Land Use Application Updates (per 2/28/23 email)

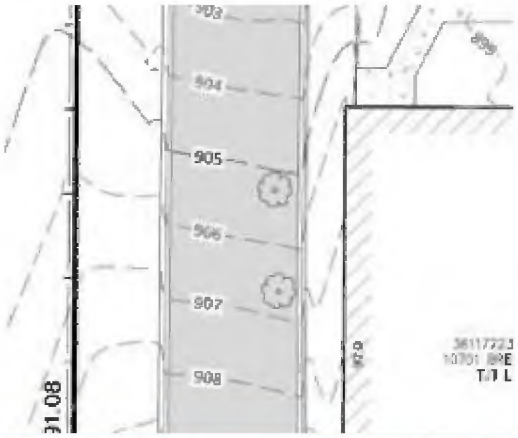
Area and unit count plan: The square footage of the various uses in the building need to be accurate in order to calculate water demand and sanitary sewer flow projections. Update, and include the other uses (office, amenity, institutional, etc.), and distinguish how the square footage is split between the north and south connections. The following is a screenshot of the area and unit count plan which suggests that the square footage may not be accurate: The area schedules have been updated to reflect the differing use sizes and the unit count of 275. See tables on sheet A1.0.

STUDIO		
UNIT S1	1,953 SF	5
UNIT S1.1	381 SF	1
UNIT S2	2,041 SF	5
UNIT S3	7,387 SF	10
UNIT S3.1	415 SF	1
	12,177 SF	22
Grand total: 272	236,550 SF	272

- **Roof:** Confirm the material and color of the roof. Initially, it was indicated that the roof would be solar ready, but the illustrations suggest a pea rock coating. Showing PV solar area on architectural site plan A0.1 and sheet A1.6

- **Snow removal plan:** A snow removal plan will be required as a condition of approval. This plan will need to include how snow will be removed from the ramp. Has consideration been made to how snow will be removed from the ramp, especially from the top floor. See sheets: A0.1 and A1.6

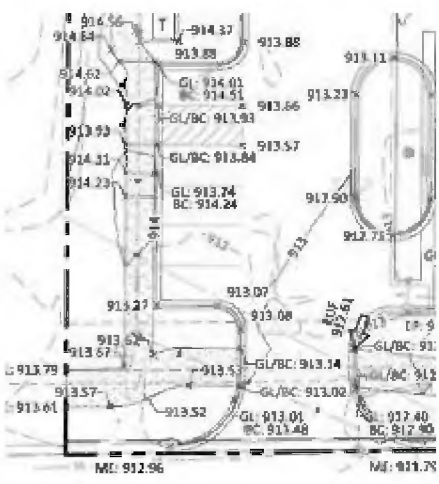
- **Existing conditions survey:** It appears that the trees on the existing conditions survey may not be overlaid correctly. Trees are being shown in the parking lot. These screenshots are of the existing conditions survey and the aerial in the northwest corner of the building. In order to be able to determine if grading tweaks could save onsite trees, as was requested by the council, the survey needs to be accurate. This has been updated: see sheet C2.01



- **Pedestrian comments:** Confirmation from the northern property owner for the landscaping and trail shown on their property is required prior to land use approval. If the owner does not agree and the trail must be relocated onto the property, all plans must be updated to reflect that change. See email to Ashley and Loren from Ned Dodington, email dated: March 9, 2023.

  More consideration to the pedestrian environment must be given. Driveways and entries must consider pedestrian crossings. Paint the pavement will not be sufficient. Concrete crosswalks provided on the plan indicate a color and material difference from the bituminous driveway area. Crosswalk signage is also be provided at the crosswalk in front of the garage entrance. See sheets C3.01, C9.03, and Landscape Plan L1.

  Accommodate vehicular overhang on all sidewalks but especially in the southwest corner of the proposed building. Sidewalk is widened to 7' to allow for 2' overhang for vehicles and a clear 5' wide sidewalk.



The plan must also incorporate pedestrian furniture, wayfinding signage from the Opus placemaking guide and dog waste bags. See top exhibit of L3 sheet, left exhibit of L4 sheet, and left exhibit of L5 sheet.

- **Stormwater plan:** An irrigation plan is required as water reuse is being used to meet stormwater rules. This irrigation plan should be complemented by the landscaping plan (see more below). No credit is given to the area on the adjacent property or areas incorporating artificial turf. Understood. Additionally, all support systems (reuse pump and generator) must be shown on all plans, including the landscaping plan. Greystar has officially engaged a stormwater reuse engineer, Rainwater Management Solutions out of Roanoke VA, and an irrigation design specialist Aqua Engineering Inc out of Eden Prairie, MN, to design this system. This system is in the initial schematic design phase and is further developing this system for the project.
  The stormwater harvesting system is indicated on plan sheet C6.01 at SW corner and NE corner. Also indicated on plan sheet IR100 Irrigation Design: POCS and POCN, HPCS and HPCN. Sheet A1.0 shows the south and north system locations in the building. Corner of bike room in the SW, and in the corner of the trash room at the NW.
  Also, see RMS Written Specifications Draft, RMS PreDesign Schematic, Bren Road – Multifamily Water Reuse Irrigation Design, Bren Road – Multifamily Water Reuse Irrigation System Details.

- **Landscaping plan:** Many of the plant selections are not appropriate for the site and the proposed stormwater plan. Based on the typical water reuse system operation and soil type, the site will become oversaturated. The plant selections have been adjusted per staff comments and the water re-use system will not allow the site to become oversaturated. Marlowe OPUS Station Landscape Design 3-10-2023

  Further consideration should be made to select plants that are suitable and have a likelihood of survival. For example: swamp white oak and tamarack are not suitable; trees are shown 3-feet from the foundation of the building on the west side; full sun perennials are shown under full-foliage trees; a dogwood does not count as a tree; and 3-inch trees are not acceptable (must be 2-inch trees to encourage survival). Adjustments have been made based on this feedback.

  The plan should evaluate the landscaping ordinance to determine how much landscaping is needed to determine how much landscaping will be required. As shown, the site would be over-

planted which will reduce the likelihood for survival. See Marlow Opus Station Landscape Design 3-10-2023 sheets (15 total)

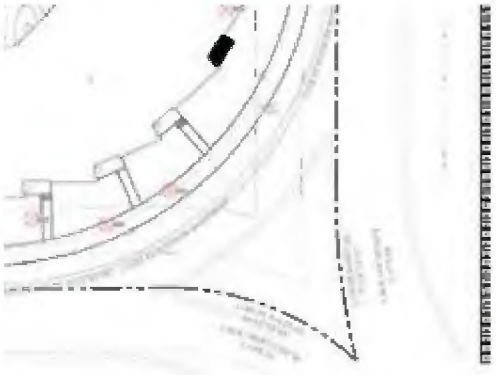
Additional considerations: How will the landscaping be maintained during the winter as plants are shown right up to the trail and sidewalks and will likely be impacted by the salting? Salt resistant plants have been chosen for areas in proximity to sidewalks. Landscaping is shown over the top of almost all of the utilities. The city will not allow trees over the public infrastructure to avoid root intrusion and replacement removals but consideration should be made by Greystar to determine if this is wanted over private infrastructure. The plan must also account for the stormwater and generators as noted above. No trees are shown over public infrastructure. Greystar is comfortable with the plantings over the private infrastructure.

- **Plumbing code:** The current plans will not meet MN Plumbing code. Additionally, the pitch of the sanitary sewer in the southwest corner of the building is less than 2-percent. The pitch of this pipe has been adjusted to be greater than 2%. See sheet: C6.01. When this occurs, the code will require a 20-percent reduction in the amount of fixtures. Please confirm the building's fixture counts.

- **Site grading:** The plans must account for the existing drainage and drains to the site as the "ditch" is being removed. More information will be given on this during the meeting. This swale has been reintroduced in the boulevard between the sidewalk and the street along Bren Road. See sheet: C4.01

- **Construction:** A site logistics plan will be required to show how the building can be constructed (material storage, crane location, etc.) with impacting the adjacent roadway flow. See: Construction Logistics Plan 3-7-23

- **Area calculation:** Does the area calculations used include the point area in the southeast corner



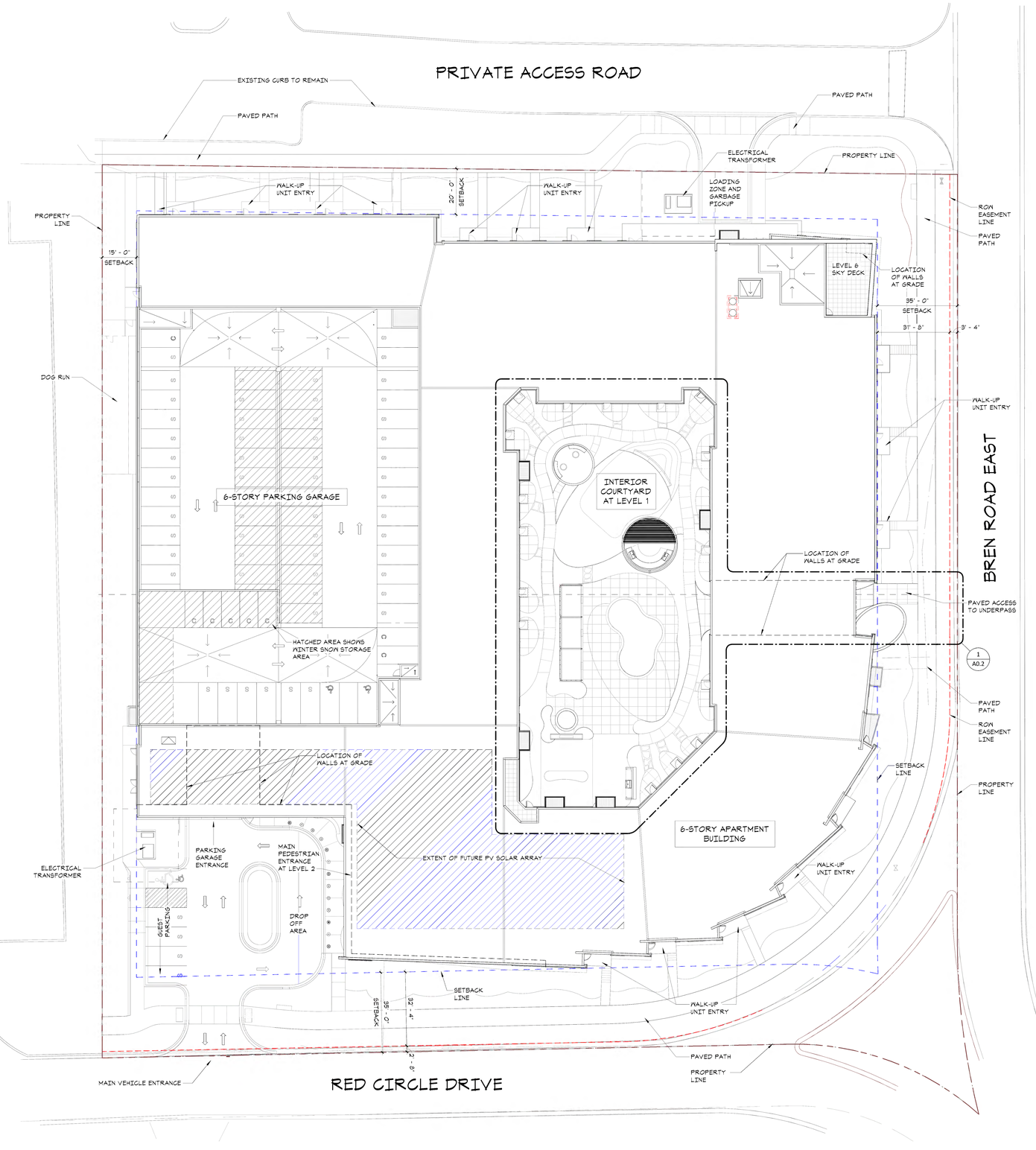
of the site? The site area has been recalculated to include the southeastern triangular portion of the site. See: C3.01

- **Other equipment notes:** A generator is shown on the west side of the building on one plan. Exhaust from this generator must be a minimum of 10 feet from the property line. The generator has been moved into the parking garage. See sheet: T1.3

- **Watermain:** Consideration to the replacement of the watermain on the western side of the building. This main is likely nearing the end of its lifecycle as there was recently a watermain break. The main must remain as it provides a loop and fire flow in the area. We look forward to the discussion on this item.

- **Hydrant:** A drawing that clearly shows existing and relocated/ new hydrants must be provided. The existing plans have labels over existing hydrants so staff is unable to determine if the hydrants are generally staying the same area as existing hydrants. The labels have been adjusted so the hydrants are visible on the plan. See sheet: C6.01

- **120-day extension:** I've attached the revised extension to the email for your review and signature. Provided by Greystar.



1 A0.1 **ARCHITECTURAL SITE PLAN**
1" = 20'-0"

3/10/2023 12:23:59 PM

MARLOWE OPUS
STATION
MULTIFAMILY
MINNETONKA, MN

GREYSTAR
esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

LAND USE APPLICATION 3/10/2023

ORIGINAL ISSUE:

REVISIONS:

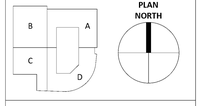
No.	Description	Date
1	UPDATES	02/23/2023
2	LUA UPDATES	03/10/2023

222521
PROJECT NUMBER

ESG
DRAWN BY

ESG
CHECKED BY

KEY PLAN



MARLOWE OPUS STATION MULTIFAMILY

ARCHITECTURAL SITE PLAN

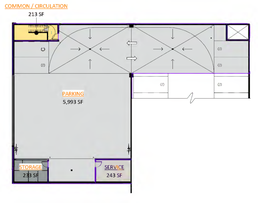
A0.1

5 **LEVEL 6 AREA PLAN**
A1.0 1/32" = 1'-0"

3 **LEVEL 2 AREA PLAN**
A1.0 1/32" = 1'-0"

4 **LEVEL 3-5 AREA PLAN**
A1.0 1/32" = 1'-0"

2 **LEVEL 1 AREA PLAN**
A1.0 1/32" = 1'-0"



1 **LEVEL -0.5 AREA PLAN**
A1.0 1/32" = 1'-0"

UNIT MIX SCHEDULE				
Unit Type	Count	Min - Max SF	%	Area
1 BED				
B1	5	613 SF	1%	3,063 SF
B2	17	687 SF ... 689 SF	5%	11,706 SF
B2 TYPE A	1	689 SF	0%	689 SF
B2.1	2	689 SF	1%	1,379 SF
B3	5	688 SF ... 688 SF	1%	3,442 SF
B4	5	724 SF ... 724 SF	1%	3,619 SF
B5	18	759 SF	5%	13,668 SF
B5 TYPE A	1	759 SF	0%	759 SF
B5.1	1	759 SF	0%	759 SF
B6	15	816 SF	5%	12,240 SF
B6.1	2	816 SF	1%	1,632 SF
1 BED: 72			21%	52,956 SF
1 BED + DEN				
BB1	5	845 SF ... 846 SF	2%	4,227 SF
BB2	5	889 SF ... 889 SF	2%	4,445 SF
BB3	5	891 SF ... 891 SF	2%	4,456 SF
BB4	15	888 SF ... 888 SF	5%	13,320 SF
BB4.1	2	888 SF	1%	1,776 SF
BB5	10	891 SF ... 910 SF	4%	9,055 SF
BB5.1	2	871 SF ... 905 SF	1%	1,776 SF
BB6	4	926 SF ... 926 SF	1%	3,706 SF
BB7	5	947 SF ... 948 SF	2%	4,739 SF
BB7.1	1	946 SF	0%	946 SF
BB8	5	945 SF ... 948 SF	2%	4,729 SF
BB9	1	1,066 SF	0%	1,066 SF
1 BED + DEN: 60			21%	54,240 SF
2 BED				
C1	5	991 SF ... 992 SF	2%	4,958 SF
C2	5	1,007 SF ... 1,010 SF	2%	5,049 SF
C3	4	1,100 SF ... 1,100 SF	2%	4,402 SF
C4	10	1,154 SF ... 1,163 SF	5%	11,595 SF
C4 TYPE A	1	1,163 SF	0%	1,163 SF
C4.1	1	1,157 SF	0%	1,157 SF
C5	10	1,164 SF ... 1,165 SF	5%	11,646 SF
C5.1	1	1,164 SF	0%	1,164 SF
C5.2	1	1,165 SF	0%	1,165 SF
C6	4	1,074 SF	2%	4,296 SF
C7	5	1,177 SF ... 1,187 SF	2%	5,916 SF
2 BED: 47			21%	52,511 SF

UNIT MIX SCHEDULE				
Unit Type	Count	Min - Max SF	%	Area
2 BED + DEN				
CC1	14	1,345 SF ... 1,357 SF	7%	18,879 SF
CC1.1	2	1,345 SF ... 1,367 SF	1%	2,712 SF
CC2	5	1,346 SF ... 1,360 SF	3%	6,743 SF
CC2.1	1	1,346 SF	1%	1,346 SF
CC3	5	1,356 SF ... 1,367 SF	3%	6,822 SF
CC3.1	1	1,391 SF	1%	1,391 SF
CC4	5	1,374 SF	3%	6,871 SF
CC4.1	1	1,374 SF	1%	1,374 SF
CC5	4	1,372 SF	2%	5,487 SF
2 BED + DEN: 38			20%	51,626 SF
3 BED				
D1	3	1,459 SF ... 1,459 SF	2%	4,378 SF
D1 TYPE A	1	1,459 SF	1%	1,459 SF
D2	4	1,473 SF ... 1,473 SF	2%	5,890 SF
D3	5	1,460 SF	3%	7,300 SF
D3.1	1	1,446 SF	1%	1,446 SF
3 BED: 14			8%	20,473 SF
ALCOVE				
A1	5	589 SF	1%	2,945 SF
A1.1	1	589 SF	0%	589 SF
A1.2	1	638 SF	0%	638 SF
A2	4	620 SF	1%	2,479 SF
A3	10	629 SF ... 629 SF	2%	6,290 SF
A3.1	2	629 SF	0%	1,258 SF
ALCOVE: 23			6%	14,199 SF
STUDIO				
S1	5	434 SF	1%	2,170 SF
S1.1	1	434 SF	0%	434 SF
S2	6	451 SF ... 466 SF	1%	2,749 SF
S3	8	454 SF ... 473 SF	1%	3,699 SF
S3.1	1	462 SF	0%	462 SF
STUDIO: 21			4%	9,514 SF
Grand Total: 275			100%	255,520 SF

PARKING SCHEDULE - RESIDENTIAL RAMP	
Description	Count
LEVEL -0.5	
8'-0" x 18' COMPACT	3
8'-6" x 18' STANDARD	11
	14
LEVEL 1	
8'-0" x 18' COMPACT	6
8'-6" x 18' STANDARD	61
ACCESSIBLE STALL	2
	69
LEVEL 2	
	5
8'-0" x 18' COMPACT	1
8'-6" x 18' STANDARD	58
ACCESSIBLE STALL	1
	65
LEVEL 3	
8'-0" x 18' COMPACT	6
8'-6" x 18' STANDARD	61
ACCESSIBLE STALL	2
	69
LEVEL 4	
8'-0" x 18' COMPACT	6
8'-6" x 18' STANDARD	61
ACCESSIBLE STALL	2
	69
LEVEL 5	
8'-0" x 18' COMPACT	6
8'-6" x 18' STANDARD	61
ACCESSIBLE STALL	2
	69
LEVEL 6	
8 x 18 COMPACT	5
8'-0" x 18' COMPACT	2
8'-6" x 18' STANDARD	6
ACCESSIBLE STALL	2
	15
TOTAL STALLS:	370

PARKING SCHEDULE - GUEST RAMP	
Description	Count
LEVEL 1	
8'-6" x 18' STANDARD - GUEST	25
	25
LEVEL 2	
8'-0" x 18' COMPACT - GUEST	4
8'-6" x 18' STANDARD - GUEST	2
ACCESSIBLE STALL - GUEST	1
VAN ACCESSIBLE STALL - GUEST	1
	8
TOTAL STALLS:	33

PARKING SCHEDULE - GUEST EXTERIOR	
Description	Count
LEVEL 2	
8'-6" x 18' STANDARD	4
ACCESSIBLE STALL	1
TOTAL STALLS:	5

AREA SCHEDULE - DEPARTMENTS TOTAL	
Area Department	Area
AMENITY	11,333 SF
COMMON / CIRCULATION	41,977 SF
LEASE OFFICE	1,191 SF
PARKING	127,626 SF
PUBLIC TERRACE	11,362 SF
RESIDENTIAL	255,520 SF
SERVICE	7,884 SF
STORAGE	3,339 SF

MARLOWE OPUS STATION MULTIFAMILY
MINNETONKA, MN

GREYSTAR
esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

LAND USE APPLICATION 3/10/2023

ORIGINAL ISSUE:

REVISIONS:

No.	Description	Date
1	UPDATES	02/23/2023
2	LUA UPDATES	03/10/2023

222521
PROJECT NUMBER

ESG DRAWN BY ESG CHECKED BY

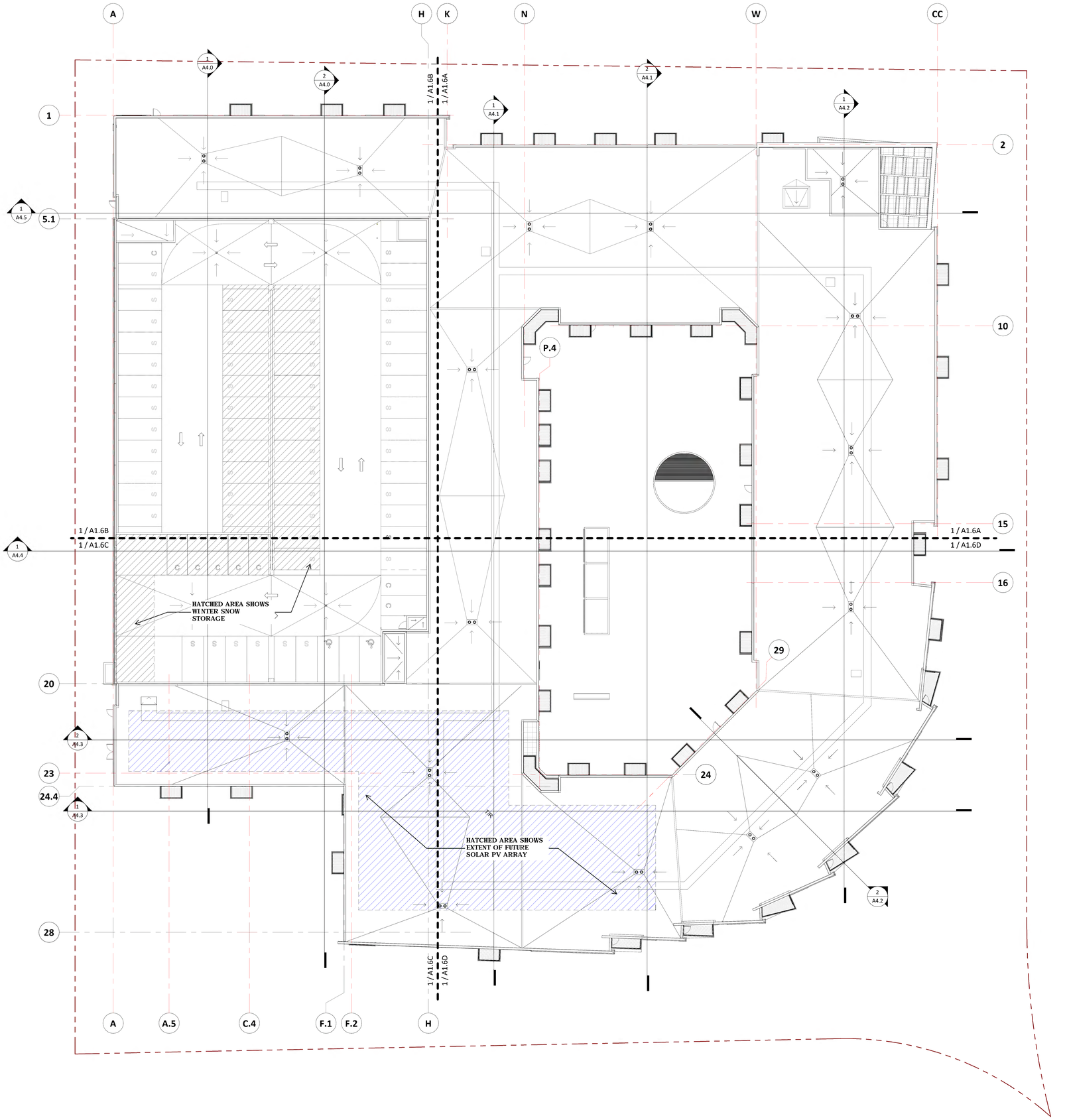
KEY PLAN

MARLOWE OPUS STATION MULTIFAMILY

AREA PLANS AND UNIT SCHEDULE

A1.0

3/10/2023 11:40:53 AM



1 A1.6 **ROOF PLAN**
1/16" = 1'-0"

3/10/2023 11:38:03 AM

MARLOWE OPUS
STATION
MULTIFAMILY
MINNETONKA, MN

GREYSTAR™

esg
ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

LAND USE
APPLICATION
3/10/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

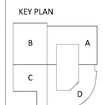
No.	Description	Date
1	UPDATES	02/23/2023
2	LUA UPDATES	03/10/2023

222521
PROJECT NUMBER

ESG
DRAWN BY

ESG
CHECKED BY

KEY PLAN

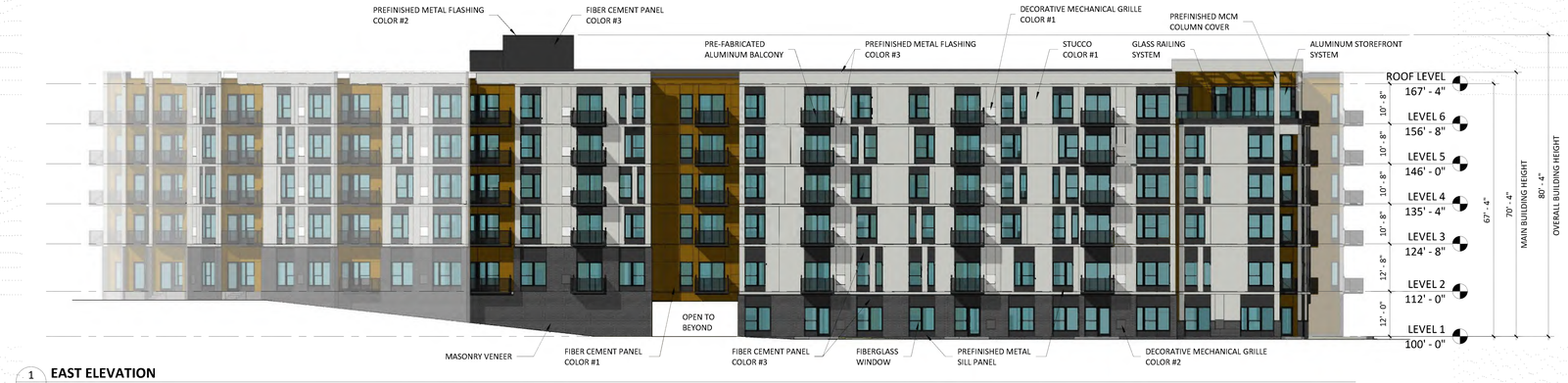


PLAN
NORTH

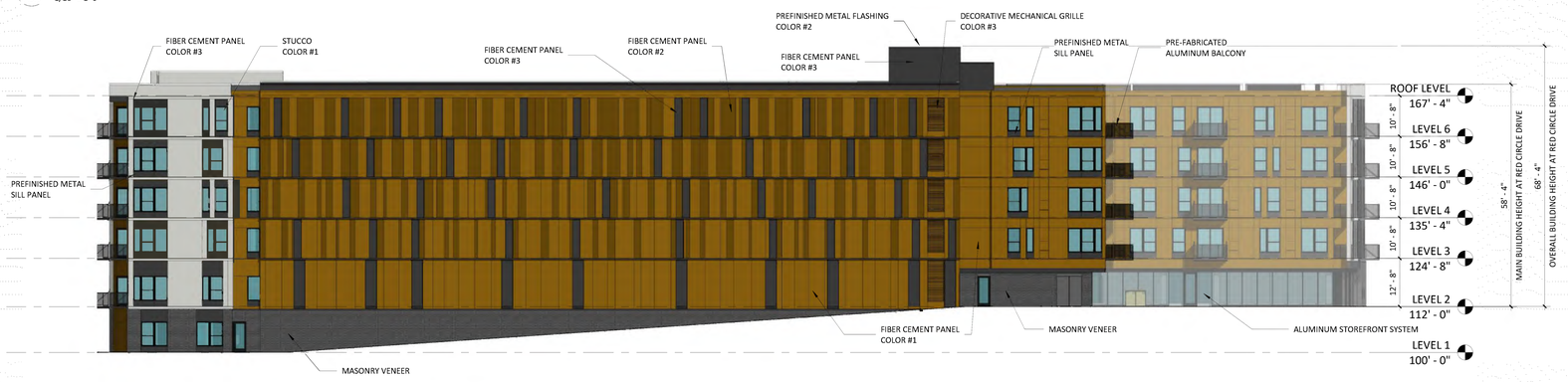
MARLOWE OPUS STATION
MULTIFAMILY

ROOF PLAN

A1.6



1 A3.0 **EAST ELEVATION**
1/16" = 1'-0"



4 A3.0 **WEST ELEVATION**
1/16" = 1'-0"

2 A3.0 **NORTH ELEVATION**
1/16" = 1'-0"

3 A3.0 **SOUTH ELEVATION**
1/16" = 1'-0"

3/10/2023 12:08:01 PM

MARLOWE OPUS STATION MULTIFAMILY
MINNETONKA, MN

GREYSTAR
esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

LAND USE APPLICATION 3/10/2023

ORIGINAL ISSUE:
02/22/23

REVISIONS:

No.	Description	Date
1	UPDATES	02/23/2023
2	LUA UPDATES	03/10/2023

222521
PROJECT NUMBER

Author DRAWN BY Checker CHECKED BY

KEY PLAN

MARLOWE OPUS STATION MULTIFAMILY

EXTERIOR ELEVATIONS
A3.0

4 A3.1 **EAST COURTYARD ELEVATION**
1/16" = 1'-0"

1 A3.1 **WEST COURTYARD ELEVATION**
1/16" = 1'-0"

2 A3.1 **SOUTH COURTYARD ELEVATION**
1/16" = 1'-0"

3 A3.1 **NORTH COURTYARD ELEVATION**
1/16" = 1'-0"

3/10/2023 12:08:07 PM

MARLOWE OPUS STATION MULTIFAMILY
MINNETONKA, MN

GREYSTAR
esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

LAND USE APPLICATION 3/10/2023

ORIGINAL ISSUE:
02/22/23

REVISIONS:

No.	Description	Date
1	UPDATES	02/23/2023
2	LUA UPDATES	03/23/2023

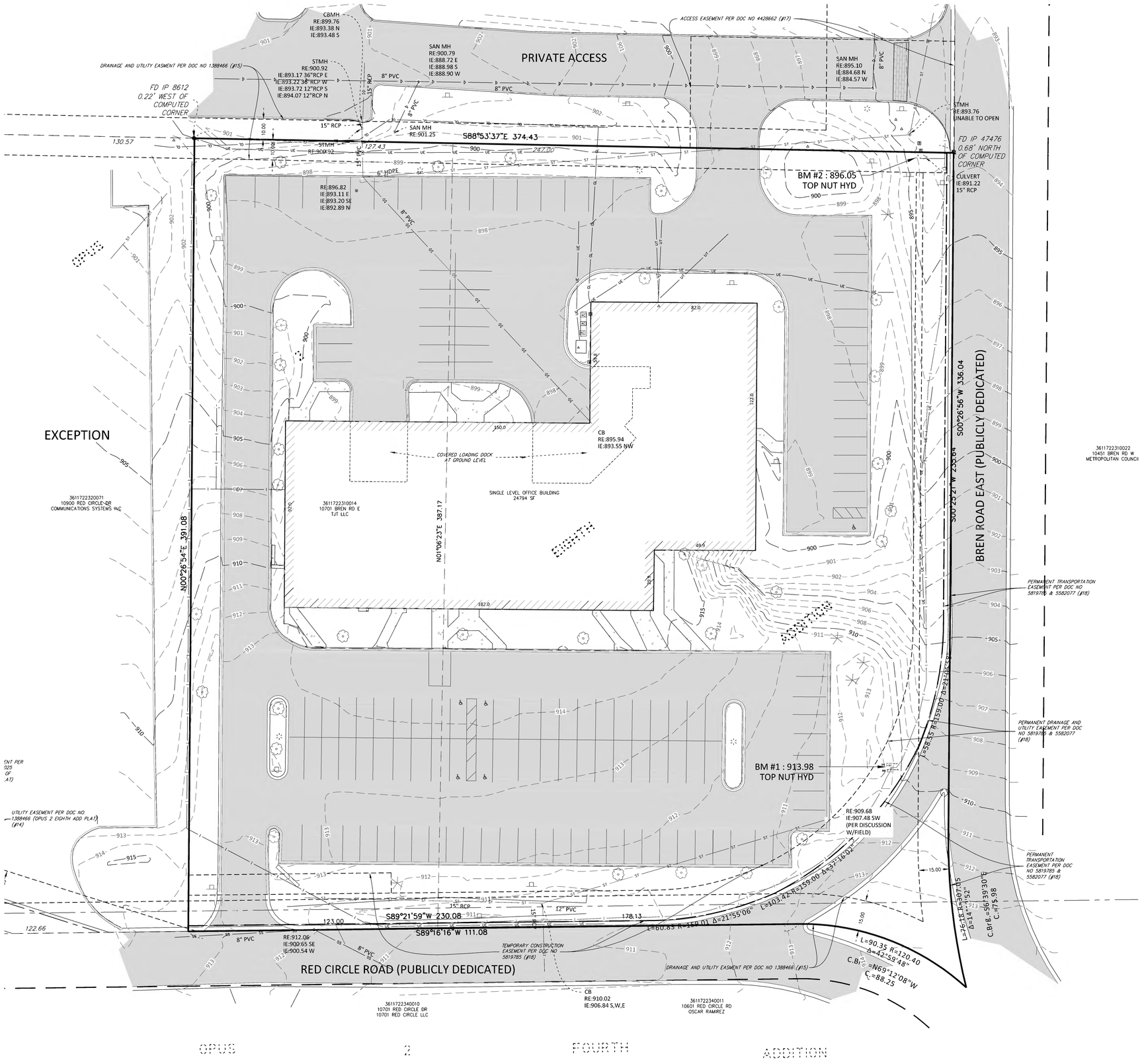
222521
PROJECT NUMBER

Author DRAWN BY Checker CHECKED BY

KEY PLAN

MARLOWE OPUS STATION MULTIFAMILY

COURTYARD ELEVATIONS
A3.1



LEGEND

- FOUND MONUMENT
- SET MONUMENT MARKED
- ELECTRIC METER
- LIGHT
- AIR CONDITIONER
- GUY ANCHOR
- HANDICAP STALL
- UTILITY POLE
- POST
- SIGN
- WATERMAIN
- SANITARY SEWER
- FORCEMAIN (SAN.)
- STORM SEWER
- FLARED END SECTION
- TELEPHONE PEDESTAL
- TELEPHONE PEDESTAL
- ELECTRIC TRANSFORMER
- GAS METER
- OVERHEAD WIRE
- CHAIN LINK FENCE
- IRON FENCE
- WIRE FENCE
- WOOD FENCE
- EASEMENT LINE
- SETBACK LINE
- RESTRICTED ACCESS
- CONCRETE CURB
- BUILDING LINE
- BUILDING CANOPY
- STANDARD DUTY ASPHALT PAVING
- BITUMINOUS SURFACE
- CONCRETE SURFACE
- LANDSCAPE SURFACE

DESCRIPTION

Parcel 1:
Lot 5 and that part of Lot 6, which lies Easterly of the following described line: Beginning at a point on the South line of said Lot 6 distant 123.00 feet Westerly from the Southeast corner of said Lot 6; thence North 1 degree, 09 minutes, 15 seconds East, a distance of 391.08 feet to a point on the North line of said Lot 6, distant 127.43 feet Westerly from the Northeast corner of said Lot 6 and said line there terminating;
All in Block 1, Opus 2 Eighth Addition, Hennepin County, Minnesota
Torrens Property Certificate of Title No. 1211616

Parcel 2:
Permanent easement for pedestrian and vehicular access and ingress and egress for the benefit of Parcel 1 as set forth in
that certain Easement Agreement dated September 20, 2007, recorded September 21, 2007, as Document No. 4428662
(T).

PROPERTY SUMMARY

1. The subject property address is 10701 Bren Road East, the property identification number is 3611722310014.
2. The gross area of the subject property is 3.328 acres or 144,986 square feet.
3. The subject property is zoned xxx, per xxx.
4. The building(s) and exterior dimensions of the outside wall at ground level are shown on the survey. It may not be the foundation wall.

BENCHMARKS

The vertical datum is based on NAVD88.

Benchmark #1
Top Nut Hydrant, Southeast corner of site elev.= 913.98

Benchmark #2
Top Nut Hydrant, Northeast corner of site elev.= 896.05

SURVEY NOTES

2. The bearing system is based on the Hennepin County coordinate system, NAD83 (1986 Adjust), with an assumed bearing of South 00 degrees 26 minutes 56 seconds West for the east line of Lot 5, Block 1, Opus 2 Eighth Addition , Section 36 , Township 117 , Range 22.
3. Field work was completed on 05/24/2022.

NORTH
0 20 40
SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

TLL DRAWN BY
BWF CHECKED BY

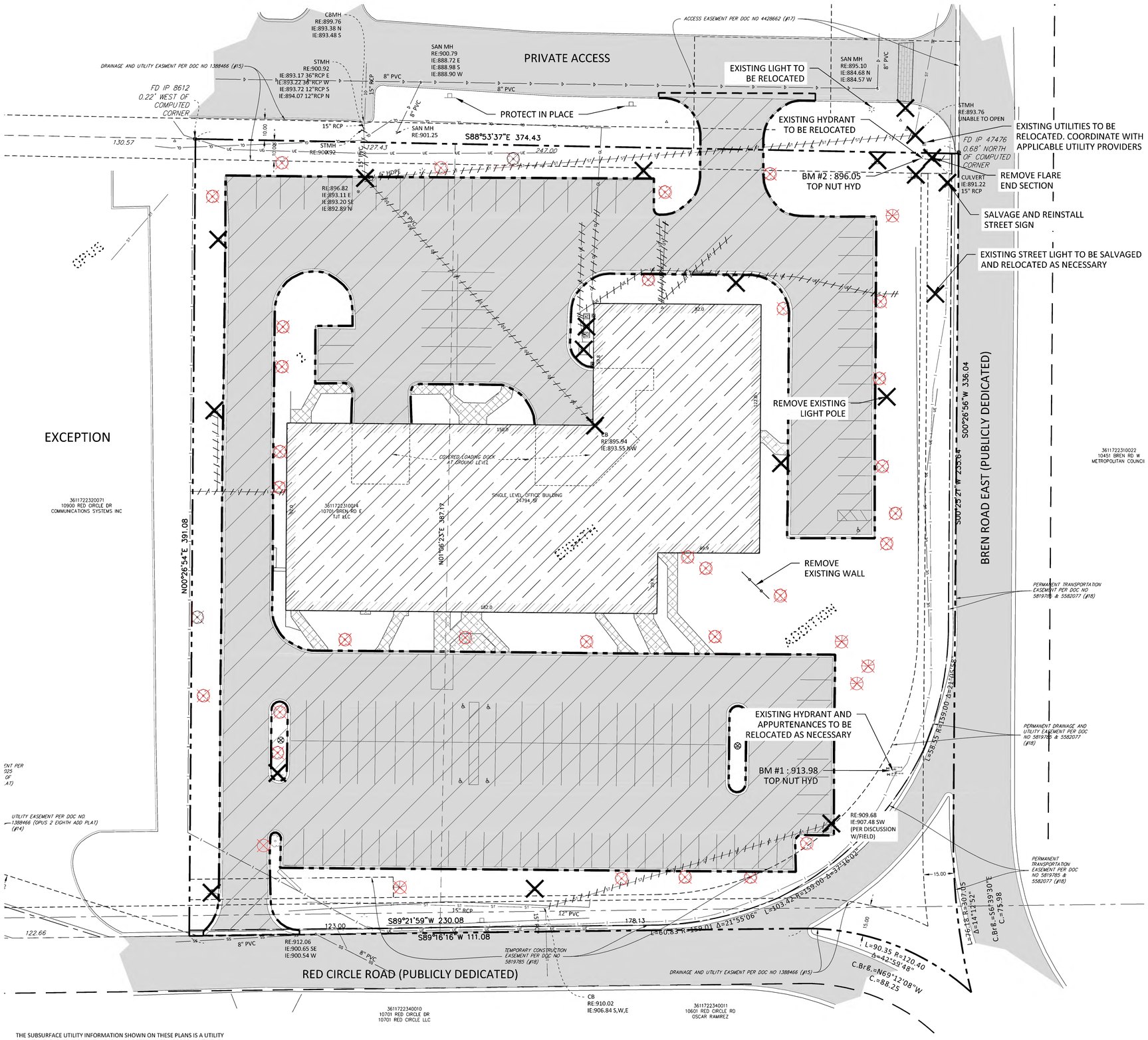
KEY PLAN

MARLOWE
OPUS STATION

EXISTING CONDITIONS

C2.01

Mar 10, 2023 - 11:41am - User:tlodin \\sambatek-fs1\Projects\PROJECTS\51166\CAD\Sheets\51166-C2-EXCND.dwg



LEGEND

- GAS METER
- HYDRANT
- LIGHT
- STORM SEWER
- DRAINTILE
- WATERMAIN
- FORCEMAIN (SAN.)
- SANITARY SEWER
- OVERHEAD WIRE
- TELEPHONE PEDESTAL
- UNDERGROUND CABLE TV
- ELECTRIC TRANSFORMER
- GAS METER
- WIRE FENCE
- IRON FENCE
- WOOD FENCE
- CHAIN LINK FENCE
- BLOCK RETAINING WALL
- SPRINKLER HEAD
- SPRINKLER VALVE
- GUIDE RAIL
- HANDRAIL
- TREE LINE
- TREES / SHRUBS
- CONCRETE
- BOLLARD
- SIGN
- CONCRETE CURB
- BUILDING LINE
- REMOVE UTILITY LINE
- REMOVE CONCRETE CURB
- SAW CUT LINE
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE GRAVEL DRIVE
- REMOVE LANDSCAPING
- REMOVE BUILDING
- REMOVE TREE
- REMOVE EXISTING STRUCTURE
- REMOVE LIGHT
- REMOVE WALL

DEMOLITION NOTES

1. DEMOLITION NOTES ARE NOT COMPREHENSIVE. CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION TO OBTAIN A CLEAR UNDERSTANDING OF THE INTENDED SCOPE OF WORK.
2. THE DESIGN SHOWN IS BASED ON ENGINEER'S UNDERSTANDING OF EXISTING CONDITIONS. THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON ALTA AND TOPOGRAPHIC MAPPING PREPARED BY SAMBATEK, INC. DATED **JUNE 10, 2022**. IF CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS WITHOUT EXCEPTION, CONTRACTOR SHALL HAVE MADE, AT OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.
3. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION, REMOVAL, AND DISPOSING IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES AND IN ACCORDANCE WITH APPLICABLE CODES, OF ALL STRUCTURES, PADS, WALLS, FLUMES, FOUNDATIONS, PARKING, DRIVES, DRAINAGE STRUCTURES, UTILITIES, ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THE PLANS CAN BE CONSTRUCTED. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE GEOTECHNICAL REPORT AND/OR GEOTECHNICAL ENGINEER.
4. CLEARING AND GRUBBING: CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
5. CONTRACTOR IS RESPONSIBLE FOR THE DISCONNECTION OF UTILITY SERVICES TO EXISTING BUILDINGS PRIOR TO DEMOLITION OF THE BUILDINGS.
6. CONTRACTOR IS SPECIFICALLY CAUTIONED THAT LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM INFORMATION AVAILABLE. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE UTILITY MAPPING ACCURACY. PRIOR TO START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES 48 HOURS PRIOR TO ANY EXCAVATION FOR ON-SITE LOCATIONS OF EXISTING UTILITIES. THE LOCATIONS OF UTILITIES SHALL BE OBTAINED BY THE CONTRACTOR BY CALLING MINNESOTA GOPHER STATE ONE CALL AT 800-252-1166 OR 651-454-0002.
7. THE MAPPING LOCATION OF ALL EXISTING SEWERS, PIPING, AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH WORK. UTILITIES DETERMINED TO BE ABANDONED SHALL BE REMOVED IF UNDER THE BUILDING INCLUDING 10' BEYOND FOUNDATIONS.
8. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO REMOVAL AND/OR RELOCATION OF UTILITIES. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANIES' FORCES AND ANY FEES WHICH ARE TO BE PAID TO UTILITY COMPANIES FOR SERVICES. CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
9. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN THE ROAD RIGHT OF WAY DURING CONSTRUCTION.
10. CONTRACTOR MUST PROTECT THE PUBLIC AT ALL TIMES WITH FENCING, BARRICADES, ENCLOSURES, ETC., TO THE BEST PRACTICES.
11. CONTINUOUS ACCESS SHALL BE MAINTAINED FOR THE SURROUNDING PROPERTIES AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
12. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND APPROVED BY THE LOCAL AUTHORITY.
13. CONTRACTOR SHALL LIMIT SAW-CUT & PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR.
14. CONTRACTOR TO PROTECT EXISTING FEATURES WHICH ARE TO REMAIN. DAMAGE TO ANY EXISTING CONDITIONS TO REMAIN WILL BE REPLACED AT CONTRACTOR'S EXPENSE.
15. ABANDON OR REMOVE ALL SANITARY, WATER AND STORM SERVICES PER CITY STANDARDS. COORDINATE ALL WORK WITH CITY. ALL STREET RESTORATION SHALL BE COMPLETED IN COMPLIANCE WITH LOCAL STANDARDS.
16. CONTRACTOR SHALL PREPARE AND SUBMIT TO THE GOVERNING AUTHORITY A TRAFFIC AND/OR PEDESTRIAN TRAFFIC PLAN PER CITY/COUNTY/STATE STANDARDS TO BE APPROVED BY THE LOCAL GOVERNING AUTHORITY.

THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

NORTH
0 20 40
SCALE IN FEET

Mar 10, 2023 - 11:41am - User:tlodle \\sambatek-fs1\Projects\PROJECTS\51166\CAD\Sheets\51166-C2-DEMO.dwg

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN
DEVELOPMENT
SUBMITTAL
03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

TLL
DRAWN BY

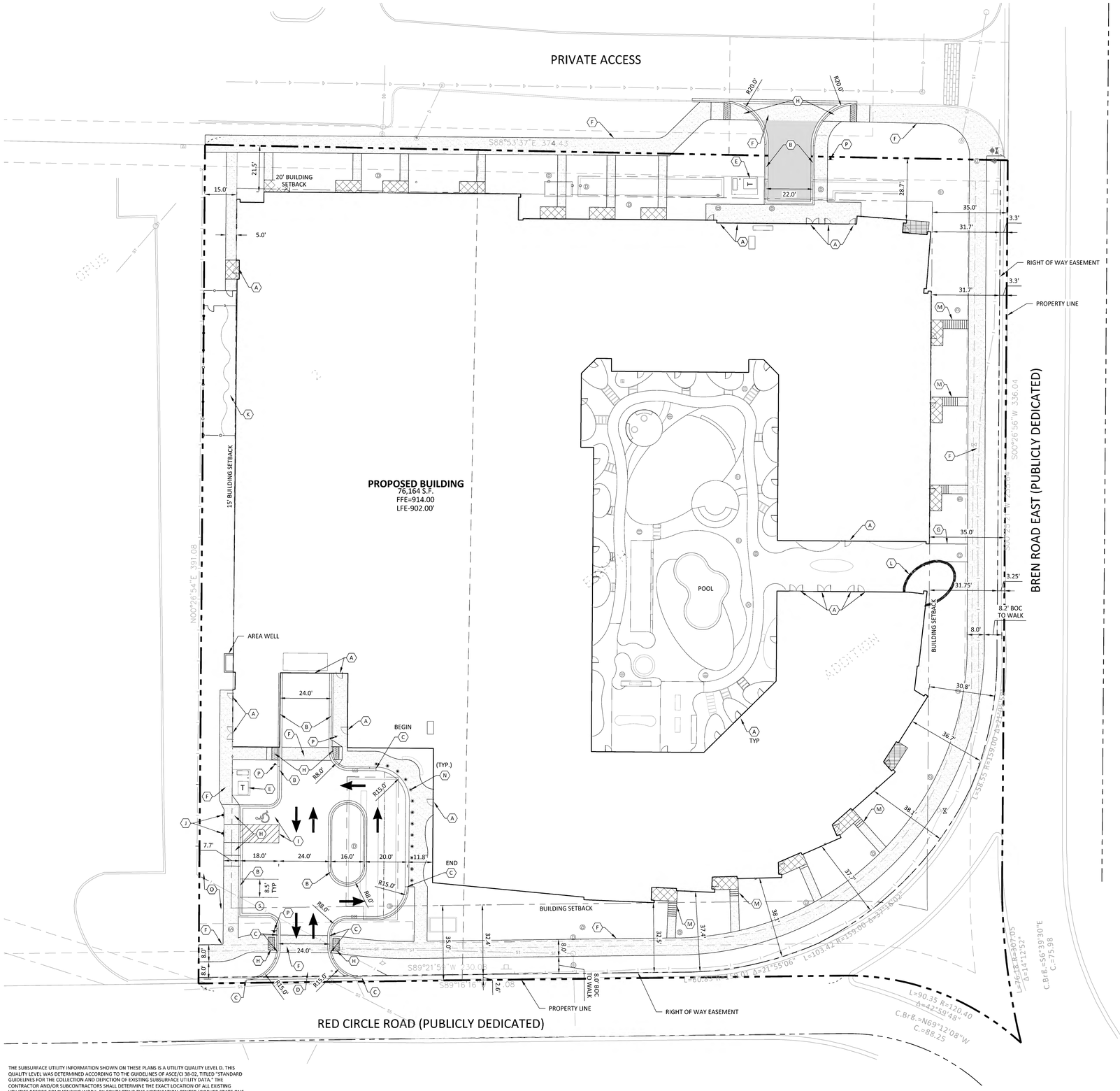
BWF
CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

DEMOLITION PLAN

C2.02



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

PROPOSED	EXISTING		
		BOUNDARY LINE	STANDARD DUTY ASPHALT PAVING (SEE DETAIL 04, SHEET C9.01)
		ROW LINE	HEAVY DUTY ASPHALT PAVING
		CONCRETE CURB	CONCRETE PAVING
		EASEMENT LINE	CONCRETE SIDEWALK
		BUILDING LINE	PAVEMENT BY OTHERS (SEE ARCHITECTURAL PLANS)
		RETAINING WALL	HANGING BALCONY
		LOT LINE	
		SAW CUT LINE	
		CHAIN LINK FENCE	
		SIGN	
		BOLLARD	

(##) PARKING STALL COUNT

(1) KEY NOTE

LIGHT POLE (BY OTHERS)

DEVELOPMENT SUMMARY

AREA	
SITE AREA	144,986 SF 3.33 AC
BUILDING	
UNITS	275 UNITS
DENSITY	87 UNITS/AC
OPEN SPACE REQUIRED (300 SF / UNIT)	82,500 SF
OPEN SPACE PROVIDED	35,290 SF
ZONING	
EXISTING ZONING	I-1
PROPOSED ZONING	PUD
SETBACKS	
FRONT YARD	35 FT
SIDE/REAR WEST	15 HT
SIDE/REAR NORTH	20 FT
PARKING	
PARKING REQUIRED (2 SPACES/UNIT, 1 TO BE ENCLOSED)	550 TOTAL 275 ENCLOSED
PARKING PROVIDED	408
SURFACE	5
ENCLOSED	403

DEVELOPMENT NOTES

1. ALL DIMENSIONS ARE ROUNDED TO THE NEAREST TENTH FOOT.
2. ALL DIMENSIONS SHOWN ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL REVIEW PAVEMENT GRADIENT AND CONSTRUCT "GUTTER OUT" WHERE WATER DRAINS AWAY FROM CURB. ALL OTHER AREAS SHALL BE CONSTRUCTED AS "GUTTER IN" CURB. COORDINATE WITH GRADING CONTRACTOR.
4. ALL AREAS ARE ROUNDED TO THE NEAREST SQUARE FOOT.
5. ALL PARKING STALLS TO BE 8.5' IN WIDTH AND 18' IN LENGTH UNLESS OTHERWISE INDICATED.
6. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF EXIT PORCHES, RAMPS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
7. SEE ARCHITECTURAL PLANS FOR MONUMENT SIGN DETAILS
8. SEE ARCHITECTURAL PLANS FOR LIGHT POLE FOUNDATION DETAIL AND FOR EXACT LOCATIONS OF LIGHT POLE.
9. REFER TO FINAL PLAT FOR LOT BOUNDARIES, LOT NUMBERS, LOT AREAS, AND LOT DIMENSIONS.
10. ALL GRADIENTS ON SIDEWALKS ALONG THE ADA ROUTE HAVE BEEN DESIGNED WITH A MAXIMUM LONGITUDINAL SLOPE OF 4.5%, AND A MAXIMUM CROSS SLOPE OF 1.5%. THIS IS LESS THAN THE ADA CODE MAXIMUM LONGITUDINAL SLOPE OF 5% (1:20), EXCEPT AT CURB RAMPS (1:12), AND A MAXIMUM CROSS SLOPE OF 2.00% (1:50). THE MAXIMUM DESIGN SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE IS 1.5%, LESS THAN THE ADA CODE MAXIMUM SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE OF 2.00% (1:50). THE CONTRACTOR SHALL REVIEW AND VERIFY THE GRADIENT IN THE FIELD ALONG THE ADA ROUTES PRIOR TO PLACING CONCRETE OR BITUMINOUS PAVEMENT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF THERE IS A DISCREPANCY BETWEEN THE GRADIENT IN THE FIELD VERSUS THE DESIGN GRADIENT AND COORDINATE WITH GRADING CONTRACTOR.
11. "NO PARKING" SIGNS SHALL BE PLACED ALONG ALL DRIVEWAYS AS REQUIRED BY CITY.

CIVIL 3D MODEL LIMITATIONS

SAMBATEK'S DELIVERABLE AND GOVERNING DOCUMENTS FOR CONSTRUCTION SHALL BE A HARD COPY AND/OR PDF PLAN SHEETS. IF A CIVIL 3D MODEL IS GENERATED IN THE PROCESS OF PREPARING THE PLAN SHEETS, IT IS AS A DESIGN TOOL ONLY AND NOT AS A SEPARATE DELIVERABLE. AT THE OWNER'S REQUEST, WE WILL RELEASE OUR CIVIL 3D MODEL FOR THE CONTRACTOR'S USE. HOWEVER, ITS USE IS AT THE CONTRACTOR'S RISK AND SHALL NOT BE USED FOR STAKING OF CURB, SIDEWALK, OR OTHER HARD SURFACE IMPROVEMENTS. IF A CIVIL 3D MODEL FOR STAKING HARD SURFACE IMPROVEMENTS IS REQUIRED, WE CAN PROVIDE A SUPPLEMENTAL AGREEMENT FOR REFINEMENT AND PREPARATION OF THE CIVIL 3D MODEL.

KEY NOTES

A. BUILDING, STOOPS, STAIRS (SEE ARCHITECTURAL PLANS)

B. B612 CONCRETE CURB AND GUTTER (SEE DETAIL 01, SHEET C9.01)

C. B612 FLAT CURB AND GUTTER (SEE DETAIL 03, SHEET C9.01)

D. CONCRETE DRIVEWAY APRON (SEE DETAIL 13, SHEET C9.01)

E. TRANSFORMER PAD (SEE ARCHITECTURAL PLANS FOR EXACT PLACEMENT)

F. CONCRETE SIDEWALK (REFER TO LANDSCAPE PLANS FOR COLOR/TEXTURE) (SEE DETAIL 02, SHEET C9.01)

G. NOT USED

H. PEDESTRIAN CURB RAMP (SEE DETAIL 06, SHEET C9.01) (MNDOT PEDESTRIAN CURB RAMP DETAILS, SHEET C9.03)

I. ADA/STANDARD STRIPING (SEE DETAIL 08, SHEET C9.01)

J. BREAKAWAY ACCESSIBLE PARKING SIGN (SEE DETAIL 05, SHEET C9.01)

K. DOG RUN (REFER TO LANDSCAPE PLAN FOR DETAILS)

L. RETAINING WALL (REFER TO LANDSCAPE PLAN FOR DETAIL)

M. STAIRS WITH HANDRAILS

N. CONCRETE PIPE BOLLARD (SEE DETAIL 14, SHEET C9.01)

O. SNOW STORAGE AREA

P. PEDESTRIAN CROSSING SIGN (SEE DETAIL 01, SHEET C9.03)

NORTH

0 20 40

SCALE IN FEET

MARLOWE OPUS STATION

MINNETONKA, MN

esg ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

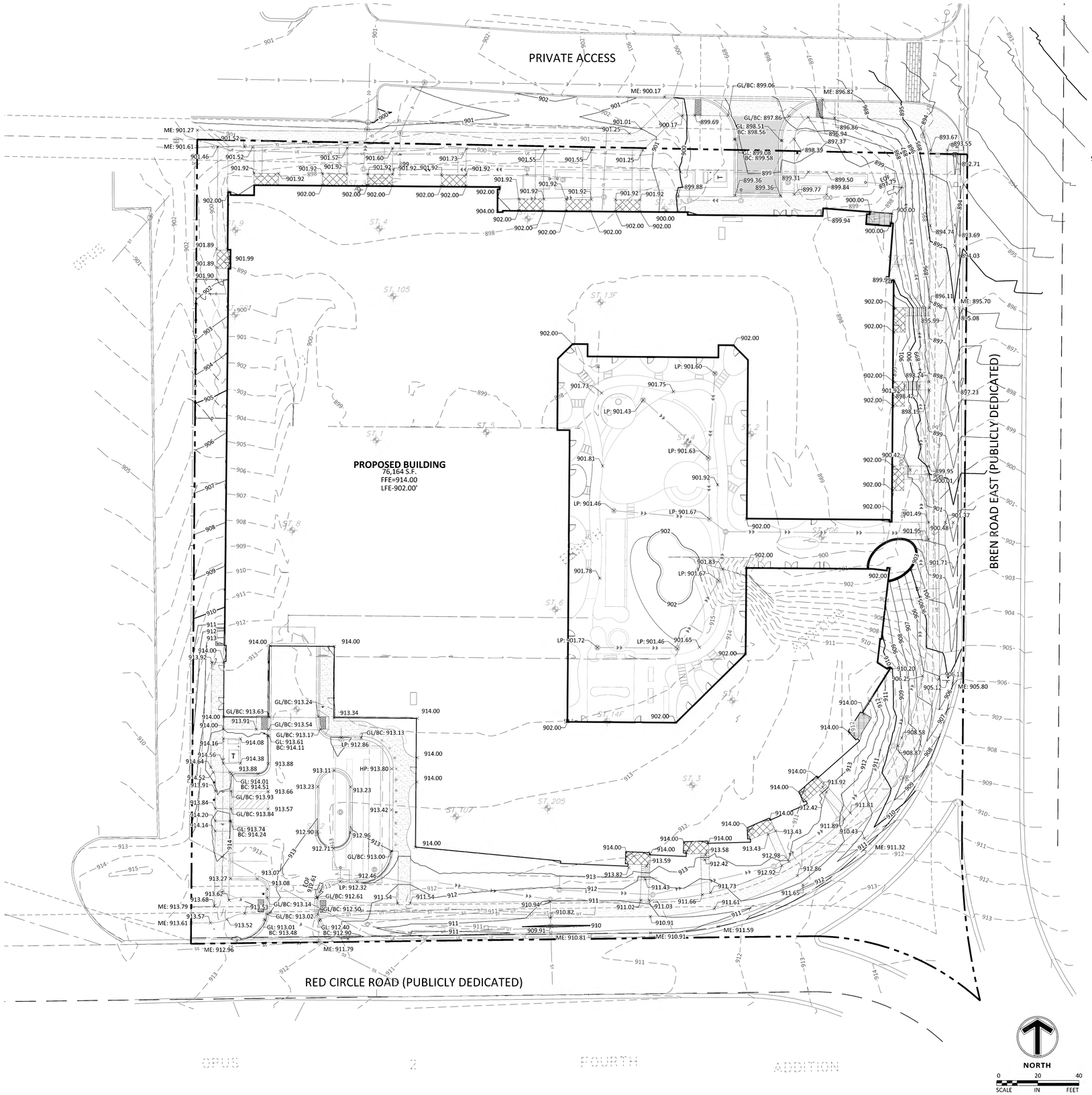
TLL DRAWN BY BWF CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

SITE PLAN

C3.01



LEGEND

PROPOSED	EXISTING	
		BOUNDARY LINE
		CONCRETE CURB
		STORM SEWER
		DRAINTILE
		BUILDING LINE
		RETAINING WALL
		CONTOUR
902.50	902.50	SPOT ELEVATIONS
		RIPRAP
EOF 902.50		OVERFLOW ELEV.
	ST 999.9	SOIL BORING

	STANDARD DUTY ASPHALT PAVING
	HEAVY DUTY ASPHALT PAVING
4"	CONCRETE PAVING
	CONCRETE SIDEWALK
	PAVEMENT BY OTHERS (SEE ARCHITECTURAL PLANS)

GRADING NOTES

1. PROPOSED CONTOURS ARE TO FINISHED SURFACE ELEVATION. SPOT ELEVATIONS ALONG PROPOSED CURB DENOTE GUTTER GRADE.
2. CONTRACTOR SHALL REVIEW PAVEMENT GRADIENT AND CONSTRUCT "GUTTER OUT" WHERE WATER DRAINS AWAY FROM CURB. ALL OTHER AREAS SHALL BE CONSTRUCTED AS "GUTTER IN" CURB.
3. ALL GRADIENT ON SIDEWALKS ALONG THE ADA ROUTE SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 5% (1:20), EXCEPT AT CURB RAMPS (1:12), AND A MAXIMUM CROSS SLOPE OF 2.00% (1:50). MAXIMUM SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE SHALL BE IN 2.00% (1:50). CONTRACTOR SHALL REVIEW AND VERIFY THE GRADIENT IN THE FIELD ALONG THE ADA ROUTES PRIOR TO PLACING CONCRETE OR BITUMINOUS. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF THERE IS A DISCREPANCY BETWEEN THE GRADIENT IN THE FIELD VERSUS THE DESIGN GRADIENT. COORDINATE ALL WORK WITH PAVING CONTRACTOR.
4. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
5. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE DEVELOPER TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
6. CONTRACTOR SHALL COMPLETE THE SITE GRADING CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER'S SOILS ENGINEER. ALL SOIL TESTING SHALL BE COMPLETED BY THE OWNER'S SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOIL TESTS AND INSPECTIONS WITH THE SOILS ENGINEER.
   A GEOTECHNICAL ENGINEERING SOILS REPORT HAS BEEN COMPLETED BY:
   COMPANY: BRAUN INTERTEC CORPORATION
   ADDRESS: 11001 HAMPSHIRE AVENUE S
   MINNEAPOLIS, MN 55438
   PHONE: 952.995.2000
   DATE: MAY 31, 2022
   CONTRACTOR SHALL OBTAIN A COPY OF THE SOILS REPORT.
7. CONTRACTOR SHALL COMPLETE DEWATERING AS REQUIRED TO COMPLETE THE SITE GRADING CONSTRUCTION.
8. PRIOR TO PLACEMENT OF THE AGGREGATE BASE, A TEST ROLL SHALL BE PERFORMED ON THE STREET AND PARKING AREA SUBGRADE. CONTRACTOR SHALL PROVIDE A LOADED TANDEM AXLE TRUCK WITH A GROSS WEIGHT OF 25 TONS. THE TEST ROLLING SHALL BE AT THE DIRECTION OF THE SOILS ENGINEER AND SHALL BE COMPLETED IN AREAS AS DIRECTED BY THE SOILS ENGINEER. CORRECTION OF THE SUBGRADE SOILS SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SOILS ENGINEER.
9. REPLACE ALL SUBGRADE SOIL DISTURBED DURING THE CONSTRUCTION THAT HAVE BECOME UNSUITABLE AND WILL NOT PASS A TEST ROLL. REMOVE UNSUITABLE SOIL FROM THE SITE AND IMPORT SUITABLE SOIL AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARDS.
11. EXISTING TREES AND OTHER NATURAL VEGETATION WITHIN THE PROJECT AND/OR ADJACENT TO THE PROJECT ARE OF PRIME CONCERN TO THE CONTRACTOR'S OPERATIONS AND SHALL BE A RESTRICTED AREA. CONTRACTOR SHALL PROTECT TREES TO REMAIN AT ALL TIMES. EQUIPMENT SHALL NOT NEEDLESSLY BE OPERATED UNDER NEARBY TREES AND EXTREME CAUTION SHALL BE EXERCISED WHEN WORKING ADJACENT TO TREES. SHOULD ANY PORTION OF THE TREE BRANCHES REQUIRE REMOVAL TO PERMIT OPERATION OF THE CONTRACTOR'S EQUIPMENT, CONTRACTOR SHALL OBTAIN THE SERVICES OF A PROFESSIONAL TREE TRIMMING SERVICE TO TRIM THE TREES PRIOR TO THE BEGINNING OF OPERATION. SHOULD CONTRACTOR'S OPERATIONS RESULT IN THE BREAKING OF ANY LIMBS, THE BROKEN LIMBS SHOULD BE REMOVED IMMEDIATELY AND CUTS SHALL BE PROPERLY PROTECTED TO MINIMIZE ANY LASTING DAMAGE TO THE TREE. NO TREES SHALL BE REMOVED WITHOUT AUTHORIZATION BY THE ENGINEER. COSTS FOR TRIMMING SERVICES SHALL BE CONSIDERED INCIDENTAL TO THE GRADING CONSTRUCTION AND NO SPECIAL PAYMENT WILL BE MADE.
    a. RESTRICTED AREAS SHALL INCLUDE ALL DESIGNATED TREED AREAS OUTSIDE OF THE DESIGNATED CONSTRUCTION ZONE. ALL VEGETATION WITHIN THE RESTRICTED AREAS SHALL REMAIN.
    b. CONTRACTOR SHALL RESTRICT ALL GRADING AND CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON THE PLANS. ACTIVITIES WITHIN THE CONSTRUCTION MAY BE RESTRICTED TO A NARROWER WIDTH IN THE FIELD TO SAVE ADDITIONAL TREES AS DIRECTED BY THE OWNER.
    c. ACTIVITIES PROHIBITED OUTSIDE OF THE CONSTRUCTION BOUNDARIES WOULD INCLUDE, BUT NOT BE LIMITED TO: SOIL AND OTHER MATERIAL STOCKPILING, EQUIPMENT OR MACHINERY STORAGE, DRIVING OF ANY VEHICLE, LEAKAGE OR SPILLAGE OF ANY "WASHOUT" OR OTHER TOXIC MATERIAL. THE COLLECTION OF OTHER DEBRIS AND SOIL STOCKPILING WILL BE IN AN AREA DETERMINED ON-SITE BY THE ENGINEER.
    d. ALL RESTRICTED AREAS SHALL BE FENCED OFF WITH BRIGHT ORANGE POLYETHYLENE SAFETY NETTING AND STEEL STAKES AS SHOWN ON THE TREE PROTECTION DETAIL. AT NO TIME SHALL THIS FENCING BE REMOVED OR ACTIVITY OF ANY KIND TAKE PLACE WITHIN IT. FINAL PLACEMENT OF ALL PROTECTIVE FENCING SHALL BE COMPLETE BEFORE ANY WORK COMMENCES ON-SITE.
    e. BEFORE COMMENCING WITH ANY EXCAVATION CONTRACTOR SHALL COMPLETE ALL PREPARATORY WORK REGARDING TREE REMOVAL, ROOT PRUNING, TREE PRUNING AND STUMP REMOVAL TO THE SATISFACTION OF THE OWNER.
    f. PREPARATORY WORK SHALL INCLUDE THE FOLLOWING AND SHALL BE COMPLETED UNDER THE DIRECT SUPERVISION OF THE OWNER'S REPRESENTATIVE:
    i. TREE REMOVAL: CONTRACTOR SHALL FELL THE TREES. AT NO TIME SHALL TREES BE BULLDOZED OUT, BUT SHALL BE CUT DOWN AND STUMPS REMOVED SEPARATELY. PRIOR TO THE FELLING OF ALL TREES, PROPER REMOVAL OF A PORTION OR ALL OF THE CANOPY SHALL BE COMPLETED SO THAT TREES IN THE RESTRICTED AREAS SHALL NOT BE INJURED IN THE PROCESS.
    ii. ROOT PRUNING: BEFORE ANY STUMPS ARE TO BE REMOVED, ALL ROOTS SHALL BE SEVERED FROM ROOTS IN THE RESTRICTED AREAS BY SAW CUTTING WITH A VERMEER DESIGNED FOR ROOT PRUNING, BY HAND, OR WITH A CHAINSAW. TREE ROOTS PROJECTING INTO THE CONSTRUCTION ZONE SHALL BE EXPOSED PRIOR TO ROOT PRUNING WITH SMALL MACHINERY, I.E..., BOBCAT.
    iii. STUMP REMOVAL: AT SUCH TIME THAT ROOTS HAVE BEEN PROPERLY SEVERED, STUMPS MAY BE REMOVED. WHERE REMOVAL OF CERTAIN STUMPS COULD CAUSE DAMAGE TO EXISTING PROTECTED TREES, TREE STUMPS SHALL BE GROUND OUT. ALL STUMP REMOVAL SHALL BE UNDER THE DIRECT SUPERVISION OF THE OWNER'S REPRESENTATIVE.
    iv. TREE PRUNING: PROPER PRUNING OF TREES IN THE RESTRICTED ZONE SHALL BE DIRECTED BY AND SUPERVISION AT ALL TIMES BY THE OWNER'S REPRESENTATIVE.
    g. AN OWNER'S REPRESENTATIVE WILL BE AVAILABLE AT ALL TIMES DURING THE PREPARATORY AND CONSTRUCTION PERIOD.
    h. MULCH RATHER THAN SEED OR SOD WILL BE USED AT THE BASE OF QUALITY TREES TO A PERIMETER DETERMINED BY THE OWNER'S REPRESENTATIVE. AREAS TO BE SEEDED FOR EROSION CONTROL PURPOSES WITHIN THE CONSTRUCTION ZONE ARE TO BE DETERMINED BY THE OWNER'S REPRESENTATIVE. NATURAL GROUND COVER WILL BE MAINTAINED WHEREVER POSSIBLE.
    i. THE USE OF RETAINING WALLS NEAR TREES, IN ADDITION TO THOSE REQUIRED ON THE PLANS SHALL BE DETERMINED IN THE FIELD, BASED ON TREE LOCATIONS AND TOPOGRAPHY.
12. EXCAVATE TOPSOIL FROM AREAS TO BE FURTHER EXCAVATED OR REGRADED AND STOCKPILE IN AREAS DESIGNATED ON THE SITE. CONTRACTOR SHALL SALVAGE ENOUGH TOPSOIL FOR RESPREADING ON THE SITE AS SPECIFIED. EXCESS TOPSOIL SHALL BE PLACED IN EMBANKMENT AREAS, OUTSIDE OF BUILDING PADS, ROADWAYS AND PARKING AREAS. CONTRACTOR SHALL SUBCUT CUT AREAS, WHERE TURF IS TO BE ESTABLISHED, TO A DEPTH OF 6 INCHES. RESPREAD TOPSOIL IN AREAS WHERE TURF IS TO BE ESTABLISHED TO A MINIMUM DEPTH OF 6 INCHES.
13. TRENCH BORROW CONSTRUCTION: IF ALLOWED BY THE OWNER, CONTRACTOR SHALL COMPLETE "TRENCH BORROW" EXCAVATION IN AREAS DIRECTED BY THE ENGINEER IN ORDER TO OBTAIN STRUCTURAL MATERIAL. TREES SHALL NOT BE REMOVED OR DAMAGED AS A RESULT OF THE EXCAVATION, UNLESS APPROVED BY THE ENGINEER. THE EXCAVATION SHALL COMMENCE A MINIMUM OF 10 FEET FROM THE LIMIT OF THE BUILDING PAD. THE EXCAVATION FROM THIS LIMIT SHALL EXTEND AT A MINIMUM SLOPE OF 1 FOOT HORIZONTAL TO 1 FOOT VERTICAL (1:1) DOWNWARD AND OUTWARD FROM THE FINISHED SURFACE GRADE ELEVATION. THE TRENCH BORROW EXCAVATION SHALL BE BACKFILLED TO THE PROPOSED FINISHED GRADE ELEVATION, AND SHALL BE COMPACTED IN ACCORDANCE WITH REQUIREMENTS OF THE QUALITY COMPACTION METHOD AS OUTLINED IN MN/DOT SPECIFICATION 2105.3F2. SNOW FENCE SHALL BE FURNISHED AND PLACED ALONG THE PERIMETER OF THE TRENCH BORROW AREA WHERE THE SLOPES EXCEED 2 FOOT HORIZONTAL TO 1 FOOT VERTICAL (2:1).
14. FINISHED GRADING SHALL BE COMPLETED, CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISHED GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS, TRAFFIC AND EROSION. REPAIR ALL AREAS THAT HAVE BECOME RUTTED, ERODED OR HAS SETTLED BELOW THE CORRECT GRADE. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO EQUAL OR BETTER THAN ORIGINAL CONDITION OR TO THE REQUIREMENTS OF THE NEW WORK.
15. TOLERANCES
    a. THE BUILDING SUBGRADE FINISHED SURFACE ELEVATION SHALL NOT VARY BY MORE THAN 0.10 FOOT ABOVE, OR 0.10 FOOT BELOW, THE PRESCRIBED ELEVATION AT ANY POINT WHERE MEASUREMENT IS MADE.
    b. THE STREET OR PARKING AREA SUBGRADE FINISHED SURFACE ELEVATION SHALL NOT VARY BY MORE THAN 0.05 FOOT ABOVE, OR 0.10 FOOT BELOW, THE PRESCRIBED ELEVATION OF ANY POINT WHERE MEASUREMENT IS MADE.
    c. AREAS WHICH ARE TO RECEIVE TOPSOIL SHALL BE GRADED TO WITHIN 0.30 FOOT ABOVE OR BELOW THE REQUIRED ELEVATION, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
    d. TOPSOIL SHALL BE GRADED TO PLUS OR MINUS 1/2 INCH OF THE SPECIFIED THICKNESS.
16. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS OR SHORTAGE OF SOIL MATERIAL EXISTS, CONTRACTOR SHALL TRANSPORT ALL EXCESS SOIL MATERIAL OFF THE SITE TO AN AREA SELECTED BY THE CONTRACTOR, OR IMPORT SUITABLE MATERIAL TO THE SITE.
17. CONTRACTOR SHALL DETERMINE THE LOCATION OF ANY HAUL ROADS THAT MAY BE REQUIRED TO COMPLETE THE SITE GRADING CONSTRUCTION AND SHALL INDICATE HAUL ROADS ON EROSION AND SEDIMENT CONTROL "SITE MAP". CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE GOVERNING AUTHORITY OF EACH ROADWAY. CONTRACTOR SHALL POST WHATEVER SECURITY AND COMPLY WITH ALL CONDITIONS WHICH ARE REQUIRED BY EACH GOVERNING AUTHORITY OF EACH ROADWAY.
18. DISTURBED AREAS WITHIN WETLAND MITIGATION SITE AND ANY DISTURBED AREAS WITHIN THE WETLAND SHALL BE RESTORED WITH 6 TO 12 INCHES OF ORGANIC SOILS, PREFERABLY SOILS THAT WERE PREVIOUSLY REMOVED FROM WETLAND AREAS. SEEDING IN THE WETLAND MITIGATION AREAS ABOVE THE NORMAL WATER LEVEL SHALL BE MN STATE SEED MIX 34-271, WET MEADOW SOUTH AND WEST, OR APPROVED EQUAL. FOR STATE SEED MIXES, OATS AND WINTER WHEAT SHOULD BE SELECTED BASED ON THE TIME OF YEAR THAT THE MIX IS BEING USED. OATS SHOULD BE INCLUDED IN MIXES IF BEING USED BETWEEN OCTOBER 15TH AND AUGUST 1ST. WINTER WHEAT SHOULD BE USED BETWEEN AUGUST 1ST AND OCTOBER 15TH. THE SEEDING RATE IS THE SAME FOR OATS AND WINTER WHEAT. MIX 34-271 SHOULD BE APPLIED AT 12 POUNDS PER ACRE. SEED SHALL BE WATERED UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.

CIVIL 3D MODEL LIMITATIONS

SAMBATEK'S DELIVERABLE AND GOVERNING DOCUMENTS FOR CONSTRUCTION SHALL BE A HARD COPY AND/OR PDF PLAN SHEETS. IF A CIVIL 3D MODEL IS GENERATED IN THE PROCESS OF PREPARING THE PLAN SHEETS, IT IS AS A DESIGN TOOL ONLY AND NOT AS A SEPARATE DELIVERABLE. AT THE OWNER'S REQUEST, WE WILL RELEASE OUR CIVIL 3D MODEL FOR THE CONTRACTOR'S USE. HOWEVER, ITS USE IS AT THE CONTRACTOR'S RISK AND SHALL NOT BE USED FOR STAKING OF CURB, SIDEWALK, OR OTHER HARD SURFACE IMPROVEMENTS. IF A CIVIL 3D MODEL FOR STAKING HARD SURFACE IMPROVEMENTS IS REQUIRED, WE CAN PROVIDE A SUPPLEMENTAL AGREEMENT FOR REFINEMENT AND PREPARATION OF THE CIVIL 3D MODEL.

REV. DATE

THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

Mar 10, 2023 - 11:41am - User:tlodin \\sambatek-fs1\Projects\PRO\BCT\51166\CAD\Sheets\51166-C4-GRAD.dwg

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL
03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

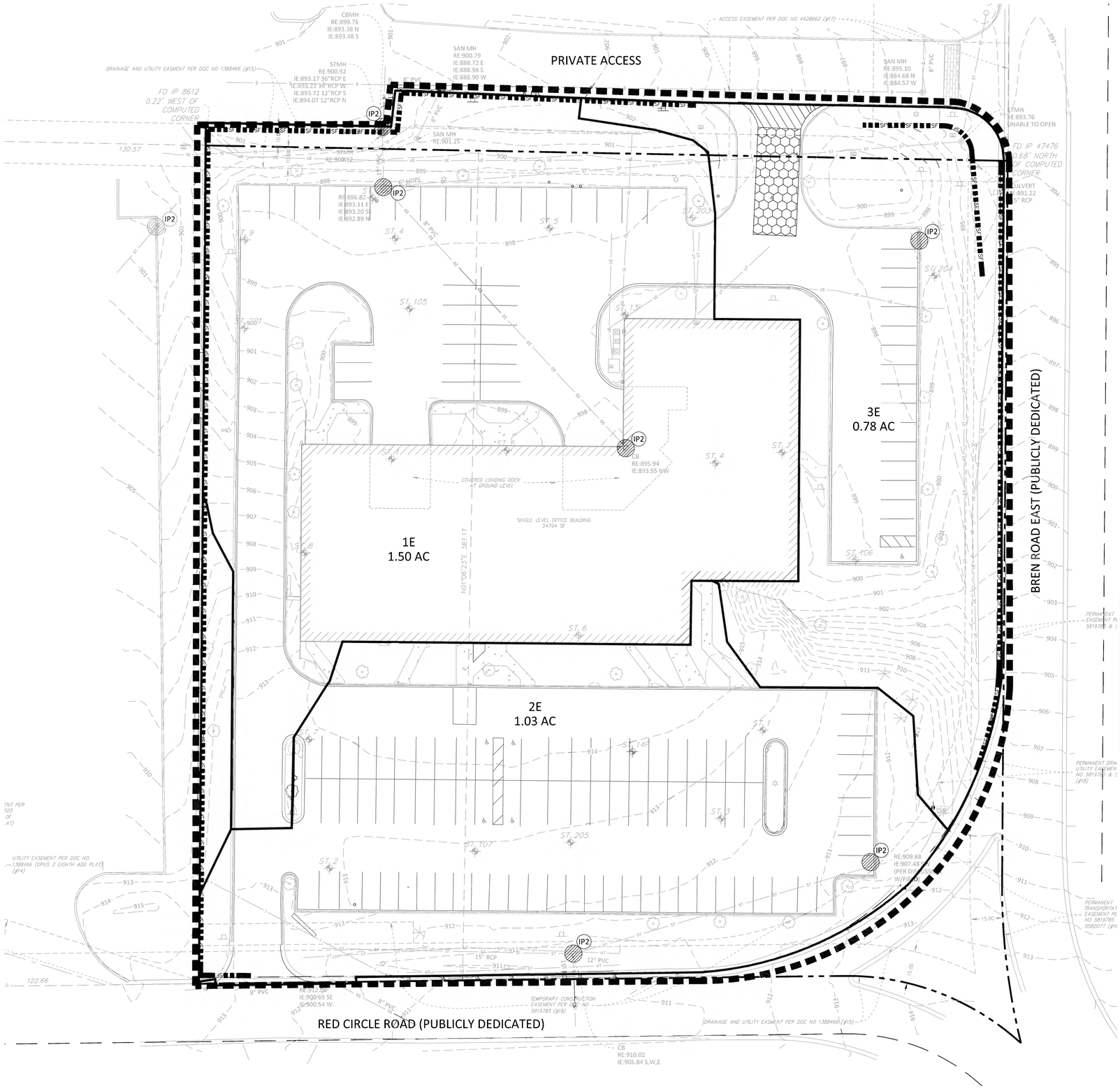
TLL DRAWN BY
BWF CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

GRADING PLAN

C4.01



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

PROPOSED / EXISTING

- CONCRETE CURB
- STORM SEWER
- 902 CONTOUR
- RIPRAP
- EOF 902.5 OVERFLOW ELEV.
- BIO-ROLL
- SF SILT FENCE
- SD SILT DIKE
- LIMITS OF DISTURBANCE
- ST # 999.9 SOIL BORING
- DIRECTION OF OVERLAND FLOW
- TEMPORARY DIVERSION DITCH
- CHECK DAM
- LIMITS OF DRAINAGE SUB-BASIN
- IP# INLET PROTECTION DEVICE
- TEMPORARY STONE CONSTRUCTION ENTRANCE
- SB TEMPORARY SEDIMENT BASIN
- TSM TEMPORARY STABILIZATION MEASURES (SEED, MULCH, MATS OR BLANKETS AS OUTLINED IN THE SWPP)
- TS TEMPORARY STORAGE AND PARKING AREA

EROSION CONTROL MATERIALS QUANTITIES

ITEM	UNIT	QUANTITY
SILT FENCE	LINEAR FEET	1,065
SILT DIKE	LINEAR FEET	0
BIO-ROLL	LINEAR FEET	0
CONSTRUCTION ENTRANCE	UNIT	1
INLET PROTECTION DEVICE (IP-1)	UNIT	0
INLET PROTECTION DEVICE (IP-2)	UNIT	7

* REFER TO SHEET C5.03 FOR GENERAL NOTES, MAINTENANCE NOTES, LOCATION MAPS, AND STANDARD DETAILS

NOTE TO CONTRACTOR

THE EROSION CONTROL PLAN SHEETS ALONG WITH THE REST OF THE SWPPP MUST BE KEPT ONSITE UNTIL THE NOTICE OF TERMINATION IS FILED WITH THE MPCA, THE CONTRACTOR MUST UPDATE THE SWPPP, INCLUDING THE EROSION CONTROL PLAN SHEETS AS NECESSARY TO INCLUDE ADDITIONAL REQUIREMENTS, SUCH AS ADDITIONAL OR MODIFIED BMPS DESIGNED TO CORRECT PROBLEMS IDENTIFIED. AFTER FILING THE NOTICE OF TERMINATION, THE SWPPP, INCLUDING THE EROSION CONTROL PLAN SHEETS, AND ALL REVISIONS TO IT MUST BE SUBMITTED TO THE OWNER, TO BE KEPT ON FILE IN ACCORDANCE WITH THE RECORD RETENTION REQUIREMENTS DESCRIBED IN THE SWPPP NARRATIVE.

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
TEMPORARY CONTROL MEASURES																		
STRIP & STOCKPILE TOPSOIL																		
ROUGH GRADE / SEDIMENT CONTROL																		
TEMPORARY CONSTRUCTION ROADS																		
FOUNDATION / BUILDING CONSTRUCTION																		
SITE CONSTRUCTION																		
PERMANENT CONTROL STRUCTURES																		
FINISH GRADING																		
LANDSCAPING / SEED / FINAL STABILIZATION																		
STORM FACILITIES																		

NOTE: CONTRACTOR OR GENERAL CONTRACTOR TO COMPLETE TABLE WITH THEIR SPECIFIC PROJECT SCHEDULE

NORTH

0 20 40

SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

TLL DRAWN BY BWF CHECKED BY

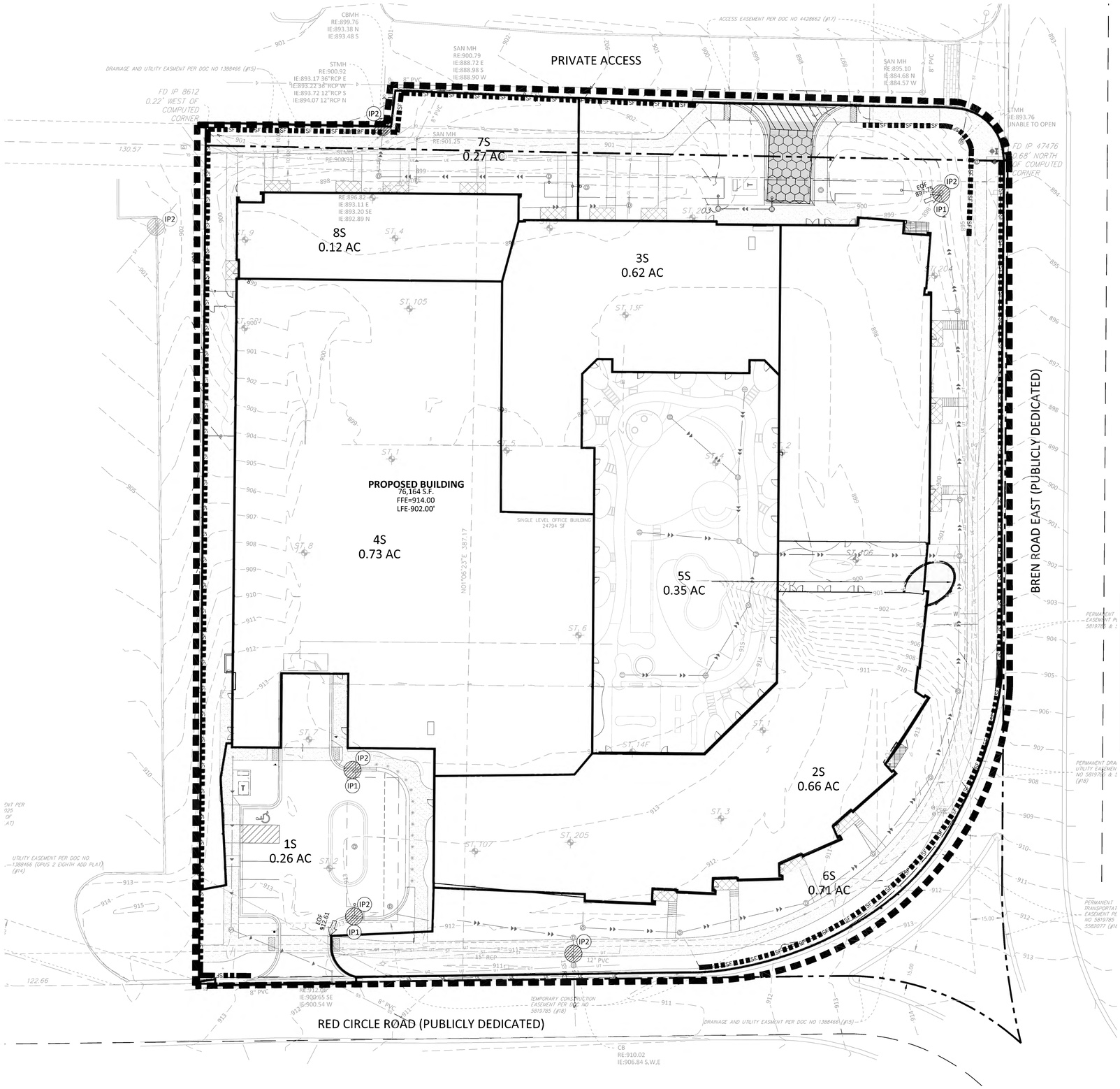
KEY PLAN

MARLOWE
OPUS STATION

PHASE I EROSION CONTROL PLAN

C5.01

Mar 10, 2023 - 11:41am - User:tlodin \\sambatek-fs1\Project\PROJECTS\51166\CAD\Sheets\51166-C5-EROS.dwg



LEGEND

PROPOSED / EXISTING

- CONCRETE CURB
- STORM SEWER
- DRAINTILE
- CONTOUR
- RIPRAP
- EOF 902.5 — OVERFLOW ELEV.
- BIO-ROLL
- SILT FENCE
- SILT DIKE
- LIMITS OF DISTURBANCE
- ST # 999.9 — SOIL BORING
- DIRECTION OF OVERLAND FLOW
- TEMPORARY DIVERSION DITCH
- CHECK DAM
- LIMITS OF DRAINAGE SUB-BASIN
- IP# — INLET PROTECTION DEVICE
- TEMPORARY STONE CONSTRUCTION ENTRANCE
- SB — TEMPORARY SEDIMENT BASIN
- TSM — TEMPORARY STABILIZATION MEASURES (SEED, MULCH, MATS OR BLANKETS AS OUTLINED IN THE SWPP)
- TS — TEMPORARY STORAGE AND PARKING AREA

EROSION CONTROL MATERIALS QUANTITIES

ITEM	UNIT	QUANTITY
SILT FENCE	LINEAR FEET	1,250
SILT DIKE	LINEAR FEET	0
BIO-ROLL	LINEAR FEET	0
CONSTRUCTION ENTRANCE	UNIT	1
INLET PROTECTION DEVICE (IP-1)	UNIT	3
INLET PROTECTION DEVICE (IP-2)	UNIT	6

* REFER TO SHEET C5.03 FOR GENERAL NOTES, MAINTENANCE NOTES, LOCATION MAPS, AND STANDARD DETAILS

NOTE TO CONTRACTOR

THE EROSION CONTROL PLAN SHEETS ALONG WITH THE REST OF THE SWPPP MUST BE KEPT ONSITE UNTIL THE NOTICE OF TERMINATION IS FILED WITH THE MPCA, THE CONTRACTOR MUST UPDATE THE SWPPP, INCLUDING THE EROSION CONTROL PLAN SHEETS AS NECESSARY TO INCLUDE ADDITIONAL REQUIREMENTS, SUCH AS ADDITIONAL OR MODIFIED BMPS DESIGNED TO CORRECT PROBLEMS IDENTIFIED. AFTER FILING THE NOTICE OF TERMINATION, THE SWPPP, INCLUDING THE EROSION CONTROL PLAN SHEETS, AND ALL REVISIONS TO IT MUST BE SUBMITTED TO THE OWNER, TO BE KEPT ON FILE IN ACCORDANCE WITH THE RECORD RETENTION REQUIREMENTS DESCRIBED IN THE SWPPP NARRATIVE.

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
TEMPORARY CONTROL MEASURES																		
STRIP & STOCKPILE TOPSOIL																		
ROUGH GRADE / SEDIMENT CONTROL																		
TEMPORARY CONSTRUCTION ROADS																		
FOUNDATION / BUILDING CONSTRUCTION																		
SITE CONSTRUCTION																		
PERMANENT CONTROL STRUCTURES																		
FINISH GRADING																		
LANDSCAPING / SEED / FINAL STABILIZATION																		
STORM FACILITIES																		

NOTE: CONTRACTOR OR GENERAL CONTRACTOR TO COMPLETE TABLE WITH THEIR SPECIFIC PROJECT SCHEDULE

THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

NORTH

0 20 40

SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

TLL DRAWN BY | BWF CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

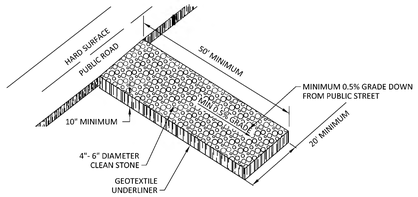
PHASE II EROSION CONTROL PLAN

C5.02

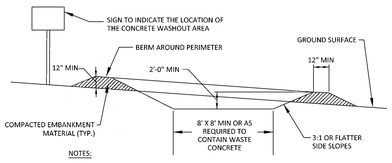
EROSION & SEDIMENTATION CONTROL NOTES & DETAILS / "SITE MAP"

SITE LOCATION MAP
NOT TO SCALE

USGS MAP
NOT TO SCALE



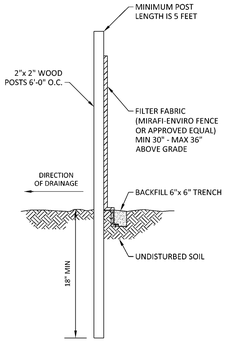
TEMPORARY STONE CONSTRUCTION EXIT
N.T.S.



NOTES:

1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. CONCRETE WASHOUT AREA SHALL BE LINED WITH MINIMUM 10 MIL THICK PLASTIC LINER.
3. VEHICLE TRACKING CONTROL IS REQUIRED IF ACCESS TO CONCRETE WASHOUT AREA IS OFF PAVEMENT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
5. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
6. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.
7. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE CITY.

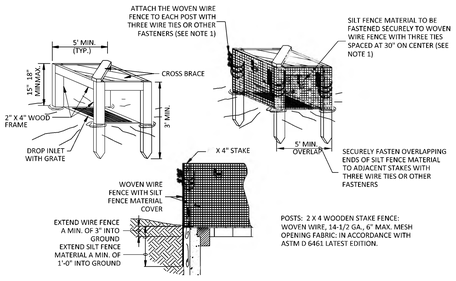
CONCRETE WASHOUT AREA
NOT TO SCALE



NOTES:

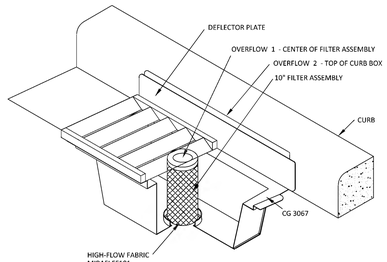
1. MAXIMUM SPACING BETWEEN POSTS (CENTER TO CENTER) SHALL NOT EXCEED 6 FEET IN SPACING.
2. A MINIMUM OF 5 FASTENERS PER POST

PREASSEMBLED SILT FENCE- WOOD POSTS (MNDOT 3886)
N.T.S.



1. ATTACH THE WOVEN WIRE FENCE TO EACH POST AND THE GEOTEXTILE TO THE WOVEN WIRE FENCE (SPACED EVERY 30") WITH THREE WIRE TIES OR OTHER FASTENERS, ALL SPACED WITHIN THE TOP 8" OF THE FABRIC. ATTACH EACH TIE DIAGONALLY 45 DEGREES THROUGH THE FABRIC, WITH EACH PUNCTURE AT LEAST 1" VERTICALLY APART.
2. WHEN TWO SECTIONS OF SILT FENCE MATERIAL ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED ACROSS TWO POSTS.
3. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE SWPPP. DEPTH OF ACCUMULATED SEDIMENTS MAY NOT EXCEED ONE-HALF THE HEIGHT OF THE FABRIC. MAINTENANCE CLEANOUT MUST BE CONDUCTED REGULARLY TO PREVENT ACCUMULATED SEDIMENTS FROM REACHING ONE-HALF THE HEIGHT OF THE SILT FENCE MATERIAL ABOVE GRADE.
4. ALL SILT FENCE INLETS SHALL INCLUDE WIRE SUPPORT.

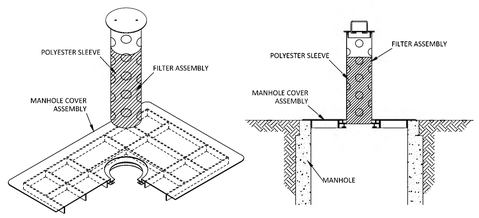
SILT FENCE INLET PROTECTION (IP-1)
NOT TO SCALE



ROAD DRAIN CASTING APPLICABILITY

- NEENAH R-3067
- NEENAH R-3512

ROAD DRAIN INLET PROTECTION (IP-2)
NOT TO SCALE



SPECIFICATIONS AND STANDARDS

- AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION
- AWS STRUCTURAL WELDING CODE-STEEL, D1.1-94.
- 29 CFR 1926-OSHA SAFETY AND HEALTH STANDARDS

DESIGN LOADS		AVAILABILITY
ALLOWABLE AXLE WEIGHT LOAD	20000 LBS.	STOCK
SAFETY FACTOR	2:1	
WATER FLOW RATE (THROUGH POLYESTER FILTER)	0.476 CFS @ 3" HEAD 1.074 CFS @ 15" HEAD	
MAXIMUM OVERFLOW RATE	1.113 CFS @ 6" HEAD 1.575 CFS @ 12" HEAD	

ROAD DRAIN INLET PROTECTION TOP SLAB MODEL (IP-3)
NOT TO SCALE

DEVELOPER/OWNER: GREYSTAR DEVELOPMENT CENTRAL, LLC 750 BERING DRIVE, SUITE 400 HOUSTON, TX 77057 832-269-0535
SITE OPERATOR / GENERAL CONTRACTOR
SUPERINTENDENT:

AREA SUMMARY IN ACRES

PAVEMENT AREA	0.86 AC±
BUILDING AREA	1.75 AC±
SEEDED AREA	0.86 AC±
TOTAL DISTURBED	3.47 AC±
PRE - CONSTRUCTION IMPERVIOUS	2.21 AC±
POST - CONSTRUCTION IMPERVIOUS	2.61 AC±

SEQUENCE OF CONSTRUCTION

PHASE I:

1. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
2. PREPARE TEMPORARY PARKING AND STORAGE AREA.
3. CONSTRUCT THE SILT FENCES ON THE SITE.
4. INSTALL INLET PROTECTION DEVICES ON EXISTING STORM STRUCTURES, AS SHOWN ON THE PLAN.
5. CONSTRUCT THE SEDIMENTATION AND SEDIMENT TRAP BASINS, AS REQUIRED.
6. HALT ALL ACTIVITIES AND CONTACT THE CIVIL ENGINEERING CONSULTANT TO PERFORM INSPECTION OF BMPs. GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT STORM WATER PRE-CONSTRUCTION MEETING WITH ENGINEER AND ALL GROUND DISTURBING CONTRACTORS BEFORE PROCEEDING WITH CONSTRUCTION.
7. CLEAR AND GRUB THE SITE.
8. BEGIN GRADING THE SITE.
9. START CONSTRUCTION OF BUILDING PAD AND STRUCTURES.

PHASE II:

1. TEMPORARY SEED DENUDED AREAS.
2. INSTALL UTILITIES, UNDERDRAINS, STORM SEWERS, CURBS AND GUTTERS.
3. INSTALL RIP RAP AROUND OUTLET STRUCTURES.
4. INSTALL INLET PROTECTION AROUND ALL STORM SEWER STRUCTURES.
5. PREPARE SITE FOR PAVING.
6. PAVE SITE.
7. INSTALL INLET PROTECTION DEVICES.
8. COMPLETE GRADING AND INSTALL PERMANENT SEEDING AND PLANTING.
9. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED), IF REQUIRED BY THE CONTRACT.

GENERAL EROSION NOTES

1. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME. WHERE A CONFLICT EXISTS BETWEEN LOCAL JURISDICTIONAL STANDARD SPECIFICATIONS AND SAMBATEK STANDARD SPECIFICATIONS, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS COMPRISED OF THIS DRAWING (EROSION & SEDIMENTATION CONTROL PLAN-ESC PLAN), THE STANDARD DETAILS, THE PLAN NARRATIVE, AND ITS APPENDICES, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING & SUBMITTING THE APPLICATION FOR THE MPCA GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE SWPPP AND THE STATE OF MINNESOTA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT, ISSUED AUGUST 1, 2018) AND BECOME FAMILIAR WITH THE CONTENTS. THE SWPPP AND ALL OTHER RELATED DOCUMENTS MUST BE KEPT AT THE SITE DURING CONSTRUCTION.
4. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES (BMP'S) AS REQUIRED BY THE SWPPP & PERMITS. CONTRACTOR SHALL OVERSEE THE INSPECTION & MAINTENANCE OF THE BMP'S AND EROSION PREVENTION FROM BEGINNING OF CONSTRUCTION AND UNTIL CONSTRUCTION IS COMPLETED, IS APPROVED BY ALL AUTHORITIES, AND THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA BY EITHER THE OWNER OR OPERATOR AS APPROVED ON PERMIT. ADDITIONAL BMP'S SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST TO OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION. (NOTE TO THE PREPARER: REVISE INSPECTION RESPONSIBILITY PER OPTIONS IN SWPPP NARRATIVE (SECTION 02370))
5. CONTRACTOR SHALL COMPLY WITH TRAINING REQUIREMENTS IN PART 21.1-21.3 OF THE GENERAL PERMIT.
6. BMP'S AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
7. ESC PLAN MUST CLEARLY DELINEATE ALL STATE WATERS. PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATERS OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.
8. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THE ESC PLANS SHALL BE CLEARLY DELINEATED (E.G. WITH FLAGS, STAKES, SIGNS, SILT FENCE, ETC.) ON THE DEVELOPMENT SITE BEFORE WORK BEGINS. GROUND DISTURBING ACTIVITIES MUST NOT OCCUR OUTSIDE THE LIMITS OF DISTURBANCE.
9. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES.
10. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) MUST BE LIMITED TO A DEFINED AREA OF THE SITE AND SHALL BE CONTAINED AND PROPERLY TREATED OR DISPOSED. NO ENGINE DEGREASING IS ALLOWED ON SITE.
11. ALL LIQUID AND SOLID WASTES GENERATED BY CONCRETE WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER. A COMPACTED CLAY LINER IS NOT ACCEPTABLE. THE LIQUID AND SOLID WASTES MUST NOT CONTACT THE GROUND, AND THERE MUST NOT BE RUNOFF FROM THE CONCRETE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES. SELF-CONTAINED CONCRETE WASHOUTS ON CONCRETE DELIVERY TRUCKS ARE ALLOWED.
12. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
13. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
14. SOLID WASTE: COLLECTED SEDIMENT, ASPHALT & CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, CONSTRUCTION & DEMOLITION DEBRIS & OTHER WASTES MUST BE DISPOSED OF PROPERLY & MUST COMPLY WITH MPCA DISPOSAL REQUIREMENTS.
15. HAZARDOUS MATERIALS: OIL, GASOLINE, PAINT & ANY HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, INCLUDING SECONDARY CONTAINMENT, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE & DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MPCA REGULATIONS.
16. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE SWPPP, SHALL BE INITIATED AS SOON AS PRACTICABLE AND PRIOR TO SOIL DISTURBING ACTIVITIES UPSLOPE.
17. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS STOPPED SHALL BE TEMPORARILY SEEDED, WITHIN 14 DAYS OF INACTIVITY. SEEDING SHALL BE IN ACCORDANCE WITH MN/DOT SEED MIXTURE NUMBER 21-111 OR 21-112 DEPENDING ON THE SEASON OF PLANTING (SEE MN/DOT SPECIFICATION SECTION 2575.3) SEEDING METHOD AND APPLICATION RATE SHALL CONFORM TO MN/DOT SPECIFICATION SECTION 2575.3. TEMPORARY MULCH SHALL BE APPLIED IN ACCORDANCE WITH MN/DOT SPECIFICATION SECTION 2575.3F1 AND 2575.3G. ALTERNATIVELY, HYDRAULIC SOIL STABILIZER IN ACCORDANCE WITH MN/DOT SPECIFICATION SECTION 2575.3H MAY BE USED IN PLACE OF TEMPORARY MULCH.
18. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY STABILIZED. THESE AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE TIME TABLE DESCRIBED ABOVE. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN FOR VEGETATIVE COVER. (NOTE TO THE PREPARER: WHERE PERMANENT SEEDING IS NOT CALLED OUT IN THE GRADING AND/ OR LANDSCAPE PLAN, REPLACE THE LAST SENTENCE IN THIS ITEM WITH THE FOLLOWING: SEED WET PONDS WITH MN/DOT SEED MIXTURE 310 "NATIVE WET TALL" BELOW THE HWL. SEED ALL OTHER AREAS WITH SEED MIXTURE 260 "COMMERCIAL TURF". SEEDING METHOD AND APPLICATION RATE SHALL CONFORM TO MN/DOT SPECIFICATION SECTION 2573.3.)
19. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT FROM CONVEYANCES & FROM TEMPORARY SEDIMENTATION BASINS THAT ARE TO BE USED AS PERMANENT WATER QUALITY MANAGEMENT BASINS. SEDIMENT MUST BE STABILIZED TO PREVENT IT FROM BEING WASHED BACK INTO THE BASIN, CONVEYANCES, OR DRAINAGEWAYS DISCHARGING OFF-SITE OR TO SURFACE WATERS. THE CLEANOUT OF PERMANENT BASINS MUST BE SUFFICIENT TO RETURN THE BASIN TO DESIGN CAPACITY.
20. ON-SITE & OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BMP'S. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
21. TEMPORARY SOIL STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS & CANNOT BE PLACED IN SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB & GUTTER SYSTEMS OR CONDUITS & DITCHES.
22. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
23. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, CHECK DAMS, INLET PROTECTION DEVICES, ETC.) TO PREVENT EROSION.
24. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY, THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.

MAINTENANCE NOTES

ALL MEASURES STATED ON THIS EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. THE DESIGNATED CONTACT PERSON NOTED ON THIS PLAN MUST ROUTINELY INSPECT THE CONSTRUCTION ON SITE ONCE EVERY SEVEN DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

1. ALL SILT FENCES MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE FENCE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
2. TEMPORARY AND PERMANENT SEDIMENTATION BASINS MUST BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS (SEE PART 10.1-10.5 OF THE GENERAL PERMIT).
3. SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF SEDIMENT BEING DEPOSITED BY EROSION. CONTRACTOR MUST REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS, AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. THE REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. CONTRACTOR SHALL USE ALL REASONABLE EFFORTS TO OBTAIN ACCESS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) CALENDAR DAYS OF OBTAINING ACCESS. CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND RECEIVING ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK.
4. CONSTRUCTION SITE VEHICLE EXIT LOCATIONS MUST BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL OFF-SITE PAVED SURFACES, WITHIN 24 HOURS OF DISCOVERY, OR IF APPLICABLE, WITHIN A SHORTER TIME TO COMPLY WITH PART 9.11-9.12 OF THE GENERAL PERMIT.
5. CONTRACTOR IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT BMPS, AS WELL AS ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, FOR THE DURATION OF THE CONSTRUCTION WORK AT THE SITE. THE PERMITTEE(S) ARE RESPONSIBLE UNTIL ANOTHER PERMITTEE HAS ASSUMED CONTROL (ACCORDING TO PART 3.1 TO 3.8 OF THE MPCA GENERAL PERMIT) OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED OR THE SITE HAS UNDERGONE FINAL STABILIZATION, AND A (N.O.T.) HAS BEEN SUBMITTED TO THE MPCA.
6. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANNER AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G., FUGITIVE SEDIMENT IN STREETS COULD BE WASHED INTO STORM SEWERS BY THE NEXT RAIN AND/OR POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS).

MARLOWE
OPUS STATION
MINNETONKA, MN

esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

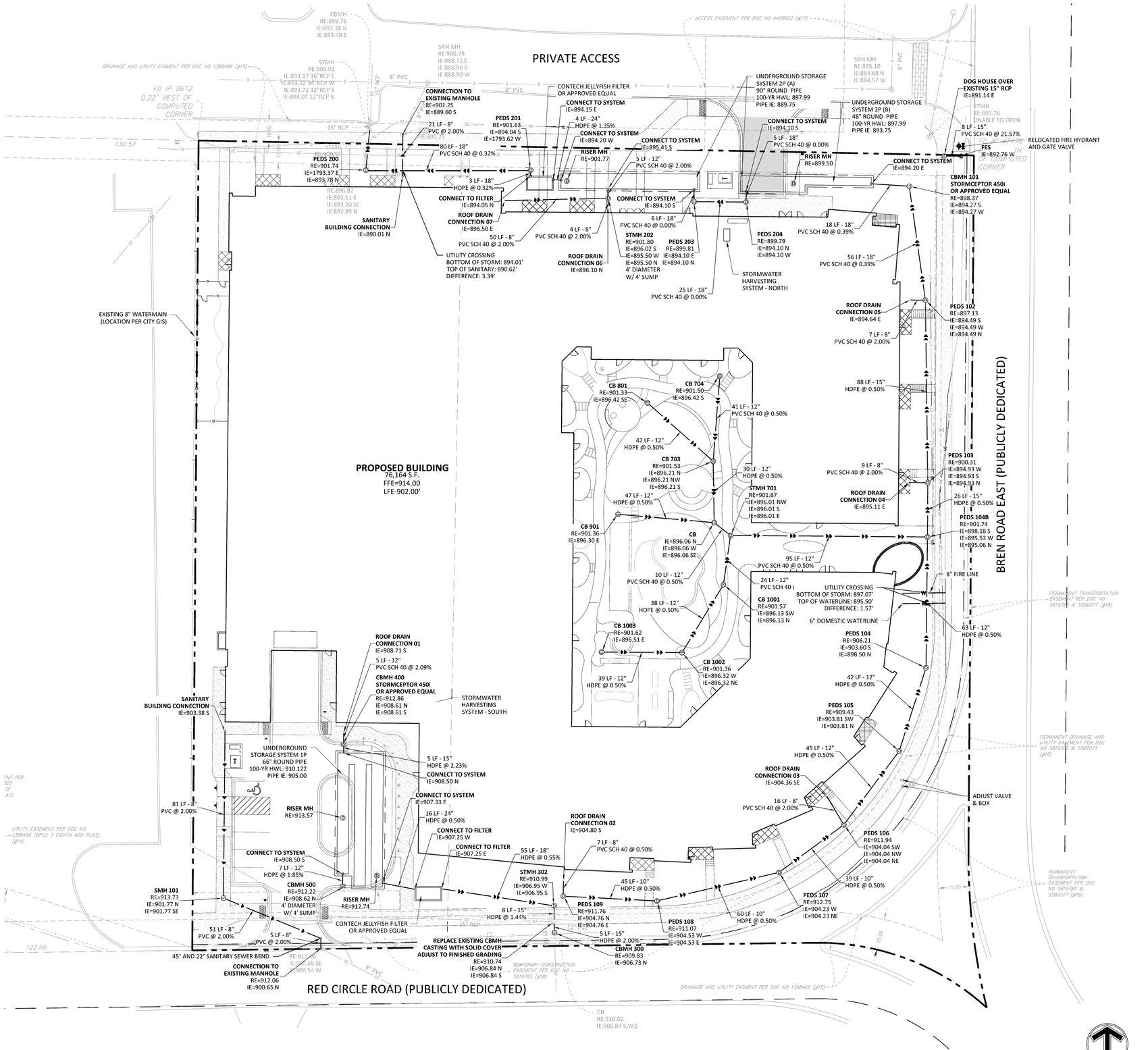
TLL DRAWN BY | BWF CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

EROSION CONTROL NOTES & DETAILS

C5.03



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IF THE CONTRACTOR ENCOUNTERS ANY DRAIN TILE WITHIN THE SITE, HE OR SHE SHALL NOTIFY THE ENGINEER WITH THE LOCATION, SIZE, INVERT AND IF THE TILE LINE IS ACTIVE. NO DRAIN TILE SHALL BE BACKFILLED WITHOUT APPROVAL FROM THE PROJECT ENGINEER.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER
D	D	STORM SEWER
D		POLYETHYLENE DRAINAGE STRUCTURE (PEDS) (SEE DETAIL 03, SHEET C9.02)
		DRAINTILE
		WATERMAIN
GAS	GAS	UNDERGROUND GAS LINE
UT	UT	UNDERGROUND TELEPHONE
UE	UE	UNDERGROUND ELECTRIC
		CONCRETE CURB
		EASEMENT LINE

UTILITY CONSTRUCTION NOTES

1. THE UTILITY IMPROVEMENTS FOR THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "STANDARD UTILITIES SPECIFICATIONS" AS PUBLISHED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM), EXCEPT AS MODIFIED HEREIN. CONTRACTOR SHALL OBTAIN A COPY OF THESE SPECIFICATIONS.
   a. ALL UTILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIRMENTS, INCLUDING BUT NOT LIMITED TO CITY, DEPARTMENT OF LABOR AND INDUSTRY AND MINNESOTA DEPARTMENT OF HEALTH REQUIREMENTS.
   b. CONTRACTOR SHALL NOT OPEN, TURN OFF, INTERFERE WITH, OR ATTACH ANY PIPE OR HOSE TO OR TAP WATERMAIN BELONGING TO THE CITY UNLESS DULY AUTHORIZED TO DO SO BY THE CITY. ANY ADVERSE CONSEQUENCES OF ANY SCHEDULED OR UNSCHEDULED DISRUPTIONS OF SERVICE TO THE PUBLIC ARE THE LIABILITY OF CONTRACTOR.
   c. A MINIMUM VERTICAL SEPARATION OF 18 INCHES, AND HORIZONTAL SEPARATION OF 10-FEET, BETWEEN OUTSIDE PIPE AND/OR STRUCTURE WALLS, IS REQUIRED AT ALL WATERMAIN AND SEWER MAIN (BUILDING, STORM AND SANITARY) CROSSINGS.
2. ALL MATERIALS SHALL BE AS SPECIFIED IN CEAM SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.
   a. ALL MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY.
   b. ALL SANITARY SEWER TO BE PVC SDR-35, UNLESS NOTED OTHERWISE.
   i. ALL SANITARY SEWER SERVICES TO BUILDING SHALL BE PVC SCH 40 CONFORMING TO ASTM D2665.
   c. ALL WATERMAIN TO BE DUCTILE IRON - CLASS 52, or PVC C-900, UNLESS NOTED OTHERWISE.
   i. ALL WATERMAIN TO HAVE 7.5-FEET OF COVER OVER TOP OF WATERMAIN.
   ii. PROVIDE THRUST BLOCKING AND MECHANICAL JOINT RESTRAINTS ON ALL WATERMAIN JOINTS PER CITY STANDARDS.
   d. ALL STORM SEWER PIPE TO BE SMOOTH INTERIOR DUAL WALL HDPE PIPE WITH WATERTIGHT GASKETS, UNLESS NOTED OTHERWISE.
   i. ALL STORM SEWER PIPE FOR ROOF DRAIN SERVICES TO BUILDING AND STORM SEWER PIPE WITHIN 10-FEET OF THE BUILDING SHALL BE PVC SCH 40 CONFORMING TO ASTM F894 & F714 AND TESTED AS REQUIRED BY THE 2020 MINNESOTA PLUMBING CODE OR AS ALLOWED BY TABLE 701.2 OF THE MINNESOTA PLUMBING CODE, AND SHALL BE TESTED AS REQUIRED BY THE CODE.
   e. RIP RAP SHALL BE Mn/DOT CLASS 3.
3. COORDINATE ALL BUILDING SERVICE CONNECTION LOCATIONS AND INVERT ELEVATIONS WITH MECHANICAL CONTRACTOR PRIOR TO CONSTRUCTION.
4. ALL BUILDING SERVICE CONNECTIONS (STORM, SANITARY, WATER) WITH FIVE FEET OR LESS COVER ARE TO BE INSULATED FROM BUILDING TO POINT WHERE 5-FEET OF COVER IS ACHIEVED.
5. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
6. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE DEVELOPER TO CONDUCT CONSTRUCTION REVIEW OF CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
7. ALL AREAS OUTSIDE THE PROPERTY BOUNDARIES THAT ARE DISTURBED BY UTILITY CONSTRUCTION SHALL BE RESTORED IN KIND. SODDED AREAS SHALL BE RESTORED WITH 6 INCHES OF TOPSOIL PLACED BENEATH THE SOD.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARDS.

ALL SOILS TESTING SHALL BE COMPLETED BY AN INDEPENDENT SOILS ENGINEER. EXCAVATION FOR THE PURPOSE OF REMOVING UNSTABLE OR UNSUITABLE SOILS SHALL BE COMPLETED AS REQUIRED BY THE SOILS ENGINEER. THE UTILITY BACKFILL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOILS TESTS AND SOIL INSPECTIONS WITH THE SOILS ENGINEER. A GEOTECHNICAL ENGINEERING REPORT HAS BEEN COMPLETED BY:

COMPANY: BRAUN INTERTEC CORPORATION
ADDRESS: 11001 HAMPSHIRE AVENUE S
MINNEAPOLIS, MN 55438
PHONE: 952.995.2000
DATE: MAY 31, 2022

CONTRACTOR SHALL OBTAIN A COPY OF THIS SOILS REPORT.

9. CONTRACTOR SHALL SUBMIT 2 COPIES OF SHOP DRAWINGS FOR MANHOLE AND CATCH BASIN STRUCTURES TO ENGINEER. CONTRACTOR SHALL ALLOW 5 WORKING DAYS FOR SHOP DRAWING REVIEW.
10. CONTRACTOR AND MATERIAL SUPPLIER SHALL DETERMINE THE MINIMUM DIAMETER REQUIRED FOR EACH STORM SEWER STRUCTURE.
11. THE UNDERGROUND STORMWATER SYSTEM SHOWN ON THE UTILITY PLAN AND THE DETAIL SHEETS IS FOR INFORMATIONAL PURPOSES ONLY AND DEPICTS THE MINIMUM STORAGE REQUIREMENTS AND THE SYSTEM ELEVATIONS. THE CONTRACTOR (WITH THEIR SUPPLIER OR DESIGNER) SHALL SUBMIT DESIGN DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE DESIGN DRAWINGS SHALL DEPICT THE FINAL LAYOUT AND DETAILS FOR CONSTRUCTION. THE DRAWINGS SHALL BE CERTIFIED BY A LICENSED ENGINEER FOR THE STATE IN WHICH THE PROJECT IS CONSTRUCTED. THE SUBMITTAL SHALL INCLUDE ALL NECESSARY PRODUCT INFORMATION, DESIGN CALCULATIONS AND BEDDING REQUIREMENTS FOR THE PROPOSED STORMWATER SYSTEM. FOLLOWING CONSTRUCTION, THE CERTIFYING ENGINEER SHALL SUBMIT A LETTER TO THE OWNER AND ENGINEER INDICATING THEY OBSERVED THE INSTALLATION AND THE INSTALLATION OF THE STORMWATER SYSTEM WAS IN CONFORMANCE WITH THE CERTIFIED DRAWINGS.
12. IRRIGATION REUSE SYSTEM. CONTRACTOR TO COORDINATE WITH IRRIGATION REUSE DESIGNER, IRRIGATION SYSTEM DESIGNER AND IRRIGATION TANK MANUFACTURER FOR DESIGN AND DETAILS

MARLOWE
OPUS STATION
MINNETONKA, MN

esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

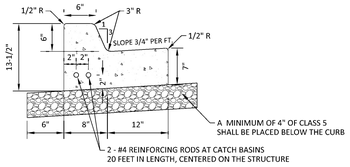
TLL DRAWN BY
BWF CHECKED BY

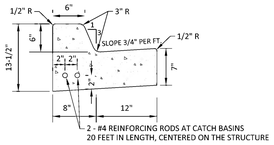
KEY PLAN

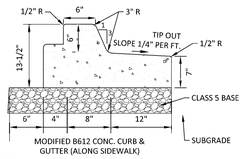
MARLOWE
OPUS STATION

UTILITY PLAN

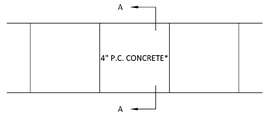
C6.01

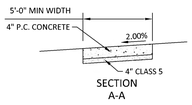






01 B612 CONCRETE CURB & GUTTER
N.T.S.



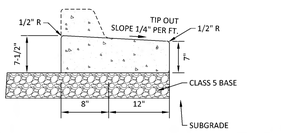


GENERAL NOTES FOR CONCRETE CONSTRUCTION:

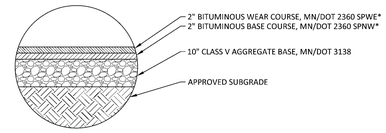
1. THE CONCRETE SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
2. SIDEWALK CONTROL JOINTS SHALL BE LOCATED AT 5 FEET ON CENTER. SIDEWALK EXPANSION JOINTS SHALL BE LOCATED AT A MAXIMUM OF 100 FEET ON CENTER, AND WHERE SIDEWALK ABUTS CURB, STRUCTURES, AND OTHER FIXED OBJECTS. SEAL ALL EXPANSION JOINTS. BROOM FINISH SHALL BE PERPENDICULAR TO THE LINE OF TRAFFIC.

*THE THICKNESS SHALL BE INCREASED TO A MINIMUM DEPTH OF 7 INCHES AT DRIVEWAY CROSSINGS.

02 CONCRETE SIDEWALK
N.T.S.



03 B612 FLAT CURB & GUTTER
N.T.S.

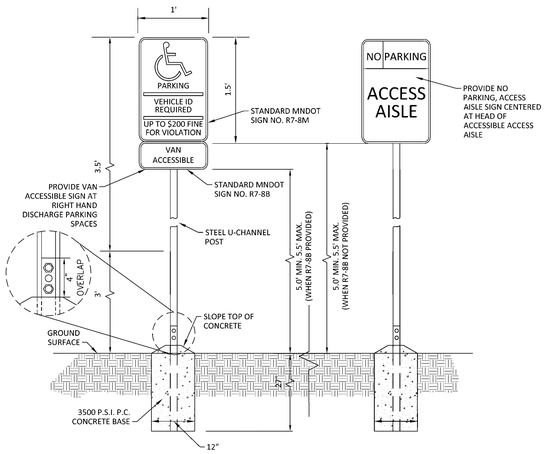


STANDARD DUTY PAVEMENT

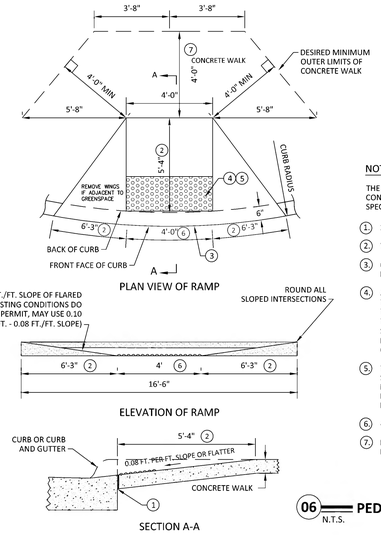
* REFER TO BITUMINOUS MIX DESIGN REQUIREMENT PROVIDED BY THE GEOTECHNICAL CONSULTANT

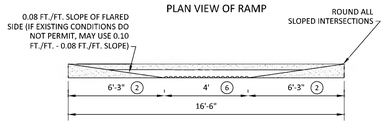
NOTES:
1. THE PAVEMENT SECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MNDOT "STANDARD SPECIFICATION FOR CONSTRUCTION", AND ALSO THE REQUIREMENTS OF THE OWNER'S GEOTECHNICAL CONSULTANT.
2. ALL THICKNESSES, AS SPECIFIED, ARE TO BE CONSIDERED MINIMUM DEPTHS, AFTER COMPACTION.
3. MN/DOT SPEC. 2357 BITUMINOUS TACK COAT SHALL BE PLACED BETWEEN SUCCESSIVE BITUMINOUS LIFTS AND AGAINST ABUTTING CONCRETE CURB EDGES.

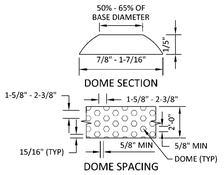
04 PAVEMENT SECTIONS
N.T.S.



05 BREAKAWAY ACCESSIBLE PARKING SIGN
N.T.S.





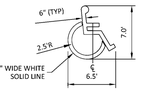


NOTE:

THE CURB AND CURB TRANSITION ON THE RAMP WILL BE PAID FOR AS LINEAR FEET OF CONCRETE CURB OR CONCRETE CURB AND GUTTER. THE RAMP AREA WILL BE PAID AS SQUARE FEET OF CONCRETE WALK, UNLESS SPECIFIED OTHERWISE. THE TRUNCATED DOME AREA WILL BE CONSIDERED INCIDENTAL.

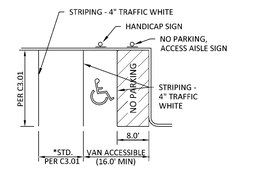
1. 1/2 INCH PREFORMED JOINT FILLER MATERIAL, AASHTO M 213.
2. VARIES WITH CURB HEIGHT. EXAMPLE SHOWN IS FOR 6" CURB HEIGHT.
3. 6" TO 8" IS THE REQUIRED OFFSET OF THE DETECTABLE WARNINGS/TRUNCATED DOME AREA FROM THE FRONT FACE OF CURB, OR PLACE THE DETECTABLE WARNINGS AT THE BACK OF CURB.
4. ADA REQUIRED TRUNCATED DOME AREA SHALL BE 2' 0" MIN. IN DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH (3' 0" OR 4' 0" TYP.) OF THE CURB RAMP. THIS 2' 0" BY 3' 0" OR 4' 0" WIDTH (TYP.) TRUNCATED DOME AREA SHALL CONTRAST VISUALLY WITH THE ADJACENT WALKING SURFACE. THE ENTIRE TRUNCATED DOME AREA SHALL BE A LIGHT COLOR (LIGHT GRAY, WHITE, OR YELLOW) WHEN THE ADJACENT SIDEWALK IS A DARK COLOR. THE ENTIRE TRUNCATED DOME AREA SHALL BE A DARK COLOR (RED, BLACK, DARK GRAY, OR BRIGHT YELLOW) WHEN THE ADJACENT SIDEWALK IS A "WHITE" OR LIGHT GRAY CEMENT COLOR.
5. THE TRUNCATED DOME AREA MAY BE EITHER GRANITE PANEL OR STAMPED CONCRETE, INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS. GRANITE PANELS SHALL BE 2" NOMINAL THICKNESS WITH SANDED TEXTURED FINISH, FREE OF ANY CRACKS, CHIPS OR COLOR DEFORMATIONS. STAMPED CONCRETE SHALL MEET REQUIREMENTS OF 3A36 CONCRETE MIX AND HAVE INTEGRATED HOMOGENEOUS COLORING.
6. 4' 0" FOR NEW CONSTRUCTION. 3' 0" ALLOWED FOR RETROFITS OR PRESERVATION PROJECTS.
7. PROVIDE A 4' X 4' LANDING BEHIND THE PEDESTRIAN RAMP. SLOPING A MAXIMUM OF 2% IN ANY DIRECTION.

06 PEDESTRIAN CURB RAMP
N.T.S.



LOCATE AT EDGE OF PARKING SPACE

07 ACCESSIBLE PARKING SYMBOL
N.T.S.

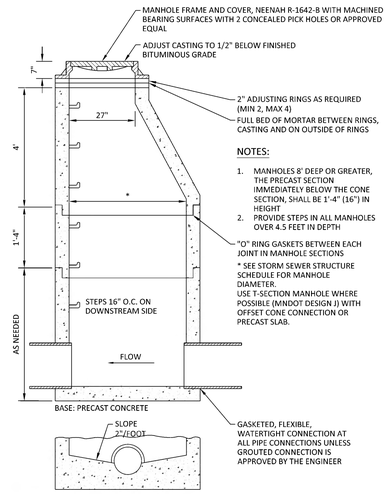


90° PARKING

SIGN TO BE ADDED TO "ACCESSIBLE PARKING SIGN" 1C/1D

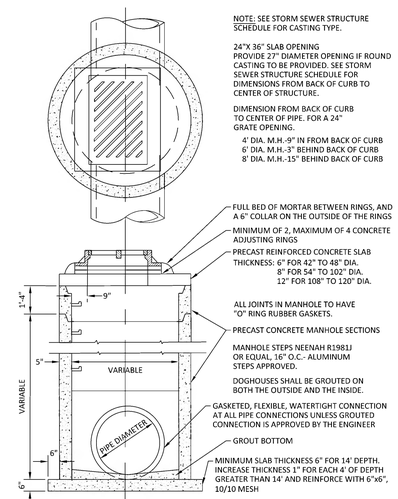
"VAN - ACCCESSIBLE" SIGNAGE, INSTALL AT DESIGNATED VAN HANDICAP SPACES, SIGNAGE SHALL BE BLUE BACKGROUND WITH WHITE CHARACTERS, 3" HIGH, UPPER CASE HELVETICA.

08 ADA/STANDARD STRIPING
N.T.S.

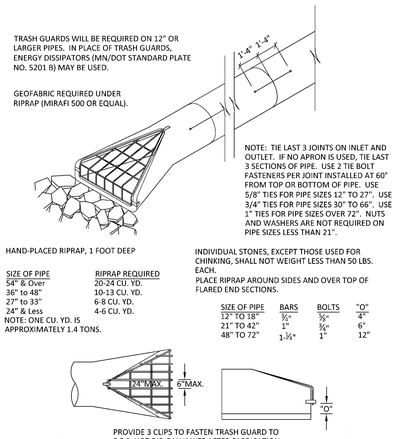


NOTES:
1. MANHOLES 8' DEEP OR GREATER, THE PRECAST SECTION IMMEDIATELY BELOW THE CONE SECTION, SHALL BE 1'-4" (16") IN HEIGHT
2. PROVIDE STEPS IN ALL MANHOLES OVER 4.5 FEET IN DEPTH

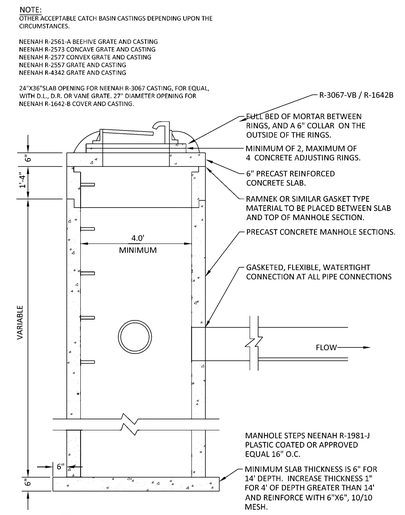
09 STORM SEWER MANHOLE
N.T.S.



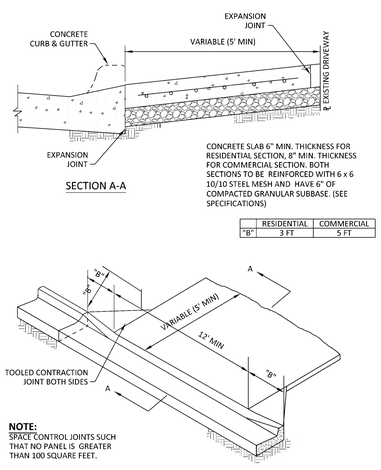
10 CATCH BASIN MANHOLE
N.T.S.



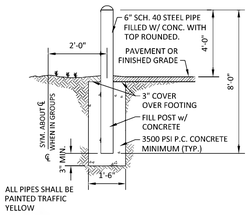
11 FLARED END SECTION
N.T.S.



12 CATCH BASIN/STORM MANHOLE WITH SUMP
N.T.S.



13 CONCRETE DRIVEWAY APRON
N.T.S.



14 CONCRETE PIPE BOLLARD
N.T.S.

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

TLL DRAWN BY | BWF CHECKED BY

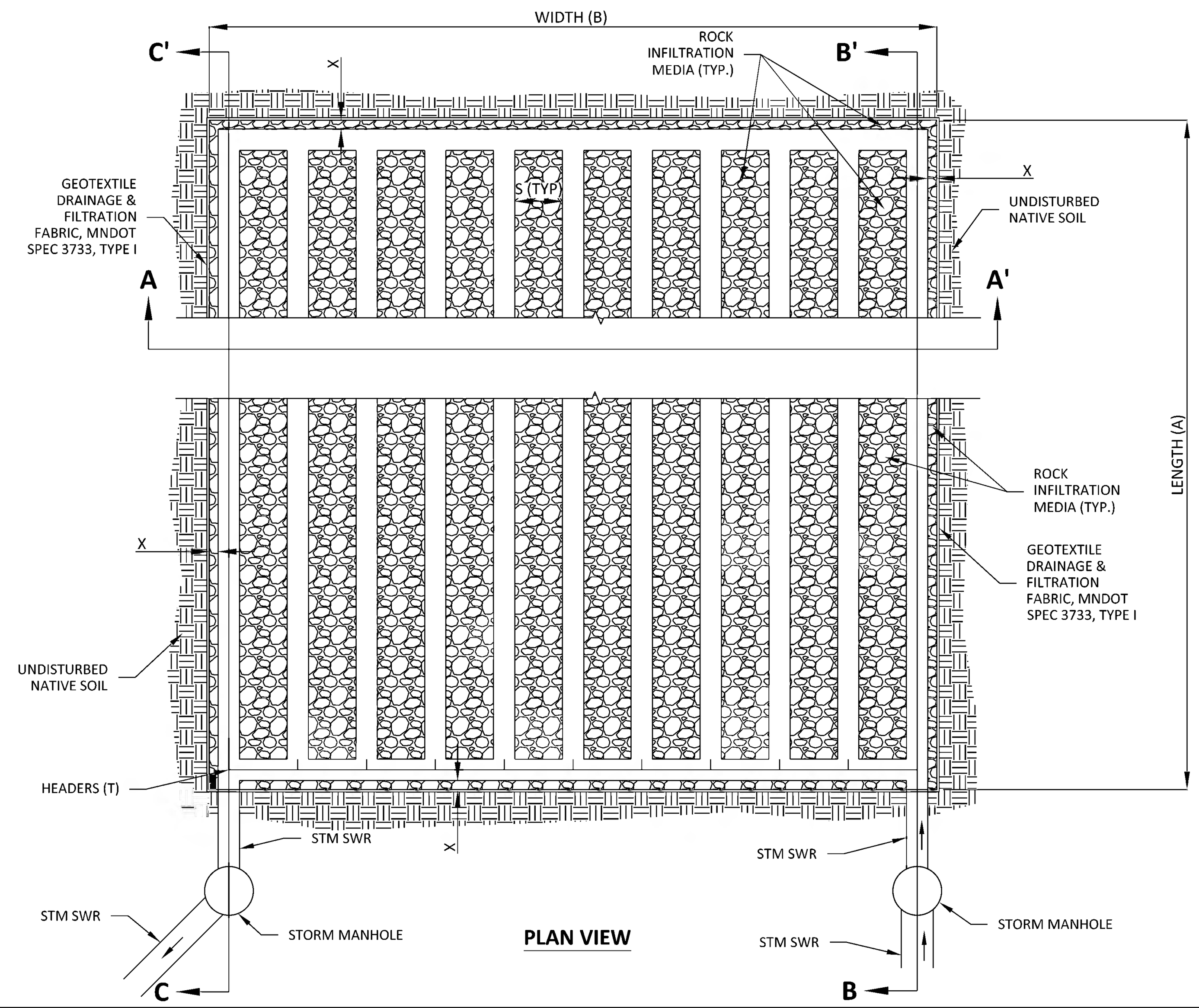
KEY PLAN

MARLOWE
OPUS STATION

DETAILS

C9.01

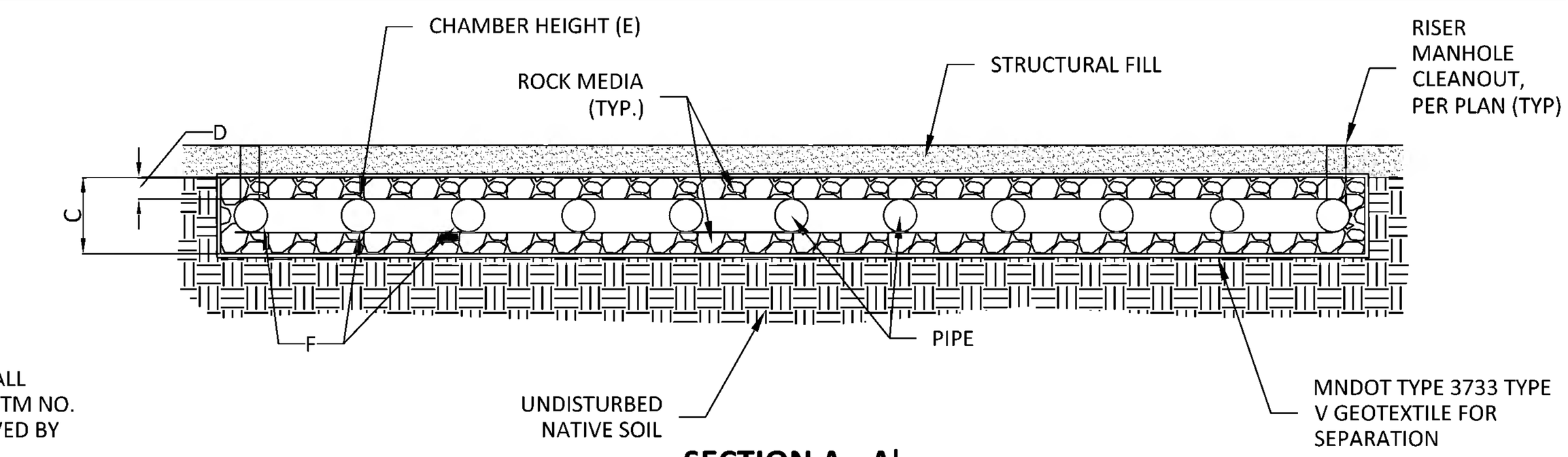
SUBSURFACE INFILTRATION AND STORAGE SYSTEMS


WIDTH (B)
ROCK INFILTRATION MEDIA (TYP.)
C'
B'
GEOTEXTILE DRAINAGE & FILTRATION FABRIC, MNDOT SPEC 3733, TYPE I
UNDISTURBED NATIVE SOIL
A
A'
S (TYP.)
LENGTH (A)
ROCK INFILTRATION MEDIA (TYP.)
GEOTEXTILE DRAINAGE & FILTRATION FABRIC, MNDOT SPEC 3733, TYPE I
UNDISTURBED NATIVE SOIL
HEADERS (T)
STM SWR
STORM MANHOLE
C
B

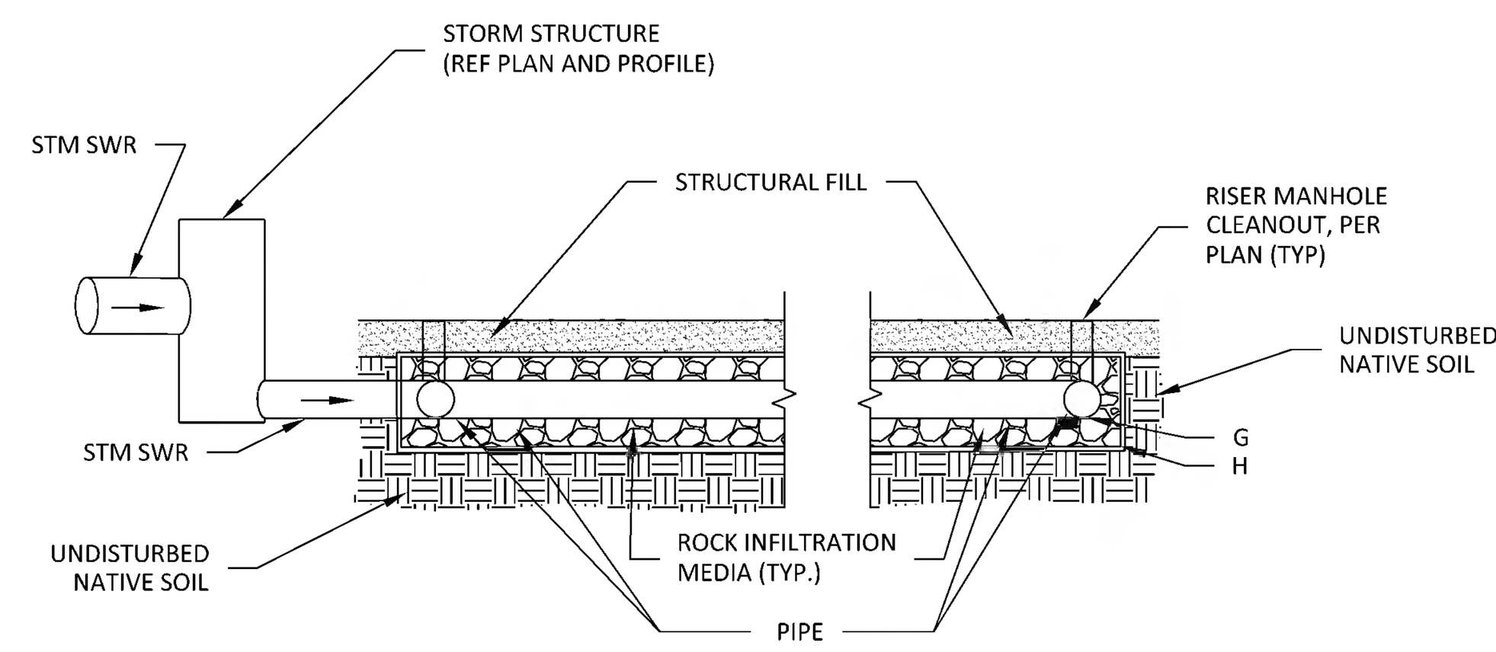
PLAN VIEW

NOTES:

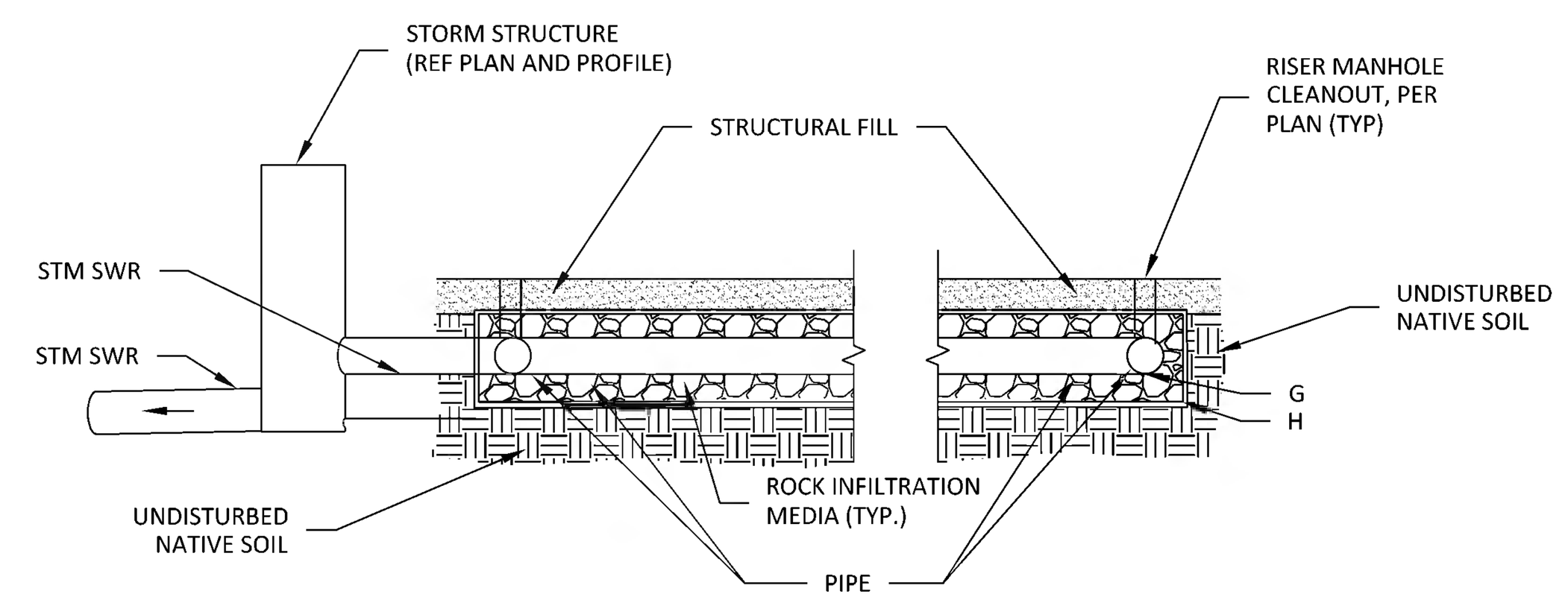
1. ROCK INFILTRATION MEDIA SHALL CONSIST OF AN OPEN GRADED ASTM NO. 2 CRUSHED STONE OR AS APPROVED BY MANUFACTURER TO MEET REQUIREMENTS FOR SOUNDNESS, HARDNESS, AND MINIMUM 40% VOID SPACE.
2. SHOP DRAWING SUBMITTALS FOR SUBSURFACE SYSTEMS SHALL INCLUDE INSTALLATION METHODS PER PIPE MANUFACTURER TO MAINTAIN STRUCTURAL CAPACITY OF PIPES. THE MATERIAL ON WHICH THE PIPE IS BEDDED SHALL BE SHAPED AND COMPACTED TO CONFORM TO THE BOTTOM OF THE PIPE, UP TO THE SPRINGLINE. (SEE NOTE #12 ON SHEET C6.01).
3. GEOTEXTILE FABRIC SHALL BE MNDOT TYPE 3733 TYPE V GEOTEXTILE FOR SEPARATION OR APPROVED EQUIVALENT.



SECTION A - A'



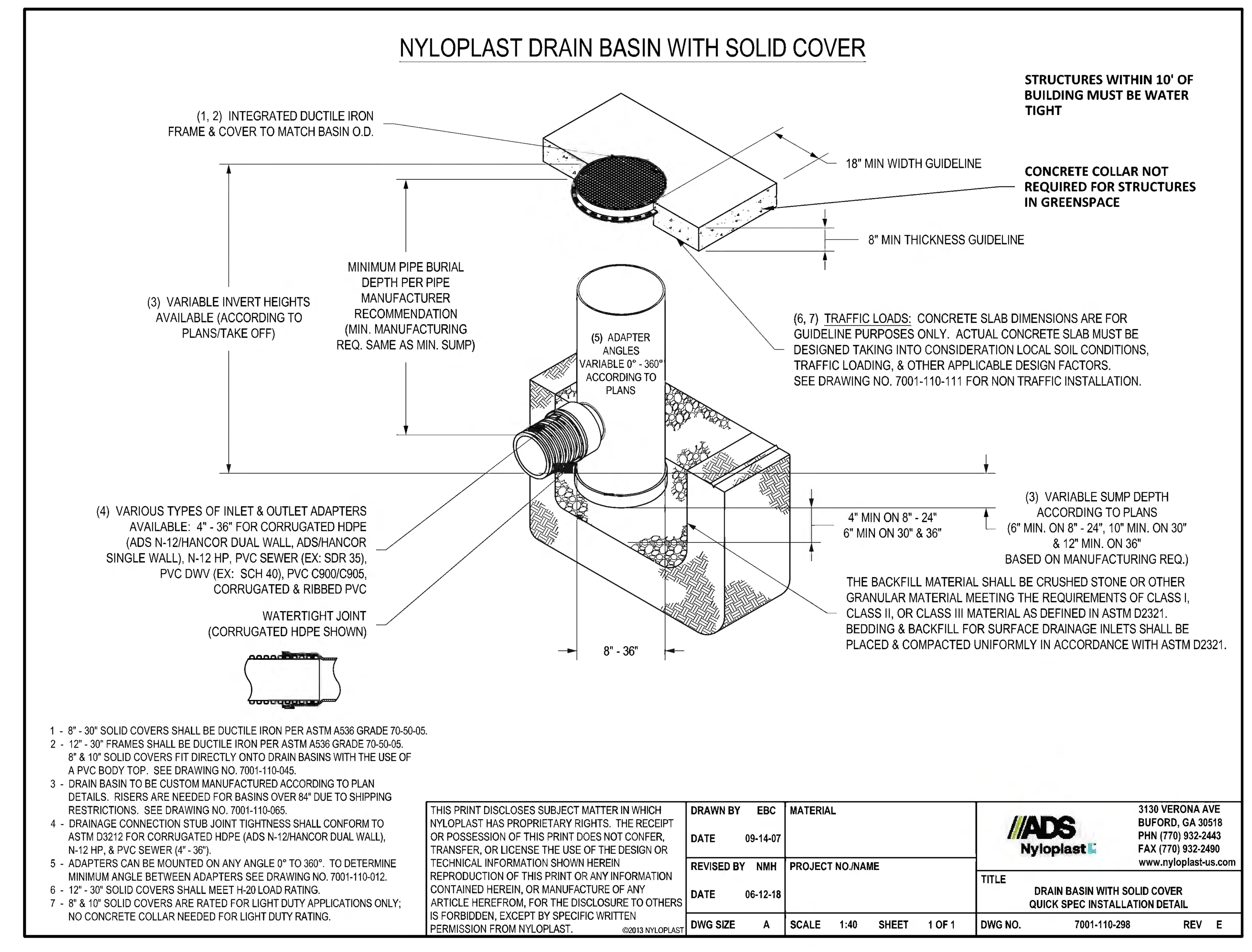
SECTION B - B'



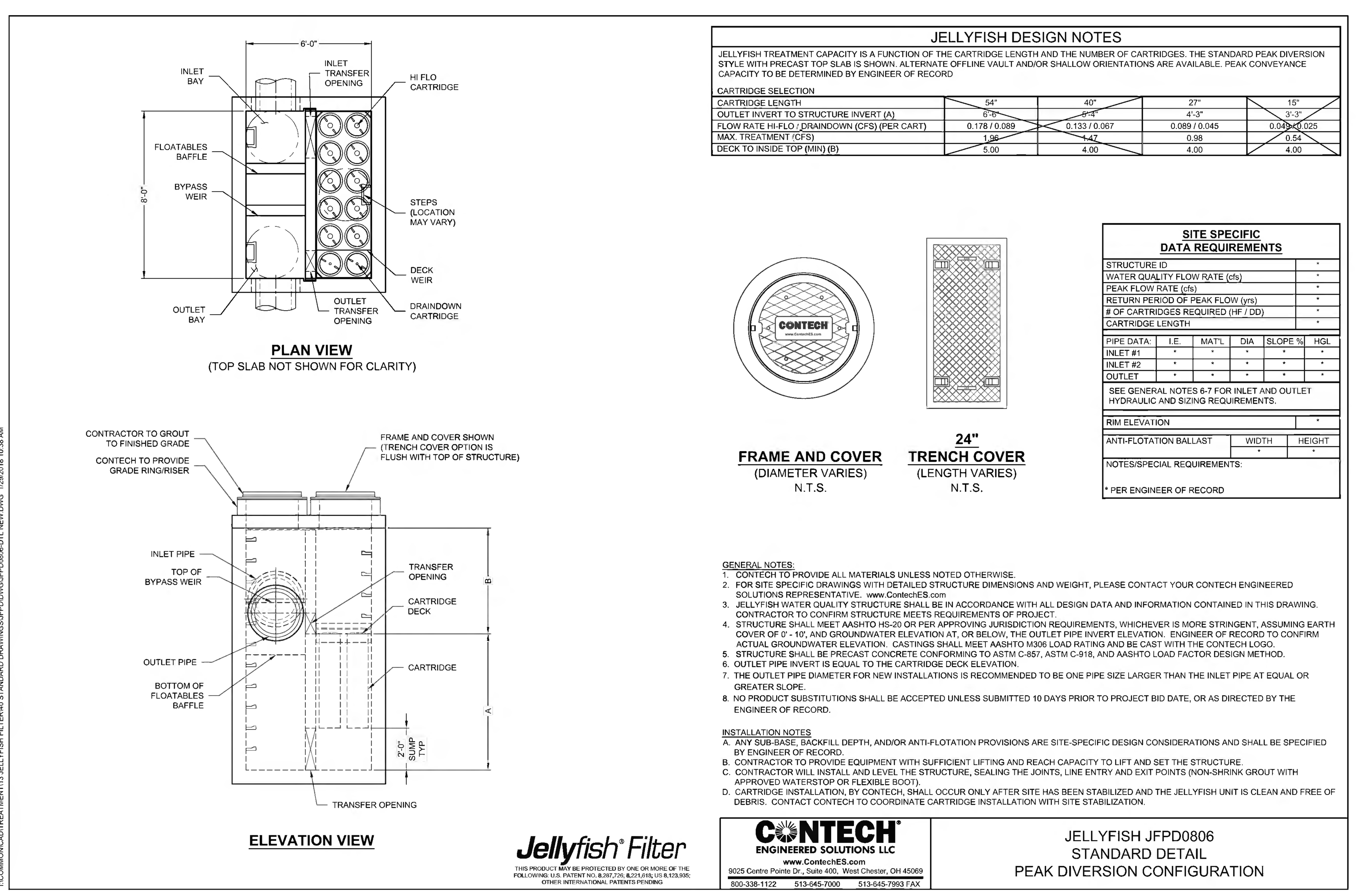
SECTION C - C'

SUBSURFACE SYSTEMS													
BMP	TYPE OF SYSTEM	LENGTH, FT (A)	WIDTH, FT (B)	SYSTEM DEPTH, FT (C)	PIPE COVER, IN (D)	PIPE SIZE, IN (E)	ROWS (F)	HEADERS (T)	PIPE INVERT (G)	BOTTOM OF ROCK (H)	EDGE SPACING, IN (X)	PIPE SPACING, IN (S)	TOTAL STORAGE (CF)*
1P**	SOLID CMP PIPE	64.50	24.00	6.50	6.0	66	3	1	905.00	904.50	12.0	33.0	4,585
2P (EAST)	SOLID CMP PIPE	68.00	9.50	8.50	6.0	90	1	0	889.75	889.25	12.0	NA	2,916
2P (MIDDLE)	SOLID CMP PIPE	33.00	9.50	8.50	6.0	90	1	0	889.75	889.25	12.0	NA	1,370
2P (WEST)	SOLID CMP PIPE	32.00	6.00	5.00	6.0	48	1	0	893.75	893.25	12.0	NA	337.0

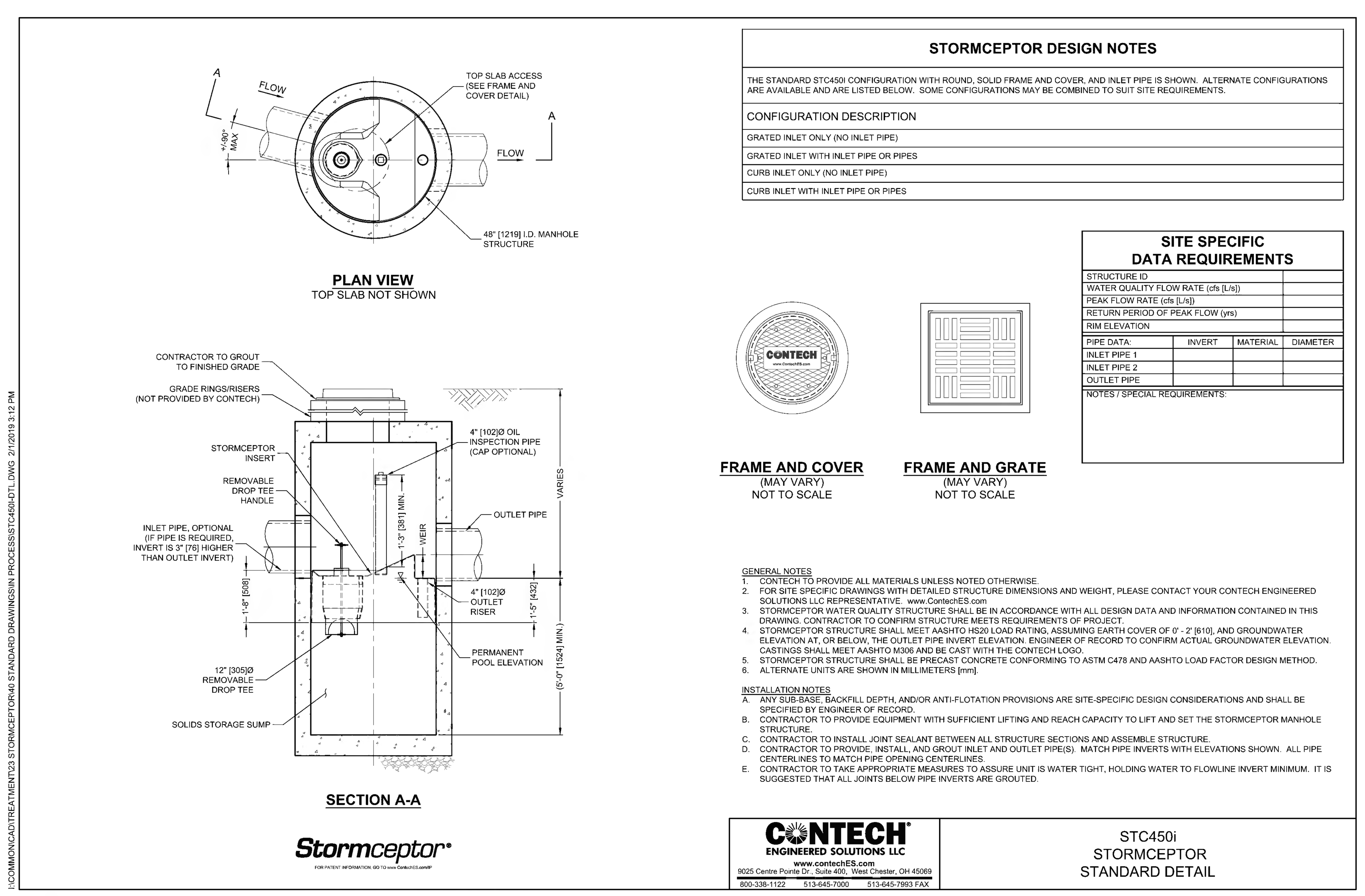
*TOTAL STORAGE VOLUME FOR SYSTEMS DOES NOT INCLUDE ROCK STORAGE VOLUME
**1P DIMENSIONS APPROXIMATE TOTAL SYSTEM SIZE. SEE UTILITY PLAN FOR PIPE CONFIGURATION LAYOUT.


NYLOPLAST DRAIN BASIN WITH SOLID COVER
(1, 2) INTEGRATED DUCTILE IRON FRAME & COVER TO MATCH BASIN O.D.
18" MIN WIDTH GUIDELINE
8" MIN THICKNESS GUIDELINE
STRUCTURES WITHIN 10' OF BUILDING MUST BE WATER TIGHT
CONCRETE COLLAR NOT REQUIRED FOR STRUCTURES IN GREENSPACE
MINIMUM PIPE BURIAL DEPTH PER PIPE MANUFACTURER RECOMMENDATION (MIN. MANUFACTURING REQ. SAME AS MIN. SUMP)
(3) VARIABLE INVERT HEIGHTS AVAILABLE (ACCORDING TO PLANS/TAKE OFF)
(5) ADAPTER ANGLES VARIABLE 0° - 360° ACCORDING TO PLANS
(6, 7) TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS. SEE DRAWING NO. 7001-110-111 FOR NON TRAFFIC INSTALLATION.
(4) VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE: 4" - 36" FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, ADS/HANCOR SINGLE WALL), N-12 HP, PVC SEWER (EX: SDR 35), PVC DWV (EX: SCH 40), PVC C900/C905, CORRUGATED & RIBBED PVC
WATERTIGHT JOINT (CORRUGATED HDPE SHOWN)
4" MIN ON 8" - 24"
6" MIN ON 30" & 36"
8" - 36"
(3) VARIABLE SUMP DEPTH ACCORDING TO PLANS (6" MIN. ON 8" - 24", 10" MIN. ON 30" & 12" MIN. ON 36" BASED ON MANUFACTURING REQ.)
THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.
1 - 8" - 30" SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" SOLID COVERS FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" SOLID COVERS SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" SOLID COVERS ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY, NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.
THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT OR POSSESSION OF THIS PRINT DOES NOT CONFER, TRANSFER, OR LICENSE THE USE OF THE DESIGN OR TECHNICAL INFORMATION SHOWN HEREIN REPRODUCTION OF THIS PRINT OR ANY INFORMATION CONTAINED HEREIN, OR MANUFACTURE OF ANY ARTICLE HEREFROM, FOR THE DISCLOSURE TO OTHERS IS FORBIDDEN, EXCEPT BY SPECIFIC WRITTEN PERMISSION FROM NYLOPLAST.
DRAWN BY EBC
DATE 09-14-07
REVISED BY NMH
DATE 06-12-18
MATERIAL
PROJECT NO./NAME
ADS Nyloplast
3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
TITLE
DRAIN BASIN WITH SOLID COVER QUICK SPEC INSTALLATION DETAIL
DWG SIZE A
SCALE 1:40
SHEET 1 OF 1
DWG NO. 7001-110-298
REV E

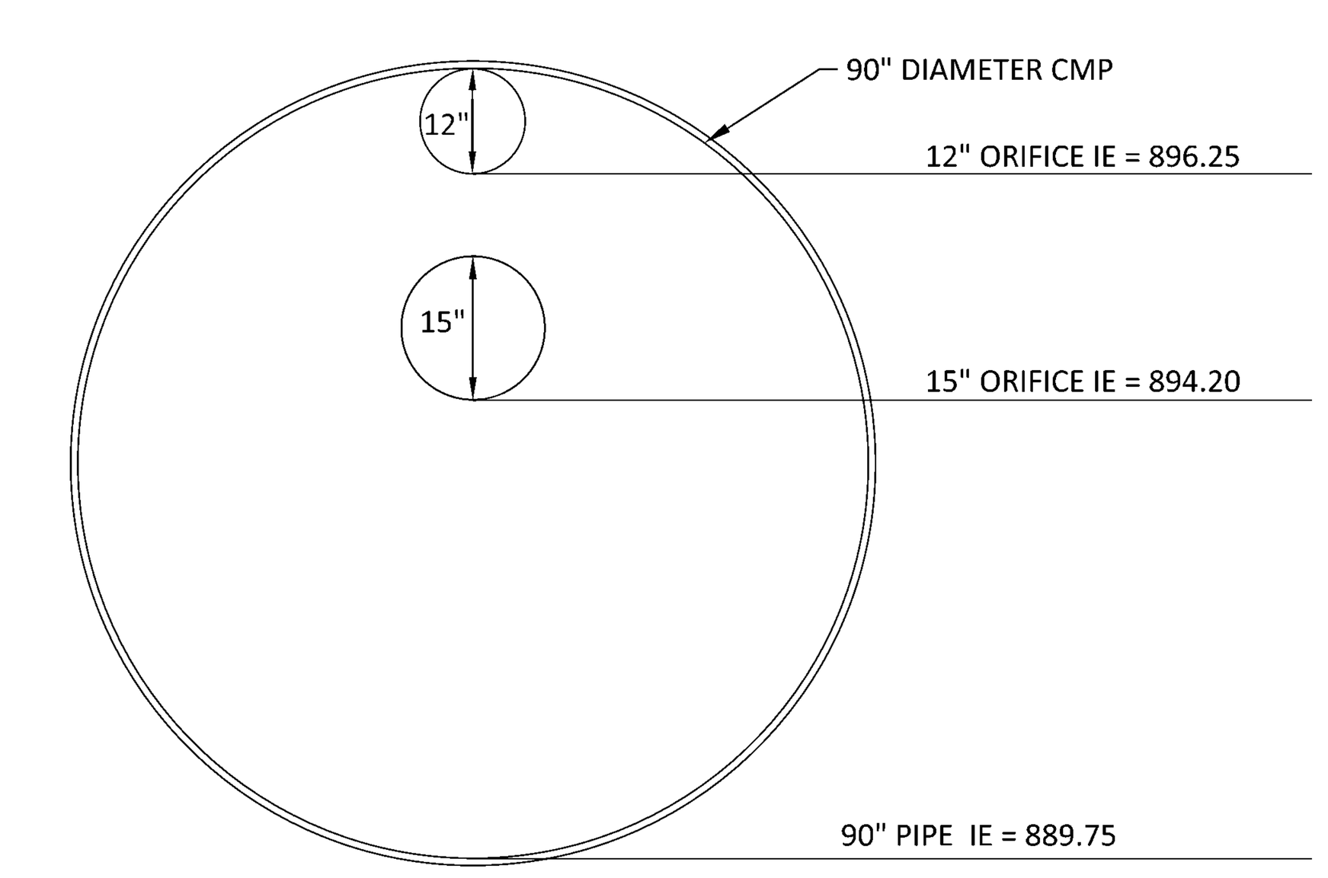
03 **POLYETHYLENE DRAINAGE STRUCTURE (PEDS)**
N.T.S.


JELLYFISH DESIGN NOTES
INLET BAY
INLET TRANSFER OPENING
HI-FLO CARTRIDGE
FLOATABLES BAFFLE
BYPASS WEIR
STEPS (LOCATION MAY VARY)
DECK WEIR
OUTLET BAY
OUTLET TRANSFER OPENING
DRAINDOWN CARTRIDGE
PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)
SITE SPECIFIC DATA REQUIREMENTS
FRAME AND COVER
(DIAMETER VARIES)
N.T.S.
24" TRENCH COVER
(LENGTH VARIES)
N.T.S.
CONTRACTOR TO GROUT TO FINISHED GRADE
CONTECH TO PROVIDE GRADE RING/RISER
FRAME AND COVER SHOWN (TRENCH COVER OPTION IS FLUSH WITH TOP OF STRUCTURE)
INLET PIPE
TOP OF BYPASS WEIR
TRANSFER OPENING
CARTRIDGE DECK
OUTLET PIPE
BOTTOM OF FLOATABLES BAFFLE
CARTRIDGE
TRANSFER OPENING
ELEVATION VIEW
GENERAL NOTES
INSTALLATION NOTES
Jellyfish Filter
CONTECH ENGINEERED SOLUTIONS LLC
JELLYFISH JFPD0806
STANDARD DETAIL
PEAK DIVERSION CONFIGURATION

04 **CONTECH JELLYFISH**
N.T.S.


STORMCEPTOR DESIGN NOTES
CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
FLOW
TOP SLAB ACCESS (SEE FRAME AND COVER DETAIL)
48" [1219] I.D. MANHOLE STRUCTURE
PLAN VIEW
TOP SLAB NOT SHOWN
SITE SPECIFIC DATA REQUIREMENTS
FRAME AND COVER
(MAY VARY)
NOT TO SCALE
FRAME AND GRATE
(MAY VARY)
NOT TO SCALE
CONTRACTOR TO GROUT TO FINISHED GRADE
GRADE RINGS/RISERS (NOT PROVIDED BY CONTECH)
STORMCEPTOR INSERT
REMOVABLE DROP TEE HANDLE
INLET PIPE, OPTIONAL
4" [102Ø] OIL INSPECTION PIPE (CAP OPTIONAL)
OUTLET PIPE
4" [102Ø] OUTLET RISER
PERMANENT POOL ELEVATION
12" [305Ø] REMOVABLE DROP TEE
SOLIDS STORAGE SUMP
SECTION A-A
GENERAL NOTES
INSTALLATION NOTES
Stormceptor
CONTECH ENGINEERED SOLUTIONS LLC
STC450i
STORMCEPTOR
STANDARD DETAIL

06 **CONTECH STORMCEPTOR 450i**
N.T.S.



NORTH UNDERGROUND SYSTEM 2P OCS

07 **SYSTEM INTEGRATED OCS WEIR PLATES**
N.T.S.

esG
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY
If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL
03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

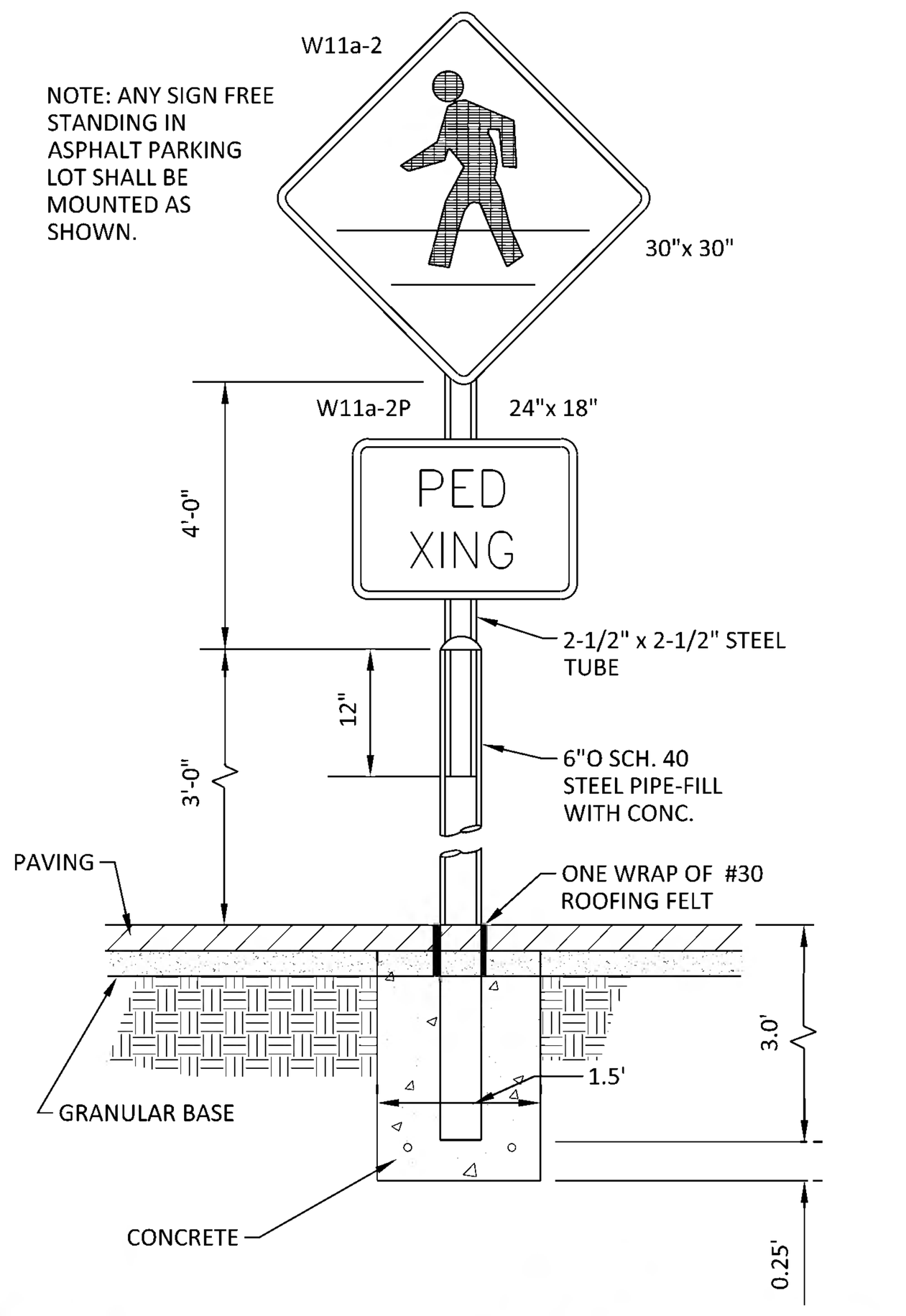
TLL — DRAWN BY
BWF — CHECKED BY

KEY PLAN

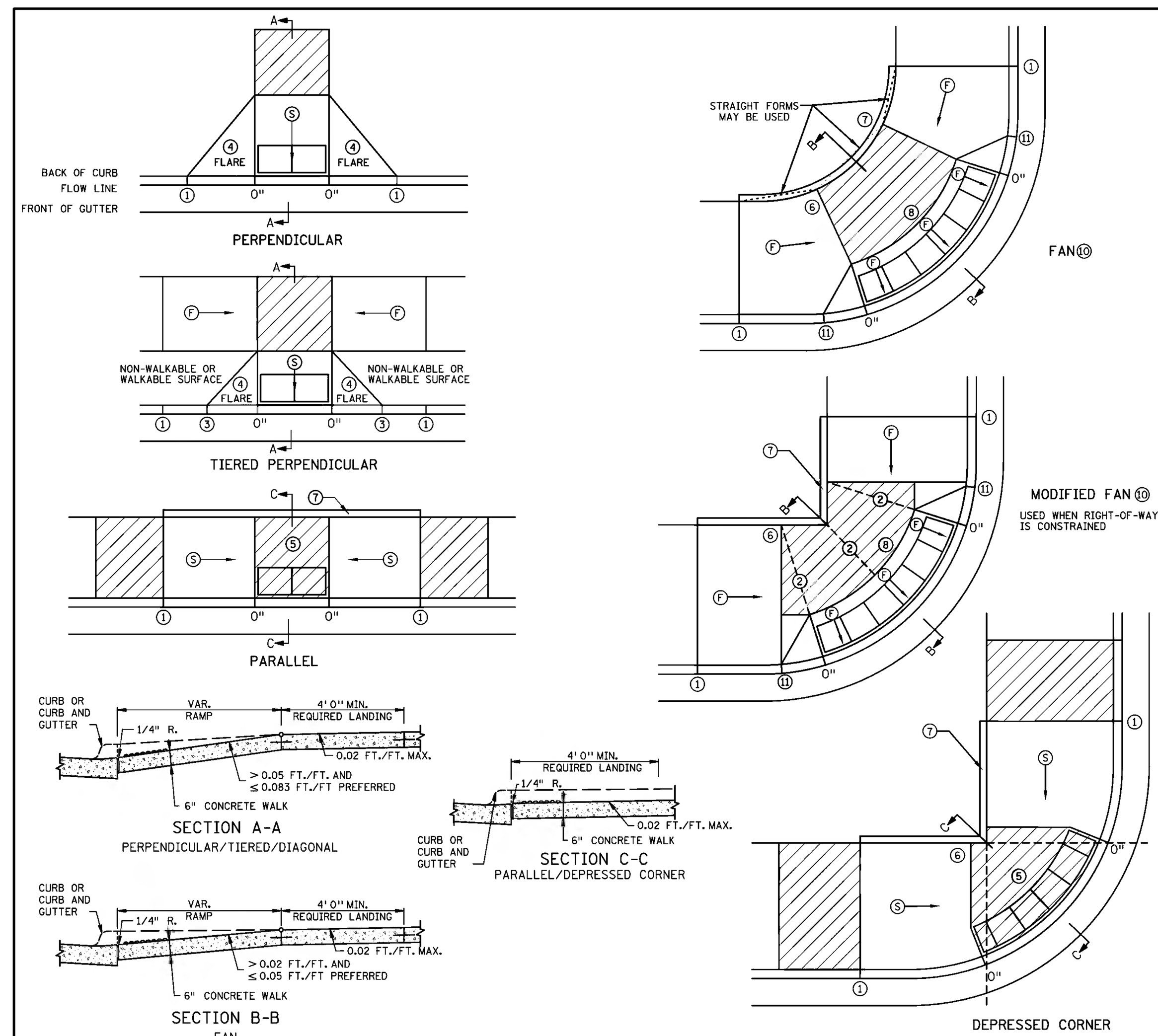
MARLOWE
OPUS STATION

DETAILS

C9.02



01 PEDESTRIAN CROSSING SIGN
N.T.S.



PERPENDICULAR — TIERED PERPENDICULAR — PARALLEL — SECTION A-A PERPENDICULAR/TIERED/DIAGONAL — SECTION B-B FAN — SECTION C-C PARALLEL/DEPRESSED CORNER — FAN ⑩ — MODIFIED FAN ⑩ (USED WHEN RIGHT-OF-WAY IS CONSTRAINED) — DEPRESSED CORNER — DIAGONAL (SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL)

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE. ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN ⑥ BELOW.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

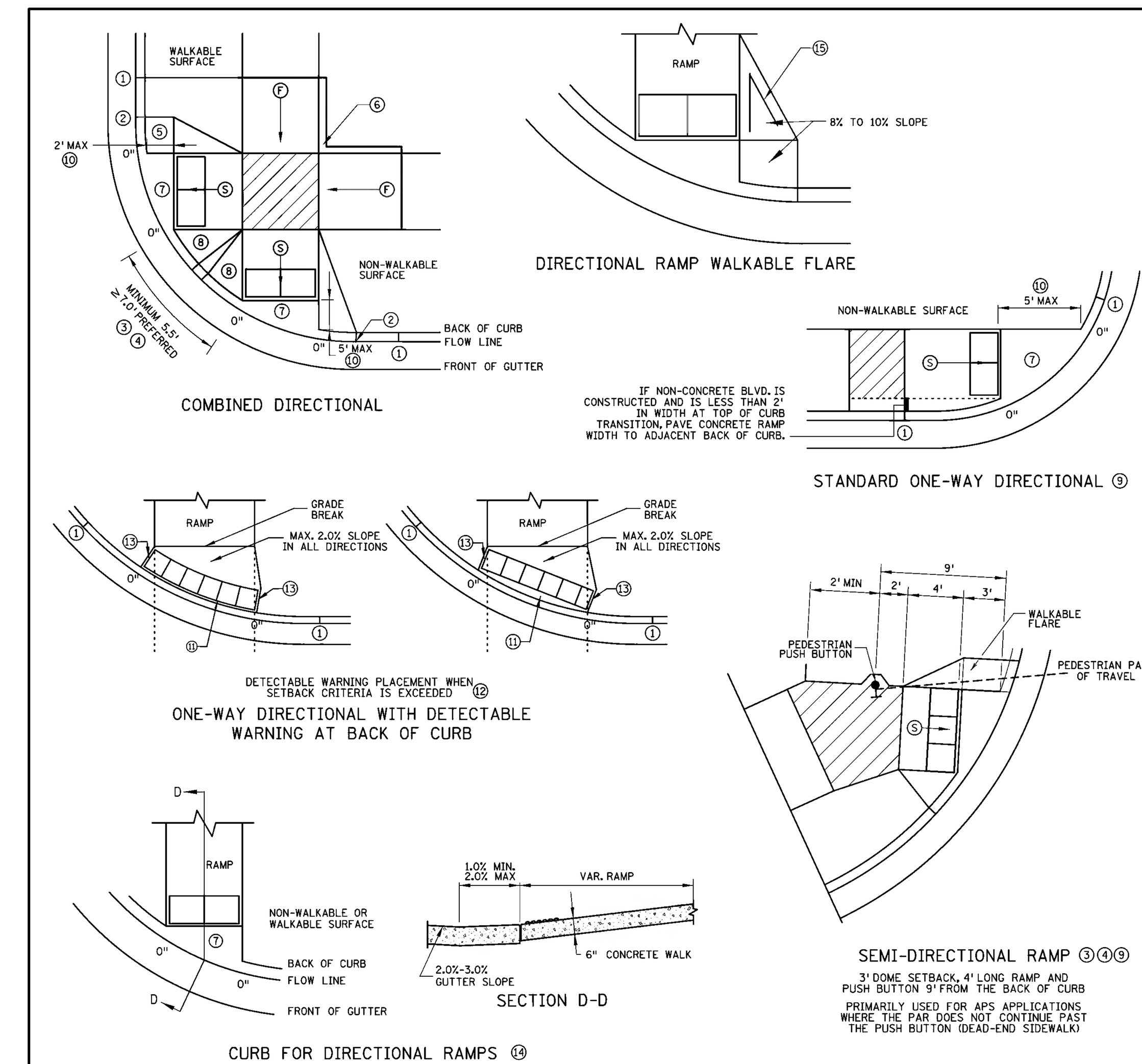
① MATCH FULL HEIGHT CURB.
② 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
③ 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
④ SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
⑤ DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
⑥ THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
⑦ WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
⑧ A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.
⑨ PAVE FULL WALK WIDTH.
⑩ "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.
⑪ INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.
Ⓢ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
Ⓕ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨ LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X" CURB HEIGHT

REVISION:
APPROVED: 11-04-2021 JEFFREY PERKINS OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION — STANDARD PLAN 5-297.250 — 1 OF 6 — APPROVED: 11-04-2021 REVISED: — THOMAS STYRBICKI STATE DESIGN ENGINEER — **PEDESTRIAN CURB RAMP DETAILS** — STATE PROJ. NO. (TH) SHEET NO. OF SHEETS



COMBINED DIRECTIONAL — DIRECTIONAL RAMP WALKABLE FLARE — STANDARD ONE-WAY DIRECTIONAL ⑨ — ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB (DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫) — SEMI-DIRECTIONAL RAMP ③④⑨ (3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB; PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)) — SECTION D-D — CURB FOR DIRECTIONAL RAMPS ⑭

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE. ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

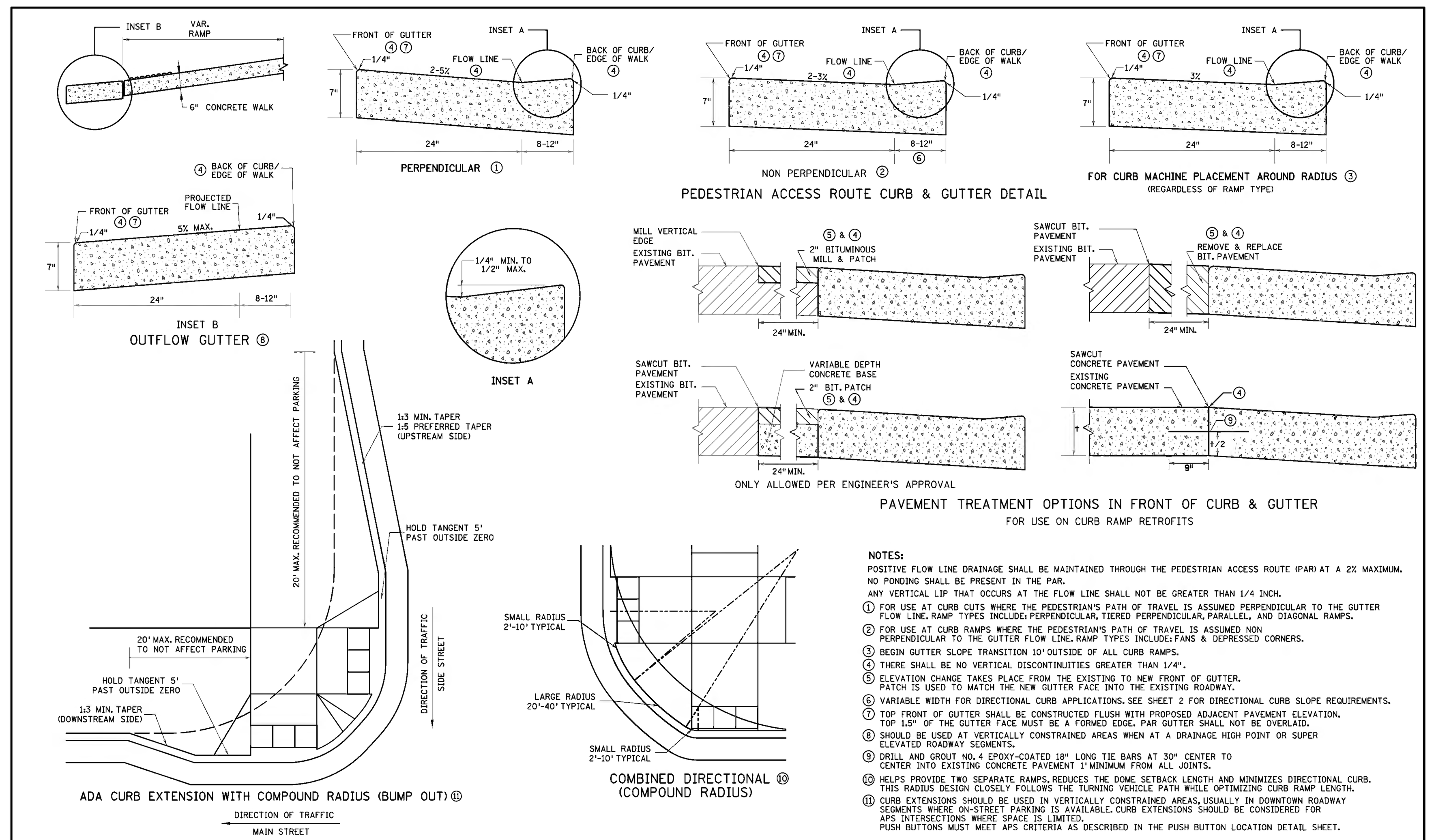
① MATCH FULL CURB HEIGHT.
② 3" HIGH CURB WHEN USING A 3' LONG RAMP. 4" HIGH CURB WHEN USING A 4' LONG RAMP.
③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES) 4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.
⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
⑧ 8% TO 10% WALKABLE FLARE.
⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.
⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.
Ⓢ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
Ⓕ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨ LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X" CURB HEIGHT

REVISION:
APPROVED: 11-04-2021 JEFFREY PERKINS OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION — STANDARD PLAN 5-297.250 — 2 OF 6 — APPROVED: 11-04-2021 REVISED: — THOMAS STYRBICKI STATE DESIGN ENGINEER — **PEDESTRIAN CURB RAMP DETAILS** — STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



PERPENDICULAR ① — NON PERPENDICULAR ② — FOR CURB MACHINE PLACEMENT AROUND RADIUS ③ (REGARDLESS OF RAMP TYPE) — PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL — INSET B OUTFLOW GUTTER ⑧ — INSET A — PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER (FOR USE ON CURB RAMP RETROFITS) — ONLY ALLOWED PER ENGINEER'S APPROVAL — ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪ — COMBINED DIRECTIONAL ⑩ (COMPOUND RADIUS)

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.

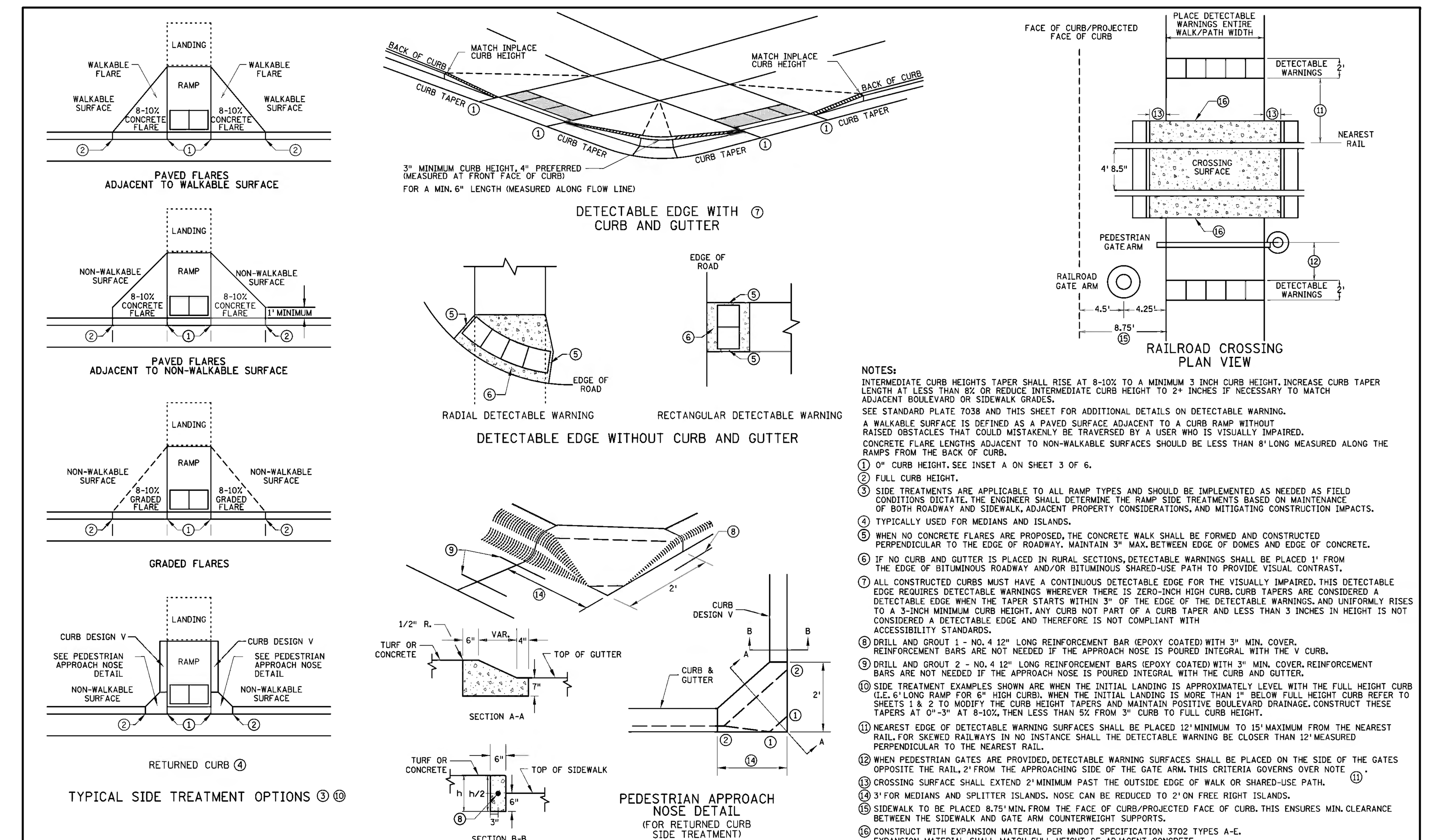
NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

REVISION:
APPROVED: 11-04-2021 JEFFREY PERKINS OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION — STANDARD PLAN 5-297.250 — 3 OF 6 — APPROVED: 11-04-2021 REVISED: — THOMAS STYRBICKI STATE DESIGN ENGINEER — **PEDESTRIAN CURB RAMP DETAILS** — STATE PROJ. NO. (TH) SHEET NO. OF SHEETS



PAVED FLARES ADJACENT TO WALKABLE SURFACE — PAVED FLARES ADJACENT TO NON-WALKABLE SURFACE — GRADED FLARES — RETURNED CURB ④ — TYPICAL SIDE TREATMENT OPTIONS ③⑩ — DETECTABLE EDGE WITH ⑦ CURB AND GUTTER — RADIAL DETECTABLE WARNING — RECTANGULAR DETECTABLE WARNING — DETECTABLE EDGE WITHOUT CURB AND GUTTER — SECTION A-A — SECTION B-B — PEDESTRIAN APPROACH NOSE DETAIL (FOR RETURNED CURB SIDE TREATMENT) — RAILROAD CROSSING PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

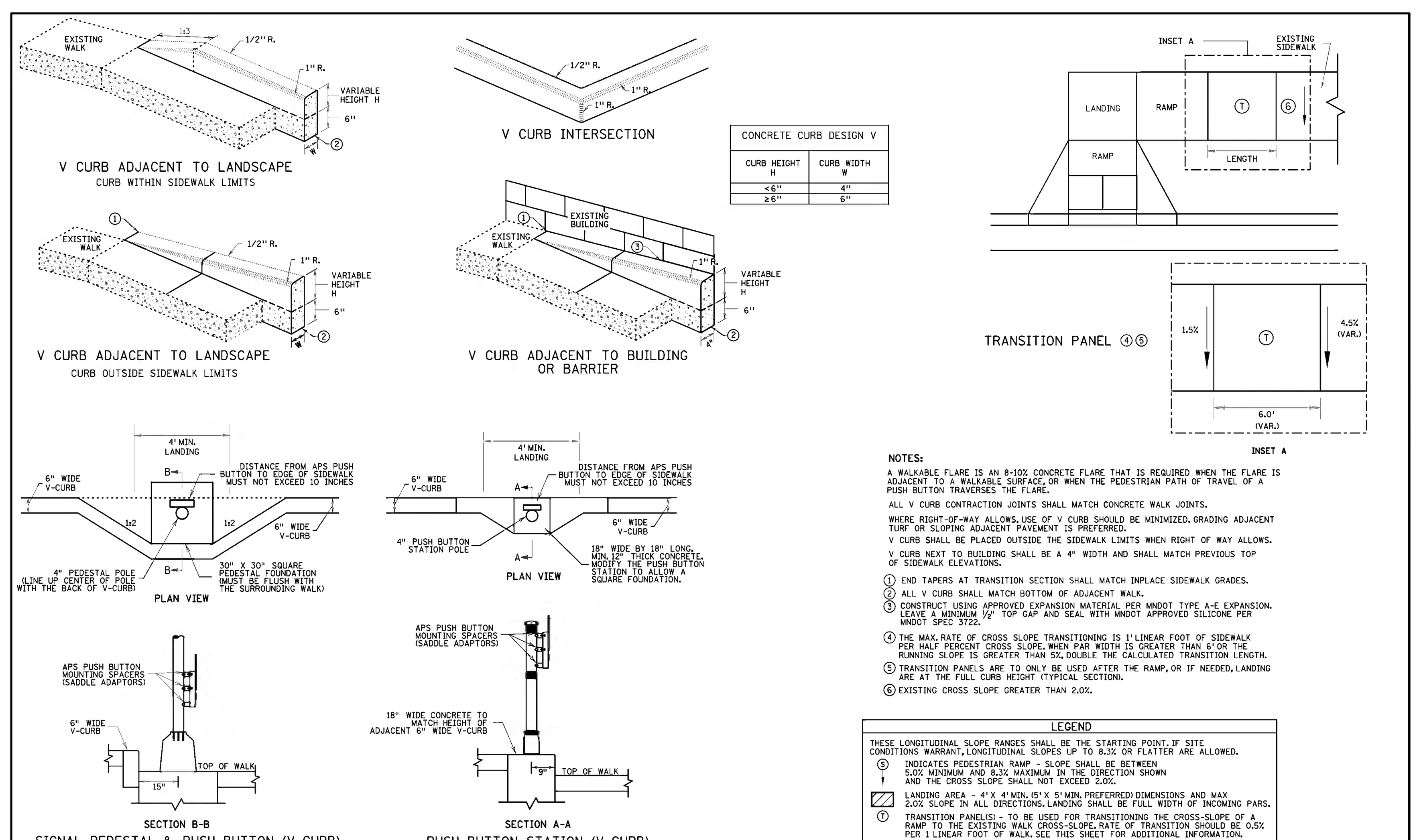
A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.
② FULL CURB HEIGHT.
③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
④ TYPICALLY USED FOR MEDIANS AND ISLANDS.
⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS, AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.
⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.
⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.
⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

REVISION:
APPROVED: 11-04-2021 JEFFREY PERKINS OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION — STANDARD PLAN 5-297.250 — 4 OF 6 — APPROVED: 11-04-2021 REVISED: — THOMAS STYRBICKI STATE DESIGN ENGINEER — **PEDESTRIAN CURB RAMP DETAILS** — STATE PROJ. NO. (TH) SHEET NO. OF SHEETS



V CURB ADJACENT TO LANDSCAPE (CURB WITHIN SIDEWALK LIMITS) — V CURB INTERSECTION — V CURB ADJACENT TO LANDSCAPE (CURB OUTSIDE SIDEWALK LIMITS) — V CURB ADJACENT TO BUILDING OR BARRIER — TRANSITION PANEL ④⑤ — SECTION B-B SIGNAL PEDESTAL & PUSH BUTTON (V-CURB) — SECTION A-A PUSH BUTTON STATION (V-CURB)

CONCRETE CURB DESIGN V

CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

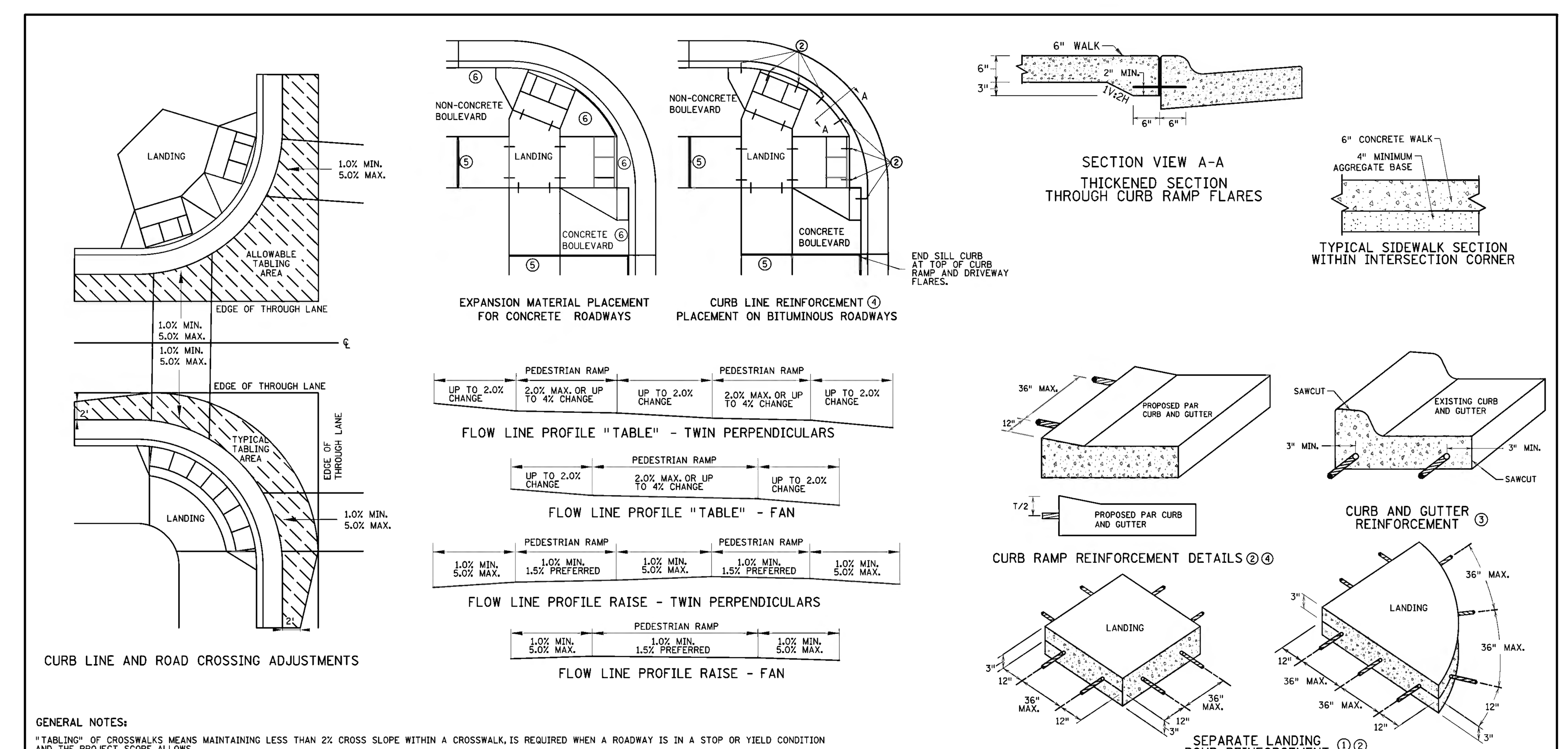
① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.
Ⓢ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨ LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
Ⓣ TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

REVISION:
APPROVED: 11-04-2021 JEFFREY PERKINS OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION — STANDARD PLAN 5-297.250 — 5 OF 6 — APPROVED: 11-04-2021 REVISED: — THOMAS STYRBICKI STATE DESIGN ENGINEER — **PEDESTRIAN CURB RAMP DETAILS** — STATE PROJ. NO. (TH) SHEET NO. OF SHEETS



CURB LINE AND ROAD CROSSING ADJUSTMENTS — EXPANSION MATERIAL PLACEMENT FOR CONCRETE ROADWAYS — CURB LINE REINFORCEMENT ④ PLACEMENT ON BITUMINOUS ROADWAYS — SECTION VIEW A-A THICKENED SECTION THROUGH CURB RAMP FLARES — TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER — FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS — FLOW LINE PROFILE "TABLE" - FAN — FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS — FLOW LINE PROFILE RAISE - FAN — CURB RAMP REINFORCEMENT DETAILS ②④ — CURB AND GUTTER REINFORCEMENT ③ — SEPARATE LANDING POUR REINFORCEMENT ①②

GENERAL NOTES:

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:
1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:
1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
3) 5.0% RECOMMENDED MAX. FLOW LINE
4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.
③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.
④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.
⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.
⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

REVISION:
APPROVED: 11-04-2021 JEFFREY PERKINS OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION — STANDARD PLAN 5-297.250 — 6 OF 6 — APPROVED: 11-04-2021 REVISED: — THOMAS STYRBICKI STATE DESIGN ENGINEER — **PEDESTRIAN CURB RAMP DETAILS** — STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

MARLOWE OPUS STATION
MINNETONKA, MN

ESG ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE: 09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

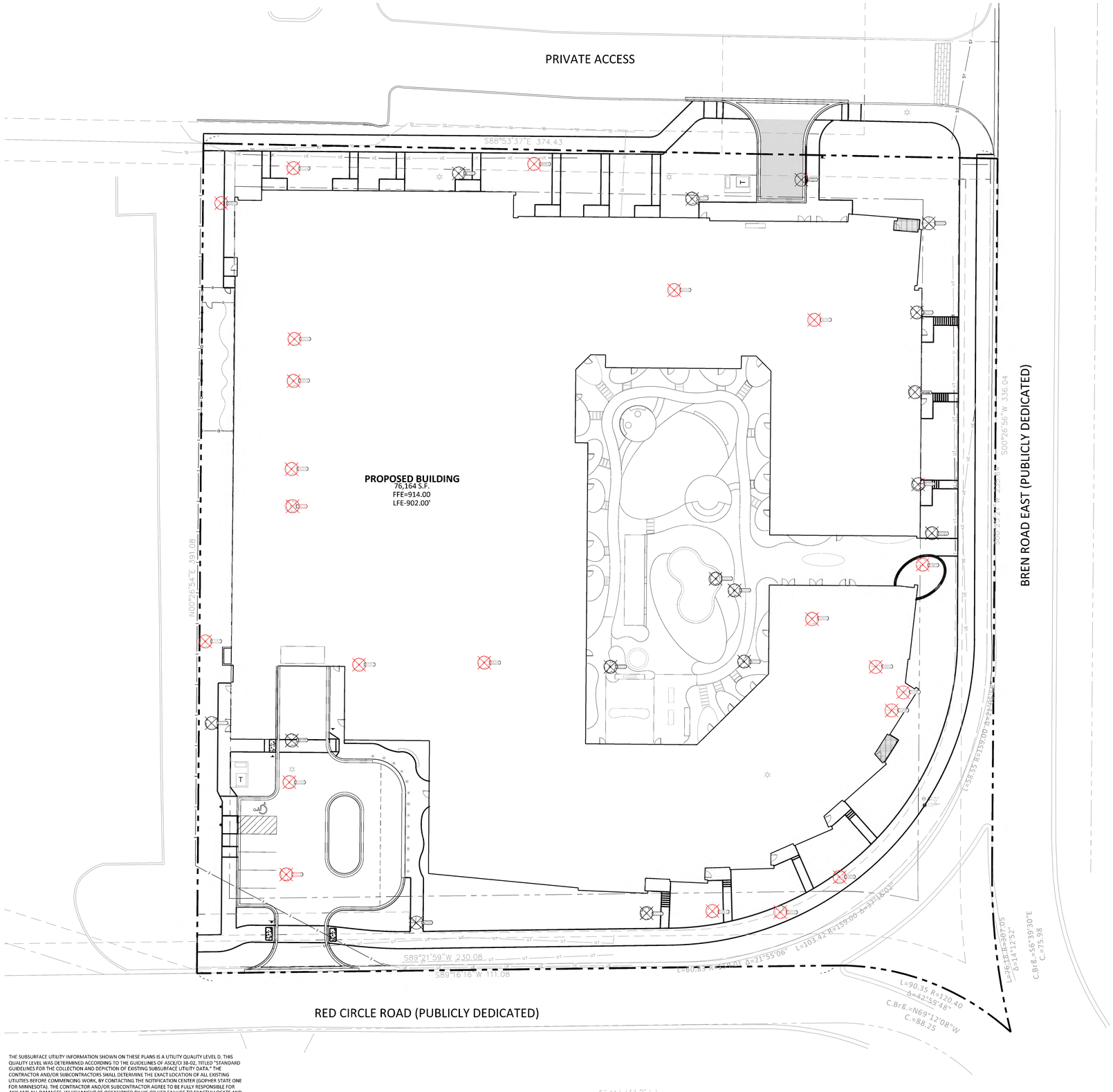
TLL — DRAWN BY
BWF — CHECKED BY

KEY PLAN

MARLOWE OPUS STATION

DETAILS

C9.03



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

	PROPOSED	EXISTING	
PROPERTY LIMIT			STANDARD DUTY ASPHALT PAVING
CURB & GUTTER			
EASEMENT			CONCRETE PAVING
BUILDING			
RETAINING WALL			CONCRETE SIDEWALK
WETLAND LIMITS		WL	
TREELINE			
LANDSCAPE EDING			
STORM SEWER	D		
SANITARY SEWER	S	S	
FORCEMAIN (SAN.)	LS	FM S	
WATERMAIN			
YARDDRAIN			
LIMITS OF DISTURBANCE			
TREE PROTECTION FENCE		TP	
TREE TO BE REMOVED			
SIGN			
PIPE BOLLARD			
RIPRAP			

MINNETONKA LANDSCAPE CODE

1. Development that is subject to landscape requirements in sections 300.27 and 300.31 must meet the minimum landscape requirements of the applicable section. Trees planted as part of a required landscaping plan may be counted as mitigation trees under this section, at the city's discretion.
2. One inch for each inch in diameter of a deciduous tree removed and one foot for each foot in height of a coniferous tree removed

CALCULATIONS	EXISTING	REQUIRED
2 INCHES PER EVERY SIGNIFICANT TREE	6 TREES	12 INCHES
1 INCH PER EACH INCH IN DIAMETER OF HIGH PRIORITY TREES		
OVERSTORY TREES	83 INCHES	154 INCHES
1 FOOT PER EACH FOOT IN HEIGHT OF HIGH PRIORITY TREES		
CONIFERS	106 FEET	106 FEET

PLANT SCHEDULE

Tag	DBH	Height	Species	Notes	Type	Status
4090	21		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4091	27		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4092	22		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4093	11		River Birch (Betula nigra)		Deciduous	Remove
4094	17		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4095	8	18	Black Hills Spruce (Picea glauca)		Coniferous	Remove
4096	23		Littleleaf Linden (Tilia coradata)		Deciduous	Remove
4097	20		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4098	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4099	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4100	7		Malus sp.		Deciduous	Remove
5001	15		Sugar Maple (Acer Sacharum)		Deciduous	Remove
5002	7		Box Elder (Acer negundo)		Deciduous	Remove
5003	18	36	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5004	18	36	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5005	20	40	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5006	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5007	9		Mulberry (Morus alba)		Deciduous	Remove
5008	14		Malus sp.		Deciduous	Remove
5009	24		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5010	24		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5011	21		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5012	27		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5013	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5014	17		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5015	25		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5017	7		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5018	11		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5019	15	30	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5020	19		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5021	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5022	18		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5023	6		Malus sp.		Deciduous	Remove
5024	9		Malus sp.		Deciduous	Remove
5025	20		Littleleaf Linden (Tilia coradata)		Deciduous	Remove
5026	18		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5027	20		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5028	20		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove

NORTH

0 20 40

SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL
03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23

51166
PROJECT NUMBER

TLL DRAWN BY
BWF CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

TREE INVENTORY

L1.01

MARLOWE OPUS STATION - LANDSCAPE DESIGN

1 OVERALL COLORED PLAN
1" = 20'-0"

0' 10' 20' 40' 80'

SHEET LIST	
Sheet Number	Sheet Name
L1	TITLE PAGE
L2	OVERALL LANDSCAPE PLAN
L3	ZONE A LANDSCAPE PLANS
L4	ZONE B LANDSCAPE PLANS
L5	ZONE C LANDSCAPE PLANS
L6	ZONE D LANDSCAPE PLANS
L7	ZONE E LANDSCAPE PLANS
L8	ZONE E LANDSCAPE PLANS
L9	ZONE E LANDSCAPE PLANS
L10	ZONE E ENLARGEMENT PLANS
L11	ZONE E ENLARGEMENT PLANS
L12	ZONE F LANDSCAPE PLANS
L13	PLANTING DETAILS
L14	DETAILS
L15	DETAILS

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
09/09/20

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

DC
DRAWN BY

RLH
CHECKED BY

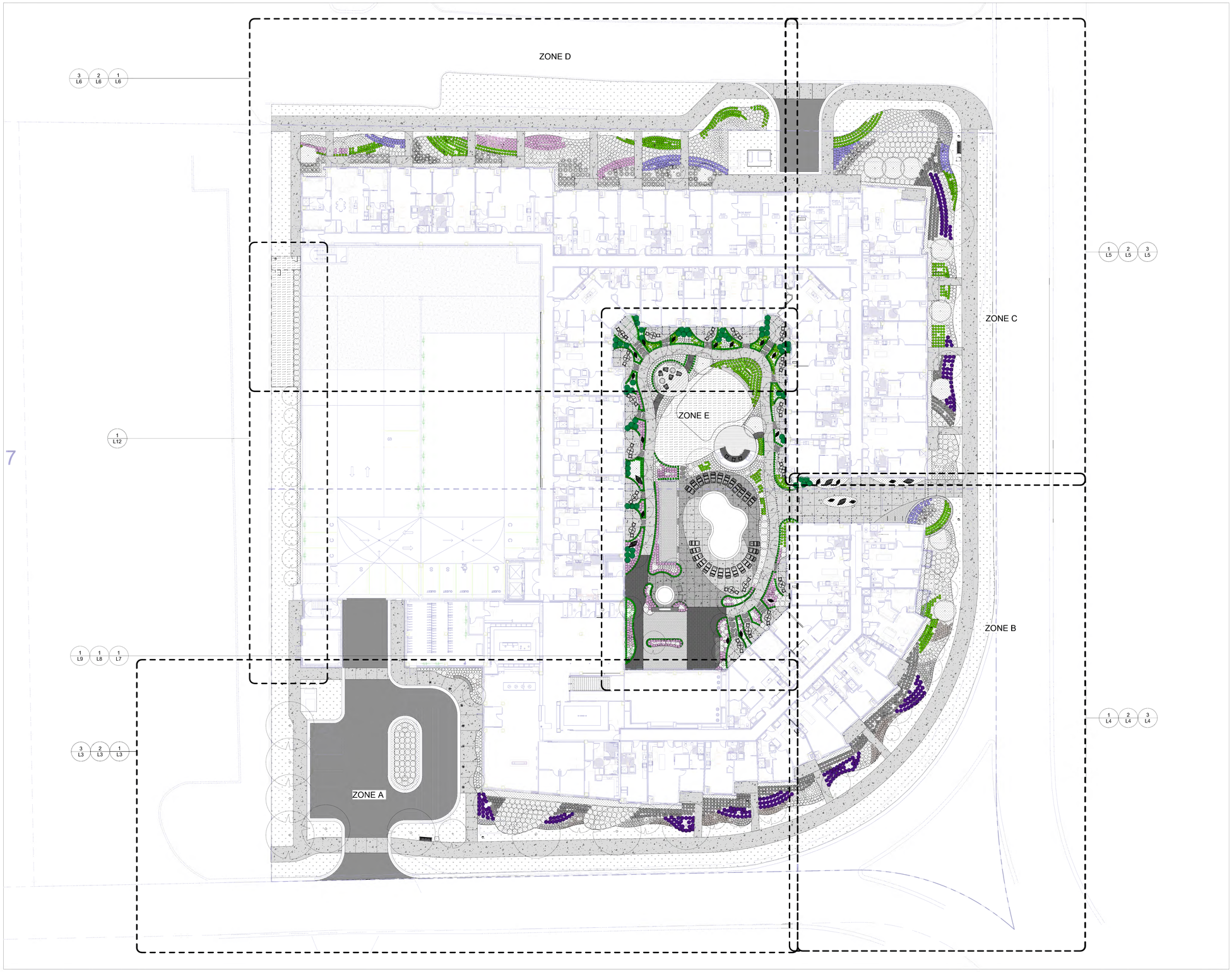
KEY PLAN

MARLOWE OPUS STATION

TITLE PAGE

L1

3/10/2023 12:00:49 PM



7

1 OVERALL LANDSCAPE PLAN
1" = 20'-0"

0' 10' 20' 40' 80'

3/10/2023 12:01:26 PM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
11/01/22

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

DC
DRAWN BY

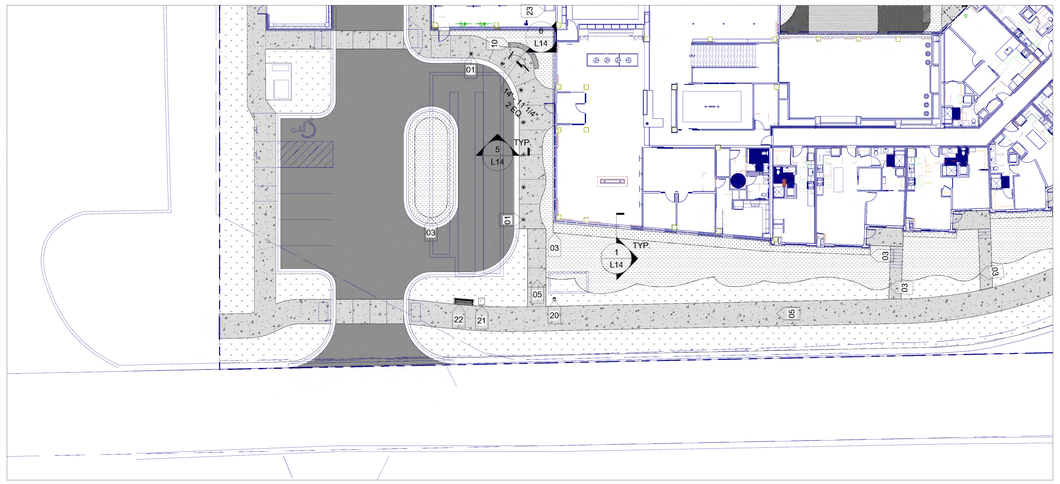
RH
CHECKED BY

KEY PLAN

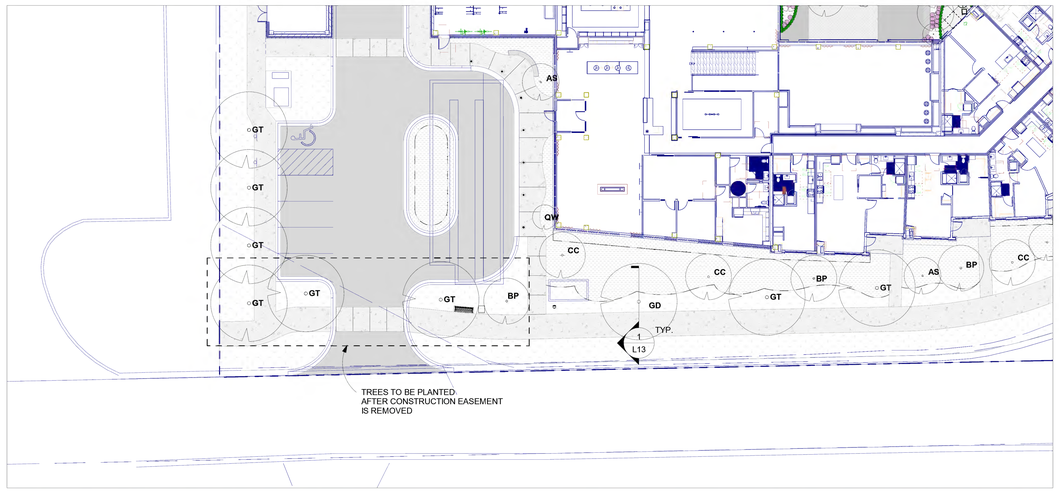
MARLOWE OPUS STATION

OVERALL LANDSCAPE PLAN

L2



1 ZONE A LAYOUT/MATERIALS
1" = 20'-0"



2 ZONE A TREES
1" = 20'-0"

3 ZONE A SHRUBS AND PERENNIALS
1" = 20'-0"

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH
23	WATER REUSE SYSTEM

LAYOUT LEGEND

STEEL EDGING

/
SECTION DETAIL KEY

##
KEYNOTE - REFER TO KEYNOTE TABLE

MATERIALS LEGEND NOT ALL MATERIALS USED ON SHEET

- CONCRETE PROPOSED TYPE 1 (Plain concrete made with medium gray cement)
- CONCRETE PROPOSED TYPE 2 (Cemstone Black Ice)
- CONCRETE PROPOSED TYPE 3 (Cemstone Split Rock)
- ARTIFICIAL TURF GRASS
- SEED TYPE 1 (TURF GRASS)
- PAVER TYPE 1
- PAVER TYPE 2
- WOOD DECKING
- ROCK MULCH TYPE 1
- ROCK MULCH TYPE 2
- HARDWOOD MULCH
- FLAGSTONE

PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

0' 10' 20' 40' 80'

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
07/22/21

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

DC
DRAWN BY

RLH
CHECKED BY

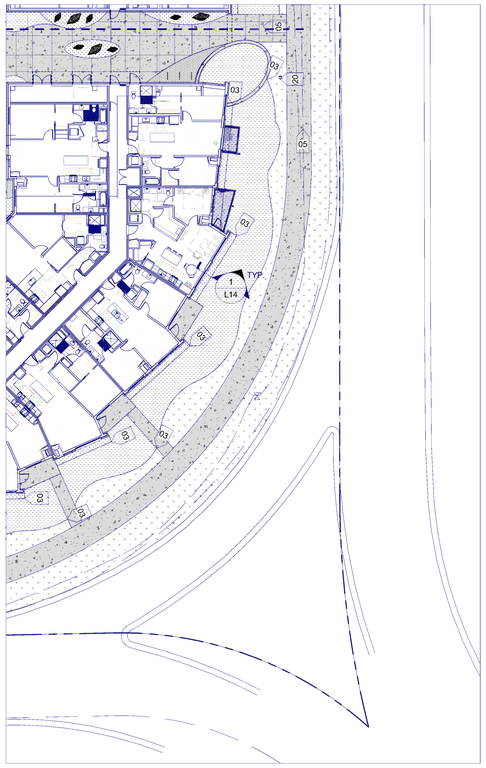
KEY PLAN

MARLOWE OPUS STATION

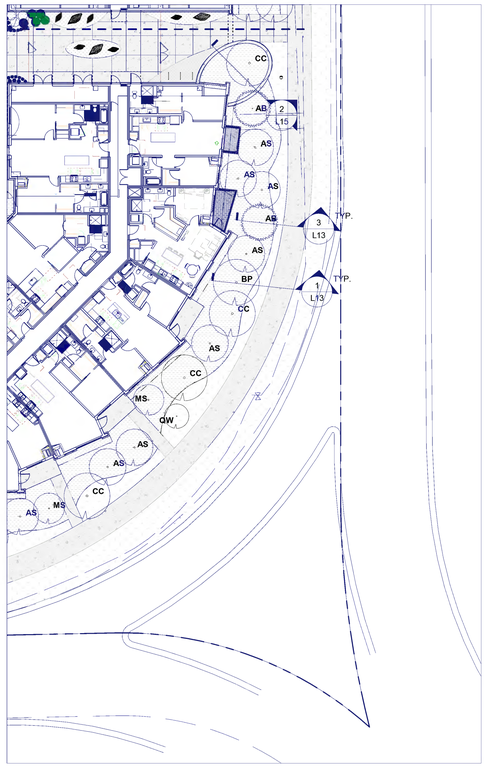
ZONE A LANDSCAPE PLANS

L3

3/10/2023 12:02:09 PM



1 ZONE B LAYOUT/JOINTING
1" = 20'-0"



2 ZONE B TREES
1" = 20'-0"

3 ZONE B PERENNIALS AND SHRUBS
1" = 20'-0"

MATERIALS LEGEND NOT ALL MATERIALS USED ON SHEET

- CONCRETE PROPOSED TYPE 1 (Plain concrete made with medium gray cement)
- CONCRETE PROPOSED TYPE 2 (Cemstone Black Ice)
- CONCRETE PROPOSED TYPE 3 (Cemstone Split Rock)
- ARTIFICIAL TURF GRASS
- SEED TYPE 1 (TURF GRASS)
- PAVER TYPE 1
- PAVER TYPE 2
- WOOD DECKING
- ROCK MULCH TYPE 1
- ROCK MULCH TYPE 2
- HARDWOOD MULCH
- FLAGSTONE

LAYOUT LEGEND

- STEEL EDGING
- SECTION DETAIL KEY (## / ####)
- KEYNOTE - REFER TO KEYNOTE TABLE (##)

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH
23	WATER REUSE SYSTEM

PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia triacanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

0' 10' 20' 40' 80'

3/10/2023 12:02:51 PM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
07/19/21

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

DC
DRAWN BY

RLH
CHECKED BY

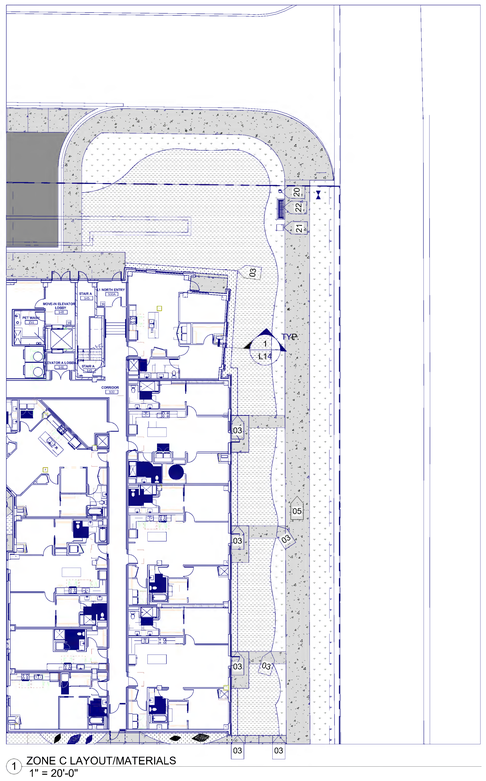
KEY PLAN

MARLOWE OPUS STATION

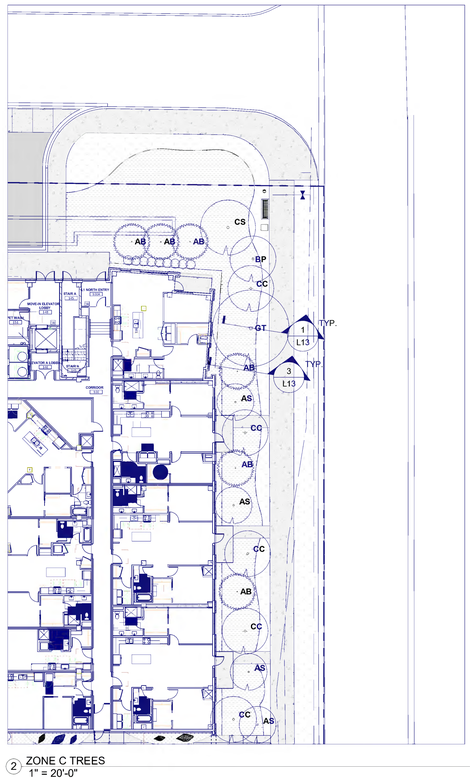
ZONE B LANDSCAPE PLANS

L4

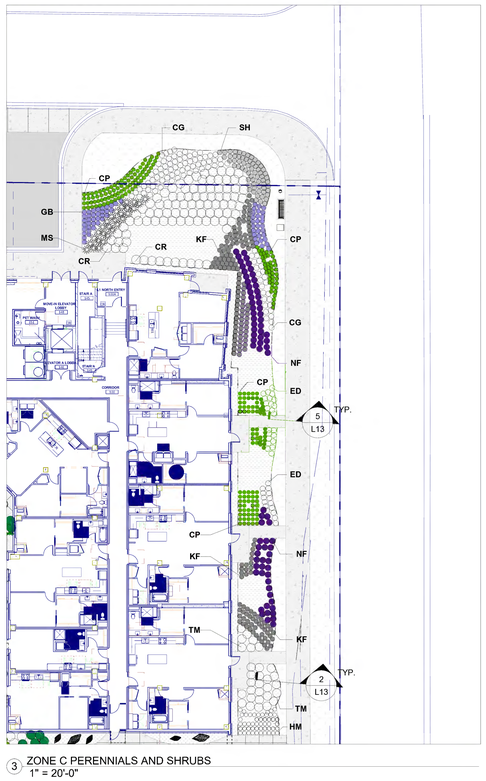
MARLOWE
OPUS STATION
MINNETONKA, MN



1 ZONE C LAYOUT/MATERIALS
1" = 20'-0"



2 ZONE C TREES
1" = 20'-0"



3 ZONE C PERENNIALS AND SHRUBS
1" = 20'-0"

MATERIALS LEGEND NOT ALL MATERIALS USED ON SHEET

- CONCRETE PROPOSED TYPE 1 (Plain concrete made with medium gray cement)
- CONCRETE PROPOSED TYPE 2 (Cemstone Black Ice)
- CONCRETE PROPOSED TYPE 3 (Cemstone Split Rock)
- ARTIFICIAL TURF GRASS
- SEED TYPE 1 (TURF GRASS)
- PAVER TYPE 1
- PAVER TYPE 2
- WOOD DECKING
- ROCK MULCH TYPE 1
- ROCK MULCH TYPE 2
- HARDWOOD MULCH
- FLAGSTONE

LAYOUT LEGEND

- STEEL EDGING
- ## / #### SECTION DETAIL KEY
- ## KEYNOTE - REFER TO KEYNOTE TABLE

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH
23	WATER REUSE SYSTEM

PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tricanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

0' 10' 20' 40' 80'

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651.340.8568

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
07/22/21

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

DC DRAWN BY
RLH CHECKED BY

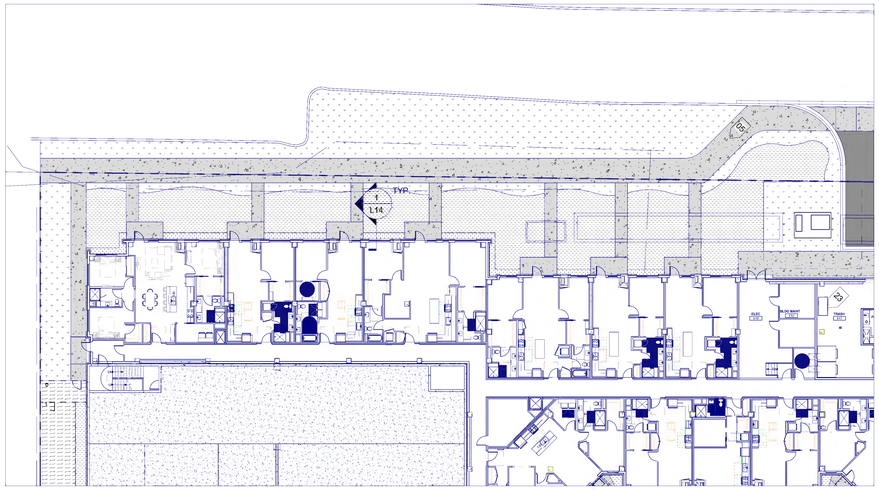
KEY PLAN

MARLOWE OPUS STATION

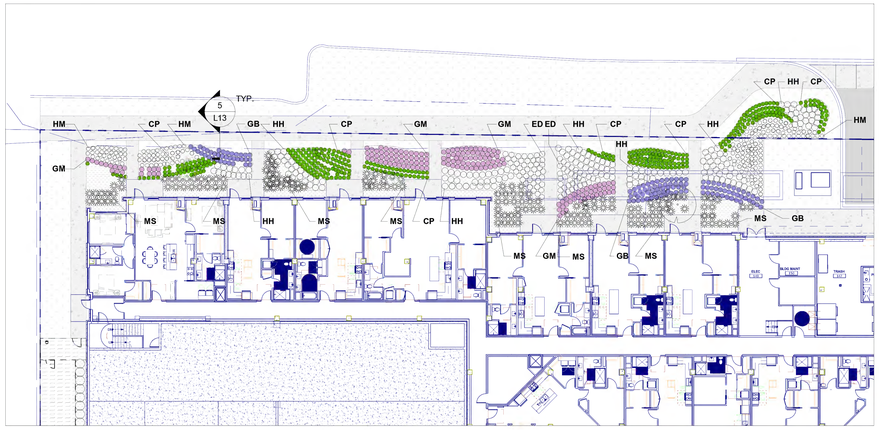
ZONE C LANDSCAPE PLANS

L5

3/10/2023 12:03:29 PM



1 ZONE D LAYOUT/MATERIALS
1" = 20'-0"



2 ZONE D PERENNIALS AND SHRUBS
1" = 20'-0"

3 ZONE D TREES
1" = 20'-0"

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH
23	WATER REUSE SYSTEM

MATERIALS LEGEND NOT ALL MATERIALS USED ON SHEET

- CONCRETE PROPOSED TYPE 1 (Plain concrete made with medium gray cement)
- CONCRETE PROPOSED TYPE 2 (Cemstone Black Ice)
- CONCRETE PROPOSED TYPE 3 (Cemstone Split Rock)
- ARTIFICIAL TURF GRASS
- SEED TYPE 1 (TURF GRASS)
- PAVER TYPE 1
- PAVER TYPE 2
- WOOD DECKING
- ROCK MULCH TYPE 1
- ROCK MULCH TYPE 2
- HARDWOOD MULCH
- FLAGSTONE

LAYOUT LEGEND

- STEEL EDGING
- ## / ##### SECTION DETAIL KEY
- ## KEYNOTE - REFER TO KEYNOTE TABLE

PLANT SCHEDULE (NOT ALL PLANTS SHOWN ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntoni'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

0' 10' 20' 40' 80'

3/10/2023 12:04:10 PM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
11/01/22

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

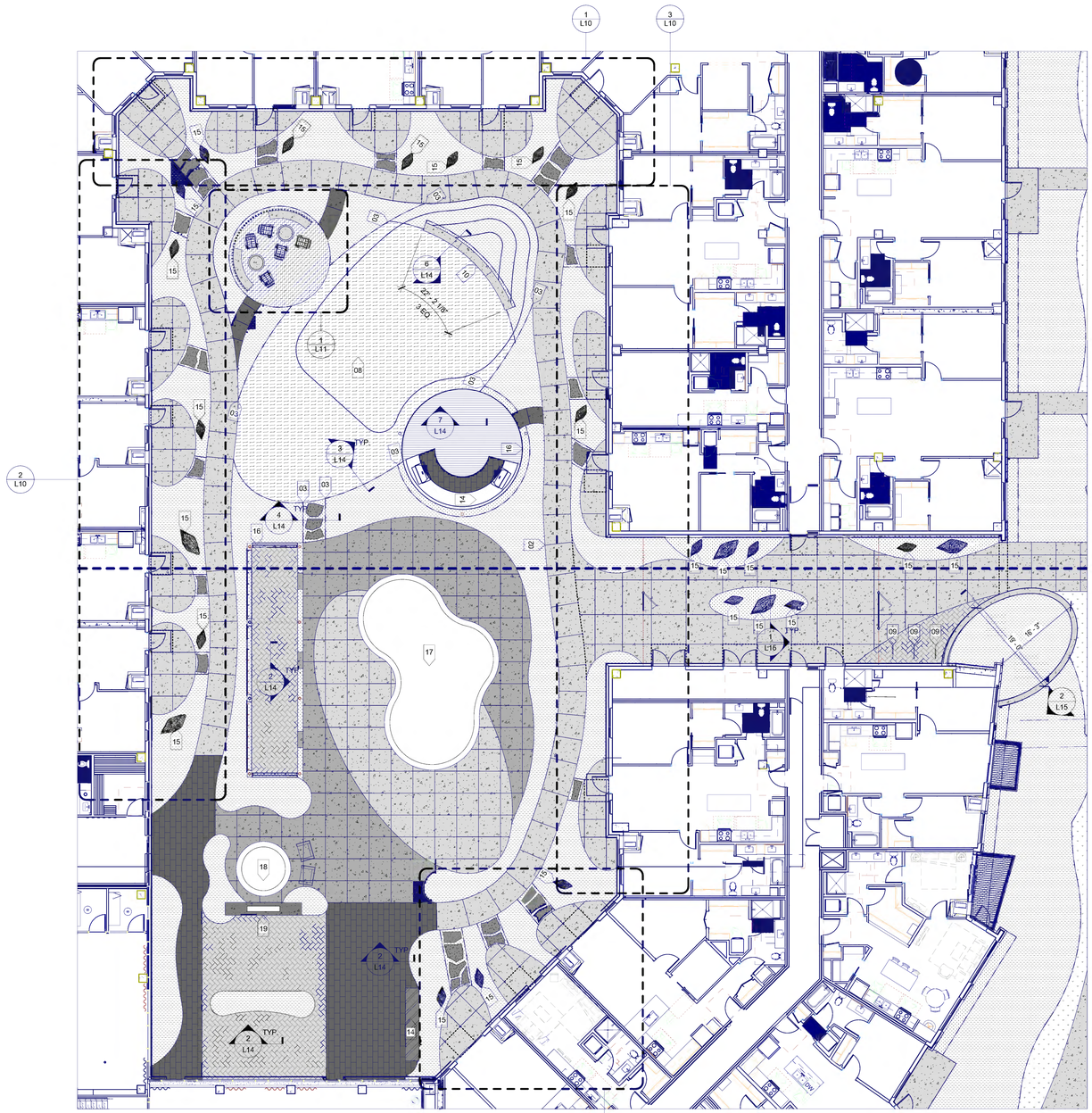
Author DRAWN BY Checker CHECKED BY

KEY PLAN

MARLOWE OPUS STATION

ZONE D LANDSCAPE PLANS

L6



1 ZONE E LAYOUT/MATERIALS
1" = 10'-0"

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH
23	WATER REUSE SYSTEM

LAYOUT LEGEND

- STEEL EDGING
- ## / #### — SECTION DETAIL KEY
- ## — KEYNOTE - REFER TO KEYNOTE TABLE

MATERIALS LEGEND NOT ALL MATERIALS USED ON SHEET

- CONCRETE PROPOSED TYPE 1 (Plain concrete made with medium gray cement)
- CONCRETE PROPOSED TYPE 2 (Cemstone Black Ice)
- CONCRETE PROPOSED TYPE 3 (Cemstone Split Rock)
- ARTIFICIAL TURF GRASS
- SEED TYPE 1 (TURF GRASS)
- PAVER TYPE 1
- PAVER TYPE 2
- WOOD DECKING
- ROCK MULCH TYPE 1
- ROCK MULCH TYPE 2
- HARDWOOD MULCH
- FLAGSTONE

0' 5' 10' 20' 40'

3/10/2023 12:04:45 PM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651.340.8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
11/01/22

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

Author
DRAWN BY

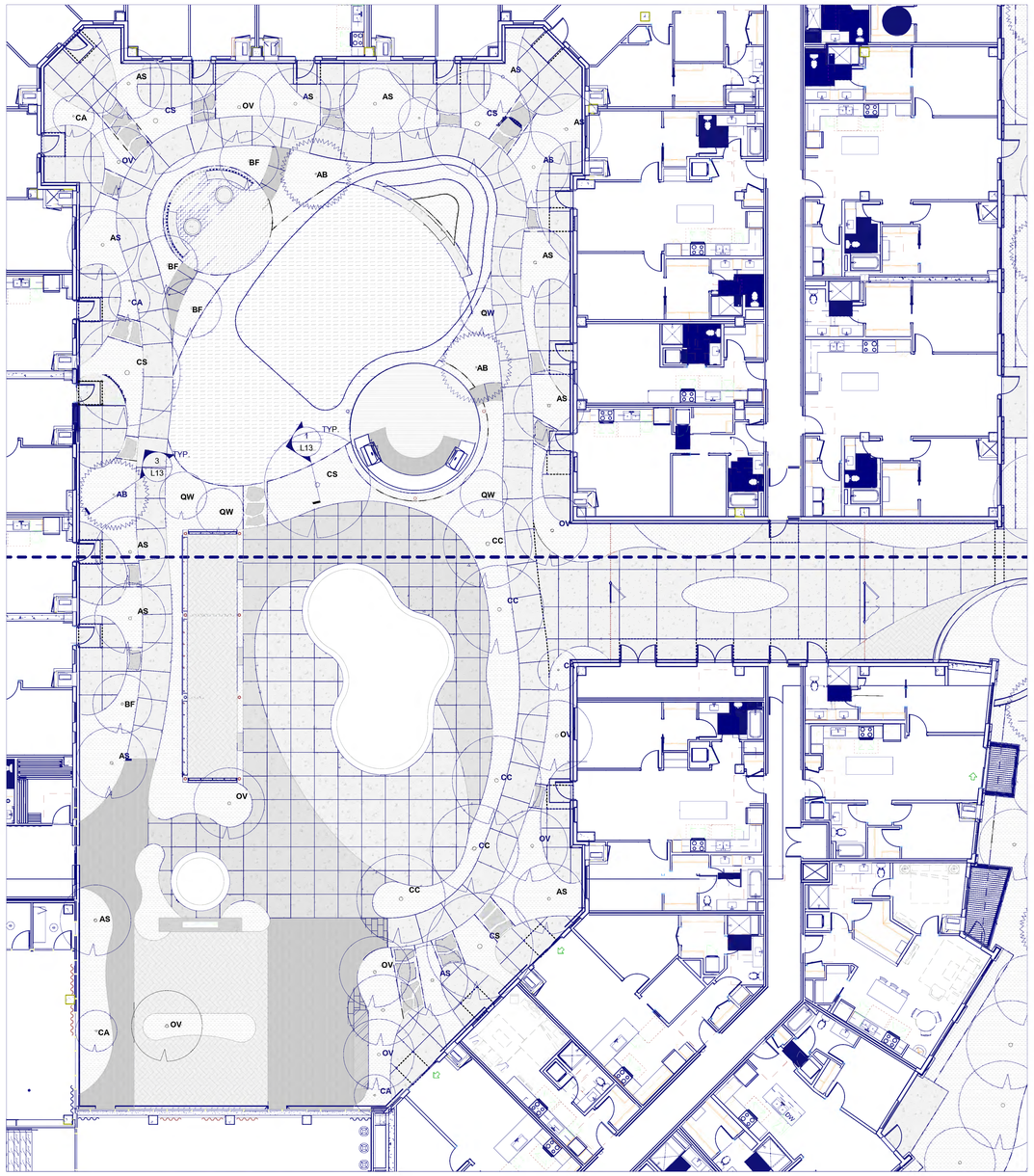
Checker
CHECKED BY

KEY PLAN

MARLOWE OPUS STATION

ZONE E LANDSCAPE PLANS

L7



1 ZONE E TREES
1" = 10'-0"

PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

0' 5' 10' 20' 40'

3/10/2023 12:05:03 PM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8068

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
12/01/22

REVISIONS:
No. Description Date

NA
PROJECT NUMBER

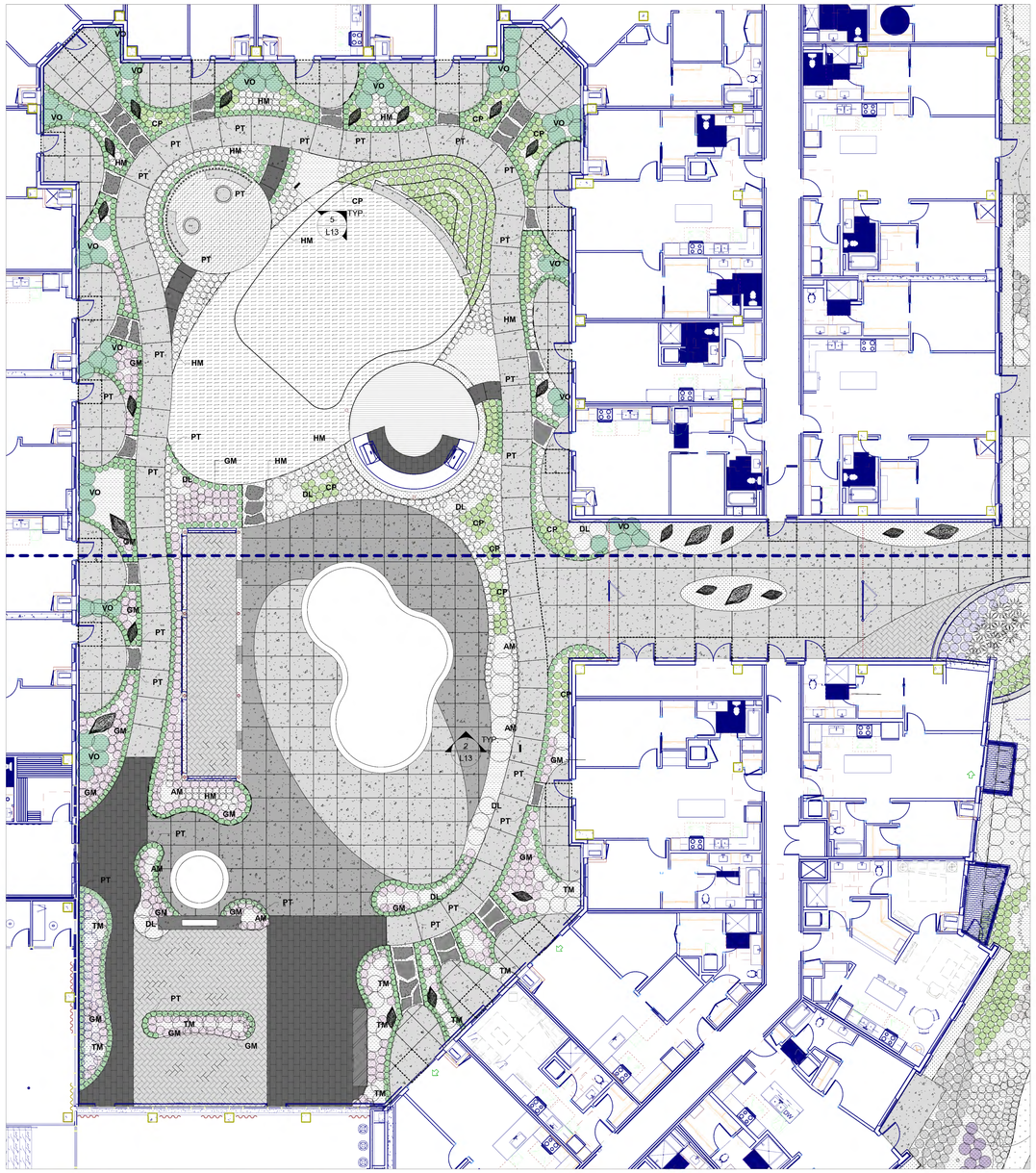
Author DRAWN BY Checker CHECKED BY

KEY PLAN

MARLOWE OPUS STATION

ZONE E LANDSCAPE PLANS

L8



1 ZONE E PERENNIALS AND SHRUBS
1" = 10'-0"

PLANT SCHEDULE (NOT ALL PLANTS SHOWN ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

3/10/2023 12:06:14 PM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
02/27/23

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

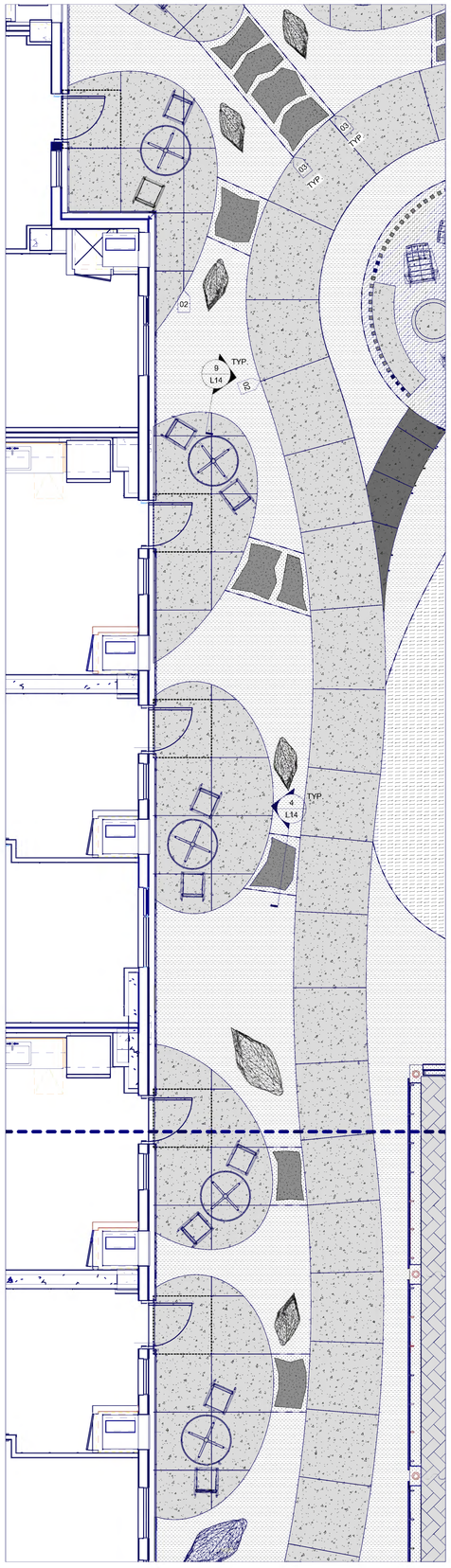
Author DRAWN BY Checker CHECKED BY

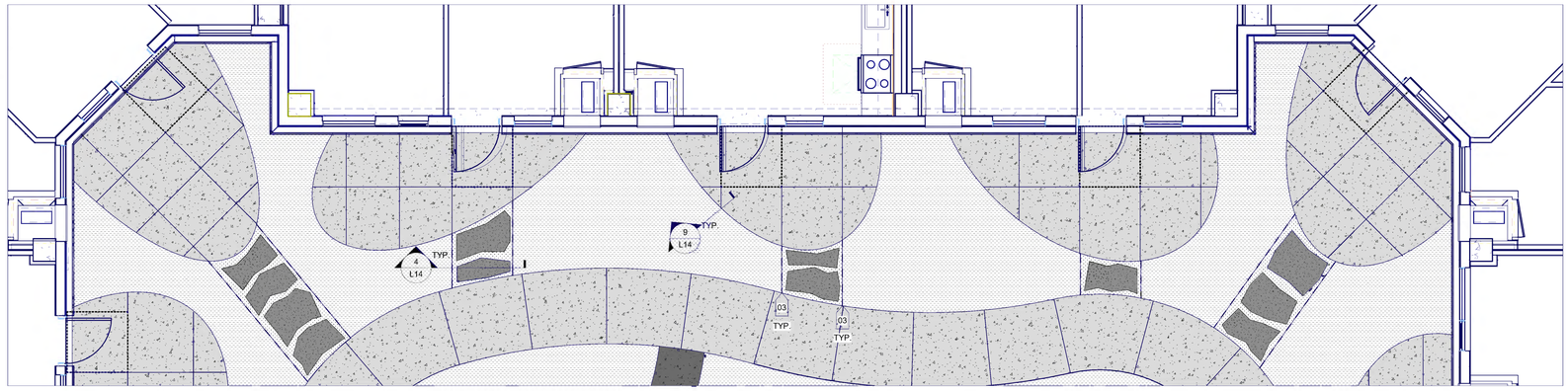
KEY PLAN

MARLOWE OPUS STATION

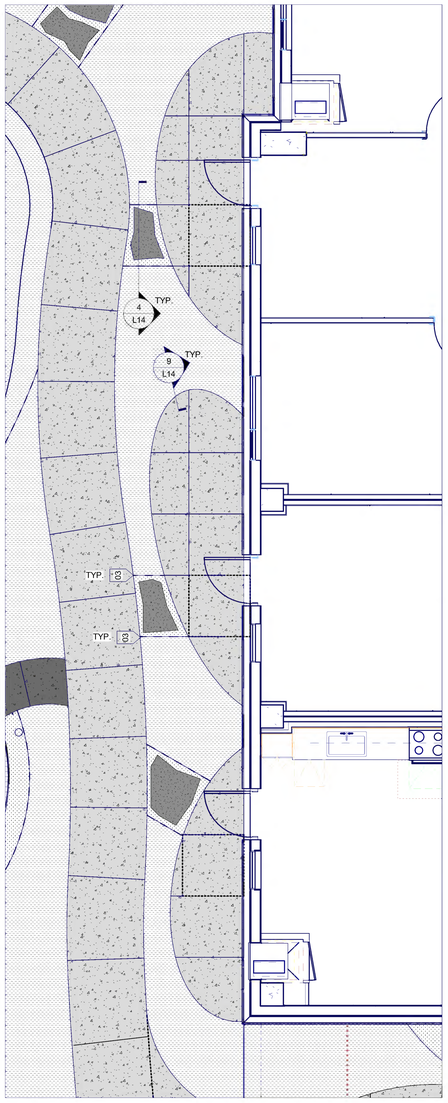
ZONE E LANDSCAPE PLANS

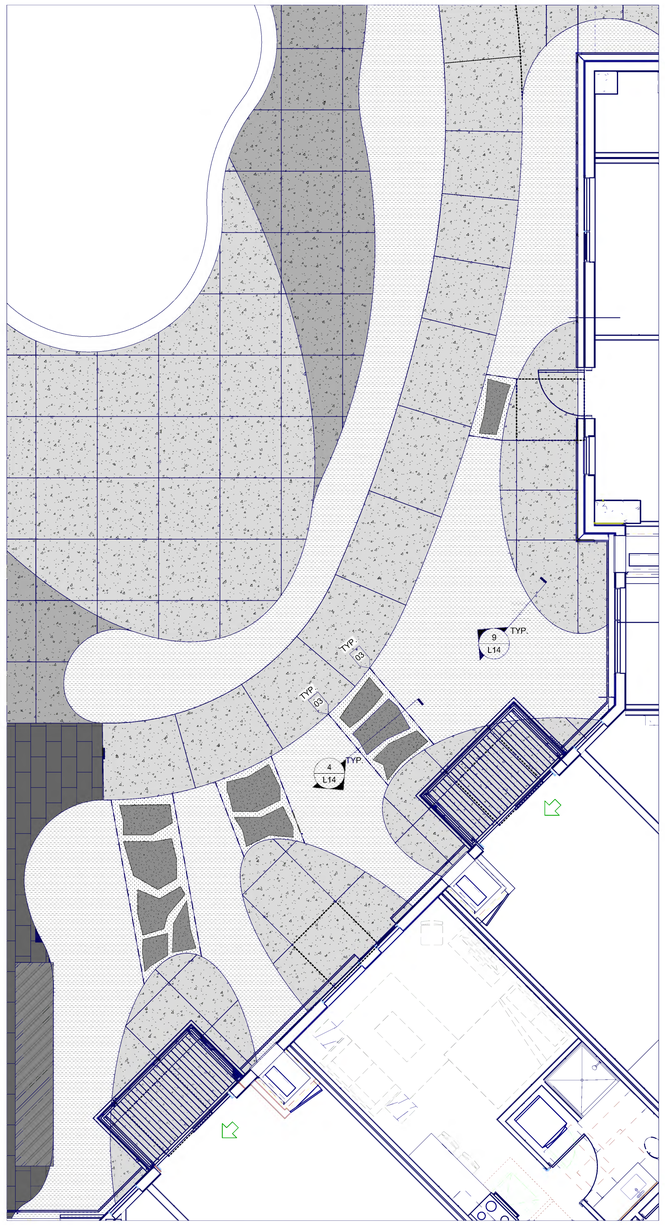
L9





1 WALK OUT ENLARGEMENT NORTH
1/4" = 1'-0"





2 WALK OUT ENLARGEMENT WEST
1/4" = 1'-0"

3 WALK OUT ENLARGEMENT EAST
1/4" = 1'-0"

4 WALK OUT ENLARGEMENT SOUTHWEST
1/4" = 1'-0"

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH

LAYOUT LEGEND

— — — STEEL EDGING

/ #### SECTION DETAIL KEY

KEYNOTE - REFER TO KEYNOTE TABLE

3/6/2023 12:47:01 AM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
01/30/23

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

Author
DRAWN BY

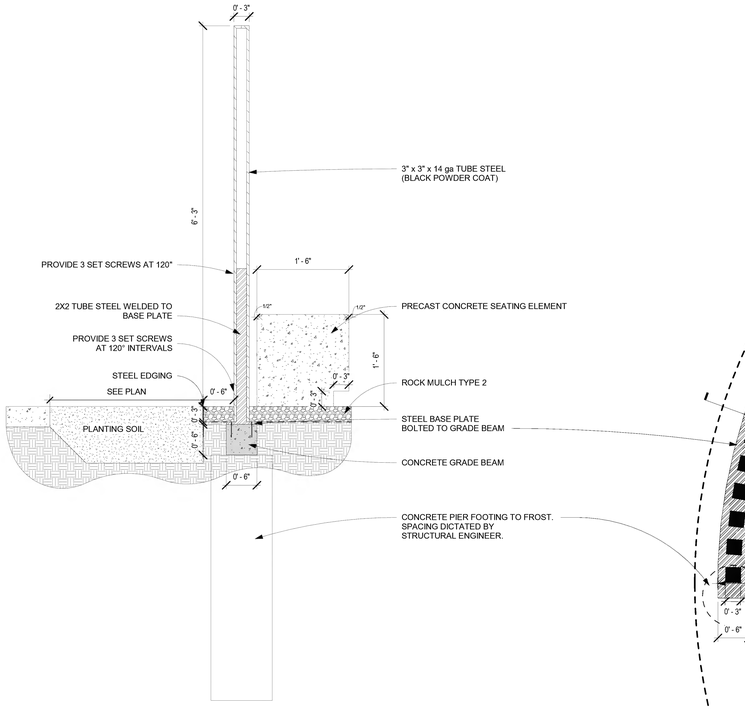
Checker
CHECKED BY

KEY PLAN

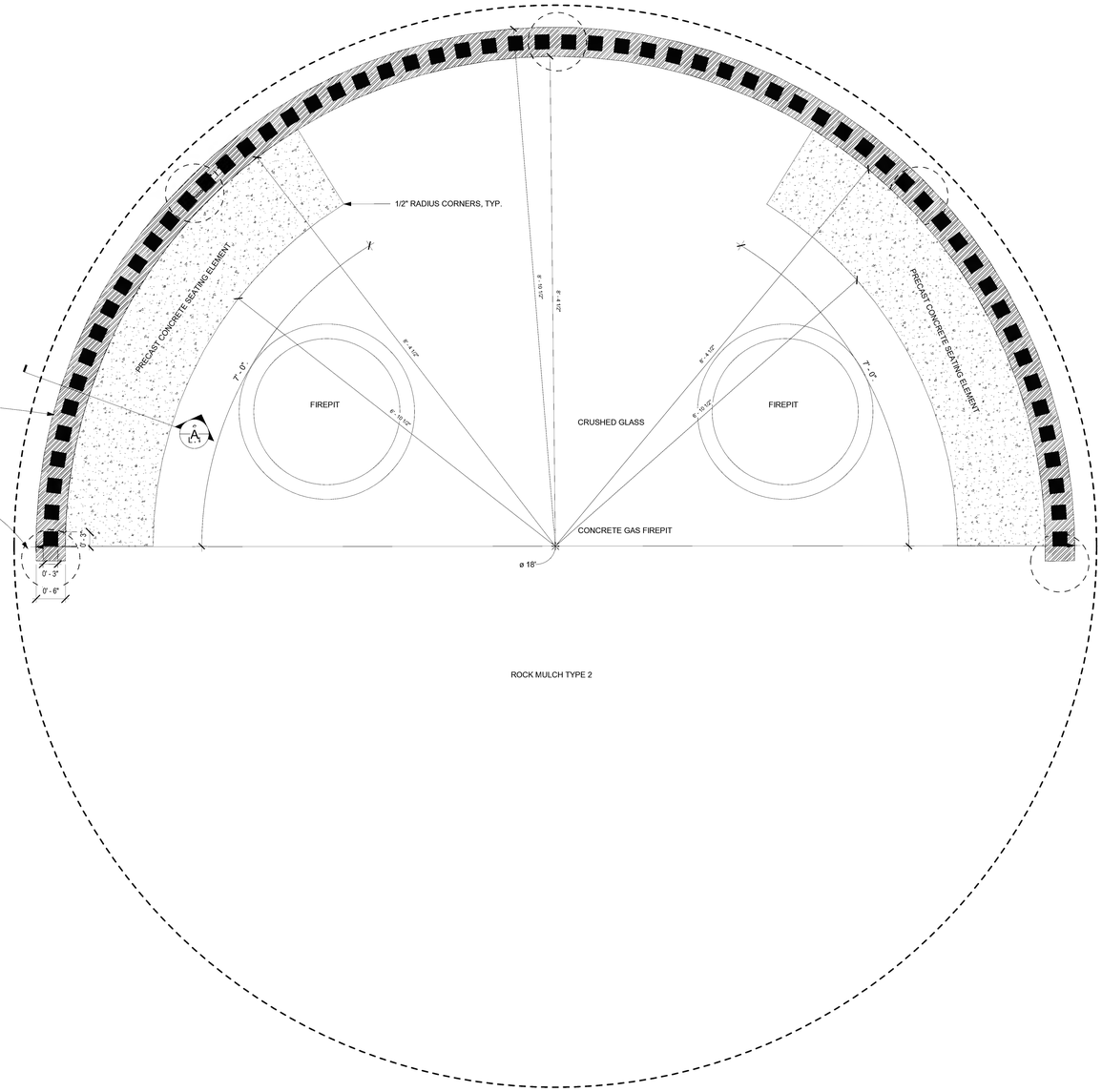
MARLOWE OPUS STATION

ZONE E ENLARGEMENT PLANS

L10



SECTION A



1 FIREPIT NORTH
1" = 1'-0"

3/6/2023 12:47:27 AM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS
LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
02/28/23

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

Author
DRAWN BY

Checker
CHECKED BY

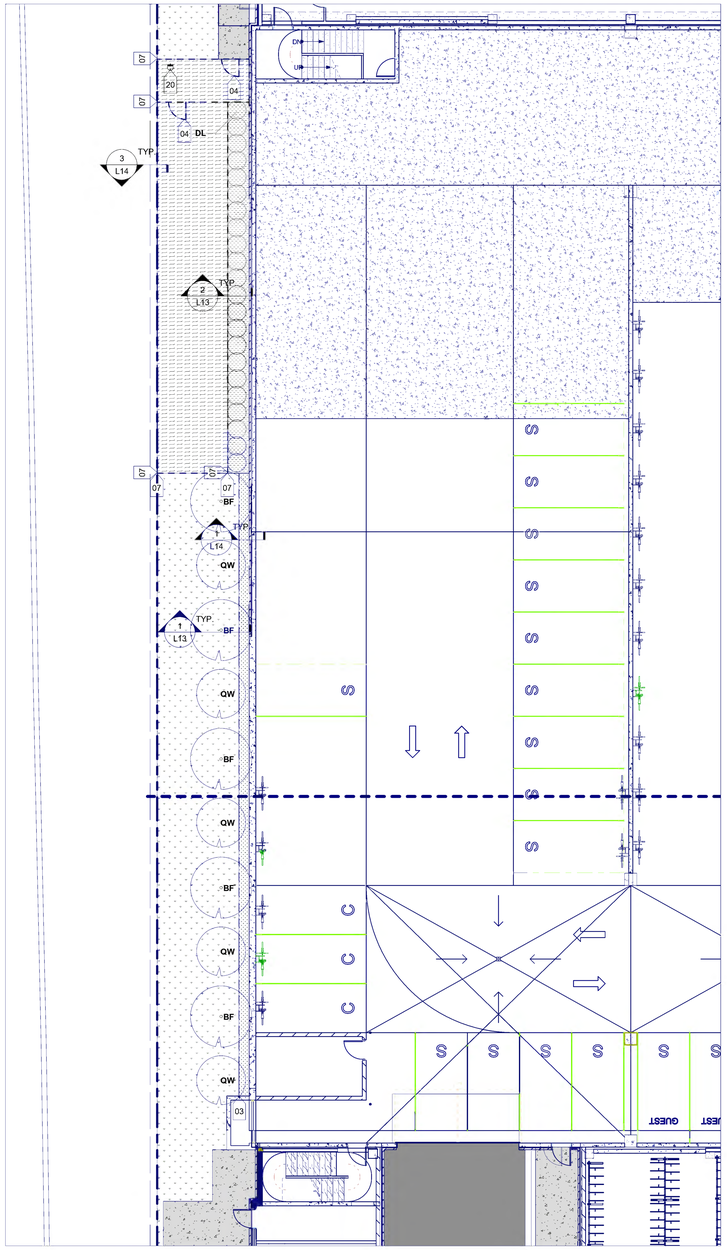
KEY PLAN

MARLOWE OPUS STATION

ZONE E ENLARGEMENT PLANS

L11

MARLOWE
OPUS STATION
MINNETONKA, MN



1 ZONE F LAYOUT/MATERIALS
1" = 10'-0"

KEYNOTES (NOT ALL KEYNOTES ON SHEET)

KEY	CONTENT
01	BOLLARD
02	SAW CUT JOINT
03	STEEL EDGING - BLACK
04	FENCE - TYPE 1 GATE
05	PEDESTRIAN WALKWAY - CONCRETE
07	FENCE - TYPE 1
08	PLAY LAWN - ARTIFICIAL TURF GRASS
09	BIKE RACK
10	PRECAST CONCRETE BENCH
14	GRILL STATION - SEE ARCHITECTURE
15	BOULDER TYPE 1
16	PERGOLA - SEE ARCHITECTURE
17	POOL - SEE ARCHITECTURE
18	SPA - SEE ARCHITECTURE
19	FIREPLACE - SEE ARCHITECTURE
20	PET WASTE STATION
21	OPUS CAMPUS SIGNAGE
22	FORMS AND SURFACES FLOAT BENCH

LAYOUT LEGEND

STEEL EDGING

SECTION DETAIL KEY

KEYNOTE - REFER TO KEYNOTE TABLE

MATERIALS LEGEND NOT ALL MATERIALS USED ON SHEET

- CONCRETE PROPOSED TYPE 1 (Plain concrete made with medium gray cement)
- CONCRETE PROPOSED TYPE 2 (Cemstone Black Ice)
- CONCRETE PROPOSED TYPE 3 (Cemstone Split Rock)
- ARTIFICIAL TURF GRASS
- SEED TYPE 1 (TURF GRASS)
- PAVER TYPE 1
- PAVER TYPE 2
- WOOD DECKING
- ROCK MULCH TYPE 1
- ROCK MULCH TYPE 2
- HARDWOOD MULCH
- FLAGSTONE

PLANT SCHEDULE (NOT ALL PLANTS SHOWN ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
167	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
485						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1013	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
135	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
509	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
168	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
825	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
216	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
193	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5650						
OVERSTORY TREES						
14	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
12	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
52						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
9	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
9						

0' 5' 10' 20' 40'

esg
ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8566

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
11/30/22

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

Author
DRAWN BY

Checker
CHECKED BY

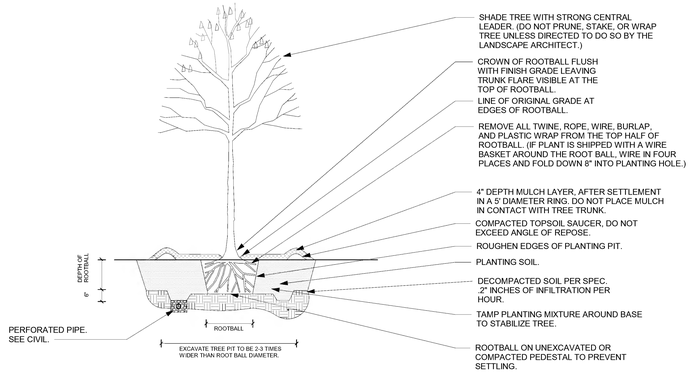
KEY PLAN

MARLOWE OPUS STATION

ZONE F LANDSCAPE PLANS

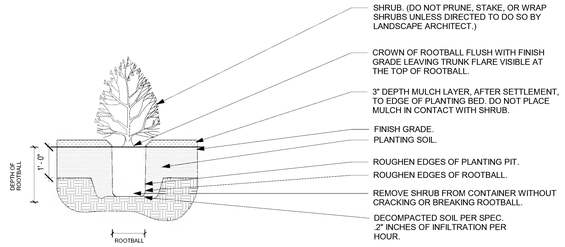
L12

3/6/2023 12:48:48 AM



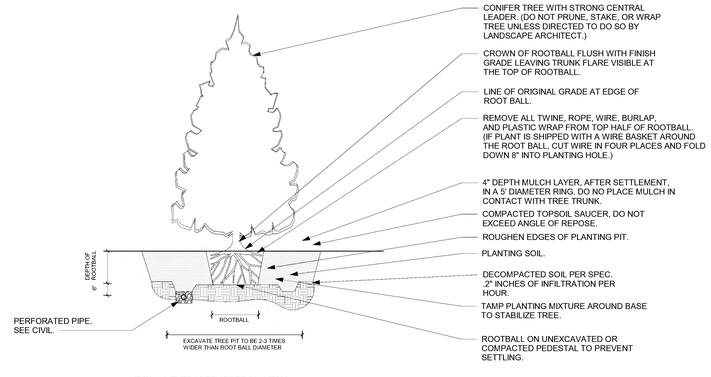
TYPICAL TREE PLANTING

1 DECIDUOUS TREE PLANTING DETAIL
1/2" = 1'-0"



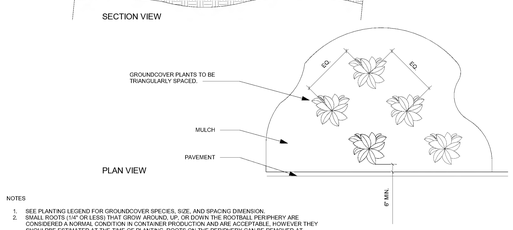
TYPICAL SHRUB PLANTING

2 SHRUB PLANTING DETAIL
1/2" = 1'-0"



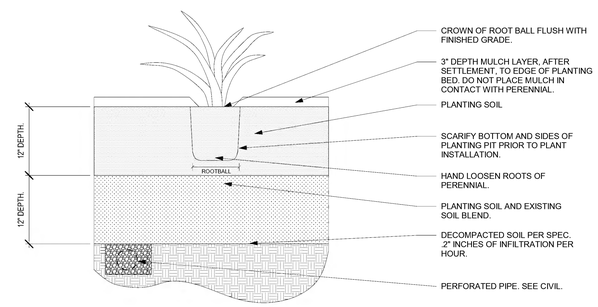
TYPICAL EVERGREEN TREE PLANTING

3 CONIFEROUS TREE PLANTING DETAIL
1/2" = 1'-0"



GROUNDCOVER

4 GROUNDCOVER PLANTING DETAIL
1/2" = 1'-0"



TYPICAL PERENNIAL PLANTING

PERENNIAL ROOT SCARIFY

5 PERENNIAL PLANTING DETAIL
1/2" = 1'-0"

3/6/2023 12:49:20 AM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com
URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8068

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
07/22/21

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

DC
DRAWN BY

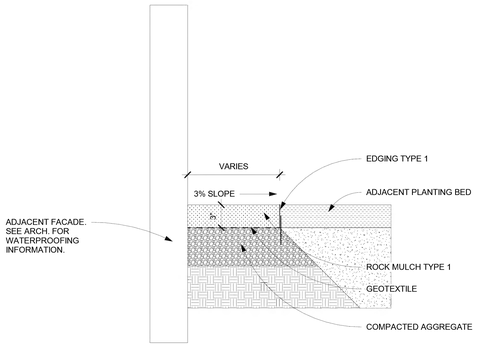
RLH
CHECKED BY

KEY PLAN

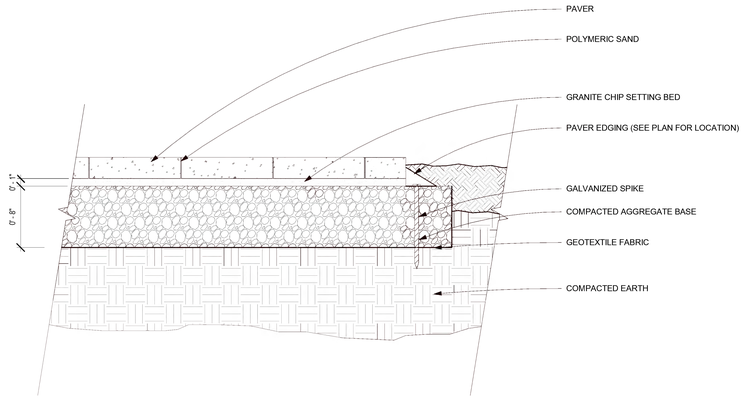
MARLOWE OPUS STATION

PLANTING DETAILS

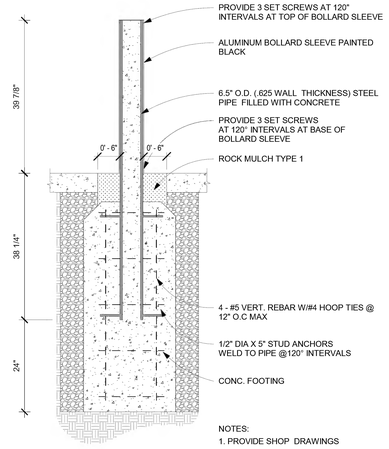
L13



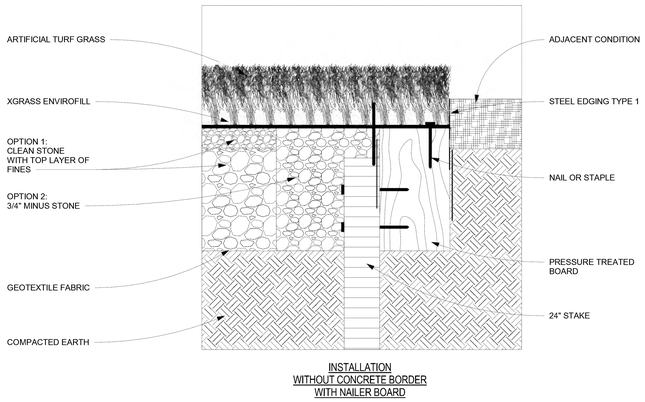
1 MAINTENANCE STRIP DETAIL
1 1/2" = 1'-0"



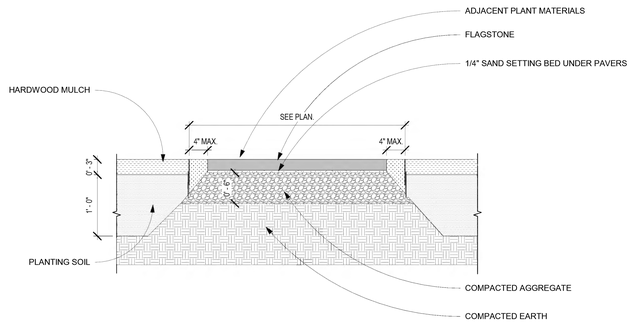
2 PAVER DETAIL
1 1/2" = 1'-0"



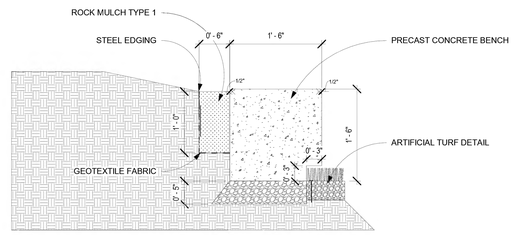
5 BOLLARD
3/4" = 1'-0"



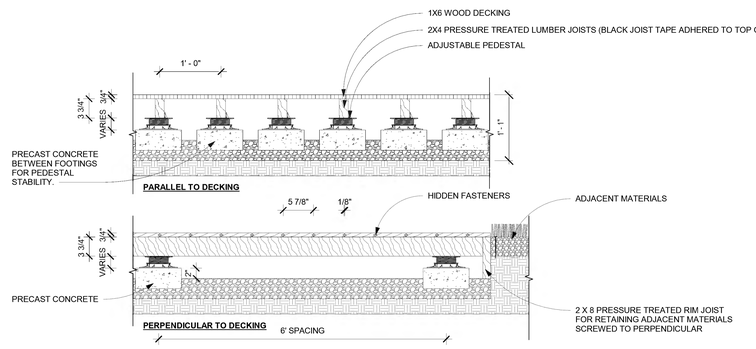
3 ARTIFICIAL TURF GRASS
6" = 1'-0"



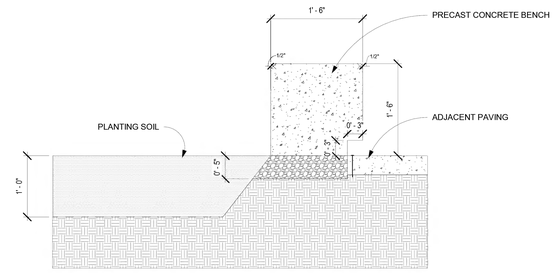
4 FLAGSTONE PAVERS
1" = 1'-0"



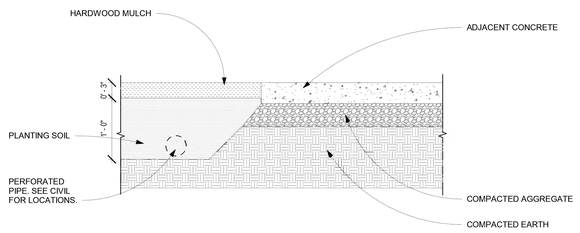
6 PRECAST BENCH - GREEN NORTH
1" = 1'-0"



7 DECK PEDESTAL DETAIL TYP.
1" = 1'-0"



8 PRECAST BENCH - ENTRY
1" = 1'-0"



9 PLANTING BEDS COURTYARD
1" = 1'-0"

3/6/2023 12:49:45 AM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com
URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651.340.8068

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
09/28/21

REVISIONS:
No. Description Date

NA
PROJECT NUMBER

DC
DRAWN BY

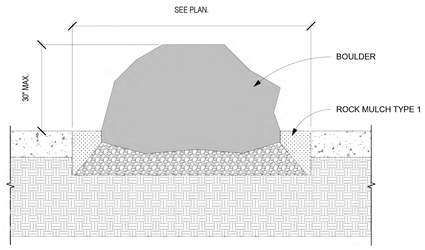
RLH
CHECKED BY

KEY PLAN

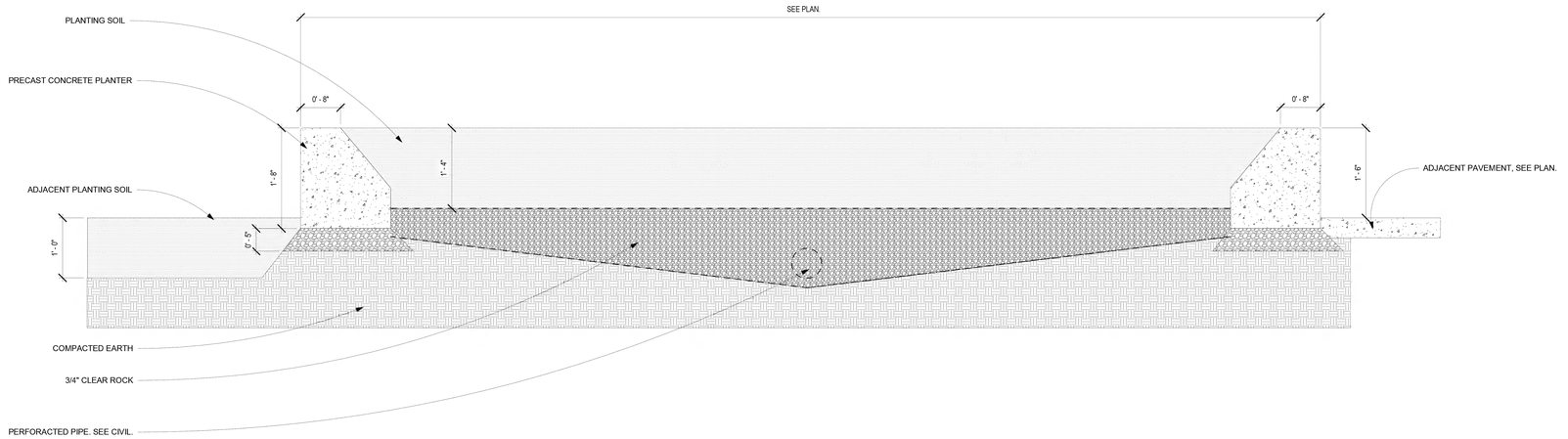
MARLOWE OPUS STATION

DETAILS

L14



1 BOULDER DETAIL
1" = 1'-0"



2 PRECAST PLANTER
1" = 1'-0"

3/6/2023 12:50:43 AM

MARLOWE
OPUS STATION
MINNETONKA, MN

esg
ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

URBAN ECOSYSTEMS LANDSCAPE ARCHITECTS
2560 UNIVERSITY AVE W
ST PAUL, MN 55114
651 340 8068

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

Signature

Typed or Printed Name

License # Date

NOT FOR CONSTRUCTION

ORIGINAL ISSUE:
11/30/22

REVISIONS:

No.	Description	Date

NA
PROJECT NUMBER

Author
DRAWN BY

Checker
CHECKED BY

KEY PLAN

MARLOWE OPUS STATION

DETAILS

L15

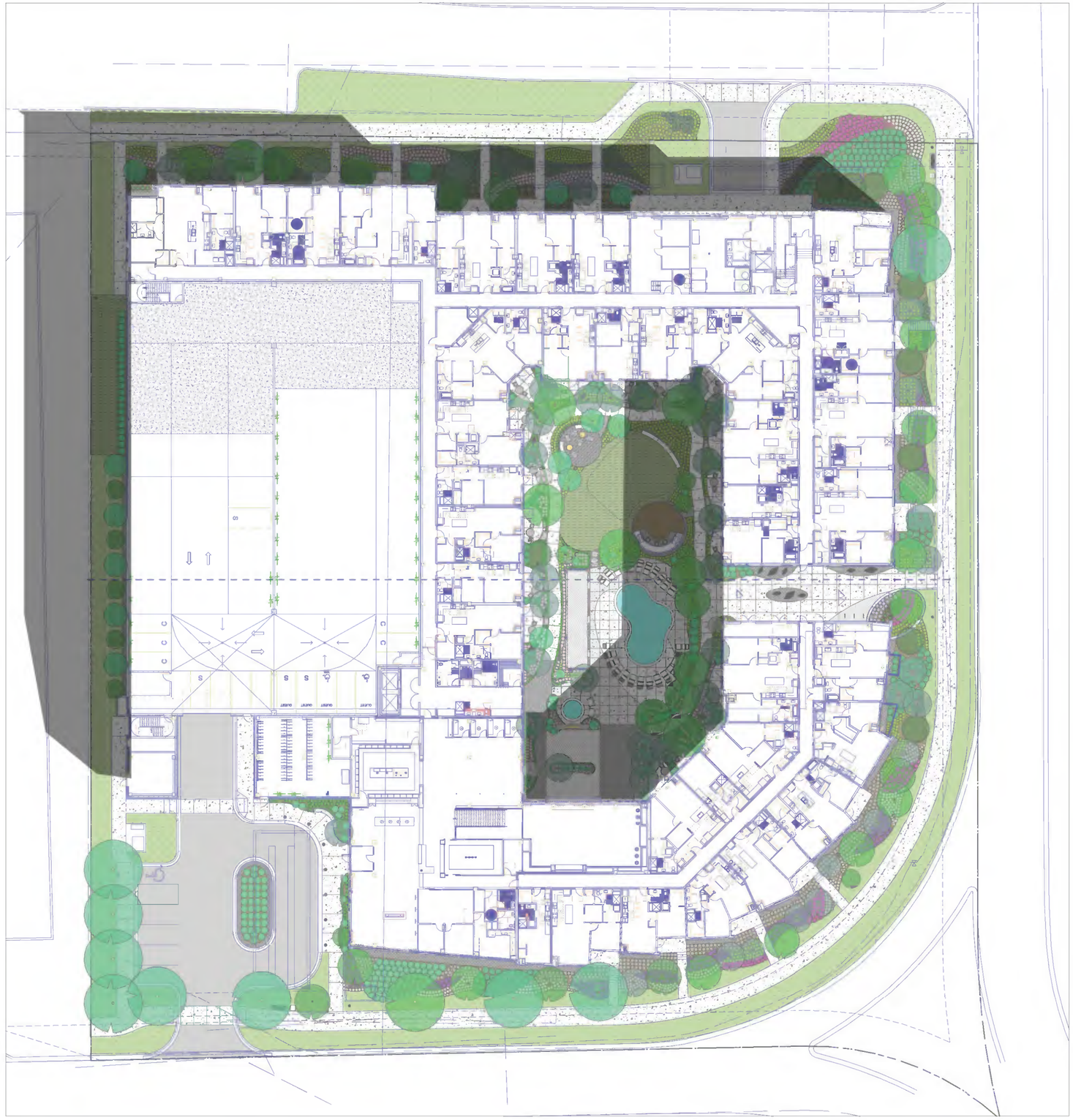
MARLOWE OPUS STATION LANDSCAPE DESIGN

SHADOW STUDIES, PLANT SPECIES, DETAILS

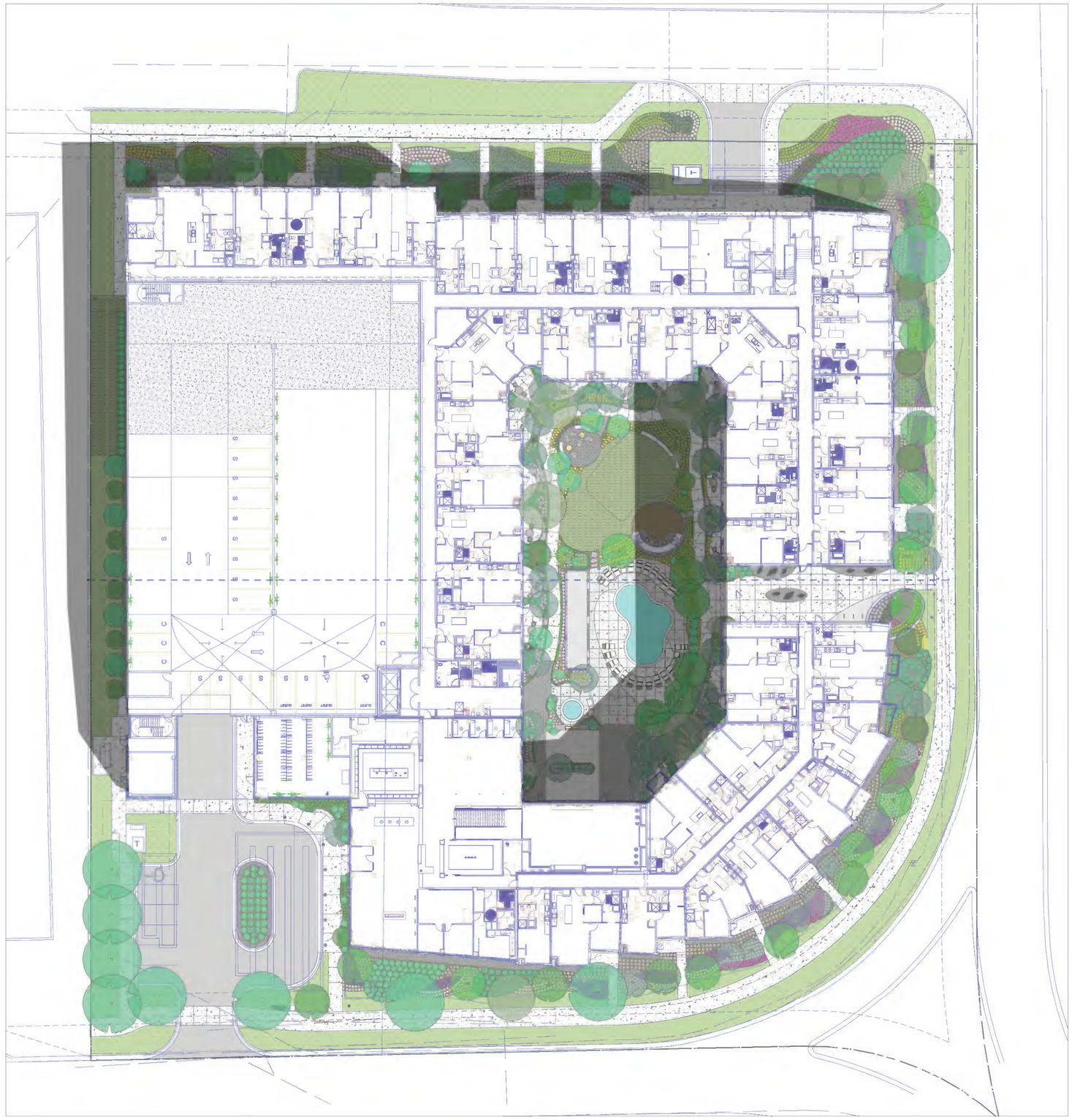
3-10-23

URBAN ECOSYSTEMS
LANDSCAPE ARCHITECTS

SHADOW STUDIES
MAY 1ST 10 AM

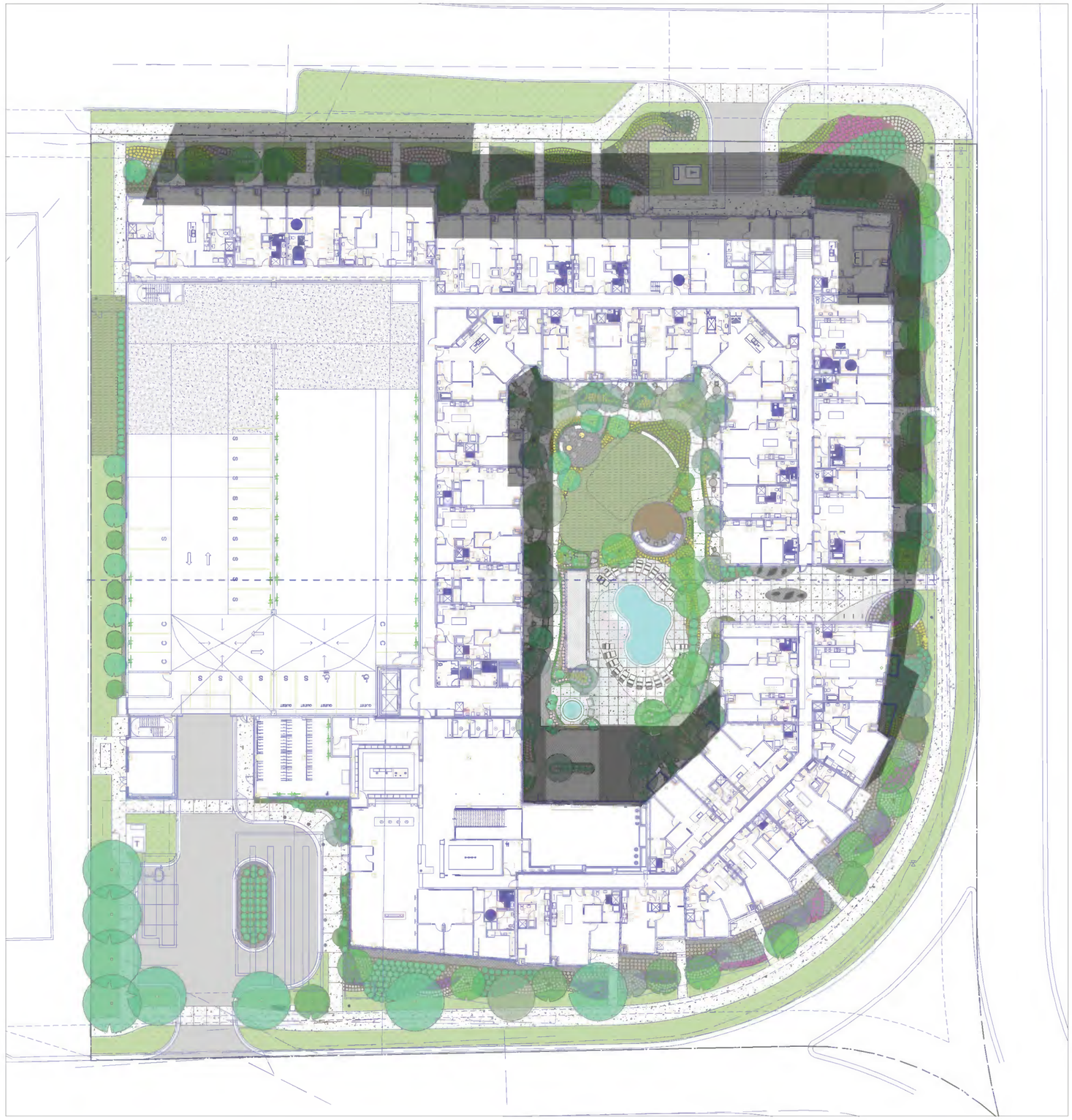


SHADOW STUDIES
JULY 1ST 10 AM



SHADOW STUDIES
SEPT. 1ST 10 AM

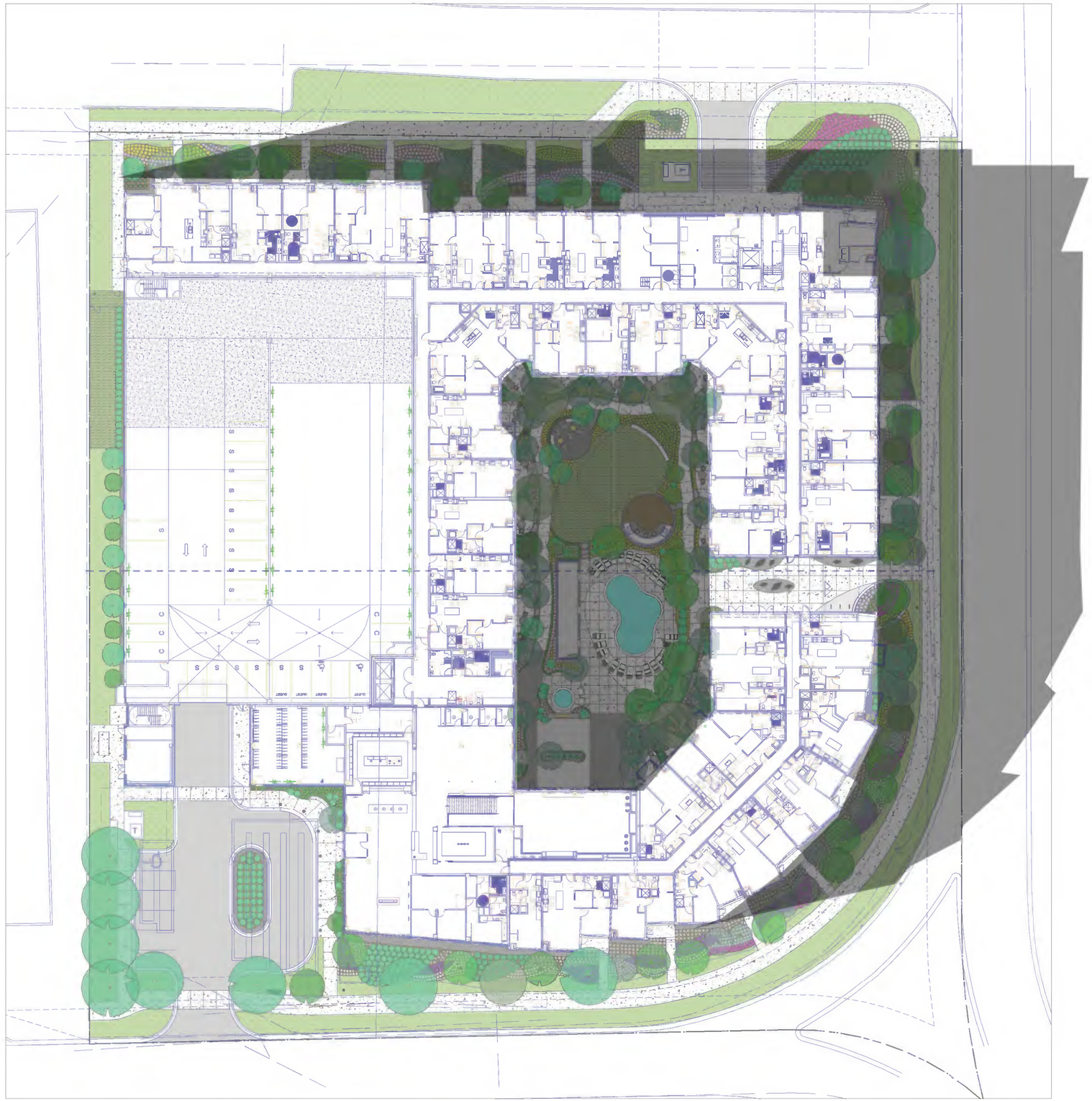
SHADOW STUDIES
MAY. 1ST 1 PM



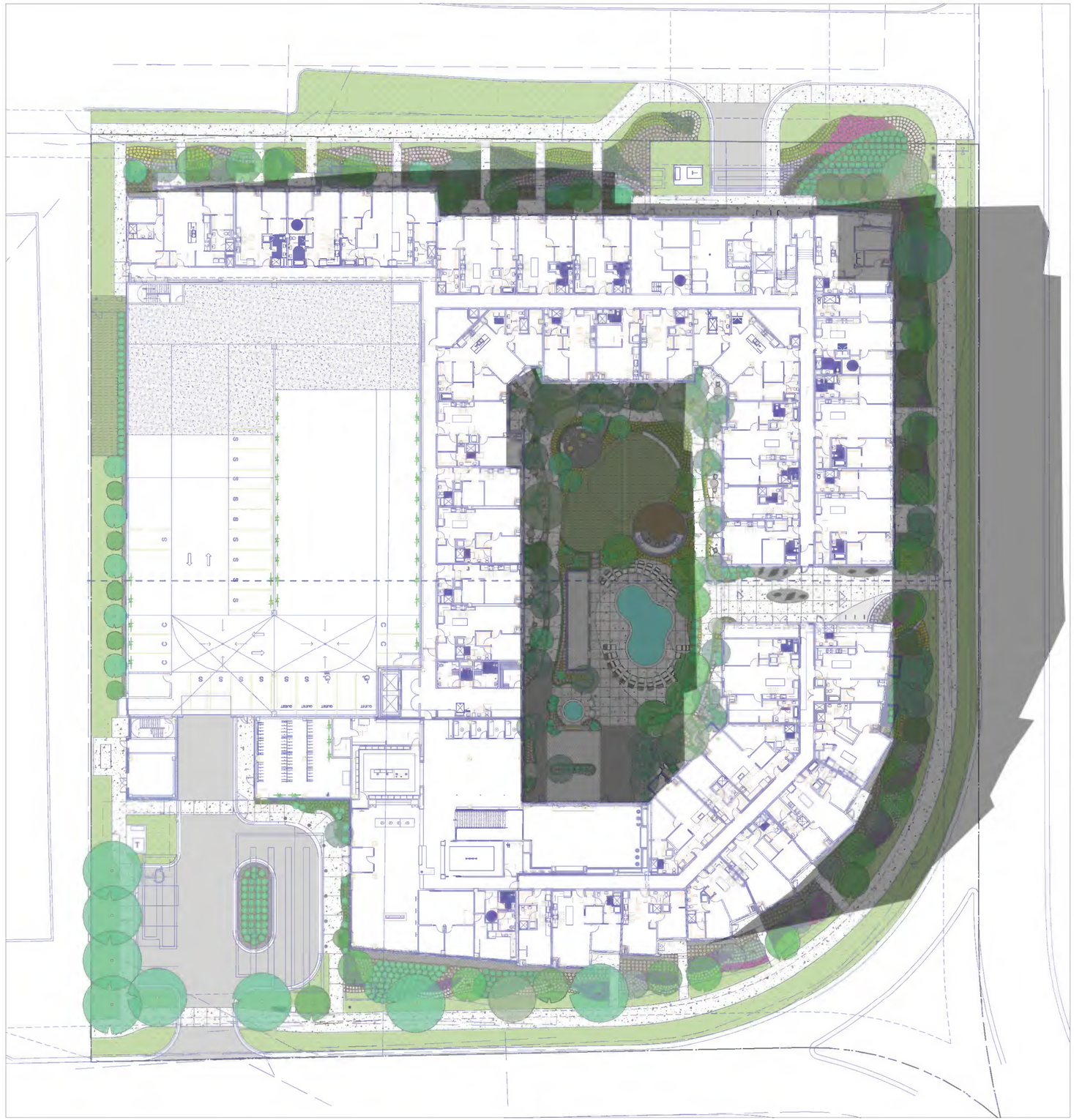
SHADOW STUDIES
JULY 1ST 1 PM

SHADOW STUDIES
SEPT. 1ST 12 PM

SHADOW STUDIES
MAY. 1ST 4 PM



SHADOW STUDIES
JULY 1ST 4 PM



SHADOW STUDIES
SEPT. 1ST 4 PM

SHADOW STUDIES SYNOPSIS

NORTH SITE:
SHADE TOLERANT PLANTS

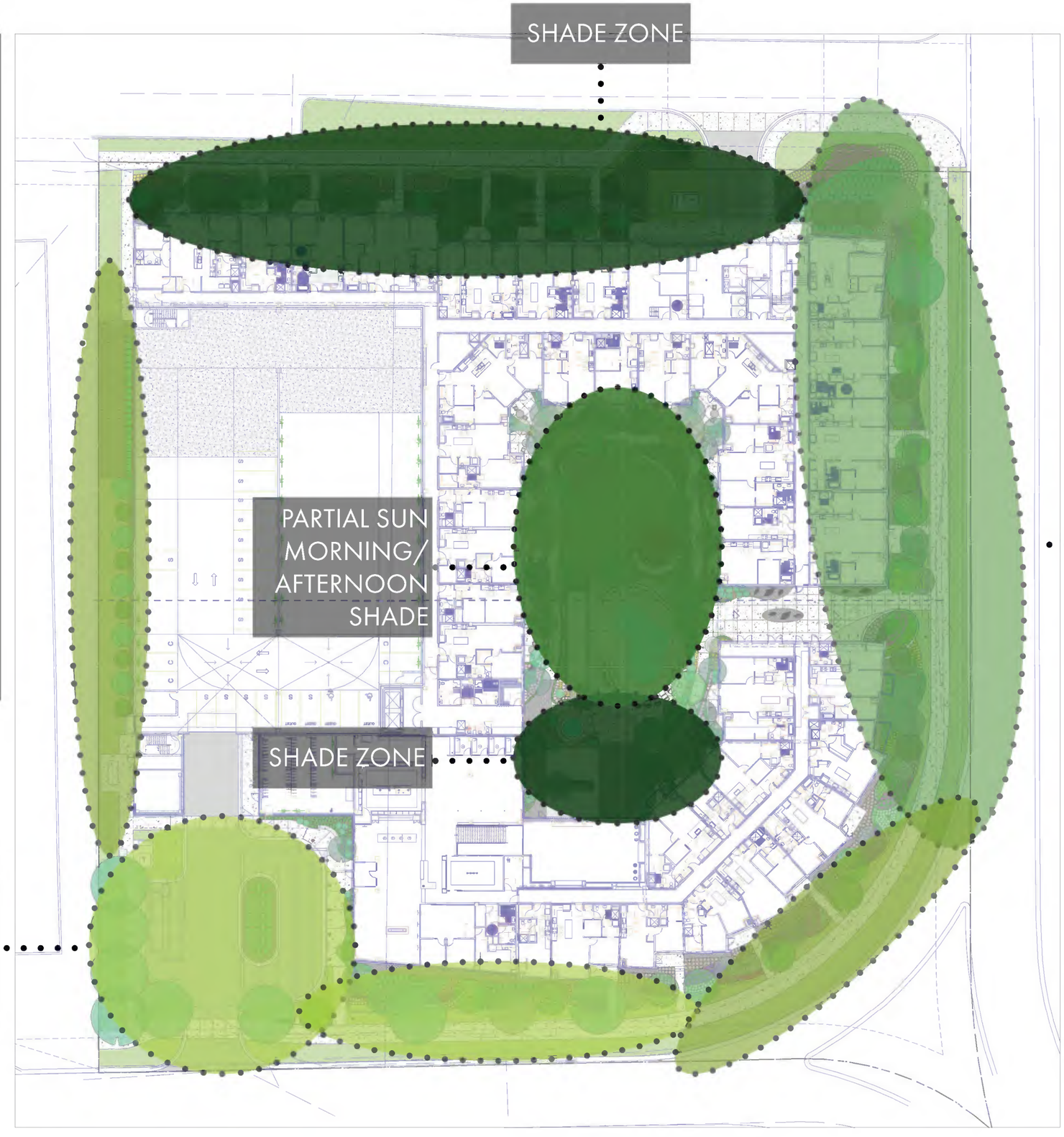
SOUTH SITE:
SUN/PARTIAL SHADE PLANTS

EAST SITE:
PARTIAL SHADE PLANTS

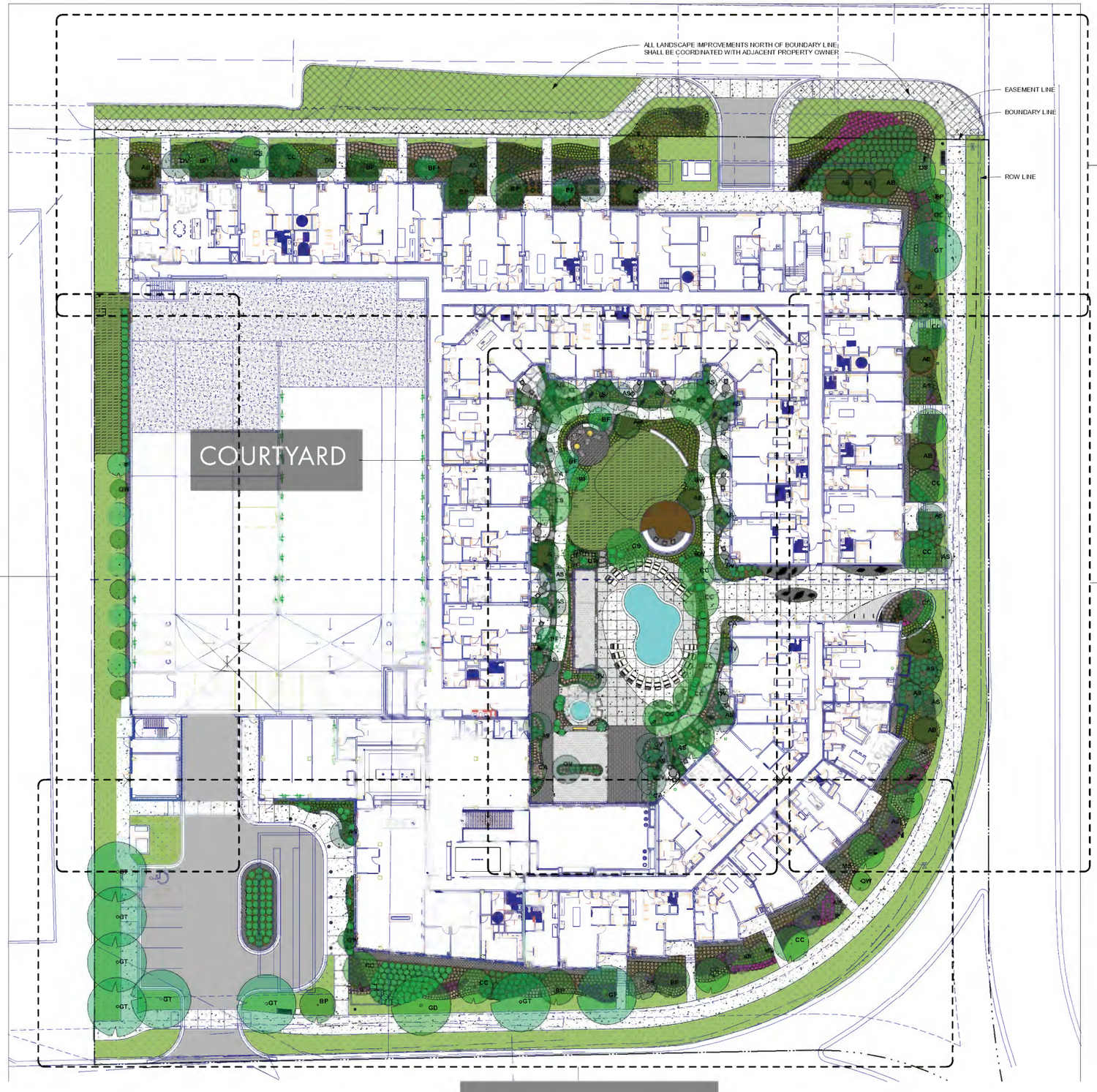
WEST SITE:
SUN/PARTIAL SHADE PLANTS

COURTYARD SOUTH:
SHADE TOLERANT PLANTS

COURTYARD NORTH:
PARTIAL SUN/SHADE PLANTS



OVERALL PLAN BREAKDOWN

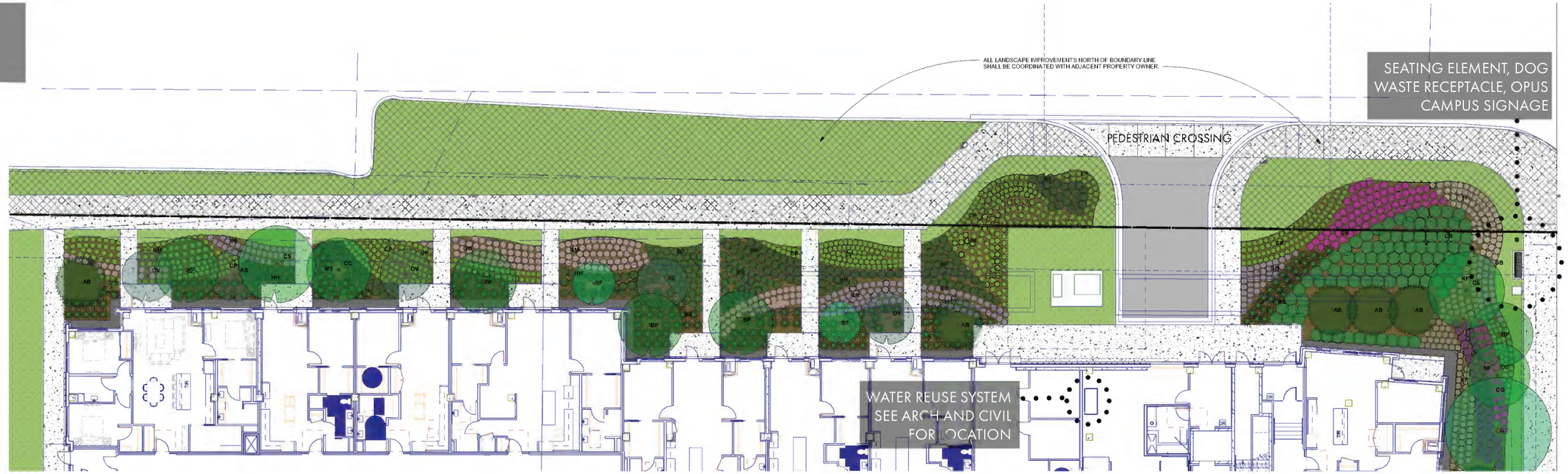


NORTH/NORTHEST LANDSCAPE DESIGN

TREES:
-Betula platyphylla 'Fargo'
DAKOTA PINNACLE BIRCH
(SUN OR SHADE)
-Ostrya virginiana, HOPHORNBEAM
(SUN OR SHADE)
-Cercis canadensis MN Strain,
NORTHERN STRAIN REDBUD
(SUN OR SHADE)
-Betula populiflora 'Whitespire',
WHITESPIRE BIRCH
(SUN OR SHADE)
-Amelanchier x grandiflora 'Autumn Brilliance',
AUTUMN BRILLIANCE SERVICEBERRY
(SUN OR SHADE)
-Abies balsamea, BALSAM FIR
(SUN OR SHADE)
-Gledistia triancanthos 'Skyline',
SKYLINE HONEYLOCUST
(SUN OR SHADE)
-Catalpa speciosa, NORTHERN CATALPA
(SUN OR SHADE)

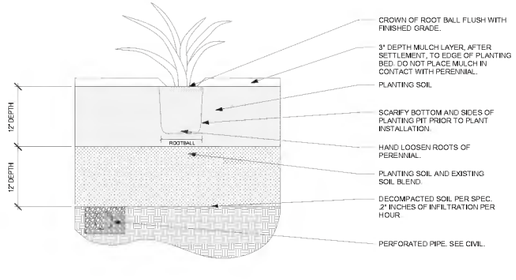
PERENNIALS:
-Carex pennsylvanica,
PENNSYLVANIA SEDGE
(PARTIAL SHADE TO SHADE)
-Eupatorium dubium 'Little Joe',
LITTLE JOE PYEWEED
(PARTIAL SHADE)
-Geranium 'Biokovo',
BIOKOVO GERANIUM
(PARTIAL SHADE TO SHADE)
-Geranium maculatum,
WILD GERANIUM
(PARTIAL SHADE TO SHADE)
-Hosta spp, HOSTA
(PARTIAL SHADE TO SHADE)
-Hakonechloa macra, HAKONE GRASS
(PARTIAL SUN TO SHADE)
-Matteuccia struthiopteris,
OSTRICH FERN
(PARTIAL SUN TO SHADE)
-Calamgrostis acutiflora,
KARL FOERSTER GRASS
(PARTIAL SUN TO FULL SUN)
-Chelone glabra, TURTLEHEAD
(PARTIAL SUN)
-Nepta x faassenii 'Walkers Low', CATMINT
(PARTIAL SHADE TO SUN)

SHRUBS:
Cornus racemosa, GREY DOGWOOD
(PARTIAL SUN TO SHADE)

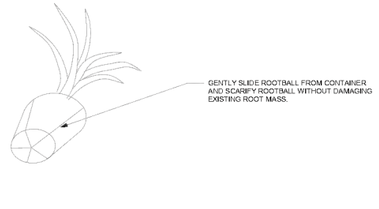


PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

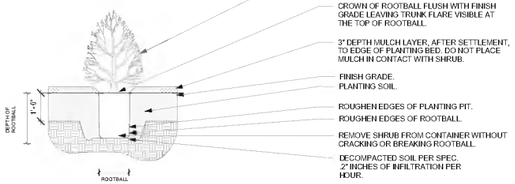
#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Taunfoni'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa specosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gledtsia triacanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	GW	Quercus x warei 'Nadler'	KIMDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						



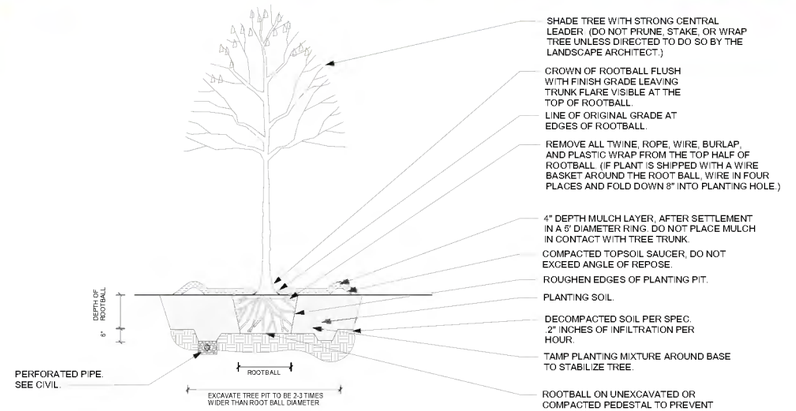
TYPICAL PERENNIAL PLANTING



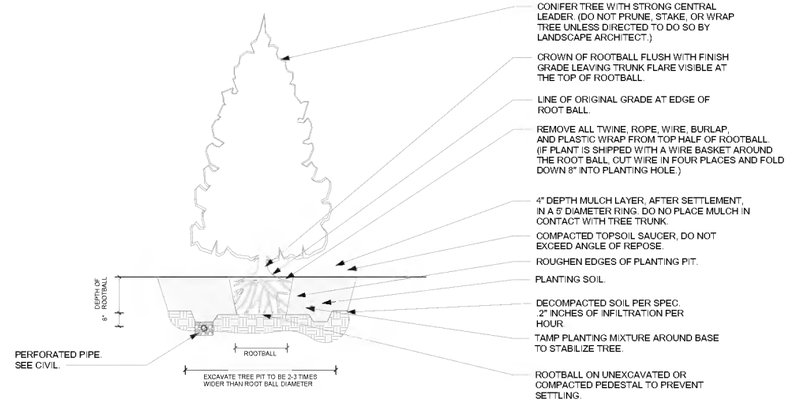
PERENNIAL ROOT SCARIFY



TYPICAL SHRUB PLANTING



TYPICAL TREE PLANTING



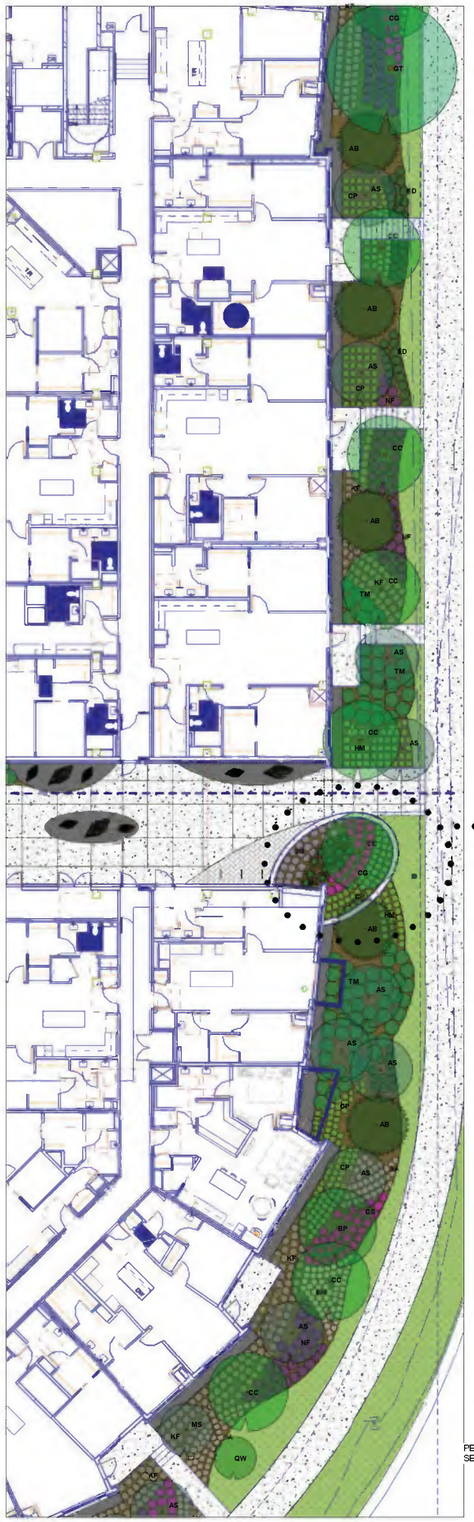
TYPICAL EVERGREEN TREE PLANTING

EAST
LANDSCAPE DESIGN

TREES:
-Betula platyphylla 'Fargo'
DAKOTA PINNACLE BIRCH
(SUN OR SHADE)
-Ostrya virginiana, HOPHORNBEAM
(SUN OR SHADE)
-Cercis canadensis MN Strain,
NORTHERN STRAIN REDBUD
(SUN OR SHADE)
-Betula populiflora 'Whitespire',
WHITESPIRE BIRCH
(SUN OR SHADE)
-Amelanchier x grandiflora 'Autumn Brilliance',
AUTUMN BRILLIANCE SERVICEBERRY
(SUN OR SHADE)
-Abies balsamea, BALSAM FIR
(SUN OR SHADE)
-Gledistia triancanthos 'Skyline',
SKYLINE HONEYLOCUST
(SUN OR SHADE)
-Malus spp. 'Spring Snow', SPRING SNOW
CRABAPPLE
(SUN)

PERENNIALS:
-Carex pennsylvanica,
PENNSYLVANIA SEDGE
(PARTIAL SHADE TO SHADE)
-Eupatorium dubium 'Little Joe',
LITTLE JOE PYEWEED
(PARTIAL SHADE)
-Geranium 'Biokovo',
BIOKOVO GERANIUM
(PARTIAL SHADE TO SHADE)
-Matteuccia struthiopteris,
OSTRICH FERN
(PARTIAL SUN TO SHADE)
-Hakonechloa macra, HAKONE GRASS
(PARTIAL SUN TO SHADE)
-Calamgrostis acutiflora,
KARL FOERSTER GRASS
(PARTIAL SUN TO FULL SUN)
-Chelone glabra, TURTLEHEAD
(PARTIAL SUN)
-Nepta x faassenii 'Walkers Low', CATMINT
(PARTIAL SHADE TO SUN)
-Hylotelephium spectabile, AUTUMN JOY
SEDUM
(SUN TO PARTIAL SUN)

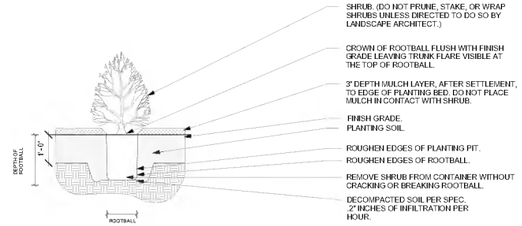
SHRUBS:
Taxus x media 'Tauntonii', TAUNTON YEW
(SUN TO SHADE)



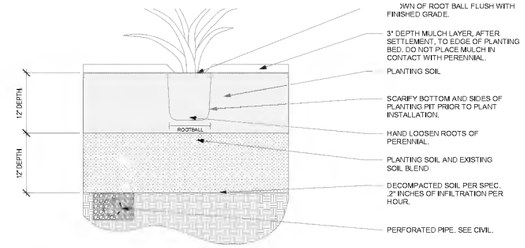
SEATING ELEMENT, DOG WASTE RECEPTACLE

PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

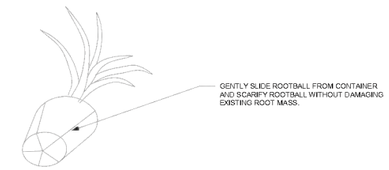
#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
8	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
186	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						



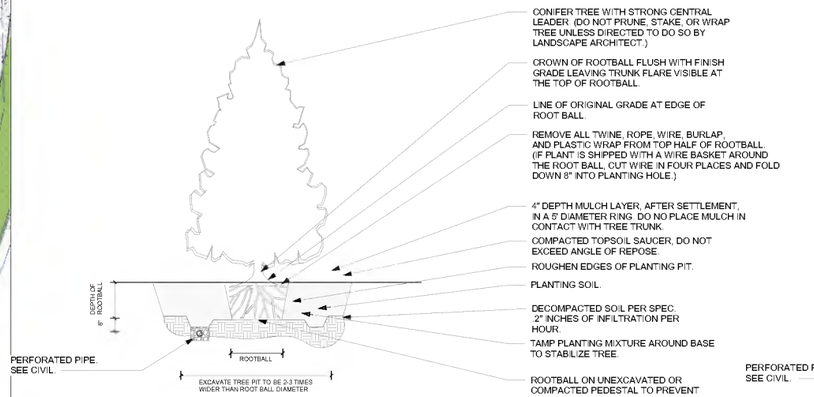
TYPICAL SHRUB PLANTING



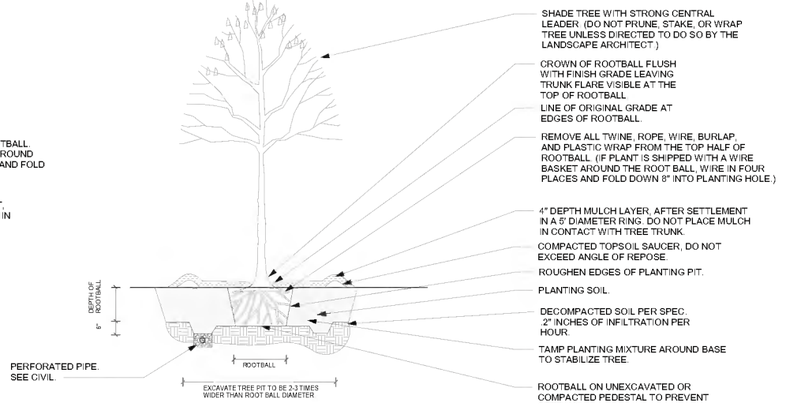
TYPICAL PERENNIAL PLANTING



PERENNIAL ROOT SCARIFY



TYPICAL EVERGREEN TREE PLANTING



TYPICAL TREE PLANTING

SOUTH/SOUTHEAST LANDSCAPE DESIGN

TREES:

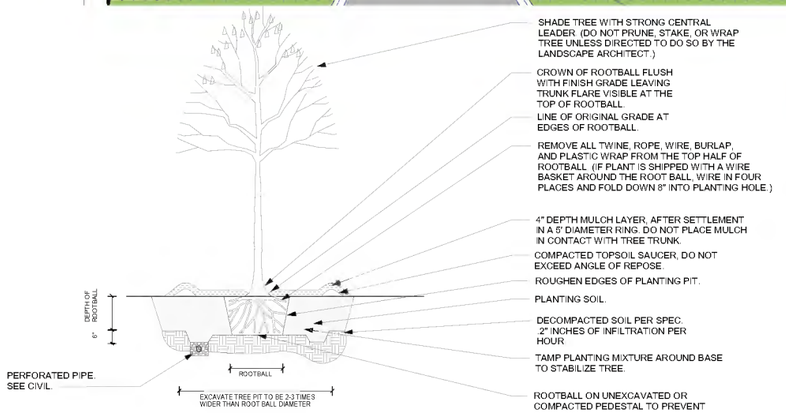
-Ostrya virginiana, HOPHORNBEAM
(SUN OR SHADE)
-Cercis canadensis MN Strain,
NORTHERN STRAIN REDBUD
(SUN OR SHADE)
-Betula populiflora 'Whitespire',
WHITESPIRE BIRCH
(SUN OR SHADE)
-Amelanchier x grandiflora 'Autumn Brilliance',
AUTUMN BRILLIANCE SERVICEBERRY
(SUN OR SHADE)
-Gledistia triancanthos 'Skyline',
SKYLINE HONEYLOCUST
(SUN OR SHADE)
-Malus spp. 'Spring Snow', SPRING SNOW
CRABAPPLE
(SUN)
-Gymnocladus dioicus, KENTUCKY COFFEE
TREE
(SUN)
-Quercus x warei 'Nadler', KINDRED SPIRIT
OAK
(SUN)

PERENNIALS:

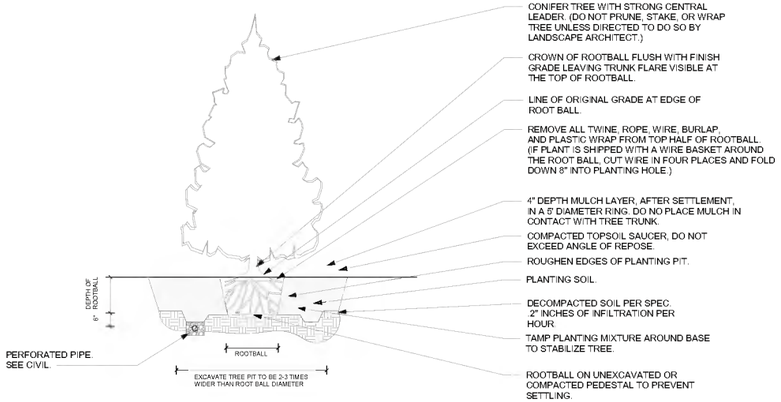
-Calamgrostis acutiflora,
KARL FOERSTER GRASS
(PARTIAL SUN TO FULL SUN)
-Chelone glabra, TURTLEHEAD
(PARTIAL SUN)
-Nepta x faassenii 'Walkers Low', CATMINT
(PARTIAL SHADE TO SUN)
-Hylotelephium spectabile, AUTUMN JOY
SEDUM
(SUN TO PARTIAL SUN)
-Echinacea 'Powwow White', POWWOW
WHITE CONEFLOWER
(SUN TO PARTIAL SUN)
-Sporobolus heterolepis, PRAIRIE DROPSEED
(SUN)

SHRUBS:

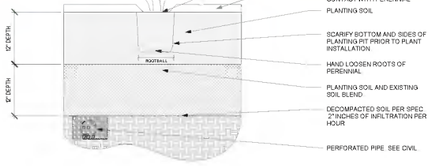
Taxus x media 'Tauntonii', TAUNTON YEW
(SUN TO SHADE)
Diervilla lonicera, DWARFBUSH HONEYSUCKLE
(FULL SUN TO PARTIAL SHADE)



TYPICAL TREE PLANTING

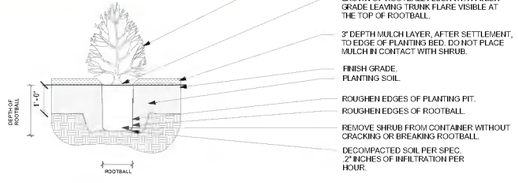


TYPICAL EVERGREEN TREE PLANTING



TYPICAL PERENNIAL PLANTING

PERENNIAL ROOT SCARIFY



TYPICAL SHRUB PLANTING

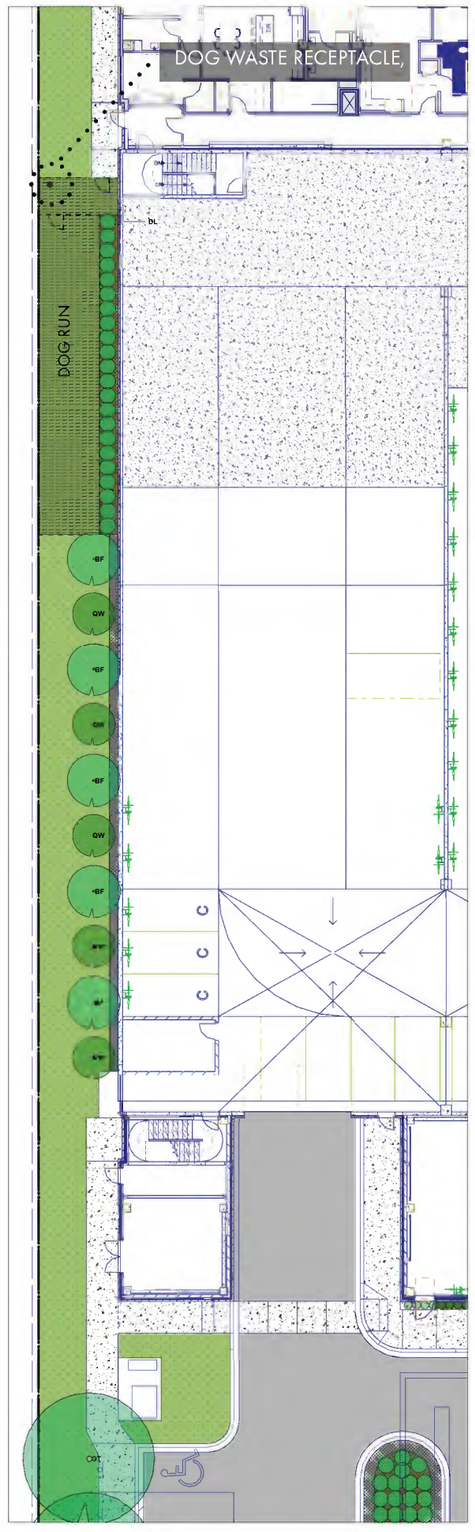
PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
166	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
484						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1009	CP	Carex pennsylvanica	PENN SEDGE	#1	CONT.	SEE PLAN
132	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
504	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
175	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
763	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
193	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
183	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5550						
OVERSTORY TREES						
11	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL.	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL.	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL.	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL.	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia triacanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL.	B+B	MATCHED SPECIMEN
11	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL.	B+B	MATCHED SPECIMEN
48						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL.	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL.	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL.	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL.	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
13	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
13						

WEST
LANDSCAPE DESIGN

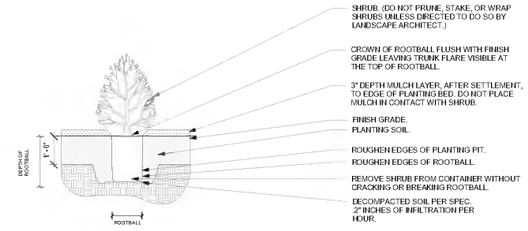
TREES:
-Betula platyphylla 'Fargo'
DAKOTA PINNACLE BIRCH
(SUN OR SHADE)
-Quercus x warei 'Nadler', KINDRED SPIRIT
OAK
(SUN)

SHRUBS:
Diervilla lonicera, DWARFBUSH HONEYSUCKLE
(FULL SUN TO PARTIAL SHADE)

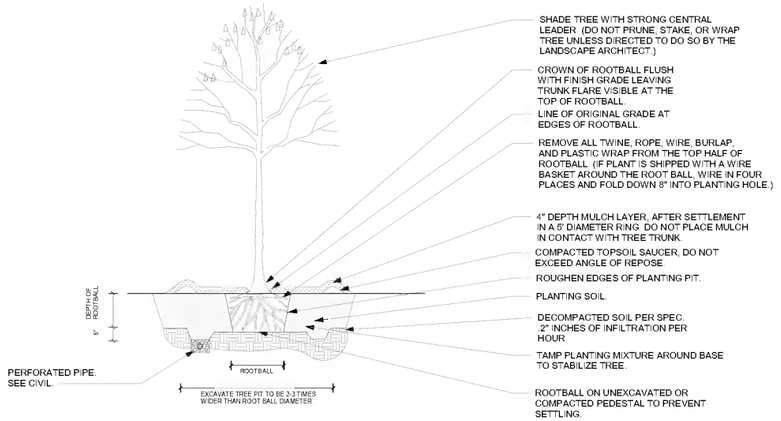


PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
167	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
485						
PERENNIALS						
194	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1013	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
135	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
509	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
168	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
825	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
216	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
193	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5650						
OVERSTORY TREES						
14	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL	B+B	MATCHED SPECIMEN
12	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL	B+B	MATCHED SPECIMEN
52						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
9	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
9						



TYPICAL SHRUB PLANTING



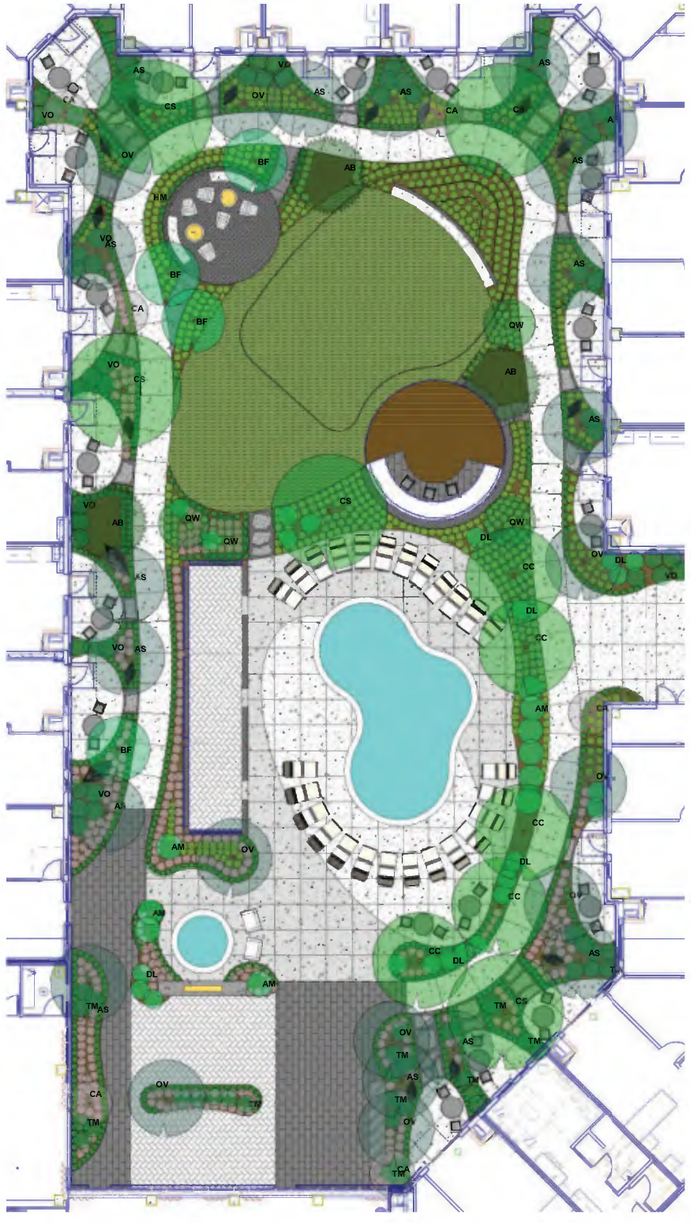
TYPICAL TREE PLANTING

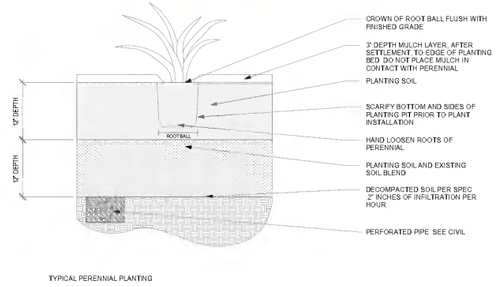
COURTYARD LANDSCAPE DESIGN

TREES:
-Betula platyphylla 'Fargo'
DAKOTA PINNACLE BIRCH
(SUN OR SHADE)
-Ostrya virginiana, HOPHORNBEAM
(SUN OR SHADE)
-Cercis canadensis MN Strain,
NORTHERN STRAIN REDBUD
(SUN OR SHADE)
-Betula populiflora 'Whitespire',
WHITESPIRE BIRCH
(SUN OR SHADE)
-Amelanchier x grandiflora 'Autumn Brilliance',
AUTUMN BRILLIANCE SERVICEBERRY
(SUN OR SHADE)
-Gledistia triancanthos 'Skyline',
SKYLINE HONEYLOCUST
(SUN OR SHADE)
-Gymnocladus dioicus, KENTUCKY COFFEE TREE
(SUN)
-Quercus x warei 'Nadler', KINDRED SPIRIT OAK
(SUN)

PERENNIALS:
-Carex pennsylvanica,
PENNSYLVANIA SEDGE
(PARTIAL SHADE TO SHADE)
-Hakonechloa macra, HAKONE GRASS
(PARTIAL SUN TO SHADE)
-Geranium maculatum,
WILD GERANIUM
(PARTIAL SHADE TO SHADE)
-Pachysandra terminalis, PACHYSANDRA
(SHADE TO PART SHADE)

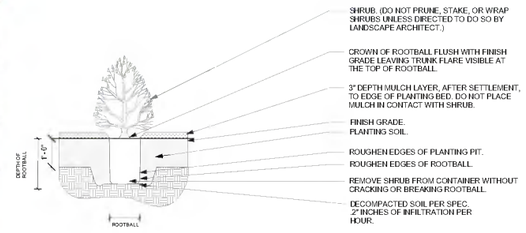
SHRUBS:
Taxus x media 'Tauntonii', TAUNTON YEW
(SUN TO SHADE)
Diervilla lonicera, DWARFBUSH HONEYSUCKLE
(FULL SUN TO PARTIAL SHADE)



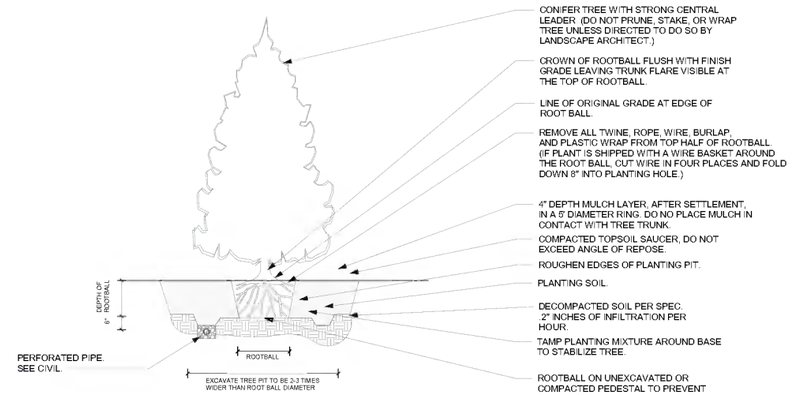


TYPICAL PERENNIAL PLANTING

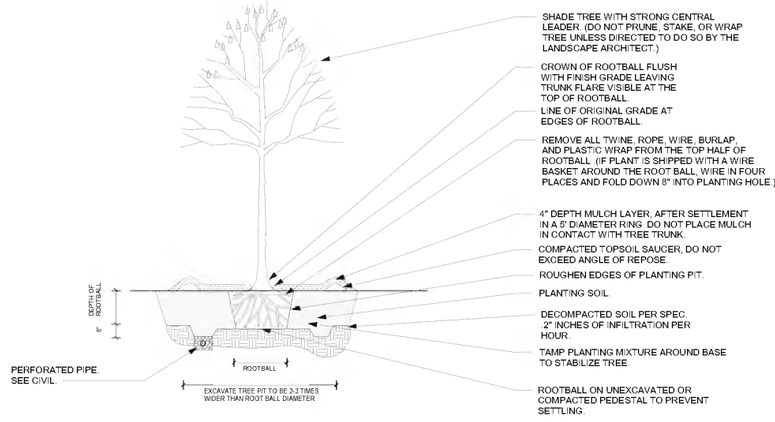
PERENNIAL ROOT SCARIFY



TYPICAL SHRUB PLANTING



TYPICAL EVERGREEN TREE PLANTING



TYPICAL TREE PLANTING

PLANT SCHEDULE (NOT ALL PLANTS ON SHEET)

#	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	NOTES
SHRUBS						
10	AM	Aronia melanocarpa	BLACK CHOKEBERRY	#7	CONT.	SEE PLAN
6	CA	Cornus alternifolia	PAGODA DOGWOOD	#7	CONT.	SEE PLAN
93	CR	Cornus racemos	GRAY DOGWOOD	#5	CONT.	SEE PLAN
167	DL	Diervilla lonicera	DWARFBUSH HONEYSUCKLE	#5	CONT.	SEE PLAN
152	TM	Taxus x media 'Tauntonii'	TAUNTON YEW	#5	CONT.	SEE PLAN
57	VO	Viburnum dentatum	ARROWWOOD VIBURNUM	#5	CONT.	SEE PLAN
485						
PERENNIALS						
~~134~~	CG	Chelone glabra	TURTLEHEAD	#1	CONT.	SEE PLAN
1013	CP	Carex pennsylvania	PENN SEDGE	#1	CONT.	SEE PLAN
135	ED	Eupatorium dubium 'Little Joe'	LITTLE JOE PYEWEED	#1	CONT.	SEE PLAN
158	EW	Echinacea 'Powwow White'	POWWOW WHITE CONEFLOWER	#1	CONT.	SEE PLAN
215	GB	Geranium 'Biokovo'	BIOKOVO GERANIUM	#1	CONT.	SEE PLAN
509	GM	Geranium maculatum	WILD GERANIUM	#1	CONT.	SEE PLAN
168	HH	Hosta spp.	HOSTA	#1	CONT.	SEE PLAN
825	HM	Hakonechloa macra	JAPANESE FOREST GRASS	#1	CONT.	SEE PLAN
580	KF	Calamagrostis acutiflora	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	SEE PLAN
216	MS	Matteuccia struthiopteris	OSTRICH FERN	#1	CONT.	SEE PLAN
247	NF	Nepeta x faassenii 'Walkers Low'	WALKERS LOW CATMINT	#1	CONT.	SEE PLAN
973	PT	Pachysandra terminalis	SPURGE	#1	CONT.	SEE PLAN
224	SA	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	#1	CONT.	SEE PLAN
193	SH	Sporobolus heterolepis	PRAIRIE DROPSEED	#1	CONT.	SEE PLAN
5650						
OVERSTORY TREES						
14	BF	Betula platyphylla 'Fargo'	DAKOTA PINNACLE BIRCH FARGO	2" CAL	B+B	MATCHED SPECIMEN
9	BP	Betula populifolia 'Whitespire'	WHITESPIRE BIRCH	2" CAL	B+B	MATCHED SPECIMEN
7	CS	Catalpa speciosa	NORTHERN CATALPA	2" CAL	B+B	MULTISTEM SPECIMEN
1	GD	Gymnocladus dioicus	KENTUCKY COFFEE TREE	2" CAL	B+B	MULTISTEM SPECIMEN
9	GT	Gleditsia tiracanthos 'Skyline'	SKYLINE HONEYLOCUST	2" CAL	B+B	MATCHED SPECIMEN
12	QW	Quercus x warei 'Nadler'	KINDRED SPIRIT OAK	2" CAL	B+B	MATCHED SPECIMEN
52						
ORNAMENTAL TREES						
32	AS	Amelanchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE(R) SERVICEBERRY	2" CAL	B+B	MULTISTEM SPECIMEN
18	CC	Cercis canadensis 'MN Strain'	NORTHERN STRAIN REDBUD	2" CAL	B+B	MULTISTEM SPECIMEN
2	MS	Malus spp. 'Spring Snow'	SPRING SNOW CRABAPPLE	2" CAL	B+B	MULTISTEM SPECIMEN
12	OV	Ostrya virginiana	HOPHORNBEAM	2" CAL	B+B	MATCHED SPECIMEN
64						
CONIFEROUS TREES						
9	AB	Abies balsamea	BALSAM FIR	8' HEIGHT	B+B	MATCHED SPECIMEN
9						

EAGLE BUILDING COMPANY
6636 CEDAR AVENUE SOUTH, SUITE 140, MINNEAPOLIS, MN 55423
PHONE: 612.378.1115 | FAX: 612.378.1116 | WWW.EAGLEBUILDINGLLC.COM

Landscape Element Valuation

TO: Greystar Devlopment Central, LLC
750 Bering Drive, Suite 200
Houston, TX 77057

DATE: March 8, 2023

ATTN: Ned Dodington

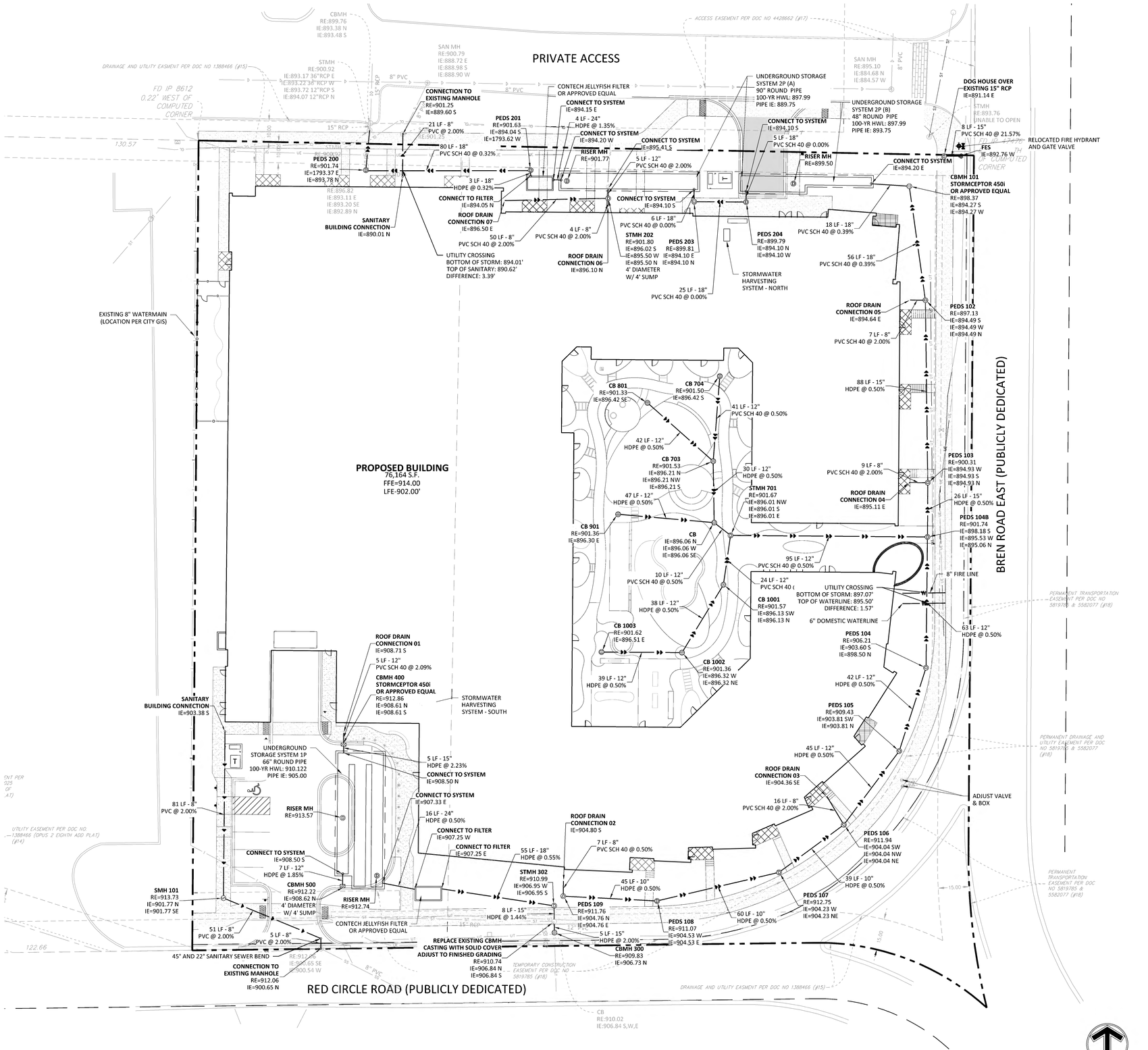
PROJECT: Marlowe Opus Station
Minnetonka, MN

Landscaping Elements Based on 12/7/22 Schematic Design		
Hardscapes & Retaining Walls		$400,000
Landscaping & Irrigation		$288,000
Courtyard Allowance		$200,000
Trellis		w/allowance
Grill Stations		w/allowance
Fire Pits		w/allowance
Fencing		w/allowance
Railings		w/allowance
Planters		w/allowance
Site Lighting		$75,000
	Total	**$963,000**

TOTAL THIS ESTIMATE: $963,000

Sincerely,
Eagle Building Company

Barry Braithwaite
Vice President



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IF THE CONTRACTOR ENCOUNTERS ANY DRAIN TILE WITHIN THE SITE, HE OR SHE SHALL NOTIFY THE ENGINEER WITH THE LOCATION, SIZE, INVERT AND IF THE TILE LINE IS ACTIVE. NO DRAIN TILE SHALL BE BACKFILLED WITHOUT APPROVAL FROM THE PROJECT ENGINEER.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER
D	D	STORM SEWER
D		POLYETHYLENE DRAINAGE STRUCTURE (PEDS) (SEE DETAIL 03, SHEET C9.02)
		DRAINTILE
		WATERMAIN
GAS	GAS	UNDERGROUND GAS LINE
UT	UT	UNDERGROUND TELEPHONE
UE	UE	UNDERGROUND ELECTRIC
		CONCRETE CURB
		EASEMENT LINE

UTILITY CONSTRUCTION NOTES

1. THE UTILITY IMPROVEMENTS FOR THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "STANDARD UTILITIES SPECIFICATIONS" AS PUBLISHED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM), EXCEPT AS MODIFIED HEREIN. CONTRACTOR SHALL OBTAIN A COPY OF THESE SPECIFICATIONS.
   a. ALL UTILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIRMENTS, INCLUDING BUT NOT LIMITED TO CITY, DEPARTMENT OF LABOR AND INDUSTRY AND MINNESOTA DEPARTMENT OF HEALTH REQUIREMENTS.
   b. CONTRACTOR SHALL NOT OPEN, TURN OFF, INTERFERE WITH, OR ATTACH ANY PIPE OR HOSE TO OR TAP WATERMAIN BELONGING TO THE CITY UNLESS DULY AUTHORIZED TO DO SO BY THE CITY. ANY ADVERSE CONSEQUENCES OF ANY SCHEDULED OR UNSCHEDULED DISRUPTIONS OF SERVICE TO THE PUBLIC ARE THE LIABILITY OF CONTRACTOR.
   c. A MINIMUM VERTICAL SEPARATION OF 18 INCHES, AND HORIZONTAL SEPARATION OF 10-FEET, BETWEEN OUTSIDE PIPE AND/OR STRUCTURE WALLS, IS REQUIRED AT ALL WATERMAIN AND SEWER MAIN (BUILDING, STORM AND SANITARY) CROSSINGS.
2. ALL MATERIALS SHALL BE AS SPECIFIED IN CEAM SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.
   a. ALL MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY.
   b. ALL SANITARY SEWER TO BE PVC SDR-35, UNLESS NOTED OTHERWISE.
   i. ALL SANITARY SEWER SERVICES TO BUILDING SHALL BE PVC SCH 40 CONFORMING TO ASTM D2665.
   c. ALL WATERMAIN TO BE DUCTILE IRON - CLASS 52, or PVC C-900, UNLESS NOTED OTHERWISE.
   i. ALL WATERMAIN TO HAVE 7.5-FEET OF COVER OVER TOP OF WATERMAIN.
   ii. PROVIDE THRUST BLOCKING AND MECHANICAL JOINT RESTRAINTS ON ALL WATERMAIN JOINTS PER CITY STANDARDS.
   d. ALL STORM SEWER PIPE TO BE SMOOTH INTERIOR DUAL WALL HDPE PIPE WITH WATERTIGHT GASKETS, UNLESS NOTED OTHERWISE.
   i. ALL STORM SEWER PIPE FOR ROOF DRAIN SERVICES TO BUILDING AND STORM SEWER PIPE WITHIN 10-FEET OF THE BUILDING SHALL BE PVC SCH 40 CONFORMING TO ASTM F894 & F714 AND TESTED AS REQUIRED BY THE 2020 MINNESOTA PLUMBING CODE OR AS ALLOWED BY TABLE 701.2 OF THE MINNESOTA PLUMBING CODE, AND SHALL BE TESTED AS REQUIRED BY THE CODE.
   e. RIP RAP SHALL BE Mn/DOT CLASS 3.
3. COORDINATE ALL BUILDING SERVICE CONNECTION LOCATIONS AND INVERT ELEVATIONS WITH MECHANICAL CONTRACTOR PRIOR TO CONSTRUCTION.
4. ALL BUILDING SERVICE CONNECTIONS (STORM, SANITARY, WATER) WITH FIVE FEET OR LESS COVER ARE TO BE INSULATED FROM BUILDING TO POINT WHERE 5-FEET OF COVER IS ACHIEVED.
5. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
6. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE DEVELOPER TO CONDUCT CONSTRUCTION REVIEW OF CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
7. ALL AREAS OUTSIDE THE PROPERTY BOUNDARIES THAT ARE DISTURBED BY UTILITY CONSTRUCTION SHALL BE RESTORED IN KIND. SODDED AREAS SHALL BE RESTORED WITH 6 INCHES OF TOPSOIL PLACED BENEATH THE SOD.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARDS.

ALL SOILS TESTING SHALL BE COMPLETED BY AN INDEPENDENT SOILS ENGINEER. EXCAVATION FOR THE PURPOSE OF REMOVING UNSTABLE OR UNSUITABLE SOILS SHALL BE COMPLETED AS REQUIRED BY THE SOILS ENGINEER. THE UTILITY BACKFILL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOILS TESTS AND SOIL INSPECTIONS WITH THE SOILS ENGINEER. A GEOTECHNICAL ENGINEERING REPORT HAS BEEN COMPLETED BY:

COMPANY: BRAUN INTERTEC CORPORATION
ADDRESS: 11001 HAMPSHIRE AVENUE S
MINNEAPOLIS, MN 55438
PHONE: 952.995.2000
DATE: MAY 31, 2022

CONTRACTOR SHALL OBTAIN A COPY OF THIS SOILS REPORT.

9. CONTRACTOR SHALL SUBMIT 2 COPIES OF SHOP DRAWINGS FOR MANHOLE AND CATCH BASIN STRUCTURES TO ENGINEER. CONTRACTOR SHALL ALLOW 5 WORKING DAYS FOR SHOP DRAWING REVIEW.
10. CONTRACTOR AND MATERIAL SUPPLIER SHALL DETERMINE THE MINIMUM DIAMETER REQUIRED FOR EACH STORM SEWER STRUCTURE.
11. THE UNDERGROUND STORMWATER SYSTEM SHOWN ON THE UTILITY PLAN AND THE DETAIL SHEETS IS FOR INFORMATIONAL PURPOSES ONLY AND DEPICTS THE MINIMUM STORAGE REQUIREMENTS AND THE SYSTEM ELEVATIONS. THE CONTRACTOR (WITH THEIR SUPPLIER OR DESIGNER) SHALL SUBMIT DESIGN DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE DESIGN DRAWINGS SHALL DEPICT THE FINAL LAYOUT AND DETAILS FOR CONSTRUCTION. THE DRAWINGS SHALL BE CERTIFIED BY A LICENSED ENGINEER FOR THE STATE IN WHICH THE PROJECT IS CONSTRUCTED. THE SUBMITTAL SHALL INCLUDE ALL NECESSARY PRODUCT INFORMATION, DESIGN CALCULATIONS AND BEDDING REQUIREMENTS FOR THE PROPOSED STORMWATER SYSTEM. FOLLOWING CONSTRUCTION, THE CERTIFYING ENGINEER SHALL SUBMIT A LETTER TO THE OWNER AND ENGINEER INDICATING THEY OBSERVED THE INSTALLATION AND THE INSTALLATION OF THE STORMWATER SYSTEM WAS IN CONFORMANCE WITH THE CERTIFIED DRAWINGS.
12. IRRIGATION REUSE SYSTEM. CONTRACTOR TO COORDINATE WITH IRRIGATION REUSE DESIGNER, IRRIGATION SYSTEM DESIGNER AND IRRIGATION TANK MANUFACTURER FOR DESIGN AND DETAILS

NORTH
0 20 40
SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Brian W. Frank
Registration No. 52728 Date: MM/DD/YYYY

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL 03/03/2023

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23

51166
PROJECT NUMBER

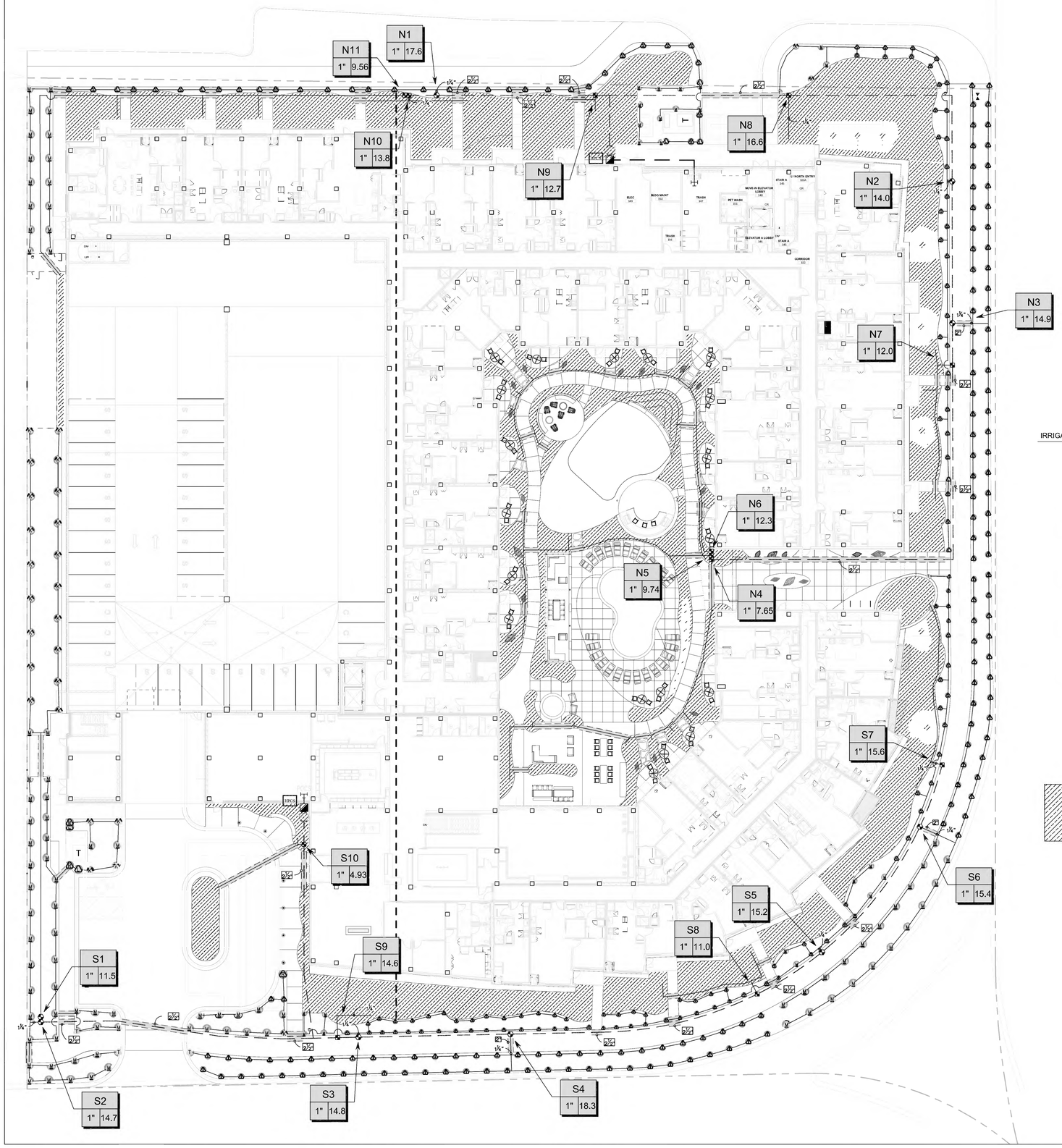
TLL DRAWN BY | BWF CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

UTILITY PLAN

C6.01



IRRIGATION NOTES:

1. DESIGN IS FOR TWO IRRIGATION SYSTEMS EACH CONNECTED TO A WATER REUSE SYSTEM INSTALLED BY OTHERS, NORTH REUSE SYSTEM & SOUTH REUSE SYSTEM.
2. IRRIGATION SYSTEM(S) ARE DESIGNED FOR 30(⅞) PSI AT BASE OF ALL TURF ROTATOR HEADS & 1½" COPPER STUB OUT(S). SYSTEM REQUIRES 60(⅞) PSI AT BOTH IRRIGATION POINT OF CONNECTION(S) TO WORK AS DESIGNED. ***VERIFY SIZES AND LOCATIONS***
3. IRRIGATION PLAN IS DIAGRAMMATIC, FIELD CHANGES MAY OCCUR. PLAN DRAWN FOR CLARITY, IRRIGATION EQUIPMENT AND PIPE SHOWN IN HARDSCAPE TO BE INSTALLED IN LANDSCAPED AREAS.
4. FULL AND COMPLETE COVERAGE IS REQUIRED. THE IRRIGATION CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS TO THE IRRIGATION LAYOUT TO ACHIEVE.
5. IRRIGATION SYSTEM SHALL BE INSTALLED AS PER MANUFACTURES SPECIFICATIONS.
6. ALL LATERAL PIPE, 1" & 1¼", SHALL BE POLYETHYLENE 100 PSI. ALL MAINLINE SHALL BE 1½" PVC CLASS 200 SDR 21.
7. MAINLINE TO BE INSTALLED WITH MULTI-STRAND 18 AWG WIRE. PROVIDE 2' EXTRA WIRE AT EACH VALVE.
8. INSTALL HUNTER RAIN SENSOR (2) WITH HUNTER HPC APP BASED IRRIGATION OUTDOOR CONTROLLER (2), ***VERIFY LOCATION WITH OWNER***. WiFi SIGNAL WITH INTERNET CONNECTION REQUIRED AT CONTROLLER (2) LOCATION TO CONNECT TO APP. WiFi SIGNAL BOOSTER MAY BE REQUIRED.
9. ALL VALVES, ELECTRIC AND MANUAL, SHALL BE INSTALLED IN VALVE BOXES THAT PROVIDE ADEQUATE SPACE FOR VALVE IN AN UPRIGHT POSITION. INSTALLED WITH BRICK SUPPORT AND 3" MINIMUM DEPTH OF WASHED GRAVEL.
10. COORDINATE ALL SLEEVING WITH GENERAL CONTRACTOR. SLEEVES TO BE TWO SIZES LARGER THEN PIPING.
11. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO COMMENCING WORK.
12. WATER REUSE EQUIPMENT INSTALLED BY OTHERS.
13. ALL PLUMBING FROM WATER REUSE EQUIPMENT TO IRRIGATION POINT OF CONNECTION COPPER STUB OUT OUTSIDE OF BUILDING INSTALLED BY OTHERS.
14. ALL PLUMBING AND ELECTRICAL WORK AS PER LOCAL CODE.
15. FINAL LOCATION OF WATER SOURCE AND IRRIGATION CONTROLLER TO BE APPROVED BY OWNER.

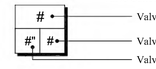
IRRIGATION_SCHEDULE

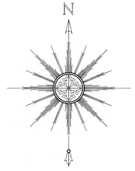
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
T	HUNTER MP CORNER PROS-04-PRS30-CV TURF ROTATOR, 4IN. POP-UP WITH FACTORY INSTALLED CHECK VALVE, PRESSURE REGULATED TO 30 PSI, MP ROTATOR NOZZLE. T=TURQUOISE ADJ ARC 45-105 ON PRS30 BODY.
LST SST RST	HUNTER MP STRIP PROS-04-PRS30-CV TURF ROTATOR, 4IN. POP-UP WITH FACTORY INSTALLED CHECK VALVE, PRESSURE REGULATED TO 30 PSI, MP ROTATOR NOZZLE ON PRS30 BODY. LST=IVORY LEFT STRIP, SST=BROWN SIDE STRIP, RST=COPPER RIGHT STRIP.
M L Q	HUNTER MP1000 PROS-04-PRS30-CV TURF ROTATOR, 4IN. POP-UP WITH CHECK VALVE, PRESSURE REGULATED TO 30 PSI, MP ROTATOR NOZZLE ON PRS30 BODY. M=MAROON ADJ ARC 90 TO 210, L=LIGHT BLUE 210 TO 270 ARC, O=OLIVE 360 ARC.
	HUNTER MP2000 PROS-04-PRS30-CV TURF ROTATOR, 4IN. POP-UP WITH FACTORY INSTALLED CHECK VALVE, PRESSURE REGULATED TO 30 PSI, MP ROTATOR NOZZLE ON PRS30 BODY. K=BLACK ADJ ARC 90-210, G=GREEN ADJ ARC 210-270, R=RED 360 ARC.
800 A 800 F	HUNTER MP800SR PROS-04-PRS30-CV TURF ROTATOR, 4IN. POP-UP WITH CHECK VALVE, PRESSURE REGULATED TO 30 PSI, MP ROTATOR NOZZLE ON PRS30 BODY. ADJ=ORANGE AND GRAY (ARC 90-210), 360=LIME GREEN AND GRAY (ARC 360)

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER PCZ-101-40 DRIP CONTROL VALVE KIT. 1IN. PGV GLOBE VALVE WITH 1IN. HY100 FILTER SYSTEM. PRESSURE REGULATION: 40PSI. FLOW RANGE: 0.5 GPM TO 15 GPM. 150 MESH STAINLESS STEEL SCREEN.
	AREA TO RECEIVE DRIPLINE RAIN BIRD XFD-06-12 XFD ON-SURFACE PRESSURE COMPENSATING LANDSCAPE DRIPLINE. 0.6 GPH EMITTERS AT 12" O.C. DRIPLINE LATERALS SPACED AT 12" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN. UV RESISTANT. SPECIFY XF INSERT FITTINGS.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER PGV-100-MB PLASTIC ELECTRIC REMOTE CONTROL VALVE, FOR RESIDENTIAL/LIGHT COMMERCIAL USE. MALE THREAD X BARB INLET/OUTLET. GLOBE CONFIGURATION, NO FLOW CONTROL.
	1" QUICK COUPLER VALVE WINTERIZATION POINT OF CONNECTION
	HUNTER ICV-G 1½" (NORTH REUSE SYSTEM) PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
	HUNTER ICV-G 1½" (SOUTH REUSE SYSTEM) PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.
HPCN	HUNTER HPC (NORTH REUSE SYSTEM) MODULAR OUTDOOR APP BASED CONTROLLER WITH TOUCHSCREEN. PLASTIC CABINET INSTALLED WITH HUNTER RAIN SENSOR ***WiFi WITH INTERNET CONNECTION REQUIRED AT CONTROLLER LOCATION FOR APP USE***
HPCS	HUNTER HPC (SOUTH REUSE SYSTEM) MODULAR OUTDOOR APP BASED CONTROLLER WITH TOUCHSCREEN. PLASTIC CABINET INSTALLED WITH HUNTER RAIN SENSOR ***WiFi WITH INTERNET CONNECTION REQUIRED AT CONTROLLER LOCATION FOR APP USE***
	NORTH WATER REUSE SYSTEM IRRIGATION POINT OF CONNECTION 1½" COPPER STUB ***VERIFY SIZE & LOCATION***
	SOUTH WATER REUSE SYSTEM IRRIGATION POINT OF CONNECTION 1½" COPPER STUB ***VERIFY SIZE & LOCATION***
	IRRIGATION LATERAL LINE: 1" & 1¼" POLYETHYLENE PIPE 100 PSI ALL 1" UNLESS NOTED ON PLAN
	IRRIGATION MAINLINE: 1½" PVC CLASS 200 SDR 21 INSTALLED WITH 18AWG MULTI-STRAND IRRIGATION CABLE
	PIPE SLEEVE: PVC CLASS 160 SDR 26 ALL SLEEVES 1½" UNLESS NOTED ON PLAN

Valve Callout





20'-0" 0'-0" 20'-0" 40'-0"

Aqua Engineering Inc.
•LAWN SPRINKLERS•
•DESIGN • INSTALL • SERVICE•
• DRAIN TILE•
6561 CITY WEST PARKWAY
EDEN PRAIRE, MN 55344
(952) 941-1138
(952) 941-1268 fax
www.aquaengineeringinc.com

PROJECT
BREN ROAD - MULTIFAMILY
WATER REUSE SYSTEM

LOCATION
MINNETONKA
MN 55343

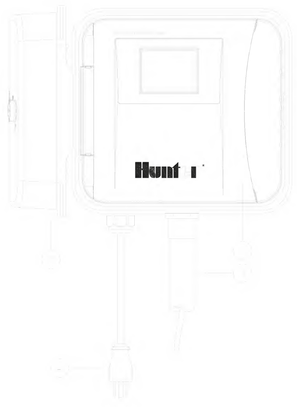
DATE	DESCRIPTION

PROJECT NO:	23002
DATE DRAWN:	3/9/2023
DRAWN BY:	MEW
CHECKED BY:	BDH
SCALE:	1" = 20'-0"

SHEET TITLE

IRRIGATION DESIGN

IR100



INTERIOR/EXTERIOR WALL

DETAIL LEGEND:

1. HYDRAWISE PRO-C CONTROLLER, PLASTIC ENCLOSURE, INDOOR OR OUTDOOR WALL MOUNT, PER PLAN
2. PLASTIC CONTROLLER HOUSING DOOR
3. IRRIGATION CONTROL WIRE IN CONDUIT TO PLANTER. SIZE AND TYPE PER LOCAL CODES.
4. STANDARD 110 VAC CABLE & PLUG FOR CONNECTION TO GROUNDED 110 VAC POWER RECEPTACLE

NOTES:

A. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

B. CONTROLLER ACCEPTS 120 VOLTS A.C. OR 230 VOLTS A.C. (INTERNATIONAL MODEL)

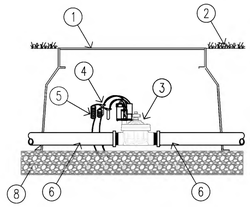
C. SEE PLAN LEGEND FOR MODEL NUMBER AND SPECIFICATIONS.

D. ALWAYS REFER TO PRODUCT INSTALLATION NOTES PRIOR TO INSTALLATION.

E. MOUNT CONTROLLER LCD SCREEN AT EYE LEVEL, CONTROLLER SHALL BE HARD-WIRED TO GROUNDED 110 VAC POWER SOURCE.

1 HUNTER HPC HYDRAWISE CONTROLLER

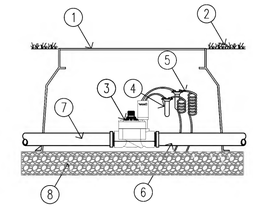
N/A — Hunter IRRIGATION DETAIL



1. STANDARD VALVE BOX
2. FINISH GRADE
3. HUNTER 1½" ICV REMOTE CONTROL MASTER VALVE
4. WATERPROOF CONNECTORS (2)
5. COILED WIRE
6. 1½" PVC MAINLINE
7. WASHED GRAVEL

2 HUNTER ICV MASTER VALVE

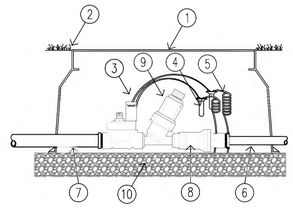
N/A — Hunter IRRIGATION DETAIL



1. STANDARD VALVE BOX
2. FINISH GRADE
3. HUNTER 1" PGV REMOTE CONTROL VALVE
4. WATERPROOF CONNECTORS (2)
5. COILED WIRE
6. LATERAL POLYETHYLENE PIPE
7. 1½" PVC MAIN LINE
8. WASHED GRAVEL

3 HUNTER PGV REMOTE CONTROL VALVE

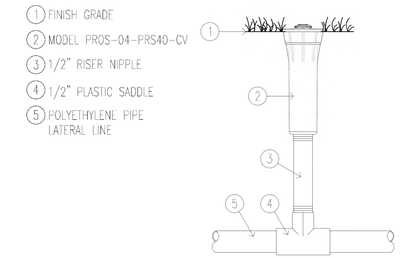
N/A — Hunter IRRIGATION DETAIL



1. 12" x 17" x 6" DEEP RECTANGULAR VALVE BOX
2. FINISH GRADE
3. HUNTER 1" PCZ VALVE DRIP ZONE CONTROL KIT
4. WATERPROOF CONNECTORS (2)
5. COILED WIRE
6. LATERAL PIPE
7. 1½" PVC MAIN LINE
8. PRESSURE REGULATOR
9. HY100 FILTER SYSTEM
10. WASHED GRAVEL

4 HUNTER DRIP ZONE CONTROL KIT

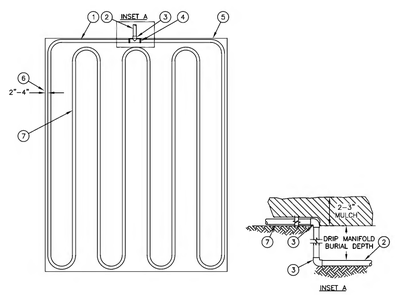
N/A — Hunter IRRIGATION DETAIL



1. FINISH GRADE
2. MODEL PROS-04-PRS40-CV
3. 1/2" RISER NIPPLE
4. 1/2" PLASTIC SADDLE
5. POLYETHYLENE PIPE LATERAL LINE

5 HUNTER PROS-04-PRS40-CV MP ROTATOR SPRINKLER

N/A — Hunter IRRIGATION DETAIL



1. PVC EXHAUST HEADER
2. PVC DRIP MANIFOLD FROM RAIN BIRD CONTROL ZONE VALVE KIT (SIZED TO MEET LATERAL FLOW DEMAND)
3. PVC SCH 40 TEE OR EL (TYPICAL)
4. BARB X MALE FITTING: RAIN BIRD XFD-MA FITTING (TYPICAL)
5. PERIMETER OF AREA
6. PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA
7. ON-SURFACE DRIPLINE: RAIN BIRD XF SERIES DRIPLINE (TYPICAL) POTABLE: XFD DRIPLINE NON-POTABLE: XFDP DRIPLINE

NOTES:
1. DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION. SEE INSTALLATION SPECIFICATIONS ON RAIN BIRD WEB SITE (WWW.RAINBIRD.COM) FOR SUGGESTED SPACING.
2. LENGTH OF LONGEST DRIPLINE LATERAL SHOULD NOT EXCEED THE MAXIMUM SPACING SHOWN IN THE ACCOMPANYING TABLE.

Inlet Pressure	XFD Dripline Maximum Lateral Lengths (Feet)					
	12" Spacing		18" Spacing		24" Spacing	
	Nominal Flow (GPH)		Nominal Flow (GPH)		Nominal Flow (GPH)	
psi	0.6	0.9	0.6	0.9	0.6	0.9
15	255	194	357	273	448	343
20	291	220	408	313	514	394
30	350	266	494	378	622	478
40	396	302	560	428	705	541
50	434	333	614	470	775	594

6 RAINBIRD XFD DRIPLINE

N/A — RAINBIRD XFD DRIPLINE END FEED LAYOUT.DWG

WATERING_SCHEDULE

NUMBER	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK
N1	HUNTER PGV-100-MB	TURF ROTARY	0.7 in/h	1	86	1,517
N2	HUNTER PGV-100-MB	TURF ROTARY	0.89 in/h	1	68	954
N3	HUNTER PGV-100-MB	TURF ROTARY	0.94 in/h	1	65	970
N4	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	482
N5	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	614
N6	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	777
N7	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	759
N8	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	1,047
N9	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	802
N10	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	866
N11	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	602
S1	HUNTER PGV-100-MB	TURF ROTARY	0.7 in/h	1	86	990
S2	HUNTER PGV-100-MB	TURF ROTARY	0.68 in/h	1	88	1,295
S3	HUNTER PGV-100-MB	TURF ROTARY	1.12 in/h	1	54	797
S4	HUNTER PGV-100-MB	TURF ROTARY	0.9 in/h	1	67	1,223
S5	HUNTER PGV-100-MB	TURF ROTARY	0.97 in/h	1	62	941
S6	HUNTER PGV-100-MB	TURF ROTARY	0.71 in/h	1	85	1,310
S7	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	981
S8	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	695
S9	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	918
S10	HUNTER PCZ-101-40	AREA FOR DRIPLINE	0.96 in/h	1	63	311
		TOTALS:			1,417	18,850

Aqua Engineering Inc.
•LAWN SPRINKLERS• •DESIGN• INSTALL• SERVICE• •DRAIN TILE•
6561 CITY WEST PARKWAY
EDEN PRAIRE, MN 55344
(952) 941-1138
(952) 941-1268 fax
www.aquaengineeringinc.com

CIC Certified Irrigation Contractor — EPA WaterSense Partner

PROJECT: BREN ROAD - MULTIFAMILY
WATER REUSE SYSTEM
LOCATION: MINNETONKA MN 55343

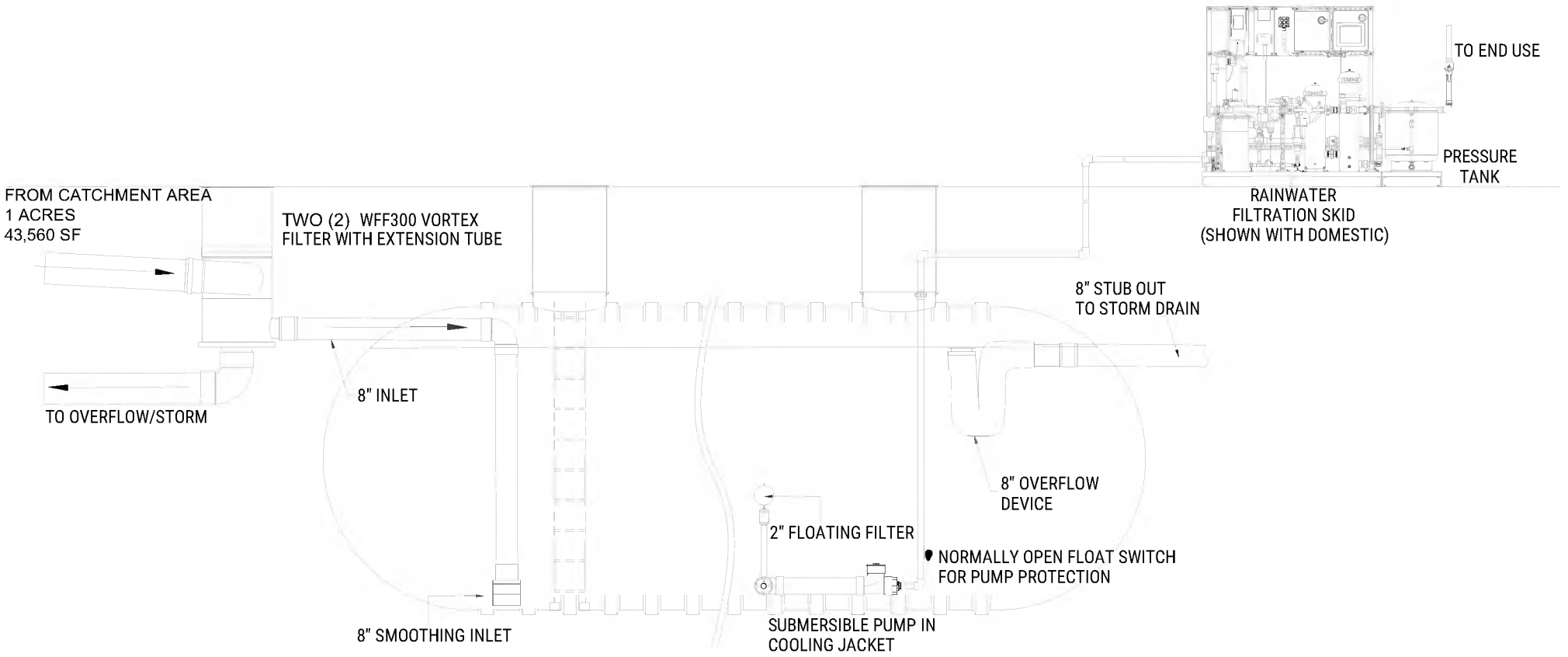
DATE	DESCRIPTION

PROJECT NO:	23002
DATE DRAWN:	3/9/2023
DRAWN BY:	MEW
CHECKED BY:	BDH
SCALE:	N/A

SHEET TITLE: IRRIGATION DETAILS

IR101

SHEET 2 OF 2



RMS
RAINWATER MANAGEMENT SOLUTIONS™

10701 BREN ROAD
RAINWATER SYSTEM SCHEMATIC
SUBMERSIBLE PUMP TO FILTRATION SKID - SYSTEM #1

ALL GRADES & ELEVATIONS TO BE SITE VERIFIED PRIOR TO CONSTRUCTION

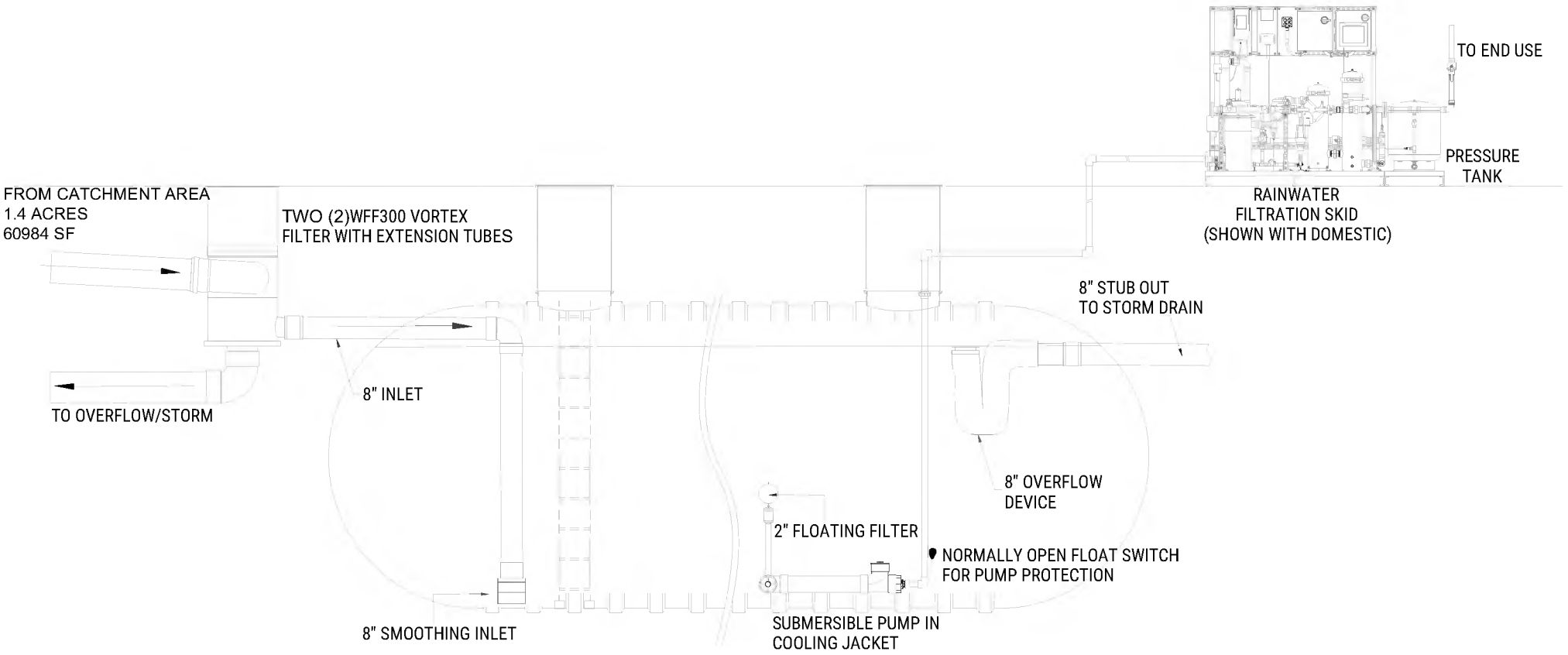
DRAWN BY: DS 03/03/2023
CHECKED BY:

REV 0

NOT TO SCALE

DRAWING FOR ILLUSTRATIVE PURPOSES ONLY. NOT FOR CONSTRUCTION.
DIMENSIONS AND LAYOUT SUBJECT TO CHANGE

RAINWATER MANAGEMENT SOLUTIONS, 1-866-653-8337
WWW.RAINWATERMANAGEMENT.COM



RMS
RAINWATER MANAGEMENT SOLUTIONS™

10701 BREN ROAD
RAINWATER SYSTEM SCHEMATIC
SUBMERSIBLE PUMP TO FILTRATION SKID - SYSTEM #2

ALL GRADES & ELEVATIONS TO BE SITE VERIFIED PRIOR TO CONSTRUCTION

DRAWN BY: DS 03/03/2023
CHECKED BY:

REV 0

NOT TO SCALE

DRAWING FOR ILLUSTRATIVE PURPOSES ONLY. NOT FOR CONSTRUCTION.
DIMENSIONS AND LAYOUT SUBJECT TO CHANGE

RAINWATER MANAGEMENT SOLUTIONS, 1-866-653-8337
WWW.RAINWATERMANAGEMENT.COM

SECTION 22XXXX - RAINWATER HARVESTING SYSTEM

PART I - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Specifications for the following rainwater harvesting system are based on the basis of design system by Rainwater Management Solutions (RMS) complete water harvesting system. The system will integrate storage, distribution and treatment functions required for an outdoor seasonal irrigation system. The system shall be capable of being supplemented by the municipal water supply during periods when there is no rain. The rainwater harvesting system shall be the product of a single system manufacturer/integrator. The intended use of the harvested rainwater is:

1. Irrigation

B. This Section includes filtration, storage and a pre-piped rainwater harvesting system skid system providing the following:

1. Pre-Cistern Filtration
2. Cistern Tank
3. Pump System
4. Water filtration and disinfection equipment
5. Rainwater system controller incorporating a Programmable Logic Controller (PLC) w/ touch screen. U.L. Listed
6. Single Point Power Source, U.L. Listed
7. Backup water supply connection

C. As described in this Section, the Contractor shall be responsible for equipment installation per directions of the Manufacturer. The Manufacturer shall be responsible for verification of system installation, start- up, testing, operation and maintenance training of the Owner's personnel

D. The rainwater skid shall be complete and operational with all control equipment and accessories specified.

E. The rainwater skid shall be capable of filtering and disinfection of harvested water for use in:

1. Irrigation

F. These specifications are intended to give a general description of what is required, but do not cover all details that will vary in accordance with the requirements of the equipment application. It is however intended to cover the manufacturing, performance testing, delivery, installation and field testing of the

materials, equipment and appurtenances related to the rainwater harvesting system, whether specifically mentioned in this section or not.

1.03 EXPERIENCE

A. Rainwater harvesting system shall be supplied by an integrator/manufacturer that is a member in good standing with the American Rainwater Catchment Association (ARCSA), who has employees that are ARCSA Approved Professionals (A.P.) and who individually have at least 10 years of experience in the design and assembly of skid mounted, pre-piped, pre-wired rainwater skids, controls and related equipment.

B. System provider shall have designed and installed at least 10 similar systems in the past four (4) years and be prepared to furnish documentation of same.

C. Contractor installing rainwater harvesting system must have installed at least 2 similar systems in the last 4 years.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, finishes for filters and other equipment. Include rated capacities, operating characteristics, electrical characteristics and furnished specialties and accessories. Pump performance curves with operating points plotted on curves and rated capacities of selected models are required.

B. Operating Manual: Manufacturer shall provide an electronic copy of the owner's manual that shall include specific instructions for receiving and handling, assembly, wiring, installation, repair and service, troubleshooting and parts lists. These manuals shall be submitted for review, along with other general submittal information, including detailed drawings, brochures, cut sheets, motor data sheets as part of the approval process.

C. Shop Drawings: Supplier of manufactured skid, shall include plans, elevations and details as required for installing contractor:

1. Detail equipment assemblies and indicate dimensions, loads, required clearances, method of field assembly, components, and location and size of each field connection.

2. Flow Diagram: Detail power, signal, and control wiring on skid and to and from all other related equipment.

3. Dimensioned Outline Drawings of Equipment Skids.

4. Plumbing process and instrumentation diagram (P&ID), including points of electrical and plumbing trade connection to the skid-mounted pre-piped skid and control panel.

5. Wiring Diagrams: For power and control wiring.

D. All equipment for water harvesting system must be approved by specifying engineer before contractor purchases system.

E. Closeout Submittals

1. Operation and Maintenance Data: For all rainwater harvesting system equipment to include in emergency operation, system operation manual and maintenance manual including critical spare parts list.

COORDINATION

Coordinate size and location of concrete bases with actual equipment provided and penetrations necessary into the cistern tank.

1.05 QUALITY ASSURANCE

A. The equipment covered in this Section shall be the products of reputable, qualified and successful manufacturers who are of proven ability and have long experience in the production of such equipment

B. All packaged pump systems shall be factory tested for performance and hydrostatic tested and certified to system design pressure prior to shipment.
C. All programming and controls shall be point to point bench tested for full functionality prior to shipment
D. Electrical components shall be UL for conformance to standards.
E. Approved manufacturers are Rainwater Management Solutions, GE Water or Siemens Water Technologies.
F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
G. Installer shall be responsible for conformance to all local, state and federal installation codes.
H. Unit is to be rated for indoor use only.

1.06 DELIVERY

A. Any shipping covers, coatings and packaging shall be retained during shipment and delivery.

B. Bearings and couplings shall be protected against damage

C. Manufacturer's written instructions for system delivery shall be followed.

1.07 COORDINATION

A. Concrete form work, foundation dimensions, location and reinforcement and penetrations required through any material/structural shall be coordinated based on manufacturer's recommendations and approval of the appropriate engineer of record prior to system delivery.

1.08 DESIGN INTENT

The purpose of this system is to provide an alternative to the municipal water supply. The system is designed to collect, store, filter and disinfect harvested rainwater. The harvested and stored water will then be transferred through a piping system, under pressure, for irrigation.

PART 2 - PRODUCTS

2.01 INITIAL FILTRATION

A. Removal of debris shall be accomplished by four (4) Rainwater Management Solutions WFF-300 Vertical Vortex Filters that have the capability of removing particulate larger than 380 microns. The collection area shall be a building roof with an impermeable covering. Water may not be harvested from green roofs or ground surfaces to include walkways, sidewalks, parking lots or roads.

2.02 WATER STORAGE CISTERN

A. The water storage cistern shall be a_____. The tank shall have __ number of __" inlets that each allow for connection from a Vortex Filter and connection inside the tank to a Smoothing Inlet. There shall be __ number of __" outlets on the tank. Each outlet shall connect to an overflow to the _____(storm drain)__. Inside the tank, each overflow shall have provision to connect to an __" overflow device. The tank shall also be provided with adequate venting, outlet connections to the pump system, electrical and control wiring connection and access for inspection and maintenance. It shall be the responsibility of the contractor to ensure that the tank provided meets all local, state and federal requirements with regards to design for the specified use and with regards to safety compliance.

B. Submersible Pump: Submersible pump with each pump providing an output of ___ GPM at ___ TDH. Each pump shall have a variable frequency drive and the entire pump skid shall have its own touch screen controller which shall be U.L. Listed. Power shall be brought from the Single Point Power Source to the pump skid. A __-gallon pressure tank shall be provided for the pump skid. _(number of)__(_) _-inch course floating filter intakes shall feed the Booster Pump Skid from inside the cistern tank. The pump shall be operated by a variable frequency drive. Basis of design is RMS _____.

C. Cistern Tank Controls
   1. A non-mercury float switch set on a float tree assembly will be used as a low water cut off float switch.
   2. An RMS stainless steel pressure sensing level sensor will be used to determine the water level in the cistern.

2.03 WATER HARVESTING SYSTEM

A. GENERAL DESCRIPTION: The rainwater skid (RMS model: RWF-___) shall be designed and manufactured to treat and distribute harvested water stored in the cistern tank. Rainwater shall be pumped to the skid by a submersible pump which utilizes variable frequency drives. Rainwater will be pumped through the filtration and water disinfection system (as designed) at a rate of __ GPM. The submersible pump shall operate with constant pressure control by way of a variable frequency drive unit that is controlled by a U.L. Listed control unit, the RMS ___ Controller. Upon pressure drop in this system created when a fixture is flushed, one of the submersible pumps will automatically start and maintain the system set point pressure. A pressure tank with a capacity of at least __ gallons and a pressure rating of ___ psi shall be located on the treatment skid. In the event that there is a low water condition in the water storage tank, the water feed for the fixtures shall seamlessly shift to a municipal water supply source whose connection is located on the rainwater skid. The water flowing from the municipal water supply will be metered as required by the entity having jurisdiction by a meter provided by others and will flow through an approved and inspected RPZ device and an actuated ball valve that is controlled by the System Controller. A U.L listed Rainwater Harvesting Controller with PLC control panel with touchscreen user interface, an RMS___, shall be mounted on the rainwater skid. Building Automation System connectivity shall be by an RS 232 connection **or** through a MODBUS RTU protocol. A U.L. Listed Single Point Power Source, mounted on the skid, shall be provided with a ____ VAC, 3 phase power supply by the Electrical Contractor with suitable amperage load capability based on the equipment being operated. The Plumbing Contractor shall provide all rainwater system piping to the points of connection to the skid.
Conduit with associated control wiring is required between the Rainwater Harvesting Controller and remote monitoring points. There shall be an appropriately sized floor drain in the immediate area of the rainwater harvesting skid.

B. Rainwater Harvesting Controller: Basis of design is a U.L. Listed RMS 200 Series Rainwater Harvesting Controller manufactured by Rainwater Management Solutions. Unit shall have a

programmable touch screen and monitor as a minimum, water flow rate, and total gallons that pass through the system, alarms, bag filter maintenance, UV light failure and pump drive failure. The screen shall display a likeness of the entire system with active tank levels and other parameters noted. All alarms will be logged and recorded for a minimum of one year. System can be operated in automatic and manual mode from this controller. Provisions shall be made for the controller to export information to a Building Automation System by way of an RS232 Connection and ModBus RTU Protocol.

C. Rainwater Skid Equipment:

1. Automatic self-flushing sediment strainer with __-micron screen and __ GPM capacity. Unit must flush itself by water pressure only and not utilize electric or air operated motors.

2. Bag Filter Assembly: 304 Stainless Steel housing with __-micron replaceable filter bags. __ gpm capacity.

3. Carbon Filtration System: 304 Stainless Steel housing with replaceable filter cartridges. __ gpm capacity.

4. UV Disinfection for designed flow requirements. __ GPM Ultraviolet Light Disinfection Unit shall be utilized. Unit shall have a COMM CENTER ultraviolet light monitor which will indicate the level of ultraviolet energy penetration and will signal the system controller if the penetration is insufficient which will result in an alarm and system shut down. Basis of design: VIQUA UV with CommCenter.

6. Pressure Differential: Pressure shall be monitored across sediment and carbon filter media using analog output. Pressure drop of 10PSI will indicate filter replacement.

7. Flow meters: Rainwater flow shall be metered as well as water from the municipal backup source and provide analog output to the control unit.

8. Solenoid Valve: Placed after the UV disinfection system. Actuated by the system controller when the water level drops in the Day Tank.

11. Rainwater Skid shall be factory mounted and plumbed on a powder coated steel skid. Schedule 80 PVC pipe shall be utilized. Skid must be pressure tested prior to delivery to operating pressure. Documentation must accompany skid.

12. Single Point Power Source (electrical disconnect box) to be located in visual sight of the pump system in compliance with local codes. Disconnect shall be NEMA 1 rated and U.L. Listed.

13. Cistern Tank Level Sensors: Pressure type Level Sensor and a float tree with one (1) float switches shall be located in the Mainn Cistern.

14. Flow meter to monitor the amount of total water flowing through system whether rainwater or domestic water shall be supplied.

D. Backup Water Supply Components:

1. Water Meter as determined by the entity having jurisdiction.

2. Flow Meter connected to the water harvesting control system so the amount of municipal water used can be monitored and recorded.

3. Reduced Pressure Backflow Prevention Device. __" Approved and inspected by the entity having jurisdiction.

4. Actuated Valve, __". Operated by the water harvesting control system when there is inadequate water in the cistern tank/water storage system.

PART 3 - EXECUTION

3.01 PREPARATION

A. Supplier shall examine the building plans and specifications for the rainwater harvesting system. Supplier shall be familiar with clearances required around rainwater skid and coordinate with installing contractor to include dividing the skid into multiple segments.

B. Contractor shall coordinate with all related trades, electrical, structural and plumbing connections.

C. Supplier shall coordinate space requirements necessary for the rainwater system with the installing contractor to ensure proper placement in the building.

D. Contractor shall coordinate and obtain all required permits and approvals from County Building Officials, Health Department, etc.

3.02 INSTALLATION

A. Manufacturer/Integrator shall provide assistance to installing contractor for field related installation questions prior to and during installation if required by installing contractor.

3.03 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform the following startup service:

1. Complete installation and startup checks according to manufacturer's written instructions. Submit a manufacturer approved check list to document startup service.

2. Check piping connections for leaks.

3. Inspect and clean strainers and filters if necessary.

4. Verify that pump controls are correct for required application.

B. Perform the following startup checks for each pump before starting:

1. Verify pump rotation

2. Prime pumps by opening suction valves and closing discharge valves, and prepare pumps for operation.

3. Start motors.

4. Open discharge valves, slowly.

5. Adjust settings.

3.04 CISTERN/ TANK INSPECTION

A. Cistern/Storage Tank Cleaning: Prior to rainwater harvesting system start-up, primary storage vessel or cistern shall be clean and free of debris and/or mud or soil. Cistern shall be

inspected prior to allowing filtered harvested rainwater to enter the cisterns.

B. Once cistern is verified to be clean and free of debris, the rainwater harvesting system is ready to receive rainwater.

3.05 LABELING AND IDENTIFICATION

A. A. Install identifying equipment marker and equipment signs on system equipment. Labeling and identification materials shall be typical for "Mechanical Identification" and codes for non-potable water systems.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train owner's maintenance personnel to adjust, operate, and maintain the Rainwater Harvesting System including all of the RMS provided equipment.

3.07 WARRANTY

Equipment shall carry a factory warranty against defects in workmanship, defective materials, and controls for a period of one (1) year. The One Year Warranty shall commence on delivery date. The quality of the water passing through the system is not warranted in anyway.

PART 4 –SEQUENCE OF OPERATION

The purpose of system is to provide an alternative to the municipal water supply. The system is designed to collect, store and treat harvested rainwater. The stored water shall be treated and transferred through the piping system, under pressure, for non-potable usage.

Harvested rainwater is conveyed to a cistern tank/water storage system through vertical, vortex pre-tank rainwater harvesting filters. Water is drawn from the tank via submersible pump(s) system operating on variable frequency drive units and utilizing floating intake filters. If no water is present in cisterns, then the rain water harvesting system will be disabled.

The water will then pass through the rain water filtration system which contains an Automatic Back Flush Filter, a bag filter assembly, a carbon filter assembly and a UV Disinfection sterilization system.

When water is required, the submersible pump system, utilizing variable frequency drive units and a pressure sensor will activate based on sensing a drop in water pressure when an irrigation valve is activated.

One (1) water levels in the main Cistern Tank shall be established as control stages to enable and disable the rainwater harvesting system.

Level One: Low Water Level Alarm. A water level of xx" below the top of the Cistern Tank shall act as a control input to shut down the submersible pump skid so that it does not loose prime and will show a "LOW WATER ALARM" on the system controller and open the domestic valve on the skid.

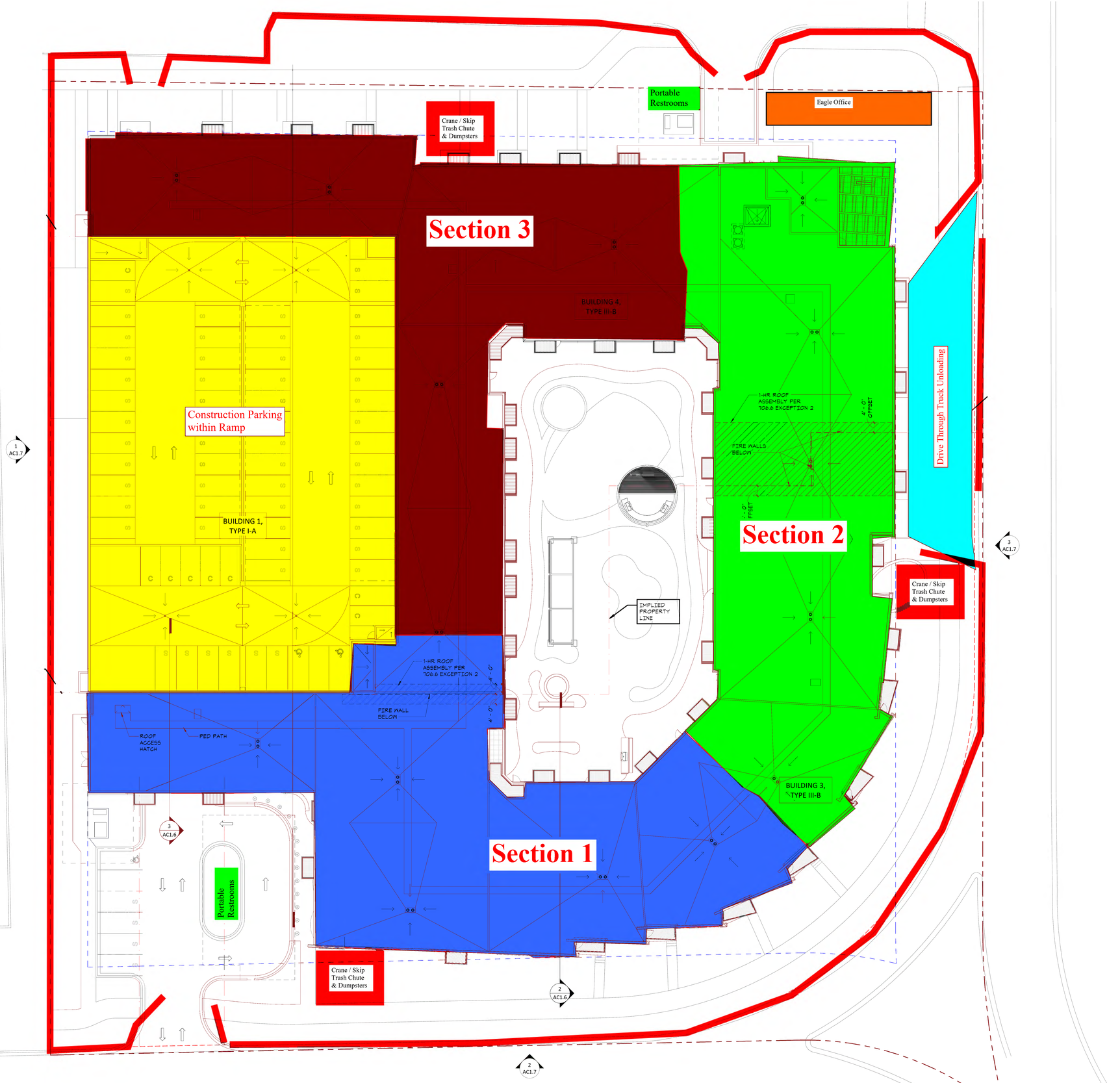
Pressure Level Sensors provide signals to the Rainwater Harvesting Controller which provide overall water level readings in both the cistern tank/water storage system.

END OF SECTION 22XXXX

Marlowe Opus Station
Eagle Building Company
Logistics Plan
3/7/23

Key

Temporary Chain Link Fencing



1 AC1.5 **ROOF CODE PLAN**
1/16" = 1'-0"

3/5/2023 6:15:26 PM

MARLOWE OPUS
STATION
MULTIFAMILY
MINNETONKA, MN

GREYSTAR

esg
ARCHITECTURE & DESIGN

500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

EAGLE BUILDING COMPANY

NOT FOR CONSTRUCTION

DESIGN DEVELOPMENT SUBMITTAL
03/03/2023

ORIGINAL ISSUE:

REVISIONS:

No.	Description	Date

222521
PROJECT NUMBER

ESG
DRAWN BY

ESG
CHECKED BY

KEY PLAN

MARLOWE OPUS STATION
MULTIFAMILY

ROOF CODE PLAN

AC1.5