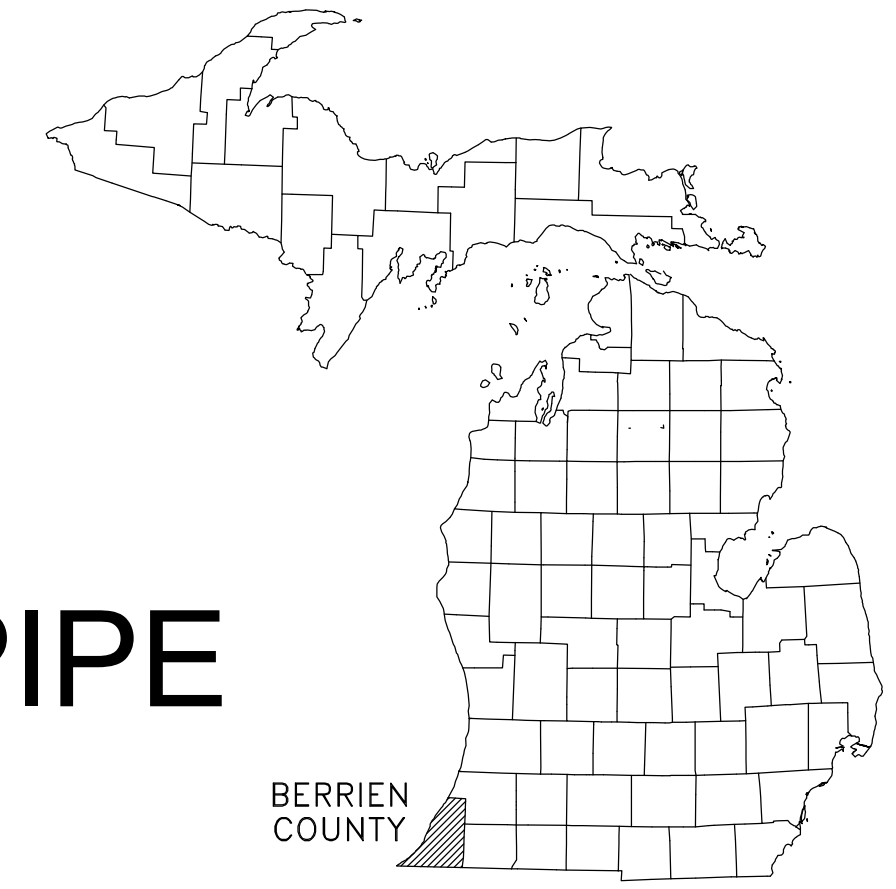


CITY OF ST. JOSEPH BERRIEN COUNTY, MICHIGAN 49085 FINAL CSO COMPLIANCE EARLY ACTION DESIGN NEW CSO-005 DIVERSION CHAMBER AND UNDERFLOW PIPE



BERRIEN COUNTY

COUNTY KEY
NOT TO SCALE

CWSRF PROJECT NO: 5775-01 (FY24)

BROOK THOMAS
MAYOR

MICHELE BINKLEY, MAYOR PRO TEM
MICHAEL FERNANDEZ, COMMISSIONER
MIKE SAROLA, COMMISSIONER
TESS ULREY, COMMISSIONER
CITY COMMISSION

JOHN HODGSON
CITY MANAGER

TIM ZEBELL, P.E.
CITY ENGINEER



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FOR VIEWING ONLY

PERMITS

TYPE	STATUS	DATE ISSUED
PART 41 (SANITARY SEWER)	ISSUED BY EGLE	4/15/2024
JOINT PERMIT (FLOODPLAIN)	IN PROCESS	
SESC (BERRIEN COUNTY)	IN PROCESS	



LOCATION MAP



PREPARED UNDER THE SUPERVISION OF:

SHAWN W. KEOUGH, PE

42619
REGISTRATION NO.

ISSUED FOR BIDS 4/19/2024

PROJECT MANAGER: SHAWN KEOUGH, C.E.P., 1000 W. LANSING, LANSING, MI 48201-1000; PHONE: 313.487.1000; FAX: 313.487.1001; EMAIL: SKEOUGH@WADETRIM.COM



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PROJECT MANAGER: SHAWN KEOUGH
CITY OF ST. JOSEPH, BERRIEN COUNTY, MI 49085
FIELD BOOK INFORMATION: LAYOUT 1 - FOLIO 47 | 7/17/2024 11:17 AM BY: ELANAGAN, MARTIN

GENERAL NOTES

- 1. THREE WORKING DAYS PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REQUEST THE LOCATION OFF ALL UTILITIES BY CALLING MISS DIG.
- 2. A MINIMUM OF 18" VERTICAL CLEARANCE IS REQUIRED WHERE:
 - A. WATER MAIN AND SANITARY SEWER CROSS
 - B. WATER MAIN AND STORM SEWER CROSS
 - C. STORM AND SANITARY SEWER CROSS UNLESS OTHERWISE SPECIFIED.
- 3. A MINIMUM OF 10' HORIZONTAL SEPARATION SHALL BE MAINTAINED WHERE WATER MAINS AND SEWERS RUN PARALLEL.
- 4. ALL TRENCH AND BEDDING SPECIFIED SHALL BE AS SHOWN ON ATTACHED STANDARD DETAILS SHEETS.
- 5. ANY EXCESS/UNSUITABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND THEY SHALL BE RESPONSIBLE FOR THE DISPOSAL OF THIS MATERIAL. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL NON-HAZARDOUS CONTAMINATED MATERIAL.
- 6. DEWATERING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PRETREATMENT OF CONTAMINATED GROUNDWATER SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF DEWATERING OPERATIONS. THE COST OF PRETREATMENT AND DEWATERING SHALL BE INCLUDED IN THE DEWATERING PAY ITEM.
- 7. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH "AS-RECORDED" DRAWINGS OF THE SEWERS UPON COMPLETION OF THE PROJECT.
- 8. THE ENGINEER SHALL PROVIDE CONSTRUCTION STAKING.
- 9. WHEN LOWERING THE ROADWAY RESULTS IN INSUFFICIENT COVER (LESS THAN 5') OVER EXISTING WATER MAIN, INSULATION SHALL BE UTILIZED AS DIRECTED BY THE ENGINEER. PAYMENT SHALL INCLUDED WITH WATER MAIN CONSTRUCTION.
- 10. TREES NOT DESIGNATED FOR REMOVAL SHALL BE PROTECTED BY THE CONTRACTOR. DAMAGED TREES SHALL BE RESTORED TO THE ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE. ALL TREES DAMAGED BEYOND SAVING AS DETERMINED BY THE ENGINEER SHALL BE REMOVED AND REPLACED WITH A NURSERY GROWN TREE AS SPECIFIED BY THE ENGINEER. ALL ANTICIPATED TRIMMING AND TREE REMOVALS FOR THIS PROJECT WERE COMPLETED IN ADVANCE OF CONSTRUCTION. ANY DELAY IN THE CONTRACT DUE TO CONTRACTOR DAMAGE TO EXISTING TREES SHALL BE CONSIDERED TO BE BORNE BY THE CONTRACTOR AND NO MONETARY OR TIME RELATED COMPENSATION WILL BE PROVIDED.
- 11. REMOVAL OF ABANDONED CONFLICTING UTILITIES SHALL BE CONSIDERED INCLUDED WITH THE ITEM BEING CONSTRUCTED, INCLUDING BULKHEADING ALL PIPES 12" DIA. OR LESS (PIPES IN EXCESS OF 12" SHALL BE PAID FOR AS A SEWER BULKHEAD).
- 12. PAY ITEM "DR STRUCTURE, REM" SHALL INCLUDE REMOVAL OF MANHOLES FOR ANY TYPE OF UTILITY.
- 13. FITTING, PIPE EXTENSIONS, AND APPURTENANCES NECESSARY TO CONNECT EXISTING PIPES TO PROPOSED MANHOLES, SHALL BE INCLUDED IN THE UNIT PRICE FOR THE PROPOSED STRUCTURE.
- 14. STORM OR SANITARY PIPES 6" DIA OR LESS, DESIGNATED FOR REMOVAL, MAY BE BULKHEADED AND REMAIN IN PLACE IF APPROVED BY THE ENGINEER. ALL STORM OR SANITARY PIPES LARGER THAN 6" DIA WILL BE REMOVED.
- 15. WHERE CONCRETE SIDEWALK IS ADJACENT TO THE BACK OF A CURB, A 1/2" EXPANSION JOINT SHALL BE PLACED BETWEEN THE CURB AND SIDEWALK. PAYMENT IN INCLUDED IN CONCRETE SIDEWALK.
- 16. THE CONTRACTOR SHALL VERIFY INVERT TIE-IN ELEVATIONS PRIOR TO INSTALLING SEWERS.

ROADWAY

- 1. BACKFILL MATERIAL WITHIN THE ZONE OF INFLUENCE OF A ROADWAY SHALL BE CLASS II. SAND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY IN 12" MAXIMUM LIFTS.
- 2. DRIVEWAY OPENING SHALL BE MDOT TYPE L OR M PER STANDARD PLAN R-29-1.
- 3. PAVEMENT DESIGNATED FOR REMOVAL SHALL BE SAWCUT FULL DEPTH AT REMOVAL LIMITS PRIOR TO REMOVAL.
- 4. UPON FINAL PAVING OPERATIONS, THE ENGINEER WILL CHECK THE RIDEABILITY OF THE NEWLY CONSTRUCTED PAVEMENT ALONG THE ENTIRE PROJECT, AND ADJACENT TO ALL STRUCTURE COVERS. AN ASPHALT TOLERANCE OF NO MORE THAN $\pm 1/8"$ ON TOP COURSE MIXTURES WILL BE CHECKED WITH 10-FOOT STRAIGHTEDGE ON MAIN LINE PAVING. AN ASPHALT TOLERANCE OR NO MORE $\pm 3/8"$ ON ASPHALT ADJACENT TO STRUCTURE COVERS INCLUDING THE STRUCTURE COVER WILL BE CHECKED WITH A 6-FOOT STRAIGHTEDGE CENTERED OVER THE COVER IN ANY DIRECTION. ANY STRUCTURE COVERS WHICH DO NOT MEET THE SPECIFIED TOLERANCE SHALL BE ADJUSTED TO GRADE WITH THE USE OF CONCRETE AS DIRECTED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH CORRECTING VARIATIONS MORE THAN THE SPECIFIED LIMITS WILL BE BORNE BY THE CONTRACTOR.
- 5. PLACEMENT OF FINAL COURSE SHALL BE PERFORMED IN ONE CONTINUOUS OPERATION. IF NOT ACHIEVED, CONTRACTOR SHALL MILL ENTIRE TOP COURSE AT THEIR OWN EXPENSE.
- 6. PAVT, REM SHALL INCLUDE REMOVAL OF ALL MATERIALS (CONCRETE, ASPHALT, BRICK, ETC.) WITHIN THE NOTED REMOVAL LIMITS AND SHALL ALSO INCLUDE REMOVAL OF ADJACENT CURBS AND GUTTERS UNLESS OTHERWISE INDICATED.

STORM SEWER

- 1. PROPOSED STORM MANHOLES SHALL BE 4 FEET IN DIAMETER UNLESS NOTED OTHERWISE.
- 2. WHERE NEW SEWER IS TO REPLACE EXISTING SEWER IN THE SAME TRENCH REMOVAL OF EXISTING SEWER SHALL BE INCLUDED AS PART OF NEW SEWER ITEM.
- 3. CONTRACTOR SHALL MAINTAIN EXISTING STORM DRAINAGE DURING CONSTRUCTION TO MINIMIZE ANY FLOODING THAT MAY OCCUR DURING RAIN EVENTS.

WATER MAIN

- 1. THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE CITY TO REQUEST A WATER SERVICE SHUTOFF. THE CITY SHALL DETERMINE THE TIME & DURATION OF THE SHUTOFF.
- 2. DUCTILE IRON WATER MAIN SHALL BE CLASS 52 FOR SIZES 6" DIA. AND SMALLER AND PRESSURE CLASS 350 FOR SIZES 8" DIA. AND LARGER.
- 3. ALL PROPOSED WATER MAIN WORK SHALL INCLUDE THE USE OF POLYWRAP ENCASEMENT. PAID FOR AS "POLYETHYLENE ENCASEMENT, MODIFIED", IF NECESSARY, AS SHOWN ON PLANS.
- 4. ALL WATER MAINS AND SERVICES SHALL HAVE A MINIMUM 5'-6" OF COVER.
- 5. WATER MAIN SHALL BE PLACED INTO SERVICE UNTIL THE APPROPRIATE TESTING AND DISINFECTION IS COMPLETE AND APPROVED BY THE CITY.
- 6. NO EXISTING VALVE SHALL BE CLOSED WITHOUT CITY APPROVAL.
- 7. ABANDONING WATER MAIN SHALL INCLUDE REMOVAL OF EXISTING PIPE, CAPPING ENDS OF PIPE OR FILLING PIPE WITH FLOWABLE FILL AS APPROVED BY THE ENGINEER. ALL PIPES LARGER THAN 6" IN DIAMETER SHALL BE FLOWABLE FILLED AND CAPPED IF PIPE IS TO REMAIN IN PLACE. PIPES 6" DIAMETER OR LESS SHALL BE CAPPED WHEN LEFT IN PLACE.
- 8. ALL WATER MAIN TO BE ABANDONED SHALL UTILIZE MECHANICAL JOINT CAPS. NO CONCRETE BULKHEADS WILL BE PERMITTED.
- 9. ALL HYDRANT WEEP HOLES SHALL BE PLUGGED ON NEWLY INSTALLED HYDRANTS.

SANITARY SEWER

- 1. SANITARY LATERAL CONNECTIONS TO EXISTING OR ABANDONED SEWERS SHALL BE LOCATED BY THE CONTRACTOR AND CONNECTED TO THE SEWER AS DIRECTED BY THE ENGINEER. ANY LATERALS NOT SCHEDULED FOR REPLACEMENT OR RECONNECTION, DAMAGED BY THE CONTRACTORS OPERATIONS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- 2. EXTERIOR DROP CONNECTION SHALL BE UTILIZED WHEN THE DIFFERENCE BETWEEN THE SEWER INVERTS IS 2' OR GREATER. COST FOR ALL NEEDED DROPS INCLUDED IN THE RELATED SANITARY MANHOLE CONSTRUCTION ITEM.
- 3. PROPOSED SANITARY MANHOLES SHALL BE 4 FEET IN DIAMETER UNLESS OTHERWISE NOTED.
- 4. SANITARY SERVICE CLEANOUTS SHALL BE INSTALLED WHERE NEW SERVICE LINES MEET EXISTING SERVICES AND AT BENDS/GRADE CHANGES AS DIRECTED BY THE ENGINEER.
- 5. NEW SANITARY SEWER SHALL BE SDR 26 PVC FOR ALL PIPES 8" DIA. AND LARGER; SDR 35 PVC FOR 6" SANITARY SERVICE LATERALS, UNLESS SPECIFIED DIFFERENTLY ON THE PLANS.
- 6. PROPOSED SANITARY MANHOLE SHALL BE PAID PER EACH REGARDLESS OF DEPTH. NO ADDITIONAL PAYMENT WILL BE MADE FOR VARIABLE DEPTH OF MANHOLES.
- 7. WHERE SANITARY SEWERS AND WATER MAIN CROSS, A FULL LENGTH OF SANITARY PIPE SHALL BE CENTERED ON THE WATER MAIN CROSSING.
- 8. BENDS AND FITTINGS SHALL BE INCLUDED IN THE UNIT COST AND WILL NOT BE PAID SEPARATELY.

POTENTIAL SEQUENCE OF CONSTRUCTION

- 1. INSTALL ALL SESC CONTROL MEASURES.
- 2. REMOVE AND RELOCATE FENCING TO SECURE CONTRACTOR WORK AREAS.
- 3. CONSTRUCT NEW DPW ENTRANCE DRIVE OFF OF BROAD AND ESTABLISH ACCESS DRIVES/WORK AREAS FOR SAFE INGRESS AND EGRESS.
- 4. ESTABLISH WORK AREAS ON PRI MAR PROPERTY AND PIER 33 PROPERTY (LECO).
- 5. VERIFY ELEVATIONS AT ALL MAJOR UTILITY CROSSINGS AND SEWER CONNECTION POINTS TO EXISTING SEWER/CHAMBERS.
- 6. CONSTRUCT NEW UNDERFLOW PIPE ACROSS PRI MAR AND PIER 33 (LECO) PROPERTY FROM CONNECTION MANHOLE #1 TO DIVERSION CHAMBER (FALL 2024).
- 7. RECONSTRUCT PARKING AND DRIVE AREAS ON PIER 33 AND PRI MAR PROPERTY (FALL 2024).
- 8. CONSTRUCT NEW DIVERSION CHAMBER.
- 9. CONSTRUCT EXPANSION TO EXISTING CSO-005 DIVERSION CHAMBER.
- 10. CONSTRUCT 36-INCH OVERFLOW CONNECTION FROM NEW DIVERSION CHAMBER TO EXPANDING EXISTING DIVERSION CHAMBER. (PLEASE NOTE THAT THIS NEW OVERFLOW CONNECTION CAN BE USED FOR TEMPORARY SANITARY FLOW CONTROL UNTIL NEW 24-INCH UNDERFLOW PIPE IS CONSTRUCTED AND IN SERVICE).
- 11. CONSTRUCT NEW 24-INCH SANITARY SEWER FROM BROAD TO NEW DIVERSION CHAMBER.
- 12. CONSTRUCT NEW 30-INCH SANITARY SEWER TO FUTURE PUMP STATION/STORAGE TANK AND INSTALL TEMPORARY BULKHEAD IN DIVERSION CHAMBER.
- 13. CONSTRUCT NEW SANITARY MANHOLE (#5) OVER EXISTING 36-INCH SANITARY SEWER AND NEW 36-INCH SANITARY SEWER TO NEW DIVERSION CHAMBER.
- 14. RECONSTRUCT STORM SEWER ON DPW PROPERTY AND PRI MAR PROPERTY.
- 15. RECONSTRUCT BROAD STREET AND DPW ENTRANCE DRIVEWAY AND PARKING LOT AREA.

REV#	DATE	DESCRIPTION	BY

2851 Chalkbrook Drive SE, Suite 108
Grand Rapids, MI 49546
616.966.8238
www.wadetrims.com

CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN NOTES

ISSUED FOR: DATE: BY:
EGL 90% SUBMITTAL 2/1/2024 SWK
EGL 100% SUBMITTAL 3/18/2024 SWK
BIDS 4/19/2024 SWK

JOB NO.
SJO2004-02T

SHEET

G-101



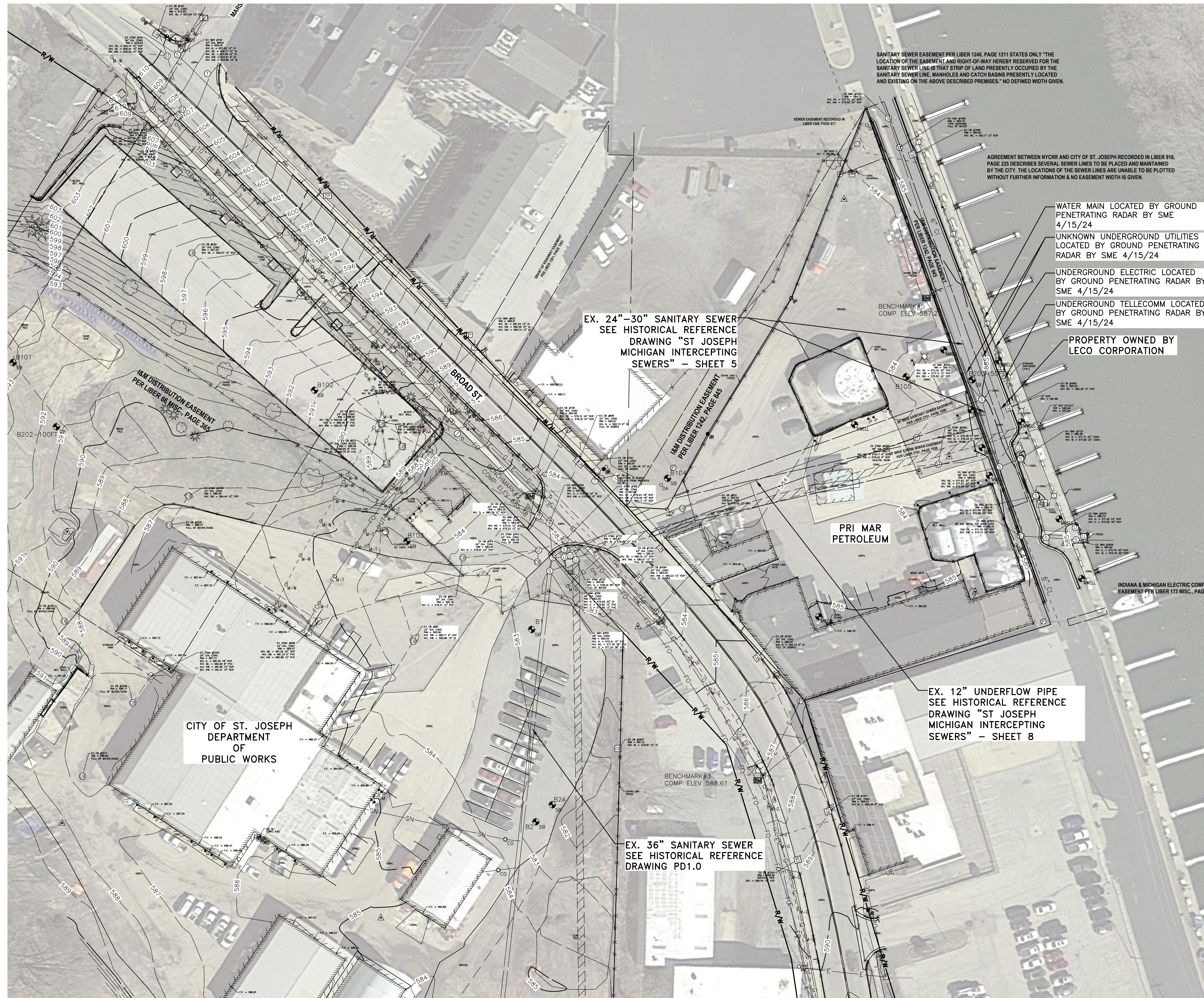
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BENCHMARK#2 EL. 585.38
 SPINDLE IN POWER POLE, WEST SIDE OF
 ENTRANCE TO DPW YARD
 (NAVD 88)

BENCHMARK#3 EL. 588.61
 MAG NAIL IN POWER POLE, WEST SIDE OF
 BROAD ST, ACROSS IF 1221 BROAD ST-
 TAIL WINDS CONDOMINIUMS
 (NAVD 88)

BENCHMARK#5 EL. 587.23
 SOUTHWESTERLY BOLT ON HYDRANT,
 NORTHEAST CORNER OF PRI MAR
 PETROLEUM PROPERTY
 (NAVD 88)



PROJECT MANAGER: SHAWN KEOUGH
 C:\P_L\WORK\WILLAGRA\14215241\VP-PLS-EXISTING CONDITIONS.DWG - LAYOUT1 - PLOTTED 4/17/2024 11:18 AM BY FLANGAN, MARTIN



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**CITY OF ST. JOSEPH
 BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
 EXISTING CONDITIONS PLAN

ISSUED FOR:	DATE:	BY:
EGLE 90%	2/1/2024	SWK
SUBMITTAL	4/19/2024	SWK
EGLE 100%		
SUBMITTAL	3/18/2024	SWK
BIDS	4/19/2024	SWK

JOB NO.
SJO2004-02T

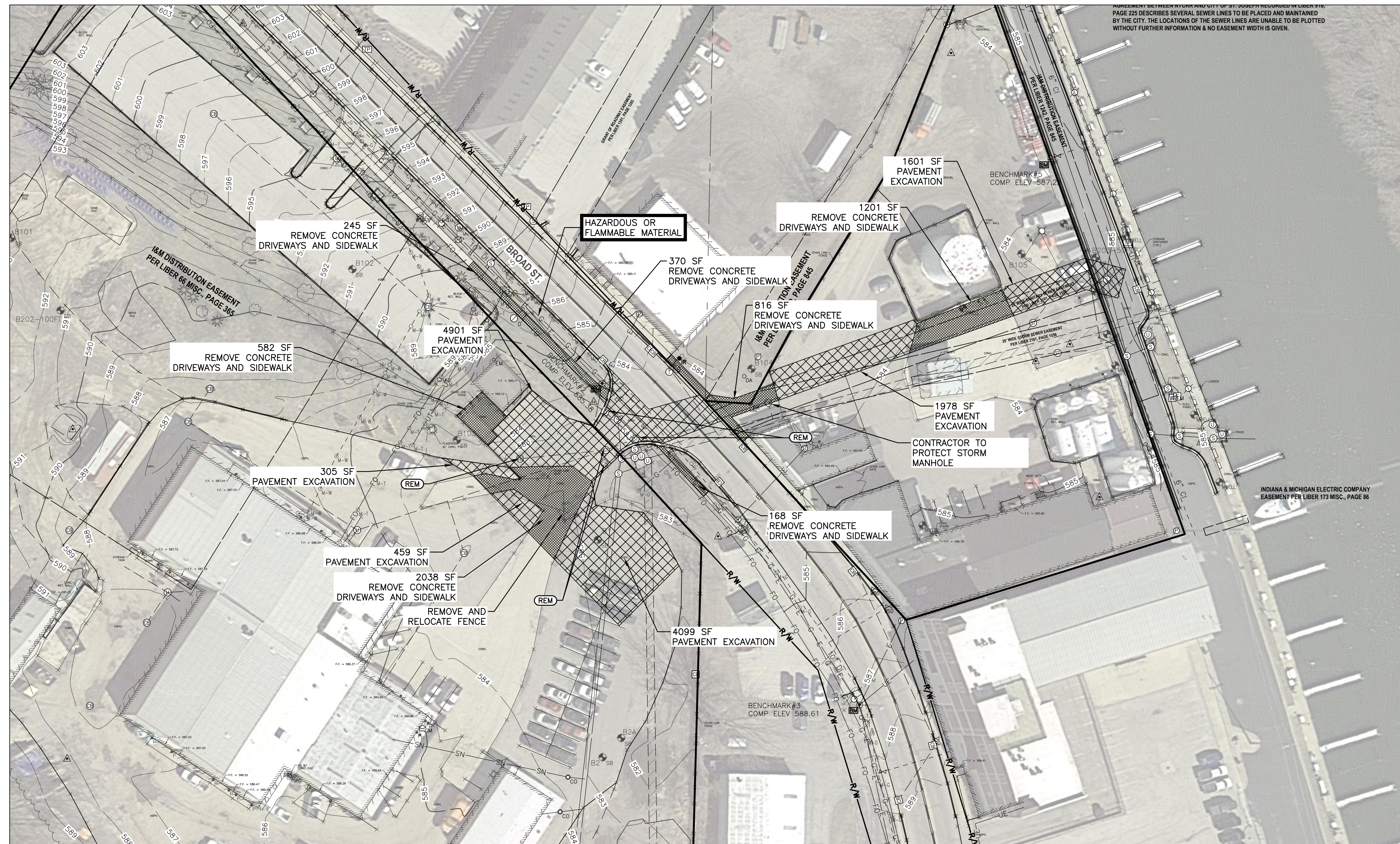
SHEET
C-100

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

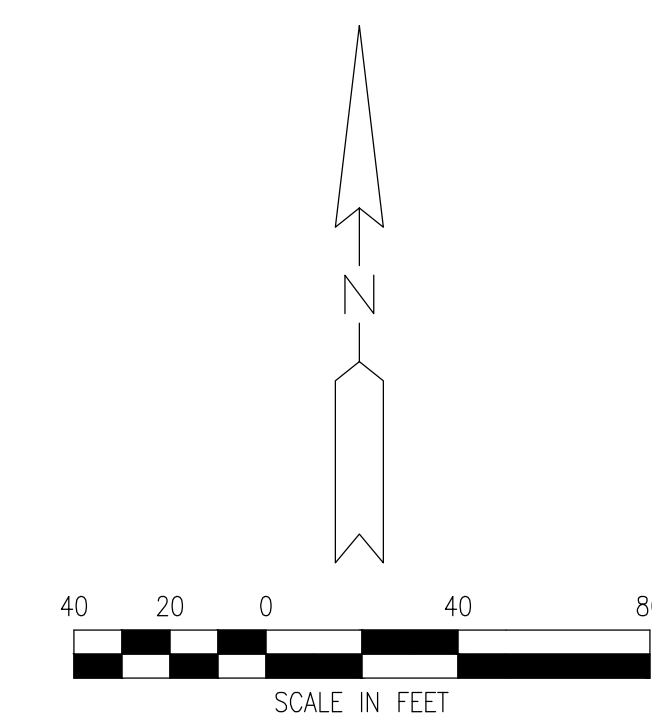
PROJECT MANAGER: SHAWN KEOUGH
 C:\P_L\ORA\W\LANAGAN\24\24\24\CRM-PLS-REMOVALS.DWG - LAYOUT: - PLOTTED: 4/17/2024 11:20 AM BY: FLANAGAN, MARTIN



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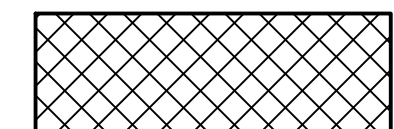
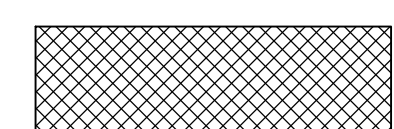

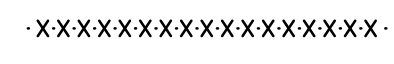
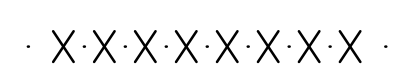
AGREEMENT BETWEEN CITY OF ST. JOSEPH AND THE CITY OF ST. JOSEPH REQUIRED UNDER 916.
 PAGE 225 DESCRIBES SEVERAL SEWER LINES TO BE PLACED AND MAINTAINED
 BY THE CITY. THE LOCATIONS OF THE SEWER LINES ARE UNABLE TO BE PLOTTED
 WITHOUT FURTHER INFORMATION & NO EASEMENT WIDTH IS GIVEN.



PAY ITEMS THIS SHEET

13,343	SF	PAVEMENT EXCAVATION, BITUMINOUS (500 CY)
5,420	SF	CONCRETE DRIVEWAYS AND SIDEWALK, REMOVE
78	LF	CONCRETE CURB AND GUTTER, REMOVE
6	EA	STORM MANHOLE, REMOVE

LEGEND

-  REMOVE BITUMINOUS PAVEMENT
-  REMOVE CONC DRIVEWAYS AND SIDEWALK
-  REMOVE
-  REMOVE UTILITY
-  REMOVE AND RELOCATE FENCE

REV#	DATE	DESCRIPTION	BY

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**CITY OF ST. JOSEPH
 BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
 REMOVALS PLAN

ISSUED FOR:	DATE:	BY:
EGL: 90% SUBMITTAL	2/1/2024 SWK	
EGL: 100% SUBMITTAL	3/18/2024 SWK	
BIDS	4/19/2024 SWK	
JOB NO.	SJO2004-02T	
SHEET	C-200	

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BENCHMARK#2 EL. 585.38

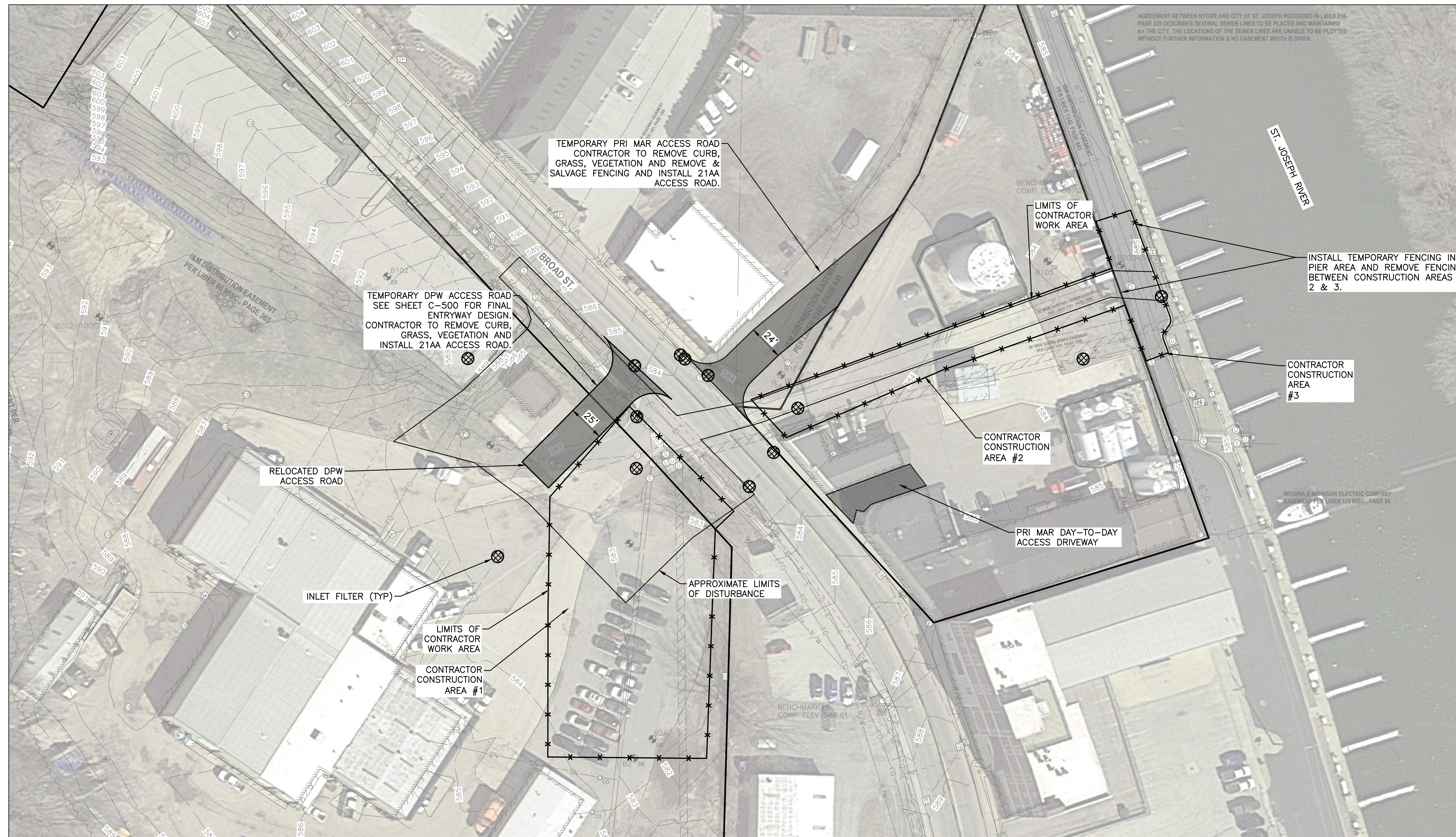
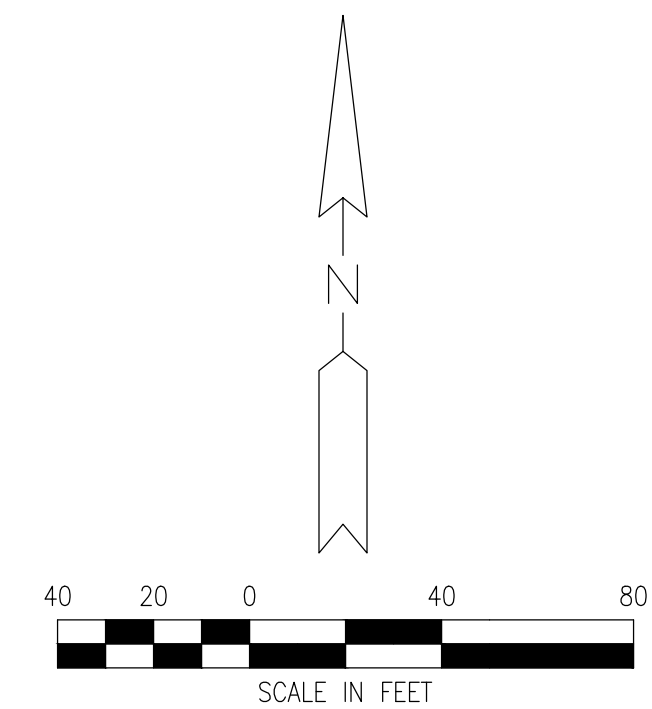
SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)

BENCHMARK#3 EL. 588.61

MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST-TAIL WINDS CONDOMINIUMS (NAVD 88)

BENCHMARK#5 EL. 587.23

SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)



AGREEMENT BETWEEN NYORR AND CITY OF ST. JOSEPH RECORDED IN LIBER 916, PAGE 225 DESCRIBES SEVERAL SEWER LINES TO BE PLACED AND MAINTAINED BY THE CITY. THE LOCATIONS OF THE SEWER LINES ARE UNABLE TO BE PLOTTED WITHOUT FURTHER INFORMATION & NO EASEMENT WIDTH IS GIVEN.

PROJECT MANAGER: SHAWN KEOUGH, C.P.E., NYORR WILKINSON, ID#15241, CSP - PLTS - ACCESS - PLANDWG - LAYOUT11 - PLOTTED 4/17/2024, 11:21 AM, BY: FLANAGAN, MARTIN

- NOTES:**
1. THE PAY ITEM TEMPORARY ACCESS ROAD INCLUDES ALL REMOVALS OF EXISTING CURB, GRASS, VEGETATION AND PREPARATION WITHIN THE ACCESS ROAD AREA.
 2. THE PAY ITEM TEMPORARY FENCING (LS) INCLUDES THE PLACEMENT OF ALL TEMPORARY FENCING SHOWN ON PLANS FOR ALL THREE CONTRACTOR WORK AREAS. INCLUDED REMOVAL AT END OF JOB.

REV#	DATE	DESCRIPTION	BY

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**CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
ACCESS & SOIL EROSION AND
SEDIMENTATION CONTROL PLAN

ISSUED FOR: DATE: BY:
EGL: 90% SUBMITTAL 2/1/2024 SWK
EGL: 100% SUBMITTAL 3/18/2024 SWK
BIDS 4/19/2024 SWK

JOB NO.
SJ02004-02T

SHEET
C-201

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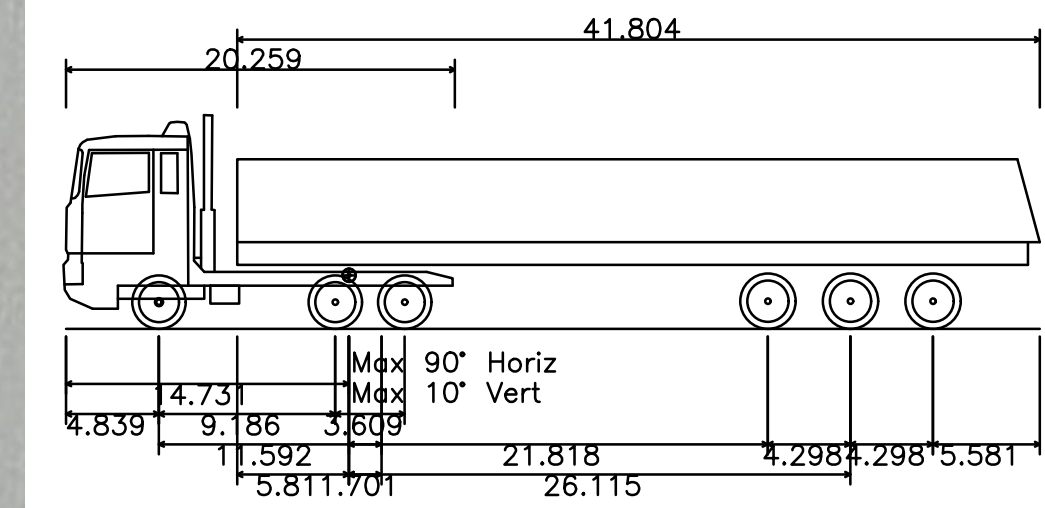
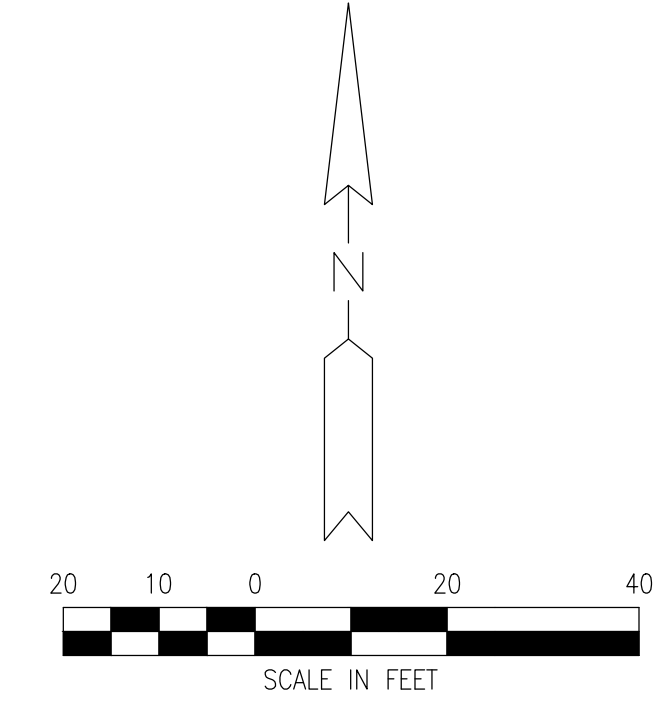
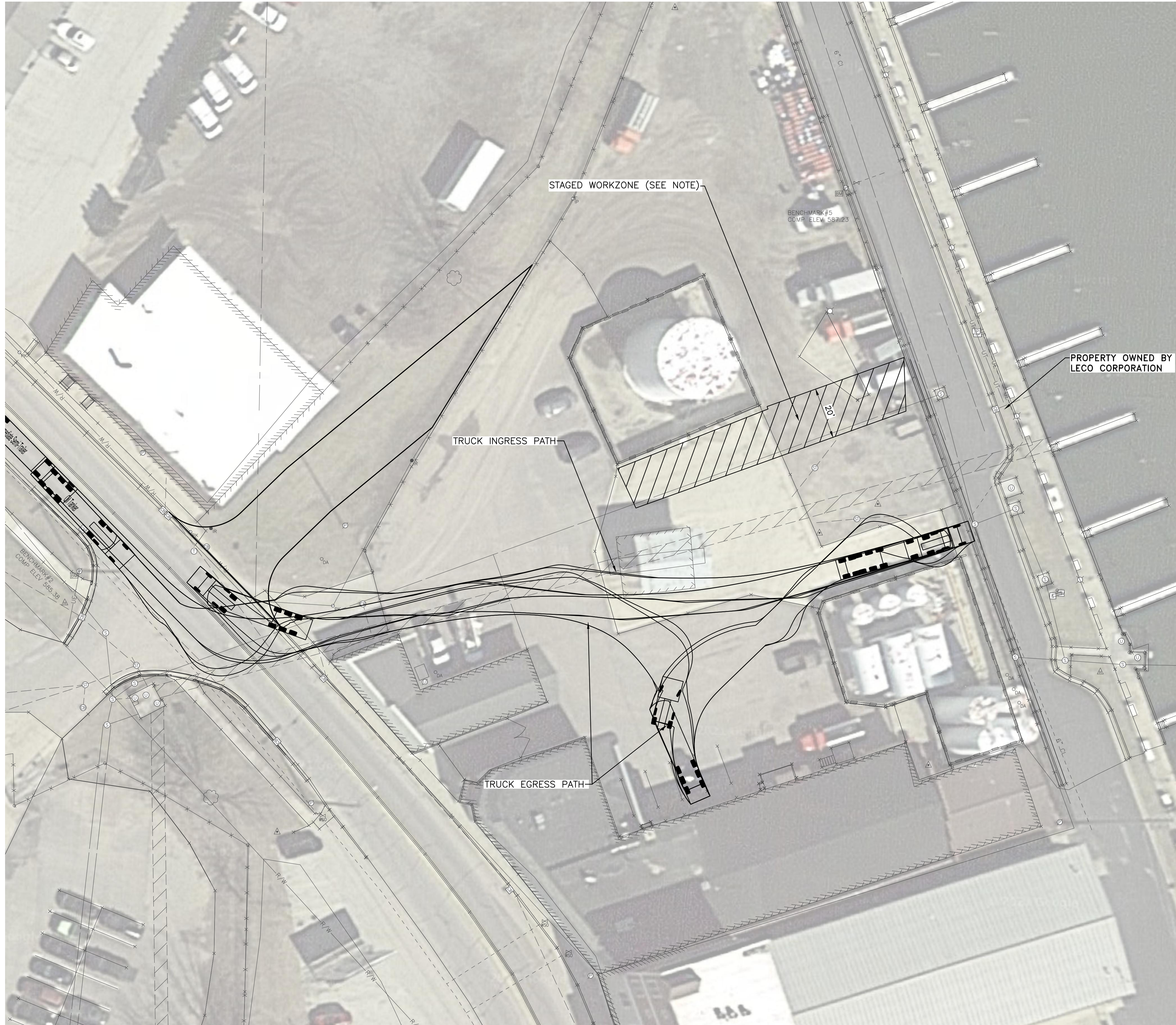
PAY ITEMS THIS SHEET

- 15 EACH INLET FILTERS
- 1 LS TEMPORARY FENCING
- 2000LF SILT FENCE
- 2 EA TEMPORARY ACCESS RD
- 500 TON AGGREGATE BASE COURSE 21AA

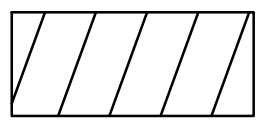
LEGEND

- ACCESS ROAD
- INLET FILTER
- TEMPORARY FENCING 6-FOOT

PHASE 1 TRUCK INGRESS & EGRESS



Oil Tanker	50.725ft
Overall Length	8.202ft
Overall Width	11.141ft
Overall Body Height	1.049ft
Min Body Ground Clearance	8.202ft
Max Track Width	4.00s
Lock-to-lock time	21.325ft
Curb to Curb Turning Radius	

 ACTIVE WORKZONE (THIS PHASE)

NOTE:
SANITARY SEWER CONSTRUCTION SHALL BE STAGED PER THE TRAFFIC CONTROL PLAN. TANKER TRUCK ACCESS INTO AND OUT OF THE PARKING LOT IS MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

PROJECT MANAGER: SHAWN KEOUGH
C:\P\WORK\WISCONSIN\421524\CSP-PLTS-PROP TRUCK ACCESS ROAD.DWG - PH 1 - PARKER (50') - PLOTTED 4/17/2024 11:22 AM BY: FLANGGAN, MARTIN

REV#	DATE	DESCRIPTION	BY

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**CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PROPOSED TRUCK ACCESS ROAD
PRI MAR PETROLEUM SITE - PHASE 1

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

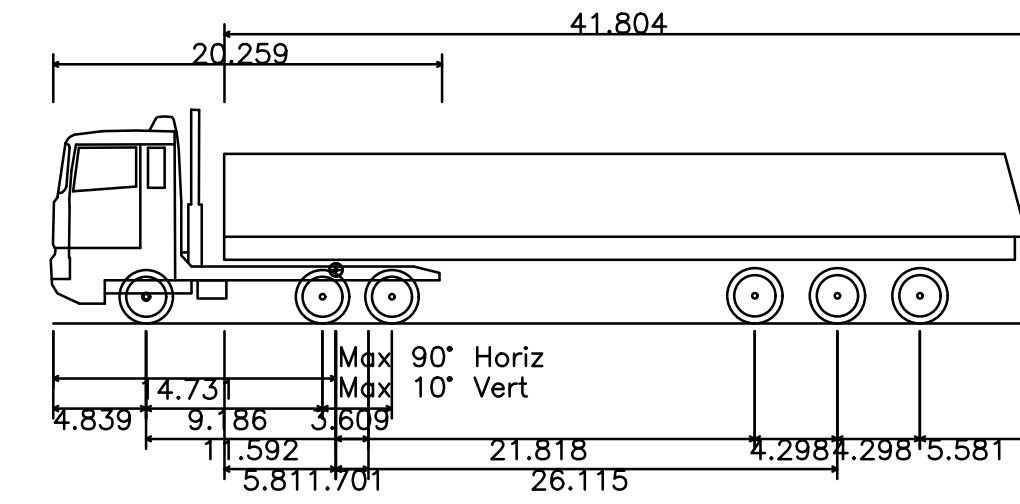
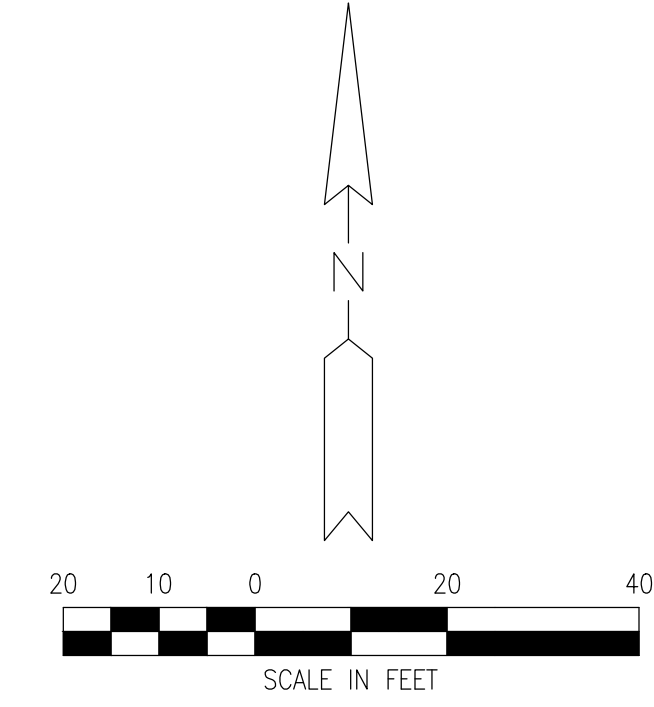
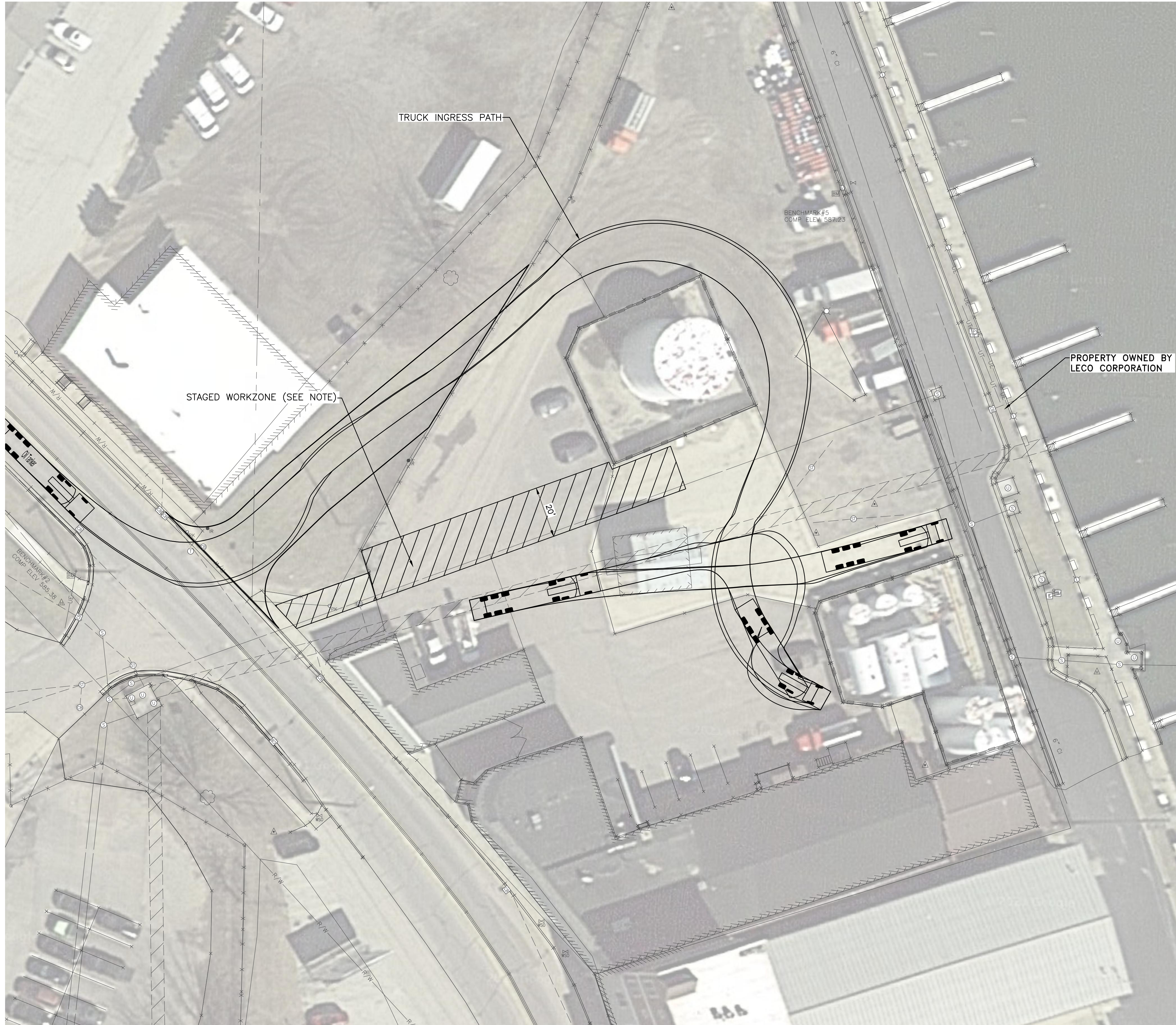
ISSUED FOR:	DATE:	BY:
EGL: 90% SUBMITTAL	2/1/2024 SWK	
EGL: 100% SUBMITTAL	3/18/2024 SWK	
BIDS	4/19/2024 SWK	

JOB NO.
SJ02004-02T

SHEET
C-202

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PHASE 2 TRUCK INGRESS



Oil Tanker	50.725ft
Overall Length	41.804ft
Overall Width	8.202ft
Overall Body Height	11.141ft
Min Body Ground Clearance	1.049ft
Max Track Width	8.202ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	21.325ft



NOTE:
SANITARY SEWER CONSTRUCTION SHALL BE STAGED PER THE TRAFFIC CONTROL PLAN. TANKER TRUCK ACCESS INTO AND OUT OF THE PARKING LOT IS MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

PROJECT MANAGER: SHAWN KEOUGH
C:\P\WORK\WILLAGRA\1421524\CSP-PLTS-PROP TRUCK ACCESS ROAD.DWG - PH 2 TANKER (SU) INGRESS - PLOTTED 4/17/2024 11:24 AM BY FLANAGAN, MARTIN

REV#	DATE	DESCRIPTION	BY

2851 Chalkbrook Drive SE, Suite 108
Grand Rapids, MI 49546
616.366.8888
www.wadetrिम.com

**CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PROPOSED TRUCK ACCESS ROAD
PRI MAR PETROLEUM SITE - PHASE 2 INGRESS

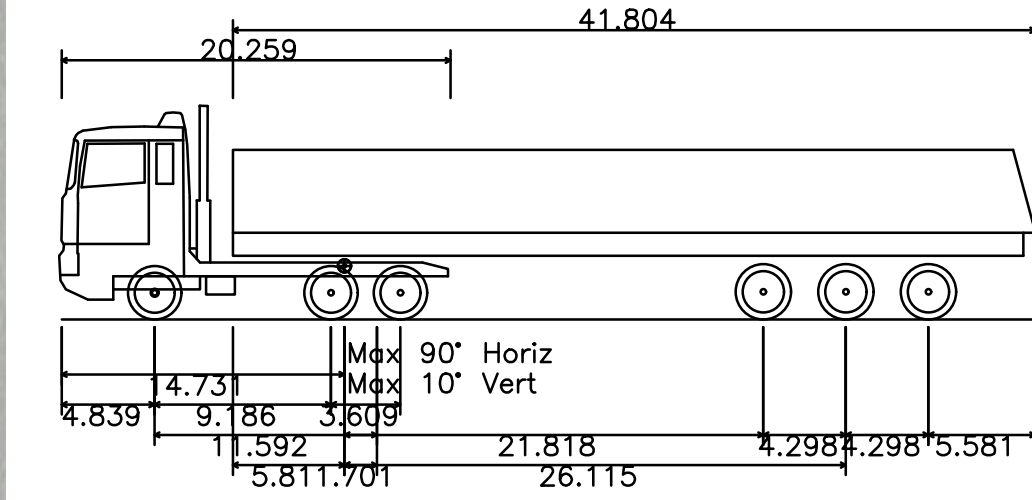
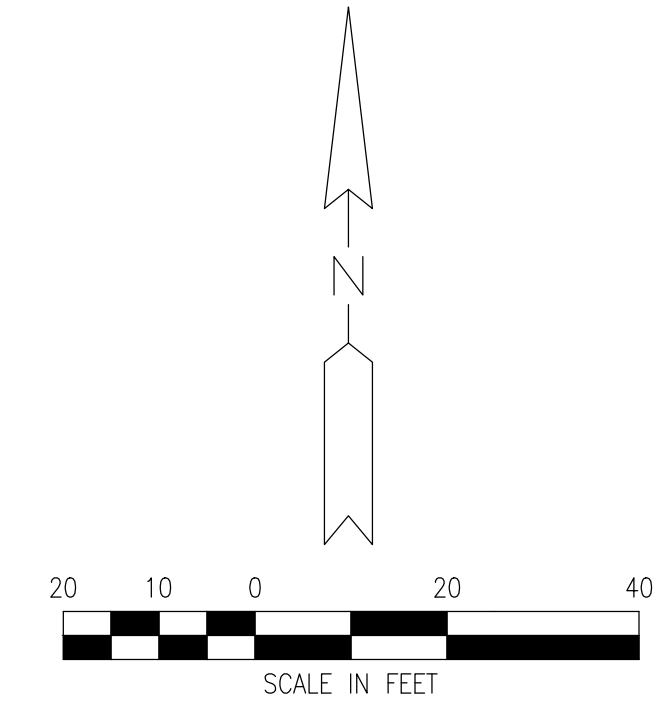
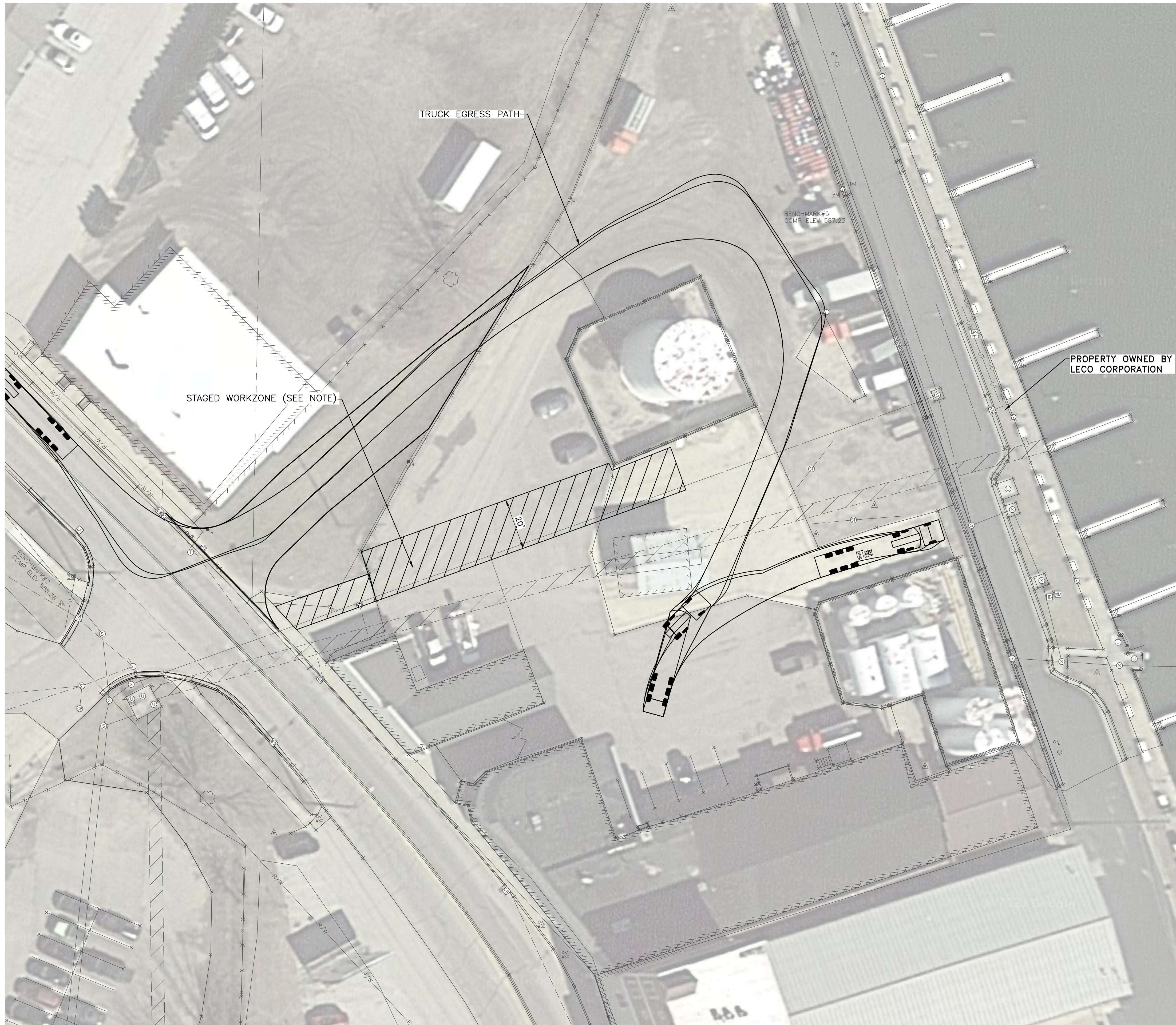
FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

ISSUED FOR:	DATE:	BY:
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EGL: 100% SUBMITTAL	3/18/2024 SWK	
BIDS	4/19/2024 SWK	

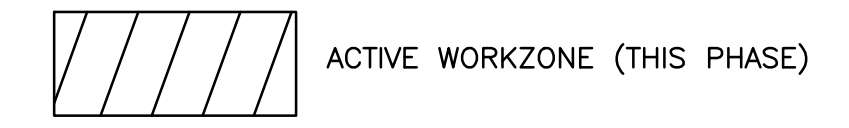
JOB NO.
SJ02004-02T

SHEET
C-203

PHASE 2 TRUCK EGRESS



Oil Tanker	50.725ft
Overall Length	41.804ft
Overall Width	8.202ft
Overall Body Height	11.141ft
Min Body Ground Clearance	1.049ft
Max Track Width	8.202ft
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	21.325ft



NOTE:
SANITARY SEWER CONSTRUCTION SHALL BE STAGED PER THE TRAFFIC CONTROL PLAN. TANKER TRUCK ACCESS INTO AND OUT OF THE PARKING LOT IS MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

PROJECT MANAGER: SHAWN KEOUGH
C:\P\WORK\WILLAGRA\1421524\CSP-PLTS-PROP TRUCK ACCESS ROAD.DWG - PH 2 TANKER (SU) EGRESS - PLOTTED 4/17/2024 11:24 AM BY: FLAAGAN, MARTIN

REV#	DATE	DESCRIPTION	BY

2851 Chalkbrook Drive SE, Suite 108
Grand Rapids, MI 49546
616.366.8888
www.wadetrिम.com

CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085

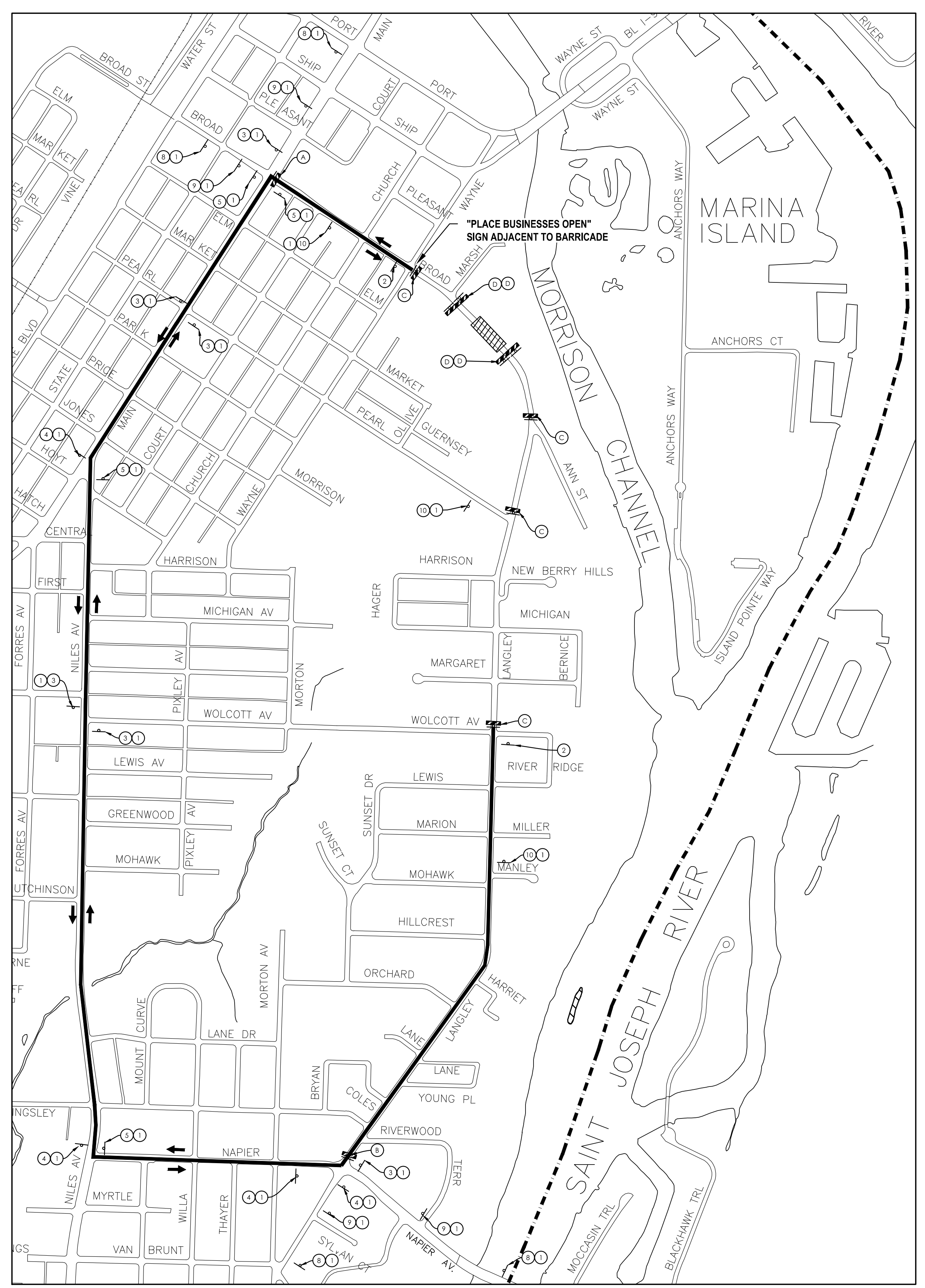
FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PROPOSED TRUCK ACCESS ROAD
PRI MAR PETROLEUM SITE - PHASE 2 EGRESS
FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

ISSUED FOR:	DATE:	BY:
EGL: 90% SUBMITTAL	2/1/2024 SWK	
EGL: 100% SUBMITTAL	3/18/2024 SWK	
BIDS	4/19/2024 SWK	

JOB NO.
SJ02004-02T

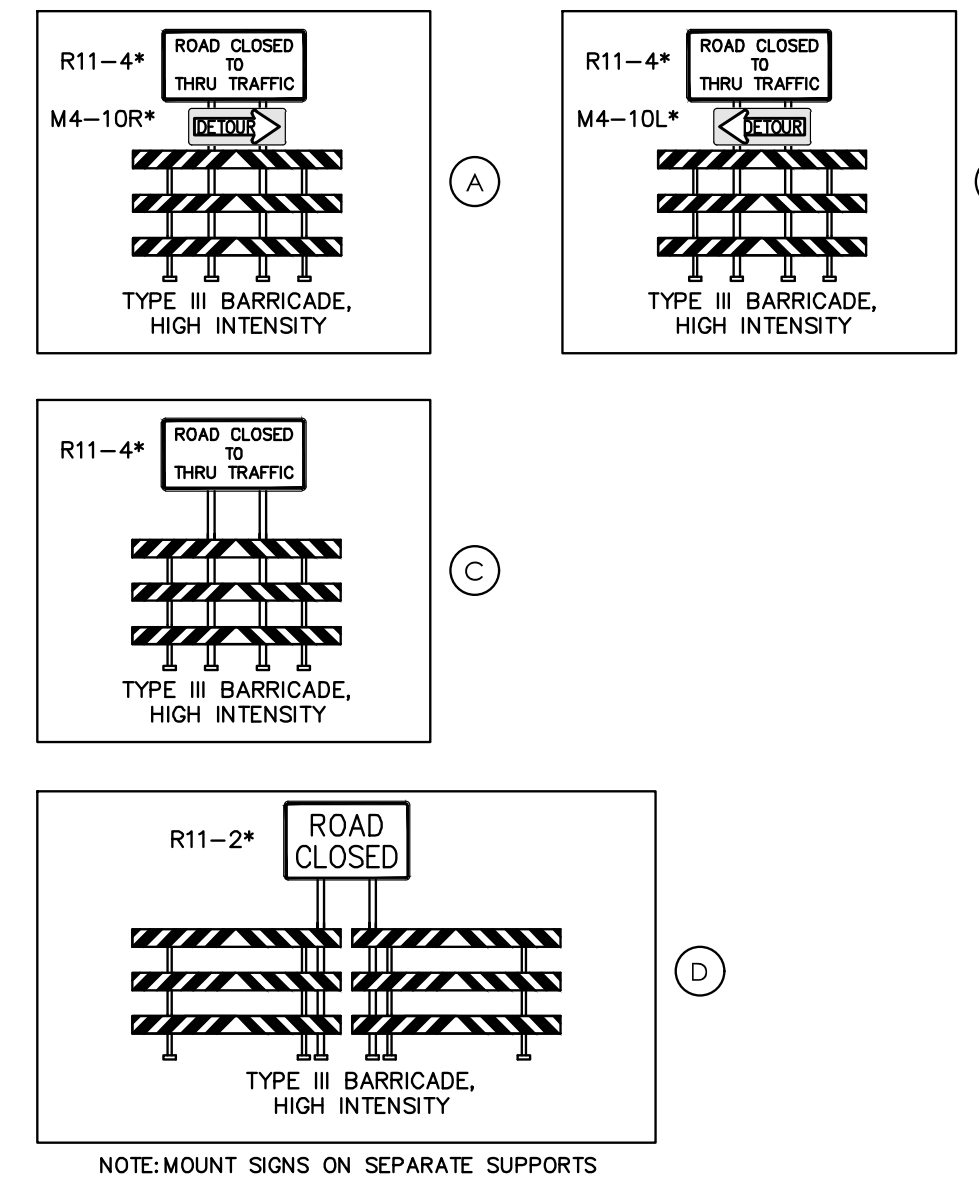
SHEET
C-204

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DETOUR PLAN - BROAD ST.
NOT TO SCALE

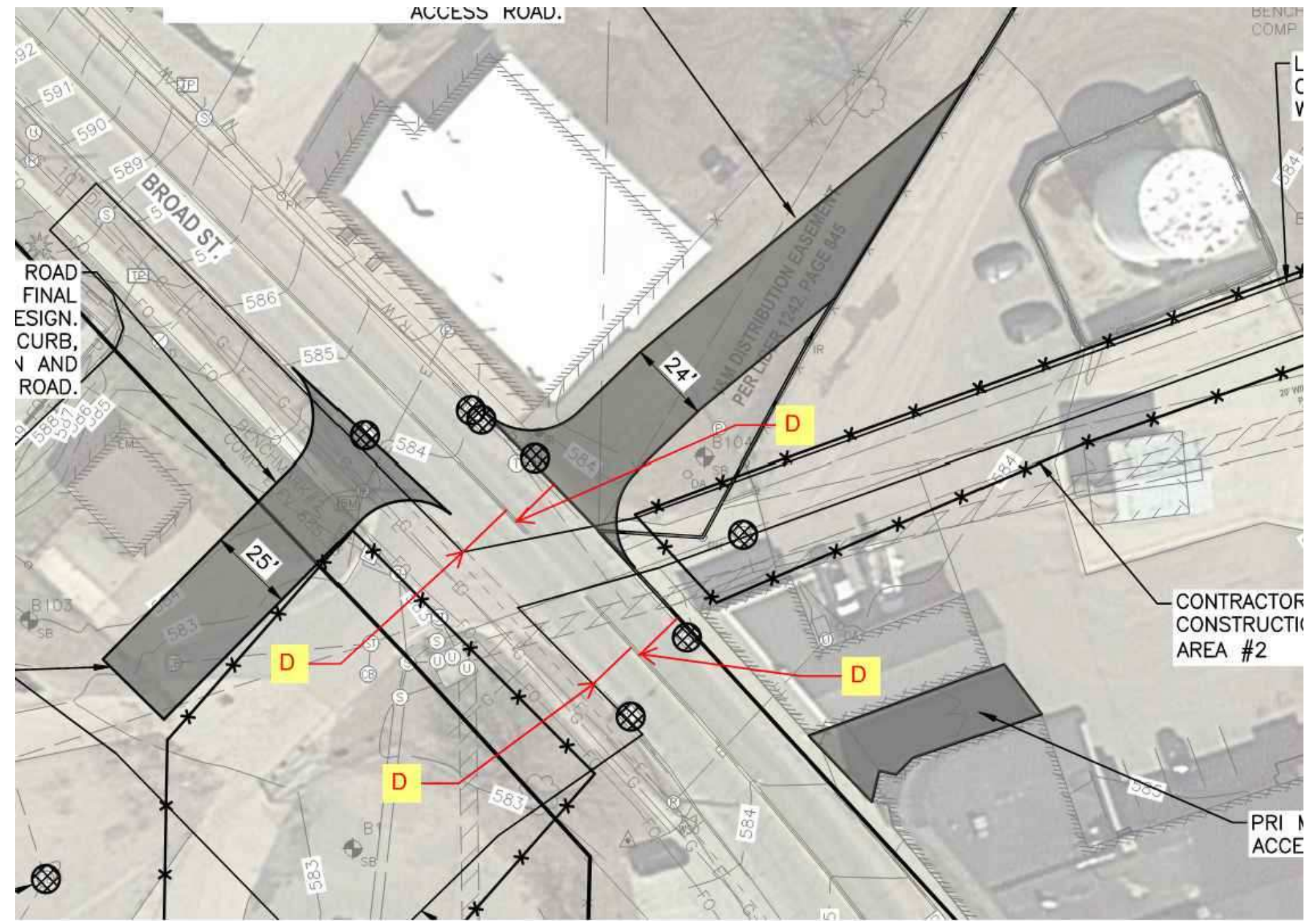
Item Description	Unit	Sht 205 Quantity
Maintenance Gravel, LM	Cyd	200
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	Ea	14
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	Ea	14
Pedestrian Type II Barricade, Temp	Ea	8
Minor Traf Devices	LSUM	1
Plastic Drum, Fluorescent, Furn	Ea	30
Plastic Drum, Fluorescent, Oper	Ea	30
Sign, Type B, Temp, Prismatic, Furn	Sft	411
Sign, Type B, Temp, Prismatic, Oper	Sft	411
Traf Regulator Control	LSUM	1



1. THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN ALL NECESSARY BARRICADES, SIGNS AND OTHER NECESSARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE MMUTCD 2011 AND THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. TRAFFIC SHALL BE MAINTAINED TO ALL LOCAL RESIDENCES.
3. ALL WARNING SIGNS SHALL BE TYPE B, PRISMATIC.
4. SIGNS WHICH ARE NO LONGER NEEDED SHALL BE COLLECTED AND STOCKPILED AT A LOCATION DESIGNATED BY THE ENGINEER WITHIN TWO WORKING DAYS.
5. 200 CYD OF "MAINTENANCE GRAVEL, LM" HAS BEEN PROVIDED TO FACILITATE THE MAINTENANCE OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL CONSIDER THIS QUANTITY TO BE A MAXIMUM ALLOWANCE FOR THIS ITEM. ANY ADDITIONAL MATERIAL BEYOND THE STATED QUANTITY SHALL BE CONSIDERED TO BE PROVIDED AT THE CONTRACTORS EXPENSE AND NO ADDITIONAL PAYMENT BY THE CITY SHALL BE MADE.
6. THE PROJECT SHALL BE PHASED BY THE CONTRACTOR TO ENSURE THAT ACCESS TO DRIVEWAYS AND SIDE STREETS IS PROVIDED AT ALL TIMES DURING CONSTRUCTION EXCEPT FOR WHEN WORK IS BEING COMPLETED IMMEDIATELY IN FRONT OF THE AFOREMENTIONED ITEMS. CONTRACTOR SHALL ENSURE ACCESS TO RESIDENCES TO RESTORED AT THE END OF EACH WORKING DAY.

ESTIMATED SIGN, TYPE B, TEMPORARY PLAN QUANTITIES

SYMBOL	LABEL	DIMENSION (FT)	AREA (SFT)	QUANTITY (EA)	QUANTITY (SFT)
1	BROAD ST	D3-1	2.5' x 1'	25	62.5
2	END DETOUR	M4-8a	2' x 1.5'	2	6
3	DETOUR	M4-9	2.5' x 2'	6	30
4	DETOUR	M4-9L	2.5' x 2'	4	20
5	DETOUR	M4-9R	2.5' x 2'	4	20
6	ROAD CLOSED	R11-2	4' x 2.5'	4	40
7	ROAD CLOSED TO THRU TRAFFIC	R11-4	5' x 2.5'	6	72
8	ROAD WORK AHEAD	W20-1	4' x 4'	4	64
9	DETOUR AHEAD	W20-2	4' x 4'	3	48
10	ROAD CLOSED AHEAD	W20-3	4' x 4'	3	48
11	DETOUR	M4-10L	4' x 1.5'	1	6
12	DETOUR	M4-10R	4' x 1.5'	1	6
		TYPE III BARRICADE HIGH INTENSITY			
				TOTAL SIGNAGE (SFT)	402.5



ST. JOSEPH
CSO STORAGE PROJECT
CITY OF ST. JOSEPH

PROPOSED BROAD STREET
DETOUR PLAN

SHEET TITLE:
 DRAWN BY: CES
 DESIGNED BY: TRD
 PM REVIEW:
 QA/QC REVIEW: TRD
 DATE: MARCH 2024
 SEAL:

SIGNATURE:
 DATE:
 SCALE:
 HORIZ: N/A
 VERT: N/A
 ACT JOB # 23-1972

BENCHMARK#2 EL. 585.38

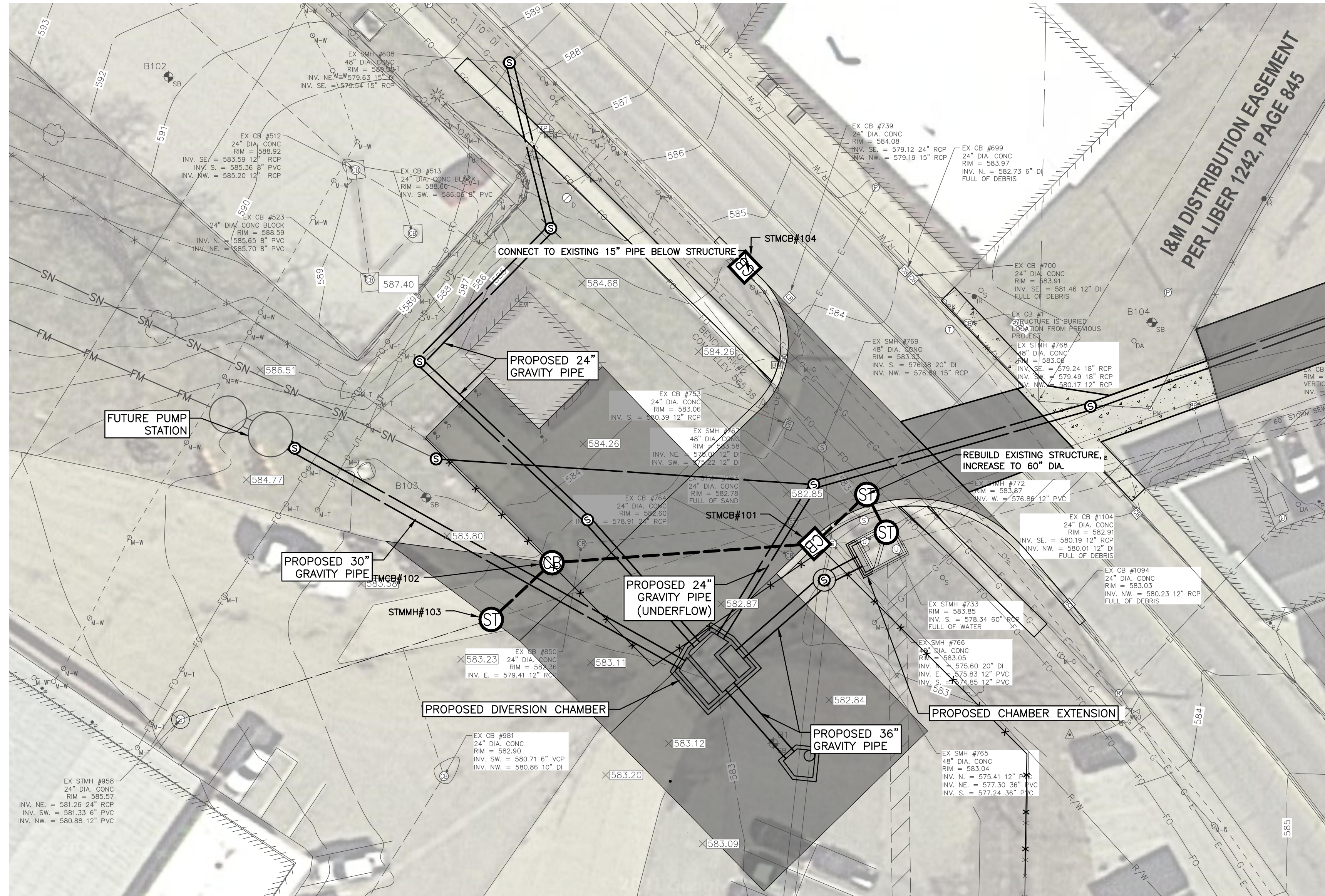
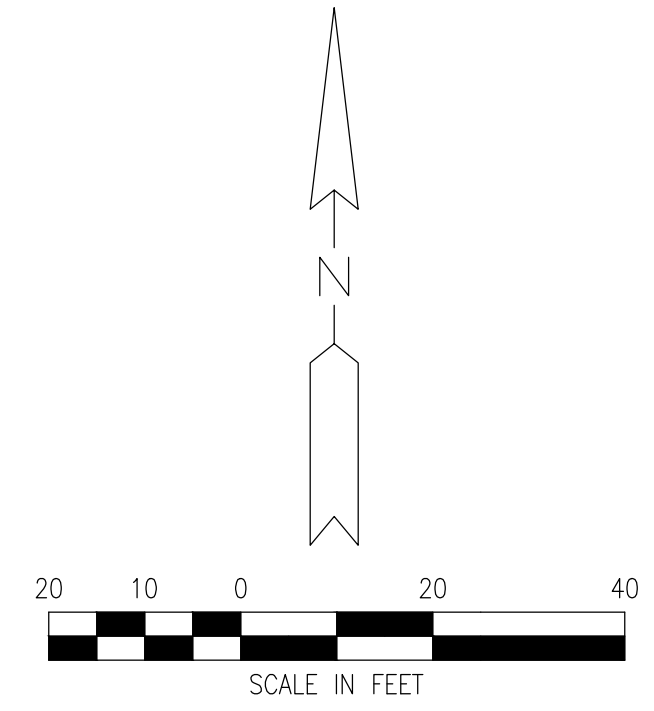
SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)

BENCHMARK#3 EL. 588.61

MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST-TAIL WINDS CONDOMINIUMS (NAVD 88)

BENCHMARK#5 EL. 587.23

SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)



PROJECT MANAGER: SHAWN KEOUGH
C:\P\WORK\BERRIEN\421524\CSP-PLTS-PROP CIVIL SITE PLAN(USF7)DWG - SITE PLAN - PLOTTED 4/17/2024 11:31 AM BY: FLANAGAN, MARTIN



Know what's below.
Call before you dig.

REV#	DATE	DESCRIPTION	BY

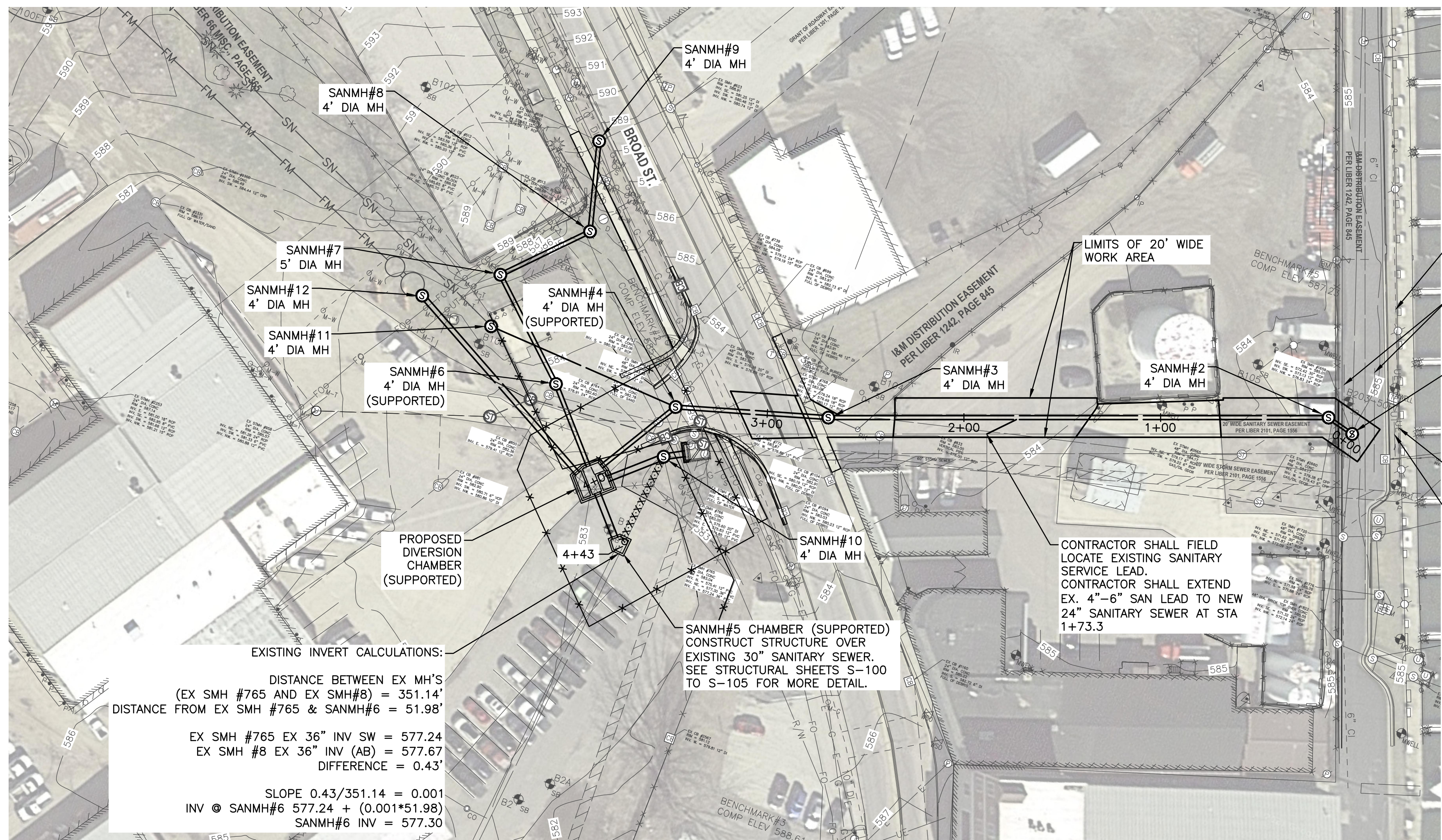
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Grand Rapids, MI 49546
www.wadetrिम.com

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BERRIEN COUNTY, MI 49085

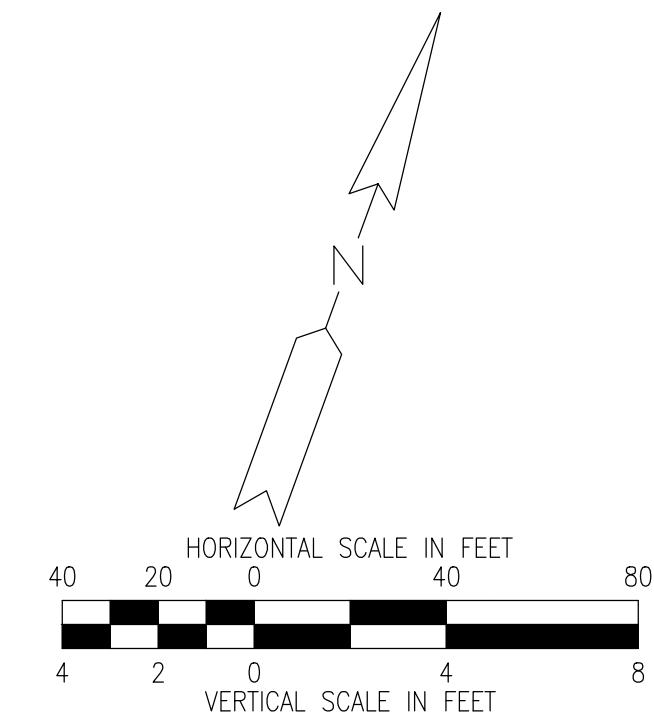
FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
ENLARGED OVERALL - DPW SITE

ISSUED FOR:	DATE:	BY:
EGL: 90%	2/1/2024	SWK
SUBMITTAL		
EGL: 100%	3/18/2024	SWK
SUBMITTAL		
BIDS	4/19/2024	SWK
JOB NO.	SJO2004-02T	
SHEET	C-301	

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
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EXISTING INVERT CALCULATIONS:
 DISTANCE BETWEEN EX MH'S
 (EX SMH #765 AND EX SMH#8) = 351.14'
 DISTANCE FROM EX SMH #765 & SANMH#6 = 51.98'
 EX SMH #765 EX 36" INV SW = 577.24
 EX SMH #8 EX 36" INV (AB) = 577.67
 DIFFERENCE = 0.43'
 SLOPE 0.43/351.14 = 0.001
 INV @ SANMH#6 577.24 + (0.001*51.98)
 SANMH#6 INV = 577.30

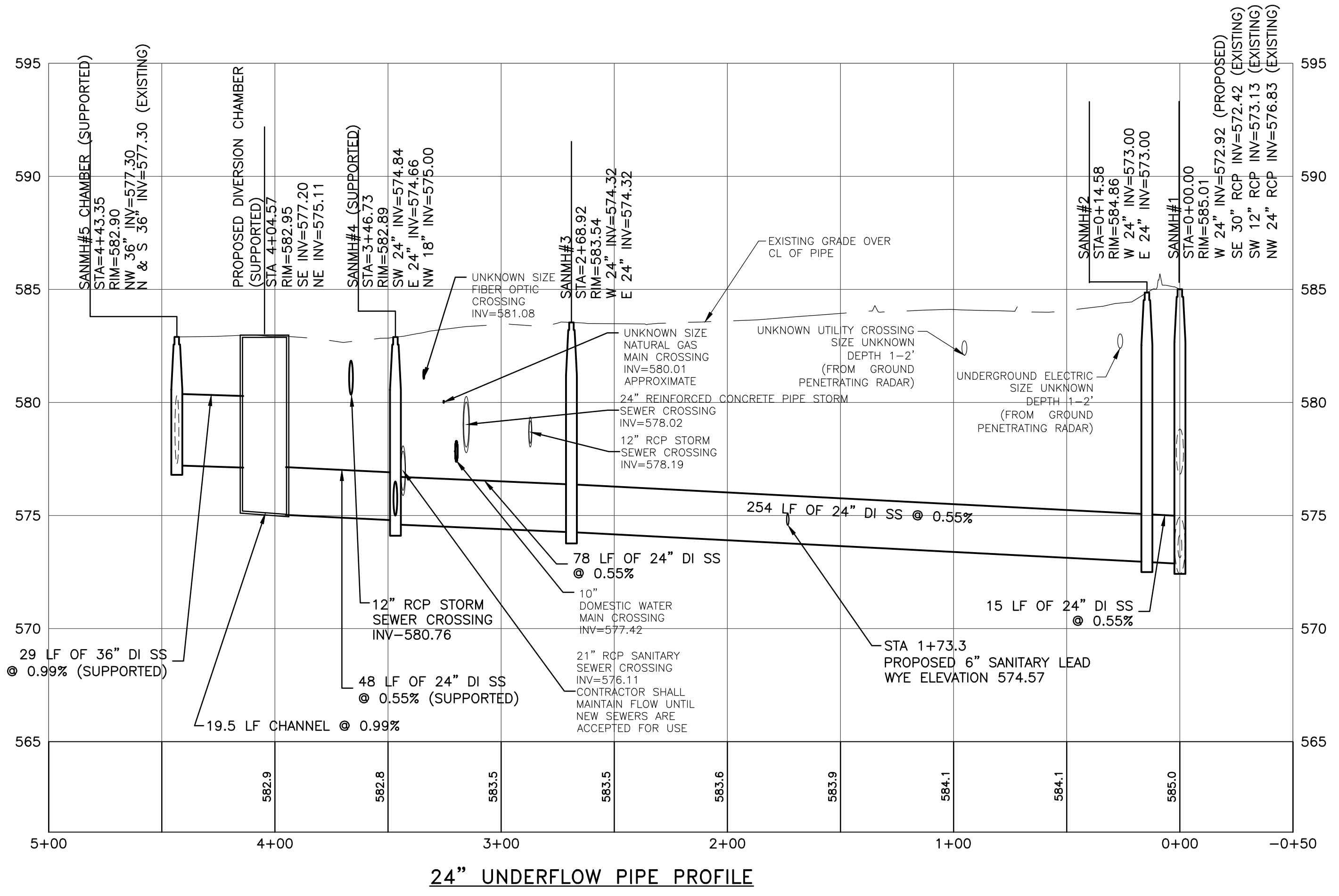


- BENCHMARK#2 EL. 585.38**
 SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)
- BENCHMARK#3 EL. 588.61**
 MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST-TAIL WINDS CONDOMINIUMS (NAVD 88)
- BENCHMARK#5 EL. 587.23**
 SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)

- WATER MAIN LOCATED BY GROUND PENETRATING RADAR BY SME 4/15/24
- UNKNOWN UNDERGROUND UTILITIES LOCATED BY GROUND PENETRATING RADAR BY SME 4/15/24
- SANMH#1 6" DIA MH CONSTRUCT 6" DIAMETER SANITARY MANHOLE OVER EXISTING 30" SANITARY SEWER. CONTRACTOR TO VERIFY EX. 30" CROWN.
- UNDERGROUND ELECTRIC LOCATED BY GROUND PENETRATING RADAR BY SME 4/15/24
- UNDERGROUND TELLECOMM LOCATED BY GROUND PENETRATING RADAR BY SME 4/15/24

NOTES:

- CONTRACTOR SHALL DESIGN & INSTALL A TEMPORARY EARTH RETENTION SYSTEM TO A DEPTH OF 35 FEET ALONG BOTH SIDES OF PROPOSED 10 FOOT WIDE UTILITY TRENCH FROM PROPOSED SANITARY MANHOLE #1 TO PROPOSED SANITARY MANHOLE #4 (ACROSS PIER 33 & PRI MAR PROPERTY). THE INTENT OF THE TEMPORARY RETENTION SYSTEM IS TO LIMIT & DEFINE THE AMOUNT OF EXCAVATED SOIL THAT WILL BE DISPOSED PROPERLY AT A TYPE II LANDFILL, AND TO HELP LIMIT THE DEWATERING AMOUNT OF GROUNDWATER WITHIN THE TRENCH (PLEASE SEE SME GEOTECHNICAL REPORT). THE DESIGN SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER (MICHIGAN) AND SHALL BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO USE. ALL COSTS FOR THE TEMPORARY EARTH RETENTION SYSTEM SHALL BE INCLUDED IN THE COST OF THE VARIOUS PAY ITEMS FOR SANITARY SEWER AND SANITARY MANHOLES.
- ALL BACKFILL SHALL BE MDOT CLASS II SAND COMPACTED TO 95%.
- CONTRACTOR SHALL MAINTAIN FLOW (INCLUDING BY-PASS PUMPING IF NECESSARY) IN ALL EXISTING SANITARY SEWERS AT ALL TIMES UNTIL NEW SEWERS ARE ACCEPTED FOR USE.
- DEWATERING: ALL GROUNDWATER FROM UTILITY TRENCHES SHALL BE FILTERED AND PUMPED DIRECTLY TO EXISTING CITY OF ST. JOSEPH SANITARY SEWERS (CONTRACTOR SHALL COORDINATE LOCATION WITH CITY PRIOR TO DEWATERING). THE COST OF THE DEWATERING SHALL BE INCLUDED IN THE COST OF THE SANITARY SEWER AND SANITARY MANHOLE PAY ITEMS.
- SOIL DISPOSAL: ALL EXCAVATED SOIL WITHIN THE UTILITY TRENCHES SHALL BE HAULED OFF AND PROPERLY DISPOSED AT A TYPE II LANDFILL. THE COST OF THE DISPOSAL SHALL BE INCLUDED IN THE PAY ITEM SOIL DISPOSAL (AT TYPE 2 LANDFILL).

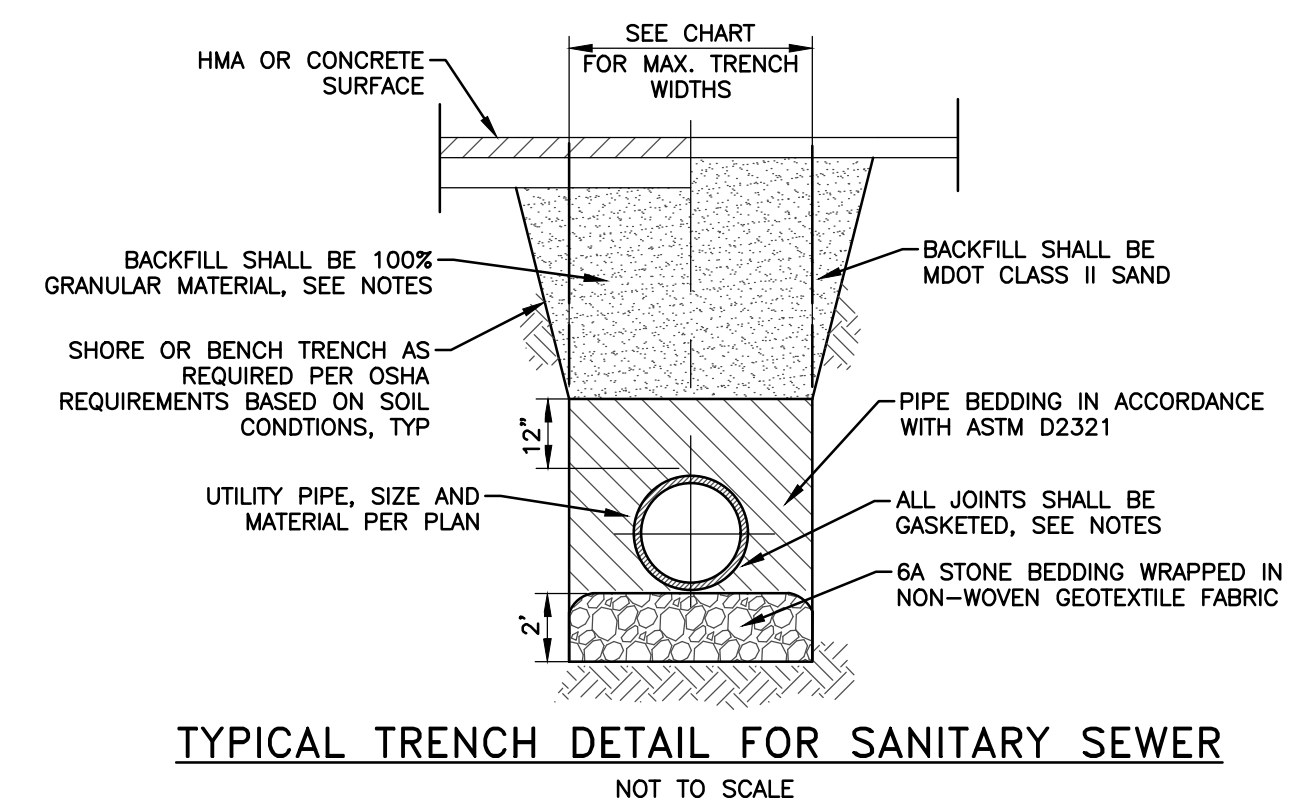


PAY ITEMS THIS SHEET

1	EACH	REMOVE EXISTING SANITARY MANHOLE
1	EACH	CONSTRUCT 6-FOOT DIAMETER SANITARY MANHOLE OVER EXISTING 30-INCH SANITARY SEWER, 0 TO 8 FEET DEEP (SANMH#1)
2	EACH	STANDARD 4-FOOT SANITARY MANHOLE, 0 TO 8 FEET DEEP (SANMH#2 & SANMH#3)
1	EACH	STANDARD 4-FOOT SANITARY MANHOLE TO TO 8 FEET DEEP SUPPORTED ON HELICAL PILES (SANMH#4)
6	VF	ADDITIONAL DEPTH SANITARY MANHOLE, 48-INCH DIAMETER, OVER 8 FEET DEEP
5	VF	ADDITIONAL DEPTH SANITARY MANHOLE, 72-INCH DIAMETER, OVER 8 FEET DEEP
347	LF	SANITARY SEWER, 24-INCH, DUCTILE IRON, TRENCH B SAND
48	LF	SANITARY SEWER, 24-INCH, DUCTILE IRON, TRENCH B SAND (SUPPORTED ON HELICAL SUPPORTS)
29	LF	SANITARY SEWER, 36-INCH, DUCTILE IRON, TRENCH B SAND (SUPPORTED ON HELICAL SUPPORTS)
2	EACH	CONNECTION TO DIVERSION CHAMBER
2600	CY	SOIL DISPOSAL (AT TYPE 2 LANDFILL)

TRENCH WIDTHS

MAX WIDTH OF TRENCH 12" ABOVE TOP OF PIPE
6" THRU 12" PIPE - 30" WIDE
15" THRU 36" PIPE - O.D. + 16"
42" THRU 60" PIPE - O.D. + 20"
OVER 60" PIPE - O.D. + 24"



- NOTE:**
- PLEASE SEE STRUCTURAL SHEETS S-100 THRU 102 & S-107 FOR DETAIL ON HELICAL PILES AND PIPE SADDLE SUPPORTS
 - FOR PROPOSED DIVERSION CHAMBER, PLEASE SEE SHEETS S-104 THRU S-106.
 - ALL ITEMS NOTED AS "SUPPORTED" REQUIRE HELICAL PILES AND PIPE SADDLE SUPPORTS



PROJECT MANAGER: SPAWN, KEOUGH
 CIVIL ENGINEER: SPAWN, KEOUGH
 FIELD BOOK INFORMATION: PLOTTED 4/17/2024 11:53 AM BY: FLANAGAN, MARTIN
 SAN PLANPRO(CUST).DWG - UNDERFLOW P-P - PLOTTED 4/17/2024 11:53 AM BY: FLANAGAN, MARTIN

PROJECT MANAGER: SPAWN, KEOUGH
 CIVIL ENGINEER: SPAWN, KEOUGH
 FIELD BOOK INFORMATION: PLOTTED 4/17/2024 11:53 AM BY: FLANAGAN, MARTIN
 SAN PLANPRO(CUST).DWG - UNDERFLOW P-P - PLOTTED 4/17/2024 11:53 AM BY: FLANAGAN, MARTIN

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 www.wadetrims.com

**CITY OF ST. JOSEPH
 BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
 PROPOSE SANITARY SEWER PLAN & PROFILE
 24-INCH UNDERFLOW PIPE

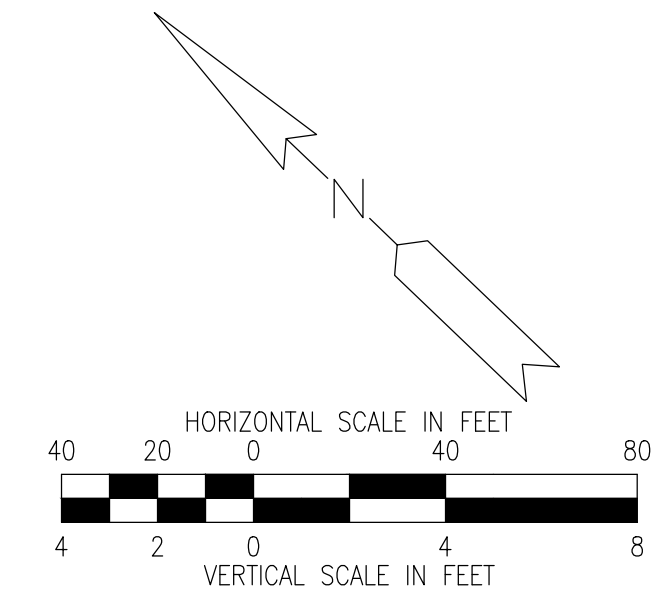
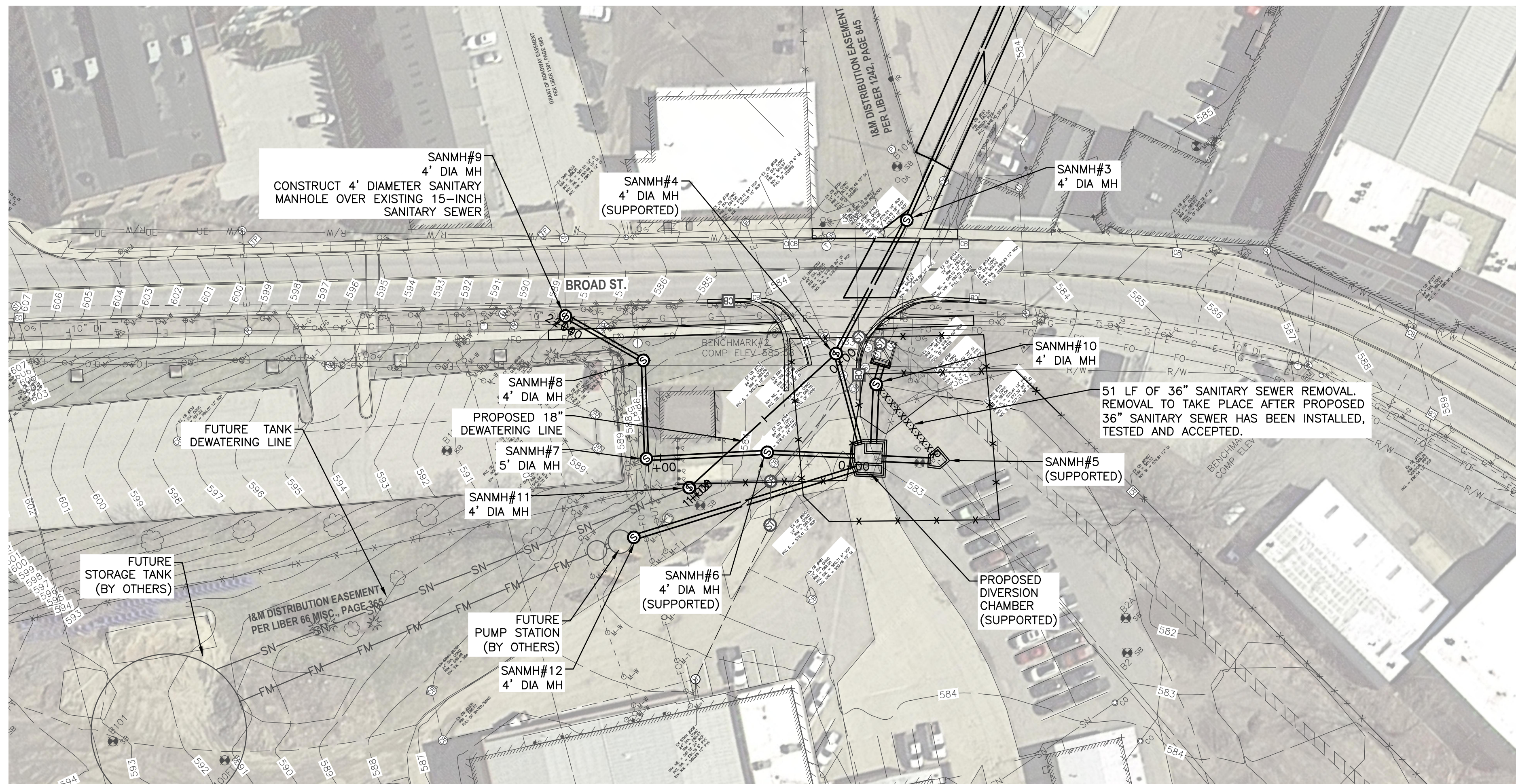
ISSUED FOR: EGLE 90% SUBMITTAL	DATE: 2/1/2024	BY: SWK
EGLE 100% SUBMITTAL	DATE: 3/18/2024	BY: SWK
BIDS	DATE: 4/19/2024	BY: SWK

JOB NO: **SJO2004-02T**

SHEET: **C-400**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
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PROJECT MANAGER: SHAWN KEOUGH
 C:\P\WORK\W\LANAGAN\1241524\CSS-PLTS-PROP SAN PLAN\PROJ(UST).DWG - E. SAN PUMP - PLOTTED, 4/17/2024, 11:40 AM, BY: LANAGAN, MARTIN



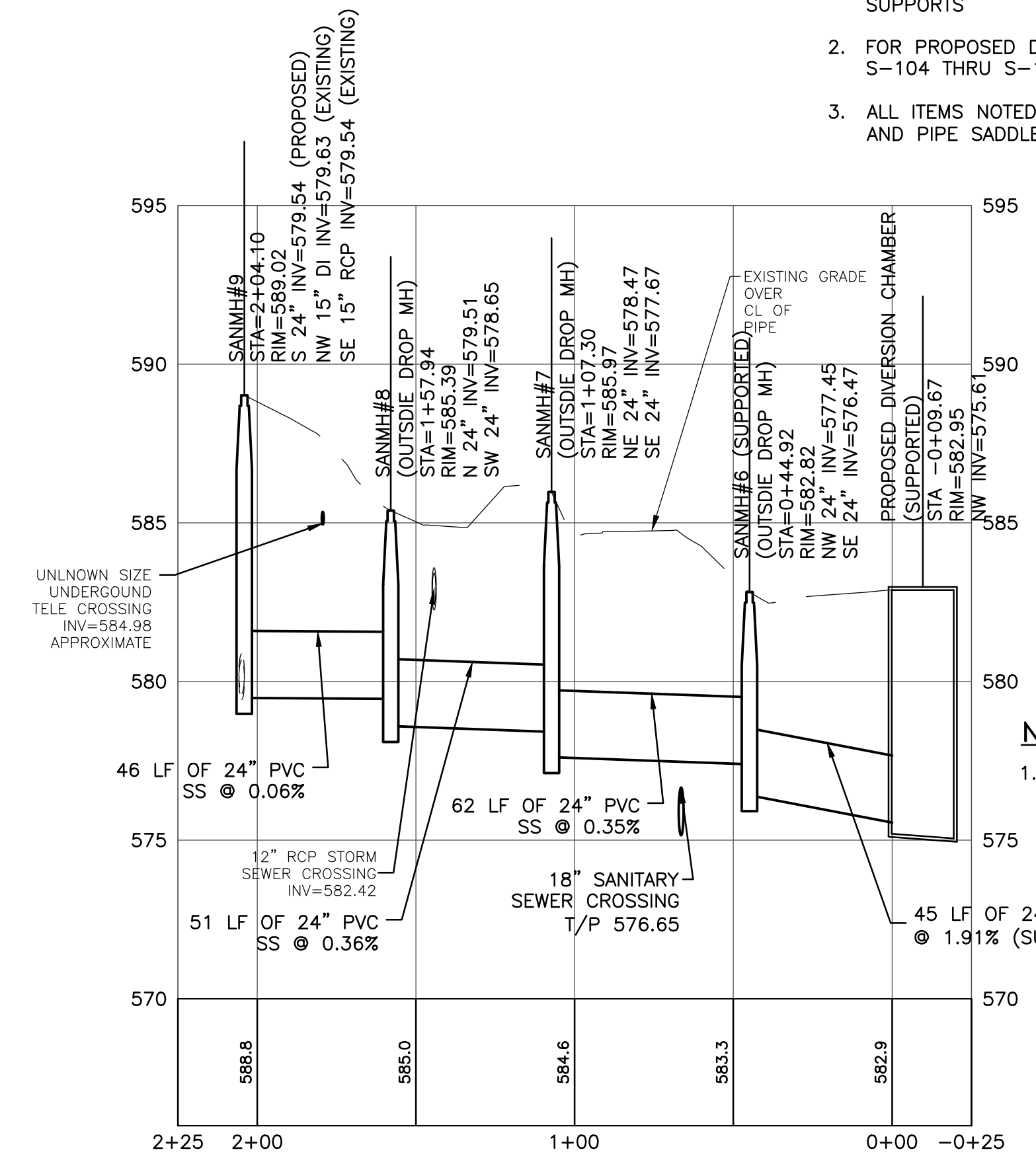
- BENCHMARK #2** EL. 585.38
 SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)
- BENCHMARK #3** EL. 588.61
 MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST - TAIL WINDS CONDOMINIUMS (NAVD 88)
- BENCHMARK #5** EL. 587.23
 SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)

NOTES:

- CONTRACTOR SHALL DESIGN & INSTALL A TEMPORARY EARTH RETENTION SYSTEM. THE INTENT OF THE TEMPORARY RETENTION SYSTEM IS TO LIMIT & DEFINE THE AMOUNT OF EXCAVATED SOIL THAT WILL BE DISPOSED PROPERLY AT A TYPE II LANDFILL, AND TO HELP LIMIT THE DEWATERING AMOUNT OF GROUNDWATER WITHIN THE TRENCH (PLEASE SEE SME GEOTECHNICAL REPORT). THE DESIGN SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER (MICHIGAN) AND SHALL BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO USE. ALL COSTS FOR THE TEMPORARY EARTH RETENTION SYSTEM SHALL BE INCLUDED IN THE COST OF THE VARIOUS PAY ITEMS FOR SANITARY SEWER AND SANITARY MANHOLES.
- ALL BACKFILL SHALL BE MDOT CLASS II SAND COMPACTED TO 95%.
- CONTRACTOR SHALL MAINTAIN FLOW (INCLUDING BY-PASS PUMPING IF NECESSARY) IN ALL EXISTING SANITARY SEWERS AT ALL TIMES UNTIL NEW SEWERS ARE ACCEPTED FOR USE.
- DEWATERING: ALL GROUNDWATER FROM UTILITY TRENCHES SHALL BE FILTERED AND PUMPED DIRECTLY TO EXISTING CITY OF ST. JOSEPH SANITARY SEWERS (CONTRACTOR SHALL COORDINATE LOCATION WITH CITY PRIOR TO DEWATERING). THE COST OF THE DEWATERING SHALL BE INCLUDED IN THE COST OF THE SANITARY SEWER AND SANITARY MANHOLE PAY ITEMS.
- SOIL DISPOSAL: ALL EXCAVATED SOIL WITHIN THE UTILITY TRENCHES SHALL BE HAULED OFF AND PROPERLY DISPOSED AT A TYPE II LANDFILL. THE COST OF THE DISPOSAL SHALL BE INCLUDED IN THE PAY ITEM SOIL DISPOSAL (AT TYPE 2 LANDFILL).

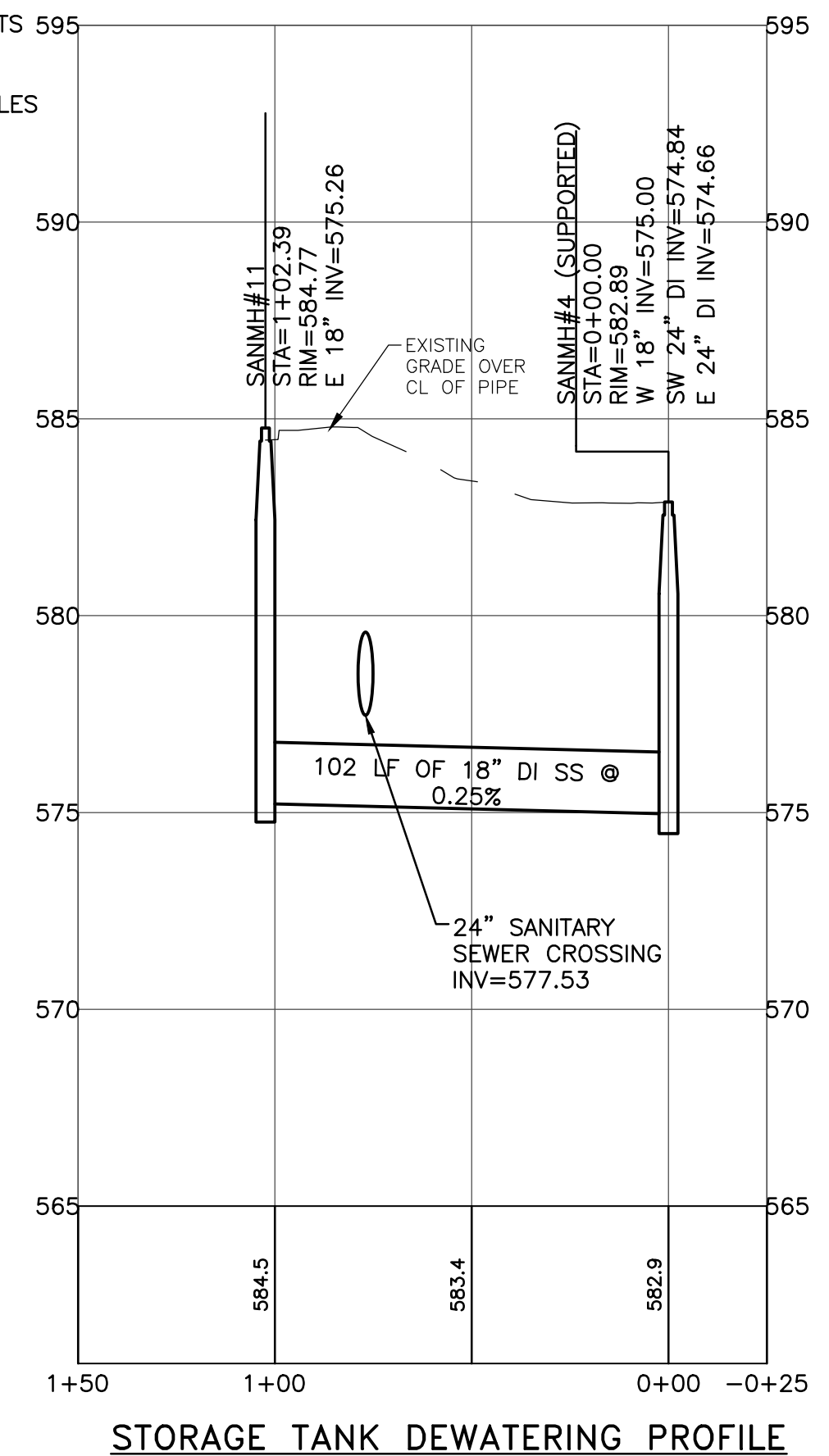
NOTE:

- PLEASE SEE STRUCTURAL SHEETS S-100 THRU 102 & S-107 FOR DETAIL ON HELICAL PILES AND PIPE SADDLE SUPPORTS
- FOR PROPOSED DIVERSION CHAMBER, PLEASE SEE SHEETS 595 S-104 THRU S-106.
- ALL ITEMS NOTED AS "SUPPORTED" REQUIRE HELICAL PILES AND PIPE SADDLE SUPPORTS



NOTE:

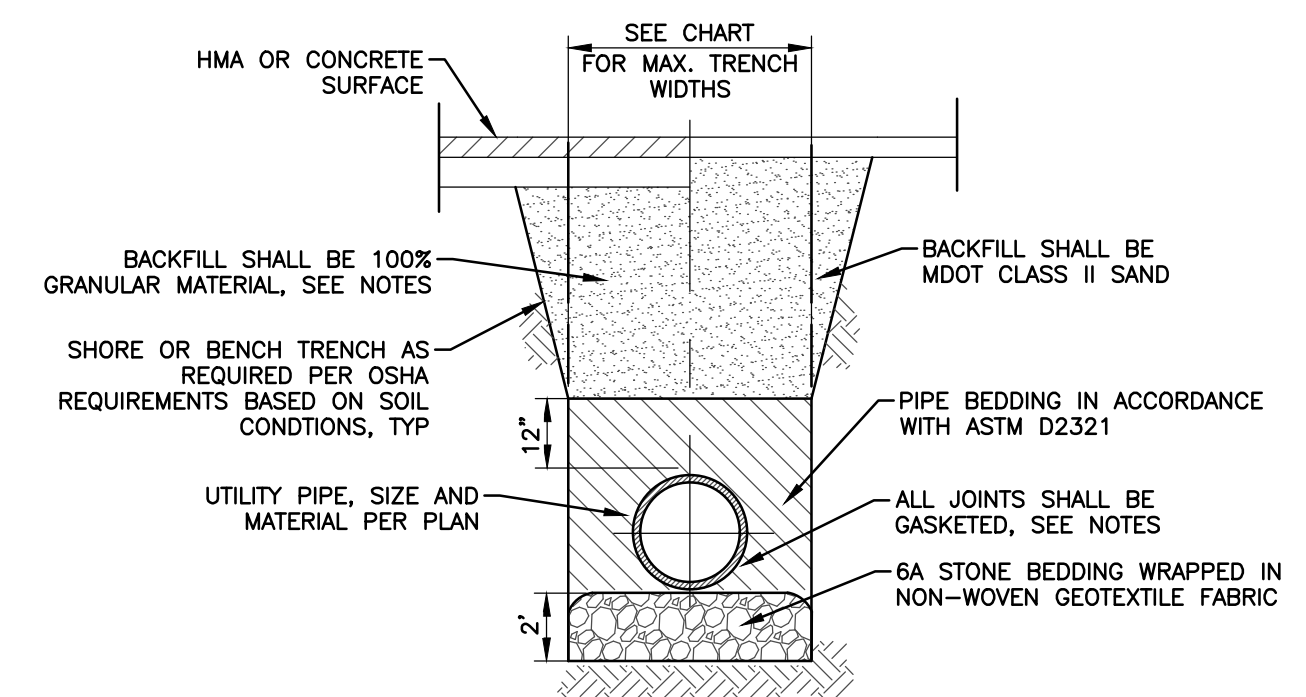
- SEE STRUCTURAL SHEETS FOR DETAIL ON HELICAL PILES AND PIPE SADDLE SUPPORTS



PAY ITEMS THIS SHEET

1	EACH	CONSTRUCT 4-FOOT DIAMETER SANITARY MANHOLE OVER EXISTING 15-INCH SANITARY SEWER, 0 TO 8 FEET DEEP (SANMH#9)
2	EACH	STANDARD 4-FOOT SANITARY MANHOLE, 0 TO 8 FEET DEEP (SANMH#8 & SANMH#11)
1	EACH	STANDARD 5-FOOT SANITARY MANHOLE (FOR 24-INCH), 0 TO 8 FEET DEEP (SANMH#7)
1	EACH	STANDARD 4-FOOT SANITARY MANHOLE 0 TO 8 FEET DEEP, SUPPORTED WITH HELICAL PILES (SANMH#6)
2	VF	ADDITIONAL DEPTH SANITARY MANHOLE, 48-INCH DIAMETER, OVER 8 FEET DEEP
2	VF	ADDITIONAL DEPTH SANITARY MANHOLE, 60-INCH DIAMETER, OVER 8 FEET DEEP
159	LF	SANITARY SEWER, 24-INCH, PVC SDR 26, TRENCH B SAND
45	LF	SANITARY SEWER, 24-INCH, DUCTILE IRON, TRENCH B SAND (SUPPORTED ON HELICAL SUPPORTS)
102	LF	SANITARY SEWER, 18-INCH, DUCTILE IRON, TRENCH B SAND
1	EACH	CONNECTION TO DIVERSION CHAMBER
2000	CY	SOIL DISPOSAL (AT TYPE 2 LANDFILL)

TRENCH WIDTHS	
MAX WIDTH OF TRENCH 12" ABOVE TOP OF PIPE	
6" THRU 12" PIPE - 30" WIDE	
15" THRU 36" PIPE - O.D. + 16"	
42" THRU 60" PIPE - O.D. + 20"	
OVER 60" PIPE - O.D. + 24"	



TYPICAL TRENCH DETAIL FOR SANITARY SEWER
 NOT TO SCALE



2851 Chalfont Drive SE, Suite 108
 Grand Rapids, MI 49506
 616.966.8888
 www.wadetrims.com

WADE TRIM

CITY OF ST. JOSEPH
 BERRIEN COUNTY, MI 49085

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
 PROPOSED SANITARY SEWER PLAN & PROFILE
 EXISTING 24-INCH SANITARY RELOCATION

ISSUED FOR: DATE: BY:
 EGLE 90% SUBMITTAL 2/1/2024 SWK
 EGLE 100% SUBMITTAL 3/18/2024 SWK
 BIDS 4/19/2024 SWK

JOB NO.
 SJO2004-02T

SHEET
C-401

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
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BENCHMARK#2 EL. 585.38

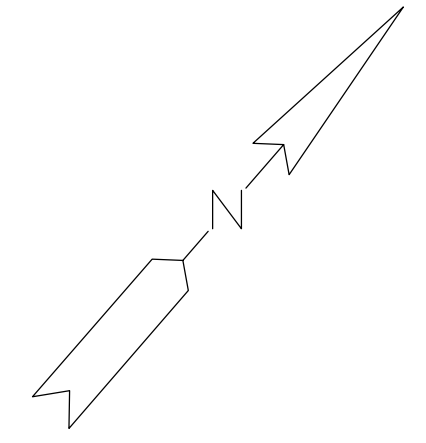
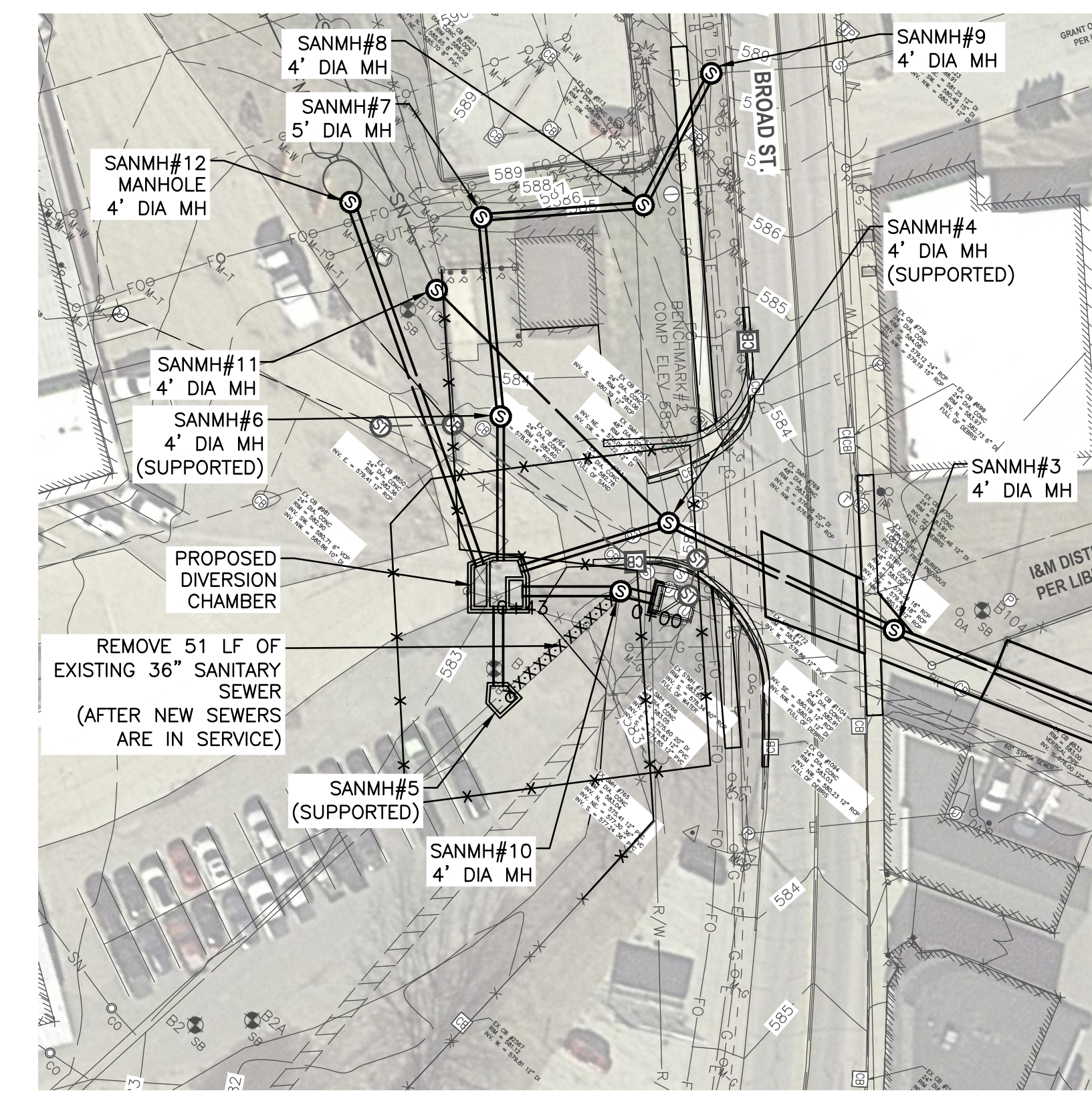
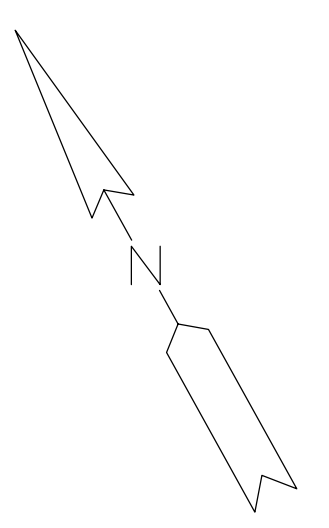
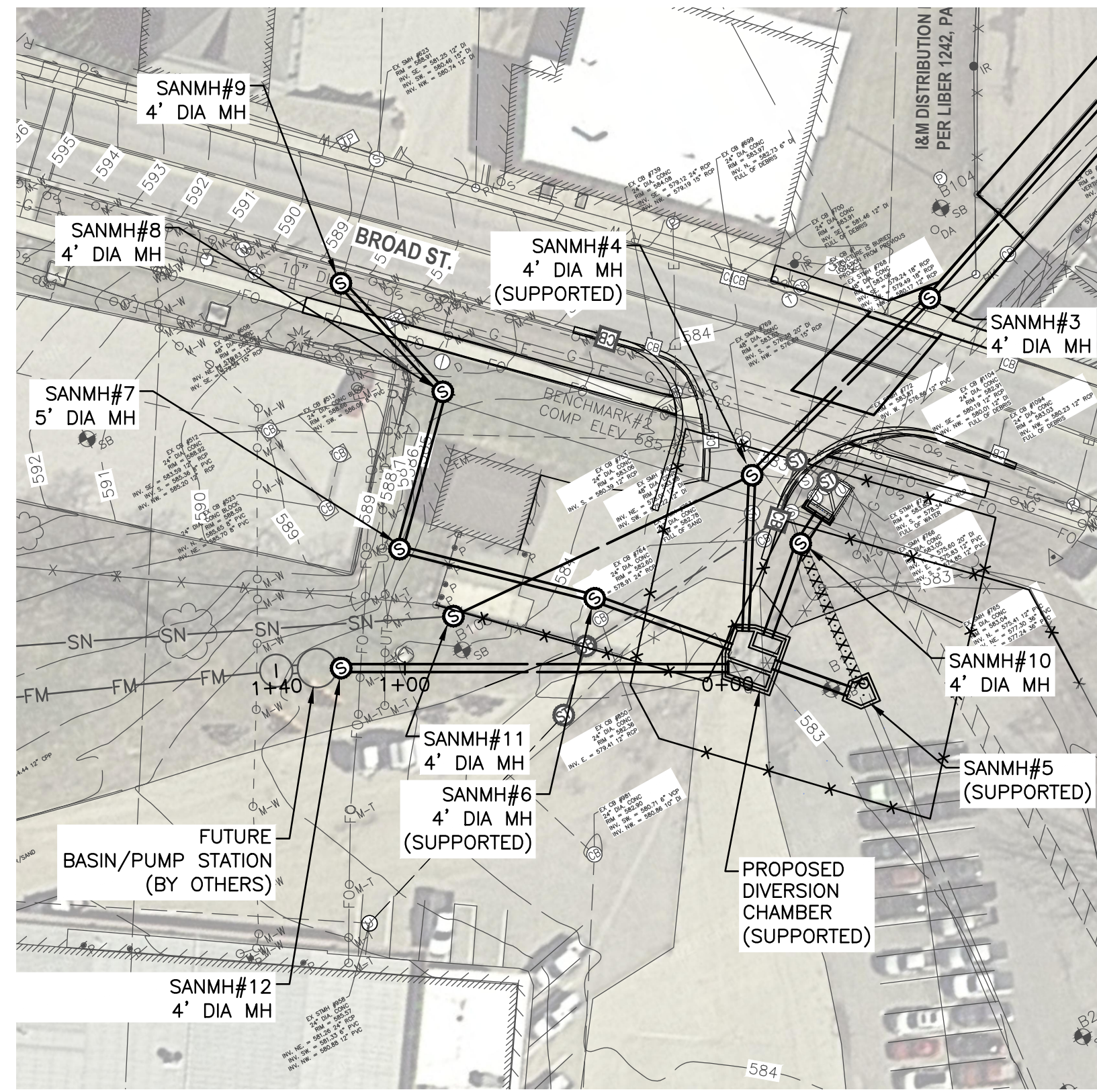
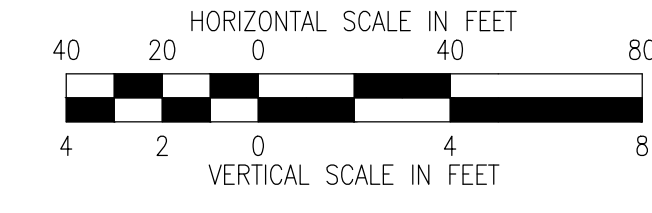
SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)

BENCHMARK#3 EL. 588.61

MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST - TAIL WINDS CONDOMINIUMS (NAVD 88)

BENCHMARK#5 EL. 587.23

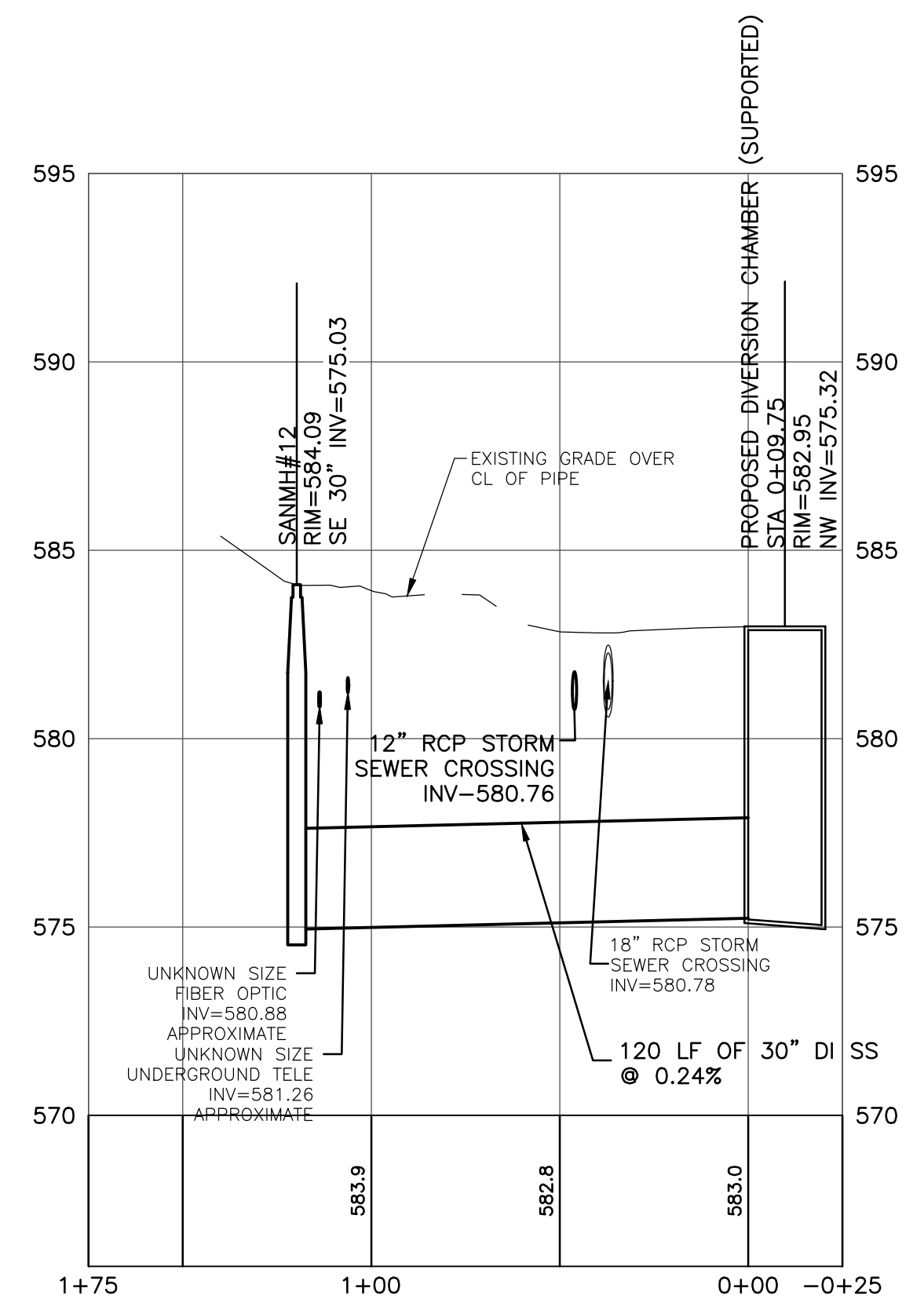
SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)



NOTES:

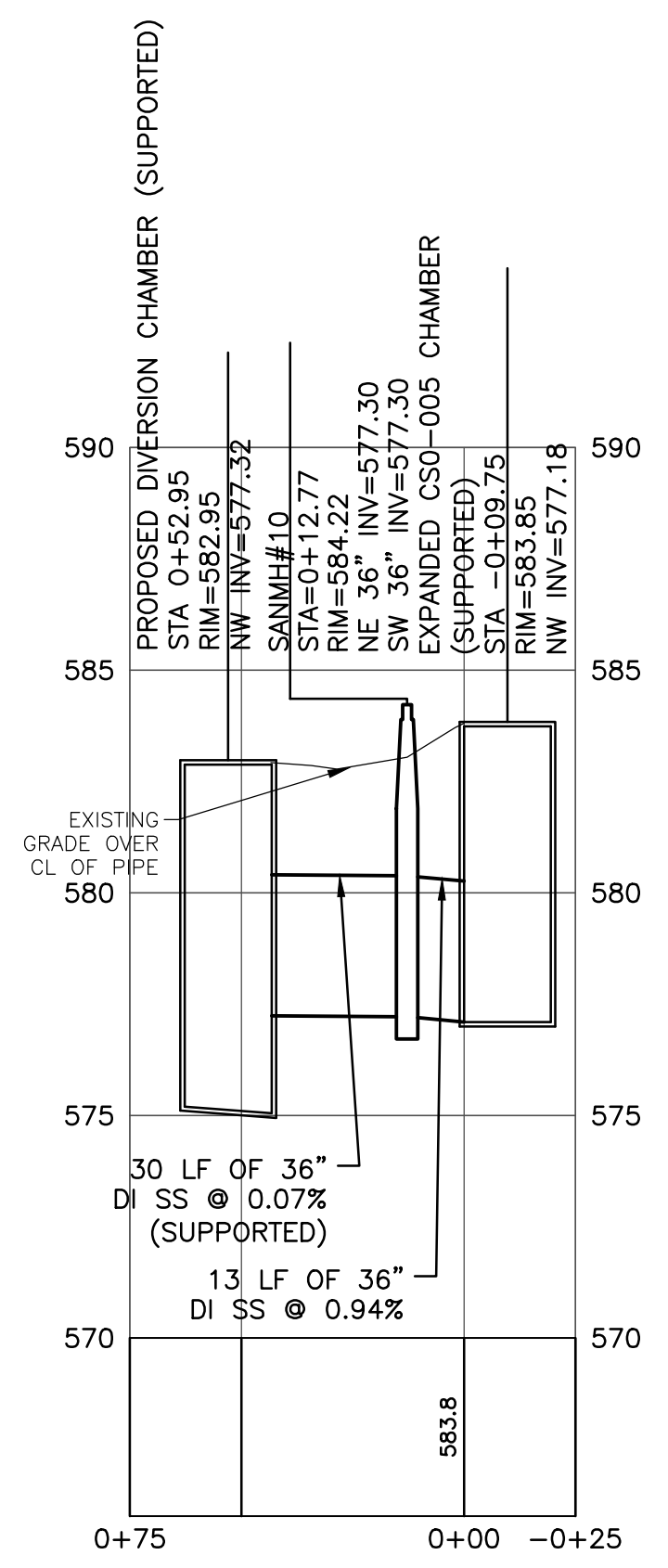
- CONTRACTOR SHALL DESIGN & INSTALL A TEMPORARY EARTH RETENTION SYSTEM. THE INTENT OF THE TEMPORARY RETENTION SYSTEM IS TO LIMIT & DEFINE THE AMOUNT OF EXCAVATED SOIL THAT WILL BE DISPOSED PROPERLY AT A TYPE II LANDFILL, AND TO HELP LIMIT THE DEWATERING AMOUNT OF GROUNDWATER WITHIN THE TRENCH (PLEASE SEE SMC GEOTECHNICAL REPORT). THE DESIGN SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER (MICHIGAN) AND SHALL BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO USE. ALL COSTS FOR THE TEMPORARY EARTH RETENTION SYSTEM SHALL BE INCLUDED IN THE COST OF THE VARIOUS PAY ITEMS FOR SANITARY SEWER AND SANITARY MANHOLES.
- ALL BACKFILL SHALL BE MDOT CLASS II SAND COMPACTED TO 95%.
- CONTRACTOR SHALL MAINTAIN FLOW (INCLUDING BY-PASS PUMPING IF NECESSARY) IN ALL EXISTING SANITARY SEWERS AT ALL TIMES UNTIL NEW SEWERS ARE ACCEPTED FOR USE.
- DEWATERING: ALL GROUNDWATER FROM UTILITY TRENCHES SHALL BE FILTERED AND PUMPED DIRECTLY TO EXISTING CITY OF ST. JOSEPH SANITARY SEWERS (CONTRACTOR SHALL COORDINATE LOCATION WITH CITY PRIOR TO DEWATERING). THE COST OF THE DEWATERING SHALL BE INCLUDED IN THE COST OF THE SANITARY SEWER AND SANITARY MANHOLE PAY ITEMS.
- SOIL DISPOSAL: ALL EXCAVATED SOIL WITHIN THE UTILITY TRENCHES SHALL BE HAULED OFF AND PROPERLY DISPOSED AT A TYPE II LANDFILL. THE COST OF THE DISPOSAL SHALL BE INCLUDED IN THE PAY ITEM SOIL DISPOSAL (AT TYPE 2 LANDFILL).

TRENCH WIDTHS	
MAX WIDTH OF TRENCH 12" ABOVE TOP OF PIPE	
6" THRU 12" PIPE - 30" WIDE	
15" THRU 36" PIPE - O.D. + 16"	
42" THRU 60" PIPE - O.D. + 20"	
OVER 60" PIPE - O.D. + 24"	



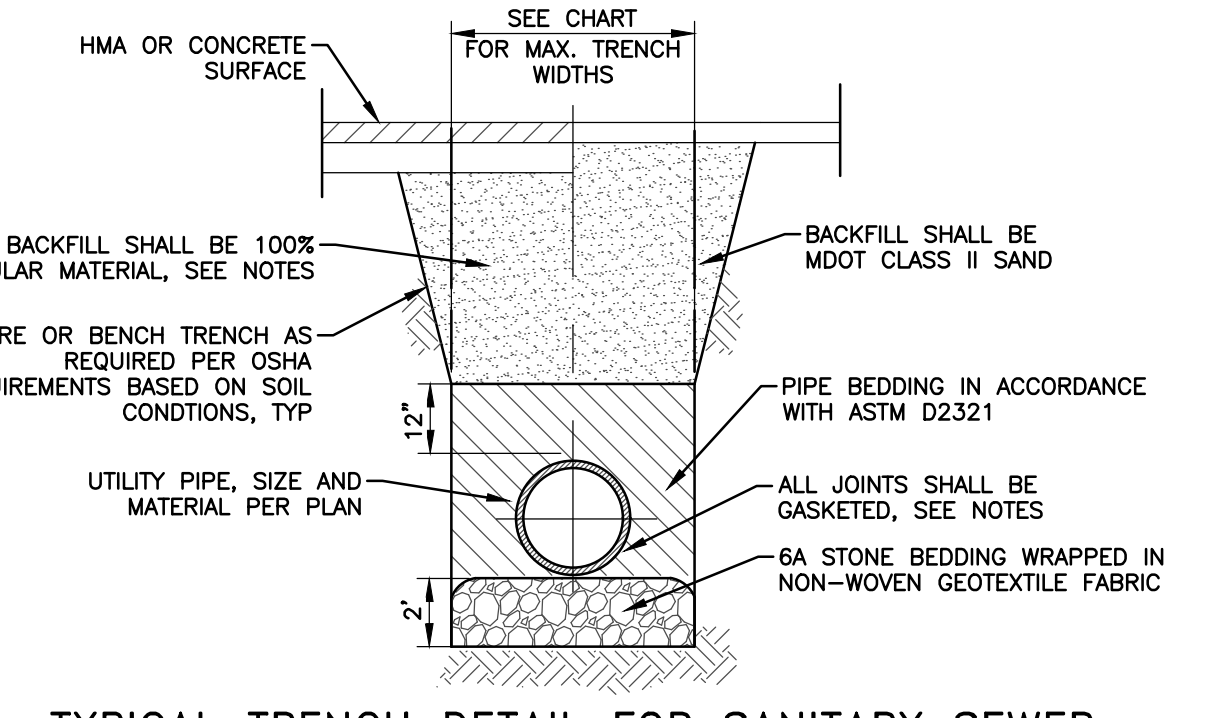
30" SANITARY SEWER TO FUTURE PUMP STATION PROFILE

- PAY ITEMS**
- 1 EACH CONNECTION TO DIVERSION CHAMBER
 - 1 EACH STANDARD 4-FOOT SANITARY MANHOLE 0 TO 8 FEET DEEP (SANMH#12)
 - 1 VF ADDITIONAL DEPTH SANITARY MANHOLE, 48-INCH DIAMETER, OVER 8 FEET DEEP
 - 120 LF SANITARY SEWER, 30-INCH, DUCTILE IRON, TRENCH B SAND



36" SANITARY SEWER BETWEEN DIVERSION CHAMBERS PROFILE

- PAY ITEMS**
- 1 EACH CONNECTION TO DIVERSION CHAMBER
 - 13 LF SANITARY SEWER, 36-INCH, DUCTILE IRON, TRENCH B SAND
 - 30 LF SANITARY SEWER, 36-INCH, DUCTILE IRON, TRENCH B SAND (SUPPORTED ON HELICAL SUPPORTS)
 - 1000 CY SOIL DISPOSAL (AT TYPE 2 LANDFILL)
 - 51 LF SANITARY SEWER (SUPPORTED ON CRADLE), REMOVE STANDARD 4-FOOT SANITARY MANHOLE 0 TO 8 FEET DEEP (SANMH#10)
 - 1 EA



TYPICAL TRENCH DETAIL FOR SANITARY SEWER
NOT TO SCALE

NOTE:

- PLEASE SEE STRUCTURAL SHEETS S-100 THRU 102 & S-107 FOR DETAIL ON HELICAL PILES AND PIPE SADDLE SUPPORTS
- FOR PROPOSED DIVERSION CHAMBER, PLEASE SEE SHEETS S-104 THRU S-106.
- ALL ITEMS NOTED AS "SUPPORTED" REQUIRE HELICAL PILES AND PIPE SADDLE SUPPORTS

PROJECT MANAGER: SHAWN KEOUGH, C.P.E., LORRA WELLS, LORRA WELLS CONSULTING, INC. FIELD BOOK INFORMATION - PLOTTED: 4/17/2024 11:41 AM BY: FLAUSGAN, MARTIN



NO.	DATE	DESCRIPTION	BY

2851 Chalkbrook Drive SE, Suite 108
Grand Rapids, MI 49546
www.wadetrims.com

**CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PROP. SANITARY SEWER PLAN & PROFILE - 30" TO
FUTURE PS & 36" BETWEEN DIVERSION CHAMBERS

ISSUED FOR:	DATE:	BY:
EGL 90% SUBMITTAL	2/1/2024	SWK
EGL 100% SUBMITTAL	3/18/2024	SWK
BIDS	4/19/2024	SWK

JOB NO. SJO2004-02T

SHEET C-402

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

BENCHMARK#2 EL. 585.38

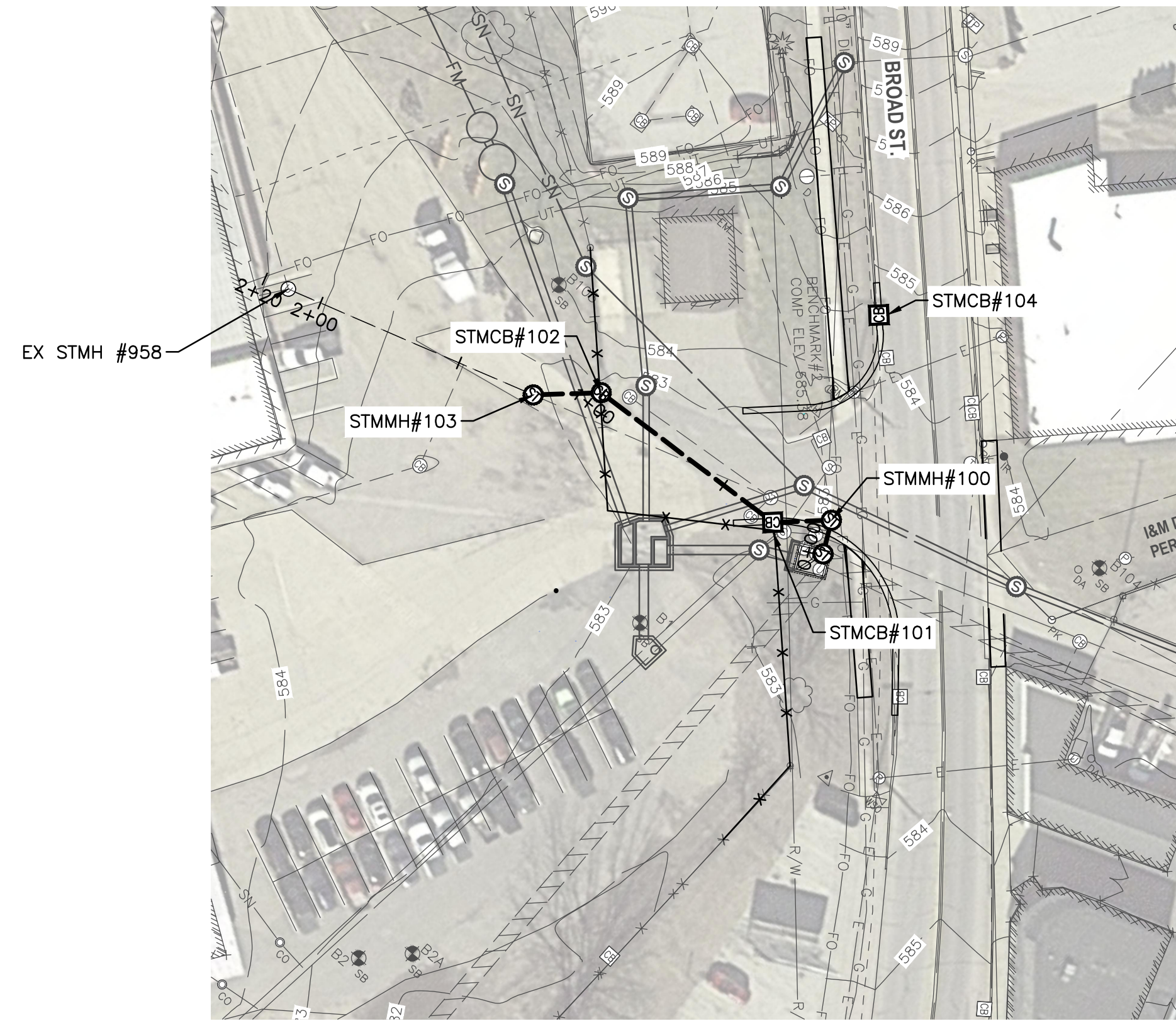
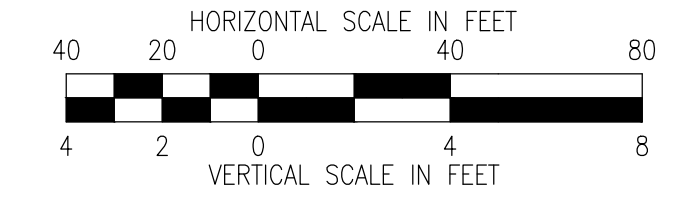
SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)

BENCHMARK#3 EL. 588.61

MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST-TAIL WINDS CONDOMINIUMS (NAVD 88)

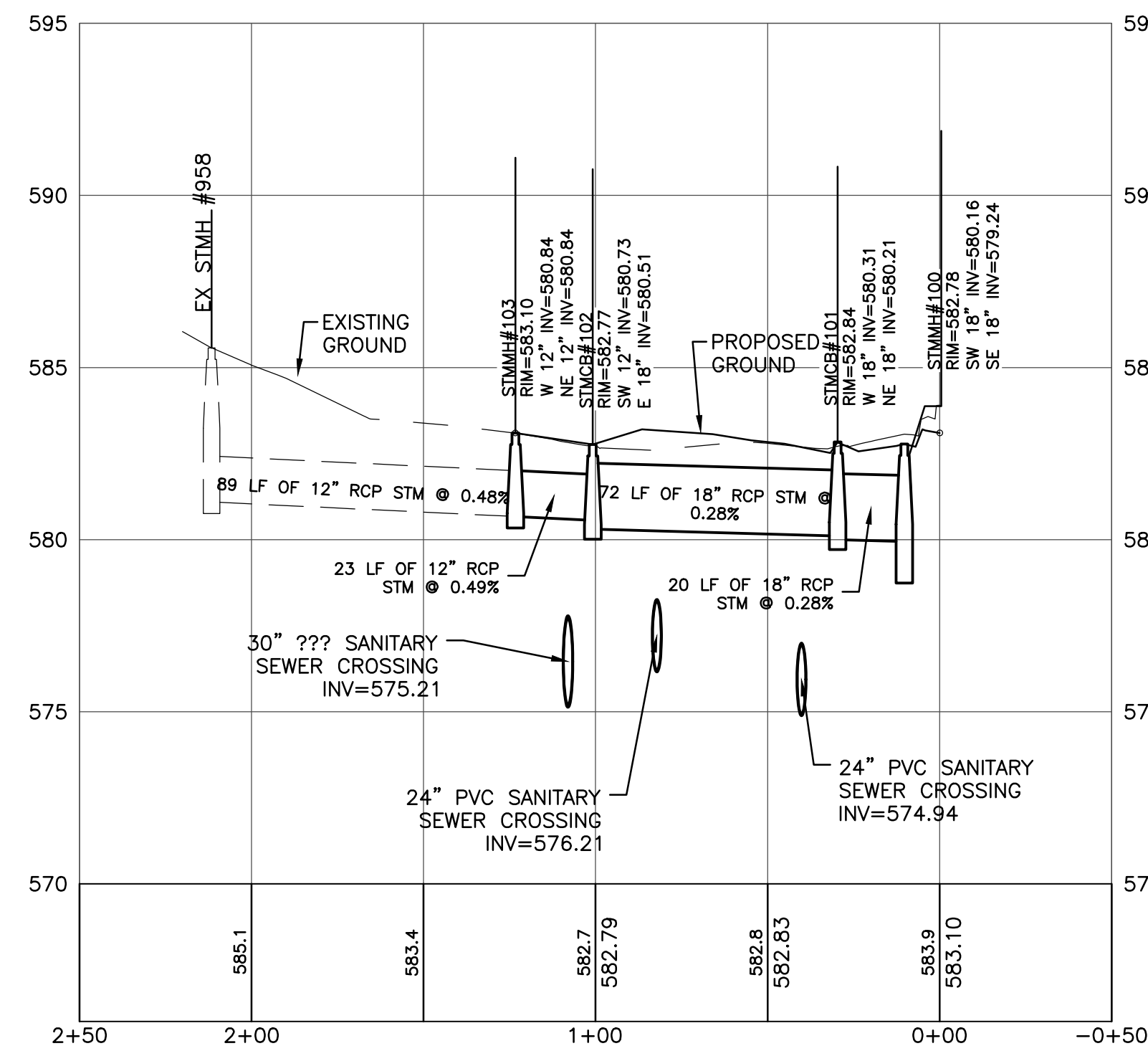
BENCHMARK#5 EL. 587.23

SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)



PAY ITEMS THIS SHEET

- 2 EACH STANDARD STORM MANHOLE
- 2 EACH CATCH BASIN
- 1 EACH CONSTRUCT 4-FOOT STORM STRUCTURE OVER EXISTING 15-INCH SEWER, 0-8 FEET DEEP
- 23 FEET STORM SEWER, 12 INCH, TRENCH B
- 104 FEET STORM SEWER, 18 INCH, TRENCH
- 500 CY SOIL DISPOSAL (AT TYPE 2 LANDFILL)



PROPOSED STORM REPLACEMENT PROFILE

STORM SEWER STRUCTURE TABLE					
STR. #	SIZE	RIM	INVERTS	NORTHING	EASTING
STMCB#101	48"	582.84	NE 18" 580.21 W 18" 580.31	227729.61	12551010.73
STMCB#102	48"	582.77	SW 12" 580.73 E 18" 580.51	227724.45	12550939.72
STMCB#104	48"	584.74		227804.41	12550991.89
STMMH#100	48"	582.78	SW 18" 580.16 SE 18" 579.24	227742.92	12551024.88
STMMH#103	48"	583.10	W 12" 580.84 NE 12" 580.84	227709.09	12550923.30

STORM SEWER PIPE TABLE							
FROM STR. #	TO STR. #	SIZE	TYPE	UP STREAM INVERT	DN STREAM INVERT	LENGTH	SLOPE
STMCB#101	STMMH#100	18"	RCP	580.21	580.16	20'	0.28%
STMCB#102	STMCB#101	18"	RCP	580.51	580.31	72'	0.28%
STMMH#100	EXISTING CSO-005 CHAMBER	18"	RCP	579.24	579.00	12'	2.08%
STMMH#103	STMCB#102	12"	RCP	580.84	580.73	23'	0.49%

*INVERT IS ESTIMATED, TO BE FIELD VERIFIED BY CONTRACTOR.

NOTES:

1. ALL BACKFILL SHALL BE MDOT CLASS II SAND COMPACTED TO 95%.
2. CONTRACTOR SHALL MAINTAIN FLOW (INCLUDING BY-PASS PUMPING IF NECESSARY) IN ALL EXISTING STORM SEWERS AT ALL TIMES UNTIL NEW SEWERS ARE ACCEPTED FOR USE.
3. DEWATERING: ALL GROUNDWATER FROM UTILITY TRENCHES SHALL BE FILTERED AND PUMPED DIRECTLY TO EXISTING CITY OF ST. JOSEPH SANITARY SEWERS (CONTRACTOR SHALL COORDINATE LOCATION WITH CITY PRIOR TO DEWATERING).
4. SOIL DISPOSAL: ALL EXCAVATED SOIL WITHIN THE UTILITY TRENCHES SHALL BE HAULED OFF AND PROPERLY DISPOSED AT A TYPE II LANDFILL.

PROJECT MANAGER: SHAWN KEOUGH, C.P.E., W-0004 WILKINSON RD #215241, CDD-PLS-PROP, STM, PLANPRO(GUST).DWG - SW - PLOTTED - 7/18/2024 8:05 AM BY: FLANGAN, MARTIN



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616.366.8888
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**CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PROPOSED STORM SEWER PLAN AND PROFILE
FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

ISSUED FOR: DATE: BY:
EGL: 90% SUBMITTAL 2/1/2024 SWK
EGL: 100% SUBMITTAL 3/18/2024 SWK
BIDS 4/19/2024 SWK

JOB NO.
SJO2004-02T

SHEET
C-403

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BENCHMARK#2 EL. 585.38

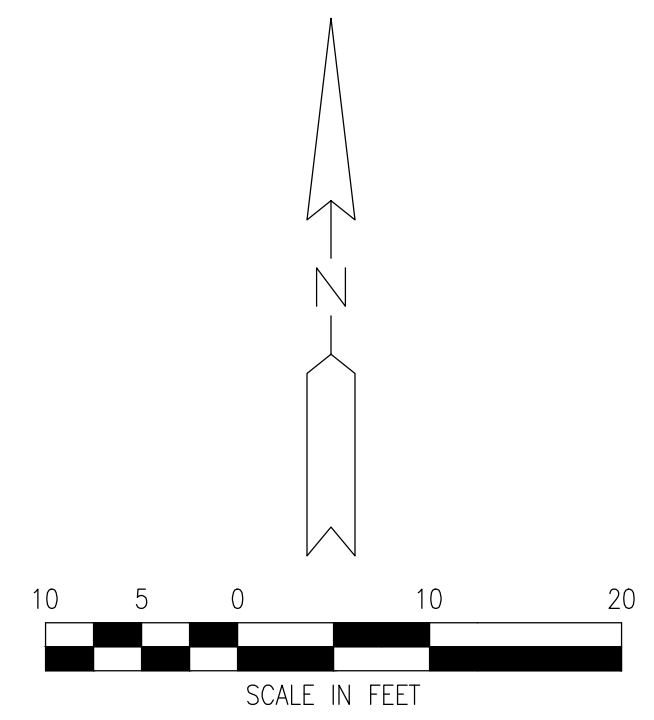
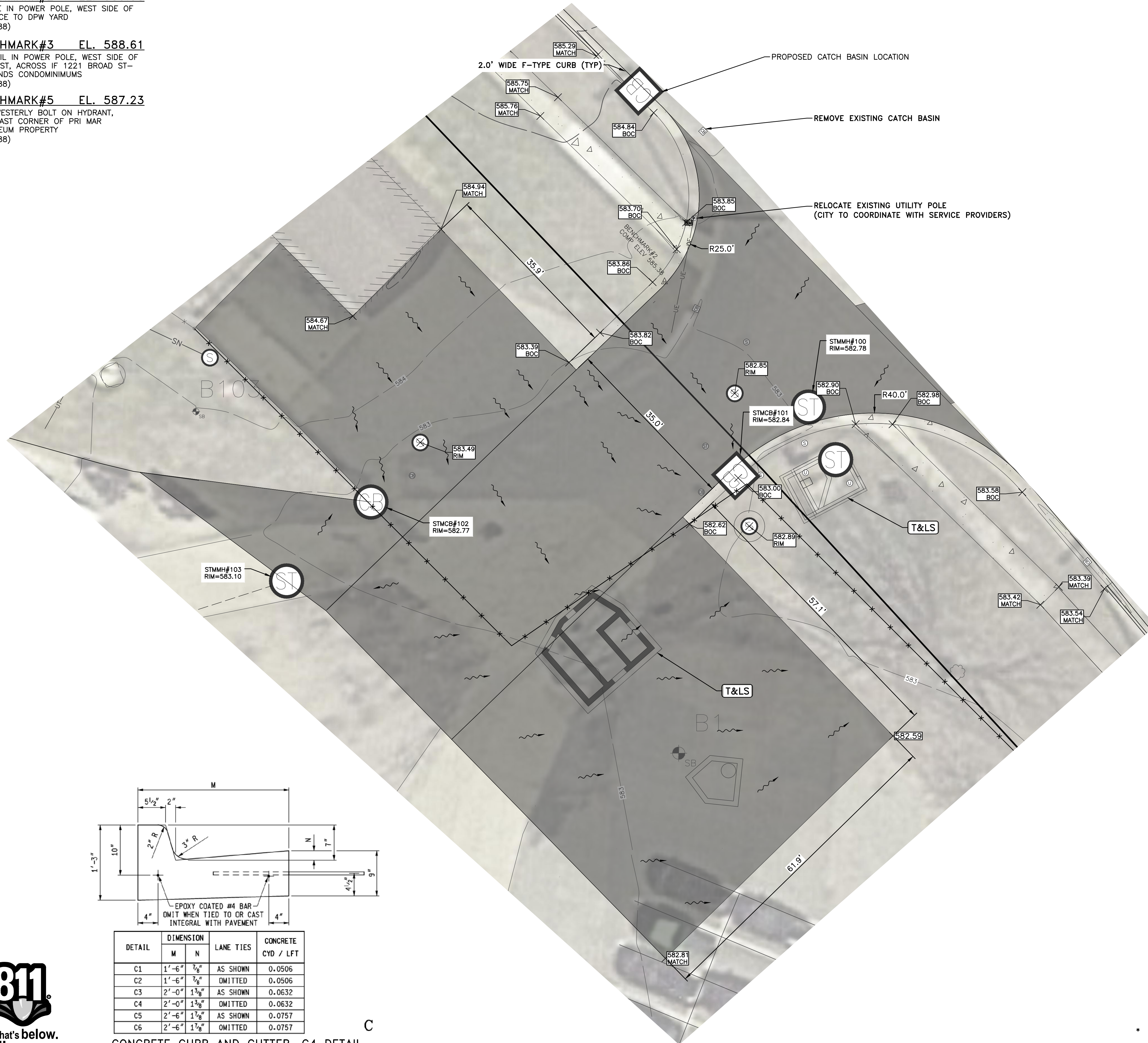
SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)

BENCHMARK#3 EL. 588.61

MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST-TAIL WINDS CONDOMINIUMS (NAVD 88)

BENCHMARK#5 EL. 587.23

SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)



LEGEND

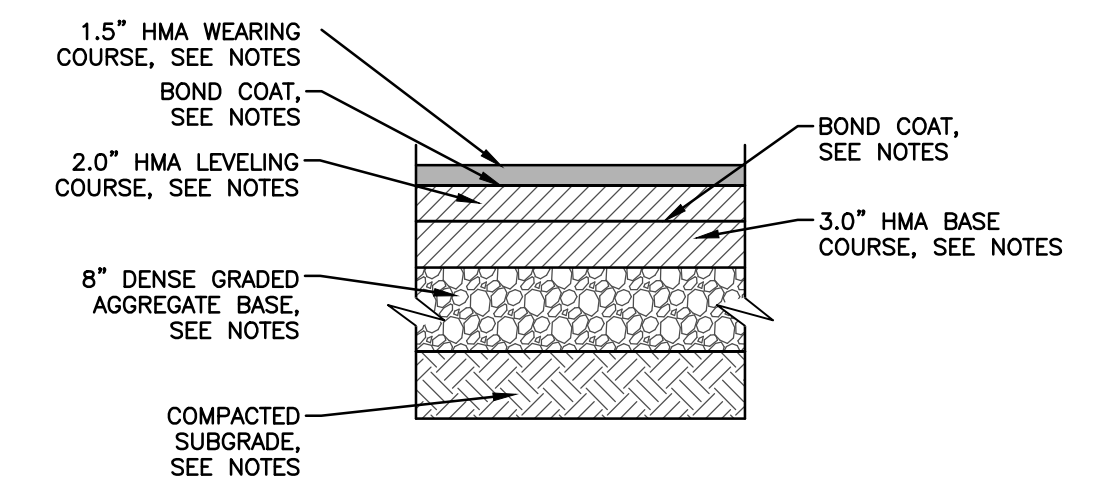
T&LS PROPOSED LOCATION FOR TELEMETRY & LEVEL SENSOR

NOTES:

- A PAY ITEM "TELEMETRY & LEVEL SENSOR ALLOWANCE" HAS BEEN INCLUDED IN THE PROJECT TO ALLOW THE OWNER TO INSTRUCT THE CONTRACTOR TO ORDER, PURCHASE & INSTALL TELEMETRY & LEVEL SENSORS AT 3 LOCATIONS AS SHOWN ON PLAN SHEETS C-500 & C-501.
- TELEMETRY & LEVEL SENSOR ELEMENTS SHALL CONSIST OF TELOG SERIES RS-3307 RECORDING UNIT WITH ONE 10 W SOLAR PANEL, TELOG SUBMERSIBLE LEVEL TRANSDUCER AND TELOG CU-AOP ANALOG DIGITAL AND POWER INPUT CABLE.

PAY ITEMS THIS SHEET

200	FT	CURB AND GUTTER, DET C4
120	TON	BITUMINOUS HMA, 1.5-INCH, WEARING 5EML
150	TON	BITUMINOUS HMA, 2.0-INCH, LEVELING 4EML
250	TON	BITUMINOUS HMA, 3.0-INCH, BASE 4EML
50	TON	HAND PATCHING, HMA 4EML
250	SY	CONCRETE PAVT, 8-INCH PLAIN
800	TON	8" AGGREGATE BASE COURSE, 21AA LESTONEM
181	FT	FENCE, 8 FT HT, CHAIN LINK, INDUSTRIAL GA
1	EA	GATE, 8 FT HT, WHEELED, 40 FT WIDE
790	SFT	SIDEWALK CONCRETE, 4-INCH
75	SFT	SIDEWALK CONCRETE, 6-INCH
10	FT	CURB RAMP OPENING, CONC
0.5	ACRE	SITE GRADING
1	LS	TELEMETRY & LEVEL SENSOR ALLOWANCE



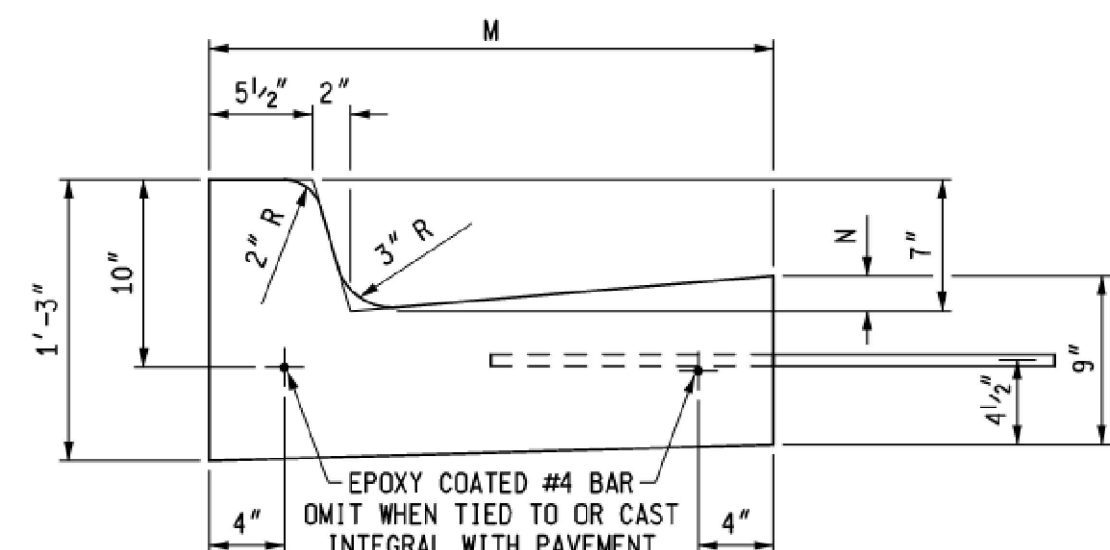
HEAVY DUTY HMA PAVEMENT DETAIL

NOT TO SCALE

HMA APPLICATION TABLE

PAY ITEM	RATE (LBS/SYD)	PERFORMANCE GRADE	TYPE
HMA, 5EML	165	64 - 28	TOP COURSE (AWI=260)
HMA, 4EML	220	64 - 28	LEVELING COURSE
HMA, 4EML	330	64 - 28	BASE COURSE
HAND PATCHING	440 (TWO LIFTS)	64 - 28	LEVELING COURSE

* HMA BOND COAT 0.05 TO 0.15 GAL/SYD REQUIRED BETWEEN ASPHALT LIFTS. (NOT A PAY ITEM)



DETAIL	DIMENSION		LANE TIES	CONCRETE CYD / LFT
	M	N		
C1	1'-6"	1/8"	AS SHOWN	0.0506
C2	1'-6"	1/8"	OMITTED	0.0506
C3	2'-0"	1 3/8"	AS SHOWN	0.0632
C4	2'-0"	1 3/8"	OMITTED	0.0632
C5	2'-6"	1 1/8"	AS SHOWN	0.0757
C6	2'-6"	1 1/8"	OMITTED	0.0757

CONCRETE CURB AND GUTTER, C4 DETAIL

PROJECT MANAGER: SHAWN KEOUGH, C.P. LORRA VILLAGRAN, D+2 15241 COP-PLS-GRADING PLANDWG - LAYOUT1 - PLOTTED: 4/17/2024 11:43 AM BY: FLANAGAN, MARTIN



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616.966.8888
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CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
GRADING PLAN - DPW SITE

ISSUED FOR: DATE: BY:
EGL 90% SUBMITTAL 2/1/2024 SWK
EGL 100% SUBMITTAL 3/18/2024 SWK
BIDS 4/19/2024 SWK

JOB NO. SJO2004-02T

SHEET **C-500**

FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

BENCHMARK#2 EL. 585.38

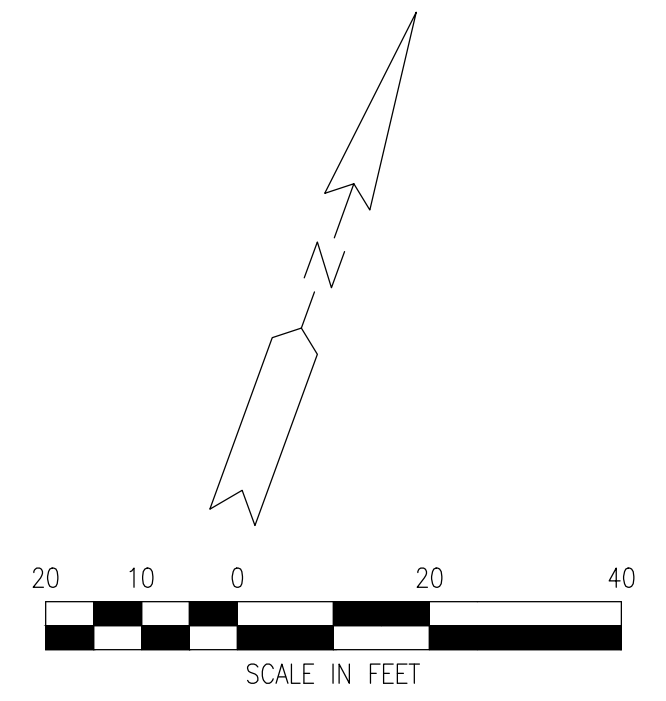
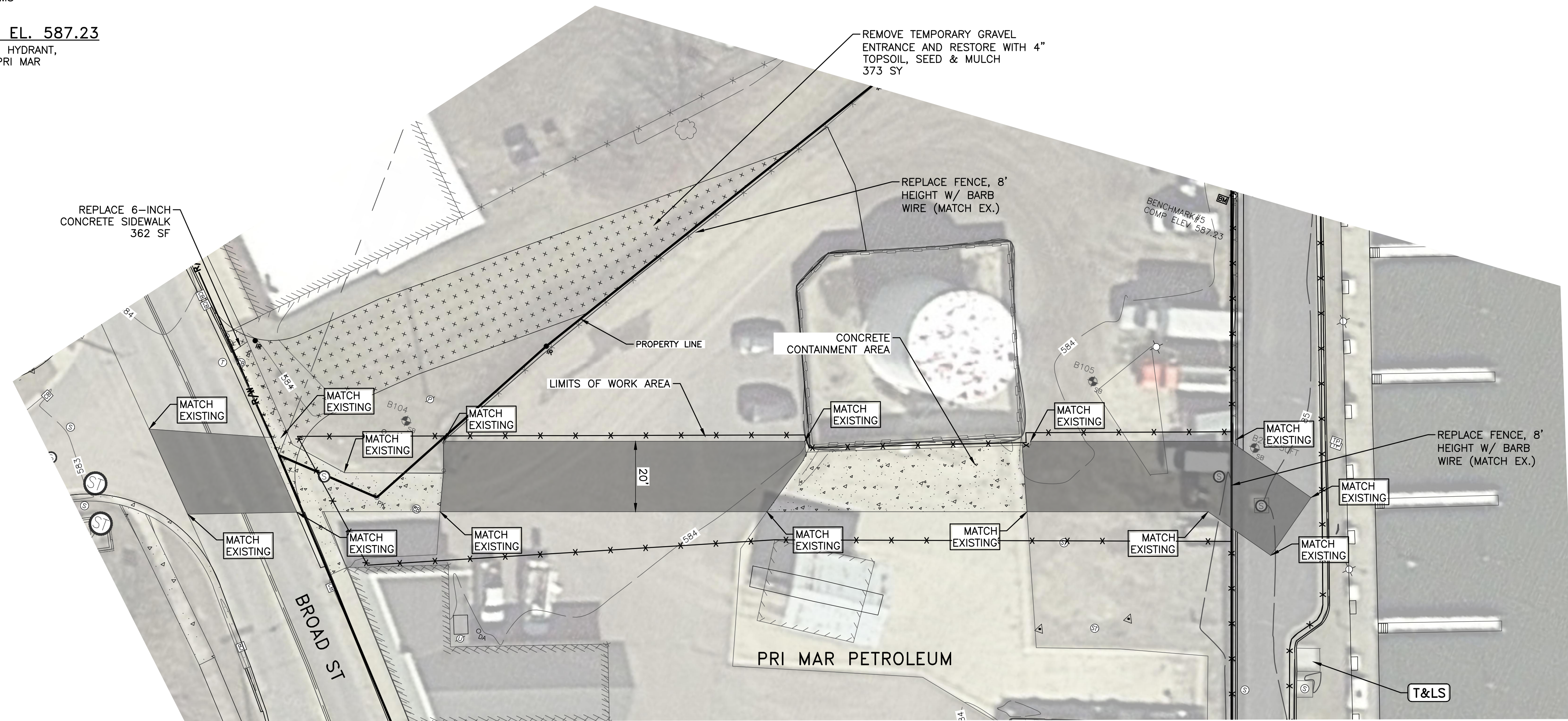
SPINDLE IN POWER POLE, WEST SIDE OF ENTRANCE TO DPW YARD (NAVD 88)

BENCHMARK#3 EL. 588.61

MAG NAIL IN POWER POLE, WEST SIDE OF BROAD ST, ACROSS IF 1221 BROAD ST-TAIL WINDS CONDOMINIUMS (NAVD 88)

BENCHMARK#5 EL. 587.23

SOUTHWESTERLY BOLT ON HYDRANT, NORTHEAST CORNER OF PRI MAR PETROLEUM PROPERTY (NAVD 88)



LEGEND
 T&LS PROPOSED LOCATION FOR TELEMETRY & LEVEL SENSOR

- NOTES:**
- A PAY ITEM "TELEMETRY & LEVEL SENSOR ALLOWANCE" HAS BEEN INCLUDED IN THE PROJECT TO ALLOW THE OWNER TO INSTRUCT THE CONTRACTOR TO ORDER, PURCHASE & INSTALL TELEMETRY & LEVEL SENSORS AT 3 LOCATIONS AS SHOWN ON PLAN SHEETS C-500 & C-501.
 - TELEMETRY & LEVEL SENSOR ELEMENTS SHALL CONSIST OF TELOG SERIES RS-3307 RECORDING UNIT WITH ONE 10 W SOLAR PANEL, TELOG SUBMERSIBLE LEVEL TRANSDUCER AND TELOG CU-AOP ANALOG DIGITAL AND POWER INPUT CABLE.

PROJECT MANAGER: SHAWN KEOUGH, CIVIL ENGINEER, LICENSE NO. 1421524-COP-PLS-GRADING PLANDWG - LAYOUT1 (2) - PLOTTED 7/17/2024 11:43 AM BY FLAVIAN, MARTIN

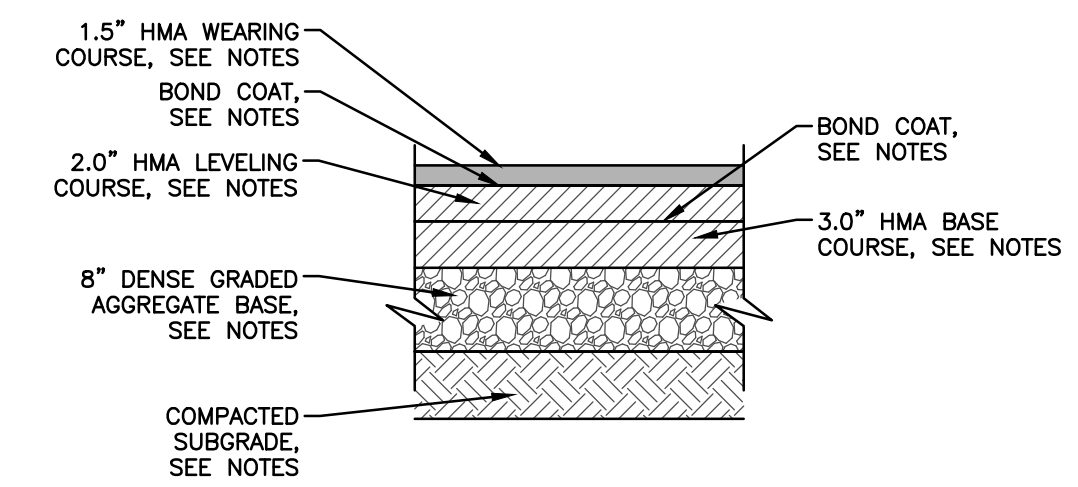
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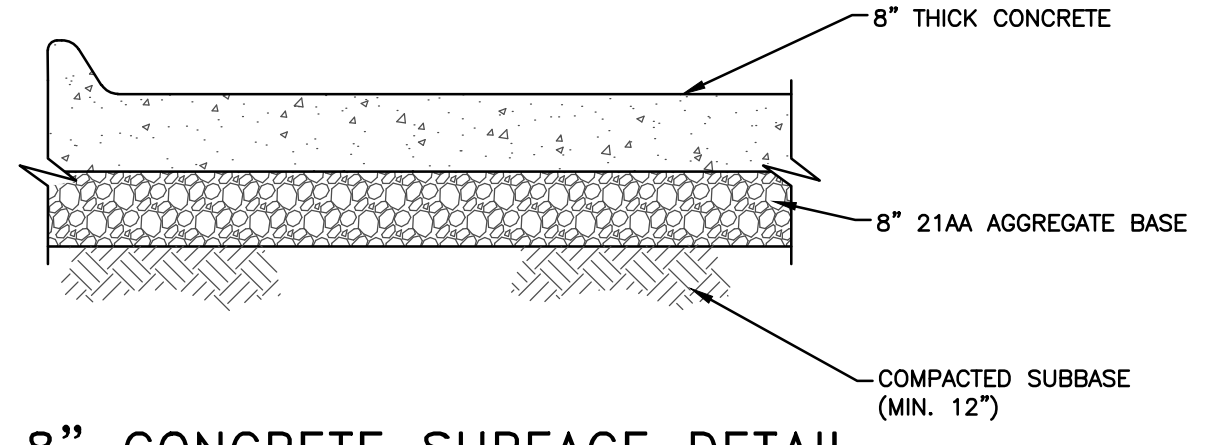
CITY OF ST. JOSEPH
 BERRIEN COUNTY, MI 49085
 FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
 GRADING PLAN
 PRI MAR PETROLEUM SITE
 FINAL CSO COMPLIANCE - EARLY ACTION DESIGN

PAY ITEMS THIS SHEET

80	FT	CURB AND GUTTER, DET C4
60	TON	BITUMINOUS HMA, 1.5-INCH, WEARING 36A
90	TON	BITUMINOUS HMA, 2.0-INCH, LEVELING 4EML
120	TON	BITUMINOUS HMA, 3.0-INCH, BASE 4EML
50	TON	HAND PATCHING, HMA
250	SY	CONCRETE PAV'T, 8-INCH PLAIN, WITH ROLLED CURB
500	TON	8" AGGREGATE BASE COURSE, 21AA LIMESTONE
101	FT	FENCE, 8 FT HT, CHAIN LINK, INDUSTRIAL GA
1	EA	GATE, 8 FT HT, WHEELED, 40 FT WIDE
200	SFT	SIDEWALK CONCRETE, 4-INCH
250	SFT	SIDEWALK CONCRETE, 6-INCH
80	FT	CURB RAMP OPENING, CONC
0.5	ACRE	SITE GRADING
373	SY	RESTORATION W/4-INCH TOPSOIL, SEED & MULCH
1	LS	TELEMETRY& LEVEL SENSOR ALLOWANCE



HEAVY DUTY HMA PAVEMENT
 DETAIL
 NOT TO SCALE



8" CONCRETE SURFACE DETAIL
 NOT TO SCALE

MIXTURE	PAY ITEM	RATE (LBS/SYD)	PERFORMANCE GRADE	TYPE
HMA, 36A	HMA, 36A	165	64 - 28	TOP COURSE (AWI=260)
HMA, 4EML	HMA, 4EML	220	64 - 28	LEVELING COURSE
HMA, 4EML	HMA, 4EML	330	64 - 28	BASE COURSE
HMA, 4EML	HAND PATCHING	440 (TWO LIFTS)	64 - 28	LEVELING COURSE

* HMA BOND COAT 0.05 TO 0.15 GAL/SYD REQUIRED BETWEEN ASPHALT LIFTS. (NOT A PAY ITEM)



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REV#	DATE	DESCRIPTION	BY

ISSUED FOR: DATE: BY:
 EGLE 90% SUBMITTAL 2/1/2024 SWK
 EGLE 100% SUBMITTAL 3/18/2024 SWK
 BIDS 4/19/2024 SWK

JOB NO.
SJO2004-02T

SHEET
C-501

GENERAL NOTES

- 1. DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON PREVIOUS CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING WITH FIELD MEASUREMENTS ALL DIMENSIONS AND ELEVATIONS FOR FABRICATION AND/OR MODIFICATIONS OR ADDITIONS BEING MADE UNDER THIS CONTRACT. ANY DISCREPANCIES SHALL BE PRESENTED TO THE OWNER AND ANY DESIGN CONFLICTS SHALL BE RESOLVED WITH OWNER PRIOR TO FABRICATIONS OR CONSTRUCTION OF IMPACTED ITEMS.
2. ALL DIMENSIONS OR ELEVATIONS MARKED WITH AN ASTERISK "*" SHALL BE DETERMINED OR VERIFIED WITH EQUIP. MFR. CERTIFIED SHOP DRAWINGS OR FIELD MEASUREMENTS OF EXISTING CONSTRUCTION BEFORE FABRICATION AND CONSTRUCTION.
3. ALL ADHESIVE ANCHORING SYSTEMS FOR POST-INSTALLED ANCHORS AND/OR REINFORCING DOWELS IN CONCRETE OR MASONRY SHALL BE PER SPECIFICATIONS AT SIZE AND SPACING INDICATED ON DRAWINGS WITH EMBEDMENT DEPTH INDICATED ON DRAWINGS. (SEE TABLE ON SHEETS-100 FOR EMBEDMENT DEPTHS NOT INDICATED ON SECTIONS.)
4. ALL POST-INSTALLED ANCHOR BOLTS INTO NEW OR EXISTING CONCRETE SHALL BE ASTM A316 STAINLESS STEEL THREADED ROD WITH STAINLESS STEEL WASHER AND NUT, UNO.
5. ALL ELEVATIONS ARE BASED ON NAVD 88.
6. ALL ADHESIVE ANCHORING SYSTEMS FOR POST INSTALLED ANCHORS AND/OR REINFORCING DOWELS IN CONCRETE AND MASONRY SHALL BE "HIT-HY 200 ADHESIVE ANCHORING SYSTEM" BY HILTI AT SIZE AND SPACING INDICATED ON DRAWINGS (OR APPROVED EQUAL).
7. ALL "TEMPORARY EARTH RETENTION" SYSTEMS AND ALL "BRACED EXCAVATION" SYSTEMS ARE SHOWN WHERE AN EARTH RETENTION SYSTEM IS ANTICIPATED OR REQUIRED TO EXCAVATE SOIL FOR THE CONSTRUCTION OF STRUCTURAL ELEMENTS FOR THIS PROJECT. THESE SYSTEMS SHALL BE DESIGNED BY THE CONTRACTOR. THE DESIGN DRAWINGS AND CALCULATIONS FOR THESE SYSTEMS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN. TEMPORARY EARTH RETENTION SYSTEMS SHALL BE DESIGNED FOR THE APPROPRIATE HYDROSTATIC PRESSURES (SEE THE GEOTECHNICAL REPORT). IT IS ANTICIPATED THAT DEWATERING WILL BE REQUIRED PRIOR TO CONSTRUCTING THE STRUCTURES. THE DEWATERING SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND SHALL LOWER THE GROUNDWATER TO A MINIMUM OF 1 FOOT BELOW THE EXCAVATIONS.

CODES AND LOADS

- 1. ALL STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
A. MICHIGAN BUILDING CODE (2015).
B. "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES - AMERICAN SOCIETY OF CIVIL ENGINEERS" ASCE 7 -10
C. CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES - AMERICAN CONCRETE ASSOCIATION ACI 308 (2006)
2. DESIGN LOADS (GENERAL)
A. STRUCTURE LOCATED IN ROADS OR PARKING AREAS - SURFACE LOAD - HS 20 WHEEL LOAD, OR 300 PSF WHICHEVER RESULTS IN THE HIGHER STRESSES.
B. STRUCTURES LOCATED IN SIDEWALKS OR LANDSCAPED AREAS - SURFACE LOAD OF 300 PSF. LATERAL SURCHARGE PRESSURE BASED ON THE SURFACE LOADING CRITERIA ABOVE.
C. LATERAL EARTH PRESSURE - UNDRAINED CONDITION
1. ACTIVE PRESSURE - Pa = 84.0 PSF
2. AT REST PRESSURE - Po = 94.0 PSF
3. PASSIVE PRESSURE - Pp = 267 PSF
D. 100 YEAR FLOOD ELEVATION - 576.00 (NAVD 88 DATUM)

DEMOLITION

- 1. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING STRUCTURES, WHICH ARE TO REMAIN, DURING DEMOLITION WORK. ALL DAMAGE SHALL BE REPAIRED TO THE COMPLETE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE. SEE CIVIL SHEETS FOR PIPE CONTINUATION
2. WHEN REMOVING EXISTING CONCRETE BY CUTTING OR CHIPPING THE CONTRACTOR SHALL ONLY REMOVE REINFORCING BARS WHICH CANNOT BE BENT INTO AREAS WHERE NEW CONCRETE WOULD COMPLETELY COVER THEM.
3. IF FRACTURE OF ADJACENT CONCRETE OCCURS DURING DEMOLITION/ALTERATION WORK, THE REPAIR SHALL BE WITH AN ENGINEER APPROVED PRESSURE INJECTED EPOXY, TO THE COMPLETE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL PROVIDE WRITTEN PLAN AND DESCRIPTION OF ALL DEMOLITION, MODIFICATION, OR ALTERATION WORK ON EXISTING STRUCTURES FOR REVIEW AND ACCEPTANCE PRIOR TO BEGINNING WORK.

SOILS

- 1. DUE TO THE PROXIMITY OF EXISTING STRUCTURES, ROADS AND UTILITIES, IT MAY BE NECESSARY TO PROVIDE TEMPORARY EARTH RETENTION AND DEWATERING FOR CONSTRUCTION WITHIN DEEP EXCAVATIONS. SELECTION AND DESIGN OF TEMPORARY EARTH RETENTION SYSTEMS AND PROTECTION OF EXISTING STRUCTURES, ROADS AND UTILITIES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DESIGN CALCULATIONS FOR PROPOSED EARTH RETENTION MEASURES, SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING RELATED EXCAVATION WORK.
2. SOIL BORING DATA IS INCLUDED IN THE SPECIFICATIONS FOR INFORMATION ABOUT THE UNDERGROUND CONDITIONS ONLY AT THE LOCATIONS WHERE THE BORINGS WERE MADE. THE OWNER DOES NOT REPRESENT OR WARRANT THAT THE UNDERGROUND CONDITIONS ENCOUNTERED DURING CONSTRUCTION WILL CONFORM TO THOSE DESCRIBED IN THE GEOTECHNICAL REPORT PREPARED FOR THIS PROJECT. THE CONTRACTOR WILL DRAW THEIR OWN CONCLUSIONS AS TO SOIL CONDITIONS FROM THEIR OWN EXPERIENCE, INDEPENDENT KNOWLEDGE, AND INVESTIGATION OF THE SITE. THE CONTRACTOR SHALL OBTAIN ADDITIONAL SUBSURFACE CONDITION INFORMATION AS THEY CONSIDER NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. CONTRACTOR SHALL PREPARE AN EXCAVATION PLAN INCLUDING SIDE SLOPES PROPOSED, TEMPORARY OR PERMANENT EARTH RETENTION SYSTEMS, AND DEWATERING OR DEPRESSURIZING SYSTEMS FOR REVIEW PRIOR TO START OF WORK.
4. REFER TO THE GEOTECHNICAL REPORT FOR DEWATERING, SITE PREPARATION AND BACKFILLING REQUIREMENTS.

CAST-IN-PLACE CONCRETE

- 1. THE DETAILING, BENDING, AND PLACING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI STANDARD 309-06/309R-06 CODE AND ACI DETAILING MANUAL, SP-86 (94). FIELD BENDING WILL NOT BE PERMITTED UNLESS APPROVED BY ENGINEER
2. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
3. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI @ 28 DAYS UNLESS OTHERWISE NOTED
4. WATERSTOPS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS, CONTROL JOINTS AND EXPANSION JOINTS (UNLESS NOTED OTHERWISE).
5. ALL COLD JOINTS IN CONCRETE STRUCTURES SHALL HAVE A CONTINUOUS WATERSTOP CREATING A WATERTIGHT JOINT AS DETAILED, WHERE NOT SPECIFIED ALL COLD JOINTS SHALL HAVE A HYDROPHILIC WATERSTOP PER SPECIFICATIONS.
6. THE LENGTH OF ALL LAP SPLICES SHALL BE AS SPECIFIED IN "REINFORCING TENSION SPLICE TABLE" ON SHEET S-100 UNLESS OTHERWISE INDICATED IN DRAWINGS. WHEN BARS OF DIFFERENT SIZE ARE BEING LAPPED, THE LENGTH SHALL BE THE SPECIFIED LAP LENGTH OF THE LARGER BAR.
7. ALL NEW TO EXISTING CONCRETE SHALL HAVE A CONTINUOUS HYDROPHILIC RUBBER WATERSTOP (TYP. U.N.O.)
8. ALL FILLET AND TOPPING CONCRETE SHALL BE HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 6000 PSI. FILLET CONCRETE, SHALL BE PLACED TO PRODUCE CONTOURS INDICATED ON PLANS, AND SHALL RECEIVE SMOOTH FLOAT FINISH.
9. CONCRETE COVER OVER PRIMARY REINFORCEMENT SHALL BE (2) INCHES MINIMUM, UNLESS NOTED OTHERWISE, AND (3) INCHES MINIMUM WHERE CAST AGAINST EARTH.
10. CAST-IN-PLACE CONCRETE WALLS WHICH SUPPORT AN ELEVATED SLAB SHALL NOT BE BACKFILLED UNTIL THE ELEVATED SLAB IS PLACED AND CURED.

HELICAL CAST PILES

- 1. ALL HELICAL CAST PILES SHALL BE A 4 HELIX PILE WITH BEARING PLATES (10-12-14-14) INCHES IN DIAMETER. THE MINIMUM DEPTH OF THE PILE TIP IS ANTICIPATED TO BE 70 FEET BELOW THE BOTTOM OF THE STRUCTURE UNLESS NOTED ON DRAWINGS.
2. HELICAL PILE SHAFTS AND BEARING PLATES SHALL BE HOT-DIPPED GALVANIZED, THE SHAFTS SHALL BE ROUND AND THE SHAFTS SHALL BE FILLED WITH GROUT.
3. DESIGN GRAVITY LOAD: ALLOWABLE WORKING LOAD - 54 KIPS (ULTIMATE LOAD - 108 KIPS)

STRUCTURAL ABBREVIATIONS

Table with 2 columns: Abbreviation and Description. Includes terms like ALTERNATE, ALUMINUM, BOTTOM, BUILDING, BEAM, etc.

ADHESIVE ANCHORING SYSTEM MINIMUM EMBEDMENT DEPTH FOR DOWELS AND RODS

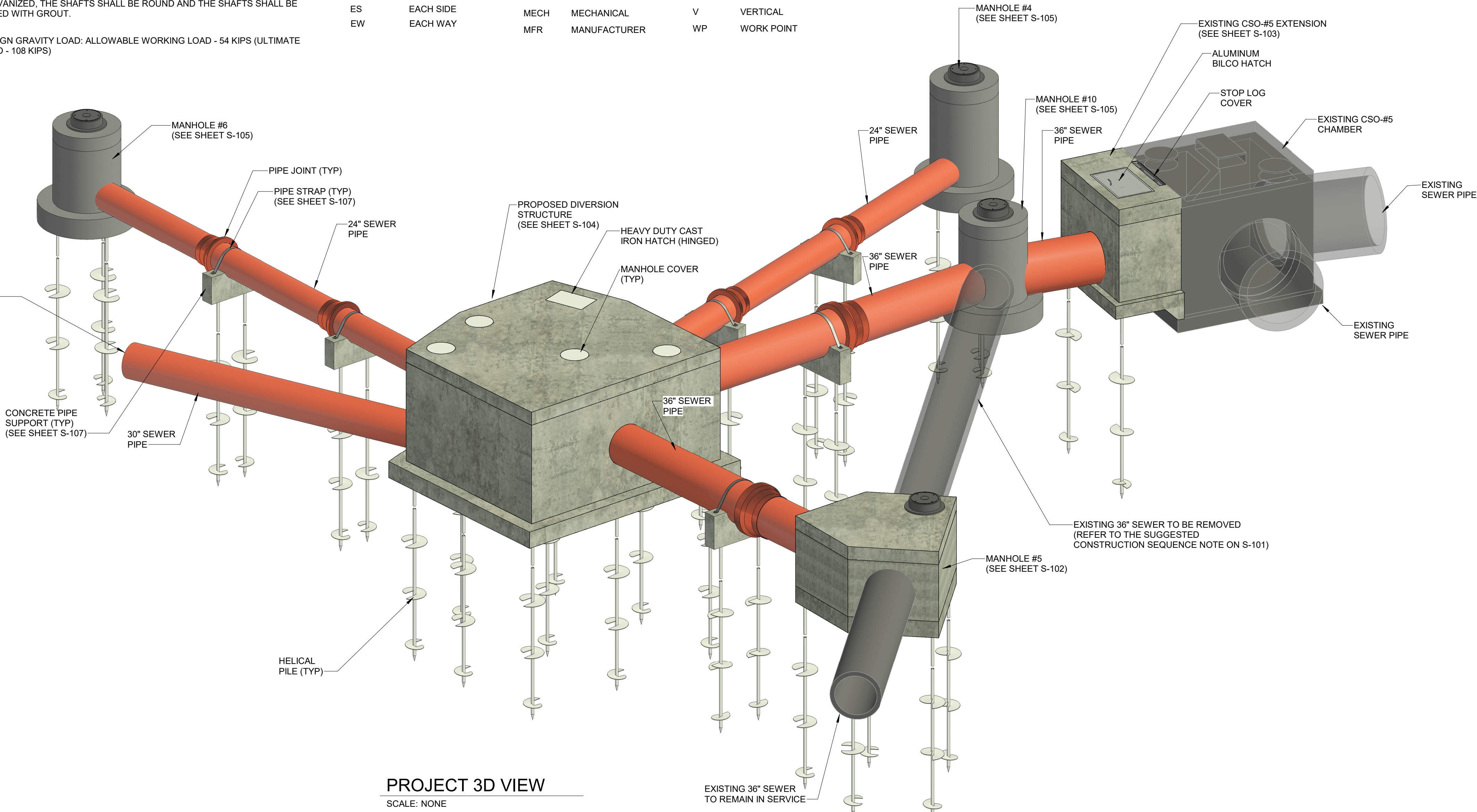
Table with 3 columns: BAR SIZE, EMBED DEPTH, REMARKS. Includes sections for REINFORCING BARS/DOWELS and ANCHOR RODS.

REINFORCING TENSION SPLICE TABLE

Table with 3 columns: BAR SIZE, TENSION LAP, * TOP BARS. Lists values for bar sizes #3 through #11.

NOTES:

- 1. ABOVE TABLE IS FOR NORMAL WEIGHT CONCRETE; f'c= 4,000 PSI AND REINFORCING STEEL: fy= 60,000 PSI.
2. ALL SPLICES SHALL BE CONSIDERED TENSION SPLICES USING LAP LENGTHS IN TABLE ABOVE UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS.
3. LENGTHS ARE BASED ON LAP CLASS B SPLICES WITH CENTER TO CENTER SPACING OF BARS GREATER THAN 6 DIAMETERS.
4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST UNDER THEM.
5. USE TENSION LAP LENGTHS FOR HORIZONTAL & VERTICAL WALL BARS.



PROJECT 3D VIEW SCALE: NONE

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Table with 3 columns: REVISION, DESCRIPTION, DATE. Includes fields for BY, DATE, and REVISION.

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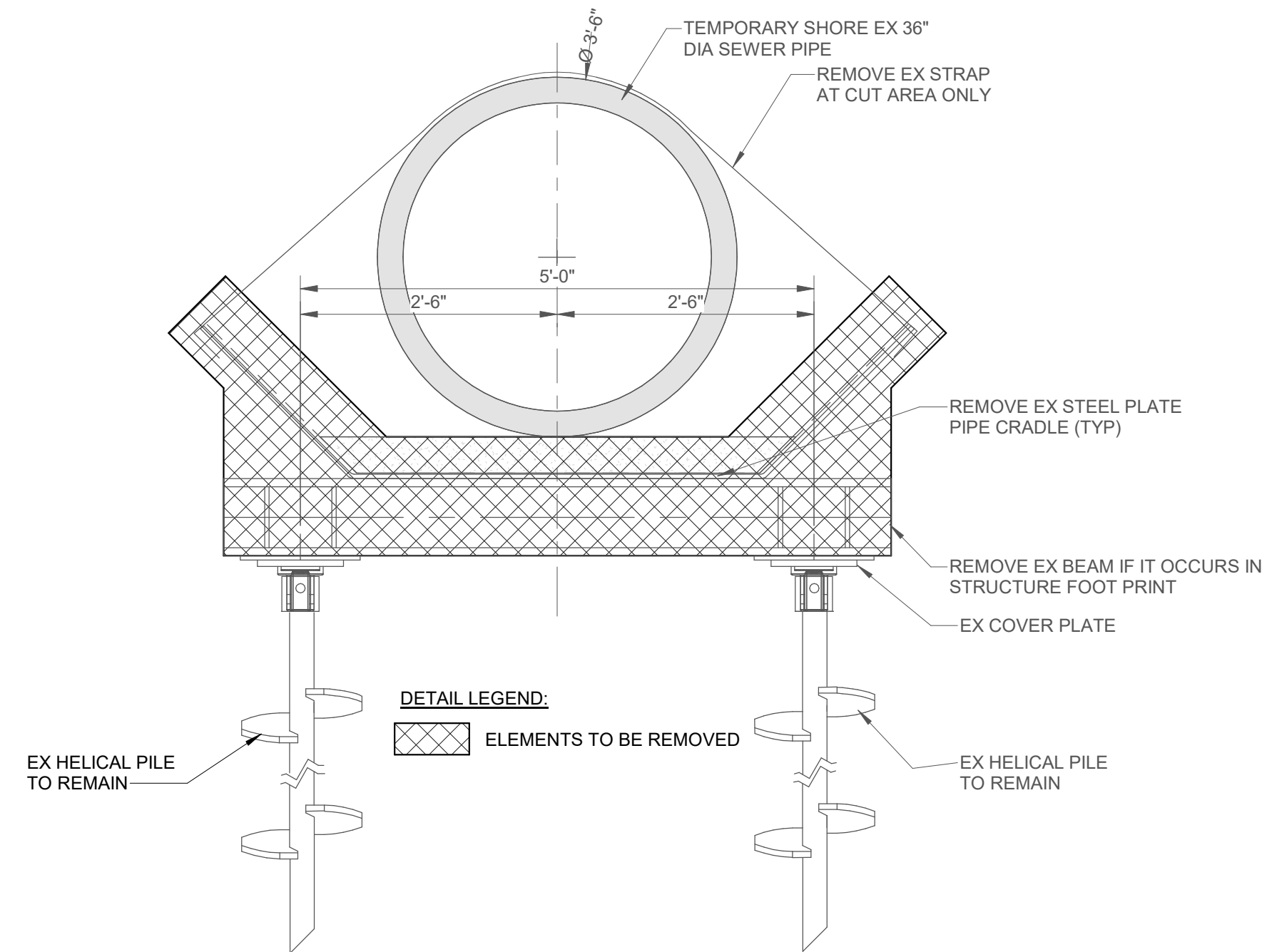
CITY OF ST. JOSEPH BERRIEN COUNTY, MI 49085 FINAL CSO COMPLIANCE - EARLY ACTION DESIGN STRUCTURAL NOTES, TABLES, AND ABBREVIATIONS

Table with 3 columns: ISSUED FOR, DATE, BY. Lists submission dates and names.

JOB NO. SJO2004-02T SHEET

S-100

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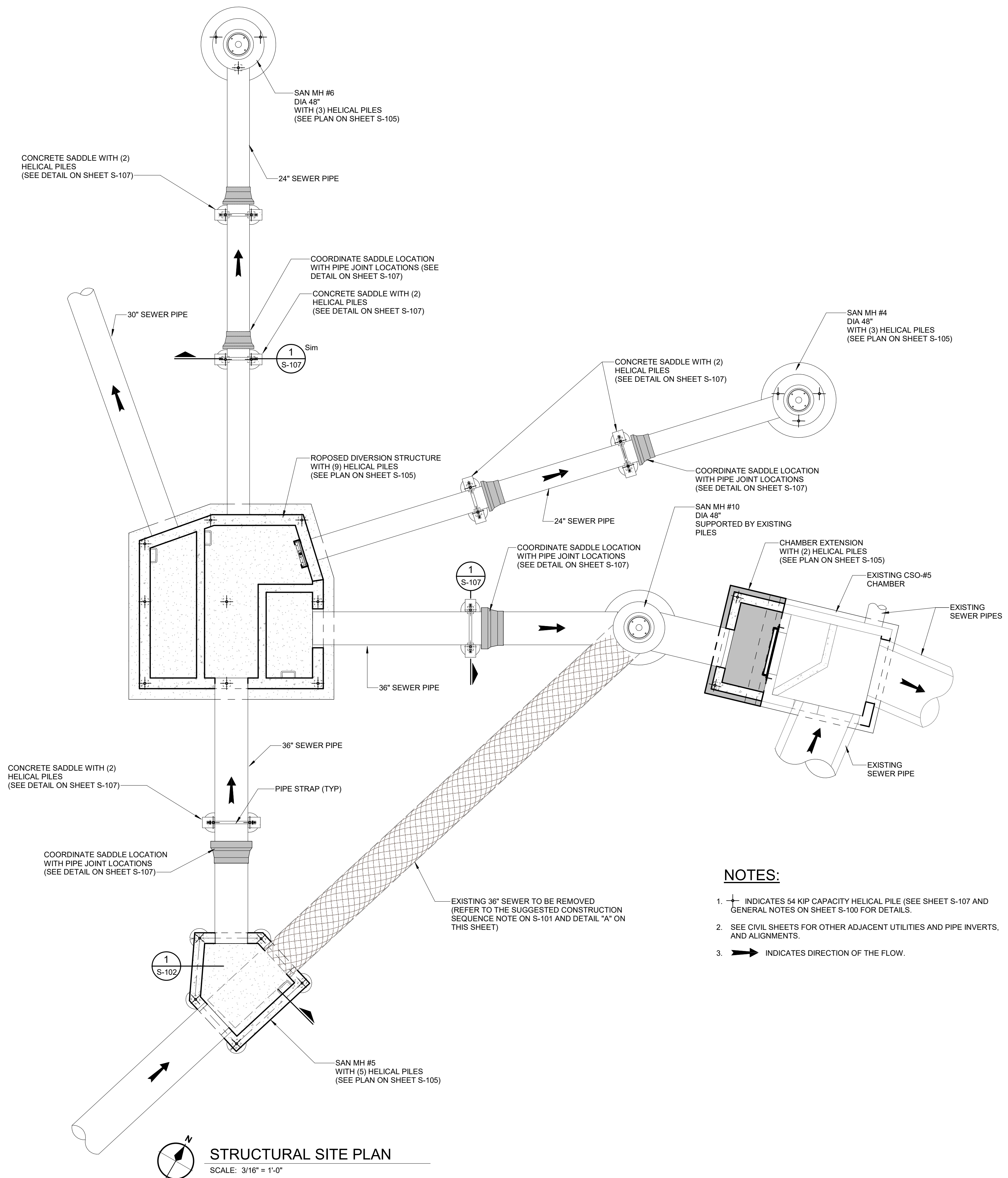
EXISTING 36 IN SEWER PIPE SUPPORT DEMO DETAIL

SCALE: 3/4" = 1'-0"

SUGGESTED CONSTRUCTION SEQUENCE:

(NOTE CRITICAL ITEMS ARE RELATED TO MANHOLE #5 AND MANHOLE # 10).

1. UNCOVER PORTION OF EXISTING 36" INTERCEPTOR AT THE MANHOLE #5 LOCATION AND LOCATE EXISTING PILE BENTS.
2. SHORE EXISTING 36" PIPE AND REMOVE STEEL CRADLE PLATE AND PILE BEAM (IF ONE EXISTS IN THIS AREA).
3. INSTALL NEW HELICAL PILES FOR MANHOLE #5.
4. CONSTRUCT NEW MANHOLE #5 STRUCTURE AROUND EXISTING INTERCEPTOR WITH NEW 36" PIPE TO NEW DIVERSION STRUCTURE.
5. CONSTRUCT NEW DIVERSION STRUCTURE WITH (2)- 36" PIPES, (2) - 30" PIPES AND (1) - 24" UNDERFLOW PIPES WITH SADDLE SUPPORTS.
6. CONSTRUCT PILE SUPPORTED MANHOLES #4 AND #6.
7. BY-PASS PUMP TO RECONSTRUCT MANHOLE #10 AND BUILD THE EXTENSION ONTO CSO-005



NOTES:

1. + INDICATES 54 KIP CAPACITY HELICAL PILE (SEE SHEET S-107 AND GENERAL NOTES ON SHEET S-100 FOR DETAILS).
2. SEE CIVIL SHEETS FOR OTHER ADJACENT UTILITIES AND PIPE INVERTS, AND ALIGNMENTS.
3. → INDICATES DIRECTION OF THE FLOW.

STRUCTURAL SITE PLAN

SCALE: 3/16" = 1'-0"

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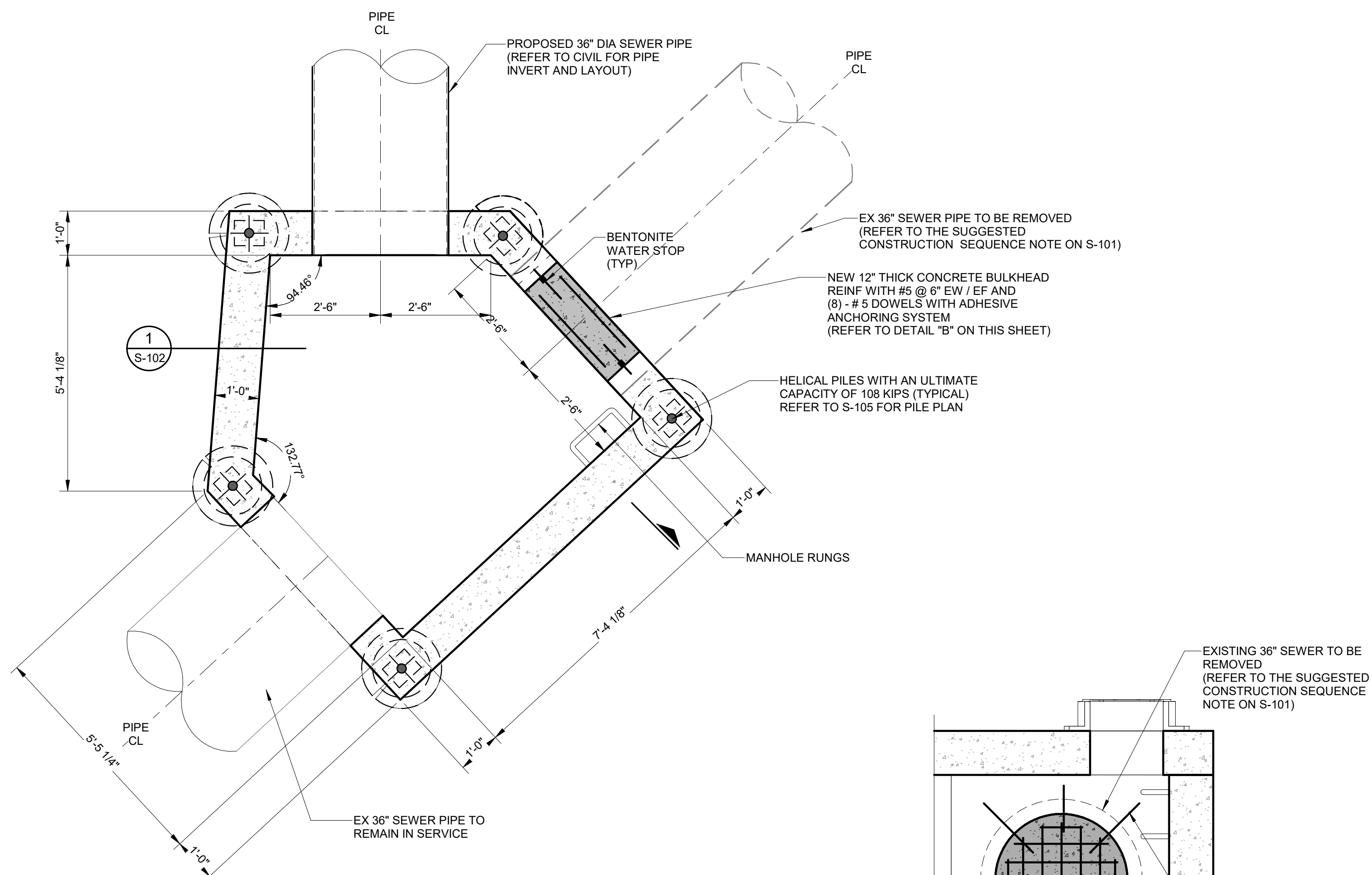
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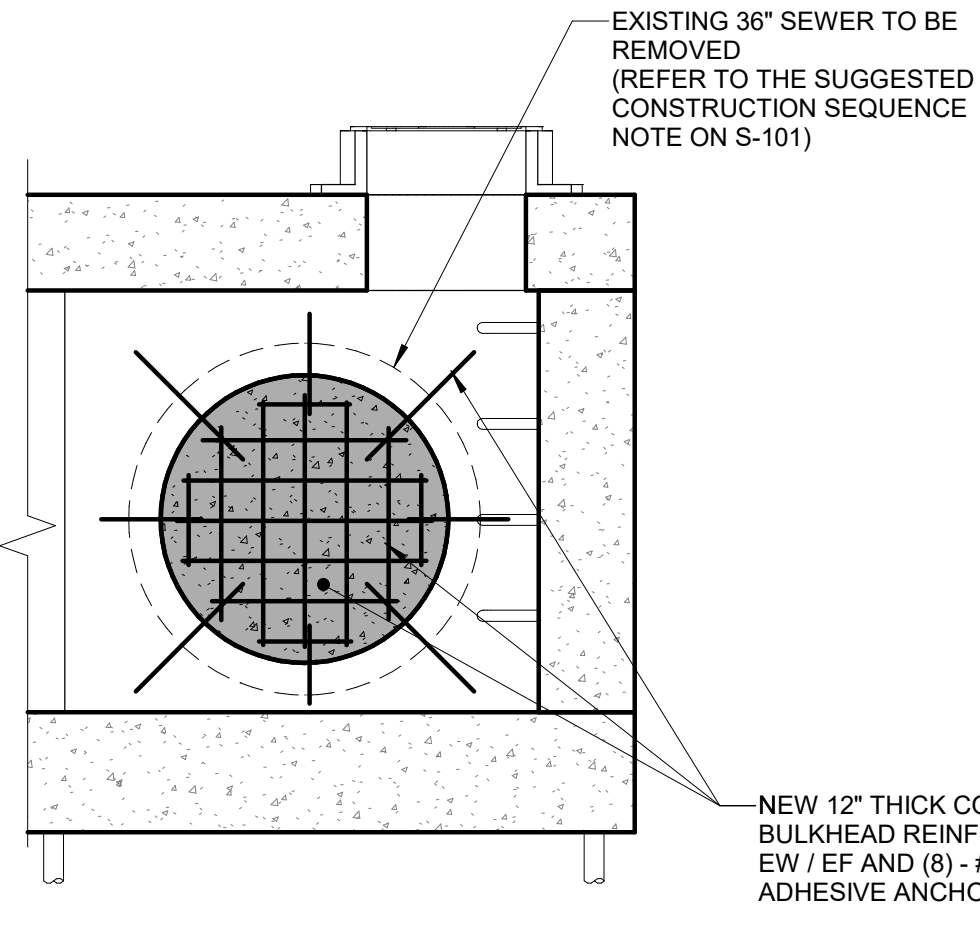
**FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
STRUCTURAL SITE PLAN**

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BIDS	4/19/2024	JKW
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S-101		

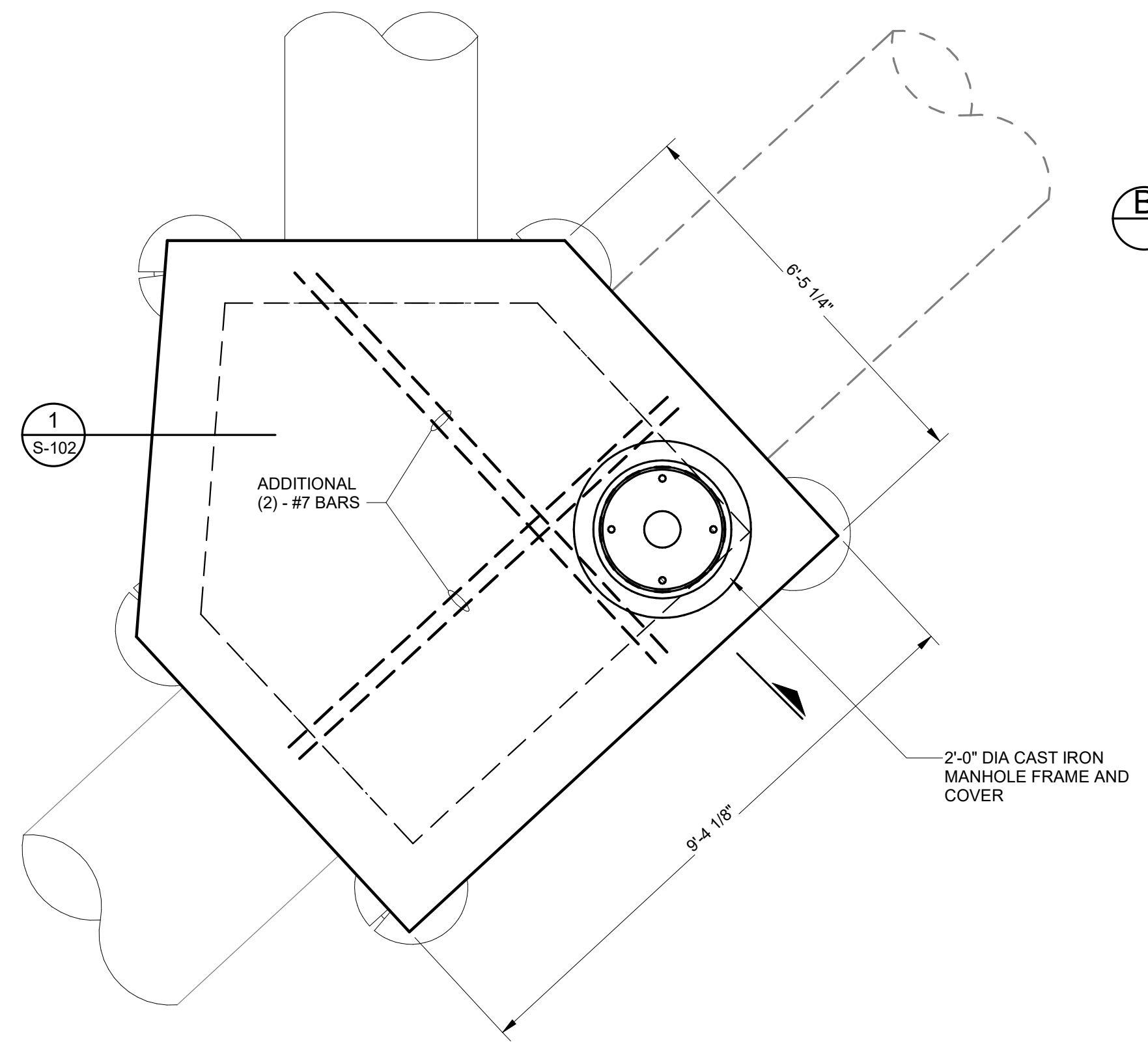
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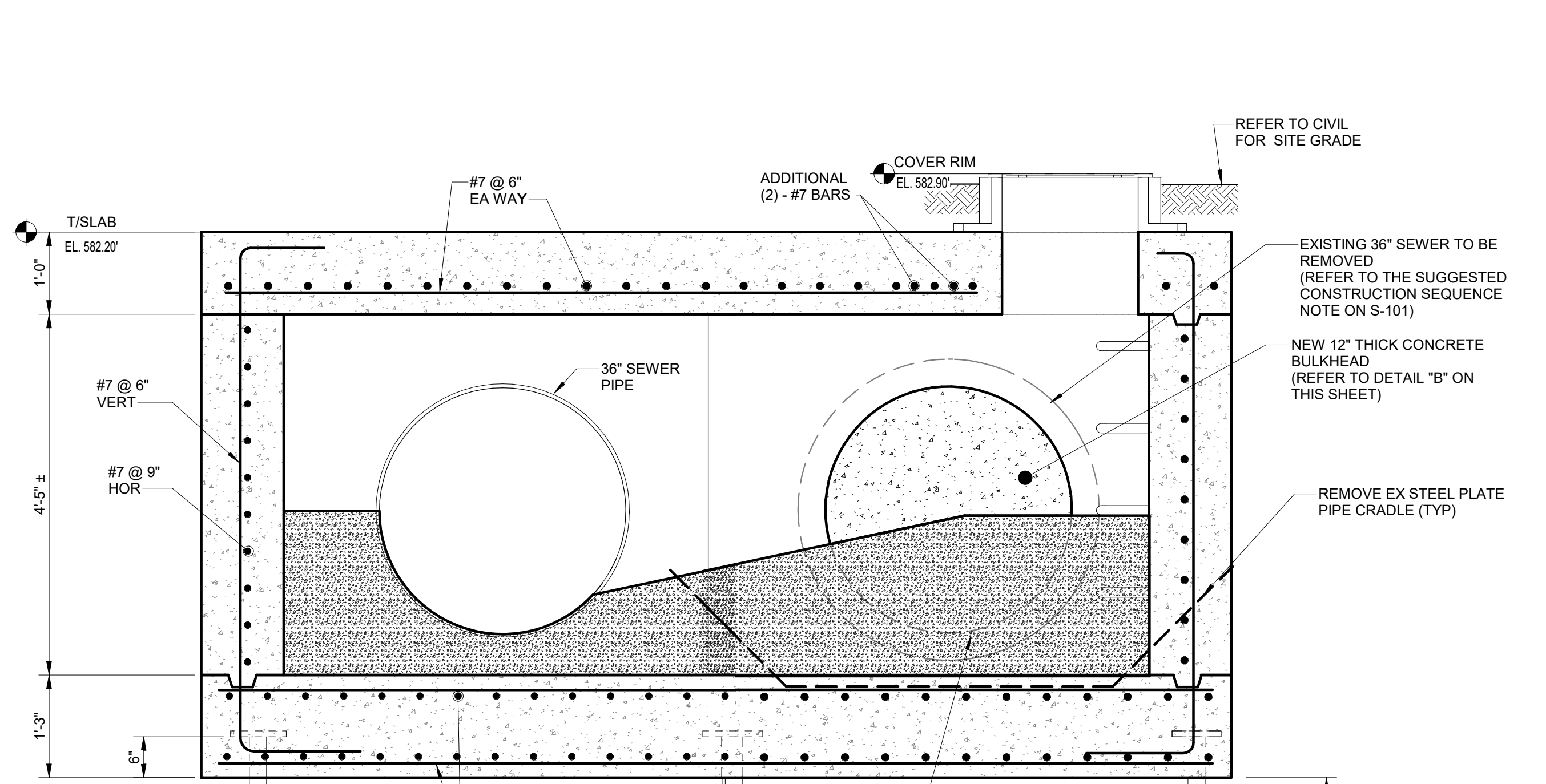
PROPOSED MANHOLE #5 STRUCTURAL FOUNDATION PLAN
SCALE: 1/2" = 1'-0"



B MAHOLE #5 - CONCRETE BULKHEAD
SCALE: 1/2" = 1'-0"



PROPOSED MANHOLE #5 STRUCTURAL GRADE PLAN
SCALE: 1/2" = 1'-0"

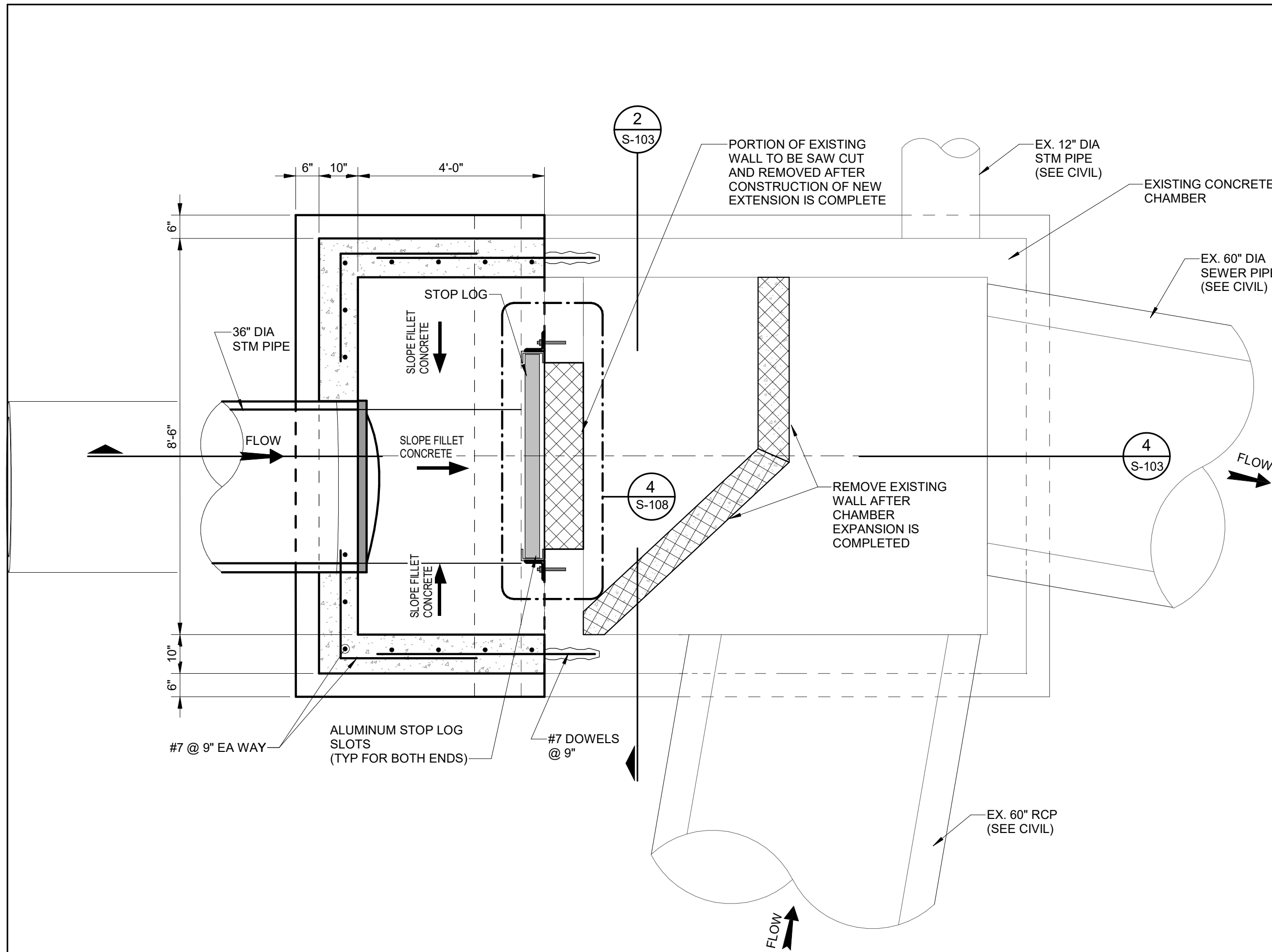


1 PROPOSED MANHOLE #5 SECTION
SCALE: 3/4" = 1'-0"

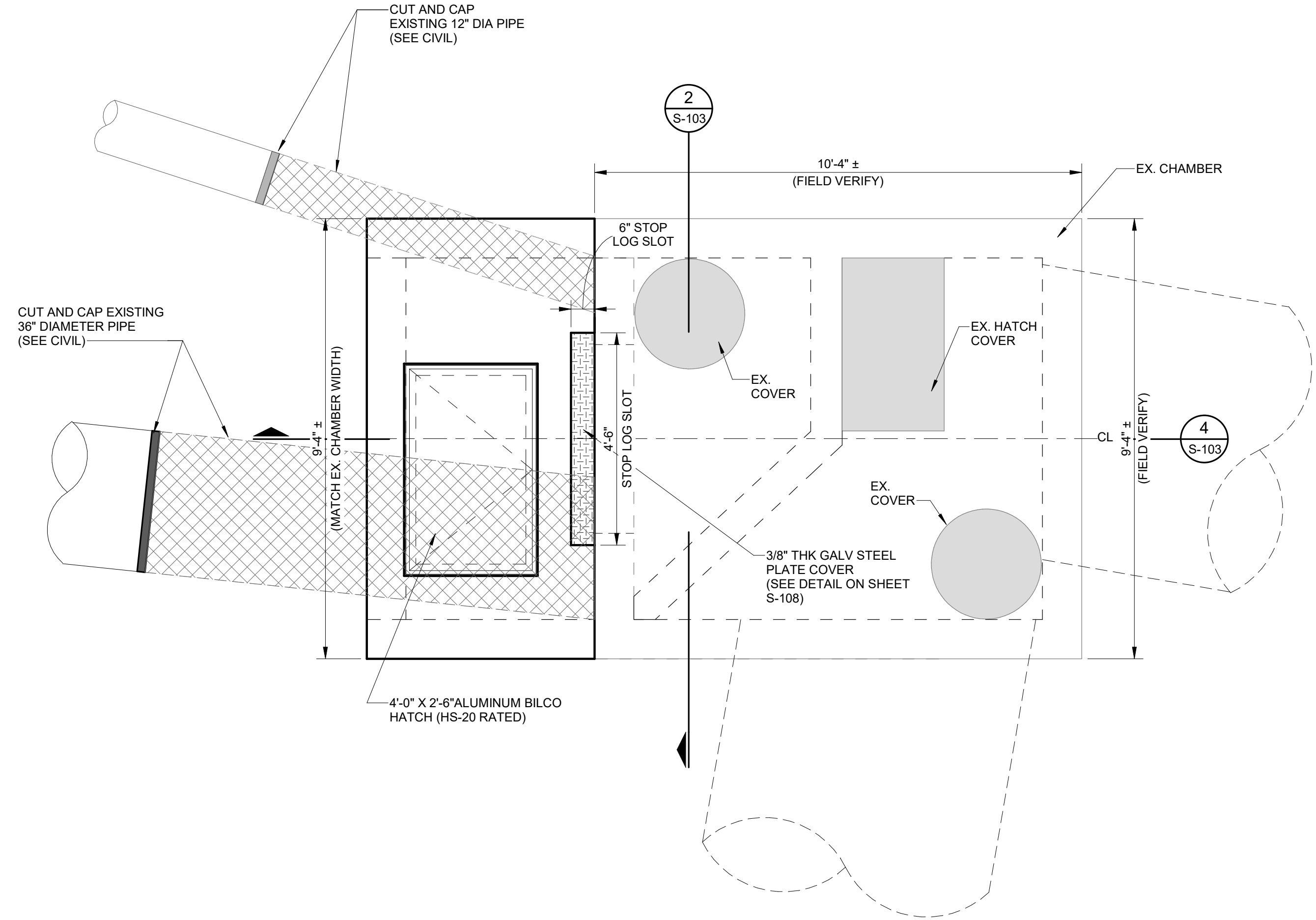
NOTE:
(*) LENGTH OF PILES WILL BE DETERMINED BY INSTALLATION TORQUE REQUIRED TO OBTAIN NOTED PILE CAPACITY.

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 FINAL CSO COMPLIANCE - EARLY ACTION DESIGN PROPOSED MANHOLE #5 PLANS AND SECTION
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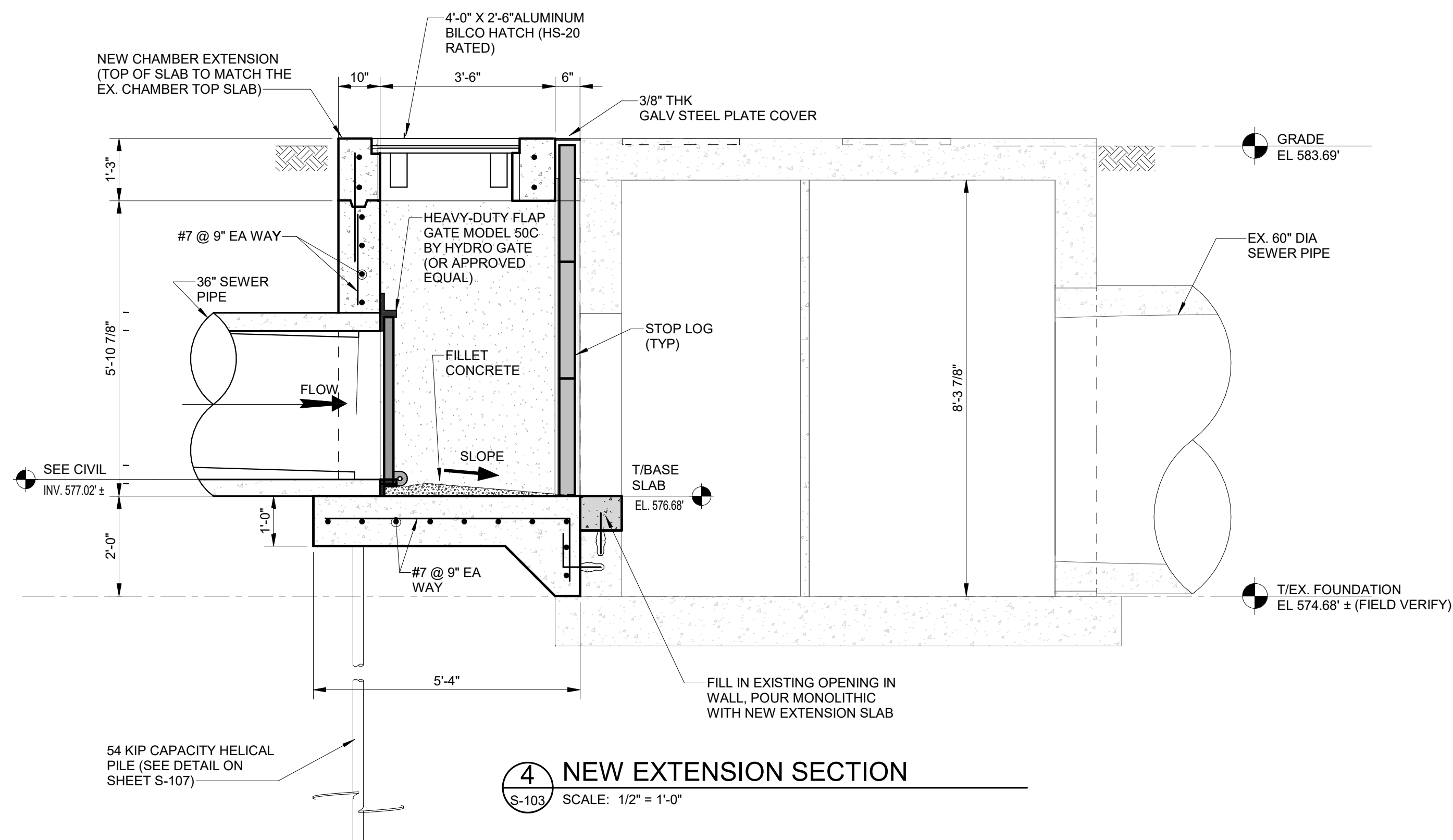
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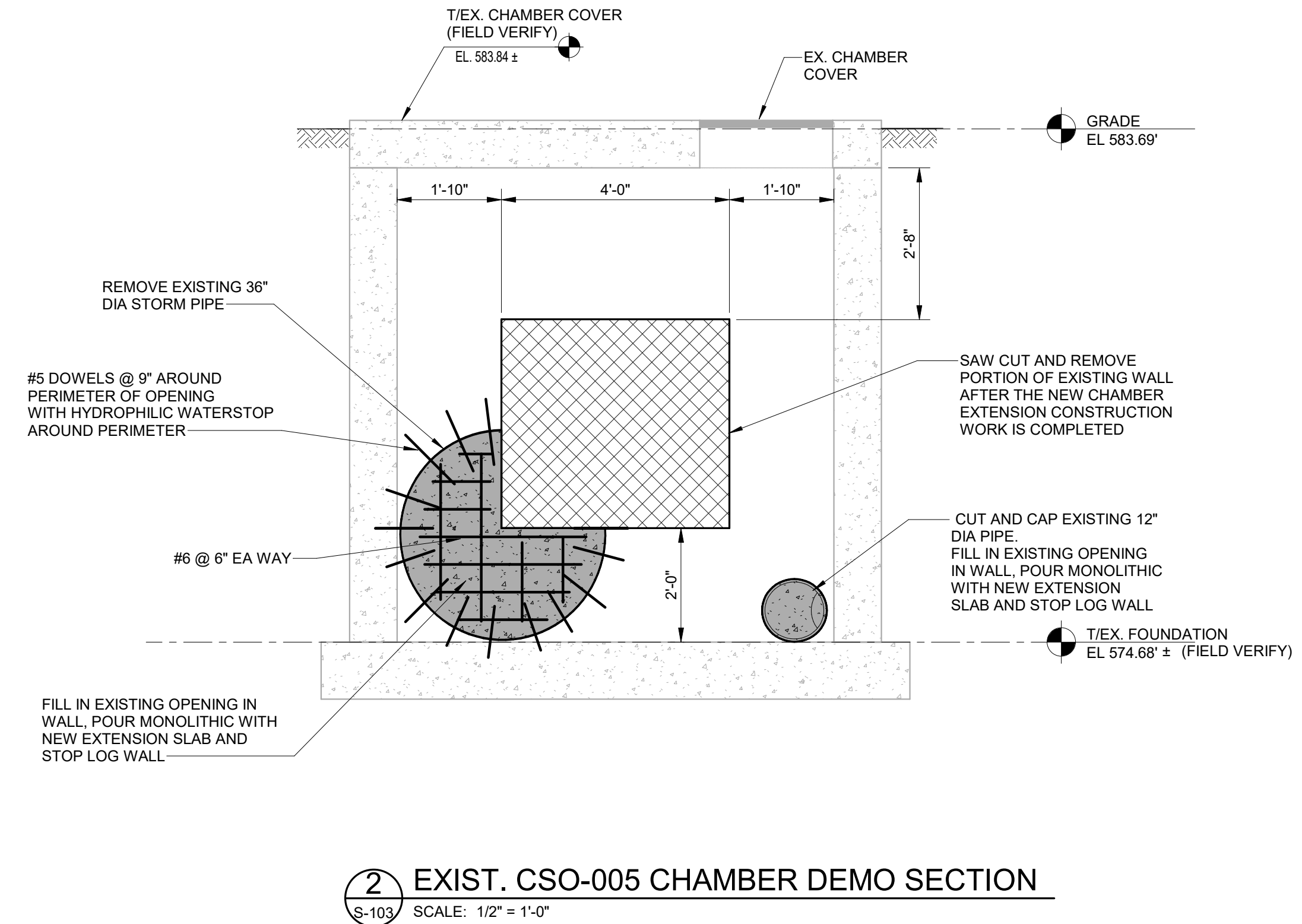
EXIST. CSO-005 CHAMBER NEW EXTENSION BASE SLAB PLAN
SCALE: 1/2" = 1'-0"



EXIST. CSO-005 CHAMBER ROOF PLAN
SCALE: 1/2" = 1'-0"



NEW EXTENSION SECTION
SCALE: 1/2" = 1'-0"



EXIST. CSO-005 CHAMBER DEMO SECTION
SCALE: 1/2" = 1'-0"

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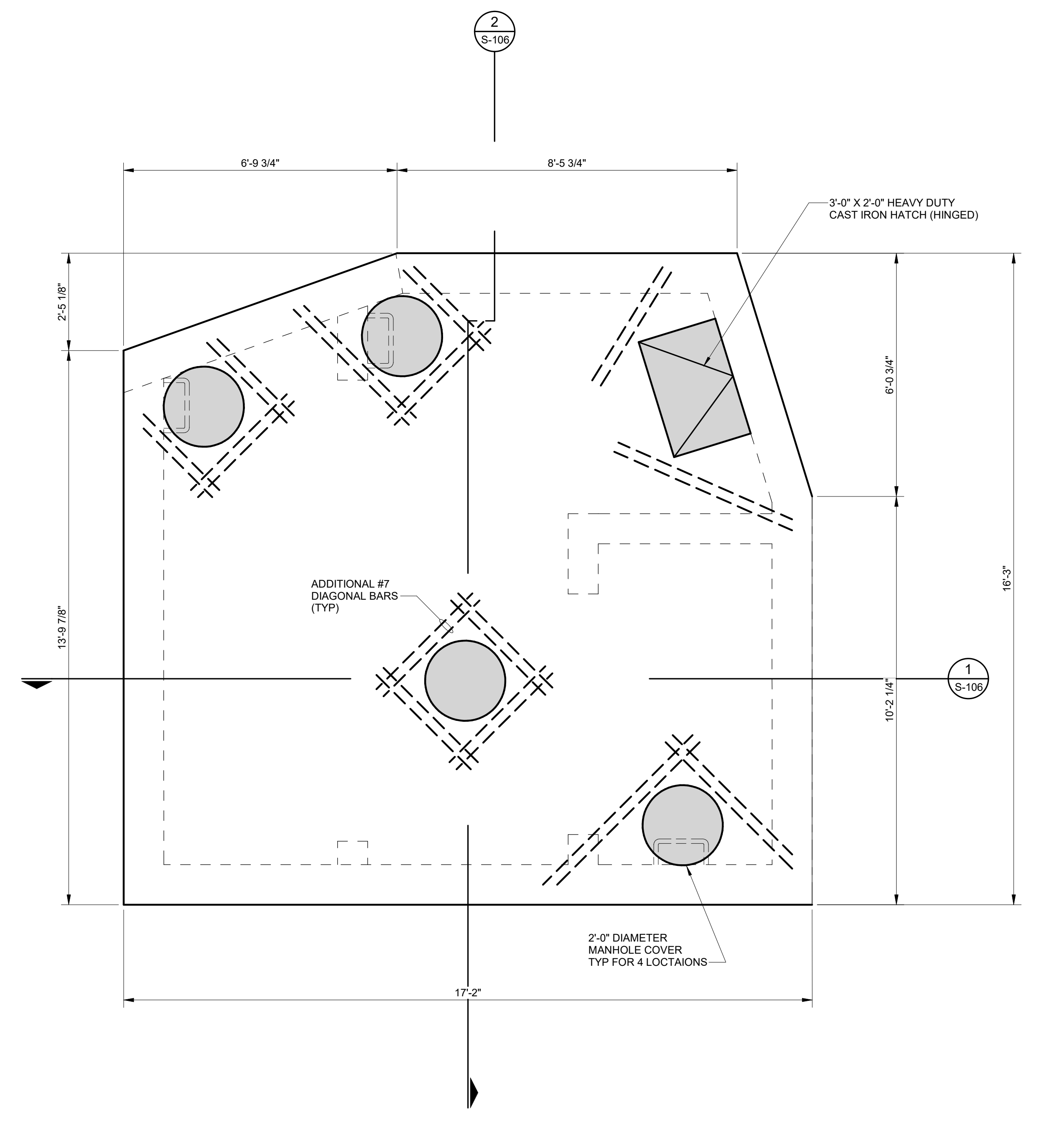
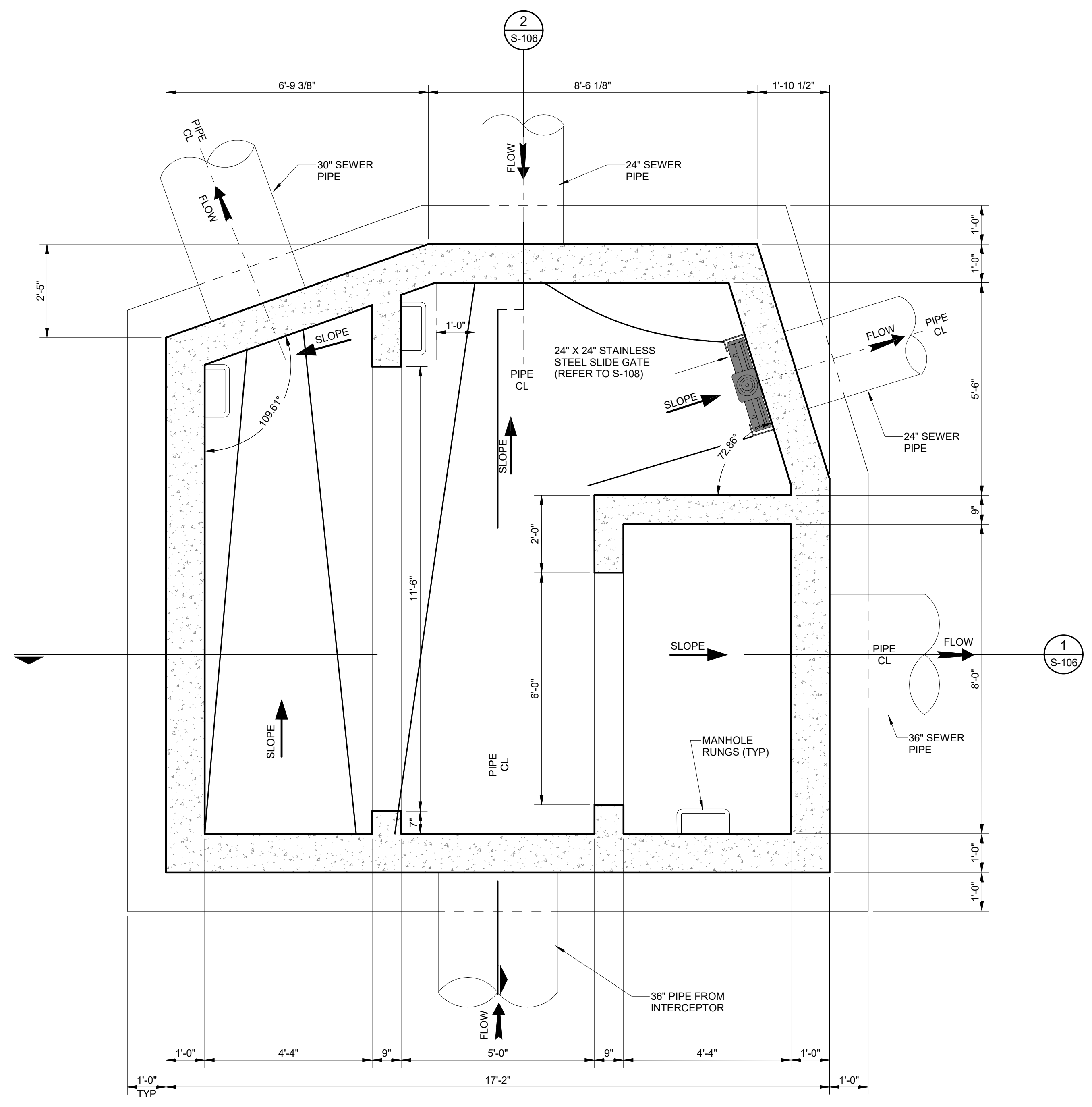
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**FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
EXISTING CHAMBER EXTENSION**

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EGL 100% SUBMITTAL	3/18/2024	JKW
BIDS	4/19/2024	JKW
JOB NO. SJO2004-02T	SHEET	
S-103		

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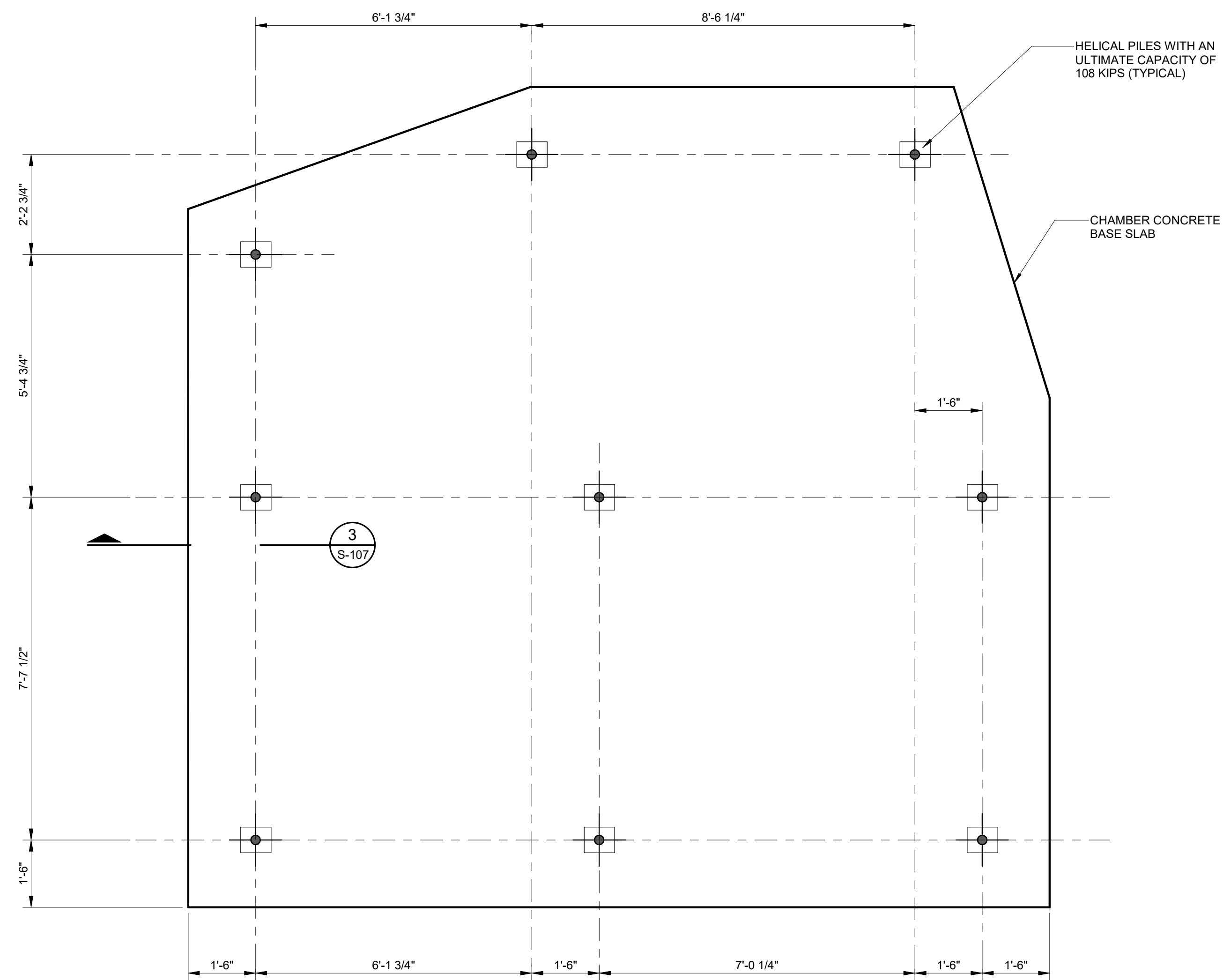
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FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PROPOSED CHAMBER PLANS

ISSUED FOR:	DATE:	BY:
EGL 90% SUBMITTAL	2/1/2024	JKW
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BIDS	4/19/2024	JKW

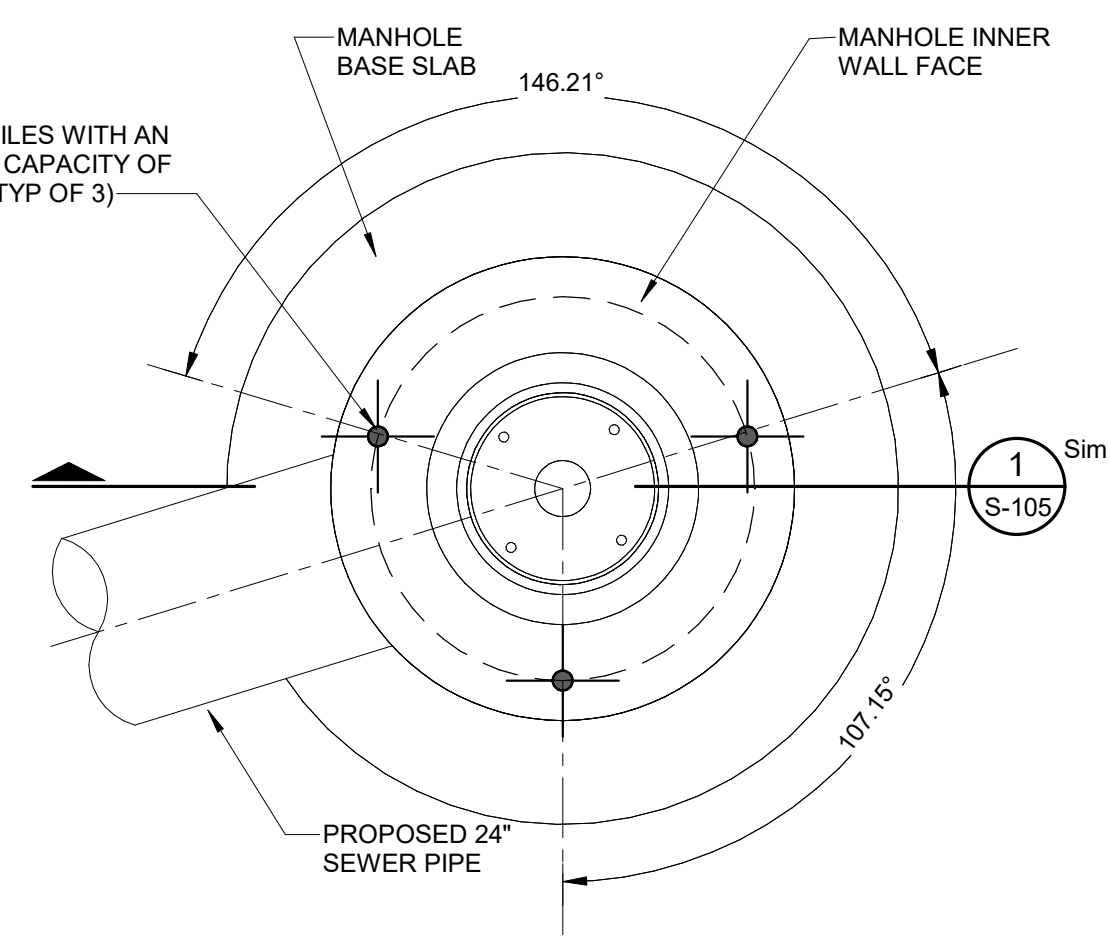
JOB NO. SJO2004-02T

SHEET S-104

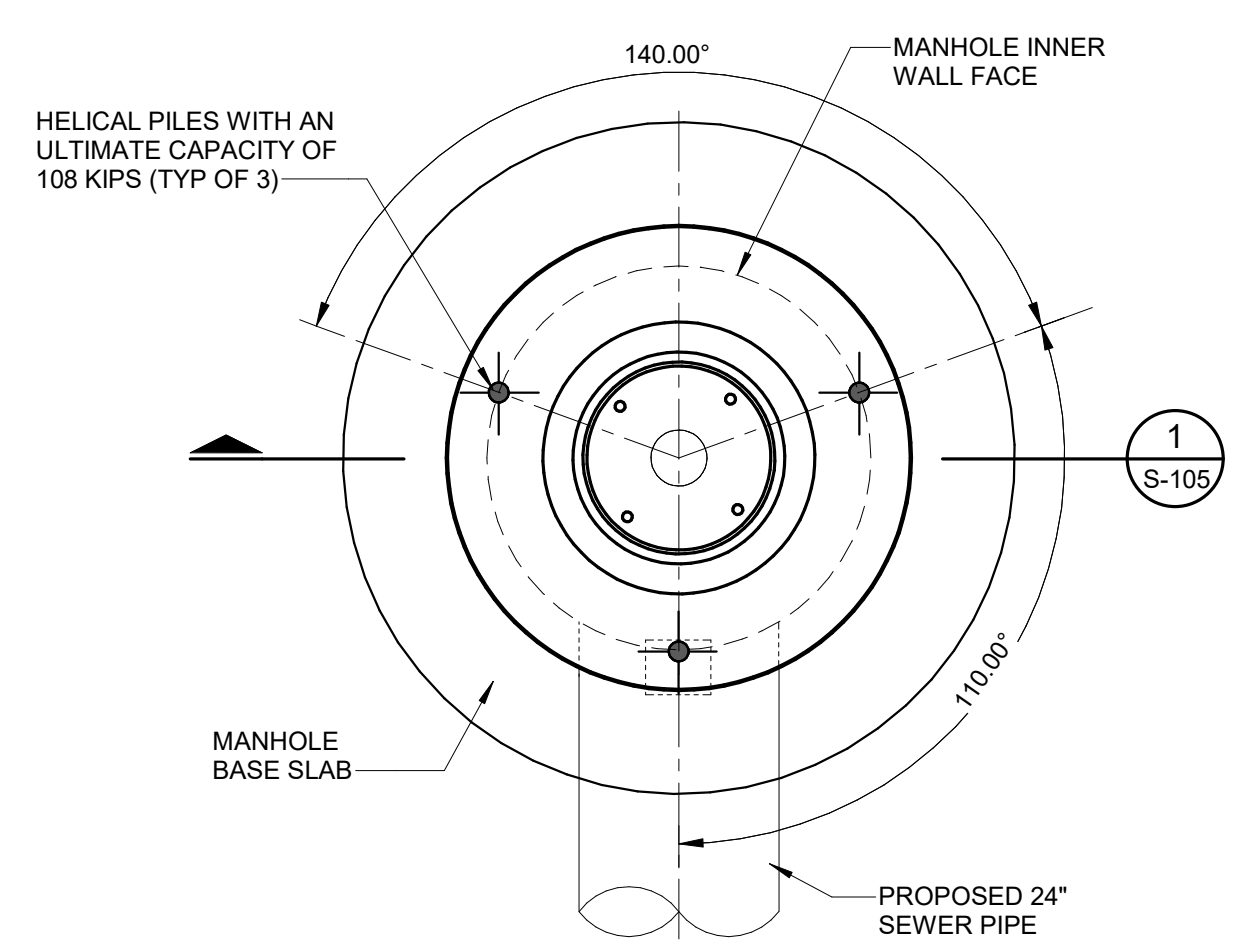
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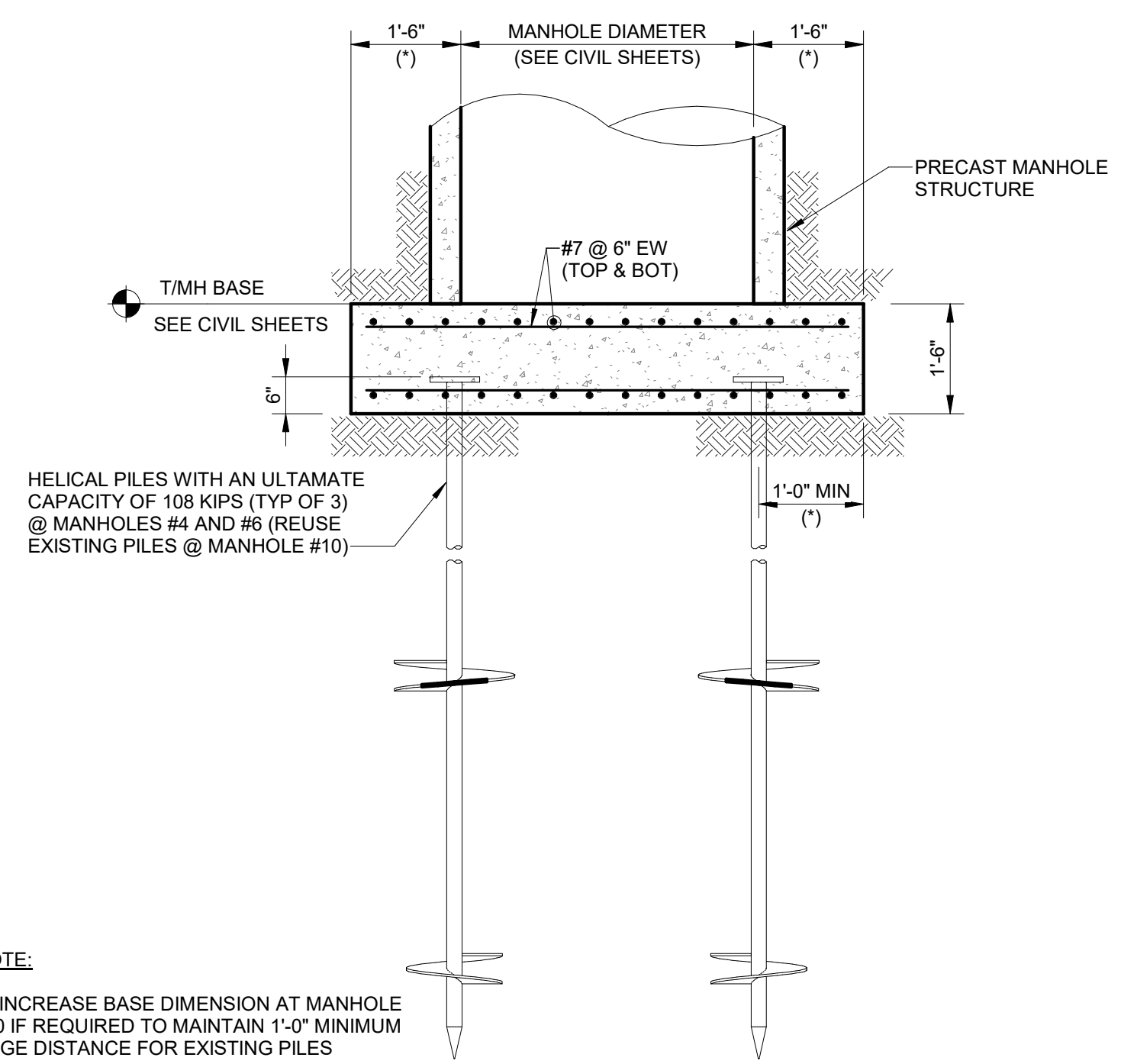
CHAMBER PILE PLAN
SCALE: 1/2" = 1'-0"



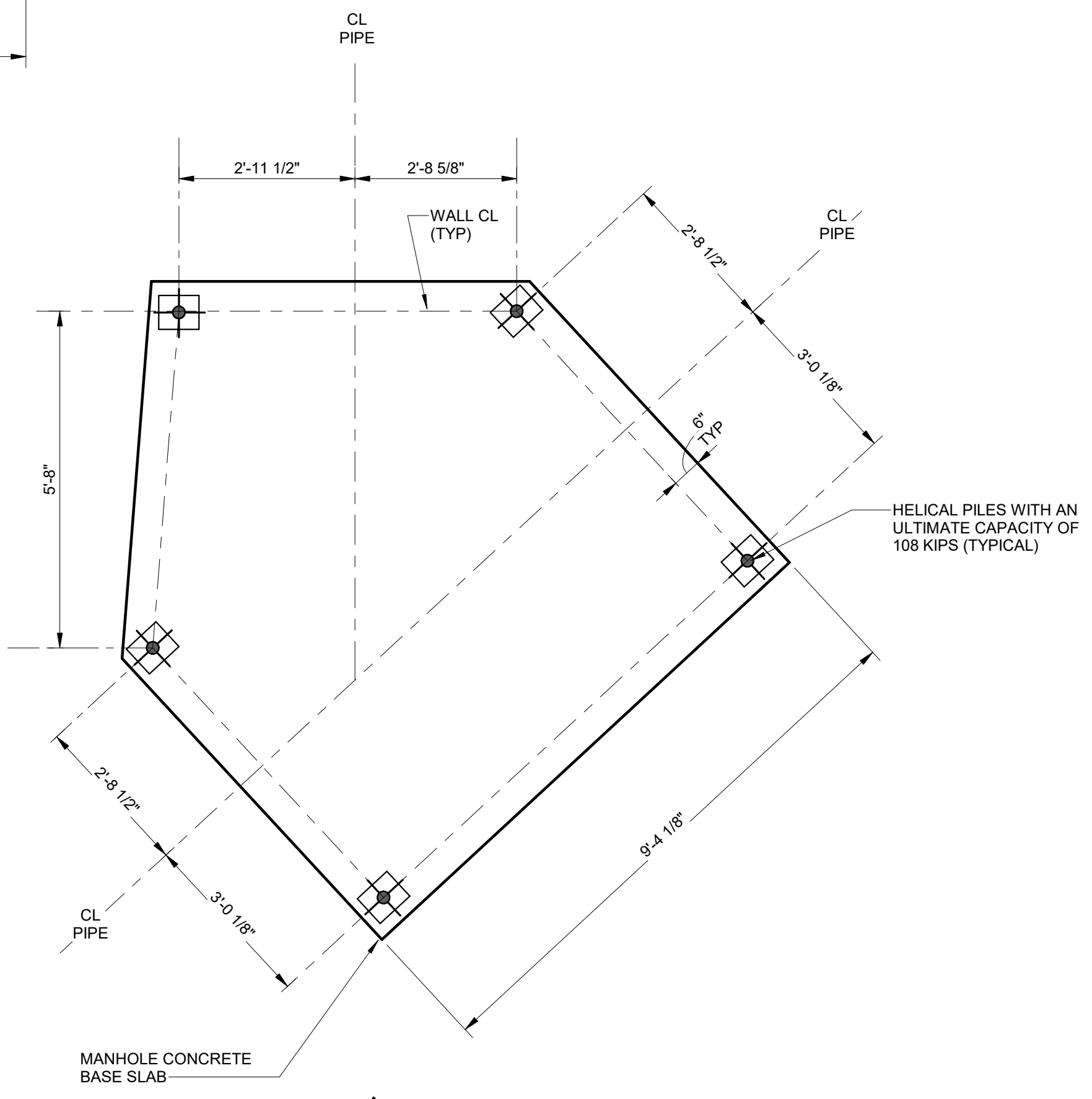
MANHOLE #4 PILE PLAN
SCALE: 1/2" = 1'-0"



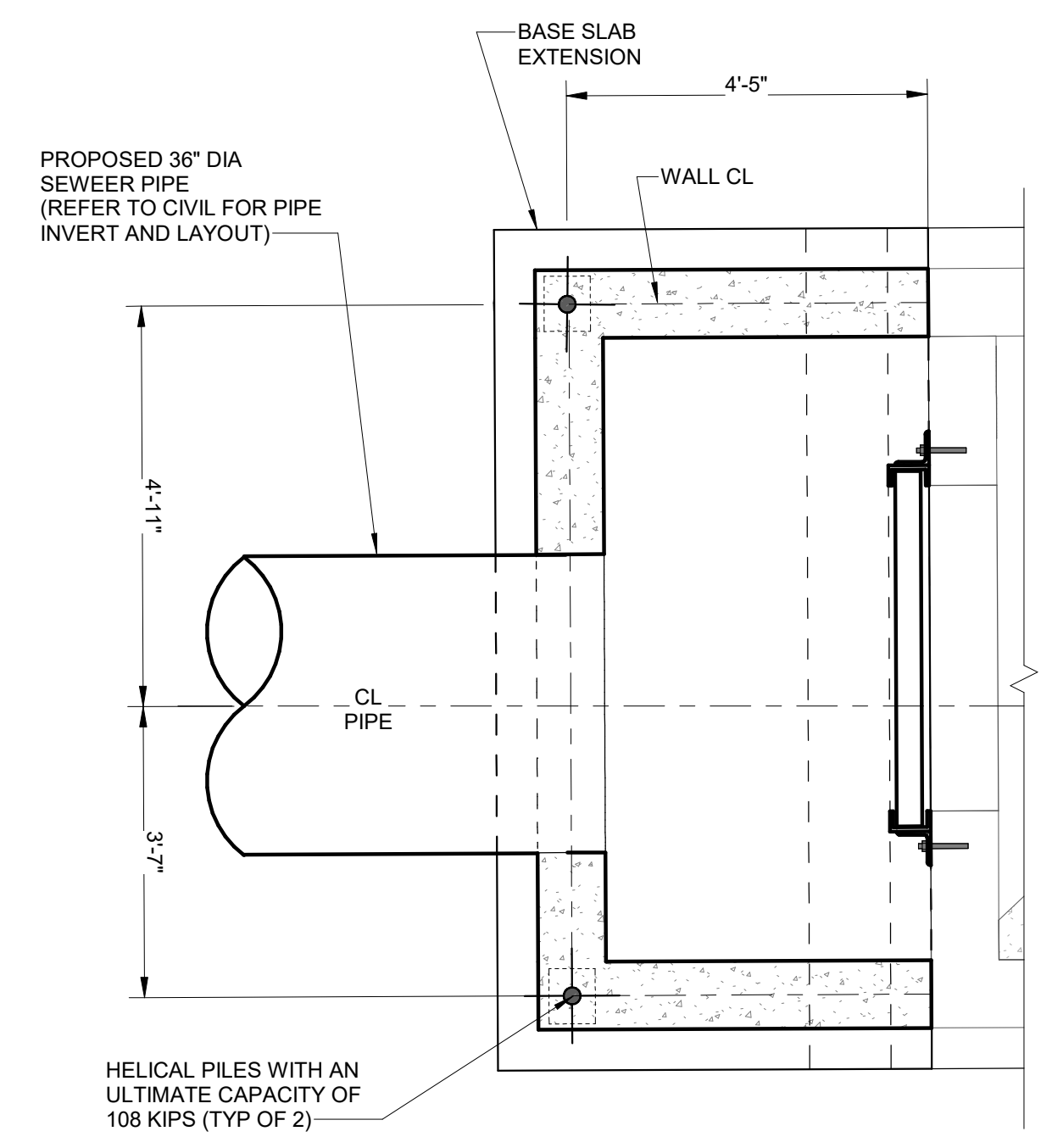
MANHOLE #6 PILE PLAN
SCALE: 1/2" = 1'-0"



MANHOLE #4, #6 AND #10 BASE SLAB DETAIL
SCALE: 1/2" = 1'-0"



MANHOLE #5 PILE PLAN
SCALE: 1/2" = 1'-0"



CSO #5 CHAMBER EXTENSION
SCALE: 1/2" = 1'-0"

Alternate Desc: SJO2004-CSO COMPLIANCE/SD2004-02T CSO Compliance-Early Action
 Design: S-105.rvt
 PLOTTED: 4/18/2024 9:14:41 AM

NOTE:
(*) INCREASE BASE DIMENSION AT MANHOLE #10 IF REQUIRED TO MAINTAIN 1'-0" MINIMUM EDGE DISTANCE FOR EXISTING PILES

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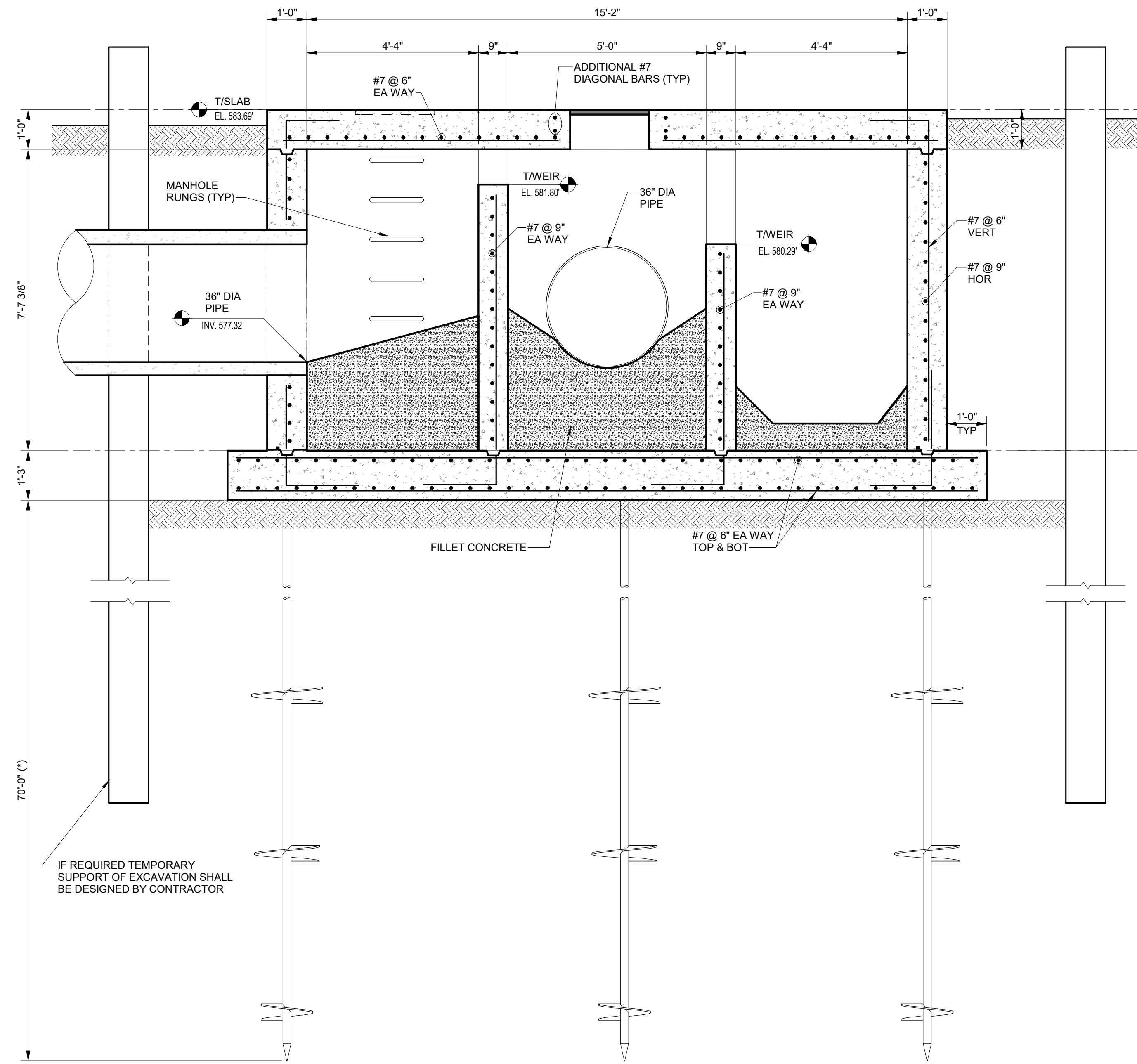
**FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
PILE PLAN AND DETAIL**

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EGL 100% SUBMITTAL	3/18/2024	JKW
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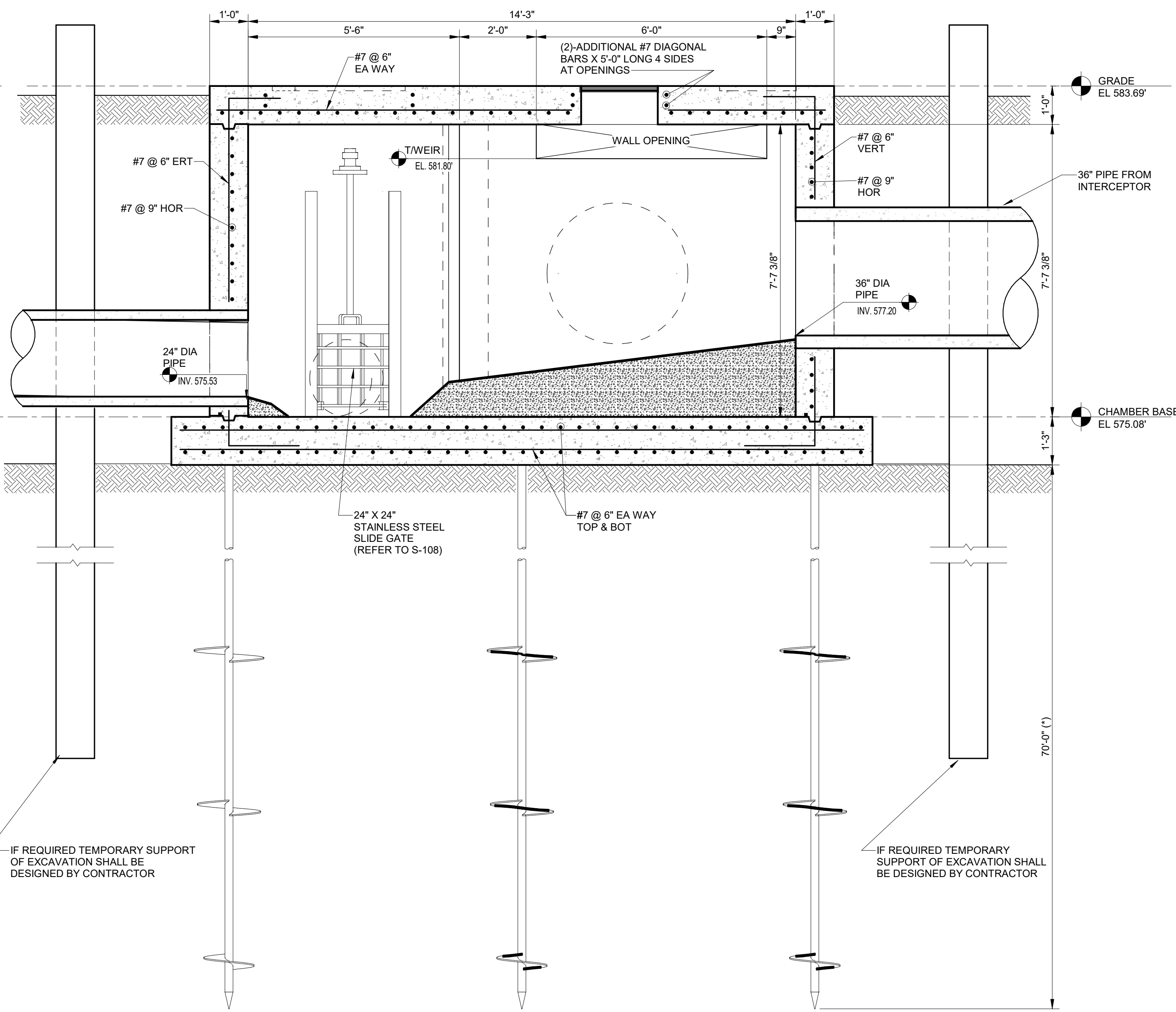
SHEET
S-105

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1 PROPOSED CHAMBER SECTION - 1
 S-104 SCALE: 1/2" = 1'-0"

NOTE:
 (*) LENGTH OF PILES WILL BE DETERMINED BY INSTALLATION TORQUE REQUIRED TO OBTAIN NOTED PILE CAPACITY.



2 PROPOSED CHAMBER SECTION - 2
 S-104 SCALE: 1/2" = 1'-0"

NOTE:
 (*) LENGTH OF PILES WILL BE DETERMINED BY INSTALLATION TORQUE REQUIRED TO OBTAIN NOTED PILE CAPACITY.

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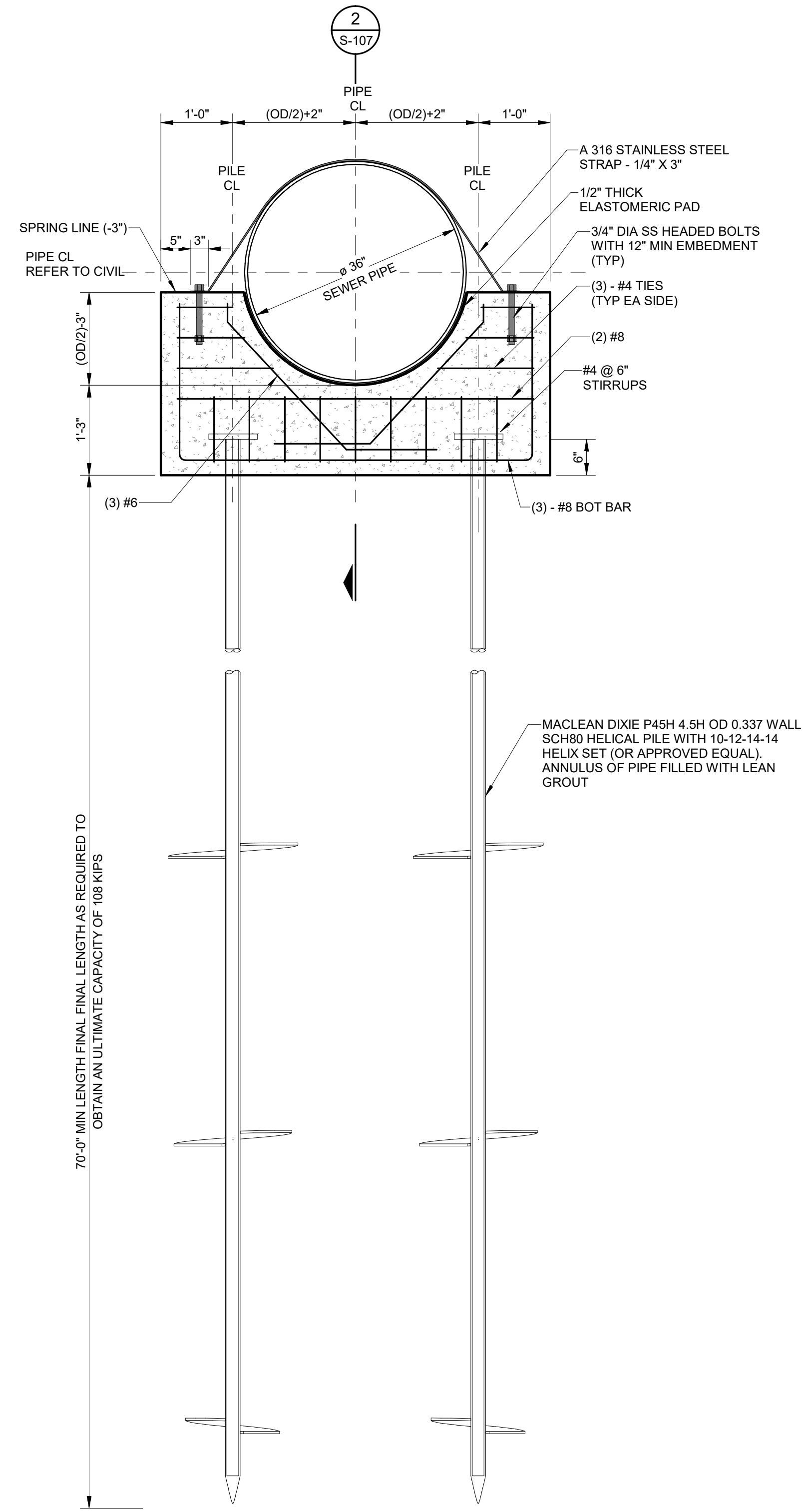
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 FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
 PROPOSED CHAMBER SECTIONS

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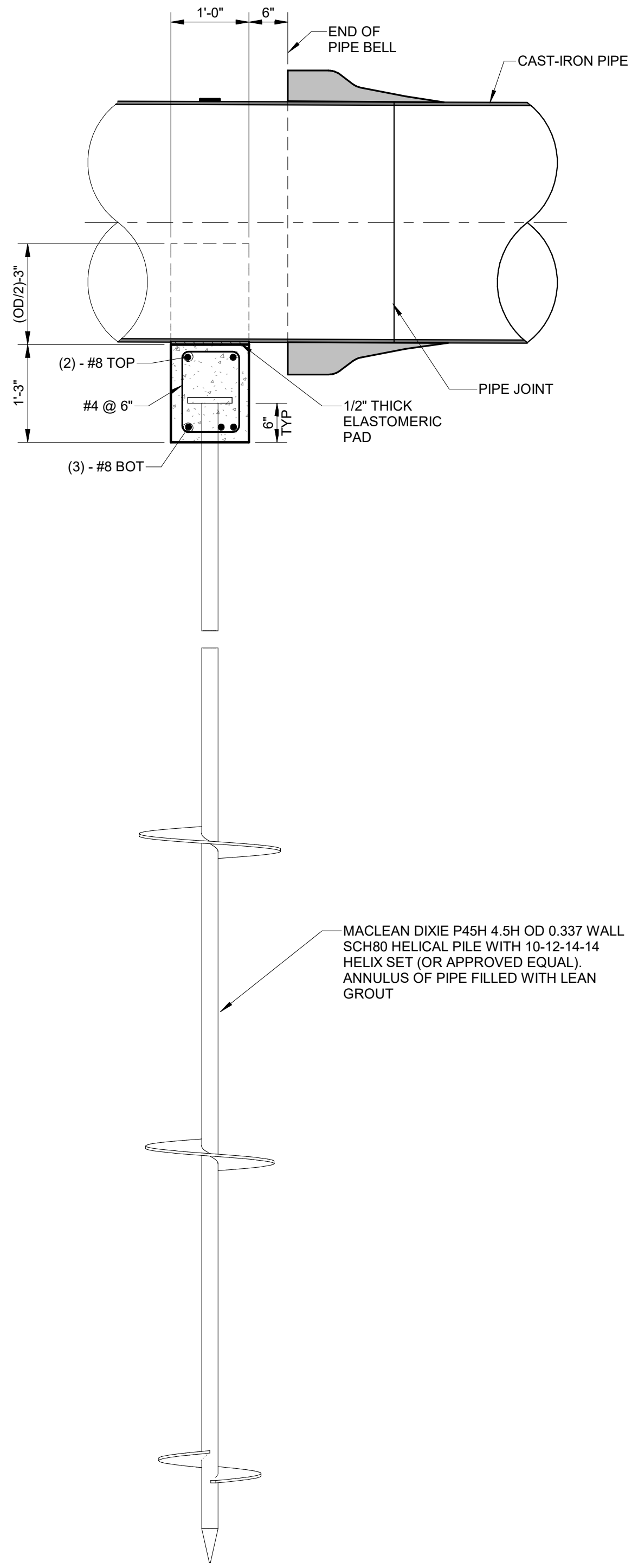
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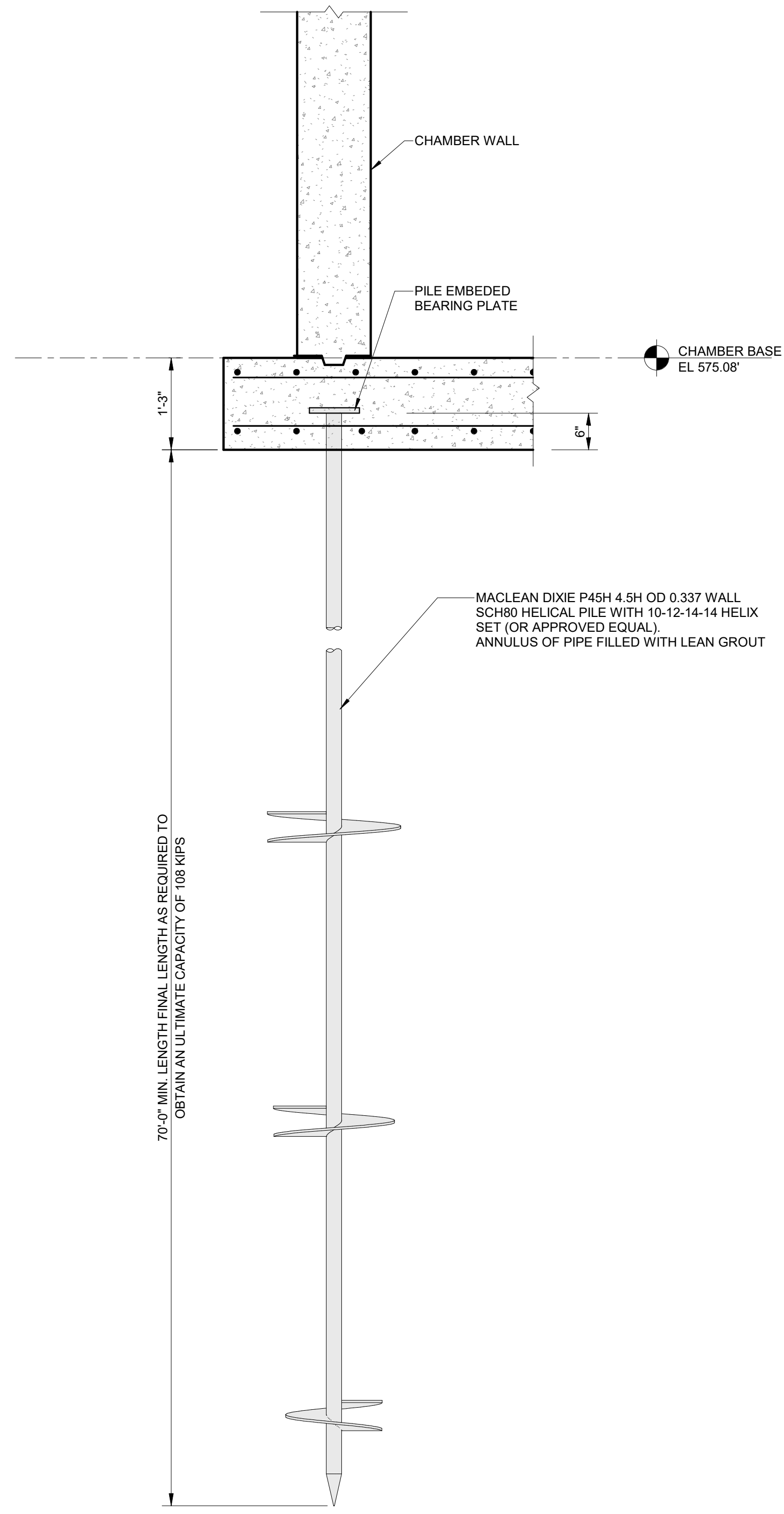
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1 PILE SUPPORTED PIPE SADDLE DETAIL-1
S-101 SCALE: 3/4" = 1'-0"



2 PILE SUPPORTED PIPE SADDLE DETAIL-2
S-107 SCALE: 3/4" = 1'-0"



3 HELICAL PILE DETAIL
S-105 SCALE: 3/4" = 1'-0"

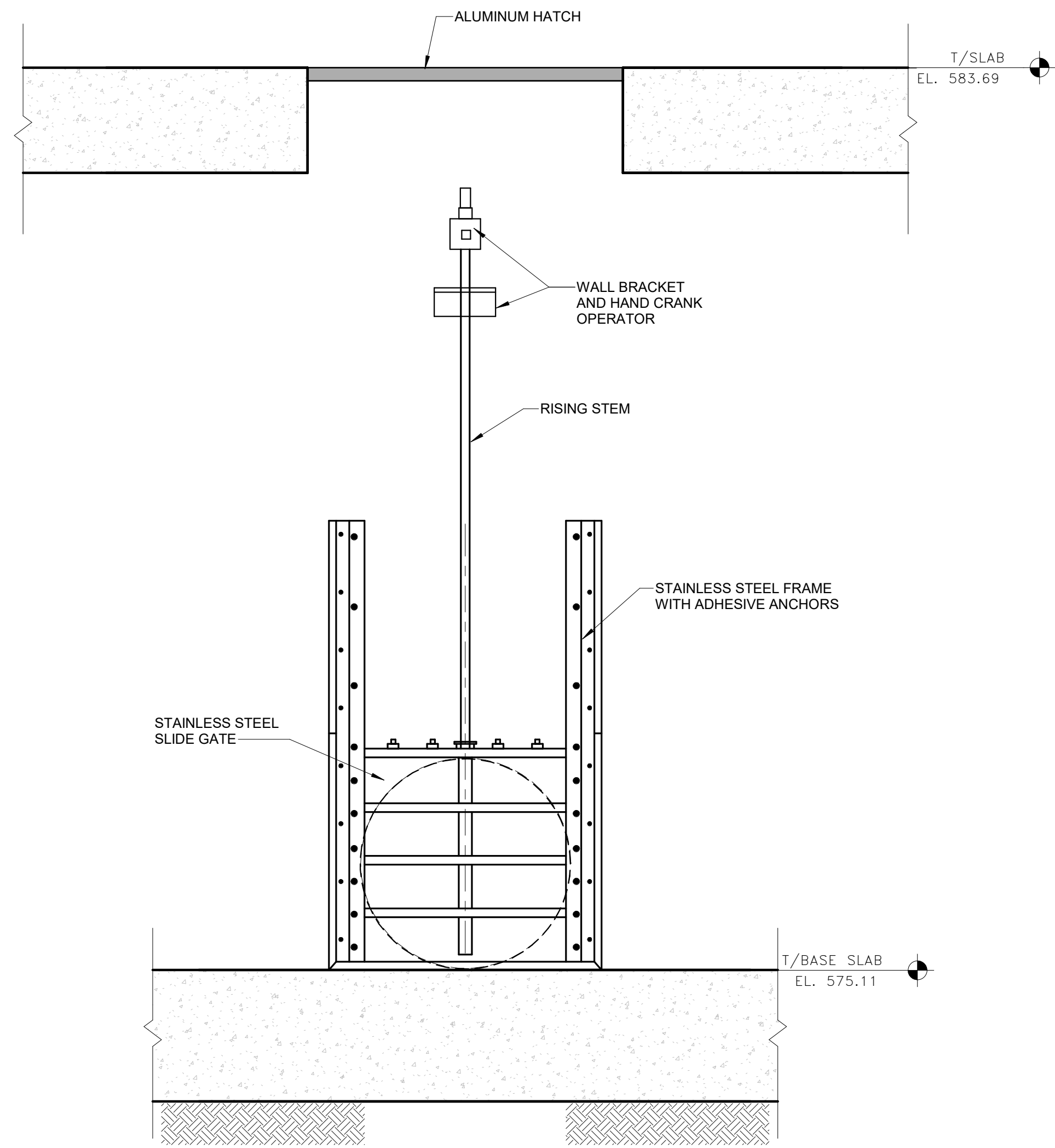
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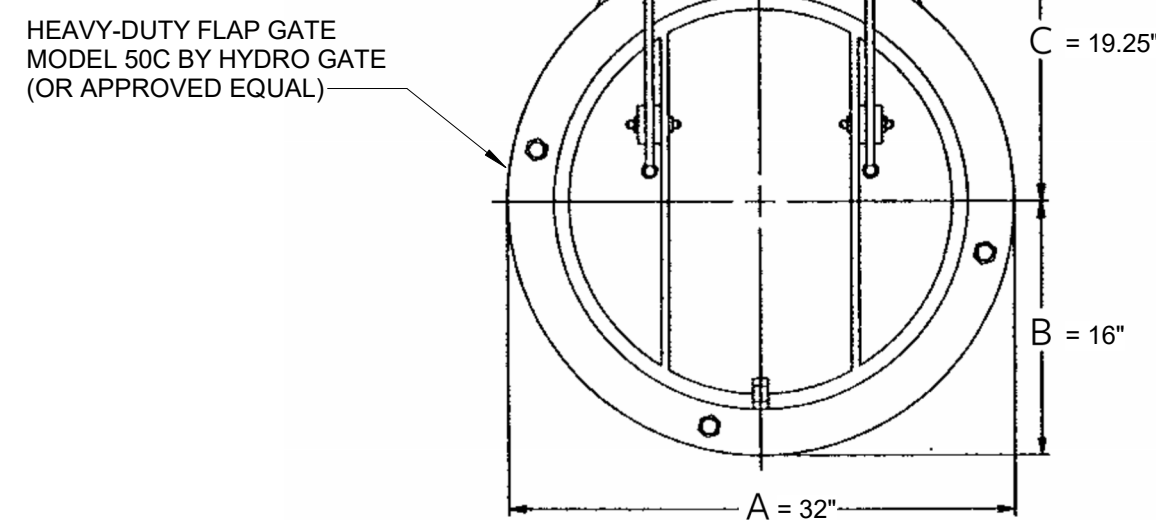
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 DETAILS I

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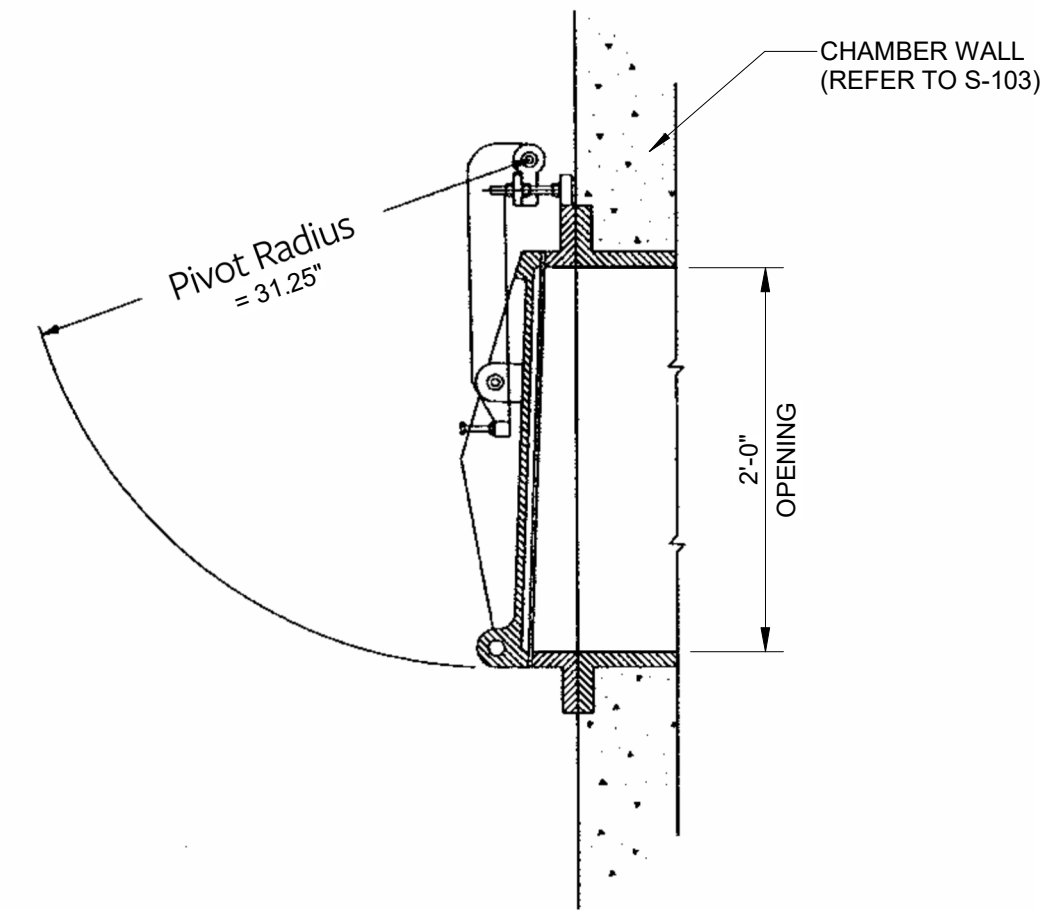
SLIDE GATE FRONT VIEW

SCALE: 1" = 1'-0"



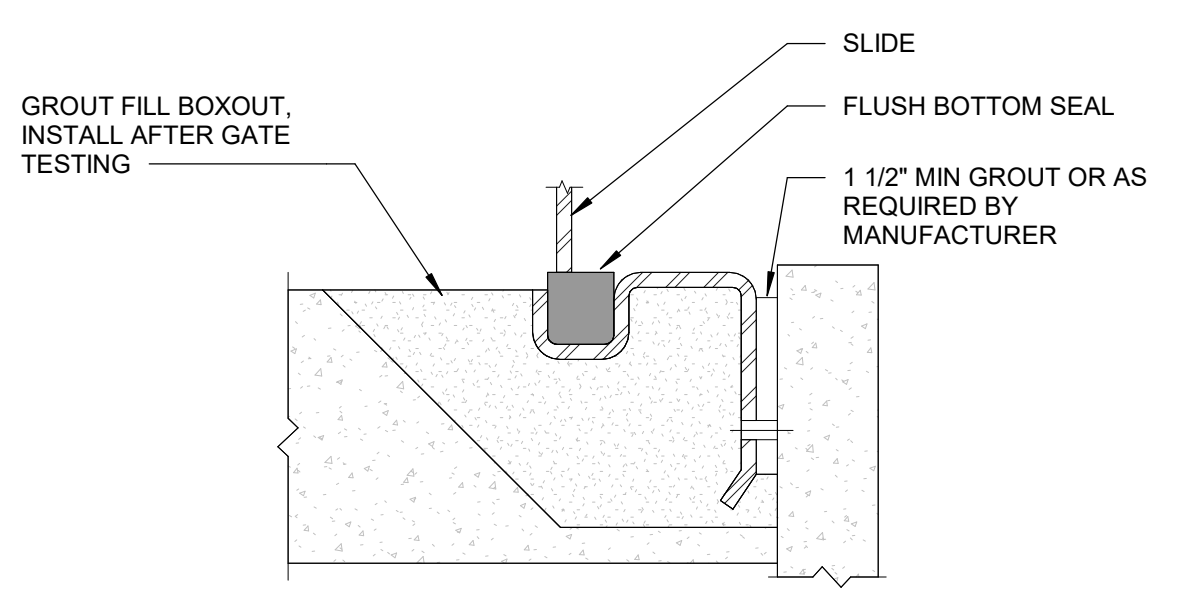
3 BACK WATER FLAP GATE AT CSO-5

SCALE: 1" = 1'-0"



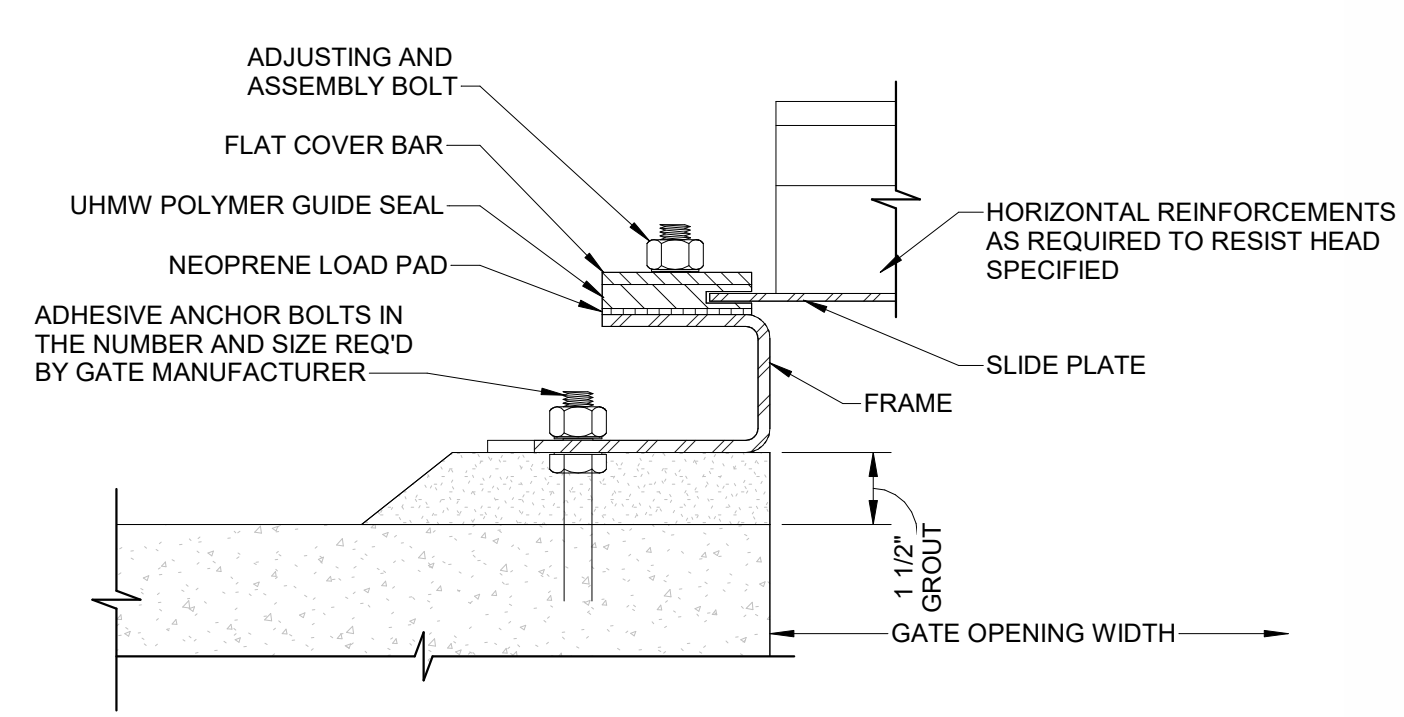
4 STOP LOG TOP VIEW PLAN

SCALE: 1 1/2" = 1'-0"



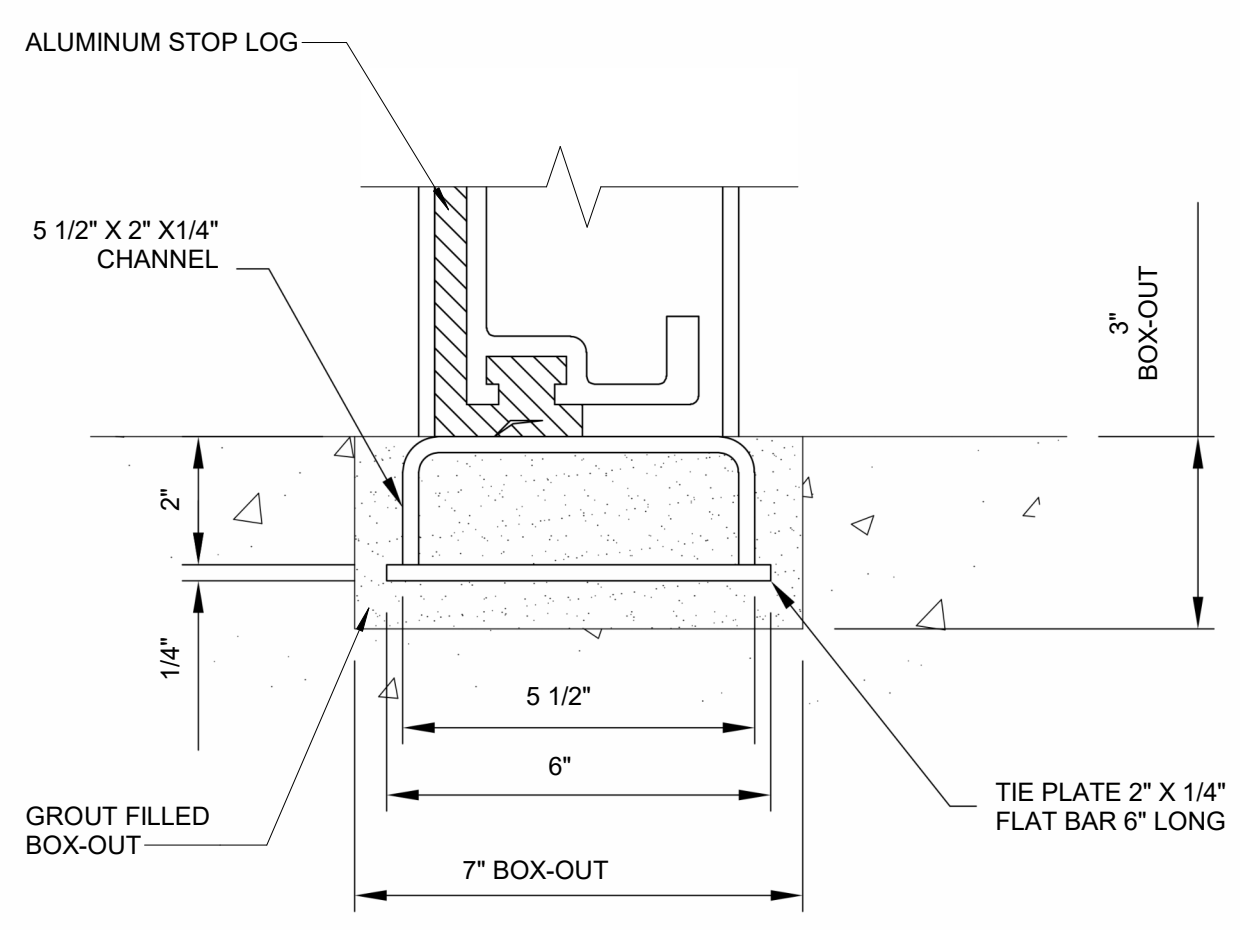
1 TYPICAL FLUSH BOTTOM SEAL DETAIL

SCALE: 1 1/2" = 1'-0"



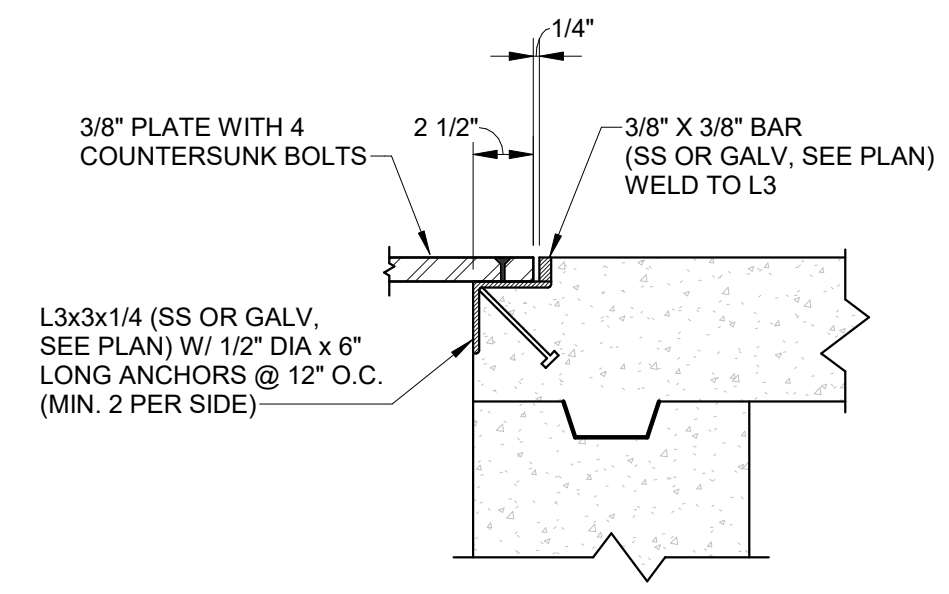
2 TYPICAL SLIDE GATE SIDE DETAIL

SCALE: 3" = 1'-0"



5 STOP LOG INVERT SECTION

SCALE: 4" = 1'-0"



6 GRATING ANGLE DETAIL

SCALE: 1 1/2" = 1'-0"

CONTROL GATE FOR 24" UNDERFLOW PIPE

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**FINAL CSO COMPLIANCE - EARLY ACTION DESIGN
DETAILS II**

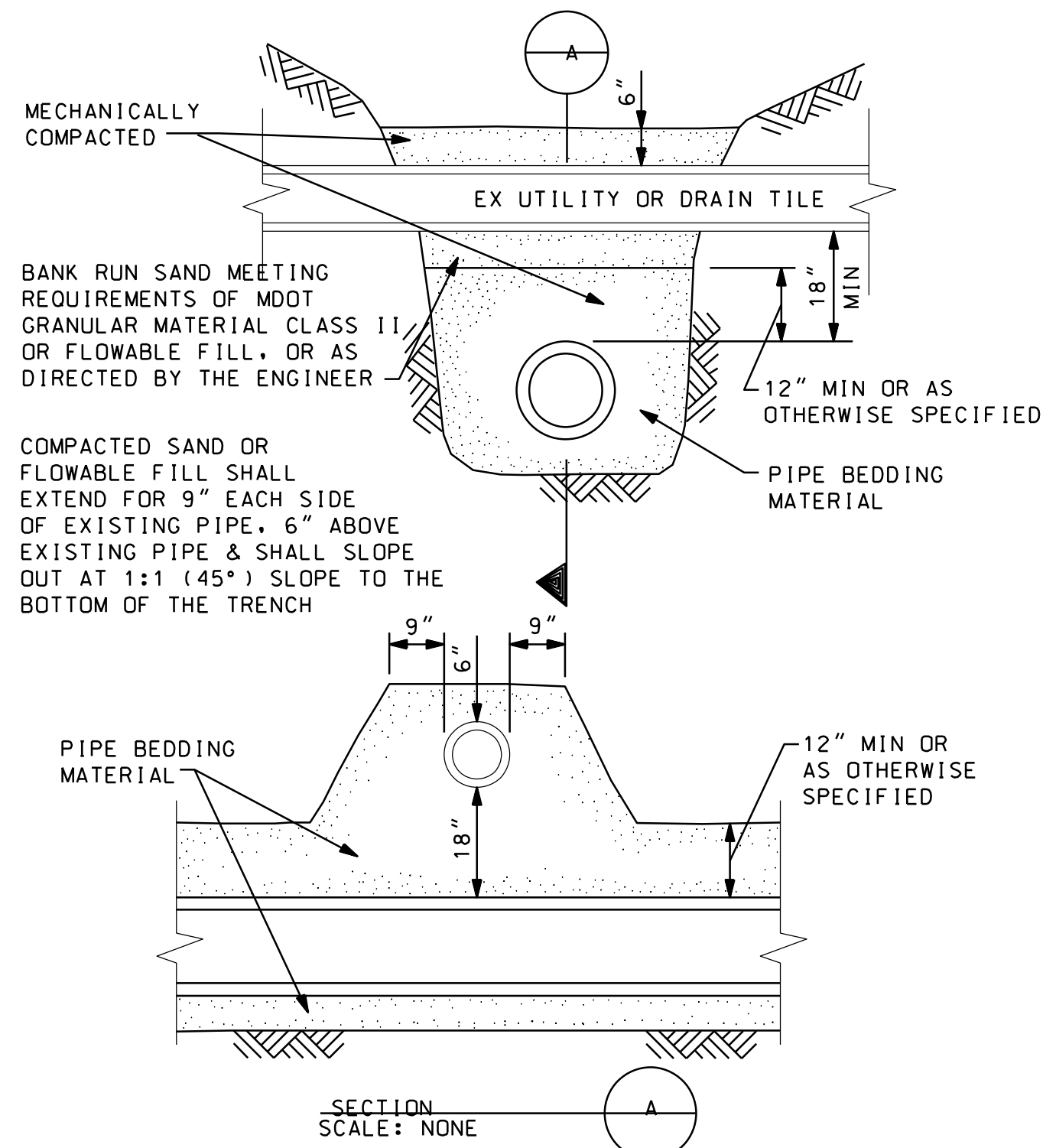
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BIDS	4/19/2024	JKW

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SHEET
S-108

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NOTE:
WHERE CONCRETE ENCASEMENT IS SPECIFIED FOR NEW UTILITY A 6" MINIMUM LAYER OF MECHANICALLY COMPACTED SAND SHALL BE MAINTAINED BETWEEN EXISTING UTILITY & TOP OF CONCRETE ENCASEMENT.



STANDARD PIPE SUPPORT
NOT TO SCALE

GENERAL NOTES

- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ATTEND A PRECONSTRUCTION MEETING, AT A TIME AND PLACE AS ARRANGED BY THE COMMUNITY, IN WHICH VARIOUS UTILITY COMPANIES AND GOVERNMENTAL AGENCY REPRESENTATIVES WILL BE PRESENT.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST HAVE IN HIS POSSESSION A COPY OF ALL PERMITS NECESSARY TO CONSTRUCT A CONNECTION TO, OR AN EXTENSION OF, THE WATER SUPPLY, SANITARY SEWER, OR STORM SEWER SYSTEMS.
- THE CONTRACTOR SHALL MAINTAIN HIS CONSTRUCTION OPERATIONS WITHIN THE PRESENTLY EXISTING ROAD RIGHTS-OF-WAY AND EASEMENTS AS NOTED ON THE PLANS THROUGHOUT THE PROJECT. IN THE EVENT THAT THE CONTRACTOR DEEMS IT NECESSARY OR ADVISABLE TO OPERATE BEYOND THE LIMITS OF THE EXISTING RIGHTS-OF-WAY OR EASEMENTS, HE SHALL BE RESPONSIBLE FOR MAKING SPECIAL WRITTEN AGREEMENTS WITH THE PROPERTY OWNERS AND SHALL FURNISH SUCH COPIES OF AGREEMENTS TO THE COMMUNITY AND ENGINEER.
- THE CONTRACTOR SHALL NOTIFY "MISS DIG" (811) 3 DAYS (NOT INCLUDING HOLIDAYS OR WEEKENDS) BEFORE STARTING CONSTRUCTION. HE SHALL MAKE ANY NECESSARY ARRANGEMENTS WITH UTILITY COMPANIES FOR RELOCATION OF EXISTING UTILITIES. THESE ARRANGEMENTS SHALL BE MADE IN SUFFICIENT TIME TO ALLOW THE RELOCATION WORK TO BE COMPLETED WITHOUT INTERFERING WITH OR DELAYING THE SEWER CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND THE ENGINEER 48 HOURS PRIOR TO UNCOVERING ANY EXISTING UTILITIES.
- ON ALL WORK WITHIN THE WAYNE COUNTY RIGHT-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER AND THE COMMUNITY 72 HOURS PRIOR TO THE START OF ANY CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN ALL TRAFFIC AT ALL TIMES AS PER THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- THE CONTRACTOR SHALL AT ALL TIMES PROVIDE EMERGENCY ACCESS TO PROPERTY IN THE VICINITY OF THE CONSTRUCTION FOR POLICE AND FIRE EQUIPMENT, AMBULANCES OR OTHER EMERGENCY VEHICLES TO PROTECT LIFE, HEALTH AND PROPERTY.
- THE CONTRACTOR SHALL MAINTAIN PUBLIC ROADS AFFECTED BY THE CONSTRUCTION OPERATIONS IN A PASSABLE CONDITION UNTIL SUCH TIME AS FINAL RESTORATION OF THESE IMPROVEMENTS CAN BE MADE. IF THE PUBLIC SAFETY IS IN DANGER OR THE NECESSITY EXISTS FOR MAINTAINING TRAFFIC, BACKFILLING MUST BE COMPLETED IMMEDIATELY. IN THE EVENT THAT THE NECESSARY BACKFILL MATERIAL AND EQUIPMENT ARE NOT AVAILABLE WHEN DIRECTION IS GIVEN FOR IMMEDIATE BACKFILL, THE TRENCH SHALL BE BACKFILLED WITH NATIVE MATERIAL TO PROVIDE FOR THE NECESSARY MAINTENANCE OF TRAFFIC AND SAFETY; HOWEVER, THE NATIVE MATERIAL SHALL BE REMOVED WITHIN 48 HOURS AND THE TRENCH PROPERLY BACKFILLED.

GENERAL NOTES

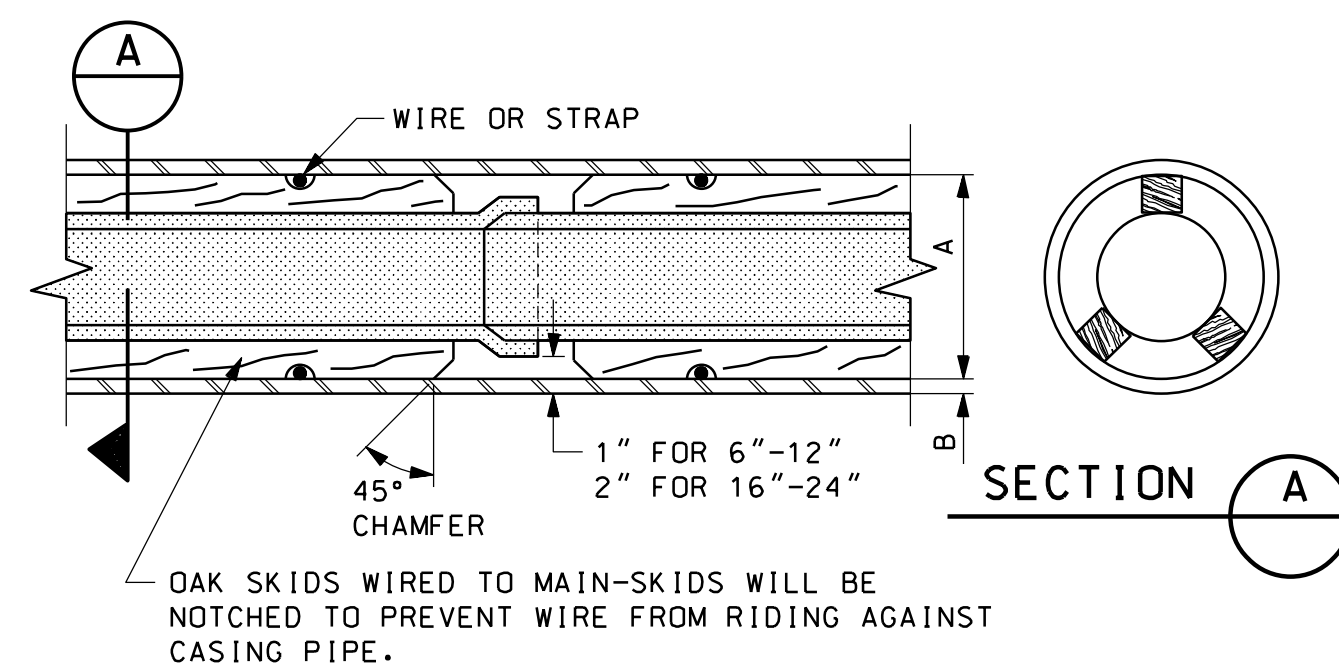
CONTINUED

- NO STREET, ROAD OR SECTION THEREOF SHALL BE CLOSED TO THROUGH TRAFFIC UNLESS AUTHORIZED BY THE AGENCY WITH JURISDICTION OVER THE ROADS. PRIOR TO CLOSING A STREET, ROAD, OR SECTION THEREOF, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COPY OF A DETOUR PLAN APPROVED BY THE AGENCY HAVING JURISDICTION OVER THE ROADS.
- IN THE EVENT ROADS ARE TO BE CLOSED, THE CONTRACTOR SHALL NOTIFY THE LOCAL FIRE DEPARTMENT, POLICE DEPARTMENT, LOCAL ROAD AUTHORITY, AMBULANCE AND EMERGENCY SERVICES, DEPARTMENT OF PUBLIC WORKS, PUBLIC TRANSIT AUTHORITY, PUBLIC SCHOOL SYSTEM, LOCAL TRASH PICKUP AUTHORITY, AND PUBLIC AND PRIVATE UTILITIES DAILY AS TO WHAT STREETS WILL BE PARTLY BLOCKED OR CLOSED, THE LENGTH OF TIME THE STREETS WILL BE BLOCKED OR CLOSED AND WHEN THE STREETS WILL BE REOPENED TO TRAFFIC.
- PAVED STREETS AND DRIVEWAYS SHALL BE MAINTAINED IN A REASONABLE STATE OF CLEANLINESS AND THE CONTRACTOR SHALL REMOVE ACCUMULATIONS OF DEBRIS CAUSED BY HIS OPERATIONS. THE CONTRACTOR SHALL HAVE, AS A MINIMUM, AN OPERATING SWEEPER BROOM ON THE SITE AT ALL TIMES. THE PAVEMENT SHALL BE CLEANED AT THE CLOSE OF EACH DAY'S OPERATION AND AS OFTEN AS NECESSARY BEFORE THAT TIME. FAILURE TO COMPLY SHALL BE CAUSE TO STOP CONSTRUCTION. CONTRACTOR SHALL ALSO COMPLY WITH THE LOCAL AIR POLLUTION CONTROL ORDINANCE.
- ALL GRAVEL AND DIRT ROADS, STREETS OR DRIVEWAYS USED SHALL BE MAINTAINED BY GRADING, PLACING DUST PALLIATIVES, AND MAINTENANCE GRAVEL IN SUFFICIENT QUANTITIES TO ELIMINATE DUST AND MAINTAIN TRAFFIC AS DIRECTED BY THE AGENCY.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY SHEETING, SHORING, DEWATERING, BRACING, TRENCH BOXES, ETC., TO PERFORM WORK SAFELY AND PROTECT EXISTING UTILITIES AND IMPROVEMENTS.
- THE FLOW IN THE EXISTING SEWERS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
- CULVERTS, DITCHES, DRAIN TILES, TILE FIELD, DRAINAGE STRUCTURES, ETC., THAT ARE DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE IMMEDIATELY RESTORED.
- ALL PROPERTY IRONS AND MONUMENTS, IF DISTURBED OR DESTROYED BY THE CONTRACTOR'S OPERATION, SHALL BE REPLACED BY A LICENSED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- AFTER ALL THE PIPE, STRUCTURES, ETC., HAVE BEEN LAID, CONSTRUCTED, AND BACKFILLED, THE SYSTEM SHALL BE TESTED AND FINAL INSPECTED. THE INSPECTION AND TESTING SHALL CONSIST OF A FIRST INSPECTION, TELEVISION INSPECTION (IF APPLICABLE) TESTING, AND FINAL INSPECTION AND MEASUREMENT. THE CONTRACTOR SHALL PROVIDE THE NECESSARY SUPERVISION, LABOR, TOOLS, EQUIPMENT, AND THE MATERIALS NECESSARY FOR THE TESTS WHICH SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED TWO (2) WORKING DAYS IN ADVANCE OF ALL TESTING.

GENERAL NOTES

CONTINUED

- THE FIRST INSPECTION SHALL BE COMPLETED AND ALL REPAIRS MADE IN AMPLIFIED TIME SO THAT THE TELEVISION INSPECTION OF THE UNDERGROUND PORTION OF THE SYSTEM CAN BE COMPLETED WITHIN FOUR (4) WEEKS OF THE COMPLETION OF THE CONSTRUCTION. WHEN RE-TELEVISION IS NECESSARY, AN ADDITIONAL TWO (2) WEEKS WILL BE ALLOWED FOR COMPLETION. TESTING OF THE SYSTEM AS HEREIN DESCRIBED SHALL IMMEDIATELY FOLLOW THE TELEVISION INSPECTION AND SHALL BE COMPLETED WITHIN A TWO (2) WEEK PERIOD.
- FAILURE TO MAINTAIN A SCHEDULE IN COMPLIANCE WITH THESE TERMS WILL AUTOMATICALLY CAUSE THE STOPPAGE OF OTHER WORK AT THE PARTICULAR SITE IN QUESTION UNTIL SUCH TIME AS THE FINAL INSPECTION OF THE COMPLETED UNDERGROUND PORTION OF THE SYSTEM HAS PROGRESSED TO ACCEPTABLE LIMITS.
- THE CONTRACTOR SHALL HAVE THE UNDERGROUND PORTION OF THE SEWER SYSTEM READY FOR THE FIRST INSPECTION WITHIN TWO (2) WEEKS AFTER THE COMPLETION OF UTILITY.
- THE FIRST INSPECTION SHALL CONSIST OF A VISIBLE AND AUDIBLE CHECK OF SEWERS, MANHOLES, GATE WELLS, AND OTHER STRUCTURES TO ASCERTAIN THAT THE STRUCTURE STEPS HAVE BEEN PLACED, ALL LIFT HOLES PLUGGED, THE CHANNELING OF THE MANHOLE BOTTOMS COMPLETED, ALL VISIBLE OR AUDIBLE LEAKS STOPPED, ALL PIPE HAS BEEN PLACED STRAIGHT AND TRUE TO THE PROPER GRADES AND ELEVATION, THE REQUIRED ADJUSTING RINGS AND FRAME AND COVER PROPERLY INSTALLED, ALL TRENCHES AND STRUCTURES BACKFILLED IN AN ACCEPTABLE MANNER AND THAT THE SYSTEM HAS BEEN THOROUGHLY CLEANED.
- THE FIRST INSPECTION SHALL BE CONSIDERED COMPLETED WHEN ALL TREE PAIRS HAVE BEEN MADE AND THE SYSTEM IS READY FOR A TELEVISION INSPECTION AND SUBSEQUENT TESTING.
- TRENCH BACKFILL UNDER ROAD SURFACES, PAVEMENTS, CURBS, DRIVEWAY, SIDEWALK AND WHERE THE TRENCH EDGE IS WITHIN 3- FEET OF THE PAVEMENT SHALL BE TRENCH B (SAND) PER SPECIFICATIONS SECTION 31 2333, TRENCHING AND BACKFILLING.
- AFTER ALL TESTING, TELEVISION INSPECTION, FINAL RESTORATION AND CLEAN-UP HAS BEEN COMPLETED, A FINAL INSPECTION AND MEASUREMENT WILL BE DONE. THE FINAL INSPECTION SHALL BE REQUESTED BY THE CONTRACTOR AND CONSIST OF, BUT IS NOT LIMITED TO, CHECKING FOR PROPER ALIGNMENT, PROPER GRADE, CLEANLINESS, LEAKS, CONFORMANCE TO THE PLANS AND SPECIFICATION, PROPER STRUCTURAL AND MECHANICAL ADJUSTMENTS, AND RESTORATION. FINAL MEASUREMENT INCLUDES STRUCTURE ELEVATIONS, DISTANCES BETWEEN STRUCTURES, AND CONFIRMATION UTILITIES ARE LOCATED WITHIN EASEMENT AND RIGHT-OF-WAY AREAS.
- SUCCESSFUL COMPLETION OF ANY TEST OR INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM THEIR RESPONSIBILITY TO CORRECT ANY DEFICIENCY OR NONCONFORMANCE TO THE PLANS OR SPECIFICATIONS WHICH MAY THEREAFTER BECOME KNOWN.

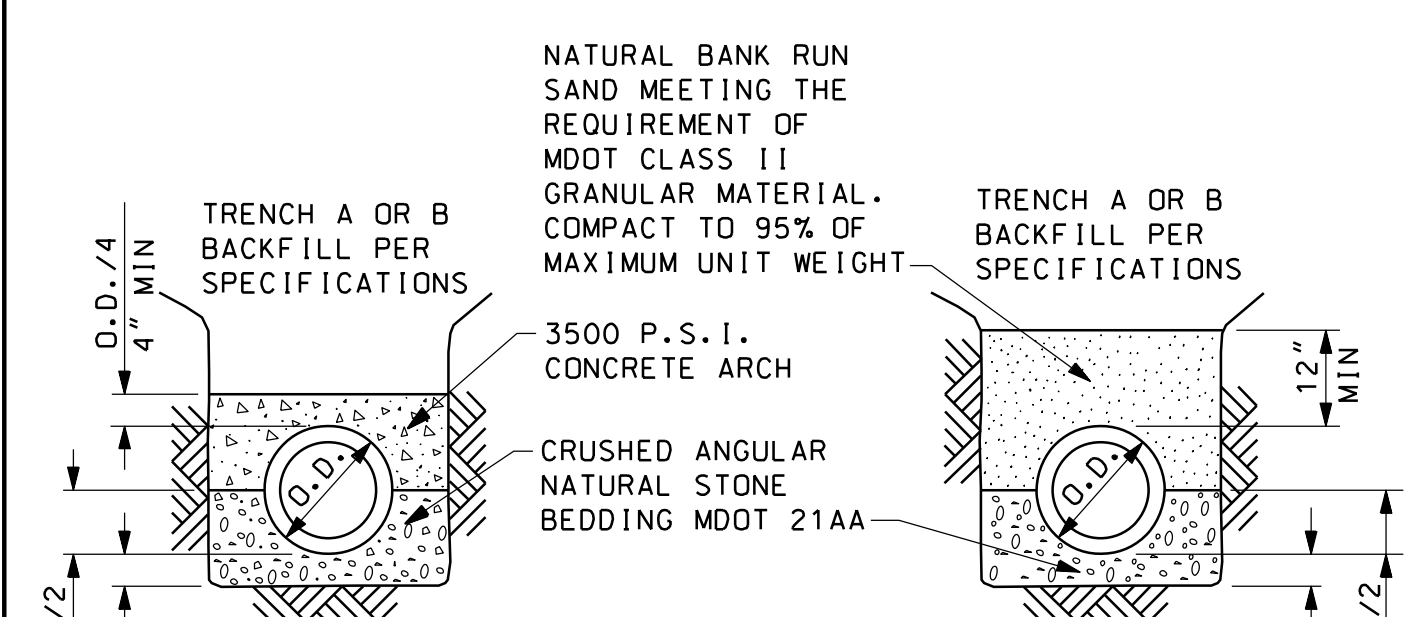


DIA OF SEWER	DIA OF MAIN	MIN "A"	ROAD CROSSING MIN "B"	RAILROAD CROSSING MIN "B"
6"	16"	.375	.375	.375
8"	16"	.375	.375	.375
10"	12"	.375	.438	.438
12" & 15"	20"	.375	.500	.500
18"	24"	.375	.500	.500

CASING PIPE SHALL BE WELDED STEEL PIPE A.S.T.M. A-252, GR 2 UNLESS OTHERWISE SPECIFIED.

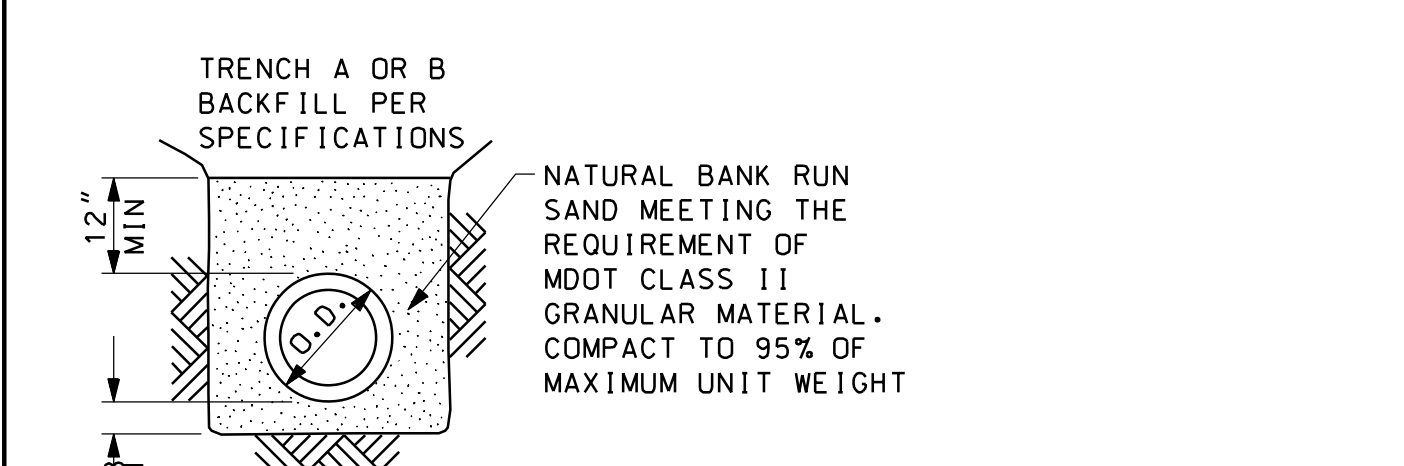
- NOTES:
- NO WATER SHALL BE USED IN BORING UNDER RAILROADS.
 - MAINTAIN MINIMUM OF 5'-6" OF COVER BETWEEN BASE OF RAIL AND TOP OF CASING.
 - THE ENDS OF THE CASING SHALL BE SUITABLY PROTECTED AGAINST THE ENTRANCE OF FOREIGN MATERIAL, BUT SHALL NOT BE TIGHTLY SEALED.
 - WHEN BORING ALL VOIDS OUTSIDE OF CASING PIPE SHALL BE FILLED BY MEANS OF PRESSURE GROUTING WITH 1:3 CEMENT-SAND MORTAR. THIS WORK MUST BE ACCOMPLISHED WITHIN 24 HOURS AFTER THE CROSSING HAS BEEN COMPLETED. BORING SHALL EXTEND A MINIMUM OF 10 FEET OUTSIDE THE EDGES OF THE PAVEMENT.
 - SKIDS ARE TO BE MINIMUM OF 80% OF PIPE LENGTH.
 - CASING SPACERS AS ALLOWED BY THE ENGINEER.

STANDARD CASING SECTION
NOT TO SCALE



(PLAIN CONCRETE) MIN WIDTH OF ARCH O.D. +8 INCHES OR 1-1/4 O.D. WHICHEVER IS GREATER
LOAD FACTOR: 1.9
CLASS "R-A"

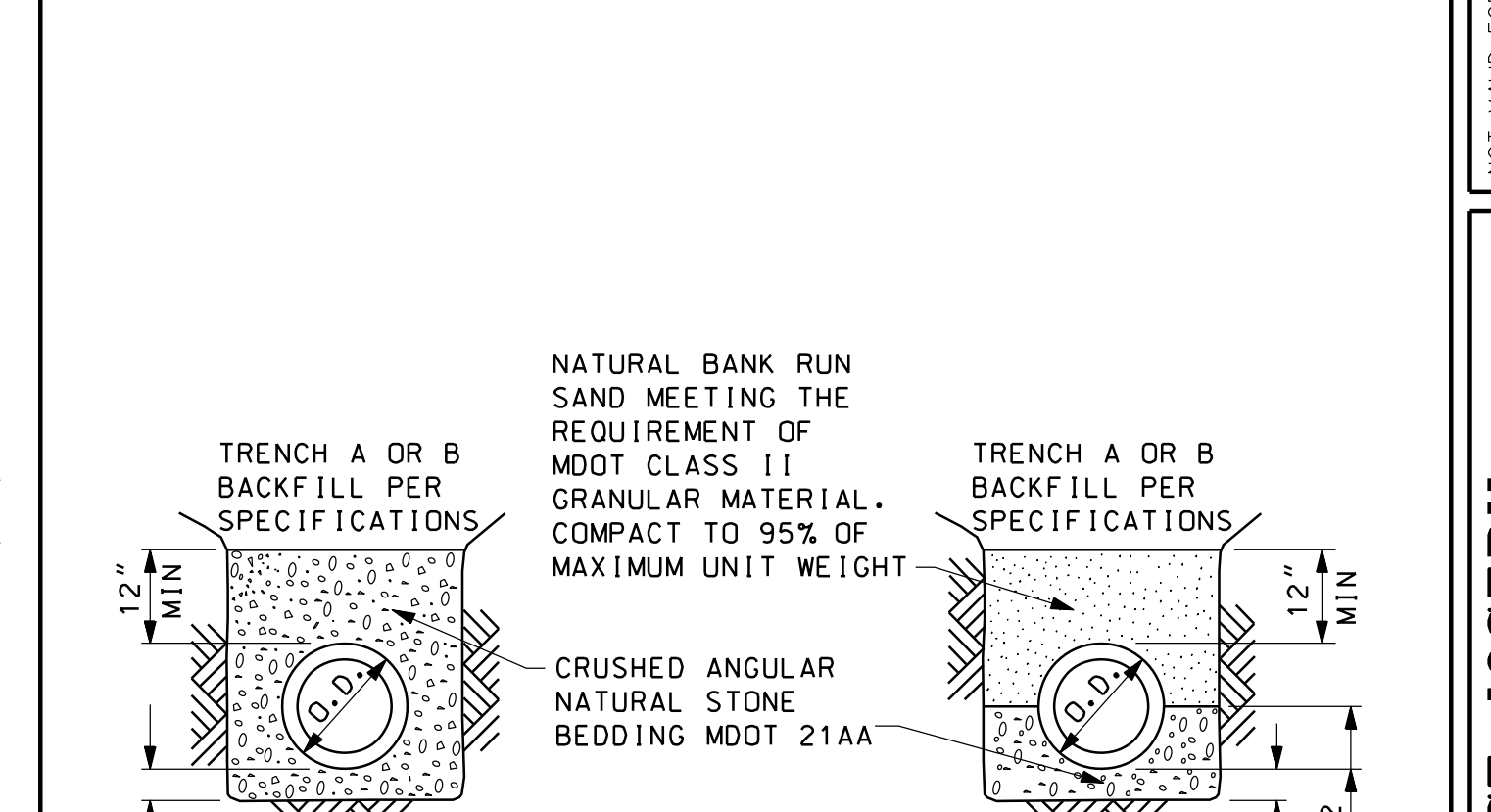
LOAD FACTOR: 1.9
CLASS "R-B"



LOAD FACTOR: 1.9
CLASS "R-C"

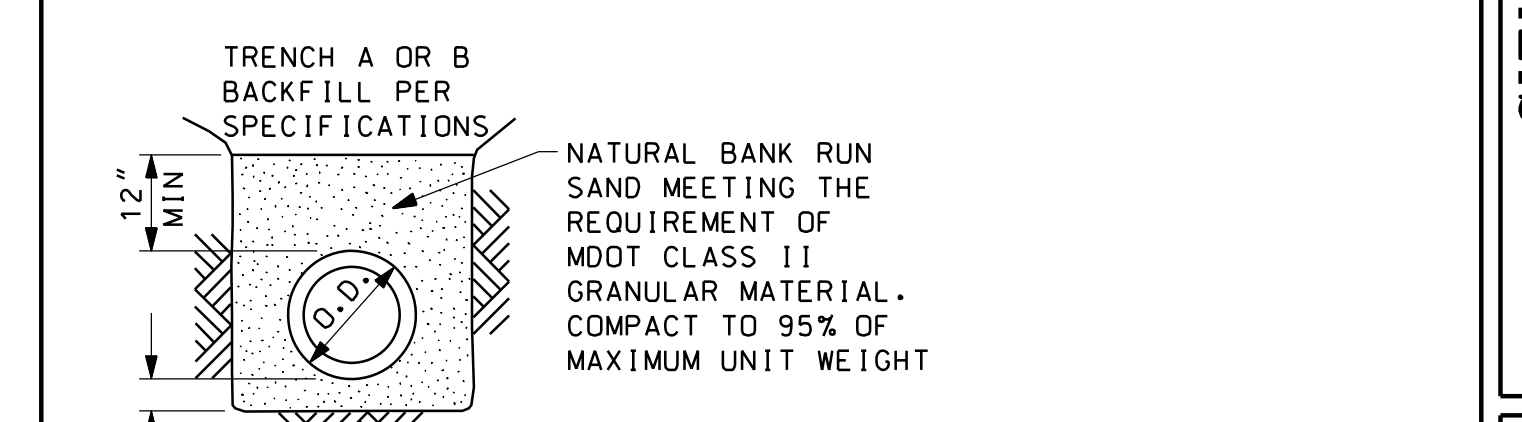
MAX WIDTH OF TRENCH AT 12" ABOVE TOP OF PIPE
6" THRU 12" PIPE - 30" WIDE
15" THRU 36" PIPE - O.D. +16"
42" THRU 60" PIPE - O.D. +20"
OVER 60" PIPE - OUTSIDE DIAMETER OF PIPE +24"
MIN WIDTH OF TRENCH 12" ABOVE THE TOP OF PIPE SHALL BE 6" ON EACH SIDE OF PIPE

RIGID PIPE BEDDING DETAILS
NOT TO SCALE



CLASS "F-I"

CLASS "F-II"



CLASS "F-III"

MINIMUM WIDTH OF TRENCH AT 12" ABOVE TOP OF PIPE	
PIPE O.D.	MINIMUM TRENCH WIDTH
UP TO 16"	O.D. + 16"
GREATER THAN 16"	O.D. x 1.25 PLUS 12"

FLEXIBLE PIPE BEDDING DETAILS
NOT TO SCALE

PROJECT MANAGER: S. KEOUGH
FIELD BOOK INFORMATION: -
PLOTS: -
BY BUSERS
STIMES
PLOTTED: -
DATE: -

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CONSTRUCTION
UNLESS SIGNED AND DATED

CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085

FINAL CSO COMPLIANCE
EARLY ACTION DESIGN
STANDARD MISCELLANEOUS DETAILS

ISSUED FOR: DATE: BY:

JOB NO.
SJO2004-02T

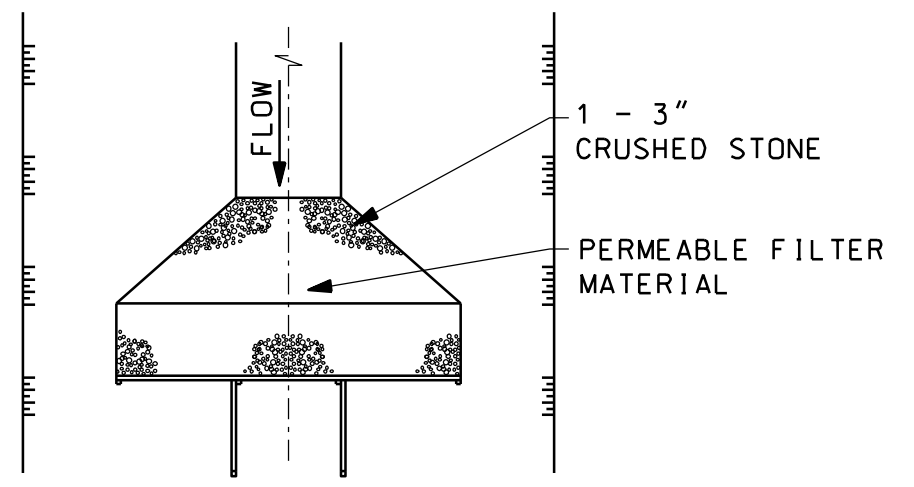
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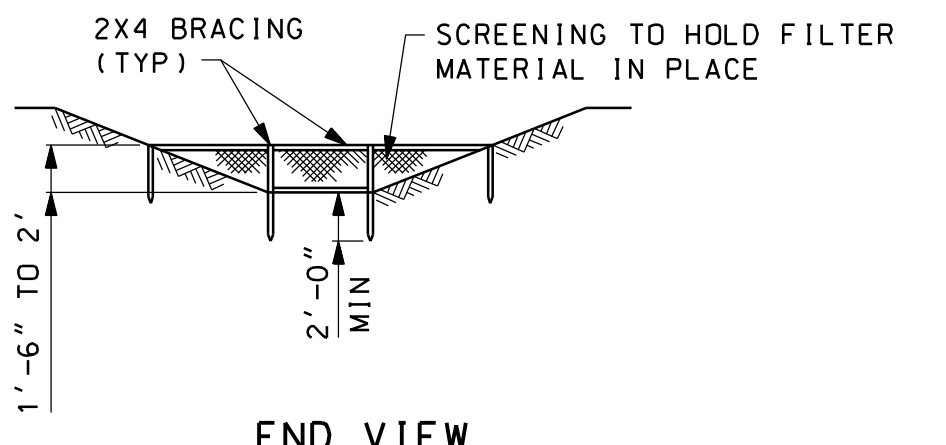
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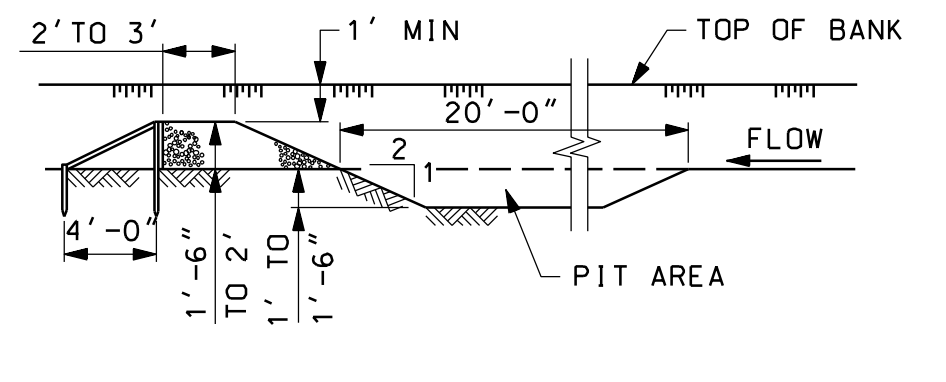
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PLAN VIEW



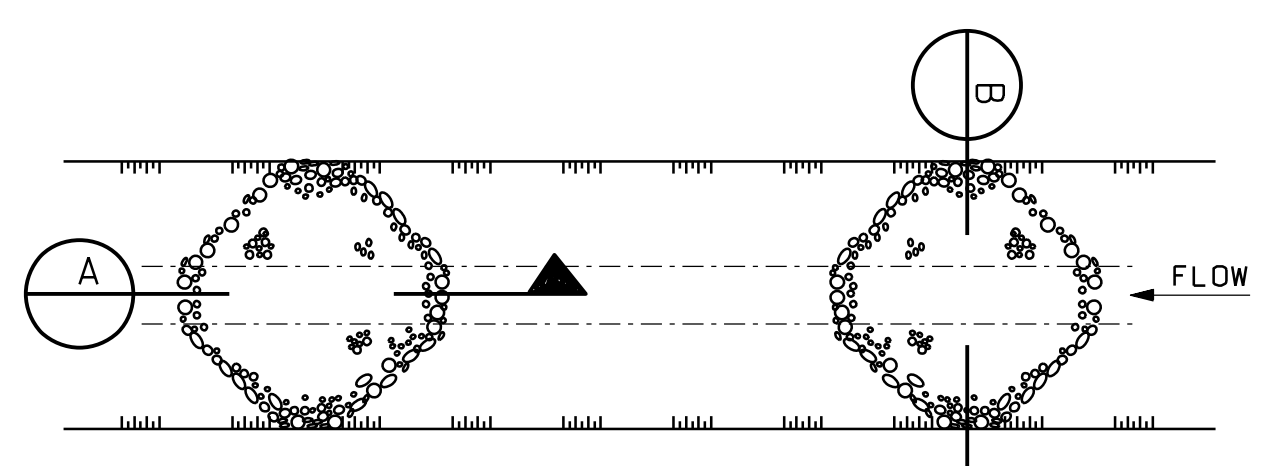
END VIEW



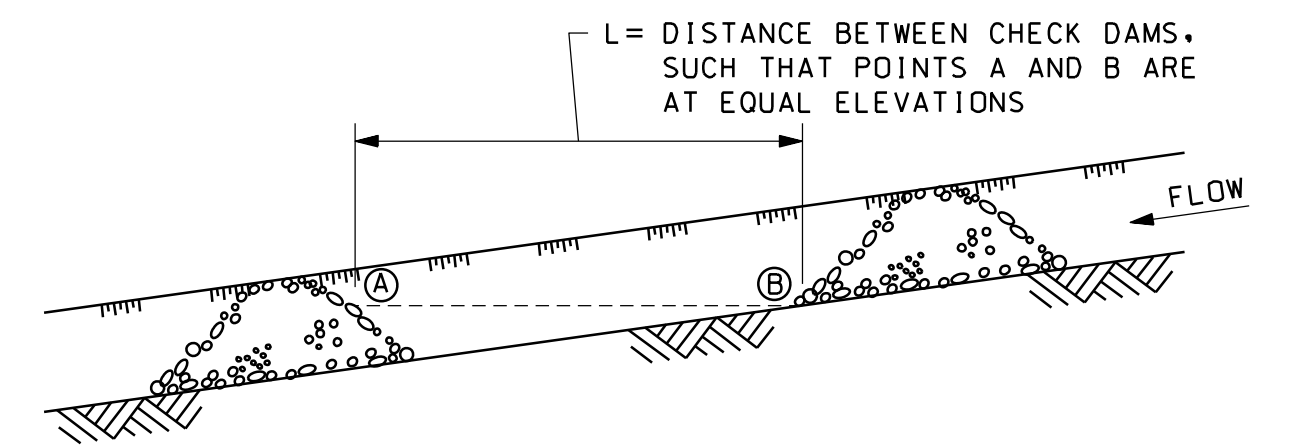
SECTION

- NOTES:
1. PLACE DITCH SEDIMENT TRAP PRIOR TO ON-SITE CONSTRUCTION WORK.
2. MAINTAIN DITCH SEDIMENT TRAP IN GOOD OPERATION DURING PROJECT & REMOVE AT END OF PROJECT.
3. CHANNEL TO BE RESTORED TO ORIGINAL CONDITION OR BETTER AS DIRECTED BY THE ENGINEER.
4. CRUSHED STONE INCLUDED WITH DITCH SEDIMENT TRAP.

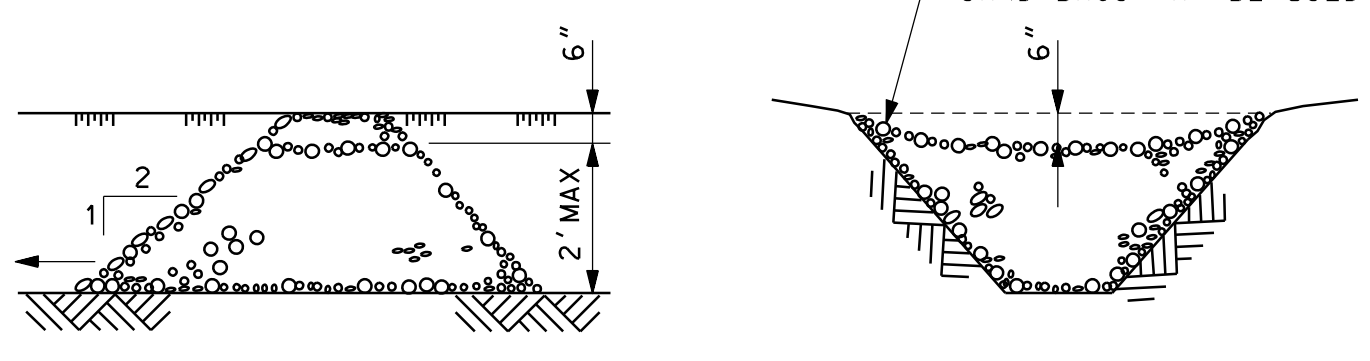
DITCH SEDIMENT TRAP
NOT TO SCALE



PLAN VIEW



CROSS-SECTION



SECTION A-A

SECTION B-B

- NOTE:
CHECK DAMS GREATER THAN TWO FEET IN DEPTH MAY SERIOUSLY IMPACT THE FLOW CHARACTERISTICS OF THE DITCH.

CHECK DAMS
NOT TO SCALE

SOIL EROSION AND SEDIMENTATION CONTROL

NOTES

- ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE AGENCY HAVING JURISDICTION.
- ALL SOIL EROSION CONTROL MEASURES SHALL BE CHECKED A MINIMUM OF ONCE PER WEEK AND WITHIN A MINIMUM OF 24 HOURS AFTER EVERY RAINFALL. ANY SOIL EROSION CONTROL MEASURES DAMAGED OR RENDERED INEFFECTIVE SHALL BE IMMEDIATELY REPAIRED OR REMOVED AND REPLACED AT NO ADDITIONAL COST.
- EROSION AND ANY SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
- ALL SOIL EROSION AND SEDIMENTATION CONTROL (SESC) DEVICES SHALL BE INSTALLED PRIOR TO CONTRACTOR BEGINNING ANY WORK. ALL SESC DEVICES SHALL BE MAINTAINED IN AN EFFECTIVE, FUNCTIONING CONDITION AT ALL TIMES DURING THE COURSE OF THE WORK. ALL TEMPORARY SESC DEVICES SHALL BE REMOVED AND THE AREA RESTORED AFTER THE PERMANENT SESC MEASURES ARE INSTALLED AND FUNCTIONING.
- DEBRIS FROM THE PROJECT SHALL BE LEFT ON THE SITE BY DELIVERY OR CONSTRUCTION VEHICLES THROUGH THE USE OF CLEAN STONE EXITS. SHOULD THE STONE BECOME INEFFECTIVE IT WILL BE REPLACED. ALL CONSTRUCTION TRAFFIC WILL USE THE CLEAN STONE EXITS.
- IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDING AREAS WITH UNWEATHERED SMALL GRAIN STRAW OR HAY SPREAD UNIFORMLY AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE. ANCHOR MULCH WITH DISC-TYPE MULCH ANCHORING TOOL OR OTHER MEANS AS APPROVED BY THE AGENCY WITH JURISDICTION.
- ALL MUD, DIRT, AND DEBRIS TRACKED OR SPILLED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
- PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 CALENDAR DAYS AFTER FINAL GRADING OR FINAL EARTH CHANGES HAVE BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IMMEDIATELY. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE ESTABLISHED. ALL PERMANENT SOIL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED. ALL DRAIN BANKS DISTURBED BY CONSTRUCTION SHALL BE RESTORED WITHIN FIVE CALENDAR DAYS AND SO D PEGGED IN PLACE.
- PARTICULAR CARE SHOULD BE TAKEN WHEN WORKING ALONG THE PERIMETER OF THE SITE. IN NO EVENT SHALL WORK AREA EXTEND BEYOND THE LIMITS INDICATED ON THE PLANS.

SOIL EROSION AND SEDIMENTATION CONTROL

NOTES - CONTINUED

- SHOULD IT BE NECESSARY FOR THE CONTRACTOR TO DEWATER THE GROUND IN THE COURSE OF CONSTRUCTING THE PROPOSED UTILITY, THE CONTRACTOR SHALL FILTER ALL DISCHARGE THROUGH A DISCHARGE FILTER BAG THAT WILL FILTER ALL DISCHARGED WATER FROM THE DEWATERING OPERATION. IN NO INSTANCE SHALL THE DEWATERING DISCHARGE BE PERMITTED TO FLOW UNFILTERED FROM THE CONSTRUCTION SITE.
- THE CONTRACTOR SHALL CONTROL THE DUST ON THE SITE DURING THE LIFE OF THE CONTRACT. IN ACCORDANCE WITH THE SPECIFICATIONS AND THE REQUIREMENTS OF THE COMMUNITY THIS DUST CONTROL SHALL BE ACCOMPLISHED BY THE APPLICATION OF A POSITIVE DUST PICK-UP METHOD WITH WATER ON HARD SURFACES. SUCH DUST CONTROL MATERIALS SHALL BE APPLIED AS OFTEN AS IS NECESSARY IN THE OPINION OF THE COMMUNITY TO CONTROL THE DUST.
- SHOULD THE SOIL EROSION CONTROL REQUIREMENTS BE NEGLECTED OR NOT ADEQUATELY FOLLOWED, THE COMMUNITY MAY REQUIRE THE CONTRACTOR TO CEASE CONSTRUCTION OPERATIONS AND TO APPLY HIS ENTIRE FORCE TO MEET THE REQUIREMENTS BEFORE PROCEEDING FURTHER WITH THE PROJECT.
- SOIL EROSION AND SEDIMENTATION CONTROL SHALL BE IN ACCORDANCE WITH PART 91 SOIL EROSION AND SEDIMENTATION CONTROL (SESC), OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA).
- AS SOON AS POSSIBLE, COMPLETE FINAL GRADING AND PLACING OF PERMANENT SOIL EROSION CONTROL DEVICES. AFTER ESTABLISHMENT OF PERMANENT VEGETATION, REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES.

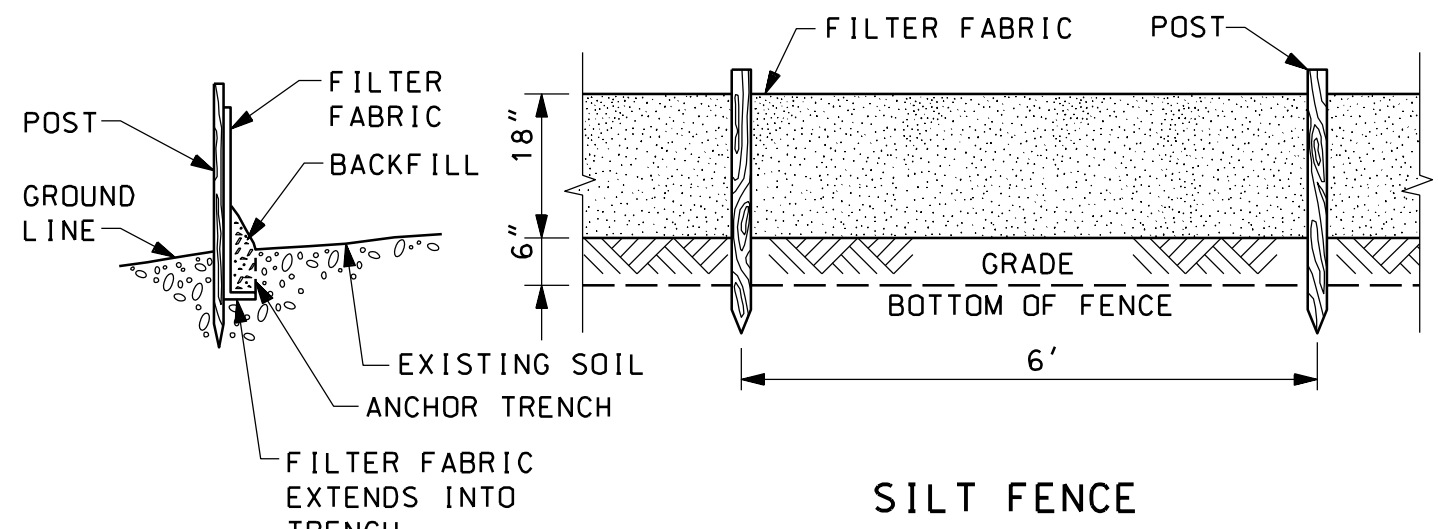
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MUST HAVE FEES FOR CONSTRUCTION UNLESS SIGNED AND DATED

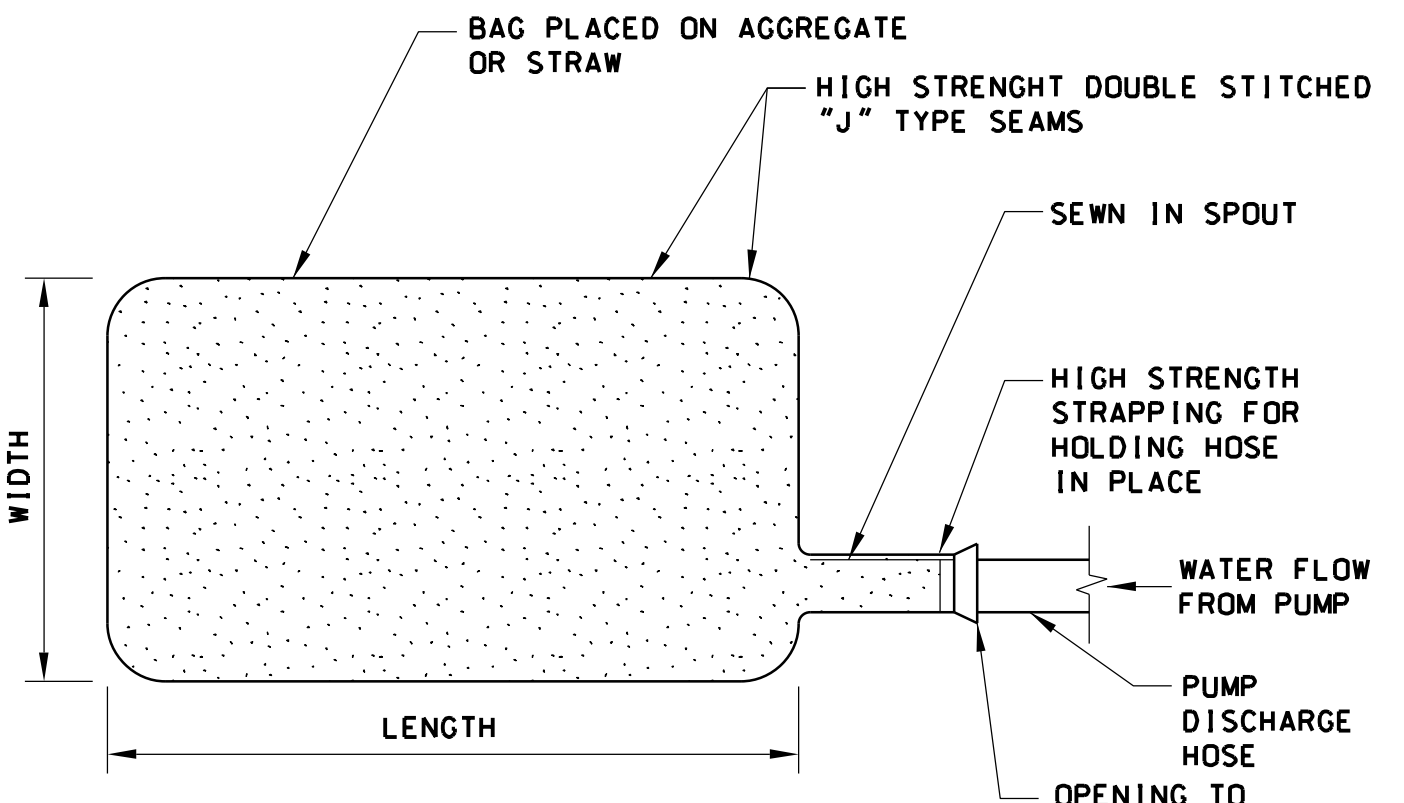
PLOTTED BY: BUSERS

PROJECT MANAGER: S. KEOUGH
FIELD BOOK INFORMATION: FILED

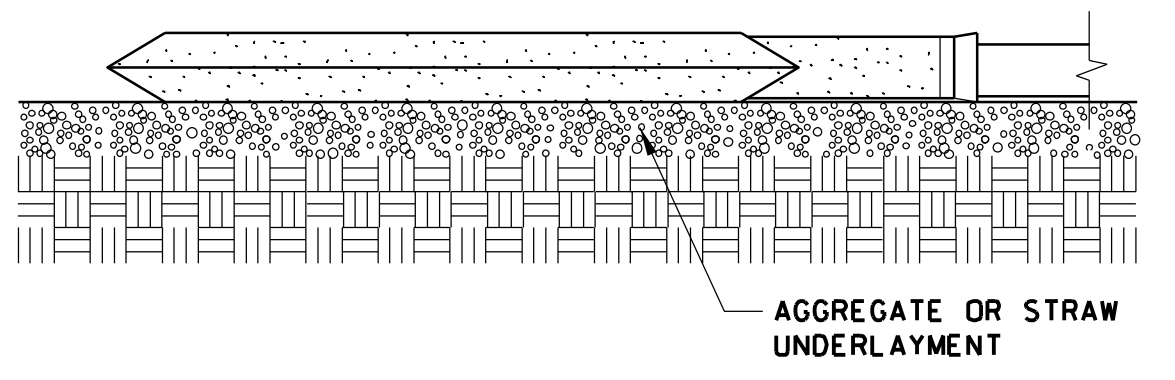


SILT FENCE

SILT FENCE
NOT TO SCALE

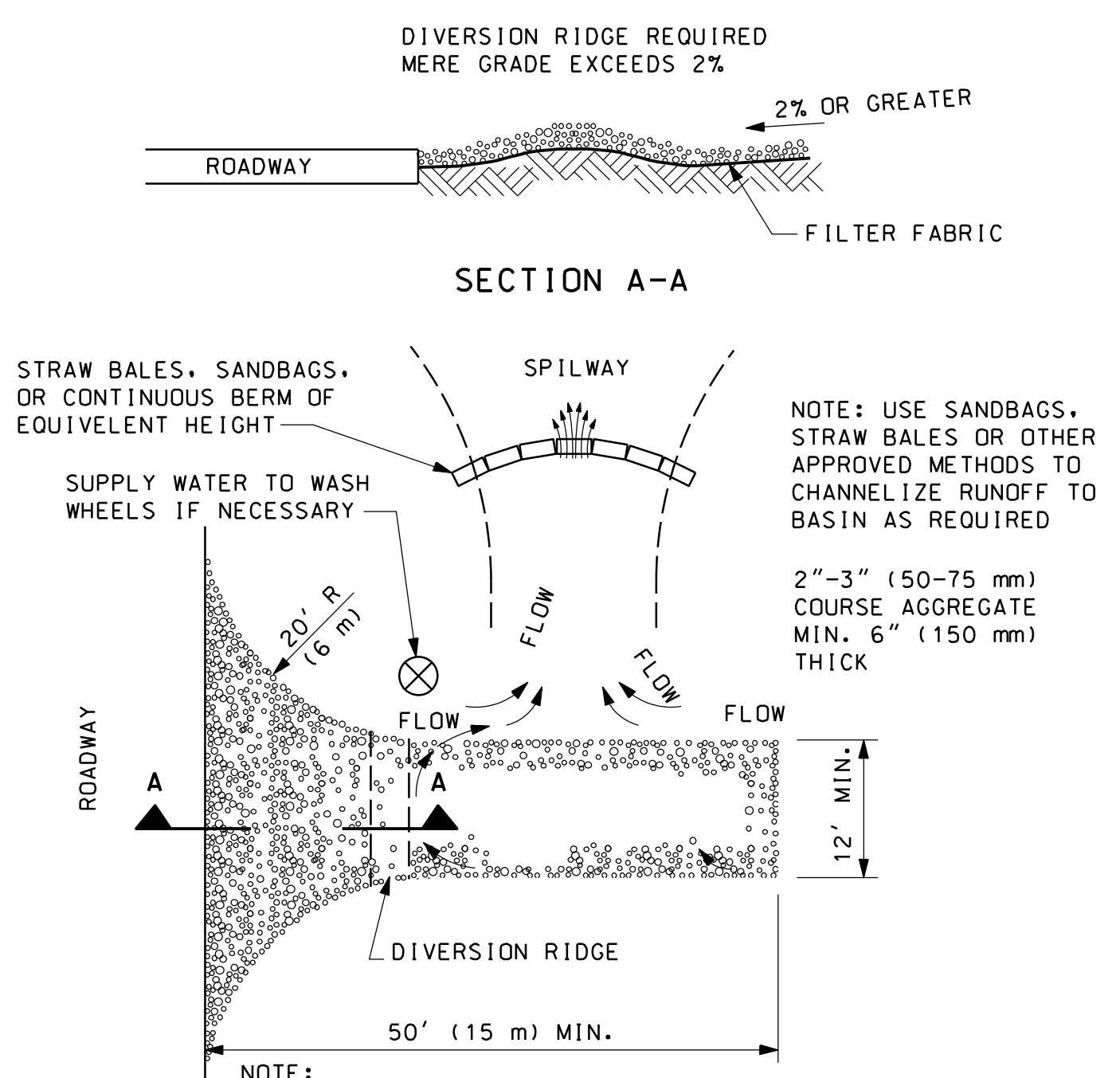


TOP VIEW



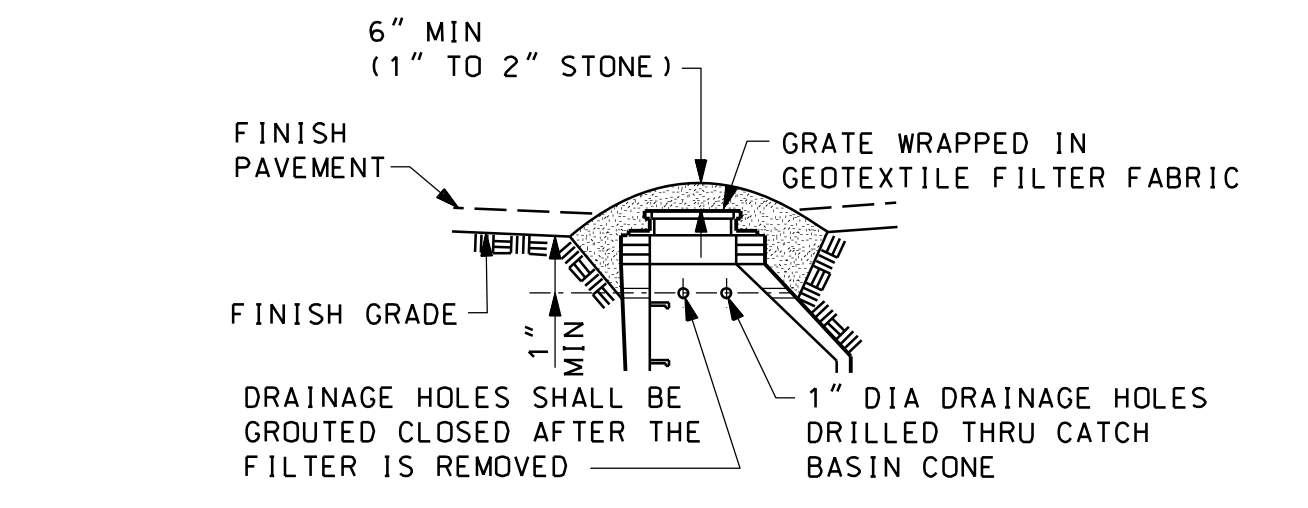
SIDE VIEW

DEWATERING FILTER BAG DETAIL
NOT TO SCALE



- NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY GRAVEL CONSTRUCTION
ENTRANCE/ EXIT
NOT TO SCALE



DRAINAGE STRUCTURE FILTER
NOT TO SCALE

CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085

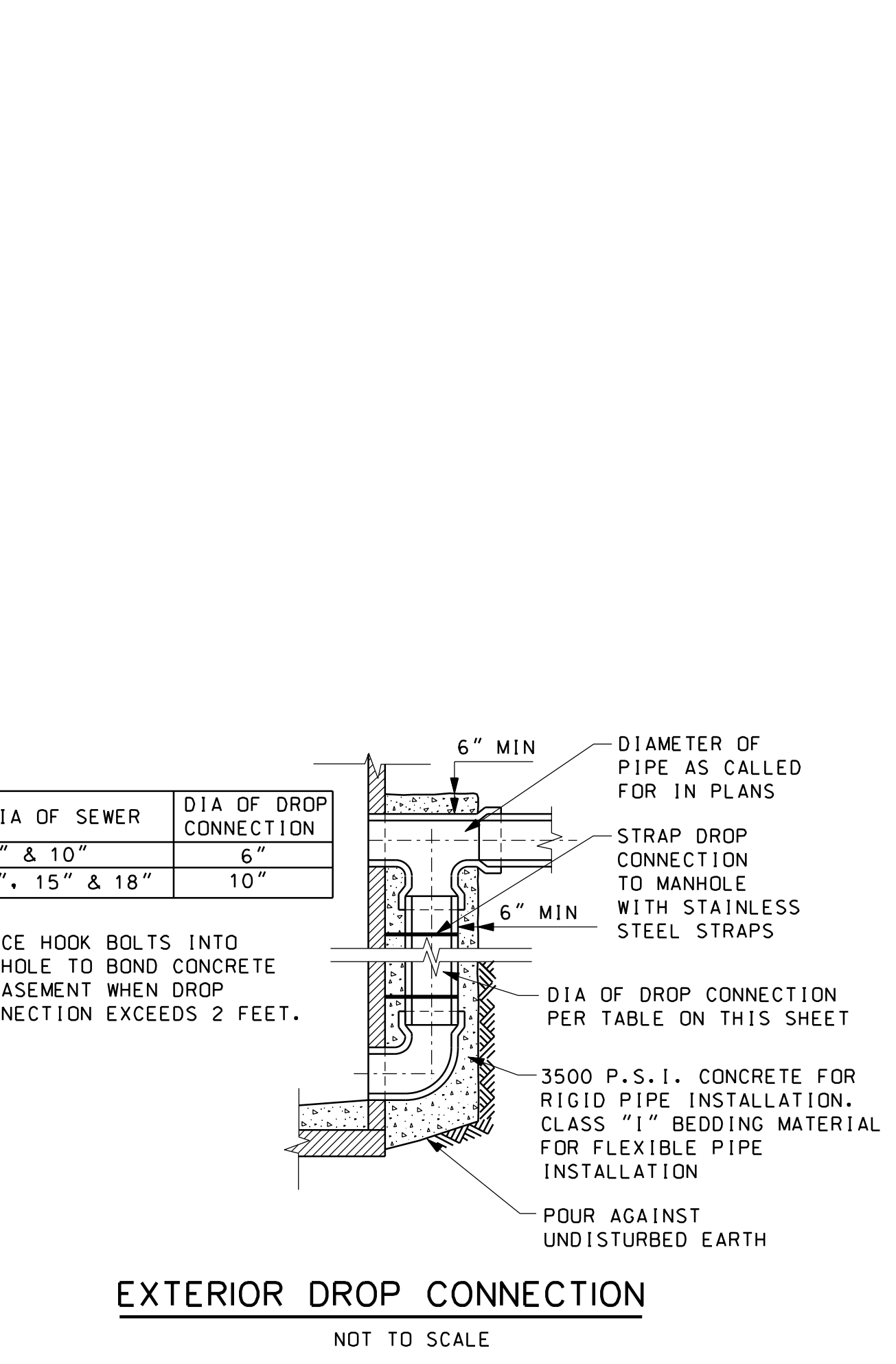
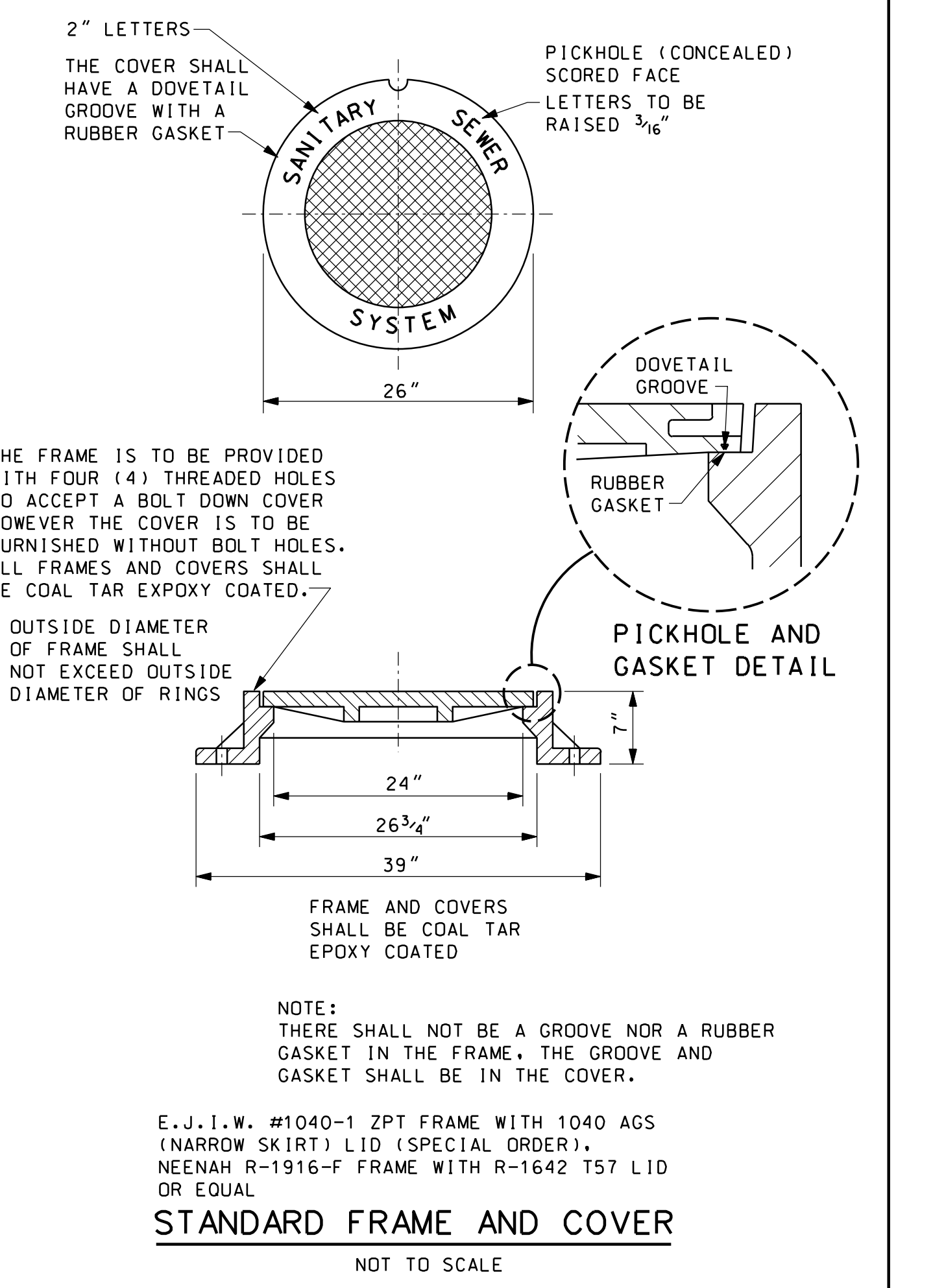
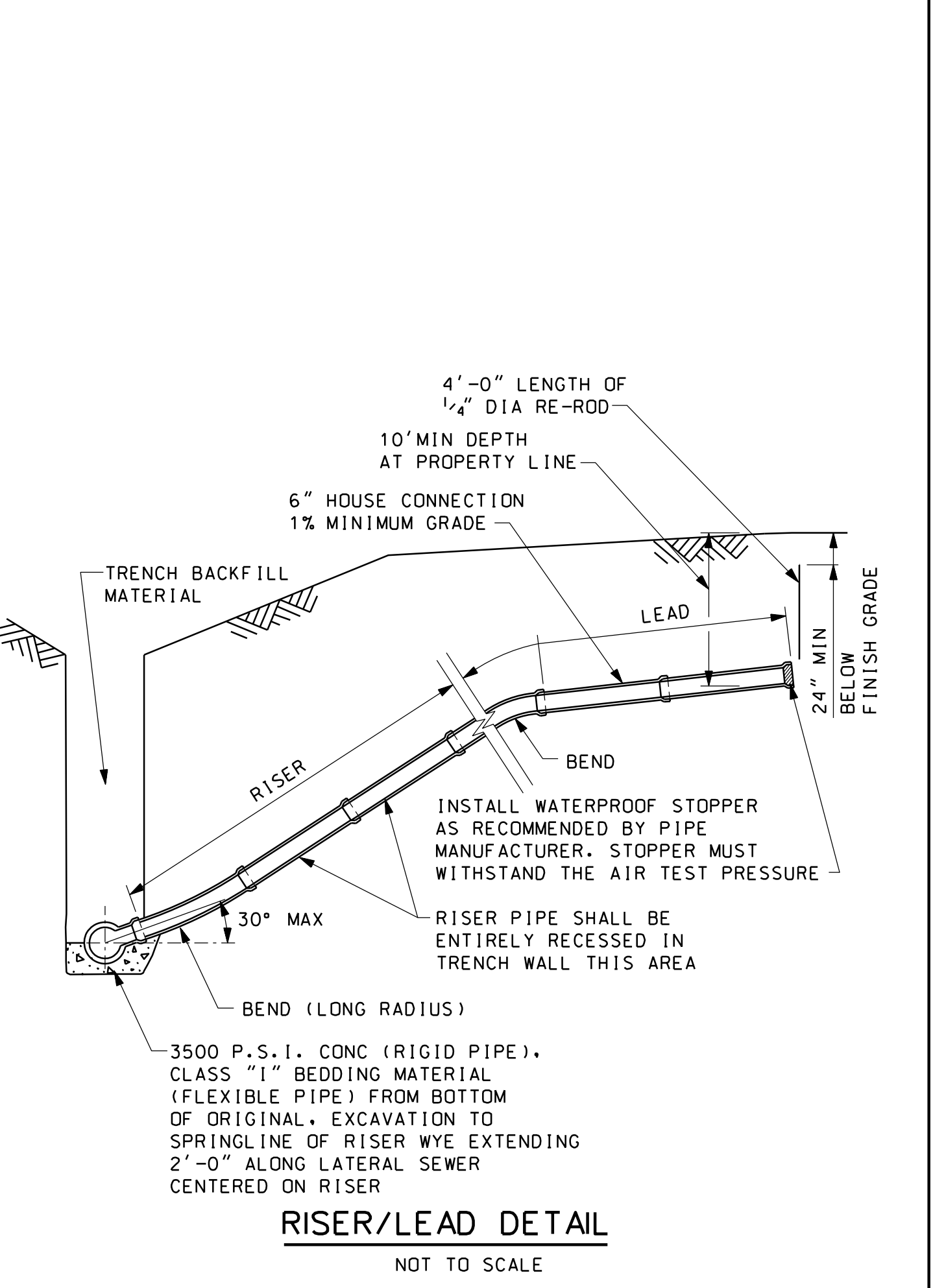
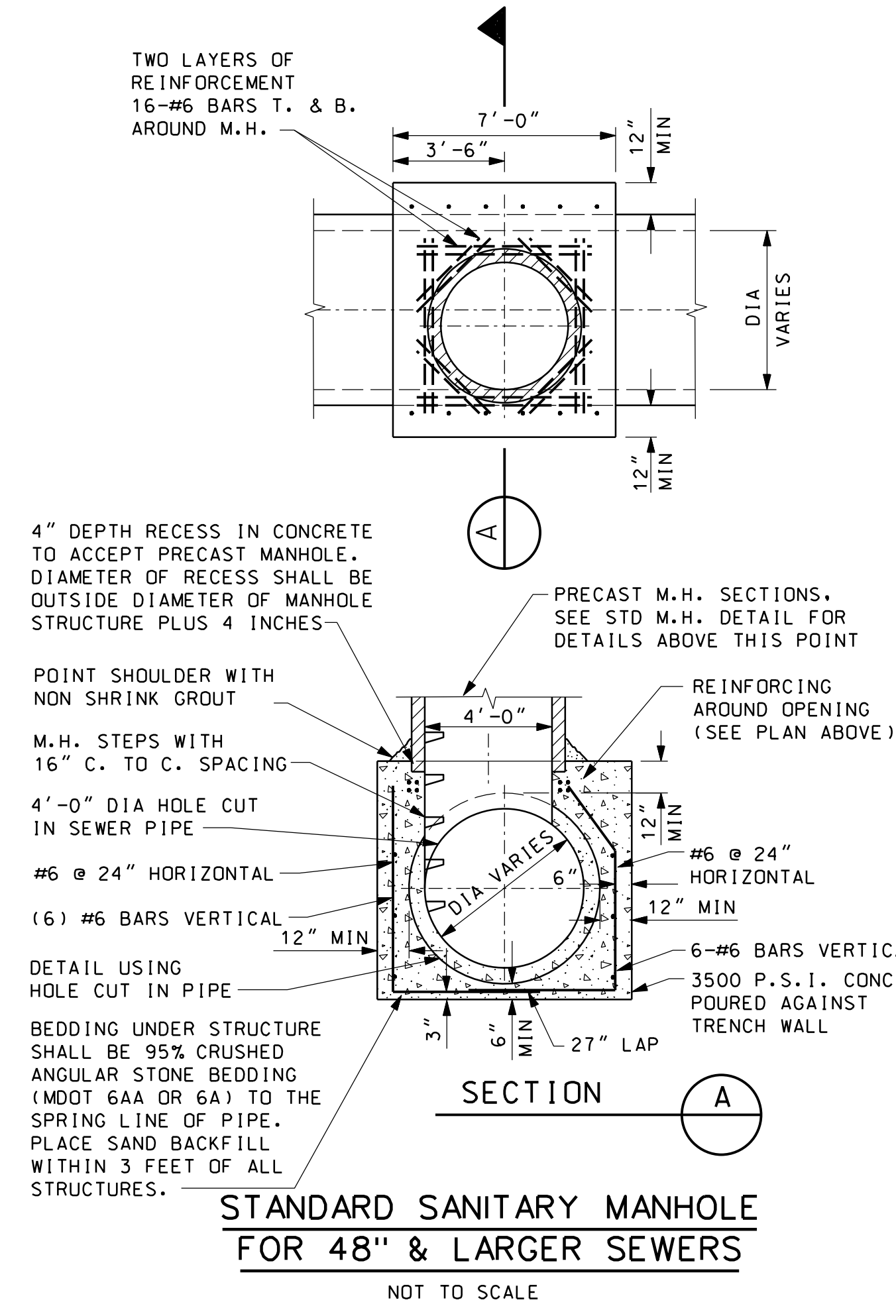
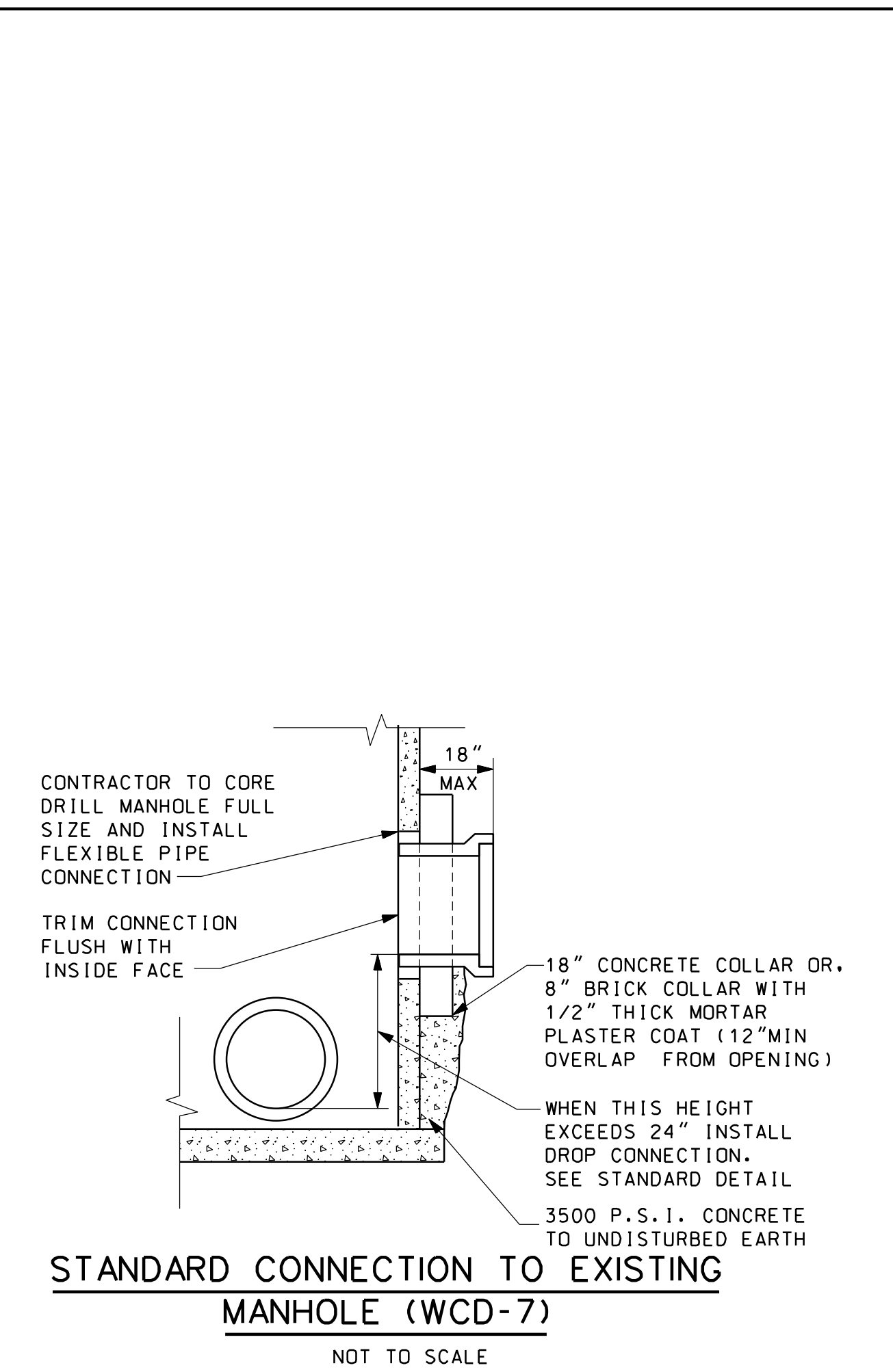
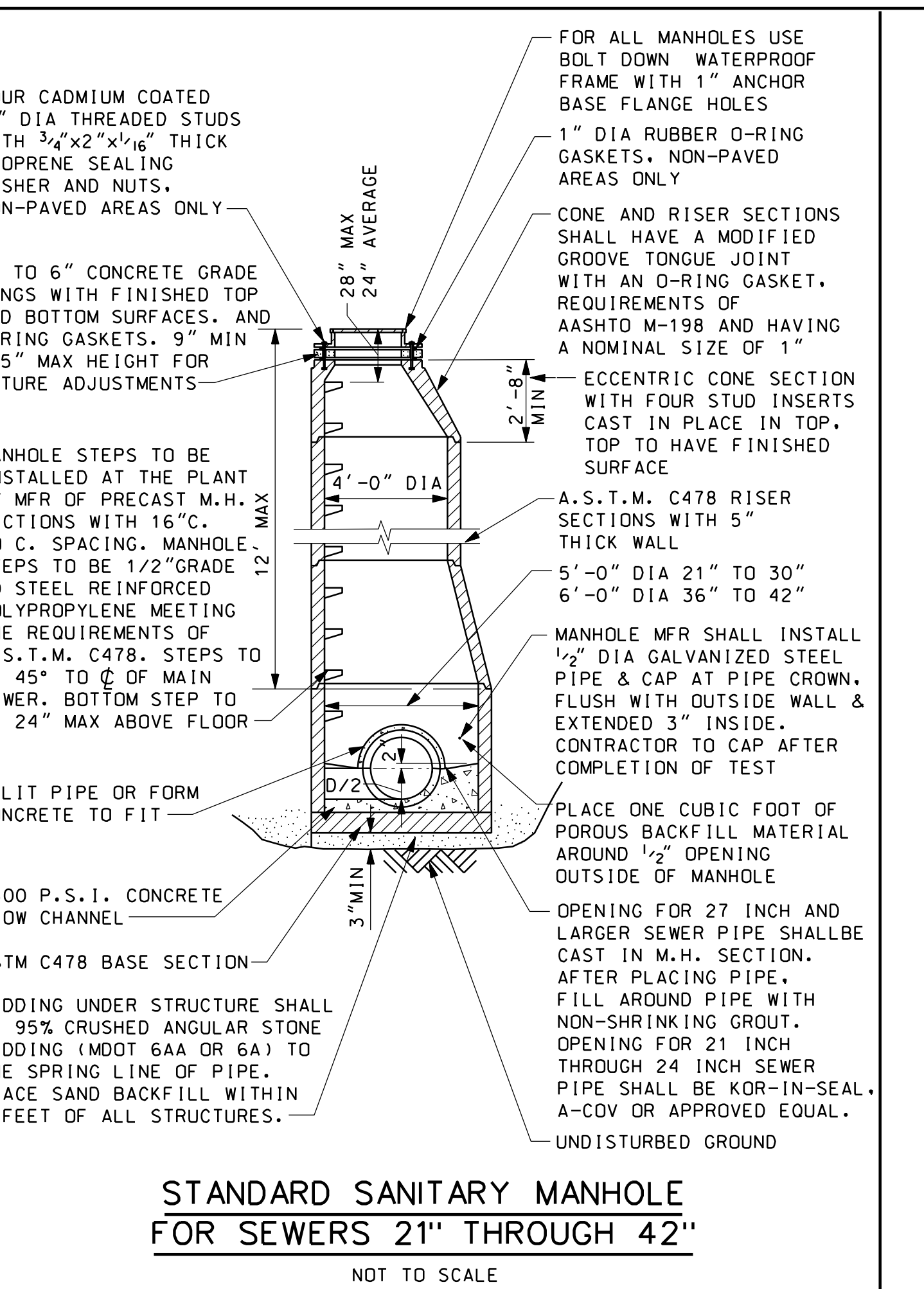
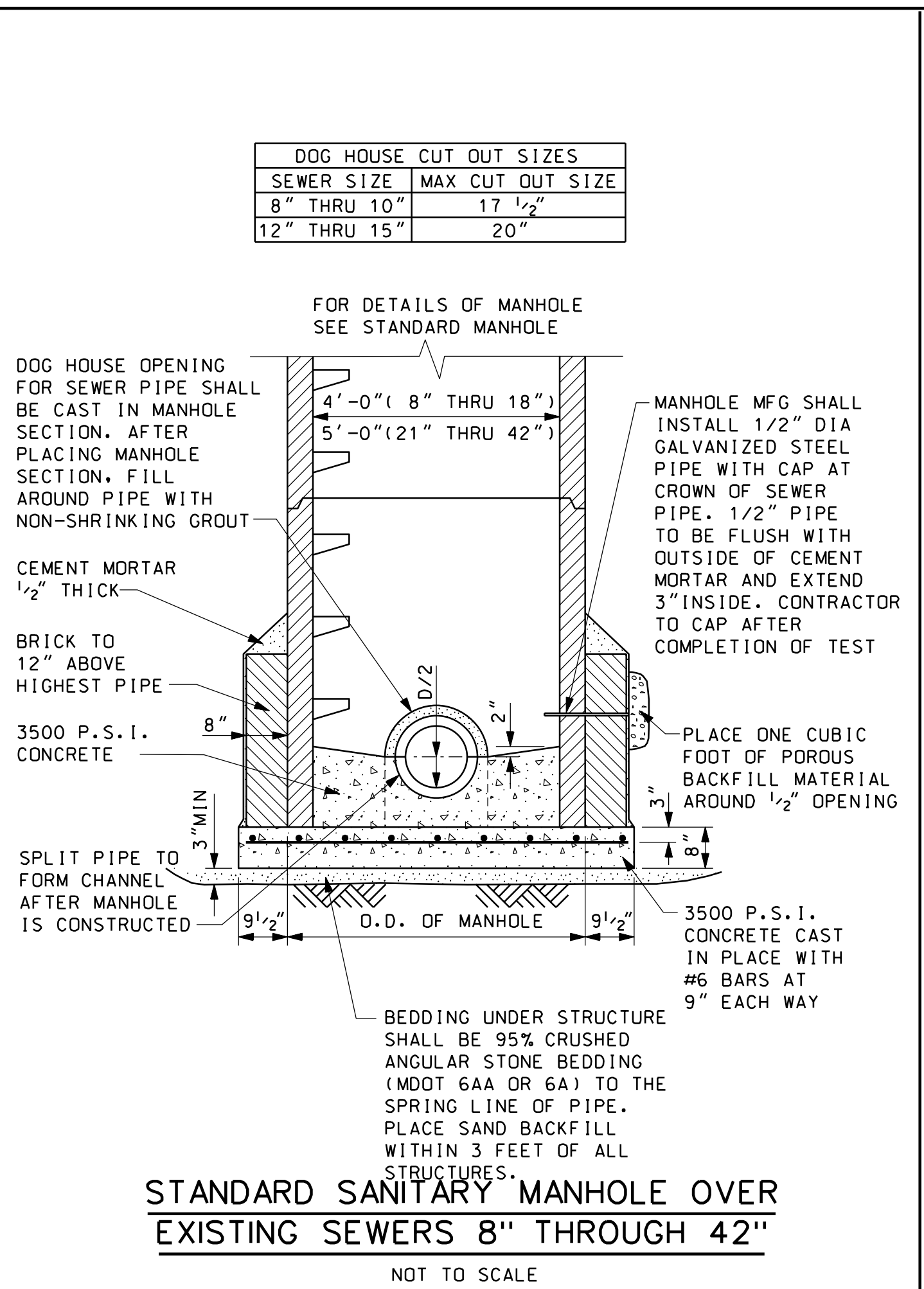
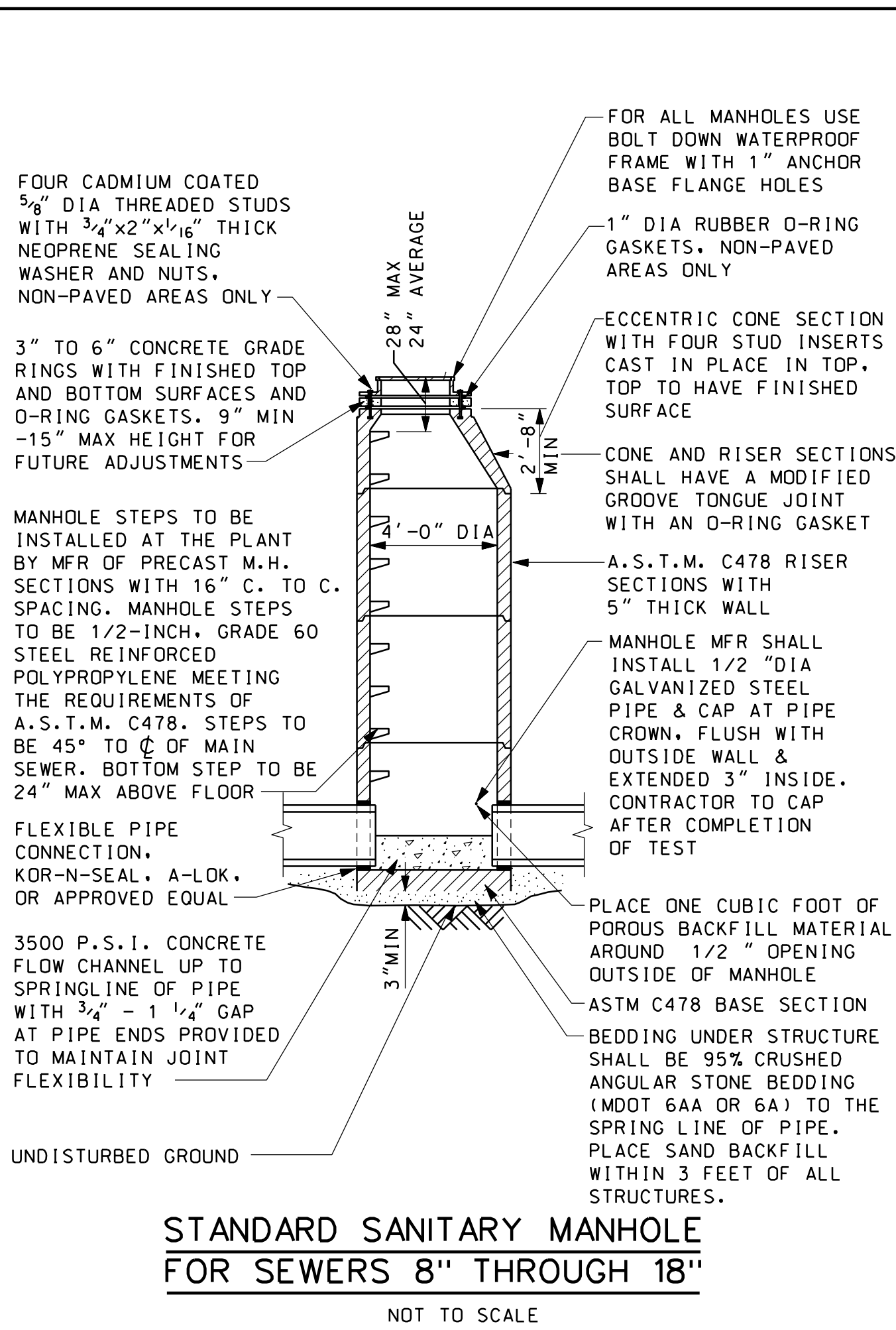
FINAL CSO COMPLIANCE
EARLY ACTION DESIGN
STANDARD SESC NOTES AND DETAILS

ISSUED FOR: DATE: BY:

JOB NO. SJ02004-02T

SHEET

SE-1



PROJECT MANAGER: S. KEOUGH FIELD BOOK INFORMATION: SHEETS PLOTTED: 04/24/15 BY: BUSERS

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STANDARD SANITARY SEWER DETAILS

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FINAL CSO COMPLIANCE
EARLY ACTION DESIGN

ISSUED FOR: DATE: BY:

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SHEET SS-1

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SANITARY SEWER NOTES

1. ALL SEWER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND GENERAL SPECIFICATION OF THE COMMUNITY SEWER DEPARTMENT AND ANY OTHER AGENCY HAVING JURISDICTION OF THE CONSTRUCTION AREA.
2. DETAILS ARE FOR STRUCTURES WITH NO MORE THAN TWO PIPES ENTERING, 180° APART. LARGER DIAMETER STRUCTURES MAY BE REQUIRED FOR DIFFERENT CONFIGURATIONS.
3. THE MANHOLE STRUCTURE REQUIRES A MINIMUM OF 8 INCHES OF CONCRETE WALL BETWEEN PIPE OPENINGS. LARGER DIAMETER STRUCTURES MAY BE REQUIRED WHERE PIPE ENTERING THE STRUCTURE ARE LESS THAN 90° APART IN ANY DIRECTION.
4. CONSTRUCTION SHALL NOT COMMENCE WITHOUT A REPRESENTATIVE OF THE OWNER PRESENT.
5. ALL MANHOLES SHALL USE ECCENTRIC CONES PLACED WITH STEPS AWAY FROM THE ROAD UNLESS DIRECTED OTHERWISE.
6. ALL MANHOLES SHALL BE PROVIDED WITH WATER TIGHT MANHOLE COVERS AND RIMS SHALL BE SET TO GRADE OR AS INDICATED ON THE PLANS.
7. ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
8. DIFFERENTIAL OF EXCAVATION AROUND EXISTING MANHOLES SHALL NOT EXCEED SIX FEET.
9. EXTERIOR DROP CONNECTIONS ARE REQUIRED WHENEVER A SEWER INVERT IS 2.0 FEET OR GREATER ABOVE THE MANHOLE FLOW CHANNEL INVERT. INTERIOR DROP CONNECTIONS ARE NOT ALLOWED.
10. NO SEWERS SHALL BE CONSTRUCTED LESS THAN 10-INCH DIAMETER WITHOUT SPECIFIC APPROVAL OF THE COMMUNITY SEWER DEPARTMENT.
11. ALL RIGID SANITARY SEWER PIPE SHALL BE CLASS "R-B" BEDDING. ALL FLEXIBLE PIPE SHALL BE CLASS "F-1" BEDDING, UNLESS OTHERWISE NOTED ON THE PLANS. SEE SHEET MD1.
12. PLACE ONE 6-INCH WYE FOR EACH LOT OR PARCEL 100 FEET OR LESS IN WIDTH OR EVERY 100 FEET FOR LOTS OR PARCELS IN EXCESS OF 100 FEET ON SANITARY SEWERS UNLESS OTHERWISE NOTED.
13. NO CONNECTION RECEIVING STORM WATER, SURFACE WATER, OR GROUND WATER SHALL BE MADE TO SANITARY SEWERS.
14. NO FOOTING DRAINS SHALL BE CONNECTED TO THE BUILDINGS SANITARY SEWER.
15. RISERS ON SANITARY SEWERS SHALL BE INSTALLED TO A DEPTH OF 10 FEET WHERE SEWER IS OVER 12 FEET.
16. PRIOR TO THE BACKFILLING OF A SERVICE LEAD, A 2" BY 2" PIECE OF WOOD SHALL BE PLACED FROM A POINT IMMEDIATELY IN FRONT OF THE SERVICE CONNECTION TO 2-FOOT BELOW THE FINISH GROUND SURFACE. DO NOT REST THE MARKER ON ANY PORTION OF THE SERVICE CONNECTION OR STOPPER.

SANITARY SEWER NOTES

CONTINUED

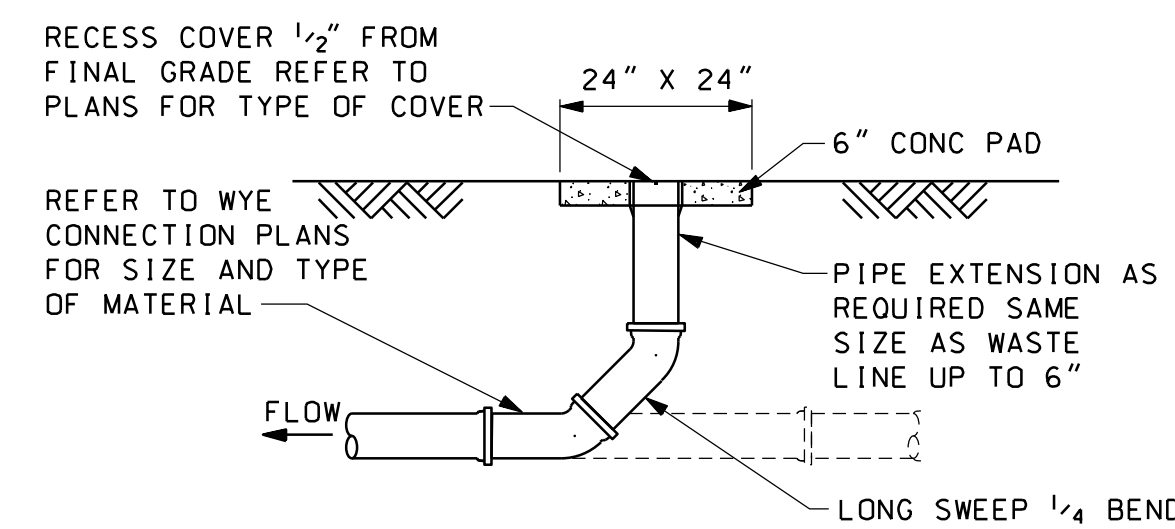
17. ALL STUBS SHALL HAVE A WATER TIGHT BULKHEAD.
18. INFILTRATION FOR ANY SECTION OF SEWERS BETWEEN MANHOLES SHALL NOT EXCEED 100 GALLONS PER INCH DIAMETER PER MILE OF SEWER PER 24 HOURS AND SHALL INCLUDE THE INFILTRATION FROM ALL MANHOLES AND OTHER APPURTENANCES.
19. ALL SEWERS SHALL BE SUBJECTED TO AIR, INFILTRATION OR EXFILTRATION TESTS, OR A COMBINATION OF SAME, PRIOR TO ACCEPTANCE. ALL SEWERS OVER 24-INCH DIAMETER SHALL BE SUBJECTED TO INFILTRATION TESTS. ALL SEWERS OF 24-INCH DIAMETER OR SMALLER, WHERE THE GROUND WATER LEVEL ABOVE THE TOP OF THE SEWER IS OVER SEVEN FEET, SHALL BE SUBJECTED TO INFILTRATION TESTS. ALL SEWERS OF 24-INCH DIAMETER OR LESS, WHERE THE GROUND WATER LEVEL ABOVE THE TOP OF THE SEWER IS SEVEN FEET OR LESS, SHALL BE SUBJECTED TO AIR TESTS OR EXFILTRATION TESTS.
20. THE PROCEDURE FOR AIR TESTING OF SEWERS SHALL BE IN ACCORDANCE WITH ASTM C828, ASTM C924, OR ASTM F1417 AS APPLICABLE.
21. NINE POINT MANDREL TEST IS REQUIRED FOR ALL FLEXIBLE PIPES AND MAY NOT BE PERFORMED UNTIL 30 DAYS AFTER INSTALLATION.
22. IF A SEWER FAILS TO PASS ANY OF THE PREVIOUSLY DESCRIBED TESTS, THE CONTRACTOR SHALL DETERMINE THE LOCATION OF THE LEAKS, REPAIR THEM, AND RETEST THE SEWER. THE TEST SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED. TELEVISION INSPECTION SHALL BE CONSIDERED COMPLETED WHEN THE NECESSARY CONSTRUCTION REPAIRS HAVE BEEN MADE AND THE INSTALLATION RETELEVISED AND THE SYSTEM IS ACCEPTABLE FOR THE TESTING PHASE.
23. THE CONTRACTOR SHALL PROVIDE FOR TELEVISION INSPECTION OF THE SANITARY SEWER LINES. ALL SANITARY LEADS FOR COMMERCIAL AND INDUSTRIAL SITES OVER 100 FEET IN LENGTH MUST BE AIR TESTED AND TELEVISION INSPECTION COMPLETED.
24. ALL SEWER SHALL BE TELEVISED, WITH RESULTS APPROVED BY THE COMMUNITY PRIOR TO PLACING THE SEWER IN SERVICE. COPIES OF THE TELEVISION RECORDING (DVD FORMAT) NEED TO GO TO THE COMMUNITY AND THE ENGINEER PRIOR TO THE CONTRACTOR LEAVING THE SITE. THE TELEVISION INSPECTION MUST BE WITNESSED BY THE OWNERS REPRESENTATIVE.
25. THE CONTRACTOR SHOULD ARRANGE FOR, ENGAGE, AND PAY ALL EXPENSES INVOLVED FOR THE SERVICES OF A COMPETENT COMPANY TO PERFORM THIS TELEVISION INSPECTION.
26. THE TELEVISION INSPECTION SHALL BE OBSERVED BY REPRESENTATIVES OF THE OWNER, ENGINEER, AND THE CONTRACTOR. ANY TELEVISION VIEWING PERFORMED IN THE ABSENCE OF THE ENGINEER WILL NOT BE CONSIDERED AS A PART OF THE FINAL INSPECTION.

SANITARY SEWER NOTES

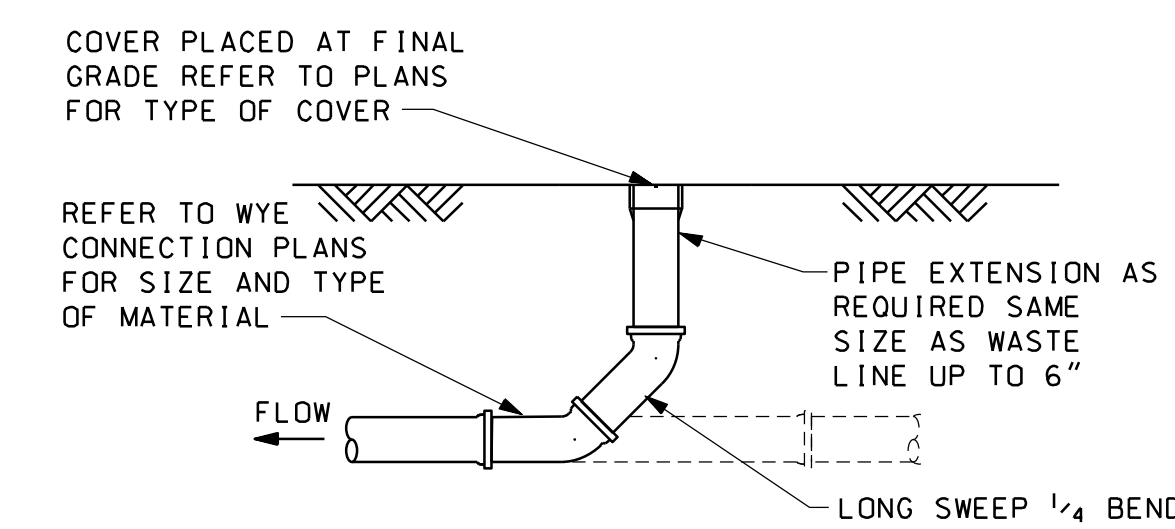
CONTINUED

27. THE INSPECTION SHALL INVOLVE THE VISUAL OBSERVATION BY CLOSED CIRCUIT TELEVISION OF ALL SANITARY SEWER INSTALLED AS PART OF THIS CONTRACT. THE INSPECTION SHALL BE PERFORMED AT A RATE OF SPEED WHICH WILL ALLOW EXAMINATION OF ALL POINTS OF INFILTRATION, CRACKED OR CRUSHED PIPE, DEFECTIVE JOINTS, MISALIGNMENT IN LINE OR GRADE, LOCATION OF ALL WYE OPENINGS AND ANY DEFECTS OR ITEMS OF POOR WORKMANSHIP WHICH MAY APPEAR. ANY ITEMS WHICH, IN THE OPINION OF THE ENGINEER, REQUIRE REPAIR SHALL BE PRECISELY LOCATED AND PHOTOGRAPHED ALONG WITH A DETAILED STATEMENT OF THE CONDITION. THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION TO REPAIR ALL SUCH DEFECTS INCLUDING EXCESSIVE INFILTRATION AT ANY SPECIFIC LOCATION. EVEN THOUGH THE INFILTRATION LIMITS AS HEREIN SPECIFIED HAVE NOT BEEN EXCEEDED FOR THE ENTIRE LENGTH OF SEWER BEING INSPECTED. FOLLOWING COMPLETION OF THE REPAIR, THE ENGINEER AT THEIR DISCRETION, MAY REQUIRE A SECOND TELEVISION INSPECTION OF ANY REPAIRED AREAS. THE CONTRACTOR SHALL ARRANGE FOR AND PAY ALL COSTS INVOLVED IN PERFORMING THIS RE-INSPECTION.
28. THERE SHALL BE NO DISCHARGE OF UNTREATED SANITARY SEWAGE TO THE SURFACE WATERS OF THE STATE DUE TO CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT.
29. CONTRACTOR SHALL NOTIFY WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES, ENGINEERING DIVISION PERMIT OFFICE, 48 HOURS PRIOR TO START OF CONSTRUCTION. MR. PAUL POLKOWSKI AT (734) 595-6507, EXTENSION 2009.

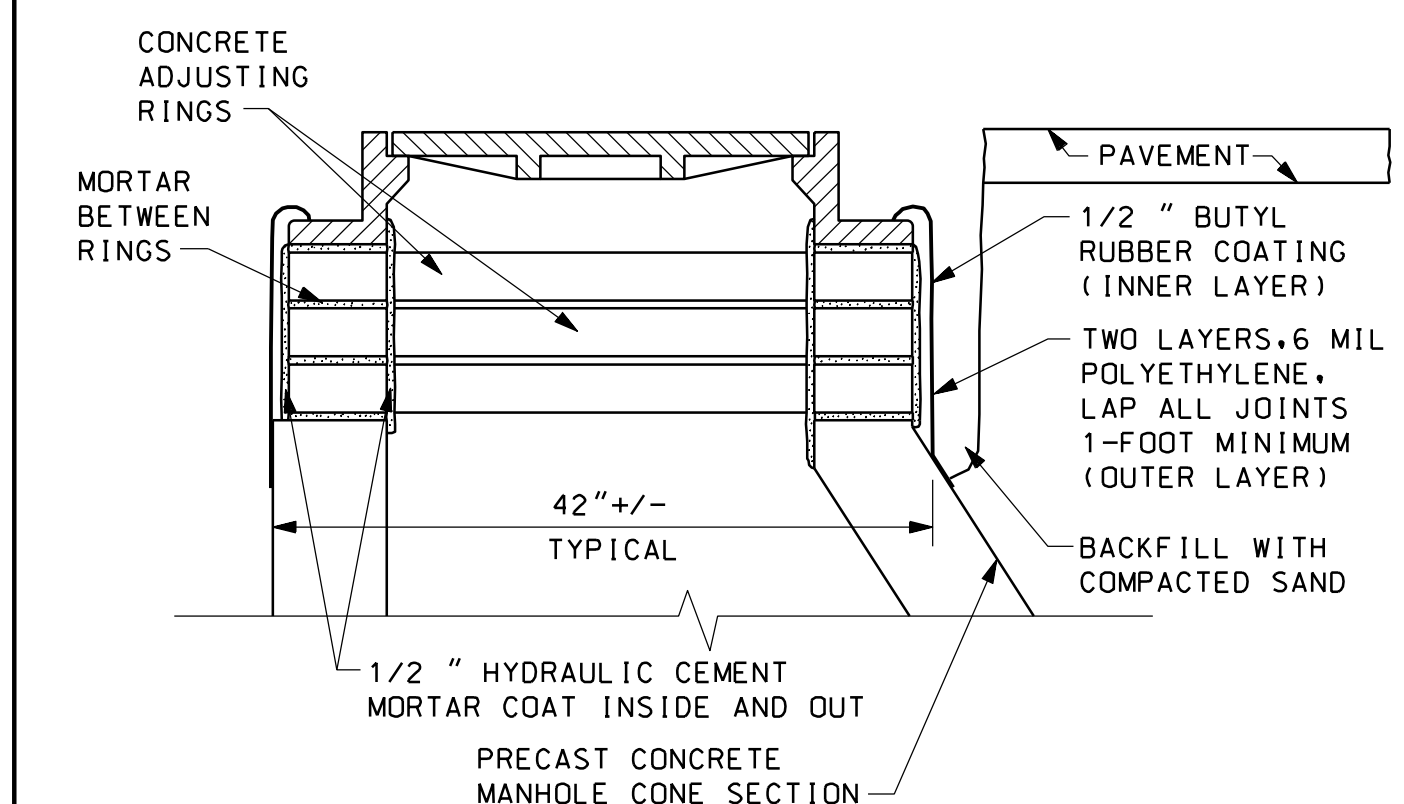
PROJECT MANAGER: S. KEOUGH FIELD BOOK INFORMATION: - BY BUSERS
PLOTTED: DATES \$TIMES \$FILELS



CLEAN - OUT
(LOCATED IN PAVED AREA)



CLEAN - OUT
NOT TO SCALE



* OUTSIDE DIAMETER OF FRAME SHALL NOT EXCEED OUTSIDE DIAMETER OF RINGS

NOTE:
THIS DETAIL TO BE USED IN CONCRETE OR BITUMINOUS PAVED AREAS. ALL OTHER AREAS SHALL USE BOLT DOWN FRAMES WITH RUBBER O-RINGS AS SHOWN ON MANHOLE DETAILS.

EXTERNAL FRAME SEAL DETAIL
NOT TO SCALE

REV#	DATE	DESCRIPTION	BY

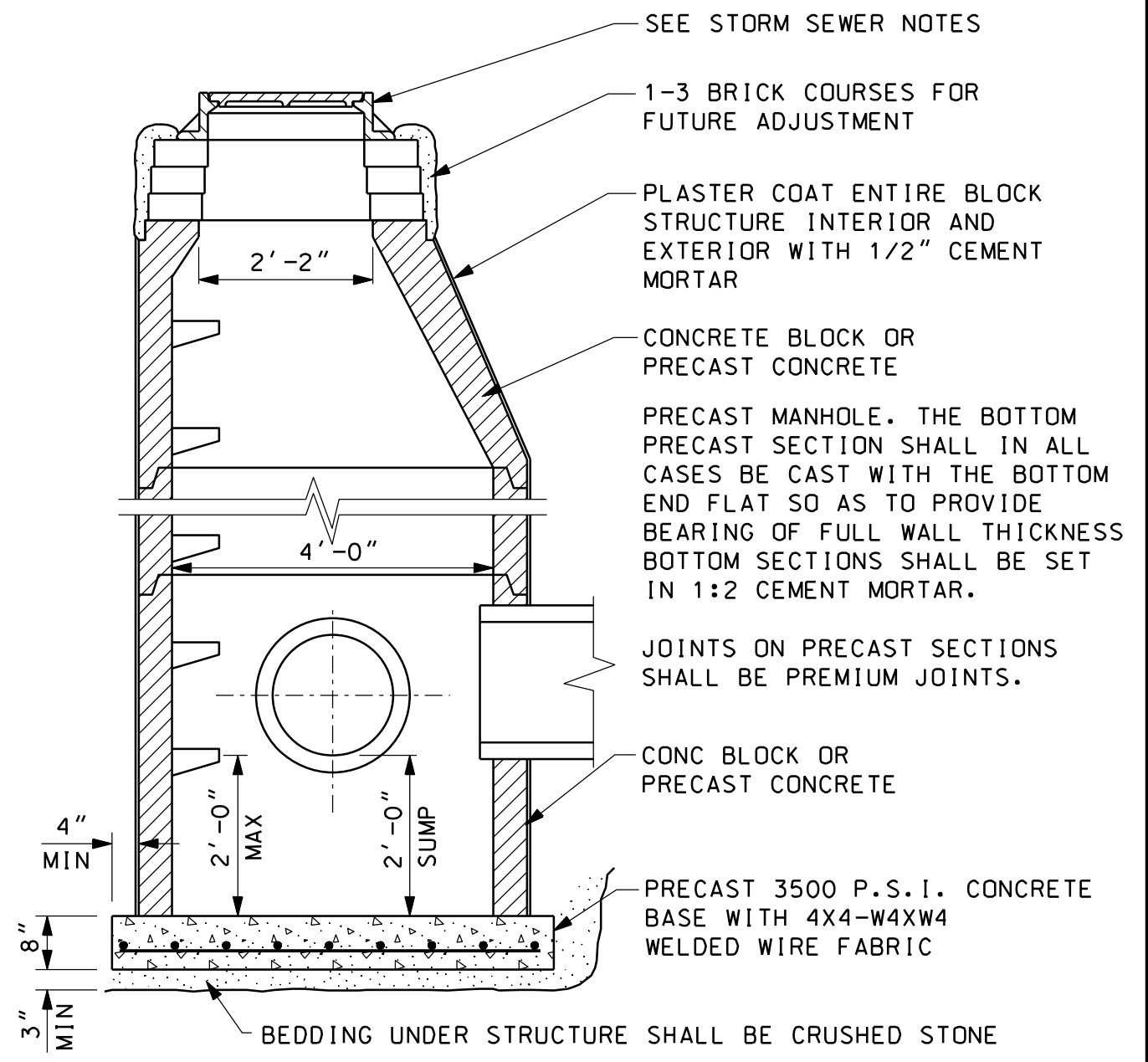
2851 Chalmers Drive SE, Suite 108
Grand Rapids, MI 49546
616.965.3304
www.wadetrtrim.com
WADE TRIM
CONSTRUCTION UNLESS SIGNED AND DATED

CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085
FINAL CSO COMPLIANCE
EARLY ACTION DESIGN
STANDARD SANITARY SEWER DETAILS

ISSUED FOR: DATE: BY:

JOB NO.
SJ02004-02T

SHEET
SS-2



SEE STORM SEWER NOTES

1-3 BRICK COURSES FOR FUTURE ADJUSTMENT

PLASTER COAT ENTIRE BLOCK STRUCTURE INTERIOR AND EXTERIOR WITH 1/2" CEMENT MORTAR

CONCRETE BLOCK OR PRECAST CONCRETE

PRECAST MANHOLE. THE BOTTOM PRECAST SECTION SHALL IN ALL CASES BE CAST WITH THE BOTTOM END FLAT SO AS TO PROVIDE BEARING OF FULL WALL THICKNESS. BOTTOM SECTIONS SHALL BE SET IN 1:2 CEMENT MORTAR.

JOINTS ON PRECAST SECTIONS SHALL BE PREMIUM JOINTS.

CONC BLOCK OR PRECAST CONCRETE

PRECAST 3500 P.S.I. CONCRETE BASE WITH 4X4-W4XW4 WELDED WIRE FABRIC

BEDDING UNDER STRUCTURE SHALL BE CRUSHED STONE

M.H. STEPS SHALL BE SPACED AS FOLLOWS:
 CONC BLK. M.H.18" CENTERS
 PRECAST M.H.16" CENTERS

TOP STEP TO BE 24" MAX BELOW TOP OF FRAME

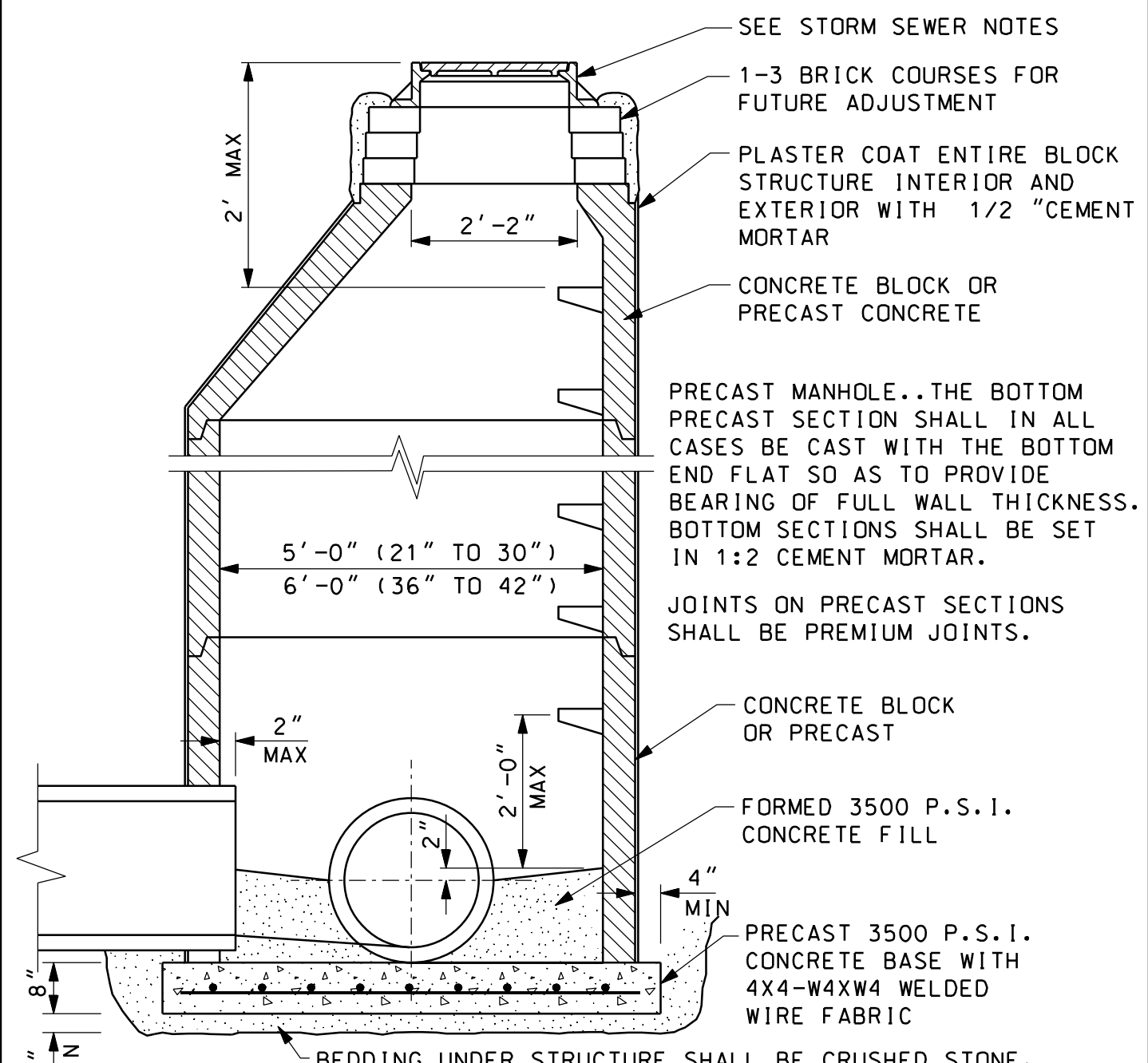
MIN CONE HEIGHTS AS FOLLOWS:
 BLOCK CONCENTRIC 3'-0"
 PRECAST ECCENTRIC 2'-8" OR 3'-4"

CONC BLOCK MANHOLE: APPROVED CONC BLOCK USE 6" OR 8" MIN THICK BLOCK TO 16' DEPTH USE 12" MIN THICK BLOCK TO 24' DEPTH 16" MIN BLOCK WALL BELOW 24' DEPTH

PRECAST MANHOLE: ASTM C-478 UP TO 32' DEEP WITH 5" MIN THICK WALL

STANDARD STORM MANHOLE FOR SEWERS WITH OUTLETS OF 18" & UNDER

NOT TO SCALE



SEE STORM SEWER NOTES

1-3 BRICK COURSES FOR FUTURE ADJUSTMENT

PLASTER COAT ENTIRE BLOCK STRUCTURE INTERIOR AND EXTERIOR WITH 1/2" CEMENT MORTAR

CONCRETE BLOCK OR PRECAST CONCRETE

PRECAST MANHOLE. THE BOTTOM PRECAST SECTION SHALL IN ALL CASES BE CAST WITH THE BOTTOM END FLAT SO AS TO PROVIDE BEARING OF FULL WALL THICKNESS. BOTTOM SECTIONS SHALL BE SET IN 1:2 CEMENT MORTAR.

JOINTS ON PRECAST SECTIONS SHALL BE PREMIUM JOINTS.

CONCRETE BLOCK OR PRECAST

FORMED 3500 P.S.I. CONCRETE FILL

PRECAST 3500 P.S.I. CONCRETE BASE WITH 4X4-W4XW4 WELDED WIRE FABRIC

BEDDING UNDER STRUCTURE SHALL BE CRUSHED STONE.

M.H. STEPS SHALL BE SPACED AS FOLLOWS:
 CONC BLK. M.H.18" CENTERS
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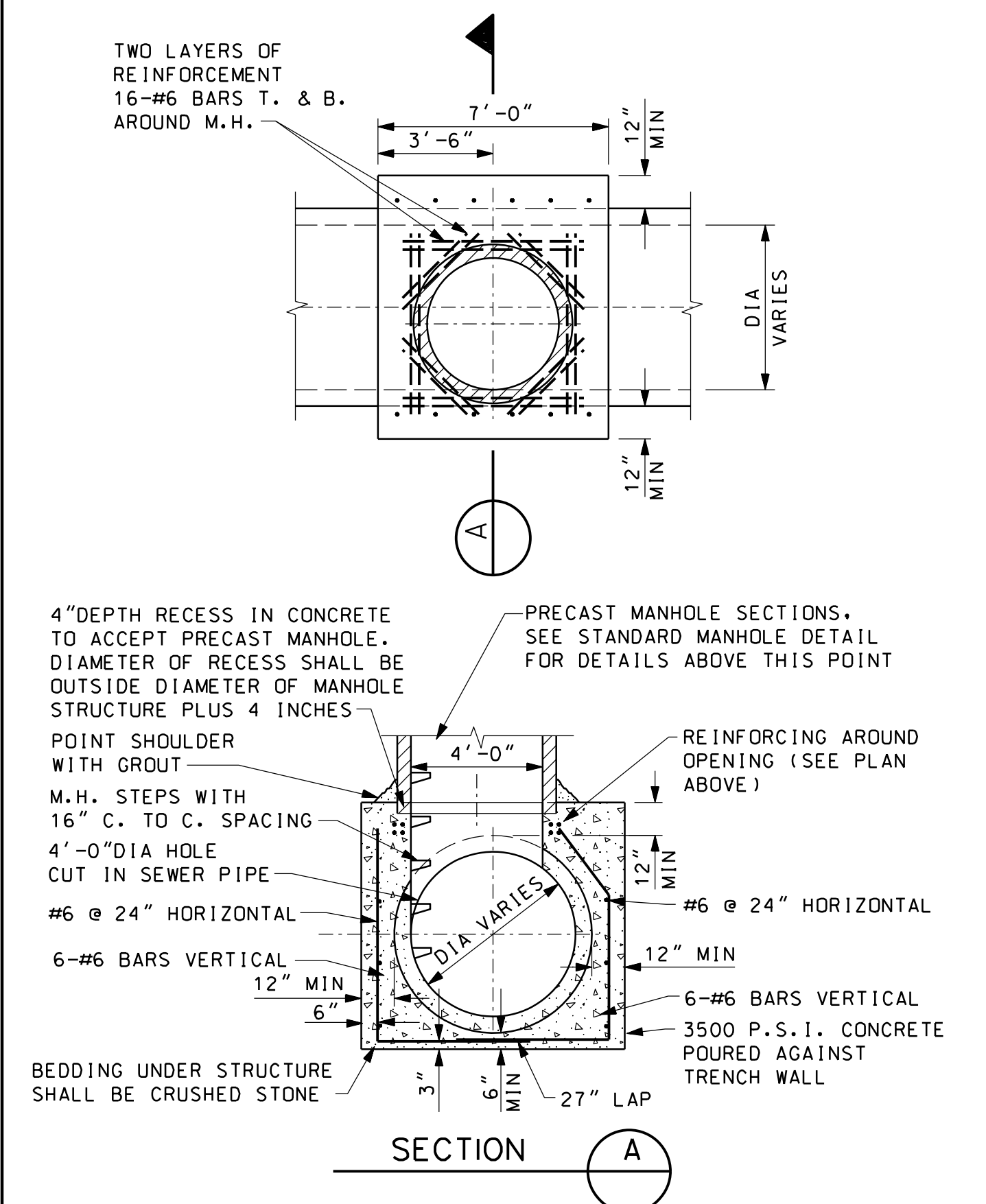
MIN CONE HEIGHTS AS FOLLOWS:
 BLOCK CONCENTRIC 3'-0"
 PRECAST ECCENTRIC 2'-8" OR 3'-4"

CONC BLOCK MANHOLE: APPROVED CONC BLOCK USE 6" OR 8" MIN THICK BLOCK TO 16' DEPTH USE 12" MIN THICK BLOCK TO 24' DEPTH 16" MIN BLOCK WALL BELOW 24' DEPTH

PRECAST MANHOLE: ASTM C-478 UP TO 32' DEEP WITH 5" MIN THICK WALL

STANDARD STORM MANHOLE FOR SEWERS 21" TO 42"

NOT TO SCALE



STANDARD STORM MANHOLE FOR 48" & LARGER SEWERS

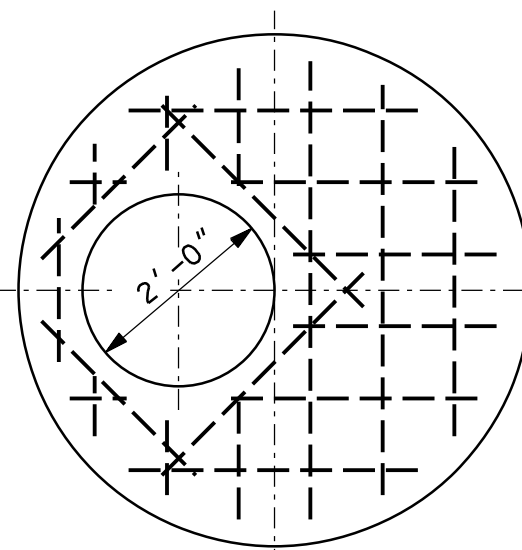
NOT TO SCALE

STORM SEWER NOTES

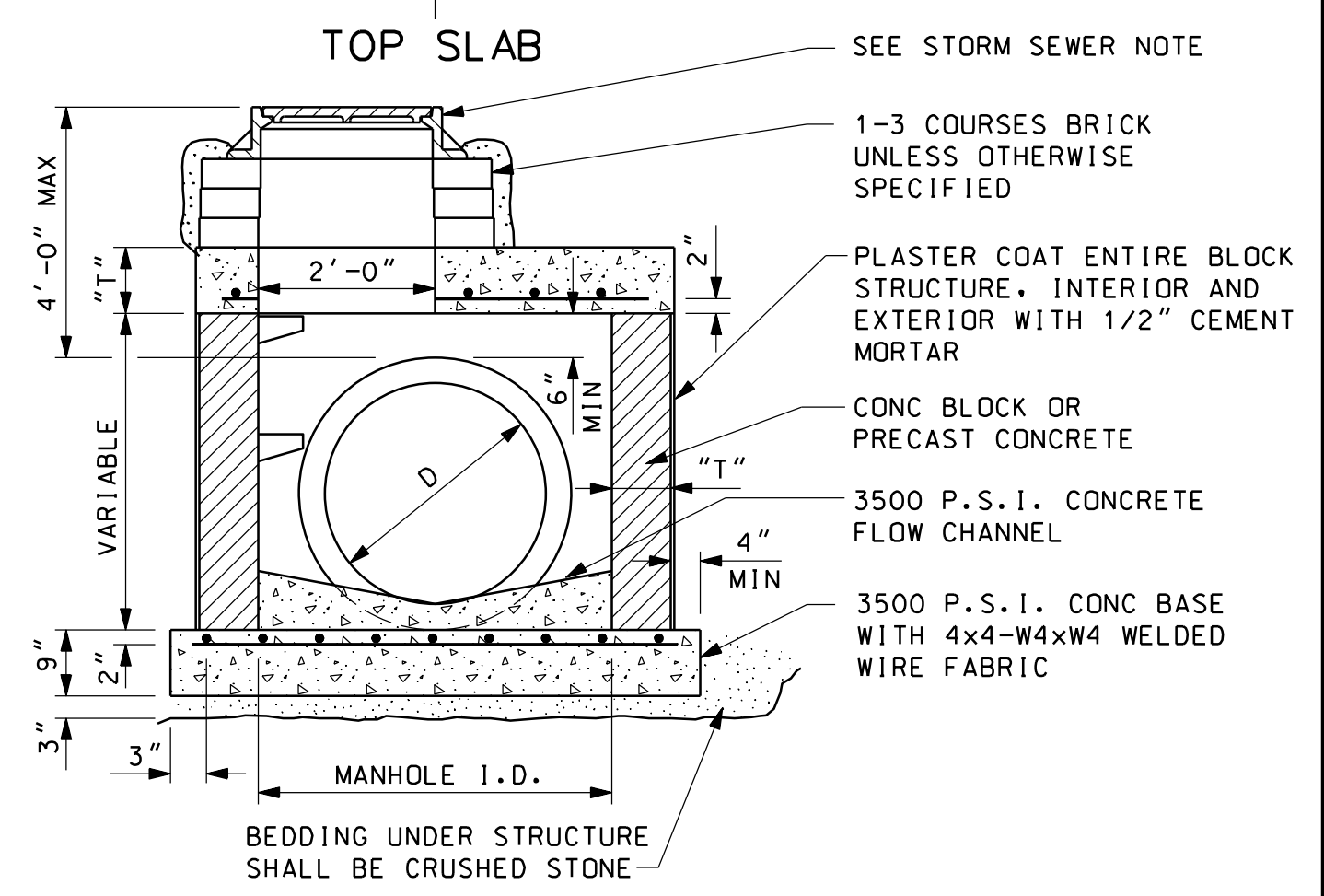
- ALL STORM SEWER CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND GENERAL SPECIFICATION OF THE AGENCY OR AGENCIES HAVING JURISDICTION OF THE STORM SEWER AND CONSTRUCTION AREA.
- DETAILS ARE FOR STRUCTURES WITH NO MORE THAN TWO PIPES. 180° APART. LARGER DIAMETER STRUCTURES MAY BE REQUIRED FOR DIFFERENT CONFIGURATIONS.
- ALL STRUCTURES REQUIRE A MINIMUM OF 8-INCHES OF WALL BETWEEN PIPE OPENINGS. LARGER DIAMETER STRUCTURES MAY BE REQUIRED WHERE PIPE ENTERING THE STRUCTURE ARE LESS THAN 90° APART IN ANY DIRECTION.
- ALL CASTING RIMS SHALL BE SET TO GRADE OR AS SHOWN ON THE PLANS.
- NO MANHOLES OR OTHER STRUCTURES MAY BE INSTALLED WITHIN DRIVEWAYS, DRIVE APPROACHES, OR SIDEWALKS.
- ALL CATCH BASIN STORM PIPE SHALL BE 12-INCH DIAMETER C76, CL-IV CONCRETE UNLESS OTHERWISE NOTED.
- MANHOLE STEPS TO BE GRAY IRON OR STEEL REINFORCED POLYPROPYLENE ASTM 2146, TYPE II, GRADE 49108.
- CATCH BASIN AND INLET FRAME AND COVERS SHALL BE SPECIFIED AS FOLLOWS:
 - WHEN LOCATED IN PAVEMENT GUTTER LINE, FRAME AND COVER SHALL BE E.J.I.W. NO. 5080, NEENAH R-3448-C TYPE "A" (RECTANGULAR), OR EQUIV.
 - WHEN LOCATED IN PAVED AREAS OTHER THAN GUTTER LINE, FRAME SHALL BE E.J.I.W. NO. 1040 WITH TYPE "M1" COVER, NEENAH R-2370 TYPE "G" COVER, OR EQUIV.
 - WHEN LOCATED IN YARD AREAS, FRAMES SHALL BE E.J.I.W. NO. 1000 WITH TYPE "N" OR "M" COVER, NEENAH R-2370 TYPE "D" OR "B" COVER, OR EQUIV.
- MANHOLE FRAME AND COVER SHALL BE E.J.I.W. NO. 1040 OR NEENAH R-1642 WITH SOLID COVER OR EQUAL.
- DIFFERENTIAL OF EXCAVATION AROUND EXISTING MANHOLES SHALL NOT EXCEED SIX FEET.
- PLACE SAND BACKFILL WITHIN THREE FEET OF ALL STRUCTURES.
- ALL STORM SEWER PIPE SHALL HAVE CLASS "R-B" BEDDING UNLESS OTHERWISE NOTED ON THE PLANS. SEE SHEET MD1 FOR BEDDING DETAILS.
- ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
- ALL DRAINAGE STRUCTURES LOCATED WITHIN PAVEMENT MUST HAVE UNDER DRAIN AS SHOWN.

OUTLET "D"	M.H. I.D.	TOP SLAB "T"	WALLS "T"	REINF STEEL
**24" OR LESS	4'-0"	9"	8"	#6@9" E.W.
30"	4'-0"	9"	8"	#6@9" E.W.
36"	4'-0"	9"	12"	#6@9" E.W.
42"	5'-0"	10"	12"	#6@9" E.W.
48"	6'-0"	11"	12"	#7@9" E.W.
54"	6'-0"	11"	12"	#7@9" E.W.

* TOP SLAB 2' SUMP REQ'D FOR MANHOLE WITH OUTLET OF 18" & UNDER

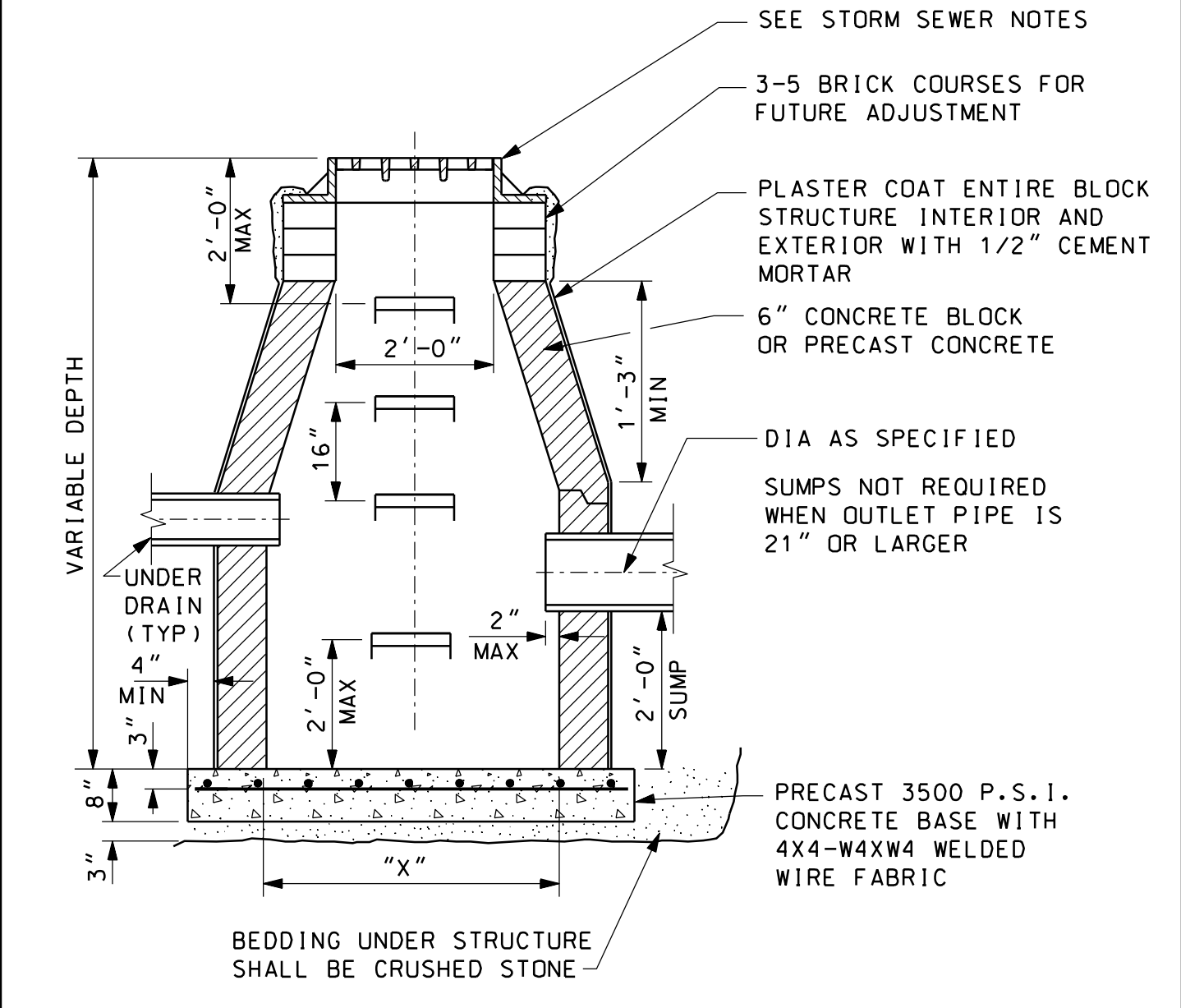


TOP SLAB



TYPICAL MANHOLE/ CATCH BASIN "D"

NOT TO SCALE

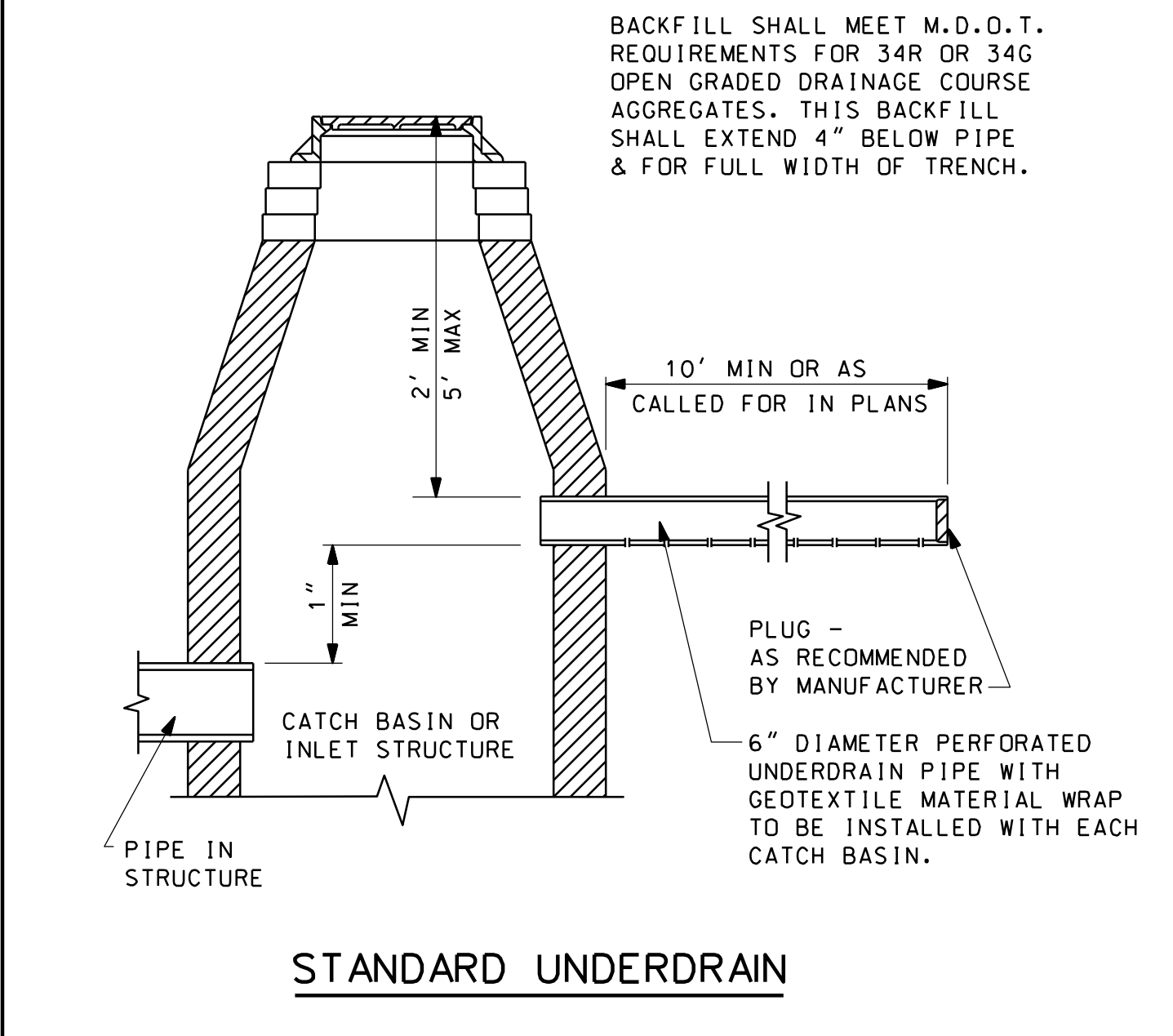


DIAMETER OF OUTLET PIPE	"X" INSIDE DIA.
12"-18"	4'-0" MIN
21"-30"	5'-0" MIN

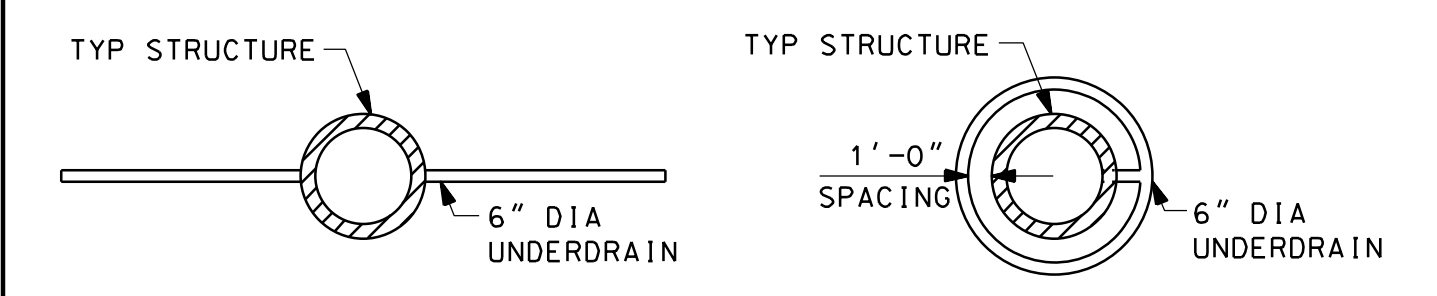
NOTE: MINIMUM OF TWO-10' LONG 6"DIA. PERFORATED UNDERDRAIN PIPE WITH GEOTEXTILE MATERIAL WRAP TO BE INSTALLED WITH EACH CATCH BASIN SEE UNDERDRAIN DETAIL FOR INSTALLATION AND MATERIAL REQUIREMENTS.

STANDARD CATCH BASIN

NOT TO SCALE



STANDARD UNDERDRAIN

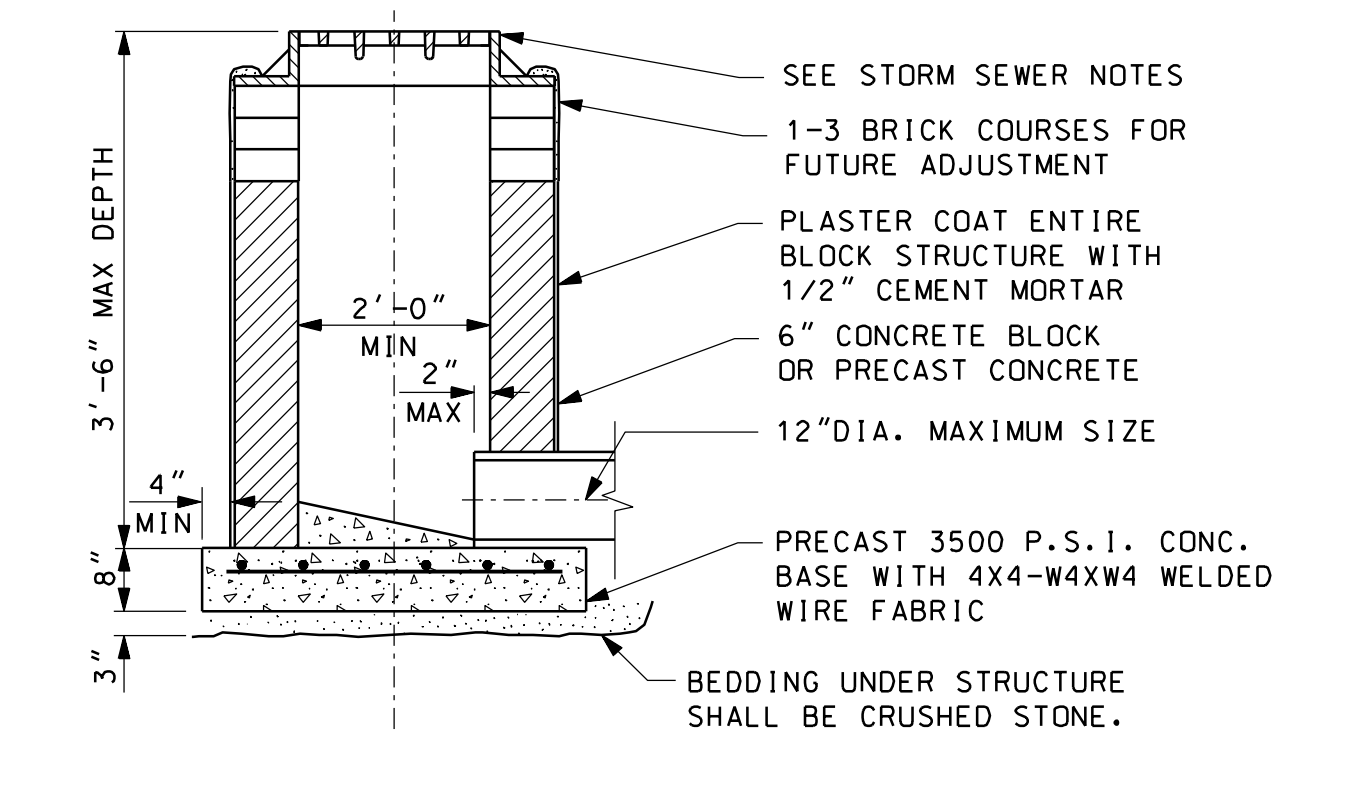


TYPICAL UNDERDRAIN PARALLEL W/CURB

NOT TO SCALE

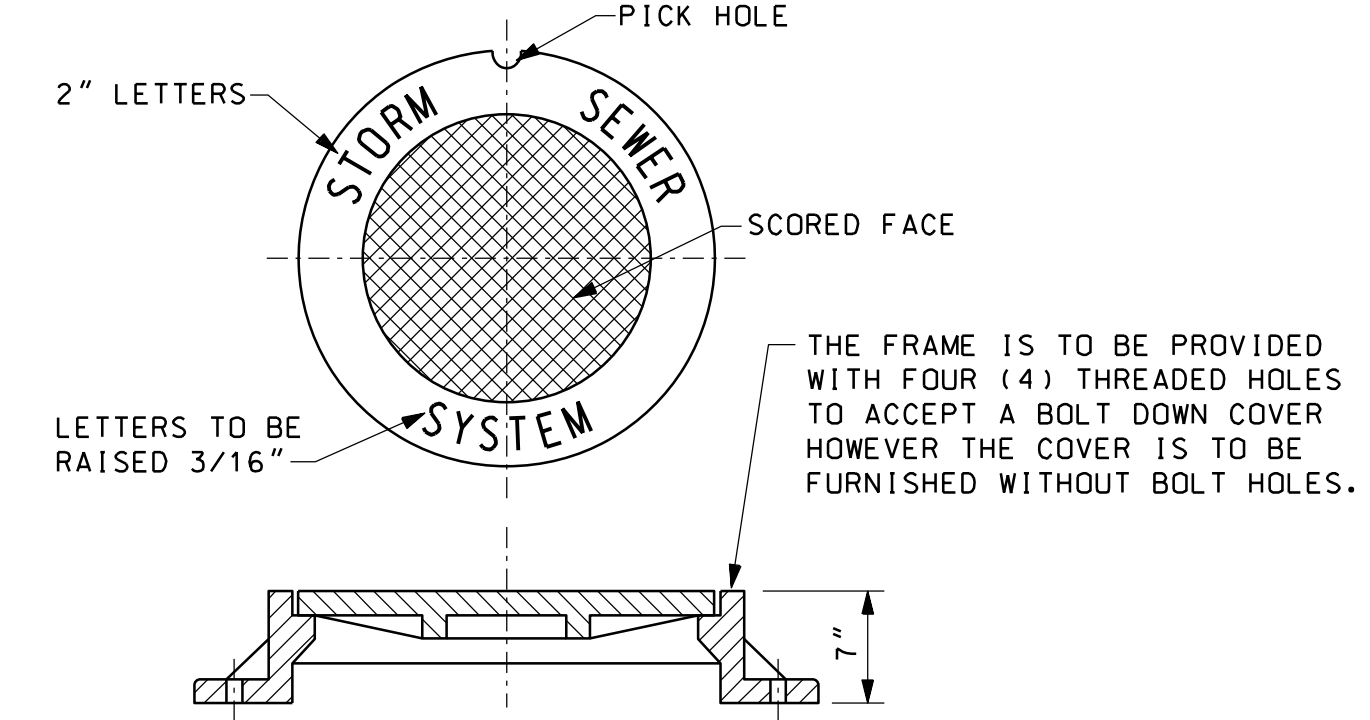
TYPICAL UNDERDRAIN IN PARKING LOT

NOT TO SCALE



STANDARD INLET

NOT TO SCALE



STANDARD MANHOLE FRAME AND COVER

NOT TO SCALE

PROJECT MANAGER: S. KEOUGH FIELD BOOK INFORMATION: SHEETS PLOTTED: 04/24/2004 BY: BUSERS

2851 Chalmers Drive SE, Suite 108 Grand Rapids, MI 49546 616.965.3304 www.wadetrims.com

UNLESS NOTED OTHERWISE, CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.T. STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION UNLESS SIGNED AND DATED.

WADE TRIM

CITY OF ST. JOSEPH
BERRIEN COUNTY, MI 49085

FINAL CSO COMPLIANCE
EARLY ACTION DESIGN
STANDARD STORM DETAILS

ISSUED FOR: DATE: BY:

JOB NO. SJO2004-02T

SHEET

ST-1

© Wade Trim Group, Inc.

CITY OF
ST. JOSEPH
MICHIGAN

**INTERCEPTING SEWERS,
SEWAGE LIFT STATIONS
AND
FORCE MAINS**

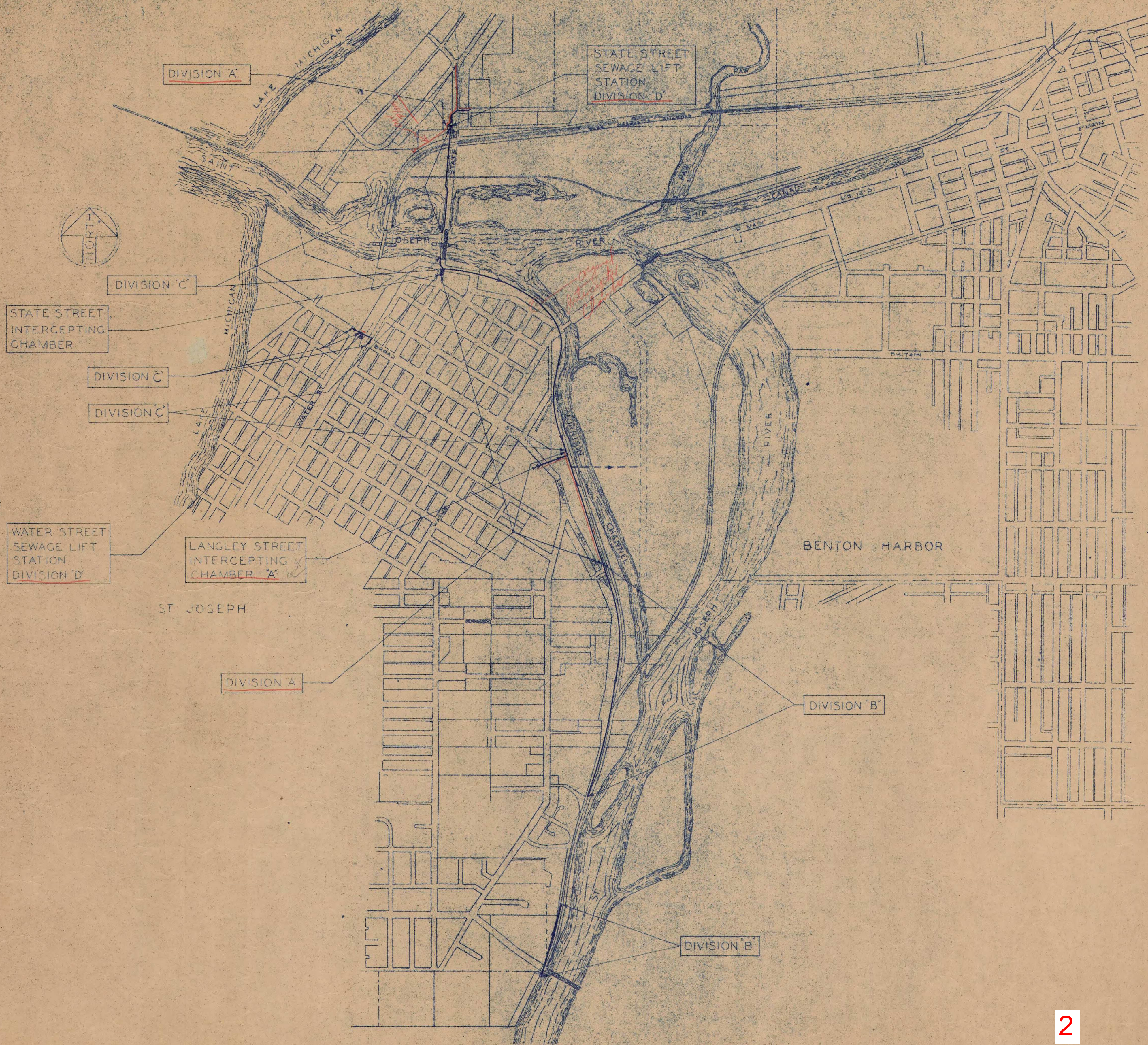
CONSOER TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
351 E. OHIO STREET
CHICAGO, ILL.

1

HISTORICAL REFERENCE DOCUMENT

SHEET 1 OF 14

44-20



SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	LOCATION PLAN AND INDEX
3	PLAN AND PROFILE
4	PLAN AND PROFILE
5	PLAN AND PROFILE
6	PLAN AND PROFILE
7	PLAN AND PROFILE
8	PLAN AND PROFILE
9	PLAN AND PROFILE
10	INTERCEPTING CHAMBER DETAILS
11	SEWER CONSTRUCTION DETAILS
12	WATER STREET SEWAGE LIFT STATION
13	WATER STREET SEWAGE LIFT STATION
14	STATE STREET SEWAGE LIFT STATION

DIVISION 'B' & 'C' NOT
PART OF THIS CONTRACT

ST. JOSEPH, MICHIGAN INTERCEPTING SEWERS		
LOCATION PLAN & INDEX SHEET		
DRAWN BY:	CONSOER, TOWNSEND & ASSOCIATES	SCALE: 1"=600'
DATE:	CHECKED BY: <i>JWT</i>	REVISED: 2-11-51
APPROVED BY:	CONSULTING ENGINEERS	SHEET NO. 2
	CHICAGO, ILL.	OF 14 SHEETS

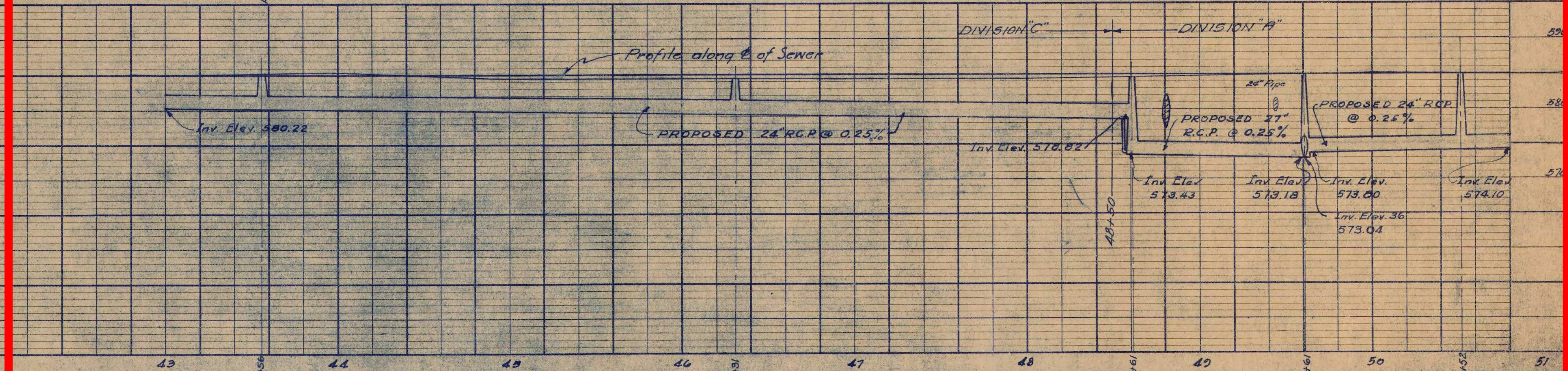
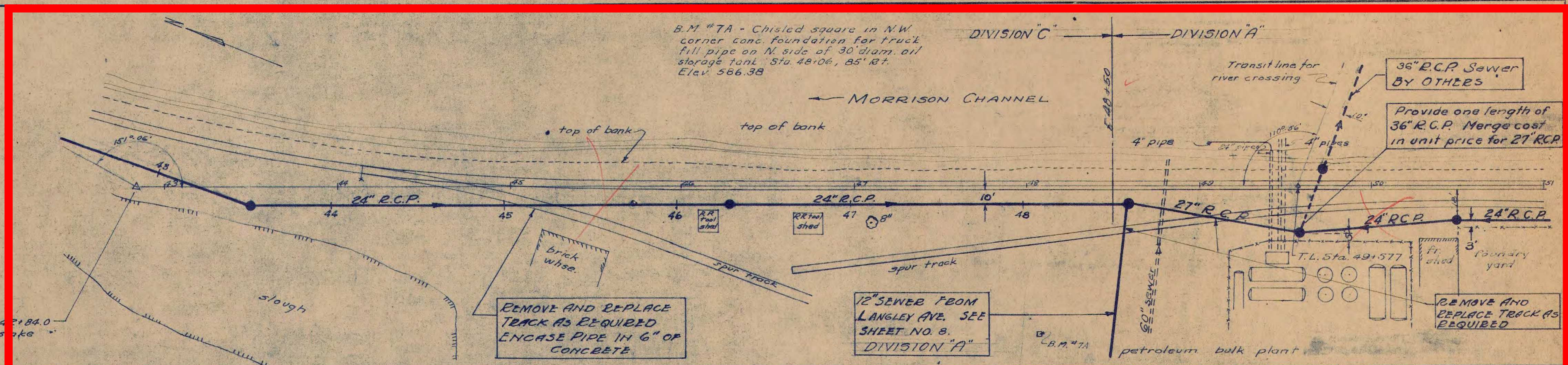
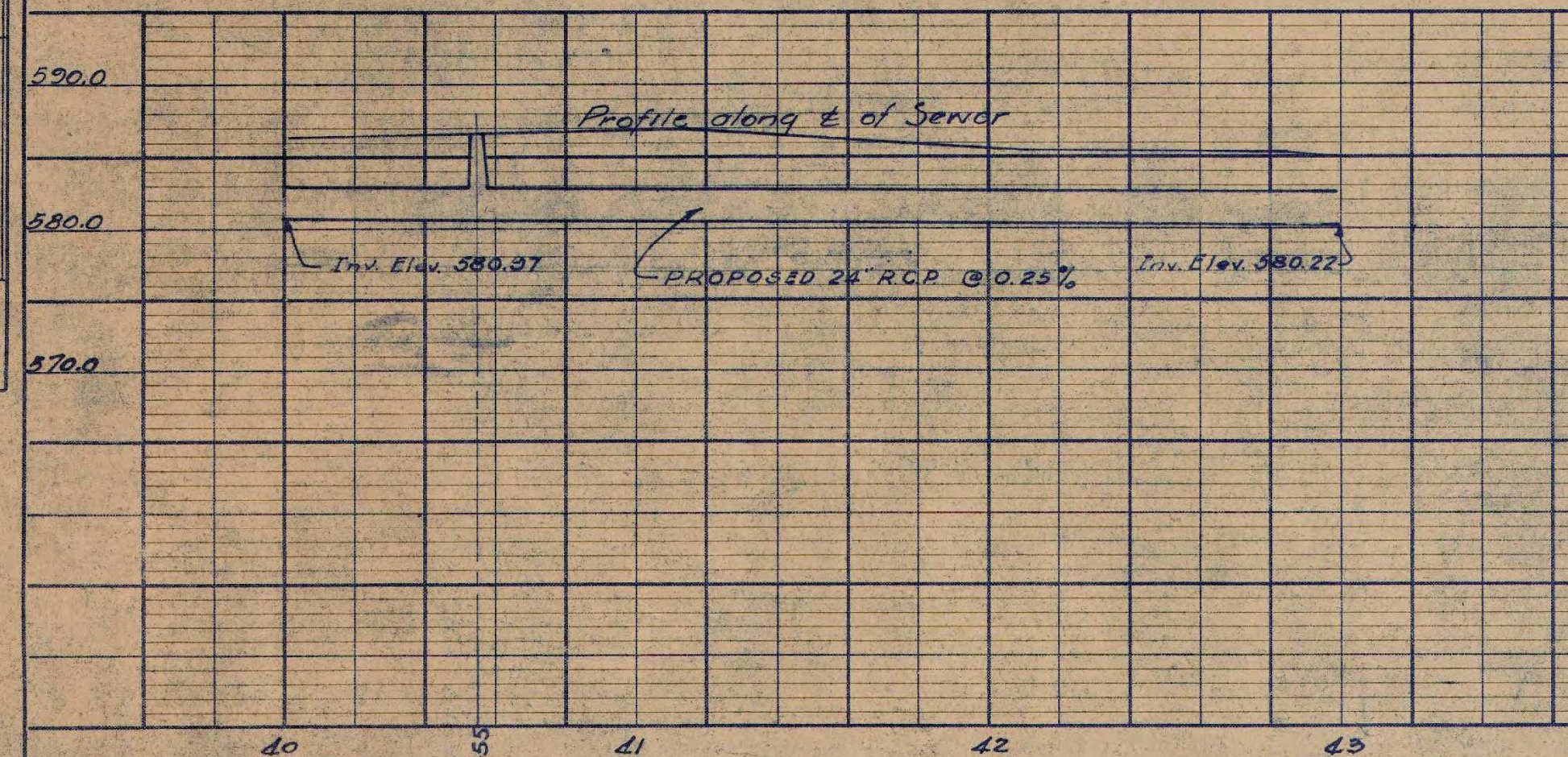
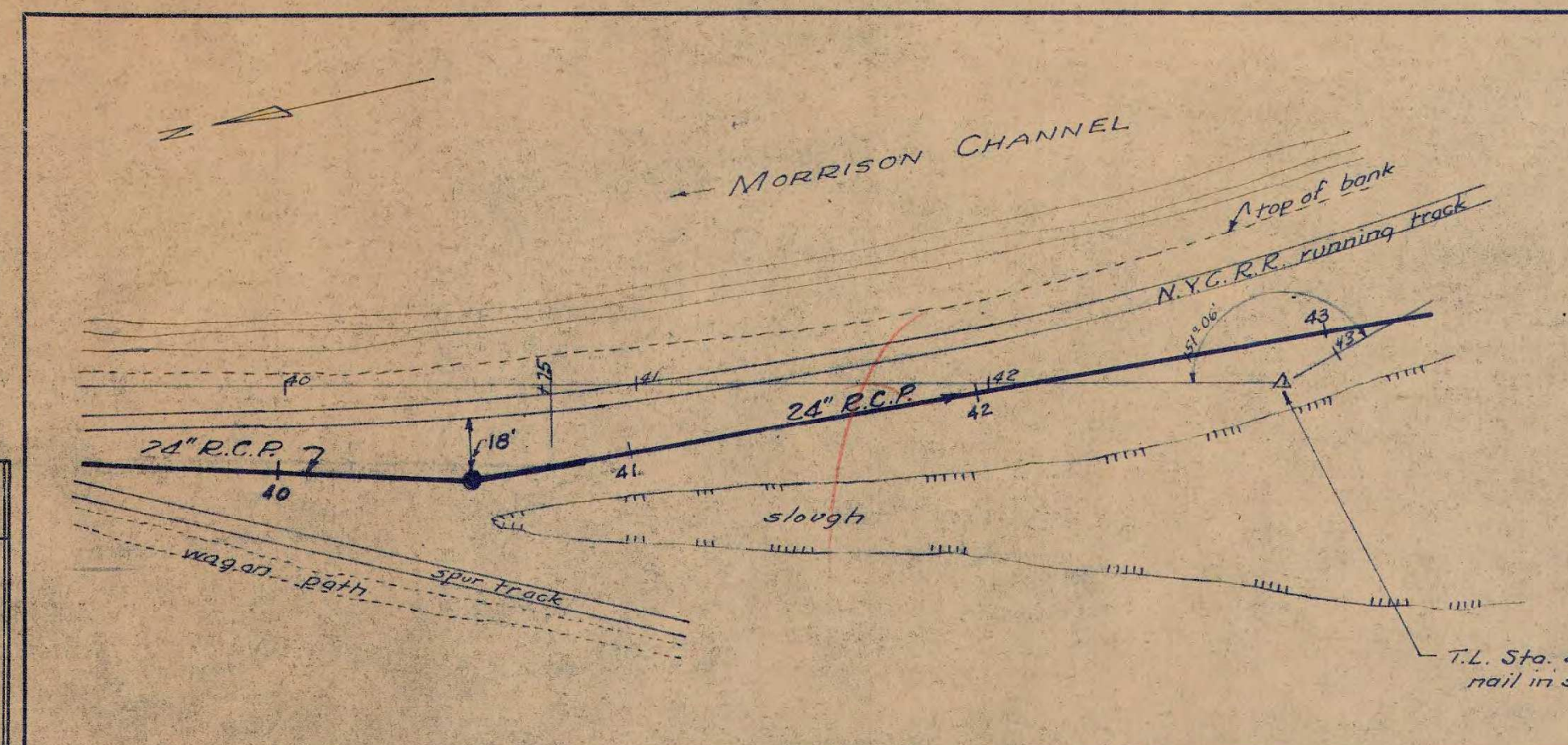
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HISTORICAL REFERENCE DOCUMENT

REVISIONS

NO.	DATE	DESCRIPTION

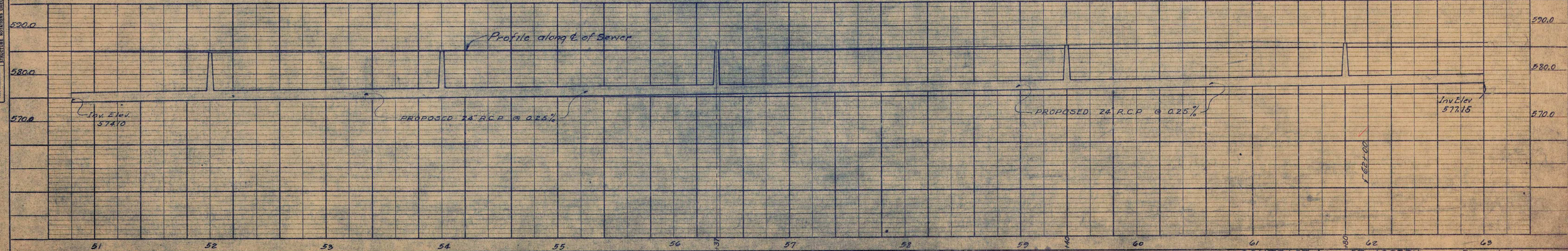
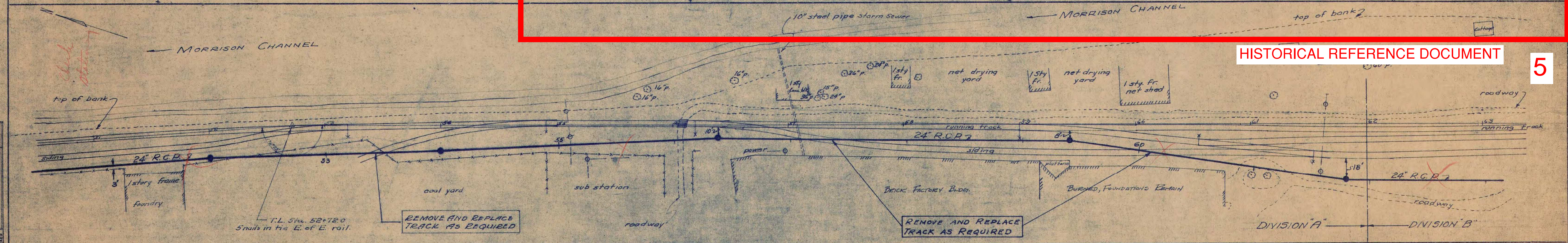
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 CHECKED BY
 PLOTTED BY
 ALIGNED BY
 NOTE BOOK NO.
 ALL DIMENSIONS CHECKED



REVISIONS

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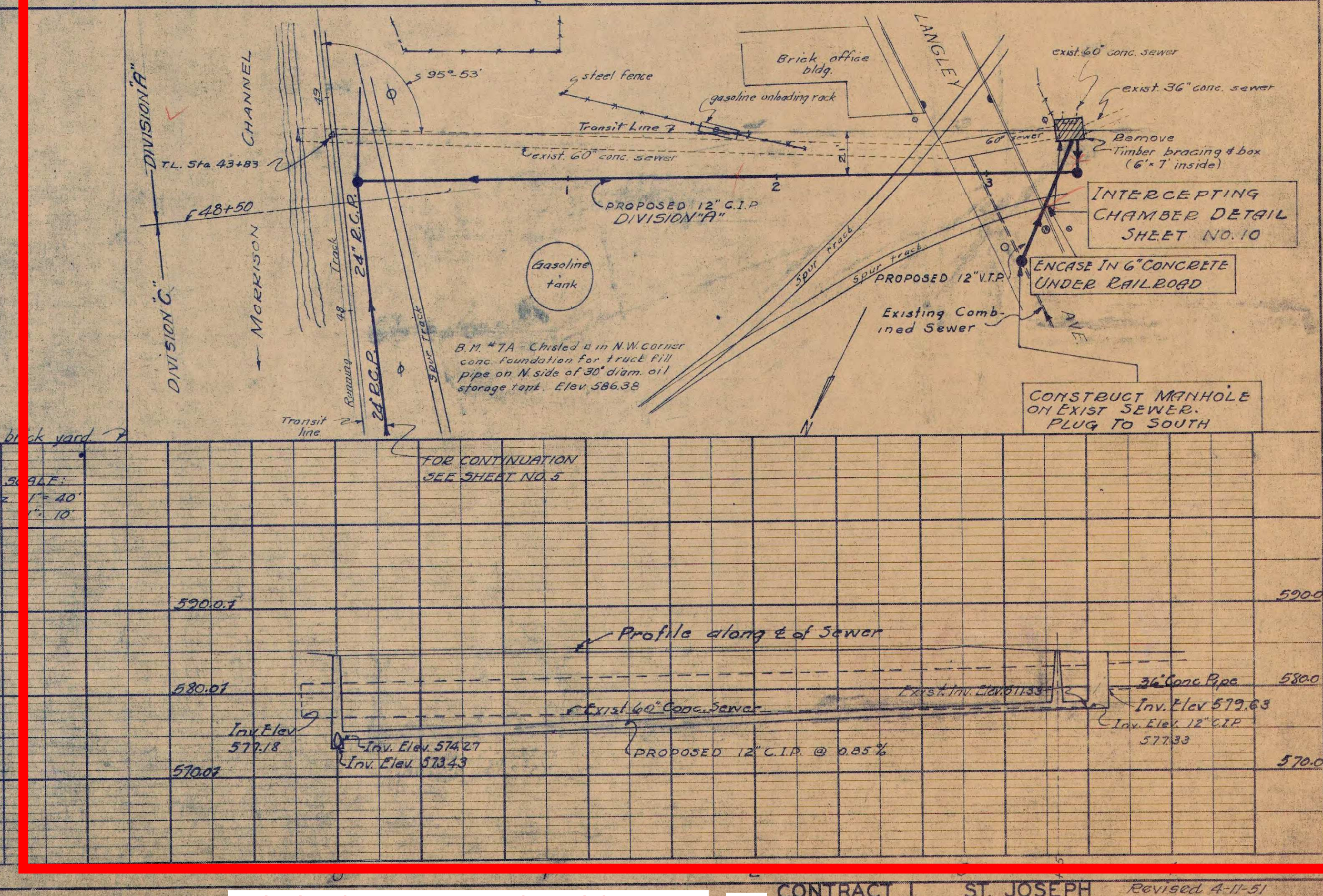
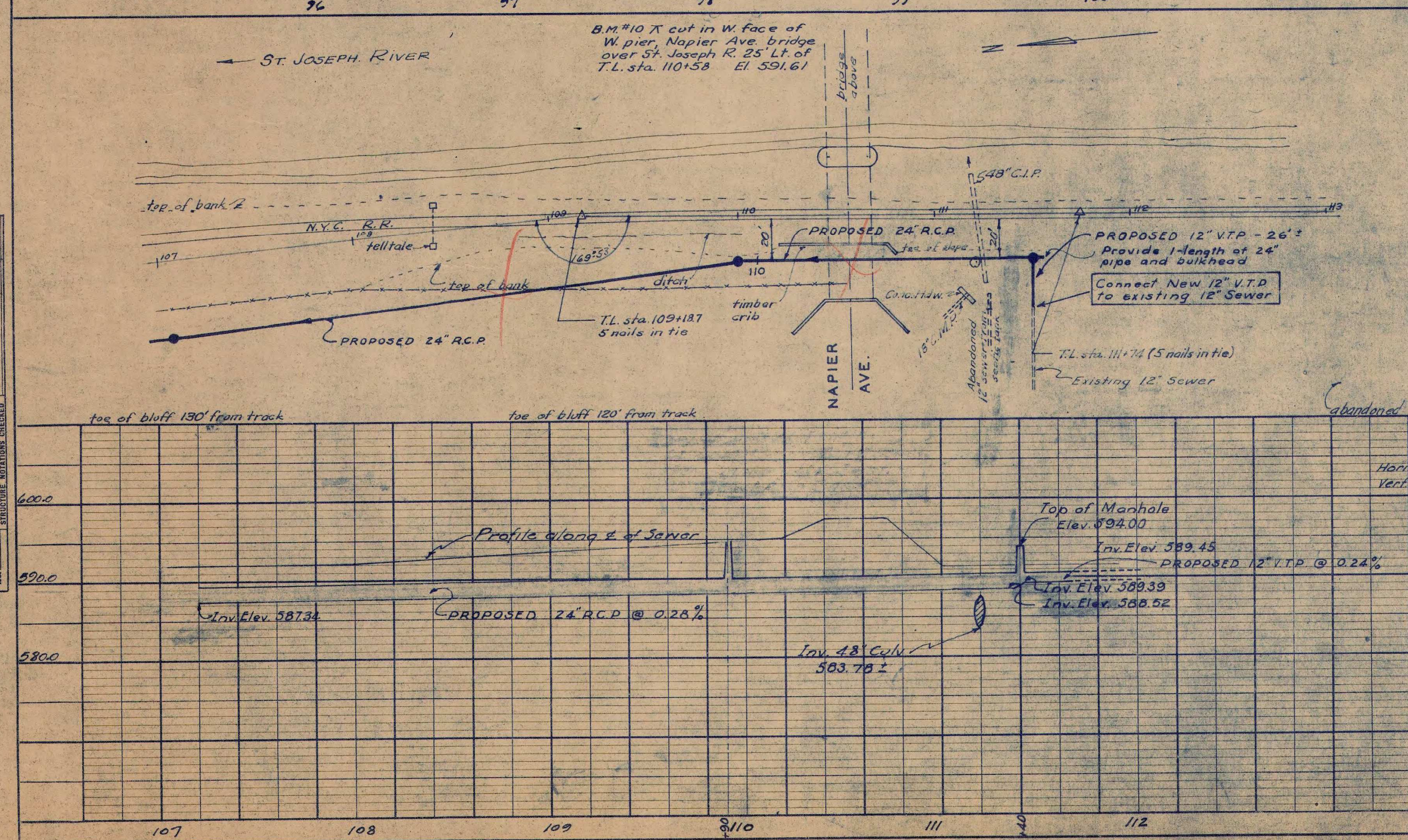
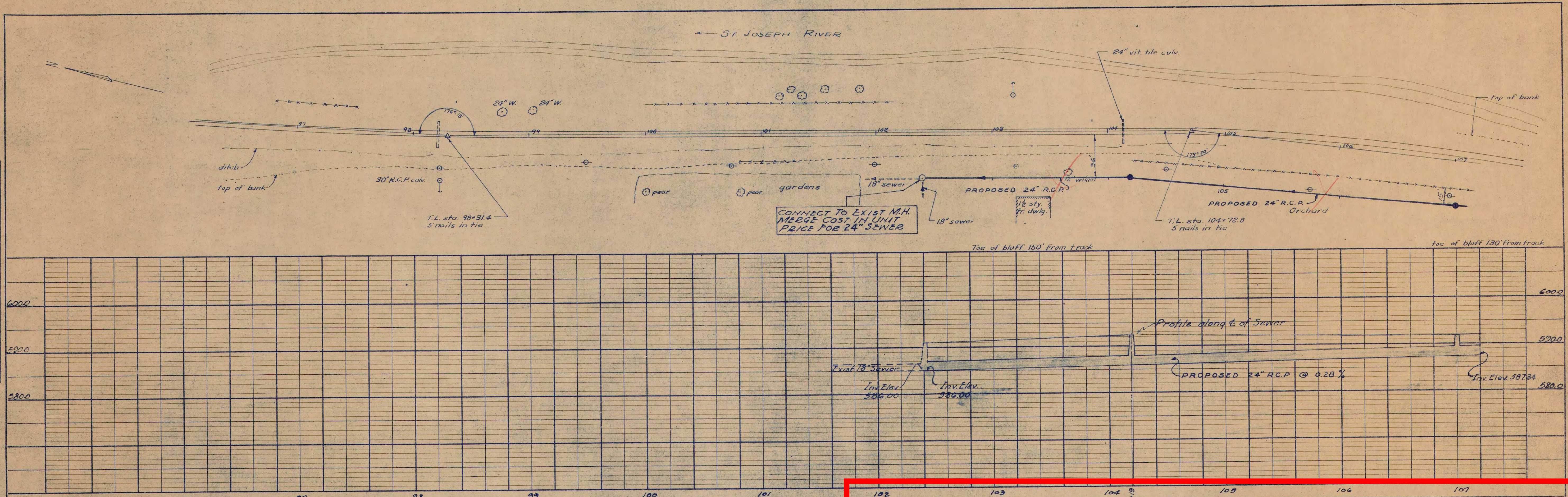
PROFILE
 DESIGNED BY
 CHECKED BY
 PLOTTED BY
 BRIDGE CHECKED BY
 NOTE BOOK NO.
 ALL DIMENSIONS CHECKED

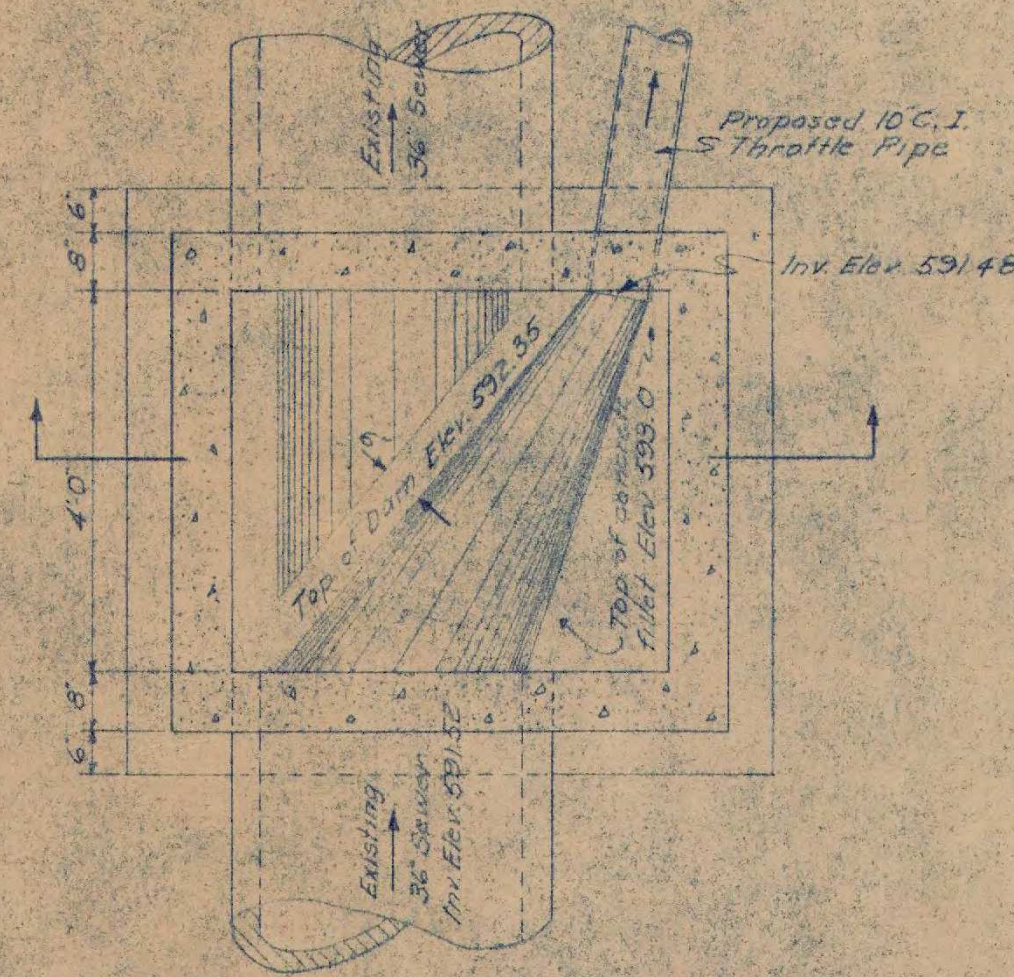


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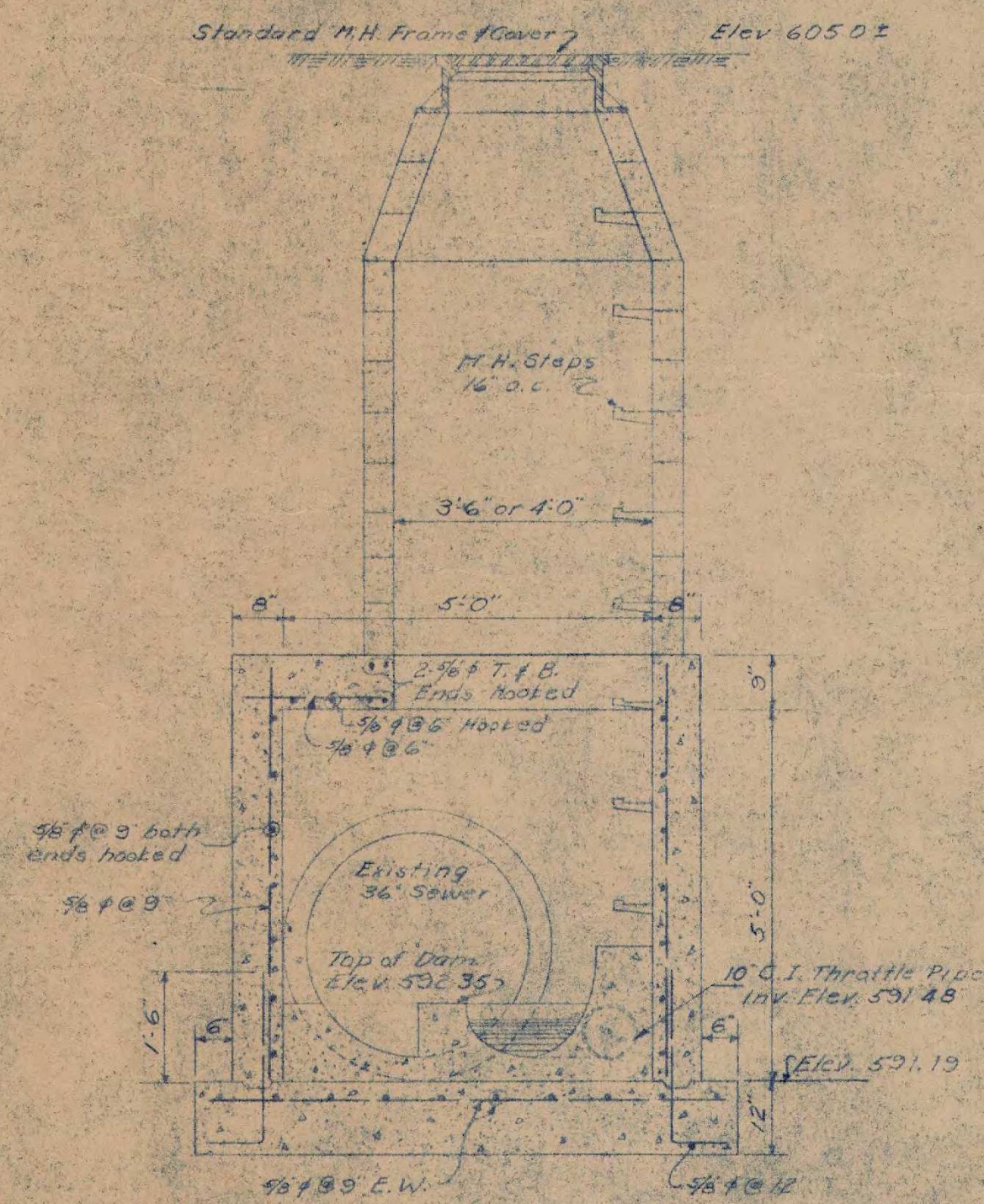
DATE: 07
 SURVEYED: _____
 PLOTTED: _____
 NOTE BOOK: _____
 NO. _____

DATE: _____
 SURVEYED: _____
 GRADES CHECKED: _____
 B.M.'S NOTED: _____
 STRUCTURE NOTATIONS CHECKED: _____
 NO. _____





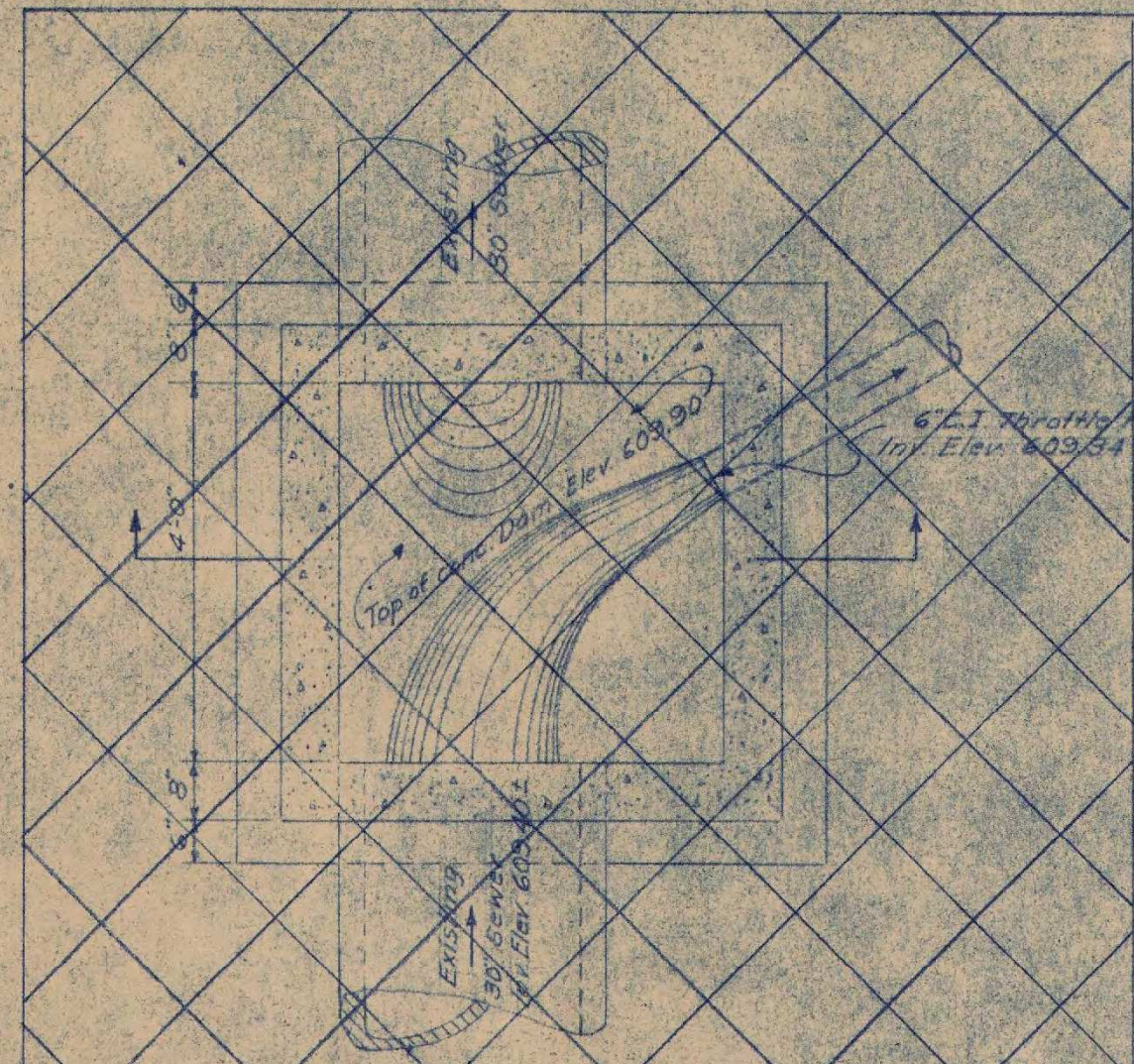
PLAN



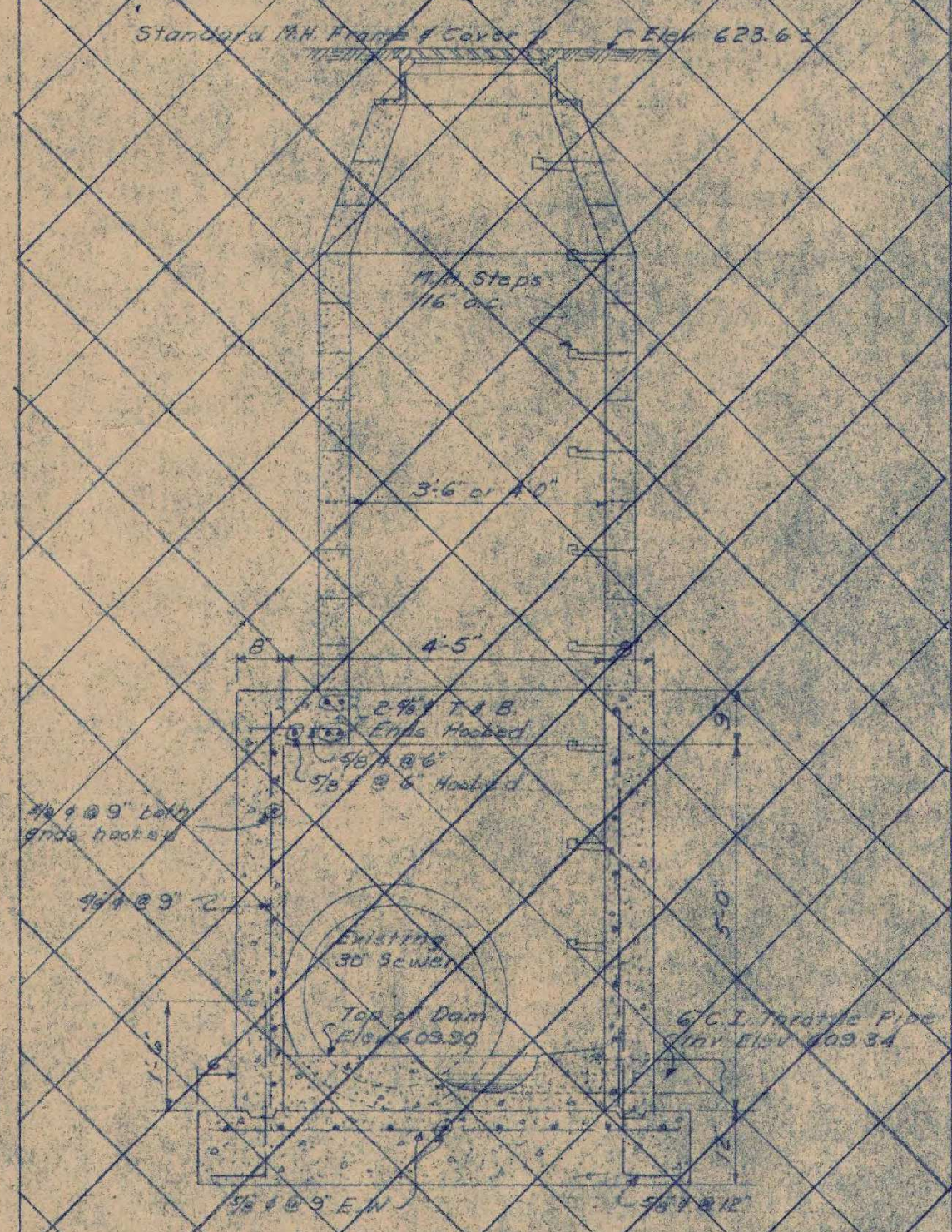
SECTION

STATE ST
INTERCEPTING CHAMBER
Scale: 1/2" = 1'-0"

all things of New Dam

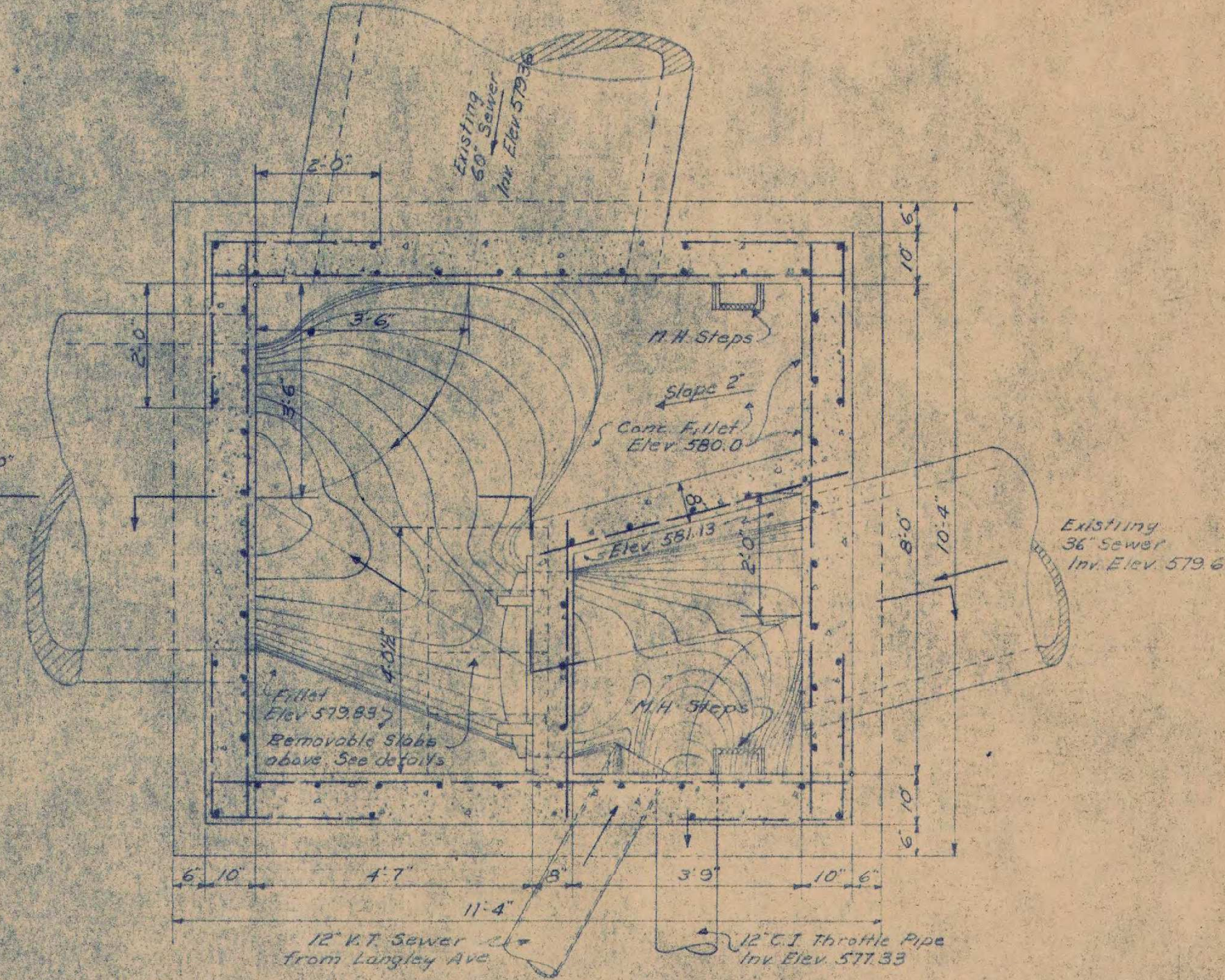


PLAN



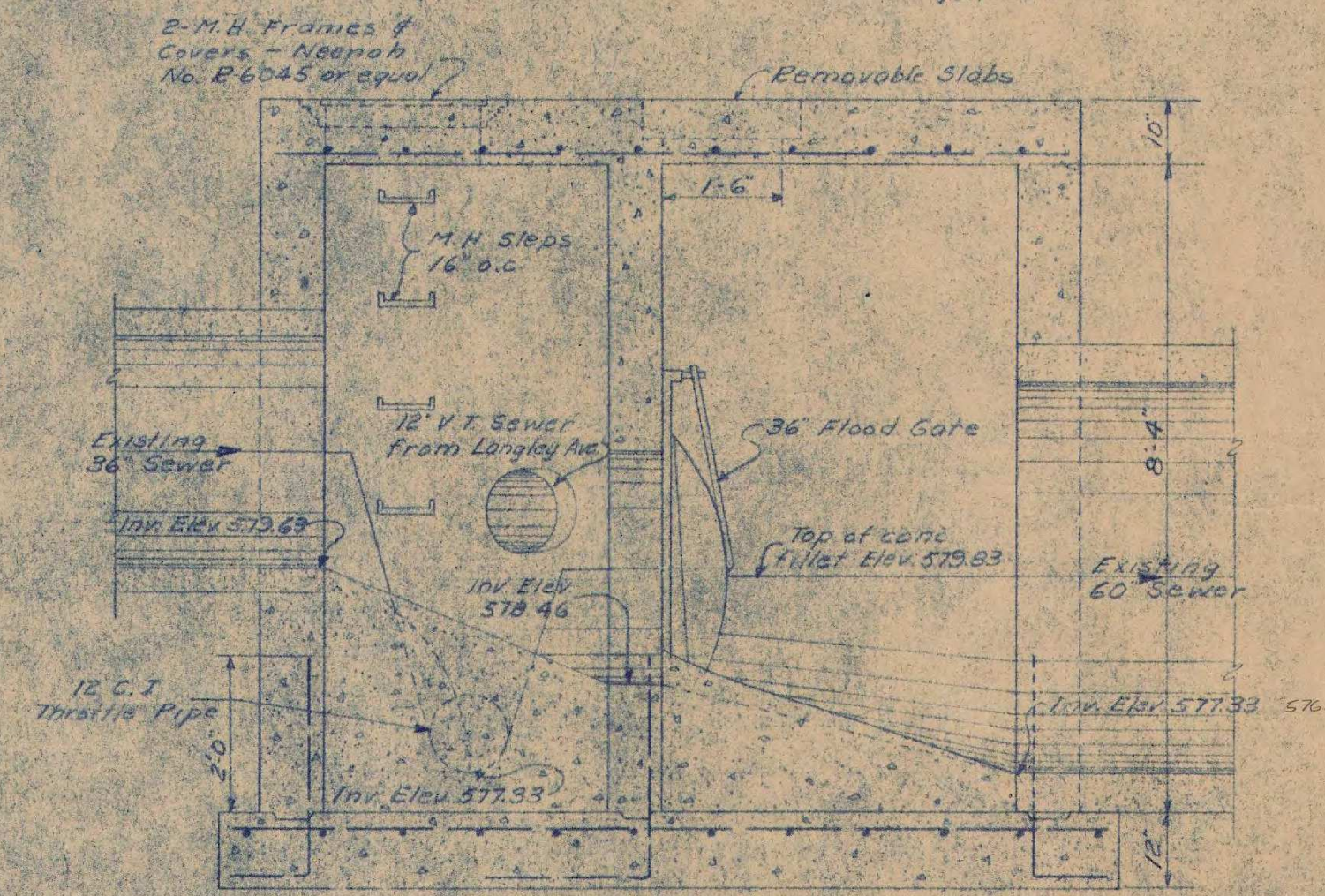
SECTION

COURT - CHURCH
INTERCEPTING CHAMBER
Scale: 1/2" = 1'-0"



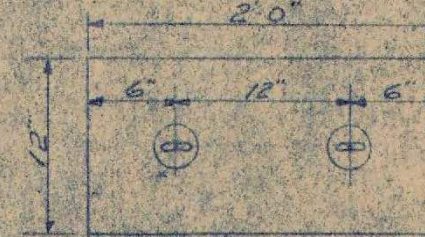
PLAN

Note: All steel
3/8" @ 12"

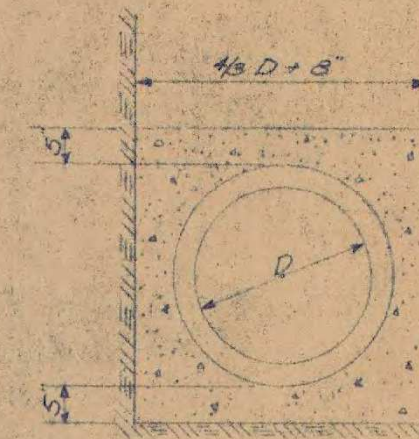


SECTION

LANGLEY AVE
INTERCEPTING CHAMBER
Scale: 1/2" = 1'-0"



DETAIL OF
REMOVABLE SLABS



D	Payment Volume of Concrete in cu. yds. per foot
10"	0.091
12"	0.109
24"	0.229

CONCRETE ENCASEMENT



DETAIL OF
REMOVABLE SLABS

ST. JOSEPH, MICHIGAN
INTERCEPTING SEWERS

INTERCEPTING CHAMBER DETAILS

DRAWN BY: ETD	CONSOER, TOWNSEND & ASSOCIATES CONSULTING ENGINEERS CHICAGO, ILL.	SCALE: As Noted
DATE:		REVISED:
CHECKED BY: JM		SHEET NO. 10
APPROVED BY:		OF 14 SHEETS

HISTORICAL REFERENCE DOCUMENT

STANDARD MANHOLES

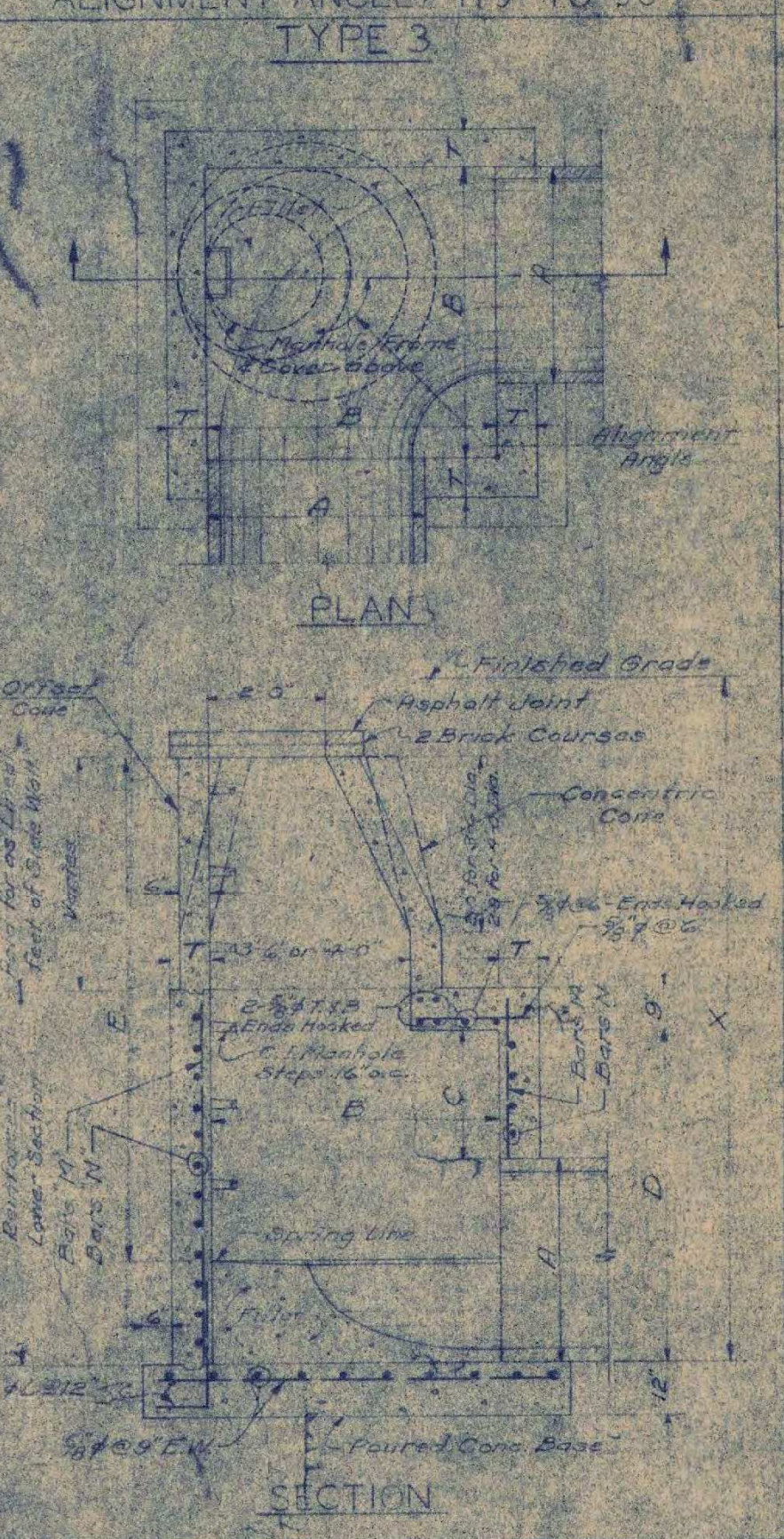
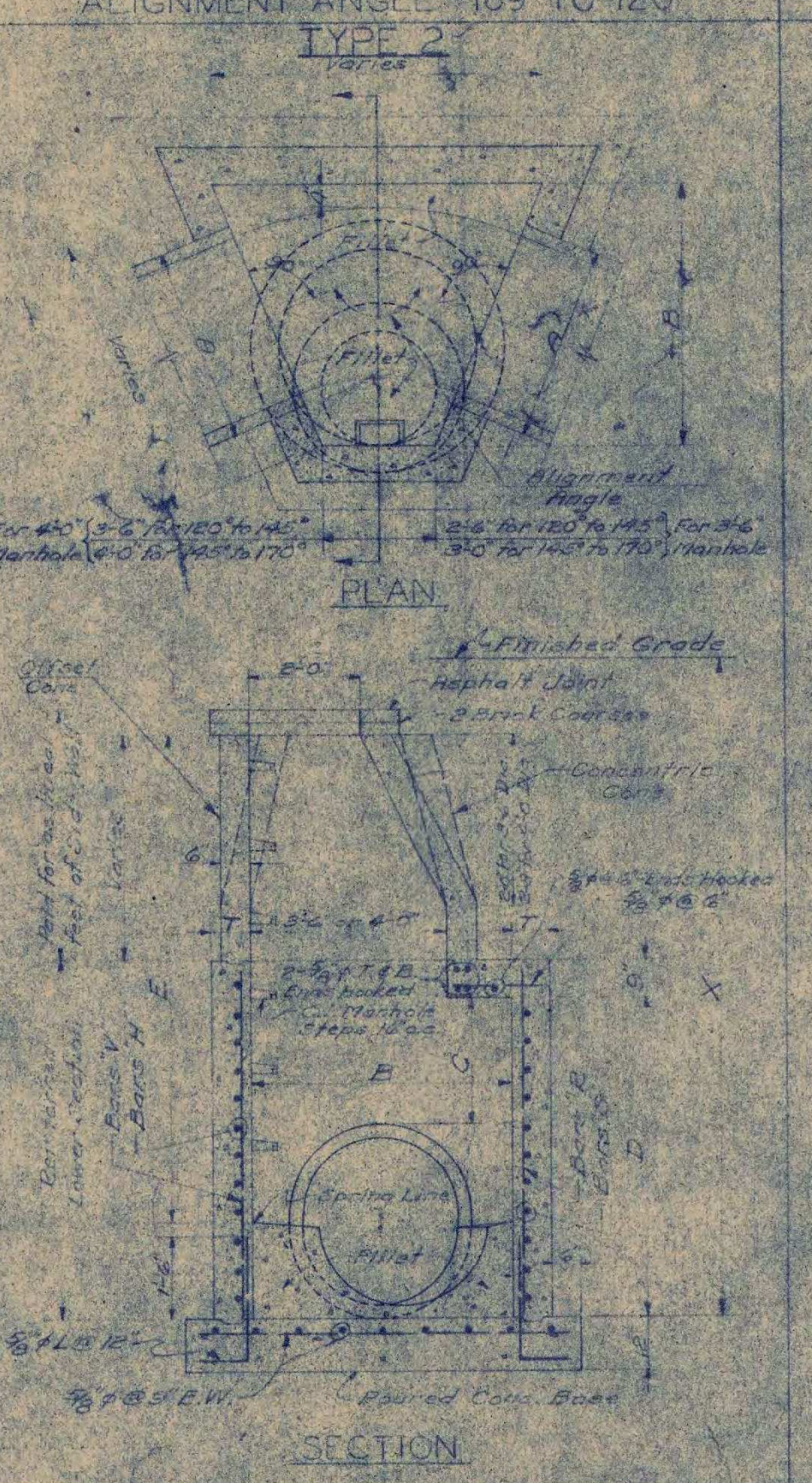
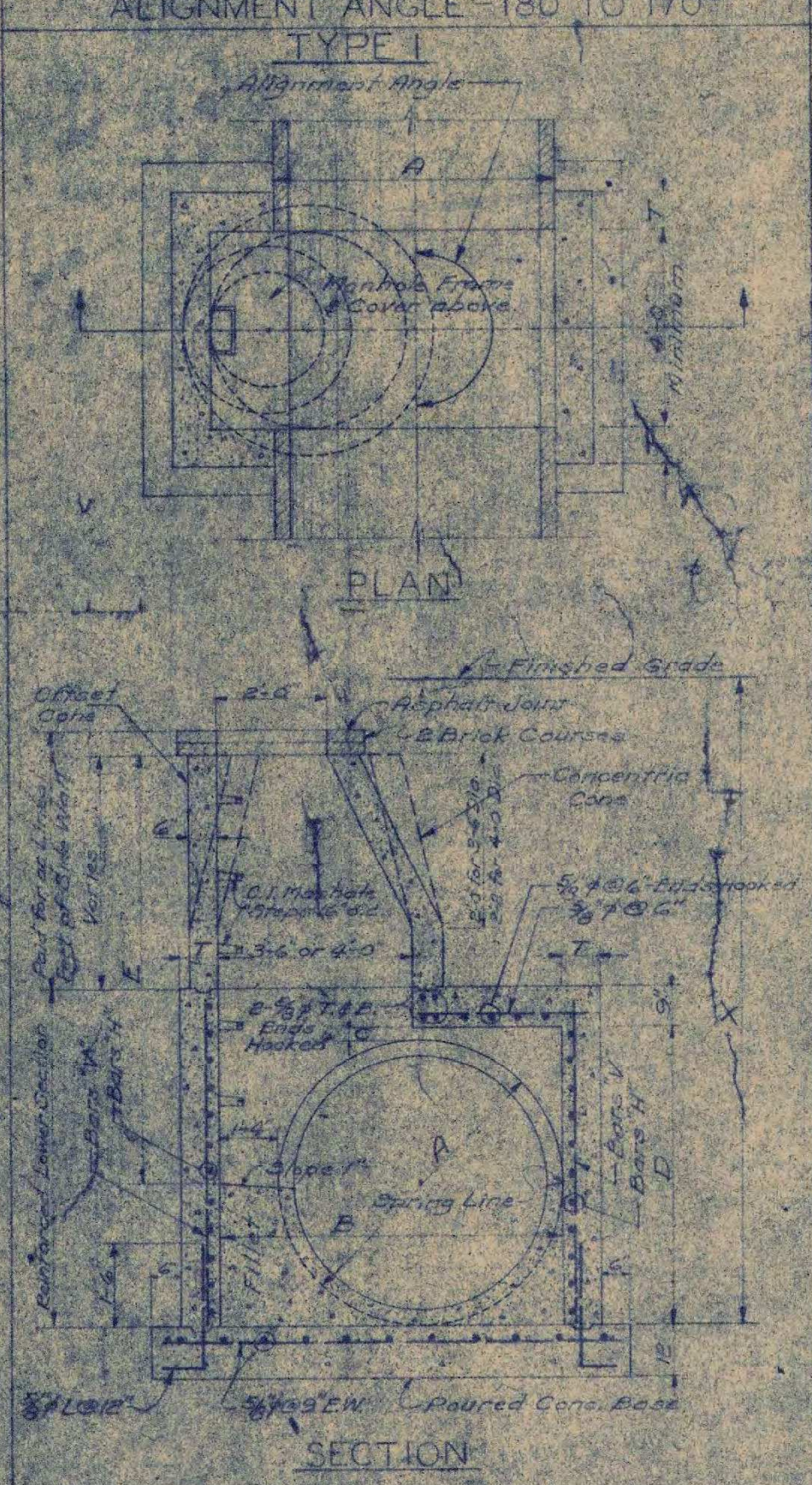
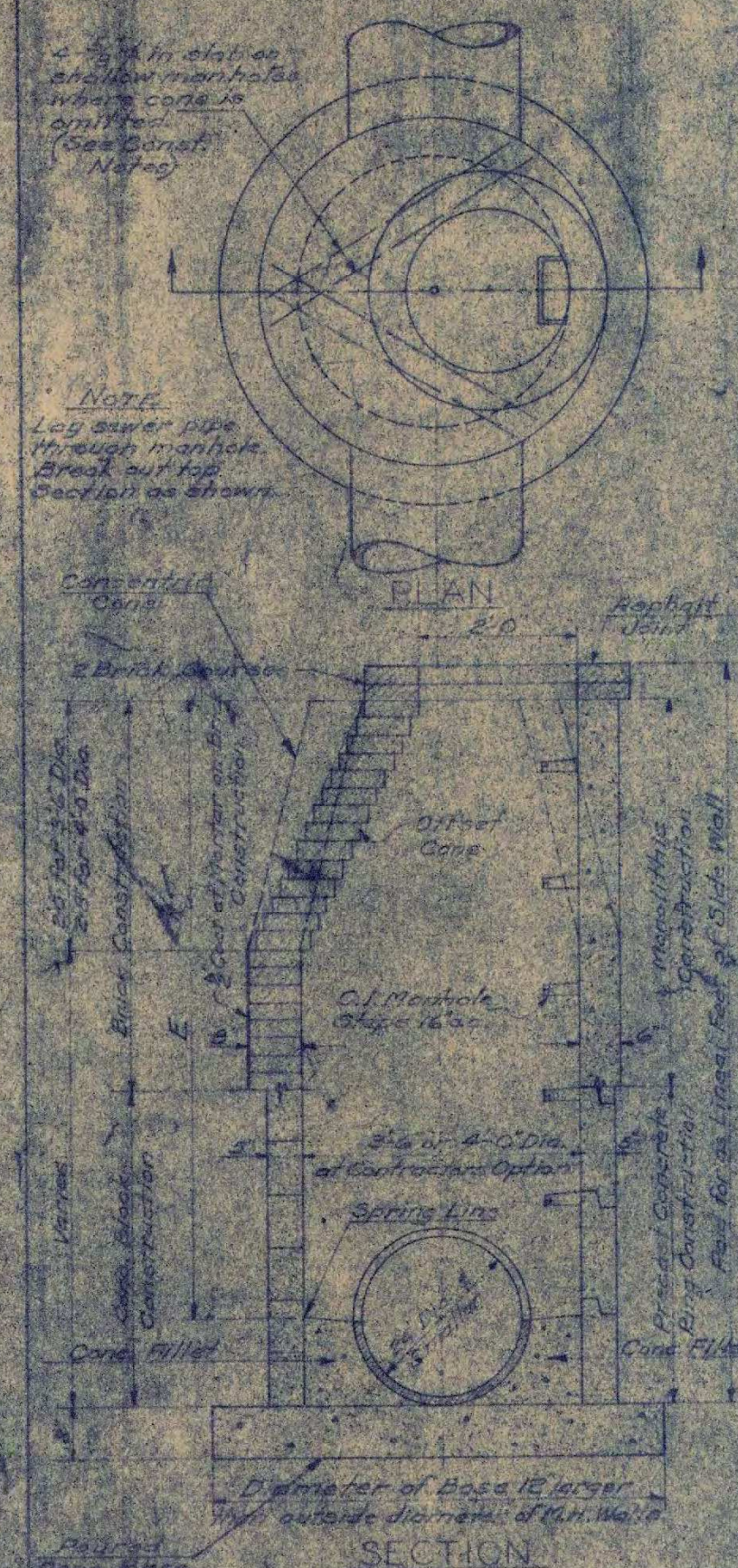
FOR SEWERS 24" DIAMETER & SMALLER

FOR SEWERS 27" INTERNAL DIAMETER AND LARGER

CONSTRUCTION DATA ALL MANHOLES

DROP PIPE FOR STANDARD MANHOLES

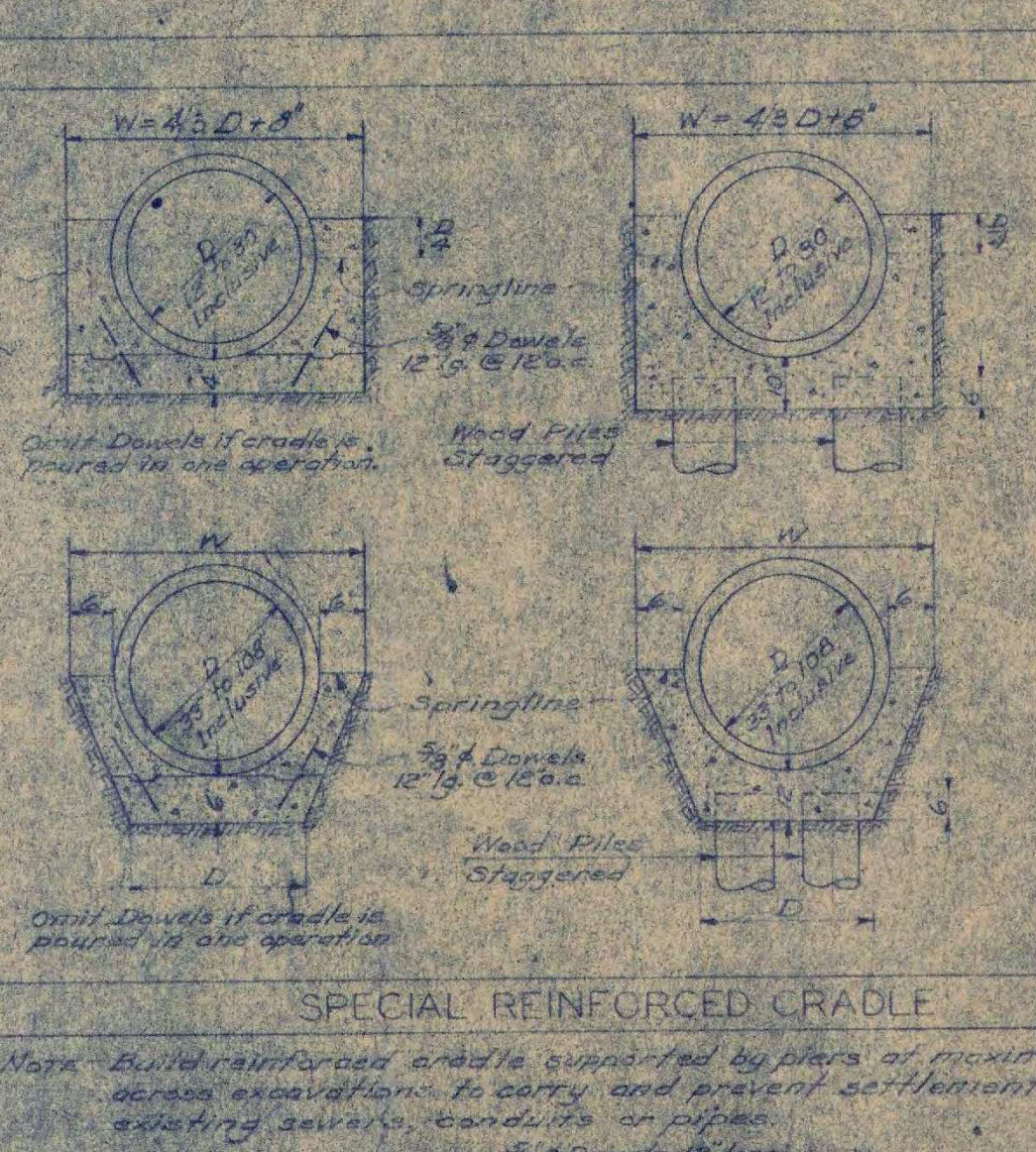
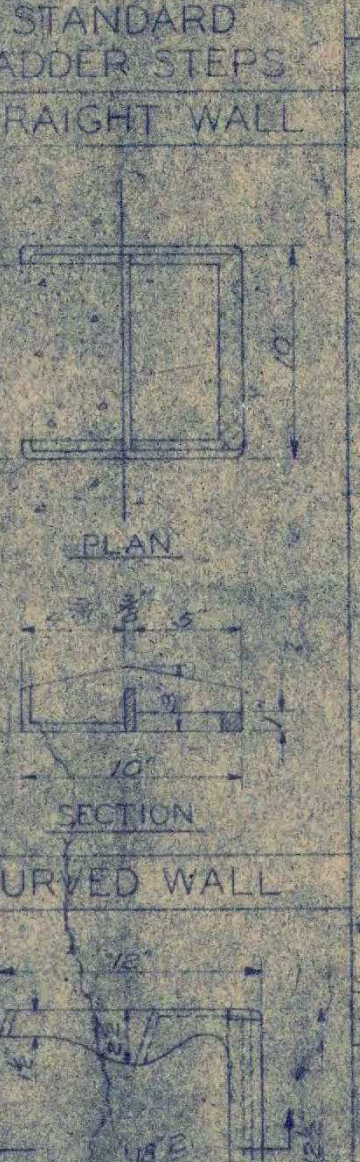
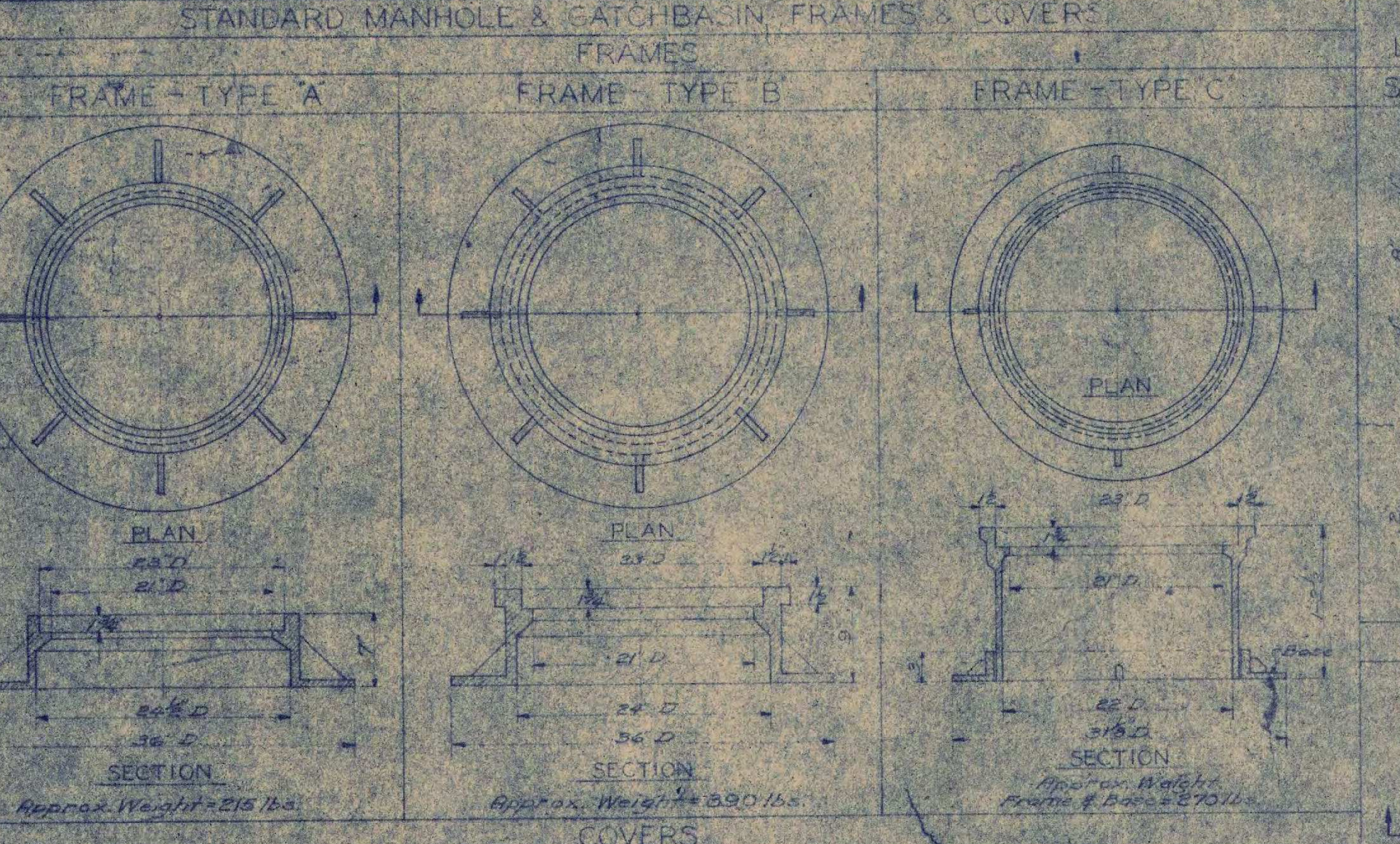
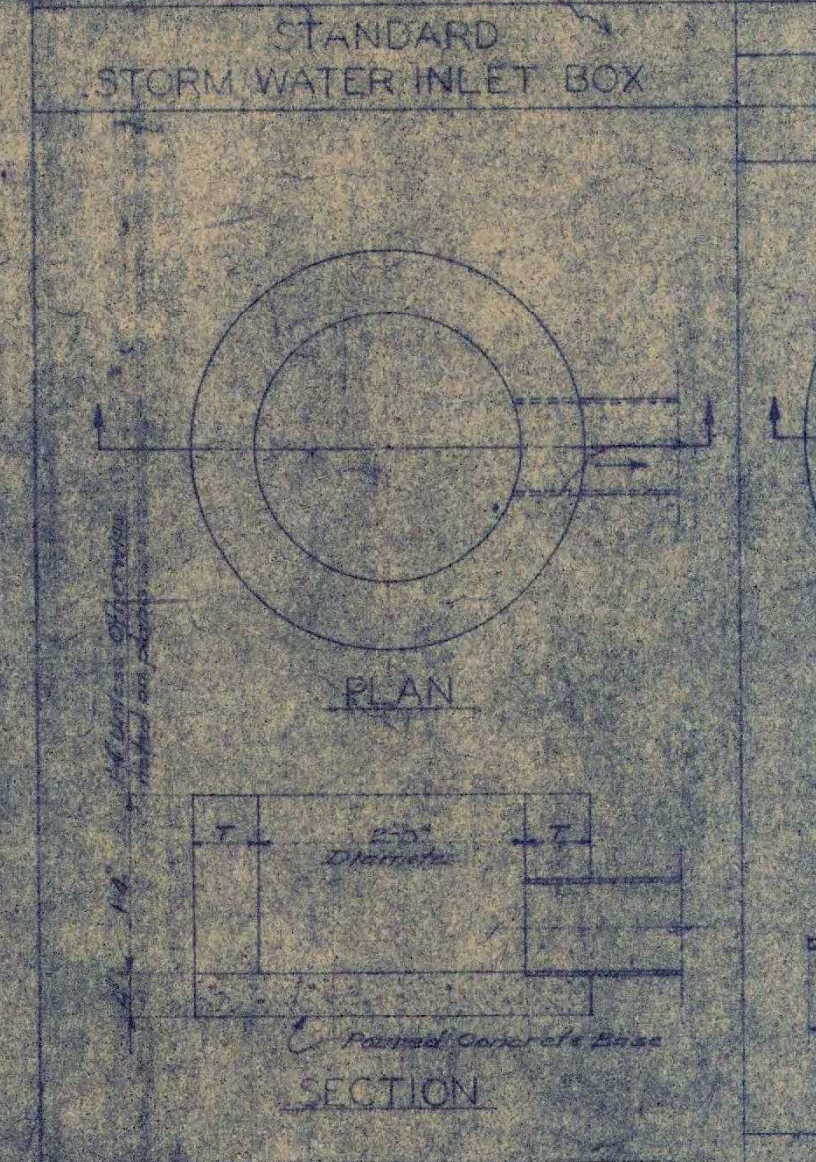
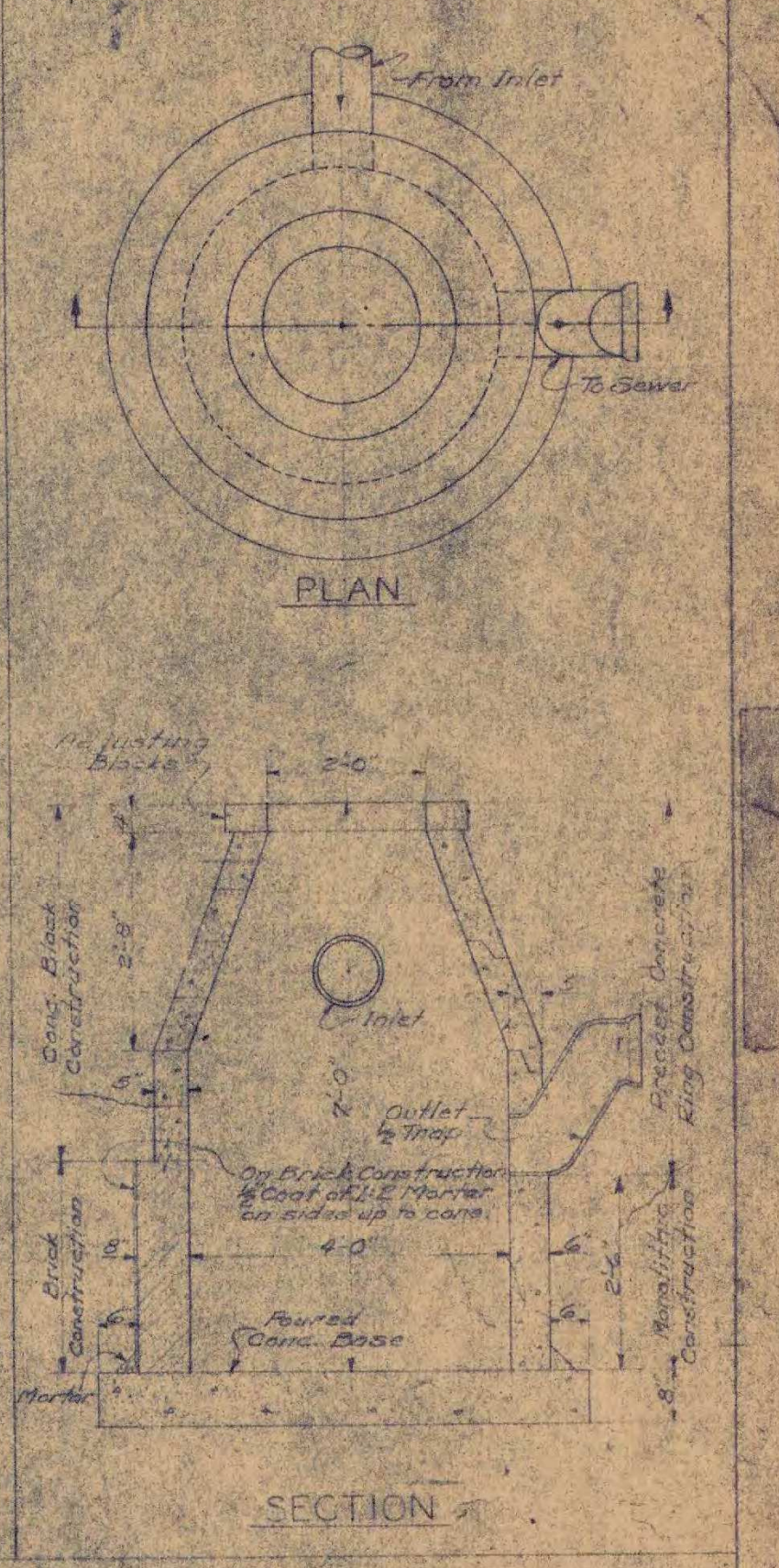
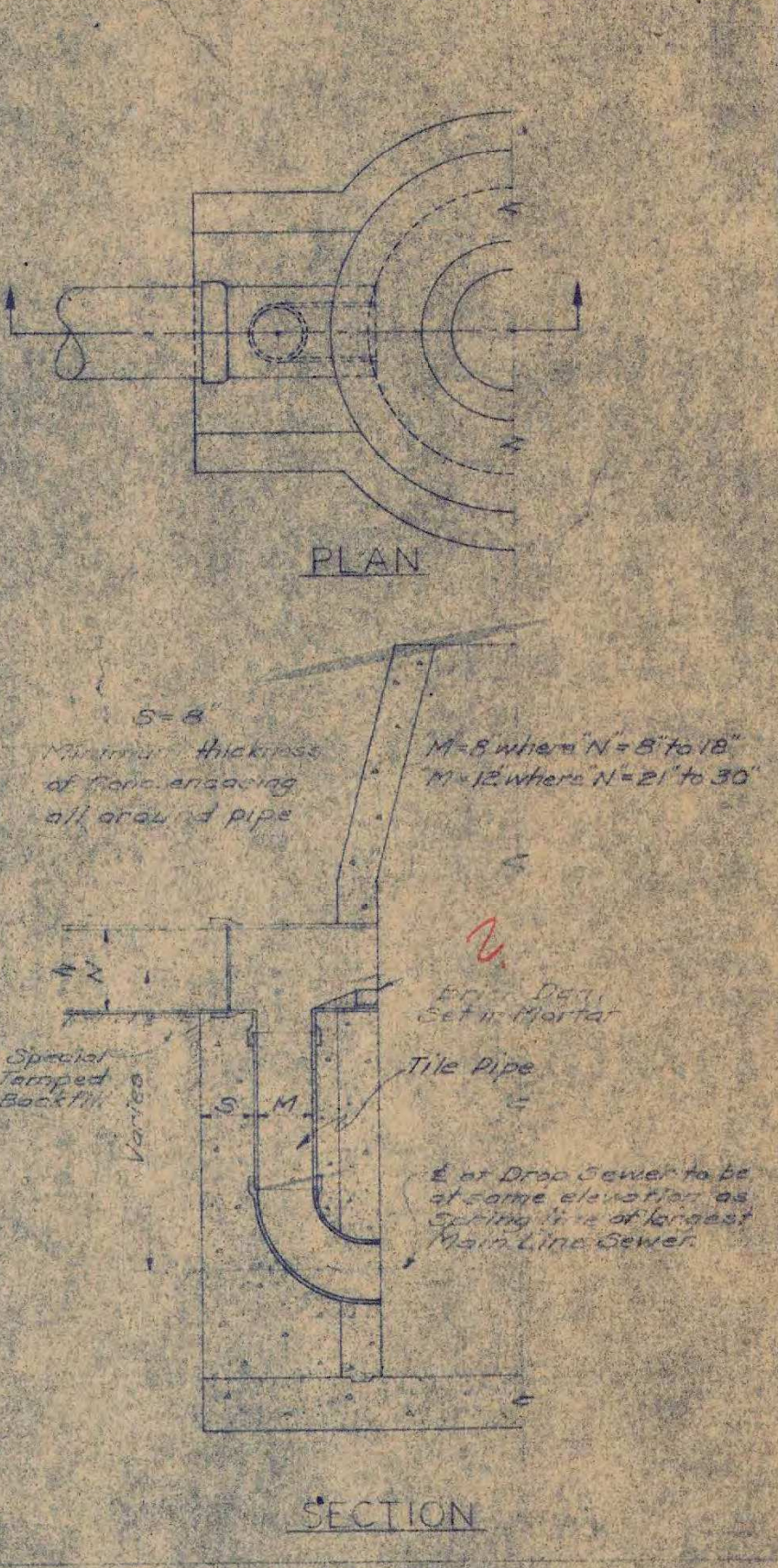
STANDARD CATCHBASIN



DIMENSIONS
 A - Outside Diameter of Largest Pipe
 B - As Shown (Minimum = 4'-0")
 C - Not Less Than 2' Above Highest Existing Grade
 D - Minimum 5'-0"
 E - Varies (See Note Below)

CONSTRUCTION NOTES
 Cylindrical and Conical Sections of all Manholes shall be constructed with brick masonry or concrete blocks or sewer brick as designated in the Unit Specifications of the Contract Documents.
 Concentric cores may be used on Precast Concrete and Concrete Block Units. Offset cores shall be used on Brick and Manhole Concrete Units. Cylindrical section may be either 3'-6" or 4'-0" diameter of Constructive Option.
 Dimension E varies. When less than 5'-0" on its base and extends cylindrical manhole sidewall section to an elevation 3 inches below bottom of adjoining brick. Construct 8 inch thick concrete slab on top of cylindrical section reinforced with 2 # 4 bars as shown. Provide 24 inch diameter opening in slab for manhole frame and brick adjustment rings as on bored manholes.

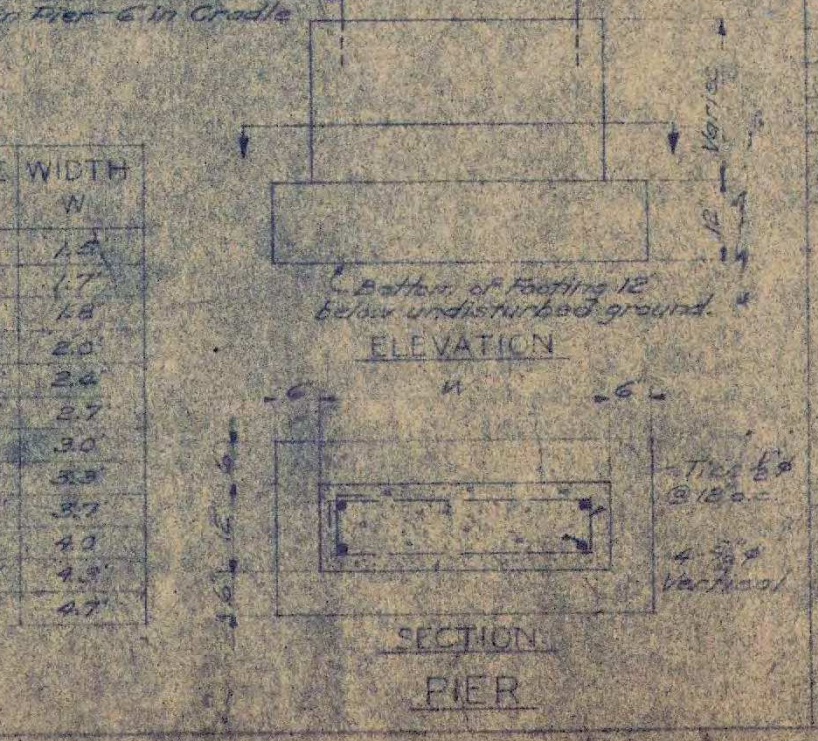
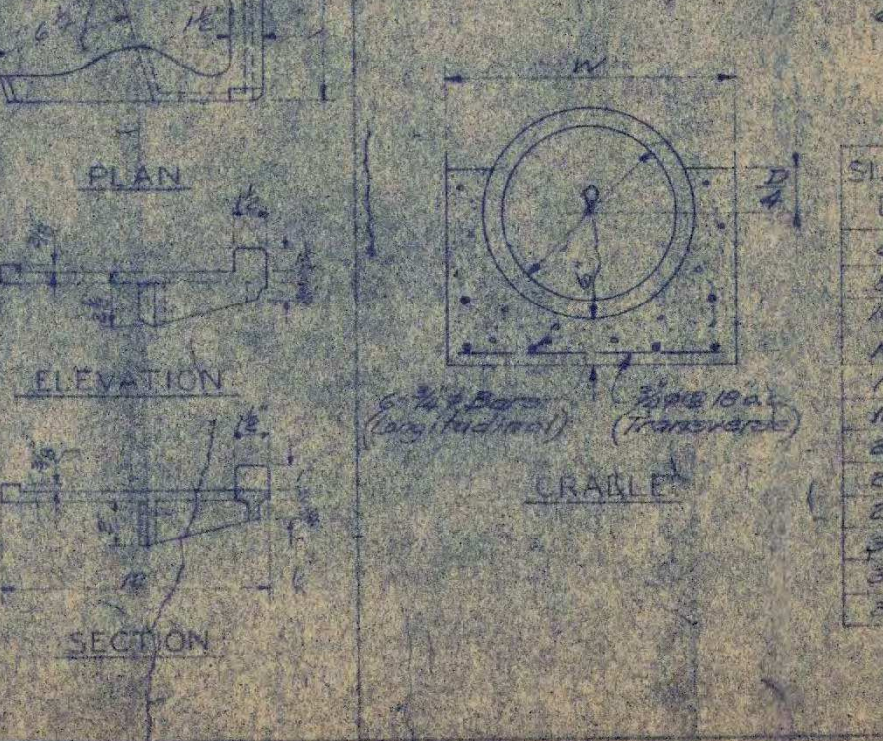
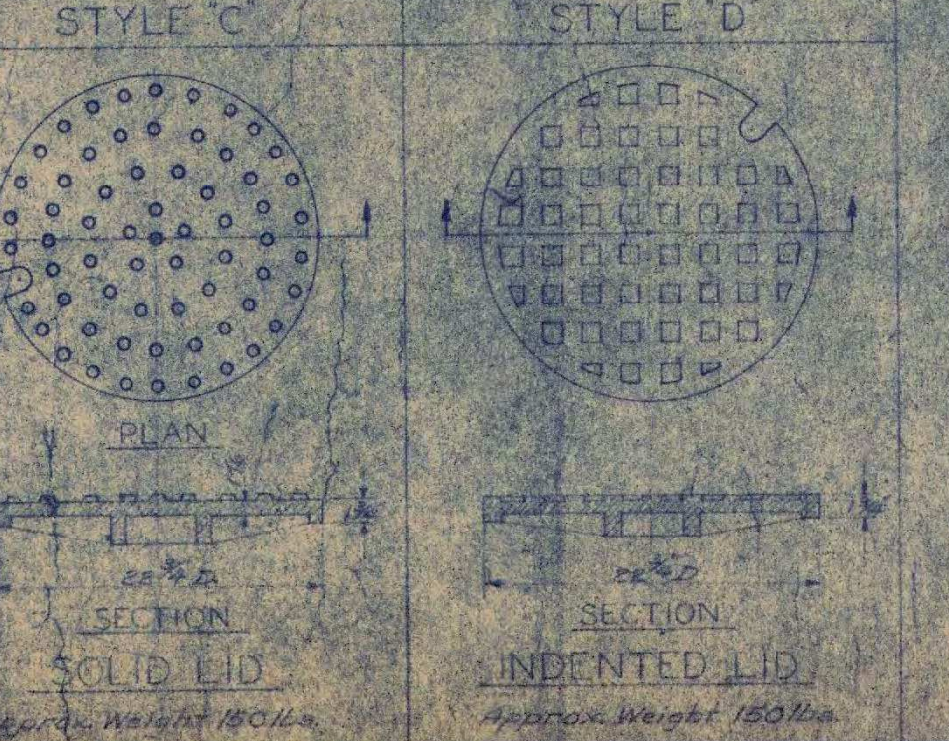
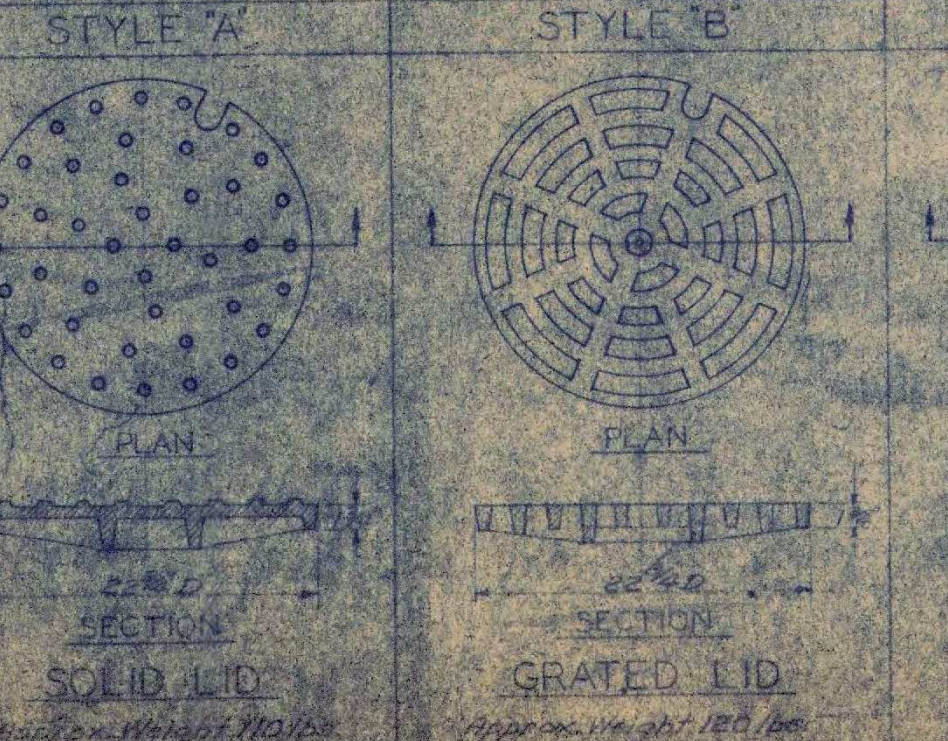
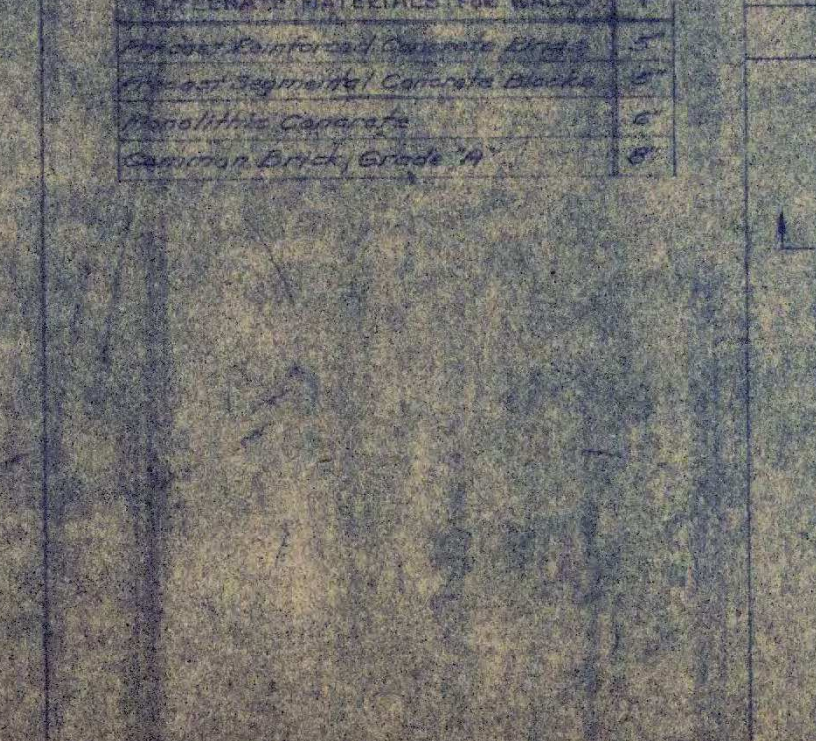
Item	For X Greater Than 15 Feet	For X Less Than 15 Feet
Dimension T	10"	8"
Bars H	3/8" x 6" Hooked	3/8" x 6" Hooked
Bars V	3/8" x 6"	3/8" x 6"
Bars L	3/8" x 6"	3/8" x 6"
Bars S	3/8" x 6" Hooked	3/8" x 6" Hooked
Bars M	3/8" x 6"	3/8" x 6"
Bars N	3/8" x 6" Hooked	3/8" x 6" Hooked



STANDARD CRADLE DIMENSIONS & PAYMENT VOLUMES

Internal Pipe Diameter	Width as shown	Payment Volume of Concrete Cradle in cubic feet per Linear foot of Pipe	Without Piling	With Piling
12"	24"	.55	.55	.55
15"	28"	.65	.65	.65
18"	32"	.75	.75	.75
21"	36"	.85	.85	.85
24"	40"	.95	.95	.95
27"	44"	1.05	1.05	1.05
30"	48"	1.15	1.15	1.15
36"	56"	1.35	1.35	1.35
42"	64"	1.55	1.55	1.55
48"	72"	1.75	1.75	1.75
54"	80"	1.95	1.95	1.95
60"	88"	2.15	2.15	2.15
66"	96"	2.35	2.35	2.35
72"	104"	2.55	2.55	2.55
78"	112"	2.75	2.75	2.75
84"	120"	2.95	2.95	2.95
90"	128"	3.15	3.15	3.15
96"	136"	3.35	3.35	3.35
102"	144"	3.55	3.55	3.55

NOTES
 Concrete cradles shall be finished and placed at locations shown on the contract drawings or at locations indicated by the Engineer. Cradles shall be placed from the outside surfaces of the pipe to the undisturbed edges of the trench, with the minimum cross section as shown on Section and dimensions for each pipe size as shown in table.
 When a contract provides for payment for concrete cradles on a cubic yard basis, payment will be made on the basis of the installed linear feet of each pipe size cradled multiplied by the volume in cubic yards per linear foot as shown in the table regardless of the concrete volume actually placed.
 When a contract provides for payment for the installation of a sewer including cradles, the complete cost of cradles shall be included in the unit bid and contract price for the sewer and no extra allowance will be made for furnishing and placing concrete cradles.



THIS CONTRACT INCLUDES ITEMS CHECKED IN FOLLOWING TABULATIONS

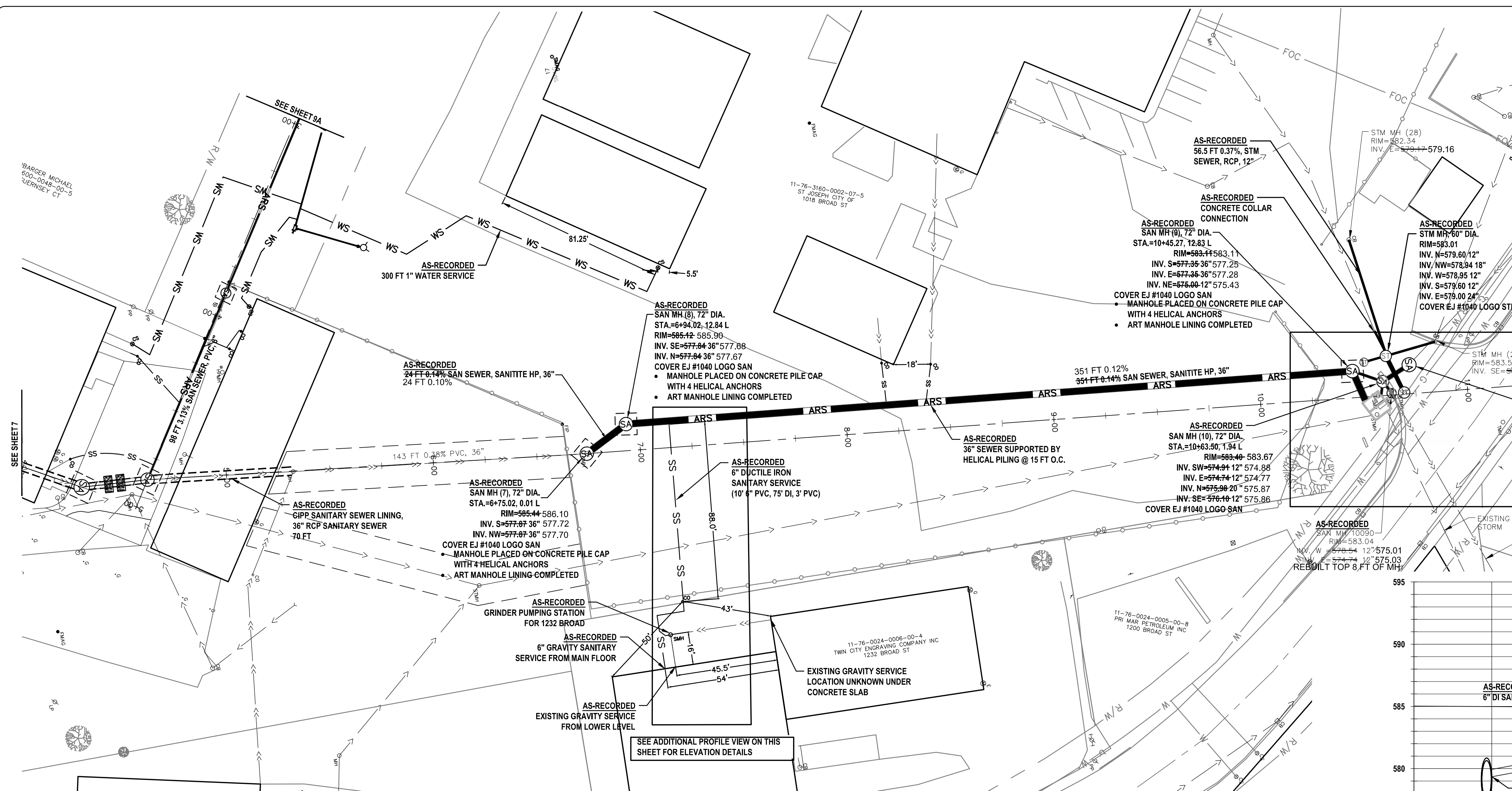
Item	Description	Item	Description
1	Manhole for Sewers 24" Dia. & Smaller	11	Manhole Covers - Style A
2	Manhole for Sewers 27" Dia. Larger Than 180 to 170	12	Style B
3	180 to 120	13	Style C
4	120 to 90	14	Style D
5	Drop Pipe for Standard Manholes	15	Standard Ladder Steps - Straight Wall
6	Standard Catchbasin	16	Curved Wall
7	Standard Storm Water Inlet Box	17	Concrete Cradle - Standard Cradle
8	Manhole Frames - Type 1	18	Concrete Cradle - Special Reinforced Cradle
9	Type 2		
10	Type 3		

ST JOSEPH, MICHIGAN INTERCEPTING SEWERS

SEWER CONSTRUCTION DETAILS

DRAWN BY: CONSER, TOWNSEND & ASSOCIATES
 CHECKED BY: CONSULTING ENGINEERS
 APPROVED BY: CHICAGO, ILL.

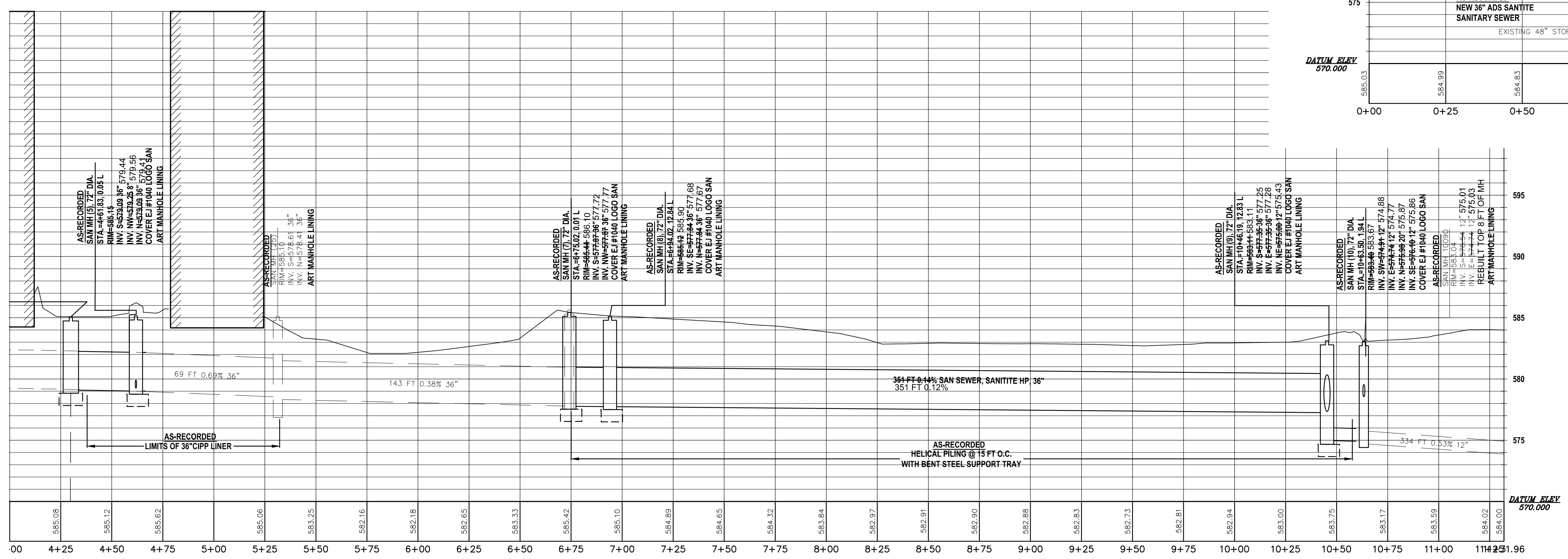
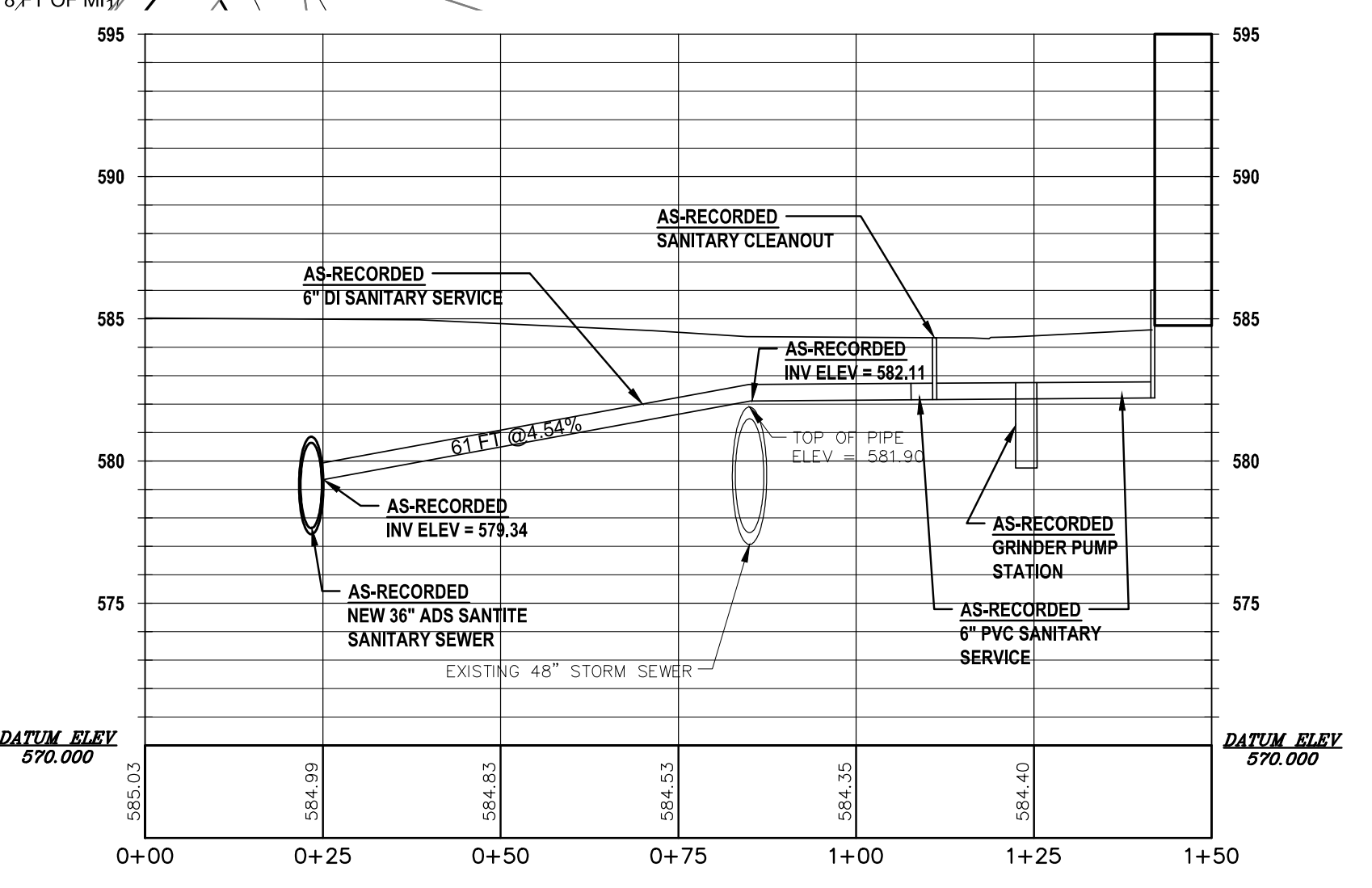
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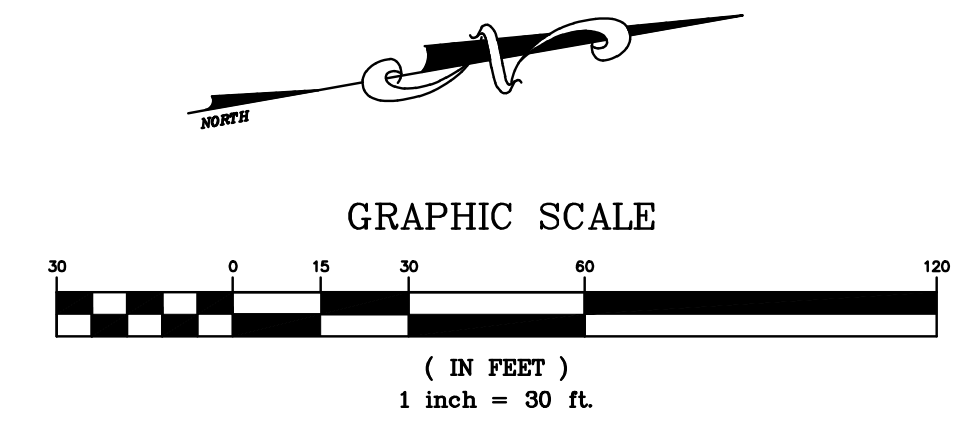
SANITARY SERVICE AS-BUILT INFORMATION					
DESC. & STATION	NORTHING	EASTING	ADDRESS	DISTANCE FROM MANHOLE TO WYE @ THE MAIN	LENGTH OF SERVICE & TOP OF PIPE ELEVATION
8" PVC 8+37L	227520.29'	12550971.85'	SIGN SHOP	210' TO MH #9	29' ELEV @ TIE-IN=577.56 ELEV @ MAIN=577.48
6" PVC8+20 L	227497.19'	12550967.27'	DPW	225' TO MH #9	20' ELEV @ TIE-IN=577.61 ELEV @ MAIN=577.51
6" PVC/D.I. 7+10 R	227332.64'	12551063.77'	1232 BROAD	18' TO MH #8	88' ELEV @ TIE-IN=582.04 ELEV @ MAIN=577.65

WATERMAIN SERVICE AS-BUILT INFORMATION					
DESC. & STATION	NORTHING	EASTING	ADDRESS	VALVE VAULT TO CORPORATION IN MAIN	LENGTH OF SERVICE & TOP OF PIPE ELEVATION
	227398.98'	12550903.19'	SIGN SHOP	310' TO GV #1	300' ELEV @ CORP=580.38 ELEV @ CURB=581.21

FOR SURFACE WORK, REFER TO SHEET 10 & SHEET 14.



LINE TYPE LEGEND	
— ARW —	AS-RECORDED WATER
— ARS —	AS-RECORDED SANITARY
— ARST —	AS-RECORDED STORM
- - - - -	AS-RECORDED PILE CAP



HISTORICAL REFERENCE DOCUMENT

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NO.	REVISION DESCRIPTION:	BY:	DATE:

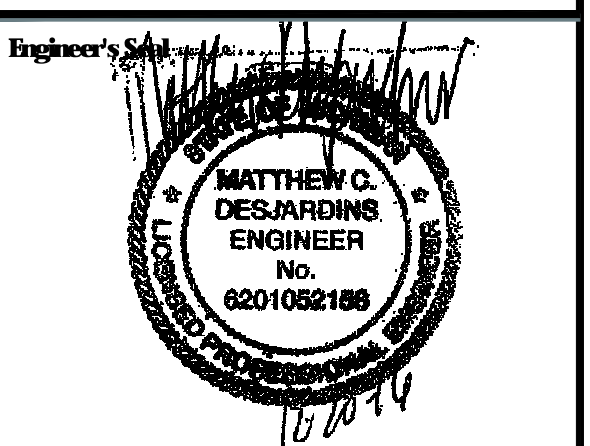
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Orientation	Scale
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Project
CITY OF ST. JOSEPH
2017 CSO PROJECT

Project Location
ST. JOSEPH, MICHIGAN

Sheet Name
TYPICAL PILE SUPPORT
DETAILS



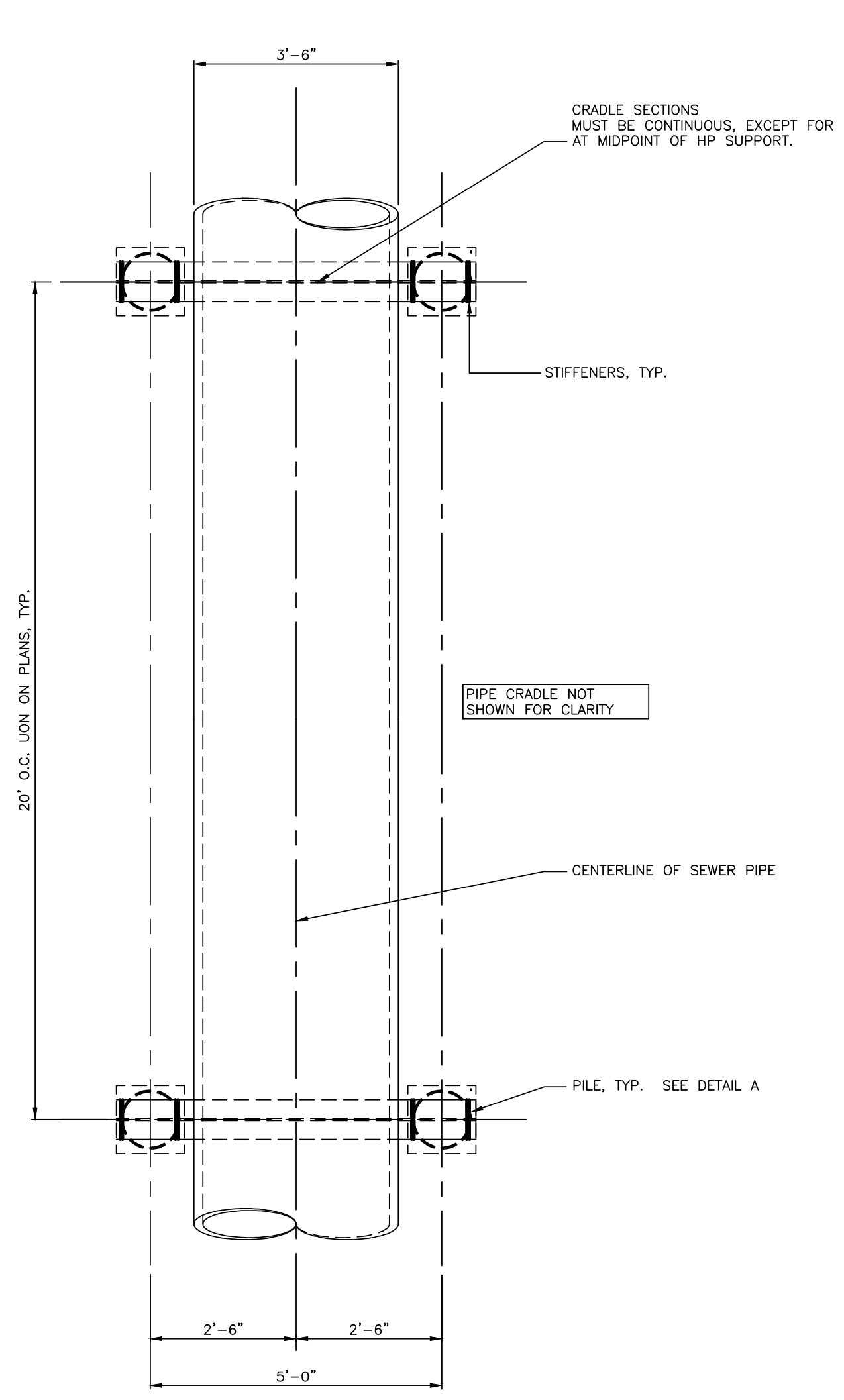
Revisions

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2	FOR BIDDING AND PERMITTING	12-20-16	MCD

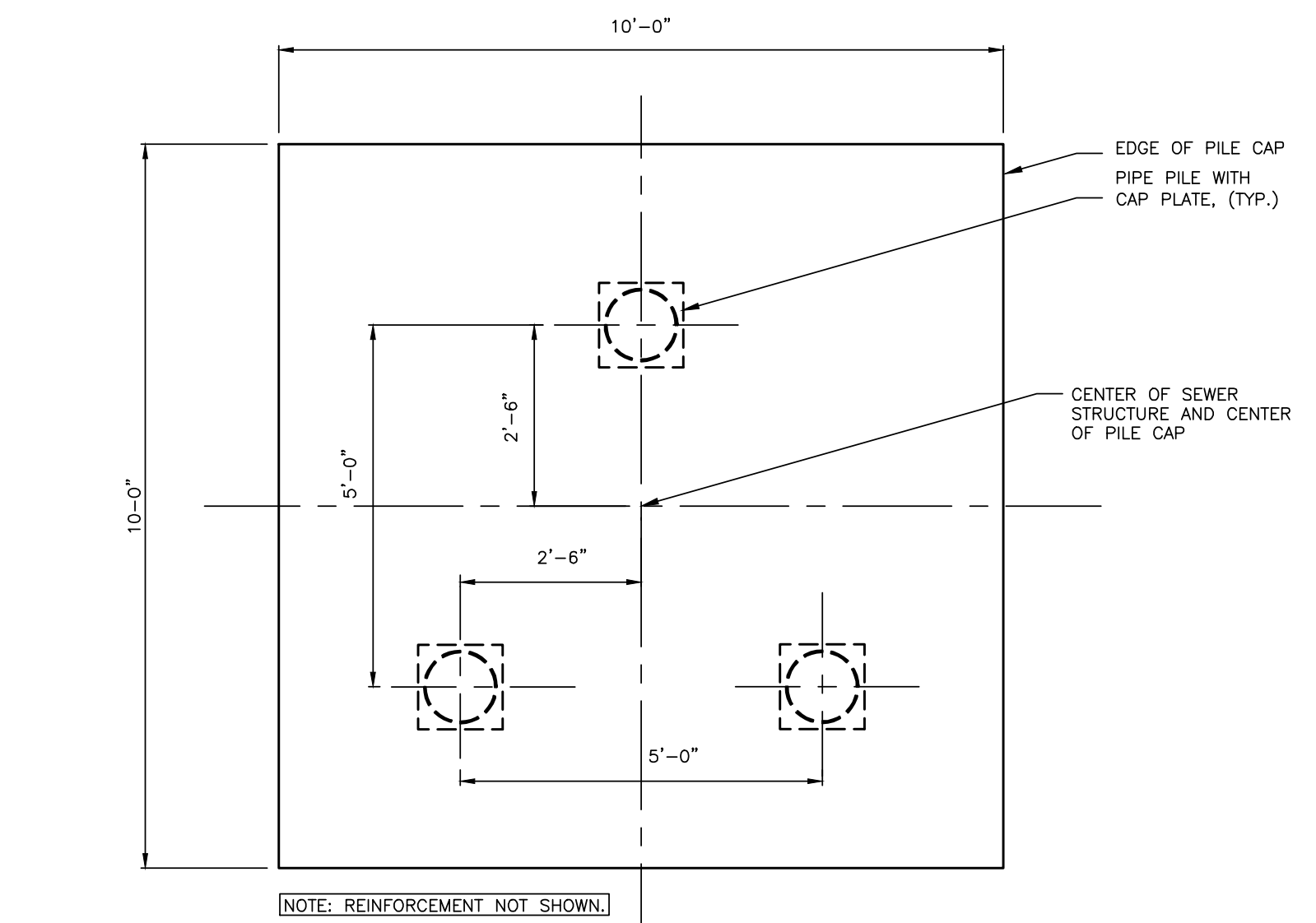
Date 12-09-2016
SME Project No. 075169.01
Project Manager: JMK
Designer: MCD
CAAD: MCD
Checked By: THB
Sheet No. PD10

PD10

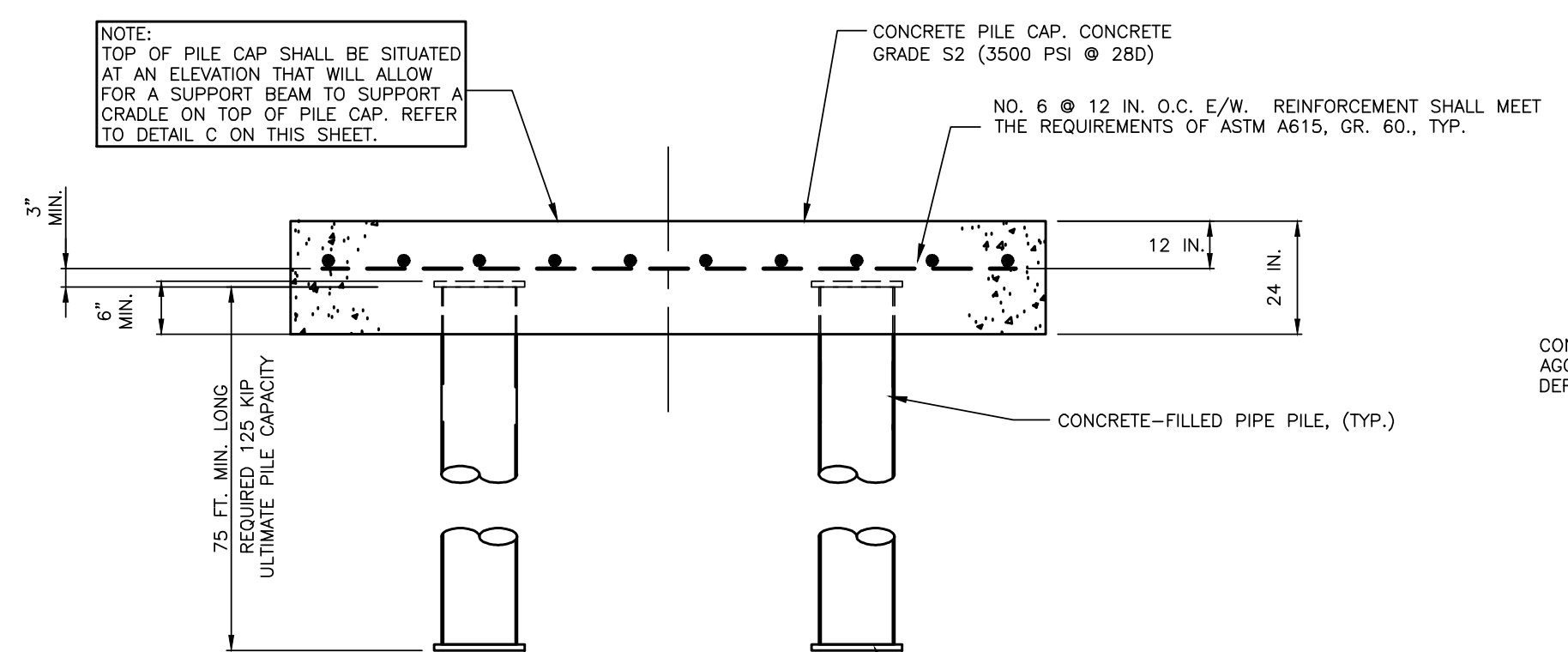
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PLAN VIEW
 SCALE: N.T.S.



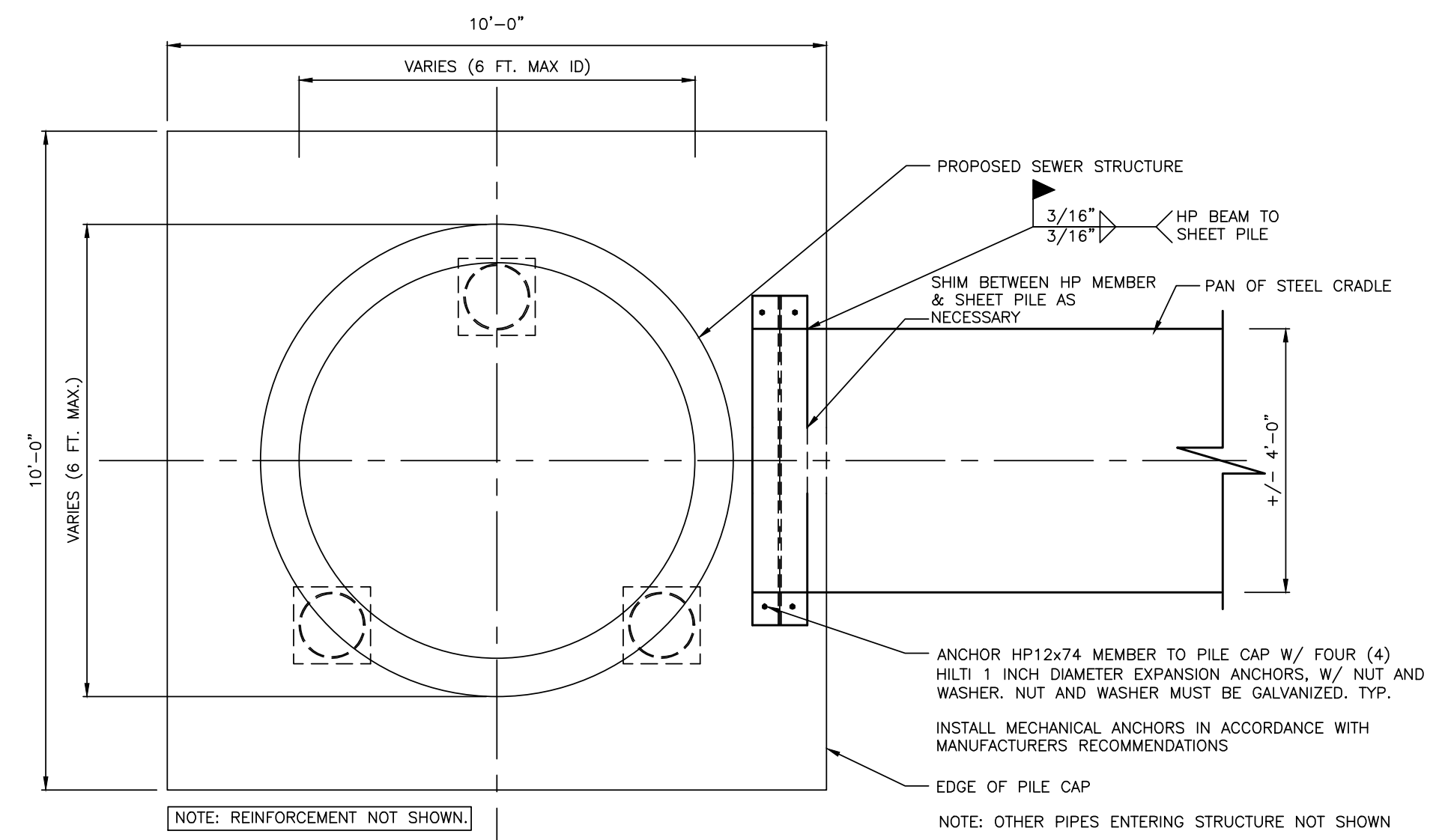
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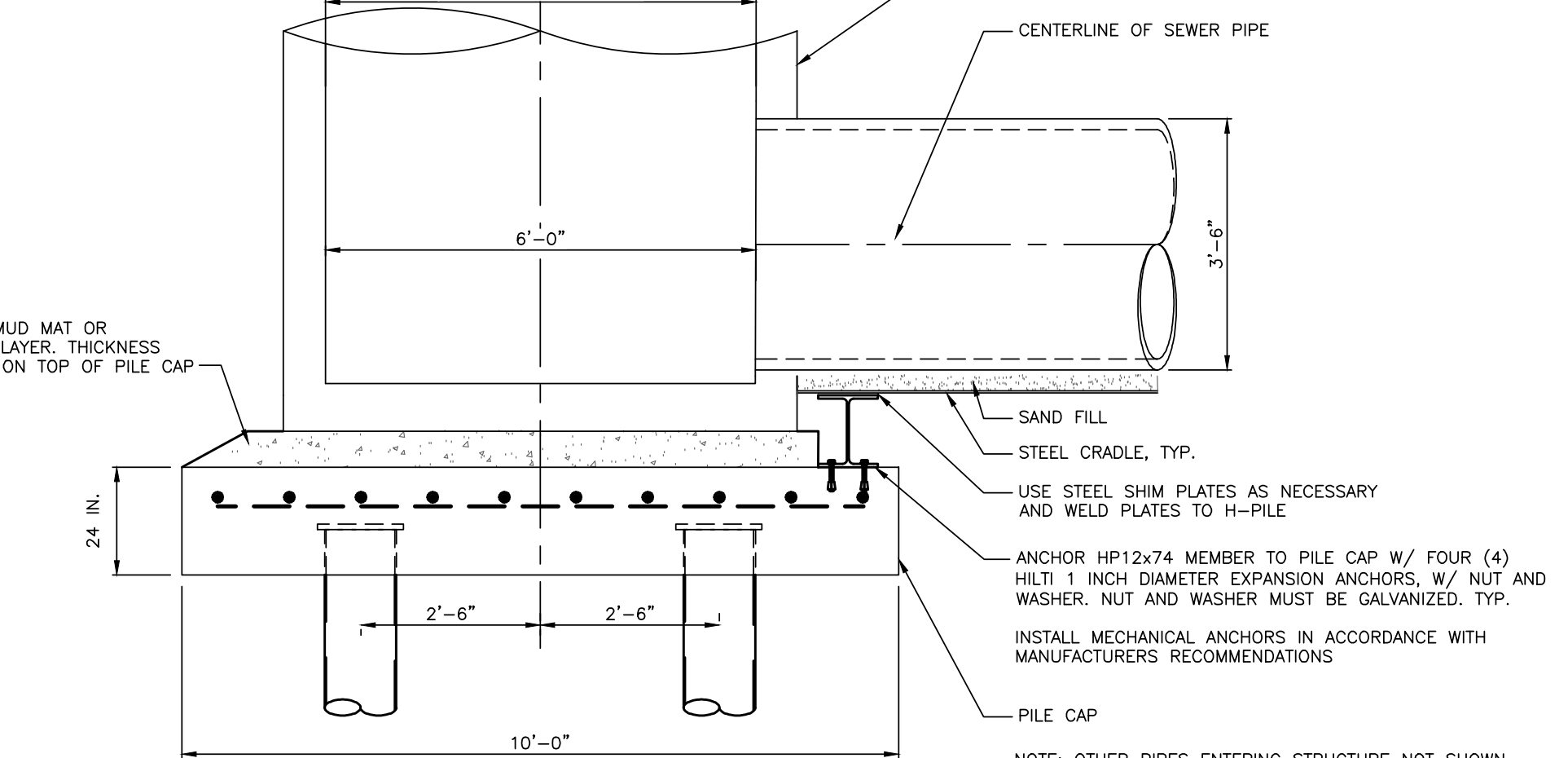
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DETAIL B
SEWER STRUCTURE SUPPORT

FOR SUPPORT OF MANHOLES 11575 AND 23
 NO SCALE



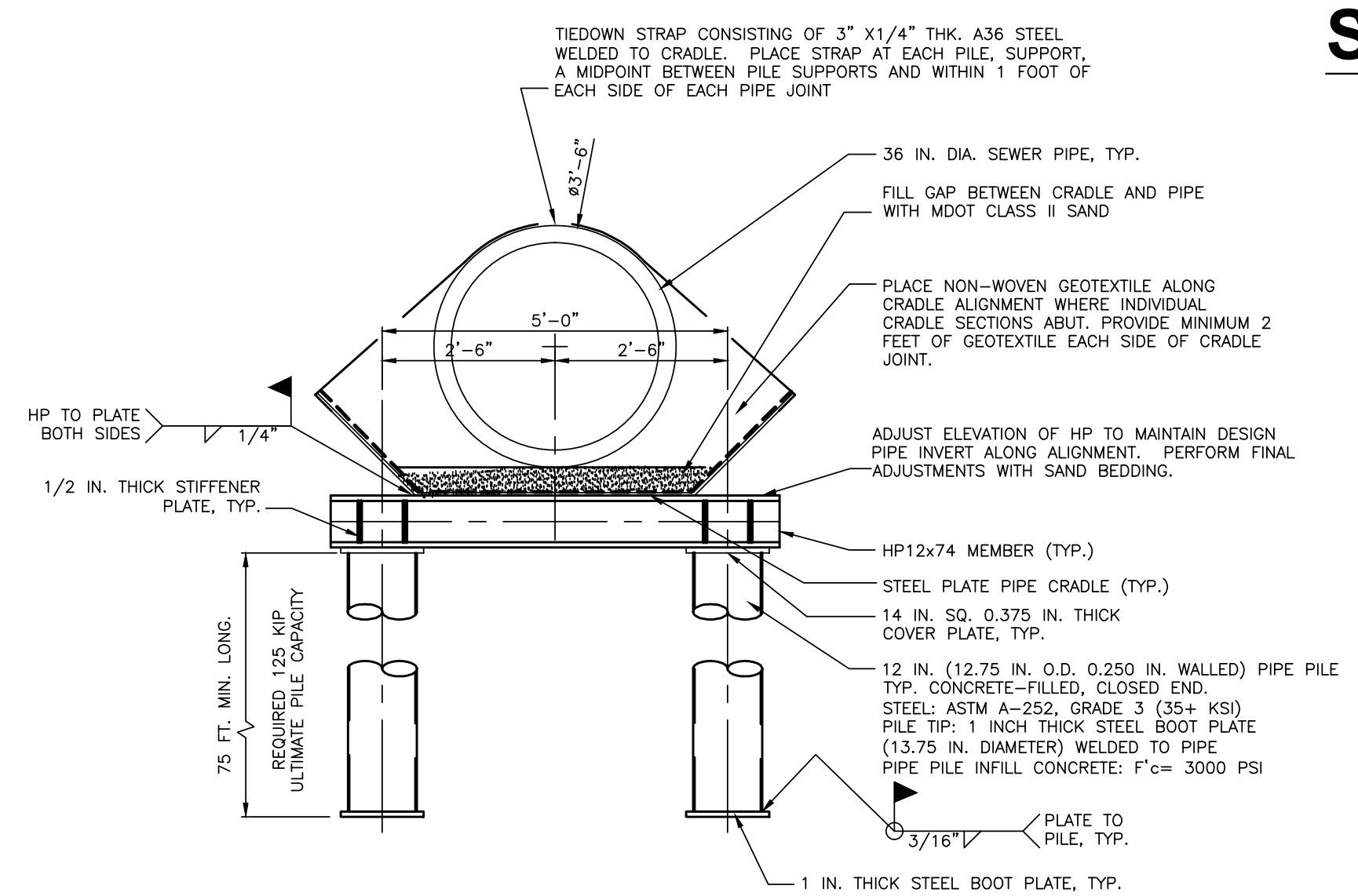
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ELEVATION
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DETAIL C
PIPE SUPPORT AT MANHOLE STRUCTURE

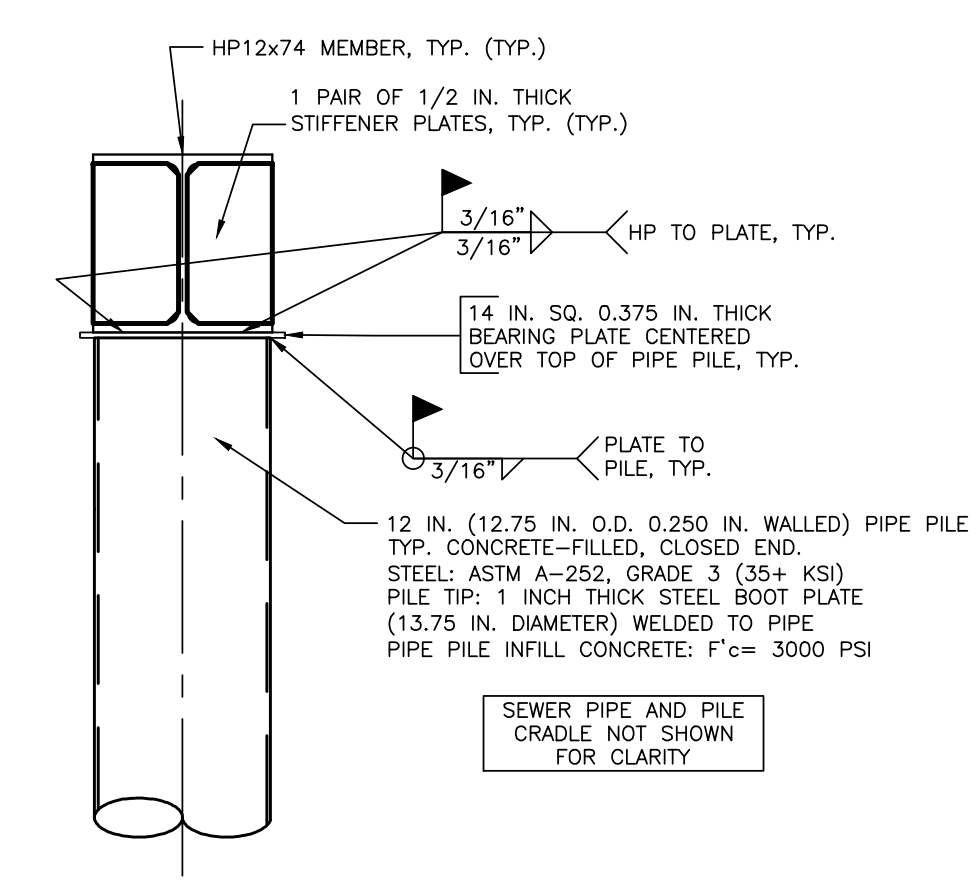
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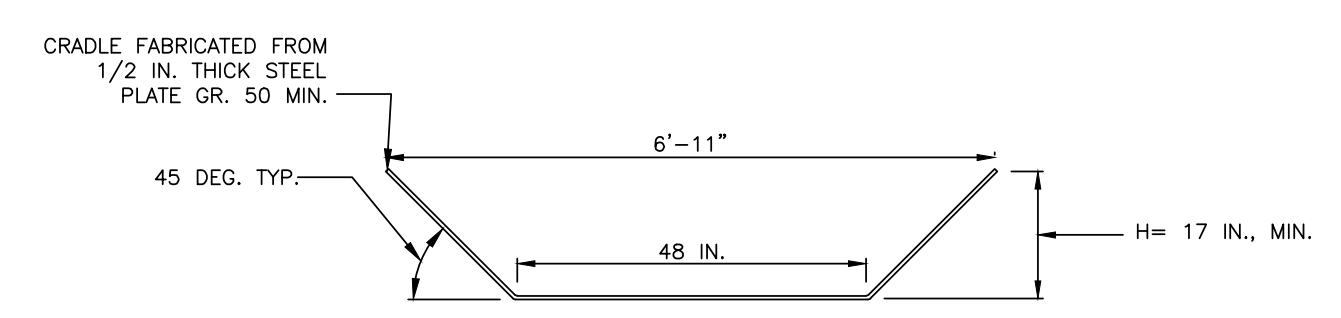
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DETAIL A - PIPE SUPPORT

NO SCALE



ENLARGED END VIEW
 SCALE: N.T.S.



CRADLE FOR 36 IN. PIPE
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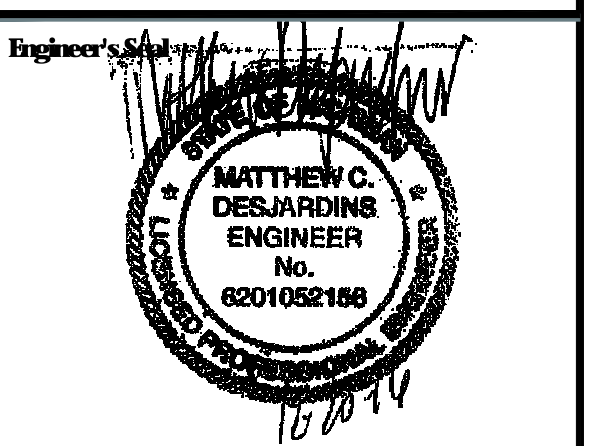
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Orientation	Scale
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Project
CITY OF ST. JOSEPH
2017 CSO PROJECT

Project Location
ST. JOSEPH, MICHIGAN

Sheet Name
TYPICAL PILE SUPPORT
DETAILS



Revisions

REV	REASON FOR	DATE	BY
1	FOR APPROVAL REVIEW	12-09-16	MCD
2	FOR BIDDING AND PERMITTING	12-20-16	MCD

Date
12-09-2016

SME Project No.
075169.01

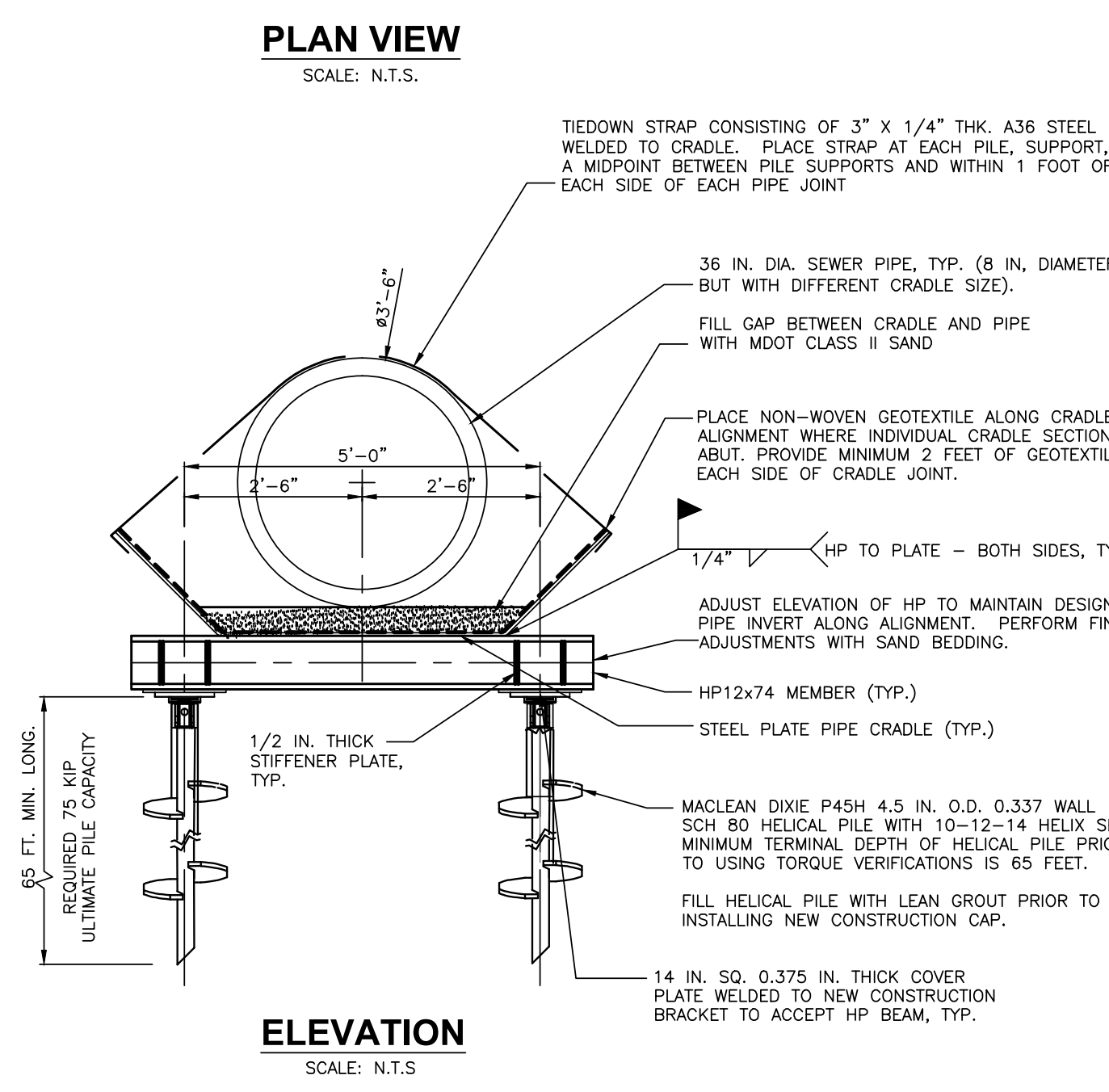
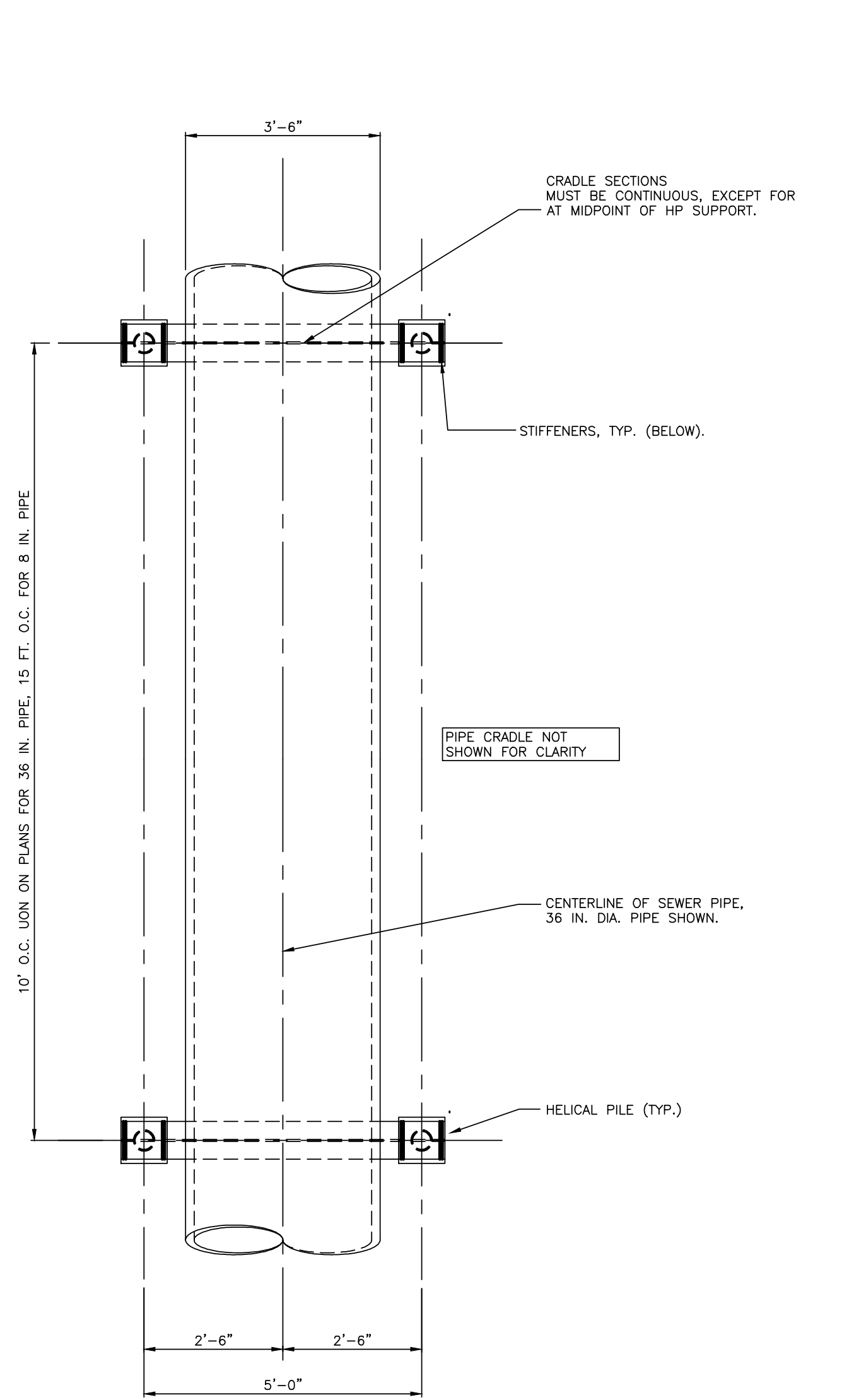
Project Manager:
JMK

Designer:
MCD

CADD:
MCD

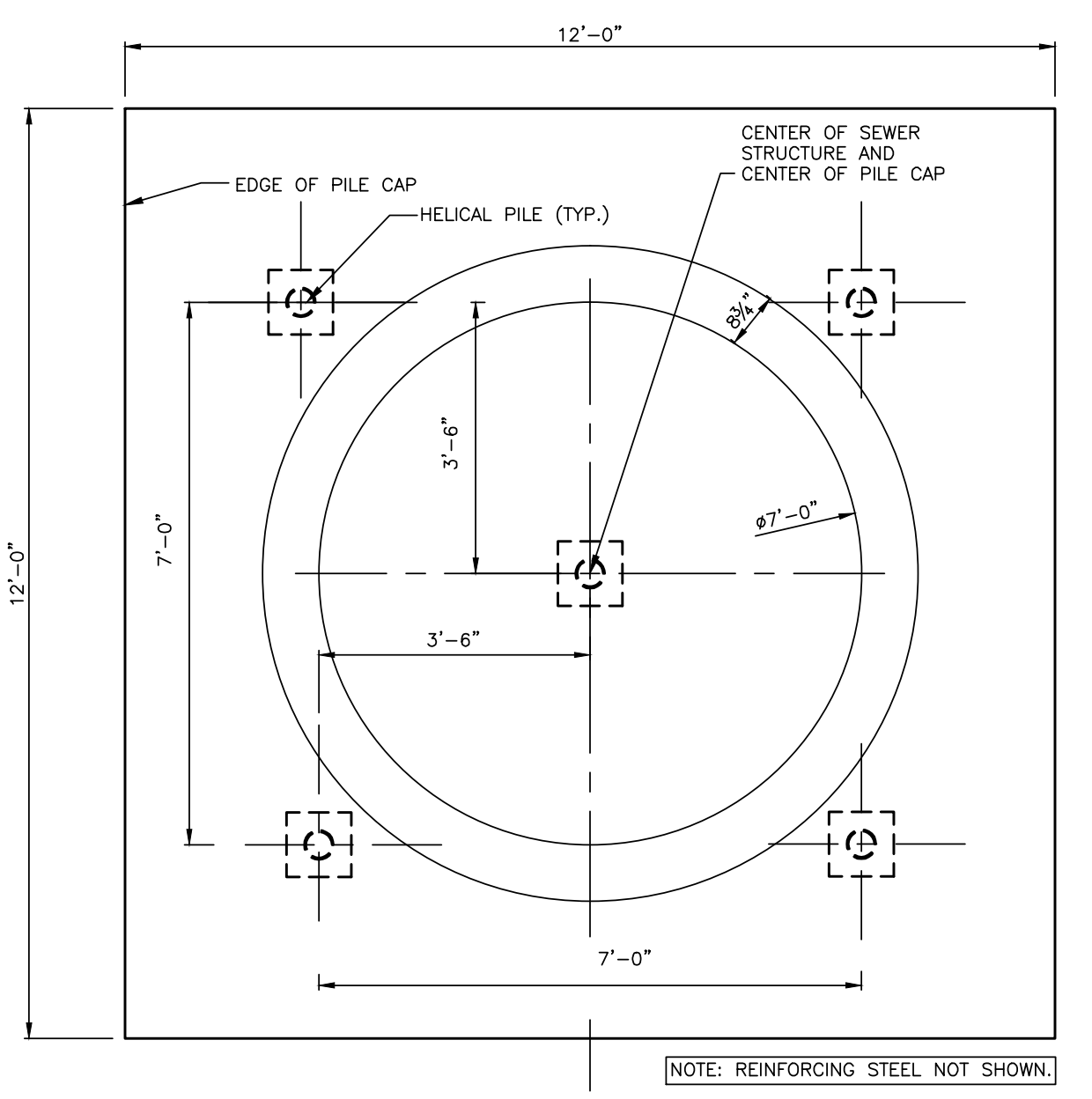
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Sheet No.
PDL1

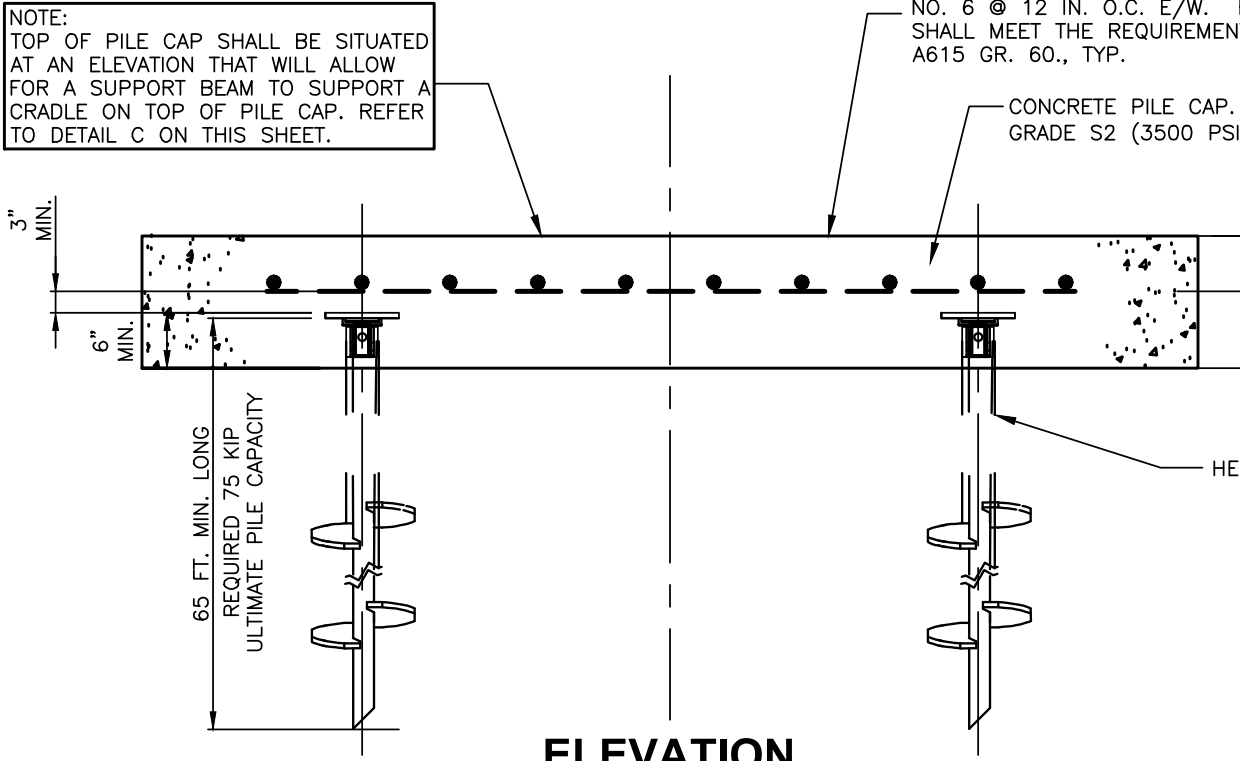


DETAIL A - 8 IN. AND 36 IN. PIPE SUPPORT

NO SCALE

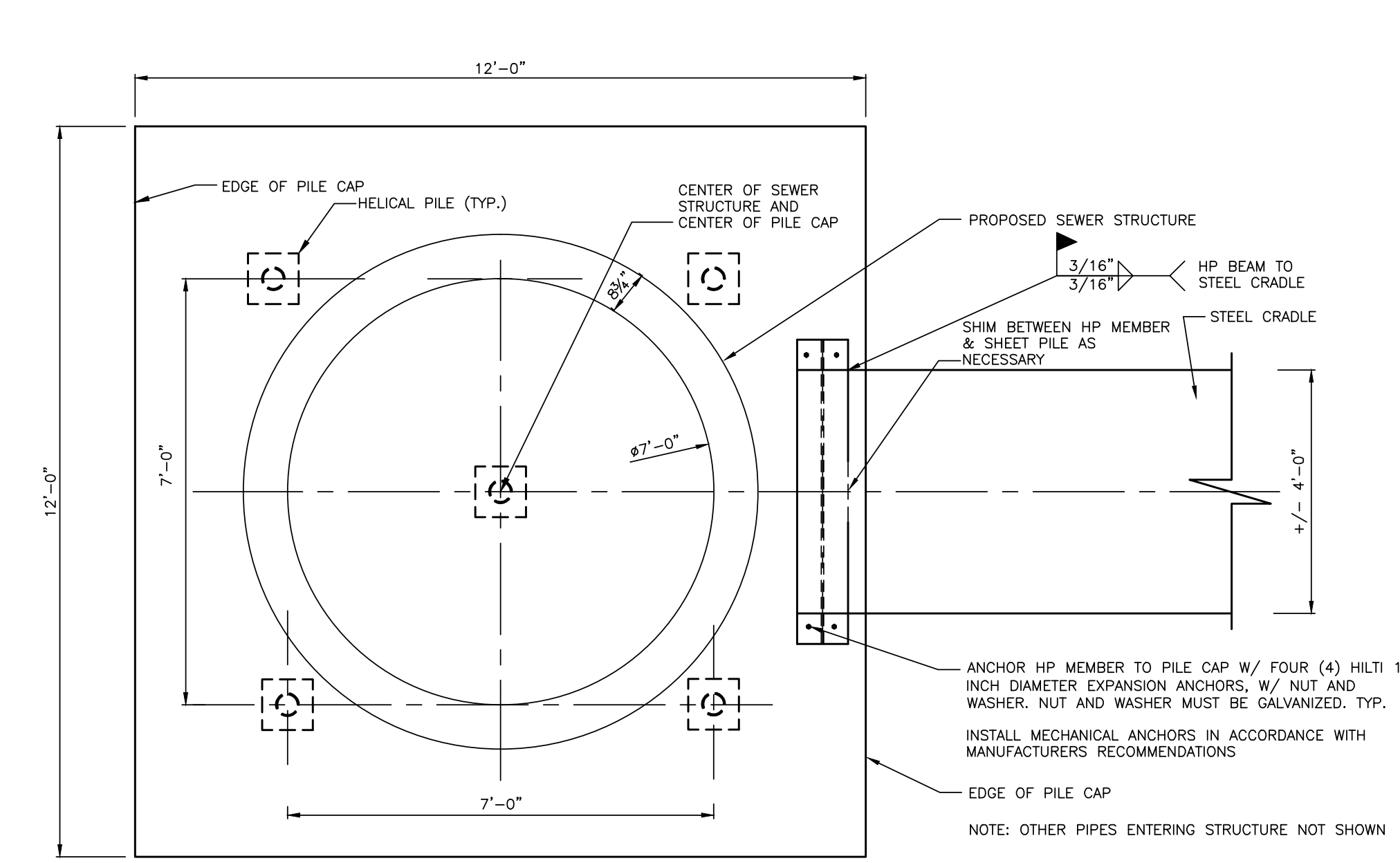
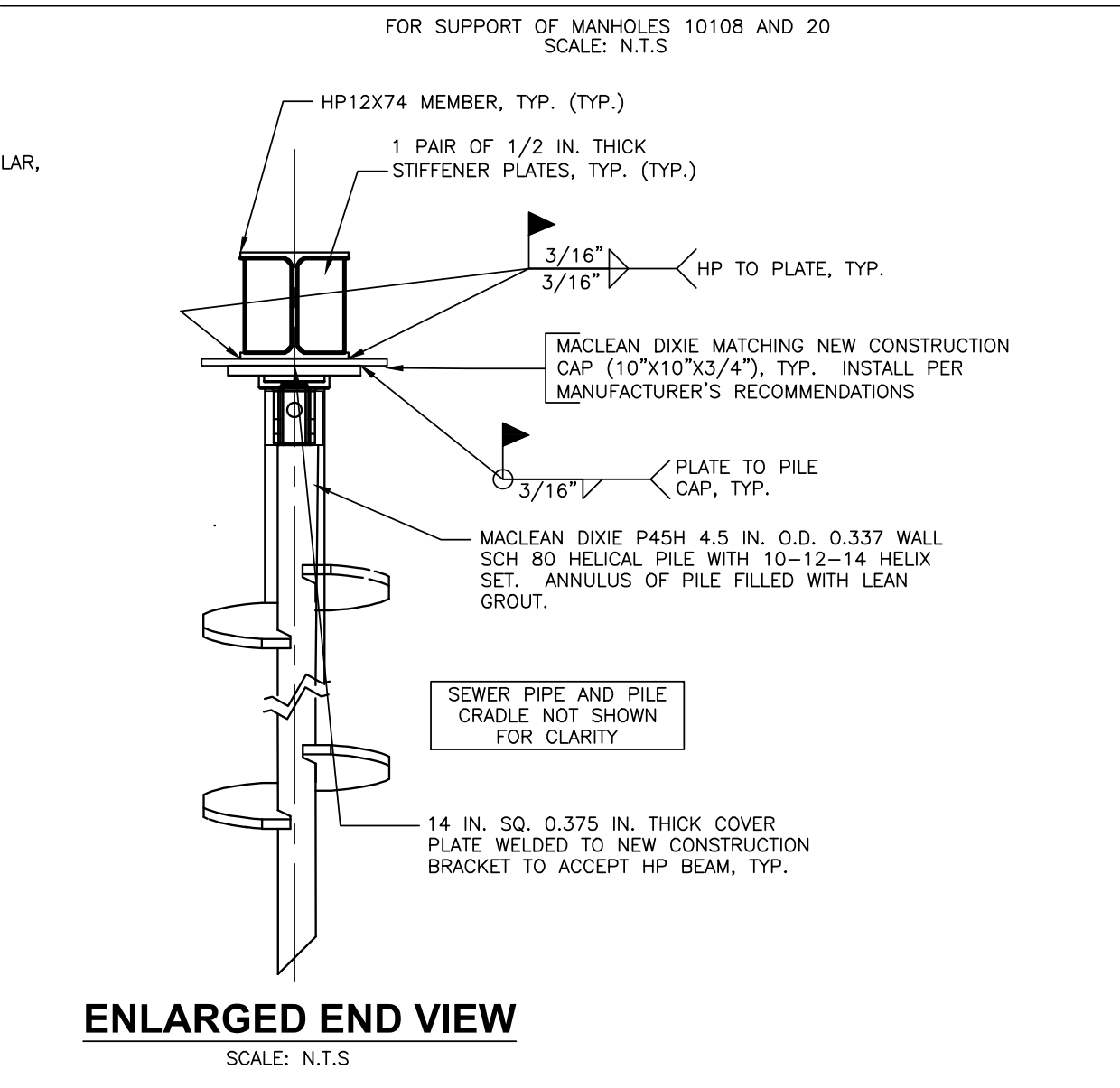


PLAN VIEW
 WHERE BASIN IS GREATER THAN 6 FT. DIAMETER
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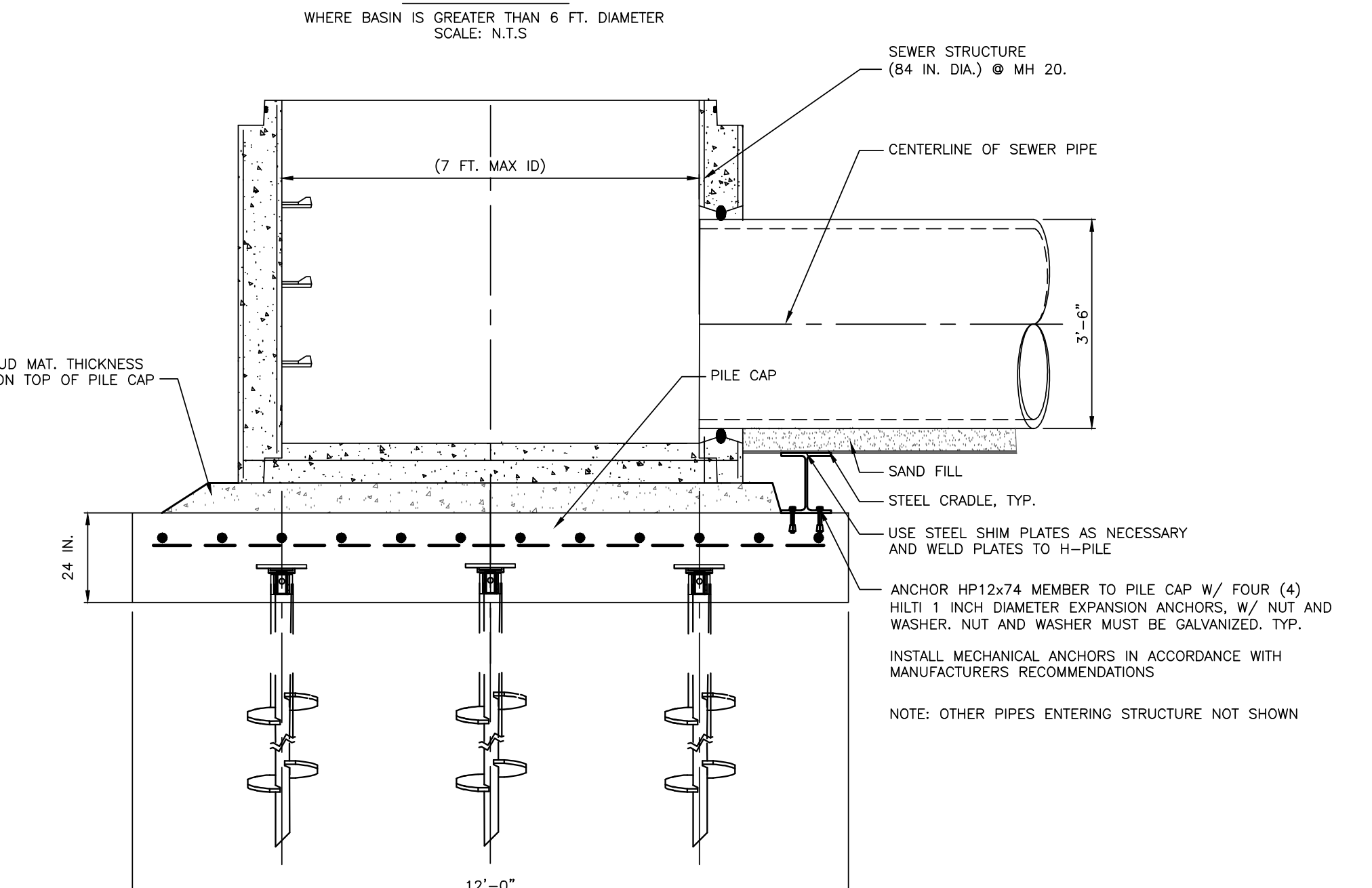


DETAIL B
SEWER STRUCTURE SUPPORT

FOR SUPPORT OF MANHOLES 10108 AND 20
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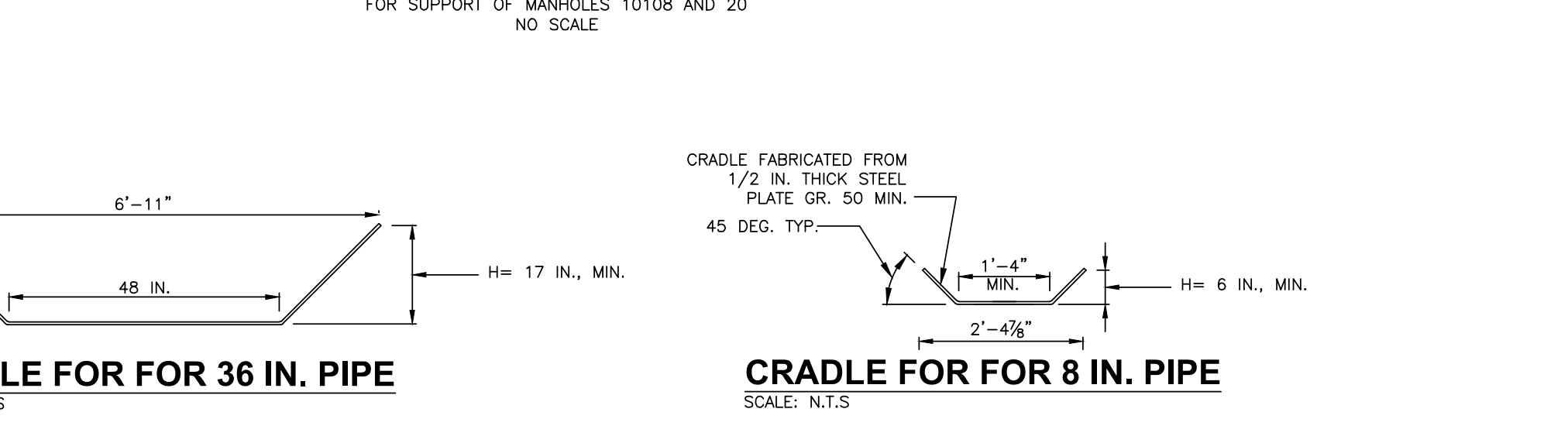
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 WHERE BASIN IS GREATER THAN 6 FT. DIAMETER
 SCALE: N.T.S.



ELEVATION
 SCALE: N.T.S.

DETAIL C
PIPE SUPPORT AT MANHOLE STRUCTURE

FOR SUPPORT OF MANHOLES 10108 AND 20
 NO SCALE



CRADLE FOR FOR 36 IN. PIPE
 SCALE: N.T.S.

CRADLE FOR FOR 8 IN. PIPE
 SCALE: N.T.S.

DATE: 2016-11-22 11:52 AM; DESIGNED BY: MCD; CHECKED BY: THB; PLOT DATE: 12-20-16