



SOURCE: USGS ONLINE MAPPER

LOCATION MAP

SCALE: 1" = 2,000'±



SOURCE: GOOGLE EARTH PRO

AERIAL MAP

SCALE: 1" = 150'±

SITE DEVELOPMENT PLANS

FOR



PROPOSED CAR WASH

PARCEL ID: 15-30-302-031

2737 SOUTH ADAMS ROAD

CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

With the condition of a variance being granted by the City Council for the reduced front yard setback.

JNRNB2022-0012
PSP2023-0012
Revision #6
Received 8/24/2023

City of Rochester Hills Planning & Economic Development

OWNER
ROSE GROVE, LLC

APPLICANT
EROP, LLC
3130 NORTH KANDY LANE
DECATUR, ILLINOIS 62526
217-972-4296
JEFFJ@HYPERSHINECW.COM

ARCHITECT
REB ARCHITECTS
103 WIND HAVEN DR. SUITE 101
NICHOLASVILLE, KENTUCKY 40356
859-523-1500
BBYRGE@REBARCH.COM

Site Plan Review		
Reviewed for compliance with City Ordinance, Building and Fire Codes Conditions and mark-ups noted throughout plan set must be addressed prior to final approval		
Department	Reviewer	Approved
Assessing	Assessing	Yes
Building	Mark Artinian 248-841-2446 ArtinianM@RochesterHills.org	Yes
Engineering - Utilities	Jason Boughton 248-841-2490 BoughtonJ@RochesterHills.org	Yes
Engineering Legal	Jenny McGuckin 248-841-2494 mcguckinj@rochesterhills.org	YES
Fire	Lt. Walter Murphy 248-841-2712 MurphyW@RochesterHills.org	Yes
Natural Resources	Matt Einheuser 248-841-2551 EinheuserM@RochesterHills.org	Yes
Planning	Chris McLeod 248-841-2572 mcleodc@RochesterHills.org	Yes
Traffic	Keith Depp 248-841-2503 DeppK@RochesterHills.org	Yes

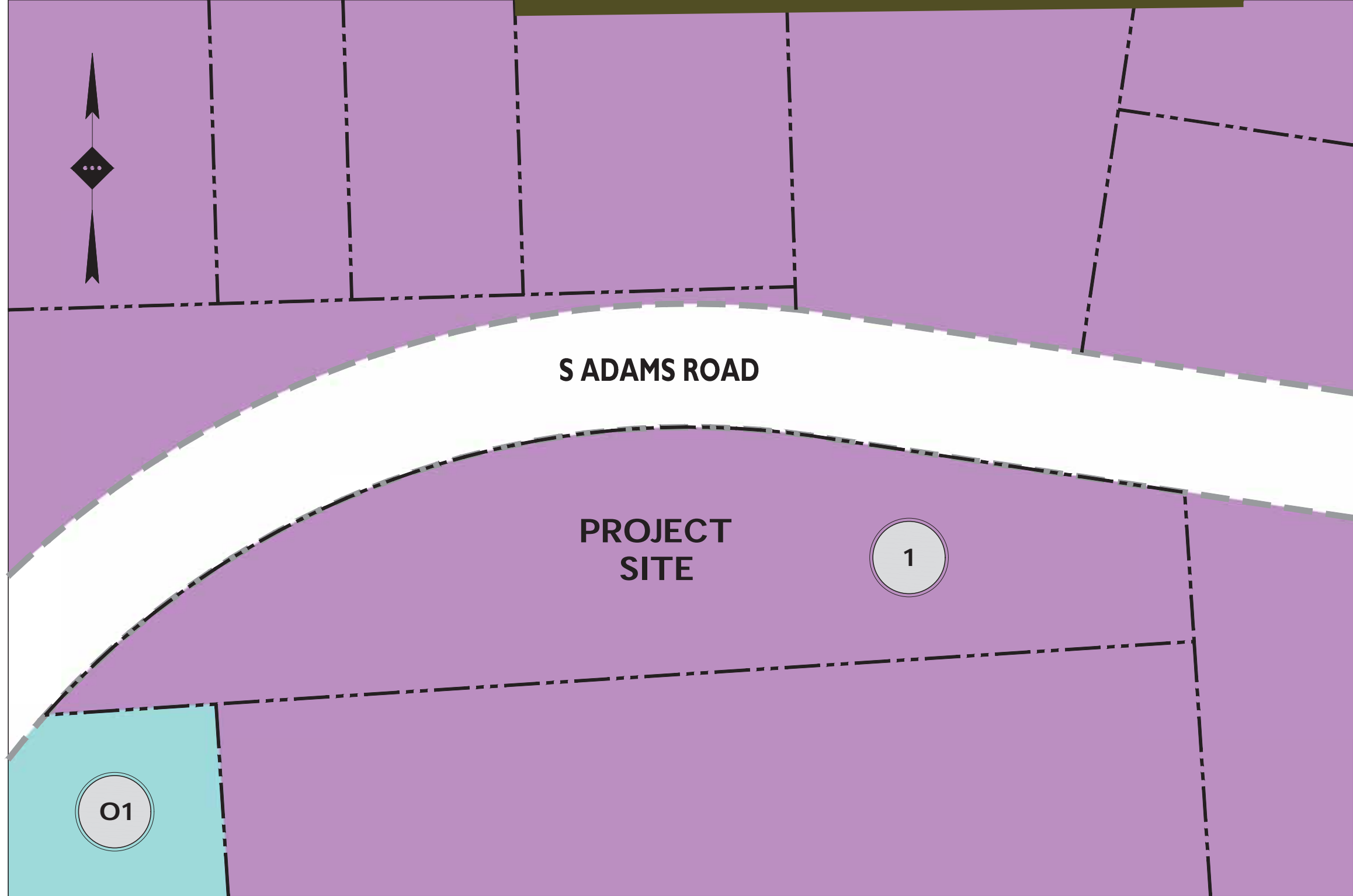
With condition that the cross walk location and Pathway extension is addressed prior to construction plan approval and final Pathway/cross walk location is reflected on the final Site Plan.

ISSUE	DATE	BY	DESCRIPTION
7	08/22/2023	EM	RESUBMISSION FOR CITY COUNCIL APPROVAL
6	08/11/2023	EM	STORM SEWER PROFILES
5	07/27/2023	EMRC	SUBMISSION FOR LAND IMPROVEMENT PERMIT
4	06/30/2023	EMRC	RESUBMISSION FOR CITY COUNCIL APPROVAL
3	05/05/2023	EMRC	RESUBMISSION FOR CITY COUNCIL APPROVAL
2	03/31/2023	EMRC	RESUBMISSION FOR CITY COUNCIL APPROVAL
1	02/16/2023	EMRC	RESUBMISSION FOR CITY COUNCIL APPROVAL

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SOURCE: CITY OF ROCHESTER HILLS ZONING MAP

ZONING MAP

SCALE: 1" = 100'±

ZONING KEY

- I- INDUSTRIAL
- O1 - OFFICE

PLAN REFERENCE MATERIALS:

1. THIS PLAN SET REFERENCES THE FOLLOWING DOCUMENTS INCLUDING, BUT NOT LIMITED TO:
 - ALTA / NSPS LAND TITLE SURVEY PREPARED BY KEM-TEC & ASSOCIATES DATED 03/24/2023
 - ARCHITECTURAL PLANS PREPARED BY REB ARCHITECTS DATED 03/28/2023
 - GEOTECHNICAL REPORT COMPLETED BY G2 CONSULTING GROUP DATED 02/05/2023
 - PHASE I ENVIRONMENTAL REPORT BY G2 CONSULTING GROUP DATED 12/06/2022
 - PHASE II ENVIRONMENTAL REPORT BY G2 CONSULTING GROUP DATED 01/31/2023
 - AERIAL MAP OBTAINED FROM GOOGLE EARTH PRO 01/24/2022
 - LOCATION MAP OBTAINED FROM USGS ONLINE MAPPER 01/24/2023
2. ALL REFERENCE MATERIAL LISTED ABOVE SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THESE MATERIALS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF EACH REFERENCE AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.



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PLANS PREPARED BY:

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ADDITIONAL SHEETS	
DRAWING TITLE	SHEET #
ALTA / NSPS LAND TITLE SURVEY	1 OF 1
CITY WATER MAIN STANDARD DETAILS	1 OF 3
CITY WATER MAIN STANDARD DETAILS	2 OF 3
CITY WATER MAIN STANDARD DETAILS	3 OF 3
CITY SANITARY SEWER STANDARD DETAILS	1 OF 2
CITY SANITARY SEWER STANDARD DETAILS	2 OF 2
CITY STORM SYSTEM STANDARD DETAILS	1 OF 1
OAKLAND COUNTY WRC SESC DETAILS	1 OF 1

SHEET INDEX	
DRAWING TITLE	SHEET #
COVER SHEET	C-1
DEMOLITION PLAN	C-2
SITE PLAN	C-3
GRADING PLAN	C-4
STORMWATER MANAGEMENT PLAN	C-5
STORMWATER DRAINAGE AREAS	C-6
UTILITY PLAN	C-7
FIRE PROTECTION PLAN	C-8
LIGHTING PLAN	C-9
SOIL EROSION & SEDIMENT CONTROL PLAN	C-10
LANDSCAPING PLAN	C-11
LANDSCAPING DETAILS	C-12
CONSTRUCTION DETAILS	C-13 TO C-18
SIGHT DISTANCE PLAN	C-19

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

STONEFIELD
engineering & design

CITY FILE #22-043 SECTION #30
SCALE: AS SHOWN PROJECT ID: DET-220436

TITLE:
COVER SHEET

DRAWING:
C-1

The applicant needs to submit a Land Improvement Permit (LIP) application with engineer's estimate, fee and construction plans to proceed with the construction plan review process.

TREE INVENTORY SCHEDULE (*)					
KEY	SIZE	BOTANICAL NAME	COMMON NAME	REGULATED ⁽¹⁾ / SPECIMEN ⁽²⁾	RECOMMENDATION
#9109	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9110	8" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9111	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9112	8" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9113	8" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9114	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9115	6", 4" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9116	6", 5" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9117	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9118	7", 6", 5" D.B.H.	ACER NEGUNDO	BOXELDER	REGULATED	TO BE REMOVED
#9119	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9121	10", 5", 5" D.B.H.	ACER NEGUNDO	BOXELDER	REGULATED	TO BE SAVED
#9122	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9123	10" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9124	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9125	6", 11" D.B.H.	ACER NEGUNDO	BOXELDER	REGULATED	TO BE SAVED
#9126	7" D.B.H.	JUGLANS SPP.	WALNUT	REGULATED	TO BE SAVED
#9127	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9128	7", 7" D.B.H.	ACER NEGUNDO	BOXELDER	REGULATED	TO BE SAVED
#9133	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9134	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9135	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9136	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9137	7", 7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9138	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9139	8", 4" D.B.H.	ROBINIA PSEUDOACACIA	BLACK LOCUST	REGULATED	TO BE REMOVED
#9140	14", 13" D.B.H.	ROBINIA PSEUDOACACIA	BLACK LOCUST	REGULATED	TO BE REMOVED
#9141	7" D.B.H.	ROBINIA PSEUDOACACIA	BLACK LOCUST	REGULATED	TO BE REMOVED
#9142	7", 5" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9143	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9144	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9145	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9146	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9147	7" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9148	8" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9149	10" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE REMOVED
#9150	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9151	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9152	8" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9153	6" D.B.H.	AILANTHUS ALTISSIMA	TREE OF HEAVEN	REGULATED	TO BE SAVED
#9154	5" D.B.H.	ULMUS PUMILA	SIBERIAN ELM	NOT REGULATED	TO BE SAVED
#9155	6" D.B.H.	ULMUS PUMILA	SIBERIAN ELM	REGULATED	TO BE SAVED
#9156	6", 5" D.B.H.	PRUNUS SYLVESTRIS	SCOTCH PINE	REGULATED	TO BE SAVED
#9157	7" D.B.H.	PRUNUS SEROTINA	BLACK CHERRY	REGULATED	TO BE SAVED
#9158	6" D.B.H.	PRUNUS SEROTINA	BLACK CHERRY	REGULATED	TO BE SAVED
#9159	7" D.B.H.	PRUNUS SEROTINA	BLACK CHERRY	REGULATED	TO BE SAVED
#9160	13", 9" D.B.H.	ACER NEGUNDO	BOXELDER	REGULATED	TO BE SAVED
#9162	27" D.B.H.	ULMUS PUMILA	SIBERIAN ELM	SPECIMEN	TO BE SAVED
#9163	8" D.B.H.	MORUS SPP.	MULBERRY	REGULATED	TO BE SAVED
#9164	10" D.B.H.	ULMUS PUMILA	SIBERIAN ELM	REGULATED	TO BE SAVED
#9165	17", 7" D.B.H.	MORUS SPP.	MULBERRY	REGULATED	TO BE SAVED
#9166	28" D.B.H.	ULMUS PUMILA	SIBERIAN ELM	SPECIMEN	TO BE SAVED
#9167	8" D.B.H.	ULMUS PUMILA	SIBERIAN ELM	REGULATED	TO BE SAVED

TOTAL REGULATED TREES TO BE REMOVED = 19 TREES
 TOTAL REGULATED TREES TO BE SAVED = 31 TREES
 TOTAL SPECIMEN TREES TO BE SAVED = 2 TREES

- (*) TREE INVENTORY WAS COMPLETED ON 12/02/2022, REVISED ON 02/13/2023.
- (1) PER § 126-261, REGULATED TREES INCLUDE ALL TREES HAVING 6" DBH OR GREATER. A TOTAL OF FIFTY (50) REGULATED TREES ARE FOUND ON SITE, TEN (10) ARE RECOMMENDED TO BE SAVED, AND FORTY (40) ARE RECOMMENDED TO BE REMOVED.
- (2) PER § 126-261, SPECIMEN TREES INCLUDE ALL TREES THAT ARE 24" DBH OR GREATER. A TOTAL OF TWO (2) SPECIMEN TREES ARE FOUND ON SITE AND ARE RECOMMENDED TO BE SAVED.

TREE MITIGATION REQUIREMENTS		
CODE SECTION	REQUIRED	PROPOSED
§ 126-327(2)	MINIMUM PRESERVATION PERCENTAGE 40% OF THE TOTAL NUMBER OF REGULATED TREES ⁽¹⁾ THAT EXIST WITHIN THE LAND AREA BEING DEVELOPED SHALL BE PRESERVED ⁽²⁾ . 50 TOTAL REGULATED TREES ⁽¹⁾ (2) (50 TREES) * (0.40) = 20 REGULATED TREES REQUIRED TO BE PRESERVED	COMPLIES: 31 REGULATED TREES TO BE PRESERVED
§ 126-397	TREE REPLACEMENT REGULATED TREES SHALL BE REPLACED ON A 1 TO 1 BASIS 19 REGULATED TREES TO BE REMOVED = 19 REPLACEMENT TREES MINIMUM TREE SIZE: 2" CALIPER	4" TREE REPLACEMENT CREDIT 17 REPLACEMENT TREES PROPOSED COMPLIES
§ 126-397(1)	FOR EACH SPECIMEN TREE ⁽¹⁾ TO BE PRESERVED A 2" TREE REPLACEMENT CREDIT SHALL BE CREDITED 2 SPECIMEN TREES TO BE PRESERVED (2 TREE) * (2") = 4" TOTAL TREE REPLACEMENT CREDIT	4" TREE REPLACEMENT CREDIT TO BE COUNTED TOWARDS REGULATED TREE REPLACEMENT

- (1) PER § 126-261, REGULATED TREES INCLUDE ALL TREES HAVING 6" DBH OR GREATER.
- (2) PER § 126-327(2), TREES CONTAINED WITHIN THE PROPOSED BUILDING ENVELOPE SHALL NOT BE INCLUDED IN THE CALCULATION OF THE REQUIRED MINIMUM PRESERVATION PERCENTAGE. THERE ARE ZERO (0) TREES CONTAINED WITHIN THE PROPOSED BUILDING ENVELOPE.
- (3) PER § 126-261, SPECIMEN TREES INCLUDE ALL TREES THAT ARE 24" DBH OR GREATER.

SYMBOL	DESCRIPTION
---	PROPERTY LINE
---	FEATURE TO BE REMOVED / DEMOLISHED
	TREE TO BE REMOVED
	REGULATED TREE TO BE SAVED
	SPECIMEN TREE TO BE SAVED

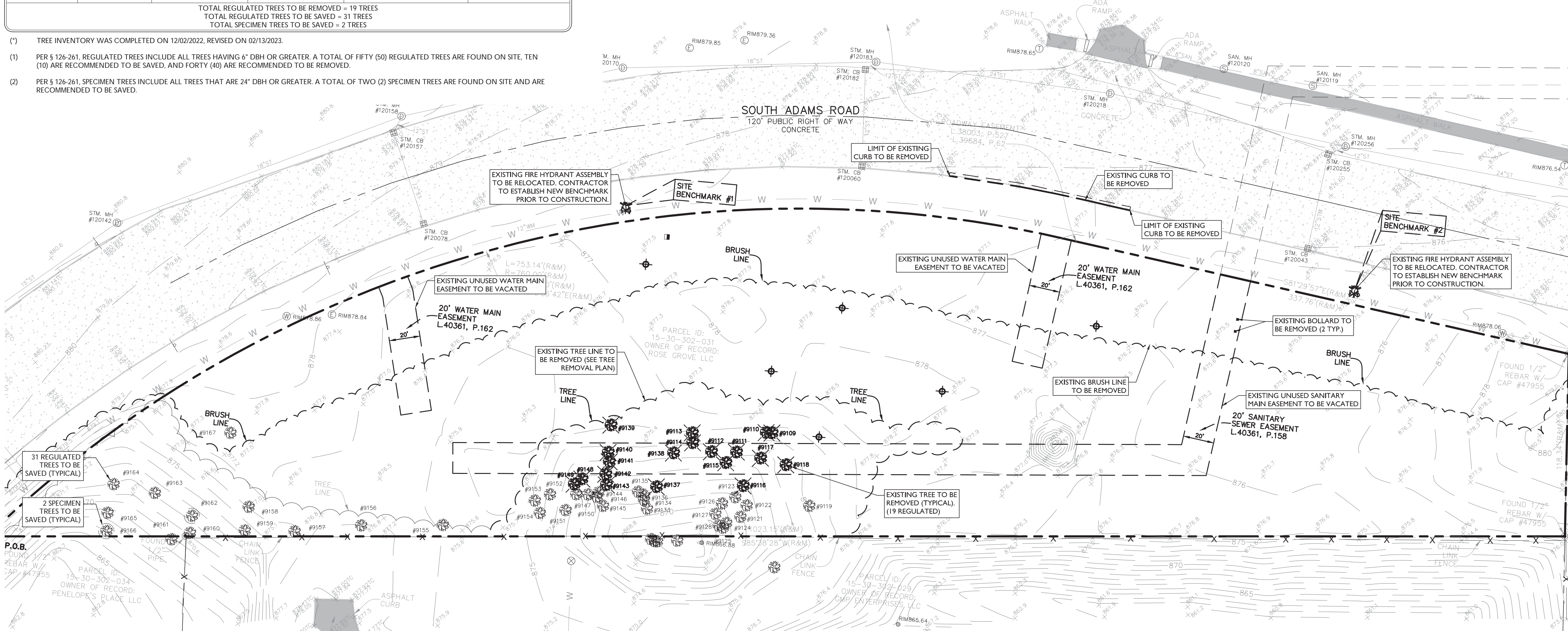
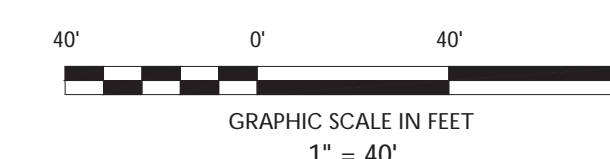
ALL SITE FEATURES WITHIN THE PROPERTY LINES INDICATED ON THIS PLAN SHALL REMAIN AND BE PROTECTED THROUGHOUT CONSTRUCTION UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF SIGNIFICANT DISCREPANCIES ARE DISCERNED BETWEEN THIS PLAN AND FIELD CONDITIONS



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DEMOLITION NOTES

- THE WORK REFLECTED ON THE DEMOLITION PLAN IS TO PROVIDE GENERAL INFORMATION TOWARDS THE EXISTING ITEMS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE ENTIRE PLAN SET AND ASSOCIATED REPORTS/REFERENCE DOCUMENTS INCLUDING ALL DEMOLITION ACTIVITIES AND INCIDENTAL TASKS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS.
- THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF DEMOLITION ACTIVITIES.
- EXPLOSIVES SHALL NOT BE USED UNLESS WRITTEN CONSENT FROM BOTH THE OWNER AND ANY APPLICABLE GOVERNING AGENCY IS OBTAINED. BEFORE THE START OF ANY EXPLOSIVE PROGRAM, THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL LOCAL, STATE, AND FEDERAL PERMITS. ADDITIONALLY, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SEISMIC TESTING AS REQUIRED AND ANY DAMAGES AS THE RESULT OF SAID DEMOLITION PRACTICES.
- ALL DEMOLITION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL CODES. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL UTILITIES ARE DISCONNECTED IN ACCORDANCE WITH THE UTILITY AUTHORITY'S REQUIREMENTS PRIOR TO STARTING THE DEMOLITION OF ANY STRUCTURE. ALL EXCAVATIONS ASSOCIATED WITH DEMOLISHED STRUCTURES OR REMOVED TANKS SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO SUPPORT SITE AND BUILDING IMPROVEMENTS. A GEOTECHNICAL ENGINEER SHOULD BE PRESENT DURING BACKFILLING ACTIVITIES TO OBSERVE AND CERTIFY THAT BACKFILL MATERIAL WAS COMPACTED TO A SUITABLE CONDITION.
- DEMOLISHED DEBRIS SHALL NOT BE BURIED ON SITE. ALL WASTE/DEBRIS GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL RECORDS OF THE DISPOSAL TO DEMONSTRATE COMPLIANCE WITH THE ABOVE REGULATIONS.



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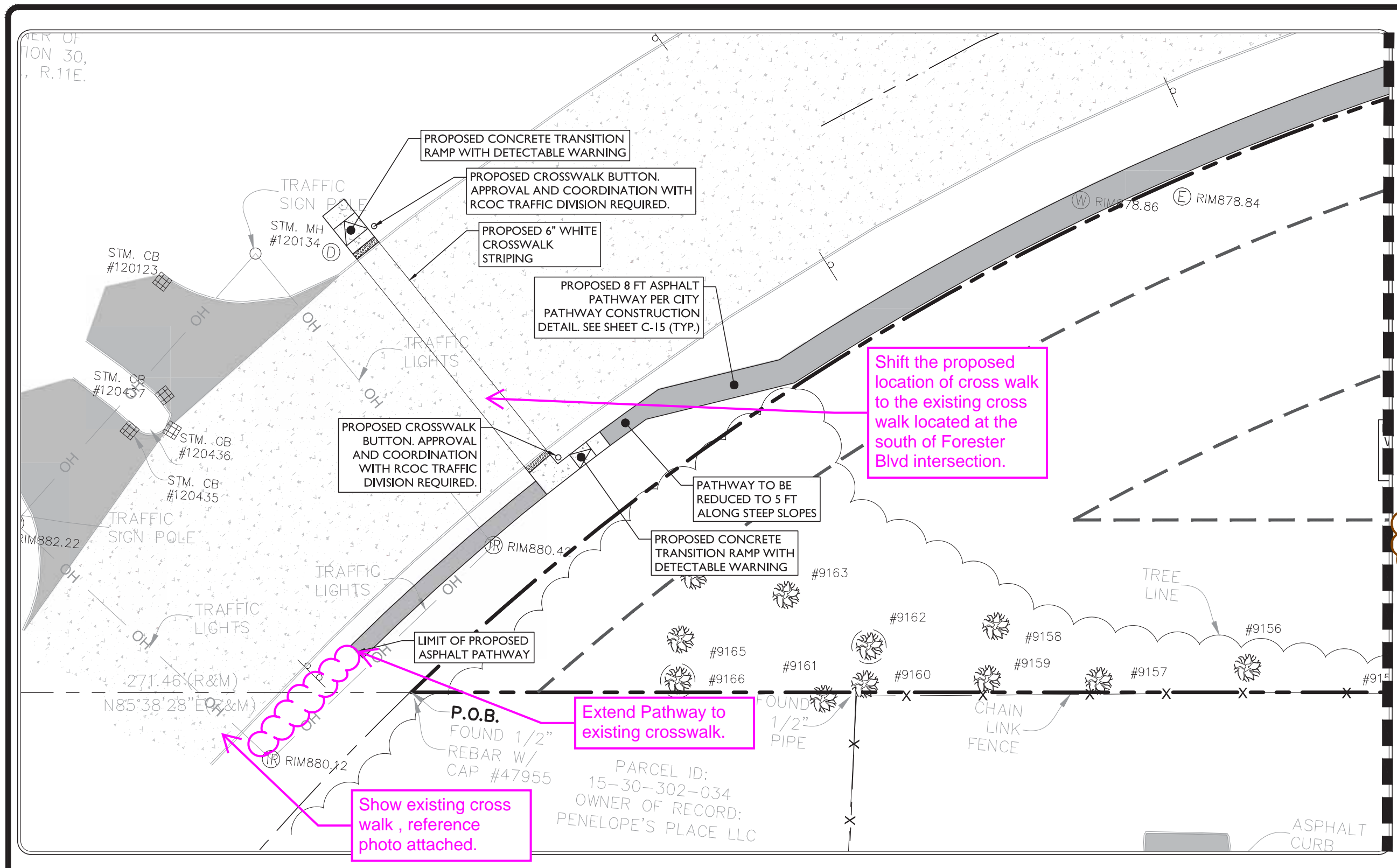
EROP LLC
PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JONATHAN REED
COOKSEY
ENGINEER
PROFESSIONAL

STONEFIELD
engineering & design

CITY FILE #22-043 SECTION #30
SCALE: 1" = 40' PROJECT ID: DET-220436
TITLE: DEMOLITION & TREE REMOVAL PLAN
DRAWING: C-2



LAND USE AND ZONING		
PID: 70-15-30-302-031		
INDUSTRIAL (I)		
PROPOSED USE	PERMITTED USE (PER CONSENT JUDGEMENT)	
CAR WASH		
ZONING REQUIREMENT	REQUIRED (I)	REQUIRED (PER CONSENT JUDGEMENT)
MINIMUM LOT AREA	N/A	N/A
MAXIMUM BUILDING HEIGHT	42 FT (3 STORIES)	40 FT PLUS 5 FT PARAPET
MINIMUM FRONT YARD SETBACK	50 FT	75 FT (ADAMS ROAD)
MINIMUM REAR YARD SETBACK	50 FT	50 FT
MINIMUM FRONT PARKING SETBACK	N/A	25 FT
MIN. PARKING LOT LANDSCAPING	5% (8,158 SF)	NONE
		31% (5,427 SF)

OFF-STREET PARKING REQUIREMENTS		
CODE SECTION	REQUIRED	PROPOSED
§ 5.138-11.204	CAR WASH: 1 SPACE PER EMPLOYEE (5 EMPLOYEES)(1 SPACE) = 5 SPACES	5 SPACES
§ 5.138-11.200 B	MAXIMUM PARKING: 25% EXCESS OF REQUIRED = 6 SPACES	5 SPACES
§ 5.138-11.204	STACKING: 4 SPACE PER WASH LINE 1 EXIT SPACE	25 STACKING SPACES (FROM PAVSTATIONS) 3 EXIT SPACES
§ 5.138-11.302	90° PARKING: 10 FT X 18 FT W/ 24 FT AISLE	10 FT X 18 FT W/ 24 FT AISLE
§ 5.138-11.303	LOADING: 0 - 5,000 SF OF FLOOR AREA ARE NOT REQUIRED TO PROVIDE A DEDICATED LOADING SPACE ⁽¹⁾	PROVIDED

SYMBOL	DESCRIPTION
---	PROPERTY LINE
---	SETBACK LINE
---	SAWCUT LINE
---	PROPOSED CURB & GUTTER
---	PROPOSED FLUSH CURB
---	PROPOSED MOUNTABLE CURB
---	PROPOSED SIGNS / BOLLARDS
---	PROPOSED BUILDING
---	PROPOSED CONCRETE
---	PROPOSED AREA LIGHT
---	PROPOSED BUILDING DOORS

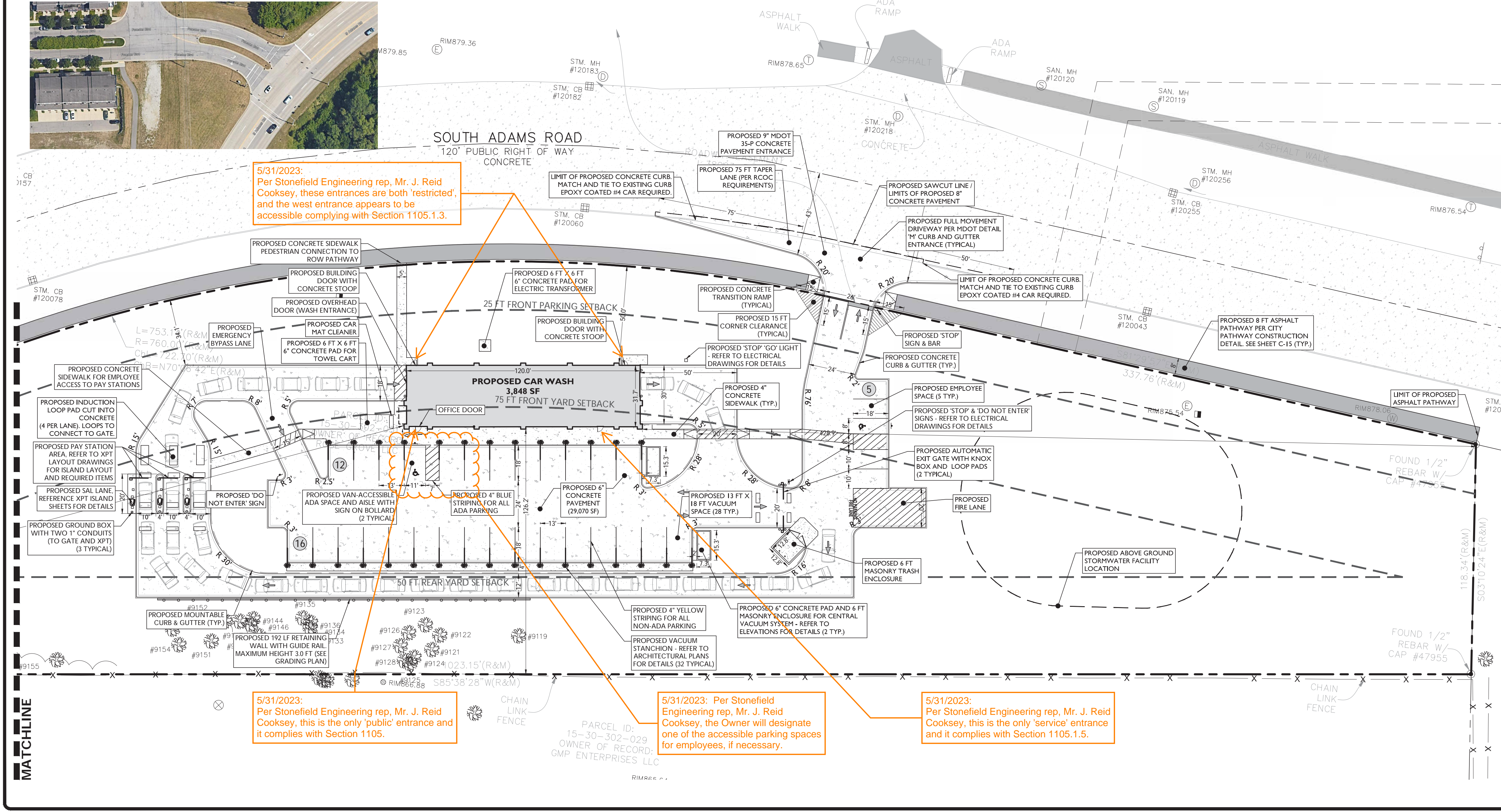
City Council to consider variance to front yard setback. Building location moved to provide additional tree preservation.

PROPOSED SITE QUANTITIES	
8" CONCRETE ROW PAVEMENT	2,233 SF
6" CONCRETE PAVEMENT	29,070 SF
4" CONCRETE WALKWAY	3,417 SF
ASPHALT PATHWAY	7,989 SF
CONCRETE CURB & GUTTER	1,967 LF
MOUNTABLE CURB & GUTTER	486 LF
FLUSH CURB	60 LF
CONCRETE BOLLARD	20
ADA SIGN ON BOLLARD	2
TRAFFIC CONTROL SIGN	3
TRANSITION RAMP	8
TRASH ENCLOSURE	1
DETECTABLE WARNING STRIP	2
TIMBER GUIDE RAIL	192 LF
RETAINING WALL - MODULAR BLOCK	570 SF

THE TABLE ABOVE IS FOR GENERAL REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO CONSTRUCTION.

GENERAL NOTES

- THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
- ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC, AND ITS SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
- THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
- THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
- THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
- THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
- THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
- SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC, BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.



ISSUE	DATE	BY	DESCRIPTION
1	02/16/2023	EMRC	SUBMISSION FOR CITY COUNCIL APPROVAL
2	03/31/2023	EMRC	SUBMISSION FOR CITY COUNCIL APPROVAL
3	05/05/2023	EMRC	SUBMISSION FOR CITY COUNCIL APPROVAL
4	06/09/2023	EMRC	SUBMISSION FOR CITY COUNCIL APPROVAL
5	07/27/2023	EMRC	SUBMISSION FOR LAND IMPROVEMENT PERMIT
6	08/11/2023	EM	STORM SEWER PROFILES
7	08/22/2023	EM	SUBMISSION FOR CITY COUNCIL APPROVAL

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EROP LLC

PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
2137 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN

PROFESSIONAL ENGINEER

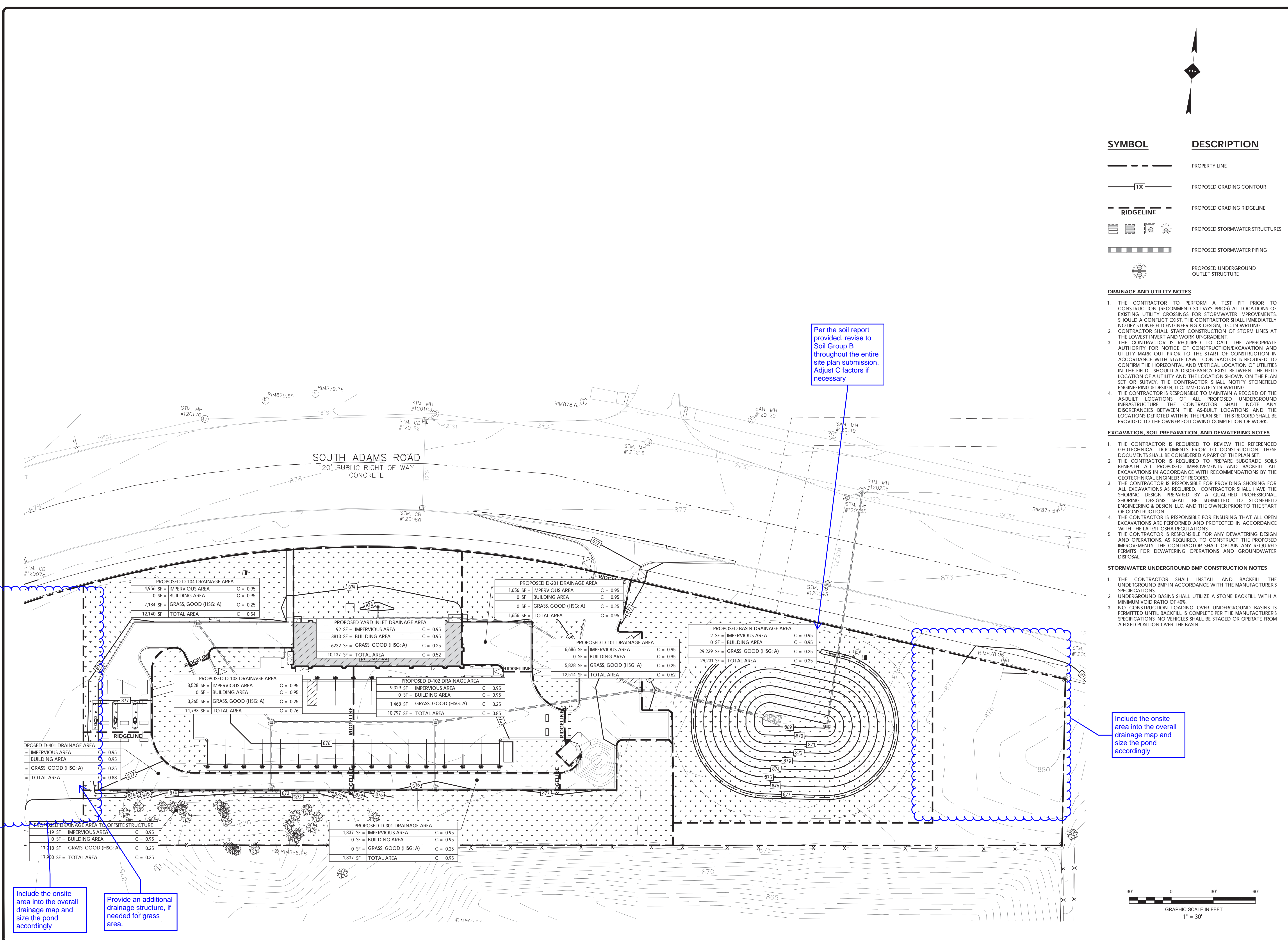
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CITY FILE #22-043 SECTION #30

SCALE: 1" = 30' PROJECT ID: DET-220436

TITLE: SITE PLAN

DRAWING: C-3



SYMBOL	DESCRIPTION
---	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
---	PROPOSED GRADING RIDGELINE
[Structure Symbols]	PROPOSED STORMWATER STRUCTURES
[Piping Symbols]	PROPOSED STORMWATER PIPING
[Outlet Symbols]	PROPOSED UNDERGROUND OUTLET STRUCTURE

- DRAINAGE AND UTILITY NOTES**
- THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR STORMWATER IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC IN WRITING.
 - CONTRACTOR SHALL START CONSTRUCTION OF STORM LINES AT THE LOWEST INVERT AND WORK UP-GRADE.
 - THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC IMMEDIATELY IN WRITING.
 - THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

- EXCAVATION, SOIL PREPARATION, AND DEWATERING NOTES**
- THE CONTRACTOR IS REQUIRED TO REVIEW THE REFERENCED GEOTECHNICAL DOCUMENTS PRIOR TO CONSTRUCTION. THESE DOCUMENTS SHALL BE CONSIDERED A PART OF THE PLAN SET.
 - THE CONTRACTOR IS REQUIRED TO PREPARE SUBGRADE SOILS BENEATH ALL PROPOSED IMPROVEMENTS AND BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHORING FOR ALL EXCAVATIONS AS REQUIRED. CONTRACTOR SHALL HAVE THE SHORING DESIGN PREPARED BY A QUALIFIED PROFESSIONAL SHORING DESIGNER. THE CONTRACTOR SHALL SUBMIT TO STONEFIELD ENGINEERING & DESIGN, LLC, AND THE OWNER PRIOR TO THE START OF CONSTRUCTION.
 - THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL OPEN EXCAVATIONS ARE PERFORMED AND PROTECTED IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS.
 - THE CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING DESIGN AND OPERATIONS, AS REQUIRED, TO CONSTRUCT THE PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL OBTAIN ANY REQUIRED PERMITS FOR DEWATERING OPERATIONS AND GROUNDWATER DISPOSAL.

- STORMWATER UNDERGROUND BMP CONSTRUCTION NOTES**
- THE CONTRACTOR SHALL INSTALL AND BACKFILL THE UNDERGROUND BMP IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
 - UNDERGROUND BASINS SHALL UTILIZE A STONE BACKFILL WITH A MINIMUM VOID RATIO OF 40%.
 - NO CONSTRUCTION LOADING OVER UNDERGROUND BASINS IS PERMITTED UNTIL BACKFILL IS COMPLETE PER THE MANUFACTURER'S SPECIFICATIONS. NO VEHICLES SHALL BE STAGED OR OPERATE FROM A FIXED POSITION OVER THE BASIN.

Per the soil report provided, revise to Soil Group B throughout the entire site plan submission. Adjust C factors if necessary

Include the onsite area into the overall drainage map and size the pond accordingly

Include the onsite area into the overall drainage map and size the pond accordingly

Provide an additional drainage structure, if needed for grass area.

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PROPOSED CAR WASH

WHITEWATER CAR WASH

PARCEL ID: 15-30-302-031
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CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JONATHAN REED
COOKSEY
ENGINEER

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CITY FILE #22-043 SECTION #30
SCALE: 1" = 30' PROJECT ID: DET-220436

TITLE:
STORMWATER DRAINAGE AREA PLAN

DRAWING:
C-6

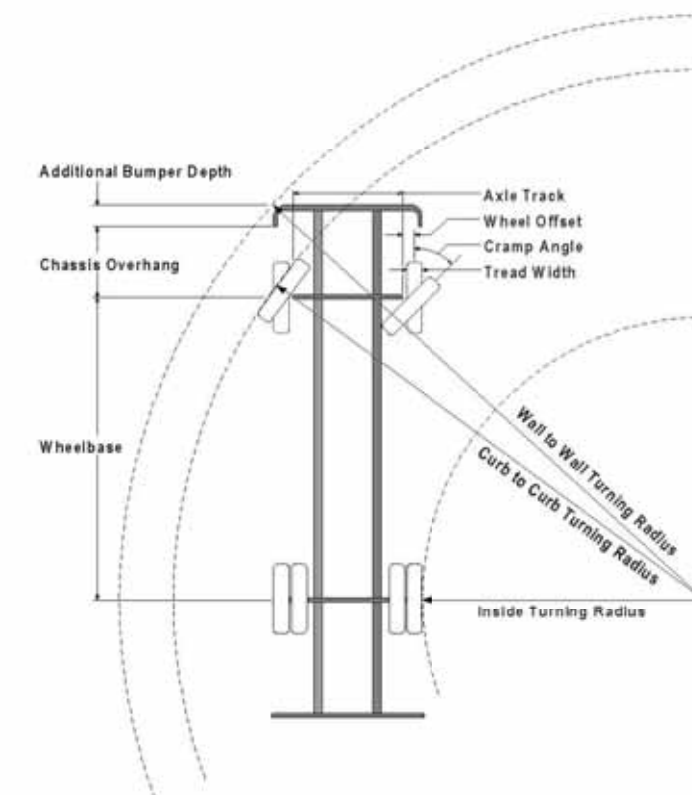


Turning Performance Analysis

02/28/2018

Bid Number: 1102
Department: City of Rochester Hills

Chassis: Arrow XT Chassis, Aerials/Tankers, Tandem Axle
Body: Aerial, HD Ladder 105', Alum Body



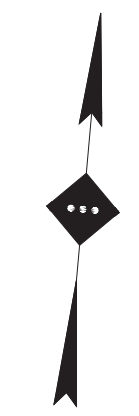
Parameters:	
Inside Cramp Angle:	45°
Axle Track:	82.92 in.
Wheel Offset:	4.68 in.
Tread Width:	10.3 in.
Chassis Overhang:	68.99 in.
Additional Bumper Depth:	16 in.
Front Overhang:	84.99 in.
Wheelbase:	245.5 in.

Calculated Turning Radii:	
Inside Turn:	19 ft. 5 in.
Curb to curb:	35 ft. 3 in.
Wall to wall:	39 ft. 7 in.

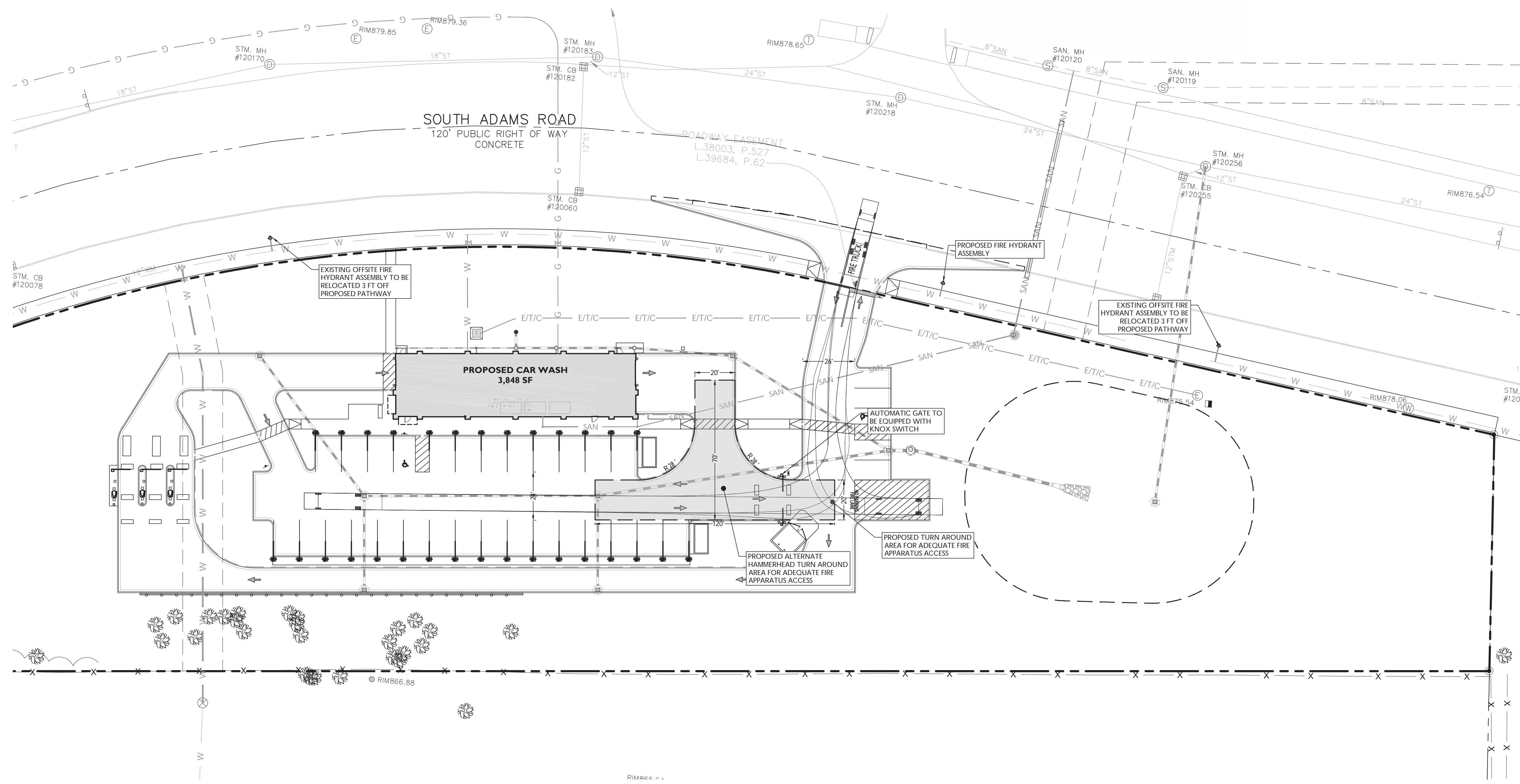
Comments:
RHFD 105' turn radius

Category	Option	Description
Axle, Front, Custom	0018453	Axle, Front, Oshkosh TAK-4, Non Drive, 22,800 lb, Qlmi/AXT/DCF
Wheels, Front	0019611	Wheels, Front, Alcoa, 22.50" x 12.25", Aluminum, Hub Pilot
Tires, Front	0594821	Tires, Front, Goodyear, G298 MSA, 425/65R22.50, 20 ply
Bumpers	0606536	Bumper, 16" Extended, Steel Painted, Arrow XT
Aerial Devices	0673137	Aerial, 105' Heavy Duty Ladder (500 dry/500 water)

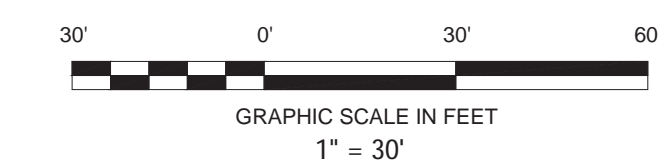
Notes:
Actual inside cramp angle may be less due to highly specialized options.
Curb to Curb turning radius calculated for 9.00 inch curb.



SYMBOL DESCRIPTION
----- PROPERTY LINE



- FIRE DEPARTMENT NOTES**
1. A KNOX KEY SYSTEM SHALL BE INSTALLED IN A LOCATION APPROVED BY THE FIRE CODE OFFICIAL. ORDERING INFORMATION IS AVAILABLE FROM THE KNOX COMPANY AT WWW.KNOXBOX.COM - IFC 2006 SEC. 1028.2
 2. FIRE LANES SHALL BE DESIGNATED BY THE FIRE CODE OFFICIAL AND SHALL BE CONSPICUOUSLY POSTED ON BOTH SIDES OF THE FIRE LANE, WITH FIRE LANE SIGNS, SPACED NOT MORE THAN 100 FEET APART. FIRE LANE SIGNS SHALL READ "NO STOPPING, STANDING, PARKING, FIRE LANE" AND SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 503
 3. CONSTRUCTION SITES SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC 2006 CHAPTER 14
 4. OPEN BURNING IS NOT PERMITTED, INCLUDING THE BURNING OF TRASH, DEBRIS, OR LAND CLEARING MATERIALS. OPEN BURNING FOR WARMING OF SAND AND / OR WATER FOR THE PREPARATION OF MORTAR SHALL BE WITHIN THE CITY OF ROCHESTER HILLS BURN PERMIT GUIDELINES - FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 307.6.2 & 307.6.2.3



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STATE OF MICHIGAN
JONATHAN REID
COOKSEY
ENGINEER

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CITY FILE #22-043 SECTION #30
SCALE: 1" = 30' PROJECT ID: DET-220436

TITLE:
FIRE PROTECTION PLAN

DRAWING:
C-8

W:\10200436\220436-043-SECTION 30\10200436-043-SECTION 30\FIRE.DWG

SECURITY CAMERAS TO BE MOUNTED ON EACH POLE 10 FT ABOVE GRADE		
POLE LABEL	NUMBER OF CAMERAS	DIRECTION OF CAMERAS
A-1		
A-2		
A-3		
A-4		
A-5		
B-1		
B-2		
B-3		
B-4		
B-5		

LIGHTING REQUIREMENTS			
CODE SECTION	REQUIRED	PROPOSED	
§ 138-10.201A	SHIELDING: ALL OUTDOOR LIGHTING SHALL BE SHIELDED	PROVIDED	
§ 138-10.201C	LIGHT TRESSPASS: MAXIMUM, ROW PROPERTY LINE: 0.1 FC MAXIMUM, NON-RESIDENTIAL PROPERTY LINE: 0.3 FC	0.1 FC 0.2 FC	
§ 138-10.202H	MAXIMUM FIXTURE HEIGHT: 20 FT	20 FT	
§ 138-10.202E	REQUIRED ILLUMINATION:	MIN.	MAX.
	PEDESTRIAN AREAS / SIDEWALK	0.2 FC	1.0 FC
	BUILDING ENTRANCES	1.0 FC	5.0 FC
	DRIVEWAY LIGHTING	0.2 FC	1.0 FC
	PARKING AREAS	0.2 FC	2.0 FC
	PARKING WITHIN 25 FT OF BLDG.	2.0 FC	4.0 FC
		0.2 FC	3.0 FC

LIGHTING STATISTICS			
DESCRIPTION	AVERAGE	MINIMUM	MAXIMUM
OVERALL PARCEL	0.45 FC	0.0 FC	5.0 FC
PROPERTY LINES	0.02 FC	0.0 FC	0.2 FC

PROPOSED LUMINAIRE SCHEDULE							
SYMBOL	LABEL	QUANTITY	SECURITY LIGHTING	DISTRIBUTION	LLF	MANUFACTURER	IES FILE
	A	5	MIRADA MEDIUM LED AREA LIGHT 07L LUMEN PACKAGE W/ HOUSE-SIDE SHIELD - SINGLE	FT	0.90	LSI INDUSTRIES	MRM-LED-07L-SL-FT-30-70CR1-L
	B	5	MIRADA MEDIUM LED AREA LIGHT 07L LUMEN PACKAGE W/ HOUSE-SIDE SHIELD - DOUBLE @180°	3	0.90	LSI INDUSTRIES	MRM-LED-07L-SL-3-30-70CR1-L
	C	2	MIRADA OUTDOOR LED WALL SCONCE 8L LUMEN PACKAGE ("SECURITY LIGHTING")	FT	0.90	LSI INDUSTRIES	XWM-FT-LED-08L-30
	D	7	LED GOOSENECK LIGHT S4L LUMEN PACKAGE, 3000K CCT	N/A	0.90	CREE LIGHTING	C-WM-A-WDG-S4L-3K

* SECURITY LIGHTING NOT INCLUDED WITHIN LIGHTING CALCULATIONS. LIGHTS ARE MOTION ACTIVATED AND NOT CONSISTENTLY ON.
* SEE LIGHTING SPECIFICATIONS ON SHEET C-14.



FIXTURES 'A' & 'B'

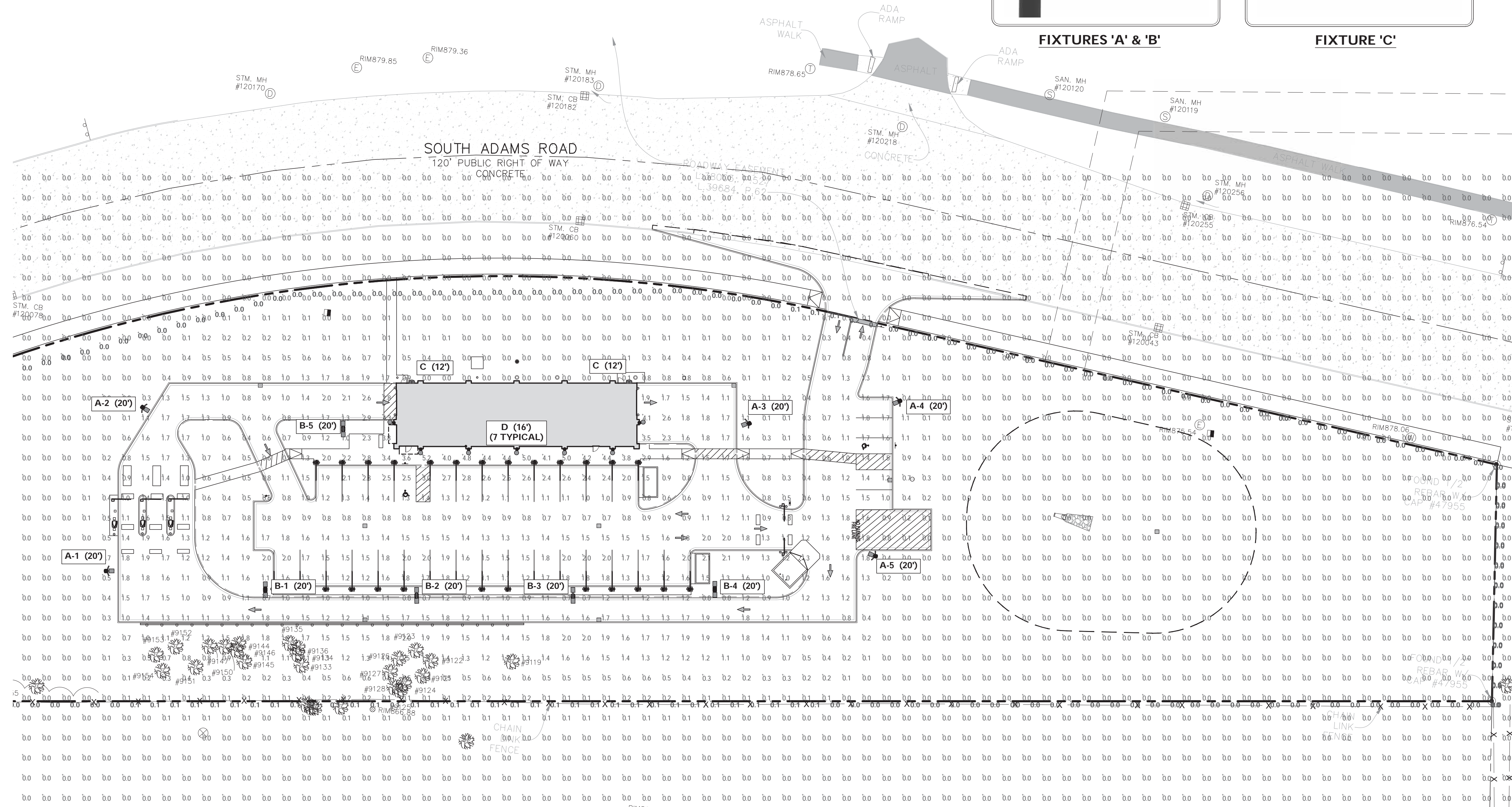


FIXTURE 'C'



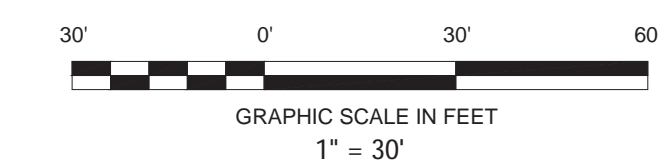
FIXTURE 'D'

SYMBOL	DESCRIPTION
---	PROPERTY LINE
A (XX)	PROPOSED LIGHTING FIXTURE (MOUNTING HEIGHT)
+XX	PROPOSED LIGHTING INTENSITY (FOOT-CANDLES)
	PROPOSED AREA LIGHT
	PROPOSED BUILDING MOUNTED LIGHT



ALL EXTERIOR LIGHTING IN NON-RESIDENTIAL DISTRICTS SHALL INCORPORATE AUTOMATIC TIMERS AND SHALL BE TURNED OFF BETWEEN THE HOURS OF MIDNIGHT AND SUNRISE, EXCEPT FOR LIGHTING NECESSARY FOR SECURITY PURPOSES OR ACCESSORY TO A USE THAT CONTINUES AFTER MIDNIGHT. SECURITY LIGHTING SHALL, TO THE EXTENT PRACTICAL, USE SENSORS AND DIM OR TURN OFF WHEN THERE IS NO ACTIVITY ON SITE.

- GENERAL LIGHTING NOTES**
- THE LIGHTING LEVELS DEPICTED WITHIN THE PLAN SET ARE CALCULATED UTILIZING DATA OBTAINED FROM THE LISTED MANUFACTURER. ACTUAL ILLUMINATION LEVELS AND PERFORMANCE OF ANY PROPOSED LIGHTING FIXTURE MAY VARY DUE TO UNCONTROLLABLE VARIABLES SUCH AS WEATHER, VOLTAGE SUPPLY, LAMP TOLERANCE, EQUIPMENT SERVICE LIFE AND OTHER VARIABLE FIELD CONDITIONS.
 - WHERE APPLICABLE, THE EXISTING LIGHT LEVELS DEPICTED WITHIN THE PLAN SET SHALL BE CONSIDERED APPROXIMATE. THE EXISTING LIGHT LEVELS ARE BASED ON FIELD OBSERVATIONS AND THE MANUFACTURER'S DATA OF THE ASSUMED OR MOST SIMILAR LIGHTING FIXTURE MODEL.
 - UNLESS NOTED ELSEWHERE WITHIN THIS PLAN SET, THE LIGHT FACTORS USED IN THE LIGHTING ANALYSIS ARE AS FOLLOWS:
 - LIGHT EMISSIONS DIODES (LED): 0.90
 - HIGH PRESSURE SODIUM: 0.72
 - METAL HALIDE: 0.72
 - THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC, IN WRITING, PRIOR TO THE START OF CONSTRUCTION, OF ANY PROPOSED LIGHTING LOCATIONS THAT CONFLICT WITH EXISTING/PROPOSED DRAINAGE, UTILITY, OR OTHER IMPROVEMENTS.
 - THE CONTRACTOR IS RESPONSIBLE TO PREPARE A WIRING PLAN AND PROVIDE ELECTRIC SERVICE TO ALL PROPOSED LIGHTING FIXTURES. THE CONTRACTOR IS REQUIRED TO PREPARE AN AS-BUILT PLAN OF WIRING AND PROVIDE COPIES TO THE OWNER AND STONEFIELD ENGINEERING & DESIGN, LLC.



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OAKLAND COUNTY, MICHIGAN

WHITEWATER
CAR WASH

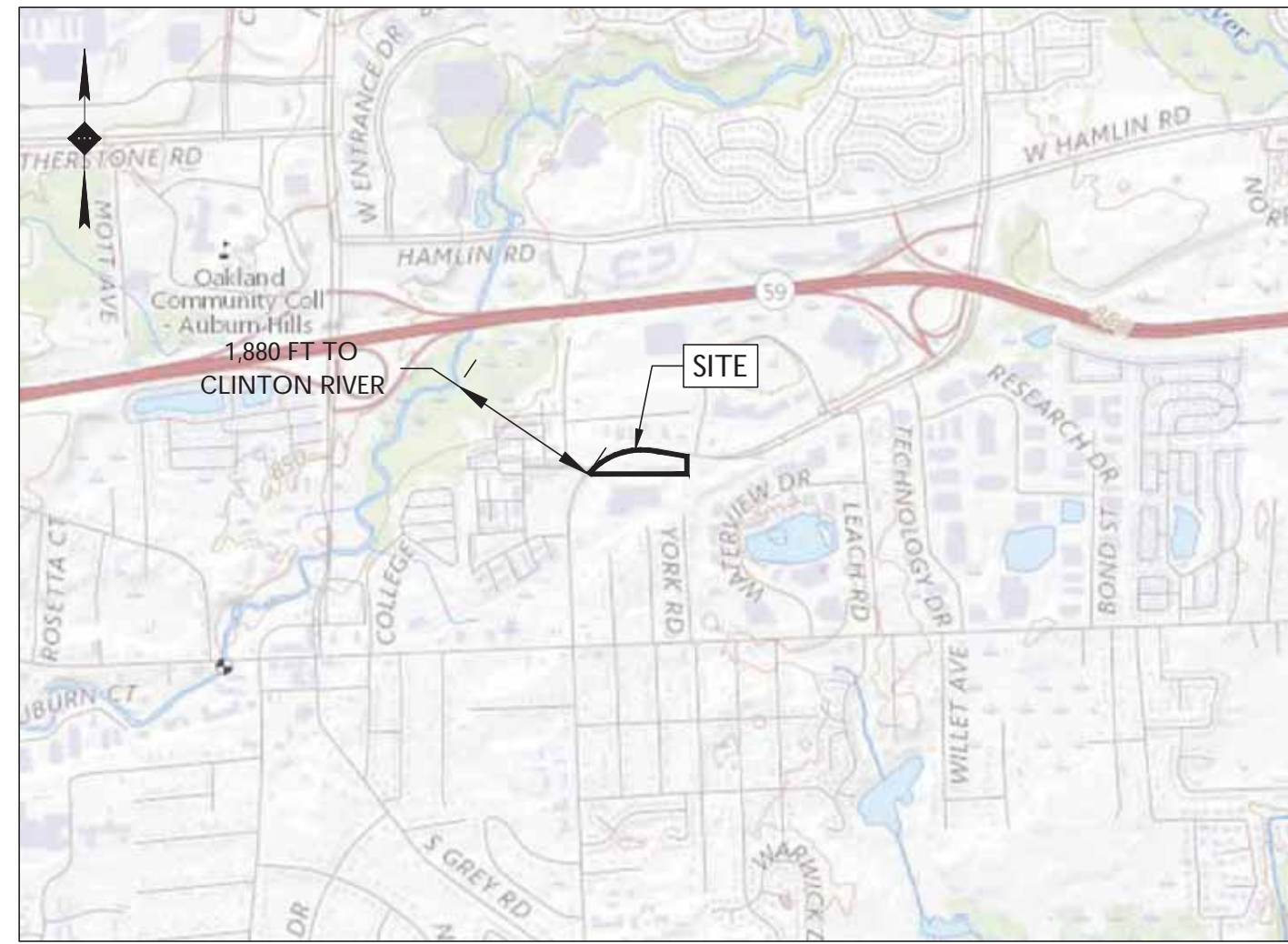
STATE OF MICHIGAN
JONATHAN REED
COOKSEY
ENGINEER

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CITY FILE #22-043 SECTION #30
SCALE: 1" = 30' PROJECT ID: DET-220436

TITLE:
LIGHTING PLAN

DRAWING:
C-9



SOURCE: USGS ONLINE MAPPER

LOCATION MAP

SCALE: 1" = 2,000'±

LAND IN THE CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MI, DESCRIBED AS FOLLOWS:

A PARCEL OF LAND LOCATED IN THE SOUTHWEST 1/4 OF SECTION 30 TOWN 3 NORTH, RANGE 11 EAST, CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 30 (AS REMONUMENTED); THENCE SOUTH 85 DEGREES 49 MINUTES 02 SECONDS WEST, 193 FEET ALONG THE WESTERLY EXTENSION OF THE EAST AND WEST 1/4 LINE OF SECTION 30 TO A PROPERTY CONTROLLING CORNER (FORMERLY DESCRIBED AS THE WEST 1/4 CORNER OF SECTION 30); THENCE PROCEEDING ALONG THE WEST PROPERTY CONTROLLING LINE OF SAID SECTION 30 (AS MONUMENTED) FORMERLY DESCRIBED AS THE WEST LINE OF SAID SECTION 30 ALSO BEING THE CENTERLINE OF ADAMS ROAD (VARIABLE WIDTH) THE FOLLOWING TWO (2) COURSES: 1) SOUTH 01 DEGREE 30 MINUTES 03 SECONDS EAST, 385.17 FEET AND 2) SOUTH 02 DEGREES 03 MINUTES 12 SECONDS EAST, 632.96 FEET; THENCE NORTH 85 DEGREES 38 MINUTES 38 SECONDS EAST, 271.46 FEET TO A POINT ON THE SOUTHERLY RIGHT OF WAY OF ADAMS ROAD (VARIABLE WIDTH); SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE FROM SAID POINT OF BEGINNING THE FOLLOWING TWO (2) COURSES ALONG SAID SOUTHERLY RIGHT OF WAY: 1) 753.14 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, RADIUS 760.00 FEET, CENTRAL ANGLE 56 DEGREES 46 MINUTES 43 SECONDS, AND A CHORD THAT BEARS NORTH 70 DEGREES 06 MINUTES 42 SECONDS EAST, 722.70 FEET AND 2) SOUTH 81 DEGREES 29 MINUTES 57 SECONDS EAST, 337.76 FEET; THENCE SOUTH 03 DEGREES 10 MINUTES 24 SECONDS EAST, 118.34 FEET; THENCE SOUTH 85 DEGREES 38 MINUTES 28 SECONDS WEST, 1023.15 FEET TO THE POINT OF BEGINNING.

SEQUENCE OF CONSTRUCTION

1. INSTALL SILT FENCE AND CONSTRUCTION ENTRANCE (2 DAYS).
2. ROUGH GRADING AND TEMPORARY SEEDING (20 DAYS).
3. EXCAVATE AND INSTALL DRAINAGE PIPING AND INLETS (20 DAYS).
4. INSTALL INLET FILTERS (1 DAY).
5. BUILDING CONSTRUCTION AND SITE IMPROVEMENTS (90 DAYS).
6. CONSTRUCT RIGHT OF WAY IMPROVEMENTS (2 DAYS).
7. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING (7 DAYS).
8. REMOVE SOIL EROSION MEASURES (1 DAY).

NOTE: TIME DURATIONS ARE APPROXIMATE AND ARE INTENDED TO ACT AS A GENERAL GUIDE TO THE CONSTRUCTION TIMELINE. ALL DURATIONS ARE SUBJECT TO CHANGE BY CONTRACTOR. CONTRACTOR SHALL SUBMIT CONSTRUCTION SCHEDULE TO TOWNSHIP AND ENGINEER. CONTRACTOR SHALL PHASE CONSTRUCTION ACCORDINGLY.

PROPOSED SESC QUANTITIES

SILT FENCE	1,690 LF
INLET FILTERS	13
CONSTRUCTION ENTRANCE	1
SOIL STOCKPILE	1
TREE PROTECTION FENCE	998 LF

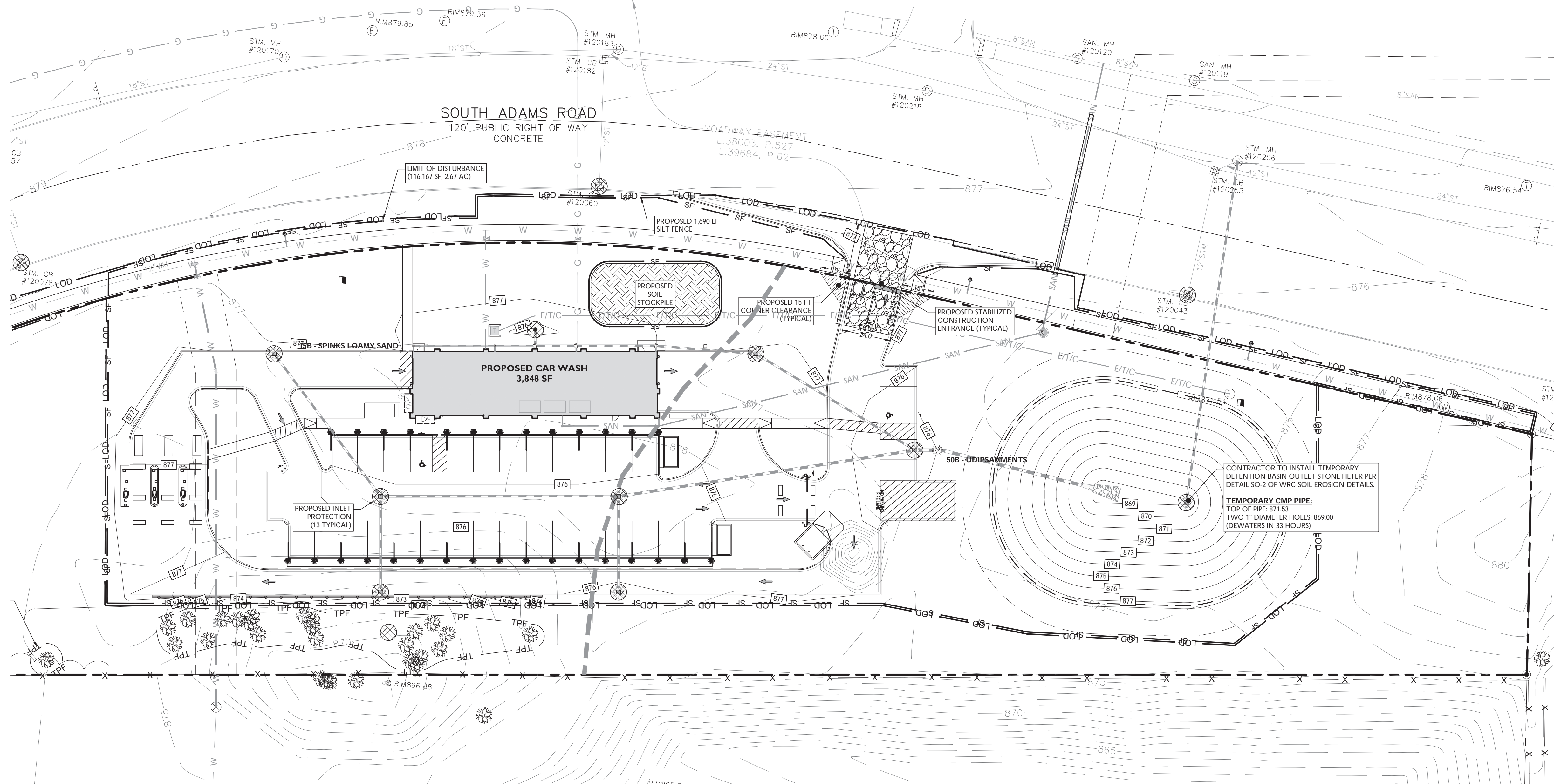
SOIL CHARACTERISTICS CHART

TYPE OF SOIL	15B - SPINKS LOAMY SAND	50B - UDIPSAMMENTS
PERCENT OF SITE COVERAGE	57.0%	43.0%
HYDROLOGIC SOIL GROUP	A	A
DEPTH TO RESTRICTIVE LAYER	> 80 INCHES	> 80 INCHES
SOIL PERMEABILITY	1.98 TO 5.95 IN/HR	5.95 TO 19.98 IN/HR
DEPTH TO WATER TABLE	> 80 INCHES	> 80 INCHES

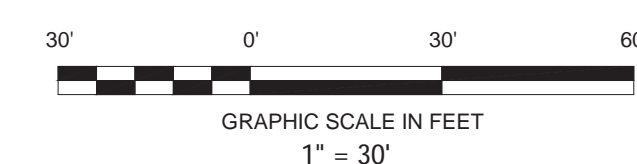
SYMBOL	DESCRIPTION
	PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED SILT FENCE
	PROPOSED STOCKPILE & EQUIPMENT STORAGE
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED INLET PROTECTION FILTER

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION AS REQUIRED.



Know what's below
Call before you dig.



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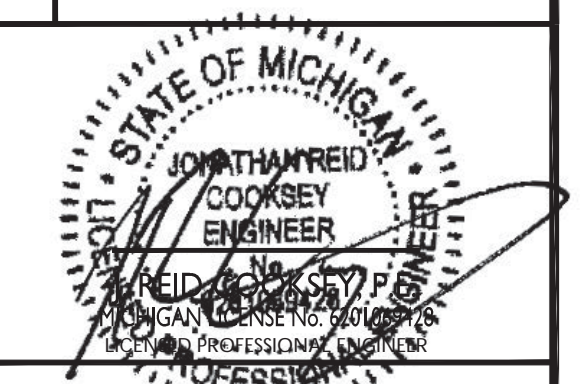
607 Shelby Suite 200, Detroit, MI 48226
Phone 248.247.1115

SITE DEVELOPMENT PLANS

EROP LLC

PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN



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engineering & design

CITY FILE #22-043 SECTION #30

SCALE: 1" = 30' PROJECT ID: DET-220436

TITLE:
SOIL EROSION & SEDIMENT CONTROL PLAN

DRAWING:

C-10

LANDSCAPING AND BUFFER REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 138-12.205.A.	PLANTING REQUIREMENTS PLANT MATERIALS SHALL NOT INCLUDE MORE THAN 20% OF ANY SINGLE PLANT SPECIES	COMPLIES
§ 138-12.301.A.1.	INTERIOR PARKING LOT LANDSCAPING 5% OF PARKING LOTS WITH 20 OR MORE SPACES SHALL BE LANDSCAPED WITH INTERIOR LANDSCAPING AREAS (31,368 SF) * (0.05) = 1,568 SF	8,030 SF (25%) PROVIDED
§ 138-12.301.A.1.	PARKING LOT TREES 1 DECIDUOUS TREES FOR EVERY 150 SF OF REQUIRED INTERIOR LANDSCAPE AREA (1,568 SF) * (1 TREE / 150 SF) = 11 TREES	11 TREES PROPOSED
§ 138-12.301.A.2.	LANDSCAPING ISLANDS TERMINAL ISLANDS SHALL BE PROVIDED AT THE END OF EACH ROW OF PARKING SPACES AND SHALL BE AT LEAST 144 SF IN AREA AND 18 FT LONG EACH LANDSCAPE ISLAND SHALL HAVE 1 SHADE TREE ISLANDS = 4 TREES	PROVIDED 4 TREES PROPOSED
§ 138-12.301.A.3.	INTERIOR LANDSCAPE ISLANDS SHALL HAVE A MINIMUM AREA OF 160 SF AND A MINIMUM WIDTH OF 8 FT EACH LANDSCAPE ISLAND SHALL HAVE 1 SHADE TREE ISLANDS = 4 TREES	341 SF PROVIDED 8.5 FT PROVIDED 4 TREES PROPOSED
§ 138-12.301.B.1.	PERIMETER PARKING LOT LANDSCAPING 1 DECIDUOUS TREE FOR EVERY 25 LF OF PERIMETER (640 FT) * (1 TREE / 25 FT PERIMETER) = 26 TREES 1 ORNAMENTAL TREE FOR EVERY 35 LF OF PERIMETER (640 FT) * (1 TREE / 35 FT PERIMETER) = 19 TREES	22 EXISTING TREES TO REMAIN 4 TREES PROPOSED 19 TREES PROPOSED
§ 138-12.300.B.	TYPE A BUFFER STANDARDS FOR BASIN MINIMUM BUFFER WIDTH: 6 FT 1.5 DECIDUOUS TREES FOR EVERY 100 LF OF BUFFER (414 FT) * (1.5 TREE / 100 FT BUFFER) = 7 TREES 1 EVERGREEN TREE FOR EVERY 100 LF OF PERIMETER (414 FT) * (1 TREE / 100 FT BUFFER) = 5 TREES 4 SHRUBS FOR EVERY 100 LF OF PERIMETER (414 FT) * (4 SHRUBS / 100 FT BUFFER) = 17 SHRUBS	6.0 FT PROVIDED 7 TREES PROPOSED 5 TREES PROPOSED 17 SHRUBS PROPOSED
§ 138-12.303.C.	STORMWATER MANAGEMENT LANDSCAPING BASINS SHALL BE PLANTED WITH A MIXTURE OF GROUNDCOVER AND WETLAND-BASED PLANTING MATERIALS TO MIMIC NATIVE PLANT COMMUNITIES OR WILDFLOWERS	COMPLIES
§ 138-12.303.D.	A TYPE A PERIMETER GREENBELT BUFFER SHALL BE PROVIDED	TYPE A BUFFER PROVIDED
§ 138-12.303.D.1.	PLANTINGS SHALL BE CLUSTERED AROUND THE BASIN TO ACHIEVE A VARIETY OF PLANT MATERIALS AND TO REPLICATE A NATURAL ENVIRONMENT	COMPLIES
§ 138-12.303.D.2.	DECIDUOUS SHADE TREES SHOULD BE CLUSTERED AROUND THE SOUTH AND WEST SIDES OF THE BASIN TO PROVIDE SHADE AND MINIMIZE SOLAR HEATING OF THE WATER TREES SHALL BE PLANTED ABOVE THE FREEBOARD LINE OF THE BASIN. ANY PLANTINGS PROPOSED BELOW THE FREEBOARD LINE SHALL BE TOLERANT OF WET OR MOIST SOIL CONDITIONS. THE LOCATION OF PLANT MATERIALS SHALL TAKE INTO CONSIDERATION THE NEED TO PROVIDE ACCESS FOR ROUTINE PLANT MAINTENANCE	COMPLIES
§ 138-12.404.A.1.	RIGHT-OF-WAY LANDSCAPING SOUTH ADAMS ROAD: 1.065 FT 1 DECIDUOUS TREE FOR EVERY 35 LF OF FRONTAGE (1,064 FT) * (1 TREE / 35 FT FRONTAGE) = 31 TREES	5 EXISTING TREES TO BE SAVED 26 TREES PROPOSED
§ 138-12.304.B.	1 ORNAMENTAL TREE FOR EVERY 60 LF OF FRONTAGE (1,064 FT) * (1 TREE / 60 FT FRONTAGE) = 18 TREES	18 TREES PROPOSED

PLANT SCHEDULE

DECIDUOUS TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
+	ACE	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3" - 3.5" CAL.	B&B
+	GIN	7	GINKGO BILOBA 'AUTUMN GOLD'	AUTUMN GOLD MAIDENHAIR TREE	3" - 3.5" CAL.	B&B
•	GLE	11	GLEDITSIA TRIACANTHOS 'INERMIS SHADENMASTER'	SHADENMASTER HONEY LOCUST	3" - 3.5" CAL.	B&B
○	NYS	9	NYSSA SYLVATICA	TUPELO	3" - 3.5" CAL.	B&B
○	BIC	4	QUERCUS BICOLOR	SWAMP WHITE OAK	3" - 3.5" CAL.	B&B
⊗	QUE	8	QUERCUS RUBRA	RED OAK	3" - 3.5" CAL.	B&B
○	TIL	6	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	3" - 3.5" CAL.	B&B
●	JUV	5	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	10" - 12" HT.	B&B
⊗	JUN	18	JUNIPERUS VIRGINIANA 'J.N. SELECT GREEN'	EMERALD FEATHER EASTERN RED CEDAR	10" - 12" HT.	B&B
○	PIC	9	PICEA GLAUCA	WHITE SPRUCE	10" - 12" HT.	B&B
ORNAMENTAL TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
⊗	AME	10	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	2" - 2.5" CAL.	B&B
+	CER	16	CERCIS CANADENSIS	EASTERN REDBUD	2" - 2.5" CAL.	B&B
○	COR	15	CORNUS FLORIDA	FLOWERING DOGWOOD	2" - 2.5" CAL.	B&B
SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
○	HQU	9	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	3 GAL.	POT
○	LIN	20	LINDERA BENZOIN	SPICEBUSH	3 GAL.	POT
○	PHY	19	PHYSCARPUS OPULIFOLIUS	NINEBARK	3 GAL.	POT
○	SAM	11	SAMBUCUS CANADENSIS	AMERICAN ELDERBERRY	3 GAL.	POT
○	SYR	12	SYRINGA PATULA 'MISS KIM'	MISS KIM KOREAN LILAC	3 GAL.	POT
EVERGREEN SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
○	BUX	26	BUXUS MICROPHYLLA 'WINTERGREEN'	WINTERGREEN BOXWOOD	30" - 36"	POT
○	ILE	26	ILEX GLABRA	INKBERRY HOLLY	30" - 36"	POT
○	TAX	12	TAXUS X MEDIA 'DENSIFORMIS'	DENSE ANGLO-JAPANESE YEW	30" - 36"	POT

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN ON THE LANDSCAPE PLAN AND WITHIN THE PLANT LIST, THE PLAN SHALL DICATE.

ERNST SEED CO. RETENTION BASIN FLOOR SEEDING SPECIFICATIONS (ERNST MIX-126):

PERFORATED POLYPROPYLENE	20%
VIOLLA SP. VARIETY 'PINK SPINNAK'	10%
VIOLLA SP. VARIETY 'CANTON'	10%
VIOLLA SP. VARIETY 'MELBA'	10%
VIOLLA SP. VARIETY 'TILLIE'	10%
VIOLLA SP. VARIETY 'TANITIA'	10%
VIOLLA SP. VARIETY 'VIRGINIA WILDORCH'	10%
VIOLLA SP. VARIETY 'VIRGINIA WILDOVER'	10%
VIOLLA SP. VARIETY 'VIRGINIA WILDOVER'	10%
VIOLLA SP. VARIETY 'VIRGINIA WILDOVER'	10%
VIOLLA SP. VARIETY 'VIRGINIA WILDOVER'	10%
VIOLLA SP. VARIETY 'VIRGINIA WILDOVER'	10%

1. SOUP MIXER SET AT 4 PARTS OF 70-40 LBS./JOUR (OR 3:1 LBS./L. MIX)
2. SUPPLEMENT ABOVE MIX WITH ANNUAL RYE AT A RATE OF 30 LBS./ACRE.
3. MOW ONCE PER YEAR IN EARLY SPRING.

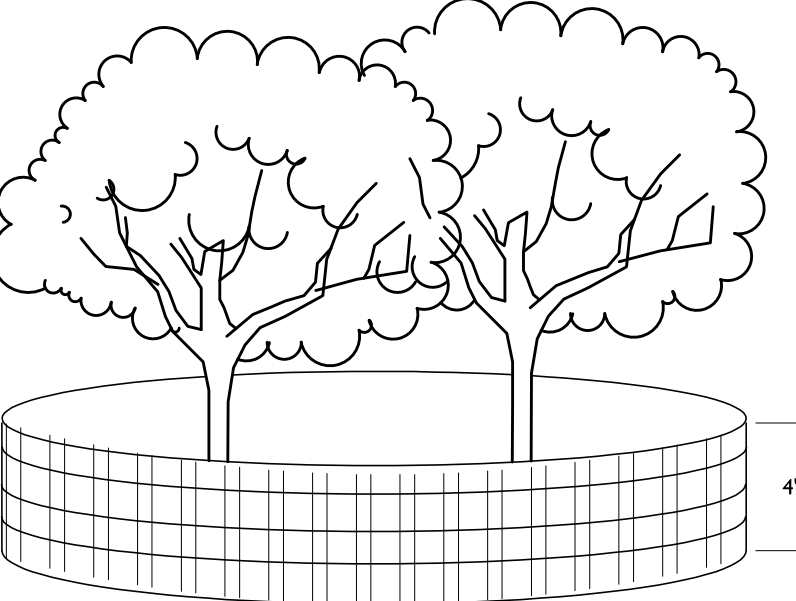
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Know what's below
Call before you dig.

ALL LANDSCAPE AREAS SHALL BE IRRIGATED INCLUDING ROAD RIGHTS-OF-WAY.

PRIOR TO THE RELEASE OF THE PERFORMANCE BOND, THE CITY OR ROCHESTER HILLS MUST INSPECT ALL LANDSCAPING PLANTINGS.

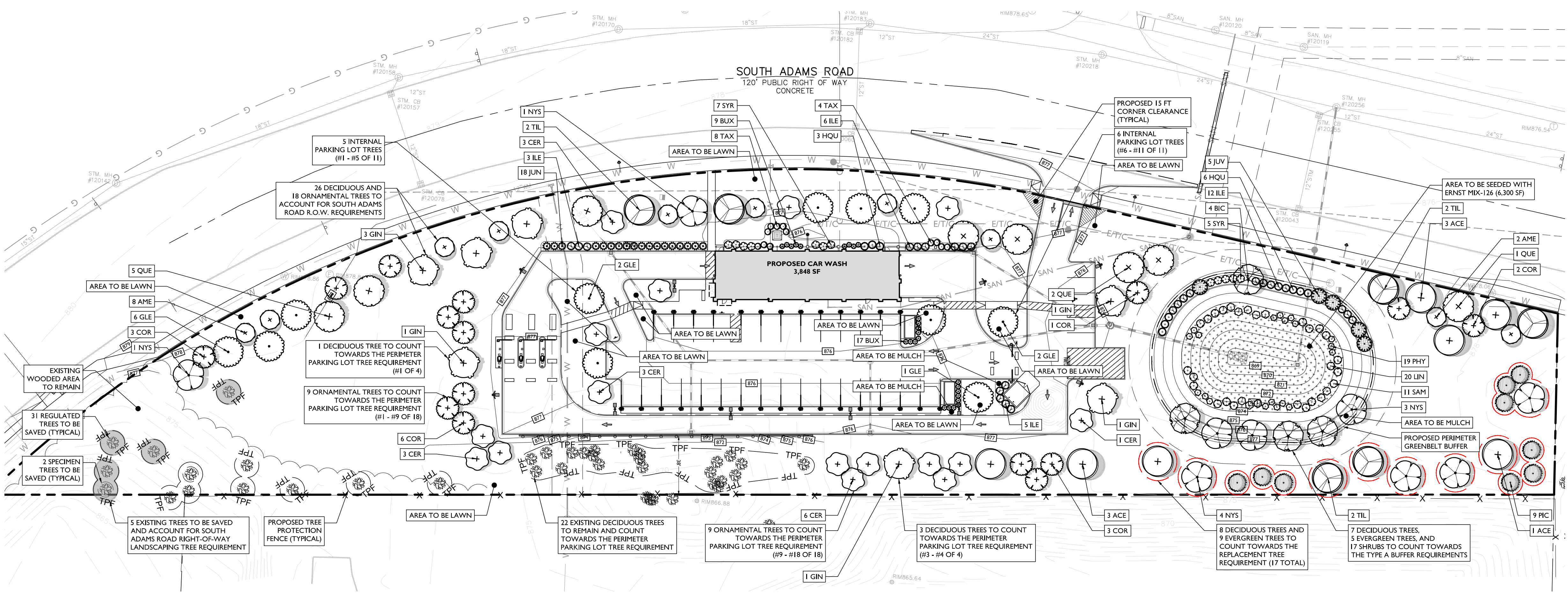
TOTAL REQUIRED LANDSCAPE TREES = 90 TREES
TOTAL REQUIRED REPLACEMENT TREES = 17 TREES
TOTAL PROPOSED TREES = 107 TREES



- NOTES:
- SNOW FENCING IS TO BE 4'-0" HIGH AND SELF-SUPPORTED.
 - DO NOT STOCKPILE MATERIALS OR STORE EQUIPMENT WITHIN THE TREE PROTECTION FENCING.
 - SNOW FENCE TO BE INSTALLED AT DRIP LINE OF EXISTING TREE OR TREE CLUSTER TO BE PROTECTED OR NO CLOSER THAN 4" FROM TREE TRUNK IF NECESSARY.
 - IF THE PROJECT AREA ENCOMPASSES A PORTION OF THE DRIP LINE OF THE TREE, NO MORE THAN ONE THIRD OF THE TOTAL AREA OF WITHIN THE DRIP LINE SHOULD BE DISTURBED BY CONSTRUCTION OR REGRADING AND A 3" THICK LAYER OF MULCH SHALL BE INSTALLED OVER THE AREA OF THE DRIP LINE WHICH IS NOT PROTECTED BY FENCING TO PROVIDE A CUSHION.

TREE PROTECTION DETAIL

NOT TO SCALE



ROCHESTER HILLS MAINTENANCE NOTES:

PRIOR APPROVAL IS REQUIRED TO PLANT ANY TREE OR SHRUB ON THE PUBLIC RIGHT-OF-WAY. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC ROAD, (TREES AND SHRUBS MUST BE PLANTED AT LEAST 15' AWAY FROM CURB OR ROAD EDGE WHERE THE SPEED LIMIT IS MORE THAN 35 MPH.) SHADE TREES AND EVERGREEN TREES MUST BE PLANTED AT LEAST 5' FROM THE EDGE OF THE PUBLIC WALKWAY. EVERGREEN AND ORNAMENTAL TREES MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC WALKWAY. NO TREES OR SHRUBS MAY BE PLANTED WITHIN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET RIGHT-OF-WAY LINES AT A DISTANCE ALONG EACH LINE OF 25' FROM THEIR POINT OF INTERSECTION. NO TREES OR SHRUBS MAY BE PLANTED IN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY DRIVEWAY WITH A PUBLIC WALKWAY AT A DISTANCE ALONG EACH LINE OF 15' FROM THEIR POINT OF INTERSECTION. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10' FROM ANY FIRE HYDRANT. SHADE AND EVERGREEN TREES MUST BE AT LEAST 15' AWAY FROM THE NEAREST OVERHEAD WIRE. TREES MUST BE PLANTED A MINIMUM OF 5' FROM AN UNDERGROUND UTILITY. UNLESS THE CITY'S LANDSCAPE ARCHITECT REQUIRES A GREATER DISTANCE, PRIOR TO THE RELEASE OF THE PERFORMANCE BOND, THE CITY OF ROCHESTER HILLS FORESTRY UNIT NEEDS TO INSPECT ALL TREES, EXISTING OR PLANTED, TO IDENTIFY ANY THAT POSE A HAZARD TO THE SAFE USE OF THE PUBLIC RIGHT-OF-WAY. FORESTRY MAY REQUIRE THE DEVELOPER TO REMOVE, AND POSSIBLY REPLACE, ANY SUCH TREES.

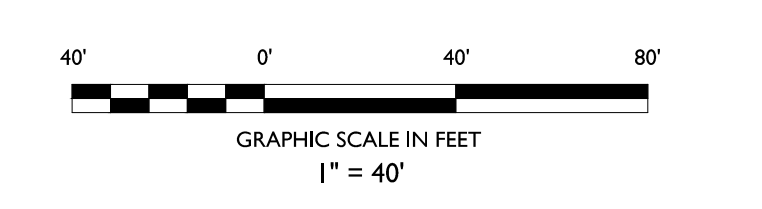
THE ABOVE REQUIREMENTS ARE INCORPORATED INTO THE PLAN.

- ROCHESTER HILLS LANDSCAPING NOTES:**
- ANY PLANT MATERIAL THAT IS DESIGNATED TO BE MAINTAINED THAT DIES OR IS DAMAGED DURING OR AS A RESULT OF CONSTRUCTION SHALL BE REPLACED PURSUANT TO ORDINANCE REQUIREMENTS.
 - ALL LANDSCAPED AREAS MUST BE IRRIGATED INCLUDING ROADS RIGHTS-OF-WAY. WATERING WILL ONLY OCCUR BETWEEN THE HOURS OF 12:00 AM AND 5:00 AM.
 - ALL LANDSCAPING REQUIRED PURSUANT TO CITY OF ROCHESTER CODES AND ORDINANCES SHALL BE MAINTAINED IN PERPETUITY.
 - ALL GROUND MOUNTED UTILITIES SHALL BE FULLY SCREENED FROM VIEW.

- ROCHESTER HILLS MAINTENANCE NOTES:**
- LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.
 - PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.
 - ALL DEAD, DAMAGED, OR DISEASED PLANT MATERIAL SHALL BE REMOVED IMMEDIATELY AND REPLACEMENTS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, DRIP IRRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS RAIN SENSORS SHALL BE IMPLEMENTED. CONTRACTOR SHALL VERIFY MAXIMUM ON SITE DYNAMIC WATER PRESSURE AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET SYSTEM PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, BRING HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS, AND SLEEVES WITHIN HARDCAPE AREAS.
 - ALL LANDSCAPE AREAS MUST BE IRRIGATED. WATERING WILL ONLY OCCUR BETWEEN THE HOURS OF 12:00 AM AND 5:00 AM.
 - IRRIGATION OVERSPRAY SHALL NOT BE BROADCAST ONTO CITY PATHWAYS.

- IRRIGATION NOTES:**
- IRRIGATION CONTRACTOR TO PROVIDE A DESIGN FOR AN IRRIGATION SYSTEM SEPARATING PLANTING BEDS FROM LAWN AREA PRIOR TO CONSTRUCTION. DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, DRIP IRRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS RAIN SENSORS SHALL BE IMPLEMENTED. CONTRACTOR SHALL VERIFY MAXIMUM ON SITE DYNAMIC WATER PRESSURE AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET SYSTEM PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, BRING HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS, AND SLEEVES WITHIN HARDCAPE AREAS.
 - ALL LANDSCAPE AREAS MUST BE IRRIGATED. WATERING WILL ONLY OCCUR BETWEEN THE HOURS OF 12:00 AM AND 5:00 AM.
 - IRRIGATION OVERSPRAY SHALL NOT BE BROADCAST ONTO CITY PATHWAYS.

- LANDSCAPING NOTES:**
- THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AND LANDSCAPING AREAS TO MATCH EXISTING CONDITIONS UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 - THE CONTRACTOR SHALL RESTORE ALL DISTURBED LAWN AREAS WITH SOD.
 - THE CONTRACTOR SHALL RESTORE MULCH AREAS WITH A MINIMUM 3 INCH LAYER OF MULCH.
 - THE MAXIMUM SLOPE ALLOWABLE IN LANDSCAPE RESTORATION AREAS SHALL BE 3 FEET HORIZONTAL TO 1 FOOT VERTICAL (3:1 SLOPE) UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 - THE CONTRACTOR IS REQUIRED TO LOCATE ALL SPRINKLER HEADS IN THE AREA OF LANDSCAPING DISTURBANCE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL RELOCATE SPRINKLER HEADS AND LINES IN ACCORDANCE WITH OWNER'S DIRECTION WITHIN AREAS OF DISTURBANCE.
 - THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED LANDSCAPED AREAS ARE GRADED TO MEET FLUSH AT THE ELEVATION OF WALKWAYS AND TOP OF CURB ELEVATIONS EXCEPT UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET. NO ABRUPT CHANGES IN GRADE ARE PERMITTED IN DISTURBED LANDSCAPING AREAS.
 - ALL MULCH BED AREAS TO HAVE PAINTED STEEL EDGING



	RESUBMISSION FOR CITY COUNCIL APPROVAL										
	STORM SEWER PROFILES										
	RESUBMISSION FOR LAND IMPROVEMENT PERMIT										
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2	03/31/2023	EM/RC									
1	02/16/2023	EM/RC									

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CITY FILE #22-043 SECTION #30
SCALE: 1" = 40' PROJECT ID: DET-220436

TITLE:

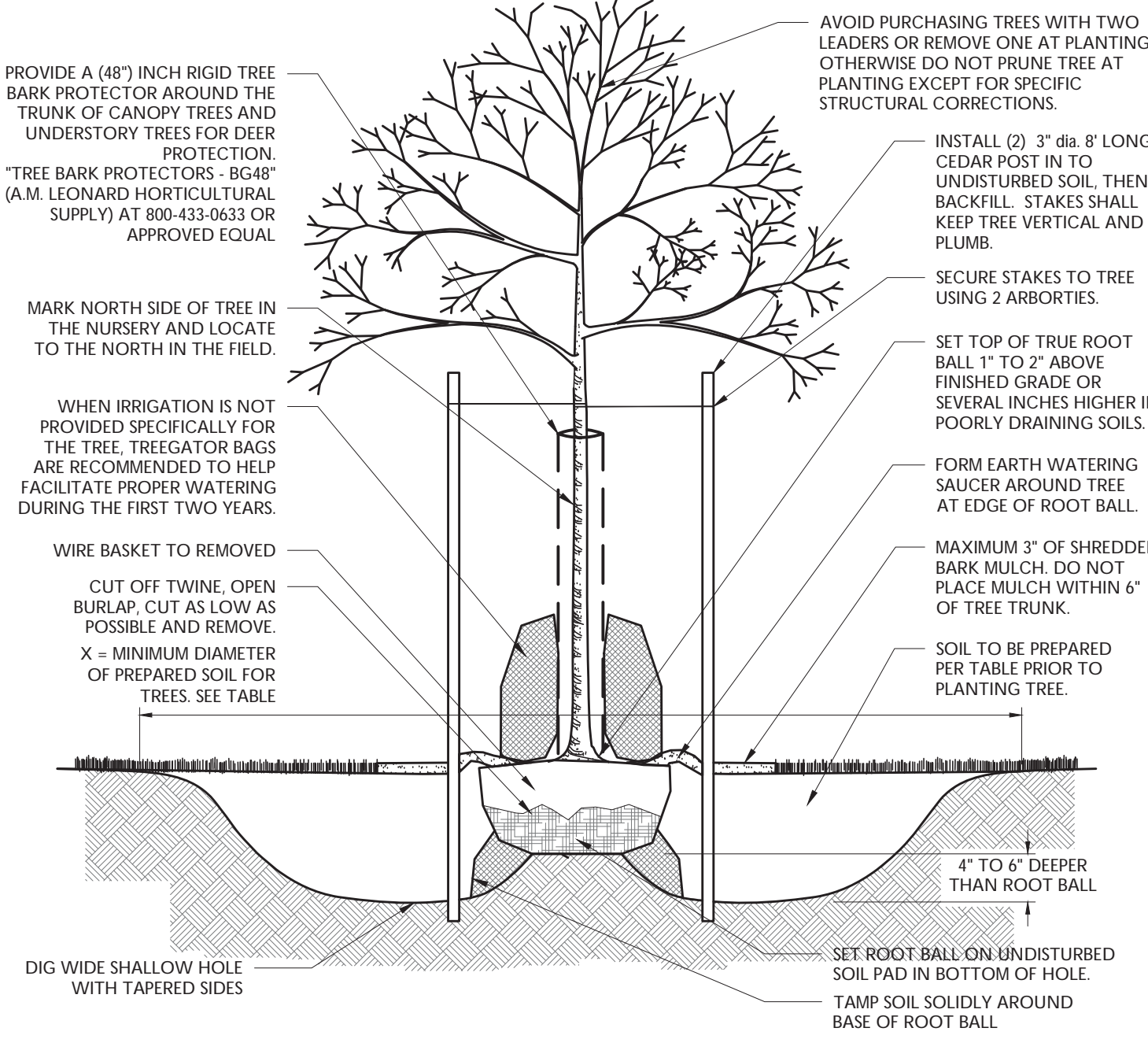
LANDSCAPING PLAN

DRAWING:

C-11

NOTES:

- FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER
- THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
- SOIL AMENDMENTS:
 - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
 - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX

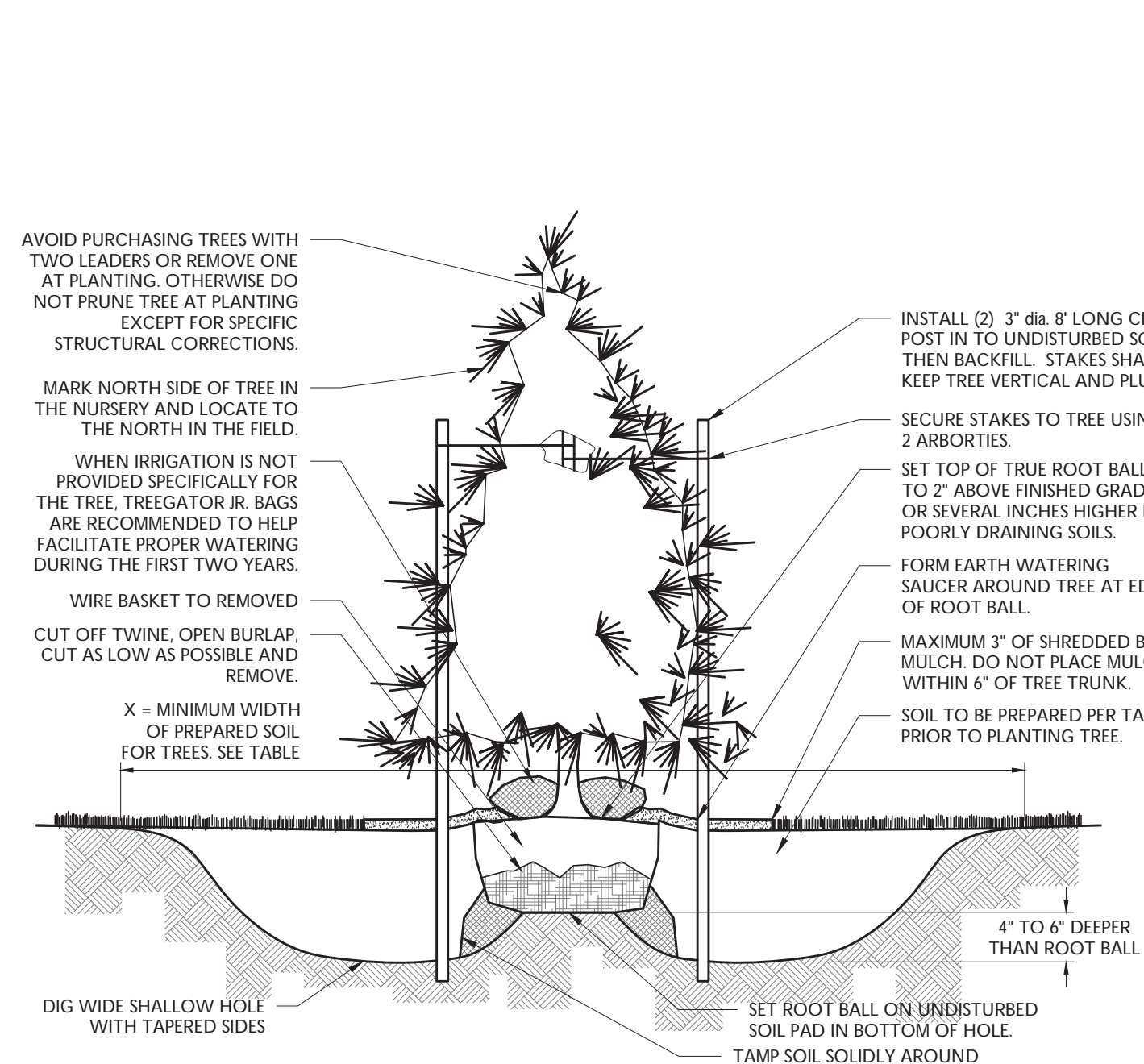


DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

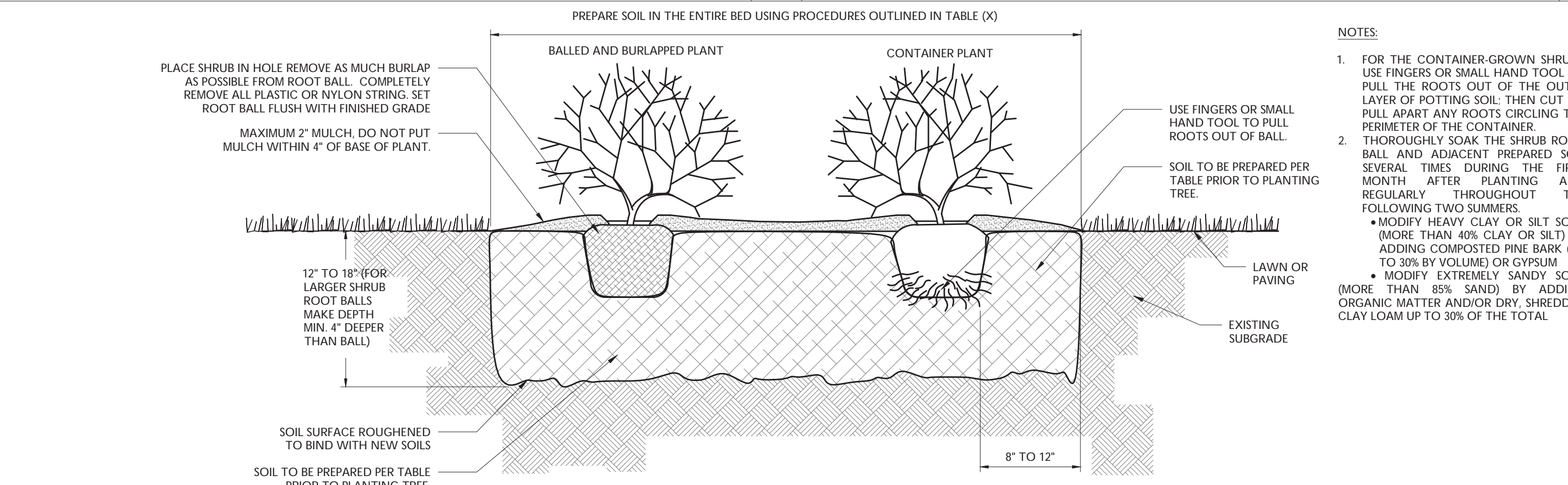
NOTES:

- FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER
- THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
- SOIL AMENDMENTS:
 - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
 - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX



CONIFEROUS TREE PLANTING DETAIL

NOT TO SCALE

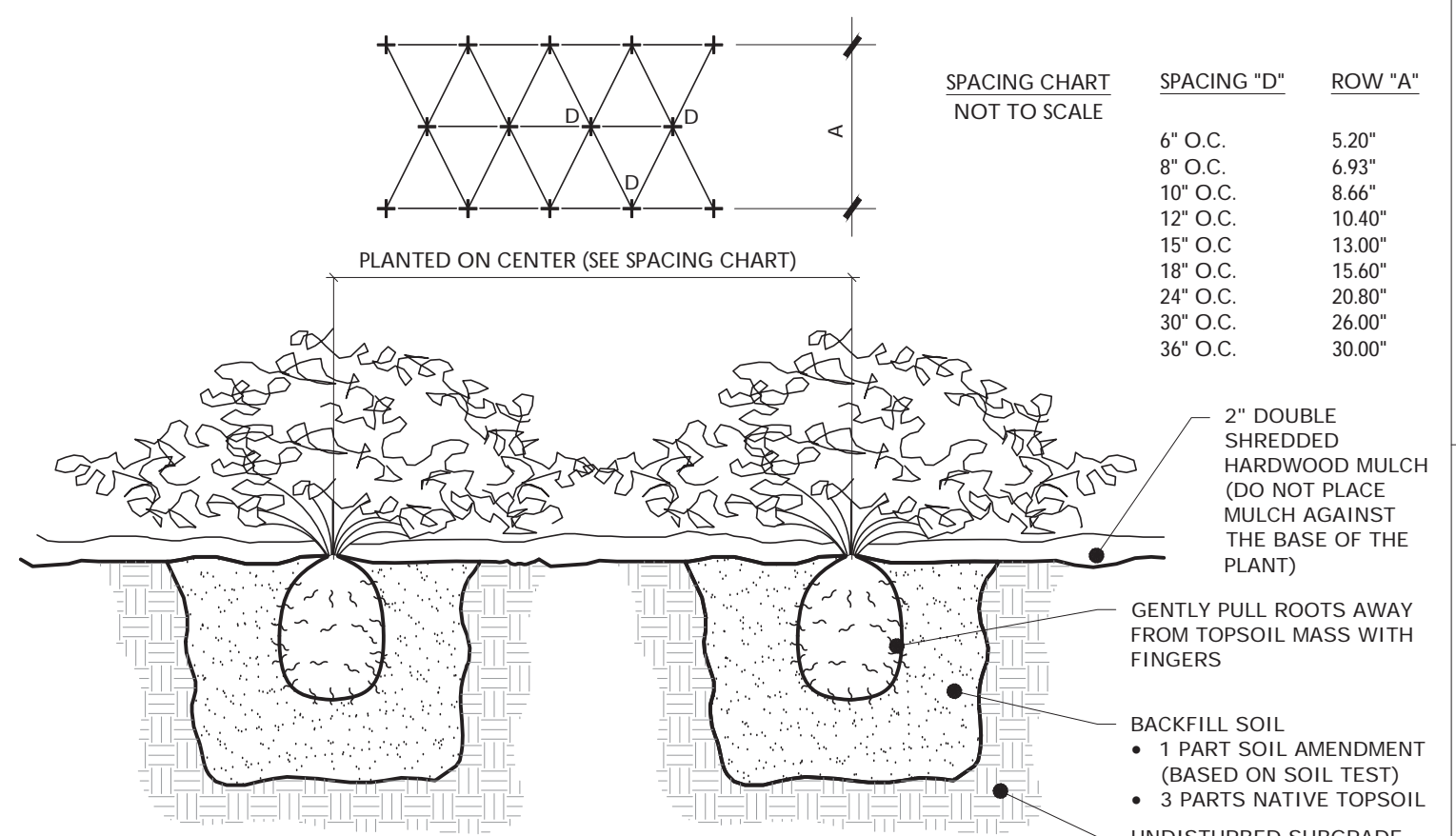


DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

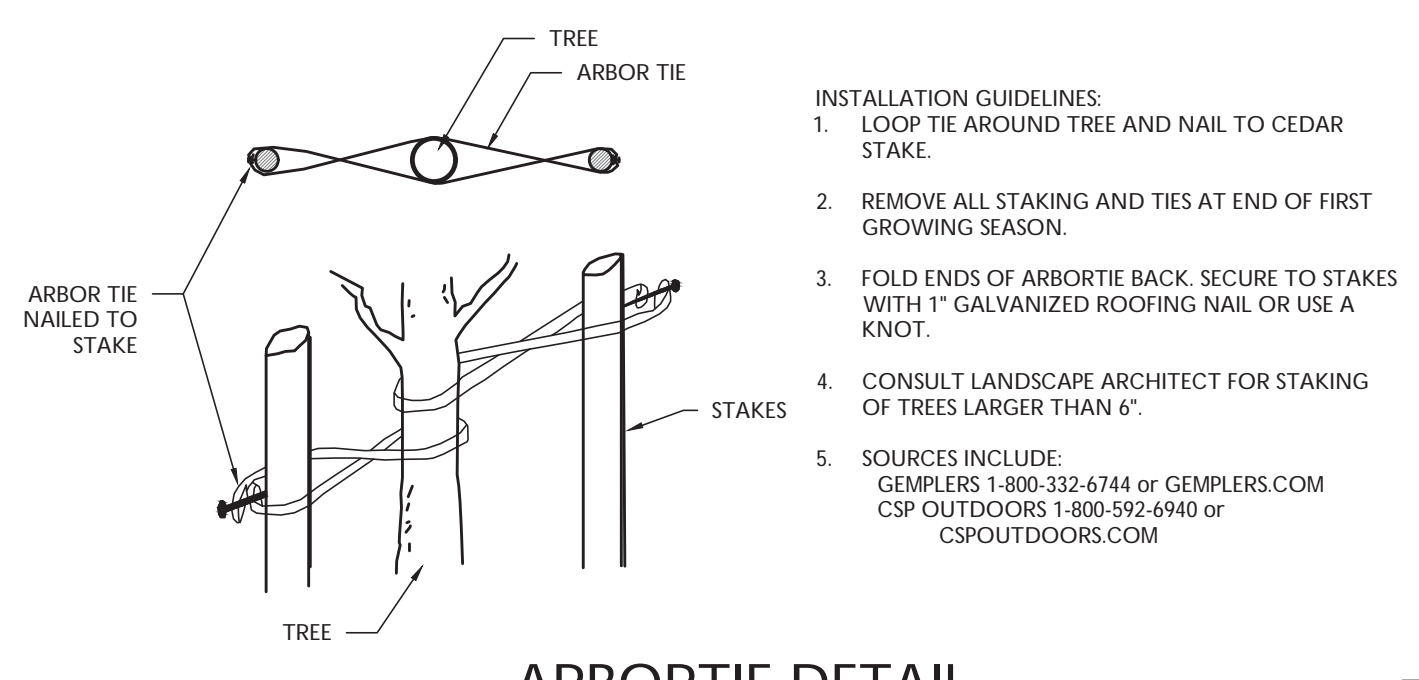
NOTES:

- THOROUGHLY SOAK THE GROUND COVER ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
- SOIL AMENDMENTS:
 - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
 - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX
- ALL GROUND COVER AREAS SHALL BE TREATED WITH A PRE-EMERGENT PER MANUFACTURERS SPECIFICATIONS



GROUND COVER/PERENNIAL/ANNUAL PLANTING DETAIL

NOT TO SCALE



ARBOR TIE DETAIL

NOT TO SCALE

NOTES:

- AT EACH IRRIGATION, APPLY TWO TO THREE GALLONS PER INCH TRUNK CALIPER TO THE ROOT BALL SURFACE. APPLY IT IN A MANNER SO ALL WATER SOAKS THE ENTIRE ROOT BALL. DO NOT WATER IF ROOT BALL IS WET/SATURATED ON THE IRRIGATION DAY.
- WHEN IRRIGATING FOR VITALITY, DELETE DAILY IRRIGATION WHEN PLANTING IN WINTER OR WHEN PLANTING IN COOL CLIMATES. ESTABLISHMENT TAKES THREE TO FOUR MONTHS PER INCH TRUNK CALIPER. NEVER APPLY IRRIGATION IF THE SOIL IS SATURATED.
- WHEN IRRIGATION FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES. IRRIGATION MAY BE REQUIRED IN THE NORMAL HOT, DRY PORTIONS OF THE FOLLOWING YEAR.

NOTES:

- IRREGULAR IRRIGATION. APPLY TWO TO THREE GALLONS PER INCH TRUNK CALIPER TO THE ROOT BALL SURFACE. APPLY IT IN A MANNER SO ALL WATER SOAKS THE ENTIRE ROOT BALL. DO NOT WATER IF ROOT BALL IS WET/SATURATED ON THE IRRIGATION DAY.
- WHEN IRRIGATING FOR VITALITY, DELETE DAILY IRRIGATION WHEN PLANTING IN WINTER OR WHEN PLANTING IN COOL CLIMATES. ESTABLISHMENT TAKES THREE TO FOUR MONTHS PER INCH TRUNK CALIPER. NEVER APPLY IRRIGATION IF THE SOIL IS SATURATED.
- WHEN IRRIGATION FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES. IRRIGATION MAY BE REQUIRED IN THE NORMAL HOT, DRY PORTIONS OF THE FOLLOWING YEAR.

GENERAL LANDSCAPING NOTES:

- THE LANDSCAPE CONTRACTOR SHALL FURNISH ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS, APPROVED OR FINAL DRAWINGS, AND INSTRUCTIONS PROVIDED BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIALS OR OWNER'S REPRESENTATIVE. ALL WORK COMPLETED AND MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH THE INTENTION OF THE SPECIFICATIONS, DRAWINGS, AND INSTRUCTIONS AND EXECUTED WITH THE STANDARD LEVEL OF CARE FOR THE LANDSCAPE INDUSTRY.
- WORK MUST BE CARRIED OUT ONLY DURING WEATHER CONDITIONS FAVORABLE TO LANDSCAPE CONSTRUCTION AND TO THE HEALTH AND WELFARE OF PLANTS. THE SUITABILITY OF SUCH WEATHER CONDITIONS SHALL BE DETERMINED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL.
- IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR, BEFORE ORDERING OR PURCHASING MATERIALS, TO PROVIDE SAMPLES OF THOSE MATERIALS TO THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL FOR APPROVAL, IF SO REQUESTED.
- IF SAMPLES ARE REQUESTED, THE LANDSCAPE CONTRACTOR IS TO SUBMIT CERTIFICATION TAGS FROM TREES, SHRUBS AND SEED VERIFYING TYPE AND PURITY.
- UNLESS OTHERWISE AUTHORIZED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL, THE LANDSCAPE CONTRACTOR SHALL PROVIDE NOTICE AT LEAST FORTY-EIGHT HOURS (48 HRS) IN ADVANCE OF THE ANTICIPATED DELIVERY DATE OF ANY PLANT MATERIAL TO THE PROJECT SITE. A LEGIBLE COPY OF THE INVOICE, SHOWING VARIETIES AND SIZES OF MATERIALS INCLUDED FOR EACH SHIPMENT SHALL BE FURNISHED TO THE PROJECT LANDSCAPE DESIGNER, OR GOVERNING MUNICIPAL OFFICIAL.
- THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL RESERVES THE RIGHT TO INSPECT AND REJECT PLANTS AT ANY TIME AND AT ANY PLACE.

PROTECTION OF EXISTING VEGETATION NOTES:

- BEFORE COMMENCING WORK, ALL EXISTING VEGETATION WHICH COULD BE IMPACTED AS A RESULT OF THE PROPOSED CONSTRUCTION ACTIVITIES MUST BE PROTECTED FROM DAMAGE BY THE INSTALLATION OF TREE PROTECTION FENCING. FENCING SHALL BE LOCATED AT THE DRIP-LINE OR LIMIT OF DISTURBANCE AS DEPICTED WITHIN THE APPROVED OR FINAL PLAN. ESTABLISHMENT OF TREE PROTECTION ZONE, FENCE INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED TREE PROTECTION FENCE DETAIL. NO WORK MAY BEGIN UNTIL THIS REQUIREMENT IS FULFILLED. THE FENCING SHALL BE INSPECTED REGULARLY BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- IN ORDER TO AVOID DAMAGE TO ROOTS, BARK OR LOWER BRANCHES, NO VEHICLE, EQUIPMENT, DEBRIS, OR OTHER MATERIALS SHALL BE DRIVEN, PARKED OR PLACED WITHIN THE TREE PROTECTION ZONE. ALL ON-SITE CONTRACTORS SHALL USE ANY AND ALL PRECAUTIONARY MEASURES WHEN PERFORMING WORK AROUND TREES, WALKS, PAVEMENTS, UTILITIES, AND ANY OTHER FEATURES EITHER EXISTING OR PREVIOUSLY INSTALLED UNDER THIS CONTRACT.
- IN RARE INSTANCES WHERE EXCAVATING, TIE, OR GRADING IS REQUIRED WITHIN THE DRIP-LINE OF TREES TO REMAIN, THE WORK SHALL BE PERFORMED AS FOLLOWS:
 - TRENCHING: WHEN TRENCHING OCCURS AROUND TREES TO REMAIN, THE TREE ROOTS SHALL NOT BE CUT, BUT THE TRENCH SHALL BE TUNNELED UNDER OR AROUND THE ROOTS BY CAREFUL HAND DIGGING AND WITHOUT INJURY TO THE ROOTS. NO ROOTS, LIMBS, OR WOODS ARE TO HAVE ANY PAINT OR MATERIAL APPLIED TO ANY SURFACE.
 - RAISING GRADES: WHEN THE GRADE AT AN EXISTING TREE IS BELOW THE NEW FINISHED GRADE, AND FILL NOT EXCEEDING 6 INCHES (6") IS REQUIRED, CLEAN, WASHED GRAVEL FROM ONE TO TWO INCHES (1" - 2") IN SIZE SHALL BE PLACED DIRECTLY AROUND THE TREE TRUNK. THE GRAVEL SHALL EXTEND OUT FROM THE TRUNK ON ALL SIDES A MINIMUM OF 18 INCHES (18") FROM APPROXIMATELY TWO INCHES (2") ABOVE THE FINISHED GRADE AT TREE TRUNK. GRAVEL BEYOND ANY EARTH FILL IS PLACED. NEW EARTH FILL SHALL NOT BE LEFT IN CONTACT WITH THE TRUNK OF ANY TREE REQUIRING FILL. WHERE FILL EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID TREE WELL SHALL BE CONSTRUCTED. IF APPLICABLE, TREE WELL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE WELL DETAIL."
 - LOWERING GRADES: EXISTING TREES LOCATED IN AREAS WHERE THE NEW FINISHED GRADE IS TO BE LOWERED, SHALL HAVE RE-GRADING WORK DONE BY HAND TO THE INDICATED ELEVATION, NO GREATER THAN SIX INCHES (6"). ROOTS SHALL BE CUT CLEANLY THREE INCHES (3") BELOW FINISHED GRADE UNDER THE DIRECTION OF A LICENSED ARBORIST. WHERE CUT EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID RETAINING WALL SHALL BE CONSTRUCTED. IF APPLICABLE, THE RETAINING WALL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE RETAINING WALL DETAIL."

SOIL PREPARATION AND MULCH NOTES:

- LANDSCAPE CONTRACTOR SHALL OBTAIN A SOIL TEST OF THE IN SITU TOPSOIL BY A CERTIFIED SOIL LABORATORY PRIOR TO PLANTING. LANDSCAPE CONTRACTOR SHALL ALLOW FOR A TWO WEEK TURNAROUND TIME FROM SUBMITTAL OF SAMPLE TO NOTIFICATION OF RESULTS.
- BASED ON SOIL TEST RESULTS, ADJUST THE RATES OF LIME AND FERTILIZER THAT SHALL BE MIXED INTO THE TOP SIX INCHES (6") OF TOPSOIL. THE LIME AND FERTILIZER RATES PROVIDED WITHIN THE "SEED SPECIFICATION" OR "SOD SPECIFICATION" IS APPROXIMATE AND FOR BIDDING PURPOSES ONLY. IF ADDITIONAL AMENDMENTS ARE NECESSARY, ADJUST THE TOPSOIL AS FOLLOWS:
 - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM.
 - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
- TOPSOIL SHALL BE FERTILE, FRIBL, NATURAL, TOPSOIL OF LOAMING CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL OBTAINED FROM A VULCANIC OR BURNED AREA, FREE FROM ALL CLAY, LUMPS, COARSE SAND, STONES, STUBS, ROOTS, STICKS, AND OTHER FOREIGN MATERIAL, GREATER THAN ONE INCH (1").
- TOPSOIL SHALL HAVE A PH RANGE OF 5.0-7.0 AND SHALL NOT CONTAIN LESS THAN 6% ORGANIC MATTER BY WEIGHT.
- OBTAIN TOPSOIL ONLY FROM LOCAL SOURCES OR FROM AREAS HAVING SIMILAR SOIL CHARACTERISTICS TO THAT FOUND AT THE PROJECT SITE.
- CONTRACTOR SHALL PROVIDE A SIX INCH (6") DEEP LAYER OF TOPSOIL IN ALL PLANTING AREAS. TOPSOIL SHALL BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN SOIL CONDITIONS.
- UNLESS OTHERWISE NOTED IN THE CONTRACT, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE GRADING WITHIN THE DISTURBED AREA OF THE SITE.
- LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE SUB-GRADE ELEVATION MEETS THE FINISHED GRADE ELEVATION (LESS THE REQUIRED TOPSOIL), IN ACCORDANCE WITH THE APPROVED OR FINAL GRADING PLAN.
- ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THE APPROVED OR FINAL CONSTRUCTION SET UNLESS OTHERWISE DIRECTED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER SURFACE AND SUBSURFACE PLANT BED DRAINAGE PRIOR TO THE INSTALLATION OF PLANTINGS. IF POOR DRAINAGE CONDITIONS EXIST, CORRECTIVE ACTION SHALL BE TAKEN PRIOR TO INSTALLATION. ALL PLANTING AND LAWN AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW A FREE FLOW OF SURFACE WATER.
- DOUBLE SHREDDED HARDWOOD MULCH OR APPROVED EQUAL, SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL SHRUB PLANTING BEDS AND ALL TREE PLANTING BEDS BY LANDSCAPE CONTRACTOR. GROUND COVER, PERENNIAL, AND ANNUAL PLANTING BEDS SHALL BE MULCHED WITH A TWO INCH (2") TOP DRESSING. SINGLE TREES OR SHRUBS SHALL BE MULCHED TO AVOID CONTACT WITH TRUNK OR PLANT STEM. MULCH SHALL BE OF SUFFICIENT CHARACTER AS NOT TO BE EASILY DISPLACED BY WIND OR WATER RUNOFF.
- WHENEVER POSSIBLE, THE SOIL PREPARATION AREA SHALL BE CONNECTED FROM PLANTING TO PLANTING.
- SOIL SHALL BE LOOSENED WITH A BACKHOE OR OTHER LARGE COARSE-TILING EQUIPMENT UNLESS THE SOIL IS FROZEN OR EXCESSIVELY WET. TILING THAT PRODUCES LARGE, COARSE CHUNKS OF SOIL IS PREFERABLE TO TILING THAT RESULTS IN FINE GRAINS UNIFORM IN TEXTURE. AFTER THE AREA IS LOOSENED IT SHALL NOT BE DRIVEN OVER BY ANY VEHICLE.
- APPLY PRE-EMERGENT WEED CONTROL TO ALL PLANTING AREAS PRIOR TO MULCHING. ENSURE COMPATIBILITY BETWEEN PRODUCT AND PLANT MATERIAL.
- ALL PLANTING SOIL SHALL BE AMENDED WITH THE FOLLOWING:

MYCRO® TREE SAVER - A DRY GRANULAR MYCORRHIZAL FUNGI INOCULANT THAT IS MIXED IN THE BACKFILL WHEN PLANTING TREES AND SHRUBS. IT CONTAINS SPORES OF FUNGI ECOTOMYCORRHIZAL AND VA MYCORRHIZAL FUNGI (VAM), BENEFICIAL RHIZOSPHERE BACTERIA, TERRA-SORB SUPERABSORBENT HYDROGEL TO REDUCE WATER LEACHING, AND SELECTED ORGANIC MICROBIAL NUTRIENTS.

- DIRECTIONS FOR USE: USE 3-OZ PER EACH FOOT DIAMETER OF THE ROOT BALL OR 3-OZ PER INCH CALIPER, MIX INTO THE BACKFILL WHEN TRANSPLANTING TREES AND SHRUBS. MIX PRODUCT IN A RING-SHAPED VOLUME OF SOIL AROUND THE UPPER PORTION OF THE ROOT BALL, EXTENDING FROM THE SOIL SURFACE TO A DEPTH OF ABOUT 8 INCHES, AND EXTENDING OUT FROM THE TRUNK ABOUT 8 INCHES INTO THE BACKFILL. APPLY WATER TO SOIL SATURATION.
- MYCRO® TREE SAVER IS EFFECTIVE FOR ALL TREE AND SHRUB SPECIES EXCEPT RHODODENDRONS, AZALEAS, AND MOUNTAIN LAUREL, WHICH REQUIRE ERICOID MYCORRHIZAE.
- SOIL PH: THE FUNGI IN THIS PRODUCT WERE CHOSEN BASED ON THEIR ABILITY TO SURVIVE AND COLONIZE PLANT ROOTS IN A PH RANGE OF 4.5 TO 9.
- FUNGICIDES: THE USE OF CERTAIN FUNGICIDES CAN HAVE A DETRIMENTAL EFFECT ON THE INOCULATION PROGRAM. SOIL APPLICATION OF ANY FUNGICIDE IS NOT RECOMMENDED FOR TWO WEEKS AFTER APPLICATION.
- OTHER PESTICIDES: HERBICIDES AND INSECTICIDES DO NOT NORMALLY INTERFERE WITH MYCORRHIZAL FUNGAL DEVELOPMENT, BUT MAY INHIBIT THE GROWTH OF SOME TREE AND SHRUB SPECIES IF NOT USED PROPERLY.

HEALTHY START MACRO TABS 12-8-8

- FERTILIZER TABLETS ARE PLACED IN THE UPPER 6 INCHES OF BACKFILL SOIL WHEN PLANTING TREES AND SHRUBS.
- TABLETS ARE FORMULATED FOR LONG-TERM RELEASE AND LAST UP TO 2 YEARS AFTER PLANTING. TABLETS CONTAIN 12-8-8 NPK FERTILIZER, AS WELL AS A MINIMUM OF SEVEN PERCENT (%) HUMIC ACID BY WEIGHT, MICROBIAL NUTRIENTS DERIVED FROM SEA KELP, PROTEIN BYPRODUCTS, AND YUCCA SCHIDIGERA, AND A COMPLEMENT OF BENEFICIAL RHIZOSPHERE BACTERIA. THE STANDARD 21 GRAM TABLET IS SPECIFIED HERE. DIRECTIONS FOR USE: FOR PLANTING BALLED & BURLAPPED (B&B) TREES AND SHRUBS, MEASURE THE THICKNESS OF THE TRUNK AND USE ABOUT 1 TABLET (21-GM) PER HALF-INCH. PLACE THE TABLETS DIRECTLY NEXT TO THE ROOT BALL, EVENLY DISTRIBUTED AROUND ITS PERIMETER, AT A DEPTH OF ABOUT 4 INCHES.

IRRIGATION DURING ESTABLISHMENT		
SIZE AT PLANTING	IRRIGATION FOR VITALITY	IRRIGATION FOR SURVIVAL
< 2" CALIPER	DAILY FOR TWO WEEKS, EVERY OTHER DAY FOR TWO MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR TWO TO THREE MONTHS
2"-4" CALIPER	DAILY FOR ONE MONTH, EVERY OTHER DAY FOR THREE MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR THREE TO FOUR MONTHS
4" - 6" CALIPER	DAILY FOR SIX WEEKS, EVERY OTHER DAY FOR FIVE MONTHS, WEEKLY UNTIL ESTABLISHED	TWICE WEEKLY FOR FOUR TO FIVE MONTHS

TABLE NOTES:

- AT EACH IRRIGATION, APPLY TWO TO THREE GALLONS PER INCH TRUNK CALIPER TO THE ROOT BALL SURFACE. APPLY IT IN A MANNER SO ALL WATER SOAKS THE ENTIRE ROOT BALL. DO NOT WATER IF ROOT BALL IS WET/SATURATED ON THE IRRIGATION DAY.
- WHEN IRRIGATING FOR VITALITY, DELETE DAILY IRRIGATION WHEN PLANTING IN WINTER OR WHEN PLANTING IN COOL CLIMATES. ESTABLISHMENT TAKES THREE TO FOUR MONTHS PER INCH TRUNK CALIPER. NEVER APPLY IRRIGATION IF THE SOIL IS SATURATED.
- WHEN IRRIGATION FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES. IRRIGATION MAY BE REQUIRED IN THE NORMAL HOT, DRY PORTIONS OF THE FOLLOWING YEAR.

PLANT QUALITY AND HANDLING NOTES:

- ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004) OR LATEST REVISION AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
- IN ALL CASES, BOTANICAL NAMES LISTED WITHIN THE APPROVED OR FINAL PLANT LIST SHALL TAKE PRECEDENCE OVER COMMON NAMES.
- ALL PLANTS SHALL BE OF SELECTED SPECIMEN QUALITY, EXCEPTIONALY HEAVY, TIGHTLY KNIT, SO TRAINED OR FAVORED IN THEIR DEVELOPMENT AND APPEARANCE AS TO BE SUPERIOR IN FORM, NUMBER OF BRANCHES, COMPACTNESS AND SYMMETRY. ALL PLANTS SHALL HAVE A NORMAL HABIT OR SOUND, HEALTHY, VIGOROUS PLANTS WITH WELL DEVELOPED ROOT SYSTEM. PLANTS SHALL BE FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE.
- PLANTS SHALL NOT BE PRUNED BEFORE DELIVERY. TREES WITH ABRASION OF THE BARK, SUNSCALDS, DISFIGURING KNOTS OR FRESH CUTS OF LIMBS OVER ONE AND ONE-FOURTH INCHES (1-1/4") WHICH HAVE NOT COMPLETELY CALLOUSED SHALL BE REJECTED.
- ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH AND BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE.
- THE ROOT SYSTEM OF EACH PLANT SHALL BE WELL PROVIDED WITH FIBROUS ROOTS. ALL PARTS SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF.
- ALL PLANTS DESIGNATED BALL AND BURLAP (B&B) MUST BE MOVED WITH THE ROOT SYSTEM AS SOLID UNITS WITH BALLS OF EARTH FIRMLY WRAPPED WITH BURLAP. THE DIAMETER AND DEPTH OF THE BALLS OF EARTH MUST BE SUFFICIENT TO ENCOMPASS THE FIBROUS ROOT FEEDING SYSTEMS NECESSARY FOR THE HEALTHY DEVELOPMENT OF THE PLANT. NO PLANT SHALL BE ACCEPTED WHEN THE BALL OF EARTH SURROUNDING ITS ROOTS HAS BEEN BADLY CRACKED OR BROKEN PREPARATORY TO OR DURING THE PROCESS OF PLANTING. THE BALLS SHALL REMAIN INTACT DURING ALL OPERATIONS. ALL PLANTS THAT CANNOT BE PLANTED AT ONCE MUST BE HELED-IN BY SETTING IN THE GROUND AND COVERING THE BALLS WITH SOIL OR MULCH AND THEN WATERING. HEMP BURLAP AND TWINE IS PREFERABLE TO TREATED. IF TREATED BURLAP IS USED, ALL TWINE IS TO BE CUT FROM AROUND THE TRUNK AND ALL BURLAP IS TO BE REMOVED.
- ALL PLANTS TRANSPORTED TO THE PROJECT IN OPEN VEHICLES SHALL BE COVERED WITH TARPS OR OTHER SUITABLE COVERS SECURELY FASTENED TO THE BODY OF THE VEHICLE TO PREVENT INJURY TO THE PLANTS. CLOSED VEHICLES SHALL BE ADEQUATELY VENTILATED TO PREVENT OVERHEATING OF THE PLANTS. EVIDENCE OF INADEQUATE PROTECTION FOLLOWING DIGGING, CARELESSNESS WHILE IN TRANSIT, OR IMPROPER HANDLING OR STORAGE SHALL BE CAUSE FOR REJECTION OF PLANT MATERIAL. ALL PLANTS SHALL BE KEPT MOIST, FRESH AND PROTECTED. SUCH PROTECTION SHALL ENCOMPASS THE ENTIRE PERIOD DURING WHICH THE PLANTS ARE IN TRANSIT, BEING HANDLED, OR ARE IN TEMPORARY STORAGE.
- ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE CORRESPONDING LANDSCAPE PLAN AND PLANTING SPECIFICATIONS.
- LANDSCAPE CONTRACTOR SHALL MAKE BEST EFFORT TO INSTALL PLANTINGS ON THE SAME DAY AS DELIVERY. IF PLANTS ARE NOT PLANTED IMMEDIATELY ON SITE, PROPER CARE SHALL BE TAKEN TO PLACE THE PLANTINGS IN PARTIAL SHADE WHEN POSSIBLE. THE ROOT BALL SHALL BE KEPT MOIST AT ALL TIME AND COVERED WITH MOISTENED MULCH OR AGED COMPOST. PROPER IRRIGATION SHALL BE SUPPLIED SO AS NOT TO ALLOW THE ROOT BALL TO DRY OUT. PLANTINGS SHALL BE UNITED AND PROPER SPACING SHALL BE ALLOTTED FOR AIR CIRCULATION AND TO PREVENT DISEASE, WILTING, AND LEAF LOSS. PLANTS THAT REMAIN UNPLANTED FOR A PERIOD OF TIME GREATER THAN THREE (3) DAYS SHALL BE HELED IN WITH TOPSOIL OR MULCH AND WATERED AS REQUIRED TO PRESERVE ROOT MOISTURE.
- NO PLANT MATERIAL SHALL BE PLANTED IN MUDDY OR FROZEN SOIL.
- PLANTS WITH INJURED ROOTS OR BRANCHES SHALL BE PRUNED PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY DISEASED OR INJURED PLANTS SHALL BE REMOVED.
- IF ROCK OR OTHER UNDERGROUND OBSTRUCTION IS ENCOUNTERED, THE LANDSCAPE DESIGNER RESERVES THE RIGHT TO A MINIMUM OF 18 INCHES (18") ABOVE GRADE TO ENLARGE OR RELOCATE PLANTINGS TO AN EQUIVALENT SPECIES OF THE SAME SIZE AS PROPOSED WITHIN SIGHT TRIANGLES. TREES SHALL BE LIMBED AND MAINTAINED TO A HEIGHT OF EIGHT FEET (8') ABOVE GRADE, AND SHRUBS, GROUND COVER, PERENNIALS, AND ANNUALS SHALL BE MAINTAINED TO A HEIGHT NOT TO EXCEED TWO FEET (2') ABOVE GRADE UNLESS OTHERWISE NOTED OR SPECIFIED BY THE GOVERNING MUNICIPALITY OR AGENCY.
- INSTALLATION SHALL OCCUR DURING THE FOLLOWING SEASONS:
PLANTS (MARCH 1 - JUNE 11 OR OCTOBER 1 - UNTIL PREPARED SOIL BECOMES FROZEN)
LAWNS (MARCH 15 - JUNE 15 OR SEPTEMBER 1 - DECEMBER 1)
- THE FOLLOWING TREES ARE SUSCEPTIBLE TO TRANSPORT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON (STARTING SEPTEMBER 15):
 - ABIES CONCOLOR
 - ACER BURGERRIANUM
 - ACER FRAXINIFOLIUM
 - ACER RUBRUM
 - ACER SACCHARINUM
 - BETULA VARIETIES
 - CARPINUS VARIETIES
 - CEDRUS DEODARA
 - CELTIS VARIETIES
 - CERIODIPHYLLUM VARIETIES
 - CORNUS VARIETIES
 - CRATAEGUS VARIETIES
 - CORNUS VARIETIES
 - CRATAEGUS VARIETIES
 - CRATAEGUS VARIETIES
 - FAGUS VARIETIES
 - HALESIA VARIETIES
 - ILEX X FOSTERII
 - ILEX NELLE STEVENS
 - ILEX OPACA
 - JUNIPERUS VIRGINIANA
 - KOLLEUTERA PANICULATA
 - LICHABAYUM VARIETIES
 - LIRODENDRON VARIETIES
 - MALUS IN LEAF
 - NYSSA SYLVIATICA
 - OSTRYA VIRGINIANA
 - PINUS NIGRA
 - PLATANUS VARIETIES
 - POPULUS VARIETIES
 - PRUNUS VARIETIES
 - PYRUS VARIETIES
 - QUERCUS VARIETIES (NOT Q. PALUSTRIS)
 - SALIX WEEPING VARIETIES
 - SORBUS VARIETIES
 - TAXODIUM VARIETIES
 - TAXUS CANADENSIS
 - TILOA TOMENTOSA VARIETIES
 - ULMUS PARVIFOLIA VARIETIES
 - ZELKOVA VARIETIES
- IF A PROPOSED PLANT IS UNAVAILABLE OR THE DAILY DIGGING HAZARD LIST AN EQUIVALENT SPECIES OF THE SAME SIZE MAY BE REQUESTED FOR SUBSTITUTION OF THE ORIGINAL PLANT. ALL SUBSTITUTIONS SHALL BE APPROVED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL PRIOR TO ORDERING AND INSTALLATION.
- DURING THE COURSE OF CONSTRUCTION/PLANT INSTALLATION, EXCESS AND WASTE MATERIALS SHALL BE CONTINUOUSLY AND PROMPTLY REMOVED AT THE END OF EACH WORK DAY. ALL DEBRIS, MATERIALS, AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF AND ALL PAVED AREAS SHALL BE CLEANED.
- LANDSCAPE CONTRACTOR SHALL DISPOSE OF ALL RUBBISH AND EXCESS SOIL AT HIS EXPENSE TO AN OFF-SITE LOCATION AS APPROVED BY THE LOCAL MUNICIPALITY.
- A 90-DAY MAINTENANCE PERIOD SHALL BEGIN IMMEDIATELY AFTER ALL PLANTS HAVE BEEN SATISFACTORILY INSTALLED.
- MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, REPLACING MULCH THAT HAS BEEN DISPLACED BY EROSION OR OTHER MEANS, REPAIRING AND RESHAPING WATER RINGS OR SAUCERS, MAINTAINING STAKES AND GUYE'S IF ORIGINALLY REQUIRED, WATERING WHEN NEEDED OR DIRECTED, WEEDING, PRUNING, SPRAYING, FERTILIZING, MOWING THE LAWN, AND PERFORMING ANY OTHER WORK REQUIRED TO KEEP THE PLANTS IN A HEALTHY CONDITION.
- MOW ALL GRASS AREAS AT REGULAR INTERVALS TO KEEP THE GRASS HEIGHT FROM EXCEEDING THREE INCHES (3"). MOWING SHALL BE PERFORMED ONLY WHEN GRASS IS DRY. MOWER BLADE SHALL BE SET TO REMOVE NO MORE THAN ONE THIRD (1/3) OF THE GRASS LENGTH, WHEN THE AMOUNT OF GRASS IS HEAVY, IT SHALL BE REMOVED TO PREVENT DIRECTION OF THE UNDERLYING TURF. MOW GRASS AREAS IN SUCH A MANNER AS TO PREVENT CLIPPINGS FROM BLOWING ON PAVED AREAS, AND SIDEWALKS. CLEANUP AFTER MOWING SHALL INCLUDE SWEEPING OR BLOWING OF PAVED AREAS AND SIDEWALKS TO CLEAR THEM FROM MOWING DEBRIS.
- GRASSED AREAS DAMAGED DURING THE PROCESS OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHO SHALL RESTORE THE DISTURBED AREAS TO A CONDITION SATISFACTORY TO THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE. THIS MAY INCLUDE FILLING TO GRADE, FERTILIZING, SEEDING, AND MULCHING.
- SHOULD THE OWNER REQUIRE MAINTENANCE BEYOND THE STANDARD 90-DAY MAINTENANCE PERIOD, A SEPARATE CONTRACT SHALL BE ESTABLISHED.
- LANDSCAPE CONTRACTOR SHALL WATER NEW PLANTINGS FROM TIME OF INSTALL AND THROUGHOUT REQUIRED 90-DAY MAINTENANCE PERIOD UNTIL PLANTS ARE ESTABLISHED. IF ON-SITE WATER IS NOT AVAILABLE AT THE PROJECT LOCATION, THE LANDSCAPE CONTRACTOR SHALL FURNISH BY MEANS OF A WATERING TRUCK OR OTHER ACCEPTABLE METHOD.
- THE QUANTITY OF WATER APPLIED AT ONE TIME SHALL BE SUFFICIENT TO PENETRATE THE SOIL TO A MINIMUM OF EIGHT INCHES (8") IN SHRUB BEDS AND SIX INCHES (6") IN TURF AREAS AT A RATE WHICH WILL PREVENT SATURATION OF THE SOIL.
- IF AN AUTOMATIC IRRIGATION SYSTEM HAS BEEN INSTALLED, IT CAN BE USED FOR WATERING PLANT MATERIAL. HOWEVER, FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY OF PLANT HEALTH AND ESTABLISHMENT.

PLANT MATERIAL GUARANTEE NOTES:

- THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR (1YR) FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE.
- THE LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE DYING, DEAD, OR DEFECTIVE PLANT MATERIAL AT HIS EXPENSE. THE LANDSCAPE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS COMPANY'S OPERATIONS.
- ALL REPLACEMENT PLANTS SHALL BE OF THE SAME SPECIES AND SIZE AS SPECIFIED ON THE APPROVED OR FINAL PLANT LIST. REPLACEMENTS RESULTING FROM REMOVAL, LOSS, OR DAMAGE DUE TO OCCUPANCY OF THE PROJECT IN ANY PART: VANDALISM, PHYSICAL DAMAGE BY ANIMALS, VEHICLES, ETC., AND LOSSES DUE TO CURTAILMENT OF WATER BY LOCAL AUTHORITIES SHALL BE APPROVED AND PAID FOR BY THE OWNER.
- THE CONTRACTOR SHALL INSTRUCT THE OWNER AS TO THE PROPER CARE AND MAINTENANCE OF ALL PLANTINGS.

LAWN (SEED OR SOD) NOTES:

- SEED MIXTURE SHALL BE FRESH, CLEAN, NEW CROP SEED. SOD SHALL BE STRONGLY ROOTED, UNIFORM IN THICKNESS, AND FREE OF WEEDS, DISEASE, AND PESTS.
- SEED OR SOD SHALL BE PURCHASED FROM A RECOGNIZED DISTRIBUTOR AND SHALL BE COMPOSED OF THE MIX OR BLEND WITH THE PREPARED "SEED SPECIFICATION" OR "SOD SPECIFICATION".
- REFERENCE LANDSCAPE PLAN FOR AREAS TO BE SEED OR LAID WITH SOD.
- SEEDING SHALL NOT BE PERFORMED IN WINDY WEATHER. IF THE SEASON OF THE PROJECT COMPLETION PROHIBITS PERMANENT STABILIZATION, TEMPORARY STABILIZATION SHALL BE PROVIDED IN ACCORDANCE WITH THE "TEMPORARY SEEDING SPECIFICATION".
- FENCES OR LAWN AREAS AGAINST TRESPASSING WHILE THE SEED IS GERMINATING. FURNISH AND INSTALL FENCES, SIGNS, BARRIERS OR OTHER NECESSARY TEMPORARY PROTECTIVE DEVICES. DAMAGE RESULTING FROM TRESPASS, EROSION, WASHOUT, SETTLEMENT OR OTHER CAUSES SHALL BE REPAIRED BY THE LANDSCAPE CONTRACTOR AT HIS EXPENSE. REMOVE ALL FENCES, SIGNS, BARRIERS OR OTHER TEMPORARY PROTECTIVE DEVICES ONCE LAWN HAS BEEN ESTABLISHED.

RESUBMISSION FOR CITY COUNCIL APPROVAL	EM	DATE	BY
RESUBMISSION FOR CITY COUNCIL APPROVAL	EM	08/22/2025	
STORM SEWER PROFILES	EM	08/11/2025	
SUBMISSION FOR LAND IMPROVEMENT PERMIT	EMRC	07/27/2025	
RESUBMISSION FOR CITY COUNCIL APPROVAL	EMRC	06/30/2025	
RESUBMISSION FOR CITY COUNCIL APPROVAL	EMRC	05/05/2025	
RESUBMISSION FOR CITY COUNCIL APPROVAL	EMRC	03/31/2025	
RESUBMISSION FOR CITY COUNCIL APPROVAL	EMRC	02/16/2025	

NOT APPROVED FOR CONSTRUCTION

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WHITE WATER CAR WASH

PROPOSED CAR WASH

EROP LLC

STATE DEVELOPMENT PLANS

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JONATHAN REED
REGISTERED PROFESSIONAL ENGINEER
No. 93205
EXPIRES 12/31/2026

STONEFIELD engineering & design

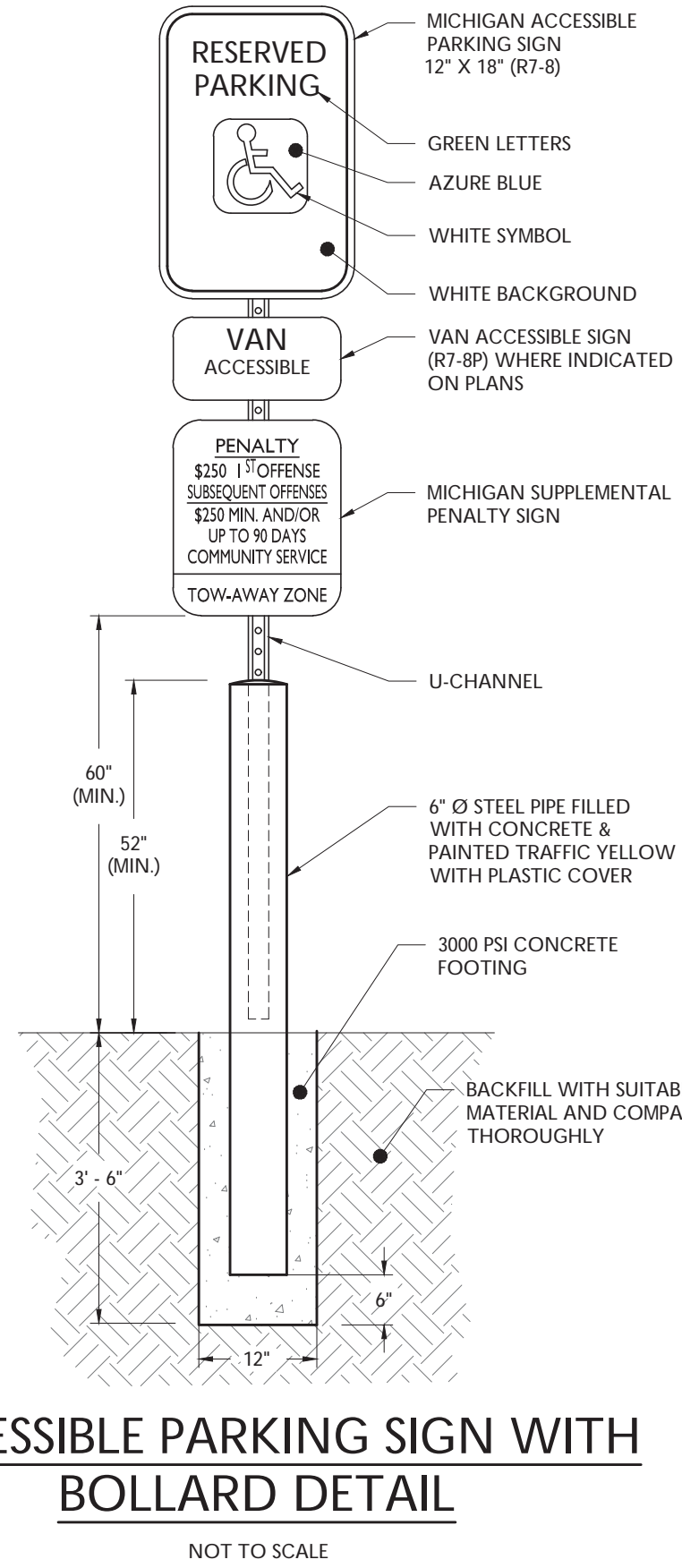
CITY FILE #22-043 SECTION #30

SCALE: AS SHOWN PROJECT ID: DET-220436

TITLE: LANDSCAPING DETAILS

LANDSCAPING DETAILS

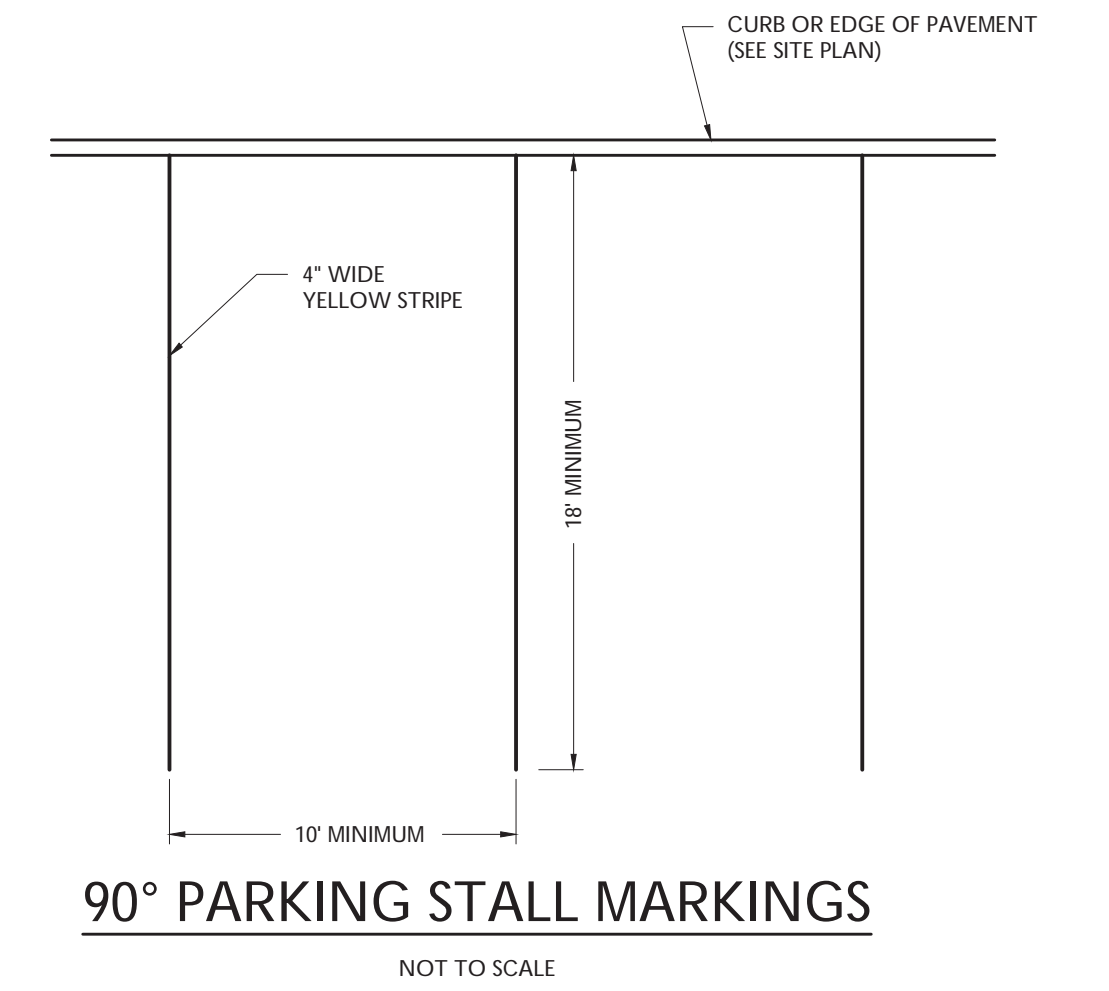
DRAWING: C-12



ACCESSIBLE PARKING SIGN WITH BOLLARD DETAIL
NOT TO SCALE

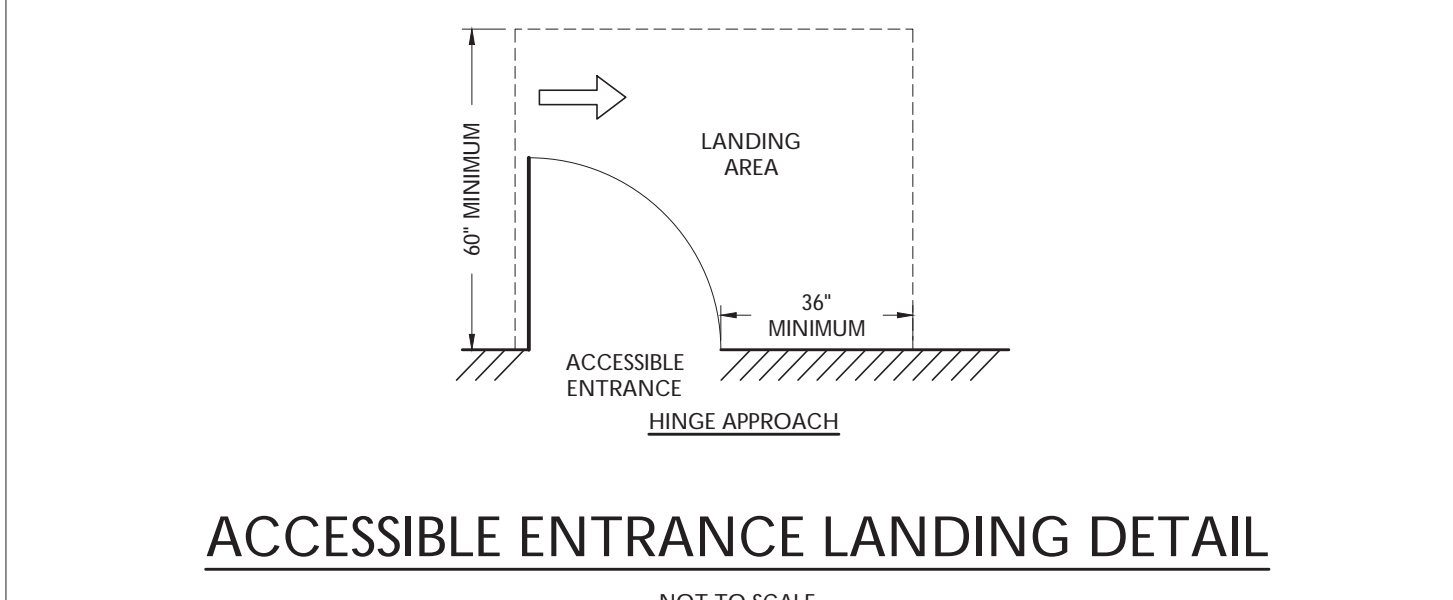


ACCESSIBLE PARKING STALL MARKINGS
NOT TO SCALE

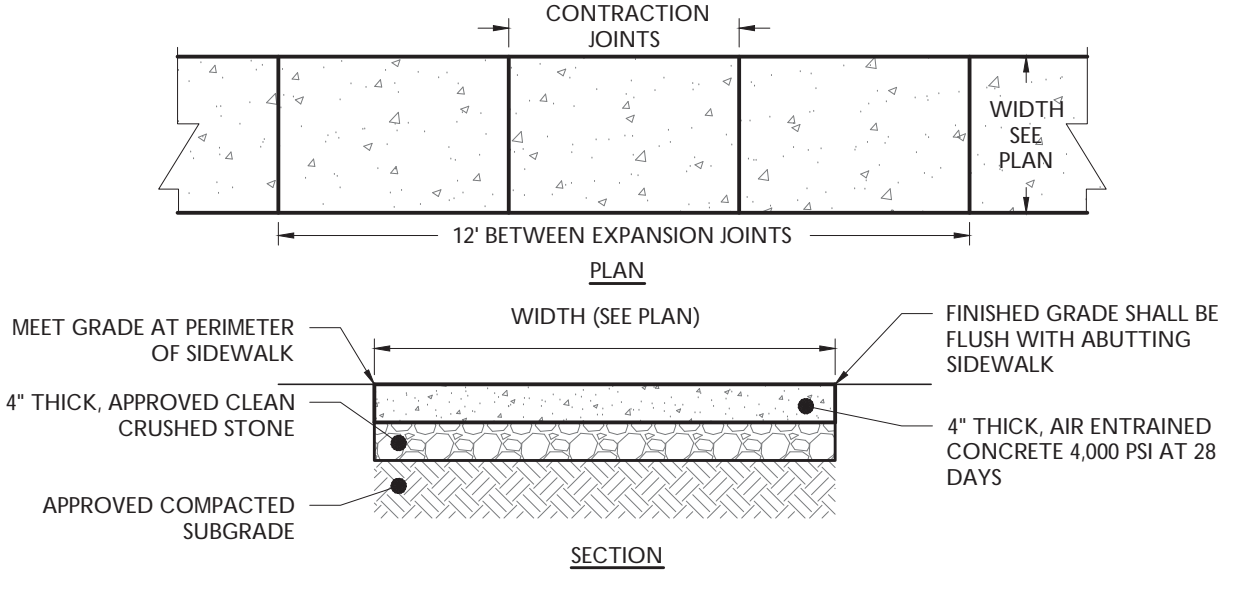


90° PARKING STALL MARKINGS
NOT TO SCALE

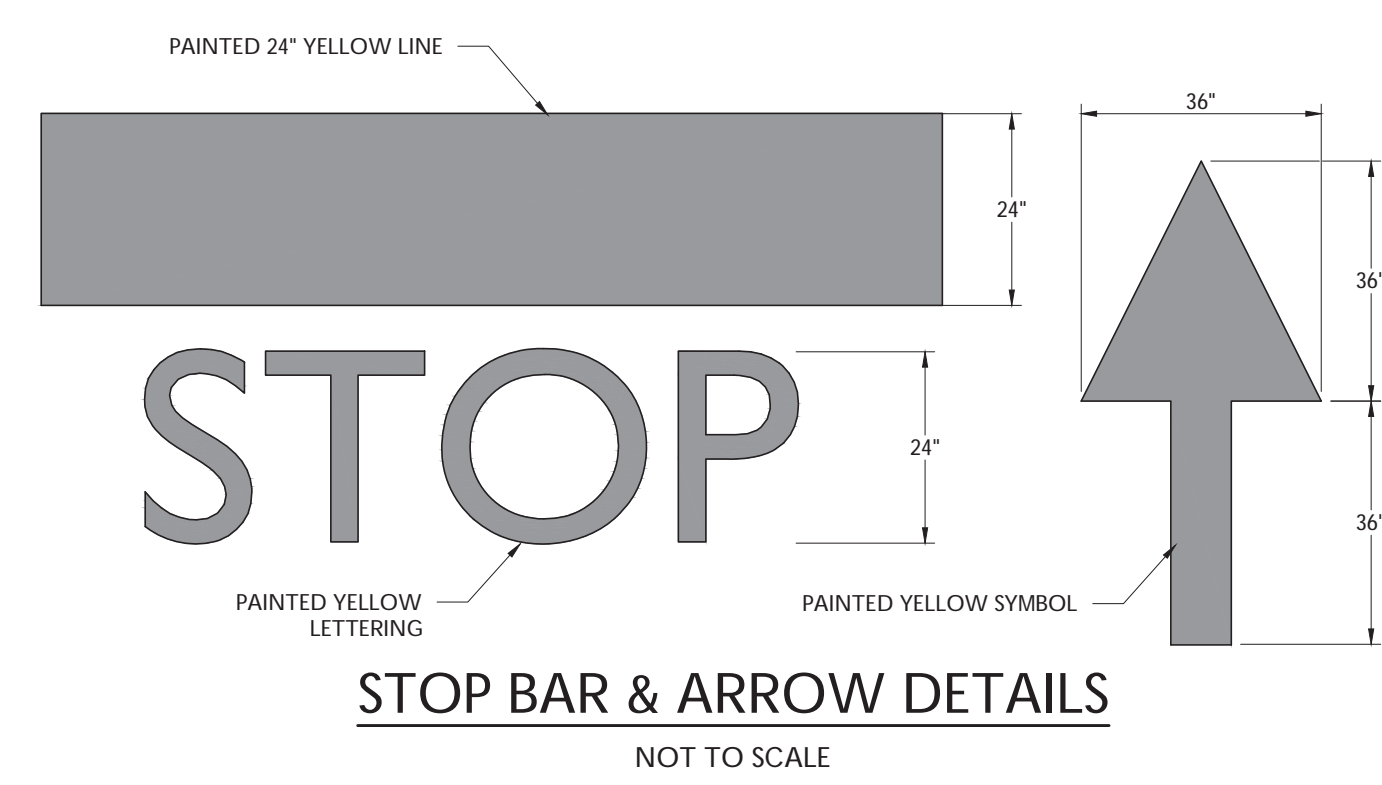
- PAVEMENT STRIPING & MARKINGS NOTES:**
1. ALL SIGNING AND STRIPING IN EXISTING CONDITION IN CONFLICT WITH THE PROPOSED DESIGN PLAN SHALL BE REMOVED.
 2. ALL PROPOSED SIGNING AND STRIPING SHALL CONFORM TO THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
 3. PAVEMENT STRIPING AND MARKINGS SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL, COUNTY AND STATE REQUIREMENTS.
 4. UNLESS OTHERWISE SPECIFIED, ALL STRIPING AND MARKINGS IN THE PUBLIC RIGHT-OF-WAY SHALL BE OF THERMOPLASTIC PAINT OR PREFORMED THERMOPLASTIC MARKINGS.
 5. UNLESS OTHERWISE SPECIFIED, ON SITE PARKING STALL STRIPING, FIRE LANE STRIPING AND DIRECTIONAL ARROWS SHALL BE EPOXY PAINT. ON SITE STOP BARS, "DO NOT ENTER" BARS, AND ASSOCIATED LETTERING SHALL BE THERMOPLASTIC PAINT OR PREFORMED THERMOPLASTIC MARKINGS.



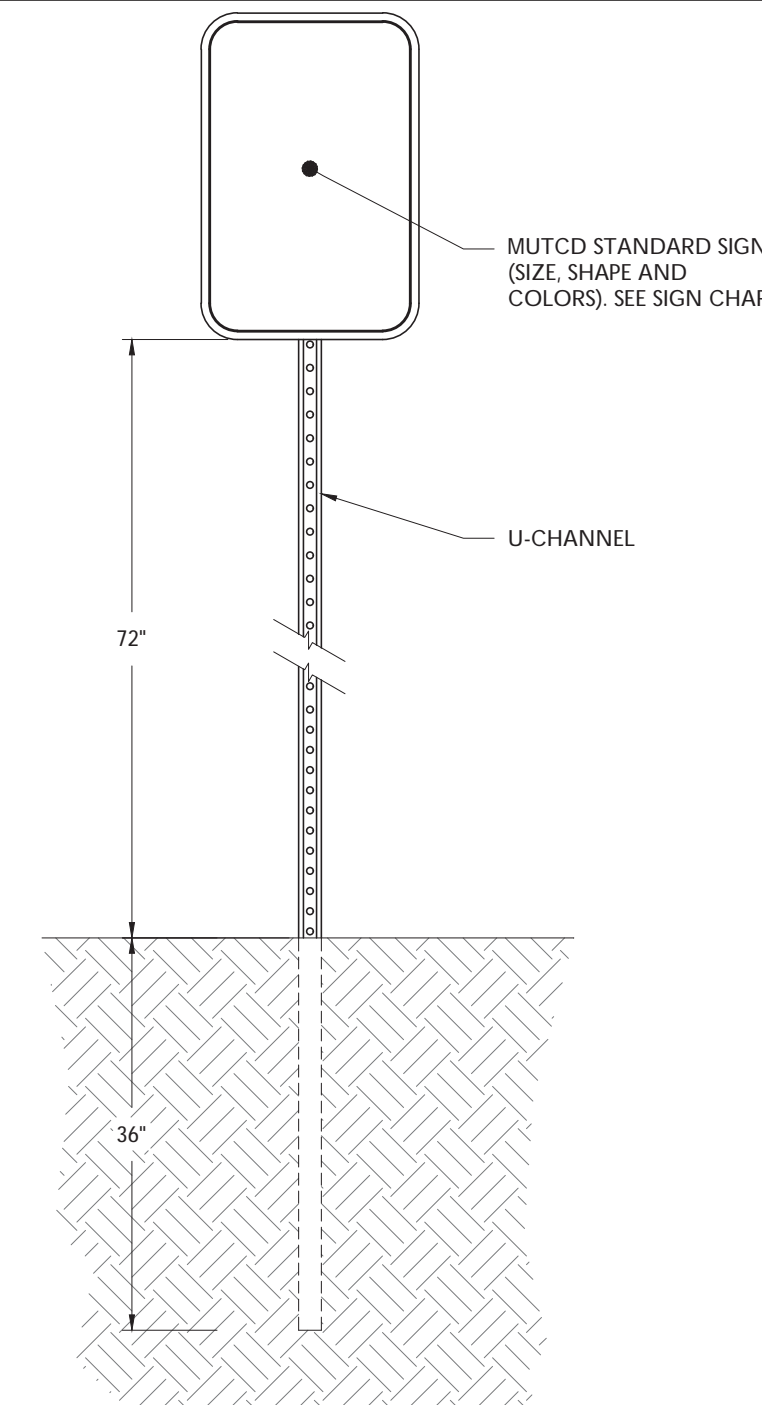
ACCESSIBLE ENTRANCE LANDING DETAIL
NOT TO SCALE



CONCRETE WALKWAY DETAIL
NOT TO SCALE



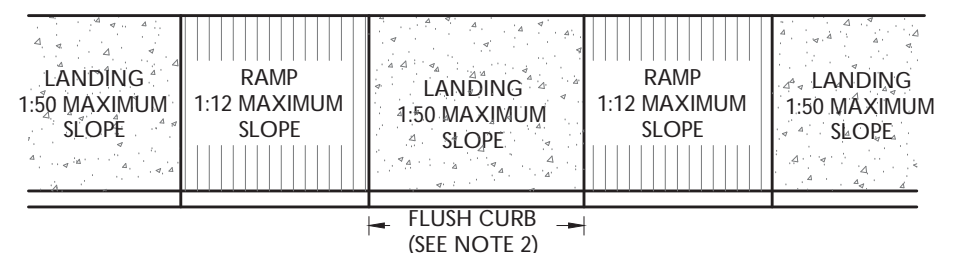
STOP BAR & ARROW DETAILS
NOT TO SCALE



SIGN DETAIL & DATA TABLE
NOT TO SCALE

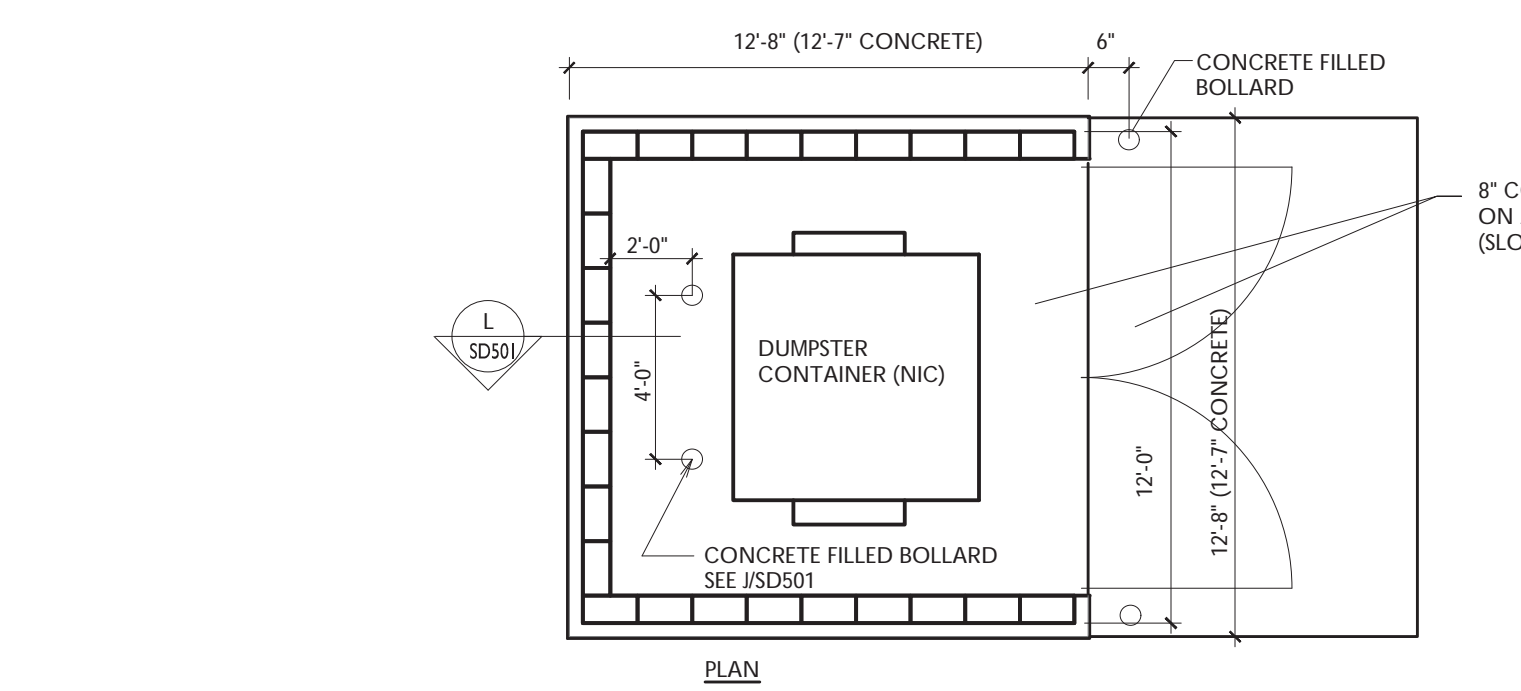
M.U.T.C.D. NUMBER	TEXT	COLOR		SIZE OF SIGN (WIDTH X HEIGHT)	TYPE OF MOUNT
		LEGEND	BACKGROUND		
STOP SIGN (R1-1)		WHITE	RED	36"x36"	GROUND
DO NOT ENTER (R5-1)		RED	WHITE	30"x30"	GROUND

- NOTES:**
1. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), EXCEPT AS NOTED.
 2. ALL SIGNS SHALL BE MOUNTED AS TO NOT OBSTRUCT THE SHAPE OF "STOP" (R1-1) AND "YIELD" (R1-2) SIGNS.

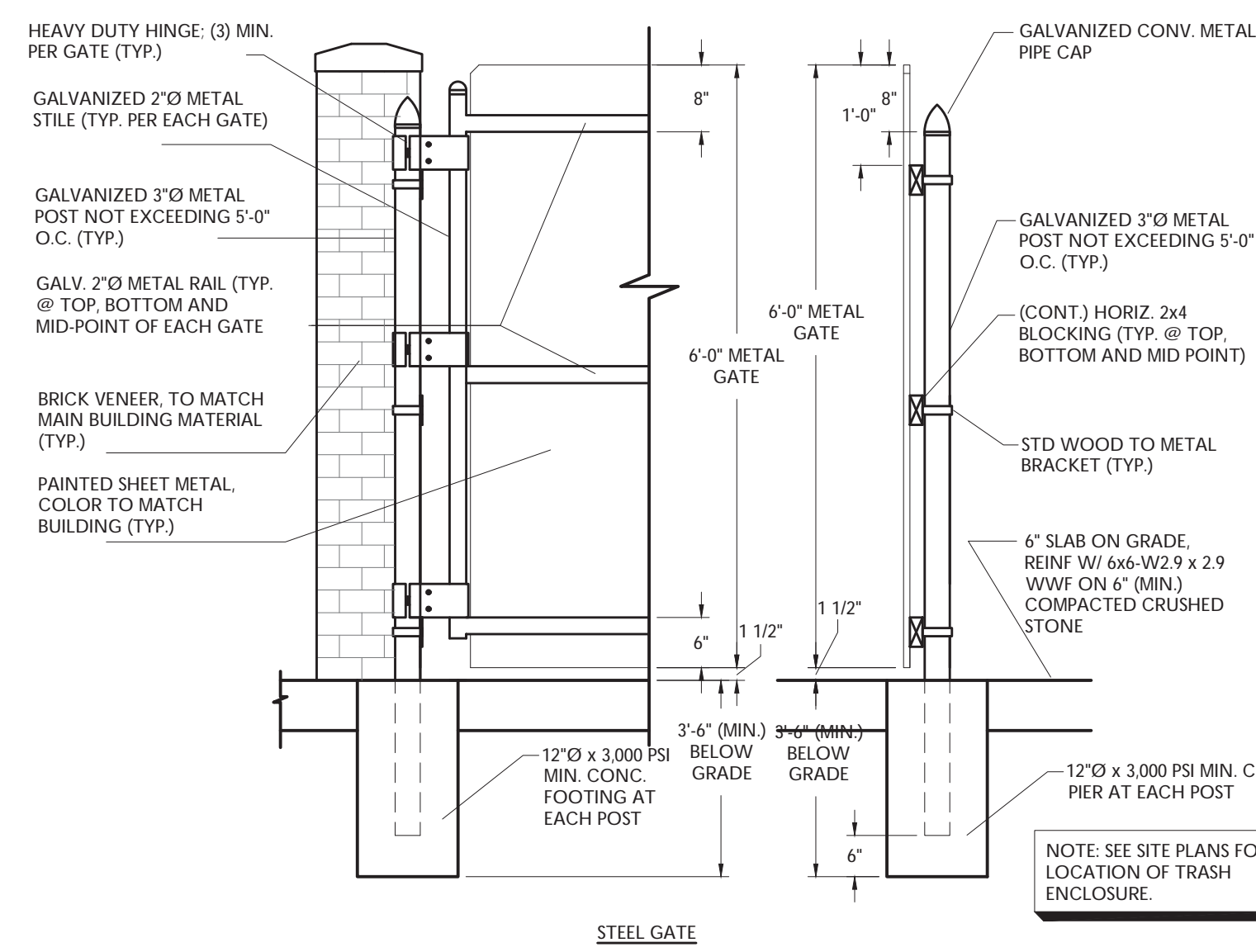


TRANSITION RAMP DETAIL
NOT TO SCALE

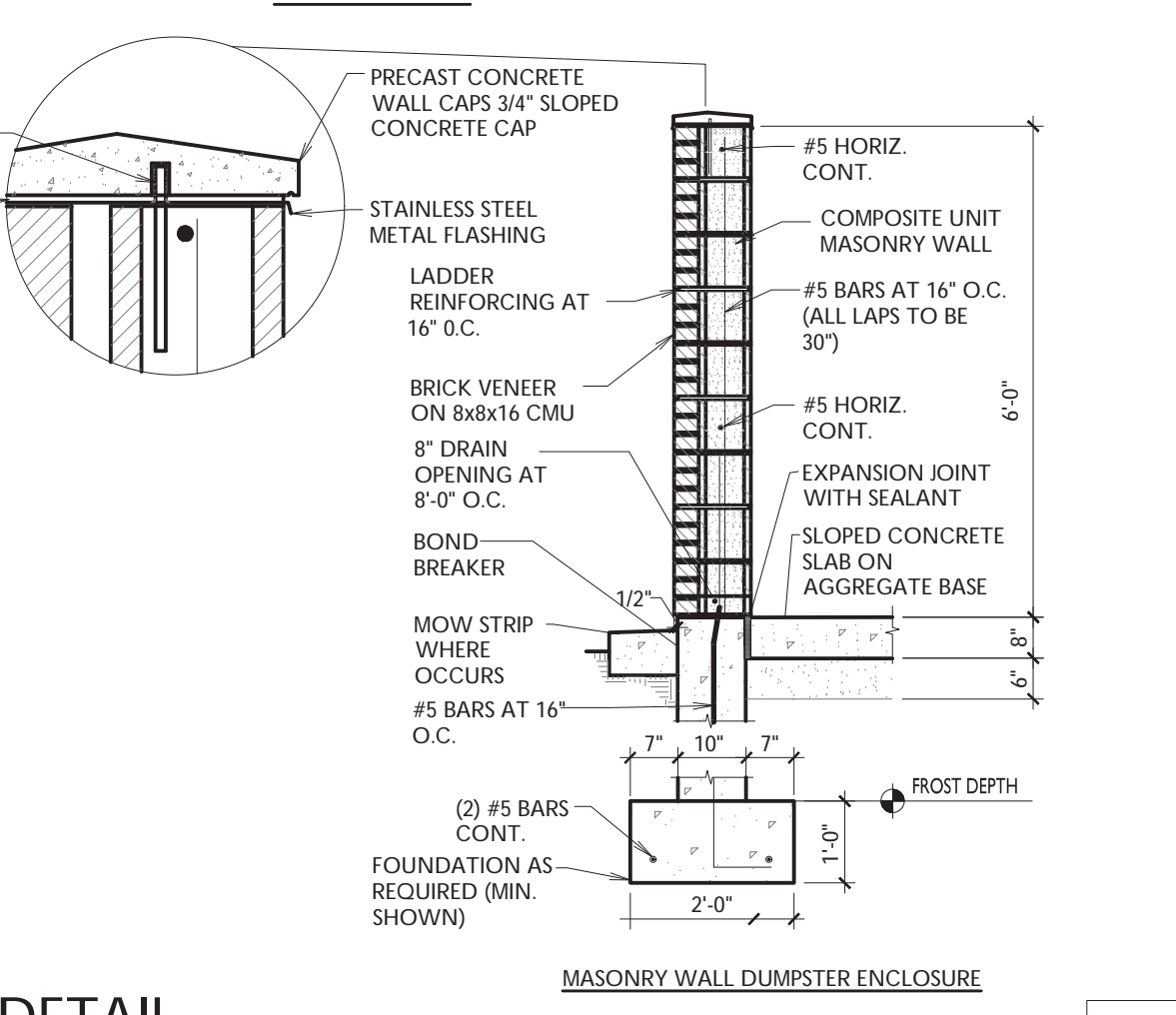
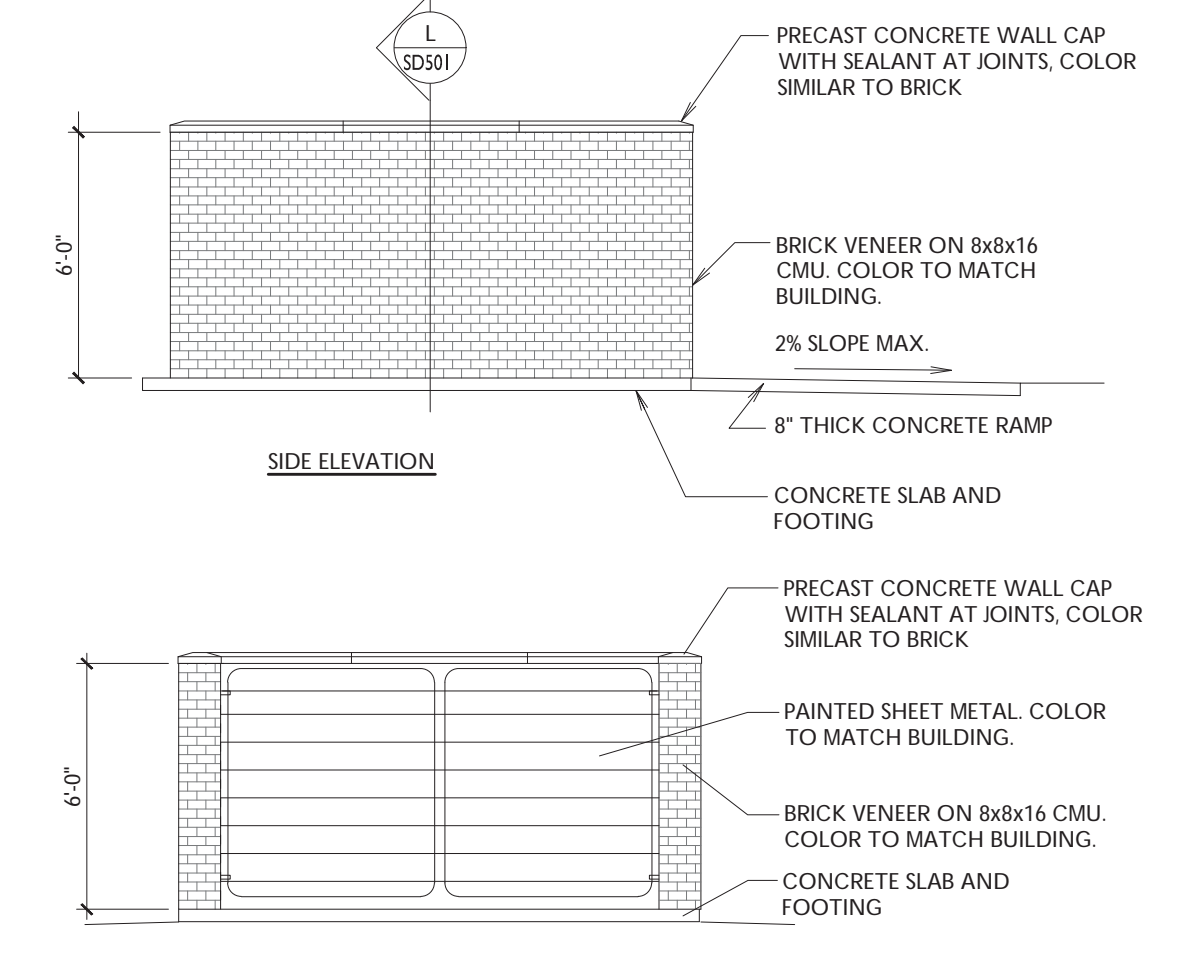
- NOTES:**
1. CROSS SLOPE ON RAMP SHALL NOT EXCEED 2%.
 2. A FLUSH CURB SHALL HAVE A MINIMUM WIDTH OF 36". SEE PLAN FOR EXACT WIDTH.
 3. RAMP SHALL HAVE A MAXIMUM RISE OF 6" WITHOUT A HANDRAIL.



TRASH / RECYCLE ENCLOSURE DETAIL
NOT TO SCALE



- NOTE:**
BLOCK COLOR TO MATCH BUILDING OR AS SPECIFIED BY OWNER



EROP LLC
PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
OAKLAND COUNTY, MICHIGAN

WHITEWATER
CAR WASH

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CITY FILE #22-043 SECTION #30
SCALE: AS SHOWN PROJECT ID: DET-220436

CONSTRUCTION DETAILS

DRAWING: **C-13**

NOT APPROVED FOR CONSTRUCTION

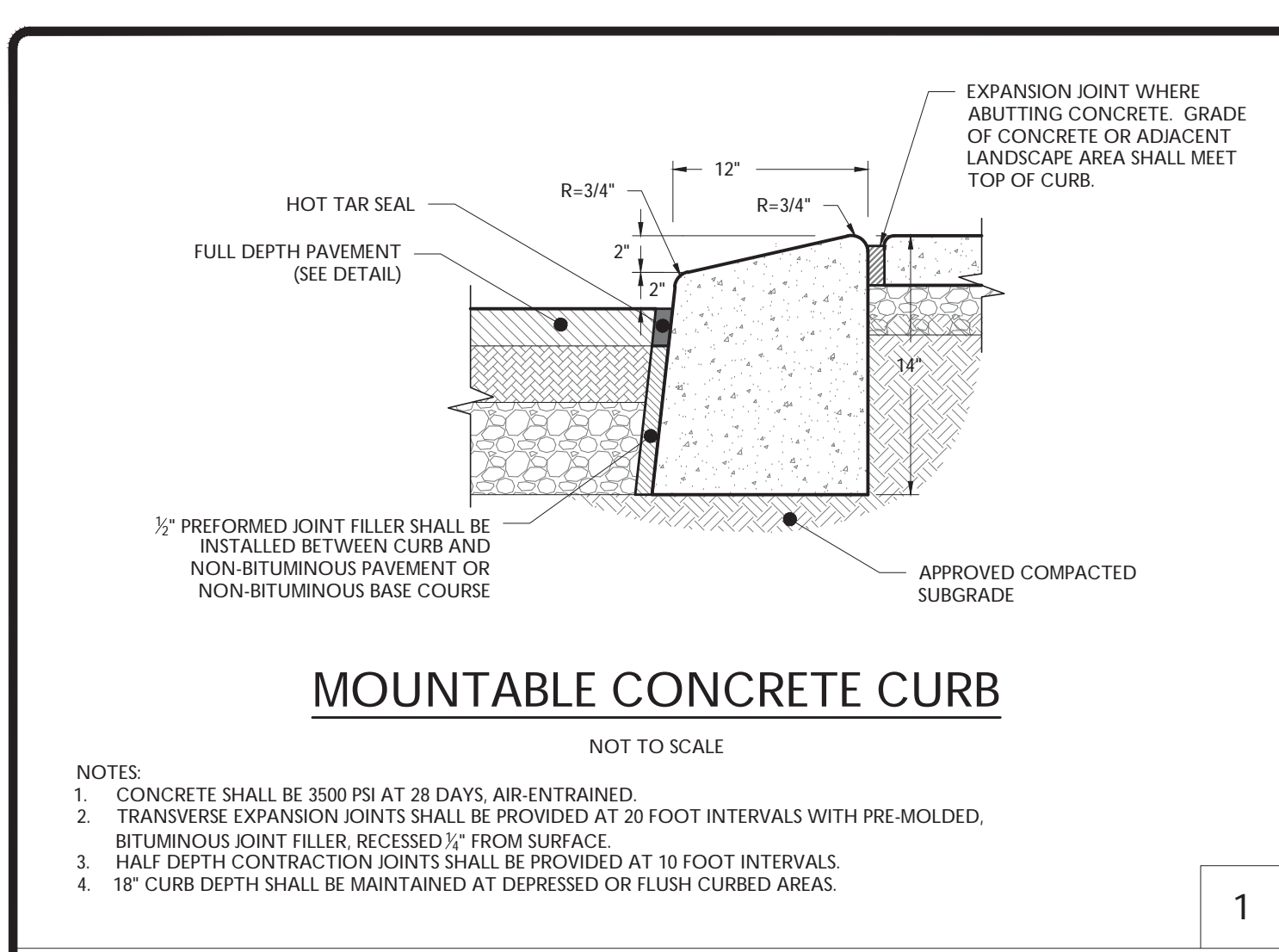
ISSUE	DATE	BY	DESCRIPTION
7	08/22/2023	EM	RESUBMISSION FOR CITY COUNCIL APPROVAL
6	08/11/2023	EM	STORM SEWER PROFILES
5	07/27/2023	EM/RC	SUBMISSION FOR LAND IMPROVEMENT PERMIT
4	06/30/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
3	05/05/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
2	03/31/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
1	02/16/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL

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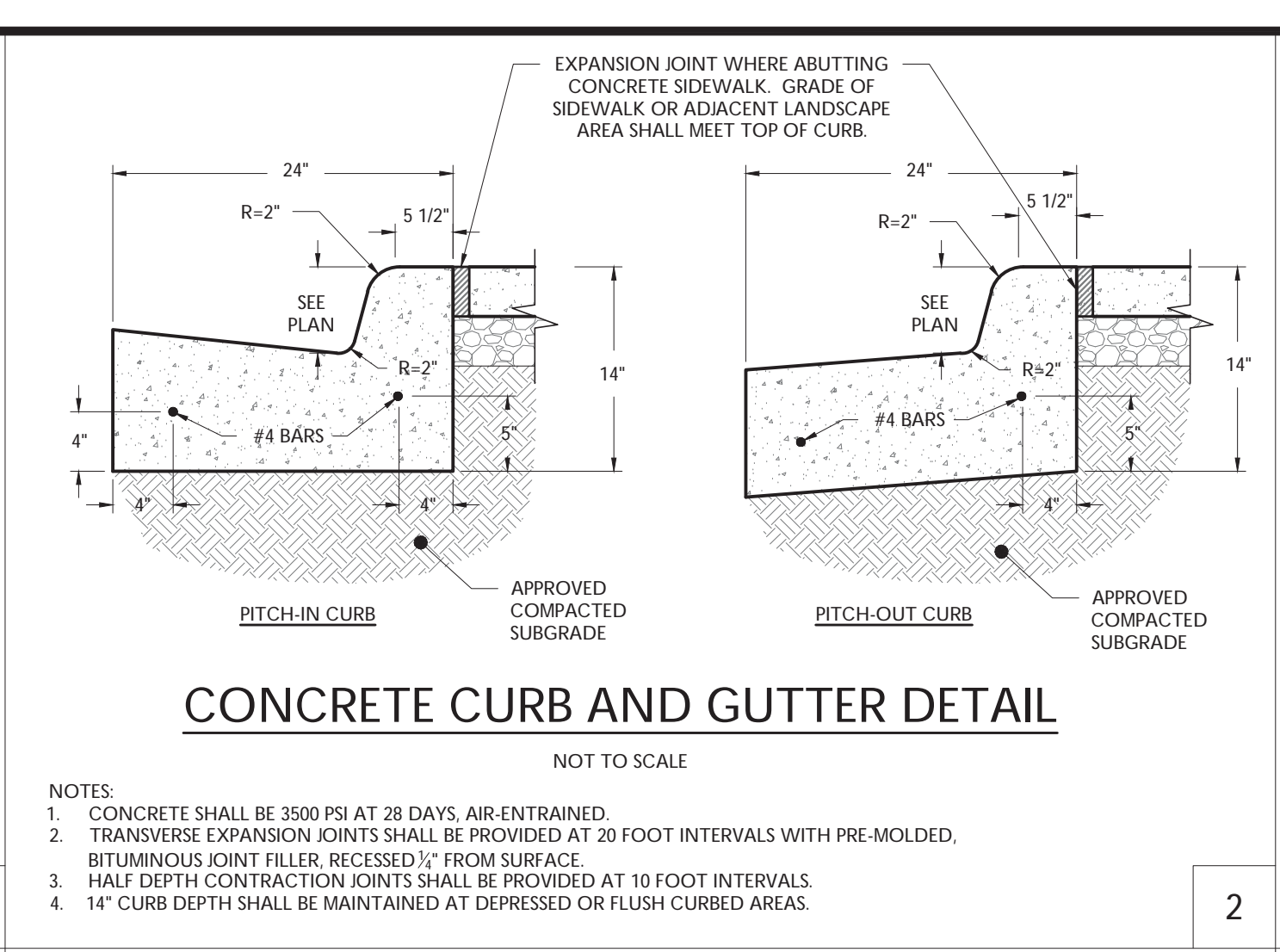
607 Shelby Suite 200, Detroit, MI 48226
Phone 248.247.1115

NOT TO SCALE



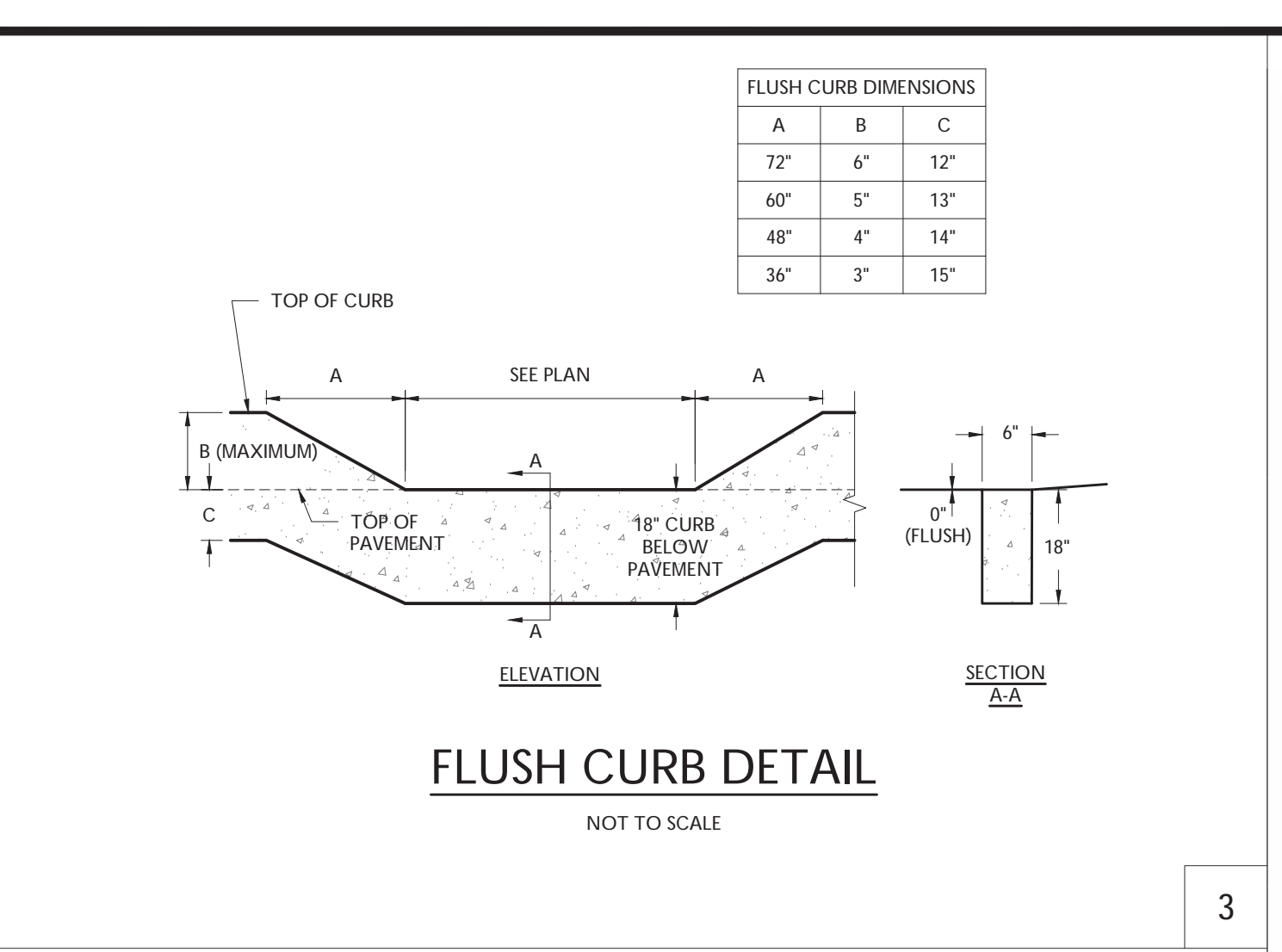
MOUNTABLE CONCRETE CURB
NOT TO SCALE

NOTES:
1. CONCRETE SHALL BE 3500 PSI AT 28 DAYS, AIR-ENTRAINED.
2. TRANSVERSE EXPANSION JOINTS SHALL BE PROVIDED AT 20 FOOT INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED 1/2\"/>



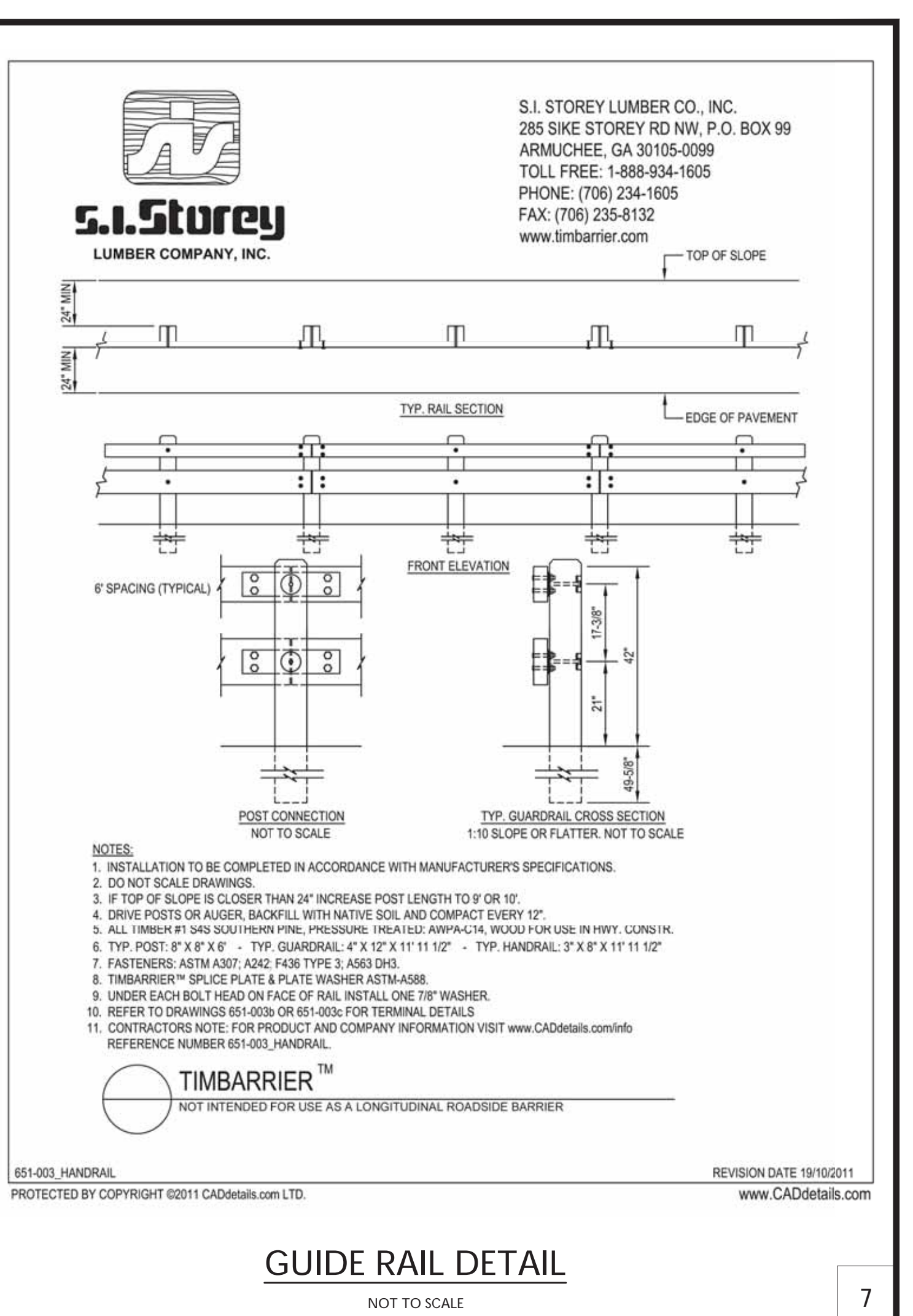
CONCRETE CURB AND GUTTER DETAIL
NOT TO SCALE

NOTES:
1. CONCRETE SHALL BE 3500 PSI AT 28 DAYS, AIR-ENTRAINED.
2. TRANSVERSE EXPANSION JOINTS SHALL BE PROVIDED AT 20 FOOT INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED 1/2\"/>



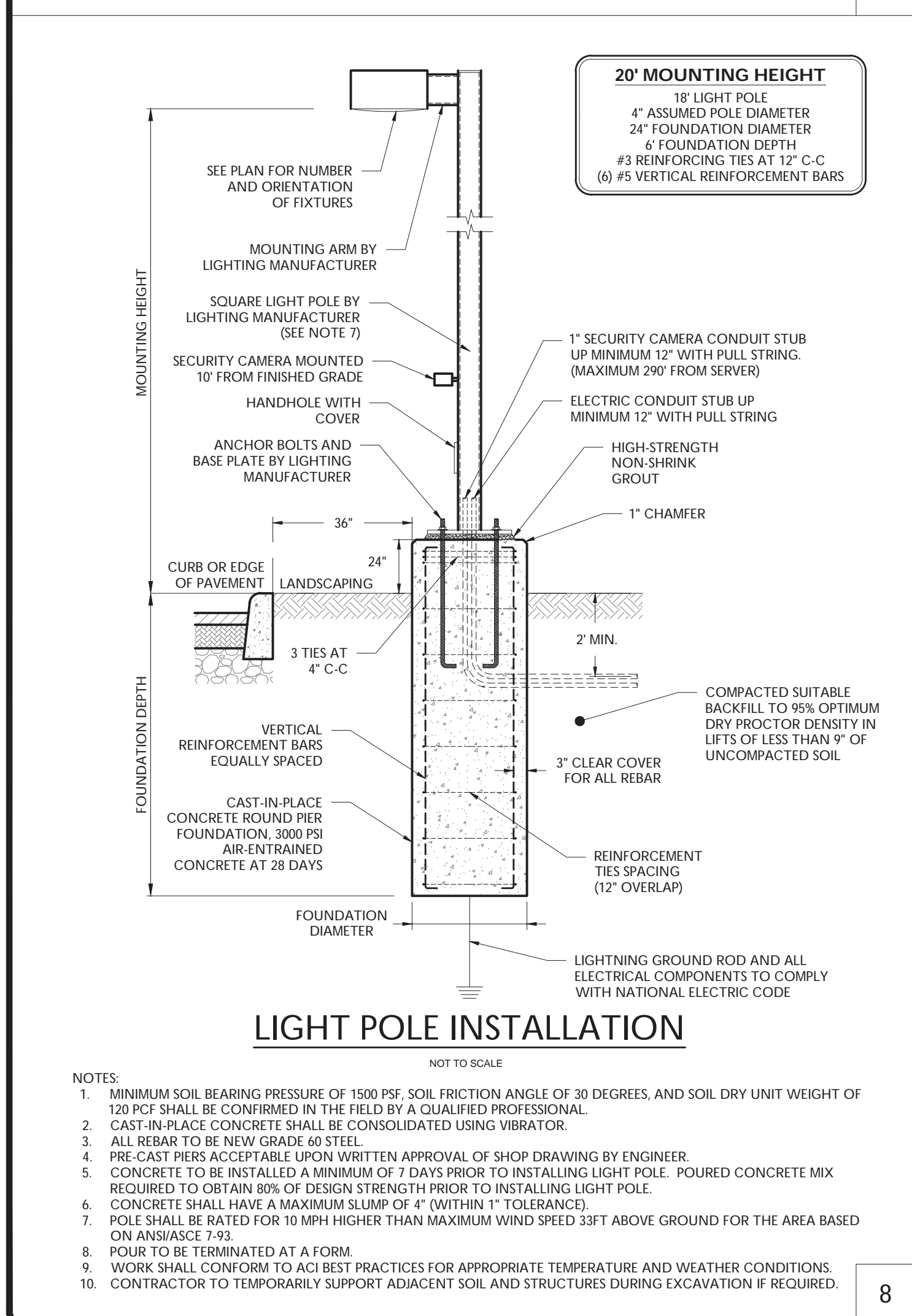
FLUSH CURB DETAIL
NOT TO SCALE

NOTES:
1. 1/2\"/>



GUIDE RAIL DETAIL
NOT TO SCALE

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. IF TOP OF SLOPE IS CLOSER THAN 24\"/>



LIGHT POLE INSTALLATION
NOT TO SCALE

NOTES:
1. MINIMUM SOIL BEARING PRESSURE OF 1500 PSF, SOIL FRICTION ANGLE OF 30 DEGREES, AND SOIL DRY UNIT WEIGHT OF 120 PCF SHALL BE CONFIRMED IN THE FIELD BY A QUALIFIED PROFESSIONAL.
2. CAST-IN-PLACE CONCRETE SHALL BE CONSOLIDATED USING VIBRATOR.
3. ALL REBAR TO BE NEW GRADE 60 STEEL.
4. PRE-CAST PIERS ACCEPTABLE UPON WRITTEN APPROVAL OF SHOP DRAWING BY ENGINEER.
5. CONCRETE TO BE INSTALLED A MINIMUM OF 7 DAYS PRIOR TO INSTALLING LIGHT POLE. POURED CONCRETE MIX REQUIRED TO OBTAIN 80% OF DESIGN STRENGTH PRIOR TO INSTALLING LIGHT POLE.
6. CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 4\"/>

Mirada Medium - MRM Outdoor LED Area Light

Performance (Cont.)
All published luminaire photometric testing performed to IESNA LM-79 standards. ISO footcandle plots below demonstrate the Mirada (MRM) light patterns only. Not for total fixture output. For complete specifications and IES files, see website.

Ordering Guide
TYPICAL ORDER EXAMPLE: **MRM LED 36L SIL FTA UNV DIM 50 70CRI ALSCS04 BRZ IL**

Luminaire Profile	Light Source	Lumen Package*	Light Distribution	Options†	Voltage	Driver
MIM	LED	ZL 2,000 lms SL 2,000 lms TL 12,000 lms SL 18,000 lms SL 30,000 lms SL 30,000 lms SL 42,000 lms	SIL - Spot 2 - Type 2 3 - Type 3 FF - Forward Triax FTA - Forward Triax Automotive	(Dim) - Standard R - Optics rotated left 90° L - Optics rotated right 90°	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	DM - 0-10V (Dimming 0-100%)

Accessory Ordering Information

Description	Order Number	Description	Order Number
XWM SW BLK - Surface Wiring Box (Available in black only)	35610BLK	SPK208 - Double Filing	35620P
FC028 - Single Filing	4810P	SPK209 - Double Filing	35620P
FKZ27 - Single Frame	48227	SPK260 - Double Filing	35648P
FKZ47 - Single Frame	48247		

Mirada Wall Sconce - XWM Outdoor LED Wall Sconce

Ordering Guide
TYPICAL ORDER EXAMPLE: **XWM 2 LED 03L 27 UE BRZ ALSC**

Luminaire Profile	Distribution	LED Technology	Lumen Package*	Color Temp.	Voltage	Finish	Controls (Choose One)	Options
XWM - 2 - Type 2	0 - Type 0	LED	SL 3,000 lms SL 4,000 lms SL 6,000 lms SL 8,000 lms SL 12,000 lms	27-3000K 30-3000K 40-3000K 50-3000K 60-3000K	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	BRZ - Bronze BLK - Black GPT - Graphite WHY - White MST - Metallic Silver WHT - White PLP - Platinum Plus SVG - Satin Verde Green	ALSC - Active Senses Control System ALSC01 - Active Senses Control System with 8-12' Motion Sensor† ALSC02 - Active Senses Control System with 10-20' Motion Sensor† ALSC03 - Active Senses Control System with 12-20' Motion Sensor†	BB - Battery Back-up CWB - Cold Weather Battery WPM - Pole Mounting Bracket

Accessory Ordering Information

Description	Order Number	Description	Order Number
XWM SW BLK - Surface Wiring Box (Available in black only)	35610BLK	SPK208 - Double Filing	35620P
FC028 - Single Filing	4810P	SPK209 - Double Filing	35620P
FKZ27 - Single Frame	48227	SPK260 - Double Filing	35648P
FKZ47 - Single Frame	48247		

C-WM-A-WDG Series LED Gooseneck Light | Field Selectable Wattage

DURABLE, EASY TO INSTALL & SELECTABLE WATTAGE
Add decorative appeal to an outdoor façade, patio or deck, storefront or other commercial building with our C-Lite LED Gooseneck Light. Choose from either an 11-inch or 14-inch straight or angled shroud. Easily mount to any wall, adjust the included arm to fit your needs, and enjoy up to 50,000 hours of maintenance free operation and efficient LED lighting. That's nearly 6 years of not having to get on a ladder to repair or replace a fixture. These gooseneck lights deliver either 4200 or 4500 lumens, are available in either 3000K or 5000K, and have field selectable wattage. Its eLUS Listed for wet locations and backed by our amazing 5-year warranty.

PRODUCT SPECIFICATIONS

OVERVIEW

- Initial Delivered Lumens: 4200L or 4500L
- CRI > 70
- CCT: Warm White (3000K) or Cool White (5000K)
- Input Power: 36W/21W/17W
- Operating Temperature Range: -40°F to 104°F (-40°C to 40°C)
- Estimated L₉₀ Lifetime @ 25°C > 100,000 hours
- Power Factor > 0.9 at full load
- Total Harmonic Distortion < 20% at full load
- Limited Warranty: 5 Years*
- Replaces 100W PSMH

FEATURES

- FCC Part 15, Subpart B, Class A limits for conducted and radiated emissions
- 17-1/2" arm to gain maximum light distribution
- Shroud can be adjusted to many different angles to fit your needs
- Building Façades
- Retail
- Signs
- Storefront
- Outdoor Patios and Decks
- Universal (120V - 277V)

ORDERING INFORMATION
Example SKU: C-WM-A-WDG-S4L-3K-UL-BK-11N-STR

C-WM	A	WDG	S4L	UL	BK	SHROUD SIZE	SHROUD TYPE
C-WM	A	WDG	S4L	UL	BK	11IN 11" Shroud	STR Straight Shroud
						14IN 14" Shroud	ANG Angled Shroud

CERTIFICATIONS: eLUS, UL, IESNA, ENERGY STAR

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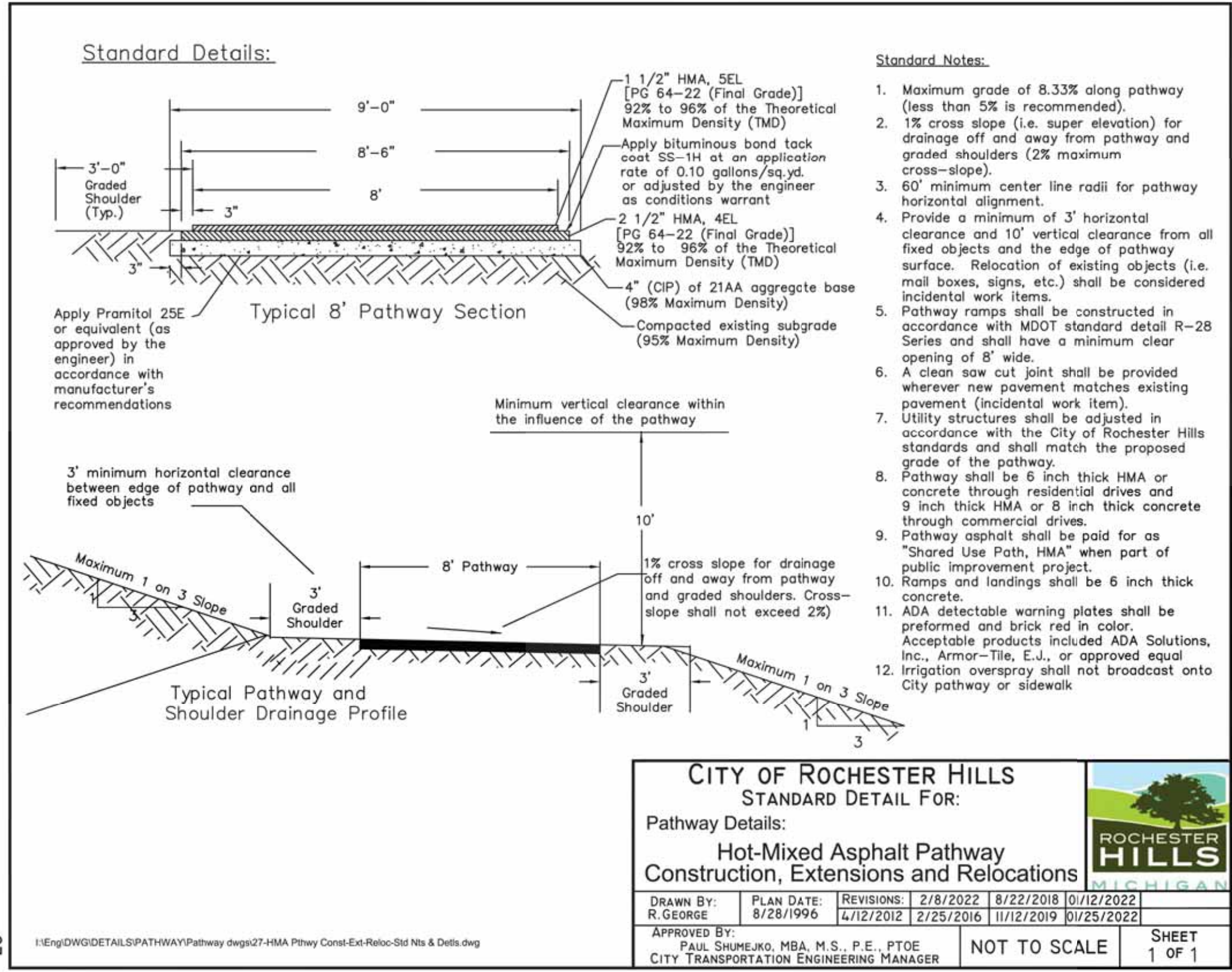
EROP LLC PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JONATHAN R. COOKSEY
REGISTERED PROFESSIONAL ENGINEER
No. 10276

STONEFIELD engineering & design

CITY FILE #22-043 SECTION #30
SCALE: AS SHOWN PROJECT ID: DET-220436
TITLE: CONSTRUCTION DETAILS
DRAWING: C-14



CITY OF ROCHESTER HILLS
STANDARD DETAIL FOR:
Hot-Mixed Asphalt Pathway
Construction, Extensions and Relocations

DRAWN BY: R. GEORGE
PLAN DATE: 8/28/1996
REVISIONS: 2/8/2022, 8/22/2018, 0/12/2022, 4/12/2012, 2/25/2016, 11/12/2019, 01/25/2022

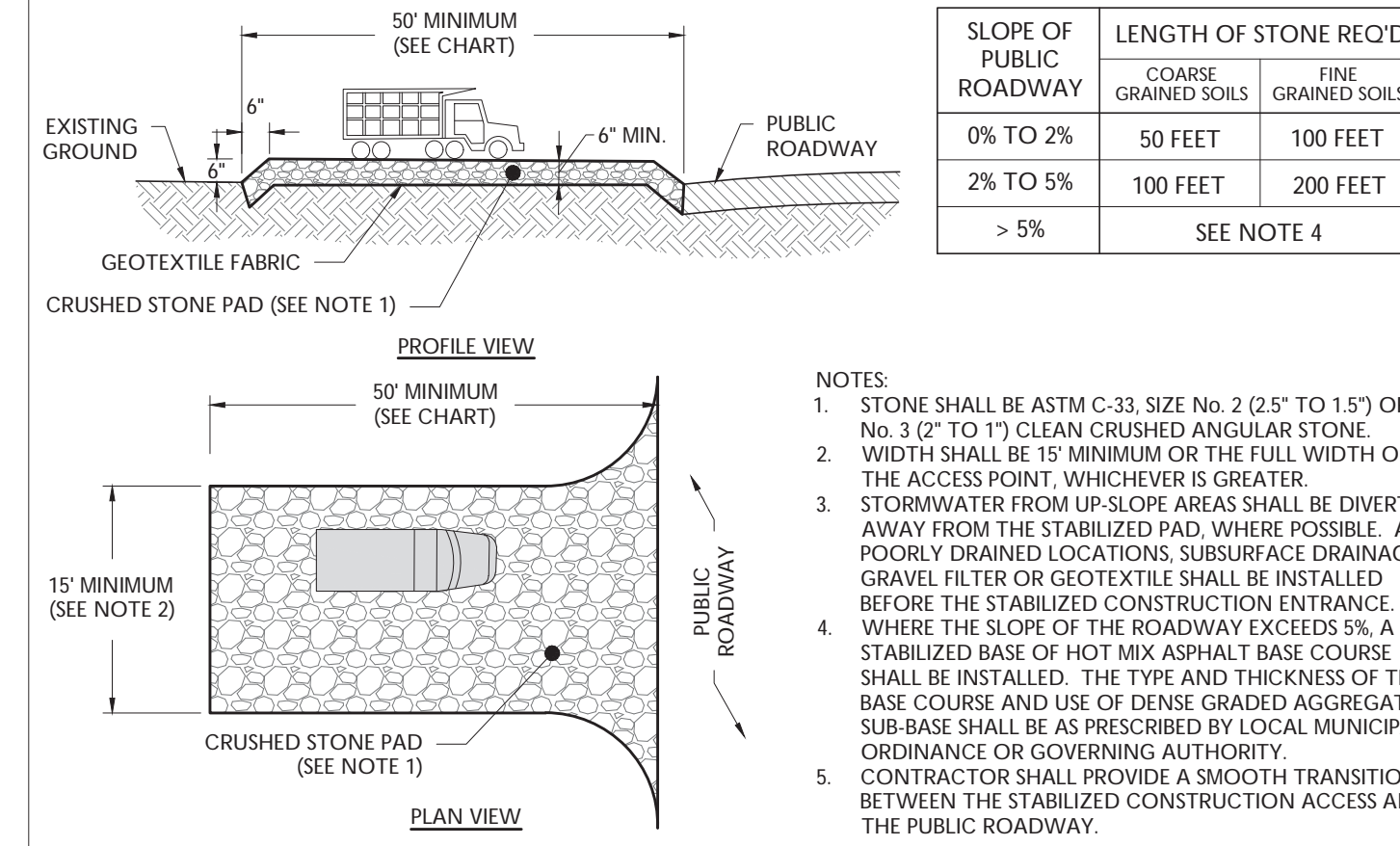
APPROVED BY: PAUL SHUMELKO, M.B.A., M.S., P.E., PTOE
CITY TRANSPORTATION ENGINEERING MANAGER

NOT TO SCALE SHEET 1 OF 1

CITY OF ROCHESTER HILLS PATHWAY CONSTRUCTION DETAILS

NOT TO SCALE

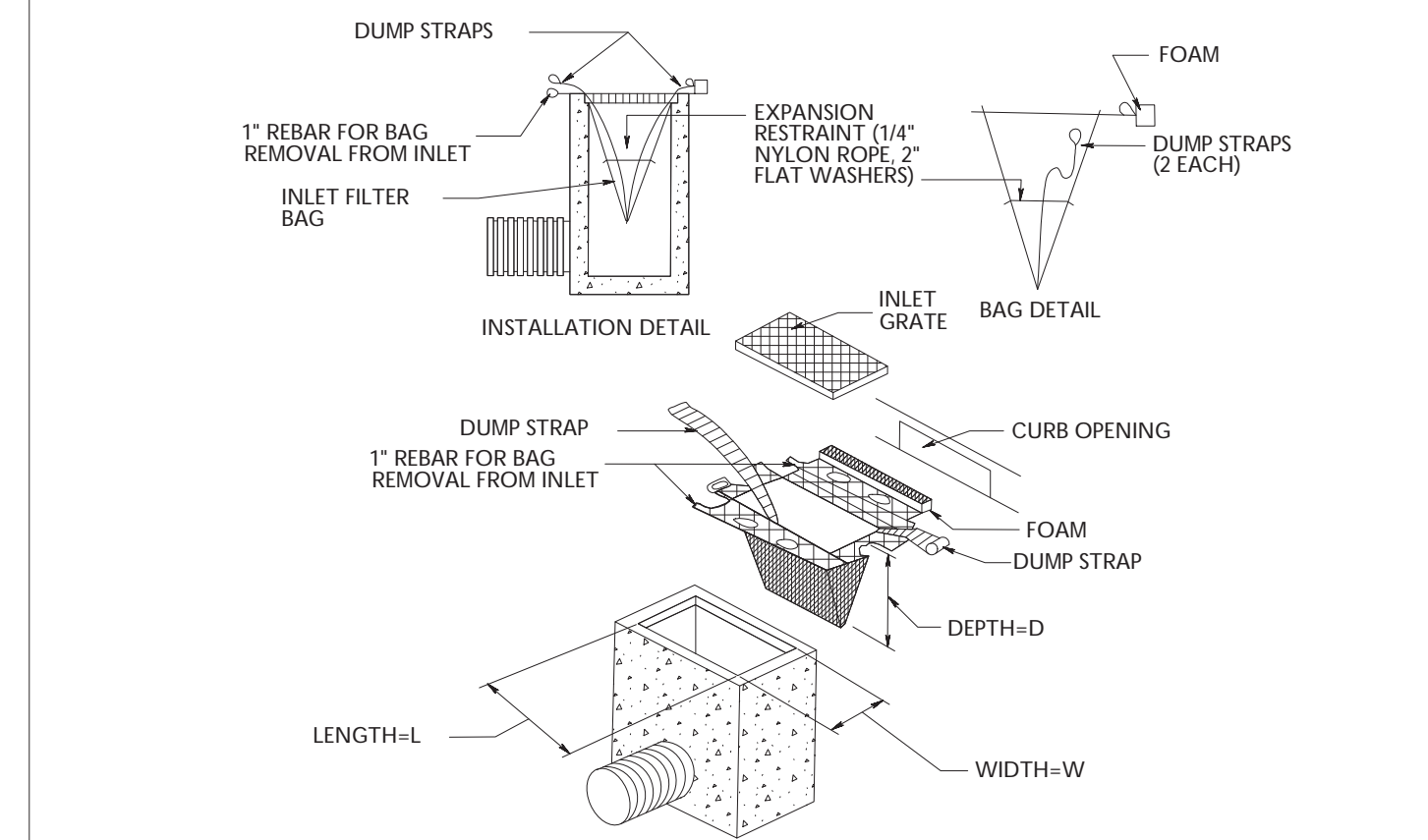
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STABILIZED CONSTRUCTION ACCESS DETAIL

NOT TO SCALE

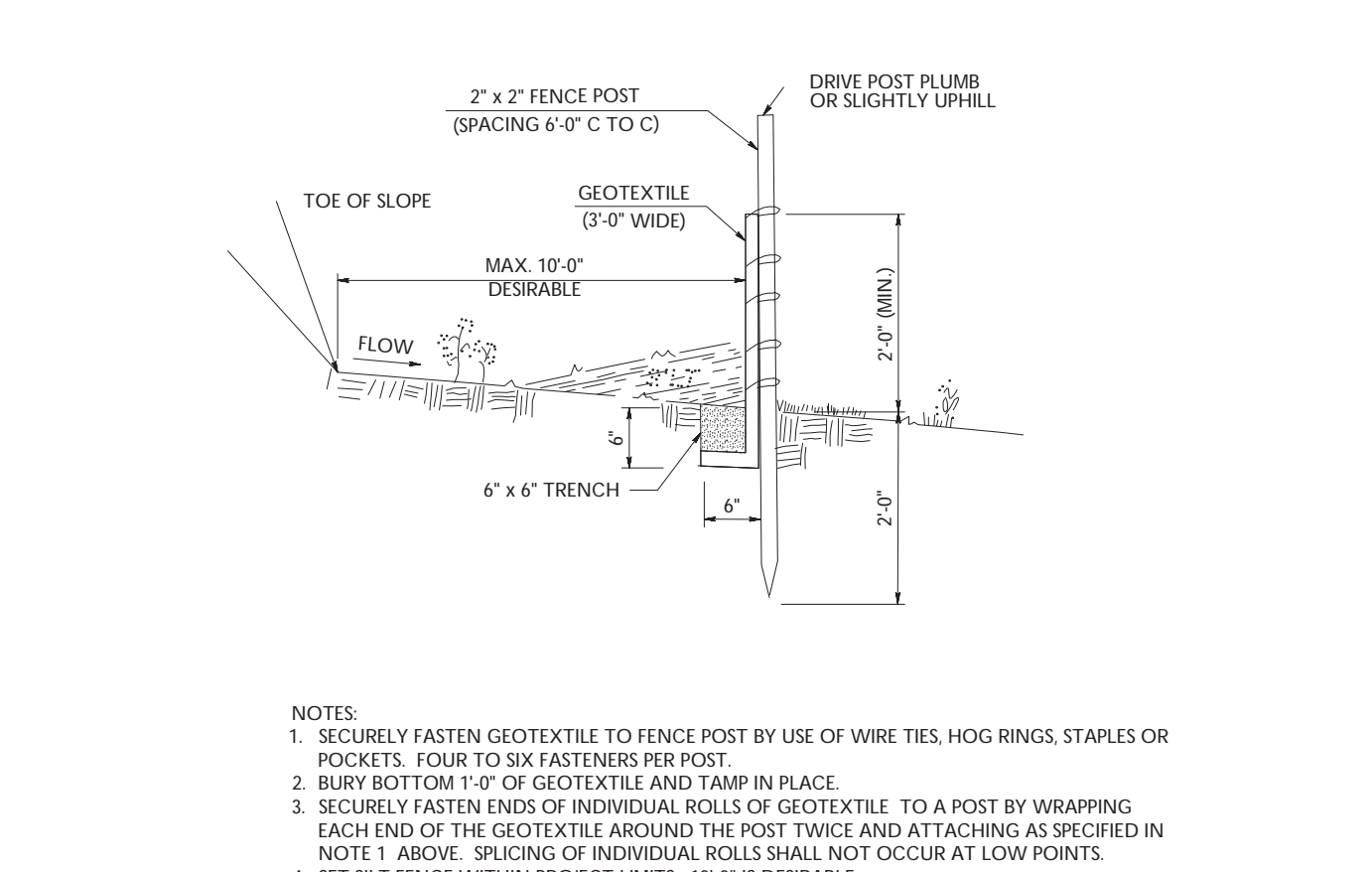
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INLET FILTER BAG DETAIL

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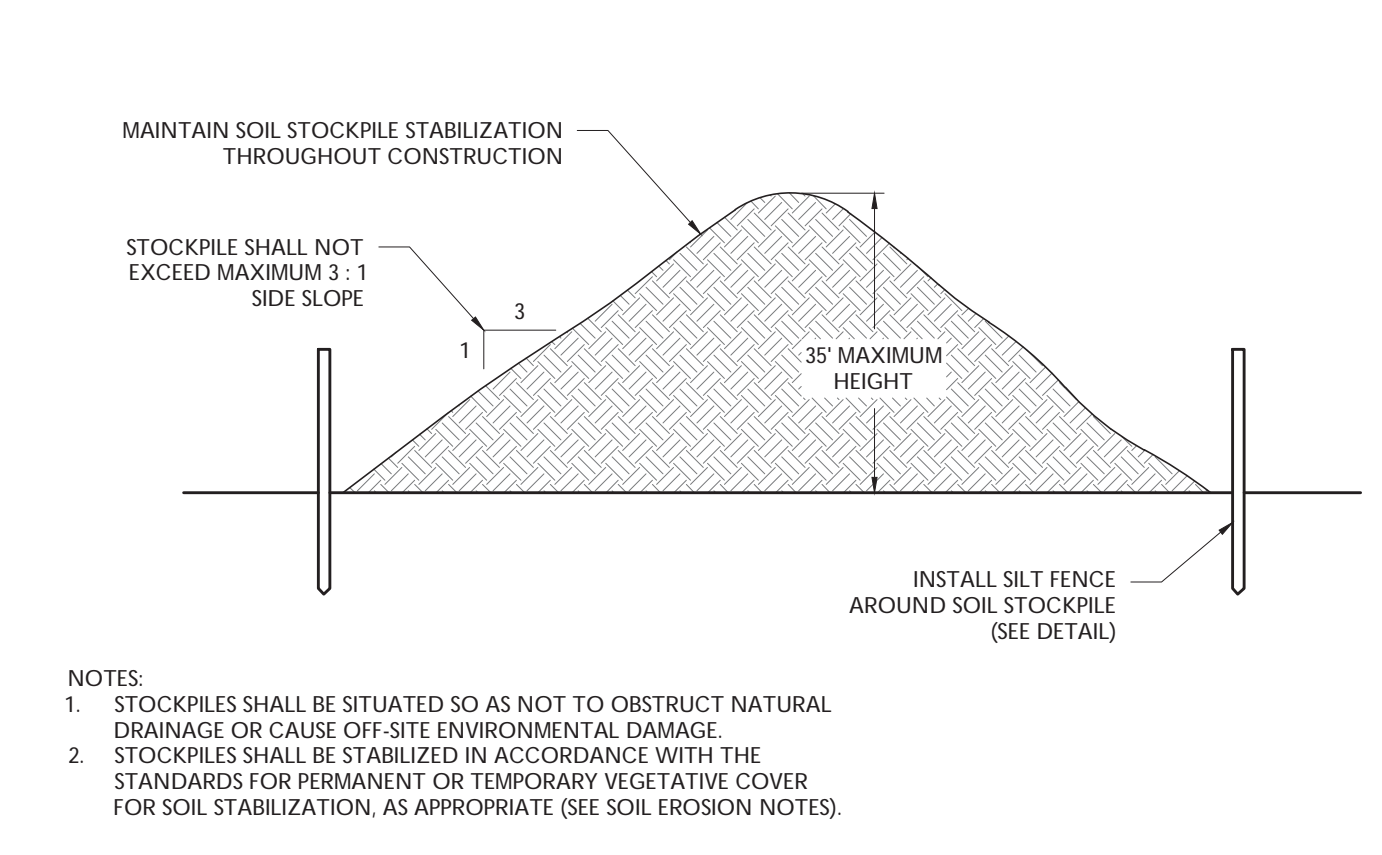
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SILT FENCE DETAIL

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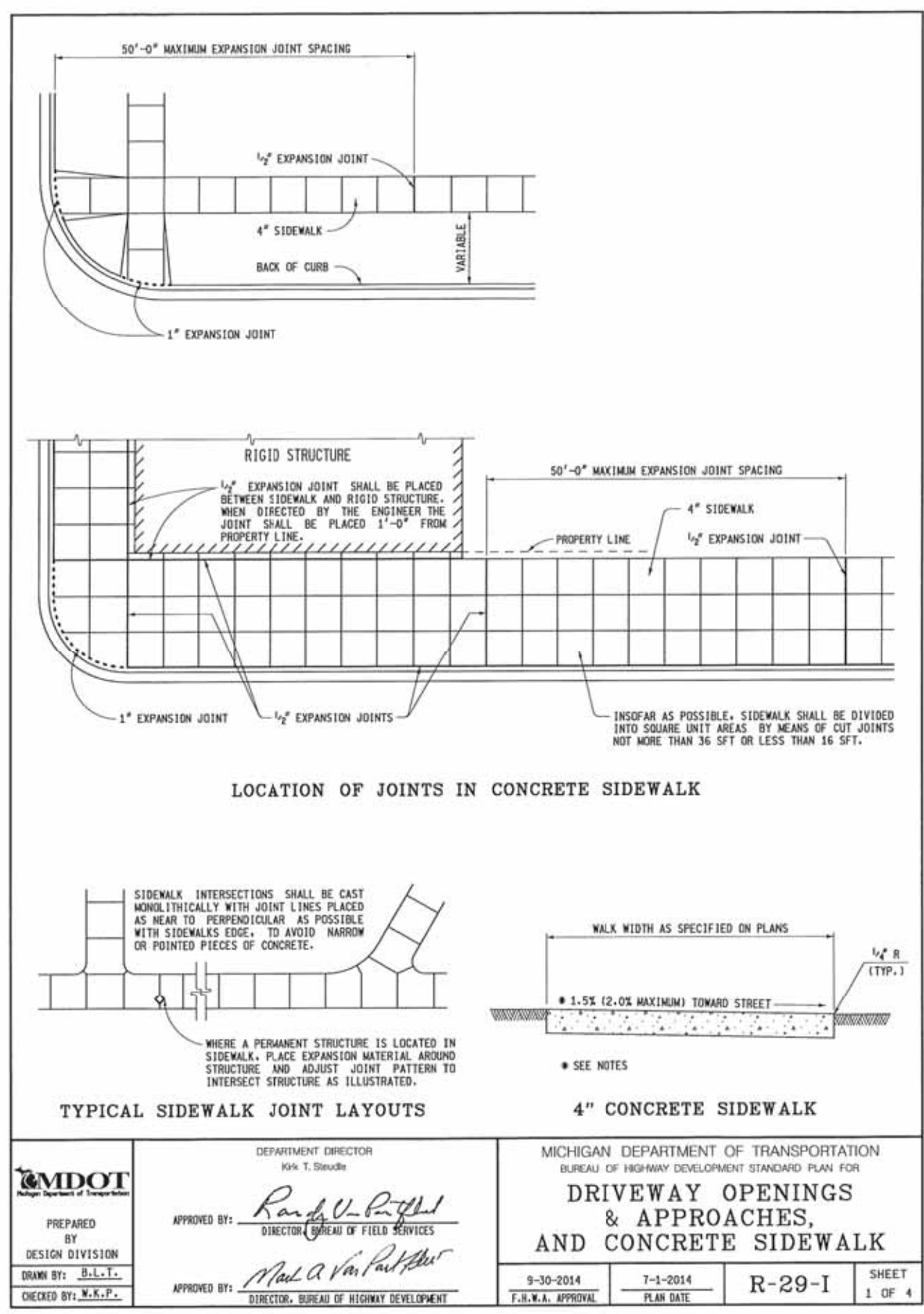
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SOIL STOCKPILE DETAIL

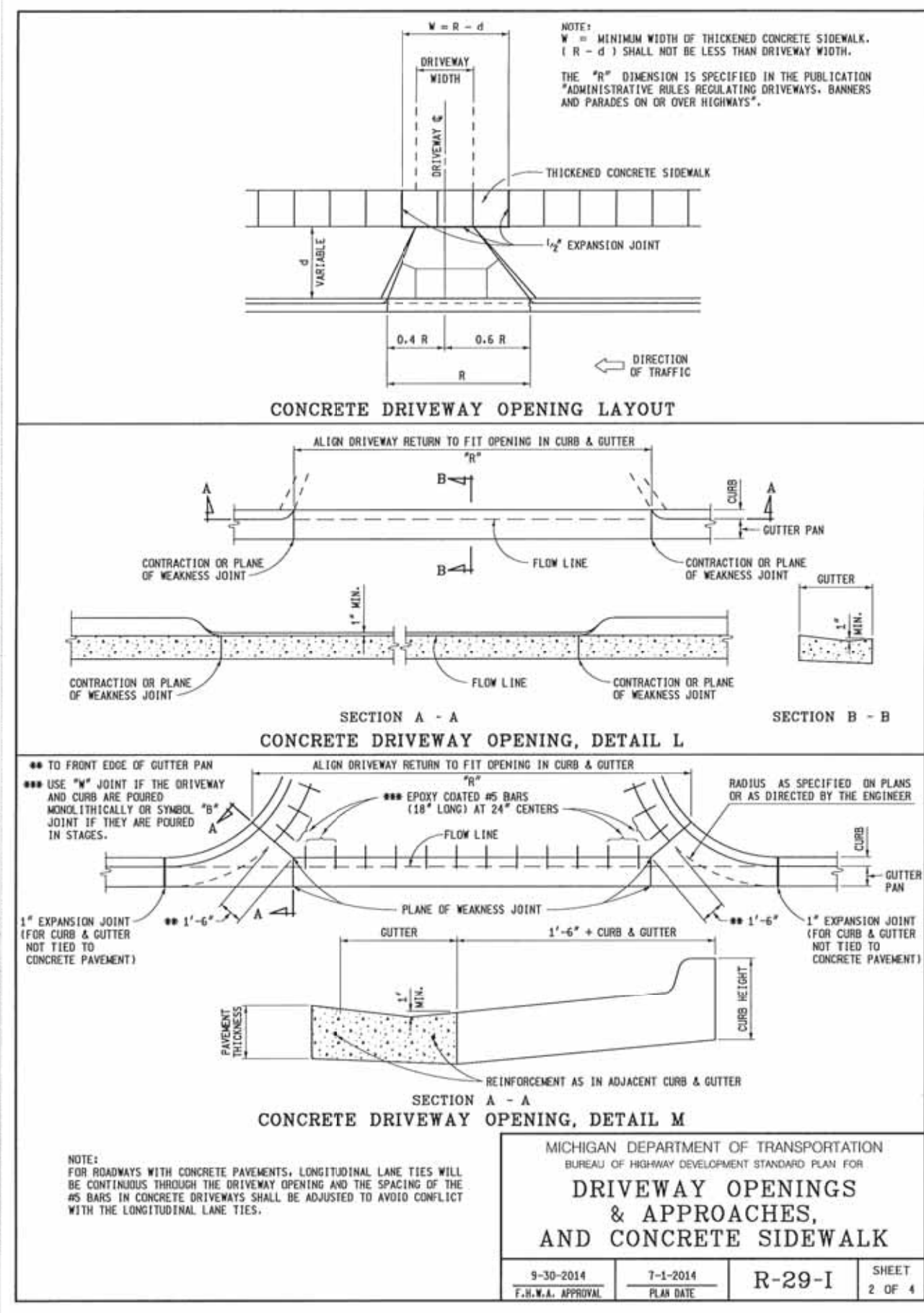
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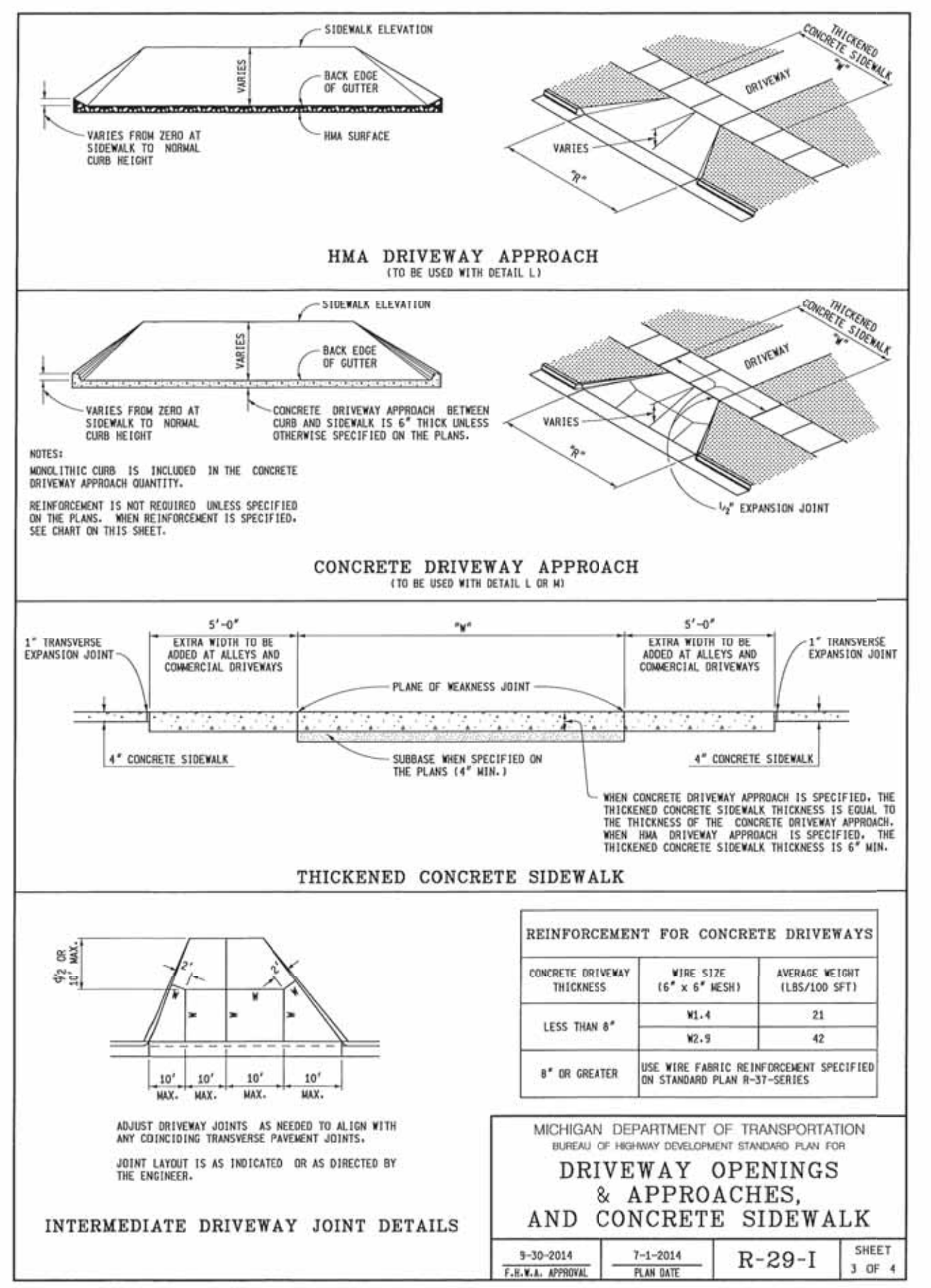
DEPARTMENT DIRECTOR: Ron T. Shultz
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
DRIVEWAY OPENINGS AND CONCRETE SIDEWALK

9-30-2014 T.A.K.A. APPROVE 7-1-2014 PLAN DATE R-29-1 SHEET 1 OF 4



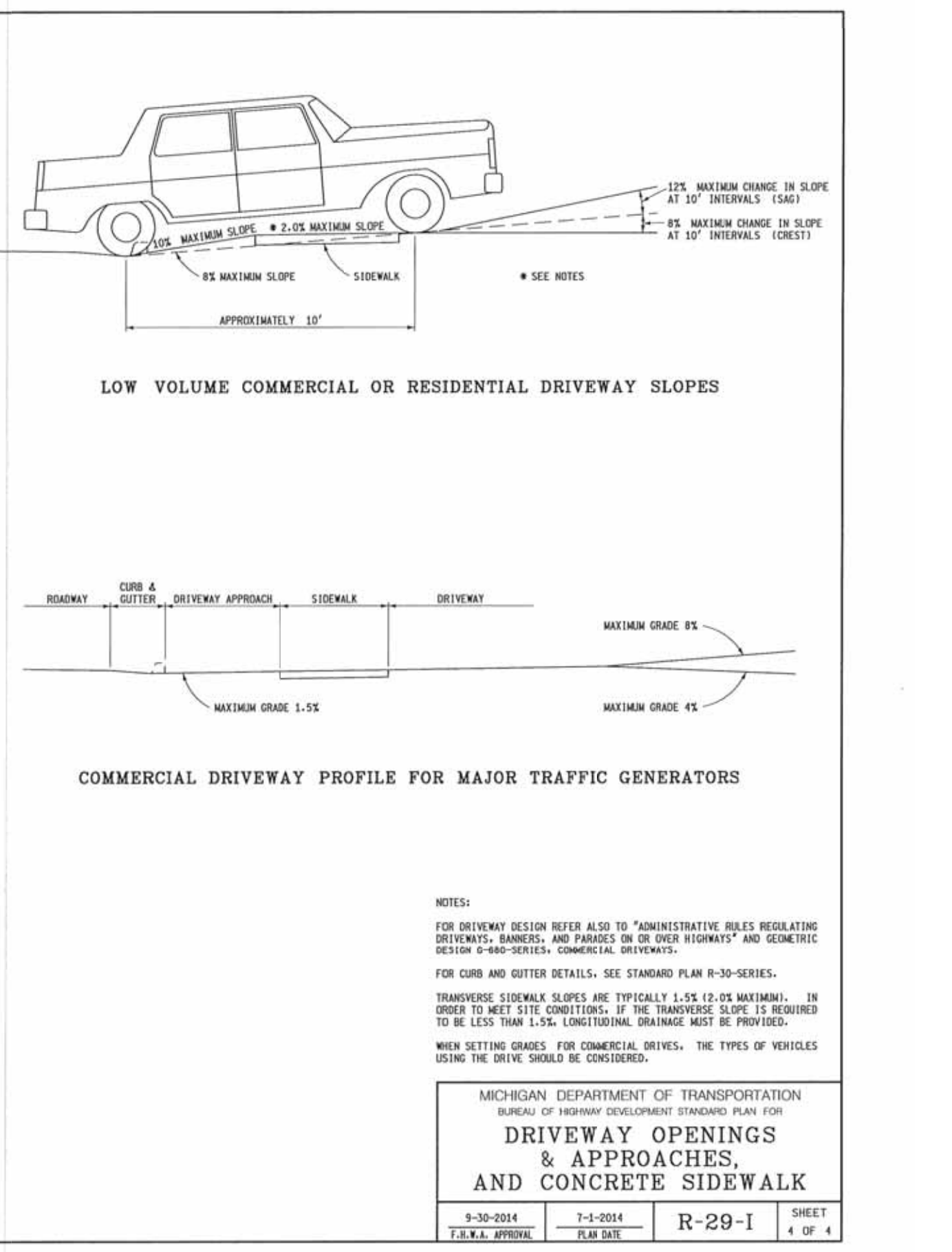
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
DRIVEWAY OPENINGS AND CONCRETE SIDEWALK

9-30-2014 T.A.K.A. APPROVE 7-1-2014 PLAN DATE R-29-1 SHEET 2 OF 4



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
DRIVEWAY OPENINGS AND CONCRETE SIDEWALK

9-30-2014 T.A.K.A. APPROVE 7-1-2014 PLAN DATE R-29-1 SHEET 3 OF 4



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
DRIVEWAY OPENINGS AND CONCRETE SIDEWALK

9-30-2014 T.A.K.A. APPROVE 7-1-2014 PLAN DATE R-29-1 SHEET 4 OF 4

DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK (R-29-1)

NOT TO SCALE

6

ISSUE	DATE	BY	DESCRIPTION
7	08/22/2023	EM	RESUBMISSION FOR CITY COUNCIL APPROVAL
6	08/11/2023	EM	STORM SEWER PROFILES
5	07/27/2023	EM/RC	SUBMISSION FOR LAND IMPROVEMENT PERMIT
4	06/30/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
3	05/05/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
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1	02/16/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL

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SITE DEVELOPMENT PLANS

EROP LLC

PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
2737 SOUTH ADAMS ROAD
CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

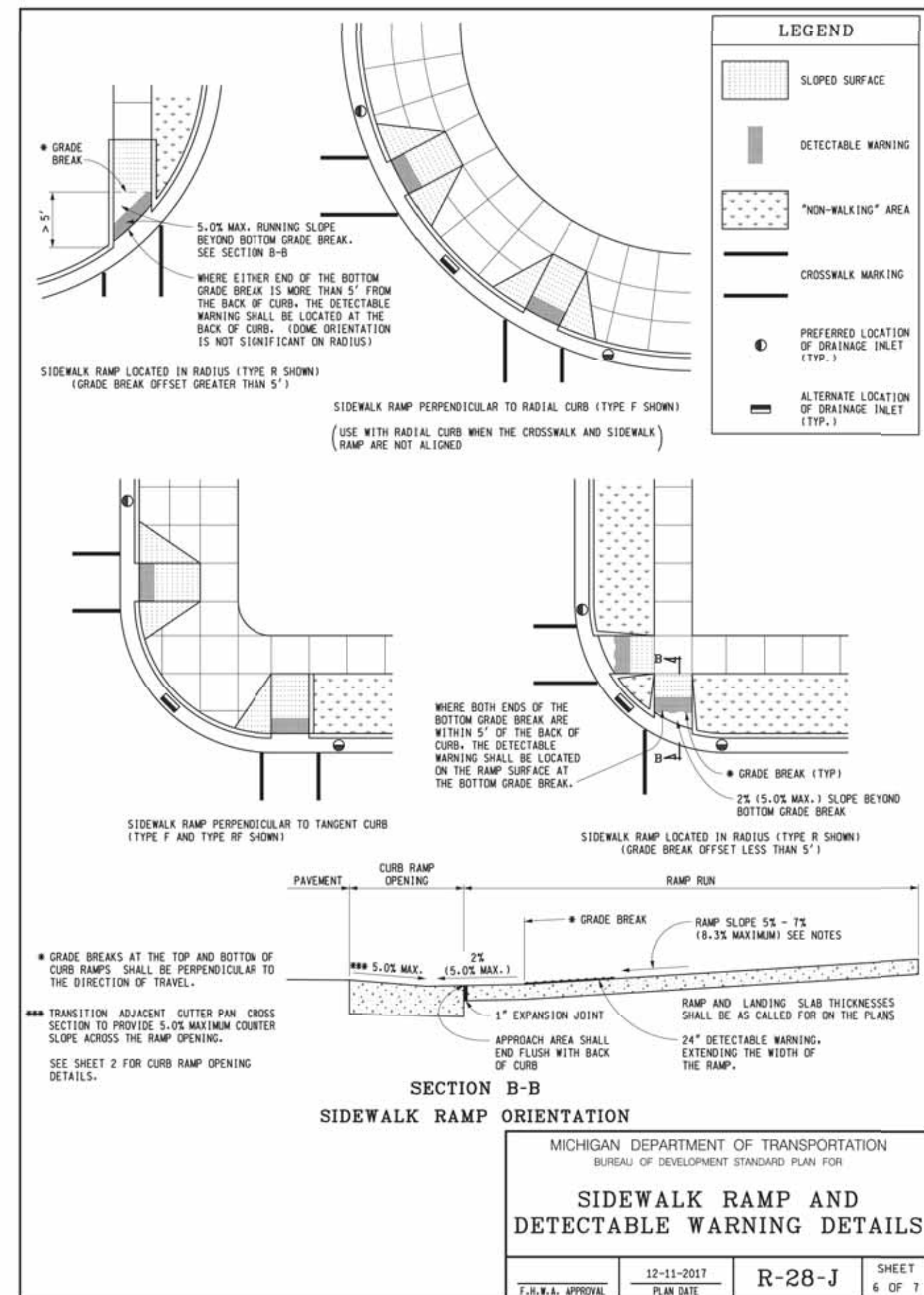
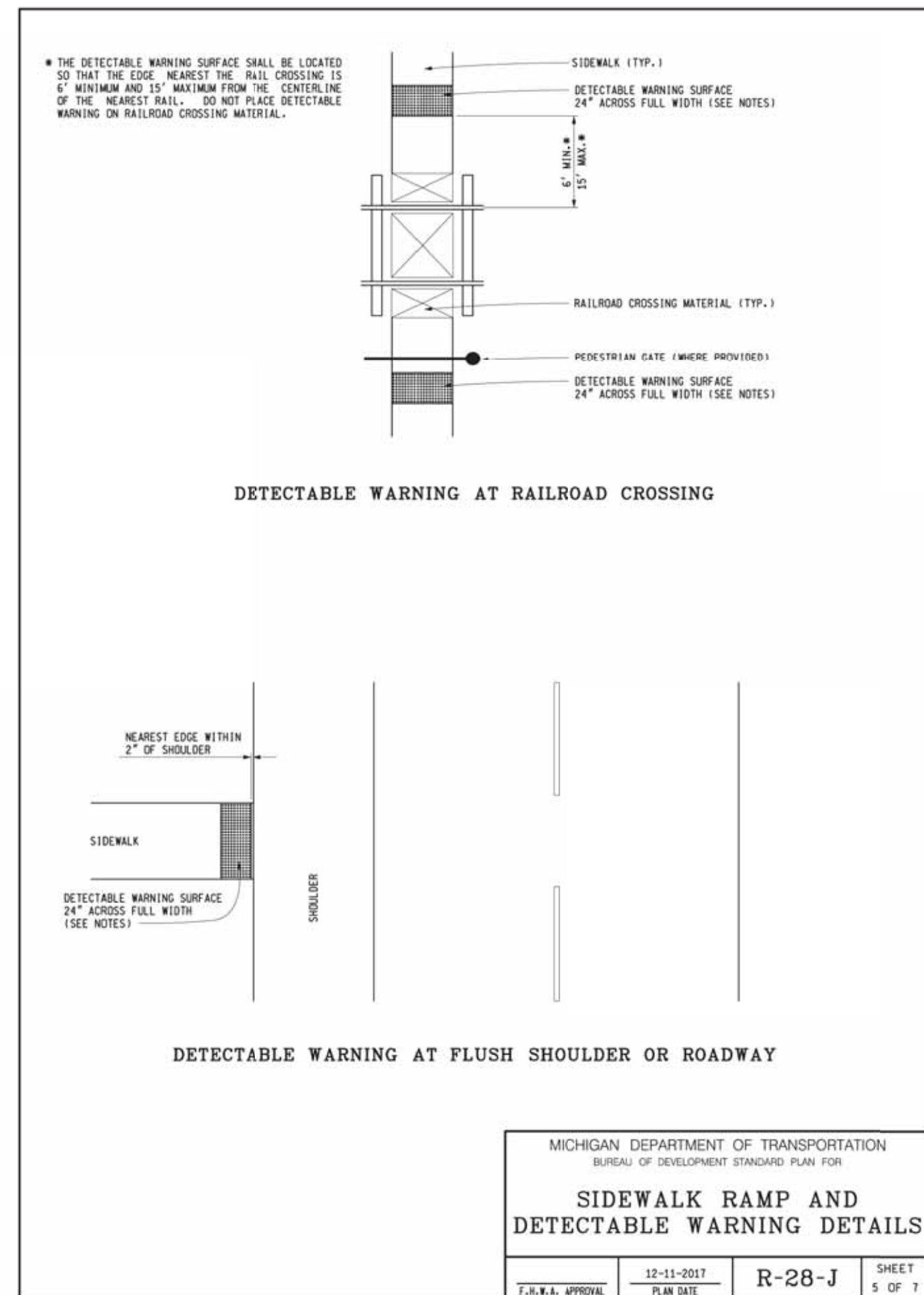
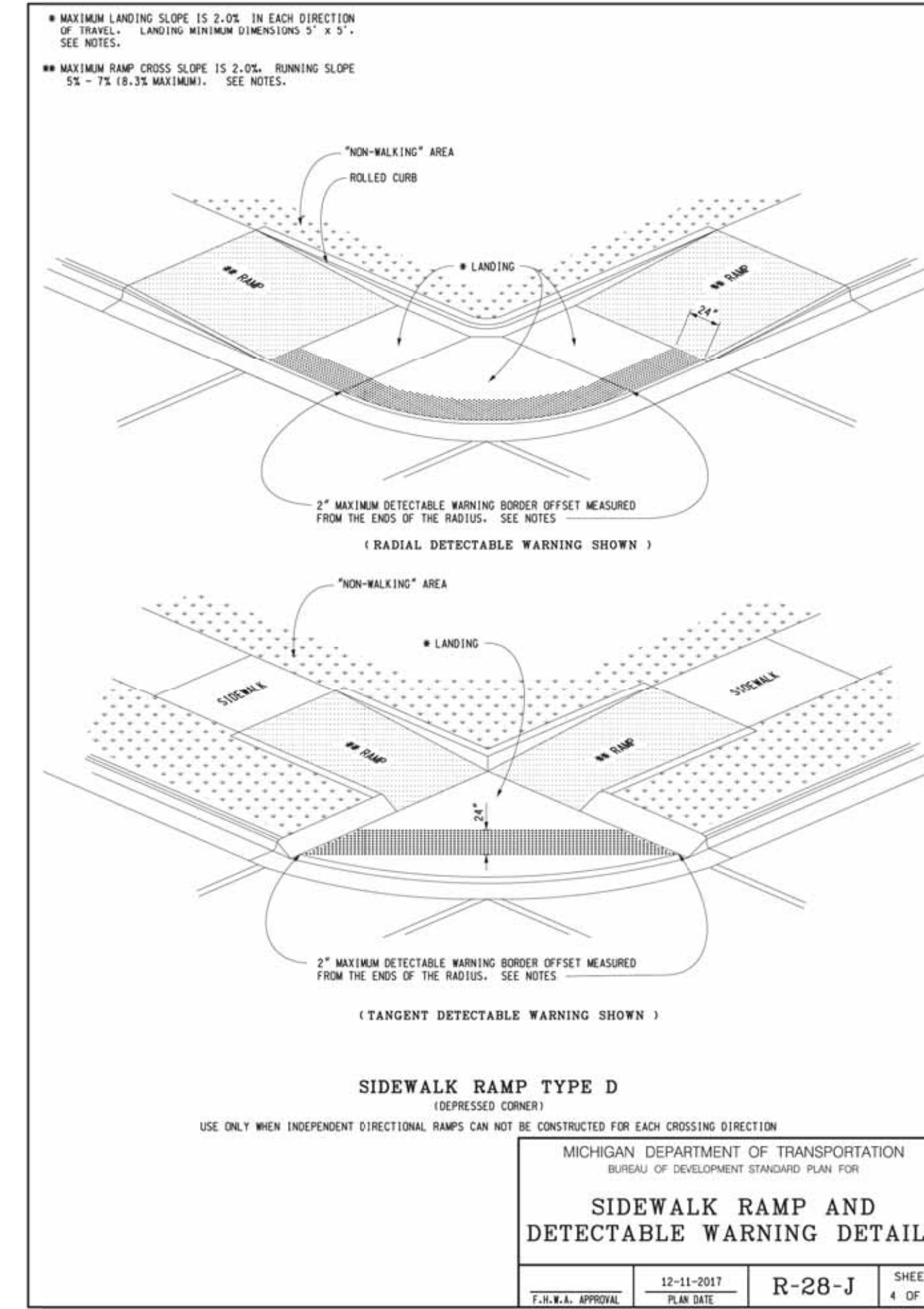
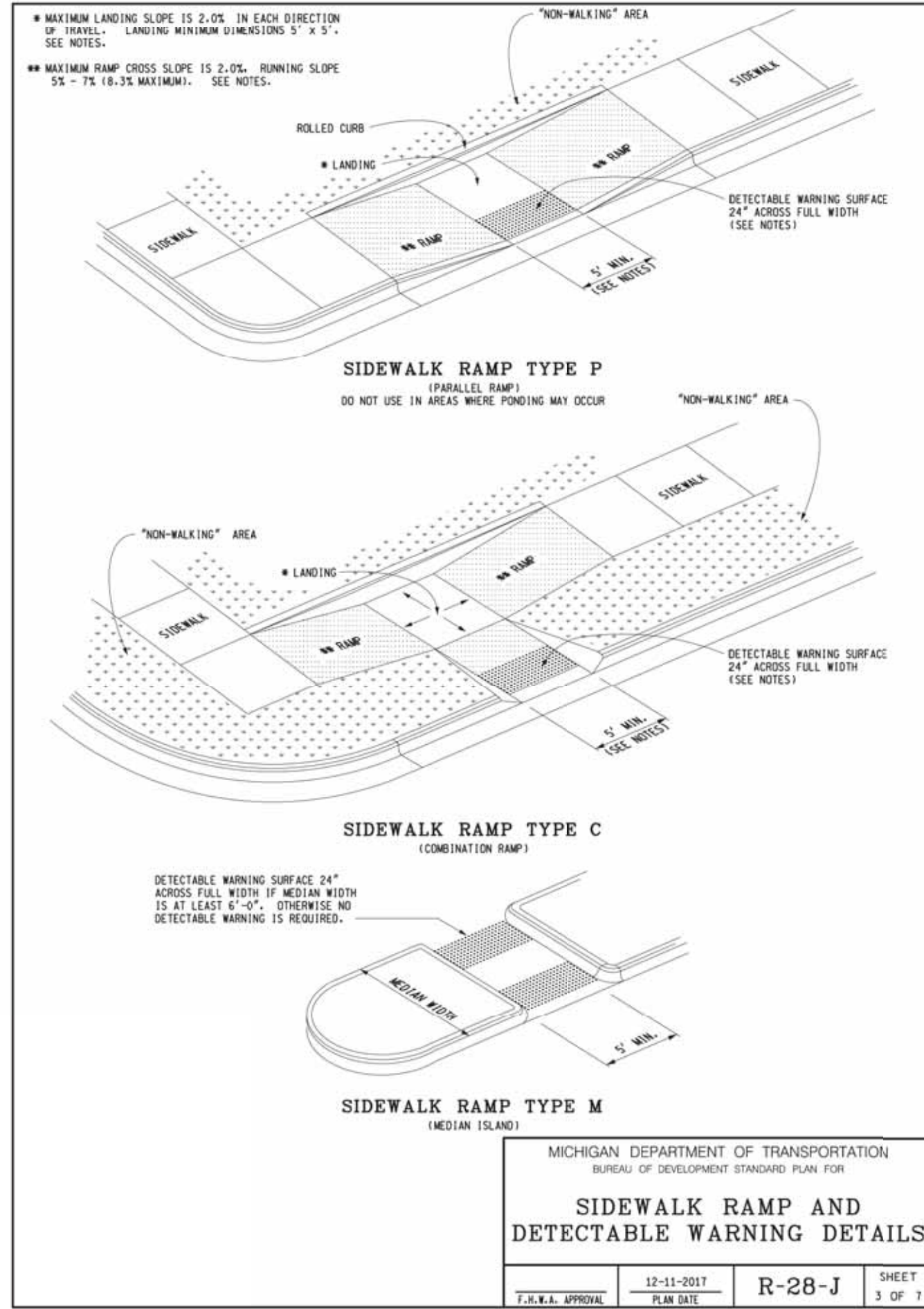
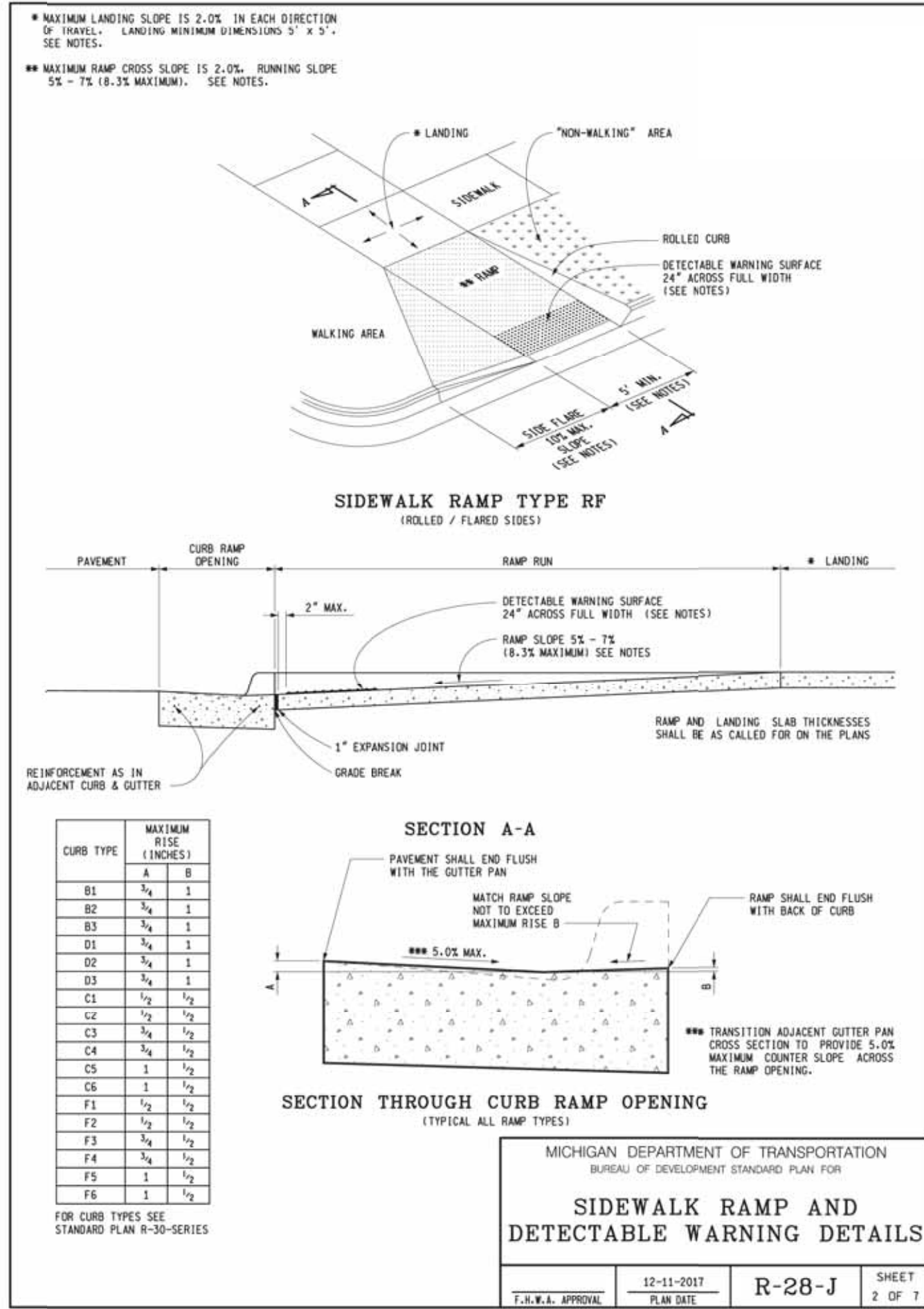
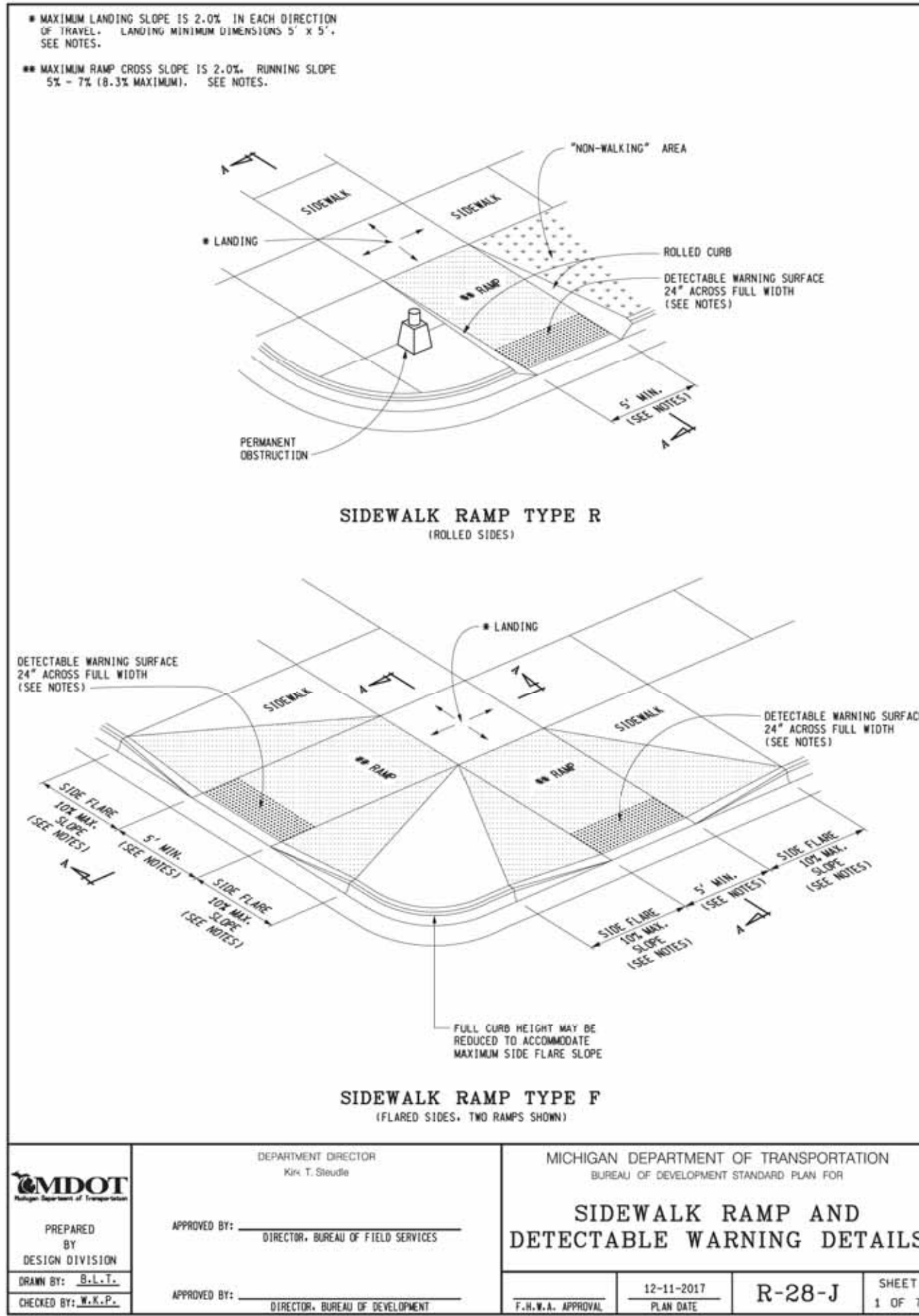
STATE OF MICHIGAN
JONATHAN FREED
COOKSEY ENGINEER
PROFESSIONAL ENGINEER
No. 10717

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CITY FILE #22-043 SECTION #30
SCALE: AS SHOWN PROJECT ID: DET-220436

TITLE: CONSTRUCTION DETAILS

DRAWING: C-15



MDOT SIDEWALK RAMP AND DETECTABLE WARNING DETAILS (R-28-J)

NOT TO SCALE

ISSUE	DATE	BY	DESCRIPTION
7	08/22/2023	EM	RESUBMISSION FOR CITY COUNCIL APPROVAL
6	08/11/2023	EM	STORM SEWER PROFILES
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EROP LLC
PROPOSED CAR WASH

WHITEWATER EXPRESS CAR WASH

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STATE OF MICHIGAN
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REGISTERED PROFESSIONAL ENGINEER

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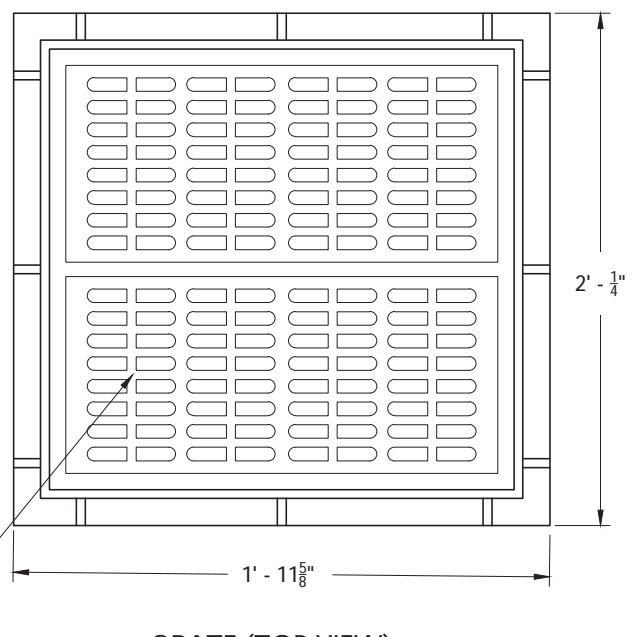
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TITLE:
CONSTRUCTION DETAILS

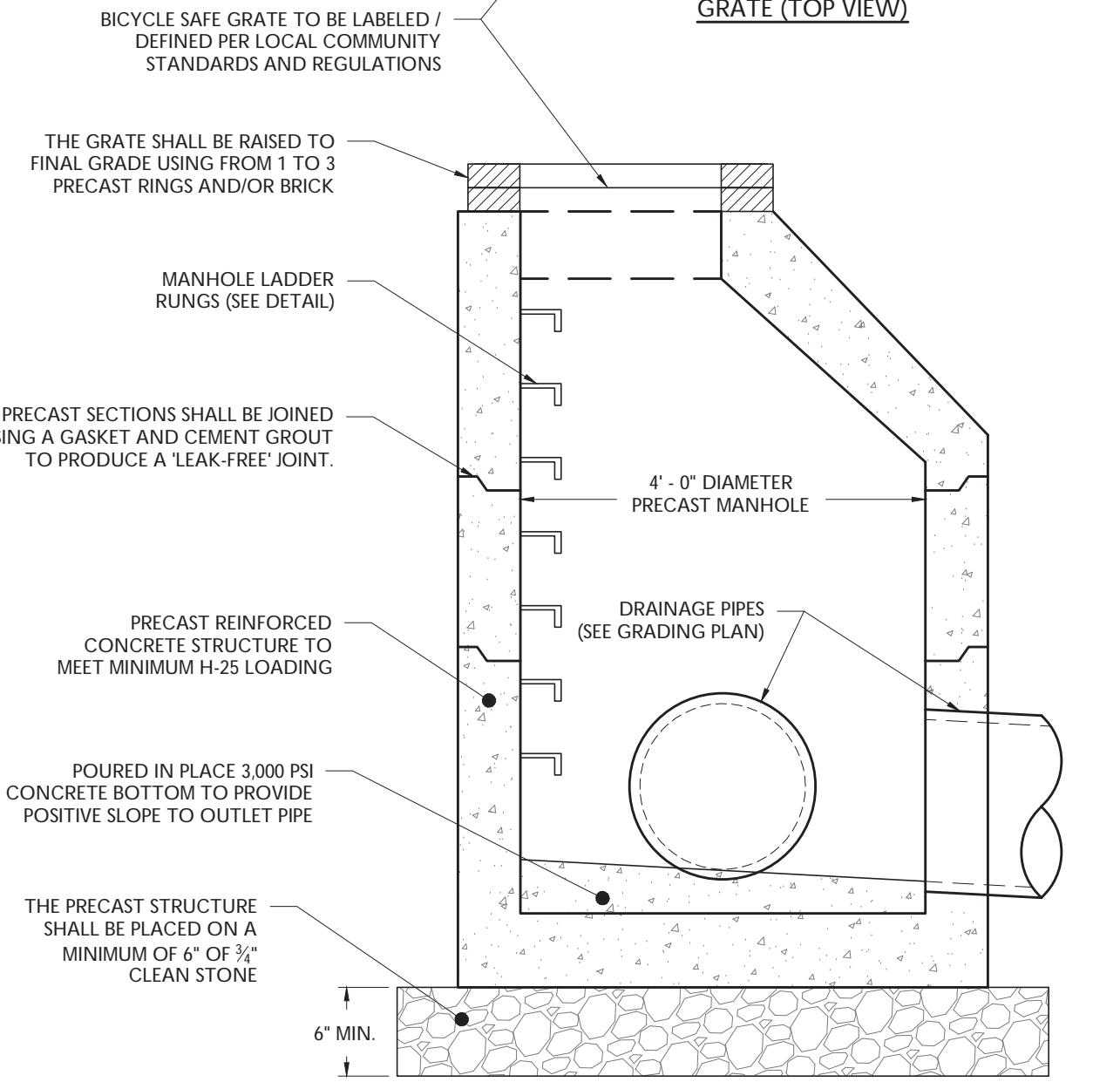
DRAWING:
C-16

V:\PROJECTS\220436-15-30-302-031\2737 ADAMS ROAD - ROCHESTER HILLS\DWG\CD\TOP\15.16.DWG

- NOTES:
 1. STRUCTURE TO BE CONSTRUCTED OF REINFORCED PRECAST CONCRETE.
 2. FRAME AND GRATE TO BE CAST-IRON AND SUPPORT MINIMUM H-25 LOADING.
 3. ALL JOINTS TO BE WATER-TIGHT.
 4. SUBGRADE BENEATH STRUCTURE SHALL BE LEVELED AND COMPACTED AS NECESSARY PRIOR TO INSTALLING STRUCTURE.

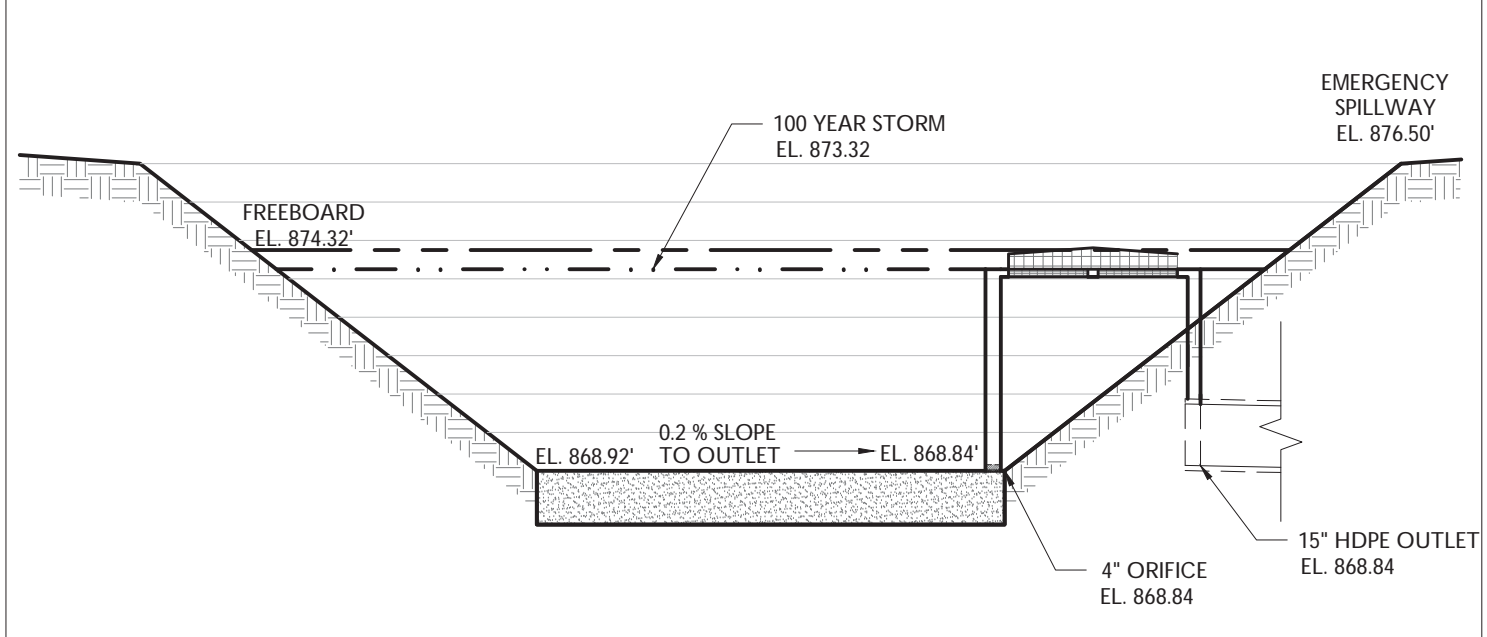


GRATE (TOP VIEW)



STORM INLET DETAIL

PER MDOT TYPE 'R' COVER
NOT TO SCALE

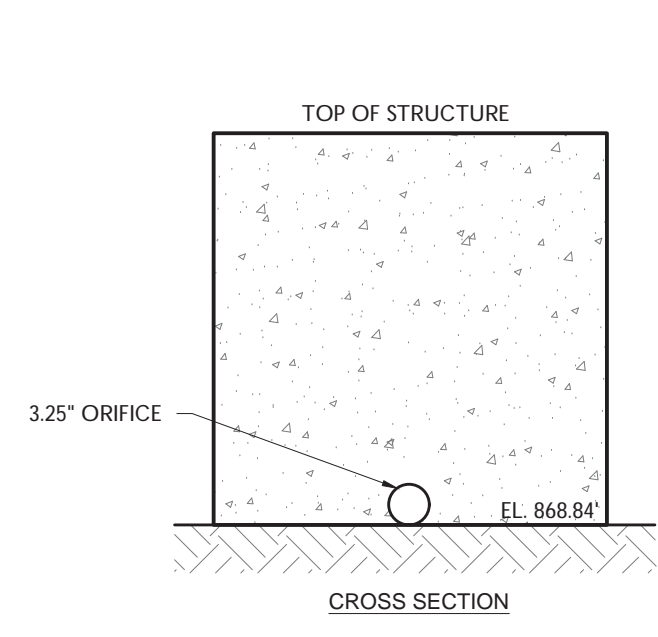


ABOVEGROUND BASIN DETAIL

NOT TO SCALE

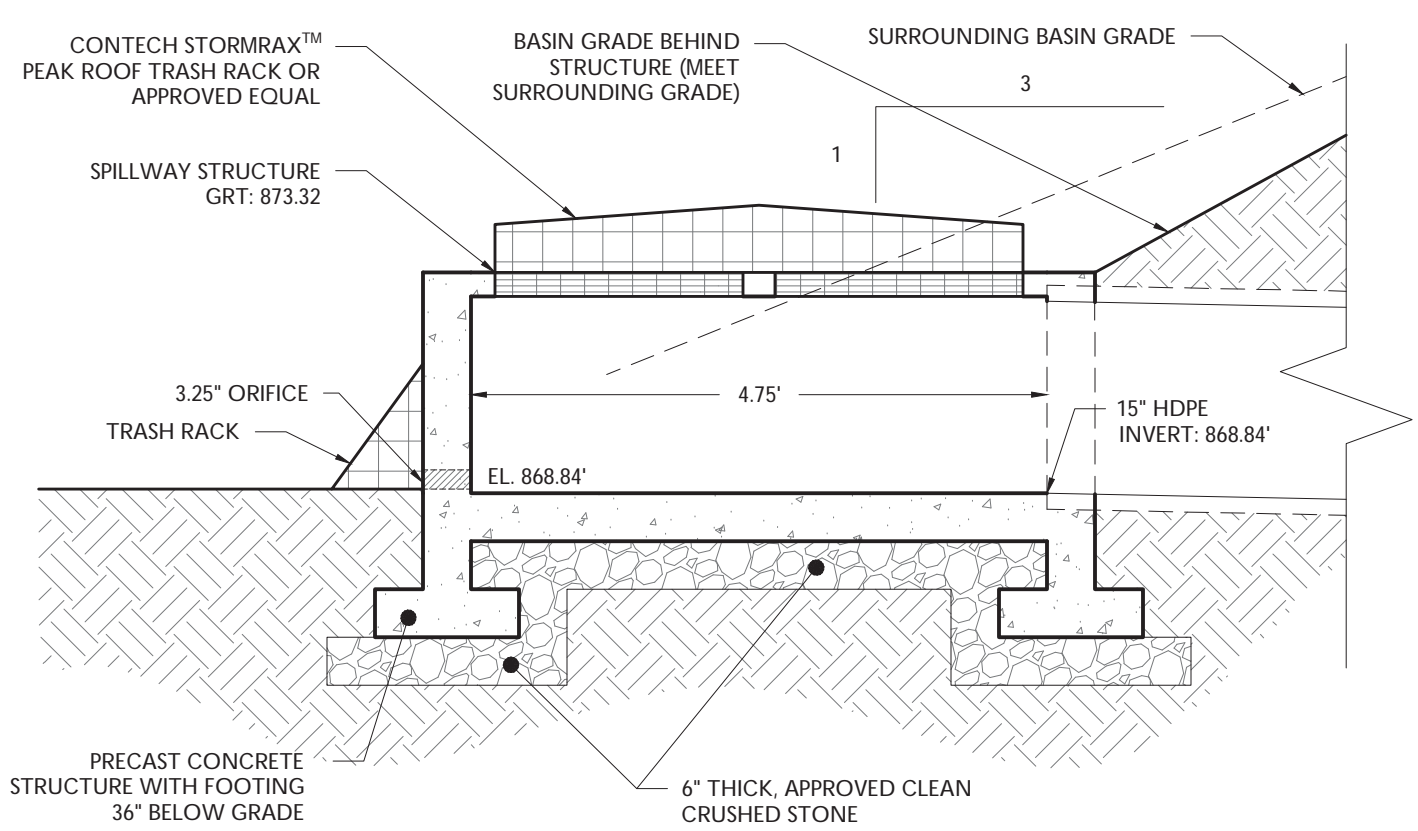
NOTES:
 BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.

2



CROSS SECTION

- NOTE:
 1. STRUCTURE SHALL SUPPORT H25 LOADING.
 2. STRUCTURE TO BE CONSTRUCTED OF REINFORCED PRECAST CONCRETE.
 3. ALL JOINTS TO BE WATER-TIGHT.
 4. TRASH RACKS CONSTRUCTED OF NON-CORROSIVE MATERIALS TO BE PROVIDED.



ABOVE-GROUND OUTLET STRUCTURE (OS#) DETAIL

NOT TO SCALE

3

STORMWATER MANAGEMENT CALCULATIONS
(Based on Oakland County Stormwater Management Regulations (11-21-2021 ordinance))

Project: **WhiteWater Rochester Hills** Designer: **JRC** Date: **08/21/23**

PART A: Determination of Surface Runoff

Landcover	Area (AC)	Area (SF)	C-Value*	Weighted Value
Building / Pavement	0.92	40,177	0.95	38,168
Landscaped Areas	HSG A	1.65	0.15	10,777
Subtotals	2.57	112,021		48,945

*C-values obtained from Oakland County Standards, Section III, Part 'A'

$I_{WQ} = 30.20p^{0.22} / (9.17 + T)^{0.81}$
 T_c , Time of Concentration:
 Residential - Assume 20 min
 Commercial/Industrial - Assume 15 min
 Sites < 5 acres - Assume 10 min

PART C: Channel Protection Volume Control
 $V_{CP,R} = 4,719 * C * A$

Is High Ground Water Present On-Site? No
 Is Infiltration > 0.24 in/hr Available On-Site? No

$K_{SAT} < 0.24$ in/hr - Soil not suitable for infiltration
 0.24 in/hr < $K_{SAT} < 0.50$ in/hr - Supplemental Measures Required
 $0.50 < K_{SAT}$ - No Supplemental Measures Required

Infiltration Calculations (Bioretention Basin / Rain Garden)

Parameter	Value
Infiltration Rate, K_{SAT}	0.00 in/hr
Area of Ponding Depth, A_1	0.00 FT
Area of Area Bottom, A_2	0.00 FT
Average Infiltration Area, A_T	0.00 SF
Max Ponding Depth, H_1	0.00 CF
Surface Storage Volume, V_{SS}	0.00 CF
Subsurface Storage, V_{SUB}	N/A CF
Infiltration Volume (6 Hrs), V_i	0.00 CF
Total Volume, V_T	N/A CF

PART D: Water Quality Control

$V_{WQ} = 3,630 * C * A$ Water Quality Volume, V_{WQ} : 4,107.44 CF
 $Q_{WQ} = C * A * (30.20 / (T_c + 9.17)^{0.81})$ Water Quality Rate, Q_{WQ} : 3.12 CFS

Is a Forebay Proposed On-Site? No Forebay Design is Waived
 $V_{FR} = 545 * C * A$ Required Forebay Volume, V_{FR} : 616.68 CF
 Provided Forebay Volume, V_{FR} : 0.00 CF

PART E: Channel Protection Rate Control: Extended Detention

$V_{ED} = 6,897 * C * A$ Extended Detention Volume, V_{ED} : N/A CF
 Total Head, h_{ED} : N/A FT
 $H_{ED} = V_{ED} / (4,666 * \sqrt{h_{ED}})$ # 1" Holes Required to Control Release, H_{ED} : N/A 1" Holes

PART F: Detention & Flood Control Facilities

$Q_{100IN} = C * I_{100} * A$ 100-yr Post-Development Peak Inflow Rate, Q_{100IN} : 8.62 CFS
 $I_{100} = 83.3 / [(T_c + 9.17)^{0.81}]$ 100-yr Rainfall Intensity, I_{100} : 7.62 in/hr
 $Q_{VRR} = 1.1055 * 0.206 * LN(A)$ Variable Release Rate, Q_{VRR} : 0.91 CFS
 *Allowable Peak Release Rate Not to Exceed: 1) Restricted Rate for the Drain, or 2) The prorated Share of the Drain's Capacity, or 3) Q_{VRR}

$Q_{100P} = Q_{VRR} * A$ 100-YR Release Rate, Q_{100P} : 2.34 CFS
 $R = 0.206 - 0.15 * LN(Q_{100P} / Q_{100IN})$ Storage Curve Factor, R : 0.40 CFS
 $V_{100R} = 18,985 * C * A$ Post Development 100-yr Runoff Volume, V_{100R} : 21,482.01 CFS
 $V_{100D} = V_{100R} * R - V_{CP,R}$ 100-yr Detention Volume, V_{100D} : 8,624.28 CF

PART F.1: Proposed Detention Volume

Elevation	Surface Area (SF)	Total Volume (CF)
868.84	0	0
869.00	336	27
870.00	1,065	727
871.00	2,021	2,270
872.00	3,202	4,882
873.00	4,610	8,788
874.00	6,244	14,215
875.00	8,104	21,389
876.00	10,190	30,536
877.00	12,502	FREEBOARD

Basin volume calculated based on a trapezoidal prism

PART F.2: Detention System Outlet & Overflow Structure Design

$Q_{ED} = V_{ED} / 172800$ Extended Detention Release Rate, Q_{ED} : N/A IN²
 Proposed Control Orifice Diameter, D_o : 3.25 IN

*Minimum 3" Orifice Diameter without additional Clogging Protection. Minimum 1" orifice overall

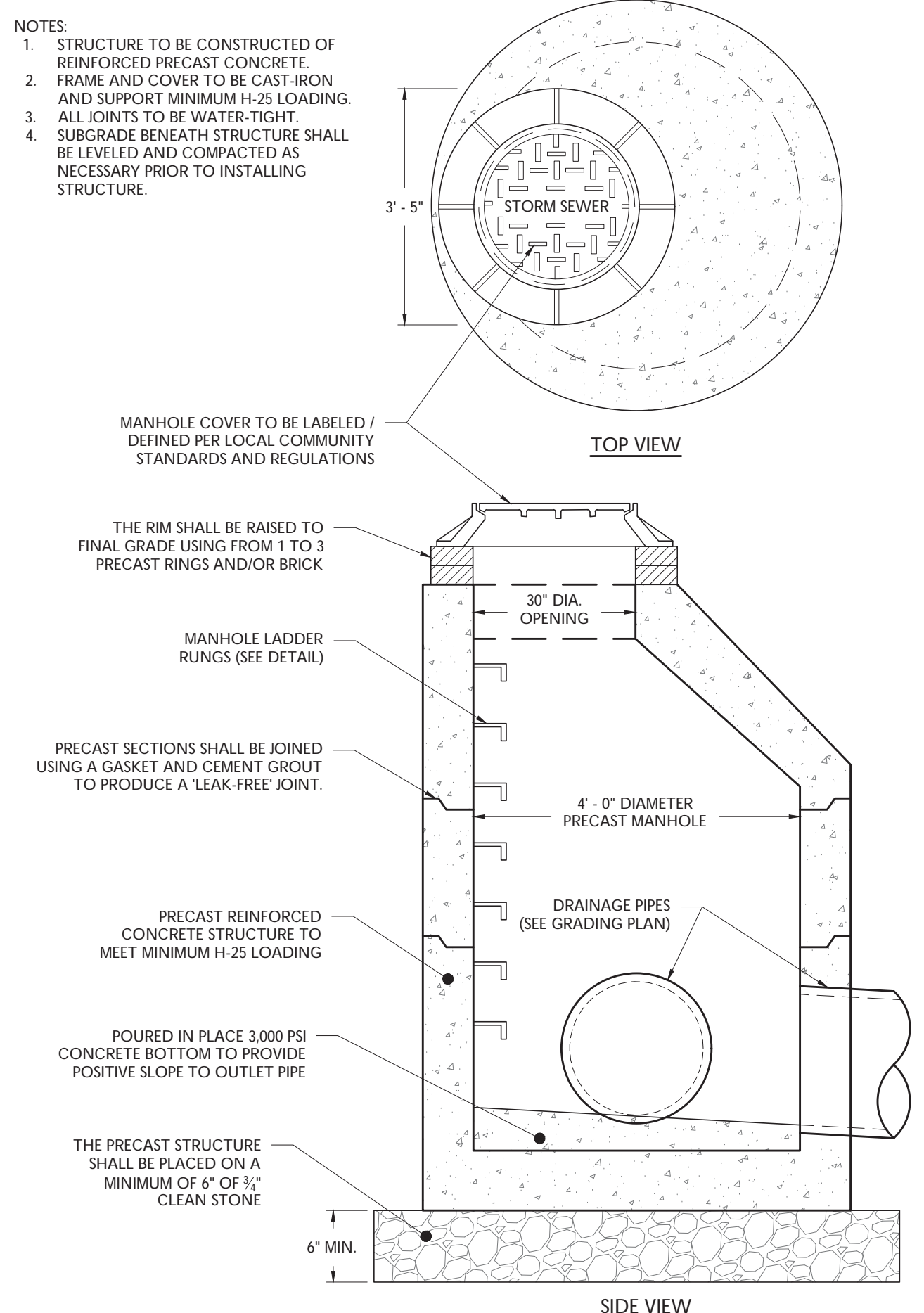
$Q_p = C_o * A_o * \sqrt{(2 * g * h)}$ Proposed Outflow*, Q_p : 0.56 CFS
 C_o is assumed to be 0.62
 $Q_p < Q_{VRR}$, Orifice Design Okay

*Per Oakland County WRC review, outfall to Nancy Dingekley Drain shall be restricted to 0.16 CFS/AC. 3.74 AC x 0.16 CFS/AC = 0.60 CFS

STORMWATER CALCULATIONS

NOT TO SCALE

4



STORM MANHOLE DETAIL

NOT TO SCALE

5

ISSUE	DATE	BY	DESCRIPTION
7	08/22/2023	EM	RESUBMISSION FOR CITY COUNCIL APPROVAL
6	08/11/2023	EM	STORM SEWER PROFILES
5	07/27/2023	EM/RC	SUBMISSION FOR LAND IMPROVEMENT PERMIT
4	06/30/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
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2	03/31/2023	EM/RC	RESUBMISSION FOR CITY COUNCIL APPROVAL
1	02/16/2023	EM/RC	SUBMISSION FOR CITY COUNCIL APPROVAL

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SITE DEVELOPMENT PLANS

EROP LLC
 PROPOSED CAR WASH

PARCEL ID: 15-30-302-031
 2737 SOUTH ADAMS ROAD
 CITY OF ROCHESTER HILLS
 OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
 JONATHAN REID
 COOKSEY
 ENGINEER

STONEFIELD
 engineering & design

CITY FILE #22-043 SECTION #30
 SCALE: AS SHOWN PROJECT ID: DET-220436
 TITLE:
CONSTRUCTION DETAILS
 DRAWING:
C-17

Project: 2737 S Adams Road
Location: Rochester Hills, MI



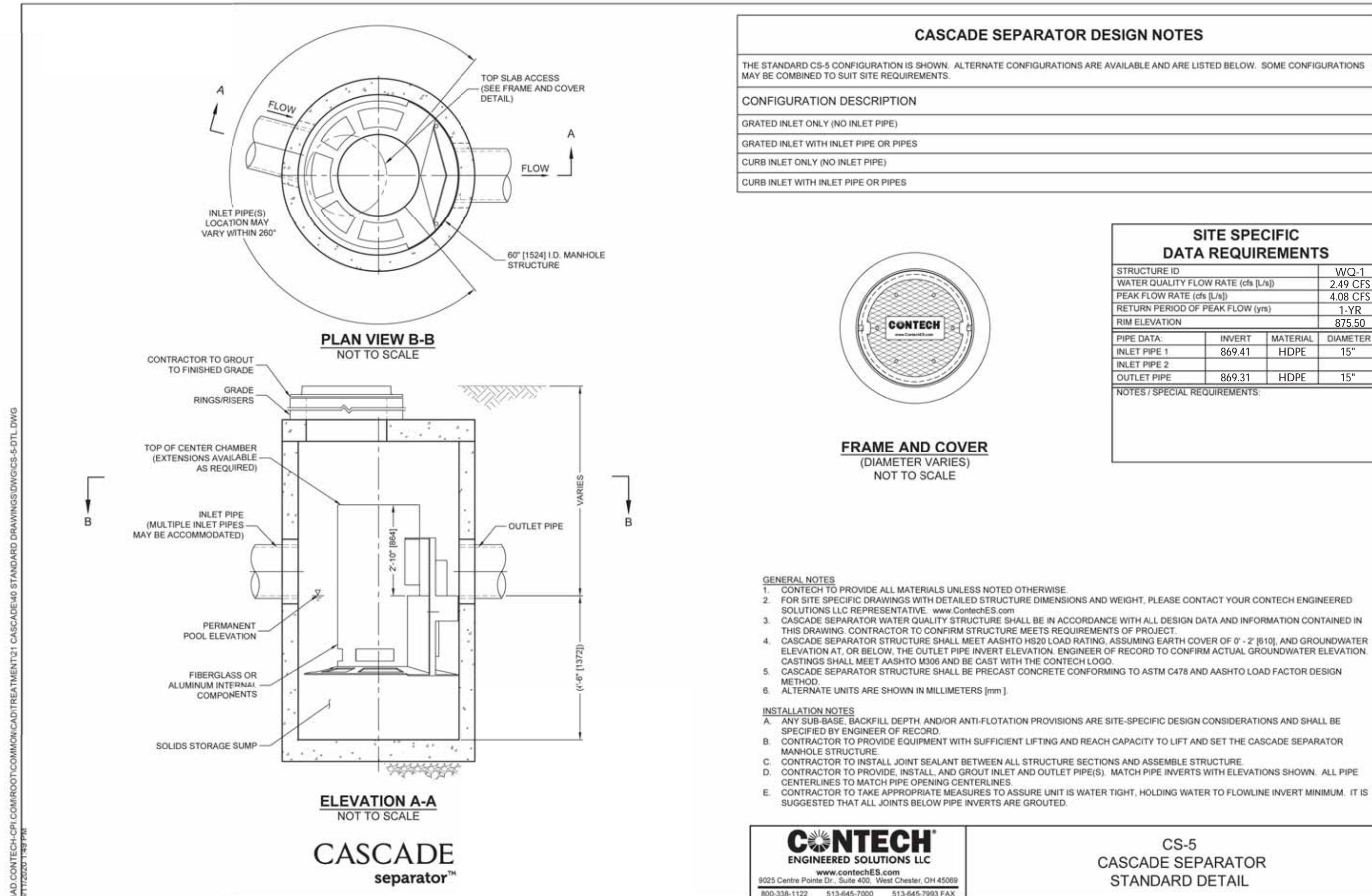
Oakland County Water Resources Commissioner's Office
Manufactured Treatment Device Sizing Calculation

Area (acres) = 2.27
Runoff Coefficient, C = 0.48
 T_c (min) = 15
1-year I_1 (in/hr) = $30.20 / (T_c + 9.17) 0.81 = 2.29$
1-year Peak Flow (cfs) = $Q_{WQ} = C \times I_1 \times A = 2.49$

Recommended Model: **CS-5**

CASCADE SEPARATOR™ MODEL SPECIFICATIONS PER NJDEP CERTIFICATION LETTER

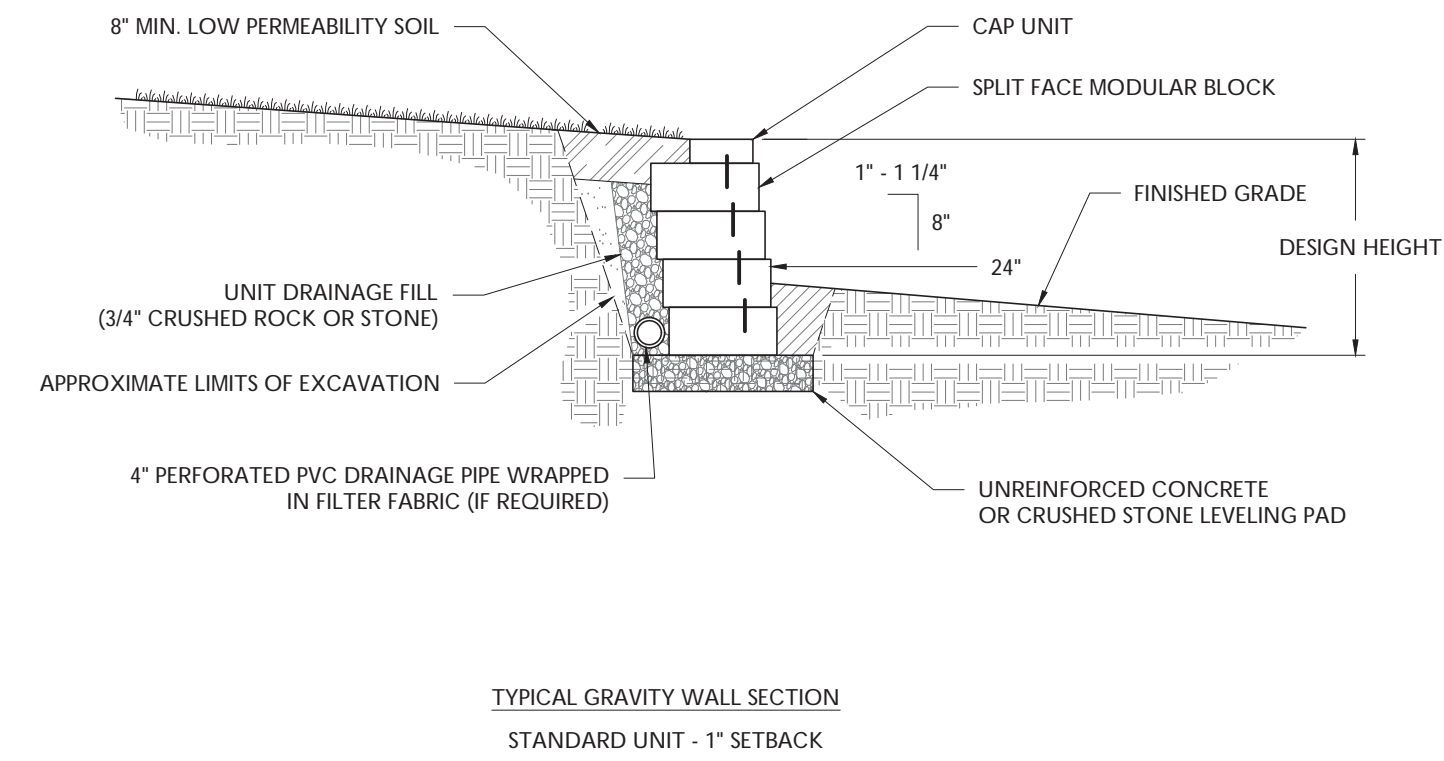
Model	MTR (cfs)
CS-4	1.80
CS-5	2.81
CS-6	4.05
CS-8	7.20
CS-10	11.3
CS-12	16.2



WATER QUALITY UNIT CALCULATIONS

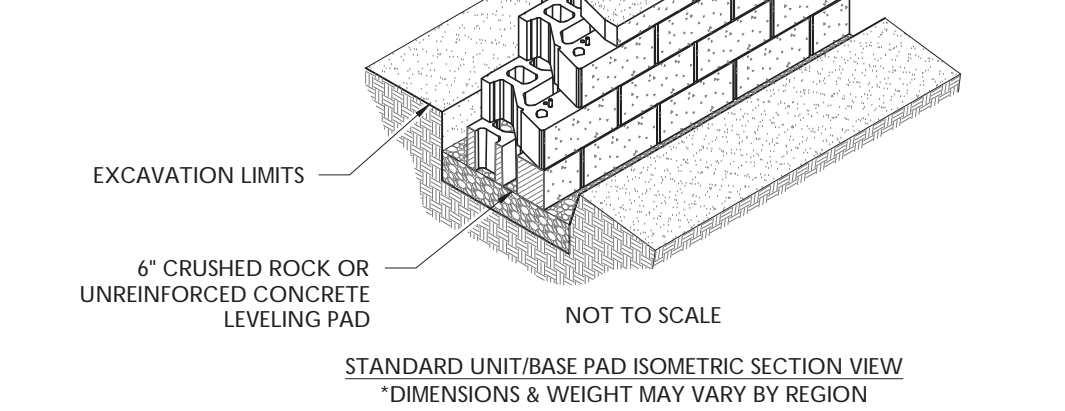
NOT TO SCALE

1



BASE LEVELING PAD NOTES:

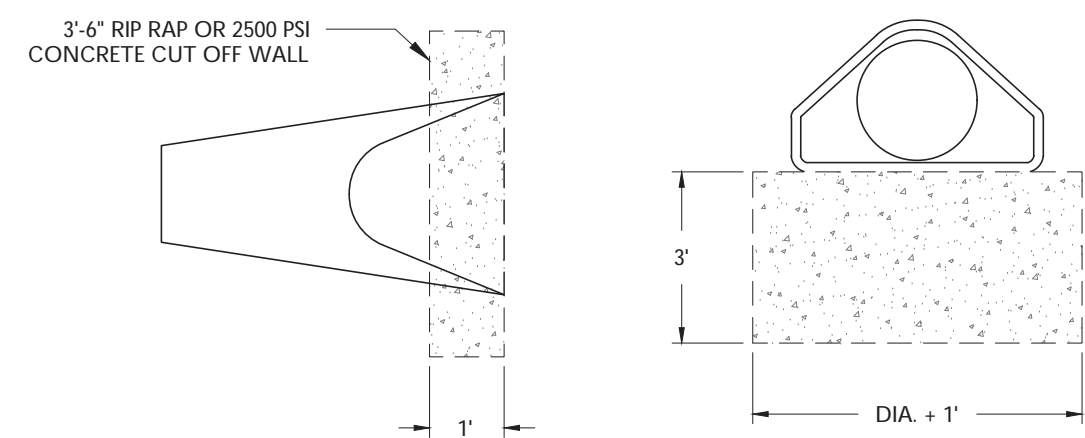
- THE LEVELING PAD IS TO BE CONSTRUCTED OF CRUSHED STONE OR 2,000 PSI UNREINFORCED CONCRETE.
- THE BASE FOUNDATION IS TO BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF THE LEVELING PAD.



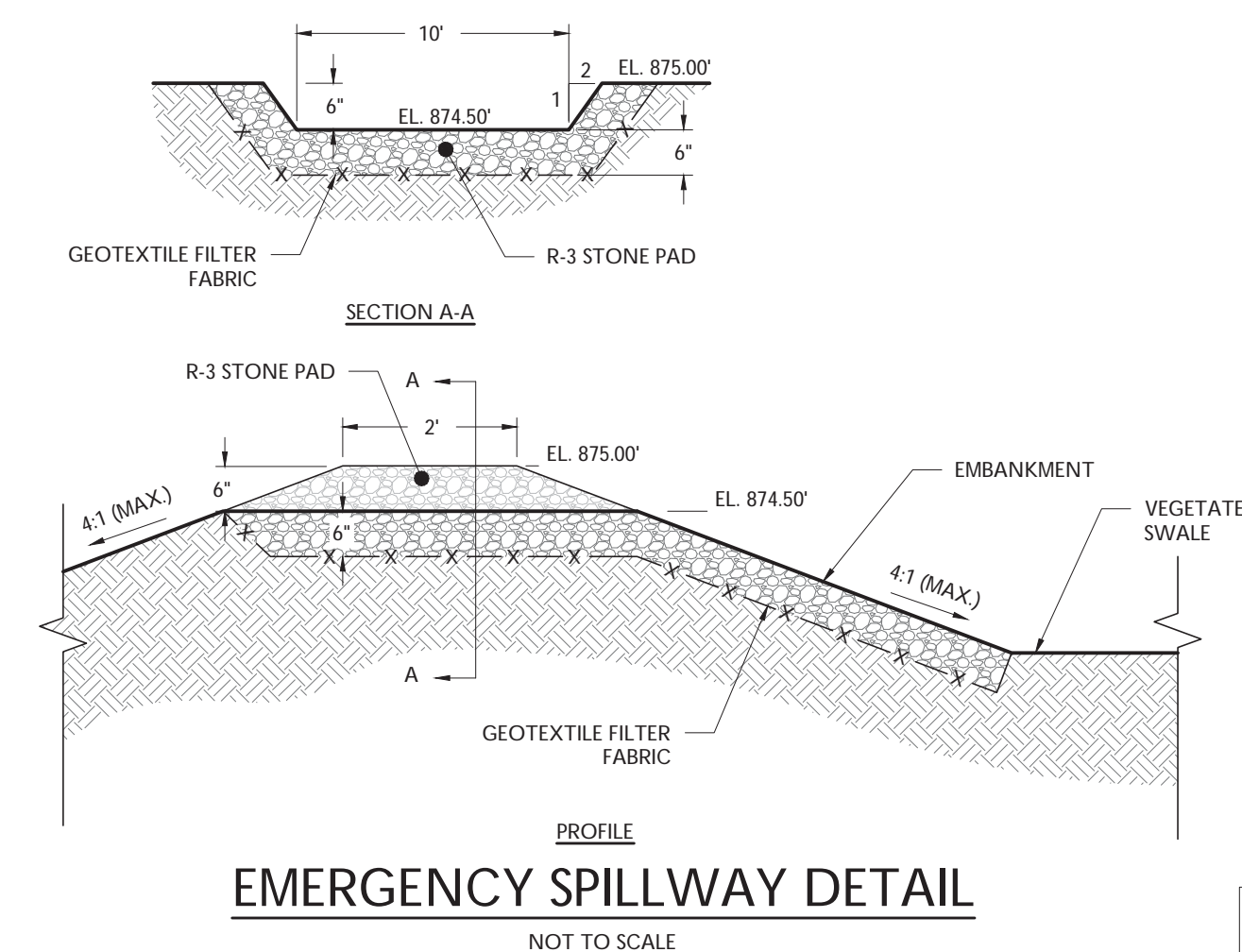
NOTES:

- RETAINING WALL DESIGN PLANS TO BE PREPARED BY LICENSED PROFESSIONAL IN THE STATE OF MICHIGAN.
- KEystone WALL SYSTEM, OR APPROVED EQUIVALENT, TO BE CONSTRUCTED.

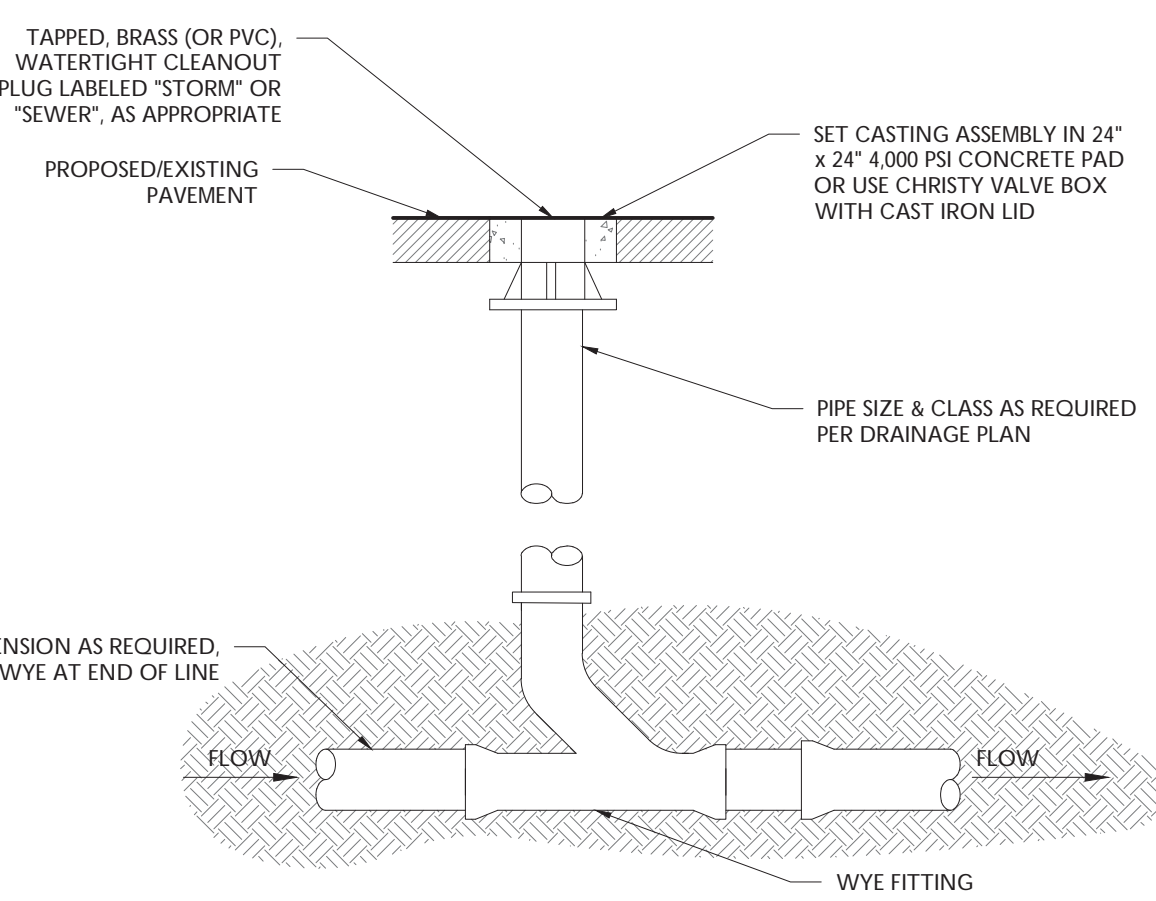
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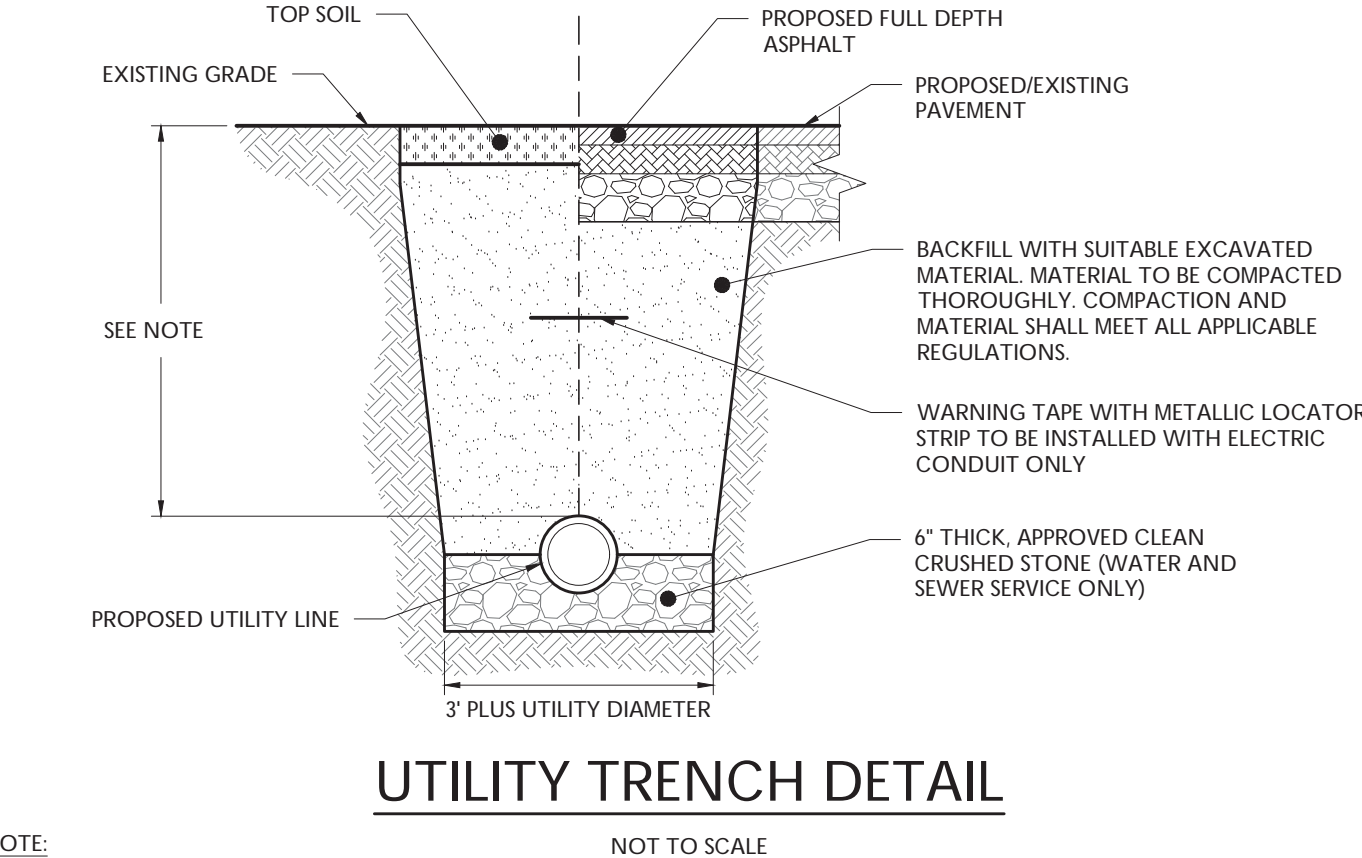
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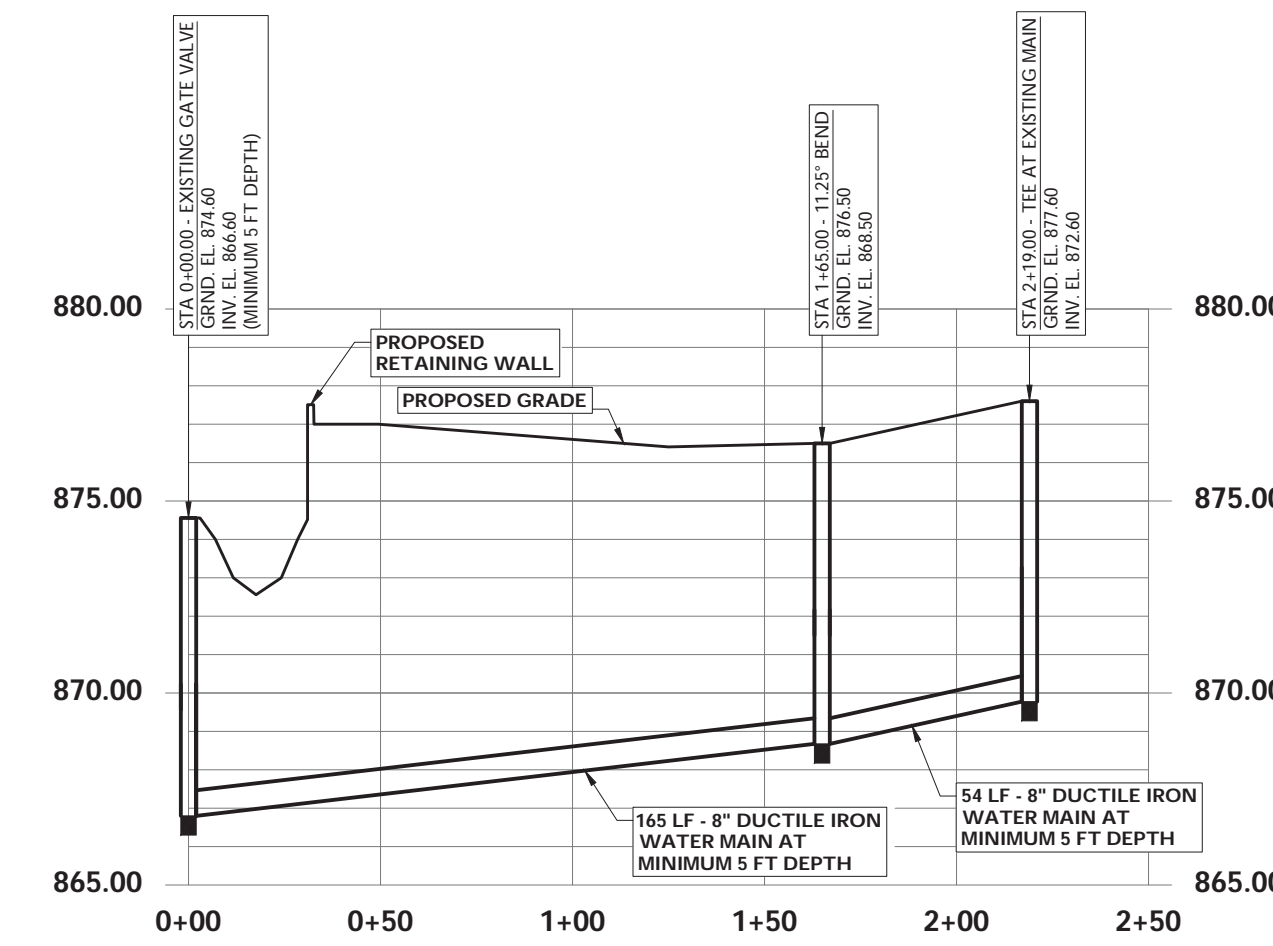
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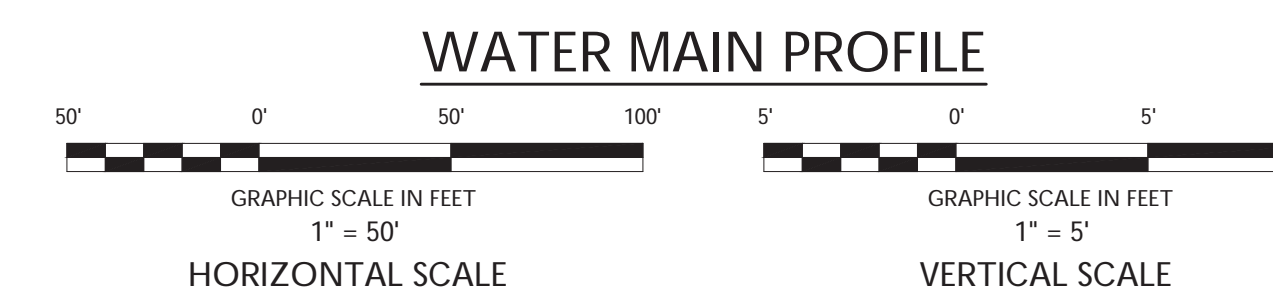
NOTE:

- MINIMUM PIPE COVER SHALL BE AS FOLLOWS:
- ELECTRIC SERVICE - PER APPLICABLE UTILITY AUTHORITY
 - GAS SERVICE - PER APPLICABLE UTILITY AUTHORITY
 - SEWER SERVICE - 36" MINIMUM
 - WATER SERVICE - 48" MINIMUM

7



EXISTING GATE VALVE TO PROPOSED TEE AT EXISTING MAIN



8

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PARCEL ID: 15-30-302-031
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CITY OF ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN

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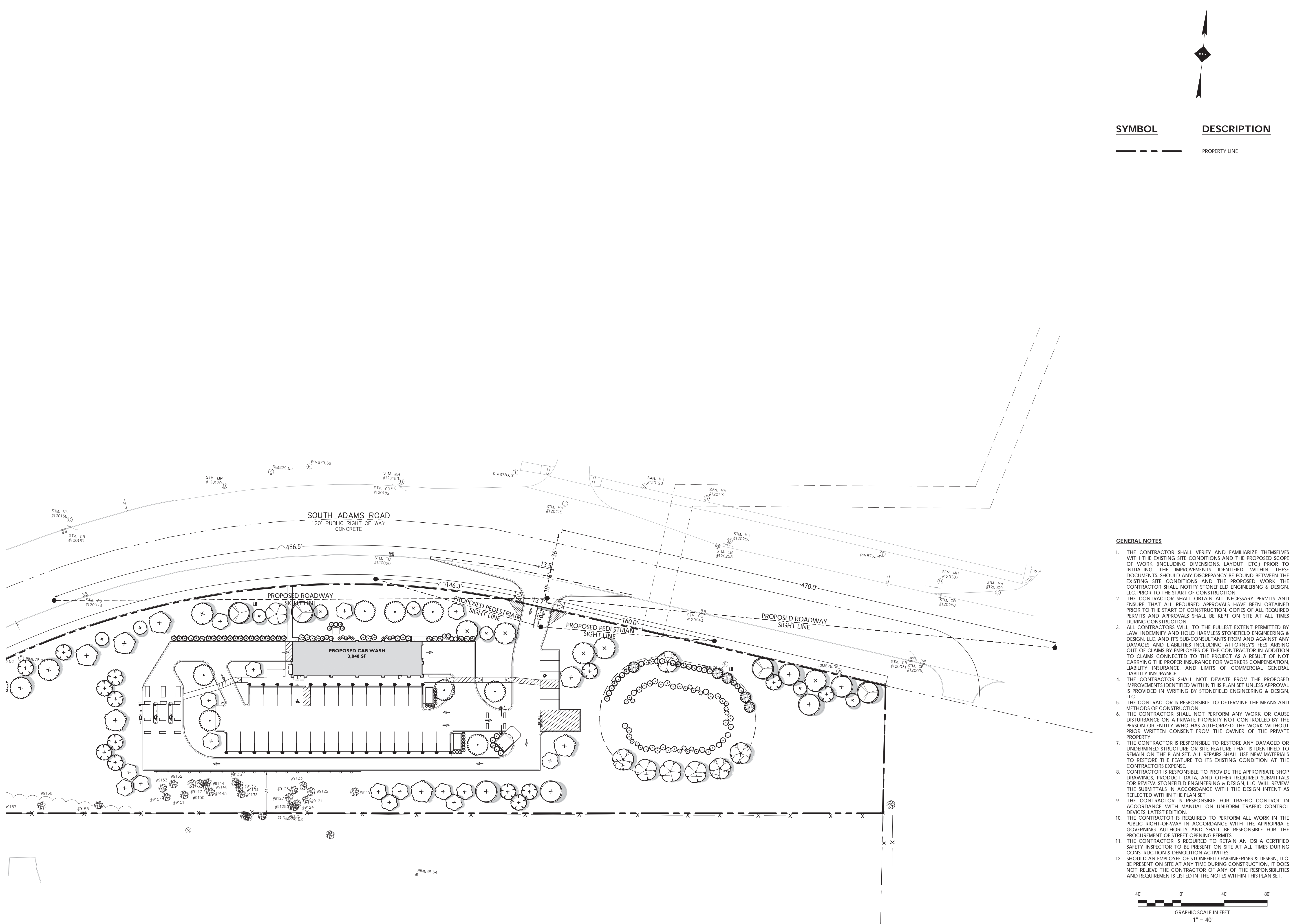
CITY FILE #22-043 SECTION #30
SCALE: AS SHOWN PROJECT ID: DET-220436

TITLE:
CONSTRUCTION DETAILS

DRAWING:
C-18

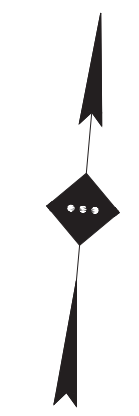
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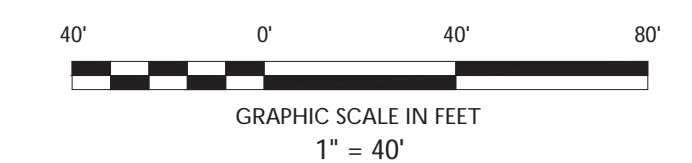


SYMBOL DESCRIPTION

--- PROPERTY LINE



- GENERAL NOTES**
1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC PRIOR TO THE START OF CONSTRUCTION.
 2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
 3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC, AND ITS SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
 4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
 5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
 6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
 7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTOR'S EXPENSE.
 8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC, WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
 9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
 10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
 11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
 12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC, BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.



ISSUE	DATE	BY	DESCRIPTION
7	08/22/2023	EM	RESUBMISSION FOR CITY COUNCIL APPROVAL
6	08/11/2023	EM	STORM SEWER PROFILES
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OAKLAND COUNTY, MICHIGAN

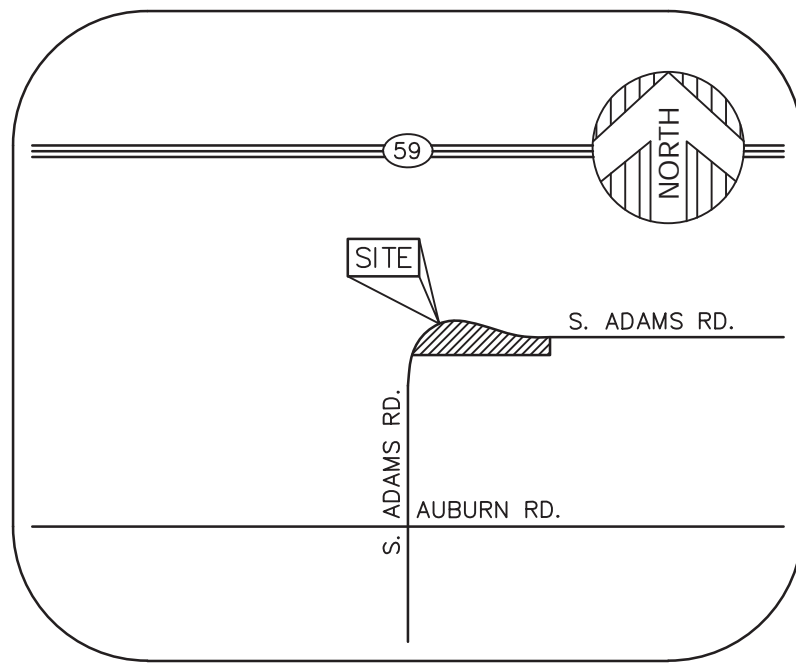
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CITY FILE #22-043 SECTION #30

SCALE: 1" = 40' PROJECT ID: DET-220436

TITLE:
SIGHT DISTANCE PLAN

DRAWING:
C-19

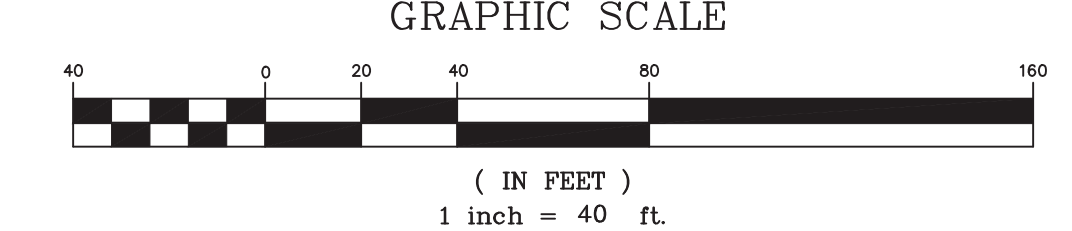
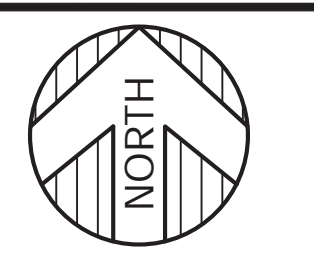


VICINITY MAP
(NOT TO SCALE)

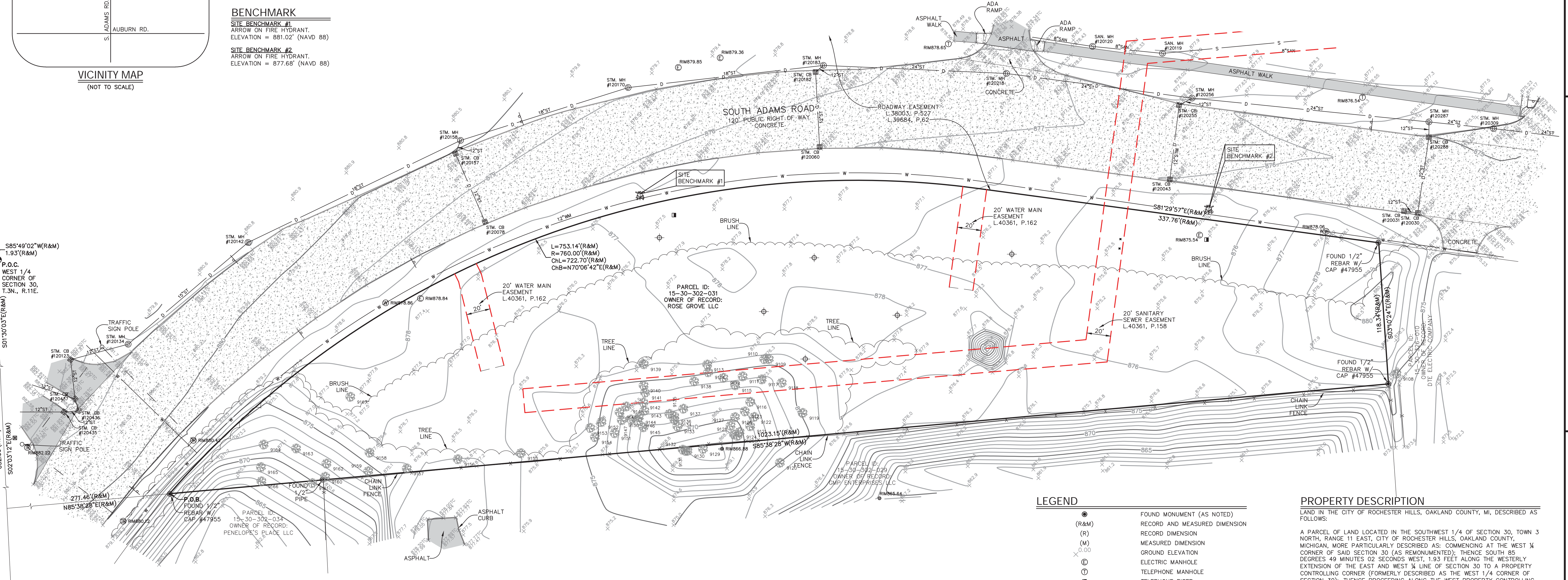
PARCEL AREA
163,152± SQUARE FEET = 3.74± ACRES

BASIS OF BEARING
SOUTH 02°03'12" EAST, BEING THE WEST LINE OF SECTION 30, AS DESCRIBED.

BENCHMARK
SITE BENCHMARK #1
ARROW ON FIRE HYDRANT.
ELEVATION = 881.02' (NAVD 88)
SITE BENCHMARK #2
ARROW ON FIRE HYDRANT.
ELEVATION = 877.68' (NAVD 88)



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ALTA / NSPS LAND TITLE SURVEY
PREPARED FOR: STONEFIELD ENGINEERING AND DESIGN
2737 SOUTH ADAMS ROAD, ROCHESTER HILLS, MICHIGAN,
PART OF SECTION 30,
TOWN 3 NORTH, RANGE 11 EAST

TITLE REPORT NOTE
ONLY THOSE EXCEPTIONS CONTAINED WITHIN THE FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT No. 979775, DATED OCTOBER 20, 2022, AND RELISTED BELOW WERE CONSIDERED FOR THIS SURVEY. NO OTHER RECORDS RESEARCH WAS PERFORMED BY THE CERTIFYING SURVEYOR.
7. NOTICE OF CONSENT JUDGMENT AND FIRST AMENDMENT TO CONSENT JUDGMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 38500, PAGE 563. (SEE DOCUMENT FOR TERMS AND CONDITIONS)
8. TERMS AND CONDITIONS CONTAINED IN RECIPROCAL EASEMENT AND OPERATION AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 38003, PAGE 527. (ROADWAY EASEMENT AS SHOWN, UTILITY EASEMENT BLANKET IN NATURE, AND DETENTION BASIN EASEMENT DOES NOT CROSS SUBJECT PROPERTY, SEE DOCUMENT FOR ADDITIONAL TERMS AND CONDITIONS)
FIRST AMENDMENT TO RECIPROCAL EASEMENT AND OPERATION AGREEMENT RECORDED IN LIBER 39684, PAGE 62. (ROADWAY EASEMENT AS SHOWN, UTILITY EASEMENT BLANKET IN NATURE, AND DETENTION BASIN EASEMENT DOES NOT CROSS SUBJECT PROPERTY, SEE DOCUMENT FOR ADDITIONAL TERMS AND CONDITIONS)
9. SANITARY SEWER EASEMENT IN FAVOR OF THE CITY OF ROCHESTER HILLS AND THE COVENANTS, CONDITIONS AND RESTRICTIONS CONTAINED IN INSTRUMENT RECORDED IN LIBER 40361, PAGE 158. (AS SHOWN)
10. WATERMAIN EASEMENT IN FAVOR OF THE CITY OF ROCHESTER HILLS AND THE COVENANTS, CONDITIONS AND RESTRICTIONS CONTAINED IN INSTRUMENT RECORDED IN LIBER 40361, PAGE 162. (AS SHOWN)
11. TERMS AND CONDITIONS CONTAINED IN SANITARY EASEMENT AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 43987, PAGE 767. SEE DOCUMENT FOR TERMS AND CONDITIONS)

MANHOLE SCHEDULE

NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)	NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)
120030	STORM CB	875.22	12	N	870.62	120170	STORM MH	879.41	18	E	872.01
		875.22		T/WATER	870.72			879.41	18	W	872.01
		875.22	B/STRUCTURE		868.82	120182	STORM CB	878.23	12	NE	873.23
120031	STORM CB	875.21	12	E	870.21			878.23		T/WATER	873.13
120151	SEWER MH	875.21			870.81			878.23		B/STRUCTURE	871.33
		875.21	B/STRUCTURE		869.01	120183	STORM MH	878.57	24	E	871.12
120043	STORM CB	875.96	NO VISIBLE PIPES					878.57	12	SW	872.97
		875.96	T/WATER		872.76			878.57	18	W	871.22
		875.96	B/STRUCTURE		871.56	120218	STORM MH	877.47	24	E	870.47
120060	STORM CB	877.14	NO VISIBLE PIPES					877.47	24	W	871.17
		877.14	T/WATER		873.84	120255	STORM CB	876.40	12	NE	872.4
		877.14	B/STRUCTURE		872.24			876.40		T/WATER	872.3
120078	STORM CB	878.37	NO VISIBLE PIPES					876.40		B/STRUCTURE	870.9
		878.37	T/WATER		874.72	120256	STORM MH	877.06	24	E	867.96
		878.37	B/STRUCTURE		873.67			877.06	12	SW	872.06
120119	SANITARY MH	878.10	8	E	864.95			877.06	24	W	869.46
		878.10		W	865.00	120287	STORM MH	875.98	24	E	867.23
120120	SANITARY MH	878.31	8	E	865.41			875.98	12	SW	868.48
		878.31		W	865.41			875.98	24	W	867.38
120123	STORM CB	881.85	12	E	875.85	120288	STORM CB	875.04	12	S	870.59
		881.85		S	876.15			875.04		T/WATER	870.44
120134	STORM MH	881.21	15	E	874.91			875.04		B/STRUCTURE	868.74
		881.21		W	875.91	120309	STORM MH	874.68	24	E	860.18
120142	STORM MH	881.01	18	E	873.51			874.68	24	W	867.18
		881.01		W	874.61	120435	STORM CB	881.56	12	E	876.76
120157	STORM CB	879.57	12	NE	874.27			881.56	12	W	876.56
		879.57	T/WATER		874.17	120436	STORM CB	881.22	12	N	876.42
		879.57	B/STRUCTURE		872.37			881.22	12	W	876.22
120158	STORM MH	880.20	18	E	872.70	120437	STORM CB	881.61	12	SE	876.21
		880.20		W	872.70			881.61	12	W	876.41

LEGEND

- FOUND MONUMENT (AS NOTED)
- RECORD AND MEASURED DIMENSION
- RECORD DIMENSION
- MEASURED DIMENSION
- GROUND ELEVATION
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL MANHOLE
- TRAFFIC SIGNAL CONTROL BOX
- SQUARE CATCH BASIN
- DRAIN
- STORM DRAIN MANHOLE
- FIRE HYDRANT
- WATER GATE MANHOLE
- WATER VALVE
- FENCE POST
- SINGLE POST SIGN
- DOUBLE POST SIGN
- SOIL BORING
- TREE (AS NOTED)
- PARCEL BOUNDARY LINE
- ADJOINER PARCEL LINE
- EASEMENT (AS NOTED)
- ASPHALT CURB
- CONCRETE CURB
- EDGE OF CONCRETE (CONC.)
- EDGE OF ASPHALT (ASPH.)
- FENCE (AS NOTED)
- TREE / BRUSH LINE (AS NOTED)
- OVERHEAD UTILITY LINE
- GAS LINE
- SANITARY LINE
- STORM LINE
- WATER LINE
- MINOR CONTOUR LINE
- MAJOR CONTOUR LINE
- ASPHALT
- CONCRETE

PROPERTY DESCRIPTION

LAND IN THE CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MI, DESCRIBED AS FOLLOWS:
A PARCEL OF LAND LOCATED IN THE SOUTHWEST 1/4 OF SECTION 30, TOWN 3 NORTH, RANGE 11 EAST, CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 30 (AS REMONUMENTED); THENCE SOUTH 85 DEGREES 49 MINUTES 02 SECONDS WEST, 1.93 FEET ALONG THE WESTERLY EXTENSION OF THE EAST AND WEST 1/4 LINE OF SECTION 30 TO A PROPERTY CONTROLLING CORNER (FORMERLY DESCRIBED AS THE WEST 1/4 CORNER OF SECTION 30); THENCE PROCEEDING ALONG THE WEST PROPERTY CONTROLLING LINE OF SAID SECTION 30 (AS MONUMENTED) WESTERLY DESCRIBED AS THE WEST LINE OF SAID SECTION 30 ALSO BEING THE CENTERLINE OF ADAMS ROAD (VARIABLE WIDTH) THE FOLLOWING TWO (2) COURSES: 1) SOUTH 01 DEGREE 59 MINUTES 03 SECONDS EAST, 385.17 FEET AND 2) SOUTH 02 DEGREES 03 MINUTES 12 SECONDS EAST, 632.96 FEET; THENCE NORTH 85 DEGREES 38 MINUTES 28 SECONDS EAST, 271.46 FEET TO A POINT ON THE SOUTHERLY RIGHT OF WAY OF ADAMS ROAD (VARIABLE WIDTH), SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE FROM SAID POINT OF BEGINNING THE FOLLOWING TWO (2) COURSES ALONG SAID SOUTHERLY RIGHT OF WAY: 1) 753.14 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, RADIUS 760.00 FEET, CENTRAL ANGLE 56 DEGREES 46 MINUTES 43 SECONDS, AND A CHORD THAT BEARS NORTH 70 DEGREES 06 MINUTES 42 SECONDS EAST, 722.70 FEET AND 2) SOUTH 81 DEGREES 29 MINUTES 57 SECONDS EAST, 337.76 FEET; THENCE SOUTH 03 DEGREES 10 MINUTES 24 SECONDS EAST, 118.34 FEET; THENCE SOUTH 88 DEGREES 39 MINUTES 28 SECONDS WEST, 1023.15 FEET TO THE POINT OF BEGINNING.

SURVEYOR'S NOTE

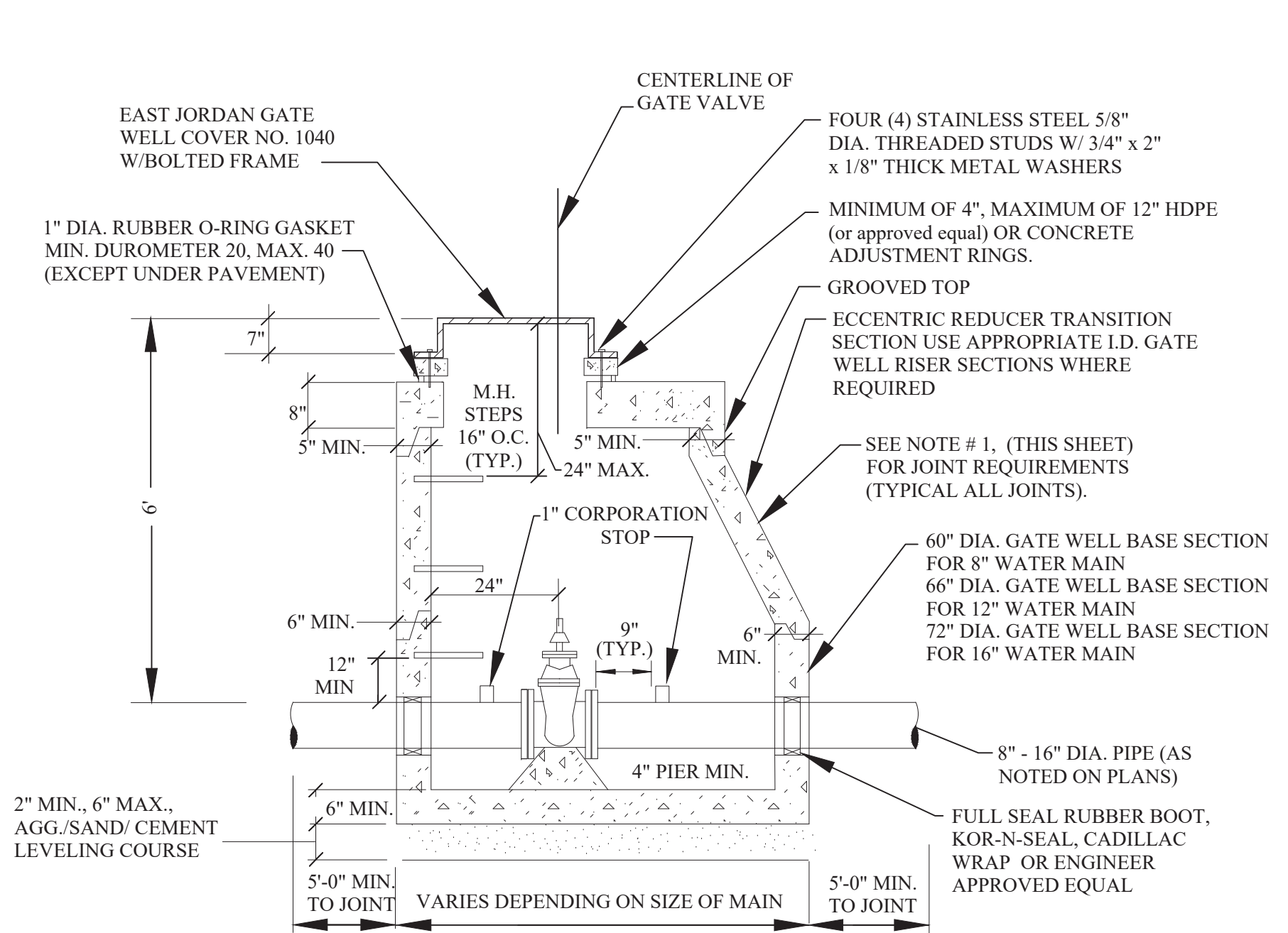
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO WARRANTIES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN THE STRUCTURE INVENTORY SHOWN HEREON.

SURVEYOR'S CERTIFICATION

TO ROSE GROVE, LLC, AND FIRST AMERICAN TITLE INSURANCE COMPANY:
THIS IS TO CERTIFY THAT THIS MAP OR PLAN 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, AND INCLUDES ITEMS 2, 4, 5, 7A, 8, 9, 11A, AND 11B OF TABLE A, THEREOF. THE FIELD WORK WAS COMPLETED ON 11/22/22.
DATE OF PLAT OR MAP: 12/02/22
ANTHONY T. SYCKO, JR., P.S.
PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 47976
22556 GRATIOT AVE., EASTPOINTE, MI 48021
TSycko@kemtec-survey.com

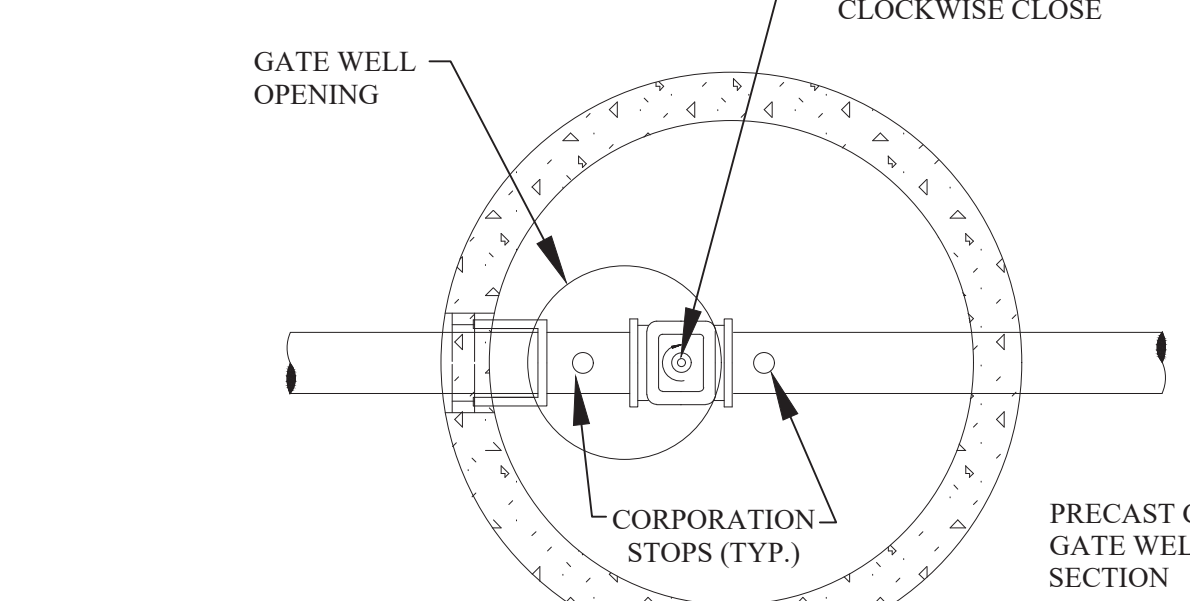


DATE	DESCRIPTION	BY
12/02/22	ADDIT TREE TAGS	JDM
02/17/23	MRJ	MRJ
12/09/22	DATE	JDM
1	REVISION	1" = 40'

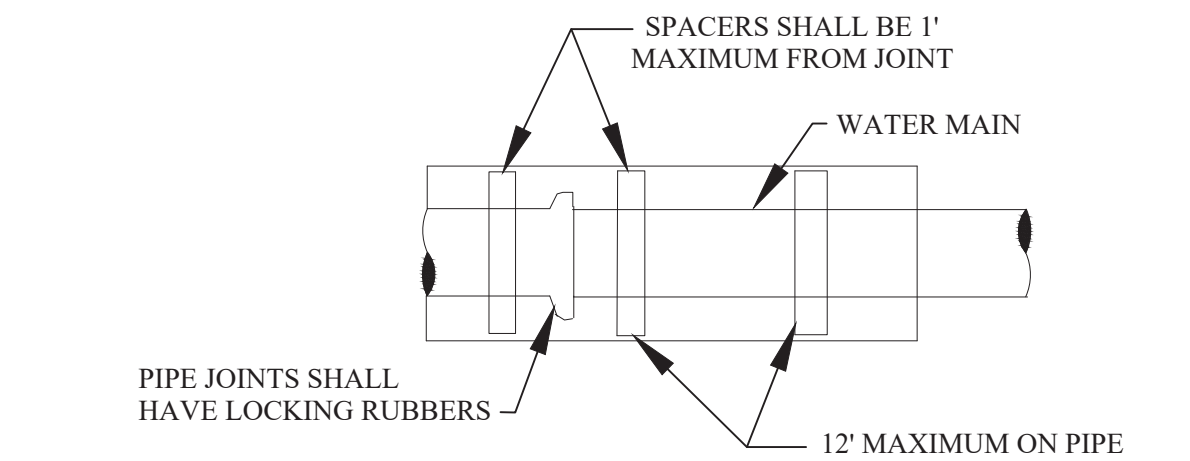


ALL GATE WELLS

MANHOLE STEPS TO BE PLASTIC COATED STEEL MEETING THE REQUIREMENTS IN ASTM D 2146, TYPE II, GRADE 49108, MA. INDUSTRIES, P.S.I. POLYPROPYLENE OR APPROVED EQUAL. STEPS TO BE INSTALLED DURING MANHOLE MANUFACTURE, PLACED AT 16" C. TO C.



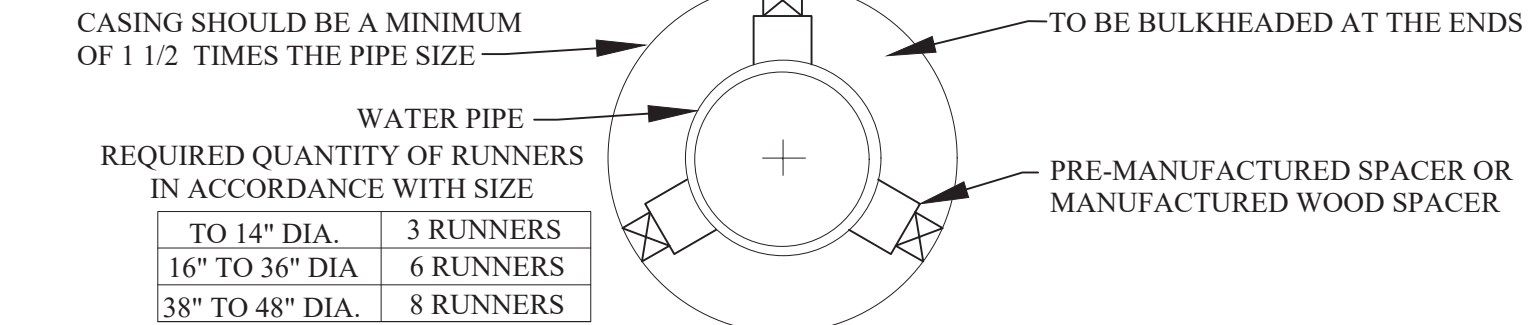
GATE WELL (TYPICAL)



WATER MAIN IN CASING SECTION

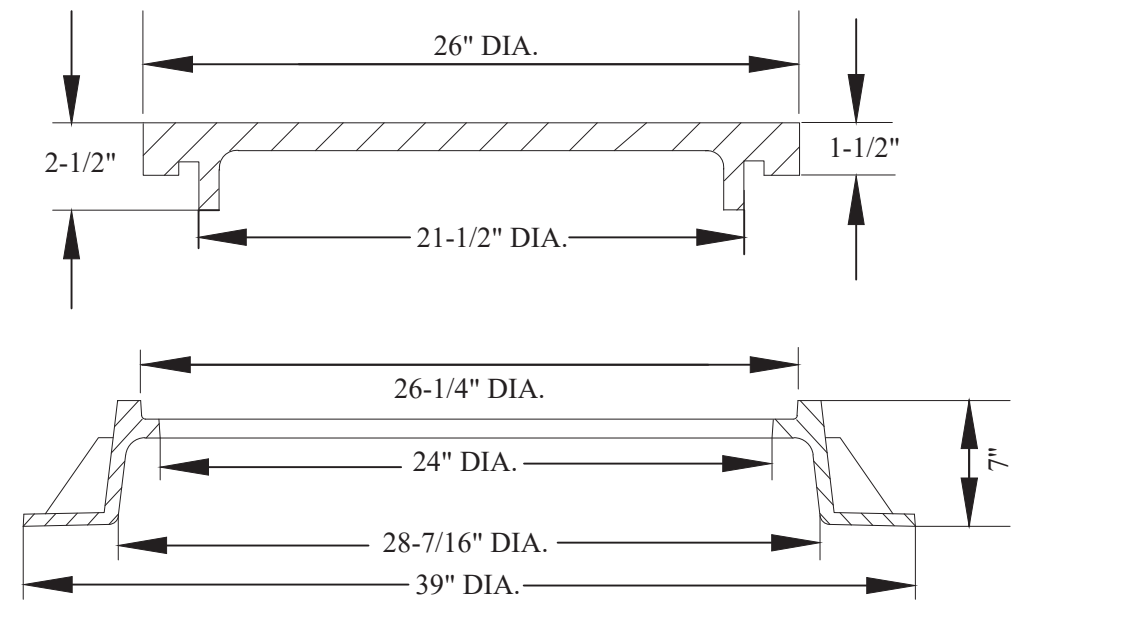
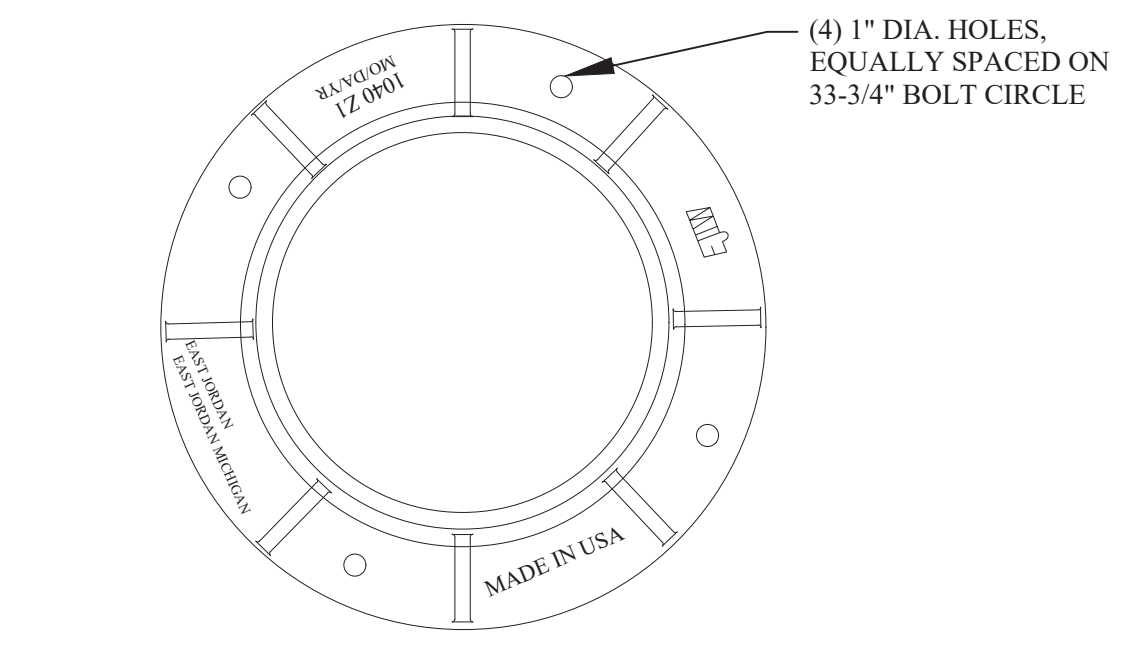
UNLESS OTHERWISE SPECIFIED, MINIMUM CASING PIPE SHALL BE ASTM A-139 GRADE B, WALL THICKNESS AS FOLLOWS:

NOMINAL SIZE	MINIMUM WALL THICKNESS
8" - 42"	0.375
48" - 60"	0.500

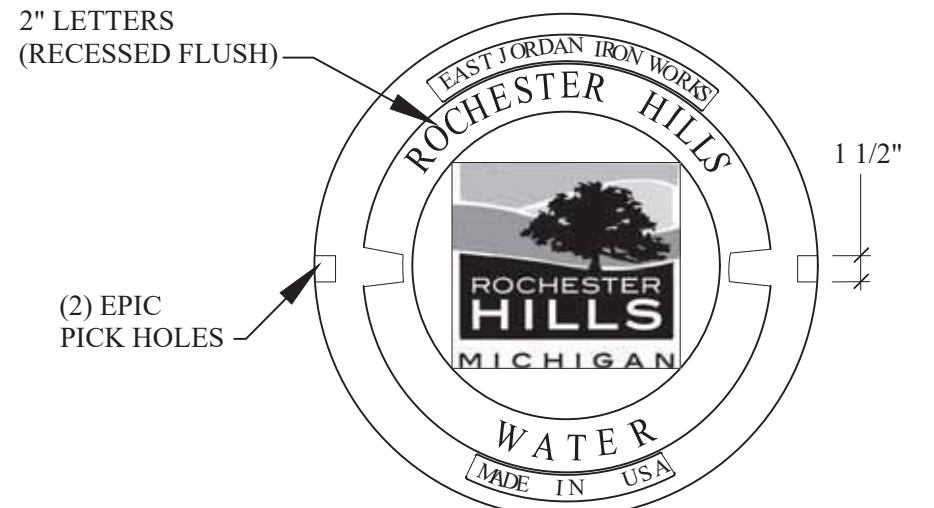


SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE

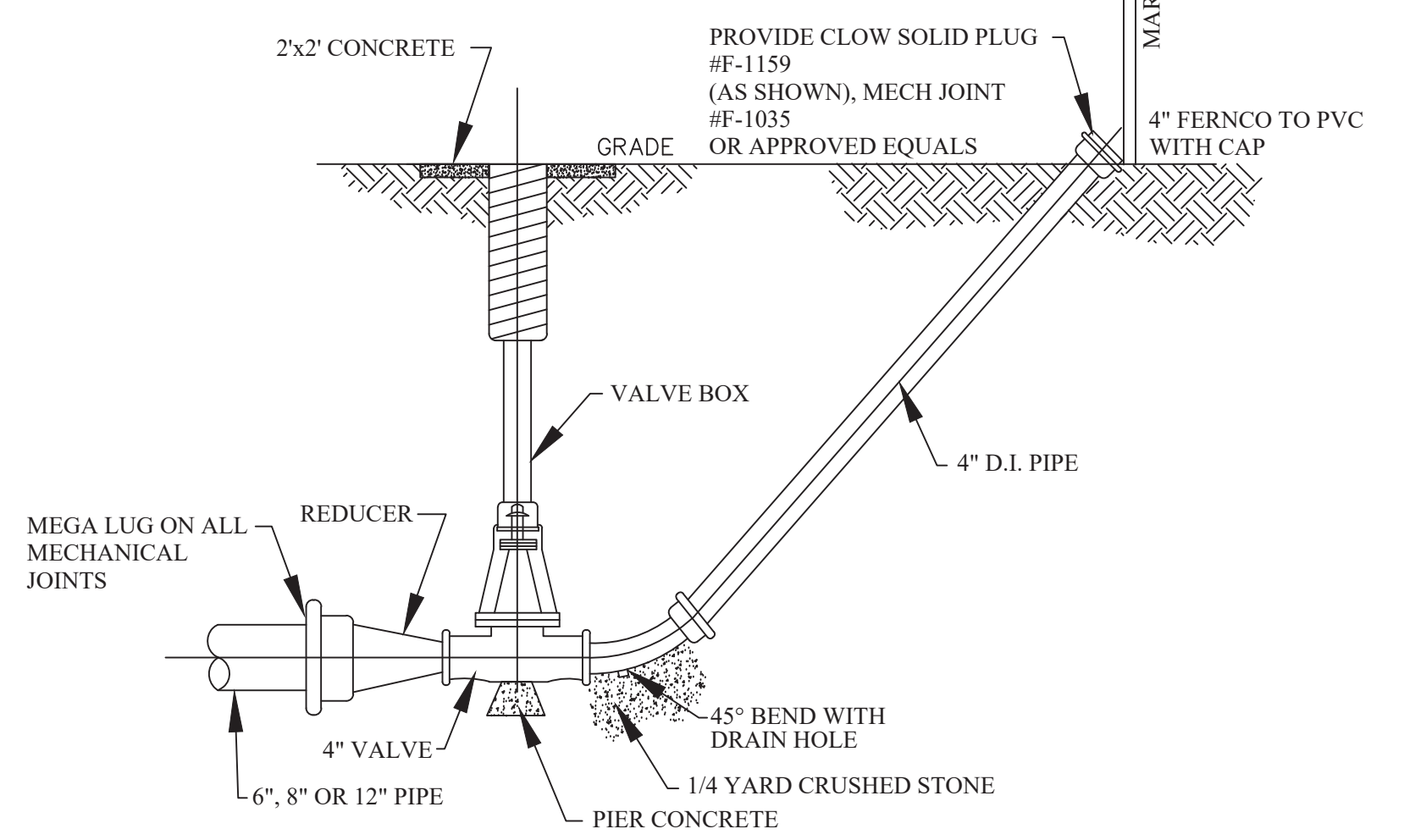
REQUIRED QUANTITY OF RUNNERS IN ACCORDANCE WITH SIZE	
TO 14" DIA.	3 RUNNERS
16" TO 36" DIA.	6 RUNNERS
38" TO 48" DIA.	8 RUNNERS



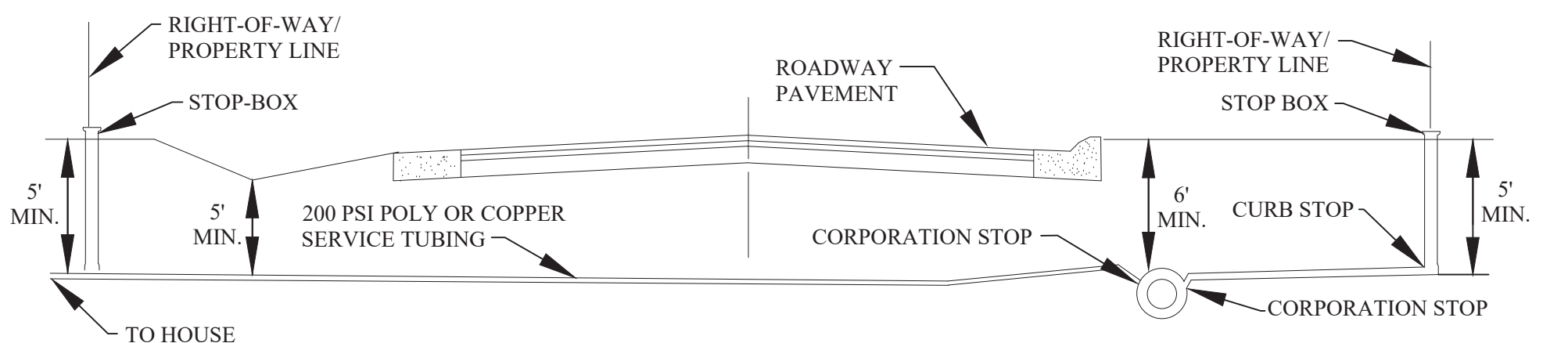
FRAME



LETTERING LAYOUT FOR GATE WELL COVERS

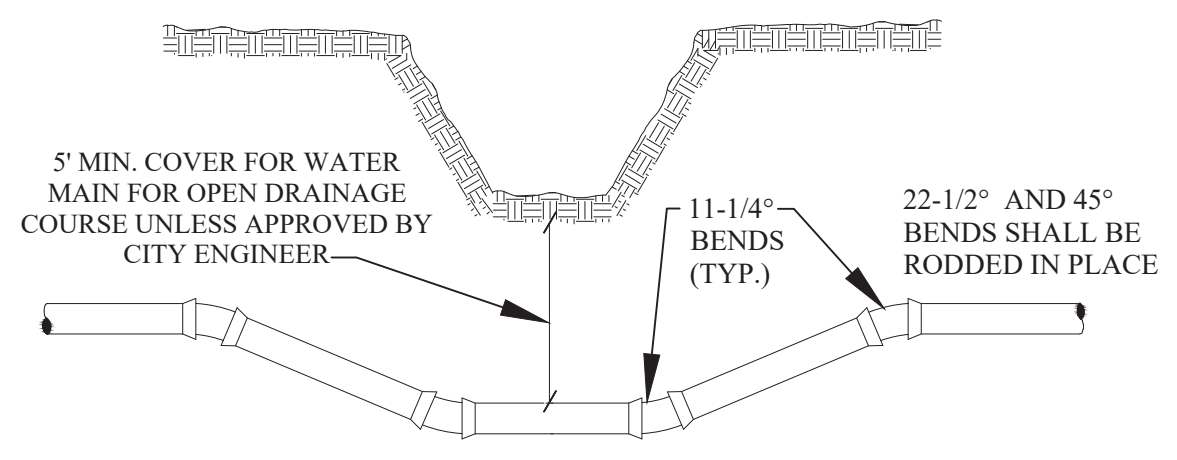


DETAIL OF 1\"/>

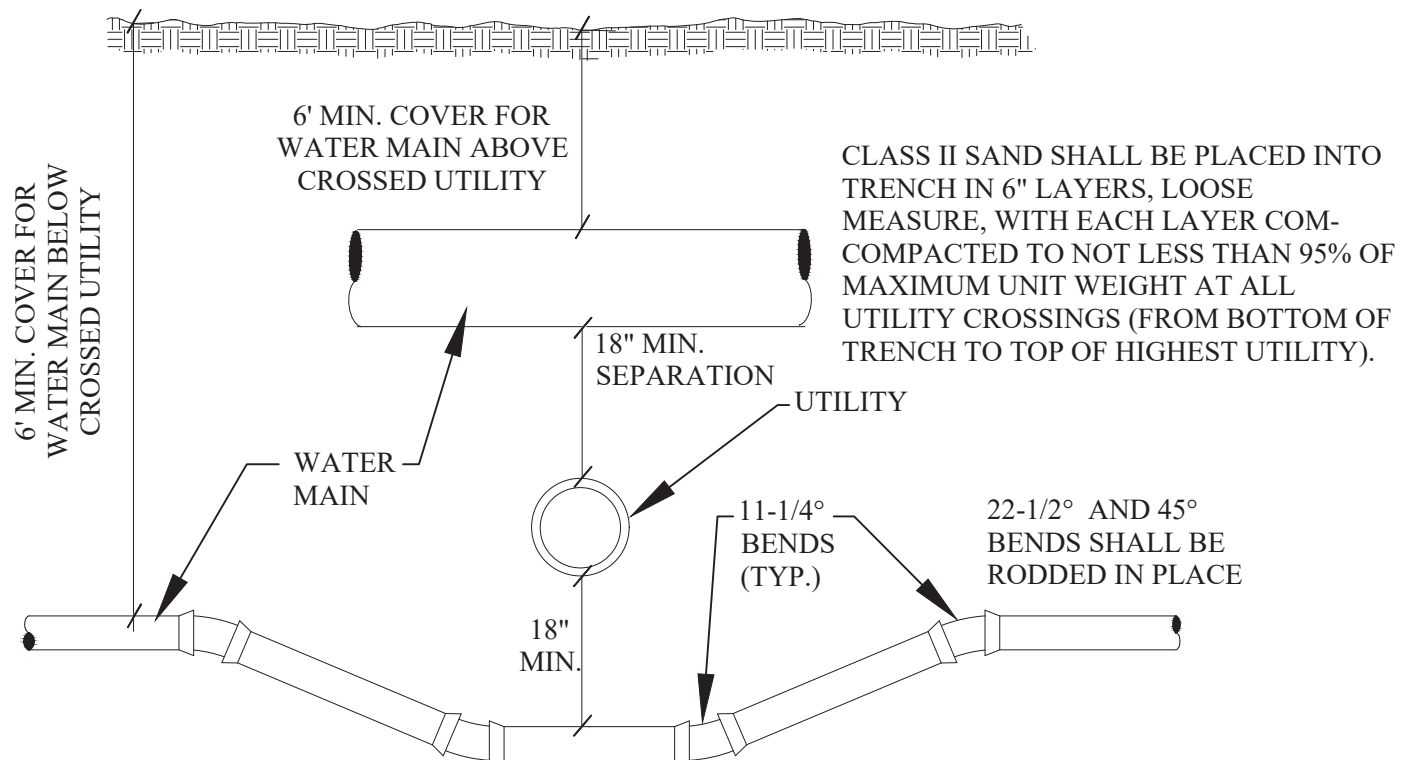


TYPICAL PUBLIC ROAD WATER SERVICE CONNECTION

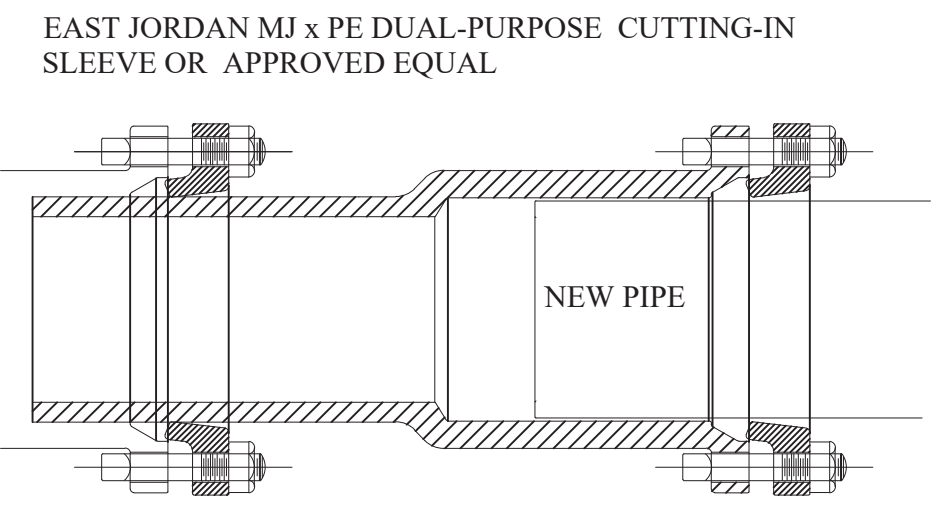
NOTES:
 1. WATER SERVICE SHUT-OFF TO BE PLACED AT PROPERTY LINE.
 2. LATERAL LOCATION SHALL BE AS REQUESTED BY THE ABUTTING PROPERTY OWNER.
 3. ROCHESTER HILLS DPS PERFORMS SERVICE LEAD TAPS UP TO 2" DIAMETER.



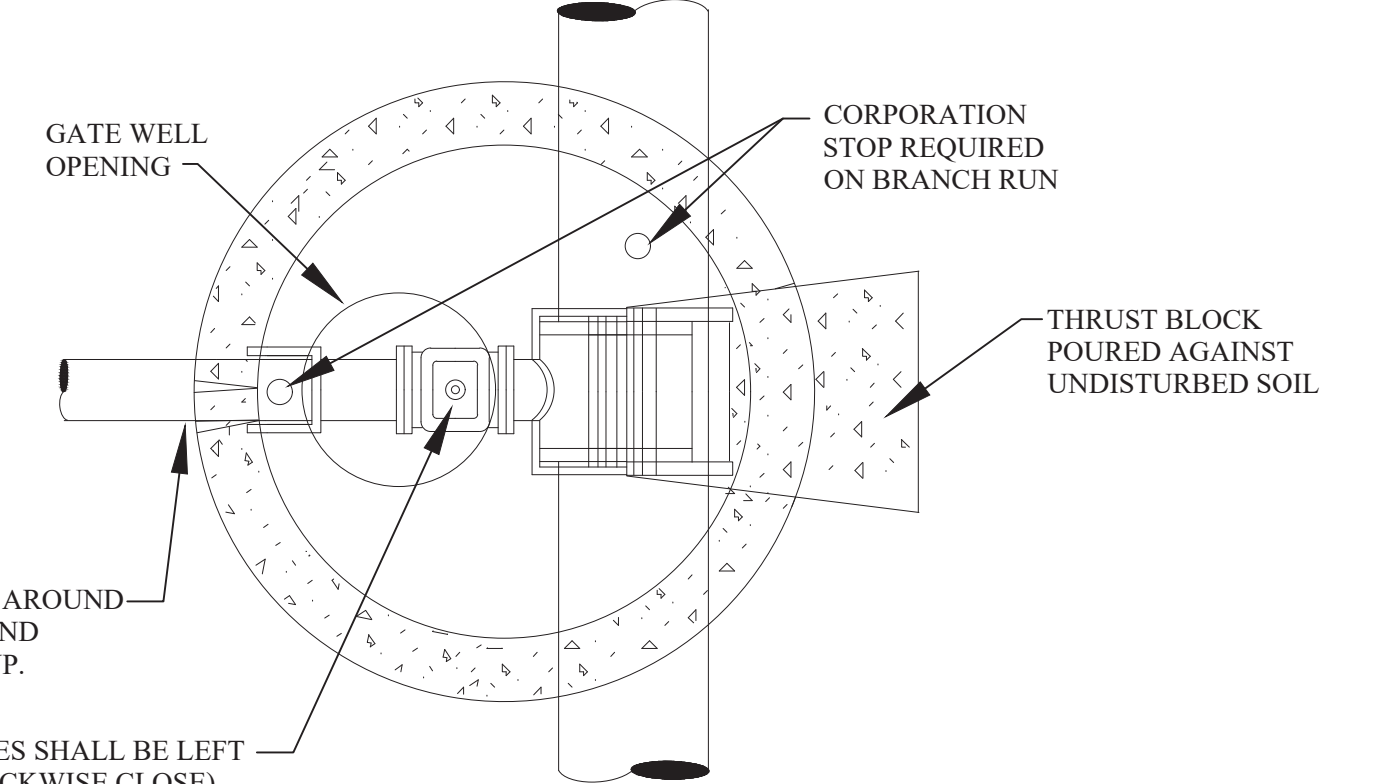
DITCH CROSSING



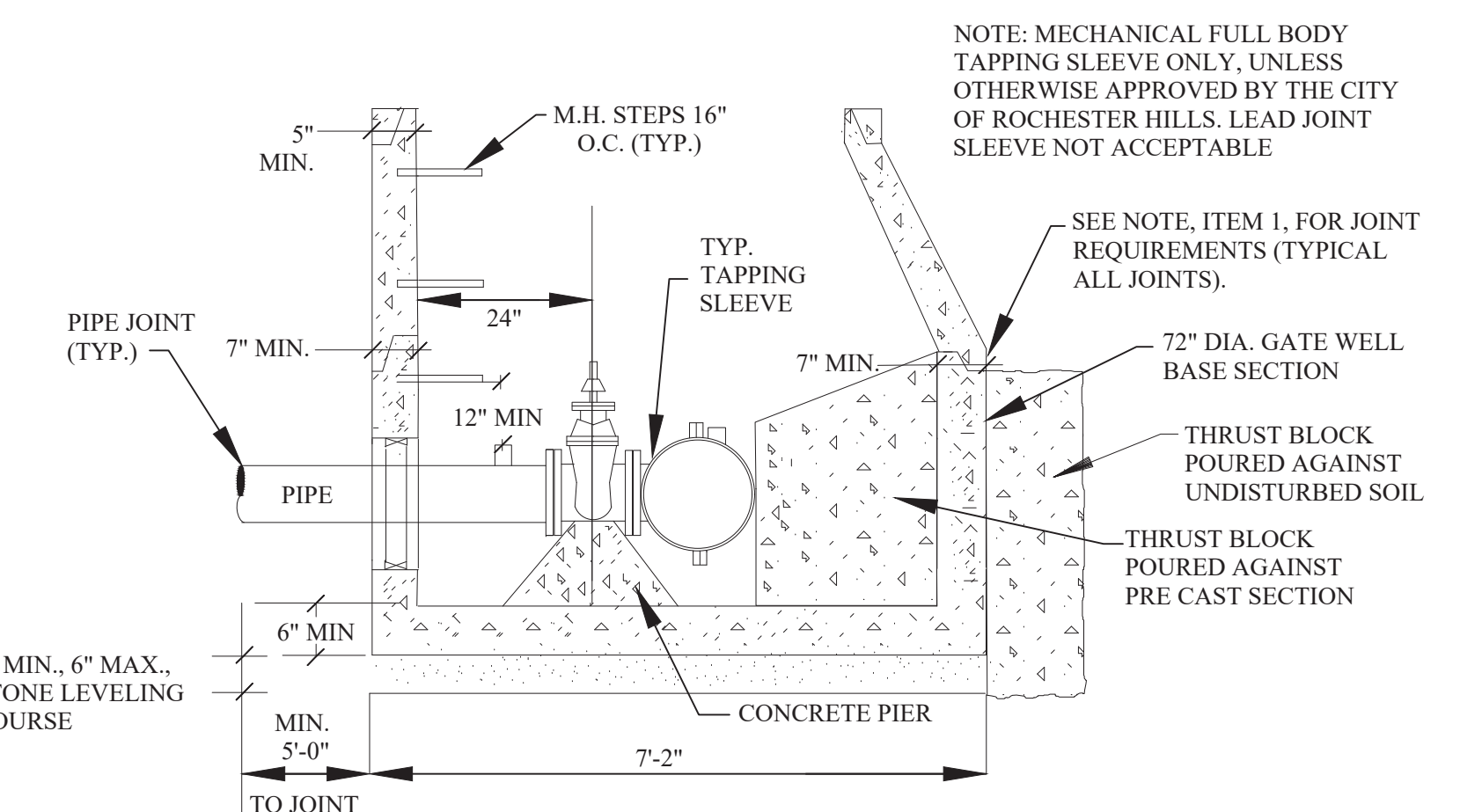
UTILITY CROSSING



BOTTLE SLEEVE



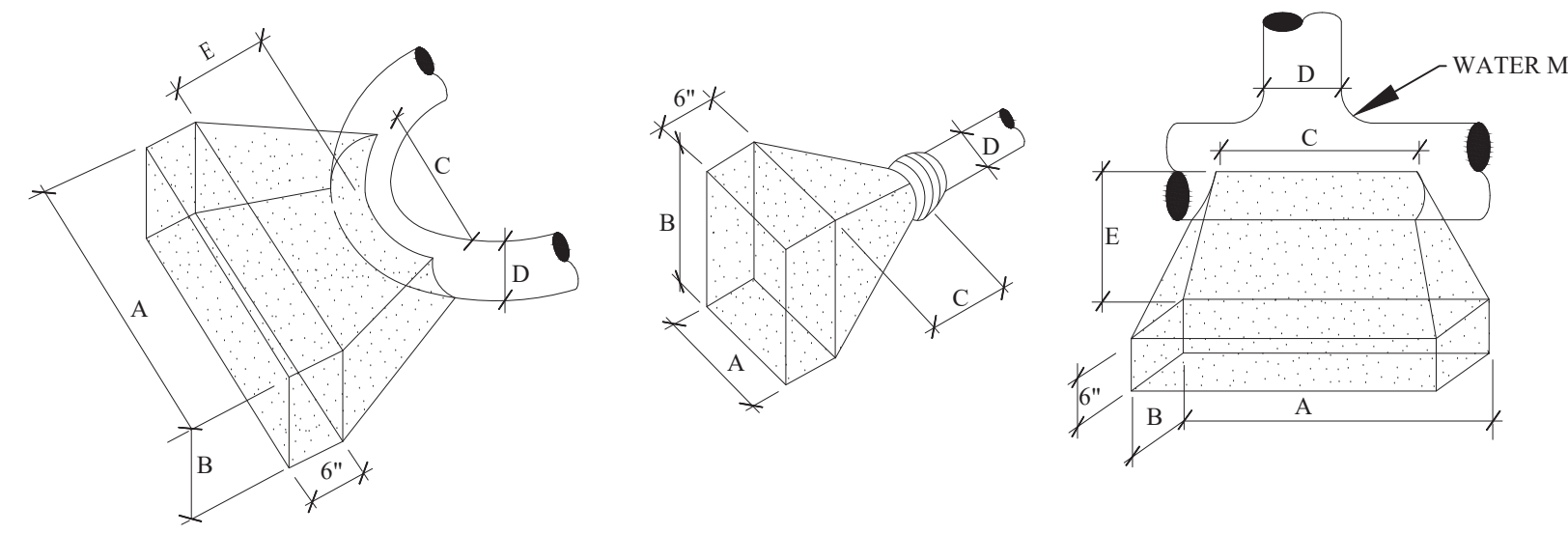
PLAN TAPPING SLEEVE VALVE WELL (TYPICAL)



TAPPING SLEEVE VALVE AND WELL (TYPICAL)

NOTES:

- ALL PRECAST CONCRETE GATE WELL SECTIONS SHALL BE MANUFACTURED TO CONFORM WITH A.S.T.M. C478, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, EXCEPT WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATE WELL SECTIONS SHALL BE "MODIFIED GROOVE TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M. C 443, STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
- CONTRACTOR SHALL INSTALL VALVES, TAPPING SLEEVES AND GATE WELL STRUCTURES IN STRICT COMPLIANCE WITH MEASUREMENTS PROVIDED ON SHEET 1 (i.e. 2'-0" BETWEEN GATE WELL WALL & CENTERLINE OF OPERATING NUT) TO ALLOW PROPER OPERATION OF VALVE THROUGH GATE WELL OPENING. FAILURE TO DO SO WILL REQUIRE CONTRACTOR TO CORRECT AT HIS EXPENSE.
- TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC INDUSTRIES; MUELLER; EAST JORDAN; SMITH-BLAIR OR APPROVED EQUAL AND APPROVED BY THE CITY OF ROCHESTER HILLS. FULL BODY SLEEVES MUST BE USED EXCEPT FOR REINFORCED CONCRETE PRESSURE PIPE OR A.C. PIPE.
- FOR ALL PIPE USE A 1" CORPORATION STOP. NO CORPS SHALL BE USED IN CONCRETE PRESSURE PIPE.
- RUBBER O-RINGS SHALL NOT BE USED IN PAVEMENT.



FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN.
20"	8'	6.5'	3.5'	2.5'
16"	6'	4'	2.5'	2'
12"	4'	3'	2'	1.75'
10"	3'	3'	2'	1.75'
8"	3'	2'	2'	1.5'
6"	2'	1.5'	2'	1.25'

FOR PLUGS

D	A	B	C MIN.
20"	7'	5'	2.5'
16"	4'-10"	4'-10"	2'
12"	4'-4"	3'	1'-9"
10"	3'	2'	1'-6"
8"	2'-10"	2'-6"	1'-6"
6"	1'-6"	1'-6"	3'

FOR TEES

D	A	B	C	E MIN.
20"	6.5'	4.5'	3.5'	3'
16"	4'-8"	4'-8"	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2'-6"	2'	2'	2.25'
6"	2'	2'	2'	2.25'

THRUST BLOCK DETAILS

NOTE: 3000 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTOR.

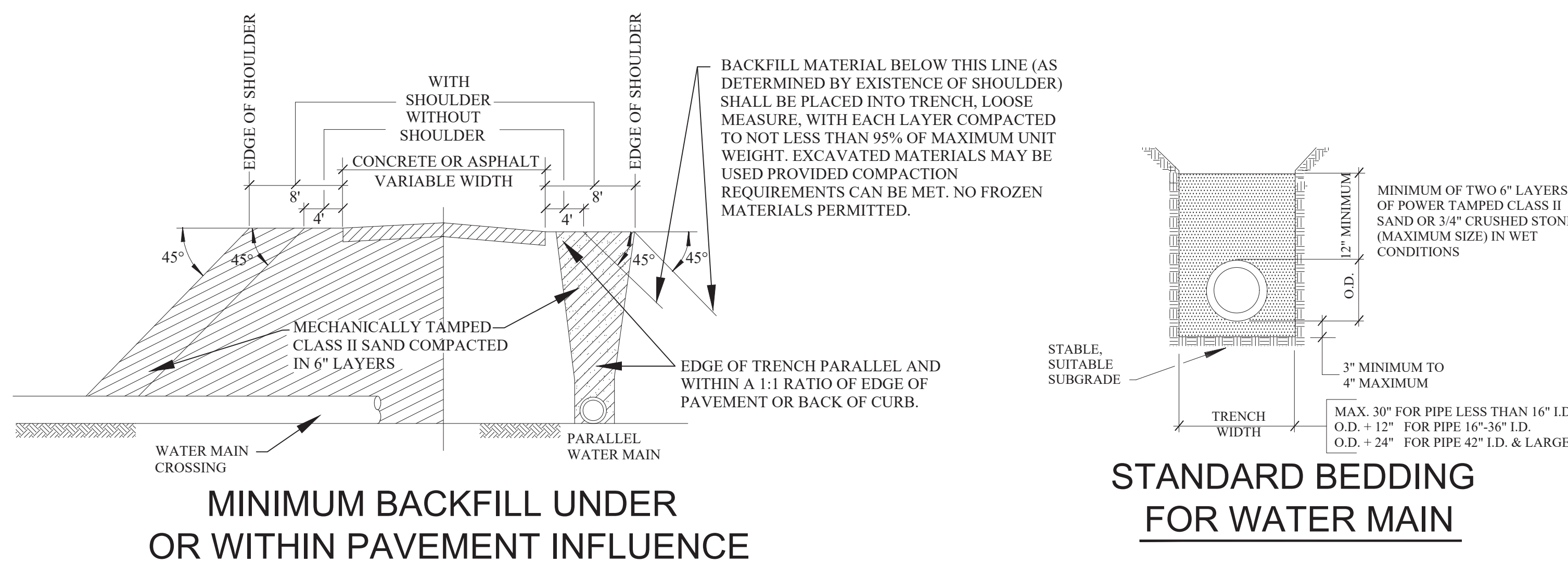


REVISIONS	DATE	APPROVED BY	NOTIFY ROCHESTER HILLS ENGINEERING DIVISION AT 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION
		CITY COUNCIL, DATE: SEPTEMBER 23, 2019	
		PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES	

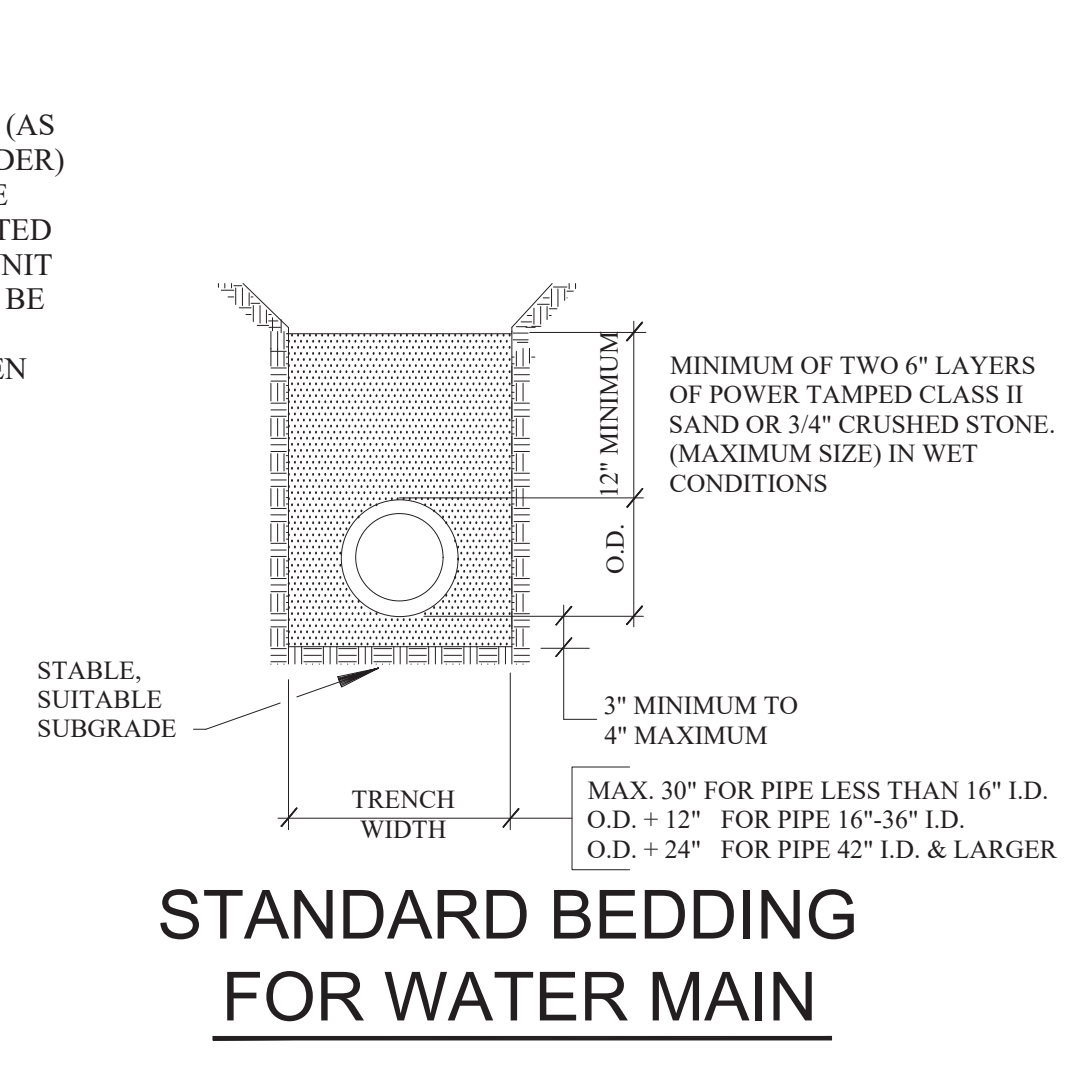
City of Rochester Hills
 1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

WATER MAIN STANDARD DETAILS

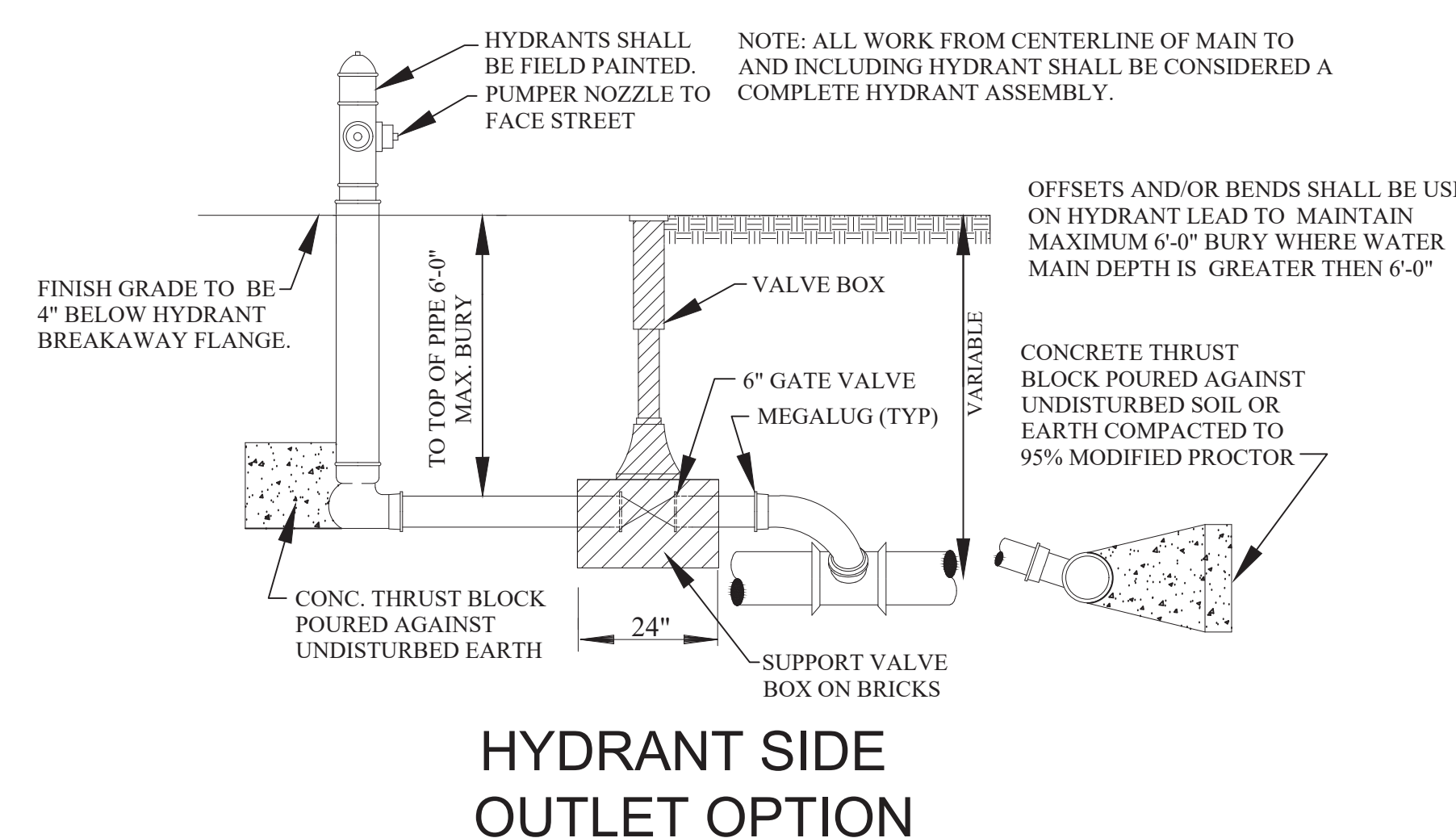
NOT TO SCALE	DATE: 1/10/2018
SHEET 1 OF 2	



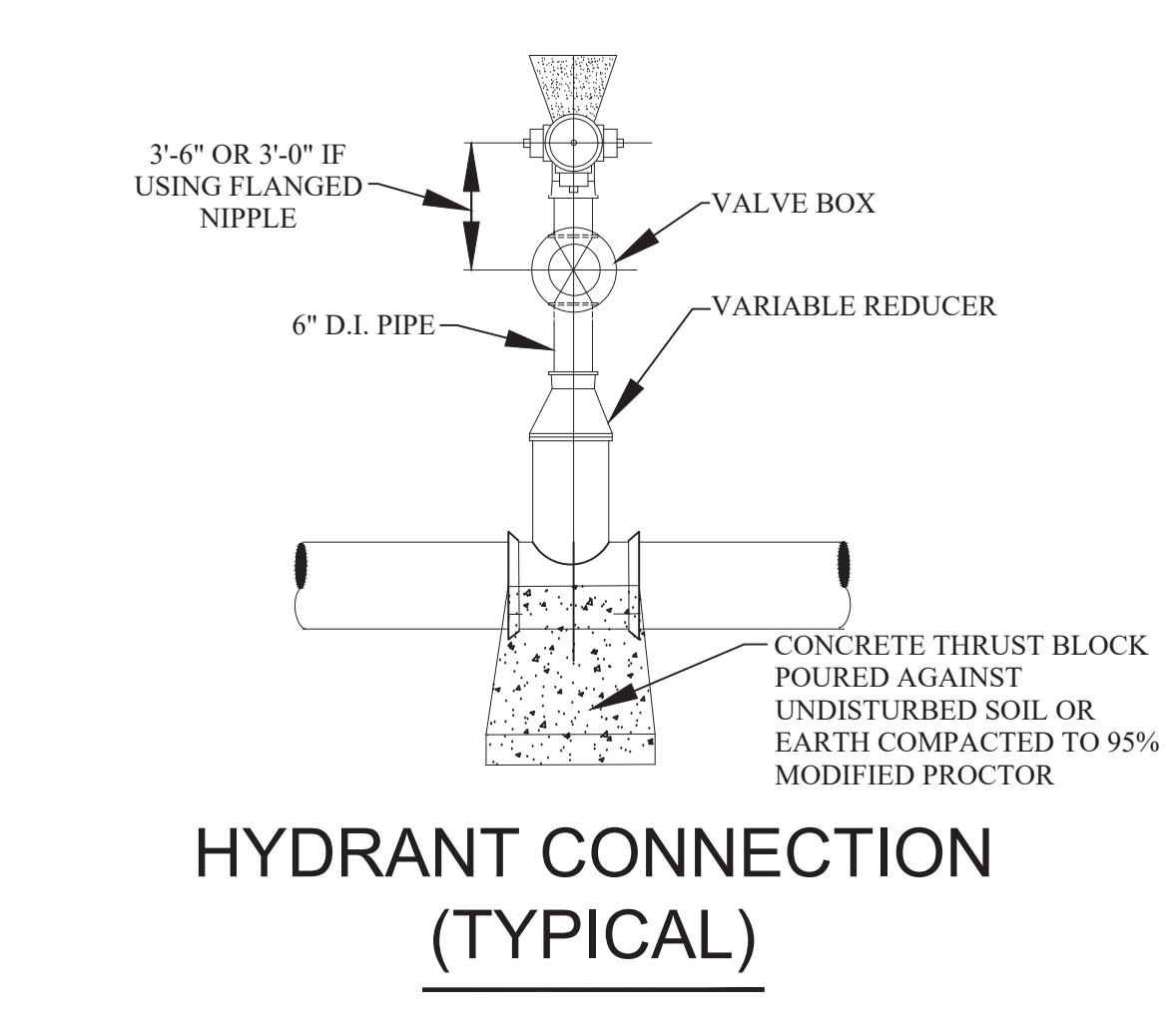
MINIMUM BACKFILL UNDER OR WITHIN PAVEMENT INFLUENCE



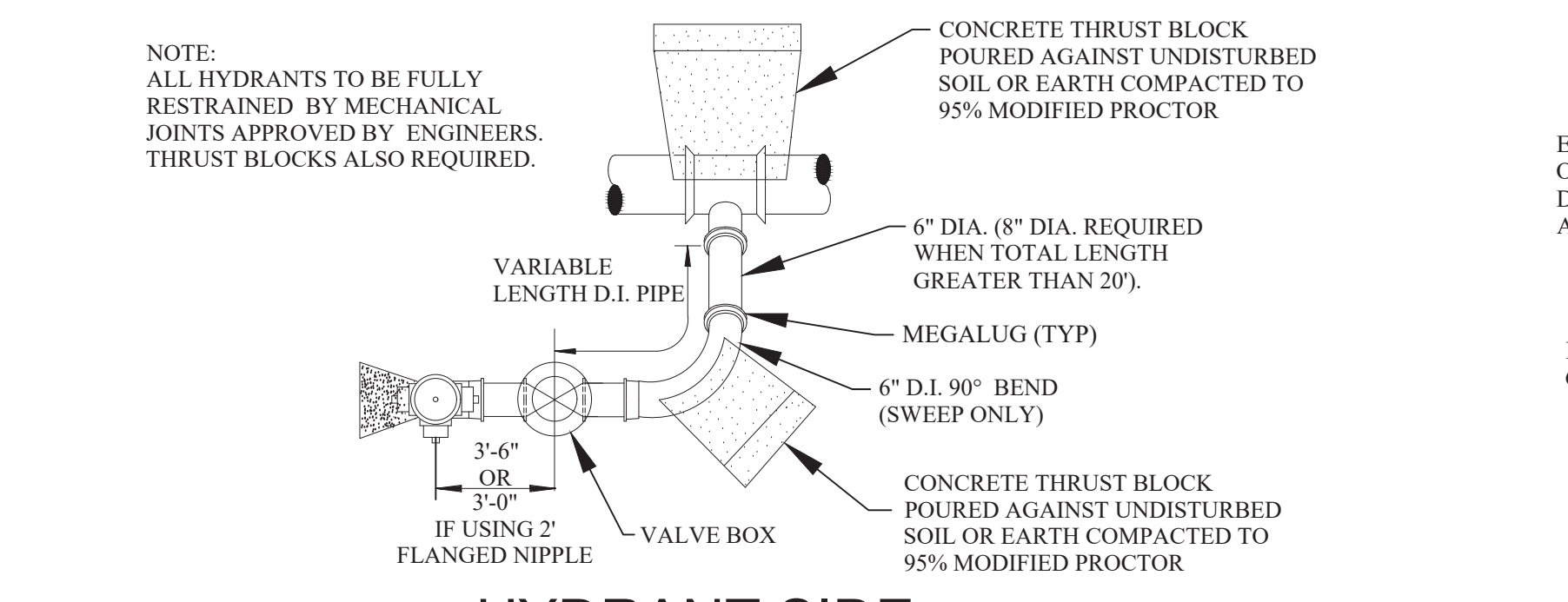
STANDARD BEDDING FOR WATER MAIN



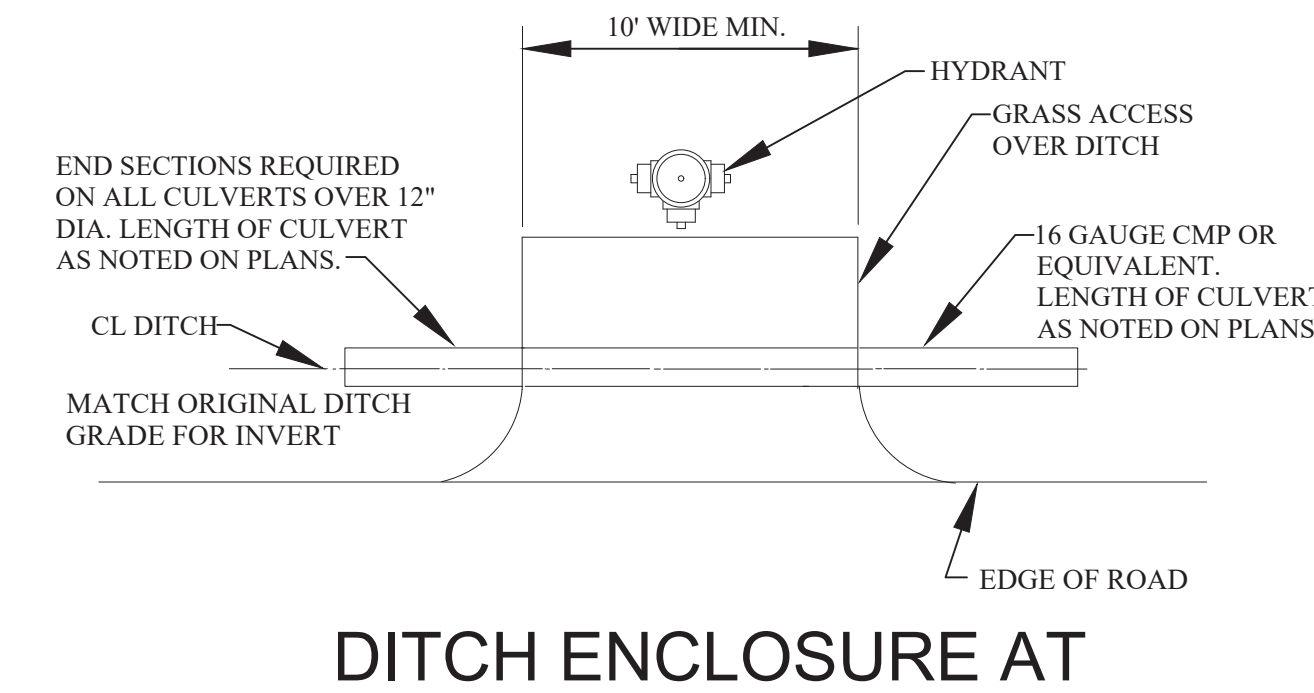
HYDRANT SIDE OUTLET OPTION



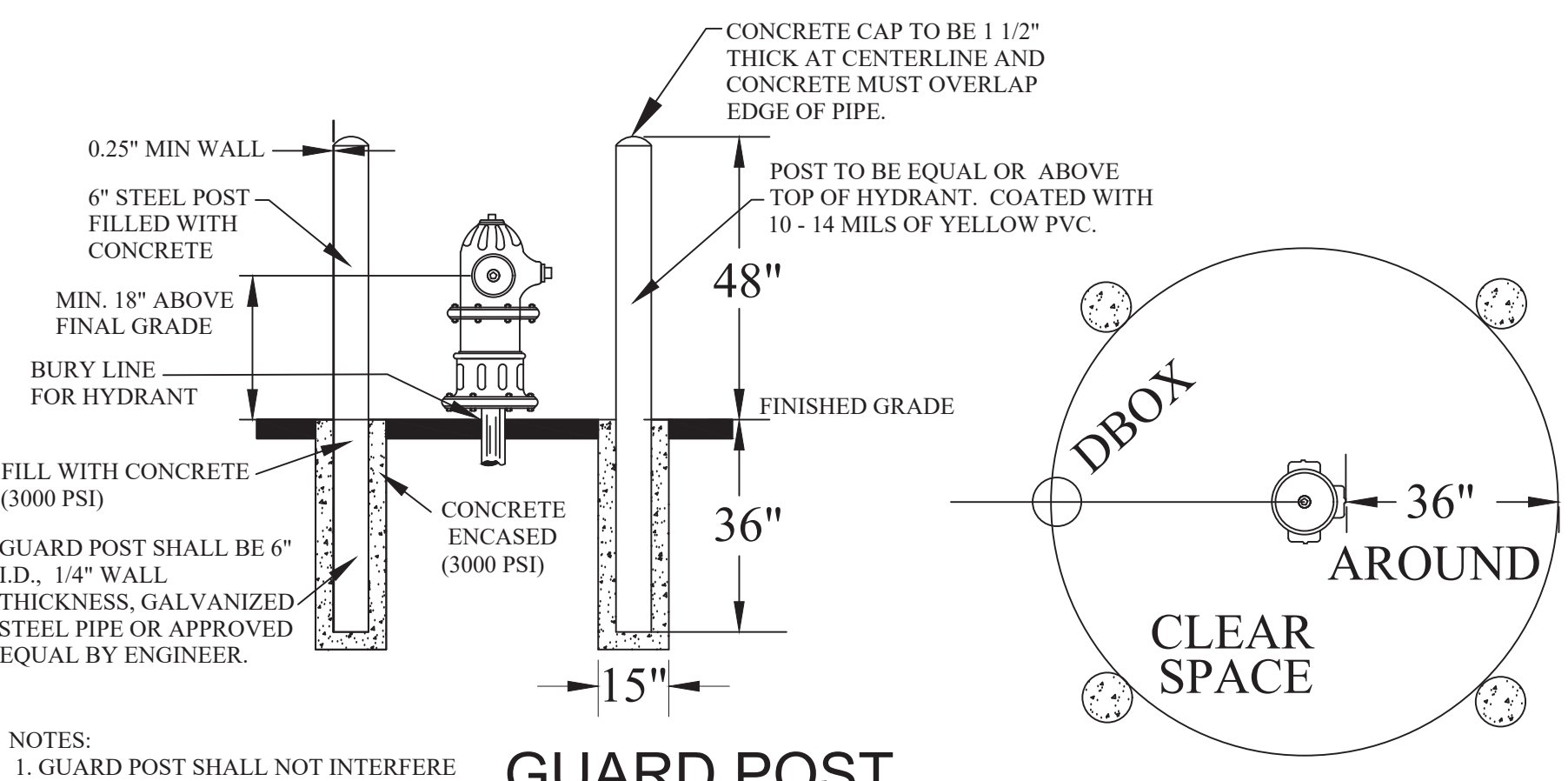
HYDRANT CONNECTION (TYPICAL)



HYDRANT SIDE OUTLET OPTION

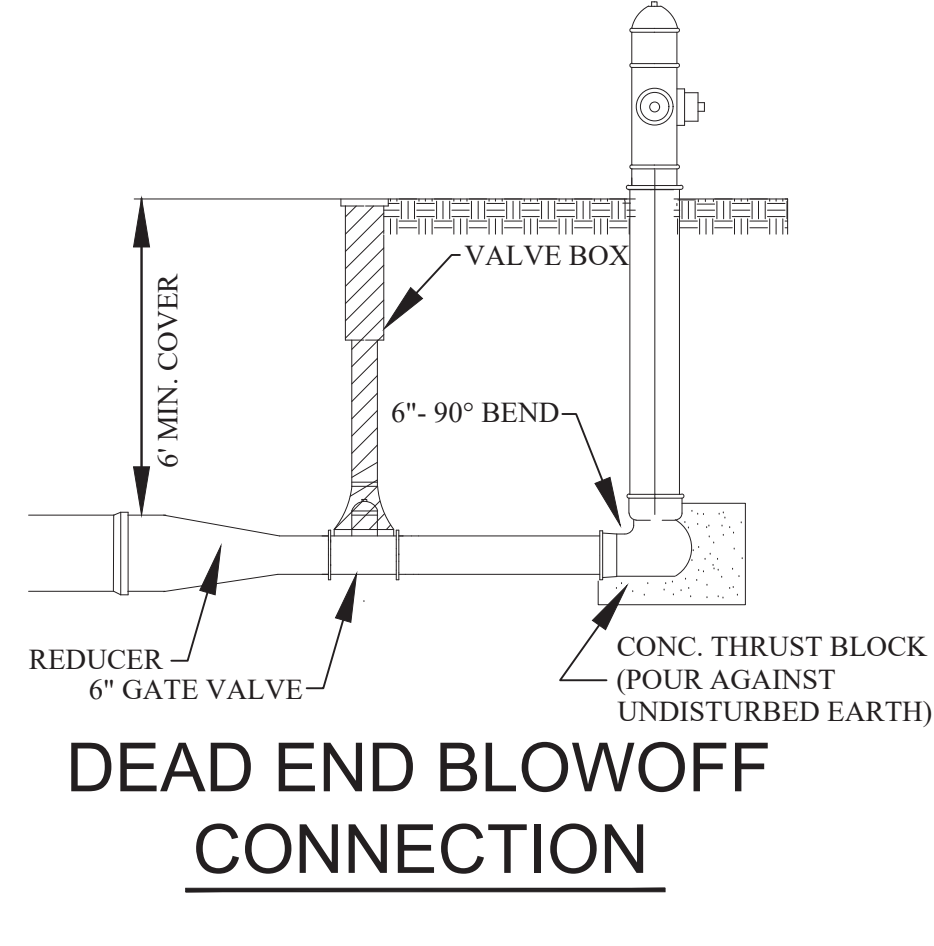


DITCH ENCLOSURE AT HYDRANT/GATE WELL



GUARD POST

HYDRANT BLOWOFF DETAILS



DEAD END BLOWOFF CONNECTION

GENERAL NOTES

1. ALL CONSTRUCTION PROCEDURES AND MATERIALS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS.
2. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED BY THE CITY OF ROCHESTER HILLS AND HELD PRIOR TO THE START OF CONSTRUCTION.
3. CONTRACTOR MUST CONTACT MISS DIG (811) AT LEAST THREE WORKING DAYS PRIOR TO THE START OF CONSTRUCTION FOR UNDERGROUND UTILITY LOCATIONS. ALL UTILITIES SHALL BE STAKED BEFORE CONSTRUCTION BEGINS.
4. ALL WATER MAIN EASEMENTS SHALL BE PROVIDED PRIOR TO CONSTRUCTION AND ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM.
5. WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 6 FEET BELOW FINISHED GRADES, INCLUDING OPEN DRAINAGE COURSES.
6. ALL TRENCHES UNDER OR WITHIN A 1:1 RATIO OF EXISTING OR PROPOSED PAVEMENT OR DRIVEWAYS, SHALL BE BACKFILLED WITH COMPACTED CLASS II SAND TO GRADE (95% MAXIMUM UNIT DENSITY).
7. WHERE TWO UTILITIES CROSS, PROVIDE CLASS II BACKFILL MATERIAL IN SIX (6) INCH COMPACTED LAYERS TO TOP OF HIGHEST UTILITY.
8. WHERE WATER MAINS DIP UNDER OTHER UTILITIES, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE CONSTRUCTED WITH 11-1/4" VERTICAL BENDS. 22 1/2" OR 45" BENDS MUST BE RODDED AND PROPERLY ANCHORED.
9. ALL PRECAST CONCRETE GATE WELL SECTIONS SHALL BE IN ACCORDANCE WITH A.S.T.M. C478, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS. WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATE WELL SECTIONS SHALL BE "MODIFIED GROOVE TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M. C 443, STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
10. CONTRACTOR SHALL INSTALL VALVES, TAPPING SLEEVES AND GATE WELL STRUCTURES IN STRICT COMPLIANCE WITH MEASUREMENTS PROVIDED ON SHEET 1 (2'-0" BETWEEN GATE WELL WALL & CENTERLINE OF OPERATING NUT) TO ALLOW PROPER OPERATION OF VALVE THROUGH GATE WELL OPENING.
11. ALL CROSS-CONNECTION CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY THE ROCHESTER HILLS PLUMBING INSPECTOR AND IN ACCORDANCE WITH THE STANDARDS OF THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER OPERATION AND MAINTENANCE DIVISION AND THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF DRINKING WATER AND RADIOLOGICAL PROTECTION.
12. ALL WATER SERVICE CONNECTIONS TWO (2) INCHES AND SMALLER SHALL BE MADE BY THE CITY OF ROCHESTER HILLS, DEPARTMENT OF PUBLIC SERVICES AFTER WATER MAIN ACCEPTANCE AND APPLICABLE PERMITS ARE OBTAINED.
13. ALL FITTINGS AND BENDS SHOULD BE BLOCKED IN ACCORDANCE WITH THRUST BLOCK DETAILS, UNLESS ALTERNATE THRUST RESTRAINT SYSTEM, AS INDICATED PLANS AND SPECIFICATIONS, IS APPROVED BY THE CITY OF ROCHESTER HILLS DEPARTMENT OF PUBLIC SERVICE.

WATER MAIN MATERIALS NOTES

1. TEMPORARY CONNECTIONS, WHICH MAY BE MADE FOR CHLORINATING AND FLUSHING PURPOSES, SHALL INCLUDE A TESTABLE DOUBLE CHECK VALVE BACKFLOW PREVENTER WITH CURRENT CERTIFICATION.
2. CORPORATION STOPS USED FOR INSERTION INTO MAINS SHALL BE FORD TYPE B-44. ALL STOPS SHALL HAVE BRONZE CAST BODIES, KEYS, STEM WASHERS AND NUTS. INLET THREADS SHALL CONFORM TO THE LATEST VERSION OF AWWA C800.
3. ALL DUCTILE IRON PIPE (D.I.P.) WATER MAIN SHALL BE DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE. A ZINC COATING WITH CLASS 52 MAY BE PROPOSED AND IS SUBJECT TO FINAL DECISION FOR APPROVAL BY THE CITY ENGINEER.
4. THE DUCTILE IRON PIPE TO BE FURNISHED AND DELIVERED UNDER THIS SPECIFICATION SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA C151 (ANSI A21.5), EXCEPT AS OTHERWISE SPECIFIED HEREIN. PIPE SHALL BE DOUBLE CEMENT-LINED AND SEAL COATED WITH AN APPROVED BITUMINOUS SEAL COAT IN ACCORDANCE WITH AWWA C104 (ANSI A21.4).
5. DUCTILE IRON PIPE SHALL BE CLASS 54 FOR SIZES THREE (3) INCH THROUGH TWENTY (20) INCHES SIZE. TWENTY-FOUR (24) INCH AND LARGER SHALL BE CLASS 55 DUCTILE IRON PIPE.
6. PIPES TWENTY-FOUR (24) INCHES AND LARGER IN NOMINAL DIAMETER SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA C100 FOR DUCTILE IRON WATER PIPE.
7. MECHANICAL JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA C111 (ANSI A21.11).
8. FLANGE JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA C110 (ANSI A21.10).
9. FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE IRON AND SHALL MEET REQUIREMENTS OF AWWA C110 (ANSI A21.10) OR AWWA C153 (ANSI A21.53). DUCTILE IRON FITTINGS SHALL BE RATED FOR 350 PSF. PIPE SIZES TWENTY-FOUR (24) INCH DIAMETER AND LESS, AND 250 PSI FOR PIPE SIZES OVER TWENTY-FOUR (24) INCH DIAMETER. DUCTILE IRON FLANGE FITTINGS SHALL BE RATED FOR 250 PSI FOR ALL PIPE DIAMETERS.
10. ALL DUCTILE IRON PIPE, FITTINGS AND HYDRANTS SHALL BE ENCASED WITH POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF A.N.S.I./A.W.W.A. STANDARD SPECIFICATION D1248 AND AWWA C105. POLYETHYLENE TUBE MATERIAL SHALL HAVE A THICKNESS OF .008" (8-MILS). ADHESIVE TAPE SHALL BE A GENERAL PURPOSE ADHESIVE TAPE 2" WIDE AND APPROXIMATELY 10-MILS THICK, SUCH AS SCOTCHRAP. NO.50, POLYKEN NO. 900, OR TAPECOAT CT.

VALVE AND SLEEVE NOTES

1. GATE VALVES, SIZES THREE (3) INCH THROUGH SIXTEEN (16) INCH AND TAPPING VALVES SHALL MEET THE CITY OF ROCHESTER HILLS STANDARD AS DETAILED WITH NON-RISE STEM. (EAST JORDAN, AMERICAN FLOW CONTROL, MUELLER)
2. ALL IN LINE GATE VALVES EIGHT (8) INCH AND LARGER SHALL BE IN WELLS. SPECIFICATIONS SHALL INCLUDE THE DIRECTION OF OPERATION OF ALL VALVES (CLOCKWISE CLOSURE). VALVE BOX USE TO BE APPROVED BY ENGINEERING DIVISION.
3. ALL GATE WELL COVERS SHALL BE CITY OF ROCHESTER HILLS STANDARD AS DETAILED.
4. ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN FIVE (5) FEET BELOW GROUND SURFACE SHALL BE PROVIDED WITH AN EXTENSION STEM. THE LENGTH OF THE EXTENSION STEM SHALL REACH WITHIN FIVE (5) FEET FROM THE GROUND SURFACE. WHEN AN EXTENSION STEM IS USED, IT SHALL BE HELD IN PLACE BY AN EXTENSION STEM GUIDE SUITABLY FASTENED TO THE WALL OF THE GATE WELL. THE EXTENSION STEM SHALL BE MECHANICALLY ATTACHED TO THE OPERATING NUT. DETAILS OF THE EXTENSION SYSTEM AND THE METHOD OF INSTALLATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
5. BUTTERFLY VALVES SHALL BE USED FOR VALVES GREATER THAN 16-INCH DIAMETER AND SHALL BE MODEL 2F11 AS MANUFACTURED BY HENRY PRATT COMPANY OR APPROVED EQUAL.
6. TAPPING VALVES SHALL BE SERIES "A" AS MANUFACTURED BY EAST JORDAN OR RESILIENT SEATED GATE VALVES AS APPROVED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES.
7. TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC INDUSTRIES; MUELLER; EAST JORDAN; SMITH-BLAIR OR APPROVED EQUAL AND APPROVED BY THE CITY OF ROCHESTER HILLS. FULL BODY SLEEVES MUST BE USED EXCEPT FOR REINFORCED CONCRETE PRESSURE PIPE OR A.C. PIPE.

HYDRANT REQUIREMENTS

1. ALL HYDRANTS SHALL BE CONSTRUCTED WITH A SIX (6) INCH COMPANION GATE VALVE IN A THREE (3) PIECE, ADJUSTABLE DUCTILE IRON VALVE BOX, WHICH SHALL INCLUDE A FIVE AND ONE-QUARTER (5-1/4) INCH SCREW SHAFT. VALVE BOXES SHALL BE SERIES 6860 AS MANUFACTURED BY TYLER PIPE OR APPROVED EQUAL.
2. ALL HYDRANTS SHALL BE EAST JORDAN NO. 5-BR-250 TRAFFIC MODEL, OR CITY APPROVED EQUAL. SELF-DRAINING HYDRANTS SHALL NOT BE USED. HYDRANTS SHALL HAVE BREAKAWAY FLANGE.
3. ALL HYDRANTS SHALL BE PAINTED RED ABOVE GROUND WITH A FINISH COAT OF RUST-OLEUM SAFETY RED OR APPROVED EQUAL. HYDRANT CAPS SHALL BE PAINTED SAME COLOR AS THE HYDRANT.
4. ALL FIRE HYDRANT JOINTS SHALL BE TOTALLY RESTRAINED BY THE USE OF RESTRAINED JOINT. THRUST BLOCKS ARE ALSO REQUIRED.

ACCEPTANCE OF NEW WATER MAINS

1. PRIOR TO WATER MAIN ACCEPTANCE THE FOLLOWING CONDITIONS MUST BE MET: 1) PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS 2) ALL EASEMENT AND RIGHT-OF-WAY ACQUISITION MUST BE ACCEPTED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES 3) THE CITY OF ROCHESTER HILLS MUST BE PROVIDED WITH THE BILL OF SALE AND 4) ALL MYLAR "AS-BUILT DRAWINGS" MUST BE ACCEPTED AND APPROVED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES. THE CITY OF ROCHESTER HILLS INSPECTION DIVISION MUST WITNESS THE CONNECTION OF THE WATER MAIN TO THE EXISTING WATER MAIN, AFTER WHICH RESIDENTIAL AND COMMERCIAL TAPS WILL BE ALLOWED.
2. THE CONTRACTOR SHALL NOTIFY THE CITY OF ROCHESTER HILLS, INSPECTION DEPARTMENT (248.841.2510) FOR PRESSURE TESTING, BACTERIOLOGICAL SAMPLING, CONNECTIONS TO EXISTING WATER MAIN AND FINAL FIELD REVIEW. A FORTY-EIGHT (48) HOUR ADVANCE NOTICE IS REQUIRED.
3. THE CONTRACTOR SHALL DISINFECT AND PRESSURE TEST ALL NEW WATER MAIN IN ACCORDANCE WITH ROCHESTER HILLS STANDARDS. THE WATER MAIN SHALL PASS A 150 PSI PRESSURE TEST FOR A TWO (2) HOUR PERIOD. WATER LOSS SHALL NOT EXCEED A RATE OF 11.65 U.S. GALLONS PER INCH DIAMETER PER MILE OF WATER MAIN IN TWENTY-FOUR (24) HOURS.
4. WHERE CONTRACTOR SUPPLIED GAUGES ARE REQUIRED, MINIMUM SIZE SHALL BE 3 1/2" DIAMETER OR LARGER GRADUATED IN ONE (1) OR TWO (2) POUND INCREMENTS FROM 1 TO 160 P.S.I. OR HIGHER AND HAVE CURRENT CERTIFICATION.
5. PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED AND APPROVED PRIOR TO CONNECTING TO THE EXISTING WATER MAIN.

CITY OF ROCHESTER HILLS WATER SYSTEMS AS-BUILT DRAWING SPECIFICATIONS

IN AREAS WHERE WATER SYSTEMS ARE OPERATED AND MAINTAINED BY THE CITY OF ROCHESTER HILLS DEPARTMENT OF PUBLIC SERVICES, FINAL ACCEPTANCE OF THE WATER SYSTEM MUST BE RENDERED BY THE DEPARTMENT OF PUBLIC SERVICES, BEFORE THE SYSTEM CAN BE USED FOR THE SERVICE INTENDED.

ONE ITEM REQUIRED FOR FINAL ACCEPTANCE SHALL BE THE SUBMISSION OF AS-BUILT DRAWINGS TO THE CITY OF ROCHESTER HILLS, DPS, BY THE DESIGN ENGINEER. AS-BUILT DRAWINGS SHALL BE DEFINED AS AND CONTAIN THE FOLLOWING INFORMATION:

1. FINAL AS-BUILT DRAWINGS SHALL BE PROVIDED IN REPRODUCIBLE PDF FORMAT VIA DIGITAL STORAGE MEDIA. XEROX OR ANY HEAT PROCESS REPRODUCTIONS WILL NOT BE ACCEPTED.
2. ALONG WITH THE PDF PLAN SET PROVIDE TWO (2) SETS OF BLACK-LINED DRAWINGS AND THE PLANS ON ELECTRONIC MEDIA IN AUTOCAD FORMAT (LATEST VERSION).
3. EACH AND EVERY SHEET SHALL BE SEALED BY THE DESIGN ENGINEER, ALONG WITH THE FOLLOWING CERTIFICATION STATEMENT ON THE COVER SHEET:

I HEREBY CERTIFY THAT OUR FIRM HAS PREPARED THESE AS-BUILT DRAWINGS OF THE IMPROVEMENTS AS CONSTRUCTED, AND THAT TO THE BEST OF MY KNOWLEDGE THOSE IMPROVEMENTS NOTED AS "AS BUILT" WERE CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS; AND ALSO THAT THE WATER MAIN AND STRUCTURES, AS CONSTRUCTED, LIE WITHIN THE EASEMENT DESCRIPTIONS REQUIRED BY THE CITY OF ROCHESTER HILLS.

(COMPANY NAME)

(ENGINEER'S SIGNATURE)

PROFESSIONAL ENGINEER NO. _____

ENGINEER SEAL

4. THE MAXIMUM SCALE SHALL BE ONE (1) INCH EQUALS FIFTY (50) FEET.
5. THE SIZE, LENGTH, CLASS AND MANUFACTURER OF PIPE INSTALLED SHALL BE INDICATED.
6. THE SIZE, BRAND AND MODEL NUMBERS OF ALL VALVES AND HYDRANTS INSTALLED SHALL BE INDICATED.
7. A TOTAL AS-BUILT DRAWING QUANTITY LIST SHALL BE INCLUDED, AS WELL AS AN AS-BUILT DRAWING QUANTITY LIST ON EACH INDIVIDUAL SHEET.
8. THE LOCATIONS SHALL BE SHOWN ON THE PLANS WITH AN ACCURACY OF ONE (1) FOOT.
9. THE OFFSET OF THE WATER MAIN FROM PROPERTY LINES SHALL BE INDICATED.
10. ALL GATE VALVE WELLS, HYDRANTS AND ALL WATER SYSTEM APPURTENANCES SHALL BE LOCATED FROM TWO FIXED OBJECTS (MANHOLES, BUILDING CORNERS ECT.).
11. ALL UNDERGROUND APPURTENANCES, SUCH AS GATE VALVE WELLS, METER PITS, PRESSURE REDUCING VALVE PITS, ETC. SHALL BE LOCATED FROM THE NEAREST HYDRANT THAT IS CONNECTED TO THE SAME WATER MAIN AS THE APPURTENANCE.
12. THE LOCATION AND SIZE OF EVERY RESTRAINED JOINT SHALL BE NOTED.
13. THE ACCURATE LOCATION OF ALL UTILITY CROSSINGS WHERE THE VERTICAL SEPARATION, IS LESS THAN 18" SHALL BE NOTED.
14. AS-BUILT SHALL BE PREPARED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS AS-BUILT GUIDELINES AS PROVIDED AT THE PRE-CONSTRUCTION MEETING.

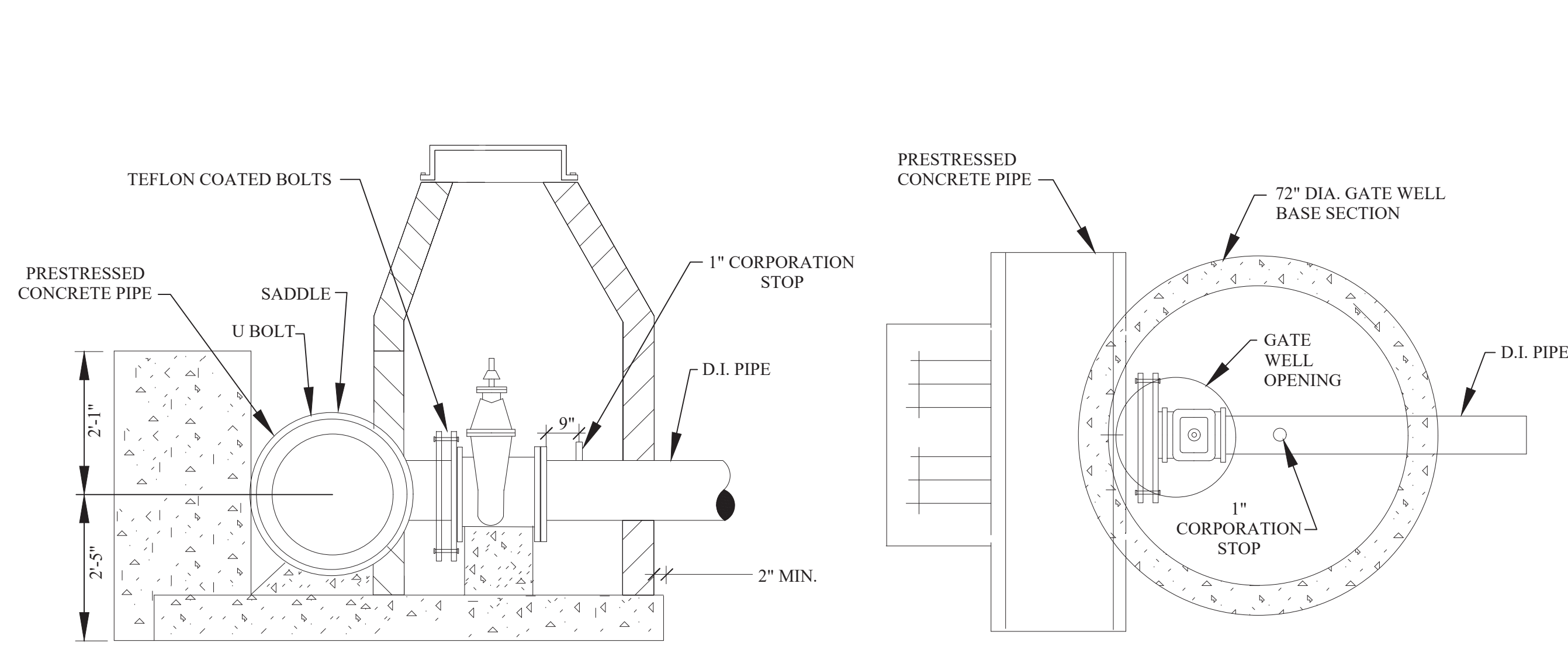


REVISIONS	DATE	APPROVED BY	DATE	NOTIFY ROCHESTER HILLS ENGINEERING DIVISION @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION
		CITY COUNCIL,	SEPTEMBER 23, 2019	
		PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES		

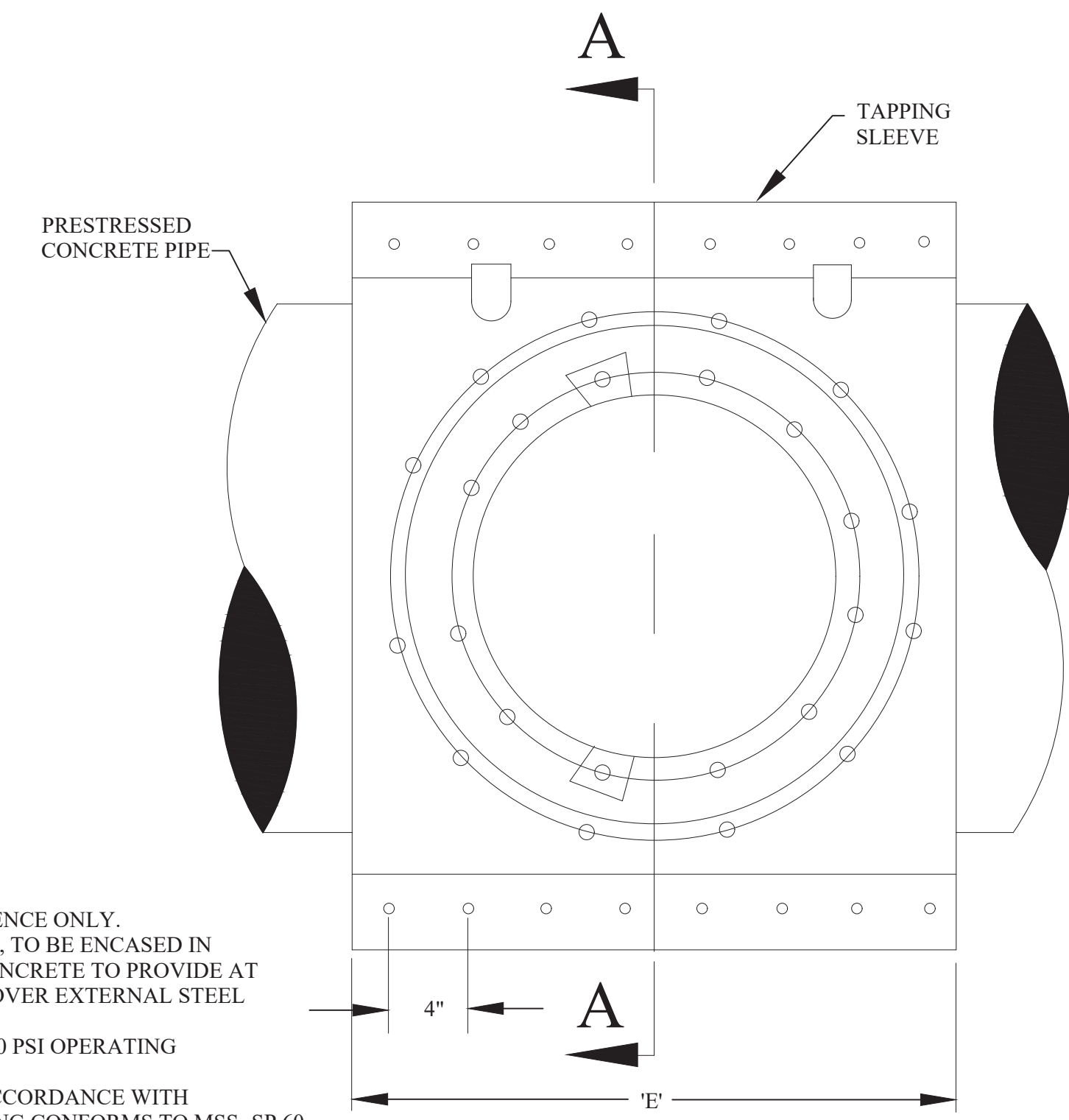
City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

WATER MAIN STANDARD DETAILS

NOT TO SCALE	DATE: 1/10/2019
SHEET 2 OF 2	

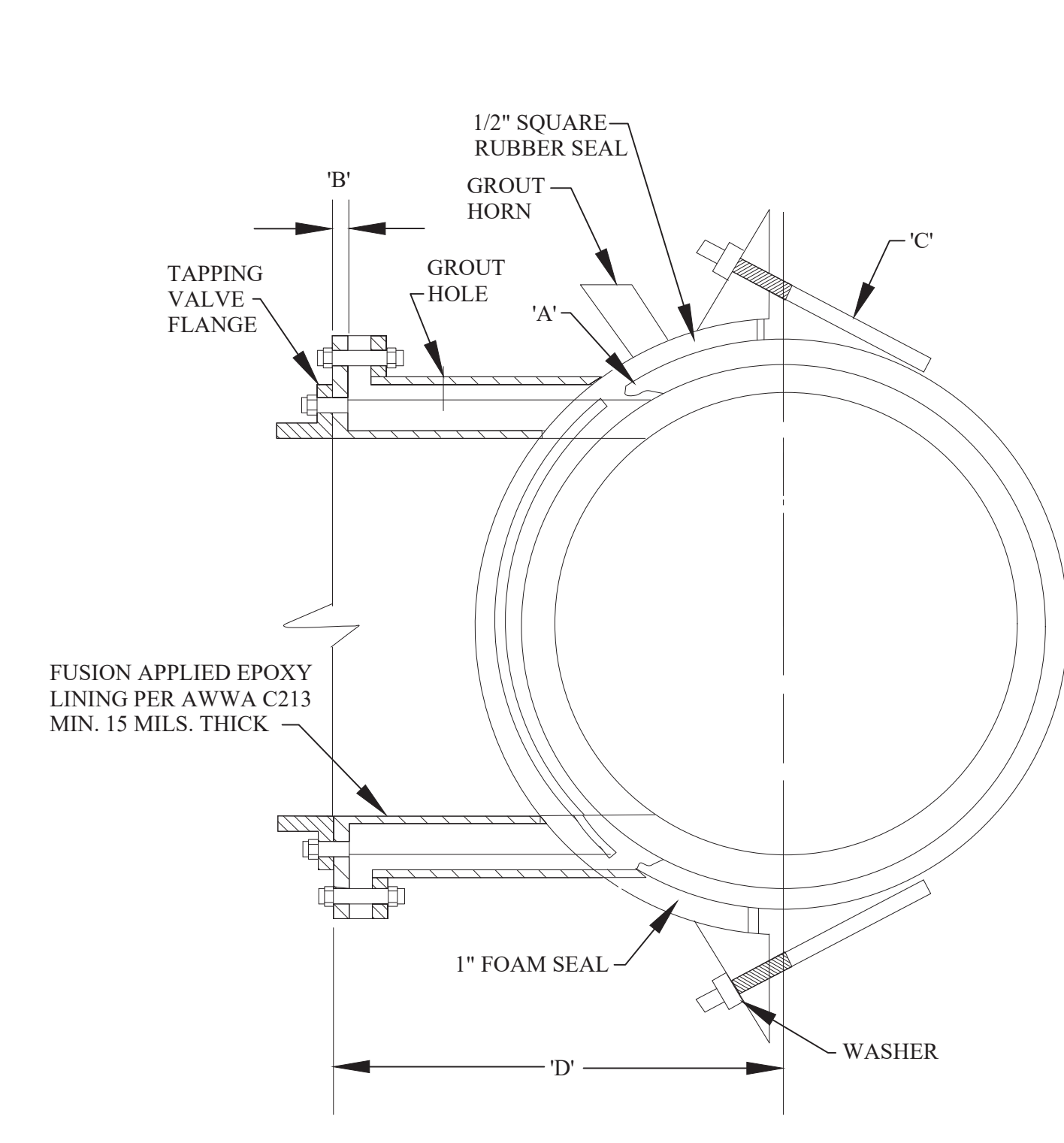


CONCRETE PRESSURE TAP VALVE WELL ASSEMBLY WITH CONCRETE ENCASEMENT



- NOTES:**
- 1) THESE DIMENSIONS ARE FOR REFERENCE ONLY.
 - 2) ENTIRE SADDLE, INCLUDING STRAPS, TO BE ENCASED IN PORTLAND CEMENT MORTAR OR CONCRETE TO PROVIDE AT LEAST ONE (1) INCH OF THICKNESS OVER EXTERNAL STEEL SURFACES PRIOR TO BACKFILLING.
 - 3) TAP SADDLES ARE DESIGNED FOR 150 PSI OPERATING PRESSURE.
 - 4) FLANGE DRILLED AND TAPPED IN ACCORDANCE WITH AWWA C207 CLASS D, CENTERING RING CONFORMS TO MSS-SP 60.
 - 5) GROUT SHALL SET A MINIMUM OF TWENTY-FOUR (24) HOURS PRIOR TO PRESSURE TESTING.

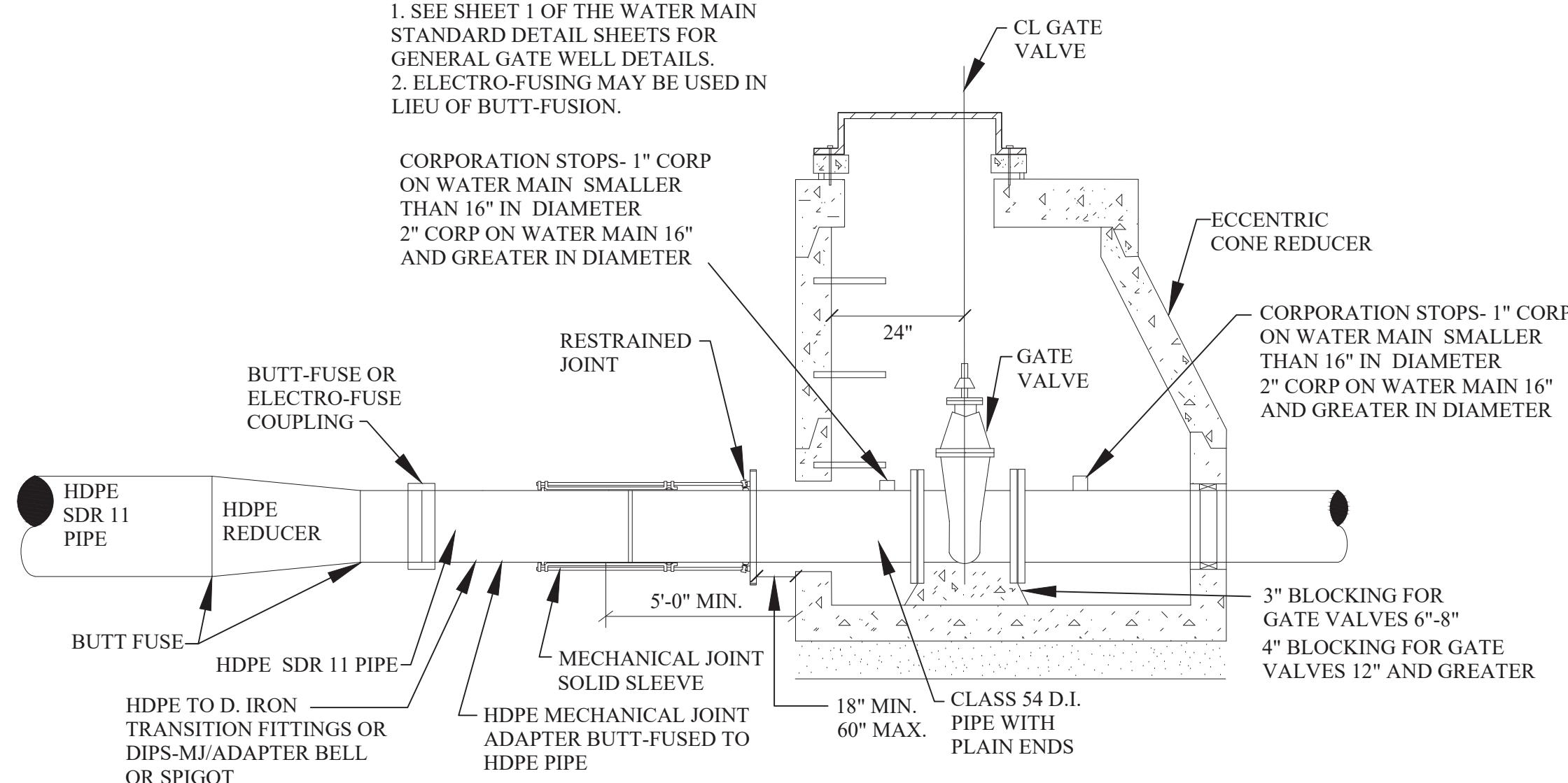
CONCRETE TAPPING SLEEVE DETAILS



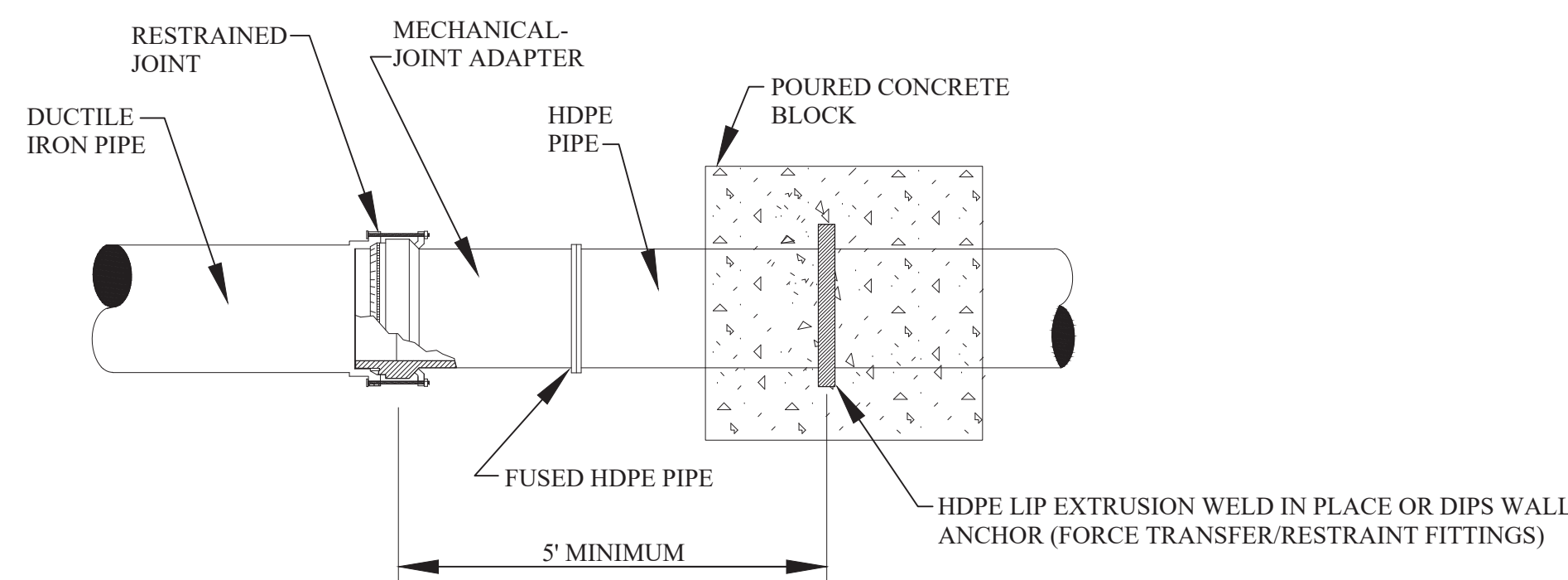
SECTION A-A

PIPE SIZE X TAP SIZE	A	B	C	D	E
16" X 4"	1/4"	7/8"	6	14-1/16"	24"
16" X 6"	1/4"	1-1/8"	6	14-5/16"	24"
16" X 8"	1/4"	1-1/8"	6	14-5/16"	24"
16" X 10"	1/4"	1-3/8"	7	14-9/16"	28"
16" X 12"	1/4"	1-3/8"	8	14-9/16"	32"
20" X 4"	1/4"	7/8"	6	16-1/2"	24"
20" X 6"	1/4"	1-1/8"	6	16-1/2"	24"
20" X 8"	1/4"	1-1/8"	6	16-1/2"	24"
20" X 10"	1/4"	1-3/8"	7	17"	28"
20" X 12"	1/4"	1-3/8"	8	17"	32"
24" X 4"	1/4"	7/8"	6	18-3/4"	24"
24" X 6"	1/4"	1-1/8"	6	19"	24"
24" X 8"	1/4"	1-1/8"	6	19"	24"
24" X 10"	1/4"	1-3/8"	7	19-1/4"	28"
24" X 12"	1/4"	1-3/8"	8	19-1/4"	32"
30" X 4"	1/4"	7/8"	6	22-1/8"	24"
30" X 6"	1/4"	1-1/8"	6	22-3/8"	24"
30" X 8"	1/4"	1-1/8"	6	22-3/8"	24"
30" X 10"	1/4"	1-3/8"	7	22-5/8"	28"
30" X 12"	1/4"	1-3/8"	8	22-5/8"	32"
36" X 4"	1/4"	7/8"	6	25-1/2"	24"
36" X 6"	1/4"	1-1/8"	6	25-3/4"	24"
36" X 8"	1/4"	1-1/8"	7	25-3/4"	28"
36" X 10"	1/4"	1-3/8"	8	26"	32"
36" X 12"	1/4"	1-3/8"	9	26"	36"
42" X 4"	1/4"	7/8"	6	28-7/8"	24"
42" X 6"	1/4"	1-1/8"	7	29-1/8"	28"
42" X 8"	1/4"	1-1/8"	8	29-1/8"	32"
42" X 10"	3/8"	1-3/8"	9	29-3/8"	36"
42" X 12"	3/8"	1-3/8"	10	29-3/8"	40"
48" X 4"	3/8"	7/8"	7	32-1/4"	28"
48" X 6"	3/8"	1-1/8"	7	32-1/2"	28"
48" X 8"	3/8"	1-1/8"	7	32-1/2"	28"
48" X 10"	3/8"	1-3/8"	7	32-3/4"	28"
48" X 12"	3/8"	1-3/8"	9	32-3/4"	36"

- NOTES:**
1. SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL GATE WELL DETAILS.
 2. ELECTRO-FUSING MAY BE USED IN LIEU OF BUTT-FUSION.

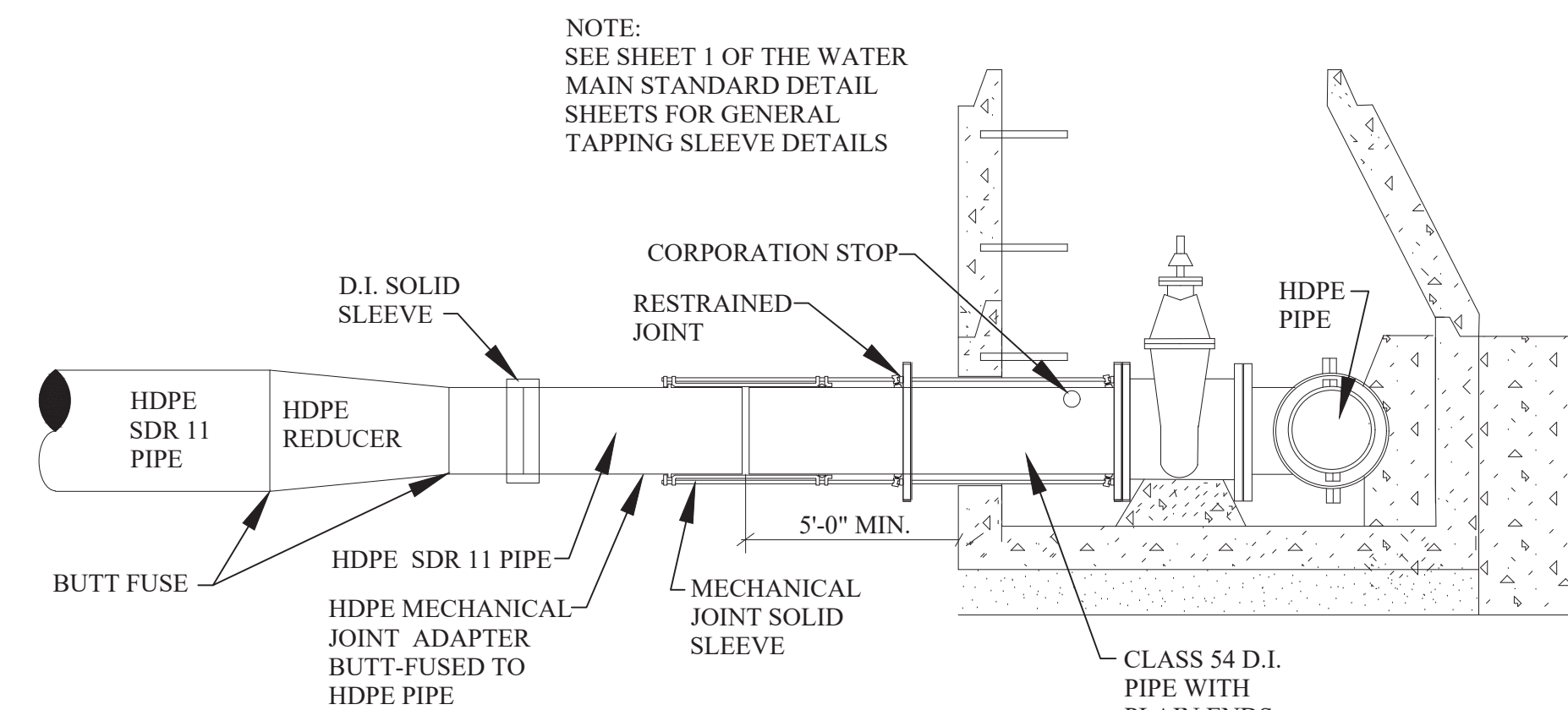


TYPICAL GATE VALVE CONNECTION TO HDPE



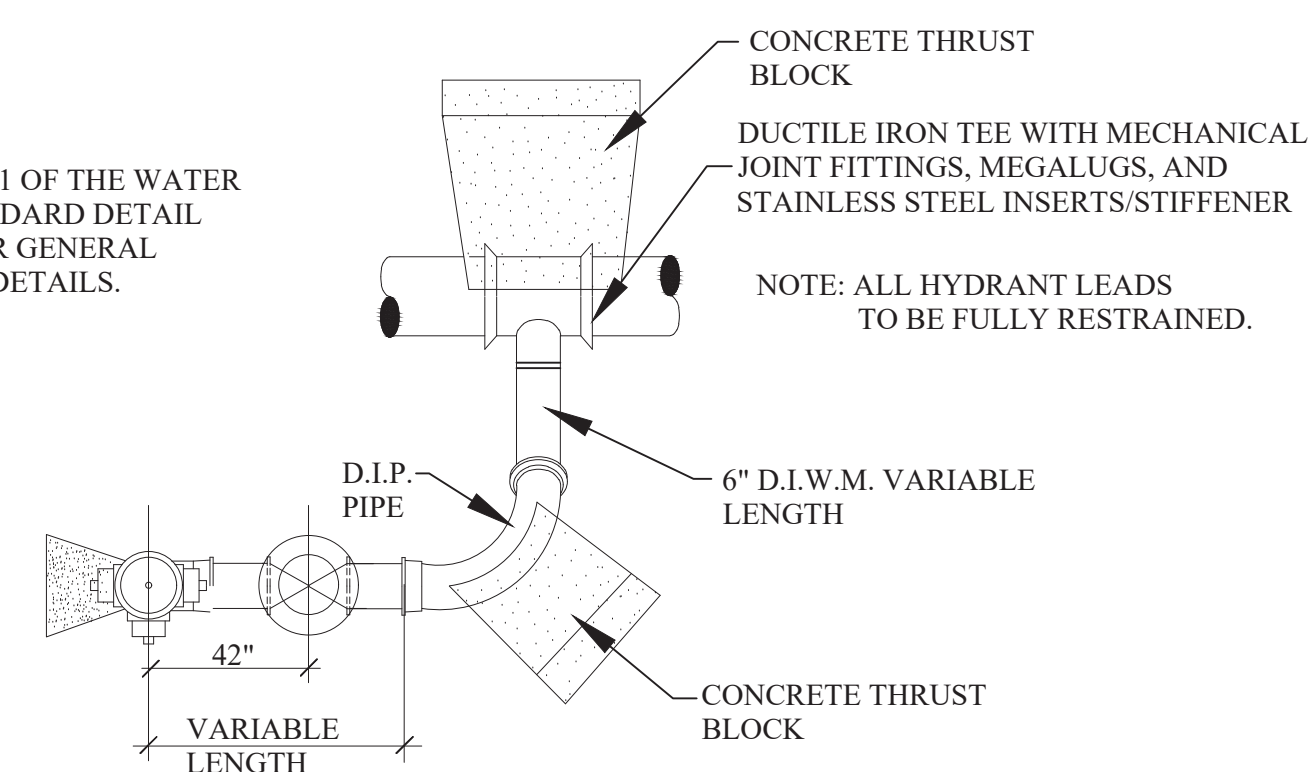
MECHANICAL-JOINT ADAPTER

- NOTE:** SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL TAPPING SLEEVE DETAILS



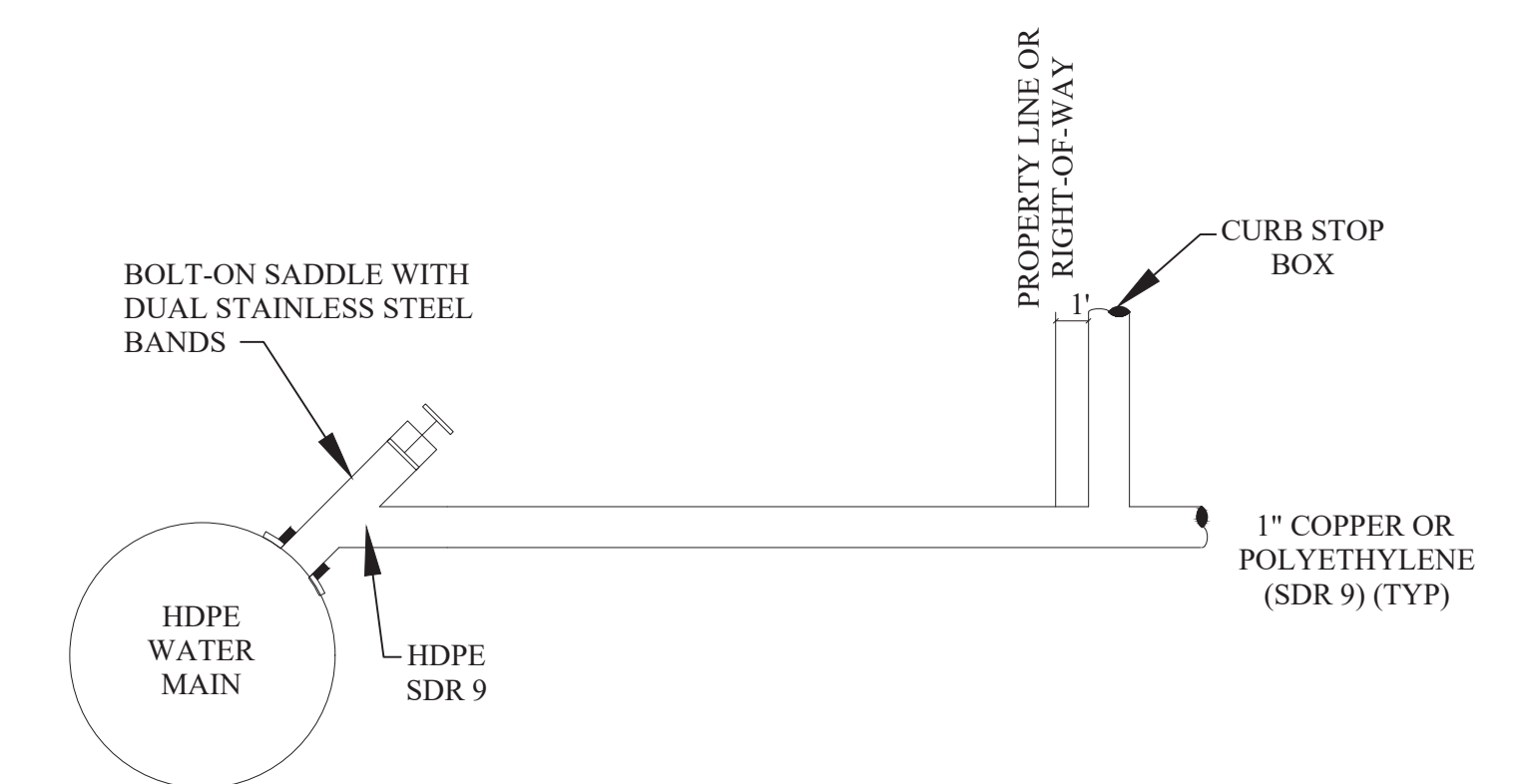
TAPPING SLEEVE VALVE WELL

- NOTE:** SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL HYDRANT DETAILS.



PLAN HYDRANT SIDE OUTLET

- NOTE:** ALL BURIED BOLTS SHALL BE CORTEN OR LOW ALLOY AND POLY-WRAPPED.



HOUSE LEAD DETAIL HDPE TO COPPER OR POLYETHYLENE (SDR 9)

DETAILS FOR HIGH DENSITY POLYETHYLENE PIPE (HDPE)

City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

WATER MAIN SPECIAL DETAILS

NOT TO SCALE DATE: 1/10/2019
SHEET 1 OF 1



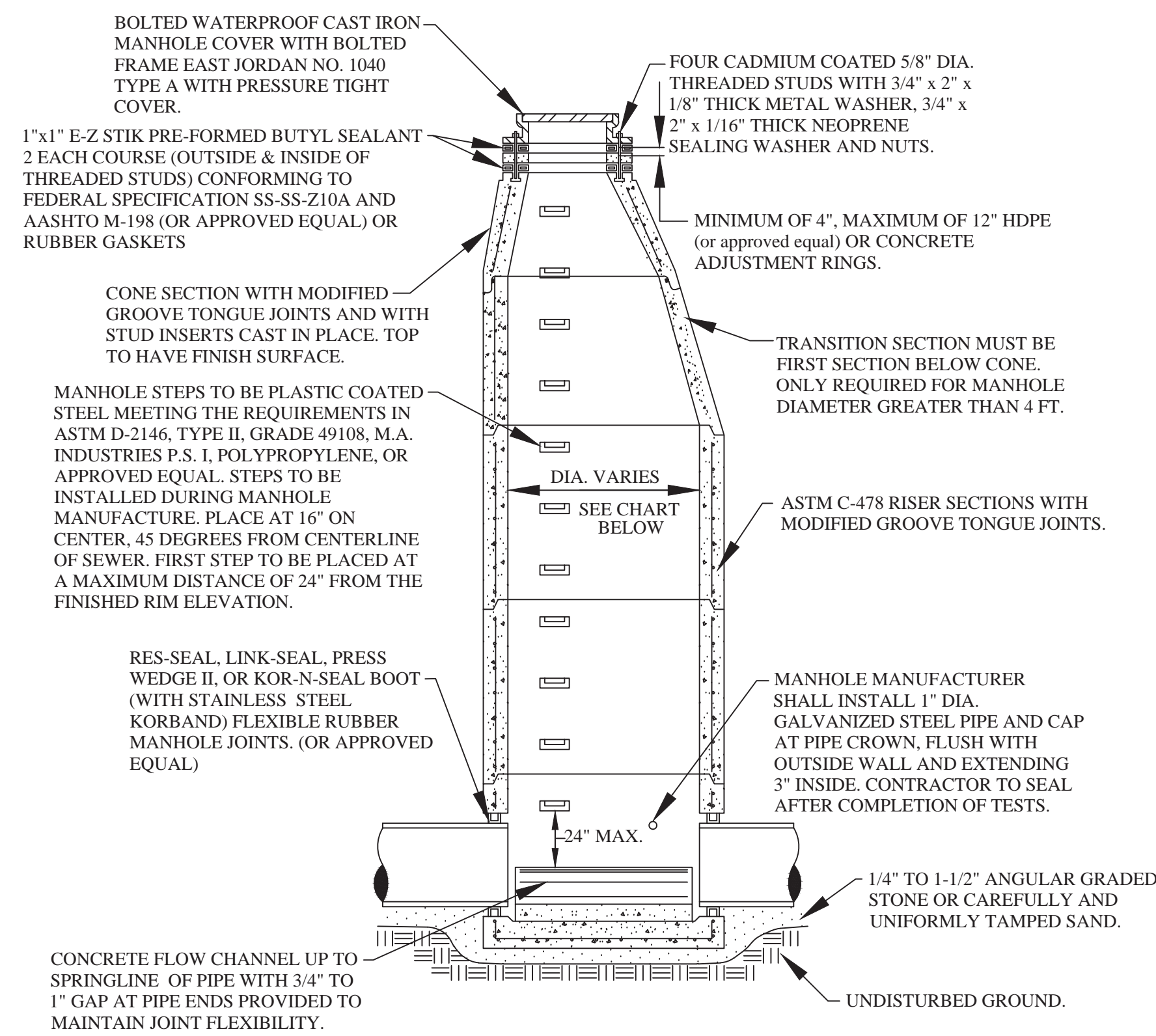
REVISIONS	DATE	APPROVED BY	NOTIFY ROCHESTER HILLS ENGINEERING DIVISION @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION
		CITY COUNCIL, DATE: SEPTEMBER 23, 2019	
		PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES	

SANITARY SEWER CONSTRUCTION NOTES

- ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS AND THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER (OCWRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY THE CITY OF ROCHESTER HILLS INSPECTION SERVICES.
- NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIAMETER PER MILE OF PIPE IN A 24 HOUR PERIOD, AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIAMETER PER MILE. AIR TESTS IN LIEU OF INFILTRATION TESTS SHALL BE AS SPECIFIED IN THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER STANDARDS. PRELIMINARY AIR TESTS ARE WITNESSED BY THE CITY AND FINAL AIR TESTS ARE WITNESSED BY BOTH THE CITY AND THE OCWRC. ONLY PIPE AND PIPE JOINTS APPROVED BY THE CITY MAY BE USED FOR SANITARY SEWER CONSTRUCTION.
- LOCATED IN THE FIRST MANHOLE UPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING SEWER, OR EXTENSION, A TEMPORARY 12-INCH DEEP SUMP SHALL BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY ACCEPTANCE TEST UP TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL. A WATERTIGHT BULKHEAD SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SUMP MANHOLE.
- AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUALLY IN PROGRESS, THE UPSTREAM OPEN END OF THE PIPE SHALL BE CLOSED BY TEMPORARY WATERTIGHT PLUGS OR BY OTHER APPROVED MEANS. IF WATER IS IN THE TRENCH WHEN WORK IS RESUMED, THE PLUG SHALL NOT BE REMOVED UNTIL THE DANGER OF WATER ENTERING THE PIPE HAS PASSED. ALL MAIN LINE PIPE SHALL BE LAID WITH A PIPE LASER BEAM FOR LINE AND GRADE. A TARGET MUST BE INSTALLED AT THE END OF THE PIPE BEING LAID.
- SELF-LEVELING ACCESS ASSEMBLY STRUCTURES SHALL BE USED FOR ADJUSTING STRUCTURES WITHIN ASPHALT AND CONCRETE PAVEMENT.
- ALL SEWER PIPE SHALL BE INSTALLED IN CLASS "B" BEDDING OR BETTER.
- ALL NEW MANHOLES SHALL HAVE CITY APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRE CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND BUTYL TYPE JOINTS. PRE CAST MANHOLE CONE SECTIONS SHALL BE CITY APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS.
- AT ALL CONNECTIONS TO MANHOLES IN ALL SEWERS, OR EXTENSIONS, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES.
- GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL NOT BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
- PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT MISS DIG THREE (3) DAYS IN ADVANCE (811) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
- AN 18 INCH MINIMUM VERTICAL SEPARATION AND A 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND ALL OTHER UTILITIES.
- AS A MEANS OF INSURING PROPER INSTALLATION OF THE SANITARY SEWER PIPE, THE CONTRACTOR SHALL VIDEO INSPECT, ACCORDING TO THE CITY OF ROCHESTER HILLS VIDEO INSPECTION STANDARDS, 100% OF THE SANITARY SEWER PIPE. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO THE CITY OF ROCHESTER HILLS PRIOR TO VIDEO INSPECTION, SO A REPRESENTATIVE MAY BE PRESENT. ROCHESTER HILLS WILL BE PROVIDED WITH A DIGITAL COPY OF THE VIDEO INSPECTION AND LOG IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS INSPECTION STANDARDS.

SANITARY SEWER MATERIALS

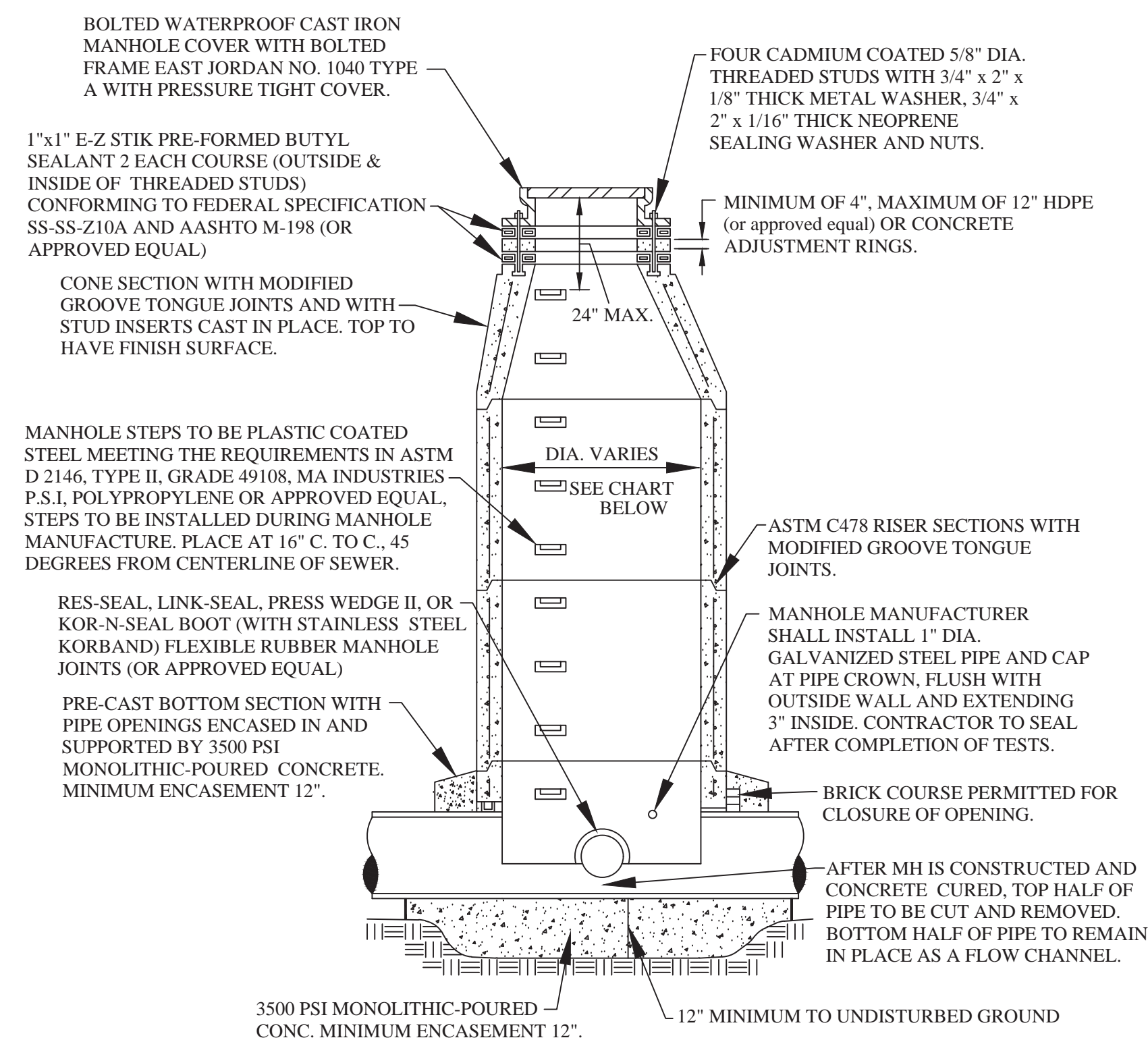
- THE FOLLOWING MATERIALS MAY BE USED FOR PUBLIC SANITARY SEWER CONSTRUCTION, APPROVED PIPE MATERIALS MUST CONFORM TO STANDARDS ADOPTED BY THE OFFICE OF THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER:
 - FOR SEWERS 8" TO 15" TO BE PVC TRUSS PIPE, ASTM D-2680, WITH GASKET JOINTS, OTHER TYPES OF PIPE AS APPROVED BY CITY ENGINEER.
 - FOR 6" SEWER LEADS SHALL BE SOLID WALLED PVC, SDR 23.5, ASTM D-3034 OR PVC SCHEDULE 40 SOLID WALLED, ASTM D-2665. PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 150 P.S.I., AND A MINIMUM DEFLECTION OF 15% AT FAILURE. THE SEWER LEAD MATERIAL SHALL BE COMPATIBLE WITH SEWER MAIN MATERIAL.
 - FOR SEWERS GREATER THAN 15" TO BE REINFORCED CONCRETE PIPE (RCP) SHALL CONFORM TO THE CURRENT ASTM D C76 WALL B. JOINTS SHALL BE SYNTHETIC RUBBER AND MEET OR EXCEED THE REQUIREMENTS ESTABLISHED BY ASTM 361.



STANDARD MANHOLE

MANHOLE SIZING CHART

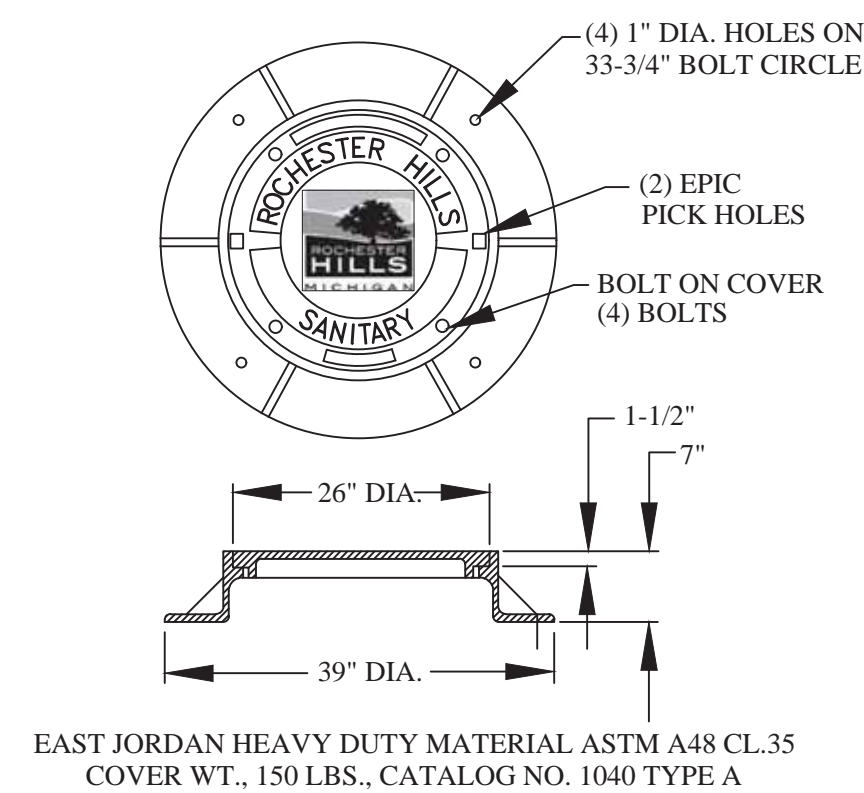
MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.	MAX. PIPE SIZE FOR RIGHT ANGLE INST.
4'	24"	18"
5'	36"	24"
6'	42"	36"
7'	60"	42"



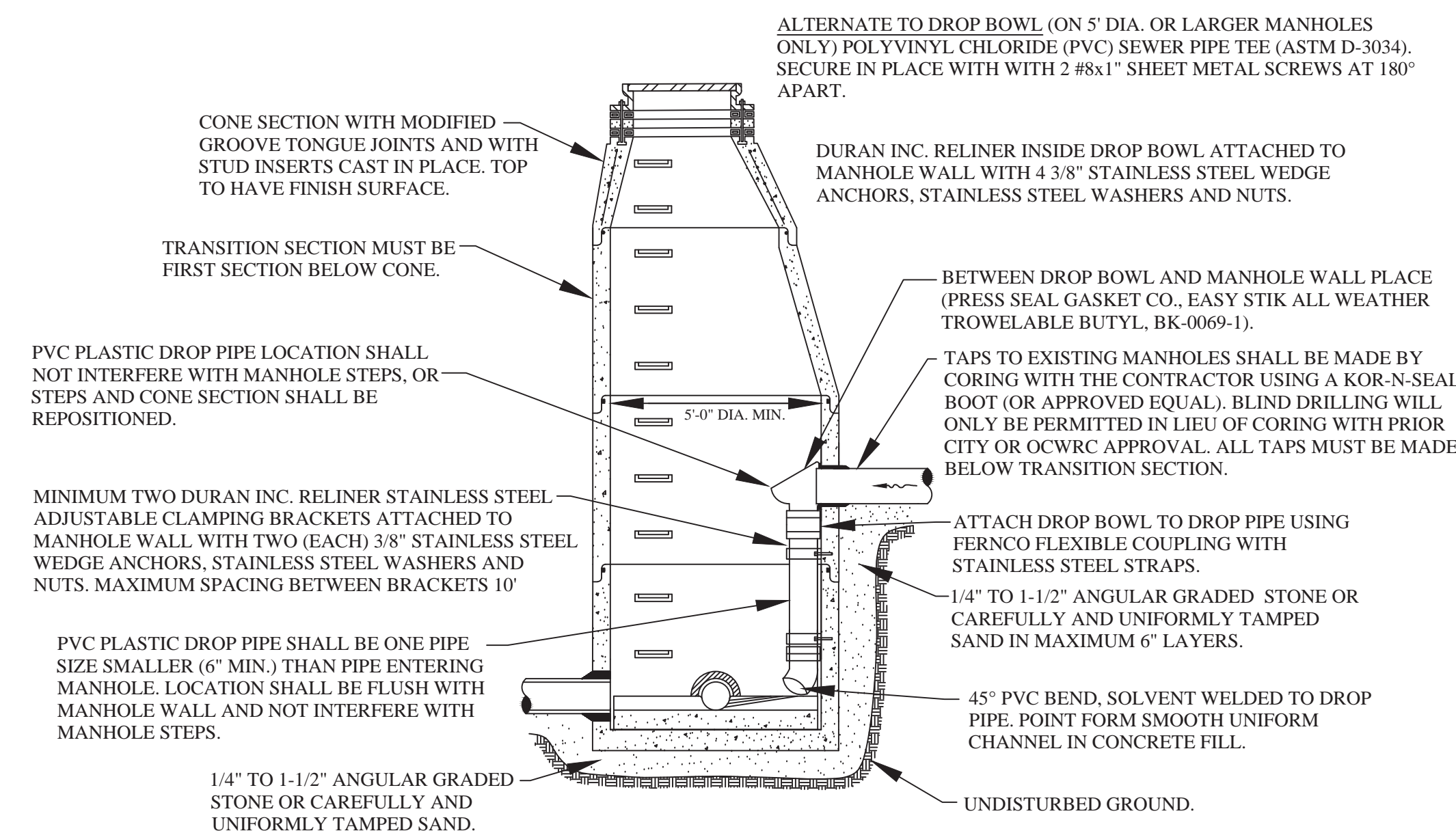
MANHOLE CONSTRUCTED OVER EXISTING SEWER

MANHOLE SIZING CHART

MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.
4'	24"
5'	36"
6'	42"
7'	60"



ROCHESTER HILLS MANHOLE COVER



INTERIOR DROP CONNECTION

NOTE: INTERIOR DROP CONNECTION PERMITTED ONLY WHEN APPROVED BY CITY ENGINEER.

