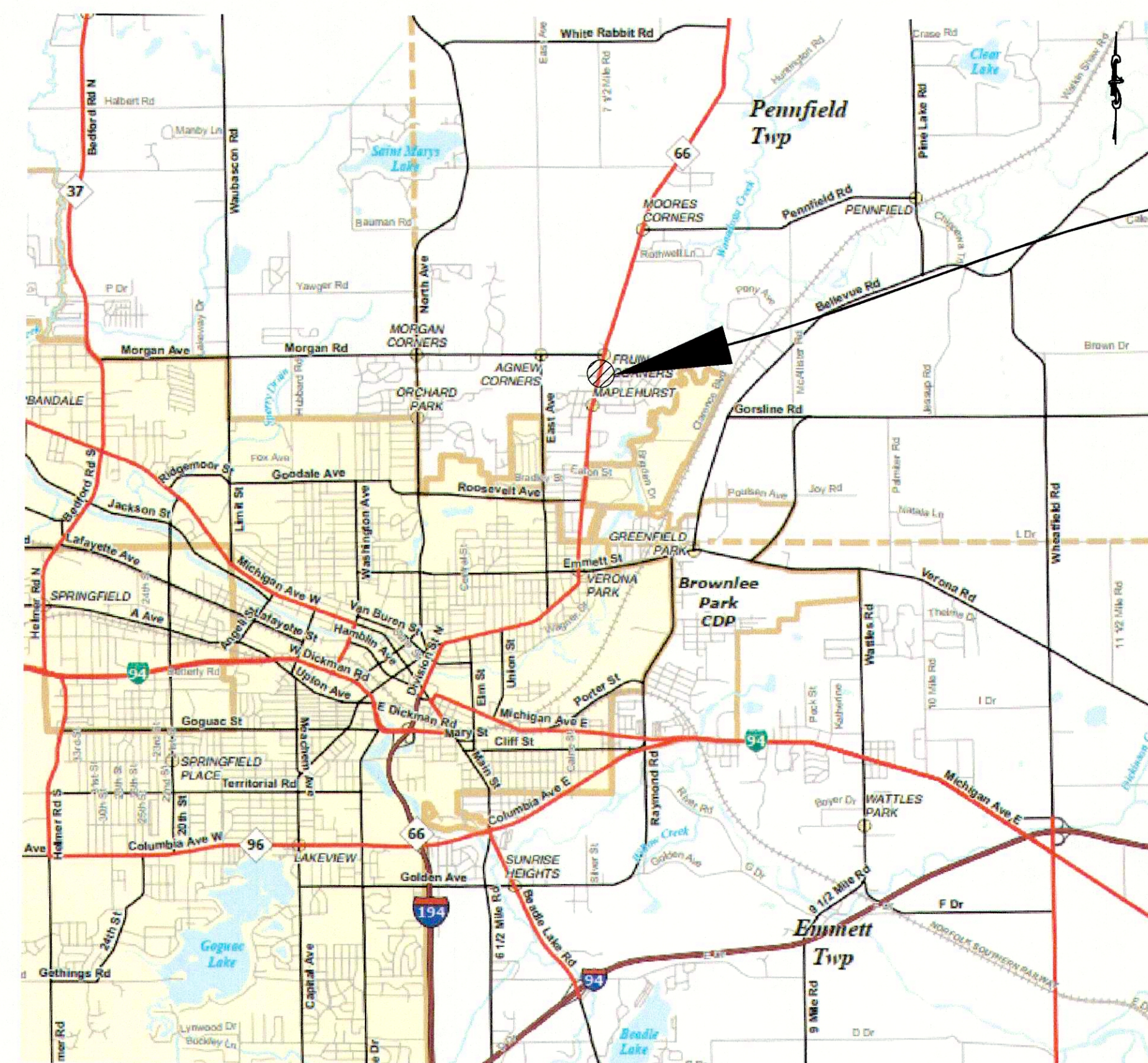
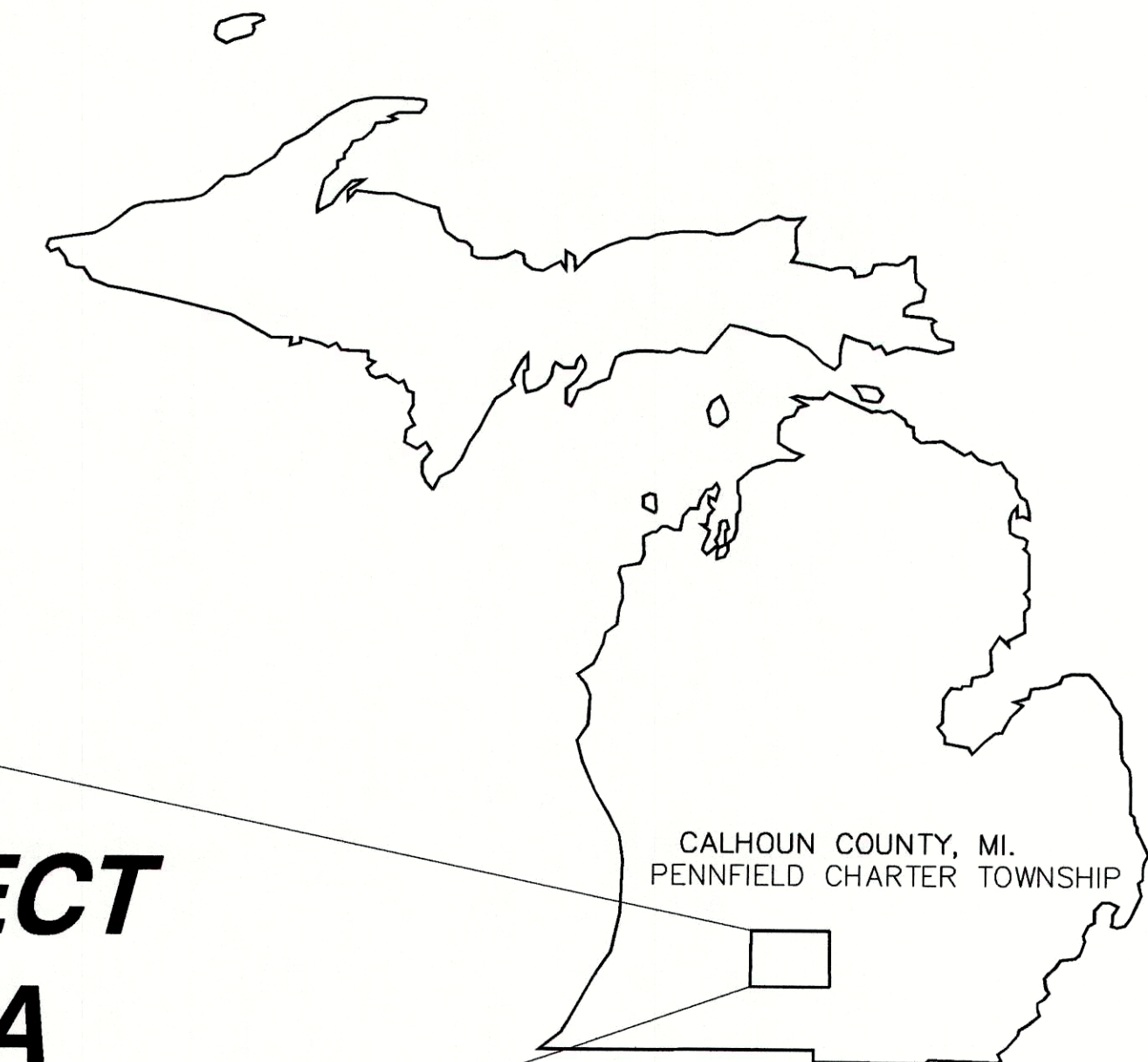


ALVENA-CAPITAL AVE SEWER EXTENSION

PROJECT SUMMARY:

THE ALVENA-CAPITAL AVE SEWER EXTENSION PROJECT CONSISTS OF EXTENDING THE EXISTING 8" SANITARY SEWER FROM ALVENA AVENUE ABOUT 300-FEET NORTH, UP CAPITAL AVENUE. THE PIPE WILL BE HORIZONTAL AUGER BORED UNDER CAPITAL AVENUE AT THE ALVENA AVENUE INTERSECTION. ALVENA AVENUE WILL BE DETOURED. THE PROJECT IS LOCATED IN SECTION 29 OF PENNFIELD CHARTER TOWNSHIP.



PROJECT AREA

CAPITAL AVE AND ALVENA AVE
TOTAL AREA = 0.30 ACRES

SHEET INDEX

1. COVER
2. PROJECT INFORMATION
3. PLAN AND PROFILE
4. HORIZONTAL AUGER BORE - SOIL BORINGS
5. ALVENA AVE DETOUR TRAFFIC CONTROL PLAN
6. MDOT TRAFFIC CONTROL
7. DETAILS

Pennfield Charter Township, Section 29, T1S, R7W, Calhoun County, MI.

CEI CIVIL
ENGINEERS INC.

"Professional Engineering Since 1993"

JOB NO. 210401

14250 Beadle Lake Road
Suite 150
Battle Creek, MI
49014-7202
269-962-5127
Fax: 962-8310
www.cei-bc.com
cel@cel-bc.com



**Pennfield Charter
Township**

OWNER:

**Pennfield Charter Township
20260 Capital Ave NE
Battle Creek, MI 49017**



LOCATION MAP NOT TO SCALE

The location of existing utilities, both underground and overhead are approximate only and have not independently been verified by the owner or its representative. The contractor shall be responsible for determining the exact location of all existing utilities whether shown on these plans or not, before commencing work, and shall be fully responsible for any and all damages which might be caused by the contractor's failure to exactly locate and preserve any and all utilities.

Call Miss Dig

Note: All sanitary sewer construction shall conform to The City of Battle Creek Special Provisions for Sanitary Sewer as issued and approved by EGLE dated January 2018.
All surface work in Pennfield Charter Township on M-66 (Capital Ave NE) shall conform to MDOT's 2020 Standard Specifications for Construction.

NOTE:
AERIAL BACKGROUND IMAGES ON THE
PLAN SHEETS ARE NOT
ORTHOGRAPHIC. THEY ARE INCLUDED
FOR REFERENCE ONLY.

FOR PERMIT APPLICATION	ISSUED DATE
CCRD	PENDING
MDOT	PENDING
EGLE	PENDING

DATE: 5/3/24
REV: 5/23/24

SHEET 1 OF 7

May 23, 2024, 10:22am P:_2021\210401_Avena-Capital Sewer Extension\DESIGN\04-Drawings\Plan.dwg

PUBLIC UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED BY OUR SURVEYS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO IT'S ACCURACY AND THE LOCATION OF EXISTING UTILITIES.

NAME OF OWNERS

AT&T
ATTENTION: CARRIE DEMOTT
ADDRESS:
CITY:
PHONE: 616-304-0861
EMAIL: CD3249@att.com

TYPE OF UTILITY

COMMUNICATIONS

COMCAST

ATTENTION: JOE SHOPF
ADDRESS: 11921 E M-89
CITY: RICHLAND
PHONE: 269-788-1150
EMAIL:

COMMUNICATIONS

CONSUMERS ENERGY

ATTENTION: JESSE BURNS
ADDRESS:
CITY:
PHONE: 269-337-2311
EMAIL: jlburns@cmsenergy.com

ELECTRIC

SEMCO ENERGY

ATTENTION: MICHAEL NEE
ADDRESS: 15851 HELMER RD S
CITY: BATTLE CREEK
PHONE: 269-660-5549
EMAIL: michael.nee@semcoenergy.com

GAS

CITY OF BATTLE CREEK

ATTENTION: KURT TRIBBET
ADDRESS: 150 S KENDALL ST
CITY: BATTLE CREEK
PHONE: 269-966-3355 EXT 1841
EMAIL: krtribbett@battlecreekmi.gov

SEWER

PENNFIELD CHARTER TOWNSHIP

ATTENTION: JOSE RAMIREZ
ADDRESS: 20260 CAPITAL AVE NE
CITY: BATTLE CREEK
PHONE: 269-968-8549
EMAIL: jramirez@pennfieldmi.gov

WATER

MICHIGAN DEPARTMENT OF TRANSPORTATION

ATTENTION: BRETT ARRANS
ADDRESS: 15300 W MICHIGAN AVE
CITY: MARSHALL
PHONE: 269-208-1112
EMAIL: arransb@michigan.gov

STATE HIGHWAYS

NOTES APPLYING TO MDOT STANDARD PLANS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON THE PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE MDOT STANDARD PLAN GIVEN BELOW, UNLESS OTHERWISE INDICATED.

TITLE	PLAN NO.
ROAD	
UTILITY TRENCHES	R-83-C
SOIL EROSION AND SEDIMENTATION CONTROL MEASURES	R-96-E
WORK ZONE DEVICES	
GENERAL SPACING CHARTS	101
SPECIAL PROVISIONS	
APPLICATION REQUIREMENTS FOR TRENCHLESS INSTALLATION	3702
SPECIAL PROVISION FOR NON-COMPLIANCE WITH SOIL EROSION AND SEDIMENTATION CONTROL MEASURES	12SP-208A-02
UTILITY COORDINATION CLAUSE	CEI J.02

DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
D (FEET)	250	300	350	400	450	500	550	600	650	700	750

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"

"B" LENGTHS	SPEED* MPH (PRIOR TO WORK AREA)											
	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	329	411	476	542	625

* POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

MINIMUM MERGING TAPER LENGTH, "L" (FEET)

OFFSET (FEET)	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
1	11	15	21	27	45	50	55	60	65	70	75
2	21	30	41	54	90	100	110	120	130	140	150
3	32	45	62	80	135	150	165	180	195	210	225
4	42	60	82	107	180	200	220	240	260	280	300
5	53	75	103	134	225	250	275	300	325	350	375
6	63	90	123	160	270	300	330	360	390	420	450
7	73	105	143	187	315	350	385	420	455	490	525
8	84	120	164	214	360	400	440	480	520	560	600
9	94	135	184	240	405	450	495	540	585	630	675
10	105	150	205	267	450	500	550	600	650	700	750
11	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
13	136	195	266	347	585	650	715	780	845	910	975
14	146	210	286	374	630	700	770	840	910	980	1050
15	157	225	307	400	675	750	825	900	975	1050	1125

NOT TO SCALE

NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

101-GEN-
SPACING-CHARTS

"B", "D" AND "L" TABLES

CHANNELIZING DEVICE SPACING,
SIGN BORDER KEY, AND ROLL-AHEAD SPACING

DATE:

MAY 2021

SHEET:

1 OF 3

FILE: 101-GEN-SPACING-CHARTS.dgn



Civil Engineers Inc.
14250 Beadle Lk Rd
Suite 150
Battle Creek, MI
49014-7202
www.cei-bc.com
269-962-5127

JOB NO: 210401
DATE: 5/3/24

DRAWN BY: RHC
REVIEWED BY: RAR

OWNER
PENNFIELD
CHARTER
TOWNSHIP
20260 CAPITAL AVE NE
BATTLE CREEK, MI 49017



ALVENA-CAPITAL AVE SEWER EXTENSION

PROJECT INFORMATION

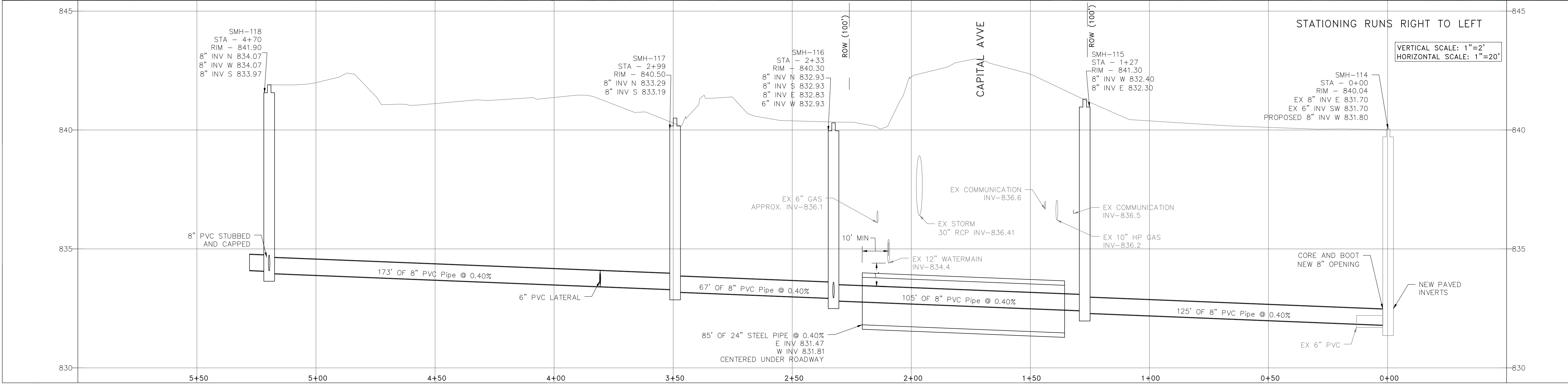
Know What's
Below, Call
MISS DIG.

MISS
DIG
811

REVISIONS

Date
Initiation
Comment

SHEET
2/7



CEI

Civil Engineers Inc.
14250 Beadle Lk Rd
Suite 150
Battle Creek, MI
49014-7202
www.cei-bc.com
269-962-5127

JOB NO: 210401
DATE: 5/3/24

DRAWN BY: RHC
REVIEWED BY: RAR

OWNER
PENNFIELD
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TOWNSHIP
20260 CAPITAL AVE NE
BATTLE CREEK, MI 49017

ALVENA-CAPITAL AVE SEWER EXTENSION

PLAN AND PROFILE

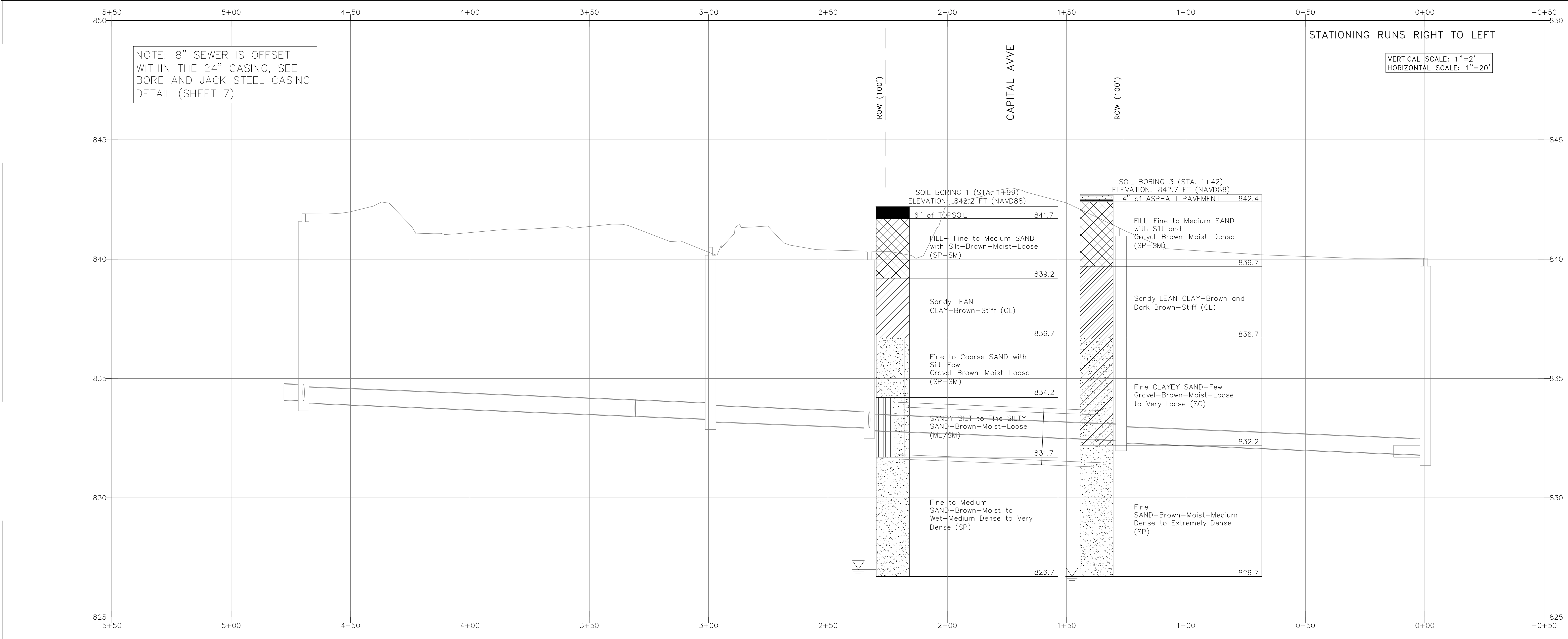
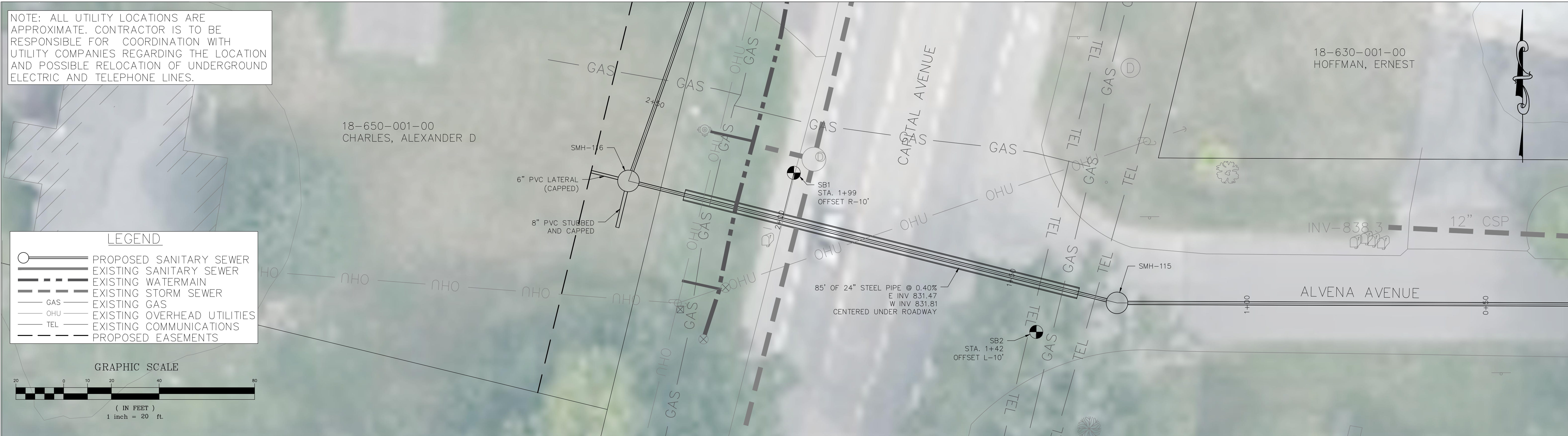
Know What's
Below, Call
MISS DIG.

REVISIONS

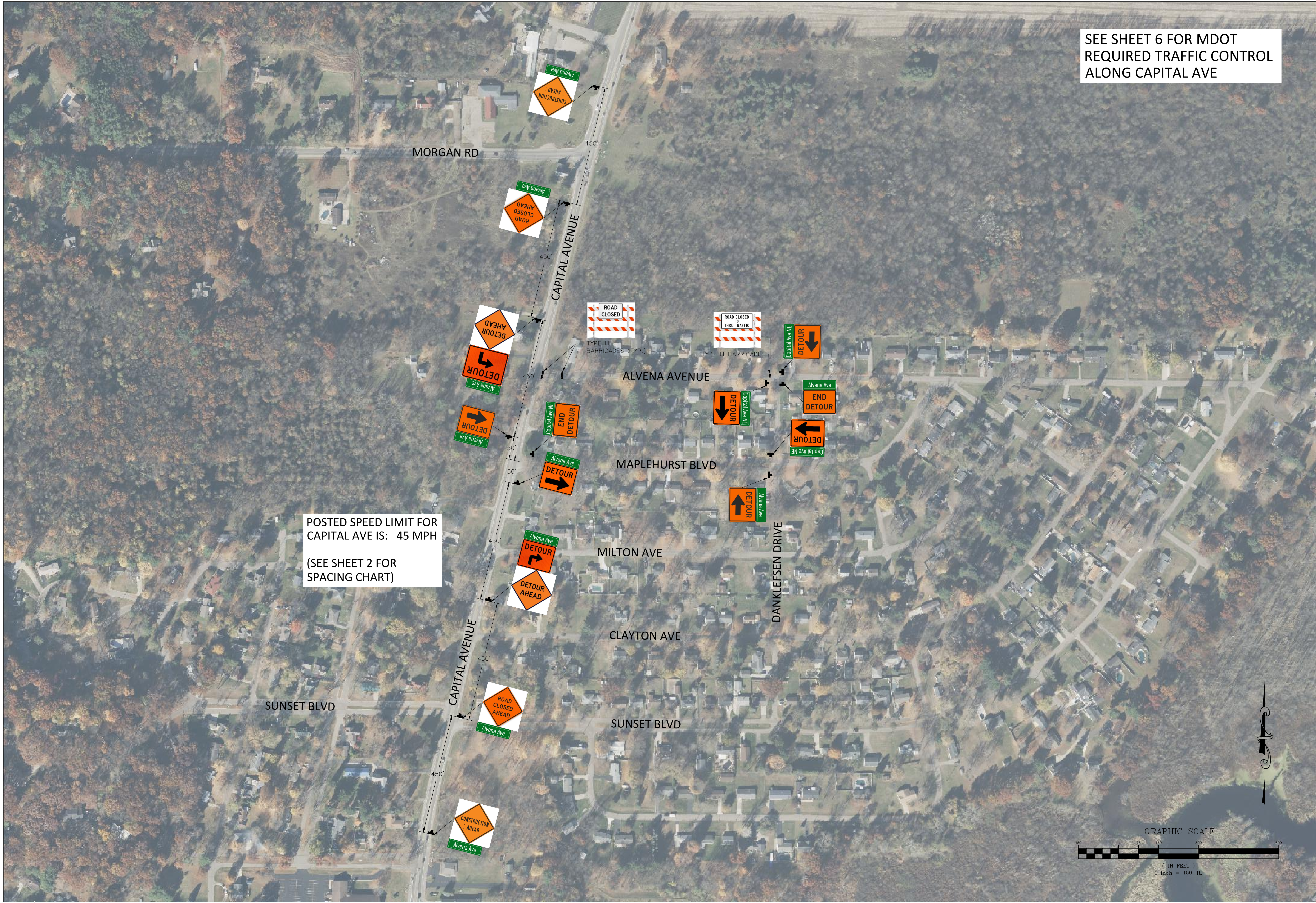
Date	Comment

SHEET
3/7

May 23, 2024 10:22am P:_2021\210401_Alvena-Capital Sewer Extension\DESIGN\04-Drawings\Plan.dwg

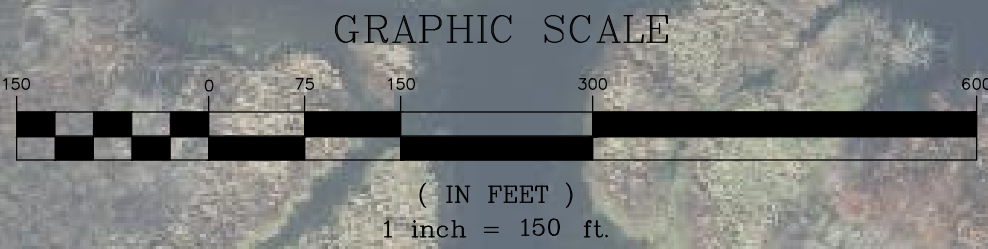


May 28, 2024 8:10am P:_2021\210401_Alvana-Capital Sewer Extension\DESIGN\04-Drawings\Plan.dwg



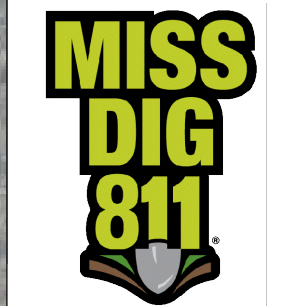
SEE SHEET 6 FOR MDOT
REQUIRED TRAFFIC CONTROL
ALONG CAPITAL AVE

POSTED SPEED LIMIT FOR
CAPITAL AVE IS: 45 MPH
(SEE SHEET 2 FOR
SPACING CHART)



ALVENA-CAPITAL AVE SEWER EXTENSION
ALVENA AVE DETOUR TRAFFIC CONTROL PLAN

Know What's
Below, Call
MISS DIG.



REVISIONS

Date	Comment
5/23/24	ADVANCE ARROWS

May 23, 2024 10:35am P: _2021\210401_Alvena-Capitol Sewer Extension\DESIGN\04-Drawings\Plan.dwg



DRAWN BY: *RHC*
REVIEWED BY: *RAR*

Know What's
Below, Call
MISS DIG.



SHEET
6/7

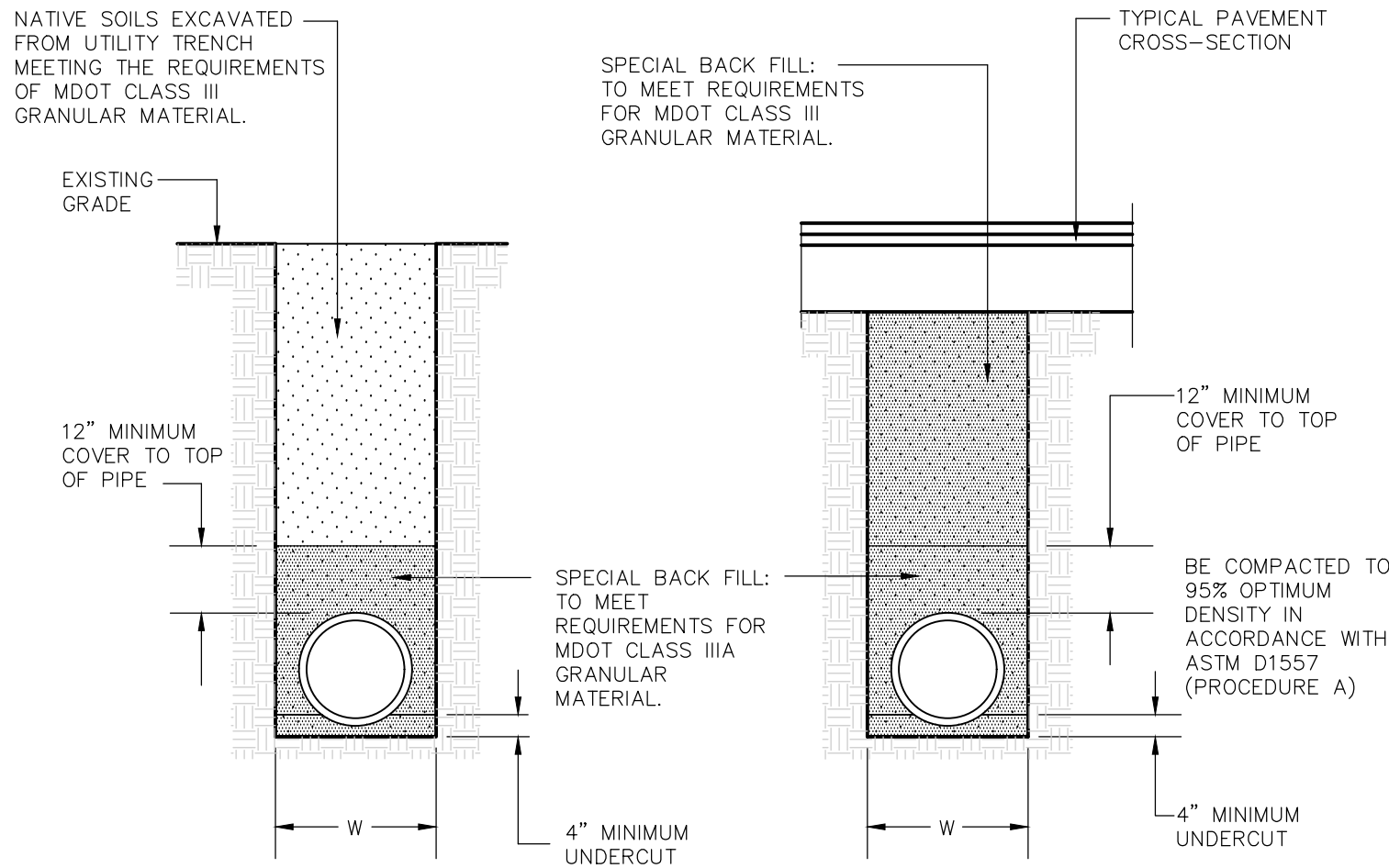
POSTED SPEED LIMIT
FOR CAPITAL AVE IS:
45 MPH

ROAD ROW
100'

CAPITAL AVENUE

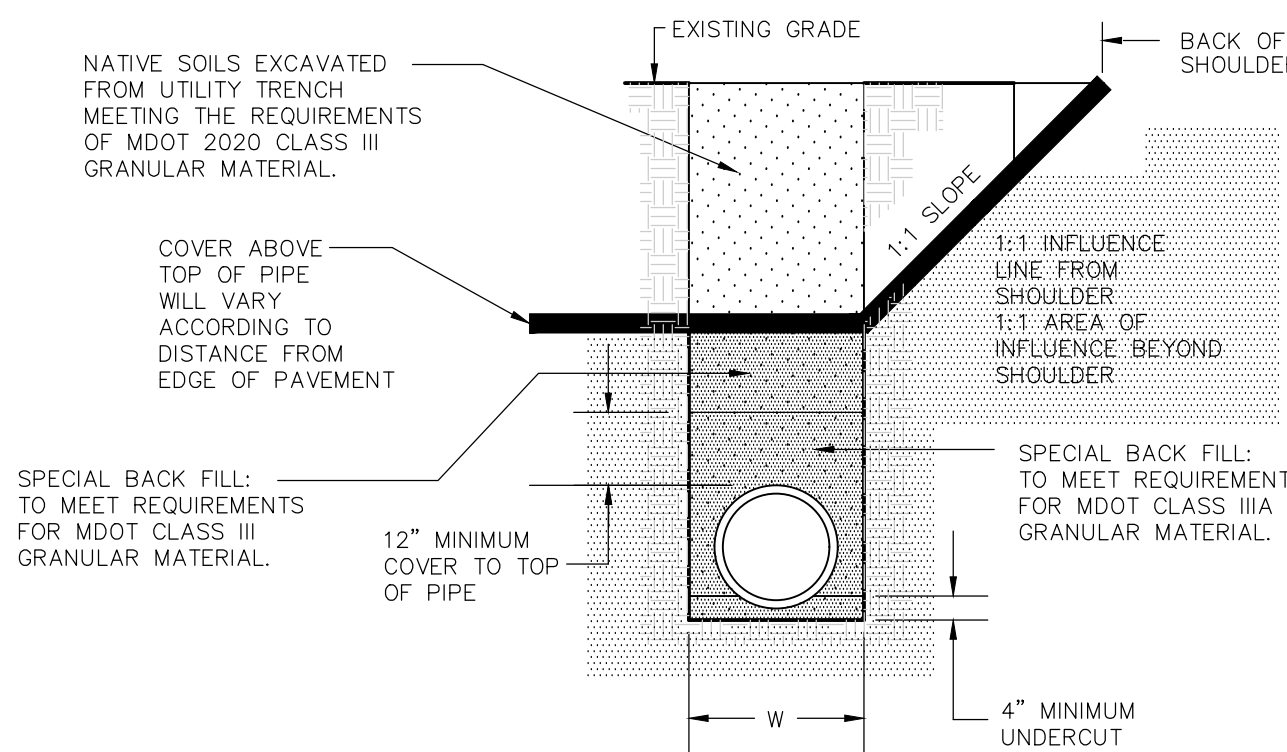
ALVINA AVENUE

PIPE TRENCH - PVC PIPE DETAIL



PVC PIPE DETAIL A
TRENCHES NOT UNDER ROADBED
NO SCALE

PVC PIPE DETAIL B
TRENCHES UNDER ROADBED
NO SCALE



PVC PIPE DETAIL B
TRENCHES WITHIN INFLUENCE OF ROADBED
NO SCALE

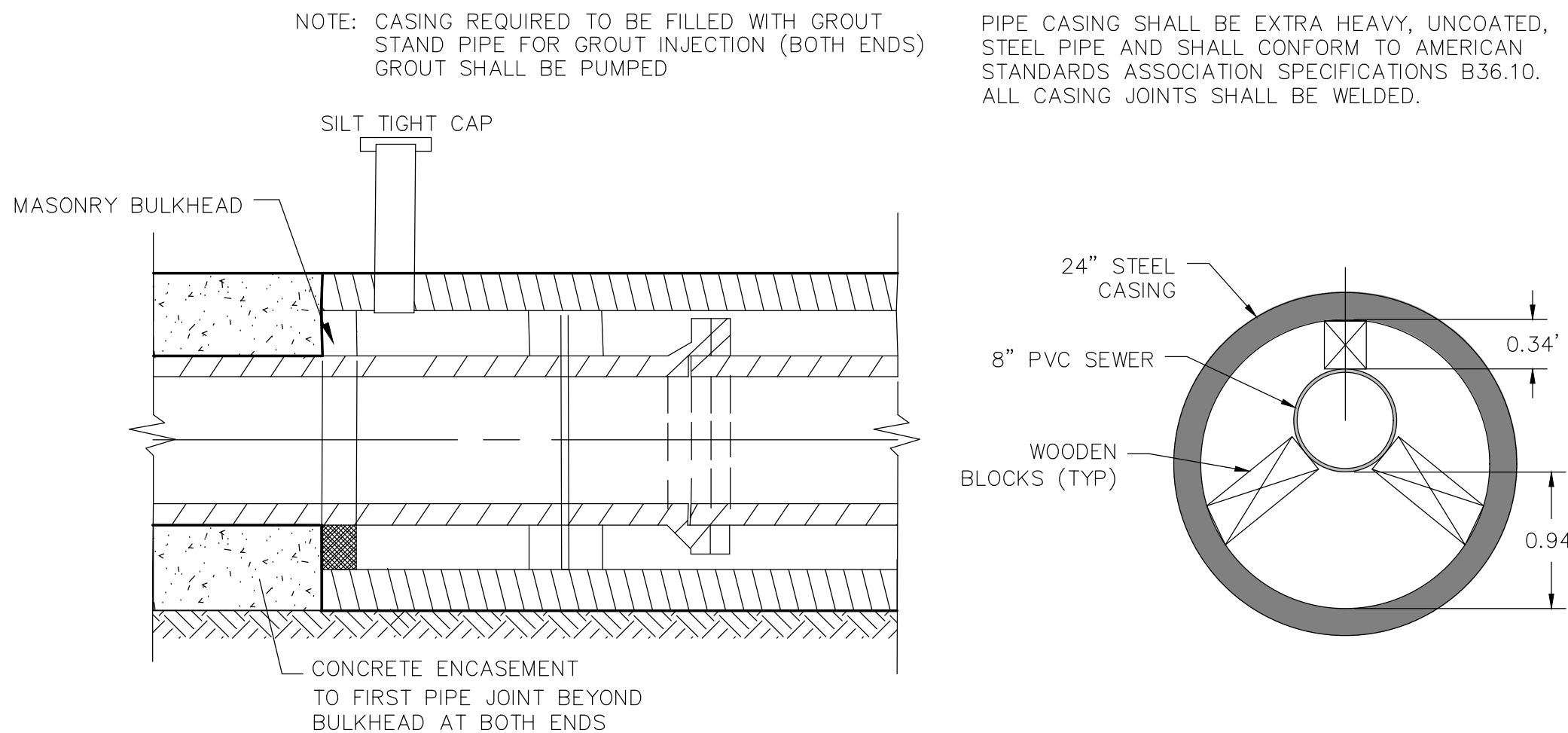
I.D. PIPE SIZE (INCHES)	<18	21	24	36
"W" TRENCH WIDTH (FEET)	3.0	3.5	4.0	6.0

GENERAL UTILITY TRENCH NOTES :

- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION SAFETY.
- ALL PLASTIC PIPE SHALL BE INSTALLED IN STRICT ACCORDANCE WITH APPLICABLE REQUIREMENTS OF ASTM D2321 "UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS".
- "MDOT CLASS II, III, AND IIIA GRANULAR MATERIAL" IS DEFINED IN SECTION 902 OF MDOT'S 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

BORE AND JACK STEEL CASING DETAIL

NO SCALE



NOTE: SEE MDOT SPECIAL PROVISION FOR HORIZONTAL AUGER BORE IN SECTION J OF PROJECT MANUAL
SEE ALSO MDOT STANDARD PLAN R-84-A IN SECTION J OF PROJECT MANUAL

NOTE:

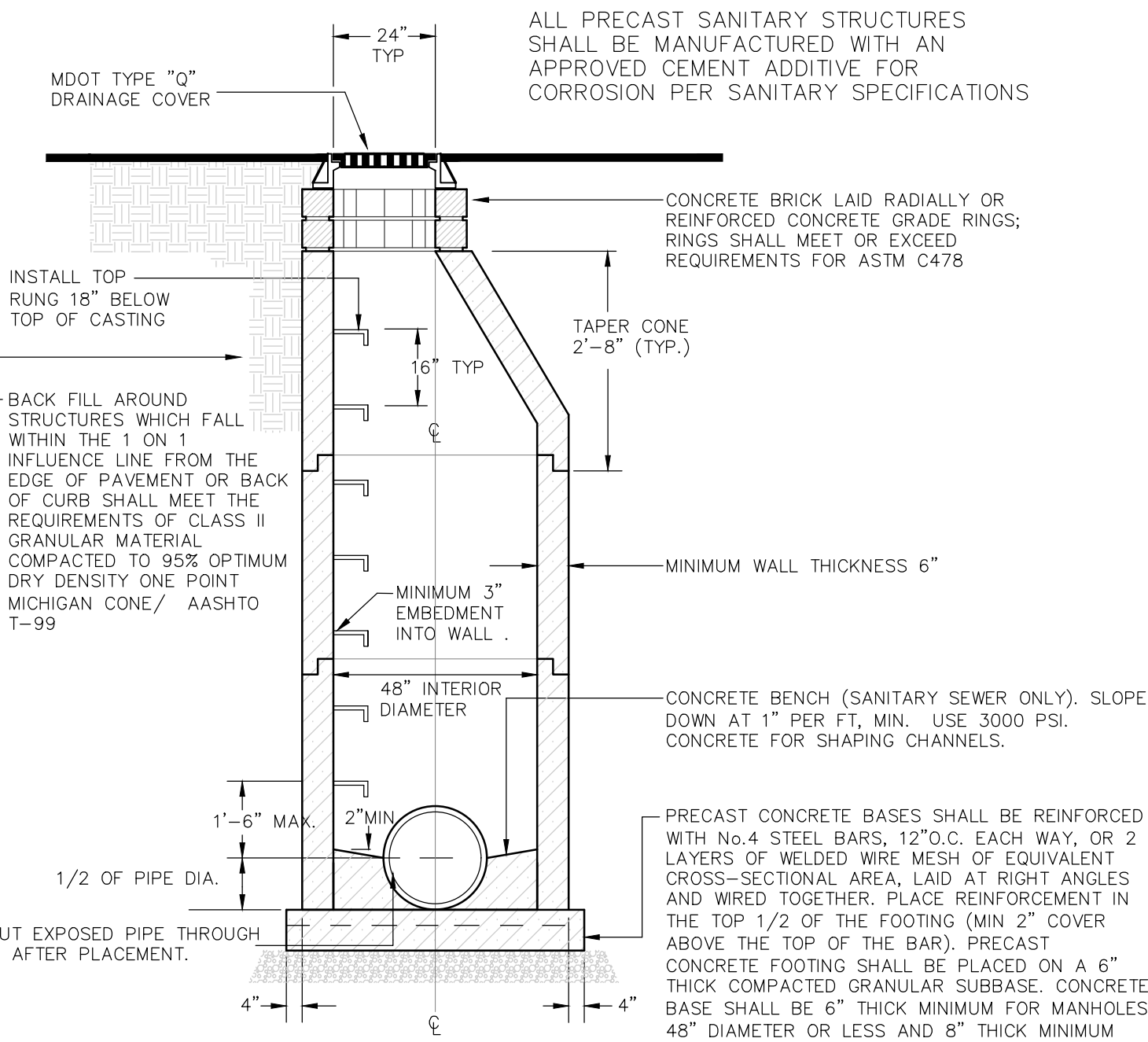
PLACE CONCRETE BEDDING A MINIMUM DEPTH OF 6" OR TO CHANNELLED INTO ONE OUTFLOW BY USE OF CONCRETE BENCHES AS SHOWN IN THIS DETAIL.

GENERAL NOTES :

- ALL PIPES FLOWING IN TO THE MANHOLE STRUCTURE SHALL BE CHANNELLED INTO ONE OUTFLOW BY USE OF CONCRETE BENCHES AS SHOWN IN THIS DETAIL.
- ALL INFLOW AND OUTFLOW PIPES SHALL BE CONNECTED TO THE MANHOLE USING GASKETS MEETING THE REQUIREMENTS OF ASTM C-923 RESILIENT CONNECTORS BETWEEN REINFORCED CONCRETE MANHOLE STRUCTURES AND PIPES .
- WHERE BRICK IS USED UNDER CASTINGS IN LIEU OF GRADE RINGS, USE GRADE "A" CONCRETE BUILDING BRICK (MIN 2500 PSI COMPRESSIVE STRENGTH) LAID RADIALLY WITH ALL VOIDS FULLY MORTARED. PLACE CASTING ON A FULL BED OF MORTAR. THICKNESS OF BRICK & BEDDING SHALL NOT EXCEED 12" OR BE LESS THAN 8".
- RINGS SHALL BE CAST INTO BASE, RISER, AND TOP SECTION SIDE WALLS AT 16" INTERVALS. RINGS SHALL BE CAPABLE OF SUPPORTING A 300 LB. CONCENTRATED LOAD AT ANY POINT OF THE RING. THE STEP SURFACE SHALL BE SERRATED OR OTHERWISE TREATED TO BE SLIP-RESISTANT. STEPS TO BE STEEL REINFORCED POLYPROPYLENE, OR APPROVED OTHER.
- SPACING BETWEEN OPENINGS IN MANHOLE SECTIONS FOR MULTIPLE PIPE ENTRANCES SHALL BE A MINIMUM OF 6" .
- "CLASS II AND III GRANULAR MATERIAL" IS DEFINED IN SECTION 902 OF MDOT'S 2020 STANDARD SPECIFICATION FOR CONSTRUCTION.

FURNISH AND INSTALL ACCESS RINGS INTO STRUCTURE TO LINE UP WITH CAST-IRON FRAME AND COVER (OR GRATE) AS SHOWN.

PLAN VIEW
NO SCALE



PRECAST SANITARY
MANHOLE DETAIL
NO SCALE

GENERAL NOTES :

- ALL BACKFILL UNDER PIPE TO BE DEPOSITED BY HAND IN 6" LAYERS AND EACH LAYER MECHANICALLY TAMPED.
- STANDARD DRAINAGE COVER MDOT TYPE "Q" WITH CITY LOGO AS SHOWN.
- ALL CONCRETE TO MEET MDOT STANDARDS AND SPECIFICATIONS.
- MANHOLE INLETS AND OUTLETS WILL HAVE A WATERTIGHT RUBBER BOOT.
- PVC SEWER SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "UNDERGROUND INSTALLATION OF THERMOPLASTIC SEWER PIPE." DEFLECTION TESTING TO BE PERFORMED ON THE NEW SEWER LESS THAN 30 DAYS AFTER PLACEMENT OF THE FINAL BACKFILL. NO PIPE SHALL EXCEED A DEFLECTION OF 5%.

ADDITIONAL SPECIFICATIONS NOTES

- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING, AND ABIDING BY ANY NECESSARY PERMITS UNLESS OTHERWISE STATED. THE FOLLOWING PERMITS WILL BE REQUIRED:
A. COUNTY ROAD COMMISSION RIGHT-OF-WAY PERMIT
B. MDOT RIGHT-OF-WAY PERMIT
C. EGLE PART 41 PERMIT
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION SITE SAFETY.
- THE CONTRACTOR SHALL MAINTAIN INSURANCE'S FOR THE DURATION OF THE PROJECTS THAT ARE REQUIRED BY THE PROJECT MANUAL.
- CLEARING: THE CONTRACTOR MUST REMOVE ALL ORGANIC MATERIAL & NONORGANIC DEBRIS NECESSARY TO PERFORM THE WORK INDICATED IN THESE PLANS. DISPOSAL OF MATERIAL & DEBRIS IS THE CONTRACTOR'S RESPONSIBILITY. ON-SITE BURNING WILL ONLY BE ALLOWED WITH THE OWNER'S PERMISSION & WITH NECESSARY BURNING PERMITS. BURIAL OF MATERIAL & DEBRIS WILL NOT BE PERMITTED.
- STRIP & STOCKPILE TOPSOIL: THE CONTRACTOR SHALL REMOVE ALL TOPSOIL & STOCKPILE THE UNCONTAMINATED (FREE OF ROCKS, STICKS, & NONORGANIC SOIL UNDER THE TOPSOIL) TOPSOIL FOR REUSE IN AREAS ACCEPTABLE TO THE OWNER.
- RELOCATE EXISTING BURIED UTILITY LINES THAT CONFLICT WITH NEW SEWER. COORDINATE WITH SERVICE PROVIDER.
- COMPACTION: THE CONTRACTOR MUST COMPACT ALL FILL MATERIAL. COMPACTION MUST BE TO 95% MAXIMUM DENSITY. ONE FOOT LIFTS ARE RECOMMENDED, & MUST BE PRACTICED UNDER ROADS.
- FILL MATERIAL MUST AT A MINIMUM MEET THE REQUIREMENTS OF MDOT 2020 STANDARD SPECIFICATIONS FOR CLASS III GRANULAR MATERIALS. FOR PIPE TRENCH SEE THE DETAILS ON THIS SHEET.
- PROOF ROLLING: THE CONTRACTOR MUST PERFORM PROOF ROLLING PRIOR TO PLACEMENT OF THE AGGREGATE BASE. THIS MUST BE DONE USING APPROVED EQUIPMENT, & WILL NOT BE ACCEPTED UNLESS IT IS DONE IN THE PRESENCE OF A REPRESENTATIVE OF CIVIL ENGINEERS, INC.
- THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING FULLY VEGETATED COVER THAT STABILIZES EROSION. A MINIMUM OF 3" OF TOPSOIL, FERTILIZER, LAWN SEED & MULCH MUST BE PLACED. EROSION CONTROL BLANKETS SHOULD BE USED ON SLOPES THAT MAY CONTINUALLY WASHOUT SO THAT THE CONTRACTOR CAN MINIMIZE RETURN TRIPS TO FIX THESE WASHOUTS.
- ANY INFORMATION OR DATA ON THIS DRAWING IS NOT INTENDED TO BE SUITABLE FOR REUSE BY ANY PERSON, FIRM, OR CORPORATION OR ANY OTHERS ON EXTENSIONS OF THIS PROJECT OR FOR ANY USE ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION AND ADAPTION BY THE ENGINEER FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE ENGINEER.

ALVENA AVE CROSS-SECTION DETAIL

NO SCALE

