

H: /JOBS/3264/

CLASSROOM ADDITION HIGHLAND EAST JUNIOR HIGH SCHOOL

DRAINAGE AND DETENTION

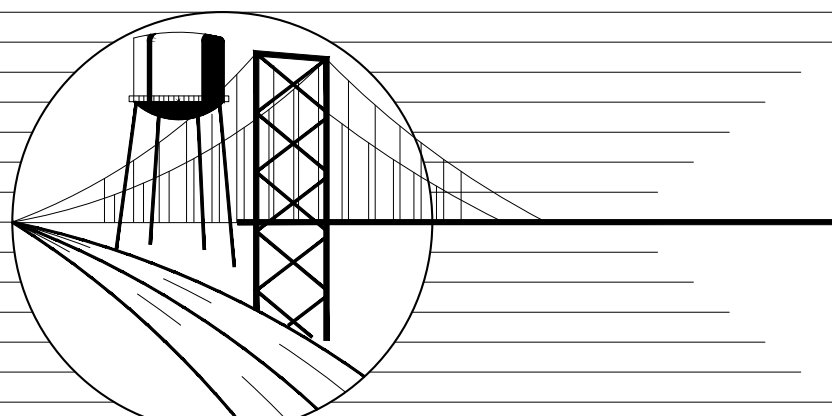
LOCATED AT

1200 SE 4TH STREET, MOORE, OK 73160

E/2, NE/4, NW/4, SEC. 24, T10N, R3W
CLEVELAND COUNTY

INDEX OF SHEETS

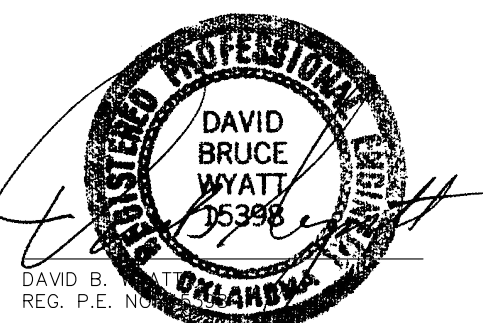
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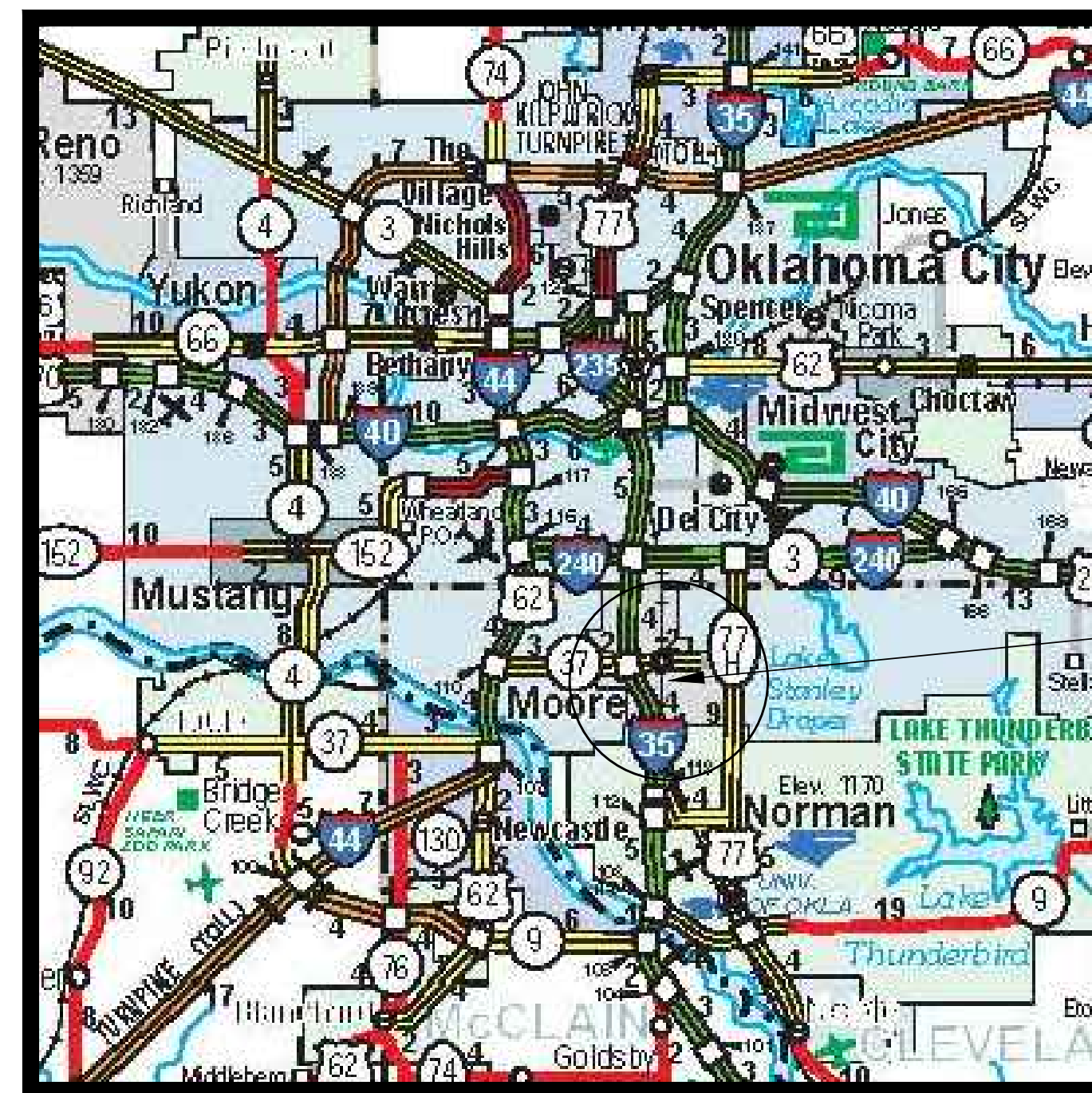
WDB ENGINEERING P.L.L.C.

6330 S.E. 74th STREET
OKLAHOMA CITY, OK 73135
405-741-7090
FAX 405-741-7094

RECOMMENDED:
WDB ENGINEERING P.L.L.C.
CERTIFICATE OF AUTHORIZATION #3987
EXPIRES 6-30-23

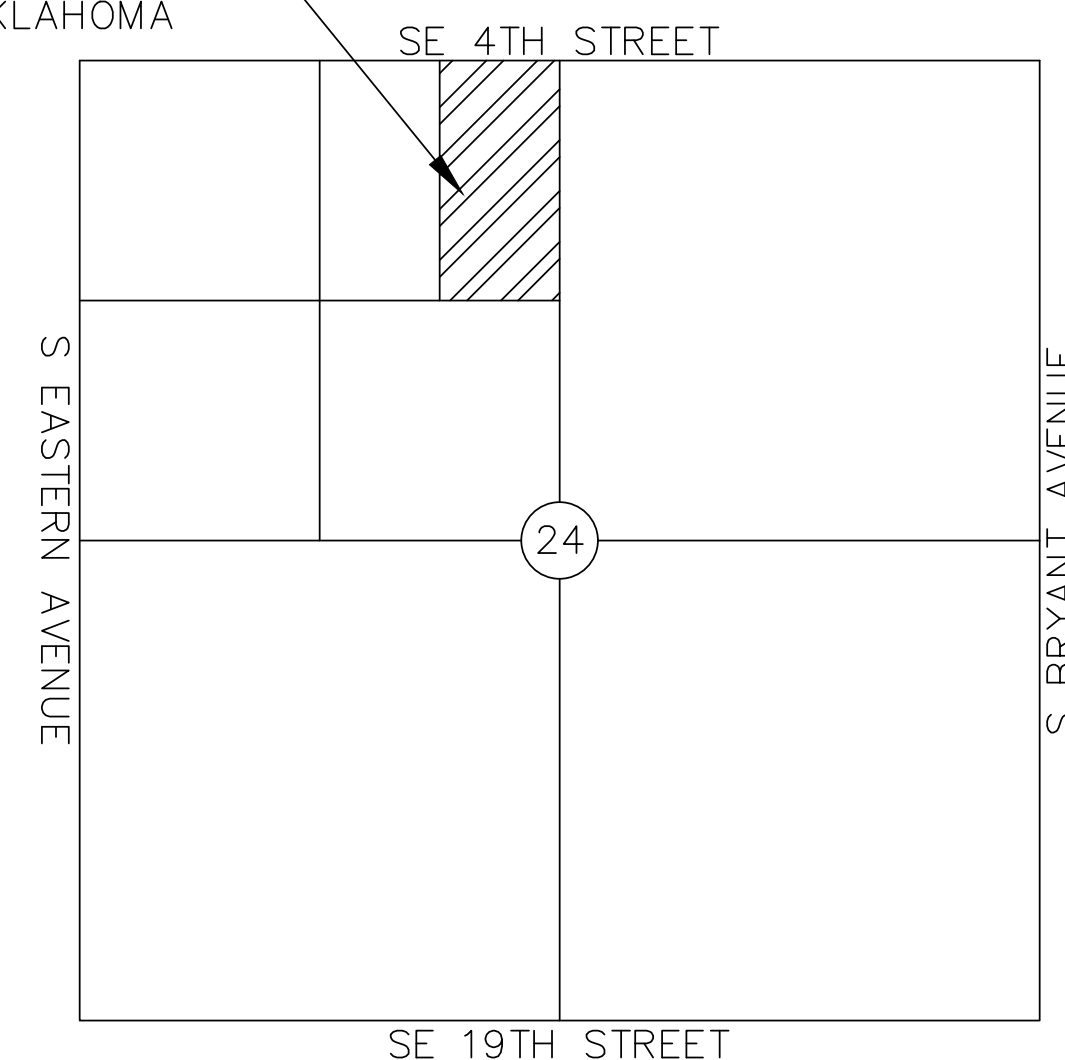


DATE: 11-08-2021



VICINITY

PROJECT LOCATION
 HIGHLAND EAST JUNIOR HIGH
 E/2, NE/4, NW/4, SEC. 24, T10N, R3W
 CLEVELAND COUNTY, OKLAHOMA



PROJECT LOCATION

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS BUILT
1	12" ADS DRAINAGE PIPE	L.F.	564	
2	STANDARD 4' DIA. MANHOLE (STORM SEWER)	EA.	3	
3	12" x 12" TEE (ADS)	EA.	4	
4	12" x 12" CROSS (ADS)	EA.	1	
5	12" CAP (ADS)	EA.	1	
6	DUAL 12" CONCRETE ENDWALL	EA.	2	
7	STANDARD 3' CUT OFF WALL	EA.	2	
8	2' WIDE EMERGENCY SPILLWAY CONCRETE FLUME	L.S.	1	
9	CUT & REPAIR EXISTING CONCRETE SIDEWALK	S.F.	20	
10	2' WIDE CONCRETE TRICKLE CHANNEL	L.F.	151	
11	8" SURGE ROCK w/18" DEPTH	C.Y.	18	
12	1" #57 ROCK BEDDING	TON	35	
13	NEW ROOF DRAINS	EA.	5	
14	STANDARD 4' DIA. MANHOLE (SANITARY SEWER)	EA.	1	
15	TIE IN TO EXISTING SANITARY SEWER MANHOLE	EA.	1	
16	6" SDR-35 SANITARY SEWER SERVICE LINE	L.F.	114	

GENERAL CONSTRUCTION NOTES

- ALL WORK NOT CLASSIFIED AS A CONTRACT "PAY ITEM", SHALL BE CONSIDERED INCIDENTAL AND THE COST THEREOF AND INCLUDED IN ITEMS CLASSIFIED FOR PAYMENT.
- BEFORE ANY SIDEWALK OR DRIVE IS CUT, THE RESIDENT ON PROPERTY AFFECTED SHALL BE NOTIFIED BY THE CONTRACTOR. NO DRIVE OR SIDEWALK SHALL BE LEFT UNCOVERED OVERNIGHT.
- THE CLEAN-UP OF RIGHT-OF-WAY SHALL NOT BE DELAYED UNTIL FINAL ESTIMATE. THE CLEAN-UP WORK ON SECTIONS OF COMPLETED LINE SHALL BE BROUGHT UP TO DATE AT LEAST EVERY 10 WORKING DAYS. IF CLEAN UP GETS BEHIND TIME, PRODUCTION SHALL BE SUSPENDED TO GIVE MORE MEN AND EQUIPMENT ATTENTION TO CLEAN UP UNTIL IT IS DONE. ALL RUBBISH AND DISCARDED MATERIALS SHALL BE REMOVED FROM THE SITE AND ADJACENT WILL NOT BE CONSIDERED AS HAVING BEEN DISPOSED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL UTILITIES EITHER PUBLIC OR PRIVATE. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE OWNER TO DETERMINE THEIR EXACT LOCATION BEFORE CONSTRUCTION BEGINS.
- THE CONTRACTOR SHALL NOTIFY THE UTILITY OWNER AND ALL PARTIES AFFECTED BEFORE ANY WATER LINE IS TAKEN OUT OF SERVICE.
- ALL CONCRETE SHALL HAVE 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- THE CONTRACTOR SHALL VERIFY THE DEPTH OF THE EXISTING UTILITIES AND/OR WATER LINES BEFORE STARTING ANY EXCAVATION BEGINS.
- THE LOCATION OF OTHER UTILITIES AS SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE OF ALL UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT. CALL 1-800-840-5032 48 HOURS PRIOR TO ANY EXCAVATION.
- FILL MATERIAL SHALL BE COMPACTED IN LIFTS NOT TO EXCEED 12" TO 95% STANDARD PROCTOR DENSITY.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE, FEDERAL AND LOCAL REGULATIONS.
- ANY CONSTRUCTION PROCEDURES NOT COVERED IN PLANS AND SPECIFICATIONS, WILL BE EXECUTED IN ACCORDANCE WITH PROPER CONSTRUCTION TECHNIQUES AND SHALL BE APPROVED BY THE ENGINEER.
- IF DITCHES SUBSIDE LATER, THE CONTRACTOR SHALL REFILL DITCHES AS SOON AS WEATHER PERMITS, AND SHALL NOT LET DITCHES WITH SUBSIDENCE EXIST DURING CONSTRUCTION OR THEREAFTER.
- ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE FINISHED TO A SMOOTH UNIFORM SURFACE PERMITTING DRAINAGE AND SLOPED IN SUCH CONDITION THAT ALL AREAS MAY BE MOWED WITH ROTARY TYPE MOWING EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FENCES DISTURBED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING FOR THE PROJECT.
- THE CONTRACTOR SHALL REFERENCE CITY OF MOORE STANDARDS.



WDB ENGINEERING PLLC
 6330 S.E. 74TH STREET
 OKC, OK 73135 PH: 405-741-7090
 CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

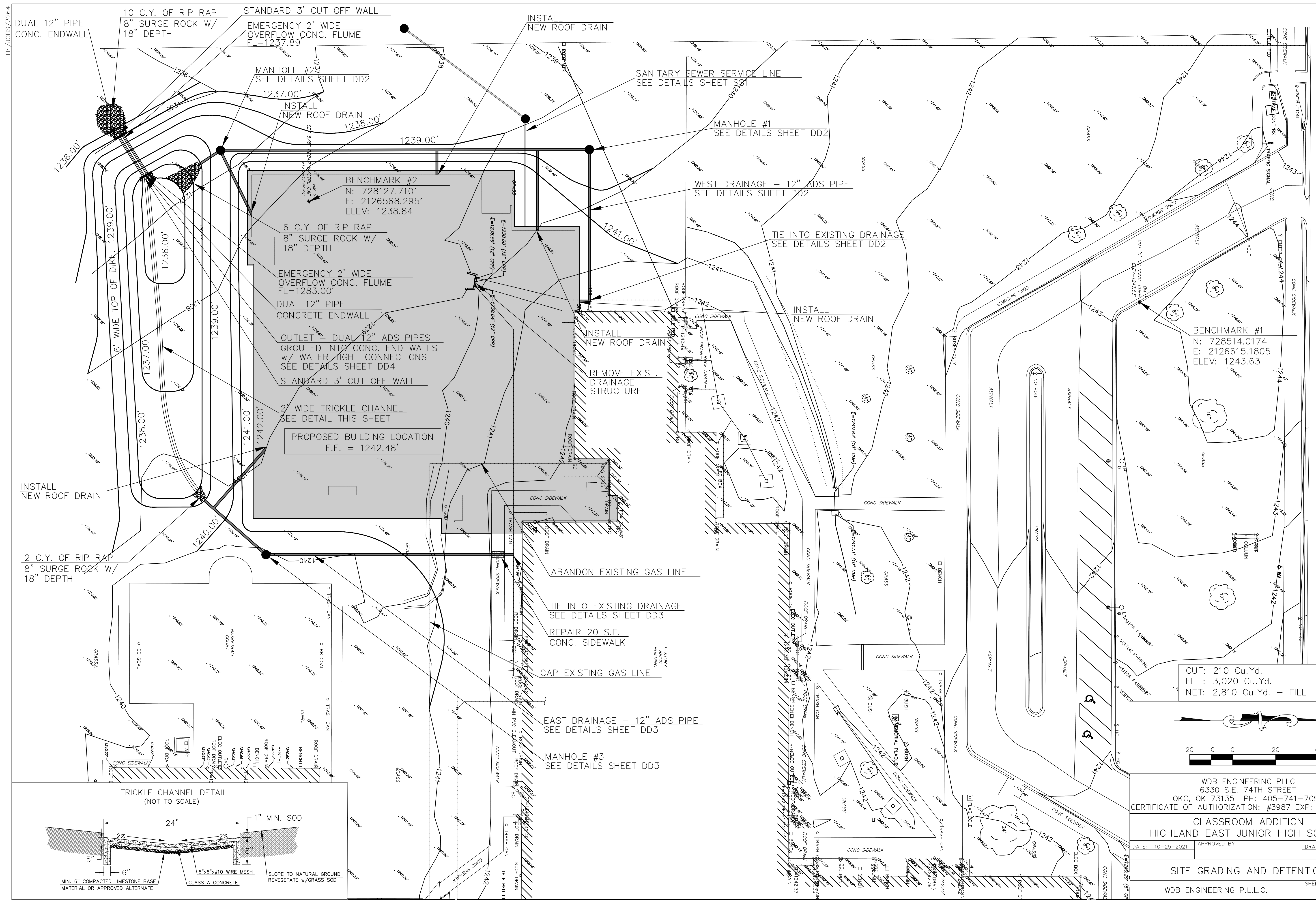
CLASSROOM ADDITION
 HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 10-26-2021 APPROVED BY: DRAWN BY: MW

LOCATION MAP &
 GENERAL NOTES

WDB ENGINEERING P.L.L.C. SHEET NUMBER 2

H:\JOBS\13264



2 C.Y. OF RIP RAP
8" SURGE ROCK W/
18" DEPTH

INSTALL
NEW ROOF DRAIN

DUAL 12" PIPE
CONC. ENDWALL

10 C.Y. OF RIP RAP
8" SURGE ROCK W/
18" DEPTH

STANDARD 3' CUT OFF WALL

EMERGENCY 2' WIDE
OVERFLOW CONC. FLUME
FL=1237.89

MANHOLE #2
SEE DETAILS SHEET DD2

INSTALL
NEW ROOF DRAIN

6 C.Y. OF RIP RAP
8" SURGE ROCK W/
18" DEPTH

EMERGENCY 2' WIDE
OVERFLOW CONC. FLUME
FL=1283.00

DUAL 12" PIPE
CONCRETE ENDWALL

OUTLET - DUAL 12" ADS PIPES
GROUTED INTO CONC. END WALLS
W/ WATER TIGHT CONNECTIONS
SEE DETAILS SHEET DD4

STANDARD 3' CUT OFF WALL

2' WIDE TRICKLE CHANNEL
SEE DETAIL THIS SHEET

PROPOSED BUILDING LOCATION
F.F. = 1242.48'

REMOVE EXIST.
DRAINAGE
STRUCTURE

ABANDON EXISTING GAS LINE

TIE INTO EXISTING DRAINAGE
SEE DETAILS SHEET DD3

REPAIR 20 S.F.
CONC. SIDEWALK

CAP EXISTING GAS LINE

EAST DRAINAGE - 12" ADS PIPE
SEE DETAILS SHEET DD3

MANHOLE #3
SEE DETAILS SHEET DD3

INSTALL
NEW ROOF DRAIN

TIE INTO EXISTING DRAINAGE
SEE DETAILS SHEET DD2

INSTALL
NEW ROOF DRAIN

WEST DRAINAGE - 12" ADS PIPE
SEE DETAILS SHEET DD2

CONC SIDEWALK

ASPHALT

GRASS

CONC SIDEWALK

ASPHALT

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CONC SIDEWALK

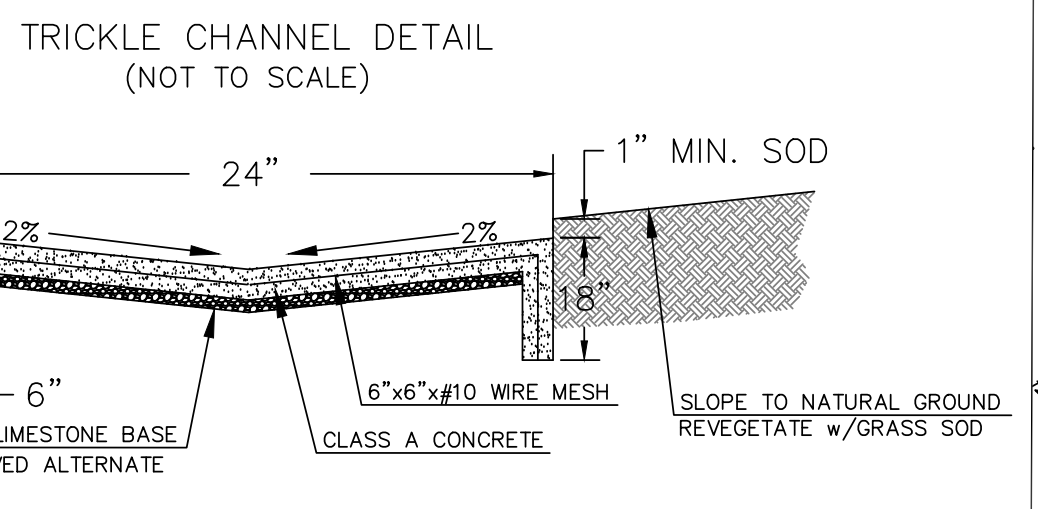
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GRASS

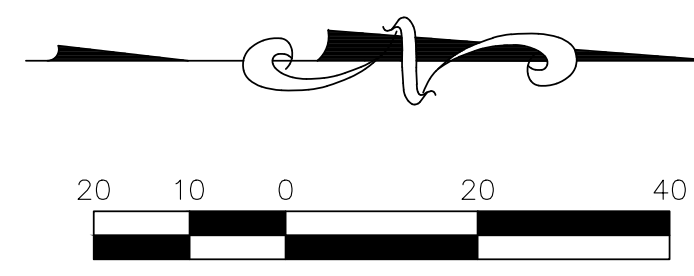
CONC SIDEWALK

ASPHALT

GRASS



CUT: 210 Cu.Yd.
FILL: 3,020 Cu.Yd.
NET: 2,810 Cu.Yd. - FILL



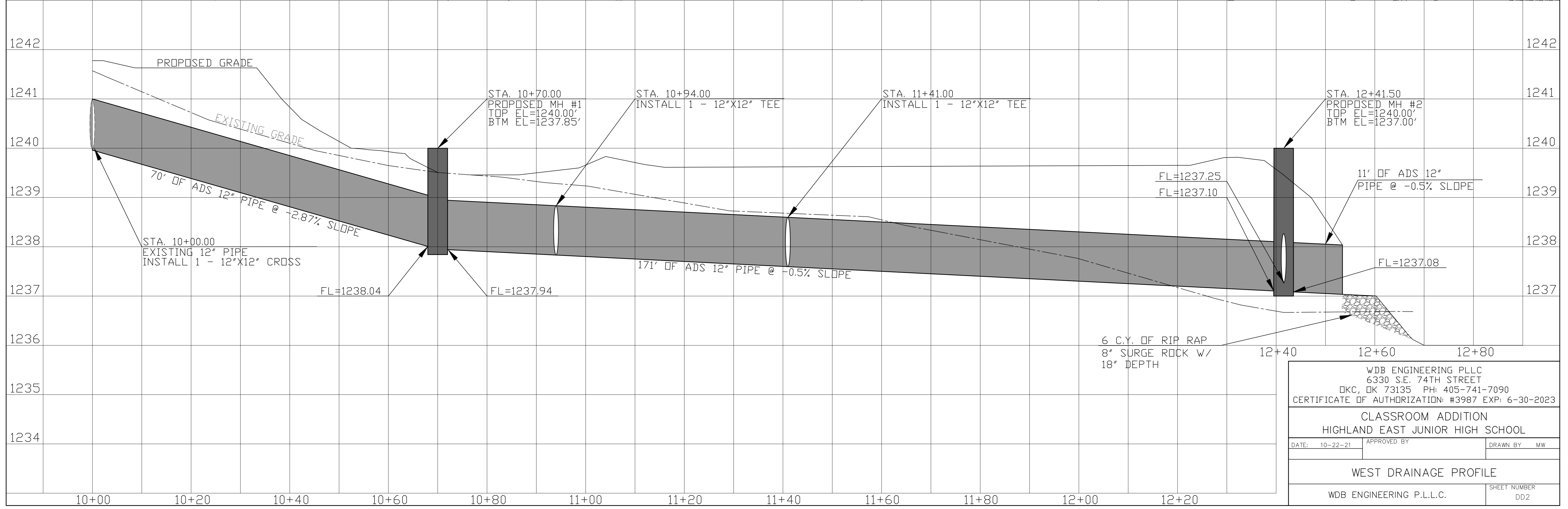
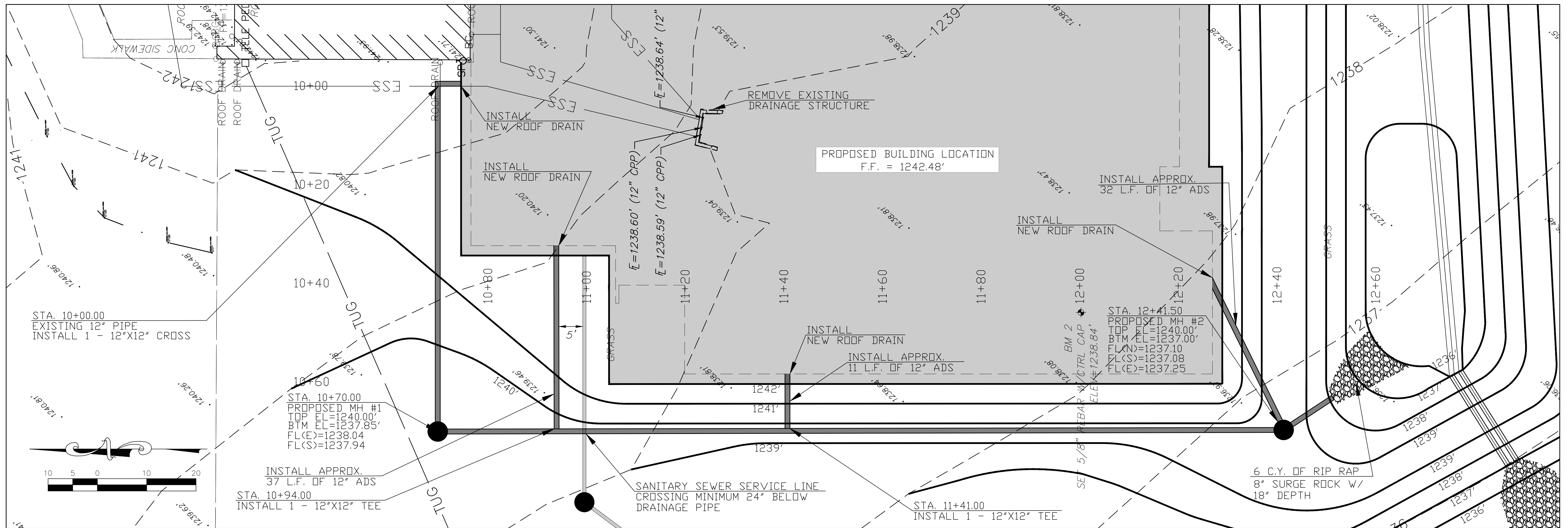
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CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2023

CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

DATE: 10-25-2021 APPROVED BY: DRAWN BY: MW

SITE GRADING AND DETENTION
WDB ENGINEERING P.L.L.C. SHEET NUMBER DD1

SE 4TH ST.
CONC PAVING



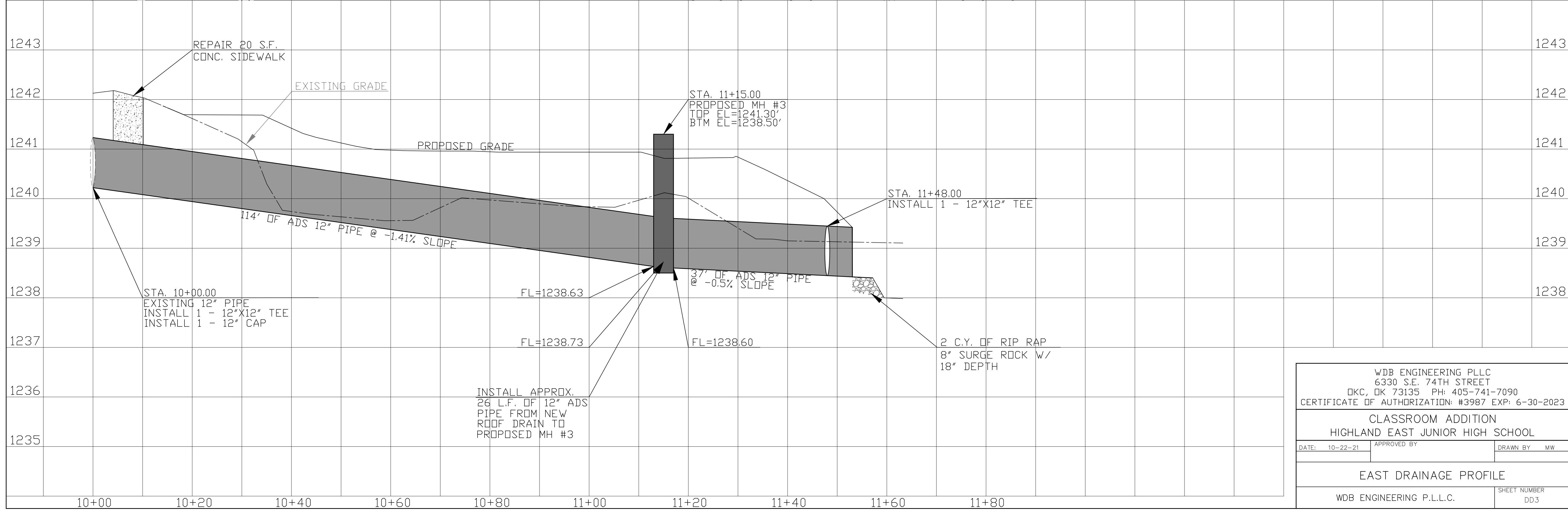
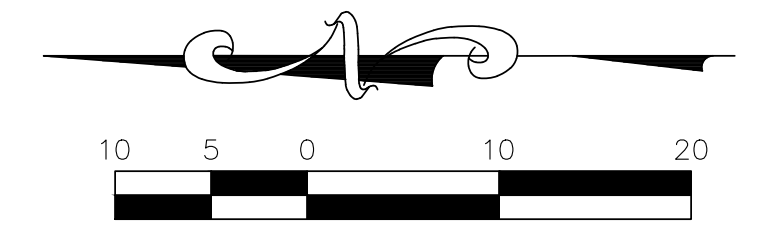
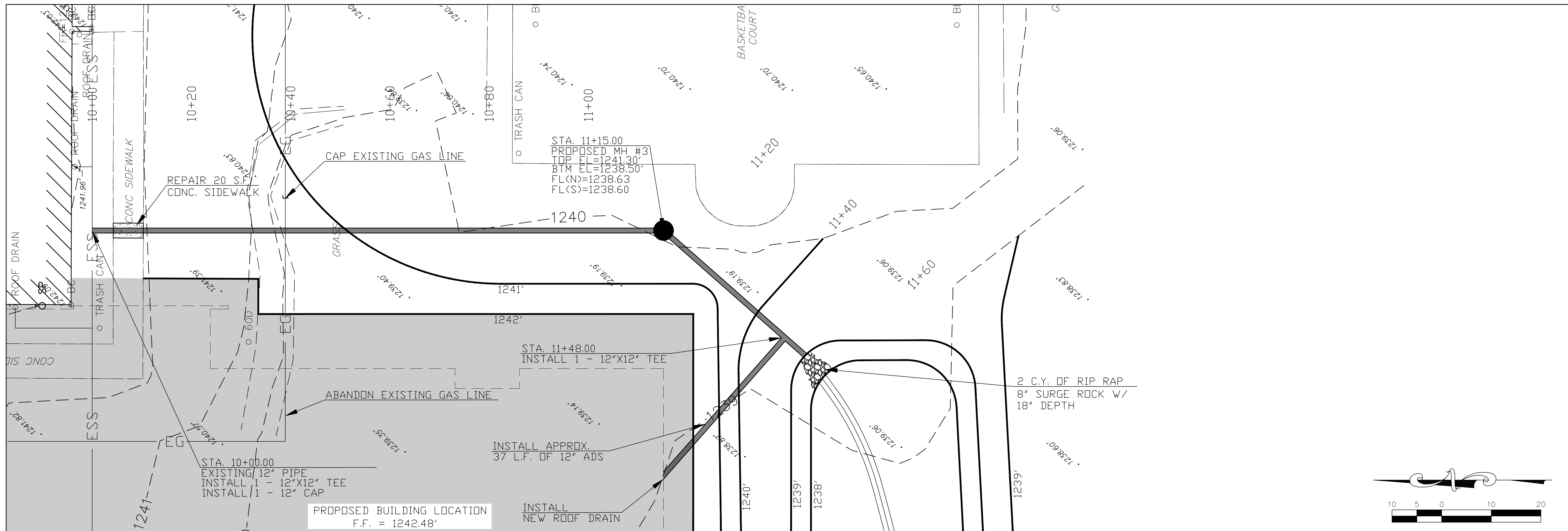
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CLASSROOM ADDITION
HIGHLAND EAST JUNIOR HIGH SCHOOL

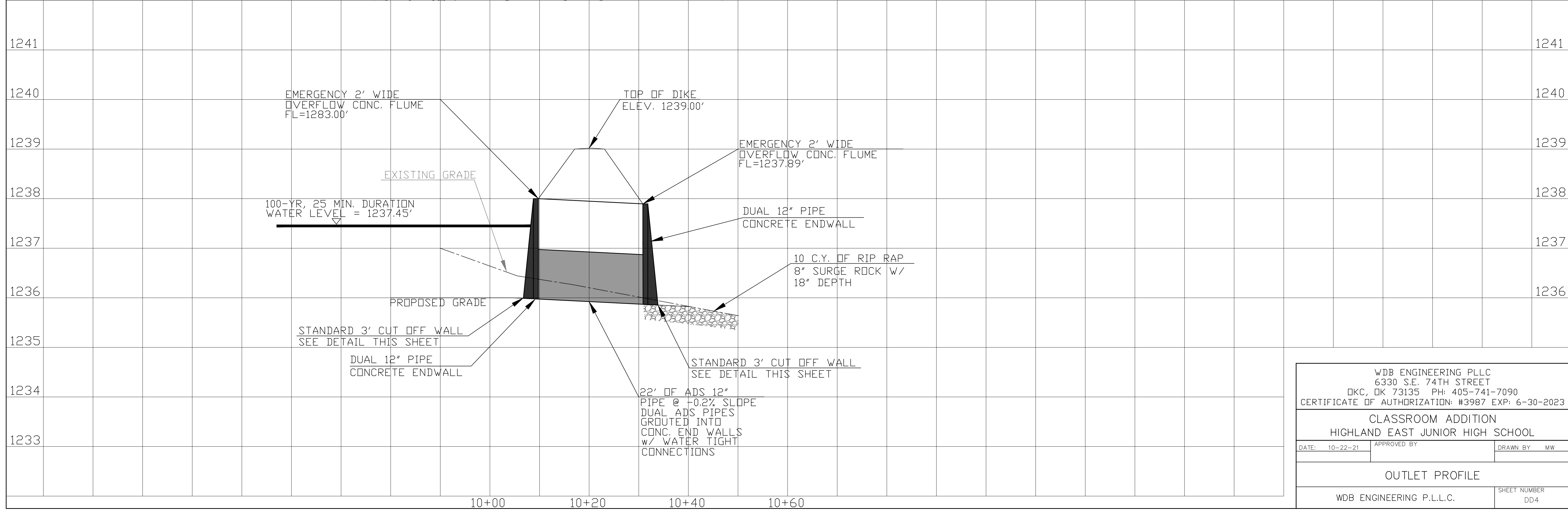
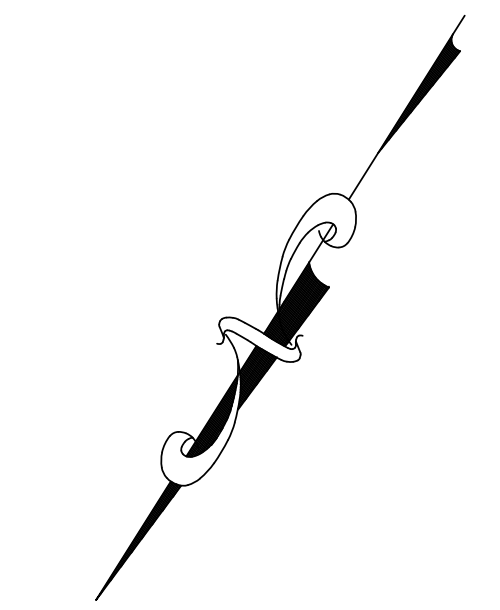
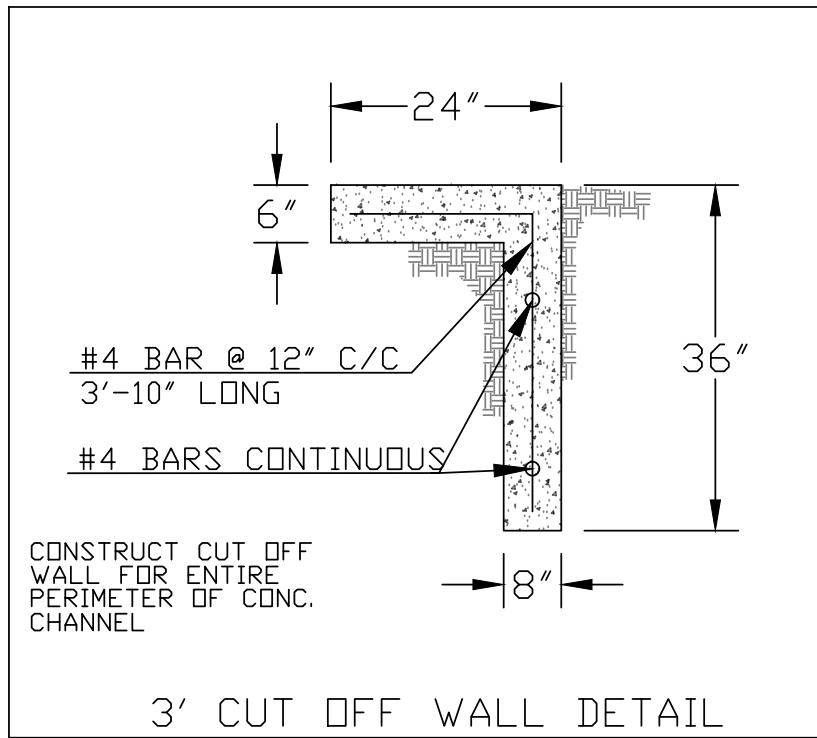
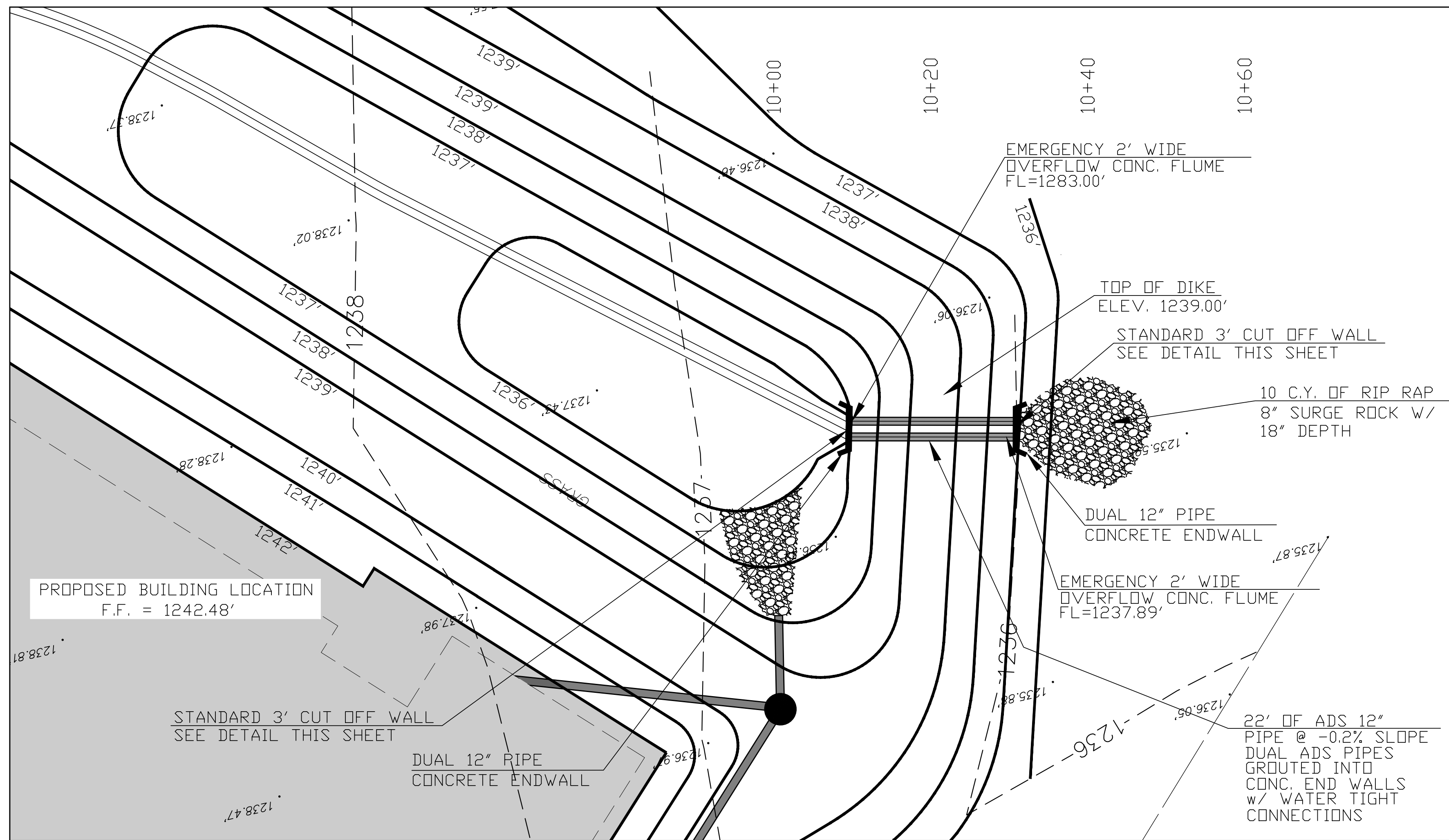
DATE: 10-22-21 APPROVED BY: _____ DRAWN BY: MW

WEST DRAINAGE PROFILE

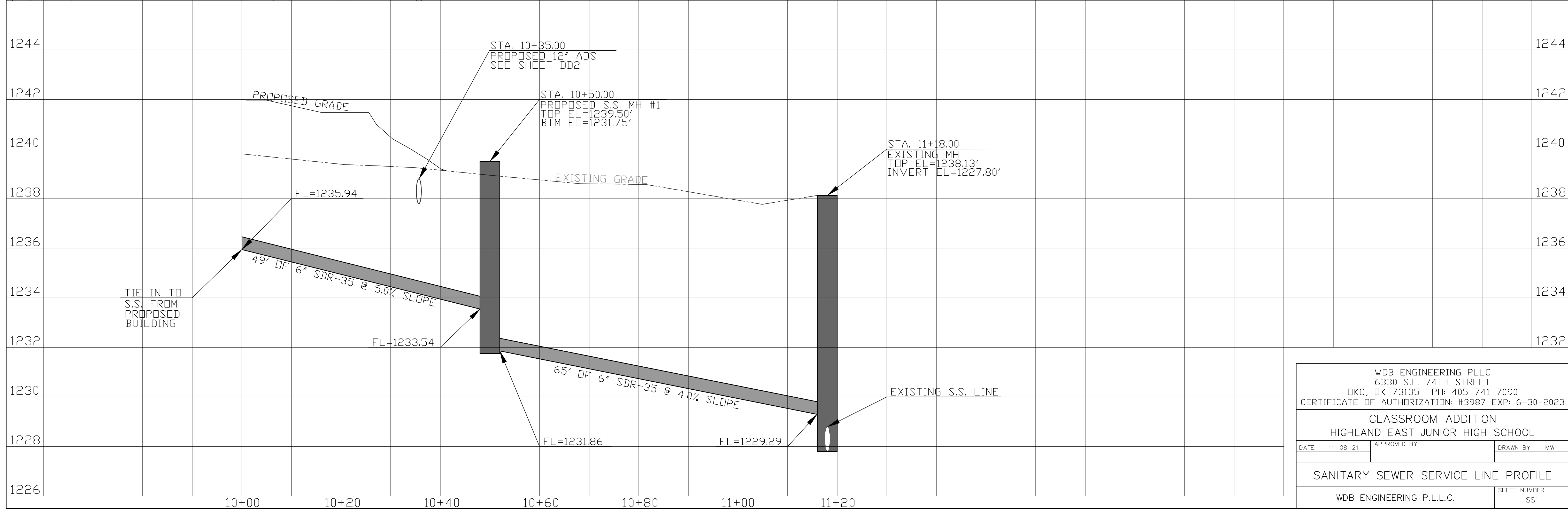
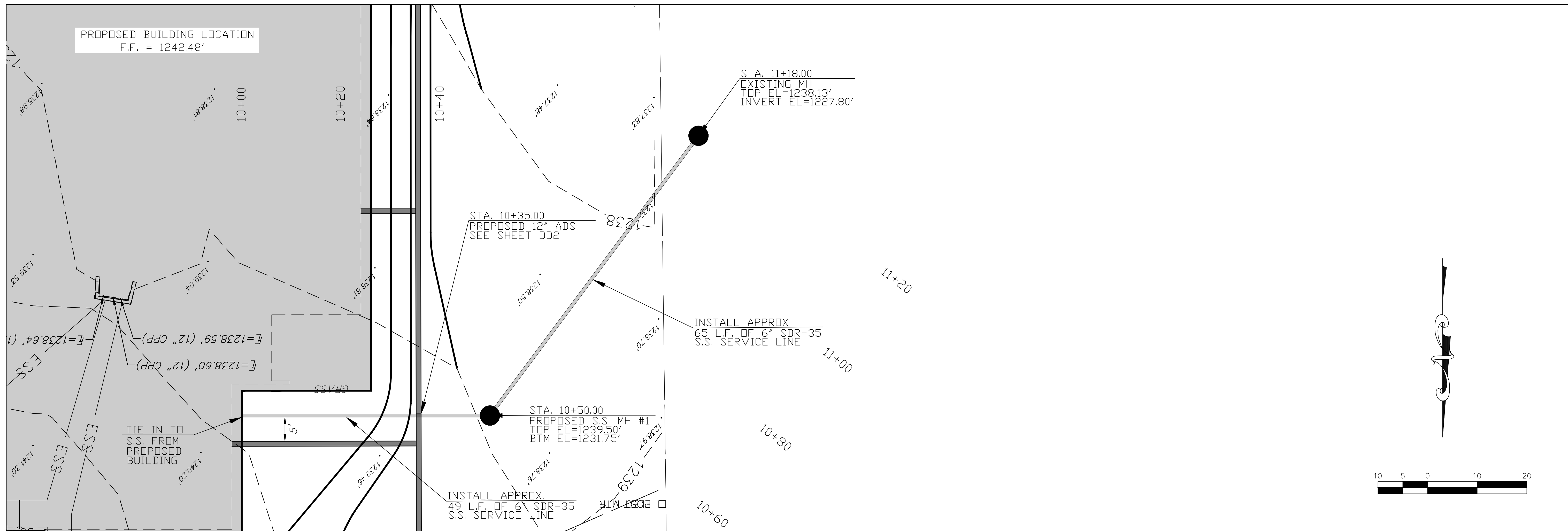
WDB ENGINEERING P.L.L.C. SHEET NUMBER DD2



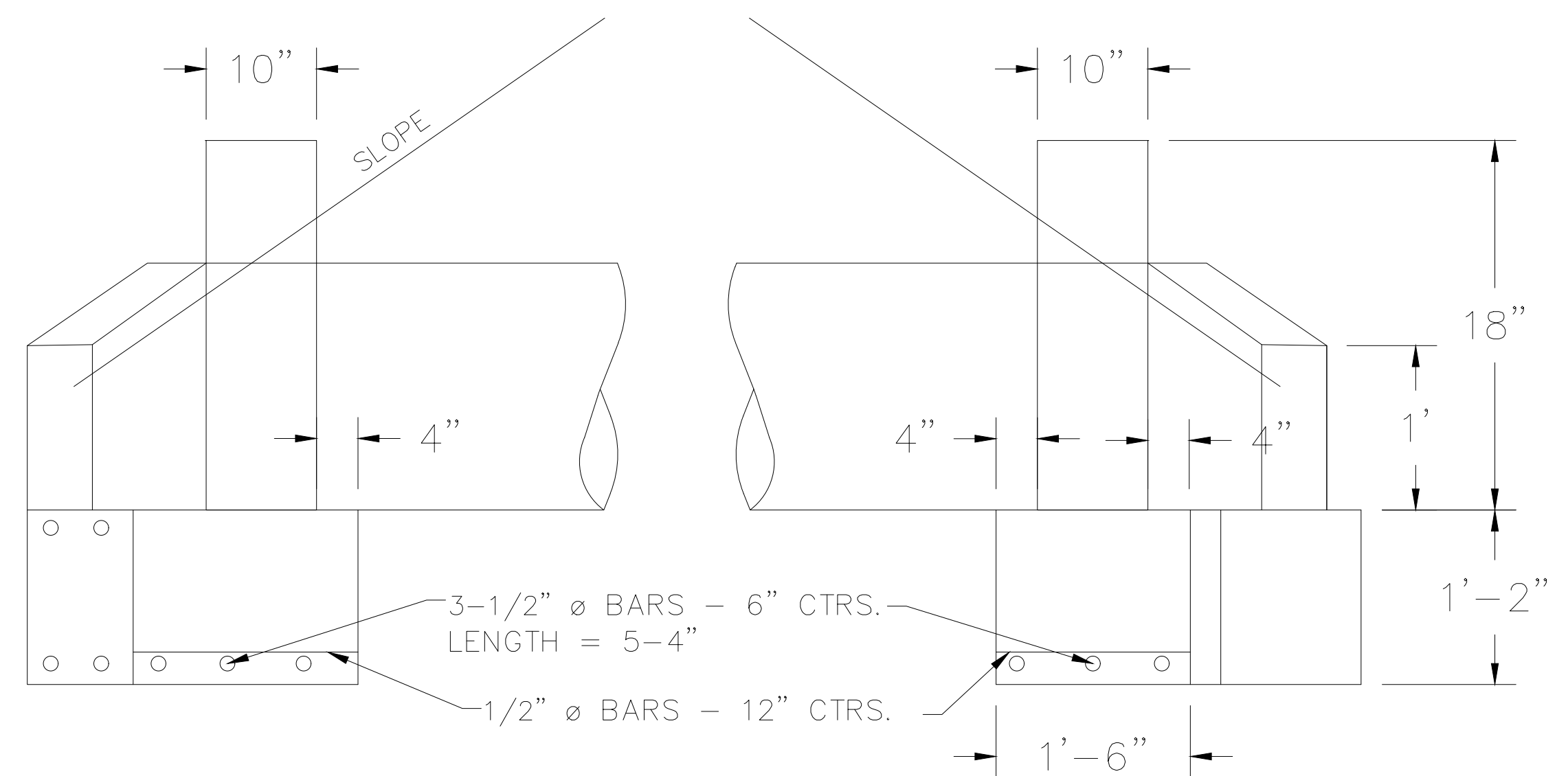
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CLASSROOM ADDITION HIGHLAND EAST JUNIOR HIGH SCHOOL		
DATE: 10-22-21	APPROVED BY:	DRAWN BY: MW
EAST DRAINAGE PROFILE		
WDB ENGINEERING P.L.L.C.		SHEET NUMBER DD3



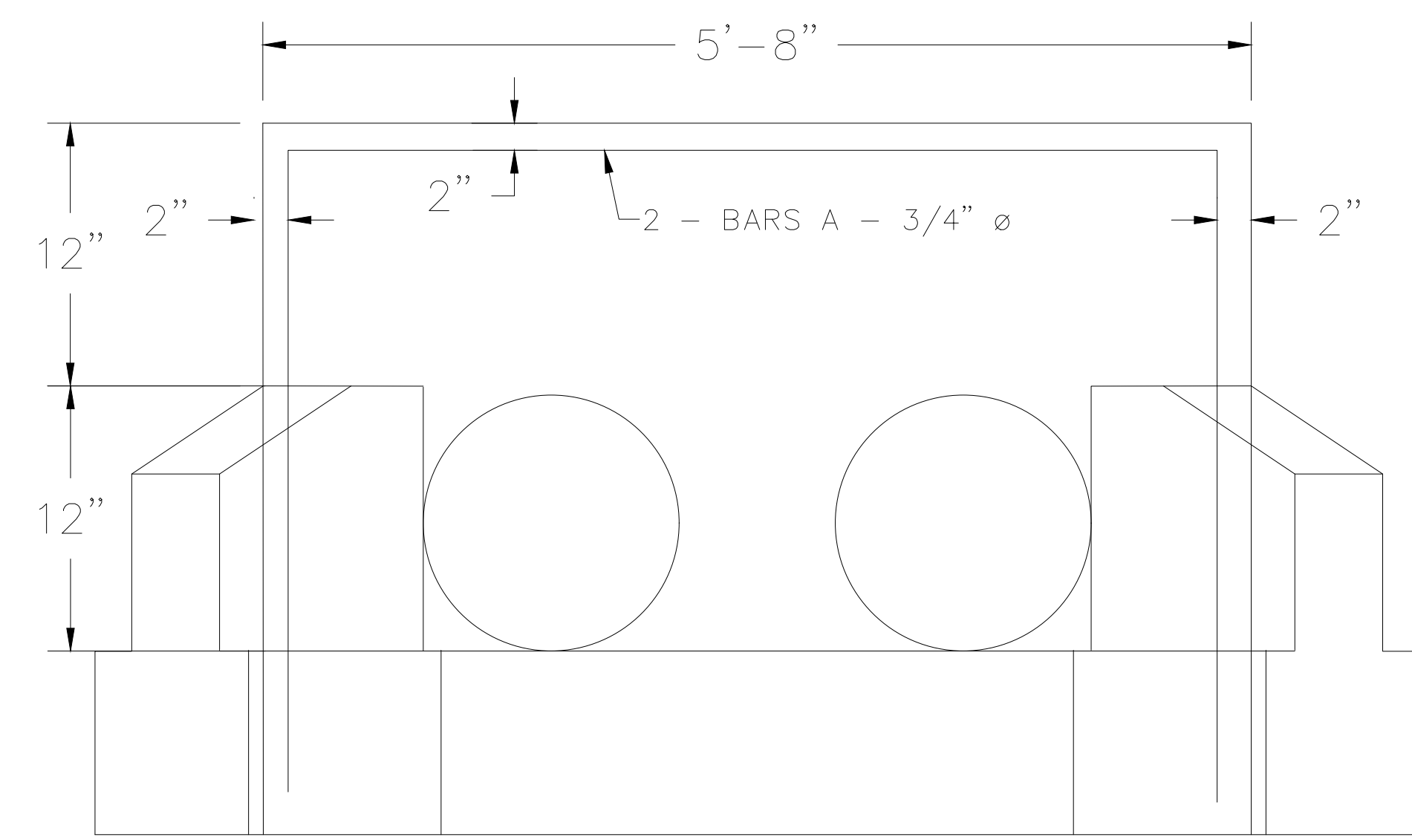
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CLASSROOM ADDITION HIGHLAND EAST JUNIOR HIGH SCHOOL		
DATE: 10-22-21	APPROVED BY:	DRAWN BY: MW
OUTLET PROFILE		
WDB ENGINEERING P.L.L.C.		SHEET NUMBER DD4



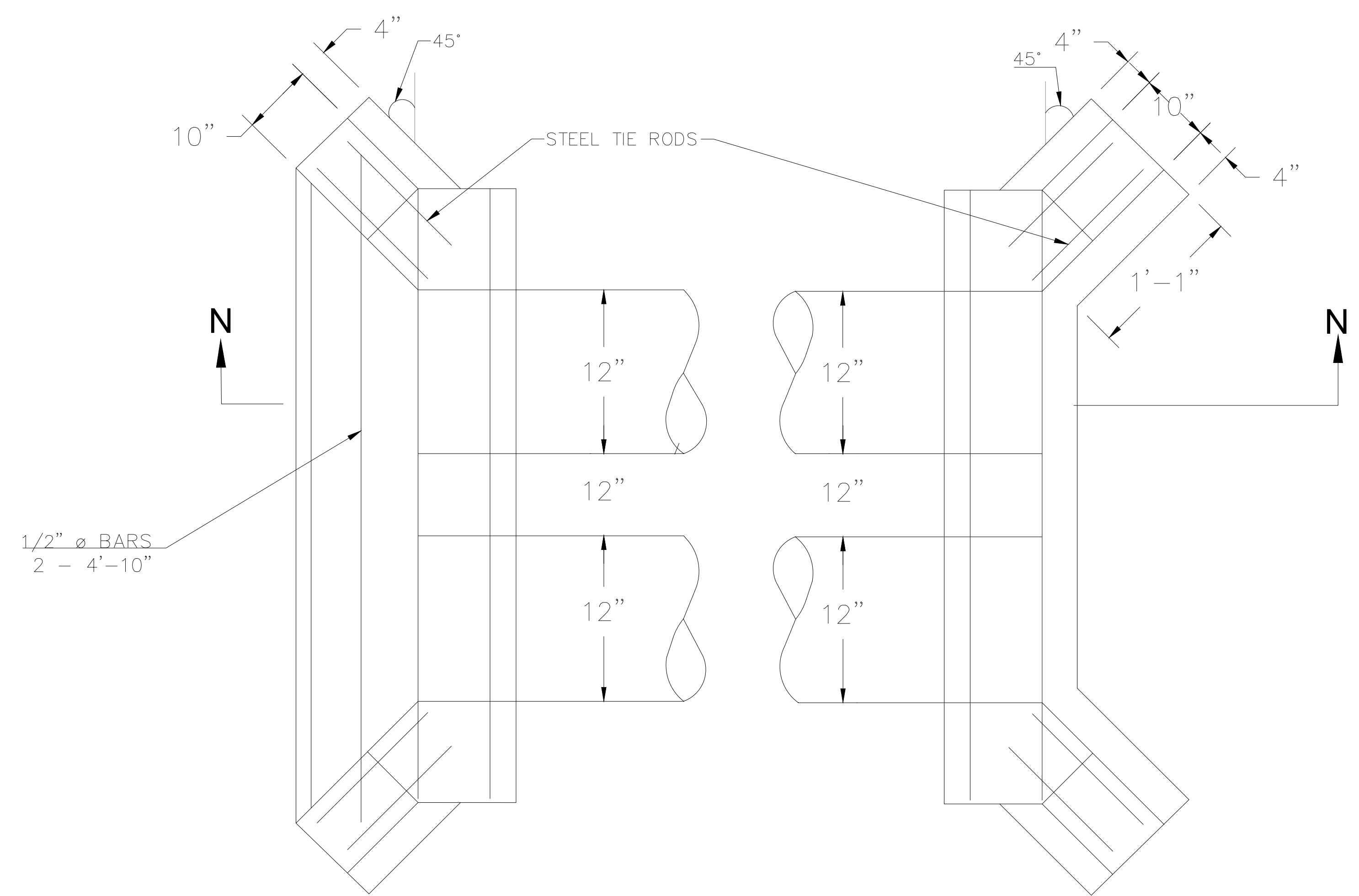
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CLASSROOM ADDITION HIGHLAND EAST JUNIOR HIGH SCHOOL		
DATE: 11-08-21	APPROVED BY:	DRAWN BY: MW
SANITARY SEWER SERVICE LINE PROFILE		
WDB ENGINEERING P.L.L.C.		SHEET NUMBER SS1



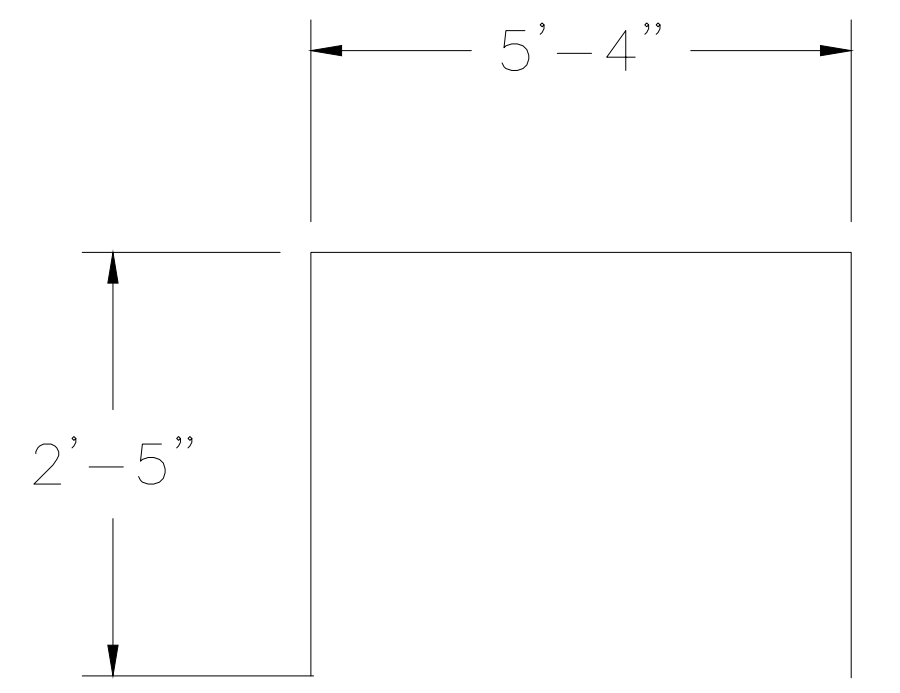
SECTION N-N



UPSTREAM END
END ELEVATION



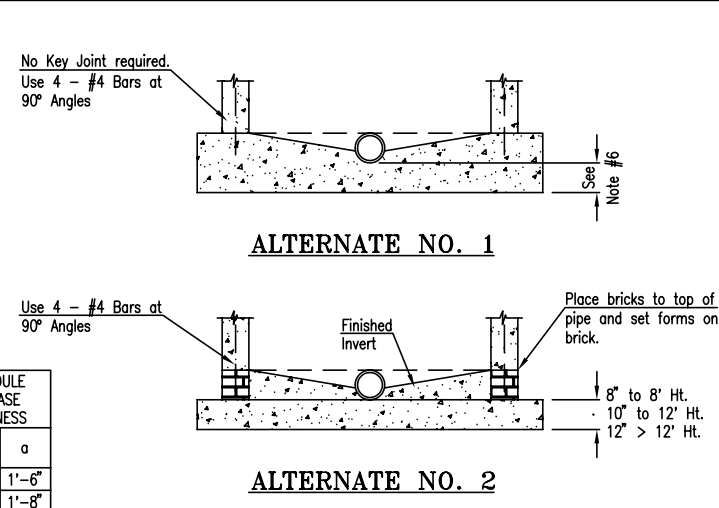
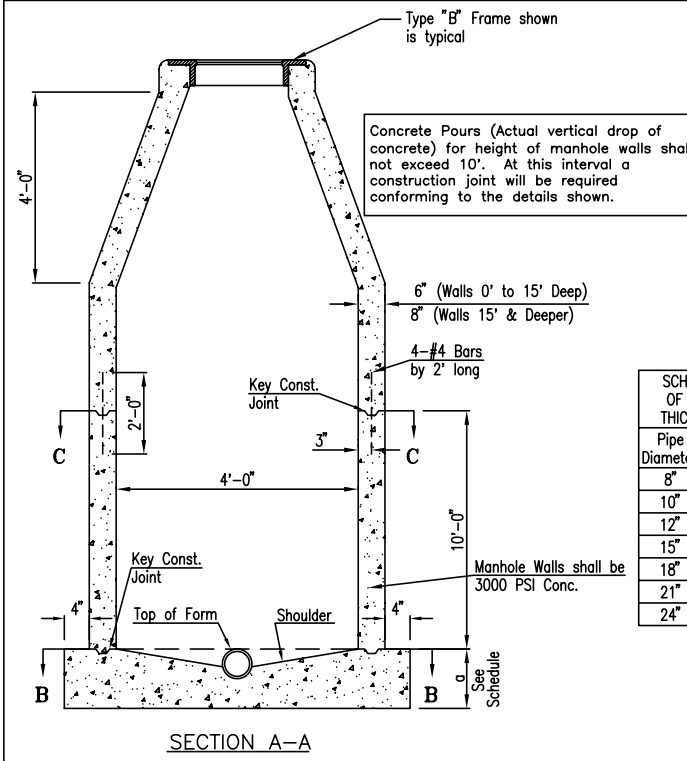
PLAN



BENDING BARS A

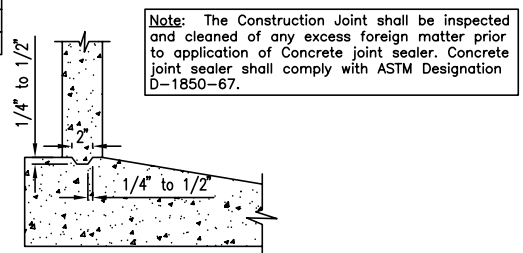
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CLASSROOM ADDITION HIGHLAND EAST JUNIOR HIGH SCHOOL		
DATE: 10-25-21	APPROVED BY:	DRAWN BY: MW
CONCRETE END WALL DETAILS		
WDB ENGINEERING P.L.L.C.		SHEET NUMBER DETAIL1

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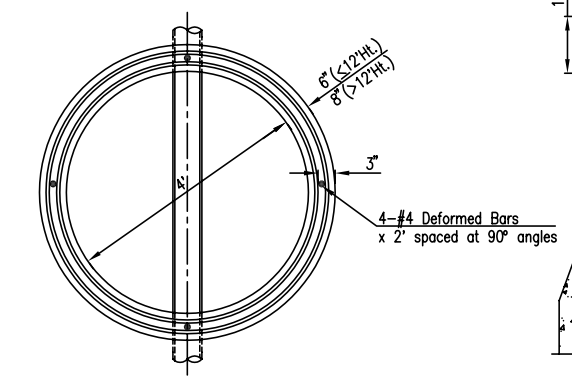
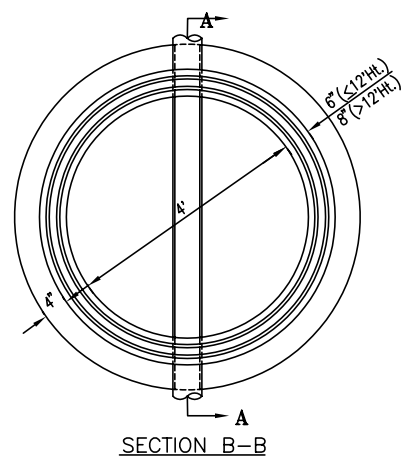
SCHEDULE OF BASE THICKNESS

Pipe Diameter	a
8"	1'-6"
10"	1'-8"
12"	1'-11"
15"	2'-2"
18"	2'-6"
21"	2'-10"
24"	3'-1"

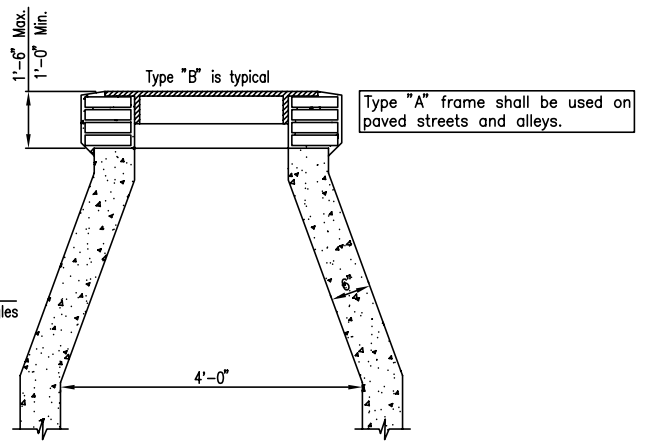


KEY CONSTRUCTION JOINT FOR BOTTOM & WALLS DETAIL
N.T.S.

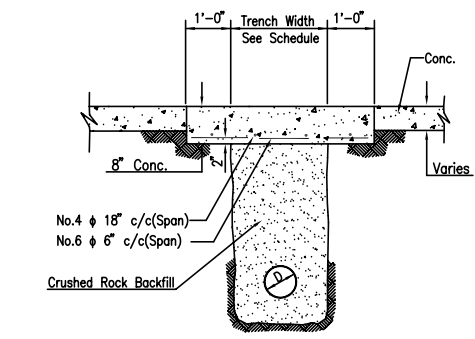
Note: The following Alternate Concrete Mix may be permitted:
Mix design: 3000 lb. pump mix, 1416 lb. of rock, 1700 lb. of sand, 5 1/2 bags of cement, or 517 lbs., and sufficient water to produce a 4" slump. No vibration required when placing this mix.



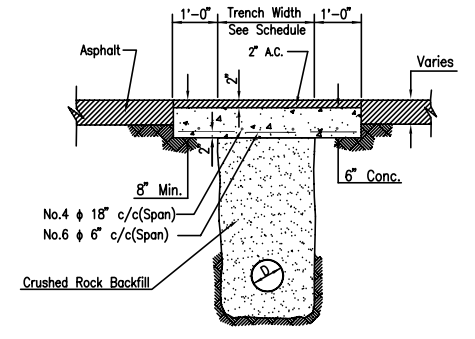
POURED-IN-PLACE STANDARD MANHOLE
N.T.S.



TYPICAL SECTION TO BE USED WITHIN STREET RIGHT-OF-WAY
N.T.S.

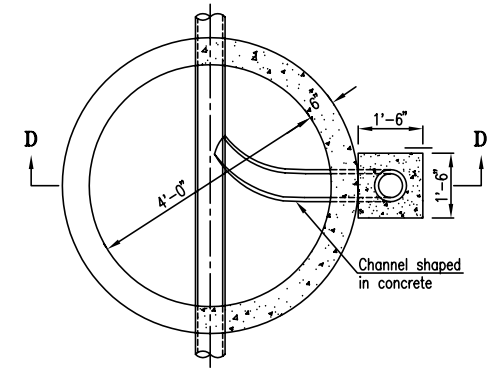


TYPICAL PERMANENT REPAIR FOR P.C. CONCRETE PAVING

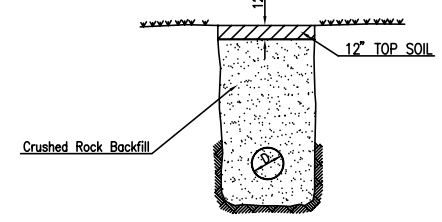


TYPICAL PERMANENT REPAIR FOR ASPHALTIC CONCRETE PAVING

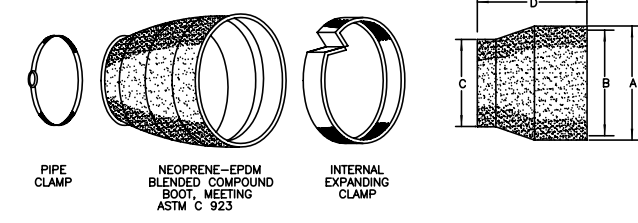
NOTE: IF SANITARY SEWER IS INSTALLED IN FRONT YARD OR STREET R/W THE DITCH SHALL BE BACKFILLED WITH ROCK TO WITHIN 12' OF FINAL GRADE.



SECTION E-E

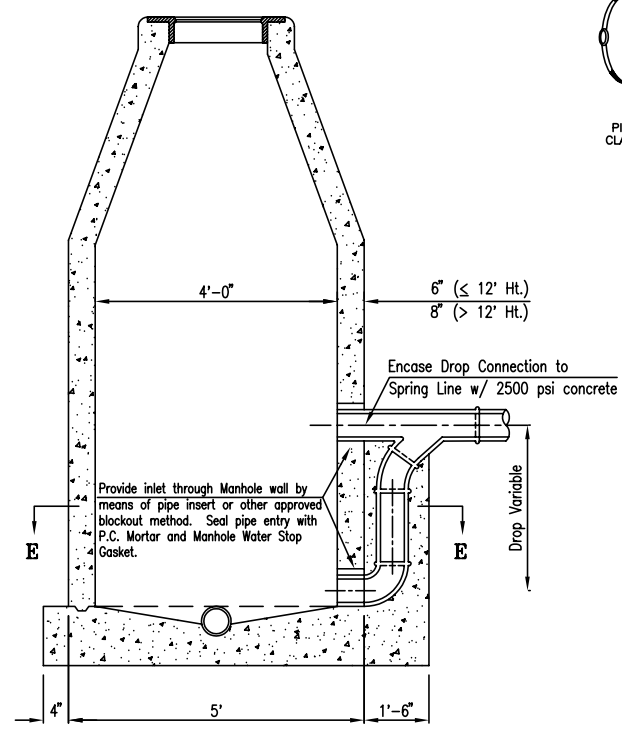


TYPICAL SECTION FOR FRONT YARD SEWERS



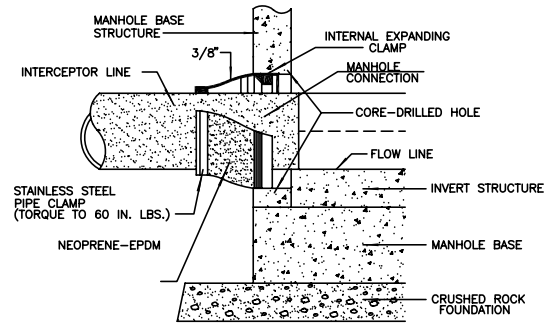
NOTE: ALL CLAMPS SHALL BE STAINLESS STEEL

SUGGESTED PIPE O.D. RANGE	HOLE & BOOT DIAMETER DIMENSIONS			
	A	B	C	D
3 1/2" - 4 1/2"	7"	6 1/8"	4 1/4"	6"
5 3/8" - 7"	12"	10 7/8"	6 1/2"	8"
7" - 8 1/2"	12"	10 7/8"	8"	8"
8 3/16" - 9 3/4"	12"	10 7/8"	9 1/4"	8"
9 1/4" - 11"	16"	14 7/8"	10 1/2"	8"
10 3/4" - 12 1/2"	16"	14 7/8"	12"	8"
12" - 13 3/4"	16"	14 7/8"	13 1/4"	8"
14 1/2" - 16 1/4"	20"	18 7/8"	15 3/4"	8"
15 3/4" - 17 1/2"	20"	18 7/8"	17"	8"
19 1/2" - 21 1/4"	24"	22 7/8"	20 3/4"	8"



SECTION D-D

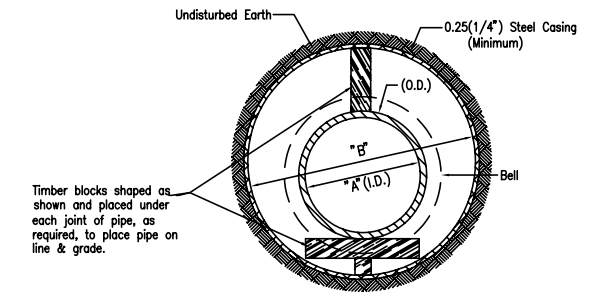
POURED-IN-PLACE DROP MANHOLE
N.T.S.




STANDARD DETAIL FOR MANHOLE-PIPE CONNECTION

GENERAL NOTES FOR POURED-IN-PLACE MANHOLES

- Materials for concrete shall conform, as a minimum to the following current specifications:
Portland Cement: ASTM C 150
Aggregate for Mortar: ASTM C 144
Fine & Coarse Aggregate: ASTM C 33
Water: Clean and free from deleterious substances. Total water content of concrete shall not exceed 6.5 gallons (54.2 liters) of water per 100 pounds (100 kg) of cement in the mix.
- The base shall be constructed of concrete having a minimum 3500 PSI compressive strength at 28 days (20,684 kn/cm) and with a maximum slump of 4 inches (10 cm), vibrated or tamped. The base shall have a minimum diameter of 8 inches (20 cm) greater than the outside diameter of the manhole.
- The invert flow channel shall be formed during or immediately after the pouring of the manhole base and brush finished as soon as the concrete has sufficiently set. The flow channel through manholes shall be made to conform in shape and in slope to that of the sewers. Sewer pipe, with the top half removed, shall be laid through the manhole whenever possible.
The inside bottom of the manhole shall rise a minimum of 1 inch per foot (8.3 cm/m) from the side of the pipe or the flow channel to the wall of the manhole. Dips or projections capable of holding water or solid materials will not be permitted. The concrete shall set for 24 hours before any pipe inside the manhole is trimmed.
- All sewers constructed of rigid or semi-rigid pipe extending from all manholes shall be encased with concrete with a distance of 3 feet (0.9 m) from the outside wall of the manhole. This support may be deleted if a flexible watertight gasket is used to connect the sewer to the manhole. No support is required for sewers constructed of flexible pipe.
- Wall thickness uniformity shall be obtained through the use of spacers located at the top and bottom of the manhole. For deep manholes, spacers located at a depth of one-half the manhole depth shall also be utilized. Wall thickness shall be 6" for manholes 0' to 12' deep and wall thickness shall be 8" for manholes greater than 12' deep.
- The base may be poured monolithically with the rest of the manhole. The base shall have a minimum thickness under the pipe as follows:
0 ft. to 8 ft. (0 - 2.4 m) manhole heights: 8 inches
8 ft. to 12 ft. (2.4 - 3.7 m) manhole heights: 10 inches
12 ft. (3.7 m) and above manhole heights: 12 inches
- The construction joint shall be inspected and cleaned of any excess foreign matter prior to application of concrete joint sealer. Concrete joint sealer shall comply with ASTM Designation D 1850-67.
- Forms shall be provided for the shaping and finishing of the manhole bottoms. A minimum interval of 24 hours shall elapse prior to pouring of manhole walls. Construction of manhole bottoms shall comply with the standard specifications for the construction of sanitary sewers and appurtenances.
- Mortar for finishing and sealing shall be Class "C". Any honeycombing of concrete less than 2" deep in 6" manhole walls may be repaired using Class "D" Mortar.
- This manhole is standard only for sewers 36" in diameter or less provided that at junction points, special manholes may be required for sewers smaller than 36" in diameter.
- Interior surfaces of all manhole walls shall receive two (2) coats of an approved sealer. A minimum interval of 24 hours shall elapse between applications of coating.
- Manholes shall conform to the requirements of Oklahoma State Department of Environmental Quality. The more restrictive requirement between The City of Moore and The ODEQ shall govern in cases where there are discrepancies.

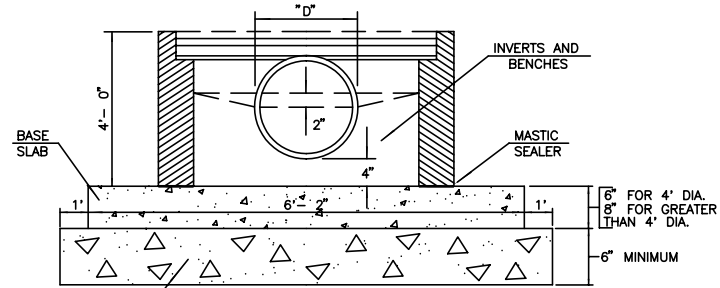


TYPICAL SECTION FOR BORING PUBLIC STREETS

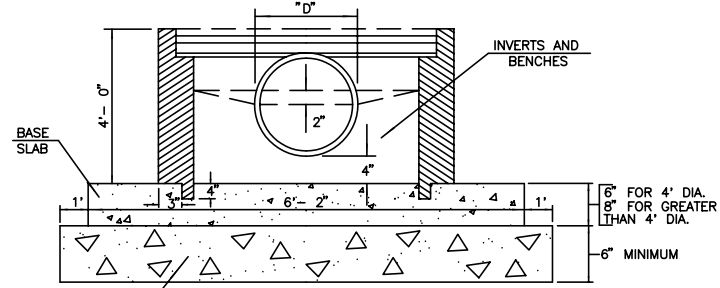
The City of MOORE Oklahoma

 Poured-in-Place Manhole Sanitary Sewer Standard Details No. 301
 APPROVED BY: *Donald Wick* DATE: 03/06/2008
 DONALD WICK, P.E. CITY ENGINEER
 REVISED: 03/05/2008

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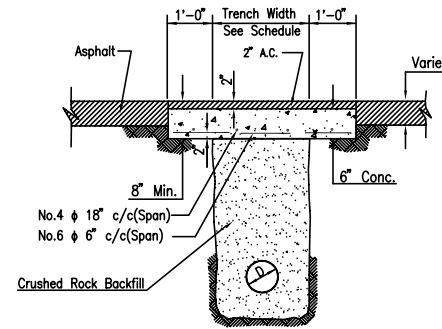
STANDARD DETAIL FOR BASE SECTIONS



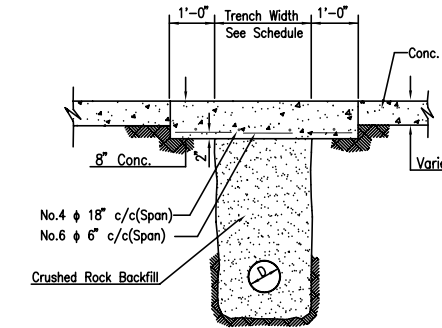
**BASE RISER SECTION
WITH MASTIC SEALER
OPTION "A"**



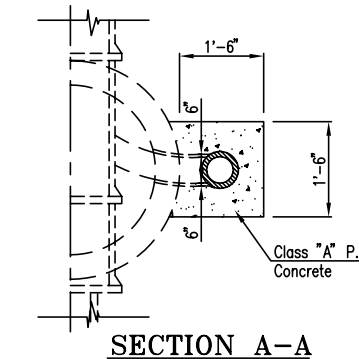
**BASE RISER SECTION
WITH PREFORMED SOCKET
OPTION "B"**



**TYPICAL PERMANENT REPAIR
FOR ASPHALTIC CONCRETE PAVING**



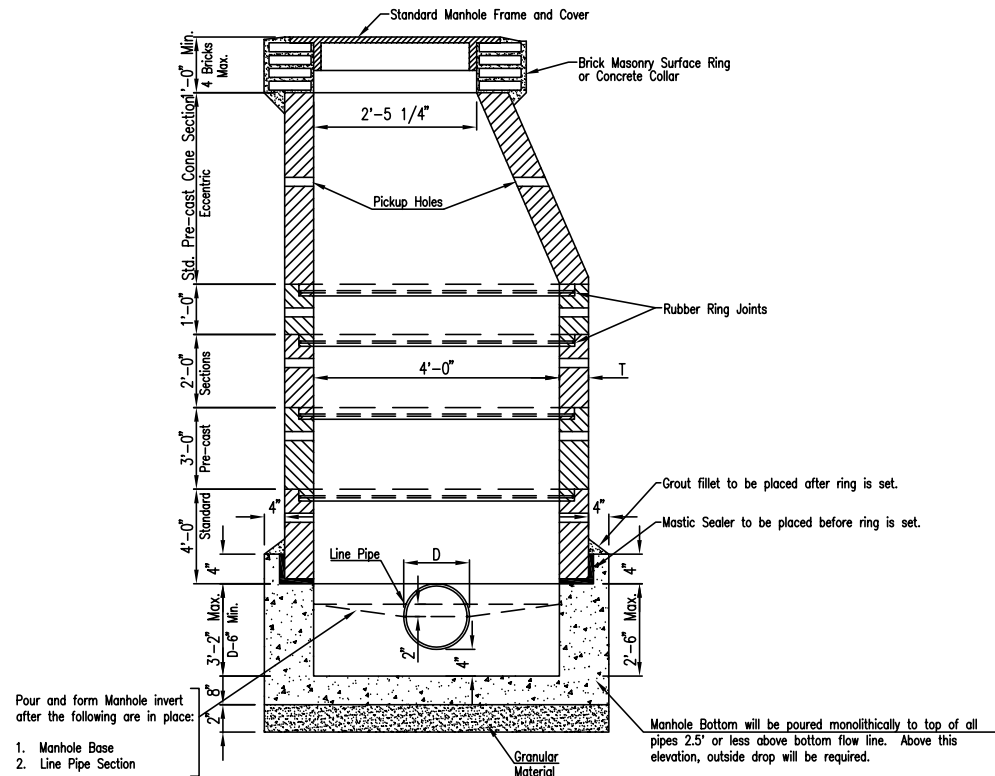
**TYPICAL PERMANENT REPAIR
FOR P.C. CONCRETE PAVING**



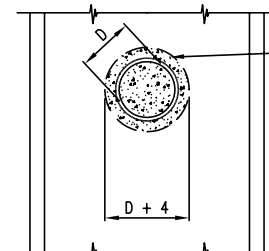
SECTION A-A

GENERAL NOTES FOR PRECAST MANHOLES

- All pre-cast components shall be reinforced per their respective ASTM specifications.
- All joints shall have approved rubber rings.
- All lifting holes shall be repaired with a mixture of cement and sand grout firmly packed.
- The interior surfaces of manhole and cone sections shall be coated with two (2) coats of approved sealer.
- The minimum compressive strength of the concrete in manhole and cone sections shall be 4000 PSI.
- Cement used in the construction of pre-cast reinforced concrete manholes shall conform to the requirements of the standard specifications for portland cement (ASTM designation: C 150).
- The minimum shell thickness for pre-cast concrete reinforced manholes shall be:
At a depth of 0 to 16 feet One-twelfth internal shell diameter or 4 inches (10cm), whichever is greater.
At a depth greater than 16 feet One-twelfth internal shell diameter or 5 inches (13cm), whichever is greater.
- Any pre-cast reinforced concrete section which has been damaged in transit or on site such that the water tightness of the section has been affected adversely shall not be utilized in the construction of the manholes.
- Materials for concrete used for manhole bases shall conform, as a minimum, to the following current specifications:
Portland Cement ASTM C 150
Aggregate for Mortar ASTM C 144
Fine & Coarse Aggregate ASTM C 33
Water: Clean and free from deleterious substances. Total water content of concrete shall not exceed 6.5 gallons (54.2) of water per 100 pounds (100kg) of cement in the mix.
- The base shall be poured of a minimum 3500 PSI (20,684kn/sm) concrete with a maximum slump of 4 inches (10cm), vibrated or tamped. The base shall have a minimum diameter of 8 inches (20cm) greater than the outside diameter of the manhole. The base shall have a minimum of 8 inch (20cm) thickness beneath the manhole wall.
- The invert flow channel shall be formed during or immediately after the pouring of the manhole base and brush finished as soon as the concrete has sufficiently set. The flow channel through manholes shall be made to conform to shape and in slope to that of the sewers. Sewer pipe, with the top half removed, shall be laid through the manhole whenever possible. The inside bottom of the manhole shall rise a minimum of 1 inch per foot (8.3 cm/m) from the side of the pipe or the flow channel to the wall of the manhole. Dips or projections capable of holding water or solid materials will not be permitted. The concrete shall set for 24 hours before any pipe inside the manhole is trimmed.
- All sewer constructed of rigid or semi-rigid pipe extending from all manholes shall be encased with concrete for a distance of 3 feet (0.9m) from the outside wall of the manhole. This support may be deleted if a flexible, watertight gasket is used to connect the sewer to the manhole. No support is required for sewers constructed of flexible pipe.
- The interior surface of all manhole walls shall receive two (2) coats of an approved sealer. A minimum 24 hours shall elapse between coats.
- Manholes shall conform to the requirements of Oklahoma Department of Environmental Quality. The more restrictive requirement between The City of Moore and The ODEQ shall govern in cases where there are discrepancies.

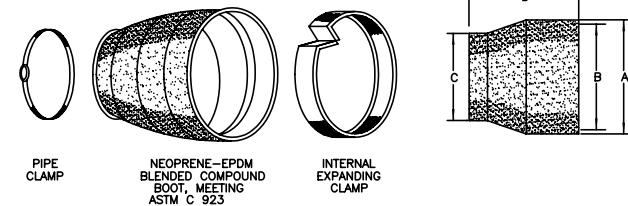


**TYPICAL BASE DETAILS
4'-0" DIAMETER MANHOLE
(Eccentric Cone)**
N.T.S.



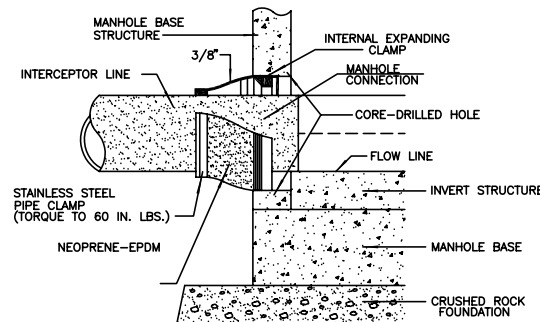
PIPE CONNECTION DETAILS

Shop shall score concrete walls to dimensions shown. Reinforcing to be cut on job site.

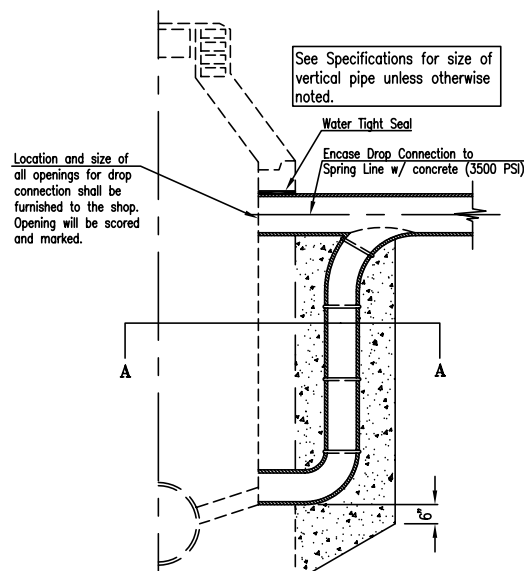


NOTE: ALL CLAMPS SHALL BE STAINLESS STEEL

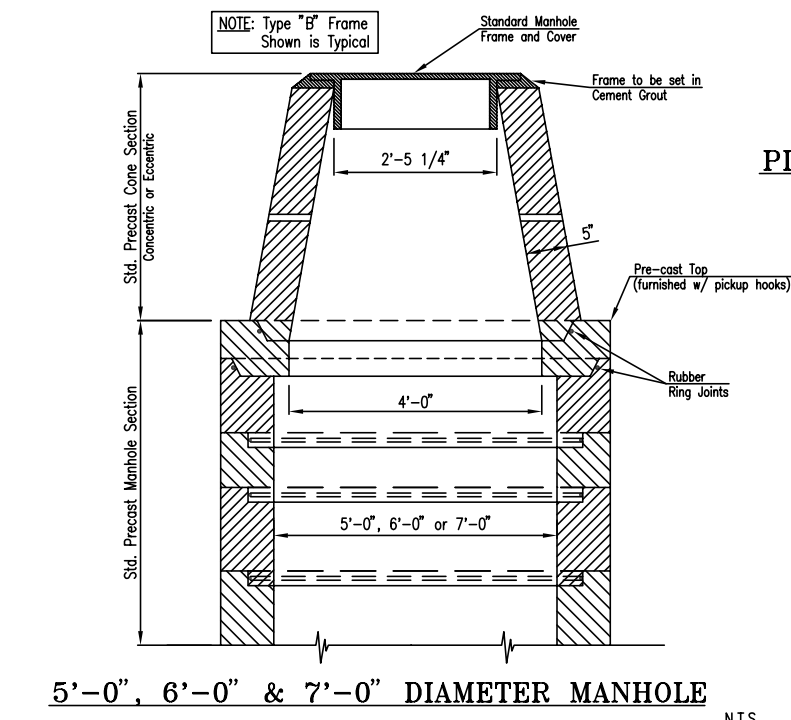
SUGGESTED PIPE O.D. RANGE	HOLE & BOOT DIAMETER DIMENSIONS			
	A	B	C	D
3 1/2" - 4 1/2"	7"	6 1/8"	4 1/4"	6"
5 3/8" - 7"	12"	10 7/8"	6 1/2"	8"
7" - 8 1/2"	12"	10 7/8"	8"	8"
8 3/16" - 9 3/4"	12"	10 7/8"	9 1/4"	8"
9 1/4" - 11"	16"	14 7/8"	10 1/2"	8"
10 3/4" - 12 1/2"	16"	14 7/8"	12"	8"
12" - 13 3/4"	16"	14 7/8"	13 1/4"	8"
14 1/2" - 16 1/4"	20"	18 7/8"	15 3/4"	8"
15 3/4" - 17 1/2"	20"	18 7/8"	17"	8"
19 1/2" - 21 1/4"	24"	22 7/8"	20 3/4"	8"



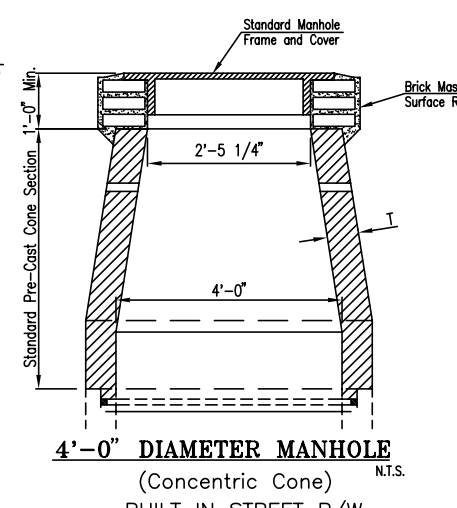
**STANDARD DETAIL FOR
MANHOLE-PIPE CONNECTION**
N.T.S.



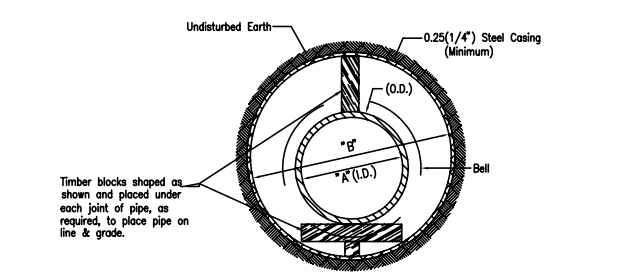
DROP MANHOLE CONNECTION
N.T.S.



5'-0", 6'-0" & 7'-0" DIAMETER MANHOLE
N.T.S.



**4'-0" DIAMETER MANHOLE
(Concentric Cone)**
N.T.S.
BUILT IN STREET R/W



**TYPICAL SECTION FOR BORING
PUBLIC STREETS**

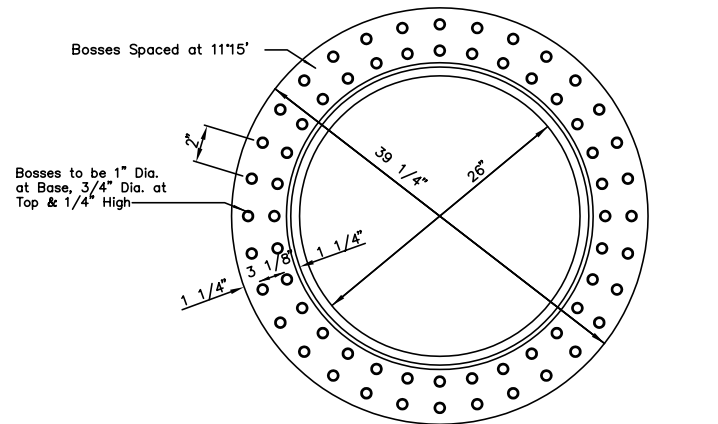
The City of MOORE Oklahoma

Precast Manhole
Sanitary Sewer
Standard Details
No. 302

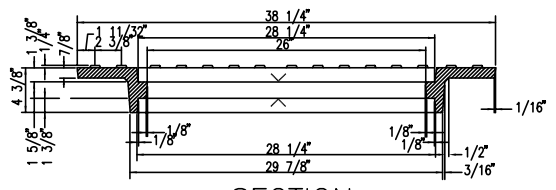
APPROVED BY: *Donald Wick* DATE: 03/06/2008
DONALD WICK, P.E. CITY ENGINEER

REVISED: 03/05/2008

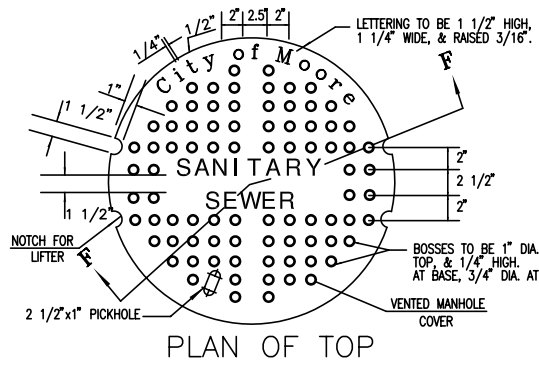
R:\DRAFTING LIBRARY\Standards\Moore\2008 revised\SEWER_303.dwg, 5/16/2008 1:57:22 PM, Adobe PDF.pc3, 1:2.04651



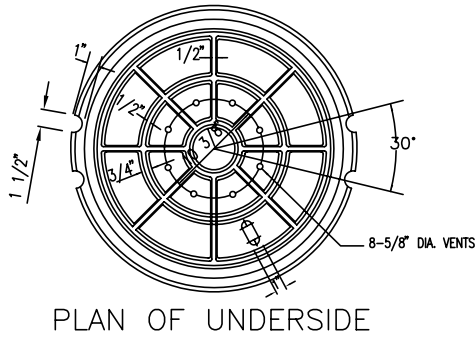
REVERSIBLE FRAME FOR TYPE "A" OR TYPE "B" INSTALLATION
N.T.S.



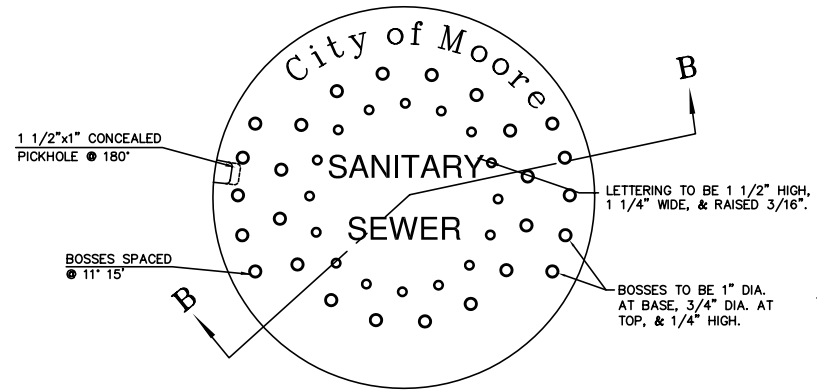
As Shown for "Out of Paving" Installation Type "B" Reversed for "In Paving" Installation Type "A"



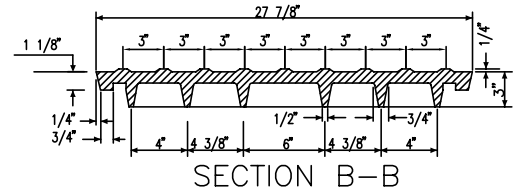
STANDARD COVER FOR TYPE "B" INSTALLATION
N.T.S.



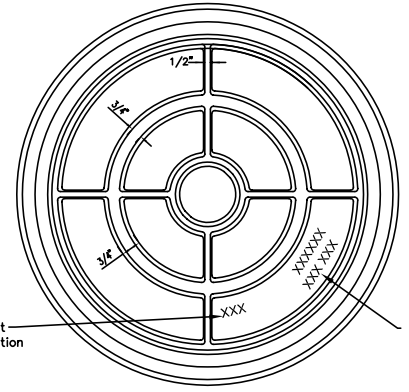
PLAN OF UNDERSIDE



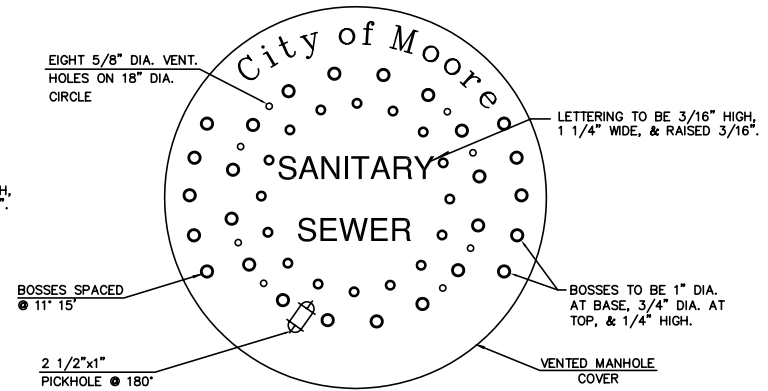
PLAN OF TOP



SECTION B-B

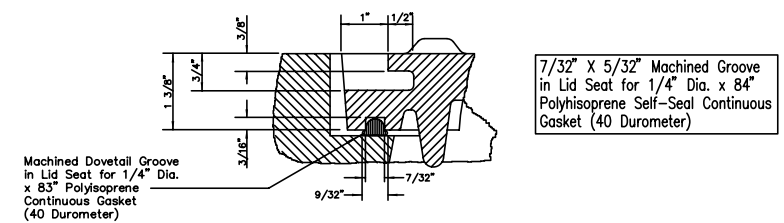


STANDARD COVER FOR TYPE "A" INSTALLATION
N.T.S.



PLAN OF TOP

OPTIONAL COVER FOR TYPE "B" INSTALLATION
N.T.S.




SELF-SEAL DETAIL FOR TYPE "A" INSTALLATION
N.T.S.

GENERAL NOTES

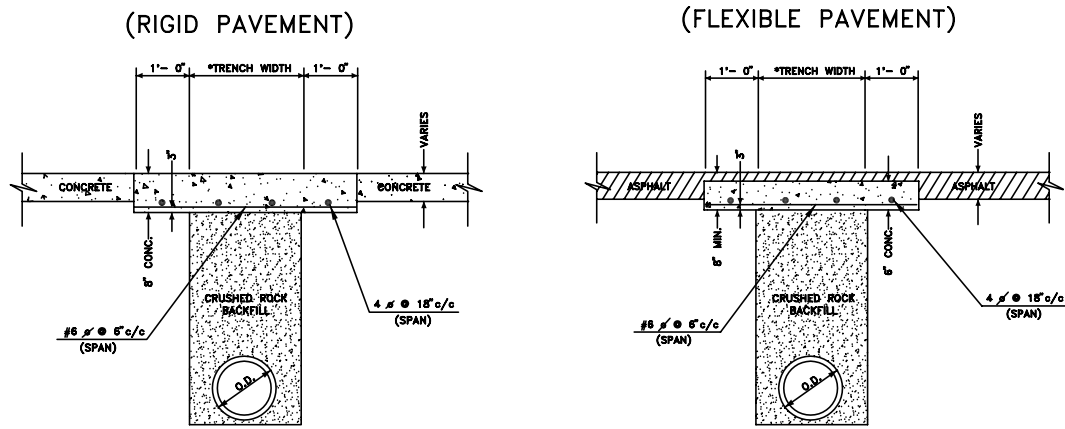
- All construction and materials shall be in accordance with the current specifications.
- Sharp edges resulting from fabrication shall be dulled by any acceptable method for safety in handling.
- Covers shall be gray iron conforming to the requirements of AASHTO M-105, class 45B or ASTM A-48-76, Class 35B. Frame shall be gray iron conforming to the requirements of AASHTO M-105, Class 30B or ASTM 4-48-76, Class 30B Ferrous Castings shall be of uniform quality, free of blowholes, porosity, hard spots, shrinkage, distortion or other defects. They shall be smooth and well cleaned by shot blasting or other approved cleaning method.
- All castings shall be manufactured true to pattern, component parts shall fit together in a satisfactory manner. Where indicated, machined surfaces shall be furnished.
- Weights are approximate and average deviation from the weights shown shall not exceed 5% plus or minus.
- Castings shall be unpainted.
- No wording or markings of any kind, other than those shown on the plan will be permitted on these castings.
- All Type "A" Installations shall have self-sealing feature as shown.

CASTING WEIGHTS

Reversible Frame	___	235 lb.
Standard Type "B" Frame	___	300 lb.
Covers for Reversible Frame	___	195 lb.
Standard Type "B" Cover	___	251 lb.

The City of MOORE Oklahoma	
	Manhole Ring and Cover Sanitary Sewer Standard Details No. 303
APPROVED BY: <i>Donald Wick</i> DONALD WICK, P.E. CITY ENGINEER	DATE: <u>03/06/2008</u> REVISED: <u>03/05/2008</u>

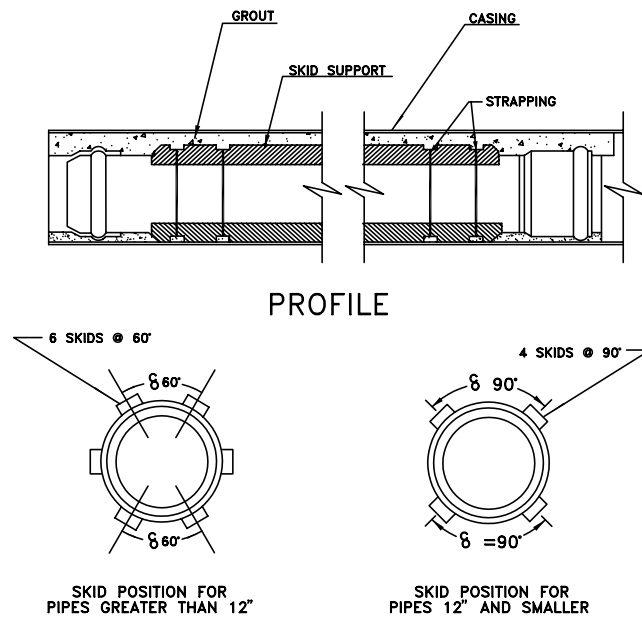
PAVING CUT AND PERMANENT REPAIR



TYPICAL SECTION

NOTE: Crushed rock backfill may be required in lieu of the sand backfill.

STANDARD DETAIL FOR BORING



PROFILE

SECTION

NOTES:

- WOOD SKID SUPPORTS - Wood skid supports, from bell to spigot, shall be used and fastened securely to pipe with steel strapping, cables or clamps. Use of petroleum products shall not be allowed as a lubricant to ease installation. When wood skids are used, they shall be pressure treated with creosote pentachlorophenol, or salt type preservative in accordance with APWA C-2. Cut surfaces shall be given two (2) heavy brush coats of the same preservative.
- PLUGGED PIPE ENDS - Both ends of the casing pipe shall be plugged with a grout or concrete having a minimum compressive strength of twenty five hundred (2500 psi) pounds per square inch or grouted masonry. Each plug shall be a minimum length of eighteen (18) inches. The grouting pressure shall be in accordance with the pipe manufacturers recommendations.
- FILLING ANNULAR SPACE - The annular space between the sanitary sewer pipe and the steel casing shall be filled with a flowable fill consisting of a portland cement grout having a minimum twenty eight (28) day compressive strength of one-thousand (1,000psi) pounds per square inch. The Contractor shall install a vent pipe higher than the upper end of the pipe to ensure that the annulus is completely filled with grout.

4. CASING PIPE SIZE - Steel casing pipe shall have the following suggested minimum diameters:

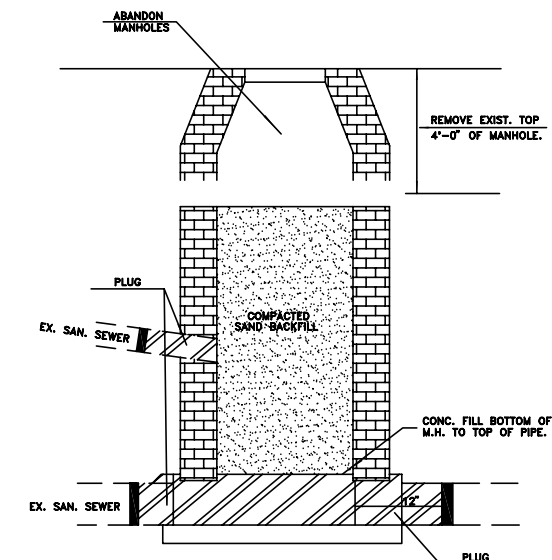
Pipe Nominal Size (inches)	Suggested Casing Pipe Inside Diameter (inches)
4	8 to 10
6	10 to 12
8	14 to 16
10	16 to 18
12	18 to 20
15	20 to 22
18	24 to 26
24	31 to 33
27	33 to 36
30	36 to 42
36	42 to 48
42	54 to 60
48	60 to 66

5. CASING PIPE THICKNESS - Steel casing pipe shall have the following minimum thickness(es), in inches, for the indicated maximum depth of cover(s), in feet:

OUTSIDE DIAMETER (inches)	UNDER HIGHWAY		UNDER RAILROAD	
	WALL THICKNESS (inches)	MAXIMUM COVER (feet)	WALL THICKNESS (inches)	MAXIMUM COVER (feet)
≤ 12 3/4	0.188	30	0.250	30
16	0.250	30	0.281	30
18	0.250	30	0.322	30
20	0.250	30	0.344	30
24	0.250	30	0.406	30
30	0.322	30	0.469	30
36	0.375	30	0.531	30
42	0.375	25	0.531	30
48	0.438	25	0.531	25
54	0.438	25	0.531	20
60	0.438	25	0.531	20
66	0.438	20	0.531	20

6. CASING MATERIAL - Steel casing pipe shall conform with ASTM A-139, Standard specification for Electric-Fusion (ARC)-Welded Steel Pipe (NPS4 and Over). The steel material shall be new, smooth wall, carbon steel, Grade B, with a minimum sixty thousand (60,000 psi) pounds per square inch tensile strength, and minimum thirty five thousand (35,000 psi) pounds per square inch yield strength.

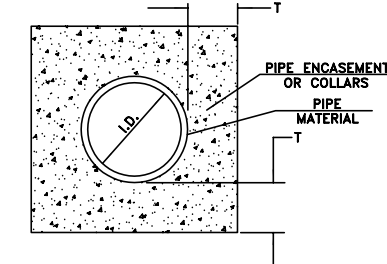
STANDARD DETAIL FOR ABANDONING MANHOLES



NOTE: Salvaged materials, including ring and cover shall be delivered to the City.

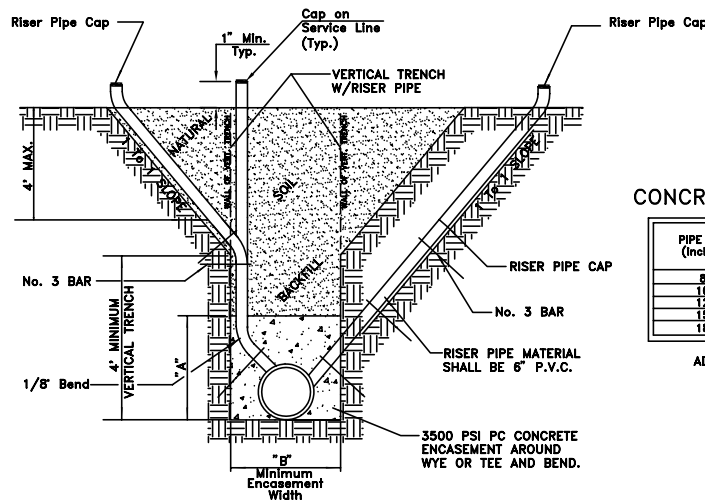
STANDARD DETAIL FOR PIPE ENCASEMENT AND COLLARS

Nominal Diameter (inches)	T (inches)
≤ 18"	6"
> 18" & ≤ 30"	8"
> 30" & ≤ 42"	10"
> 42"	12"



NOTE: For collars, the concrete encasement shall be placed to a minimum of twelve (12') inches on either side of the joint.

SERVICE CONNECTION INSTALLATION



CONCRETE ENCASEMENT FOR RISER PIPE

PIPE SIZE (inches)	"A" (feet)	"B" (feet)	LENGTH OF ENCASEMENT (feet)
8	1.5	2.2	2.0
10	2.0	2.2	2.0
12	2.0	2.2	2.0
15	2.5	2.5	2.0
18	3.0	3.0	2.5

ADD 1.0' TO "B" WHEN USING BRACING OR SHORING

CONNECTION TYPES

1. EXTERNAL CONNECTIONS FOR NEW CONSTRUCTION

WYE BRANCHES - For new construction there shall be installed wye branches of size and type shown on the plans with six (6") inch openings at locations shown on the plans or as designated by the Engineer.

2. EXTERNAL CONNECTION TO EXISTING MAIN - Connections to existing main may be accomplished as follows:

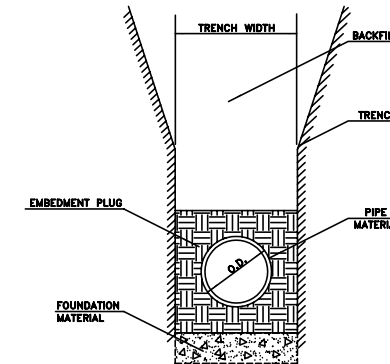
- SADDLES - Connections may be made by excavating to the existing main and cutting a hole using approved equipment and installing a saddle. Sewer service connections constructed with saddles shall include straps, a one-eighth (1/8) degree bend, and a closure piece. When existing main has been rehabilitated by trenchless method of construction, the saddle connection shall be made to the trenchless pipe and/or liner.
- TEES - Connections may be made by removing a section of the existing pipe and installing a tee. Sewer service connections constructed with tees shall include a one-eighth (1/8) bend, and when required, an elbow and a closure piece.
- WYE BRANCHES - Connections may be made by removing a section of existing pipe and installing a wye branch. Fittings, riser and closure assembly shall be used to make the connection and shall be supplied in a nominal diameter of six (6") inches. The external connections shall be considered complete when backfilling and subsequent surface restoration is complete. Service connections constructed with wye branches shall include a one-eighth (1/8) degree bend, elbow, and when required, a closure piece.

3. RISER

- INSTALLATION - The riser pipe may be installed in one of the three ways shown above.
- SIZE AND MATERIAL - Riser pipe shall be six inch (6") or four inch (4") schedule 40 PVC as shown on the plans.
- CONCRETE ENCASEMENT - Concrete encasement around riser shall meet the requirement established above.

4. LOCATOR TAPE - A locator tape, green in color and stating "CAUTION - SANITARY SEWER RISER PIPE BURIED BELOW" shall be attached to the sanitary sewer riser and extend to a minimum of two (2') feet above ground. The tape shall be three (3") inch width DuraTape as manufactured by THOR Enterprises, Inc. of Sun Prairie, Wisconsin or approved equal. This shall aid in locating any services that may be lost due to accidental removal of the riser pipe.

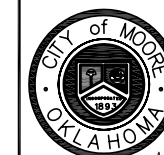
STANDARD DETAIL FOR EMBEDMENT PLUGS



NOTES:

- CLAY PLUGS - The embedment and backfill material shall be select clay separated from excavated material and shall be approved by the Engineer prior to placement. This material shall be free of clods, lumps, debris, organic material and stones. All clay plug material shall be compacted to a minimum of ninety (90%) percent of Standard Proctor Density (ASTM D-698) at plus or minus (±) three (3%) percent of Optimum Moisture Content.
- FLOWABLE FILL PLUGS - Flowable fill plugs shall consist of a Portland Cement grout having a minimum twenty-eight (28) day compressive strength of five hundred (500 psi) pounds per square inch.

The City of MOORE Oklahoma



Sanitary Sewer Standard Details No. 304

APPROVED BY: *Donald Vick* DATE: 03/06/2008 REVISION: 03/05/2008
DONALD VICK, P.E. CITY ENGINEER