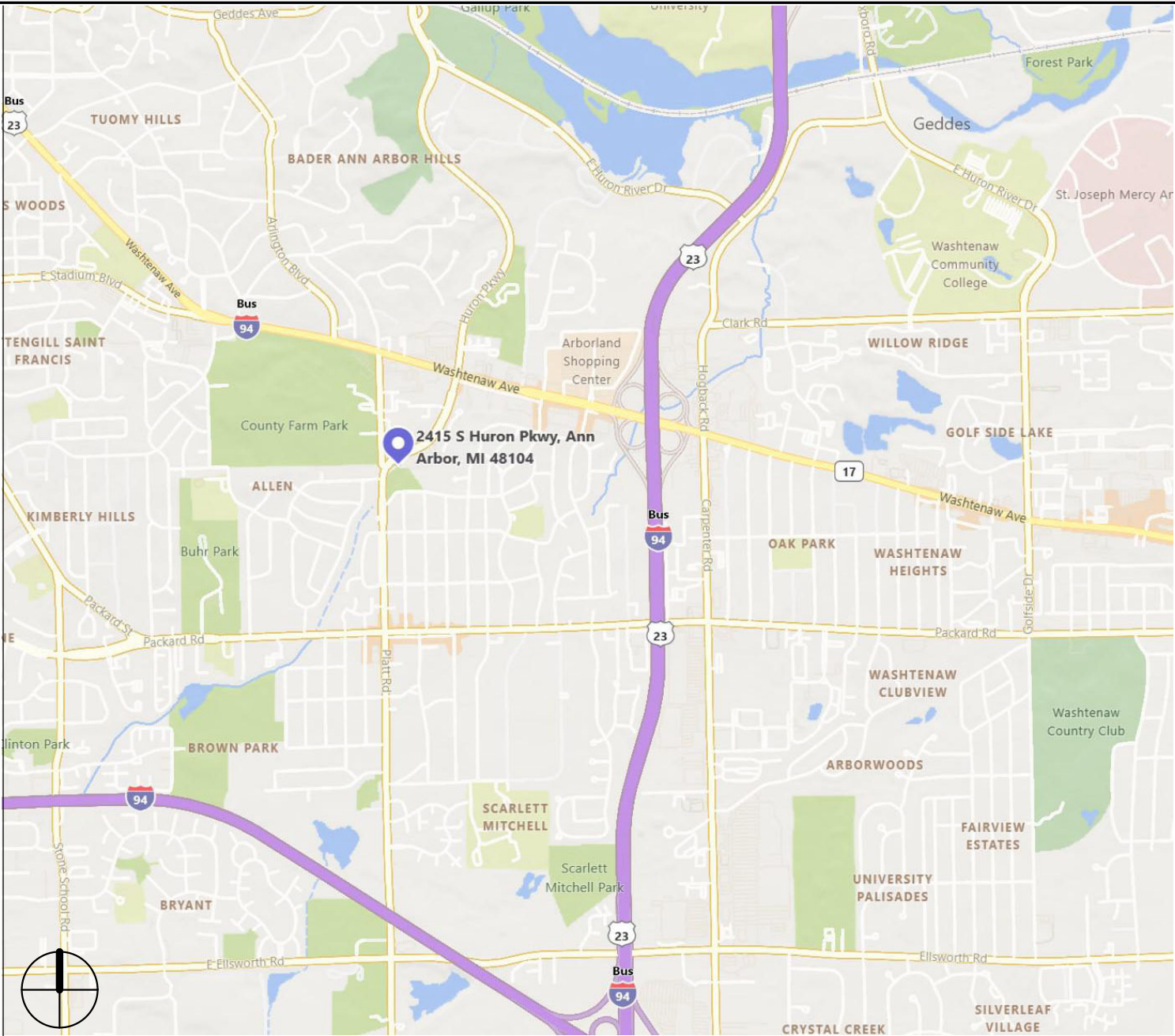
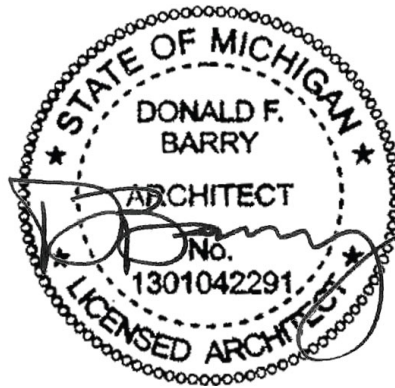


# ANN ARBOR FIRE STATION #4

2415 S. Huron Pkwy, Ann Arbor, Michigan 48104



VICINITY MAP



Project Number 21018

Issue	Date
Bids/Permits	10/11/24
Bids/Permits	08/04/23
Design Development	05/28/23
Site Plan Approval	09/22/22
DrawnTCA/A3C	CheckedTCA/A3C

City of Ann Arbor  
NEW FIRE STATION 4  
2415 S HURON PKWY  
ANN ARBOR, MI 48104

TITLE SHEET

A3C  
COLLABORATIVE ARCHITECTURE

115 1/2 E LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663 - 1910  
F: (866) 732 - 2168  
www.a3c.com

Sheet  
G0.01

## City of Ann Arbor Fire Department

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Troy, MI 48098  
David Conrad, PE  
dconrad@pbanet.com



DRAWING INDEX KEY		ISSUED FOR	
ISSUED FOR REFERENCE ONLY		09/22/22	08/04/23
ISSUED FOR REVIEW		09/22/22	08/04/23
ISSUED FOR BID/PERMIT		09/22/22	08/04/23
SHEET #	SHEET NAME	09/22/22	08/04/23
1. GENERAL			
G0.01	TITLE SHEET	●	●
G0.02	SHEET INDEX	●	●
G0.03	SUMMARY SHEET	●	●
G0.04	WALL PARTITION TYPES	●	●
G0.10	CODE COMPLIANCE	●	●
G0.11	CODE COMPLIANCE PLAN	●	●
2. CIVIL			
C-1.0	TOPOGRAPHIC SURVEY	●	●
C-1.1	TOPOGRAPHIC SURVEY	●	●
C-1.2	TOPOGRAPHIC SURVEY	●	●
C-1.3	ALTA/ASOM LAND TITLE SURVEY	●	●
C-1.4	ALTA/ASOM LAND TITLE SURVEY	●	●
C-1.5	SOIL BORING INFORMATION PLAN	●	●
C-2.0	DEMOLITION PLAN	●	●
C-3.0	OVERALL DIMENSIONAL LAYOUT PLAN	●	●
C-3.1	TURNING MOVEMENTS & SIGHT TRIANGLES	●	●
C-4.0	GRADING PLAN	●	●
C-5.0	SOIL EROSION & SEDIMENTATION CONTROL PLAN	●	●
C-6.0	UTILITY PLAN	●	●
C-6.1	SANITARY SEWER AND WATER MAIN PLAN & PROFILE	●	●
C-6.2	STORM WATER PROFILES	●	●
C-7.0	DRAINAGE PLAN	●	●
C-7.1	STORM WATER PROFILES	●	●
C-7.2	STORM WATER DRAINAGE AREAS AND CALCULATIONS	●	●
C-7.3	WCWRC WORKSHEET-FIRE STATION SIDE	●	●
C-7.4	WCWRC WORKSEETS - BASKETBALL COURT SIDE	●	●
C-7.5	STORM WATER DETENTION OUTLET CALCULATIONS	●	●
C-8.0	NOTES	●	●
C-8.1	SESC NOTES & DETAILS	●	●
C-8.2	DETAILS	●	●
C-8.3	ADS DETENTION SYSTEM DETAILS	●	●
3. LANDSCAPE			
L0.1	NATURAL FEATURES PLAN	●	●
L0.2	NATURAL FEATURES OVERLAY PLAN	●	●
L0.3	NATURAL FEATURES TREE INFORMATION	●	●
L0.4	OVERALL LANDSCAPE, TREE, SHRUB, AND SEEDING PLAN	●	●
L0.5	LANDSCAPE PLAN FIRE STATION AREA	●	●
L0.6	LANDSCAPE PLAN BASKETBALL AREA	●	●
L0.7	LANDSCAPE DETAILS	●	●
4. ARCHITECTURE			
A2.11	FIRST LEVEL FLOOR PLAN	●	●
A2.12	SECOND LEVEL FLOOR PLAN	●	●
A2.13	ROOF PLAN	●	●
A2.21	DOOR SCHEDULE, DOOR & FRAME TYPES	●	●
A2.22	INTERIOR DOOR & WINDOW DETAILS	●	●
A2.41	INTERIOR FINISH SCHEDULE & KEY	●	●
A2.42	FINISH PLANS	●	●
A3.11	EXTERIOR ELEVATIONS	●	●
A3.12	EXTERIOR ELEVATIONS	●	●
A3.13	EXTERIOR ELEVATIONS	●	●
A3.21	BUILDING SECTIONS	●	●
A3.22	BUILDING SECTIONS	●	●
A3.23	BUILDING SECTIONS	●	●
A3.31	WALL SECTIONS	●	●
A3.32	WALL SECTIONS	●	●
A3.33	WALL SECTIONS	●	●
A3.34	WALL SECTIONS	●	●
A3.35	WALL SECTIONS	●	●
A3.36	WALL SECTIONS	●	●
A3.37	WALL SECTIONS	●	●
A3.41	EXTERIOR DETAILS	●	●
A3.42	EXTERIOR DETAILS	●	●
A3.43	EXTERIOR DETAILS	●	●
A3.44	EXTERIOR DETAILS	●	●
A3.61	ROOF DETAILS	●	●
A4.11	ENLARGED PLANS	●	●
A4.12	INTERIOR ELEVATIONS	●	●
A4.13	INTERIOR ELEVATIONS	●	●
A4.14	INTERIOR ELEVATIONS	●	●

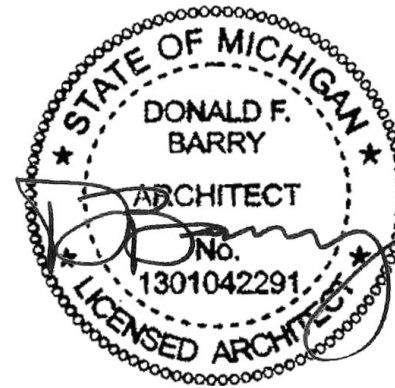
SHEET #		SHEET NAME		ISSUED FOR	
				09/22/22	08/04/23
				09/22/22	08/04/23
				09/22/22	08/04/23
A4.15	INTERIOR ELEVATIONS	●	●		
A4.16	INTERIOR ELEVATIONS	●	●		
A4.17	INTERIOR ELEVATIONS	●	●		
A4.18	INTERIOR ELEVATIONS	●	●		
A5.11	ADA CODE SHEET	●	●		
A6.11	FIRST LEVEL REFLECTED CEILING PLAN	●	●		
A6.12	SECOND LEVEL REFLECTED CEILING PLAN	●	●		
A6.21	CEILING DETAILS	●	●		
A6.22	CEILING DETAILS	●	●		
A7.11	ENLARGED STAIR & ELEVATOR PLANS	●	●		
A7.12	STAIR & ELEVATOR SECTIONS	●	●		
A7.13	STAIR & ELEVATOR DETAILS	●	●		
A8.11	CASEWORK DETAILS	●	●		
A8.12	INTERIOR FINISH DETAILS	●	●		
5. STRUCTURAL					
S0.01	GENERAL STRUCTURAL NOTES	●	●		
S0.02	LEGEND & ABBREVIATIONS	●	●		
S1.01	FIRST LEVEL STRUCTURAL PLAN	●	●		
S1.02	SECOND LEVEL STRUCTURAL PLAN	●	●		
S1.03	ROOF STRUCTURAL PLAN	●	●		
S2.01	ELEVATIONS	●	●		
S2.02	ELEVATIONS	●	●		
S3.01	FOUNDATION SECTIONS	●	●		
S4.01	SUPERSTRUCTURE SECTIONS	●	●		
S4.02	SUPERSTRUCTURE SECTIONS	●	●		
S5.01	TYPICAL DETAILS	●	●		
S5.02	TYPICAL DETAILS	●	●		
S5.03	TYPICAL DETAILS	●	●		
S5.04	TYPICAL DETAILS	●	●		
S5.05	TYPICAL DETAILS	●	●		
S5.06	TYPICAL DETAILS	●	●		
S6.01	SCHEDULES	●	●		
6. MECHANICAL					
M0.01	MECHANICAL STANDARDS AND DRAWING INDEX	●	●		
M0.02	MECHANICAL SITE PLAN	●	●		
M0.03	ENERGY MODELING INFORMATION	●	●		
M3.01	FIRST LEVEL HVAC PIPING PLAN	●	●		
M3.02	SECOND LEVEL HVAC PIPING PLAN	●	●		
M4.01	FIRST LEVEL SHEET METAL PLAN	●	●		
M4.02	SECOND LEVEL SHEET METAL PLAN	●	●		
M4.03	ROOF SHEET METAL PLAN	●	●		
M6.01	ENLARGED MECHANICAL PLANS	●	●		
M6.02	MECHANICAL SECTIONS	●	●		
M6.03	MECHANICAL SECTIONS	●	●		
M6.51	MECHANICAL ISOMETRIC VIEWS	●	●		
M6.01	MECHANICAL DETAILS	●	●		
M6.02	MECHANICAL DETAILS	●	●		
M6.03	MECHANICAL DETAILS	●	●		
M6.04	MECHANICAL DETAILS	●	●		
M7.01	MECHANICAL SCHEDULES	●	●		
M7.02	MECHANICAL SCHEDULES	●	●		
M7.11	MECHANICAL SCHEDULES	●	●		
M7.12	MECHANICAL SCHEDULES	●	●		
M8.01	TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES	●	●		
M8.02	TEMPERATURE CONTROLS	●	●		
M8.03	TEMPERATURE CONTROLS	●	●		
M8.04	TEMPERATURE CONTROLS	●	●		
M8.05	TEMPERATURE CONTROLS	●	●		
M8.06	TEMPERATURE CONTROLS	●	●		
7. PLUMBING					
P2.00	UNDERGROUND PLUMBING PLAN	●	●		
P2.01	FIRST LEVEL PLUMBING PLAN	●	●		
P2.02	SECOND LEVEL PLUMBING PLAN	●	●		
P2.03	ROOF PLUMBING PLAN	●	●		
P5.01	ENLARGED PLUMBING PLANS	●	●		
P6.01	PLUMBING DETAILS	●	●		
P6.02	PLUMBING DETAILS	●	●		
P7.01	PLUMBING SCHEDULES	●	●		

SHEET #		SHEET NAME		ISSUED FOR	
				09/22/22	08/04/23
				09/22/22	08/04/23
				09/22/22	08/04/23
P7.02	PLUMBING SCHEDULES	●	●		
8. ELECTRICAL					
E0.01	ELECTRICAL STANDARDS AND DRAWING INDEX	●	●		
E0.02	ELECTRICAL STANDARD SCHEDULES	●	●		
E0.03	ELECTRICAL SITE PLAN	●	●		
E2.01	FIRST LEVEL LIGHTING PLAN	●	●		
E2.02	SECOND LEVEL LIGHTING PLAN	●	●		
E3.01	FIRST LEVEL POWER PLAN	●	●		
E3.02	SECOND FLOOR POWER PLAN	●	●		
E4.01	ROOF ELECTRICAL PLAN	●	●		
E5.01	ONE LINE DIAGRAM	●	●		
E5.02	PANEL SCHEDULES	●	●		
E7.01	ELECTRICAL DETAILS AND DIAGRAMS	●	●		
E7.02	ELECTRICAL DETAILS AND DIAGRAMS	●	●		
E7.03	ELECTRICAL DETAILS AND DIAGRAMS	●	●		
E7.04	ELECTRICAL DETAILS AND DIAGRAMS	●	●		
9. FIRE PROTECTION					
FP1.01	FIRE PROTECTION PLANS	●	●		
FP6.01	FIRE PROTECTION DETAILS	●	●		



## GENERAL PROJECT NOTES

- CONSTRUCTION OF THIS PROJECT SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND EACH SUBCONTRACTOR TO REVIEW, UNDERSTAND AND COORDINATE WORK WITH APPLICABLE CODES, ORDINANCES, REGULATIONS, AND ALL CONTRACT DRAWINGS BEFORE THE INSTALLATION OF THEIR WORK. ANY DISCREPANCY BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION. ANY WORK INSTALLED IN CONFLICT WITH THE ARCHITECTURAL DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE AND AT NO EXPENSE TO THE OWNER, ENGINEER OR ARCHITECT.
- SCHEDULE AND RECEIVE APPROVAL FROM GOVERNING JURISDICTION AND THE ENGINEER FOR ALL UTILITY INTERRUPTIONS IN ADVANCE OF NEEDED DATE. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE REQUIRED NOTIFICATION TIMES WITH EACH GOVERNING JURISDICTION AND/OR UTILITY.
- CONTRACTOR SHALL VERIFY SIZES AND LOCATIONS OF ALL OPENINGS FOR MECHANICAL EQUIPMENT, ELECTRICAL EQUIPMENT, OWNER SUPPLIED EQUIPMENT, AND OTHER EQUIPMENT, AS WELL AS SHOP DRAWINGS AS REVIEWED BY ARCHITECT OR ENGINEER BEFORE PROCEEDING WITH WORK.
- CONTRACTOR SHALL VERIFY/ADJUST SIZES AND LOCATIONS OF ALL EQUIPMENT PADS AND BASES, POWER, WATER AND DRAIN INSTALLATION BEFORE PROCEEDING WITH THE WORK. THIS SHALL OCCUR WITH NO ADDITIONAL COST TO OWNER. PROVIDE BLOCKING BEHIND ALL WALL MOUNTED ACCESSORIES AND MILLWORK AS REQUIRED BY APPLICABLE MANUFACTURER RECOMMENDATIONS, AND AS INDICATED BY ARCHITECT DURING SUBMITTAL PROCESS.
- ALL PENETRATIONS OF FIRE RESISTIVE WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR THROUGH PENETRATION FIRE STOP SYSTEM.
- CONTRACTOR SHALL CONTACT ARCHITECT PRIOR TO FINAL PLACEMENT OF LIGHT FIXTURES AND DIFFUSERS IN ALL CEILINGS AND WALLS. COORDINATE WITH ELECTRICAL PRIOR TO ACOUSTICAL CEILING GRID INSTALLATION.
- ALL DIMENSIONS ARE FROM FACE OF CONCRETE MASONRY UNIT, BLOCK, STUD OR CENTERLINE OF COLUMNS, UNLESS NOTED OTHERWISE.
- ALL EXTERIOR WALL & ROOF OPENINGS, FLASHING, COUNTER FLASHING, EXPANSION JOINTS SHALL BE CONSTRUCTED IN SUCH A MANNER AS TO MAKE THEM WEATHERPROOF AND WATERTIGHT.
- EACH INSTALLER SHALL BE RESPONSIBLE FOR VERIFICATION AND COORDINATION WITH OTHER INSTALLERS TO SECURE COMPLIANCE OF DRAWING AND SPECIFICATIONS CONCERNING THE ACCURATE LOCATION OF STRUCTURAL MEMBERS AND OPENINGS FOR MECHANICAL, ELECTRICAL AND MISCELLANEOUS EQUIPMENT.
- DO NOT SCALE DRAWINGS. THE CONTRACTOR SHALL USE DIMENSIONS AS SHOWN AND ACTUAL FIELD MEASUREMENT. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
- RECYCLING- CONTRACTOR IS ENCOURAGED TO RECYCLE ALL MATERIALS POSSIBLE AND TO USE RECYCLED MATERIALS WHERE SUITABLE. CONTRACTOR SHOULD NOTIFY ARCHITECT OF POTENTIAL RECYCLED MATERIALS WHICH MAY BE APPROPRIATE FOR SUBSTITUTION.
- THIS PROJECT HAS BIDDER DESIGNED AND INSTALLED FEATURES AS NOTED BELOW, TO BE SUBMITTED AS A DEFERRED SUBMITTAL BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR APPLYING FOR AND OBTAINING ALL REQUIRED PERMITS. THE CONTRACTOR IS RESPONSIBLE FOR INCLUDING ALL PREPARATION AND PERMIT REVIEW TIME IN THE PROJECT SCHEDULE. THE CONTRACTOR SHALL HIRE ENGINEERS FOR DELEGATED DESIGN AND PROVIDE REQUIRED STAMPED (BY MI STATE LICENSED ENGINEERS) DRAWINGS AND CALCULATIONS. BIDDER DESIGNED & INSTALLED ITEMS INCLUDE:
  - AUTO SPRINKLER SYSTEM PER NFPA 13, MBC SECTION 903
  - FIRE ALARM SYSTEM PER SPECIFICATIONS AND REQUIREMENTS



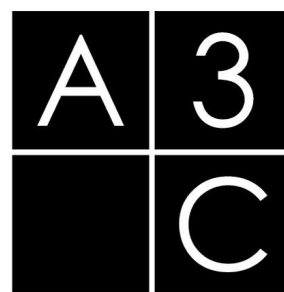
Project Number 21018

Issue	Date

Bids/Permits	10/11/24
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City of Ann Arbor  
NEW FIRE STATION 4  
2415 S HURON PKWY  
ANN ARBOR, MI 48104

SHEET INDEX



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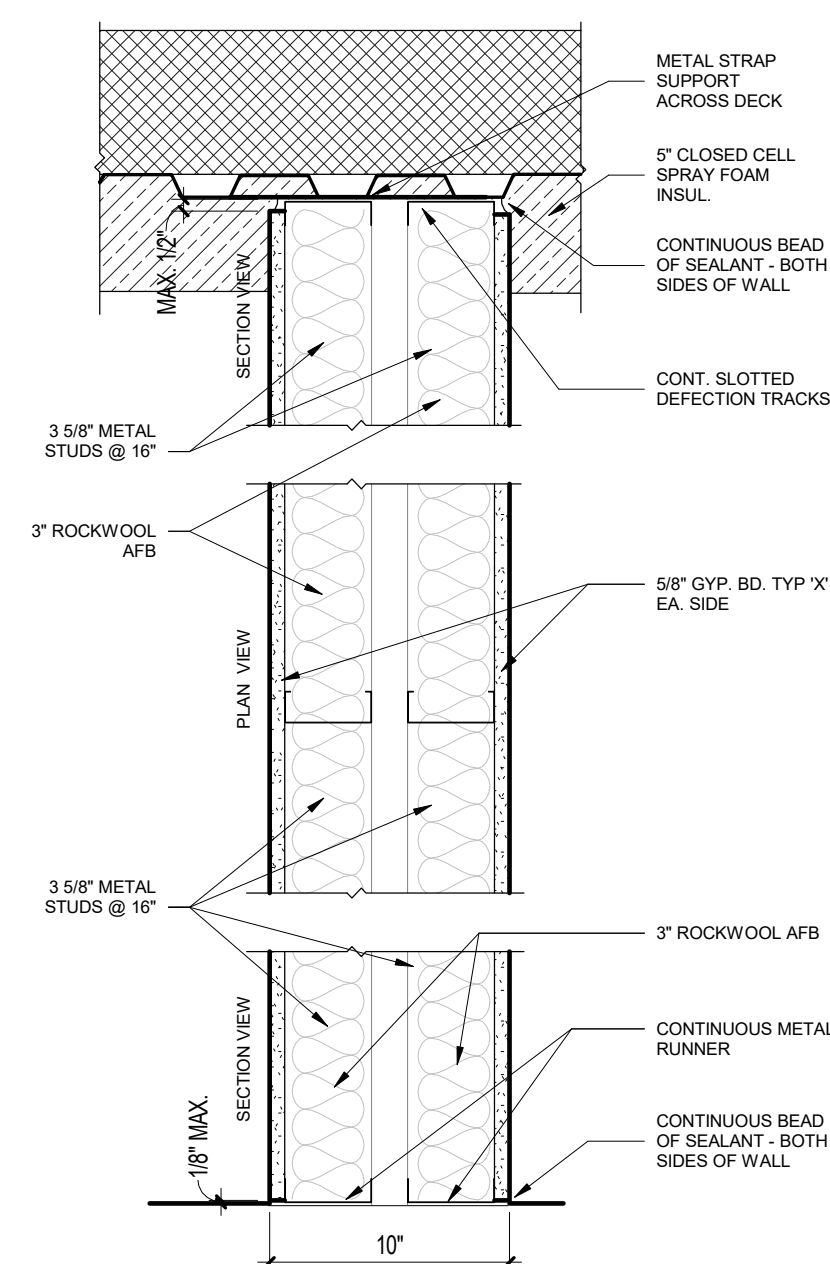




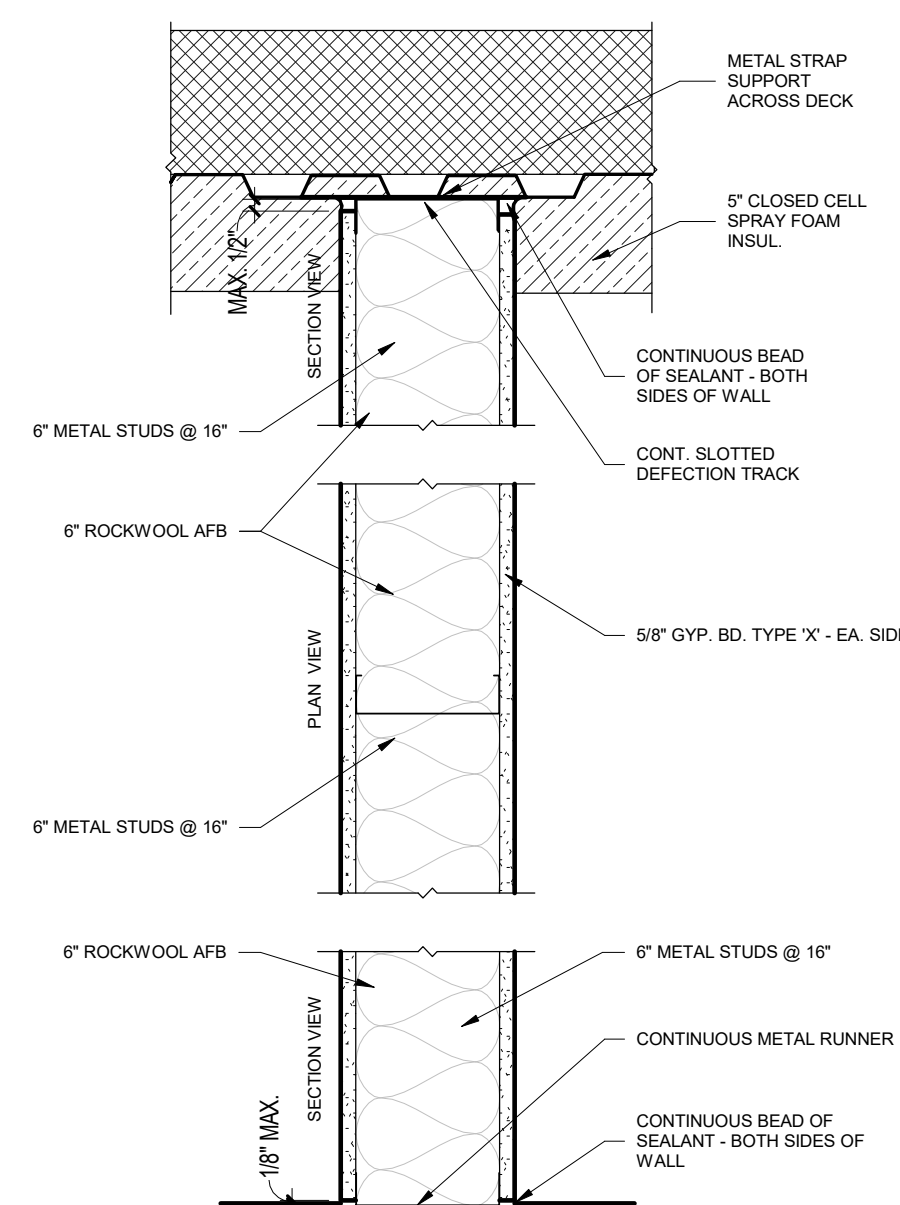


**WALL TYPE NOTES**

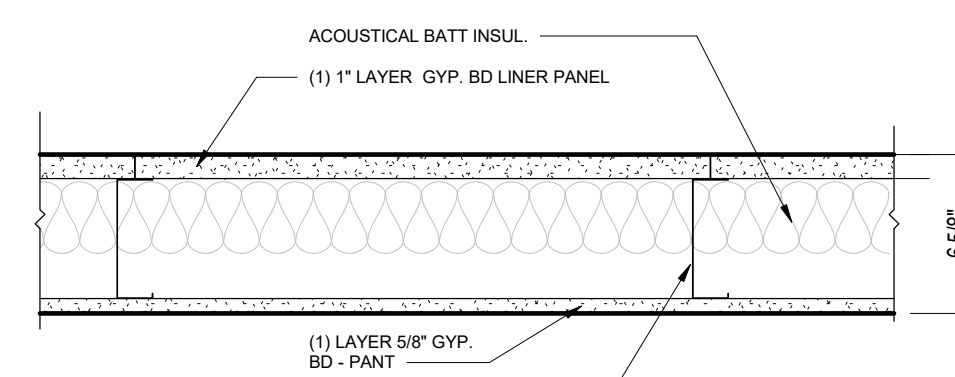
1. WALL TYPES ARE KEYED ON SHEETS A2.11, A2.12, A4.11 AND A7.11
2. MOISTURE RESISTANT GYPSUM BOARD AT TOILET ROOMS, ALCOVES AND DECON
3. SEE FINISH SCHEDULE FOR ADDITIONAL GYPSUM BOARD INFORMATION
4. SEE WALL SECTIONS FOR EXTERIOR WALL TYPES



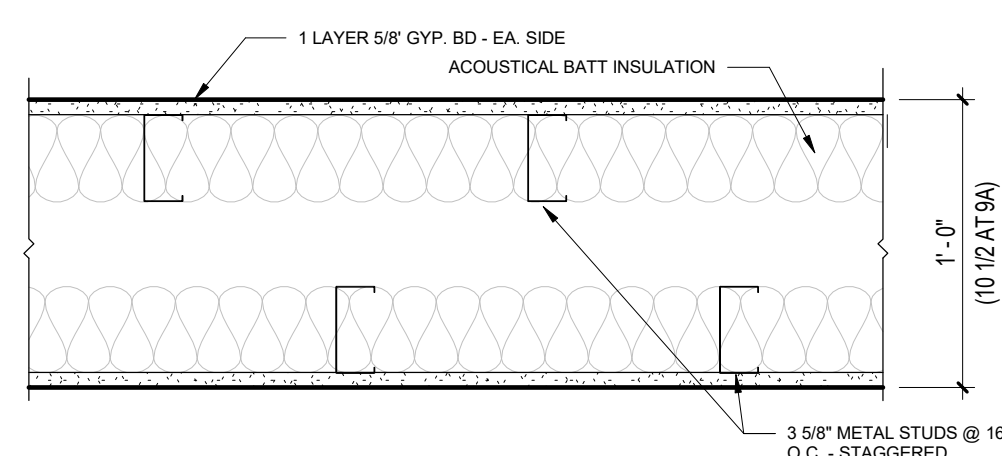
12 1/2 HOUR FIRE PARTITION - TO UNDERSIDE OF METAL DECK ABOVE  
UL ASSEMBLY NO. U419 (SIMILAR), STC RATING OF 52 (ASSEMBLY NO. ISS-25)



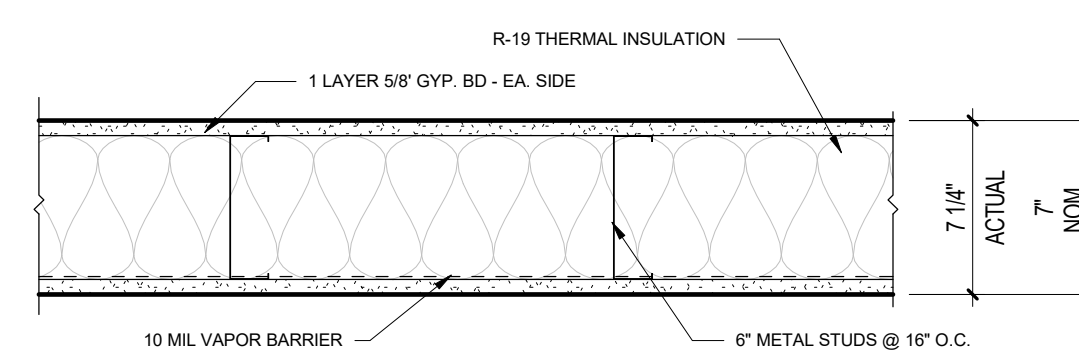
11 1/2 HOUR FIRE PARTITION - TO UNDERSIDE OF METAL DECK ABOVE  
UL ASSEMBLY NO. U419 (SIMILAR), STC RATING OF 52 (ASSEMBLY NO. ISS-25)



10 1-HOUR FIRE-RATED SHAFT WALL CONSTRUCTION- (1) LAYER TYPE "X", 5/8" GYP. BOARD OVER C-H STUDS AT 24" O.C. WITH 1" THICK GYP. BOARD LINER PANEL (TYPE "SLX"). ACOUSTIC BAT INSULATION FULL HEIGHT. PARTITION EXTENDS FROM FLOOR TO UNDERSIDE OF METAL DECK ABOVE. UL ASSEMBLY NO. U415. SYSTEM "A"

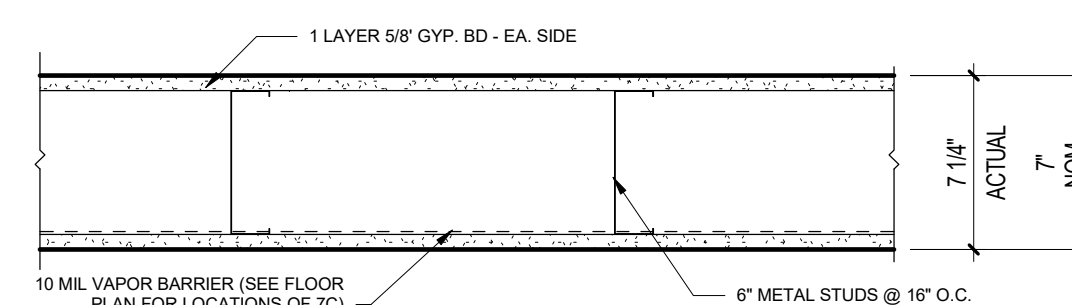


9 TO UNDERSIDE OF DECK OR STRUCTURE  
9A TO 6" ABOVE FINISHED CEILING



8 TO UNDERSIDE OF DECK

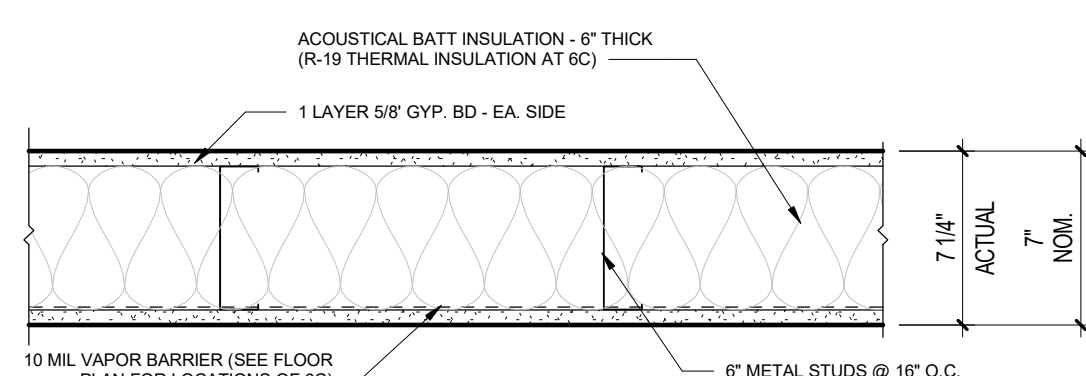
8A TO UNDERSIDE OF DECK (GYP. BD. ONE SIDE



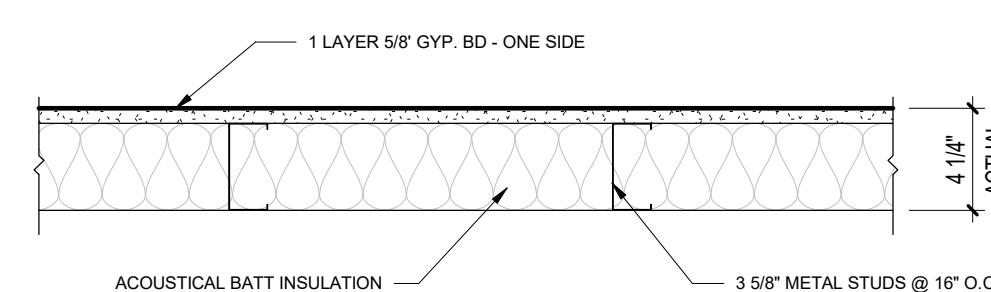
7 TO UNDERSIDE OF DECK OR STRUCTURE (NO VAPOR BARRIER)

7A TO 6" ABOVE FINISHED CEILING (NO VAPOR BARRIER)

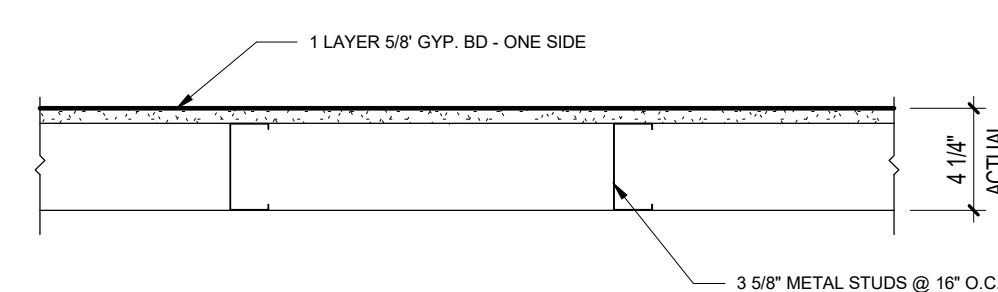
7C TO UNDERSIDE OF DECK OR STRUCTURE WITH VAPOR BARRIER



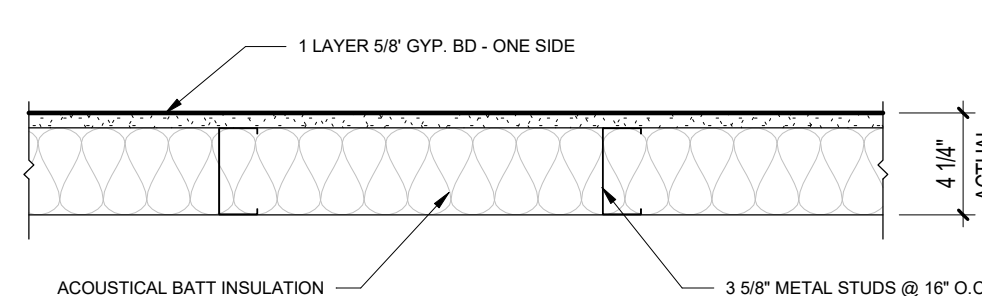
<b>6</b>	TO UNDERSIDE OF DECK OR STRUCTURE (AT COLUMN LINE 2 SEE WALL SECTION FOR EXTENT OF WALL (NO VAPOR BARRIER)
<b>6A</b>	TO 6" ABOVE FINISHED CEILING (NO VAPOR BARRIER)
<b>6C</b>	TO UNDERSIDE OF DECK OR STRUCTURE WITH VAPOR BARRIER TO HALL SIDE



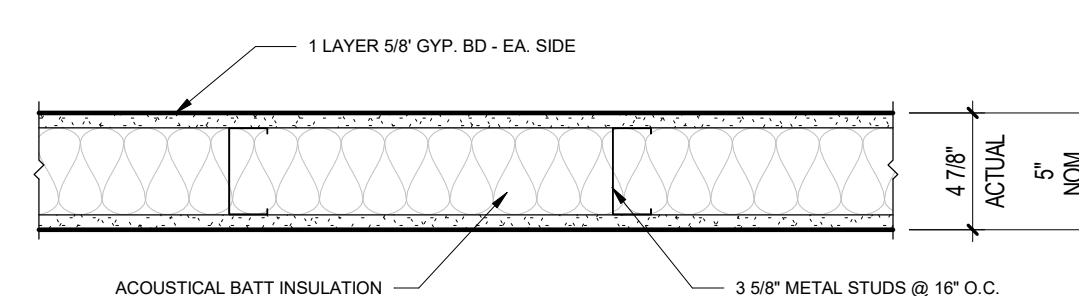
5 TO UNDERSIDE OF DECK OR STRUCTURE  
5A TO 6" ABOVE FINISHED CEILING



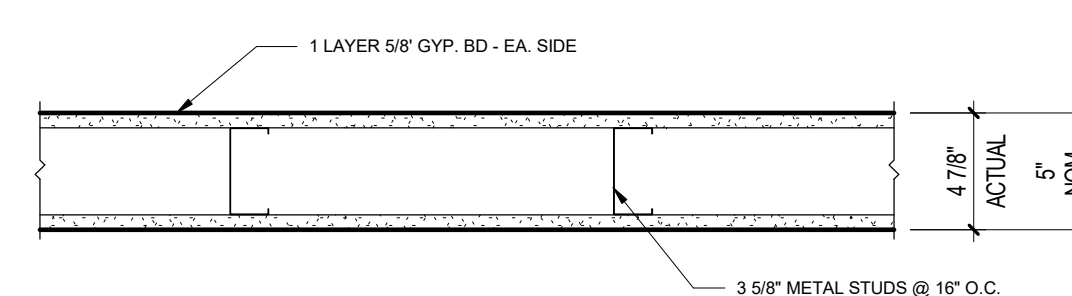
4 TO UNDERSIDE OF DECK OR STRUCTURE  
4A TO 6" ABOVE FINISHED CEILING



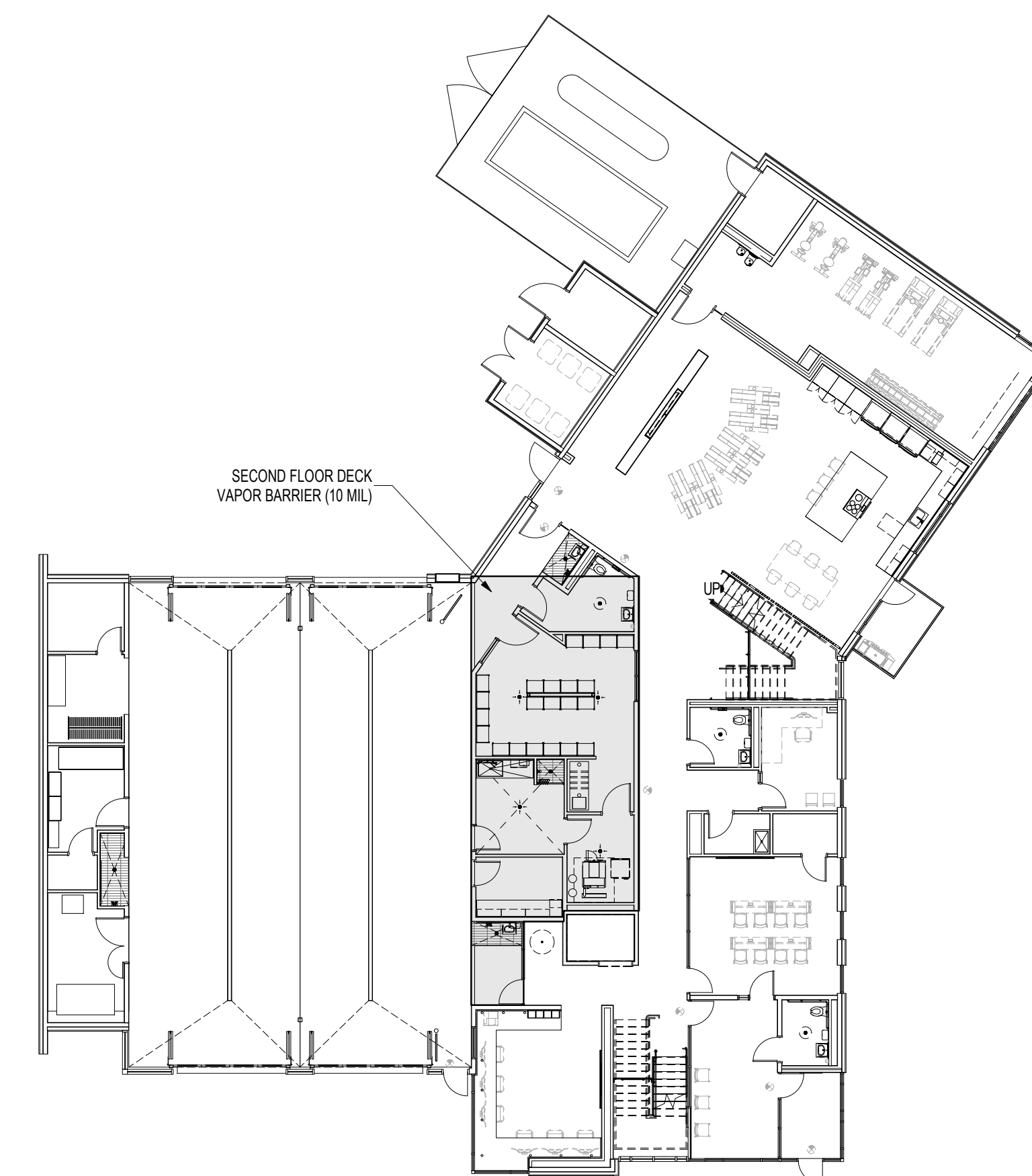
3 TO UNDERSIDE OF DECK OR STRUCTURE  
3A TO 6" ABOVE FINISHED CEILING



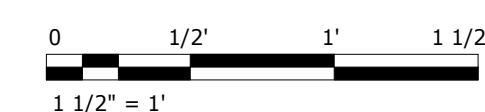
2 TO UNDERSIDE OF DECK OR STRUCTURE  
2A TO 6" ABOVE FINISHED CEILING



1 TO UNDERSIDE OF DECK OR STRUCTURE  
1A TO 6" ABOVE FINISHED CEILING



**1 FIRST FLOOR PLAN**  
Scale: 1/16" = 1'-0"





BUILDING CODE SUMMARY

2015 Michigan Building Code (MBC 2015)

2021 Michigan Plumbing Code (MPC 2021)

2021 Michigan Mechanical Code (MMC 2021)

2023 National Electrical Code (NEC 2023) with part 6 State amendments

ICC / ANSI A117.1 – 2009 & Michigan Barrier Free Design Law of Public Act 1 of 1966 as amended

2015 International Energy Conservation Code Part 10 with ANSI / ASHRAE /

IESNA Standard 90.1-2013 (Project voluntarily designed to more stringent ASHRAE 90.1-2019)

2015 International Fire code

2013 NFPA 13, 13D & 13R

2019 NFPA 72 Fire Alarm Code

MICHIGAN ENERGY CODE 2015 - ASHRAE STD. 90.1

(GOVERNING ENGERY CODE IS BASED ON ASHRAE 90.1-2013. THIS PROJECT VOLUNTARILY DESIGNED TO MORE STRINGIENT ASHRAE 90.1-2019 FOR NON-RESIDENTIAL UNLESS NOTED)

THE BELOW ARE MINIMUM CODE PERFORMANCES.  
REFER TO SPECIFICATIONS AND DRAWINGS FOR REQUIRED PRODUCT VALUES - EQUAL OR HIGHER PERFORMANCE REQUIRED

BUILDING DESIGNATED AS NON-RESIDENTIAL.  
CLIMATE ZONE 5A. BUILDING ENVELOPE REQUIREMENTS PER TABLE 5.5-5 (OF ASHRAE STD. 90.1-2019)

BUILDING ELEMENT	MIN. R-VALUE OF INSULATION AND/OR ASSEMBLY	MAX. SHGC
ROOF	R-30 c.i., U-0.032 (SEE DRAWINGS FOR R-60 ROOF)	
MASS WALLS STEEL-FRAMED	R-13 + R-10 c.i., U-0.055 (SEE DRAWINGS FOR R-43 WALLS)	
SLAB ON GRADE FLOORS - UNHEATED	R-15 FOR 24IN.	
OPAQUE DOORS - SWING - NONSWINING	U-0.370 U-0.310	
FENESTRATION - FIXED - OPERABLE - ENTRANCE DOOR	U-0.36 U-0.45 U-0.63	SHGC - 0.38 SHGC - 0.33 SHGC - 0.33

GENERAL NOTES

1. PROVIDE CONTINUOUS AIR BARRIER (SEE DRAWINGS AND SPECIFICATIONS FOR AIR/VAPOR BARRIER).
2. AIR LEAKAGE RATE OF THE BUILDING ENVELOPE SHALL NOT EXCEED 0.40 CFM/FT<sup>2</sup> UNDER PRESSURE DIFFERENTIAL OF 0.3 IN. OF WATER.
3. PROVIDE ALL TESTING AND REPORTS FOR BUILDING ENVELOPE REQUIREMENTS.

CHAPTER 3 - USE & OCCUPANCY

Building Occupancy: B - Business Areas (Offices, Day Room, Exercise, Meeting Room, Kitchen, 2nd Floor areas other than sleeping, etc.)  
R-3 - Residential Areas (2nd Floor Sleeping Rooms)  
S-1 - Moderate-Hazard Storage (Apparatus Bay Support Areas, Mechanical Room)  
S-2 - Low Hazard Storage (Apparatus Bay)

CHAPTER 4 - SPECIAL DETAILED REQUIREMENTS BASED ON USE & OCCUPANCY

Section 406.3.4 Separation (MBC 2015)

Section 420.2 Separation Walls (MBC 2015)

Section 420.3 Horizontal Separation (MBC 2015)

Fire Partitions (1/2 hour) are required to separate R-3 sleeping units from other occupancies in accordance with section 708 and 708.3 - exception 2 fire resistance rating of not less than 1/2 hour in VB building and equipped throughout with an automatic sprinkler system

Horizontal assemblies (1/2 hour) are required to separate R-3 sleeping units from other occupancies in accordance with section 711 and 711.2.4.3 - exception fire resistance rating of not less than 1/2 hour in a VB building and equipped throughout with an automatic sprinkler system

CHAPTER 5 - BUILDING HEIGHTS & AREAS

Maximum allowable height and area:  
Section 508.3 Nonseparated occupancies (MBC 2015)  
(Based on V-B construction type with automatic sprinkler system throughout and use groups B, R-3, S-1 and S-2. The building area & height based on most restrictive allowances for the occupancy group)

Table 504.3, 504.4 & 506.2 (MBC 2015)

	Building	Allowed
Building Height	2 Story / 29'-0"	2 Story (S-1) / 40'-0" (B)
Building Area	8,715 SF First Floor 3,326 SF Second Floor 12,041 SF Total	27,000 SF (B)

Required Separation of Occupancies  
Section 508.4 Table (MBC 2015)

Separation required per section 420.2 and 420.3 above.

CHAPTER 6 - TYPES OF CONSTRUCTION

Construction Classification  
Section 602.5 (MBC 2015)  
Type V-B, Sprinklered

Fire-Resistance Rating for Building Elements  
Table 602 (MBC 2015)

Table 601 (MBC 2015)

Structural Frame	0 hours
Bearing Walls – Interior	0 hours
Bearing Walls – Exterior	0 hours
Nonbearing Walls – Interior	0 hours
Floor Construction	0 hours
Roof Construction	0 hours

Fire-Resistance Rating for Exterior Walls  
Table 602 (MBC 2015)

Fire Separation Distance  $10 \leq X < 30$  Group B – 0 hours

CHAPTER 7 - FIRE & SMOKE PROTECTION

Fire Barriers  
Section 707 & Section 713.4 (MBC 2015)

1 Hour Fire Barrier at Elevator Shaft Enclosure

Fire Partitions  
Section 708 (MBC 2015)

See Section 420.2 for separation requirements.

Floor Assemblies  
Section 711 (MBC 2015)

See Section 420.3 for separation requirements.

Doors  
Table 716.5 (MBC 2015)

1 Hour Rated in 1 Hour Fire Barrier  
1/3 Hour (20 min.) rated in 1/2 Hour Rated Fire Partition

CHAPTER 8 - INTERIOR FINISHES

Interior finishes shall be classified in one of the following groups:

Class A: Flame spread index 0-25; smoke-developed index 0-450  
Class B: Flame spread index 25-75; smoke-developed index 0-450  
Class C: Flame spread index 76-200; smoke-developed index 0-450

Interior wall and ceiling finish requirements  
Table 803.11 (MBC 2015)

OCC GROUP	EXIT PASSAGEWAYS	CORRIDORS & ENCLOSURE FOR EXIT ACCESS	ROOMS & ENCLOSED SPACES
R-3	C	C	C
S	C	C	C
B	B	C	C

CHAPTER 9 - FIRE PROTECTION SYSTEMS

Automatic Sprinkler Systems  
Section 903  
The building will have an automatic sprinkler system throughout, unless otherwise noted.

Fire Alarm and Detection Systems  
Section 907

The building will have automatic fire alarm system.

CHAPTER 10 - MEANS OF EGRESS

Ceiling Height  
Section 1003.2

Means of egress paths shall have a minimum height of 7'-6".

Occupant Load  
Table 1004.1.2

OCCUPANT LOAD				
OCCUPANCY TYPE	FUNCTION OF SPACE	AREA	FLOOR AREA - SF PER	OCCUPANTS

LEVEL 1				
BUSINESS (B)	EXERCISE	699	50	13.98
BUSINESS (B)	BUSINESS AREAS	3,798	100	37.98
STORAGE (S-1)	ACC. STORAGE	1,389	300	4.63
STORAGE (S-2)	PARKING GARAGES	2,829	200	14.15
TOTAL - LEVEL 1		8,715		71

LEVEL 2				
BUSINESS (B)	BUSINESS AREAS	1,622	100	16.22
STORAGE (S-1)	ACC. STOR. / MECH / ELEC	872	300	2.90
RESIDENTIAL (R-3)	RESIDENTIAL	832	200	4.16
TOTAL - LEVEL 2		3,326		24
TOTAL - LEVEL 1 & 2		12,041		95

Required egress capacity based on occupant load (doors)  
Section 1005.3.2

2 x 95 Occupants = 19" Required  
96" Provided

Common path of egress travel and exit access travel distance with automatic sprinkler system  
Table 1006.2.1 and 1017.2

Refer to floor plan plans on sheet G0.11 for distances within building

Common path of egress (MBC 1006.2.1)  
Occupancy Group B 100 FT  
Occupancy Group R-3 125 FT  
Occupancy Group S-1 & S-2 100 FT

Exist access travel distance (MBC 1017.2)  
Occupancy Group R-3 250 FT  
Occupancy Group S-1 250 FT  
Occupancy Group B 300 FT  
Occupancy Group S-2 400 FT

CHAPTER 29 - PLUMBING SYSTEMS

Plumbing systems and equipment shall be designed and installed per the Michigan Plumbing Code 2018 (MPC 2018)

Required fixtures  
Table 403.1

Business Use Group (B)

Occupant Load = 13.98+37.98+16.22=68.18 (69)  
35 Male and 35 Female

Water closets  
(1 per 25 required for first 50 and 1 per 50  
For the remainder exceeding 50)

Required  
1.4 (Men)  
1.4 (Women)

Lavatories  
(1 per 40 required for first 80 and 1 per 80  
For the remainder exceeding 80)

875 (Men)  
875 (Women)

Storage Use Group (S-1 & S-2)

Occupant Load = 4.63+14.15+2.90=21.68 (22)  
11 Male and 11 Female

Water closets  
(1 per 100)

.11 (Men)  
.11 (Women)

Lavatories  
(1 per 100)

.11 (Men)  
.11 (Women)

Residential (R-3)

Occupant Load = 4.16 (use 6 for 6 beds)  
3 Male and 3 Female

Water closets  
(1 per 10)

.3 (Men)  
.3 (Women)

Lavatories  
(1 per 10)

.3 (Men)  
.3 (Women)

Showers  
(1 per 8)

.375 (Men)  
.375 (Women)

Required Provided

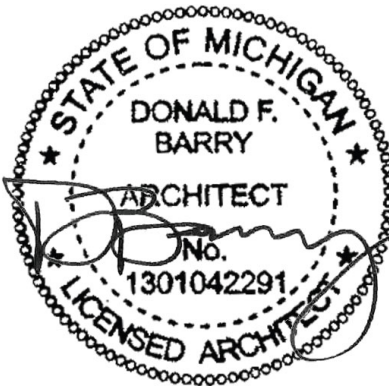
2.8+ 22+ 6=4 (M & W) 6 (Unisex-individual)

Total Water Closets 1.75+ 22+ 6=3 (M & W) 6 (Unisex-individual)

Total Lavatories .75=1 (M & W) 3 (Unisex-individual)

Total Drinking Fountains (1 per 100) 95/100=1 1

Service Sinks (1 required) 2



Project Number 21018

Issue	Date
Bids/Permits	10/11/24
Bids/Permits	08/04/23
Design Development	05/28/23
Drawn: KJ	Checked: FEA

City of Ann Arbor  
NEW FIRE STATION 4  
2415 S HURON PKWY  
ANN ARBOR, MI 48104

CODE COMPLIANCE

A3C  
COLLABORATIVE ARCHITECTURE

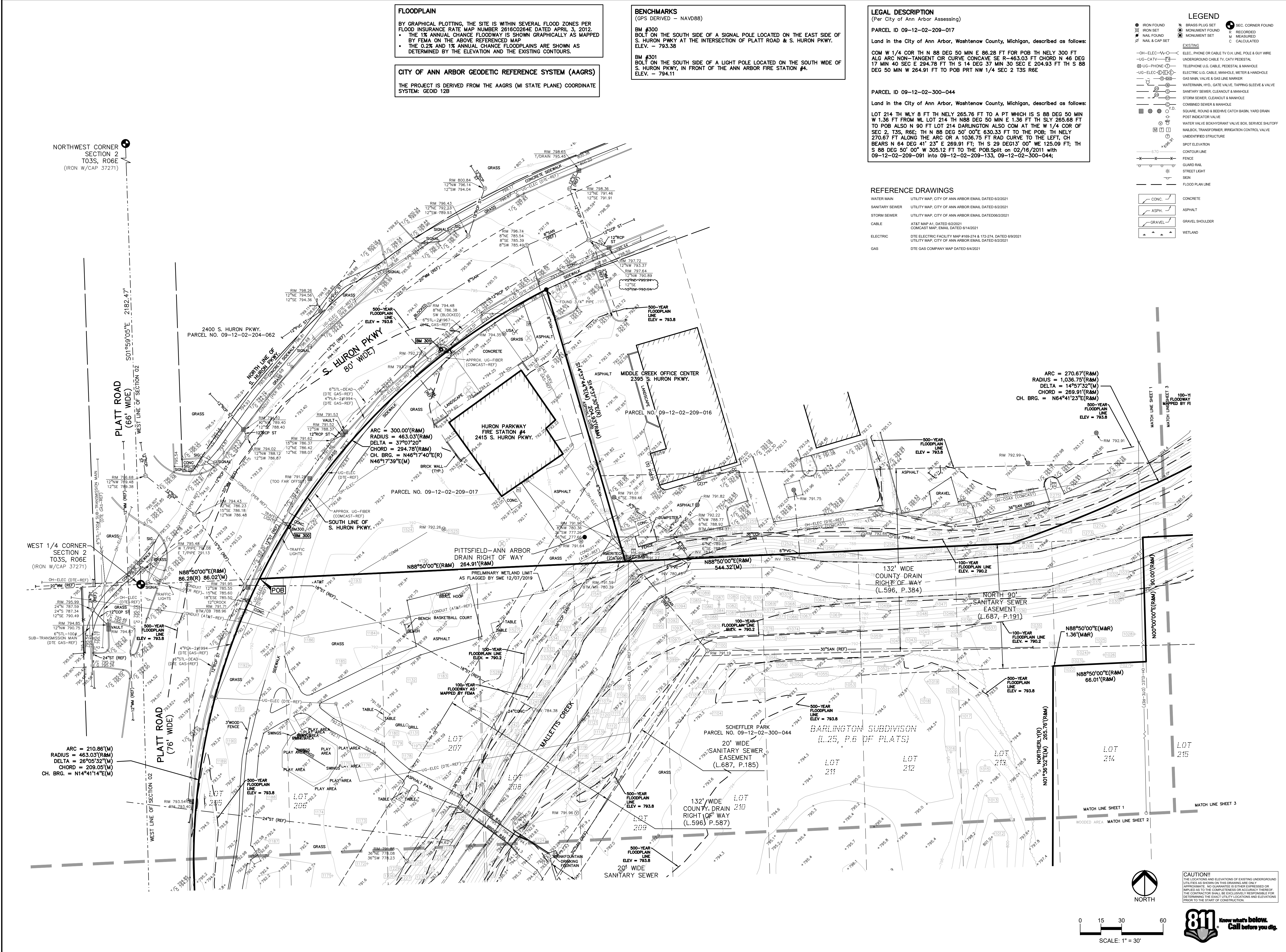
115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663 - 1910  
F: (866) 732 - 2168  
www.a3c.com







S:\PROJECTS\2021\2021-0184 ANN ARBOR FIRE STATION\DWG\TOPOBASE-210184.dwg,09.03.05 4:41 PM



TC

ARCHITECTURE + PLANNING + DESIGN

JOSEPH B. WYWROT  
ENGINEER  
No. 6501049674  
PROFESSIONAL SEAL

*Joseph B. Wywrot*

PEA GROUP

t: 844.813.2949  
www.peagroup.com

PROJECT NUMBER	21018
Bids/Permits	10.11.24
Site Plan-Engineering	08.21.24
Final Site Plan-Rev	11.08.23
Final Site Plan	09.08.23
Bids/Permits	08.04.23
WCWRC Resubmittal	01.13.23
Site Plan Reapproval	11.21.22
Site Plan Approval	09.22.22
DRN: JW	CHK'D: JC

A3C

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COLLABORATIVE ARCHITECTURE

811

Know what's below.  
Call before you dig.

SCALE: 1" = 30'

NORTH

CAUTION!!

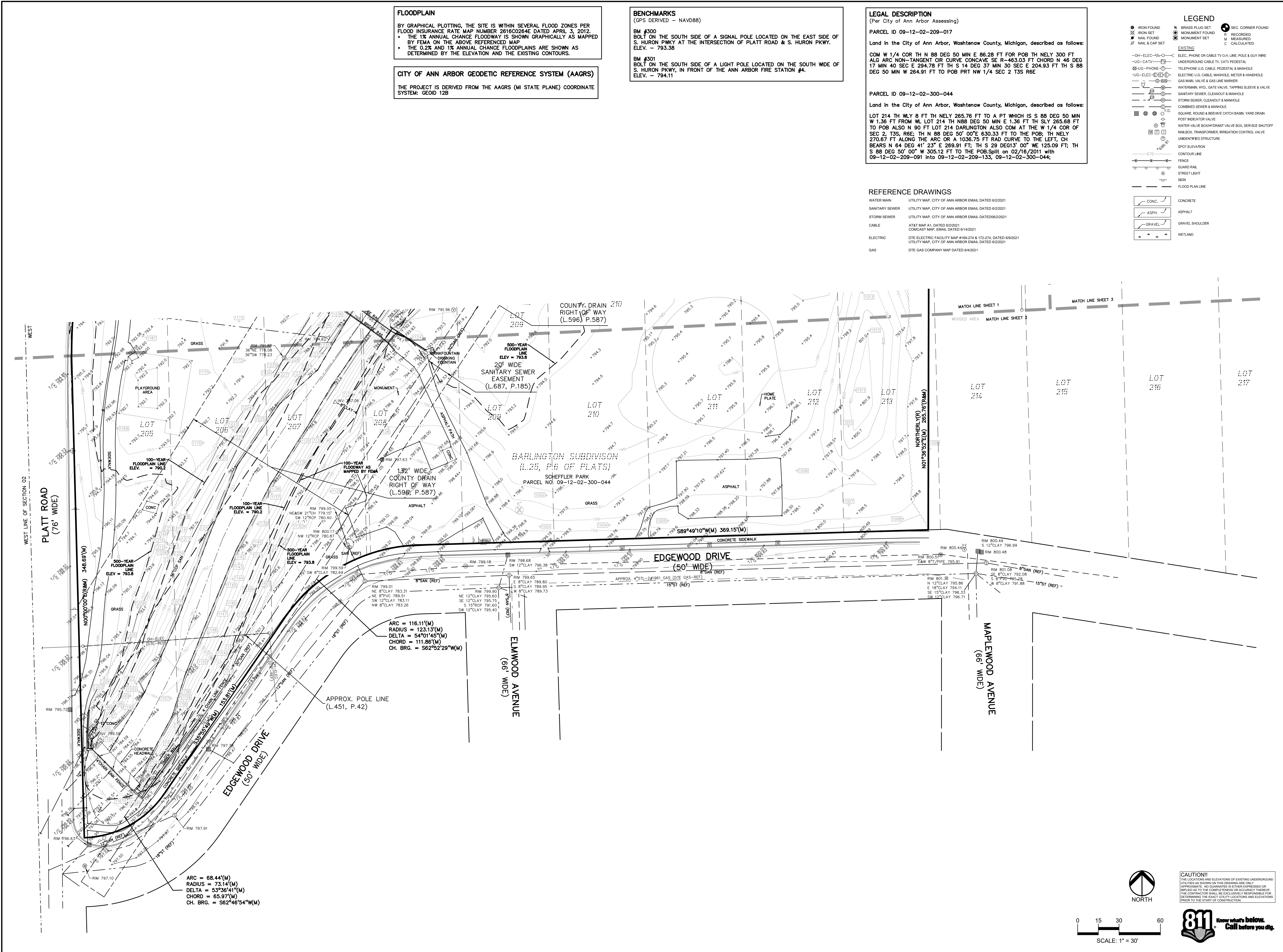
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

TOPOGRAPHIC SURVEY

C-1.0



S:\PROJECTS\2021\2021-0184 ANN ARBOR FIRE STATION\DWG\TOPOBASE-210184.dwg,09.03.05 4:41 PM



**FLOODPLAIN**  
BY GRAPHICAL PLOTTING, THE SITE IS WITHIN SEVERAL FLOOD ZONES PER FLOOD INSURANCE RATE MAP NUMBER 2616C0264E DATED APRIL 3, 2012.  
• THE 1% ANNUAL CHANCE FLOODWAY IS SHOWN GRAPHICALLY AS MAPPED BY FEMA ON THE ABOVE REFERENCED MAP  
• THE 0.2% AND 1% ANNUAL CHANCE FLOODPLAINS ARE SHOWN AS DETERMINED BY THE ELEVATION AND THE EXISTING CONTOURS.

**CITY OF ANN ARBOR GEODETIC REFERENCE SYSTEM (AAGRS)**  
THE PROJECT IS DERIVED FROM THE AAGRS (MI STATE PLANE) COORDINATE SYSTEM: GEOID 12B

**BENCHMARKS**  
(GPS DERIVED - NAVD88)

**BM #300**  
BOLT ON THE SOUTH SIDE OF A SIGNAL POLE LOCATED ON THE EAST SIDE OF S. HURON PKWY AT THE INTERSECTION OF PLATT ROAD & S. HURON PKWY. ELEV. - 793.38

**BM #301**  
BOLT ON THE SOUTH SIDE OF A LIGHT POLE LOCATED ON THE SOUTH WIDE OF S. HURON PKWY, IN FRONT OF THE ANN ARBOR FIRE STATION #4. ELEV. - 794.11

**LEGAL DESCRIPTION**  
(Per City of Ann Arbor Assessing)

**PARCEL ID 09-12-02-209-017**  
Land in the City of Ann Arbor, Washtenaw County, Michigan, described as follows:  
COM W 1/4 COR TH N 88 DEG 50 MIN E 86.28 FT FOR POB TH NELY 300 FT ALG ARC NON-TANGENT OR CURVE CONCAVE SE R-463.03 FT CHORD N 46 DEG 17 MIN 40 SEC E 294.78 FT TH S 14 DEG 37 MIN 30 SEC E 204.93 FT TH S 88 DEG 50 MIN W 264.91 FT TO POB PRT NW 1/4 SEC 2 T3S R6E

**PARCEL ID 09-12-02-300-044**  
Land in the City of Ann Arbor, Washtenaw County, Michigan, described as follows:  
LOT 214 TH WLY 8 FT TH NELY 265.76 FT TO A PT WHICH IS S 88 DEG 50 MIN W 1.36 FT FROM WL LOT 214 TH N88 DEG 50 MIN E 1.36 FT TH SLY 265.68 FT TO POB ALSO N 90 FT LOT 214 DARLINGTON ALSO COM AT THE W 1/4 COR OF SEC 2, T3S, R6E; TH N 88 DEG 50' 00"E 630.33 FT TO THE POB; TH NELY 270.67 FT ALONG THE ARC OR A 1036.75 FT RAD CURVE TO THE LEFT, CH BEARS N 64 DEG 41' 23" E 269.91 FT; TH S 29 DEG13' 00" WE 125.09 FT; TH S 88 DEG 50' 00" W 305.12 FT TO THE POB. SHOWN ON 02/16/2011 WITH 09-12-02-209-091 INTO 09-12-02-209-133, 09-12-02-300-044;

**REFERENCE DRAWINGS**

WATER MAIN UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021  
SANITARY SEWER UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021  
STORM SEWER UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021  
CABLE AT&T MAP A1, DATED 6/2/2021  
CONCAST MAP, EMAIL DATED 6/14/2021  
ELECTRIC DTE ELECTRIC FACILITY MAP #168-274 & 172-274, DATED 6/9/2021  
GAS UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021  
DTE GAS COMPANY MAP DATED 6/4/2021

**LEGEND**

**EXISTING**

- IRON FOUND
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUS SET
- MONUMENT FOUND
- MONUMENT SET
- RECORDED
- MEASURED
- CALCULATED

**EXISTING**

- OH-ELEC-W-O
- UG-CATV
- UG-PHONE
- UG-ELEC
- WATERMAIN, HYD, GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & REEFIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BOX/PORTANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- FLOOD PLAN LINE

**CONC.** CONCRETE  
**ASPH.** ASPHALT  
**GRAVEL** GRAVEL SHOULDER  
**WETLAND** WETLAND

**PEA GROUP**  
t: 844.813.2949  
www.peagroup.com

**PROJECT NUMBER 21018**

Bids/Permits	10.11.24
Site Plan-Engineering	08.21.24
Final Site Plan-Rev	11.08.23
Final Site Plan	09.08.23
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Site Plan Approval	09.22.22

DRN: JW CHK'D: JC

**TOPOGRAPHIC SURVEY**

**A3C**  
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**811** Know what's below. Call before you dig.

**C-1.1**



# C-1.2







\\pea\new\PROJECTS\2021\09-12-02-300-018- ANN ARBOR FIRE STATION\SUBSET-DEPT\2018\ALTA\ORIGINAL\Ta.dwg

**NOTES CORRESPONDING TO SCHEDULE B**  
Issuing office file No.: Old Republic National Title Insurance Company  
Commitment No.: LIB177114  
Property Address: VL Edgewood Dr., Ann Arbor, MI 48104-5129  
Commitment Date: August 16, 2022

Items 1 through 10 are standard title exceptions

- Release of Right of Way in favor of County Drain Commissioner to the County of Washtenaw, as recorded in Liber 596, page 587, Washtenaw County Records.  
[SHOWN ON THE SURVEY MAP.]
- Release of Right of Way in favor of County Drain Commissioner to the County of Washtenaw, as recorded in Liber 596, page 384, Washtenaw County Records.  
[SHOWN ON THE SURVEY MAP.]
- Pole Line Permit in favor of The Detroit Edison Company, as recorded in Liber 451, page 42, Washtenaw County Records.  
[SHOWN ON THE SURVEY MAP.]
- Easement in favor of City of Ann Arbor for Sanitary Sewer, as recorded in Liber 687, page 185, Washtenaw County Records.  
[SHOWN ON THE SURVEY MAP.]
- Easement in favor of City of Ann Arbor for Sanitary Sewer, as recorded in Liber 687, page 191, Washtenaw County Records.  
[SHOWN ON THE SURVEY MAP.]
- Release of Right of Way in favor of County Drain Commissioner to the County of Washtenaw, as recorded in Liber 535, page 18, Washtenaw County Records.  
[NOT LOCATED ON SURVEY PROPERTY AND IS NOT SHOWN ON THE SURVEY MAP.]

#### SCHEDULE C PROPERTY DESCRIPTION

Issuing office file No.: Old Republic National Title Insurance Company  
Commitment No.: LIB177114  
Property Address: VL Edgewood Dr., Ann Arbor, MI 48104-5129  
Commitment Date: August 16, 2022

The land referred to in this Commitment is located in the City of Ann Arbor, County of Washtenaw, State of Michigan, and described as follows:

Lots 205 through 212, Lot 213 except beginning at the Southwest corner of Lot 214 thence Westerly 8 feet; thence Northeasterly 265.76 feet to a point which is South 88 degrees 50 minutes West 1.36 feet from Westerly line of Lot 214; thence North 88 degrees 50 minutes East 1.36 feet; thence Southerly 265.68 feet to point of beginning, also The North 90 feet of lot 214, all in Darlington Subdivision, as recorded in Libert 5 of Plats, page 5, Washtenaw County Records; Also com at the West 1/4 cor of Section 2, T3S, R6E; thence North 88 degrees 50 minutes 00 seconds Esat 630.33 feet along the East-West 1/4 line of said Section2 to the point of beginning; thence Northeasterly 270.67 feet in the arc of a curve to the left, radius 1036.75 feet, central angle 14 degrees 57 minutes 31 seconds and chord bearing North 64 degrees 41 minutes 23 seconds Est 125.09 feet; thence South 88 degrees 50 minutes 00 seconds West 305.12 feet along said East-West 1/4 line to the point of beginning, being a part of Section 2, T2S, R6E, Washtenaw County, Michigan.

\* Schedule C contains typos and missing information legal below per County Tax recorded.

Land in the City of Ann Arbor, Washtenaw County, Michigan, described as follows:

LOTS 205 THRU 212 LOT 213 EXC BEG SW COR LOT 214 TH WLY 8 FT TH NELY 265.76 FT TO A PT WHICH IS S 88 DEG 50 MIN W 1.36 FT FROM WL LOT 214 TH N 88 DEG 50 MIN E 1.36 FT TH SLY 265.68 FT TO POB ALSO N 90 FT LOT 214 DARLINGTON ALSO COM AT THE W 1/4 COR OF SEC 2, T3S, R6E; TH N 88 DEG 50' 00" E 630.33 FT TO THE POB; TH NELY 270.67 FT ALONG THE ARC OR A 1036.75 FT RAD CURVE TO THE LEFT, CH BEARS N 64 DEG 41' 23" E 269.91 FT; TH S 29 DEG 13' 00" WE 125.09 FT; TH S 88 DEG 50' 00" W 305.12 FT TO THE POB.  
PARCEL NO.: 09-12-02-300-044

#### SURVEYOR'S NOTES

- A) No table A Items requested.
- B) Bearings were established by holding East-West 1/4 line of Section 2, T.03S., R.06E. at recorded bearing N88°50'E Darlington Subdivision as recorded in Liber 25, Page 6 of plats Washtenaw County records.
- C) The surveyed property covers approximately 5.94 acres of land (258,771 square feet)

#### ALTA/NSPS LAND TITLE SURVEY CERTIFICATE

To: XXX

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS. The field work was completed on August 25, 2022.

Christopher T. Beland, P.S.  
Michigan Professional Surveyor No. 4001049106  
Agent for PEA Group

September 20, 2022  
Date



#### LEGEND:

- OH-ELEC-W-O EX. OH. ELEC. POLE & GUY WIRE
- UG-CATV EX. U.G. CABLE TV & PEDESTAL
- UG-COMM EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- UG-ELEC-EX EX. U.G. ELEC. MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN & LIGHTPOLE
- EX. FENCE
- EX. GUARD RAIL
- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND

- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- RECORDED / MEASURED / CALCULATED
- CONCRETE
- ASPHALT
- TITLE EXCEPTION

#### REFERENCE DRAWINGS

- TICKET NO. 811523463-608
- UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021
- WATER MAIN
- SANITARY SEWER
- UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021
- STORM SEWER
- UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021
- CABLE
- AT&T MAP A1, DATED 6/2/2021
- COMCAST MAP, EMAIL DATED 6/14/2021
- ELECTRIC
- DTE ELECTRIC FACILITY MAP #169-274 & 172-274, DATED 6/9/2021
- UTILITY MAP, CITY OF ANN ARBOR EMAIL DATED 6/2/2021
- GAS
- DTE GAS COMPANY MAP DATED 6/4/2021

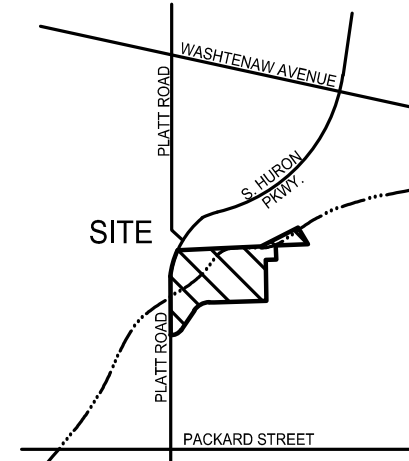
**PEA GROUP**  
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www.peagroup.com



0 25 50 100  
SCALE: 1" = 50'



**CAUTION!!**  
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CLIENT

**A3C**  
115 E. LIBERTY STREET  
ANN ARBOR, MICHIGAN 48104

PROJECT TITLE

**SCHUEFLER PARK**  
VL EDGEWOOD DR.  
ANN ARBOR, MICHIGAN 48104

#### REVISIONS

NO.	DESCRIPTION

ORIGINAL ISSUE DATE:  
September 20, 2022

DRAWING TITLE

**ALTA/NSPS  
LAND TITLE  
SURVEY**

PEA JOB NO. 2021-0184

P.M. CB

DN. JSH

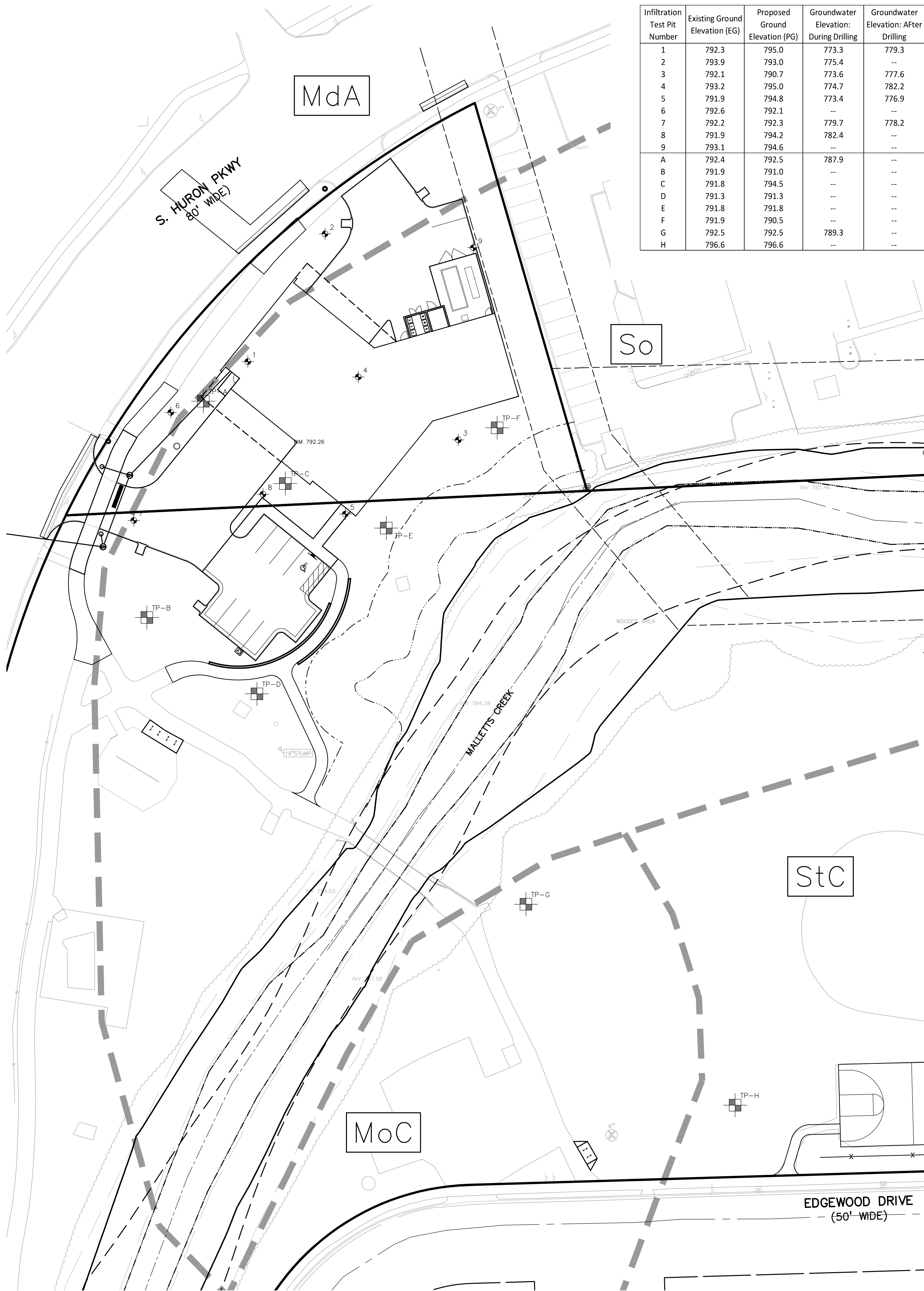
DES. -

DRAWING NUMBER:

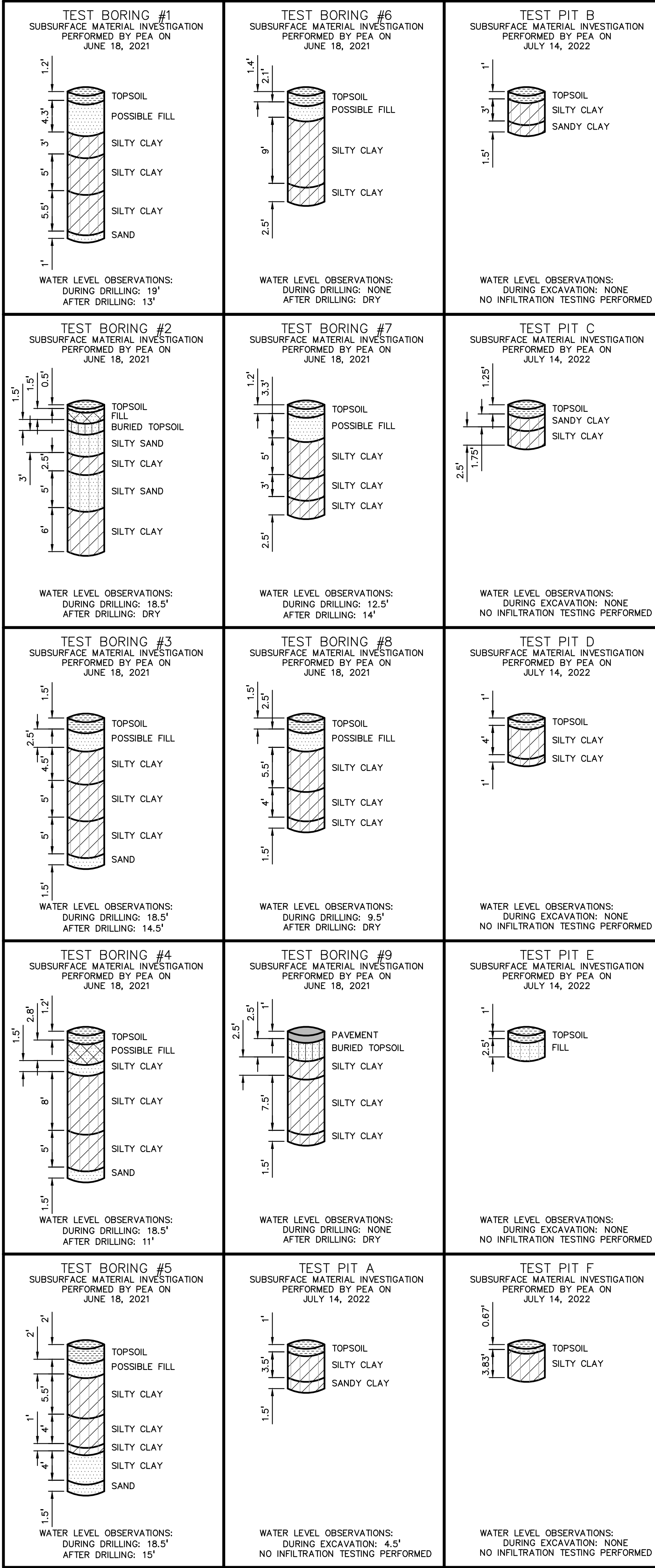
**C-1.4**



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Infiltration Test Pit Number	Existing Ground Elevation (EG)	Proposed Ground Elevation (PG)	Groundwater Elevation: During Drilling	Groundwater Elevation: After Drilling
1	792.3	795.0	773.3	779.3
2	793.9	793.0	775.4	--
3	792.1	790.7	773.6	777.6
4	793.2	795.0	774.7	782.2
5	791.9	794.8	773.4	776.9
6	792.6	792.1	--	--
7	792.2	792.3	779.7	778.2
8	791.9	794.2	782.4	--
9	793.1	794.6	--	--
A	792.4	792.5	787.9	--
B	791.9	791.0	--	--
C	791.8	794.5	--	--
D	791.3	791.3	--	--
E	791.8	791.8	--	--
F	791.9	790.5	--	--
G	792.5	792.5	789.3	--
H	796.6	796.6	--	--



**LEGAL DESCRIPTION**  
(Per City of Ann Arbor Assessing)  
PARCEL ID 09-12-02-209-017  
Land in the City of Ann Arbor, Washtenaw County, Michigan, described as follows:  
COM W 1/4 COR TH N 88 DEG 50 MIN E 86.28 FT FOR POB TH NELY 300 FT ALG ARC NON-TANGENT CIR CURVE CONCAVE SE R-463.03 FT CHORD N 46 DEG 17 MIN 40 SEC E 294.78 FT TH S 14 DEG 37 MIN 30 SEC E 204.93 FT TH S 88 DEG 50 MIN W 284.91 FT TO POB PRT NW 1/4 SEC 2 T3S R6E

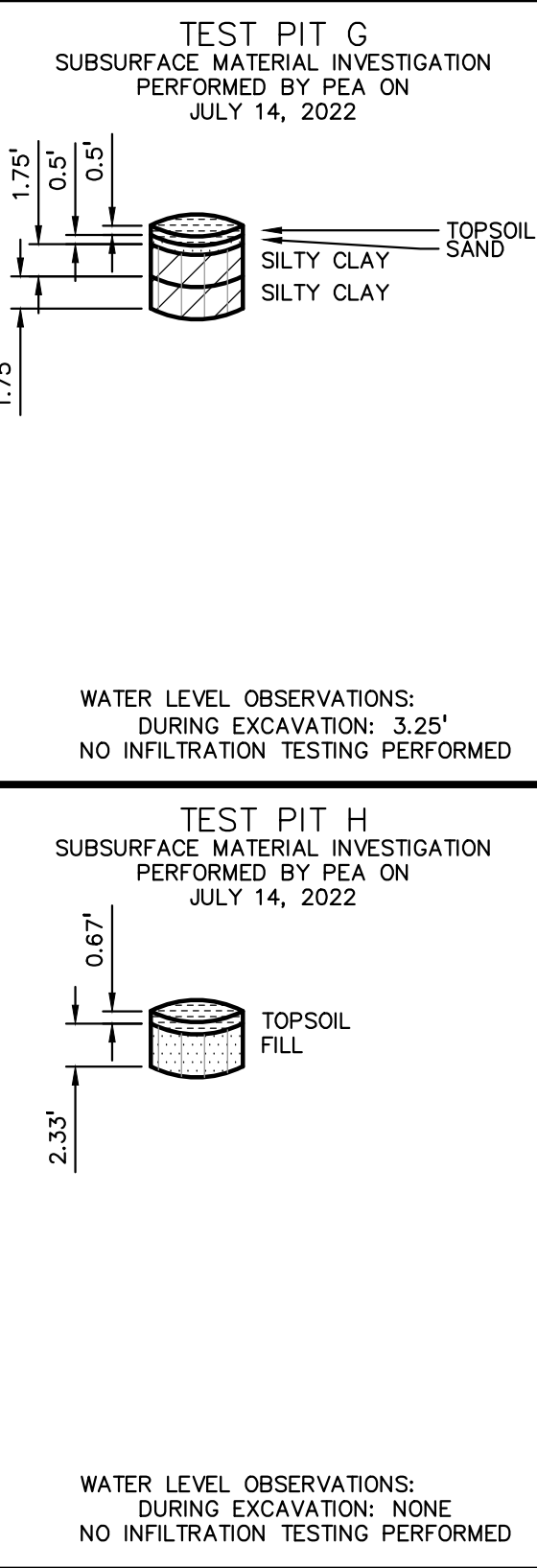
**BENCHMARKS**  
(GPS DERIVED - NAVD88)  
BM #300  
BOLT ON THE SOUTH SIDE OF A SIGNAL POLE LOCATED ON THE EAST SIDE OF S. HURON PKWY AT THE INTERSECTION OF PLATT ROAD & S. HURON PKWY.  
ELEV. - 793.38  
BM #301  
BOLT ON THE SOUTH SIDE OF A LIGHT POLE LOCATED ON THE SOUTH WIDE OF S. HURON PKWY, IN FRONT OF THE ANN ARBOR FIRE STATION #4.  
ELEV. - 794.11

**FLOODPLAIN NOTE:**  
PER GRAPHICAL PLOTTING, SITE IS WITHIN SEVERAL FLOOD ZONES PER FLOOD INSURANCE RATE MAP NUMBER 26161C0264E DATED APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR MORE DETAILED INFORMATION.

**SOIL INVESTIGATION**  
PER THE US DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE SOILS MAP FOR WASHTENAW COUNTY, SITE SOILS CONSIST OF:  
MdA - MATHERTON SANDY LOAM, 0 TO 4 PERCENT SLOPES; HYDROLOGIC SOIL GROUP B/D  
MoC - MORLEY LOAM, 6 TO 12 PERCENT SLOPES; HYDROLOGIC SOIL GROUP C  
So - SLOAN SILT LOAM, 0 TO 1 PERCENT SLOPES; FREQUENTLY FLOODED; HYDROLOGIC SOIL GROUP B/D  
StC - ST. CLAIR CLAY LOAM, 6 TO 12 PERCENT SLOPES; HYDROLOGIC SOIL GROUP D

**SOIL INVESTIGATION LEGEND:**  
SOIL BORING LOCATION  
PROPOSED TEST PIT LOCATION

NOTE: A GEOTECHNICAL INVESTIGATION, DATED JULY 21, 2021, WAS COMPLETED BY PEA GROUP FOR THE PROJECT AND IS AVAILABLE UPON REQUEST. ADDITIONAL INFORMATION ON THE SOIL BORINGS CAN BE FOUND IN THIS REPORT.



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

0 15 30 60  
SCALE: 1" = 30'

**NORTH**

**ARCHITECTURE + PLANNING + DESIGN**

**JOSEPH B. WYWROT**  
ENGINEER  
No. 6501048674  
PROFESSIONAL ENGINEER

**PEA GROUP**  
t: 844.813.2949  
www.peagroup.com

**PROJECT NUMBER 21018**

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WCWRC Resubmittal	01.13.23
Site Plan Reapproval	11.21.22
Site Plan Approval	09.22.22

DRN: JW CHKD: JC

**SOIL BORING INFORMATION PLAN**

**A3C**

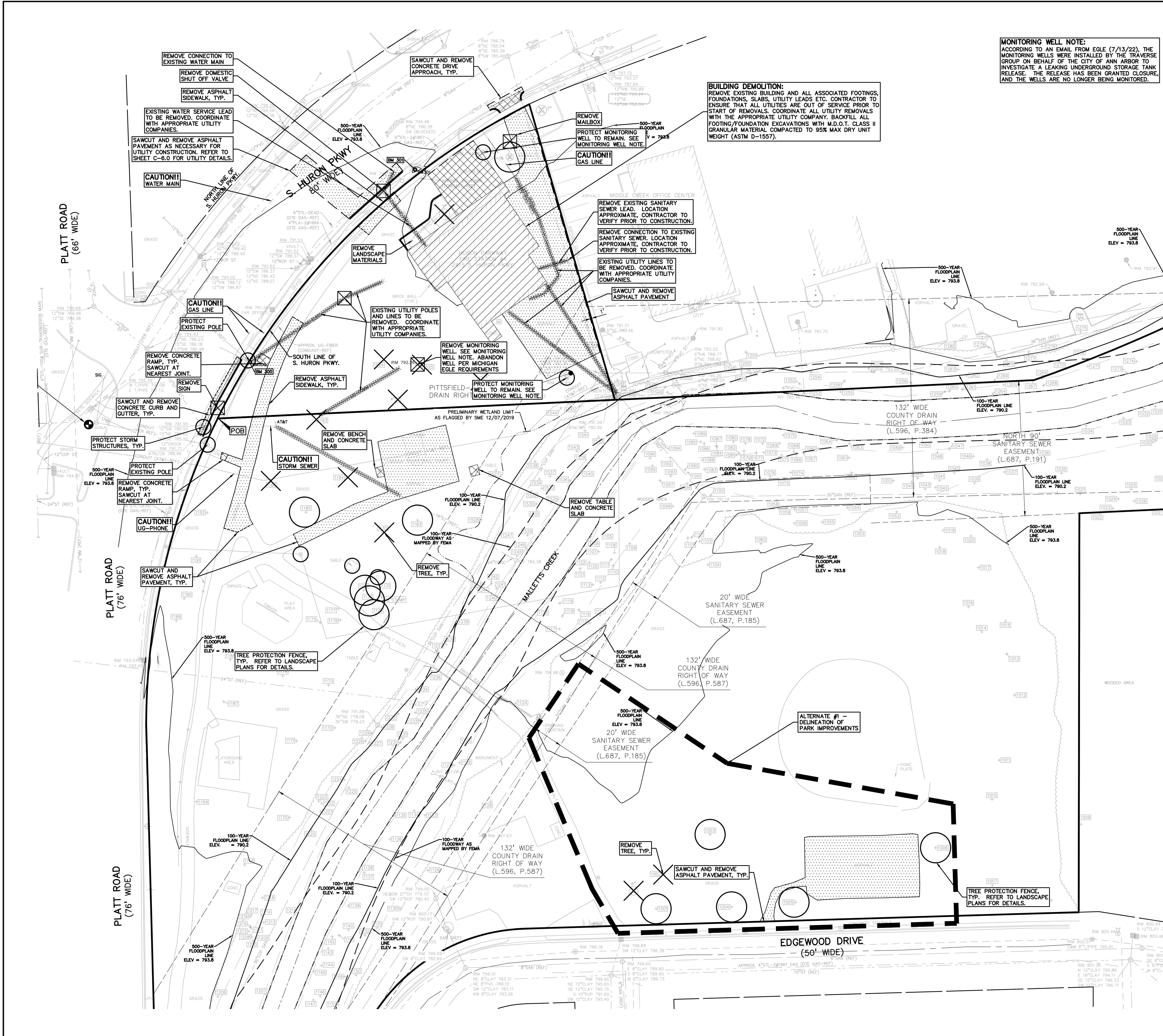
115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 463 - 1910  
F: (866) 732 - 2168  
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**COLLABORATIVE ARCHITECTURE**

SHEET **C-1.5**



S:\PROJECTS\2021\2021-0184 ANN ARBOR FIRE STATION\DWG\CONSTRUCTION\C-2.0 DEMO-210184.dwg,09.03.05 4:41 PM



**MONITORING WELL NOTE:**  
ACCORDING TO AN EMAIL FROM EGLE (7/13/22), THE MONITORING WELLS WERE INSTALLED BY THE TRAVERSE GROUP ON BEHALF OF THE CITY OF ANN ARBOR TO INVESTIGATE A LEAKING UNDERGROUND STORAGE TANK RELEASE. THE RELEASE HAS BEEN GRANTED CLOSURE, AND THE WELLS ARE NO LONGER BEING MONITORED.

**BUILDING DEMOLITION:**  
REMOVE EXISTING BUILDING AND ALL ASSOCIATED FOOTINGS, FOUNDATIONS, SLABS, UTILITY LEADS ETC. CONTRACTOR TO ENSURE THAT ALL UTILITIES ARE OUT OF SERVICE PRIOR TO START OF REMOVALS. COORDINATE ALL UTILITY REMOVALS WITH THE APPROPRIATE UTILITY COMPANY. BACKFILL ALL FOOTING/FOUNDATION EXCAVATIONS WITH M.D.O.T. CLASS II GRANULAR MATERIAL COMPACTED TO 95% MAX DRY UNIT WEIGHT (ASTM D-1557).

**LEGAL DESCRIPTION**  
(Per City of Ann Arbor Assessing)  
PARCEL ID 09-12-02-209-017  
Land in the City of Ann Arbor, Washtenaw County, Michigan, described as follows:  
COM W 1/4 COR TH N 88 DEG 50 MIN E 86.28 FT FOR POB TH N 300 FT ALG ARC NON-TANGENT CIR CURVE CONCAVE SE R-463.03 FT CHORD N 46 DEG 17 MIN 40 SEC E 294.78 FT S 14 DEG 37 MIN 30 SEC E 204.93 FT TH S 88 DEG 50 MIN W 264.91 FT TO POB PRT NW 1/4 SEC 2 T3S R6E  
**BENCHMARKS**  
(GPS DERIVED - NAVD88)  
BM #300  
BOLT ON THE SOUTH SIDE OF A SIGNAL POLE LOCATED ON THE EAST SIDE OF S. HURON PKWY AT THE INTERSECTION OF PLATT ROAD & S. HURON PKWY.  
ELEV. - 793.38  
BM #301  
BOLT ON THE SOUTH SIDE OF A LIGHT POLE LOCATED ON THE SOUTH SIDE OF S. HURON PKWY, IN FRONT OF THE ANN ARBOR FIRE STATION #4.  
ELEV. - 794.11

**FLOODPLAIN NOTE:**  
BY GRAPHICAL PLOTTING, SITE IS WITHIN SEVERAL FLOOD ZONES PER FLOOD INSURANCE RATE MAP NUMBER 261610294E DATED APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR MORE DETAILED INFORMATION.

- GENERAL DEMOLITION NOTES:**  
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
  - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
  - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
  - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
  - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
  - REFER TO LANDSCAPE DRAWINGS FOR TREE PROTECTION DETAILS.
  - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST, CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
  - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
  - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
  - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
  - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
  - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
  - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

**DEMOLITION LEGEND:**

ITEM TO BE PROTECTED	
ITEM TO BE REMOVED	
CURB/FENCE REMOVAL	
CONCRETE PAVEMENT AND SIDEWALK REMOVAL	
AREA OR ITEMS TO BE REMOVED	
UTILITY REMOVAL	
ABANDON UTILITY	
ASPHALT REMOVAL	
TREE REMOVAL	
SAWCUT LINE	

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T C A  
ARCHITECTURE + PLANNING + DESIGN

JOSEPH B. WYVROT  
ENGINEER  
No. 6501048574  
PROFESSIONAL SEAL

PEA GROUP  
t: 844.813.2949  
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DRN: JW CHK'D: JC

DEMOLITION PLAN

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COLLABORATIVE ARCHITECTURE

SHEET C-2.0



S:\PROJECTS\2021\2021-0184 ANN ARBOR FIRE STATION\DWG\CONSTRUCTION\C-3.0 SITE-210184.dwg,09.03.05 4:41 PM

NOTE:  
ALL WORK WITHIN THE S. HURON PARKWAY OR PLATT ROAD RIGHT-OF-WAY IS UNDER THE JURISDICTION OF THE CITY OF ANN ARBOR AND REQUIRES A PERMIT.

PROPOSED POLE AND MAST ARM FOR NEW TRAFFIC SIGNAL. FINAL DESIGN OF TRAFFIC SIGNAL MODIFICATIONS TO BE INCLUDED IN FINAL DESIGN DRAWINGS.

PLATT ROAD  
(66' WIDE)

STANDARD DUTY ASPHALT PAVEMENT. REFER TO DETAIL ON SHEET C-8.2

BAY DOOR SLAB REINFORCEMENT. TYP. REFER TO STRUCTURAL/ARCHITECTURAL SHEETS FOR MORE DETAIL.

STANDARD DUTY ASPHALT PAVEMENT. REFER TO DETAIL ON SHEET C-8.2

CONNECT TO EXISTING CONCRETE SIDEWALK RAMP

STANDARD DUTY CONCRETE SIDEWALK. REFER TO DETAIL ON SHEET C-8.2

THICKENED SIDEWALK AT DRIVE APPROACH. TYP. REFER TO DETAIL ON SHEET C-8.2

DETAIL 'M' GUTTER PAN THROUGH DRIVE APPROACH. REFER TO DETAIL ON SHEET C-8.2

STANDARD DUTY CONCRETE SIDEWALK. REFER TO DETAIL ON SHEET C-8.2

CONNECT TO EXISTING CONCRETE SIDEWALK RAMP

STANDARD DUTY ASPHALT PAVEMENT. REFER TO DETAIL ON SHEET C-8.2

HEAVY DUTY CONCRETE WITH INTEGRAL CURB. TYP. REFER TO DETAIL ON SHEET C-8.2

CURB CUT AND SPILLWAY. TYP. REFER TO DETAIL ON SHEET C-8.2

CONNECT TO EXISTING ASPHALT PAVEMENT

INDICATES NUMBER OF PARKING SPACES. TYP.

PROVIDE 4" YELLOW STRIPING FOR STANDARD PARKING SPACES. TYP.

EV CHARGING STATION. PROVIDE ADDITIONAL CONDUIT FOR FUTURE EXPANSION

STANDARD DUTY ASPHALT PAVEMENT. TYP. REFER TO DETAIL ON SHEET C-8.2

STANDARD DUTY CONCRETE WITH BIKE RACKS. REFER TO DETAIL ON SHEET C-8.2; REFER TO LANDSCAPE ARCHITECTURE SHEETS FOR BIKE RACK DETAIL.

STANDARD DUTY ASPHALT PAVEMENT. TYP. REFER TO DETAIL ON SHEET C-8.2

STANDARD DUTY ASPHALT PAVEMENT. TYP. REFER TO DETAIL ON SHEET C-8.2

PLATT ROAD  
(76' WIDE)

NORTH LINE OF S. HURON PKWY.

S. HURON PKWY  
(80' WIDE)

PROPOSED BUILDING  
8,800 SQ.FT.  
F.F. 795.00

FLAGPOLE. REFER TO DETAIL ON SHEET C-8.2

TAPER ASPHALT TO EXPOSE CURB FACE FROM 6" TO 0" HEIGHT OVER 20 FEET.

DOOR WITH CONCRETE STOOP. TYP.

PITTSFIELD-ANN ARBOR DRAIN RIGHT OF WAY.

INTEGRAL CURB AND WALK. TYP. REFER TO DETAIL ON SHEET C-8.2

SIGN. TYP. REFER TO LEGEND ON THIS SHEET.

BARRIER FREE PARKING SPACES AND SYMBOLS TO BE MARKED USING 4" BLUE STRIPING. TYP.

SEGMENTAL MASONRY RETAINING WALL. HEIGHT VARIES. REFER TO DETAIL ON SHEET C-8.2

24" CONCRETE CURB AND GUTTER. TYP. REFER TO DETAIL ON SHEET C-8.2

APPROXIMATE LOCATION OF TRASH, RECYCLING, COMPOST CART STAGING

HEAVY DUTY CONCRETE WITH INTEGRAL CURB. TYP. REFER TO DETAIL ON SHEET C-8.2

CURB CUT AND SPILLWAY. TYP. REFER TO DETAIL ON SHEET C-8.2

SCREEN WALL. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION.

PROPANE TANK. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION.

CONCRETE PAD FOR GENERATOR. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION.

TRASH/UTILITY ENCLOSURES. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION.

PROPOSED 38' SANITARY SEWER EASEMENT

132' WIDE COUNTY DRAIN RIGHT OF WAY  
(L.596, P.384)

NORTH 80' SANITARY SEWER EASEMENT  
(L.687, P.191)

LIMITS OF 1% CHANCE FLOODPLAIN

DELINEATED WETLAND

WETLAND SETBACK

LIMITS OF 1% CHANCE FLOODWAY

20' WIDE SANITARY SEWER EASEMENT  
(L.687, P.185)

132' WIDE COUNTY DRAIN RIGHT OF WAY  
(L.596, P.587)

20' WIDE SANITARY SEWER EASEMENT  
(L.687, P.185)

STANDARD DUTY CONCRETE WITH BIKE RACKS. REFER TO DETAIL ON SHEET C-8.2; REFER TO LANDSCAPE ARCHITECTURE SHEETS FOR BIKE RACK DETAIL.

132' WIDE COUNTY DRAIN RIGHT OF WAY  
(L.596, P.587)

BASKETBALL COURT PAVING. TYP. REFER TO DETAIL ON LANDSCAPE ARCHITECTURE SHEETS.

STANDARD DUTY CONCRETE SIDEWALK. TYP. REFER TO DETAIL ON SHEET C-8.2

EDGEWOOD DRIVE  
(50' WIDE)

DECORATIVE FENCE. REFER TO DETAIL ON LANDSCAPE ARCHITECTURE SHEETS

#### LEGAL DESCRIPTION

(Per City of Ann Arbor Assessing)

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#### BENCHMARKS

(GPS DERIVED - NAVD88)

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BOLT ON THE SOUTH SIDE OF A SIGNAL POLE LOCATED ON THE EAST SIDE OF S. HURON PKWY AT THE INTERSECTION OF PLATT ROAD & S. HURON PKWY.  
ELEV. - 793.38

BM #301  
BOLT ON THE SOUTH SIDE OF A LIGHT POLE LOCATED ON THE SOUTH SIDE OF S. HURON PKWY, IN FRONT OF THE ANN ARBOR FIRE STATION #4.  
ELEV. - 794.11

#### FLOODPLAIN NOTE:

GRAPHICAL PLOTTING. SITE IS WITHIN SEVERAL FLOOD ZONES PER FLOOD INSURANCE RATE MAP NUMBER 2616100264E DATED APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR MORE DETAILED INFORMATION.

#### GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

- ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
- REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
- REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS.
- ALL SIDEWALKS SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR BY THE OWNER OF THE LAND ADJACENT TO AND ABUTTING THE SAME. PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY FOR THIS SITE, ALL EXISTING SIDEWALKS IN NEED OF REPAIR MUST BE REPAIRED IN ACCORDANCE WITH CITY STANDARDS.

#### LEGEND:

- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN LIGHT/POLE
- GUARD RAIL

#### SIGN LEGEND:

- 'BARRIER FREE PARKING' SIGN
- 'VAN ACCESSIBLE' SIGN
- REFER TO DETAIL SHEET FOR SIGN DETAILS



0 15 30 60  
SCALE: 1" = 30'

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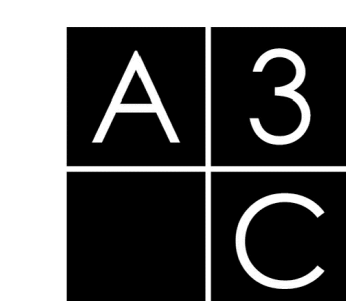
**PEA GROUP**  
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DRN: JW CHK'D: JC

OVERALL DIMENSIONAL LAYOUT PLAN

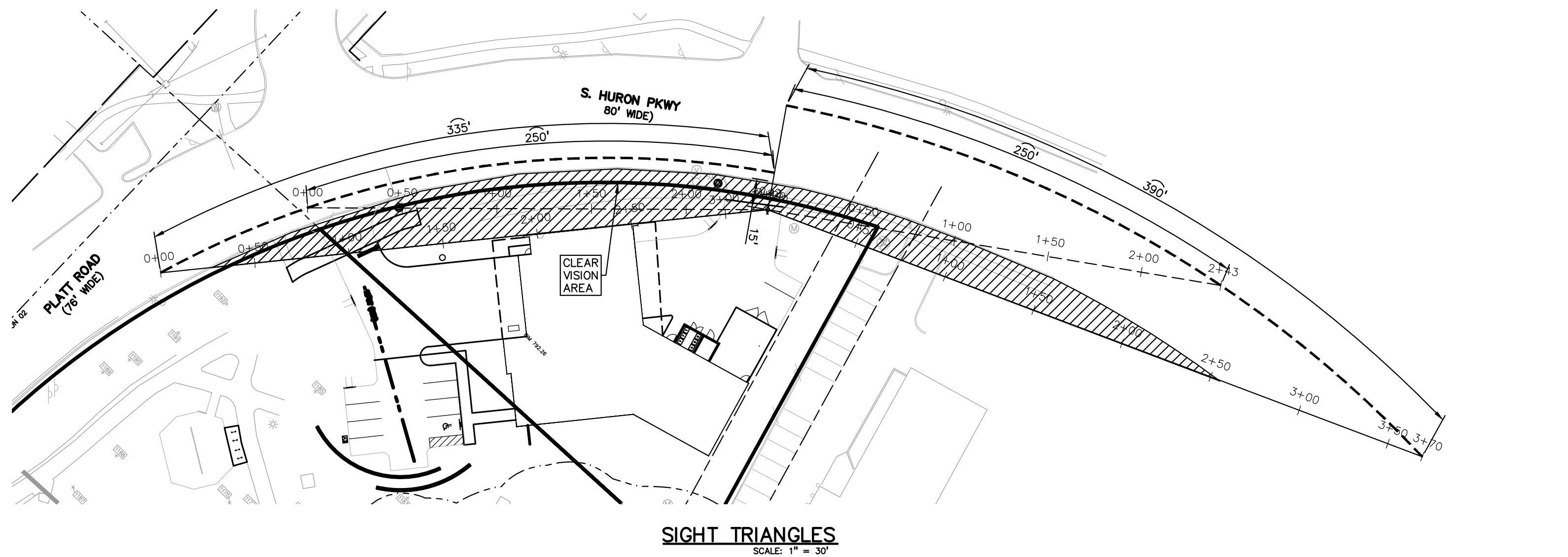


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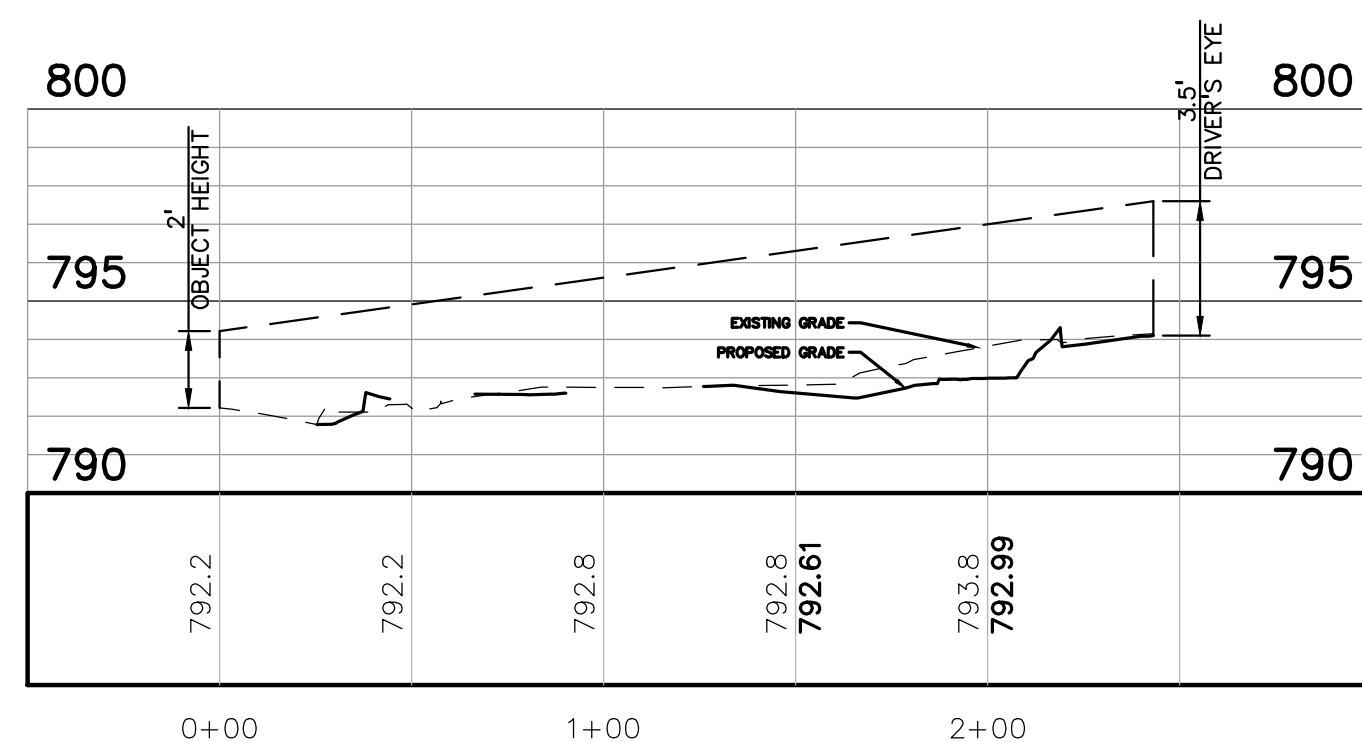
SHEET C-3.0



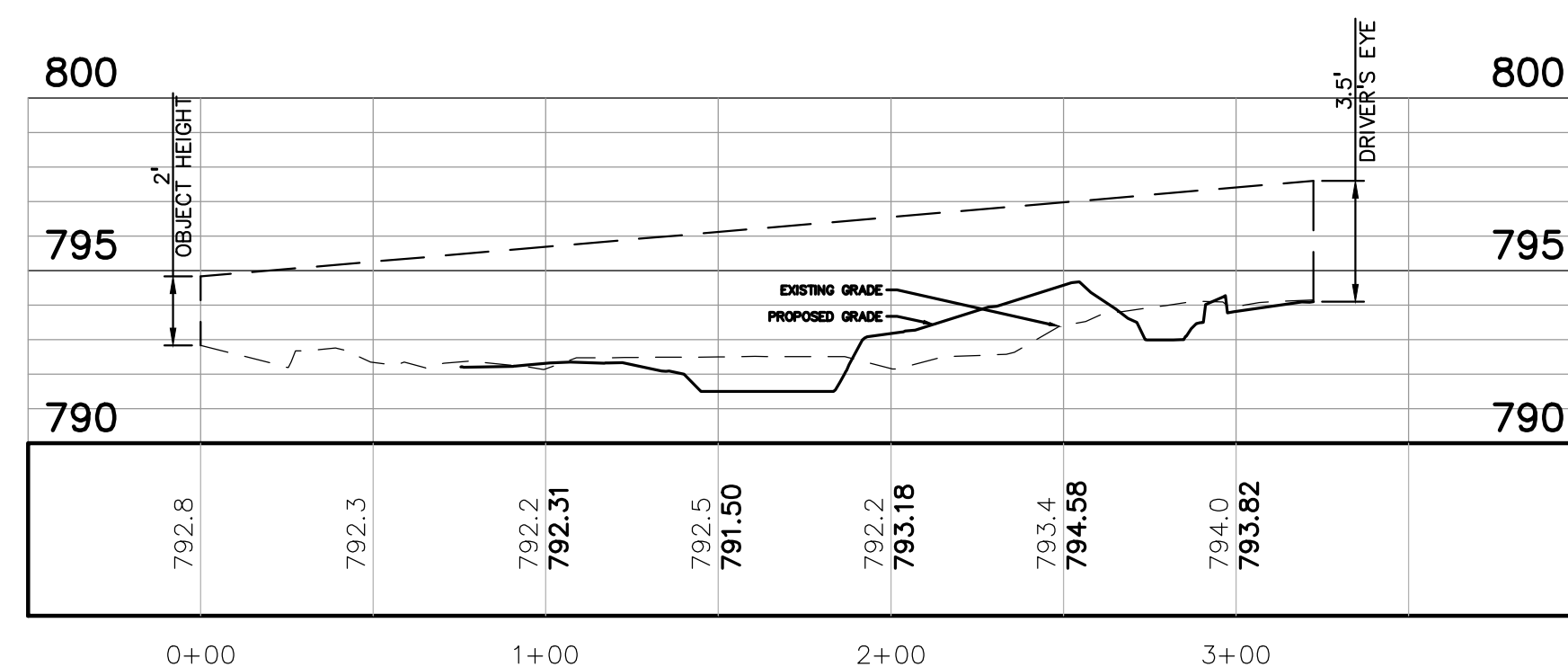
AERIAL FIRE TRUCK TURNING MOVEMENT  
SCALE: 1" = 50'



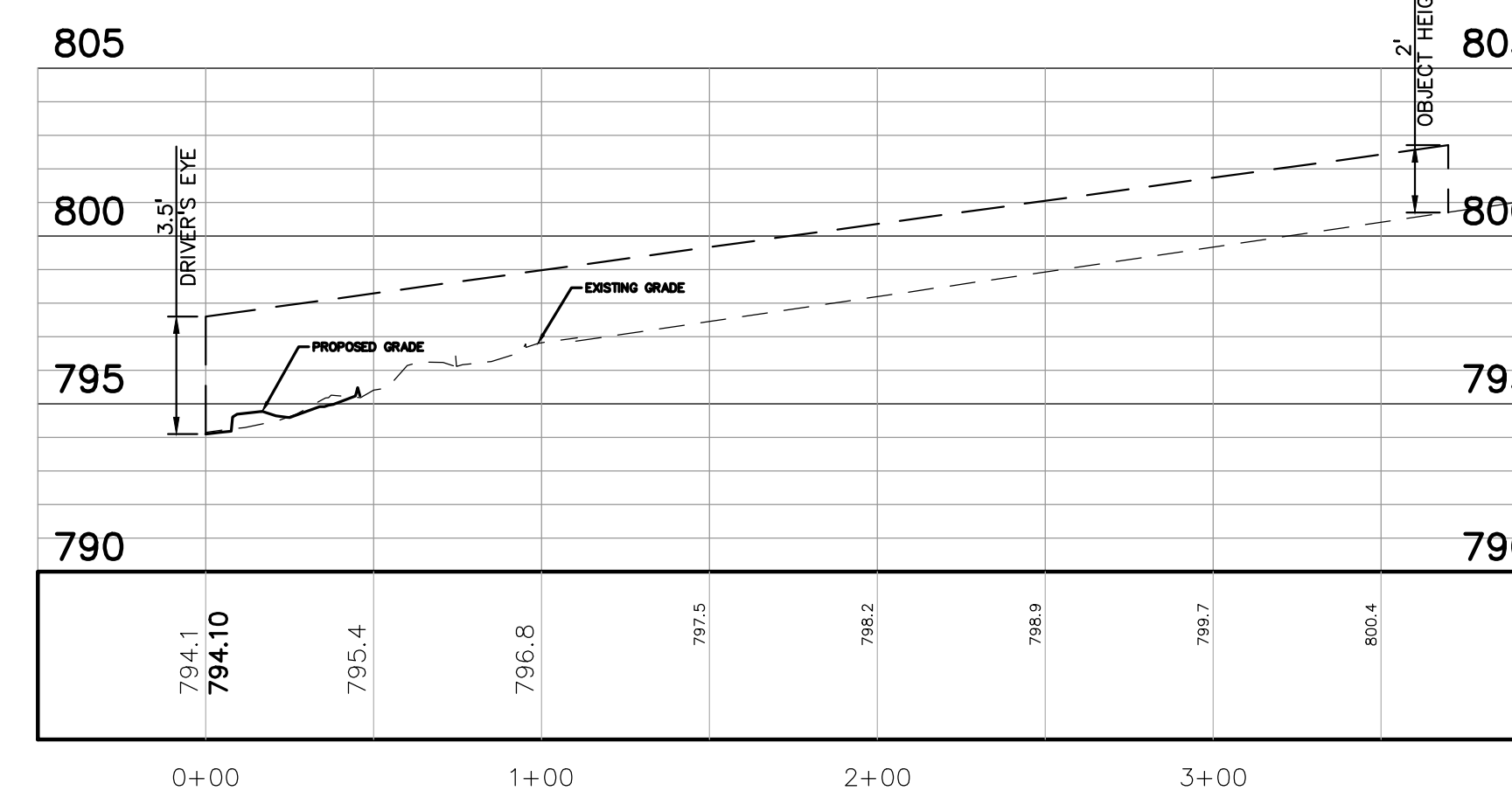
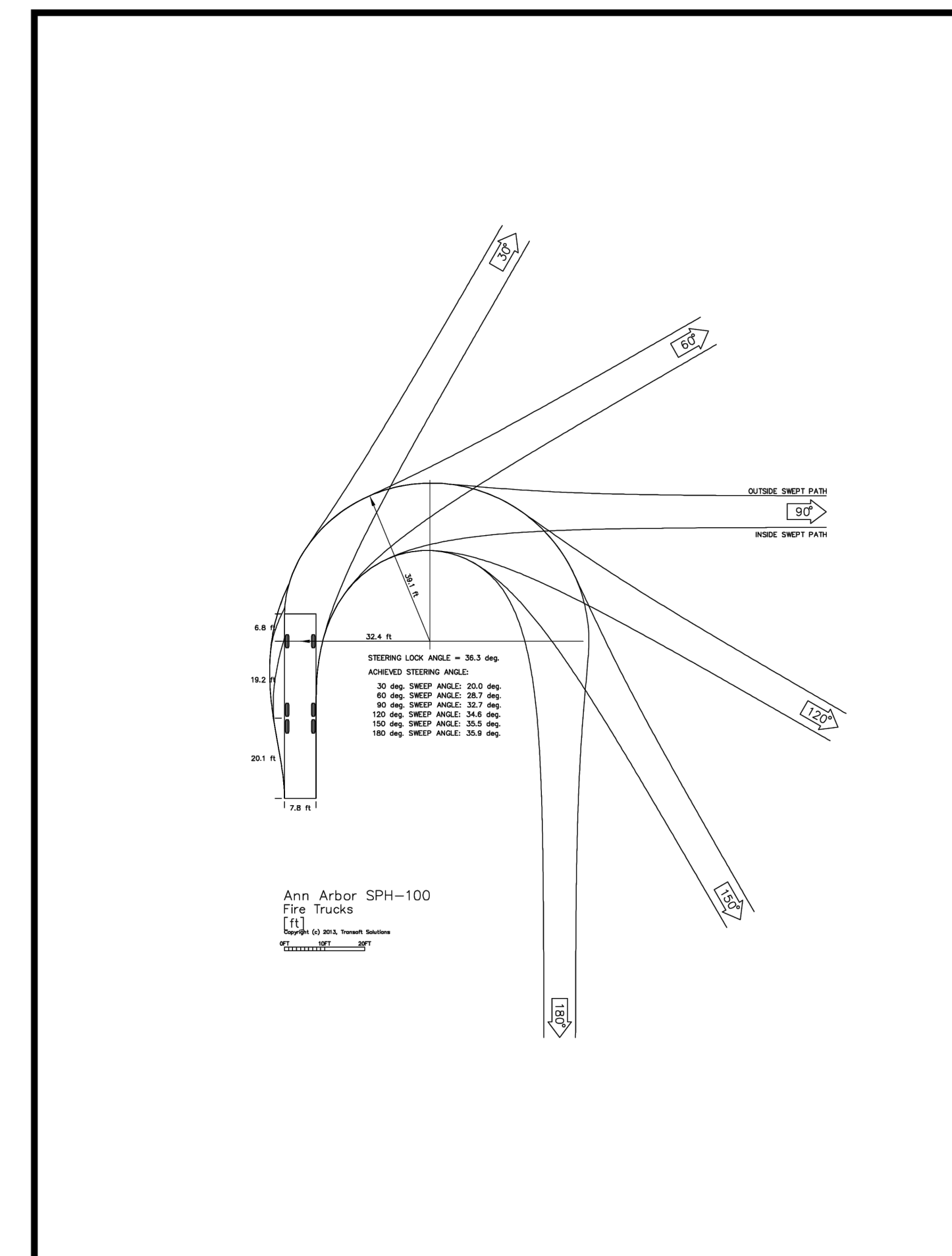
### SIGHT TRIANGLES



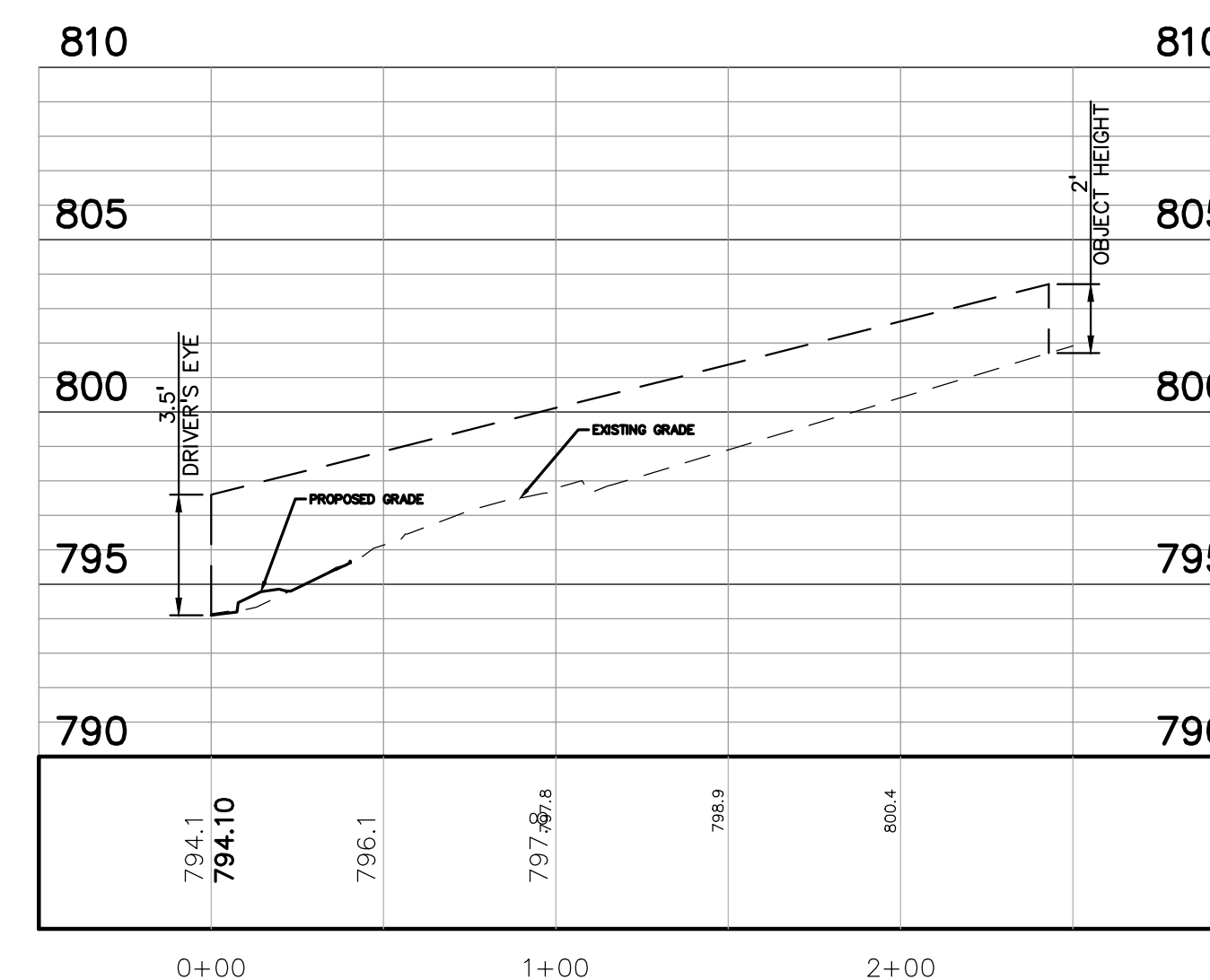
## STOPPING SIGHT – WEST PROFILE



## RIGHT-TURN SIGHT TRIANGLE PROFILE



### LEFT-TURN SIGHT TRIANGLE PROFILE



### STOPPING SIGHT – EAST PROFILE

The diagram illustrates the sight triangle on a two-lane road. A speed limit sign is shown above the road. Key points and distances are labeled:

- ROAD CENTERLINE**: Indicated by a dashed line.
- RIGHT DISTANCE TO TRUCK (d)**: Distance from the truck to the point of sight.
- RIGHT DISTANCE TO OBJECT (d<sub>o</sub>)**: Distance from the object to the point of sight.
- EDGE OF PAVEMENT OR GRAVEL**: The boundary of the travel lane.
- MEASURED OFFSET (d<sub>o</sub>)**: The distance from the edge of the pavement to the object.
- TYPE OF OBSTRUCTION**: A table lists various obstructions and their typical measured offsets in feet.
- CLEAR VISION AREA (NOT DRAWN TO SCALE)**: The shaded area representing the driver's field of vision.

TYPE	MEASURED OFFSET (d <sub>o</sub> )
TEMPORARY	10
RESIDENTIAL	15
POWER LINE	15
FAIR FIELD	10
FOREST	10



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DRN: JW		CHK'D: JC

DRN: JW                      CHK'D: JC

## TURNING MOVEMENTS & SIGHT TRIANGLES

**A3C**  
E ARCHITECTURE

115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663 - 1910  
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[www.a3c.com](http://www.a3c.com)

SHEET

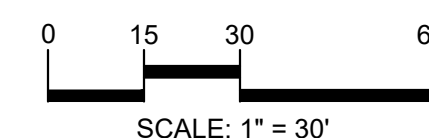
C-3.1



THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

SHEET

C-4.0

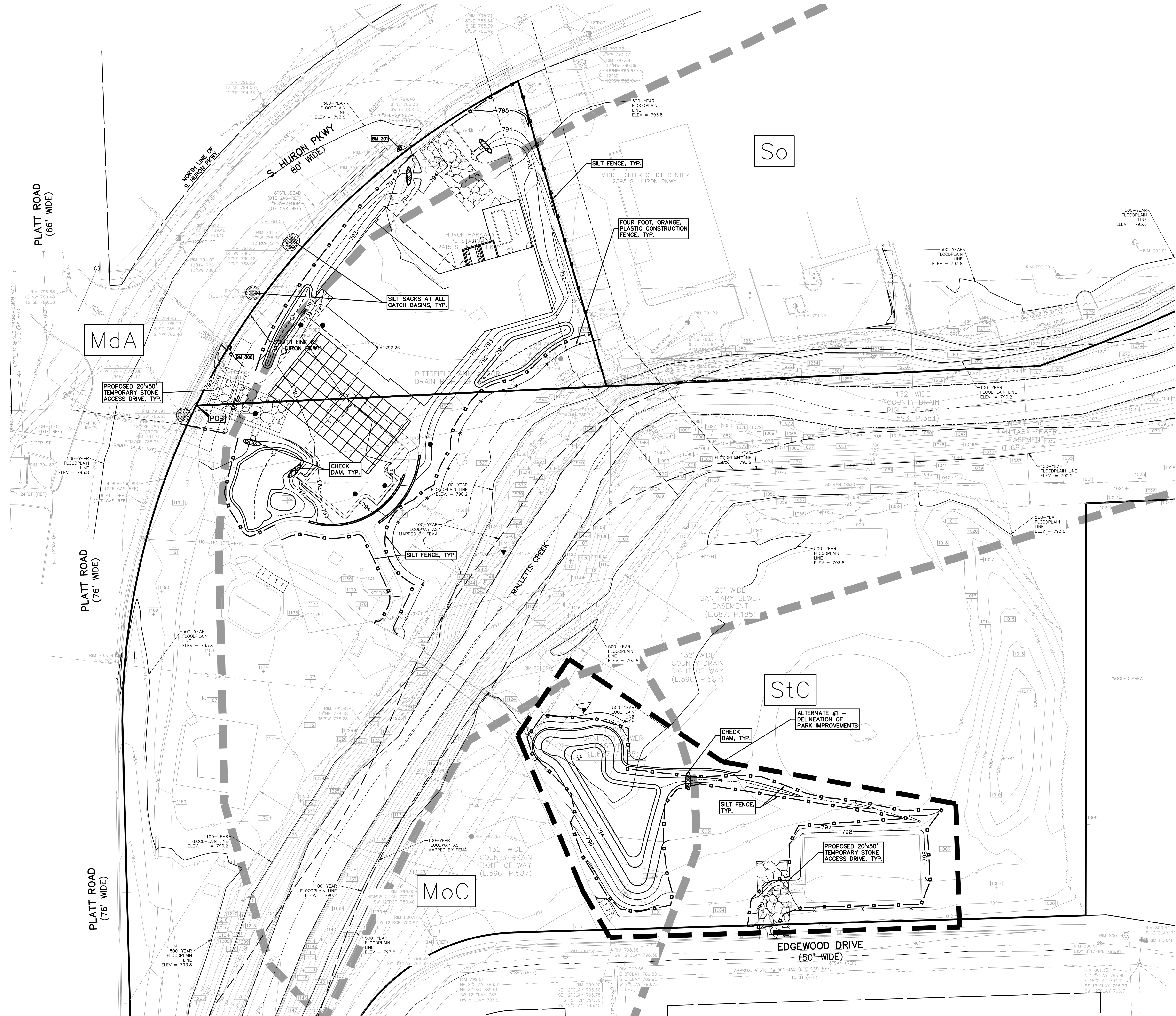


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ELEV. - 794.11

#### FLOODPLAIN NOTE:

BY GRAPHICAL PLOTTING, SITE IS WITHIN SEVERAL FLOOD ZONES PER FLOOD INSURANCE RATE MAP NUMBER 261610264E DATED APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR MORE DETAILED INFORMATION.

#### SYMBOLS: EROSION CONTROL

- SILT FENCE (REFER TO DETAIL ON SHEET C-8.1)
- FOUR FOOT, ORANGE, CONSTRUCTION FENCE
- STORM SEWER INLET FILTER (REFER TO DETAIL ON SHEET C-8.1)
- DITCH SEDIMENT TRAP WITH CHECK DAM (REFER TO DETAIL ON SHEET C-8.1)
- TEMPORARY CONSTRUCTION ACCESS DRIVE (REFER TO DETAIL ON SHEET C-8.1)

#### SOIL INVESTIGATION

PER THE US DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE SOILS MAP FOR WASHTENAW COUNTY, SITE SOILS CONSIST OF:

MdA - MATHERTON SANDY LOAM, 0 TO 4 PERCENT SLOPES; HYDROLOGIC SOIL GROUP B/D

MoC - MORLEY LOAM, 6 TO 12 PERCENT SLOPES; HYDROLOGIC SOIL GROUP C

So - SLOAN SILTY LOAM, 0 TO 1 PERCENT SLOPES; FREQUENTLY FLOODED; HYDROLOGIC SOIL GROUP B/D

StC - ST. CLAIR CLAY LOAM, 6 TO 12 PERCENT SLOPES; HYDROLOGIC SOIL GROUP D

#### EROSION CONTROL COST ESTIMATE (CONSTRUCTION)

INSTALL SILT FENCE	1,957 LF.	\$1.60	\$3,131
INSTALL INLET FILTERS	3 EA.	\$120	\$360
INSTALL TEMPORARY ACCESS DRIVES	3 EA.	\$1,200	\$3,600
TEMPORARY SEEDING	±2,775 S.Y.	\$1.05	\$2,914
EXPOSED SOIL PROTECTION FROM EROSION SHOULD CONSTRUCTION DISCONTINUE	±5,851 S.Y.	\$1.15	\$6,729
TOTAL			\$16,734

PROJECT NUMBER 21018

Bids/Permits	10.11.24
Site Plan-Engineering	08.21.24
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Final Site Plan	09.08.23
Bids/Permits	08.04.23
WCWRC Resubmittal	01.13.23
Site Plan Reapproval	11.21.22
Site Plan Approval	09.22.22

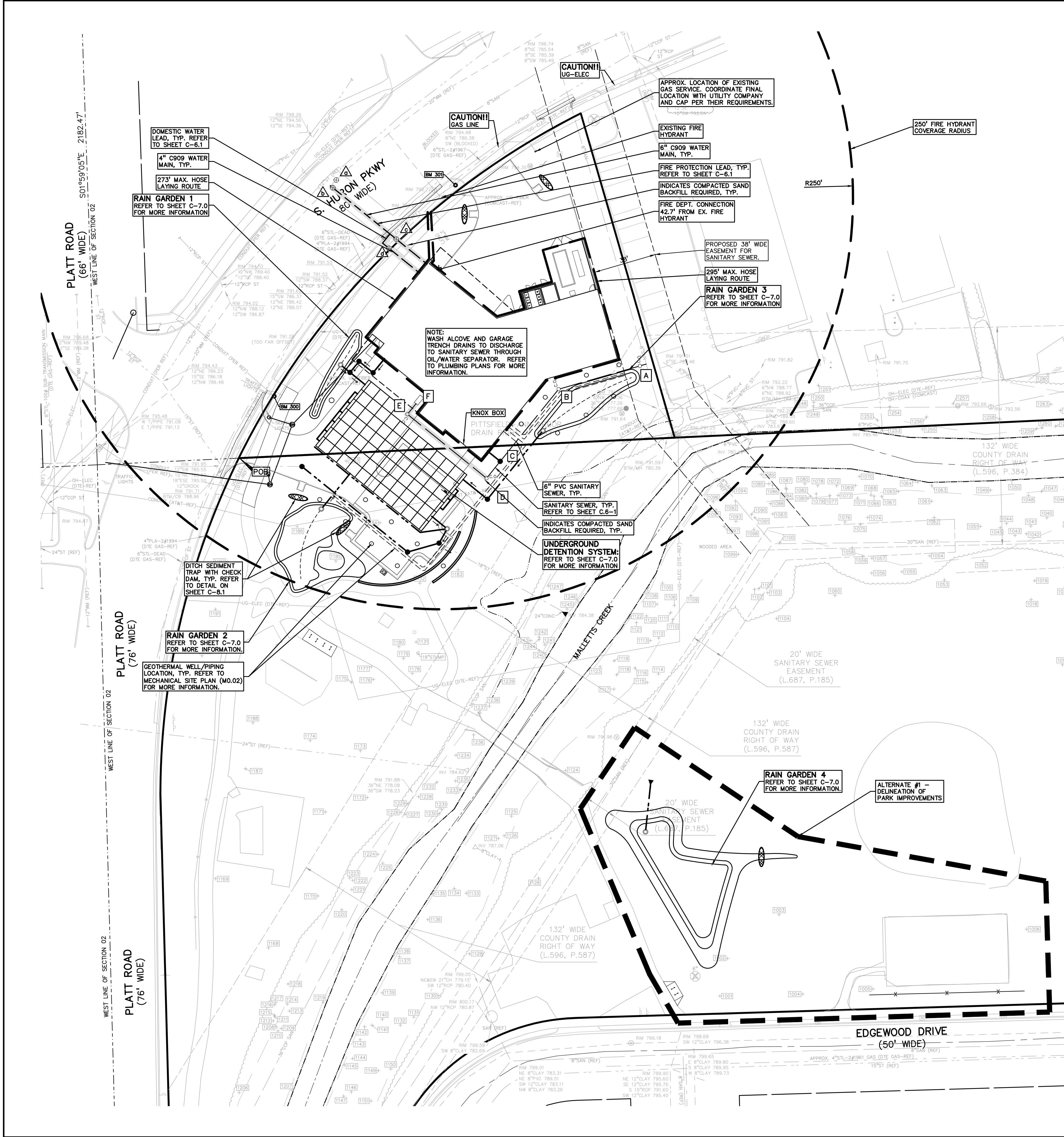
DRN: JW CHK'D: JC

SOIL EROSION & SEDIMENTATION CONTROL PLAN

SHEET

C-5.0





**SANITARY SEWER BASIS OF DESIGN:**

**PROPOSED FIRE STATION:**

- 10 EMPLOYEES
- 75 GPD/CAPITA
- UNIVERSITY HOUSING, BOARDING HOUSE, OR APARTMENT UNIT HOUSING MORE THAN FOUR PEOPLE
- AVERAGE DAILY FLOW = 75 GPD/CAPITA x 10 EMPLOYEES = 750 GPD
- TOTAL AVERAGE DAILY FLOW = 750 GPD = 0.0011 CFS

- POPULATION = 10 PEOPLE
- $P = 10 / 1000 = 0.01$
- PEAKING FACTOR =  $(18 + \sqrt{SQRT(P)}) / (4 + \sqrt{SQRT(P)}) = (18 + \sqrt{SQRT(0.01)}) / (4 + \sqrt{SQRT(0.01)}) = 4.41$
- PEAK HOUR FLOW =  $4.41 \times 750 \text{ GPD} = 3,308 \text{ GPD} = 0.0051 \text{ CFS}$
- CAPACITY OF 8" PVC PIPE AT 0.50% = 1.11 CFS ( $>0.0051 \text{ CFS}$ )

**NOTE:**  
CONTRACTOR TO VERIFY ALL QUANTITIES. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF PE GROUP FOR VERIFICATION, PRIOR TO BIDDING.

**PREMIUM TRENCH BACKFILL NOTE:**  
ALL UTILITIES UNDER PAVEMENT OR WITHIN 3' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45' LINE OF INFLUENCE OF PAVEMENT) SHALL HAVE MDOT CLASS II GRANULAR BACKFILL COMPACTED TO 95% MAX. DRY DENSITY (ASTM D-1557).

**REFER TO:**  
UTILITY NOTES ON SHEET C-8.0  
STORM SEWER STRUCTURE INFORMATION ON SHEET C-7.0  
STORM SEWER DESIGN ON SHEET C-7.2  
UTILITY DETAILS ON SHEET C-8.2 AND C-8.3

**STORM SEWER QUANTITIES:**

6" HDPE UNDERDRAIN WITH SOCK	98 LF
12" PVC SDR 26	11 LF
12" RCP CL-V PIPE	194 LF
18" RCP CL-V PIPE	102 LF
12" CONC. END SECTION	1 EA.
4" DIA. MANHOLE	7 EA.
2" DIA. OUTLET CONTROL STRUCTURE	3 EA.
3" DIA. OUTLET CONTROL STRUCTURE	1 EA.
6" DIA. OUTLET CONTROL STRUCTURE	1 EA.

**SANITARY SEWER QUANTITIES:**

6" PVC SDR 23.5 PIPE	203 LF
CLEANOUT AND BOX	4 EA.
4" DIA. MANHOLE	1 EA.

**WATER MAIN QUANTITIES:**

4" D.I.W.M. CLASS 54	36 LF
6" D.I.W.M. CLASS 54	76 LF
4" GATE VALVE AND WELL	1 EA.
6" GATE VALVE AND WELL	2 EA.
20" GATE VALVE AND WELL	1 EA.

**CITY OF ANN ARBOR STORM SEWER FRAME AND COVER NOTES**

- CATCH BASIN - BARRIER CURB  
FRAME: EJ 7045  
COVER: TYPE "M1"
- CATCH BASIN - BARRIER CURB WITH DOUBLE INLET  
FRAME: NEENAH FOUNDRY R-3249F  
COVER: TYPE "S" GRATE
- CATCH BASIN - MOUNTABLE CURB  
FRAME: EJ 7065  
COVER: TYPE "M1"
- CATCH BASIN - GUTTER  
FRAME: EJ 5080  
COVER: TYPE "M2"
- CATCH BASIN - GUTTER WITH DOUBLE INLET  
FRAME: EJ 5000  
COVER: TYPE "M2"
- CATCH BASIN - YARD  
FRAME: EJ 1040  
COVER: TYPE "02"
- CATCH BASIN - CITY PARK  
FRAME: EJ 1040  
COVER: TYPE "M1"
- MANHOLE  
FRAME: EJ 1040  
COVER: TYPE "A"

**LEGAL DESCRIPTION**

(Per City of Ann Arbor Assessing)

PARCEL ID 09-12-02-209-017

Land in the City of Ann Arbor, Washtenaw County, Michigan, described as follows:

COM W 1/4 COR TH N 88 DEG 50 MIN E 86.28 FT FOR POB TH NELY 300 FT ALG ARC N-N-TANGENT TO CONCAVE SE R-463.03 FT CHORD N 46 DEG 17 MIN 40 SEC E 294.78 FT TH S 14 DEG 37 MIN 30 SEC E 204.93 FT TH S 88 DEG 50 MIN W 284.91 FT TO POB PRT NW 1/4 SEC 2 T3S R6E

**BENCHMARKS**

(GPS DERIVED - NAVD88)

BM #300  
BOLT ON THE SOUTH SIDE OF A SIGNAL POLE LOCATED ON THE EAST SIDE OF S. HURON PKWY AT THE INTERSECTION OF PLATT ROAD & S. HURON PKWY.  
ELEV. - 793.38

BM #301  
BOLT ON THE SOUTH SIDE OF A LIGHT POLE LOCATED ON THE SOUTH SIDE OF S. HURON PKWY, IN FRONT OF THE ANN ARBOR FIRE STATION #4.  
ELEV. - 794.11

**FLOODPLAIN NOTE:**

BY GRAPHICAL PLOTTING, SITE IS WITHIN SEVERAL FLOOD ZONES PER FLOOD INSURANCE RATE MAP NUMBER 26161C0284E DATED APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR MORE DETAILED INFORMATION.

**UTILITY NOTES**

1. NO FIREWALLS WILL BE CONSTRUCTED AS A PART OF THIS PROJECT.
2. NO BOOSTER PUMPS WILL BE USED FOR THE BUILDING WATER SERVICE LEAD AND NO FIRE PUMPS WILL BE USED.

SANITARY STRUCTURES		SANITARY CLEANOUTS	
C	MH (4' DIA.) RIM = 792.33 6" SW 788.28 6" NW 789.69 6" NE 788.78	A	C.O. IN BOX RIM = 791.33 INV. 785.71
		B	C.O. IN BOX RIM = 792.25 INV. 786.22
		D	C.O. IN BOX RIM = 793.07 INV. 788.41
		E	C.O. IN BOX RIM = 794.63 INV. 789.03
WATER MAIN STRUCTURES			
a	GV IN WELL RIM = 794.17		
b	GW-b RIM = 794.05		
c	GW-c RIM = 792.91		
d	GW-d RIM = 792.85		

**DEVELOPMENT SEWAGE FLOW OFFSET MITIGATION PROGRAM.**

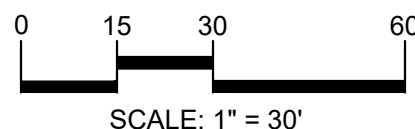
**10 FIRE STATION EMPLOYEES**

- 10 EMPLOYEES x 75 GPD / CAPITA = 750 GPD
- (TABLE A: UNIVERSITY HOUSING, BOARDING HOUSE, OR APARTMENT UNIT HOUSING MORE THAN FOUR PEOPLE)
- PEAK FLOW = 750 GPD x 4 (PEAKING FACTOR) x 1.1 (SYSTEM RECOVERY FACTOR) = 3,300 GPD
- 3,300 GPD x 1 DAY/24 HRS x 1 HR/60 MIN = 2.3 GPM PEAK FLOW
- PER THE CITY OF ANN ARBOR "SANITARY FLOW OFFSET MITIGATION FOR DEVELOPMENT" (2/12/2019)

EXISTING AND PROPOSED POPULATION WILL BE THE SAME. EXISTING AND PROPOSED BUILDINGS INCLUDE WASH ALCOVE AND GARAGE AREA TRENCH DRAINS. THEREFORE, THE PEAK FLOW WILL BE THE SAME AND NO OFFSET MITIGATION WILL BE REQUIRED.

**UTILITY LEGEND:**

- OH—ELEC—V— EX. OH, ELEC. POLE & GUY WIRE  
—UG—CATV— EX. U.G. CABLE TV & PEDESTAL  
—UG—COMM— EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE  
—UG—ELEC— EX. U.G. ELEC. MANHOLE, METER & HANDHOLE  
— EX. GAS LINE  
EX. GAS VALVE & GAS LINE MARKER  
EX. TRANSFORMER & IRRIGATION VALVE  
EX. WATER MAIN  
EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE  
EX. WATER VALVE BOX & SHUTOFF  
EX. SANITARY SEWER  
EX. SANITARY CLEANOUT & MANHOLE  
EX. COMBINED SEWER MANHOLE  
EX. STORM SEWER  
EX. CLEANOUT & MANHOLE  
EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN  
EX. YARD DRAIN & ROOF DRAIN  
EX. UNIDENTIFIED STRUCTURE  
— PROPOSED WATER MAIN  
PROPOSED HYDRANT AND GATE VALVE  
PROPOSED TAPPING SLEEVE, VALVE & WELL  
PROPOSED POST INDICATOR VALVE  
— PROPOSED SANITARY SEWER  
PROPOSED SANITARY CLEANOUT & MANHOLE  
— PROPOSED STORM SEWER  
PROPOSED STORM SEWER CLEANOUT & MANHOLE  
PROPOSED CATCH BASIN, INLET & YARD DRAIN

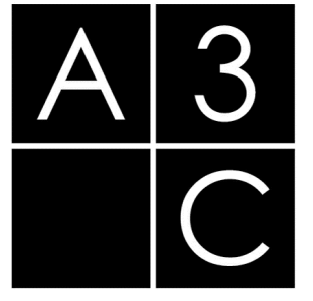


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ISSUE	Bids/Permits	10.11.24	
	Site Plan-Engineering	08.21.24	
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	Site Plan Approval	09.22.22	
DRN: JW		CHK'D: JC	

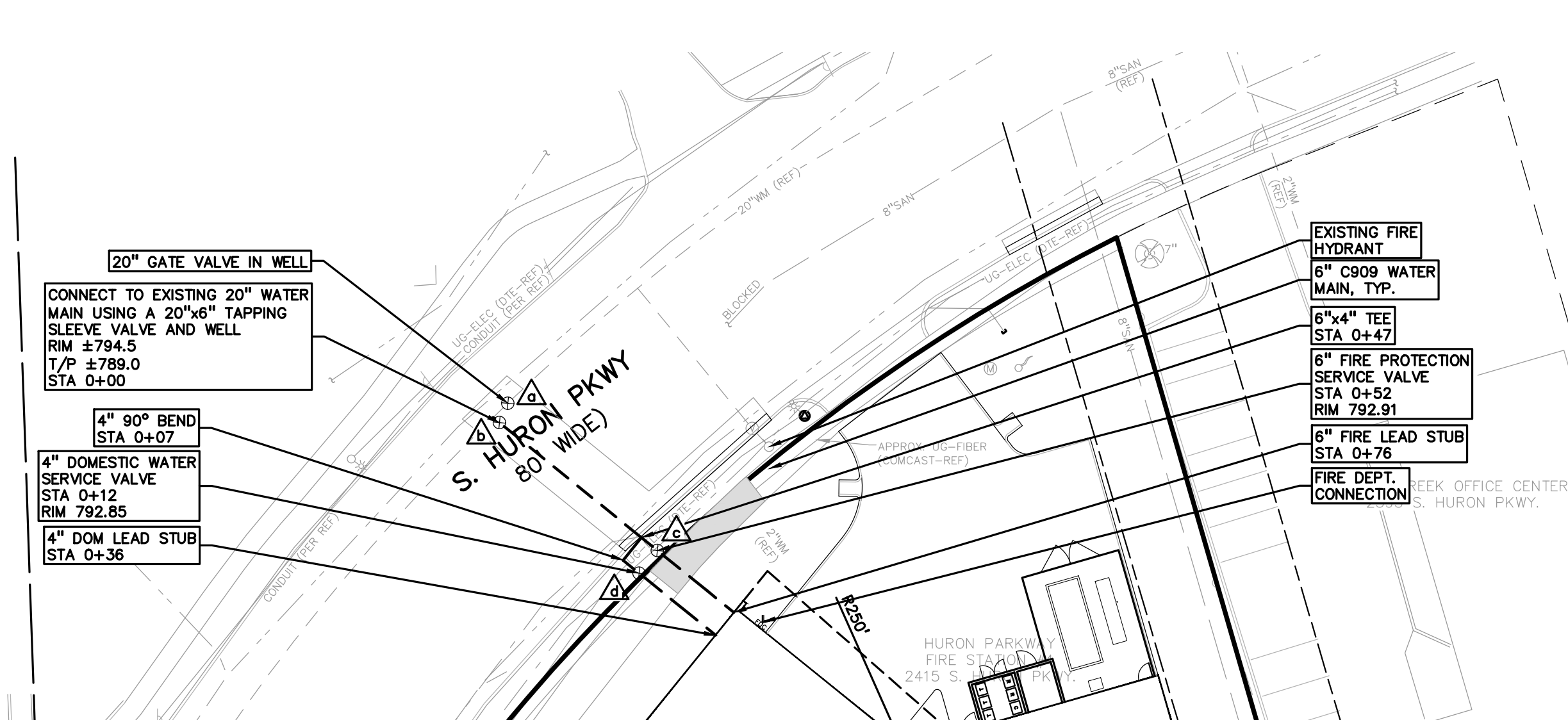
UTILITY PLAN



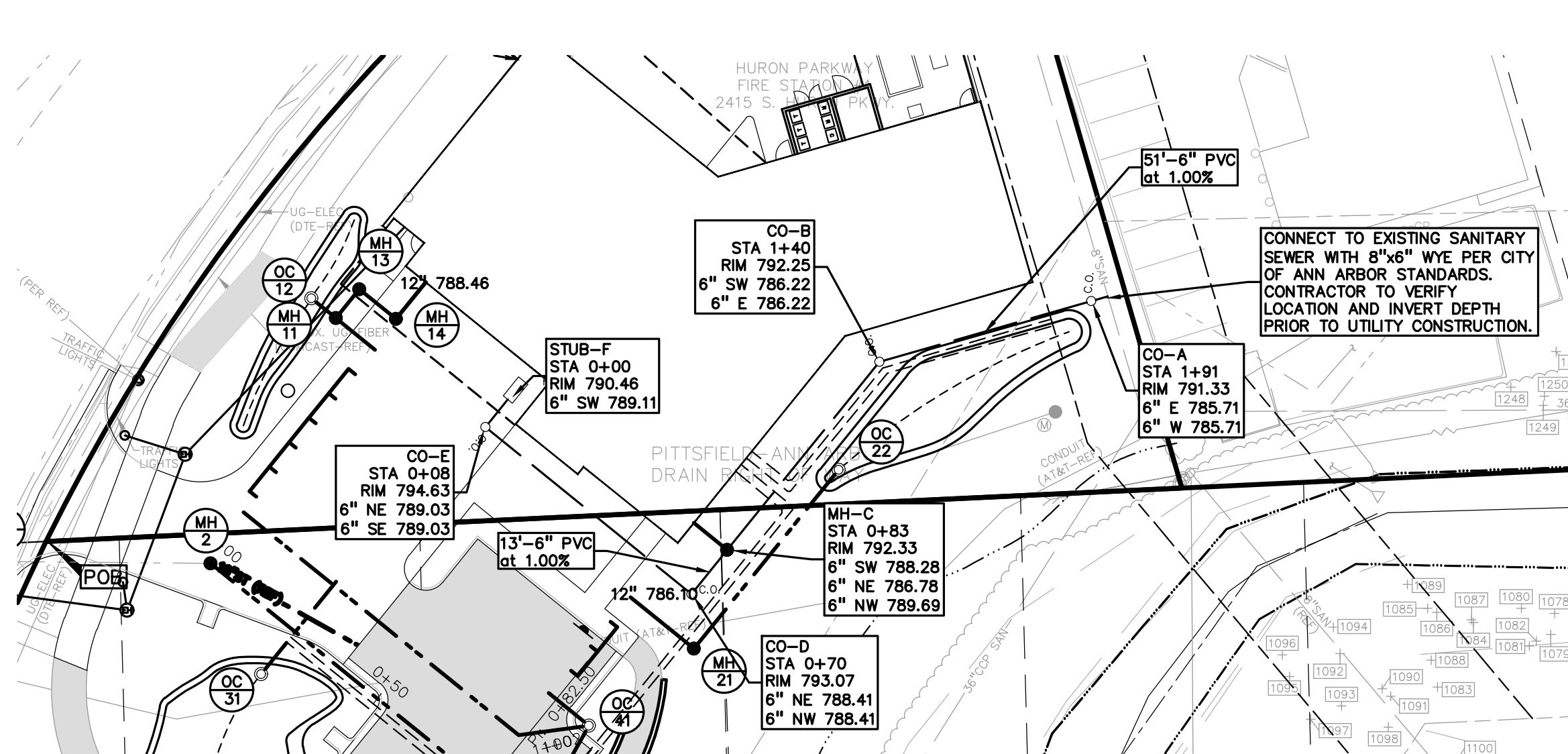
115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663 - 1910  
F: (866) 732 - 2168  
www.a3c.com



S:\PROJECTS\2021\2021-0184 ANN ARBOR FIRE STATION\DWG\CONSTRUCTION\C-6.1 UPRF-210184.dwg,09.03.05 4:41 PM



FIRE PROTECTION AND DOMESTIC WATER MAIN PLAN



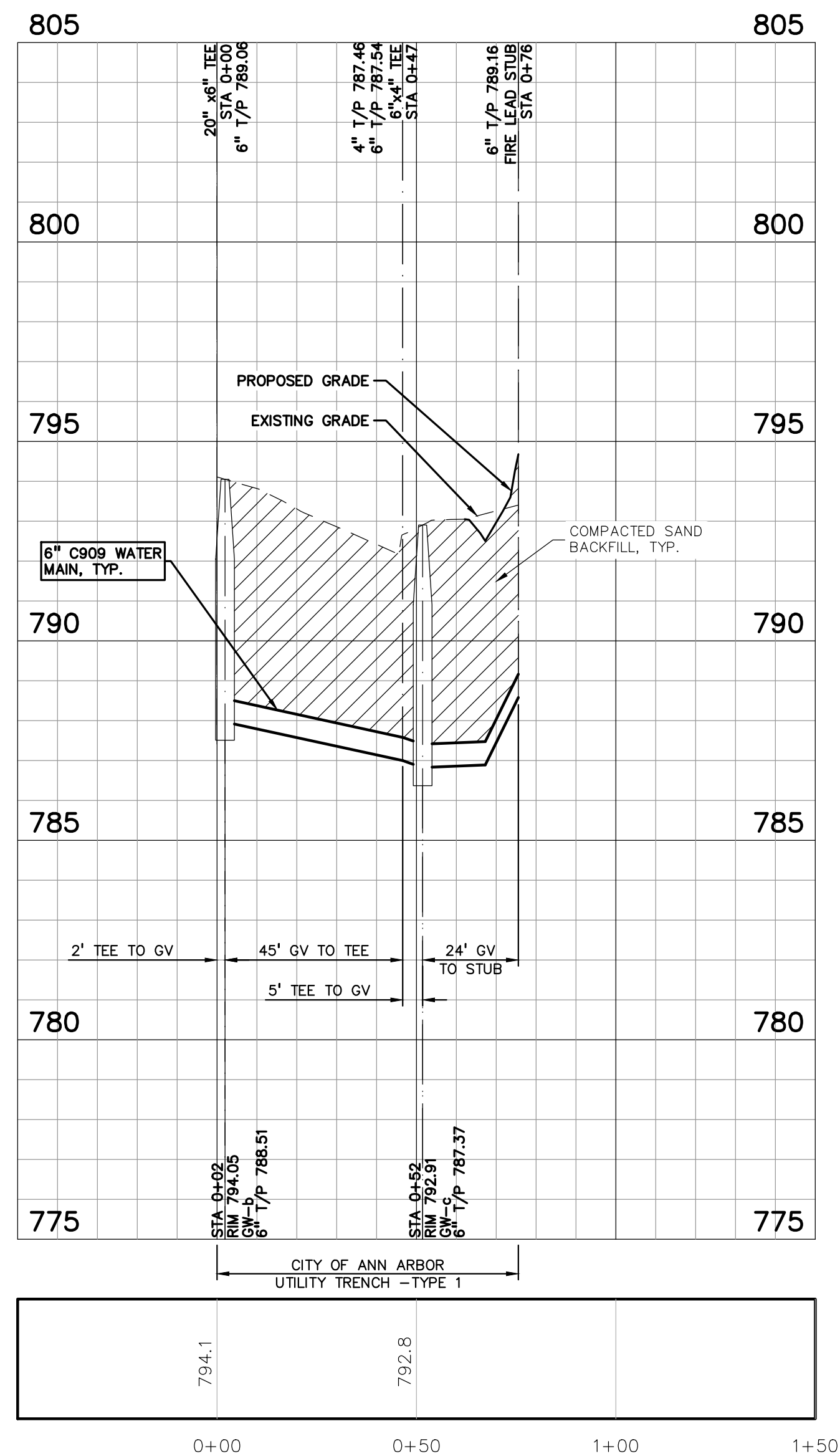
SANITARY PLAN



**LEGAL DESCRIPTION**  
(Per City of Ann Arbor Assessing)  
PARCEL ID 09-12-02-209-017  
Land in the City of Ann Arbor, Washtenaw County, Michigan,  
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COM W 1/4 COR TH N 88 DEG 50 MIN E 86.28 FT FOR POB TH  
NELLY 300 FT ALG ARC NON-TANGENT CIR CURVE CONCAVE SE  
R-463.03 FT CHORD N 46 DEG 17 MIN 40 SEC E 294.78 FT TH S  
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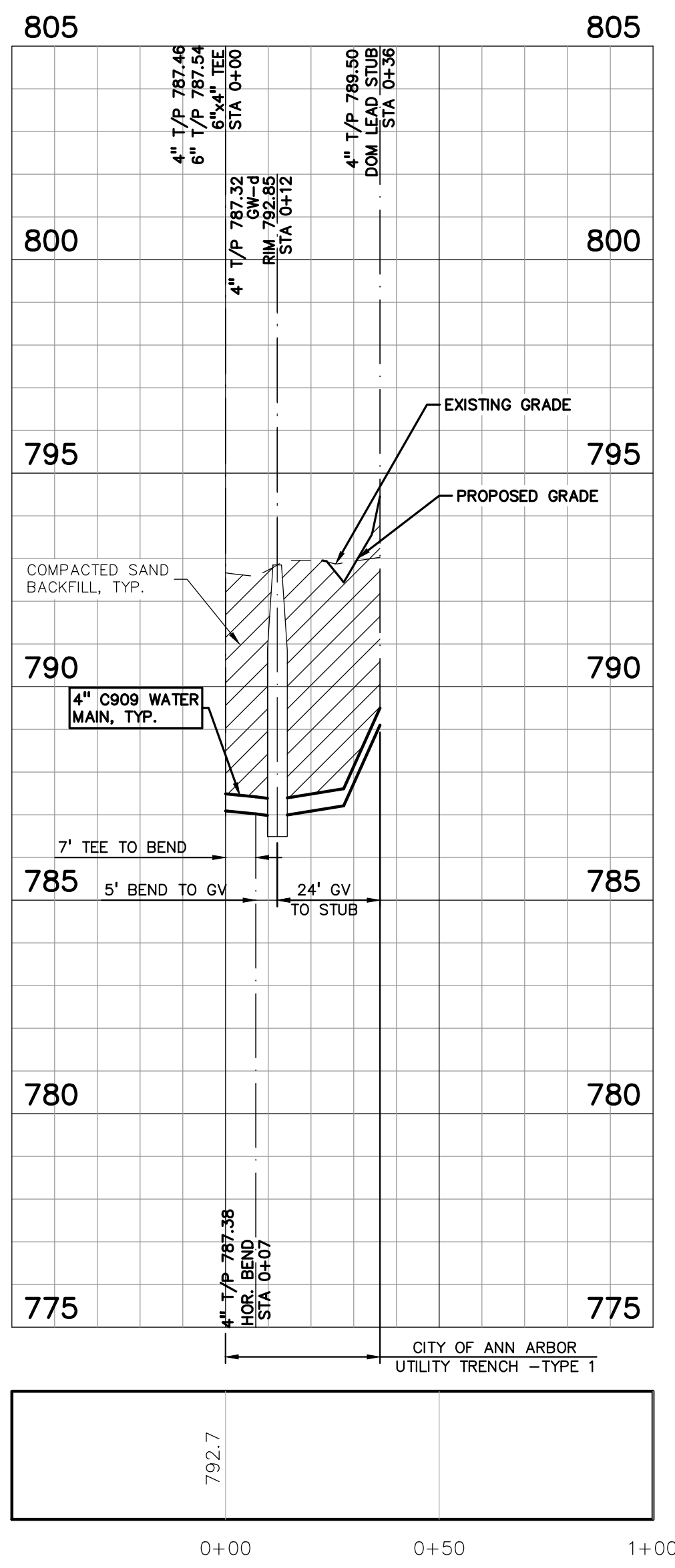
**BENCHMARKS**  
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FIRE STATION #4.  
ELEV. - 794.11

**FLOODPLAIN NOTE:**  
BY GRAPHICAL PLOTTING, SITE IS WITHIN SEVERAL FLOOD ZONES  
PER FLOOD INSURANCE RATE MAP NUMBER 26161C0264E DATED  
APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR  
MORE DETAILED INFORMATION.



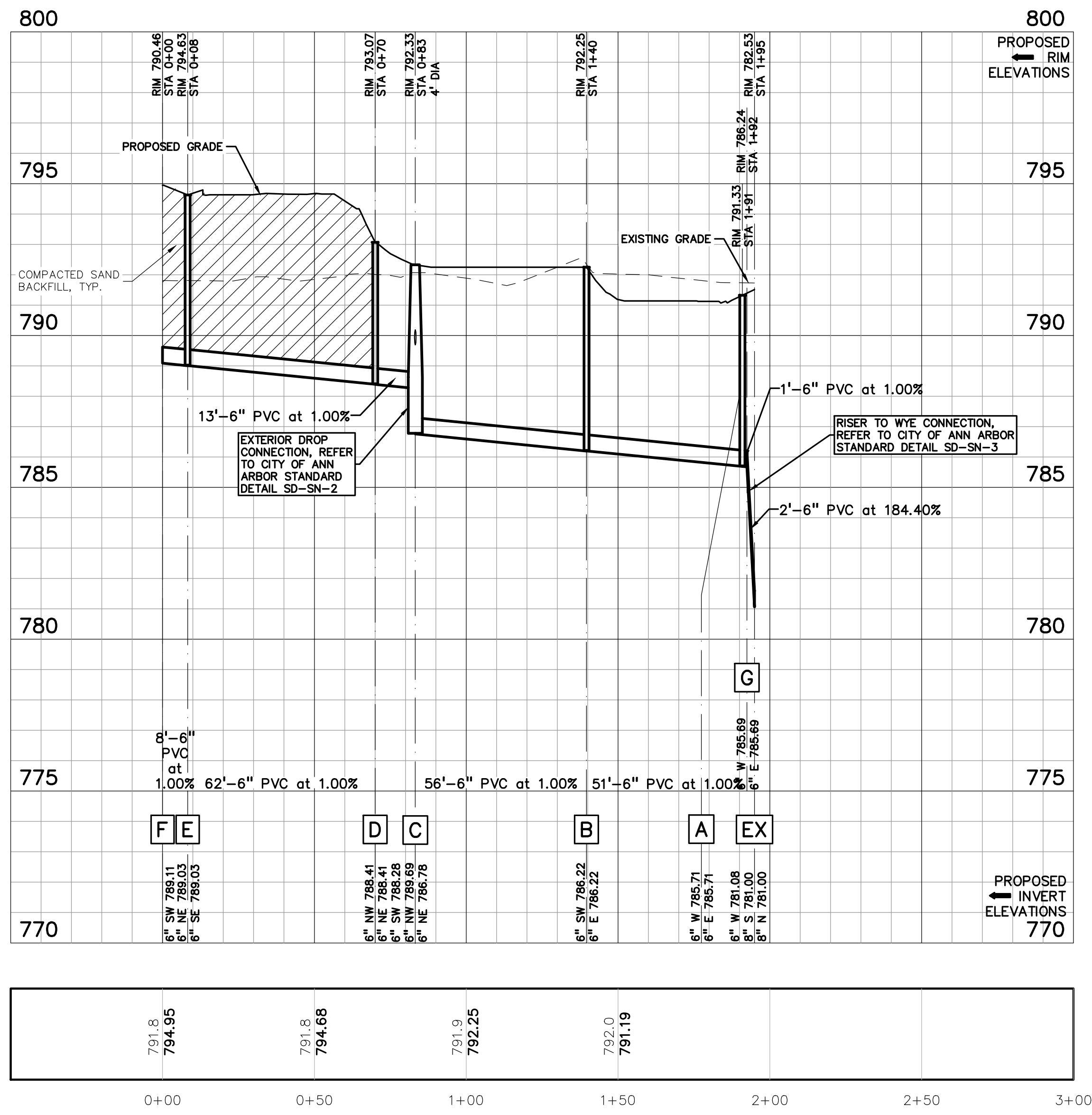
WATER-FIRE PROFILE

HORIZ: 1" = 30'  
VERT: 1" = 3'



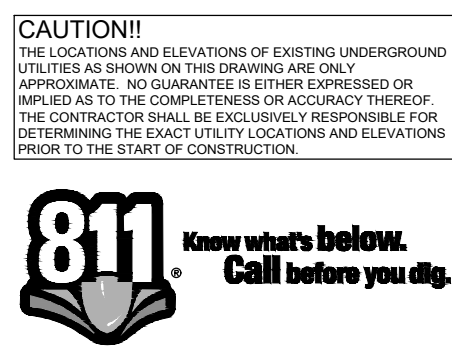
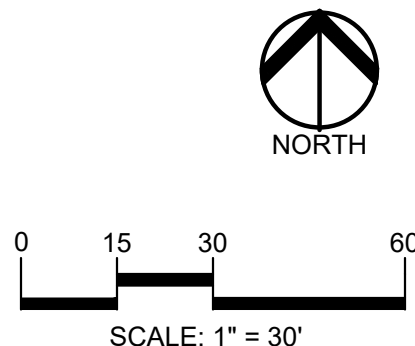
WATER-DOM PROFILE

HORIZ: 1" = 30'  
VERT: 1" = 3'



SANITARY D-A PROFILE

HORIZ: 1" = 30'  
VERT: 1" = 3'



T C A  
ARCHITECTURE + PLANNING + DESIGN

JOSEPH B. WYVROT  
ENGINEER  
No. 6501049874  
PROFESSIONAL ENGINEER

**PEA GROUP**  
t: 844.813.2949  
www.peagroup.com

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DRN: JW CHKD: JC

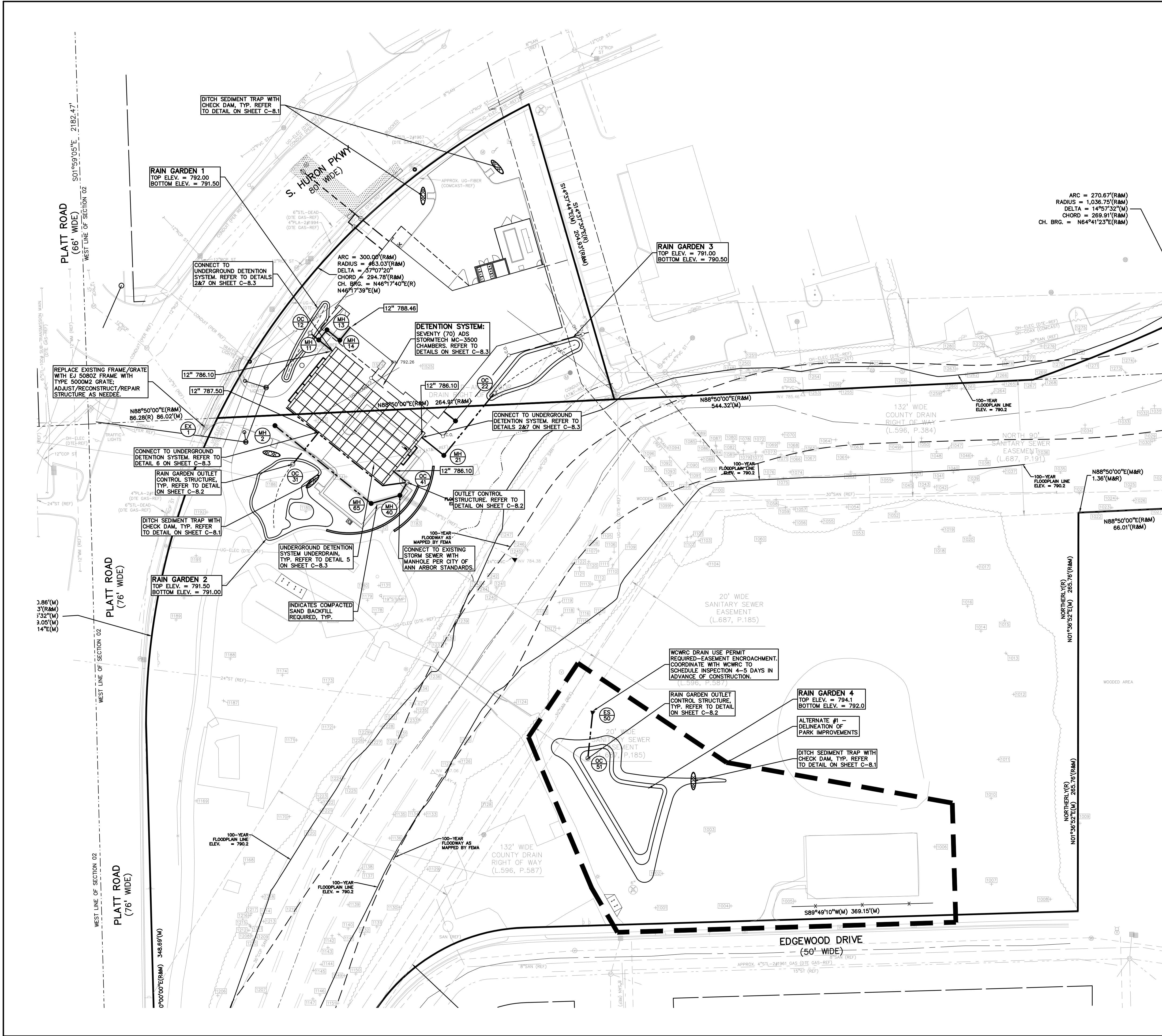
**SANITARY SEWER AND WATER MAIN PLAN & PROFILE**

**A3C**  
COLLABORATIVE ARCHITECTURE  
115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663-1910  
F: (866) 732-2168  
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SHEET  
**C-6.1**



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ELEV. - 794.11

#### FLOODPLAIN NOTE:

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#### UTILITY NOTES

SEE SHEET C-6.0 FOR SANITARY SEWER AND WATER MAIN STRUCTURE INFORMATION.

#### EXISTING STORM STRUCTURES

EX	EXISTING STRUCTURE
1	RIM = 791.95 18" E 785.50

#### END SECTIONS

50	END SECTION
	12" 791.90

#### STORM STRUCTURES

MH 2	(4' DIA./2' SUMP) RIM = 792.16 18" SE 785.26 18" W 785.26 18" E 785.26
MH 11	(4' DIA./0' SUMP) RIM = 792.94 12" NW 786.26 12" NE 788.31 12" SE 786.16
OC 12	(2' DIA./0' SUMP) RIM = 792.00 6" SW 789.00 6" NE 789.00 12" SE 786.30
MH 13	(4' DIA./0' SUMP) RIM = 793.15 12" SE 788.35 12" SW 788.35
MH 14	(4' DIA./0' SUMP) RIM = 794.45 12" NE 788.40 12" NW 788.40
MH 21	(4' DIA./0' SUMP) RIM = 792.26 12" NE 786.26 12" NW 786.16
OC 22	(2' DIA./0' SUMP) RIM = 791.00 6" NE 788.59 12" SW 786.49
OC 31	(2' DIA./0' SUMP) RIM = 791.50 6" S 788.50 12" NE 787.64
MH 40	(4' DIA./0' SUMP) RIM = 793.88 18" SE 784.81 12" NE 784.95 18" W 784.81 18" NW 784.81
OC 41	(6' DIA./2' SUMP) RIM = 794.18 12" NW 786.04 6" W 785.25 12" SW 785.00
OC 51	(3' DIA./2' SUMP) RIM = 794.00 12" N 792.00
MH 65	(4' DIA./0' SUMP) RIM = 793.47 18" NW 784.94 18" E 784.94

T

C

A

ARCHITECTURE + PLANNING + DESIGN

JOSEPH B. WYWROT  
ENGINEER  
No. 6501045874  
PROFESSIONAL ENGINEER

7/15/17

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Site Plan Approval 09.22.22

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DRAINAGE PLAN

A3C

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COLLABORATIVE ARCHITECTURE

SHEET C-7.0

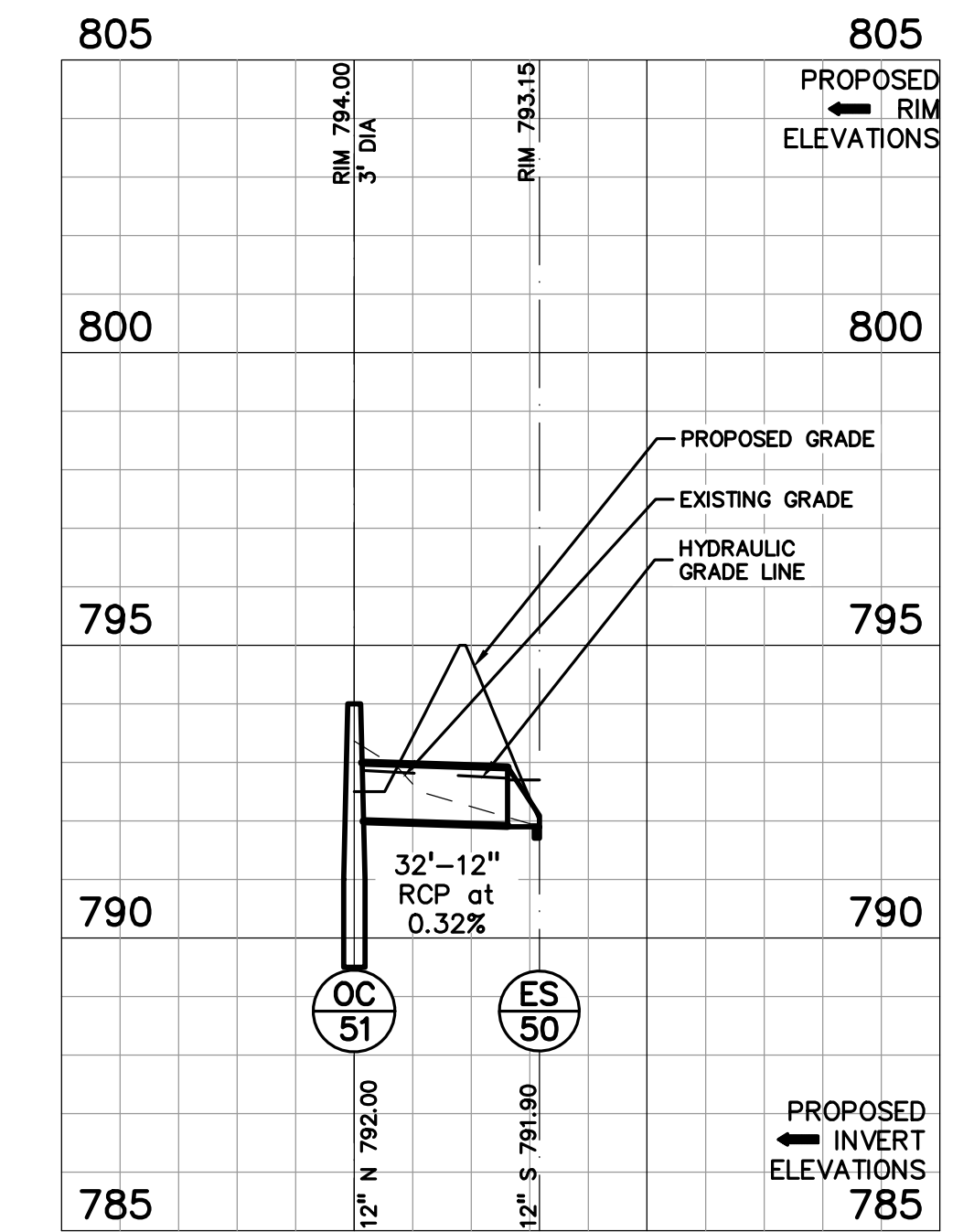
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SCALE: 1" = 30'

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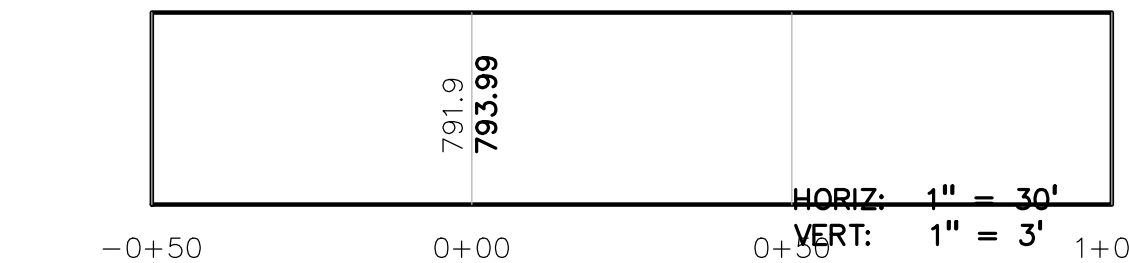
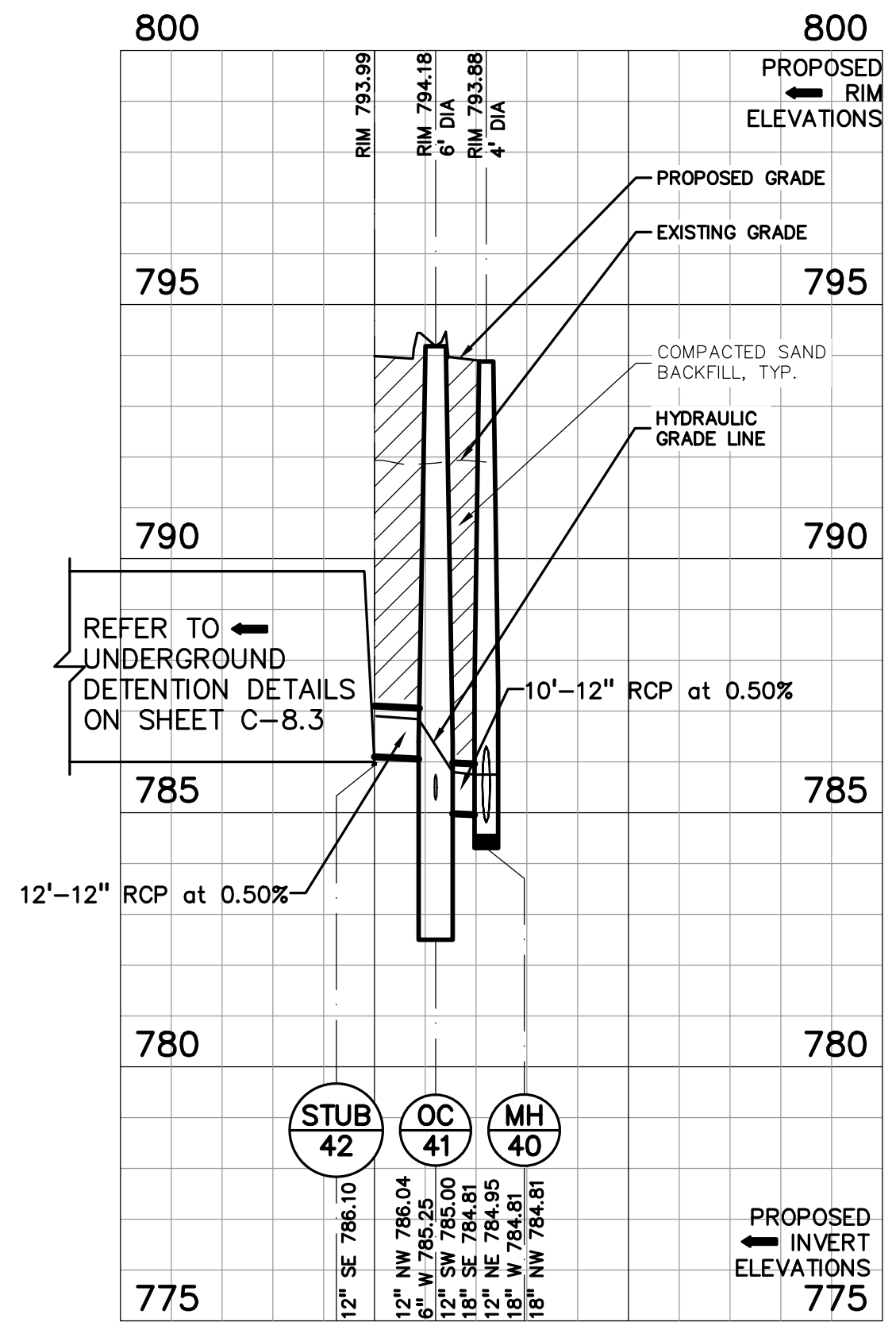
811  
Know what's below.  
Call before you dig.



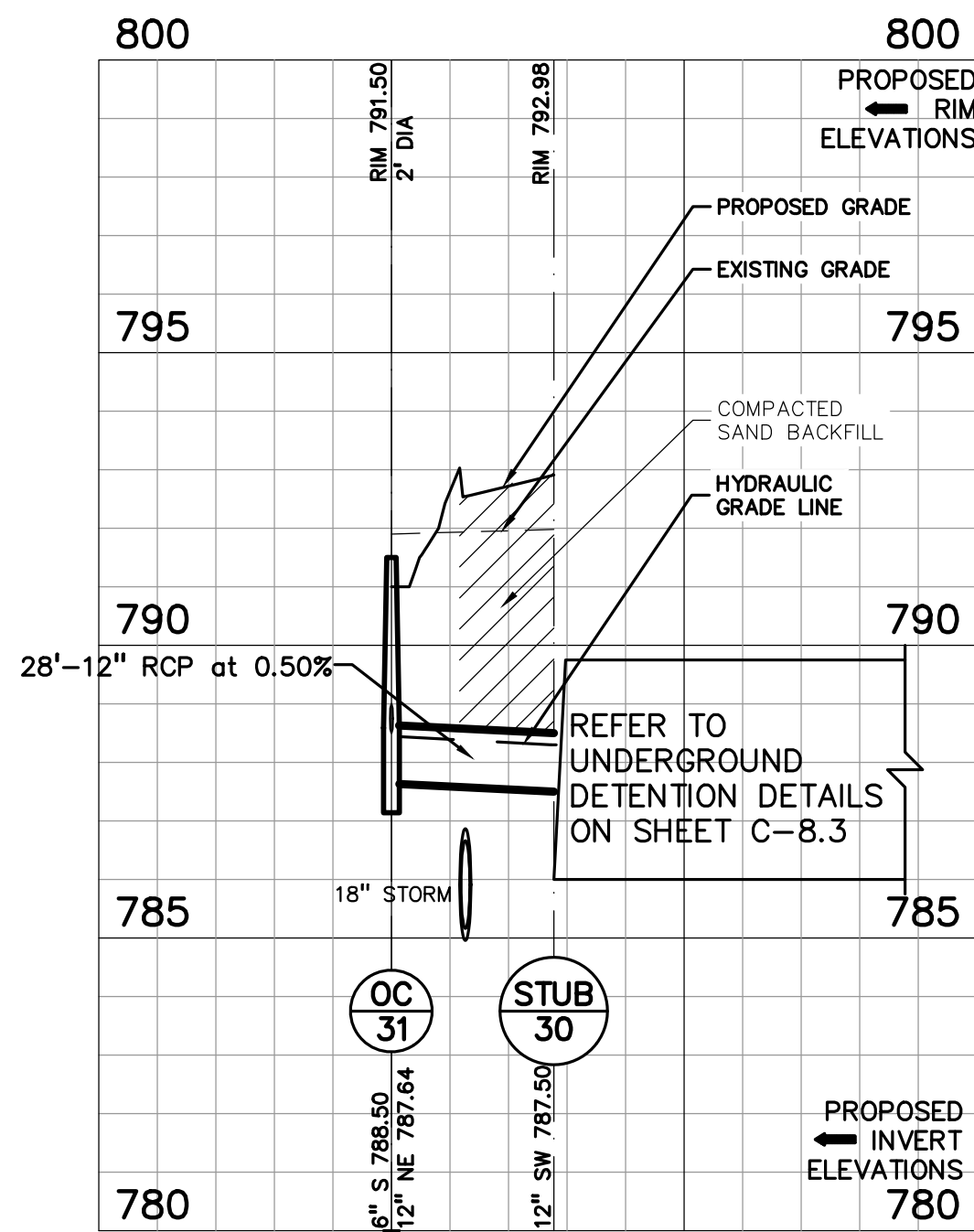
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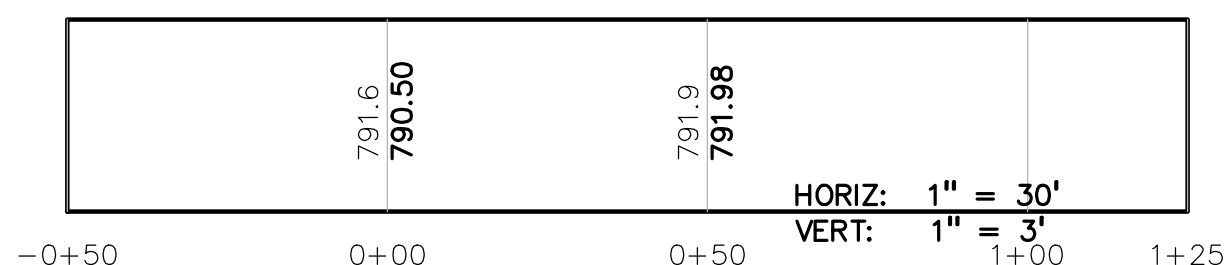
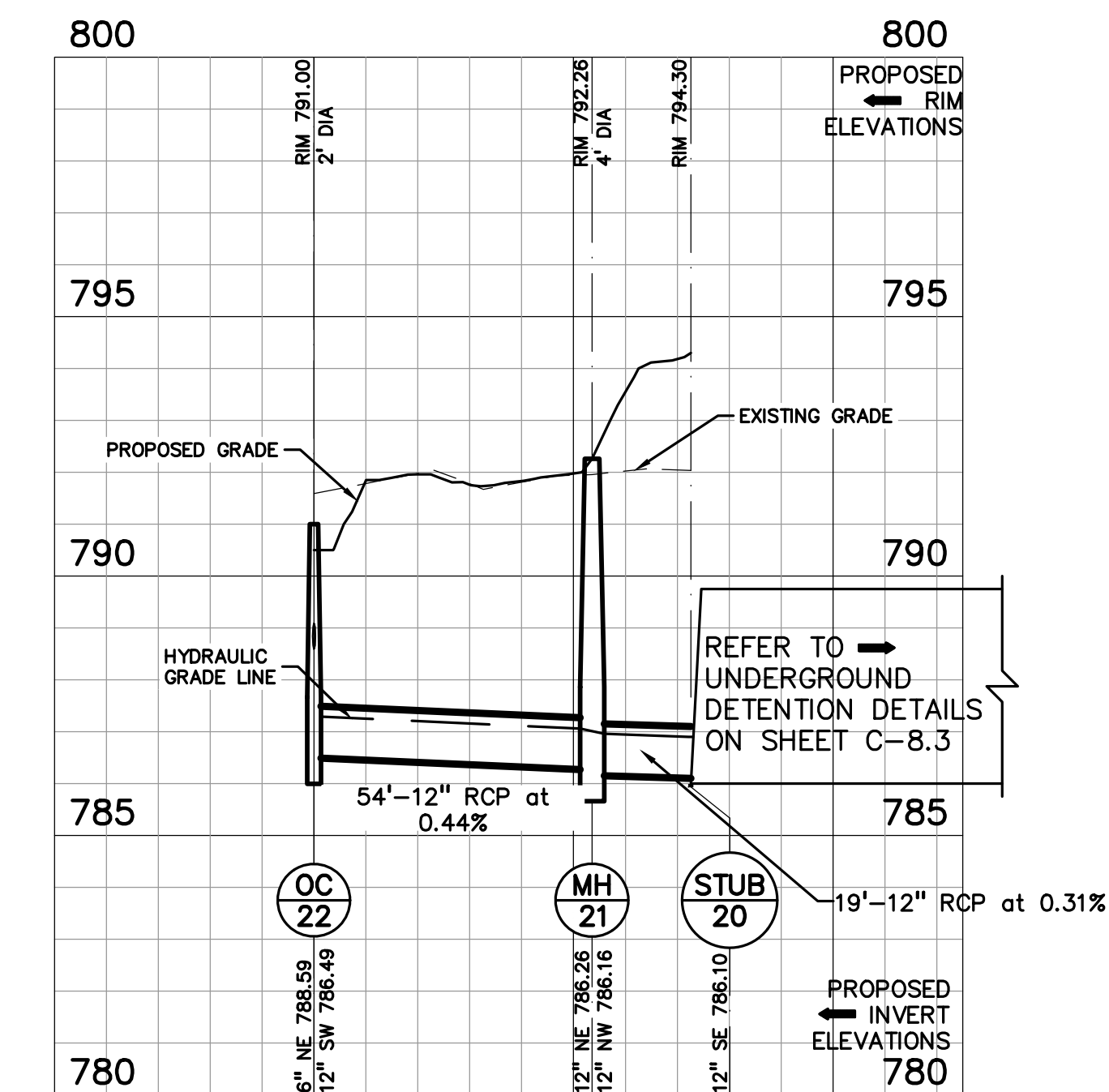
STORM 51-50 PROFILE



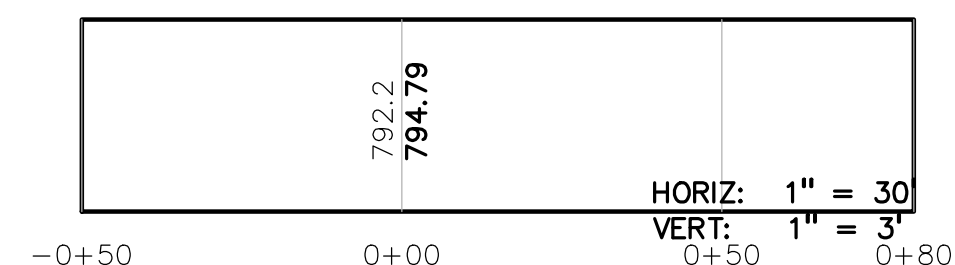
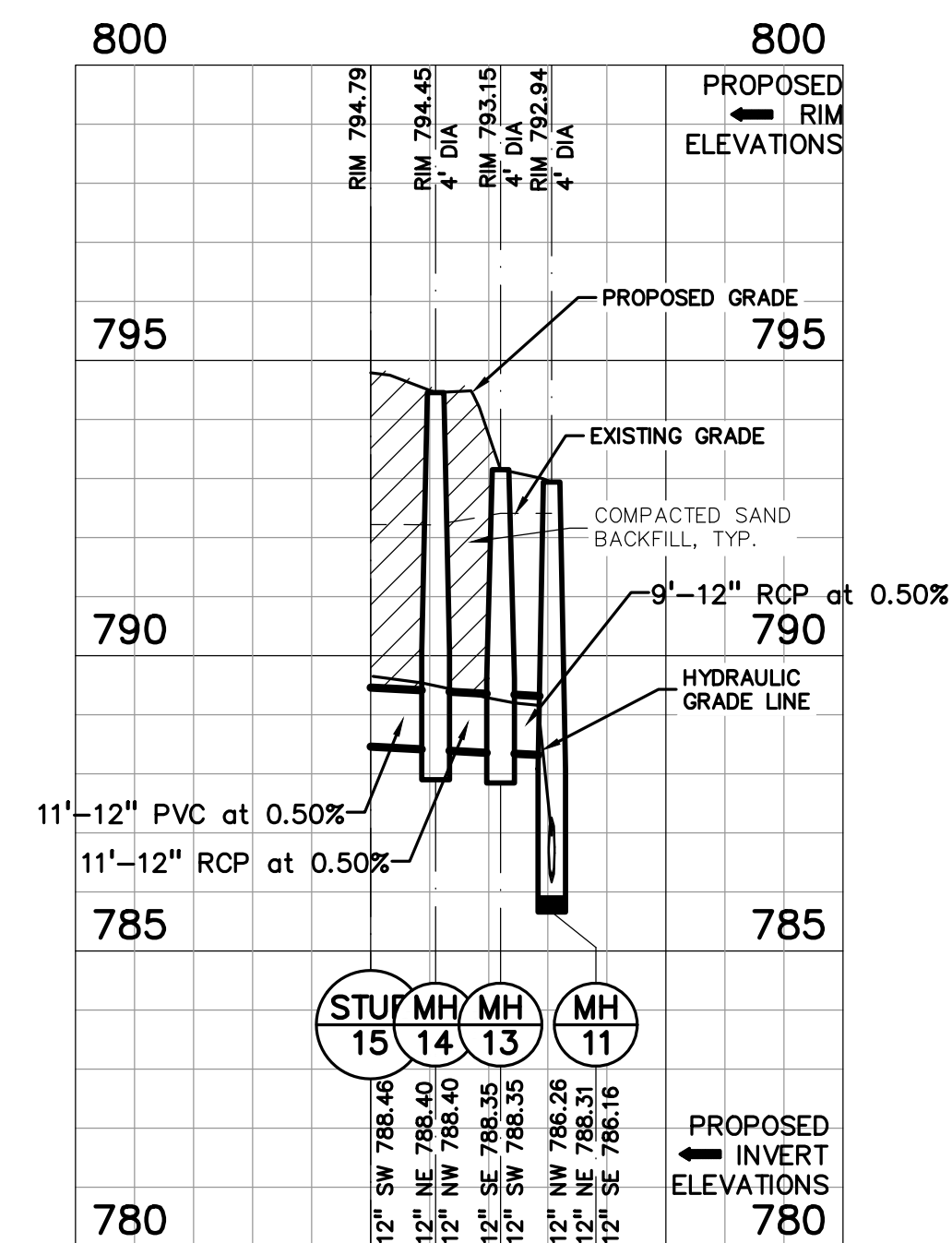
STORM 42-40 PROFILE



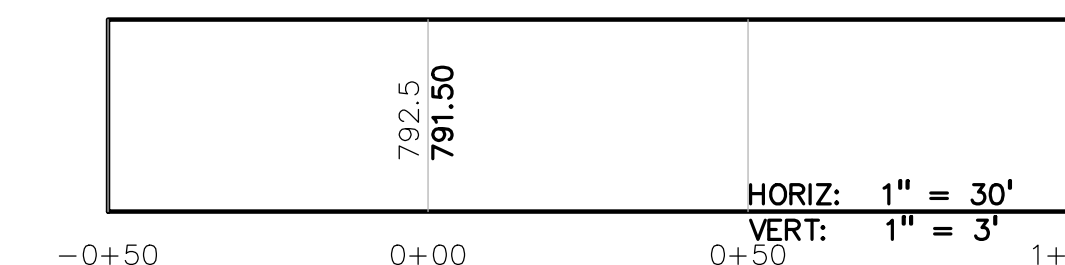
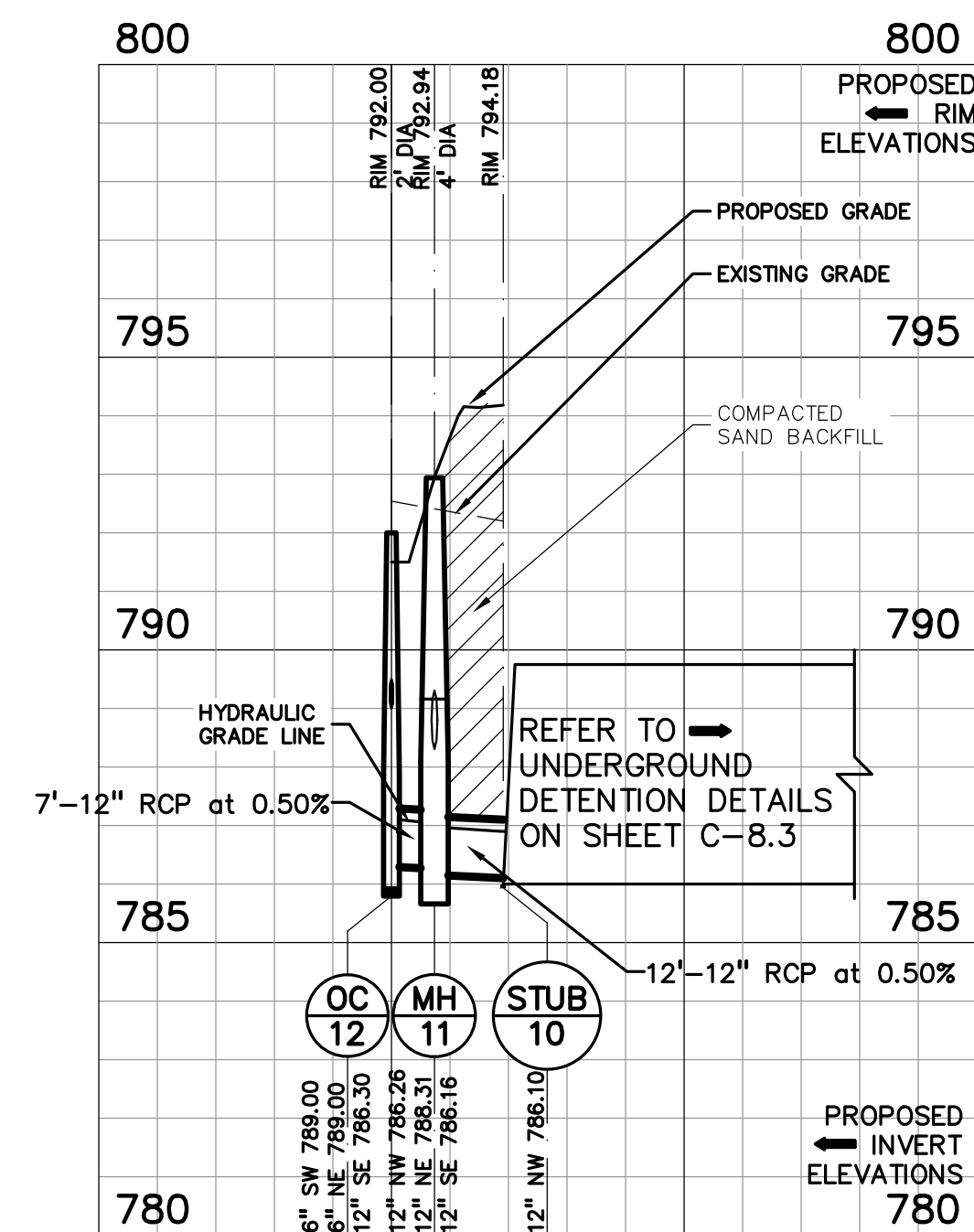
STORM 31-30 PROFILE



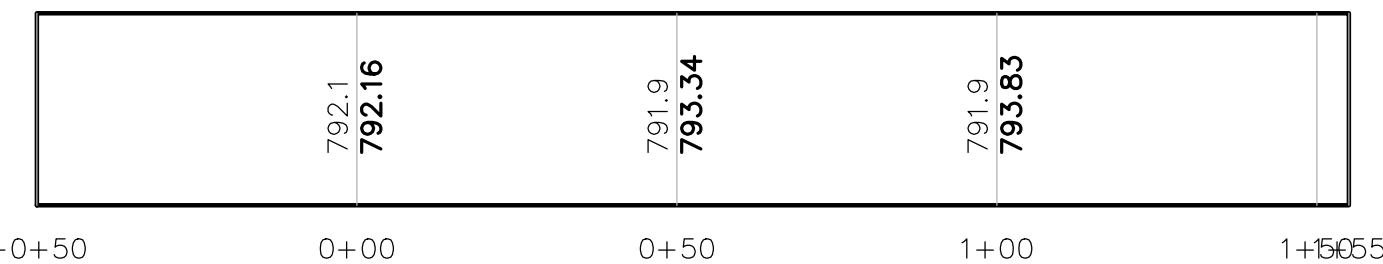
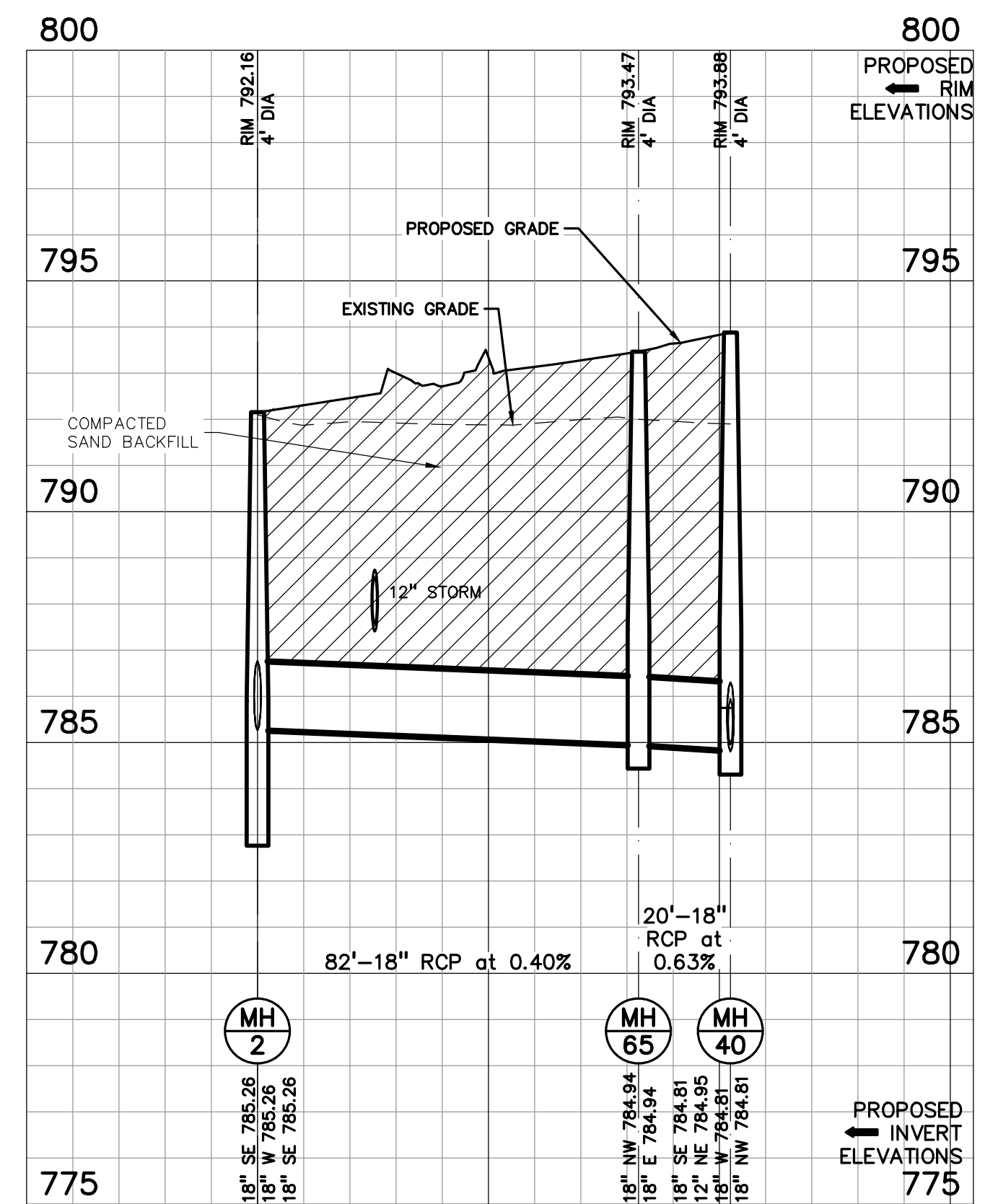
STORM 22-20 PROFILE



STORM 15-11 PROFILE



STORM 12-10 PROFILE



STORM NEW ROUTE PROFILE

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COM W 1/4 COR TH N 88 DEG 50 MIN E 86.28 FT FOR POB TH  
NELLY 300 FT ALG ARC NON-TANGENT CIR CURVE CONCAVE SE  
R=463.03 FT CHORD N 46 DEG 17 MIN 40 SEC E 294.78 FT TH S  
14 DEG 37 MIN 30 SEC E 204.93 FT TH S 88 DEG 50 MIN W  
264.91 FT TO POB PRT NW 1/4 SEC 2 T3S R6E

**BENCHMARKS**  
(GPS DERIVED - NAVD88)  
BM #300  
BOLT ON THE SOUTH SIDE OF A SIGNAL POLE LOCATED ON THE  
EAST SIDE OF S. HURON PKWY AT THE INTERSECTION OF PLATT  
ROAD & S. HURON PKWY.  
ELEV. - 793.38  
BM #301  
BOLT ON THE SOUTH SIDE OF A LIGHT POLE LOCATED ON THE  
SOUTH SIDE OF S. HURON PKWY, IN FRONT OF THE ANN ARBOR  
FIRE STATION #4.  
ELEV. - 794.11

**FLOODPLAIN NOTE:**  
BY GRAPHICAL PLOTTING, SITE IS WITHIN SEVERAL FLOOD ZONES  
PER FLOOD INSURANCE RATE MAP NUMBER 26161C0264E DATED  
APRIL 3, 2012. SEE SHEET P-1.0, TOPOGRAPHICAL SURVEY FOR  
MORE DETAILED INFORMATION.

**CAUTION!!**  
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND  
UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY  
APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR  
IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF.  
THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR  
DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS  
PRIOR TO THE START OF CONSTRUCTION.

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

**NORTH**

**SCALE: 1" = 30'**

**T C A**  
ARCHITECTURE + PLANNING + DESIGN

**JOSEPH B. WYWROT**  
ENGINEER  
No. 6501049874  
PROFESSIONAL ENGINEER

**PEA GROUP**  
t: 844.813.2949  
www.peagroup.com

PROJECT NUMBER	21018
Bids/Permits	10.11.24
Site Plan-Engineering	08.21.24
Final Site Plan-Rev	11.08.23
Final Site Plan	09.08.23
Bids/Permits	08.04.23
WCWRC Resubmittal	01.13.23
Site Plan Reapproval	11.21.22
Site Plan Approval	09.22.22
DRN: JW	CHK'D: JC

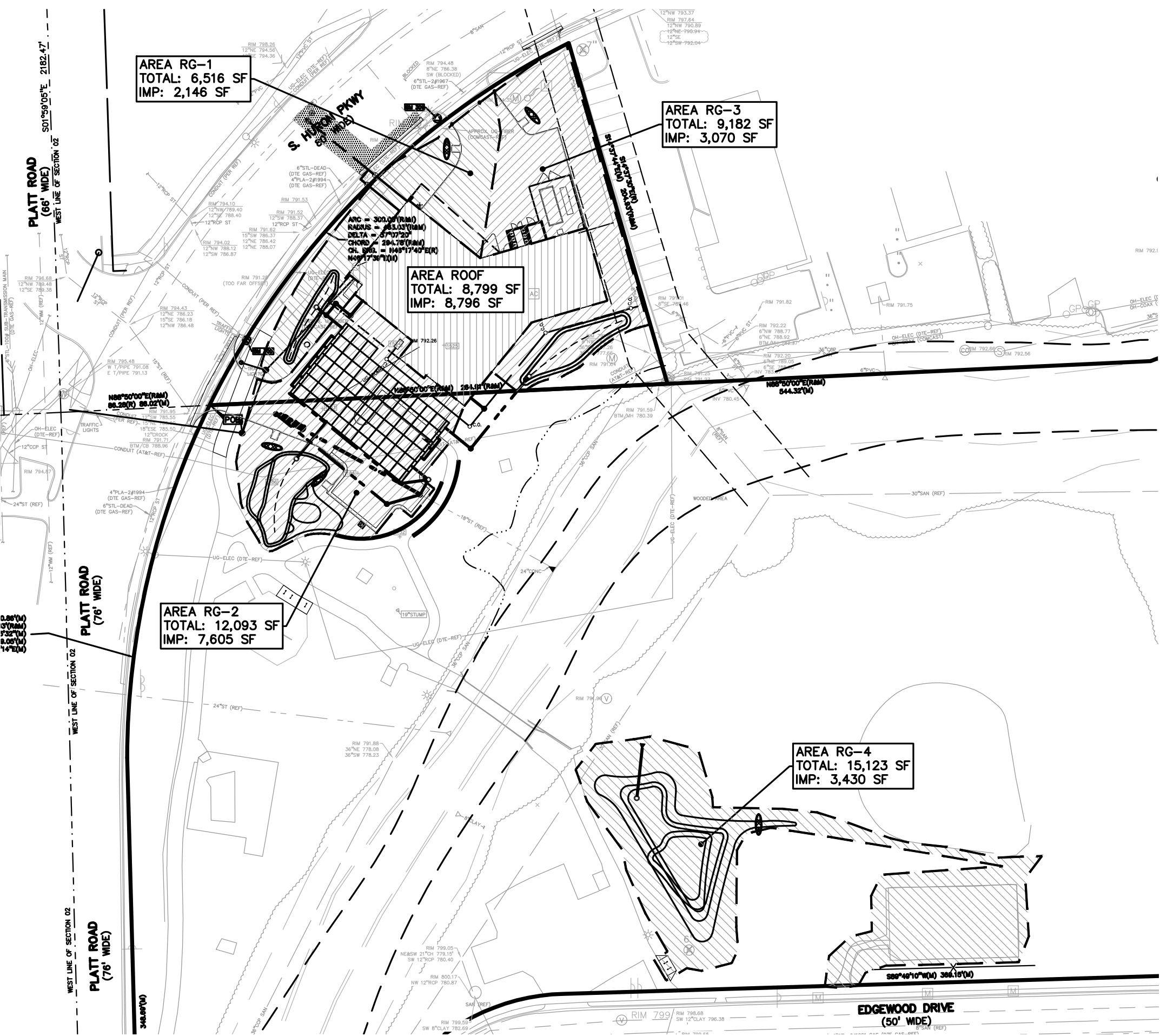
STORM WATER PROFILES

**A3C**  
COLLABORATIVE ARCHITECTURE  
115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663 - 1910  
F: (866) 732 - 2168  
www.a3c.com

SHEET  
**C-7.1**



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DRAINAGE AREA PLAN

SCALE: 1" = 60'

STORM SEWER SYSTEM DESIGN

Location: Washtenaw County

$I = \frac{B}{(T+D)} \cdot E$        $B = 175.00$        $D = 25.00$        $E = 1.00$   
 $C = \text{varies}$   
 $T = 15 \sqrt{\text{min.}}$       Pipe "n" Value = 0.013

FROM STR	TO STR	AREA (A) (Acres)	COEF. C	A x C	TOTAL AREA (AxC) (Acres)	TOTAL AREA (Acres)	TIME t (min.)	INT. I (in/hr)	FLOW Q (cfs)	PIPE CAP. (cfs)	PIPE DIA. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (%)	MIN HG PER "Q" (ft.)	VEL. FULL (ft./sec)	TIME FLOW (min.)	H.G.L. ELEV.		RIM ELEV.		INVERT ELEV.		PIPE COVER		HGL COVER	
																	UP STREAM	DOWN STREAM	UP STREAM	DOWN STREAM	UP STREAM	DOWN STREAM	UP STREAM	DOWN STREAM	UP STREAM	DOWN STREAM
51	50	0.31	0.47	0.14	0.14	0.31	15.00	4.38	0.63	2.02	12	31	0.32	0.03%	2.6	0.2	792.80	792.70	793.17	793.15	792.00	791.90	0.00	0.08	0.37	0.45
42	41	0.00	0.00	0.00	0.00	0.00	15.00	4.38	0.00	2.52	12	12	0.50	0.00%	3.2	0.1	786.90	786.84	793.99	794.18	786.10	786.04	6.72	6.98	7.09	7.34
41	40	0.00	0.00	0.00	0.00	0.00	15.10	4.36	0.00	2.52	12	10	0.50	0.00%	3.2	0.1	785.80	785.75	794.18	793.88	785.00	784.95	8.02	7.77	8.38	8.13
31	30	0.30	0.70	0.21	0.21	0.30	15.00	4.38	0.93	2.52	12	28	0.50	0.07%	3.2	0.1	787.44	787.30	791.50	792.98	786.64	786.50	3.69	5.31	4.06	5.68
22	21	0.19	0.53	0.10	0.10	0.19	15.00	4.38	0.45	2.52	12	47	0.50	0.02%	3.2	0.2	787.29	787.06	791.00	793.00	786.49	786.26	3.34	5.57	3.71	5.94
21	20	0.00	0.00	0.00	0.10	0.19	15.20	4.35	0.45	2.52	12	12	0.50	0.02%	3.2	0.1	786.96	786.90	793.00	794.47	786.16	786.10	5.67	7.21	6.04	7.57
15	14	0.20	0.95	0.19	0.19	0.20	15.00	4.38	0.84	2.52	12	22	0.50	0.06%	3.2	0.1	789.65	789.54	795.00	794.47	788.85	788.74	4.98	4.57	5.35	4.94
14	13	0.00	0.00	0.00	0.19	0.20	15.10	4.36	0.84	2.52	12	29	0.50	0.06%	3.2	0.1	789.44	789.29	794.47	793.15	788.64	788.49	4.67	3.49	5.04	3.86
13	11	0.00	0.00	0.00	0.19	0.20	15.20	4.35	0.84	2.52	12	9	0.50	0.06%	3.2	0.0	789.20	789.16	793.15	792.94	788.40	788.36	3.58	3.42	3.95	3.78
12	11	0.14	0.51	0.07	0.07	0.14	15.00	4.38	0.31	2.52	12	7	0.50	0.01%	3.2	0.0	787.10	787.06	792.00	792.94	786.30	786.26	4.54	5.52	4.90	5.89
11	10	0.00	0.00	0.00	0.26	0.34	15.00	4.38	1.15	2.52	12	12	0.50	0.10%	3.2	0.1	786.96	786.90	792.94	794.04	786.16	786.10	5.62	6.77	5.99	7.14

STORM WATER CONVEYANCE CALCULATIONS

Drainage Area	Impervious Area sf	Pervious Area sf	Total Area sf	ac
RG-1	2,146	4,370	6,516	0.15
RG-2	7,605	4,488	12,093	0.28
RG-3	3,070	6,112	9,182	0.21
Roof	8,800	0	8,800	0.20
Sub-total	21,621	14,970	36,591	0.84
RG-4	3,430	11,693	15,123	0.35
Sub-total	3,430	11,693	15,123	0.35
Total	25,051	26,663	51,714	1.19

STORM WATER NARRATIVE

THE EXISTING PARCEL CURRENTLY DRAINS, UN-DETAINED, VIA SHEET FLOW TO THE SOUTH HURON PARKWAY RIGHT-OF-WAY AND MALLETTS CREEK.

INFILTRATION TESTING WAS PERFORMED ON THE SUBJECT PARCEL IN ACCORDANCE WITH THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER RULES AND GUIDELINES. NONE OF THE TESTED LOCATIONS PROVED TO BE SUITABLE FOR INFILTRATION. CONSEQUENTLY, INFILTRATION WILL NOT BE INCLUDED AND THE SUBSEQUENT PENALTY FOR NOT PROVIDING INFILTRATION WILL BE INCORPORATED.

WHERE POSSIBLE, OVERLAND FLOW THROUGH CURB SPILLWAYS AND SWALES HAS BEEN INCORPORATED INTO THE DESIGN. IN SOME INSTANCES, A NEW ON-SITE ENCLOSED STORM SEWER SYSTEM DESIGNED PER THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER STANDARDS WILL BE INCLUDED.

RAIN GARDENS WILL ALSO BE INCLUDED THROUGHOUT THE SITE. EVEN THOUGH ULTIMATE INFILTRATION TO THE GROUND WATER SYSTEM IS UNLIKELY, INFILTRATION WILL OCCUR WITHIN THE RAIN GARDENS AND SOME BENEFIT TO THE QUALITY OF THE STORM WATER WILL BE REALIZED. THE RAIN GARDENS WILL ALSO PROVIDE A SMALL AMOUNT OF SURFACE AND SUBSURFACE STORAGE, ALLOWING THE UNDERGROUND DETENTION SYSTEM TO BE SLIGHTLY SMALLER.

THE DETENTION BASIN WILL CAPTURE STORM WATER RUNOFF FROM ON-SITE TRIBUTARY DRAINAGE AREAS. AFTER DETENTION, THE DETENTION BASIN WILL DISCHARGE TO AN EXISTING STORM SEWER PIPE THAT ULTIMATELY OUTLETS TO MALLETTS CREEK. PLEASE REFER TO THE CALCULATIONS PROVIDED ON SHEET C-7.2 FOR VOLUMES AND RELEASE RATES.

Rain Garden 1			
CONTOUR ELEV	DETENTION AREA	INCR. VOLUME	CUMUL. VOLUME
792.00	462	184	184
791.50	275	0	0

Rain Garden 2			
CONTOUR ELEV	DETENTION AREA	INCR. VOLUME	CUMUL. VOLUME
791.50	1164	527	527
791.00	943	0	0

Rain Garden 3			
CONTOUR ELEV	DETENTION AREA	INCR. VOLUME	CUMUL. VOLUME
791.00	1018	432	432
790.50	711	0	0

Rain Garden 4			
CONTOUR ELEV	DETENTION AREA	INCR. VOLUME	CUMUL. VOLUME
794.00	3787	2985	4327
793.00	2183	944	1342
792.50	1593	398	398
792.00	0	0	0

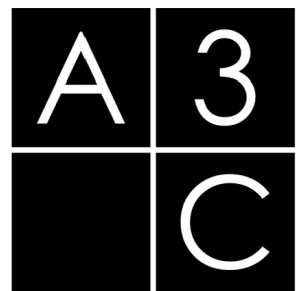
Rain Garden	Avg Bed Area, sf	Max Water Depth, ft	Surface Storage Volume, cf	Subsurface Depth, ft	Subsurface Mat. Void Ratio	Subsurface Volume, cf
1	369	0.50	184	2	30	165
2	1054	0.50	527	2	30	566
3	865	0.50	432	2	30	427
Total Surface Storage Volume (Station Side)			1,143	Total Subsurface Storage Volume (Station Side)		1,157
4	1891	2.00	4327	2	30	956
Total Surface Storage Volume (Park Side)			4,327	Total Subsurface Storage Volume (Park Side)		956



PROJECT NUMBER 21018

ISSUE	Bids/Permits	10.11.24
	Site Plan-Engineering	08.21.24
	Final Site Plan-Rev	11.08.23
	Final Site Plan	09.08.23
	Bids/Permits	08.04.23
	WCWRC Resubmittal	01.13.23
Site Plan Reapproval		11.21.22
Site Plan Approval		09.22.22
DRN: JW		CHK'D: JC

STORM WATER DRAINAGE  
AREAS AND CALCULATIONS



115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
T: (734) 663 - 1910  
F: (866) 732 - 2168  
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C-7.2











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Project:	Ann Arbor Fire Station No. 4		
Location:	Ann Arbor, Michigan		
Project No:	2021-0184		
	Surface Detention		
DESIGN STORM EVENT:	100 YEAR STORM	POND OUTLET: ORIFICE	
ALLOWABLE OUTFLOW:	0.15 CFS / AC.		
Input Parameters			
A TOTAL DRAINAGE AREA:		.35 Ac.	
C WEIGHTED C:		0.48	
DETENTION CALCS			
Q <sub>o</sub> = OUTFLOW	(.15 CFS/AC.) =	0.053	CFS
Q <sub>o</sub> = Q <sub>o</sub> / (AREA x C) =		0.31	CFS/ACRE IMPERVIOUS
NET REQUIRED DETENTION VOLUME			
V <sub>NET</sub> = (Per Sec. W13)		4,671	CF
INFILTRATION VOLUME DURING STORM			
V <sub>STORM</sub> = (Per WCWRC Worksheets)		-	CF
FIRST FLUSH VOLUME			
V <sub>FF</sub> = (Per WCWRC Worksheets)		610	CF
NET FIRST FLUSH VOLUME			
V <sub>FF (NET)</sub> = V <sub>FF</sub> - V <sub>STORM</sub>		610	CF
BANK FULL VOLUME			
V <sub>BF-POST</sub> = (Per WCWRC Worksheets)		1,199	CF
NET BANK FULL VOLUME			
V <sub>BF-POST (NET)</sub> = V <sub>BF-POST</sub> - V <sub>STORM</sub>		1,199	CF
SEDIMENT FOREBAY VOLUME			
V <sub>SED</sub> = 5% of V <sub>det</sub>		234	CF

BASIN SIZING			CONTOUR INTERPOLATION CALCS.		
CONTOUR	CUMUL.		100-YR	NET BANK	NET FIRST
ELEV	VOLUME		HWL	FULL	FLUSH
TOP OF DET.	790.75	12,568	12,472	4,820	2,287
	789.75	11,290	790.68	-	-
	789.00	9,990	-	-	-
	788.25	8,082	-	-	-
	787.50	5,873	-	787.17	-
	786.75	3,475	-	-	786.40
	786.00	958	-	-	-
BOT. OF DET.	785.25	0	-	-	-
			790.68	787.17	786.40
			Detention Outlet Invert: 785.25		
First Flush Calculations					
Total First Flush Storage Volume, V(ff) =			2,287	CF	
Elevation of First Flush, X(ff-actual) =			786.40		
Outlet Sizing for First Flush:					
Q <sub>ave</sub> = V(ff)/86,400 sec				0.026	CFS
Average Head for Orifice Equation:					
Elevation Difference from X(ff) to Outlet Elevation				1.15	FT
h <sub>ave</sub> = 2/3 * (elev diff)				0.76	FT
Orifice Area Required					
A = Q/(0.62*sqrt(2gh))				0.0061	SF
Number of Orifice Holes Required					
Hole Diameter (at bottom elev.)			1.00 in.	Hole Area =	0.0055 SF
Holes =A/.0055					
			therefore, use	1	HOLES
Actual Release Rate:					
A(ff) = # holes * (hole area)				0.0055	SF
Q <sub>act</sub> = 0.62*A*sqrt(2gh))				0.024	CFS
Actual Holding Time					
T <sub>act</sub> = V/Q <sub>act</sub>				26.78	HR
				>24 hr = OK	

Bankfull Calculations			
Bank Full Storage Volume, V(bf) =	4,820	CF	
Bank Full Volume above First Flush =	2,533	CF	
Elevation of Bank Full, X(bf-actual) =	787.17		
Avg. discharge through the first flush orifices (bottom holes) when water is above FF elevation			
Elevation Difference from X(bf) to FF	0.77	FT	
h <sub>ave</sub> = 2/3 * (BF to FF) + ((ff to outlet diff)	1.66	FT	
Release Rate thru Bottom of Det. Orifices:			
Q = 0.62*A(ff)*sqrt(2gh))	0.035	CFS	
Avg. discharge through the bank full orifices (at FF elev.) when water is above FF elevation			
Elevation Difference from X(bf) to First Flush Elevation	0.77	FT	
h <sub>ave</sub> = 2/3 * (elev diff)	0.52	FT	
Hole Diameter (at FF elev.)	0.00 in.	Hole Area =	0.0000 SF
Holes =A/.			0 HOLES
Release Rate thru Orifices at FF elev:			
Q = 0.62*A(bf)*sqrt(2gh))	0.000	CFS	
Actual Holding Time (BF Elev. to FF Elev.)			
T <sub>act</sub> = V/Q <sub>act</sub>	=2533/(0.035+0)x(1/3600)	20.11	HR
Total Holding Time (BF Elev. to Bottom Elev.)			
T <sub>act</sub> = V/Q <sub>act</sub>	=26.78+20.11=	46.89	HR
			>36 & <48 = OK
100-Year Storm Calculations			
100-yr Detention Volume, V(100) =		12,472	CF
100-yr Detention Volume above Bank Full elevation		7,652	CF
Elevation of 100-Year Storm, X(100-actual) =		790.68	
Design Rim Elevation for 100-Yr Storm, X(100) =		790.75	
Allowable Outflow Rate, Q(allow) = 0.15 cfs/acre =		0.126	CFS
Peak Release Rate Provided by First Flush Orifices for 100-yr Storm			
h = Elevation Difference from X(100) to X (bot)		5.43	FT
Q(ff) = 0.62*A(ff)*sqrt(2gh))		0.063	CFS

Peak Release Rate Provided by Bank Full Orifices for 100-yr Storm			
h = Elevation Difference from X(100) to X (ff)		4.28	FT
Q(bf) = 0.62*A(bf)*sqrt(2gh))		0.000	CFS
Q(max) = Q(allow) - Q(bf) - Q(ff) =		0.063	CFS
Maximum Head for Orifice Equation:			
Elevation Difference from X(100) to X (BF)		3.58	FT
Orifice Area Required			
A = Q/(0.62*sqrt(2gh))		0.007	SF
Number of Orifice Holes Required			
Hole Diameter (at BF elev.)		1.00	Hole Area =
Holes =A/.0055			0.0055 SF
			1.22 HOLES
		therefore, use	1 HOLES
Peak Release Rate Provided by 100-YR Orifices for 100-yr Storm			
A(100) = # holes * (hole area)		0.0055	SF
Q(100) = 0.62*A*sqrt(2gh))		0.05	CFS
Q(out) = Q(100) + Q(BF) + Q(ff)=		0.11	CFS
Q(out) < Q(allow) :		0.11 <= 0.13	OK
Avg. discharge through the first flush orifices (bottom holes) when water is above BF elevation			
h(ave)= (2/3)(X100- Xbf)+(Xbf - Xbot)		4.26	FT
Q = 0.62*A(ff)*sqrt(2gh))		0.056	CFS
Avg. discharge through the bank full orifices (at FF elev.) when water is above BF elevation			
h(ave)= (2/3)(X100- Xbf)+(Xbf - Xff)		3.11	FT
Q = 0.62*A(bf)*sqrt(2gh))		0.000	CFS
Avg. Discharge Through the 100 yr orifices (at BF elev.) when water is above BF elevation			
h(100-ave)= (2/3)*(X100-Xbf)		2.34	FT
Q = 0.62*A(bf)*sqrt(2gh))		0.041	CFS
Actual Holding Time (100 yr Elev. to BF Elev.)			
T <sub>act</sub> = V/Q <sub>act</sub>		=7652/(0.056+0+0.041)x(1/3600)	21.81 HR
Total Holding Time (BF Elev. to Bottom Elev.)			
T <sub>act</sub> = V/Q <sub>act</sub>		=46.89+21.81=	68.70 HR
			<72 = OK

STORM WATER DETENTION OUTLET CALCULATIONS – FIRE STATION SIDE

Project:	Ann Arbor Fire Station No. 4		
Location:	Ann Arbor, Michigan		
Project No:	2021-0184		
	Surface Detention		
DESIGN STORM EVENT:	100 YEAR STORM	POND OUTLET: ORIFICE	
ALLOWABLE OUTFLOW:	0.15 CFS / AC.		
Input Parameters			
A TOTAL DRAINAGE AREA:		.35 Ac.	
C WEIGHTED C:		0.48	
DETENTION CALCS			
Q <sub>o</sub> = OUTFLOW	(.15 CFS/AC.) =	0.053	CFS
Q <sub>o</sub> = Q <sub>o</sub> / (AREA x C) =		0.31	CFS/ACRE IMPERVIOUS
NET REQUIRED DETENTION VOLUME			
V <sub>NET</sub> = (Per Sec. W13)		4,671	CF
INFILTRATION VOLUME DURING STORM			
V <sub>STORM</sub> = (Per WCWRC Worksheets)		-	CF
FIRST FLUSH VOLUME			
V <sub>FF</sub> = (Per WCWRC Worksheets)		610	CF
NET FIRST FLUSH VOLUME			
V <sub>FF (NET)</sub> = V <sub>FF</sub> - V <sub>STORM</sub>		610	CF
BANK FULL VOLUME			
V <sub>BF-POST</sub> = (Per WCWRC Worksheets)		1,199	CF
NET BANK FULL VOLUME			
V <sub>BF-POST (NET)</sub> = V <sub>BF-POST</sub> - V <sub>STORM</sub>		1,199	CF
SEDIMENT FOREBAY VOLUME			
V <sub>SED</sub> = 5% of V <sub>det</sub>		234	CF

BASIN SIZING				CONTOUR INTERPOLATION CALCS.		
CONTOUR ELEV	DETENTION AREA	INCR. VOLUME	CUMUL. VOLUME	100-YR HWL	NET BANK FULL	NET FIRST FLUSH
				4.671	1,199	610
				-	-	-
				-	-	-
				-	-	-
				794.07	-	-
TOP OF DET.	795.00	5,629	4,708	9,035	-	-
	794.00	3,787	2,985	4,327	-	-
	793.00	2,183	944	1,342	-	792.61
	792.50	1,593	398	398	-	-
BOT. OF DET.	792.00	0	-	-	-	-
					794.07	792.92
						792.61
					Detention Outlet Invert	792.00
First Flush Calculations						
Total First Flush Storage Volume, V(ff) =			610	CF		
Elevation of First Flush, X(ff-actual) =			792.61			
Outlet Sizing for First Flush:						
Q <sub>ave</sub> = V(ff)/86,400 sec				0.007	CFS	
Average Head for Orifice Equation:						
Elevation Difference from X(ff) to Outlet Elevation				0.61	FT	
h <sub>ave</sub> = 2/3 * (elev diff)				0.41	FT	
Orifice Area Required						
A = Q/(0.62*sqrt(2gh))				0.0022	SF	
Number of Orifice Holes Required						
Hole Diameter (at bottom elev.)		0.75 in.	Hole Area =	0.0031	SF	
Holes =A/.0031						
				therefore, use	1	HOLES
Actual Release Rate:						
A(ff) = # holes * (hole area)				0.0031	SF	
Q <sub>act</sub> = 0.62*A*sqrt(2gh))				0.010	CFS	
Actual Holding Time						
T <sub>act</sub> = V/Q <sub>act</sub>				17.38	HR	
				<24 hr - ADJUST		



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GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
4. ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY FOR ALL CITY INSPECTION FEES.
5. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
6. CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING FINAL APPROVAL, HAVING TO BE ADJUSTED OR RE-DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
7. ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
8. ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
10. THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE, REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

PAVING NOTES:

1. IN AREAS WHERE NEW PAVEMENTS ARE BEING CONSTRUCTED, THE TOPSOIL AND SOIL CONTAINING ORGANIC MATTER SHALL BE REMOVED PRIOR TO PAVEMENT CONSTRUCTION.
2. REFER TO ARCHITECTURAL PLANS FOR DETAILS OF FROST SLAB AT EXTERIOR BUILDING DOORS.
3. CONSTRUCTION TRAFFIC SHOULD BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE INITIAL LIFT THICKNESS COULD BE INCREASED AND PLACEMENT OF THE FINAL LIFT COULD BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM.
4. ALL EXPANSION JOINTS AND CONCRETE PAVEMENT JOINTS TO BE SEALED.
5. CONCRETE PAVEMENT JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION;
  - 5.1. WHERE PROPOSED CONCRETE ABUTS A STRUCTURE, PROVIDE A MINIMUM 1/2" EXPANSION JOINT. THE JOINT FILLER BOARD MUST BE AT LEAST THE FULL DEPTH OF THE CONCRETE AND HELD DOWN A 1/2" TO ALLOW FOR SEALING.
  - 5.2. WHERE PROPOSED CONCRETE ABUTS EXISTING CONCRETE OR IN BETWEEN POURS OF PROPOSED CONCRETE (CONSTRUCTION JOINT), PROVIDE 5/8" DOWELS EVERY 30" CENTER TO CENTER HALF WAY ALONG THE THICKNESS OF THE PROPOSED PAVEMENT. ALTERNATE DOWELS SIZES AND SPACING MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
  - 5.3. WHERE PROPOSED CONCRETE ABUTS EXISTING OR PROPOSED SIDEWALK OR CURBING, PROVIDE A MINIMUM 1/2" EXPANSION JOINT.
  - 5.4. CONTROL, LONGITUDINAL AND/OR TRANSVERSE JOINTS SHALL BE PLACED TO PROVIDE PANELS WITHIN THE PAVEMENT AS SQUARE AS POSSIBLE WITH THE FOLLOWING MAXIMUM SPACING PARAMETERS:
    - 5.4.1. 6-INCH THICK CONCRETE PAVEMENT: 12' X 12'
    - 5.4.2. 8-INCH THICK CONCRETE PAVEMENT: 15' X 15'
  - 5.5. IRREGULAR-SHAPED PANELS MAY REQUIRE THE USE OF REINFORCING MESH OR FIBER MESH AS DETERMINED BY THE ENGINEER. THE USE OF MESH MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK VIA THE SUBMITTAL PROCESS.
  - 5.6. IF A JOINT PLAN IS NOT PROVIDED IN THE PLANS, THE CONTRACTOR SHALL SUBMIT ONE TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
6. CONCRETE CURBING JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
  - 6.1. JOINTS WHEN ADJACENT TO ASPHALT PAVEMENT
    - 6.1.1. PLACE CONTRACTION JOINTS AT 10' INTERVALS
    - 6.1.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
    - 6.1.3. PLACE 1" EXPANSION JOINT:
      - 6.1.3.1. AT SPRING POINTS OF INTERSECTIONS OR ONE OF THE END OF RADIUS LOCATIONS IN A CURVE
      - 6.1.3.2. AT 400' MAXIMUM INTERVALS ON STRAIGHT RUNS
      - 6.1.3.3. AT THE END OF RADIUS AT OPPOSITE ENDS IN A CURBED LANDSCAPE ISLAND
  - 6.2. JOINTS WHEN TIED TO CONCRETE PAVEMENT
    - 6.2.1. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT
    - 6.2.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
    - 6.2.3. PLACE 1" EXPANSION JOINT OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT
    - 6.2.4. CURB AND GUTTER AND CONCRETE SHALL BE TIED TOGETHER SIMILAR TO A LONGITUDINAL LANE TIE JOINT (MDOT B1 JOINT)
  - 6.3. IN BETWEEN POURS OF PROPOSED CONCRETE CURBING (CONSTRUCTION JOINT):
    - 6.3.1. CARRY THE REBAR CONTINUOUSLY BETWEEN POURS
    - 6.3.2. IF THE REBAR IS NOT LONG ENOUGH TO CARRY CONTINUOUSLY, THEN TIE TWO PIECES OF REBAR PER THE LATEST MDOT SPECIFICATIONS
7. CONCRETE SIDEWALK JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
  - 7.1. PLACE TRANSVERSE CONTRACTION JOINTS EQUAL TO THE WIDTH OF THE WALK WHEN WIDTH IS LESS THAN 8'
  - 7.2. PLACE TRANSVERSE AND LONGITUDINAL CONTRACTION JOINTS EQUAL TO 1/2 THE WIDTH OF THE WALK WHEN WIDTH IS EQUAL TO OR GREATER THAN 8'
  - 7.3. PLACE 1" EXPANSION JOINT WHERE ABUTTING SIDEWALK RAMP AND/OR RADIUS IN INTERSECTION
  - 7.4. PLACE TRANSVERSE 1/2" EXPANSION JOINT AT MAXIMUM OF 100' SPACING
  - 7.5. PLACE 1/2" EXPANSION JOINT WHEN ABUTTING A FIXED STRUCTURE, OTHER PAVEMENT (CONCRETE PAVEMENT AND DRIVE APPROACHES), UTILITY STRUCTURES, LIGHT POLE BASES AND COLUMNS

GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
2. ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE WASHTENAW COUNTY WATER RESOURCE COMMISSION PRIOR TO CONSTRUCTION.
5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:6 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEORIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
14. ANY SUB-GRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

GENERAL UTILITY NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF ANN ARBOR.
2. ALL TRENCHES UNDER OR WITHIN THREE (3) FEET OR THE FORTY-FIVE (45) DEGREE ZONE OF INFLUENCE LINE OF EXISTING AND/OR PROPOSED PAVEMENT, BUILDING PAD OR DRIVE APPROACH SHALL BE BACKFILLED WITH MDOT CLASS II SAND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF MAXIMUM UNIT WEIGHT (ASTM D-1557). ALL OTHER TRENCHES TO BE COMPACTED TO 90% OR BETTER.
3. WHERE EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4" CENTER TO CENTER, AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
4. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UTILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES.
5. THE CONTRACTOR SHALL COORDINATE TO ENSURE ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED FOR THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, IRRIGATION, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT AND LANDSCAPING.
6. PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.
7. CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION AND WITH THE GOVERNING AGENCY INSPECTOR PRIOR TO ESTABLISHING FINAL GRADE. NOTIFY THE ENGINEER, OWNER/DEVELOPER, AND GOVERNING AGENCY IF STRUCTURE IS DEEMED TO BE STRUCTURALLY UNSOUND AND/OR IN NEED OF REPAIR.
8. THE CITY OF ANN ARBOR STANDARD DETAILS ARE INCORPORATED INTO AND MADE A PART OF THESE PLANS. CONTRACTOR TO REFER TO THE CITY OF ANN ARBOR STANDARD DETAIL SHEETS FOR ALL STRUCTURE, PIPE MATERIALS, BEDDING, TESTING, ETC. CITY STANDARD DETAILS AS NEEDED FOR SOLID WASTE AND/OR FORESTRY SHALL BE INCLUDED WITHIN THE PLAN SET AS NEEDED.
9. HYDRANT COVERAGE NOTE: HYDRANTS PROVIDING PROTECTION COVERAGE FOR THE BUILDING SHALL BE IN SERVICE AND APPROVED BY PLANNING, ENGINEERING, AND THE FIRE DEPARTMENT BEFORE THE FIRE DEPARTMENT WILL SUPPORT ISSUANCE FOR NEW CONSTRUCTION PHASES AND BEFORE COMBUSTIBLE MATERIALS ARE PLACED ON THE JOB SITE. HYDRANTS SHALL BE IN SERVICE THROUGHOUT CONSTRUCTION.

STORM SEWER NOTES:

1. ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C-76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS UNLESS SPECIFIED OTHERWISE (ASTM C-443).
2. ALL STORM SEWER LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL STORM SEWER 10" OR LESS AND/OR LEADS SHALL BE SDR 26.
4. JOINTS FOR PVC PIPE SHALL BE ELASTOMERIC (RUBBER GASKET) AS SPECIFIED IN A.S.T.M. DESIGNATION D-3212.

WATER MAIN NOTES:

1. WATER MAIN CONSTRUCTION SHALL CONFORM TO DIVISION IV, SECTION 3 OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
2. ALL WATER MAIN SHALL BE INSTALLED WITH A MINIMUM COVER OF 5.5' BELOW FINISH GRADE. WHEN WATER MAINS MUST DIP TO PASS UNDER A STORM SEWER OR SANITARY SEWER, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE KEPT TO A MINIMUM LENGTH BY THE USE OF VERTICAL TWENTY TWO AND A HALF (22.5") DEGREE BENDS, PROPERLY ANCHORED.
3. PHYSICAL CONNECTIONS SHALL NOT BE MADE BETWEEN EXISTING AND NEW WATER MAINS UNTIL REQUIRED TESTING IS SATISFACTORILY COMPLETED.
4. MAINTAIN 10' HORIZONTAL CLEARANCE BETWEEN OUTER EDGE OF WATERMAIN AND ANY SANITARY/STORM SEWER OR STRUCTURE.
5. NO PHYSICAL CONNECTION TO THE EXISTING WATER MAIN CAN BE MADE UNTIL ALL NEW WATER MAIN PASSES PRESSURE AND BACTERIOLOGICAL TESTS TO THE SATISFACTION OF THE CITY OF ANN ARBOR.
6. ALL WATER MAIN AND FITTINGS (4" DIAMETER AND LARGER) SHALL BE DUCTILE IRON, CLASS 54 AND SHALL BE POLYETHYLENE WRAPPED PER ANSI/AWWA C105/A21.5.
7. WATER MAIN SERVICE LEADS SHALL BE TYPE 'K' ANNEALED SEAMLESS COPPER WITH FLARED FITTINGS, UNLESS OTHERWISE NOTED.
8. ALL FIRE HYDRANTS SHALL BE EAST JORDAN IRON WORKS PRODUCT NUMBER 55931D WITH A 5" STORZ. TRAFFIC FLANGES SHALL BE PER THE CITY OF ANN ARBOR SPECIFICATIONS.
9. ALL HYDRANTS SHALL BE CENTERED A MINIMUM 4' AND A MAXIMUM 10' FROM THE FACE OF CONCRETE CURB OR PAVEMENT EDGE, TYP.
10. ALL TEES, BENDS, CONNECTIONS, ETC. ARE CONSIDERED INCIDENTAL TO THE JOB. ALL NECESSARY FITTINGS, THRUST BLOCKS, RESTRAINING GLANDS, BLOW OFFS, ETC. FOR WATER MAIN ARE CONSIDERED INCIDENTAL TO THIS PROJECT. THE CONTRACTOR SHALL INSTALL THESE ITEMS AS NECESSARY AND AS REQUIRED BY THE CITY OF ANN ARBOR.
11. THE WATER MAIN CONTRACTOR SHALL NOTIFY THE CITY OF ANN ARBOR PROJECT MANAGEMENT UNIT AT 734.794.6410 AT LEAST THREE WORKING DAYS IN ADVANCE OF STARTING CONSTRUCTION. INSPECTION SERVICES SHALL BE ARRANGED THROUGH TECHNICIAN SUPERVISOR, DAVE CLEMONS AT 734.219.2909.

SANITARY SEWER NOTES:

1. ALL SEWER CONSTRUCTION SHALL CONFORM TO DIVISION IV, SECTION 2 OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND DETAILS.
2. DOWNSPOUTS, WEEP TILE, FOOTING DRAINS OR ANY CONDUIT THAT CARRIES STORM OR GROUND WATER SHALL NOT BE ALLOWED TO DISCHARGE INTO A SANITARY SEWER.
3. ALL SANITARY LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
4. ALL SANITARY SEWER SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 PIPE AND FITTINGS. ALL JOINTS SHALL BE BELL AND SPIGOT RUBBER O-RING GASKET.
5. SANITARY LEADS SHALL BE PROVIDED WITH CLEANOUTS EVERY 100 FEET AND AT EVERY BEND AS SHOWN. ALL CLEANOUTS TO BE PROVIDED WITH E.J.I.W. #1585 BOX OR EQUAL.
6. SANITARY SEWER DEPTHS SHALL MEET THE CITY OF ANN ARBOR'S REQUIREMENTS AND WILL BE DOCUMENTED ON THE FINAL ENGINEERING PLANS.

CONSTRUCTION MATERIAL SUBMITTALS

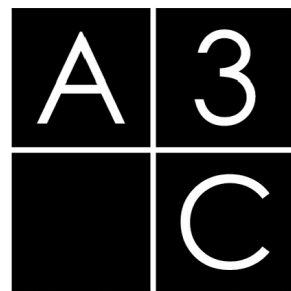
UNLESS REQUIRED OTHERWISE IN THE PROJECT SPECIFICATIONS, THE CONTRACTOR SHALL ONLY SUBMIT THE FOLLOWING CONSTRUCTION MATERIAL SUBMITTALS, AS APPLICABLE TO THE PLANS, FOR REVIEW BY THE ENGINEER. UNLESS APPROVED IN ADVANCE AND IN WRITING BY THE ENGINEER, ANY MATERIAL SUBMITTALS PROVIDED TO THE ENGINEER FOR REVIEW IN ADDITION TO THIS LIST SHALL BE RETURNED TO THE CONTRACTOR WITHOUT A REVIEW BEING PERFORMED.

1. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
2. UTILITY TRENCH BACKFILL MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 30 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
3. RIP RAP MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
4. STORM AND SANITARY SEWER PIPING INCLUDING JOINTS
5. STORM AND SANITARY SEWER STRUCTURES
6. STORM AND SANITARY SEWER STRUCTURE FRAME AND COVERS INCLUDING CLEAN OUTS
7. WATER DISTRIBUTION SYSTEM PIPING INCLUDING JOINTS
8. WATER DISTRIBUTION SYSTEM STRUCTURES
9. WATER DISTRIBUTION SYSTEM STRUCTURE FRAME AND COVERS
10. WATER DISTRIBUTION SYSTEM SHUT OFF BOXES
11. WATER DISTRIBUTION SYSTEM FIRE HYDRANTS
12. WATER DISTRIBUTION SYSTEM GATE VALVES
13. STORM WATER MANAGEMENT OUTLET CONTROL STRUCTURES INCLUDING COVERS OR GRATES
14. STORM WATER MANAGEMENT OUTLET SEDIMENTATION BASIN RISERS INCLUDING GRATES
15. STORM WATER MANAGEMENT MECHANICAL PRE-TREATMENT UNITS INCLUDING COVERS
16. STORM WATER MANAGEMENT UNDERGROUND DETENTION SYSTEM MATERIAL AND SHOP DRAWINGS DEPICTING THE LAYOUT OF THE SYSTEM
17. PAVEMENT AGGREGATE BASE MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 30 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
18. PAVEMENT UNDERDRAIN MATERIAL AND BACKFILL WITH ALL BACKFILL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
19. PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOT REVIEW CHECKLISTS AS SUMMARIZED BELOW AND ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER:
  - CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
  - SUPERPAVE MIX DESIGN CHECKLIST (FORM 1082)
  - MARSHALL MIX DESIGN CHECKLIST (FORM 1849)
20. ANY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY STATE FOR THE CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO:
  - RETAINING WALL MATERIAL AND STRUCTURAL CALCULATIONS
  - ANY SPECIALTY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY DO NOT STATE FOR THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW BUT THE CONTRACTOR REQUESTS TO BE REVIEWED. THE CONTRACTOR'S REQUEST FOR REVIEW MUST BE IN WRITING AND APPROVED BY THE ENGINEER PRIOR TO SUBMITTING THE INFORMATION.



PROJECT NUMBER		21018
ISSUE	Bids/Permits	10.11.24
	Site Plan-Engineering	08.21.24
	Final Site Plan-Rev	11.08.23
	Final Site Plan	09.08.23
	Bids/Permits	08.04.23
	WCWRC Resubmittal	01.13.23
	Site Plan Reapproval	11.21.22
DRN: JW		CHK'D: JC

NOTES



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COLLABORATIVE ARCHITECTURE

SHEET

C-8.0



S:\PROJECTS\2021\2021-0184 ANN ARBOR FIRE STATION\DWG\CONSTRUCTION\C-8.0) DETS-210184.dwg,09.03.05 4:41 PM

EROSION CONTROL STANDARDS:

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO STANDARDS AND SPECIFICATIONS OF THE JURISDICTIONAL AGENCY UNDER PART 91 OF ACT 451 OF 1994, AS AMENDED.
2. DAILY INSPECTIONS SHALL BE MADE BY CONTRACTOR WHILE WORKING TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES. ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY. ALL SOIL EROSION CONTROL PROVISIONS SHALL BE PROPERLY MAINTAINED DURING CONSTRUCTION.
3. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, AND PONDS.
4. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGE AREAS HAVE BEEN COMPLETED.
5. STAGING THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED EARTH.
6. SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
7. DUST SHALL BE CONTROLLED BY WATERING OR BY OTHER APPROVED MEANS THROUGHOUT ALL CONSTRUCTION OPERATIONS.
8. PERMANENT SOIL EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 5 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
9. THE CONTRACTOR SHALL PRESERVE NATURAL VEGETATION AS MUCH AS POSSIBLE.
10. ANY WORK OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL REQUIRE A SEPARATE GRADING PERMIT.
11. FOLLOWING THE PLACEMENT OF 4" OF TOPSOIL AND HYDROSEED, STRAW MULCH BLANKET IS TO BE INSTALLED PERPENDICULAR ALONG THE PROPOSED SLOPES 1:6 OR STEEPER FROM TOP OF SLOPE TO TOE OF SLOPE, INCLUDING DITCH BOTTOMS, AND IT MUST BE PEGGED IN PLACE.
12. ALL MUD/DIRT TRACKED ONTO EXISTING COUNTY/CITY ROADS FROM THIS SITE, DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
13. TEMPORARY STABILIZATION OF THE ENTIRE SITE SHALL BE COMPLETED AND APPROVAL OBTAINED FROM THE CITY OF ANN ARBOR

SOIL EROSION MAINTENANCE SCHEDULE AND NOTES:

1. THE CONTRACTOR SHALL INSPECT THE SOIL EROSION AND SEDIMENTATION CONTROL DEVICES ONCE EACH WEEK AND/OR WITHIN 24 HOURS OF A RAINFALL EVENT WHICH RESULTS IN A STORM WATER DISCHARGE FROM THE SITE. THE FOLLOWING STEPS SHALL BE IMPLEMENTED IF ANY DAMAGE HAS OCCURRED.
2. ANY DEBRIS OR DIRT ON ANY PAVED AREA RESULTING FROM CONSTRUCTION TRAFFIC SHALL BE CLEANED IN A PROMPT MANNER BY THE CONTRACTOR. THE CONSTRUCTION DRIVE SHALL BE CLEANED AT THE END OF EACH DAY.
3. ALL DIRT AND MUD TRACKED ONTO PAVED AREAS SHALL BE REMOVED DAILY BY SCRAPING. STREET SWEEPING IS REQUIRED WEEKLY.
4. SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR REBACKFILL THE SILTATION FENCE SHOULD IT FALL OR BE DAMAGED DURING CONSTRUCTION.
5. INLET FILTER MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY ACCUMULATED SILT OR OTHER DEBRIS. THE REMOVAL OF SILT SHOULD BE WITH THE USE OF A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTERS CAN NOT BE CLEANED OR ARE DAMAGED, THEN THE FABRIC MUST BE REPLACED.
6. A WATER TRUCK SHALL BE AVAILABLE TO WATER DOWN THE SITE ON A DAILY BASIS AS REQUIRED TO MAINTAIN DUST CONTROL.

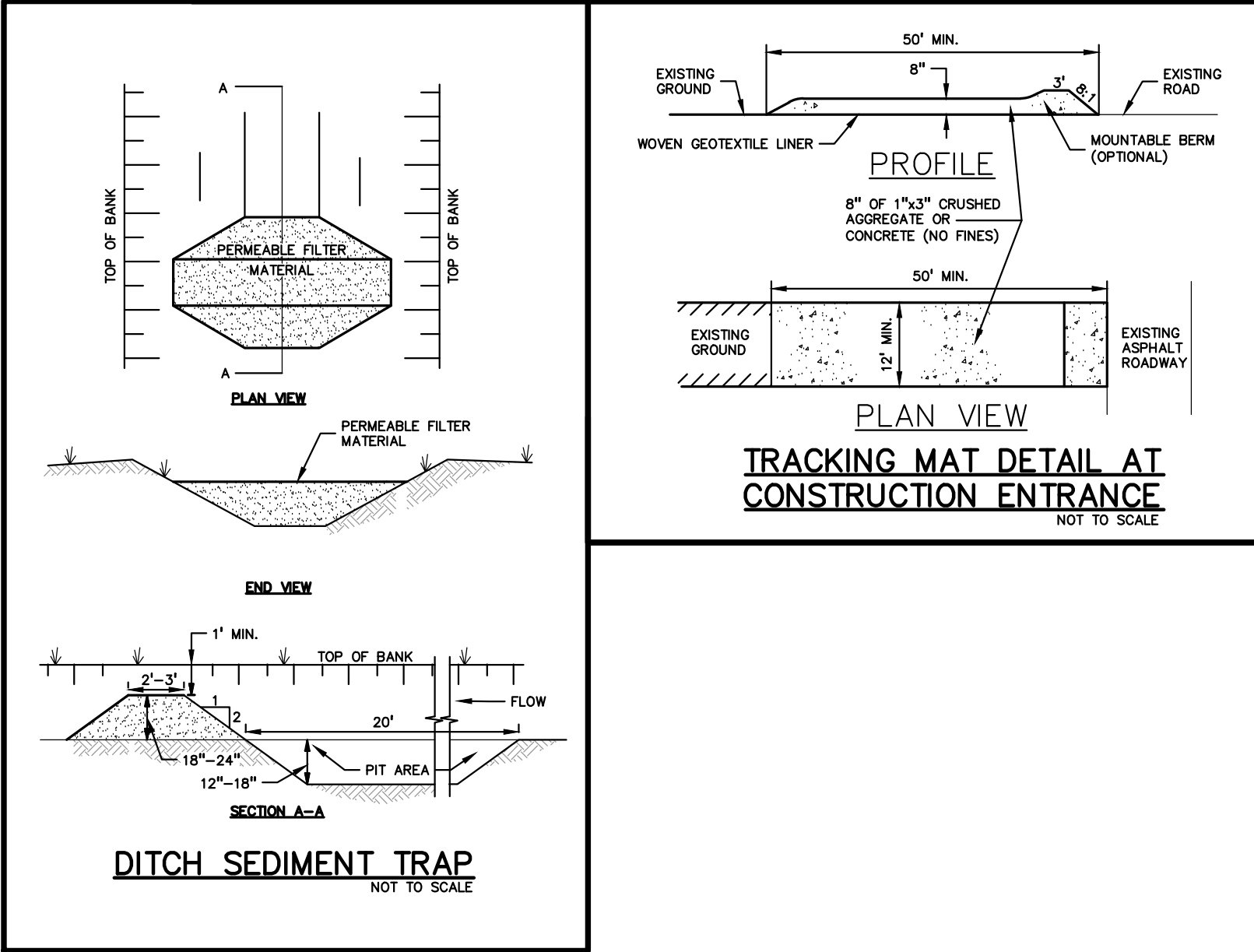
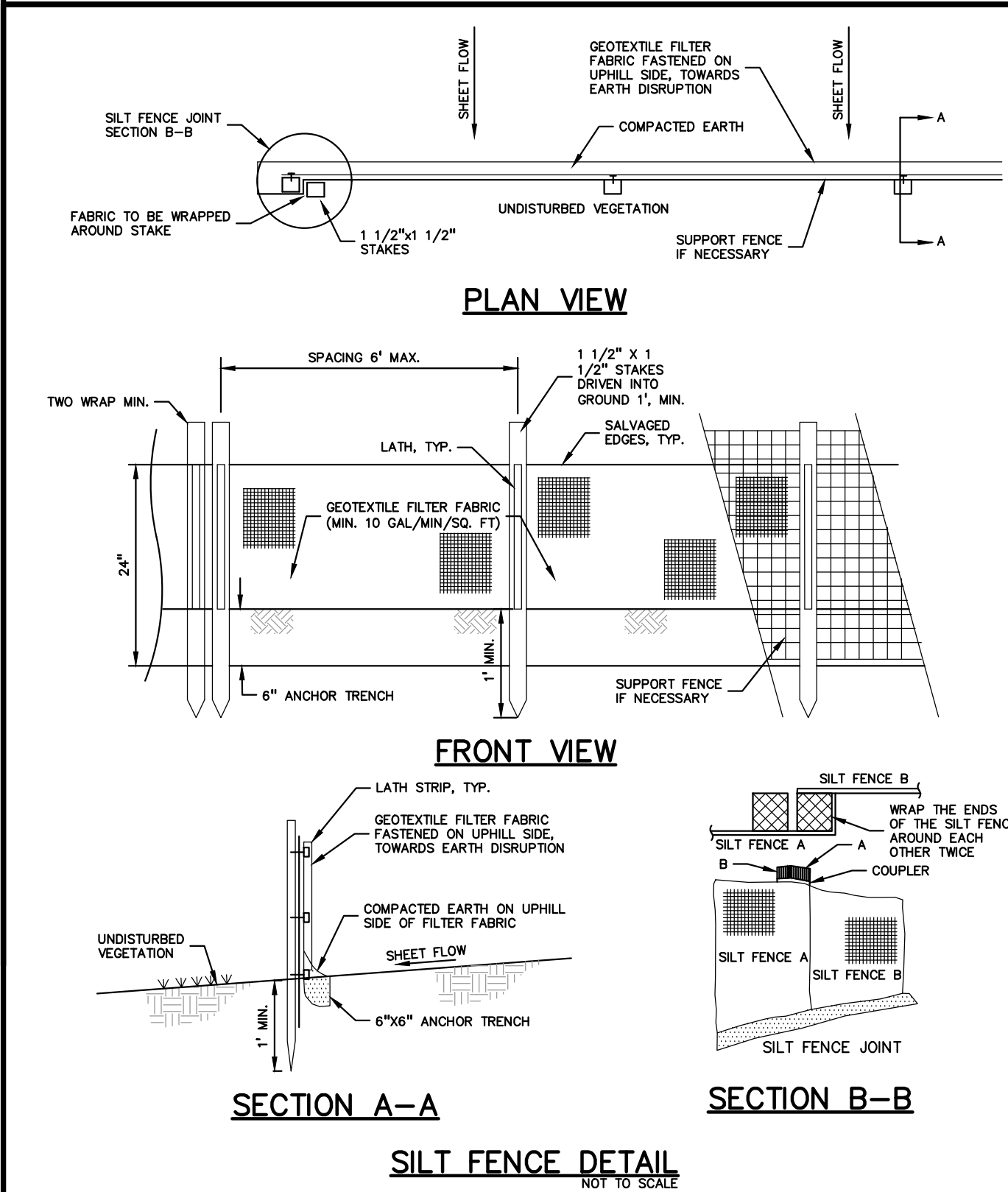
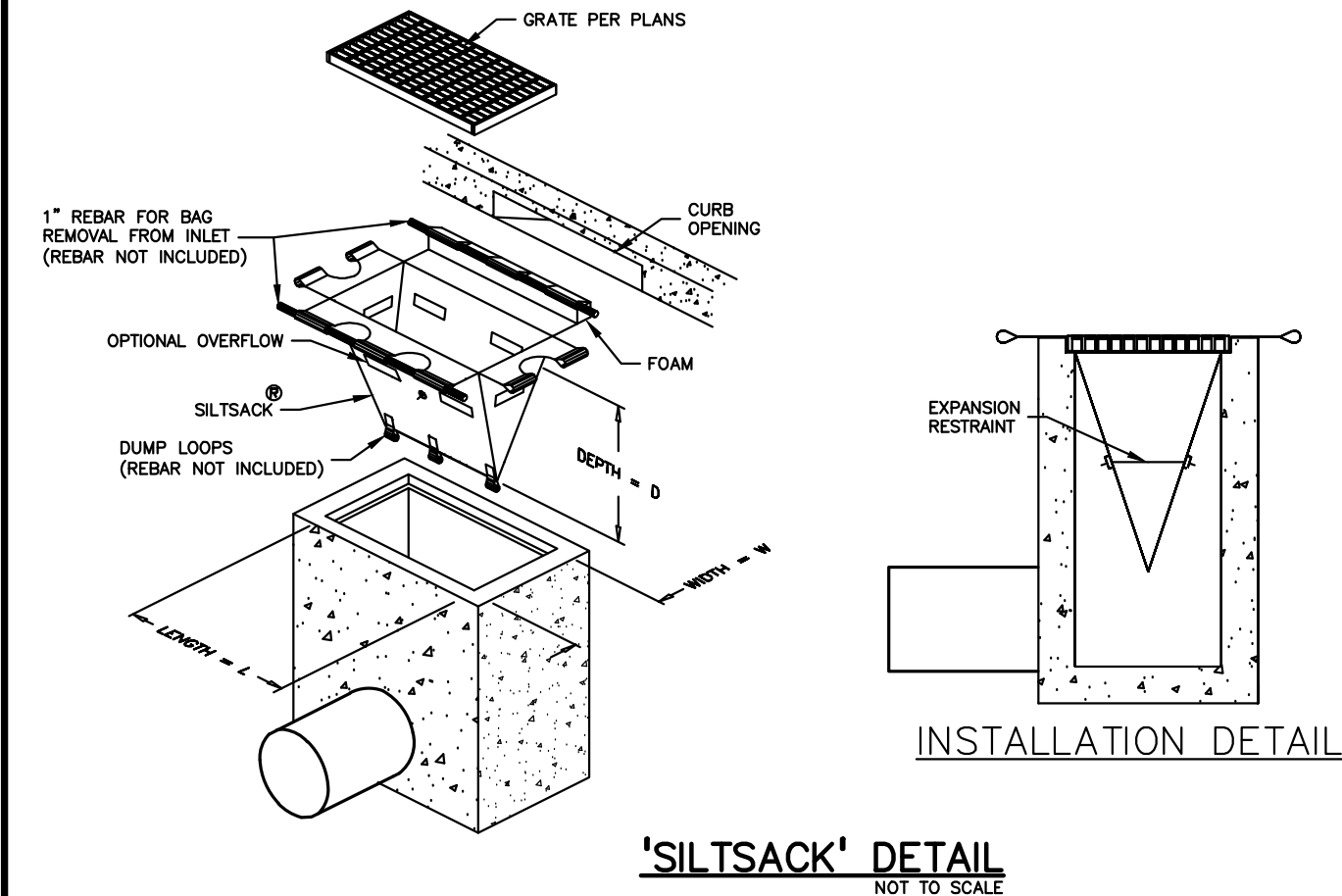
SEQUENCE OF CONSTRUCTION		
START DAY	END DAY	ACTIVITY
1	1	CITY OF ANN ARBOR SOIL EROSION AND SEDIMENTATION CONTROL PRE-GRADING MEETING
2	300	INSTALL TEMPORARY SOIL EROSION CONTROL MEASURES, SILT FENCES, INLET FILTERS, ETC. AS NECESSARY.
5	30	REMOVE ALL VEGETATION, TREES AND BRUSH FROM THE AREA OF PROPOSED IMPROVEMENT UNLESS MARKED TO REMAIN. STRIP AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE GRADED AND SEEDED.
5	65	DEMOLISH ALL PAVEMENT, SIDEWALK, AND UTILITIES AS REQUIRED TO INSTALL THE PROPOSED WORK.
5	75	DISPOSE OF ALL EXCESS/UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO ON-SITE BURN OR BURY PITS ALLOWED.
30	90	ROUGH GRADE SITE. SEED AND MULCH BLANKETS MUST BE INSTALLED AS SHOWN WITHIN 5 DAYS OF FINAL GRADE. REPAIR AND/OR RE-INSTALL ANY TEMPORARY SOIL EROSION CONTROL MEASURES THAT WERE DAMAGED DURING GRADING OPERATIONS.
40	240	TEMPORARY SEEDING MUST BE PROVIDED IN AREAS NOT TO BE WORKED ON FOR 14 DAYS OR LONGER.
45	105	CONSTRUCT AND STABILIZE DETENTION FACILITIES
45	120	INSTALL SITE UTILITIES (STORM, SANITARY, WATER MAIN, ETC.) INSTALL INLET FILTERS AT NEW DRAINAGE STRUCTURES.
100	110	WATER MAIN FLUSHING
150	175	FINE GRADE SITE AND PREPARE FOR SITE PAVING OPERATIONS.
175	205	INSTALL FIRST COURSE OF PAVEMENT, SIDEWALKS, CURBING AS PROPOSED. IF PERMANENT LANDSCAPING IS NOT TO BE INSTALLED SOON AFTER PAVING IS COMPLETE, ALL AREAS WITHIN 20 FEET OF BACK OF CURB MUST BE TEMPORARILY SEEDED. REPAIR INLET FILTERS, SILT FENCE AND ANY OTHER DAMAGED SOIL EROSION CONTROL MEASURES AS NECESSARY.
205	270	CONSTRUCT PROPOSED BUILDINGS
270	280	INSTALL FINAL PAVEMENT COURSE
280	290	FINAL GRADE, REDISTRIBUTE STOCKPILED TOPSOIL, ESTABLISH VEGETATION AND INSTALL ALL PERMANENT LANDSCAPING IN ALL DISTURBED AREAS NOT BUILT.
290	295	CLEAN PAVEMENT AND REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES. RE-ESTABLISH VEGETATION AS REQUIRED.
300	300	REMOVE SEDIMENTATION CONTROLS ONCE ENTIRE SITE HAS BEEN PERMANENTLY STABILIZED AND THE CITY OF ANN ARBOR APPROVES THE FINAL GRADING

MAINTENANCE TASKS AND SCHEDULE DURING CONSTRUCTION										
TASKS	COMPONENTS									SCHEDULE
	STORM SEWER SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASTINGS	DITCHES AND SWALES	OUTFLOW CONTROL STRUCTURE	RIP-RAP	SEDIMENT BASINS	RAIN GARDENS	STORM DETENTION AREAS	
INSPECT FOR SEDIMENT ACCUMULATION	X	X		X	X		X	X	X	WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X	X		X	X		X	X	X	AS NEEDED* & PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS			X	X	X		X	X	X	QUARTERLY
CLEANING OF FLOATABLES AND DEBRIS			X	X	X		X	X	X	QUARTERLY & AT TURNOVER
INSPECTION FOR EROSION				X	X		X	X	X	WEEKLY
RE-ESTABLISH PERMANENT VEGETATION ON ERODED SLOPES				X	X		X	X	X	AS NEEDED & PRIOR TO TURNOVER
REPLACEMENT OF STONE					X	X				AS NEEDED & PRIOR TO TURNOVER
MOWING				X	X		X	X	X	0-2 TIMES PER YEAR
INSPECT STORM WATER SYSTEM COMPONENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS			X	X	X	X	X	X	X	ANNUALLY AND AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION	X	X	X	X	X	X	X	X	X	AS NEEDED

\* AS NEEDED MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM DEPTH OF ONE FOOT

PERMANENT MAINTENANCE TASKS, SCHEDULE AND BUDGET												
TASKS	CATCH BASIN INLET CASTINGS	DITCHES AND SWALES	OUTFLOW CONTROL STRUCTURE	RIP-RAP	SEDIMENT BASINS	RAIN GARDENS	STORM DETENTION AREAS	SCHEDULE	ESTIMATED ANNUAL BUDGET			SESC TASKS
									1ST YEAR	2ND YEAR	3RD YEAR	
INSPECT FOR SEDIMENT ACCUMULATION		X	X		X	X	X	ANNUALLY	\$100	\$100	\$100	X
REMOVAL OF SEDIMENT ACCUMULATION		X	X		X	X	X	EVERY 2 YEARS AS NEEDED	\$300	\$100	\$0	X
INSPECT FOR FLOATABLES AND DEBRIS	X	X	X		X	X	X	ANNUALLY	\$75	\$75	\$75	
CLEANING OF FLOATABLES AND DEBRIS	X	X	X		X	X	X	ANNUALLY	\$150	\$50	\$0	
INSPECTION FOR EROSION		X	X		X	X	X	ANNUALLY	\$125	\$100	\$100	X
RE-ESTABLISH PERMANENT VEGETATION ON ERODED SLOPES		X	X		X	X	X	AS NEEDED	\$250	\$100	\$100	X
REPLACEMENT OF STONE			X	X				EVERY 3-5 YEARS AS NEEDED	\$150	\$0	\$250	X
MOWING		X	X		X	X	X	0-2 TIMES PER YEAR	\$2,500	\$1,750	\$1,750	
INSPECT STORM WATER SYSTEM COMPONENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS	X	X	X	X	X	X	X	ANNUALLY	\$75	\$75	\$75	
INSPECT INFILTRATION BASIN FOLLOWING STORMS OF 1-INCH OR MORE					X	X	X	AS NEEDED	\$75	\$75	\$75	
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION	X	X	X	X	X	X	X	AS NEEDED	\$300	\$300	\$300	
KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES								ANNUALLY	\$0	\$0	\$0	
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE, AND REPAIRS								ANNUALLY	\$0	\$0	\$0	
TOTAL BUDGET									\$4,100	\$2,725	\$2,825	
SESC BUDGET									925	400	550	

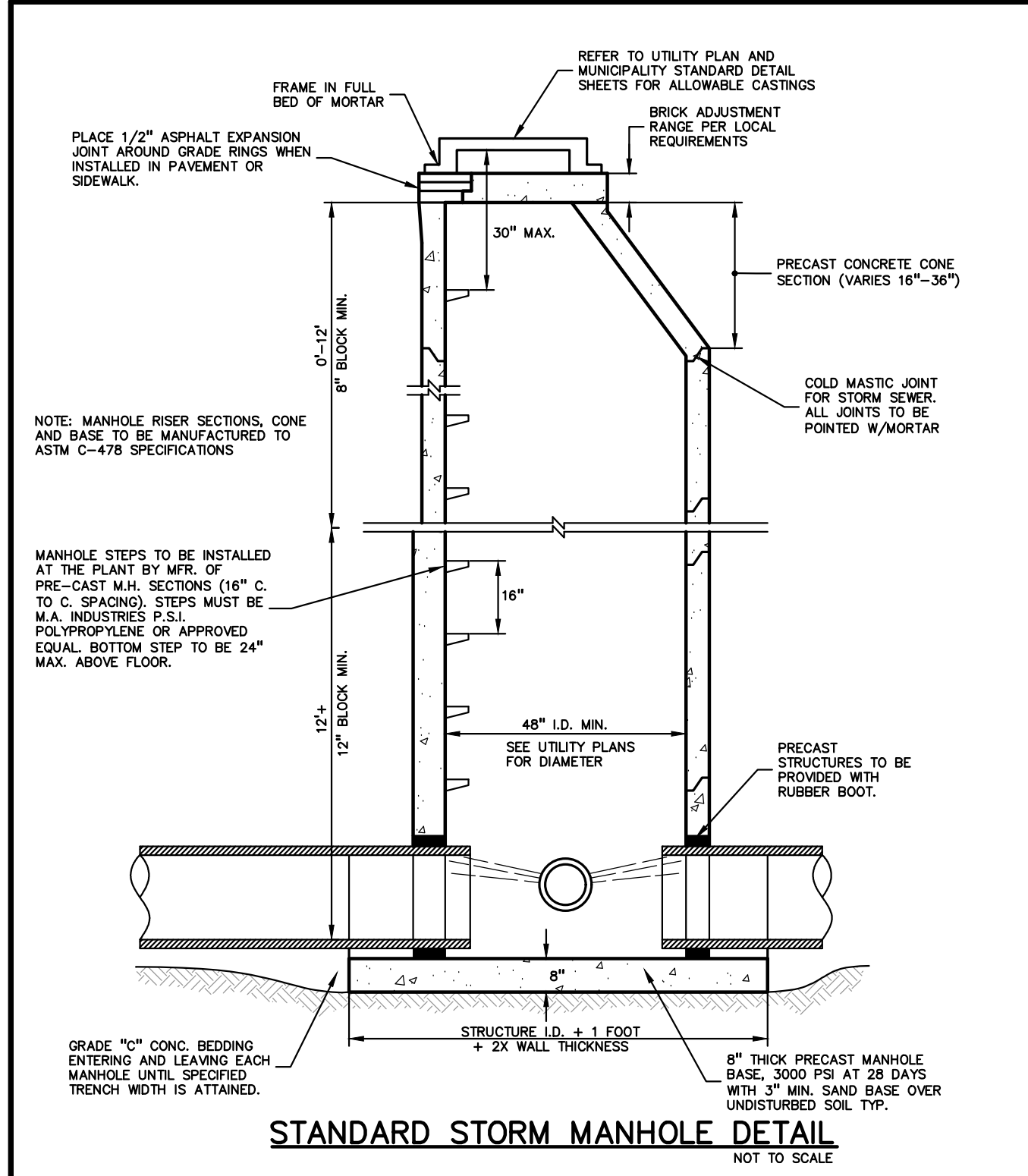
NOTE: LONG-TERM STORM WATER MAINTENANCE WILL BE PERFORMED BY THE CITY OF ANN ARBOR FIRE DEPARTMENT.



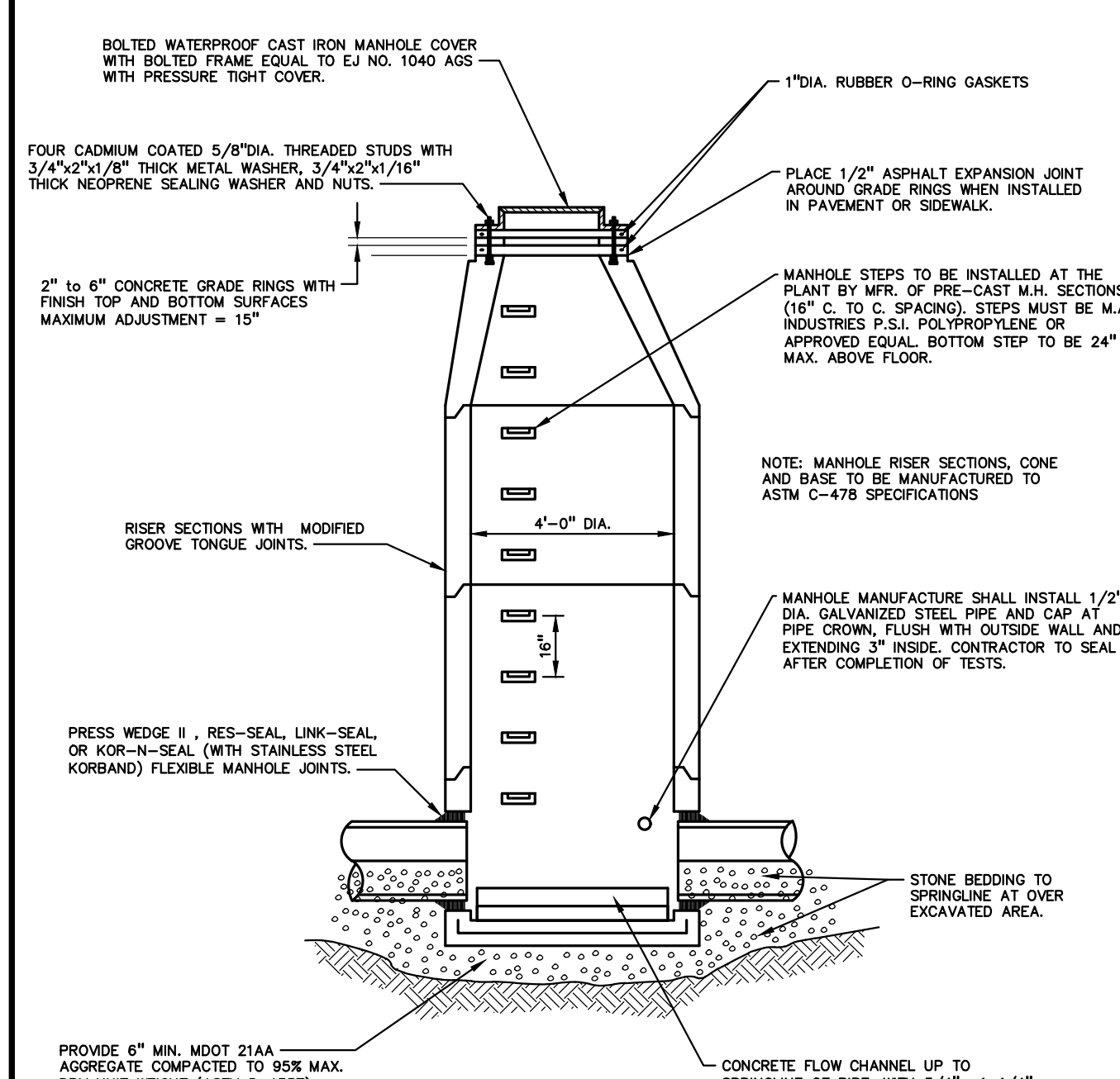
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Bids/Permits	10.11.24
Site Plan-Engineering	08.21.24
Final Site Plan-Rev	11.08.23
Final Site Plan	09.08.23
Bids/Permits	08.04.23
WCWRC Resubmittal	01.13.23
Site Plan Reapproval	11.21.22
Site Plan Approval	09.22.22
DRN: JW	CHK'D: JC



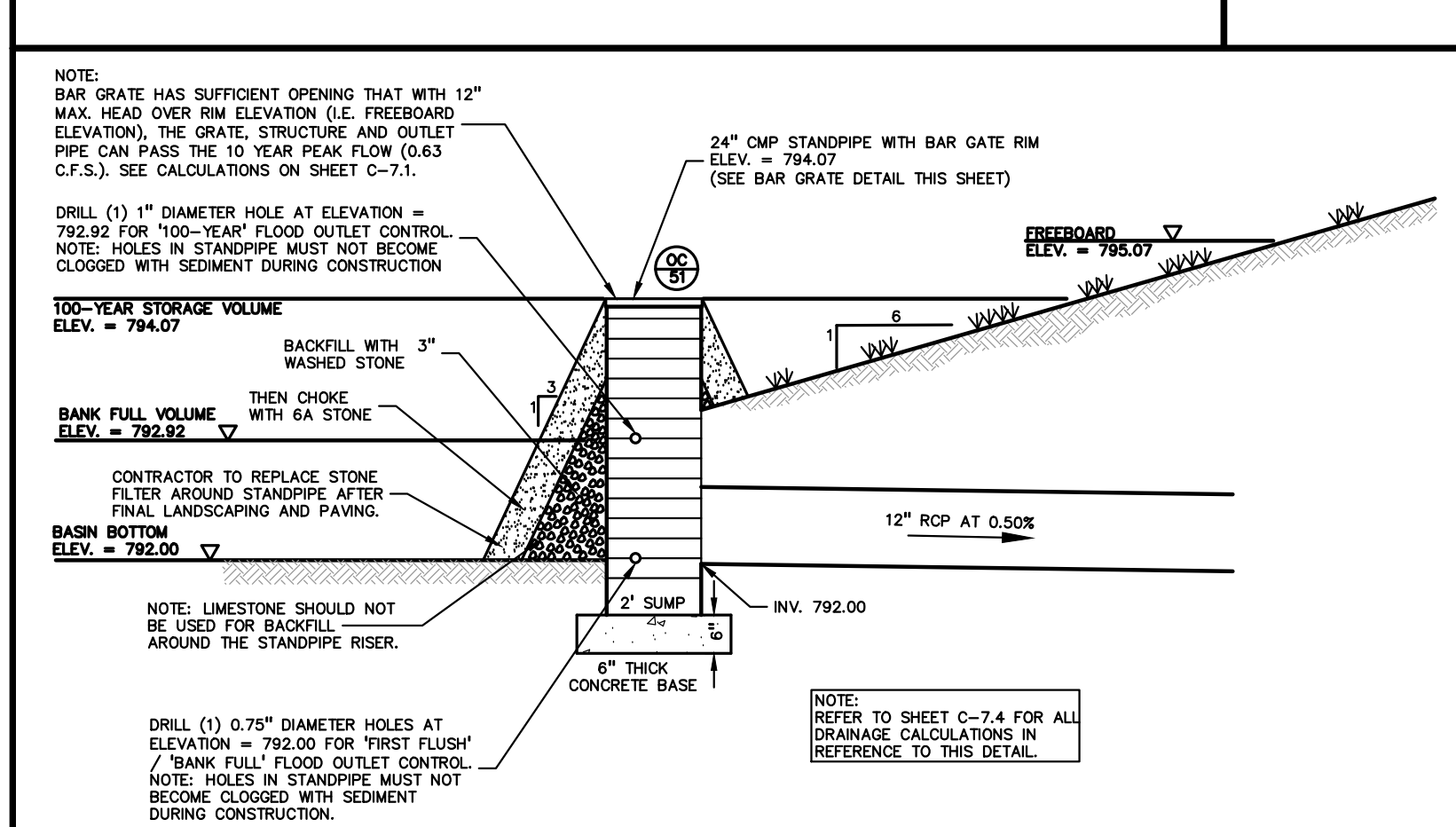
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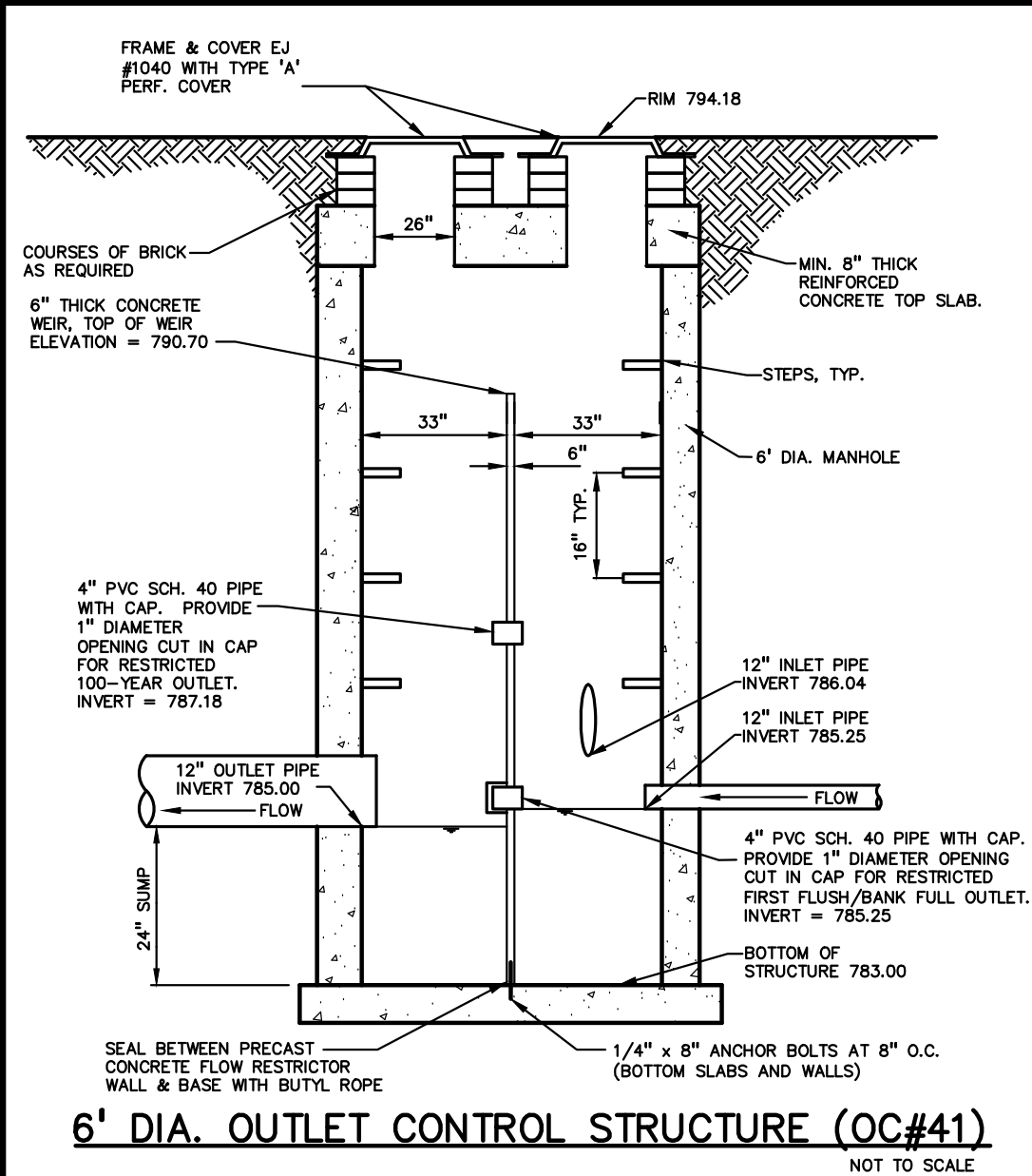
STANDARD STORM MANHOLE DETAIL  
NOT TO SCALE



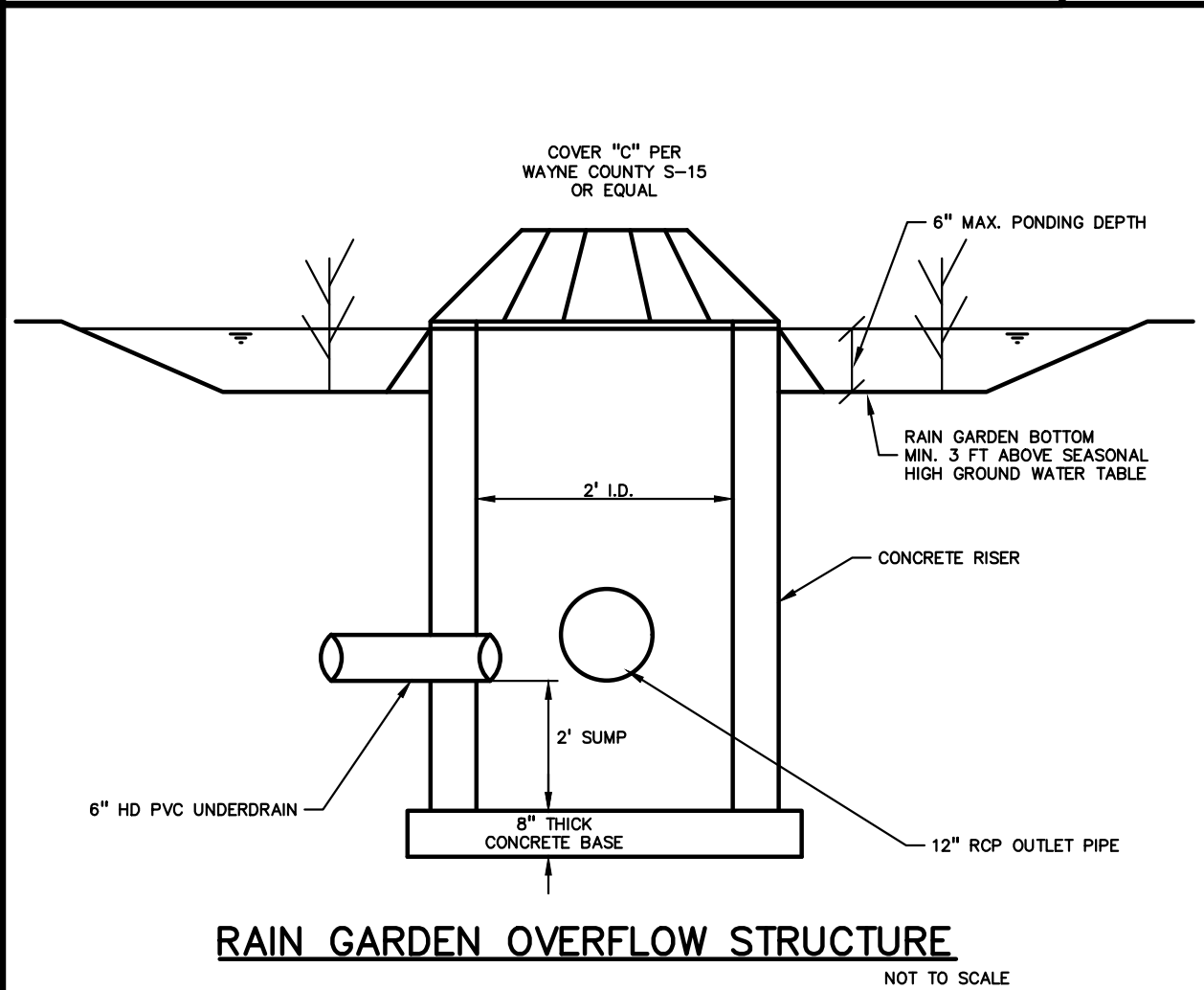
STANDARD SANITARY SEWER MANHOLE DETAIL  
(ON 8" THROUGH 24" DIAMETER)  
NOT TO SCALE



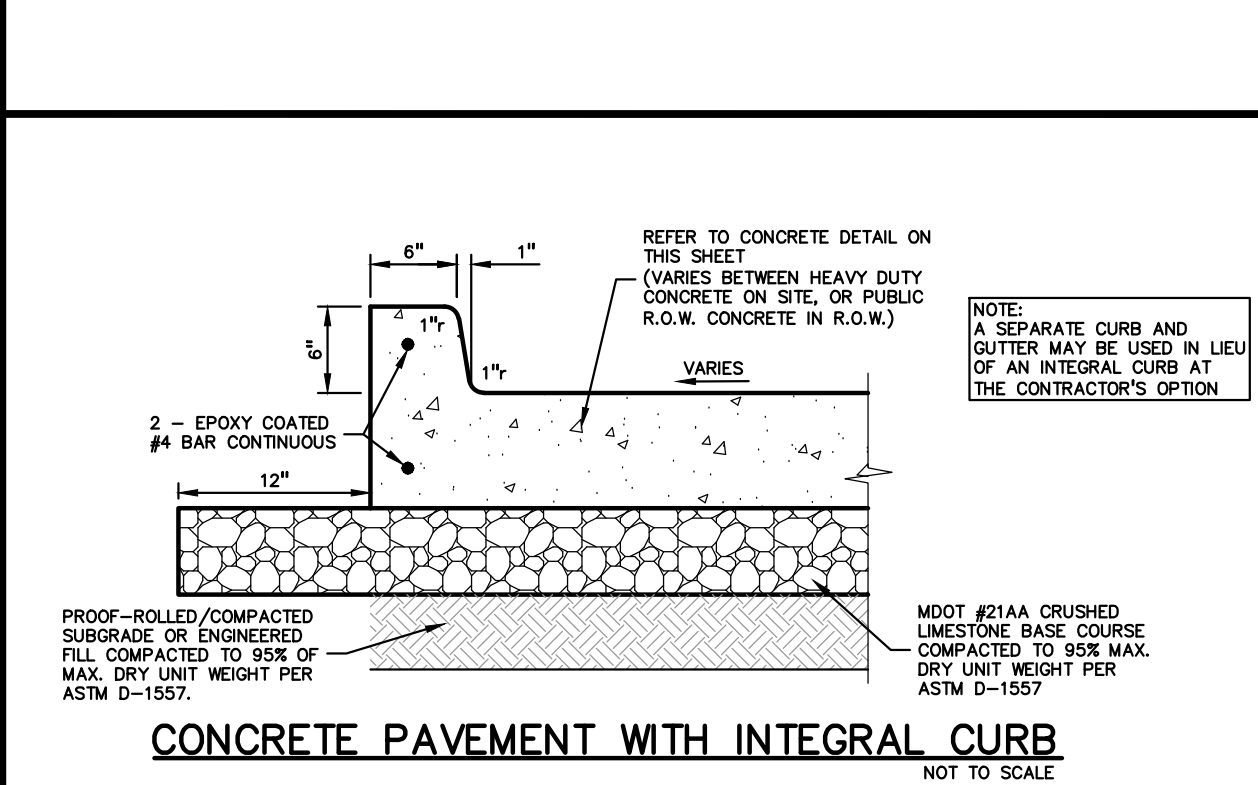
DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL (OC-51)  
NOT TO SCALE



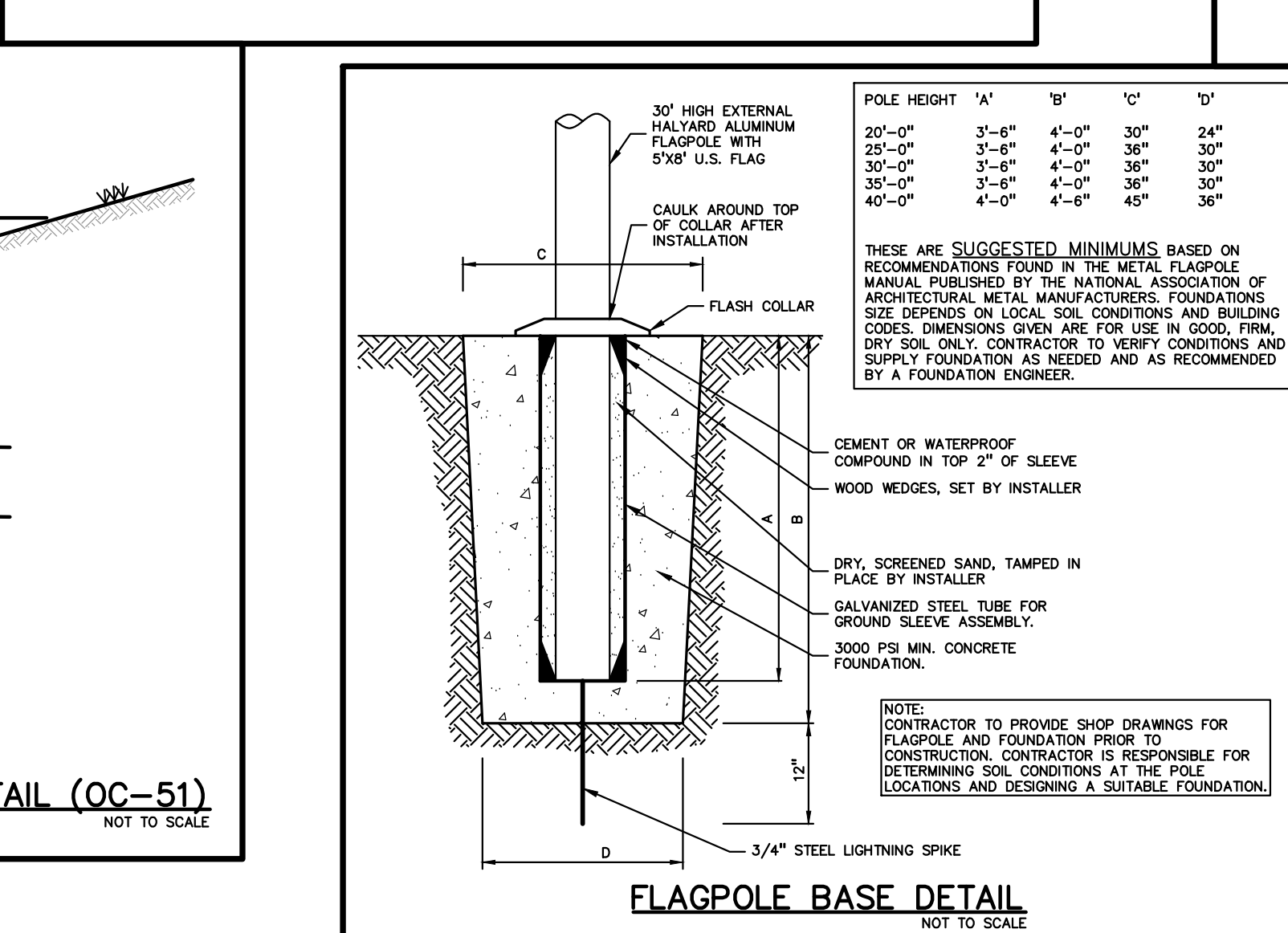
CONCRETE CURB SPILLWAY DETAIL  
NOT TO SCALE



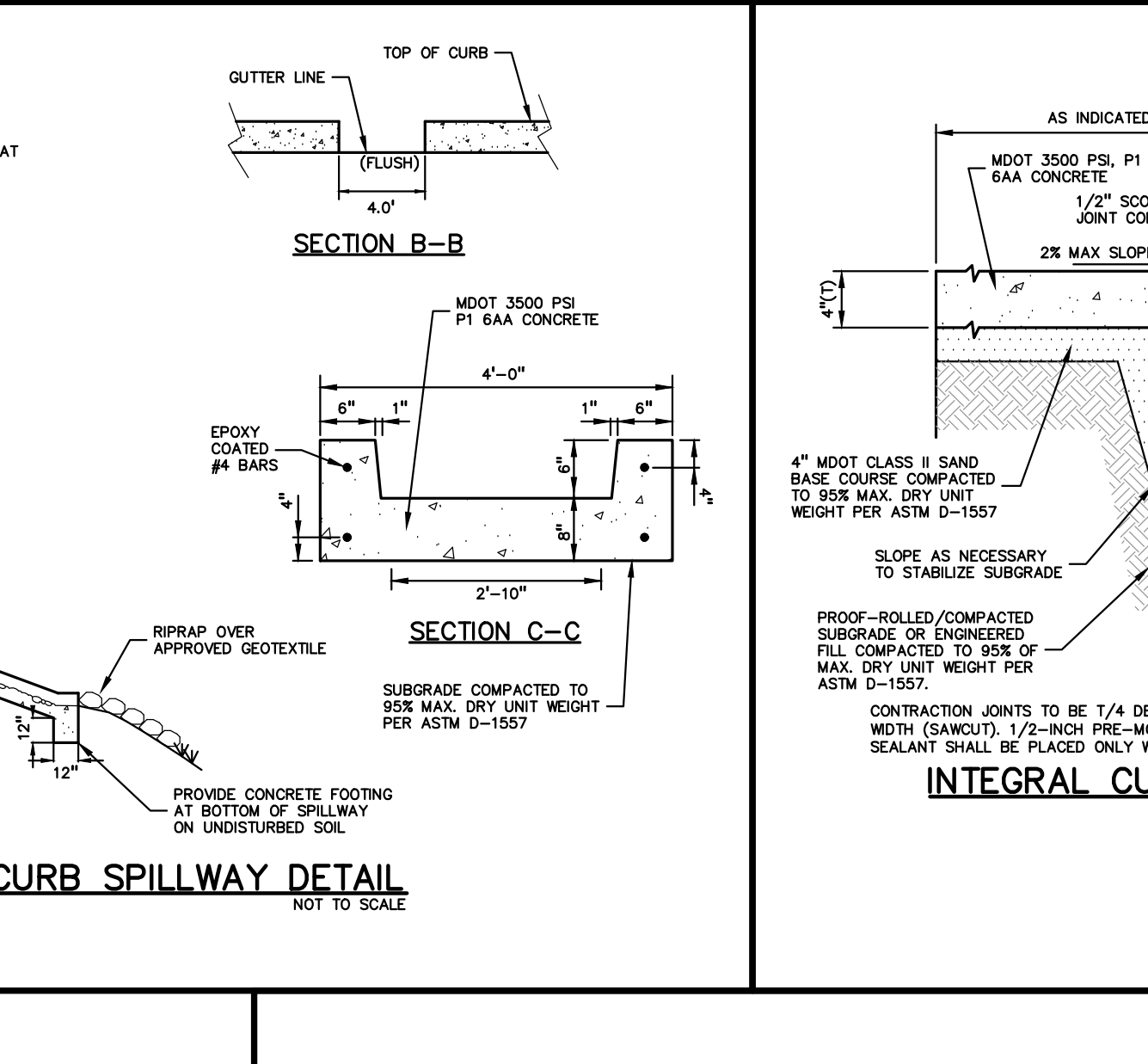
RAIN GARDEN OVERFLOW STRUCTURE  
NOT TO SCALE



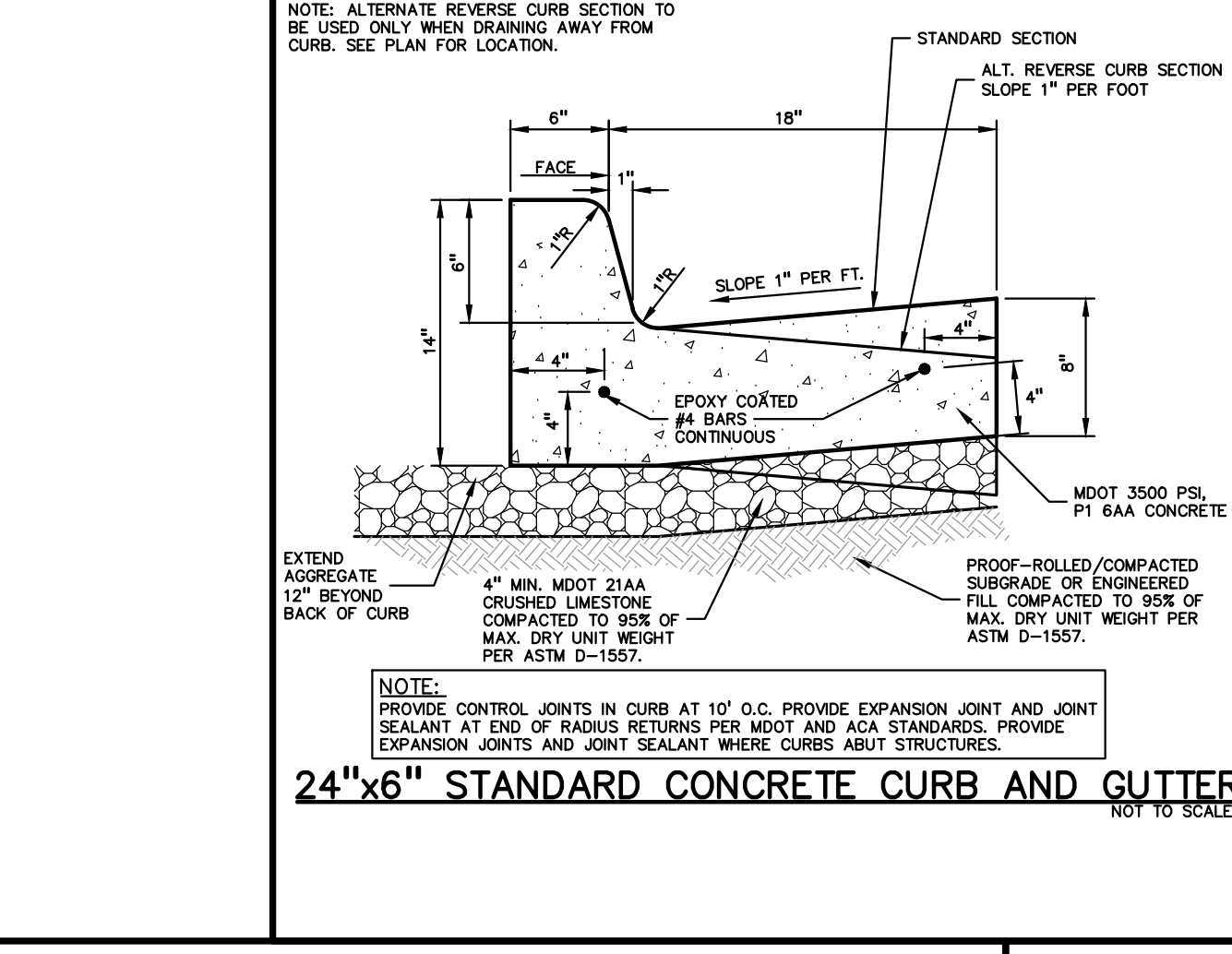
CONCRETE PAVEMENT WITH INTEGRAL CURB  
NOT TO SCALE



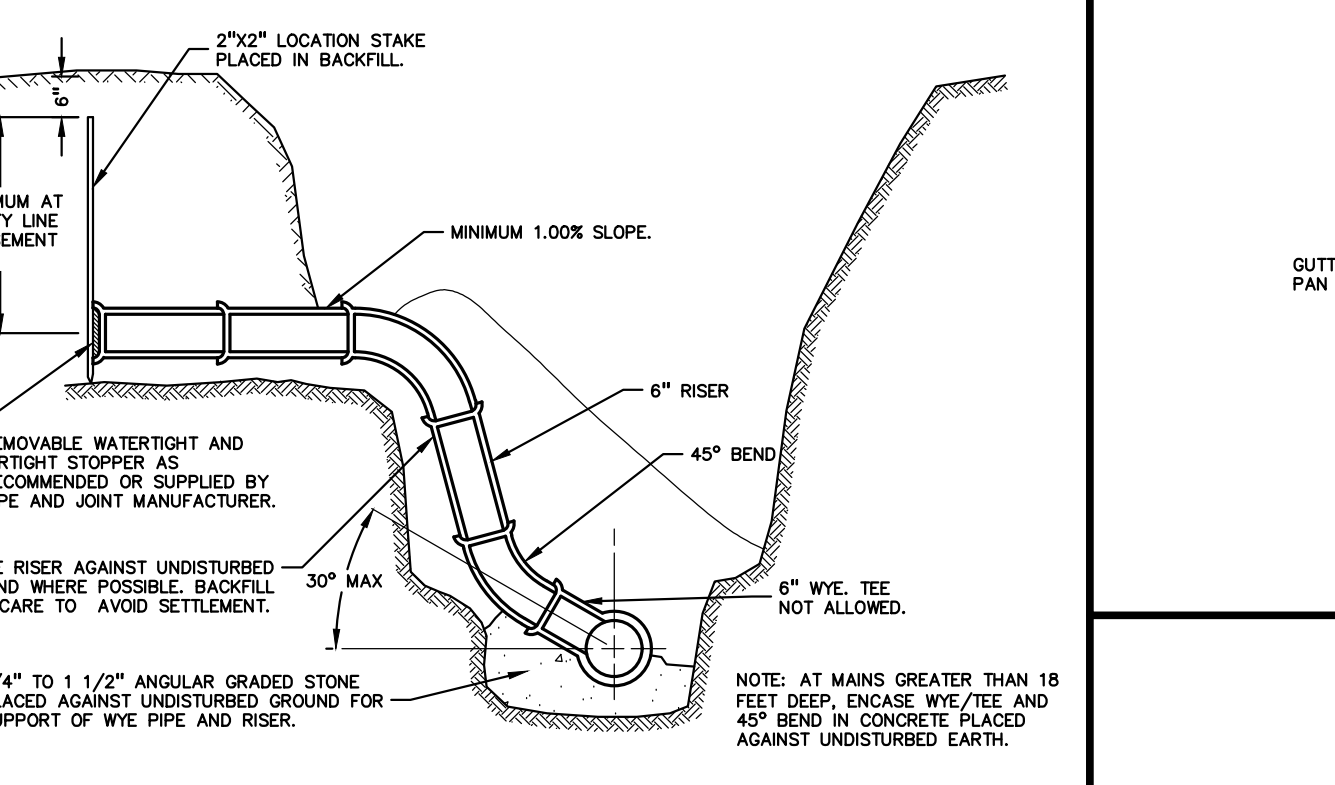
FLAGPOLE BASE DETAIL  
NOT TO SCALE



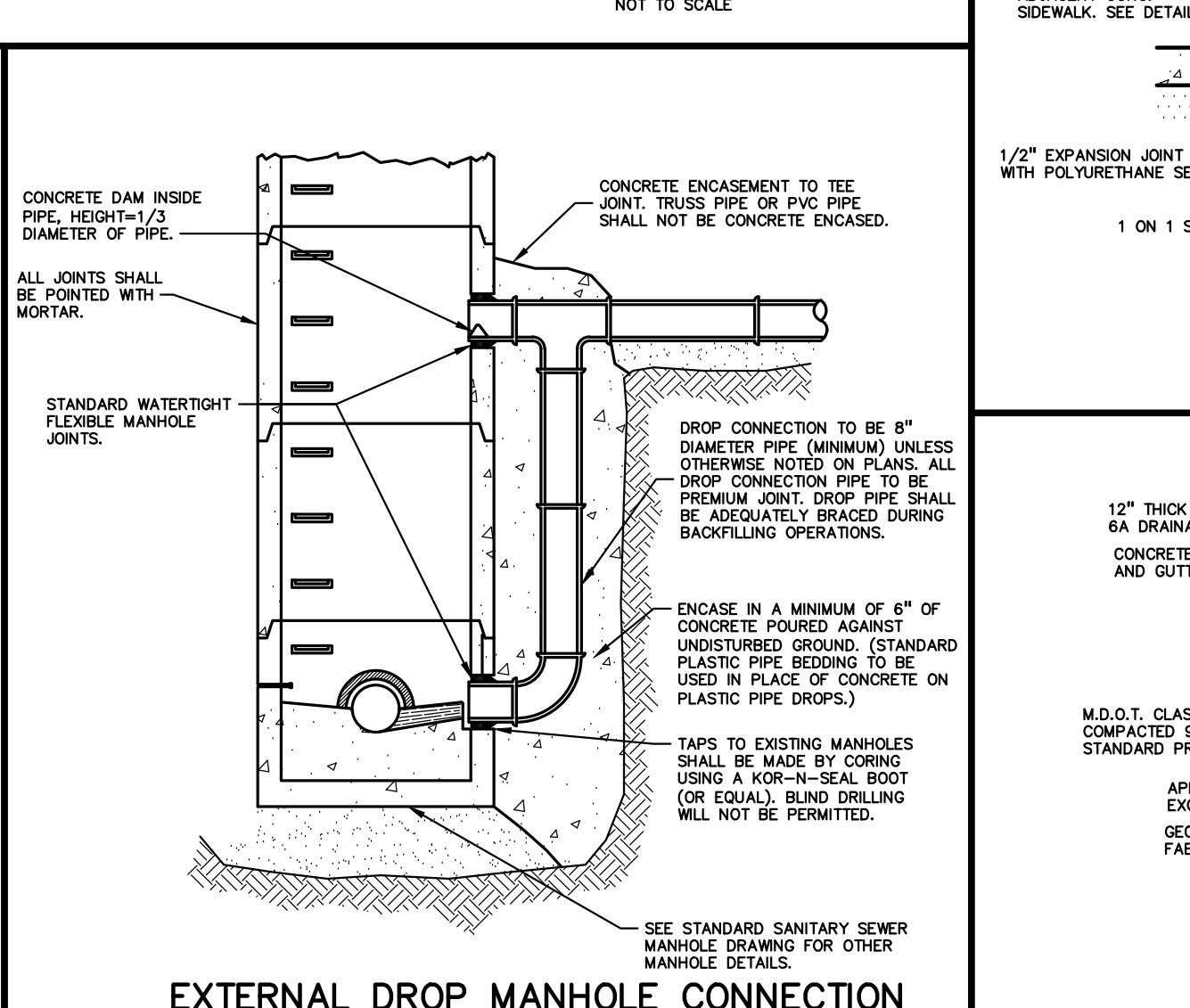
INTEGRAL CURB AND SIDEWALK  
NOT TO SCALE



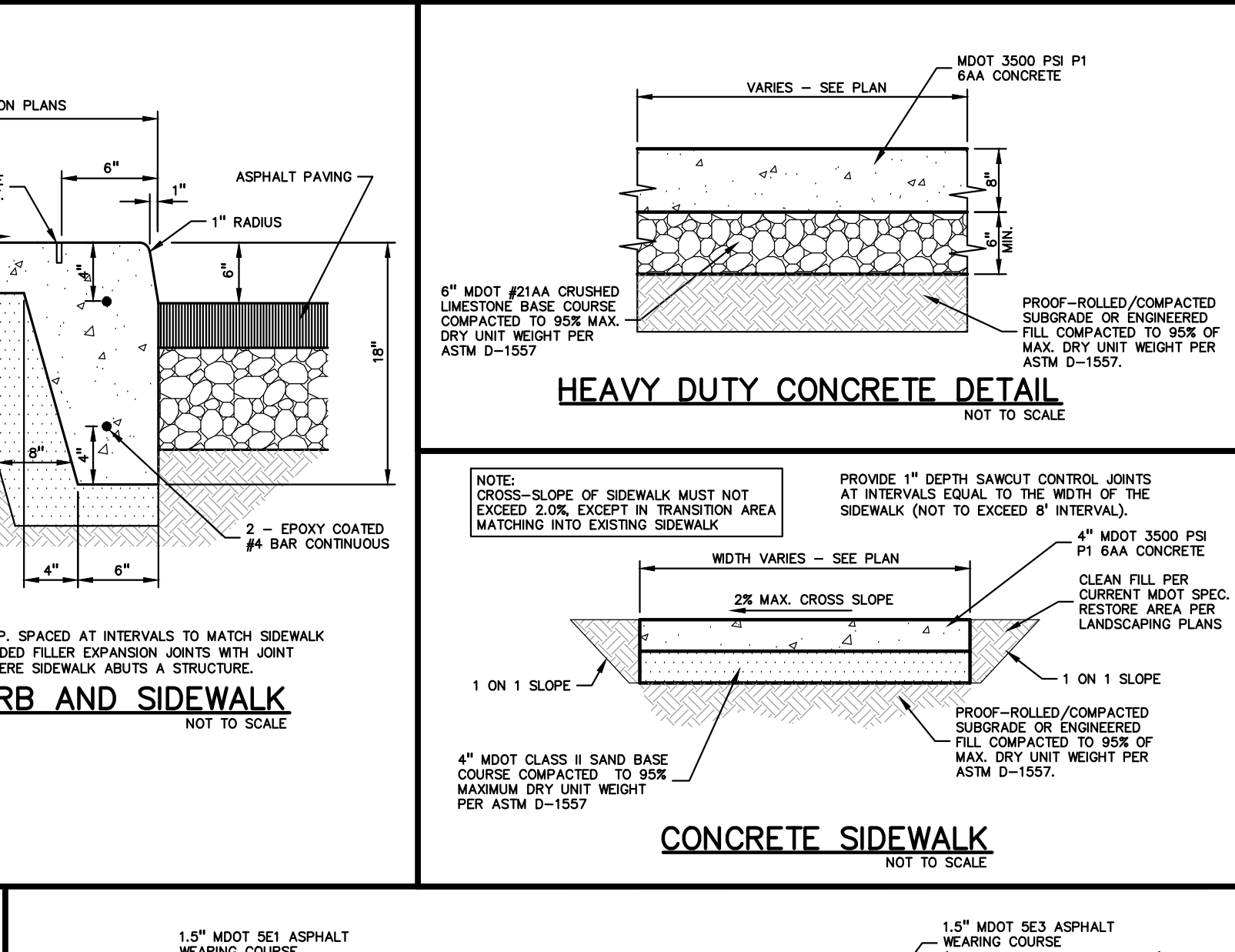
24"x6" STANDARD CONCRETE CURB AND GUTTER  
NOT TO SCALE



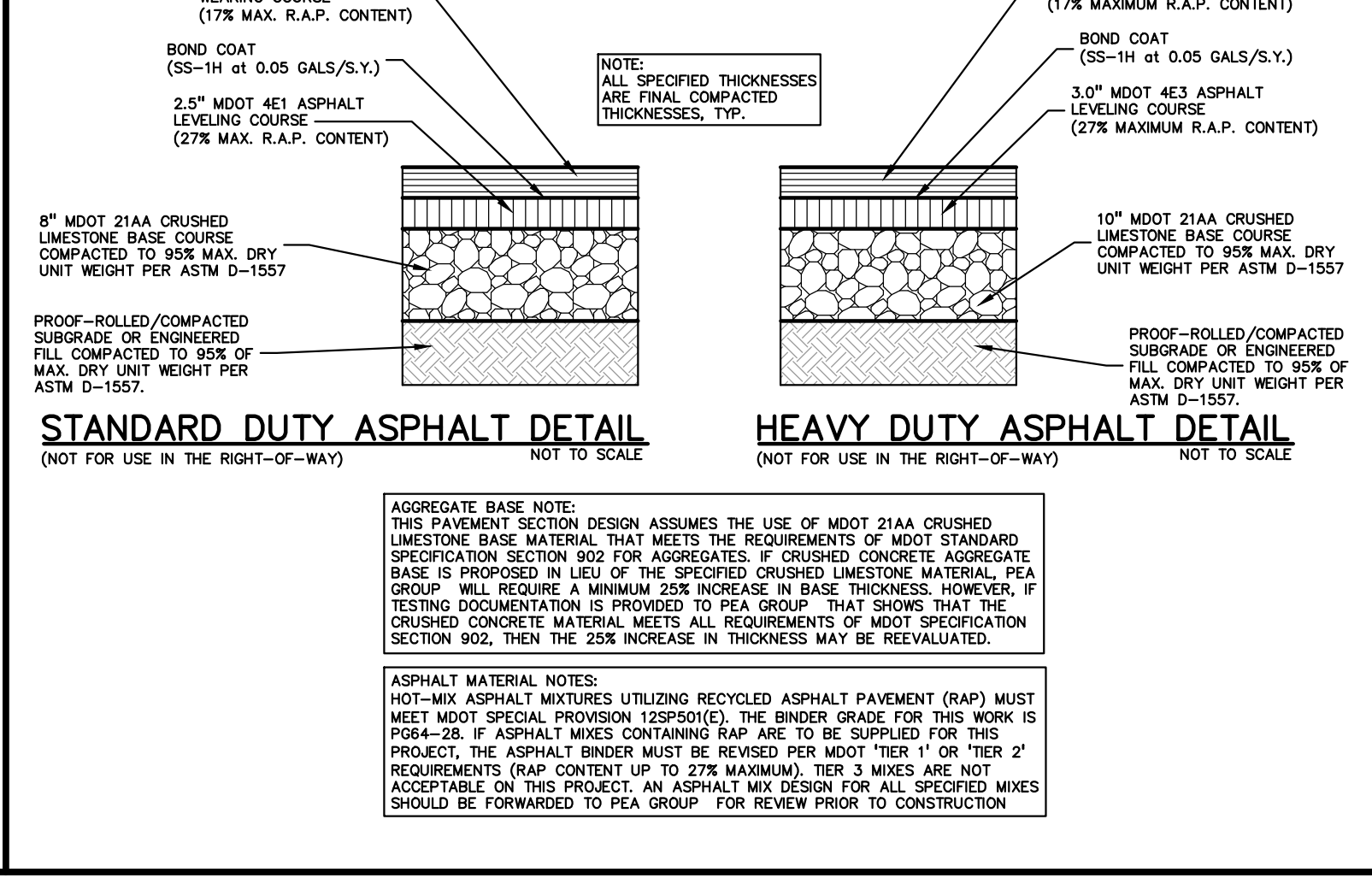
BUILDING LEAD RISER DETAIL  
NOT TO SCALE



EXTERNAL DROP MANHOLE CONNECTION  
NOT TO SCALE

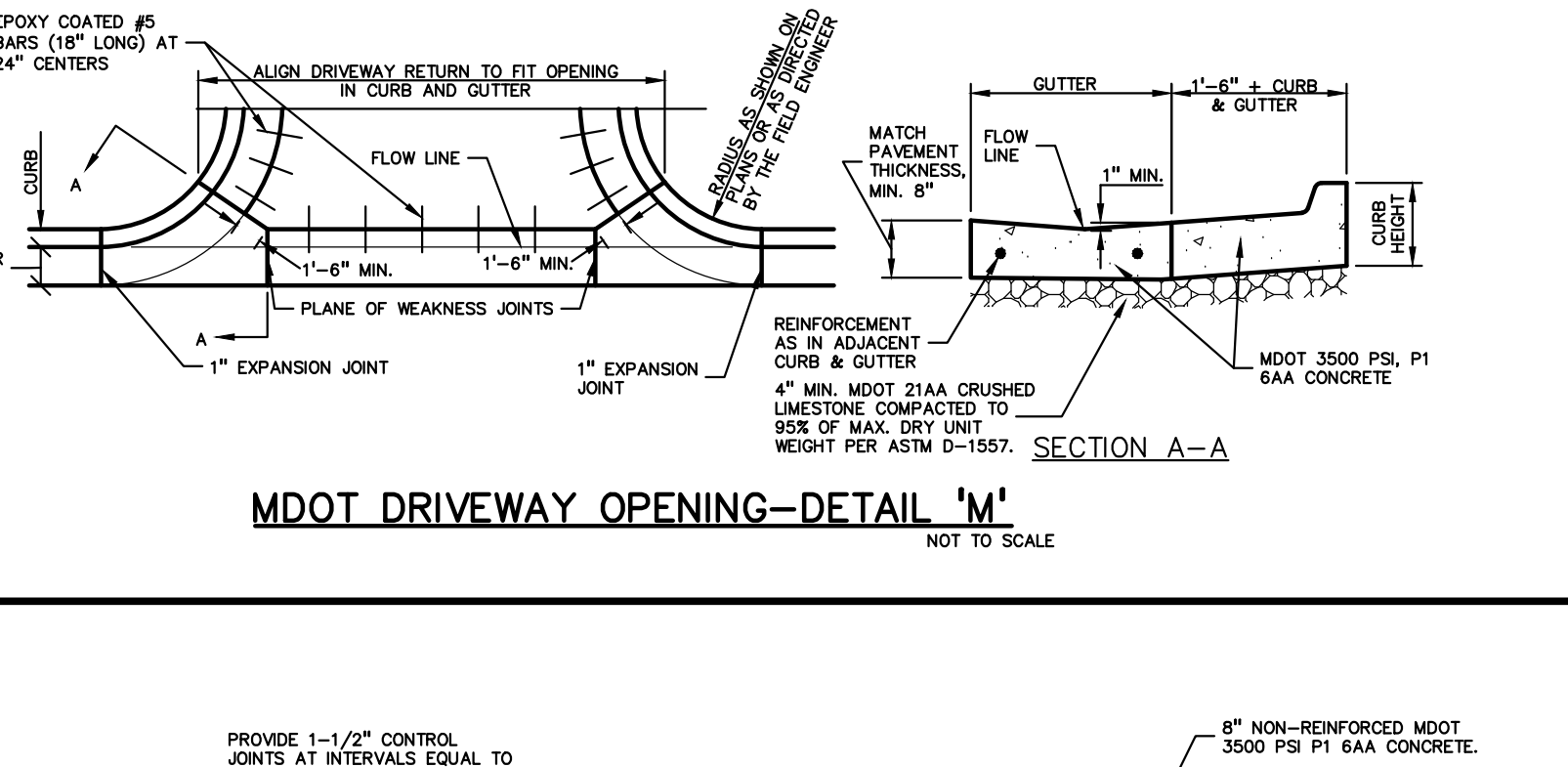


HEAVY DUTY CONCRETE DETAIL  
NOT TO SCALE

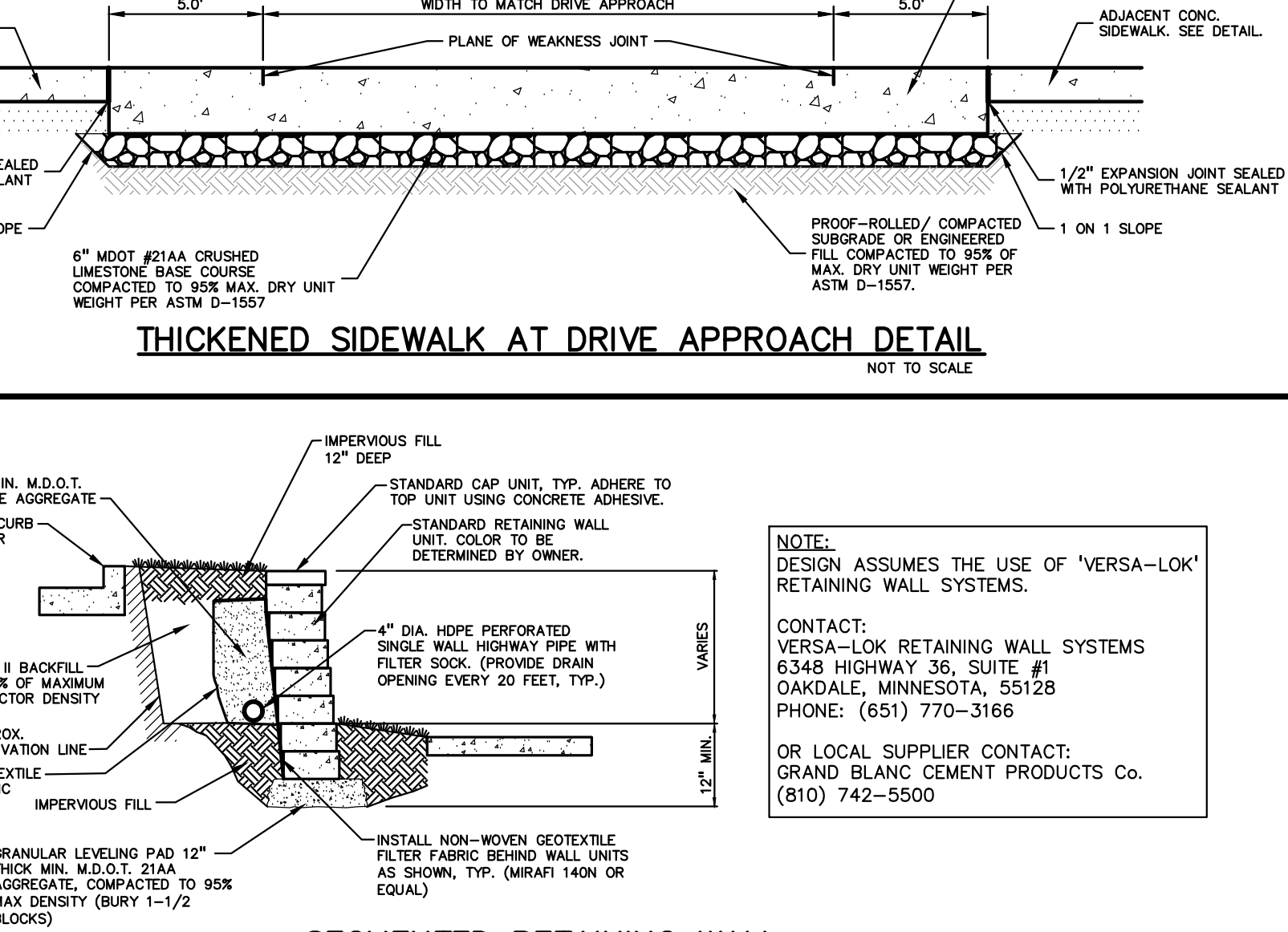


STANDARD DUTY ASPHALT DETAIL  
(NOT FOR USE IN THE RIGHT-OF-WAY)  
NOT TO SCALE

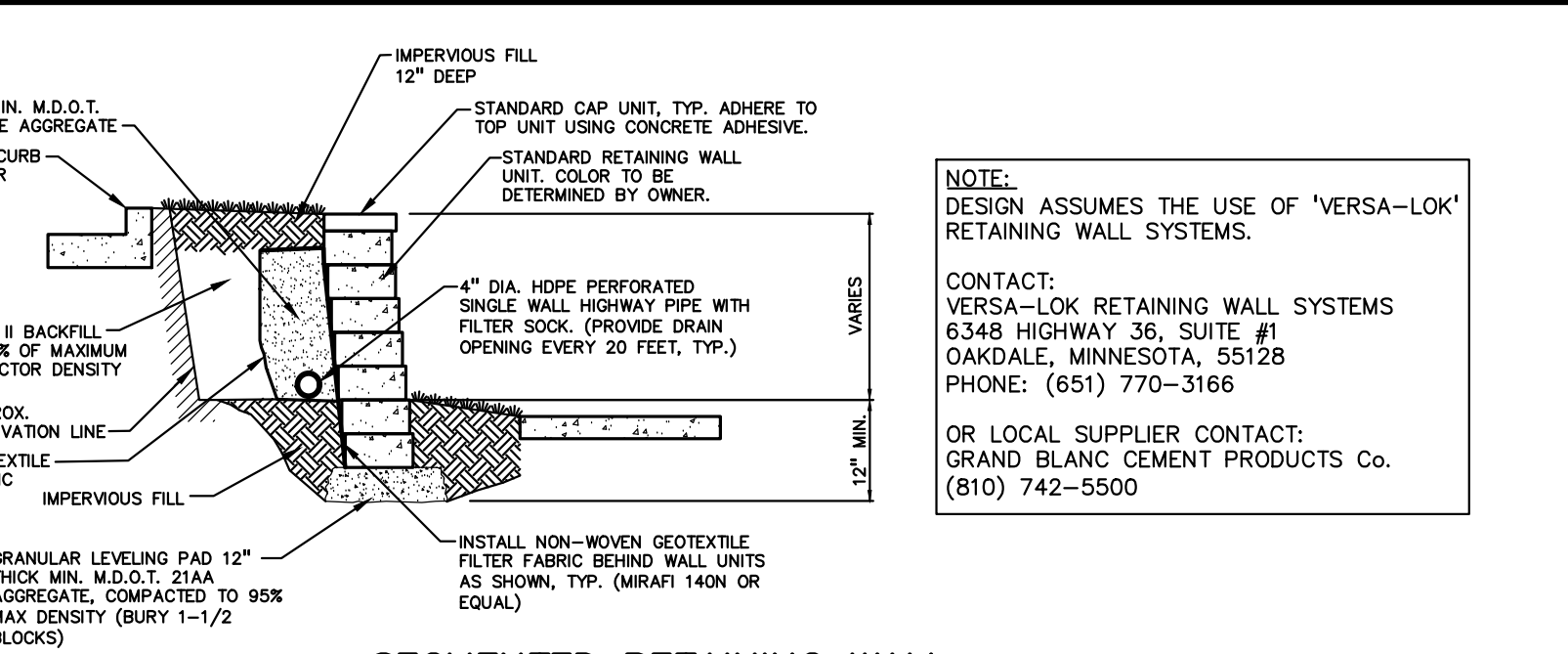
HEAVY DUTY ASPHALT DETAIL  
(NOT FOR USE IN THE RIGHT-OF-WAY)  
NOT TO SCALE



MDOT DRIVEWAY OPENING-DETAIL 'M'  
NOT TO SCALE



THICKENED SIDEWALK AT DRIVE APPROACH DETAIL  
NOT TO SCALE



SEGMENTED RETAINING WALL  
NOT TO SCALE



**PEA GROUP**  
t: 844.813.2949  
www.peagroup.com

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**DETAILS**

**A3C**  
COLLABORATIVE ARCHITECTURE  
115 1/2 E. LIBERTY STREET  
ANN ARBOR, MI 48104  
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www.a3c.com

SHEET  
**C-8.2**



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### MC-3500 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-3500.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPERE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT<sup>2</sup>, THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.06 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

### IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

- STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

### NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER Tired LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

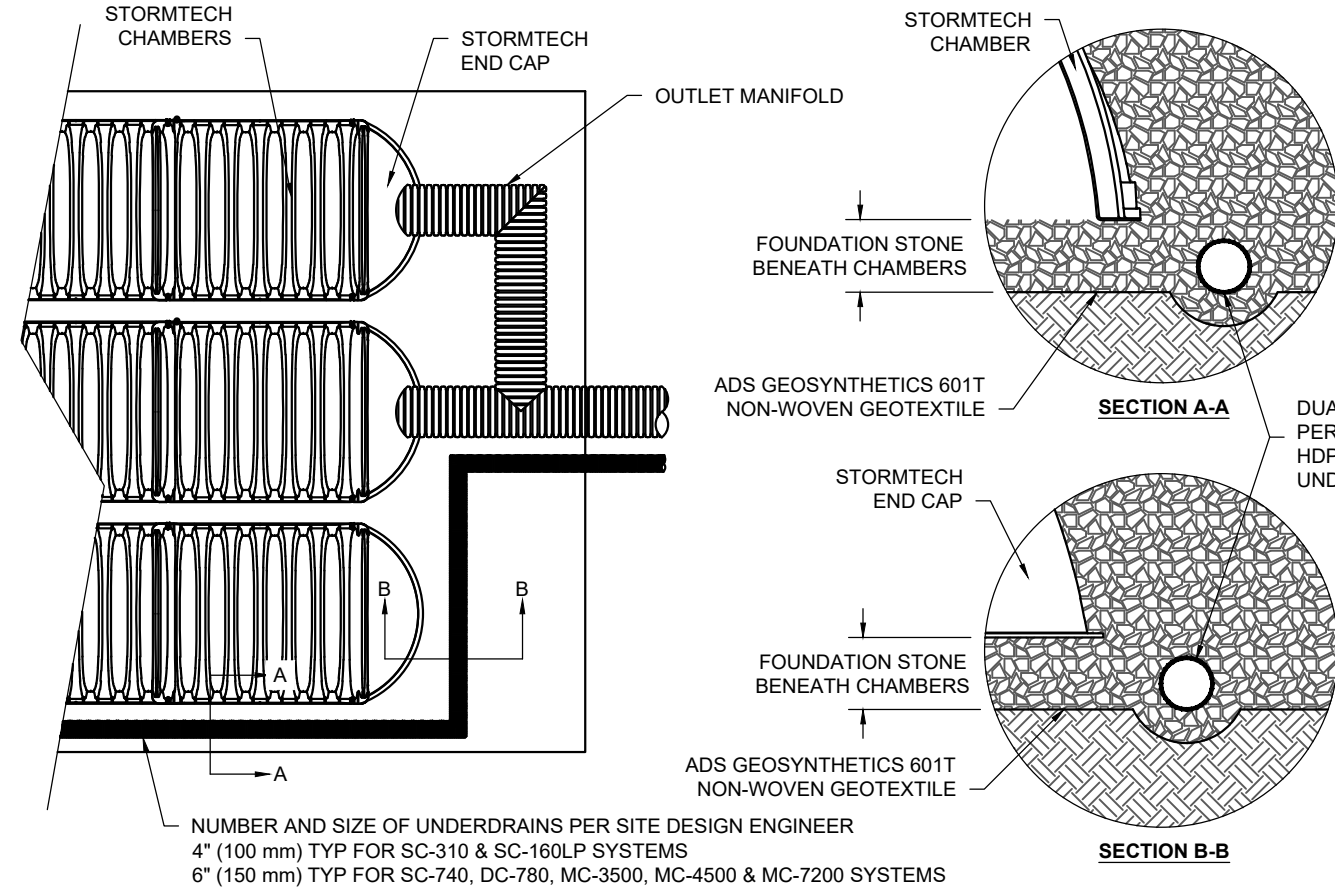
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

### INSPECTION & MAINTENANCE

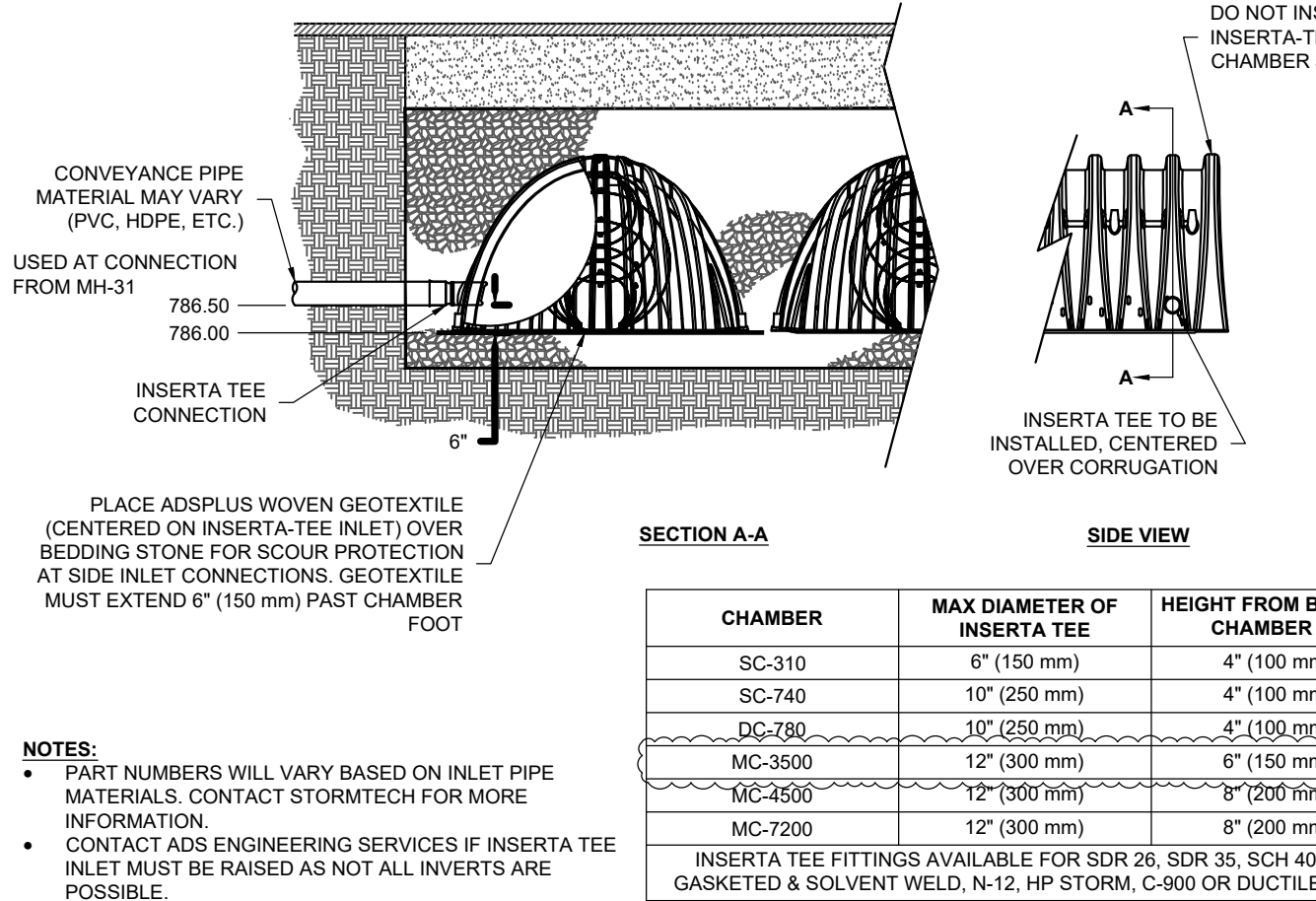
- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
  - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
  - ALL ISOLATOR PLUS ROWS
  - REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - IF ENTERING MANHOLE
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
  - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

### NOTES

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



### 5 UNDERDRAIN DETAIL

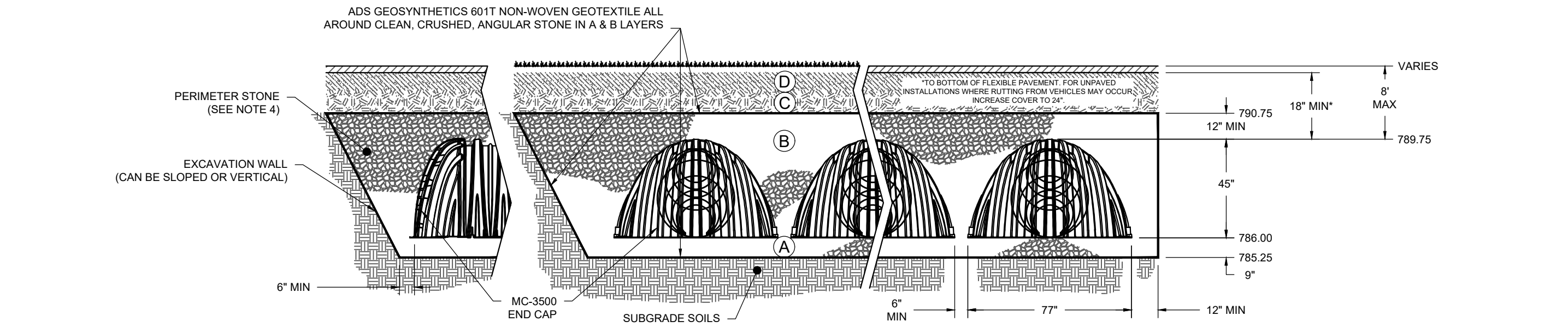


### 6 INSERTA-TEE SIDE INLET DETAIL

### ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	<b>FINAL FILL:</b> FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRUCTURAL MATERIAL AND PREPARATION REQUIREMENTS.
C	<b>INITIAL FILL:</b> FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 <sup>1</sup> A-1, A-2.4, A-3 OR AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	<b>EMBEDMENT STONE:</b> FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 <sup>1</sup> 3, 4	NO COMPACTION REQUIRED.
A	<b>FOUNDATION STONE:</b> FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 <sup>1</sup> 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

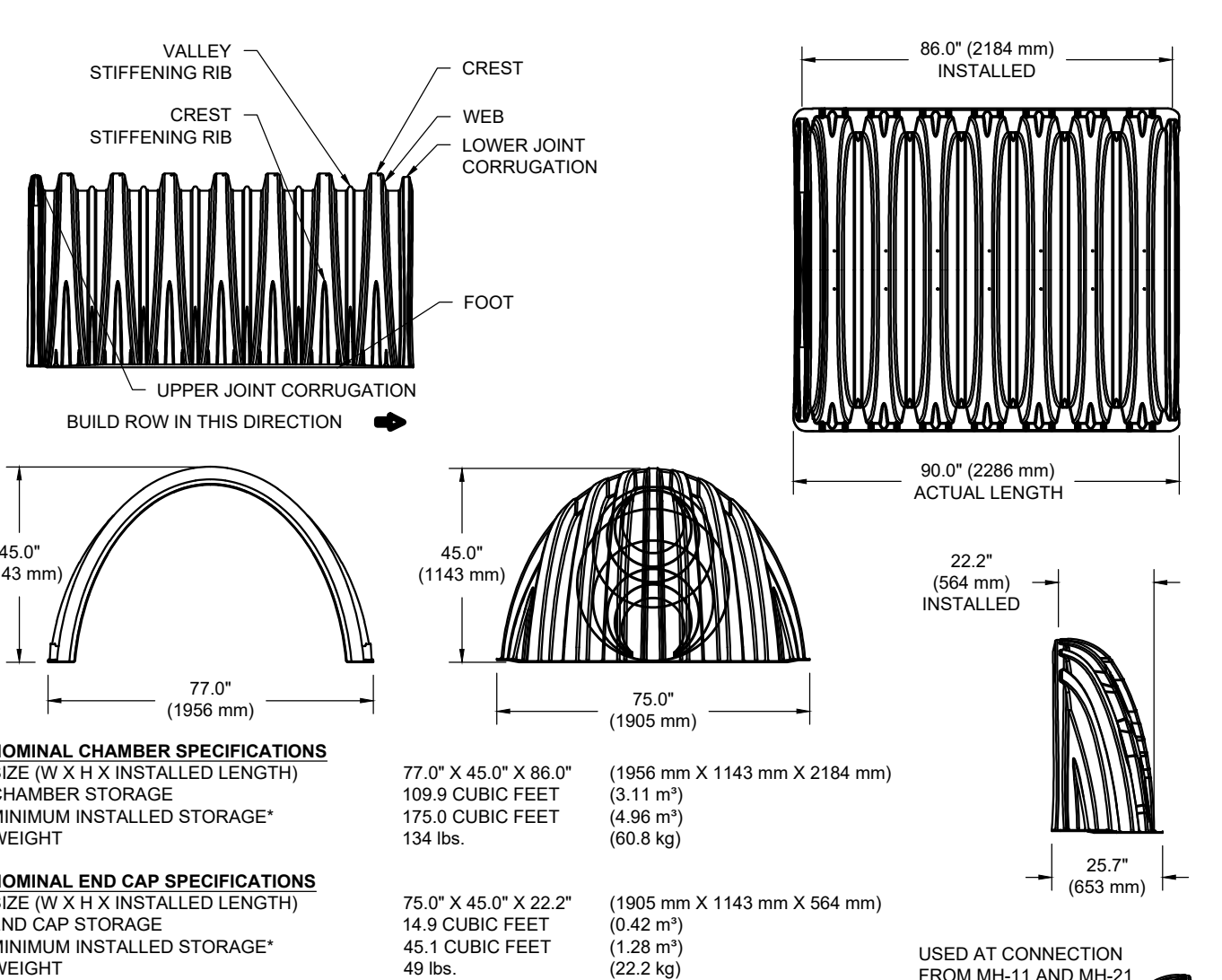
- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
  - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



### NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT<sup>2</sup>, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

### MC-3500 CROSS SECTION DETAIL



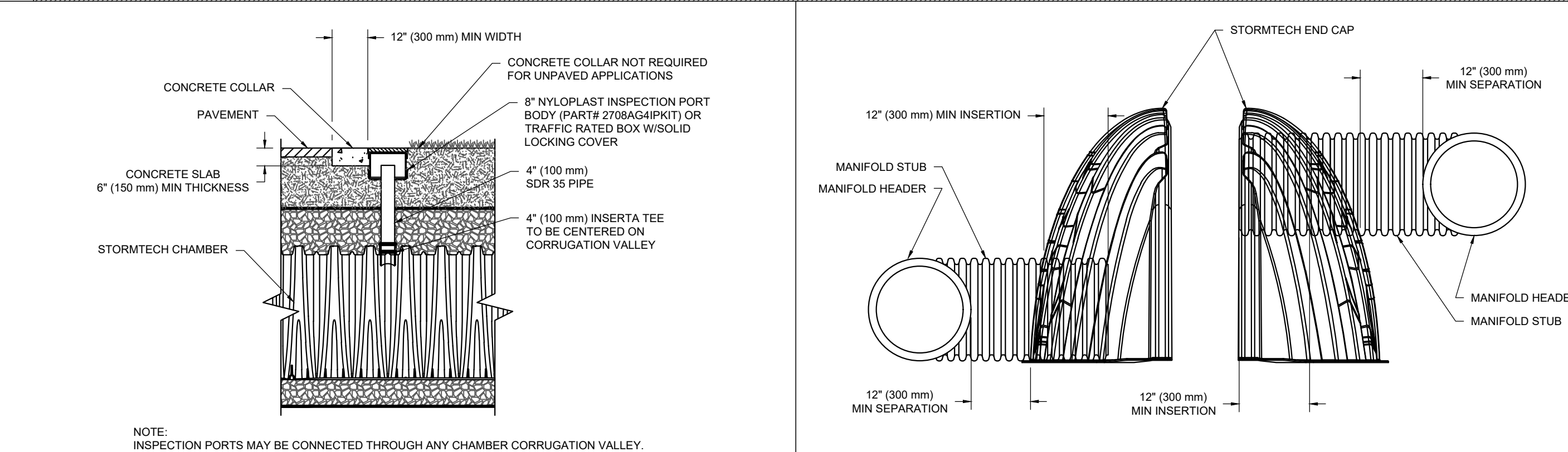
NOMINAL CHAMBER SPECIFICATIONS  
SIZE (W X H X INSTALLED LENGTH)  
CHAMBER STORAGE  
MINIMUM INSTALLED STORAGE\*  
WEIGHT

NOMINAL END CAP SPECIFICATIONS  
SIZE (W X H X INSTALLED LENGTH)  
END CAP STORAGE  
MINIMUM INSTALLED STORAGE\*  
WEIGHT

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B	---	---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B	---	---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B	---	---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B	---	---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B	---	---	1.50" (38 mm)
MC3500IEPP18T	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18B	---	---	1.77" (45 mm)
MC3500IEPP18TW	---	14.48" (368 mm)	---
MC3500IEPP24TW	---	---	2.06" (52 mm)
MC3500IEPP24BC	---	---	2.75" (70 mm)
MC3500IEPP24BW	---	---	---
MC3500IEPP30BC	---	---	---

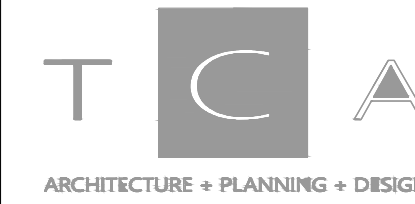
NOTE: ALL DIMENSIONS ARE NOMINAL.

### 3 MC-3500 ISOLATOR ROW PLUS DETAIL



### 4 4" PVC INSPECTION PORT DETAIL (MC SERIES CHAMBER)

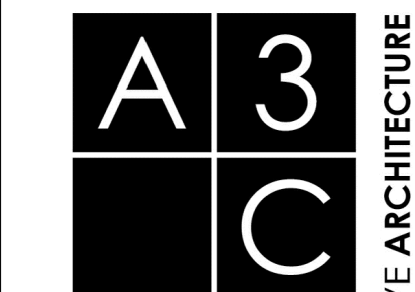
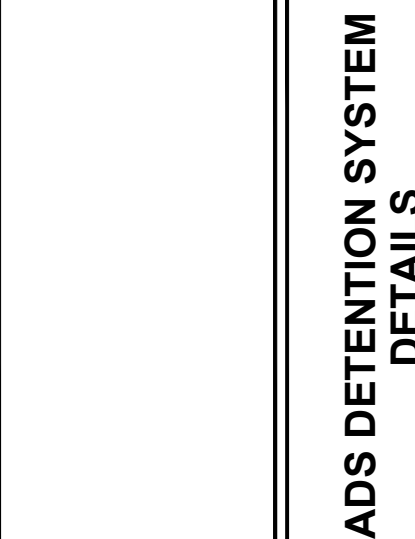
### 7 MC-SERIES END CAP INSERTION DETAIL



PROJECT NUMBER 21018

Bids/Permits	10.11.24
Site Plan-Engineering	08.21.24
Final Site Plan-Rev	11.08.23
Final Site Plan	09.08.23
Bids/Permits	08.04.23
WCWRC Resubmittal	01.13.23
Site Plan Reapproval	11.21.22
Site Plan Approval	09.22.22

DRN: JW CHK'D: JC

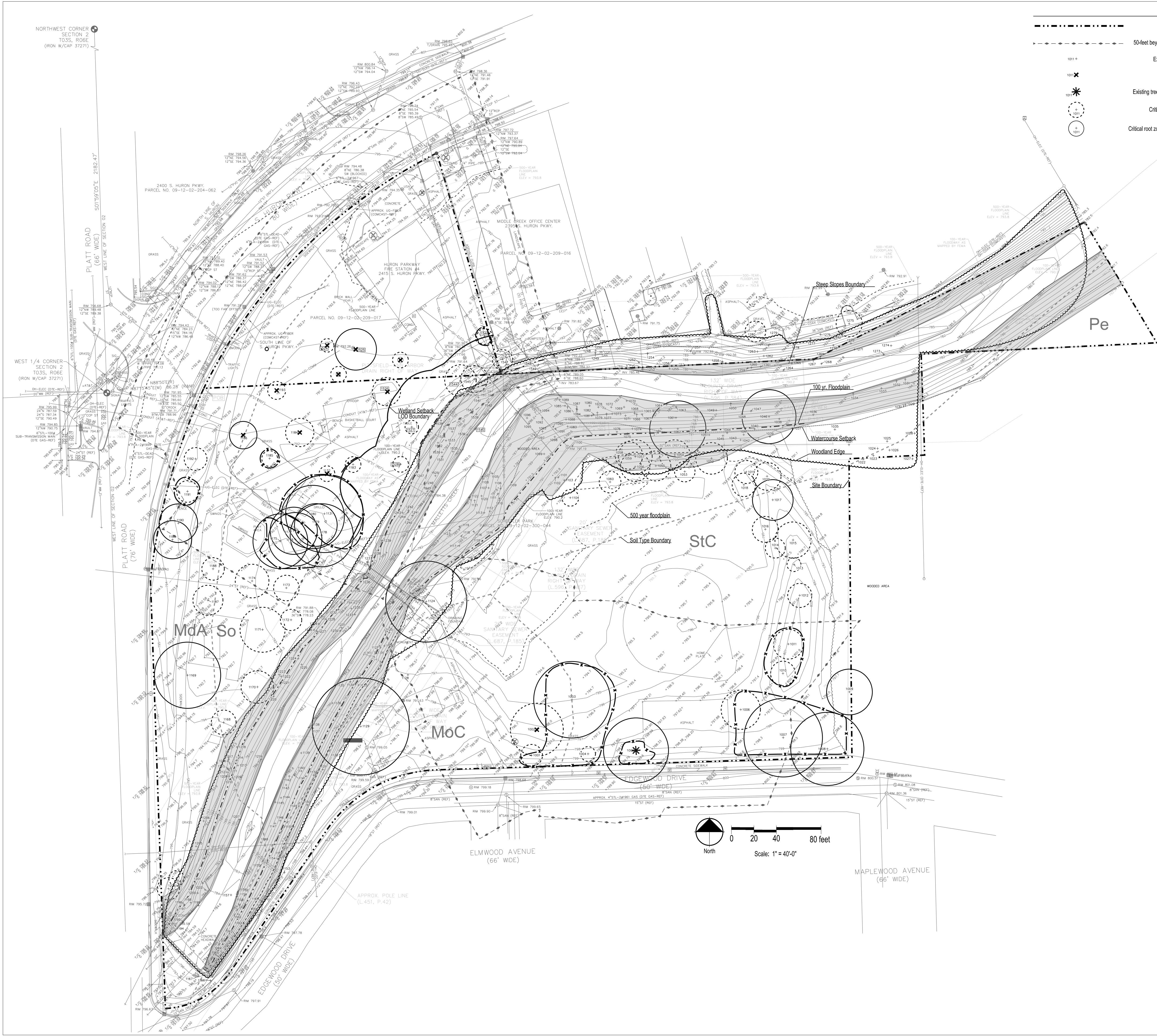


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C-8.3





Project boundary

50-feet beyond limits of soil disturbance

Existing tree in woodland area

Existing tree to be removed

Existing tree to remain, but mitigated for

Critical root zone of existing tree

Critical root zone of existing landmark tree

Tree protection fence

Woodland edge

Watercourse Setback

Steep Slopes

Wetland Setback

500 yr. Floodplain

Soil type boundary

100 yr. floodplain

NOTE: Refer to civil plans for elements not listed above.

WOODLAND DESCRIPTION

The site consists of 6.7 acres of land situated east of Platt Road/S. Huron Parkway and north of Edgewood Drive. The site has remained mostly open for park use while maintaining 1.68 acres of medium-quality woodland along the creek consisting of a mix between native and invasive tree/shrub species with weedy understory growth. Trees within the woodland consist of box elders, maples, elms, black walnuts, cottonwoods, willows, and oaks along with invasive shrubs such as common buckthorn, glossy buckthorn, and others. See L-3 for full list. The quality of the woodland increases as it progresses towards Redbud Nature Area to the east. The woodland has a basal area of 29,660 sqft, or .88 acres. Thus the woodland basal area ratio is .40 acre/acre.

MITIGATION SUMMARY

All mitigation for landmark and woodland tree removal shall be in the form of tree replacement on the site. Refer to sheet L-4 for the proposed mitigation program, including location and species of proposed mitigation plantings.

SOILS

According to the NRCS soil survey, the soils on site include:

- So - Sloan silt loam, 0 to 1 percent slopes
- MdA - Matherton Sandy Loam, 0 to 4 percent slopes
- Pe - Pewamo clay loam, 0 to 2 percent slopes
- StC - St. Clair clay loam, 6 to 12 percent slopes
- MoC - Morley loam, 6 to 12 percent slopes

STEEP SLOPES

Within the 6.7 acre site, 1.3 acres are classified as steep slopes, all of which fall within the woodland boundary and 100 yr. floodplain setbacks.

No proposed development is occurring within the steep slope boundary. A barrier fence will be installed at the limits of soil disturbance near steep sloped areas.

WATERCOURSES

According to the Huron Rivershed Water Council, "Malletts Creek is composed of 10 miles of opens streams, and it drains about 11 square miles of land. Several miles of the creek are disconnected from the main branch as they have been put underground into pipes. Malletts Creek flows into the 50 acre South Pond which then empties into the Huron River." This section of Malletts Creek is typical of an urban stream with banks that are incised and with bare soil from flashy rain events.

WETLAND REPORT

See the attached entire wetland report for more detailed information. From the report, "The existing wetland is a riparian forested and scrub-shrub wetland heavily influenced by the flow regime of Chalmers Drain (aka Malletts Creek), and by the poorly drained hydric soil complex that encompasses the Site.

Dominant vegetation found within the wetland include creeping bentgrass (agrostis stolonifera), glossy buckthorn (frangula alnus), green ash (fraxinus pennsylvanica), and eastern cottonwood (populus deltoides). Soils within the wetland were comprised of clayey silt loams considered hydric due to the presence of the hydric soil criteria of a sandy redox, and depleted matrix. Indicators of wetland hydrology observed within the wetland included water-stained leaves, oxidized microspores in living roots, geomorphic position, the FAC-neutral test, and potential evidence of spring saturation from aerial imagery.

Dominant vegetation observed within the upland adjacent to the wetland include creeping bentgrass agrostis stolonifera), common blackberry (rubus allegheniensis), white oak (quercus alba), chinquapin oak (quercus muhlenbergii), red pine (pinus resinosa), and Japanese honeysuckle (lonicera japonica). Soils in the upland adjacent to the wetland were also comprised of clayey silt loams, but did not exhibit indicators of hydric soils. At the time of the visits, no indicators of wetland hydrology were observed."

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T

C

A

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48105

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SHANNAN  
GIBB-RANDALL  
LANDSCAPE  
ARCHITECT  
NO. 3901001515

REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT

PROJECT NUMBER	21018
DATE	
BIDS/PERMITS	10.11.24
Final Site Plan	9.08.23
BIDS/PERMITS	8.04.23
Site Plan Resubmission	11.09.22
Site Plan Approval	09.22.22
DRN: JLS	CHKD: DFB

Ann Arbor Fire Station 4

Natural Features Plan

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COLLABORATIVE ARCHITECTURE

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L.01

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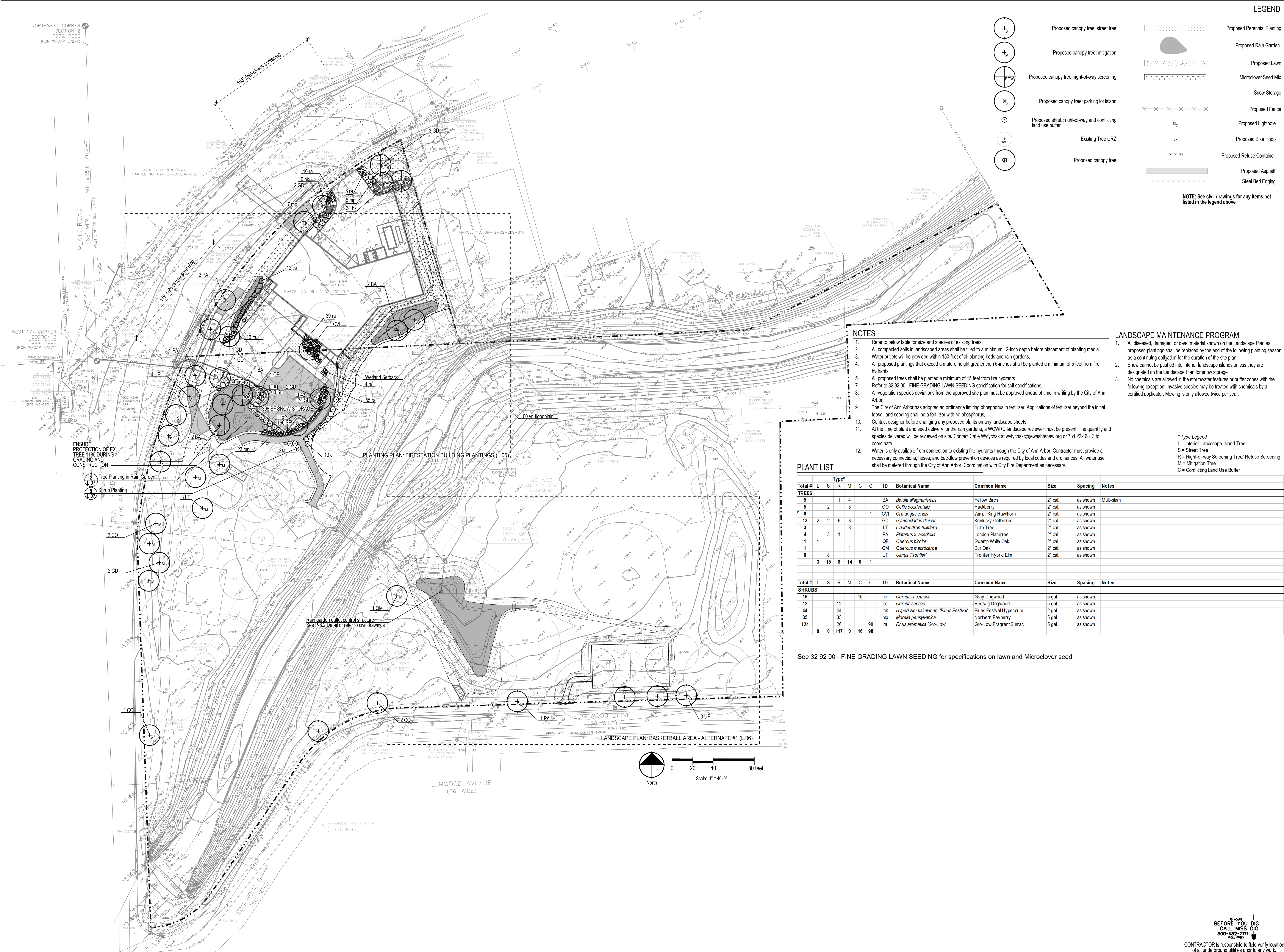




Key: LM = Landmark Tree, WL = Woodland Tree, M = Mitigate, T = Trunk, G = Growth Rate, S = Structure, D = Diseases, C = Crown dev., L = Life expect.															
TAG NO.	CODE	DBH	COMMON NAME	LATIN NAME	T	G	S	D	C	L	SCORE	LM	WL	REMOVE	M
1001	SU	6	Sugar Maple	Acer saccharum	5	5	5	5	4	5	29				
1002	BW	17	Black Walnut	Juglans nigra	5	5	5	5	4	5	28			Remove	
1003	SM	34	Silver Maple	Acer saccharinum	4	5	4	5	5	5	28	LM			
1004	DR	6	Dawn redwood	Metasequoia	4	4	5	5	5	5	28				
1005	BC	25	Wild Black Cherry	Prunus serotina	5	5	5	5	4	5	29		LM		M
1006	SC	17	Scotch Pine	Pinus sylvestris	4	4	5	5	4	5	27				
1007	BW	34	Black Walnut	Juglans nigra	5	5	5	5	4	5	28	LM			
1008	BW	32	Black Walnut	Juglans nigra	4	5	4	5	4	5	27	LM			
1009	BW	18	Black Walnut	Juglans nigra	5	5	5	5	4	5	27	LM			
1010	BS	9	Blue Spruce	Picea pungens	4	4	4	4	4	4	25				
1011	BS	11	Blue Spruce	Picea pungens	4	4	4	4	4	4	25				
1012	SU	10	Sugar Maple	Acer saccharum	5	5	5	5	5	5	30				
1013	WS	6	White Spruce	Picea glauca	4	5	5	5	5	5	29				
1014	CA	7	Crab Apple	Malus coronaria	4	4	4	5	4	5	26				
1015	RO	16	Red Oak	Quercus rubra	5	5	4	4	4	5	27	LM			
1016	WP	11	(Eastern) White Pine	Pinus strobus	5	5	5	5	4	5	29				
1017	BO	18	Black Oak	Quercus velutina	5	5	5	5	5	5	30	LM			
1018	WP	10	(Eastern) White Pine	Pinus strobus	5	5	5	5	5	5	30				
1019	SU	9	Sugar Maple	Acer saccharum	5	5	5	5	5	5	30				
1020	RO	12	Red Oak	Quercus rubra	5	5	4	5	4	5	28		WL		
1021	BX	6	Box elder	Acer negundo	4	4	3	5	4	5	25		WL		
1022	BX	6	Box elder	Acer negundo	4	4	4	5	4	5	26		WL		
1023	BX	7	Box elder	Acer negundo	4	4	3	5	3	5	24		WL		
1024	WS	11	White Spruce	Picea glauca	5	4	3	5	4	5	26		WL		
1025	BX	12	Box elder	Acer negundo	4	3	3	4	3	4	21		WL		
1026	BX	9	Box elder	Acer negundo	4	3	3	4	3	4	21		WL		
1027	BX	8	Box elder	Acer negundo	4	3	2	4	3	4	20		WL		
1028	BX	17	Box elder	Acer negundo	5	3	4	5	4	4	25		WL		
1029	BX	19	Box elder	Acer negundo	4	3	2	3	2	4	18		LM		
1030	BX	20	Box elder	Acer negundo	4	4	4	4	4	4	24	LM	WL		
1031	SM	8	Silver Maple	Acer saccharinum	4	3	3	4	2	5	21		WL		
1032	BX	12	Box elder	Acer negundo	4	4	3	4	3	4	22				
1033	CT	17	Cottonwood	Populus deltoides	5	4	4	4	4	5	26				
1034	SM	7	Silver Maple	Acer saccharinum	4	3	3	4	2	5	21		WL		
1035	BW	17	Black Walnut	Juglans nigra	5	4	4	4	5	5	27		WL		
1036	BX	13	Box elder	Acer negundo	4	4	4	5	4	5	26		WL		
1037	BX	8	Box elder	Acer negundo	4	4	3	4	3	4	22		WL		
1038	MW	7	White Mulberry	Morus alba	4	4	3	4	4	5	24		WL		
1039	BL	13	Black Locust	Robinia pseudoacacia	4	4	3	4	3	4	22				
1040	BL	14	Black Locust	Robinia pseudoacacia	4	3	3	4	3	4	21		WL		
1041	BL	10	Black Locust	Robinia pseudoacacia	4	3	3	4	3	4	21		WL		
1042	BX	6	Box elder	Acer negundo	4	4	4	4	3	4	23		WL		
1043	BX	6	Box elder	Acer negundo	4	4	4	4	4	4	24		WL		
1044	BW	15	Black Walnut	Juglans nigra	5	5	4	5	4	5	28				
1045	BX	6	Box elder	Acer negundo	4	4	3	4	3	4	22		WL		
1046	BX	24	Box elder	Acer negundo	4	3	3	4	3	4	21	LM		WL	
1047	SM	11	Silver Maple	Acer saccharinum	4	4	4	5	4	5	26		WL		
1048	SM	14	Silver Maple	Acer saccharinum	4	4	3	3	3	5	22		WL		
1049	BX	13	Box elder	Acer negundo	4	4	3	3	4	4	22				
1050	SM	15	Silver Maple	Acer saccharinum	4	3	3	3	3	5	21		WL		
1051	BL	10	Black Locust	Robinia pseudoacacia	4	3	3	3	3	4	20		WL		
1052	BO	14	Black Oak	Quercus velutina	5	4	4	5	4	5	27				
1053	RO	9	Red Oak	Quercus rubra	5	5	4	5	4	5	28				
1054	RP	13	Red Pine	Pinus resinosa	4	4	3	4	2	5	22		WL		
1055	BO	13	Black Oak	Quercus rubra	5	4	5	5	4	5	28		WL		
1056	SC	13	Scotch Pine	Pinus sylvestris	4	4	4	4	4	4	25		WL		
1057	SC	15	Scotch Pine	Pinus sylvestris	4	4	4	4	4	4	25		WL		
1058	BC	6	Wild Black Cherry	Prunus serotina	4	4	3	5	3	5	24		WL		
1059	RO	12	Red Oak	Quercus rubra	5	4	4	5	4	5	27		WL		
1060	BP	9	Bradford Pear	Pyrus calleryana	4	4	4	5	4	3	24				
1061	BX	6	Box elder	Acer negundo	3	4	3	4	3	4	21		WL		
1062	BL	25	Black Locust	Robinia pseudoacacia	4	3	3	4	4	4	22	LM			
1063	SM	23	Silver Maple	Acer saccharinum	4	4	3	5	3	5	24	LM	WL		
1064	BX	6	Box elder	Acer negundo	3	3	3	3	3	4	19		WL		
1065	SM	11	Silver Maple	Acer saccharinum	5	4	4	5	4	5	27				
1066	E	10	American Elm	Ulmus americana	4	4	3	5	4	5	25		WL		
1067	SM	6	Silver Maple	Acer saccharinum	5	4	4	5	3	5	26		WL		
1068	SM	10	Silver Maple	Acer saccharinum	4	3	4	5	3	5	24		WL		
1069	CT	13	Cottonwood	Populus deltoides	5	4	4	4	4	3	24		WL		
1070	SM	6	Silver Maple	Acer saccharinum	4	4	3	5	3	5	24		WL		
1071	SM	7	Silver Maple	Acer saccharinum	4	4	3	5	2	5	23		WL		
1072	CT	17	Cottonwood	Populus deltoides	4	4	3	5	3	4	23				
1073	CT	6	Cottonwood	Populus deltoides	4	3	3	5	2	4	21				
1074	BL	9	Black Locust	Robinia pseudoacacia	4	4	3	4	3	4	22		WL		
1075	BL	9	Black Locust	Robinia pseudoacacia	4	4	3	4	3	4	22		WL		
1076	BL	11	Black Locust	Robinia pseudoacacia	4	4	3	4	3	4	22		WL		
1077	CT	8	Cottonwood	Populus deltoides	4	3	3	4	2	4	20				
1078	EE	9	Siberian Elm	Ulmus pumila	4	2	1	4	1	4	16				
1079	SM	7	Silver Maple	Acer saccharinum	3	3	3	4	3	5	21		WL		
1080	SM	8	Silver Maple	Acer saccharinum	4	3	3	4	3	5	22		WL		
1081	CT	19	Cottonwood	Populus deltoides	4	4	4	5	4	4	25	LM			
1082	BWW	12	Black Willow	Salix nigra	4	3	3	5	4	4	23		WL		
1083	SM	6	Silver Maple	Acer saccharinum	4	4	4	4	2	5	23				
1084	BWW	13	Black Willow	Salix nigra	4	4	3	4	3	4	22		WL		
1085	BWW	10	Black Willow	Salix nigra	4	3	1	4	2	4	18		WL		
1086	BWW	11	Black Willow	Salix nigra	3	3	2	4	1	4	17		WL		
1087	CT	7	Cottonwood	Populus deltoides	4	4	3	4	2	4	21		WL		
1088	CT	7	Cottonwood	Populus deltoides	3	1	1	4	1	4	14				
1089	BWW	16	Black Willow	Salix nigra	4	3	2	4	3	4	20		WL		
1090	CT	15	Cottonwood	Populus deltoides	4	4	4	5	3	4	24				
1091	CT	19	Cottonwood	Populus deltoides	4	4	4	4	4	4	24	LM			
1092	SM	6	Silver Maple	Acer saccharum	4	3	3	4	2	5	21		WL		
1093	CT	10	Cottonwood	Populus deltoides	4	4	4	5	3	4	24		WL		
1094	BWW	6	Black Willow	Salix nigra	3	1	1	0	1	4	10				
1095	SM	10	Silver Maple	Acer saccharum	4	4	3	4	2	5	22		WL		
1096	SM	6	Silver Maple	Acer saccharum	4	4	3	4	2	5	22				
1097	CT	18	Cottonwood	Populus deltoides	4	4	4	5	3	4	24	LM		WL	
1098	BW	6	Black Walnut	Juglans nigra	5	4	4	5	4	5	27				
1099	BW	8	Black Walnut	Juglans nigra	4	4	4	5	4	5	26		WL		
1100	BW	10	Black Walnut	Juglans nigra	4	4	4	5	4	5	26				
1101	SC	10	Scotch Pine	Pinus sylvestris	3	3	2	4	2	4	18		WL		
1102	MW	7	White Mulberry	Morus alba	3	3	3	4	2	4	19		WL		
1103	SC	16	Scotch Pine	Pinus sylvestris	4	4	3	4	3	4	22		WL		
1104	BP	7	Bradford Pear	Pyrus calleryana	3	3	3	4	3	3	19				
1105	SM	11	Silver Maple	Acer saccharum	4	4	3	4	3	5	23		WL		
1106	CT	16	Cottonwood	Populus deltoides	5	4	4	5	4	4	26		WL		
1107	CT	17	Cottonwood	Populus deltoides	4	4	3	4	3	4	22		WL		
1108	SM	6	Silver Maple	Acer saccharum	4	3	3	4	2	5	21				
1109	E	9	American Elm	Ulmus americana	4	3	4	4	3	5	23		WL		
1110	BX	10	Box elder	Acer negundo	3	3	2	4	2	4	18		WL		
1111	BX	8	Box elder	Acer negundo	3	1	1	4	1	4	14		WL		
1112	BX	11</													

Key:	LM	Landmark Tree, WL = Woodland Tree, M = Mitigate, T = Trunk, G = Growth Rate, S = Structure, D = Diseases, C = Crown dev., L = Life expect.													
1113	BX	6	Box elder	Acer negundo	4	3	3	4	2	4	20		WL		
1114	BX	13	Box elder	Acer negundo	4	3	3	4	3	4	21		WL		
1115	E	11	American Elm	Ulmus americana	4	3	3	4	3	4	21		WL		
1116	BX	7	Box elder	Acer negundo	3	3	2	4	2	4	18		WL		
1117	BW	10	Black Walnut	Juglans nigra	4	4	3	4	3	5	23		WL		
1118	BWW	10	Black Willow	Salix nigra	4	3	3	4	3	4	21		WL		
1119	AS	16	Quaking Aspen	Populus tremuloides	3	1	1	5	1	4	15		WL		
1120	CT	12	Cottonwood	Populus deltoides	4	3	4	4	2	4	21		WL		
1121	BWW	14	Black Willow	Salix nigra	3	2	2	4	1	4	16		WL		
1122	BWW	14	Black Willow	Salix nigra	3	2	2	4	1	4	16		WL		
1123	SM	7	Silver Maple	Acer saccharinum	4	3	4	2	5	2	21		WL		
1124	WO	36	White Oak	Quercus alba	4	4	4	5	4	5	26	LM	WL		
1125	BR	6	Bur oak	Quercus macrocarpa	4	4	4	5	4	5	26		WL		
1126	BR	6	Bur oak	Quercus macrocarpa	4	4	4	5	4	5	26		WL		
1127	NM	6	Norway Maple	Acer platanoides	5	4	4	5	4	5	27		WL		
1128	ER	6	Eastern Redbud	Cercis canadensis	4	4	4	5	4	4	25		WL		
1129	WO	29	White Oak	Quercus alba	4	3	4	5	3	5	23	LM			
1130	NM	10	Norway Maple	Acer platanoides	5	4	4	5	5	5	28			WL	
1131	E	6	American Elm	Ulmus americana	4	3	4	5	3	4	23				
1132	BC	6	Wild Black Cherry	Prunus serotina	4	4	4	5	4	5	25				Remove
1133	NM	8	Norway Maple	Acer platanoides	4	4	4	5	4	5	25		WL		
1134	NM	9	Norway Maple	Acer platanoides	4	4	4	5	4	5	27		WL		
1135	SM	6	Silver Maple	Acer saccharinum	1	1	1	4	1	3	11		WL		
1136	E	9	American Elm	Ulmus americana	4	4	4	2	4	2	22		WL		
1137	CT	10	Cottonwood	Populus deltoides	4	3	4	4	3	4	21		WL		
1138	C	10	Catalpa	Catalpa speciosa	3	4	3	4	3	4	22		WL		
1139	BWW	10	Black Willow	Salix nigra	3	4	3	4	3	4	21		WL		
1140	CT	7	Cottonwood	Populus deltoides	4	4	3	3	4	4	22		WL		
1141	E	8	American Elm	Ulmus americana	3	4	3	3	3	4	20		WL		
1142	CT	12	Cottonwood	Populus deltoides	4	3	2	4	1	4	18		WL		
1143	CT	7	Cottonwood	Populus deltoides	3	3	3	4	2	4	19		WL		
1144	E	7	American Elm	Ulmus americana	3	3	3	4	3	4	21		WL		
1145	SM	6	Silver Maple	Acer saccharinum	4	4	5	4	5	5	25		WL		
1146	CT	9	Cottonwood	Populus deltoides	4	3	2	4	2	4	19		WL		
1147	E	8	American Elm	Ulmus americana	4	4	4	4	4	4	24		WL		
1148	BWW	16	Black Willow	Salix nigra	3	3	2	4	2	3	17		WL		
1149	BWW	6	Black Willow	Salix nigra	4	4	4	4	4	4	23		WL		
1150	BC	6	Wild Black Cherry	Prunus serotina	1	1	1	3	1	3	10		WL		
1151	BW	6	Black Walnut	Juglans nigra	4	4	4	4	4	5	25		WL		
1152	NM	8	Norway Maple	Acer platanoides	4	4	4	4	4	5	25		WL		
1153	EE	11	Siberian Elm	Ulmus pumila	4	3	3	4	3	4	21		WL		
1154	SM	7	Silver Maple	Acer saccharinum	4	3	3	4	3	5	22		WL		
1155	E	6	American Elm	Ulmus americana	3	3	3	4	3	4	20		WL		
1156	BX	6	Box elder	Acer negundo	3	3	2	4	2	4	18		WL		
1157	BWW	14	Black Willow	Salix nigra	4	3	3	3	2	4	19		WL		
1158	CT	6	Cottonwood	Populus deltoides	3	3	3	3	3	4	19		WL		
1159	BWW	15	Black Willow	Salix nigra	3	3	2	2	3	3	16		WL		
1160	EE	7	Siberian Elm	Ulmus pumila	4	4	3	3	3	4	21		WL		
1161	BW	11	Black Walnut	Juglans nigra	4	4	4	5	3	5	25		WL		
1162	MW	14	White Mulberry	Morus alba	4	3	3	4	4	4	22		WL		
1163	E	6	American Elm	Ulmus americana	4	3	3	3	3	4	21		WL		
1164	BW	6	Black Walnut	Juglans nigra	4	3	3	3	3	5	22		WL		
1165	SM	8	Silver Maple	Acer saccharinum	3	3	2	4	2	4	18		WL		
1166	E	12	American Elm	Ulmus americana	4	3	4	3	3	4	21		WL		
1167	BW	8	Black Walnut	Juglans nigra	4	4	4	4	4	5	25		WL		
1168	RO	10	Red Oak	Quercus rubra	5	4	4	5	4	5	27			LM	
1169	BW	29	Black Walnut	Juglans nigra	4	4	3	3	5	5	23				
1170	BO	11	Black Oak	Quercus velutina	4	4	4	4	4	5	26				
1171	SU	13	Sugar Maple	Acer saccharum	4	4	4	4	4	5	25				
1172	RO	7	Red Oak	Quercus rubra	4	4	4	5	4	5	26				
1173	SU	10	Sugar Maple	Acer saccharum	4	4	4	4	4	5	25				
1174	BO	15	Black Oak	Quercus velutina	5	4	4	4	4	5	26				
1175	SM	24	Silver Maple	Acer saccharinum	4	4	4	4	3	5	23	LM			
1176	SM	23	Silver Maple	Acer saccharinum	4	4	3	3	3	5	23	LM			
1177	SM	21	Silver Maple	Acer saccharinum	4	4	4	4	3	5	24	LM			
1178	SM	28	Silver Maple	Acer saccharinum	4	4	4	4	3	5	24	LM			
1179	SM	19	Silver Maple	Acer saccharinum	4	4	4	4	3	5	24	LM			
1180	SM	28	Silver Maple	Acer saccharinum	4	4	4	4	4	5	25	LM			
1181	SM	34	Silver Maple	Acer saccharinum	4	4	4	4	4	5	25	LM	WL		
1182	SWO	7	Swamp White Oak	Quercus bicolor	4	4	4	4	4	5	24			Remove	
1183	SWO	7	Swamp White Oak	Quercus bicolor	4	4	4	4	3	5	24				
1184	S	13	Sycamore	Platanus occidentalis	3	4	4	4	4	4	25			Remove	
1185	SWO	7	Swamp White Oak	Quercus bicolor	4	4	4	4	4	5	24				
1186	FC	12	Flowering Cherry	Prunus spp.	4	4	4	5	4	5	26	LM		Remove	M
1187	SWO	7	Swamp White Oak	Quercus bicolor	4	4	4	4	4	5	25				
1188	SU	10	Sugar Maple	Acer saccharum	3	3	4	3	3	5	22				
1189	CA	15	Crab Apple	Malus coronaria	3	3	3	4	3	4	20	LM			
1190	CA	15	Crab Apple	Malus coronaria	3	3	3	3	3	4	19	LM			
1191	CA	9	Crab Apple	Malus coronaria	3	3	3	4	3	4	20				
1192	CA	10	Crab Apple	Malus coronaria	3	3	3	3	3	4	20			Remove	
1193	RM	8	Red Maple	Acer rubrum	4	4	4	4	5	5	26			Remove	
1194	E	7	American Elm	Ulmus americana	4	4	3	4	3	4	22		WL		
1195	EE	8	Siberian Elm	Ulmus pumila	3	3	3	3	3	4	20		WL		
1196	EE	11	Siberian Elm	Ulmus pumila	4	3	2	4	3	4	20		WL		
1197	E	6	American Elm	Ulmus americana	4	3	2	4	2	4	19		WL		
1198	E	6	American Elm	Ulmus americana	4	3	3	4	2	4	20		WL		
1199	CT	11	Cottonwood	Populus deltoides	4	3	3	4	3	4	21		WL		
1200	EE	7	Siberian Elm	Ulmus pumila	3	4	3	3	3	4	21		WL		
1201	CT	10	Cottonwood	Populus deltoides	4	3	3	4	3	4	21		WL		
1202	E	6	American Elm	Ulmus americana	4	4	4	4	3	4	23		WL		
1203	BW	9	Black Walnut	Juglans nigra	4	4	3	3	3	5	23		WL		
1204	EE	6	Siberian Elm	Ulmus pumila	4	3	2	4	2	4	19		WL		
1205	BW	8	Black Walnut	Juglans nigra	4	4	4	4	4	5	25		WL		
1206	EE	7	Siberian Elm	Ulmus pumila	4	3	3	3	3	5	22		WL		
1207	CT	10	Cottonwood	Populus deltoides	4	4	4	4	3	4	23		WL		
1208	BW	6	Black Walnut	Juglans nigra	4	3	3	3	3	5	22		WL		
1209	BW	6	Black Walnut	Juglans nigra	4	4	4	4	3	5	24		WL		
1210	BW	8	Black Walnut	Juglans nigra	4	4	4	3	3	5	24		WL		
1211	BW	7	Black Walnut	Juglans nigra	4	4	4	4	4	5	25		WL		
1212	EE	8	Siberian Elm	Ulmus pumila	4	4	3	3	3	4	22		WL		
1213	BW	6	Black Walnut	Juglans nigra	4	3	3	3	3	5	22		WL		
1214	BW	7	Black Walnut	Juglans nigra	4	3	3	3	3	5	22		WL		
1215	BW	8	Black Walnut	Juglans nigra	4	4	4	4	4	5	25		WL		
1216	EE	8	Siberian Elm	Ulmus pumila	2	3	2	4	2	4	17		WL		
1217	EE	7	Siberian Elm	Ulmus pumila	4	3	3	4	3	4	21		WL		
1218	EE	7	Siberian Elm	Ulmus pumila	4	3	3	4	3	4	21		WL		
1219	E	8	American Elm	Ulmus americana	4	3	2	4	2	4	19		WL		
1220	BW	7	Black Walnut	Juglans nigra	4	4	3	4	3	5	23		WL		
1221	EE	7	Siberian Elm	Ulmus pumila	4	4	3	4	3	4	21		WL		
1222	BW	6	Black Walnut	Juglans nigra	4	3	3	3	3	5	21		WL		
1223	BW	9	Black Walnut	Juglans nigra	4	4	4	4	4	5	26		WL		
1224	EE	19	Siberian Elm	Ulmus pumila	4	4	3	4	3	4	22	LM			
1225	TH	7	Thornapple/Hawthorne	Crataegus spp.	3	3	3	4	3	4	20		WL		
1226	BR	8	Bur oak	Quercus macrocarpa	4	4	4	4	4	5	24		WL		





LEGEND

- Proposed canopy tree: street tree
- Proposed canopy tree: mitigation
- Proposed canopy tree: right-of-way screening
- Proposed canopy tree: parking lot island
- Proposed shrub: right-of-way and conflicting land use buffer
- Existing Tree CRZ
- Proposed canopy tree
- Proposed Perennial Planting
- Proposed Rain Garden
- Proposed Lawn
- Microclover Seed Mix
- Snow Storage
- Proposed Fence
- Proposed Lightpole
- Proposed Bike Hoop
- Proposed Refuse Container
- Proposed Asphalt
- Steel Bed Edging

NOTE: See civil drawings for any items not listed in the legend above

NOTES

- Refer to below table for size and species of existing trees.
- All compacted soils in landscaped areas shall be tilled to a minimum 12-inch depth before placement of planting media.
- Water outlets will be provided within 150-feet of all planting beds and rain gardens.
- All proposed plantings that exceed a mature height greater than 6-inches shall be planted a minimum of 5 feet from fire hydrants.
- All proposed trees shall be planted a minimum of 15 feet from fire hydrants.
- Refer to 32 92 00 - FINE GRADING LAWN SEEDING specification for soil specifications.
- All vegetation species deviations from the approved site plan must be approved ahead of time in writing by the City of Ann Arbor.
- The City of Ann Arbor has adopted an ordinance limiting phosphorus in fertilizer. Applications of fertilizer beyond the initial topsoil and seeding shall be a fertilizer with no phosphorus.
- Contact designer before changing any proposed plants on any landscape sheets
- At the time of plant and seed delivery for the rain gardens, a WQVRC landscape reviewer must be present. The quantity and species delivered will be reviewed on site. Contact Katie Wytychak at wytychako@ewashtenaw.org or 734.222.6813 to coordinate.
- Water is only available from connection to existing fire hydrants through the City of Ann Arbor. Contractor must provide all necessary connections, hoses, and backflow prevention devices as required by local codes and ordinances. All water use shall be metered through the City of Ann Arbor. Coordination with City Fire Department as necessary.

PLANT LIST

Type*										ID	Botanical Name	Common Name	Size	Spacing	Notes
Total #	L	S	R	M	C	O									
TREES															
5			1	4						BA	<i>Betula alleghaniensis</i>	Yellow Birch	2" cal.	as shown	Multi-stem
5	2			3						CO	<i>Celtis occidentalis</i>	Hackberry	2" cal.	as shown	
0							1			CVI	<i>Crataegus viridis</i>	Winter King Hawthorn	2" cal.	as shown	
13	2	2	6	3						GD	<i>Gymnocladus dioica</i>	Kentucky Coffeetree	2" cal.	as shown	
3								3		LT	<i>Liriodendron tulipifera</i>	Tulip Tree	2" cal.	as shown	
4	3	1								PA	<i>Platanus x. acerifolia</i>	London Planetree	2" cal.	as shown	
1										QB	<i>Quercus bicolor</i>	Swamp White Oak	2" cal.	as shown	
1					1					QM	<i>Quercus macrocarpa</i>	Bur Oak	2" cal.	as shown	
8		8								UF	<i>Ulmus 'Frontier'</i>	Frontier Hybrid Elm	2" cal.	as shown	
3	15	8	14	0	1										
SHRUBS															
16					16					cr	<i>Cornus racemosa</i>	Gray Dogwood	5 gal.	as shown	
12										cs	<i>Cornus sericea</i>	Redtwig Dogwood	5 gal.	as shown	
44										hk	<i>Hypericum kalmianum</i> 'Blues Festival'	Blues Festival Hypericum	2 gal.	as shown	
35										rnp	<i>Morella pensylvanica</i>	Northern Bayberry	5 gal.	as shown	
124										ra	<i>Rhus aromatica</i> 'Gro-Low'	Gro-Low Fragrant Sumac	5 gal.	as shown	
0	0	117	0	16	98										

\* Type Legend  
L = Interior Landscape Island Tree  
S = Street Tree  
R = Right-of-way Screening Tree/ Refuse Screening  
M = Mitigation Tree  
C = Conflicting Land Use Buffer

See 32 92 00 - FINE GRADING LAWN SEEDING for specifications on lawn and Microclover seed.

T C A

ARCHITECTURE + PLANNING + DESIGN

IN SITE

InSite Design Studio, Inc.

412 Longshore Drive  
Ann Arbor, Michigan  
48105

Phone: 734.995.4194  
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SHANNAN  
GIBB-RANDALL  
LANDSCAPE  
ARCHITECT  
NO. 3901001515

REGISTERED LANDSCAPE ARCHITECT

PROJECT  
NUMBER

21018

BIDS/PERMITS  
Final Site Plan

10.11.24  
9.08.23

BIDS/PERMITS  
Site Plan Resubmission

8.04.23  
11.09.22

BIDS/PERMITS  
Site Plan Approval

09.22.22

DRN: JLS

CHKD: DFB

Ann Arbor Fire Station 4

Overall Landscape: Tree, Shrub, and  
Seeding Plan

A 3 C

COLLABORATIVE ARCHITECTURE

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CONTRACTOR is responsible to field verify location  
of all underground utilities prior to any work.

SHEET

L.04

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LANDSCAPE NOTES

- 1.Refer to sheet L-4 for size and species of proposed trees.  
2.All compacted soils in landscaped areas shall be tilled to a minimum 12-inch depth before placement of planting media.  
3.Water outlets will be provided within 150-feet of all required plantings except those in detention basin 1 (L.06).  
4. All proposed plantings that exceed a mature height greater than 6-inches shall be planted a minimum of 5 feet from fire hydrants.  
5.All proposed trees shall be planted a minimum of 15 feet from fire hydrants.  
6.Developer reserves the right to shift tree planting locations if water main connection is installed to the south.  
7.Refer to 32.92.00 - FINE GRADING LAWN SEEDING specification for soil specifications.  
8.All vegetation species deviations from the approved site plan must be approved ahead of time in writing by the City of Ann Arbor.  
9.The City of Ann Arbor has adopted an ordinance limiting phosphorus in fertilizer. Applications of fertilizer beyond the initial topsoil and seeding shall be a fertilizer with no phosphorus.  
10. At the time of plant and seed delivery for rain gardens, a WCWRC landscape reviewer must be present. The quantity and species delivered will be reviewed on site. Contact Catie Wytychak at wytychako@washtenaw.org or 734.222.6813 to coordinate.  
11. Water is only available from connection to existing fire hydrants through the City of Ann Arbor. Contractor must provide all necessary connections, hoses, and backflow prevention devices as required by local codes and ordinances. All water use shall be metered through the City of Ann Arbor. Coordination with City Fire Department as necessary.

LANDSCAPE MAINTENANCE PROGRAM

1. All diseased, damaged, or dead material shown on the Landscape Plan as proposed plantings shall be replaced by the end of the following planting season as a continuing obligation for the duration of the site plan.  
2. Snow cannot be pushed into interior landscape islands unless they are designated on the Landscape Plan for snow storage.  
3. No chemicals are allowed in the stormwater features or buffer zones with the following exception: invasive species may be treated with chemicals by a certified applicator. Mowing is only allowed twice per year.

Plant Schedule - Basketball Court Rain Garden					
Perennials and Bulbs					
Key	Qty	Botanical Name	Common Name	Spacing	Size
ba	19	Baptisia australis	Blue False Indigo	36" o.c.	#1 cont
ls	46	Liatris spicata	Dense Blazing Star	See drawing	plug
hm	7	Heracleum maximum	Cow Parsnip	See drawing	plug
Mix 01					
Key	Qty	Botanical Name	Common Name	Spacing	Size
ep	34	Echinacea purpurea	Purple Coneflower	24" o.c.	plug
mc	34	Molinia caerulea 'Poul Petersen'	Moor Grass 'Poul Petersen'	24" o.c.	#1 cont
st	34	Silphium terebinthinaceum	Praine Dock	24" o.c.	plug
Mix 02					
Key	Qty	Botanical Name	Common Name	Spacing	Size
fr	62	Fragaria virginiana	Wild Strawberry	36" o.c.	plug
mf	65	Monarda feulosa	Wild Bergamot	24" o.c.	plug
rh	65	Silphium terebinthinaceum	Praine Dock	24" o.c.	plug
Mix 03					
Key	Qty	Botanical Name	Common Name	Spacing	Size
mc	54	Molinia caerulea 'Poul Petersen'	Moor Grass 'Poul Petersen'	30" o.c.	#1 cont
mv	75	Melanthium virginicum	Bunchflower Lily	18" o.c.	plug
vh	75	Verbena hastata	blue Vervain	18" o.c.	plug
Mix 04					
Key	Qty	Botanical Name	Common Name	Spacing	Size
ag	26	Andropogon gerardii	Big Bluestem	24" o.c.	#1 cont
ey	26	Eryngium yuccifolium	Rattlesnake Master	24" o.c.	plug
rs	26	Rudbeckia subtomentosa	Sweet Coneflower	24" o.c.	plug
Mix 05					
Key	Qty	Botanical Name	Common Name	Spacing	Size
ca	691	Carex albicans	Whitetripe Sedge	12" o.c.	plug
er	87	Eupatorium rugosum	White Snakeroot	24" o.c.	plug
ic	87	Iris cristata	Crested Iris	24" o.c.	plug
Mix 06					
Key	Qty	Botanical Name	Common Name	Spacing	Size
dc	106	Deschampsia cespitosa 'Goldau'	Gold Dew Tufted Hair Grass	18" o.c.	#1 cont
ls	106	Lobelia siphilica	Great Blue Lobelia	18" o.c.	plug
Mix 07					
Key	Qty	Botanical Name	Common Name	Spacing	Size
ep	77	Eupatorium perfoliatum	Boneset	24" o.c.	plug
pv	77	Panicum virgatum	Switchgrass	24" o.c.	#1 cont
vv	77	Veronicastrum virginicum	Culver's Root	24" o.c.	plug

