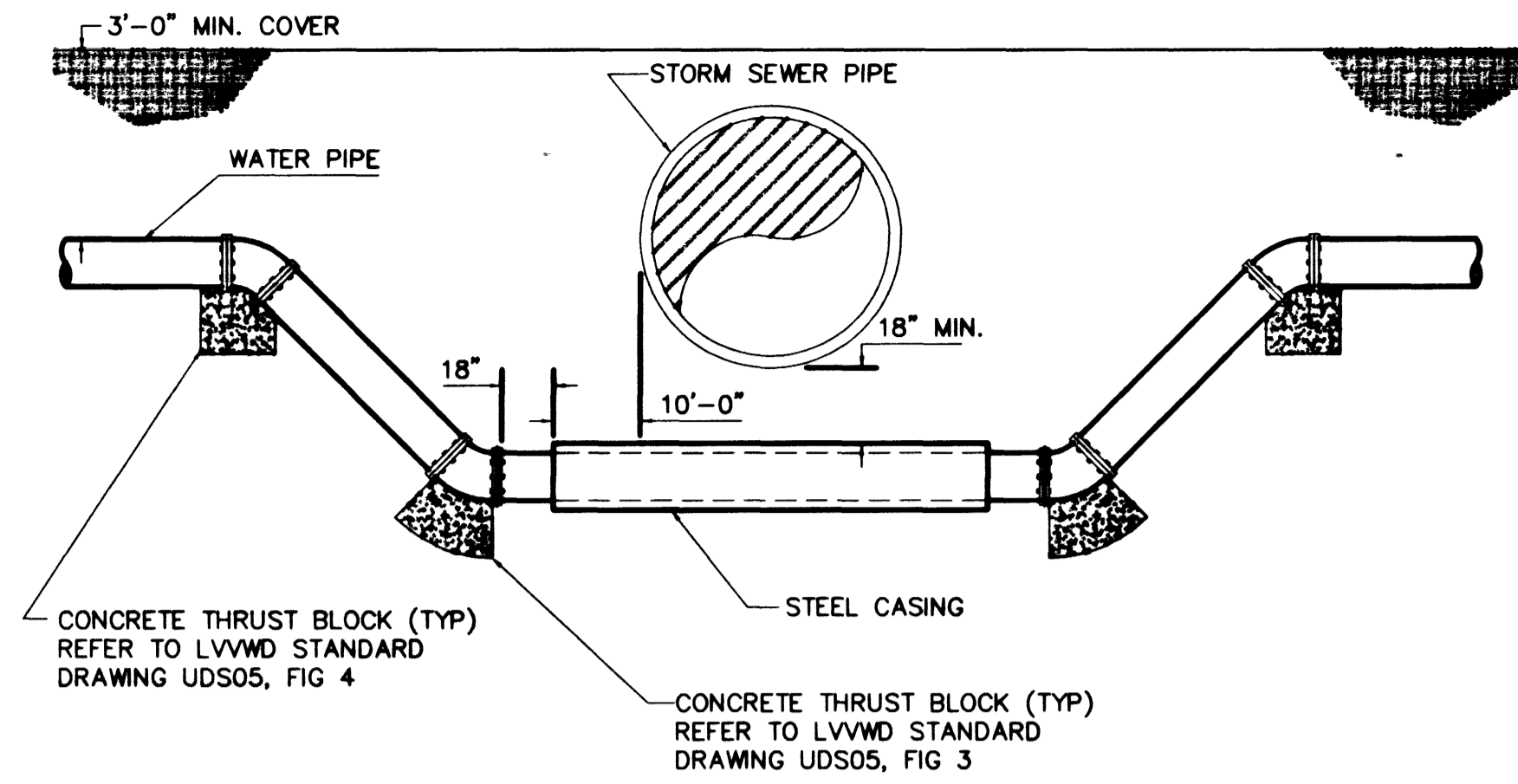


WHERE THE WATER LINE IS LESS THAN 18 INCHES OVER THE SEWER LINE, AND WHERE THE WATER LINE IS UNDER THE SEWER LINE, AND WHERE THE HORIZONTAL SEPARATION, AS REQUIRED BY THE WATER SUPPLY REGULATIONS, CANNOT BE MAINTAINED BECAUSE OF PHYSICAL OBSTRUCTIONS, THE WATER LINE, SHALL BE PROTECTED BY CONSTRUCTION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

1. EXTRA HEAVY CAST IRON PIPE;
2. WATER SUPPLY QUALITY MATERIALS; OR
3. 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° CROSSINGS TO THE POINT AT WHICH THE TEN FOOT SEPARATION BETWEEN THE WATER AND SEWER LINES IS ACHIEVED (10/SINE OF CROSSING ANGLE.)

STORM SEWER / WATER CROSSING DETAIL 1
N.T.S.



WHERE THE WATER LINE IS LESS THAN 18 INCHES OVER THE SEWER LINE, AND 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 OBSTRUCTIONS, THE WATER LINE, SHALL BE PROTECTED BY CONSTRUCTION OF THE STORM SEWER LINE AS FOLLOWS:

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

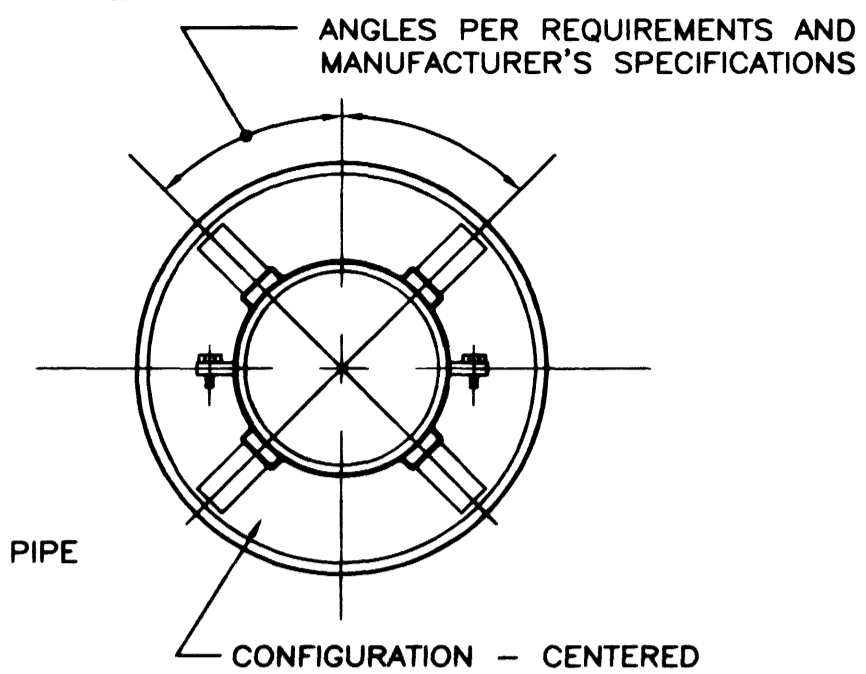
EACH OF THESE PROVISIONS SHALL ALSO BE EXTENDED FOR OTHER THAN 90° CROSSINGS TO THE POINT AT WHICH THE TEN FOOT SEPARATION BETWEEN THE WATER AND SEWER LINES IS ACHIEVED (10/SINE OF CROSSING ANGLE.)

STORM SEWER / WATER CROSSING DETAIL 2
N.T.S.

Bonnie C. D. T.
LAS VEGAS VALLEY WATER DISTRICT
SIGNATURE FOR DETAILS 1, 2 & TYPICAL CASING SECTION ONLY. DATE: 2-28-00

DI CARRIER PIPE	
8" SPACER WIDTH	
PIPE SIZE	CASING ID
8"	18"
12"	24"

PLACEMENT OF SPACERS ON CARRIER PIPE PER MANUFACTURER'S SPECIFICATIONS



1. STEEL PIPE CASING SHALL BE FABRICATED FROM 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 C201, "AWWA STANDARD FOR FABRICATED ELECTRICALLY WELDED STEEL WATER PIPE.". COATINGS FOR STEEL CASING ARE NOT REQUIRED.
2. PIPE CASING SHALL BE LAID TRUE TO LINE AND GRADE WITH NO BENDS OR CHANGES IN GRADE FOR THE FULL LENGTH OF THE CASING.
3. THE PIPE SHALL BE SUPPORTED AT EACH END OF EACH JOINT WITH SPACERS. AFTER INSTALLATION OF THE PIPE, THE CASING SHALL BE SEALED AT BOTH ENDS WITH CASING END SEALS.

TYPICAL CASING SECTION
N.T.S.

Bonnie C. D. T.
LAS VEGAS VALLEY WATER DISTRICT
DATE: 2-28-00

MEETS REQUIREMENTS FOR STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION
TYPE "D" DROP INLET

R-3067-L
24"x36" CURB INLET WITH CAST IRON FRAME, GRATE, AND HOOD

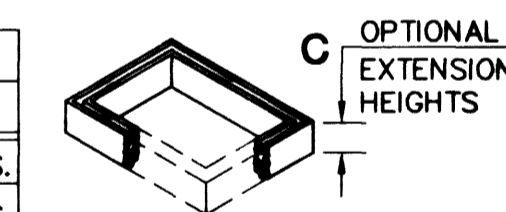
DROP INLET			
MODEL NO.	A	B	* WEIGHT
2436HDI-36	36"	48"	3028 LBS.
2436HDI-48	48"	60"	3889 LBS.

* WEIGHT IS MINUS FRAME & GRATE

NOTES:

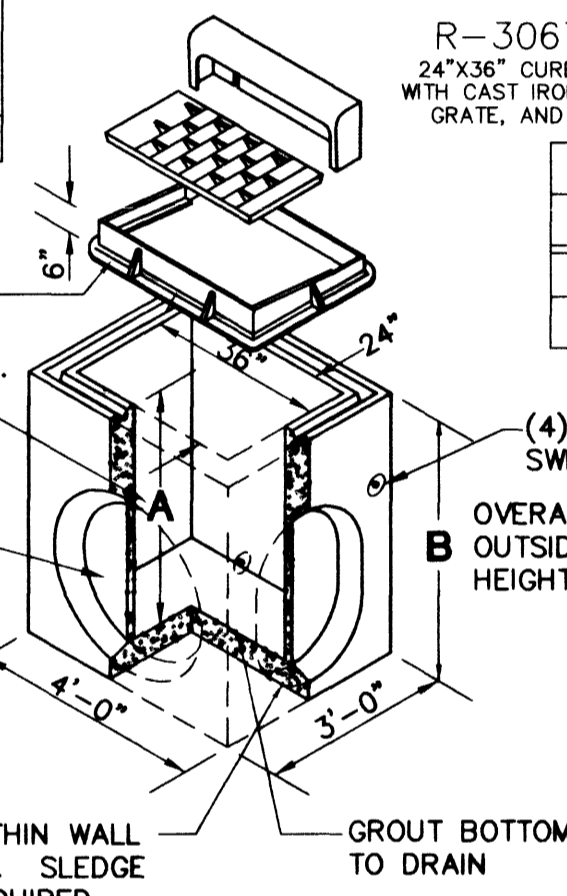
1. DROP INLET DESIGN LOAD: H-20 TRAFFIC, UP TO 12 FT DEPTH
2. GRATE AND FRAME DESIGN LOAD: 40,000 LB TRAFFIC LOAD
3. DROP INLET AND EXTENSION MODEL NUMBERS SHOWN ARE BY JENSEN PRECAST. SUBMIT "OR EQUAL" ALTERNATES FOR APPROVAL.

EXTENSION		
MODEL NO.	C	WEIGHT
2436-R6	6"	450 LBS.
2436-R12	12"	900 LBS.

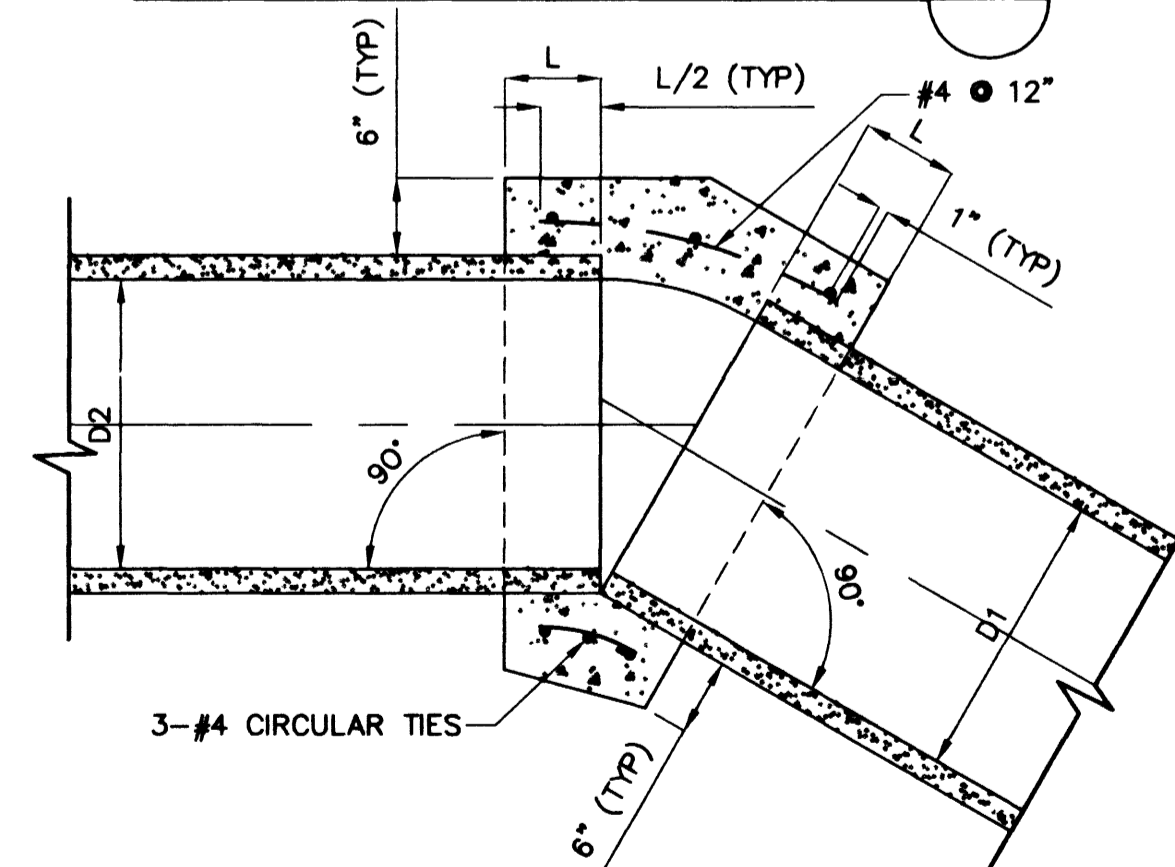


CAST IRON FRAME, GRATE, & HOOD APPROX. WT.: 510 LBS.
INSIDE HEIGHT OF BOX
31" ROUND THIN WALL KNOCKOUTS. SLEDGE OUT AS REQUIRED. (TYP. 2 PLACES) (SEE NOTE 1)

18" X 31" THIN WALL KNOCKOUTS. SLEDGE OUT AS REQUIRED. (TYP. 2 PLACES) (SEE NOTE 1)



SINGLE CURB INLETS DETAIL 3

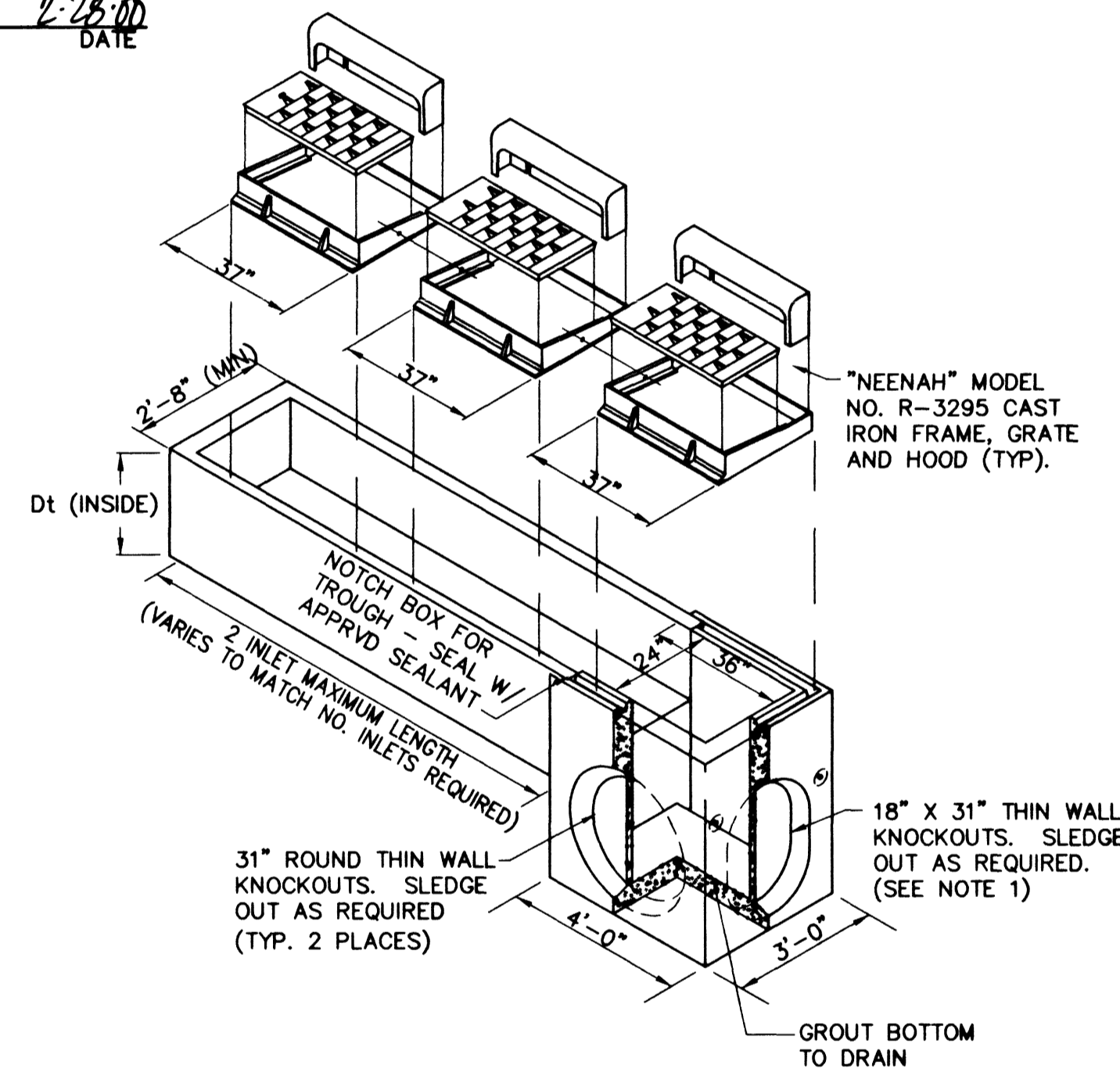
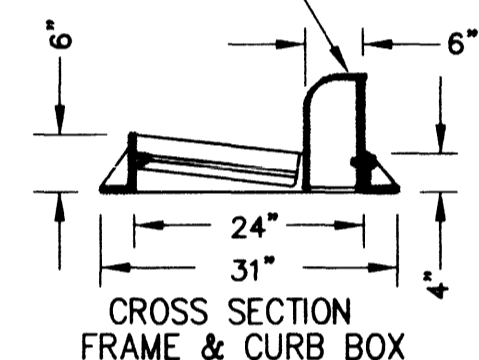


NOTES:

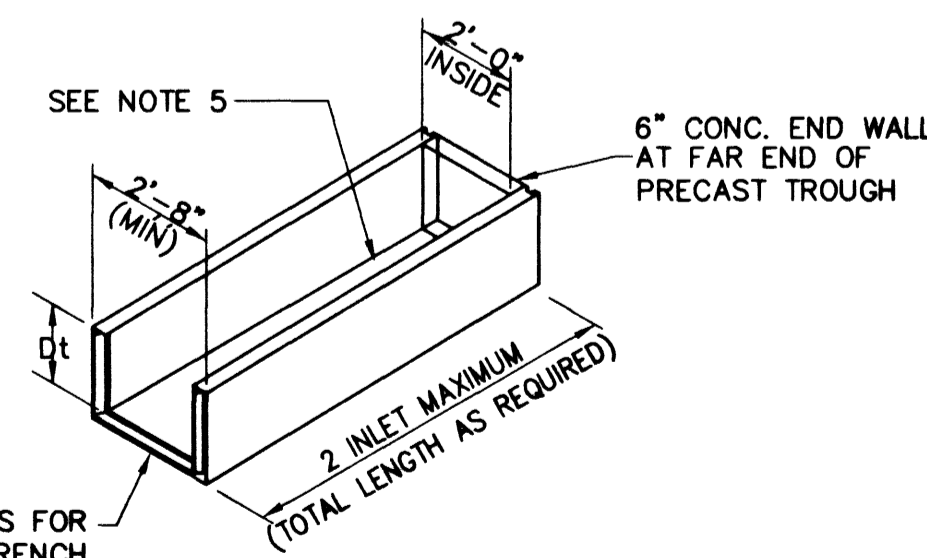
1. A CONCRETE COLLAR IS REQUIRED WHERE THE CHANGE IN ALIGNMENT OR GRADE EXCEEDS THAT ALLOWED FOR AN ORDINARY JOINT.
2. L=12" FOR PIPES 24" OR LESS, L=18" FOR PIPES 27" TO 39", AND L=24" FOR PIPES 42" AND GREATER.
3. OMIT REINFORCING ON PIPES 24" OR LESS IN DIAMETER
4. WHERE REINFORCING IS REQUIRED, THE DIAMETER OF CIRCULAR TIES SHALL BE D+(2*WALL THICKNESS)+8". USE GRADE 60 REINFORCING STEEL.
5. NOT TO BE USED FOR A SIZE CHANGE IN THE MAINLINE.

CONCRETE PIPE COLLAR

CURB BOX ADJUSTABLE FROM 6" TO 9" HT. ---



MULTIPLE CURB INLETS DETAIL 4



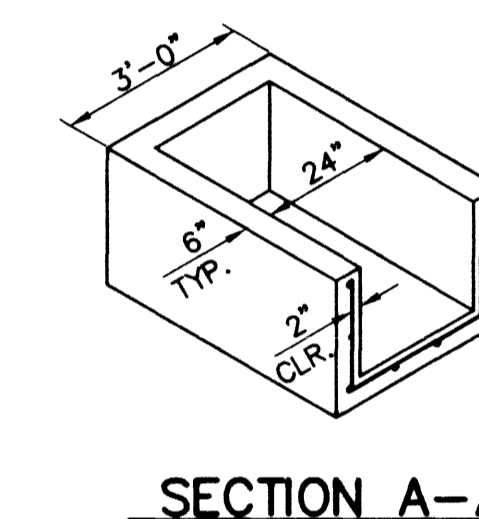
TROUGH DEPTH, Dt, SHALL BE AS FOLLOWS:

- Dt = 3' (MIN.) FOR 2 TO 4 GRATES
- Dt = 4' (MIN.) FOR 5 TO 9 GRATES
- Dt = 5' (MIN.) FOR 10 OR MORE GRATES

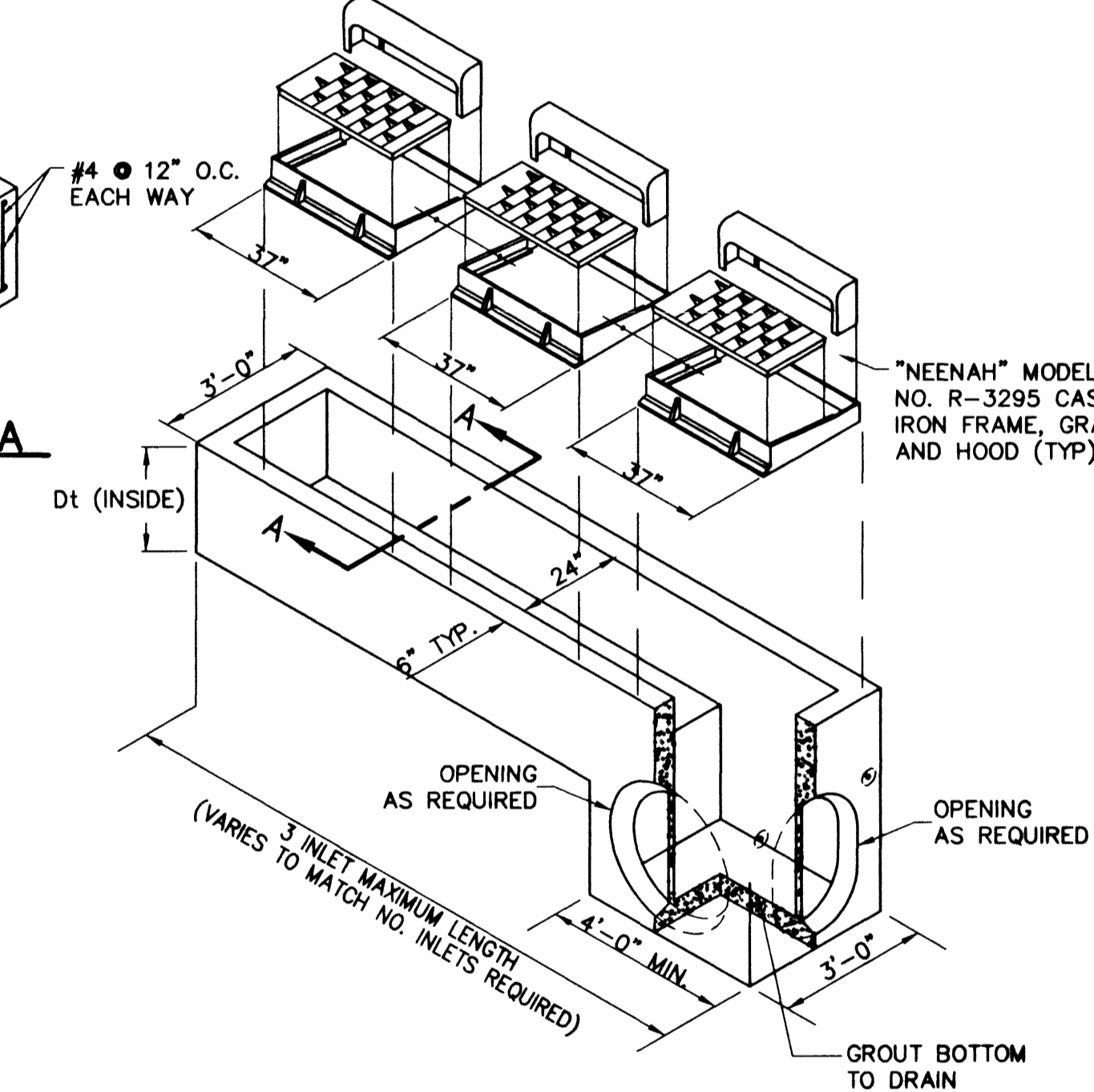
TROUGH DETAIL

NOTES:

1. IN AREAS WHERE ALTERNATE CAST IN PLACE DROP INLET WILL BE NECESSARY, LARGER BLOCKOUTS AND/OR BOXES MAY BE REQUIRED, THIS MAY REQUIRE SPECIAL ORDER PRE-CAST BOXES OR CAST-IN-PLACE INLET BOXES SUBMIT CALCULATIONS AND DETAILS.
2. BOLT MULTIPLE GRATE FRAMES TOGETHER, LEVEL AND SET FRAMES IN MORTAR BED AND SECURE TO INLET TROUGH PER MANUFACTURER'S RECOMMENDATIONS.
3. PLACE EXP. JOINT FILLER MATERIAL AT ONE END OF FRAMES AND HOOD WHERE THEY ABUT THE CONC. CURB & GUTTER
4. FRAME AND GRATE MODEL NUMBERS SHOWN ARE BY NEENAH FOUNDRY. SUBMIT "OR EQUAL" ALTERNATES FOR APPROVAL.
5. TROUGH SHALL BE LAID OR POURED PARALLEL WITH CURB SLOPE SEE DROP INLET SCHEDULE ON SHEET CS-4
6. CAST-IN-PLACE DROP INLETS MAY BE USED IN LIEU OF PRE CAST OPTION SHOWN. SUBMIT CALCULATIONS AND DETAILED DRAWINGS.
7. SEE DROP INLET SCHEDULE ON SHEET CS-4 FOR DESIGN AND LOCATION INFORMATION. SEE SHEET SD-13 FOR DROP INLET SECTION PROFILES AND GROUTING.
8. IN EXISTING CURB, GUTTER, & SIDEWALK REMOVE JOINT TO JOINT.



SECTION A-A



ALTERNATE CAST IN PLACE MULTIPLE CURB INLETS DETAIL 4

CAST-IN-PLACE CONSTRUCTION NOTES:

1. CONSTRUCTION SPECIFICATIONS: "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA." EXCEPT AS NOTED IN THE SPECIAL PROVISIONS IN THIS CONTRACT.
2. LIVE LOADS: STANDARD HS 20-44 LOADING.
3. CONCRETE: ALL CONCRETE SHALL BE CLASS DA-MODIFIED, TYPE V (6.5 SACK MINIMUM, 0.45 WATER/CEMENT RATIO), WITH A 28 DAY COMPRESSIVE STRENGTH OF 4,000 P.S.I.
4. REINFORCING STEEL: ALL REINFORCING STEEL TO BE ASTM A 615 GRADE 60. BOTTOM SLAB REINFORCEMENT SHALL HAVE 3" CLEARANCE ALL OTHER REINFORCEMENT SHALL HAVE 2" CLEARANCE UNLESS OTHERWISE NOTED ON THE PLANS.
5. REINFORCEMENT SIZE AND SPACING SHALL BE AS PER MANUFACTURERS SPECIFICATIONS. SUBMIT CALCULATIONS & DETAILS

CITY OF LAS VEGAS
731 SOUTH FOURTH STREET
LAS VEGAS, NEVADA 89101

URS Greiner
2785 EAST DESERT INN ROAD
LAS VEGAS, NEVADA 89121
(702)-796-7775 FAX (702)-796-1803

GENERAL DETAILS
CRAIG ROAD IMPROVEMENTS
BID NO. 00.1730.23

SHEET: 54 OF 55 SHEETS
DRAWING NO. 107-V3048

SCALE: NONE
1" = 4' VERT.

PROJECT NO. 44-300

DESIGNED BY: DMS/MRA
CHECKED BY: DM

DATE: 2/23/00

PROFESSIONAL ENGINEER
STATE OF NEVADA
No. 7401

28363