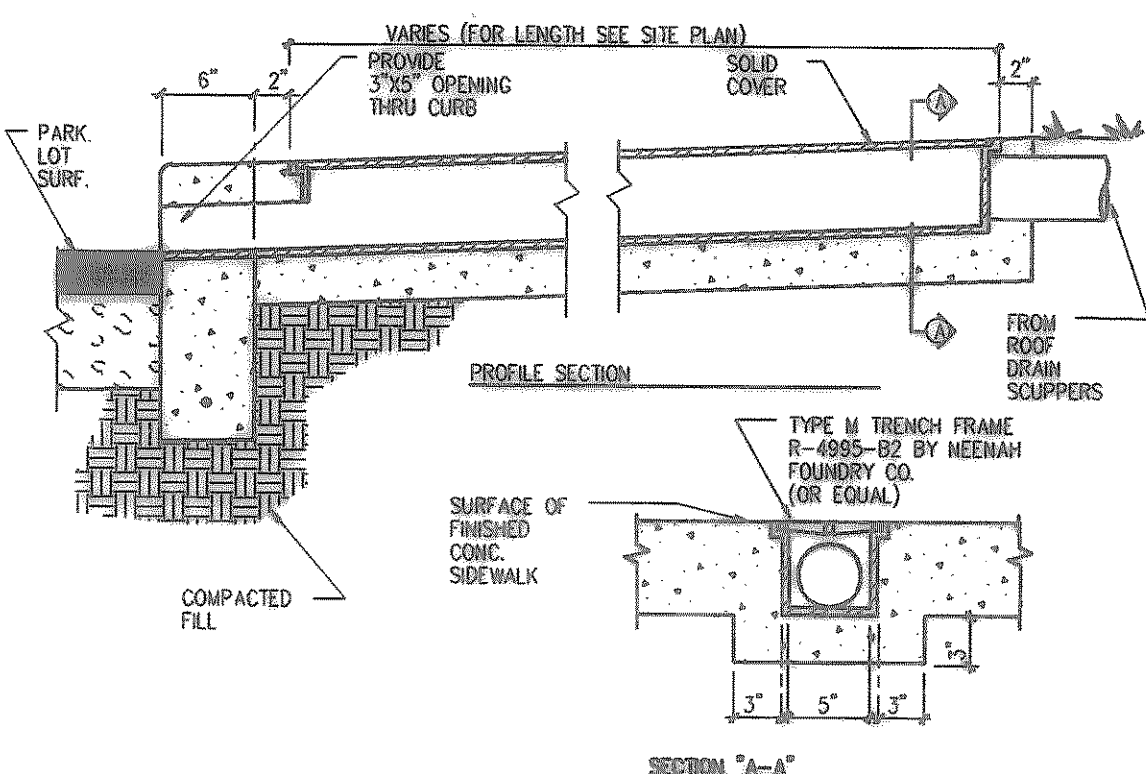
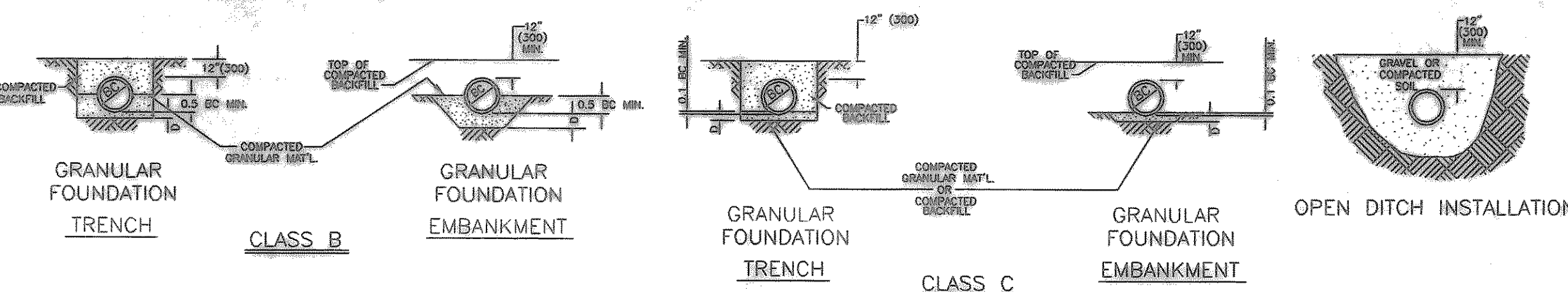
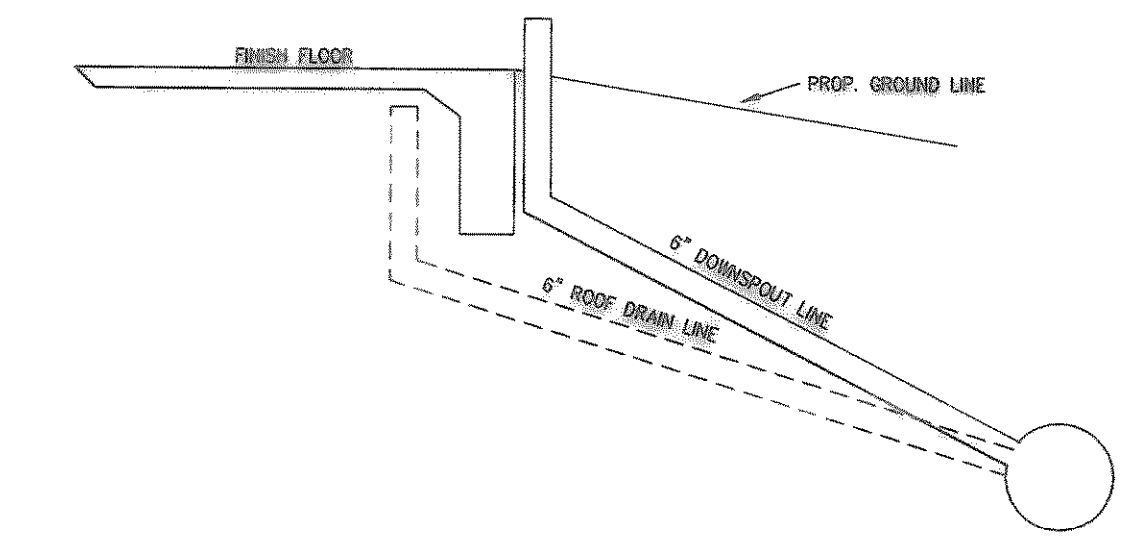


## RECOMMENDATIONS FOR INSTALLATION AND USE OF SOILS AND AGGREGATES FOR FOUNDATION, EMBEDMENT AND BACKFILL

	CLASS IA	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 GRADATION WHICH WILL MINIMIZE MIGRATION OF ADJACENT MATERIALS. SUITABLE FOR USE AS DRAINAGE BLANKET AND UNDERDRAIN.	WHERE HYDRAULIC GRADIENT EXISTS CHECK GRADATION TO MINIMIZE MIGRATION. 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. 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.	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 IN AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT.	SUITABLE AS RESTRICTED ABOVE. INSTALL AND COMPACT IN 6-IN. MAXIMUM LAYERS. WORK IN AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT.
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.
EMBEDMENT/COMPACTION	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 TAMPER OR VIBRATORY COMPACTORS.	MINIMUM DENSITY 85% STD. PROCTOR USE HAND TAMPER OR VIBRATORY COMPACTORS. MAINTAIN MOISTURE CONTENT NEAR OPTIMUM TO MINIMIZE COMPACTIVE EFFORT.	MINIMUM DENSITY 90% STD. PROCTOR USE HAND TAMPER 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.



**ROOF DRAIN FLUME**  
NTS  
NOTE: THIS DETAIL IS TO BE USED WHEN DOWN SPOUT IS ALONG ROADWAY PAVEMENT OR ADJACENT TO CURB.



**DOWNSPOUT DETAIL**  
NTS

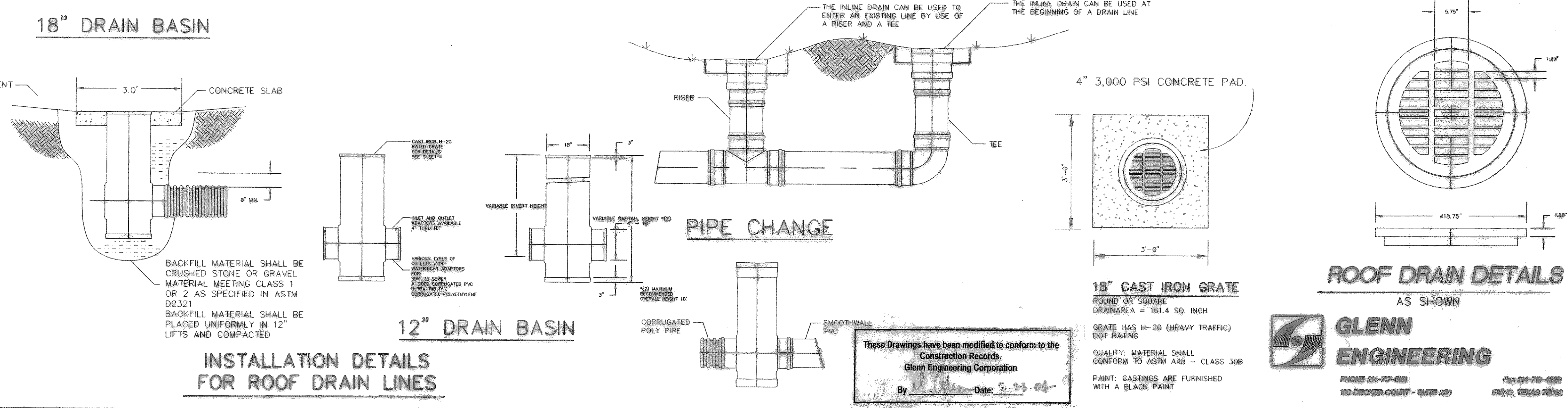
NOTE:  
1. AT ALL LOCATIONS OF DOWNSPOUTS AND ROOF DRAINS A 6" PVC PIPE IS TO BE INSTALLED FROM THE 12" PVC LINE TO THE FOUNDATION AND EXTEND UP ABOVE THE FINISH FLOOR ELEV. SEE ARCH. PLAN FOR THE CONNECTION DETAIL AND THE ROOF PLAN FOR ACTUAL DOWNSPOUT AND ROOF DRAIN LOCATIONS.

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 COMPACTOR 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."  
COUPLING BANDS SHALL LAP EQUALLY ON EACH OF THE PIPES BEING CONNECTED TO FORM A TIGHTLY CLOSED JOINT AFTER INSTALLATION.  
THE CORRUGATIONS IN THE BAND SHALL INDEX THE CORRUGATIONS IN THE PIPE ENDS TO ENGAGE THE FIRST OR SECOND CORRUGATION FROM THE END OF EACH PIPE.  
WHEN INFILTRATION OF EXFILTRATION IS A CONCERN, THE COUPLING MAY BE REQUIRED TO HAVE GASKETS. THE GASKET MATERIAL SHALL BE CLOSED-CELL EXPANDED RUBBER OR NEOPRENE.
  - 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		MULTIPLE INSTALLATION OF POLYETHYLENE PIPES	
PIPE (INSIDE) DIAMETER	TRENCH WIDTH	DIAMETER OF PIPE	CLEAR DISTANCES BETWEEN PIPES
IN. (MM)	FT. (M)	IN. (MM)	FT. (M)
15 (375)	3.0 (1)	18 (450)	1' 2" (0.36)
18 (450)	3.2 (1)	24 (600)	1' 5" (0.44)
24 (600)	3.9 (1.2)	30 (750)	1' 8" (0.52)
30 (750)	4.8 (1.5)	36 (900)	1' 11" (0.60)
36 (900)	5.4 (1.7)	42 (1050)	2' 2" (0.68)
42 (1050)	6.9 (2.1)	48 (1200)	2' 5" (0.76)
48 (1200)	7.4 (2.3)		

### AREA DRAIN DETAILS



**INSTALLATION DETAILS FOR ROOF DRAIN LINES**

### ADS OR HANCOR PIPE INSTALLATION DETAILS FOR STORM DRAIN LINES

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%
IB	MANUFACTURED, PROCESSED AGGREGATES, DENSE-GRADED, CLEAN.	NONE	ANGULAR, CRUSHED STONE (OR OTHER CLASS IA MATERIALS) AND STONE/SAND MIXTURES WITH GRADATIONS SELECTED TO MINIMIZE MIGRATION OF ADJACENT SOILS, CONTAIN LITTLE OR NO FINES (SEE M1.8).	100%	≤ 50%	≤ 5%
II	COARSE-GRADED SOILS, CLEAN	GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES; LITTLE OR NO FINES.	100%	≤ 50% "COARSE FRACTION"	≤ 5%
		GP	POORLY-GRADED GRAVELS AND GRAVEL-SAND MIXTURES; LITTLE OR NO FINES.		≥ 50% OF "COARSE FRACTION"	
		SW	WELL-GRADED SANDS AND GRAVELY SANDS; LITTLE OR NO FINES.			
		SP	POORLY-GRADED SANDS AND GRAVELY SANDS; LITTLE OR NO FINES.			
III	COARSE-GRADED SOILS, WITH FINES	GK	SILTY GRAVELS, GRAVEL-SAND SILT MIXTURES.	100%	≤ 50% OF "COARSE FRACTION"	12% TO 50%
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.			
		SM	SILTY SANDS, SAND-SILT MIXTURES.		≥ 50% OF "COARSE FRACTION"	
		SC	CLAYEY SANDS, SAND-CLAY MIXTURES.			

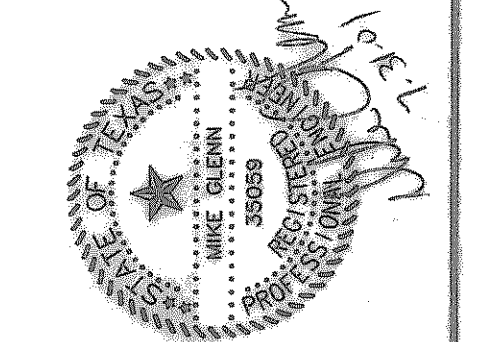
DATE: MAY 18, 2001  
 DRAWN BY: JTW  
 CHECKED: RAH  
 CORR NO: 1441-01-017  
 REVISION:

# ROCKWALL ELEMENTARY #9

## ROCKWALL INDEPENDENT SCHOOL DISTRICT

### ROCKWALL, TEXAS

FINAL PLANS FOR BIDDING AND CONSTRUCTION



**SHW Group Inc.**  
Architects + Engineers

SHEET NUMBER: **C 2.13**  
OF 22  
SET NUMBER

**ROOF DRAIN DETAILS**  
AS SHOWN

**GLENN ENGINEERING**

PHONE 214-777-5101  
100 BREKNER COURT - SUITE 202  
FARMERS, TEXAS 75042

These Drawings have been modified to conform to the Construction Records.  
Glenn Engineering Corporation  
By: *[Signature]* Date: 2.23.04