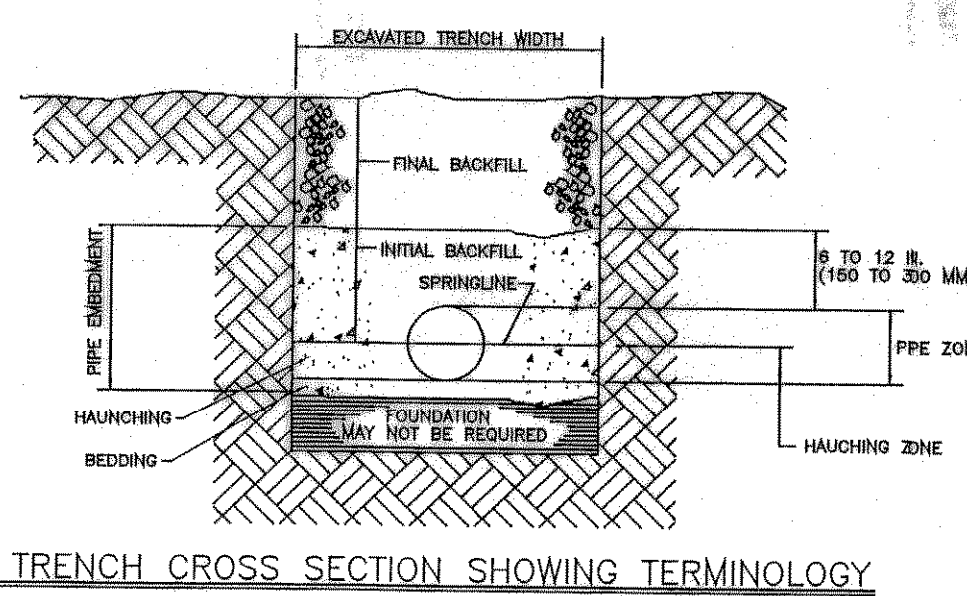
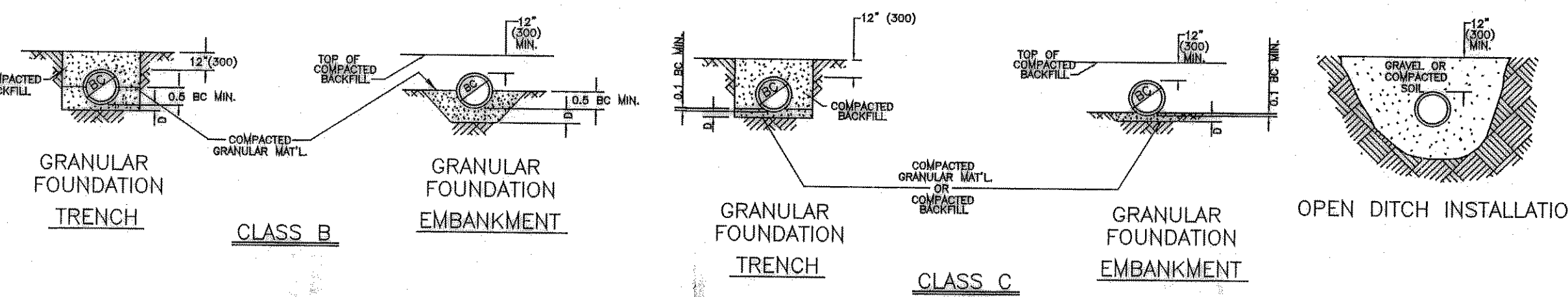


RECOMMENDATIONS FOR INSTALLATION AND USE OF SOILS AND AGGREGATES FOR FOUNDATION, EMBEDMENT AND BACKFILL

	CLASS IA	SOIL CLASS CLASS IB	CLASS II	CLASS III
GENERAL RECOMMENDATIONS AND RESTRICTIONS	DO NOT USE WHERE CONDITIONS MAY CAUSE MIGRATION OF FINES FROM ADJACENT SOIL AND LOSS OF PIPE SUPPORT. SUITABLE FOR USE AS A DRAINAGE BLANKET AND UNDERDRAIN IN ROCK CUTS WHERE ADJACENT MATERIAL IS SUITABLY GRADED.	PROCESS MATERIAL AS REQUIRED TO OBTAIN GRADEATION WHICH WILL MINIMIZE MIGRATION OF ADJACENT MATERIALS. SUITABLE FOR USE AS DRAINAGE BLANKET AND UNDERDRAIN.	WHERE HYDRAULIC GRADIENT EXISTS CHECK GRADATION TO MINIMIZE MIGRATION. "CLEAN" GROUPS SUITABLE FOR USE AS DRAINAGE BLANKET AND UNDERDRAIN.	DO NOT USE WHERE WATER CONDITIONS IN TRENCH MAY CAUSE INSTABILITY.
FOUNDATION	SUITABLE AS FOUNDATION AND FOR REPLACING OVER-EXCAVATED AND UNSTABLE TRENCH BOTTOM AS RESTRICTED ABOVE. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS.	SUITABLE AS FOUNDATION AND FOR REPLACING OVER-EXCAVATED AND UNSTABLE TRENCH BOTTOM AS RESTRICTED ABOVE. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS.	SUITABLE AS FOUNDATION AND FOR REPLACING OVER-EXCAVATED AND UNSTABLE TRENCH BOTTOM AS RESTRICTED ABOVE. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS.	SUITABLE AS FOUNDATION AND FOR REPLACING OVER-EXCAVATED TRENCH BOTTOM AS RESTRICTED ABOVE. DO NOT USE IN THICKNESSES GREATER THAN 12 IN. TOTAL. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS.
BEDDING	SUITABLE AS RESTRICTED ABOVE. INSTALL IN 6-IN. MAXIMUM LAYERS. LEVEL FINAL GRADE BY HAND. MINIMUM DEPTH 4 IN. (6 IN. IN ROCK CUTS).	INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS. LEVEL FINAL GRADE BY HAND. MINIMUM DEPTH 4 IN. (6 IN. IN ROCK CUTS).	SUITABLE AS RESTRICTED ABOVE. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS. LEVEL FINAL GRADE BY HAND. MINIMUM DEPTH 4 IN. (6 IN. IN ROCK CUTS).	SUITABLE ONLY IN DRY TRENCH CONDITIONS. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS. LEVEL FINAL GRADE BY HAND. MINIMUM DEPTH 4 IN. (6 IN. IN ROCK CUTS).
HAUNCHING	SUITABLE AS RESTRICTED ABOVE. INSTALL IN 6-IN. MAXIMUM LAYERS. WORK IN AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT.	INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS WORK IN AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT.	SUITABLE AS RESTRICTED ABOVE. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS. WORK AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT.	SUITABLE AS RESTRICTED ABOVE. INSTALL AND COMPACT TO A MINIMUM OF 6 IN. ABOVE PIPE CROWN.
INITIAL BACKFILL	SUITABLE AS RESTRICTED ABOVE. INSTALL TO A MINIMUM OF 6 IN. ABOVE PIPE CROWN.	INSTALL AND COMPACT TO A MINIMUM OF 6 IN. ABOVE PIPE CROWN.	SUITABLE AS RESTRICTED ABOVE. INSTALL AND COMPACT TO A MINIMUM OF 6 IN. ABOVE PIPE CROWN.	SUITABLE AS RESTRICTED ABOVE. INSTALL AND COMPACT TO A MINIMUM OF 6 IN. ABOVE PIPE CROWN.
EMBODIMENT COMPACTON	PLACE AND WORK BY HAND TO INSURE ALL EXCAVATED VOIDS AND HAUNCH AREAS ARE FILLED. FOR HIGH DENSITIES USE VIBRATORY COMPACTORS.	MINIMUM DENSITY 85% STD. PROCTOR USE HAND TAMPERS OR VIBRATORY COMPACTORS.	MINIMUM DENSITY 85% STD. PROCTOR USE HAND TAMPERS OR VIBRATORY COMPACTORS.	MINIMUM DENSITY 90% STD. PROCTOR USE HAND TAMPERS OR VIBRATORY COMPACTORS. MAINTAIN MOISTURE CONTENT NEAR OPTIMUM TO MINIMIZE COMPACTIVE EFFORT.
FINAL BACKFILL	COMPACT AS REQUIRED BY THE ENGINEER.	COMPACT AS REQUIRED BY THE ENGINEER.	COMPACT AS REQUIRED BY THE ENGINEER.	COMPACT AS REQUIRED BY THE ENGINEER.



HIGH DENSITY CORRUGATED POLYETHYLENE PIPE HEIGHT OF COVER H-20 AND E-80 LIVE LOADS

NOMINAL DIAMETER IN. (MM)	H-20 (300)	E-80 (600)	MAXIMUM COVER FT. (M)
12 (300)	12 (300)	24 (600)	58 (18)
15 (375)	12 (300)	24 (600)	59 (18)
18 (450)	12 (300)	24 (600)	62 (19)
24 (600)	12 (300)	24 (600)	61 (19)
30 (750)	12 (300)	24 (600)	61 (19)
36 (900)	12 (300)	24 (600)	61 (19)
42 (1050)	12 (300)	24 (600)	61 (19)
48 (1200)	12 (300)	24 (600)	61 (19)

STRUCTURAL DESIGN CALCULATIONS BASED UPON LOAD FACTOR DESIGN METHODOLOGY PER AASHTO.

*WHEN USING MECHANICAL COMPACTORS AVOID CONTACT WITH PIPE. WHEN COMPACTING OVER PIPE CROWN MAINTAIN A MINIMUM OF 6 IN. COVER WHEN USING SMALL MECHANICAL COMPACTORS. WHEN USING LARGER COMPACTORS MAINTAIN MINIMUM CLEARANCES AS REQUIRED BY THE ENGINEER.
 *THE MINIMUM DENSITIES GIVEN IN THE TABLE ARE INTENDED AS THE COMPARISON REQUIREMENTS FOR OBTAINING SATISFACTORY EMBEDMENT STIFFNESS IN MOST INSTALLATION CONDITIONS.

- GENERAL NOTES:
- MATERIALS: UNLESS OTHERWISE SPECIFIED ON THE PLANS OR HEREIN, CORRUGATED POLYETHYLENE PIPE SHALL CONFORM TO AASHTO M-294, LATEST EDITION, STANDARD SPECIFICATION FOR CORRUGATED POLYETHYLENE PIPE.
 - RESINS: CORRUGATED POLYETHYLENE PIPE SHALL BE MANUFACTURED FROM HIGH DENSITY POLYETHYLENE VIRGIN COMPOUNDS, AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-3350 FOR THE CELL CLASSIFICATION 324420C.
 - COUPLING BANDS: EXCEPT AS OTHERWISE REQUIRED HEREIN, COUPLING BANDS AND OTHER HARDWARE FOR CORRUGATED POLYETHYLENE PIPE SHALL DEMONSTRATE THAT THEY MEET THE SOIL TIGHTNESS REQUIREMENTS OF AASHTO SECTION 26.4.2.4 "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."

- DESIGNATION OF TYPE: THE TYPES OF PIPE WILL BE INDICATED BY THE FOLLOWING DESCRIPTIONS
 TYPE C: THIS PIPE WILL HAVE A FULL CIRCULAR CROSS-SECTION, WITH A CORRUGATED SURFACE BOTH INSIDE AND OUTSIDE.
 TYPE S: THIS PIPE WILL HAVE A FULL CIRCULAR CROSS-SECTION, WITH AN OUTER CORRUGATED PIPE WALL AND A SMOOTH INNER LINER.
 TYPE D: THIS PIPE SHALL CONSIST OF AN ESSENTIALLY SMOOTH WATERWAY BRACED CIRCUMFERENTIALLY WITH CIRCULAR RIBS WHICH ARE FORMED SIMULTANEOUSLY WITH A SMOOTH OUTER WALL.
- INSTALLATION: CORRUGATED POLYETHYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321, LATEST EDITION, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS."

TRENCH WIDTH BASED ON OUTSIDE DIAMETER

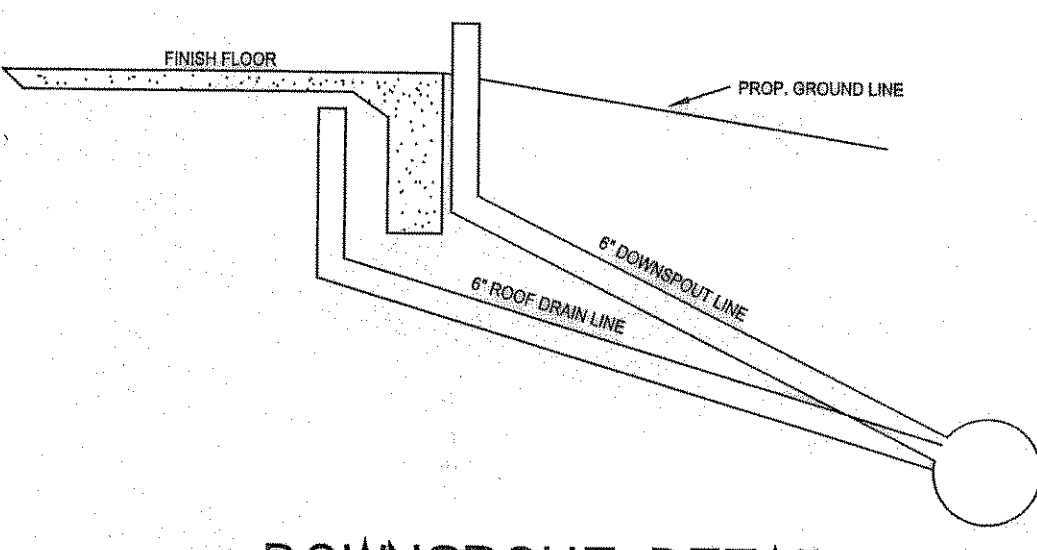
PIPE (INSIDE) DIAMETER IN. (MM)	TRENCH WIDTH FT. (M)
15 (375)	3.0 (1)
18 (450)	3.2 (1)
24 (600)	3.9 (1.2)
30 (750)	4.8 (1.5)
36 (900)	5.4 (1.7)
42 (1050)	6.9 (2.1)
48 (1200)	7.4 (2.3)

MULTIPLE INSTALLATION OF POLYETHYLENE PIPES

DIAMETER OF PIPE IN. (MM)	CLEAR DISTANCES BETWEEN PIPES FT. (M)
18 (450)	1' 2" (0.36)
24 (600)	1' 5" (0.44)
30 (750)	1' 8" (0.52)
36 (900)	1' 11" (0.60)
42 (1050)	2' 2" (0.68)
48 (1200)	2' 5" (0.76)

CLASSES OF EMBEDMENT AND BACKFILL MATERIALS

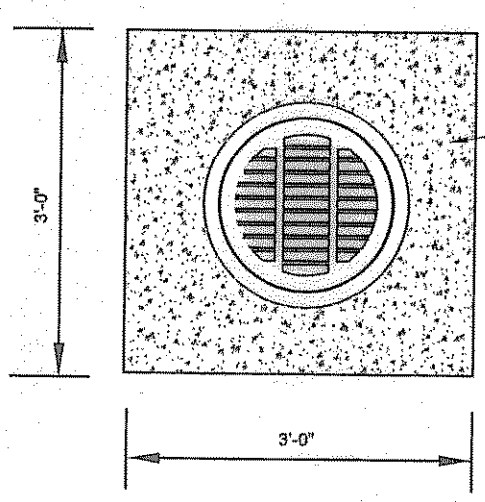
CLASS	TYPE	SOIL GROUP SYMBOL D 2487	DESCRIPTION	PERCENTAGE PASSING SIEVE SIZES			
				1 1/2 IN. (40 MM)	NO. 4 (4.75 MM)	NO. 200 (0.075 MM)	
IA	MANUFACTURED AGGREGATES OPEN-GRADED, CLEAN	NONE	ANGULAR, CRUSHED STONE OR ROCK, CRUSHED GRAVEL, BROKEN CORAL, CRUSHED SLAG, CHENDERS OR SHELLS; LARGE VOID CONTENT; CONTAIN LITTLE OR NO FINES.	100%	≤10%	≤5%	
				100%	≤60%	≤5%	
II	COARSE-GRAINED SOILS, CLEAN	GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES; LITTLE OR NO FINES.	100%	<50%	<5%	
				GP	POORLY-GRADED GRAVELS AND GRAVEL-SAND MIXTURES; LITTLE OR NO FINES.	>50% OF "COARSE FRACTION"	
				SW	WELL-GRADED SANDS AND GRAVELLY SANDS; LITTLE OR NO FINES.		
				SP	POORLY-GRADED SANDS AND GRAVEL SANDS; LITTLE OR NO FINES.		
III	COARSE-GRAINED SOILS, WITH FINES	GM, GC, SM, SC	SANDS AND GRAVELS WHICH ARE BORDERLINE BETWEEN CLEAN AND WITH FINES.	100%	VARIES	5% TO 12%	
				GM	SILTY GRAVELS, GRAVEL-SAND SILT MIXTURES.	<50% OF "COARSE FRACTION"	12% TO 50%
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.	>50% OF "COARSE FRACTION"	
				SM, SC	SILTY SANDS, SAND-SILT MIXTURES.		



DOWNSPOUT DETAIL

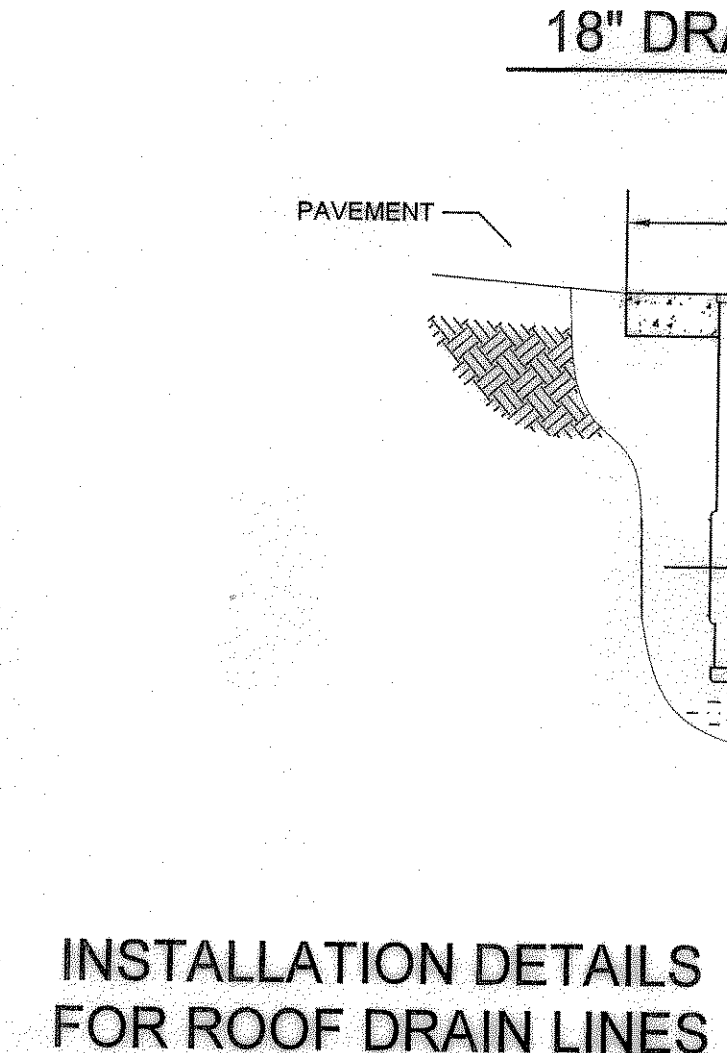
NOTE:
 1. AT ALL LOCATIONS OF DOWNSPOUTS AND ROOF DRAINS A 6" PVC PIPE IS TO BE INSTALLED FROM THE 12" PVC LINE TO THE FOUNDATION AND EXTEND UP ABOVE THE FINISH FLOOR ELEV. SEE ARCH. PLAN FOR THE CONNECTION DETAIL AND THE ROOF PLAN FOR ACTUAL DOWNSPOUT AND ROOF DRAIN LOCATIONS.

4" 3,000 PSI CONCRETE PAD.

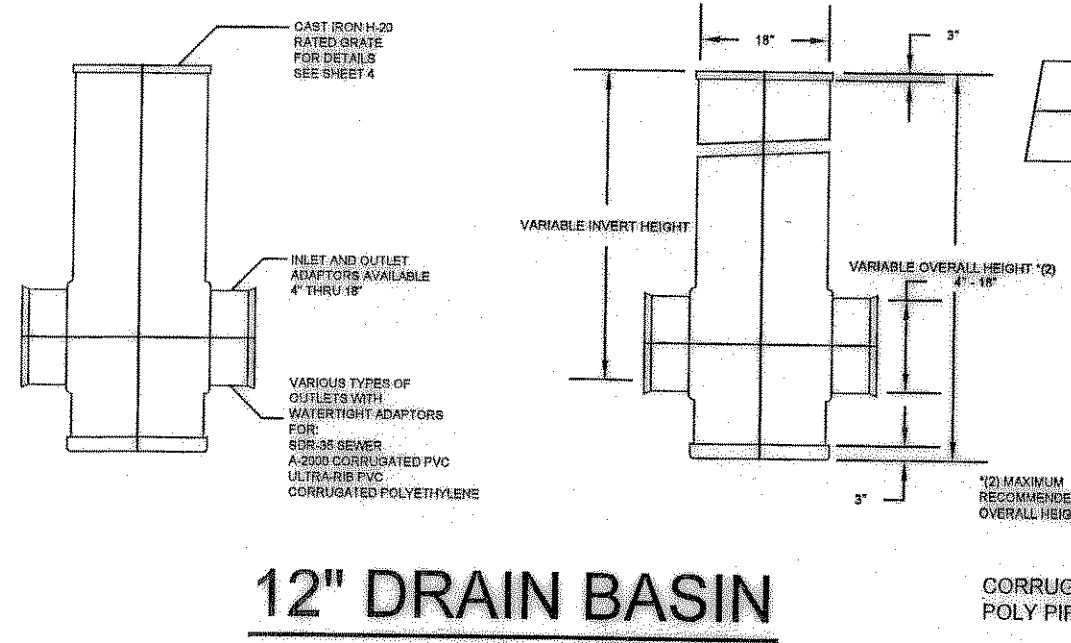


18" CAST IRON GRATE
 ROUND OR SQUARE
 DRAINAREA = 161.4 SQ. INCH
 GRATE HAS H-20 (HEAVY TRAFFIC) DOT RATING
 QUALITY: MATERIAL SHALL CONFORM TO ASTM A48 - CLASS 30B
 PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

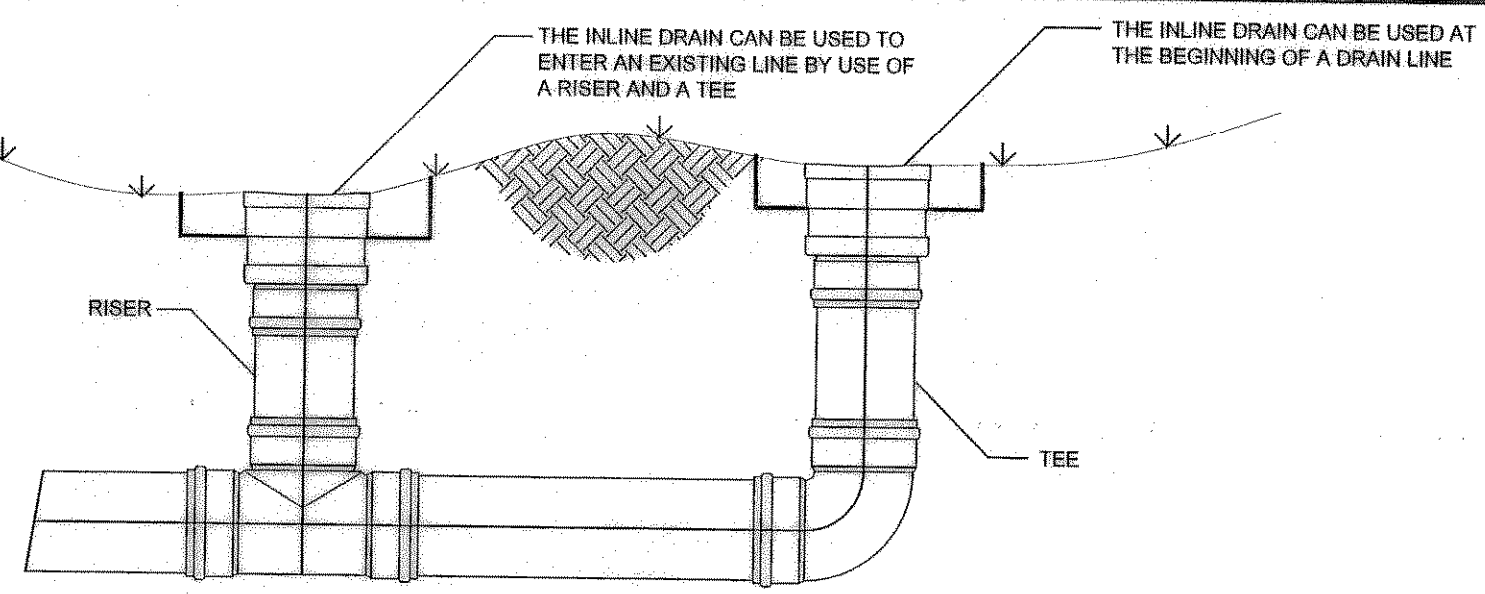
AREA DRAIN DETAILS



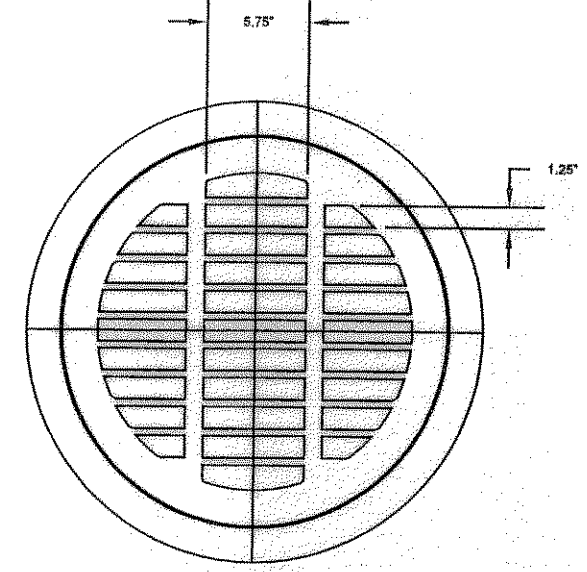
INSTALLATION DETAILS FOR ROOF DRAIN LINES



12" DRAIN BASIN



PIPE CHANGE



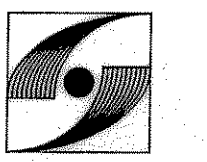
ROOF DRAIN DETAILS

AS SHOWN

RECORD DRAWING
 This is to certify that changes and corrections have been made to conform to the contractor's record of this project.
 Signed: *[Signature]* Date: 5-26-10
 Glenn Engineering Corporation

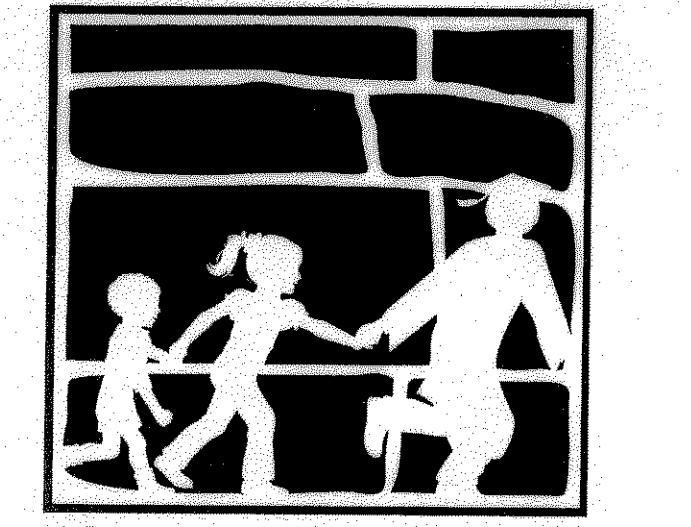
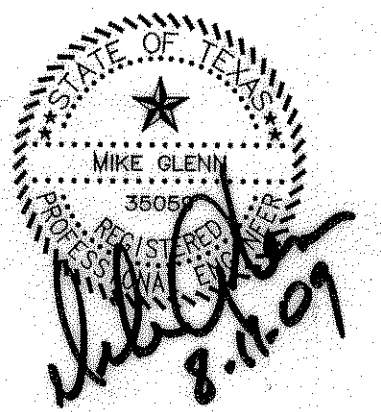


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Final Plans for Bidding and Construction



Rockwall INDEPENDENT SCHOOL DISTRICT
 TENNIS COMPLEX AT WILKERSON SANDERS STADIUM
 ROCKWALL, TEXAS

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Revisions:

1	08/06/09	CITY REVISIONS
2	08/11/09	CITY REVISIONS

Sheet Title:
STORM SEWER DETAILS

CU 1.02

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