

# NASON BASIN TO GROVE AVENUE STORM SEWER IMPROVEMENTS PHASE 1

BID SET

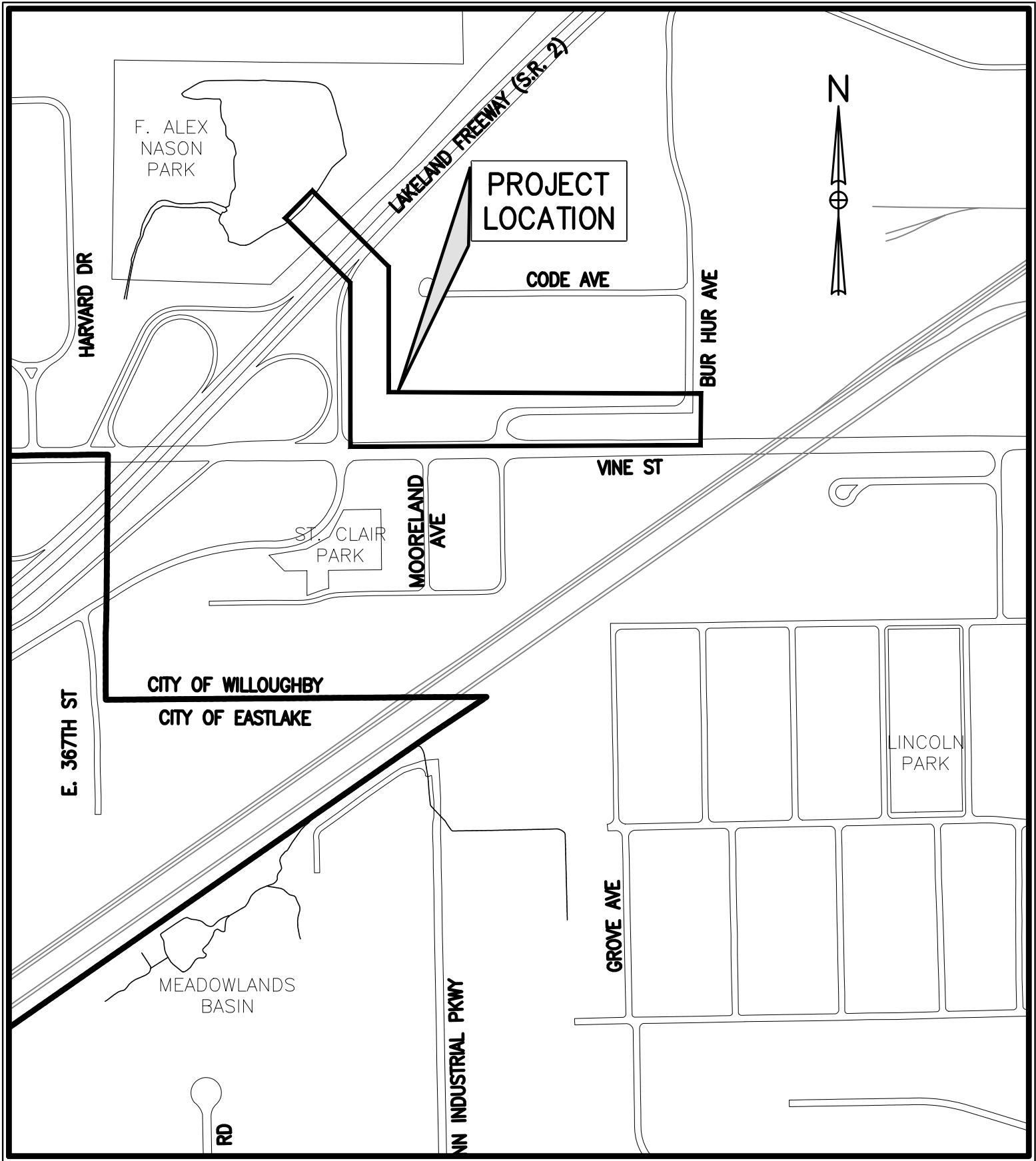
ADMINISTRATION

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MICHAEL C. LUCAS, DIRECTOR OF LAW  
CHER HOFFMAN, DIRECTOR OF FINANCE  
RICH PALMISANO, DIRECTOR OF PUBLIC SERVICE  
JUDEAN KELLER, DIRECTOR OF PARKS AND RECREATION  
TIM LANNON P.E., CITY ENGINEER

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ALISA NOVAK, CLERK OF COUNCIL

IN THE CITY OF WILLOUGHBY  
BY THE CITY OF WILLOUGHBY  
LAKE COUNTY, OHIO  
FEBRUARY 2025



LOCATION MAP  
SCALE: 1" = 500'

NOTE:  
THE SURVEY SHOWN ON THESE PLANS WAS OBSERVED IN THE FIELD FOR CONSTRUCTION PURPOSES ONLY AND MAY NOT BE SUITABLE FOR PROPERTY LINE SURVEYS OR ANY OTHER PURPOSE.



1-800-362-2764

CALL TWO WORKING DAYS BEFORE YOU DIG  
(NON MEMBERS MUST BE CALLED DIRECTLY)




*Judean Keller*

LENE C. HILL, P.E. – E-66017

2/6/2025

DATE

	NO	REVISION	DATE	<div>CITY OF WILLOUGHBY</div> <div>NASON BASIN TO GROVE AVENUE STORM SEWER IMPROVEMENTS PHASE 1</div> <div>LAKE COUNTY<div>WILLOUGHBY, OHIO</div></div>	ISSUED FOR:	BID	<div>COVER SHEET</div>	PROJECT NO. <b>150772</b>	
					ISSUE DATE:	02/07/25		DISCIPLINE <b>CIVIL</b>	
					SCALE:	AS SHOWN		SHEET NAME <b>COVER</b>	
					DESIGNED BY:	MPC		SHEET	OF
					DRAWN BY:	TJM		<b>01</b>	<b>43</b>
					CHECKED BY:	LCH			









PROJECT CONSTRUCTION ZONE.

THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM HIS OPERATION AND RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE ENGINEER.

ALL EXISTING STORM AND SANITARY SEWER FACILITIES, INCLUDING TILE, DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED, REPLACED OR RECONNECTED TO THE EXISTING OR PROPOSED SYSTEM AS DIRECTED BY THE ENGINEER AT NO COST TO THE OWNER.

MATERIAL SPECIFICATIONS

THE MATERIAL SPECIFICATIONS ON THE PLANS REPRESENT THE MINIMUM REQUIRED FOR EACH APPLICATION. THE OWNER MAY REQUEST OR THE CONTRACTOR MAY DESIRE TO SUBSTITUTE ALTERNATE MATERIALS. ANY SUCH SUBSTITUTIONS MUST BE EQUIVALENT IN QUALITY TO THE MATERIAL CALLED FOR AND MUST BE APPROVED IN WRITING BY THE APPROVING AGENCIES AND THE ENGINEER.

ALL STORM SEWER SHALL BE HIGH PERFORMANCE POLYPROPYLENE (HPPP) DUAL WALL, SMOOTH INTERIOR, WT PIPE; UNLESS OTHERWISE SHOWN ON PLANS

1.

BELL AND SPIGOT JOINTS SHALL MEET ASTM D3212 FOR WATER TIGHT (WT) INSTALLATION.
2.

MAXIMUM PERMITTED DIAMETER FOR DUAL WALL (PP), (WT) SHALL BE 24 INCHES;
3.

MAXIMUM PERMITTED DIAMETER EXCEEDING 24 INCH SHALL BE THE TRIPLE WALL, (HPPP), UP TO 60 INCHES OR UNLESS NOTED AS A SPECIFIC PIPE MANUFACTURER CALL OFF I.E. FLOWTITE.
4.

STORM SEWER MAIN GREATER THAN 60 INCH PIPE SHALL HIGH PERFORMANCE BELL AND SPIGOT DUROMAXX STEEL REINFORCED POLYETHYLENE.
5.

THE CARRIER PIPE FOR THE ROADWAY RIB & LAGGING TUNNEL SHALL BE HIGH PERFORMANCE BELL AND SPIGOT DUROMAXX STEEL REINFORCED POLYETHYLENE OR APPROVED EQUAL. GROUT PORTS AND ROUND SKID RAIL TUBING AT THE CONTRACTOR'S DISCRETION.
6.

SANITARY SEWER LATERALS BEING RELOCATED FOR CONFLICTS SHALL BE SDR 26 PVC.

STORM SEWER LATERALS (6 INCH DIA.) AND INLET CROSSEOVERS (8 INCH DIA.) SHALL BE PVC SDR 26 WITH VARIOUS BEND CONFIGURATIONS ALLOWING FOR MIN. 1 % FALL ALONG PIPE RUNS.

SEWER MAIN CONNECTIONS TO EXISTING SEWERS SHALL BE MADE WITH EITHER FERNCO COUPLINGS WITH SS SHEAR BANDS TO MATCH PROPOSED/EXISTING PIPE SIZE AND TYPE, OR APPROVED EQUAL.

ALL LATERAL TIE-INS TO EXISTING SEWERS TO BE MADE WITH INSERTA-TEES.

THE CONTRACTOR SHALL PROVIDE Z-LOK SEALS FOR THE NEW PRECAST STRUCTURES THAT FIT-UP WITH THE CORRUGATED HPPP AND RCP. WHERE REQUIRED AND NEEDED AS A RESULT OF THE INABILITY TO USE THE Z-LOK, AN A-LOK COMPRESSION SEAL MAY BE USED ALONG WITH A SMOOTH OUTSIDE WALL PIPE ADAPTER OR BY THE USE OF A POLYPROPYLENE OVER-SLEEVE OR SMOOTH OUTSIDE PIPE WALL.

WHERE PIPE ANGLES AND PIPE CENTERLINE CLEARANCES WILL NOT ALLOW THE USE OF THE Z-LOK AND Z-LOK COMPRESSION SEALS, AT A MINIMUM AN A-LOK WATERSTOP SEAL AND GROUTED JOINT SHALL BE UTILIZED.

EXISTING AND PROPOSED SANITARY SEWER FACILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATING, ADJUSTMENTS OR ADDITIONS TO THE EXISTING SANITARY SEWER FACILITIES AS CALLED FOR ON THE PLANS OR REQUIRED BY THE WORK, INCLUDING ALL COSTS ASSOCIATED WITH INSPECTION OF SANITARY SEWER FACILITIES. THE CONTRACTOR SHALL NOTIFY THE CITY OF WILLOUGHBY AT LEAST 48 HOURS IN ADVANCE OF ANY WORK IN THEIR SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING INSPECTION DIRECTLY WITH THE THE ENGINEER'S REPRESENTATIVE.

ALL SANITARY SEWER AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RULES, STANDARDS AND SPECIFICATIONS OF THE CITY OF WILLOUGHBY AND SHALL BE REVIEWED, TESTED AND APPROVED BY PLAN SPECIFICATION REQUIREMENTS.

STORM JUNCTION CHAMBERS:

THE CONTRACTOR SHALL FIELD POUR 12 INCH SHAPED FLOW CHANNELS (SHELF) IN EACH JUNCTION CHAMBER. CONCRETE SHALL BE 3000 PSI MINIMUM AND AIR ENTRAINED.

SOIL EROSION AND SEDIMENT CONTROLS

THE CONTRACTOR SHALL FOLLOW POLLUTION CONTROL MEASURES IN ACCORDANCE WITH SECTION 013543 OF THE DETAILED SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE TEMPORARY EROSION CONTROL IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND ODOT SUPPLEMENTAL SPECIFICATION 832. STORMWATER POLLUTION PREVENTION PLANS AND DETAILS ARE PROVIDED AS MINIMUM REQUIREMENTS FOR ENVIRONMENTAL PROTECTION.

SOIL STABILIZATION MEASURES SHALL FOLLOW THE OHIO DEPARTMENT OF NATURAL RESOURCE'S (ODNR) RAINWATER AND LAND DEVELOPMENT MANUAL CHAPTERS 4-7.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN SPW3 FOR ANY DISPOSAL SITE.

ENVIRONMENTAL PROTECTION – PROHIBITED CONSTRUCTION ACTIVITIES

DISPOSING OF EXCESS OR UNSUITABLE EXCAVATED MATERIAL IN WETLANDS OR FLOOD PLAINS, EVEN WITH THE PERMISSION OF THE PROPERTY OWNER AND APPROPRIATE PERMITS.

LOCATING STOCKPILE STORAGE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS.

INDISCRIMINATE, ARBITRARY OR CAPRICIOUS OPERATION OF EQUIPMENT IN ANY STREAM CORRIDORS, WETLANDS, SURFACE WATERS OR OUTSIDE THE EASEMENT LIMITS.

PUMPING OF SEDIMENT-LADEN WATER FROM TRENCHES OR OTHER EXCAVATIONS DIRECTLY INTO ANY SURFACE WATERS, STREAM CORRIDORS, WETLANDS OR STORM SEWERS; ALL SUCH WATER WILL BE PROPERLY FILTERED OR SETTLED TO REMOVE SILT PRIOR TO RELEASE.

DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO.

PERMANENT OR UNSPECIFIED ALTERATION OF THE FLOW LINE OF ANY STREAM.

DAMAGING ANY VEGETATION OUTSIDE OF THE CONSTRUCTION AREA.

DISPOSAL OF TREES, BRUSH, AND OTHER DEBRIS IN ANY STREAM CORRIDORS, WETLANDS, SURFACE WATERS OR AT UNSPECIFIED LOCATIONS.

OPEN BURNING OF PROJECT DEBRIS WITHOUT A PERMIT.

DISCHARGING INJURIOUS SILICA DUST CONCENTRATIONS INTO THE ATMOSPHERE RESULTING FROM BREAKING, CUTTING, CHIPPING, DRILLING, BUFFING, GRINDING, POLISHING, SHAPING OR SURFACING CLOSER THAN 200 FEET TO PLACES OF RESIDENCES OR COMMERCIAL, PROFESSIONAL, QUASI-PUBLIC OR PUBLIC PLACES OF HUMAN OCCUPATION.

STORING CONSTRUCTION EQUIPMENT AND VEHICLES AND/OR STOCKPILING CONSTRUCTION MATERIALS ON PROPERTY, PUBLIC OR PRIVATE, NOT PREVIOUSLY SPECIFIED ON THE PLANS BY THE ENGINEER FOR SUCH PURPOSES.

RUNNING WELL POINT OR PUMP DISCHARGE LINES THROUGH PRIVATE PROPERTY OR PUBLIC PROPERTY AND RIGHT-OF-WAY WITHOUT THE WRITTEN PERMISSION OF THE OWNER AND THE CONSENT OF THE ENGINEER.

OPERATIONS ENTAILING THE USE OF VIBRATORY HAMMERS OR COMPACTORS OUTSIDE THE HOURS OF 8:00 A.M. AND 5:00 P.M. OR OUTSIDE THE HOURS ALLOWED FOR CONSTRUCTION BY LOCAL ORDINANCES OR REGULATIONS.

CLOSING OFF CLEAR ACCESS TO ANY PUBLIC ALLEY, STREET, ROAD, AVENUE OR BOULEVARD WITHOUT THE PRIOR CONSENT OF MUNICIPAL OFFICIALS AND THE ENGINEER, AND CLOSING CLEAR ACCESS:

1.

BY FIRE PROTECTION EQUIPMENT AND EMERGENCY VEHICLES.
2.

BY THE PUBLIC TO ANY COMMERCIAL OR PROFESSIONAL PLACE OF BUSINESS, QUASI-PUBLIC OR PUBLIC ESTABLISHMENT, OR PLACE OF RESIDENCE.
3.

BY VEHICLES TO DRIVEWAYS WITHOUT THE PROVISION OF ALTERNATIVE MEANS OF BUILDING INGRESS AND EGRESS.

PROTECTION AND RESTORATION OF PROPERTY

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL PUBLIC AND PRIVATE PROPERTY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE OR INJURY TO PROPERTY AND/OR PERSONS DURING THE PROSECUTION OF THE WORK, RESULTING FROM ANY ACT, OMISSION, NEGLECT OR MISCONDUCT IN HIS MANNER OR METHOD OF EXECUTING THE WORK, OR AT ANY TIME DUE TO DEFECTIVE WORK OR MATERIALS, AND SAID RESPONSIBILITY WILL NOT BE RELEASED UNTIL THE PROJECT HAS BEEN COMPLETED AND ACCEPTED.

DUST NUISANCE ORIGINATING FROM ANY OF THE CONTRACTOR'S OPERATIONS EITHER INSIDE OR OUTSIDE THE RIGHT-OF-WAY SHALL BE CONTROLLED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL ORDINANCES AND REGULATIONS AT THE SOLE EXPENSE OF THE CONTRACTOR.

WHEN OR WHERE ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY BY OR ON ACCOUNT OF ANY ACT, OMISSION, NEGLECT OR MISCONDUCT IN THE EXECUTION OF THE WORK, OR IN CONSEQUENCE OF THE NONEXECUTION THEREOF BY THE CONTRACTOR, HE SHALL RESTORE, AT HIS OWN EXPENSE, SUCH PROPERTY TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE BY REPAIRING, REBUILDING OR OTHERWISE RESTORING AS MAY BE DIRECTED, OR SHALL MAKE GOOD SUCH DAMAGE OR INJURY IN AN ACCEPTABLE MANNER.

WHEN MAIL BOXES, ROAD OR STREET NAME SIGNS AND SUPPORTS INTERFERE WITH CONSTRUCTION, THE CONTRACTOR SHALL REMOVE AND REERECT THEM IN A TEMPORARY LOCATION DURING CONSTRUCTION IN A MANNER SATISFACTORY TO AND AS DIRECTED BY THE ENGINEER. AFTER COMPLETION OF THE CONSTRUCTION AND BEFORE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL ERECT THE MAIL BOXES, ROAD OR STREET NAME SIGNS AND SUPPORTS IN THEIR ORIGINAL LOCATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR CLEARING AND GRUBBING.

LANDSCAPING AND DRIVEWAY ITEMS

WHEN THE CONSTRUCTION OPERATIONS ARE IN CLOSE PROXIMITY TO LANDSCAPING FEATURES (TIMBERS, ROCKS, BOULDERS, ETC.), DRIVEWAY TIMBERS, DRIVEWAY CURBING, ETC. THE CONTRACTOR SHALL SAVE, REMOVE AND PLACE THESE ITEMS OUTSIDE THE WORK LIMITS AT A LOCATION ACCEPTABLE TO THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE STORM SEWER.

USE OF PRIVATE PROPERTY

THE CONTRACTOR CAN USE PRIVATE PROPERTY FOR THE STORAGE OF EQUIPMENT AND MATERIALS ONLY WITH A WRITTEN AGREEMENT WITH THE PROPERTY OWNER. THE CONTRACTOR SHALL PROVIDE THIS AGREEMENT TO THE ENGINEER PRIOR TO ANY USE OF PRIVATE PROPERTY.

REMOVAL ITEMS

ALL ITEMS NOTED ON THE PLANS TO BE REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER BY THE CONTRACTOR UNLESS OTHERWISE NOTED.

SUBSURFACE INVESTIGATIONS

A LIMITED SUBSURFACE SOIL INVESTIGATIONS WAS PERFORMED FOR THIS PROJECT. HOWEVER, IT IS THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO MAKE HIS OWN INVESTIGATION OF SUBSURFACE CONDITIONS INCLUDING AREAS WITHIN THE PAVEMENT AREAS RECEIVING SOIL CEMENT STABILIZATION PRIOR TO SUBMITTING HIS PROPOSAL AND DURING CONSTRUCTION AS DEEMED NECESSARY BY THE CONTRACTOR.

DRIVEWAY AND ROADWAY PAVEMENT INSTALLATION

ALL PAVEMENT INSTALLATION SHOULD BE CONDUCTED UNDER SUITABLE WEATHER CONDITIONS. THE ENGINEER SHALL BE NOTIFIED IN ADVANCE OF ANY PROPOSED PAVEMENT INSTALLATION TO DETERMINE THE SUITABILITY OF WEATHER CONDITIONS FOR PAVEMENT INSTALLATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL ROADWAYS AND DRIVES PRIOR TO FINAL INSTALLATION. THE COST OF ANY TEMPORARY SURFACE MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RESPECTIVE ITEM OF WORK.

GARBAGE COLLECTION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE TRANSFER OF ALL GARBAGE, GARBAGE CANS, AND RECYCLE BINS FROM DRIVEWAYS WITHIN THE CONSTRUCTION ZONE TO THE OPPOSITE SIDE OF THE ROADWAY. CONTRACTOR TO ALLOW ACCESS TO GARBAGE TRUCKS ONCE THE GARBAGE AND RECYCLABLE MATERIALS HAVE BEEN COLLECTED, ALL GARBAGE CANS AND RECYCLE BINS SHALL BE RETURNED TO THE APPROPRIATE DRIVEWAYS AND OUTSIDE OF THE CONSTRUCTION LIMITS, OR AS DIRECTED BY THE ENGINEER. THE COST FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

CONTINGENCY ITEMS

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE FOR USE "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED OVER TO THE BID PROPOSAL ITEMS AND ARE TO BE USED ONLY AS DIRECTED BY THE ENGINEER:

(611) 6" DIAMETER & SMALLER SEWER & DRAIN REPLACEMENT, CONTINGENCY 50 LF

UTILITY COMPANY CHARGES ALLOWANCE ON THE BID FORM IS INTENDED TO PROVIDE A CONTINGENCY QUANTITY ALLOWANCE TO PAY UTILITY COMPANY FOR HOLDING POLES WHILE EXCAVATION AND PIPE INSTALLATION IS PERFORMED. AN ESTIMATE OF \$7,500 HAS BEEN INCLUDED.

ODOT PERFORMANCE BOND AND PERMIT

THE CONTRACTOR WILL BE REQUIRED TO OBTAIN A PERFORMANCE BOND FOR THE STORM SEWER CROSSING ON STATE ROUTE 2. ODOT WILL REQUIRE A PERFORMANCE BOND IN THE AMOUNT OF \$263,839.36 THAT WILL COVER THIS WORK FOR A PERIOD OF (5) YEARS FROM COMPLETION, AND THAT ANY REPAIRS THAT MAY BE NEEDED ARE COMPLETED BY THE PERMITTEE. IF THE REPAIRS ARE NOT COMPLETED BY THE PERMITTEE, THE PERFORMANCE BOND IS IN PLACE FOR ODOT TO USE THE FUNDS TO COMPLETE ANY NECESSARY REPAIRS. THE PERMIT NUMBER WILL BE 054L23. THE CONTRACTOR SHALL SEND A CERTIFIED COPY OF THE PERFORMANCE BOND TO: OHIO DEPARTMENT OF TRANSPORTATION – ATTN: DISTRICT 12 PERMITS DEPARTMENT, 5500 TRANSPORTATION BOULEVARD, GARFIELD HEIGHTS, OH 44125. ONCE THE BOND HAS BEEN RECEIVED, THEN THE PERMIT WILL BE ISSUED.

LAKE COUNTY RIGHT-OF-WAY

THE CONTRACTOR WILL BE REQUIRED TO FILL OUT A RIGHT-OF-WAY USAGE PERMIT WITH A SURETY BOND AMOUNT OF \$50,000.

LEGEND

NOTE:  
**BOLD TEXT AND IMAGES** ARE PROPOSED WORK,  
*SLANTED TEXT AND SCREENED IMAGES* ARE EXISTING FEATURES.

NOTE:  
SINGLE LINES ARE USED TO SHOW UTILITIES 12" DIA. AND SMALLER.  
DOUBLE LINES ARE USED FOR THOSE 13" DIA. AND LARGER.

CENTER LINES W/ STATIONING

RIGHT-OF-WAY

PROPERTY LINE

EX. WATERLINE, VALVE, HYDRANT ASSEMBLY

EX. SANITARY & M.H.

EX. STORM & M.H.

EX. GAS LINE, VALVE

EX. FENCE

EX. RETAINING WALL

EX. OVERHEAD POWERLINE

EX. ELECTRIC

PROP. SANITARY & M.H. 8" SAN

PROP. STORM & M.H. 8" STM

PROP. PERM. EASEMENT

PROP. TEMP. EASEMENT

	POWER & LIGHT POLE		MONUMENT BOX
	LIGHT POLE		SIGN
	POWER POLE		WATER OR GAS METER
	YARD LIGHT		CORPORATION STOP
	TRAFFIC POLE		TREE
	POLE		CONIFER
	FLAG POLE		BUSH
	GUY WIRE		STUMP
	MAILBOX		

CITY OF WILLOUGHBY

NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

GENERAL NOTES 2

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
GN - 2	
SHEET	OF
04	43





SANITARY SEWER NOTES:

1. NEW SANITARY SEWERS SHALL BE PVC, SDR 26 – ASTM 3034 WITH ASTM D3212, F477 WATER–TIGHT, FLEXIBLE GASKET JOINTS IN ACCORDANCE WITH PLANS AND SPECIFICATION 333100.
2. SEWER LATERAL PIPE FITTINGS SHALL BE IN ACCORDANCE WITH CMS 707.44 AND PER SPECIFICATION 333100.
3. SEWER MAIN CONNECTIONS TO EXISTING SEWERS SHALL BE MADE WITH FERNCO COUPLINGS WITH SS SHEAR BANDS TO MATCH PROPOSED/EXISTING PIPE SIZES OR AN APPROVED EQUAL.
4. INSPECTION TEE RISERS SHALL BE SIX (6) INCH DIAMETER PVC SEWER PIPE PER SPECIFICATIONS WITH A 6" X 6" TEE CONNECTION TO THE LATERAL AND AN E–Z SET LOCATING PLUG CAP PLACED AT THE TOP. AN EAST JORDAN #3675 OR APPROVED EQUAL SHALL BE INSTALLED IF TEE IS IN A PAVEMENT AREA.
5. MANHOLES SHALL BE IN ACCORDANCE WITH SPECIFICATION 333100 AND PLAN DETAILS.
6. SANITARY SEWER MANHOLE CASTINGS SHALL EAST JORDAN #1710 W/FRAME AND COVER, STAMPED "SANITARY".
7. ALL EXISTING UTILITY LINE ELEVATIONS SHOWN ARE ESTIMATED AND MUST BE FIELD DETERMINED BY THE CONTRACTOR. CONFLICTS MUST BE RESOLVED BY THE CONTRACTOR AND THE UTILITY OWNER.
8. EXISTING PIPE REMOVED WITHIN TRENCH LIMITS FOR PLACEMENT OF PROPOSED PIPE SHALL BE INCLUDED IN THE PRICE FOR CONDUIT ITEM AND WILL NOT BE PAID FOR SEPARATELY.
9. RIM ELEVATION ARE APPROXIMATELY SET. FINAL RIM TO BE FLUSH WITH THE FINAL GRADE.
10. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SEWER FLOW AT ALL TIMES.
11. THE CONTRACTOR SHALL PROVIDE A FINAL CLEANING OF ALL SANITARY MAIN SEWERS, MANHOLES AND LATERALS AFTER ALL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
12. THE CONTRACTOR SHALL PROVIDE A VIDEO RECORDING OF THE INTERIOR OF THE SANITARY MAIN SEWERS AND MAN HOLES AFTER CLEANING HAS BEEN COMPLETED.
13. CONTRACTOR SHALL TELEWISE THE MAIN SEWER DOWNSTREAM OF THE MAIN SEWER TO THE NEXT MANHOLE OR 300 FEET, WHICHEVER IS LESS. ALL DEBRIS SO LOCATED SHALL BE REMOVED BY THE CONTRACTOR.
14. ALL CLEANING AND DOCUMENTATION COSTS SHALL BE INCLUDED IN THE TABULATED ITEMS FOR SANITARY SEWER, LATERAL AND MANHOLE INSTALLATION OR PAVEMENT INSTALLATION. ALL RECORDINGS SHALL BE TURNED OVER TO THE CITY.

EXCAVATION, BACKFILL AND COMPACTION:

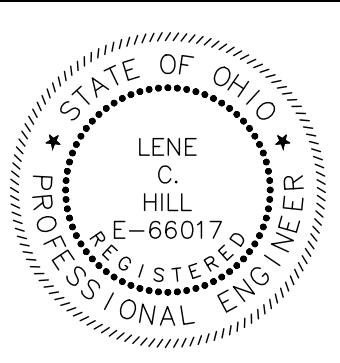
1. ALL EXCAVATION WILL BE CONSIDERED UNCLASSIFIED, NO COMPENSATION WILL BE ALLOWED THE CONTRACTOR FOR ROCK OR SHALE EXCAVATION.
2. ALL BACKFILL WILL BE AS DESCRIBED IN SPECIFICATION SECTION 310000 USING MACHINE MOUNTED COMPACTION EQUIPMENT TO MEET THE COMPACTION REQUIREMENT OF 100% OF MAXIMUM LABORATORY DRY DENSITY PER ASTM D 698.
3. THE OWNER AND THE ENGINEER DO NOT GUARANTEE NOR SUGGEST THE IN–SITU MATERIAL TO BE EXCAVATED WILL BE SUITABLE OR IN ITS PRESENT STATE WILL CONSIST OF THE PROPER MOISTURE CONTENT TO ACHIEVE THE COMPACTION REQUIREMENTS. THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATION AS TO THE BACKFILL MATERIAL HE WILL USE. UPON REQUEST, THE OWNER WILL PROVIDE ACCESS TO THE SITE FOR THE CONTRACTOR TO CONDUCT SUCH INVESTIGATION AND TESTS DEEMED NECESSARY TO MAKE HIS DETERMINATION. NO EXTRA PAYMENT WILL BE MADE TO DISPOSE OF UNSUITABLE MATERIAL OR FURNISH AND PLACE SUITABLE MATERIAL MEETING THE REQUIREMENTS OF SECTION 310000.
4. BACKFILLING OF ANY TRENCHES OR EXCAVATIONS WILL NOT BE PERMITTED WITHOUT MACHINE MOUNTED COMPACTION EQUIPMENT BEING USED.
5. SLAG PRODUCTS WILL NOT BE PERMITTED FOR BEDDING, BACKFILL, OR TRAFFIC COMPACTED SURFACE.
6. ALL UTILITY LINES CROSSING THE NEW WATERLINE TRENCH, (i.e. STORM SEWERS, STORM LATERALS, SANITARY SEWERS, SANITARY LATERALS, WATER MAINS, WATER SERVICE CONNECTIONS, GAS MAINS, GAS SERVICE CONNECTIONS, UNDERGROUND OCT CONDUITS, CABLE T.V. LINES) SHALL BE PROTECTED AND SUPPORTED WITH HARDWOOD PLANKS OR REMOVED AND REPLACED, RECONNECTED AND SUPPORTED ACROSS THE ENTIRE WIDTH OF THE TRENCH. NO ADDITIONAL COMPENSATION WILL BE PAID FOR THE ABOVE WORK UNLESS ANY OF THE ABOVE UTILITIES ARE ENCOUNTERED AND NOT SHOWN ON THE DRAWINGS.

OHIO EPA SANITARY NOTES:

1. ALL SANITARY SEWERS SHALL PASS THE AIR ACCEPTANCE TEST PER ASTM F–1417. THE INFILTRATION LIMIT SHALL NOT EXCEED 110 GAL. PER IN. PIPE DIA. PER MILE PER DAY.
2. PRIOR TO ACCEPTANCE, ALL SANITARY SEWER MANHOLES SHALL PASS THE AIR TEST AS SPECIFIED BY ASTM C–1244.
3. A DEFLECTION TEST SHALL BE REQUIRED FOR ALL FLEXIBLE PIPE OF 8" DIAMETER AND LARGER. THE ALLOWABLE DEFLECTION RATE SHALL NOT EXCEED FIVE (5%) PERCENT. THE TEST SHALL BE CONDUCTED AT LEAST 30 DAYS AFTER COMPLETION OF BACKFILL AND SHALL BE IN ACCORDANCE WITH THE OHIO EPA SPECIFICATION 01 33 19 AND THE CITY OF WILLOUGHBY SPECIFICATIONS.
4. FLEXIBLE GASKETS ON SEWER LINE CONNECTIONS MUST MEET ASTM C–923 STANDARDS.

LCDU WATER WORKS NOTES

1. ONLY WATER/SEWER CONTRACTORS LICENSED BY THE LAKE COUNTY BOARD OF COMMISSIONERS MAY INSTALL WATER MAINS.
2. THE CONTRACTOR SHALL NOTIFY THE LCDU AT LEAST 48 HOURS IN ADVANCE OF ANY WORK IN THEIR SYSTEMS.
3. THE LCDU SHALL PERFORM INSPECTION SERVICES. THE COST OF INSPECTION SHALL BE INCLUDED AS PART OF THIS CONSTRUCTION PROJECT AT THE CURRENT BASE RATE AS ESTABLISHED BY THE LAKE COUNTY BOARD OF COMMISSIONERS. (SEE SECTION 7 FEE SCHEDULE) COST FOR LAKE COUNTY INSPECTION FEE AND OTHER FEES SHALL BE INCLUDED IN THE UNIT PRICES BID FOR OTHER WATERLINE ITEMS.
4. ALL HYDRANTS SHALL BE POSITIONED SO THAT THE STEAMER NOZZLES POINT IN THE DIRECTION SHOWN ON THE PLANS.
5. ALL BOLTS SHALL BE STAINLESS STEEL TYPE 304 OR 316 WITH ANTI–GALLING AGENT.
6. ALL SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR PRELIMINARY CHECKING. THE ENGINEER SHALL FORWARD CHECKED SHOP DRAWNGS TO THE LCDU FOR FINAL CHECKING AND APPROVAL.
7. THE LCDU SHALL PROVIDE WATER FOR THE NEW WATER MAIN WITHOUT COST FOR THE INITIAL OPERATION. ALL WATER FOR FLUSHING OPERATIONS SHALL BE PAID FOR BY THE CONTRACTOR AT CURRENT RATES AS ESTABLISHED BY THE LAKE COUNTY BOARD OF COMMISSIONERS PER 100 CUBIC FEET OF WATER USED. (SEE SECTION 7 FEE SCHEDULE)
8. ALL WATER MAIN PIPE SHALL BE AN APPROVED MATERIAL AS SHOWN ON THE APPROVED PLANS.
9. LOCATION OF STERILIZATION AND TESTING CONNECTIONS SHALL BE AS DIRECTED BY THE LCDU AND ALL COSTS ASSOCIATED WITH PLACING AND UTILIZING SAID STERILIZATION AND TESTING CONNECTIONS SHALL BE INCLUDED IN THE PRICE BID PER LINEAL FOOT OF THE WATER MAINS. NO BACTERIA SAMPLES ARE TO BE TAKEN FROM FIRE HYDRANTS.
10. ALL CURB STOP BOXES, VALVE BOXES, ETC. TO BE SET AS SHOWN ON THE PLANS. RIMS WILL BE RAISED OR LOWERED AND BOXES PLUMBED BY THE CONTRACTOR AT TIME OF HOUSE CONSTRUCTION WHEN FINAL YARD GRADING IS COMPLETED.
11. ALL PROJECT HYDRANTS SHALL HAVE A FIELD COAT OF APPROVED PAINT APPLIED BY THE CONTRACTOR WITH THE EXCEPTION OF HYDRANTS THAT ARE FACTORY PAINTED WITH A ONE COAT UV RESISTANT HIGH GLOSS 2–PART POLYURETHANE ENAMEL, COLOR AS SPECIFIED. IF THE COATING ON THE HYDRANT IS DAMAGED BEFORE INSTALLATION THE HYDRANT MUST BE PAINTED.
12. THE CONTRACTOR SHALL NOTIFY THE FIRE DEPARTMENT PRIOR TO ANY PRESSURE TESTING.



NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

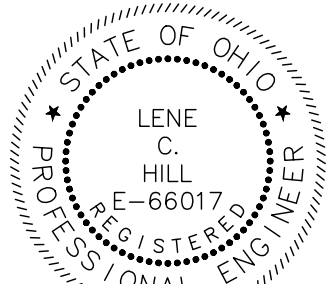
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LGH

GENERAL NOTES 3

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
GN - 3	
SHEET	OF
05	43



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NO	REVISION	DATE

**CITY OF WILLOUGHBY**

**NASON BASIN TO GROVE AVENUE**

**STORM SEWER IMPROVEMENTS**

**PHASE 1**

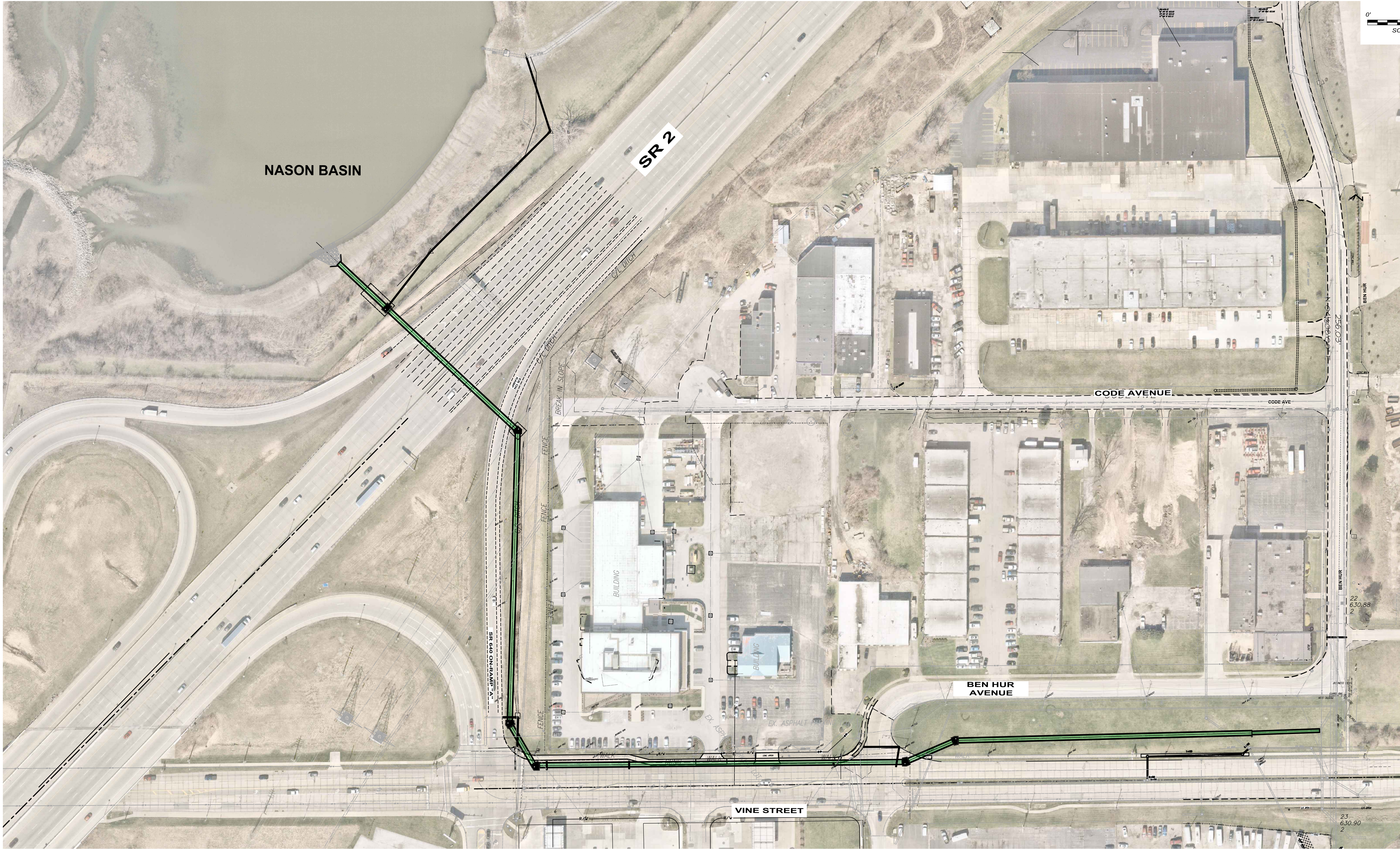
LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

OVERALL PLAN

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
PLAN	
SHEET	OF
06	43





NOTES:

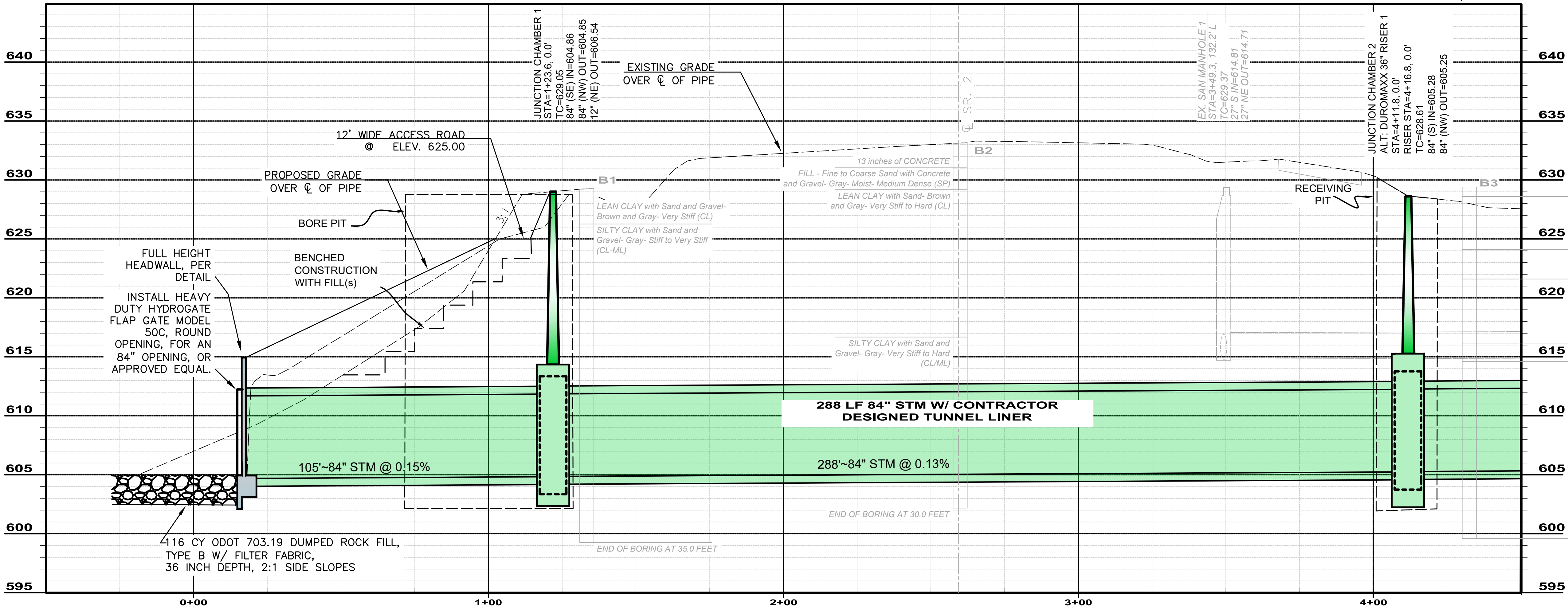
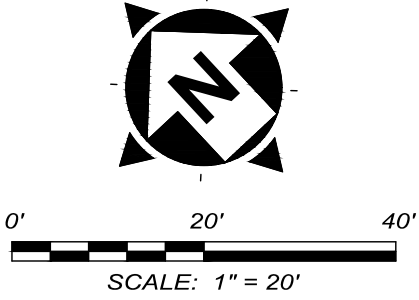
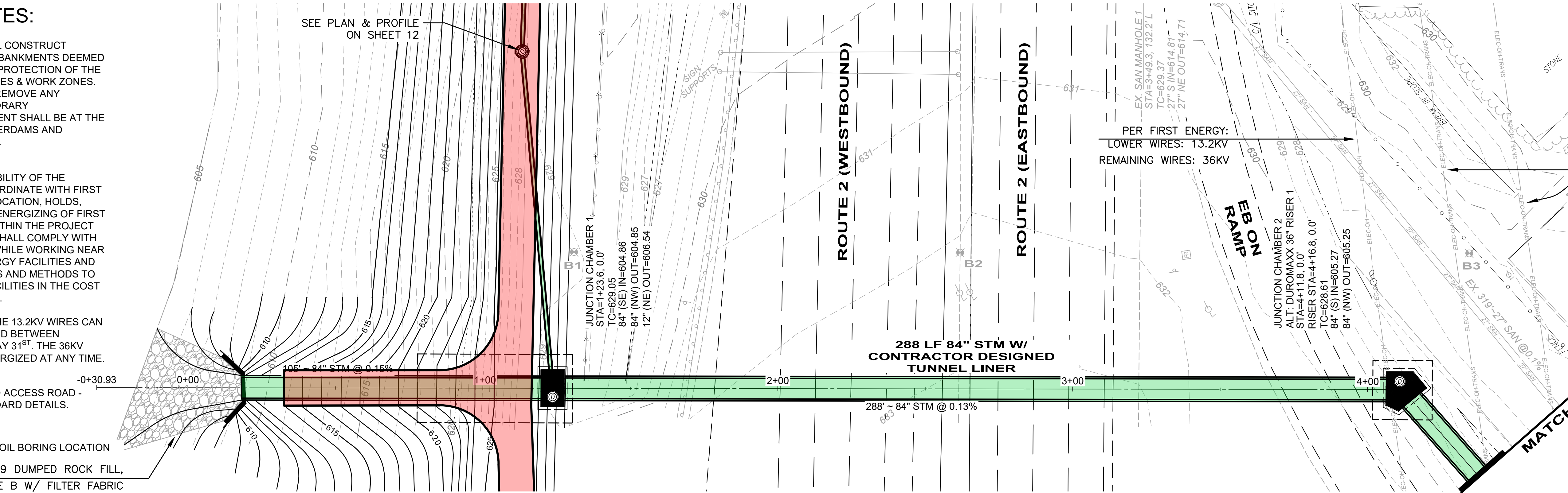
1. CONTRACTOR SHALL CONSTRUCT COFFERDAMS AND EMBANKMENTS DEEMED NECESSARY FOR THE PROTECTION OF THE PROPOSED STRUCTURES & WORK ZONES. CONTRACTOR SHALL REMOVE ANY CONSTRUCTED TEMPORARY EMBANKMENTS. PAYMENT SHALL BE AT THE UNIT PRICE FOR COFFERDAMS AND EXCAVATION BRACING.

2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH FIRST ENERGY (CEI) ON RELOCATION, HOLDS, BRACING, AND/OR DE-ENERGIZING OF FIRST ENERGY FACILITIES WITHIN THE PROJECT AREA. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS WHILE WORKING NEAR OR UNDER FIRST ENERGY FACILITIES AND SHALL INCLUDE MEANS AND METHODS TO WORK UNDER THE FACILITIES IN THE COST OF PIPE INSTALLATION.

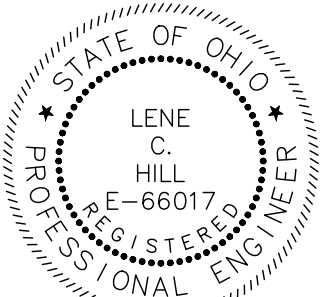
PER FIRST ENERGY, THE 13.2KV WIRES CAN ONLY BE DE-ENERGIZED BETWEEN NOVEMBER 1<sup>ST</sup> AND MAY 31<sup>ST</sup>. THE 36KV WIRES CAN BE DE-ENERGIZED AT ANY TIME.

- PROPOSED ACCESS ROAD - SEE STANDARD DETAILS.
- APPROX. SOIL BORING LOCATION
- 116 CY ODOT 703.19 DUMPED ROCK FILL, TYPE B W/ FILTER FABRIC

SEE PLAN & PROFILE ON SHEET 12



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NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY  
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

PLAN & PROFILE STA. 0+00 TO 4+50

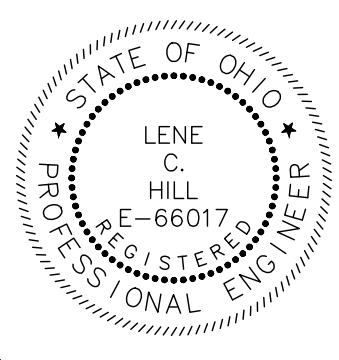
PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	PP-1
SHEET	07
OF	43







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Drawing name: H:\2015\150772\DWG\BASE\Phase 1\150772.dwg Layout: PP-3 by: mntus



**verdantas**

NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

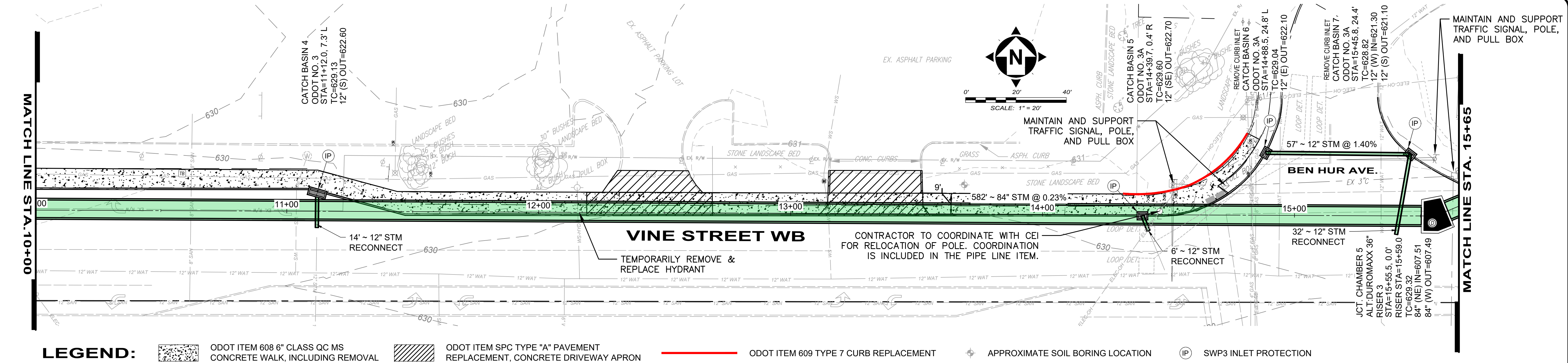
LAKE COUNTY

WILLOUGHBY, OHIO

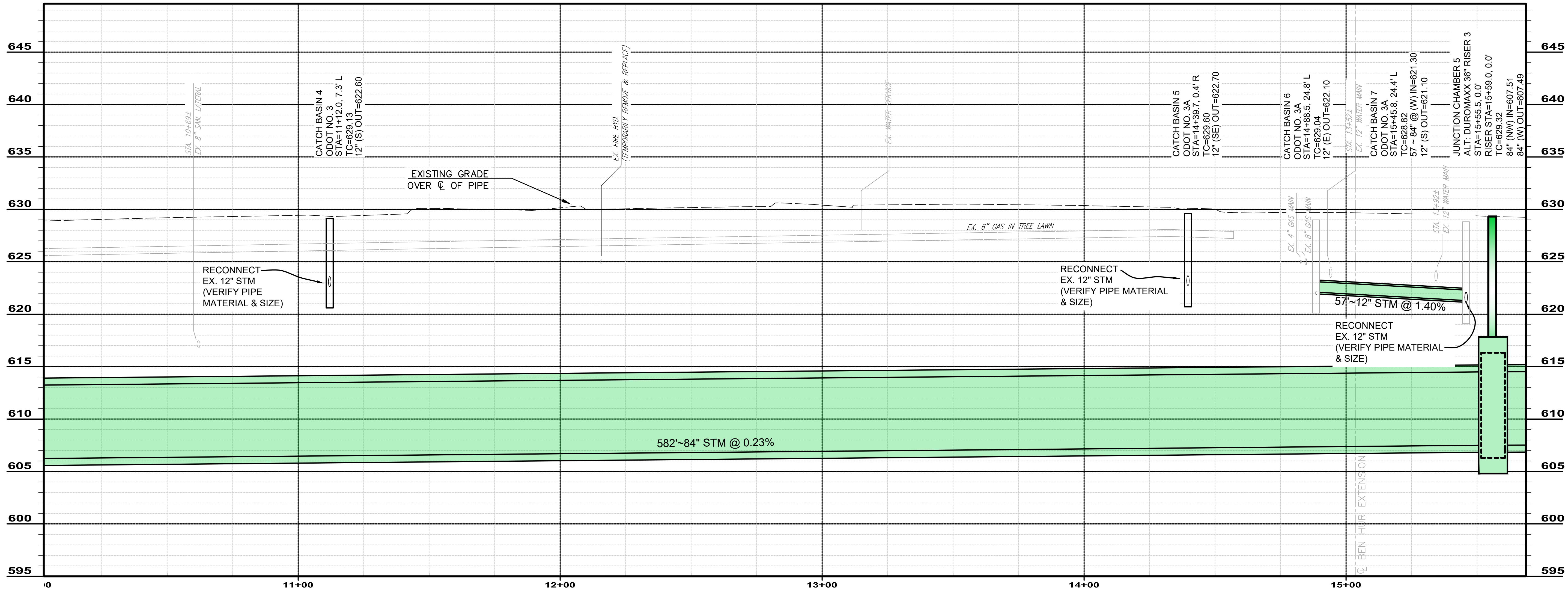
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**PLAN & PROFILE STA. 10+00 TO 15+65**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	PP-3
SHEET	09
OF	43

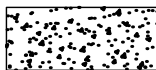





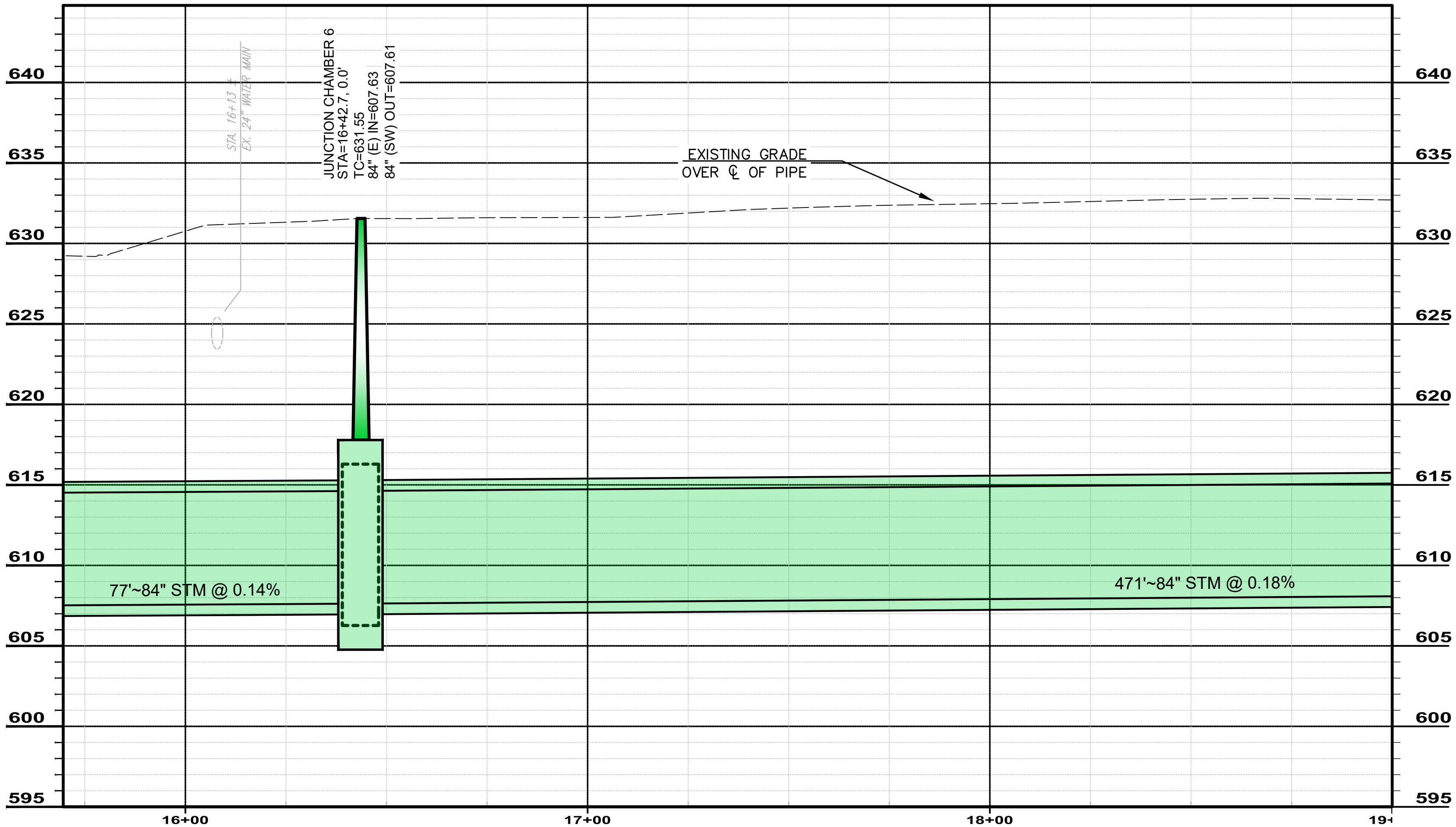
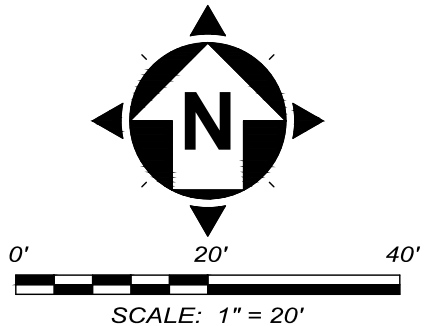
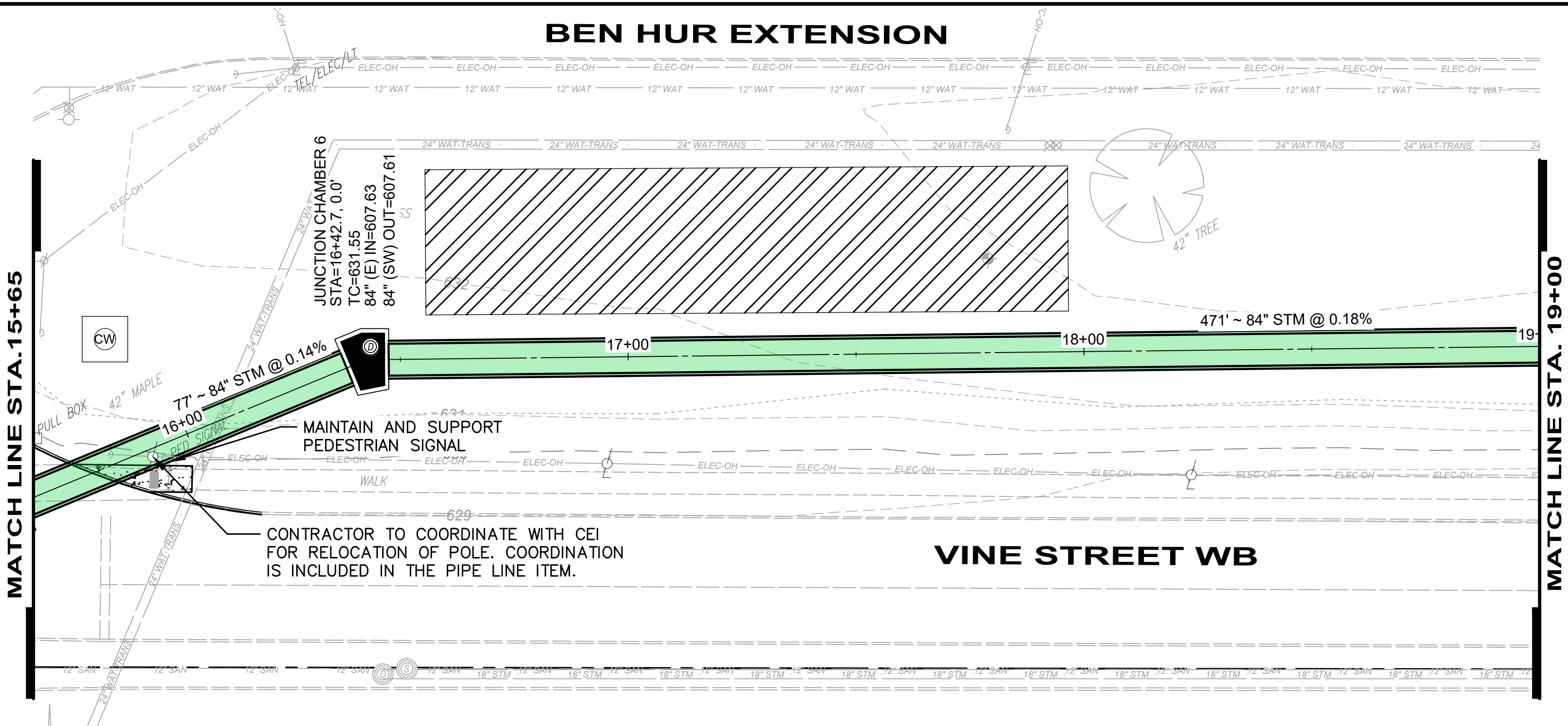
- LEGEND:**
- ODOT ITEM 608 6" CLASS QC MS CONCRETE WALK, INCLUDING REMOVAL
  - ODOT ITEM SPC TYPE "A" PAVEMENT REPLACEMENT, CONCRETE DRIVEWAY APRON
  - ODOT ITEM 609 TYPE 7 CURB REPLACEMENT
  - APPROXIMATE SOIL BORING LOCATION
  - SWP3 INLET PROTECTION



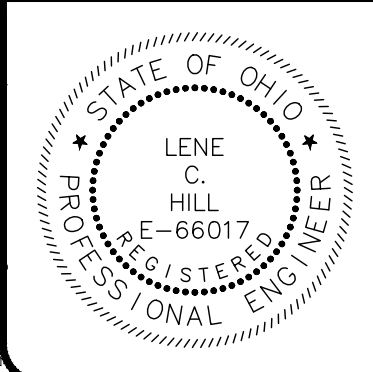


LEGEND:

-  ODOT ITEM 608 6" CLASS QC MS  
CONCRETE WALK, INCLUDING REMOVAL
-  CONTRACTOR STAGING AREA
-  CONCRETE WASHOUT PIT
-  APPROXIMATE SOIL BORING LOCATION



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NO	REVISION	DATE

**CITY OF WILLOUGHBY**

**NASON BASIN TO GROVE AVENUE**

**STORM SEWER IMPROVEMENTS**

**PHASE 1**

LAKE COUNTY

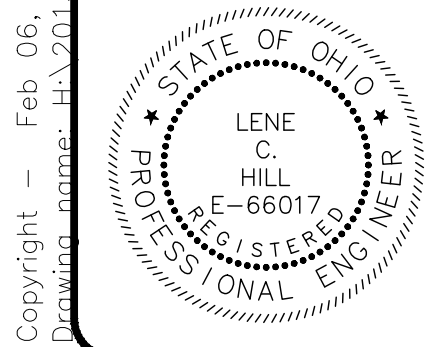
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

PLAN & PROFILE STA. 15+65 TO 19+00

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
PP-4	
SHEET	OF
10	43

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NO	REVISION	DATE

CITY OF WILLOUGHBY

NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

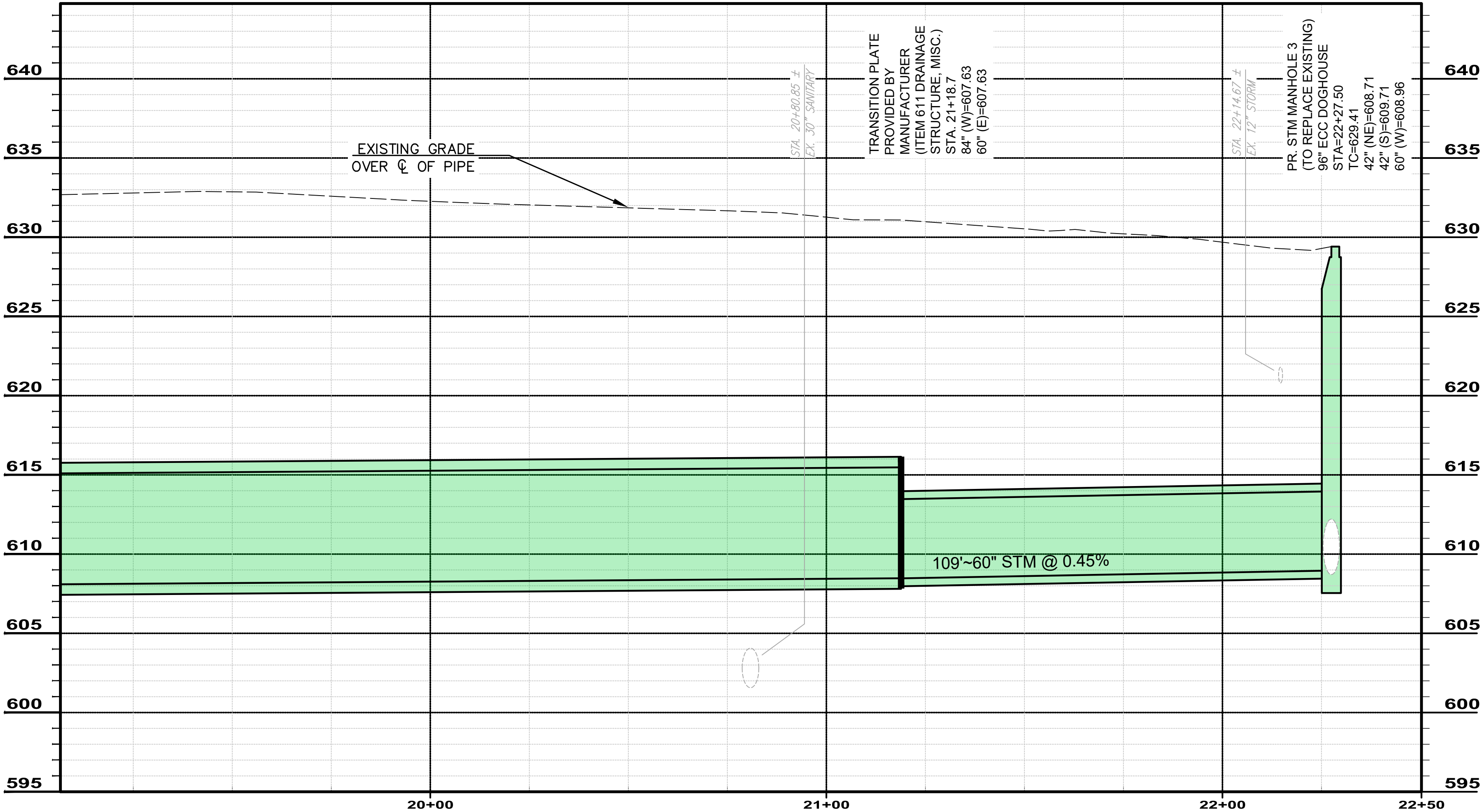
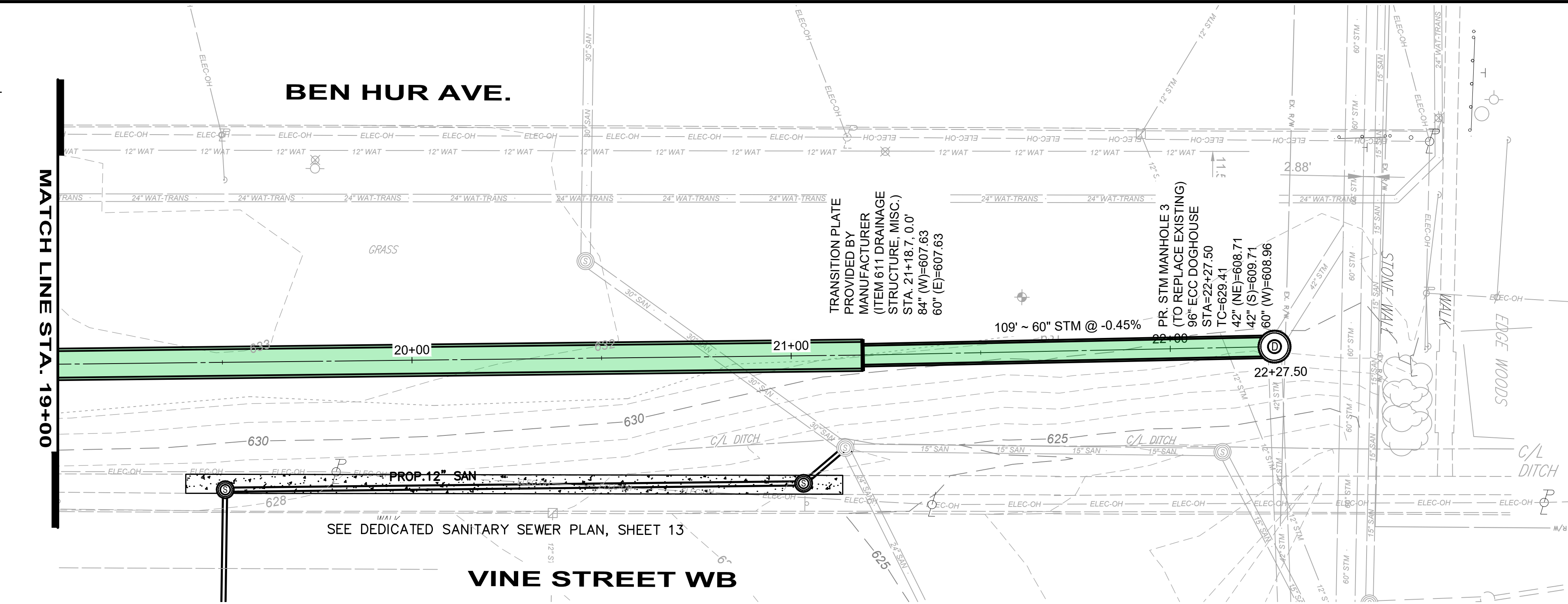
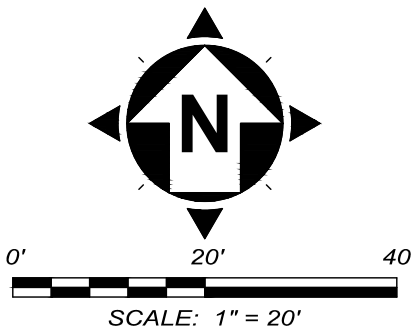
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

PLAN & PROFILE STA. 19+00 TO 22+27.50

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
PP-5	
SHEET	OF
11	43

LEGEND:

- 
- ODOT ITEM 608 6" CLASS QC MS
- 
- CONCRETE WALK, INCLUDING REMOVAL





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NO	REVISION	DATE

CITY OF WILLOUGHBY

NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

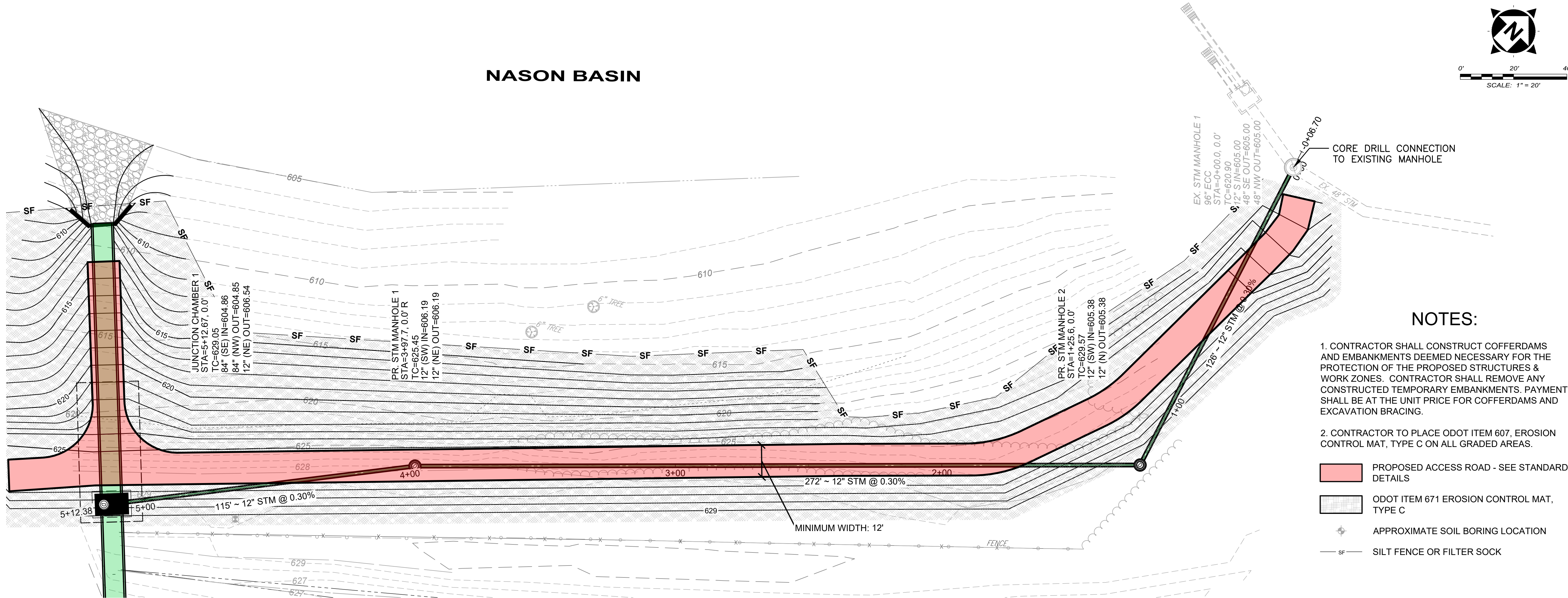
LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

12 INCH STORM SEWER & ACCESS ROAD  
GRADING PLAN

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	PP-6
SHEET	12
OF	43

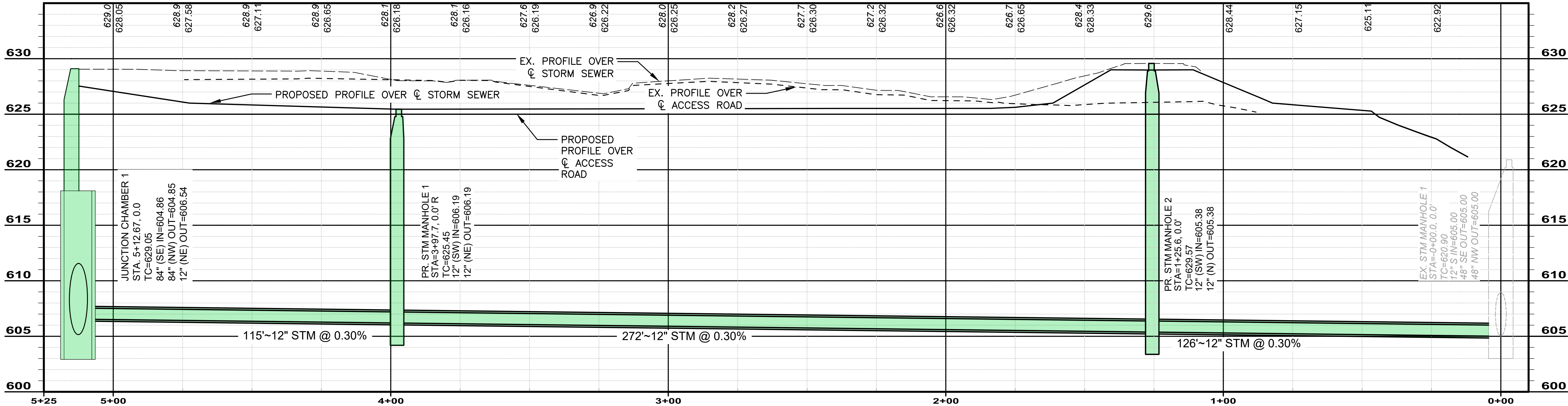


NOTES:

1. CONTRACTOR SHALL CONSTRUCT COFFERDAMS AND EMBANKMENTS DEEMED NECESSARY FOR THE PROTECTION OF THE PROPOSED STRUCTURES & WORK ZONES. CONTRACTOR SHALL REMOVE ANY CONSTRUCTED TEMPORARY EMBANKMENTS. PAYMENT SHALL BE AT THE UNIT PRICE FOR COFFERDAMS AND EXCAVATION BRACING.

2. CONTRACTOR TO PLACE ODOT ITEM 607, EROSION CONTROL MAT, TYPE C ON ALL GRADED AREAS.

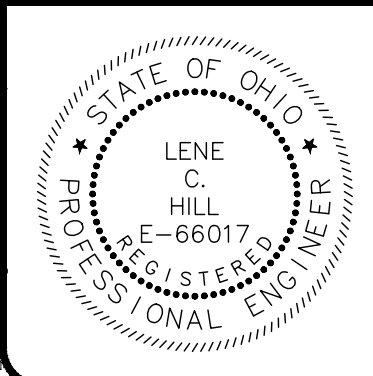
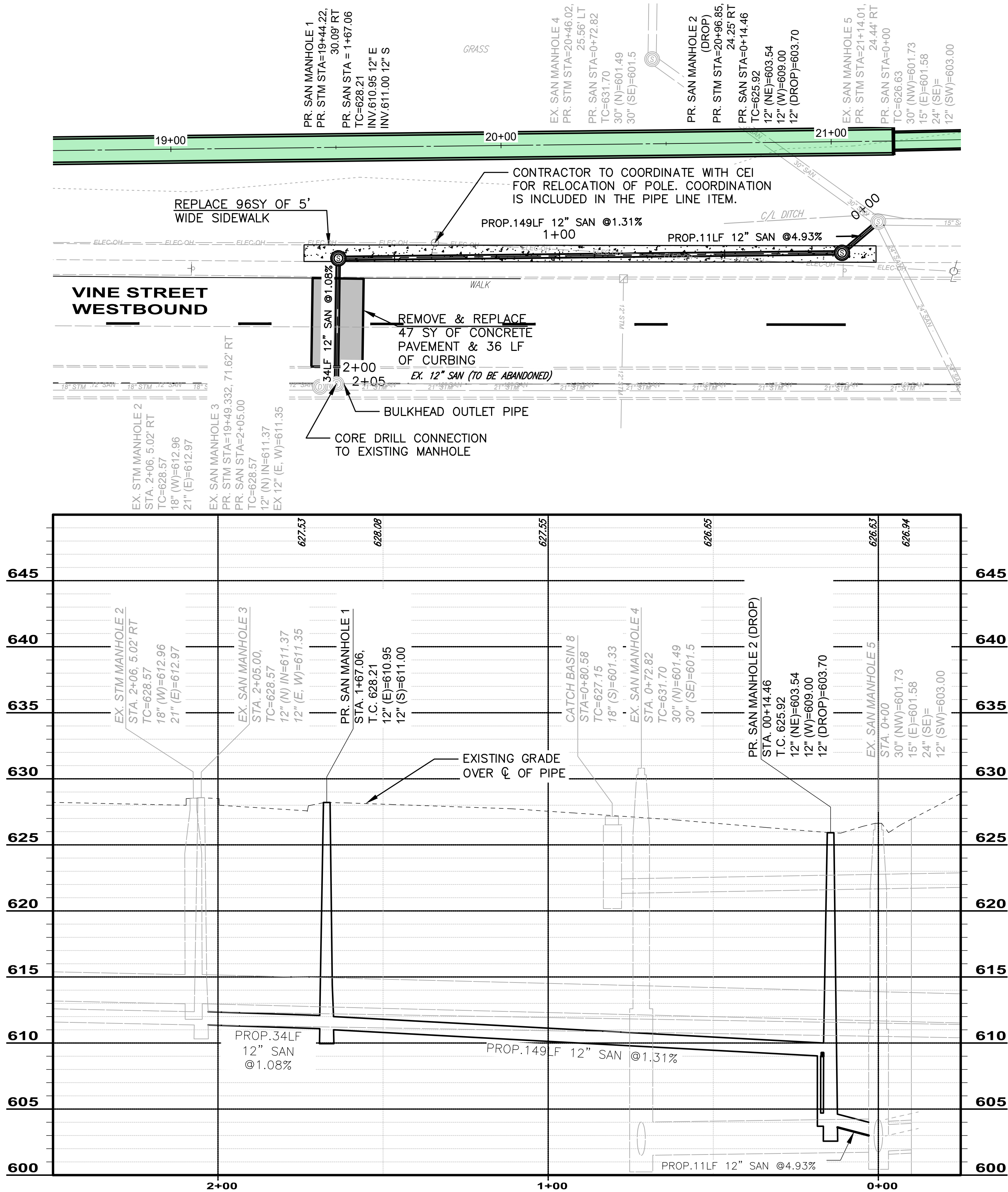
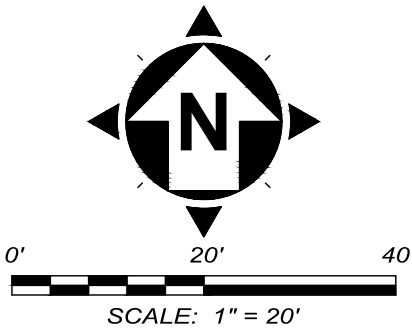
- PROPOSED ACCESS ROAD - SEE STANDARD DETAILS
- ODOT ITEM 671 EROSION CONTROL MAT, TYPE C
- APPROXIMATE SOIL BORING LOCATION
- SILT FENCE OR FILTER SOCK





LEGEND:

- 
- 



NO	REVISION	DATE

**CITY OF WILLOUGHBY**

**NASON BASIN TO GROVE AVENUE**

**STORM SEWER IMPROVEMENTS**

**PHASE 1**

**LAKE COUNTY**

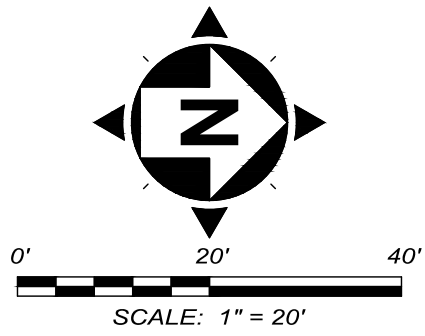
**WILLOUGHBY, OHIO**

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LGH

SANITARY SEWER PLAN & PROFILE

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
PP-7	
SHEET	OF
13	43

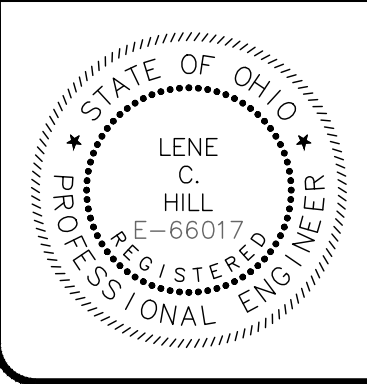




NOTES:

1. EXCAVATION LINE ITEM INCLUDES MOBILIZATION, CLEARING AND GRUBBING, EROSION CONTROL, HAUL ROAD INSTALLATION AND REMOVAL, EXCAVATION, DREDGING, DREDGING ACCESS, DEWATERING, RESTORATION, AND SPREADING OF THE DREDGED MATERIALS OVER FINAL GRADING AT THE PELTON ROAD LANDFILL.

REPAIR REVETMENT WITH ODOT ITEM 601 DUMPED ROCK FILL, TYPE A



NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

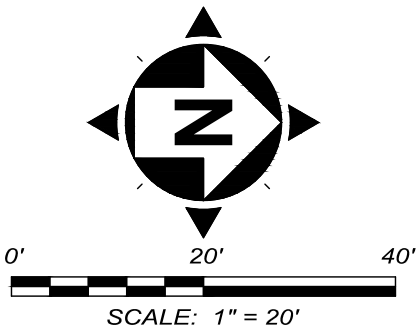
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

PROPOSED DREDGING PLAN

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
Grading	
SHEET	OF
14	43





DREDGING AMOUNT:

CUT: 443 CY



NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

WILLOUGHBY, OHIO

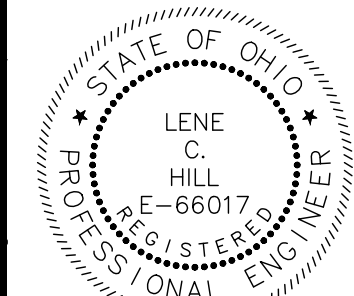
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ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**BASIN DREDGE DEPTH**

PROJECT NO.	
<b>150772</b>	
DISCIPLINE	
<b>CIVIL</b>	
SHEET NAME	
<b>Dredge</b>	
SHEET	OF
<b>15</b>	<b>43</b>



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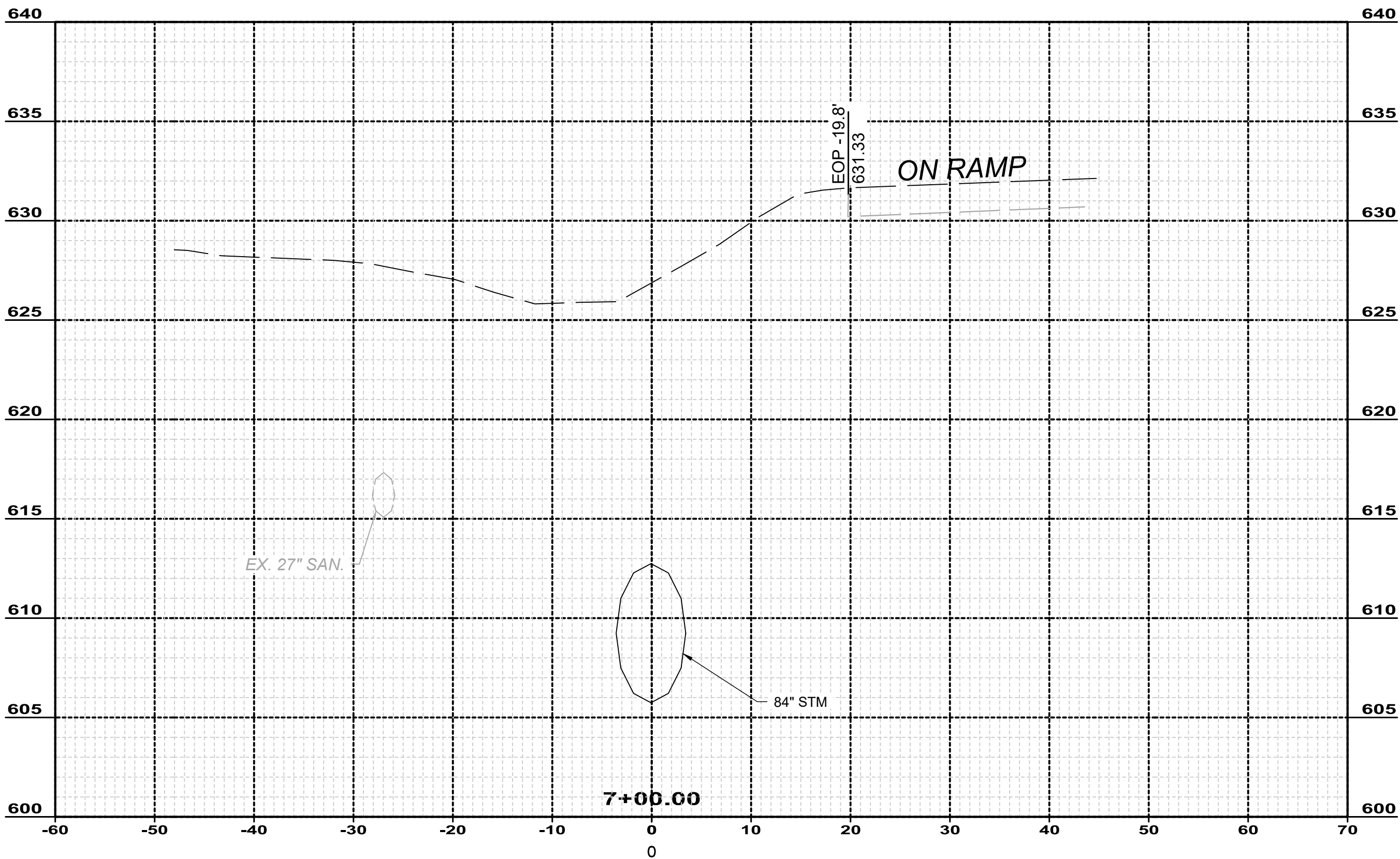
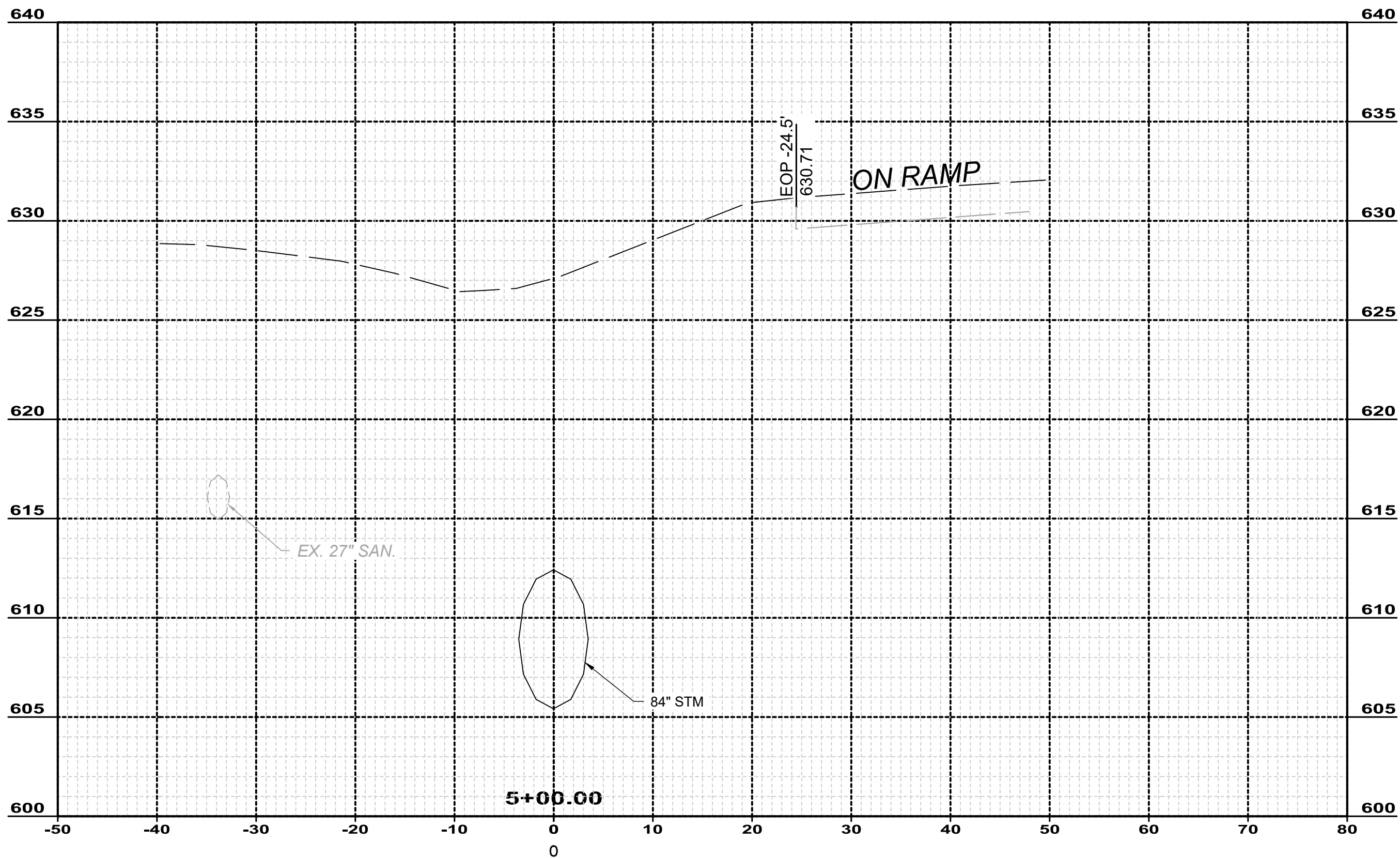
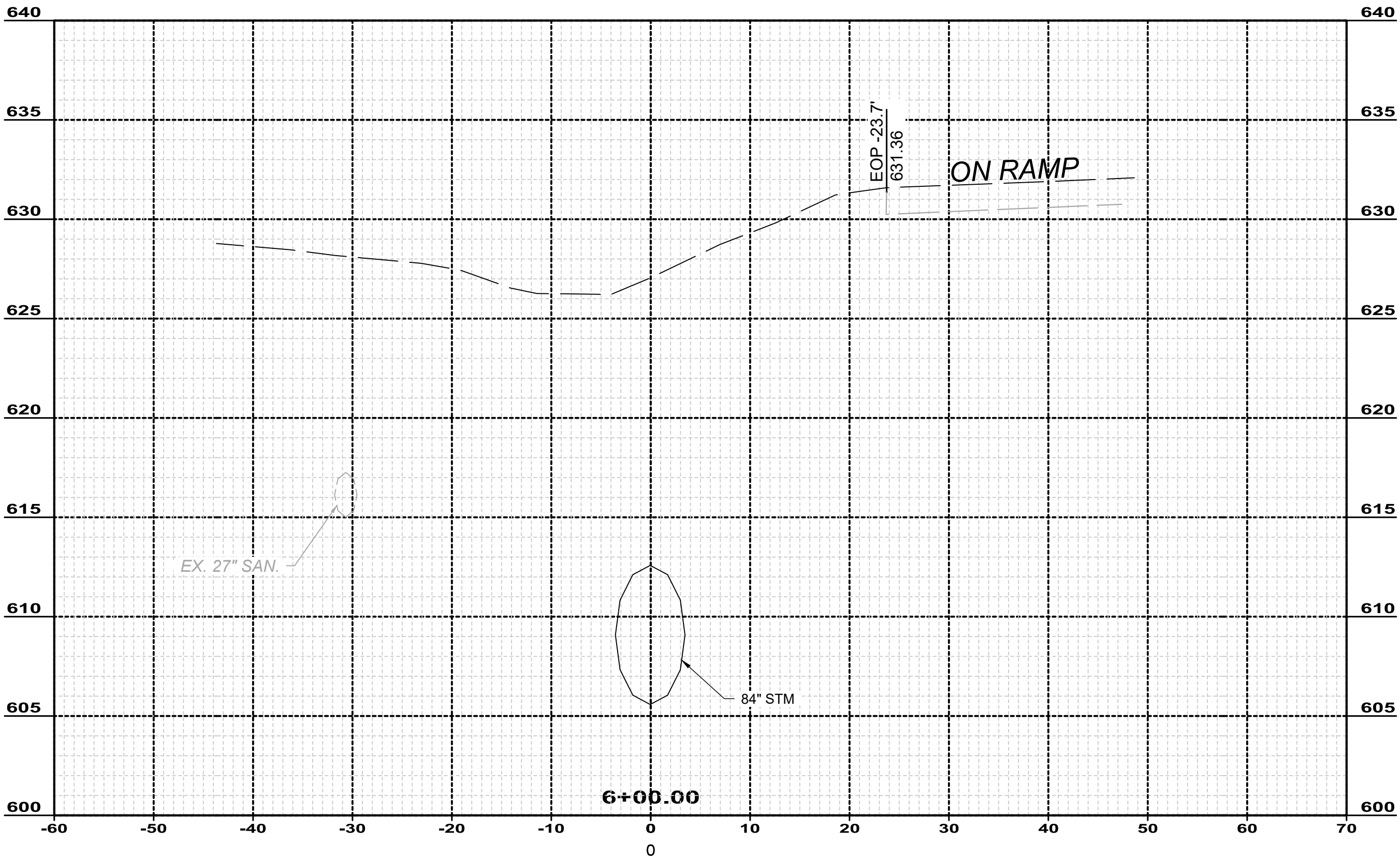
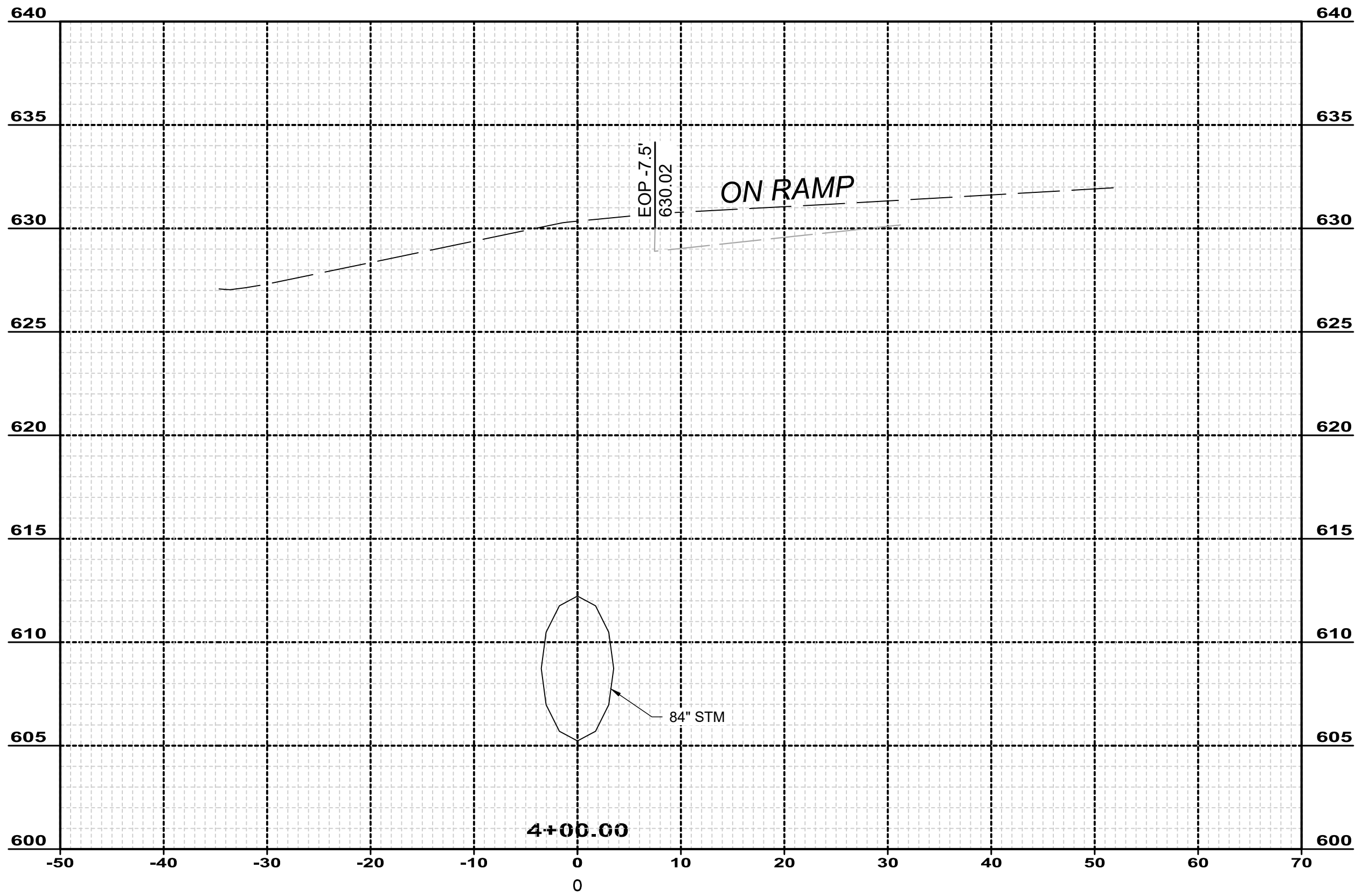
**CITY OF WILLOUGHBY**  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY  
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
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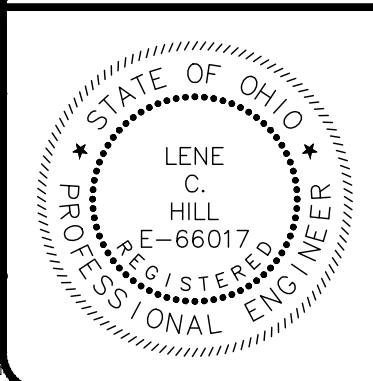
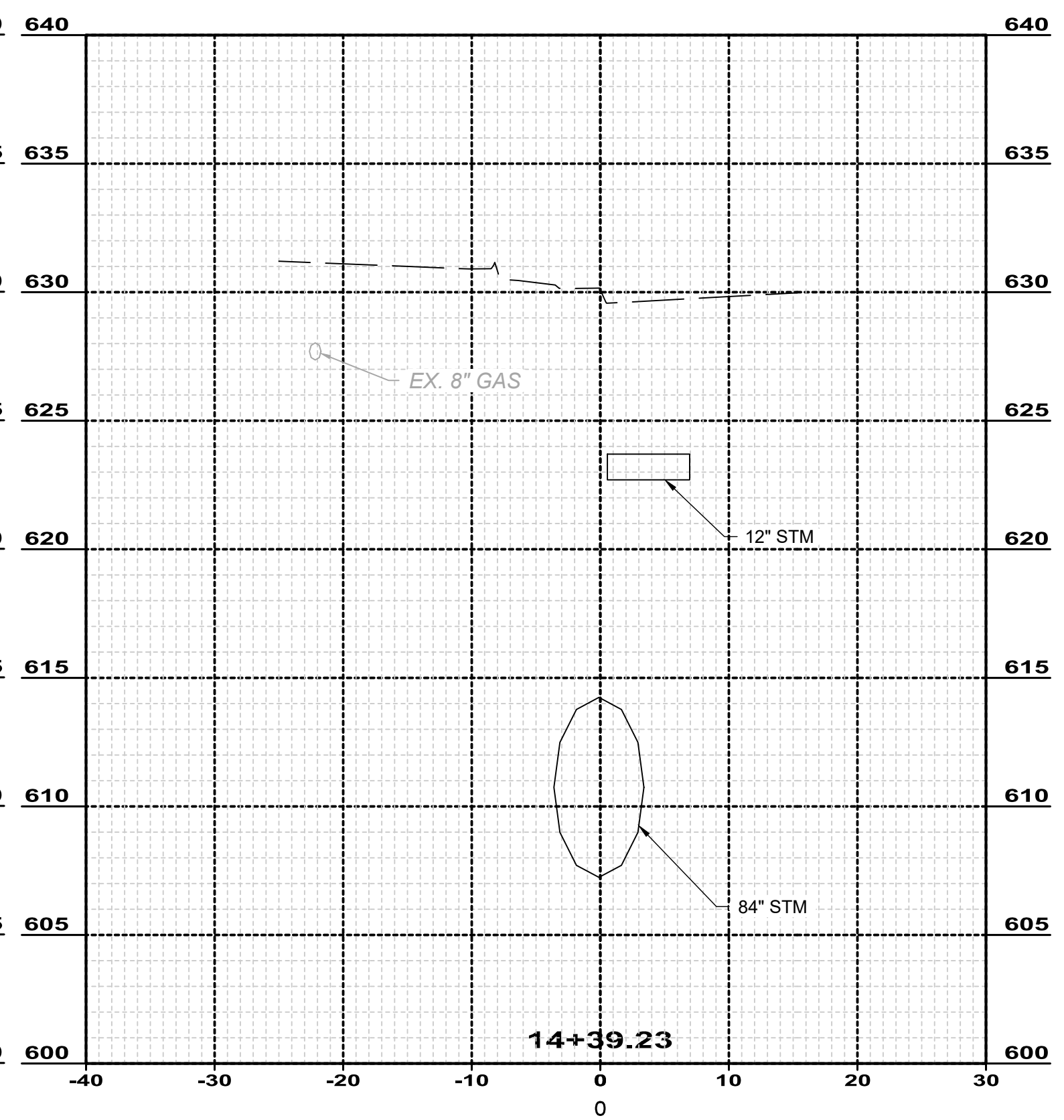
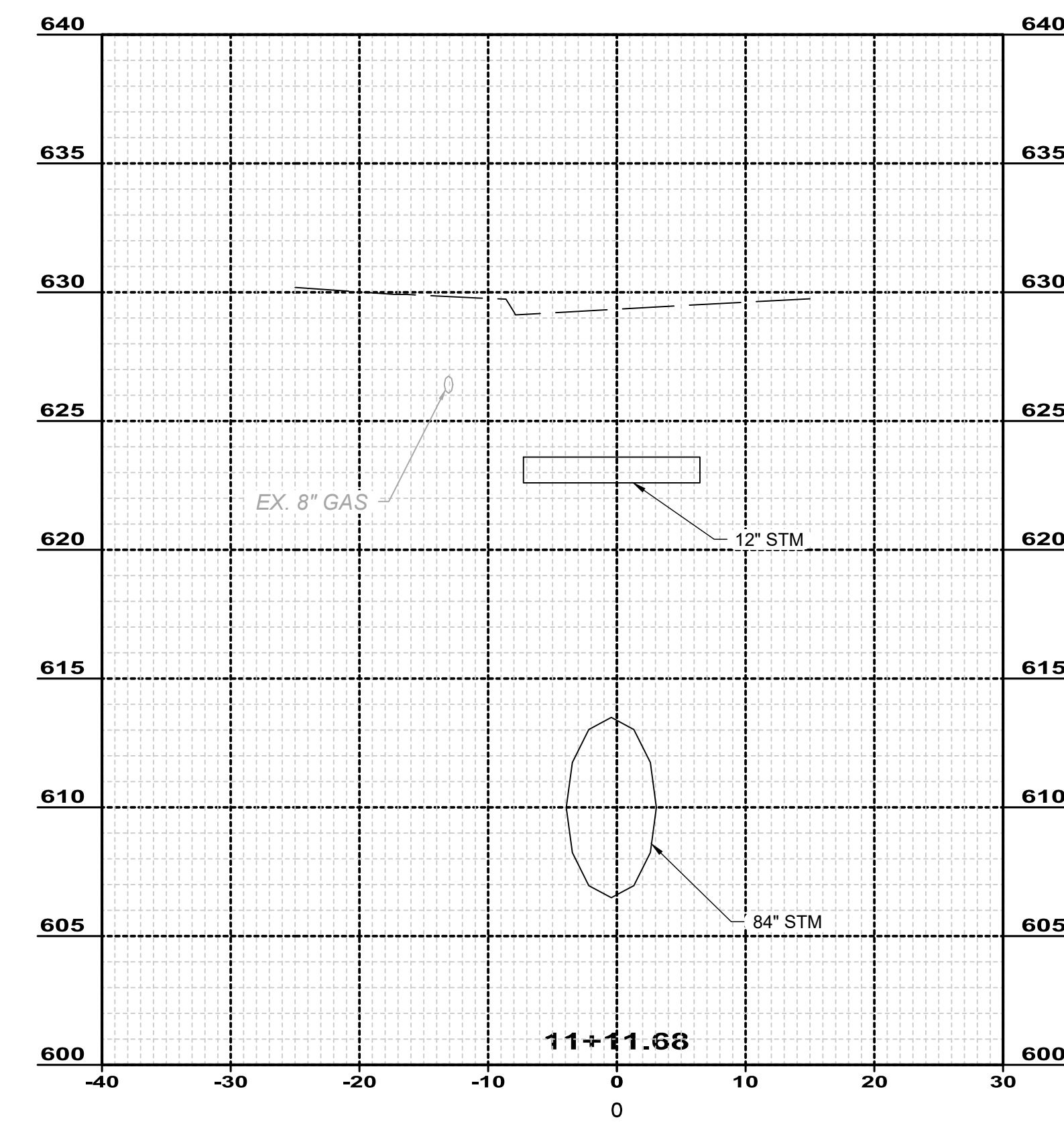
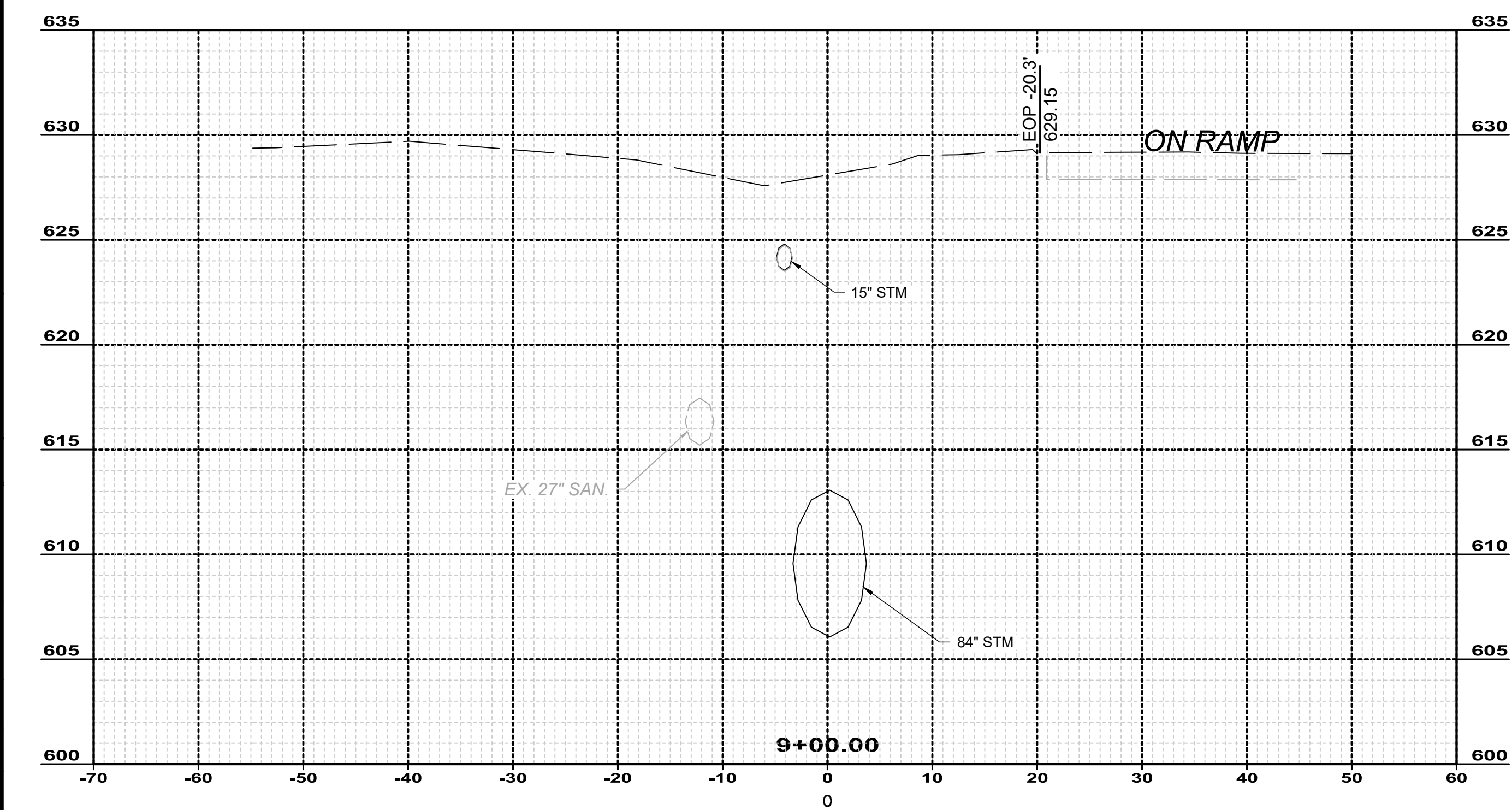
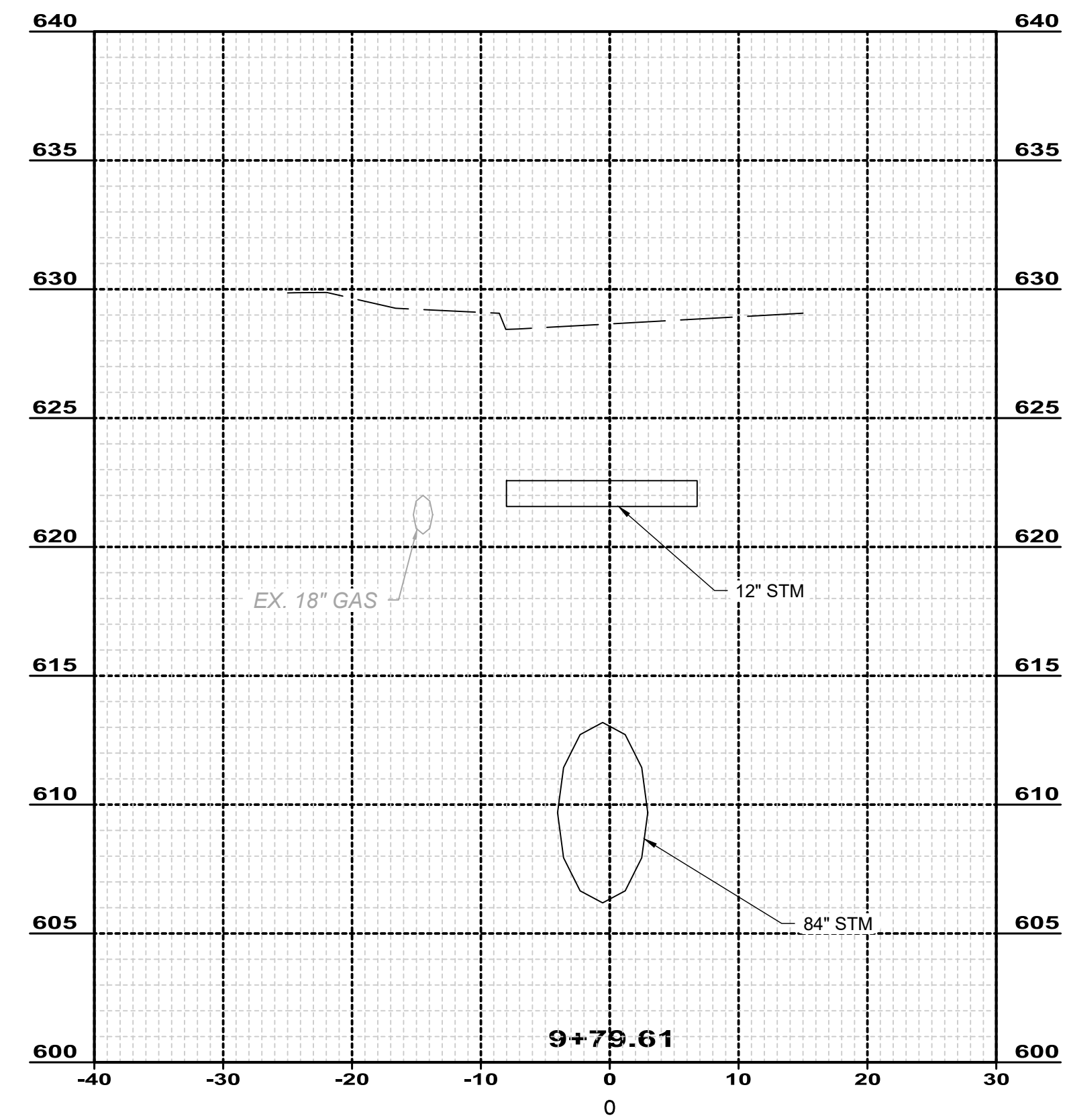
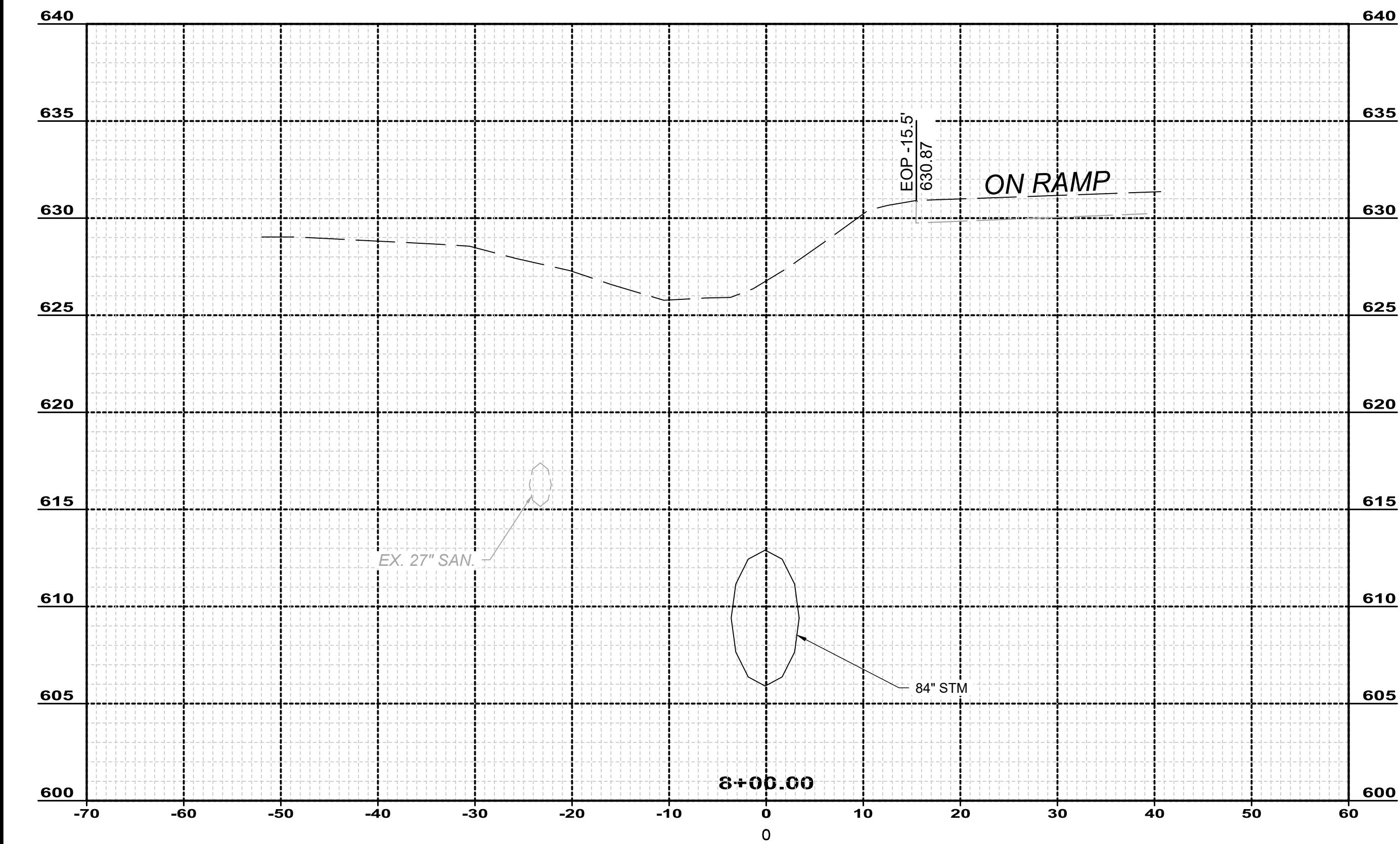
MISCELLANEOUS PROFILES &  
CROSS SECTIONS 1

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
X-SEC-1	
SHEET	OF
16	43





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NO	REVISION	DATE

**CITY OF WILLOUGHBY**

**NASON BASIN TO GROVE AVENUE**

**STORM SEWER IMPROVEMENTS**

**PHASE 1**

**LAKE COUNTY**

**WILLOUGHBY, OHIO**

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**MISCELLANEOUS PROFILES &**

**CROSS SECTIONS 2**

PROJECT NO.

**150772**

DISCIPLINE

**CIVIL**

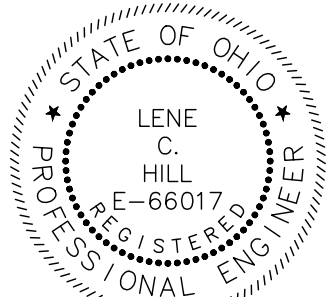
SHEET NAME

**X-SEC-2**

SHEET	OF
<b>17</b>	<b>43</b>



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NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

WILLOUGHBY, OHIO

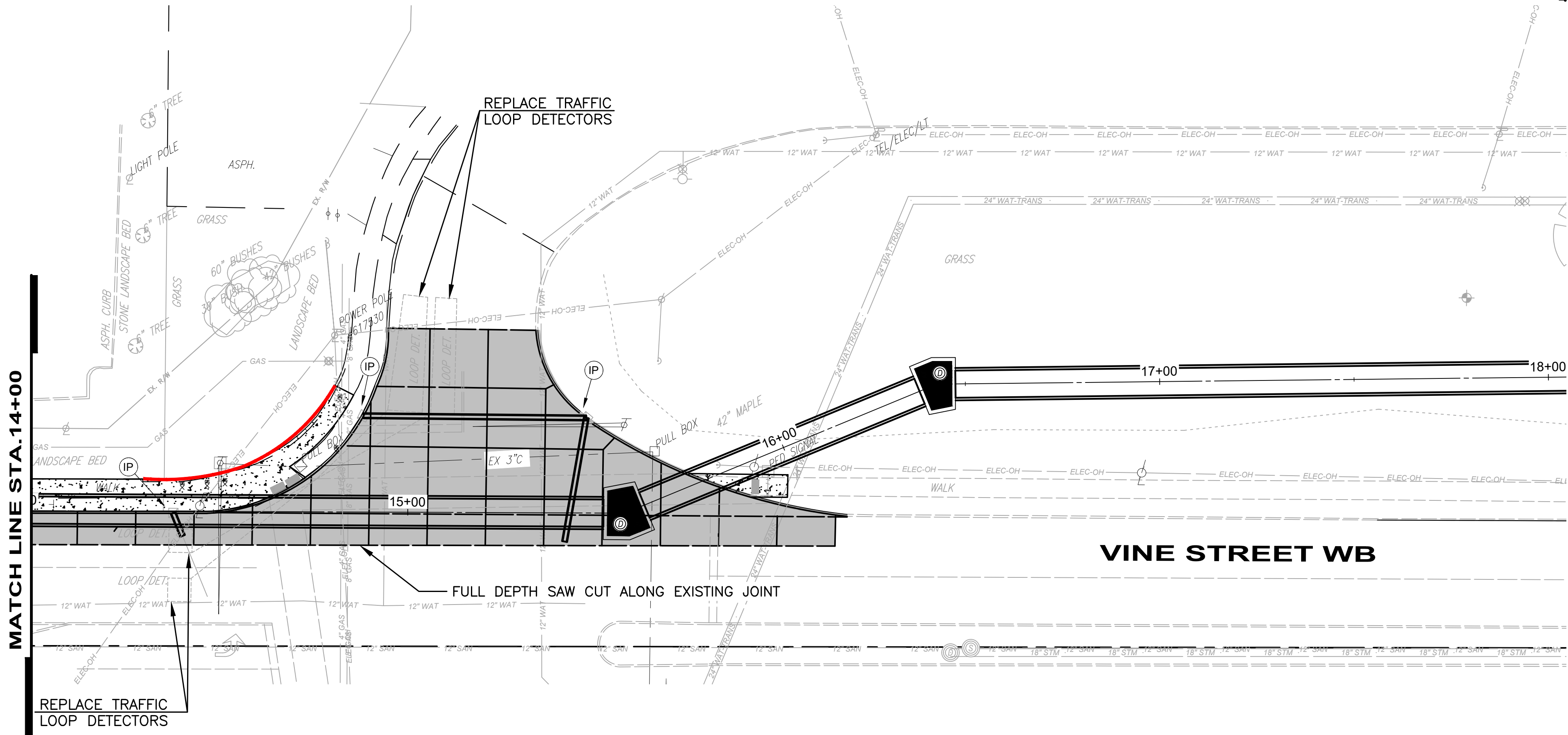
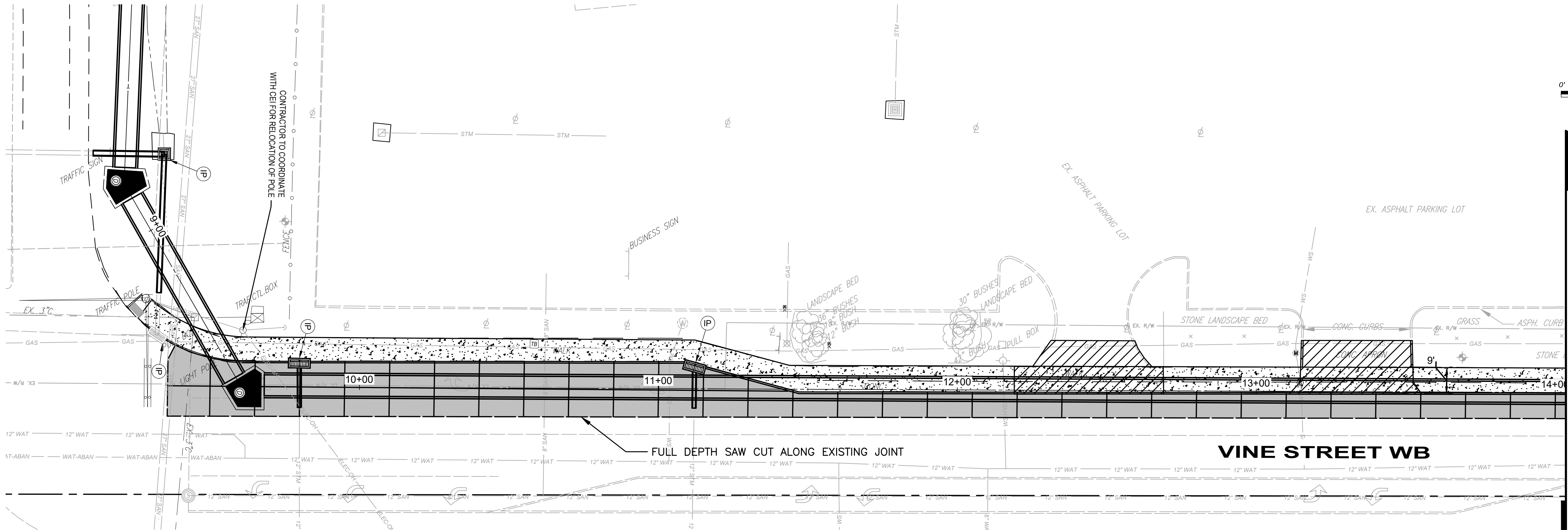
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**PAVEMENT REPLACEMENT PLAN**

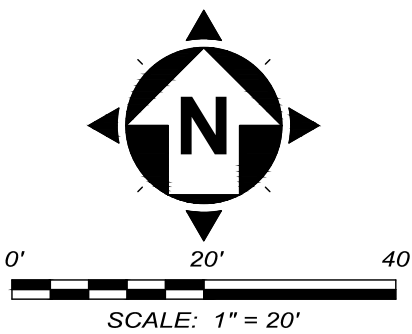
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DISCIPLINE	
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SHEET NAME	
PAV-1	
SHEET	OF
18	43

**LEGEND:**

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- 
- 
- 

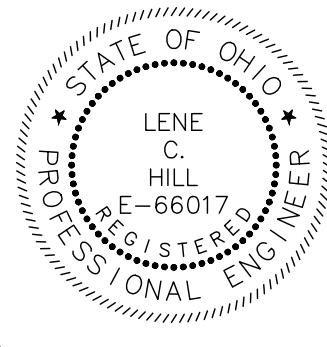


MATCH LINE STA. 14+00





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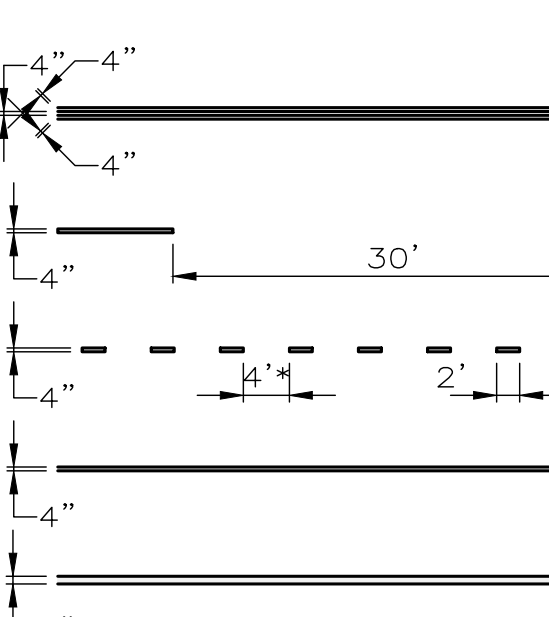
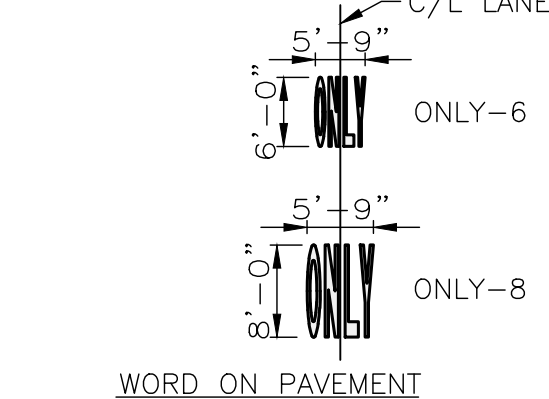
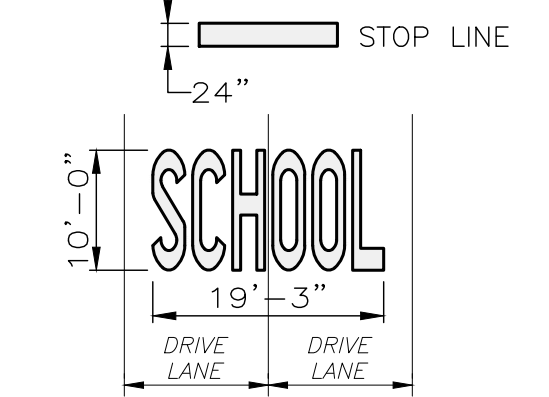
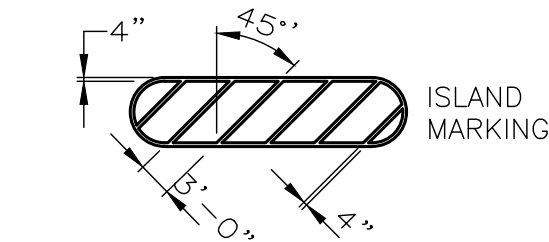
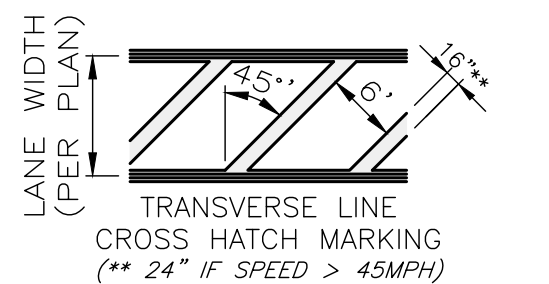
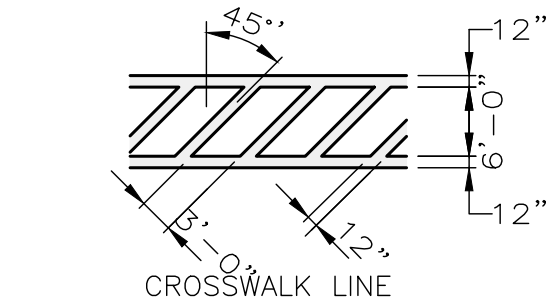


NO	REVISION	DATE

CITY OF WILLOUGHBY		ISSUED FOR:	BID
NASON BASIN TO GROVE AVENUE		ISSUE DATE:	02/07/25
STORM SEWER IMPROVEMENTS		SCALE:	AS SHOWN
PHASE 1		DESIGNED BY:	MPC
LAKE COUNTY		DRAWN BY:	TJM
WILLOUGHBY, OHIO		CHECKED BY:	LCH

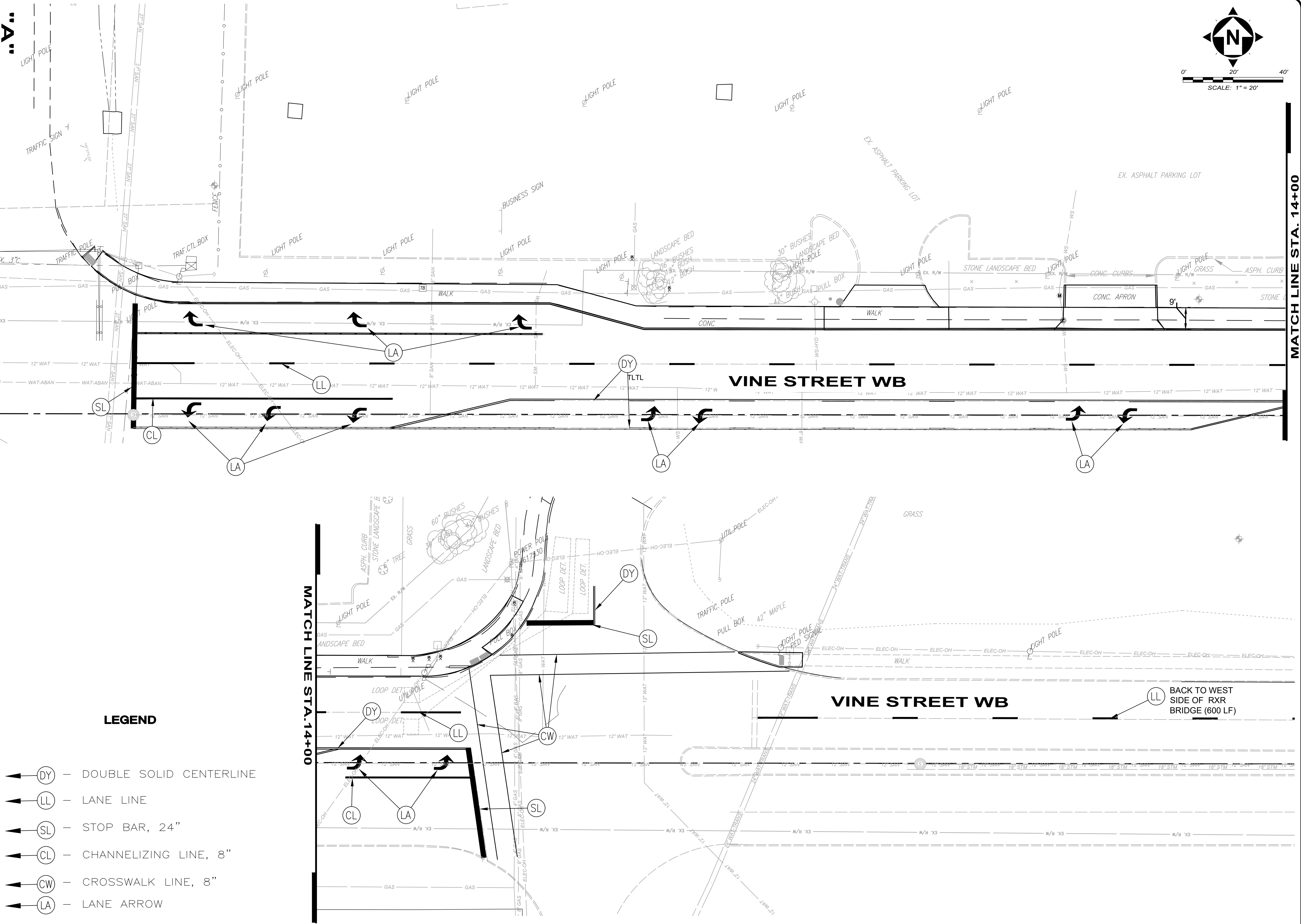
PAVEMENT MARKING PLAN

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
PAV-2	
SHEET	OF
19	43

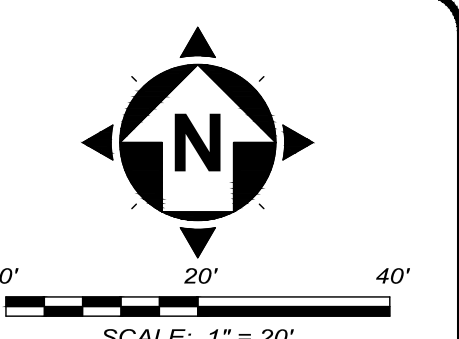


- NOTES:
- CENTER LINES TO BE YELLOW. EDGE, DOTTED, TRANSVERSE AND CHANNELIZING LINES, PARKING STALL LINES, AND ISLAND MARKINGS MAY BE YELLOW OR WHITE (SEE PLAN). ALL OTHER PAVEMENT MARKINGS TO BE WHITE UNLESS SPECIFIED OTHERWISE.
  - ALL PAINTED AREAS TO RECEIVE (2) 15 MIL COATS OF PAINT WITH 4 WEEKS MIN. BETWEEN COATS.
  - 8' SIZED LANE ARROWS ARE SHOWN; SEE SEPARATE DETAIL FOR SMALLER 6' SIZED LANE ARROWS.

PAVEMENT MARKING DETAIL  
SCALE: NONE



- LEGEND
- DY — DOUBLE SOLID CENTERLINE
  - LL — LANE LINE
  - SL — STOP BAR, 24"
  - CL — CHANNELIZING LINE, 8"
  - CW — CROSSWALK LINE, 8"
  - LA — LANE ARROW



MATCH LINE STA. 14+00



ITEM 614 – MAINTAINING TRAFFIC

ALL CONSTRUCTION TRAFFIC CONTROL DEVICES USED FOR THIS PROJECT SHALL CONFORM TO THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, HEREINAFTER REFERRED TO AS THE MANUAL, AND SHALL BE FURNISHED, ERECTED, MAINTAINED, RELOCATED AND REMOVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY SAFEGUARDS, SUCH AS BARRICADES, LIGHTING, FLAGGERS, PLASTIC DRUMS, FLASHING ARROW PANELS AND SUCH OTHER TRAFFIC CONTROL DEVICES AS PROVIDED IN ITEM 614, MAINTAINING TRAFFIC, SO AS TO AVOID DAMAGE AND/OR INJURY TO VEHICLES AND PERSONS USING THE ROADWAY DURING CONSTRUCTION. WHENEVER THE ENGINEER DEEMS IT NECESSARY, HE MAY DIRECT THAT ADDITIONAL OR ALTERNATIVE DEVICES BE USED. ALSO, THE CONTRACTOR SHALL PROVIDE SUFFICIENT ADDITIONAL BARRICADES, ETC., TO PROTECT THE FRESH PAVEMENT DURING THE CURING PERIOD FROM VEHICLES WHICH MAY DRIVE AROUND OR THROUGH THE TRAFFIC CONTROL.

TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER. WHERE OPERATIONS ARE PERFORMED IN PHASES, THERE SHALL BE IN PLACE ONLY THOSE DEVICES THAT APPLY TO THE CONDITION PRESENT DURING THE PHASE-IN PROGRESS. ALL SIGNS WITH MESSAGES WHICH DO NOT APPLY DURING A CERTAIN PERIOD SHALL BE COVERED OR SET ASIDE OUT OF THE VIEW OF TRAFFIC. CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED IN ACCORDANCE WITH SECTION 641.10 OF THE OHIO SPECIFICATIONS BEFORE ANY SECTION OF ROADWAY IS MADE AVAILABLE TO USE BY TRAFFIC.

ALL PERMANENT AND TEMPORARY PAVEMENT MARKINGS ARE TO BE MAINTAINED THROUGHOUT THE PROJECT. ANY DAMAGED OR FADED PAVEMENT MARKINGS SHALL BE CORRECTED WITHIN EIGHT HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE PROBLEM. IF WEATHER IS NOT CONDUSIVE TO PAVEMENT MARKING INSTALLATION THEN REPAIRS SHALL BE MADE ON THE FIRST WEATHER PERMISSIVE DAY AFTER NOTIFICATION.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH ODOT ITEM 614 APPLICABLE SECTIONS OF THE SPECIFICATIONS AS WELL AS THE MANUAL. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS OTHERWISE SEPARATELY ITEMIZED IN THE PLANS.

THE CONTRACTOR WILL FURNISH AND INSTALL TRAFFIC COMPACTED SURFACE WITH ODOT 304 INCLUDING NECESSARY WATER AND CALCIUM CHLORIDE FOR DUST CONTROL.

WORK HOURS

NO WEEKEND WORK OR WORK BETWEEN THE HOURS OF 9:00 PM TO 7:00 AM SHALL BE PERMITTED  
UNLESS OTHERWISE SPECIFICALLY APPROVED BY THE ENGINEER.

## PROVIDING CONTINUOUS ACCESS TO RESIDENCES AND BUSINESSES

TWO WEEKS PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A COMPLETE SCHEDULE OF CONSTRUCTION OPERATIONS ALONG WITH PLANS SHOWING TRAFFIC CONTROL FOR EACH PHASE OF CONSTRUCTION. INCLUDED SHALL BE DETAILS OF THE PROPOSED METHODS TO MAINTAIN SAFE AND CONTINUOUS ACCESS FOR PASSENGER VEHICLES, TRUCKS AND SAFETY EQUIPMENT TO ALL ADJOINING PROPERTIES AND INTERSECTING STREETS. THESE PLANS SHALL INCLUDE ALL TEMPORARY MATERIALS NECESSARY TO PROVIDE SAFE, ADEQUATE DRIVE SURFACES TO ALL ADJOINING PROPERTIES. THE COST FOR ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO PROVIDE CONTINUOUS ACCESS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ODOT ITEM 614, MAINTAINING TRAFFIC. PLANS MUST BE SUBMITTED TO THE ENGINEER AND APPROVED PRIOR TO COMMENCING ANY WORK.

SHOULD THE ENGINEER, AT ANY TIME PRIOR TO OR DURING CONSTRUCTION, DEEM ANY PART OF THE CONTRACTOR'S PLANS FOR SAFE AND CONTINUOUS ACCESS TO RESIDENCES AND BUSINESSES INADEQUATE, ADDITIONAL MATERIALS, CLOSURES AND/OR DIVERSIONS SHALL BE REQUIRED AT NO ADDITIONAL COST TO THE CITY.

WHERE CONSTRUCTION ACTIVITIES MAY REQUIRE AN ALTERNATE CIRCULATION PATH, THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO SECURE A TEMPORARY PEDESTRIAN ACCESS ROUTE. THE TEMPORARY PEDESTRIAN ACCESS ROUTE SHALL ACCOMMODATE PERSONS WITH DISABILITIES IN ACCORDANCE WITH THE MUTCD, FEDERAL AND LOCAL GUIDELINES OR REGULATIONS. THE CONTRACTOR SHALL MAINTAIN FACILITIES ON A 24 HOUR BASIS UNTIL THE PROJECT IS COMPLETE AND ACCEPTED BY THE CITY.

## NOTIFICATION OF PROPERTY OWNERS

THE CONTRACTOR SHALL NOTIFY ALL RESIDENCES AND BUSINESSES ALONG THE PROJECT ROUTE IN WRITING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCING WORK. SUCH NOTICE SHALL INCLUDE, AT A MINIMUM, A BRIEF PROJECT DESCRIPTION, TENTATIVE CONSTRUCTION SCHEDULE, LIMITS OF CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS AND PHONE NUMBER, AS WELL AS A CONTACT PERSON'S NAME AND EMERGENCY PHONE NUMBER WHERE HE COULD BE REACHED DURING NON-WORK HOURS. THE NOTICE SHALL ALSO REQUEST THAT THE PROPERTY OWNERS PROVIDE INFORMATION TO THE CONTRACTOR AND/OR CITY OF WILLOUGHBY REGARDING THE LOCATIONS OF ANY UNDERGROUND PET FENCING, LAWN SPRINKLER SYSTEMS, YARD LIGHTING, WIRING AND ANY OTHER FACILITIES THAT ARE UNDERGROUND IN THE VICINITY OF THE PROJECT. THE NOTICE SHALL BE REVIEWED AND APPROVED BY THE CITY OF WILLOUGHBY PRIOR TO BEING DISTRIBUTED. ALL COSTS ASSOCIATED WITH THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ODOT ITEM 614, MAINTAINING TRAFFIC.

FAILURE TO COMPLY

FOR ANY FAILURE TO COMPLY WITH PROVISIONS FOR TRAFFIC CONTROL SET OUT IN THESE PLANS AND NOTES OR WITH THE PROVISIONS OF THE MANUAL, THE HIGHWAY IN THE VICINITY OF THE WORK AREA SHALL BE CONSIDERED IN A CONDITION UNACCEPTABLE FOR THE SAFETY AND CONVENIENT USE BY THE TRAVELING PUBLIC. ANY FAILURE TO KEEP THE HIGHWAY IN THE VICINITY OF THE WORKING AREA IN A CONDITION ACCEPTABLE FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC SHALL BE CONSIDERED A BREACH OF THIS CONTRACT. WORK SHALL BE SUSPENDED UNTIL THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF THE AFOREMENTIONED ITEMS.

MATERIALS FOR MAINTAINING TRAFFIC:

### SIGNS

SIGN DIMENSION AND SPECIFICATIONS, INCLUDING LETTER SIZES, SHALL BE AS PROVIDED IN THE MANUAL OR SIGN DESIGN DRAWINGS PROVIDED IN THESE PLANS. THE SIGNS SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER PRIOR TO THE START OF THE PROJECT. ALL COST FOR INSTALLING, MAINTAINING AND SUBSEQUENT REMOVAL OF SAID SIGNS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ODOT ITEM 614 - MAINTAINING TRAFFIC.

## NOTIFICATION

THE CITY OF WILLOUGHBY POLICE, FIRE, SERVICE DEPARTMENT, CITY ENGINEER AND THE WILLOUGHBY-EASTLAKE BOARD OF EDUCATION SHALL BE NOTIFIED AT LEAST ONE (1) WEEK PRIOR TO THE ACTUAL START OF CONSTRUCTION.

CITY OF WILLOUGHBY POLICE DEPARTMENT: JAMES SHULTZ, CHIEF	440-953-4229
CITY OF WILLOUGHBY FIRE DEPARTMENT TODD UNGER, CHIEF	440-953-4343
CITY OF WILLOUGHBY ENGINEER TIM LANNON, P.E.	440-951-9000
CITY OF WILLOUGHBY SERVICE DEPARTMENT RICH PALMISANO, DIRECTOR	440-953-4110
WILLOUGHBY-EASTLAKE BOARD OF EDUCATION DIRECTOR OF TRANSPORTATION	440-946-5000
UNITED STATES POST OFFICE	440-951-0543
WASTE MANAGEMENT	440-286-7116
LAKETRAN	440-354-6100

## SIGN SUPPORTS

SIGN SUPPORTS SHALL BE OF SUFFICIENT SIZES AND HEIGHT TO SUPPORT THE SIGNS AT THE HEIGHT INDICATED IN THE MANUAL. SUPPORTS SHALL ALSO BE ADEQUATE IN MASS AND STABILITY TO PREVENT SIGNS FROM BEING BLOWN OVER BY WIND OR VECLAR-GENERATED AIR TURBULENCE. ALL COSTS FOR INSTALLING, MAINTAINING AND SUBSEQUENT REMOVAL OF SAID SIGNS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 – MAINTAINING TRAFFIC.

DETOUR PLAN

THE CONTRACTOR SHALL SUBMIT A PHASED CONSTRUCTION SCHEDULE AND PLANS FOR INTERSECTION CLOSURES, MAINTENANCE OF TRAFFIC PLAN AND TRAFFIC SIGNAL MODIFICATIONS REQUIRED FOR THEIR MEANS, METHODS AND CONSTRUCTION SEQUENCING.

IF THE CONTRACTOR PLANS TO CLOSE ANY INTERSECTION THE CONTRACTOR MUST PREPARE AND SUBMIT A DETOUR PLAN TO BE APPROVED BY THE ENGINEER BEFORE BEGINNING CONSTRUCTION.



PLAN SET MOT PLAN

THE MOT PLAN SUPPLIED IN THE PLAN SET FOR VINE STREET IS CONSIDERED TO BE THE MAXIMUM ALLOWABLE LANE CLOSURE FOR WORK IN THIS STRETCH OF VINE STREET. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING MARKINGS AND SIGNS. CONFLICTING SIGNS AND MARKINGS SHALL BE REMOVED OR BAGGED. SIGNS REQUIRED TO SUPPLEMENT THIS LAYOUT SHALL BE PROVIDED IN A PLAN SUBMITTED BY THE CONTRACTOR AND IN ACCORDANCE WITH WORK ZONE SAFETY REQUIREMENTS.

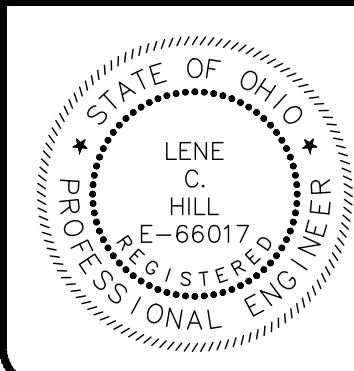
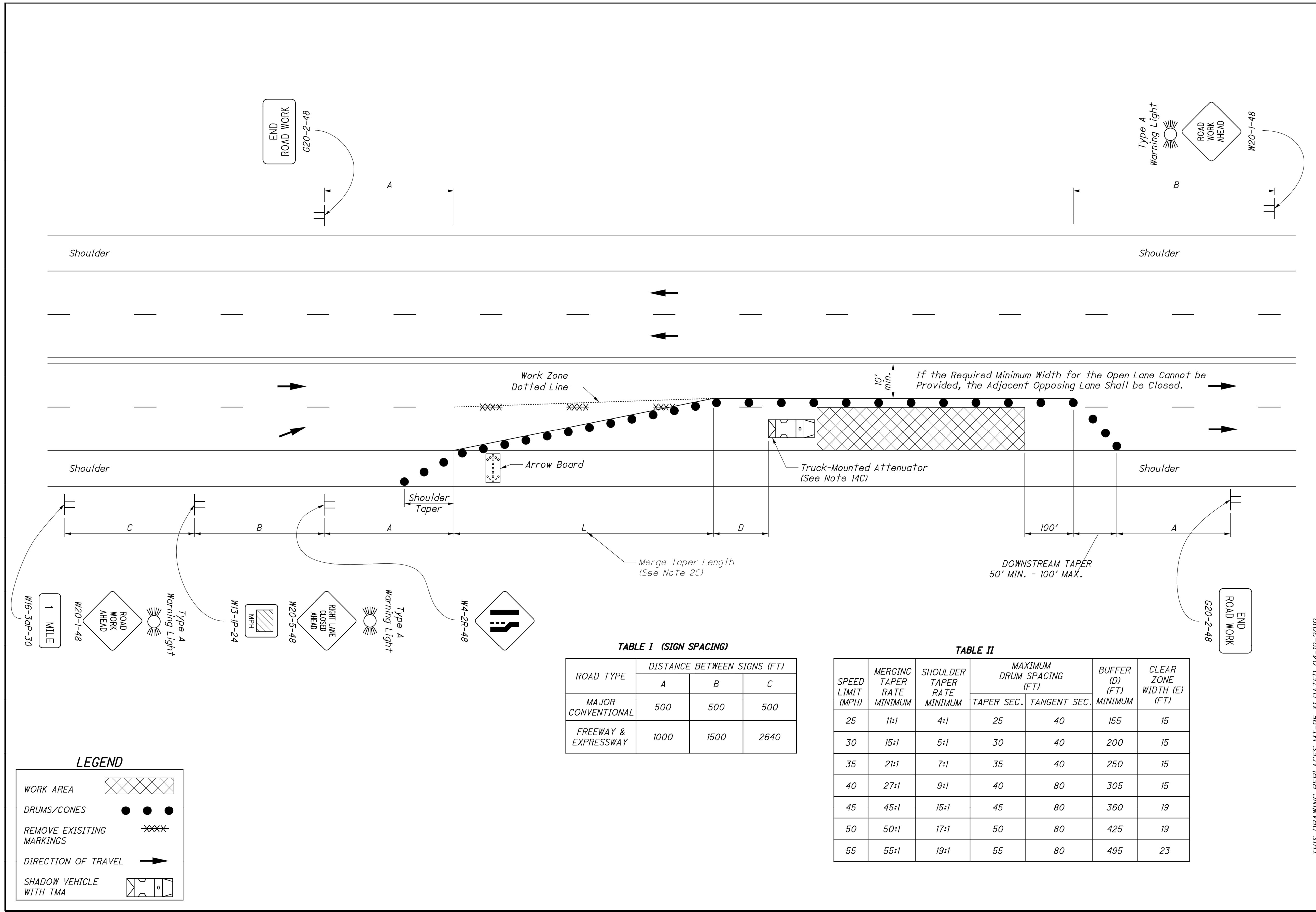
EB ON RAMP MAINTENANCE OF TRAFFIC SHALL BE CONTROLLED BY RESTRICTING ON RAMP LANE WIDTH TO 10 FT MINIMUM WITH A 2 FT SHOULDER WIDTH FOR DURATION OF WORK REQUIRED TO PERFORM TUNNELING AND PIPE INSTALLATION.

\_\_\_\_\_  
 ODOT PERMIT AND LAKE COUNTY ENGINEER'S APPROVAL

THE MOT PLAN FOR WORKING IN THE LIMITED ACCESS AREA OF LAK-2 SHALL BE DEVELOPED BY THE CONTRACTOR AND SUBMITTED TO ODOT FOR APPROVAL OF A RIGHT-OF-WAY AND UTILITIES PERMIT. THE APPLICATION SHALL BE MADE BY THE CONTRACTOR.

 	NO	REVISION	DATE	<div>CITY OF WILLOUGHBY</div> <div>NASON BASIN TO GROVE AVENUE STORM SEWER IMPROVEMENTS PHASE 1</div> <div>LAKE COUNTY</div> <div>WILLOUGHBY, OHIO</div>	ISSUED FOR:	BID	<div>MAINTENANCE OF TRAFFIC 1</div>	PROJECT NO.	
	.	.	.		ISSUE DATE:	02/07/25		150772	
	.	.	.		SCALE:	AS SHOWN		DISCIPLINE	
	.	.	.		DESIGNED BY:	MPC		CIVIL	
	.	.	.		DRAWN BY:	TJM		SHEET NAME	
	.	.	.		CHECKED BY:	LCH		MOT-1	
	.	.	.					SHEET	OF
					20	43			





NO	REVISION	DATE

CITY OF WILLOUGHBY

NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

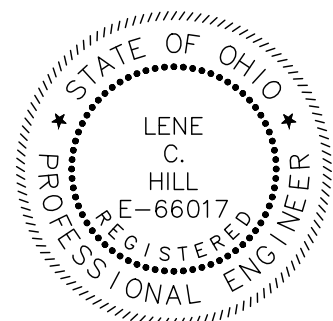
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

MAINTENANCE OF TRAFFIC 2

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
MOT-2	
SHEET	OF
21	43



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Drawing name: H:\2015\150772\DWG\BASE\Phase 1\150772\TALL.dwg Layout: MOT-3 by: mntus



NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

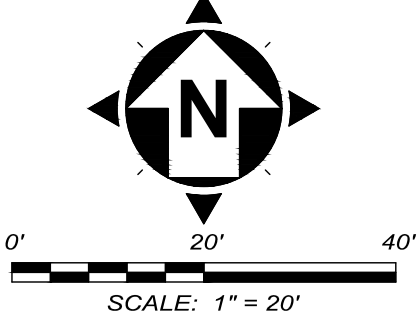
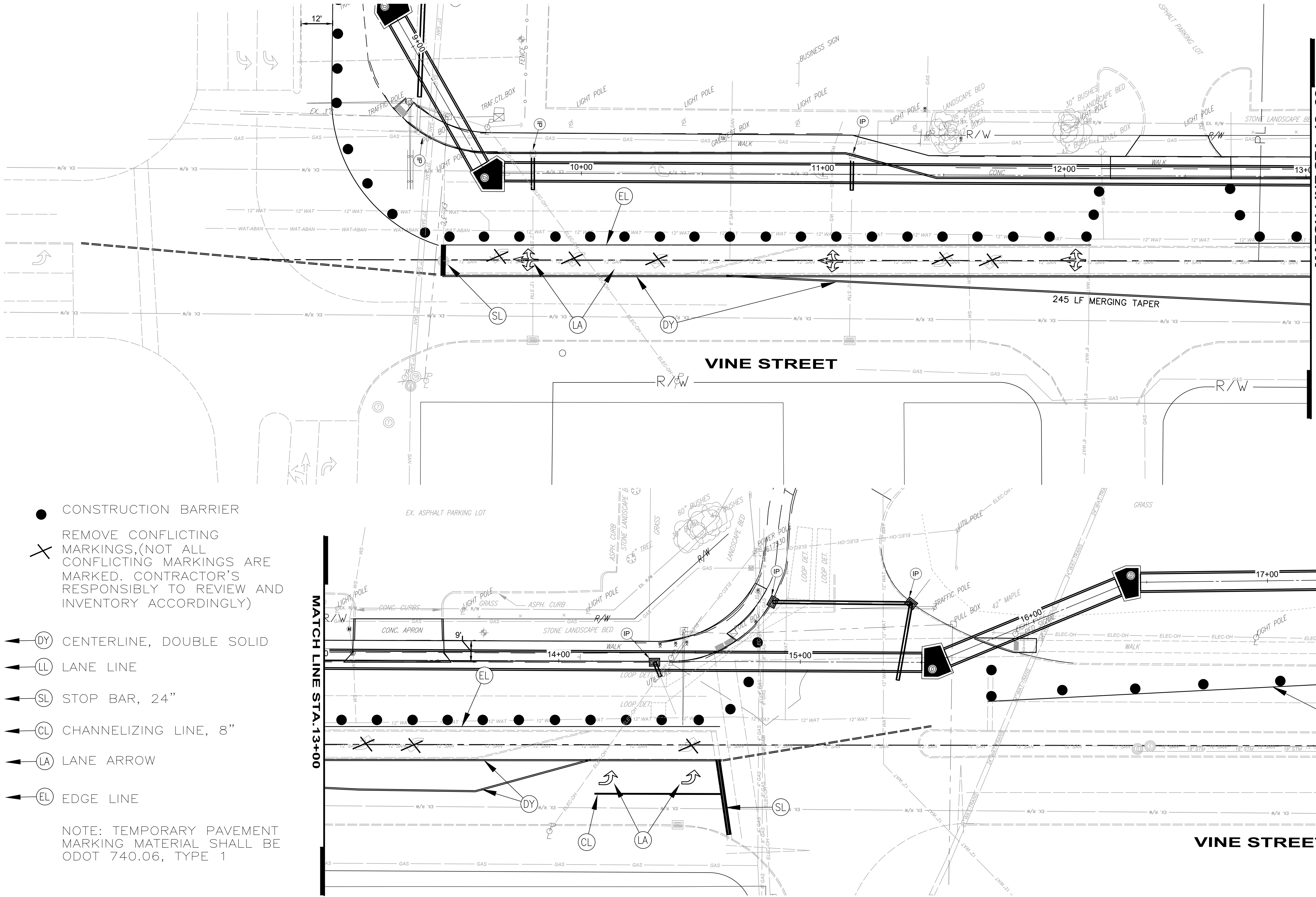
LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

MAINTENANCE OF TRAFFIC 3

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
MOT-3	
SHEET	OF
22	43

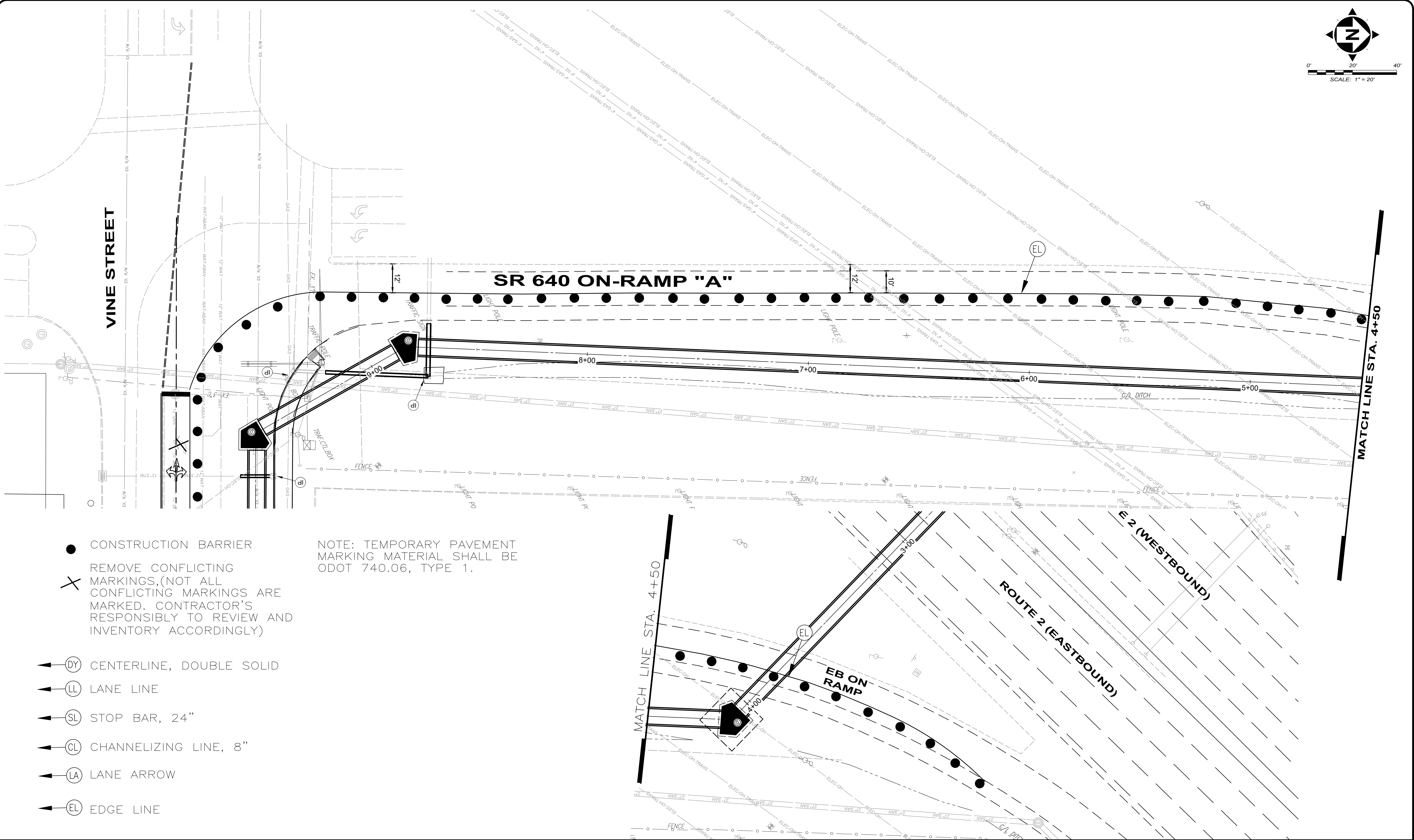


- CONSTRUCTION BARRIER
- ✕ REMOVE CONFLICTING MARKINGS.(NOT ALL CONFLICTING MARKINGS ARE MARKED. CONTRACTOR'S RESPONSIBLY TO REVIEW AND INVENTORY ACCORDINGLY)
- ➡ (DY) CENTERLINE, DOUBLE SOLID
- ➡ (LL) LANE LINE
- ➡ (SL) STOP BAR, 24"
- ➡ (CL) CHANNELIZING LINE, 8"
- ➡ (LA) LANE ARROW
- ➡ (EL) EDGE LINE

NOTE: TEMPORARY PAVEMENT MARKING MATERIAL SHALL BE ODOT 740.06, TYPE 1



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- CONSTRUCTION BARRIER
- ✕ REMOVE CONFLICTING MARKINGS, (NOT ALL CONFLICTING MARKINGS ARE MARKED. CONTRACTOR'S RESPONSIBLY TO REVIEW AND INVENTORY ACCORDINGLY)
- ◄(DY) CENTERLINE, DOUBLE SOLID
- ◄(LL) LANE LINE
- ◄(SL) STOP BAR, 24"
- ◄(CL) CHANNELIZING LINE, 8"
- ◄(LA) LANE ARROW
- ◄(EL) EDGE LINE

NOTE: TEMPORARY PAVEMENT MARKING MATERIAL SHALL BE ODOT 740.06, TYPE 1.

NO	REVISION	DATE

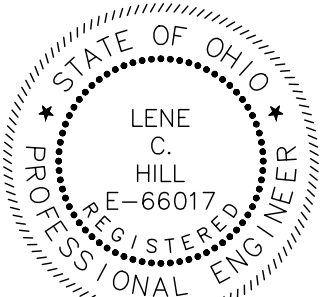
**CITY OF WILLOUGHBY**  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1  
  
LAKE COUNTY  
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**MAINTENANCE OF TRAFFIC 4**

PROJECT NO. <b>150772</b>	
DISCIPLINE <b>CIVIL</b>	
SHEET NAME <b>MOT-4</b>	
SHEET <b>23</b>	OF <b>43</b>





NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

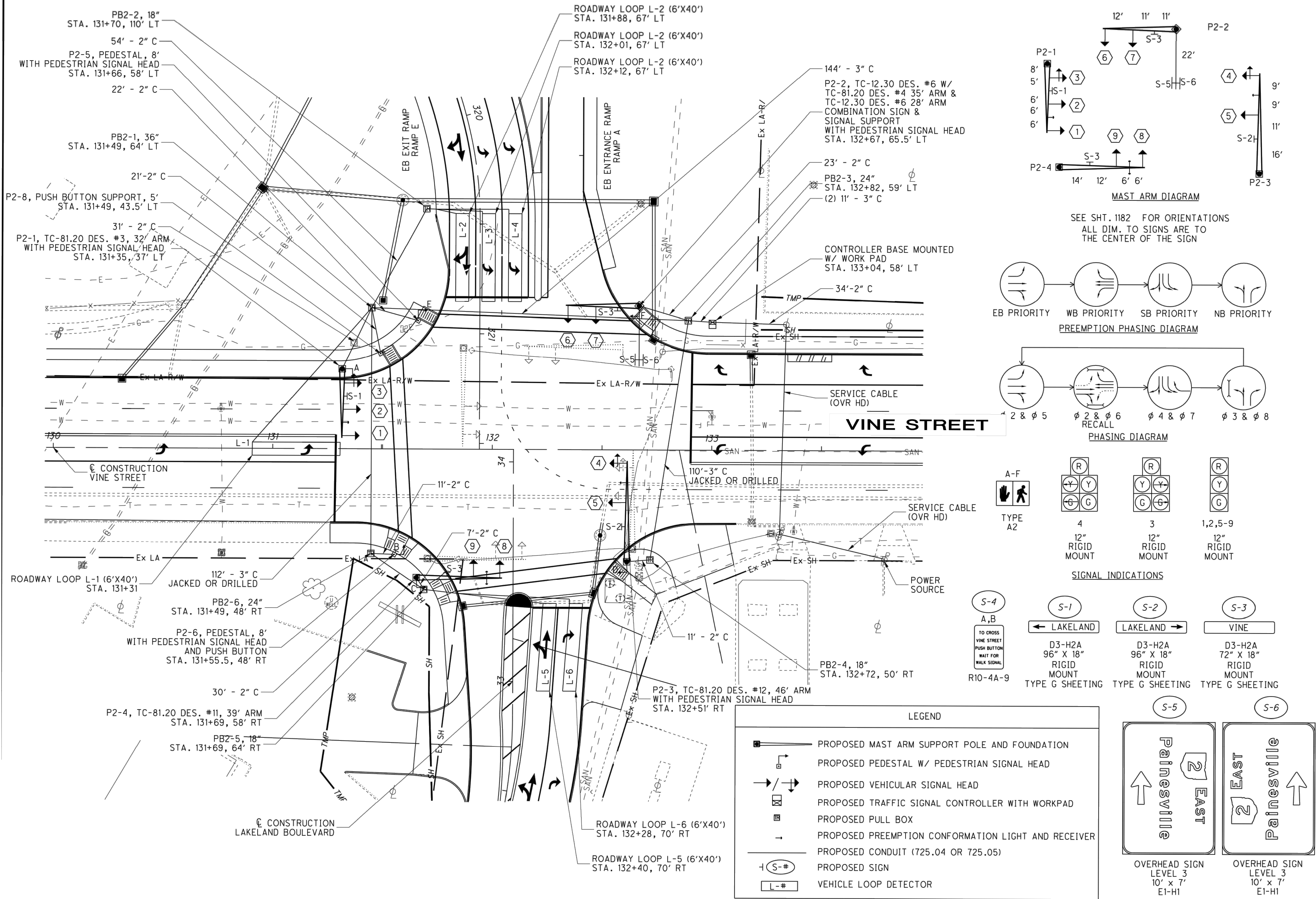
LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

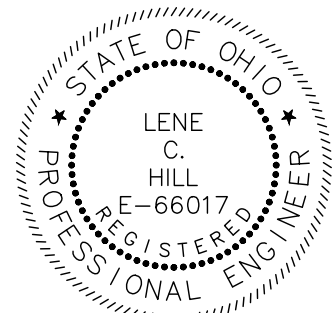
**EXISTING SIGNAL PLAN**  
**FOR REFERENCE 1**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	MOT-5
SHEET	24
OF	43





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Drawing name: H:\2015\150772\DWG\Phase 1\150772.dwg Layout: MOT-6 by: mltus



**verdantas**

NO	REVISION	DATE

<b>CITY OF WILLOUGHBY</b> <b>NASON BASIN TO GROVE AVENUE</b> <b>STORM SEWER IMPROVEMENTS</b> <b>PHASE 1</b>	<b>LAKE COUNTY</b> <b>WILLOUGHBY, OHIO</b>
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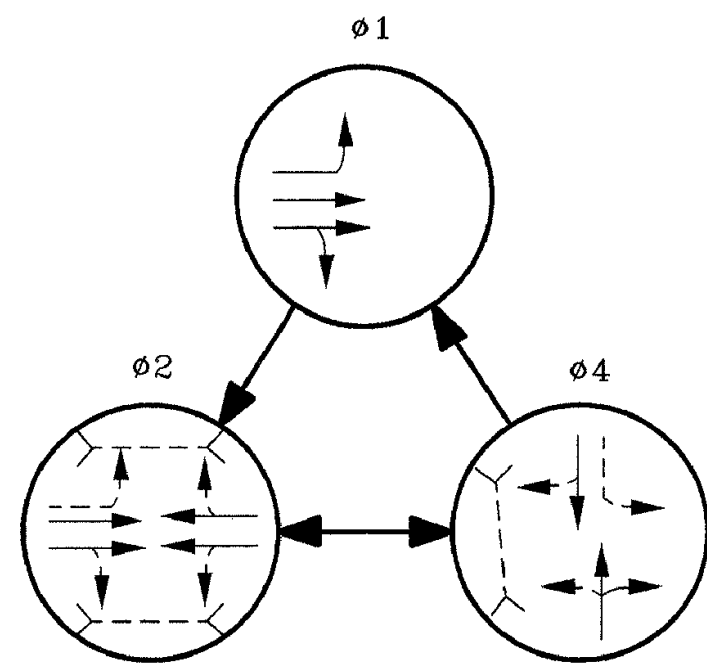
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**EXISTING SIGNAL PLAN**  
**FOR REFERENCE 2**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	MOT-6
SHEET	25
OF	43

CALC. BY: _____	LAKE COUNTY LAK-20-2.70	OHIO
DATE: _____		FHWA REGION <b>5</b>
CHD. BY: _____		FEDERAL
DATE: _____		PROJECT

48  
98



PHASING DIAGRAM

PROP. PULLBOX, PB6  
STA 138+05, 37'L

PROP. SIGNAL SUPPORT, P5  
TYPE TC-81.20 DES. 4, 37' ARM WITH  
PEDESTRIAN SIGNALS AND PUSHBUTTONS  
STA 138+13, 50'L

PROP. PULLBOX, PB7  
STA 138+72, 50'L

REMOVE EXIST. STRAIN POLE  
AND PEDESTRIAN SIGNAL  
STA 138+76, 53'L

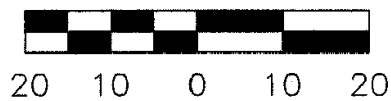
PROP. SIGNAL SUPPORT, P1  
TYPE TC-81.20 DES. 11, 42' ARM  
STA 139+20, 57'L

PROP. PULLBOX, PB1  
STA 139+28, 52'L

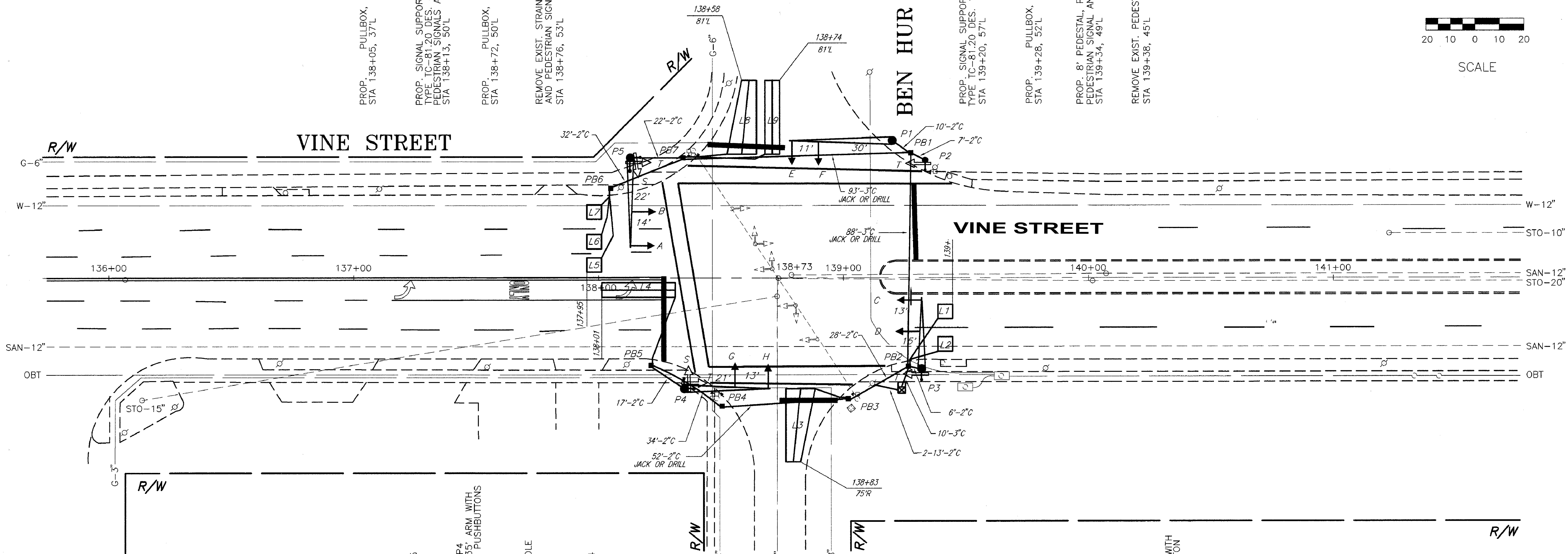
PROP. 8' PEDESTAL, P2 WITH  
PEDESTRIAN SIGNAL AND PUSHBUTTON  
STA 139+34, 49'L

REMOVE EXIST. PEDESTRIAN SIGNALS  
STA 139+38, 45'L

THE UNDERGROUND UTILITIES ARE SHOWN ACCORDING  
TO INFORMATION FURNISHED BY THE UTILITIES CONCERNED.  
THEIR ACCURACY IS NOT GUARANTEED, THEREFORE THEY  
SHOULD BE RECHECKED BEFORE UNDERGROUND  
CONSTRUCTION BEGINS.



SCALE



TO CROSS  
VINE STREET  
PUSH BUTTON  
WAIT FOR  
WALK SIGNAL  
R-73A-9  
QTY. = 2

TO CROSS  
BEN HUR AVE.  
PUSH BUTTON  
WAIT FOR  
WALK SIGNAL  
R-73A-9  
QTY. = 2

TO CROSS  
ST. CLAIR  
PUSH BUTTON  
WAIT FOR  
WALK SIGNAL  
R-73A-9  
QTY. = 2

PED SIGNS

PROP. PULLBOX, PB5  
STA 138+22, 36'R

PROP. SIGNAL SUPPORT, P4  
TYPE TC-81.20 DES. 3, 35' ARM WITH  
PEDESTRIAN SIGNALS AND PUSHBUTTONS  
STA 138+35, 45'R

REMOVE EXIST. STRAIN POLE  
AND PEDESTRIAN SIGNALS  
STA 138+49, 49'R

PROP. PULLBOX, PB4  
STA 138+52, 52'R

PROP. PULLBOX, PB3  
STA 139+03, 49'R

REMOVE EXIST. CONTROLLER  
STA 139+04, 53'R

REMOVE EXIST. STRAIN POLE  
AND PEDESTRIAN SIGNAL  
STA 139+06, 49'R

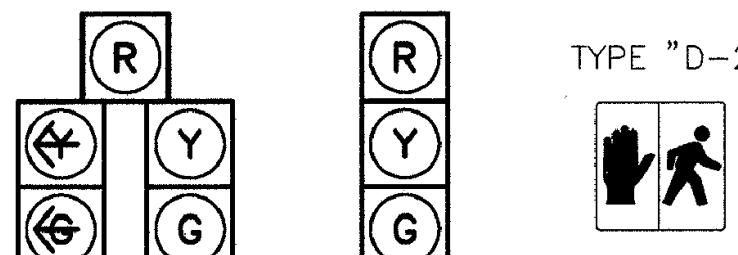
PROP. POWER SOURCE WITH  
1 1/2" DIA CONDUIT RISER  
STA 139+12, 43'R

PROP. CONTROLLER WITH  
FOUNDATION AND WORK PAD  
STA 139+25, 46'R

PROP. PULLBOX, PB2  
STA 139+27, 36'R

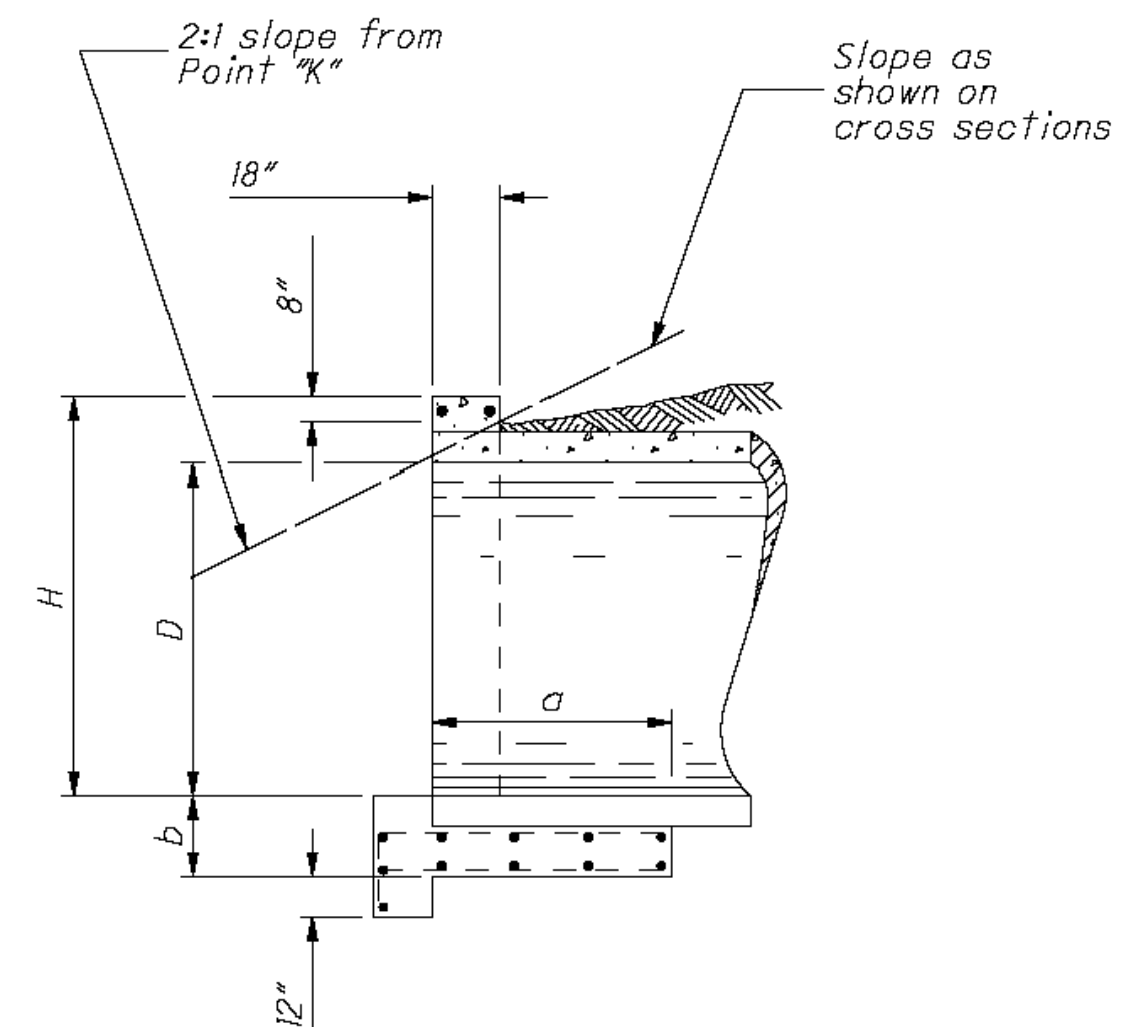
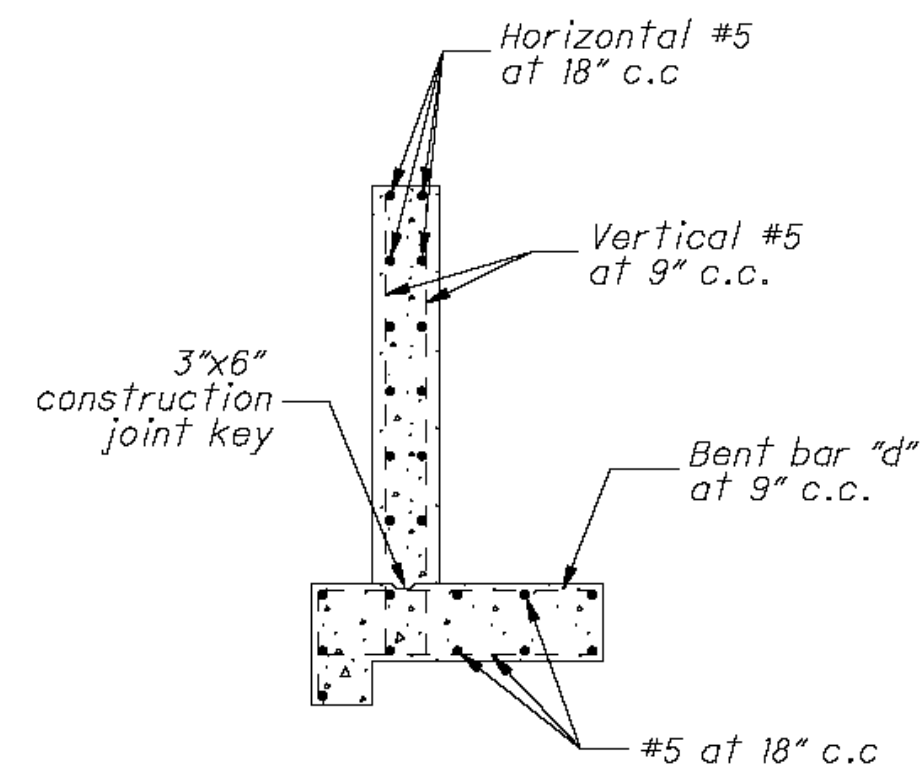
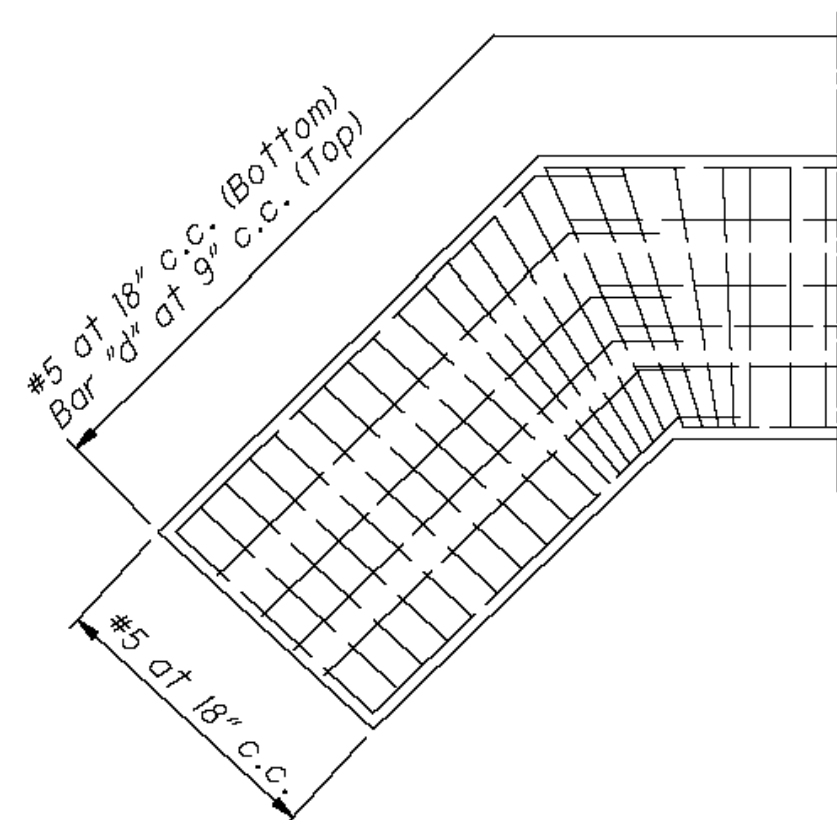
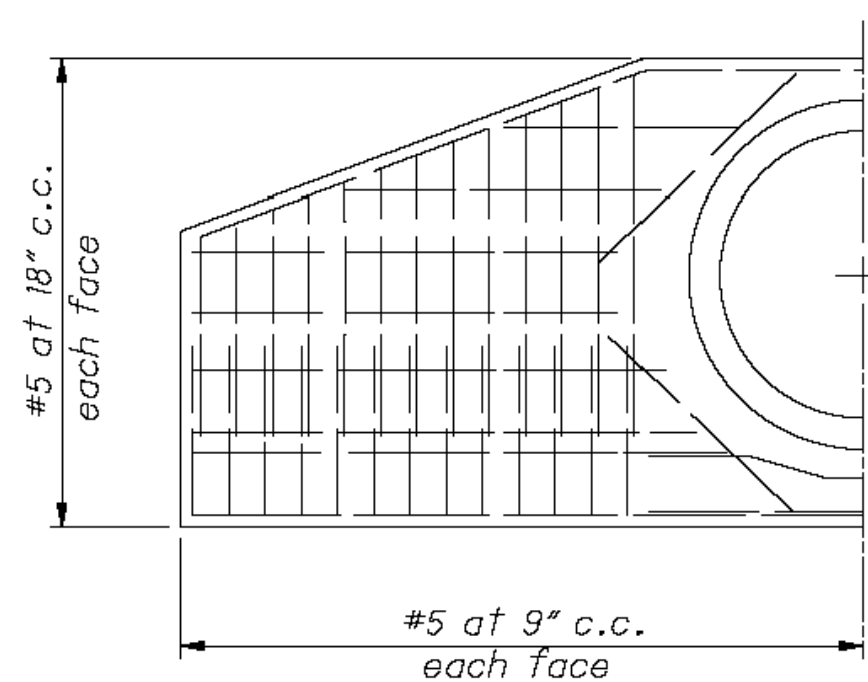
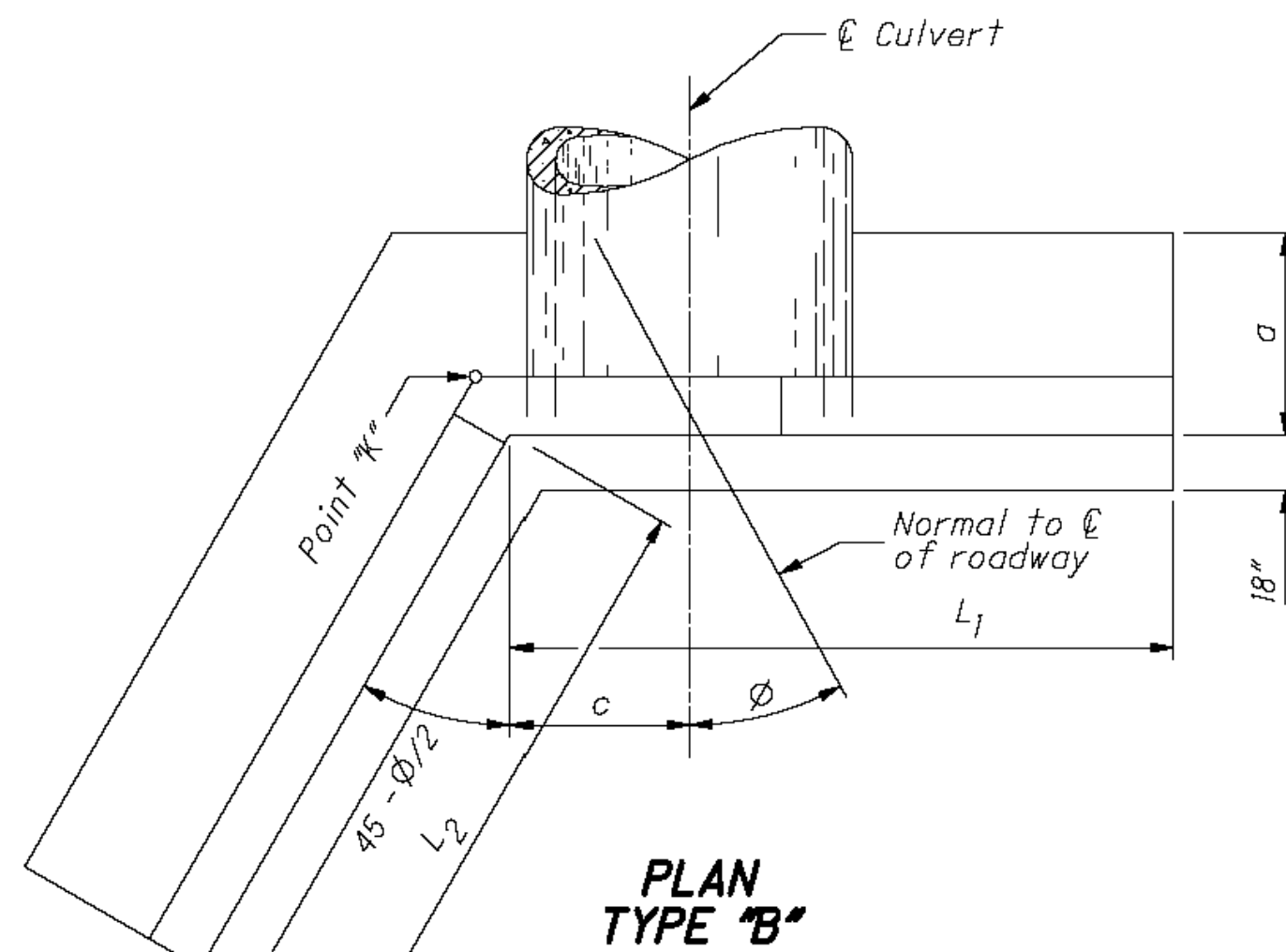
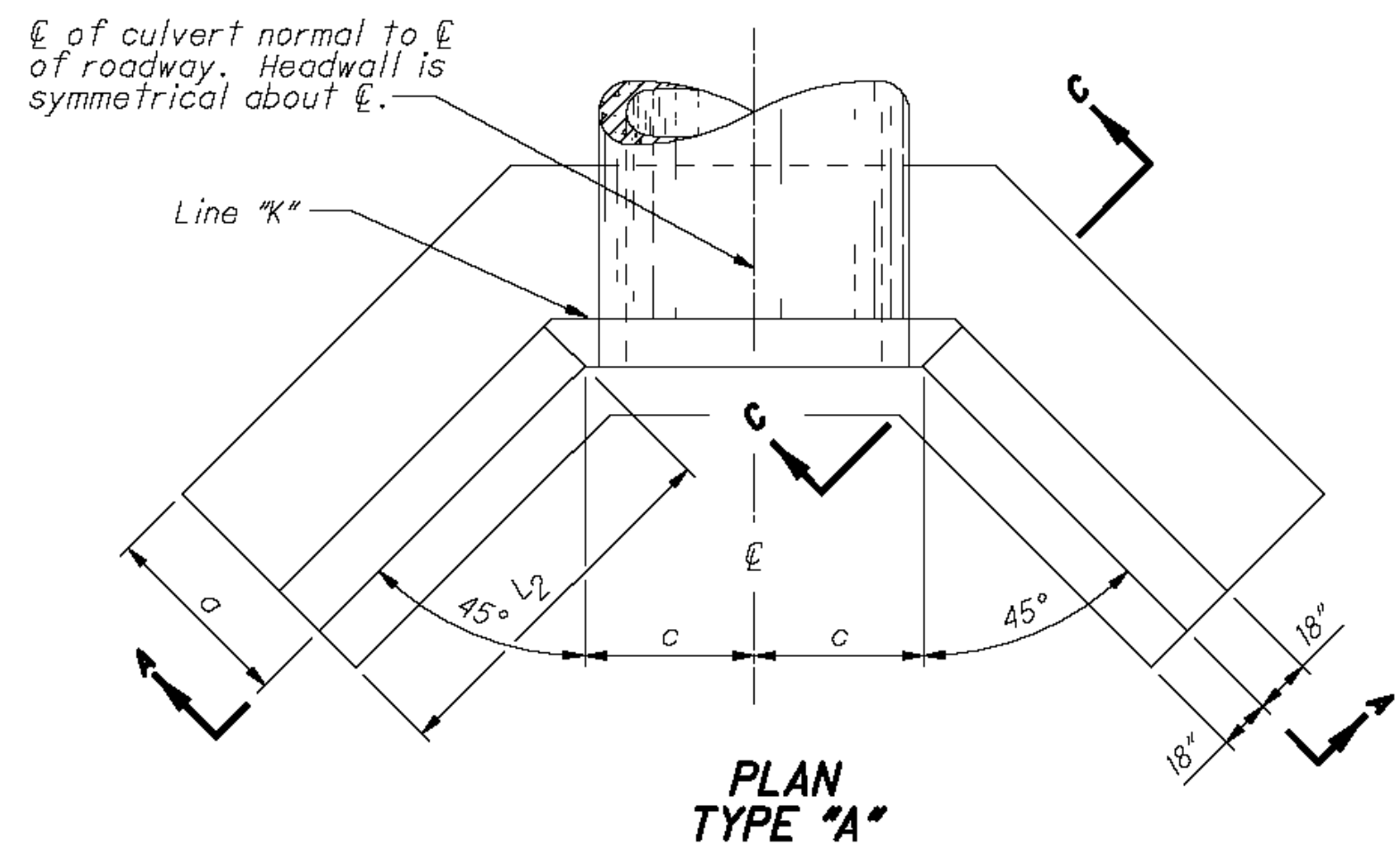
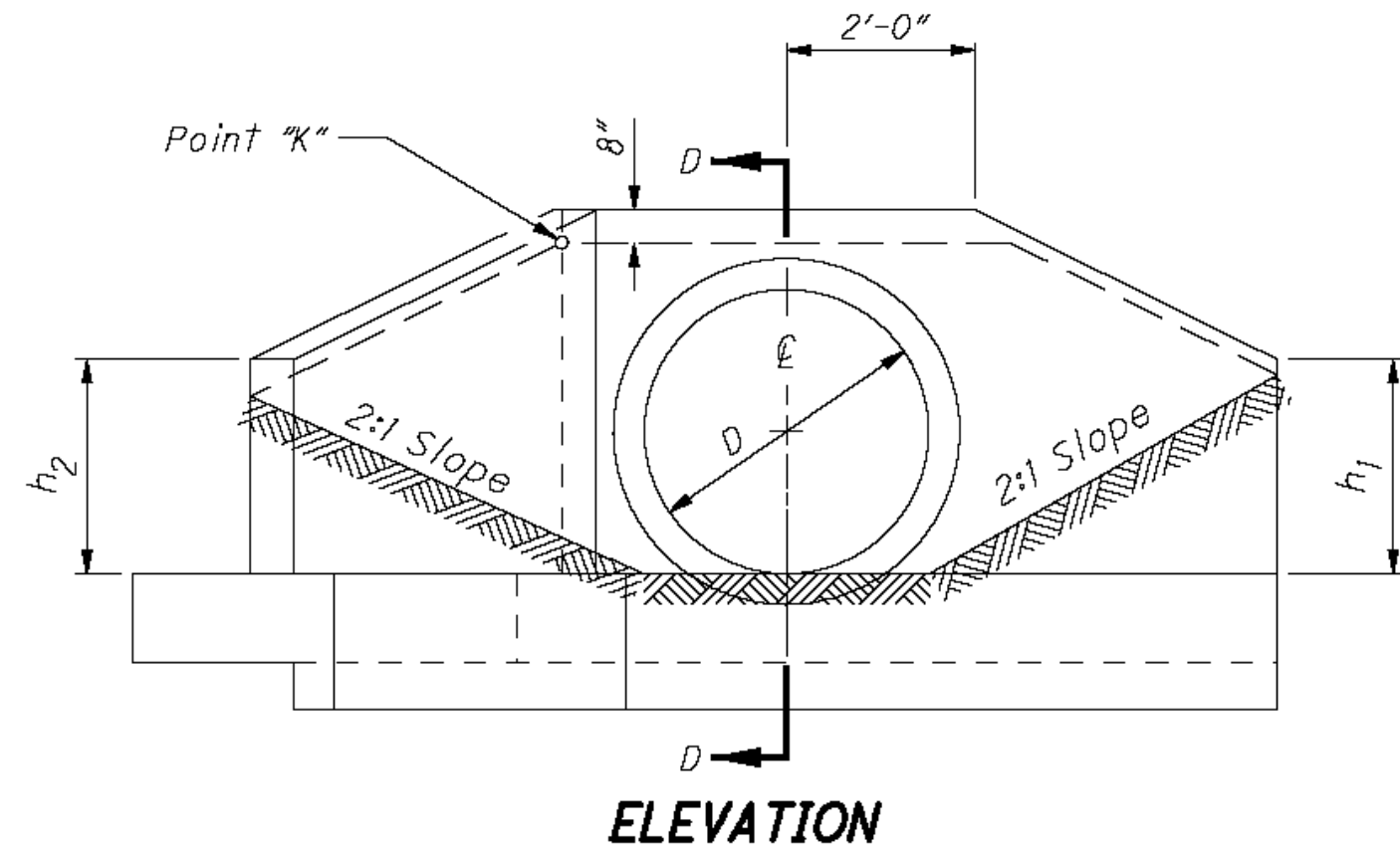
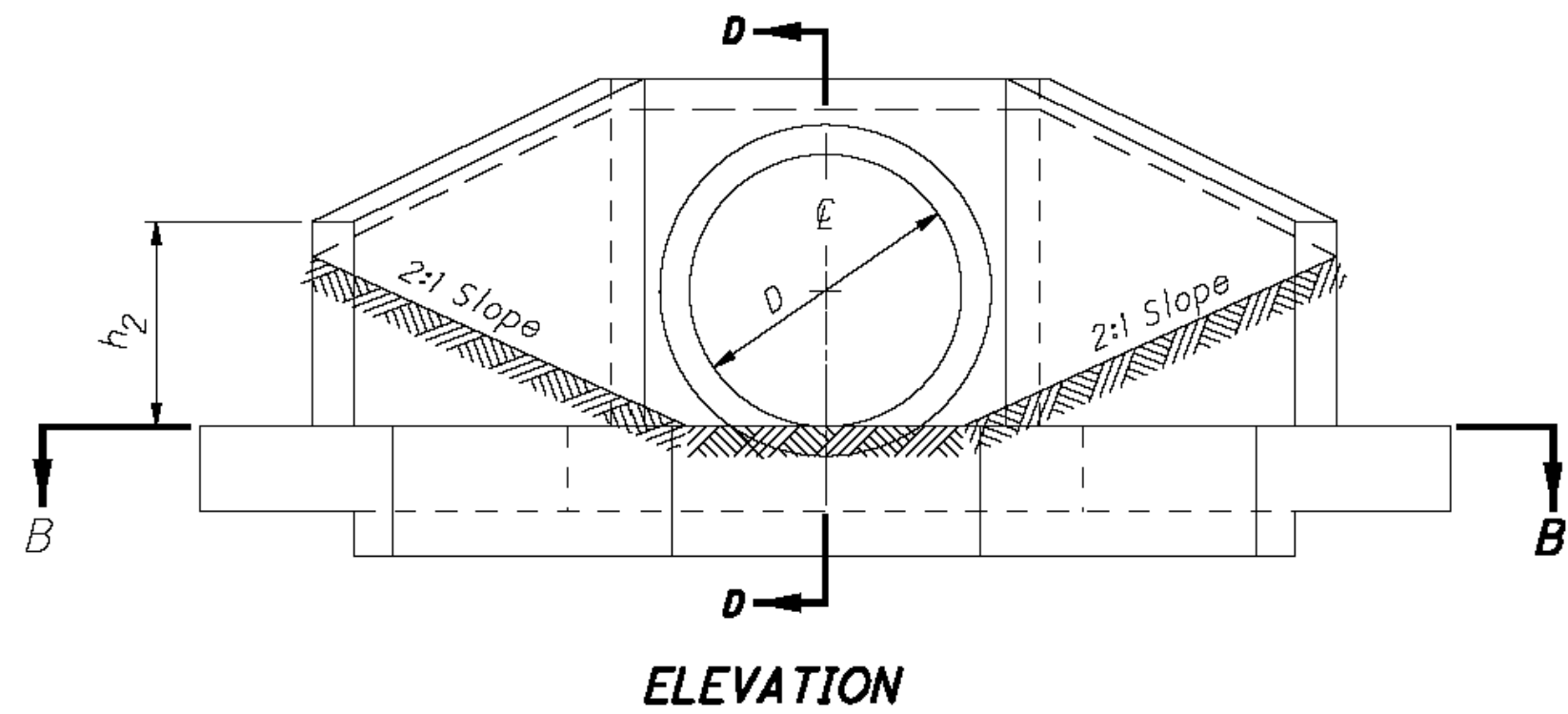
PROP. SIGNAL SUPPORT, P3  
TYPE TC-81.20 DES. 2, 29' ARM WITH  
PEDESTRIAN SIGNAL AND PUSHBUTTON  
STA 139+33, 37'R

SIGNALS



ALL HEADS ARE 12" POLY





## NOTES

**APPLICATION:** Provide Full Height Headwalls for skewed and non-skewed culverts having a diameter or rise of 42" to 84" inclusive. Use Type "A" when the skew angle ( $\phi$ ) is ten degrees or less and Type "B" when the skew angle is over ten degrees.

**CONCRETE:** Use 4000 psi compressive strength concrete.

**REINFORCING STEEL:** Provide epoxy coated #5 bars.

**DETAILS AND QUANTITIES:** Are shown for circular sections only. When used with reinforced elliptical concrete pipe or corrugated metal pipe arches, adjust dimensions and quantities to conform to those listed for the nearest size circular pipe. Apply the dimensions established by vertical diameter to span. Round all calculated dimensions established by horizontal diameter to the nearest 1". Chamfer all exposed corners  $\frac{1}{4}$ ".

**FOUNDATION:** Where the soil borings indicate a bearing capacity of less than 2,600 pounds per square foot, increase the width of the footing.

**HEADWALL LOCATION:** Determine by the intersection of the embankment slope at the back of the headwall at point "K". Provide 2:1 slopes adjacent to the headwall.

**PAYMENT:** Item 602 Concrete Masonry includes reinforcing.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION  
STATE HYDRAULIC ENGINEER

REVISIONS  
7/30/07  
7/20/12  
1/18/13

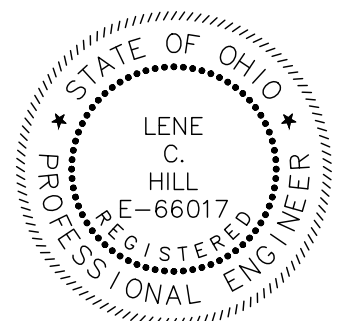
ROADWAY  
ENGINEER  
MOTT  
COZZOLI

OFFICE OF  
HYDRAULIC  
ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING  
FULL-HEIGHT HEADWALLS

SCD NUMBER  
HW-1.1

1 / 2



verdantas

NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

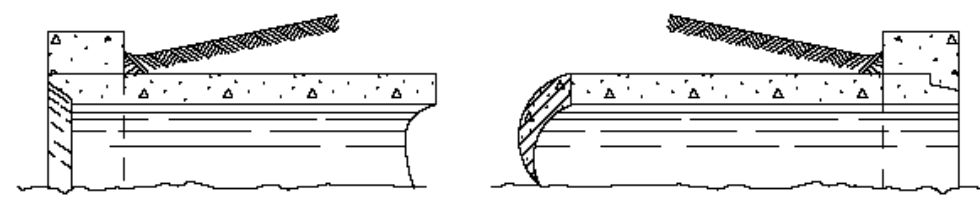
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

HEADWALL DETAILS 1

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	HW DET-1
SHEET	26
OF	43

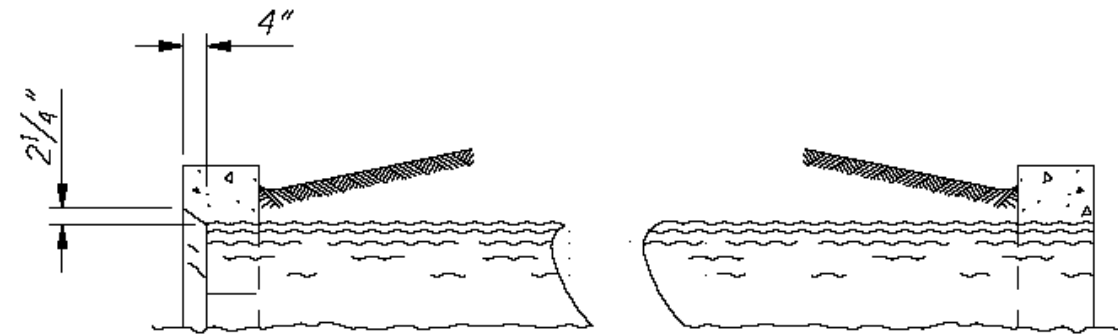




INLET END  
GROOVE OR BELL  
UPSTREAM

OUTLET END

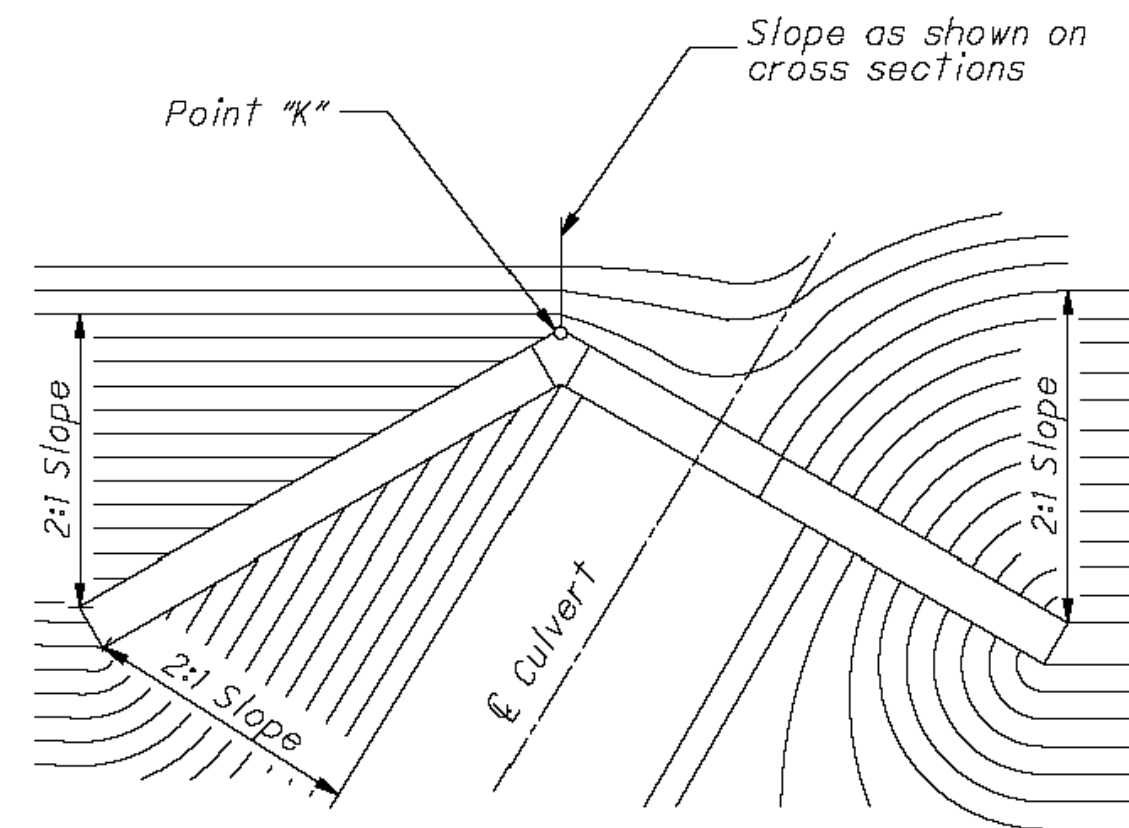
RIGID PIPE



INLET END

OUTLET END

CORRUGATED PIPE  
END TREATMENT OF HEADWALL



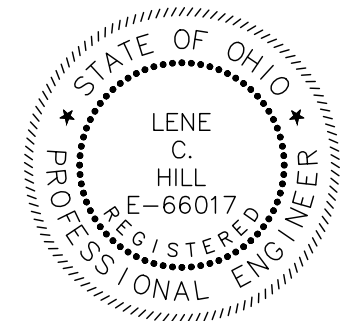
LOCATION AND GRADING PLAN FOR  
SKEWED PIPE CULVERT - TYPE B

FULL-HEIGHT HEADWALLS (English)																																
PIPE DIA. D	H	a	b	c	Bar# d	$\phi \approx 0^\circ$					$\phi \approx 15^\circ$						$\phi \approx 30^\circ$						$\phi \approx 45^\circ$						PIPE DIA. D			
						L <sub>2</sub>	h <sub>2</sub>	Conc. CMP (cy)	Conc. RCP (cy)	Steel (lbs.)	L <sub>1</sub>	L <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	Conc. CMP (cy)	Conc. RCP (cy)	Steel (lbs.)	L <sub>1</sub>	L <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	Conc. CMP (cy)	Conc. RCP (cy)	Steel (lbs.)	L <sub>1</sub>	L <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>		Conc. CMP (cy)	Conc. RCP (cy)	Steel (lbs.)
42"	4'-11"	3'-3"	1'-6"	2'-6"	#5	3'-7"	3'-1"	7.0	6.7	598	8'-9"	4'-6"	3'-8"	3'-2"	7.3	7.1	619	7'-10"	5'-9"	3'-2"	3'-3"	7.5	7.3	633	7'-10"	7'-9"	3'-2"	3'-3"	8.7	8.5	718	42"
48"	5'-5"	3'-6"	1'-6"	2'-9"	#5	4'-4"	3'-4"	8.5	8.2	793	10'-0"	5'-4"	4'-1"	3'-5"	9.0	8.7	776	8'-9"	6'-10"	3'-5"	3'-6"	9.1	8.8	801	8'-9"	9'-2"	3'-5"	3'-7"	10.6	10.3	925	48"
54"	5'-11"	3'-9"	1'-6"	3'-0"	#5	5'-2"	3'-8"	10.3	10.0	1,069	11'-4"	6'-3"	4'-6"	3'-8"	10.9	10.5	1,026	9'-8"	7'-11"	3'-8"	3'-9"	10.8	10.5	1,024	9'-8"	10'-7"	3'-8"	3'-10"	12.6	12.2	1,188	54"
60"	6'-6"	4'-0"	1'-6"	3'-3"	#5	5'-11"	3'-11"	12.3	11.8	1,149	12'-7"	7'-2"	4'-10"	4'-0"	12.9	12.4	1,174	10'-7"	9'-0"	3'-10"	4'-1"	12.7	12.3	1,157	10'-7"	12'-0"	3'-10"	4'-1"	14.8	14.3	1,354	60"
72"	7'-7"	4'-6"	1'-7"	3'-9"	#7	7'-5"	4'-5"	17.0	16.2	1,783	15'-1"	8'-11"	5'-7"	4'-6"	17.8	17.1	1,811	12'-5"	11'-2"	4'-3"	4'-7"	17.3	16.6	1,788	12'-5"	14'-10"	4'-3"	4'-8"	20.2	19.6	2,076	72"
84"	8'-8"	5'-0"	1'-10"	4'-6"	#8	9'-0"	5'-4"	22.8	22.8	2,596	17'-7"	10'-9"	6'-4"	5'-1"	24.8	23.9	2,596	14'-7"	13'-4"	4'-10"	5'-2"	24.1	23.3	2,511	14'-7"	17'-8"	4'-8"	5'-2"	27.9	27.0	2,990	84"
10'-0"		4'-6"				6'-2"																										

10'-0"

4'-6"

6'-2"



NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1  
  
LAKE COUNTY

ISSUED FOR: BID  
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CHECKED BY: LCH

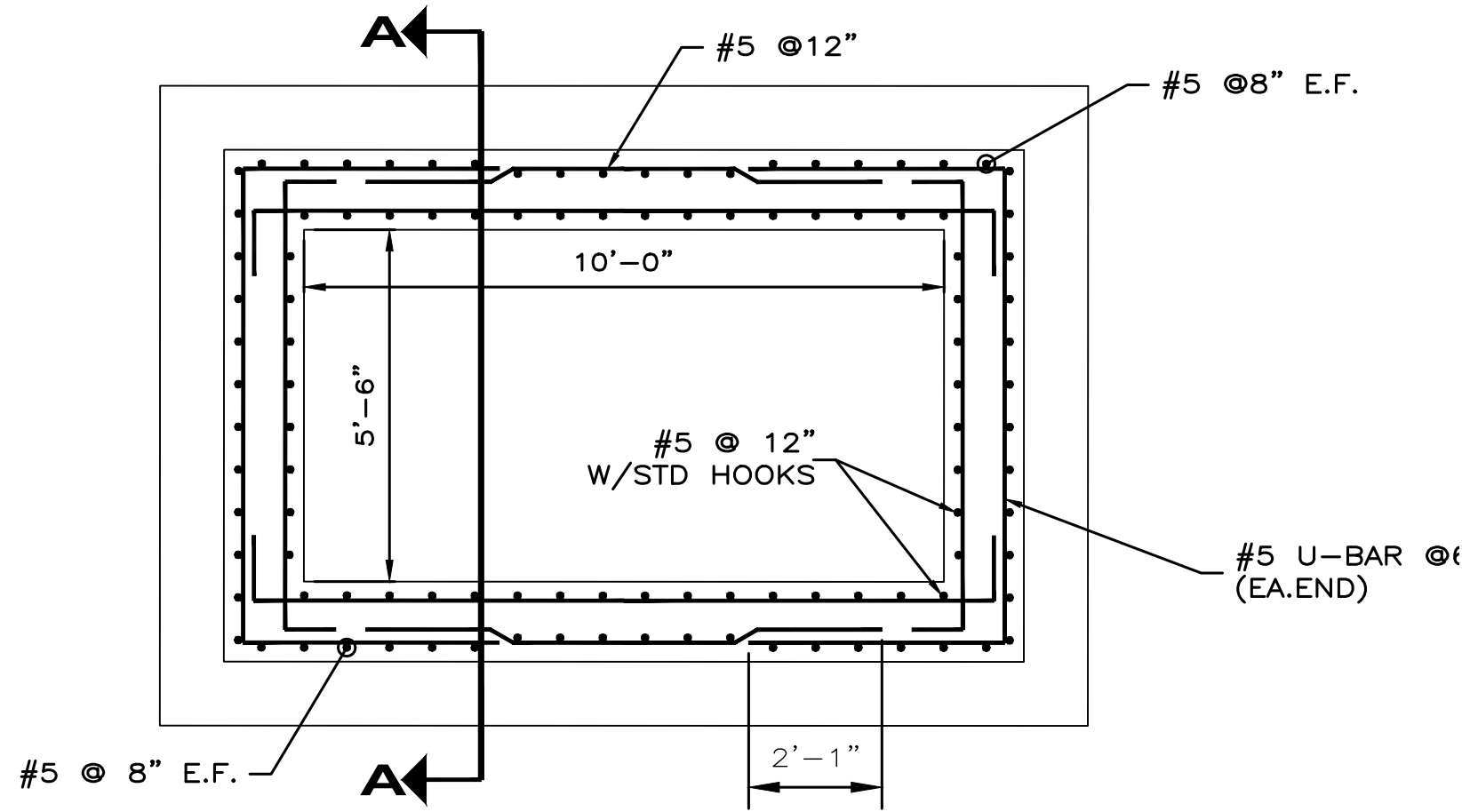
HEADWALL DETAILS 2

PROJECT NO. <b>150772</b>	
DISCIPLINE <b>CIVIL</b>	
SHEET NAME <b>HW DET-2</b>	
SHEET <b>27</b>	OF <b>43</b>

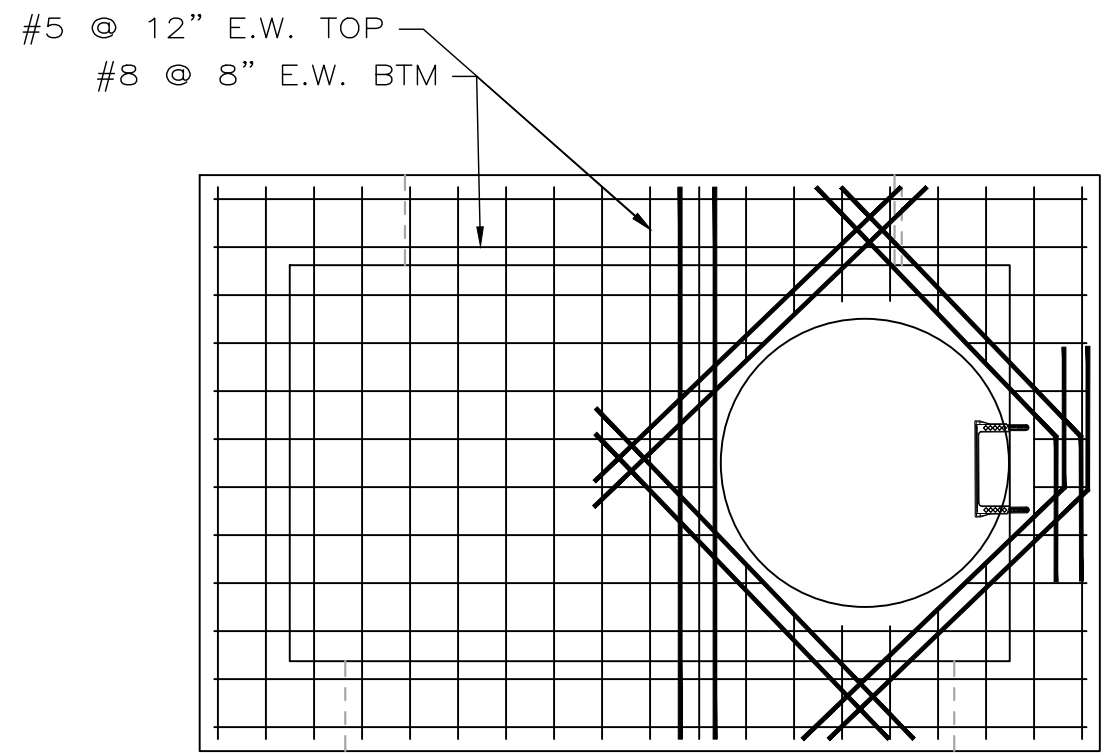


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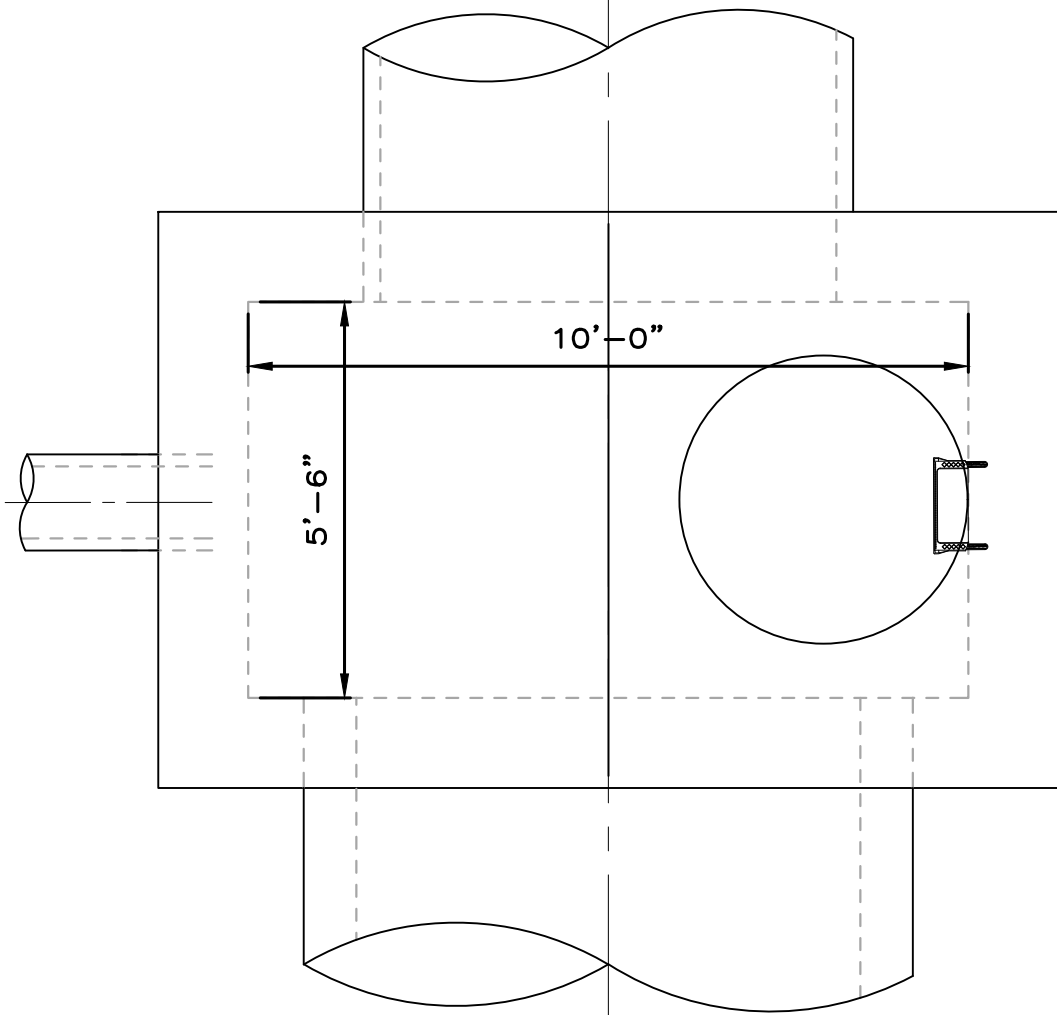
1. SEE STANDARD DETAILS FOR REINFORCING AROUND OPENINGS
2. CONCRETE CLASS QC1 – COMPRESSIVE STRENGTH = 4000 PSI
3. REINFORCING STEEL – GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI EPOXY COATED
4. CONTRACTOR HAS OPTION TO UTILIZE PRECAST CONCRETE MANHOLE STRUCTURES. THE STRUCTURE. NO ADDITIONAL PAYMENT TO CONTRACTOR SHALL BE MADE FOR PRECAST STRUCTURES.
5. PRECAST MANHOLE STRICTURES SHALL UTILIZE WATERPROOFING MEMBRANE AROUND FABRICATED STRUCTURE JOINTS.
6. PIPE TO MANHOLE CONNECTORS A-LOK OR APPROVED EQUIVALENT SHALL BE UTILIZED IN PRECAST SECTIONS.
7. PROVIDE MANHOLE STEPS 16" O/C.



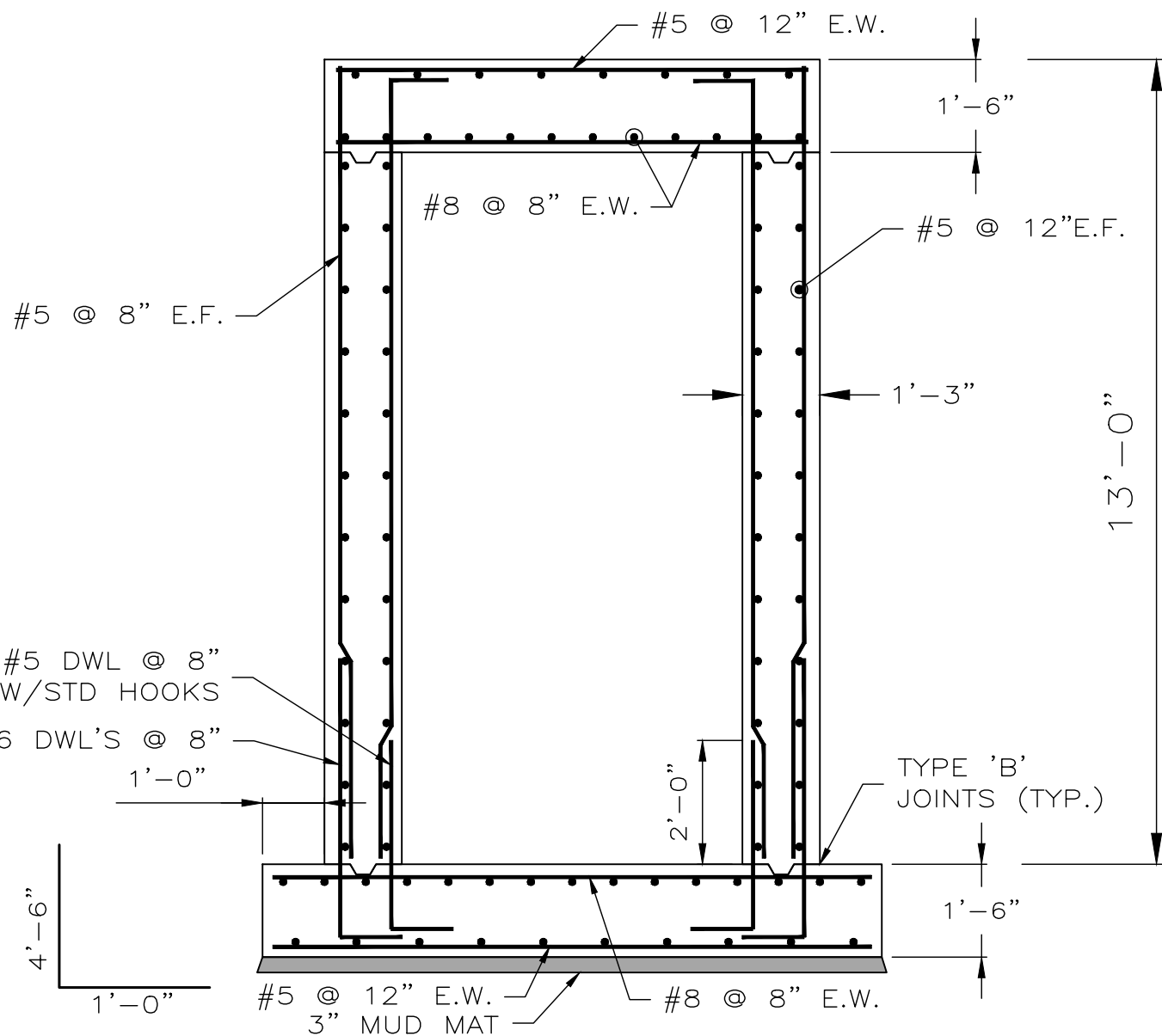
**JUNCTION CHAMBER #1  
MANHOLE REINFORCING PLAN**  
Scale 3/8"=1'-0"



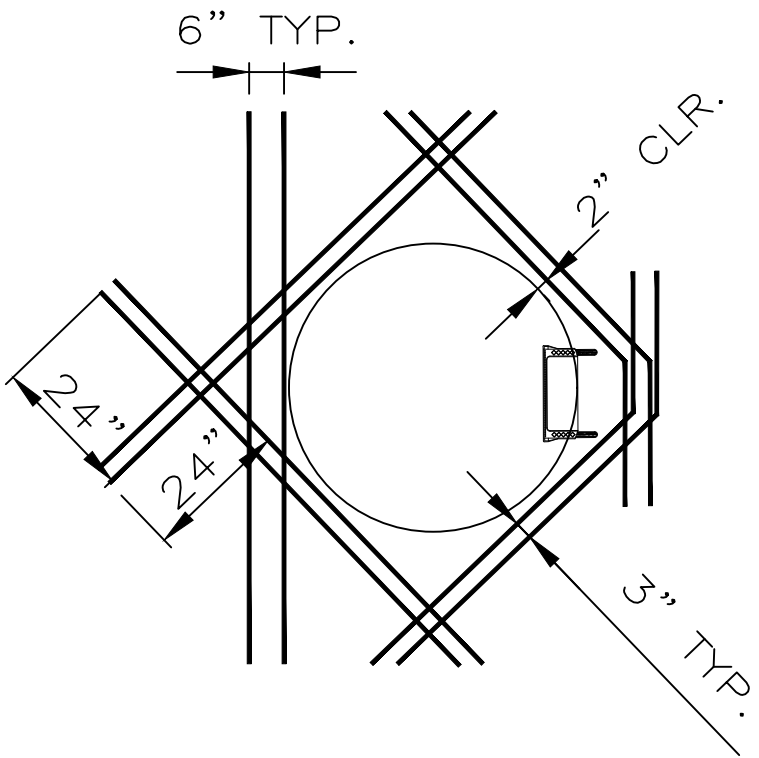
**JUNCTION CHAMBER #1  
MANHOLE TOP SLAB PLAN**  
Scale 3/8"=1'-0"



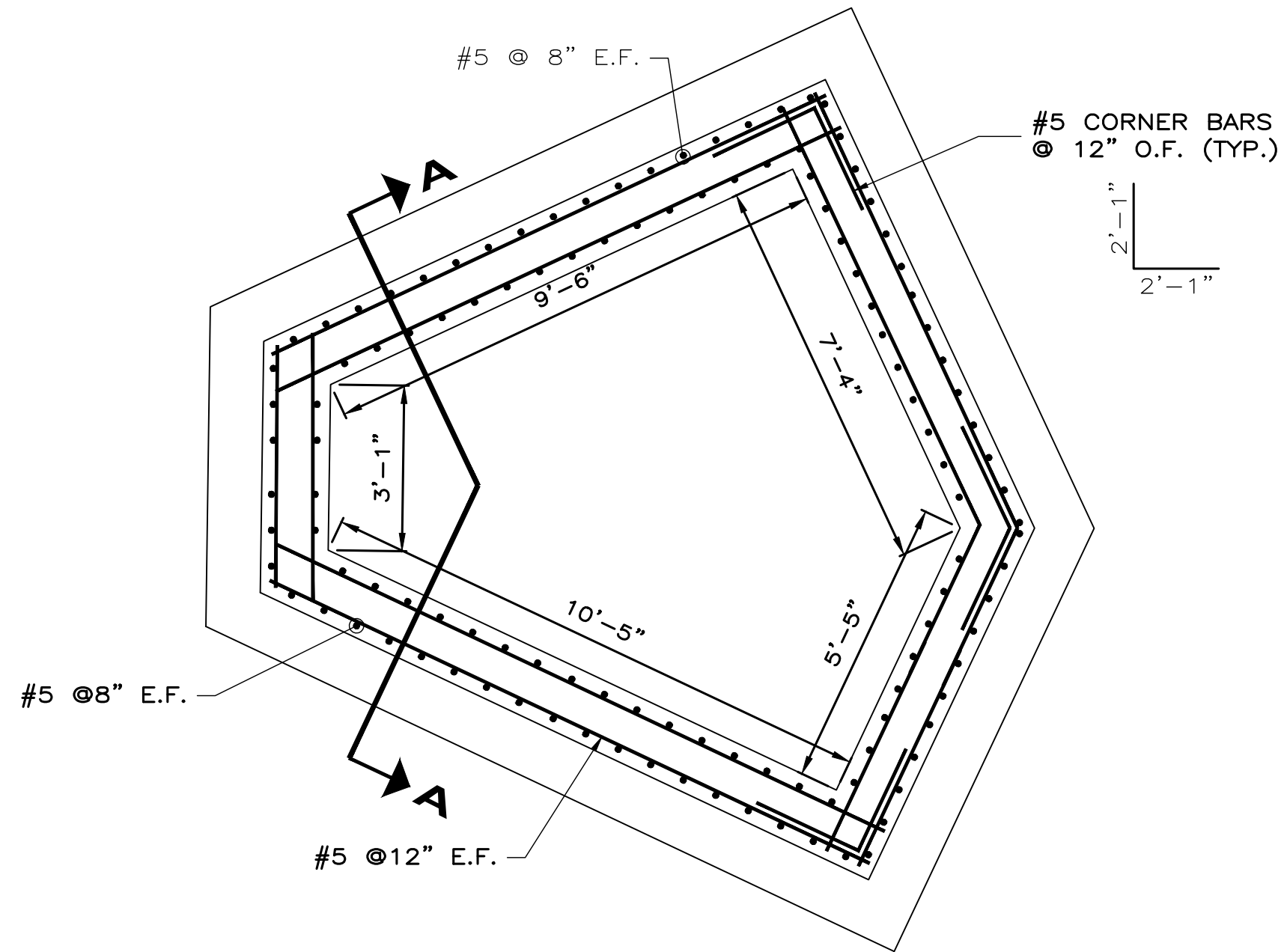
**JUNCTION CHAMBER #1  
MANHOLE TOP SLAB SIZING**  
Scale 3/8"=1'-0"



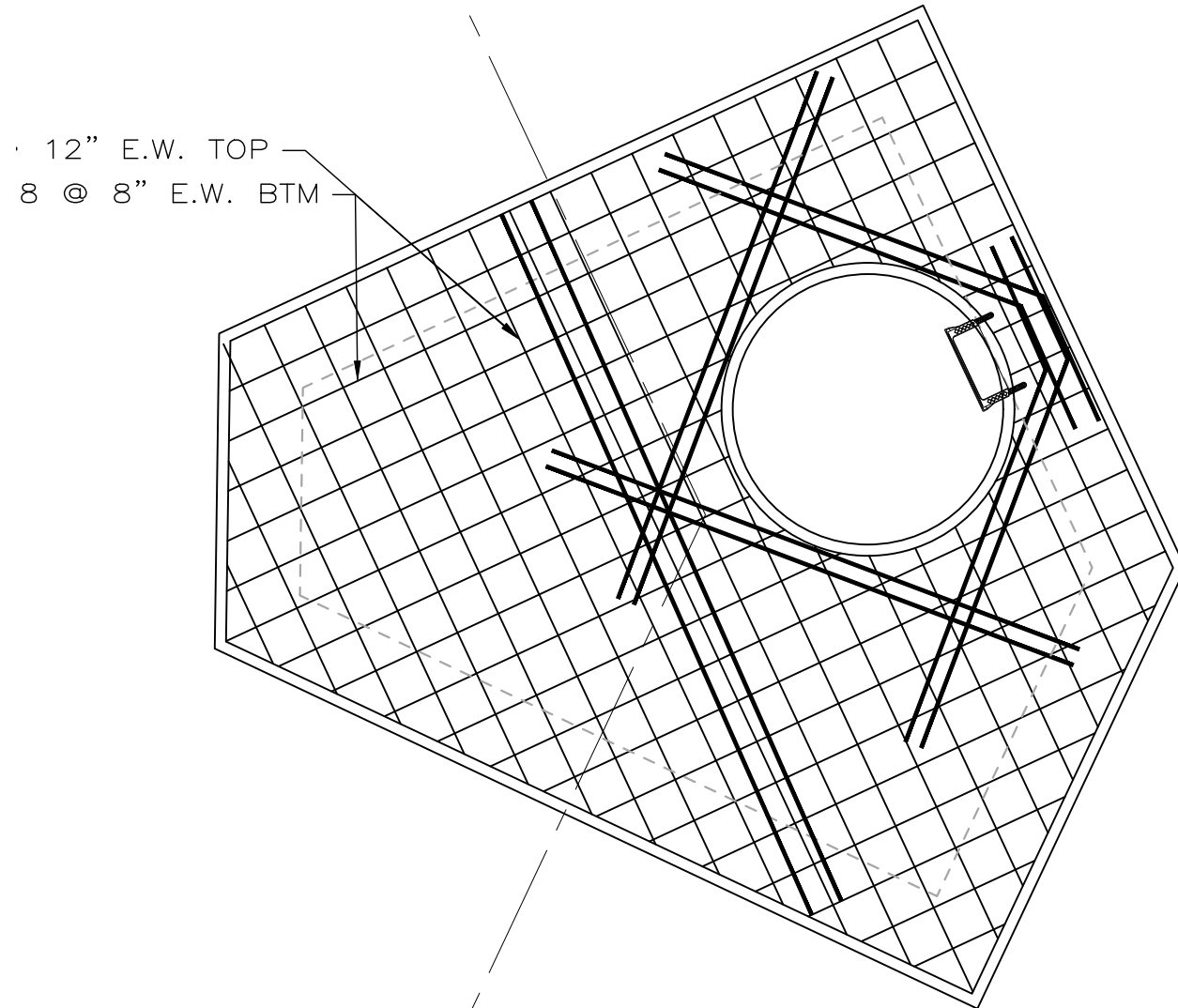
**SECTION A-A**  
Scale 3/8"=1'-0"



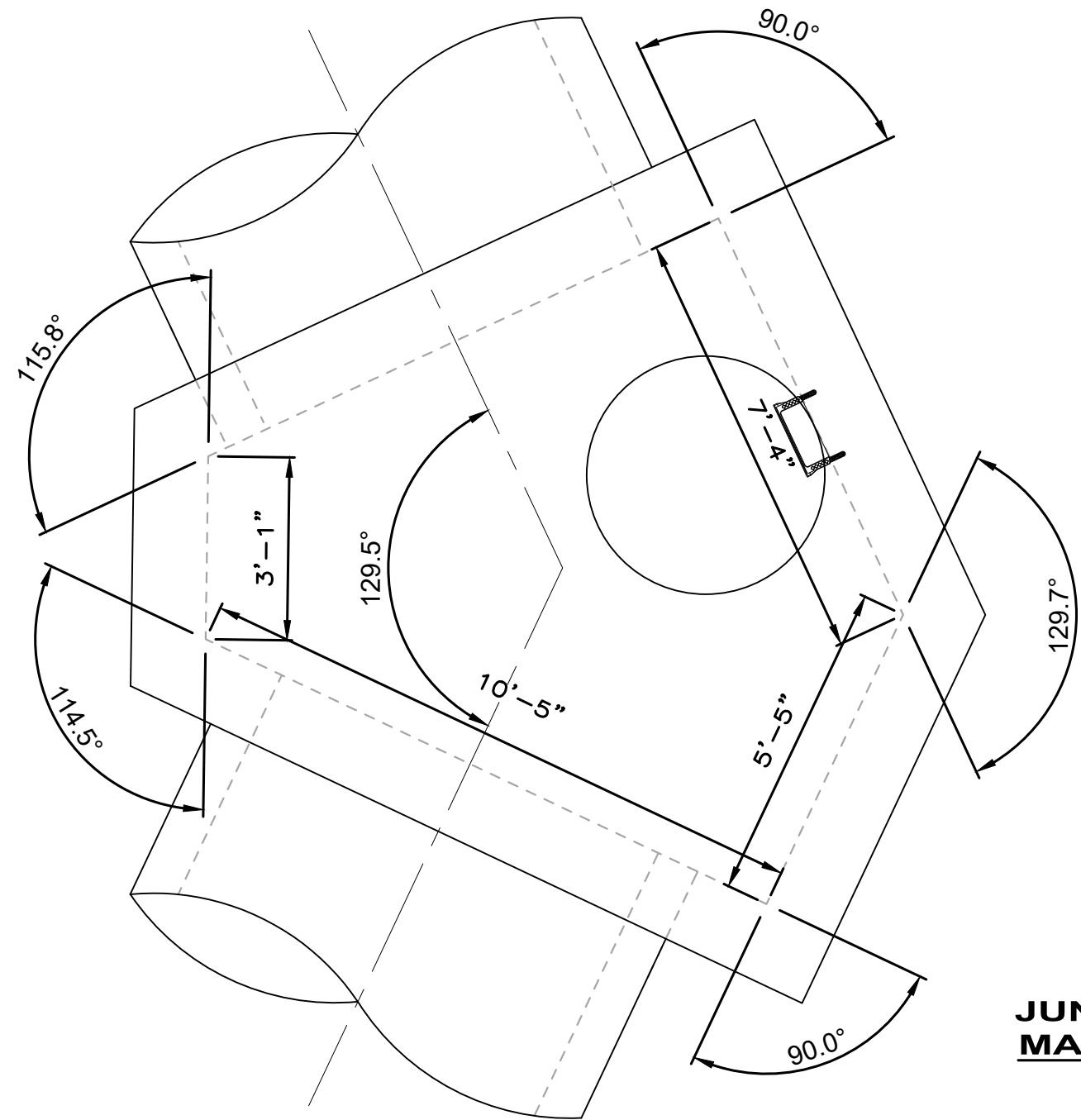
**JUNCTION CHAMBER #1  
MANHOLE CLEARANCE DETAILS**  
Scale 3/8"=1'-0"



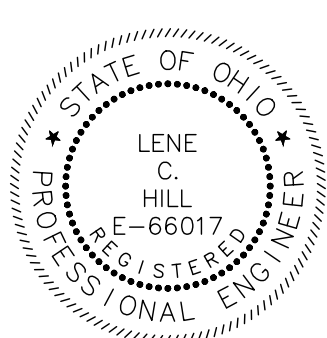
**JUNCTION CHAMBER #2  
MANHOLE REINFORCING PLAN**  
Scale 3/8"=1'-0"



**JUNCTION CHAMBER #2  
MANHOLE TOP SLAB PLAN**  
Scale 3/8"=1'-0"



**JUNCTION CHAMBER #2  
MANHOLE DIMENSIONS**  
Scale 3/8"=1'-0"



**verdantas**

NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

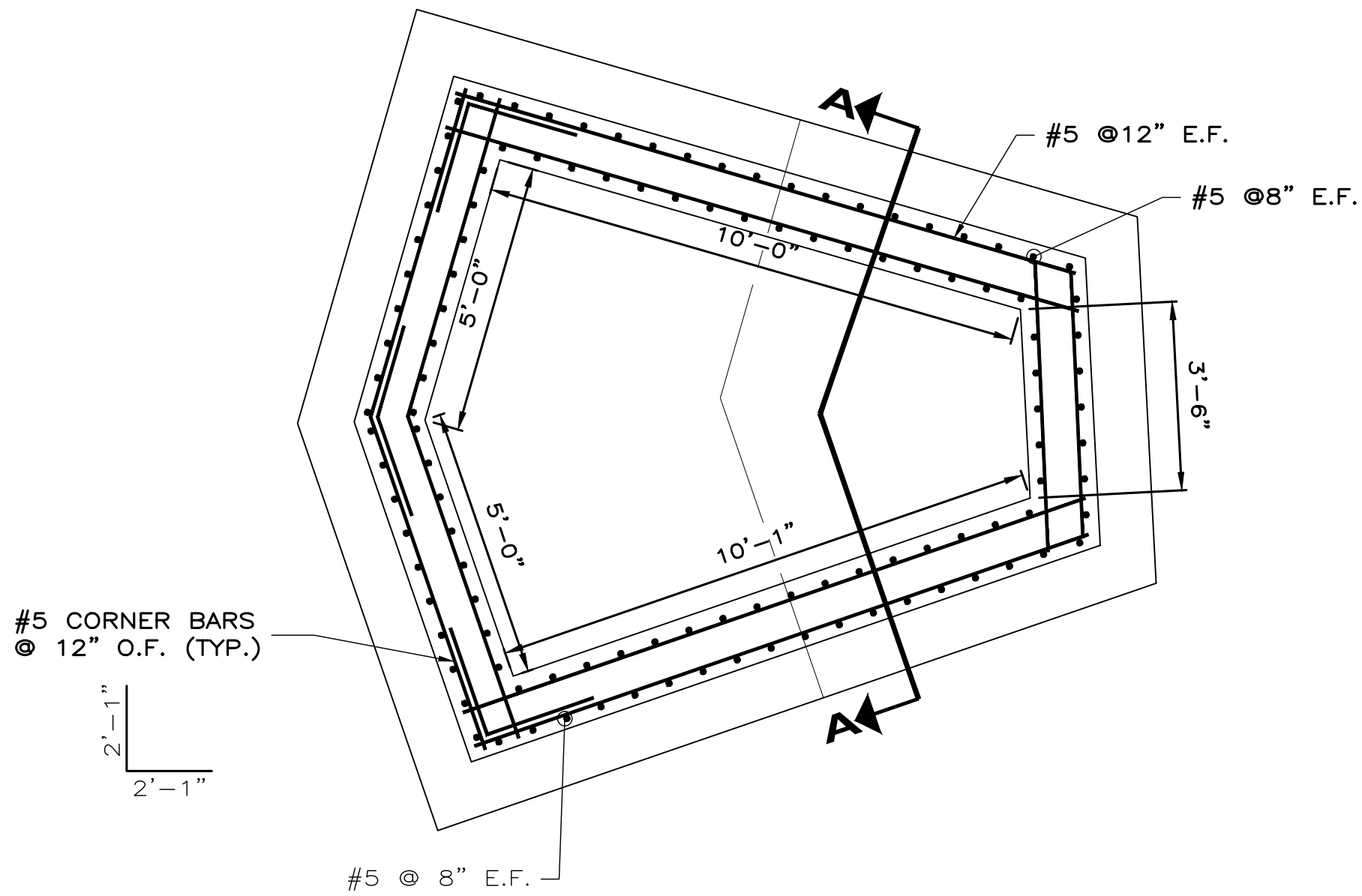
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
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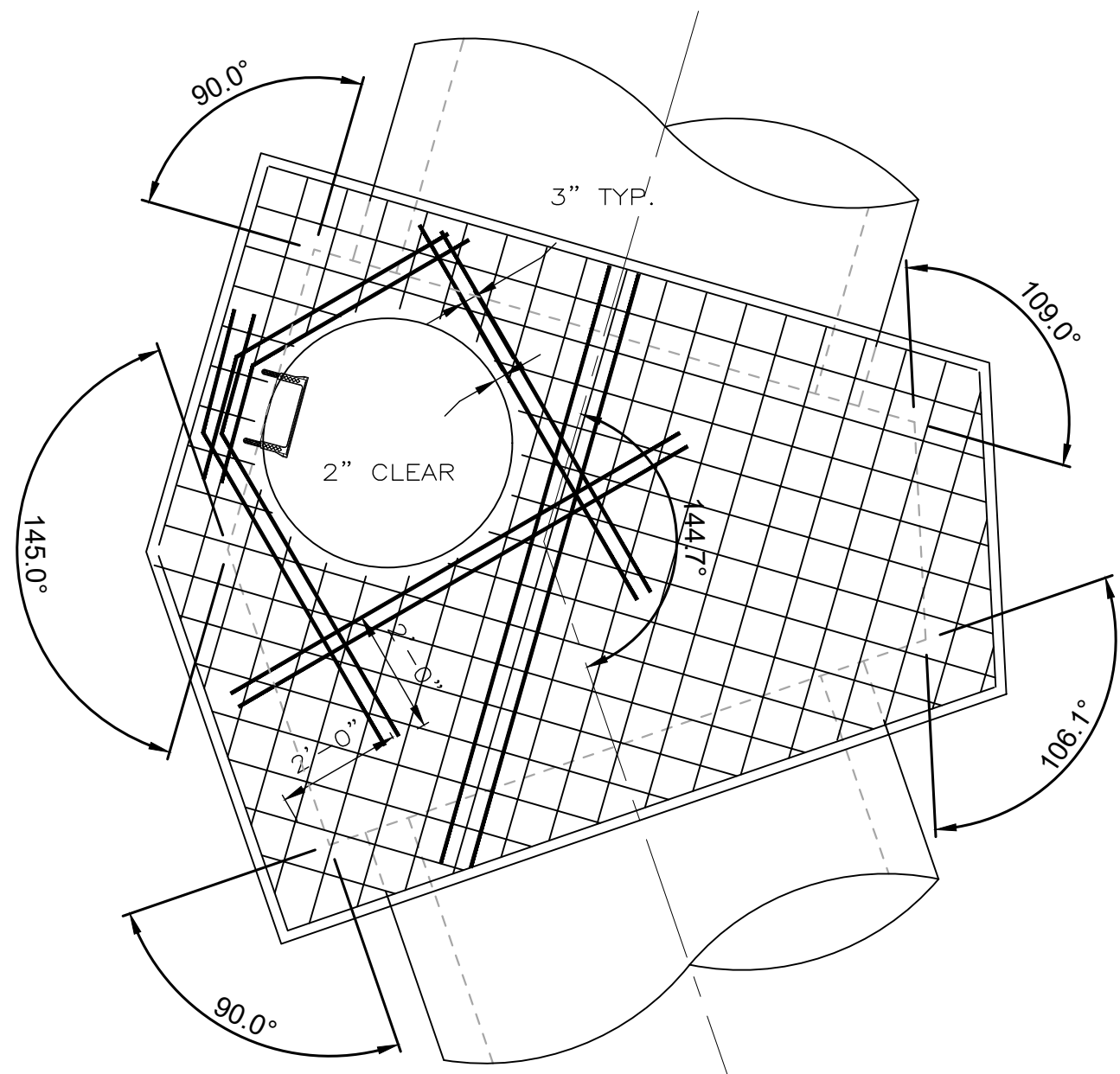
**JUNCTION CHAMBER DETAILS 1**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	MH DET-1
SHEET	28
OF	43

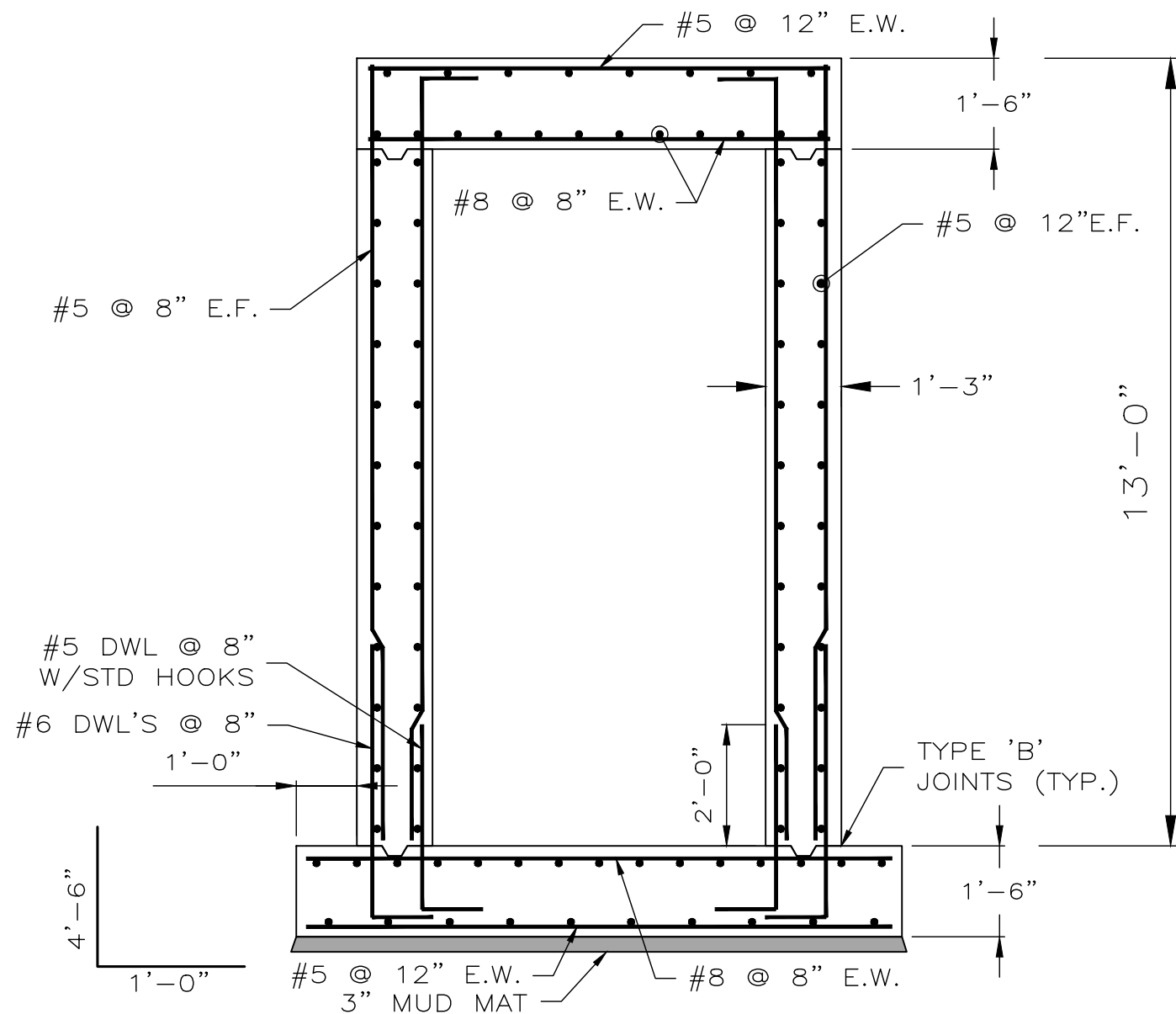




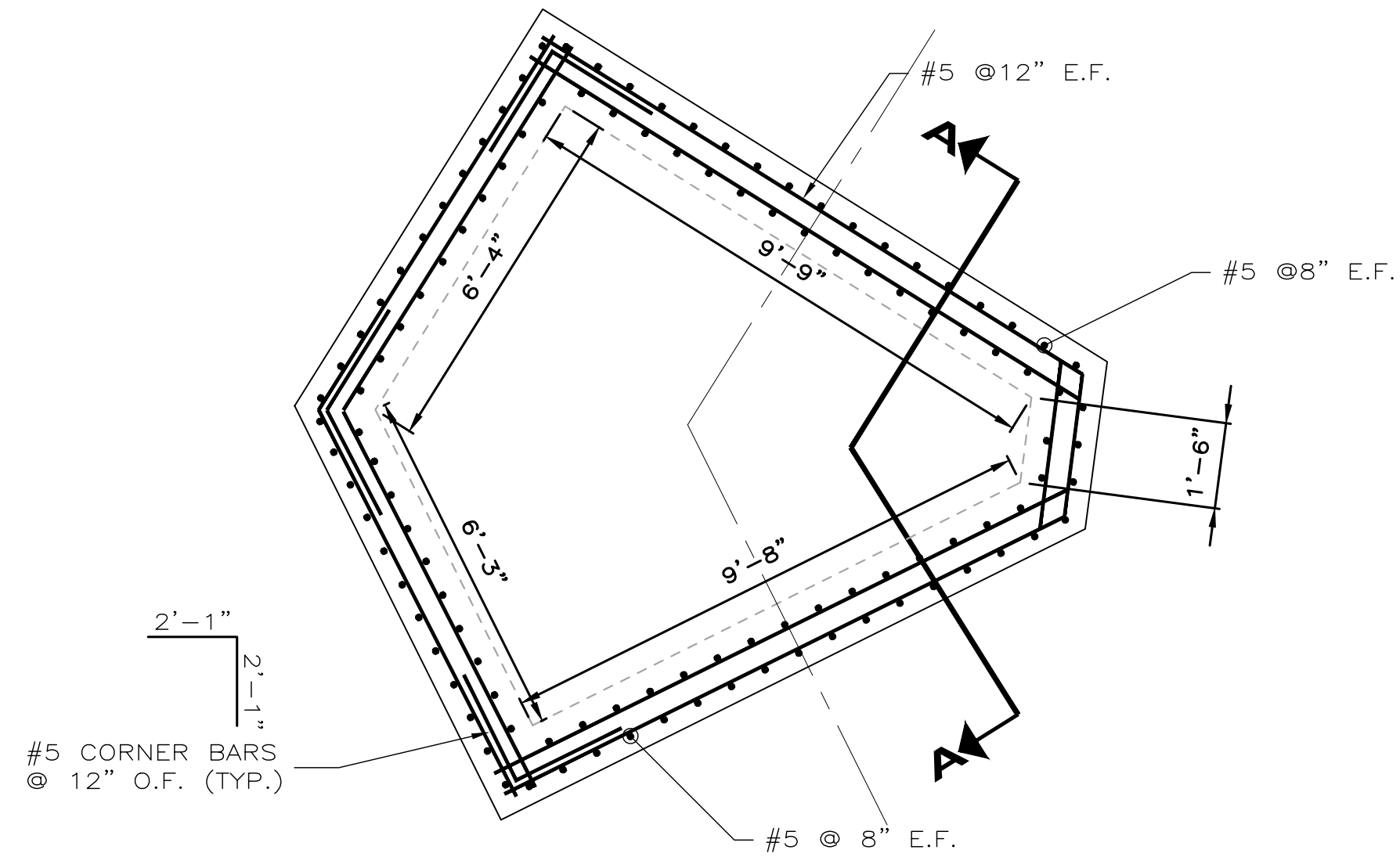
**JUNCTION CHAMBER #3  
MANHOLE REINFORCING PLAN**  
Scale 3/8"=1'-0"



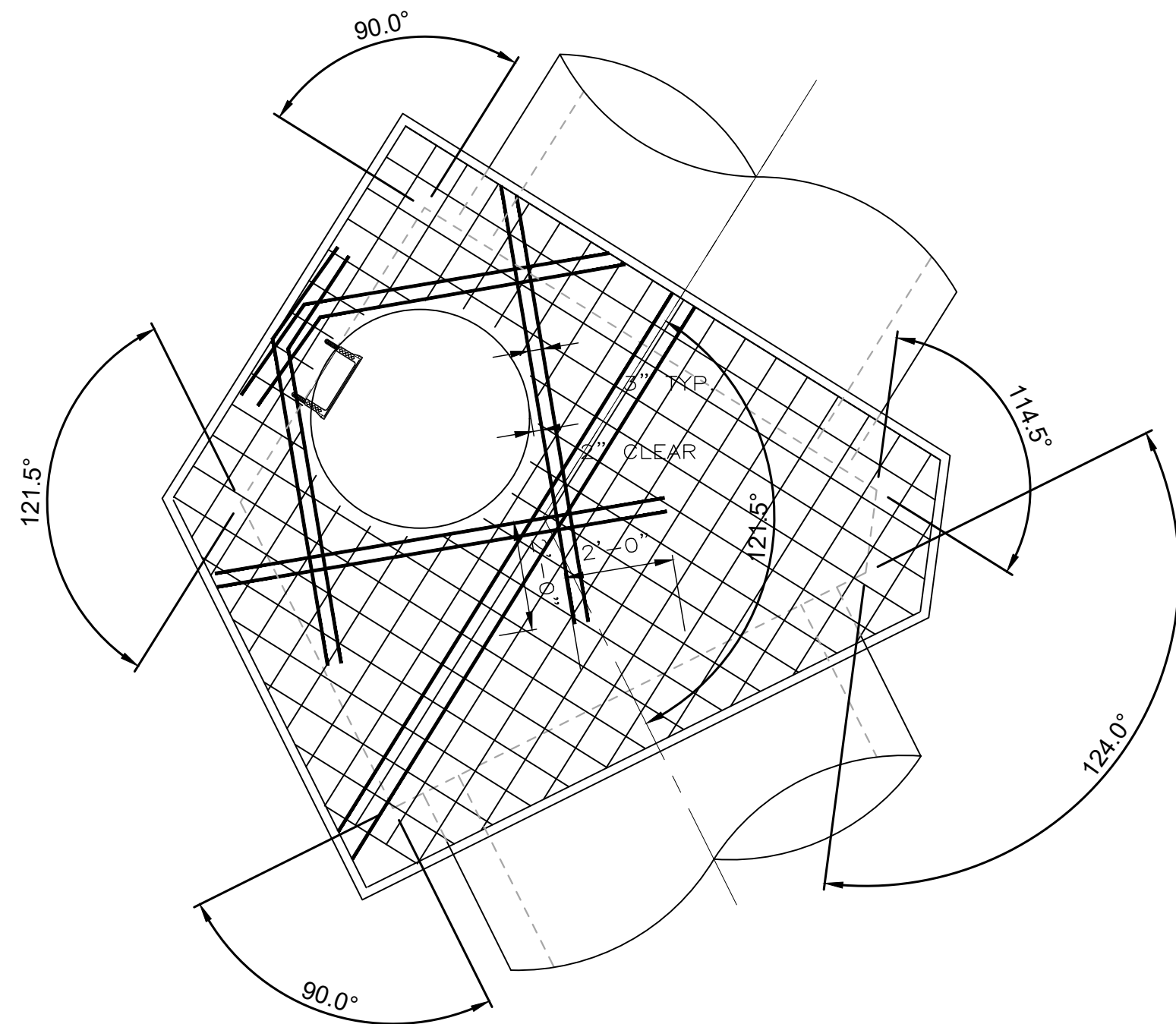
**MANHOLE TOP SLAB PLAN**  
Scale 3/8"=1'-0"



**SECTION A-A**  
Scale 3/8"=1'-0"



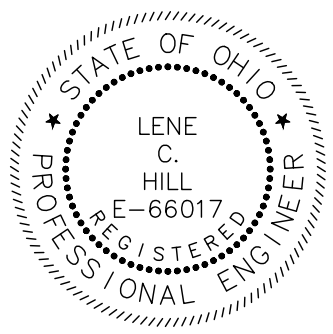
**JUNCTION CHAMBER #4  
MANHOLE REINFORCING PLAN**  
Scale 3/8"=1'-0"



**MANHOLE TOP SLAB PLAN**  
Scale 3/8"=1'-0"

**NOTES:**

- SEE STANDARD DETAILS FOR REINFORCING AROUND OPENINGS
- CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH = 4000 PSI
- REINFORCING STEEL - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI EPOXY COATED
- CONTRACTOR HAS OPTION TO UTILIZE PRECAST CONCRETE MANHOLE STRUCTURES. THE STRUCTURE, NO ADDITIONAL PAYMENT TO CONTRACTOR SHALL BE MADE FOR PRECAST STRUCTURES.
- PRECAST MANHOLE STRICTURES SHALL UTILIZE WATERPROOFING MEMBRANE AROUND FABRICATED STRUCTURE JOINTS.
- PIPE TO MANHOLE CONNECTORS A-LOK OR APPROVED EQUIVALENT SHALL BE UTILIZED IN PRECAST SECTIONS.
- PROVIDE MANHOLE STEPS 16" O/C.



**verdantas**

NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

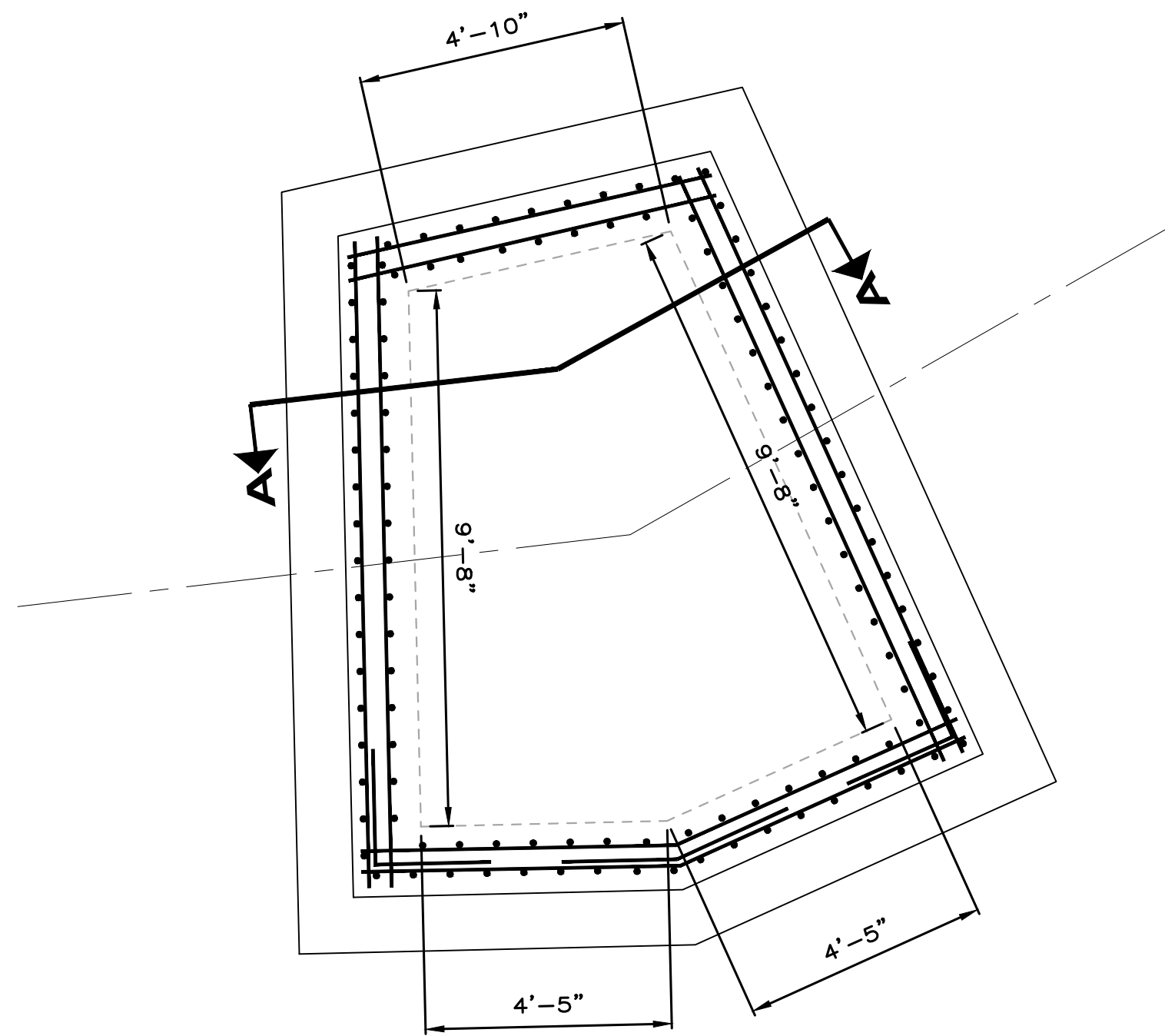
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

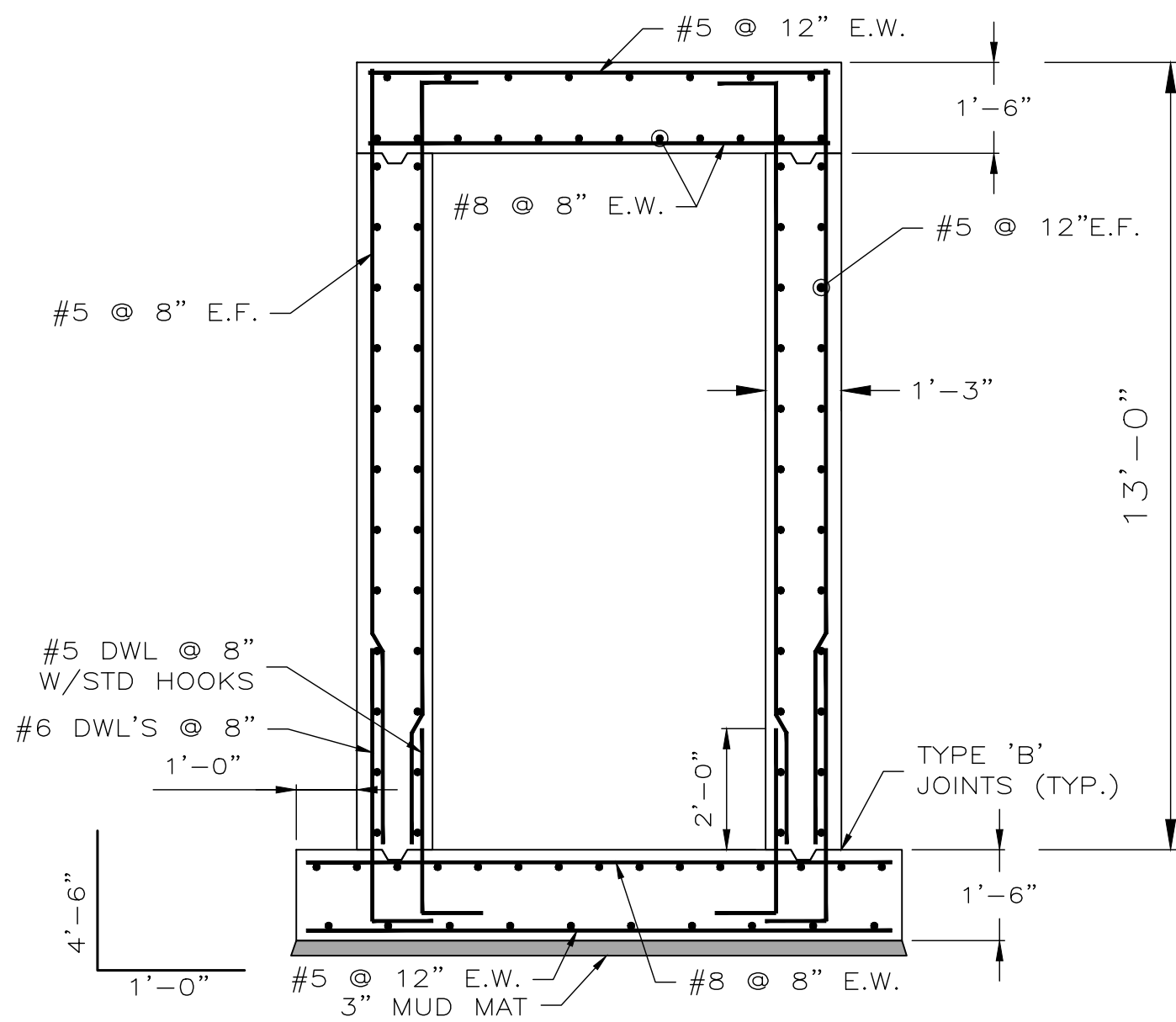
**JUNCTION CHAMBER DETAILS 2**

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
MH DET- 2	
SHEET	OF
29	43

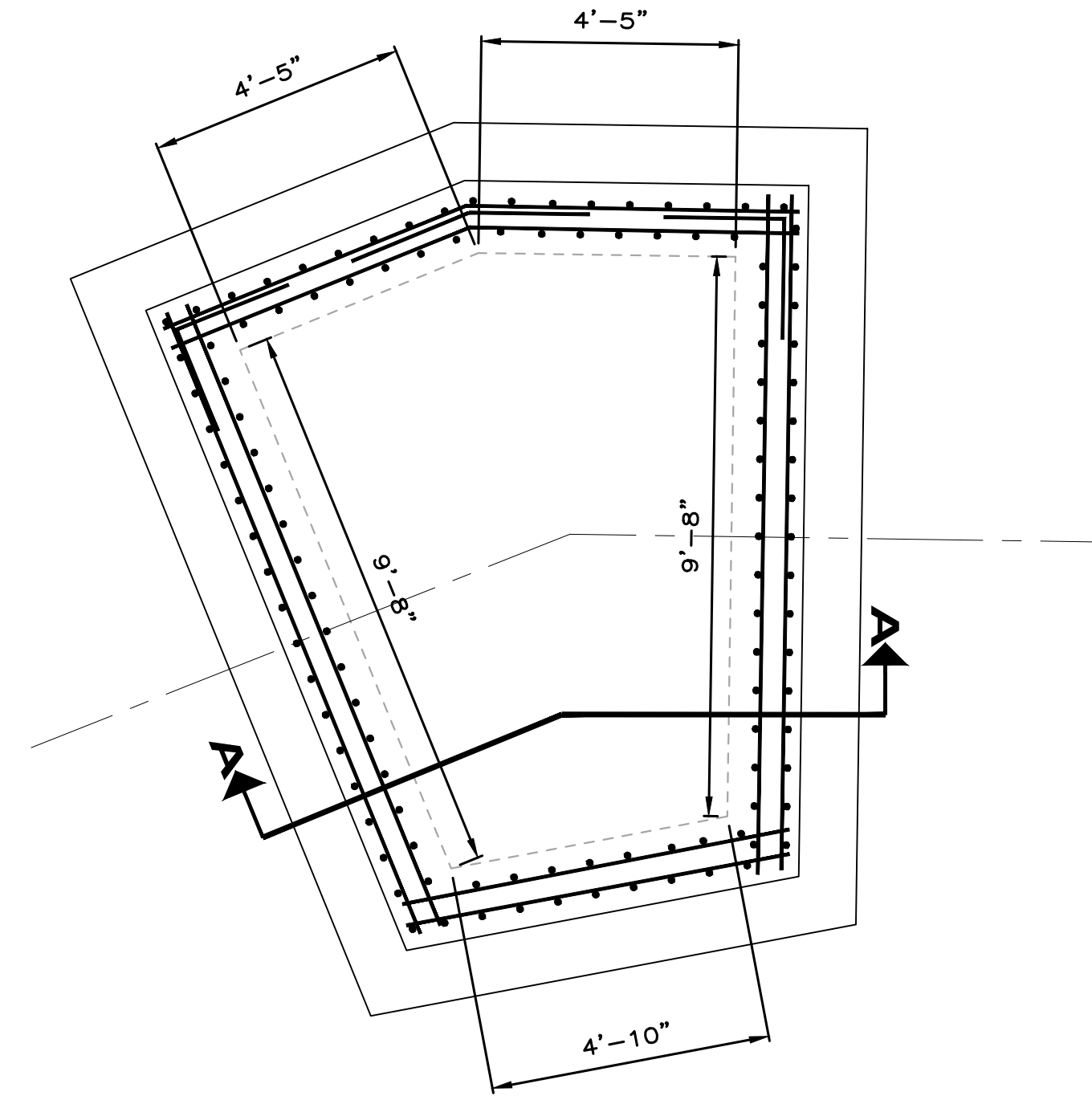




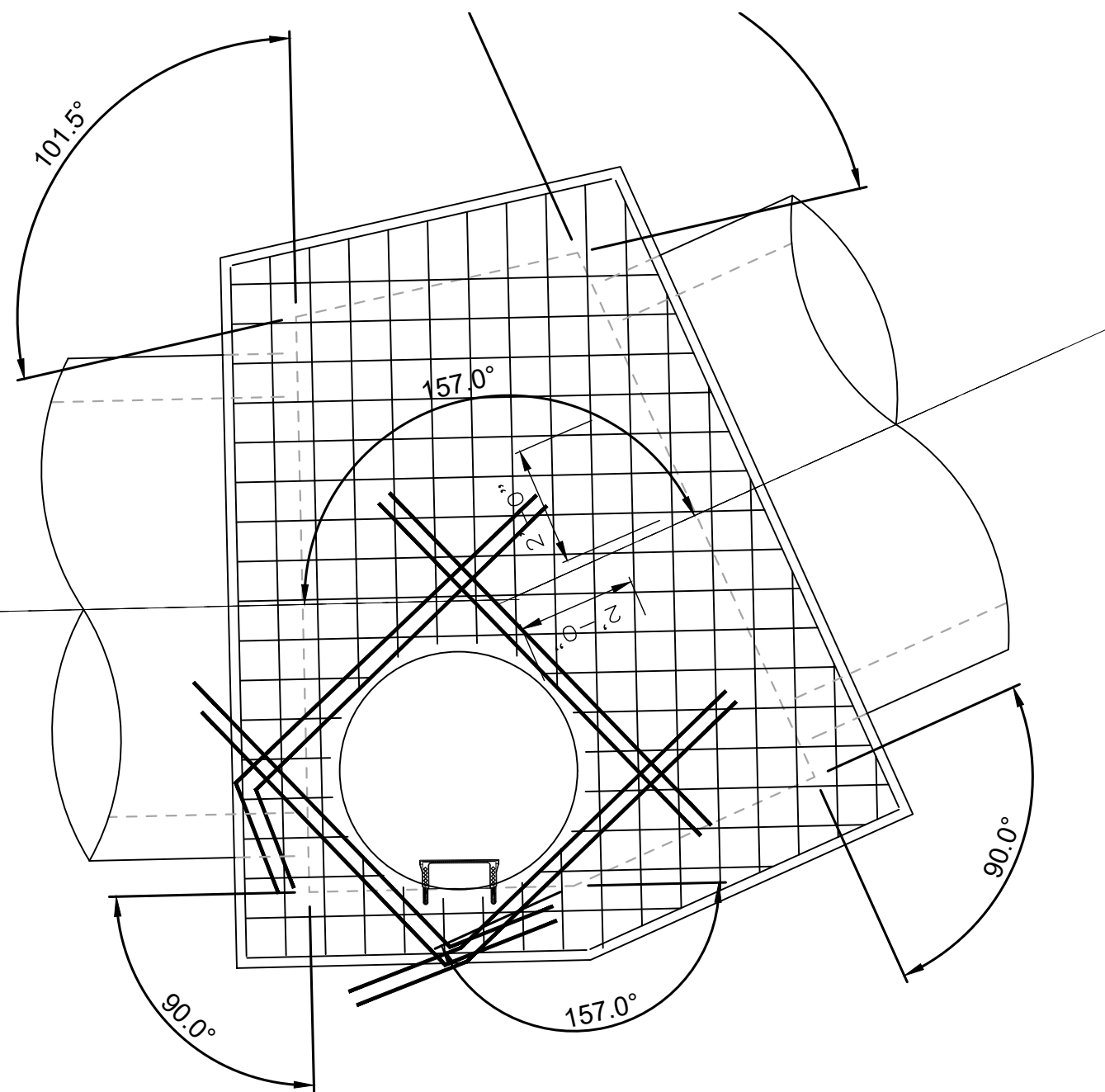
**JUNCTION CHAMBER #5  
MANHOLE REINFORCING PLAN**  
Scale  $\frac{3}{8}$ "=1'-0"



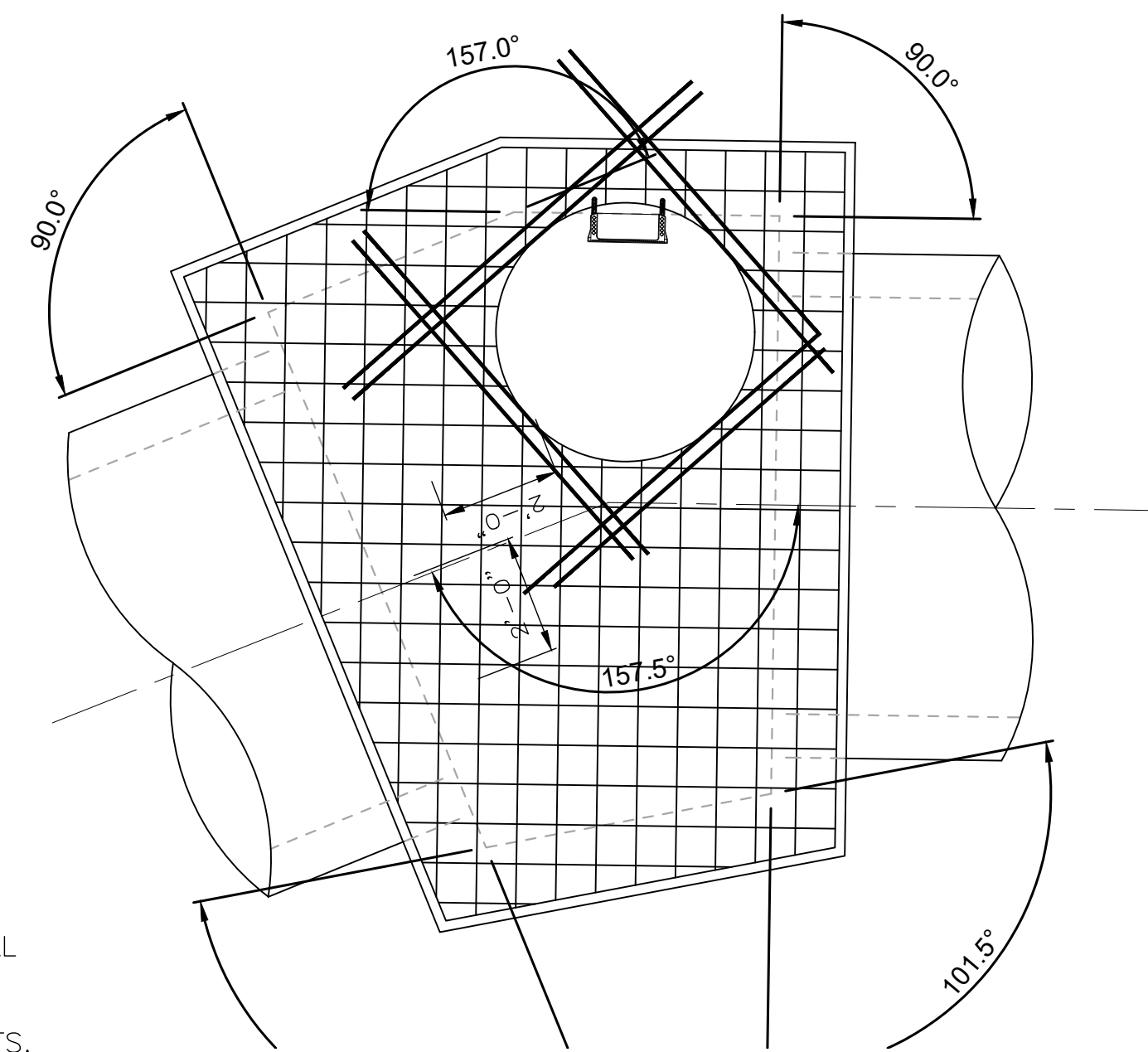
**SECTION A-A**  
Scale  $\frac{3}{8}$ "=1'-0"



**JUNCTION CHAMBER #6  
MANHOLE REINFORCING PLAN**  
Scale  $\frac{3}{8}$ "=1'-0"



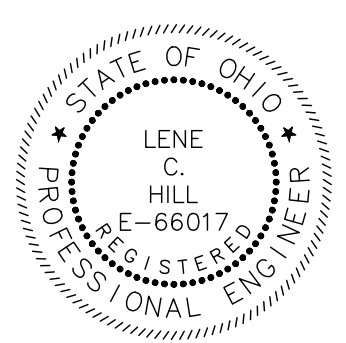
**MANHOLE TOP SLAB PLAN**  
Scale  $\frac{3}{8}$ "=1'-0"



**MANHOLE TOP SLAB PLAN**  
Scale  $\frac{3}{8}$ "=1'-0"

**NOTES:**

1. SEE STANDARD DETAILS FOR REINFORCING AROUND OPENINGS
2. CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH = 4000 PSI
3. REINFORCING STEEL - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI EPOXY COATED
4. CONTRACTOR HAS OPTION TO UTILIZE PRECAST CONCRETE MANHOLE STRUCTURES. THE STRUCTURE. NO ADDITIONAL PAYMENT TO CONTRACTOR SHALL BE MADE FOR PRECAST STRUCTURES.
5. PRECAST MANHOLE STRICTURES SHALL UTILIZE WATERPROOFING MEMBRANE AROUND FABRICATED STRUCTURE JOINTS.
6. PIPE TO MANHOLE CONNECTORS A-LOK OR APPROVED EQUIVALENT SHALL BE UTILIZED IN PRECAST SECTIONS.
7. PROVIDE MANHOLE STEPS 16" O/C.



**verdantas**

NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

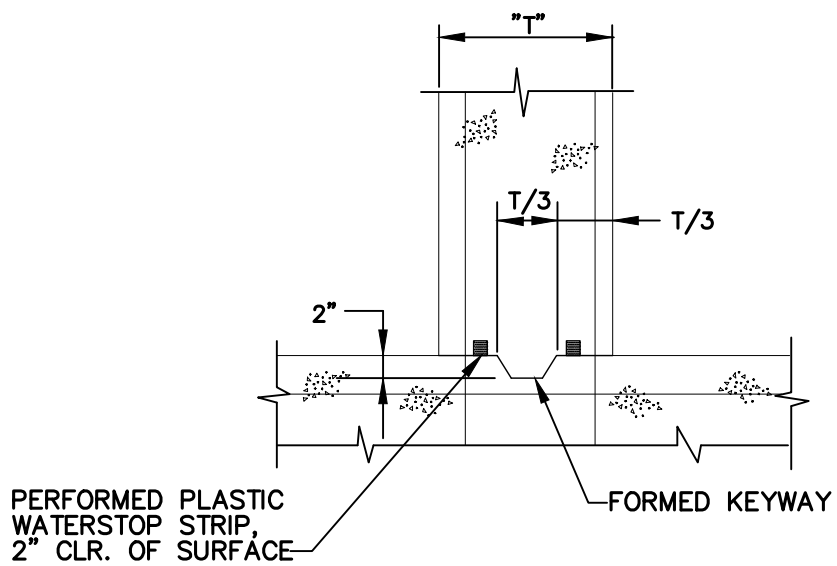
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
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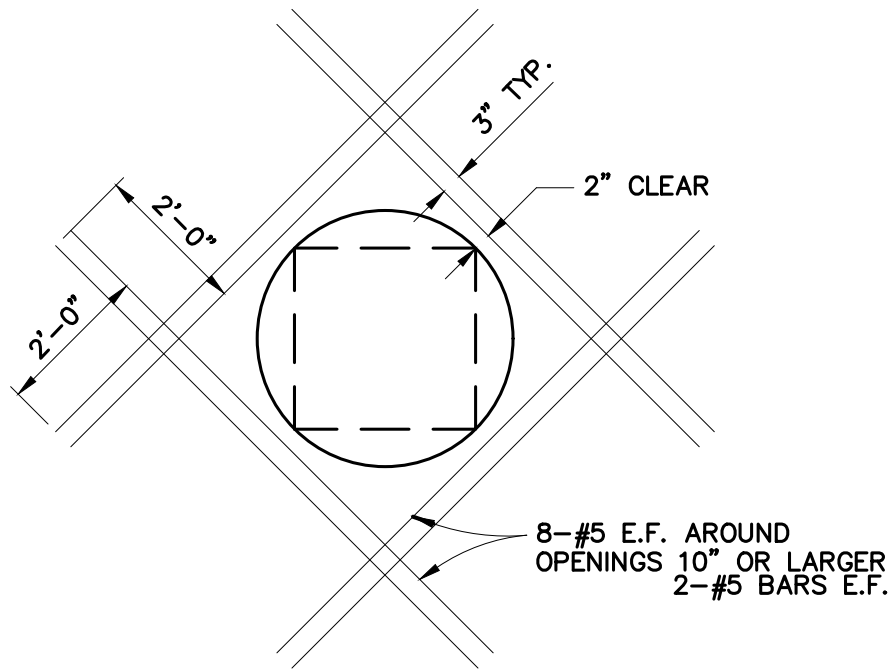
**JUNCTION CHAMBER DETAILS 3**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	MH DET-3
SHEET	OF
30	43

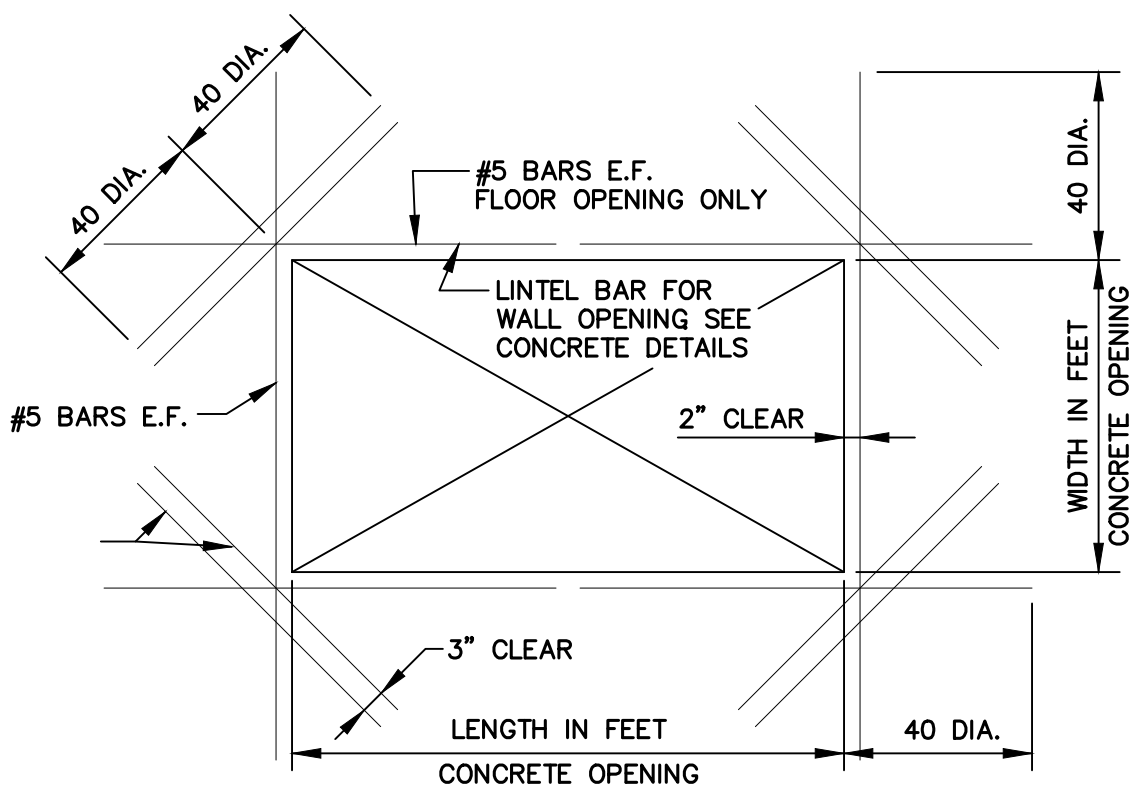




TYPE "B"  
WATERSTOP CONSTRUCTION JOINT  
( N.T.S. )



TYPICAL REINFORCING AROUND  
OPENINGS IN REINFORCED  
CONCRETE SLABS AND WALLS  
( N.T.S. )



TYPICAL REINFORCING AROUND  
OPENINGS IN REINFORCED  
CONCRETE SLABS AND WALLS  
( N.T.S. )

WATERSTOP NOTES:

1. WATERSTOP SHOWN SHALL BE "WATERSTOP-RX" BY AMERICAN COLLOID COMPANY OR "SYNKO-FLEX" BY SYNKO-FLEX PRODUCTS, INC. OR AN APPROVED EQUAL.
2. MAINTAIN A MINIMUM OF 2 INCHES OF CONCRETE COVER TO THE EXTERIOR OF THE JOINT SURFACE.
3. EXISTING CONCRETE SURFACES SHALL BE CLEAN AND DRY. APPLY MANUFACTURER'S RECOMMENDED PRIMER TO EXISTING SURFACE PRIOR TO INSTALLING WATERSTOP.
4. THE ENDS OF WATERSTOP STRIPS SHALL BE BUTTED TOGETHER OR LAPPED END TO END AS REQUIRED BY THE APPROVED MANUFACTURER.

STRUCTURAL BACKFILL AND FILL

1. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENT UNTIL THE STRENGTH LEVEL OF THE IN-PLACE CONCRETE HAS ATTAINED THE SPECIFIED DESIGN STRENGTH.
2. THE CONTRACTOR MAY TEST IN-PLACE STRENGTH USING NONDESTRUCTIVE PROCEDURES OF ASTM C803.
3. WHERE STRUCTURES ARE LOCATED OUTSIDE OF PAVEMENT OR THE ZONE OF INFLUENCE, EXISTING ON-SITE SOILS WHICH ARE FREE OF ORGANIC CONTAMINATION AND OTHER OBJECTIONABLE MATERIALS MAY BE UTILIZED AS FILL MATERIAL BEYOND THE LIMITS OF POROUS STRUCTURAL BACKFILL. COMPACT MAXIMUM EIGHT (8") INCH LOOSE LAYERS UNIFORMLY TO NOT LESS THAN 98% STANDARD PROCTOR UNLESS OTHERWISE SPECIFIED. SHALE AND/OR SLAG MAY NOT BE USED AS A BACKFILL OR FILL MATERIAL.
4. POROUS STRUCTURAL BACKFILL SHALL BE PLACED FULL LENGTH AND HEIGHT AROUND ALL NEW STRUCTURES. THE THICKNESS NORMAL TO WALL FACE SHALL BE NOT LESS THAN 18" INCHES.
5. POROUS BACKFILL SHALL BE GRAVEL OR LIMESTONE; NO. 467, NO. 57, NO. 67, NO. 6 OR NO. 78 SIZE.

CONCRETE SPECIFICATIONS

1. ALL STRUCTURAL CONCRETE SHALL BE ODOT ITEM 499 CLASS QC1.
2. CONCRETE DESIGN MIX SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO STARTING WORK.
3. ALL REINFORCING SHALL BE ASTM 615 GRADE 60.
4. MUD MAT CONCRETE SHALL BE 2000 PSI (28 DAYS).

EXCAVATION SUPPORT

1. IF THE CONTRACTOR PROVIDES TEMPORARY EXCAVATION SUPPORTS TO ENCLOSE AND PROTECT THE CHAMBER EXCAVATIONS, HE SHALL SUBMIT HIS DESIGN TO THE ENGINEER FOR REVIEW. THE SUPPORT SYSTEM DESIGN AND CALCULATIONS SHALL BE PREPARED AND SEALED BY A REGISTERED OHIO PROFESSIONAL ENGINEER.
2. CONTINUOUS DEWATERING MAY BE REQUIRED AT THE TIME OF EXCAVATION TO MAINTAIN THE WATER TABLE BELOW THE BOTTOM OF EXCAVATION.

LOW STRENGTH MORTAR BACKFILL

1. SELF-COMPACTING FLOWABLE, CONTROLLED LOW STRENGTH MORTAR BACKFILL SHALL BE USED FOR BACKFILL WHERE INDICATED.
2. THE MATERIAL SHALL BE PROPORTIONED IN ACCORDANCE WITH ODOT ITEM 613, LOW STRENGTH MORTAR BACKFILL, TYPE 1 WITH A MINIMUM 28 DAY UNCONFINED COMPRESSIVE STRENGTH OF 100 PSI. SAMPLES SHALL BE FABRICATED AND TESTED IN ACCORDANCE WITH ASTM D 4832, AT 7 AND 28 DAYS.

CONCRETE CURING

1. BEGINNING IMMEDIATELY AFTER PLACEMENT, CONCRETE SHALL BE PROTECTED FROM PREMATURE DRYING.
2. CURING COMPOUNDS SHALL NOT BE USED ON ANY STRUCTURAL ELEMENTS, INCLUDING SLABS.
3. PROVIDE MOIST CURING BY KEEPING CONCRETE SURFACES CONTINUOUSLY WET FOR A MINIMUM OF SEVEN DAYS.
4. ACCEPTABLE METHODS ARE BY PONDING, CONTINUOUS SPRINKLING, ABSORPTIVE MATS OR FABRICS KEPT CONTINUOUSLY WET, OR APPLICATION OF WATERPROOF SHEET MATERIALS CONFORMING TO ASTM C171.

STRUCTURAL EXCAVATIONS

1. THE SUBSURFACE EXPLORATION PERFORMED FOR THIS PROJECT IS ON FILE AT THE OFFICES OF CT CONSULTANTS, INC. AND MAY BE REVIEWED BY CONTRACTORS BIDDING ON THE PROJECT.
2. THE CONTRACTOR SHALL MAINTAIN SAFE SIDE SLOPES FOR ALL STRUCTURAL EXCAVATIONS. EXCAVATION SLOPES FOR SOIL ABOVE ROCK SHOULD FOLLOW OSHA GUIDELINES FOR TYPE 'C' SOILS.

FOUNDATION PREPARATION

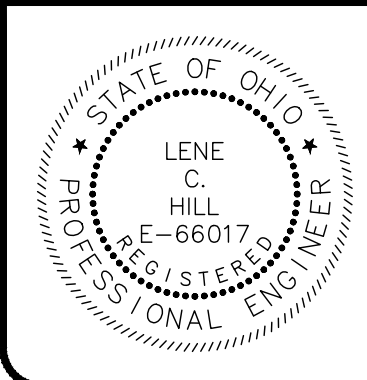
1. FOUNDATION EXCAVATIONS SHALL BE DUG WITH FLAT BOTTOMS OR AS SHOWN BY A METHOD THAT WILL NOT DISTURB THE BEARING MATERIAL.
2. SOIL LOOSENED DURING EXCAVATION SHALL BE REMOVED FROM THE FOOTING BOTTOM.
3. ALL FOOTING EXCAVATIONS SHALL BE CHECKED BY A GEOTECHNICAL ENGINEER OR ENGINEERING GEOLOGIST BEFORE POURING CONCRETE TO CONFIRM THAT DESIGN BEARING CONDITIONS ARE ACHIEVED IN THE FIELD. ALLOWABLE BEARING PRESSURE SHALL BE 2000 PSF MINIMUM.
4. THE FOOTING BEARING SURFACE SHALL BE PROTECTED AGAINST WATER ACCUMULATION FROM RAINFALL, SURFACE DRAINAGE OR SIDEWALL SEEPAGE.
5. A CONCRETE MUD MAT SHALL BE POURED IMMEDIATELY AFTER CLEANING THE EXCAVATION BOTTOM AND CHECKING THE BEARING CONDITION, UNLESS NOTED OTHERWISE.

MINIMUM CONCRETE COVER FOR REINFORCEMENT

UNLESS NOTED OTHERWISE:

- a. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- b. CONCRETE EXPOSED TO EARTH, LIQUID, WEATHER OR BEARING ON WORK MAT OR SLABS SUPPORTING EARTH COVER:

SLAB AND JOINTS	2"
BEAMS AND COLUMNS:	
STIRRUPS, SPIRALS, AND TIES	2"
PRIMARY REINFORCING	2½"
WALLS	2"
FOOTING AND BASE SLABS:	
FORMED SURFACES	2"
TOP OF FOOTINGS AND BASE SLABS	2"



NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

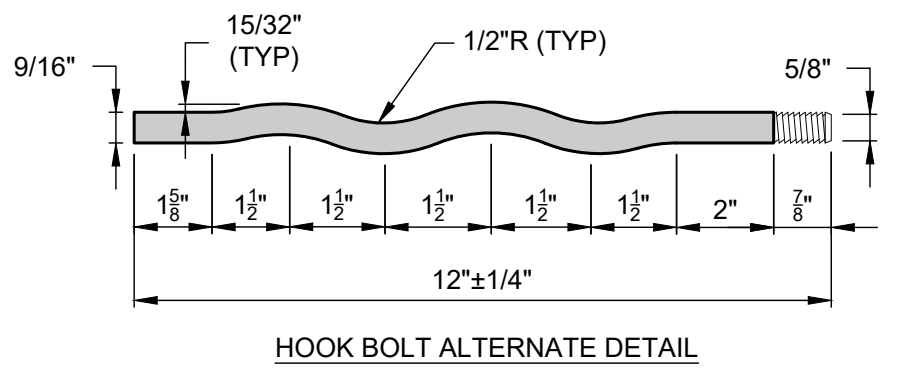
WILLOUGHBY, OHIO

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SCALE:	AS SHOWN
DESIGNED BY:	MPC
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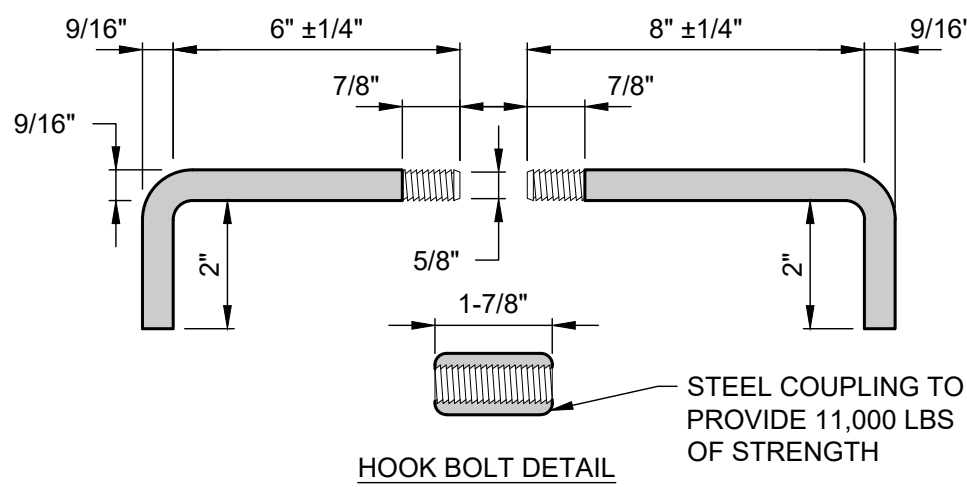
CAST IN PLACE MANHOLE REINFORCING  
DETAILS & NOTES

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
REINF DET	
SHEET	OF
31	43



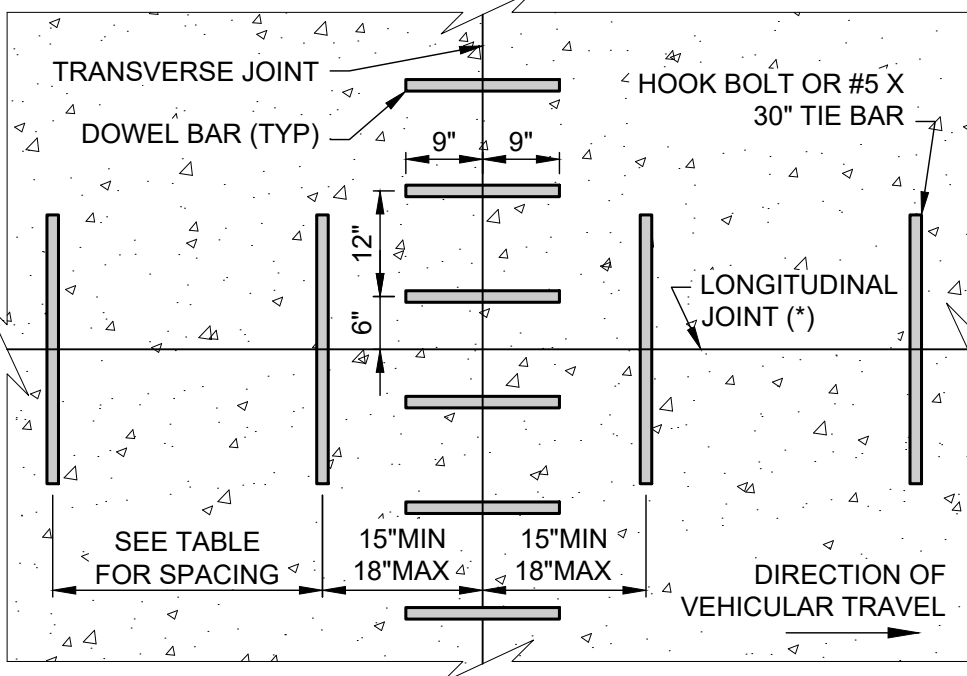


HOOK BOLT ALTERNATE DETAIL



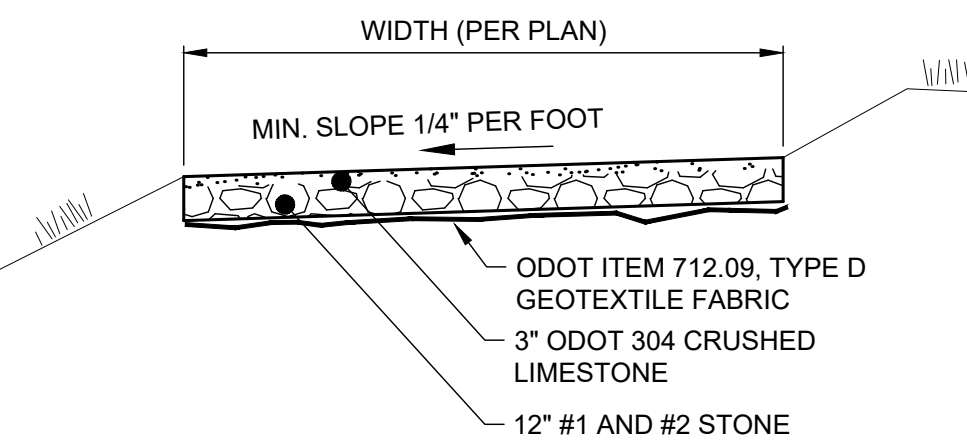
HOOK BOLT DETAIL

(\*) LONGITUDINAL JOINTS TO BE ALONG THE PAVEMENT CENTERLINE UNLESS OTHERWISE SHOWN.

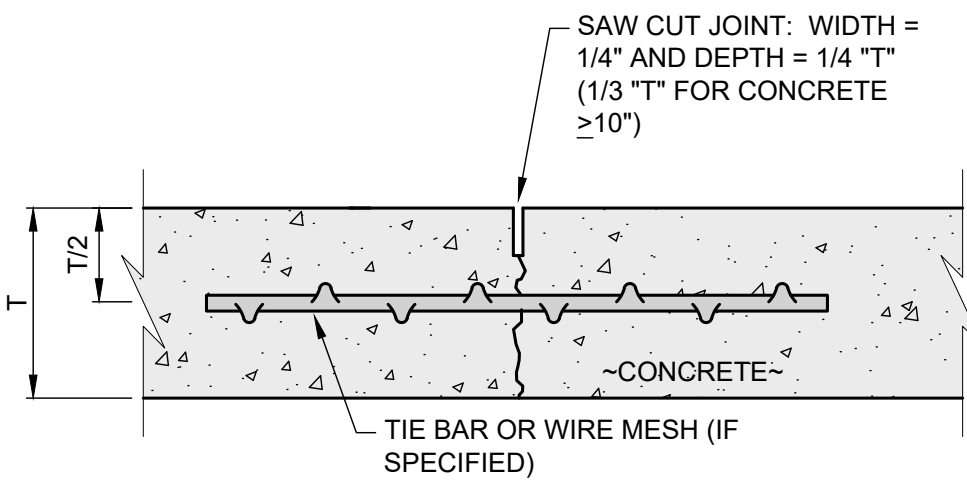


TIE BAR OR HOOK BOLT SPACING			
PAVEMENT THICKNESS	TRANSVERSE JOINT SPACING	NUMBER OF BARS PER SLAB	MAX. SPACING BETWEEN BARS
10" OR LESS	15'	7	26"
	21'	10	26"
GREATER THAN 10"	15'	9	20"
	21'	13	20"

TIE BAR OR HOOK BOLT SPACING DETAIL  
SCALE: NONE

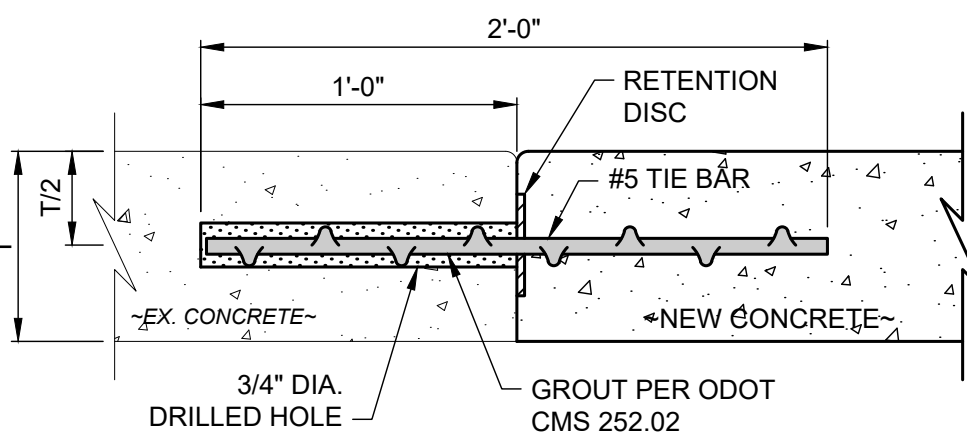


ACCESS ROAD DETAIL  
SCALE: NONE



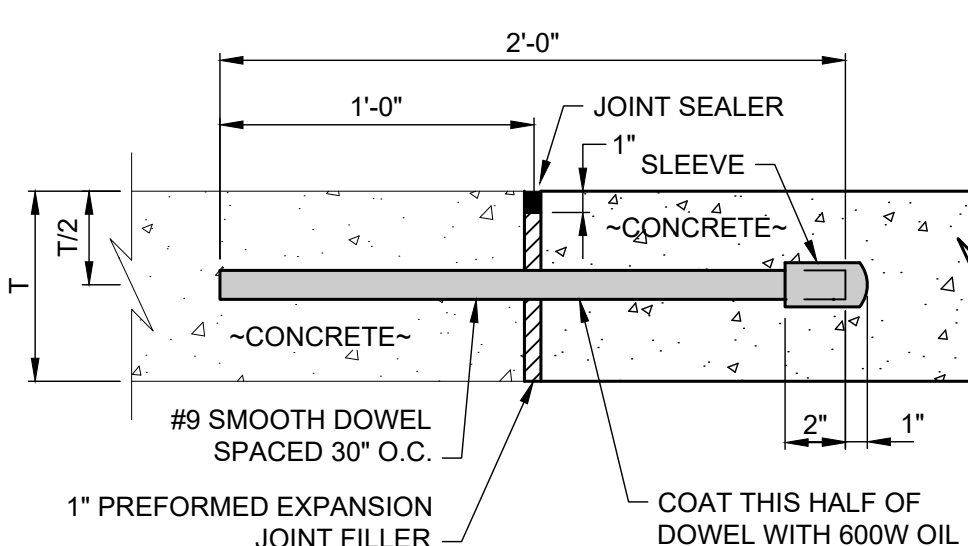
- NOTES:
- ALL JOINTS SHALL BE CLEANED AND LEFT UNSEALED.

CONTRACTION JOINT DETAIL  
SCALE: NONE

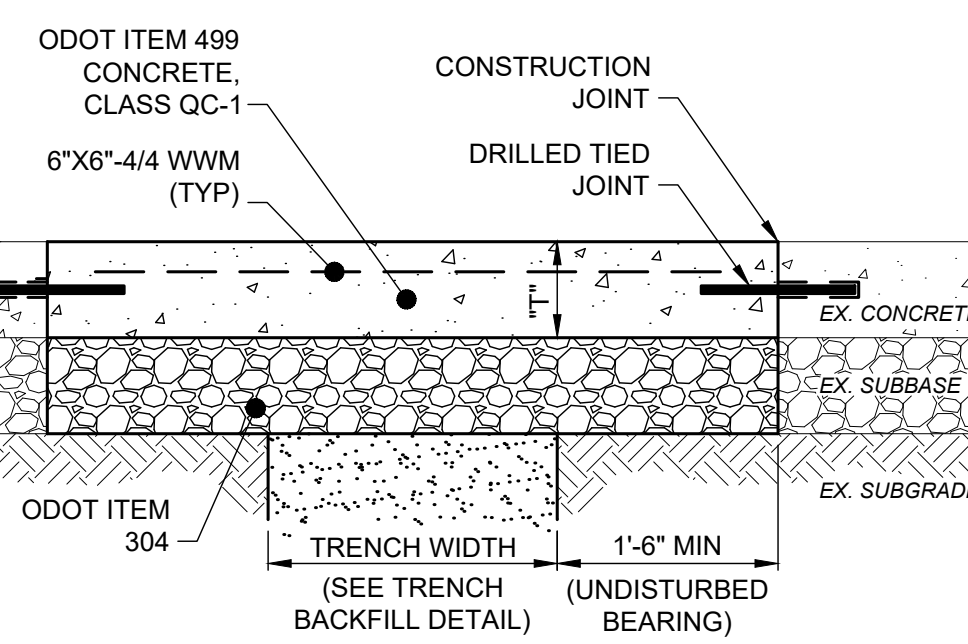


- NOTES:
- SELF DRILLING EXPANSION SHIELD ANCHORS NOT PERMITTED.
  - WHEN CONSTRUCTED/RECONSTRUCTED LONGITUDINALLY:
    - SPACE BARS 24" TO 30" O.C.
    - BEGIN/END BARS 15" FROM TRANSVERSE JOINTS
  - WHEN CONSTRUCTED/RECONSTRUCTED TRANSVERSELY:
    - SPACE BARS 12" O.C. ALONG TRANSVERSE JOINTS
    - PROVIDE 15" TO 18" SPACE ADJACENT TO TIED LONGITUDINAL JOINT
    - PROVIDE 12" SPACE ADJACENT TO UNTIED LONGITUDINAL JOINT OR EDGE OF PAVEMENT

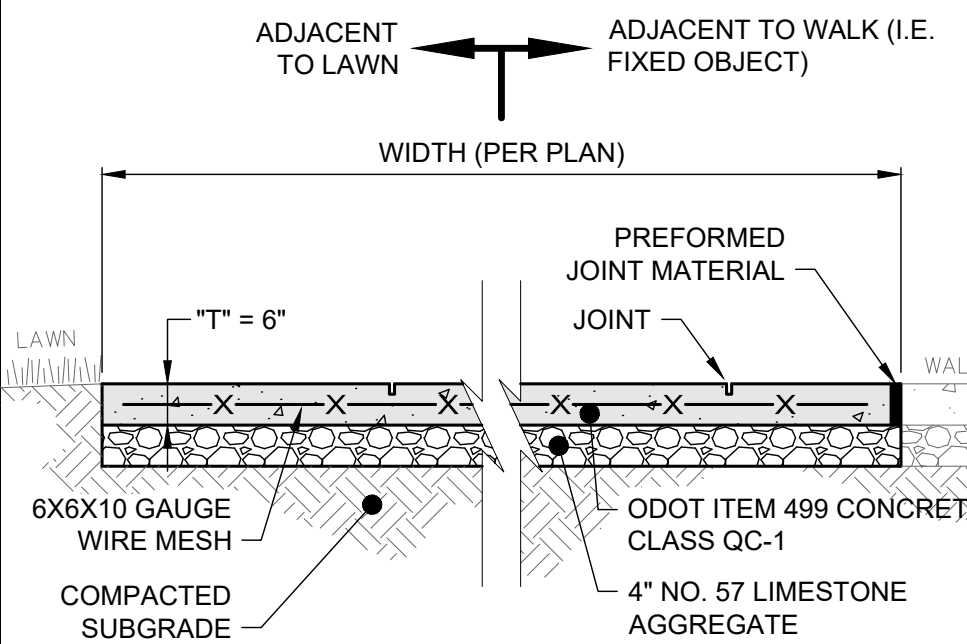
DRILLED TIED JOINT DETAIL  
SCALE: NONE



EXPANSION JOINT DETAIL  
SCALE: NONE

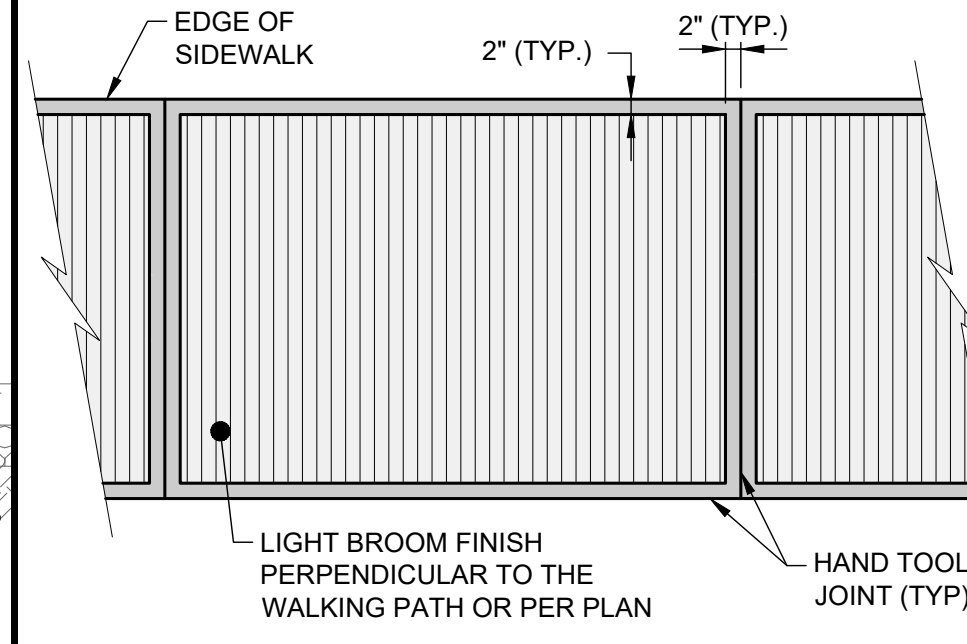


REPAIR OF CONCRETE PAVEMENT OVER TRENCH DETAIL  
SCALE: NONE



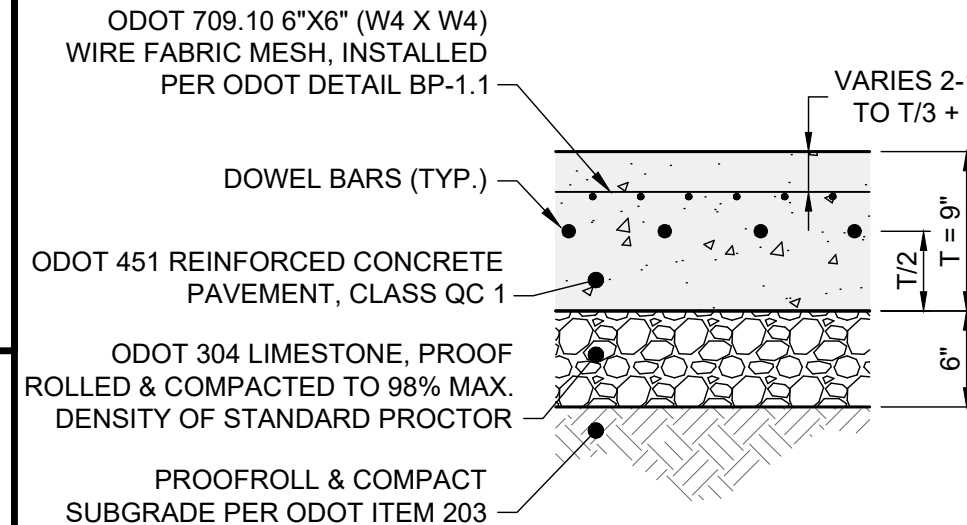
- NOTES:
- SEE LAYOUT PLAN FOR JOINT LOCATIONS. IF JOINTS ARE NOT PROVIDED, THEN THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL JOINTS. DIVIDE JOINTS INTO EQUALLY SPACED RECTANGULAR BLOCKS.
  - SAW CUT OR HAND TOOL JOINT 1/8" WIDE BY 1/4" OF "T" DEEP.
  - ROUND ALL EDGES AND JOINTS WITH A 1/4" RADIUS.
  - INSTALL 1/2" PREFORMED JOINT MATERIAL EVERY 30', OR BETWEEN SIDEWALK AND ANY FIXED OBJECT (I.E. MANHOLE, WALK, BUILDING). WALK SHOWN FOR REFERENCE ONLY.
  - LIGHTLY BROOM THE FINISH PERPENDICULAR TO THE WALKING PATH OR PER PLAN. IF HAND TOOLED JOINTS AND EDGES ARE SPECIFIED, FINISH AFTER PANEL INTERIOR TEXTURE HAS BEEN APPLIED (I.E. WINDOW PANE EFFECT).
  - APPLY LIQUID-MEMBRANE CURING COMPOUND (200 S.F./GAL.)

CONCRETE WALK DETAIL  
SCALE: NONE



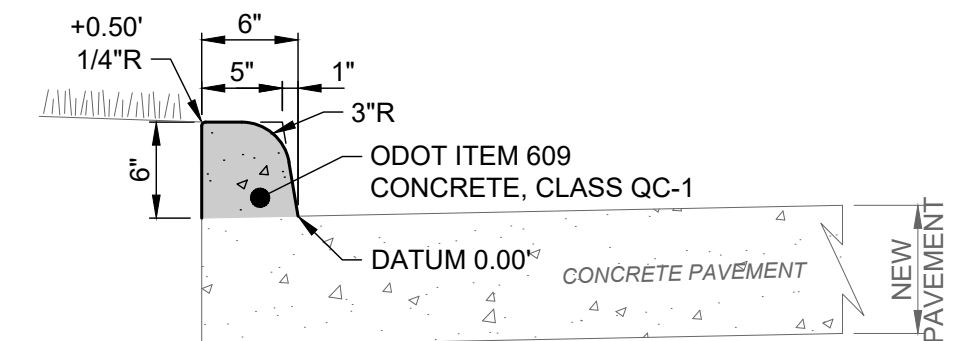
- NOTES:
- HAND TOOLED JOINTS SHALL BE APPLIED TO CREATE A "WINDOW PANE" EFFECT AROUND EACH PANEL.
  - ALL HAND TOOLED JOINTS AND EDGES SHALL BE FINISHED AFTER PANEL INTERIOR TEXTURE HAS BEEN APPLIED.
  - TOOLED EDGE SHALL BE 2" WIDTH EACH SIDE OF JOINT.

CONCRETE SIDEWALK JOINT AND FINISH DETAIL  
SCALE: NONE



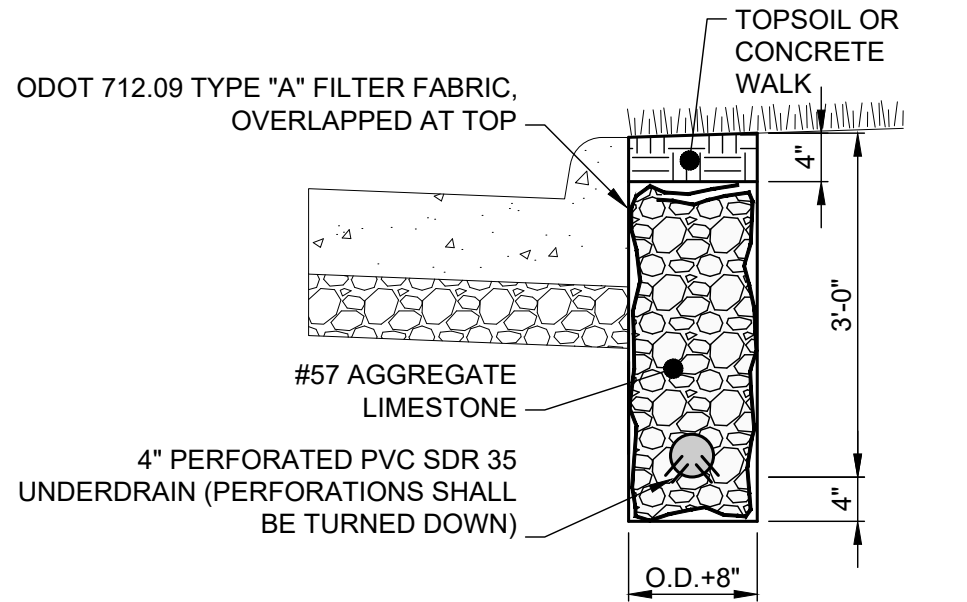
- NOTES:
- THIS DETAIL SHOWS DIMENSIONS FOR REFERENCE ONLY. SEE SITE PLAN FOR ACTUAL THICKNESS.
  - SEE LAYOUT PLAN FOR JOINT LOCATIONS. IF JOINTS ARE NOT SHOWN, THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL JOINTS. DIVIDE JOINTS INTO EQUALLY SPACED RECTANGULAR BLOCKS. MAXIMUM JOINT SPACING SHALL BE 13' X 13'.
  - APPLY LIQUID-MEMBRANE CURING COMPOUND (200 S.F./GAL.).
  - IF UNSUITABLE SOILS EXISTS, SEE SUBGRADE REPAIR DETAIL.

REINFORCED CONCRETE PAVEMENT DETAIL  
SCALE: NONE



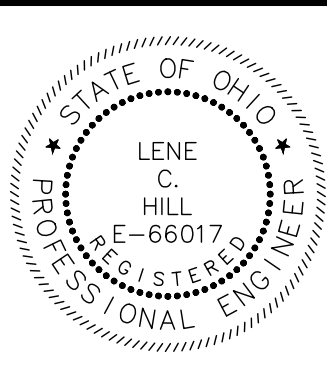
- NOTES:
- SEE THE SEPARATE PAVEMENT DETAIL.

6" INTEGRAL VERTICAL CURB DETAIL  
SCALE: NONE



- NOTES:
- REMOVE OR COMPACT ALL LOOSE EXCAVATION AT BOTTOM OF TRENCH BEFORE INSTALLING AGGREGATE.
  - MAINTAIN POSITIVE DRAINAGE OF PIPE INVERTS WITH NO DIPS OR HUMPS IN FLOWLINE.

UNDERDRAIN DETAIL  
SCALE: NONE



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NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

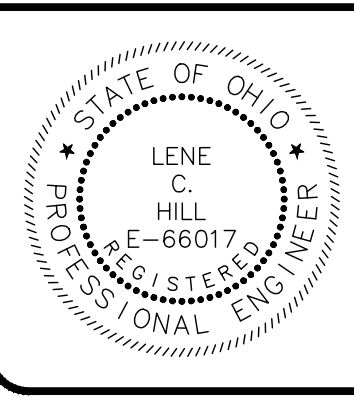
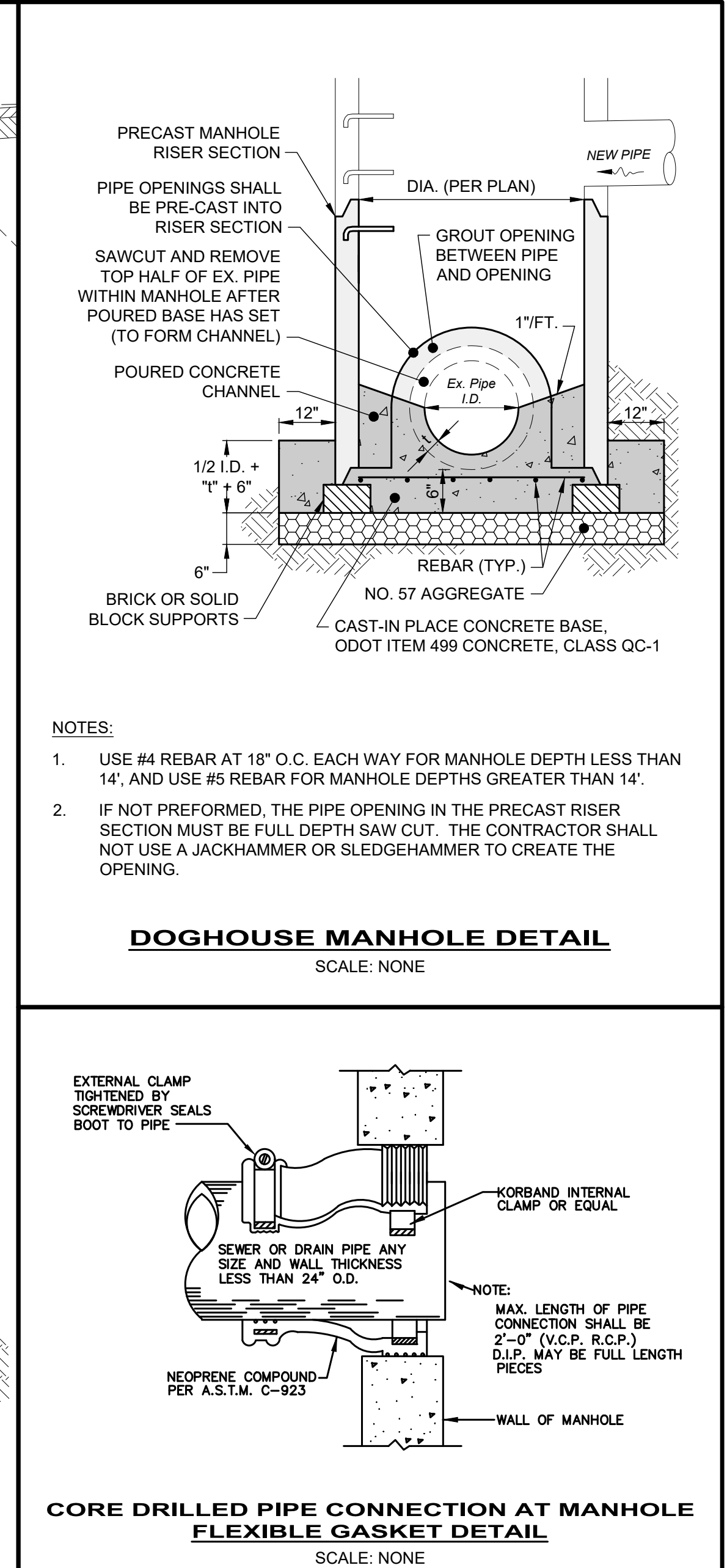
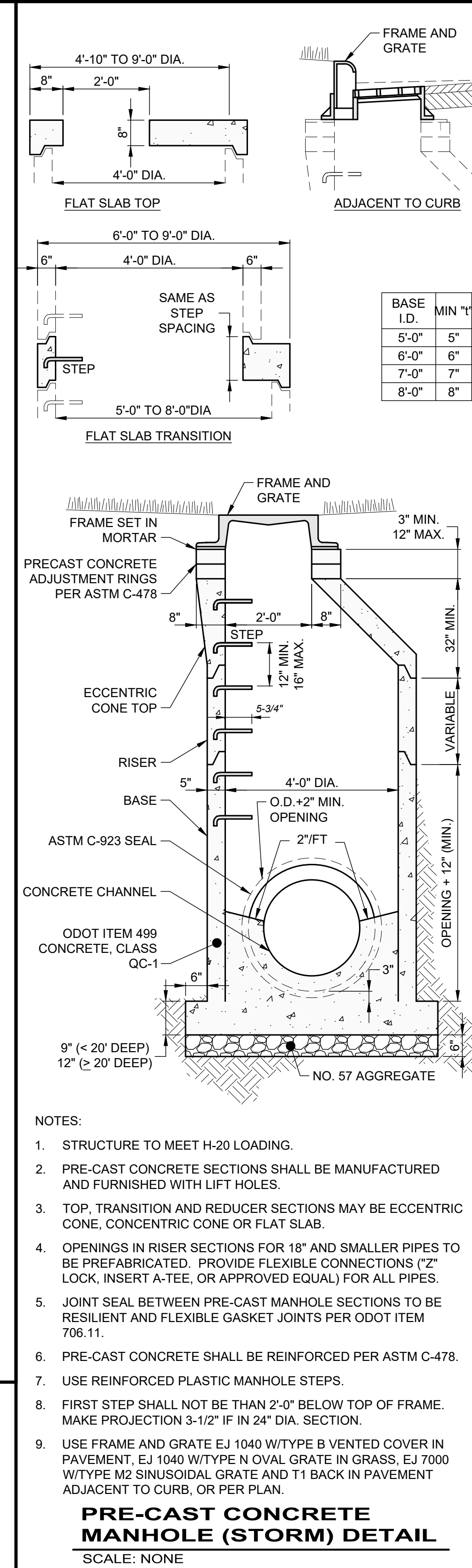
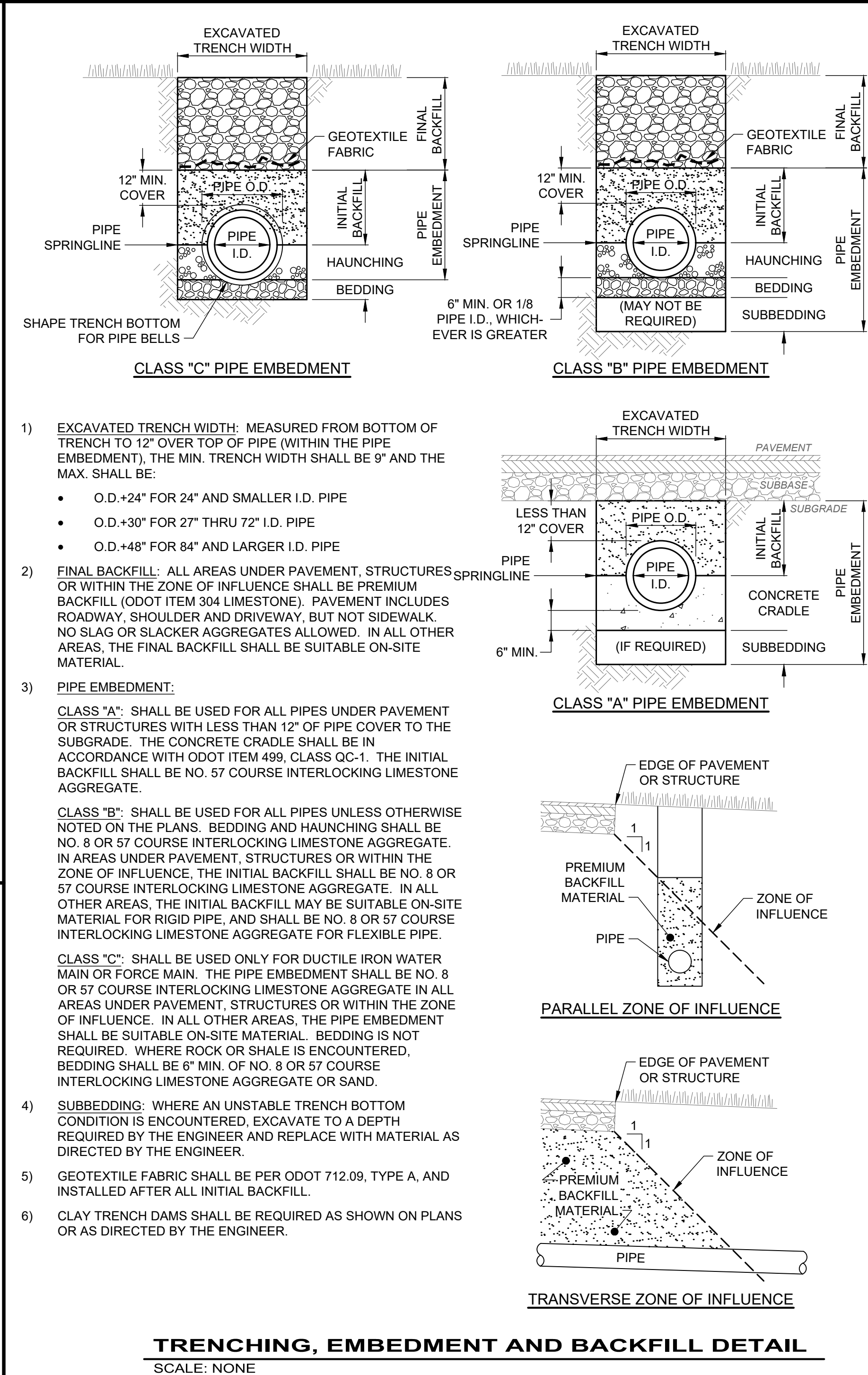
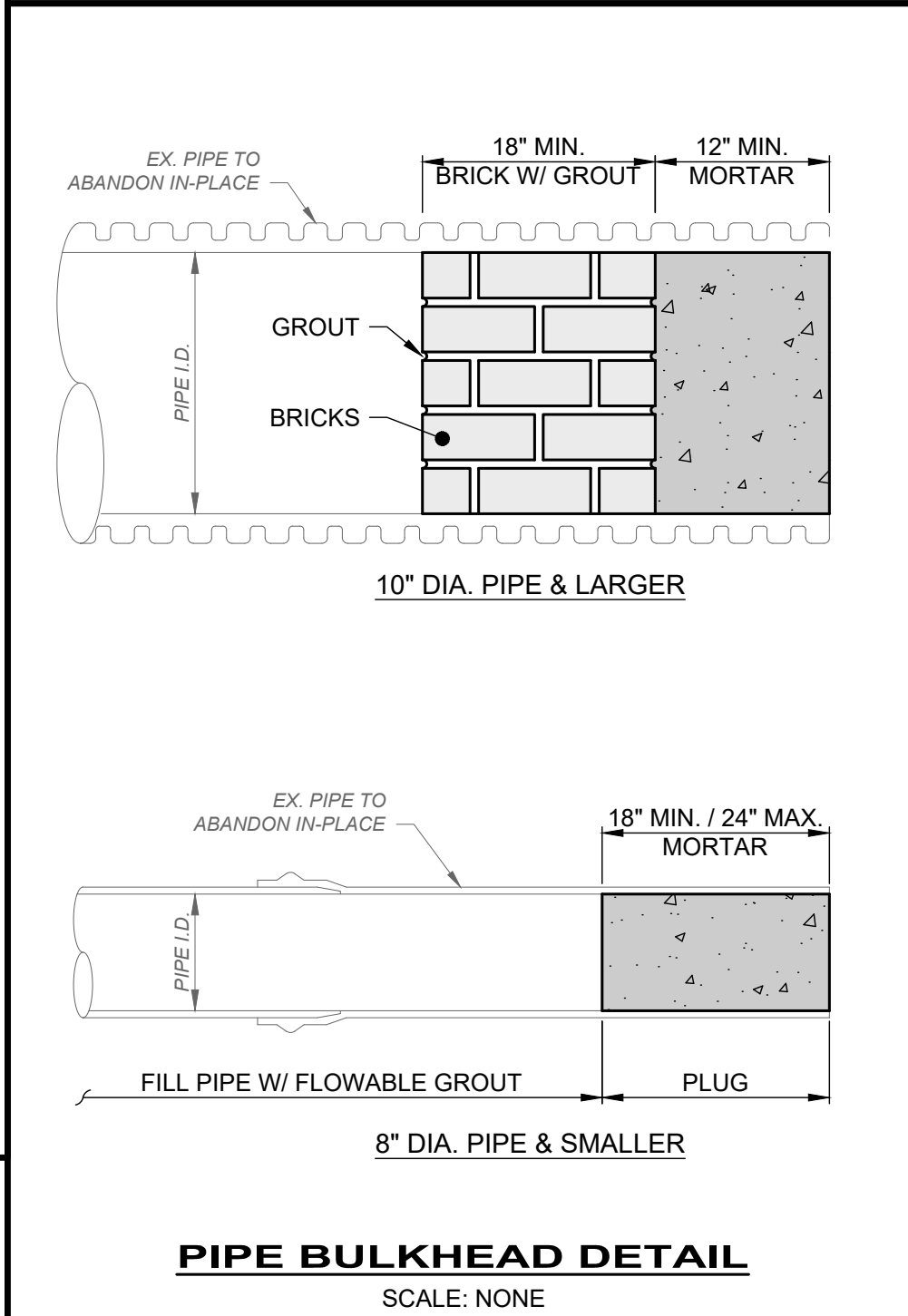
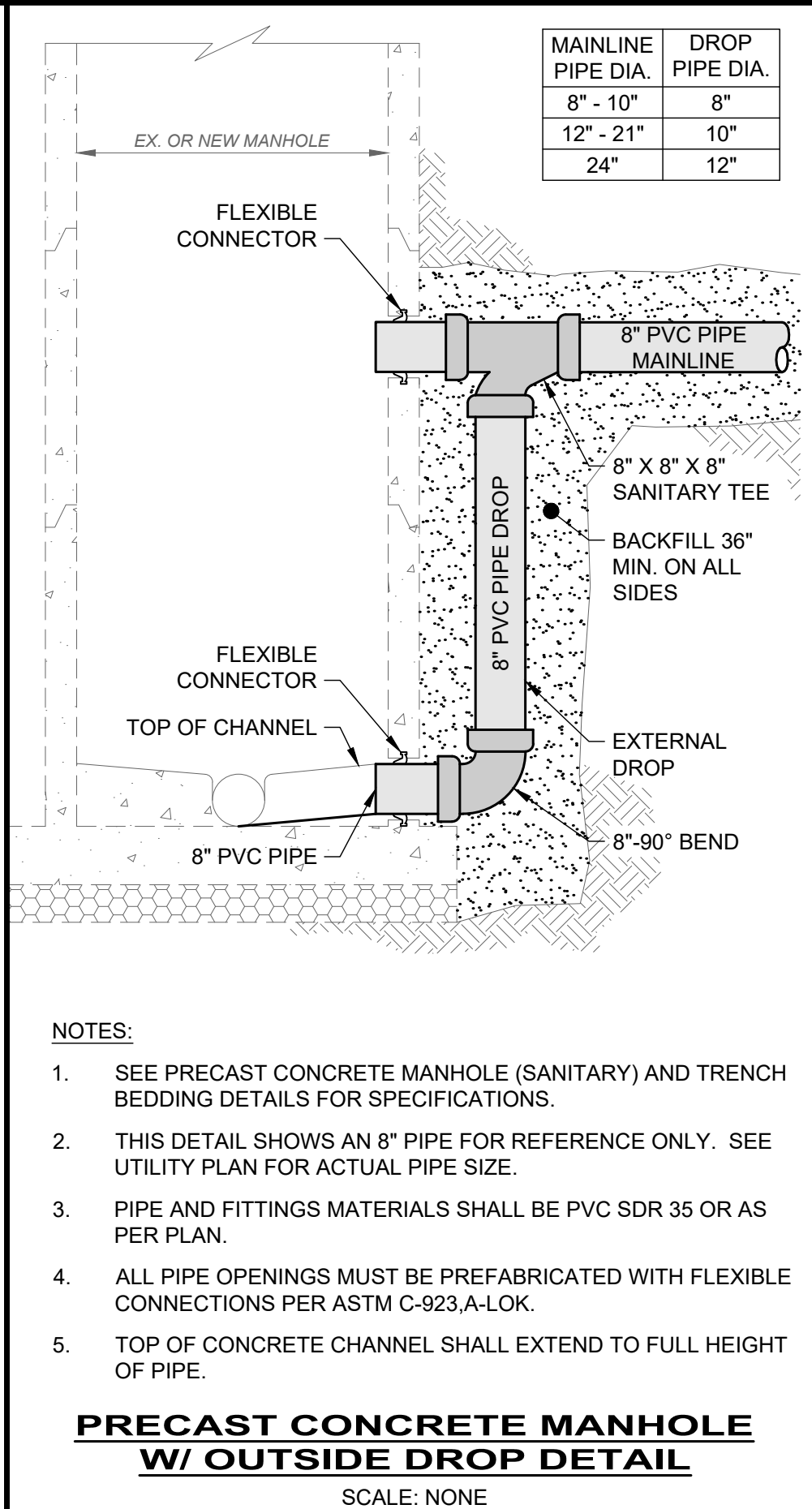
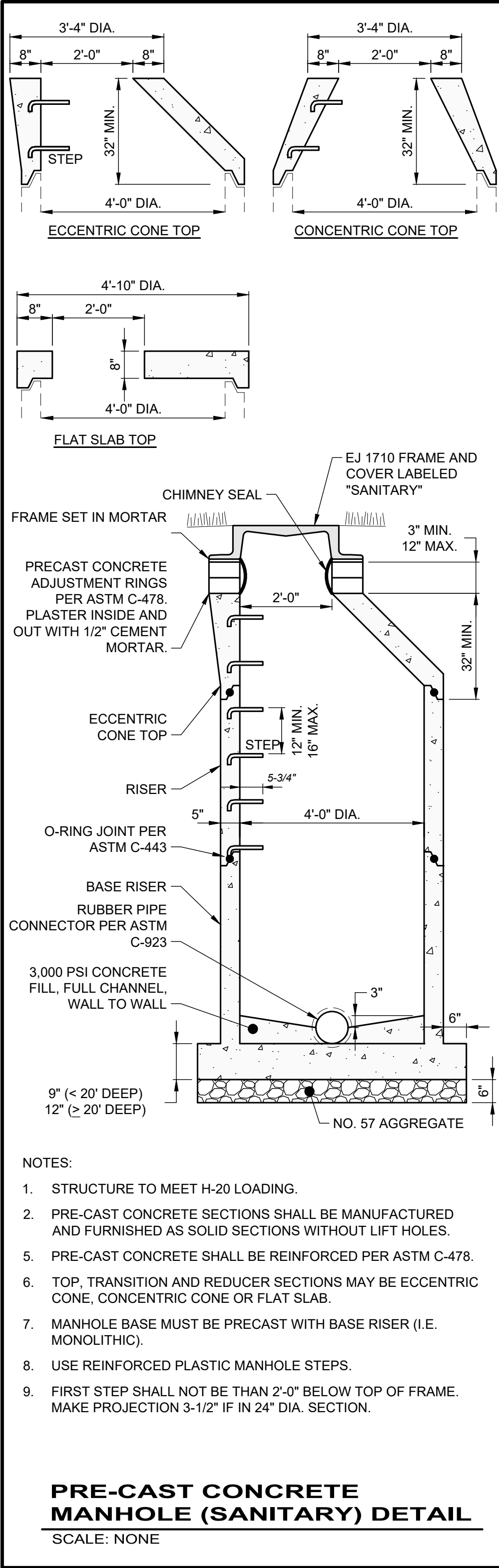
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

STANDARD DETAILS 1

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
DET-1	
SHEET	OF
32	43





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NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

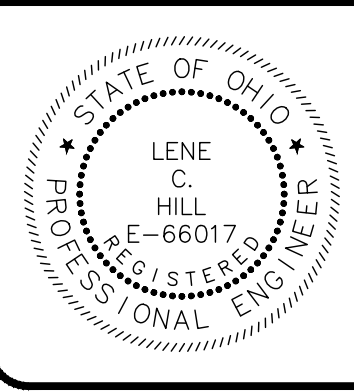
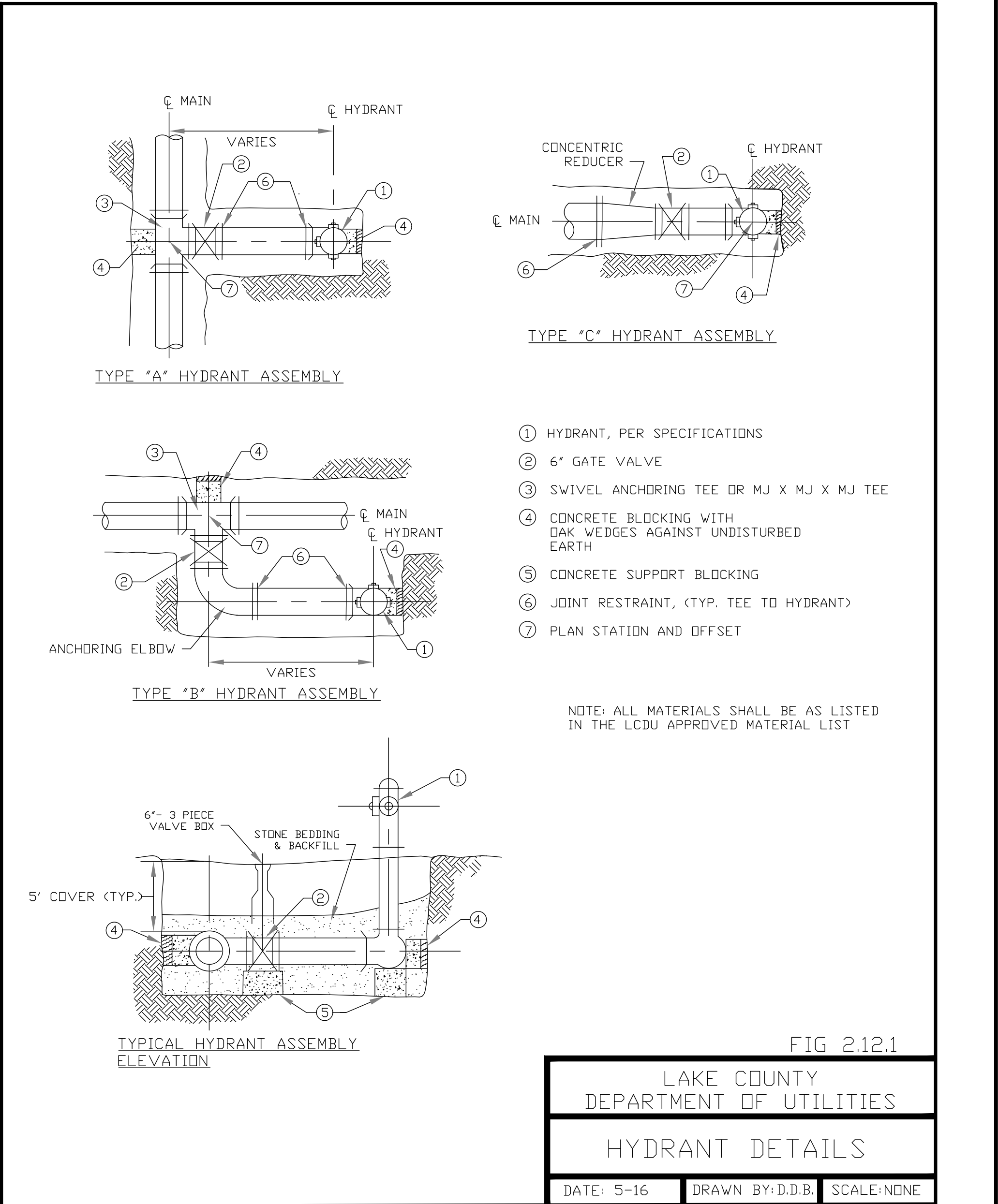
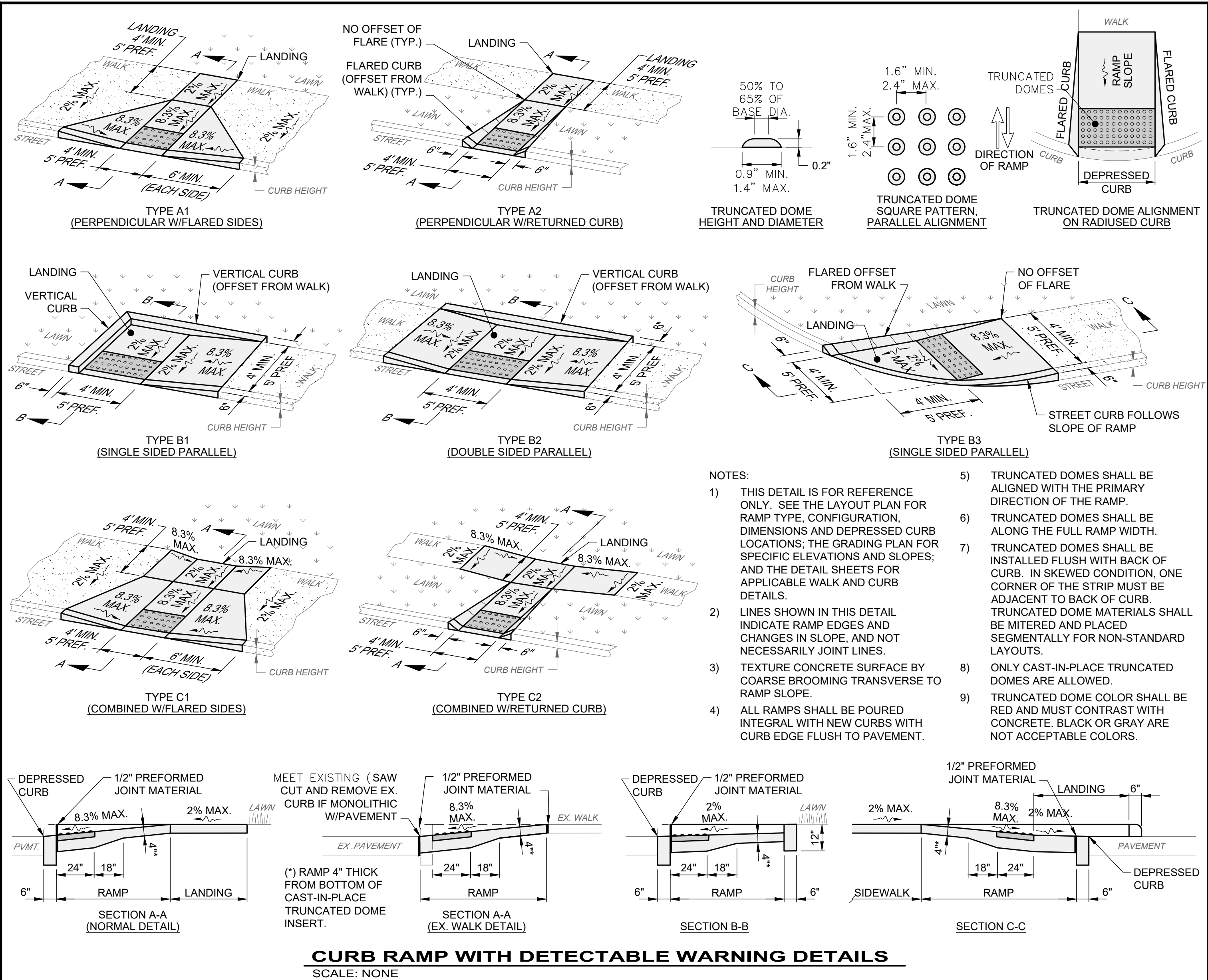
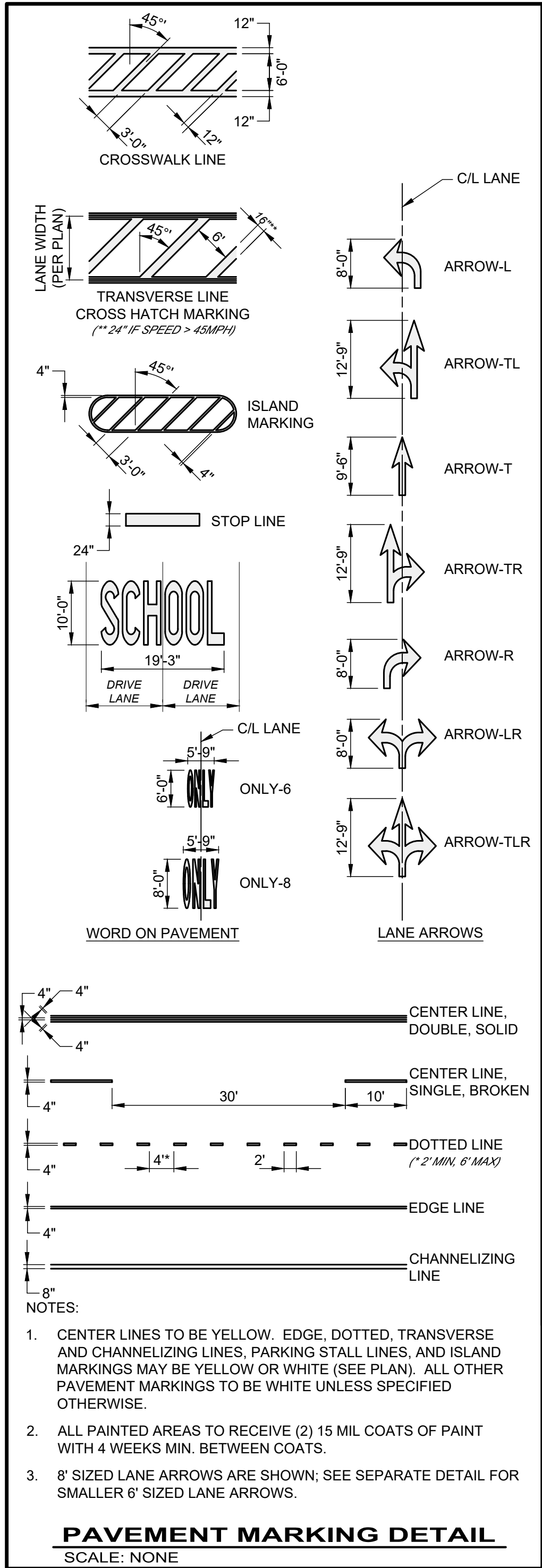
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

**STANDARD DETAILS 2**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	DET-2
SHEET	OF
33	43





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NO	REVISION	DATE

**CITY OF WILLOUGHBY**  
**NASON BASIN TO GROVE AVENUE**  
**STORM SEWER IMPROVEMENTS**  
**PHASE 1**

LAKE COUNTY

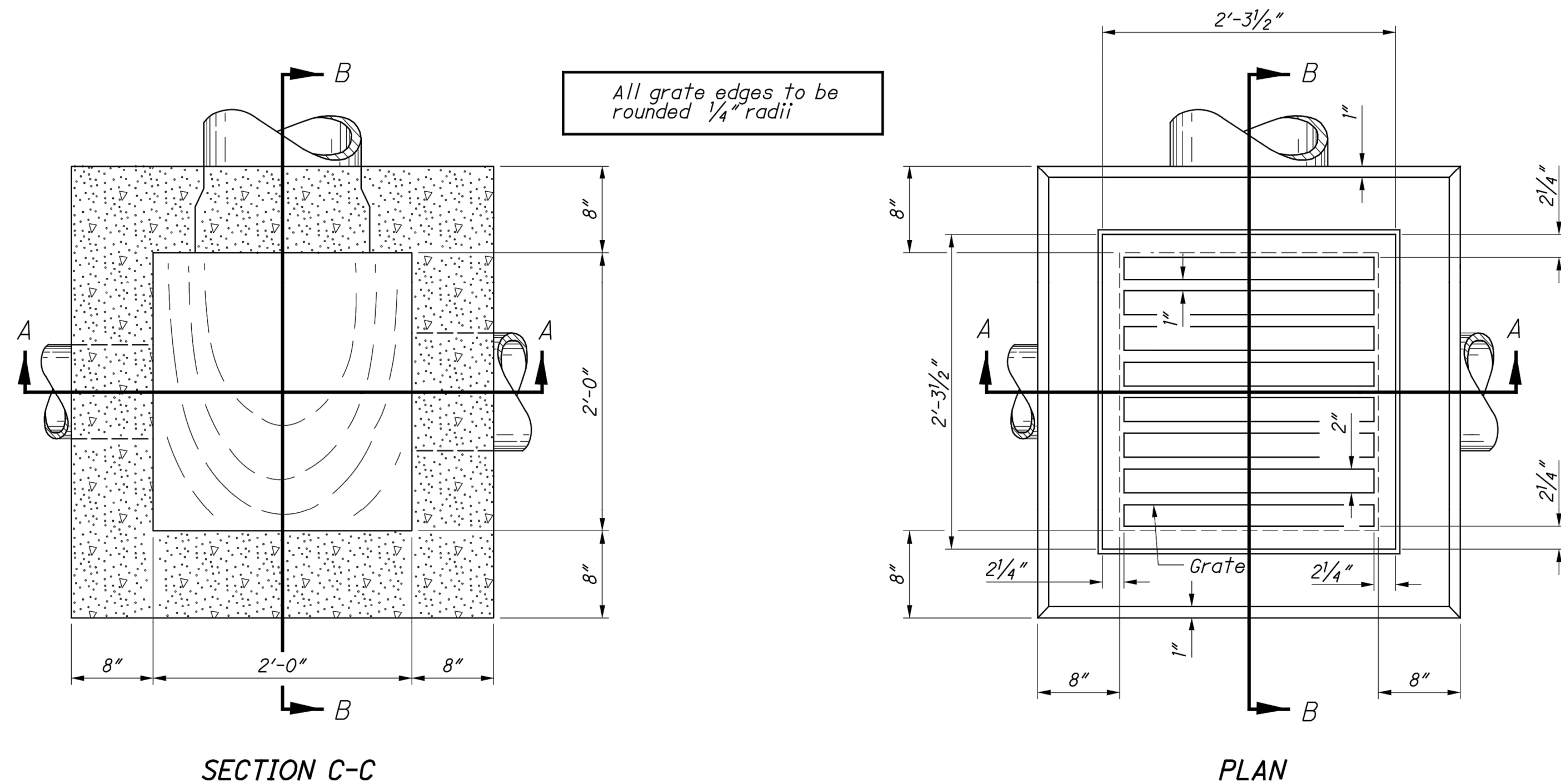
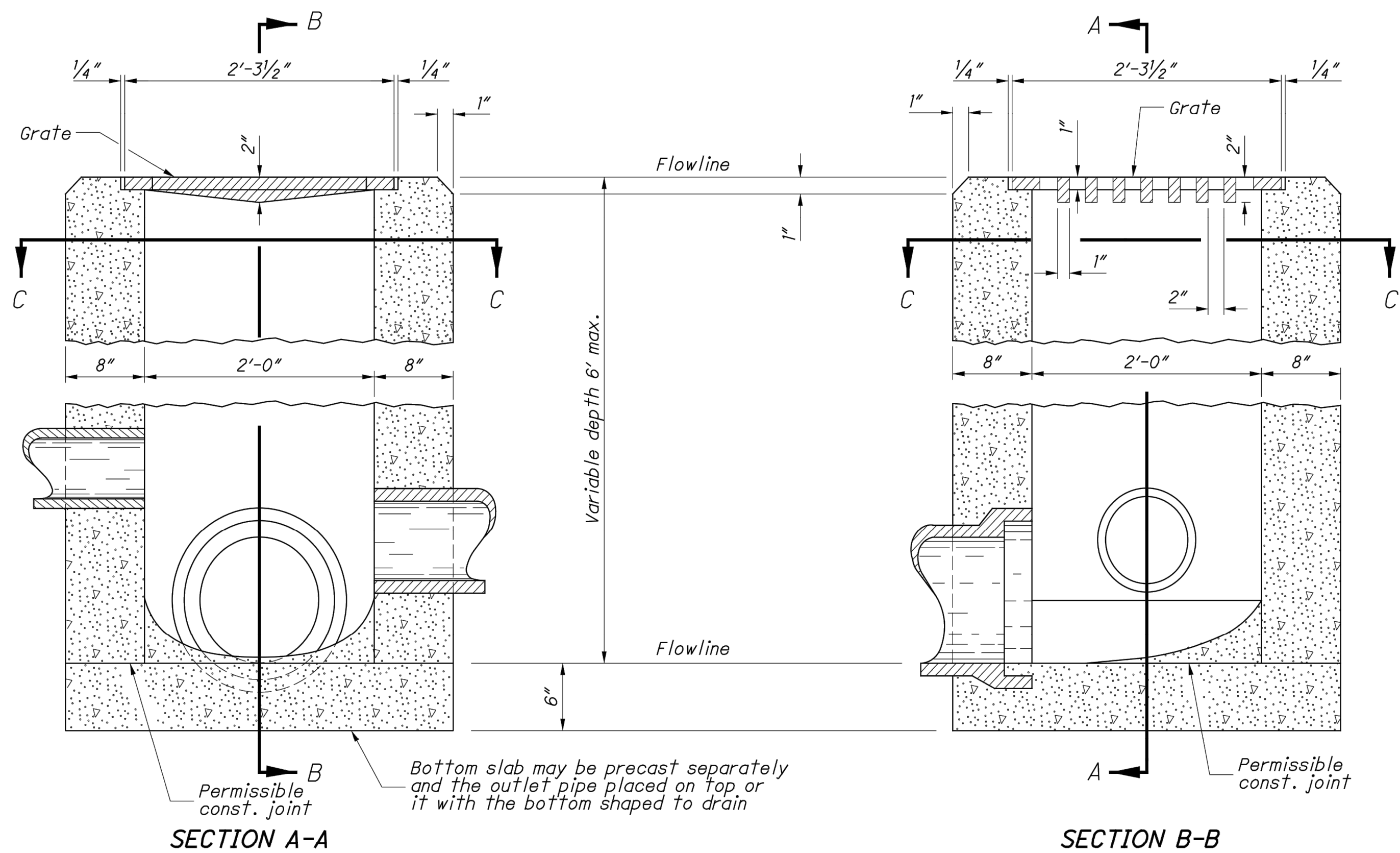
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LGH

**STANDARD DETAILS 3**

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	DET-3
SHEET	OF
34	43





CATCH BASIN No. 2-2B

## NOTES

**CATCH BASINS 2-2A & B:** This sheet depicts Catch Basin 2-2B. See Sheet 1 of 2 for Catch Basin 2-2A.

**GRATE:** Furnish a design essentially the same and equally as strong as the one shown (see Construction Information table), or meet the requirements of CMS 711.14. Provide grate openings and dimensions as shown here unless otherwise shown in the plans.

If necessary, bicycle safe grates will be specified in the plans. Furnish Neenah No. R-4859-C or East Jordan No. 5110 Type M3 bicycle safe grates or approved equals.

Cast the following text into the top of the grate:

**"DRAINS TO WATERWAY" and "DUMP NO WASTE"**

Print text in bold, capital letters at least 1/2" high. "WATERWAY" may be substituted with "STREAM", "RIVER", "LAKE", etc. Actual placement and logo may vary per manufacturer.

**WALLS:** Construct brick or cast-in-place walls with a nominal 8" thickness. Provide precast walls at least 6" thick with sufficient reinforcing to permit shipping and handling without damage.

**CONCRETE:** Use 4000 psi compressive strength for cast-in-place concrete. Meet the requirements of CMS 706.13 for all precast concrete and mark with the catch basin number.

**PRECAST BASE:** If a precast base is used, set it deep enough so that the top can be placed on the base to provide the grate elevation specified in the plans. Do not use brick layers to adjust the top elevation.

**LOCATION AND ELEVATION:** When given on the plans, location and elevation are at the top center of the grate. When side openings are provided, the elevation is at the flow line of the side inlet.

**MINIMUM DEPTH:** The minimum depth of CB No. 2-2B is the outside diameter (O.D.) of the outlet pipe plus 4".

**2-2B GRATE ELEVATION:** Place grate elevation 4" to 6" below normal ditch and return to normal 10' to 15' each side of inlet.

**OPENINGS:** Ensure pipe openings are the O.D. of the pipe being supplied plus 2" when fabricated or field cut. Fill any voids per C&MS 611.

**PAYMENT:** All materials and labor, including excavation and backfilling, are paid for under **Item 611 - Catch Basin, No. 2-2B**.

## CONSTRUCTION INFORMATION

Minimum weight of grate, 120 lbs.

CATCH BASIN	OUTLET PIPE SIZE
2-2A	12" to 21"
2-2B	12" to 21"

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

REVISIONS  
7-20-01  
7-19-02  
7-15-05  
7-20-12  
1-18-13  
1-15-16

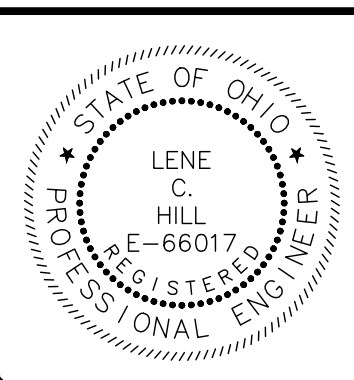
ROADWAY  
HYDRAULIC  
ENGINEER  
Matt  
Cuzzoli

OFFICE OF  
HYDRAULIC  
ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING  
CATCH BASINS No's 2-2A & B

SCD NUMBER  
CB-1.1

2 / 2



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NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

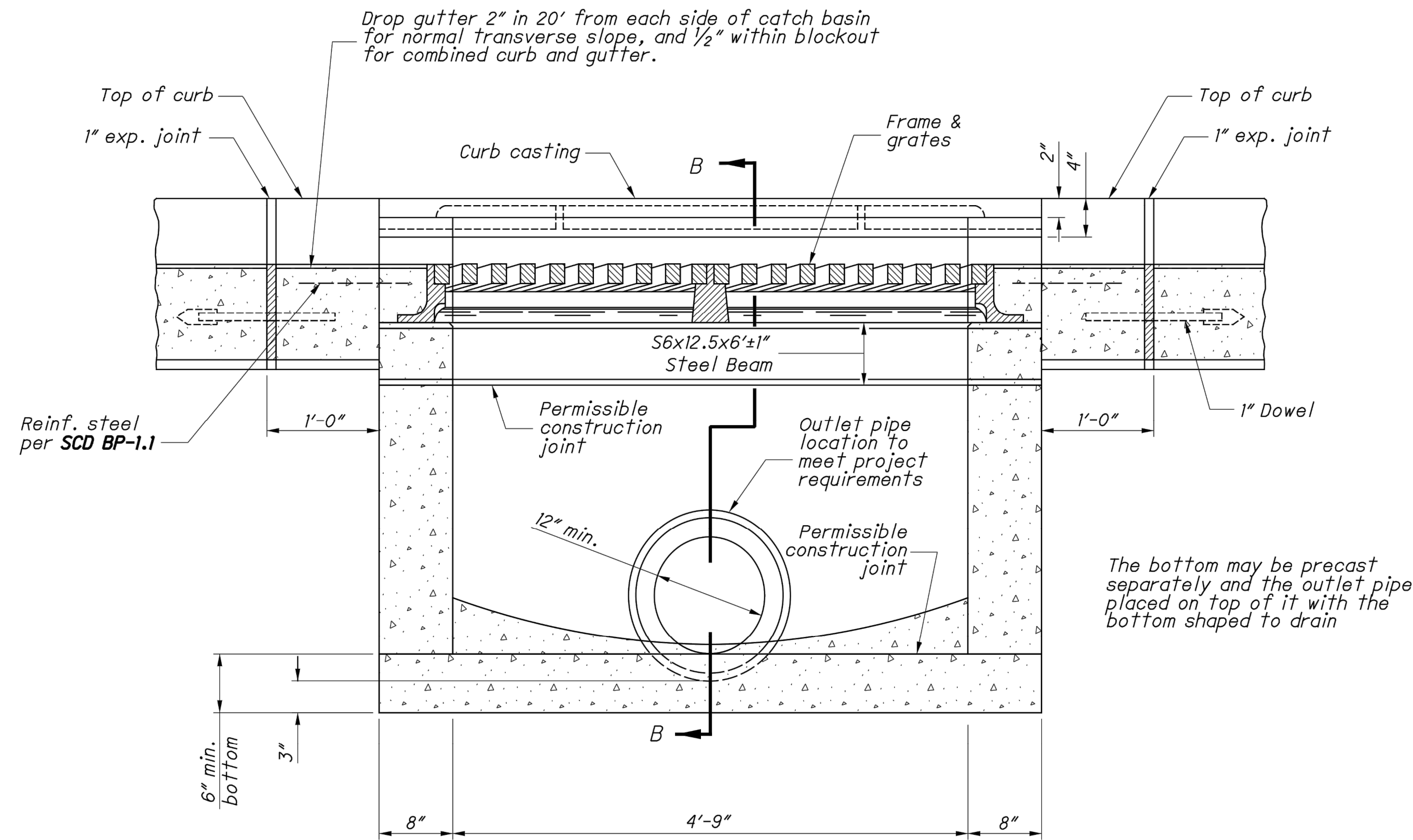
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

ODOT CATCH BASIN TYPE 2-2B DETAILS

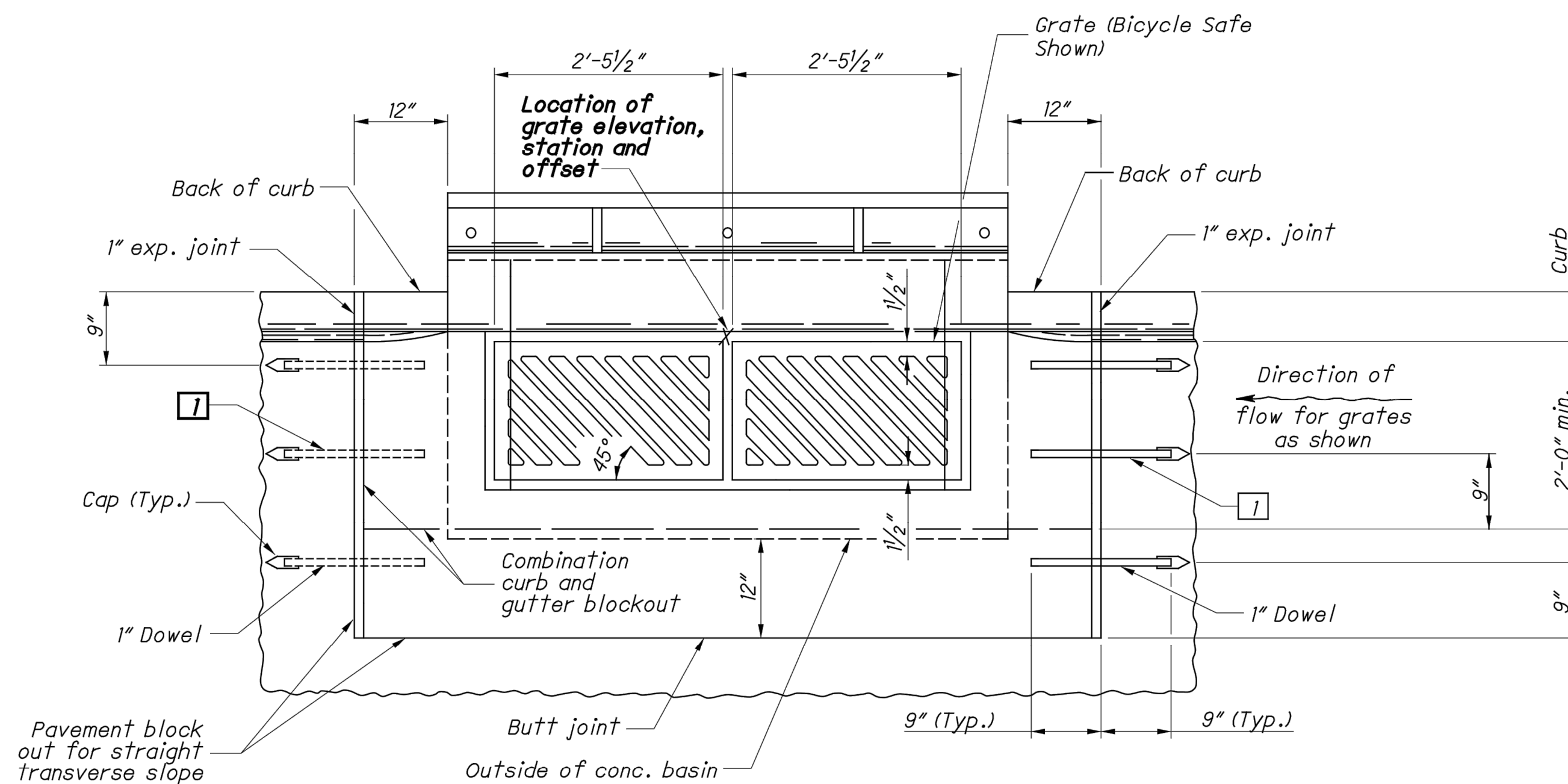
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DISCIPLINE	CIVIL
SHEET NAME	CB-1
SHEET	OF
35	43





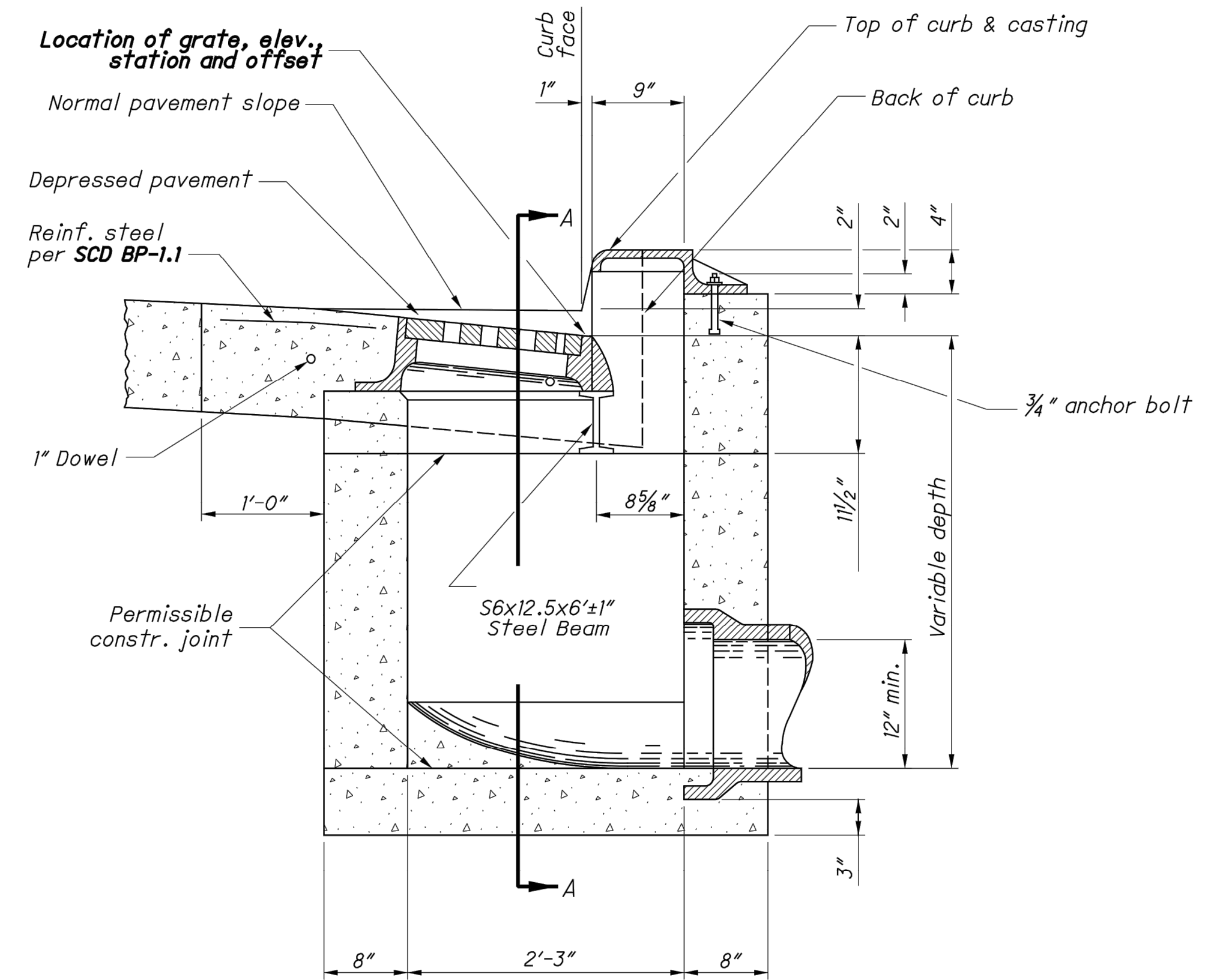
SECTION A-A

1 Dowel location for curb & gutter

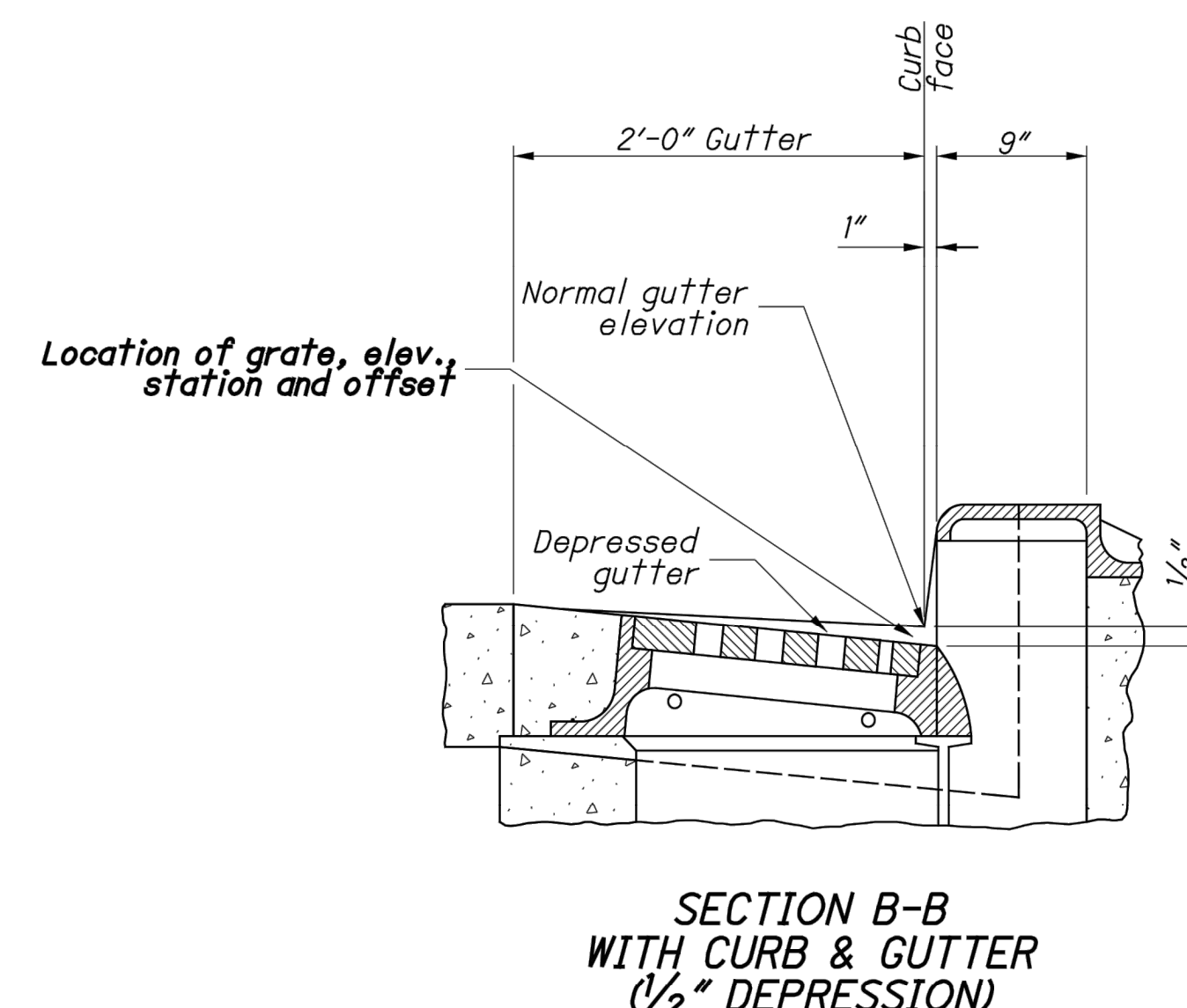


PLAN OF CATCH BASIN AND PAVEMENT JOINTS

CATCH BASIN No. 3



SECTION B-B  
WITH CURB  
(2" DEPRESSION)



SECTION B-B  
WITH CURB & GUTTER  
(1/2" DEPRESSION)

See Sht. 2/2 for NOTES

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

ROADWAY  
HYDRAULIC  
ENGINEER

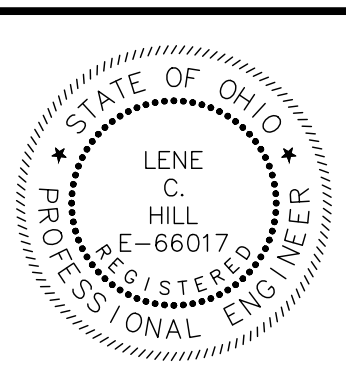
OFFICE OF  
HYDRAULIC  
ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING  
CATCH BASIN NO. 3

SCD NUMBER  
CB-2.1

1 / 2

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
CB-2	
SHEET	OF
36	43



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NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

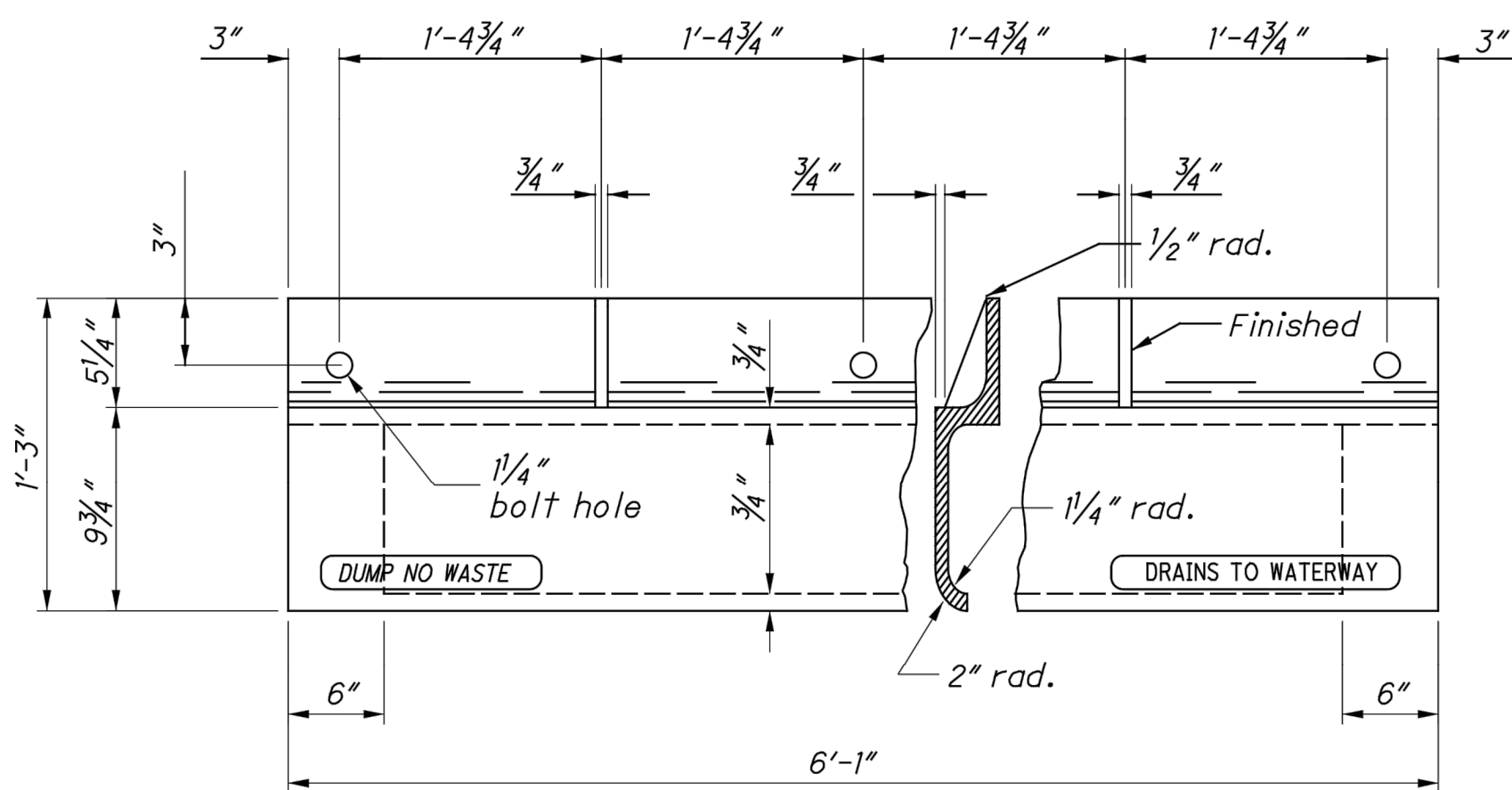
LAKE COUNTY

WILLOUGHBY, OHIO

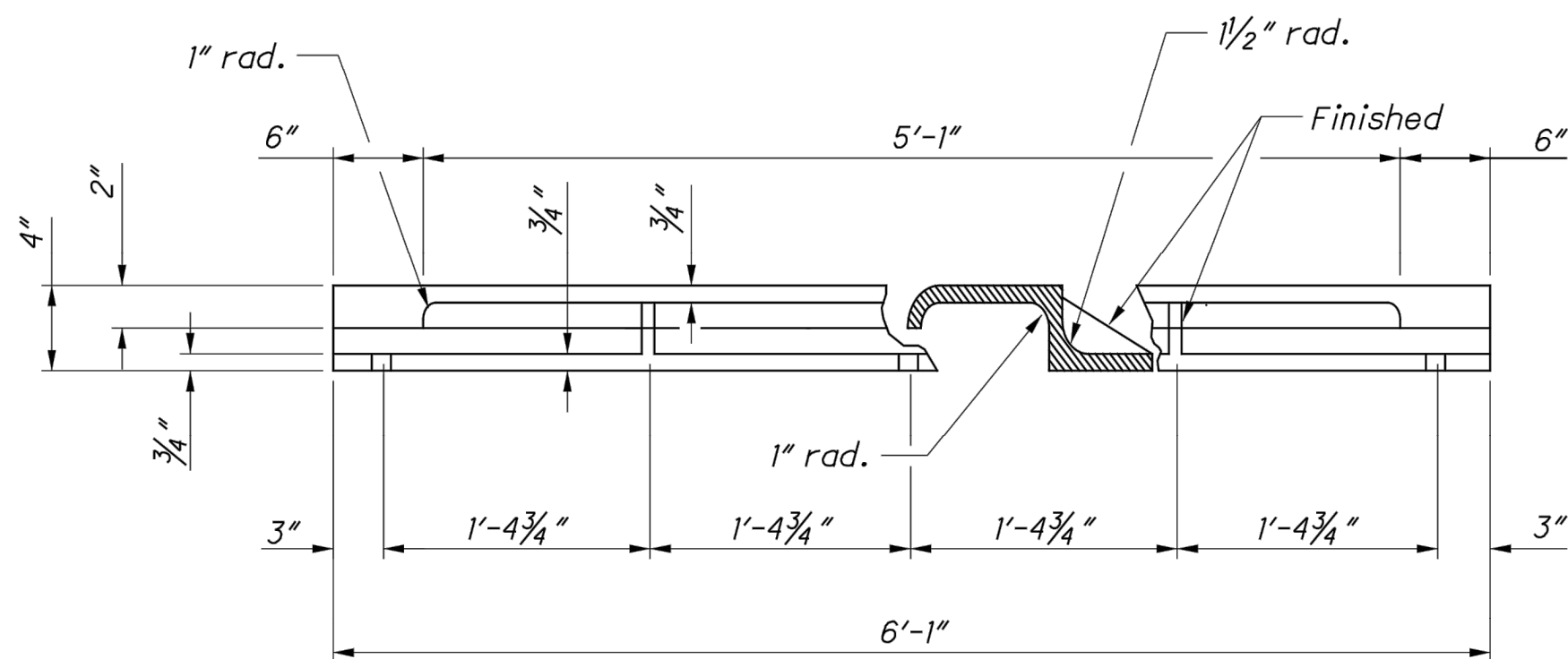
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
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DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

ODOT CATCH BASIN TYPE 3 DETAILS 1

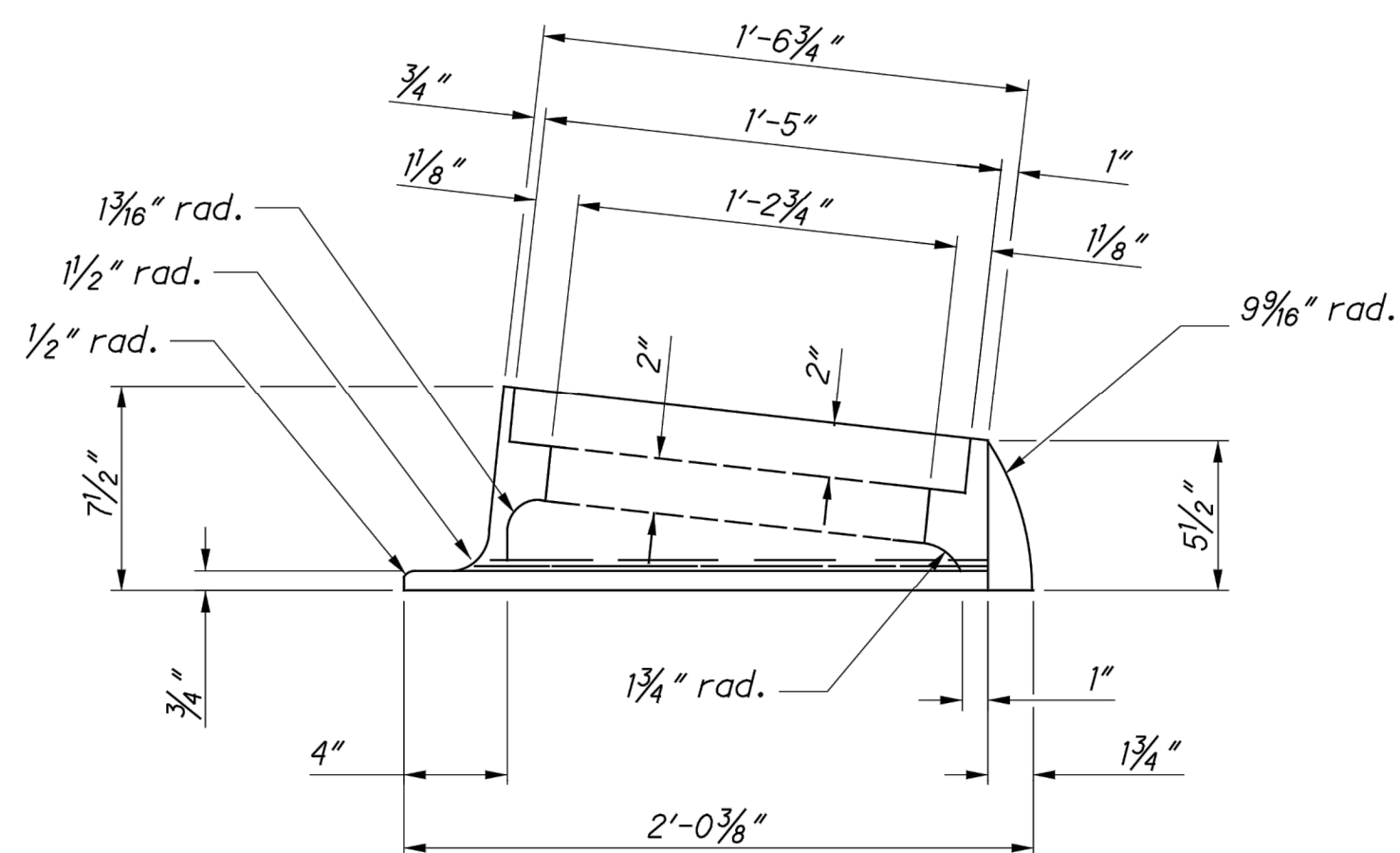




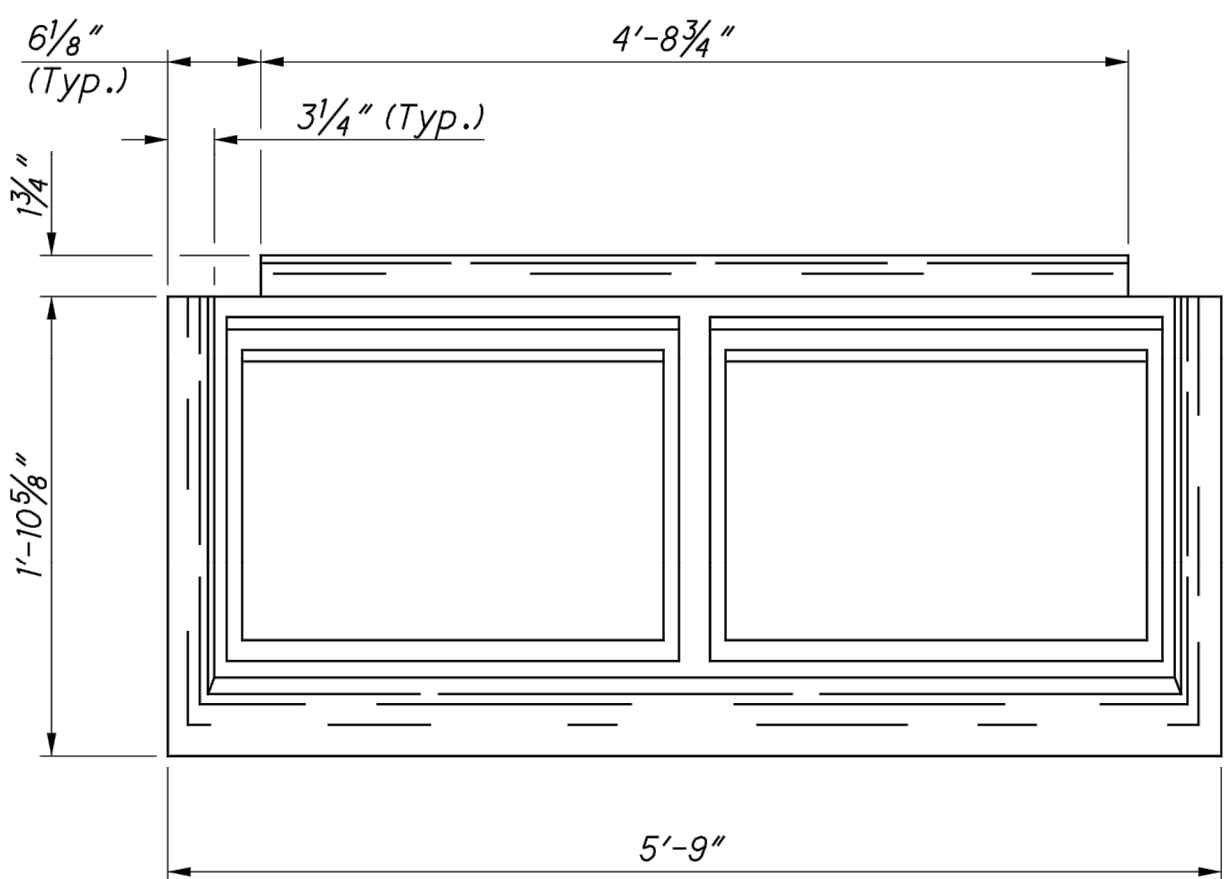
PLAN & SECTION



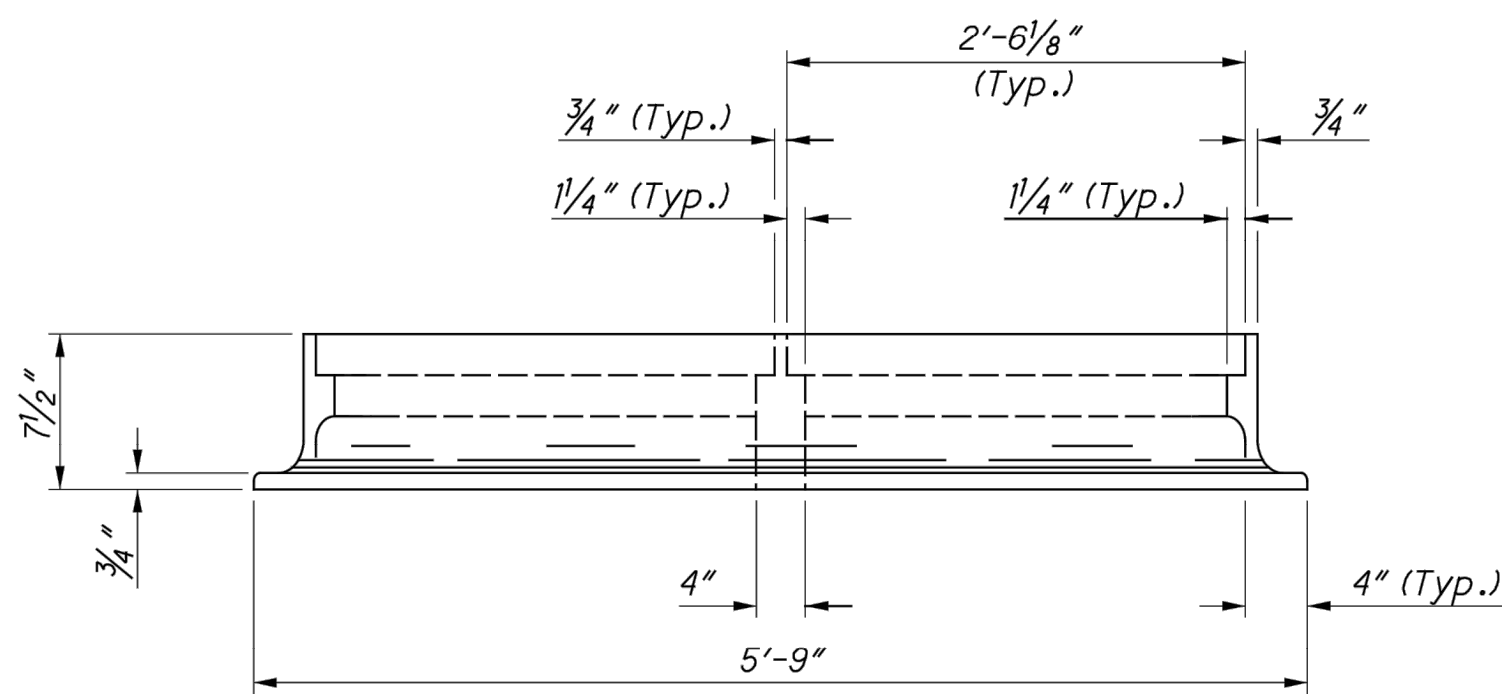
FRONT VIEW & SECTION  
CURB CASTING



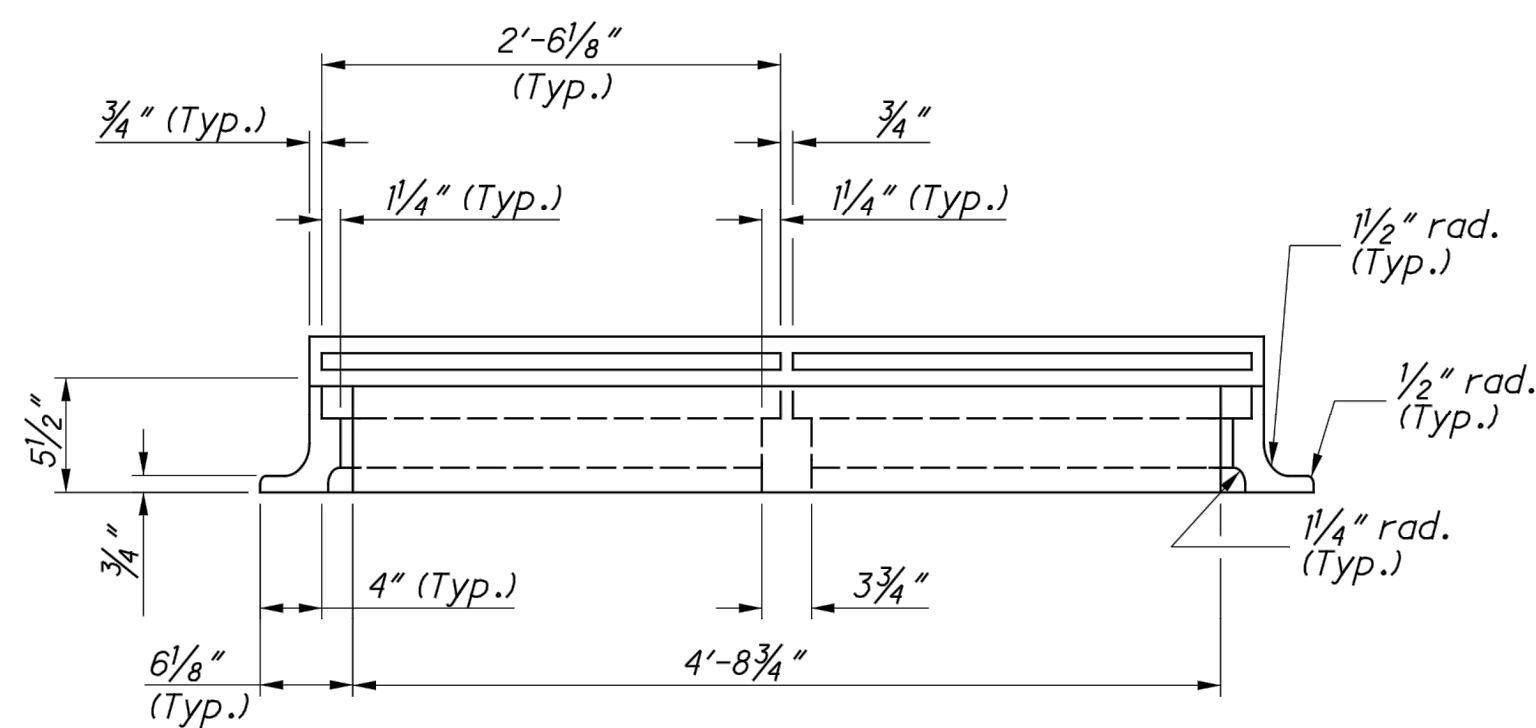
END VIEW FRAME



PLAN



FRONT VIEW



BACK VIEW

FRAME

## NOTES

**GRATES:** Two required. For details, see **SCD CB-2.2**. Provide Grate "V" unless the plans specifically require the diagonal grate. If the diagonal grate is specified, place it so that the diagonal bars direct drainage flow toward the curb.

**CASTINGS:** Provide a design essentially the same and equally as strong as the one shown. Minimum weight:

Curb Casting . . . . . 305 lbs.  
Two Grates . . . . . 254 lbs.  
Frame . . . . . 590 lbs.  
Two Grate "V" . . . . . 210 lbs.

Lighter weight frames and grates that meet the requirements of CMS 711.14 may also be provided. Provide grate openings and dimensions as shown here unless otherwise shown in the plans.

Cast the following text into the top of the curb casting:

**"DUMP NO WASTE" and "DRAINS TO WATERWAY"**

Print text in bold, capital letters at least 3/4" high. See example on Plan & Section. "WATERWAY" may be substituted with "STREAM", "RIVER", "LAKE", etc. Actual placement and logo may vary per manufacturer.

**BEARING AREAS:** Fit and finish the frame and grate to provide a firm and even seat. No projections are permitted on bearing areas, and the grate must seat in its frame without rocking.

**WALLS:** When used in place of concrete, construct brick side walls with 8" nominal thickness.

**PRECAST CONSTRUCTION:** Permitted, except for the apron. Meet CMS 706.13 concrete requirements. Provide precast walls at least 6" thick with sufficient reinforcing to permit shipping and placement without damage. Reduce the wall thickness from the outside.

**MINIMUM DEPTH:** The minimum depth is per the cover requirements for that pipe type.

**OPENINGS:** Ensure pipe openings are the O.D. of the pipe being supplied plus 2" when fabricated or field cut. Fill any voids per C&MS 611.

**DOWELS:** Furnish four 1"x18" dowels for concrete pavement or gutter breakout. See **SCD BP-2.2** for dowel details.

**BLOCKOUT:** Pave blockouts with 4000 psi compressive strength concrete in PCC pavement or gutter. Blockouts are paid for as part of the pavement or gutter with no deduction in pavement, curb or gutter quantities because of the castings. Cast a 4000 psi compressive strength concrete apron, the size of the 2'-0" gutter blockout, in place in asphalt pavement (no dowels required) with the cost included in the catch basin bid price. No deduction is made in curb quantities.

**PAYMENT:** All materials and labor, including excavation and backfilling, are paid for under **Item 611 - Catch Basin, No. 3**.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

ROADWAY  
HYDRAULIC  
ENGINEER

OFFICE OF  
HYDRAULIC  
ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAINING

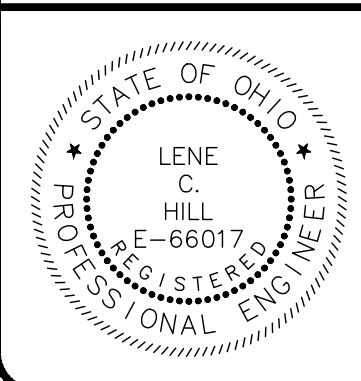
SCD NUMBER  
CB-2.1

2 / 2

STATE HYDRAULIC ENGINEER  
Mott  
Cozzoli

REVISIONS  
7-20-01  
7-19-02  
7-15-05  
7-20-12  
1-18-13  
1-15-16

CATCH BASIN NO. 3



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NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

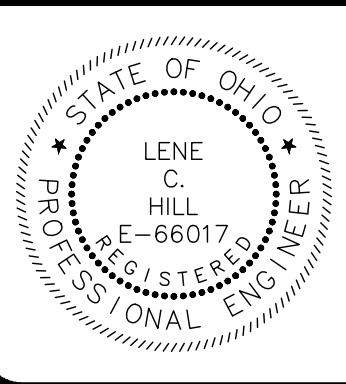
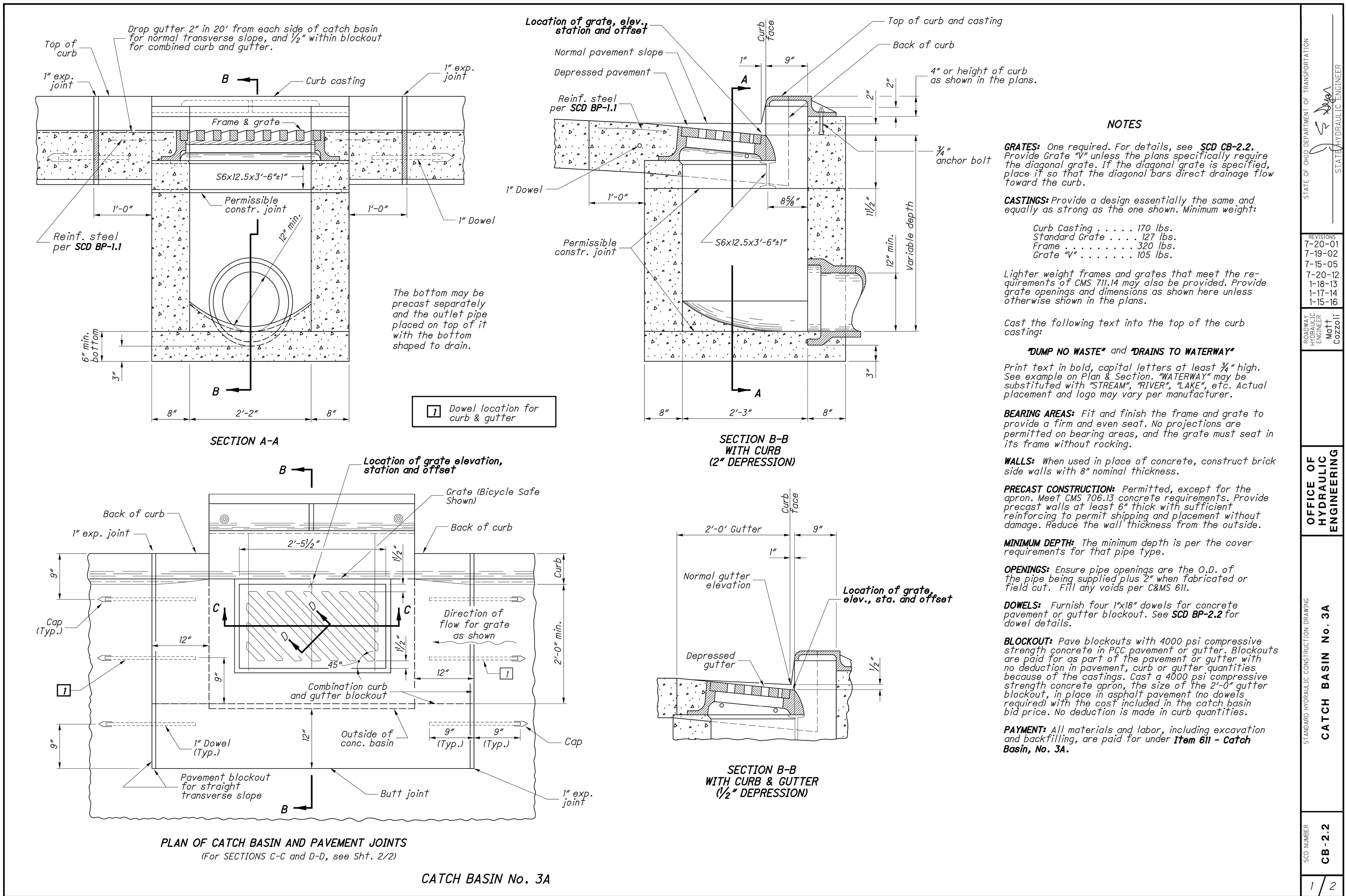
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

ODOT CATCH BASIN TYPE 3 DETAILS 2

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	CB-3
SHEET	OF
37	43





NO	REVISION	DATE

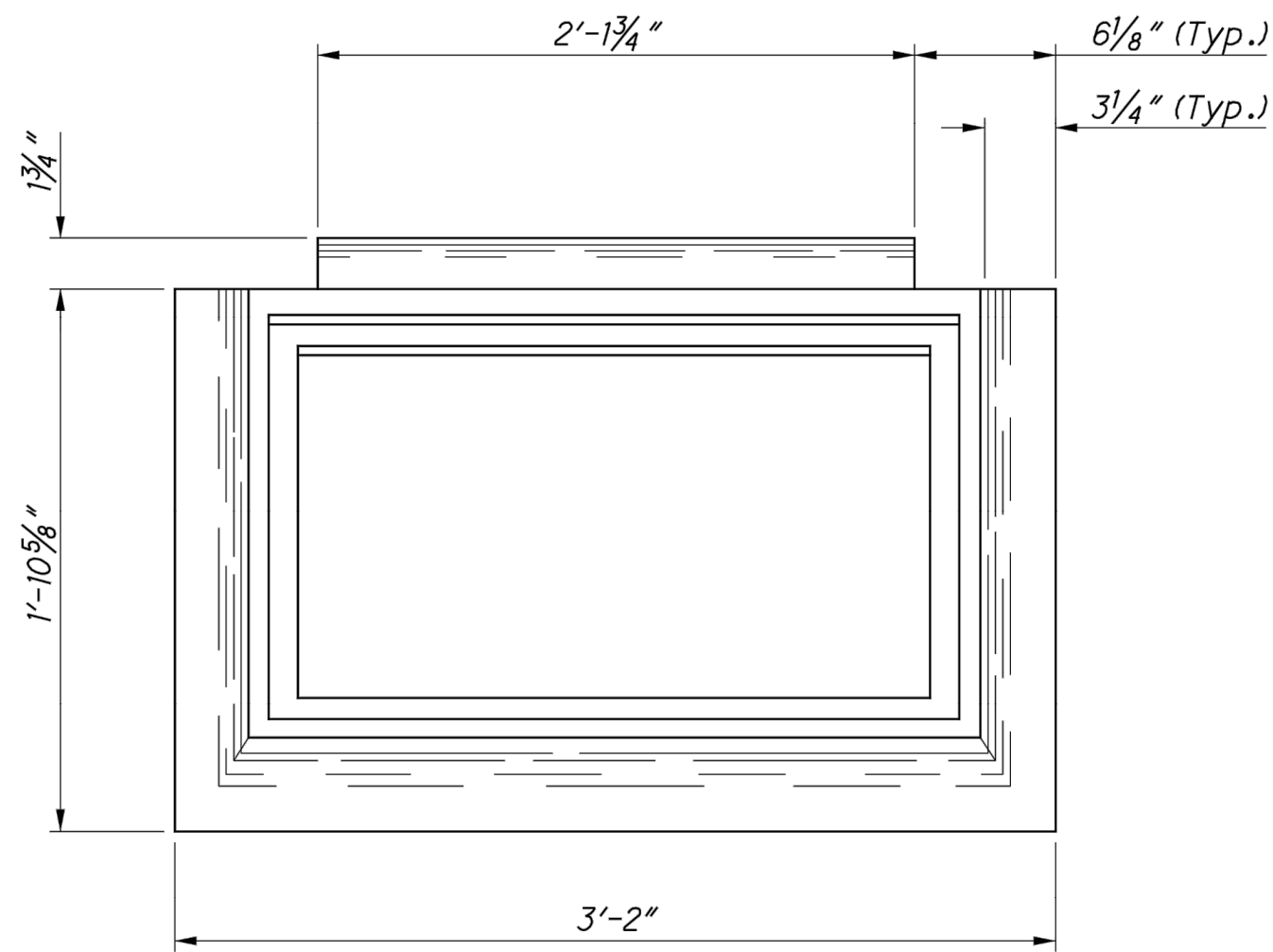
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<b>NASON BASIN TO GROVE AVENUE</b>
<b>STORM SEWER IMPROVEMENTS</b>
<b>PHASE 1</b>
<b>LAKE COUNTY</b>
<b>WILLOUGHBY, OHIO</b>

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

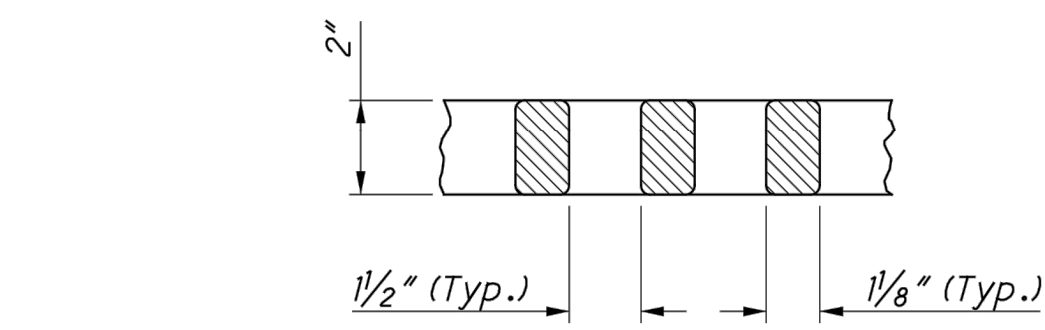
ODOT CATCH BASIN TYPE 3A DETAILS 1

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	CB-4
SHEET	OF
38	43

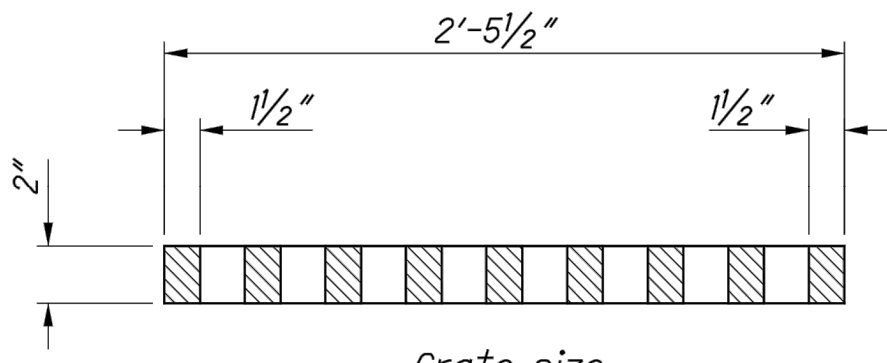




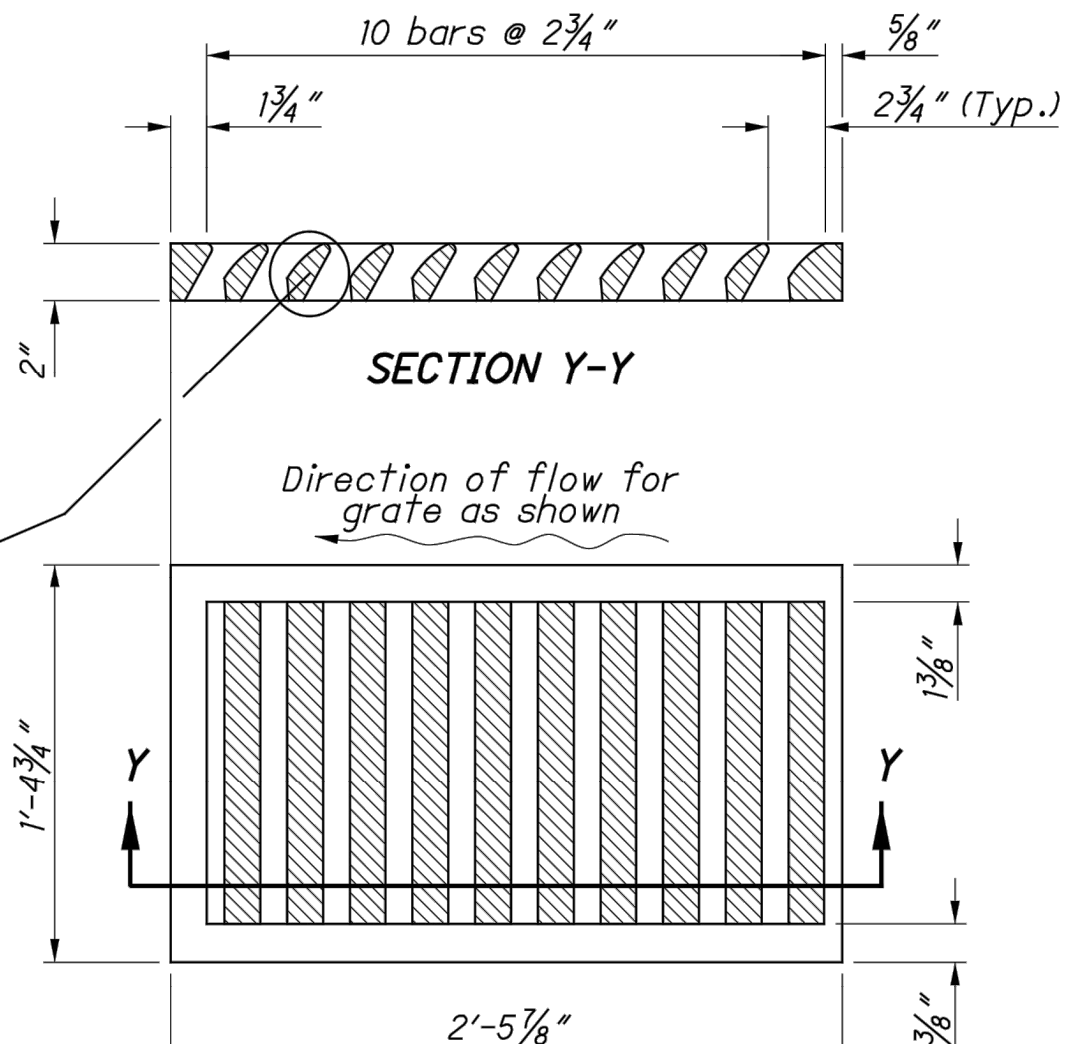
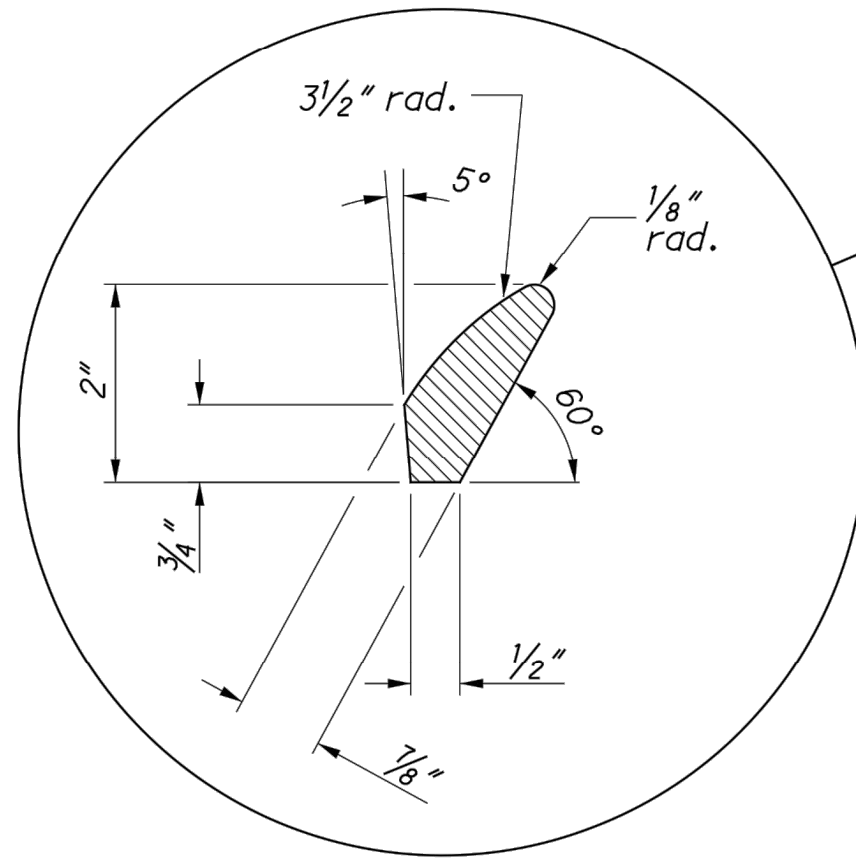
PLAN



SECTION D-D  
(See Sht. 1/2.)



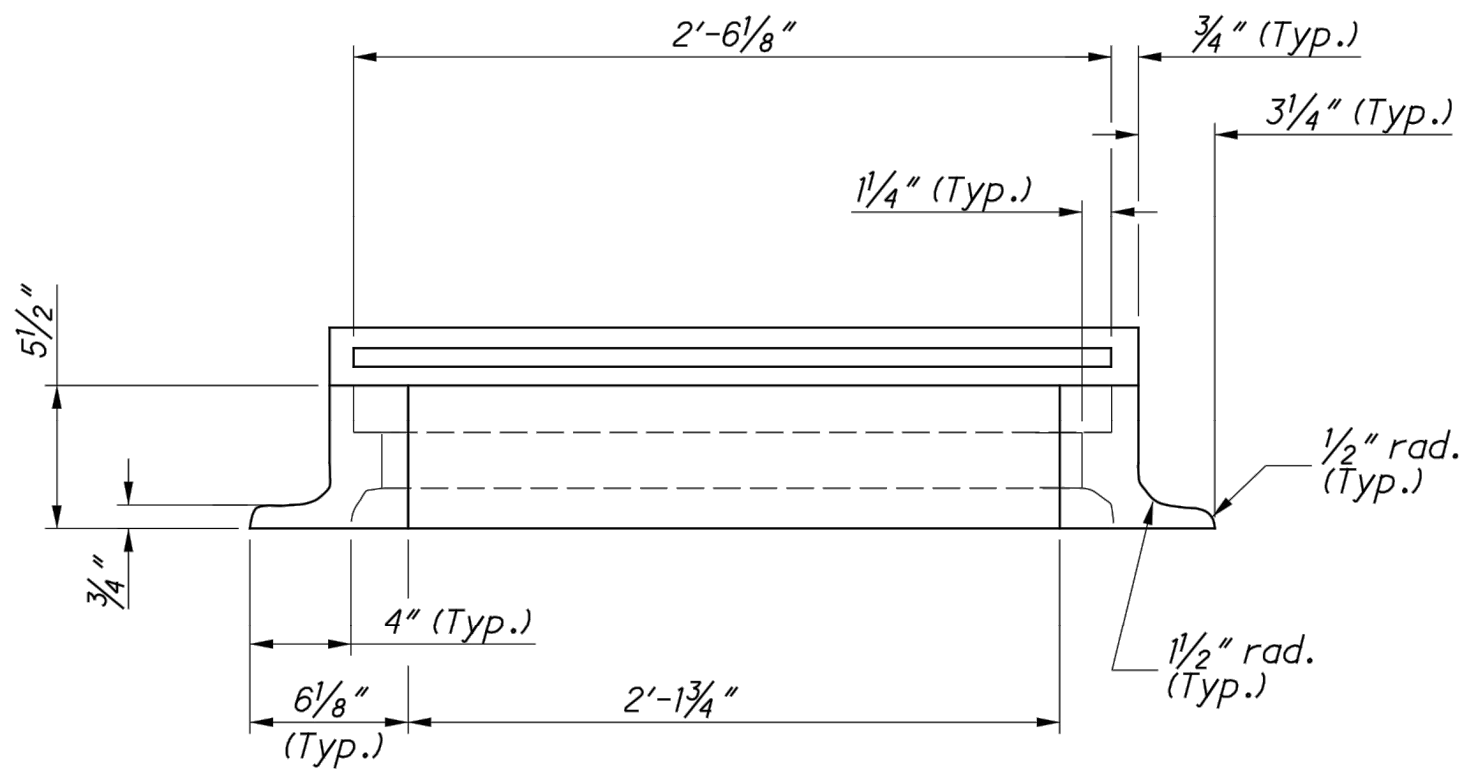
SECTION C-C  
DIAGONAL GRATE  
(See Sht. 1/2)



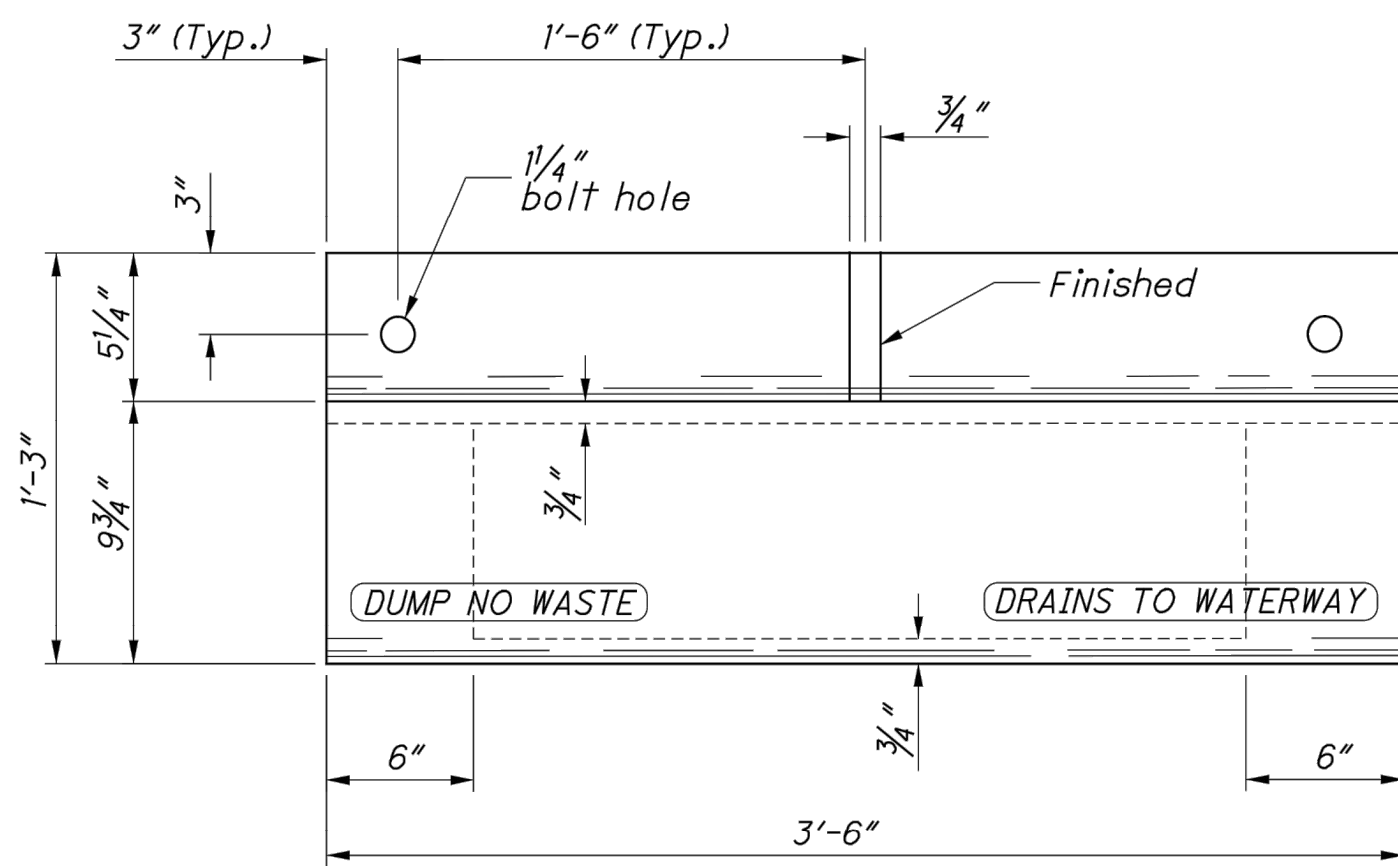
SECTION Y-Y

Direction of flow for grate as shown

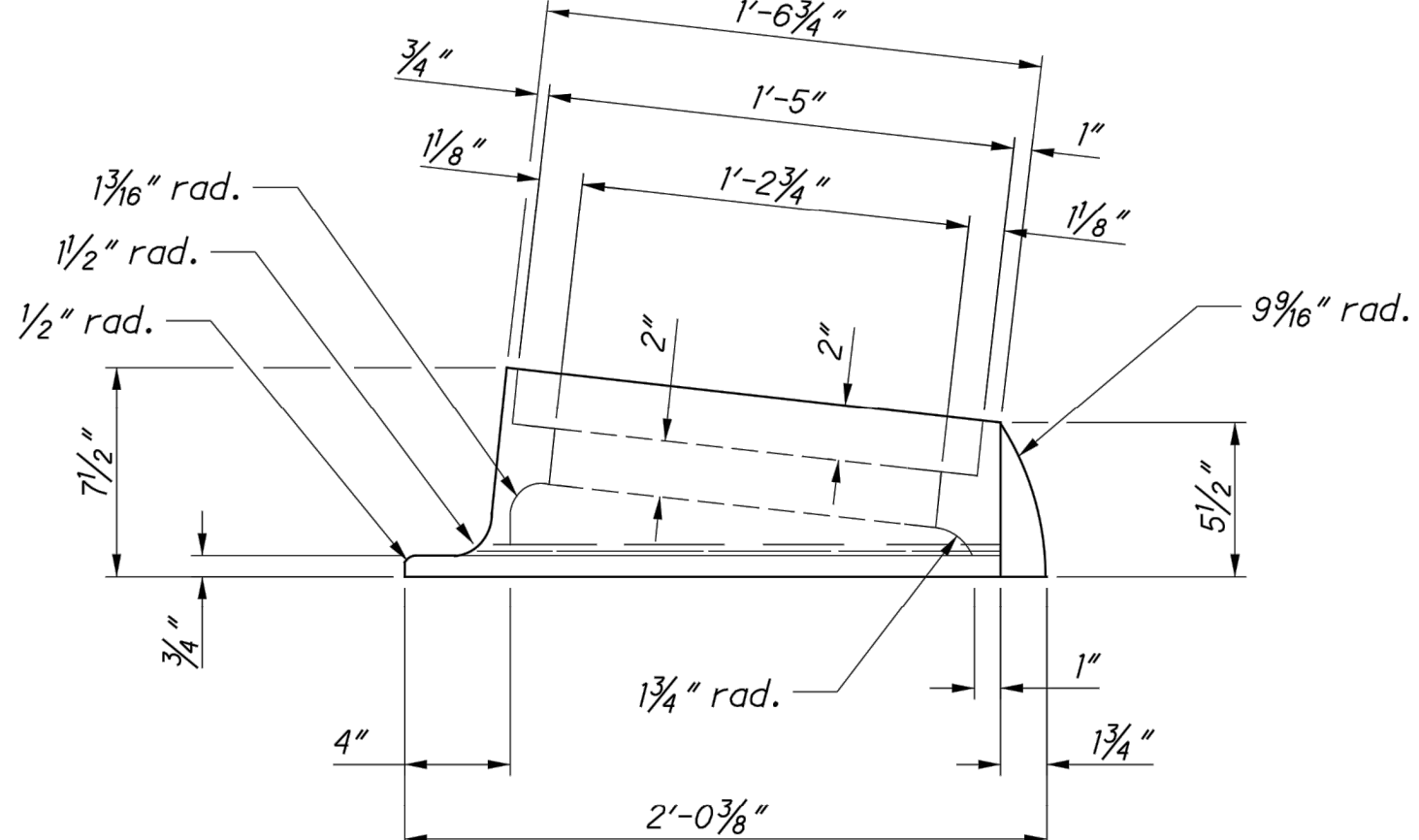
PLAN  
GRATE "V"



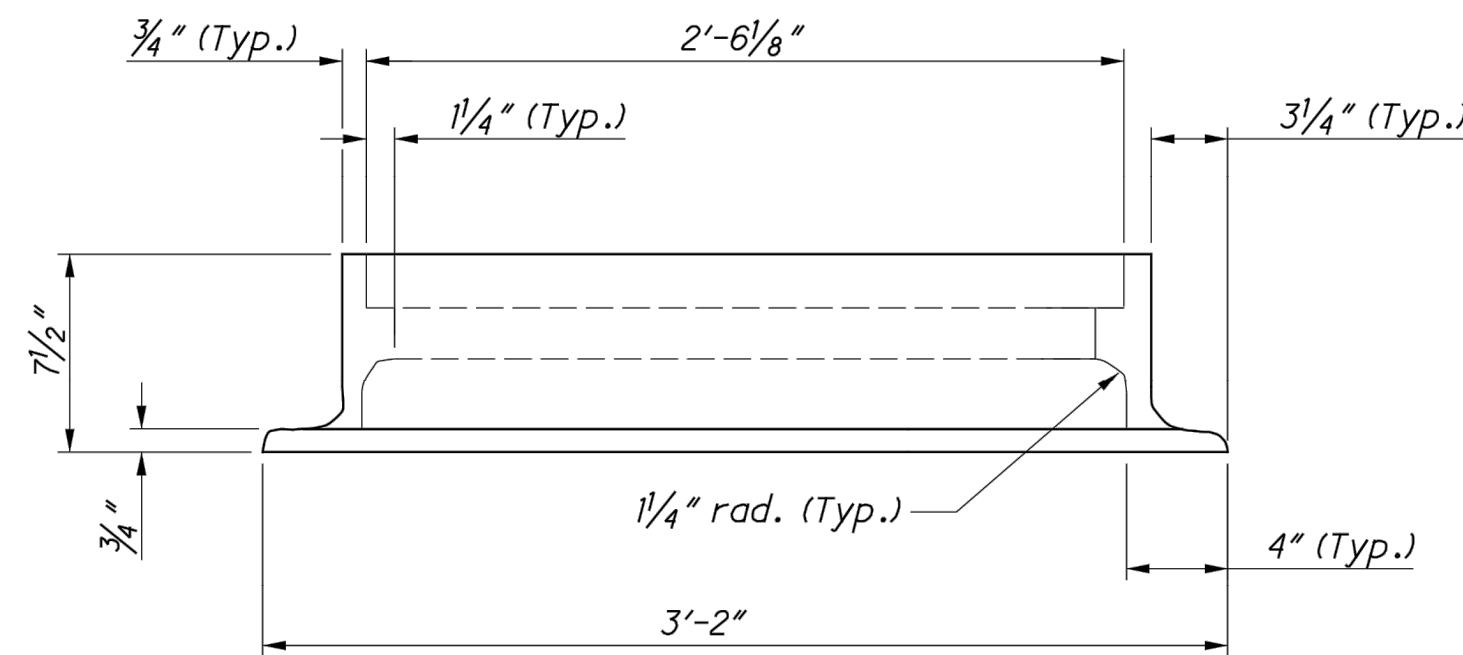
BACK VIEW



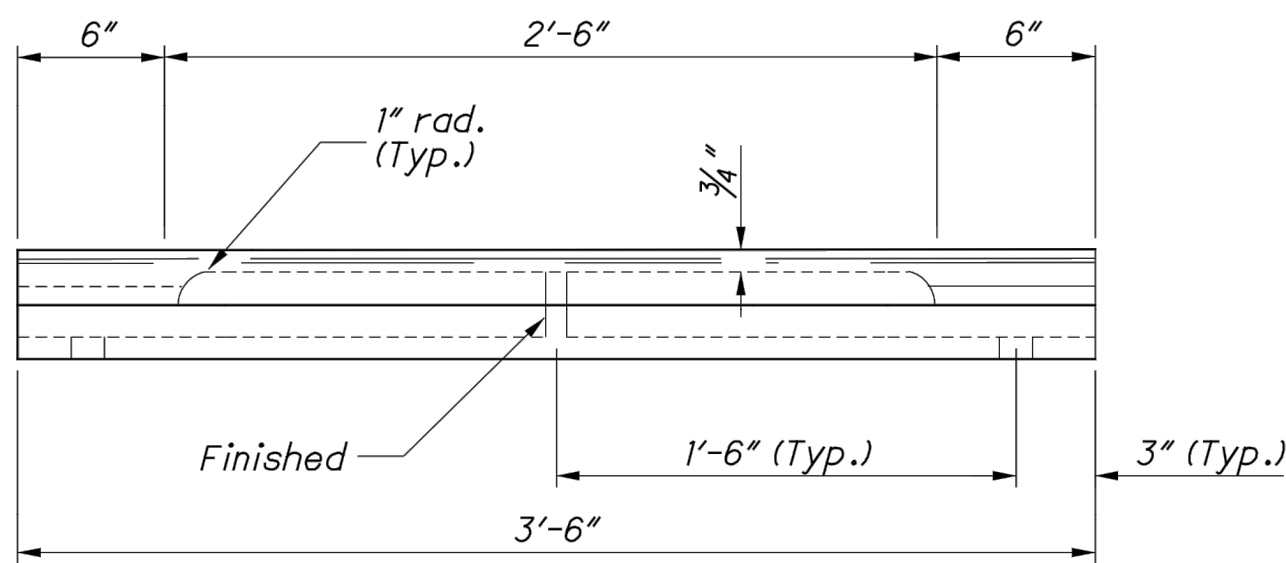
PLAN



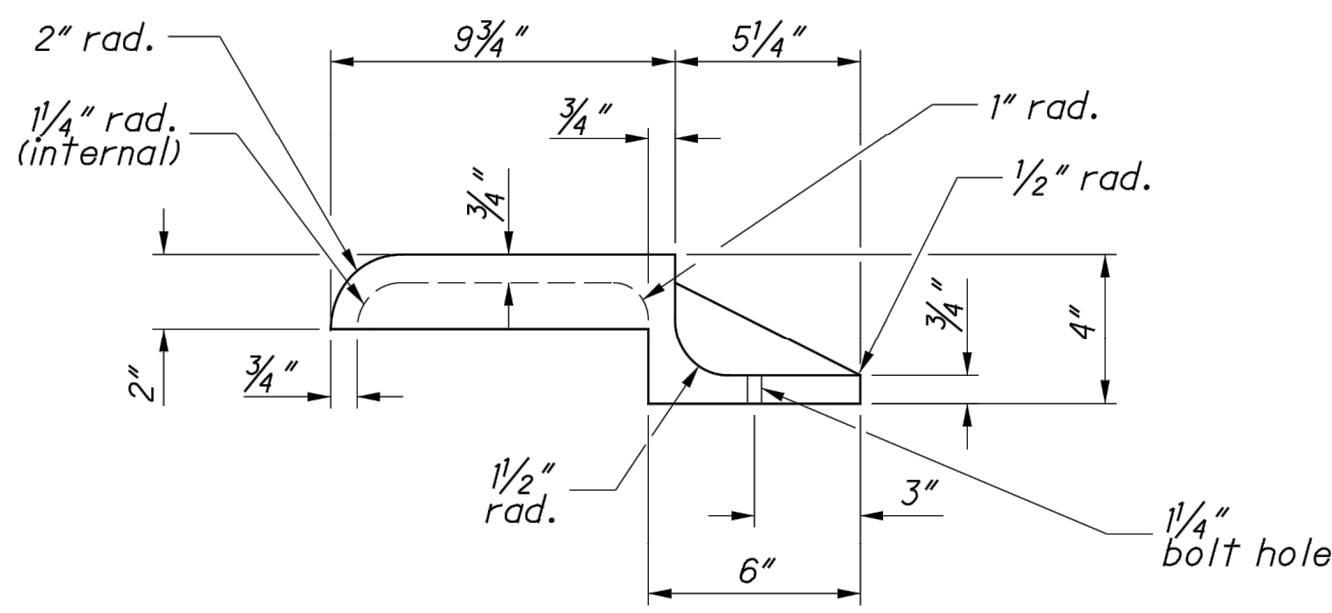
END VIEW FRAME



FRAME  
FRONT VIEW



FRONT VIEW  
CURB CASTING



END VIEW  
CURB CASTING

STATE OF OHIO DEPARTMENT OF TRANSPORTATION  
STATE HYDRAULIC ENGINEER  
MATT COZZOLI

REVISIONS  
7-20-01  
7-19-02  
7-15-05  
7-20-12  
1-18-13  
1-17-14  
1-15-16

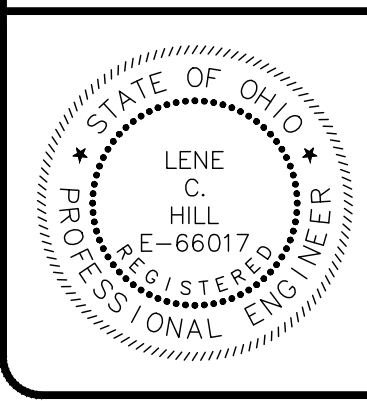
ROADWAY  
HYDRAULIC  
ENGINEER  
MATT  
COZZOLI

OFFICE OF  
HYDRAULIC  
ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING  
CATCH BASIN No. 3A

SCD NUMBER  
CB-2.2

2 / 2



verdantas

NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1  
LAKE COUNTY  
WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

ODOT CATCH BASIN TYPE 3A DETAILS 2

PROJECT NO.	150772
DISCIPLINE	CIVIL
SHEET NAME	CB-5
SHEET	39
OF	43



GENERAL NOTES

1.

THIS SWP3 HAS BEEN PREPARED SHOWING THE ITEMS LISTED BELOW, BUT THE CONTRACTOR MAY NEED TO MOVE OR ADD ITEMS AS CONSTRUCTION PROGRESSES OR DURING THE VARIOUS STAGES OF CONSTRUCTION.
- LIMITS OF EARTH DISTURBING ACTIVITY

CONSTRUCTION ENTRANCE

EROSION AND SEDIMENT CONTROL MEASURES

INLET PROTECTIONS

CONCRETE WASHOUT PITS

EQUIPMENT STAGING

FUEL STORAGE AND VEHICLE FUELING AREA

CONSTRUCTION TRAILER

SANITATION FACILITY

MATERIAL STOCKPILE LOCATION

CHEMICAL COMPOUND MIXING AND STORAGE AREA

ANY OTHER EROSION CONTROL REQUIRED
2.

ALL WORK REQUIRED TO IMPLEMENT THE SWP3 INCLUDING INSPECTION FEES, MAINTENANCE AND REPAIRS SHALL BE DONE BY AND AT THE EXPENSE OF THE CONTRACTOR.
3.

THE CONTRACTOR SHALL AMEND THE SWP3 WHEN THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION OR MAINTENANCE THAT HAS A SIGNIFICANT POTENTIAL FOR DISCHARGE OF POLLUTANTS TO SURFACE WATERS OF THE STATE.
4.

ADDITIONAL OR DIFFERENT BMPs MAY BE NEEDED AS CONSTRUCTION PROGRESSES OR REQUIRED BY THE OWNER, SWCD, MS4 OR OHIO EPA.
5.

NO CONDITION OF THE SWP3 OR NPDES PERMIT SHALL RELEASE THE CONTRACTOR OF THEIR RESPONSIBILITY OR REQUIREMENTS UNDER ANY OTHER ENVIRONMENTAL STATUE OR REGULATION.

ADMINISTRATIVE NOTES

1.

AN OHIO EPA NPDES PERMIT IS REQUIRED WHERE CONSTRUCTION ACTIVITIES (I.E. CLEARING, GRUBBING, GRADING, EXCAVATING, FILLING AND/OR TRENCH DEWATERING) AND/OR SUPPORT ACTIVITIES (I.E. CONCRETE OR ASPHALT BATCH PLANT, EQUIPMENT STAGING YARD, MATERIAL STORAGE AREA, AND ON-SITE OR OFF-SITE BORROW AREA OR SOIL DISPOSAL AREA) DISTURB 1 OR MORE ACRES OF LAND, OR SMALLER SITES LESS THAN 1 ACRE THAT ARE PART OF A LARGER COMMON DEVELOPMENT. DISTURBED LAND IS LAND IN WHICH SOILS ARE EXPOSED TO STORM WATER.
2.

A NOI IS REQUIRED FOR THIS PROJECT AND MUST BE FILED WITH THE OHIO EPA AT LEAST 21 DAYS PRIOR TO THE START OF CONSTRUCTION BECAUSE THE TOTAL LAND DISTURBANCE IS GREATER THAN 1 ACRE. THE CONTRACTOR SHALL FOLLOW THE PRACTICES AND REQUIREMENTS PROVIDED IN THE OHIO EPA NPDES CONSTRUCTION SITE STORMWATER GENERAL PERMIT OH000006 AND THE ODNr RAINWATER AND LAND DEVELOPMENT MANUAL, AND BE RESPONSIBLE FOR ALL NPDES TERMS AND CONDITIONS UNTIL A NOT IS FILED.
3.

NO CONSTRUCTION ACTIVITIES MAY BEGIN UNTIL ALL OF THE FOLLOWING OCCUR:

OHIO EPA NPDES AUTHORIZATION LETTER RECEIVED.

THE CONTRACTOR FILES A CO-PERMITTEE APPLICATION TO THE OHIO EPA.

THE CONTRACTOR ATTENDS A PRE-CONSTRUCTION MEETING WITH THE SWCD TO DISCUSS OHIO EPA NPDES PERMIT REQUIREMENTS.

5.

OHIO EPA APPLICATION FORMS (I.E. NOI, NOT, CO-PERMITTEE NOI/NOT, INDIVIDUAL LOT NOI/NOT AND PERMIT TRANSFER) ARE ONLY ACCESSIBLE ELECTRONICALLY VIA THE OHIO EPA STREAMS APPLICATION SUBMITTAL SYSTEM USING AN INDIVIDUAL EBUSINESS CENTER ACCOUNT. VISIT THE OHIO EPA'S ELECTRONIC BUSINESS SERVICES WEBSITE (HTTPS://EBIZ.EPA.OHIO.GOV/) FOR MORE INFORMATION, GUIDANCE AND REPORTING QUESTIONS.

6.

THE CONTRACTOR SHALL SELECT QUALIFIED INSPECTION PERSONNEL KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROLS FOR INSPECTIONS, MAINTENANCE, REPAIRS, AND COMPLETING INSPECTION AND MAINTENANCE REPORTS. THE CONTRACTOR SHALL COMPLETE A "DELEGATION OF AUTHORITY FOR STORMWATER POLLUTION PREVENTION PLAN".

7.

ALL PROCEDURES AND REQUIREMENTS CONTAINED IN THE SWP3 APPLY TO ALL GENERAL AND SUBCONTRACTORS. THE CONTRACTOR SHALL IMPLEMENT, INFORM, REQUIRE AND ENFORCE ALL ASPECTS AND PROCEDURES OF THE SWP3. THE CONTRACTOR SHALL HAVE ALL SUBCONTRACTORS THAT ARE OR MAY BE ENGAGED IN ACTIVITIES THAT COULD IMPACT STORMWATER COMPLETE A "SUBCONTRACTOR AGREEMENT FOR EROSION AND SEDIMENT CONTROL" TO ACKNOWLEDGE THEY REVIEWED AND UNDERSTOOD THE SWP3.

8.

ALL NPDES PERMITS, NOI, SWP3, INSPECTION LOGS, REPORTS AND CERTIFICATIONS MUST BE SIGNED, KEPT ON-SITE AND IMMEDIATELY AVAILABLE UPON REQUEST BY THE OWNER, SWCD, MS4 OR OHIO EPA.

9.

EROSION AND SEDIMENT CONTROL WORK SHALL BE SUBJECT TO INSPECTION BY THE OWNER, SWCD, MS4 AND OHIO EPA.
- EROSION & SEDIMENT CONTROL NOTES
1.

SPECIAL MEASURES SHALL BE TAKEN TO STABILIZE DRAINAGE CHANNELS AND STORM WATER OUTFALLS.

2.

PHASE CONSTRUCTION ACTIVITIES TO MINIMIZE LAND DISTURBED AT ANY ONE TIME AND LEAVE EXISTING VEGETATION IN PLACE AS LONG AS POSSIBLE.

3.

STORMWATER DIVERSION PRACTICES SHALL BE USED TO KEEP SURFACE RUNOFF AWAY FROM DISTURBED AREAS AND STEEP SLOPES WHERE PRACTICABLE.

4.

STABILIZATION OF DISTURBED AREAS SHALL, AT A MINIMUM, BE INITIATED WITHIN THE TIME FRAMES IN THE FOLLOWING TABLES:
- | PERMANENT STABILIZATION  |   |
|--|---|
| AREA REQUIRING PERMANENT STABILIZATION   | TIME FRAME TO APPLY EROSION CONTROLS      |
| ANY AREAS TO LIE DORMANT FOR 1 YEAR OR MORE.                                     | WITHIN 7 DAYS OF MOST RECENT DISTURBANCE. |
| ANY AREAS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE (*) AND AT FINAL GRADE. | WITHIN 2 DAYS OF REACHING FINAL GRADE.    |
| OTHER AREAS AT FINAL GRADE.  | WITHIN 7 DAYS OF REACHING FINAL GRADE.    |
- | TEMPORARY STABILIZATION  |   |
|--|---|
| AREA REQUIRING TEMPORARY STABILIZATION   | TIME FRAME TO APPLY EROSION CONTROLS  |
| ANY DISTURBED AREAS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE (*) AND NOT AT FINAL GRADE.   | WITHIN 2 DAYS OF MOST RECENT DISTURBANCE IF TO REMAIN IDLE MORE THAN 14 DAYS.   |
| ANY DISTURBED AREAS TO BE DORMANT FOR MORE THAN 14 DAYS, BUT LESS THAN 1 YEAR, AND NOT WITHIN 50 FEET OF A SURFACE WATER OF THE STATE (*). | FOR RESIDENTIAL SUBDIVISION, DISTURBED AREAS MUST BE STABILIZED AT LEAST 7 DAYS PRIOR TO TRANSFER OF PERMIT COVERAGE FOR INDIVIDUAL LOT(S). |
| DISTURBED AREAS THAT WILL BE IDLE OVER WINTER.   | PRIOR TO ONSET OF WINTER WEATHER.   |
- (\*) SURFACE WATERS OF THE STATE INCLUDE WETLANDS, STREAMS, LAKES, PONDS, MARSHES, WATERCOURSES, WELLS, SPRINGS, IRRIGATION SYSTEMS, DRAINAGE SYSTEMS, AND OTHER ACCUMULATIONS OF WATER, SURFACE AND UNDERGROUND, NATURAL OR ARTIFICIAL.
5.

INLET PROTECTION AND SEDIMENT CONTROLS MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING.

6.

SEDIMENT PONDS, TEMPORARILY MODIFIED PERMANENT PONDS AND PERIMETER SEDIMENT BARRIERS MUST BE INSTALLED AS THE FIRST STEP OF GRADING AND WITHIN 7 DAYS FROM THE START OF CLEARING AND GRUBBING, AND CONTINUE TO FUNCTION UNTIL ALL DISTURBED UPLAND AREAS ARE STABILIZED.

7.

SEDIMENT CONTROLS MUST POND RUNOFF TO BE CONSIDERED FUNCTIONAL.

8.

SEDIMENT-LADEN TRENCH OR GROUND WATER MUST PASS THROUGH A SEDIMENT-SETTLING POND OR BE DEWATERED IN-PLACE USING A SUMP PIT, FILTER BAG OR OTHER COMPARABLE METHOD PRIOR TO DISCHARGE FROM THE SITE. TRENCH AND GROUND WATER FREE FROM SEDIMENT OR OTHER POLLUTANTS MAY BE DISCHARGED WITHOUT TREATMENT, PROVIDED THIS WATER DOES NOT BECOME POLLUTANT-LADEN BY TRAVERSING OVER DISTURBED SOILS OR OTHER POLLUTANT SOURCES.

9.

SEDIMENT BARRIERS SHALL NOT EXCEED THEIR DESIGN CAPACITIES. INSTALLING SEDIMENT BARRIERS IN PARALLEL SERIES DOES NOT INCREASE THE DESIGN CAPACITY.

10.

SETTLED MATERIAL SHALL BE DISPOSED IN A LOCATION WHERE IT WILL NOT BE CARRIED OFF-SITE OR INTO A STORM SEWER BY RAINFALL.

11.

SOIL STOCKPILES SHALL BE RINGED WITH SILT FENCE ALONG THE BOTTOM FOOTPRINT. IF THE STOCKPILE WILL BE INACTIVE FOR 14 DAYS OR MORE, THE SURFACE SHALL BE SEEDED OR STABILIZED WITHIN 7 DAYS OF LAST DISTURBANCE.
- GOOD HOUSEKEEPING AND OTHER WASTE CONTROL NOTES
1.

MATERIALS OR SUBSTANCES LISTED BELOW ARE ANTICIPATED TO BE PRESENT ON-SITE DURING CONSTRUCTION:

(X) CONCRETE

(X) FERTILIZER

( ) CLEANING SOLVENT

( ) ASPHALT

( ) TAR

( ) DETERGENT

( ) CMU BLOCK

( ) PAINT

( ) PETROLEUM BASED PRODUCT

2.

STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN AN ORDERLY MANNER IN APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.

3.

PRODUCTS SHALL BE KEPT IN ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER LABEL UNLESS NOT RESEALABLE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS AND CLEARLY LABELED.

4.

ALL OF A PRODUCT SHALL BE USED BEFORE DISPOSING OF THE CONTAINER WHENEVER POSSIBLE. DO NOT MIX PRODUCTS WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

5.

DAILY INSPECTION SHALL OCCUR TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.

6.

SAFETY DATA SHEETS (SDS) SHALL BE KEPT ON-SITE.

7.

SPILL CONTROL PRACTICES:

A.

MANUFACTURER RECOMMENDED METHODS FOR SPILL CLEANUP MUST BE POSTED AND SITE PERSONNEL MADE AWARE OF THE PROCEDURES, LOCATION OF THE INFORMATION AND LOCATION OF CLEANUP SUPPLIES.

B.

SPILL CLEANUP SUPPLIES (I.E. DUST PANS, BROOMS, MOPS, RAGS, GLOVES, GOGGLES, TRASH CONTAINERS, ETC.) AND MATERIALS (I.E. SAWDUST, KITTY LITTER, SAND, ABSORBENT MATERIAL, ETC.) SHALL BE KEPT IN AN ON-SITE MATERIAL STORAGE AREA.

C.

SPILLS SHALL BE CLEANED IMMEDIATELY AFTER DISCOVERY AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING. SMALL PETROLEUM PRODUCT SPILLS (LESS THAN 25 GALLONS) SHALL BE CLEANED PER MANUFACTURER RECOMMENDED METHODS AND DISPOSED WITH THE TRASH. LARGE PETROLEUM PRODUCT SPILLS (25 OR MORE GALLONS) OR ANY TOXIC OR HAZARDOUS MATERIAL SPILL, REGARDLESS OF SIZE, MUST BE REPORTED TO THE APPROPRIATE FEDERAL GOVERNMENT AGENCY, OHIO EPA SPILL HOTLINE (800-282-9378), LOCAL FIRE DEPARTMENT AND LOCAL EMERGENCY PLANNING COMMITTEE (LEPC) WITHIN 30 MINUTES OF THE SPILL. SPILLS THAT RESULT IN CONTACT WITH WATERS OF THE STATE, REGARDLESS OF SIZE OR TYPE, MUST BE REPORTED TO THE OHIO EPA SPILL HOTLINE.

D.

ON-SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE

8.

IT IS PROHIBITED TO BURN, BURY OR POUR ONTO THE GROUND OR INTO STORM INLETS OR SURFACE WATERS OF THE STATE ANY LIQUID OR SOLID WASTE (I.E. CONSTRUCTION AND DEMOLITION DEBRIS (C&DD), TRASH, BUILDING MATERIALS, SOLVENTS, PAINTS, FUELS, MOTOR OIL, ANTIFREEZE, HYDRAULIC FLUIDS, CURING COMPOUNDS, FORM RELEASE OILS, OTHER TOXIC OR HAZARDOUS WASTE, ETC.).

9.

TRASH AND C&DD SHALL BE COLLECTED IN A SECURELY LIDDED AND LEAK-PROOF DUMPSTER, HAULED OFF-SITE AND EMPTIED AS NECESSARY, IN AN OHIO EPA APPROVED LANDFILL. ALL OTHER WASTE SHALL BE DISPOSED IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS OR AS SPECIFIED BY THE MANUFACTURER.

10.

CONTAMINATED SOILS MUST BE TREATED AND/OR DISPOSED IN AN OHIO EPA APPROVED SOLID WASTE MANAGEMENT FACILITY OR HAZARDOUS WASTE TREATMENT, STORAGE OR DISPOSAL FACILITY. THE FOLLOWING PRACTICES SHALL BE USED AS APPROPRIATE TO PREVENT CONTAMINATION FROM SPREADING:

A.

BERMS, TRENCHES AND PITS TO COLLECT CONTAMINATED RUNOFF.

B.

RUNOFF PUMPED INTO A CONTAINER FOR TRANSPORT TO A FACILITY.

C.

CONTAMINATED AREA COVERED WITH TARPS OR OTHER METHODS THAT PREVENT STORM WATER CONTACT.

11.

FUEL STORAGE TANKS SHALL BE STORED IN DIKED AREAS WITH A VOLUME OF AT LEAST 110% OF THE LARGEST TANK. A DIKED AREA IS NOT NECESSARY IF A SELF-CONTAINED SPILL PROOF TANK IS USED. AREAS USED FOR FUEL STORAGE TANK STORAGE, FUELING OR VEHICLE MAINTENANCE SHALL NOT BE LOCATED NEAR STORM INLETS, WATERCOURSES OR SURFACE WATERS OF THE STATE.

12.

APPLY FERTILIZER ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. CONTENTS OF PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

13.

CONCRETE TRUCKS ARE PROHIBITED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ONTO THE GROUND OR INTO STORM INLETS OR SURFACE WATERS OF THE STATE. ALL EXCESS CONCRETE AND WASHOUT, INCLUDING FROM HAND MIXERS AND LIGHT EQUIPMENT, MUST BE DISPOSED IN A CONCRETE WASHOUT AREA.

14.

TEMPORARY SANITARY FACILITIES SHALL BE PROVIDED ON-SITE, SERVICED BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR, AND COLLECTED AT LEAST ONCE PER WEEK.

15.

OFF-SITE VEHICLE TRACKING OF SEDIMENT AND DUST SHALL BE MINIMIZED. ADJACENT OFF-SITE PAVED STREETS SHALL BE SWEEPED DAILY, OR MORE OFTEN AS NECESSARY, TO REMOVE MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUST CONTROL SHALL BE PROVIDED WITH WATER OR CALCIUM CHLORIDE DUST PALLIATIVE AS NECESSARY. USED OIL MAY NOT BE USED. DUMP TRUCKS HAULING MATERIAL OFF-SITE MUST BE COVERED WITH A TARPULIN.
- PROJECT INFORMATION
- CONSTRUCTION ACTIVITIES LOCATED AT:  
WILLOUGHBY, LAKE COUNTY, OHIO 44094  
LATITUDE: 41.644957°N LONGITUDE: -81.423295°W
- SWP3 PREPARED FOR:  
CITY OF WILLOUGHBY  
1 PUBLIC SQUARE, WILLOUGHBY, OH 44094  
CONTACT: RICH PALMISANO, SERVICE DIRECTOR  
PHONE: (440) 953-4110  
EMAIL: RPALMISANO@WILLOUGHBYOHIO.COM
- SWP3 PREPARED:  
VERDANTAS LLC  
8150 STERLING COURT, MENTOR, OHIO 44060  
CONTACT: LENE C. HILL, PE  
PHONE: (440) 530-2212  
EMAIL: LHILL@VERDANTAS.COM
- GENERAL CONTRACTOR INFORMATION:
- BUSINESS NAME  
STREET ADDRESS  
CITY STATE ZIP CODE
- PERSON RESPONSIBLE FOR AMENDING SWP3:
- NAME PHONE  
EMAIL
- ESTIMATED PROJECT CONSTRUCTION START DATE: 04/01/2025  
ESTIMATED PROJECT CONSTRUCTION COMPLETION DATE: 12/31/2025
- TYPE OF CONSTRUCTION ACTIVITY:  
( ) CLEARING ( ) GRUBBING (X) GRADING  
(X) EXCAVATING (X) FILLING (X) TRENCH DEWATERING
- TYPE OF CONSTRUCTION SUPPORT ACTIVITY:  
( ) ASPHALT BATCH PLANT (X) CONCRETE BATCH PLANT  
(X) EQUIPMENT STAGING YARD (X) MATERIAL STORAGE AREA  
(X) BORROW AREA (X) OFF-SITE BORROW AREA  
(X) SOIL DISPOSAL AREA (X) OFF-SITE SOIL DISPOSAL AREA
- TYPE OF PROJECT:  
( ) RETAIL ( ) COMMUNITY ( ) MIXED USE  
( ) OFFICE ( ) RECREATION ( ) SHOPPING MALL  
( ) MEDICAL ( ) PUBLIC SAFETY ( ) RESTAURANT  
( ) HIGHWAY ( ) EDUCATION ( ) APARTMENT  
(X) ROAD ( ) INDUSTRIAL ( ) MANUFACTURING  
( ) LOW DENSITY RESIDENTIAL (X) LINEAR UTILITY  
( ) HIGH DENSITY RESIDENTIAL
- DESCRIPTION OF PROJECT:  
INSTALLATION OF 2100 LF OF 84" STORM SEWER AND 200 LF OF 12" SANITARY SEWER, INCLUDING APPURTENANCES. CREATION OF AN ACCESS ROAD, REPLACEMENT OF 1230 CY OF CONCRETE PAVEMENT.
- SOIL DISTURBING ACTIVITIES INCLUDE:  
EROSION AND SEDIMENT CONTROL INSTALLATION; UTILITIES INSTALLATION; EARTHWORK GRADING.
- DESCRIPTION OF PRIOR AND EXISTING LAND USE:  
URBAN AREA
- SITE AREA INFORMATION:  
CONSTRUCTION LIMIT AREA = 2.0 AC.  
TOTAL SOIL DISTURBANCE AREA = 1.5 AC.  
INCREASE OR DECREASE IMPERVIOUS AREA = 0 %
- PROJECT INFORMATION CONTINUED
- NAME OF IMMEDIATE RECEIVING STREAM, SURFACE WATER OR MS4:  
NASON BASIN TO CORPORATION CREEK TO THE CHAGRIN RIVER TO LAKE ERIE.

DESCRIPTION OF ON-SITE STREAM(S) CONDITION:  
( ) PRIOR CHANNELIZATION ( ) BED INSTABILITY OR HEADCUTS  
( ) NATURAL CHANNEL ( ) PUBLIC MAINTENANCE CHANNEL

DESCRIPTION OF ON-SITE WETLANDS  
THERE ARE NO WETLANDS ON-SITE.

DESCRIPTION OF ON-SITE CONTAMINATED SOILS  
THERE IS NO KNOWN OR PROBABLY CONTAMINATED SOIL.
- STATE OF OHIO

LENE C. HILL

PROFESSIONAL ENGINEER

E-66017

verdantas

PROFESSIONAL ENGINEERING

NO	REVISION	DATE

CITY OF WILLOUGHBY

NASON BASIN TO GROVE AVENUE

STORM SEWER IMPROVEMENTS

PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

PROJECT NO.

150772

DISCIPLINE

CIVIL

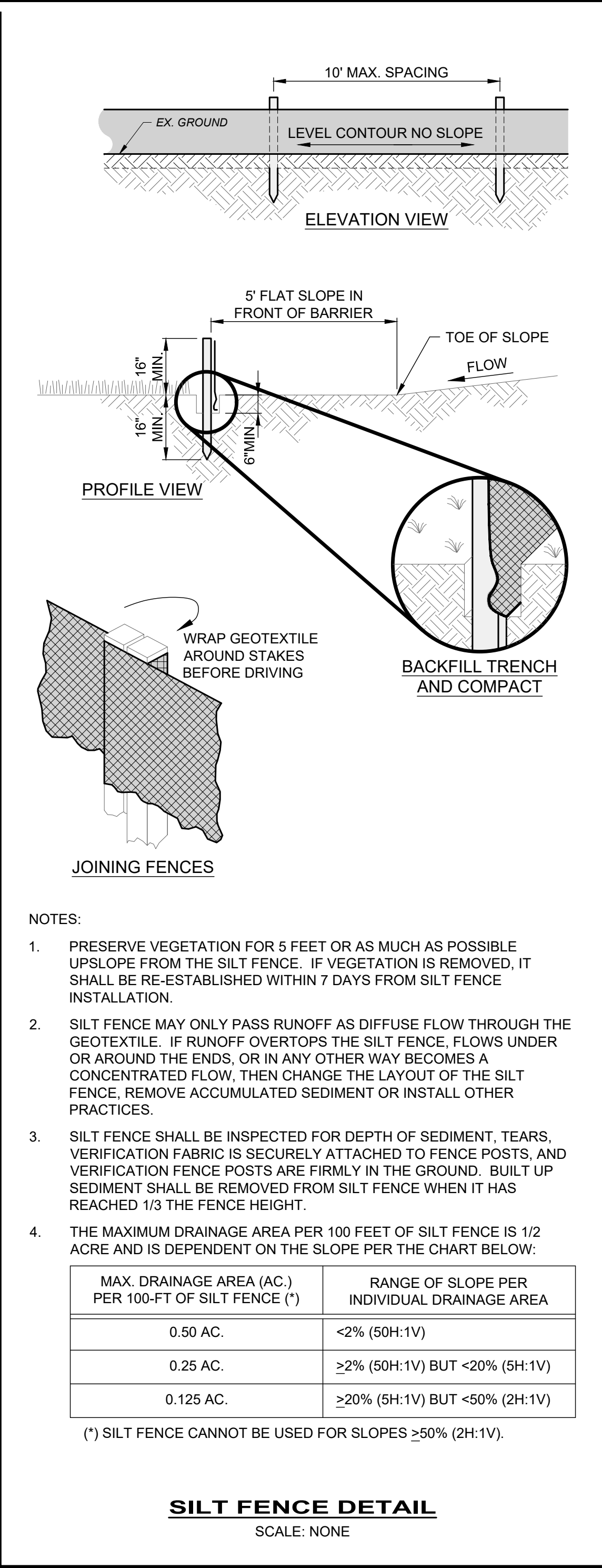
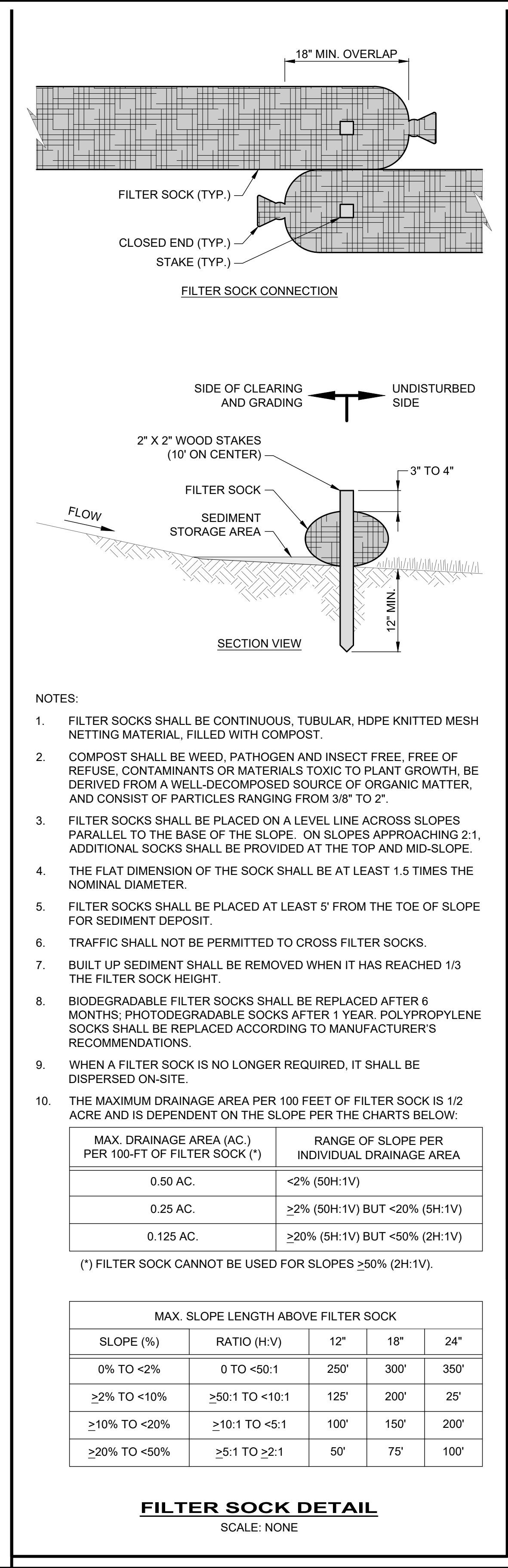
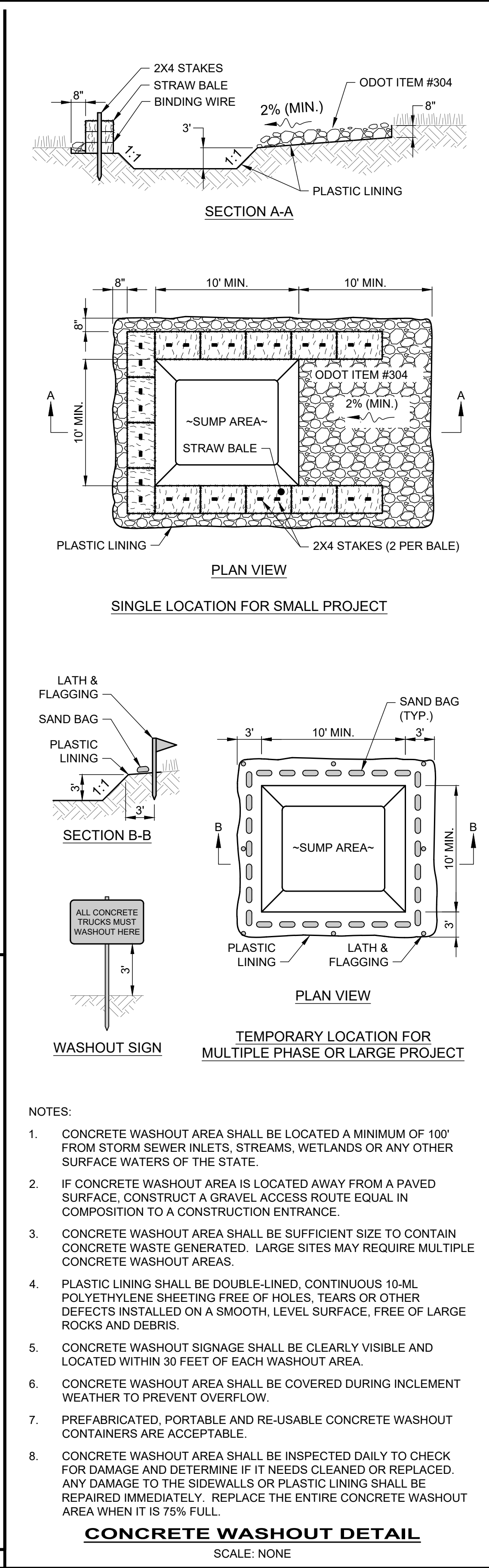
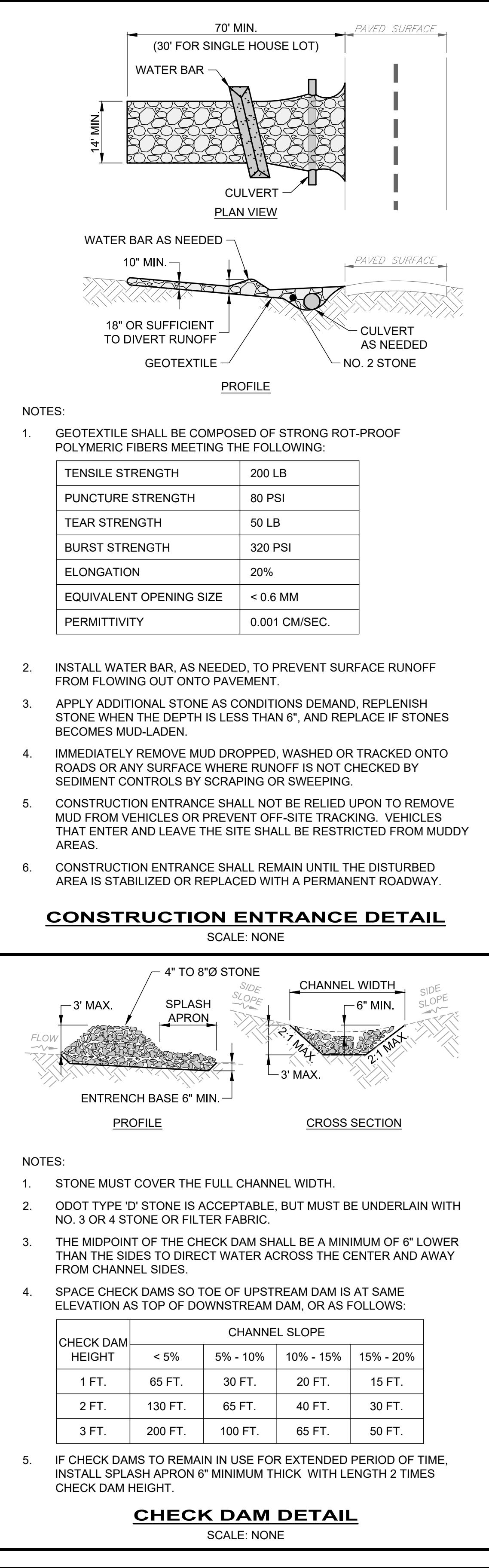
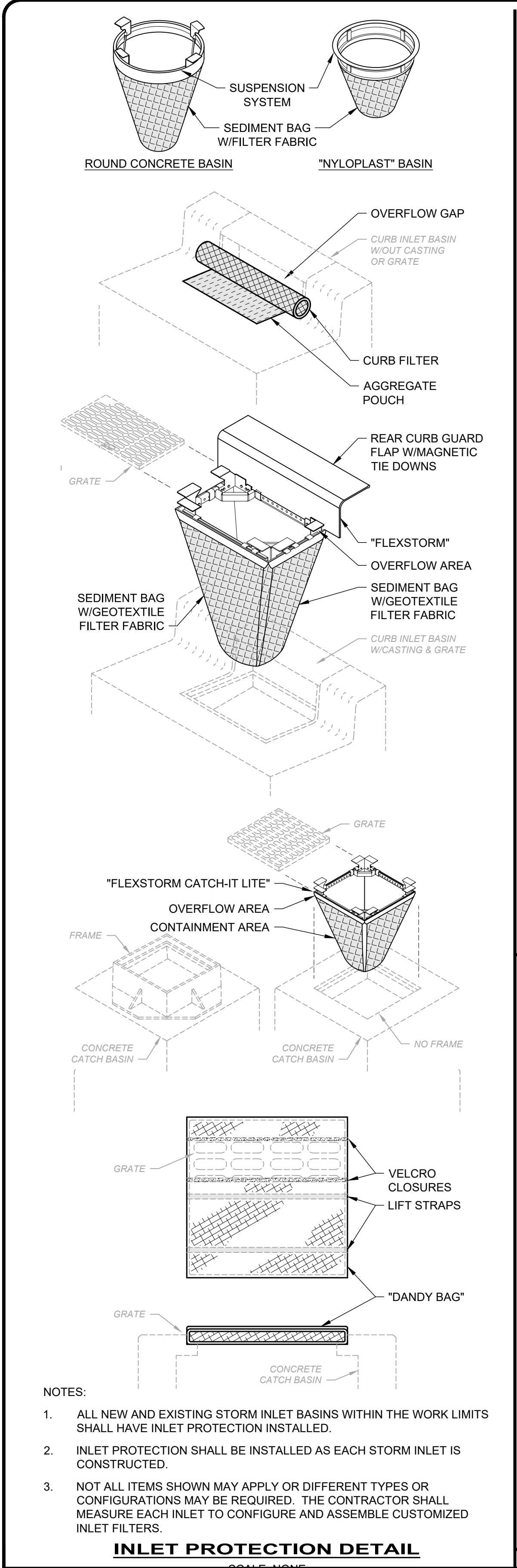
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SWPPP 1

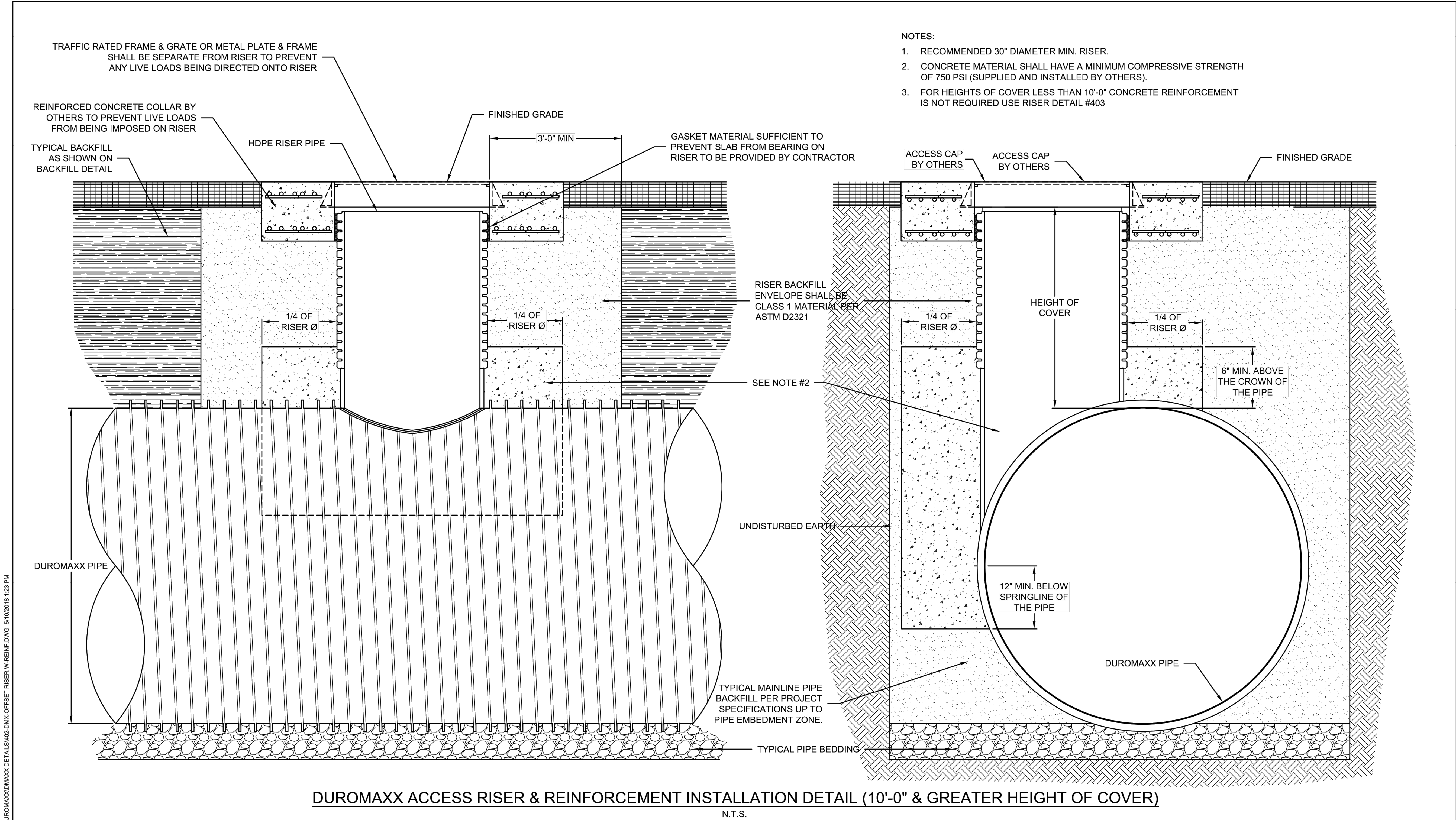
SHEET	OF
40	43

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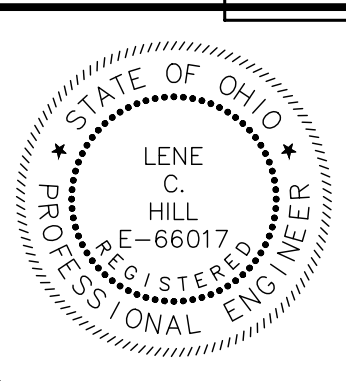
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MARK	DATE	REVISION DESCRIPTION	BY

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ENGINEERED SOLUTIONS LLC  
www.ContechES.com  
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069  
800-338-1122 513-645-7000 513-645-7993 FAX

**DuroMaxx**  
STEEL REINFORCED PE TECHNOLOGY

402 - DuroMaxx  
STANDARD ACCESS RISER  
OFFSET RISER W/ REINF

402-DMX-OFFSET RISER W-REINF	
SCALE: N.T.S.	DATE DRAWN: 03-26-14
REV #	REV DATE: ----
DRAWING TYPE: ----	



NO	REVISION	DATE

CITY OF WILLOUGHBY  
NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

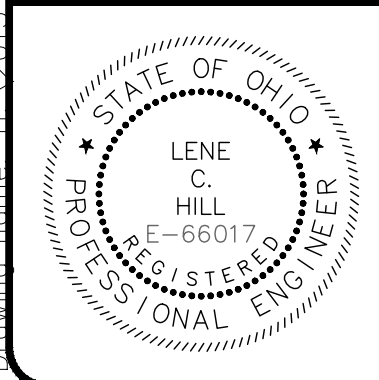
ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LGH

ALTERNATE A - RISER DETAIL

PROJECT NO. <b>150772</b>	
DISCIPLINE <b>CIVIL</b>	
SHEET NAME <b>ALT A DET</b>	
SHEET <b>42</b>	OF <b>43</b>



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NO	REVISION	DATE

CITY OF WILLOUGHBY

NASON BASIN TO GROVE AVENUE  
STORM SEWER IMPROVEMENTS  
PHASE 1

LAKE COUNTY

WILLOUGHBY, OHIO

ISSUED FOR:	BID
ISSUE DATE:	02/07/25
SCALE:	AS SHOWN
DESIGNED BY:	MPC
DRAWN BY:	TJM
CHECKED BY:	LCH

ALTERNATE B - PELTON  
LANDFILL GRADING PLAN

PROJECT NO.	
150772	
DISCIPLINE	
CIVIL	
SHEET NAME	
ALT B PLAN	
SHEET	OF
43	43

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