PVC) pipe conforming to the following:

B. Tests
1. Pipe material delivered for use on this project shall conform to the requirements of the appropriate AWWA and ASTM Specifications noted herein. All pipe shall be marked in accordance with the requirements of the cited Specifications and each load delivered to the job site shall be accompanied by the manufacturer's certification of such compliance. Said certification to be delivered to the Engineer or his representative.

DUCTILE IRON PIPE
A. Ductile iron pipe meeting the requirements of AWWA Standard C151 (ANSI 21.51), cement mortar lined with internal and external bituminous coating and furnished with either push-on or mechanical joints with rubber gaskets. Do not furnish cable bonding or other methods of providing electrical conductivity.
1. Ductile iron pipe shall be furnished for the following minimum thickness classes:
a. Six (6) inch hydrant lead and 8 inch pipe shall be Class 52.

POLYVINYL CHLORIDE PIPE
A. Polyvinyl chloride (PVC) pipe (4 inch through 12 inch diameter) meeting the requirements of AWWA Standard C909, DRI8, with cast iron O.D. and integral elastomeric bell and spigot joints each 10ga Bluetracer wire and tracer wire access boxes.
1. Hydrant leads shall be ductile iron pipe.

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

SITE SPECIFICATIONS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
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ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS
03/11/2025 RS
ADVANCE PLANS
05/12/2025 -RS
SPEC REVISIONS
05/30/2025 -NK
GEN. PLAN REV.
07/31/2025 -RS
REVISIONS

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FITTINGS (USED WITH DUCTILE IRON AND PVC PIPE)

A. Fittings shall be ductile iron or cast iron, cement mortar lined with internal and external bituminous coating and meeting the requirements of AWWA Standard C110 (ANSI 21.10). Fittings shall be supplied with mechanical joints with rubber gaskets.

1. Ductile iron mechanical joint fittings meeting the requirements of AWWA Standard C153 for "compact fittings", 3" through 24" size, may be used in place of the fittings specified above.

2. All fittings shall be North American made; Star Pipe Products, Tyler/Union and Sigma Corp. ONLY.

B. Bolts

1. All water main nuts and bolts, including connections to mains, fittings, valves and hydrants, shall be stainless steel or Cor-Blue T-Bolts as manufactured by NSS Industries or equal.

VALVES AND VALVE BOXES

A. Resilient-Seated Gate Valves

1. Resilient-seated gate valves shall meet the requirements of AWWA C-509 or AWWA C-515.
   a. Resilient-seated gate valves shall be furnished with mechanical joints with rubber gaskets, cast iron or ductile iron body, bronze mounted, resilient wedge, non-rising stem, "O"-ring stem seals, 2 inch square operating nut opening to the left (counterclockwise) and rated at 200 psi working pressure.

   b. All 4, 6, and 8 inch valves shall be resilient-seated gate valves unless shown otherwise on the Plans.

   c. Resilient-seated gate valves shall be Meuller A2361, (no substitutes).

B. Valve Boxes and Adapters

1. 664s Cast Iron two piece box (American Made)
2. Rubber Valve Box Adapters shall be Valbe Box Adapter II manufactired by Adaptor, Inc. (no substitutes)

C. Tapping Valves and Sleves

1. Tapping sleeves shall be supplied by the manufacturer of the tapping valves.

D. Cutting-In Valves and Sleeves

1. Cutting-in valves shall be similar to the AWWA gate valves specified in Subsection 510.A of the "Special Provisions" except that they shall be provided with special gaskets allowing assembly on various types of pipe.

2. Cutting-in sleeves shall be supplied by the manufacturer of the cutting-in valves.

Repair Clamps

3. Valve Box Depth

a. Valve box depths shown on the Plans are approximate only, unless the cover elevation is indicated. Valve box covers shall be placed to match the existing grade (¼ inch below pavement surface) unless the finished elevation is shown on the Plans.

E. Repair Clamps

1. Use only Smith Blair Clamps with stainless steel bolts and nuts.

F. Valve Boxes and Adapters

1. 664s Cast Iron two piece box (American Made)
2. Rubber Valve Box Adapter shall be Valbe Box Adapter II manufactured by Adaptor, Inc. (no substitutes)

HYDRANTS

A. Standard Hydrant

1. Hydrants shall be A423 Mueller Centurion, conforming to the following specifications: (no alternates allowed)
   a. Hydrants shall be compression type, with 5-1/4 inch bottom valve and 6 inch mechanical joint inlet connection 6" trench depth, 6" MJ Shoe, equipped with cable bonding, "O" -ring packing, safety flange construction, meeting the requirements of AWWA Standard C502 and meeting specifications for 300 PSI test pressure and 150 PSI working pressure.

   b. Hydrants shall have two 2-1/2 inch hose nozzles with National Standard fire hose coupling screw threads and nut type nozzle caps with gaskets and chains and one 5 inch pumper nozzle with STORZ-LOK 125 quick-connect fitting.

   c. Hydrants shall have 1-1/2 inch pentagon operating nut opening to the left (counter-clockwise).

   d. Hydrants, including barrel extensions, shall be painted red. All hydrant parts and extensions must be OM parts.

B. Barrel Extensions

1. Hydrants shall be furnished for 6-1/2 feet of bury unless the Plans show greater burial depths. Use bends in the hydrant lead to bring the hydrant to the proper burial depth. The distance from the ground line to the centerline of the lowest nozzle shall be from 18 to 23 inches.

2. Extensions
   a. Hydrant extensions may be used only where bends cannot be utilized to bring the hydrant to the desired depth and only with the Owner's approval. Hydrant extensions shall be compatible with hydrant barrel and stem sections and shall be installed at the top of the barrel section.

C. Valves and Valve Boxes

1. Hydrant valves and valve boxes shall conform to the requirements for gate valves and valve boxes specified.

D. Hydrant Leads

1. Hydrant leads shall be six (6) inch, Class 53, ductile iron pipe.

2. Restrain hydrants with thrust blocking and by anchoring to the main. Restrain all joints with MEGALUG restrained joints or anchoring pipe and anchoring fittings. Provide concrete thrust blocks for both hydrant and hydrant tee.

3. Restrain one full length of pipe on both sides of the hydrant tee.

E. Hydrant and Auxiliary Valve Locations

1. Place hydrants on the back slopes of ditches at road grade or greater, or on fill slopes within 3' of shoulder edge.

F. Temporary Hydrant Cover

1. Temporarily cover new hydrants during construction with polyethylene bags, securely fastened in place, until after the water main has been tested and placed in service.

WATER SERVICES

A. Installation

1. Water service piping shall be installed in accordance with Chapter 5.5.0 of the "Standard Specifications" and the following provisions:
   a. Do not connect services to the water main until after the main has been tested and a safe water sample obtained.

   b. Insert the corporation stop into the water main while the main is in service and under pressure.

   c. Don't backfill the water service trench until after the service has been checked for leaks and the service piping thoroughly flushed.

2. Cover
   a. Install water service piping with 6-1/2 feet minimum cover except provide 5 feet minimum cover at ditches.

3. Tapping PVC Water Main
   a. PVC water main shall be tapped using double strap service clamps. Corporation stops installed on PVC pipe shall be furnished with AWWA tapered threads conforming to AWWA C-800.

      (1) Service clamps shall have the following minimum total widths:
      (a) 3/4" and 1" services – 2" minimum width.
      (b) 1-1/4", 1-1/2" and 2" services – 3" minimum width.

   b. Taps shall be located at least 2 feet from the ends of pipe sections and at least 18 inches apart measured in a horizontal direction.

   c. Tap PVC pipe using a shell cutter with internal teeth. Do not use a standard drill and tap for direct tapping under pressure.

   d. Place teflon tape on corporation stop threads prior to installation. Corporation stops shall be torqued to a maximum of 35 ft.-lb. or as recommended by the manufacturer.

B. Curb Valve Location

1. Curb valves shall be placed, on the lot, six (6) inches to one (1) foot from the right-of-way line, unless shown otherwise on the Plans; with the residence side of the curb valve capped or plugged.

C. Water Service/Sanitary Sewer (Lateral) Separation

1. Horizontal Separation

   a. Install water services 2 inches or less in diameter at least 30 inches horizontally from sanitary sewer laterals.
      (1) Water services may be installed closer than 30 inches from a sewer lateral if the bottom of the water piping is at least 12 inches above the sewer.

   b. No water service may be installed within 6 inches of a storm sewer.

2. Vertical Separation
   a. Water main and water service piping crossing a sanitary sewer, including laterals, and located within 10 feet of the point of crossing shall be installed:
      (1) At least 12 inches above the top of the sewer, or
      (2) At least 18 inches below the bottom of the sewer from the top of the water piping, or
      (3) Within a waterproof sleeve, made of PVC (ASTM D3034 or ASTM D1785) or other acceptable material per Table 84.30-3 of the Plumbing Code – Department of Commerce.

B. Water Service Piping

1. Tubing
   a. Water service piping for shall be an SDR9 poly ethylene tubing (CTS) with stiffeners and 12ga TracerWire. 2500 PSI AWWA901.

C. Water Service Materials

1. The cost of water services shall include furnishing and installing corporation stop, service clamps if required, curb valve, valve box, and stationary rod as specified herein and as shown on the Plans.
   a. Corporation stops shall be Mueller 1" H-15008 compression fittings.
      (1) Install all stops on PVC pipe with double strap service clamps. Furnish saddles for PVC OD pipe.

   b. Curb valves shall be 1" Mueller H-15155.

   c. Curb boxes shall be extension type with Minneapolis pattern base; 6" Mueller H-10300 with stationary rod #84261.
      (1) Furnish curb boxes with stationary rod for 6-1/2 feet of bury. Stationary rods shall be 1"x39" in length (no alternates allowed)

   d. All water service fittings shall be compression type.

HYDROSTATIC TESTS

A. General Requirements

1. All tests shall be performed as specified in Chapter 4.15.0 of the "Standard Specifications", except that the water main shall pass three consecutive one-hour leakage tests. The City Utility Engineer or his Representative shall be present at all times during testing.

2. The Contractor shall furnish all labor, equipment and material to complete all testing.

3. Temporary Air-Release
   a. Trapped air shall be bled off (by tapping the main) when filling the main with water and/or removed by flushing through hydrants.

   b. Temporary air-release may be provided by tapping 1 inch corporation stops into the high points of pipe or into the plug on dead end lines. After flushing and testing is completed, the temporary taps shall be abandoned in place.

   c. The Contractor shall provide temporary flushing hydrants if required to flush dead end lines.

B. Test Sections

1. The Contractor has the option to test the entire new water main as one continuous test section or in segments per his discretion.

2. Connections to intersecting streets need not be tested, however, the Contractor shall sterilize and flush all connecting mains. The intersecting main(s) shall be subjected to line pressure and any visible defects repaired prior to backfilling.

DISINFECTION

A. General Requirements

1. The water main shall be disinfected in accordance with Section 4.3.12 and Chapter 4.16.0 of the "Standard Specifications".
   a. Amend paragraph 4.16.5 of the "Standard Specifications" to read:

      4.16.5 SAMPLING. The Contractor shall take all necessary samples of the water and provide any equipment necessary to take these samples at no cost to the Owner. The Contractor, accompanied by the Engineer or his representative, shall deliver the samples to an approved laboratory for testing.

B. Safe Samples

1. At least one (1) safe sample must be obtained from each of the segments hydrostatically tested. Additional samples may also be required from:
   a. Representative locations from each of the test sections to establish that all of the mains are free of contamination.

   b. Dead end lines.

   c. Connections to existing mains.

2. Water main segment(s) shall not be placed in service until after safe water sample(s) have been obtained.

C. Procedures for Disinfecting Connections to Existing Mains

The following procedures apply when existing mains are wholly or partially dewatered. Existing mains that are isolated by an existing valve require no disinfection. After the appropriate procedures have been completed, the existing main may be returned to service prior to completion of bacteriological testing to minimize disruption to service.

1. Apply liberal quantities of hypochlorite to wet trenches at or near the connection to the existing main. Use hypochlorite tablets if water is being pumped from the trench to prolong protection as hypochlorite is slowly released as the tablets dissolve.

2. Swab the interior of all pipe and fittings located between the connection to the existing main and the closest new valve (including connection pipe and fittings) with a one percent hypochlorite solution.

3. Flush the connection to the existing main, from both directions toward the connection if valve and locations permit, as soon as the connection has been completed and the nearest new valve installed and secured. Flush through the new main until all discolored water is eliminated.

4. Should the water main connection be severely contaminated by dirty water or other means, the existing main and connection shall be disinfected by slug chlorination in accordance with the procedure specified below:
   a. Continue to isolate the section of contaminated main.

   b. Shut off all service connections.

   c. Place hypochlorite tablets in the connection to the new main.

   d. Flush the main to remove particulates.

   e. Slowly dose the contaminated main with a 300 mg/l free chlorine concentration for a period of at least 15 minutes.

   f. Flush the main until the water is free of noticeable chlorine odor.

   g. Open service connections and return the main to service.

5. Take bacteriological samples to provide a record for determining the effectiveness of the procedure. Samples may be required from both sides of the connection.

If unsatisfactory tests are recorded, the City Utility Engineer will determine the necessary corrective action. Take daily samples until two consecutive safe samples have been recorded.

D. Rechlorination

1. Should any test prove unsatisfactory, the water main shall be sterilized by the Contractor by such methods as he deems necessary and samples taken until acceptable results are obtained.

E. Flushing

1. All water mains, including dead end mains and all hydrants, and all water services shall be flushed. Water services shall be flushed, with a minimum amount of water equivalent to the volume of the service pipe, until the water is visibly clean.
   a. Provisions shall be made to convey water used for flushing or testing to a suitable discharge point without damage to crops or cropland and without disruption of farming operations. No flushing water may be discharged on farmlands.

   b. The Contractor shall use suitable methods for disposing of flushing water to prevent surface erosion.

   c. The Contractor shall provide temporary flushing hydrants as required.

2. Water Furnished By the Village of Williams Bay
   a. Water for testing and flushing will be furnished by the Village of Williams Bay. The Contractor shall notify the Village DPW prior to commencing flushing and shall coordinate his operations with the Village in order not to deplete the water supply. Water usage may be restricted to periods of flow demand (night time or weekend hours) if water usage is high during normal working hours. All flushing of new mains and services shall be done under the direct supervision of the Engineer or his representative.

B. Swabbing Water Main.

1. All piping installed outside of water main test segments shall be disinfected by swabbing with a 1% hypochlorite solution and thoroughly flushed. The entire interior surfaces of all pipes and fittings shall be thoroughly swabbed. The diameter of swabs used in pipes shall match the interior pipe diameter and provide resistance when swabbing the pipes. Pipes shall be swabbed with a pumping motion with all surfaces wiped several times. The Contractor shall use extreme care to insure the cleanliness of all water main materials used.

Additional Construction Recommendations from the amended TSC geotechnical report (dated 8/14/25). These are in addition to the previous requirements and take precedence if and when they are not already implemented:

1. Grading operations shall include the complete stripping of topsoil/root-zone materials and proof-rolling of the exposed soils.

2. Exposed soils shall be reduced in moisture content and/or recompacted to provide a stable base for fill placement and/or pavement construction.

3. Compact all new fill and utility trench backfill to a minimum of 90% Modified Proctor density and compact the upper two feet of below pavement areas to 95% Modified Proctor density.

4. When soft/wet/unsuitable material is encountered in exposed soils, it shall be removed and replaced with dry engineered fill prior to commencing with fill placement.

5. Pavement base course materials shall conform to WisDOT specifications for 1 1/4"-inch dense graded base aggregate. The granular base shall be compacted to 95% Modified Proctor density (ASTM D1557) or 100 percent of the Standard Proctor (ASTM D698) maximum density value.

6. If soft/wet/unstable material is encountered at the base of utility excavations, it shall be removed and replaced with 12 to 24 inches of coarse aggregate backfill or additional bedding material.

7. Utility backfill within roadway areas shall be granular materials conforming to WisDOT specifications section 206 (Granular Backfill) or section 520.2.5.2 (Foundation Backfill).

WILLABAY MEADOWS
FINAL ENGINEERING PLAN

SITE SPECIFICATIONS

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT P.O. BOX 437
ELKHORN, WISCONSIN 53121
OFFICE: (262) 723-2098 FAX: (262) 723-5886

REVISIONS

03/11/2025 RS
FINAL ENGINEERING

05/30/2025 -NK
GEN. PLAN REV.

07/31/2025 -RS
REVISIONS

PROJECT NO.
5536.17

DATE
05/12/2025

SHEET NO.
19 OF 19

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STORMWATER MANAGEMENT PLAN

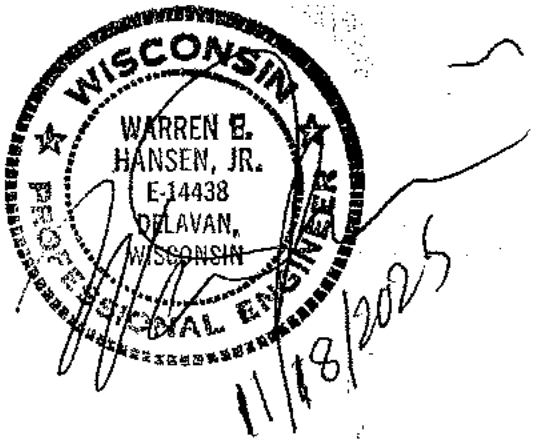
WILLABAY MEADOWS
WILLIAMS BAY, WALWORTH COUNTY,
WISCONSIN
JULY 2024
REVISED AUGUST 2025
REVISED SEPTERMBER 2025
REVISED NOVEMBER 2025

Prepared For:

Land and Lakes Development
Des Plaines IL, 60018

Prepared By:

Farris, Hansen & Associates, Inc.
Engineers, Architects & Surveyors
7 Ridgway Court
Elkhorn, WI 53121
Project No.: 5536.17



*** PORTIONS OF THIS PLAT ARE NOT ACCURATE UNTIL ANNEXATION OCCURS ***

WILLABAY MEADOWS, A SUBDIVISION

PART OF THE NW 1/4 OF THE NW 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, PART OF NE 1/4 AND NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST, AND PART OF THE SE 1/4 AND SW 1/4 OF THE SE 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, ALL IN THE VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN

GRID NORTH
WISCONSIN STATE PLANE COORDINATE SYSTEM SOUTH ZONE (NAD 83) N. LINE NE 1/4 OF SECTION 6-1-17 BEARS N 88°55'28" E

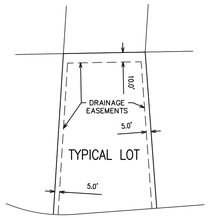
TRANS 233 NOTES

THERE SHALL BE NO IMPROVEMENTS OR STRUCTURES PLACED BETWEEN THE HIGHWAY AND THE SETBACK LINE WITHOUT A SPECIAL EXCEPTION FROM THE DEPARTMENT OF TRANSPORTATION. THIS SHALL BE A RESTRICTION FOR THE BENEFIT OF THE PUBLIC UNDER §236.293, STATS., AND SHALL BE ENFORCEABLE BY THE DEPARTMENT OF TRANSPORTATION.

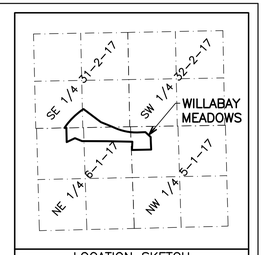
AS OWNER I HEREBY RESTRICT ALL LOTS AND BLOCKS (EXCEPT OUTLOTS 5, 6 AND 7) IN THAT NO OWNER, POSSESSOR, USER, NOR LICENSEE, NOR OTHER PERSON SHALL HAVE ANY RIGHT OF DIRECT VEHICULAR INGRESS OR EGRESS WITH STH '50' AS SHOWN ON THE PLAT; IT BEING EXPRESSLY INTENDED THAT THIS RESTRICTION SHALL CONSTITUTE A RESTRICTION FOR THE BENEFIT OF THE PUBLIC ACCORDING TO §236.293, STATS., AND SHALL BE ENFORCEABLE BY THE DEPARTMENT OF TRANSPORTATION.

THE LOTS OF THIS LAND DIVISION MAY EXPERIENCE NOISE AT THE LEVELS EXCEEDING THE LEVELS IN §TRANS 405.04, TABLE I. THESE LEVELS ARE BASED ON FEDERAL STANDARDS. THE DEPARTMENT OF TRANSPORTATION IS NOT RESPONSIBLE FOR ABATING NOISE FROM EXISTING STATE TRUNK HIGHWAYS OR CONNECTING HIGHWAYS, IN THE ABSENCE OF ANY INCREASE BY THE DEPARTMENT TO THE HIGHWAY'S THROUGH-LANE CAPACITY.

STANDARD DRAINAGE EASEMENT DETAIL
1:75 SCALE



MEADOW DRIVE



LOCATION SKETCH

LINE	BEARING	DISTANCE
L1	S 88°58'05" W	54.02'
L2	S 49°52'08" W	66.73'
L3	N 86°17'17" W	51.39'
L4	S 86°17'17" E	57.53'
L5	N 49°52'08" E	66.73'
L6	N 22°49'44" E	37.48'
L7	S 64°24'20" W	76.02'
L8	S 01°04'32" E	32.39'
L9	N 03°35'16" E	56.08'

NOTE: ALL LOTS 1 THRU 42 SHALL BE SUBJECT TO A 5 FOOT SIDE LOT DRAINAGE EASEMENT TO SERVE THE LOT AND ABUTTING LOTS TO COLLECT RUNOFF AND CARRY TO ESTABLISHED WATERWAYS IN THE REAR YARDS AS WELL AS THE EXISTING STREET DITCHES. REAR YARDS SHALL BE SUBJECT TO A 10 FOOT DRAINAGE EASEMENT.

OUTLOTS 1 AND 2 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AS PUBLIC WATERMAIN EASEMENTS AND WALKING PATH AREAS.

OUTLOTS 3 AND 4 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AS STORM WATER MANAGEMENT AND WALKING PATH AREAS.

OUTLOT 5 SHALL BE OWNED BY THE HOMEOWNER'S ASSOCIATION WITH MAINTENANCE.

OUTLOTS 6 AND 7 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION AS STORM WATER MANAGEMENT AREAS.

LEGEND

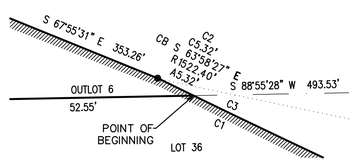
- ○ = FOUND IRON PIPE STAKE, 1 3/8" O.D.
- ● = FOUND IRON REBAR STAKE, 3/4" DIA.
- ⊡ = FOUND COUNTY MONUMENT WITH BRASS CAP
- ⌀ = SET SOLID IRON BAR STAKE, 1 5/16" x 18" x 4.60 lbs/ft
- {XXX} = RECORDED AS

ALL OTHER LOT & OUTLOT CORNERS ARE SET IRON REBAR STAKE, 3/4" x 18" x 1.13 lbs/ft

EASEMENT LEGEND

- XX' U.E. = UTILITY EASEMENT
- XX' S.E. = SANITARY SEWER EASEMENT
- XX' W.E. = WATERMAIN EASEMENT
- XX' D.E. = DRAINAGE EASEMENT
- = WOODLAND PRESERVATION EASEMENT

POINT OF BEGINNING DETAIL



FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT, PO BOX 437
ELKHORN, WISCONSIN 53121
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FAX: (262) 723-5886

PROJ. NO.: 5536.17 | DATE: 11/11/2025 | SHEET 1 OF 3

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WILLABAY MEADOWS, A SUBDIVISION

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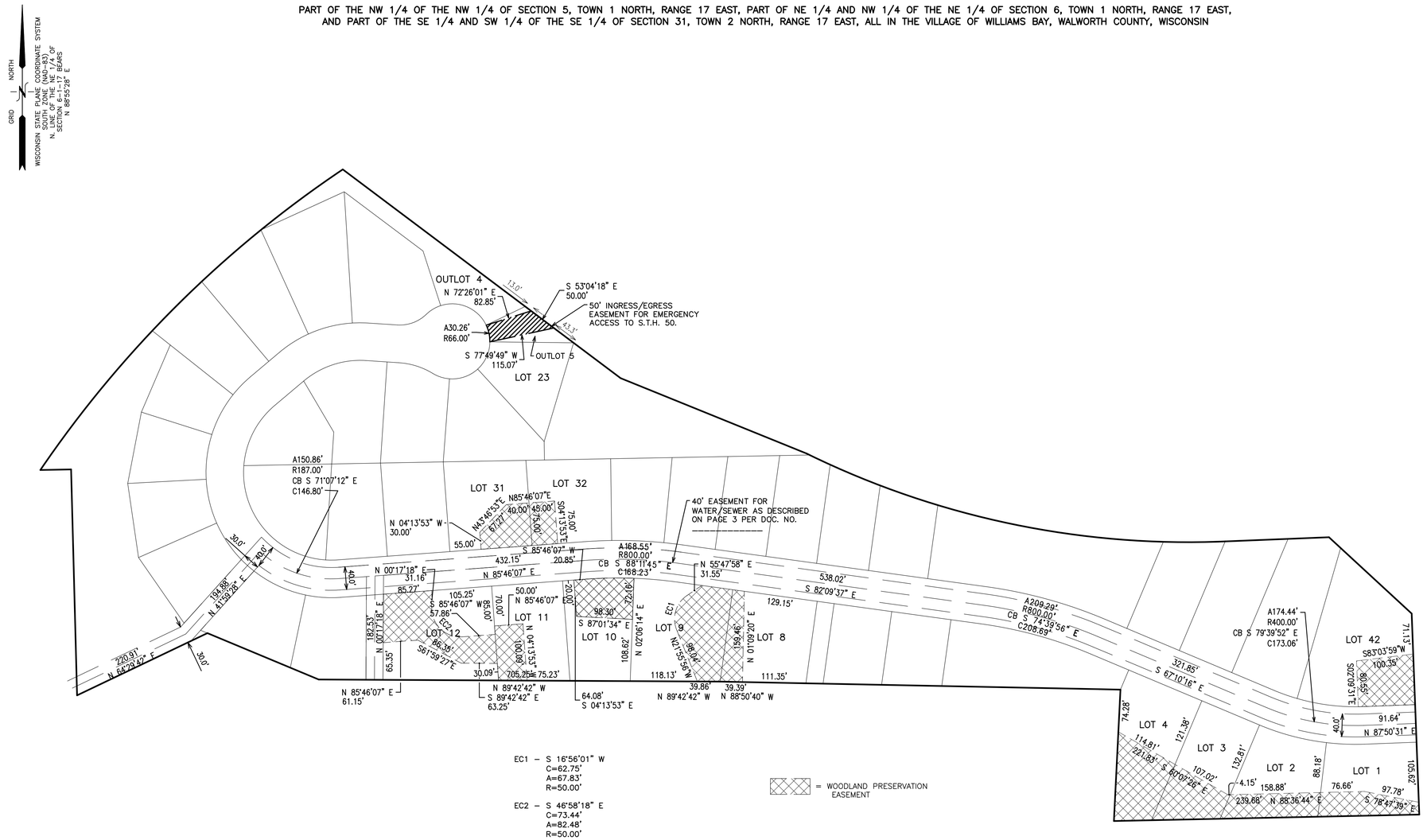

EC1 – S 16°56'01" W
C=62.75'
A=67.83'
R=50.00'

EC2 – S 46°58'18" E
C=73.44'
A=82.48'
R=50.00'

= WOODLAND PRESERVATION EASEMENT

100 50 0 100 200 300 400
MAP SCALE IN FEET – ORIGINAL 1"=100'

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SURVEYOR'S CERTIFICATE

I, CHRISTOPHER A. HODGES, PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT AT THE DIRECTION OF LAND & LAKES DEVELOPMENT CO., FORMERLY KNOWN AS POPLAR RIDGE ESTATE DEVELOPMENT, (OWNER), I HAVE SURVEYED, DIVIDED, AND MAPPED PART OF THE NW 1/4 OF THE NW 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, PART OF NE 1/4 AND NW 1/4 OF THE NE 1/4 OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST, AND PART OF THE SE 1/4 AND SW 1/4 OF THE SE 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, ALL IN THE VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6, S 88DEG 55MIN 28SEC W, 493.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE ALONG SAID HIGHWAY 753.45 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 78DEG 15MIN 08SEC E, 745.78 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG SAID HIGHWAY N 87DEG 40MIN 28SEC E, 182.42 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG SAID HIGHWAY S 47DEG 16MIN 54SEC E, 197.81 FEET TO AN IRON REBAR STAKE FOUND MARKING A POINT ALONG THE WESTERLY RIGHT OF WAY BOUNDARY OF EAST GENEVA STREET; THENCE ALONG SAID STREET S 02DEG 09MIN 29SEC E, 353.43 FEET TO AN IRON REBAR STAKE; THENCE S 88DEG 47MIN 41SEC W, 536.64 FEET TO AN IRON PIPE STAKE FOUND MARKING A POINT ALONG THE BOUNDARY OF WILLABAY WOODS, A SUBDIVISION; THENCE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 02DEG 51MIN 46SEC E, 231.13 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 88DEG 50MIN 40SEC W, 703.54 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 89DEG 42MIN 42SEC W, 705.25 FEET; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 67DEG 21MIN 05SEC W, 211.80 FEET TO AN IRON PIPE STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, S 64DEG 29MIN 42SEC W, 253.70 FEET TO AN IRON PIPE STAKE FOUND MARKING A POINT ALONG THE EASTERLY BOUNDARY OF WILLABAY SHORES CONDOMINIUM; THENCE ALONG THE BOUNDARY OF SAID CONDOMINIUM N 01DEG 31MIN 25SEC W, 396.99 FEET TO AN IRON REBAR STAKE; THENCE CONTINUE ALONG THE BOUNDARY OF SAID CONDOMINIUM, S 88DEG 58MIN 55SEC W, 54.02 FEET; THENCE 753.83 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45DEG 09MIN 54SEC E, 749.25 FEET TO AN IRON REBAR STAKE FOUND MARKING A POINT ALONG THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY S 53DEG 04MIN 18SEC E, 610.59 FEET TO AN IRON REBAR STAKE; THENCE CONTINUE ALONG SAID HIGHWAY S 67DEG 55MIN 31SEC E, 353.26 FEET TO AN IRON REBAR STAKE; THENCE CONTINUE ALONG SAID HIGHWAY 5.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 63DEG 58MIN 27SEC E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 1,237,404 SQUARE FEET (28.41 ACRES) OF LAND, MORE OR LESS.

I ALSO CERTIFY THAT THIS PLAT IS A CORRECT REPRESENTATION OF ALL THE EXTERIOR BOUNDARIES OF THE LAND SURVEYED AND THE SUBDIVISION THEREOF AND THAT I HAVE FULLY COMPLIED WITH THE PROVISIONS OF CHAPTER 236 OF WISCONSIN STATUTES AND THE LAND DIVISION ORDINANCE FOR THE VILLAGE OF WILLIAMS BAY IN SURVEYING, DIVIDING, AND MAPPING THE LAND.

DATED: 11/11/2025

CHRISTOPHER A. HODGES PLS 2760

WISCONSIN — CHRISTOPHER A HODGES — 2760 — PALMYRA WIS. — LAND SURVEYOR

DEDICATED EASEMENT AS SHOWN ON SHEET 1 OF PLAT WITHIN MEADOW DRIVE EXTENDING THROUNG OUTLOT 3 TO WILLABAY SHORES CONDOMINIUM

LAND & LAKES DEVELOPMENT CO., (THE "GRANTOR"), DOES HEREBY GRANT TO THE VILLAGE OF WILLIAMS BAY, (THE "GRANTEE") AND ITS RESPECTIVE SUCCESSORS AND ASSIGNS, AN EASEMENT TO OPERATE, REPAIR, MAINTAIN, REPLACE, AND CONNECT TO EXISTING SANITARY SEWER AND WATER SERVICE IMPROVEMENTS CONSTRUCTED BY THE GRANTOR, OR ITS SUCCESSORS OR ASSIGNS, AND ACCEPTED BY THE VILLAGE, WITHIN 20 FEET ON EITHER SIDE OF THE CENTER LINE OF MEADOWS DRIVE FOR THE PURPOSES OF PROVIDING WATER SERVICE AND SANITARY SEWER SERVICE TO THE WILLABAY MEADOWS SUBDIVISION PROPERTY, AND FURTHER, PROVIDING THE RIGHT TO EXTEND THE WILLABAY MEADOWS PUBLIC UTILITIES FOR WATER AND SANITARY SEWER SERVICE EAST OF GENEVA STREET TO PROPERTY WHICH MAY BE ANNEXED TO THE VILLAGE AT A FUTURE DATE, PROVIDED, HOWEVER, THAT SUCH UTILITIES AND IMPROVEMENTS ARE INSTALLED AND MAINTAINED AS REQUIRED IN THE FINAL ENGINEERING PLANS APPROVED BY THE VILLAGE FOR WILLABAY MEADOWS SUBDIVISION. THIS GRANT IS MADE ONLY TO THE EXTENT THAT THE GRANTOR HAS THE RIGHT TO MAKE SUCH GRANT, AND ONLY TO THE EXTENT NOT ALREADY CONVEYED BY THE DEDICATION OF THE MEADOWS DRIVE PUBLIC RIGHT-OF-WAY. THIS GRANT SHALL NOT BE CONSTRUED TO PERMIT THE VILLAGE OR ITS SUCCESSORS OR ASSIGNS TO CONSTRUCT SANITARY SEWER AND WATER SERVICE IMPROVEMENTS WITHIN WILLABAY MEADOWS SUBDIVISION, EXCEPT AS PROVIDED IN THE FINAL ENGINEERING PLANS, AND AS PROVIDED FOR IN THE DEVELOPER'S AGREEMENT EXECUTED BETWEEN THE PARTIES.

UTILITY EASEMENT PROVISIONS

An easement for electric, gas and communication facilities is hereby granted by

LAND & LAKES DEVELOPMENT CO. , Grantor, to

ALLIANT ENERGY, a Wisconsin corporation, Grantee,

_____, Grantee, and

_____, Grantee

their respective successors and assigns, to construct, install, operate, repair, maintain and replace from time to time, facilities used in connection with overhead and underground transmission and distribution of electricity and electric energy for such purposes as the same is now or may hereafter be used and for sounds and signals. All in over, under, across, along and upon the property shown within those areas on the plat designated as "Utility Easement" and the property designated on the plat for streets and alleys, whether public or private, together with the right to install service connections upon, across, within and beneath the surface of each lot to serve improvements thereon, or on adjacent lots. Also included is the right of access to the easement. Also, the right to trim and cut down trees, brush and roots as may be reasonably required incident to the rights herein given. The Grantees agree to restore or cause to have restored, the property, as nearly as is reasonably possible, to the condition existing prior to such entry by the Grantees or their agents. This restoration, however, does not apply to the initial installation of said underground and/or above ground electrical facilities or communication facilities or to any trees, brush or roots which may be removed at any time pursuant to the rights herein granted. Buildings and planting of trees shall not be placed within the lines marked "Utility Easement" without the prior written consent of Grantees. After installation of any such facilities, the grade of the subdivided property shall not be altered by more than six inches without written consent of Grantees.

The Grant of easement shall be binding upon and inure to the benefit of the heirs, successors and assigns of all parties hereto.

VILLAGE OF WILLIAMS BAY APPROVAL

STATE OF WISCONSIN)
ss
COUNTY OF WALWORTH)

I, TINA KOLLS, BEING THE DULY APPOINTED, QUALIFIED, AND ACTING CLERK OF THE VILLAGE OF WILLIAMS BAY, WISCONSIN, DO HEREBY CERTIFY THAT THE VILLAGE BOARD OF WILLIAMS BAY, WISCONSIN APPROVED ON _____, 2025, AUTHORIZING ME TO ISSUE A CERTIFICATE OF APPROVAL OF THE FINAL PLAT OF WILLABAY MEADOWS, A SUBDIVISION, LAND & LAKES DEVELOPMENT CO., OWNER.

DATED THIS _____ DAY OF _____, 2025.

_____
TINA KOLLS VILLAGE OF WILLIAMS BAY CLERK

CONSENT OF CORPORATE OWNER

LAND & LAKES DEVELOPMENT CO., FORMERLY KNOWN AS POPLAR RIDGE ESTATES DEVELOPMENT, A COMPANY DULY ORGANIZED AND EXISTING UNDER AND BY VIRTUE OF THE LAWS OF THE

STATE OF _____, OWNER OF THE LANDS DESCRIBED HEREON, DOES HEREBY CERTIFY THAT SAID COMPANY CAUSED THE LAND DESCRIBED ON THIS PLAT TO BE SURVEYED, DIVIDED, MAPPED, AND DEDICATED AS REPRESENTED ON THIS PLAT. THIS PLAT IS REQUIRED BY s.236.10 OR s.236.12 TO BE SUBMITTED TO THE FOLLOWING FOR OBJECTION OR APPROVAL:

DEPARTMENT OF ADMINISTRATION (STATE OF WISCONSIN)
DEPARTMENT OF TRANSPORTATION (STATE OF WISCONSIN)
VILLAGE OF WILLIAMS BAY

IN WITNESS WHEREOF, THE SAID LAND & LAKES DEVELOPMENT HAS CAUSED THESE PRESENTS TO BE SIGNED BY

_____, ITS REPRESENTATIVE, AT _____, _____ THIS _____ DAY OF _____, 2025.

_____
MARY MARGARET COWHEY LAND & LAKES DEVELOPMENT CO.

STATE OF _____)
ss
COUNTY OF _____)

PERSONALLY CAME BEFORE ME THIS _____ DAY OF _____, 2025, _____, AUTHORIZED REPRESENTATIVE OF THE ABOVE NAMED COMPANY, TO ME KNOWN TO BE THE PERSON WHO EXECUTED THE FOREGOING INSTRUMENT AND TO ME KNOWN TO BE SUCH REPRESENTATIVE OF SAID COMPANY, AND ACKNOWLEDGED THAT THEY EXECUTED THE FOREGOING INSTRUMENT AS SUCH REPRESENTATIVE AS THE DEED OF SAID COMPANY, BY ITS AUTHORITY.

_____

_____
MY COMMISSION EXPIRES

NOTARY PUBLIC, _____, _____

CURVE	TANGENT BEARING-IN	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	TANGENT BEARING-OUT
C1	S 63°52'26" E	1522.40'	28°33'23"	S 78°09'08" E	750.94'	758.77'	N 87°34'11" E
C2	S 63°52'26" E	1522.40'	0°12'01"	S 63°58'27" E	5.32'	5.32'	S 64°04'27" E
C3	S 64°04'27" E	1522.40'	28°21'22"	S 78°15'08" E	745.78'	753.45'	N 87°34'11" E
C4	N 34°12'58" E	1972.41'	21°53'51"	N 45°09'54" E	749.25'	753.83'	N 56°06'49" E
C5	S 67°10'16" E	433.00'	24°59'13"	S 79°39'52" E	187.34'	188.83'	N 87°50'31" E
C6	S 82°09'37" E	767.00'	14°59'21"	S 74°39'56" E	200.08'	200.65'	S 67°10'16" E
C7	N 85°46'07" E	767.00'	12°04'16"	S 88°11'45" E	161.29'	161.59'	S 82°09'37" E
C8	S 49°52'08" W	220.00'	144°06'01"	S 22°10'52" E	418.58'	553.31'	N 85°46'07" E
C9	N 86°17'17" W	220.00'	43°50'35"	S 71°47'26" W	164.27'	168.35'	S 49°52'08" W
C10	S 45°50'28" W	66.00'	47°52'15"	S 69°46'36" W	53.55'	55.14'	N 86°17'17" W
C11	S 58°40'44" E	66.00'	255°28'48"	N 06°25'08" W	104.39'	294.29'	S 45°50'28" W
C12	S 86°17'17" E	132.00'	27°36'32"	S 72°29'00" E	62.99'	63.61'	S 58°40'44" E
C13	N 49°52'08" E	154.00'	43°50'35"	N 71°47'26" E	114.99'	117.84'	S 86°17'17" E
C14	S 85°46'07" W	154.00'	144°06'01"	N 22°10'52" W	293.01'	387.31'	N 49°52'08" E
C15	N 82°09'37" W	833.00'	12°04'16"	N 88°11'45" W	175.17'	175.50'	S 85°46'07" E
C16	N 67°10'16" W	833.00'	14°59'21"	N 74°39'56" W	217.30'	217.92'	N 82°09'37" W
C17	S 87°50'31" W	367.00'	24°59'13"	N 79°39'52" W	158.79'	160.05'	N 67°10'16" W
C18	S 83°18'42" E	433.00'	8°50'47"	S 87°44'06" E	66.79'	66.85'	N 87°50'31" E
C19	S 67°10'16" E	433.00'	16°08'26"	S 75°14'29" E	121.58'	121.88'	S 83°18'42" E
C20	S 87°53'46" E	767.00'	5°44'09"	S 85°01'41" E	76.75'	76.79'	S 82°09'37" E
C21	N 85°46'07" E	767.00'	6°20'07"	N 88°56'11" E	84.76'	84.81'	S 87°53'46" E
C22	S 78°11'29" E	220.00'	16°02'23"	S 86°12'41" E	61.39'	61.59'	N 85°46'07" E
C23	S 51°55'06" E	220.00'	26°16'23"	S 65°03'18" E	100.00'	100.88'	S 78°11'29" E
C24	S 44°05'57" E	220.00'	7°49'09"	S 48°00'32" E	30.00'	30.02'	S 51°55'06" E
C25	S 23°49'46" E	220.00'	20°16'11"	S 33°57'52" E	77.43'	77.83'	S 44°05'57" E
C26	S 03°05'24" E	220.00'	20°44'22"	S 13°27'35" E	79.20'	79.63'	S 23°49'46" E
C27	S 17°38'58" W	220.00'	20°44'22"	S 07°16'47" W	79.20'	79.63'	S 03°05'24" E
C28	S 38°23'21" W	220.00'	20°44'22"	S 28°01'09" W	79.20'	79.63'	S 17°38'58" W
C29	S 49°52'08" W	220.00'	11°28'48"	S 44°07'45" W	44.01'	44.08'	S 38°23'21" W
C30	S 65°30'33" W	220.00'	15°38'25"	S 57°41'21" W	59.87'	60.05'	S 49°52'08" W
C31	S 86°25'01" W	220.00'	20°54'28"	S 75°57'47" W	79.84'	80.28'	S 65°30'33" W
C32	N 86°17'17" W	220.00'	7°17'42"	N 89°56'08" W	27.99'	28.01'	S 86°25'01" W
C33	S 72°02'07" W	66.00'	26°11'39"	S 58°56'18" W	29.91'	30.17'	S 45°50'28" W
C34	N 26°35'40" W	66.00'	82°22'13"	N 66°46'47" W	86.92'	94.88'	S 72°02'07" W
C35	N 00°40'43" E	66.00'	26°16'23"	N 12°27'29" W	30.00'	30.26'	N 26°35'40" W
C36	N 47°29'51" E	66.00'	46°49'08"	N 24°05'17" E	52.44'	53.93'	N 00°40'43" E
C37	S 85°41'00" E	66.00'	46°49'08"	N 70°54'25" E	52.44'	53.93'	N 47°29'51" E
C38	S 58°40'44" E	66.00'	27°00'16"	S 72°10'52" E	30.82'	31.11'	S 85°41'00" E
C39	N 04°28'30" E	154.00'	45°23'39"	N 27°10'19" E	118.84'	122.01'	N 49°52'08" E
C40	N 86°24'44" W	154.00'	90°53'14"	N 40°58'07" W	219.47'	244.29'	N 04°28'30" E
C41	S 85°46'07" W	154.00'	7°49'09"	S 89°40'42" W	21.00'	21.02'	N 86°24'44" W
C42	S 89°14'54" W	833.00'	3°28'47"	S 87°30'31" W	50.58'	50.59'	S 85°46'07" W
C43	N 84°26'29" W	833.00'	6°18'37"	N 87°35'47" W	91.70'	91.74'	S 89°14'54" W
C44	N 82°09'37" W	833.00'	2°16'52"	N 83°18'03" W	33.16'	33.16'	N 84°26'29" W
C45	N 73°51'56" W	367.00'	6°41'40"	N 70°31'06" W	42.86'	42.88'	N 67°10'16" W
C46	S 87°50'31" W	367.00'	18°17'33"	N 83°00'43" W	116.67'	117.17'	N 73°51'56" W
C47	N 34°12'58" E	1972.41'	9°07'40"	N 38°46'48" E	313.90'	314.23'	N 43°20'38" E
C48	N 43°20'38" E	1972.41'	3°33'16"	N 45°07'17" E	122.34'	122.36'	N 46°53'55" E
C49	N 46°53'55" E	1972.41'	4°00'52"	N 48°54'21" E	138.17'	138.19'	N 50°54'46" E
C50	N 50°54'46" E	1972.41'	5°12'03"	N 53°30'48" E	178.98'	179.04'	N 56°06'49" E
C51	S 64°04'27" E	1522.40'	1°30'06"	S 64°49'30" E	39.90'	39.90'	S 65°34'34" E
C52	S 65°34'34" E	1522.40'	3°34'54"	S 67°22'01" E	95.15'	95.17'	S 69°09'28" E
C53	S 69°09'28" E	1522.40'	4°01'35"	S 71°10'15" E	106.96'	106.98'	S 73°11'03" E
C54	S 73°11'03" E	1522.40'	15°09'02"	S 80°45'33" E	401.39'	402.56'	S 88°20'04" E
C55	S 88°20'04" E	1522.40'	4°05'45"	N 89°37'03" E	108.81'	108.83'	N 87°34'11" E

CURVE DATA TABLE

WALWORTH COUNTY TREASURER'S CERTIFICATE

STATE OF WISCONSIN)
ss
COUNTY OF WALWORTH)

I, VALERIE ETZEL, BEING THE DULY ELECTED, QUALIFIED, AND ACTING TREASURER OF WALWORTH COUNTY, WISCONSIN, DO HEREBY CERTIFY THAT THE RECORDS IN MY OFFICE SHOW NO UNREDEEMED TAX SALES AND NO UNPAID TAXES OR SPECIAL ASSESSMENTS

AS OF _____ AFFECTING THE LANDS INCLUDED IN THE PLAT OF WILLABAY MEADOWS, A SUBDIVISION.

DATED THIS _____ DAY OF _____, 2025.

_____
VALERIE ETZEL WALWORTH COUNTY TREASURER

VILLAGE OF WILLIAMS BAY TREASURER'S CERTIFICATE

STATE OF WISCONSIN)
ss
COUNTY OF WALWORTH)

I, JENNIFER WIESE, BEING THE DULY ELECTED, QUALIFIED, AND ACTING TREASURER OF THE VILLAGE OF WILLIAMS BAY, WISCONSIN, DO HEREBY CERTIFY THAT THE RECORDS IN MY OFFICE SHOW NO UNREDEEMED TAX SALES AND NO UNPAID TAXES OR SPECIAL

ASSESSMENTS AS OF _____ AFFECTING THE LANDS INCLUDED IN THE PLAT OF WILLABAY MEADOWS, A SUBDIVISION.

DATED THIS _____ DAY OF _____, 2025.

_____
JENNIFER WIESE VILLAGE TREASURER

FARRIS, HANSEN & ASSOCIATES, INC.
ENGINEERING – ARCHITECTURE – SURVEYING
7 RIDGWAY COURT, PO BOX 437
ELKHORN, WISCONSIN 53121
PHONE: (262) 723-2098
FAX: (262) 723-5886

PROJ. NO.: 5536.17 | DATE: 11/11/2025 | SHEET 3 OF 3

X:\PROJECTS\5536\5536_17\ACAD\5536_17 Final Plat.dwg

RESOLUTION NO. R-_____-25

RESOLUTION RECOMMENDING TEMPORARY ZONING, UPON ANNEXATION, OF TERRITORY LOCATED IN THE TOWN OF GENEVA AND TOWN OF LINN TO THE VILLAGE OF WILLIAMS BAY, WALWORTH COUNTY, WISCONSIN

WHEREAS, Land & Lakes Development Co., an Illinois corporation ("Petitioner"), has made and filed with the Village Clerk of the Village of Williams Bay ("Village") a Petition for Direct Annexation by Unanimous Consent of Electors and Property Owners of Territory Located in the Town of Geneva, Walworth County, Wisconsin, and Town of Linn, Walworth County, Wisconsin, to the Village of Williams Bay, Walworth County, Wisconsin, pursuant to Wis. Stat. § 66.0217(2) ("Annexation Petition"), in the office of the Village Clerk for the Village of Williams Bay, Walworth County, Wisconsin, on or about the 2nd day of August, 2025, requesting the annexation to the Village of lands described in Exhibit A attached hereto and incorporated herein by reference ("Subject Territory"), which such lands are contiguous to the Village; and

WHEREAS, it appears by acknowledgment of receipt on file herein that Petitioner has filed a duplicate original of the Annexation Petition, including a legal description and scale map of the Subject Territory, with the Town Clerk of the Town of Geneva, Walworth County, Wisconsin, Town of Linn, Walworth County, Wisconsin, and the State of Wisconsin, Department of Administration, within five (5) days after filing the Annexation Petition with the Village Clerk; and

WHEREAS, it further appears that all of the requirements of Wis. Stat. § 66.0217(2) have been fully complied with, and that the State of Wisconsin, Department of Administration, has reviewed the proposed annexation and, by letter, found it to be in the public interest, and said letter has been duly considered and reviewed by the Village and/or the Village's Counsel; and

WHEREAS, the proposed annexation was referred to the Plan Commission of the Village for its recommendation concerning the temporary zoning of the Subject Territory upon annexation to the Village; and

WHEREAS, pursuant to the Preannexation Agreement between the Village and Developer approved October 7, 2024, the Developer stated its desire that, upon annexation, the Subject Territory be assigned the temporary and permanent zoning of Suburban and Residential Zoning District (SF-3); and

WHEREAS, the Plan Commission of the Village finds that the Suburban and Residential District Zoning District (SF-3) of the Subject Territory would conform to the Village's comprehensive plan.

NOW, THEREFORE, the Plan Commission of the Village of Williams Bay, Walworth County, Wisconsin, hereby Resolves:

1. It is recommended to the Village Board of the Village of Williams Bay that the lands comprising the Subject Territory, as described in Exhibit A attached hereto and incorporated herein, upon annexation, be assigned the temporary zoning classification of Suburban and Residential Zoning District (SF-3).

Approved by the Plan Commission of the Village of Williams Bay, Walworth County Wisconsin this _____ day of _____, 2025.

VILLAGE OF WILLIAMS BAY

By:_____
Adam Jaramillo, President

Attest: _____
Tina Kolls, Clerk

EXHIBIT A

Legal Descriptions

Geneva Property

LEGAL DESCRIPTION (TAX PARCEL J G 3100009A)

PART OF THE SOUTHEAST 1/4 AND SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 31, TOWN 2 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE NORTH LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6 S 88DEG 55MIN 28SEC W, 493.53 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE S 88DEG 55MIN 28SEC W, 1351.14 FEET TO THE NORTHWEST CORNER OF WILLABAY SHORES CONDOMINIUM; THENCE 752.66 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 1972.41 FEET AND A CHORD WHICH BEARS N 45DEG 10MIN 55SEC E, 748.10 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50"; THENCE ALONG SAID HIGHWAY, S 53DEG 04MIN 18SEC E, 610.59 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, S 67DEG 55MIN 31SEC E, 353.26 FEET; THENCE CONTINUE ALONG SAID HIGHWAY, 5.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 63DEG 58MIN 27SEC E, 5.32 FEET TO THE POINT OF BEGINNING. CONTAINING 339,436 SQUARE FEET (7.79 ACRES) OF LAND, MORE OR LESS.

Town of Linn Property

LEGAL DESCRIPTION (TAX PARCELS I L 500005 AND I L 500005A)

PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 5, TOWN 1 NORTH, RANGE 17 EAST, WALWORTH COUNTY, WISCONSIN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A CONCRETE COUNTY MONUMENT FOUND MARKING THE NORTHEAST CORNER OF SECTION 6, TOWN 1 NORTH, RANGE 17 EAST; THENCE ALONG THE EAST LINE OF THE NORTHEAST 1/4 OF SAID SECTION 6 S 02DEG 08MIN 37SEC E, 153.46 FEET TO THE SOUTHERLY RIGHT OF WAY BOUNDARY OF STATE TRUNK HIGHWAY "50" AND THE POINT OF BEGINNING; THENCE ALONG SAID HIGHWAY 231.32 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 1522.40 FEET AND A CHORD WHICH BEARS S 88DEG 04MIN 38SEC E, 231.10 FEET; THENCE CONTINUE ALONG SAID HIGHWAY N 87DEG 40MIN 28SEC E, 182.42 FEET; THENCE CONTINUE ALONG SAID HIGHWAY S 47DEG 16MIN 54SEC E, 197.81 FEET TO A POINT ALONG THE WESTERLY RIGHT OF WAY BOUNDARY OF EAST GENEVA STREET; THENCE ALONG SAID STREET S 02DEG 09MIN 29SEC E, 353.43 FEET; THENCE S 88DEG 47MIN 41SEC W, 536.64 FEET TO A POINT ALONG THE BOUNDARY OF WILLABAY WOODS, A SUBDIVISION; THENCE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 02DEG 51MIN 46SEC E, 231.13 FEET; THENCE CONTINUE ALONG THE BOUNDARY OF SAID SUBDIVISION, N 88DEG 50MIN 40SEC W, 36.91 FEET; THENCE N 02DEG 08MIN 37SEC W, 267.62 FEET TO THE POINT OF BEGINNING. CONTAINING 255,241 SQUARE FEET (5.86 ACRES) OF LAND, MORE OR LESS.

RESOLUTION NO. R-_____-25

RESOLUTION RECOMMENDING APPROVAL OF FINAL PLAT OF WILLABAY MEADOWS, A SUBDIVISION

WHEREAS, Land & Lakes Development Co., an Illinois Corporation (Applicant), has filed with the Village of Williams Bay (Village) a preliminary plat for the development of property currently located in part in the Village, in part in the Town of Geneva and in part in the Town of Linn, which is identified as Willabay Meadows, a subdivision; and

WHEREAS, the preliminary plat having been reviewed by the Village Engineer and Village Zoning Administrator who supplied their comments relative thereto to the Plan Commission of the Village; and

WHEREAS, the Village Plan Commission having reviewed the proposed preliminary plat, and having considered the comments of the Village Engineer and Village Zoning Administrator, and based on said review and consideration of those comments, having recommended to the Village Board approval of the preliminary plat subject to the comments of the Plan Commission, Village Engineer and Village Zoning Administrator; and

WHEREAS, the Village Board having reviewed the proposed preliminary plat, the recommendations of the Plan Commission as well as the comments of the Village Engineer and Village Zoning Administrator, and having, on October 7, 2024, approved the preliminary plat subject to such comments; and

WHEREAS, Applicant having subsequently conferred with the Village Engineer to address the concerns of the Village relative to the proposed final plat; and

WHEREAS, the Applicant having prepared for review and comment by the Village Engineer, engineering plans for the installation of public improvements within the plat area as required by §375-305E. of the Code of Ordinances; and

WHEREAS, the Village Engineer having reviewed same and having given his conditional approval to the engineering plan; and

WHEREAS, the Plan Commission of the Village having reviewed the proposed final plat, and having considered the comments of the Village Engineer and Village Zoning Administrator, and having determined that the final plat is in conformity with the intent and provisions of Chapter 375 of the Code of Ordinances and that the final plat substantially conforms with the preliminary plat.

NOW, THEREFORE, the Plan Commission of the Village of Williams Bay hereby resolves as follows:

That it recommends to the Village Board of the Village of Williams Bay approval of the final plat of Willabay Meadows, a subdivision, as submitted by Applicant Land & Lakes Development Co., conditioned upon addressing any remaining comments of the Village Engineer to the satisfaction of the Village Board.

Approved by the Plan Commission of the Village of Williams Bay, Walworth County Wisconsin this _____ day of December, 2025.

VILLAGE OF WILLIAMS BAY

By:_____
Adam Jaramillo, President

Attest: _____
Tina Kolls, Clerk

Date Passed: _____