



COMMUNITY DEVELOPMENT DEPARTMENT

45175 Ten Mile Road
Novi, MI 48375
(248) 347-0415 Phone
(248) 735-5600 Facsimile
www.cityofnovi.org

ZONING BOARD OF APPEALS STAFF REPORT

FOR: City of Novi Zoning Board of Appeals

ZONING BOARD APPEALS DATE: January 12, 2021

REGARDING: 46500 Humboldt Drive, Parcel # 50-22-09-176-019 (PZ20-0056)

BY: Larry Butler, Deputy Director Community Development

I. GENERAL INFORMATION:

Applicant

JB Donaldson/Lineage Logistics

Variance Type

Use Variance

Property Characteristics

Zoning District:	General Industrial
Location:	West of West Park Drive and North of Twelve Mile Road
Parcel #:	50-22-09-176-019

Request

The applicant is requesting variance from the Novi Zoning Ordinance Section 4.19.1.J for the quantity of accessory buildings (2 permitted by code, 34 carports proposed). This property is zoned General Industrial (I-2).

II. STAFF COMMENTS:

III. RECOMMENDATION:

The Zoning Board of Appeals may take one of the following actions:

1. I move that we **grant** the use variance in Case No. PZ20-0056, sought by _____, for _____ to allow Petitioner to use the property for _____ because the Petitioner has established an unnecessary hardship:
 - (a) Petitioner can not use the property as permitted in the _____ zoning district because (either):
 1. The unique circumstances of the property consisting of _____ prevents _____, or,
 2. The physical condition of the property consisting of _____ prevents _____,

And, the condition is not a personal or economic hardship.

(b) Using the property for _____ in the _____ zoning district will not alter the essential character of the area because _____.

(c) Petitioner and his predecessors did not create the need for this variance because _____.

(d) **The variance is granted subject to:**

1. _____
2. _____
3. _____
4. _____

2. I move that we **deny** the use variance in Case No. PZ20-0056, sought by _____ for _____ because the Petitioner has **not** established an unnecessary hardship:

(a) Petitioner has not established that a hardship regarding the current zoning designation of the property, as the property can be used as zoned because _____.

(b) Petitioner has not established unique circumstances or unique physical conditions regarding the property because _____.

(c) The variance requested is based on the Petitioner's personal or economic hardship because Petitioner stated _____.

(d) The proposed use will alter the essential character of area by _____.

(e) The Petitioner has created the need for the variance by _____.

Should you have any further questions with regards to the matter please feel free to contact me at (248) 347-0417.

Larry Butler
Deputy Director Community Development
City of Novi



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ZONING BOARD OF APPEALS APPLICATION

APPLICATION MUST BE FILLED OUT COMPLETELY

RECEIVED

NOV 02 2020

CITY OF NOVI
 COMMUNITY DEVELOPMENT

I. PROPERTY INFORMATION (Address of subject ZBA Case)			
PROJECT NAME / SUBDIVISION Lineage Parking Expansion FSP Update			
ADDRESS 46500 Humboldt Drive		LOT/SUITE/SPACE #	
SIDWELL # 50-22-09 - 178 - 019		May be obtain from Assessing Department (248) 347-0485	
CROSS ROADS OF PROPERTY <small>West Park Drive and Humboldt</small>			
IS THE PROPERTY WITHIN A HOMEOWNER'S ASSOCIATION JURISDICTION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		REQUEST IS FOR: <input type="checkbox"/> RESIDENTIAL <input checked="" type="checkbox"/> COMMERCIAL <input type="checkbox"/> VACANT PROPERTY <input type="checkbox"/> SIGNAGE	
DOES YOUR APPEAL RESULT FROM A NOTICE OF VIOLATION OR CITATION ISSUED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
II. APPLICANT INFORMATION			
A. APPLICANT		EMAIL ADDRESS cwicklne@jbdonaldson.com	CELL PHONE NO. 248-830-4476
NAME Chris Wickline		TELEPHONE NO. 248-344-9045	
ORGANIZATION/COMPANY JB Donaldson		FAX NO. 248-536-2353	
ADDRESS 37610 Hills Tech Drive	CITY Farmington Hills	STATE MI	ZIP CODE 48331
B. PROPERTY OWNER <input type="checkbox"/> CHECK HERE IF APPLICANT IS ALSO THE PROPERTY OWNER			
Identify the person or organization that owns the subject property:		EMAIL ADDRESS rsangdahl@lineagelogistics.com	CELL PHONE NO.
NAME Rob Sangdahl		TELEPHONE NO. 419-340-3793	
ORGANIZATION/COMPANY Lineage Logistics		FAX NO.	
ADDRESS 46500 Humboldt Drive	CITY Novi	STATE MI	ZIP CODE 48377
III. ZONING INFORMATION			
A. ZONING DISTRICT			
<input type="checkbox"/> R-A <input type="checkbox"/> R-1 <input type="checkbox"/> R-2 <input type="checkbox"/> R-3 <input type="checkbox"/> R-4 <input type="checkbox"/> RM-1 <input type="checkbox"/> RM-2 <input type="checkbox"/> MH <input type="checkbox"/> I-1 <input checked="" type="checkbox"/> I-2 <input type="checkbox"/> RC <input type="checkbox"/> TC <input type="checkbox"/> TC-1 <input type="checkbox"/> OTHER _____			
B. VARIANCE REQUESTED			
INDICATE ORDINANCE SECTION (S) AND VARIANCE REQUESTED:			
1. Section <u>4.19.1.J</u> Variance requested <u>variance for quantity of accessory structures</u>			
2. Section _____ Variance requested _____			
3. Section _____ Variance requested _____			
4. Section _____ Variance requested _____			
IV. FEES AND DRAWINGS			
A. FEES			
<input type="checkbox"/> Single Family Residential (Existing) \$200 <input type="checkbox"/> (With Violation) \$250 <input type="checkbox"/> Single Family Residential (New) \$250 <input checked="" type="checkbox"/> Multiple/Commercial/Industrial \$300 <input type="checkbox"/> (With Violation) \$400 <input type="checkbox"/> Signs \$300 <input type="checkbox"/> (With Violation) \$400 <input type="checkbox"/> House Moves \$300 <input type="checkbox"/> Special Meetings (At discretion of Board) \$600			
B. DRAWINGS 1-COPY & 1 DIGITAL COPY SUBMITTED AS A PDF			
<ul style="list-style-type: none"> • Dimensioned Drawings and Plans • Site/Plot Plan • Existing or proposed buildings or addition on the property • Number & location of all on-site parking, if applicable 		<ul style="list-style-type: none"> • Existing & proposed distance to adjacent property lines • Location of existing & proposed signs, if applicable • Floor plans & elevations • Any other information relevant to the Variance application 	

Application Fee: \$300.00
 Meeting Date: 1/12/21
~~Dec 8 2020~~
 ZBA Case #: PZ 20-0056



ZONING BOARD OF APPEALS APPLICATION

V. VARIANCE

A. VARIANCE (S) REQUESTED

DIMENSIONAL USE SIGN

There is a five-(5) hold period before work/action can be taken on variance approvals.

B. SIGN CASES (ONLY)

Your signature on this application indicates that you agree to install a **Mock-Up Sign ten-(10) days** before the schedule ZBA meeting. Failure to install a mock-up sign may result in your case not being heard by the Board, postponed to the next schedule ZBA meeting, or cancelled. A mock-up sign is **NOT** to be actual sign. Upon approval, the mock-up sign must be removed within five-(5) days of the meeting. If the case is denied, the applicant is responsible for all costs involved in the removal of the mock-up or actual sign (if erected under violation) within five-(5) days of the meeting.

C. ORDINANCE

City of Novi Ordinance, Section 3107 – Miscellaneous

No order of the Board permitting the erection of a building shall be valid for a period longer than one-(1) year, unless a building permit for such erection or alteration is obtained within such period and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.

No order of the Board permitting a use of a building or premises shall be valid for a period longer than one-hundred and eighty-(180) days unless such use is establish within such a period; provided, however, where such use permitted is dependent upon the erection or alteration or a building such order shall continue in force and effect if a building permit for such erection or alteration is obtained within one-(1) year and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.

D. APPEAL THE DETERMINATION OF THE BUILDING OFFICIAL

PLEASE TAKE NOTICE:

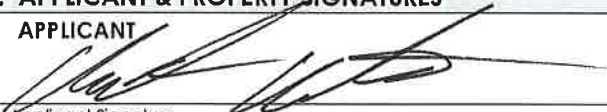
The undersigned hereby appeals the determination of the Building Official / Inspector or Ordinance made

CONSTRUCT NEW HOME/BUILDING ADDITION TO EXISTING HOME/BUILDING SIGNAGE

ACCESSORY BUILDING USE OTHER _____

VI. APPLICANT & PROPERTY SIGNATURES

A. APPLICANT

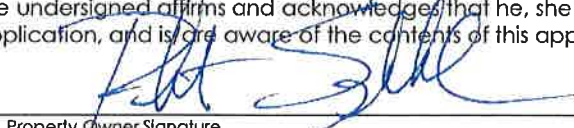

Applicant Signature

10-6-20
Date

B. PROPERTY OWNER

If the applicant is not the owner, the property owner must read and sign below:

The undersigned affirms and acknowledges that he, she or they are the owner(s) of the property described in this application, and is/are aware of the contents of this application and related enclosures.


Property Owner Signature

10/6/2020
Date

VII. FOR OFFICIAL USE ONLY

DECISION ON APPEAL:

GRANTED

DENIED

The Building Inspector is hereby directed to issue a permit to the Applicant upon the following and conditions:

Chairperson, Zoning Board of Appeals

Date



Community Development Department

45175 Ten Mile Road
Novi, MI 48375
(248) 347-0415 Phone
(248) 735-5600 Facsimile
www.cityofnovi.org

**REVIEW STANDARDS
USE VARIANCE**

For Use Variances: A use variance may be granted by the Zoning Board of Appeals only in cases where the applicant demonstrates in the official record of the public hearing that undue hardship exists by showing all of the following:

In the space below, and on additional paper if necessary, explain how the proposed project meets each of the following standards.

Standard #1. Cannot Be Reasonably Used.

Explain how the land, building or structure cannot be reasonably used for any of the uses permitted by right or by special land use permit in the zoning district in which it is located.

Client wishes to provide covered parking for users of the auxilliary lot. Ordinance 4.19.1.J limits the number of accessory structures to two. A reasonable number of parking spaces cannot be covered by only two awnings.

Standard #2. Circumstances or Physical Conditions.

Explain how the need for the requested variance is due to unique circumstances or physical conditions of the property involved, such as narrowness, shallowness, shape, water, topography, or similar physical conditions and is not due to the applicant's personal or economic hardship.

This location of Lineage Logistics is to serve as headquarters and training center. As a result, additional parking is needed, and since it is not proximate to the building, the owner would like to provide some weather protection to visitors and vehicles.

Standard #3. Character of the Neighborhood.

Explain how the proposed use will not alter the essential character of the neighborhood.

Site is in an industrial park. The covered parking will be well away from roadways and drives, and will not be visible to passers-by.

Standard #4. Not Self-Created.

Explain how the need for the requested variance is not the result of actions of the property owner or previous property owners (i.e., is not self-created).

This is a unique situation which really does not fall into the easily defined categories envisioned by the ordinance. Allowing this variance will not set a damaging precedent for the City.

REVISED CONSTRUCTION PLANS FOR

LINEAGE PARKING EXPANSION

46500 HUMBOLDT DRIVE
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

OWNER:

LINEAGE
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN 48377
CONTACT: ROB SANGDAHL
PHONE: (419) 340-3793
EMAIL: RSANGDAHL@LINEAGELOGISTICS.COM

APPLICANT/DEVELOPER:

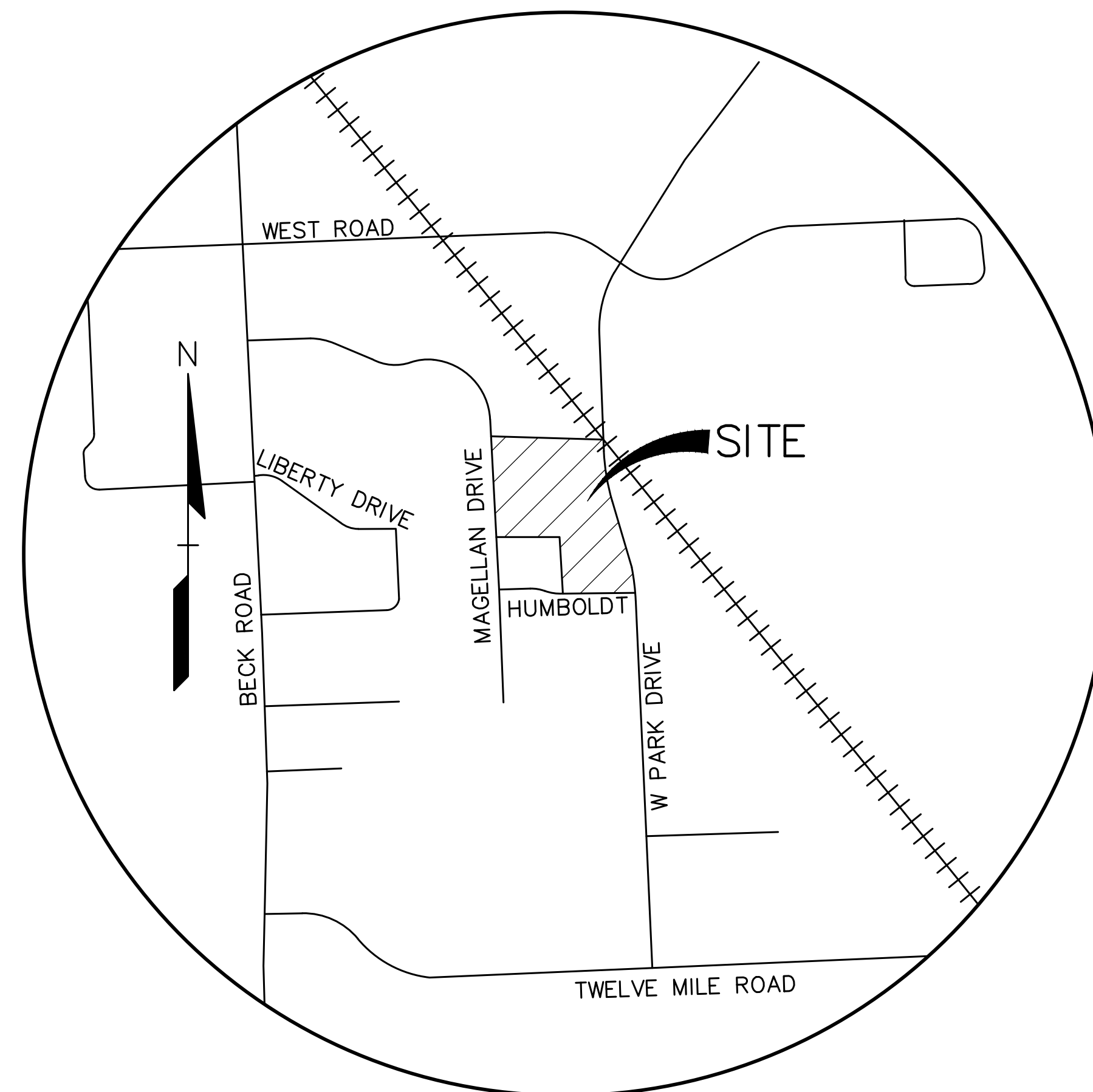
JB DONALDSON
37610 HILLS TECH DRIVE
FARMINGTON HILLS, MICHIGAN 48331
CONTACT: CHRIS WICKLINE
PHONE: (248) 344-9045
FAX: (248) 536-2353
CELL: (248) 830-4476
EMAIL: CWICKLINE@JBDONALDSON.COM

CIVIL ENGINEER:

PEA, INC.
2430 ROCHESTER CT, SUITE 100
TROY, MI 48083
CONTACT: JASON SUTTON, P.E.
PHONE: (248) 689-9090 EXT. 1163
FAX: (248) 689-1044
EMAIL: JSUTTON@PEAINC.COM

LANDSCAPE ARCHITECT:

PEA, INC.
7927 NEMCO WAY, SUITE 115
BRIGHTON, MI 48116
CONTACT: JEFF SMITH, R.L.A., LEED AP
PHONE: (517) 546-8583
FAX: (517) 546-8973
EMAIL: JSMITH@PEAINC.COM



LOCATION MAP
NO SCALE

INDEX OF DRAWINGS:

- C-0.0 COVER SHEET
- C-1.0 OVERALL EXISTING CONDITIONS
- C-1.1 TOPOGRAPHIC SURVEY
- C-3.0 OVERALL SITE PLAN
- C-3.1 DIMENSION PLAN
- C-4.1 GRADING AND UTILITY PLAN - NORTH
- C-4.2 GRADING AND UTILITY PLAN - SOUTH
- C-5.0 DEMO AND SESC PLAN
- C-8.0 STORMWATER MANAGEMENT PLAN
- C-9.0 NOTES AND DETAILS
- C-9.1 NOTES AND DETAILS
- I-1.0 IRRIGATION PLAN
- I-1.1 IRRIGATION DETAILS
- L-1.0 LANDSCAPE PLAN
- L-1.1 LANDSCAPE DETAILS
- L-1.2 LANDSCAPE DETAILS
- L-1.3 PHRAGMITES CONTROL PLAN
- L-2.0 LANDSCAPE SPECIFICATIONS
- L-2.1 LANDSCAPE SPECIFICATIONS
- T-1.0 TREE SURVEY PLAN

PHOTOMETRIC PLAN (BY OTHERS)

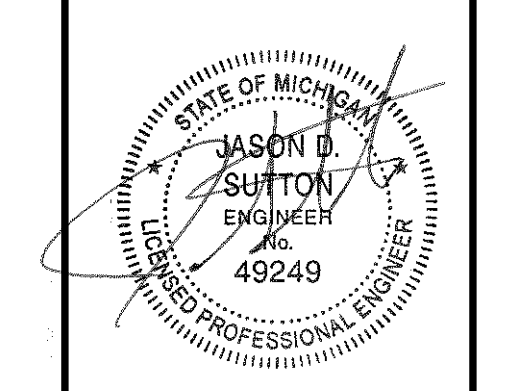
ARCHITECTURAL PLANS (BY OTHERS)

- CITY OF NOVI STANDARD DETAILS
- PAVING STANDARD DETAILS (2 SHEETS)
- STORM SEWER STANDARD DETAILS (2 SHEETS)

OAKLAND COUNTY STANDARD DETAILS

- SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

NO.	BY	CHK	DESCRIPTION	DATE
10	BLA	BK	PLANNING AND P&A SUBMITTAL	11-02-20
9	BA	BK	BUILDING DEPARTMENT REVISIONS	09-28-20
8	BA	BK	ARCHITECTURAL REVISIONS	07-22-20
7	BA	BK	GRADING REVISION	07-15-20
6	BKS	BK	FINAL CONSTRUCTION SET	06-24-20
5	JKS	JS	FINAL SITE PLAN	06-23-20
4	JKS	JS	ENLARGED PARKING AREA	01-17-20
3	JKS	JS	REVISIONS	01-17-20
2	BA	BK	DESCRIPTION	
1	BLA	BK	DATE	



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Troy, MI 48083-1872
t: 248.689.9090
f: 248.689.1044
www.peainc.com

DES.	JS	DN	BA	SUR	N/A	P/M	BK
	<p>JB DONALDSON 37610 HILLS TECH DRIVE FARMINGTON HILLS, MICHIGAN 48331</p> <p>COVER SHEET LINEAGE PARKING EXPANSION PART OF THE NW 1/4 OF SECTION 15, T1N, R1E, S8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN</p>						

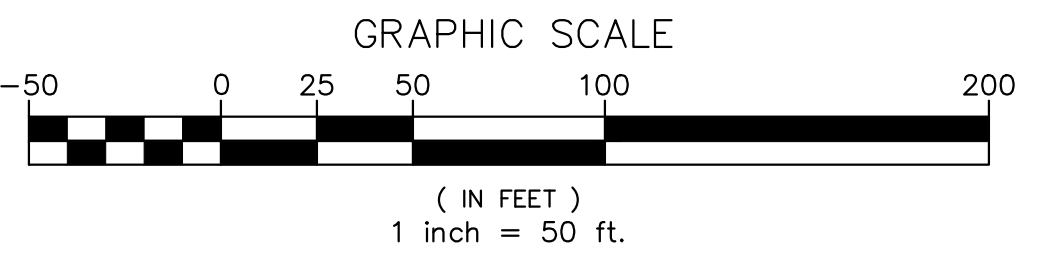
ORIGINAL ISSUE DATE:
JANUARY 10, 2020

PEA JOB NO. 2019-436

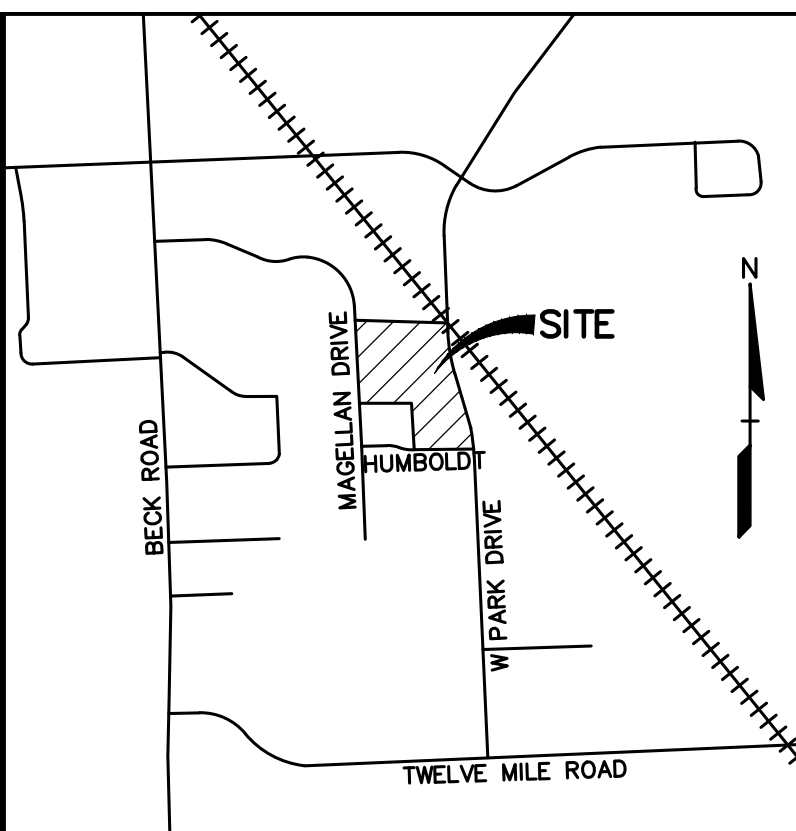
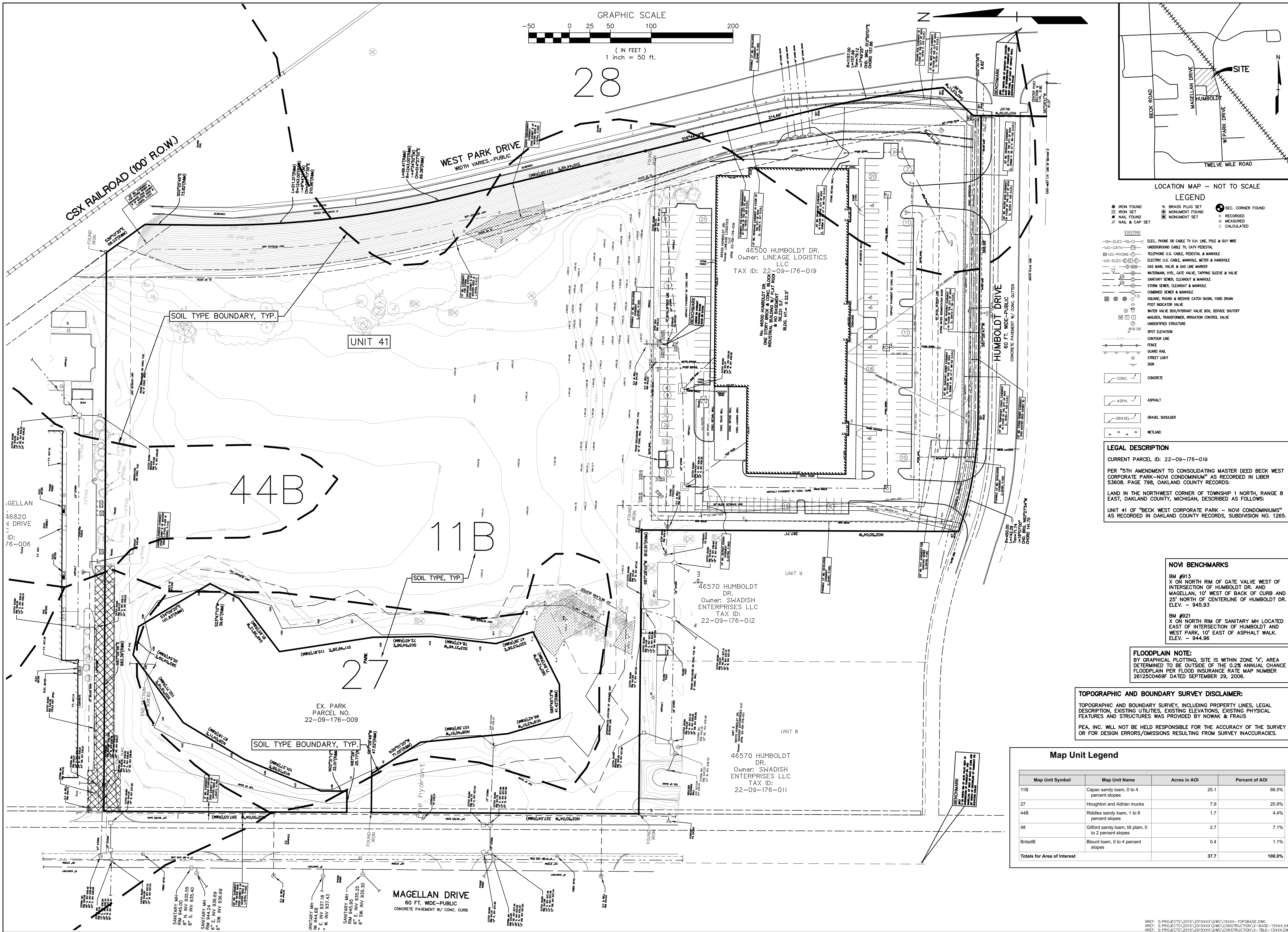
SCALE: N.T.S.

DRAWING NUMBER:
C-0.0

XREF: S:\PROJECTS\2019\2019XXXX\DWG\15XXXX-TOPOBASE.DWG
XREF: S:\PROJECTS\2019\2019XXXX\DWG\CONSTRUCTION-V-BASE-15XXXX.DWG
XREF: S:\PROJECTS\2019\2019XXXX\DWG\CONSTRUCTION-V-TBLX-15XXXX.DWG



28



LEGEND

● IRON FOUND ○ MONUMENT FOUND ⊕ SEC. CORNER FOUND
 ⊗ IRON SET ⊙ MONUMENT SET ⊕ RECORDED
 ⊗ NAIL FOUND ⊙ MEASURED
 ⊗ NAIL & CAP SET ⊙ CALCULATED

EXISTING

- OH-ELEC—W—ELEC. PHONE OR CABLE TV OH. LINE, POLE & GUY WIRE
- UG-CATV—UG-CATV UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-ELEC—TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-PHONE—ELECTRIC U.G. CABLE, MANHOLE, METER & MANHOLE
- UG-GAS—GAS MAIN VALVE & GAS LINE MARKER
- WATER—WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
- SEWER—SANITARY SEWER, CLEANOUT & MANHOLE
- STORM—STORM SEWER, CLEANOUT & MANHOLE
- COMBINED—COMBINED SEWER & MANHOLE
- SQUARE—SQUARE, ROUND & BENTHIE CATCH BASIN, YARD DRAIN
- POST—POST INDICATOR VALVE
- WATER VALVE—WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MTR—MTR, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED—UNIDENTIFIED STRUCTURE
- SPOT—SPOT ELEVATION
- CONTOUR—CONTOUR LINE
- FENCE—FENCE
- RAIL—RAIL
- STREET—STREET LIGHT
- SON—SON
- CONC.—CONCRETE
- ASPH.—ASPHALT
- GRAVEL—GRAVEL SHOULDER
- WETLAND—WETLAND

LEGAL DESCRIPTION

CURRENT PARCEL ID: 22-09-176-019

PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI CONDOMINIUM" AS RECORDED IN LIBER 53608, PAGE 798, OAKLAND COUNTY RECORDS:

LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUM" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.

NOVI BENCHMARKS

BM #913
 X ON NORTH RIM OF GATE VALVE WEST OF INTERSECTION OF HUMBOLDT DR. AND MAGELLAN, 10' WEST OF BACK OF CURB AND 25' NORTH OF CENTERLINE OF HUMBOLDT DR. ELEV. - 945.93

BM #921
 X ON NORTH RIM OF SANITARY MH LOCATED EAST OF INTERSECTION OF HUMBOLDT DR. AND WEST PARK, 10' EAST OF ASPHALT WALK. ELEV. - 944.96

FLOODPLAIN NOTE:

BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE "X", AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26125C0469F DATED SEPTEMBER 29, 2006.

TOPOGRAPHIC AND BOUNDARY SURVEY DISCLAIMER:

TOPOGRAPHIC AND BOUNDARY SURVEY, INCLUDING PROPERTY LINES, LEGAL DESCRIPTION, EXISTING UTILITIES, EXISTING ELEVATIONS, EXISTING PHYSICAL FEATURES AND STRUCTURES WAS PROVIDED BY NOWAK & FRAUS

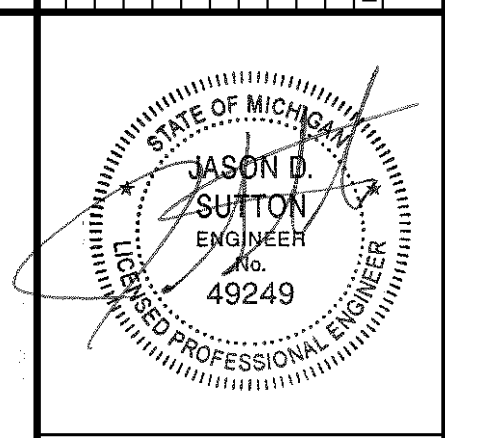
PEA, INC. WILL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THE SURVEY OR FOR DESIGN ERRORS/OMISSIONS RESULTING FROM SURVEY INACCURACIES.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11B	Capac sandy loam, 0 to 4 percent slopes	25.1	66.5%
27	Houghton and Adrian mucks	7.9	20.9%
44B	Riddles sandy loam, 1 to 6 percent slopes	1.7	4.4%
48	Gifford sandy loam, fill plain, 0 to 2 percent slopes	2.7	7.1%
BntadB	Blount loam, 0 to 4 percent slopes	0.4	1.1%
Totals for Area of Interest		37.7	100.0%

REVISIONS

NO.	DATE	DESCRIPTION
1	01-11-20	ISSUED FOR BIDS
2	01-11-20	ENLARGED PARKING AREA
3	04-03-20	FINAL SITE PLAN
4	04-03-20	SEC. RESUBMITTAL
5	06-29-20	SEC. RESUBMITTAL
6	07-15-20	GRAPHING REVISION
7	07-15-20	ARCHITECTURAL REVISIONS
8	09-26-20	BUILDING DEPARTMENT REVISIONS
9	09-26-20	PLANNING AND ZONING DEPARTMENT REVISIONS



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CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERAL ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR THE SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THAT THE REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND CONSTRUCTION CONTRACTOR FURTHER AGREES AND CONSTRUCTION CONTRACTOR SHALL HOLD DESIGN PROFESSIONAL ENGINEER AND HOLD DESIGN PROFESSIONAL ENGINEER ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL ENGINEER.

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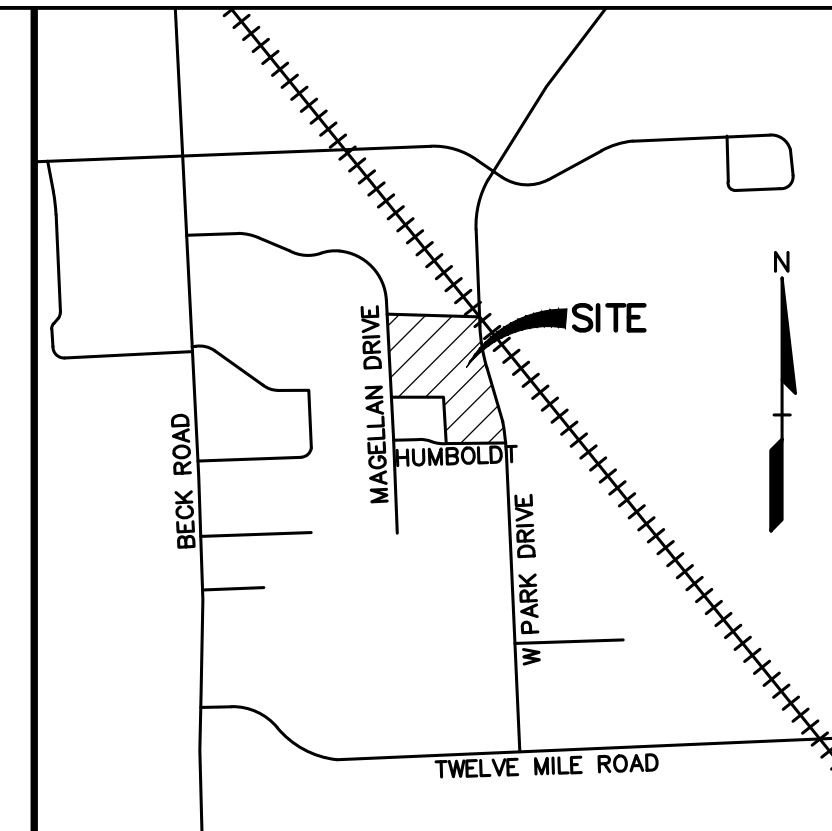
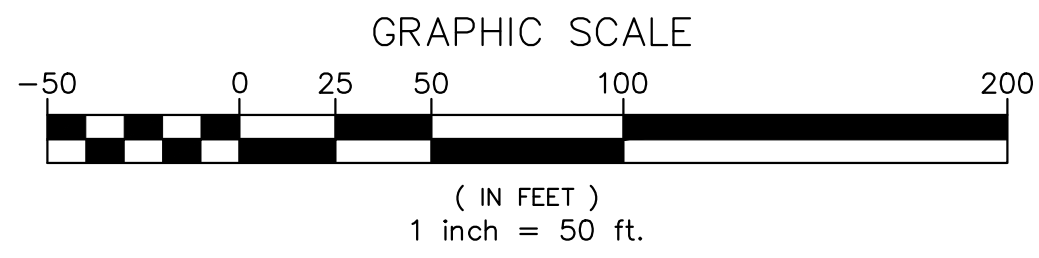
JB DONALDSON
 37670 HILLS EICH DRIVE
 FARMINGTON HILLS, MICHIGAN 48331

OVERALL EXISTING CONDITIONS LINEAGE PARKING EXPANSION
 PART OF THE NW 1/4 OF SECTION 9, T. 1N., R. 8E., CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

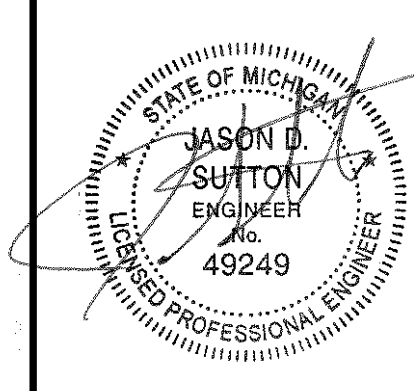
DES. JS DN. BA SUR. N/A P.M. BK

ORIGINAL ISSUE DATE: JANUARY 10, 2020
 PEA JOB NO. 2019-436
 SCALE: 1" = 50'
 DRAWING NUMBER: C-1.0

REF: S:\PROJECTS\2019\2019XXXX\DWG\CONSTRUCTION\TOPBASE.DWG
 REF: S:\PROJECTS\2019\2019XXXX\DWG\CONSTRUCTION\BASE-15XXX.DWG
 REF: S:\PROJECTS\2019\2019XXXX\DWG\CONSTRUCTION\TBK-15XXX.DWG



NO.	DATE	REVISIONS
1	10-26-20	PLANNING AND SUBMITTAL
2	10-26-20	BUILDING DEPARTMENT REVISIONS
3	10-26-20	ARCHITECTURAL REVISIONS
4	10-26-20	GRADING REVISIONS
5	10-26-20	SEC. RESUBMITTAL
6	10-26-20	SEC. RESUBMITTAL
7	10-26-20	SEC. RESUBMITTAL
8	10-26-20	SEC. RESUBMITTAL
9	10-26-20	FINAL SITE PLAN
10	10-26-20	FINAL SITE PLAN
11	10-26-20	ENLARGED PARKING AREA
12	10-26-20	ISSUED FOR BIDS
13	10-26-20	ISSUED FOR BIDS
14	10-26-20	ISSUED FOR BIDS
15	10-26-20	ISSUED FOR BIDS
16	10-26-20	ISSUED FOR BIDS
17	10-26-20	ISSUED FOR BIDS
18	10-26-20	ISSUED FOR BIDS
19	10-26-20	ISSUED FOR BIDS
20	10-26-20	ISSUED FOR BIDS
21	10-26-20	ISSUED FOR BIDS
22	10-26-20	ISSUED FOR BIDS
23	10-26-20	ISSUED FOR BIDS
24	10-26-20	ISSUED FOR BIDS
25	10-26-20	ISSUED FOR BIDS
26	10-26-20	ISSUED FOR BIDS
27	10-26-20	ISSUED FOR BIDS
28	10-26-20	ISSUED FOR BIDS
29	10-26-20	ISSUED FOR BIDS
30	10-26-20	ISSUED FOR BIDS



CAUTION!
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CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR SHALL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THAT THIS REQUIREMENT SHALL BE TO NORMAL WORKING HOURS AND CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS AND HOLD DESIGN PROFESSIONAL LIABILITY FROM ANY AND ALL LIABILITY CLAIMS OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

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37610 HILLS TECH DRIVE
FARMINGTON HILLS, MICHIGAN 48331
OVERALL SITE PLAN
LINEAGE PARKING EXPANSION
PART OF THE NW 1/4 OF SECTION 9, T. 1N, R. 8E,
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

DES.	JS	DN	BA	SUR.	NJA	P.M.	BK
VARIANCES AND WAIVERS:							
1. A VARIANCE IS REQUESTED FROM 4.19-1.J TO ALLOW MORE THAN TWO ACCESSORY STRUCTURES TO BE ERRECTED ON THE PROPERTY.							
2. A SECTION 9 WAIVER TO DEVIATE FROM FACADE ORDINANCE SECTION 5.15 IS REQUESTED.							

ORIGINAL ISSUE DATE:
JANUARY 10, 2020
PEA JOB NO. 2019-436
SCALE: 1" = 50'
DRAWING NUMBER:
C-3.0

LEGEND

● IRON FOUND
○ BRASS PLUG SET
⊗ MONUMENT FOUND
⊗ MONUMENT SET
⊗ RECORDED
⊗ MEASURED
⊗ CALCULATED

EXISTING

- OH-ELEC-M-C: ELEC. PHONE OR CABLE TV O.H. LINE, POLE & RUY WIRE
- UG-CATV: UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE: TELEPHONE U.G. CABLE, PRESSURE & MANHOLE
- UG-ELEC: ELECTRIC U.G. CABLE, MANHOLE, WATER & MANHOLE
- GAS MAN, VALVE & GAS LINE MARKER
- WATERMAN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- CHIMNEY SEWER & MANHOLE
- SQUARE, ROUND & REDDIE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- GUARD RAIL
- STREET LIGHT
- SIGN

PROPOSED

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

LEGAL DESCRIPTION
CURRENT PARCEL ID: 22-09-176-019
PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI, CONDOMINIUM" AS RECORDED IN LIBER 53608, PAGE 798, OAKLAND COUNTY RECORDS:
LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:
UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUMS" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.

SITE DATA TABLE:

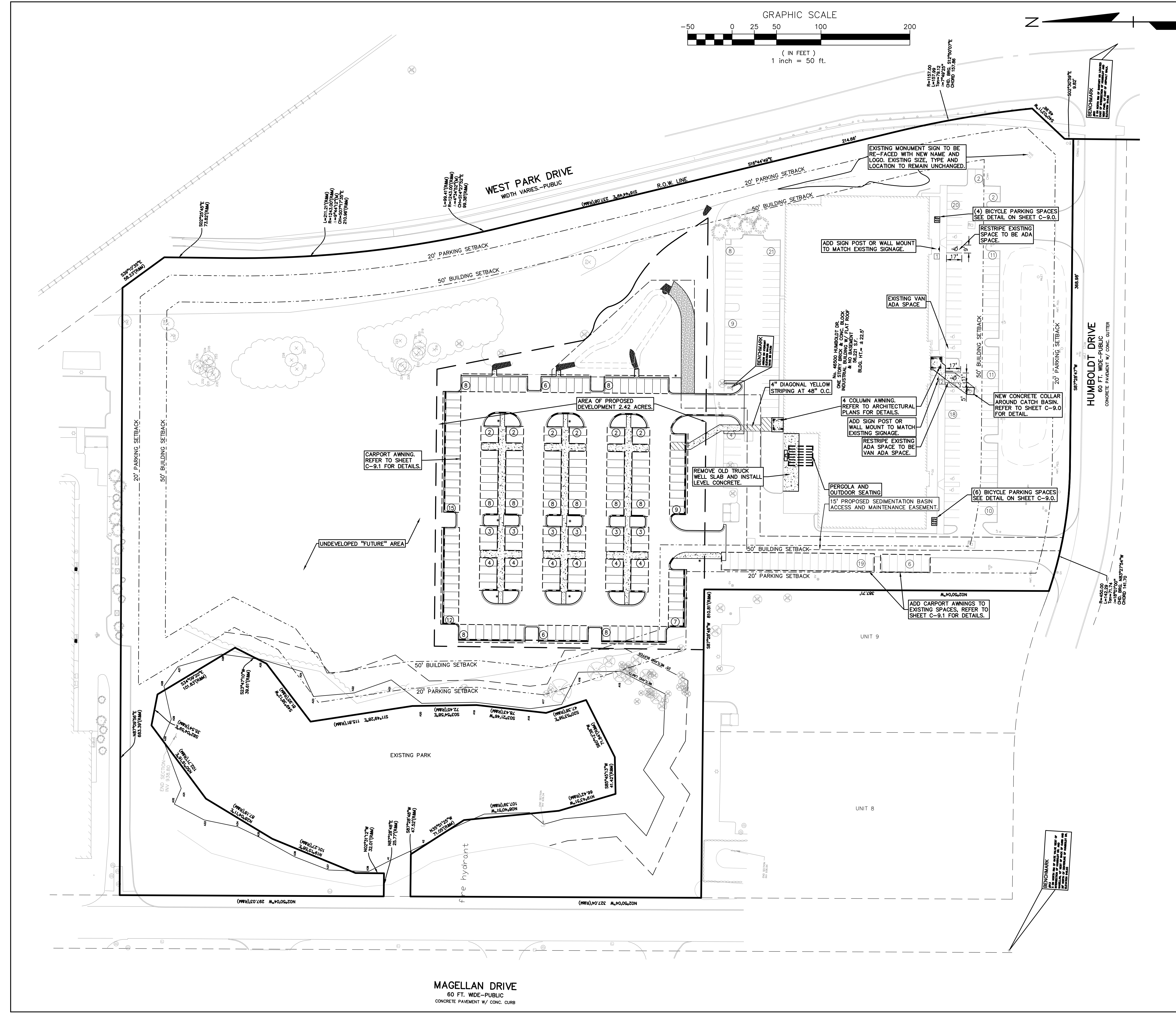
SITE AREA: 14.27 ACRES (621,600 SQ.FT.) NET AND GROSS
PROPOSED AREA OF DEVELOPMENT: 2.42 AC. (105,415 SF)
ZONING: I-2, GENERAL INDUSTRIAL
EXISTING BUILDING AREA: 56,221 SF (GROSS)
HEIGHT: 22.5 FT (1 STORY)

PARKING CALCULATIONS:
INDUSTRIAL = 1 SPACE PER 700 S.F.
TOTAL INDUSTRIAL PARKING REQUIRED = 56,221 SF/700 x 80% = 65 SPACES
OR
5 SP + 1SP/1.5 EML. x 300 EML. = 205 SPACES
TOTAL REQUIRED PARKING = 205 SPACES (INCL. 7 BARRIER FREE SPACES)
TOTAL EXISTING PARKING = 149 SPACES (INC. 7 BARRIER FREE)
SPACES TO BE REMOVED = 6 SPACES
ADDITIONAL PROPOSED PARKING SPACES = 189 SPACES
TOTAL PROVIDED PARKING SPACES = 189 + 149 - 6 = 332 (INC. 8 B.F.)
BICYCLE PARKING REQUIRED = 5% REQUIRED PARKING x 205 SPACES = 10 SPACES
TOTAL BICYCLE PARKING PROVIDED = 10 SPACES

VARIANCES AND WAIVERS:

SIGN LEGEND:

'BARRIER FREE PARKING' SIGN (R7-B) [Symbol] 1 EA.
'VAN ACCESSIBLE' SIGN (R7-8P) [Symbol] 1 EA.
REFER TO SHEET C-9.0 FOR SIGN DETAILS



MAGELLAN DRIVE
60 FT. WDE-PUBLIC
CONCRETE PAVEMENT W/ CONC. CURB

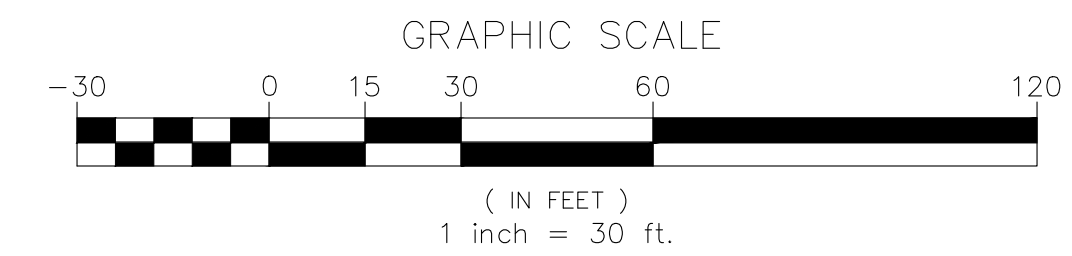
XREF: S:\PROJECTS\2019\20190401\DWG\1500X-10P\BASE.DWG
XREF: S:\PROJECTS\2019\20190401\DWG\CONSTRUCTION-V-BASE-1500X.DWG
XREF: S:\PROJECTS\2019\20190401\DWG\CONSTRUCTION-V-TBLK-1500X.DWG

GENERAL NOTES:
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

- ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
- REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
- REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS.
- ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
- THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR MUST CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
- ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY FOR ALL CITY INSPECTION FEES.
- ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
- ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADEING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL

- DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, CITY OF NOVI AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND/OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.
- IN AREAS WHERE NEW PAVEMENTS ARE BEING CONSTRUCTED, THE TOPSOIL AND SOIL CONTAINING ORGANIC MATTER SHALL BE REMOVED PRIOR TO PAVEMENT CONSTRUCTION.
- PROVIDE EXPANSION JOINTS AND JOINT SEALANT AT TWO "END-OF-RADIUS" LOCATIONS (OPPOSITE SIDES AT EACH LONG END) OF CONCRETE CURB ISLANDS.
- REFER TO ARCHITECTURAL PLANS FOR DETAILS OF FROST SLAB AT EXTERIOR BUILDING DOORS.
- CONSTRUCTION TRAFFIC SHOULD BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE INITIAL LIFT THICKNESS COULD BE INCREASED AND PLACEMENT OF THE FINAL LIFT COULD BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM.
- PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOOT REVIEW CHECKLISTS AS SUMMARIZED BELOW:
 - CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
 - SUPERPAVE MIX DESIGN CHECKLIST (FORM 1862)
 - MARSHALL MIX DESIGN CHECKLIST (FORM 1849)
- CONCRETE PAVEMENT JOINTING - UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION:
 - WHERE PROPOSED CONCRETE ABUTS A STRUCTURE PROVIDE A MINIMUM 1/2" EXPANSION JOINT WITH SEALANT.

- CONCRETE CURBING JOINTING - UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION:
 - WHERE PROPOSED CONCRETE ABUTS A STRUCTURE PROVIDE A MINIMUM 1/2" EXPANSION JOINT WITH SEALANT.
 - WHERE PROPOSED CONCRETE ABUTS EXISTING OR PROPOSED SIDEWALK PROVIDE A MINIMUM 1/2" EXPANSION JOINT WITH SEALANT.
 - WHERE PROPOSED CONCRETE ABUTS EXISTING CURBING PROVIDE A MINIMUM 1/2" EXPANSION JOINT WITH SEALANT.
 - IN BETWEEN POURS OF PROPOSED CONCRETE CURBING (CONSTRUCTION JOINT)
 - CARRY THE REBAR CONTINUOUSLY BETWEEN POURS.
 - IF THE REBAR IS NOT LONG ENOUGH TO CARRY CONTINUOUSLY THEN TIE TWO PIECES OF REBAR PER THE LATEST MDOOT SPECIFICATIONS.
 - CONTROL JOINTS SHALL BE PLACED A MAXIMUM 10' CENTER TO CENTER AND AT ALL RADIUS RETURNS.
- CONCRETE CURBING JOINTING - UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION:
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LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊙ IRON SET	⊙ MONUMENT FOUND	⊙ RECORDED
⊙ NAIL FOUND	⊙ MONUMENT SET	⊙ MEASURED
⊙ NAIL & CAP SET		⊙ CALCULATED

EXISTING

- OH-ELEC-4" ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UG-CATV UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-ELEC-ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- ⊙ GAS GAS MAIN, VALVE & GAS LINE MARKER
- ⊙ WATER WATER MAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
- ⊙ SANITARY SANITARY SEWER, CLEANOUT & MANHOLE
- ⊙ STORM STORM SEWER, CLEANOUT & MANHOLE
- ⊙ COMBINED COMBINED SEWER & MANHOLE
- ⊙ SQUARE SQUARE IRON & REINFORCING CATCH BASIN, YARD DRAIN
- ⊙ POST POST INDICATOR VALVE
- ⊙ WATER WATER VALVE, BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- ⊙ MALBOX MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- ⊙ UNIDENTIFIED UNIDENTIFIED STRUCTURE
- ⊙ SPOT SPOT ELEVATION
- ⊙ CONTOUR CONTOUR LINE
- ⊙ FENCE FENCE
- ⊙ GUARD GUARD RAIL
- ⊙ STREET STREET LIGHT
- ⊙ SIGN SIGN

PROPOSED

- ⊙ SEC. CORNER FOUND
- ⊙ RECORDED
- ⊙ MEASURED
- ⊙ CALCULATED
- ⊙ STD. HEAVY R.O.W. DUTY ONLY
- ⊙ STD. HEAVY DEEP DUTY ONLY
- ⊙ STD. HEAVY DUTY STRENGTH

LEGAL DESCRIPTION

CURRENT PARCEL ID: 22--09--176--019

PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI CONDOMINIUM" AS RECORDED IN LIBER 53608, PAGE 79B, OAKLAND COUNTY RECORDS:

LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUMS" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.

NO.	DATE	BY	DESCRIPTION
1	11-02-20	BA	ISSUED FOR BIDS
2	01-12-20	BA	ISSUED FOR BIDS
3	04-22-20	BA	ISSUED FOR BIDS
4	08-03-20	BA	ISSUED FOR BIDS
5	08-03-20	BA	ISSUED FOR BIDS
6	08-03-20	BA	ISSUED FOR BIDS
7	07-15-20	BA	ISSUED FOR BIDS
8	07-15-20	BA	ISSUED FOR BIDS
9	07-15-20	BA	ISSUED FOR BIDS
10	05-26-20	BA	ISSUED FOR BIDS

CAUTION!!

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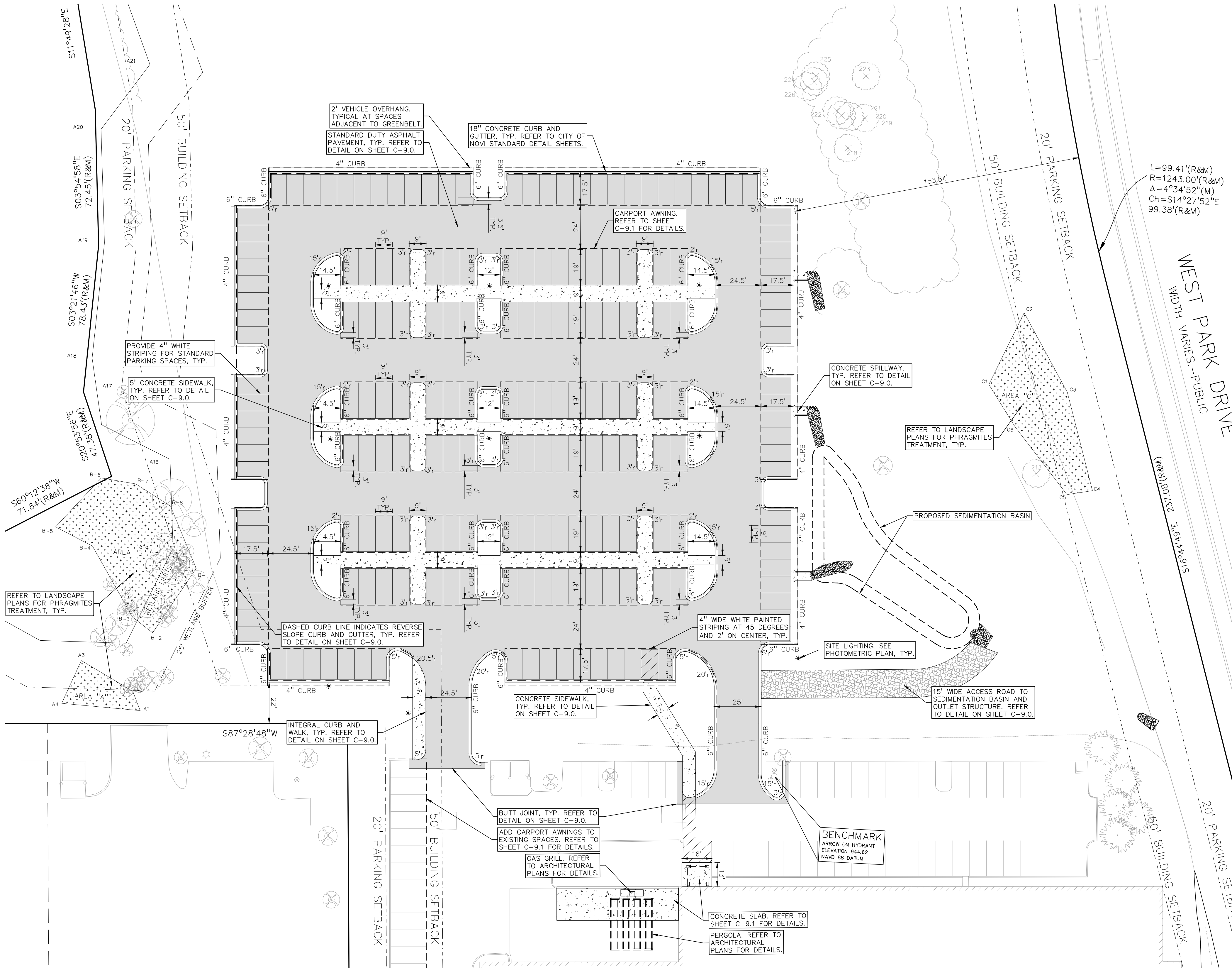
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CONTRACTOR FOR FURTHER JUDICIAL AND CONSTRUCTION MAKE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND CONSTRUCTION WORK SHALL BE HELD DESIGN PROFESSIONAL ENGINEER AND HOLD DESIGN PROFESSIONAL ENGINEER LICENSE IN THE STATE OF MICHIGAN OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL ENGINEER.

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$$R=1243.00'(R\&M)$$

$$\Delta=4^{\circ}34'52''(M)$$

$$CH=S14^{\circ}27'52''E$$

$$99.38'(R\&M)$$

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DIMENSION PLAN
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DES. JS DN. BA SUR. N/A P.M. BK

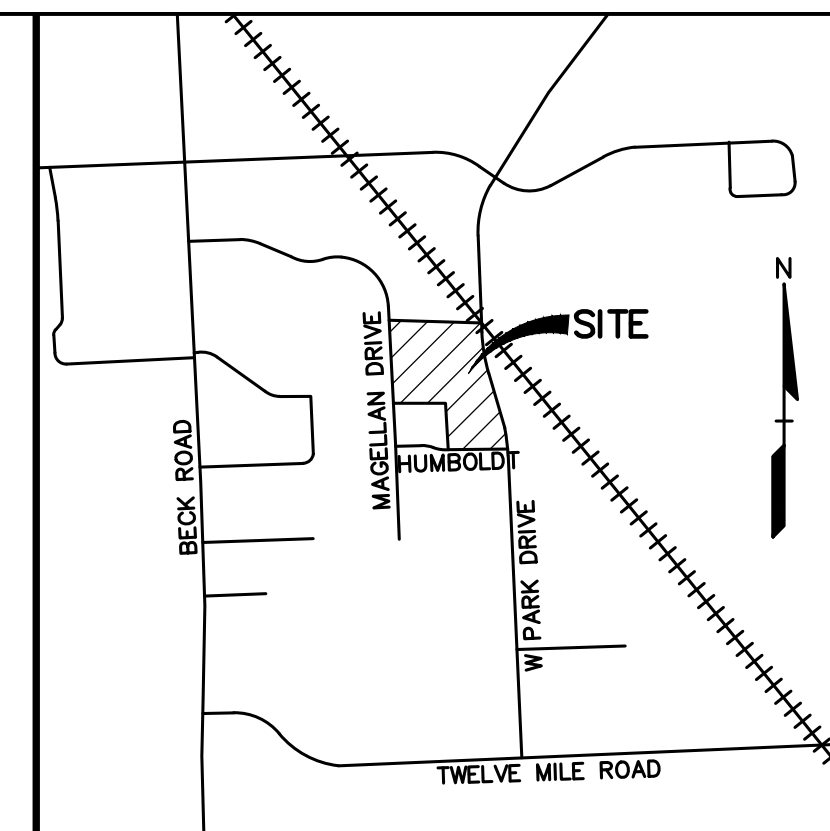
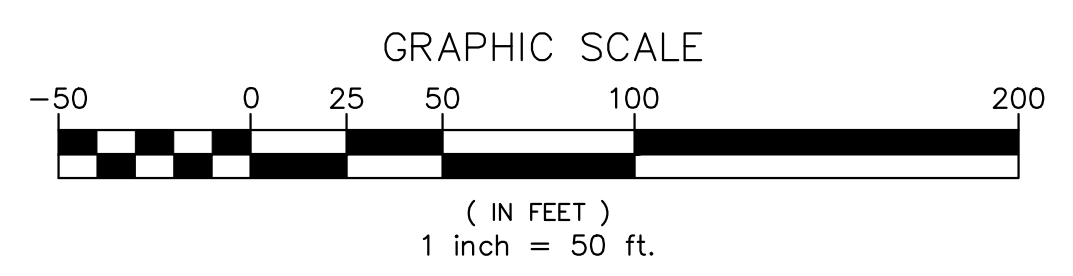
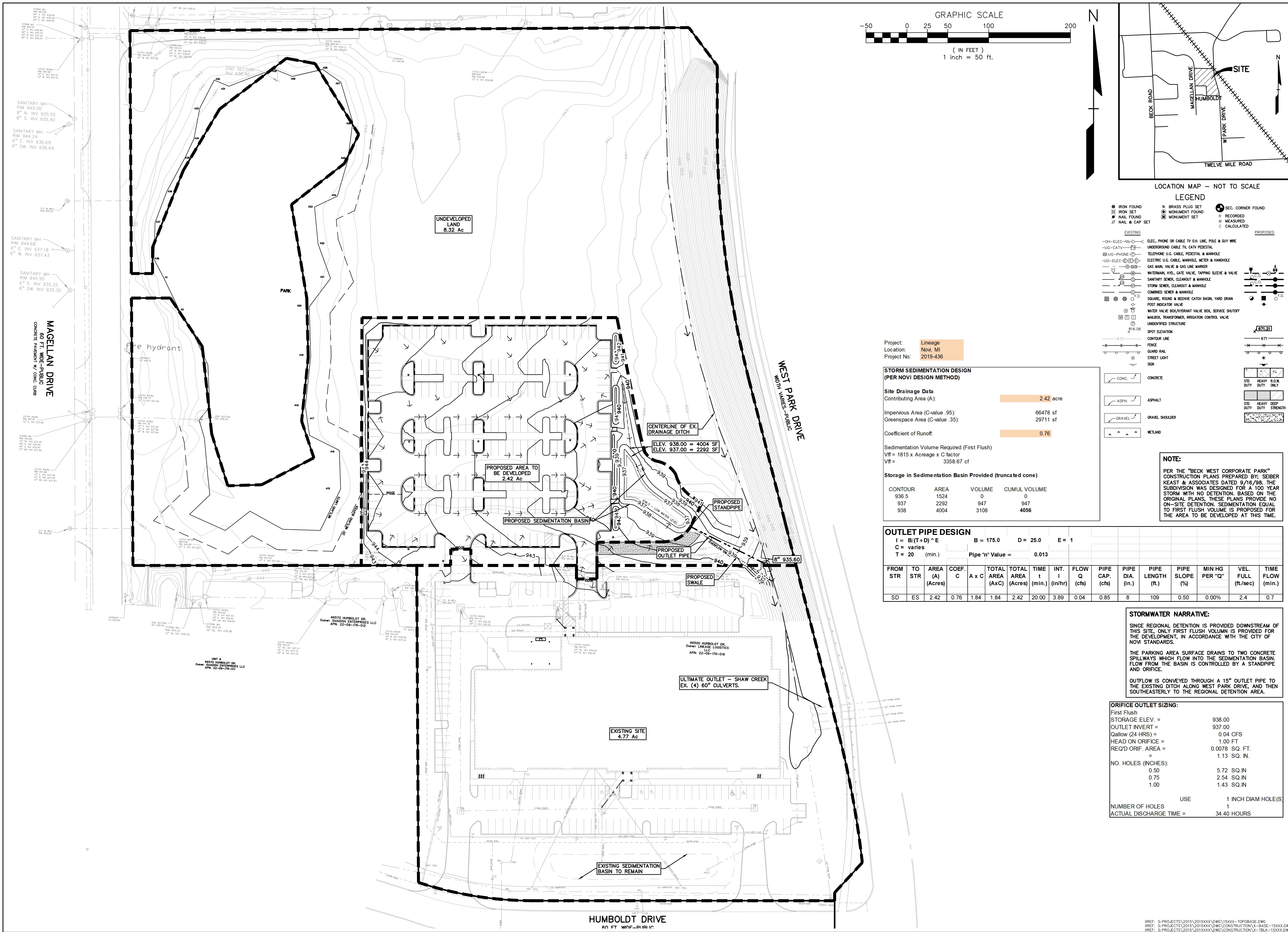
ORIGINAL ISSUE DATE:
JANUARY 10, 2020

PEA JOB NO. 2019-436

SCALE: 1" = 30'

DRAWING NUMBER:
C-3.1

XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION\V-BASE-15XXXX.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION\V-TBLK-15XXXX.DWG



LEGEND

● IRON FOUND	⊗ MONUMENT FOUND	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT SET	⊙ RECORDED
⊗ NAIL FOUND	⊗ NAIL & CAP SET	⊙ MEASURED
		⊙ CALCULATED

EXISTING

- OH-ELEC- Pole & Guy Wire
- UG-CATV- Underground Cable TV, CATV Pedestal
- UG-PHONE- Telephone U.G. Cable, Pedestal & Manhole
- UG-ELEC- Electric U.G. Cable, Manhole, Meter & Handhole
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- WATER- Watermain, Hyd., Gate Valve, Tapping Sleeve & Valve
- SEWER- Sanitary Sewer, Cleanout & Manhole
- STORM- Storm Sewer, Cleanout & Manhole
- COMB- Combined Sewer & Manhole
- S&M- Square, Round & Beddie Catch Basin, Yard Drain
- PIV- Post Indicator Valve
- WV- Water Valve, Box/Hydrant Valve, Box, Service Shutoff
- MTR- Malbox, Transformer, Irrigation Control Valve
- UNID- Unidentified Structure
- SPOT- Spot Elevation
- CONC- Concrete
- ASPH- Asphalt
- GRAV- Gravel Shoulder
- WETL- Wetland

PROPOSED

- OH-ELEC- Pole & Guy Wire
- UG-CATV- Underground Cable TV, CATV Pedestal
- UG-PHONE- Telephone U.G. Cable, Pedestal & Manhole
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- CONC- Concrete
- ASPH- Asphalt
- GRAV- Gravel Shoulder
- WETL- Wetland

Project: Lineage
 Location: Novi, MI
 Project No: 2019-436

STORM SEDIMENTATION DESIGN (PER NOVI DESIGN METHOD)

Site Drainage Data

Contributing Area (A):	2.42 acre
Impervious Area (C-value .95):	66478 sf
Greenspace Area (C-value .35):	29711 sf
Coefficient of Runoff:	0.76

Sedimentation Volume Required (First Flush)
 $V_{ff} = 1815 \times \text{Acres} \times C \text{ factor}$
 $V_{ff} = 3358.67 \text{ cf}$

Storage in Sedimentation Basin Provided (truncated cone)

CONTOUR	AREA	VOLUME	CUMUL VOLUME
936.5	1524	0	0
937	2292	947	947
938	4004	3108	4056

OUTLET PIPE DESIGN

$I = B / (T + D) \wedge E$ $B = 175.0$ $D = 25.0$ $E = 1$
 $C = \text{varies}$
 $T = 20$ (min.) Pipe "n" Value = 0.013

FROM STR	TO STR	AREA (A)	COEF. C	A x C	TOTAL AREA (AxC)	TOTAL AREA (Acres)	TIME t (min.)	INT. I (in/hr)	FLOW Q (cfs)	PIPE CAP. (cfs)	PIPE DIA. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (%)	MIN HG PER "Q"	VEL. FULL (ft/sec)	TIME FLOW (min.)
SD	ES	2.42	0.76	1.84	1.84	2.42	20.00	3.89	0.04	0.85	8	109	0.50	0.00%	2.4	0.7

STORMWATER NARRATIVE:

SINCE REGIONAL DETENTION IS PROVIDED DOWNSTREAM OF THIS SITE, ONLY FIRST FLUSH VOLUME IS PROVIDED FOR THE DEVELOPMENT, IN ACCORDANCE WITH THE CITY OF NOVI STANDARDS.

THE PARKING AREA SURFACE DRAINS TO TWO CONCRETE SPILLWAYS WHICH FLOW INTO THE SEDIMENTATION BASIN. FLOW FROM THE BASIN IS CONTROLLED BY A STANDPIPE AND ORIFICE.

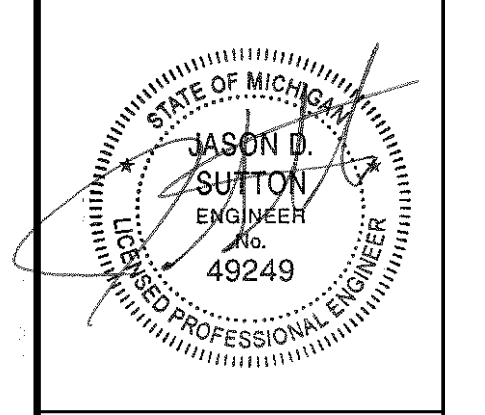
OUTFLOW IS CONVEYED THROUGH A 15" OUTLET PIPE TO THE EXISTING DITCH ALONG WEST PARK DRIVE, AND THEN SOUTHEASTERLY TO THE REGIONAL DETENTION AREA.

ORIFICE OUTLET SIZING:

First Flush	
STORAGE ELEV. =	938.00
OUTLET INVERT =	937.00
Qallow (24 HRS) =	0.04 CFS
HEAD ON ORIFICE =	1.00 FT
REQD ORIF. AREA =	0.0078 SQ. FT.
=	1.13 SQ. IN.
NO. HOLES (INCHES):	
0.50	5.72 SQ. IN.
0.75	2.54 SQ. IN.
1.00	1.43 SQ. IN.
USE	1 INCH DIAM HOLE(S)
NUMBER OF HOLES	1
ACTUAL DISCHARGE TIME =	34.40 HOURS

REVISIONS

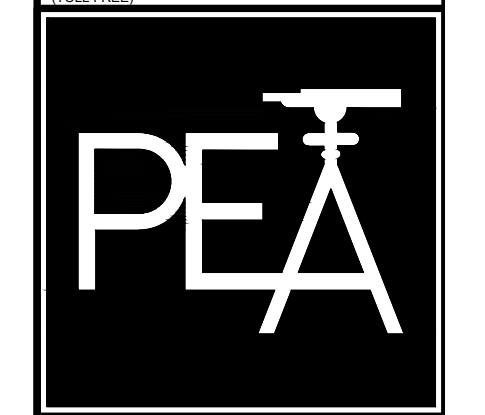
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1	05-26-20	PLANNING AND PRELIMINARY
2	07-15-20	ARCHITECTURAL REVISIONS
3	07-15-20	GRAPHIC REVISION
4	08-29-20	SEC. RESUBMITTAL
5	08-29-20	SEC. RESUBMITTAL
6	08-29-20	FINAL SITE PLAN
7	08-29-20	ENLARGED PARKING AREA
8	01-14-21	ISSUED FOR BIDS
9	01-14-21	DATE



CAUTION!
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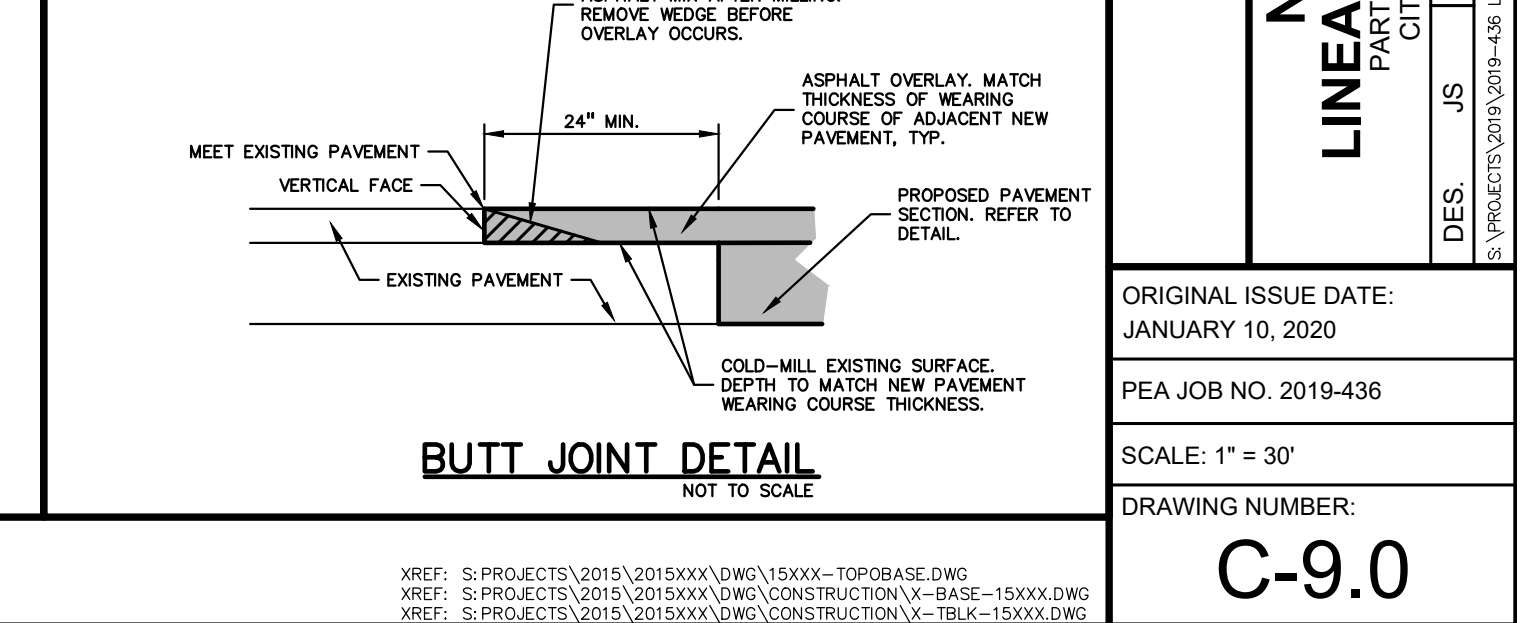
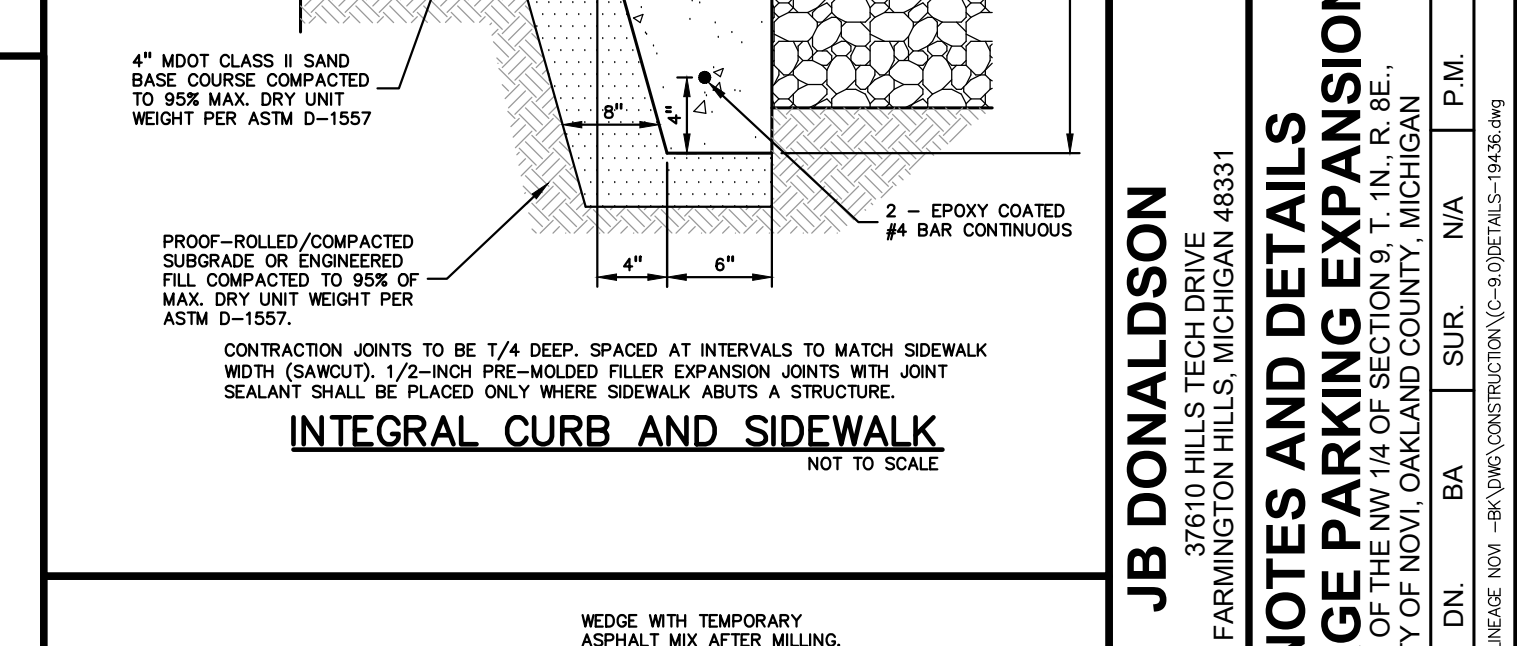
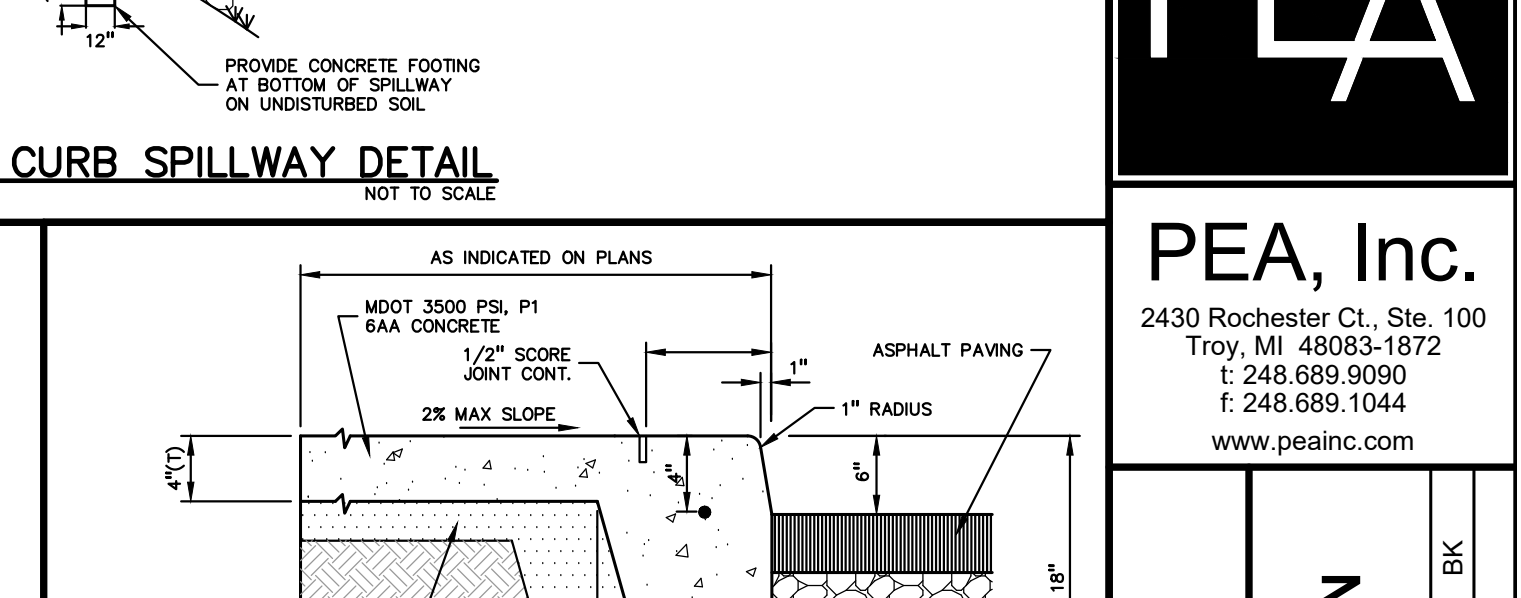
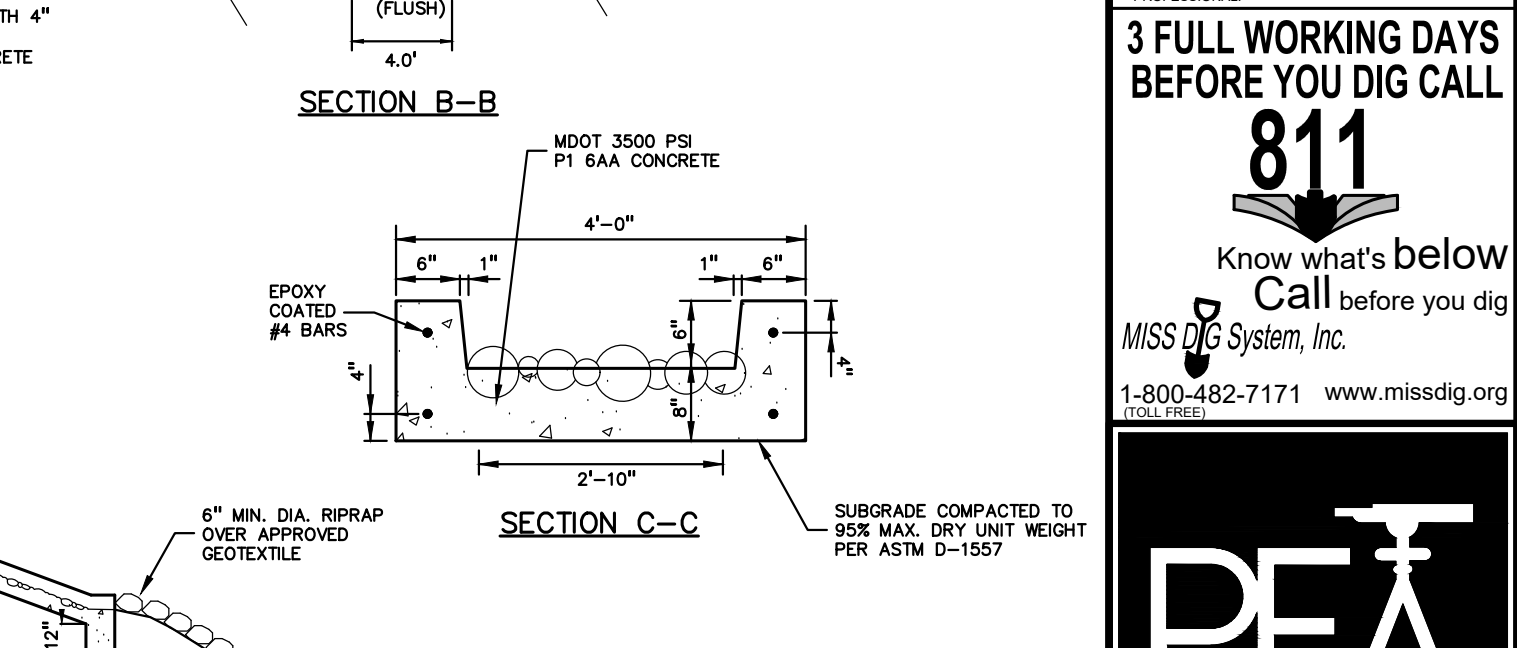
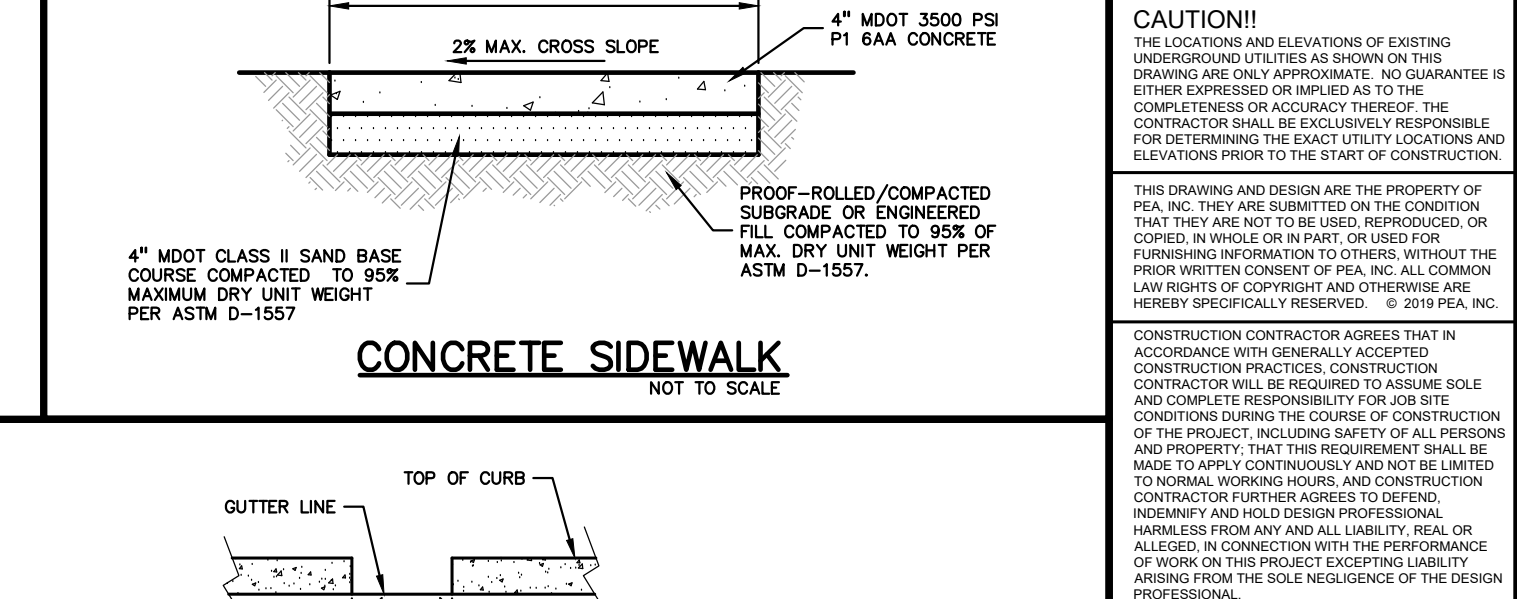
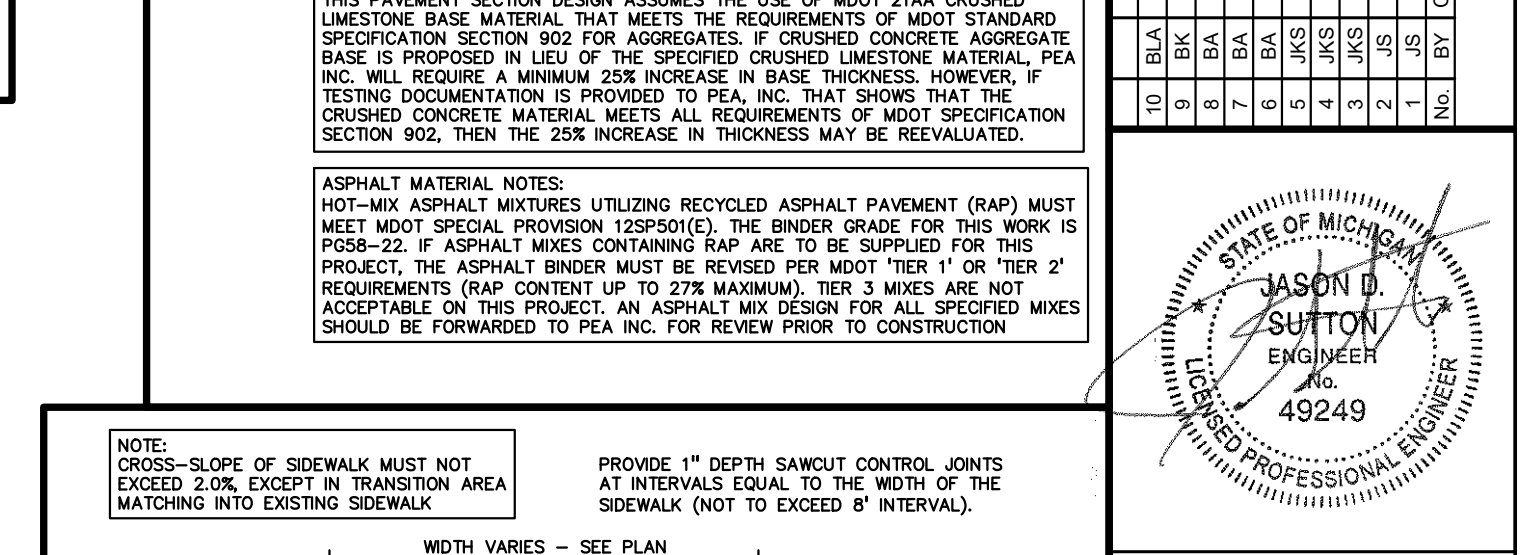
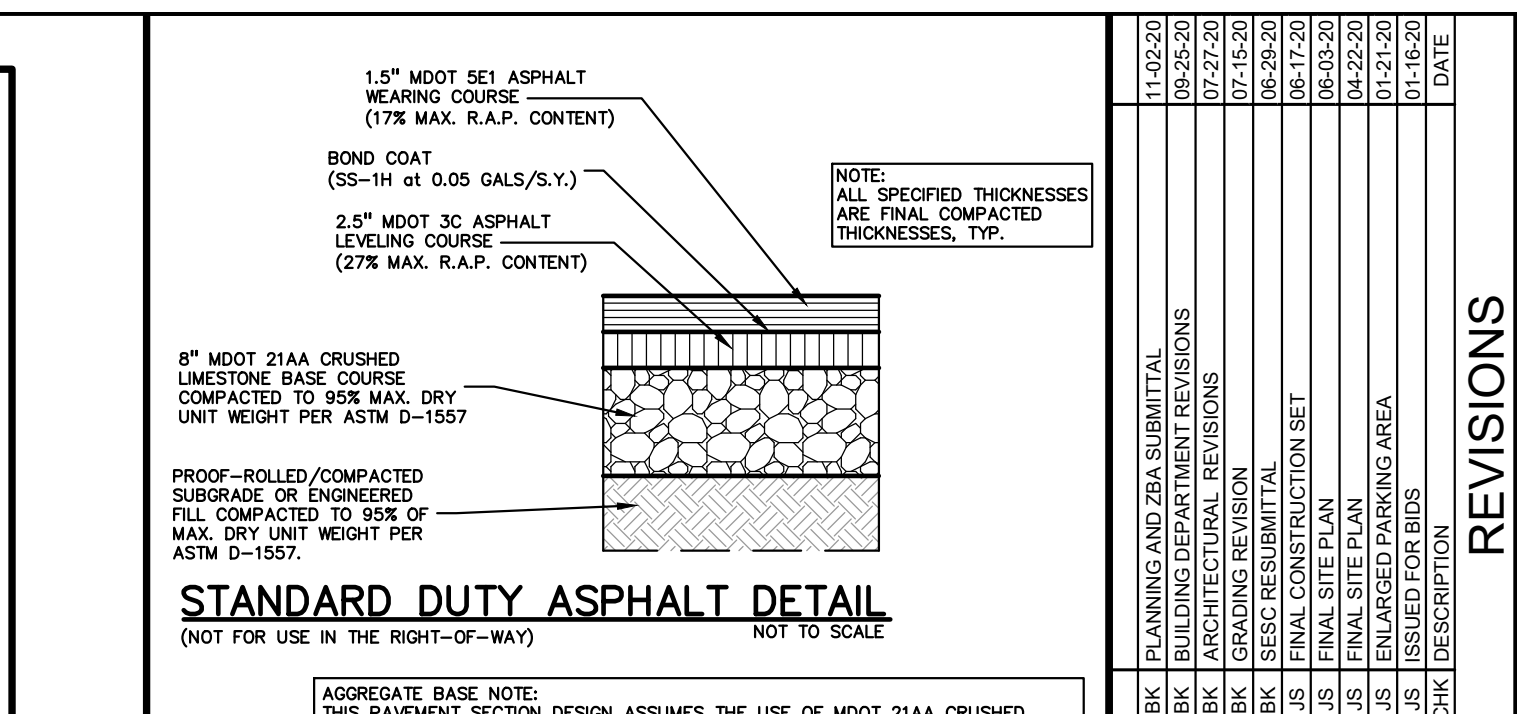
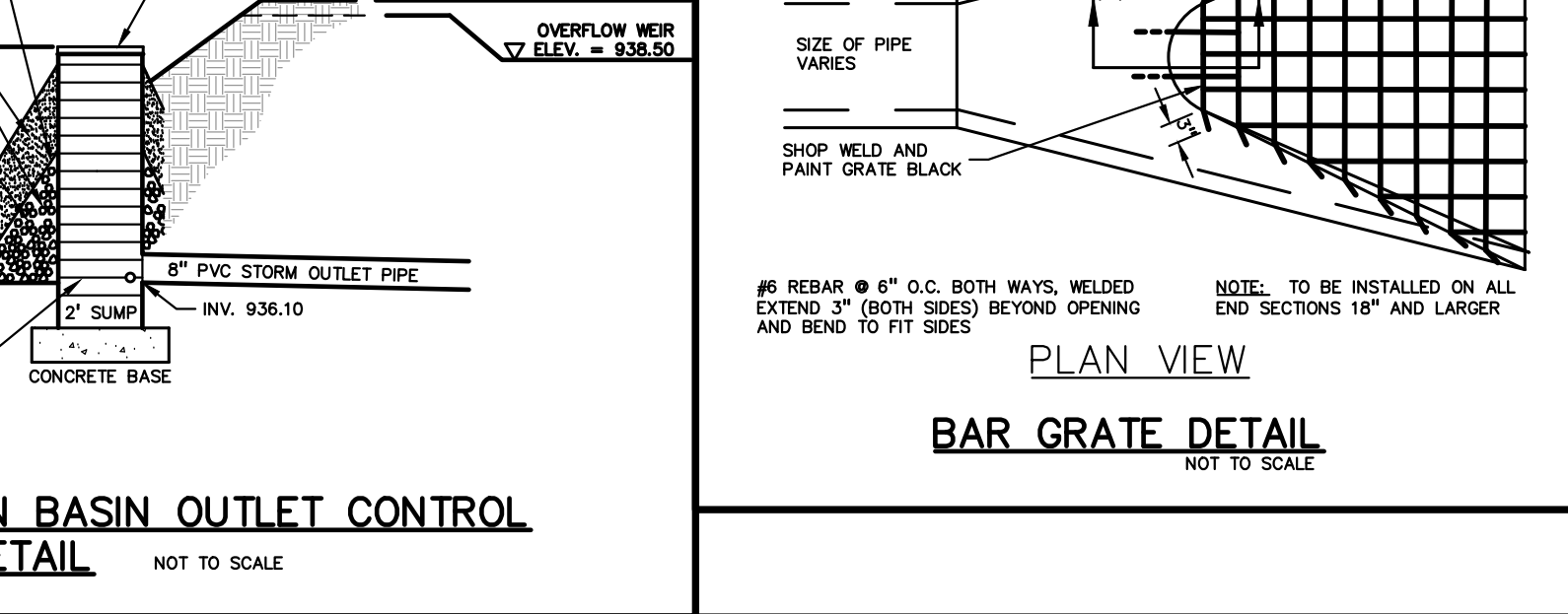
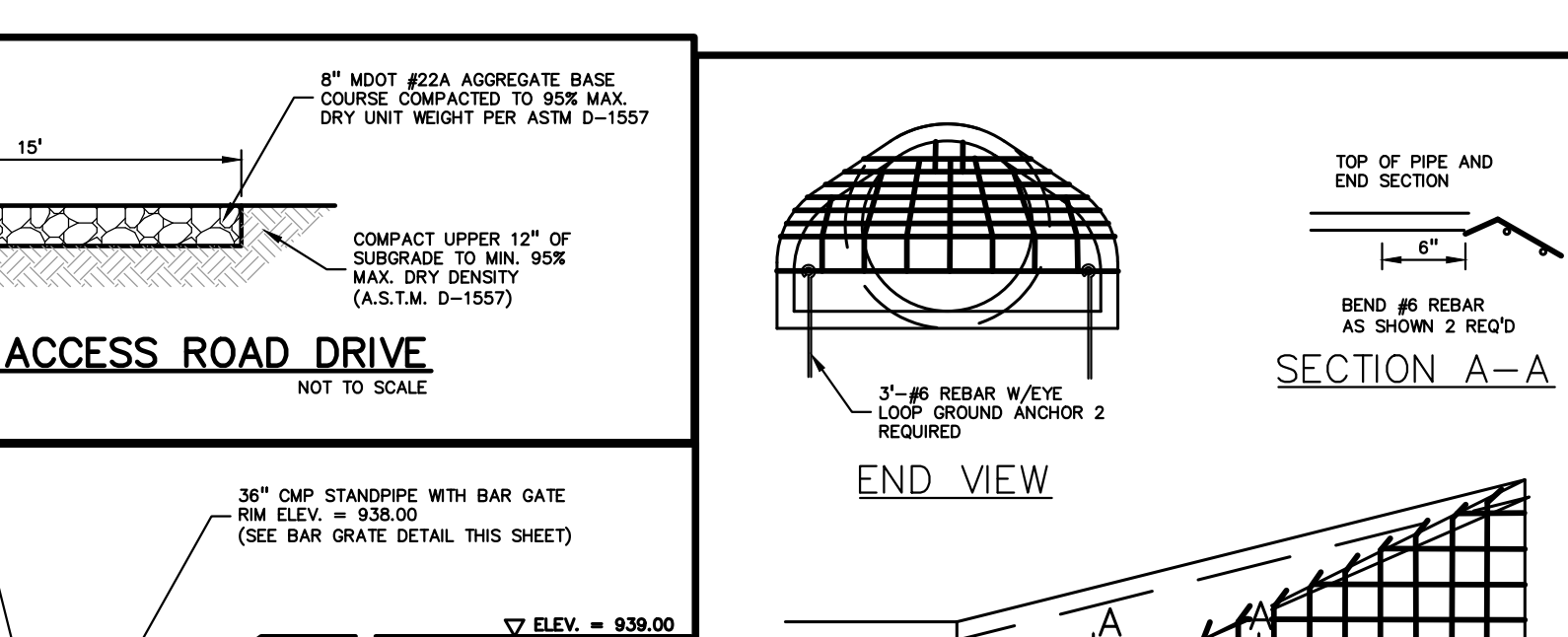
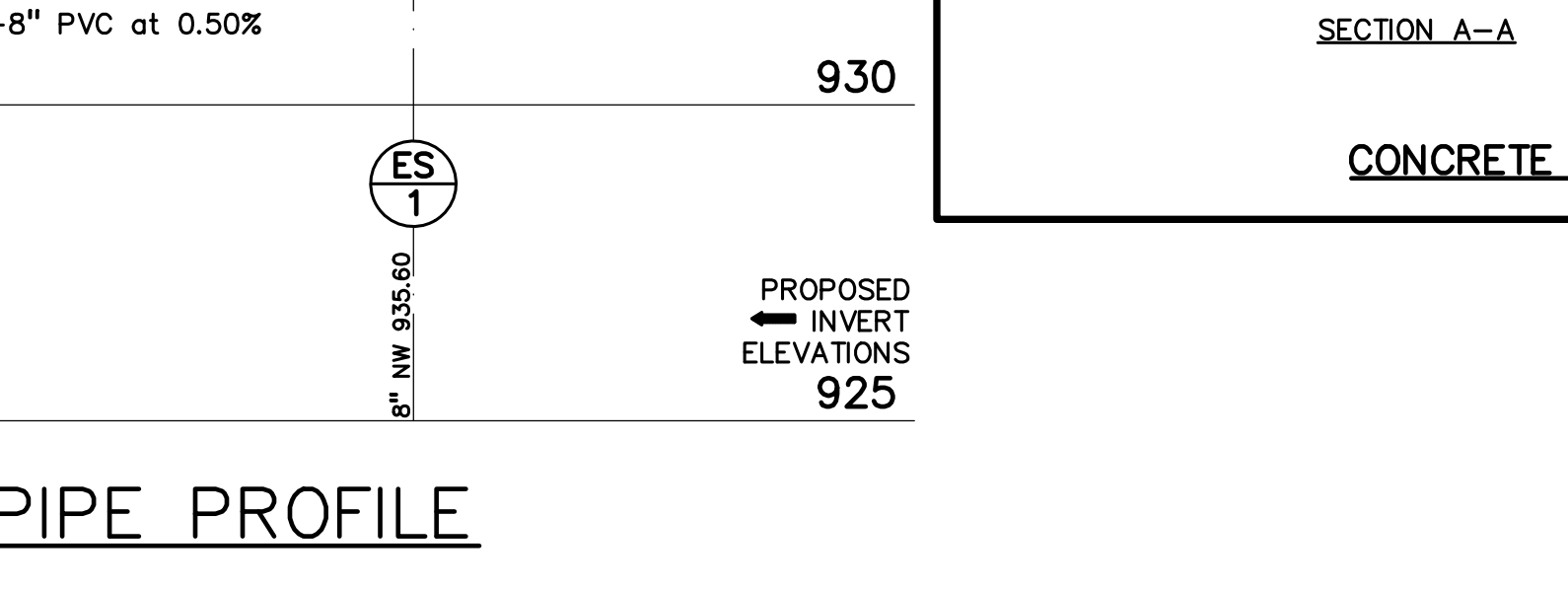
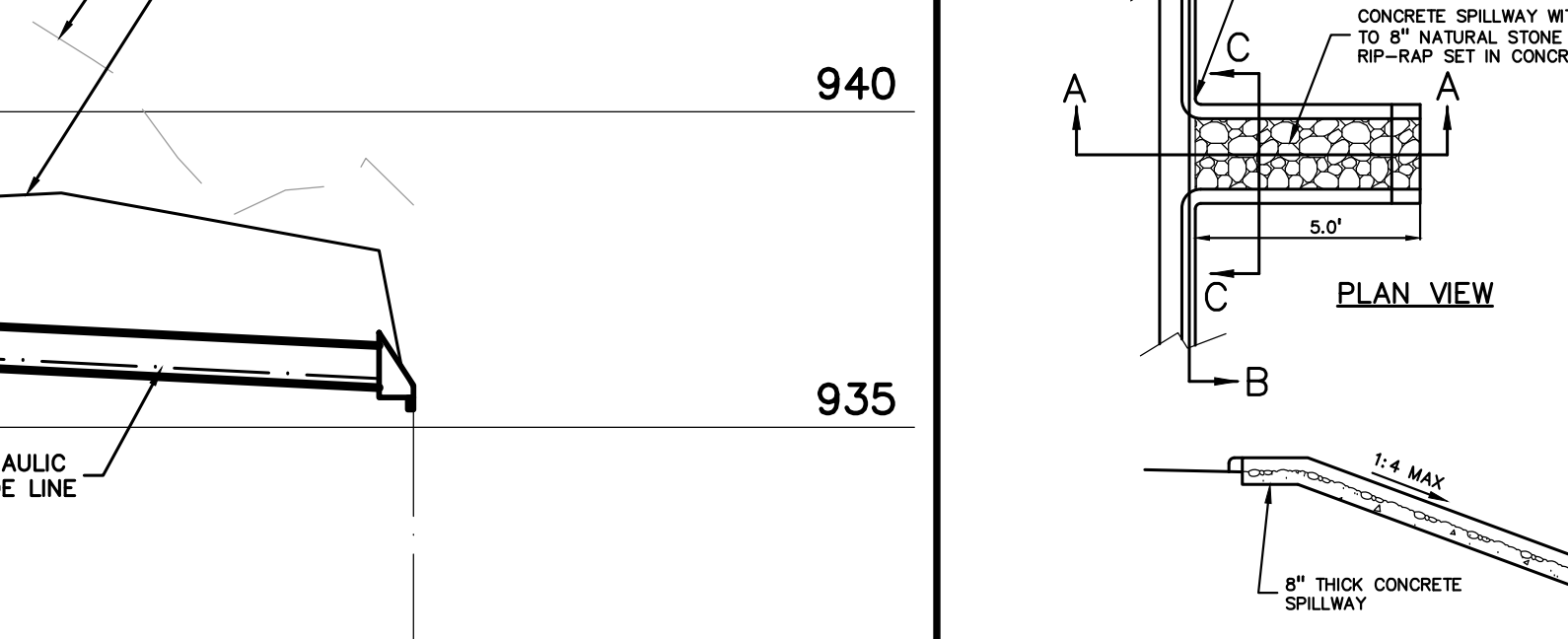
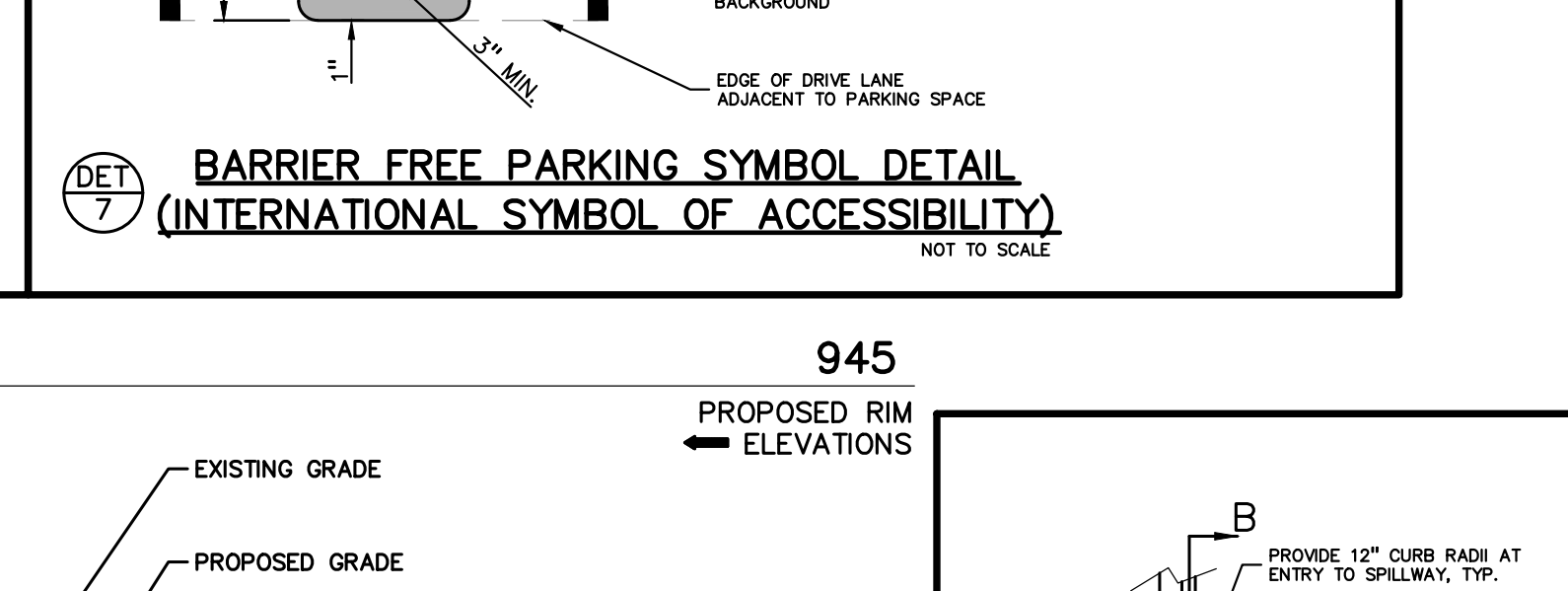
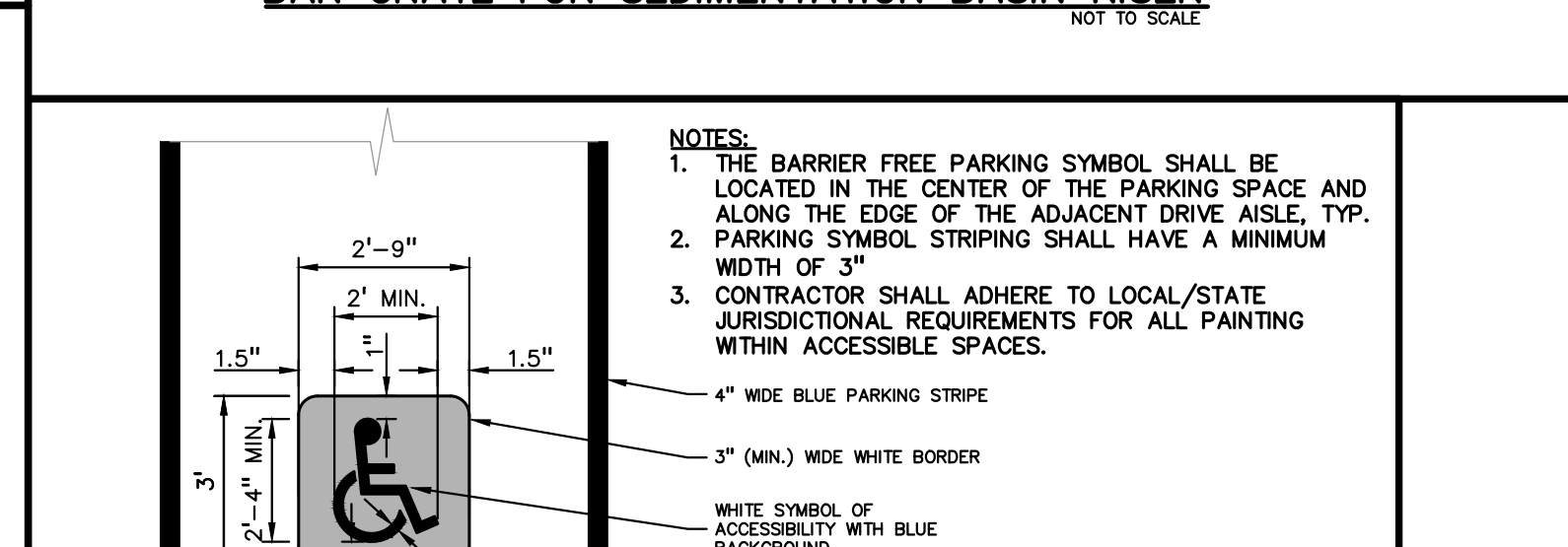
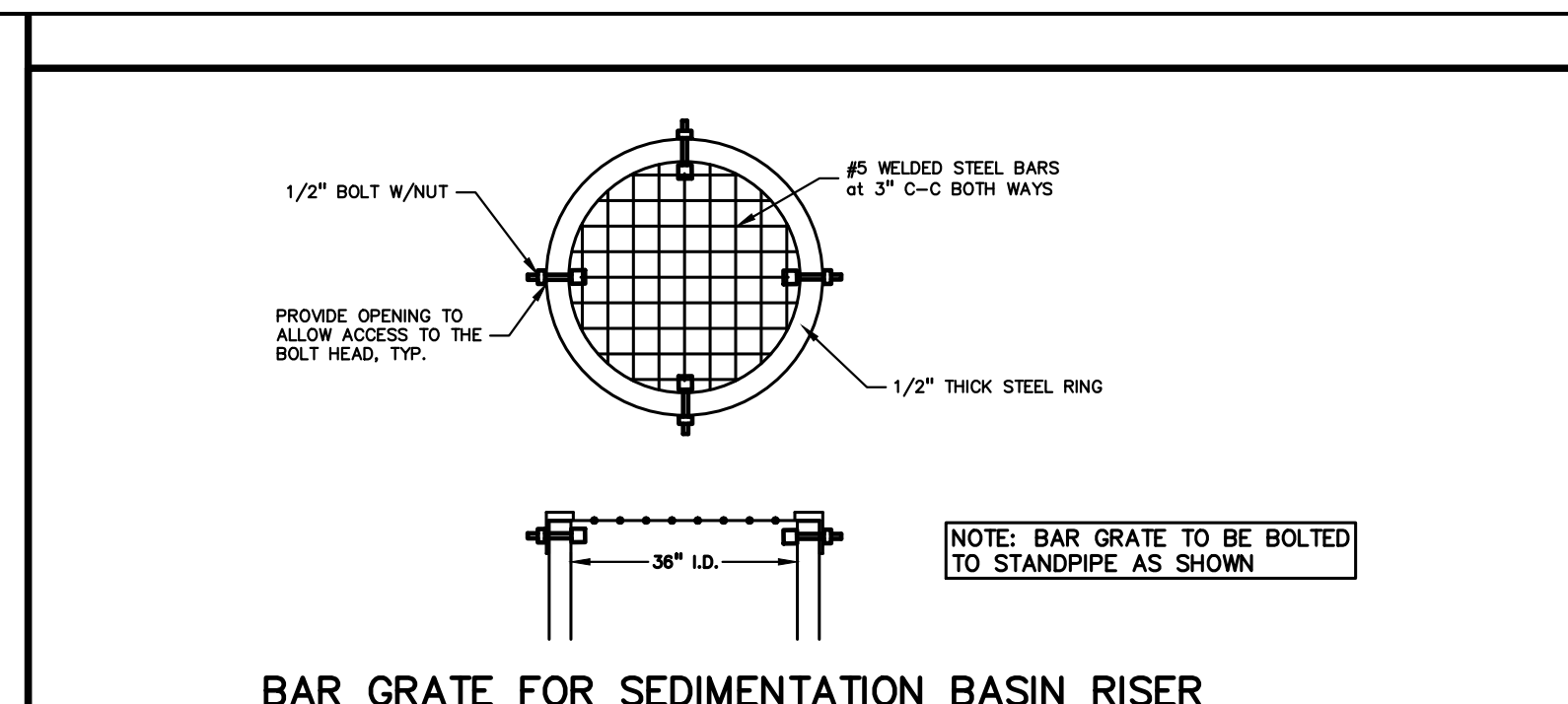
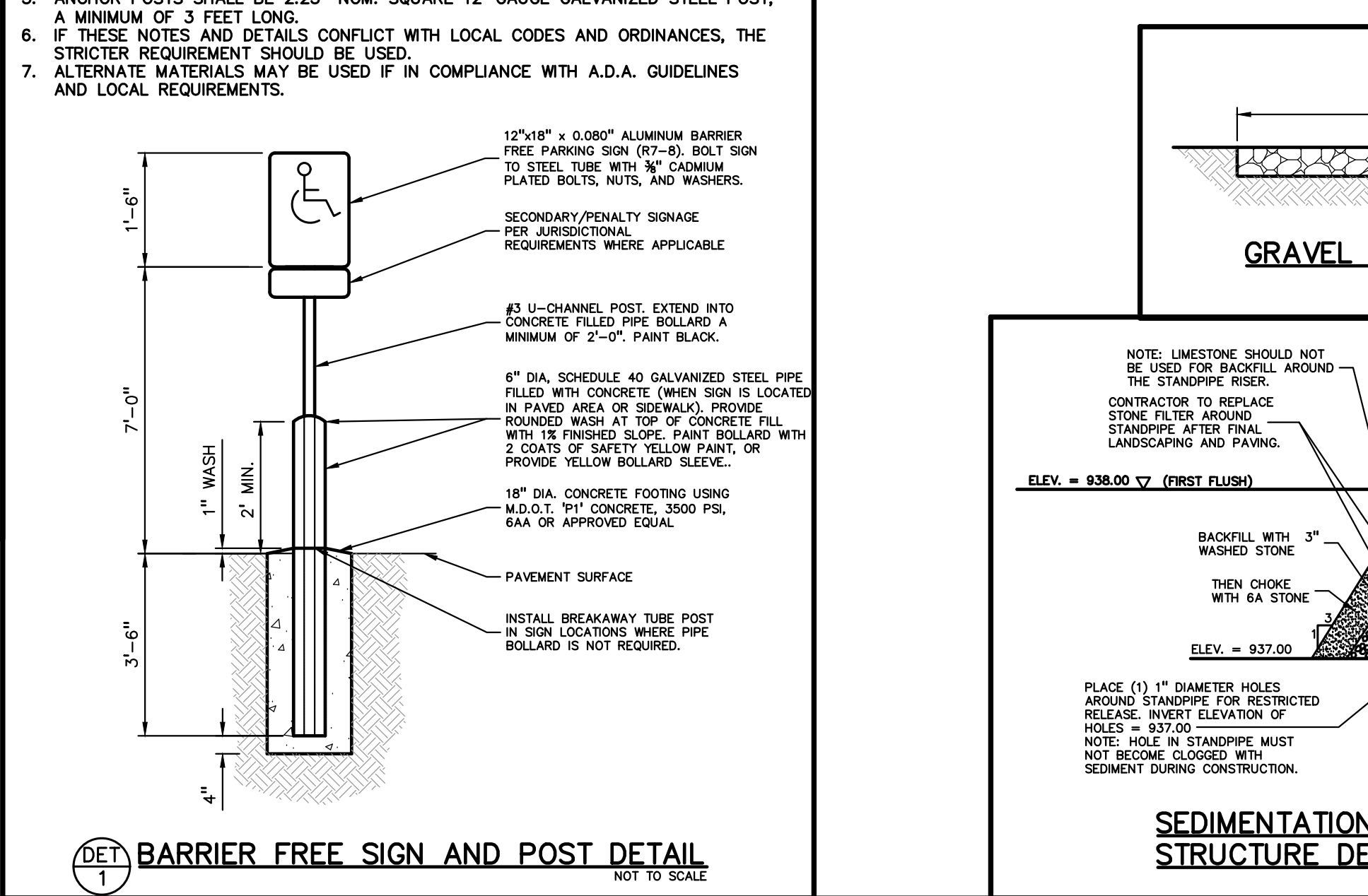
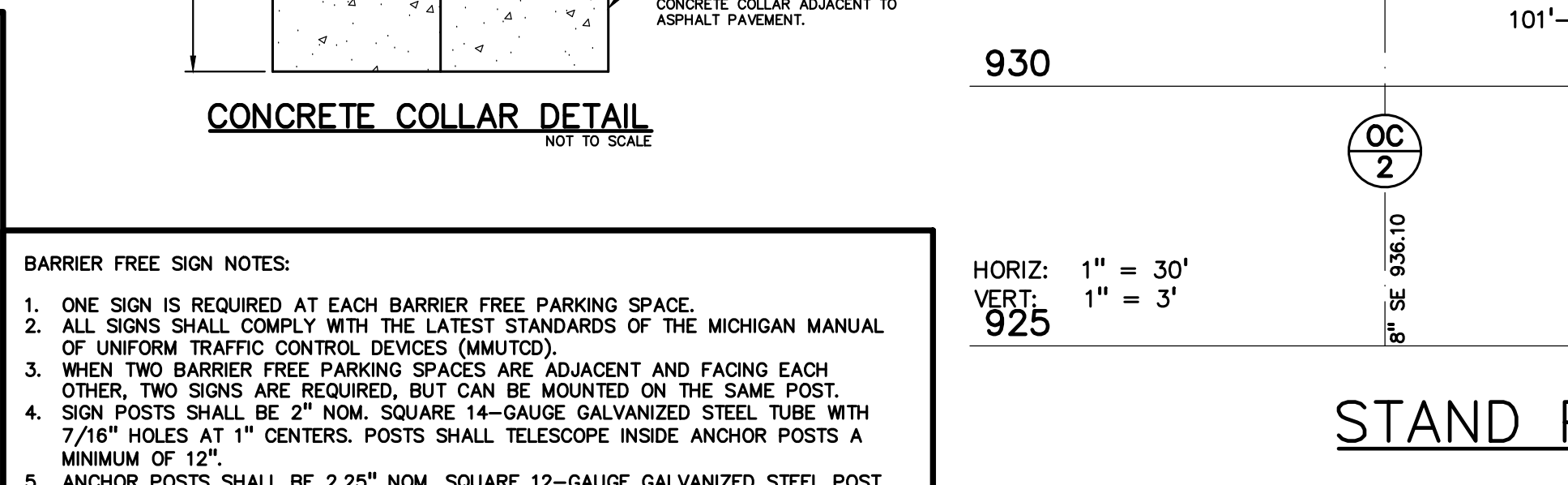
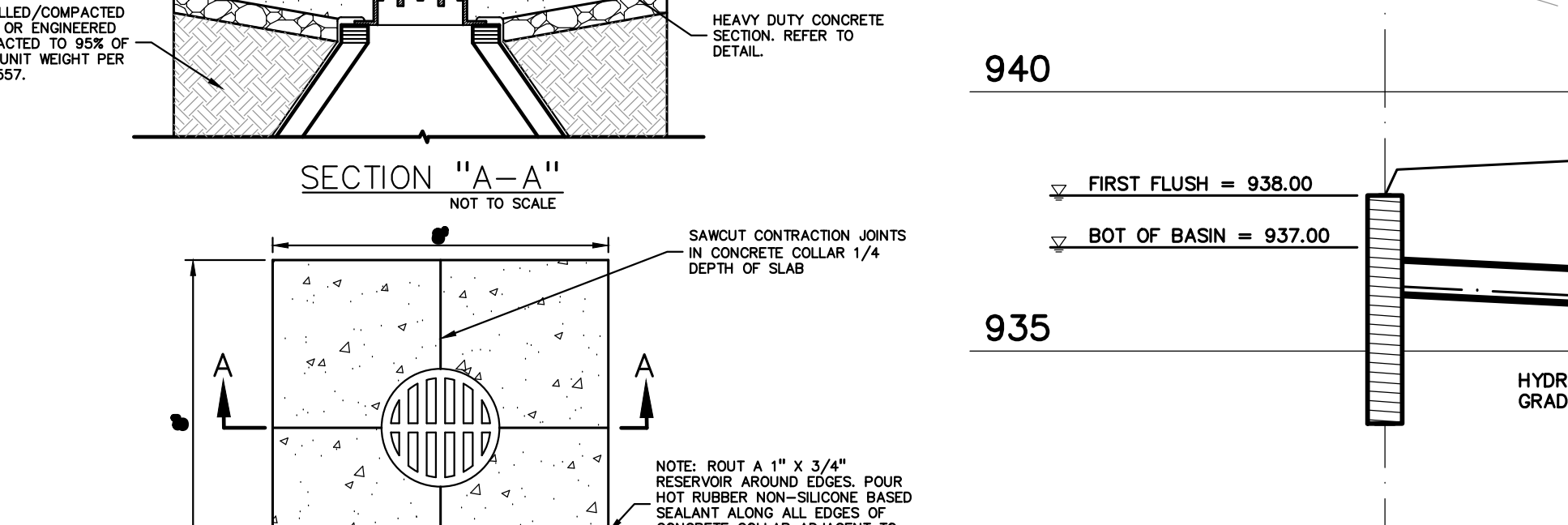
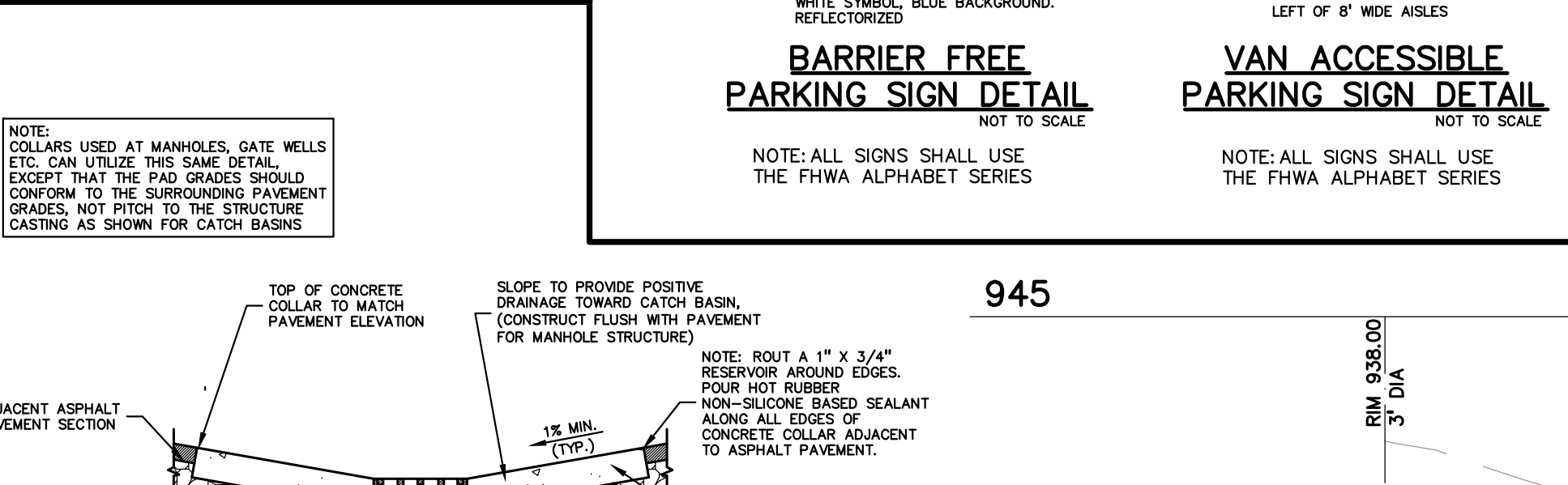
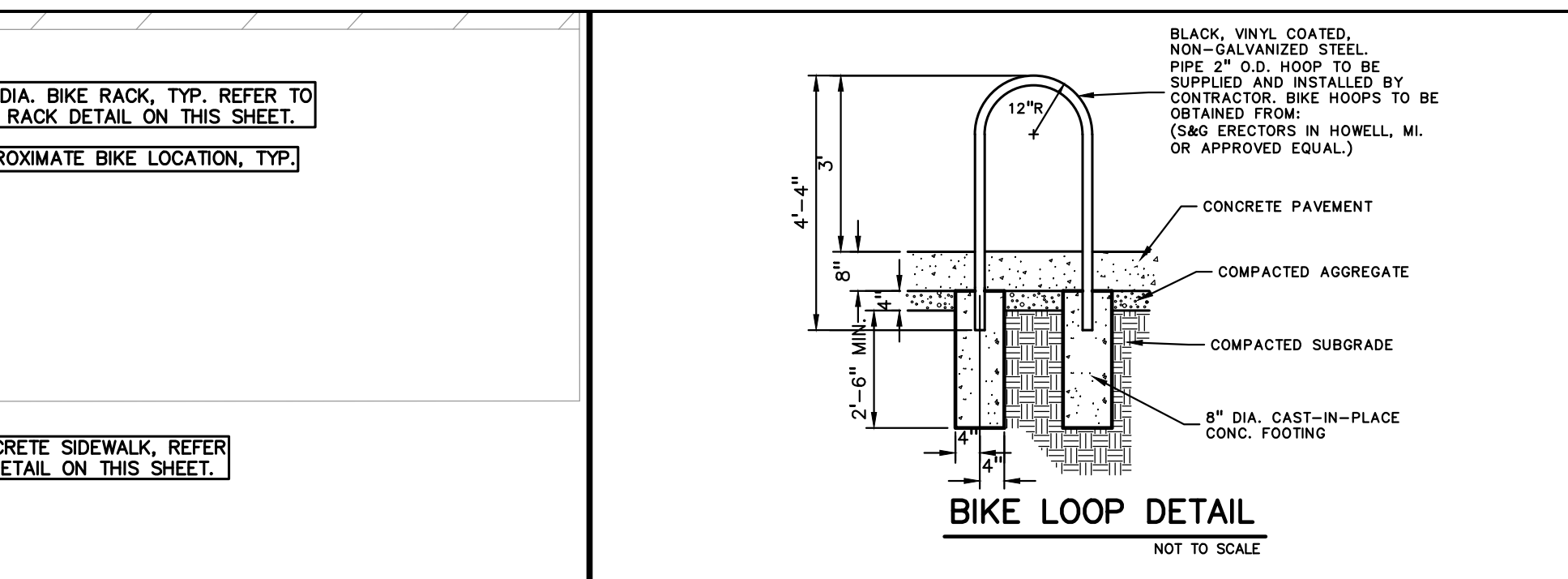
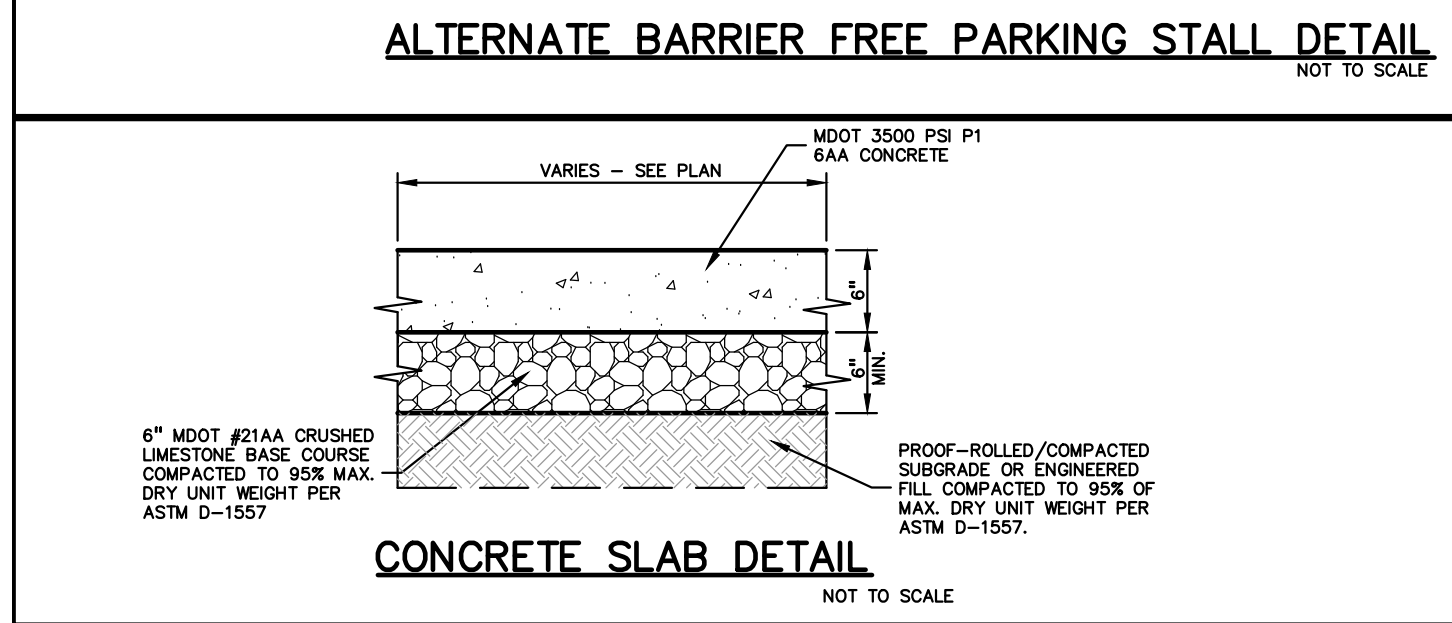
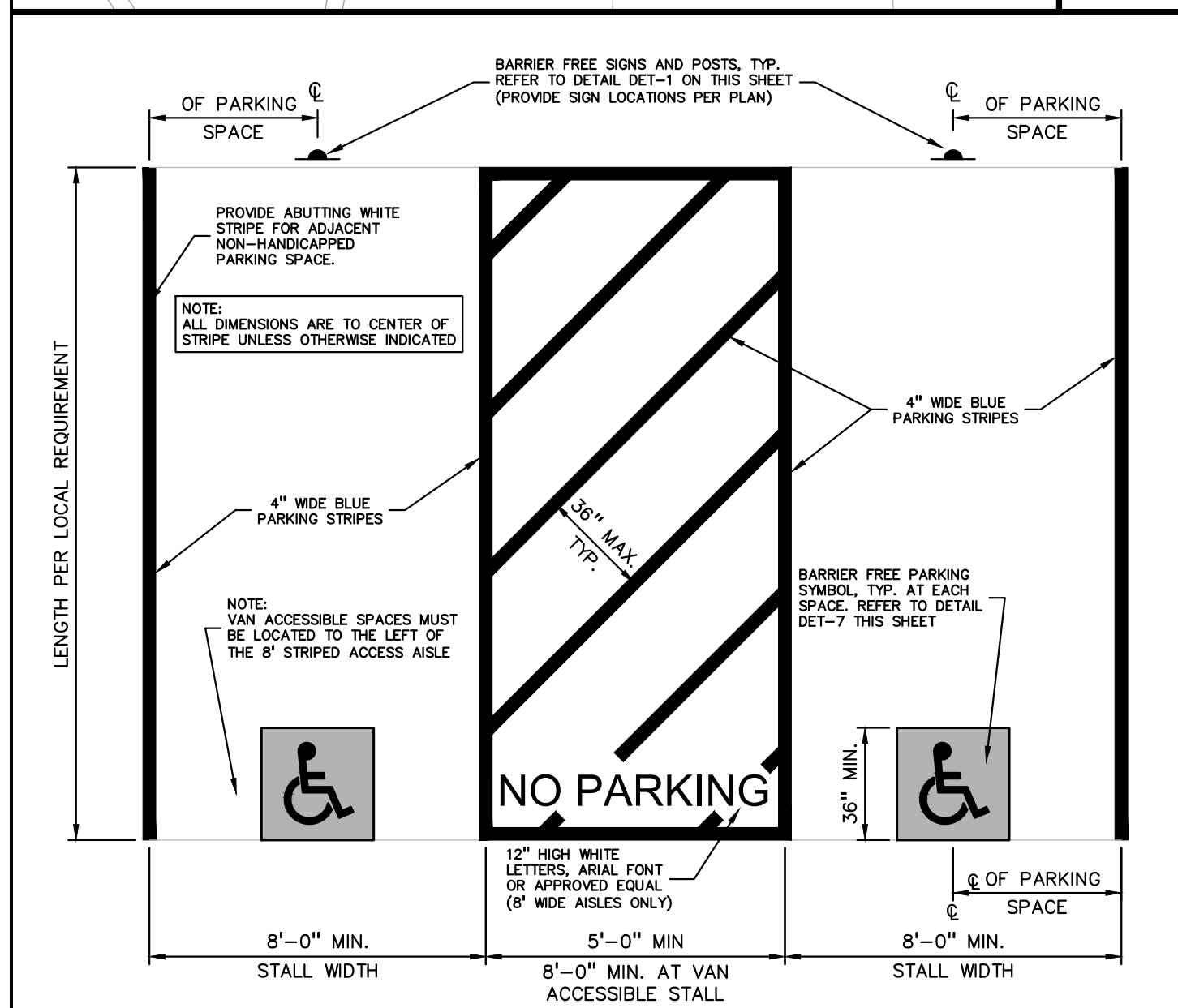
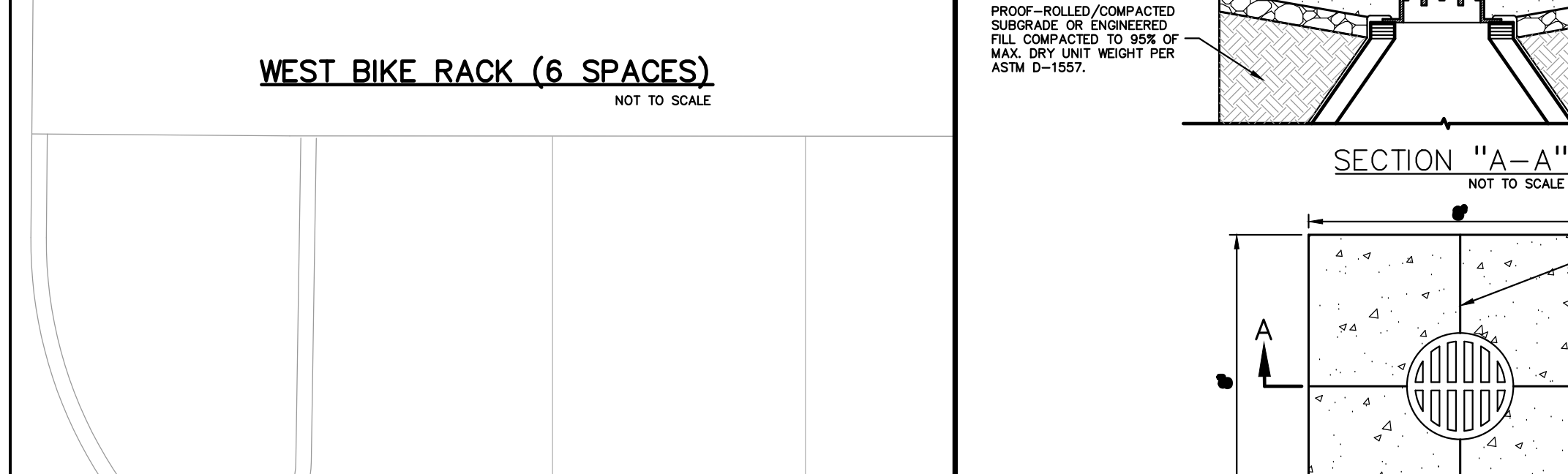
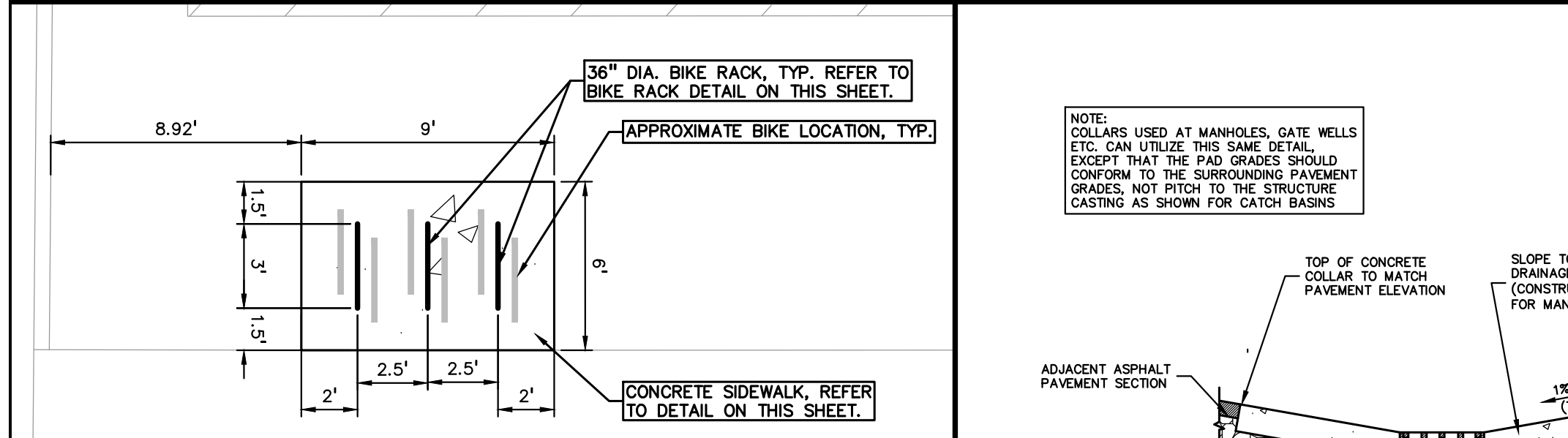
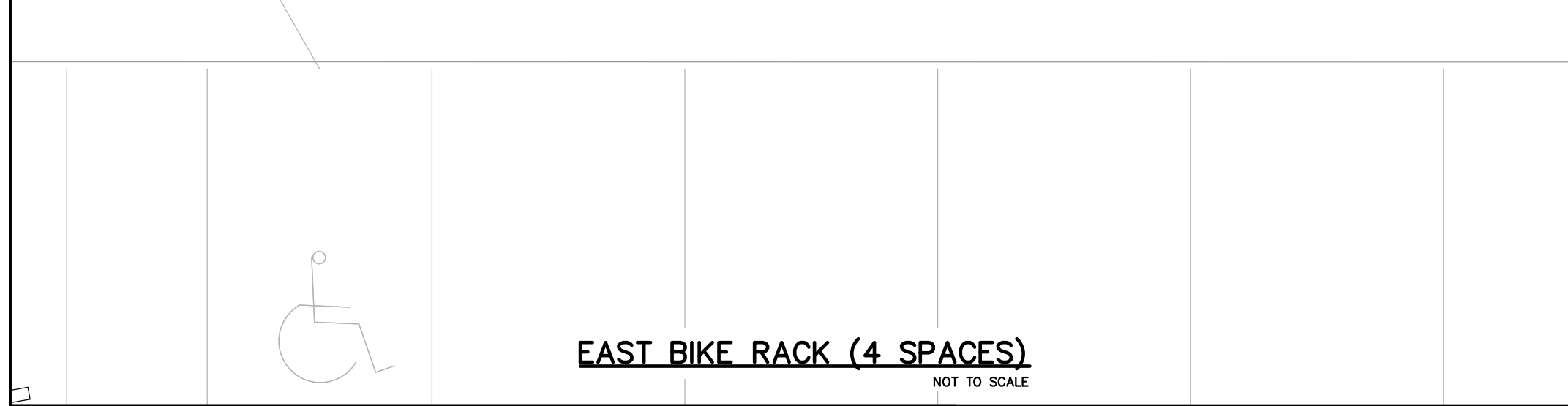
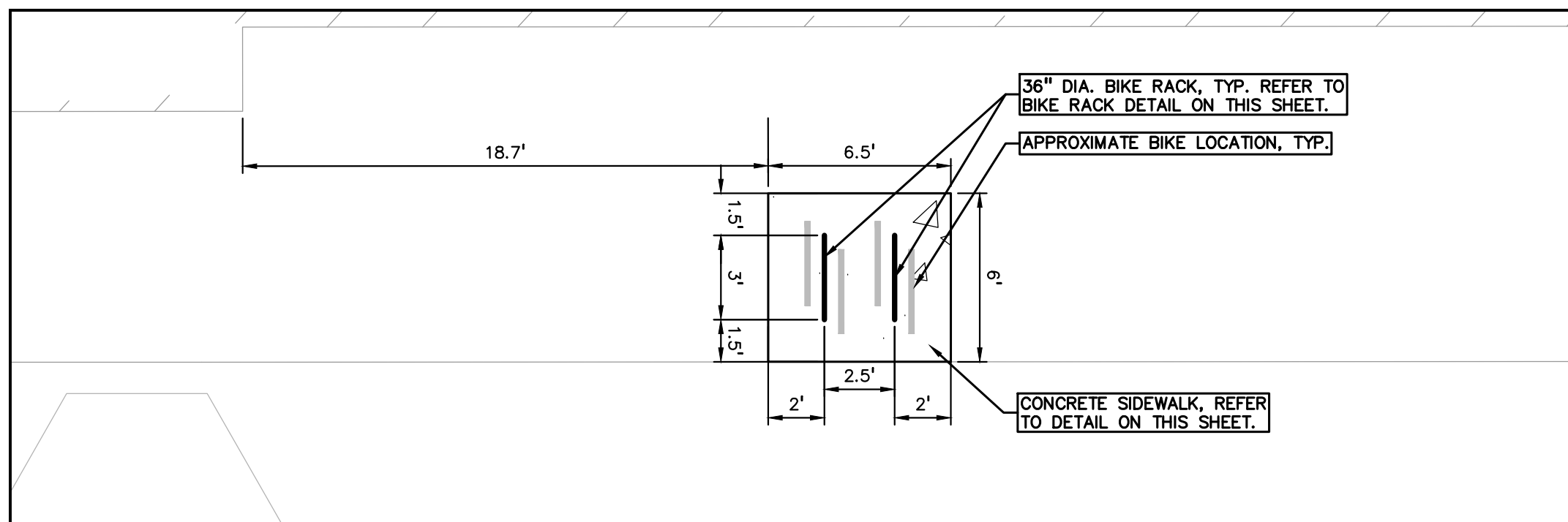


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 Troy, MI 48063-1872
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 f: 248.689.1044
 www.peainc.com

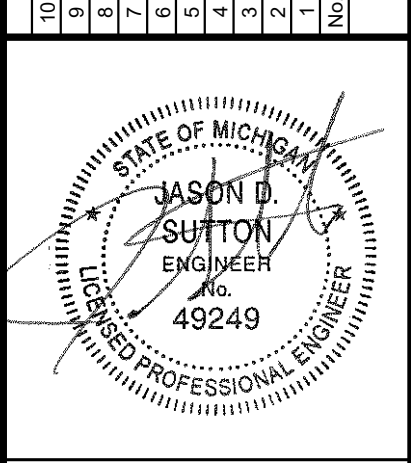
JB DONALDSON
 37670 HILLS ECH DRIVE
 FARMINGTON HILLS, MICHIGAN 48331
STORMWATER MANAGEMENT PLAN LINEAGE PARKING EXPANSION
 PART OF THE NW 1/4 OF SECTION 9, T. 1N., R. 8E., CITY OF NOVI, OAKLAND COUNTY, MICHIGAN
 DES. JS DN. BA SUR. N/A P.M. BK
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ORIGINAL ISSUE DATE:
 JANUARY 10, 2020
 PEA JOB NO. 2019-436
 SCALE: 1" = 50'
 DRAWING NUMBER:
C-8.0

XREF: S:\PROJECTS\2019-436\LINEAGE\NOV-2019\CONSTRUCTION\VC-8-DONALDSON-19-436.dwg
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NO.	DATE	DESCRIPTION
1	05-26-20	ISSUED FOR BIDS
2	07-17-20	ENLARGED PARKING AREA
3	08-03-20	FINAL SITE PLAN
4	08-03-20	ISSUED FOR BIDS
5	08-03-20	ISSUED FOR BIDS
6	08-03-20	ISSUED FOR BIDS
7	08-03-20	ISSUED FOR BIDS
8	08-03-20	ISSUED FOR BIDS
9	08-03-20	ISSUED FOR BIDS
10	08-03-20	ISSUED FOR BIDS
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13	08-03-20	ISSUED FOR BIDS
14	08-03-20	ISSUED FOR BIDS
15	08-03-20	ISSUED FOR BIDS
16	08-03-20	ISSUED FOR BIDS
17	08-03-20	ISSUED FOR BIDS
18	08-03-20	ISSUED FOR BIDS
19	08-03-20	ISSUED FOR BIDS
20	08-03-20	ISSUED FOR BIDS



CAUTION!
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FARMINGTON HILLS, MICHIGAN 48331
NOTES AND DETAILS
LINEAGE PARKING EXPANSION
PART OF THE NW 1/4 OF SECTION 9, T. 11N., R. 8E., CITY OF NOVI, OAKLAND COUNTY, MICHIGAN
DES. JS DN. BA SUR. N/A P.M. BK
CONSTRUCTION (C-9) 002-FINAL-1-PK-IMP

ORIGINAL ISSUE DATE: JANUARY 10, 2020
PEA JOB NO. 2019-436
SCALE: 1" = 30'
DRAWING NUMBER: **C-9.0**
SHEET NO. 1 OF 1
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S:\PROJECTS\2019\20190401\CONSTRUCTION\BASE-15XXX.DWG
S:\PROJECTS\2019\20190401\CONSTRUCTION\BASE-15XXX.DWG

GENERAL NOTES:

- ALL WORK SHALL CONFORM TO THE MOST RESTRICTIVE STANDARDS OF THE FOLLOWING CODES:
 - AISC 1315 INTERNATIONAL BUILDING CODE
 - AISC 360-10 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" AND AISC 360-10 CODE OF QUALITY PRACTICES FOR STEEL BUILDING AND BRIDGES"
 - ASCE 510-1007 EDITION "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COMPOSITE STEEL STRUCTURES" AND AISC 305-10 "SPECIFICATION FOR COMPOSITE STEEL DECKING"
 - WELDING SHALL BE IN ACCORDANCE WITH AISC LATEST EDITION "STRUCTURAL STEEL WELDING CODE" AND AISC LATEST EDITION "STEEL WELDING CODE"
 - THE CONTRACTOR SHALL VERIFY ALL NECESSARY FIELD MEASUREMENTS AS REQUIRED AND SHALL VERIFY EXISTING FIELD CONDITIONS. ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS MUST BE CHECKED BY AN INDEPENDENT TESTING AGENCY BEFORE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS.
- ALL CONSTRUCTION SHALL CONFORM FULLY WITH THE APPLICABLE PROVISIONS OF NATIONAL OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS.
- ALL WORK SHOWN ON THESE DRAWINGS MAY BE CHECKED BY AN INDEPENDENT TESTING AGENCY BEFORE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS.

STRUCTURAL STEEL:

- STRUCTURAL STEEL SHALL CONFORM TO ASTM A572 GRADE 50 (F_y=50 KSI, F_u=65 KSI) AND SHALL BE GALVANNEAL TO MEET THE REQUIREMENTS OF THE AISC 360-10 CODE OF QUALITY PRACTICES FOR STRUCTURAL STEEL BUILDING AND BRIDGES. ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS MUST BE CHECKED BY AN INDEPENDENT TESTING AGENCY BEFORE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS.
- ALL STRUCTURAL STEEL SHALL BE SET OF GALVANNEAL PER ASTM A123 SPECIFICATIONS. ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS MUST BE CHECKED BY AN INDEPENDENT TESTING AGENCY BEFORE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND LOCATIONS SHOWN ON THESE DRAWINGS.
- STRUCTURAL STEEL SHALL NOT BE ADDED IN THE FIELD FROM THAT SHOWN ON THE DESIGN DRAWINGS. MEMORIALIZED HOLES SHALL BE HEAVY TO A LARGER SIZE. CUTTING, BURNING OR WELDING NOT SHOWN ON DESIGN DRAWINGS SHALL BE PERFORMED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ARCHITECT.

CONCRETE FOUNDATIONS:

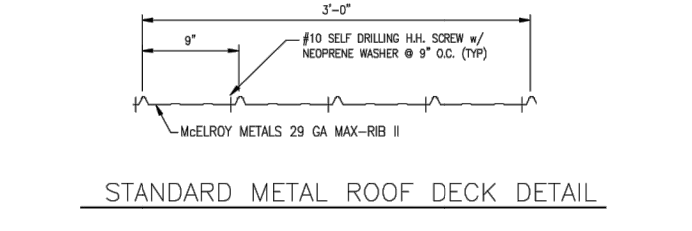
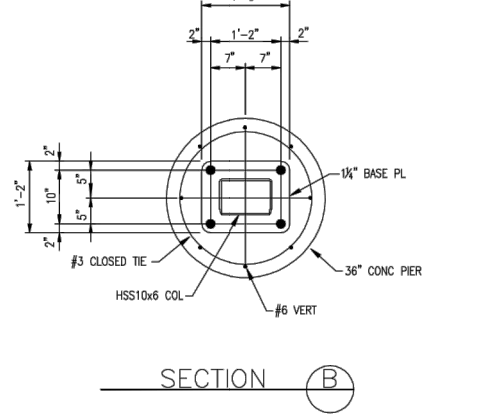
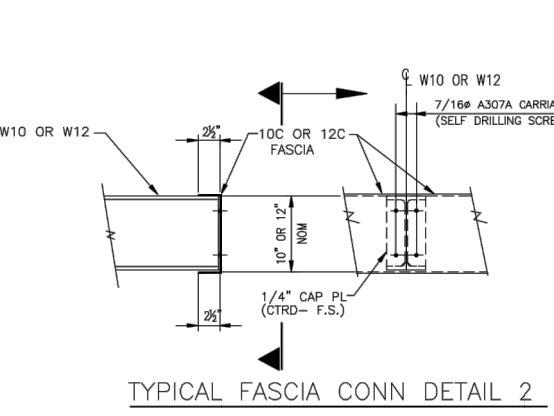
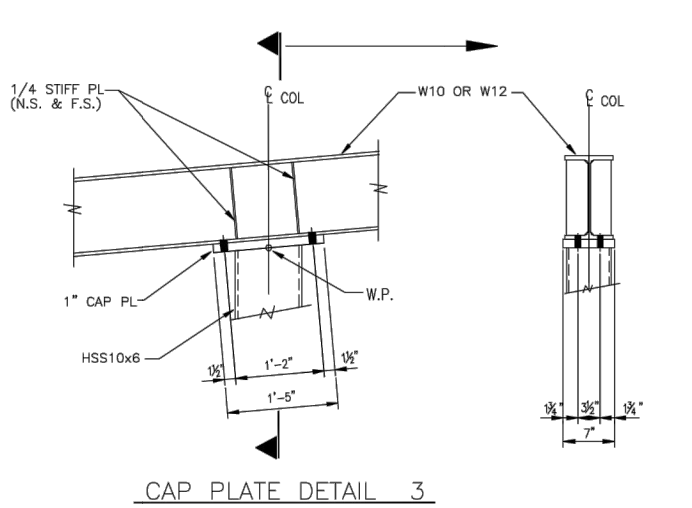
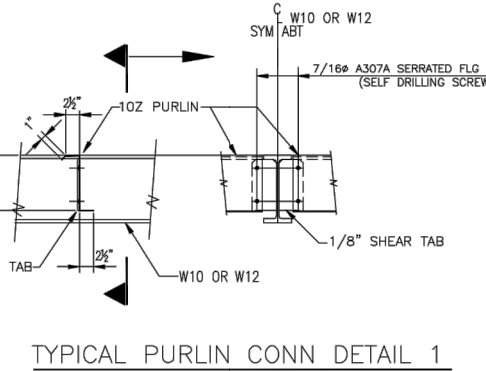
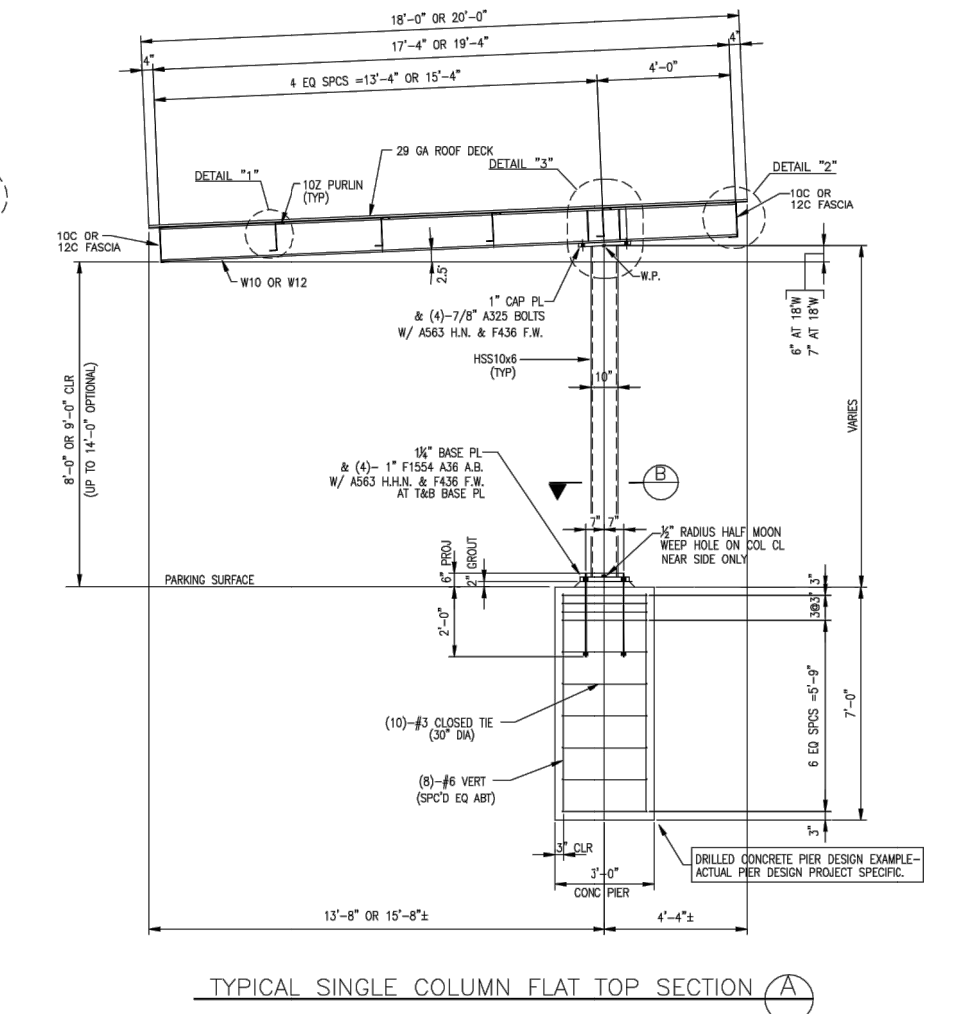
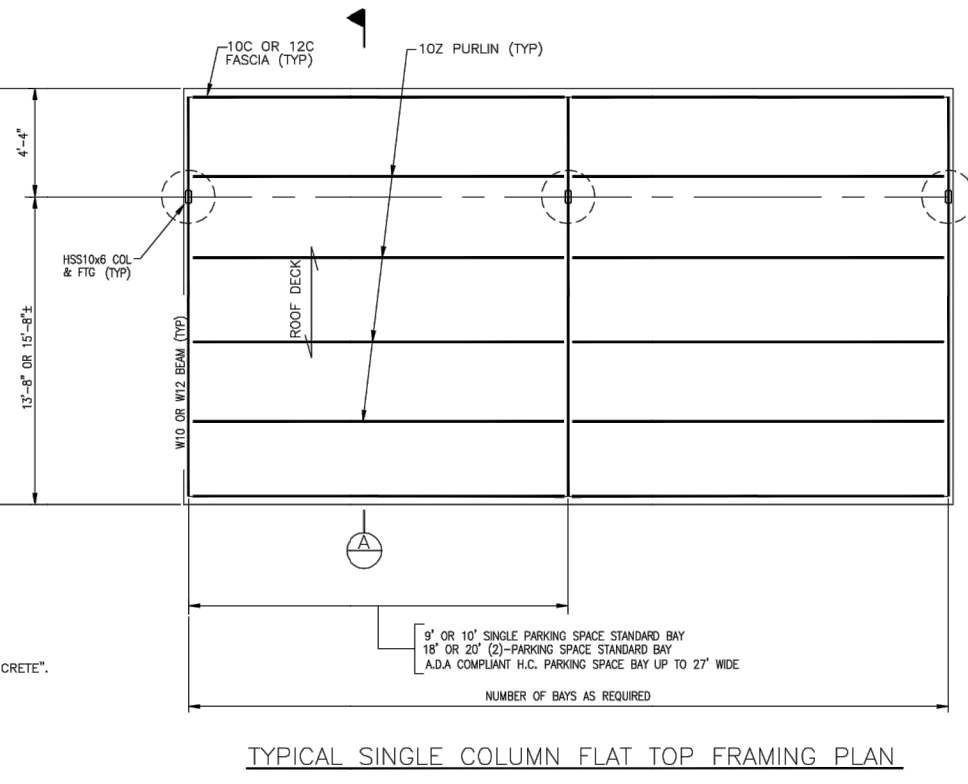
- FOUNDATION DESIGN IS BASED ON BEARING SOILS HAVING A MINIMUM ALLOWABLE BEARING CAPACITY OF 3,000 PSF.
- AFTER EXCAVATING TO REQUIRED DEPTH AND PRIOR TO FOUNDATION CONSTRUCTION, THE SOILS SHALL BE EXAMINED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN TO DETERMINE THE EXISTING SOIL BEARING CAPACITY.
- CONCRETE CONSTRUCTION SHALL CONFORM WITH AISC LATEST EDITION "SPECIFICATIONS FOR STRUCTURAL CONCRETE" AND AISC 308-10 "SPECIFICATION FOR STRUCTURAL CONCRETE".
- CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
- CONCRETE SUBSTRATES SHALL COMPLY WITH ASTM C33 AND BE FREE FROM CLAY, LUMPS, AND DEFECTIVE MATERIALS.
- CONCRETE SHALL BE AIR ENTRAINED WITH 6% AIR ENTRAINMENT.
- TOP OF FOUNDATIONS SHALL BE SLOPED SUFFICIENT FOR DRAINAGE.
- STEEL REINFORCEMENT SHALL BE SET PER ASME A115 (OR 80).
- NON-SHAPE BARS SHALL COMPLY WITH ASTM A618-14.
- CONTRACTOR SHALL VERIFY ALL CONDITIONS, INCLUDING UNDERGROUND UTILITIES AT THE JOB SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE CONSTRUCTION.

WELDING:

- WELDS SHALL BE MADE BY CERTIFIED WELDERS AND WELDING OPERATORS WHO HAVE BEEN QUALIFIED BY TESTS AS PRESCRIBED BY THE STRUCTURAL WELDING CODE OF THE AMERICAN WELDING SOCIETY.

DESIGN NOTES:

- UNLESS OTHERWISE NOTED, ALL BOLTS SHALL BE TENSORED TO A "TIGHT TIGHT" CONDITION. A "TIGHT TIGHT" CONDITION EXISTS WHEN ALL OF THE PLATES IN A CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS IN THE JOINT AND ALL BOLTS IN THE JOINT HAVE BEEN TENSORED SUFFICIENTLY TO PREVENT THE SEPARATION OF THE WELDED JOINTS OF THE MEMBER. THE "TIGHT TIGHT" CONDITION IS VERTICALLY ADJUSTED WITH THE WEIGHT OF AN UNIFORM WIND OR FULL WIND ON A MEMBER ON A GUST-WIND SPEED WIND.



DESIGN TABLE	
CODE: SEE GENERAL NOTES	
ROOF LIVE LOAD	20.0 PSF
GROUND SNOW LOAD	30.0 PSF
IMPORTANCE FACTOR (I)	1.0
EXPOSURE FACTOR (E)	1.0
THERMAL FACTOR (T)	1.0
UNIFORM ROOF DESIGN SNOW LOAD	30.0 PSF
WIND DESIGN DATA	
ULTIMATE WIND SPEED	115.0 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	B
EARTHQUAKE DESIGN DATA	
SPECTRAL RESPONSE ACCELERATION (S)	1.80
SPECTRAL RESPONSE ACCELERATION (T)	1.80
SITE CLASS	D
SEISMIC DESIGN CATEGORY	II
SEISMIC FORCE RESISTANCE SYSTEM	COMBINED COLUMN
RESPONSE MOD. FACTOR	1.25
SEISMIC RESPONSE COEFFICIENT (C)	1.80

CARPORT STRUCTURES
 1820 Westmore Rd., Okemos, MI 48867
 Tel: (248) 298-0871
 Fax: (248) 298-1988

Chief Engineer: S. K'ua, P.E.
 2774 Maple Road
 Okemos, Michigan
 Tel: (517) 879-1787

Project: SINGLE COLUMN FLAT TOP CARPORT

Drawn By: SULTAN
 Checked By: JAKOB
 Approved By: S. SUDORE

DESIGN STANDARDS
 4A

NO.	DATE	REVISIONS
1	07/27/20	ARCHITECTURAL REVISIONS
2	09/26/20	FRAMING AND DETAIL SUBMITTAL BUILDING DEPARTMENT REVISIONS

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 t: 248.689.9090
 f: 248.689.1044
 www.peainc.com

JB DONALDSON
 37610 HILLS ECH DRIVE
 FARMINGTON HILLS, MICHIGAN 48331

CARPORT DETAILS
LINEAGE PARKING EXPANSION
 PART OF THE NW 1/4 OF SECTION 9, T. 1N., R. 8E.,
 CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

DES. JS DN. BA SUR. N/A P.M. BK

ORIGINAL ISSUE DATE:
 JANUARY 10, 2020

PEA JOB NO. 2019-436

SCALE: 1" = 30'

DRAWING NUMBER:
C-9.1

XREF: S:\PROJECTS\2015\2015XXXX\DWG\15XXXX-TOPOBASE.DWG
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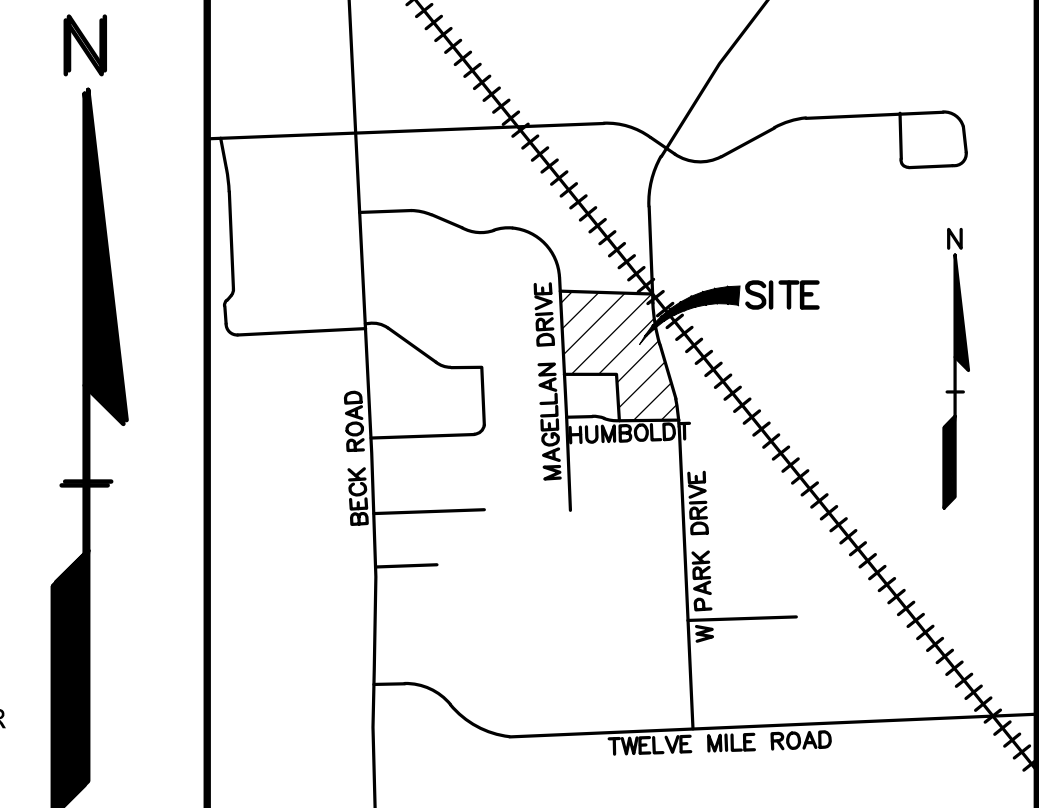
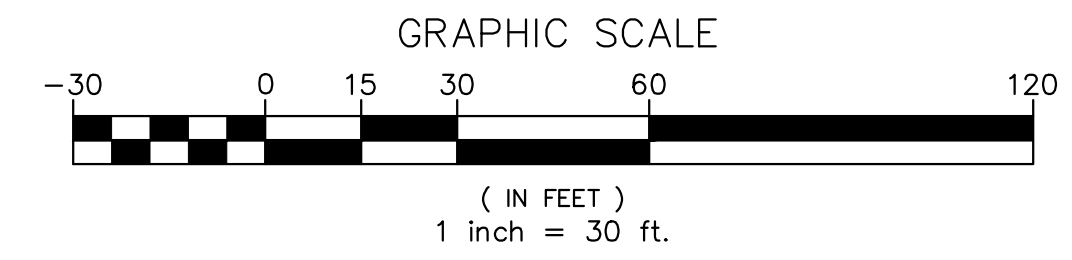
LEGEND

■ ■ ■ ■ ■	570Z-4P	10'-MPR SERIES	TORO FIXED SPRAY POP-UP (4")
● ● ● ● ●	570Z-4P	12'-MPR SERIES	TORO FIXED SPRAY POP-UP (4")
▼ ▼ ▼ ▼ ▼	570Z-4P	15'-MPR SERIES	TORO FIXED SPRAY POP-UP (4")
⊙	570Z-4P	TVAN-12 NOZZLE	TORO FIXED SPRAY POP-UP (4")
⊙	570Z-4P	TVAN-17 NOZZLE	TORO FIXED SPRAY POP-UP (4")
⊙	T5PCK (P/C)	#1.5 LOW ANGLE NOZZLE	TORO GEAR DRIVEN ROTARY POP-UP
⊙	474-00		TORO 1" QUICK COUPLER VALVE W/(1) KEY AND HOSE SWIVEL
⊙	EZF-26-04		TORO 1" ELECTRIC VALVE
⊙	252-26-06		TORO 1-1/2" ELECTRIC VALVE

—	PVC SDR-26 CLASS 160 PIPE (ALL PRESSURIZED MAINLINE PIPE)
—	100# POLYETHYLENE PIPE (PE-3408 NSF APPROVED) (ALL PIPE DOWNSTREAM OF VALVE 1-1/2" AND SMALLER)
—	NOT SHOWN #18/10 UL APPROVED MULTI-CONDUCTOR CONTROL WIRE
●	POINT OF CONNECTION (P.O.C.)
◀	EXISTING 2" PRESSURE VACUUM BREAKER
⊕	206 SERIES RED/WHITE LINE SIZE ISOLATION VALVE (2-1/2" AND SMALLER)

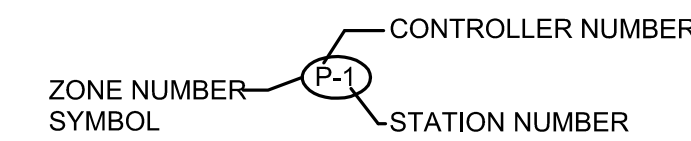
GENERAL NOTES:

- COORDINATE THIS WORK WITH ALL OTHER TRADES.
- ALL PLUMBING AND ELECTRICAL SHALL BE INSTALLED ACCORDING TO STATE AND LOCAL CODES.
- ALL SLEEVES SHALL BE 4" PVC SDR-26 CLASS160 (UNLESS OTHERWISE SPECIFIED). SLEEVE INSTALLATION SHALL BE THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR.
- ALL PIPE NOT SIZED DOWNSTREAM OF VALVE IS 1".
- IRRIGATION CONTRACTOR'S POINT OF CONNECTION SHALL BE A CONNECTION TO THE EXISTING MAINLINE NEAR THE EXISTING PRESSURE VACUUM BREAKER ON THE NORTH SIDE (BACK) OF BUILDING.
- 115V POWER INTO CONTROLLER IS EXISTING, INSIDE BUILDING.
- THERE IS AN EXISTING CONTROLLER INSIDE BLDG. IF STATION COUNT IS NOT HIGH ENOUGH TO CONNECT THE (7) NEW PARKING LOT ZONES AND ALL EXISTING ZONES, THEN IRRIGATION CONTRACTOR SHALL REPLACE WITH A NEW 36-STATION CONTROLLER.
- IRRIGATION CONTRACTOR SHALL ADJUST THE FLOW CONTROL FEATURE ON ALL ELECTRIC VALVES PER THE MANUFACTURER'S RECOMMENDATIONS TO MAXIMIZE THE VALVES PERFORMANCE AND LONGEVITY.
- IF SITE PRESSURE IS NOT ADEQUATE, A BOOSTER PUMP AND RELATED EQUIPMENT MAY BE REQUIRED AT ADDITIONAL COST TO OWNER.
- IRRIGATION PIPE AND EQUIPMENT SHOWN IN PAVED AREAS IS FOR CLARITY ONLY AND SHALL BE INSTALLED WITHIN THE TURF & LANDSCAPE AREAS.
- PIPE ROUTING IS DIAGRAMMATIC. ALL EQUIPMENT AND PIPE ARE TO BE FIELD ADJUSTED TO TAKE INTO CONSIDERATION ANY OBSTRUCTIONS AND ALL LANDSCAPE.
- NOTE: ALL REFERENCES TO EXISTING IRRIGATION SYSTEMS AND THEIR COMPONENTS ARE BASED ON ORIGINAL BID DOCUMENTS AND AS-BUILTS (IF AVAILABLE). IRRIGATION CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH EXISTING IRRIGATION SYSTEM(S) PRIOR TO INSTALLATION OF ANY NEW IRRIGATION.

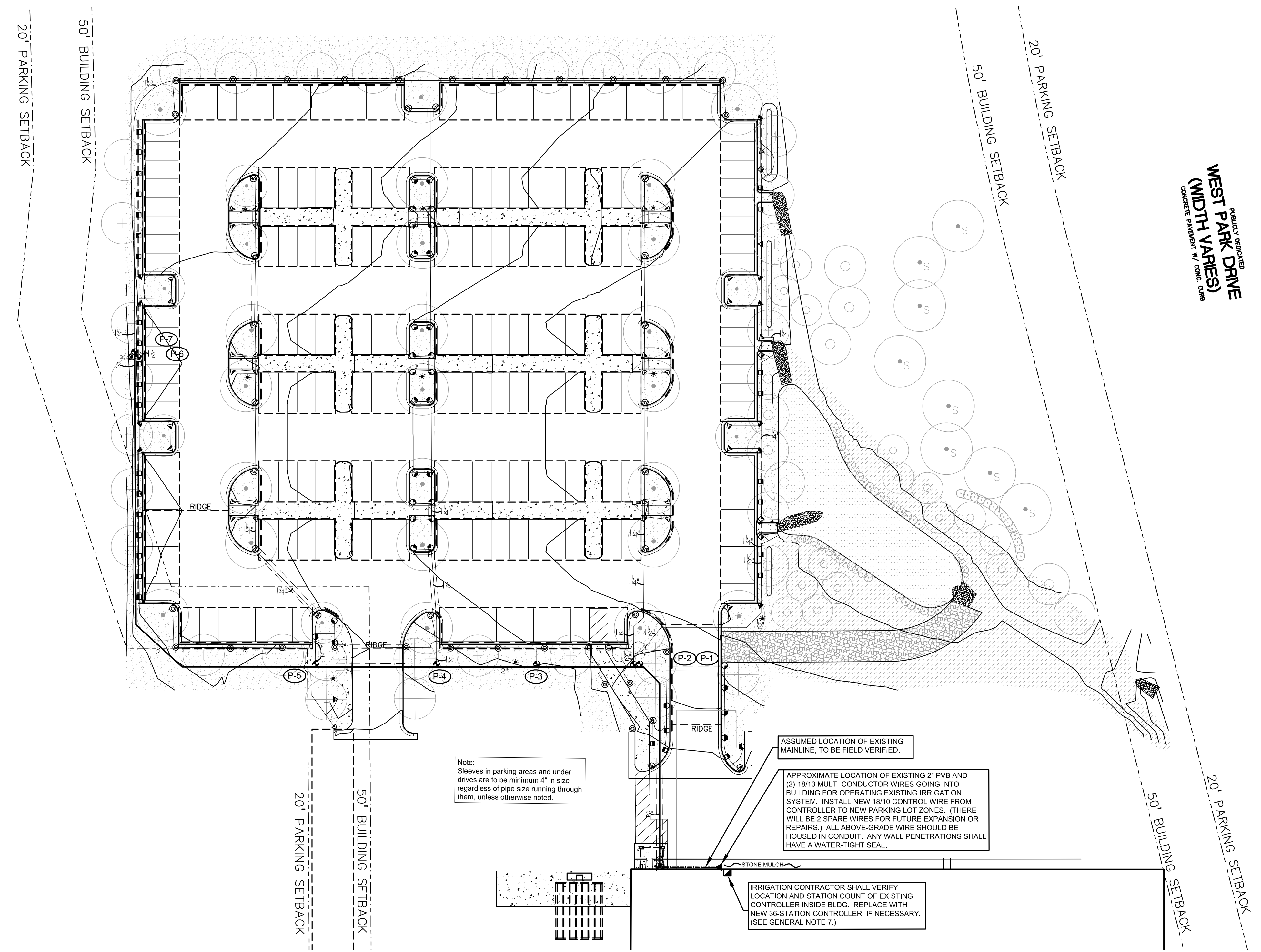


WATER REQUIREMENTS: 31 GPM @ 43 PSI (AT P.O.C.)

ZONE NUMBER	VALVE SIZE	GPM	ZONE TYPE
P-1	1-1/2"	31	TURF SPRAYS
P-2	1-1/2"	28	TURF SPRAYS
P-3	1"	19	TURF ROTORS
P-4	1"	18	TURF SPRAYS
P-5	1"	24	TURF SPRAYS
P-6	1-1/2"	27	TURF SPRAYS
P-7	1"	15	TURF ROTORS



NOTE:
NO AS-BUILT DRAWINGS FOR THE EXISTING SYSTEM WERE AVAILABLE AT THE TIME OF THIS DESIGN. IRRIGATION CONTRACTOR SHALL VERIFY ALL EXISTING EQUIPMENT AND SITE CONDITIONS BEFORE BIDDING AND STARTING WORK ON THIS PARKING EXPANSION PROJECT.



Note: Sleeves in parking areas and under drives are to be minimum 4" in size regardless of pipe size running through them, unless otherwise noted.

ASSUMED LOCATION OF EXISTING MAINLINE, TO BE FIELD VERIFIED.

APPROXIMATE LOCATION OF EXISTING 2" PVB AND (2)-18/13 MULTI-CONDUCTOR WIRES GOING INTO BUILDING FOR OPERATING EXISTING IRRIGATION SYSTEM. INSTALL NEW 18/10 CONTROL WIRE FROM CONTROLLER TO NEW PARKING LOT ZONES. (THERE WILL BE 2 SPARE WIRES FOR FUTURE EXPANSION OR REPAIRS). ALL ABOVE-GRADE WIRE SHOULD BE HOUSED IN CONDUIT. ANY WALL PENETRATIONS SHALL HAVE A WATER-TIGHT SEAL.

IRRIGATION CONTRACTOR SHALL VERIFY LOCATION AND STATION COUNT OF EXISTING CONTROLLER INSIDE BLDG. REPLACE WITH NEW 36-STATION CONTROLLER, IF NECESSARY. (SEE GENERAL NOTE 7.)

LEGEND

● IRON FOUND	⊕ BRASS PLUG SET	⊕ SEC. CORNER FOUND
⊗ IRON SET	⊕ MONUMENT FOUND	⊕ RECORDED
⊗ NAIL FOUND	⊕ MONUMENT SET	⊕ MEASURED
⊗ NAIL & CAP SET		⊕ CALCULATED

EXISTING	— OH-ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & RAY WIRE
	— UG-CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL
	— UG-ELEC—	ELECTRIC U.G. CABLE, MANHOLE, & MANHOLE
	— UG-PHONE—	PHONE U.G. CABLE, MANHOLE, W/TER & HANDBOLE
	— UG-ELEC—	ELEC. U.G. CABLE, MANHOLE, W/TER & HANDBOLE
	—	GAS MAIN, VALVE & GAS LINE MARKER
	—	WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
	—	SANITARY SEWER, CLEANOUT & MANHOLE
	—	STORM SEWER, CLEANOUT & MANHOLE
	—	COMBINED SEWER & MANHOLE
	—	SQUARE, ROUND & SLOPE CATCH BASIN, YARD DRAIN
	—	POST INDICATOR VALVE
	—	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
	—	MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
	—	UNIDENTIFIED STRUCTURE
	—	SPOT ELEVATION
	—	CONTOUR LINE
	—	FENCE
	—	GUARD RAIL
	—	STREET LIGHT
	—	SIEN
	— CONC. —	CONCRETE
	— ASPHL —	ASPHALT
	— GRAVEL —	GRAVEL SHOULDER
	—	WETLAND

LEGAL DESCRIPTION
CURRENT PARCEL ID: 22-09-176-019
PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI CONDOMINIUM" AS RECORDED IN LIBER 53608, PAGE 798, OAKLAND COUNTY RECORDS:
LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:
UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUMS" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.

REVISIONS

NO.	BY	DATE	DESCRIPTION
1	JKS	04-29-20	ISSUED FOR BIDS
2	JKS	04-29-20	ISSUED FOR BIDS
3	JKS	04-29-20	ISSUED FOR BIDS
4	JKS	04-29-20	ISSUED FOR BIDS
5	JKS	04-29-20	ISSUED FOR BIDS
6	JKS	04-29-20	ISSUED FOR BIDS
7	JKS	04-29-20	ISSUED FOR BIDS
8	JKS	04-29-20	ISSUED FOR BIDS
9	JKS	04-29-20	ISSUED FOR BIDS
10	JKS	04-29-20	ISSUED FOR BIDS

CAUTION!
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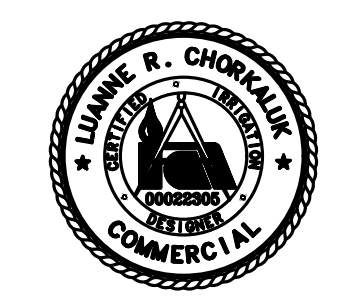
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Fax: 248.373.8899

800.822.2216

Design By: J. CHORKALUK, C.I.D.
Plan #: 20-011c
Date: 11/23/2020
Revisions:

JB DONALDSON
37610 HILLS TECH DRIVE
FARMINGTON HILLS, MICHIGAN 48331

IRRIGATION PLAN
LINEAGE PARKING EXPANSION
PART OF THE NW 1/4 OF SECTION 9, T. 1N, R. 8E.,
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

DES.	LC	DN	LC	SUR.	N/A	P.M.	BK
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ORIGINAL ISSUE DATE:
JANUARY 10, 2020

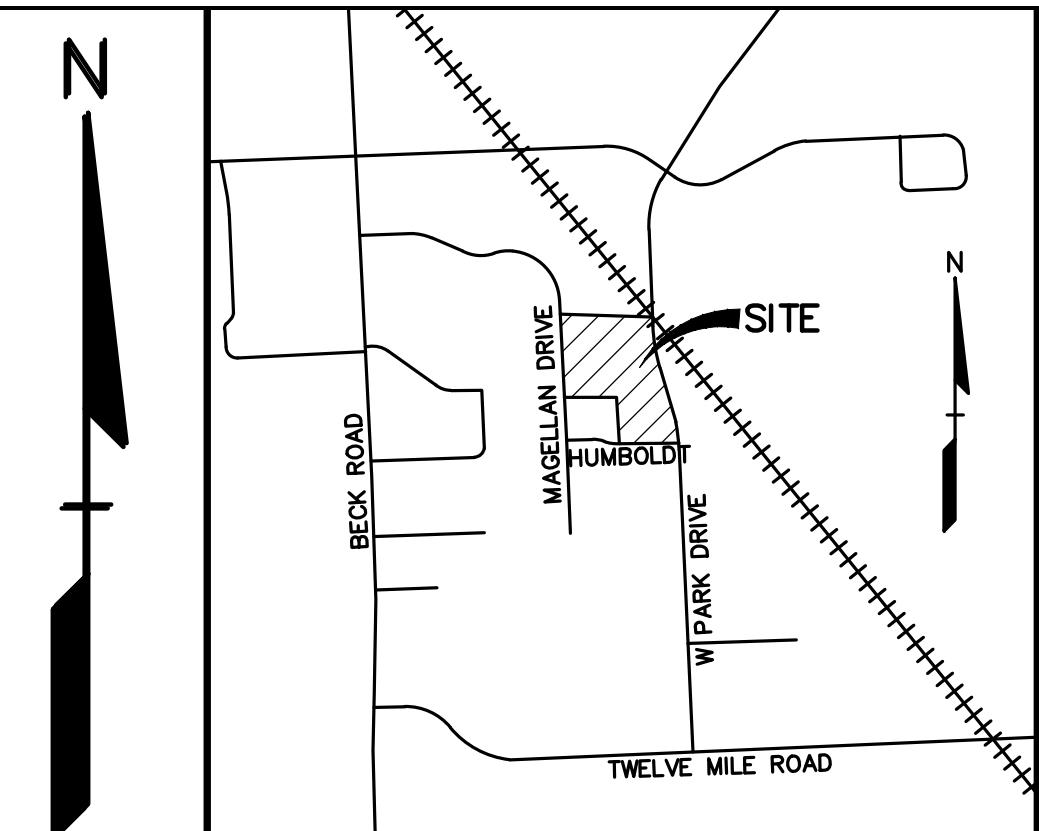
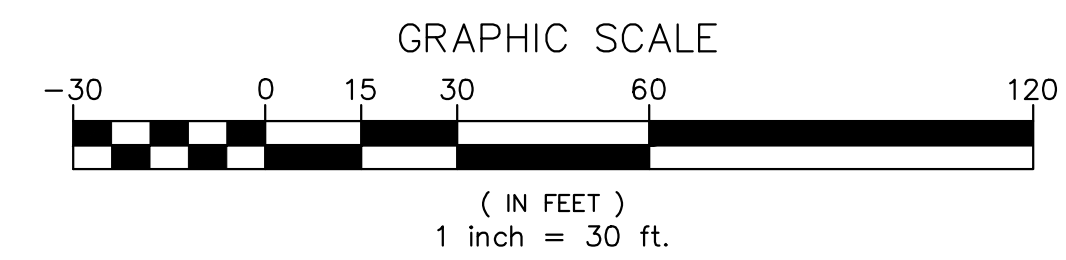
PEA JOB NO. 2019-436

SCALE: 1" = 30'

DRAWING NUMBER:

I-1.0

XREF: S:\PROJECTS\2015\2015XXXX\DWG\15XXXX-TOPOBASE.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION-V-BASE-15XXXX.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION-V-TBK-15XXXX.DWG



NO.	DATE	DESCRIPTION	BY	CHKD.
1	01-20-20	ISSUED FOR BIDS	JUS	JUS
2	01-21-20	ENLARGED PARKING AREA	JUS	JUS
3	01-22-20	FINAL SITE PLAN	JUS	JUS
4	01-23-20	FINAL SITE PLAN	JUS	JUS
5	01-23-20	SEC. RESUBMITTAL	JUS	JUS
6	01-29-20	SEC. RESUBMITTAL	JUS	JUS
7	07-15-20	GRADING REVISION	BA	BA
8	07-27-20	ARCHITECTURAL REVISIONS	BA	BA
9	08-26-20	PLANNING AND DESIGN REVISIONS	BA	BA

REVISIONS

LEGEND

- 570Z-4P 10'-MPR SERIES TORO FIXED SPRAY POP-UP (4")
- 570Z-4P 12'-MPR SERIES TORO FIXED SPRAY POP-UP (4")
- ▼ 570Z-4P 15'-MPR SERIES TORO FIXED SPRAY POP-UP (4")
- ⊙ 570Z-4P TVAN-12 NOZZLE TORO FIXED SPRAY POP-UP (4")
- ⊙ 570Z-4P TVAN-17 NOZZLE TORO FIXED SPRAY POP-UP (4")
- ⊙ T5PCK (P/C) #1.5 LOW ANGLE NOZZLE TORO GEAR DRIVEN ROTARY POP-UP
- ⊙ 474-00 TORO 1" QUICK COUPLER VALVE W(1) KEY AND HOSE SWIVEL
- ⊙ EZF-26-04 TORO 1" ELECTRIC VALVE
- ⊙ 252-26-06 TORO 1-1/2" ELECTRIC VALVE

— PVC SDR-26 CLASS 160 PIPE (ALL PRESSURIZED MAINLINE PIPE)
 — 100# POLYETHYLENE PIPE (PE-3408 NSF APPROVED) (ALL PIPE DOWNSTREAM OF VALVE 1-1/2" AND SMALLER)

NOT SHOWN #18/10 UL APPROVED MULTI-CONDUCTOR CONTROL WIRE

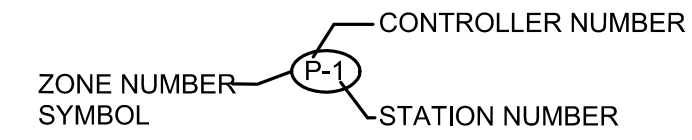
- POINT OF CONNECTION (P.O.C.)
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GENERAL NOTES:

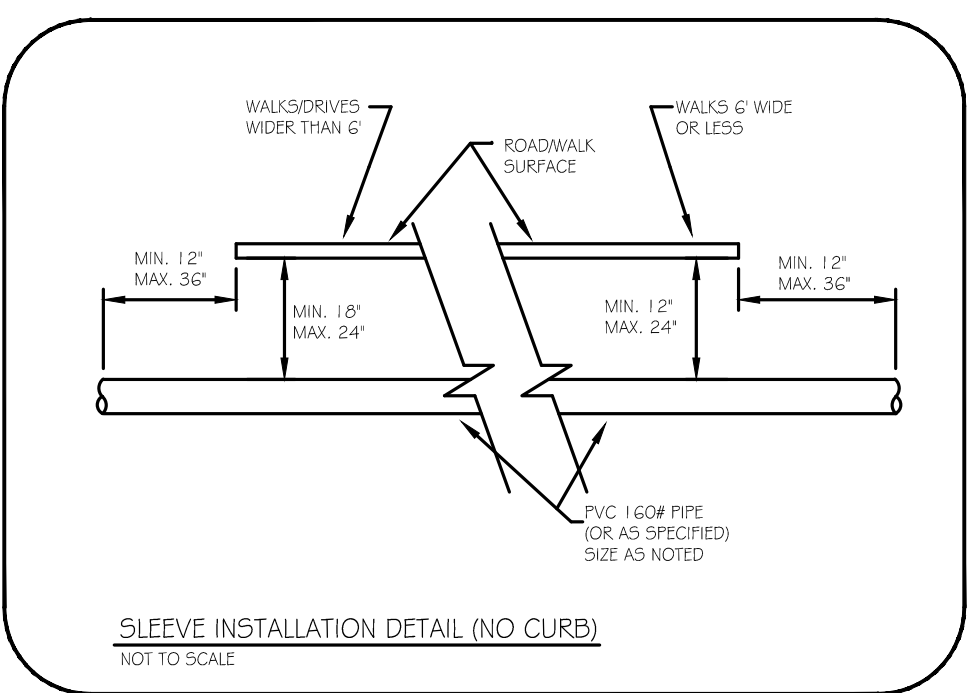
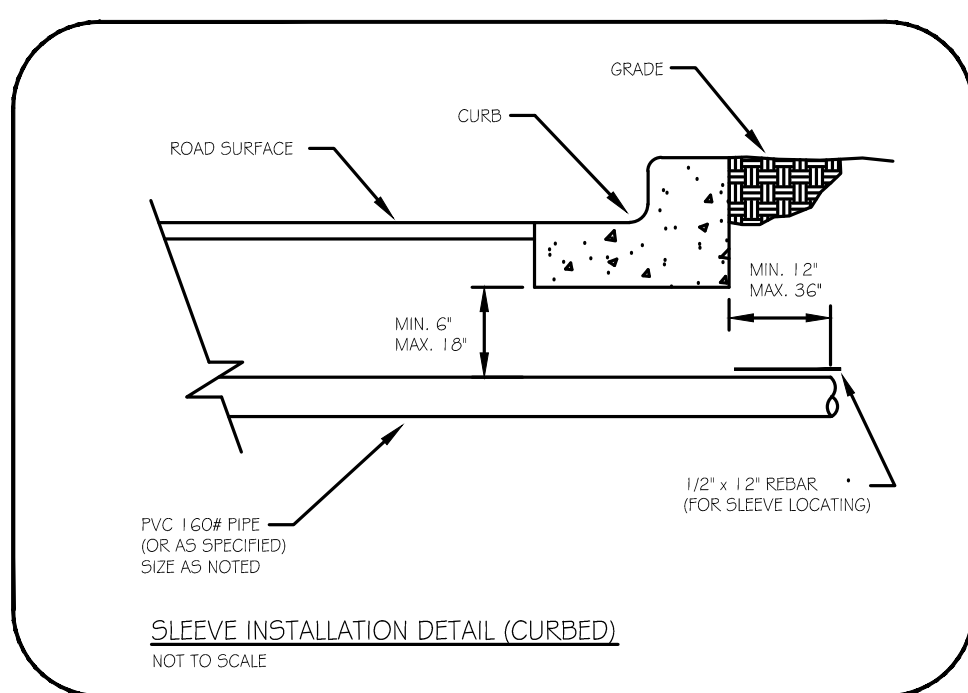
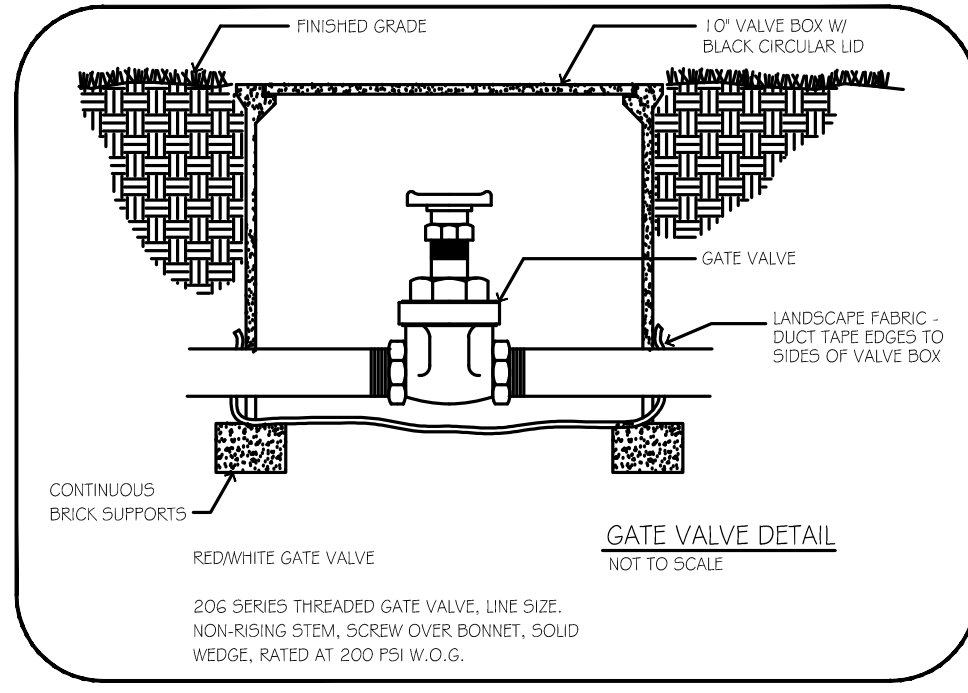
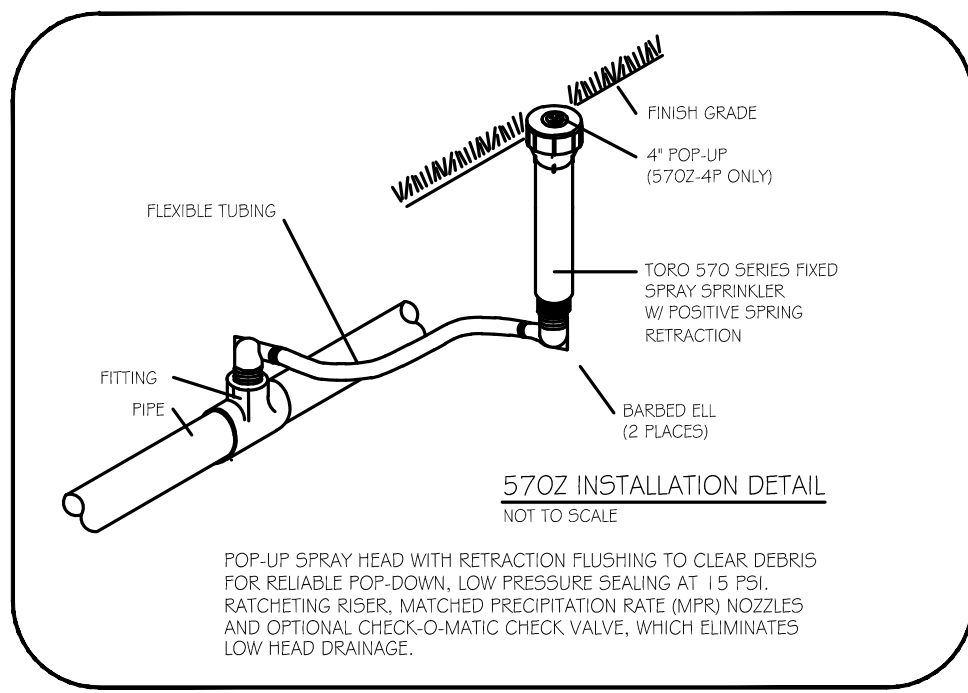
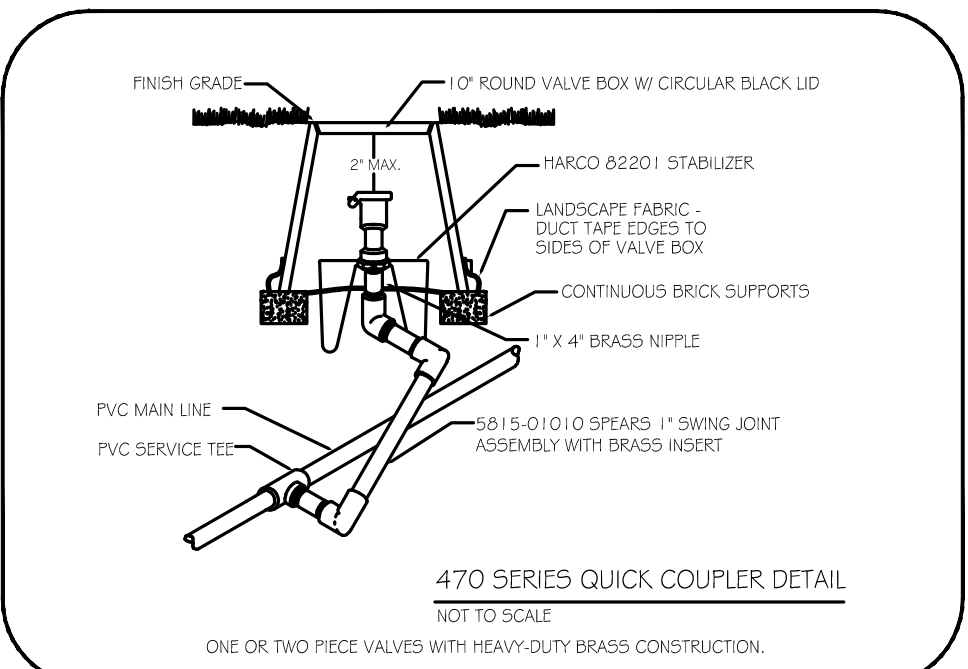
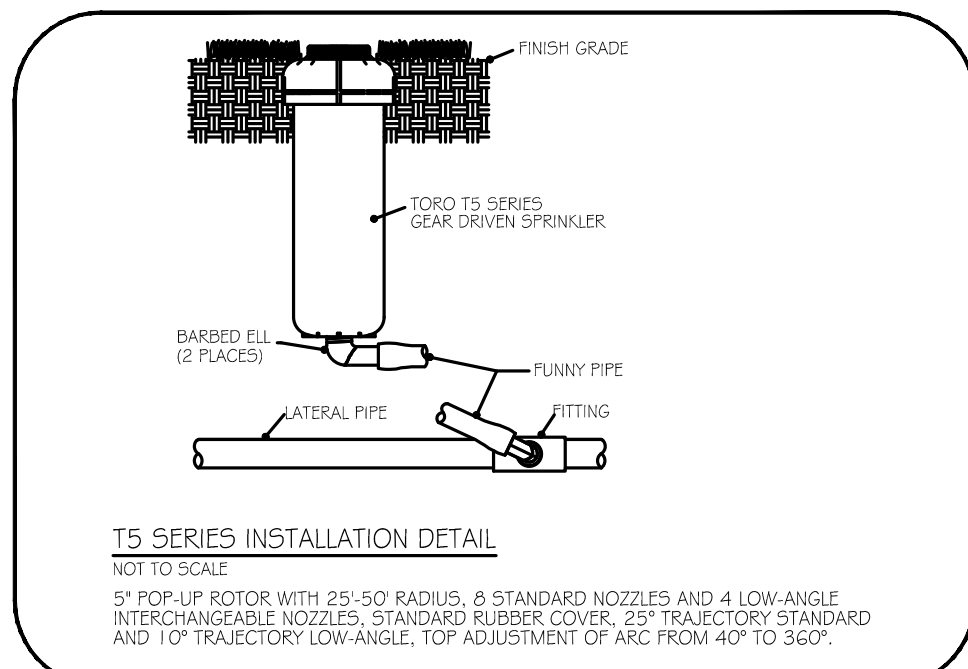
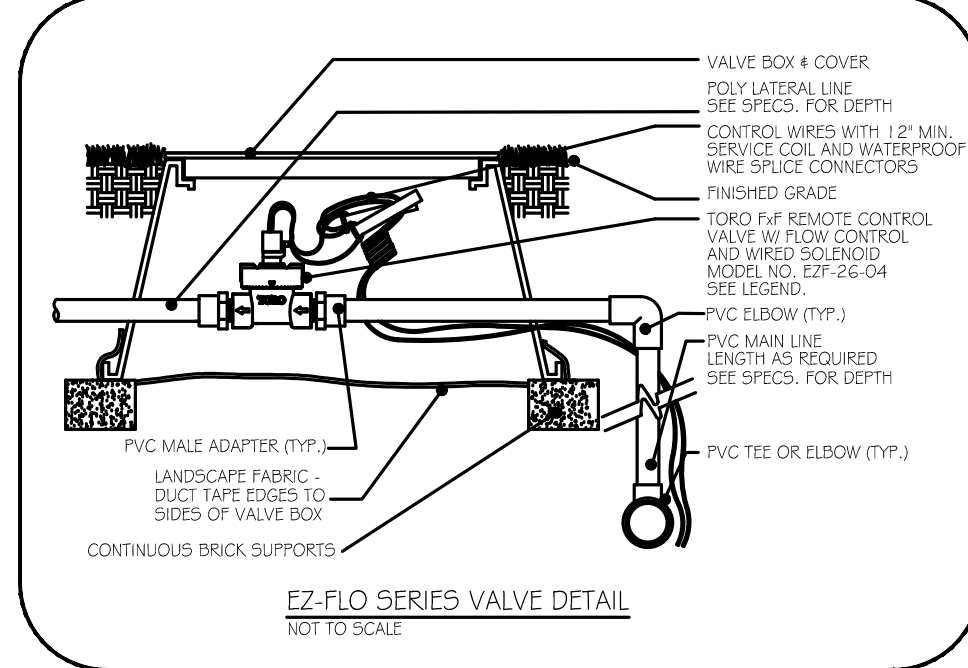
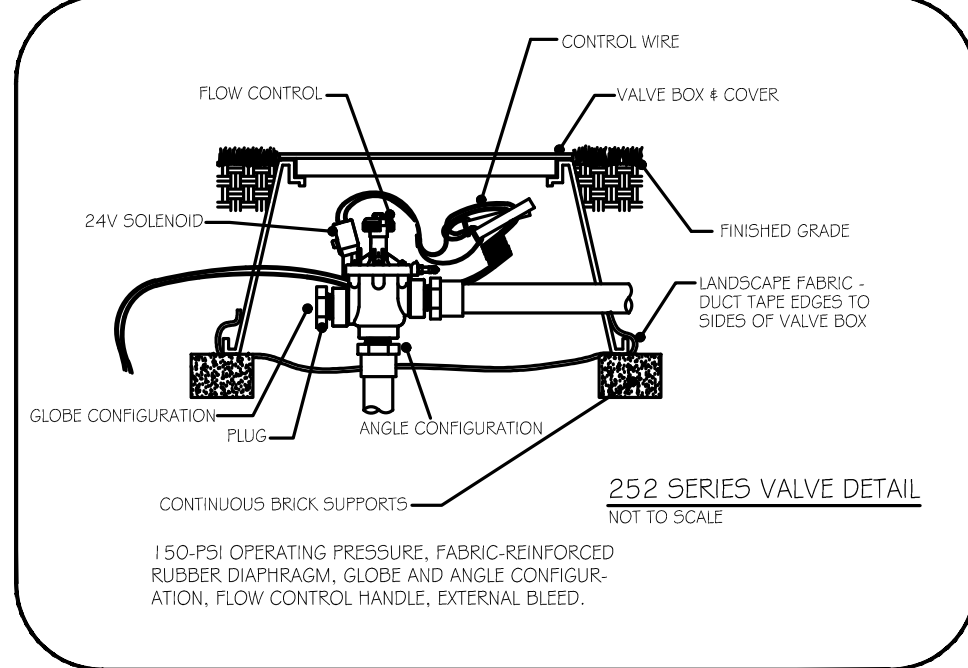
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WATER REQUIREMENTS: 31 GPM @ 43 PSI (AT P.O.C.)

ZONE NUMBER	VALVE SIZE	GPM	ZONE TYPE
P-1	1-1/2"	31	TURF SPRAYS
P-2	1-1/2"	28	TURF SPRAYS
P-3	1"	19	TURF ROTORS
P-4	1"	18	TURF SPRAYS
P-5	1"	24	TURF SPRAYS
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P-7	1"	15	TURF ROTORS



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LEGEND

● IRON FOUND ⊕ BRASS PILE SET ⊕ SEC. CORNER FOUND
 ⊗ IRON SET ⊗ MONUMENT SET ⊕ RECORDED
 ⊗ NAIL FOUND ⊗ MEASURED
 ⊗ NAIL & CAP SET ⊗ CALCULATED

EXISTING

— OH-ELEC-W-C ELEC. PHONE OR CABLE TV O.H. LINE, POLE & RAY WIRE
 — UG-CATV UNDERGROUND CABLE TV, CATV PEDESTAL
 — UG-ELEC-ELEC TELEPHONE U.G. CABLE, PRESS. & MANHOLE
 — UG-ELEC-GAS ELECTRIC G. CABLE, MANHOLE, METER & MANHOLE
 — GAS MAN. VALVE & GAS LINE MARKER
 — WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
 — SANITARY SEWER, CLEANOUT & MANHOLE
 — STORM SEWER, CLEANOUT & MANHOLE
 — CHIMNEY SEWER & MANHOLE
 — SQUARE, ROUND & SLOPE CATCH BASIN, YARD DRAIN
 — POST INDICATOR VALVE
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 — MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
 — UNIDENTIFIED STRUCTURE

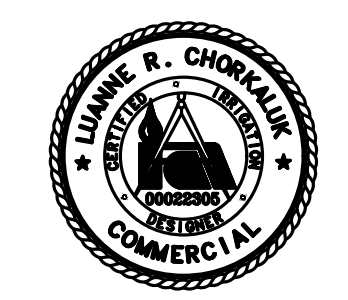
PROPOSED

— 671 SPOT ELEVATION
 — 670 CONTOUR LINE
 — FENCE
 — GUARD RAIL
 — STREET LIGHT
 — SIGN

CONCRETE
 ASPHALT
 GRAVEL SHOULDER
 WETLAND

STD HEAVY ROW DUTY ONLY
 STD HEAVY DEEP DUTY ONLY
 STD HEAVY DEEP DUTY STRENGTH

LEGAL DESCRIPTION
 CURRENT PARCEL ID: 22-09-176-019
 PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI CONDOMINIUM" AS RECORDED IN LIBER 53608. PAGE 798, OAKLAND COUNTY RECORDS.
 LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:
 UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUMS" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.



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 Fax: 616 887 6268

1050 Opdyke Road
 Auburn Hills, MI 48326
 Ph: 248 373 8800
 Fax: 248 373 8899

800.822.2216

Design By: L. CHORKALUK, C.I.D.
 Plan #: 20-0111c
 Date: 11/23/2020
 Revisions:

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IRRIGATION DETAILS
LINEAGE PARKING EXPANSION
 PART OF THE NW 1/4 OF SECTION 9, T. 1N, R. 8E.,
 CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

DES. LC DN. LC SUR. N/A P.M. BK
 S:\PROJECTS\2019\2019-48-UNL-UNL-UNL\CONSTRUCTION\IRRI\DWG\20-0111c.dwg (revised from 20-0111) IRRIGATION

ORIGINAL ISSUE DATE:
 JANUARY 10, 2020

PEA JOB NO. 2019-436

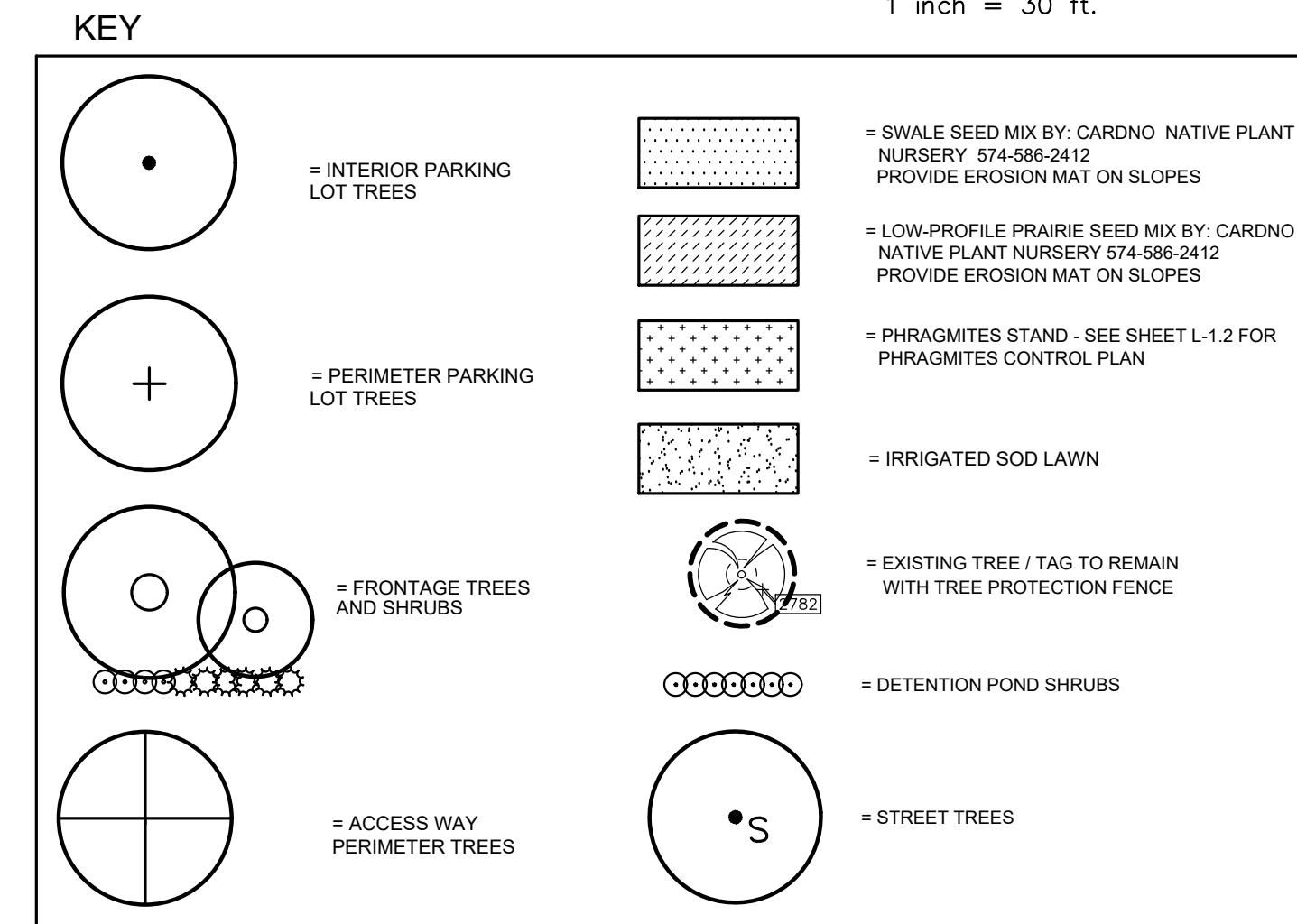
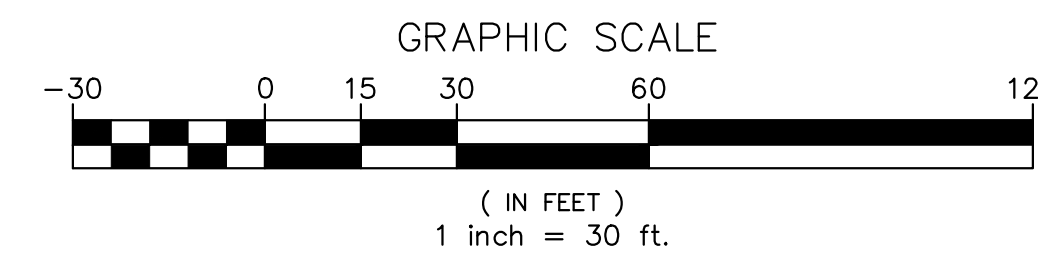
SCALE: 1" = 30'

DRAWING NUMBER:
I-1.1

QTY	SYM	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC COMMENT
12	CS36	Arctic Fire Dogwood	<i>Cornus stolonifera</i> 'Farrow'	36" Ht.	Cont. Native
20	PO36	Diablo Ninebark	<i>Physocarpus opulifolius</i> 'Monro'	36" Ht.	Cont. Native
81	TH36	Hicks Yew	<i>Taxus x media</i> 'Hicksii'	36" Ht.	Cont. Non-Native
28	VD36	Arrowwood Viburnum	<i>Viburnum dentatum</i>	36" Ht.	Cont. Native
141	TOTAL SHRUBS				

QTY	SYM	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC COMMENT	REPLACE TREE	GENUS %	SPECIES %
7	AR3	Redpointe Maple	<i>Acer rubrum</i> 'Redpointe'	3" Cal.	B&B Native	NO	7%	7%
4	BP10	Paper Birch	<i>Betula papyrifera</i>	10" Ht.	B&B Native	NO	4%	4%
9	CA3	American Hornbeam	<i>Carpinus caroliniana</i>	3" Cal.	B&B Native	NO	10%	10%
12	GT3	Skyline Honeylocust	<i>Gleditsia triacanthos</i>	3" Cal.	B&B Native	NO	13%	13%
5	LT3	Tulip Tree	<i>Liriodendron tulipifera</i>	3" Cal.	B&B Native	NO	5%	5%
5	NS3	Black Gum	<i>Nyssa sylvatica</i>	3" Cal.	B&B Native	NO	5%	5%
6	OV3	American Hophornbeam	<i>Ostrya virginiana</i>	3" Cal.	B&B Native	NO	6%	6%
6	PO3	Sycamore	<i>Platanus occidentalis</i>	3" Cal.	B&B Native	NO	6%	6%
3	QB3	Swamp White Oak	<i>Quercus bicolor</i>	3" Cal.	B&B Native	NO	3%	3%
7	QR3	Red Oak	<i>Quercus rubra</i>	3" Cal.	B&B Native	NO	7%	7%
9	TB3	American Basswood	<i>Tilia americana</i>	3" Cal.	B&B Native	NO	10%	10%
7	UA3	American Elm	<i>Ulmus americana</i>	3" Cal.	B&B Native	NO	7%	7%
80	TOTAL DECIDUOUS TREES							

QTY	SYM	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC COMMENT	REPLACE TREE	GENUS %	SPECIES %
7	AA8	Downy Serviceberry	<i>Amelanchier arborea</i>	8-10' Ht.	B&B Native	NO	7%	7%
7	CC8	Eastern Redbud	<i>Cercis canadensis</i>	8-10' Ht.	B&B Native	NO	7%	7%
14	TOTAL SUBCANOPY TREES							
94	TOTAL TREES							

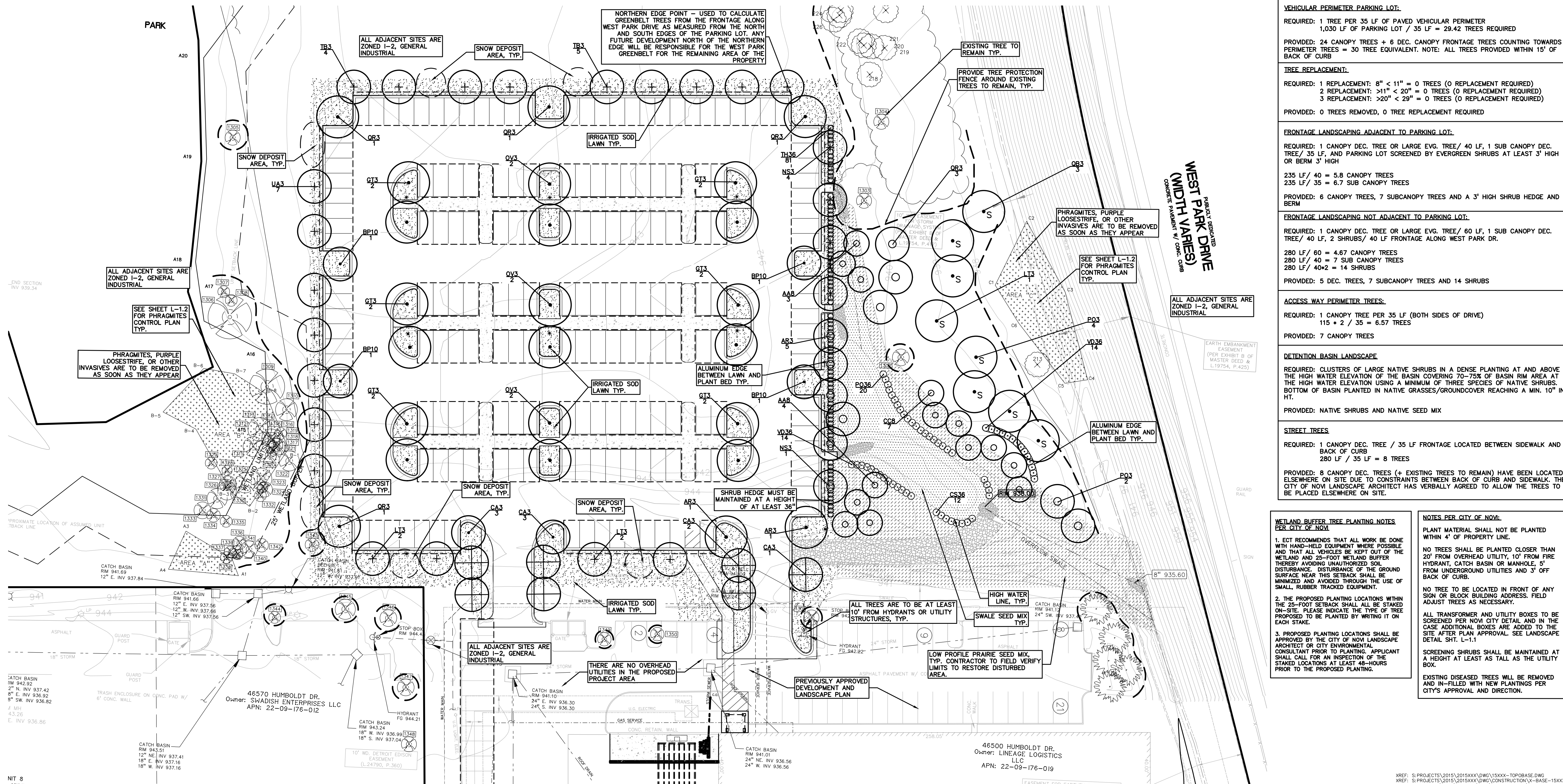


COST OPINION
PROJECT NAME: LINEAGE JOB NO. 2019-436

LANDSCAPE

ESTIMATED QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	ITEM PRICE
1,335	S.Y.	Specialty Seed Mix (Bioswale Area)	\$3.00	\$4,005
2,320	S.Y.	Sod Lawn	\$6.00	\$13,920
305	C.Y.	Topsoil - On Site (3" Depth)	\$7.00	\$2,135
30	C.Y.	Plant mix for beds (12" Depth)	\$15.00	\$450
10	C.Y.	Mulch (3" Depth)	\$35.00	\$350
141	EA.	Shrubs	\$50.00	\$7,050
556	LF.	Aluminum edge	\$5.00	\$2,780
14	EA.	Sub-Canopy Ornamental Trees	\$250.00	\$3,500
80	EA.	Deciduous Trees	\$400.00	\$32,000
1	LS.	Irrigation	\$20,000.00	\$20,000
TOTAL LANDSCAPING				\$86,190

Does not include foundation plantings, contingency, mobilization



LANDSCAPE CALCULATIONS:
PER CITY OF NOV ZONING ORDINANCE; I-2 GENERAL INDUSTRIAL

INTERIOR PARKING LOT LANDSCAPE:
REQUIRED:
A. SF OF PARKING SPACE = 50,000 x 5.0% = 2,500 SF
B. SF OF ADDITIONAL PAVING = (66,329 SF - 50,000) x 0.5% = 8,165 SF
C. A+B = 2,500 + 8,165 = 2,582 SF OF ISLANDS REQUIRED
D. C/200 = 2,582 / 200 = 12.91 CANOPY TREES REQUIRED
PROVIDED: 6,471 SF OF LANDSCAPING
13 + 17 = 30 CANOPY TREES (1 TREE MIN. PER ENDCAP / ISLAND IN ADDITION TO THE 13 REQUIRED TREES)

VEHICULAR PERIMETER PARKING LOT:
REQUIRED: 1 TREE PER 35 LF OF PAVED VEHICULAR PERIMETER
1,030 LF OF PARKING LOT / 35 LF = 29.42 TREES REQUIRED
PROVIDED: 24 CANOPY TREES + 6 DEC. CANOPY FRONTAGE TREES COUNTING TOWARDS PERIMETER TREES = 30 TREE EQUIVALENT. NOTE: ALL TREES PROVIDED WITHIN 15' OF BACK OF CURB

TREE REPLACEMENT:
REQUIRED: 1 REPLACEMENT: 8" < 11" = 0 TREES (0 REPLACEMENT REQUIRED)
2 REPLACEMENT: >11" < 20" = 0 TREES (0 REPLACEMENT REQUIRED)
3 REPLACEMENT: >20" < 29" = 0 TREES (0 REPLACEMENT REQUIRED)
PROVIDED: 0 TREES REMOVED, 0 TREE REPLACEMENT REQUIRED

FRONTAGE LANDSCAPING ADJACENT TO PARKING LOT:
REQUIRED: 1 CANOPY DEC. TREE OR LARGE EVG. TREE / 40 LF, 1 SUB CANOPY DEC. TREE / 35 LF, AND PARKING LOT SCREENED BY EVERGREEN SHRUBS AT LEAST 3' HIGH OR BERM 3' HIGH
235 LF / 40 = 5.875 CANOPY TREES
235 LF / 35 = 6.714 SUB CANOPY TREES
PROVIDED: 6 CANOPY TREES, 7 SUBCANOPY TREES AND A 3' HIGH SHRUB HEDGE AND BERM

FRONTAGE LANDSCAPING NOT ADJACENT TO PARKING LOT:
REQUIRED: 1 CANOPY DEC. TREE OR LARGE EVG. TREE / 60 LF, 1 SUB CANOPY DEC. TREE / 40 LF, 2 SHRUBS / 40 LF FRONTAGE ALONG WEST PARK DR.
280 LF / 60 = 4.67 CANOPY TREES
280 LF / 40 = 7 SUB CANOPY TREES
280 LF / 40x2 = 14 SHRUBS
PROVIDED: 5 DEC. TREES, 7 SUBCANOPY TREES AND 14 SHRUBS

ACCESS WAY PERIMETER TREES:
REQUIRED: 1 CANOPY TREE PER 35 LF (BOTH SIDES OF DRIVE)
115 x 2 / 35 = 6.57 TREES
PROVIDED: 7 CANOPY TREES

DETENTION BASIN LANDSCAPE:
REQUIRED: CLUSTERS OF LARGE NATIVE SHRUBS IN A DENSE PLANTING AT AND ABOVE THE HIGH WATER ELEVATION OF THE BASIN COVERING 70-75% OF BASIN RIM AREA AT THE HIGH WATER ELEVATION USING A MINIMUM OF THREE SPECIES OF NATIVE SHRUBS. BOTTOM OF BASIN PLANTED IN NATIVE GRASSES/GROUNDCOVER REACHING A MIN. 10" IN HT.
PROVIDED: NATIVE SHRUBS AND NATIVE SEED MIX

STREET TREES:
REQUIRED: 1 CANOPY DEC. TREE / 35 LF FRONTAGE LOCATED BETWEEN SIDEWALK AND BACK OF CURB
280 LF / 35 LF = 8 TREES
PROVIDED: 8 CANOPY DEC. TREES (+ EXISTING TREES TO REMAIN) HAVE BEEN LOCATED ELSEWHERE ON SITE DUE TO CONSTRAINTS BETWEEN BACK OF CURB AND SIDEWALK. THE CITY OF NOV LANDSCAPE ARCHITECT HAS VERBALLY AGREED TO ALLOW THE TREES TO BE PLACED ELSEWHERE ON SITE.

WETLAND BUFFER TREE PLANTING NOTES PER CITY OF NOV:
1. ECT RECOMMENDS THAT ALL WORK BE DONE WITH HAND-HELD EQUIPMENT WHERE POSSIBLE AND THAT ALL VEHICLES BE KEPT OUT OF THE WETLAND AND 25-FOOT WETLAND BUFFER THEREBY AVOIDING UNAUTHORIZED SOIL DISTURBANCE. DISTURBANCE OF THE GROUND SURFACE NEAR THIS SETBACK SHALL BE MINIMIZED AND AVOIDED THROUGH THE USE OF SMALL, RUBBER TRACKED EQUIPMENT.
2. THE PROPOSED PLANTING LOCATIONS WITHIN THE 25-FOOT SETBACK SHALL ALL BE STAKED ON-SITE. PLEASE INDICATE THE TYPE OF TREE PROPOSED TO BE PLANTED BY WRITING IT ON EACH STAKE.
3. PROPOSED PLANTING LOCATIONS SHALL BE APPROVED BY THE CITY OF NOV LANDSCAPE ARCHITECT OR CITY ENVIRONMENTAL CONSULTANT PRIOR TO PLANTING. APPLICANT SHALL CALL FOR AN INSPECTION OF THE STAKED LOCATIONS AT LEAST 48-HOURS PRIOR TO THE PROPOSED PLANTING.

NOTES PER CITY OF NOV:
PLANT MATERIAL SHALL NOT BE PLANTED WITHIN 4' OF PROPERTY LINE.
NO TREES SHALL BE PLANTED CLOSER THAN 20' FROM OVERHEAD UTILITY, 10' FROM FIRE HYDRANT, CATCH BASIN OR MANHOLE, 5' FROM UNDERGROUND UTILITIES AND 3' OFF BACK OF CURB.
NO TREE TO BE LOCATED IN FRONT OF ANY SIGN OR BLOCK BUILDING ADDRESS. FIELD ADJUST TREES AS NECESSARY.
ALL TRANSFORMER AND UTILITY BOXES TO BE SCREENED PER NOV CITY DETAIL AND IN THE CASE ADDITIONAL BOXES ARE ADDED TO THE SITE AFTER PLAN APPROVAL. SEE LANDSCAPE DETAIL SHT. L-1.1
SCREENING SHRUBS SHALL BE MAINTAINED AT A HEIGHT AT LEAST AS TALL AS THE UTILITY BOX.
EXISTING DISEASED TREES WILL BE REMOVED AND IN-FILLED WITH NEW PLANTINGS PER CITY'S APPROVAL AND DIRECTION.

NO.	BY	DATE	REVISIONS
1	JKS	04-22-20	ISSUED FOR BIDS
2	JKS	04-22-20	ENLARGED PARKING AREA
3	JKS	04-22-20	FINAL SITE PLAN
4	JKS	04-22-20	FINAL SITE PLAN
5	JKS	04-22-20	FINAL SITE PLAN
6	JKS	04-22-20	FINAL SITE PLAN
7	JKS	04-22-20	FINAL SITE PLAN
8	JKS	04-22-20	FINAL SITE PLAN
9	JKS	04-22-20	FINAL SITE PLAN
10	JKS	04-22-20	FINAL SITE PLAN



CAUTION!
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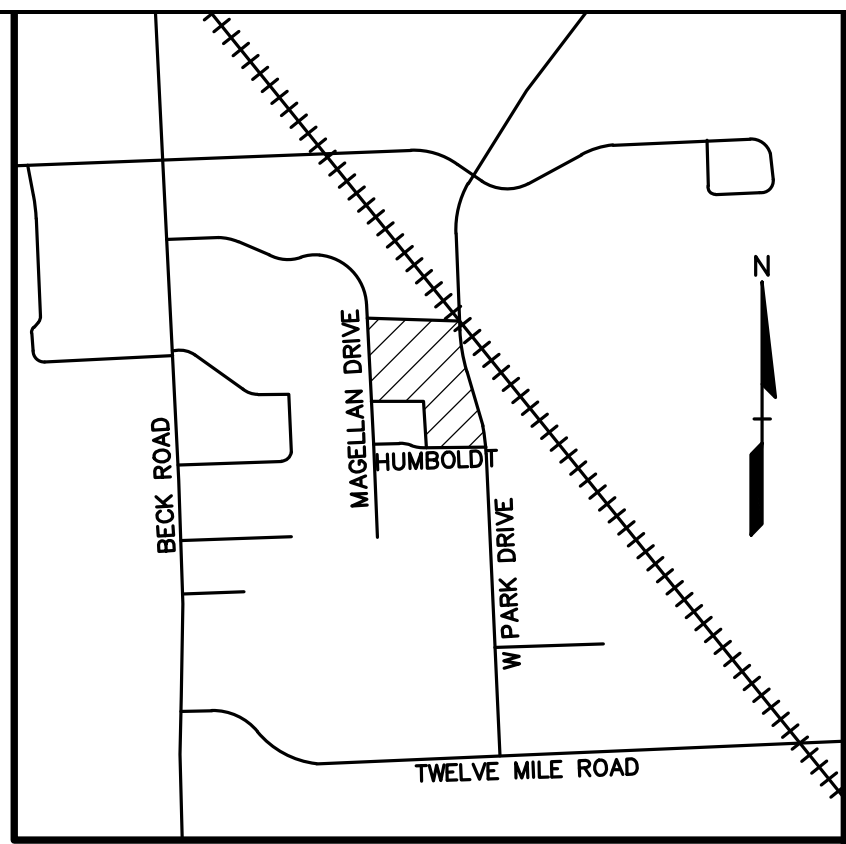
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www.peainc.com

JB DONALDSON
37610 HILLS TECH DRIVE
FARMINGTON HILLS, MICHIGAN 48331
LANDSCAPE PLAN
LINEAGE PARKING EXPANSION
PART OF THE NW 1/4 OF SECTION 9, T. 1N, R. 8E, CITY OF NOV, OAKLAND COUNTY, MICHIGAN

ORIGINAL ISSUE DATE: JANUARY 10, 2020
PEA JOB NO. 2019-436
SCALE: 1" = 30'
DRAWING NUMBER: L-1.0



NO.	BY	DATE	DESCRIPTION
1	JKS	01-29-20	PLANNING AND PRELIMINARY
2	JKS	02-10-20	PLANNING AND PRELIMINARY
3	JKS	02-10-20	PLANNING AND PRELIMINARY
4	JKS	02-10-20	PLANNING AND PRELIMINARY
5	JKS	02-10-20	PLANNING AND PRELIMINARY
6	JKS	02-10-20	PLANNING AND PRELIMINARY
7	JKS	02-10-20	PLANNING AND PRELIMINARY
8	JKS	02-10-20	PLANNING AND PRELIMINARY
9	JKS	02-10-20	PLANNING AND PRELIMINARY
10	JKS	02-10-20	PLANNING AND PRELIMINARY
11	JKS	02-10-20	PLANNING AND PRELIMINARY
12	JKS	02-10-20	PLANNING AND PRELIMINARY
13	JKS	02-10-20	PLANNING AND PRELIMINARY
14	JKS	02-10-20	PLANNING AND PRELIMINARY
15	JKS	02-10-20	PLANNING AND PRELIMINARY
16	JKS	02-10-20	PLANNING AND PRELIMINARY
17	JKS	02-10-20	PLANNING AND PRELIMINARY
18	JKS	02-10-20	PLANNING AND PRELIMINARY
19	JKS	02-10-20	PLANNING AND PRELIMINARY
20	JKS	02-10-20	PLANNING AND PRELIMINARY

REVISIONS

NATIVE SEED INSTALLATION AND MAINTENANCE GUIDELINES:

Prepare site for installation

Prior to installing native seed or plants, the site needs to be prepared properly, which involves identifying existing native plants, removing unwanted vegetation, stabilizing erodible areas, and preparing the plant and seed beds. Before making modifications to a site, however, be sure to obtain any required permits and put proper erosion control measures in place. Cardno can assist with your permitting and erosion control needs.

Before installing a native landscape, a site may need to be prepared over one or more growing seasons. The effort required depends on current site conditions, in particular the amount of non-native plants in the seed bank and invasive species on site. Cardno can provide the professional assistance needed to evaluate site preparation needs.

Identify any existing native vegetation

Some projects may have areas of "remnant" habitat present. Protecting these species onsite or temporarily relocating and using them later as part of the installation can be key to a project's success. Cataloging which species are present within these areas can also be highly valuable for developing a planting plan, because the remnant will contain species that have adapted to survive at that particular site. These remnants can also serve as seed sources for plant material if preserving local genotype is a goal of the project.

Remove unwanted vegetation

Be sure to remove any weeds and existing vegetation that could out-compete native species. Besides the usual aggressive invasive species, such as Purple Loosestrife, Reed Canary Grass, and Honeysuckle, some of the more problematic competitors include cool-season grasses, such as Bromo, Clover, Tall Fescue, and other turf grasses. If your site has a significant unwanted plant seed bank, it will likely require ongoing control and maintenance, to ensure unwanted vegetation does not become re-established.

Several techniques can be used to remove undesirable vegetation. Hand weeding can be done if a site is small or if there are a limited number of plants to be removed. However, for most sites, either a more aggressive approach or a combination of approaches is typically needed. A trained and licensed native landscape professional should perform these intensive vegetation control activities.

Effective vegetation removal techniques

Herbicide application

Works for large sites or sites with little or no native vegetation. Selective use of herbicide is especially effective for aggressive non-natives. The number of treatments depends upon site conditions, species present, and the presence of a seed bank within the soil. Repeat applications may be required for persistent perennial weeds.

Smothering

Works for smaller sites when chemical use is not desirable. Landscaping fabric, dense compost, or grass clippings cover existing vegetation and is left in place for a full growing season.

Cultivation

Involves tilling an area regularly from spring to fall, to between four to five inches deep, to destroy weed root systems. Because it can also bring up weed seeds, cultivation needs to occur at regular intervals, between two to three weeks, to ensure undesirable perennials do not re-sprout. This has the highest risk of soil loss from erosion. Plants with deep root systems may need supplemental herbicide application.

Prescribed burning

Can be used to prepare a site, but it is most commonly used to maintain a prairie landscape. See the section on maintenance for more information on prescribed burning.

Stabilize erodible areas

Many native plant installations are located along streambanks, shorelines, and other sloped areas that have a tendency to erode. Before planting occurs on these sites, the surrounding soils need to be stabilized. Structures

such as silt fences, erosion control blankets, straw mulch, and straw bale dams can be installed to control erosion and siltation. As a site becomes stable, seeding with permanent native species helps with optimal long-term erosion control. Cardno provides various bioengineering materials for erosion control.

Prepare planting and seedbeds

To prepare the soil and create optimal plant conditions, before disturbing any ground:

- > Check for any buried utilities
- > Clear area of debris that would interfere with planting
- > Mow any excess existing vegetation growth
- > Apply broad-spectrum or targeted herbicide, depending on species present
- > De-compact any areas of special concern
 - Lightly de-compact tilled or loose soil with a roller, cultipacker, or similar equipment. If using a no-till seed drill, tilling can usually be omitted.
 - If ground is wet, tilling should not occur until the soil dries enough to break apart when tilled.

Amend soils

For stormwater applications like rain gardens and bioswales, soil can be amended to create appropriate growing conditions for wetland plants and allow for drainage required to allow these features to function properly. These areas often have the native soil removed and have a combination of compost and sand applied to achieve this objective.

Follow appropriate timing

Seed: The optimal time to install seed is from the fall (September 1) to late spring (June 15). Avoid mid-to-late summer seeding, because of limited soil moisture and rainfall. Native seed mixes can be installed in the fall when temperatures are cooler and rains are more frequent. Many native species require a cold stratification in order to break dormancy. When conditions are right in the spring, the seed will be in place to germinate.

Seeding a wetland in the winter is often easier, because the site is frozen and equipment can more easily access the site. Broadcast the seed when the evening temperatures drop below freezing. Use appropriate erosion control measures, because the seed is not likely to germinate and provide stabilization until the following growing season.

Live Plants: Live plants, including plugs, container stock, and bareroot herbaceous plants, are best planted during the growing season, which in the Midwest is between May 1 and October 15. Spring plantings are usually more successful, because the plants have sufficient time to develop a deep-root system to withstand summer droughts. If planting needs to occur in the middle of summer, irrigation is recommended. If plants are installed in late fall (after October 15) after going dormant, care should be taken to anchor plants in loose soil to prevent frost heaving. Wet soils are more prone to frost heaving.

Dormant Woody Materials: Bare-root trees and shrubs, live stakes, fascines, and brush layering are all dormant when sold and are best planted during their dormant season (December 1 through April 15). This timing reduces transplant shock and allows the plants to develop a root system when moisture is readily available. Fall availability of bare-root trees and shrubs is weather dependent, and winter weather can eliminate fall harvest opportunities.

Install seed and plant material

Seed installation techniques

Cardno's native plant experts recommend using specific techniques to successfully install native seed.

Broadcasting: For small (typically two acres or less) or irregularly shaped areas, seed can be planted by hand broadcasting. To aid seed distribution, combine the seed mix with filler materials, such as dry sand, silt, sand, or vermiculite. The filler material should be dry so that the seed flows easily through the broadcaster. If not already included in the seed mix, plant a temporary cover crop along with the seed, to stabilize the soil

while the permanent native species germinate and become established, especially in highly-erodible areas. Do not use a heavy amount of cover crop seed, which could smother the native seed and inhibit germination.

Using a hand-crank or low-behind broadcaster, start with half of the seed and try to cover the entire area with that amount of seed. Take the remaining half of the seed, go to the opposite end of the site and cover it again. This approach helps prevent running out of seed, a common occurrence. After broadcasting is complete, it is important to use a cultipacker or roller over the area to make good seed-to-soil contact. If a roller is not available, tractor tires can be used instead. Do not cover seed more than 1/4-inch deep.

No-Till Drill: For larger areas and sites with existing vegetation, use a no-till seed drill, which does not require the soil to be tilled before planting, resulting in minimal soil disturbance. No-till drills plant seed in rows by opening slits in the soil, into which seed is deposited. Several brands of no-till drills are available to plant prairie forbs and grasses. If using a no-till drill, Cardno recommends following the specific manufacturer's recommendations. Because the diversity of seed sizes makes drill calibration a challenge, perform a few test areas first to help prevent running out of seed.

If wetland is temporarily dry:

- > Scarify soil surface through shallow tilling or raking. If tilling adjacent to a wet area, assess the potential for erosion and runoff when disturbing the soil.
- > In lower elevations, where water levels are deeper, sow seed that is packaged wet. Sow dry-packaged seed on the higher elevations, this seed can overlap into wet-seed areas.
- > Press seed firmly into soil using a roller, cultipacker, or similar equipment. Light raking is an acceptable alternative, but be careful not to cover seed more than 1/4-inch deep.
- > Install erosion fabric over areas where water is likely to flow and displace seed.
- > Slowly restore water level or wait for rainfall to bring water level up after seeding. If feasible, use outlet controls to maintain water level depths between 1/2 inch and 6 inches until seed germinates and wetland vegetation is well established.

If wetland is permanently wet:

- > Mix seed with damp clay pellets in a container, such as a five-gallon bucket. Clay pellets should be small (approximately 1/8 inch in diameter) and placed in optimal areas for germination.
- > Sow dry-packaged seed in areas at and above the waterline. If soil moisture conditions permit, press seed firmly into soil using a roller, cultipacker, or similar equipment. Do not cover seed more than 1/4-inch deep.
- > Permanently wet areas can also be seeded by broadcasting when the ground is frozen.
- > Post-planting Protection: Plantings may need to be protected after installation. Use physical barriers such as chicken wire, netting, or twine obstacles to keep out geese, muskrats, deer, and other animals. Various repellants can also be applied directly to the plants, but they often need to be re-applied periodically.

Monitor and maintain site

To help ensure success, projects need a maintenance and management plan that is flexible and supports site development goals. While native plants tend to germinate and develop at a slower rate than ornamental perennials or turf grass, regular maintenance during the establishment period greatly improves project success. Regular maintenance and monitoring controls invasive species, ensures optimal moisture levels are present, and identifies other necessary management actions.

The maintenance of a native landscape can include many different actions:

- > Regular site inspection and monitoring
- > Mowing
- > Selective herbicide application
- > Overseeding and supplemental planting
- > Water control and temporary irrigation
- > Prescribed burning

Selection of maintenance methods partly depends upon timing, but other factors such as aesthetic goals, project size, and budget also help determine what techniques will work best. For example, for small areas or sites where chemical applications cannot be performed, target species may be removed by hand.

Regular site inspection and monitoring

During the first 6 to 12 months of a seeding project, it may be difficult to differentiate between the germinated native seed and undesirable weeds. Although some wildflower and grass species will be recognizable within the first year, it may take two to four years before the native plant community is sufficiently established to be recognized by most people. During this establishment period, address any invasive species that subsequently appear on site, to prevent them from becoming a larger problem later on. Cardno inspects project areas throughout each growing season to gauge native plant density and composition, and manage undesirable weeds.

Mowing

During the establishment period, native plants concentrate their energy toward expanding their root systems. Mowing can suppress non-native annual plants without negatively affecting natives. Mowing also thins out the canopy, allowing more light to reach new seedlings.

Because most weed competition comes from fast-growing annuals, mowing needs to occur to keep these species from re-seeding. Cardno recommends mowing to between 8 and 10 inches high. During the first growing season, our team performs one to three mowing events, depending on the height and growth of the vegetation. If weed pressure is high, more mowing events may be needed.

Selective herbicide application

Many perennial weed species are best controlled through chemical applications. Cardno's trained herbicide application staff uses caution when applying these chemicals, to minimize collateral damage to desirable plant species. Cardno staff has the qualifications to ensure chemical selection, rates, and application methods are legal and appropriate.

Overseeding and supplemental planting

Most native species grow slowly from seed, making it difficult to assess the development of a recently seeded site. Supplemental plantings are often used to increase diversity or to introduce conservative species to an established planting. Cardno can determine the need for overseeding or supplemental planting, typically by the second growing season following installation.

Water control and temporary irrigation

In periods of drought, small native areas will benefit from irrigation, especially during the first growing season. Typically, one inch of water per week is sufficient to encourage proper germination and growth. Weed pressure will increase with supplemental watering, which may then require more frequent mowing or herbicide application.

Prescribed burning

Controlled burns can be important to long-term prairie maintenance. Burning simulates historical processes that once maintained prairies. It greatly reduces the number of woody species and enhances the health of herbaceous species. It also clears thatch, making way for new growth in the spring. The black, burned surface absorbs and retains heat, giving natives an early start in the spring. Cardno has a team of personnel trained in fire management techniques.

Botanical Name	Common Name
Swale Seed Mix CARDNO 574-586-2412 cardnonativeplantnursery.com	
Permanent Grasses/Sedges:	
<i>Andropogon gerardii</i>	Big Bluestem
<i>Carex comosa</i>	Bristly Sedge
<i>Carex cristatella</i>	Crested Owl Sedge
<i>Carex lurida</i>	Bottlebrush Sedge
<i>Carex spp.</i>	Prairie Sedge Mix
<i>Carex vulpinoidea</i>	Brown Fox Sedge
<i>Elymus virginicus</i>	Virginia Wild Rye
<i>Glyceria striata</i>	Fowl Mann Grass
<i>Panicum virgatum</i>	Switch Grass
<i>Scirpus atrovirens</i>	Dark Green Rush
<i>Scirpus cyperinus</i>	Wood Grass
<i>Spartina pectinata</i>	Prairie Cord Grass
Temporary Cover:	
<i>Avena sativa</i>	Common Oat
<i>Lolium multiflorum</i>	Annual Rye
Forbs:	
<i>Alisma spp.</i>	Water Plantain (Various Mix)
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Coneopsis tripteris</i>	Tall Coneopsis
<i>Eutrochium maculatum</i>	Spotted Joe-Pye Weed
<i>Iris virginica</i>	Blue Flag
<i>Liatris spicata</i>	Marsh Blazing Star
<i>Lobelia cardinalis</i>	Cardinal Flower
<i>Lobelia siphilitica</i>	Great Blue Lobelia
<i>Lycopus americanus</i>	Common Water Horehound
<i>Psycanthemum virginianum</i>	Common Mountain Mint
<i>Rubricaria trieta</i>	Brown-Eyed Susan
<i>Sagittaria latifolia</i>	Common Arrowhead
<i>Senna hebecarpa</i>	Wild Senna
<i>Silphium terebinthaceum</i>	Prairie Dock
<i>Symphoricarum novae-angliae</i>	New England Aster
<i>Verbena hastata</i>	Blue Vervain
<i>Zizia aurea</i>	Golden Alexanders

Botanical Name	Common Name
Low-profile Prairie Seed Mix CARDNO 574-586-2412 cardnonativeplantnursery.com	
Permanent Grasses:	
<i>Bouteloua curtipendula</i>	Side Oats Grama
<i>Carex spp.</i>	Prairie Carex Mix
<i>Elymus canadensis</i>	Canada Wild Rye
<i>Koeleria pyramidata</i>	Junc Grass
<i>Panicum virgatum</i>	Switch Grass
<i>Schizachyrium scoparium</i>	Little Bluestem
Temporary Cover:	
<i>Avena sativa</i>	Common Oat
<i>Lolium multiflorum</i>	Annual Rye
Forbs:	
<i>Anemone canadensis</i>	Lead Plant
<i>Anemone cylindrica</i>	Thimbleweed
<i>Asclepias syriaca</i>	Common Milkweed
<i>Asclepias tuberosa</i>	Butterfly Milkweed
<i>Baptisia alba</i>	White Wild Indigo
<i>Chamaecrista fasciculata</i>	Partridge Pea
<i>Coreopsis lanceolata</i>	Sand Coreopsis
<i>Coreopsis palmata</i>	Prairie Coreopsis
<i>Dalea candida</i>	White Prairie Clover
<i>Dalea purpurea</i>	Purple Prairie Clover
<i>Desmanthus illinoensis</i>	Illinois Sensitive Plant
<i>Echinacea purpurea</i>	Broad-Leaved Purple Coneflower
<i>Eryngium yuccifolium</i>	Rattlesnake Master
<i>Lespedeza capitata</i>	Round-Head Bush Clover
<i>Liatris aspera</i>	Rough Blazing Star
<i>Lupinus perennis</i>	Wild Lupine
<i>Monarda fistulosa</i>	Wild Bergamot
<i>Oligoneuron rigidum</i>	Stiff Goldenrod
<i>Parthenium integrifolium</i>	Wild Quinine
<i>Penstemon digitalis</i>	Foxglove Beard Tongue
<i>Penstemon hirsutus</i>	Hairy Beard Tongue
<i>Psycanthemum virginianum</i>	Common Mountain Mint
<i>Ratibida pinnata</i>	Yellow Coneflower
<i>Rudbeckia hirta</i>	Black-Eyed Susan
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan
<i>Silphium terebinthaceum</i>	Prairie Dock
<i>Solidago speciosa</i>	Showy Goldenrod
<i>Symphoricarum encoides</i>	Health Aster
<i>Symphoricarum laeve</i>	Smooth Blue Aster
<i>Symphoricarum novae-angliae</i>	New England Aster
<i>Tradescantia ohimensis</i>	Common Spiderwort
<i>Verbena stricta</i>	Hoary Vervain
<i>Vernonia spp.</i>	Ironweed (Various Mix)
<i>Veronicastrum virginicum</i>	Culvers Root



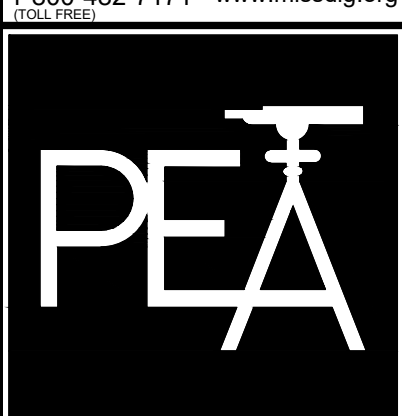
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JB DONALDSON
37610 HILLS TECH DRIVE
FARMINGTON HILLS, MICHIGAN 48331
LANDSCAPE DETAILS
LINEAGE PARKING EXPANSION
PART OF THE NEW 1/4 OF SECTION 9, T. 1N., R. 8E.,
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN
DES. JRG DN. JRG SUR. N/A P.M. BK
S:\PROJECTS\2019\2019-438-UNL-UNL-UNL\DWG\CONSTRUCTION\1-10-LANDSCAPE PLAN-FINAL.dwg

ORIGINAL ISSUE DATE:
JANUARY 10, 2020

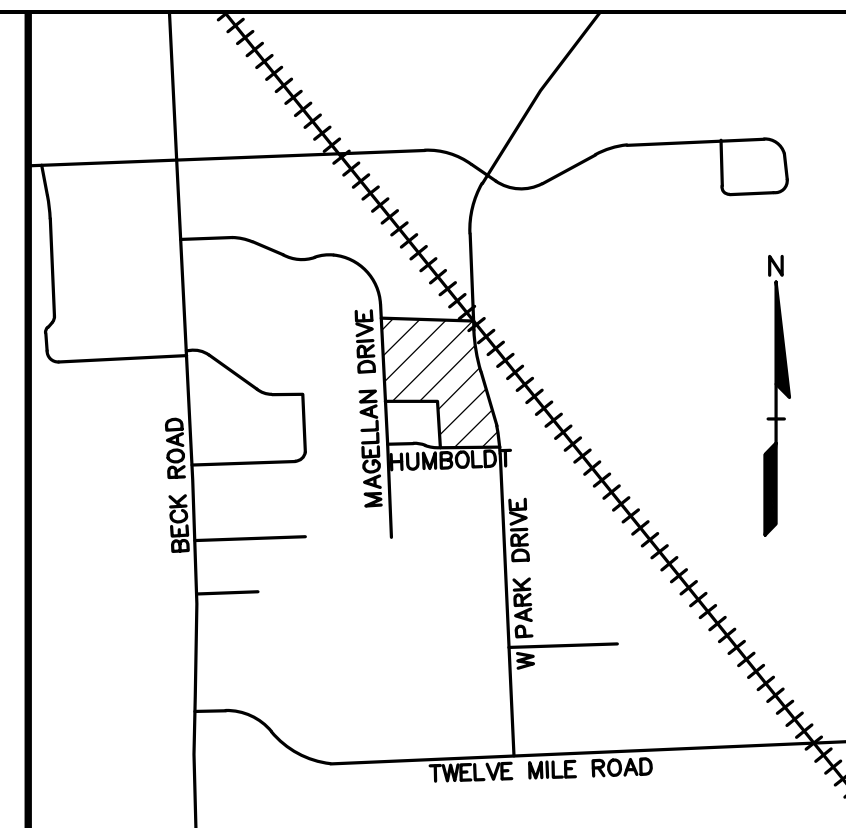
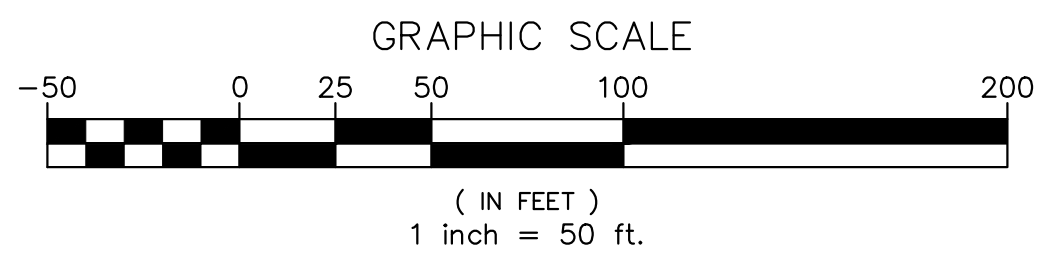
PEA JOB NO. 2019-438

SCALE: N / A

DRAWING NUMBER:

L-1.2

XREF: S:\PROJECTS\2015\2015XXXX\DWG\15XXXX-TOPOBASE.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION\X-BASE-15XXXX.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION\X-TBLK-15XXXX.DWG



NO.	BY	DATE	REVISIONS
1	JKS	08-03-20	ISSUED FOR BIDS
2	JKS	08-22-20	ENLARGED PARKING AREA
3	JKS	08-22-20	FINAL SITE PLAN
4	JKS	08-22-20	FINAL SITE PLAN
5	JKS	08-22-20	FINAL SITE PLAN
6	BA	08-29-20	SS&C RESUBMITTAL
7	BA	07-15-20	GRADING REVISION
8	BA	07-27-20	ARCHITECTURAL REVISIONS
9	BA	08-26-20	PLANNING AND PER. SUBMITTAL
10	BA	11-02-20	PLANNING AND PER. SUBMITTAL

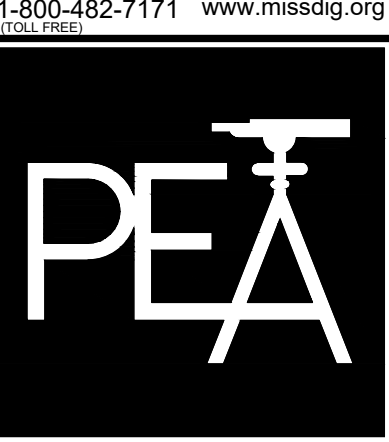


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JB DONALDSON 37610 HILLS TECH DRIVE FARMINGTON HILLS, MICHIGAN 48331	PHRAGMITES CONTROL PLAN LINEAGE PARKING EXPANSION PART OF THE NW 1/4 OF SECTION 9, T. 1N, R. 8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN	DES. JRG DN. JRG SUR. N/A P.M. BK
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ORIGINAL ISSUE DATE: JANUARY 10, 2020

PEA JOB NO. 2019-436

SCALE: 1" = 50'

DRAWING NUMBER: L-1.3

XREF: S:\PROJECTS\2015\2015XXXX\DWG\1500X-TOPOBASE.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION-V-BASE-15XXX.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION-V-TBLK-15XXX.DWG

NOTE:
THE CITY LANDSCAPE ARCHITECT SHALL BE NOTIFIED WHEN TREATMENTS OCCUR.

STAND 'A'- FLAGS A-1 TO A-4
STAND A IS LOCATED ALONG THE SOUTHERN PROPERTY LINE AND JUST EAST OF THE EXISTING WETLAND. THE POCKET OF PHRAGMITES WAS FOUND IN THE AREA ALONG THE WETLAND. THIS STAND WAS THICK AND DENSE. THE DELINEATED STAND IS APPROXIMATELY 2407 SF (0.06 AC). DUE TO THE WETLAND AND DRAINAGE DITCH A CITY OF NOVI WETLAND USE PERMIT WILL BE NEEDED TO ERADICATE THE SPECIES FROM THIS AREA.

STAND 'B'- FLAGS B-1 TO B-8
STAND B IS LOCATED WITHIN THE SOUTHEASTERN PORTION OF THE WETLAND. THIS STAND WAS SPORADIC WITH POCKETS OF PHRAGMITE STEMS. THE ENTIRE DELINEATED AREA DOES NOT CONTAIN PHRAGMITES, BUT THE AREA REPRESENTS THE EDGES OR LIMIT OF THE PHRAGMITES WITHIN THIS STAND. IT IS ASSUMED THAT THERE ARE EXISTING PHRAGMITE RUNNERS UNDERGROUND WITHIN THIS AREA. THE DELINEATED STAND IS APPROXIMATELY 3,200 SF (0.07AC). IT SHOULD BE NOTED THAT A CITY OF NOVI AND DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY (EGLE) USE PERMIT WILL BE NEEDED TO ERADICATE THE SPECIES FROM THE WETLAND AREA.

STAND 'C'- FLAGS C-1 TO C-6
STAND C IS LOCATED ALONG THE BOTTOM OF THE SLOPE WITHIN THE RIGHT-OF-WAY ALONG WEST PARK DRIVE. IT WAS OBSERVED THAT THE PHRAGMITES WERE ON BOTH SIDES OF THE DRAINAGE DITCH AND CROWING UP THE SLOPE. THIS STAND WAS THICK AND DENSE. THE DELINEATED STAND IS APPROXIMATELY 2407 SF (0.06 AC). DUE TO THE WETLAND AND DRAINAGE DITCH A CITY OF NOVI AND DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY (EGLE) USE PERMIT WILL BE NEEDED TO ERADICATE THE SPECIES FROM THE WETLAND AND DRAINAGE DITCH AREA.

LONG TERM CONTROL AND MAINTENANCE PLAN FOR COMMON REED (PHRAGMITES AUSTRALIS)

A OBJECTIVE

THE OBJECTIVE OF THIS CONTROL AND MAINTENANCE PLAN IS TO REMOVE THE PRESENCE OF PHRAGMITES WITHIN THE SUBJECT PROPERTY CONSISTENT WITH THE CITY OF NOVI'S ORDINANCE, SEC 5.5.6.C. THIS EFFORT WILL BE ACCOMPLISHED BY APPLYING HERBICIDE TO THESE TARGETED PLANTS AND/OR REMOVING SOILS WITHIN THE DESIGNATED TREATMENT AREAS.

C TREATMENT

1. TREATMENT TECHNIQUE
a. SPECIES AND LOCATIONS TO TREAT
CONTROL ALL NON-NATIVE PHRAGMITES INDICATED ON THE TOPOGRAPHICAL SURVEY PLAN AND ANY NEW GROWTH OR SINGLE PLANT OBSERVED DURING TREATMENT PERIODS.
b. SPECIES-SPECIFIC TREATMENT TECHNIQUES

i. PHRAGMITES
APPLY HERBICIDE TO THE FOLIAGE OF ALL LIVE CULMS OF PHRAGMITES (PHRAGMITES AUSTRALIS) WITHIN THE DESIGNATED TREATMENT AREAS; EVEN SINGLE STEM PLANTS. FOLIAR SPRAYING MAY BE USED IN AREAS WHERE SIGNIFICANT DAMAGE TO NON-TARGET NATIVE VEGETATION CAN BE AVOIDED (I.E., IN DENSE PATCHES COMPOSED OF 75% OR MORE PHRAGMITES OR PHRAGMITE STANDS OF ANY DENSITY MIXED WITH OTHER NON-NATIVE VEGETATION). FOR ISOLATED PLANTS OR SPARSE PATCHES ADJACENT TO NATIVE VEGETATION, INDIVIDUAL PLANTS MUST BE TREATED BY A CAREFUL WICK OR HAND APPLICATION OF HERBICIDE TO INDIVIDUAL PLANTS.

ii. ISOLATED PLANTS
SEED HEADS MUST ALSO BE REMOVED FROM ISOLATED PHRAGMITE PLANTS; THIS INCLUDES ANY STAND OF PHRAGMITES WITH FEWER THAN 50 TASSELING CULMS THAT IS AT LEAST 100 FEET IN ANY DIRECTION FROM THE NEAREST PHRAGMITES, OR IN AN AREA PROTECTED FROM LIKELY SEED DISPERSAL (I.E., CLOSER THAN 100 FEET BUT DUE TO LARGE TREES, NATIVE SHRUBS, OR TOPOGRAPHY IS OTHERWISE CUT OFF FROM OTHER PHRAGMITES PLANTS).

iii. TREATMENT TIMING
TREATMENT MUST OCCUR AFTER THE MAJORITY OF PHRAGMITES PLANTS HAVE TASSELED (WHILE PLANTS ARE SUPPLYING NUTRIENTS TO THE RHIZOME), BETWEEN SEPTEMBER 4 AND SEPTEMBER 29 OF EACH YEAR.

2. HERBICIDES
a. THE REQUIRED HERBICIDE IS RODEO®.

b. ALL HERBICIDE TREATMENTS MUST BE MIXED AND APPLIED ACCORDING TO LABEL SPECIFICATIONS AND PERFORMED BY A CERTIFIED COMMERCIAL PESTICIDE APPLICATOR. PROOF OF CERTIFICATION IN APPROPRIATE CATEGORIES WILL BE REQUIRED PRIOR TO START OF WORK. OVERSPRAY ONTO NON-TARGET VEGETATION AND/OR SOIL AS WELL AS RUNOFF OF THE HERBICIDE INTO THE GROUND OR WATER MUST NOT OCCUR.

c. ALL TREATMENTS MUST BE MARKED IN THE FIELD. AN APPROPRIATE MARKING DYE SHALL BE USED WITH THE HERBICIDE. FLAGGING MAY BE REQUIRED IN SOME ZONES TO DOCUMENT WHICH PLANTS HAVE BEEN TREATED.

3. ADJUVANTS
CYNET PLUS® MUST BE USED WITH ALL HERBICIDES AT A RATE OF 0.8% OF THE MIX VOLUME.

4. PERFORMANCE MINIMUMS
THE CONTRACTOR IS EXPECTED TO ACHIEVE A MINIMUM OF 98% TREATMENT OF THE EXTANT TARGET SPECIES AND A MINIMUM OF 85% KILL OF ANY TREATED PLANTS WITHIN THE MAPPED AREAS. THE TREATMENT WILL CONTINUE YEARLY UNTIL ALL PLANTS ARE ERADICATED FROM THE SUBJECT PROPERTY.

5. WEATHER & RE-TREATMENT
THE CONTRACTOR IS RESPONSIBLE FOR RE-TREATMENT IF RAIN OCCURS WITHIN SIX (6) HOURS OF THE ORIGINAL TREATMENT FOR FOLIAR AND HAND SWIPE APPLICATIONS AND WITHIN TWO (2) HOURS OF THE ORIGINAL TREATMENT FOR CUT STUMP APPLICATIONS.

6. APPROVED SUBSTITUTIONS
PROPOSED SUBSTITUTIONS BY A CONTRACTOR [I.E. TREATMENT TECHNIQUE(S), SPECIFIC HERBICIDE(S), AND SURFACTANT(S)] MUST BE SUBMITTED TO PEA, INC. IN WRITING FOR REVIEW. SPECIFIC BRAND NAME CHEMICAL PRODUCTS MUST BE LISTED AND A BRIEF WRITTEN JUSTIFICATION OF WHY THE CHANGE. ANY HERBICIDE OR CONCENTRATION OTHER THAN THOSE SPECIFIED ABOVE MUST BE APPROVED BY THE PEA, INC. AND/OR MDEQ PRIOR TO USE.

7. SIGNS/ MARKING
SIGNS MUST BE POSTED BY THE CONTRACTOR WHEREVER CHEMICAL TREATMENT OCCURS. SIGNAGE SHALL REMAIN IN PLACE FOR THE MINIMUM LENGTH OF TIME AS DETERMINED BY THE HERBICIDE LABEL AND FOR A MAXIMUM AMOUNT OF TIME AS AGREED BETWEEN THE CONTRACTOR AND THE PEA. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SIGNAGE.

9. PERMITS/ APPROVALS
a. A MDEQ AQUATIC NUISANCE CONTROL (ANC) CERTIFICATE OF COVERAGE MAY BE REQUIRED FOR THE TREATMENT OF PHRAGMITES WITHIN OPEN WATER AND/OR STATE REGULATED WETLAND. IN ALL TREATMENT AREAS WHERE AN ANC PERMIT IS REQUIRED AND OBTAINED, THE CONTRACTOR WILL BE RESPONSIBLE FOR POSTING THE REQUIRED ADVISORY SIGNAGE AS SPECIFIED IN THE ANC PERMIT FOR THE SITE. IN LOCATIONS WHERE ANC SIGNAGE IS REQUIRED, IT MAY BE USED IN PLACE OF THE OTHER SIGNAGE PREVIOUSLY DESCRIBED ABOVE (I.E., IT IS NOT NECESSARY TO DO BOTH). ANC ADVISORY SIGNAGE MUST BE POSTED SURROUNDING THE LANDWARD SIDE OF ANY AREA WHERE CHEMICALS WILL BE APPLIED OVER STANDING WATER OR ON GREAT LAKES BOTTOMLANDS ON THE DAY OF TREATMENT (JUST PRIOR TO COMMENCING SPRAYING) AT 100-FOOT INTERVALS. THE APPROVED SIGN MUST BE DOWNLOADED FROM THE DEQ AQUATIC NUISANCE CONTROL WEB SITE (WWW.MICHIGAN.GOV/DEQ/01607-1136-3313_3681_3710-57109-0011.ML). THE CONTRACTOR IS RESPONSIBLE FOR PRINTING AND DUPLICATING THE SIGN, ATTACHING IT TO STAKES (SUPPLIED BY THE CONTRACTOR), AND POSTING THE SIGNS AT THE REQUIRED 100-FOOT INTERVALS ALONG THE LANDWARD SIDE OF ANY AREA WHERE CHEMICALS WILL BE APPLIED OVER STANDING WATER OR ON GREAT LAKES BOTTOMLANDS. SIGNAGE SHALL REMAIN IN PLACE FOR THE MINIMUM LENGTH OF TIME AS DETERMINED BY THE HERBICIDE LABEL AND THE REQUIREMENTS OF THE ANC PERMIT AND FOR A MAXIMUM AMOUNT OF TIME AS AGREED BETWEEN THE CONTRACTOR AND THE PEA PROJECT MANAGER. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SIGNAGE.

b. TO MAINTAIN COMPLIANCE WITH THE FEDERAL CLEAN WATER ACT, PESTICIDE TREATMENTS THAT OCCUR 'IN, OVER, OR NEAR WATERS OF THE STATE' WILL FALL UNDER A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CERTIFICATE OF COVERAGE UNDER THE DEQ GENERAL PERMIT FOR NUISANCE PLANT AND ALGAE CONTROL (GP #MIG031000, COC #MIG031030). ALL TREATMENTS CONDUCTED IN AREAS THAT FALL UNDER THIS CERTIFICATE OF COVERAGE MUST FOLLOW ALL CONDITIONS OF THE NPDES GENERAL PERMIT.

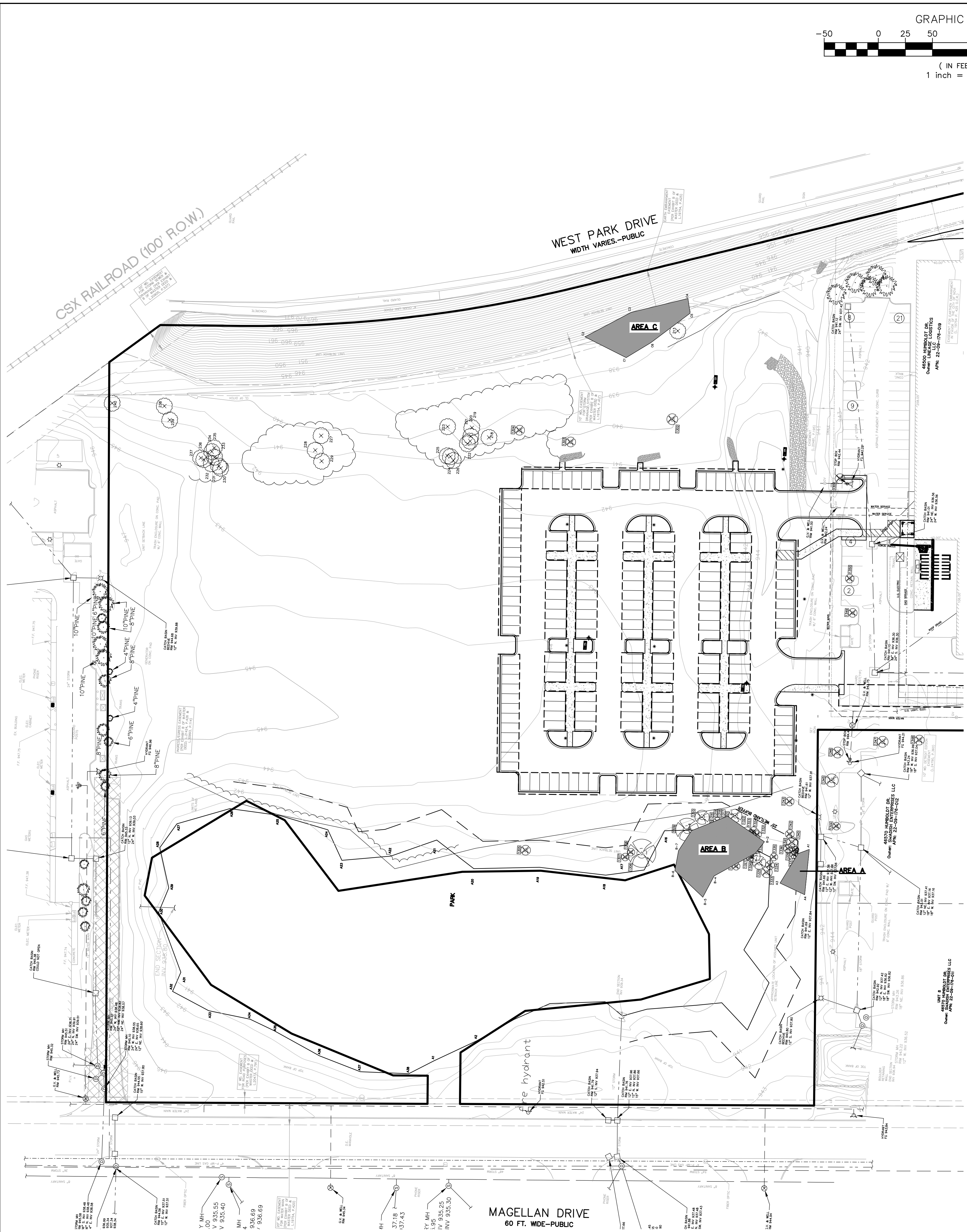
c. PESTICIDE TREATMENTS WITHIN ANY STORMWATER EASEMENT AREAS (I.E. RETENTION AND/OR DETENTION BASIN) WILL REQUIRE A PERMIT/ APPROVAL FROM THE CITY OF NOVI'S ENGINEERING DEPARTMENT.

10. WEED SEED CONTROL AND CONTAMINATION
a. ALL EQUIPMENT, FOOTWEAR, CLOTHING, AND ALL OTHER MATERIALS BROUGHT ONTO THE PROPERTY FOR THIS PROJECT MUST BE COMPLETELY CLEAN AND FREE OF ALL PLANT MATERIAL AND SOIL (SEEDS, PIECES OF VEGETATION, CHUNKS OF SOIL, ETC.) PRIOR TO ARRIVAL AT THE PARK. THESE PRECAUTIONS ARE CRITICAL TO PREVENTING THE SPREAD OF INVASIVE PLANTS AND CONTAMINATION OF GENETIC MATERIAL (SEEDS) FROM LOCATIONS OUTSIDE OF THE SUBJECT PROPERTY.
b. IN ADDITION, WHILE CONDUCTING THE SCOPE OF WORK WITHIN THE PROPERTY ALL FOOTWEAR, CLOTHING, AND EQUIPMENT MUST BE CHECKED AND CLEANED OF SEEDS, OTHER PLANT FRAGMENTS, AND SOIL AGAIN BEFORE MOVING BETWEEN WORK AREAS TO PREVENT THE SPREAD OF INVASIVE PLANTS FROM ONE WORK AREA TO ANOTHER AND INTO UN-INFESTED AREAS. TRAVEL ROUTES AND ORDER OF WORK BETWEEN TREATMENT AREAS MAY BE DICTATED BY PEA TO FURTHER PREVENT THE POSSIBLE SPREAD OF INVASIVE SEED AND PLANT MATERIAL.

11. THREATENED & ENDANGERED SPECIES
STATE-LISTED ENDANGERED AND THREATENED SPECIES MAY OCCUR IN SOME TREATMENT AREAS AND ARE SUBJECT TO THE PROTECTION OF MICHIGAN PUBLIC ACT 451 OF 1994, SECTION 365 (ENDANGERED SPECIES PROTECTION). ACCORDING TO MICHIGAN NATURAL FEATURES INVENTORY RESOURCES, APPROXIMATELY 100 SPECIES OF COMBINED ANIMAL AND PLANT SPECIES ARE LISTED FOR OAKLAND COUNTY AS SPECIAL CONCERN, THREATENED OR ENDANGERED STATUS. A SITE ASSESSMENT FOR THE SPECIES HAS NOT BEEN CONDUCTED. ALL HERBICIDE APPLICATORS WORKING AT THESE SITES MUST BE CAPABLE OF IDENTIFYING THE APPLICABLE PROTECTED PLANTS AND THE COMMON NATIVE PLANTS THAT COULD BE CONFUSED WITH THE TARGET SPECIES (SUCH AS BLUE-JOINT GRASS AND NATIVE SEDGES).

REFERENCES:

- CITY OF NOVI PHRAGMITE CONTROL ORDINANCE (ZONING 5.5.6.C)
- 1. SURVEY THE SITE FOR ANY POPULATIONS OF COMMON REED (PHRAGMITES AUSTRALIS).
- 2. IF ANY PHRAGMITES AUSTRALIS (EVEN A SINGLE PLANT), SHOW THAT ON THE TOPOGRAPHICAL SURVEY. IF NONE ARE FOUND, PLEASE ADD A NOTE STATING THAT.
- 3. IF PHRAGMITES AUSTRALIS IS FOUND, PLEASE ADD A TREATMENT/CONTROL PLAN TO THE LANDSCAPE PLAN AND CARRY IT OUT UNTIL THE PHRAGMITES ARE COMPLETELY REMOVED FROM THE SITE.
- 4. CONTINUE TO CONTROL THE PHRAGMITES ON AN ON-GOING BASIS.



MAGELLAN DRIVE
60 FT. WIDE-PUBLIC

Y MH 936.69
O 936.55
V 935.40
A 936.69

4H 37.18
37.43
RY MH 935.30
935.30
935.30

3.4 MH 935.30
935.30
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3.4 MH 935.30
935.30
935.30

L-1.3

GENERAL LANDSCAPING REQUIREMENTS

- 1.0 GENERAL
1.1 SUMMARY
1.1.1 Includes But Not Limited To
1. General procedures and requirements for Site Work.
2.0 PRODUCTS - Not Used
3.0 EXECUTION
3.1 PREPARATION
3.1.1 Protection
A. Spillage:
1. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.
2. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.
2. Erosion Control:
A. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on-site or off-site drainage systems.
B. Develop, install, and maintain an erosion control plan if required by law.
C. Repair and correct damage caused by erosion.
3. Existing Plants And Features:
A. Do not damage tops, trunks, and roots of existing trees and shrubs on site which are intended to remain.
B. Do not use heavy equipment within branch spread. Interfering branches may be removed only with permission of Landscape Architect.
C. Do not damage other plants and features which are to remain.
3.1.2 If specified precautions are not taken or corrections and repairs made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of the Work.

LANDSCAPING PREPARATION

- 1.0 GENERAL
1.1 SUMMARY
1.1.1 Includes But Not Limited To
1. General landscape work requirements.
1.2 QUALITY ASSURANCE
1.2.1 Comply with all applicable local, state and federal requirements, regarding materials, methods of work, and disposal of excess and waste materials.
1.2.2 Obtain and pay for all required inspections, permits, and fees.
1.2.3 Provide notices required by governmental authorities.
1.3 PROJECT CONDITIONS
1.3.1 Locate and identify existing underground and overhead services and utilities within contract limit work areas. (Call Miss Dig: 1-800-482-7171 in Michigan).
1.3.2 Provide adequate means to protect utilities and services designated to remain.
1.3.3 Repair utilities damaged during site work operations at Subcontractor's expense.
1.3.4 When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the applicable utility company immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation.
1.3.5 Locate, protect, and maintain benchmarks, monuments, control points and project engineering reference points. Re-establish disturbed or destroyed items at Subcontractor's expense.
1.3.6 Perform landscape work operations and the removal of debris and materials to assure minimum interference with streets, walks, and other adjacent facilities.
1.3.7 Obtain governing authorities' written permission when required to close or obstruct streets, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways when required by governing authorities.
1.3.8 Protect and maintain street lights, utility poles and services, traffic signal control boxes, curb boxes, valves and other services, except items designated for removal.
1.3.9 The General Contractor will occupy the premises and adjacent facilities during the entire period of construction. Perform landscape work operations to minimize conflicts and to facilitate General Contractor's use of the premises and conduct of his normal operations.
1.3.10 Perform landscape preparation work before commencing landscape construction.
1.3.11 Provide necessary barricades, coverings and protection to prevent damage to existing improvements indicated to remain.
1.3.12 Protect existing trees scheduled to remain against injury or damage including cutting, breaking or skinning of roots, trunks or branches, smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.
2.0 PRODUCTS
2.1 MATERIALS/EQUIPMENT
2.1.1 As selected by the General Contractor, except as indicated.
A. Tree protection:
1. Tree protection:
A. Wood fencing - Snow fencing 4' height.
B. Posts - Steel fence post.
C. Herbicide for lawn restoration - "Round-up" by Monsanto.
3.0 EXECUTION
3.1 EXISTING UTILITIES
3.1.1 Call "MISS DIG" 811 before construction begins. Information on the drawings related to existing utility lines and services is from the best sources presently available. All such information is furnished only for information and is not guaranteed. Excavate test pits as required to determine exact locations of existing utilities.
3.2 CLEARING
3.2.1 Locate and suitably identify trees and improvements indicated to remain.
3.2.2 Fencing/soil erosion fence is to be installed.
3.2.3 Any equipment that compacts the soil in the areas of existing trees is not allowed.
3.2.4 Protect trees scheduled to remain with 4' high snow fence per plans.

- 3.2.5 No vehicular traffic is permitted beneath drip line at any time. All lawn areas are to be worked by hand.
3.2.6 Clear and grub areas within contract limits as required for site access and execution of the work.
3.2.7 Remove trees, plants, undergrowth, other vegetation and debris, except items indicated to remain.
3.2.8 Treat planting and lawn areas as required with herbicide per manufacturer recommendations to kill existing vegetation prior to planting, seeding and sodding.
3.2.9 Remove stumps and roots to a clear depth of 36" below subgrades. Remove stumps and roots to their full depth within 5'0" of underground structures, utility lines, footings, and paved areas.
3.3 DISPOSAL OF WASTE MATERIALS
3.3.1 Stockpile, haul from site and legally dispose of waste materials and debris. Accumulation is not permitted.
3.3.2 Maintain disposal routes, clear, clean and free of debris.
3.3.3 On site burning of combustible cleared materials is not permitted.
3.3.4 Upon completion of landscape preparation work, clean areas within contract limits, remove tools and equipment. Site to be clear, clean and free of materials and debris and suitable for site work operations.
3.3.5 Materials, items and equipment not scheduled for reinstallation or salvaged for the General Contractor are the property of the Landscape Contractor. Remove cleared materials from the site as the work progresses. Storage and sale of Landscape Contractor's salvage items on site is not permitted.

FINISH GRADING AND TOPSOIL PLACEMENT

- 1.0 GENERAL
1.1 SUMMARY
1.1.1 Includes But Not Limited To
1. Perform finish grading and topsoil placement required to prepare site for installation of landscaping as described in Contract Documents.
1.2 SUBMITTALS
1.2.1 Quality Assurance
1. Submit test on imported topsoil and on site stockpiled topsoil by independent licensed testing laboratory prior to use. Imported topsoil shall meet minimum specified requirements and be approved by Landscape Architect prior to use.
2. Provide and pay for testing and inspection during topsoil operations. Laboratory, inspection services, and Soils Engineer shall be acceptable to the Landscape Architect.
3. Submit report stating location of source of imported topsoil and account of recent use.
4. Test for pH factor, mechanical analysis, and percentage of organic content.
5. Submit test reports to General Contractor.
1.3 QUALITY ASSURANCE
1.3.1 Participate in pre-installation meeting with Landscape Architect.
1.4 PROJECT CONDITIONS
1.4.1 Also see Landscape Preparation Section.
1.4.2 Protect existing trees, plants, lawns, and other features designated to remain as part of the landscaping work.
1.4.3 Promptly repair damage to adjacent facilities caused by topsoil operations. Cost of repair at Subcontractor's expense.
1.4.4 Promptly notify the General Contractor and Landscape Architect of unexpected subsurface conditions.
2.0 PRODUCTS
2.1 MATERIALS
2.1.1 Topsoil: supplied and stockpiled topsoil proposed for use must meet the testing criteria results specified. Topsoil must conform to adjustments and recommendations from the soil test and by the Landscape Architect.
2.1.2 Existing topsoil: existing topsoil from on-site stockpile shall be utilized. All processing, cleaning, and preparation of this stored topsoil to render it acceptable for use is the responsibility of the Subcontractor.
2.1.3 Provide additional topsoil as required to complete the job. Topsoil must meet testing criteria results specified.
2.1.4 All processing, cleaning, and preparation of this supplied topsoil to render it acceptable for use is the responsibility of the Subcontractor.
2.1.5 Supplied and stockpiled topsoil, shall be fertile, friable, dark in color and representative of local productive soil, capable of sustaining vigorous plant growth and free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones of 1" in any dimension, roots, sticks, and other extraneous material: not frozen or muddy. PH of soil range between 5.0 and 7.5.
2.1.6 Soil shall not contain more than 2 percent of particles measuring over 2.0 mm in largest size.
2.1.7 Prepared topsoil shall be used in planting mixtures as specified in Trees, Plants, and Ground Cover; all beds prepared as specified.
3.0 EXECUTION
3.1 EXAMINATION
3.1.1 Do not commence work of this Section until grading tolerances specified are met.
3.2 PREPARATION
3.2.1 Prior to grading, dig out weeds from planting areas by their roots and remove from site. Before placing top soil in landscape areas, remove rocks larger than 1 inch in any dimension and foreign matter such as building rubble, wire, cans, sticks, concrete, etc.
3.2.3 Prior to placing topsoil, remove any imported base material present in planting areas down to natural subgrade or other material acceptable to Landscape Architect.
3.3 PERFORMANCE
3.3.1 Site Tolerances
1. Total Topsoil Depth -
A. Lawn And Groundcover Planting Areas - 3 inches minimum compacted.
B. Shrub Planting Areas - 12 inches minimum throughout entire shrub bed area.
2. Elevation of topsoil relative to walks or curbs -
A. Seeded Lawn Areas - 1/4 inch below
B. Sodded Lawn Areas - 1 1/2 inches below
C. Shrub And Ground Cover Areas - 3 inches below
3.3.2 Do not expose or damage existing shrub or tree roots.
3.3.3 Redistribute approved existing top soil stored on site as a result of rough grading. Remove organic material, rocks and clods greater than 1 inch in any dimension, and other objectionable materials. Provide additional approved imported topsoil required for specified topsoil depth and bring surface to specified elevation relative to walk or curb.

- 3.3.4 For trees, shrubs, ground cover beds and plant mix for beds see Exterior Plants section.
3.3.5 Provide earth berming where indicated on Plans.
3.3.6 Berming to be free flowing in shape and design, as indicated, and to blend into existing grades gradually so that the toe of slope is not readily visible. Landscape Architect or General Contractor's representative to verify final contouring before planting.
3.3.7 Regardless of finish grading elevations indicated, it is intended that grading be such that proper drainage of surface water away from buildings will occur and that no low areas are created to allow ponding. Subcontractor to consult the General Contractor and Landscape Architect regarding variations in grade elevations before rough grading is completed.
3.3.8 Slope grade away from building for 12 feet minimum from walls at slope of 1/2 inch per ft minimum unless otherwise noted. High point of finish grade at building foundation shall be 6 inches minimum below finish floor level. Direct surface drainage in manner indicated on Drawings by mounding surface to facilitate natural run-off of water. Fill low spots and pockets with top soil and grade to drain properly.
3.3.9 Rake all topsoil to remove clods, rocks, weeds, and debris.
3.3.10 Grade and shape area to bring surface to true uniform planes free from irregularities and to provide proper drainage and slopes per plans.
3.4 CLEANING
3.4.1 Upon completion of topsoil operations, clean areas within contract limits, remove tools, equipment, and haul all excess topsoil off-site. Site shall be clear, clean, free of debris, and suitable for site work operations.

LAWN SEEDING

- 1.0 GENERAL
1.1 SUMMARY
1.1.1 Includes But Not Limited To
1. Furnish and install seeded lawn as described in Contract Documents.
1.2 SUBMITTALS
1.2.1 Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight, and percentage of purity, germination, and weed seed for each grass species.
1.2.2 Quality Assurance
1. Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.
1.3 DELIVERY AND STORAGE
1.3.1 Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.
1.4 PROJECT CONDITIONS
1.4.1 See landscape preparation section.
1.4.2 Work notification: Notify Landscape Architect of General Contractor's representative at least seven (7) working days prior to start of seeding operation.
1.4.3 Protect existing utilities, paving, and other facilities from damage caused by seeding operations.
1.4.4 Perform seeding work only after planting and other work affecting ground surface has been completed.
1.4.5 Provide hose and lawn watering equipment as required.
1.4.6 The irrigation system will be installed prior to seeding. Locate, protect, and maintain the irrigation system during seeding operations. Repair irrigation system components damaged during seeding operations at the Sub-Contractor's expense.
1.5 WARRANTY
1.5.1 See Landscape Maintenance and Warranty Section
2.0 PRODUCTS
2.1 MATERIALS
2.1.1 Topsoil for Seeded Areas: See Topsoil Placement and Drawings.
2.1.2 Lawn seeded areas: Fresh, clean and new crop seed mixture. Mixed by approved methods.
2.1.3 Seed mixture composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination.
2.1.4 Irrigated Lawn Seed Mixture proportioned by volume as indicated below:
SEED TYPE PROPORTION PURITY GERMINATION
Kentucky Bluegrass 50% 90% 75%
Penn Lawn Fescue 30% 95% 80%
Annual Ryegrass 20% 95% 80%
2.1.5 Non-Irrigated Seed Mixture proportioned by volume as indicated below:
SEED TYPE PROPORTION PURITY GERMINATION
Penn Lawn Fescue 60% 90% 85%
Kentucky 28# Common Bluegrass 20% 90% 90%
Pennline Perennial Rye 20% 90% 90%
2.1.6 Fertilizer: granular, non burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.
2.1.7 Ground Limestone: Used if required by soil test report: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20% mesh sieve.
2.1.8 Straw Mulch: Used in crimping process only. Clean oat or wheat straw well seasoned before baling, free from mature seed-bearing status, or roots of prohibited or noxious weeds.
2.1.9 Water: Free of substance harmful to seed growth. Hoses or other methods to transpiration furnished by Sub Contractor.
3.0 EXECUTION
3.1 INSPECTION
3.1.1 Landscape Architect or General Contractor's representative must approve finish surfaces, grades, topsoil quality and depth. Do not start seeding work until unsatisfactory conditions are corrected.
3.2 PREPARATION
3.2.1 SURFACE PREPARATION
1. Seven days maximum prior to seeding, -
A. Treat Lawn areas if required with "Round-Up" by Monsanto, per label direction to kill existing vegetation prior to seeding.
B. Loosen topsoil areas to minimum depth of 4", dampen thoroughly, and cultivate to properly break up clods and lumps.
C. Rake area to remove clods, rocks, weeds, roots, debris, and stones over 1" in any dimension.
D. Grade lawn areas to smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.
E. Apply limestone to supplied topsoil if required by soil test report at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 no more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
F. Apply fertilizers to indicated turf areas at a rate equal to 1 lb. of actual nitrogen 1,000 sq. ft. (43 lbs / acre).
G. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.
2. Dampen dry soil prior to sodding. -
A. Treat Lawn areas if required with herbicide per manufacturer recommendations to kill existing vegetation prior to sodding.
B. Loosen topsoil areas to minimum depth of 4", dampen thoroughly, and cultivate to properly break up clods and lumps.
C. Rake area to remove clods, rocks, weeds, roots, debris, and stones over 1" in any dimension.
D. Grade lawn areas to smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.
E. Apply limestone to supplied topsoil if required by soil test report at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 no more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
F. Apply fertilizers to indicated turf areas at a rate equal to 1 lb. of actual nitrogen 1,000 sq. ft. (43 lbs / acre).
G. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.

- H. After lawn areas have been prepared, take no heavy objects over them except lawn rollers.
I. After preparation of lawn areas and with topsoil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type.
J. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.
K. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to seeding.
3.3 INSTALLATION
3.3.1 SEEDING
1. Seed lawns only between April 1, and June 1, and fall seeding between August 15, and October 15, or at such other times acceptable to Landscape Architect.
2. Seed immediately after preparation of bed. Seed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.
3. Perform seeding operations when the soil is dry and when the winds do not exceed five(5) miles per hour velocity.
4. Apply seed with a rotary or drop type distributor. Install seed evenly by sowing equal quantities in two (2) directions, at right angles to each other.
5. Sow seed at a rate of 300 lbs./acre.
6. After seeding, rake or drag surface of soil lightly to incorporate seed into top 1/8" of soil. Roll with light lawn roller.
7. Provide soil erosion planting mat where grade conditions required to stabilize the planting area.
3.3.2 HYDRO-SEEDING
1. Hydro-seeding: The application of grass seed and a wood cellulose fiber mulch tinted green shall be accomplished in one operation by use of an approved spraying machine.
A. Mix seed, fertilizer, and wood cellulose fiber in required amount of water to produce a homogeneous slurry. Add wood cellulose fiber after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight.
B. For hydro-seeding, wood cellulose fiber shall be used. Silva-Fiber Mulch by Weyerhaeuser Company, Tacoma, WA (800-443-9179).
C. Hydroaically spray material on ground to form a uniform cover impregnated with grass seed.
D. Immediately following application of slurry mix, make separate application of wood cellulose mulch at the rate of 1,000 pounds, dry weight, per acre.
E. Apply cover so that rainfall or applied water will percolate to underlying soil.
3.3.3 MULCHING
1. Place straw mulch on seeded areas within 24-hours after seeding.
2. Place straw mulch uniformly in a continuous blanket at a rate of 2-1/2 tons per acre, or two (2) 50 lb. bales per 1,000 sq. ft. of area. A mechanical blower may be used for straw mulch application when acceptable to the Landscape Architect.
3. Crimp straw into soil by use of a "crimper". Two passes in alternate direction required. Alternative methods or areas too small for crimper must be approved by the Landscape Architect or Owner's Representative.
3.3.3 ESTABLISH LAWN
1. Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established.
2. Damage to seeded area resulting from erosion to be repaired by Sub Contractor.
3. In event Sub Contractor does not establish dense lawn during first germination period, return to project to re-fertilize and reseed to establish dense lawn.
4. Should the seeded lawn become largely weeds after germination, Sub Contractor is responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.

- 3.4 CLEANING
3.4.1 Perform Cleaning during installation of the work and upon completion of the work to the approval of the Landscape Architect. Remove from site all excess materials, debris, and equipment. Repair damage resulting from seeding operations.
3.5 MAINTENANCE
3.5.1 See Landscape Maintenance and Warranty Section.
3.6 ACCEPTANCE
3.6.1 See Landscape Maintenance and Warranty Section.
END OF SECTION
LAWN SODDING
1.0 GENERAL
1.1 SUMMARY
1.1.1 Includes But Not Limited To
1. Furnish and install sodded lawn as described in Contract Documents.
1.2 QUALITY ASSURANCE
1.2.1 Sod: Comply with American Sod Producers Association (ASPA) classes of sod materials.
1.3 SUBMITTALS
1.3.1 Submit sod growers certification of grass species. Identify source location.
1.3.2 Submit manufacturer's certification of fertilizer.
1.4 DELIVERY, STORAGE, AND HANDLING
1.4.1 Cut, deliver, and install sod within 24 hour period.
1.4.2 Do not harvest or transport sod when moisture content may adversely affect sod survival.
1.4.3 Protect sod from sun, wind, and dehydration prior to installation. Do not tear, stretch, or drop sod during handling and installation.
1.4.4 Sod which dries out before installation will be rejected.
1.5 PROJECT CONDITIONS
1.5.1 See Landscape Preparation section.
1.5.2 Work notification: Notify Landscape Architect or General Contractor's representative at least seven (7) working days prior to start of sodding operation.
1.5.3 Protect existing utilities, paving, and other facilities from damage caused by sodding operations.
1.5.4 Perform sodding work only after planting and other work affecting ground surface has been completed.
1.5.5 Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.

- 1.5.6 Provide hose and lawn watering equipment as required.
1.5.7 The irrigation system will be installed prior to sodding. Locate, protect, and maintain the irrigation system during sodding operations. Repair irrigation system components damaged during sodding operations at the Subcontractor's expense.
1.6 WARRANTY
1.6.1 See Landscape Maintenance and Warranty Section.
2.0 PRODUCTS
2.1 MATERIALS
2.1.1 Sod: An "approved" nursery grown blend of Improved Kentucky Bluegrass varieties.
2.1.2 Sod containing Common Bermudagrass, Quackgrass, Johannaegrass, Poison Ivy, Nuttallseed, Nimbalewill, Canada Thistle, Timothy, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel, or Bramegrass weeds will not be acceptable.
2.1.3 Provide well rooted, healthy sod, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density, and free of weeds, undesirable grasses, stones, roots, thatch, and extraneous material; viable and capable of growth and development when planted.
2.1.4 Furnish sod, machine stripped in square pads or strips not more than 3'-0" long; uniformly 1" to 1-1/2" thick with clean cut edges. Mow sod before stripping.
2.1.5 Fertilizer: granular, non burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.
2.1.6 Type A: starter fertilizer containing 20% nitrogen, 12% phosphoric acid, and 8% potash by weight or similar approved composition.
2.1.7 Ground Limestone: Used if required by soil test report: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20% mesh sieve.
2.1.8 Stokes: softwood, 3/4" x 8" long.
2.1.9 Water: Free of substance harmful to seed growth. Hoses or other methods to transpiration furnished by Sub Contractor.
2.1.10 Topsoil: see Topsoil Placement section.
3.0 EXECUTION
3.1 INSPECTION
3.1.1 Landscape Architect or General Contractor's representative must approve finish surfaces, grades, topsoil quality and depth. Do not start sodding work until unsatisfactory conditions are corrected.
3.2 PREPARATION
3.2.1 Surface Preparation:
1. Seven days maximum prior to sodding, -
a. Treat Lawn areas if required with herbicide per manufacturer recommendations to kill existing vegetation prior to sodding.
b. Loosen topsoil areas to minimum depth of 4", dampen thoroughly, and cultivate to properly break up clods and lumps.
c. Rake area to remove clods, rocks, weeds, roots, debris, and stones over 1" in any dimension.
d. Grade lawn areas to smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.
e. Apply limestone to supplied topsoil if required by soil test report at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 no more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
f. Apply fertilizers to indicated turf areas at a rate equal to 1 lb. of actual nitrogen 1,000 sq. ft. (43 lbs / acre).
g. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.
h. After lawn areas have been prepared, take no heavy objects over them except lawn rollers.
i. After preparation of lawn areas and with topsoil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs.
j. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.
k. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to sodding.
l. Dampen dry soil prior to sodding. -
1. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips. Do not overlap edges. Stagger strips to offset joints in adjacent course. Remove excess sod to avoid othering of adjacent grass. Provide sod pad top flush with adjacent curbs, sidewalks, drains, and seeded areas.
2. Do not lay dormant sod or install sod on saturated, frozen soil.
3. Install initial row of sod in a straight line, beginning at the bottom of slopes, perpendicular to direction of the sloped area. Place subsequent rows parallel to and lightly against previously installed row.
4. Peg sod on slopes greater than 3 to 1 or in centerline of swales to prevent slippage at a rate of 2 stakes per yard of sod.
5. Water sod thoroughly with a fine spray immediately after laying to obtain moisture penetration through sod into top 4 inches of topsoil.
6. Roll with light lawn roller in two directions perpendicular to each other to ensure contact with sub grade.
7. Install sod at indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.
8. Damage to sodded area resulting from erosion to be repaired by Subcontractor.
3.4 CLEANING
3.4.1 Perform Cleaning during installation of the work and upon completion of the work to the approval of the Landscape Architect. Remove from site all excess materials, debris, and equipment. Repair damage resulting from sodding operations.
3.5 MAINTENANCE
3.5.1 See Landscape Maintenance and Warranty Section.
3.6 ACCEPTANCE
3.6.1 See Landscape Maintenance and Warranty Section.
END OF SECTION

Table with 10 columns: No., Description, Date. Includes entries for Planning, Design, and Construction phases.



CAUTION!! THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THE DRAWINGS ARE ONLY APPROXIMATE. IN NO EVENT SHALL THE CONTRACTOR BE RESPONSIBLE FOR DAMAGE TO ANY UTILITIES OR OTHER PROPERTY CAUSED BY HIS OPERATIONS. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

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CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH LOCALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE TO NORMAL WORKING HOURS AND CONSTRUCTION COSTS FOR THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

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JB DONALDSON 37610 HILLS TECH DRIVE FARMINGTON HILLS, MICHIGAN 48331 LANDSCAPE SPECIFICATIONS LINEAGE PARKING EXPANSION PART OF THE NW 1/4 OF SECTION 9, T. 1N, R. 8E., CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

ORIGINAL ISSUE DATE: JANUARY 10, 2020

PEA JOB NO. 2019-436

SCALE: N/A DRAWING NUMBER:

L-2.0

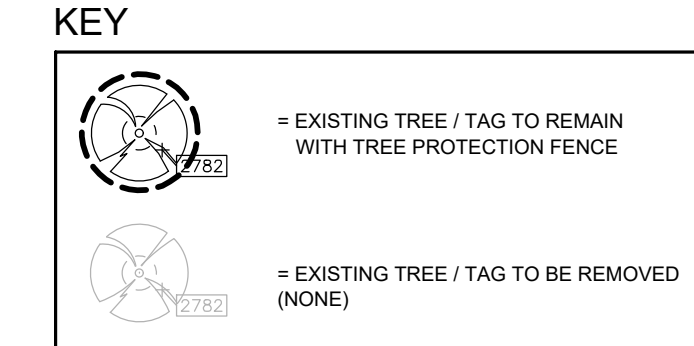
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TREE REPLACEMENT CALCULATIONS

REQUIRED: 1 REPLACEMENT: 8" < 11" =	0	0 REPLACEMENT TREES REQUIRED
2 REPLACEMENT: 12" < 19" =	0	0 REPLACEMENT TREES REQUIRED
3 REPLACEMENT: 20" < 29" =	0	0 REPLACEMENT TREES REQUIRED
4 REPLACEMENT: > 30" =	0	0 REPLACEMENT TREES REQUIRED
TOTAL REGULATED TREES REMOVED =	0	
TOTAL REQUIRED REPLACEMENT TREES =	0	

TAG #	CODE	DBH	COMMON NAME	LATIN NAME	CON	COMMENT	EXEMPT?	SAVE / REMOVE	REPLACEMENTS REQ'D
1311	HK	7	Hackberry	Celtis occidentalis	Good		EXEMPT-SIZE	SAVE	-
1302	BL	10	Black Locust	Robinia pseudoacacia	Fair	7.5	SAVE	-	
1304	CT	9	Cottonwood	Populus deltoides	Fair	8.6,5	SAVE	-	
1304	CT	9	Cottonwood	Populus deltoides	Fair	8 (previous tag 217)	SAVE	-	
1305	SM	26	Silver Maple	Acer saccharinum	Poor		SAVE	-	
1306	SM	31	Silver Maple	Acer saccharinum	Fair		SAVE	-	
1307	SM	7	Silver Maple	Acer saccharinum	Poor		EXEMPT-SIZE	SAVE	-
1308	SM	7	Silver Maple	Acer saccharinum	Fair		EXEMPT-SIZE	SAVE	-
1309	SM	21	Silver Maple	Acer saccharinum	Fair	15,14,12	SAVE	-	
1310	CT	13	Cottonwood	Populus deltoides	Good		SAVE	-	
1311	CT	12	Cottonwood	Populus deltoides	Fair		SAVE	-	
1312	CT	14	Cottonwood	Populus deltoides	Good		SAVE	-	
1313	CT	6	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1314	CT	11	Cottonwood	Populus deltoides	Fair		SAVE	-	
1315	CT	10	Cottonwood	Populus deltoides	Fair		SAVE	-	
1316	CT	8	Cottonwood	Populus deltoides	Fair		SAVE	-	
1317	CT	6	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1318	CT	10	Cottonwood	Populus deltoides	Good		SAVE	-	
1319	CT	7	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1320	CT	10	Cottonwood	Populus deltoides	Fair		SAVE	-	
1321	CT	12	Cottonwood	Populus deltoides	Fair		SAVE	-	
1322	CT	13	Cottonwood	Populus deltoides	Fair		SAVE	-	
1323	CT	6	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1324	CT	9	Cottonwood	Populus deltoides	Fair		SAVE	-	
1325	CT	12	Cottonwood	Populus deltoides	Fair		SAVE	-	

TAG #	CODE	DBH	COMMON NAME	LATIN NAME	CON	COMMENT	EXEMPT?	SAVE / REMOVE	REPLACEMENTS REQ'D
1326	CT	10	Cottonwood	Populus deltoides	Good		SAVE	-	
1327	CT	10	Cottonwood	Populus deltoides	Fair	5	EXEMPT-SIZE	SAVE	-
1328	CT	6	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1329	CT	7	Cottonwood	Populus deltoides	Fair	4	EXEMPT-SIZE	SAVE	-
1330	CT	11	Cottonwood	Populus deltoides	Fair	3	SAVE	-	
1331	CT	12	Cottonwood	Populus deltoides	Good		SAVE	-	
1332	CT	7	Cottonwood	Populus deltoides	Poor		EXEMPT-SIZE	SAVE	-
1333	E	10	American Elm	Ulmus americana	Fair		SAVE	-	
1334	E	8	American Elm	Ulmus americana	Fair		SAVE	-	
1335	E	7	American Elm	Ulmus americana	Fair		EXEMPT-SIZE	SAVE	-
1336	CT	8	Cottonwood	Populus deltoides	Good		SAVE	-	
1337	CT	7	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1338	CT	8	Cottonwood	Populus deltoides	Fair		SAVE	-	
1339	CT	8	Cottonwood	Populus deltoides	Fair		SAVE	-	
1340	CT	6	Cottonwood	Populus deltoides	Fair		EXEMPT-SIZE	SAVE	-
1341	CT	10	Cottonwood	Populus deltoides	Good		SAVE	-	
1342	E	8	Cottonwood	Populus deltoides	Fair		SAVE	-	
1343	E	8	American Elm	Ulmus americana	Poor		SAVE	-	
1344	NM	7	Norway Maple	Acer platanoides	Good		EXEMPT-SIZE	SAVE	-
1345	SU	12	Sugar Maple	Acer saccharum	Good		SAVE	-	
1346	NM	10	Norway Maple	Acer platanoides	Good		SAVE	-	
1347	RO	10	Red Oak	Quercus rubra	Good		SAVE	-	
1348	RO	9	Red Oak	Quercus rubra	Good		SAVE	-	
1349	LL	8	Littleaf Linden	Tilia Cordata	Fair		SAVE	-	
1350	RM	8	Red Maple	Acer rubrum	Good		SAVE	-	



TREE REPLACEMENT CALCULATIONS:
PER CITY OF NOV ZONING ORDINANCE: 1-2 GENERAL INDUSTRIAL

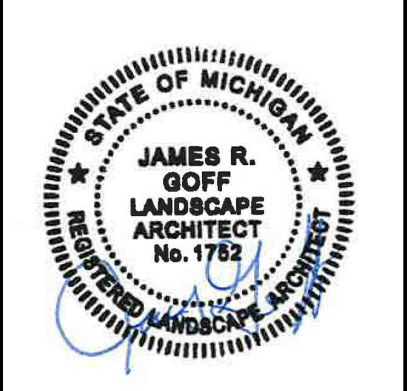
TREE REPLACEMENT:

REQUIRED: 1 REPLACEMENT: 8" < 11" = 0 TREES (0 REPLACEMENT REQUIRED)
2 REPLACEMENT: >11" < 20" = 0 TREES (0 REPLACEMENT REQUIRED)
3 REPLACEMENT: >20" < 29" = 0 TREES (0 REPLACEMENT REQUIRED)

PROVIDED: 0 TREES REMOVED, 0 TREE REPLACEMENT REQUIRED

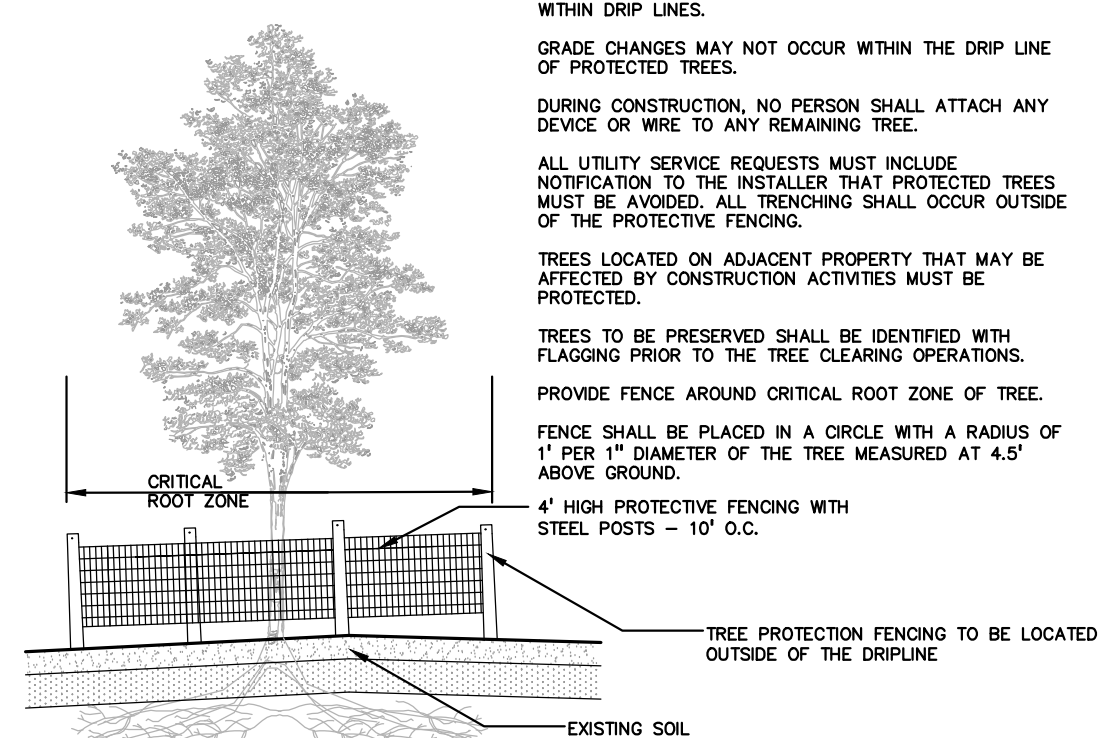


NO.	DATE	DESCRIPTION
1	08-26-20	ISSUED FOR PERMITS
2	08-26-20	ISSUED FOR PERMITS
3	08-26-20	ISSUED FOR PERMITS
4	08-26-20	ISSUED FOR PERMITS
5	08-26-20	ISSUED FOR PERMITS
6	08-26-20	ISSUED FOR PERMITS
7	08-26-20	ISSUED FOR PERMITS
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10	08-26-20	ISSUED FOR PERMITS

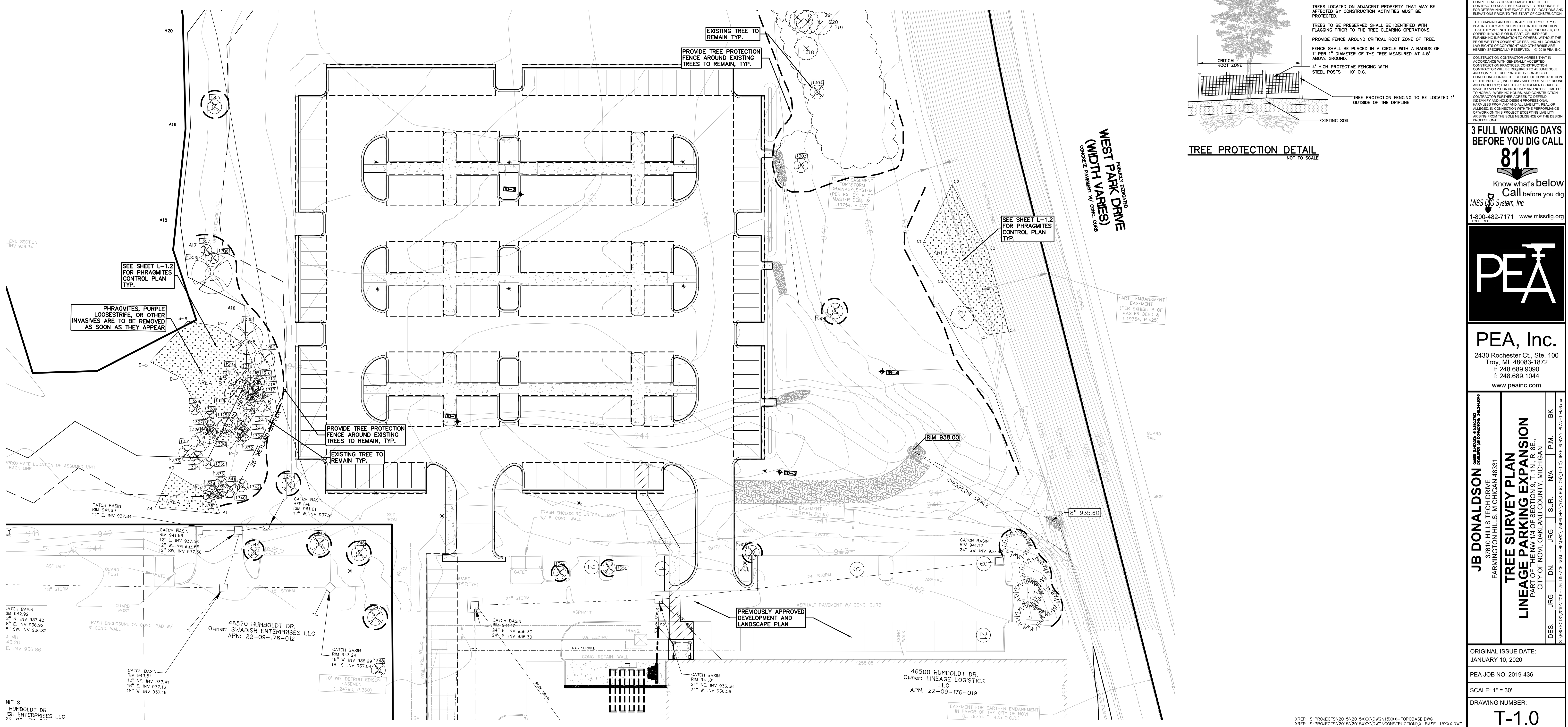


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TREE PROTECTION DETAIL NOT TO SCALE



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FARMINGTON HILLS, MICHIGAN 48331

TREE SURVEY PLAN
LINEAGE PARKING EXPANSION
PART OF THE NW 1/4 OF SECTION 9, T. 1N., R. 8E.,
CITY OF NOVATI, OAKLAND COUNTY, MICHIGAN

DES: JRG DN JRG SUR N/A P.M. BK
S:\PROJECTS\2019\2019-09-17-18 LINEAGE NOV - JB DONALDSON\CONSTRUCTION\T-1-01 TREE SURVEY PLAN-19-08.dwg

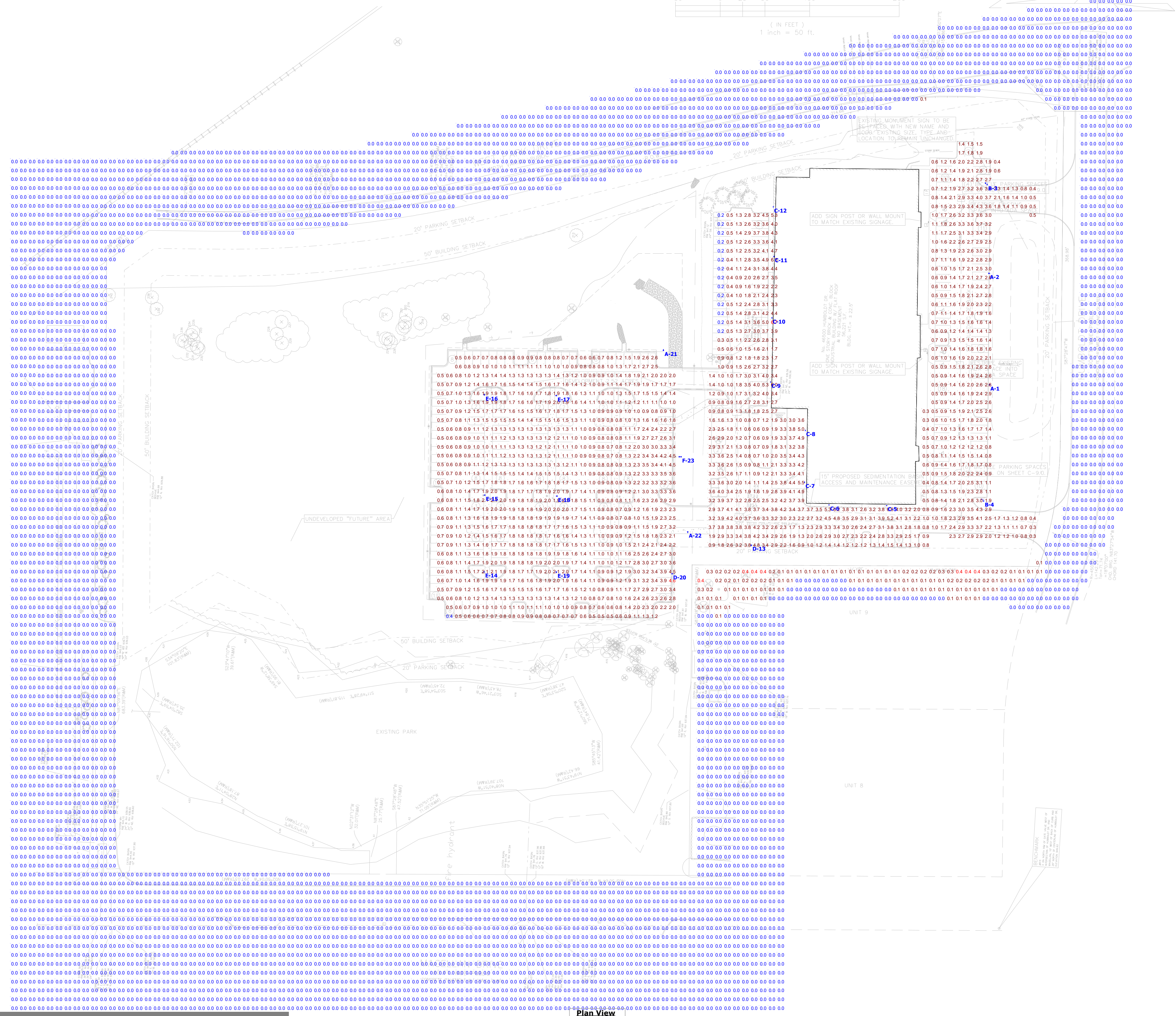
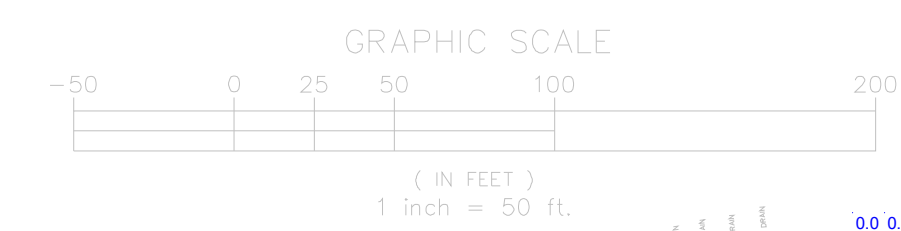
ORIGINAL ISSUE DATE:
JANUARY 10, 2020

PEA JOB NO. 2019-436

SCALE: 1" = 30'

DRAWING NUMBER:
T-1.0

XREF: S:\PROJECTS\2015\2015XXXX\DWG\15XXXX-TOPOBASE.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION-V-BASE-15XXXX.DWG
XREF: S:\PROJECTS\2015\2015XXXX\DWG\CONSTRUCTION-V-TBLK-15XXXX.DWG



Luminaire Locations					
Location					
No.	Label	X	Y	Z	MH
1	A	159.84	132.92	24.00	24.00
2	A	159.40	257.95	24.00	24.00
3	B	156.29	359.19	24.00	24.00
4	B	152.36	4.42	24.00	24.00
5	C	43.64	-2.56	18.00	18.00
6	C	-21.05	-1.84	18.00	18.00
7	C	-48.45	23.65	18.00	18.00
8	C	-47.69	81.77	18.00	18.00
9	C	-86.69	136.07	18.00	18.00
10	C	-85.16	207.96	18.00	18.00
11	C	-82.87	276.80	18.00	18.00
12	C	-83.63	332.63	18.00	18.00
13	D	-108.32	-8.01	24.00	24.00
14	E	-409.07	-76.95	24.00	24.00
15	E	-408.20	9.20	24.00	24.00
16	E	-408.64	121.71	24.00	24.00
17	E	-327.83	120.80	24.00	24.00
18	E	-327.30	8.11	24.00	24.00
19	E	-327.84	-77.15	24.00	24.00
20	D	-196.07	-79.08	24.00	24.00
21	A	-206.81	172.54	24.00	24.00
22	A	-179.52	-33.13	24.00	24.00
23	F	-188.16	52.20	24.00	24.00

Schedule						
Symbol	Label	Quantity	Manufacturer	Catalog Number	Lumens Per Lamp	Wattage
	A	4	KIM LIGHTING Educational, Government, Healthcare, Hospitality, Hotel, Industrial, Institutional, Manufacturing, Pathway, Prison, Roadway, Site, Sports, Street, Direct, Wet Location	ALT1-54L-155-4K7-4W	17254	156
	B	2	KIM LIGHTING Educational, Government, Healthcare, Hospitality, Hotel, Industrial, Institutional, Manufacturing, Pathway, Prison, Roadway, Site, Sports, Street, Direct, Wet Location	[...]	[...]	216
	C	8	KIM LIGHTING Pathway, Pedestrian, Residential, Retail, Sidewalk, Sign, Walkway, Manufacturing, Direct, Wet Location	WDM-D-48L-88-4K7-4F	10834	88
	D	2	KIM LIGHTING Educational, Government, Healthcare, Hospitality, Hotel, Industrial, Institutional, Manufacturing, Pathway, Prison, Roadway, Site, Sports, Street, Direct, Wet Location	ALT1-54L-155-4K7-4	17452	156
	E	6	KIM LIGHTING Educational, Government, Healthcare, Hospitality, Hotel, Industrial, Institutional, Manufacturing, Pathway, Prison, Roadway, Site, Sports, Street, Direct, Wet Location	ALT1-54L-120-4K7-5W	14853	122
	F	1	KIM LIGHTING Educational, Government, Healthcare, Hospitality, Hotel, Industrial, Institutional, Manufacturing, Pathway, Prison, Roadway, Site, Sports, Street, Direct, Wet Location	ALT1-54L-155-4K7-4	17452	312

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #3	+	0.0 fc	0.4 fc	0.0 fc	N/A	N/A
Existing Lot	+	2.1 fc	6.7 fc	0.2 fc	33.5:1	10.5:1
New Lot	+	1.5 fc	4.6 fc	0.4 fc	11.5:1	3.8:1

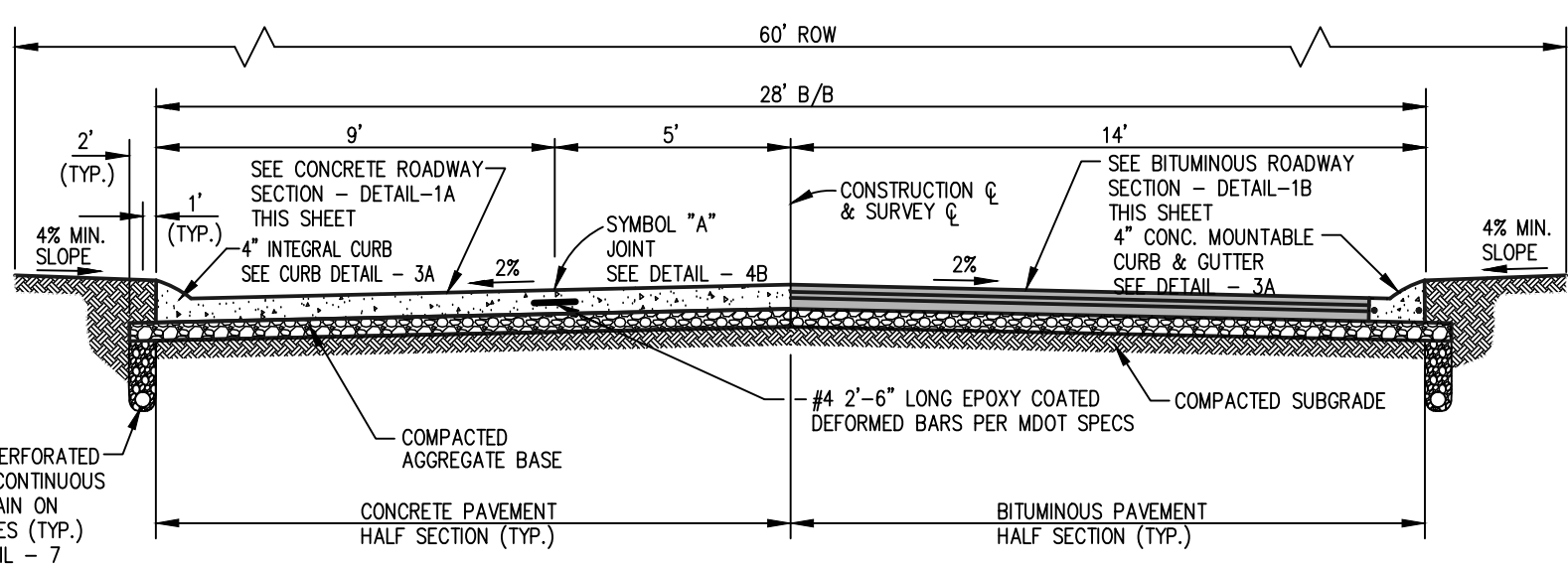
Plan View
Scale - 1" = 60ft

Note
 1. Electrical service to light fixtures shall be placed underground
 2. Flashing light shall not be permitted
 3. No security lighting will be on after hours
 4. Hours of operation are: 6AM to 7PM, M-F



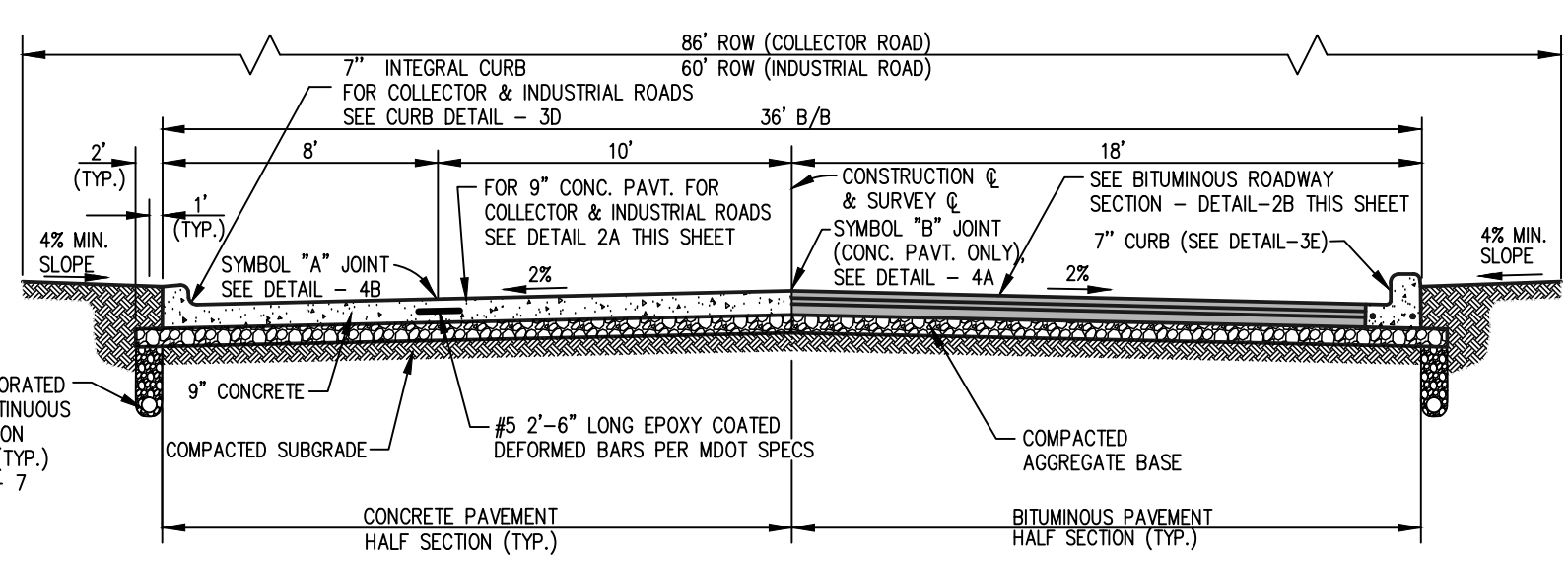
Designer
 Brian Mendez
 Date
 1/28/2020
 Scale
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 Drawing No.
 Summary

Lineage Logistics
 Novi, MI

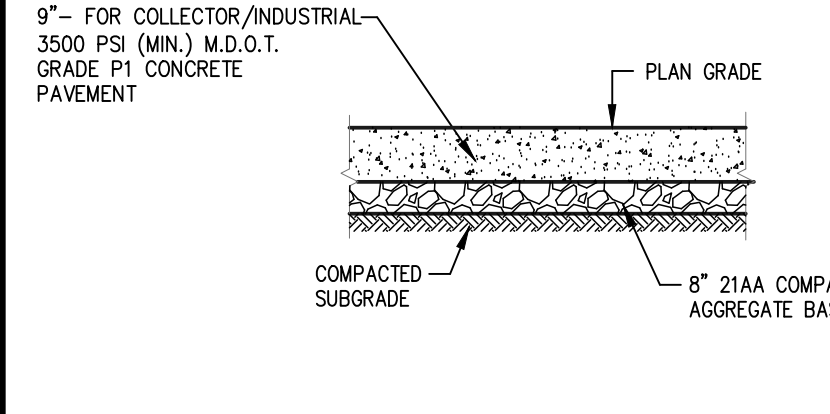


TYPICAL CROSS SECTION DETAIL - 1
RESIDENTIAL ROAD PAVEMENT (28' B/B)
NOT TO SCALE

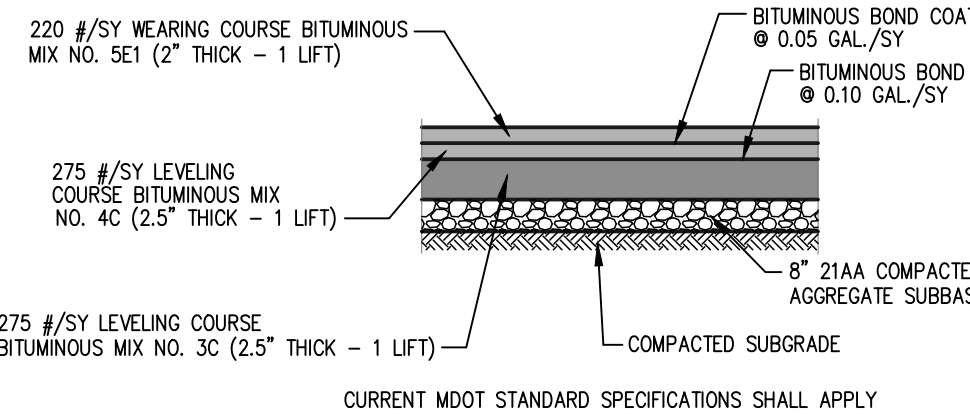
NOTE: CONCRETE PAVEMENT DETAIL SHOWN IS FOR A SINGLE FOUR CONSTRUCTION. FOR A DOUBLE FOUR CONSTRUCTION, A SYMBOL "B" JOINT WILL BE REQUIRED ALONG THE CENTER OF THE ROAD AND THE SYMBOL "D" JOINT WILL BE LOCATED 6" FROM BACK OF CURB.



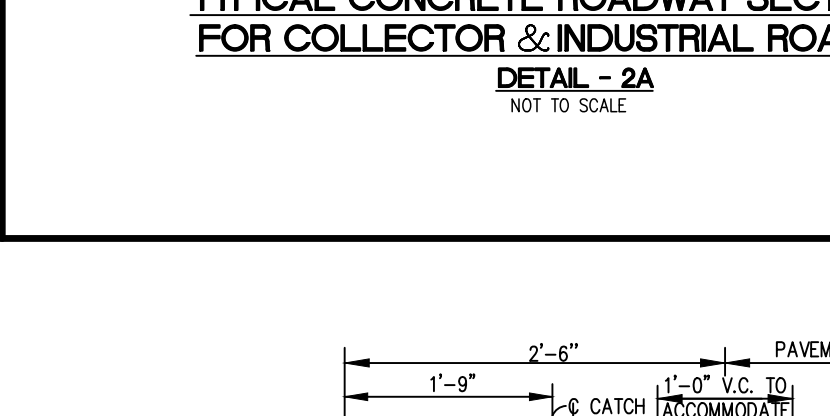
TYPICAL CROSS SECTION DETAIL - 2
COLLECTOR AND INDUSTRIAL ROAD PAVEMENT (36' B/B)
NOT TO SCALE



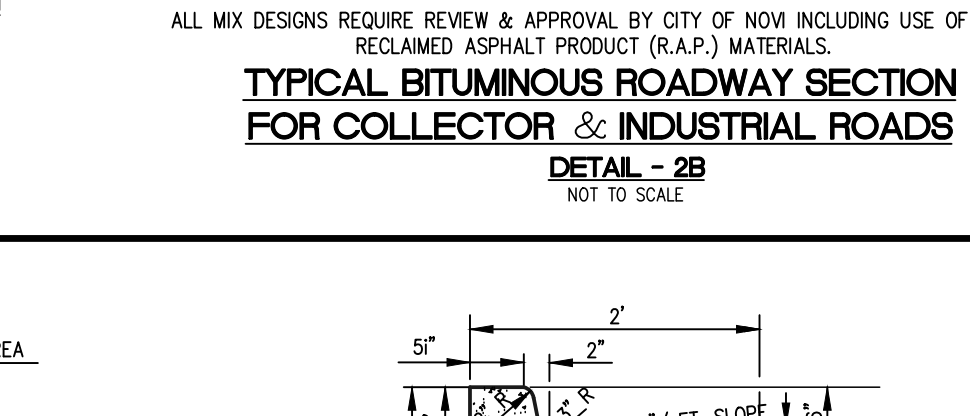
TYPICAL CONCRETE ROADWAY SECTION FOR RESIDENTIAL ROAD
DETAIL - 1A
NOT TO SCALE



TYPICAL BITUMINOUS ROADWAY SECTION FOR RESIDENTIAL ROAD
DETAIL - 1B
NOT TO SCALE



TYPICAL CONCRETE ROADWAY SECTION FOR COLLECTOR & INDUSTRIAL ROADS
DETAIL - 2A
NOT TO SCALE



TYPICAL BITUMINOUS ROADWAY SECTION FOR COLLECTOR & INDUSTRIAL ROADS
DETAIL - 2B
NOT TO SCALE

GENERAL NOTES

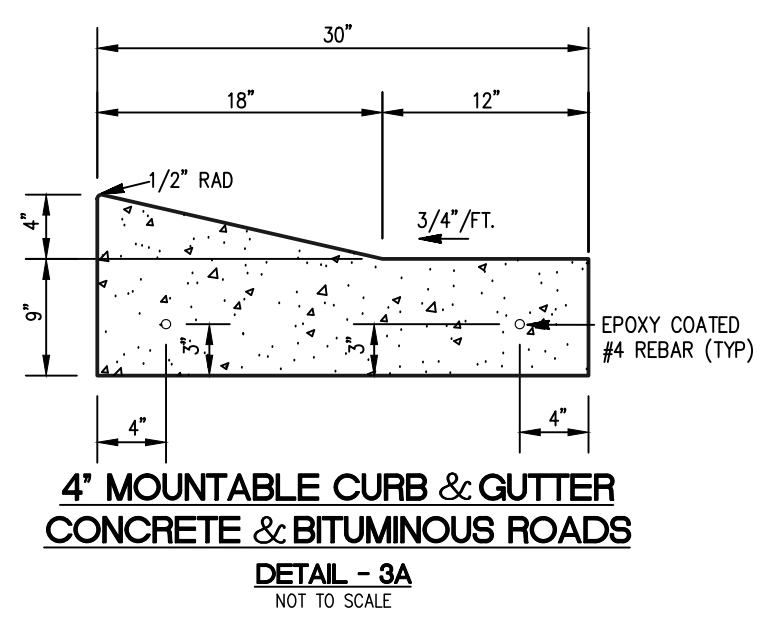
1. EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS. TREE ROOTS SHALL BE COMPLETELY REMOVED.
2. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
3. THE PAVEMENT SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED IN THE PRESENCE OF A GEOTECHNICAL/PAVEMENT ENGINEER TO DETERMINE STABILITY. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. ALL FILL MATERIAL AND BASE MATERIAL SHALL BE TESTED AND ITS COMPACTED AND SUITABILITY FOR ACCEPTANCE OF THE BASE MATERIAL AND PAVEMENT SHALL BE CERTIFIED BY SAID TESTING FIRM. THE OWNER SHALL SUPPLY THREE COPIES OF GEOTECHNICAL AND TECHNICAL REPORTS TO THE CITY'S CONSULTANT.
4. IF IN THE OPINION OF THE INSPECTOR/ENGINEER, FIELD CONDITIONS WARRANT ADDITIONAL TESTING, THE DEVELOPER SHALL ARRANGE FOR AND PAY FOR ALL REQUIRED ADDITIONAL TESTING.
5. 21AA AGGREGATE BASE SHALL BE COMPACTED TO ACHIEVE A 95% COMPACTION LEVEL (MODIFIED PROCTOR - ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 2 FEET BEYOND THE BACK OF CURB OR THE PAVED EDGE.
6. CONCRETE PAVEMENT TESTING SHALL BE REQUIRED FOR ALL PROJECTS.
7. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF NOVATO, ROCO AND MDOT.
8. FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND LICENSES ARRANGE FOR ALL INSPECTION.
9. 1.0 INCH AND 2.0 INCH EXPANSION JOINTS SHALL BE INSTALLED PER CITY STANDARDS PER THIS SHEET.
10. FILL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT.
11. 6" UNDER DRAIN SHALL BE INSTALLED ON BOTH SIDES OF ALL ROADWAYS IN GEOTEXTILE WRAPPED TRENCH. ALSO, PLACE UNDER DRAINS AT ALL DRAINAGE STRUCTURES WITHIN PARKING AREAS. (SEE DETAILS 6 AND 8).
12. PRIOR TO BITUMINOUS STREET ACCEPTANCE, THE FULL CROSS SECTION MUST BE INSTALLED PER THE APPROVED PLAN, AND ANY AND ALL REPAIRS TO THE PAVEMENT AND CURB MUST BE COMPLETED AT THE DIRECTION OF THE CITY ENGINEER.
- 12a. AT THE TIME OF INITIAL ROAD CONSTRUCTION, THE FULL CROSS SECTION MAY BE INSTALLED TO MINIMIZE THE AMOUNT OF PAVEMENT AND CURB REPAIRS. PRIOR TO STREET ACCEPTANCE, THE CITY ENGINEER WILL INSPECT THE PAVEMENT AND CURB, AND WILL IDENTIFY ANY AREAS TO BE REPAIRED.
- 12b. ALTERNATIVELY, THE TOP COURSE MAY BE OMITTED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. PRIOR TO STREET ACCEPTANCE, THE CITY ENGINEER WILL INSPECT THE BASE PAVEMENT AND CURB, AND WILL IDENTIFY AREAS TO BE REPAIRED PRIOR TO THE INSTALLATION OF THE TOP COURSE.
13. PROVIDE MINIMUM 20' DISTANCE TO TRANSITION FROM DETAIL 3E TO DETAIL 3A CURBS.

CONCRETE PAVEMENT

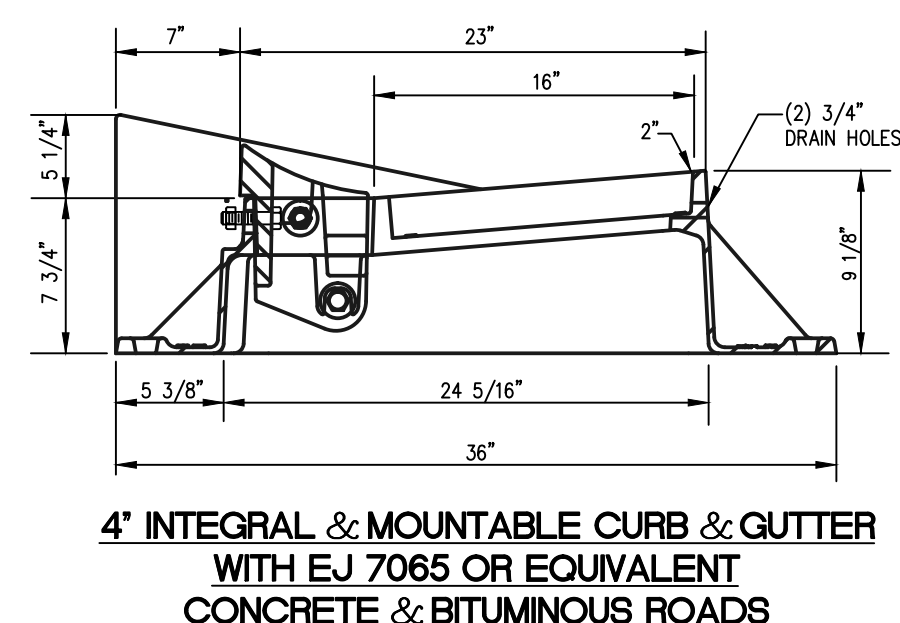
1. CONCRETE SHALL CONSIST OF: PORTLAND CEMENT TYPE IA (AIR-ENHANCED) WITH A MINIMUM CEMENT CONTENT OF SIX SACKS PER CUBIC YARD, MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI AND A SLUMP OF 1 1/2" TO 3 INCHES. PAVEMENT SHALL CONFORM TO M.D.O.T. GRADE P1.
2. ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.
3. THE CONCRETE BATCH PLANT SHALL BE M.D.O.T. CERTIFIED WITH LOCATION APPROVED BY THE CITY.
4. NO CONCRETE PAVING SHALL BE ALLOWED PRIOR TO MAY 1, OR AFTER NOVEMBER 1 (UNLESS APPROVED BY THE CITY).
5. DO NOT PLACE CONCRETE WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING, UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING. TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING CONCRETE WILL BE ACCORDING TO THE CURRENT MDOT SPECIFICATIONS. PAVING WILL NOT BE ALLOWED BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.

BITUMINOUS PAVEMENT

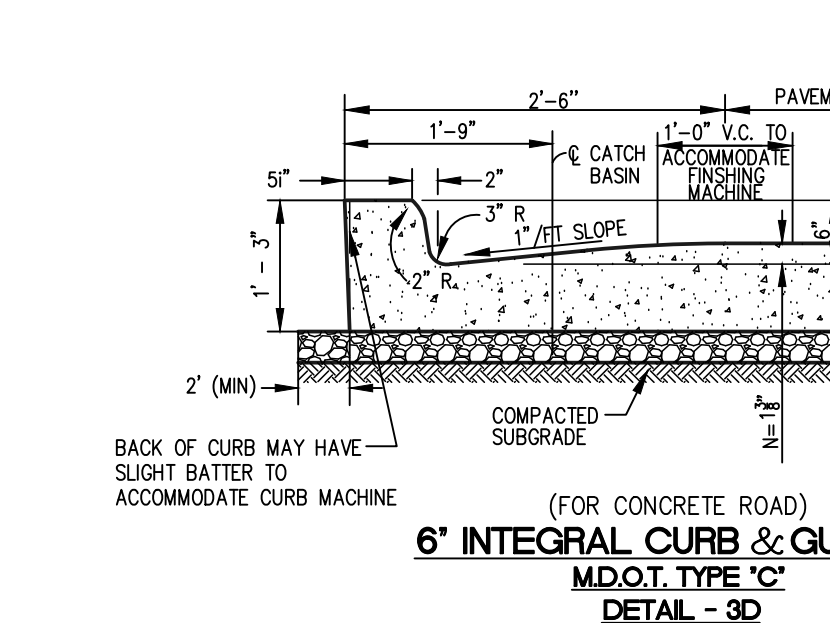
1. BITUMINOUS MIXTURE SHALL CONSIST OF: LEVELING COURSE - MDOT BITUMINOUS MIXTURE NO. 3C; LEVING COURSE - MDOT BITUMINOUS MIXTURE NO. 4C; WEARING COURSE MDOT BIT MIX NO. 5E1. ASPHALT CEMENT PENETRATION GRADE 85-100 (PG 64-22) RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE REVIEWED FOR APPROVAL BY THE CITY NOVATO.
2. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY OF 92% OF THE FIELD CONTROL DENSITY AS DETERMINED BY THE THEORETICAL MAXIMUM DENSITY.
3. A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN ALL COURSES OF ASPHALT IMMEDIATELY PRIOR TO PLACEMENT OF EACH COURSE OF PAVEMENT. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.10 GALLON/S.Y. BETWEEN LEVELING COURSES & 0.05 GALLON/S.Y. BETWEEN WEARING COURSE AND LEVELING COURSE.
4. DO NOT PLACE HMA OR APPLY BOND COAT WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING, UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING. TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING HMA WILL BE ACCORDING TO THE CURRENT MDOT SPECIFICATIONS. PAVING WILL NOT BE ALLOWED BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.



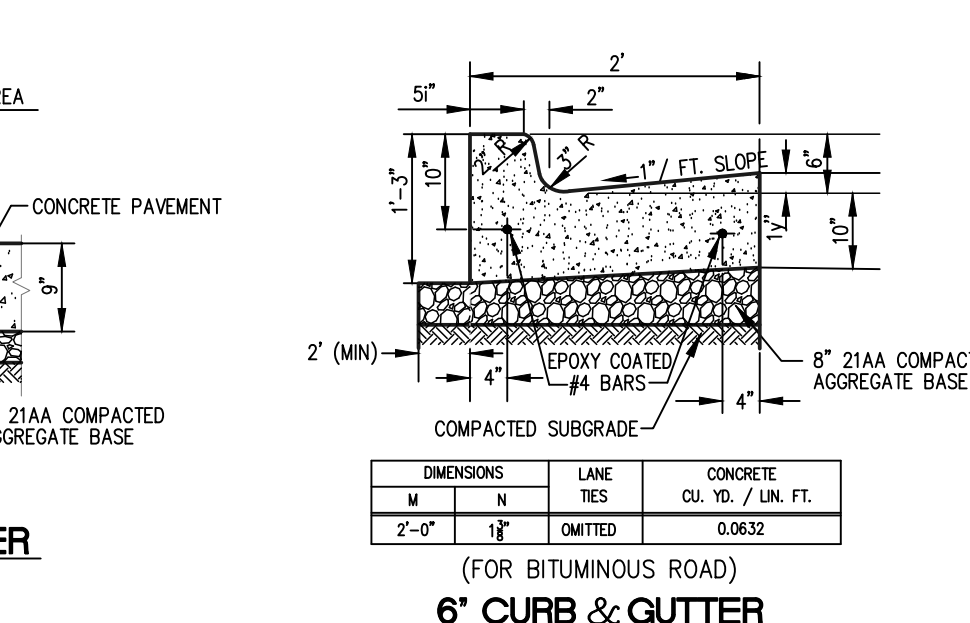
4" MOUNTABLE CURB & GUTTER CONCRETE & BITUMINOUS ROADS
DETAIL - 3A
NOT TO SCALE



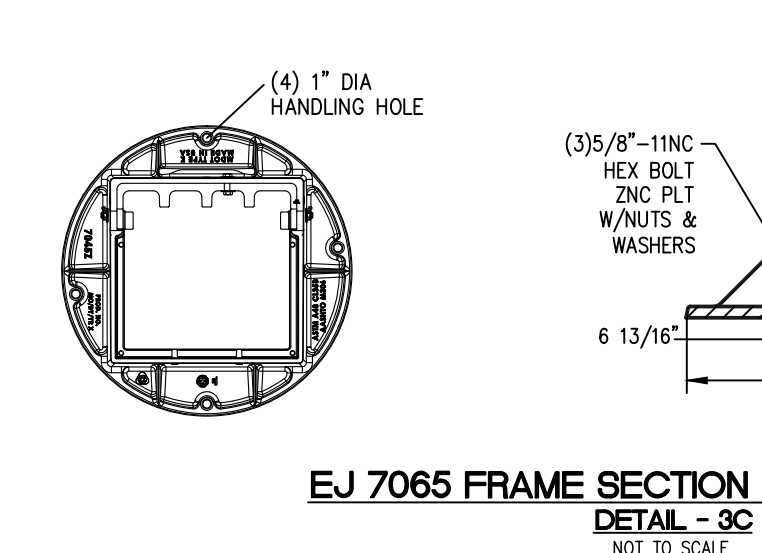
4" INTEGRAL & MOUNTABLE CURB & GUTTER WITH EJ 7065 OR EQUIVALENT CONCRETE & BITUMINOUS ROADS
DETAIL - 3B
NOT TO SCALE



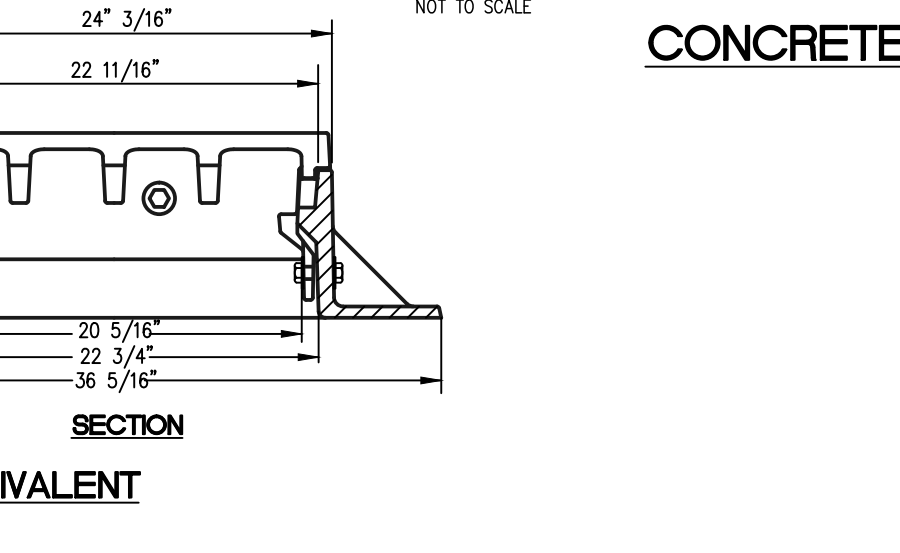
6" INTEGRAL CURB & GUTTER M.D.O.T. TYPE 'C' CONCRETE & BITUMINOUS ROADS
DETAIL - 3C
NOT TO SCALE



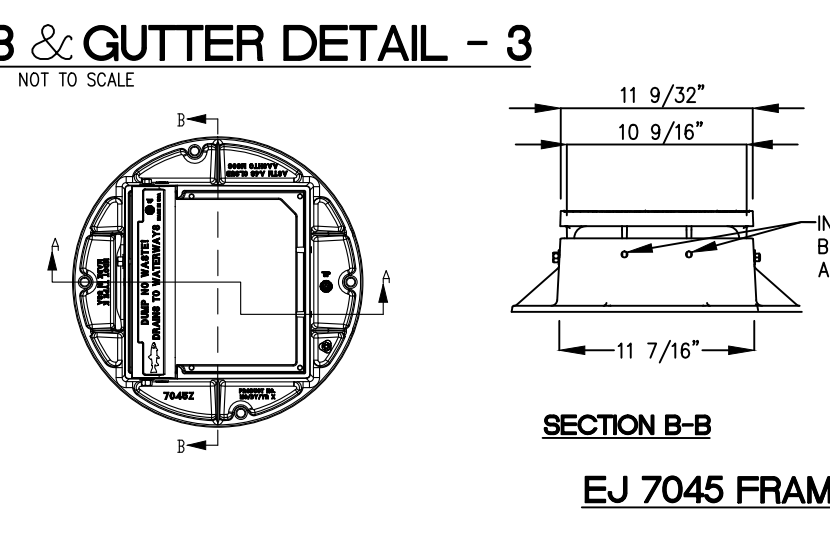
6" CURB & GUTTER CONCRETE & BITUMINOUS ROADS
DETAIL - 3E
NOT TO SCALE



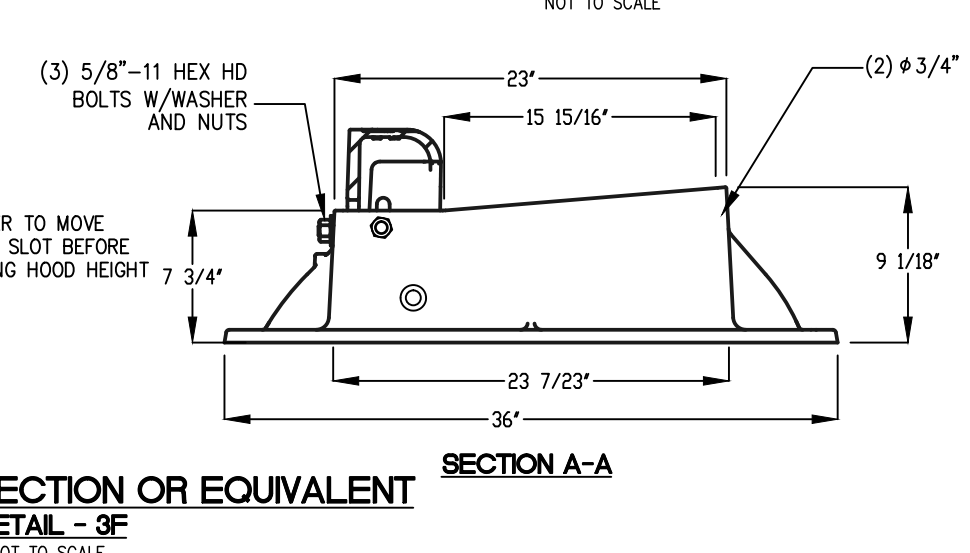
EJ 7065 FRAME SECTION OR EQUIVALENT
DETAIL - 3C
NOT TO SCALE



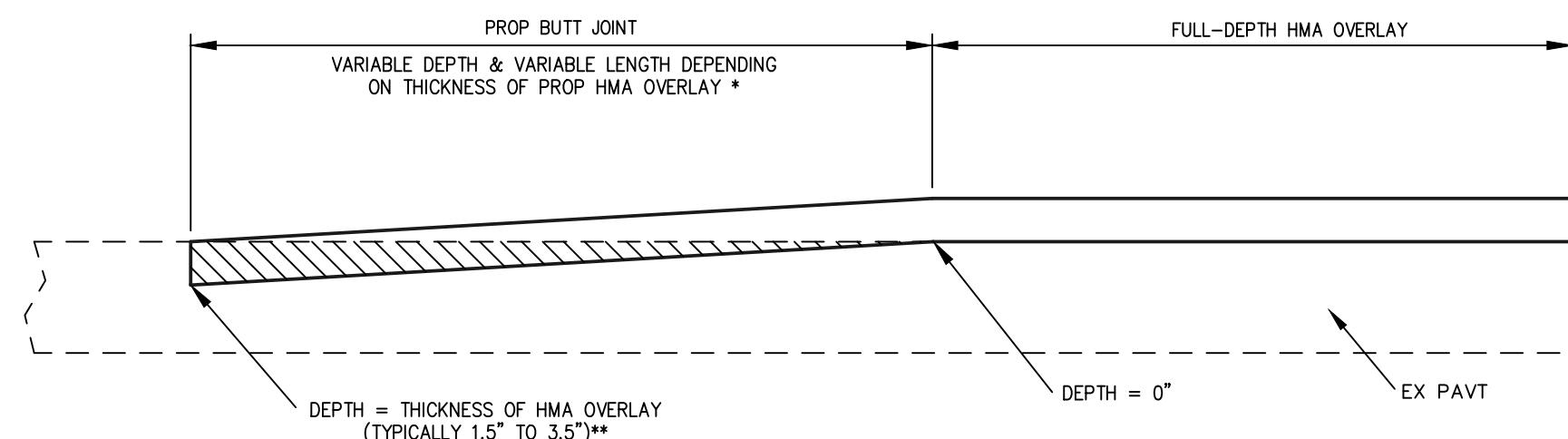
EJ 7045 FRAME SECTION OR EQUIVALENT
DETAIL - 3F
NOT TO SCALE



CONCRETE CURB & GUTTER DETAIL - 3
NOT TO SCALE

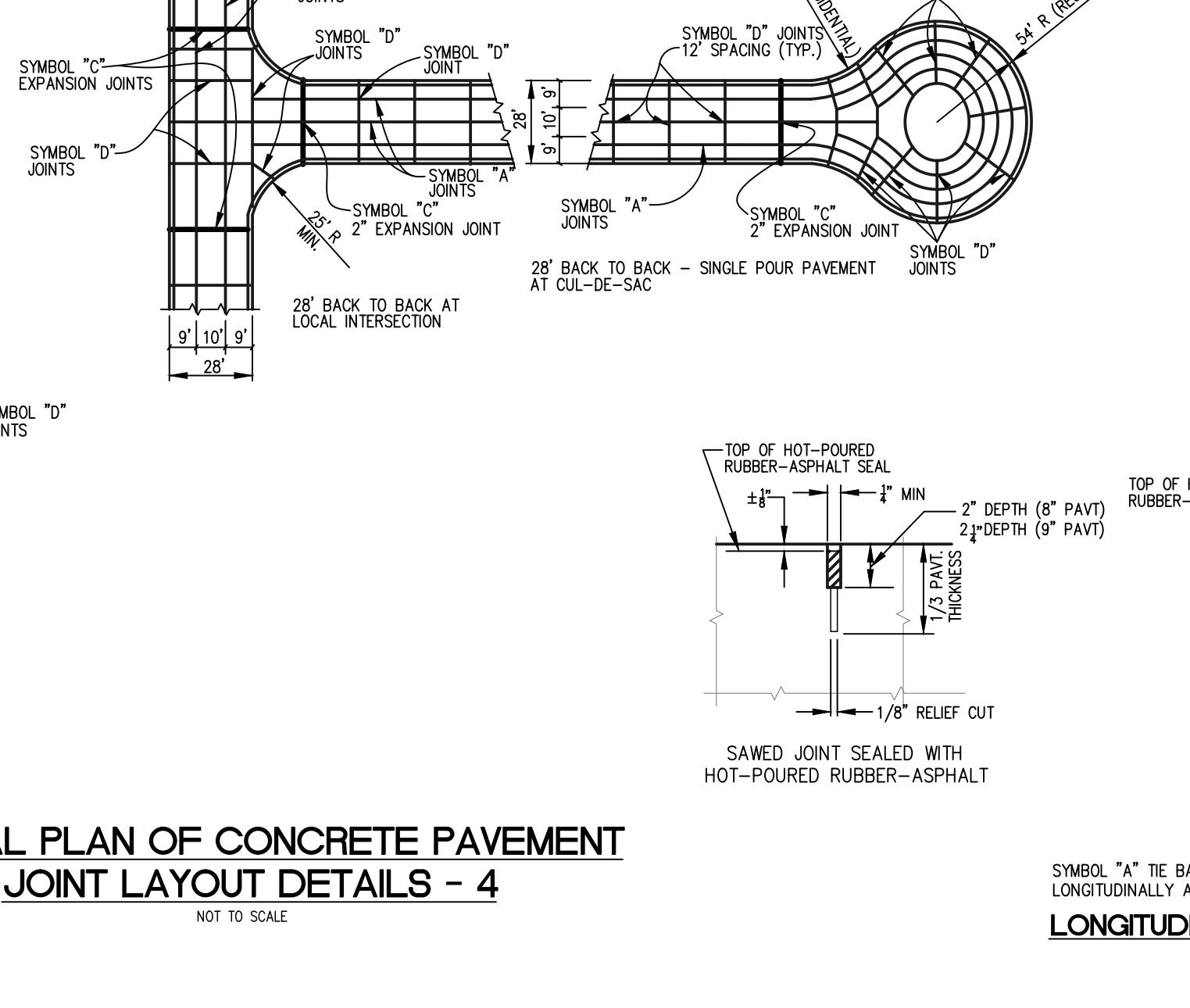
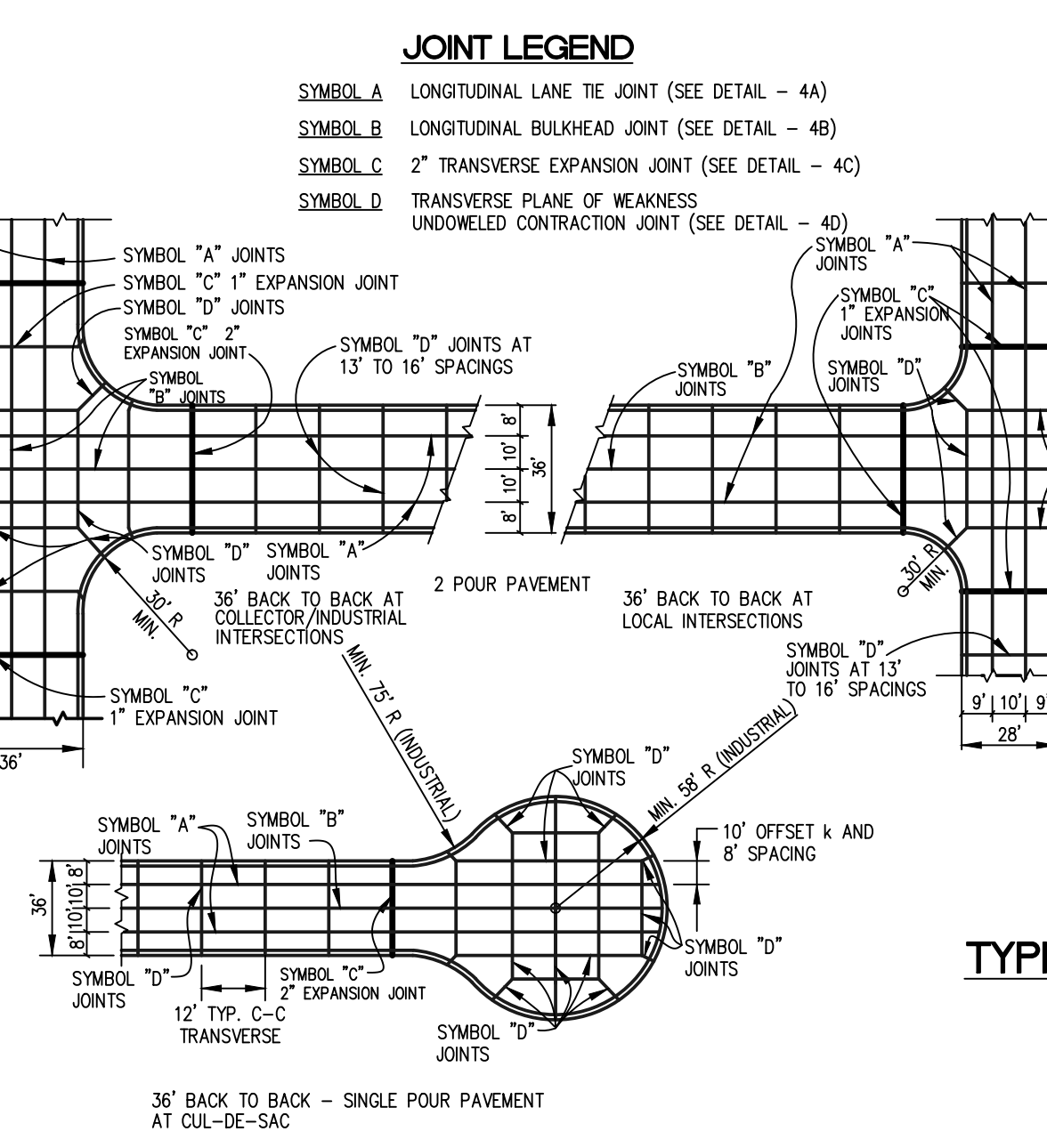


EJ 7065 FRAME SECTION OR EQUIVALENT
DETAIL - 3E
NOT TO SCALE

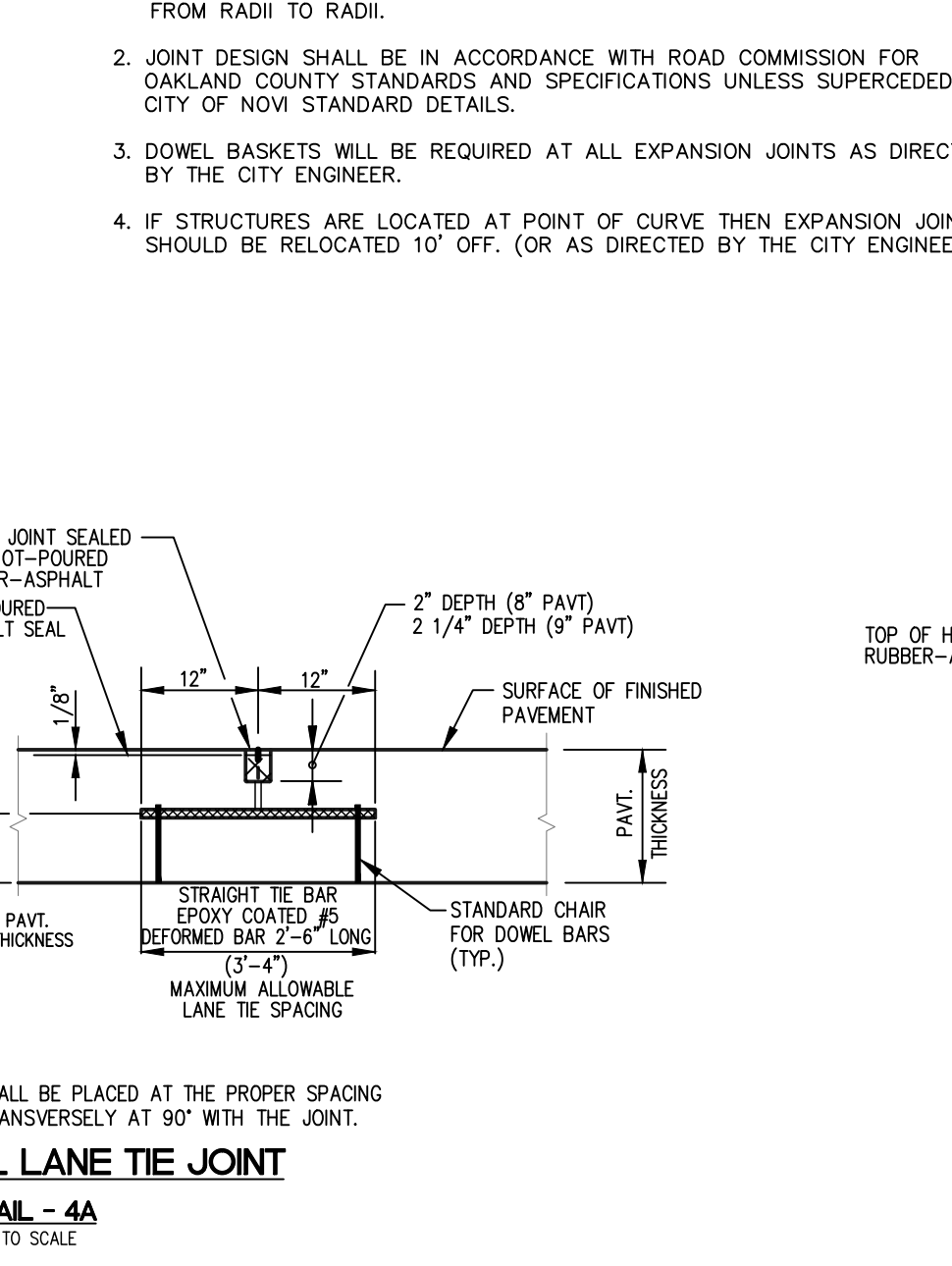


* NOTE: PER MDOT ROAD DESIGN MANUAL, SECTION 6.03.11, IT IS RECOMMENDED TO MILL THE BUTT JOINT 25 FT FOR EVERY 0.75" OF OVERLAY THICKNESS. FOR EXAMPLE, A 3" OVERLAY WOULD REQUIRE A 100 FT LONG BUTT JOINT.
** NOTE: WHEN OVERLAYING EXISTING CONCRETE PAVEMENT, IT IS NOT RECOMMENDED TO MILL BUTT JOINT MORE THAN 1.5-2" DEEP SO REINFORCEMENT (IF PRESENT) WILL NOT BE EXPOSED.

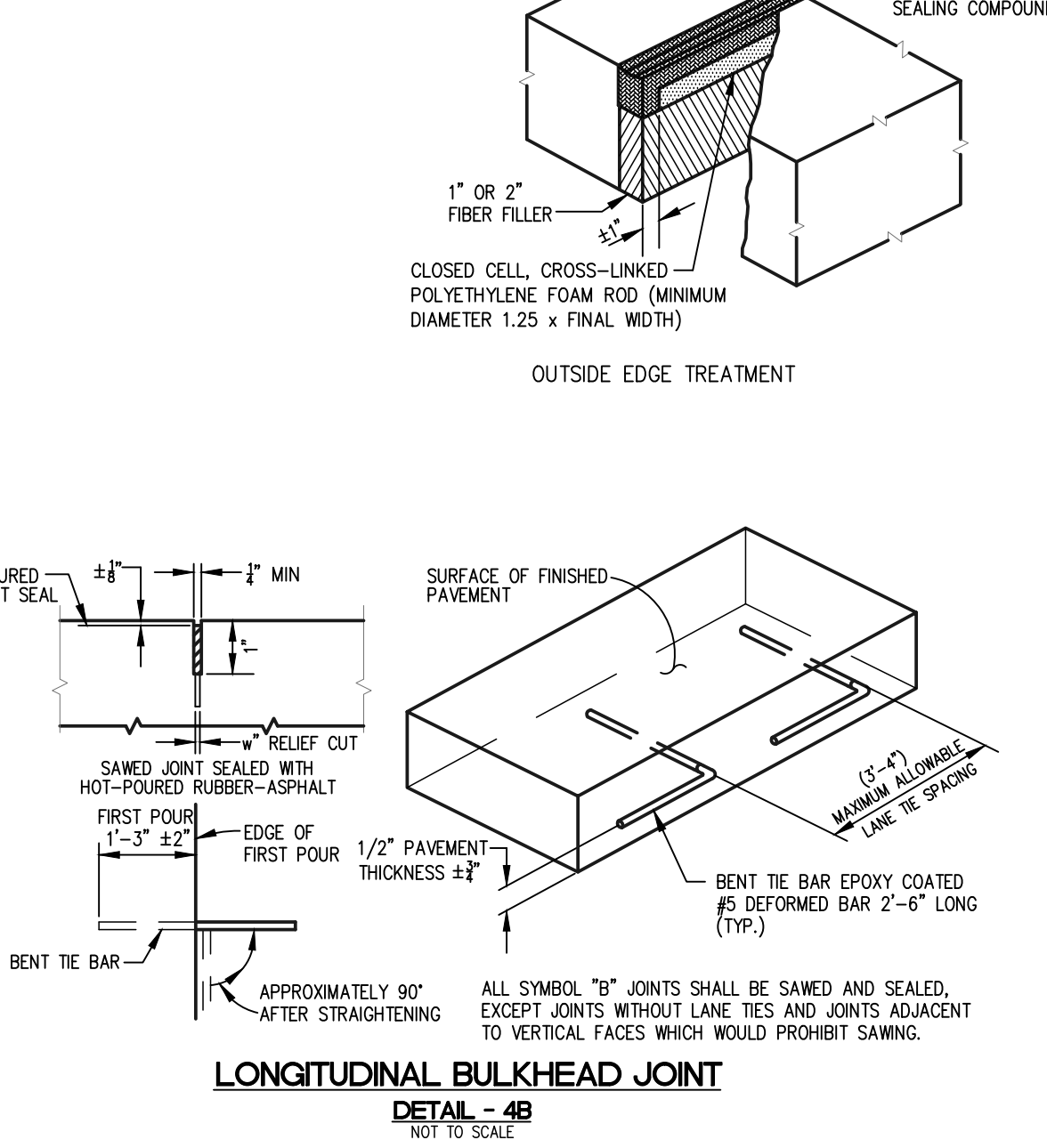
TERMINAL BUTT JOINT
DETAIL - 5
NOT TO SCALE



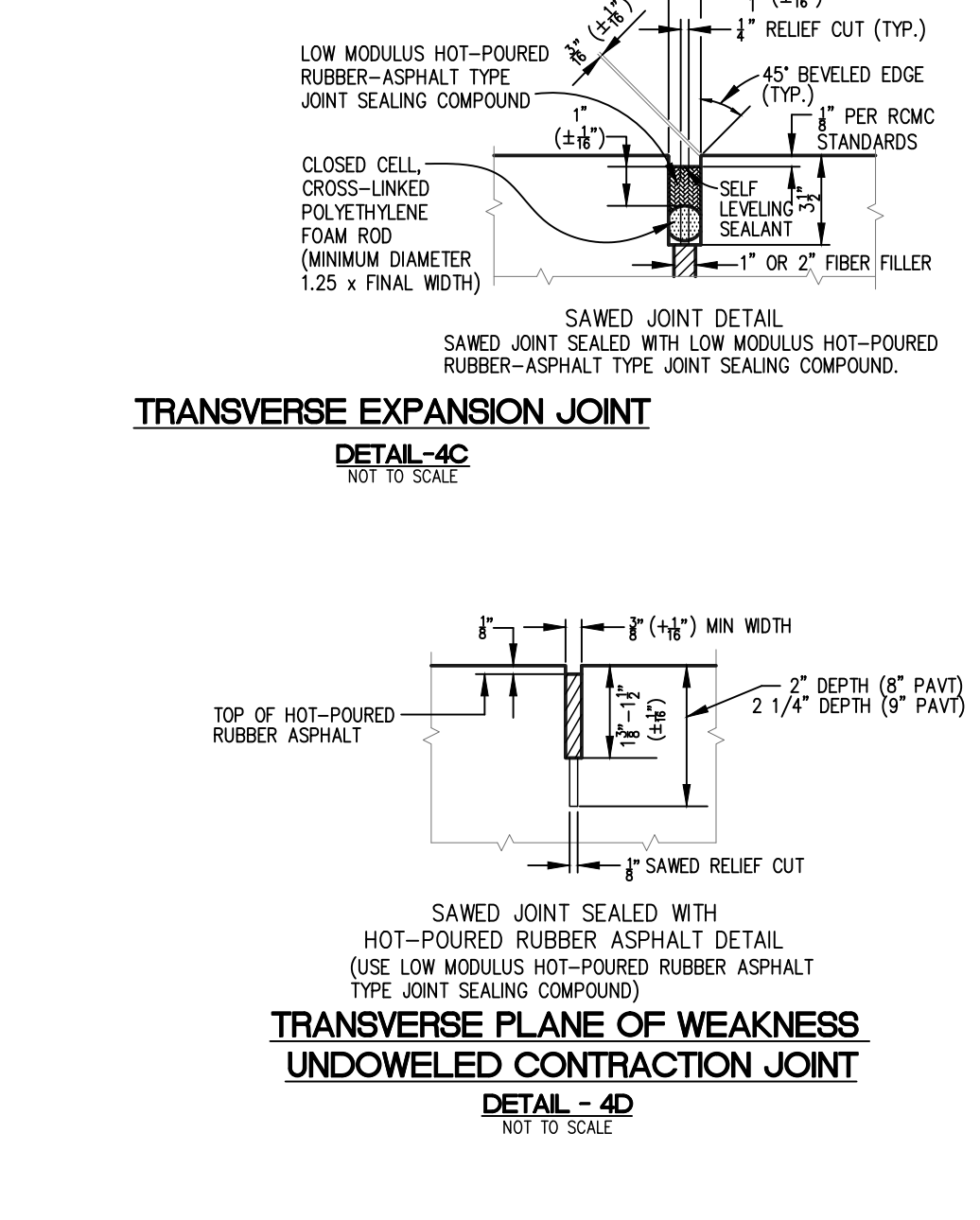
TYPICAL PLAN OF CONCRETE PAVEMENT JOINT LAYOUT DETAILS - 4
NOT TO SCALE



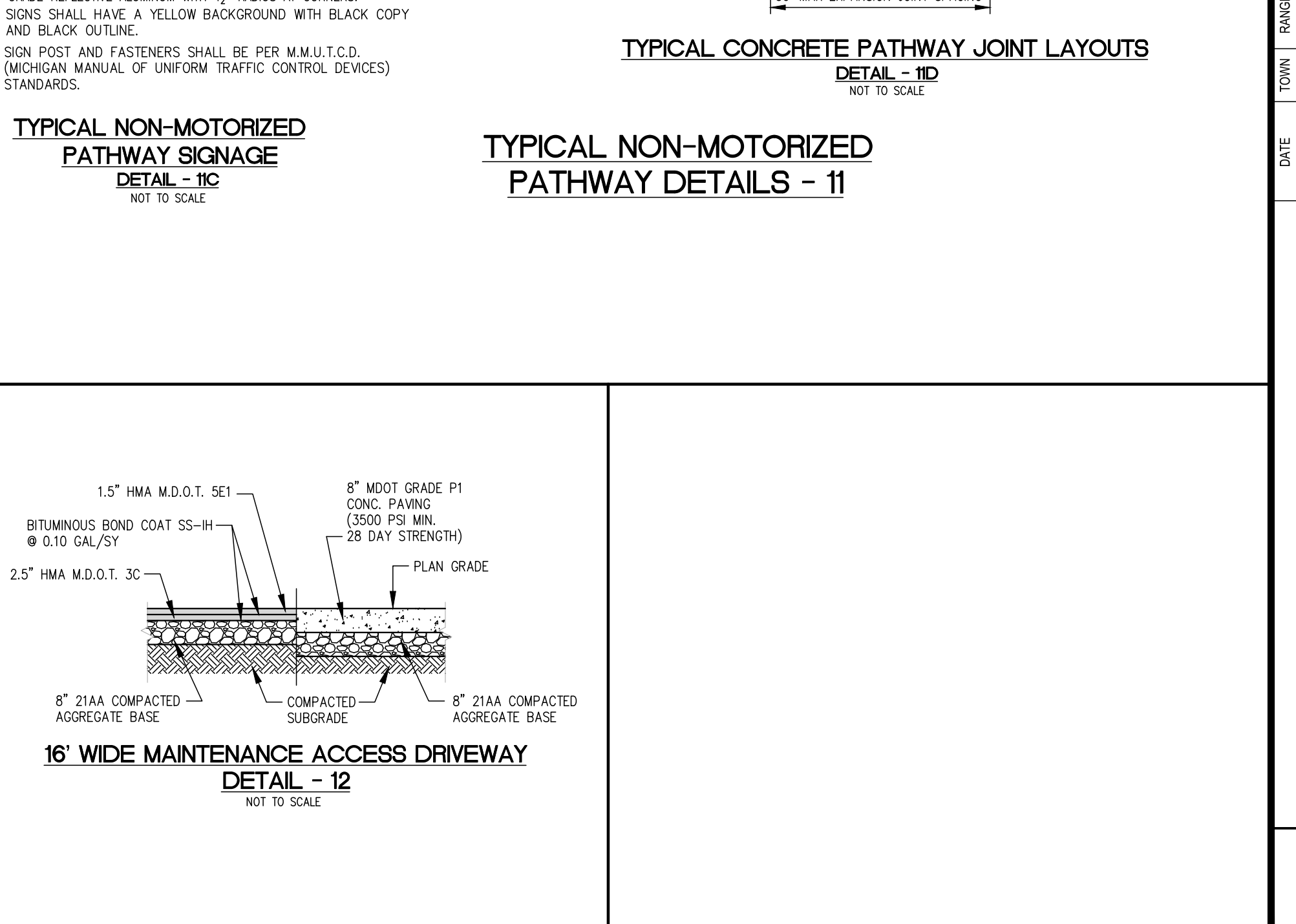
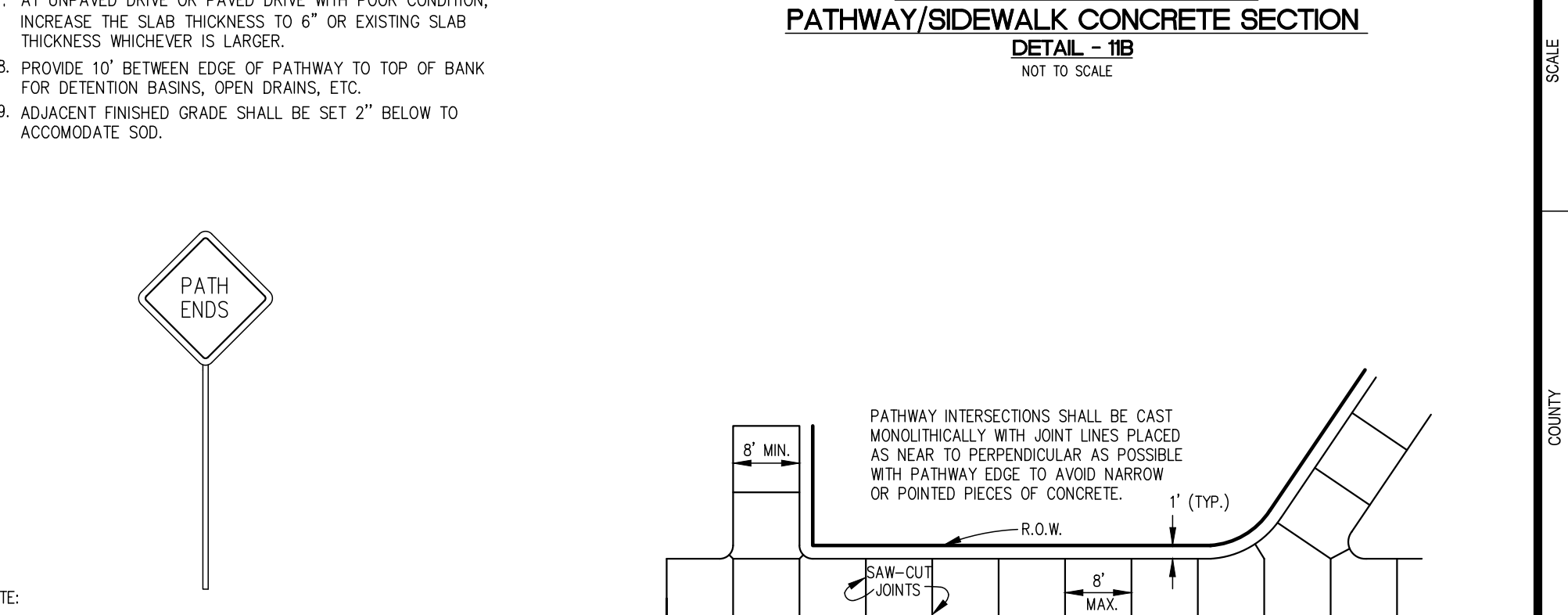
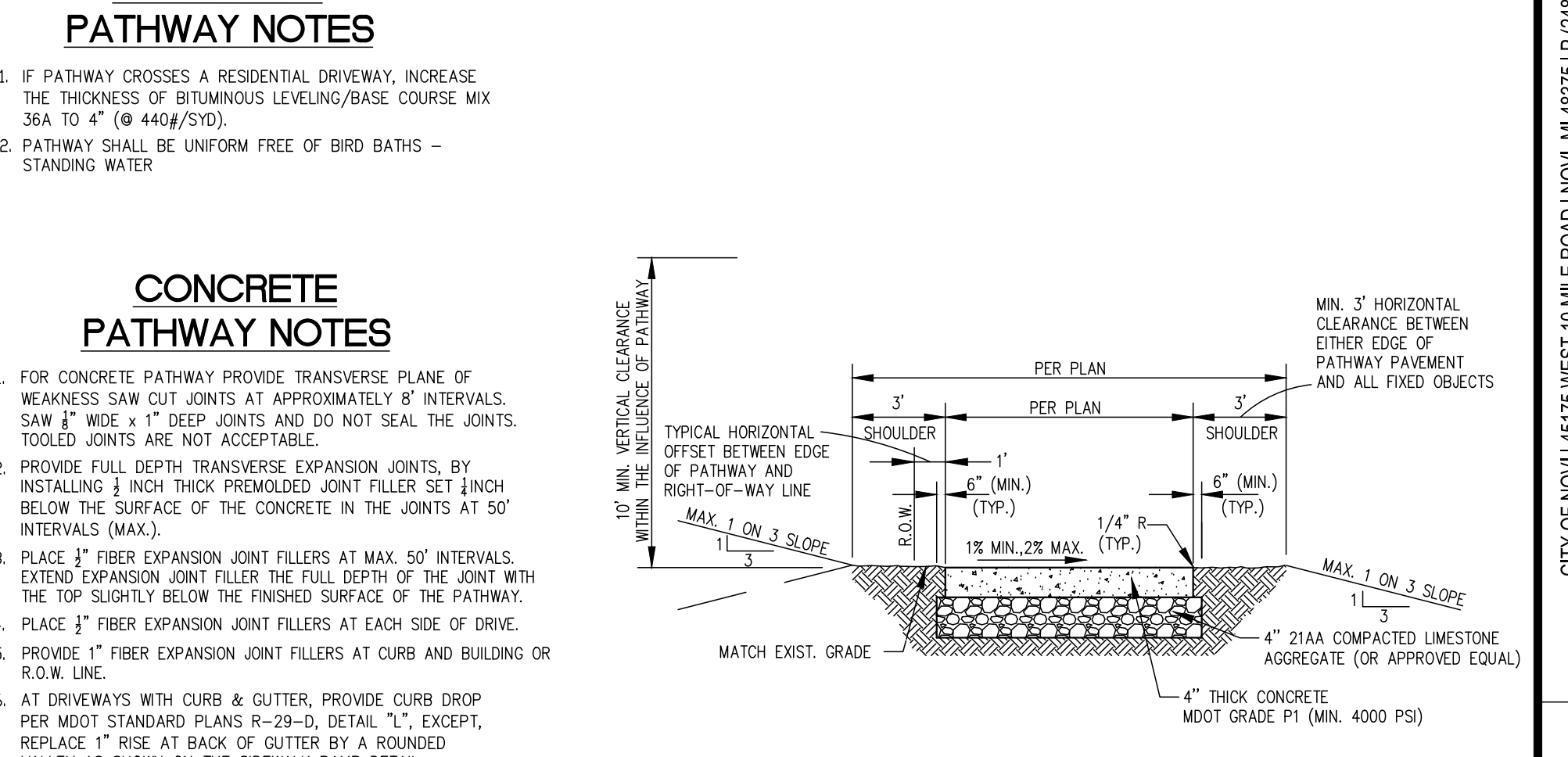
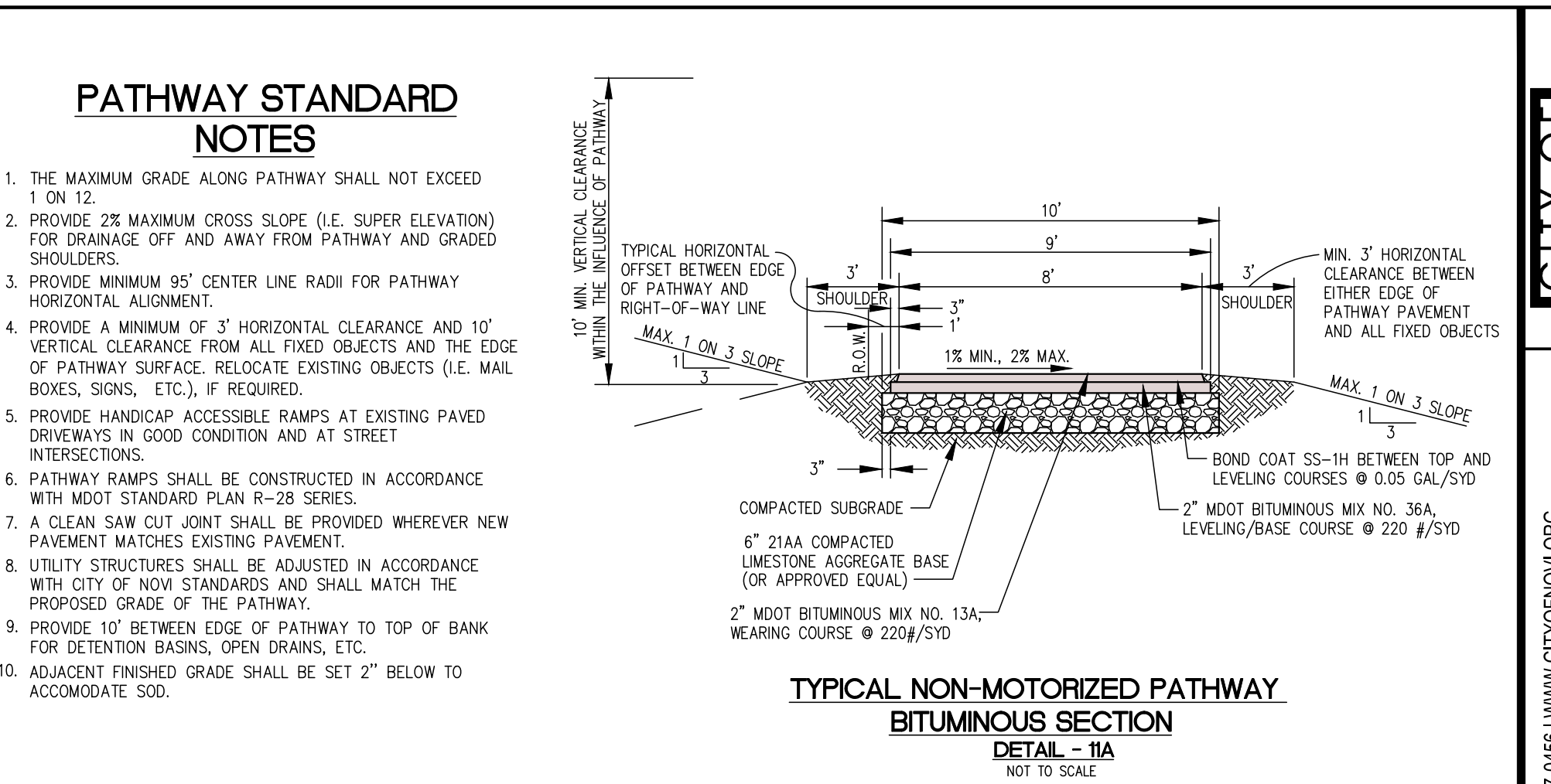
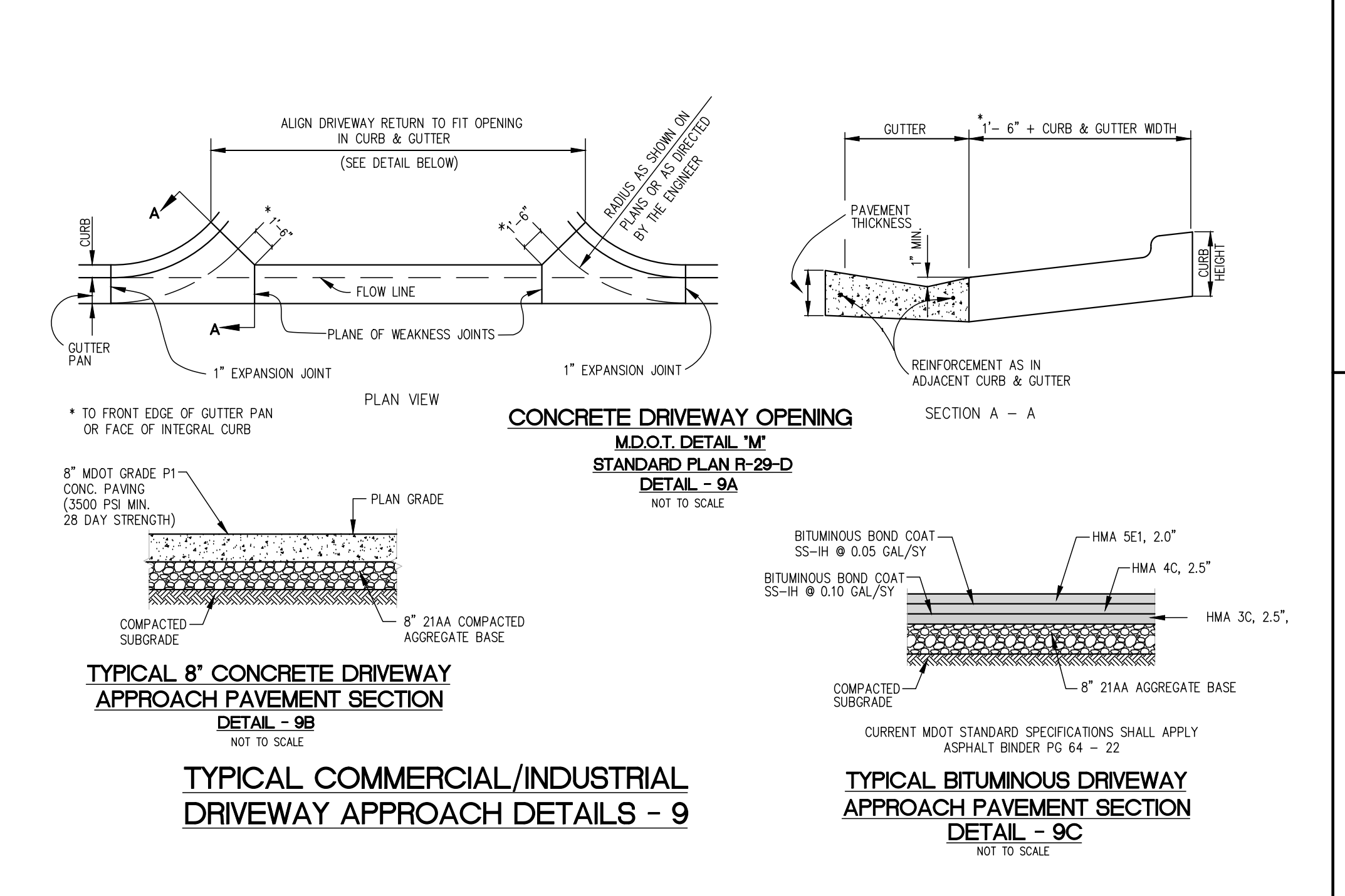
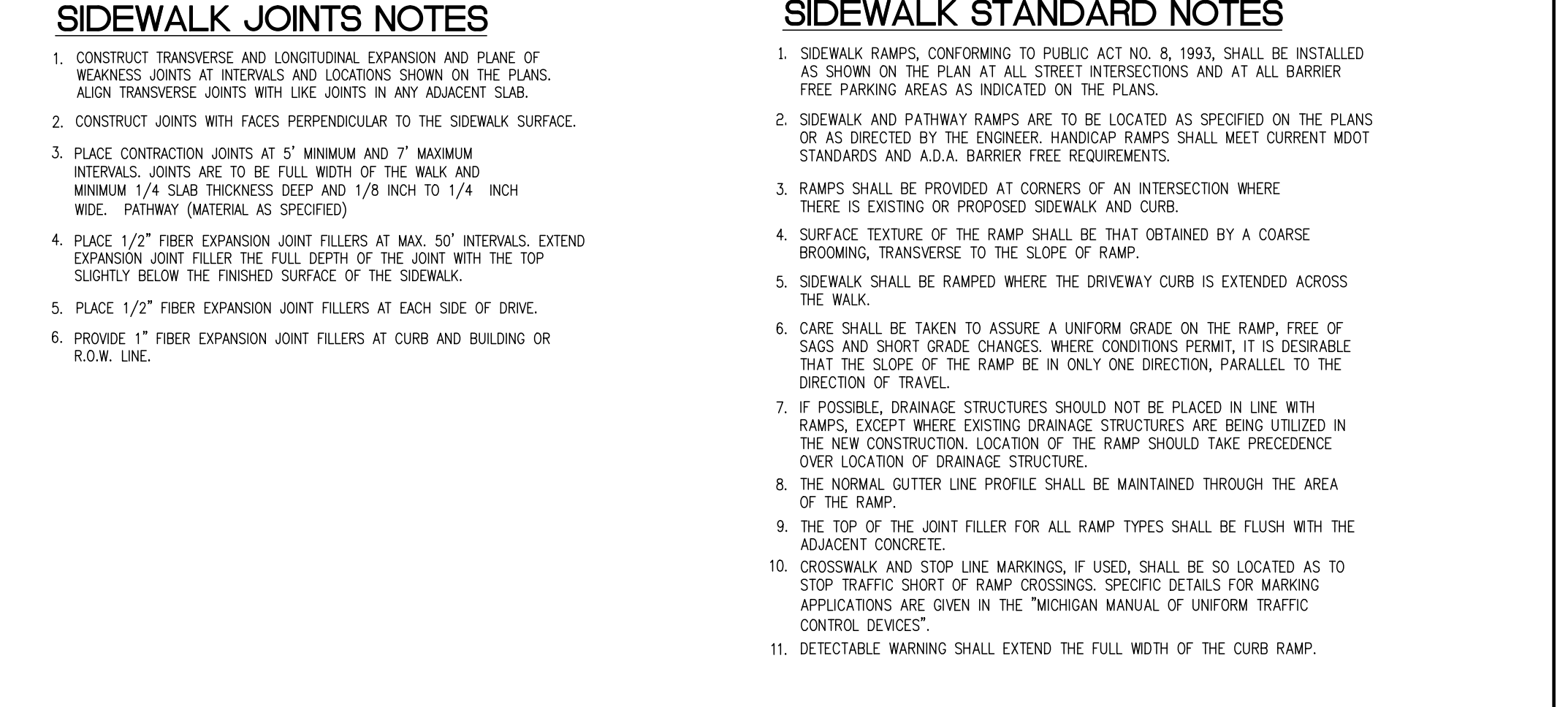
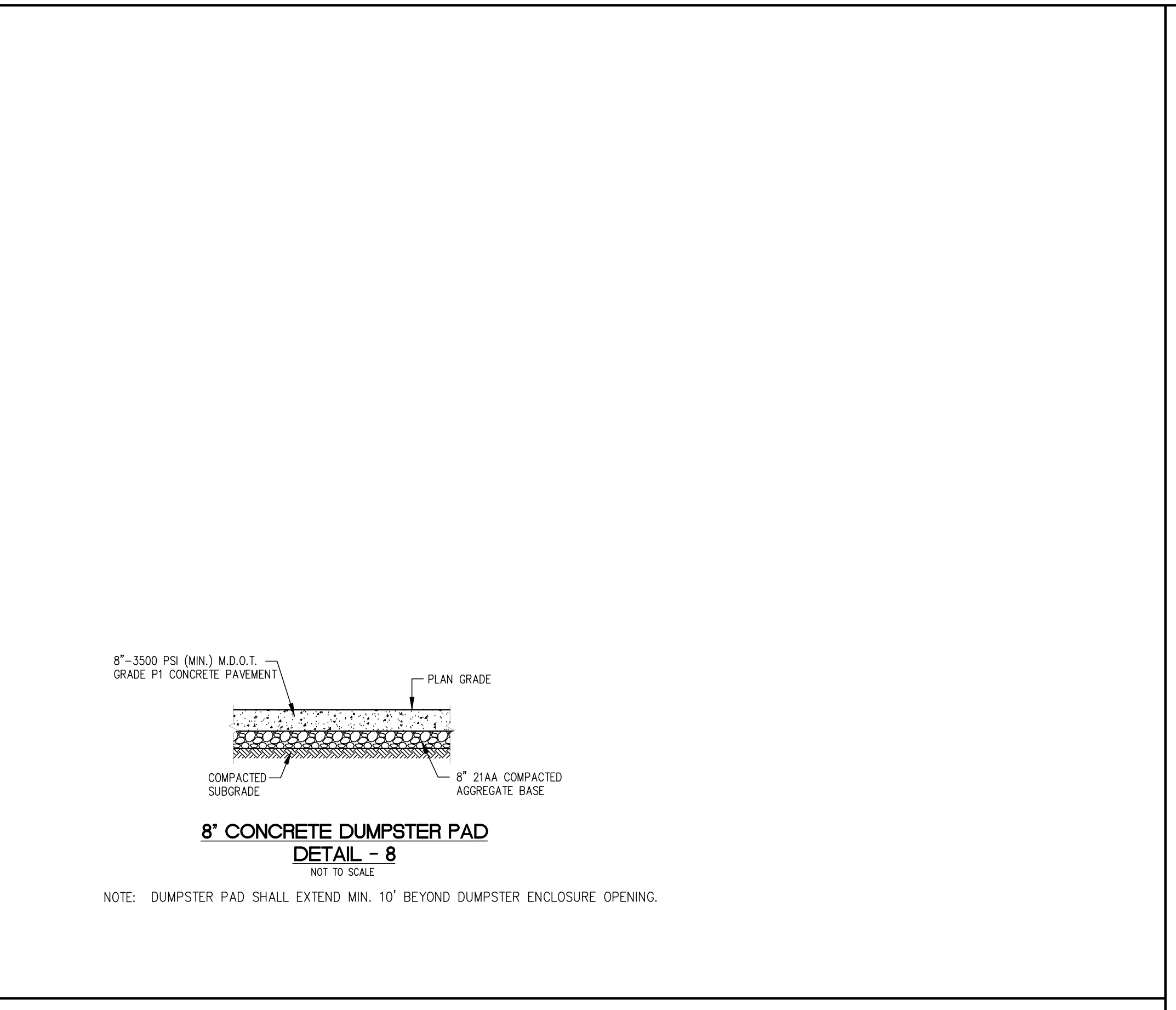
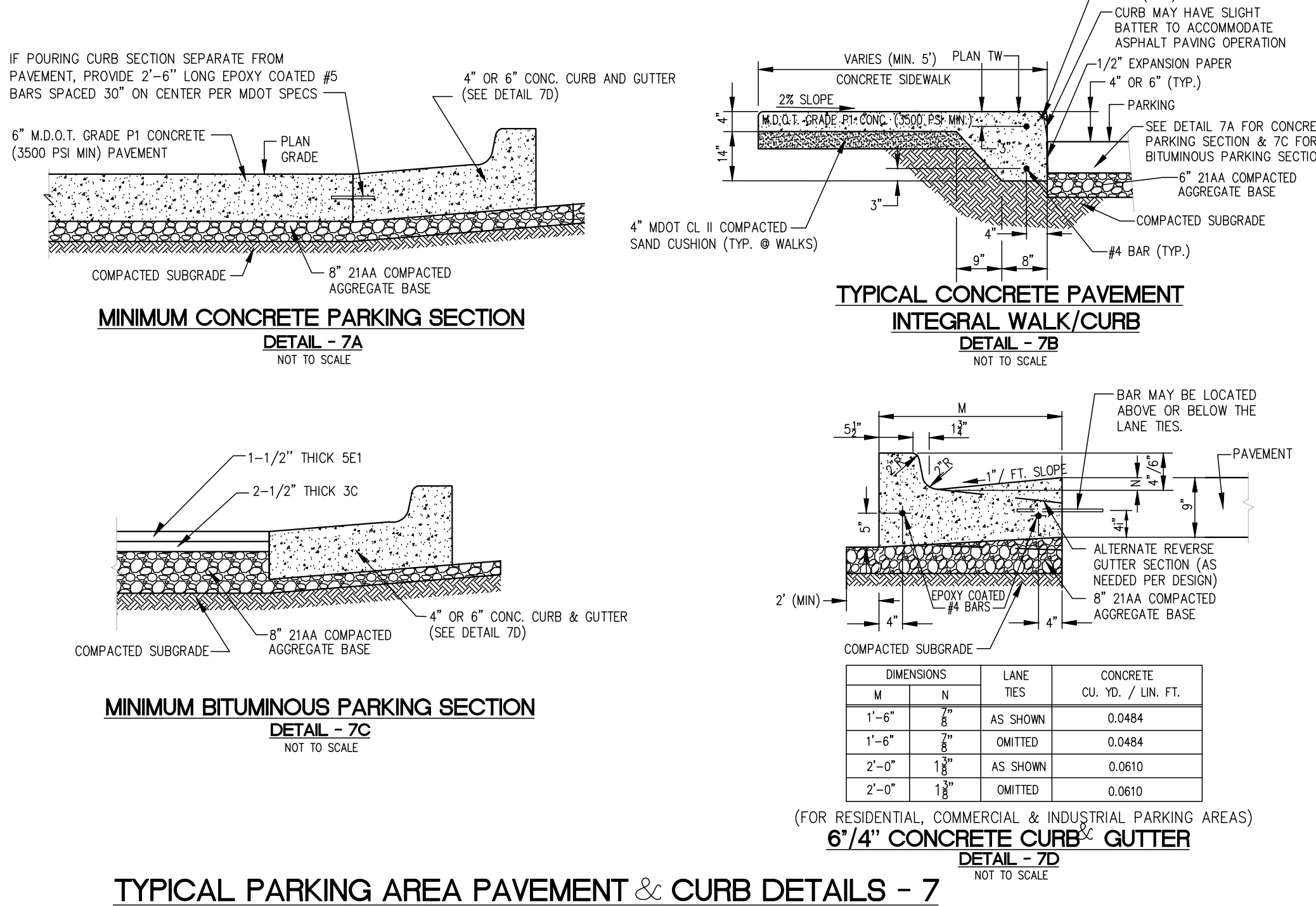
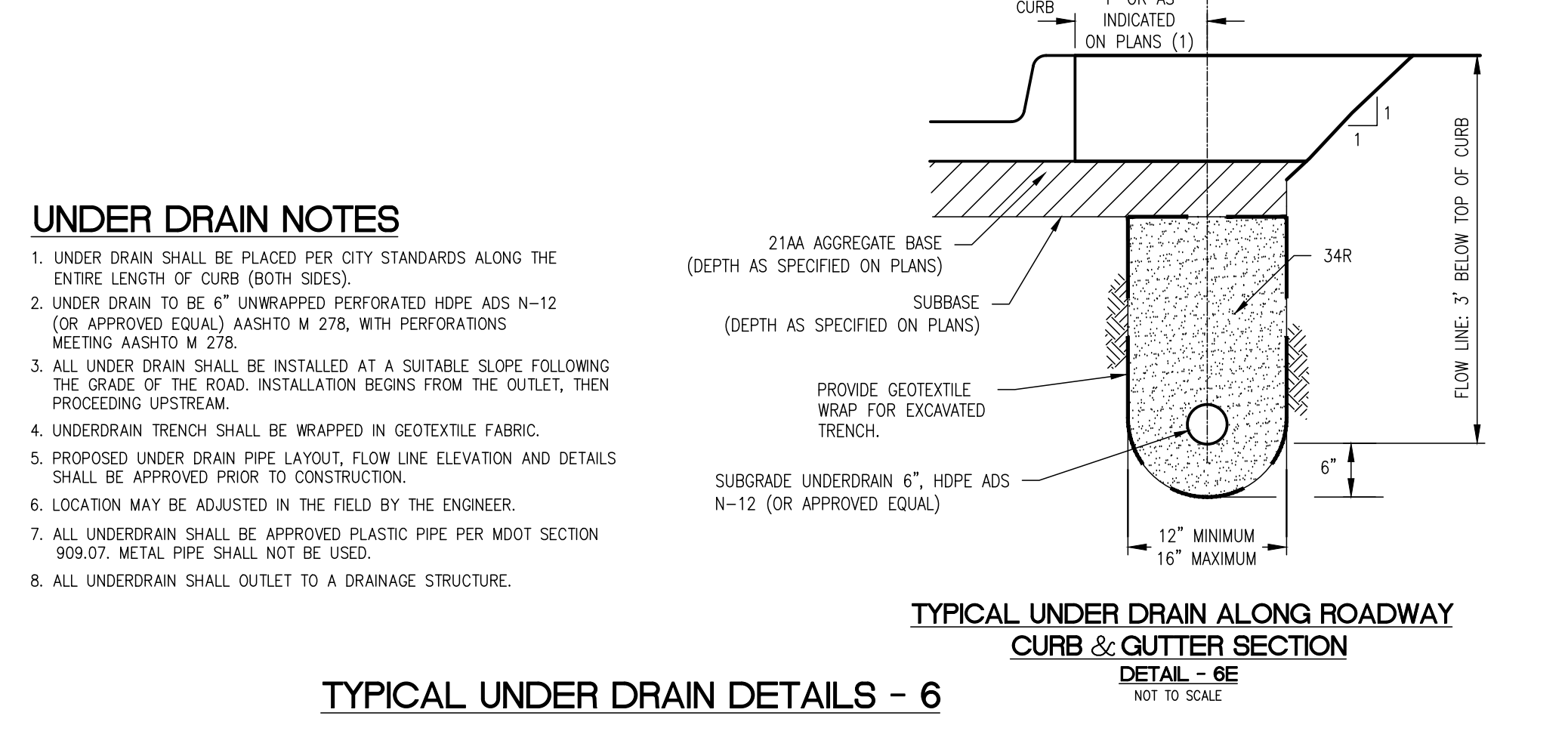
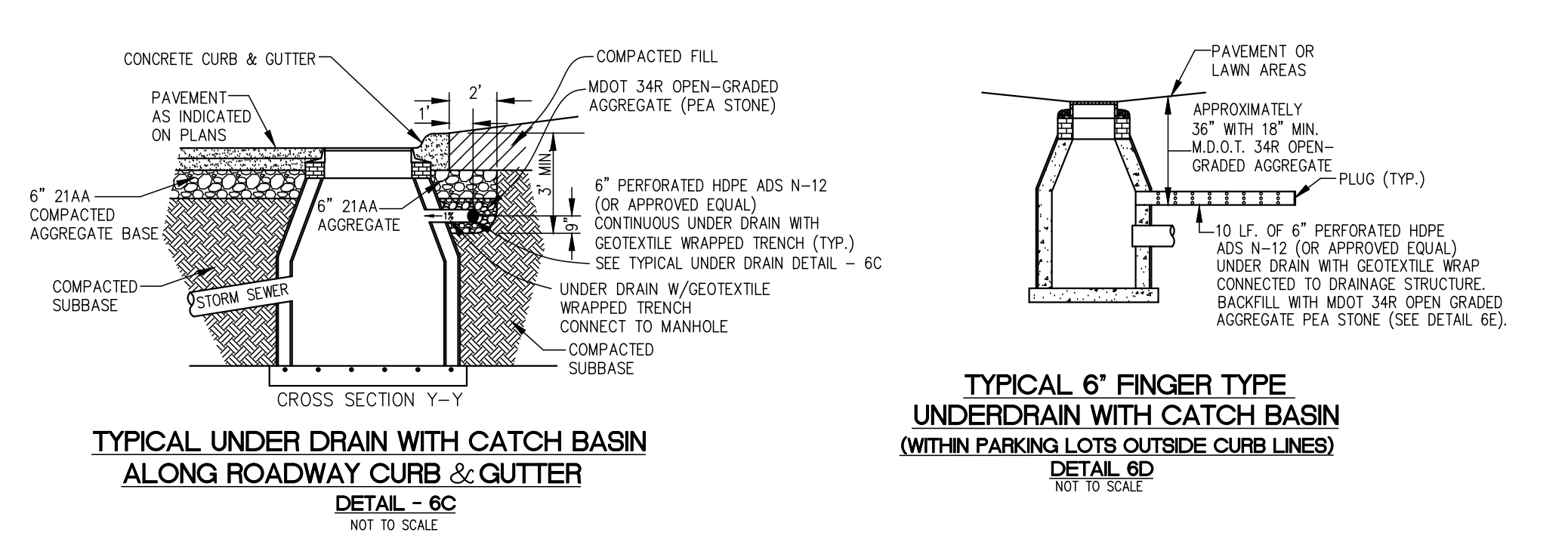
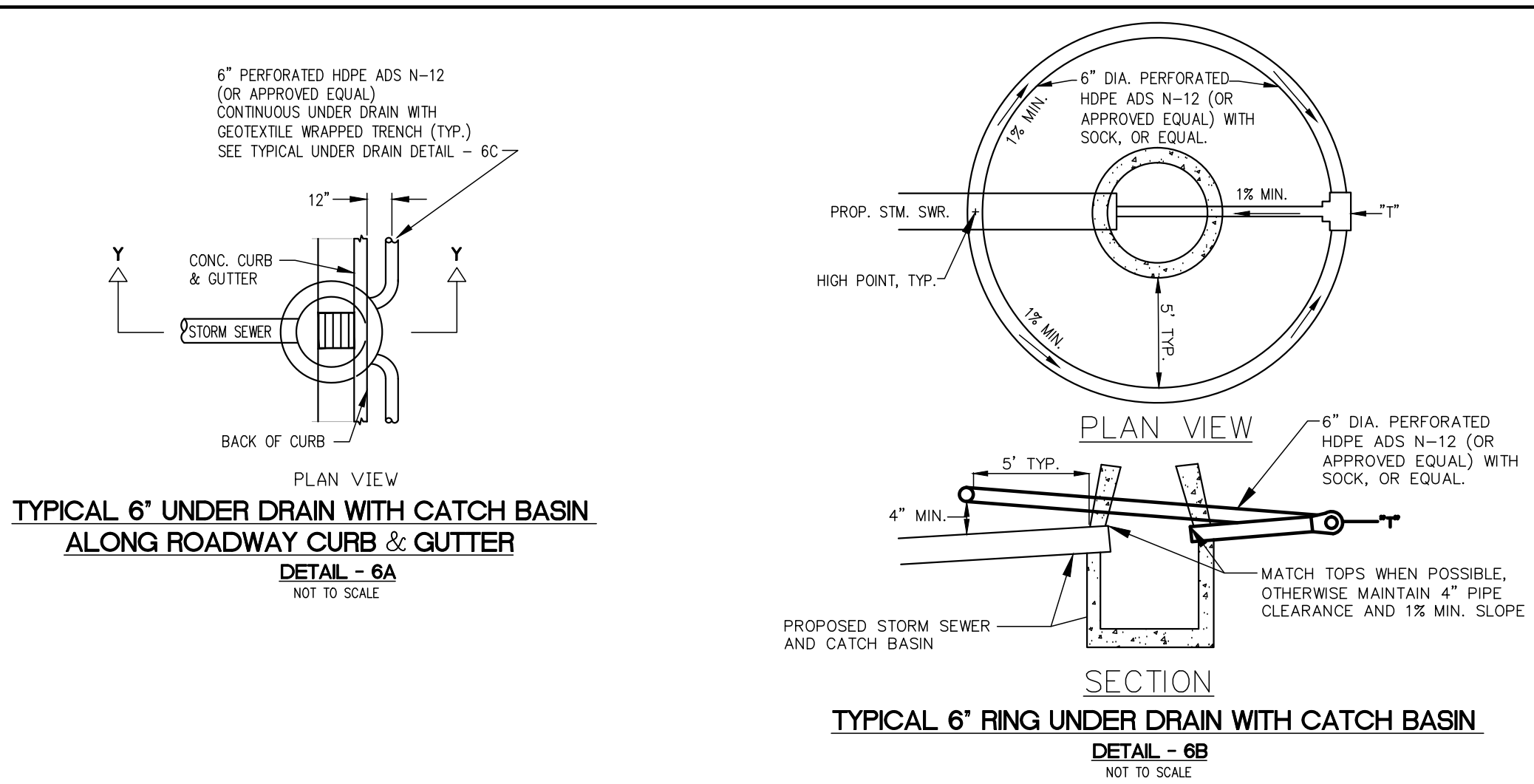
LONGITUDINAL LANE TIE JOINT
DETAIL - 4A
NOT TO SCALE



LONGITUDINAL BULKHEAD JOINT
DETAIL - 4B
NOT TO SCALE



TRANSVERSE EXPANSION JOINT
DETAIL - 4C
NOT TO SCALE



CITY OF NOV

DATE: JUNE 2012
REVISIONS: SPALING DESIGN

TOWN: RAINBOW
COUNTY: OAKLAND COUNTY
DATE: 5/28/2017

SCALE: V. N.T.S.
H. N.T.S.

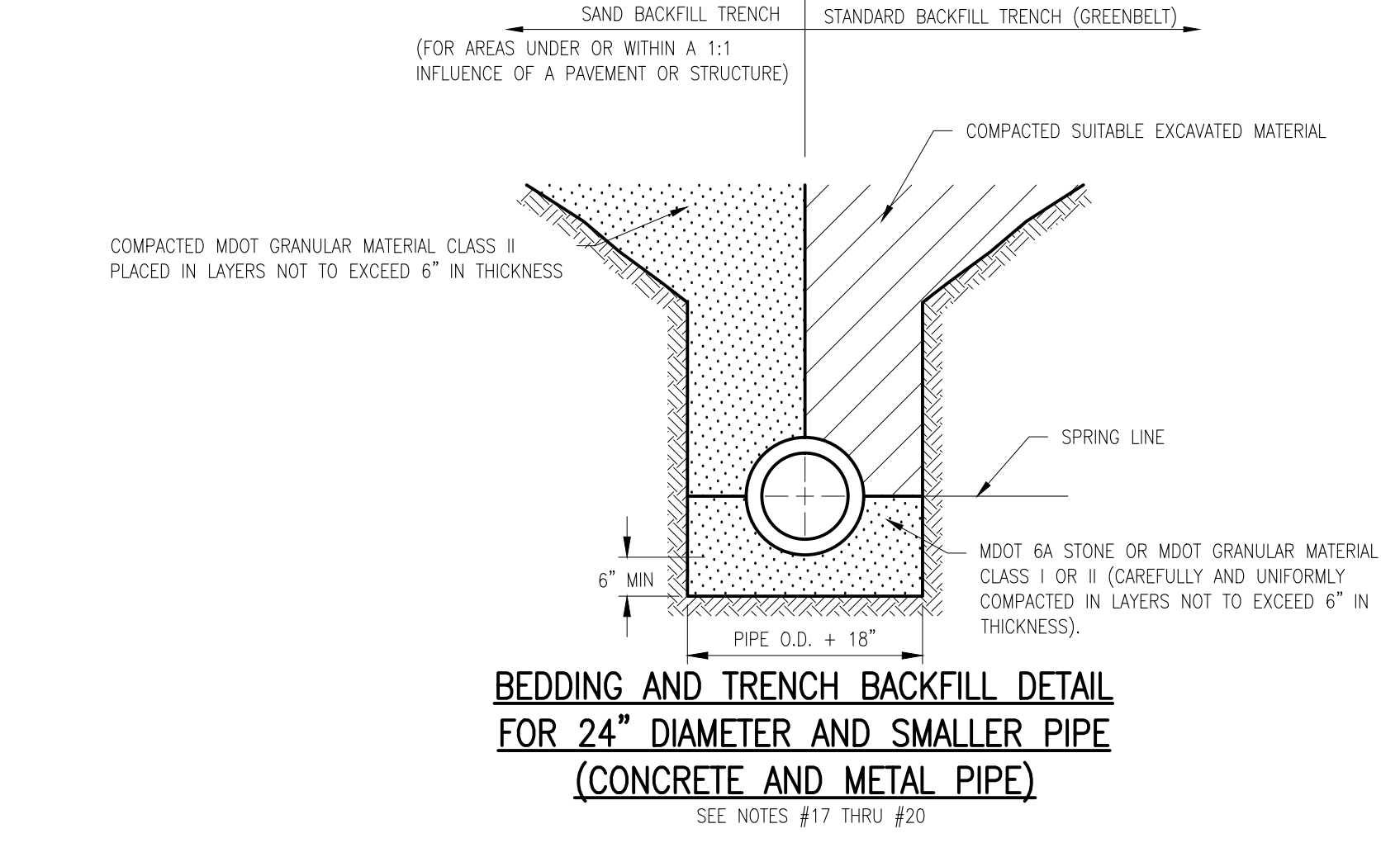
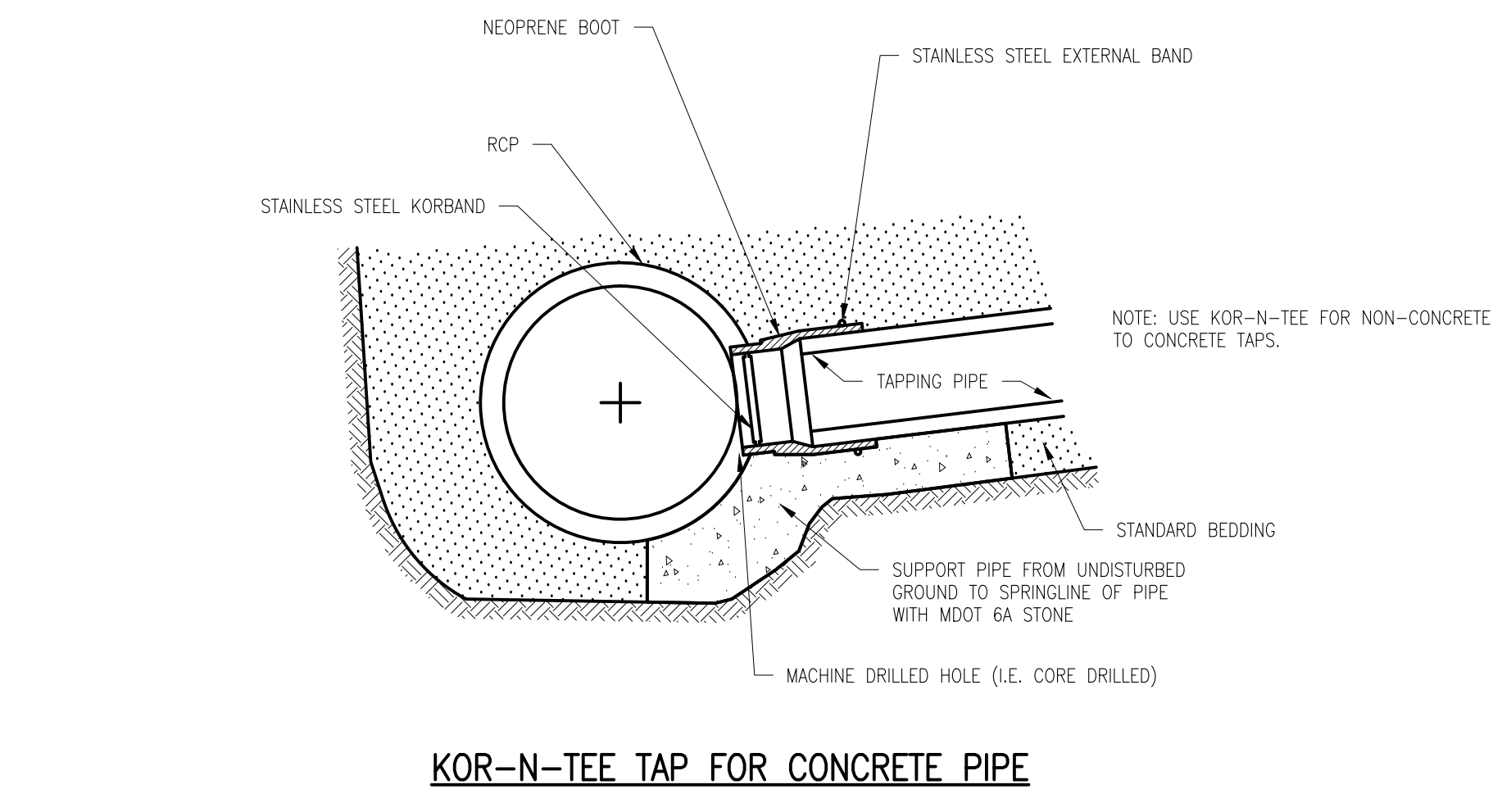
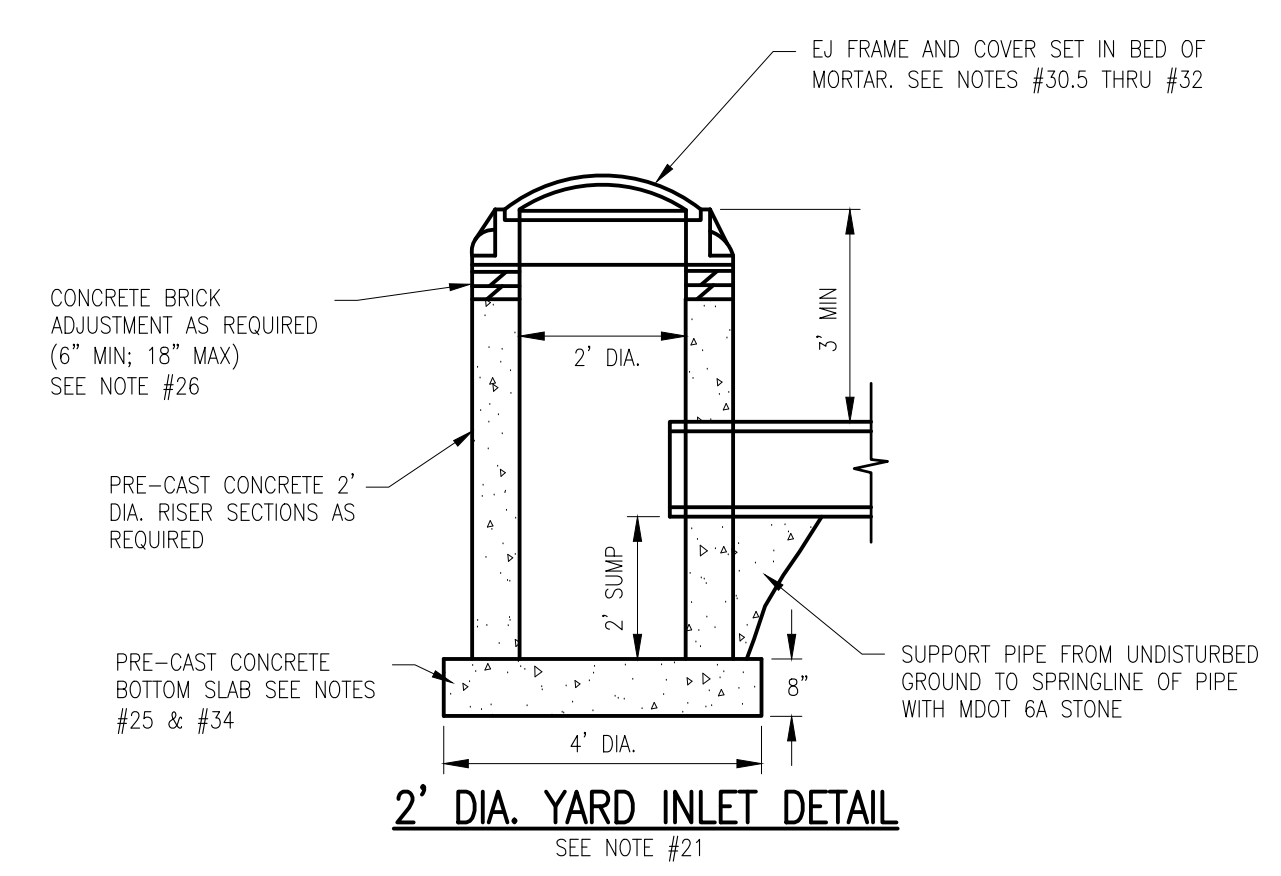
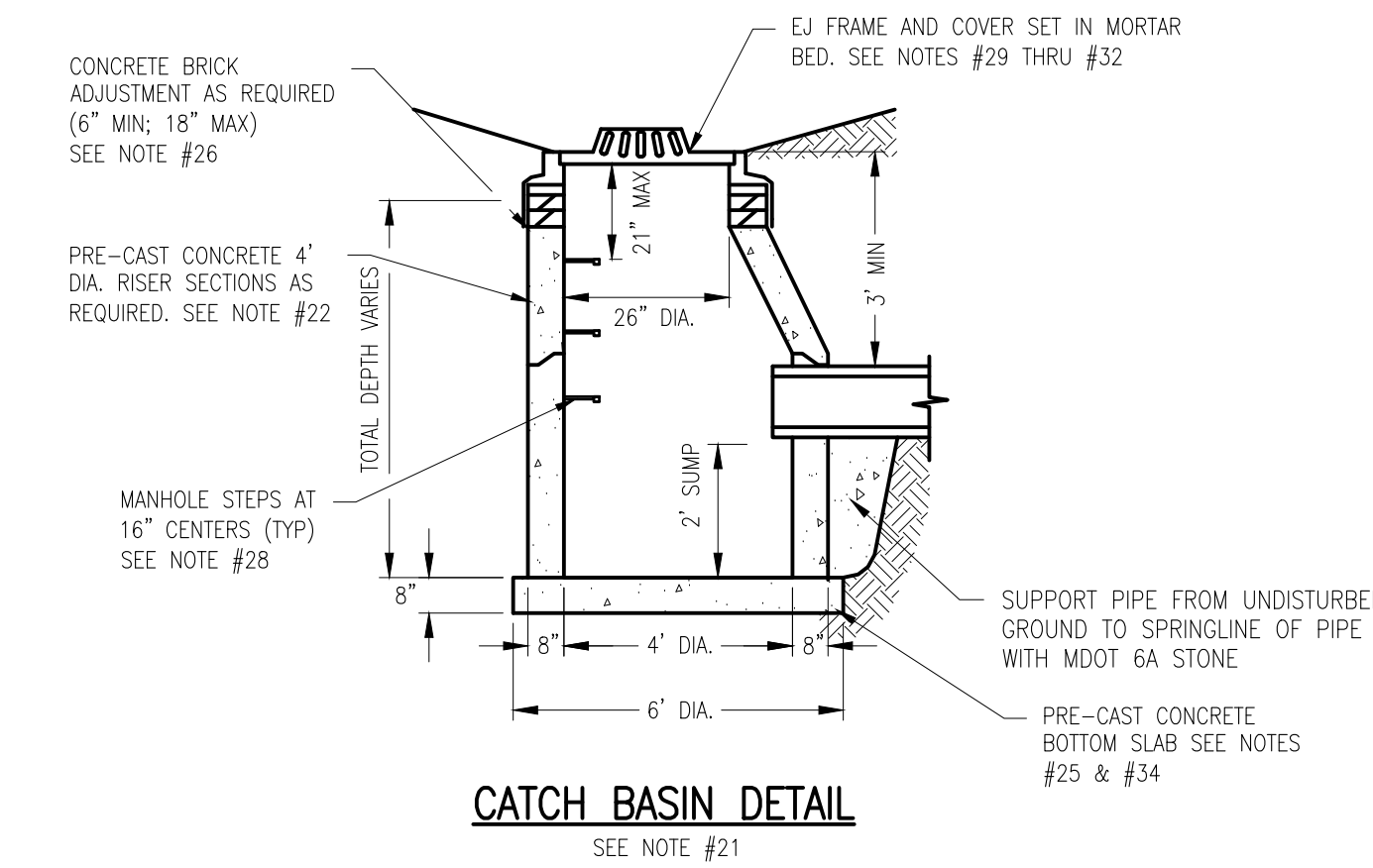
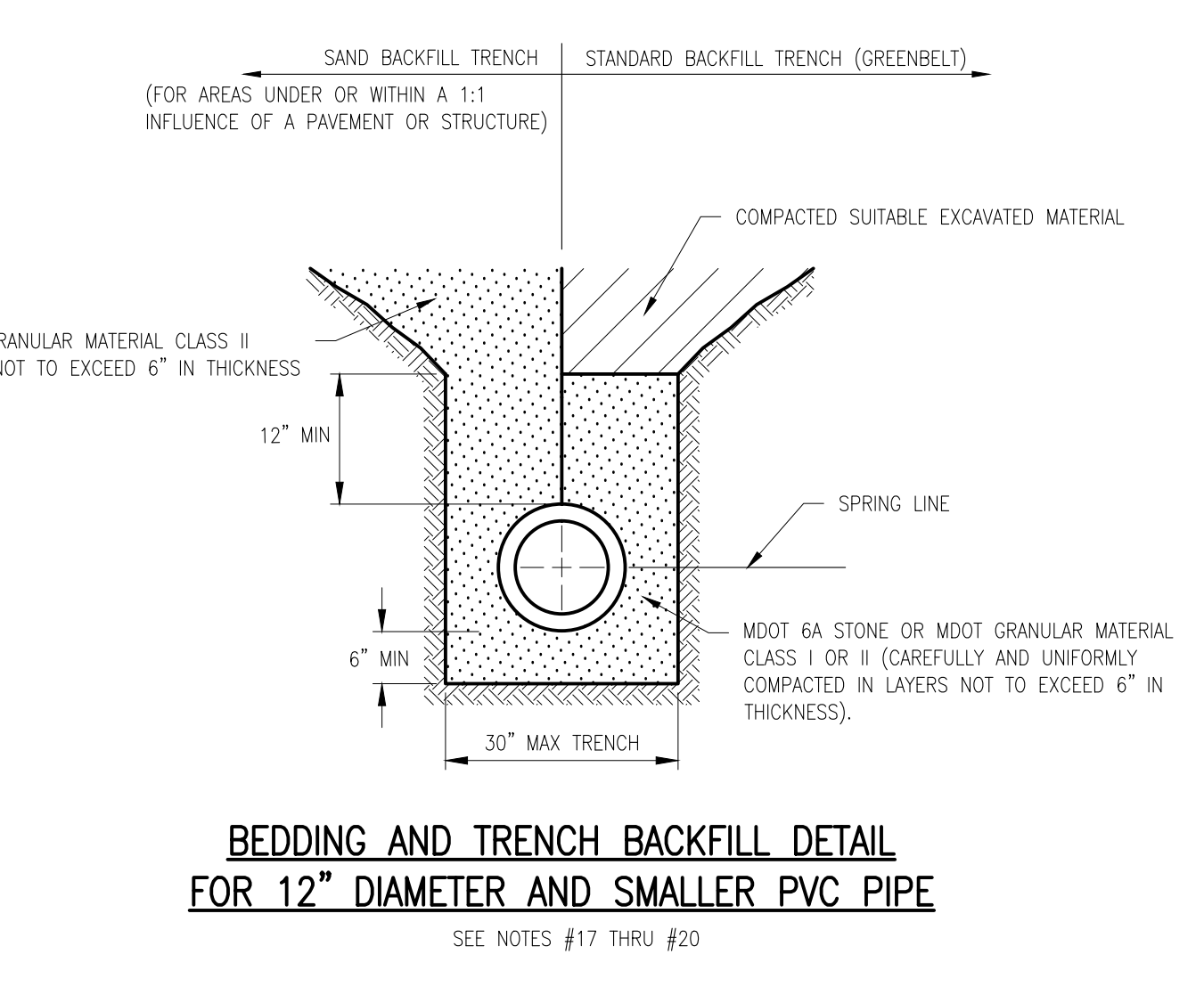
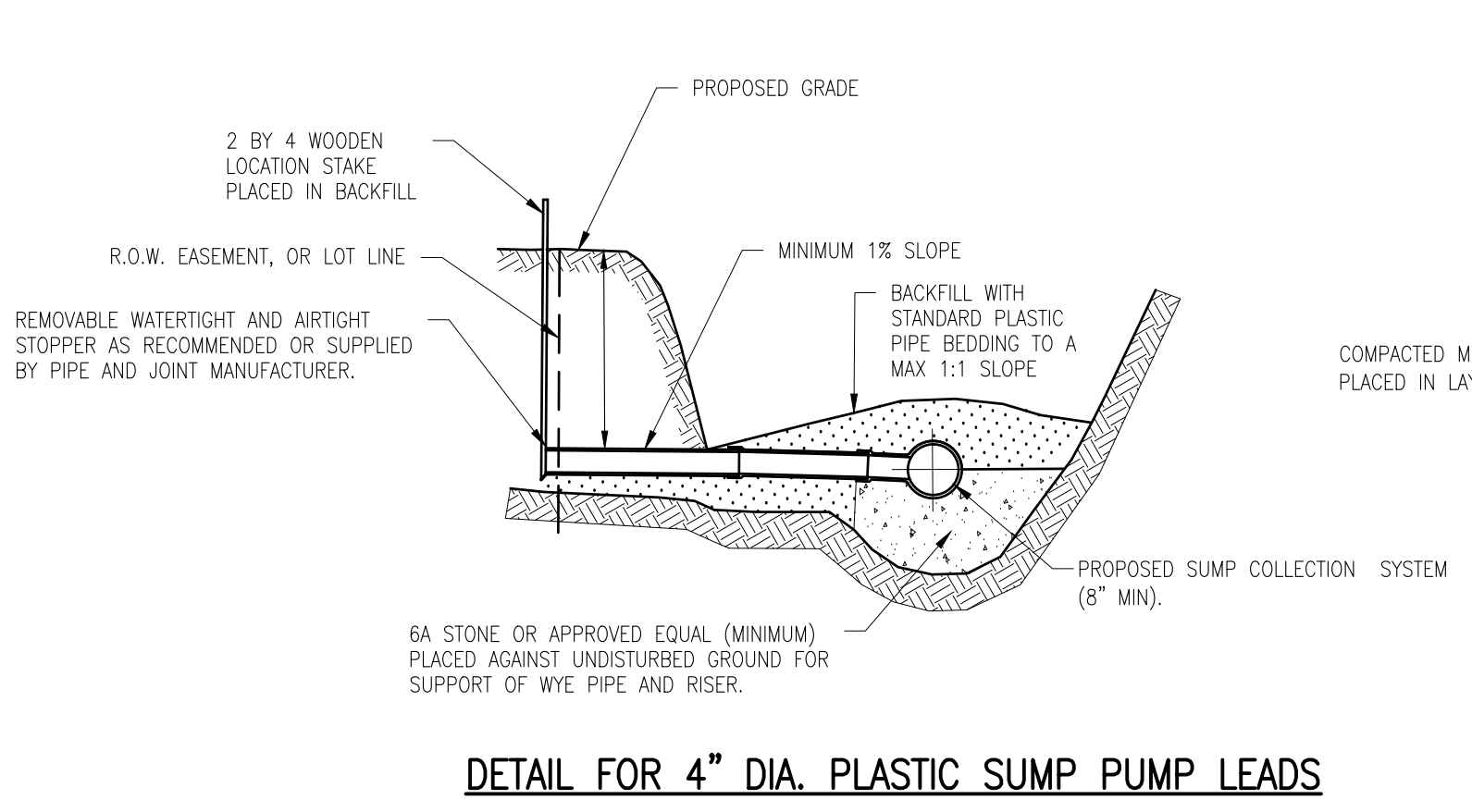
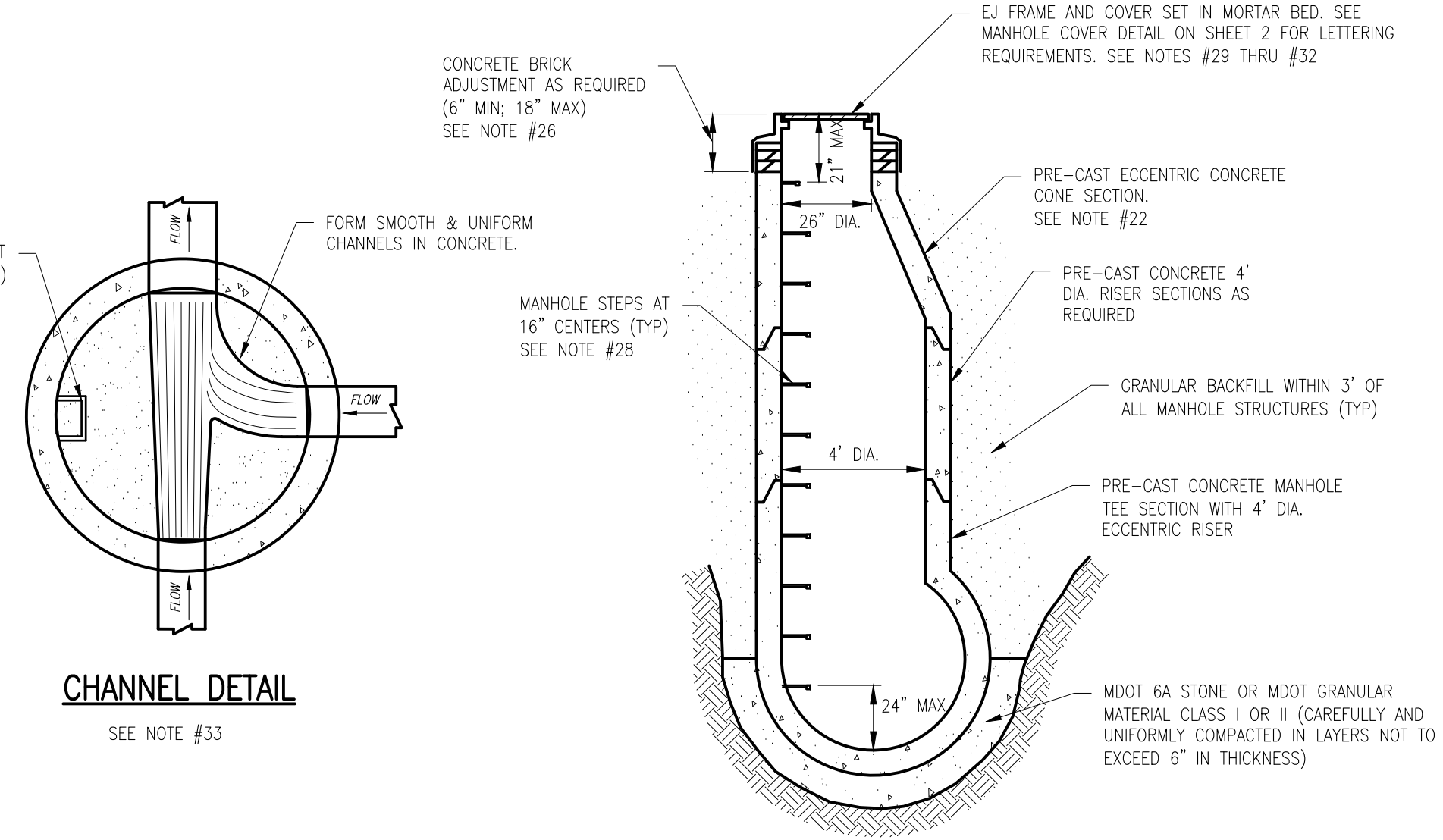
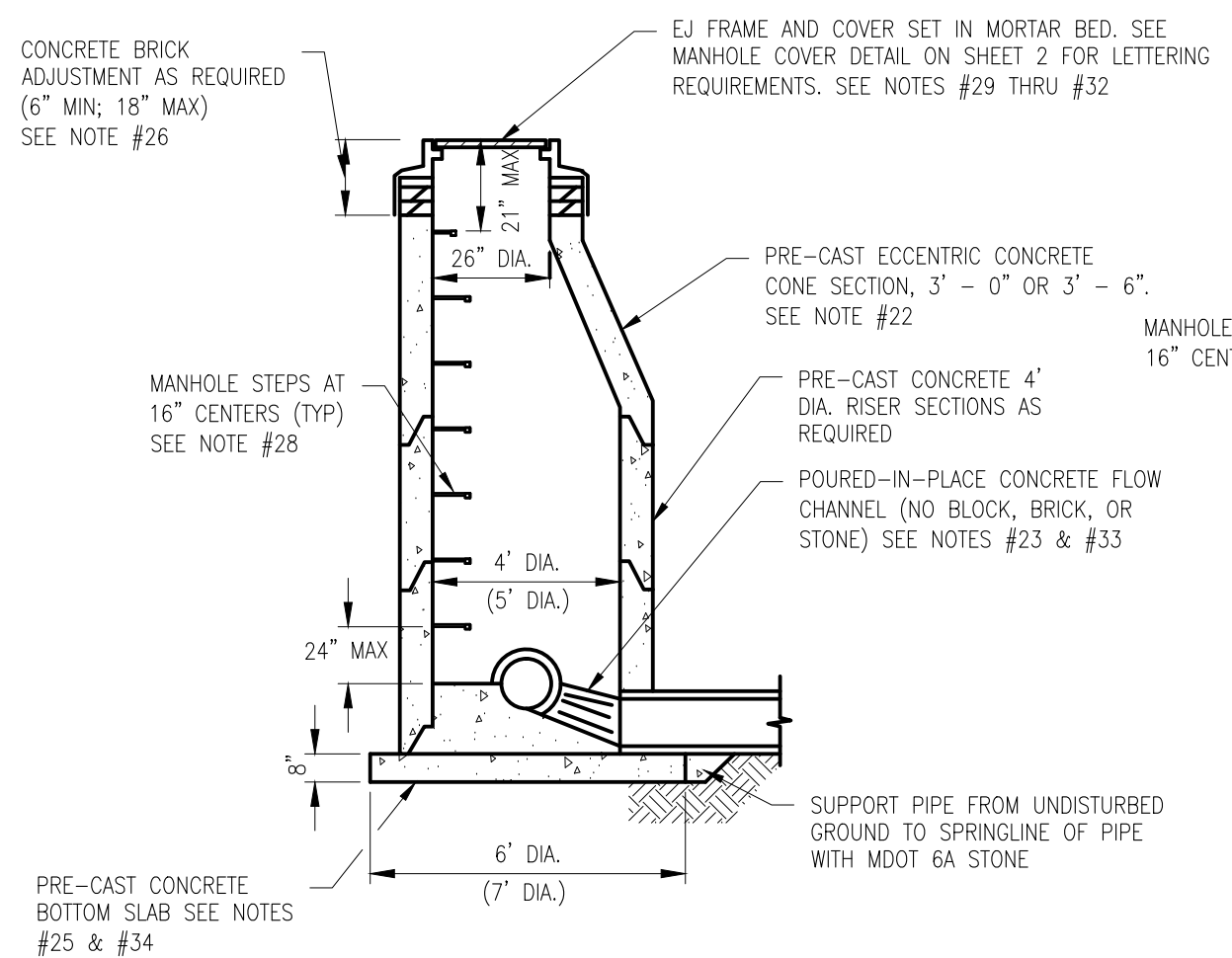
REVISIONS: SPALING DESIGN

DATE: 3/26/2018

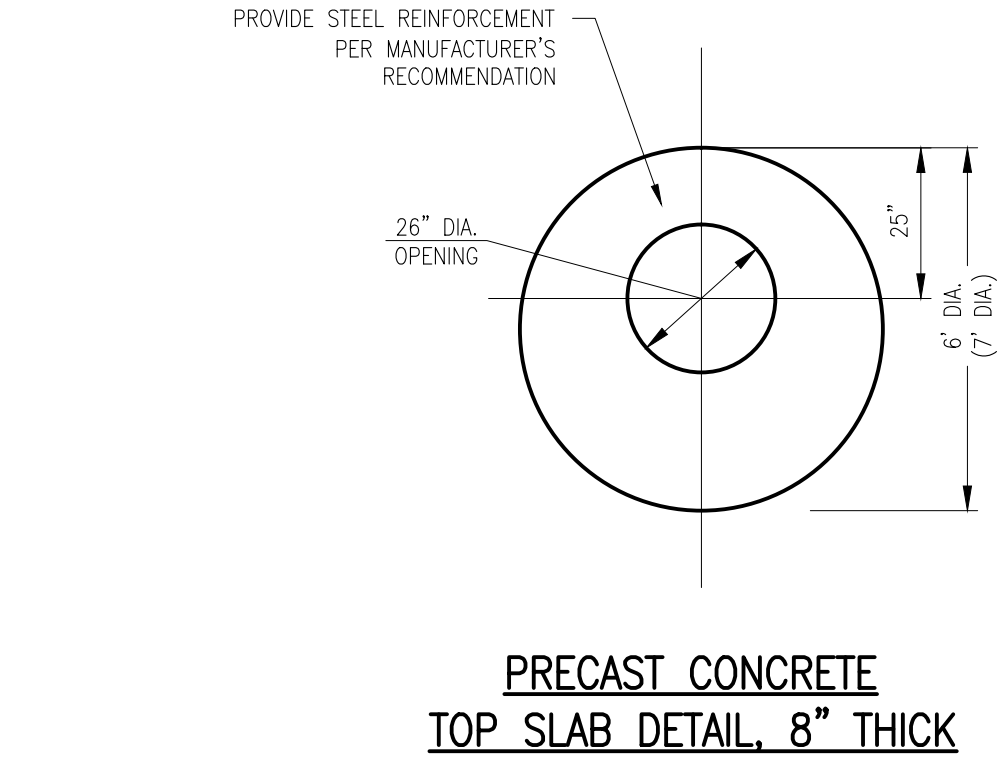
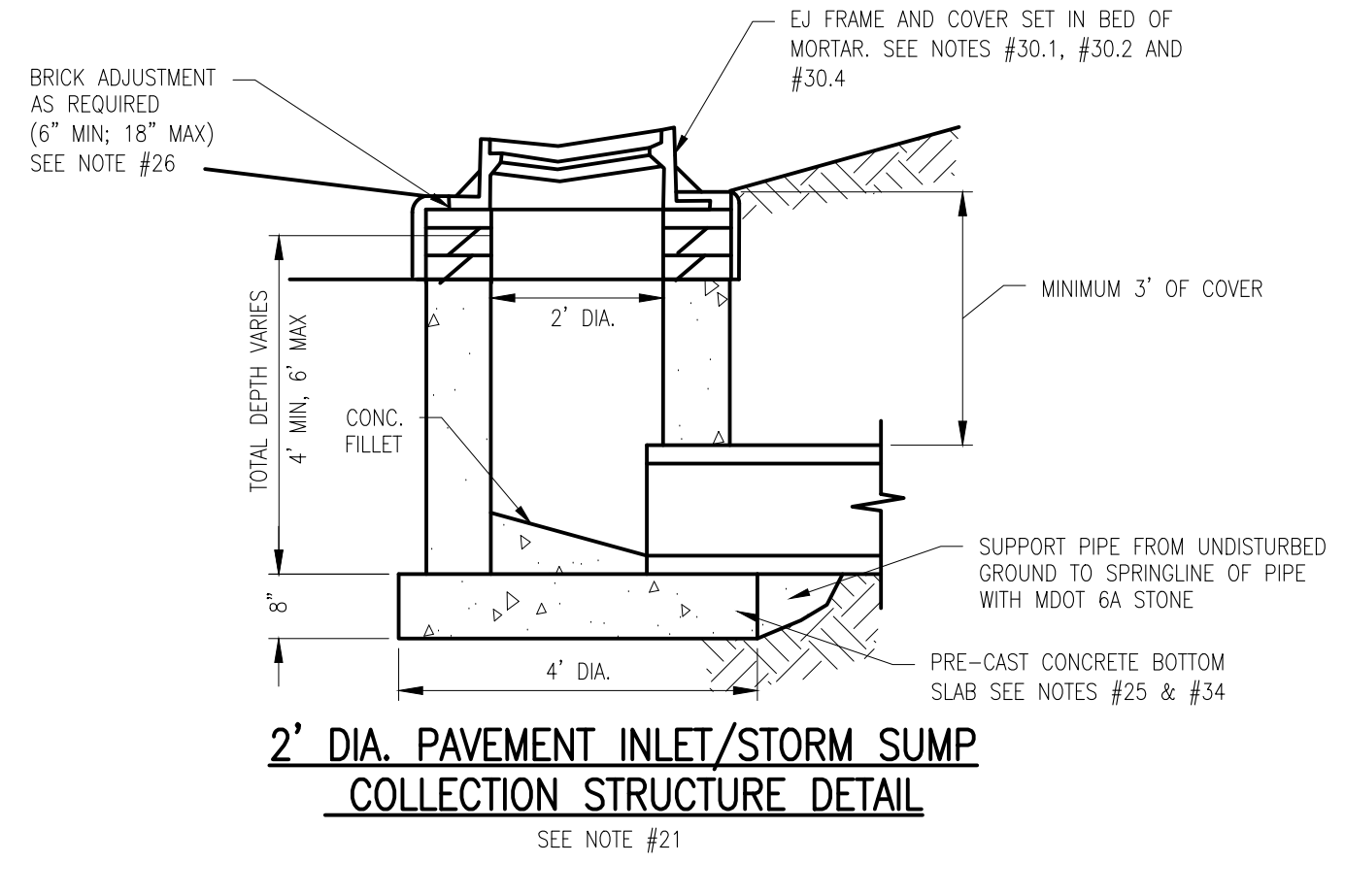
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CITY OF NOV PAVING STANDARD DETAILS

SHEET 2 OF 2



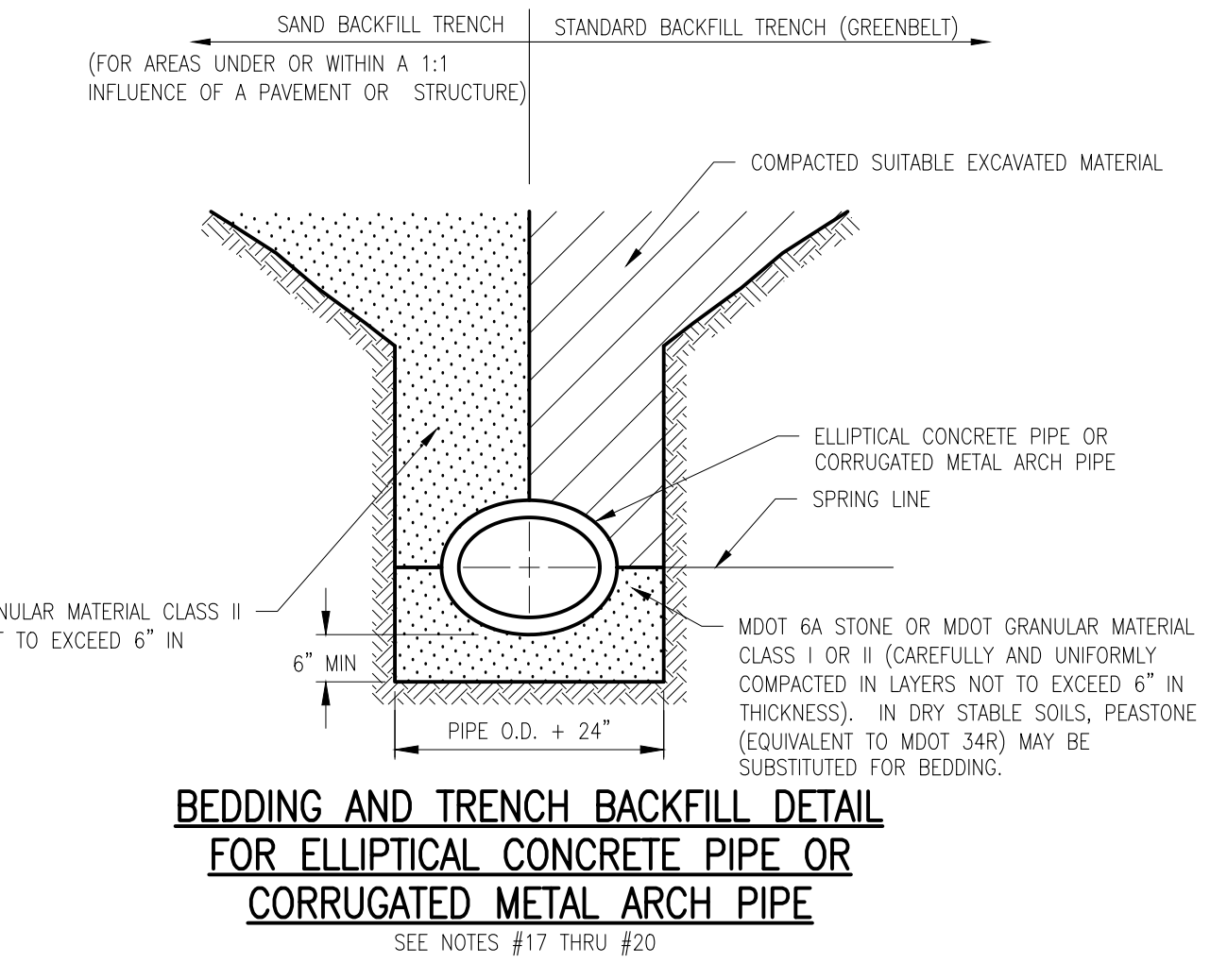
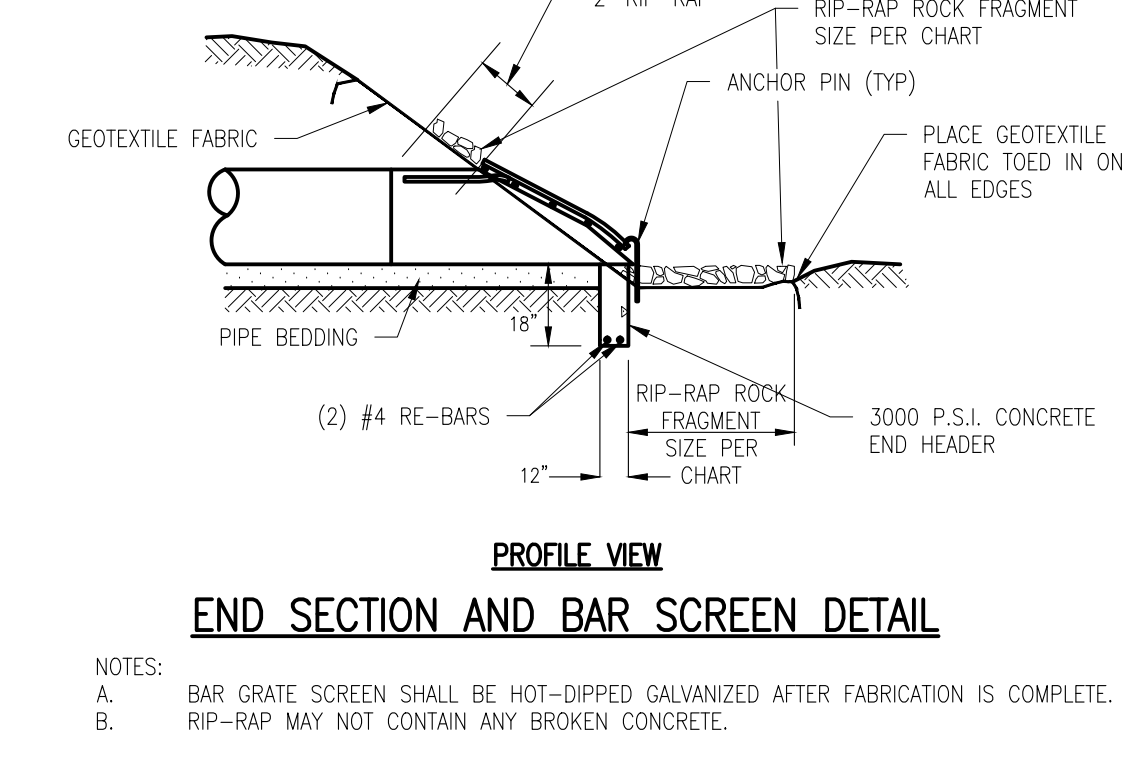
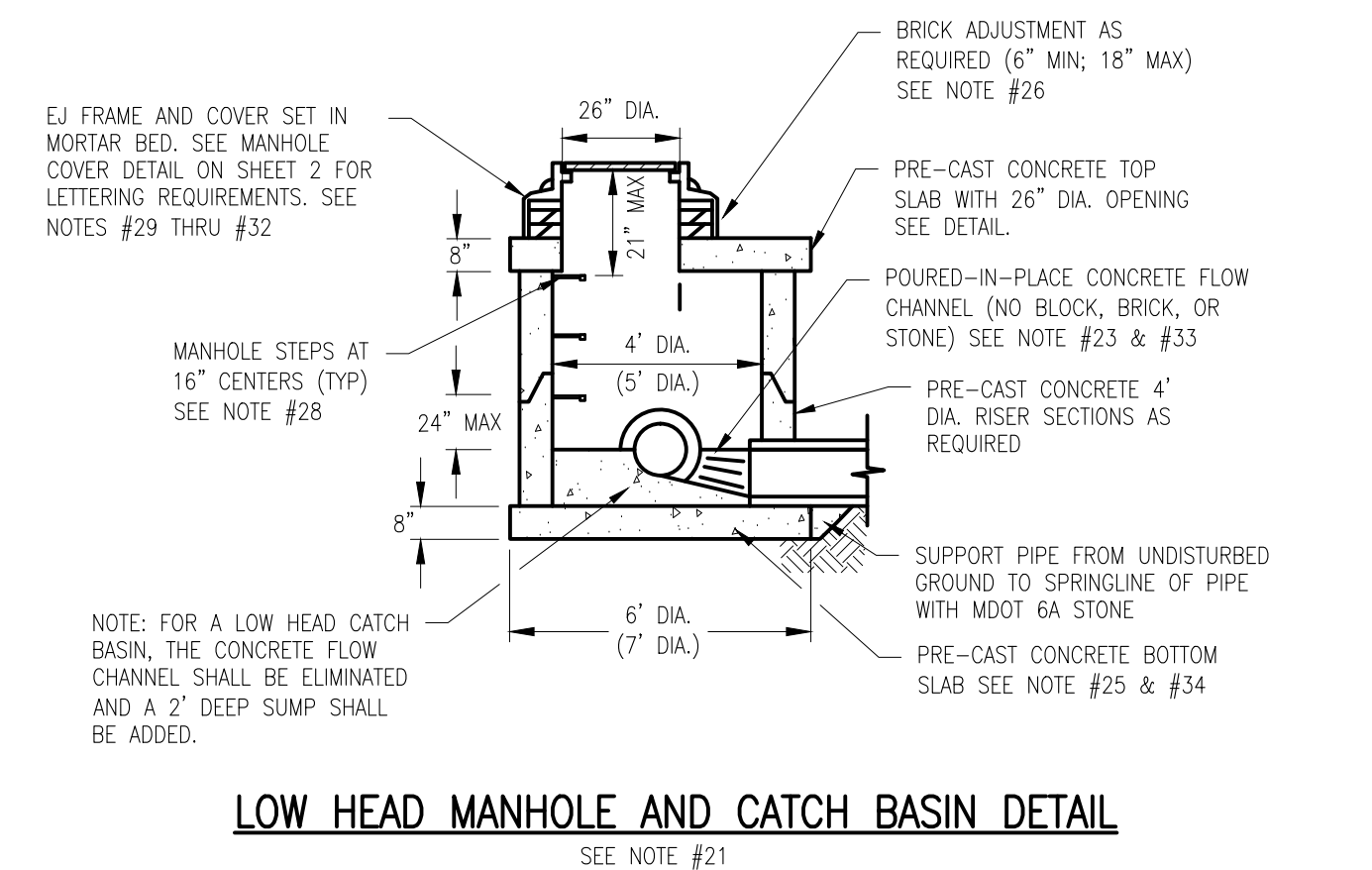
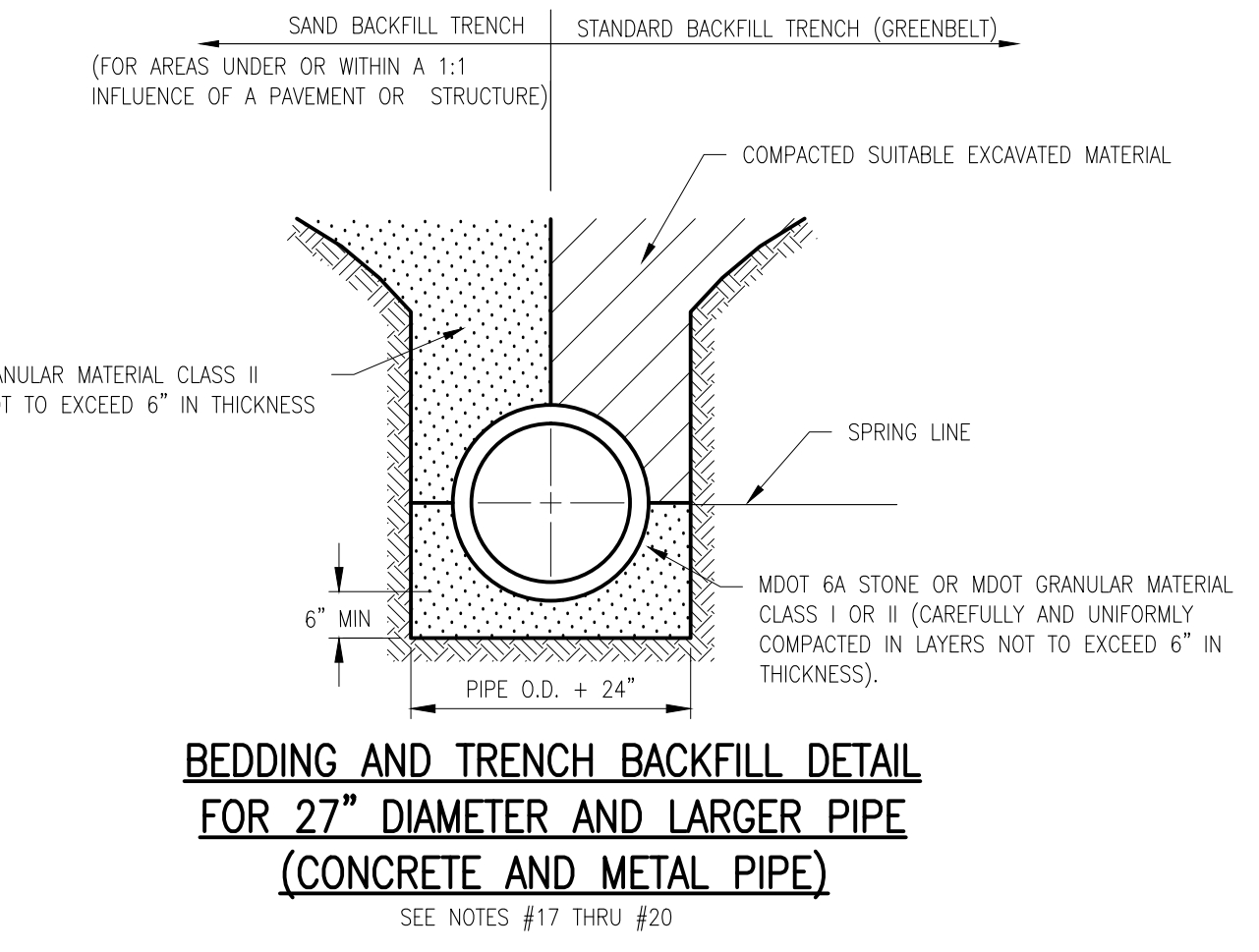
INSIDE DIAMETER	MAXIMUM PIPE SIZE FOR STRAIGHT THRU INSTALLATION	MAXIMUM PIPE SIZE FOR RIGHT ANGLE INSTALLATION
4' - 0"	24"	18"
5' - 0"	36"	24"
6' - 0"	42"	36"
8' - 0"	60"	42"



TYPICAL DETAIL FOR ROCK OUTLET PROTECTION BELOW A CULVERT

Culvert Size B _c (inches)	Rock Size d _r (inches)	Apron Length L _a (feet)	Upstream Width W _u (feet)	Downstream Width W _d (feet)	Thickness T (inches)	Quantity (tons)
12	6	12	3	13	18	15
18	9	16	4.5	18	24	20
24	12	20	6	22	30	25
30	15	24	7.5	26	36	30
36	18	28	9	30	42	35
42	21	32	10.5	34	48	40
48	24	36	12	38	54	45

RIP RAP ROCK FRAGMENT SIZE CHART



DRAWING PATH: L:\NV\Design\NV7003-Nov17\Standards and Details\DWG\Storm.dwg Feb 16, 2018 - 8:23am

