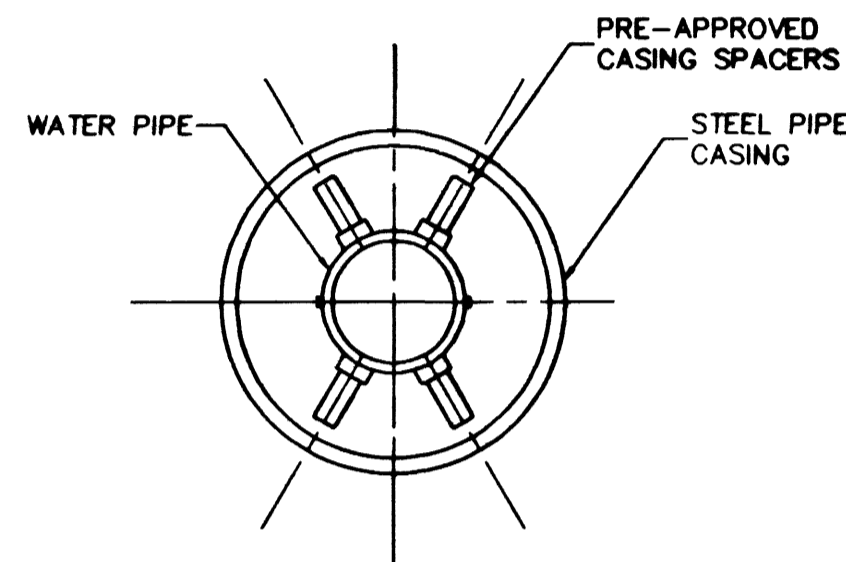


**TYPICAL CASING SECTION**



- STEEL PIPE CASING SHALL BE FABRICATED FROM A MINIMUM 1/4" THICK STEEL PLATES CONFORMING TO THE REQUIREMENTS OF ASTM A283, GRADE B, C, OR D. ALL JOINTS SHALL BE WELDED. INTERIOR JOINTS SHALL BE GROUNDED TO A SMOOTH FINISH. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWWA C200, "AWWA STANDARD FOR FABRICATED ELECTRICALLY WELDED STEEL WATER PIPE." COATINGS FOR STEEL CASING ARE NOT REQUIRED.
- PIPE CASING SHALL BE LAID TRUE TO LINE AND GRADE WITH NO BENDS OR CHANGES IN GRADE FOR THE FULL LENGTH OF THE CASING.
- THE PIPE SHALL BE SUPPORTED AT EACH END WITH SPACERS. AFTER INSTALLATION OF THE PIPE, THE CASING SHALL BE SEALED AT BOTH ENDS WITH CASING END SEALS. DUCTILE IRON PIPE JOINTS INSIDE CASING ARE TO BE RESTRAINED.

WHERE THE WATER LINE IS LESS THAN 18 INCHES OVER THE SEWER LINE, WHERE THE WATER LINE IS UNDER THE SEWER LINE, AND WHERE THE HORIZONTAL SEPARATION, AS REQUIRED BY THE WATER SUPPLY REGULATIONS, CANNOT BE MAINTAINED BECAUSE OF PHYSICAL OBSTRUCTION, THE WATER LINE SHALL BE PROTECTED BY CONSTRUCTION OF THE STORM/SEWER LINE AS FOLLOWS:

- EXTRA HEAVY CAST IRON PIPE;
- WATER SUPPLY QUALITY MATERIALS; OR
- ENCASEMENT WITH FOUR INCHES, MINIMUM OF CONCRETE OR SLEEVING WITH WATER SUPPLY QUALITY PIPE.

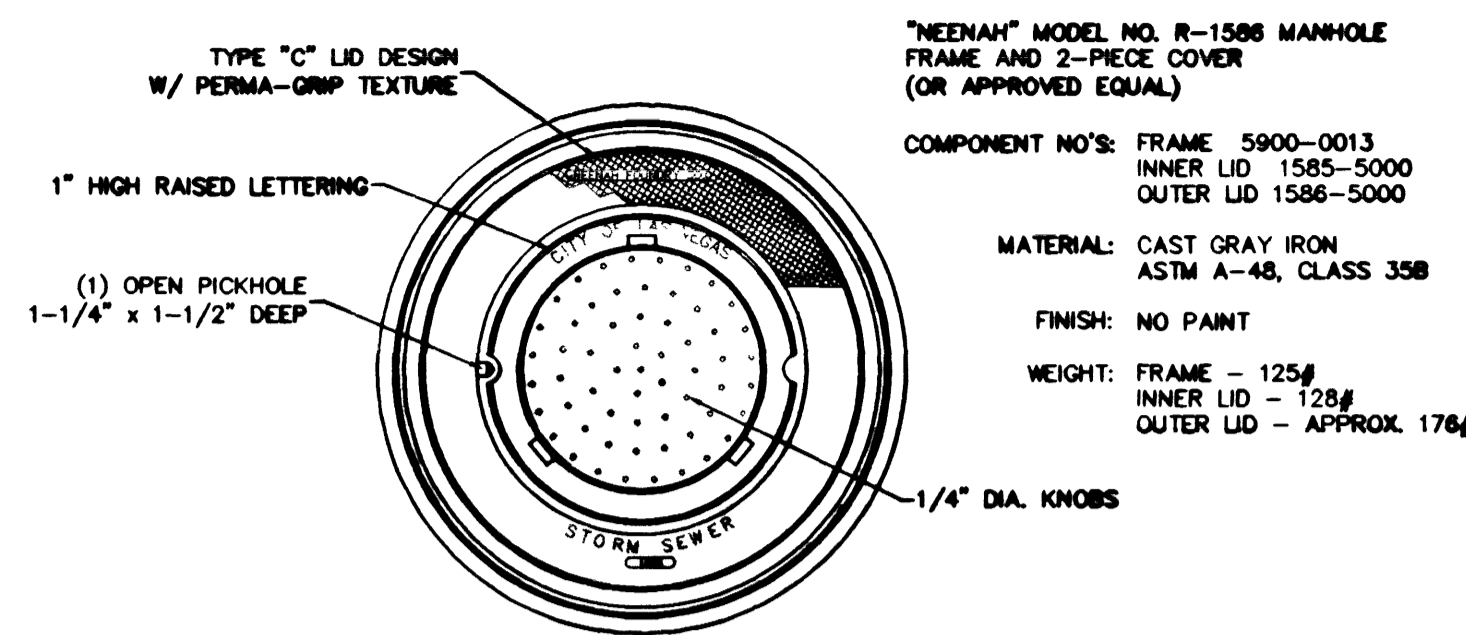
EACH OF THESE PROVISIONS SHALL ALSO BE EXTENDED FOR OTHER THAN 90 DEGREE CROSSINGS TO THE POINT AT WHICH THE TEN FOOT SEPARATION BETWEEN THE WATER AND SEWER LINES IS ACHIEVED (10/SINE OF CROSSING ANGLE).

**NOTES:**

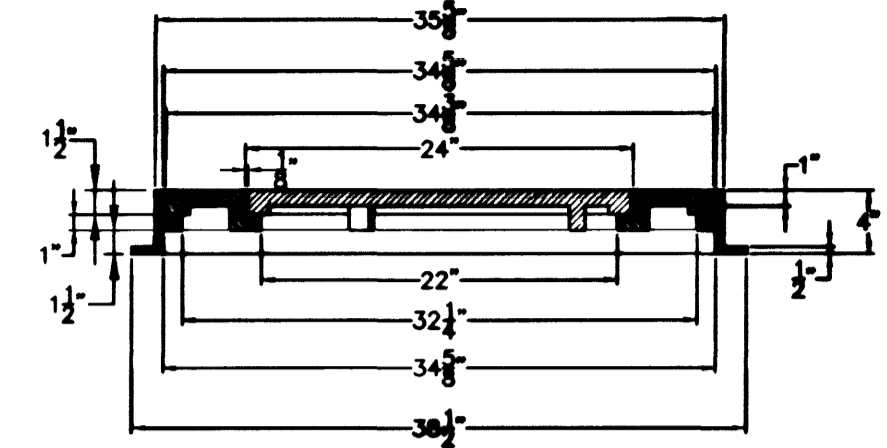
- STEEL PIPE CASING SYMMETRICAL ABOUT WATER MAIN CENTERLINE.
- PRE-APPROVED CASING SPACERS AND PRE-APPROVED END SEALS INSTALLED PER MANUFACTURER'S SPECIFICATIONS. (REDWOOD SKIDS NOT ALLOWED. UDACS SECTION 3.26 NOT APPLICABLE). USE A "CENTERED" CONFIGURATION AND PROVIDE THE MANUFACTURER WITH THE FOLLOWING:
  - \*PIPE OD
  - \*CASING ID
  - \*CASING LENGTH

APPROVED BY  
*[Signature]*  
 LAS VEGAS VALLEY WATER DISTRICT  
 DATE 6-23-99

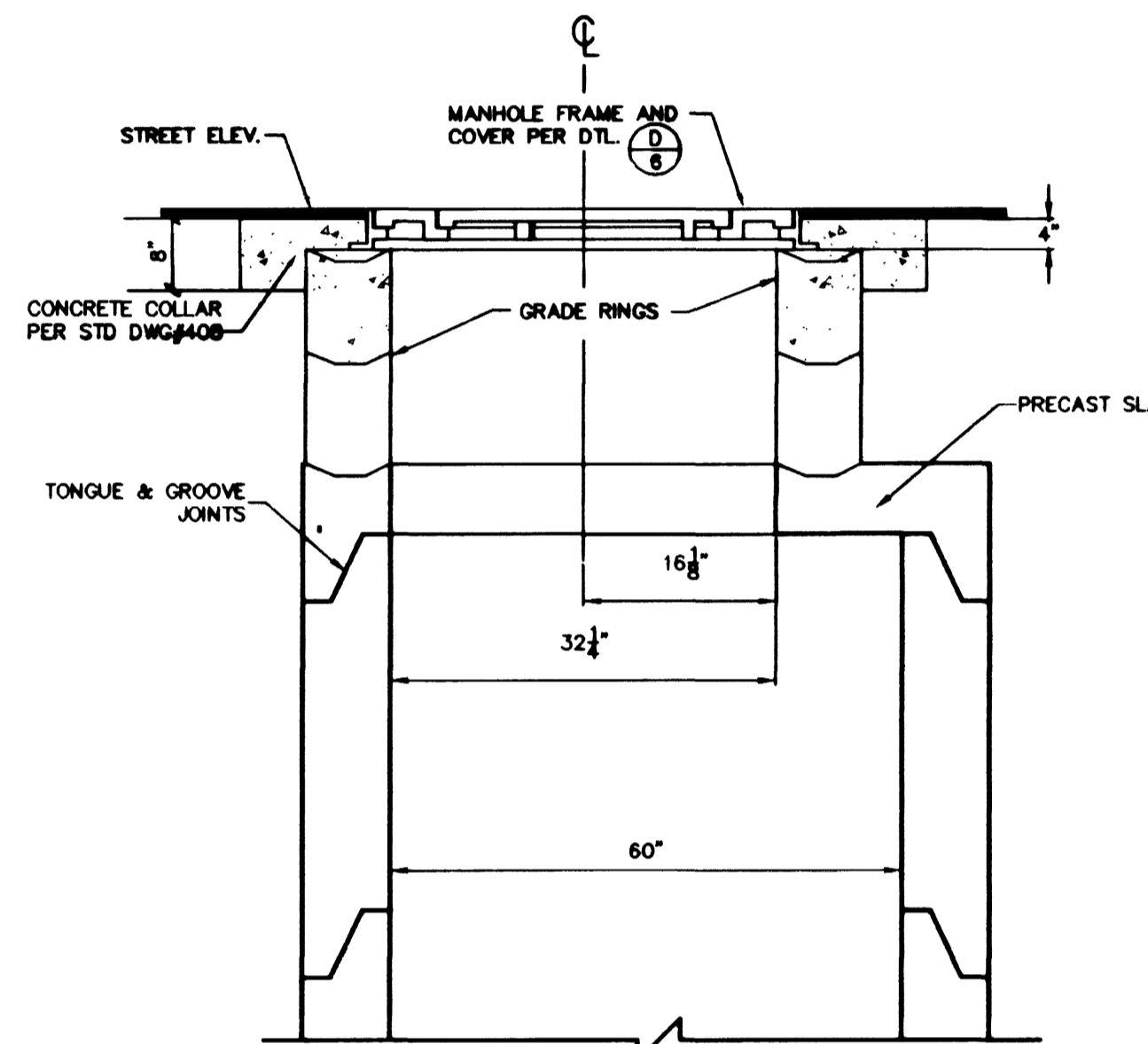
**STORM/SEWER WATER CROSSING DETAIL**



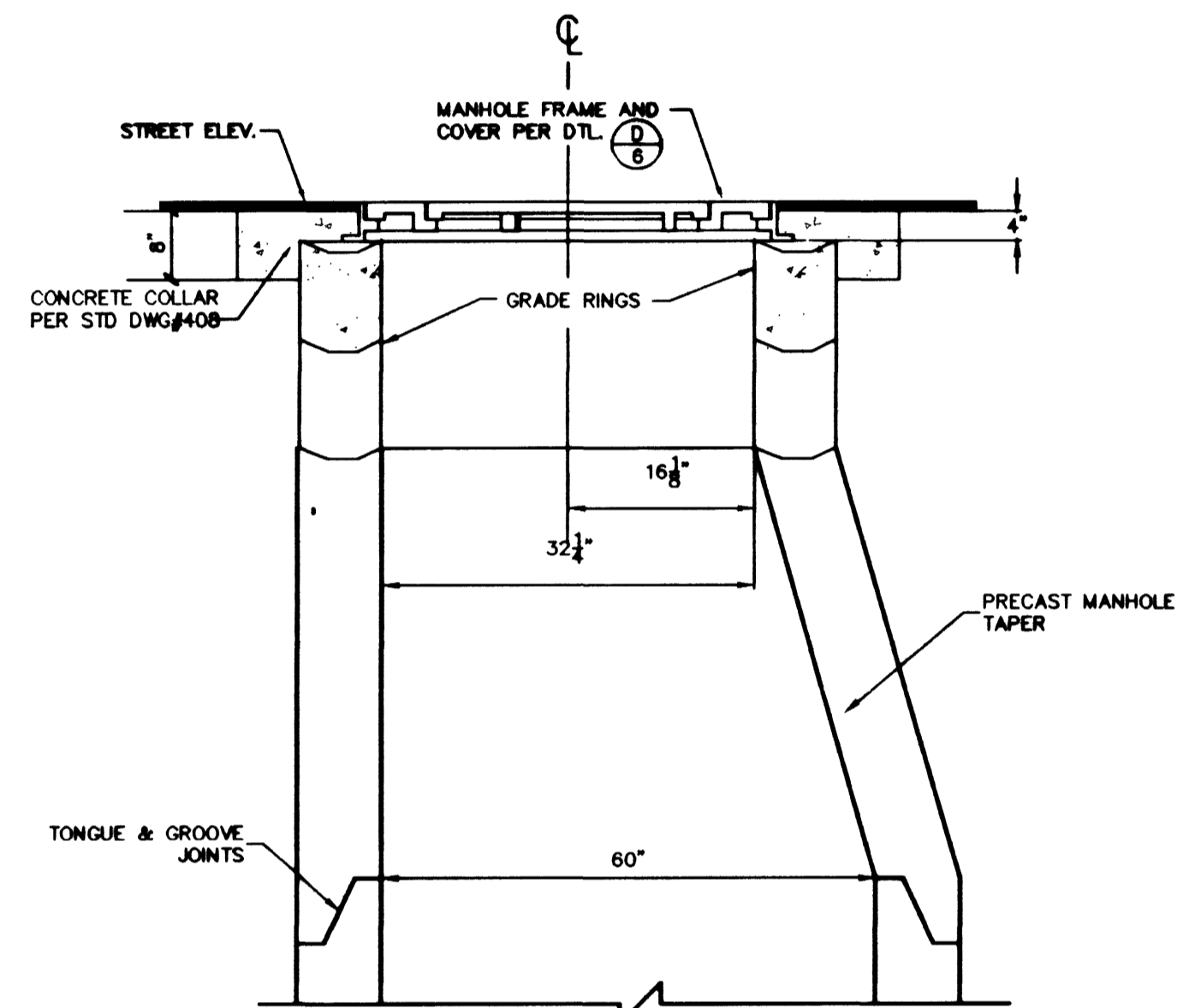
"NEENAH" MODEL NO. R-1586 MANHOLE FRAME AND 2-PIECE COVER (OR APPROVED EQUAL)  
 COMPONENT NO'S: FRAME 5900-0013  
 INNER LID 1585-5000  
 OUTER LID 1586-5000  
 MATERIAL: CAST GRAY IRON  
 ASTM A-48, CLASS 35B  
 FINISH: NO PAINT  
 WEIGHT: FRAME - 125#  
 INNER LID - 128#  
 OUTER LID - APPROX. 176#



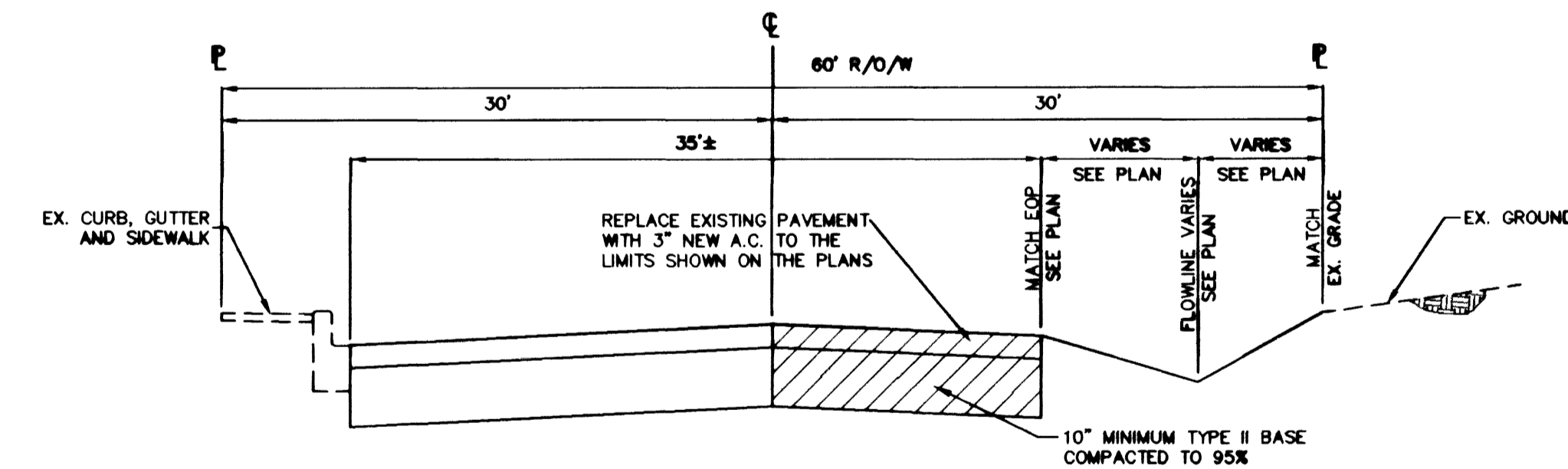
**FRAME AND 2 PC. LID**  
 N.T.S. (D/6)



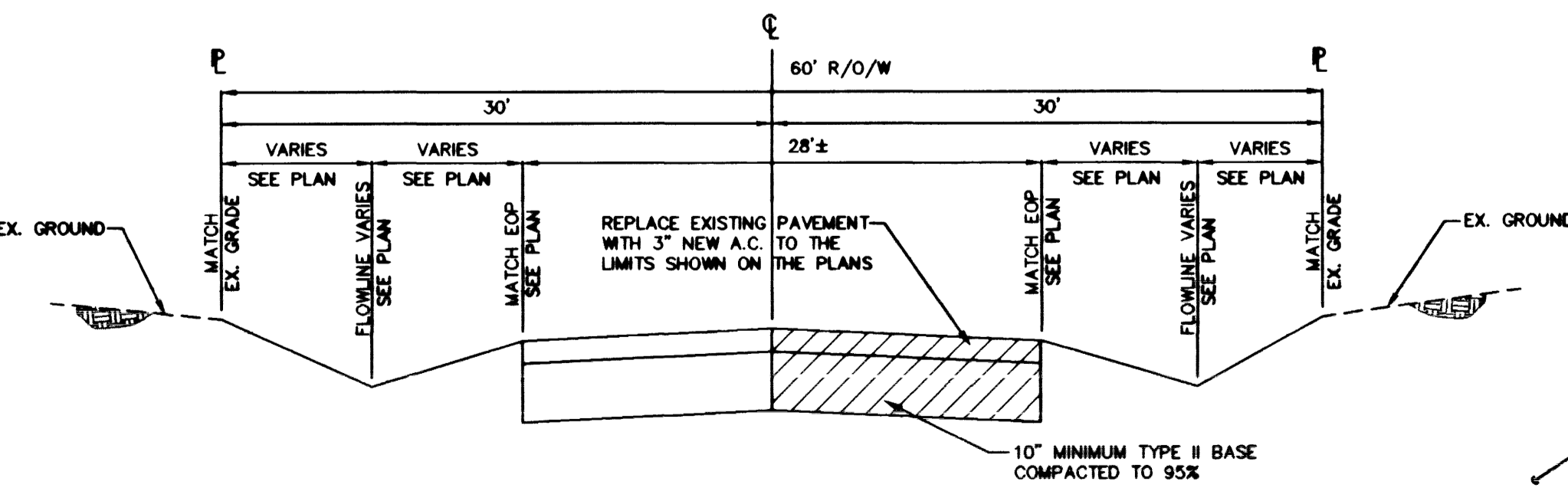
**TYPE 1A MANHOLE OPENING**  
 N.T.S.



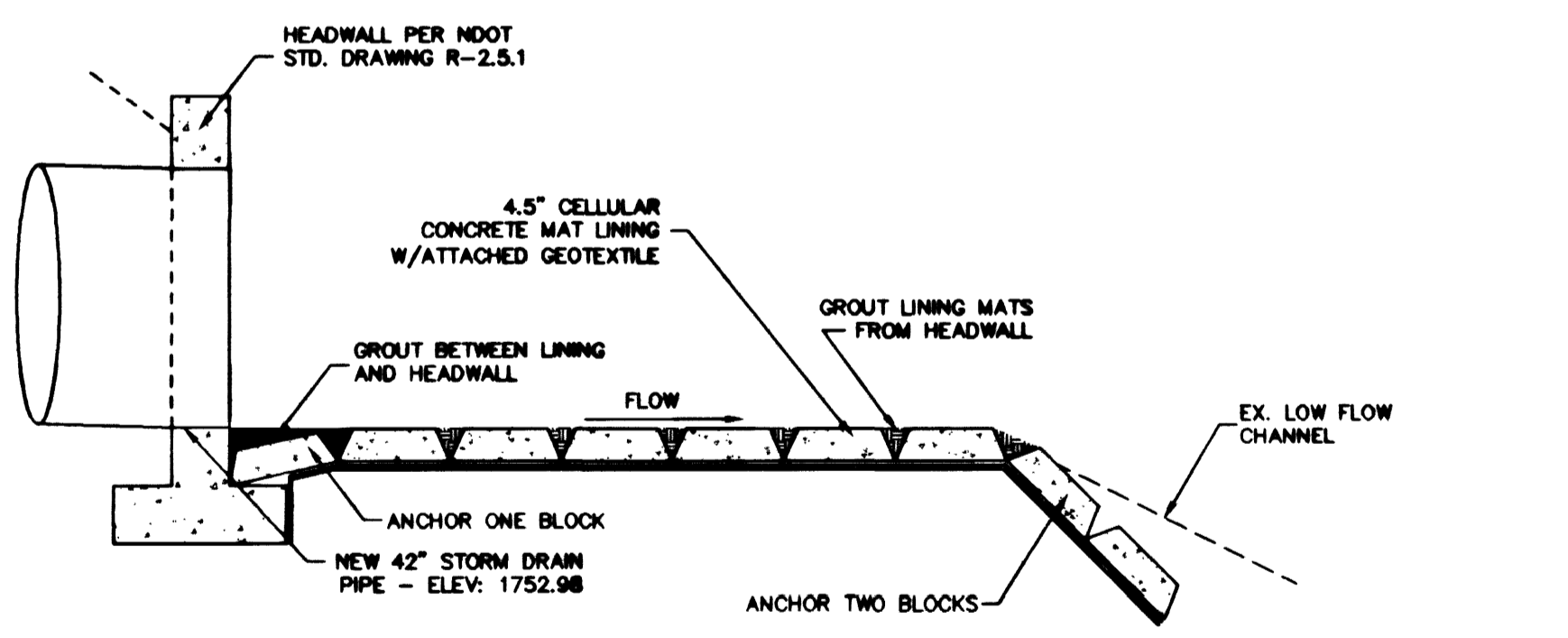
**TYPE 1 MANHOLE OPENING**  
 N.T.S.



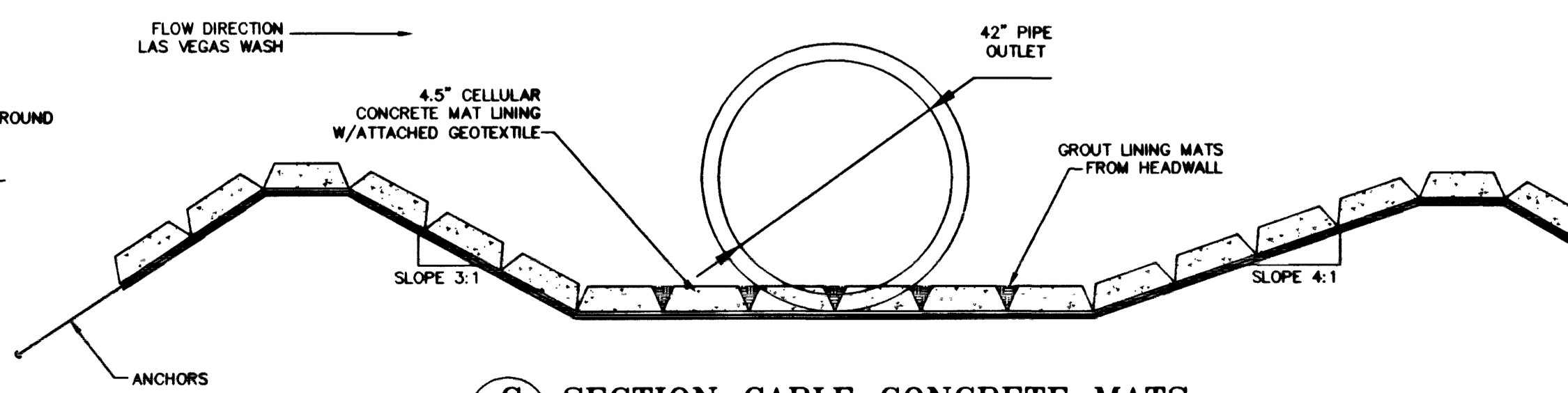
**A GRADING SECTION HARRIS AVENUE**  
 N.T.S.



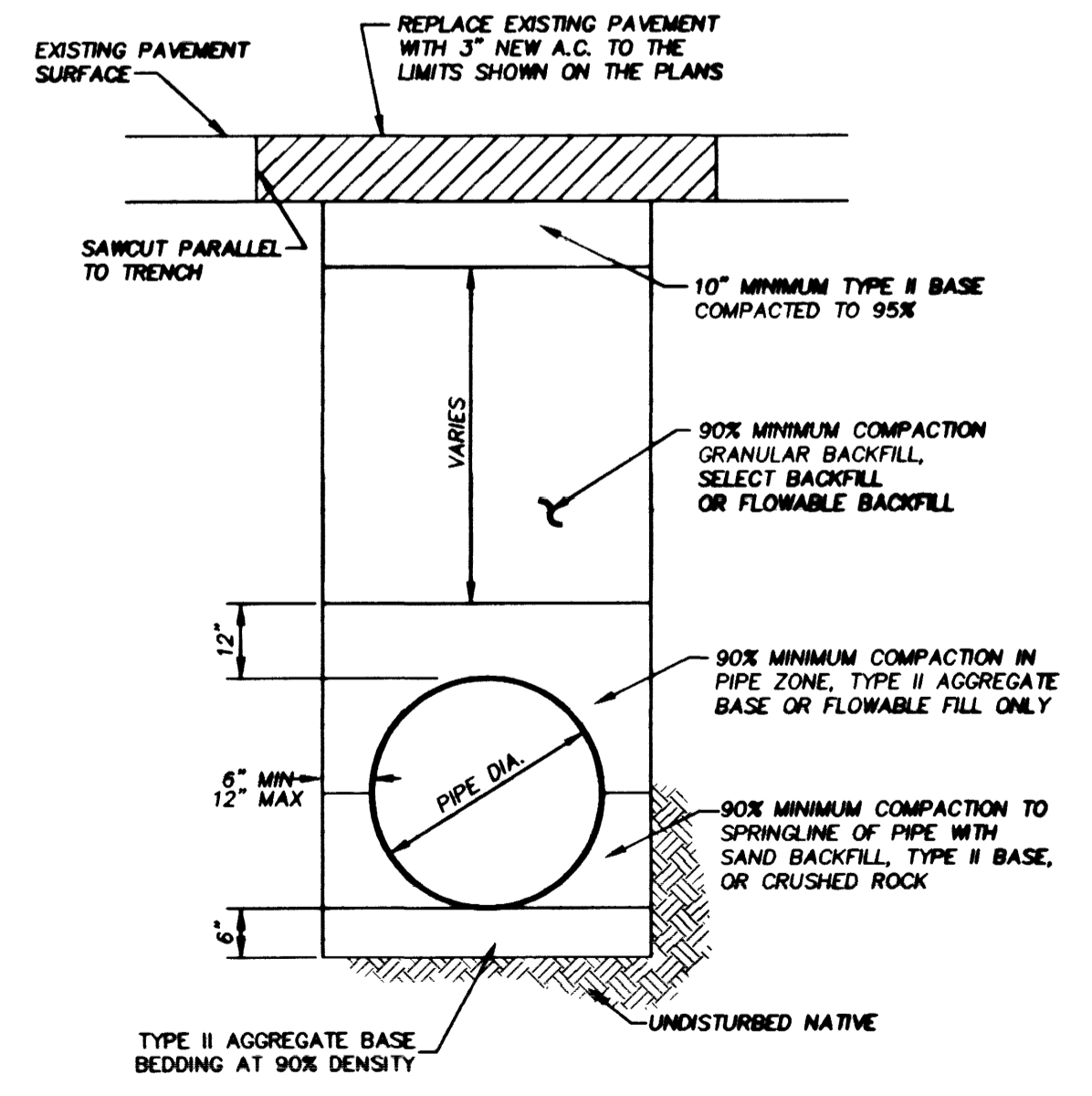
**B GRADING SECTION MARCO STREET**  
 N.T.S.



**DETAIL FOR CABLE CONCRETE MATS**  
 N.T.S.



**C SECTION CABLE CONCRETE MATS**  
 N.T.S.



**TYPICAL TRENCH SECTION**  
 N.T.S.

DATE	
REVISIONS	
SCALE (H) AS SHOWN	SCALE (V) N/A
FLD. BK. # N/A	DATE JUNE 22, 1999
W.A. # WJ9485	DESIGN BY DDL
<b>ENGINEERING DESIGN DIVISION</b>	
CITY ENGINEER: DENNIS ANDERSON, P.E. PROJECT MANAGER: ED NEITENSTROM, P.E.	
<b>DEPARTMENT OF PUBLIC WORKS</b>	
<b>HARRIS AVENUE STORM DRAIN</b>	
<b>DETAILS</b>	
DRAWING NO. 327-V248	
SHEET 7/8	

F:\DEPT\DESIGN\harris\details.dwg Tue Jun 22 10:50:30 1999

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