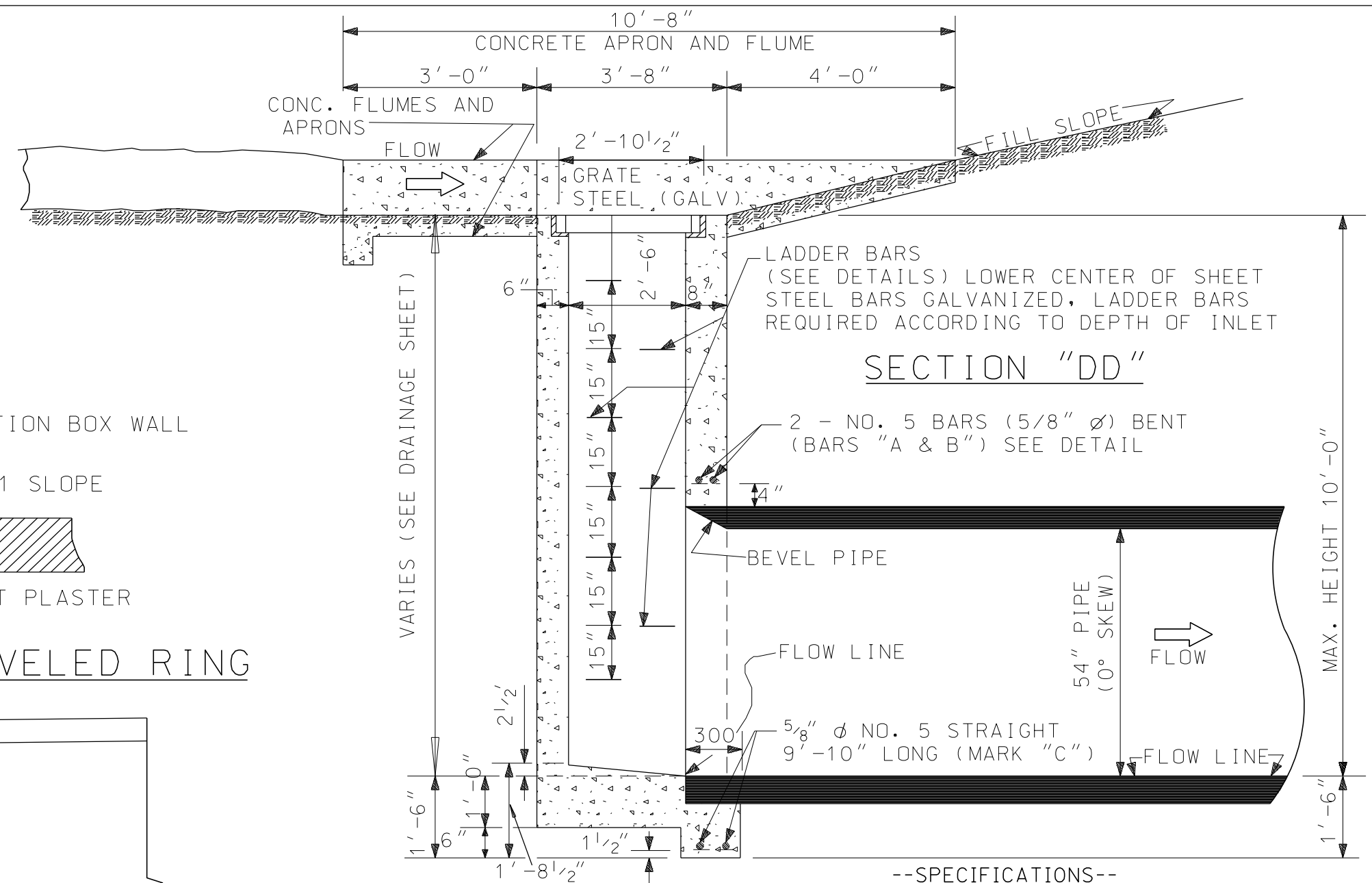
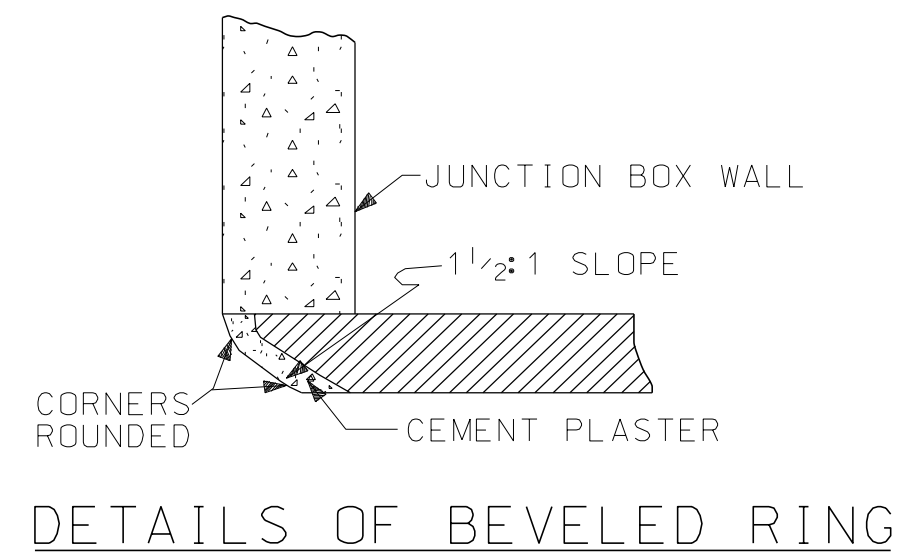
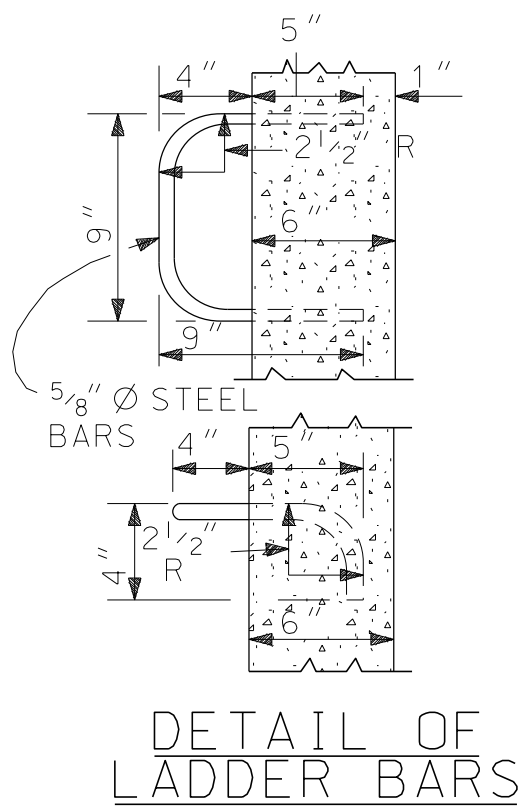
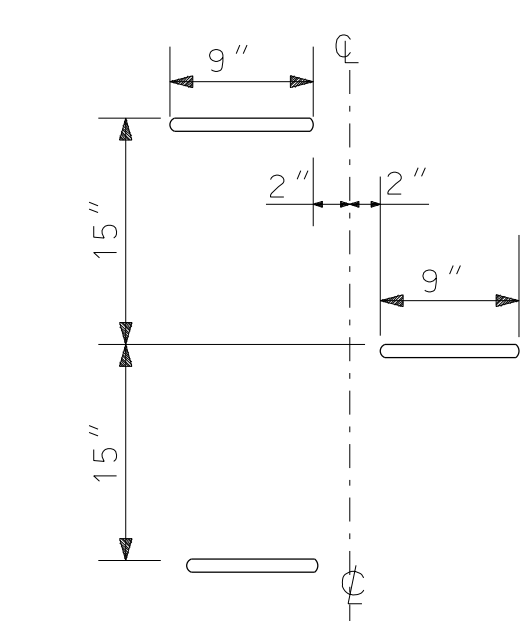


PLAN VIEW
INLET FOR 48" PIPE
SKEW - 0° THROUGH 15°

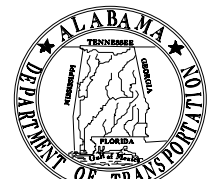


SECTION "DD"

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS
1. Added to CADD on 05-05-99
by Joe Thomas.



ALABAMA DEPARTMENT
OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

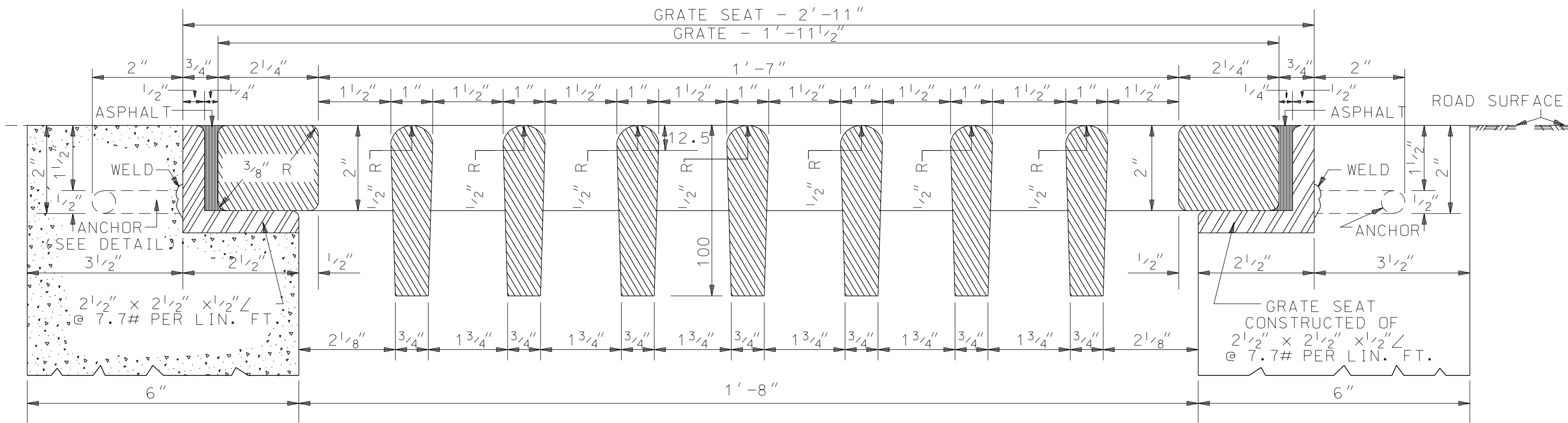
DESIGN BUREAU SPECIAL DRAWING
DETAILS OF CONCRETE DROP INLETS
WITH STEEL GRATES FOR USE AT
LOCATIONS WHERE THE DRAINAGE PIPE
IS LOCATED DEEP IN THE GROUND
(TYPE GH, IJ, & MN)

Bureau Std Engr: D.J.W.
DRAWN BY: DATE DRAWN: 2-14-75

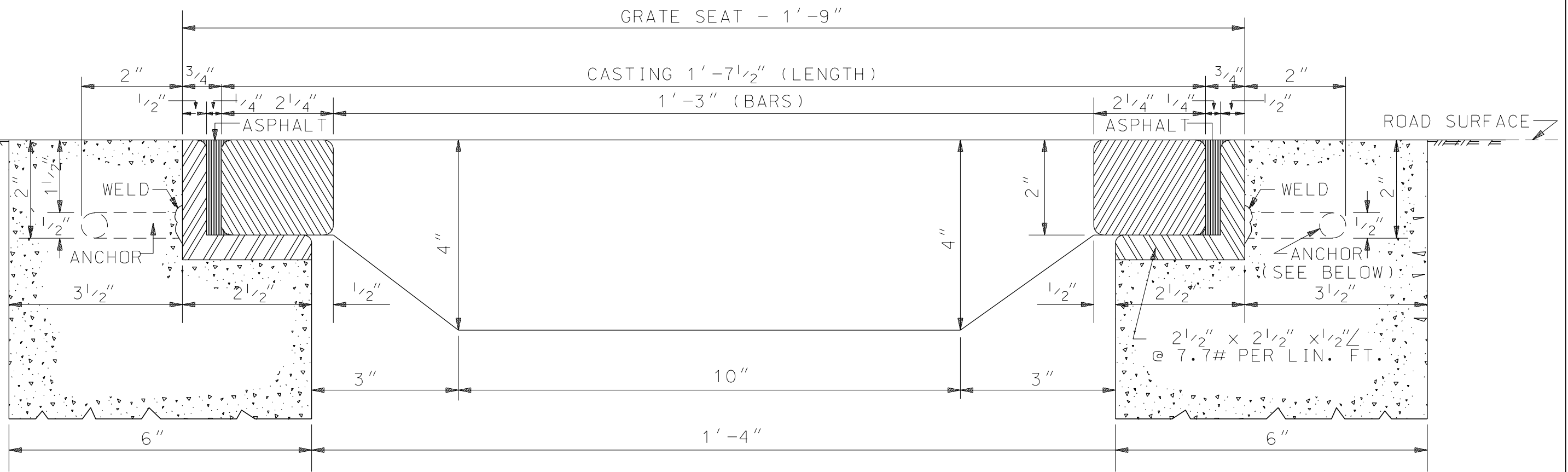
SPECIAL DRAWING NO
I-621 (SHEET 3 OF 4)

INDEX NO
62103

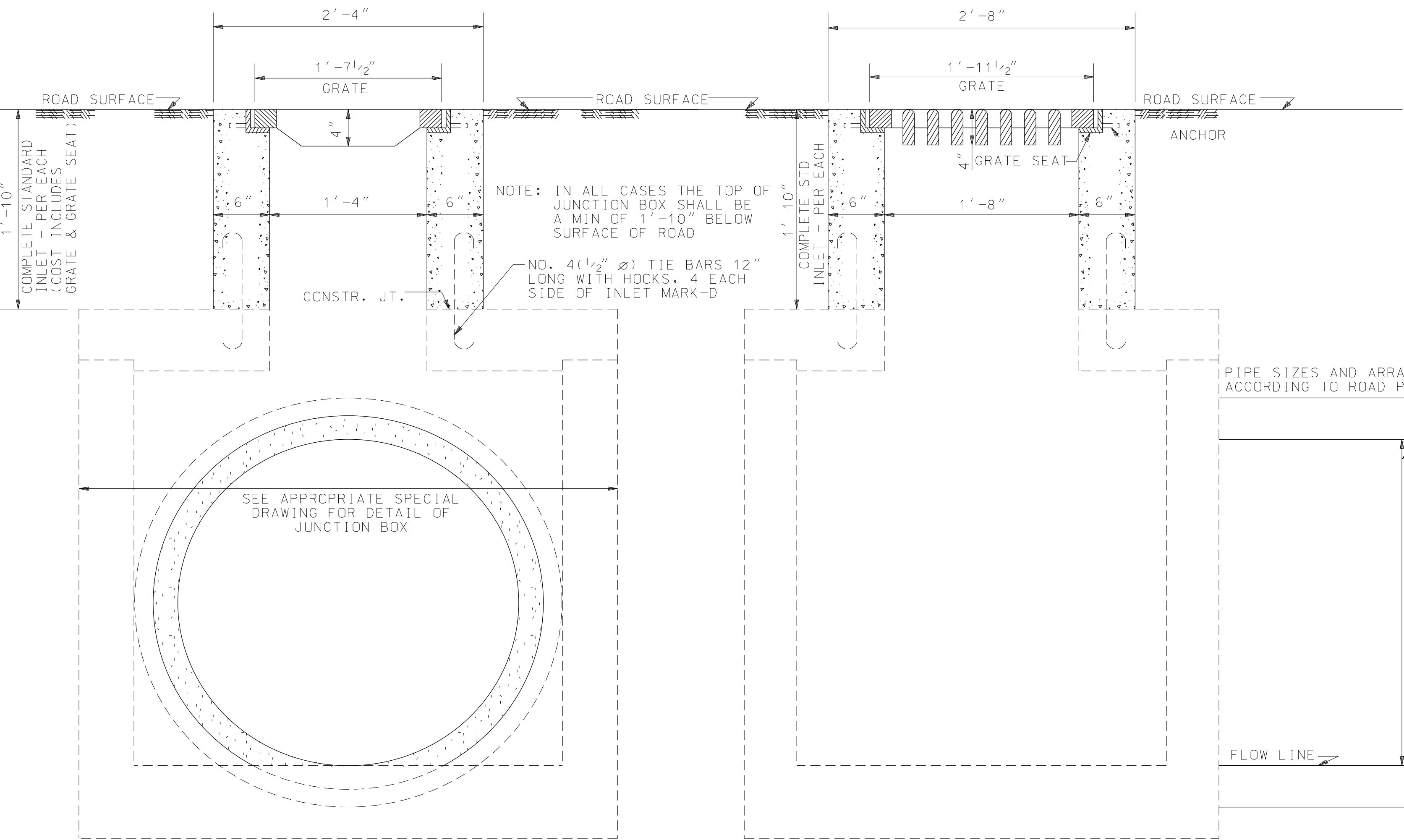
NOT TO SCALE



SECTION "BB" (THROUGH GRATE)



SECTION "AA" (THROUGH GRATE)

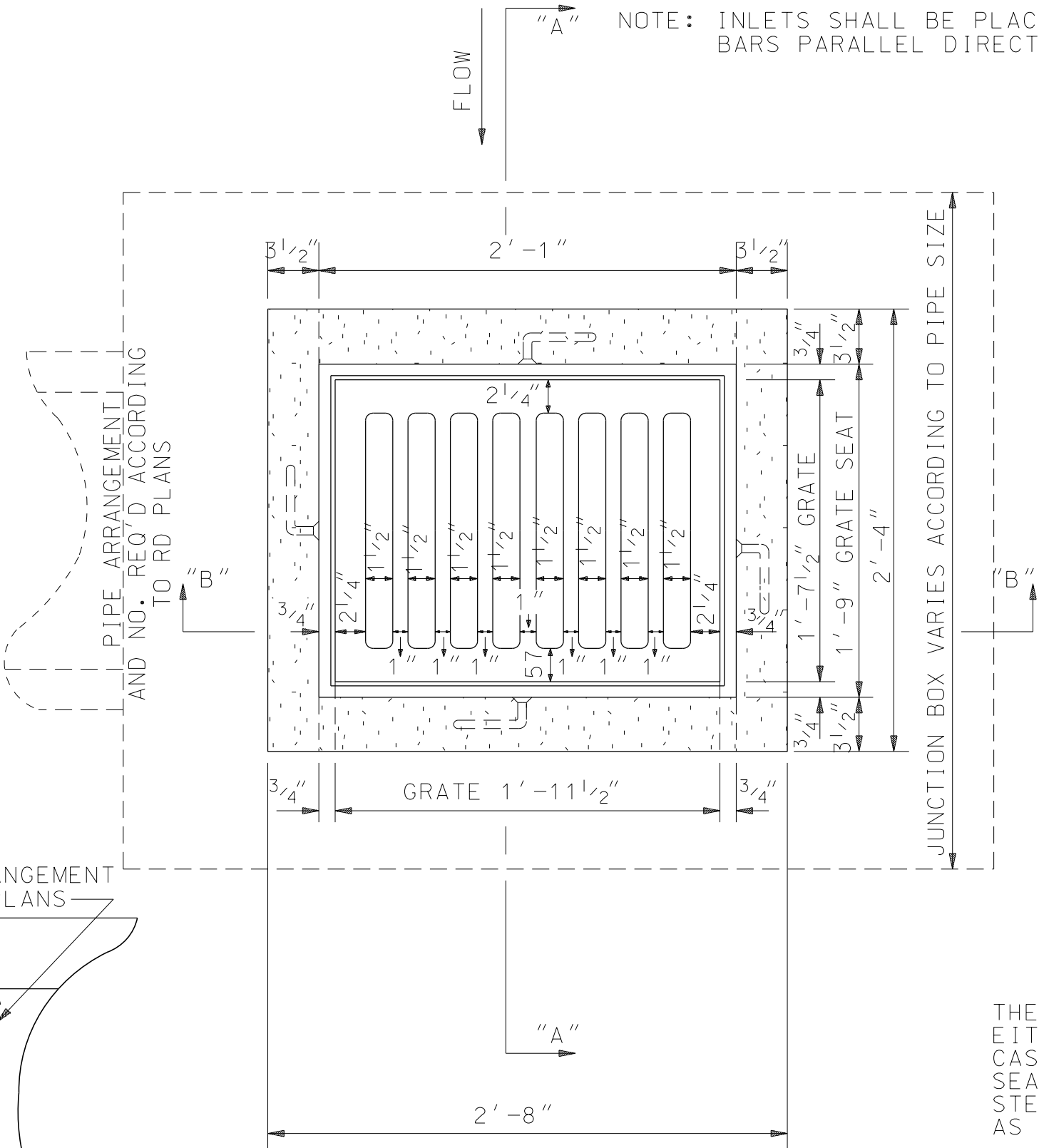


SECTION "AA"

SECTION "BB"

NOTE: INLET WILL BE PAID FOR "PER EACH" FOR EACH COMPLETE STANDARD INLET AS SHOWN AT SECTIONS "AA" AND "BB" ABOVE. IF COMPLETED STANDARD INLETS REQUIRE GREATER DEPTH THAN SHOWN ON DRAWING, THE EXTRA DEPTH WILL BE PAID FOR UNDER INLET UNITS, FROM A POINT 1'-10" BELOW ROAD SURFACE TO TOP OF JUNCTION BOX INLET. UNITS WILL BE PAID FOR IN INCREMENTS OF 2'-0". ANY FRACTIONAL UNIT LESS THAN 2'-0" WILL BE PAID FOR AS A FULL 2'-0" UNIT.

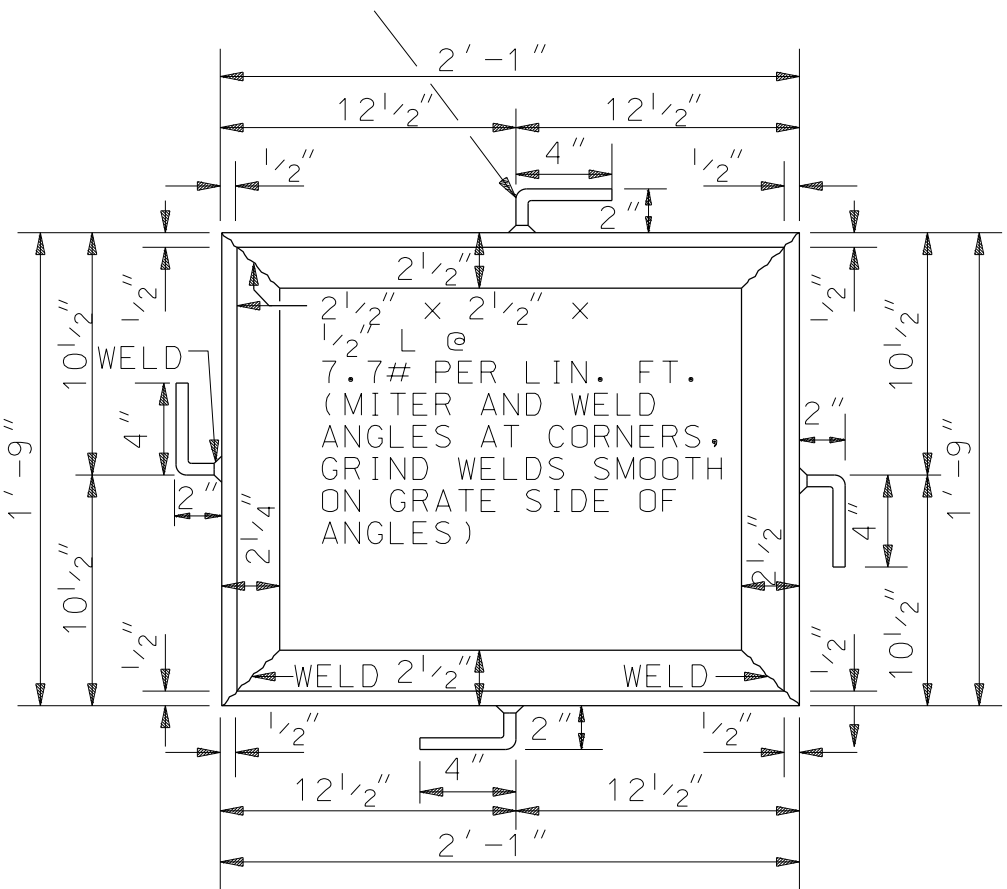
NOTE: CONTROL POINTS FOR INLETS ARE SURFACE OF ROAD AND FLOW LINE OF PIPE



PLAN VIEW OF INLET AND GRATE
DUCTILE OR MALLEABLE IRON GRATE CASTING

ANCHORS CONSTRUCTED OF NO. 4 (1/2" Ø) REINF BARS BENT TO SHAPE AND WELDED TO GRATE SEAT (4 REQUIRED)


GRATE SEAT INCLUDING ANCHORS SHALL BE CLEANED AND GALVANIZED AFTER WELDING



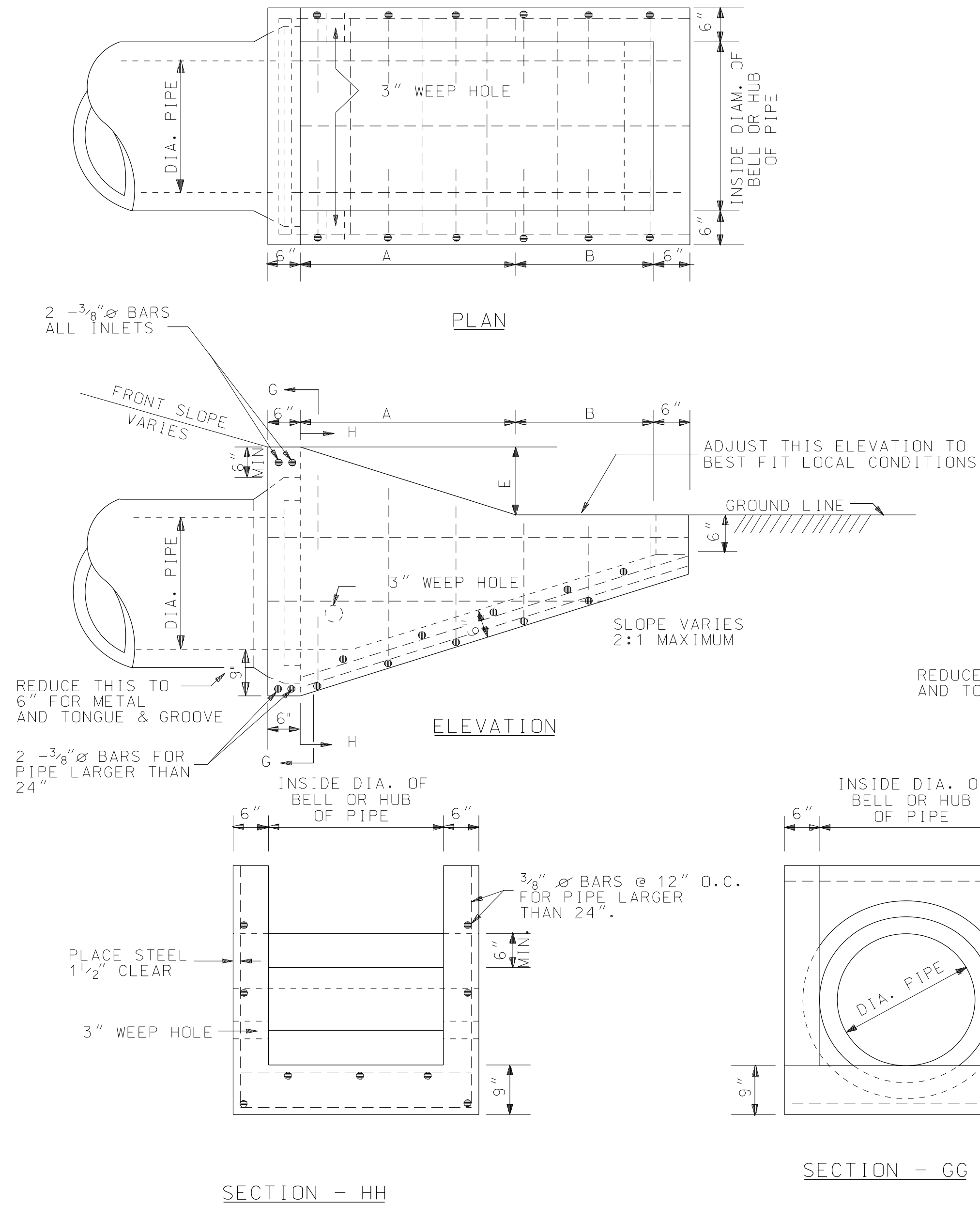
PLAN VIEW OF GRATE SEAT

NOTE TO CONTRACTOR

THE CONTRACTOR HAS THE OPTION OF FURNISHING EITHER DUCTILE IRON OR MALLEABLE IRON GRATE CASTINGS AND WELDED STEEL (ANGLE) GRATE SEATS AS DETAILED ON THIS SHEET OR WELDED STEEL GRATE AND WELDED STEEL GRATE SEAT AS DETAILED ON SHEET NO. 2 OF THIS DRAWING.

| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
|--|--|---|
| THIS DRAWING REPRESENTS DESIGNS PREPARED FOR USE BY THE ALABAMA DEPARTMENT OF TRANSPORTATION AND IS NOT TO BE COPIED, REPRODUCED, ALTERED, OR USED BY ANYONE, OR ANY ORGANIZATION, WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE ALABAMA DEPARTMENT OF TRANSPORTATION REPRESENTATIVE AUTHORIZED TO APPROVE THIS USE. ANYONE MAKING UNAUTHORIZED USE OF THIS DRAWING MAY BE PROSECUTED TO THE FULLEST EXTENT OF THE LAW. | | |
| REVISIONS 1. Added to CADD on 08-30-99 by J.F.T. | | |
|  ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050 | | |
| DESIGN BUREAU SPECIAL DRAWING SEWER INLET TYPE B (SURFACE DRAIN) FOR USE IN INTERSECTIONS AND OTHER LOCATIONS WHERE A SURFACE TYPE DRAIN IS REQUIRED ON THE TRAVEL WAY | | |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: 8-21-81 | | INDEX NO 1-621-B (SHEET 1 OF 2) 62107 |

NOT TO SCALE

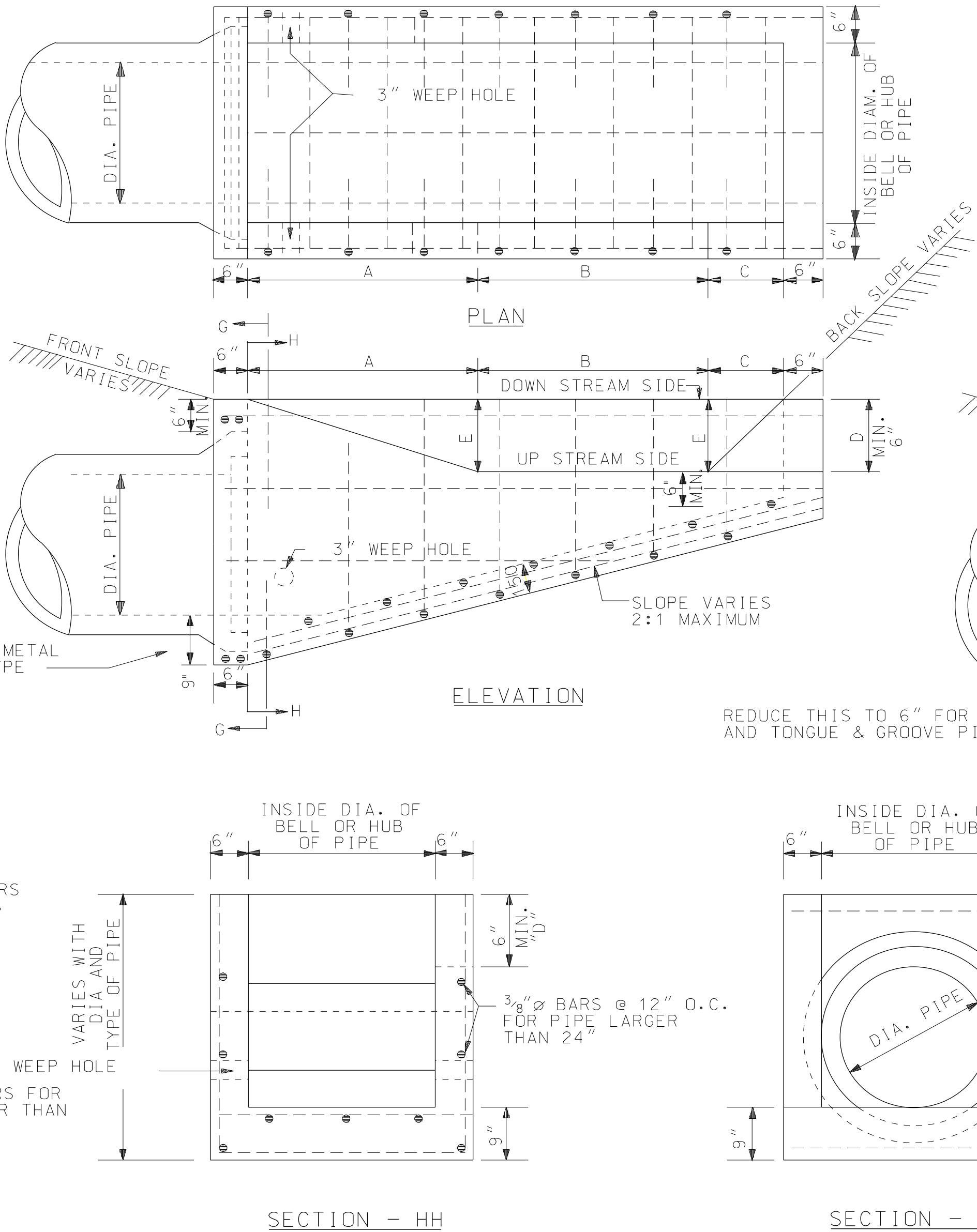


TYPE 1

| INSIDE DIAMETER OF PIPE | DIMENSION | | | CU. YDS. CONCRETE ONE INLET | POUNDS DEF. BAR REINF. |
|-------------------------|-----------|-------|-------|-----------------------------|------------------------|
| | A | B | E | | |
| 18" | 3'-0" | 2'-0" | 1'-0" | 0.80 | 2.08 |
| 24" | 3'-0" | 2'-0" | 1'-0" | 0.90 | 2.44 |
| 30" | 3'-0" | 2'-0" | 1'-0" | 1.05 | 45.31 |
| 36" | 3'-0" | 2'-0" | 1'-0" | 1.21 | 51.13 |
| 42" | 3'-0" | 2'-0" | 1'-0" | 1.41 | 57.00 |
| 48" | 3'-0" | 2'-0" | 1'-0" | 1.68 | 62.79 |

GENERAL NOTES

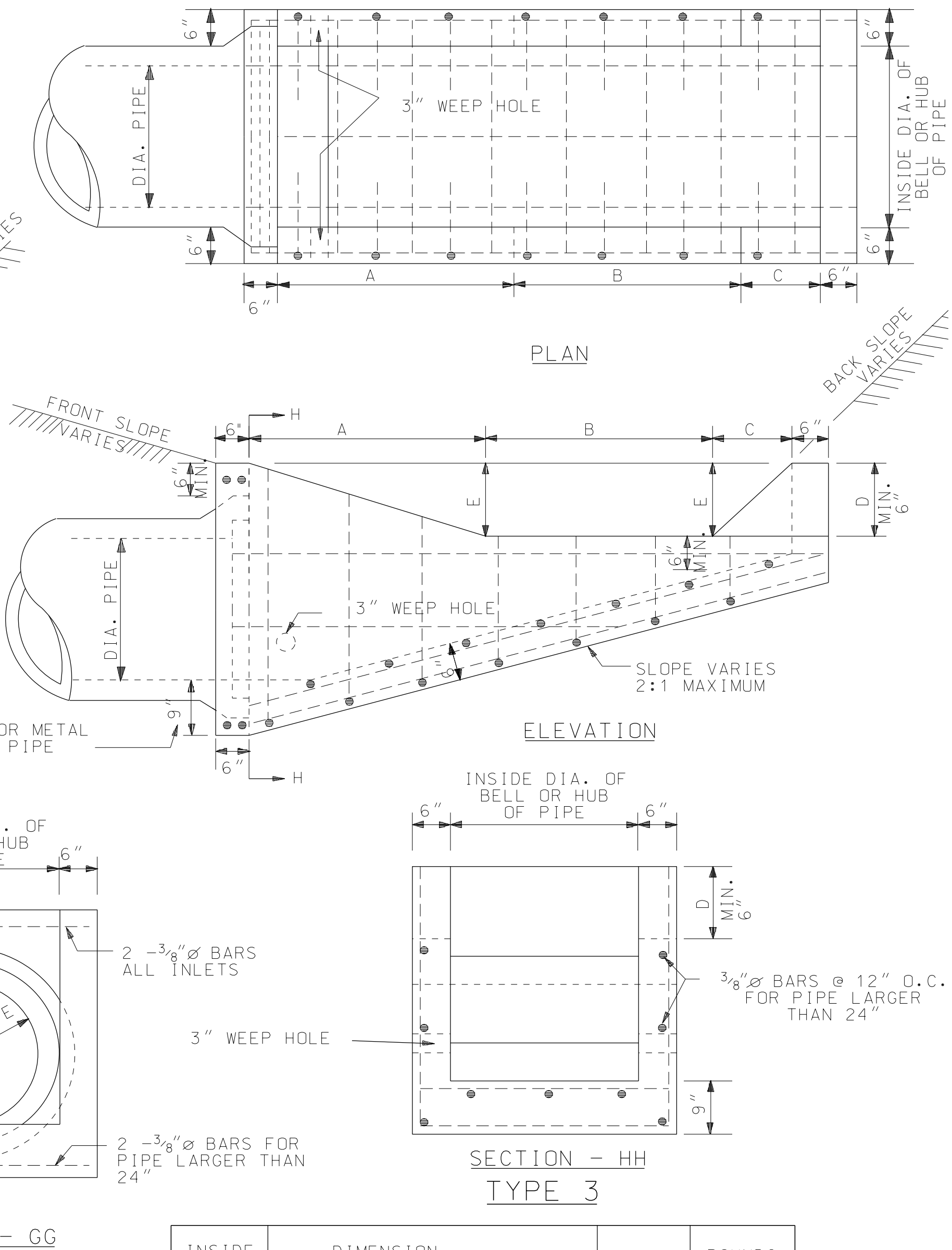
- ALL THE QUANTITIES ARE FOR ESTIMATING PURPOSE ONLY AND ARE NOT TO BE USED IN PAYING ESTIMATES. THE PROJECT ENGINEER SHALL PREPARE SKETCHES AND COMPUTE QUANTITIES FOR INLETS CONSTRUCTED.
- THIS SPECIAL DROP INLET DRAWING IS INTENDED AS A GUIDE IN DESIGNING INLETS TO BEST FIT LOCAL CONDITIONS IN THE FIELD.
- ALL DROP INLETS TO BE ADAPTED TO ANY SIZE PIPE OR SMALL BOX CULVERTS.
- USE TYPE ONE INLET WHERE THREE WAY ENTRANCE FOR WATER IS REQUIRED.
- USE TYPE TWO INLET WHERE TOP OF INSIDE OF PIPE IS HIGHER THAN NORMAL DITCH LEVEL.
- USE TYPE THREE AT THE LOW POINT OF VERTICAL CURVES AND ON GRADES.
- A REINFORCED SLAB 4" THICK MAY BE USED TO COVER INLETS WHERE NECESSARY.
- PLACE 2 - 3/8"Ø BARS IN WALL ABOVE TOP OF PIPE IN ALL INLETS.



TYPE 2

| INSIDE DIAMETER OF PIPE | DIMENSION | | | | | CU. YDS. CONCRETE ONE INLET | POUNDS DEF. BAR REINF. |
|-------------------------|-----------|-------|-------|--------|-------|-----------------------------|------------------------|
| | A | B | C | D | E | | |
| 18" | 3'-0" | 3'-0" | 1'-0" | 1'-4" | 1'-0" | 1.08 | 2.08 |
| 24" | 3'-0" | 3'-0" | 1'-0" | 1'-3" | 1'-0" | 1.26 | 2.44 |
| 30" | 3'-0" | 3'-0" | 1'-0" | 1'-2" | 1'-0" | 1.44 | 71.28 |
| 36" | 3'-0" | 3'-0" | 1'-0" | 1'-1" | 1'-0" | 1.70 | 76.17 |
| 42" | 3'-0" | 3'-0" | 1'-0" | 1'-0" | 1'-0" | 1.84 | 80.05 |
| 48" | 3'-0" | 3'-0" | 1'-0" | 0'-11" | 1'-0" | 2.06 | 84.94 |

A - SLOPE AND DISTANCE VARIES TO FIT FRONT SLOPE.
B - VARIES TO FIT WIDTH OF FLAT BOTTOM DITCH.
C - SLOPE AND DISTANCE VARIES TO FIT BACK OF SLOPE.
D - VARIES WITH INSIDE DIAMETER OF PIPE AND BACK SLOPE.
E - ADJUST TOP OF WALLS TO NORMAL DITCH LEVEL.



SECTION - HH
TYPE 3

| INSIDE DIAMETER OF PIPE | DIMENSION | | | | | CONCRETE ONE INLET | POUNDS DEF. BAR REINF. |
|-------------------------|-----------|-------|-------|--------|-------|--------------------|------------------------|
| | A | B | C | D | E | | |
| 18" | 3'-0" | 3'-0" | 1'-0" | 1'-4" | 1'-0" | 1.00 | 2.08 |
| 24" | 3'-0" | 3'-0" | 1'-0" | 1'-3" | 1'-0" | 1.17 | 2.44 |
| 30" | 3'-0" | 3'-0" | 1'-0" | 1'-2" | 1'-0" | 1.36 | 68.80 |
| 36" | 3'-0" | 3'-0" | 1'-0" | 1'-1" | 1'-0" | 1.61 | 73.69 |
| 42" | 3'-0" | 3'-0" | 1'-0" | 1'-0" | 1'-0" | 1.75 | 77.57 |
| 48" | 3'-0" | 3'-0" | 1'-0" | 0'-11" | 1'-0" | 1.97 | 82.46 |

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS
1. Added to CAD00 on 09-14-99 by J.F.T.

ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

SPECIAL DROP INLET
TYPE 1, TYPE 2, AND TYPE 3

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 5-20-75

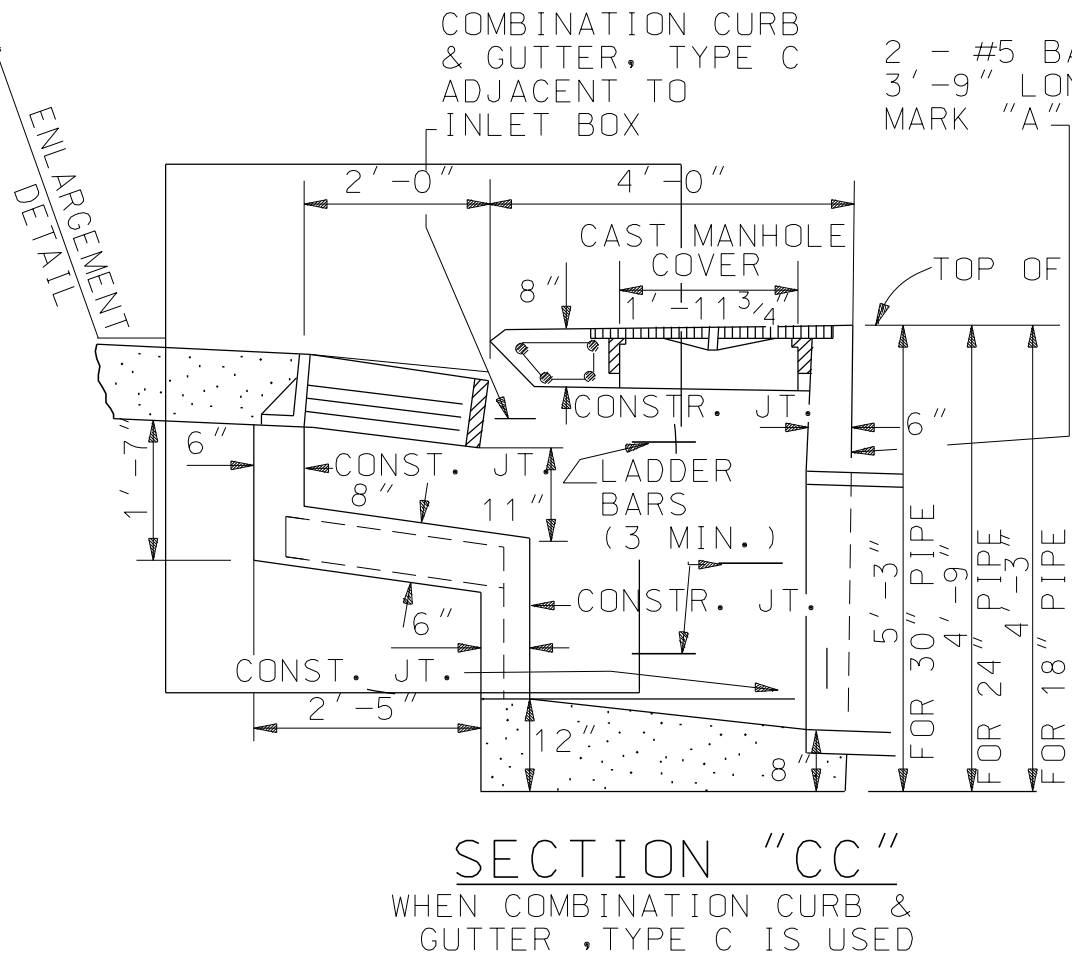
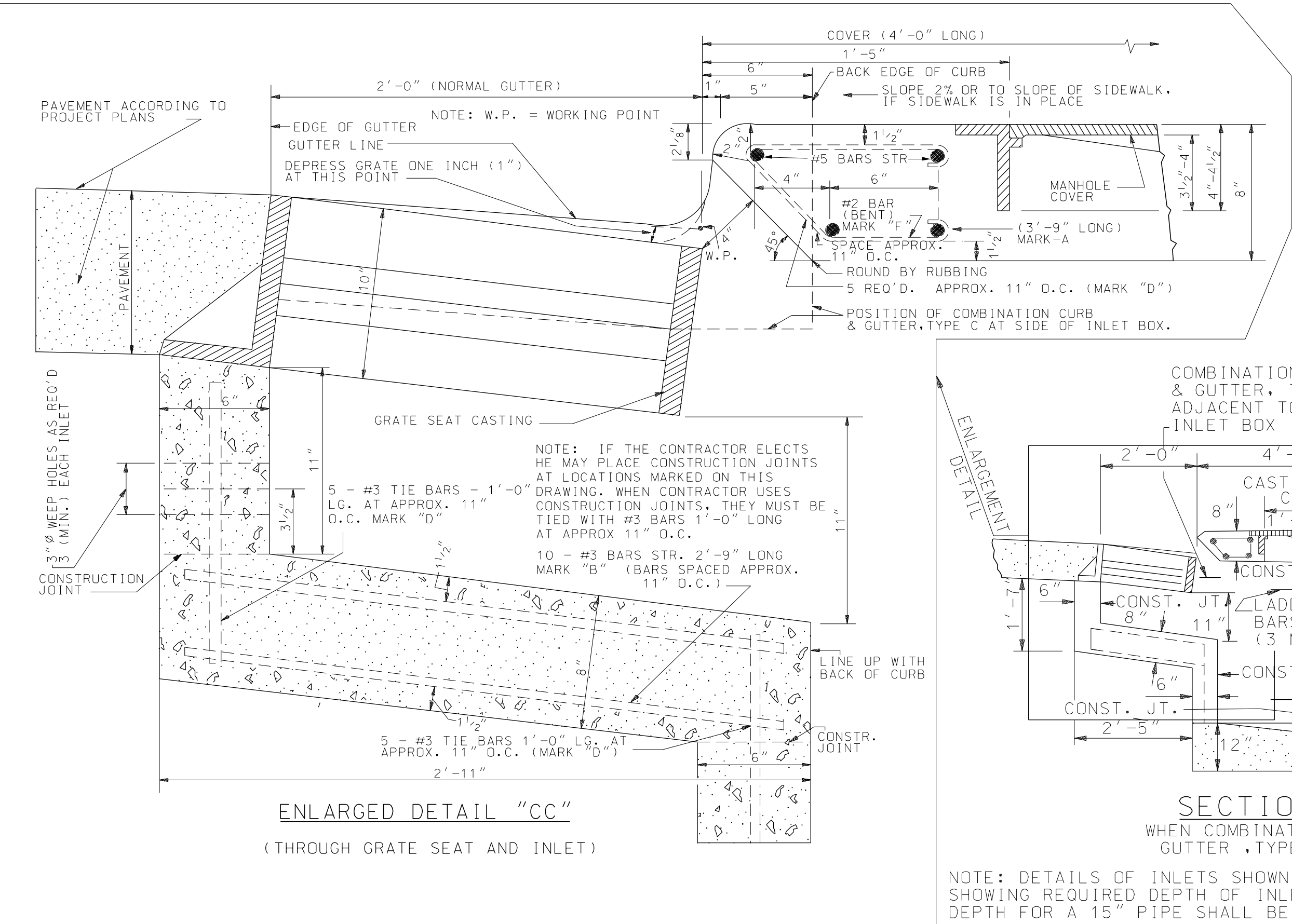
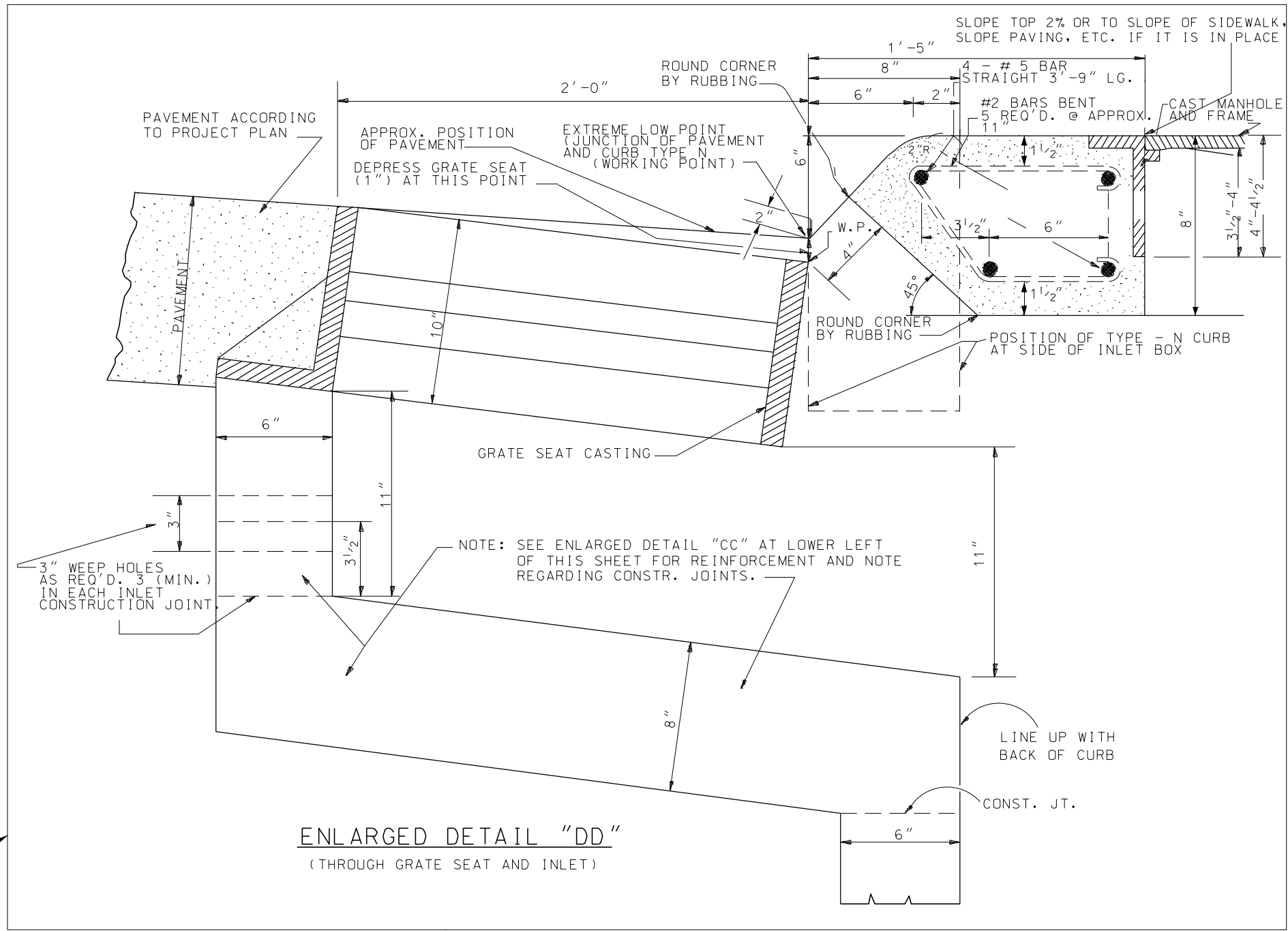
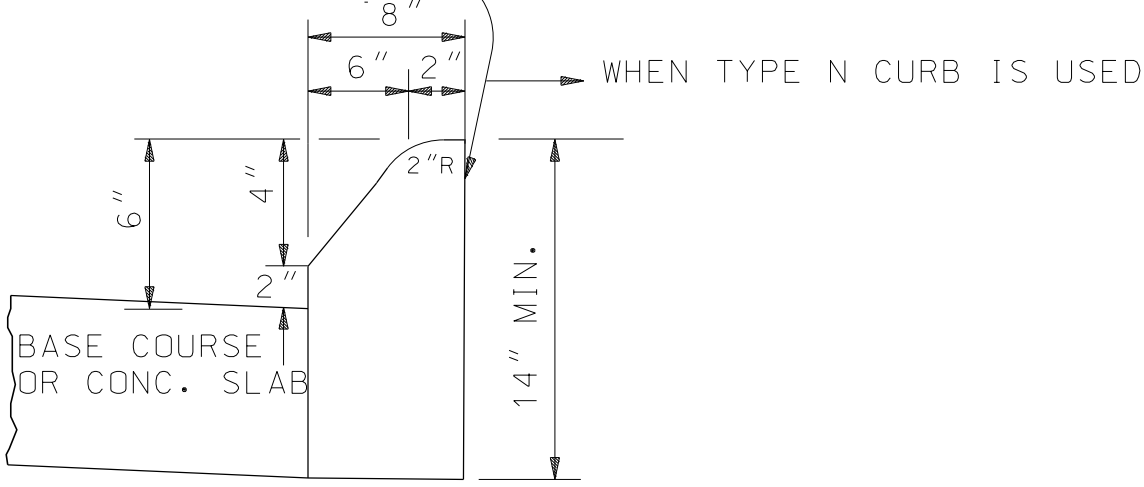
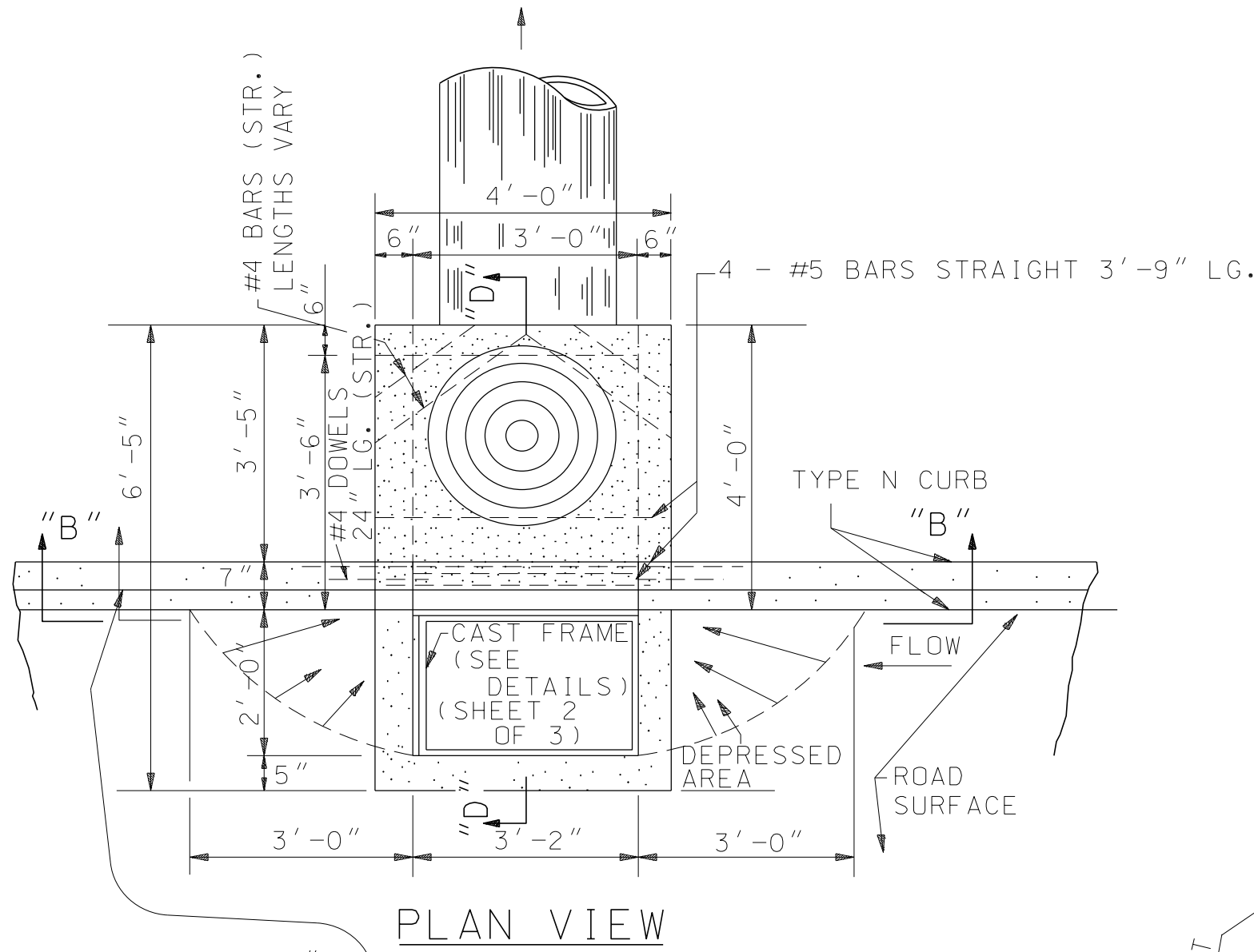
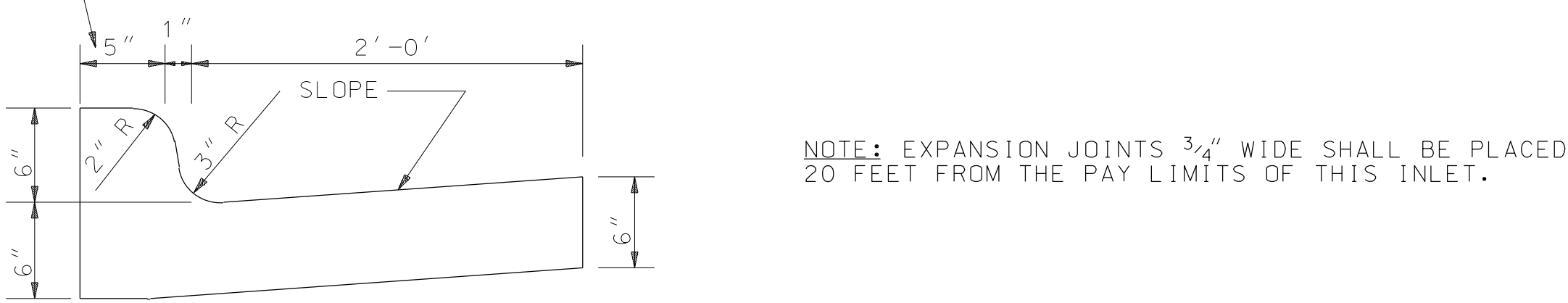
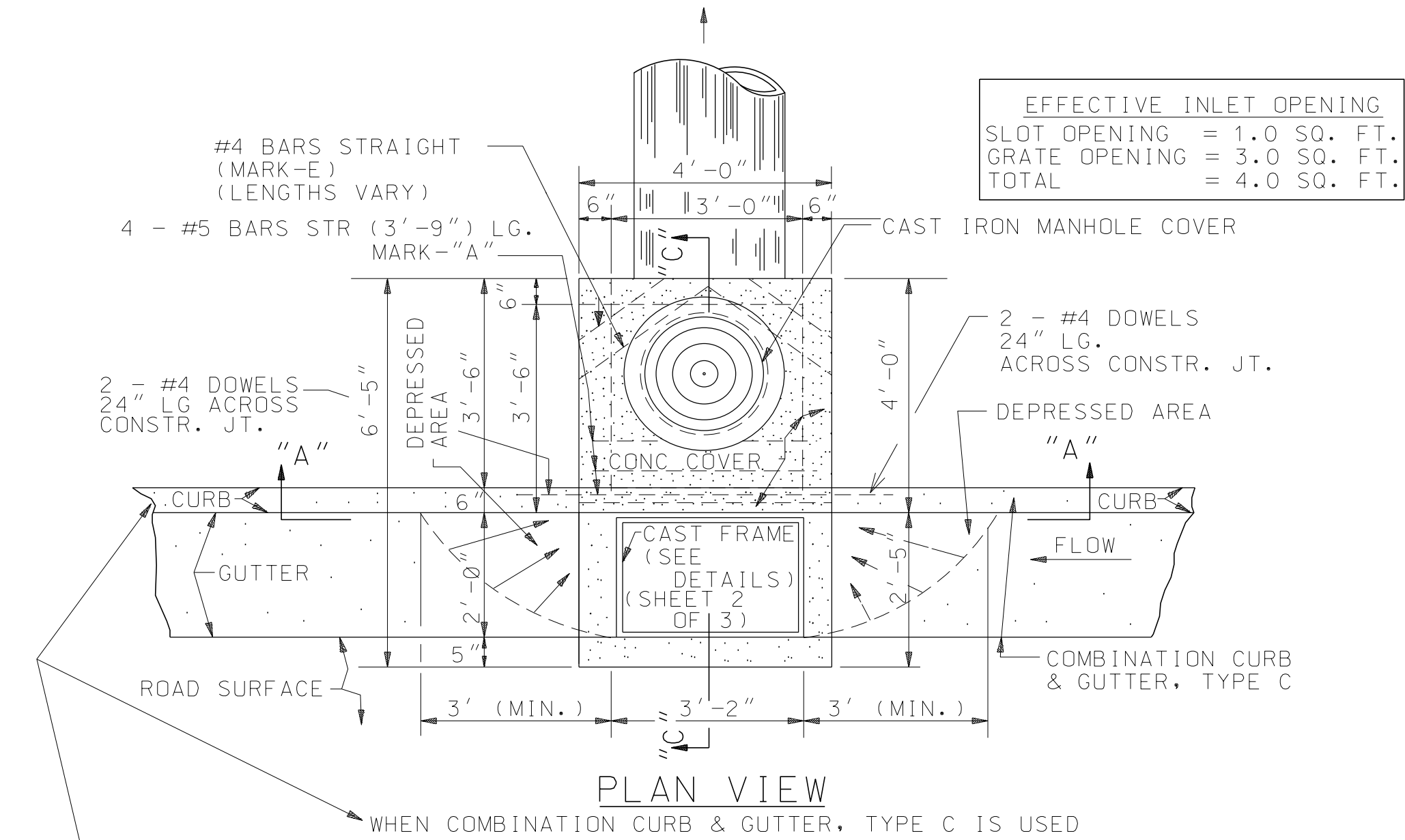
SPECIAL DRAWING NO
I-621-D

INDEX NO
62115

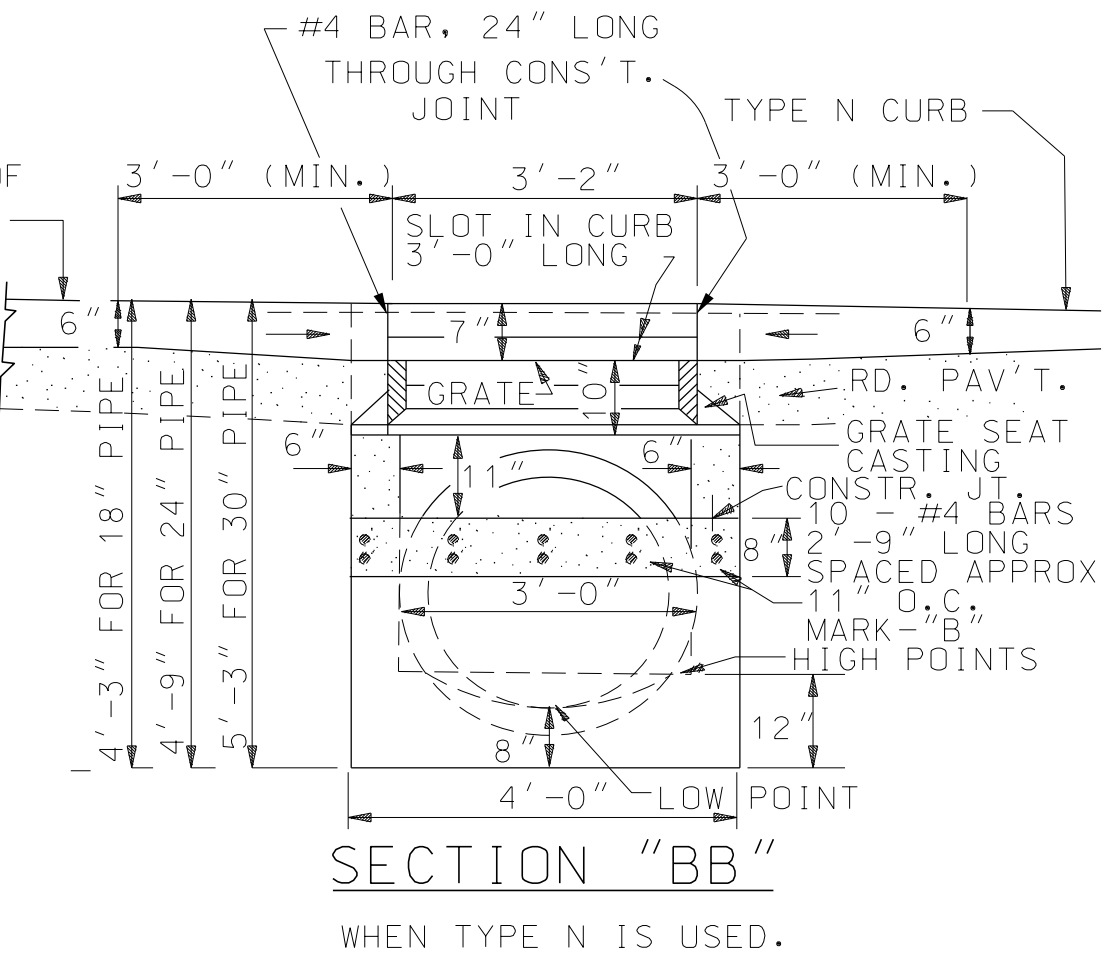
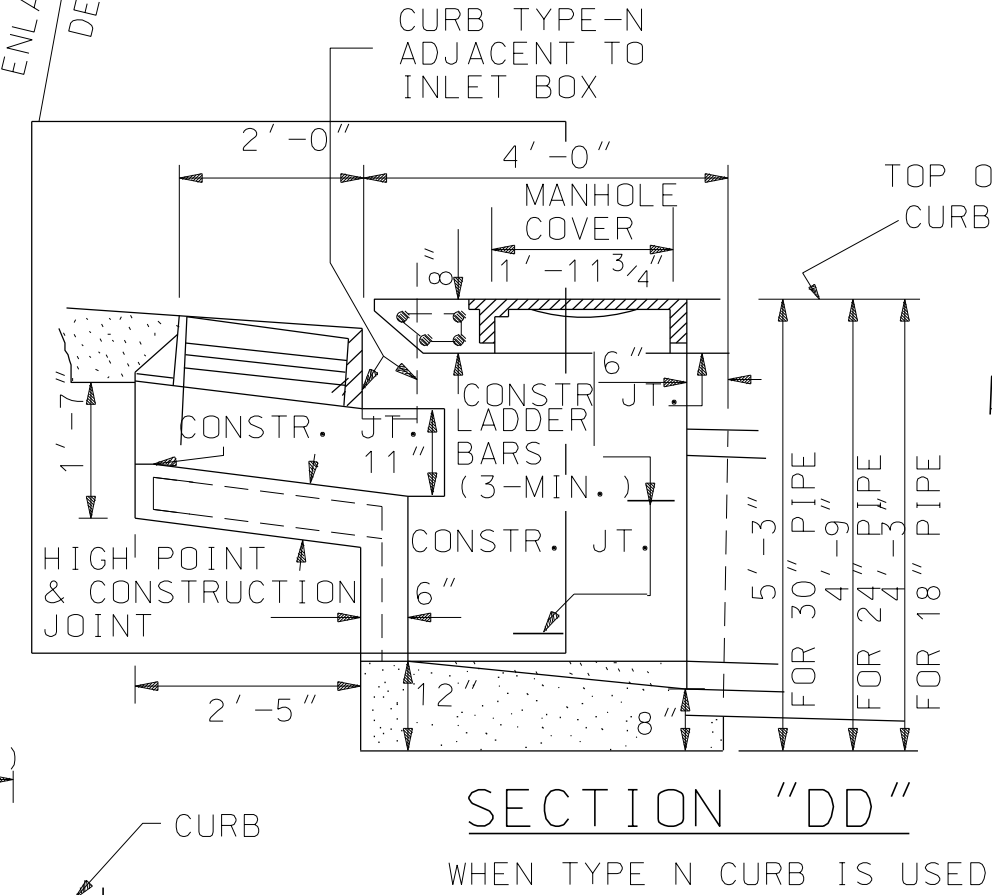
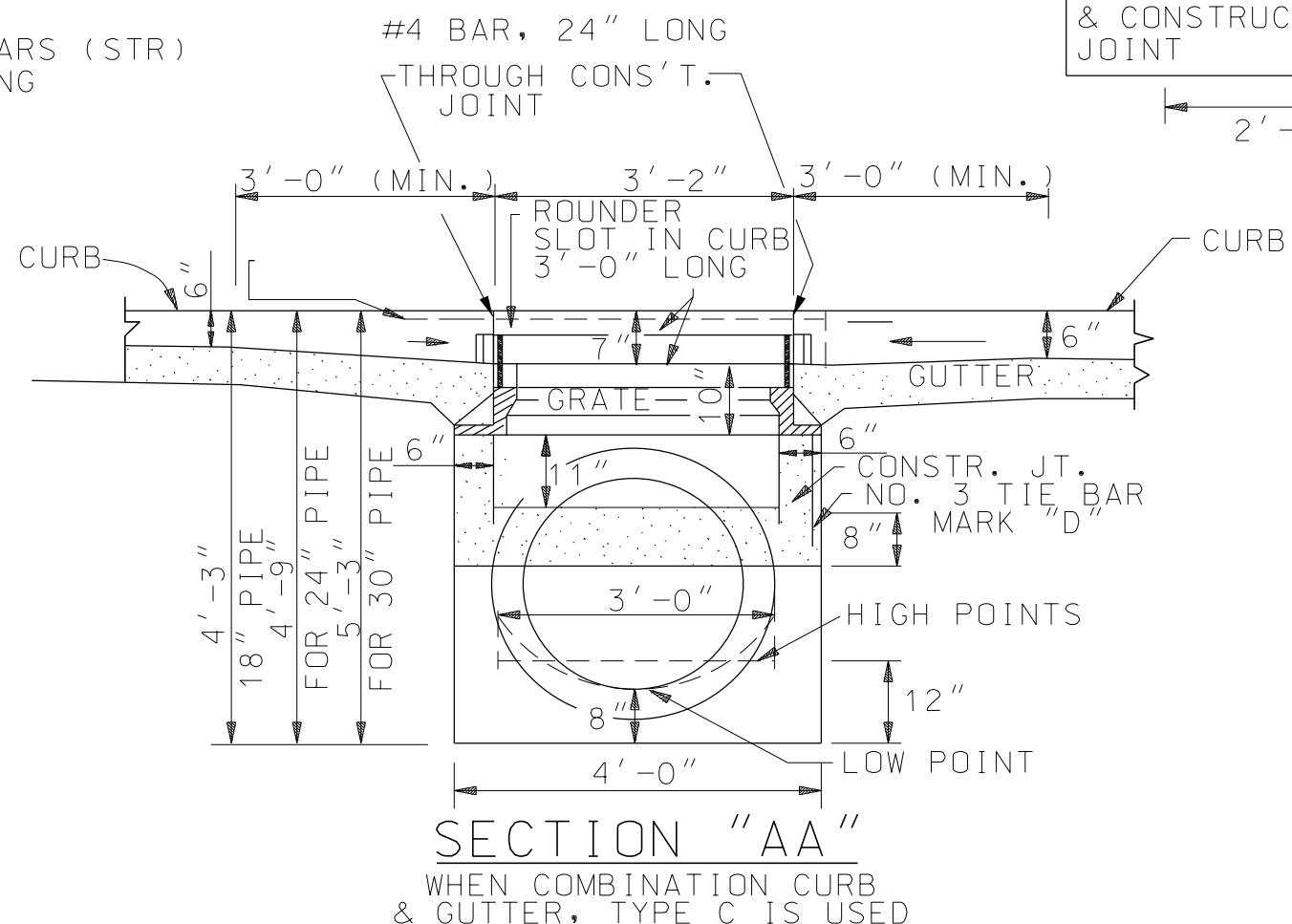
| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |

PAY FOR INLETS

INLETS WILL BE PAID FOR PER EACH STANDARD INLET COMPLETE AND IN PLACE AS SHOWN ON DRAWING. A COMPLETE STANDARD INLET SHALL BE CONSTRUCTED TO DEPTHS SHOWN FOR 18" - 24" OR 30" PIPE. THE DEPTHS SHALL BE TAKEN FROM TOP OF INLETS TO BOTTOM OF INLETS. PAY FOR INLET SHALL INCLUDE COST OF WELDED STEEL GRATE AND CAST GRATE SEAT. IF FOUND NECESSARY ON CONSTRUCTION TO CARRY AN INLET TO A GREATER DEPTH THAN SHOWN ON DRAWING THE CONTRACTOR WILL BE PAID FOR THIS EXTRA DEPTH IN (2) FOOT INLET UNITS. THE EXTRA DEPTH WILL BE MEASURED FROM TOP OF INLET BOTTOM IN INCREMENTS OF (2) FT. IF THE FIRST OR LAST INCREMENT LESS THAN 2'-0" THE CONTRACTOR WILL BE PAID FOR A FULL UNIT. IF THE GRATE IS REQUIRED TO TEMPORARILY HANDLE TRAFFIC DURING CONSTRUCTION, THE CONTRACTOR WILL REMOVE EXISTING GALVANIZING AND PLACE $\frac{5}{16}$ " PARTIAL PENETRATION WELDS 4" LONG LONGITUDINALLY ALONG GRATE FROM EACH CORNER. AFTER TRAFFIC IS REMOVED, THE CONTRACTOR WILL REMOVE WELD, CLEAN AFFECTED AREA AND REGALVANIZE. COST OF THIS WORK WILL BE INCLUDED IN THE PAY FOR INLET.

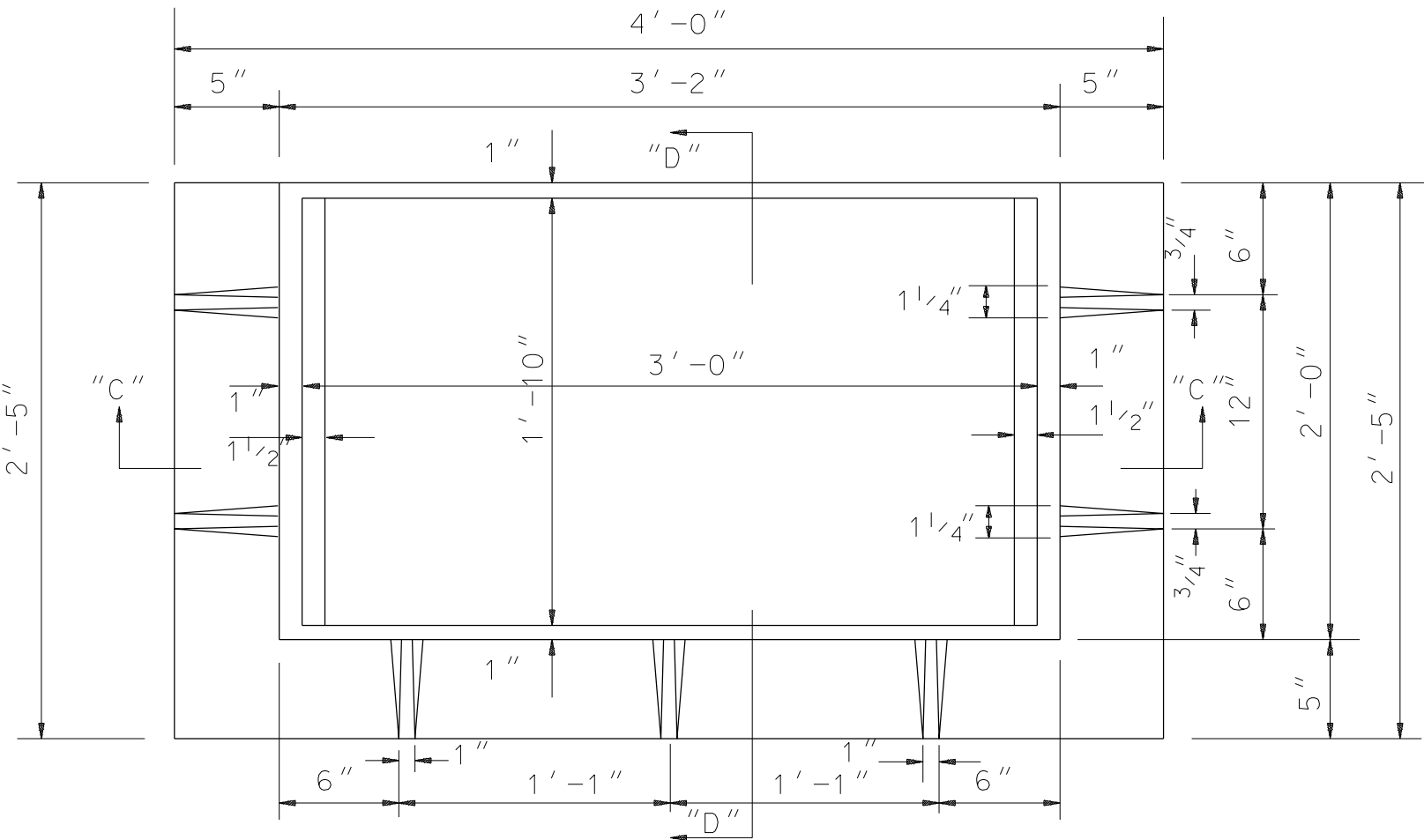


NOTE: DETAILS OF INLETS SHOWN ABOVE ARE COMPLETE STANDARD INLETS SHOWING REQUIRED DEPTH OF INLETS FOR 18" THROUGH 30" PIPE. INLET DEPTH FOR A 15" PIPE SHALL BE THE SAME AS THAT FOR AN 18" PIPE.

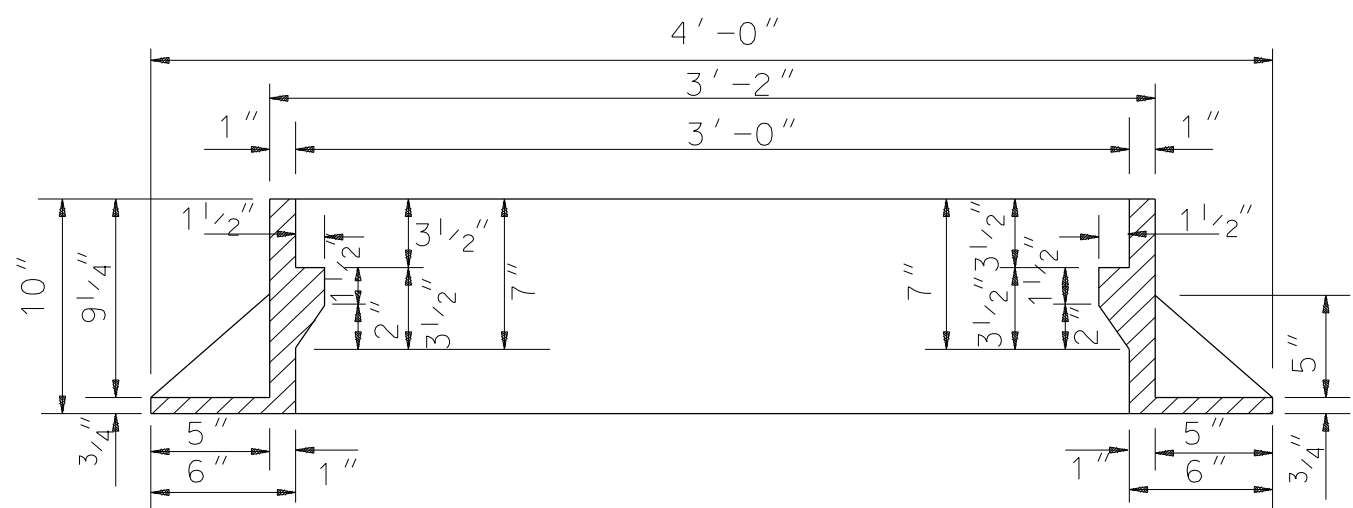


| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
|--|--|--|
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| <div>REVISIONS</div> <div>1. Added to CAD on 05-05-00 by J.F.T.</div> <div>2. Deleted 4" Type F curb & Replaced with Type N curb 06-27-02 by J.F.T.</div> <div>3. Added expanded PAY FOR INLETS on 03-30-09 by W.W.A.</div> <div>4. Clarified Working Point (W.P.) on Enlarged Detail 'CC' on 08-05-16 by J.F.T.</div> | | |
| <div>ALABAMA DEPARTMENT OF TRANSPORTATION</div> <div>1409 COLISEUM BOULEVARD</div> <div>MONTGOMERY, AL 36130-3050</div> | | |
| DESIGN BUREAU SPECIAL DRAWING DETAILS OF CURB INLET TYPE E FOR USE WITH TYPE N CURB OR COMBINATION CURB & GUTTER TYPE C | | |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: 7-31-85 | | INDEX NO I-621-E (SHEET 1 OF 3) 62118 |

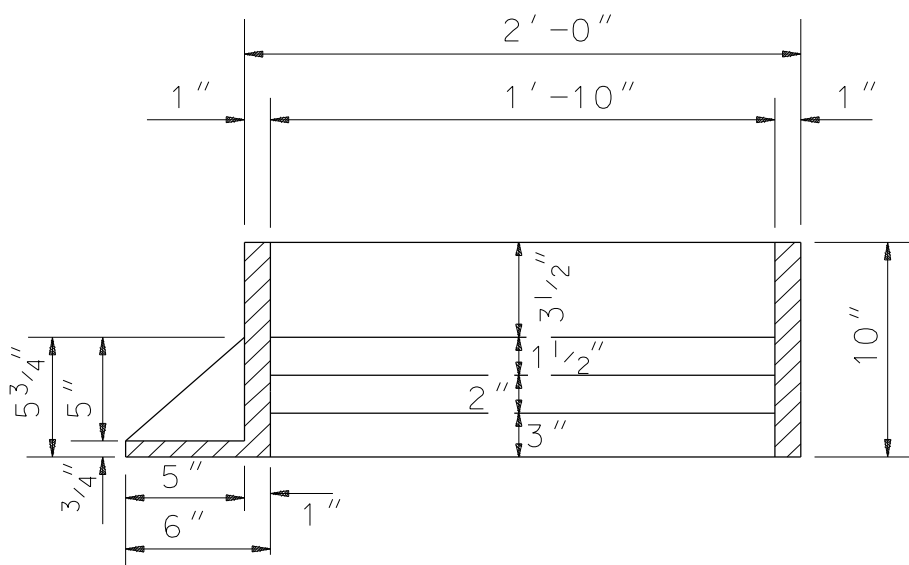
NOT TO SCALE



PLAN VIEW OF CAST FRAME



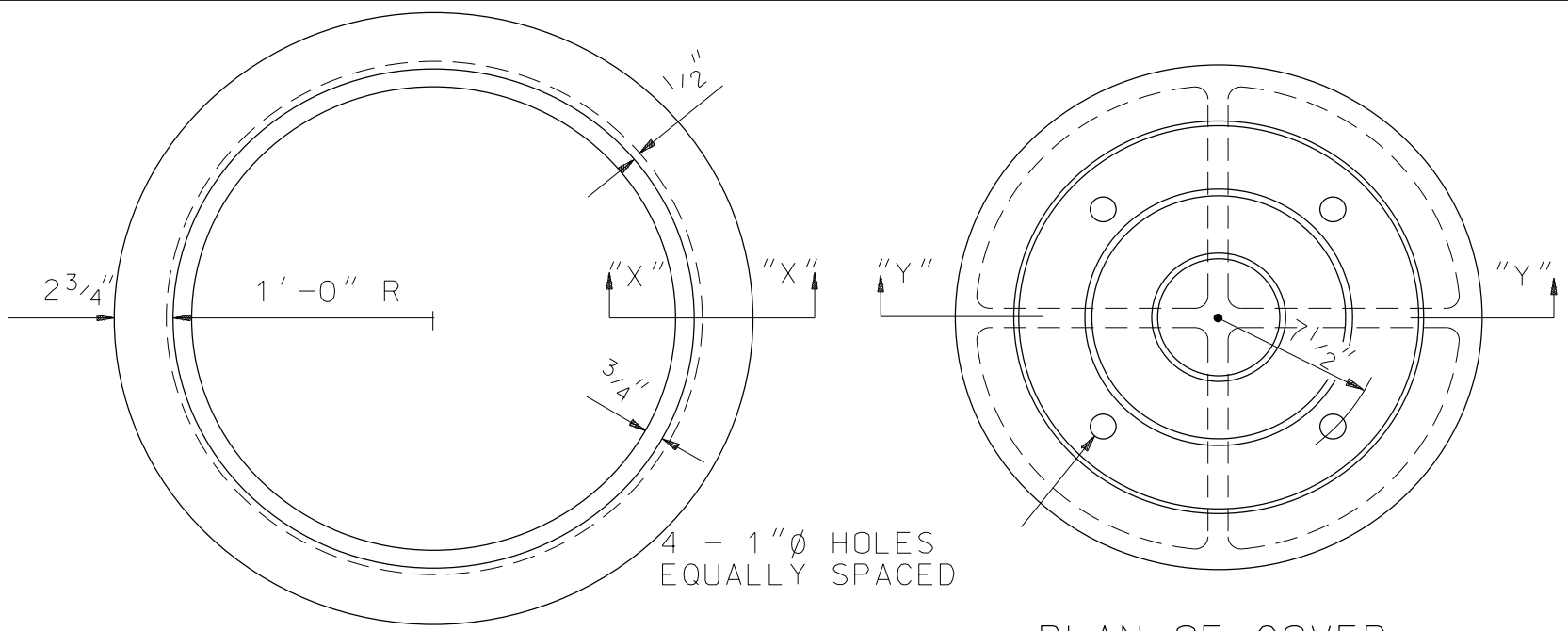
SECTION "CC"



SECTION "DD"

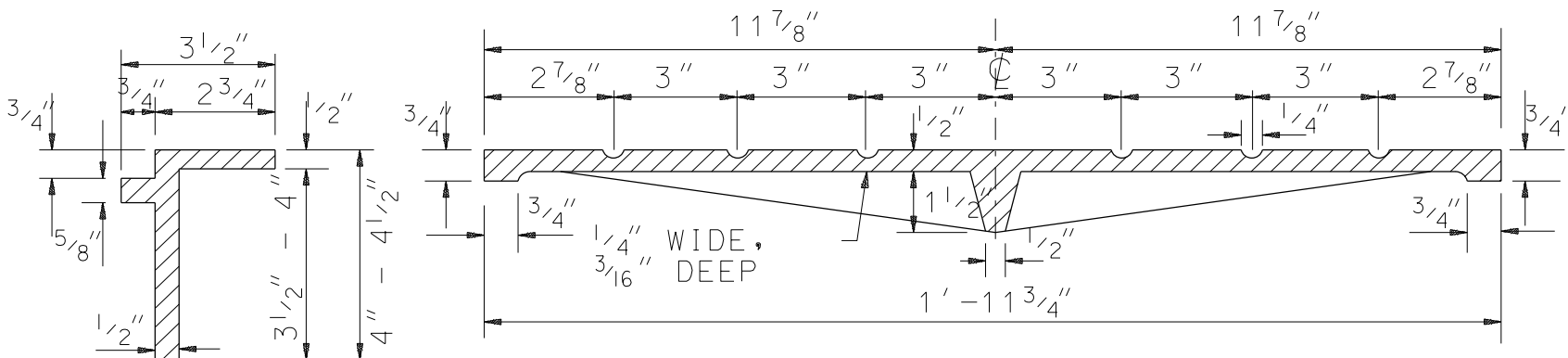
DETAILS FOR CAST DUCTILE IRON OR MALLEABLE IRON GRATE SEAT

WEIGHT OF GRATE SEAT= APPROX. 506 POUNDS



PLAN OF RING

PLAN OF COVER



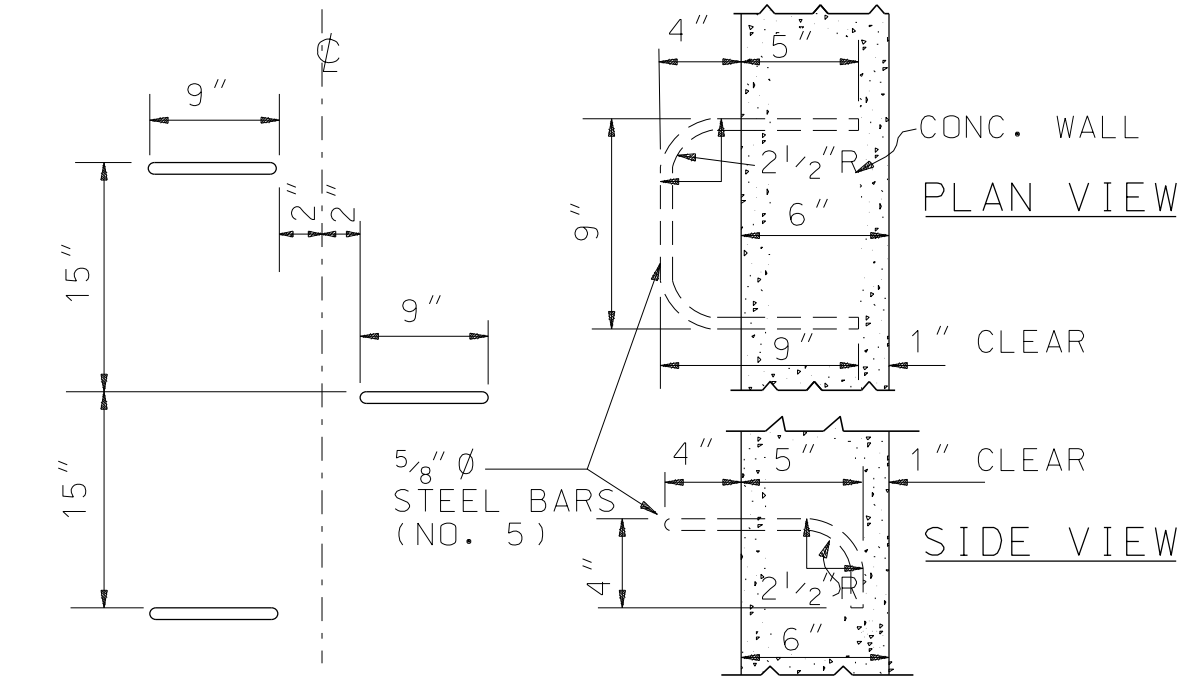
SECTION "XX"

APPROX WEIGHT OF CASTINGS
CAST IRON RING - 75 POUNDS
CAST IRON COVER - 61 POUNDS

MANHOLE CASTINGS

MANHOLE COVERS AND RING FOR INLETS MAY BE
CONSTRUCTED OF DUCTILE IRON OR GRAY IRON

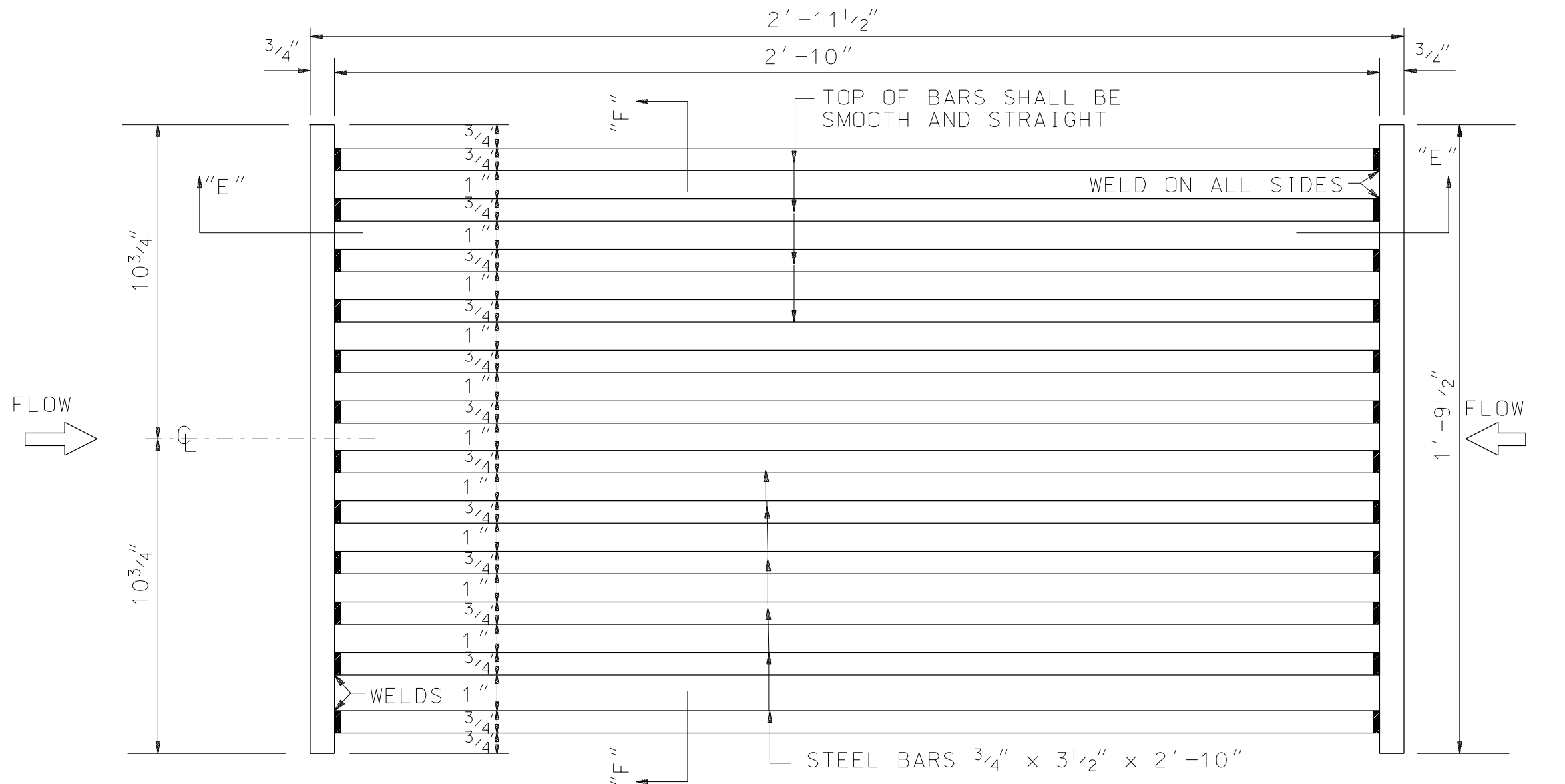
NOTE: A MINIMUM OF THREE (3) 5/8" Ø STEEL LADDER BARS
ARE REQUIRED IN ALL INLETS WHERE INTERIOR DEPTH IS
4'-0" OR GREATER. NUMBER AND LOCATION OF LADDER RE-
QUIRED IN INLETS TO BE AS DIRECTED BY THE ENGINEER.
ALUMINUM OR POLYPROPYLENE STEPS MAY BE USED IN LIEU OF
STEEL IF APPROVED BY THE ENGINEER.



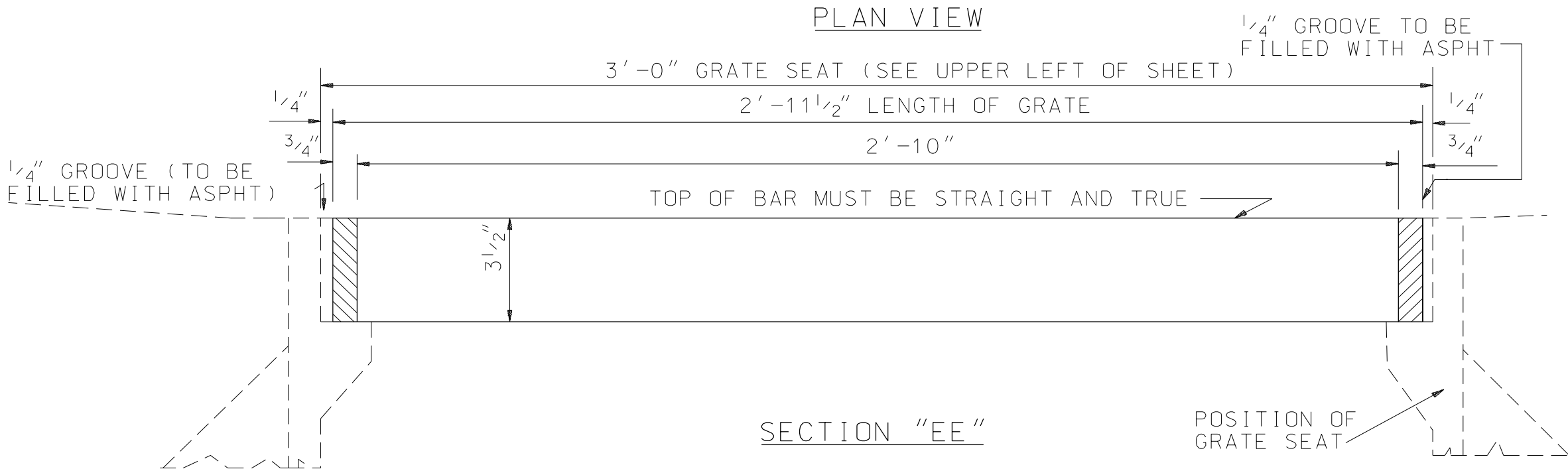
ARRANGEMENT OF
LADDER BARS

DETAILS

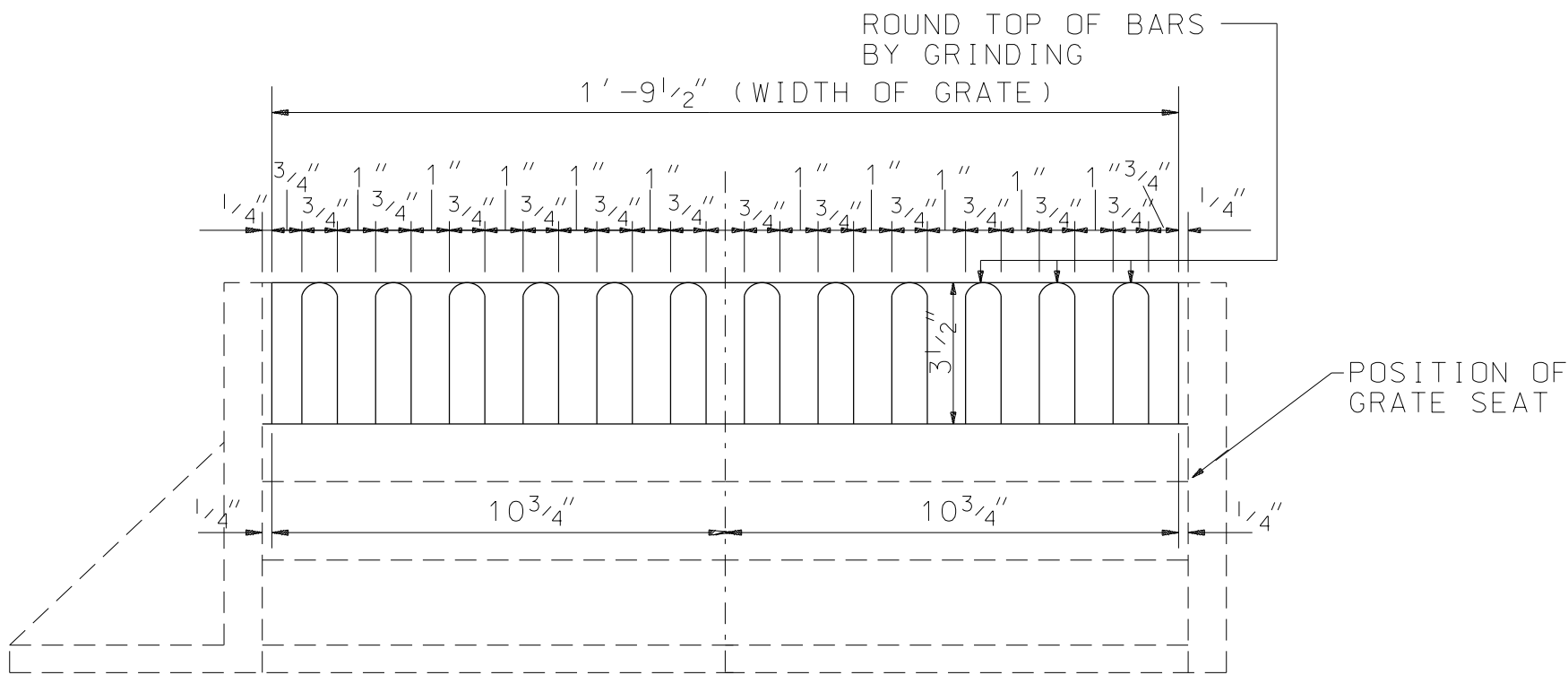
DETAILS OF LADDER BARS



PLAN VIEW

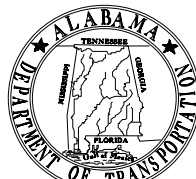


SECTION "EE"



SECTION "FF"

WELDED STEEL GRATE

| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
|--|--|---|
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| REVISIONS 1. Added to CADD on 09-15-99 by J.F.T. 2. Added Expanded General Notes on 03-30-09 by W.W.A. | |  <div>ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050</div> |
| DESIGN BUREAU SPECIAL DRAWING DETAILS OF CAST DUCTILE OR MALLEABLE IRON GRATE SEAT, CAST DUCTILE OR GRAY IRON COVER AND RING, WELDED STEEL GRATE, AND STEEL LADDER BARS FOR CURB INLETS TYPE E | | |
| Bureau Std Engr: <u>D.J.W.</u> DRAWN BY: _____ DATE DRAWN: <u>6-13-85</u> | | SPECIAL DRAWING NO I-621-E (SHEET 2 OF 3) |
| | | INDEX NO 62119 |

GENERAL NOTES

- AFTER WELDING AND ALL OTHER WORK ON WELDED GRATE IS COMPLETED THE GRATE SHALL BE CLEANED AND GALVANIZED.
- SEE SHEET No. 1 of 3, PAY FOR INLETS.

NOT TO SCALE



DETAILS OF WELDED FRAME



Enlarged View of Curved Vane



CURVED VANE GRATE & FRAME

GENERAL NOTES (GRATE AND FRAME)

1. WELDED STEEL GRATE SHALL BE CLEANED AND GALVANIZED AFTER WELDING ACCORDING TO ASTM A123.
2. WELDED STEEL GRATE SHALL BE IN ACCORDANCE WITH CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
3. ALL STEEL SHALL BE ASTM A-36.
4. SEE STD-DWG 1-621-E (SHEET 2 OF 3) FOR ADDITIONAL DETAILS OF GRATE SEAT.

--SPECIFICATIONS--

CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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DESIGN BUREAU SPECIAL DRAWING

DETAILS OF WELDED FRAME
No CIGS-20 & STEEL WELDED
CURVED VANE GRATE USED ON
CURB INLETS TYPE E

Bureau Std Engr: D.J.W.

DRAWN BY: _____ DATE DRAWN: 05-08-75

SPECIAL DRAWING NO.

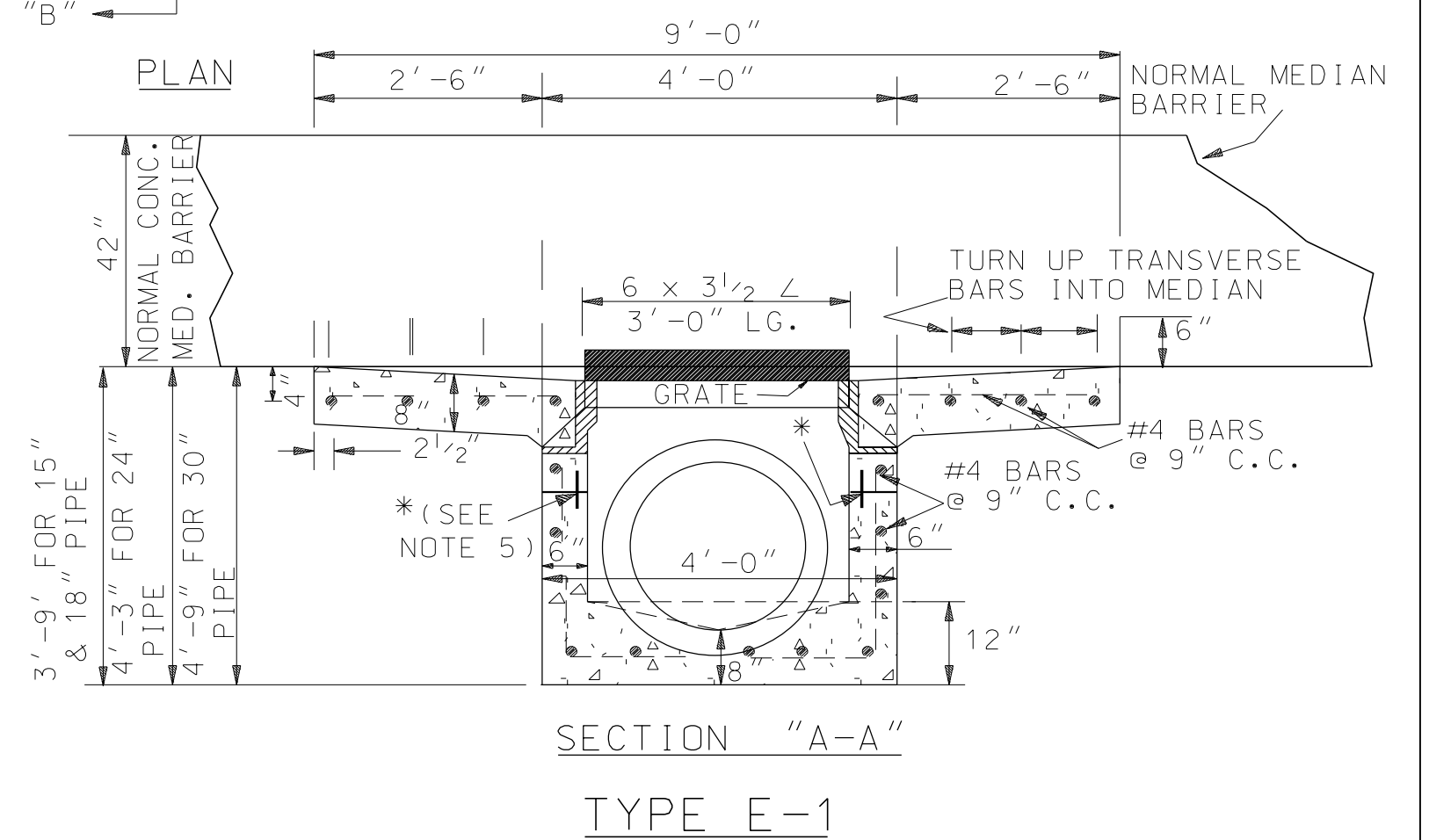
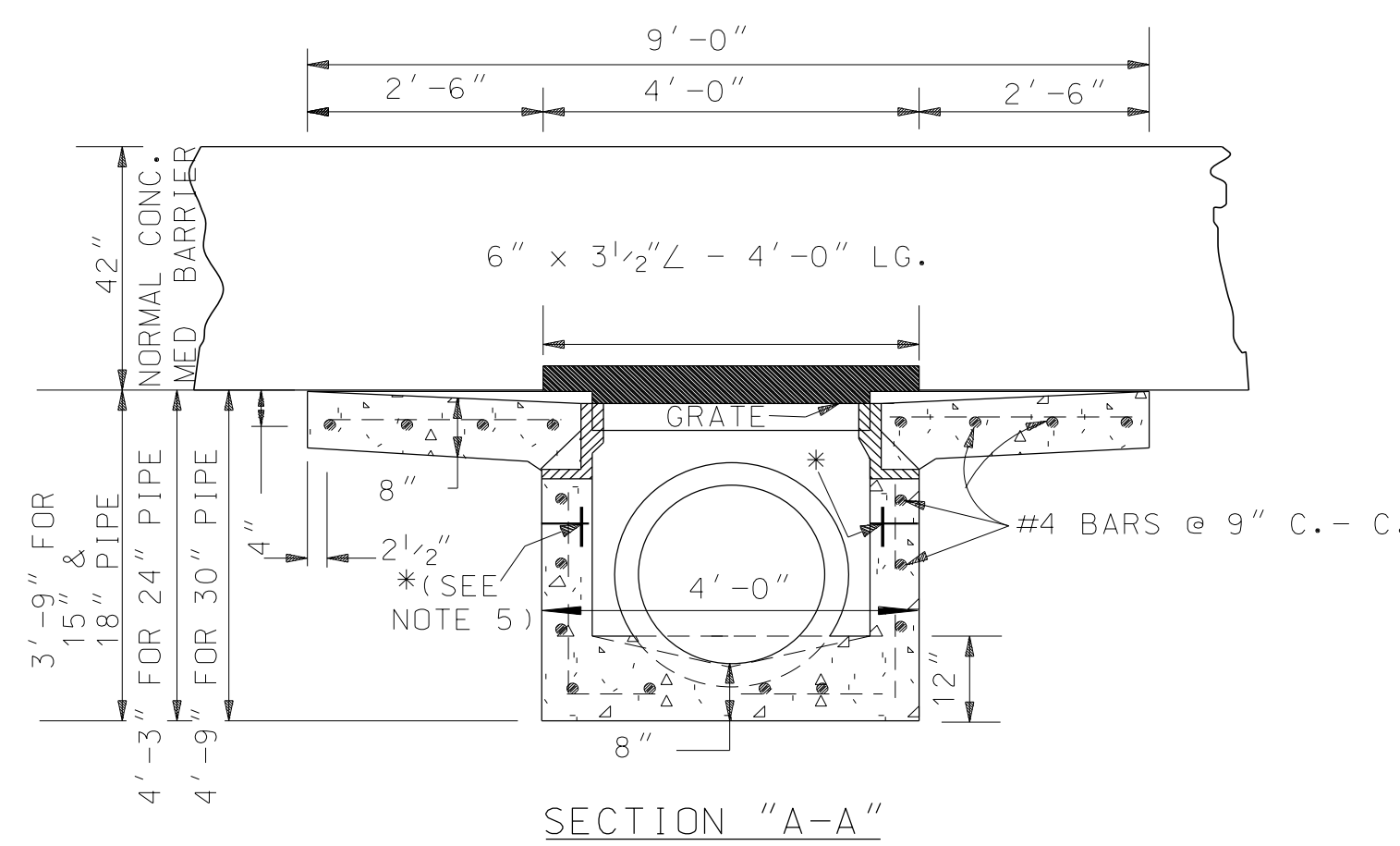
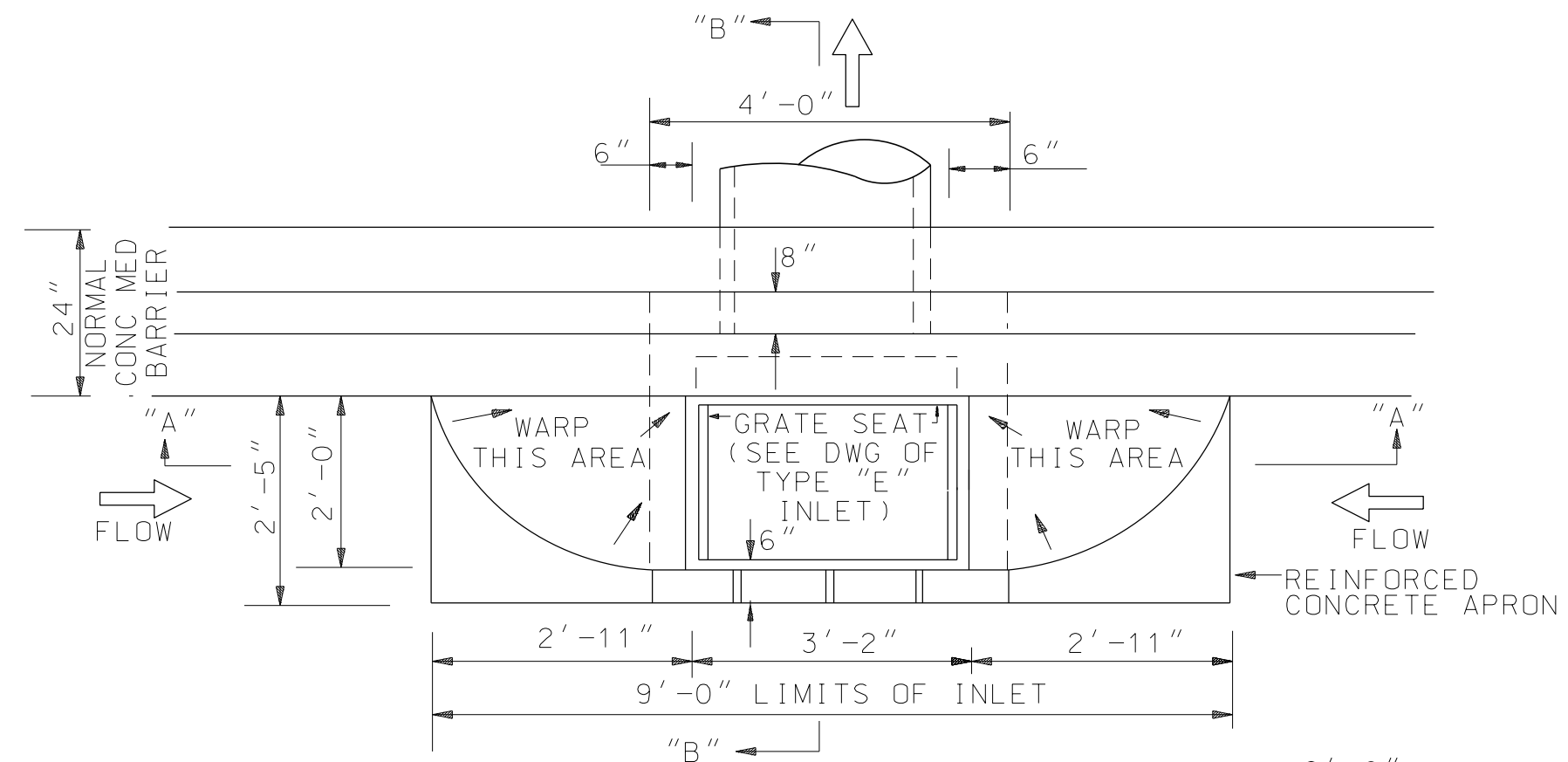
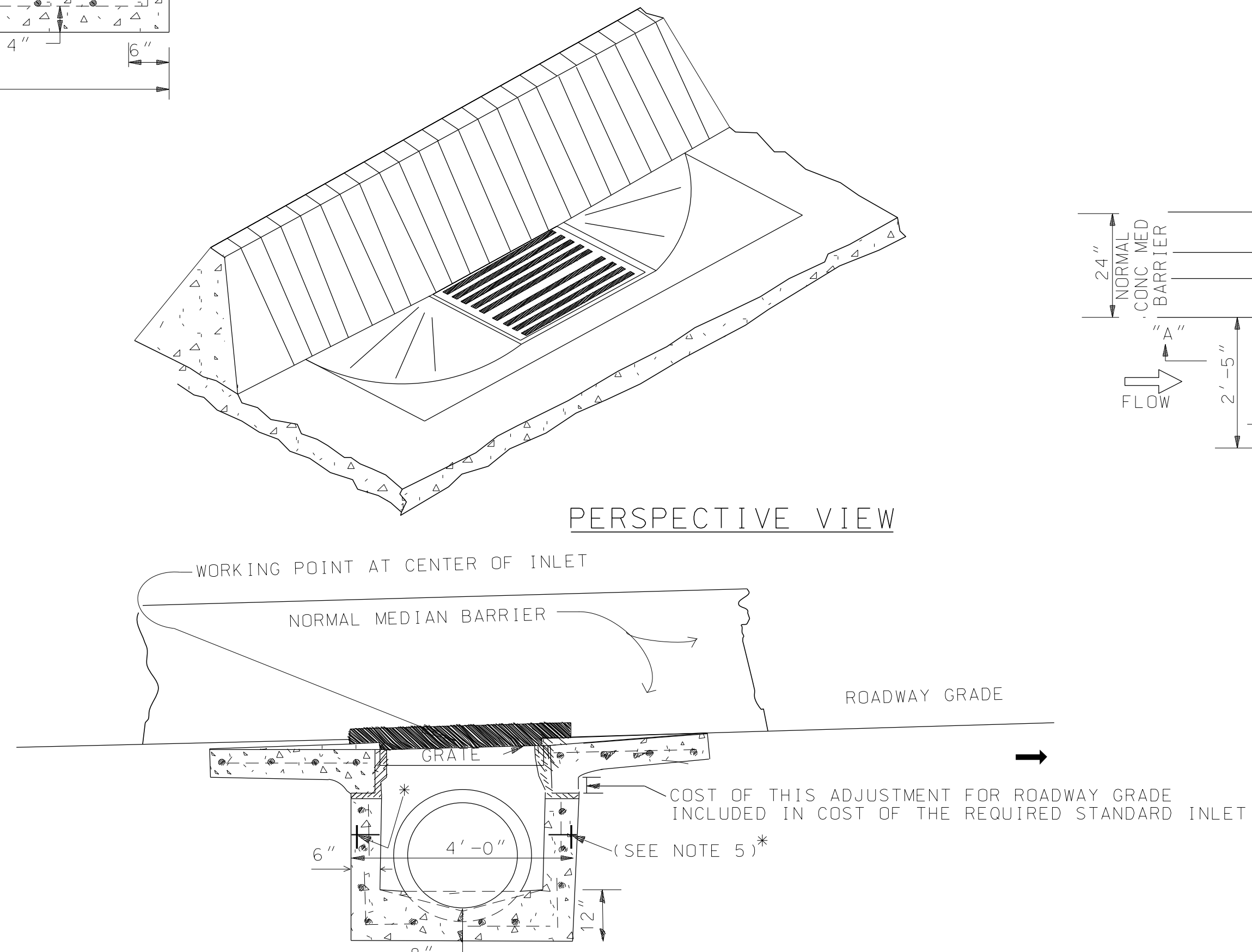
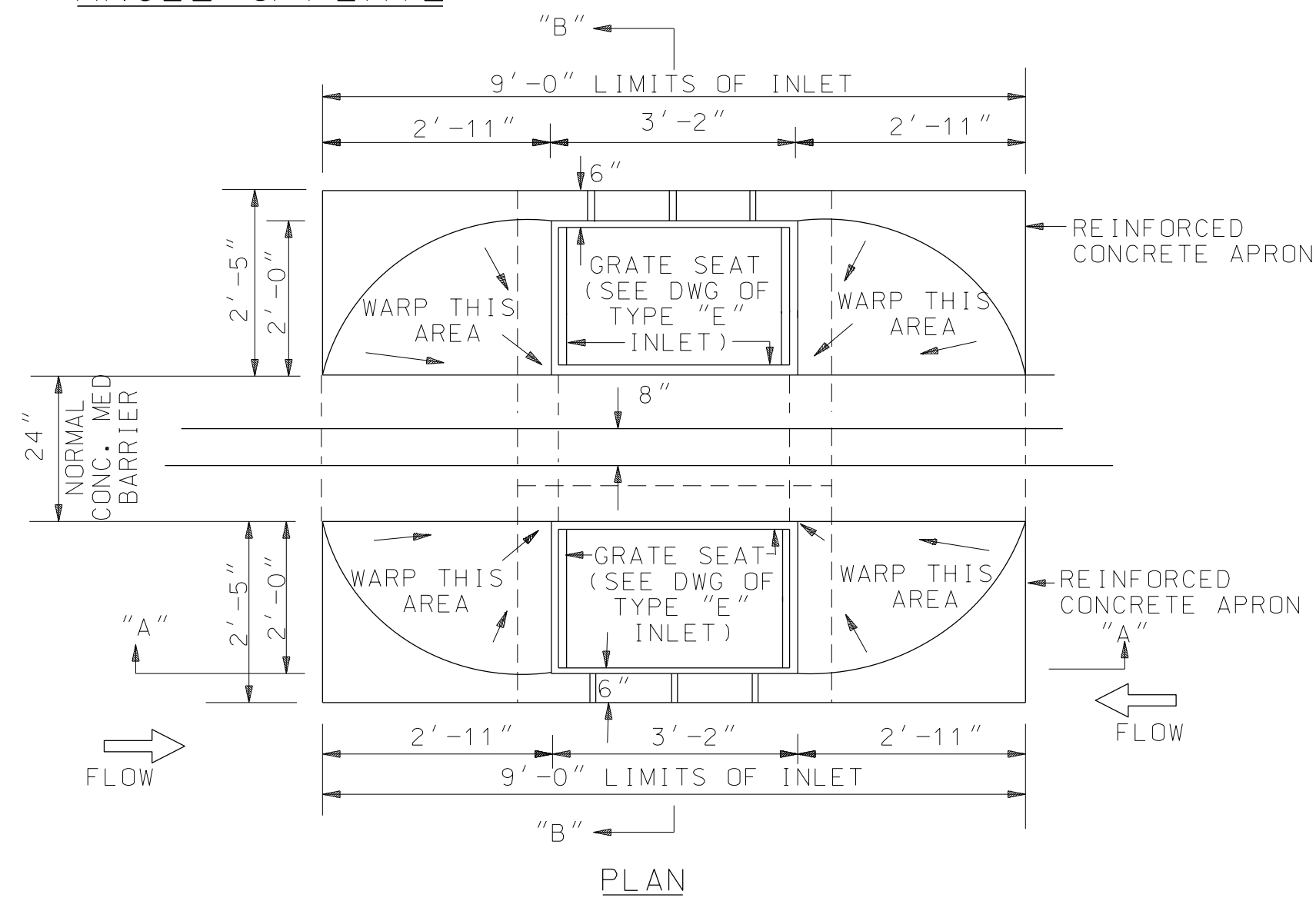
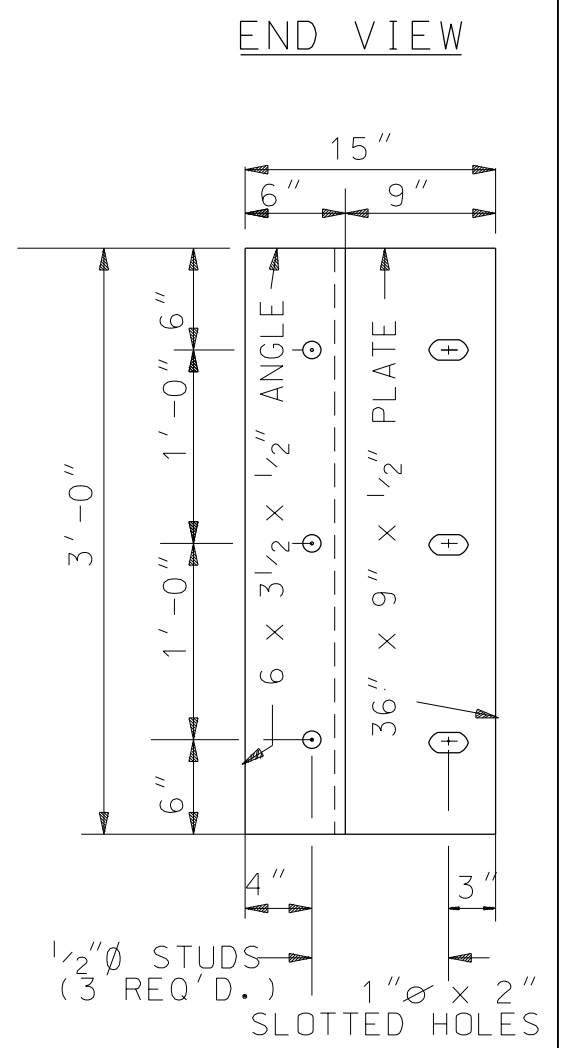
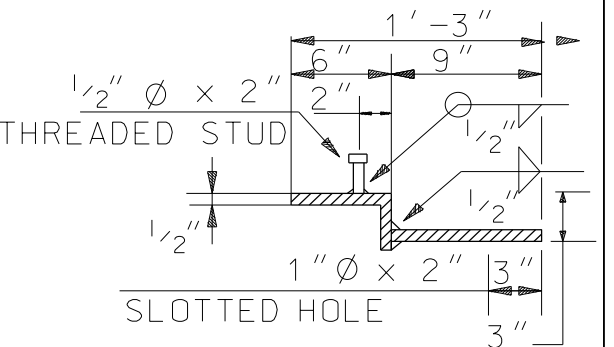
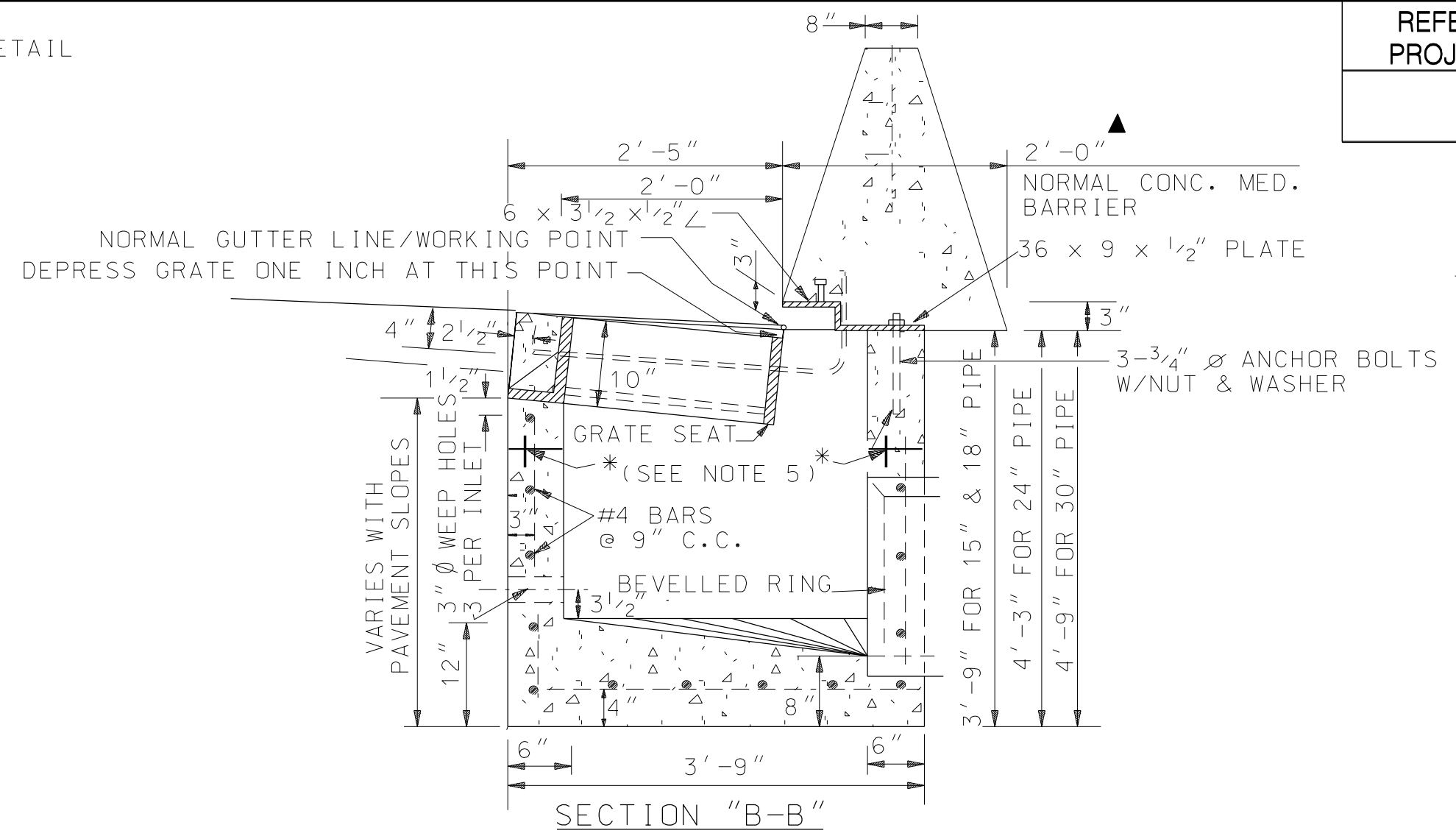
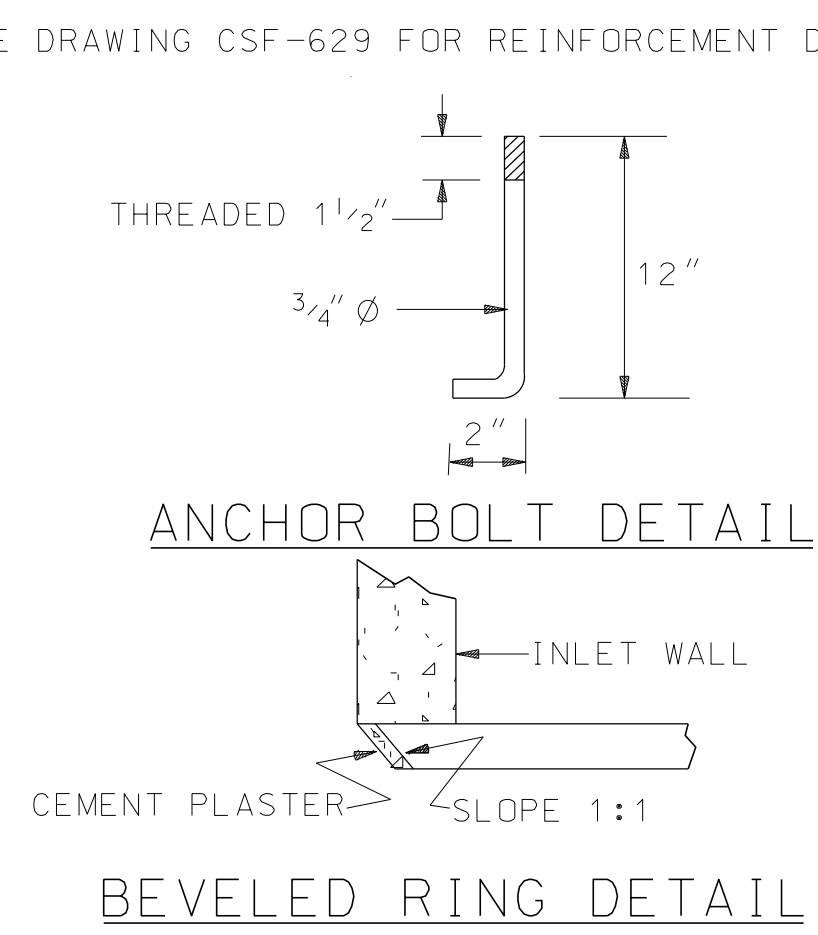
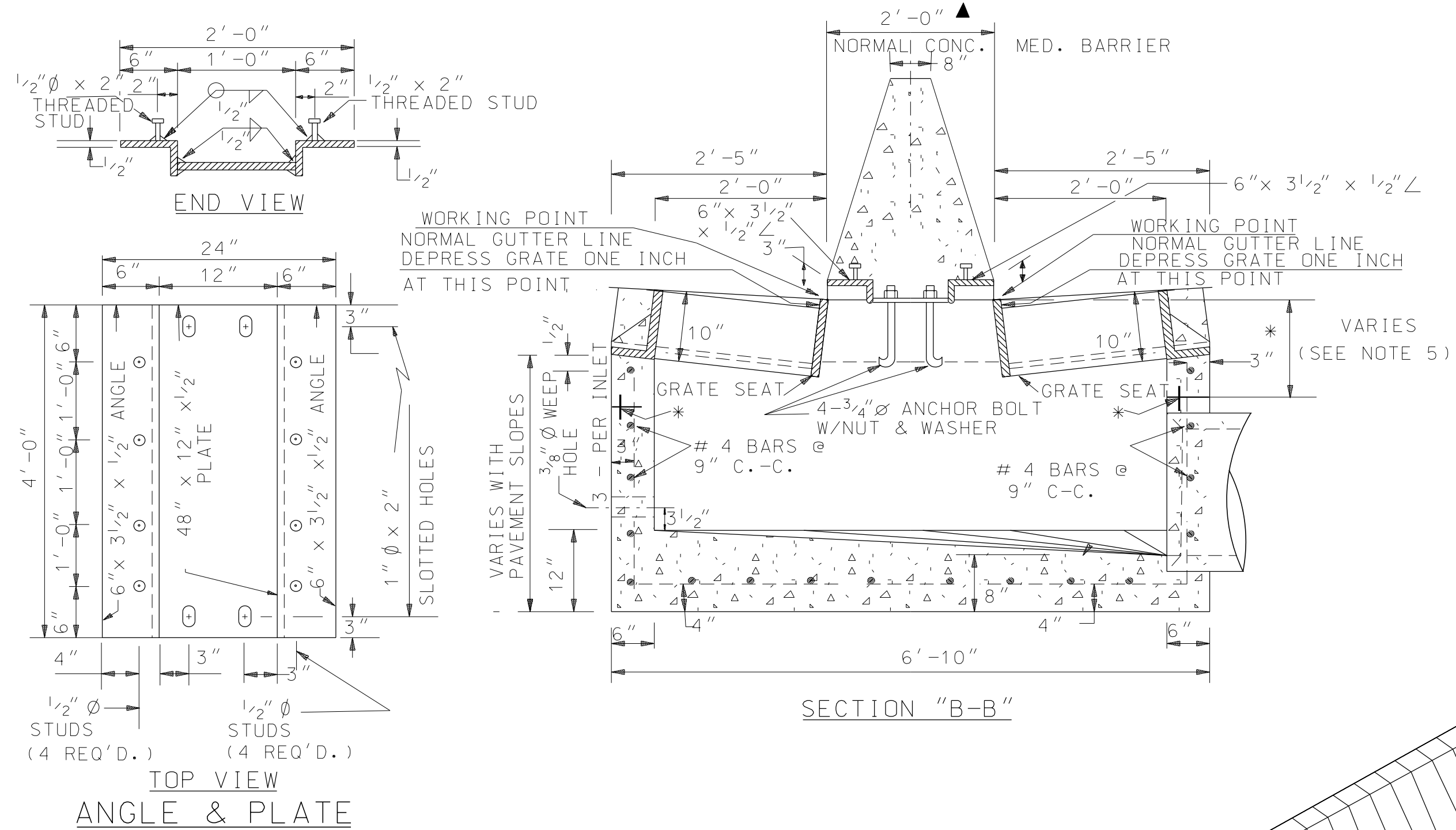
I-621-E (SHEET 3 OF 3)

INDEX NC

62120

NOT TO SCALE

| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |



--SPECIFICATIONS--

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OF TRANSPORTATION REPRESENTATIVE AUTHORIZED TO APPROVE THIS USE. ANYONE MAKING
UNAUTHORIZED USE OF THIS DRAWING MAY BE PROSECUTED TO THE FULLEST EXTENT OF THE LAW.

| REVISIONS | |
|-----------|--|
| 1. | Added to CADD on 12-02-99 by J.F.T. |
| 2. | Added Sec. 'AA' to match Roadway Grade by J.F.T. on 04-26-01. |
| 3. | Added Note No. 5 on 09-24-02 by J.F.T. |
| 4. | Revised Drawing to show CSF-42 on 11-28-2017 by J.F.T. |



ALABAMA DEPARTMENT
OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

DETAILS OF INLET TYPES EI AND E2 FOR USE WITH CSF-42 CONCRETE MEDIAN BARRIER

Bureau Std Engr: D.J.W.

DRAWN BY: _____ DATE DRAWN: 2-20-91

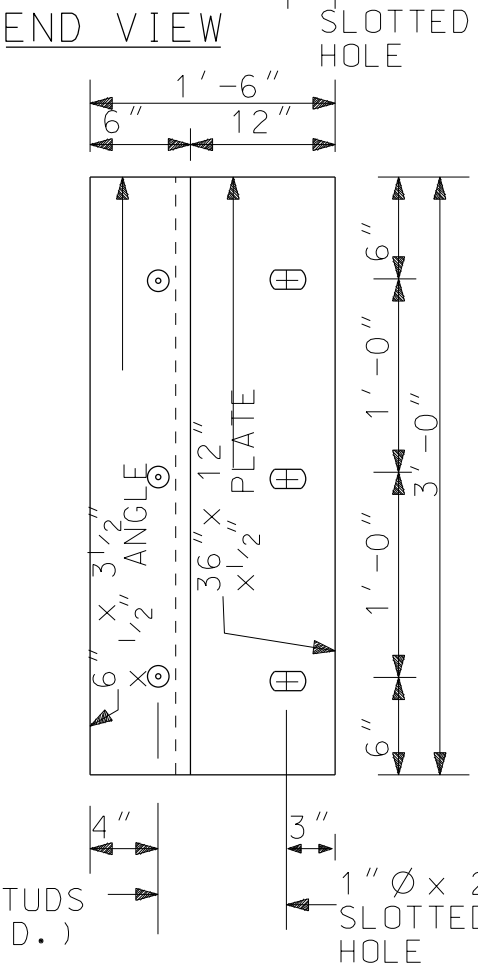
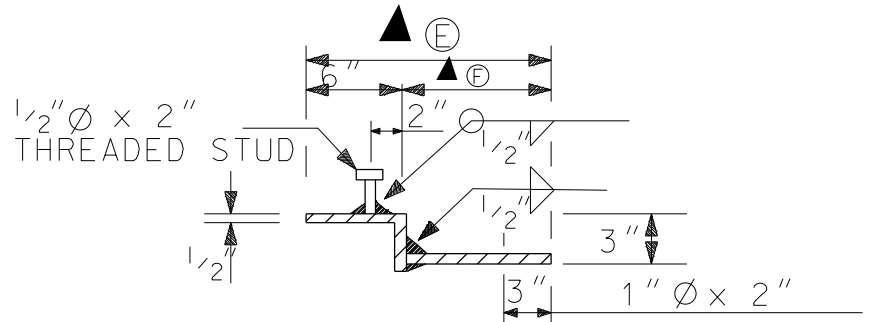
SPECIAL DRAWING NO

I-621-E1

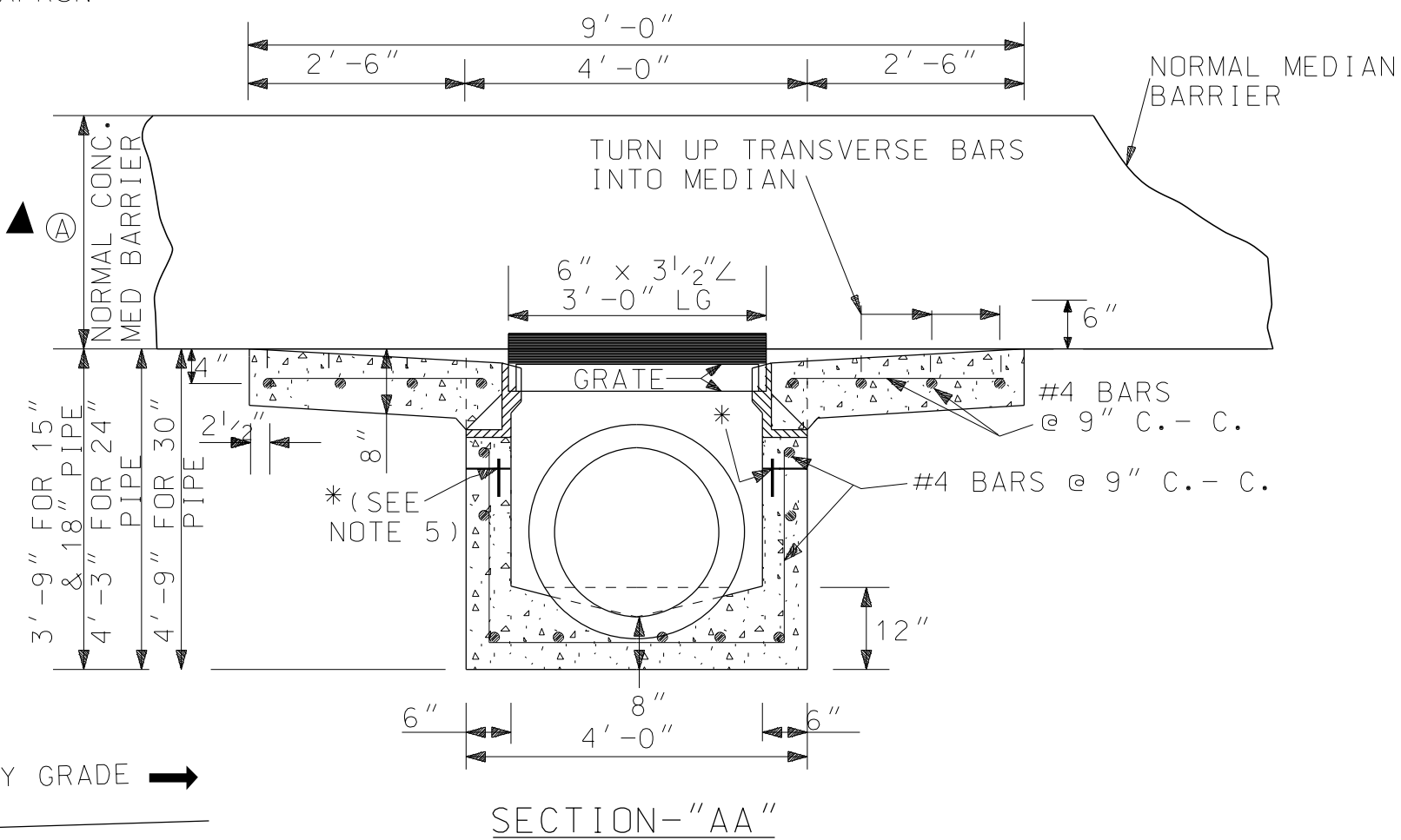
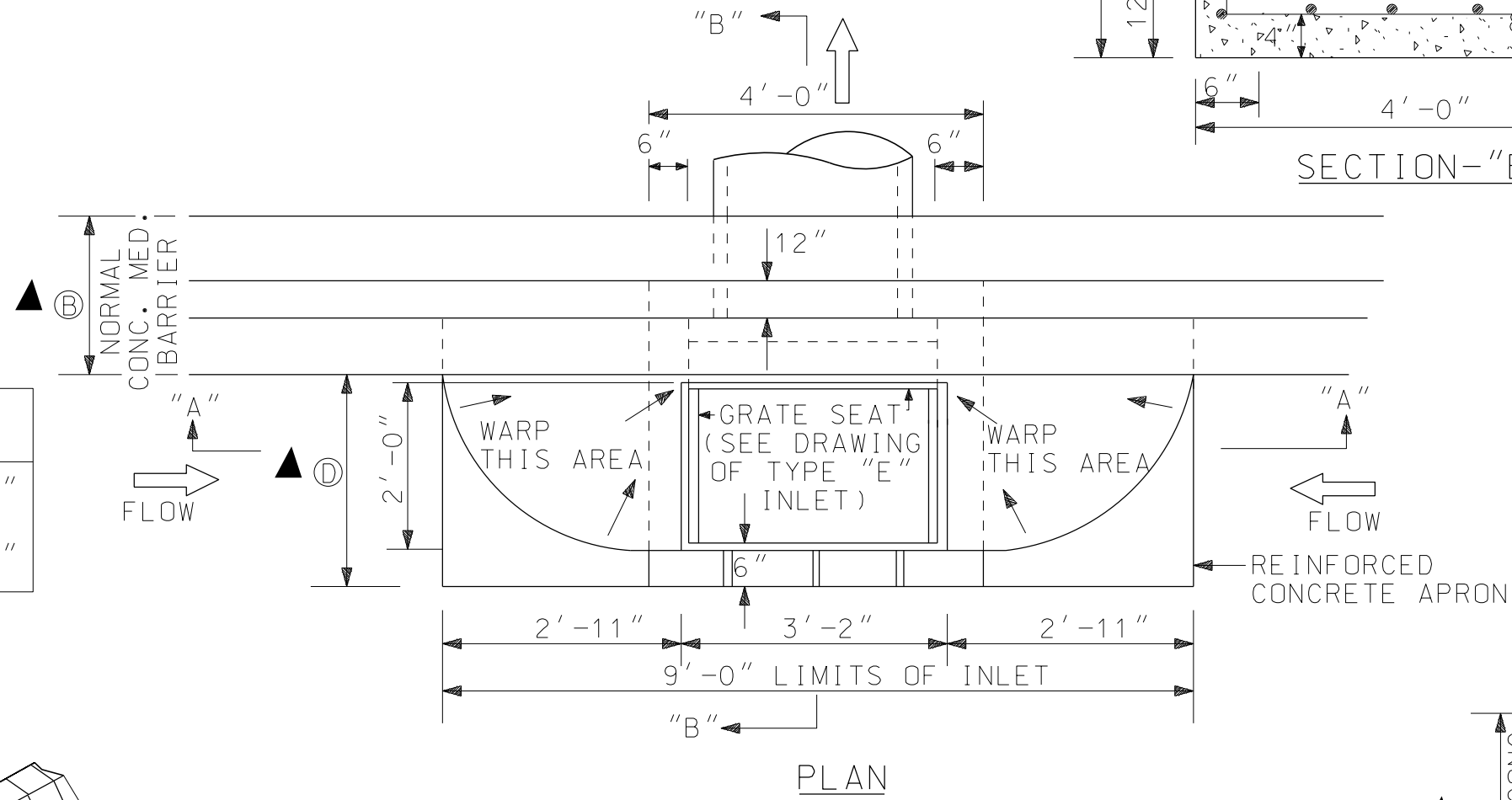
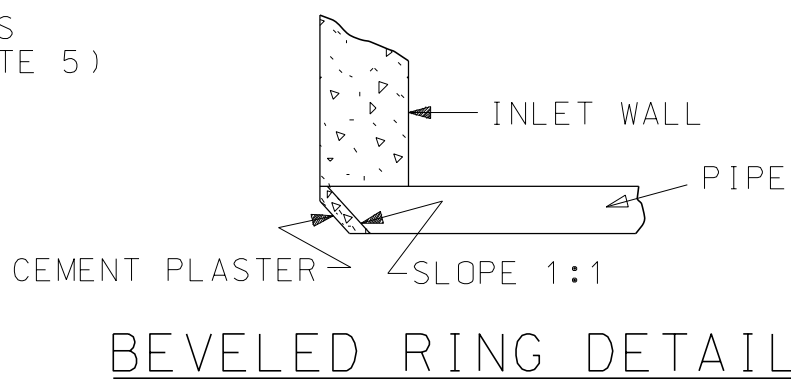
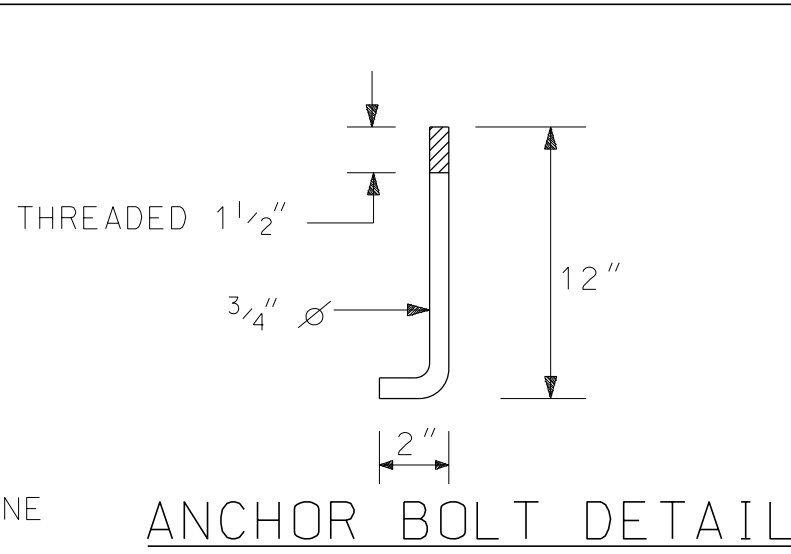
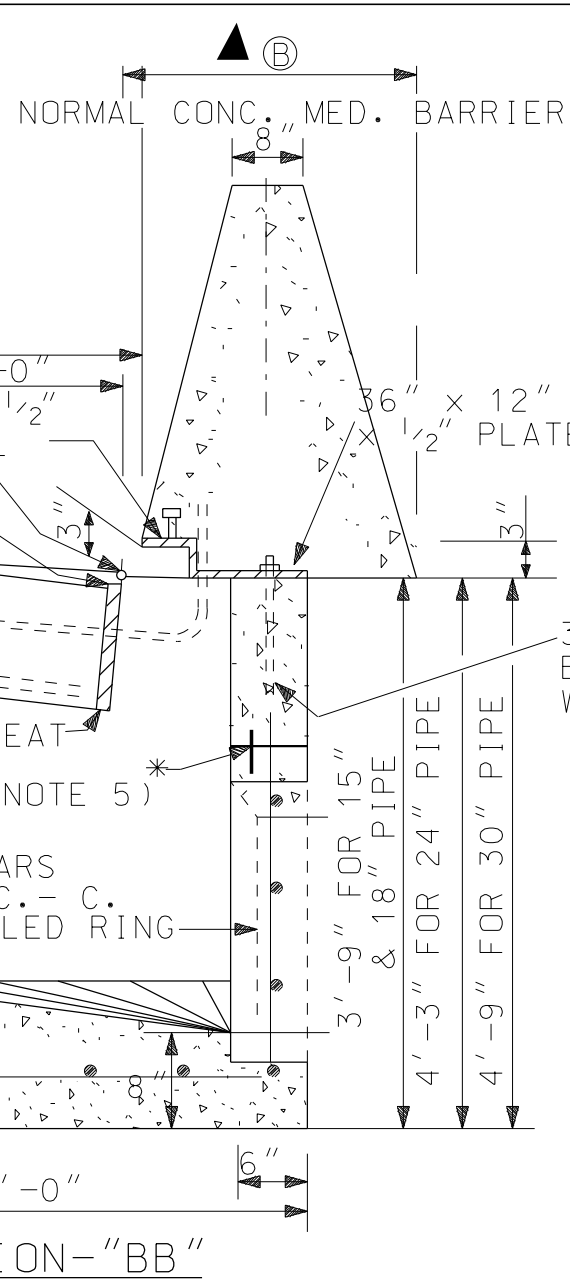
| | |
|----------|--|
| INDEX NO | |
|----------|--|

52123

NOT TO SCALE



TOP VIEW
ANGLE & PLATE



TYPE E-3

PERSPECTIVE VIEW

SECTION "A-A"
(TO MATCH ROADWAY GRADE)

TYPE E-3 or E-4

GENERAL NOTES

1. INLETS WILL BE PAID FOR PER EACH STANDARD INLET COMPLETE IN PLACE AS SHOWN ON DRAWING. A COMPLETE INLET SHALL BE CONSTRUCTED TO DEPTHS SHOWN FOR 15"-30" PIPE. THE DEPTHS SHALL BE TAKEN FROM TOP OF INLET TO BOTTOM OF BOX. PAYMENT SHALL INCLUDE COST OF GRATE, SEAT, ANGLE AND PLATE ASSEMBLY. IF FOUND NECESSARY DURING CONSTRUCTION TO CARRY AN INLET TO A GREATER DEPTH THAN SHOWN, THE CONTRACTOR WILL BE PAID FOR THIS EXTRA DEPTH BY INLET UNITS, MEASURED IN INCREMENTS OF (2) FEET.
2. INLET THROAT FORMED BY ANGLE IRON SHALL BE BLOCKED OFF WITH WOOD, POLYSTYRENE FORM OR A MATERIAL THAT WILL PREVENT INFILTRATION OF CONCRETE DURING POURING OF MEDIAN BARRIER.
3. THE INTENT OF THIS INLET DESIGN PROVIDES FOR THE UNINTERRUPTED PLACEMENT OF CONCRETE MEDIAN BARRIER. NO CONCRETE MEDIAN BARRIER WILL BE INCLUDED IN COST OF INLET.
4. MATERIAL ADJACENT TO INLET BOX AND BENEATH CONCRETE APRON SHALL BE COMPACTED TO REQUIRED DENSITY OF ADJOINING COMPACTED MATERIAL, PRIOR TO POURING CONCRETE APRON.
- *5. IF REQUIRED FOR TEMPORARY MEDIAN DRAINAGE DURING CONSTRUCTION, AND IF DIRECTED BY THE ENGINEER, A CONSTRUCTION JOINT WITH DOWELS SHALL BE CONSTRUCTED ON THESE INLETS. DOWELS SHALL BE #4 BARS, 12" LONG AT 9" C-C SPACING. THIS WORK INCLUDED IN THE COST OF THE INLET.
- ▲ 6. THE DIMENSIONS SHOWN ARE FOR THE CSF-48 AND CSF-54 BARRIERS BUILT USING THE OPTIONAL CONSTRUCTION JOINT AND 1" OFFSETS. IF THE OPTIONAL CONSTRUCTION JOINT IS NOT UTILIZED, THESE DIMENSIONS MUST BE ADJUSTED ACCORDINGLY. SEE DRAWINGS CONSTANT SLOPE FACE CONCRETE BARRIER (FLEXIBLE PAVEMENT), SPECIAL PROJECT DETAIL (SHEET 1 OF 2) AND CONSTANT SLOPE FACE CONCRETE BARRIER (RIGID PAVEMENT), SPECIAL PROJECT DETAIL (SHEET 2 OF 2) FOR MEDIAN BARRIER DETAILS.

--SPECIFICATIONS--
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REVISONS

1. Added to CADD on 09-24-99 by J.F.T.
2. Added Sec. 'AA' to match Roadway Grade by J.F.T. on 04-26-01.
3. Added Note No. 5 on 09-24-02 by J.F.T.
4. Added Sheet 1 of 2 on 08-24-07 by W.W.A.
5. Modified sheet to show CSF barrier 11-28-2017 by J.F.T.

ALABAMA DEPARTMENT OF TRANSPORTATION

1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

DETAILS OF INLET TYPE E3 AND E4 FOR USE WITH CSF-48 AND CSF-54 CONCRETE MEDIAN BARRIER

SPECIAL DRAWING NO

I-621-E3

INDEX NO

62126

Bureau Std Engr: D.J.W.

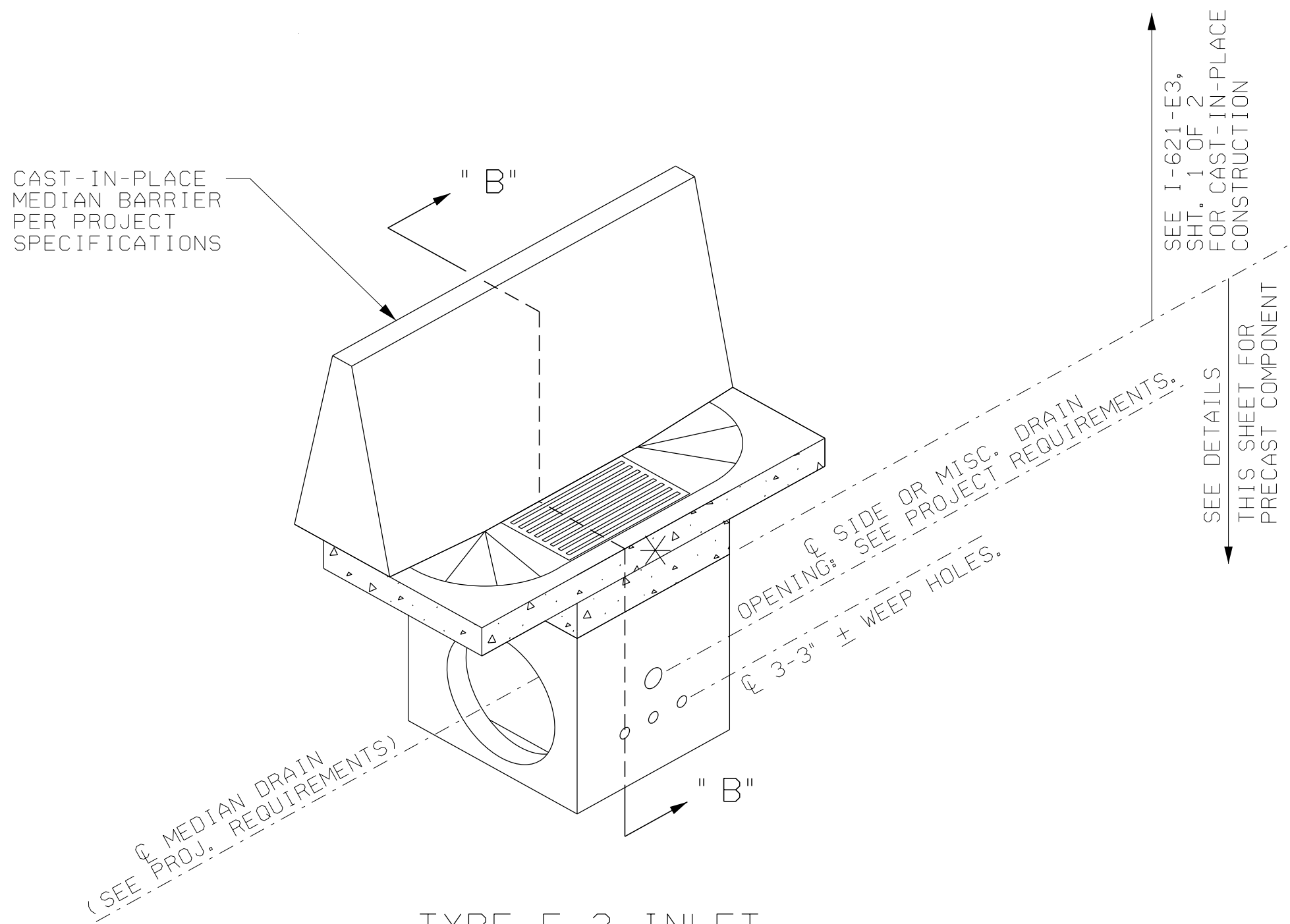
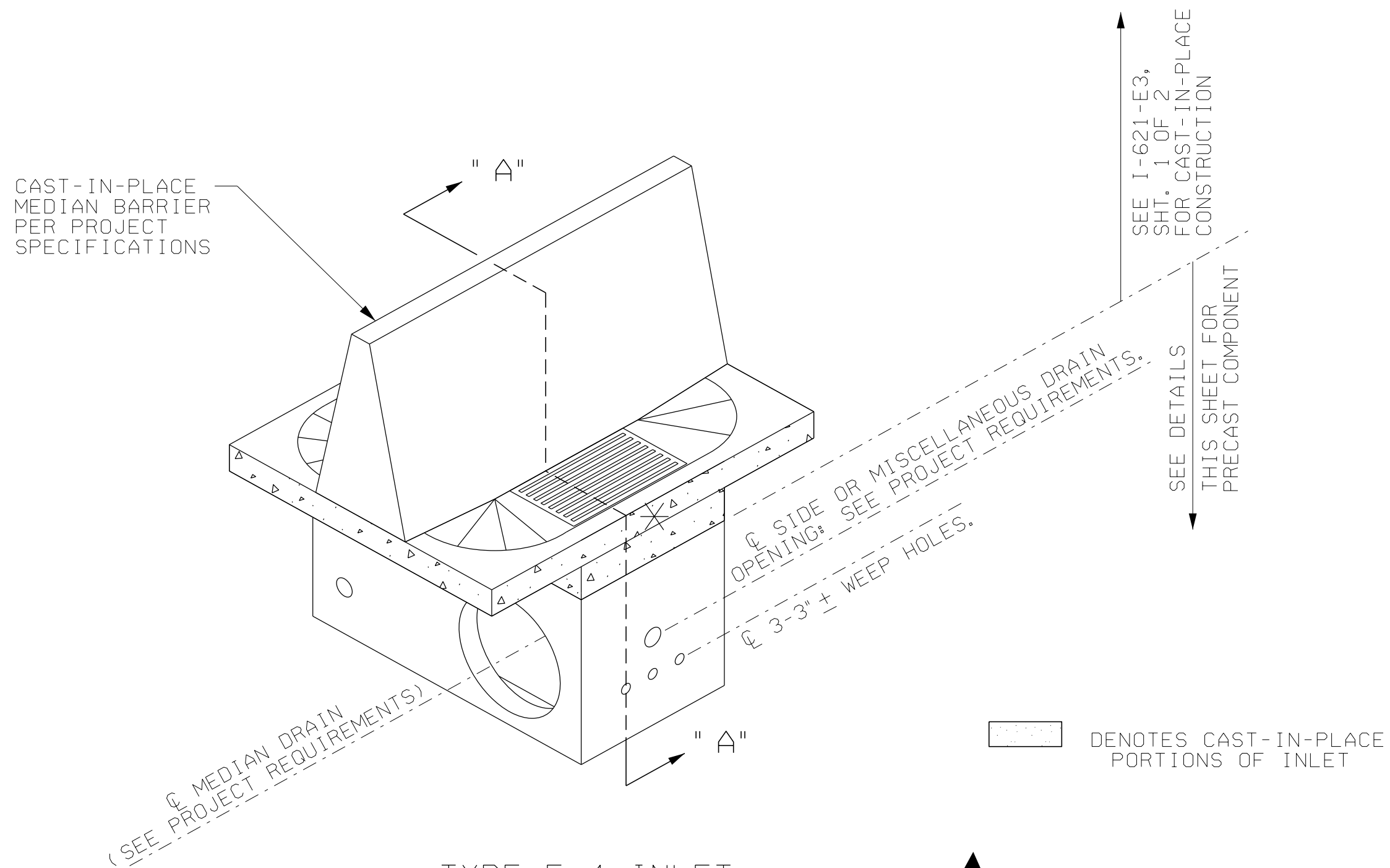
DRAWN BY: _____ DATE DRAWN: 7-01-91

NOT TO SCALE

| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |

GENERAL NOTES

1. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH: 4000 P.S.I.
2. REINFORCING STEEL: TO BE IN ACCORDANCE WITH THE SPECIFICATIONS. MINIMUM YIELD STRENGTH=60 K.S.I
3. SIZING AND LOCATION OF LIFTING DEVICES SHALL BE THE RESPONSIBILITY OF THE FABRICATOR IN ORDER TO ASSURE SAFETY AND BALANCED HANDLING DURING THE TRANSPORTATION AND INSTALLATION. IF LIFTING HOLES PASS COMPLETELY THROUGH WALL OR SLAB, HOLES SHALL BE SEALED BY FILLING WITH MORTAR AFTER INSTALLATION.
4. ALL PIPE OPENINGS IN PRECAST UNITS SHALL BE PRECAST.
5. INLETS WILL BE PAID FOR PER EACH STANDARD INLET COMPLETE AND IN PLACE AS SHOWN ON THE DRAWING. A COMPLETE INLET SHALL BE CONSTRUCTED TO DEPTHS SHOWN. FOR 15" -30" PIPE, THE DEPTHS SHALL BE TAKEN FROM TOP OF INLET TO BOTTOM OF BOX. PAYMENT SHALL INCLUDE THE COST OF GRATE, SEAT, ANGLE, AND PLATE ASSEMBLY. IF FOUND NECESSARY DURING CONSTRUCTION TO CARRY AN INLET TO A GREATER DEPTH THAN SHOWN, THE CONTRACTOR WILL BE PAID FOR THIS EXTRA DEPTH BY INLET UNITS MEASURED IN INCREMENTS OF TWO (2) FEET.
6. MATERIAL ADJACENT TO INLET BOX AND BENEATH CONCRETE APRON SHALL BE COMPACTED TO REQUIRED DENSITY OF ADJOINING COMPACTED MATERIAL PRIOR TO POURING CONCRETE APRON.
7. INLETS TO BE PAID AS E-3 OR E-4.
8. THE DIMENSIONS SHOWN ARE FOR THE CSF-48 AND CSF-54 BARRIERS BUILT USING THE OPTIONAL CONSTRUCTION JOINT AND 1' OFFSETS. IF THE OPTIONAL CONSTRUCTION JOINT IS NOT UTILIZED, THESE DIMENSIONS MUST BE ADJUSTED ACCORDINGLY. SEE DRAWINGS CONSTANT SLOPE FACE CONCRETE BARRIER (FLEXIBLE PAVEMENT), SPECIAL PROJECT DETAIL (SHEET 1 OF 2) AND CONSTANT SLOPE FACE CONCRETE BARRIER (RIGID PAVEMENT), SPECIAL PROJECT DETAIL (SHEET 2 OF 2) FOR MEDIAN BARRIER DETAILS.

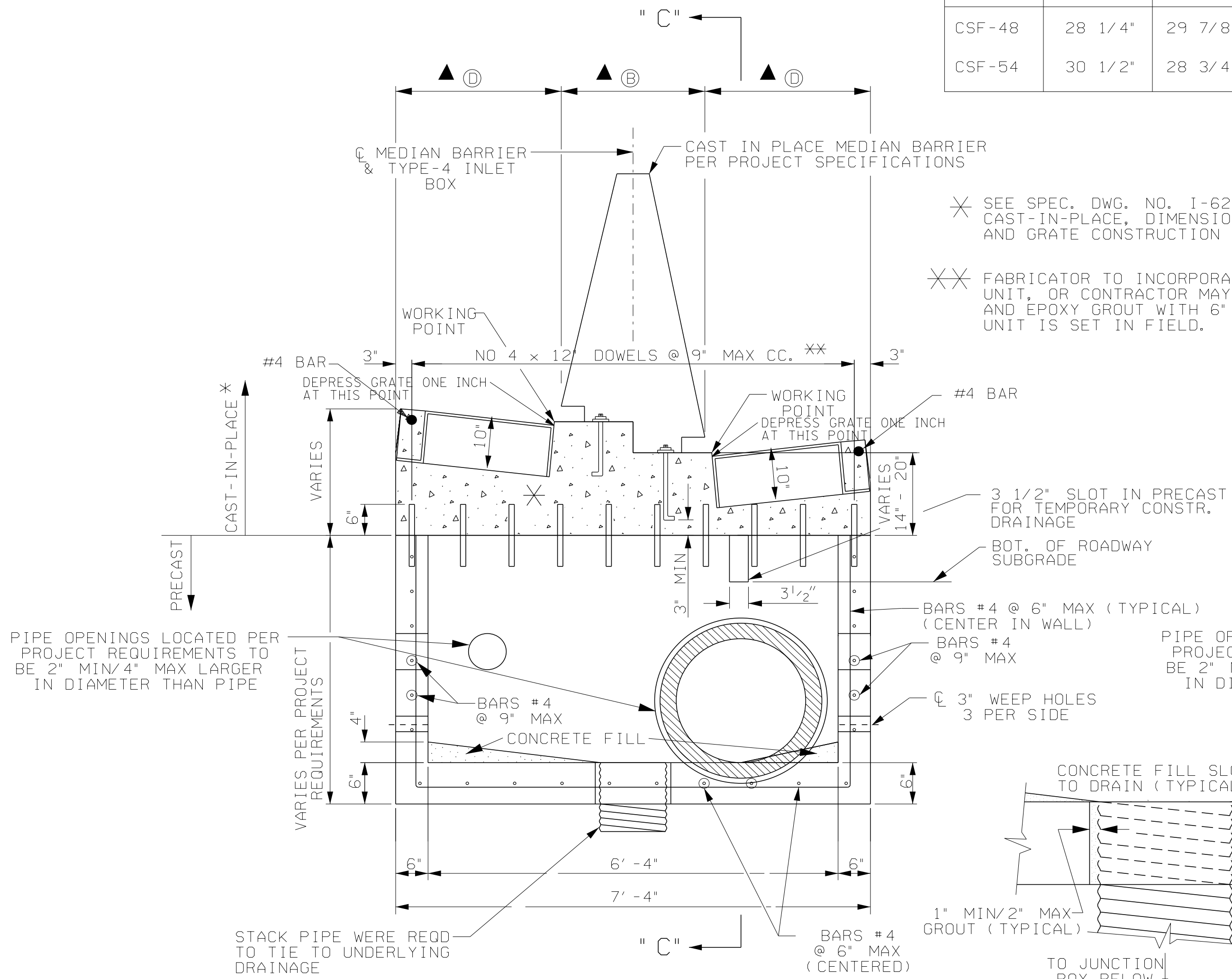


TYPE E-4 INLET

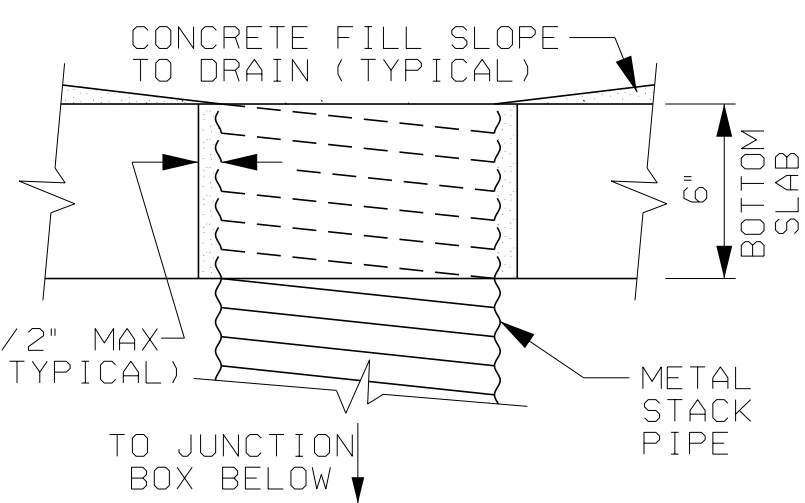
| BARRIER | Ⓑ | Ⓓ |
|---------|---------|---------|
| CSF-48 | 28 1/4" | 29 7/8" |
| CSF-54 | 30 1/2" | 28 3/4" |

X SEE SPEC. DWG. NO. I-621-E3 1 OF 2 FOR
CAST-IN-PLACE, DIMENSIONS, REINFORCEMENT
AND GRATE CONSTRUCTION DETAILS

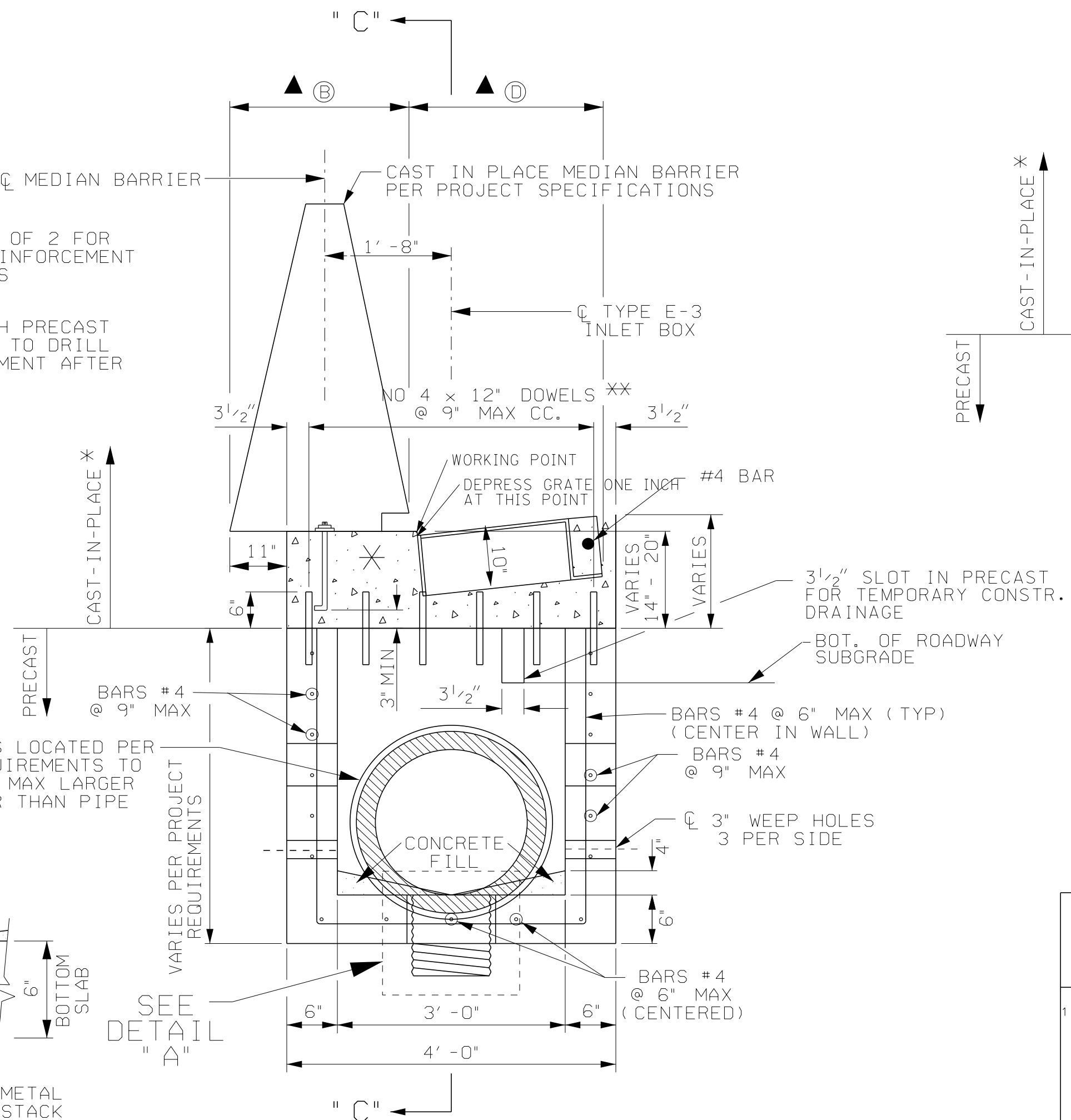
✕✕ FABRICATOR TO INCORPORATE WITH PRECAST
UNIT, OR CONTRACTOR MAY ELECT TO DRILL
AND EPOXY GROUT WITH 6" EMBEDMENT AFTER
UNIT IS SET IN FIELD.



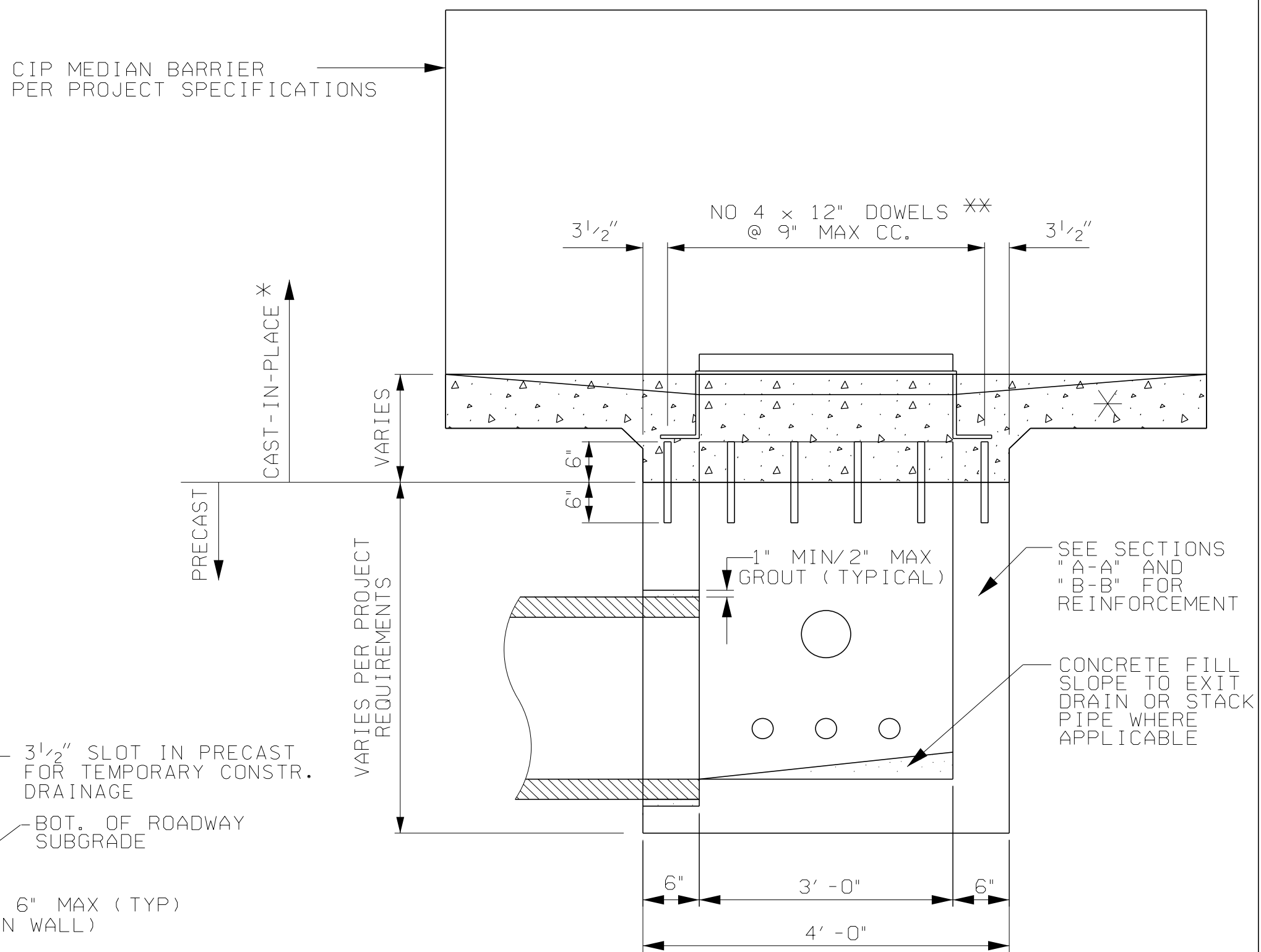
SECTION "A-A" : TYPE E-4 INLET



DETAIL "A": STACK PIPE
PENETRATION DETAIL



SECTION " B-B" : TYPE E-3 INLET



SECTION " C-C"
(SHOWN WITHOUT STACK PIPE)

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| REVISIONS | |
|-----------|--|
| 1. | Modified sheet to show CSF barrier 11-28-2017 by J.F.T. |



ALABAMA DEPARTMENT
OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

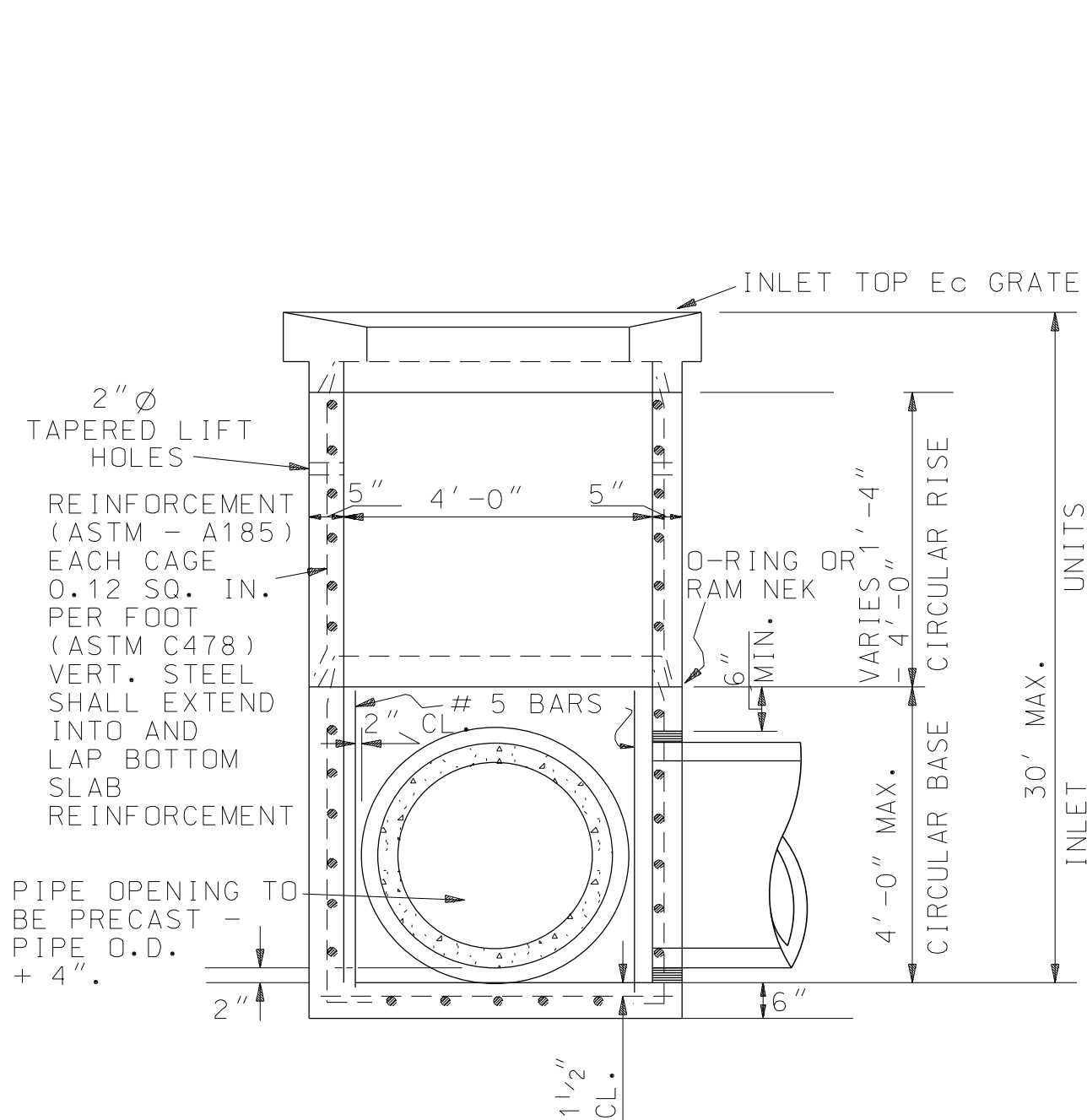
DESIGN BUREAU SPECIAL DRAWING
DETAILS OF PRECAST INLET TYPE E3
AND E4 FOR USE WITH CSF-48 AND
CSF-54 CONCRETE MEDIAN BARRIER

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: _____

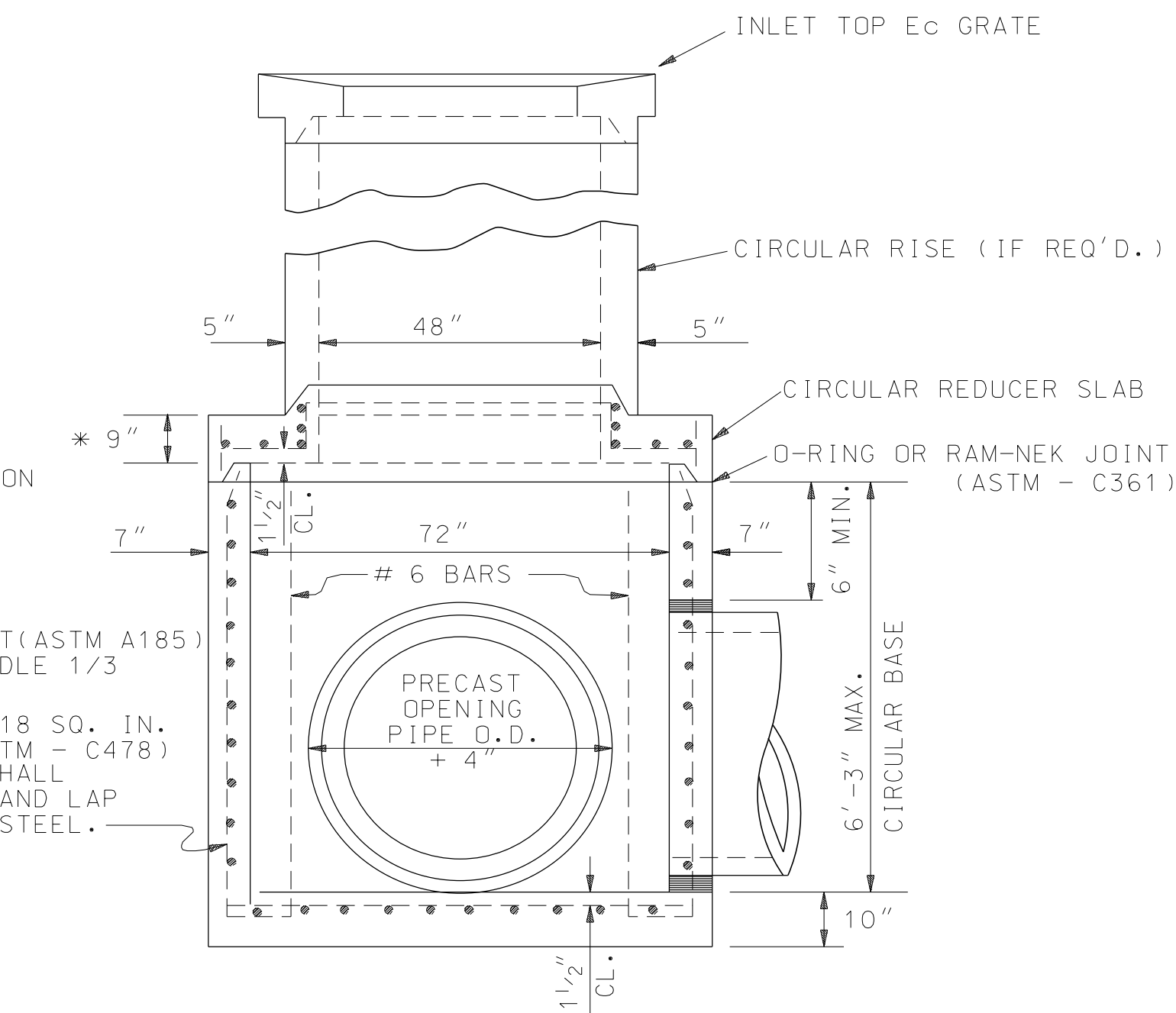
SPECIAL DRAWING NO.
I-621-E3

INDEX NO
62127

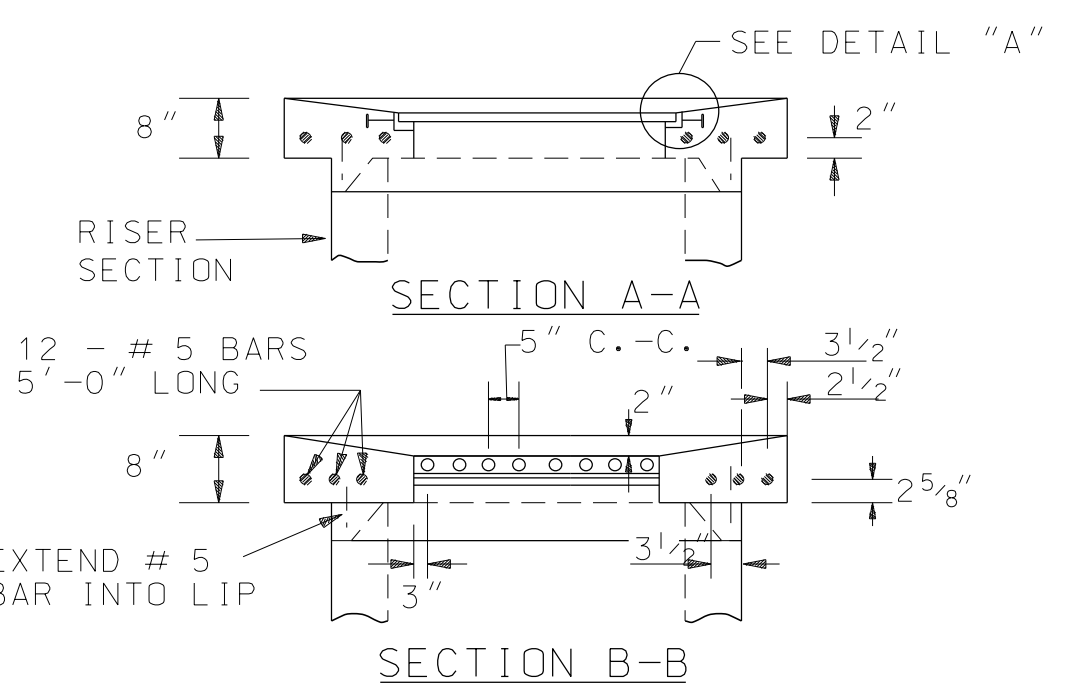
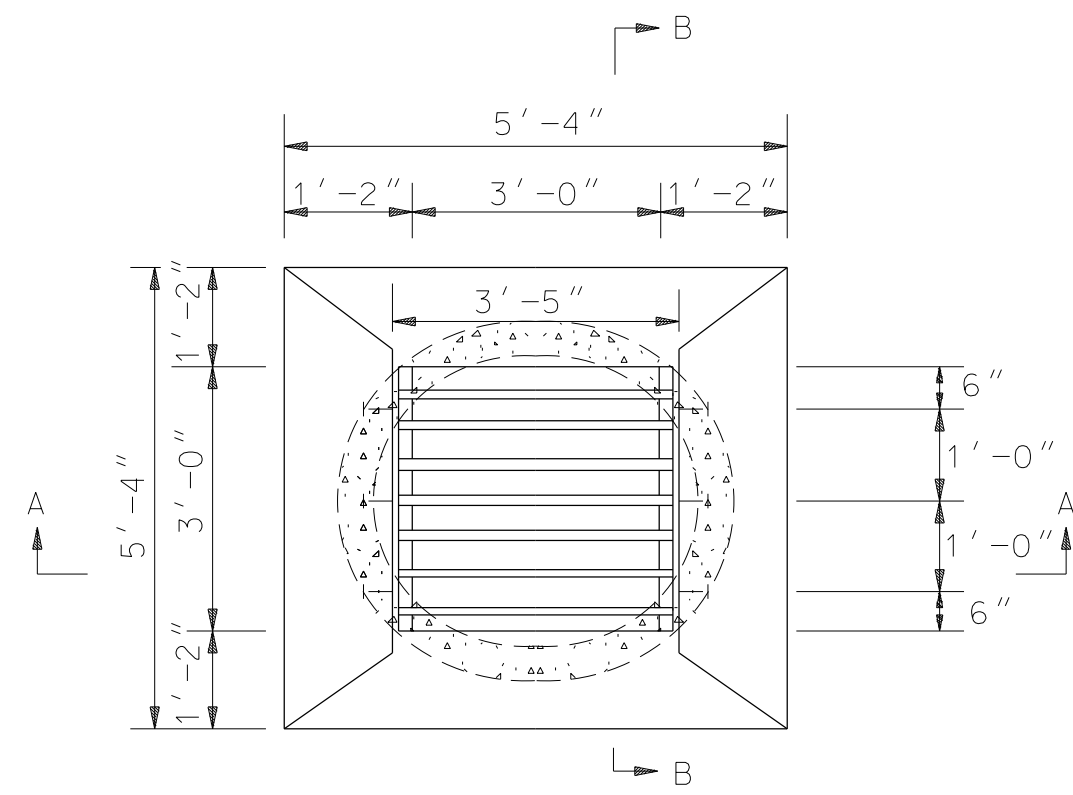
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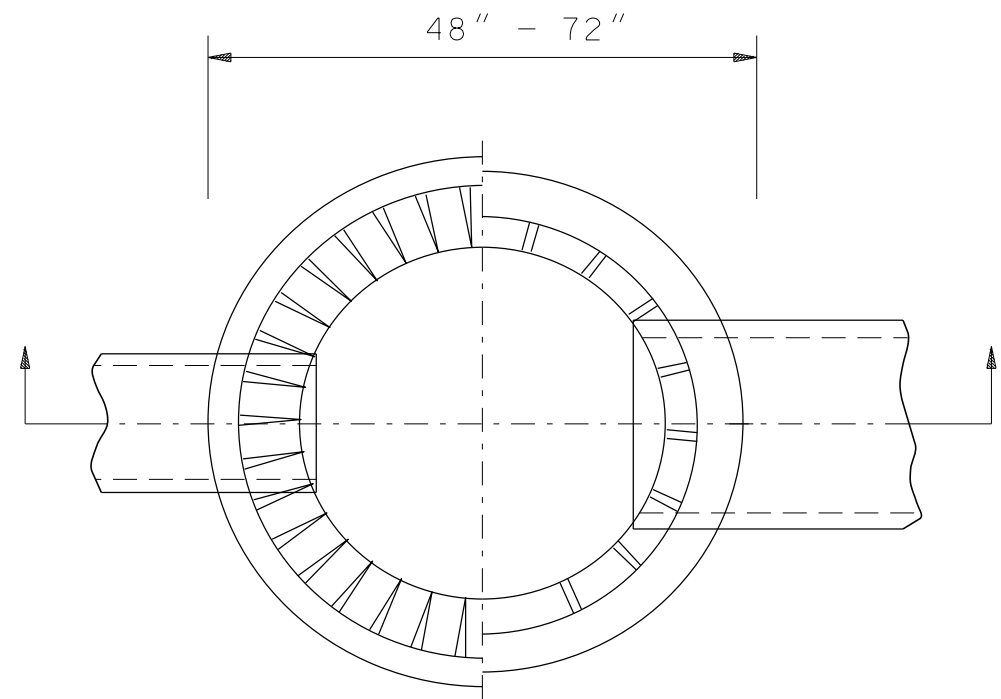
VERTICAL SECTION - CIRCULAR PRECAST CONCRETE
FOR 15" - 30" PIPE / TYPE P1



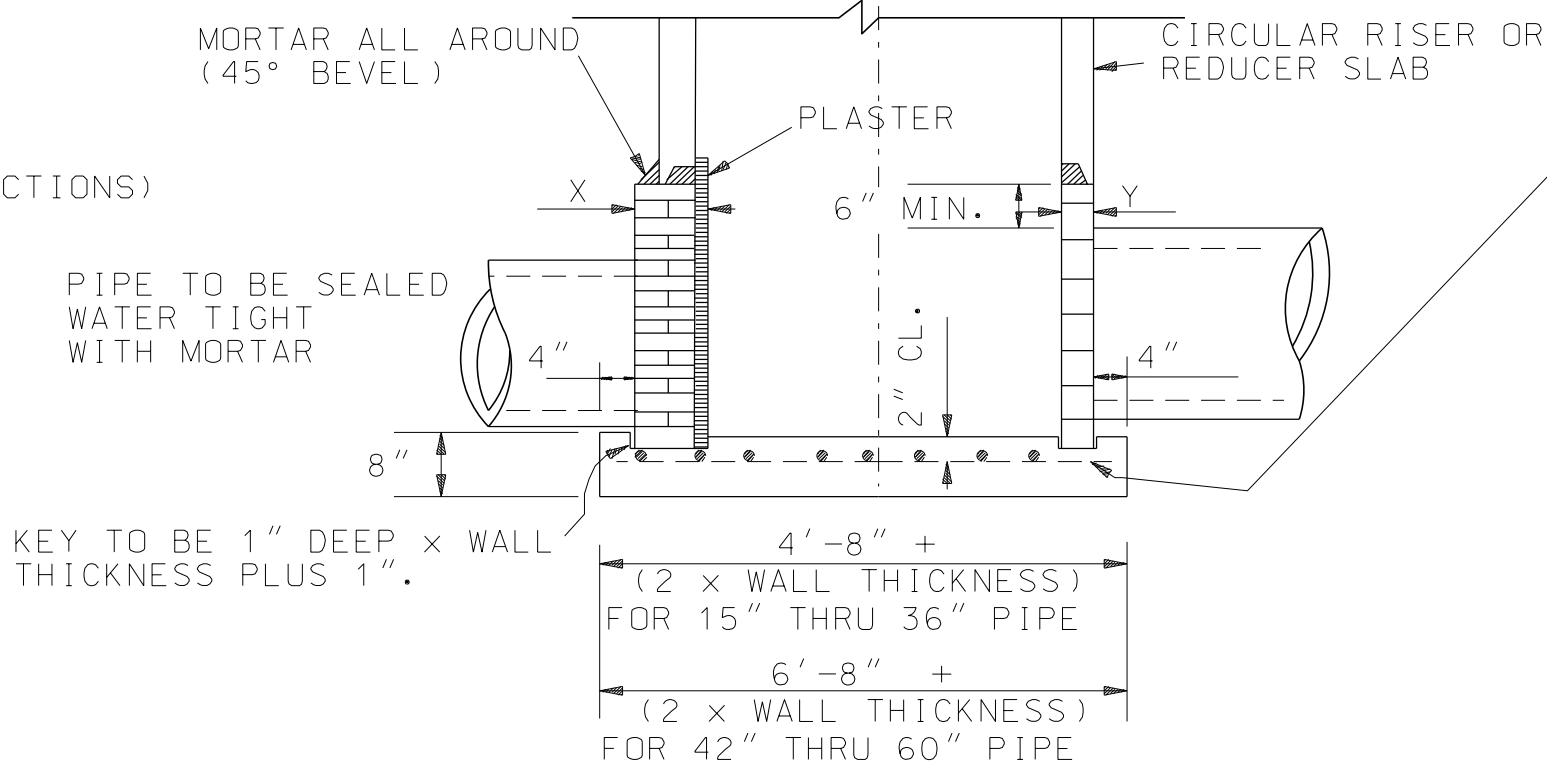
VERTICAL SECTION - CIRCULAR PRECAST CONCRETE
FOR 36" - 60" PIPE / TYPE P2



PLAN - CONCRETE INLET TOP E_C GRATE



PLAN - BRICK OR CONCRETE BLOCK / P3

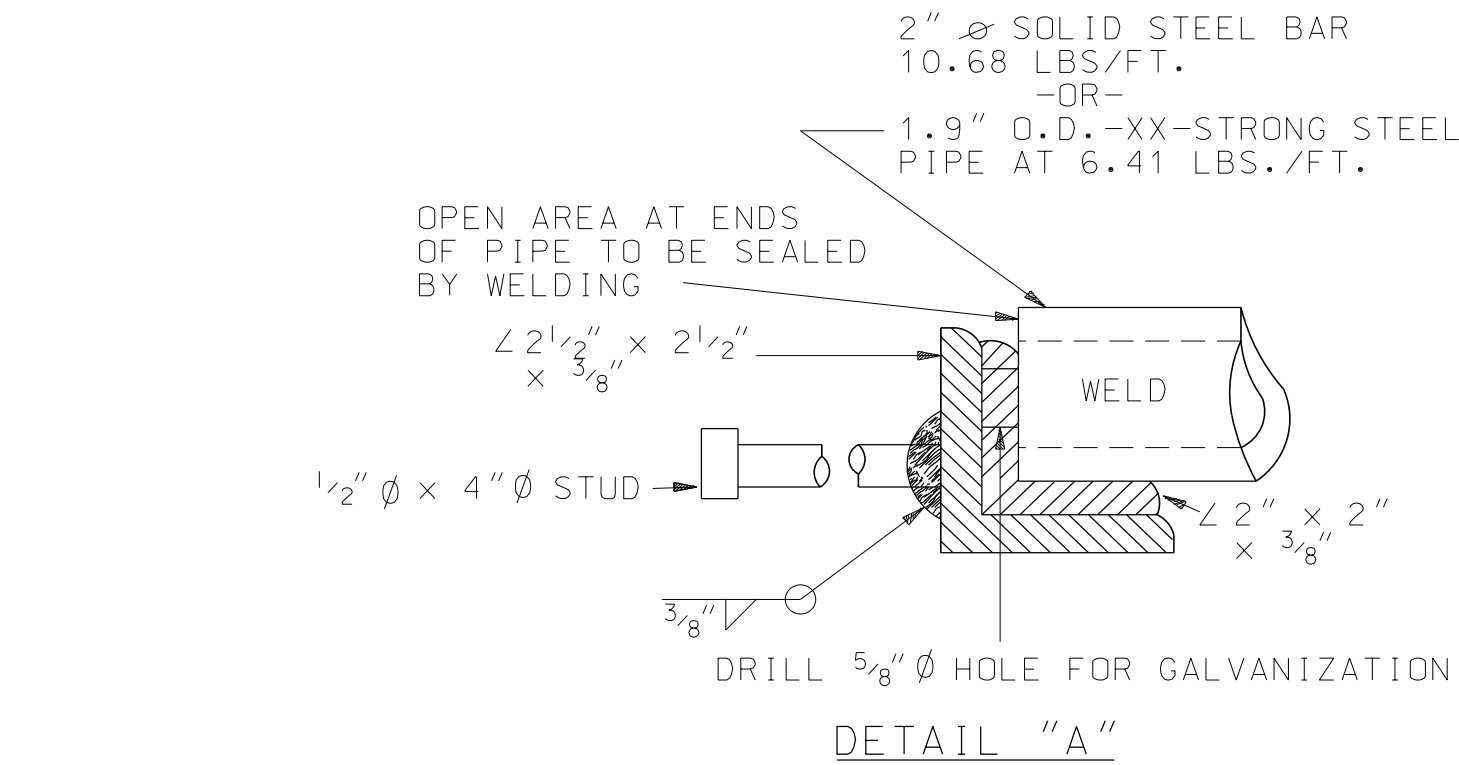


| X-DIM | DEPTH | Y-DIM | DEPTH |
|-------|---------|-------|---------|
| 8" | 0'-10" | 5" | 0'-12" |
| 12" | 11'-16" | 10" | 13'-25" |
| 16" | 17'-25" | | |

HALF SECTION - BRICK

HALF SECTION - CONC. BLOCK

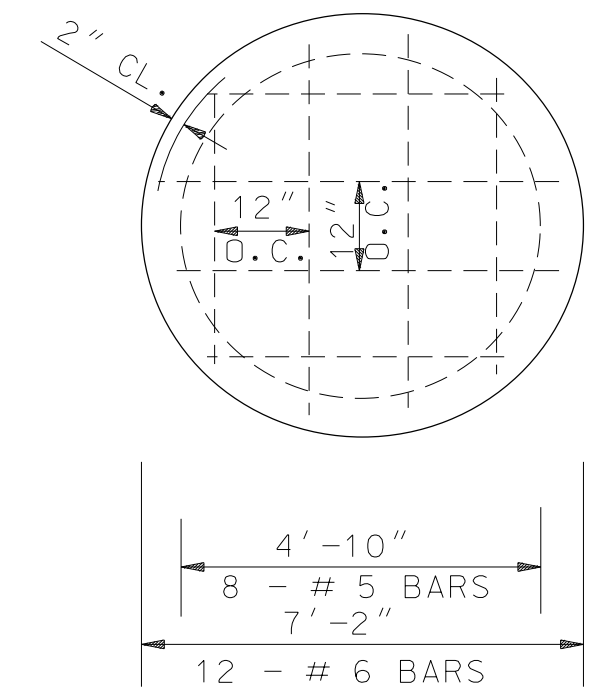
CIRCULAR DROP INLET FOR 15" - 60" PIPE / P3



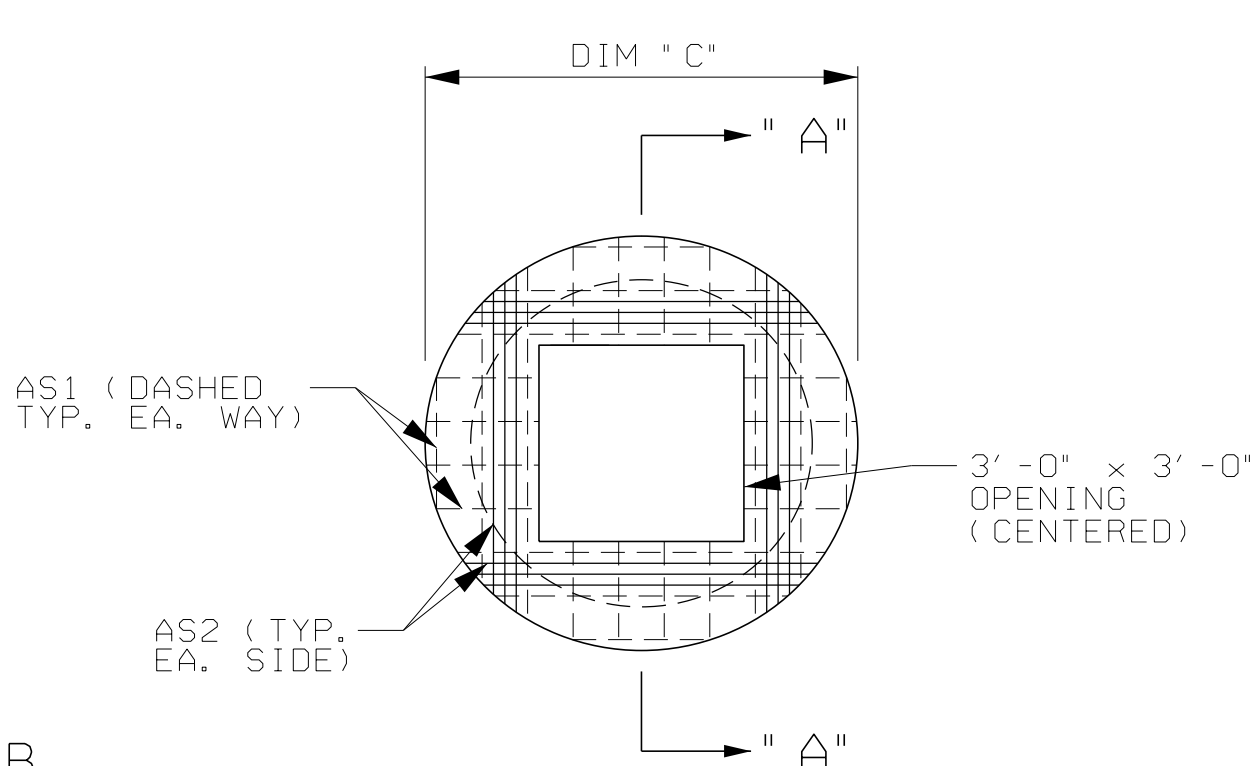
DETAIL "A"

GENERAL NOTES

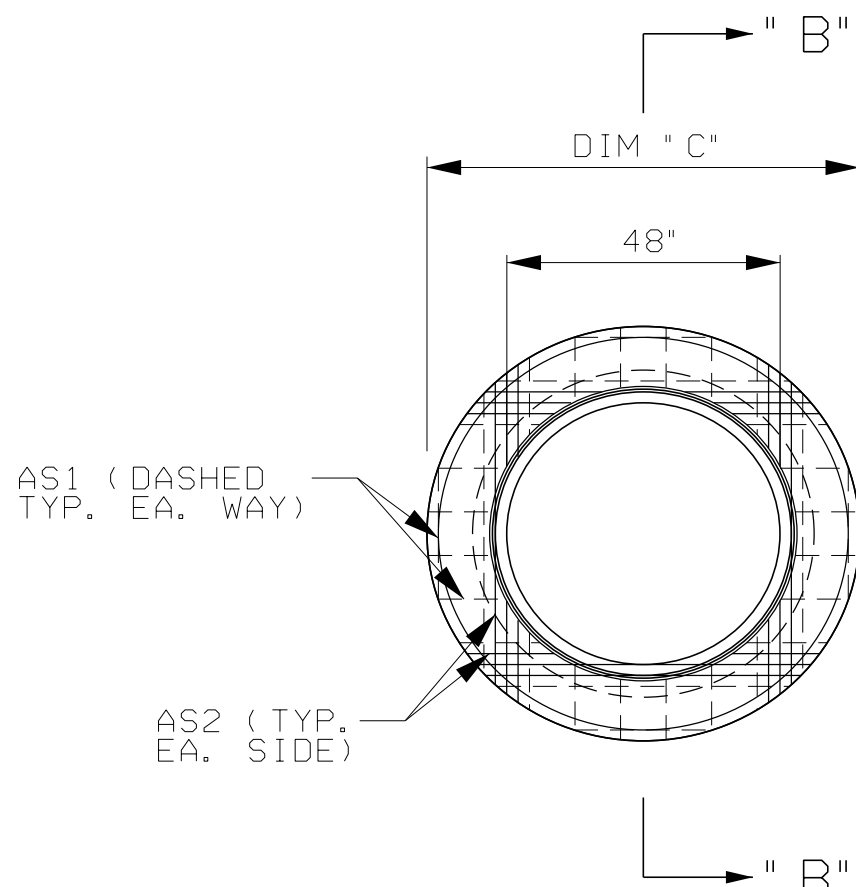
- ALL BASE AND RISER UNITS ARE TO BE IN ACCORDANCE WITH ASTM C478 EXCEPT THAT MINIMUM WALL THICKNESS IS TO BE 5".
- MAXIMUM DEPTH TO BE 30'.
- ALL CIRCULAR SECTION JOINTS SHALL BE SEALED WITH BUTYL PER C990 OR RUBBER GASKET PER C443 AND C1619.
- ALL PIPE OPENINGS IN PRECAST UNITS SHALL BE PREFORMED OR CORED.
- THE CONTRACTOR SHALL FURNISH THE FABRICATOR WITH THE ANGLES BETWEEN PIPE CENTER LINES, INVERT ELEVATIONS AND PIPE SIZES.
- A MIN OF 1'-6" ALONG THE OUTER CIRCUMFERENCE IS TO REMAIN BETWEEN THE EXTREMITIES OF HOLES OF ADJACENT PIPES IN ANY SINGLE UNIT.
- TWO - 2" TAPERED LIFT HOLES TO BE PROVIDED IN EACH BASE AND RISE UNIT. HOLES ARE TO BE LOCATED ABOVE THE CENTER OF GRAVITY OF EACH UNIT WITH CENTERS 180° APART. HOLES ARE TO BE SEALED WITH MORTAR AFTER INSTALLATION.
- APPROVED MANHOLE STEPS OR LADDERS SHALL BE INSTALLED IN STRUCTURES THAT EXCEEDS 4' IN DEPTH.
- THE TYPE OF INLET DETAILED HEREON TO BE CONSTRUCTED WILL BE THE OPTION OF THE CONTRACTOR.
- CONCRETE INLET TOP TO BE PRECAST.
- INLET GRATE AND SEAT TO BE GALVANIZED.
- OUTSIDE DIMENSIONS OF GRATE TO BE 3'-4" x 2'-11 3/4".
- INVERT CHANNELS ARE REQUIRED IN INLET BASE. INVERT CHANNELS MAY BE FORMED DIRECTLY IN CONCRETE OF BASE OR CONSTRUCTED LATER USING CEMENT CONCRETE MORTAR. CHANGES IN DIRECTION OF FLOW SHALL HAVE A TRUE CURVE OF AS LARGE A RADIUS AS SIZE OF INLET WILL PERMIT AND BE FINISHED UP TO CENTER OF PIPE.



PLAN - BOTTOM SLAB



FLAT TOP REDUCER SLAB



TRANSITION SLAB

(TRANSITION TO 48" DIAMETER SECTIONS)

NOTE: WHEN INLET HEIGHT NECESSITATES AN ACCESS LADDER, REDUCER SLAB W/ ECCENTRIC OPENING SHALL BE USED.

| DIM "C" | ROUND MANHOLE I. D. | REQ'D THK., T | REINFORCING STEEL | |
|---------|---------------------|---------------|-------------------|---------|
| | | | AS1 | AS2 |
| 72" | 60" | 8 | NO. 5 @ 9" | 3-NO. 6 |
| 86" | 72" | 8 | NO. 5 @ 9" | 4-NO. 6 |
| 100" | 84" | 8 | NO. 6 @ 9" | 4-NO. 6 |
| 114" | 96" | 8 | NO. 6 @ 8" | 5-NO. 6 |
| 142" | 120" | 12 | NO. 6 @ 6" | 5-NO. 6 |

HORIZONTAL SECTION - BASE

INDICATES MINIMUM DIMENSION= 6" FOR 48" THRU 72" DIA. MANHOLES 8" FOR 84" THRU 120" DIA. MANHOLES

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REVISIONS
1. Added to CADD on 09-28-99 by J.F.T.
2. Adjusted Note No. 4, adjusted Cage Vertical Steel in the Vertical Section - Circular Precast Concrete Sketch on 06-05-08 by W.W.A.
3. Changed dimension on "VERTICAL SECTION- CIRCULAR PRECAST CONCRETE" from 54" to 60" and dimension on "HORIZONTAL SECTION-BASE" from 96" to 120". Deleted "DETAIL OF BEVELED RING" and removed "BEVEL PIPE" on all "VERTICAL SECTION" diagrams, "HORIZONTAL SECTION-BASE", "PLAN-BRICK OR CONCRETE BLOCK / P3", "CIRCULAR DROP INLET FOR 15'-60" PIPE/P3" and added "TRANSITION SLAB" and "FLAT TOP REDUCER SLAB". Deleted "PLAN- PRECAST CIRCULAR REDUCER SLAB W/ CONCENTRIC OPENING" and "NOTE" on 09-08-11 by J.F.T.

ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

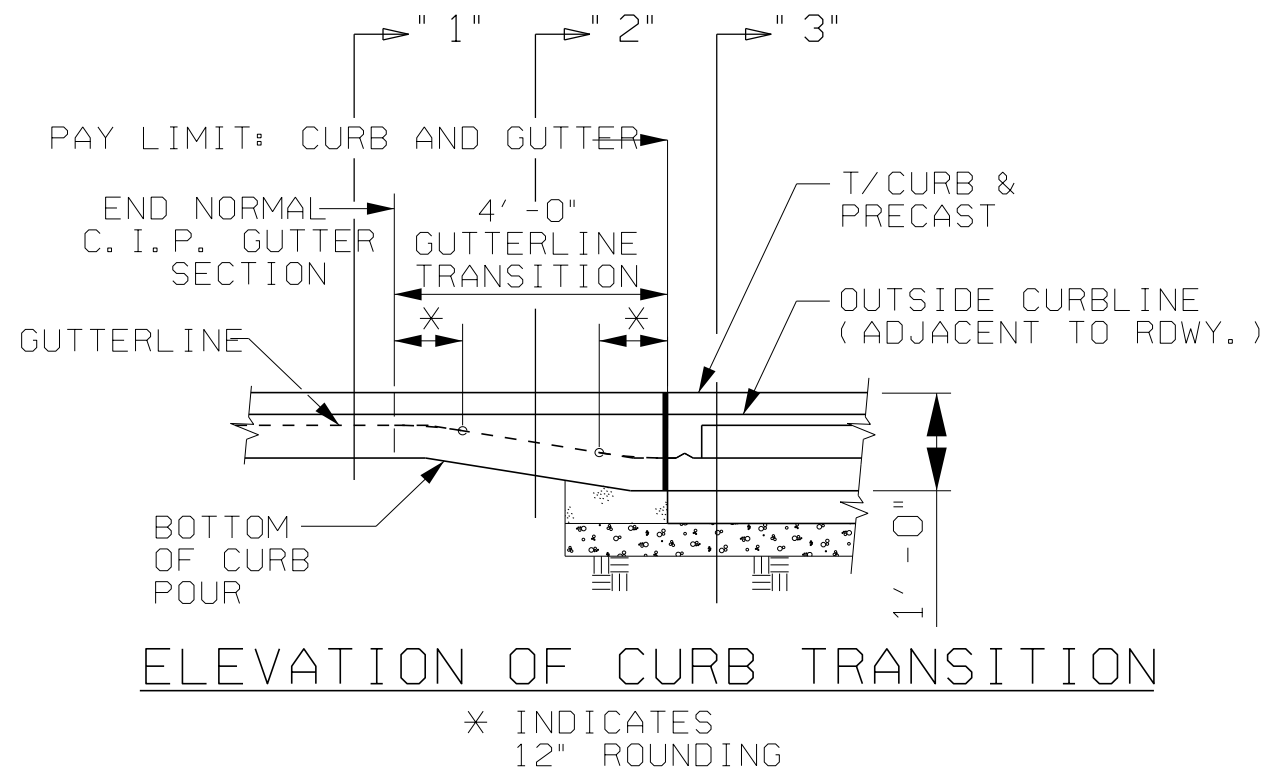
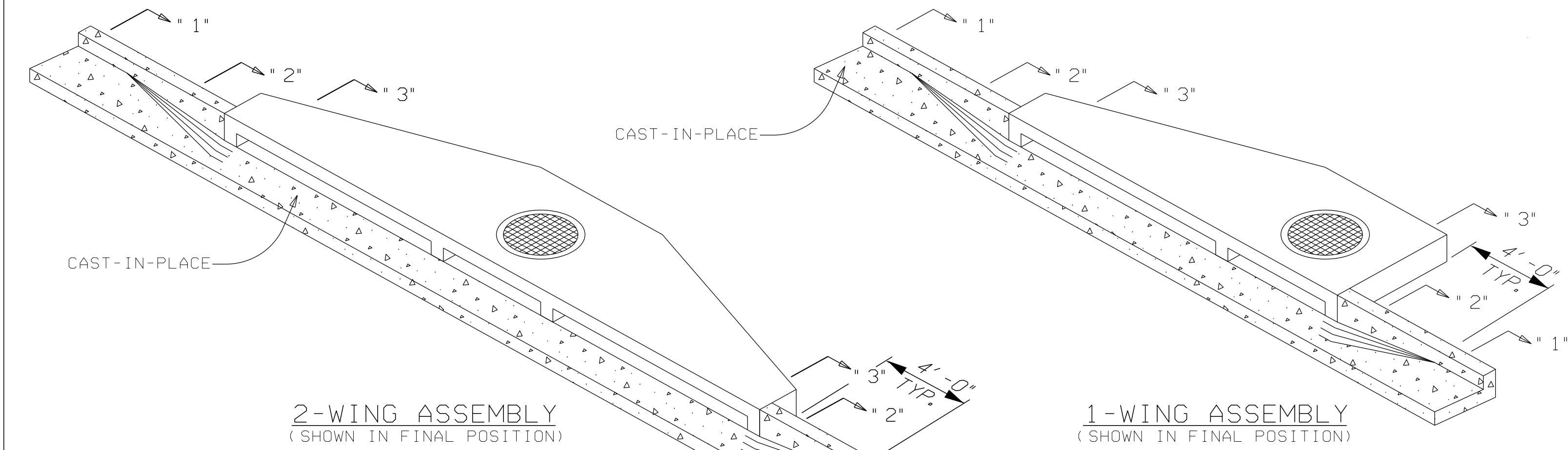
DESIGN BUREAU SPECIAL DRAWING
DETAILS OF CIRCULAR PRECAST
CONCRETE AND BRICK OR
CONCRETE BLOCK DROP INLET
TYPES P1, P2, & P3

SPECIAL DRAWING NO
I-621-P

INDEX NO
62130

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 3-28-78

NOT TO SCALE



GENERAL NOTES

- SEE TYPICAL SECTION AND TABLE OF VALUES FOR STORM STRUCTURE FOR MAXIMUM INSTALLATION DEPTH.
- JOINTS BETWEEN BASE SECTION AND CURB INLET SHALL BE SEALED WITH GROUT OR BUTYL MASTIC MATERIAL.
- MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH: 4000 P.S.I.
- REINFORCING STEEL: TO BE IN ACCORDANCE WITH THE SPECIFICATIONS. MINIMUM YIELD STRENGTH=60 K.S.I.
- INVERT CHANNELS ARE REQUIRED IN THE BASE. CHANNELS MAY BE FORMED IN CONCRETE OR CONSTRUCTED LATER USING A CEMENT CONCRETE MORTAR. CHANGES IN DIRECTION OF FLOW SHALL HAVE A TRUE CURVE OF AS LARGE A RADIUS AS SIZE WILL PERMIT AND BE FINISHED UP TO THE CENTER OF PIPE.
- ALL PIPE OPENINGS IN PRECAST UNITS SHALL BE PREFORMED OR CORED.
- BASE UNIT MAY BE ROUND, SQUARE, OR RECTANGULAR. BASE HEIGHT VARIES TO MEET JOB REQUIREMENTS. THE SIZE OF THE BASE CAN VARY TO ACCEPT LARGER PIPE WITHOUT THE CURB INLET CHANGING. ROUND UNITS TO MEET ASTM C-478, AND SQUARE/RECTANGULAR UNITS TO MEET ASTM C-913.
- ALL CURB & GUTTER SHALL MEET ALDOT SPECIFICATIONS SECTION 623.
- APPROVED MANHOLE STEPS OR LADDERS SHALL BE INSTALLED IN STRUCTURES THAT EXCEED 4'-0" IN DEPTH. SEE MANHOLE DETAILS FOR STRUCTURAL REQUIREMENTS.
- WHERE DIRECTION OF FLOW IS FROM BOTH ENDS OF INLET, SIDEWALK OPENINGS SHALL BE CONSTRUCTED AT BOTH ENDS AND PAYMENT FOR MADE UNDER ITEM: INLET TYPE-S (2-WINGS). WHERE ONLY 1-WING REQUIRED, PAYMENT FOR MADE UNDER ITEM INLET TYPE-S (1-WING).

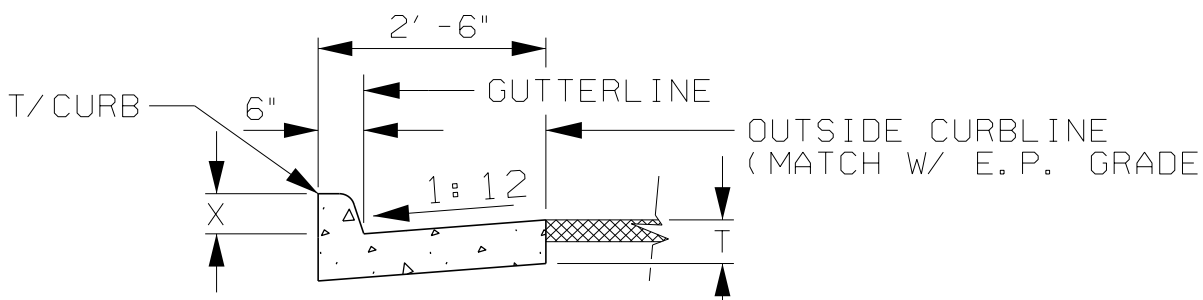
TYPE S1(15" -30")
TYPE S2(36" -60")

STANDARD INLET

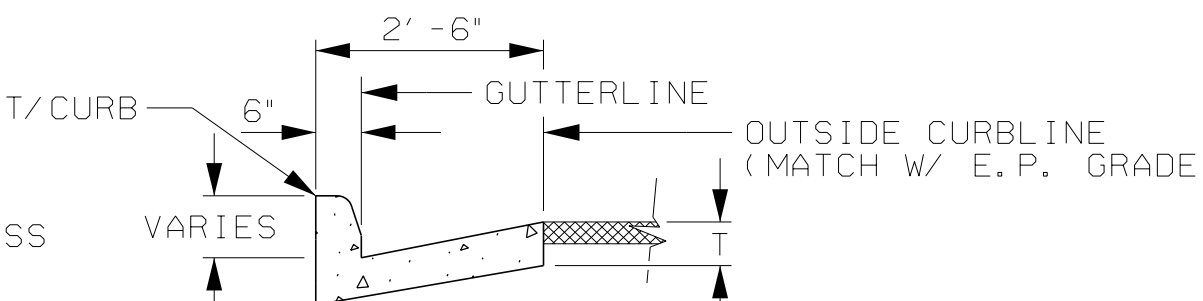
(FROM WORKING POINT TO OUT E)

S1 (15" -30") = 4' -0"

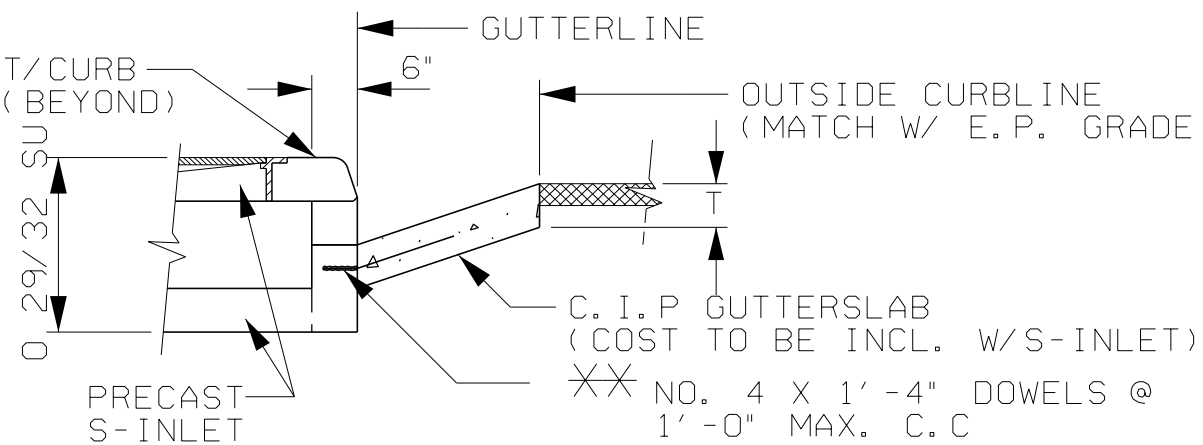
S2 (36" -60") = 6' -3"



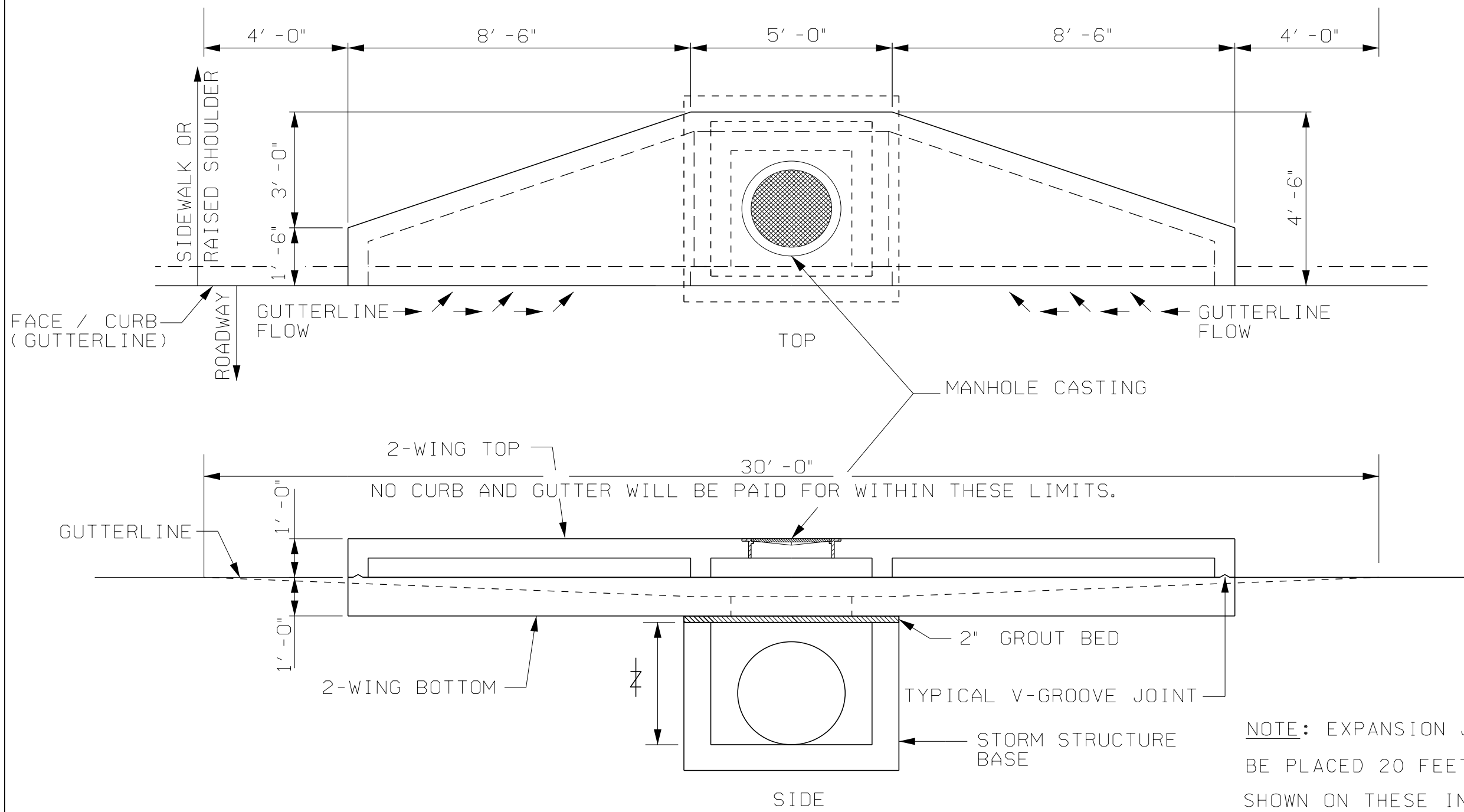
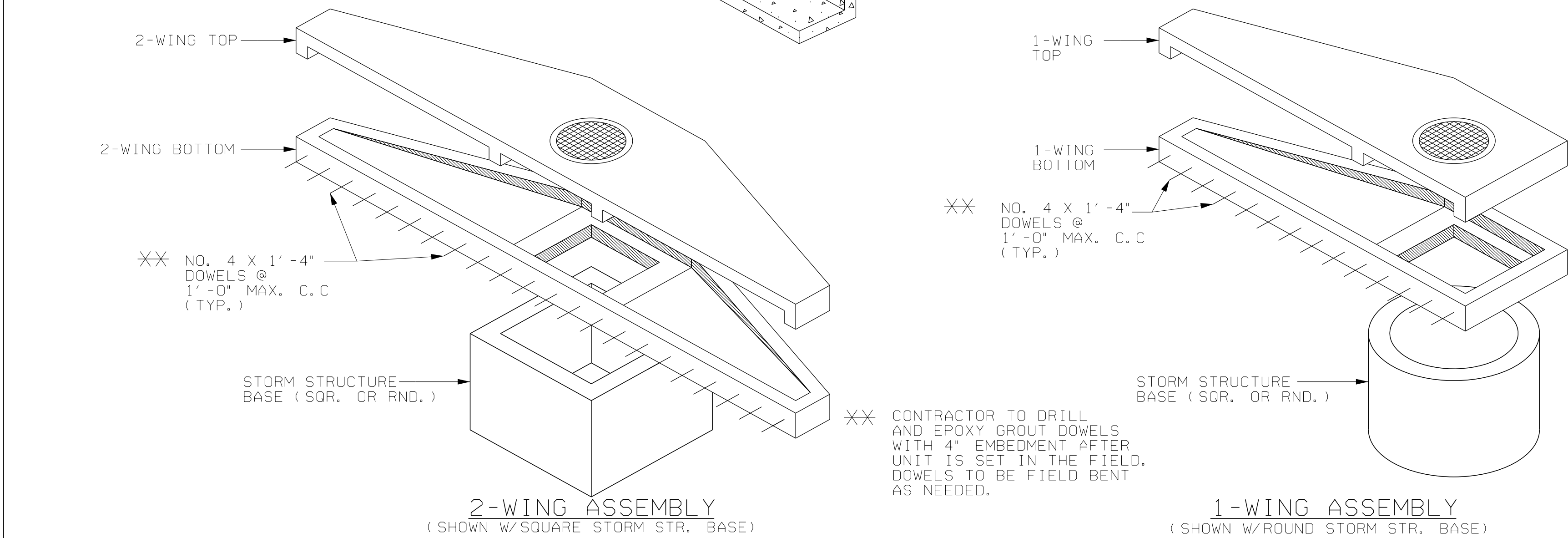
SECTION 1: @ APPROACH CURB & GUTTER
(SEE PROJECT PLAN AND SPECIFICATIONS FOR DETAILS)



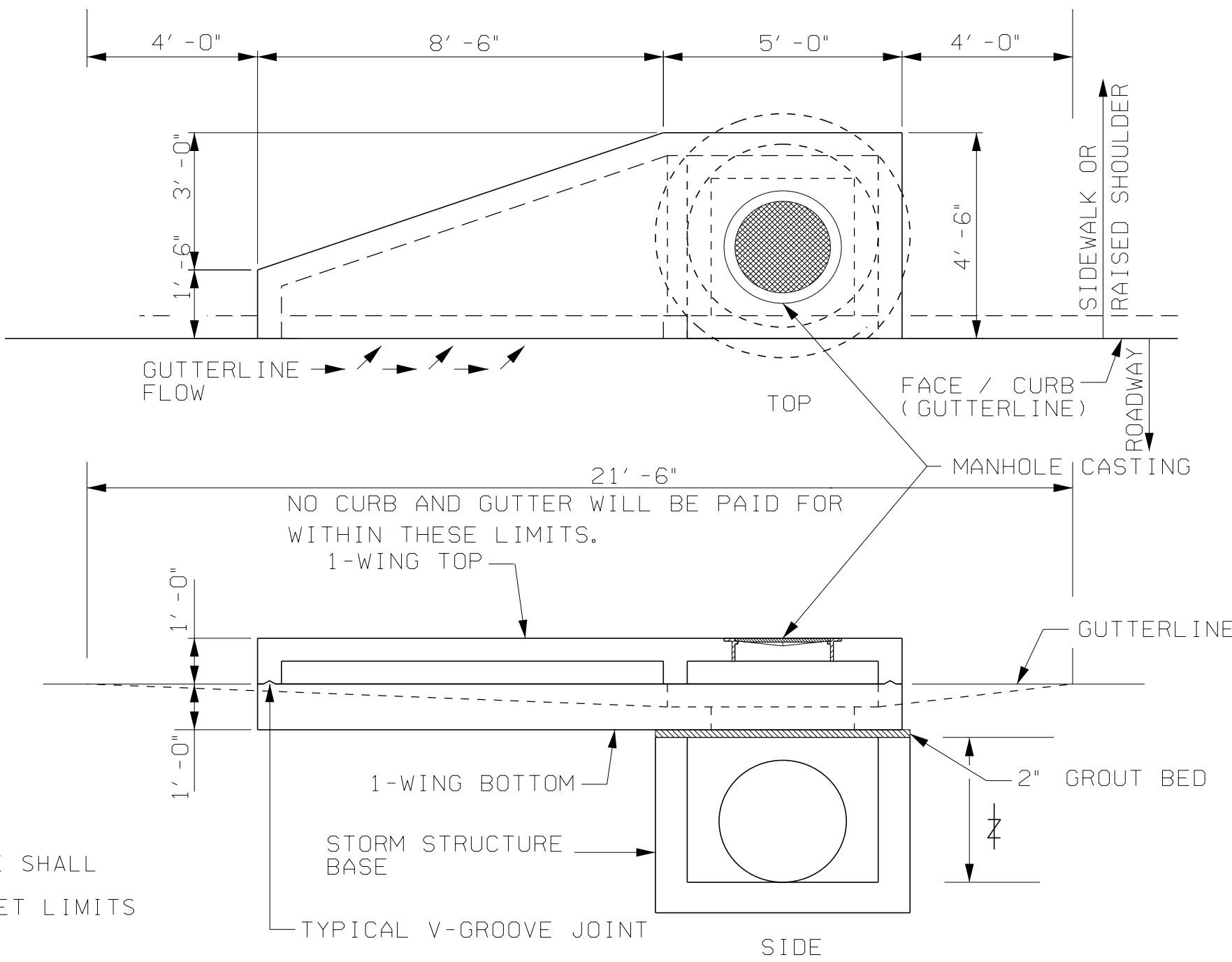
SECTION 2: GUTTERLINE IN TRANSITION



SECTION 3: @ FRONT FACE OF S-INLET

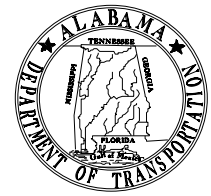


2-WING ASSEMBLY: GENERAL LAYOUT



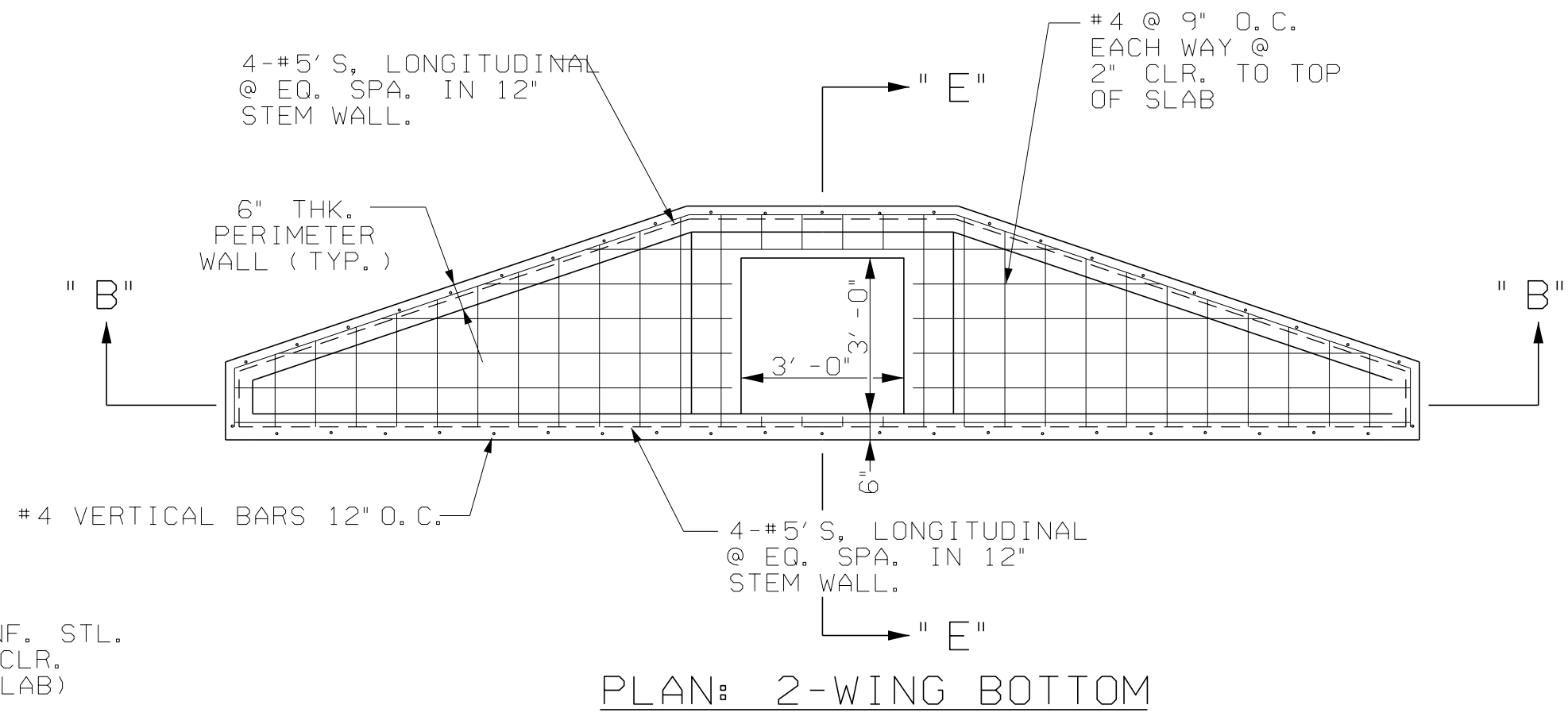
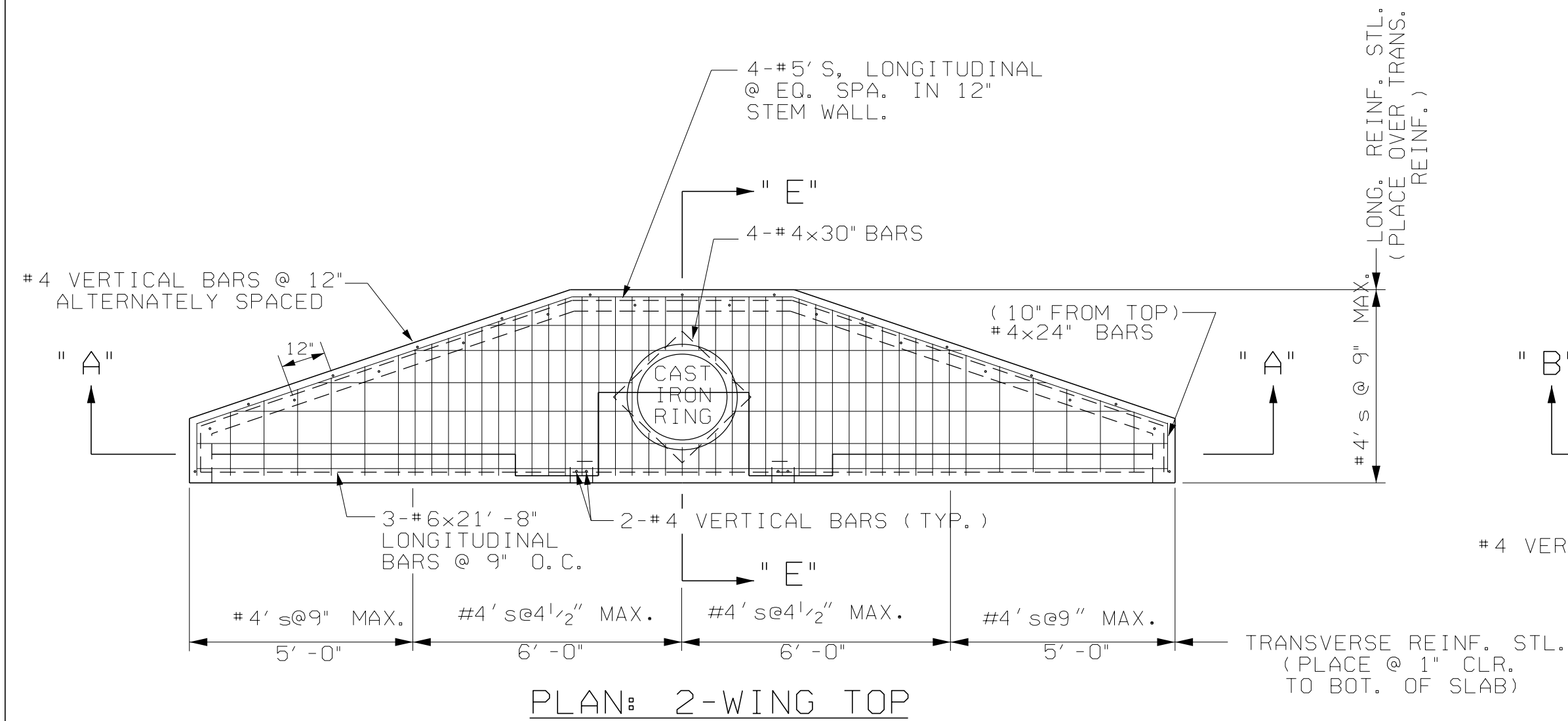
1-WING ASSEMBLY: GENERAL LAYOUT
(SHOWN W/LEFT WING: RIGHT WING ASSEMBLY SIM. OPP. HAND)

NOTE: EXPANSION JOINTS 3/4" WIDE SHALL BE PLACED 20 FEET FROM THE INLET LIMITS SHOWN ON THESE INLETS.

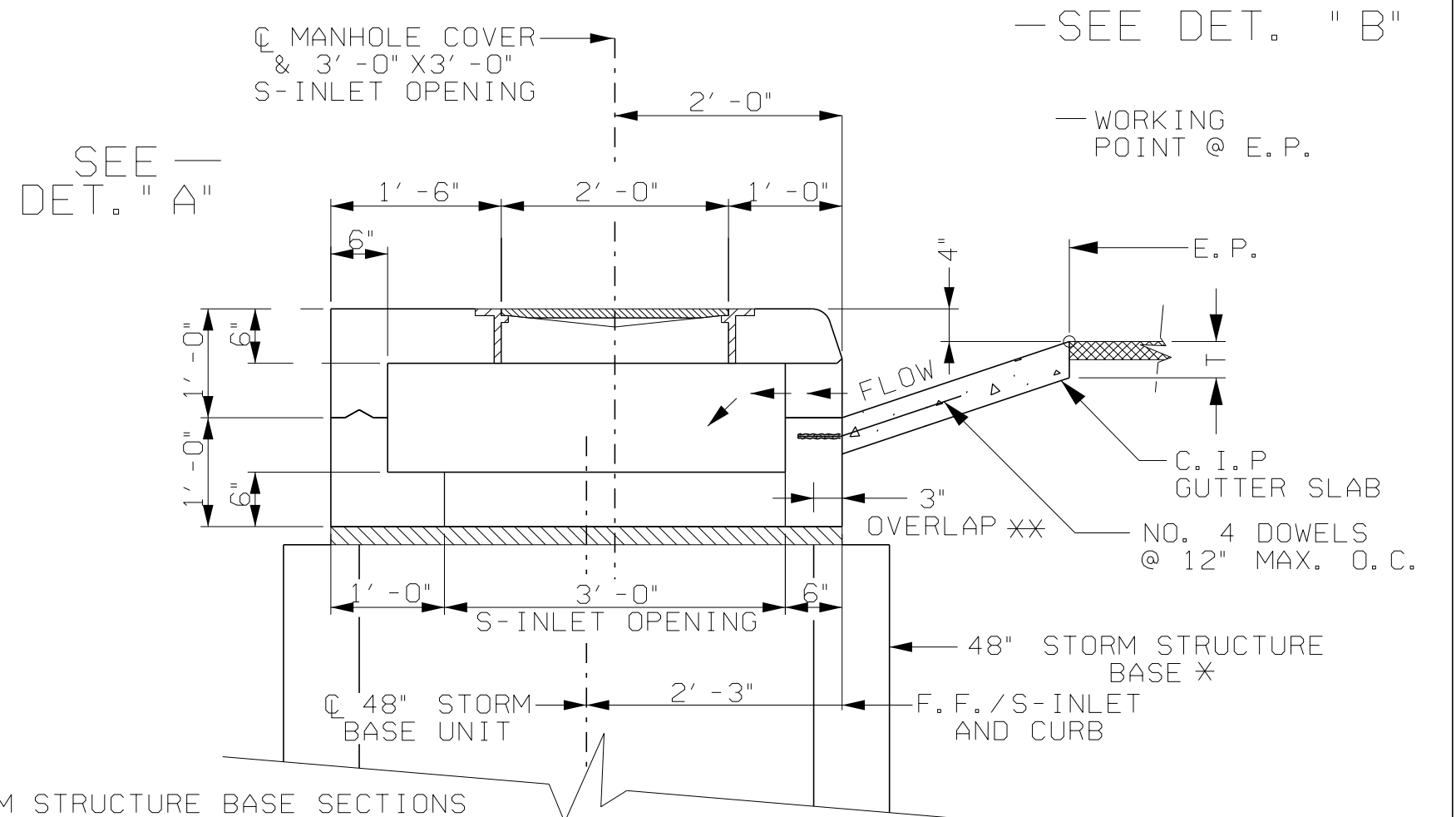
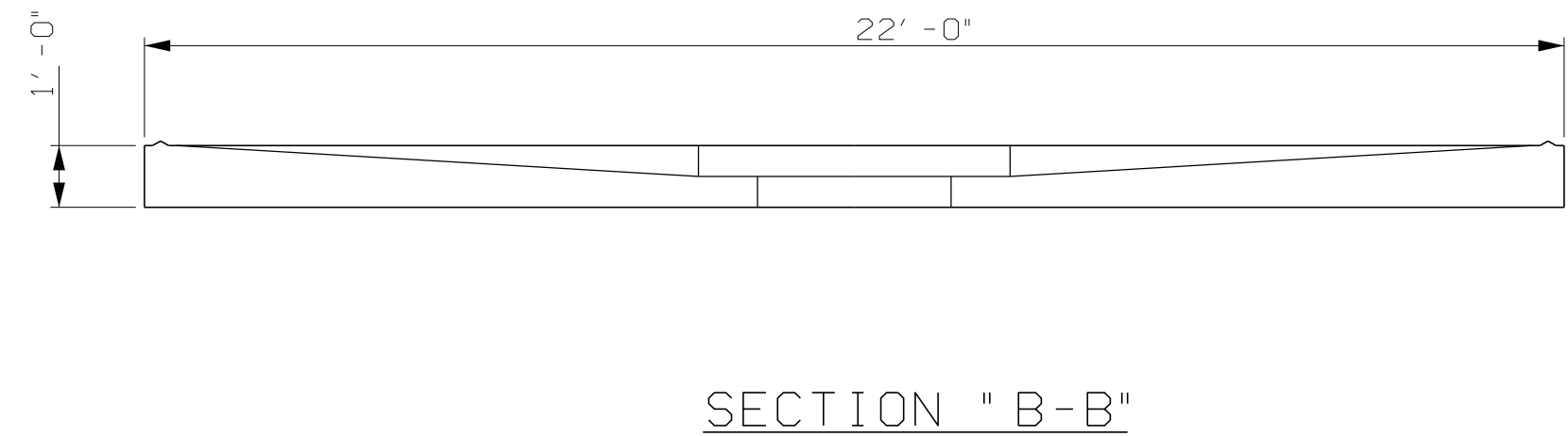
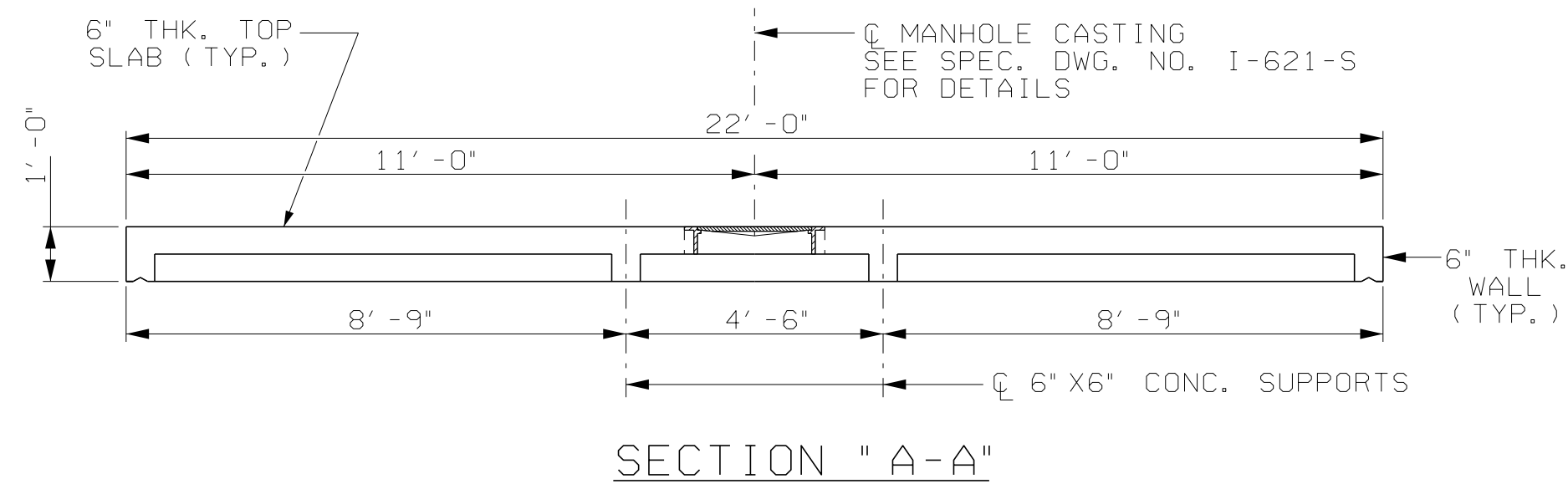
| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
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| THIS DRAWING REPRESENTS DESIGNS PREPARED FOR USE BY THE ALABAMA DEPARTMENT OF TRANSPORTATION AND IS NOT TO BE COPIED, REPRODUCED, ALTERED, OR USED BY ANYONE, OR ANY ORGANIZATION, WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE ALABAMA DEPARTMENT OF TRANSPORTATION REPRESENTATIVE AUTHORIZED TO APPROVE THIS USE, ANYONE MAKING UNAUTHORIZED USE OF THIS DRAWING MAY BE PROSECUTED TO THE FULLEST EXTENT OF THE LAW. | | |
| <div>REVISIONS</div> <div>1. Changed Type S2 (36"-54") to (36"-60") and edited Note #6 from "PRECAST" to "PREFORMED TO CORED" on 07-21-11 by J.F.T.</div> | | |
| <div> ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050</div> <div>DESIGN BUREAU SPECIAL DRAWING</div> <div>PRECAST CONCRETE STORM SEWER INLET TYPES S1 AND S2</div> | | INDEX NO 62137 |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: _____ | | SPECIAL DRAWING NO I-621-SP (1 OF 3) |

NOT TO SCALE

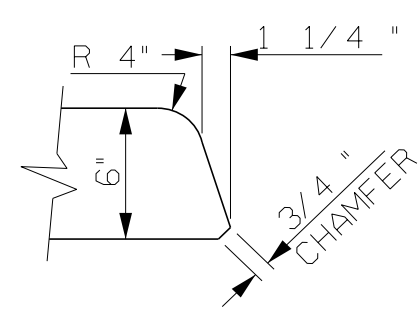
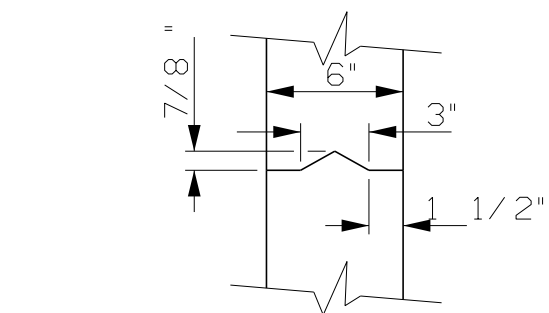
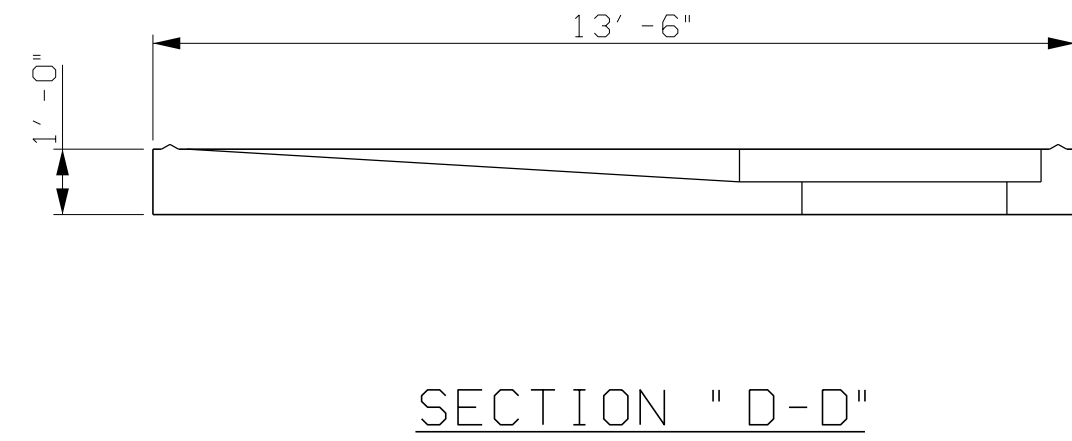
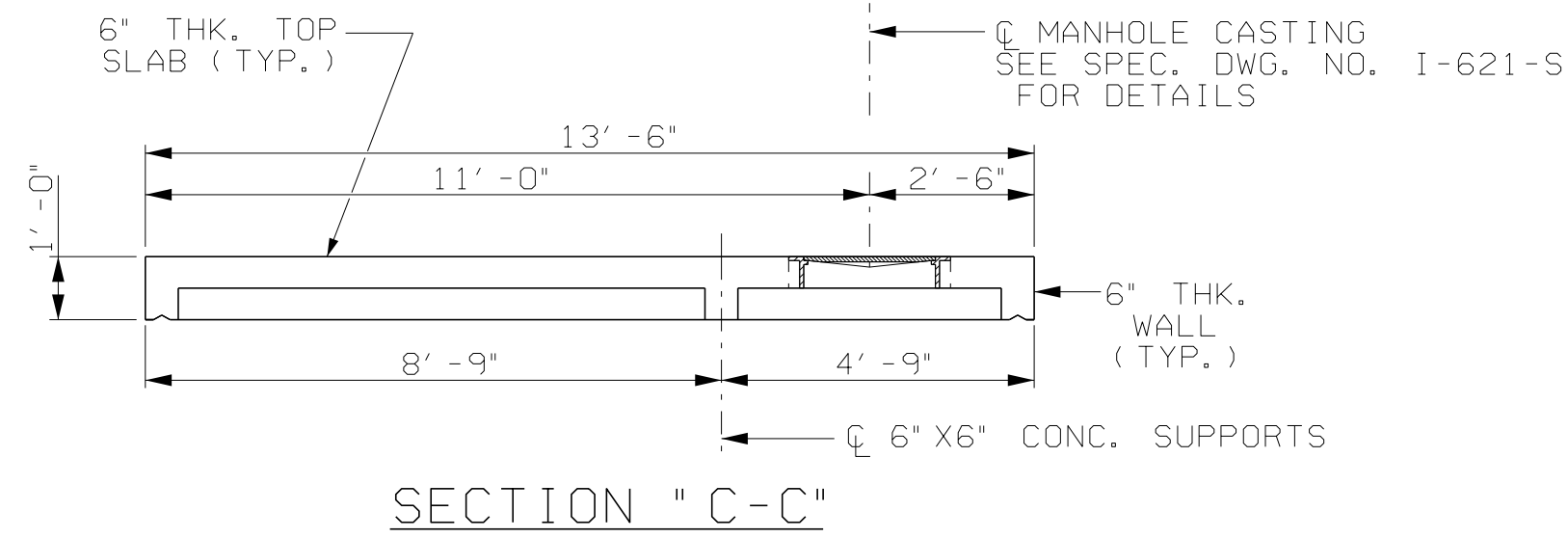
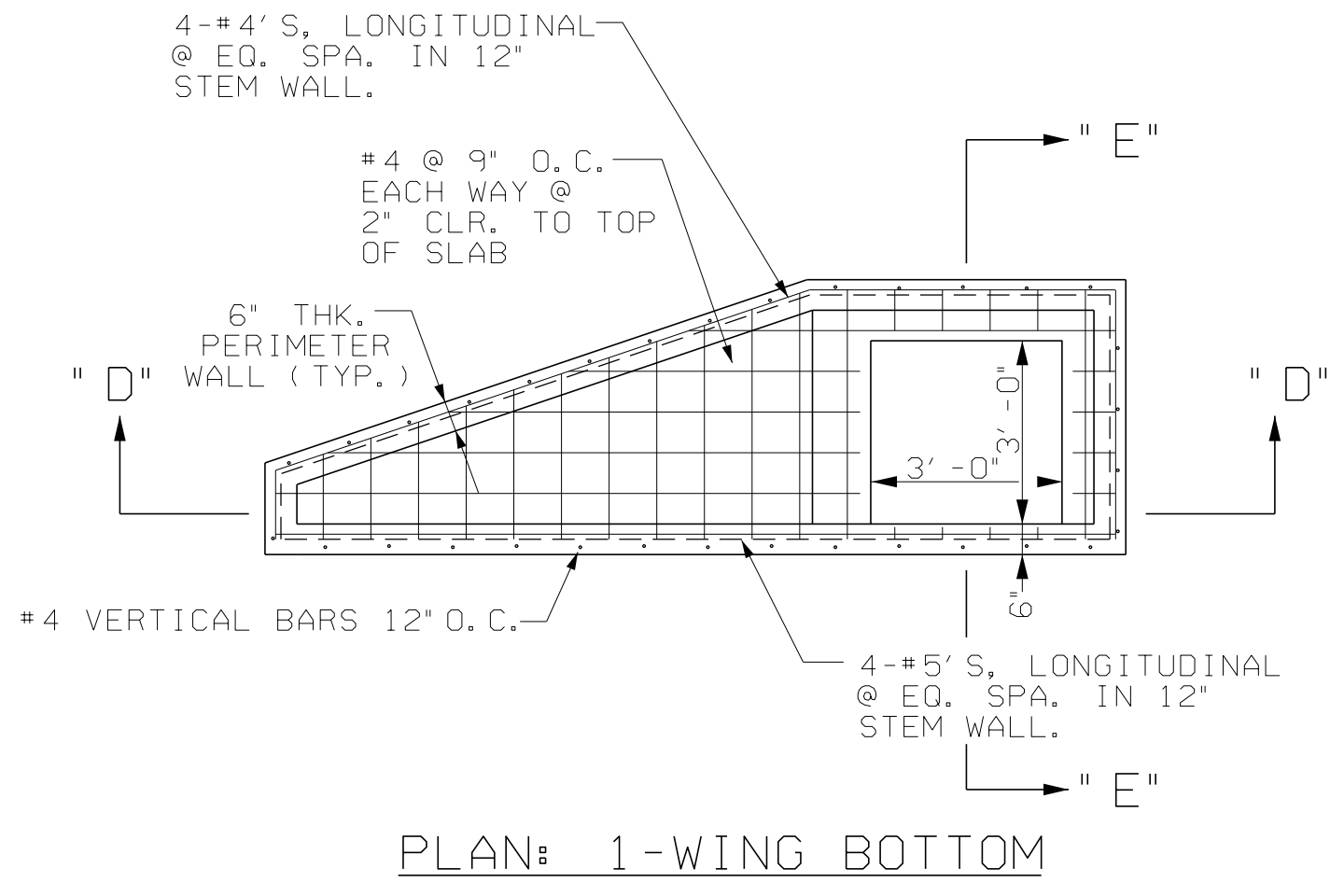
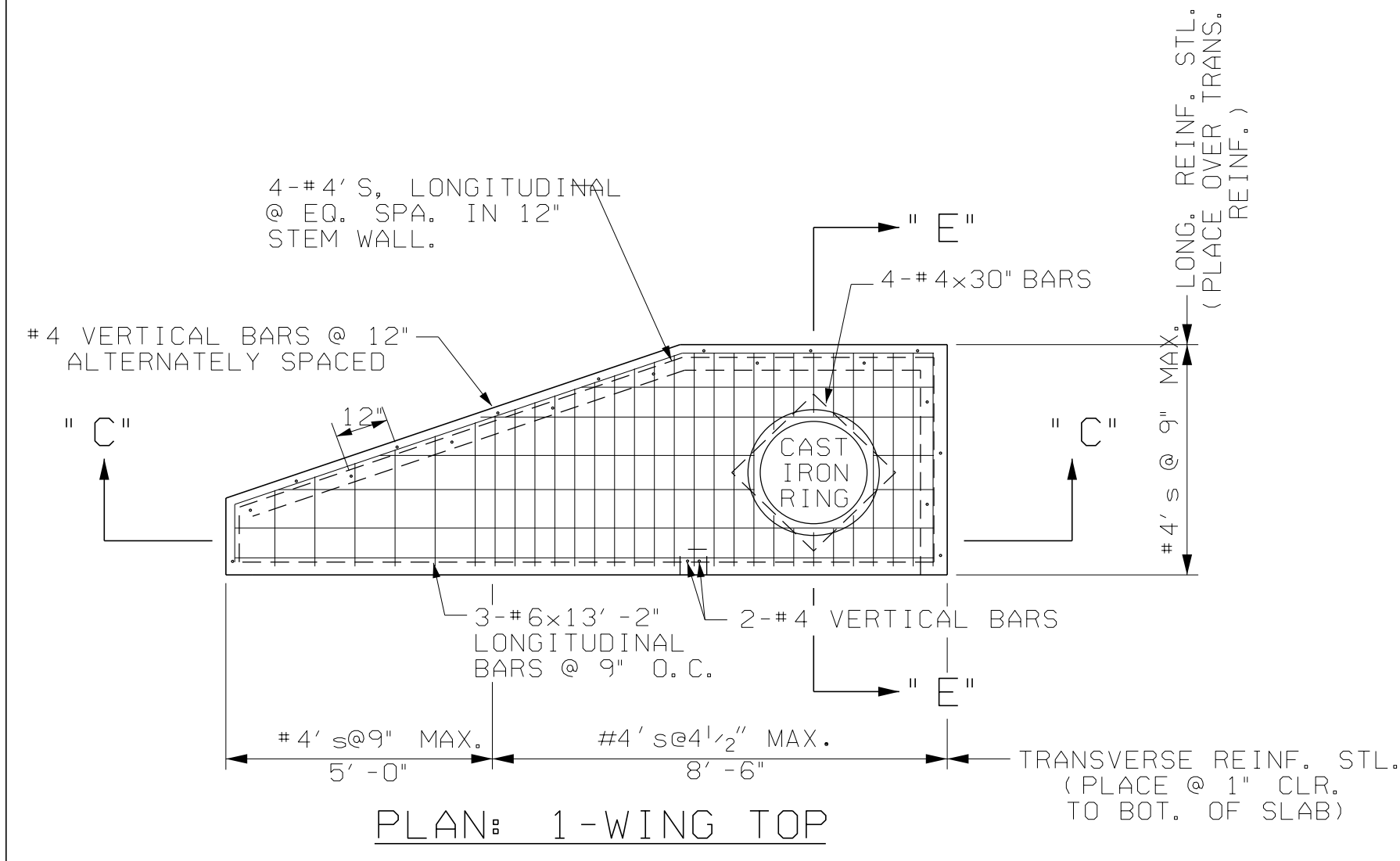
| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |



NOTE: WELDED WIRE REINFORCEMENT PROVIDING EQUIVALENT AREAS OF REINFORCING STEEL TO THOSE DENOTED MAY BE SUBSTITUTED FOR REINFORCING BARS. WELDED WIRE REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
NOTE: WALL AND SLAB THICKNESSES INDICATED ARE MINIMUM VALUES, AND MAY BE INCREASED ARE THE DISCRETION OF THE PRECAST MANUFACTURER.



2-WING COMPONENT DETAILS



DETAIL "A" @ V-JOINT

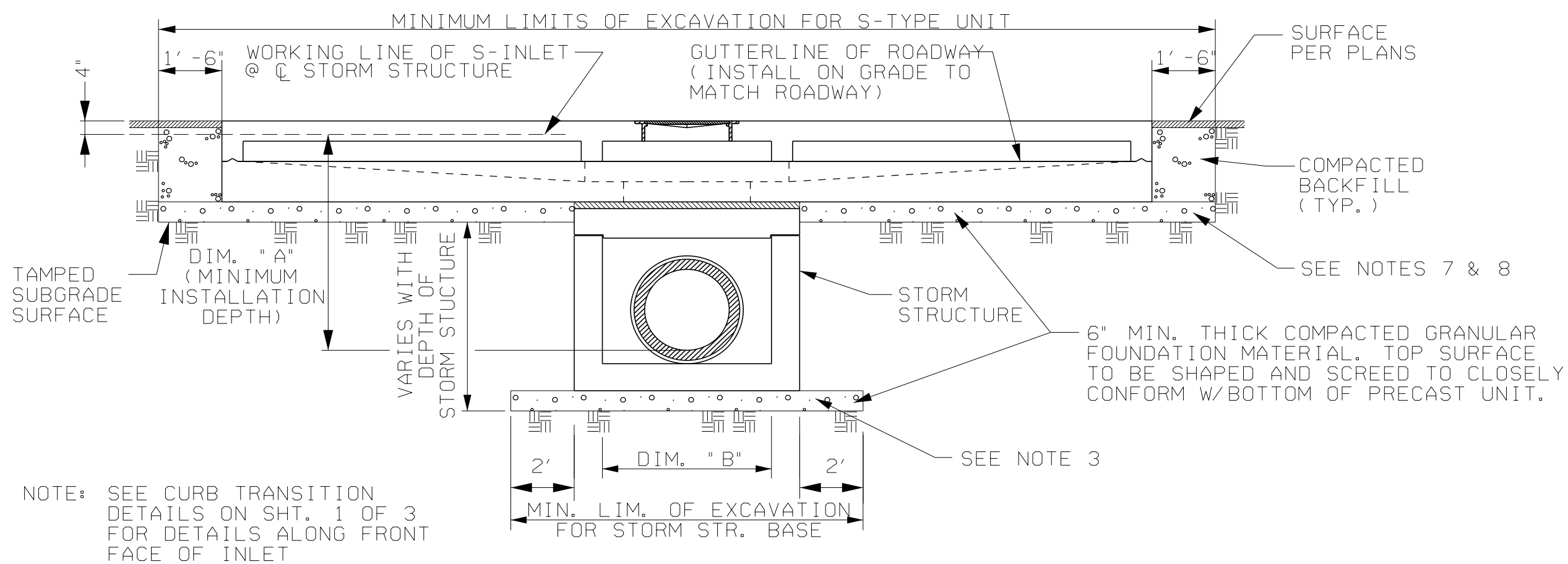
DETAIL "B" @ FRONT EDGE

TYPE S1(15" -30")
TYPE S2(36" -60")

1-WING COMPONENT DETAILS

NOT TO SCALE

| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
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| REVISIONS 1. Changed Type S2 from (36"-54") to (36"-60") on 07-21-11 by J.F.T. | | ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050 |
| DESIGN BUREAU SPECIAL DRAWING | | PRECAST CONCRETE STORM SEWER INLET TYPES S1 AND S2 |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: _____ | SPECIAL DRAWING NO I-621-SP (2 OF 3) | INDEX NO 62138 |

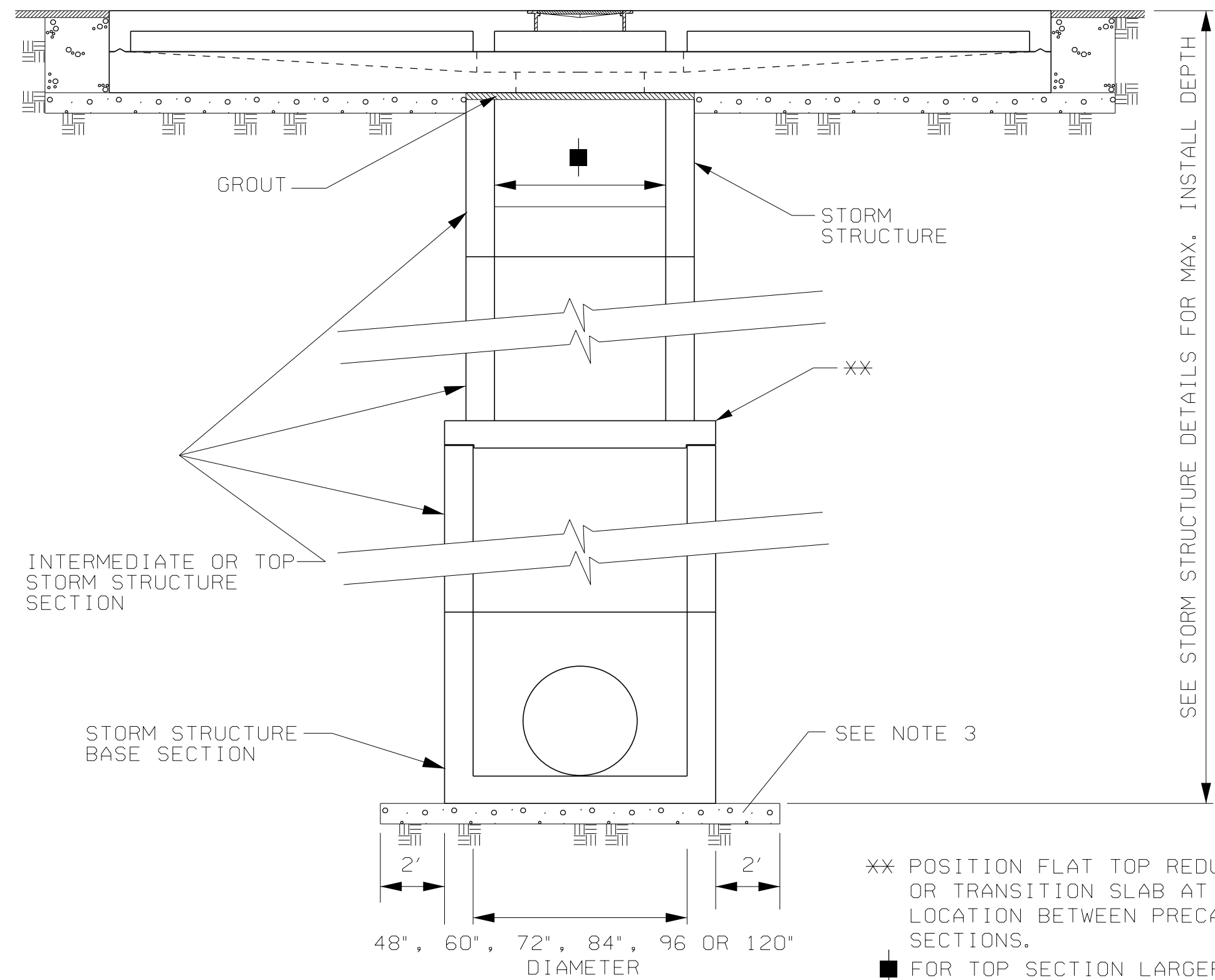


SECTION SHOWING TYPICAL S-INLET INSTALLATION
(SHOWN @ 2-WING S-INLET; 1-WING INSTALLATION SIMILAR)

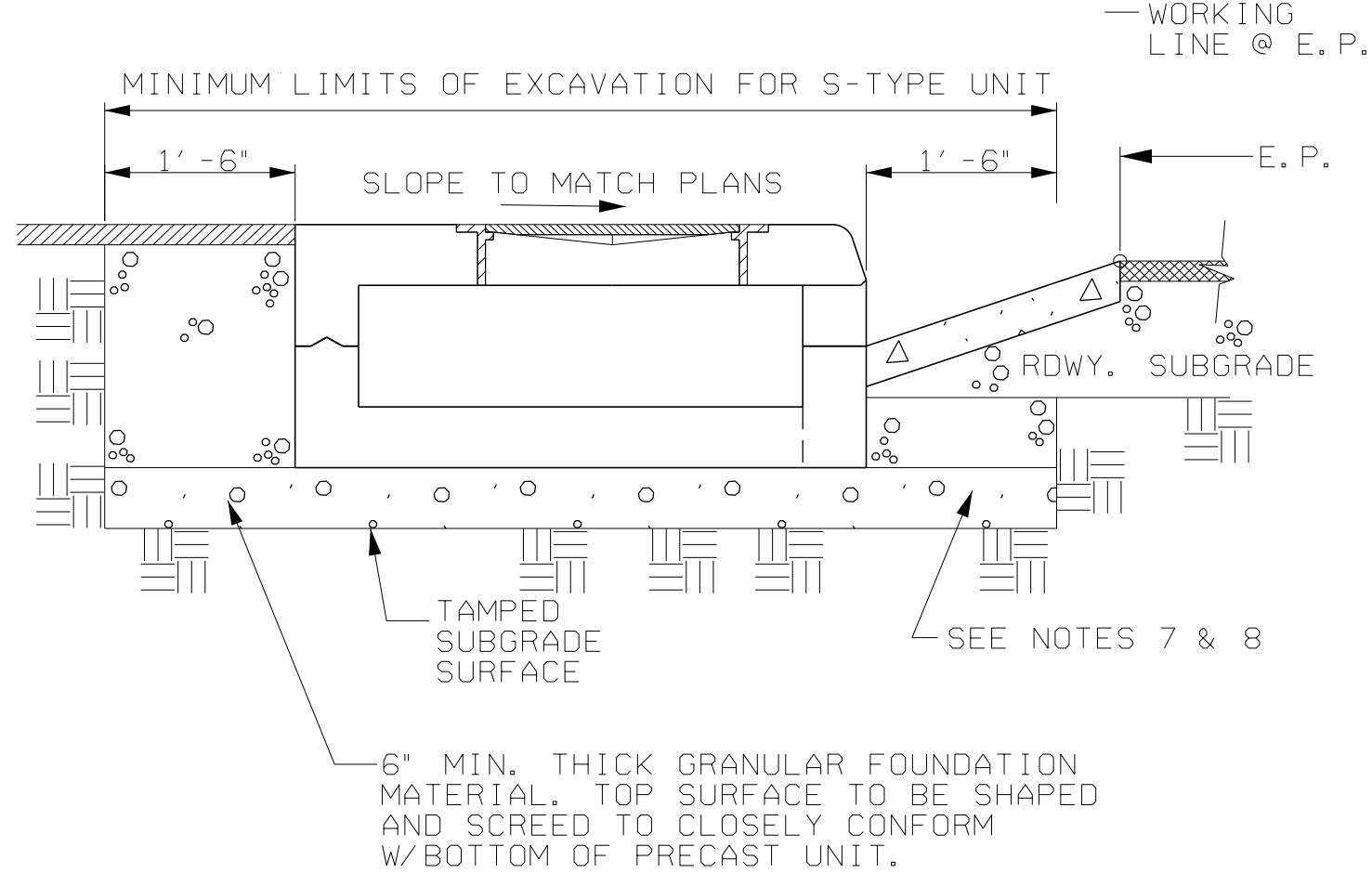
| | TYPE S1 INLET | | | | | TYPE S2 INLET | | | | |
|----------------------|----------------|---------|---------|---------|---------|--------------------------|---------|---------|---------|--|
| | DIM. "B" = 48" | | | | | DIM. "B" = 60" THRU 120" | | | | |
| STORM PIPE DIA. | 18" | 24" | 30" | 30" | 36" | 42" | 48" | 54" | 60" | |
| MIN. REQ'D. DIM. "A" | 4' - 3" | 4' - 9" | 5' - 4" | 6' - 0" | 6' - 8" | 7' - 3" | 7' - 9" | 8' - 3" | 8' - 9" | |

DIM. "A" : MINIMUM REQ'D. INSTALLATION DEPTH *
(REQUIRED FOR TYPICAL S-INLET INSTALLATION)

* MINIMUM INSTALLATION DEPTH, DIMENSION "A" = VERTICAL DISTANCE FROM WORKING LINE OF S-INLET TO INVERT OF STORM PIPE. THE TABULAR MINIMUM INSTALLATION DEPTH IS REQUIRED FOR TYPICAL S-INLET INSTALLATIONS AS SHOWN ON THIS SHEET. INSTALLATIONS WHERE DIMENSION "A" IS LESS THAN THE TABULAR VALUE MAY BE PERMISSIBLE UTILIZING A SPECIAL STORM STRUCTURE DESIGN.



SECTION @ MULTIPLE ROUND STORM STRUCTURE CONSTRUCTION
(SHOWN @ 2-WING S-INLET; 1-WING INSTALLATION SIMILAR)



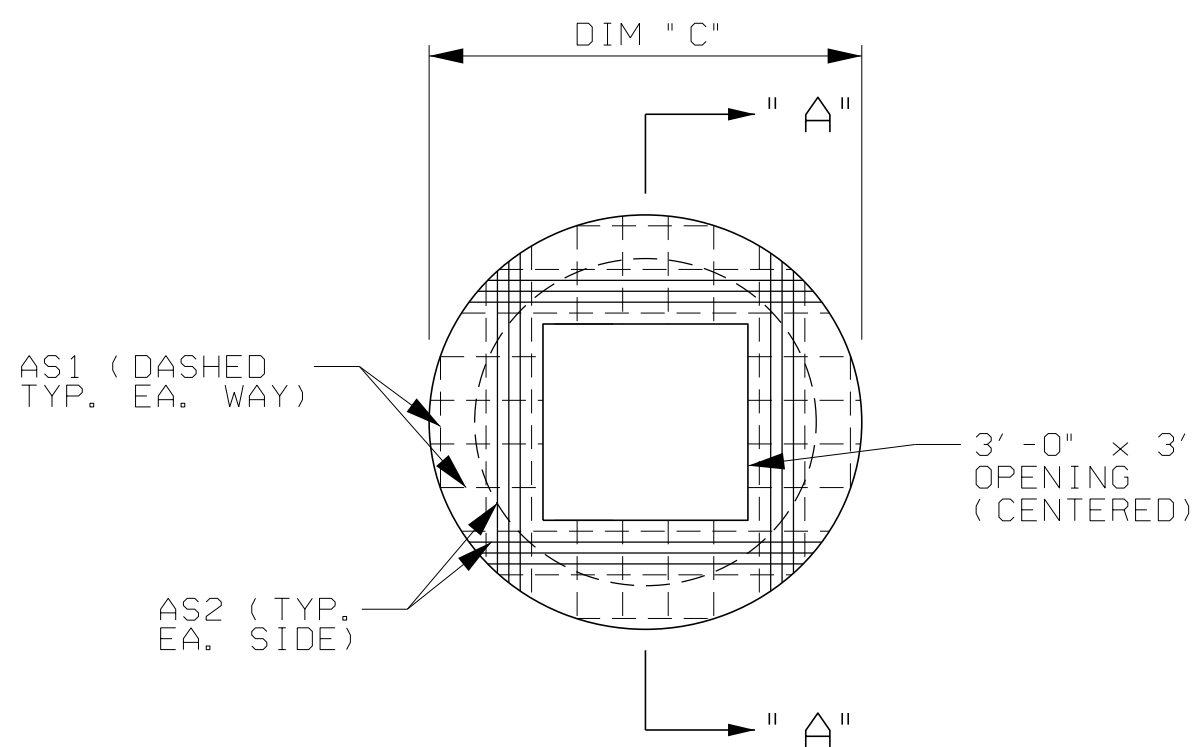
TRANSVERSE SECTION

SUGGESTED INSTALLATION PROCEDURE

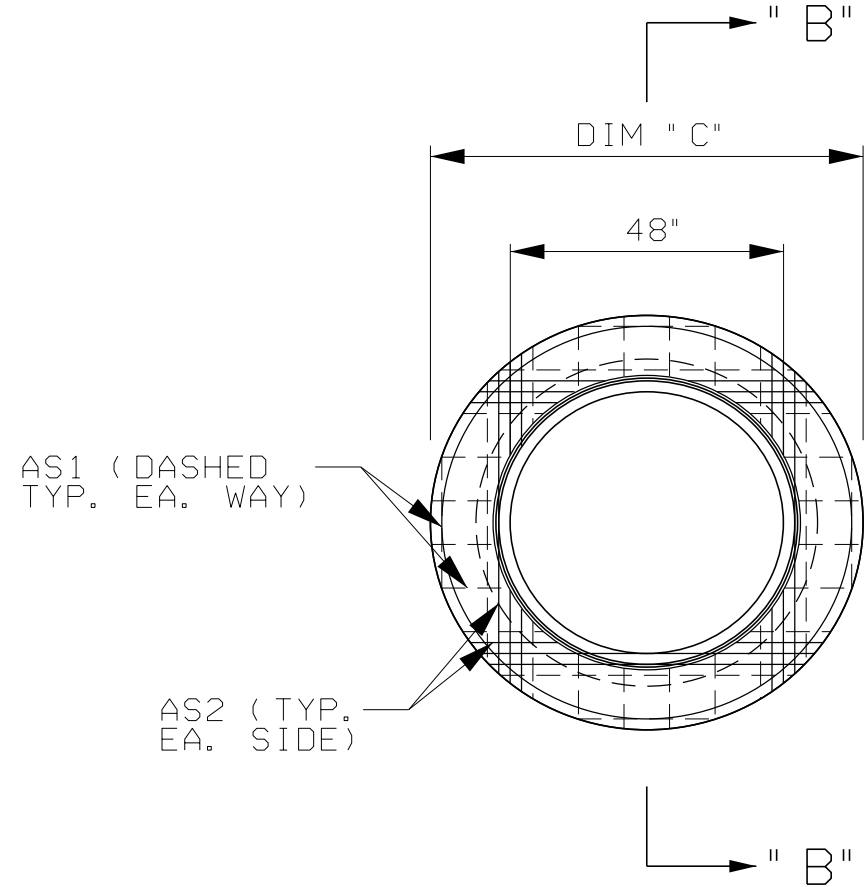
1. EXCAVATE AREA FOR PRECAST STORM STRUCTURE BASE TO THE LIMITS INDICATED AND EXCAVATE TRENCH FOR DRAINAGE PIPE.
2. UNDERCUT AND REPLACE ANY AREAS OF UNSUITABLE SUBGRADE MATERIALS. FIRMLY TAMP SUBGRADE MATERIAL AND TRIM TO LIMITS INDICATED.
3. PLACE A SIX (6) INCH MINIMUM THICKNESS OF GRANULAR FOUNDATION FILL MATERIAL. TOP SURFACE OF FOUNDATION FILL TO BE SCREEDED AND SHAPED AS CLOSE AS PRACTICABLE TO CONFORM TO BOTTOM PROFILE OF PRECAST STORM STRUCTURE BASE UNIT.
4. SET PRECAST STORM BASE UNIT INTO PLACE ON TOP OF PREPARED SURFACE.
5. INSTALL DRAINAGE PIPE PER PLANS AND SPECIFICATIONS TO A MINIMUM DISTANCE OF 5 FEET BEYOND THE PROPOSED LIMITS OF THE S-INLET EXTERIOR WALLS ABOVE.
6. PLACE PIPE BEDDING AND BACKFILL PER SPECIFICATIONS AND PLACE COMPACTED BACKFILL FOR THE STORM STRUCTURE BASE UP TO THE SUBGRADE LEVEL FOR THE S-INLET.
7. PLACE MINIMUM FOUR (4) INCH THICK COURSE GRANULAR FOUNDATION MATERIAL. TOP SURFACE OF FOUNDATION FILL TO BE SCREEDED AND SHAPED AS CLOSE AS PRACTICABLE TO CONFORM TO BOTTOM OF PRECAST S-INLET AND TAMPED INTO PLACE. FOUNDATION FILL SURFACE SHALL CONFORM WITH GUTTERLINE AND ROADWAY TEMPLATE CROSS SLOPE.
8. SPREAD A UNIFORM LAYER OF 2 INCHES OF SAND OR OTHER SMALL DIAMETER GRANULAR MATERIAL ON TOP OF GRANULAR FOUNDATION MATERIAL AND SCREED TO REQUIRED SUBGRADE ELEVATION.
9. PLACE S-UNIT BASE SECTION, CHECK HORIZONTAL ALIGNMENT WITH FACE OF CURB AND VERTICAL ALIGNMENT VS. PROPOSED TOP OF CURB ELEVATIONS.
10. REMOVE S-UNIT BASE AND ADJUST SUBGRADE CONFIGURATION IF REQUIRED.
11. PLACE S-UNIT BASE IN FINAL POSITION AND SEAL INTERFACE BETWEEN TOP OF STORM STRUCTURE AND BOTTOM OF S-UNIT BASE WITH APPROVED CEMENTIOUS GROUT.
12. PLACE CAST-IN-PLACE CURB AND GUTTER.

TYPE S1(15" - 30")

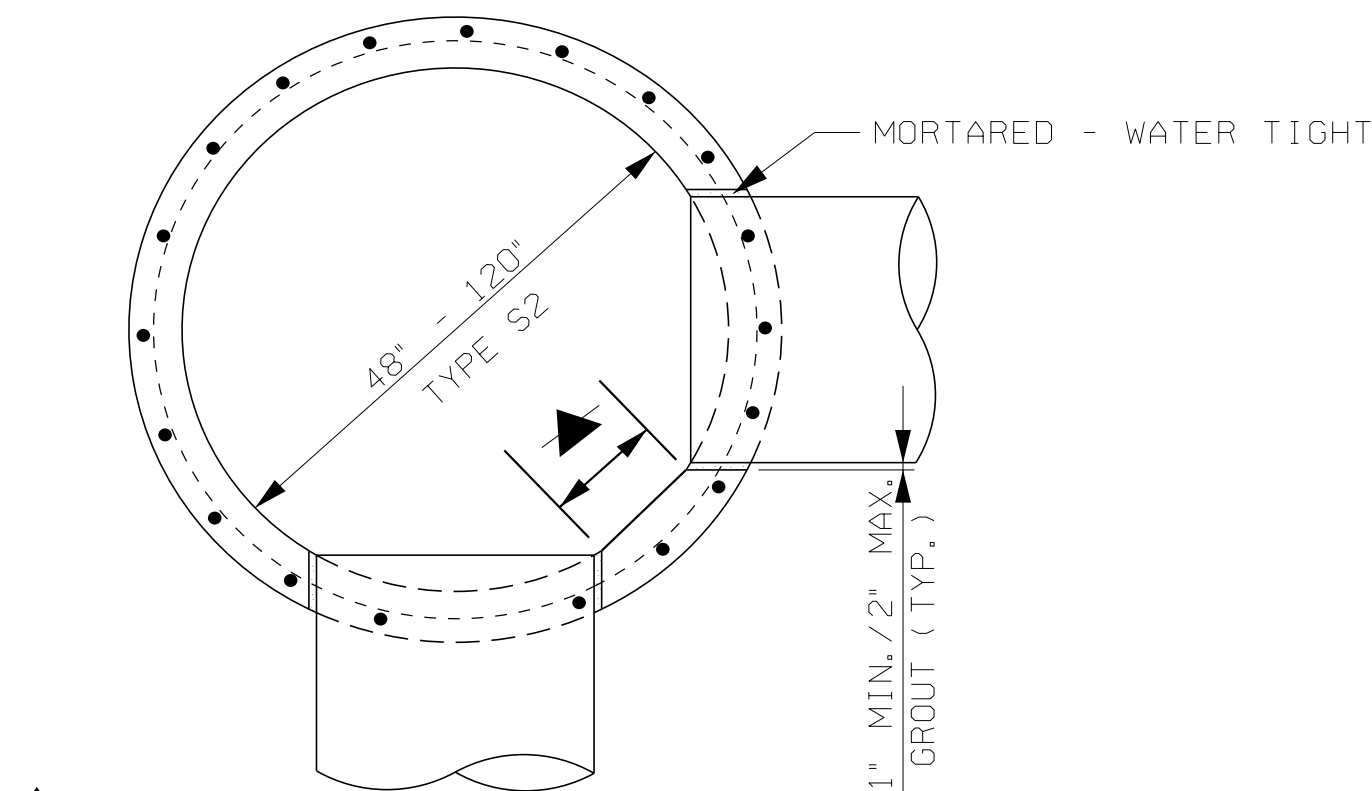
TYPE S2(36" - 60")



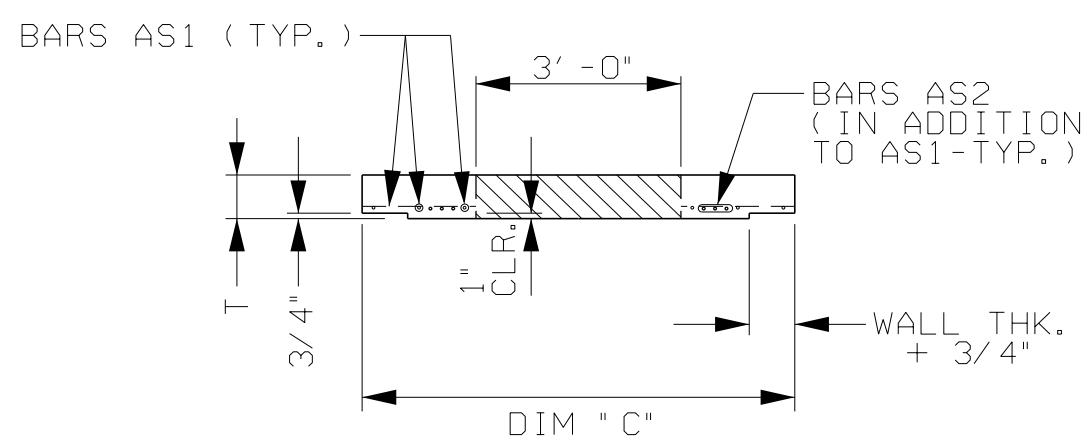
FLAT TOP REDUCER SLAB



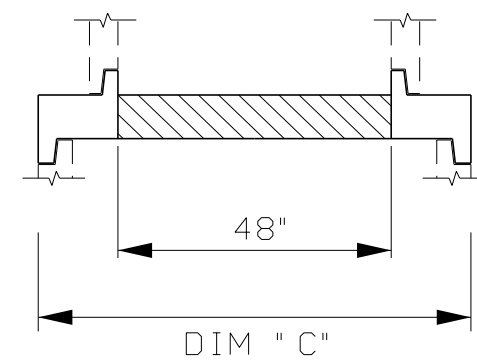
TRANSITION SLAB
(TRANSITION TO 48" DIAMETER SECTIONS)



HORIZONTAL SECTION @ CIRCULAR BASE



SECTION "A-A"



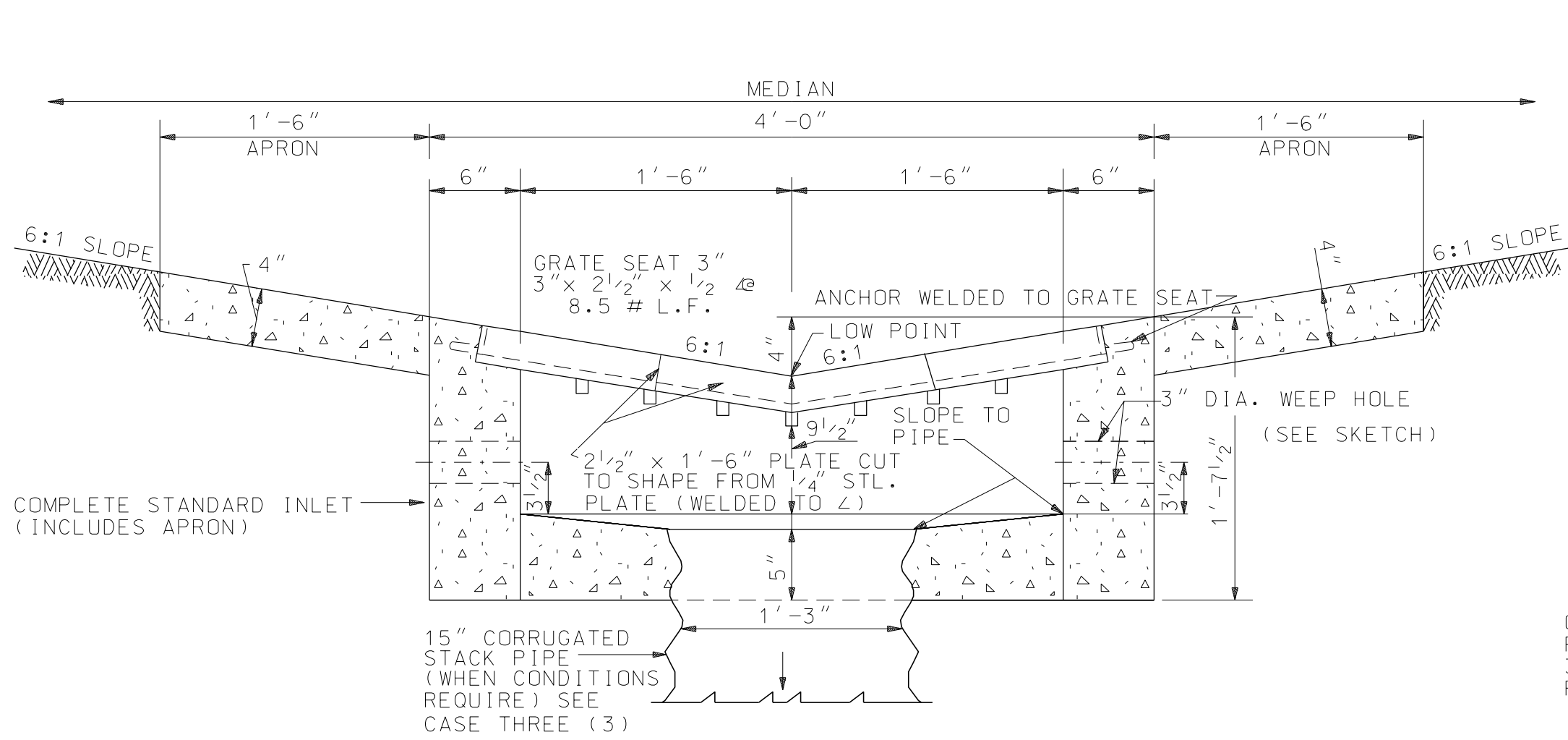
SECTION "B-B"

| DIM "C" | ROUND MANHOLE I. D. | REQ'D THK., T | REINFORCING STEEL | |
|---------|---------------------|---------------|-------------------|---------|
| | | | AS1 | AS2 |
| 72" | 60" | 8 | NO. 5@9" | 3-NO. 6 |
| 86" | 72" | 8 | NO. 5@9" | 4-NO. 6 |
| 100" | 84" | 8 | NO. 6@9" | 4-NO. 6 |
| 114" | 96" | 8 | NO. 6@8" | 5-NO. 6 |
| 142" | 120" | 12 | NO. 6@6" | 5-NO. 6 |

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

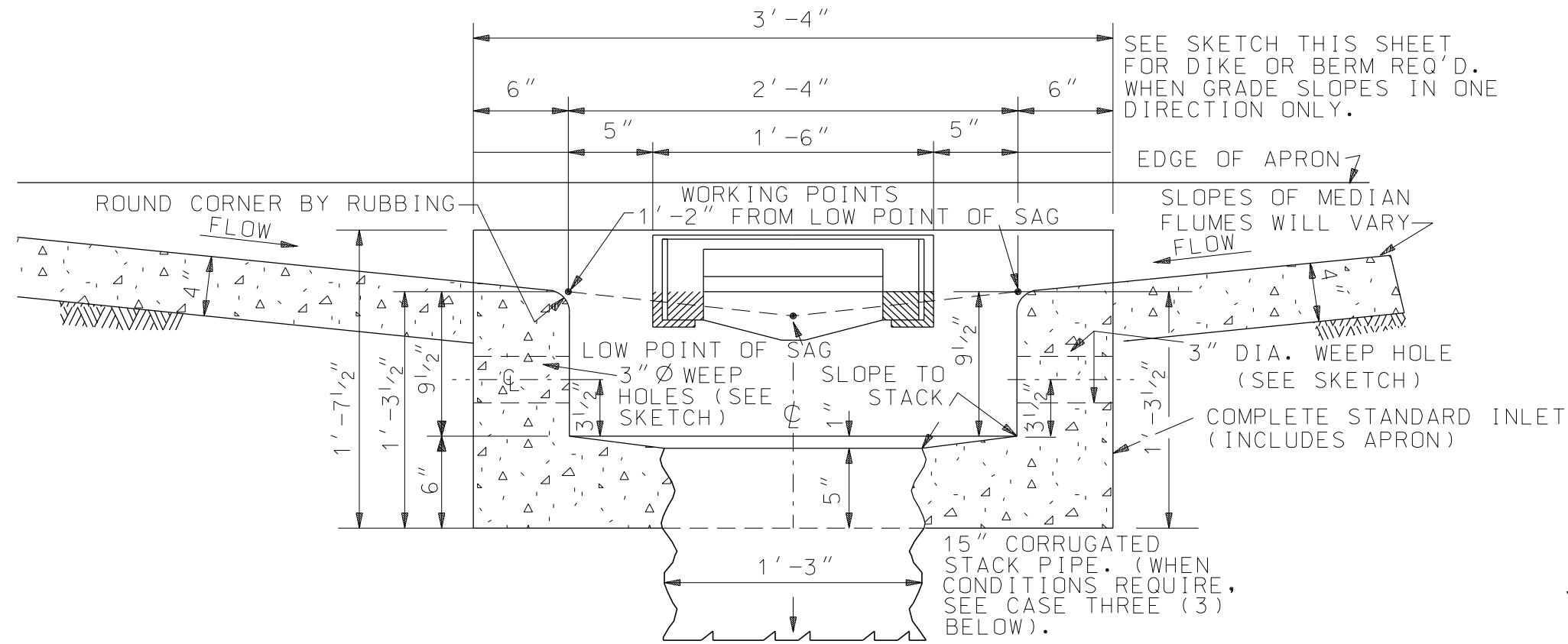
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| <div>REVISIONS</div> <div>1. Adjusted symbol in Horizontal Sec. @ Circular Base Sketch and thickness of 84" & 96" Slab from 5" to 8" on 06-03-08 by W.W.A.</div> <div>2. Added diameter size to 120" & expanded charts to include up to 120" size on 07-06-09 by W.W.A.</div> | | |
| <div>ALABAMA DEPARTMENT OF TRANSPORTATION</div> <div>1409 COLISEUM BOULEVARD</div> <div>MONTGOMERY, AL 36130-3050</div> <div>DESIGN BUREAU SPECIAL DRAWING</div> <div>PRECAST CONCRETE STORM SEWER INLET TYPES S1 AND S2</div> | | |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: _____ | | INDEX NO I-621-SP (3 OF 3) 62139 |

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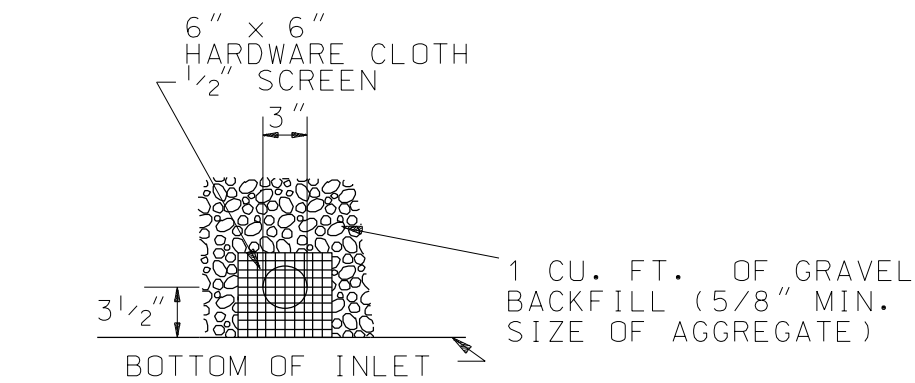


SECTION "B-B" (SEE PLAN)

NOTE: IN ALL CASES WHERE FEASIBLE PLACE CENTER LINE OF INLET AT EXACT LOW POINT OF SAG.



SECTION "A-A" (SEE PLAN)



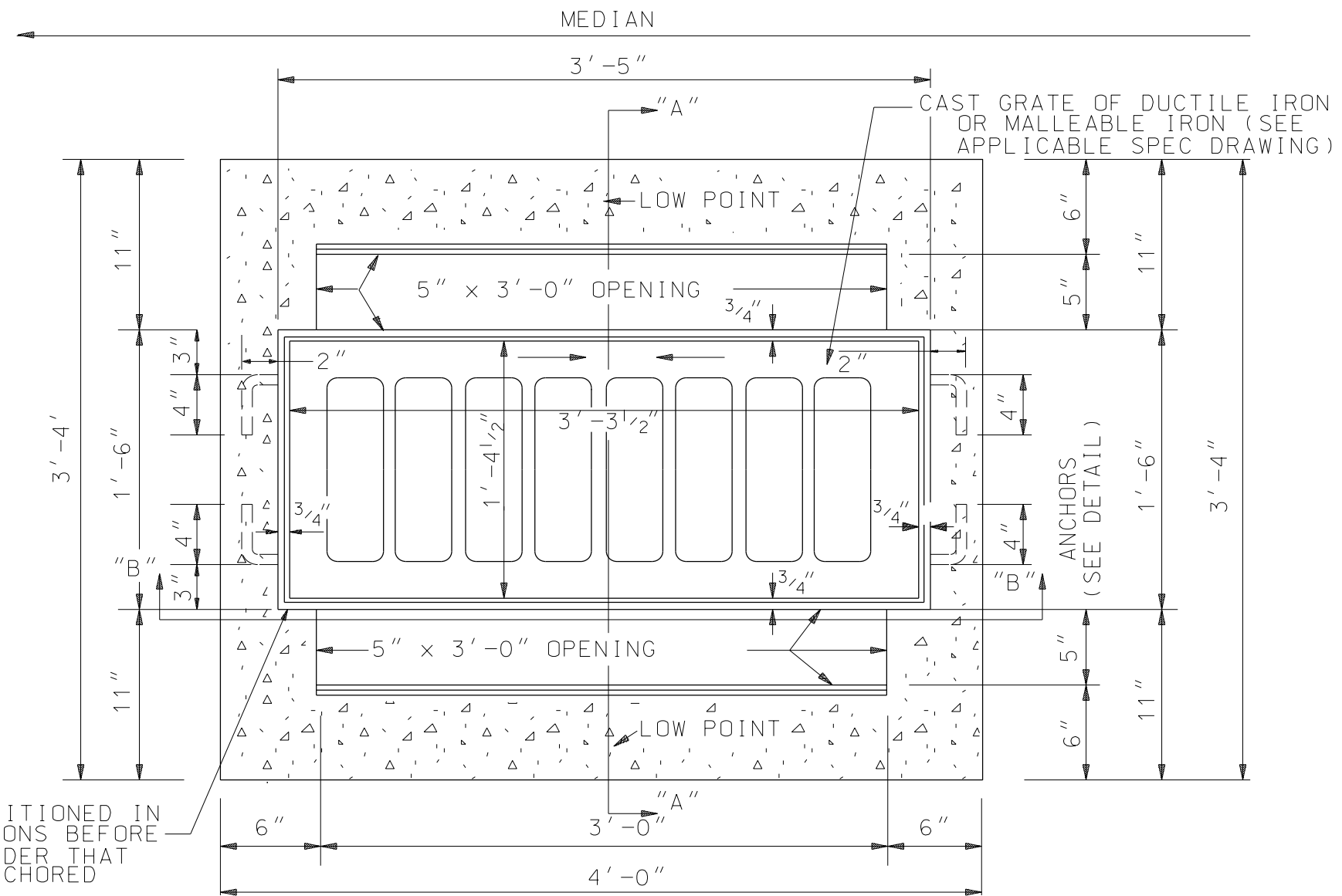
SKETCH SHOWING TREATMENT OF WEEP HOLES

WEEP HOLES

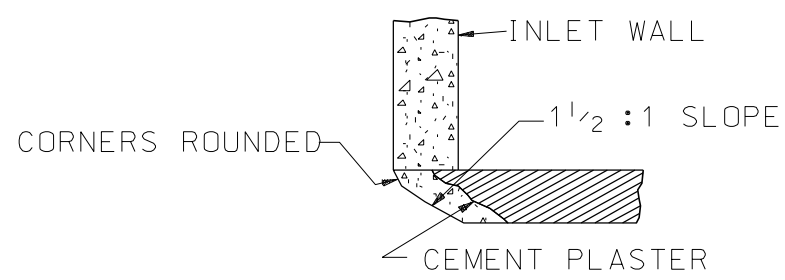
INLETS SHALL BE PROVIDED WITH A MINIMUM OF TWO (2) WEEP HOLES AND A MAXIMUM OF FOUR (4) WHEN DIRECTED. LOWER ALTERNATING INLET UNITS SHALL BE PROVIDED WITH FOUR (4) WEEP HOLES. WEEP HOLES SHALL BE 3" DIA. AND 6" IN LENGTH CUT FROM 3" WATER PIPE, GALV. P.V.C. OR CAST IRON. THIN SHEET METAL PIPE WILL NOT BE ACCEPTABLE FOR THIS PURPOSE. SEE TREATMENT OF WEEP HOLES ABOVE.

NOTE:

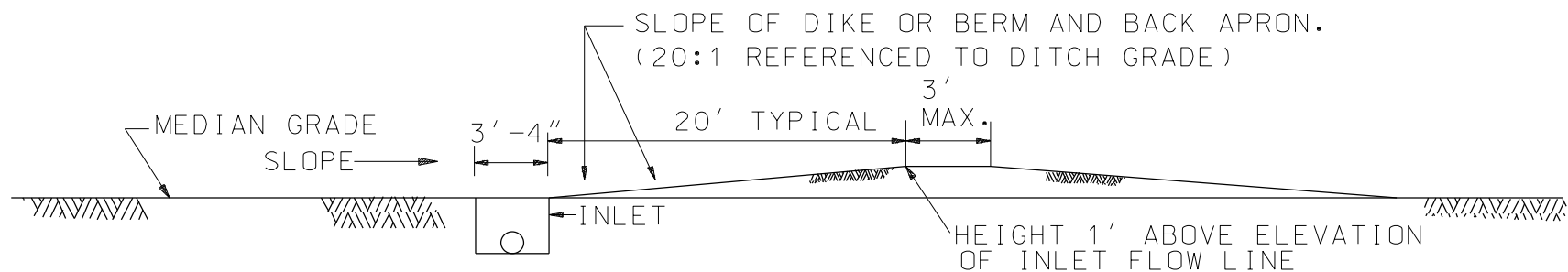
GRATE SEATS SHALL BE POSITIONED IN THEIR EXACT FIXED LOCATIONS BEFORE CONCRETE IS POURED IN ORDER THAT THEY WILL BE SECURELY ANCHORED IN CONCRETE.



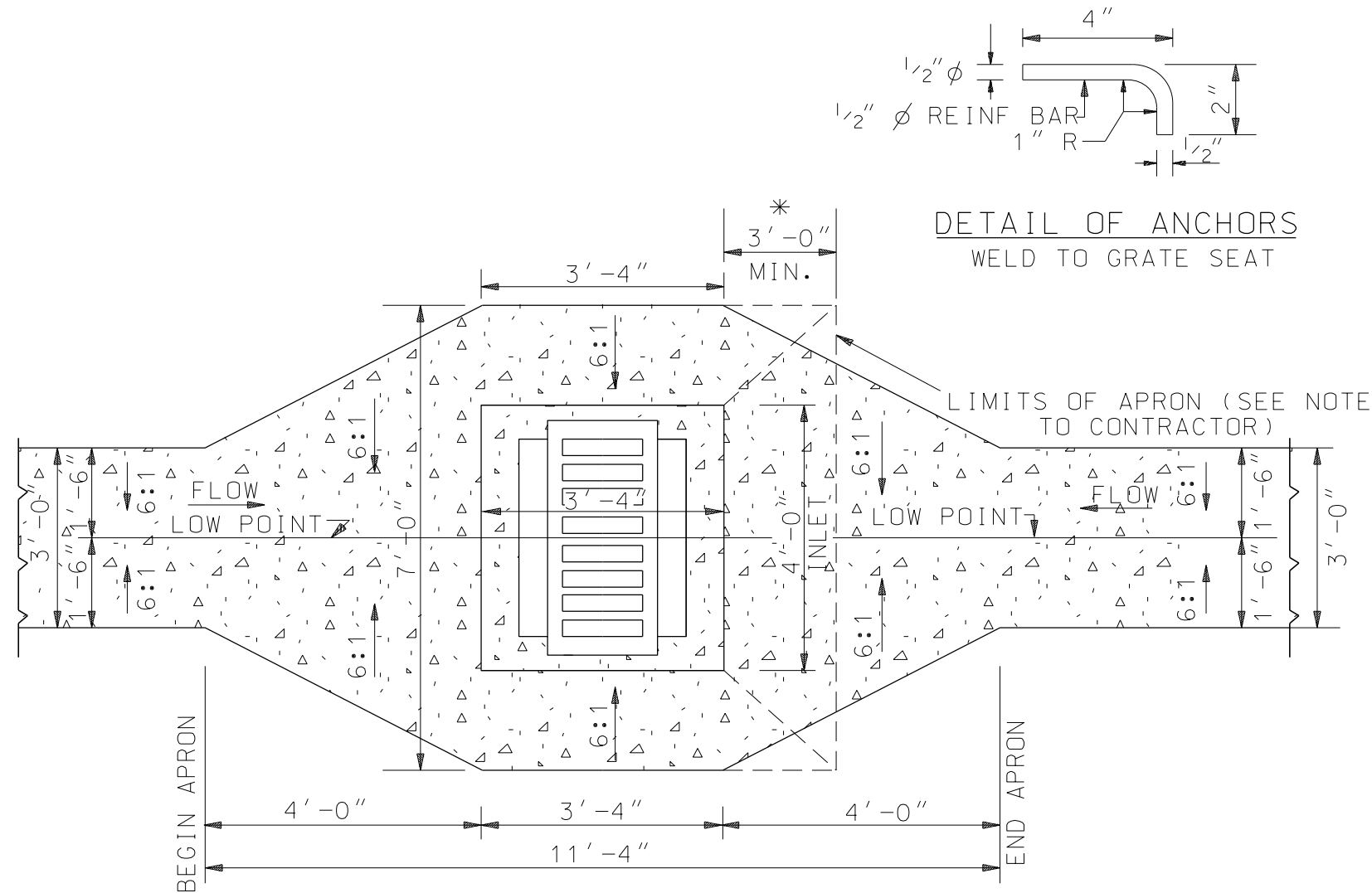
PLAN VIEW



DETAIL OF BEVELED RING



SECTION THRU INLET AND MEDIAN, WHEN MEDIAN GRADE SLOPES ONE WAY ONLY



PLAN OF CONCRETE APRON

NOTE TO CONTRACTOR:


PAY FOR CONCRETE APRON AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID PRICE FOR INLET, TYPE-Y EACH.

* BACK APRON 3'-0" (MIN.) 20:1 SLOPE.

WHEN INLETS ARE USED WHERE MEDIAN DRAIN SLOPES ONE WAY ONLY, WITH EARTH DIKE ON DOWNHILL SIDE, THE CONC. APRON SHALL BE CONSTRUCTED TO LIMITS SHOWN BY BROKEN LINE.

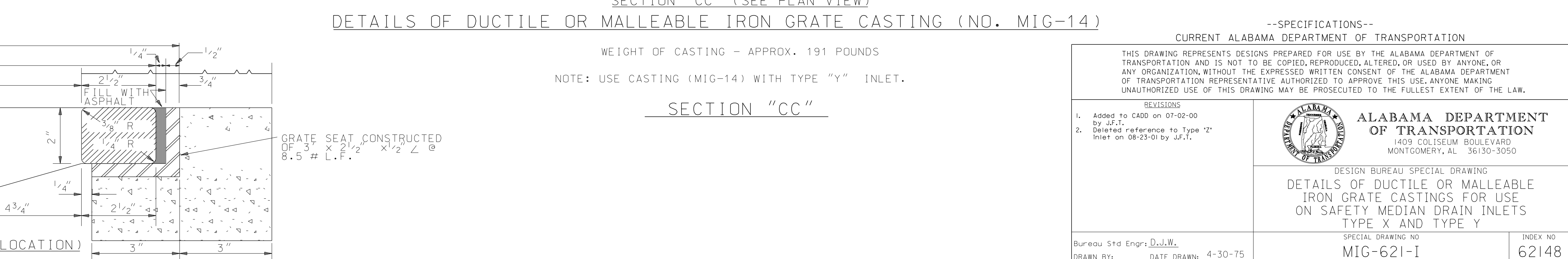
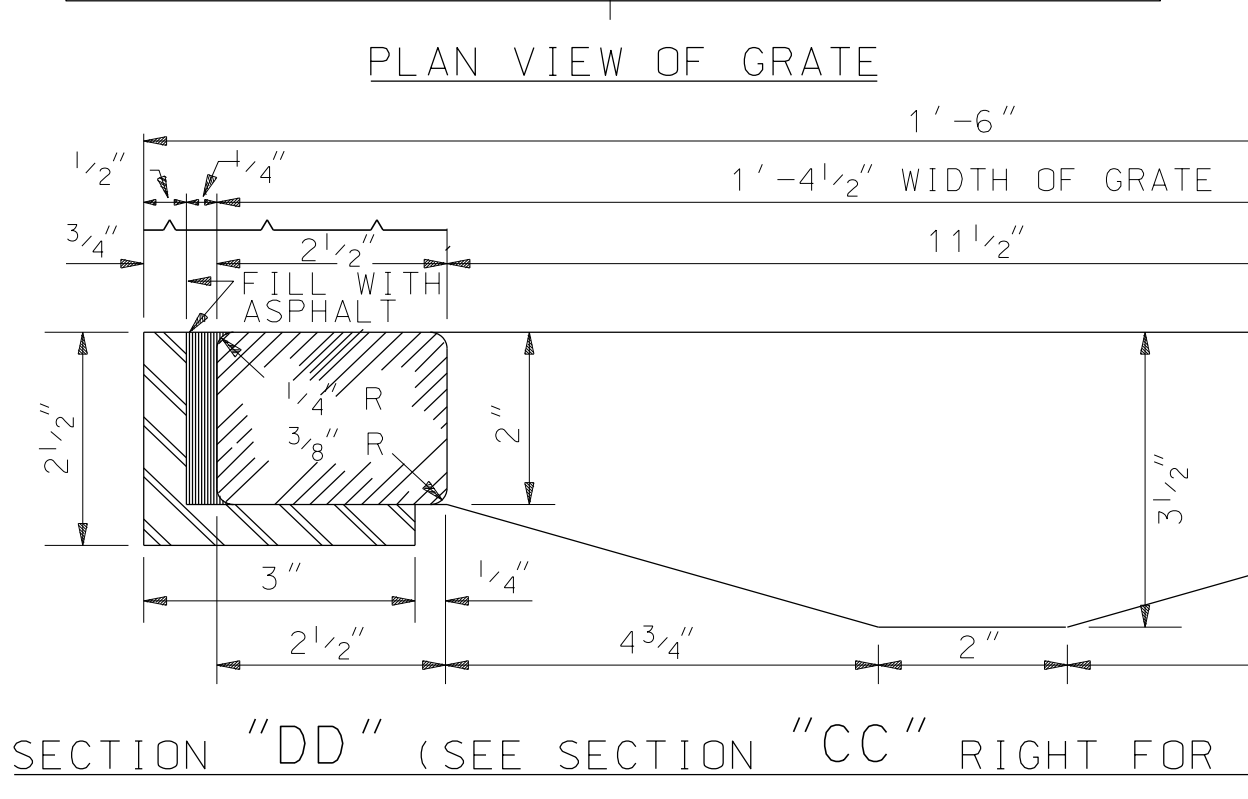
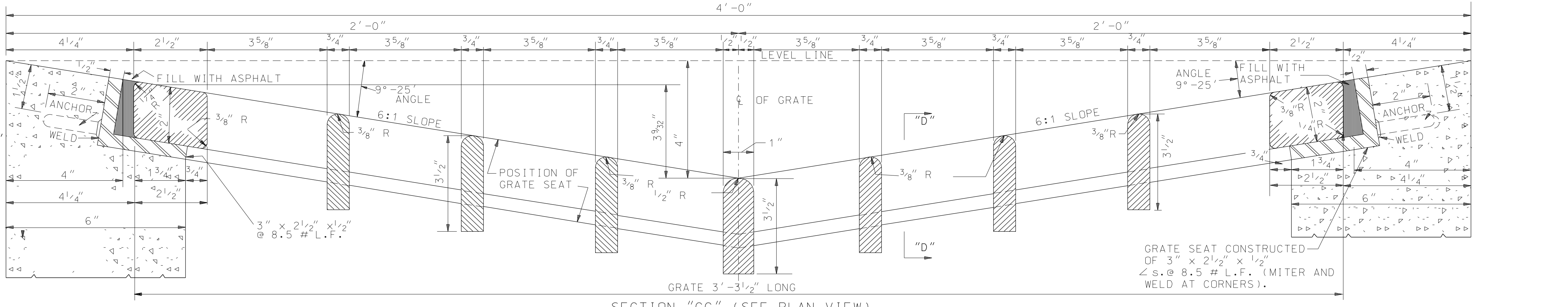
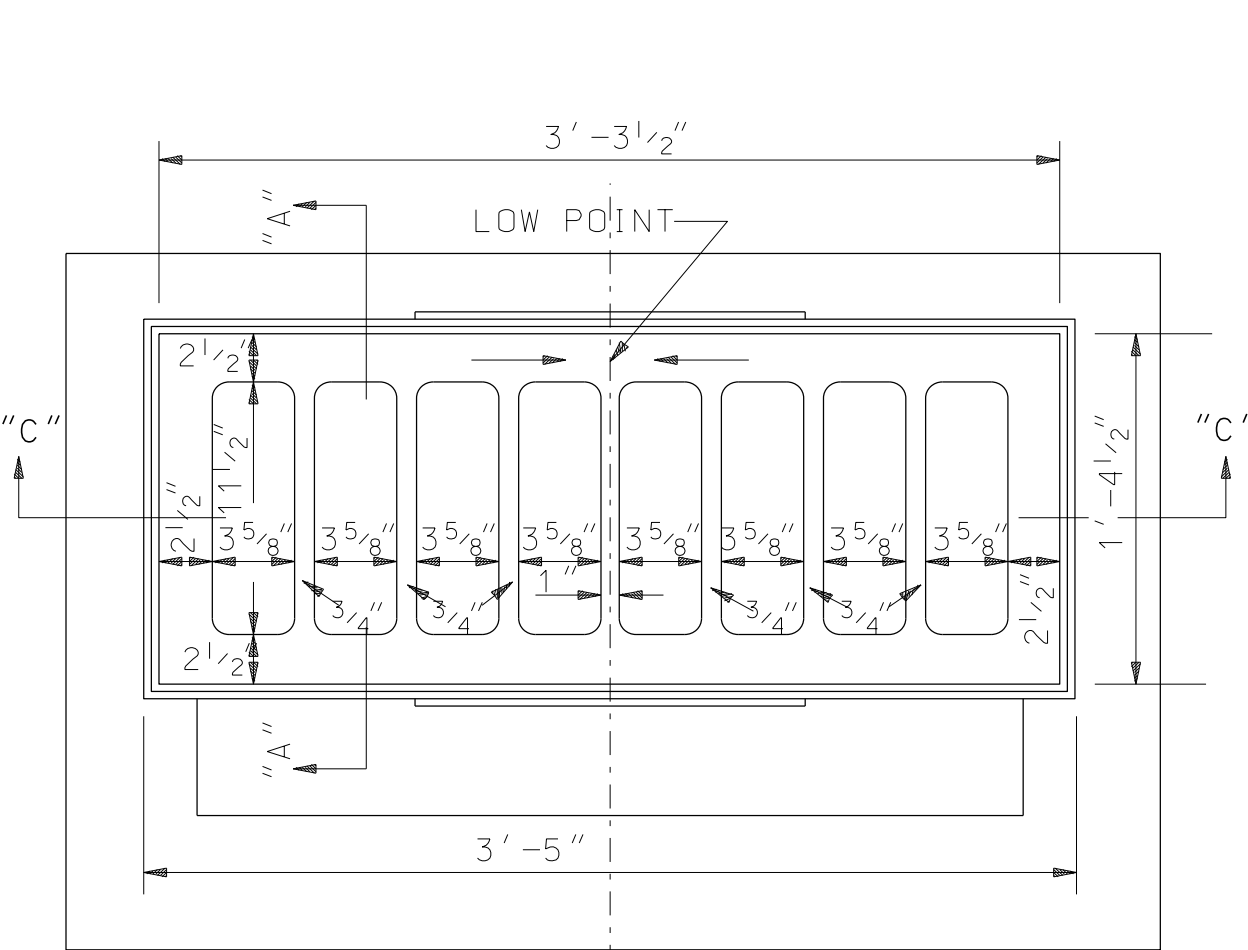
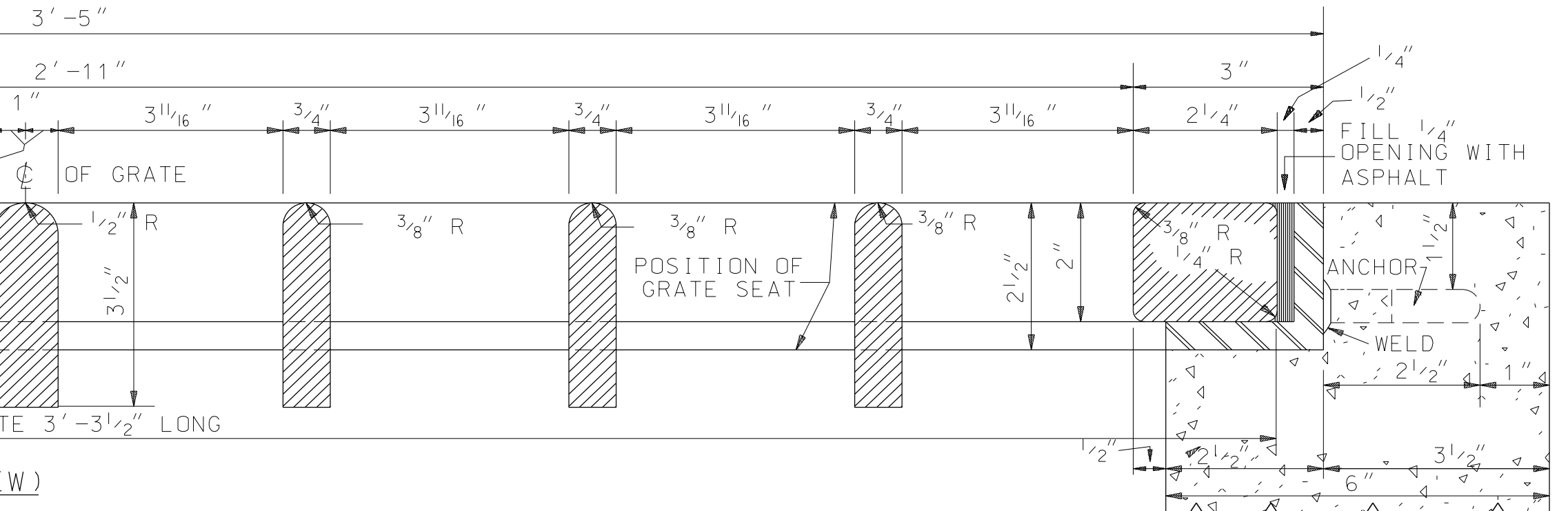
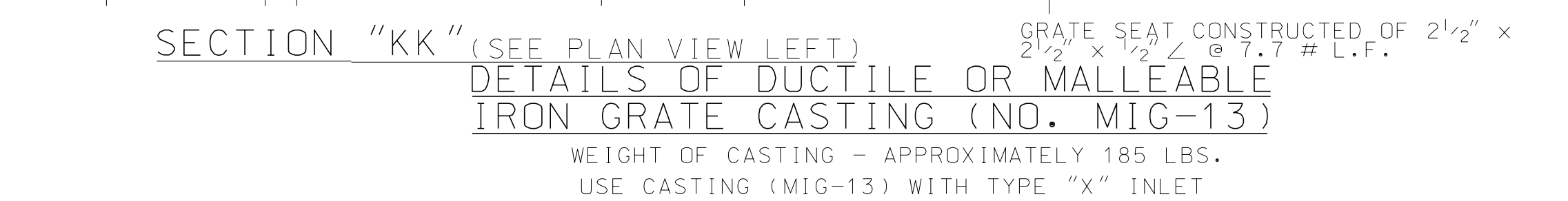
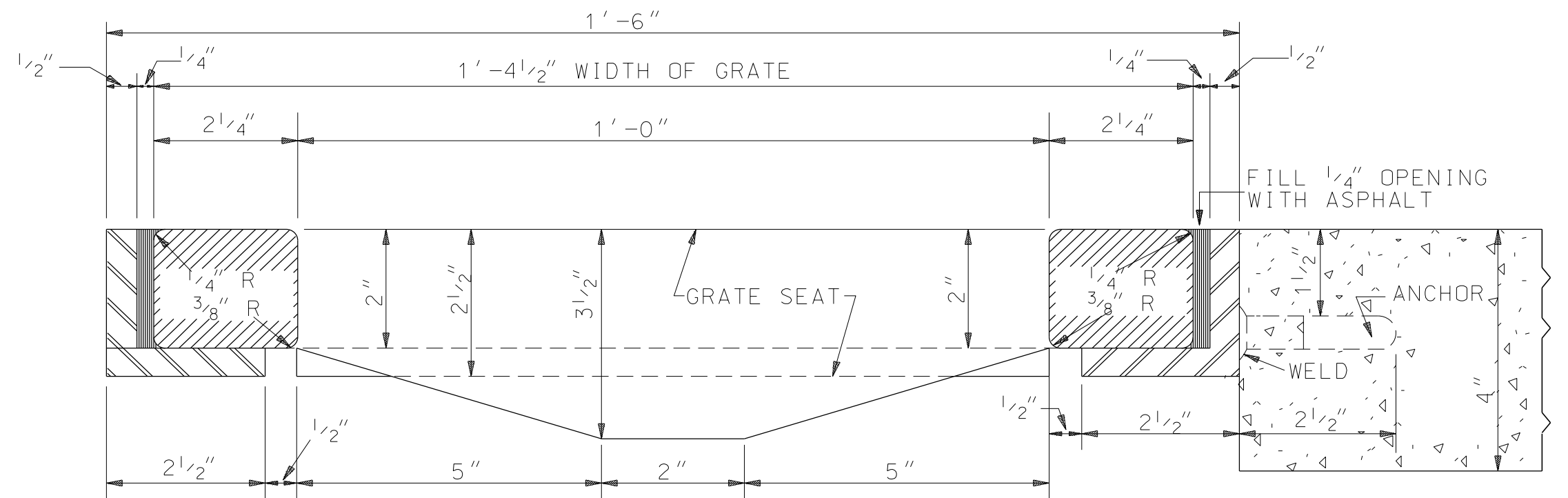
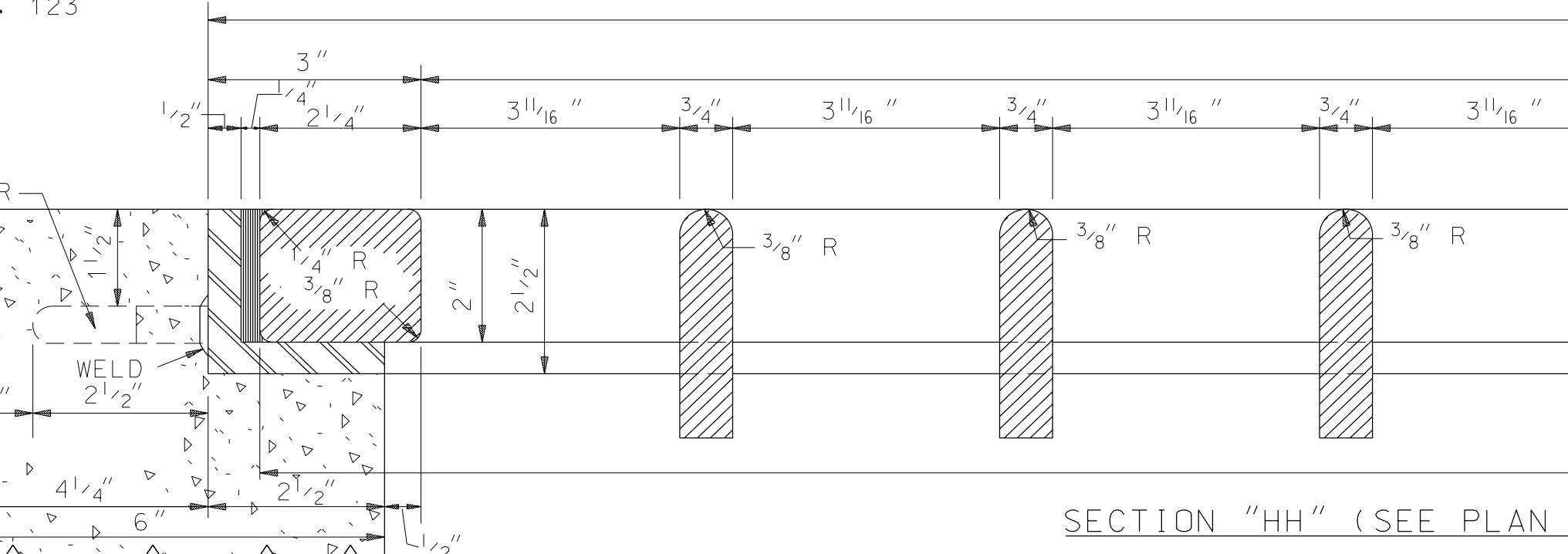
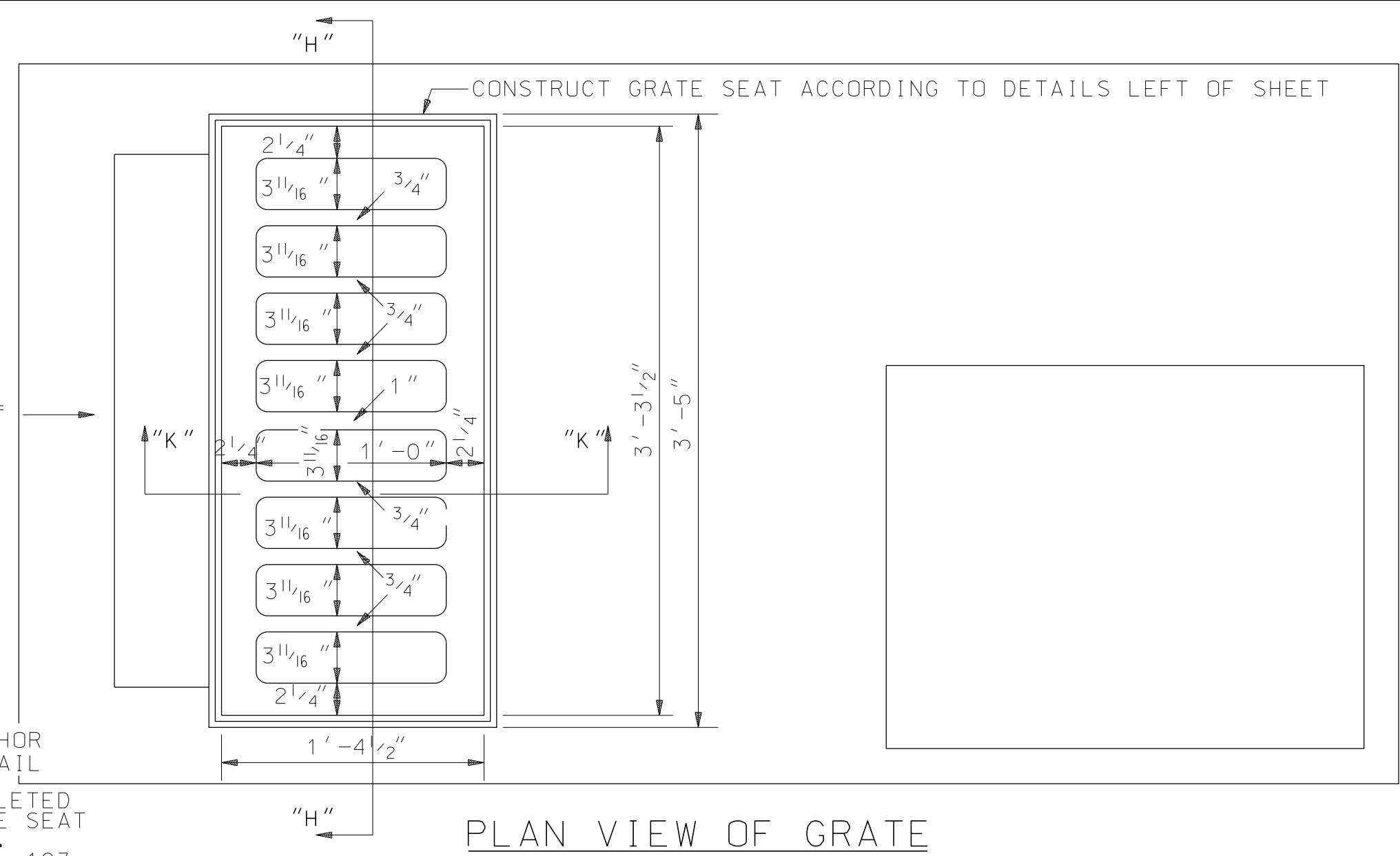
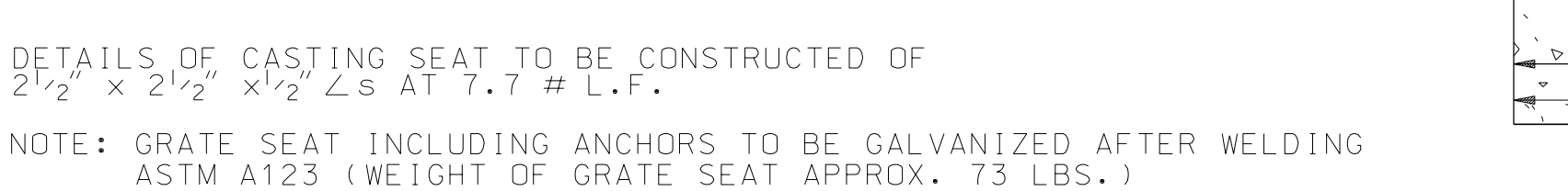
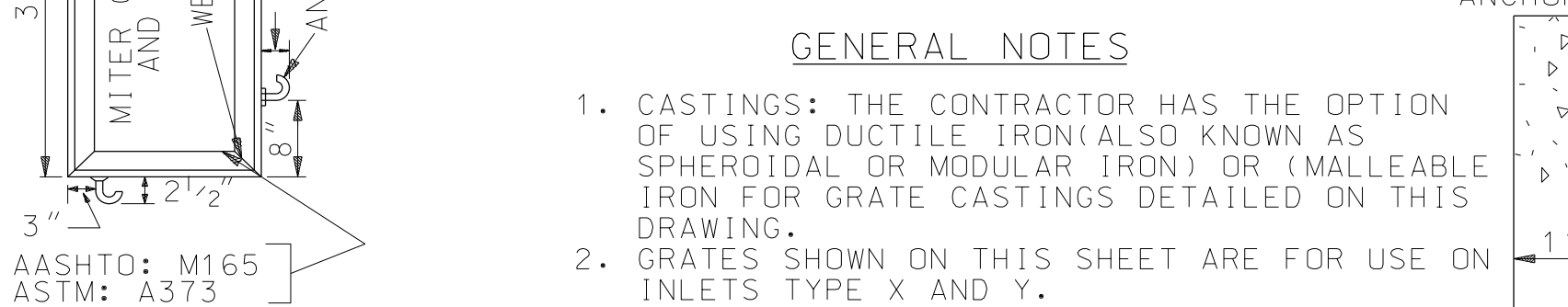
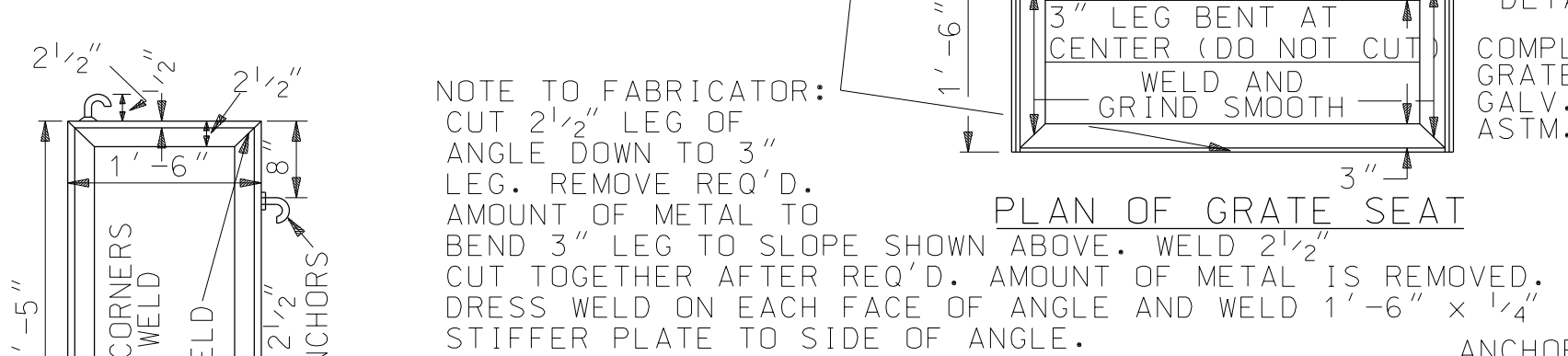
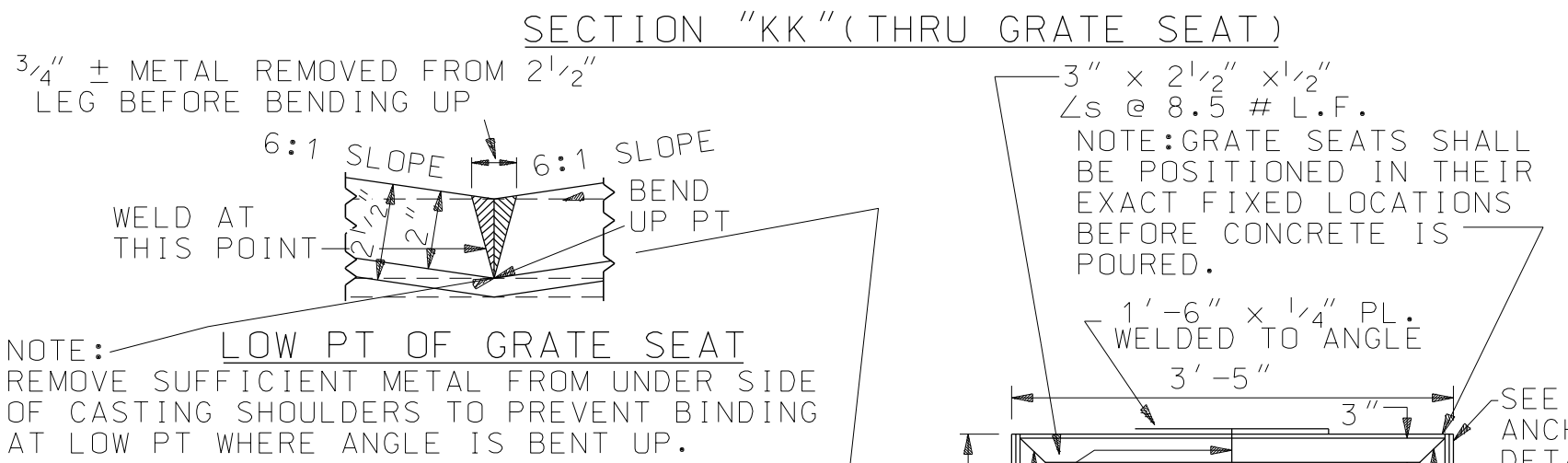
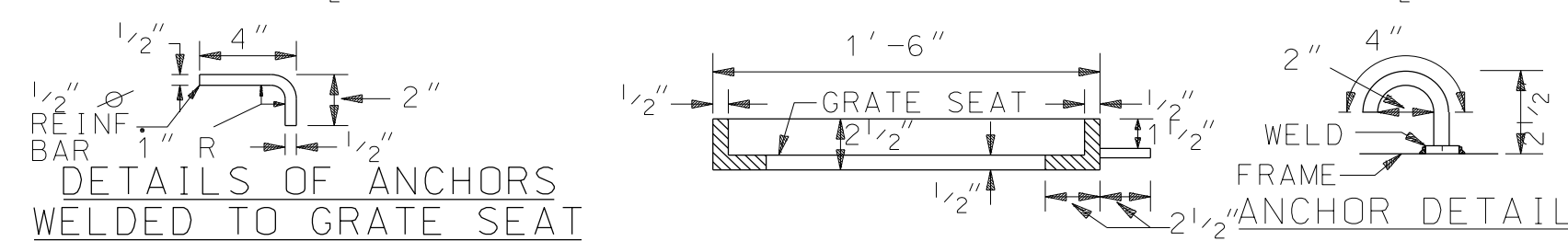
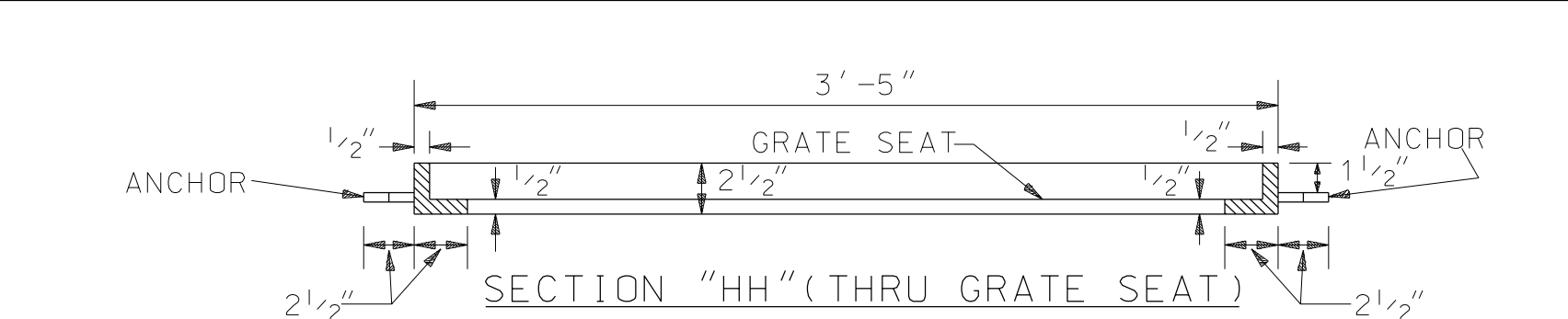
--SPECIFICATIONS--

CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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| REVISIONS 1. Added to CADD on 06-19-00 by J.F.T. by J.F.T. 2. Relocated Weep Hole sketch & added Inlet Unit to Case Four on 02-14-07 by J.F.T. 3. Corrected text callout for depth in Section A-A on 7-13-2020 by DJW. | |
|  ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050 | |
| DESIGN BUREAU SPECIAL DRAWING DETAILS OF SAFETY INLET TYPE Y FOR USE IN MEDIAN DRAIN WHERE DRAINS SLOPE IN TWO DIRECTIONS AND CONVERGE IN A LOW POINT OR FOR USE WHERE DRAIN SLOPES ONE WAY | |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: 4-27-93 | INDEX NO 62145 |

NOT TO SCALE

| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |

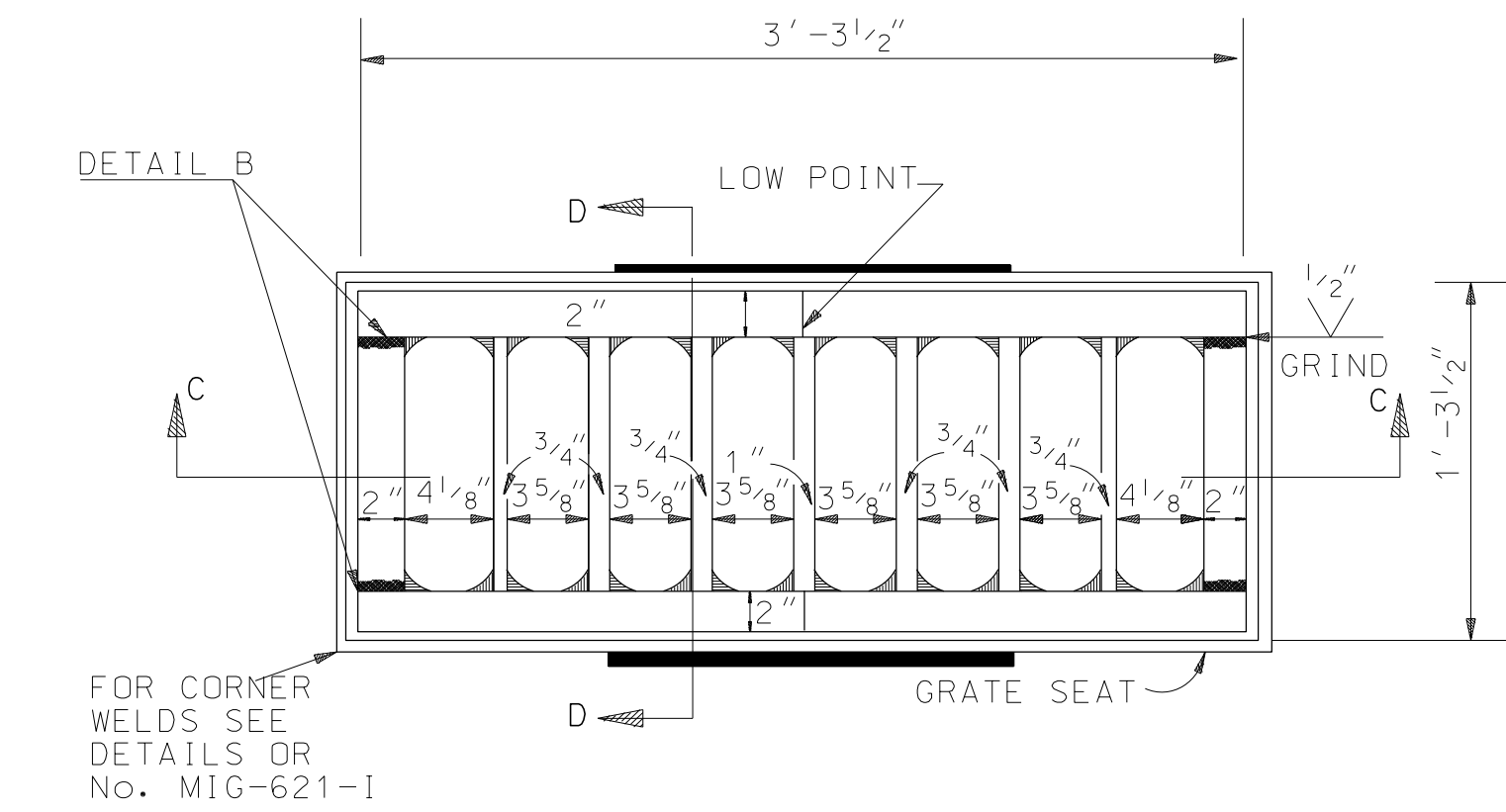
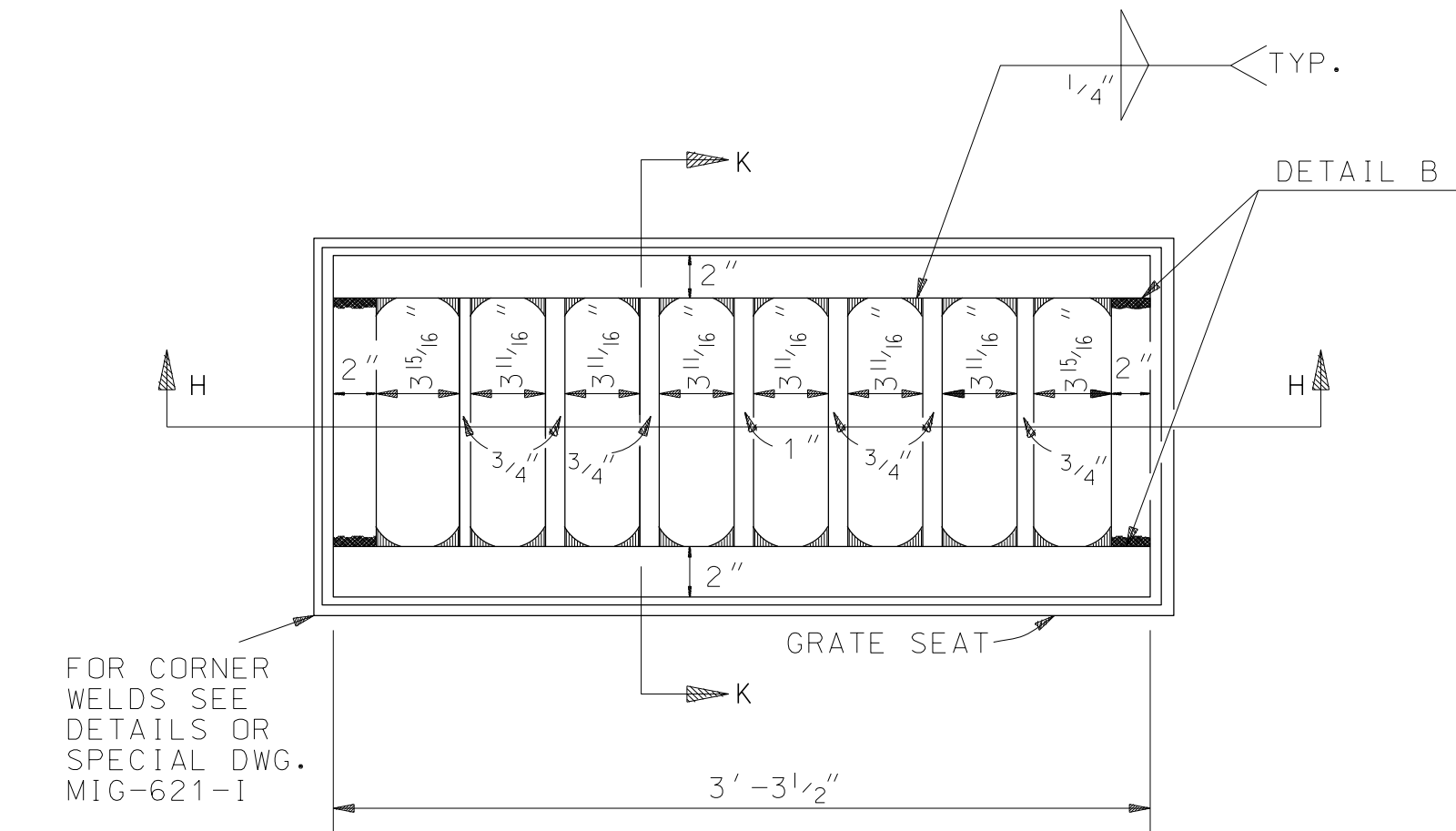


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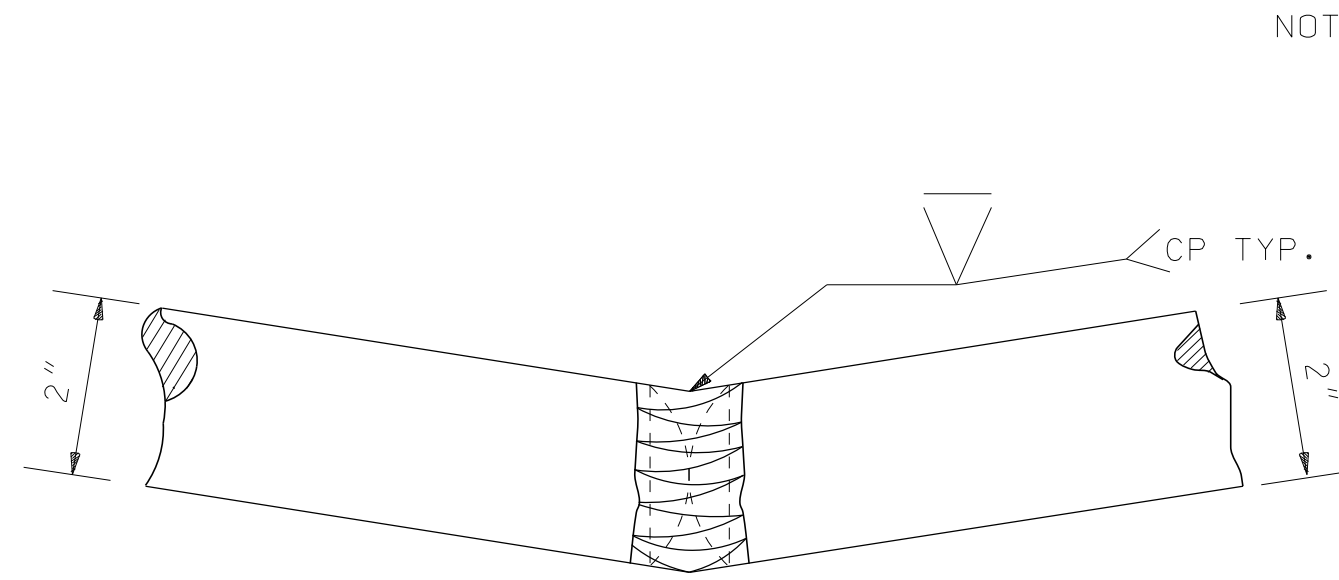
GENERAL NOTES

1. AT HIS OPTION THE CONTRACTOR MAY FURNISH WELDED STEEL GRATES AS DETAILED ON THIS SHEET IN LIEU OF THE DUCTILE IRON OR MALLEABLE IRON CAST GRATES SHOWN ON SPECIAL DWG. No. MIG-621-1.
2. STEEL DESIGNATION ASTM A36.
3. GALVANIZATION ACCORDING TO ASTM A123.
4. CORNERS SHOWN ROUNDED ARE APPROXIMATE AND SERVE AS GUIDE LINES ONLY.
5. AS AN OPTION THE CONTRACTOR MAY SUPPLY $2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{2}"$ ANGLES FOR THE TYPE Y WELDED STEEL GRATE SEAT. THE OFFSET FROM THE GRATE TO THE ANGLE WILL BE REDUCED TO $\frac{1}{4}"$ AND SHALL BE FILLED WITH ASPHALT. (SEE DETAIL A)
6. AN OPTIONAL $\frac{1}{2}" \times 2\frac{1}{8}"$ STUD MAY BE SUPPLIED FOR THE GRATE SEAT ANCHOR (SEE DETAIL A)
7. GRIND THE CORNER OF THE ANGLE FLAT TO MATCH THE DIAMETER OF THE STUD.

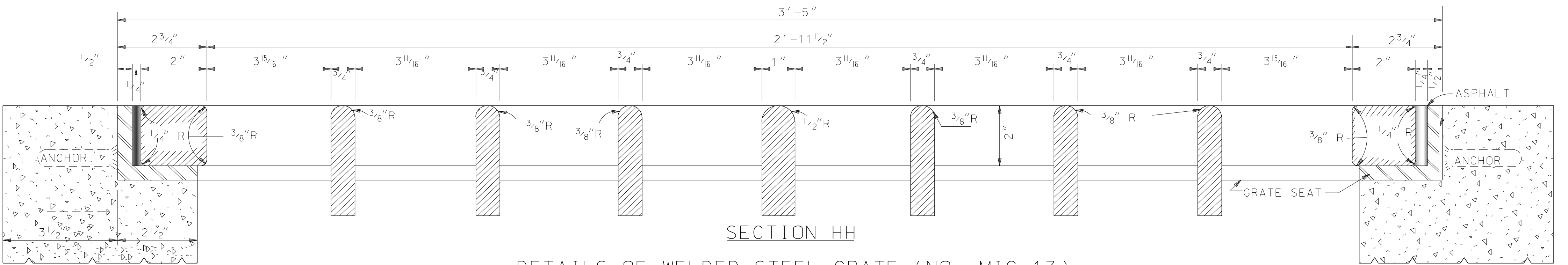
| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
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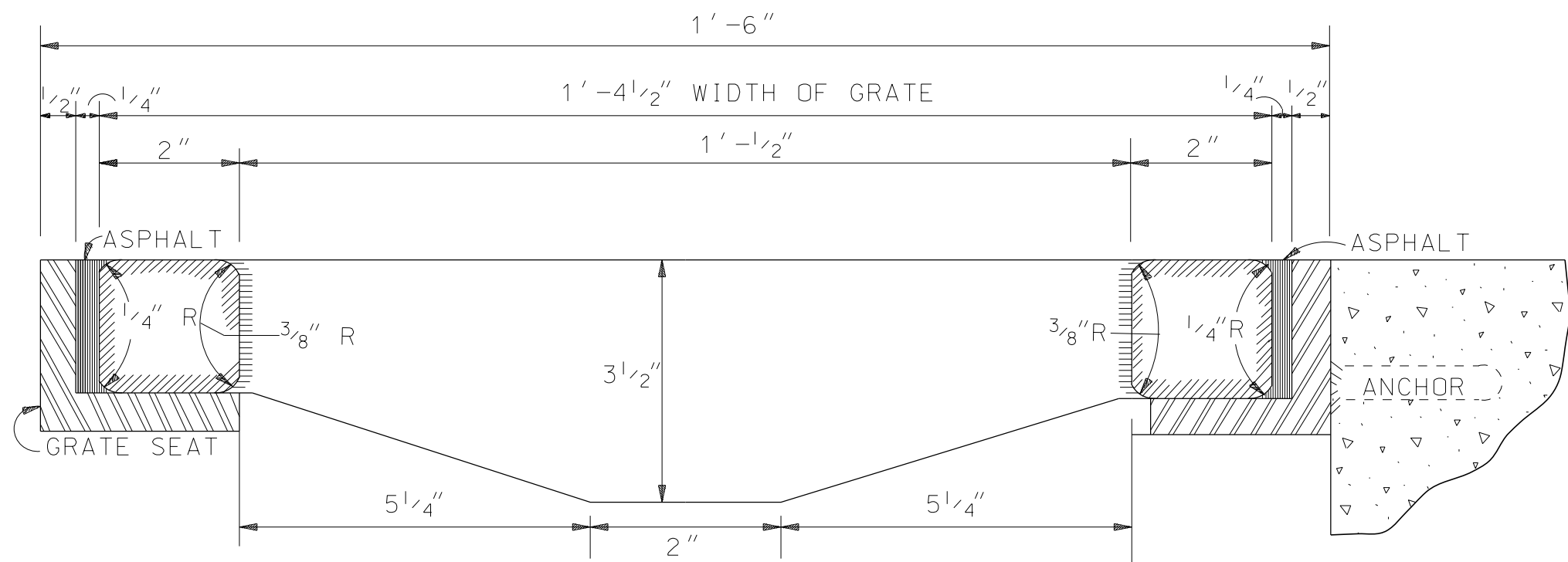
PLAN VIEW OF GRATES



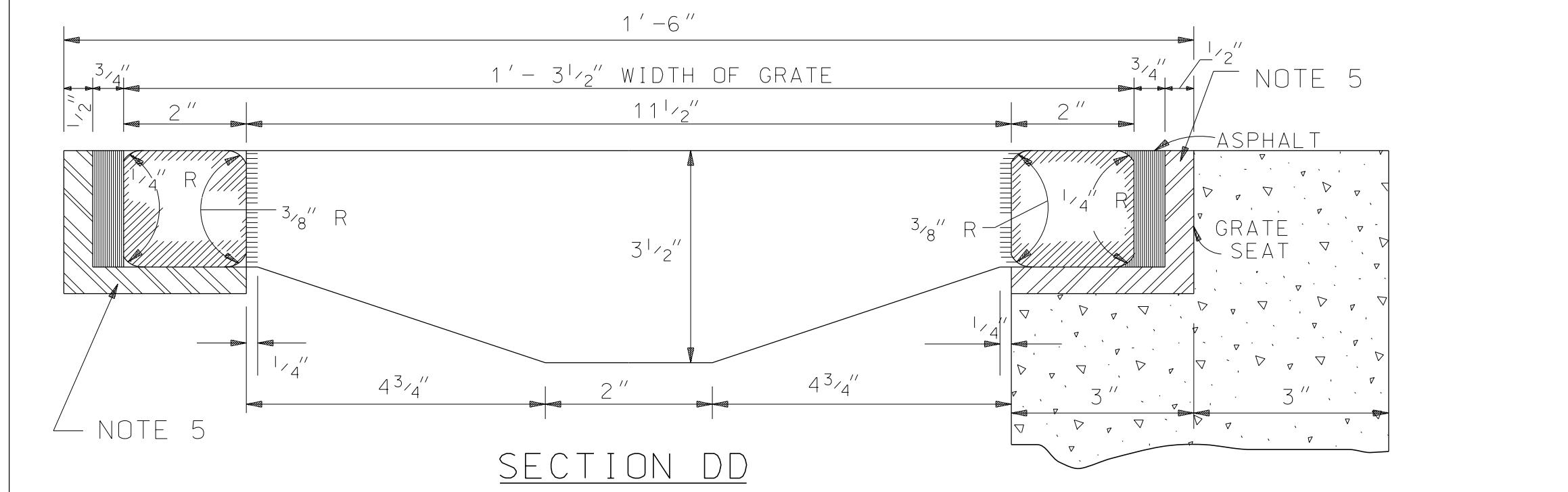
DETAILS OF WELD ON LOWER GRATE (NO. MIG-14)



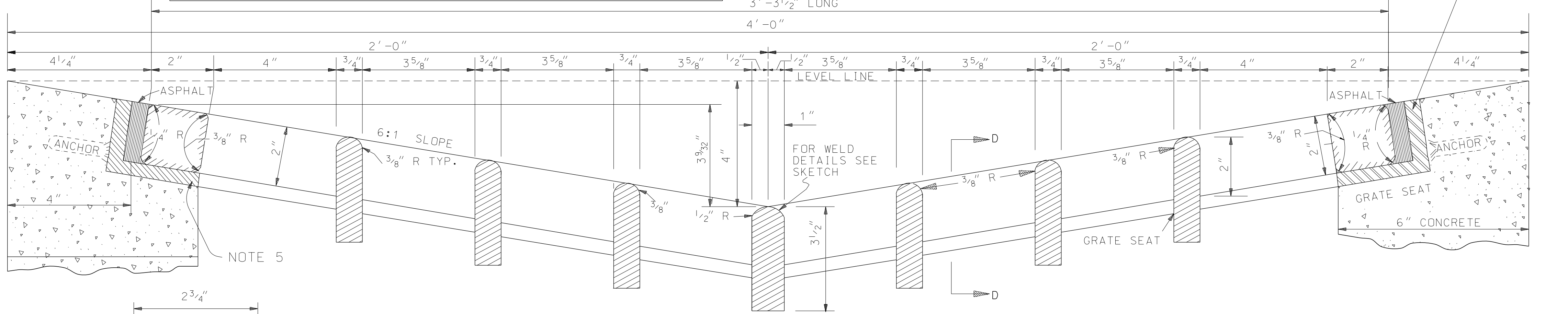
DETAILS OF WELDED STEEL GRATE (NO. MIG-13)
FOR USE WITH TYPE "X" INLET



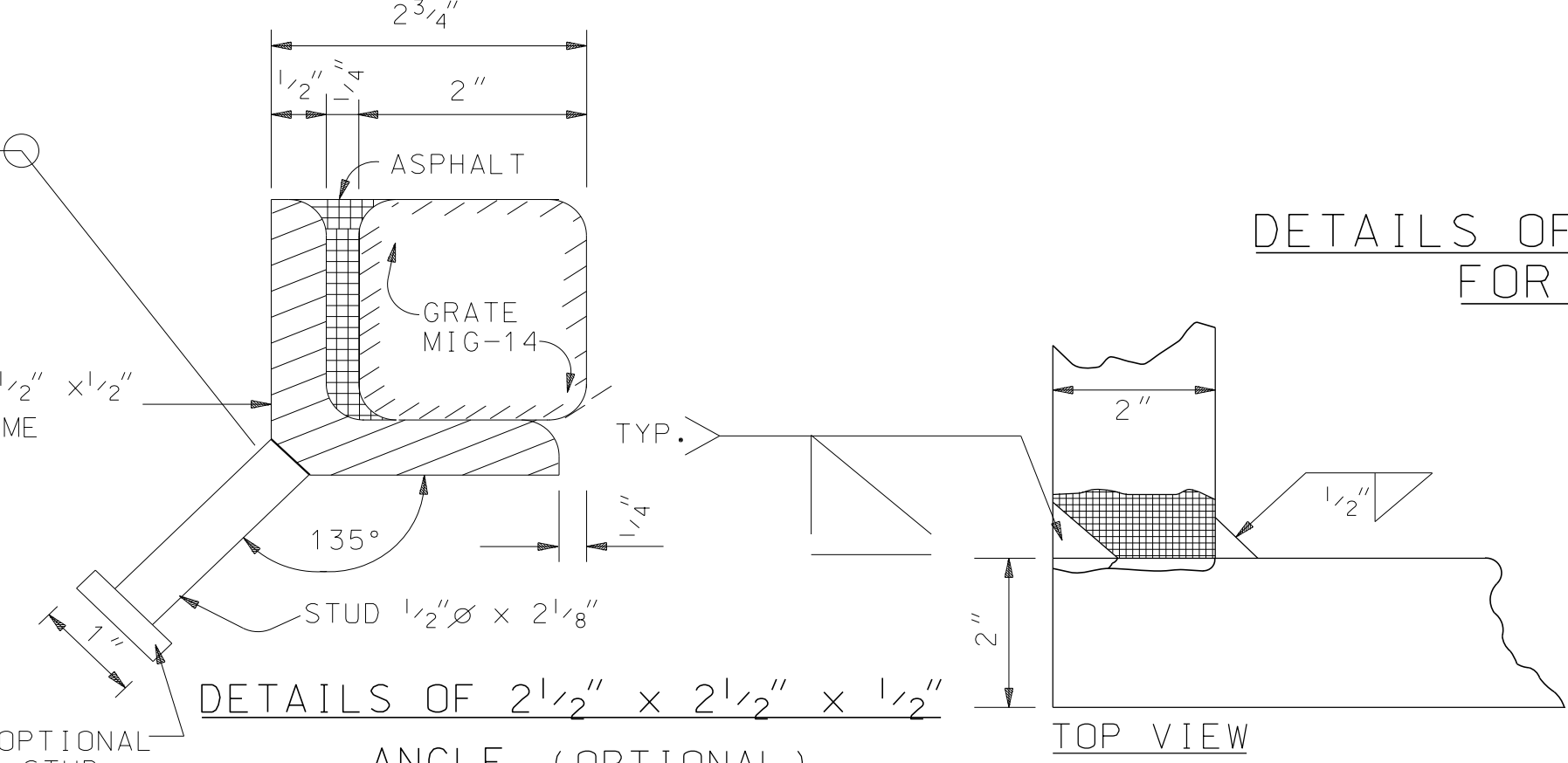
SECTION KK



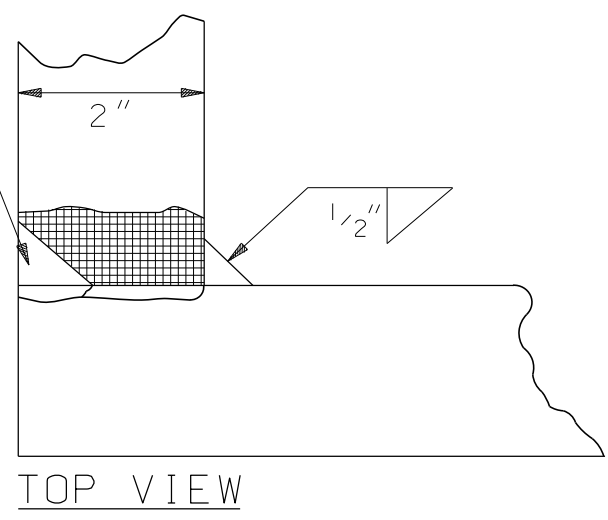
SECTION DD



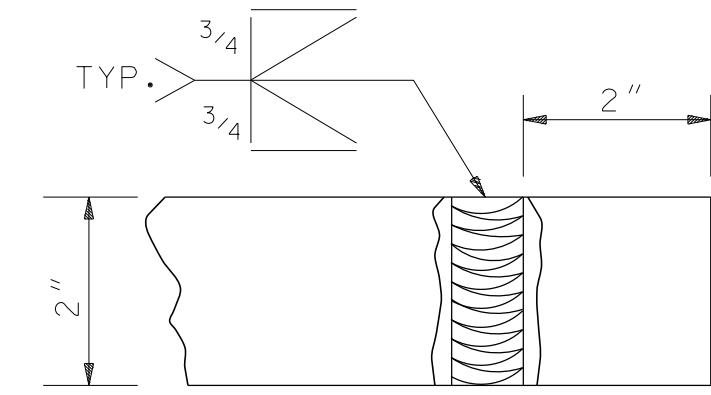
SECTION CC
DETAILS OF WELDED STEEL GRATE (NO. MIG-14)
FOR USE WITH TYPE "Y" INLET.



ANGLE (OPTIONAL)



TOP VIEW




END VIEW

DETAIL A (SEE NOTES 5 & 6)

DETAIL B CORNER WELDS

--SPECIFICATIONS--

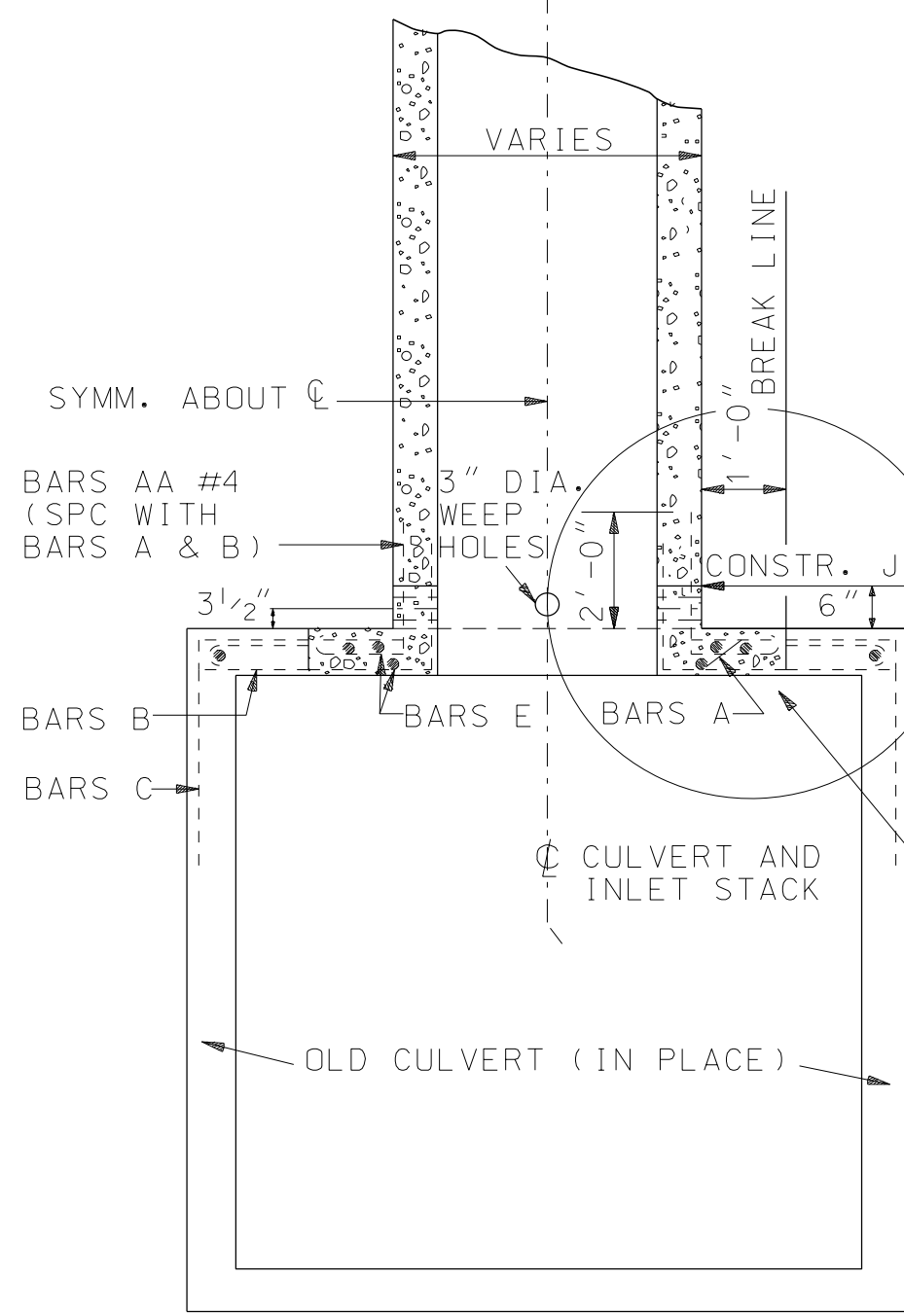
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

| | | |
|--|---------------------------------|-------------------|
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| REVISIONS 1. Added to CADD on 08-04-00 by J.F.T. 2. Deleted reference to Type "Y" Inlet On 08-23-01 by J.F.T. 3. Added Detail A & General Note #5, 6 & 7 on 11-01-05 W.W.A. | | |
|  ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050 | | |
| DESIGN BUREAU SPECIAL DRAWING | | |
| DETAILS OF WELDED STEEL GRATES FOR USE ON SAFETY MEDIAN DRAIN INLETS TYPE X AND TYPE Y | | |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: 4-30-75 | SPECIAL DRAWING NO MIG-621-S | INDEX NO 62151 |

NOT TO SCALE

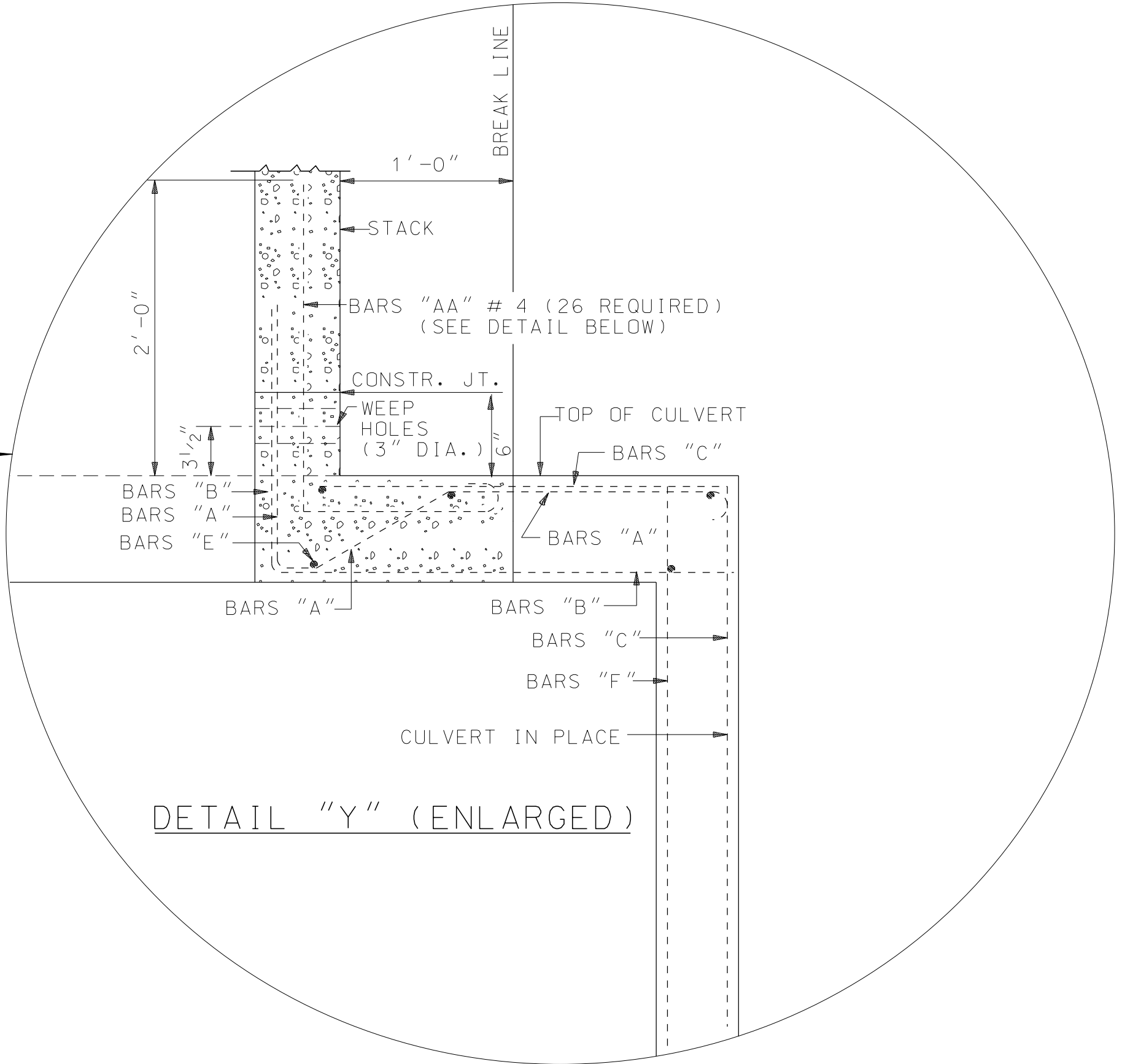
| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |

NOTE:
STACK AND INLET DETAILS SAME
AS THOSE SHOWN BELOW.

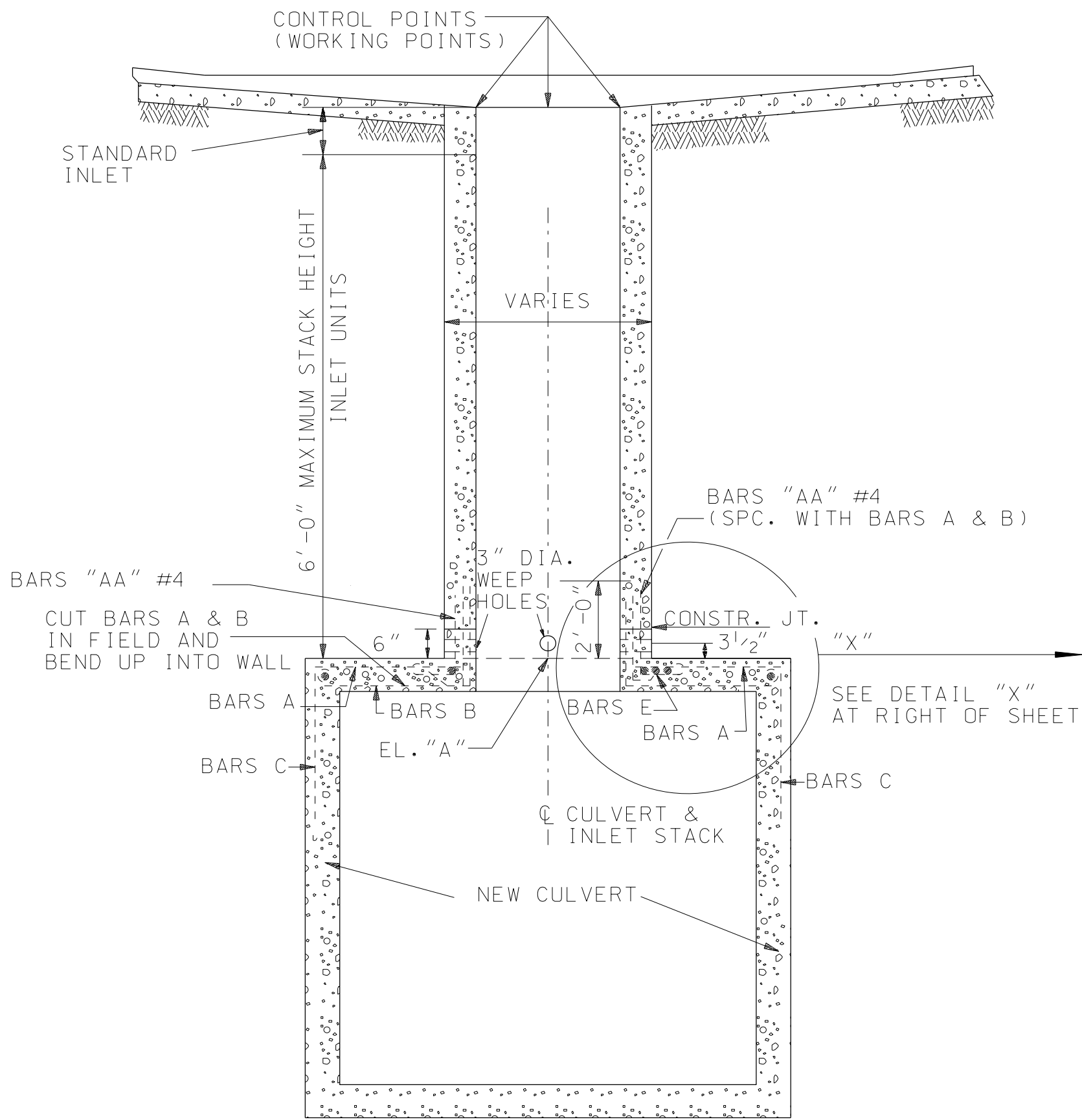


SECTION-"AA"

(INLET INTO EXISTING CULVERT)

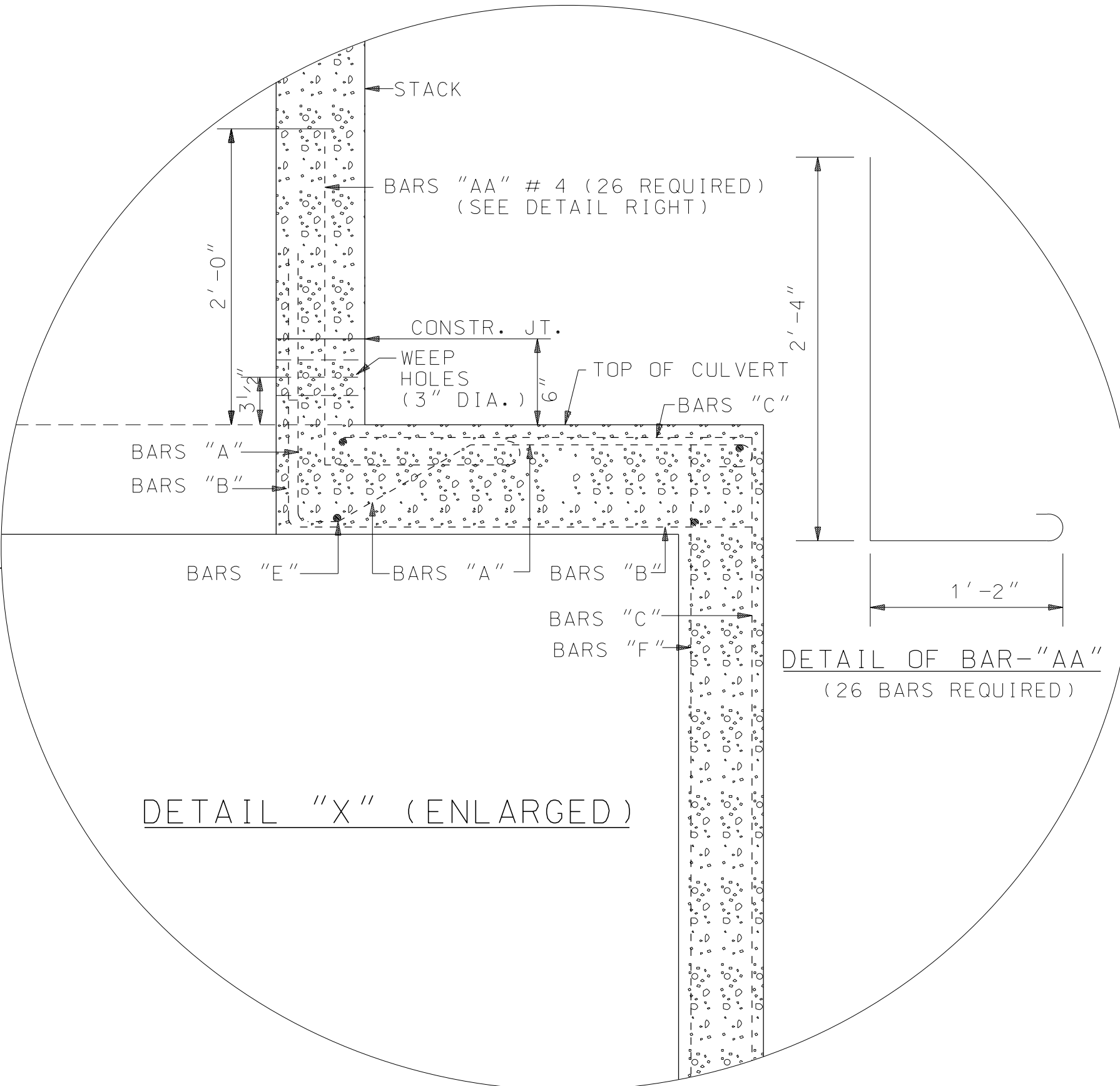


DETAIL "Y" (ENLARGED)

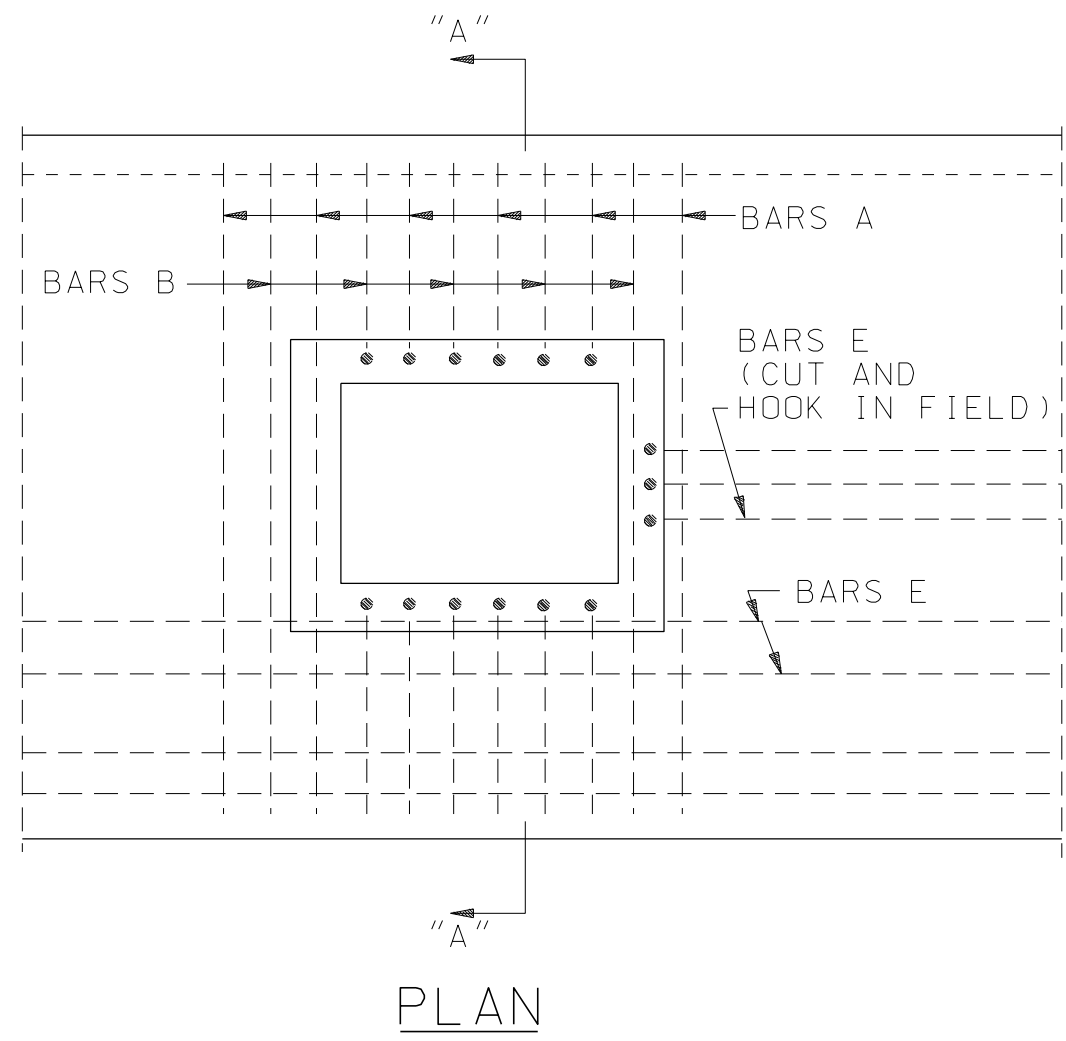


SECTION-"AA"

(INLET INTO NEW CULVERT)



DETAIL "X" (ENLARGED)

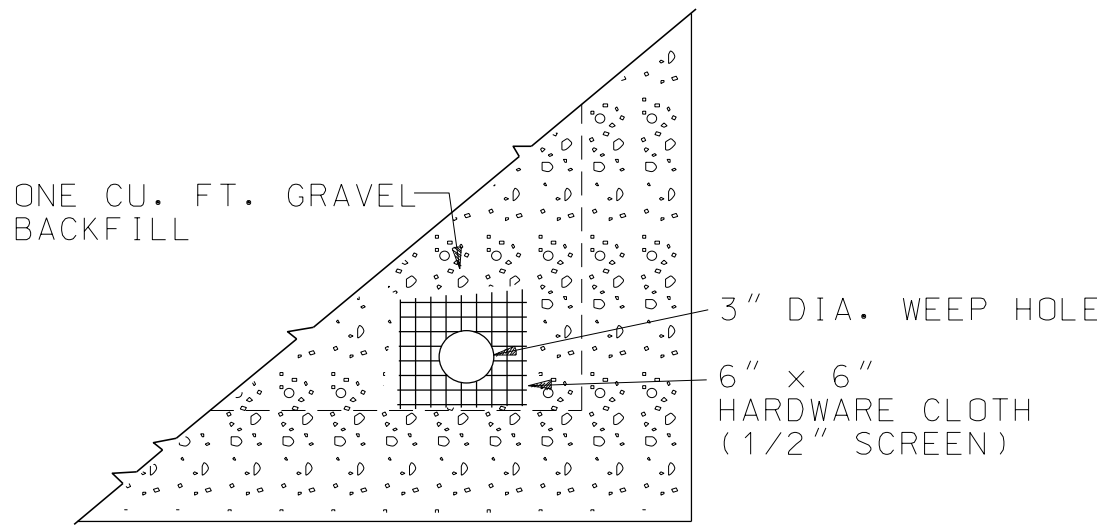


PLAN

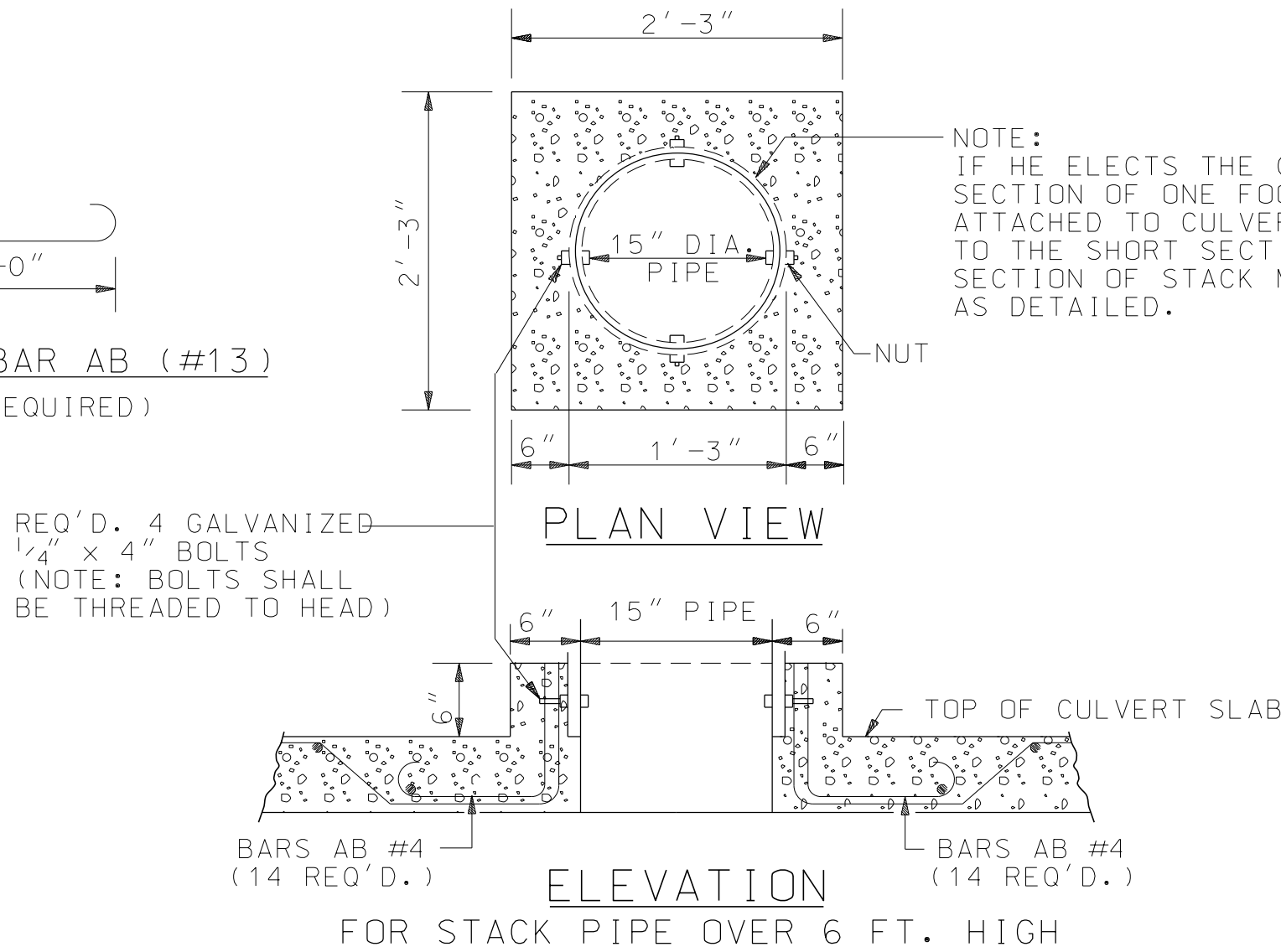
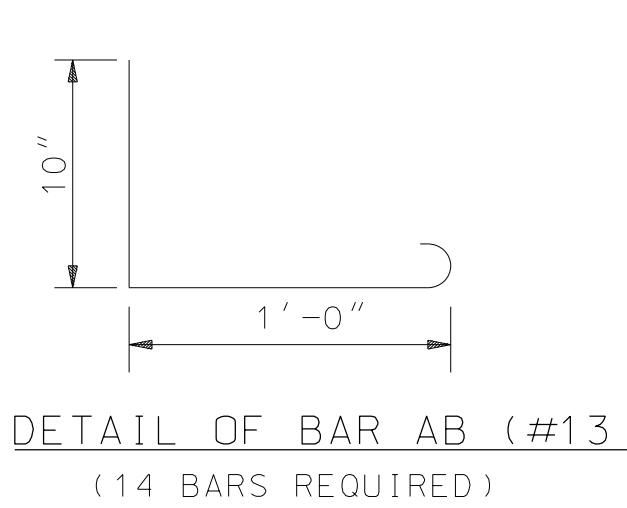
NOTE:
USE ROADWAY DRAINAGE SHEETS
FOR ELEVATIONS AT WORKING
POINTS AND "A" ELEVATION.

NOTE:
SEE ROADWAY DRAINAGE SHEETS AND INLET DRAWINGS.
THE ENGINEER MAY MAKE MODIFICATIONS AND
ADJUSTMENTS WHEN NECESSARY.

NOTE: WEEP HOLES SHALL BE AS SHOWN ON
DRAWING OR AS DIRECTED BY THE ENGINEER.



SKETCH SHOWING TREATMENT OF WEEP HOLES



NOTE:
IF HE ELECTS THE CONTRACTOR MAY USE A SHORT
SECTION OF ONE FOOT TO THREE FOOT IN LENGTH
ATTACHED TO CULVERT AND LATER BAND THE LONGER
SECTION TO THE SHORT SECTION. IN EITHER CASE THE BOTTOM
SECTION OF STACK MUST BE SECURED TO CULVERT
AS DETAILED.

--SPECIFICATIONS--

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REVISIONS
1. Added to CADD on 08-22-00
by J.F.T.



ALABAMA DEPARTMENT
OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

DETAILS OF CONNECTING INLETS
AND STACK PIPE INTO
CONCRETE CULVERTS

Bureau Std Engr: D.J.W.
DRAWN BY: DATE DRAWN: 4-12-85

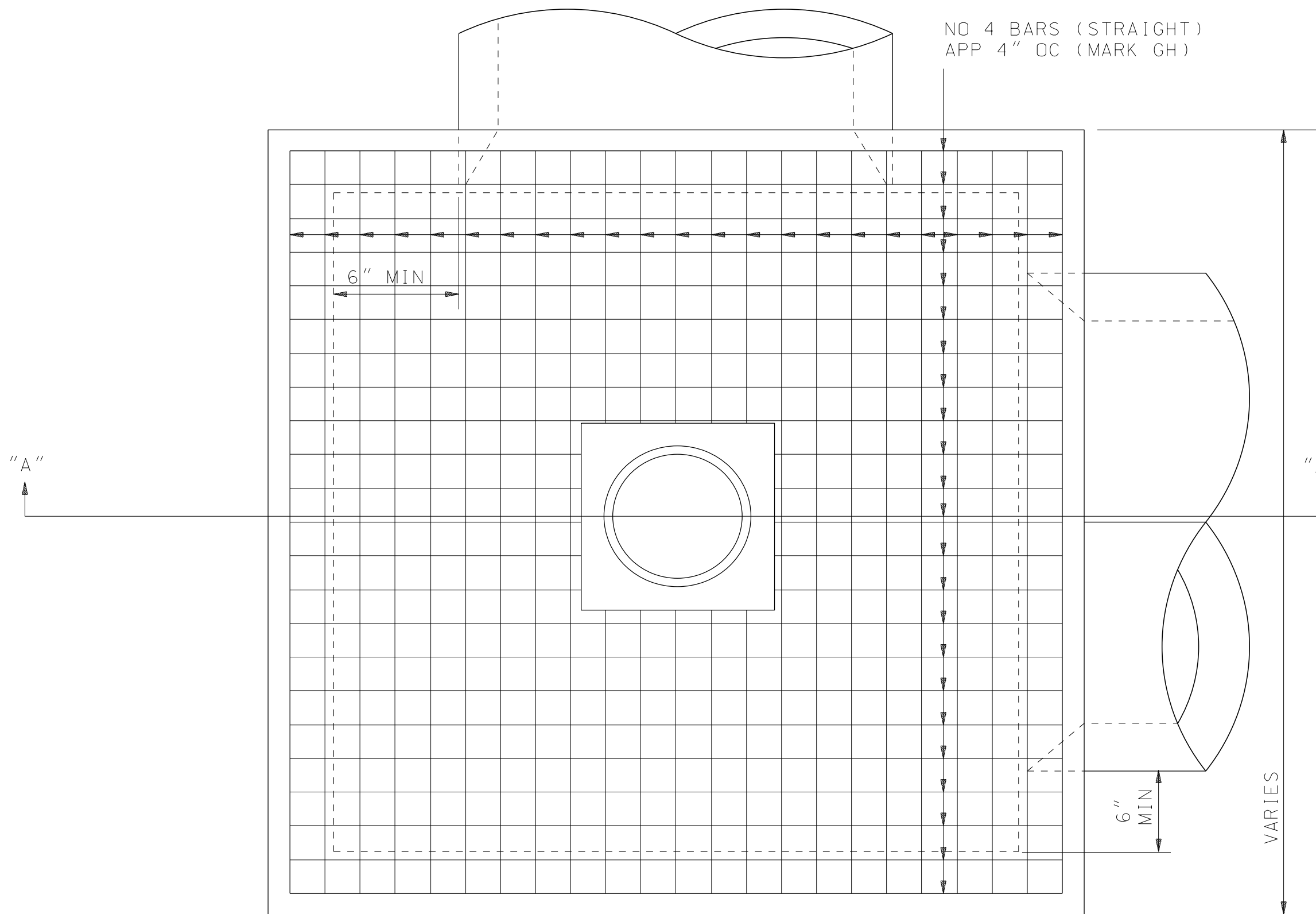
SPECIAL DRAWING NO

MIU-621

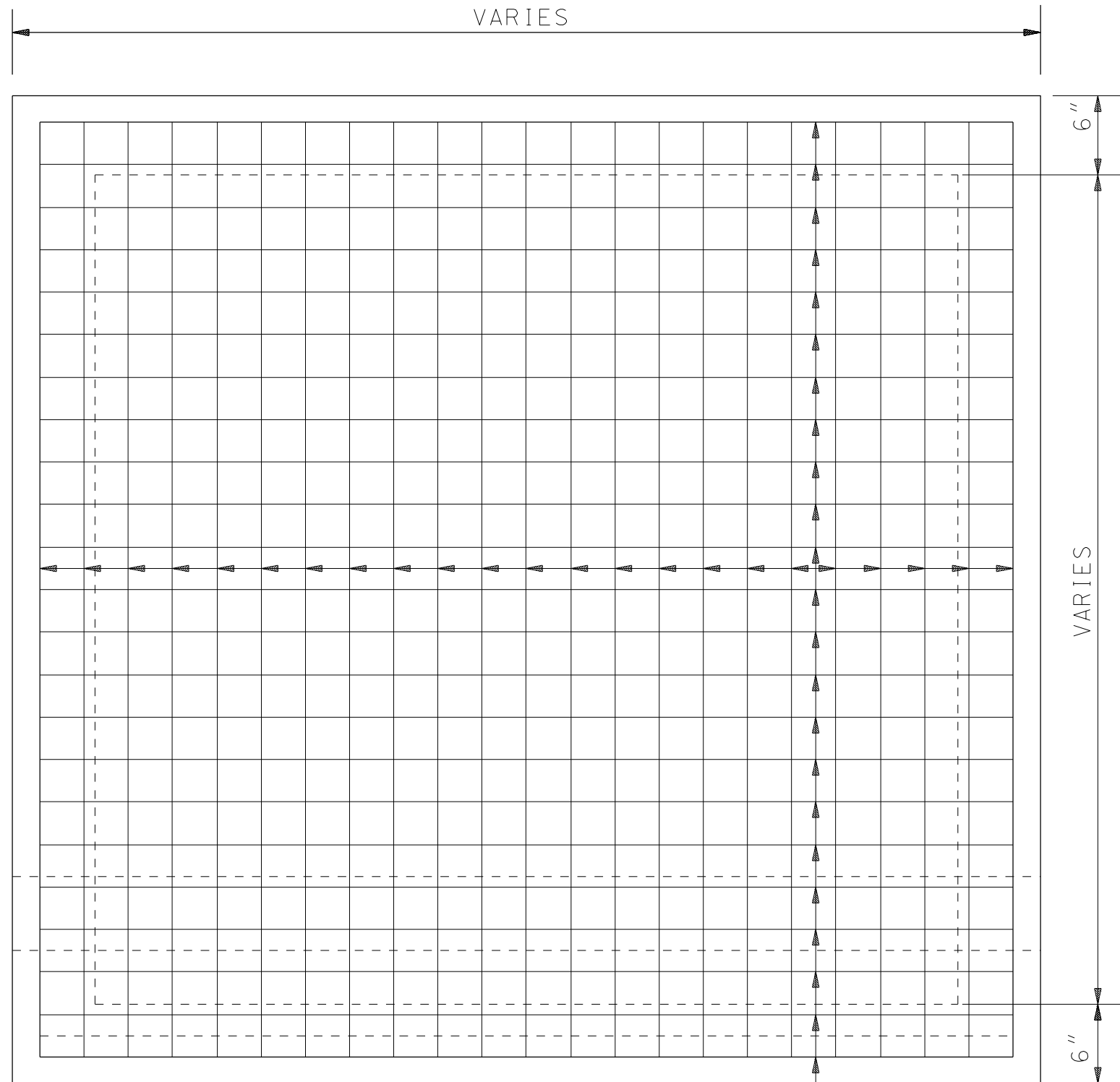
INDEX NO

62154

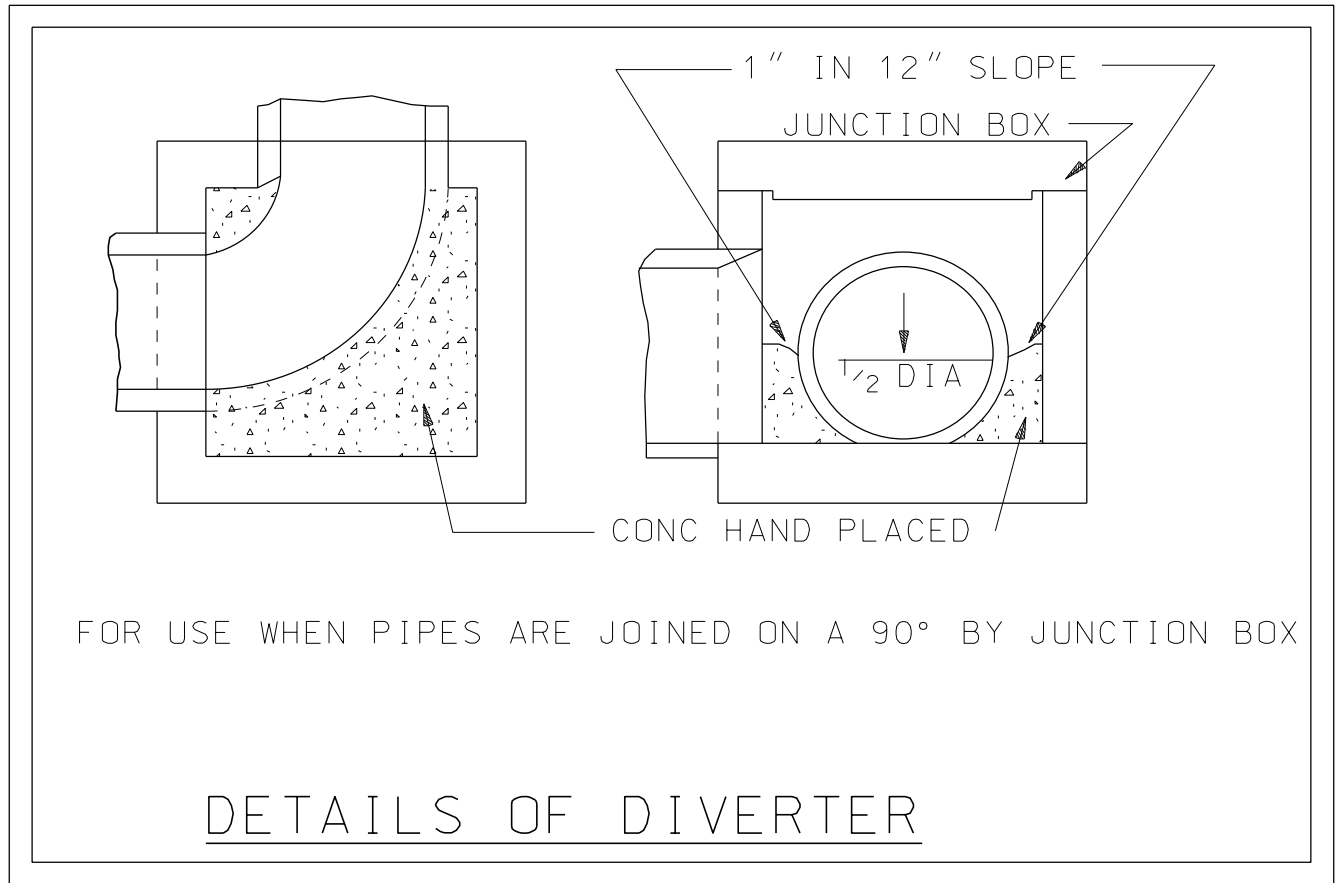
NOT TO SCALE



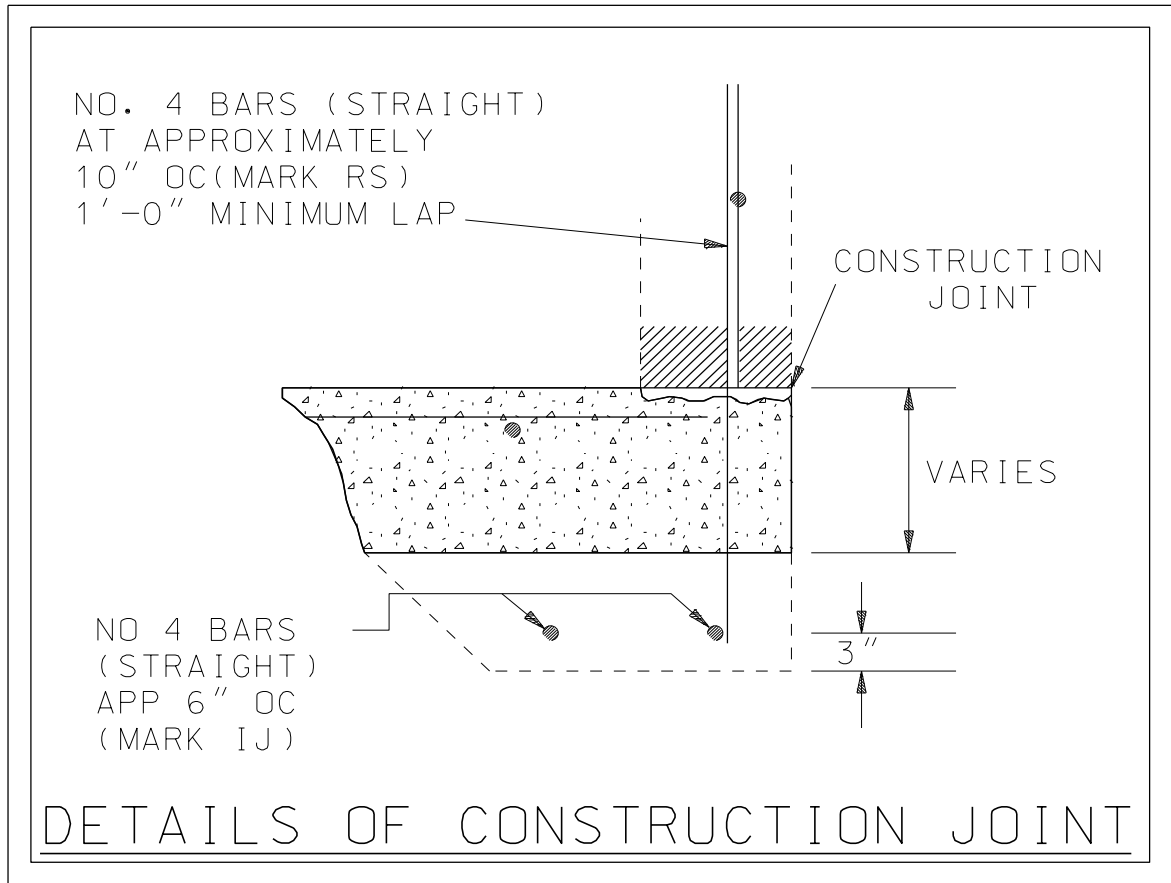
TOP PLAN



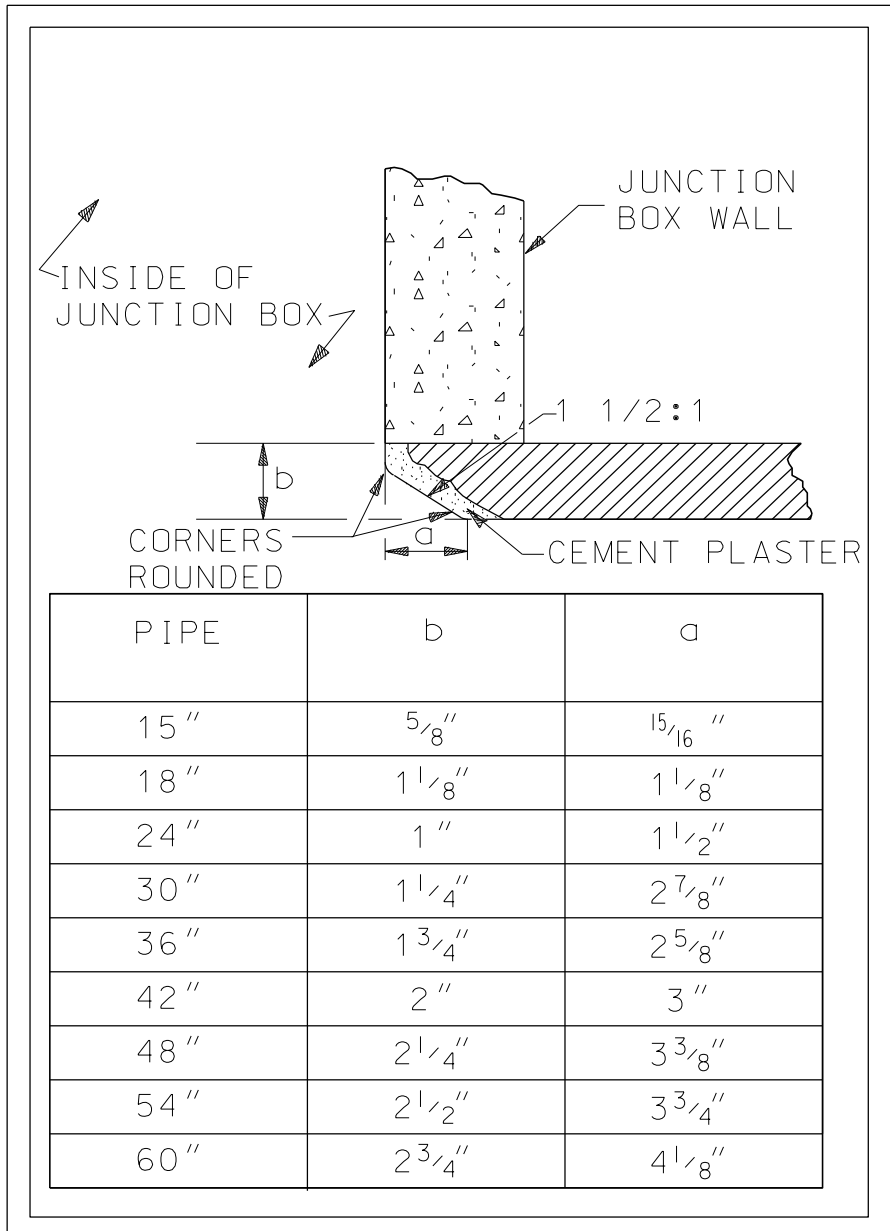
BOTTOM PLAN



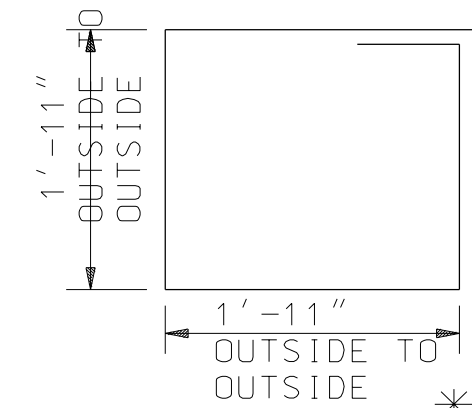
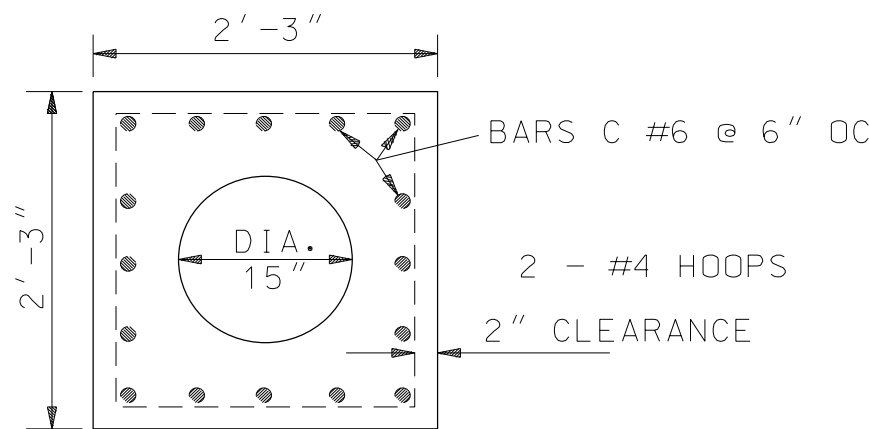
DETAILS OF DIVERTER



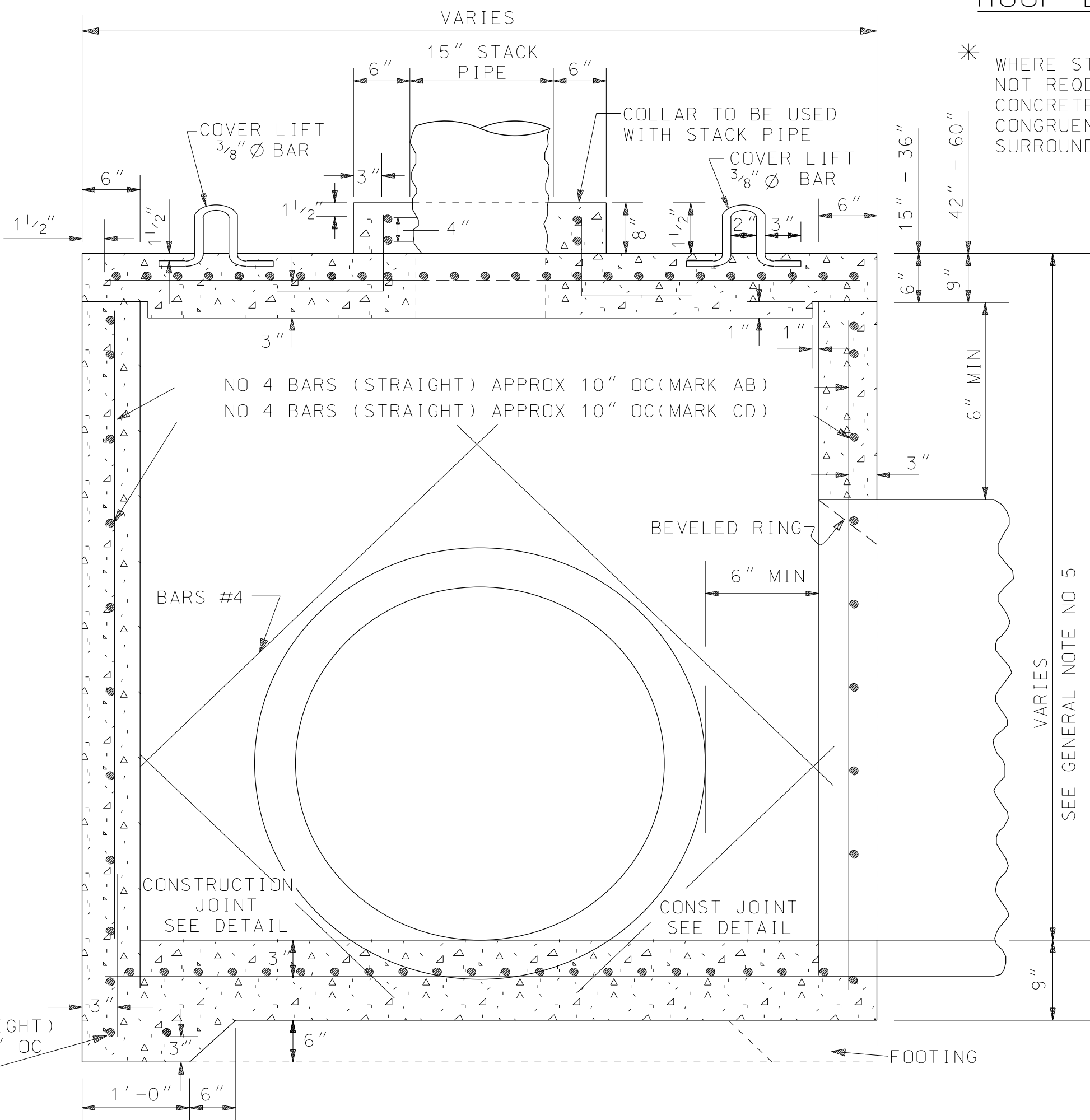
DETAILS OF CONSTRUCTION JOINT



DETAILS OF BEVELED RING



HOOP DETAIL *



SECTION "AA"

GENERAL NOTES

1. FOOTINGS ARE REQ'D. WHERE 42"Ø- 60" Ø PIPE ENTERS OR EXITS JUNCTION BOX.
2. WHERE STACK PIPE IS REQUIRED, FIELD CUTS AND FORMING OF BARS AS SHOWN SHALL BE PERMITTED.
3. MATERIALS USED IN FOOTING AND STACK PIPE COLLAR ARE NOT INCLUDED IN THE QUANTITIES OF JUNCTION BOX.
4. REINFORCING STEEL FOR PIPE ENTRANCE SHALL BE CUT IN FIELD. REINFORCING STEEL SHALL NOT BE FABRICATED UNTIL ACTUAL SIZE OF JUNCTION BOX IS ESTABLISHED BY THE ENGINEER IN THE FIELD. IN CASES WHERE INLETS ARE ATTACHED DIRECTLY TO JUNCTION BOX TOP SLAB, JUNCTION BOX WALL STEEL SHALL BE EXTENDED INTO INLET WALLS OR AS DIRECTED BY THE ENGINEER
5. ADDITIONAL HEIGHT ABOVE 4'-0" SHALL BE PAID FOR AS TYPE-I JUNCTION BOX UNITS MEASURED IN INCREMENTS OF 2'.

ESTIMATED QUANTITIES FOR MINIMUM SIZE BOXES

| PIPE SIZE | CU YDS CONC | LBS STEEL |
|-----------|-------------|-----------|
| 15" | 1.2 | 148.5 |
| 18" | 1.4 | 179.1 |
| 24" | 1.8 | 233.8 |
| 30" | 2.3 | 302.6 |
| 36" | 2.8 | 394.0 |
| 42" | 4.1 | 497.2 |
| 48" | 4.8 | 586.6 |
| 54" | 5.6 | 712.3 |
| 60" | 6.4 | 840.4 |

Requires
Junction Box
Unit (s)

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS
1. Added to CADD on 07-01-99 by J.F.L.
2. Adjusted and clarified J-Box unit minimum on 06-04-03 by W.W.A.

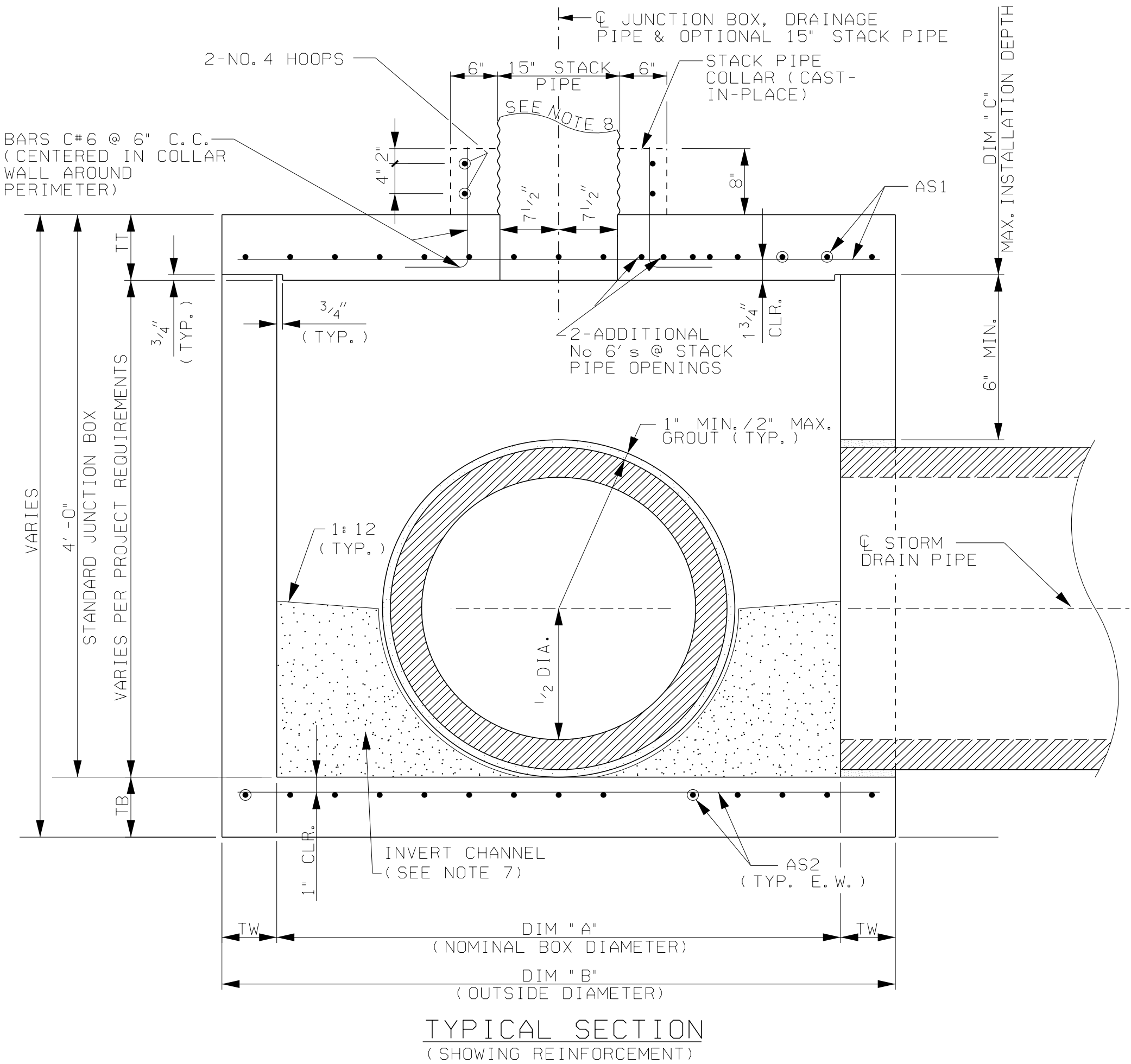
ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050
DESIGN BUREAU SPECIAL DRAWING
DETAILS OF JUNCTION BOX TYPE-I
FOR 15" - 60" PIPE
(0 - 10' FILL HEIGHT)

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 04-18-85

SPECIAL DRAWING NO
JB-620-B

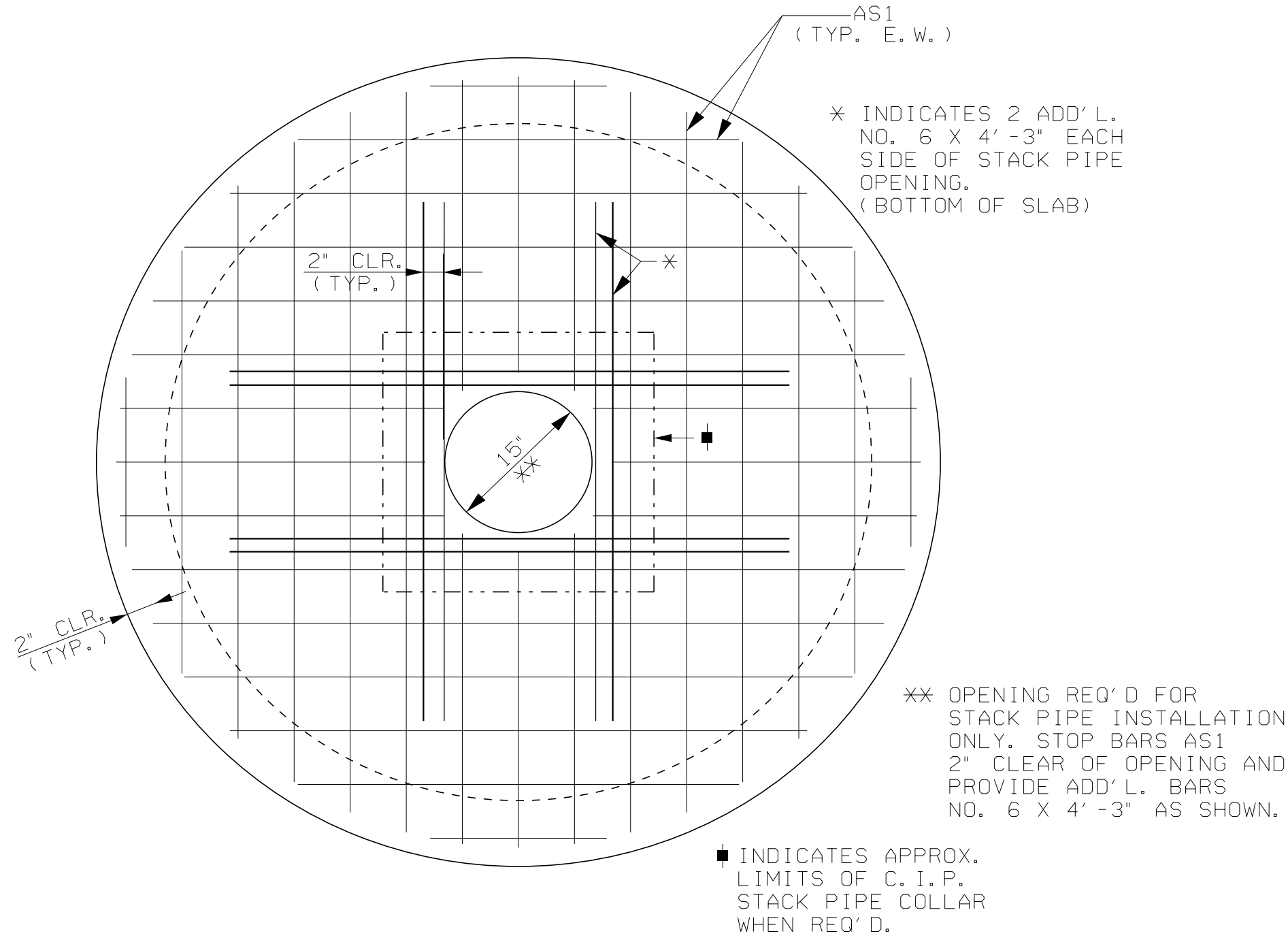
INDEX NO
62160

NOT TO SCALE



BARS C#6 @ 6" C.C.
(CENTERED IN COLLAR
WALL AROUND
PERIMETER)

TYPICAL SECTION
(SHOWING REINFORCEMENT)



FLAT TOP PLAN
(SHOWING REINFORCEMENT)

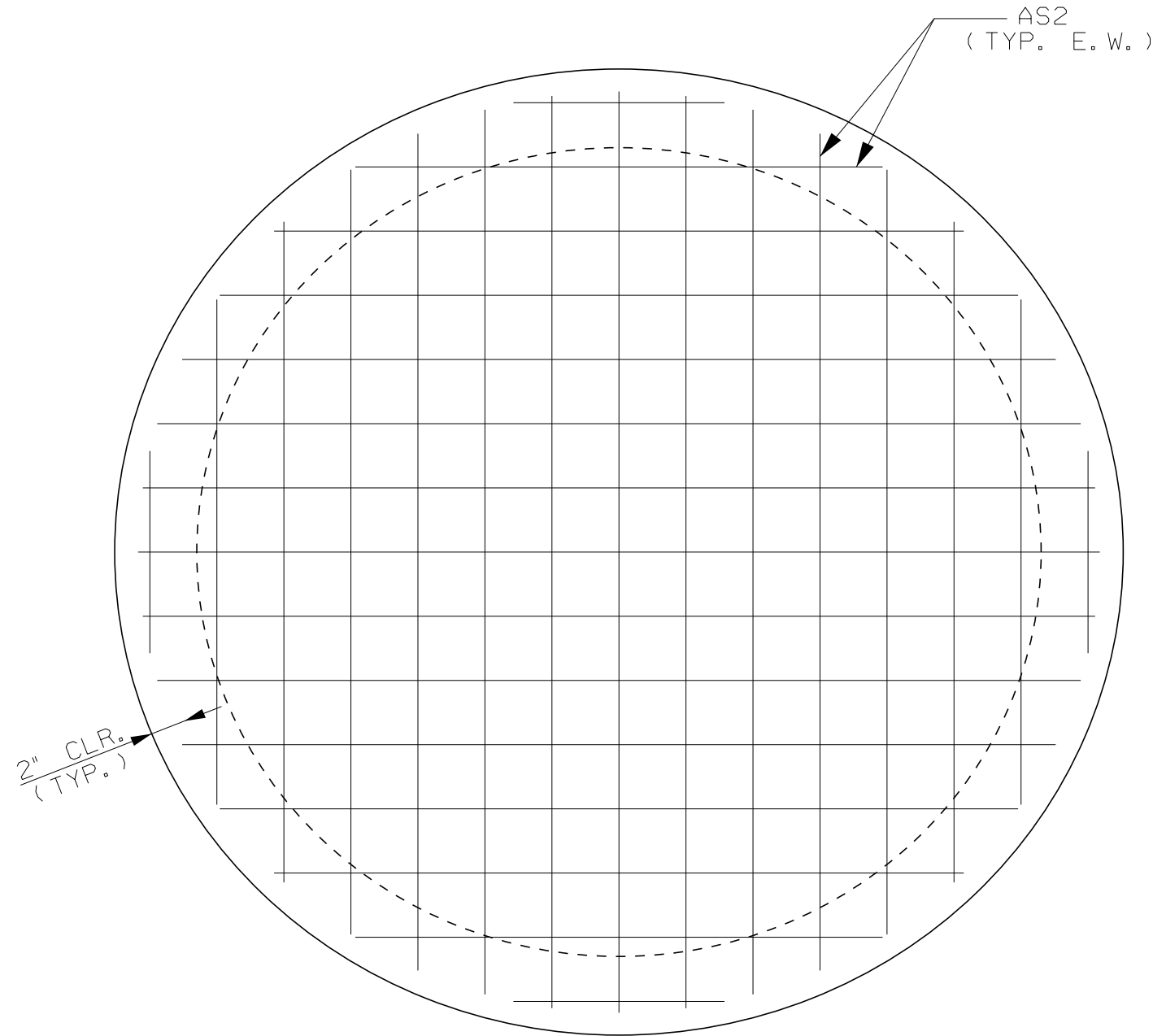
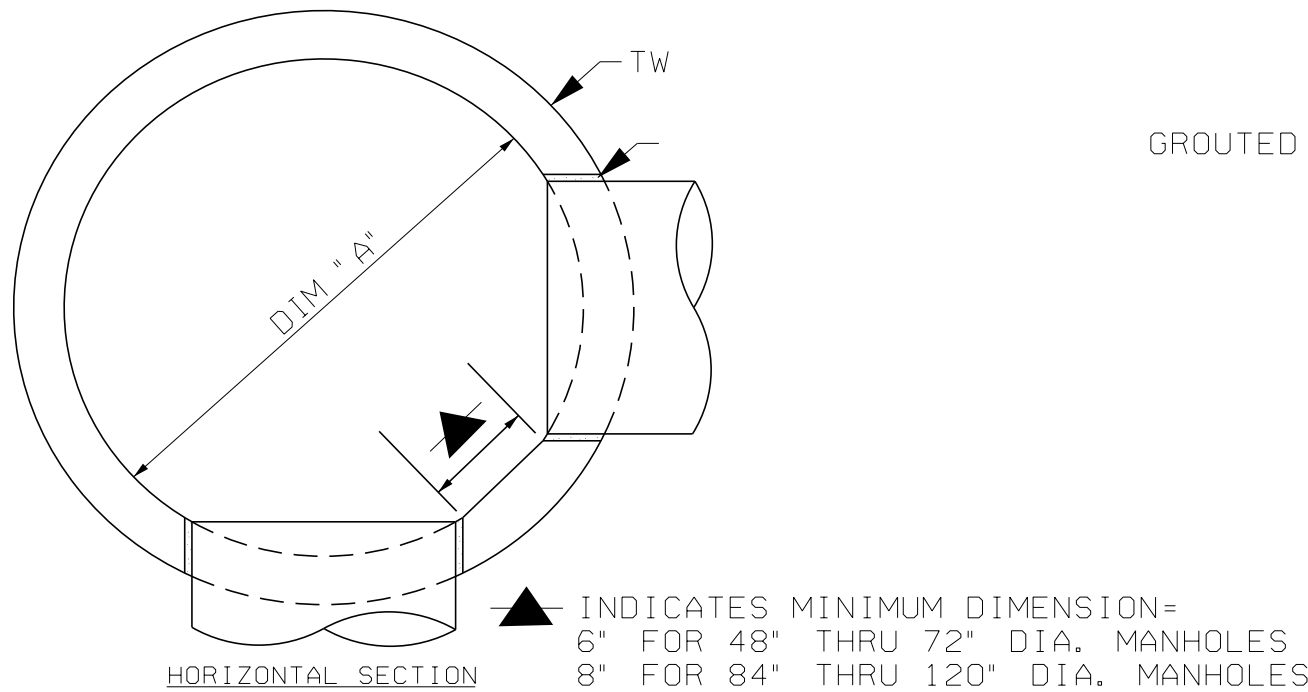
| DIMENSIONS | | | MAX. PIPE I.D. FOR 90° OR 180° INTERSECTION ANGLE | | ELEMENT THICKNESS (MIN.) | | | REINFORCEMENT | |
|------------|----------|---------|---|------|--------------------------|-----|-----|---------------|-------|
| * A* | * B* | * C* | 90° | 180° | TW | TB | TT | AS1 | AS2 |
| 4' -0" | 4' -10" | 30' -0" | 18" | 30" | 5" | 6" | 6" | #5@5" | #5@5" |
| 5' -0" | 6' -0" | 30' -0" | 24" | 42" | 6" | 8" | 8" | #5@5" | #5@5" |
| 6' -0" | 7' -2" | 30' -0" | 30" | 48" | 7" | 8" | 8" | #6@5" | #6@5" |
| 7' -0" | 8' -4" | 30' -0" | 36" | 60" | 8" | 8" | 8" | #6@5" | #6@5" |
| 8' -0" | 9' -6" | 30' -0" | 42" | 66" | 9" | 8" | 8" | #6@4" | #6@4" |
| 10' -0" | 11' -10" | 30' -0" | 60" | 84" | 11" | 12" | 12" | #6@4" | #6@4" |
| | | | | | | | | | |

NOTE: WALL REINFORCEMENT TO BE IN ACCORDANCE WITH ASTM C478.

■ ■ ■ MAXIMUM ENTRANCE/EXIT PIPE SIZES NOT SPECIFICALLY INDICATED IN TABLE SHALL BE CONTROLLED BY THE MINIMUM WALL STRIP BETWEEN INTERSECTING PIPE. SEE HORIZONTAL SECTION FOR ADDITIONAL INFORMATION.

TABLE OF VALUES

- FOOTNOTES:
1. WALL AND SLAB THICKNESSES DENOTED ARE MINIMUM VALUES AND MAY BE INCREASED AT THE DISCRETION OF THE PRECAST MANUFACTURER.
 2. WELDED WIRE REINFORCEMENT PROVIDING EQUIVALENT AREAS OF STEEL TO THOSE DENOTED ABOVE MAY BE SUBSTITUTED FOR REINFORCING BARS. WELDED WIRE REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

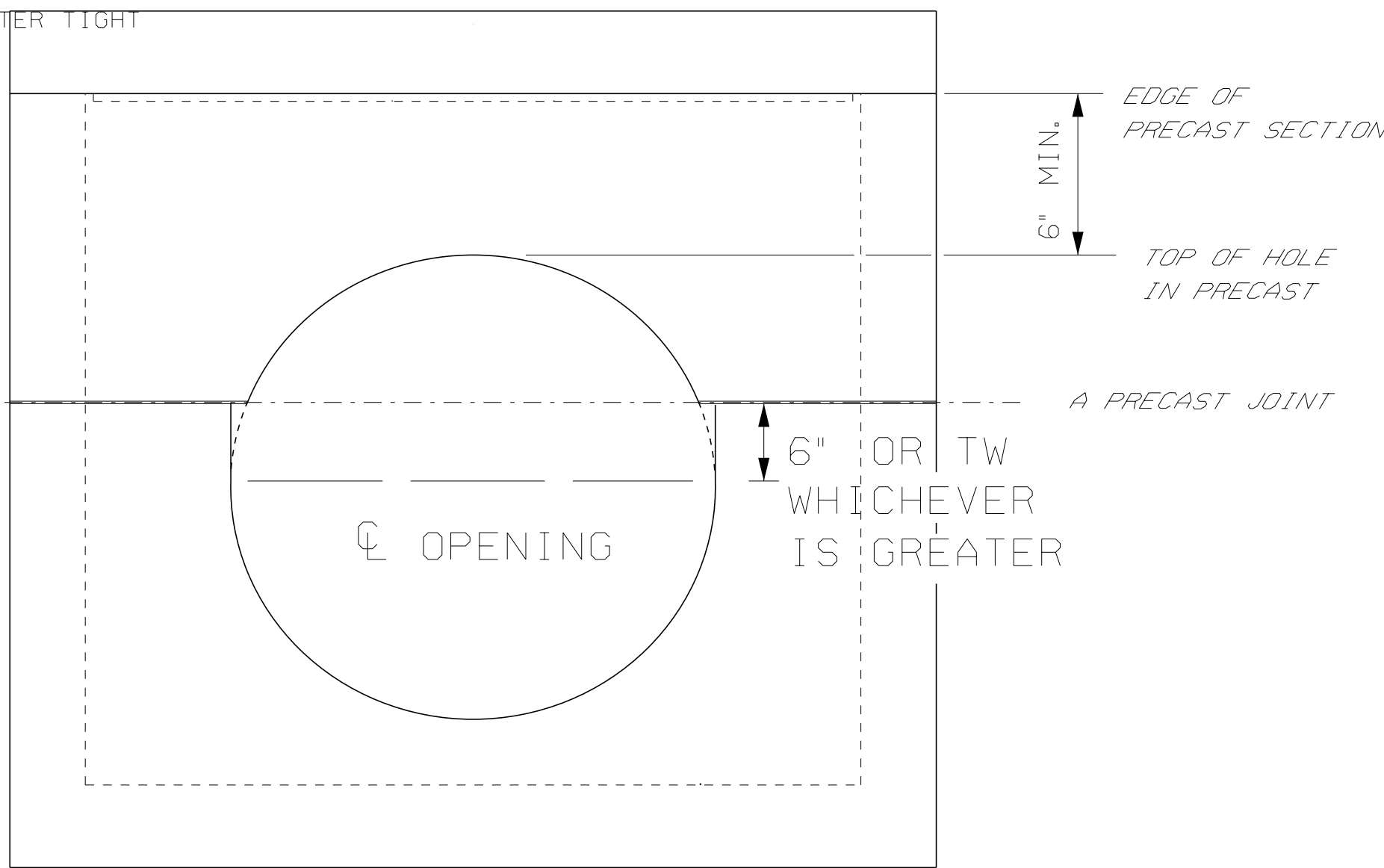


BOTTOM PLAN
(SHOWING REINFORCEMENT)

TYPE 1P (15" -30")

TYPE 2P (36" -84")

GROUTED - WATER TIGHT




PARTIAL HOLE DETAIL
(FOR SPLIT HOLES)

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS

1. Note 9 changed "Precast" to "Preformed or Cored" and adjusted the Cored Angle on 06-04-08 by W.W.A.
2. Clarified "PARTIAL HOLE DETAIL" showed steel on "FLAT TOP PLAN VIEW" & added Note "2-ADDITIONAL #6'S @ STACK PIPE OPENINGS" on "TYPICAL SECTION" on 07-15-11 by J.F.T.



ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

DETAILS OF PRECAST ROUND JUNCTION BOX
TYPES - 1P & 2P

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: _____

SPECIAL DRAWING NO
JB-621-P (SHEET 1 OF 2)

INDEX NO
62163

NOT TO SCALE

| BOX DIMENSIONS | | DIMENSION "C" (MAX) | MAX PIPE DIAMETER | ELEMENT THICKNESS | | | REQUIRED REINFORCING STEEL (GRADE 60) | | | | |
|----------------|--------|---------------------|-------------------|-------------------|-----|-----|---------------------------------------|-------|-------|-------|--------|
| "A" | "B" | | | TW | TB | TT | AS1 | AS2 | AS3 | AS4 | AS5 |
| 3'-0" | 4'-0" | 30'-0" | 15" | 6" | 6" | 6" | #5@6" | #5@6" | 1-#6 | #5@8" | #4@12" |
| 4'-0" | 5'-2" | 30'-0" | 27" | 7" | 7" | 7" | #5@5" | #5@5" | 1-#6 | #5@8" | #4@12" |
| 5'-0" | 6'-4" | 30'-0" | 36" | 8" | 8" | 8" | #6@5" | #6@5" | 2-#6 | #5@8" | #4@12" |
| 6'-0" | 7'-4" | 30'-0" | 48" | 8" | 8" | 8" | #6@5" | #6@5" | 2-#6 | #6@8" | #4@12" |
| 7'-0" | 8'-6" | 30'-0" | 54" | 9" | 9" | 9" | #6@5" | #6@5" | 2-#6 | #6@8" | #4@12" |
| 8'-0" | 9'-6" | 30'-0" | 66" | 9" | 9" | 9" | #6@5" | #6@5" | 2-#6 | #6@5" | #5@12" |
| 9'-0" | 10'-8" | 30'-0" | 72" | 10" | 10" | 10" | #6@4" | #6@4" | 2-#6" | #6@4" | #5@12" |

TABLE OF VALUES

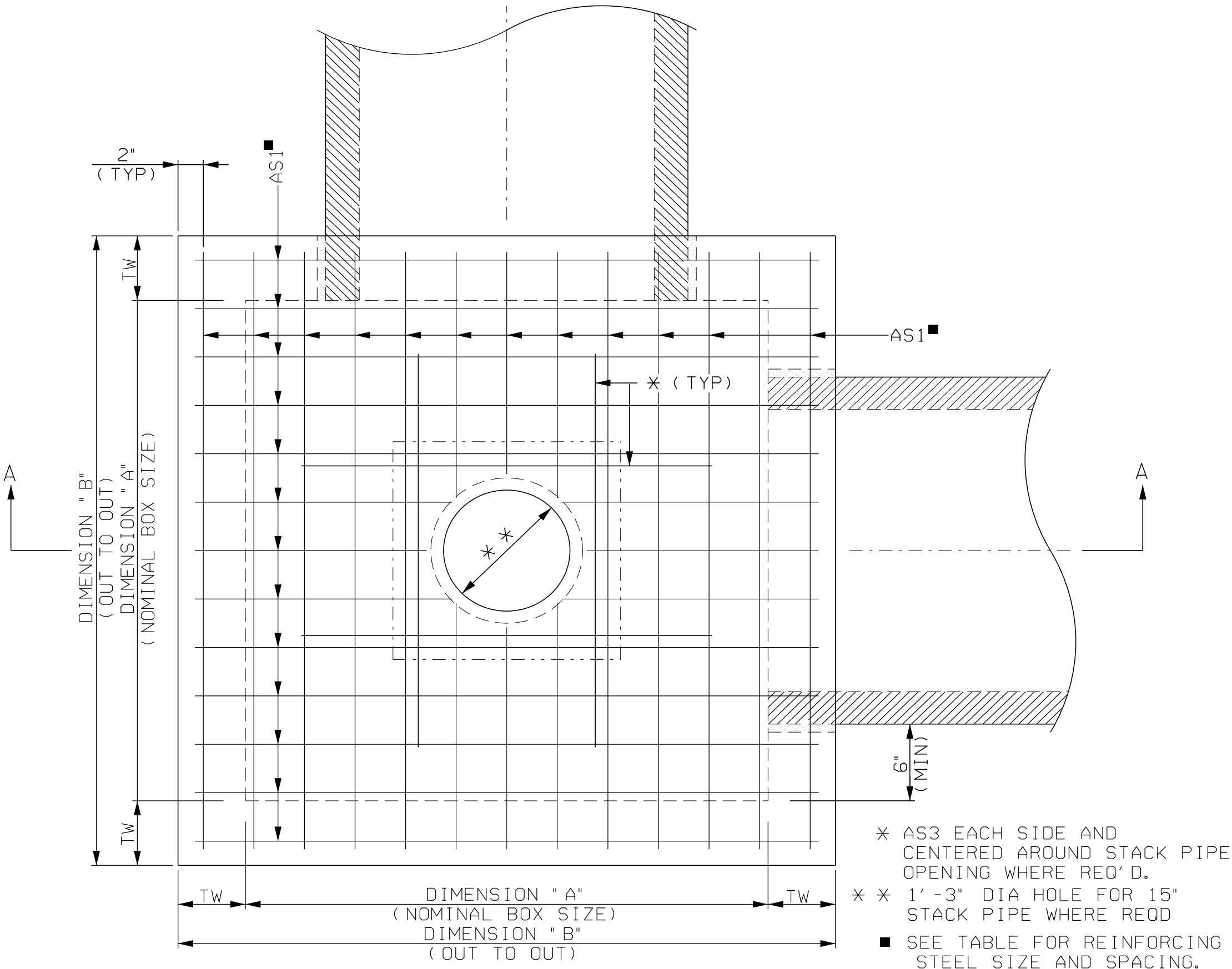
- FOOTNOTES:
- WALL AND SLAB THICKNESSES DENOTED ARE MINIMUM VALUES AND MAY BE INCREASED AT THE DISCRETION OF THE PRECAST MANUFACTURER.
 - WELDED WIRE REINFORCEMENT PROVIDING EQUIVALENT AREAS OF STEEL TO THOSE DENOTED ABOVE MAY BE SUBSTITUTED FOR REINFORCING BARS. WELDED WIRE REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
 - USE TABULAR VALUES TO DETERMINE REINFORCING STEEL TO BE PLACED IN EACH DIRECTION. FOR TOP SLAB, PLACE SHORTER BARS IN THE BOTTOM REINFORCING STEEL MAT. FOR BOTTOM SLAB, PLACE SHORTER BARS IN THE TOP REINFORCING MAT.

GENERAL NOTES

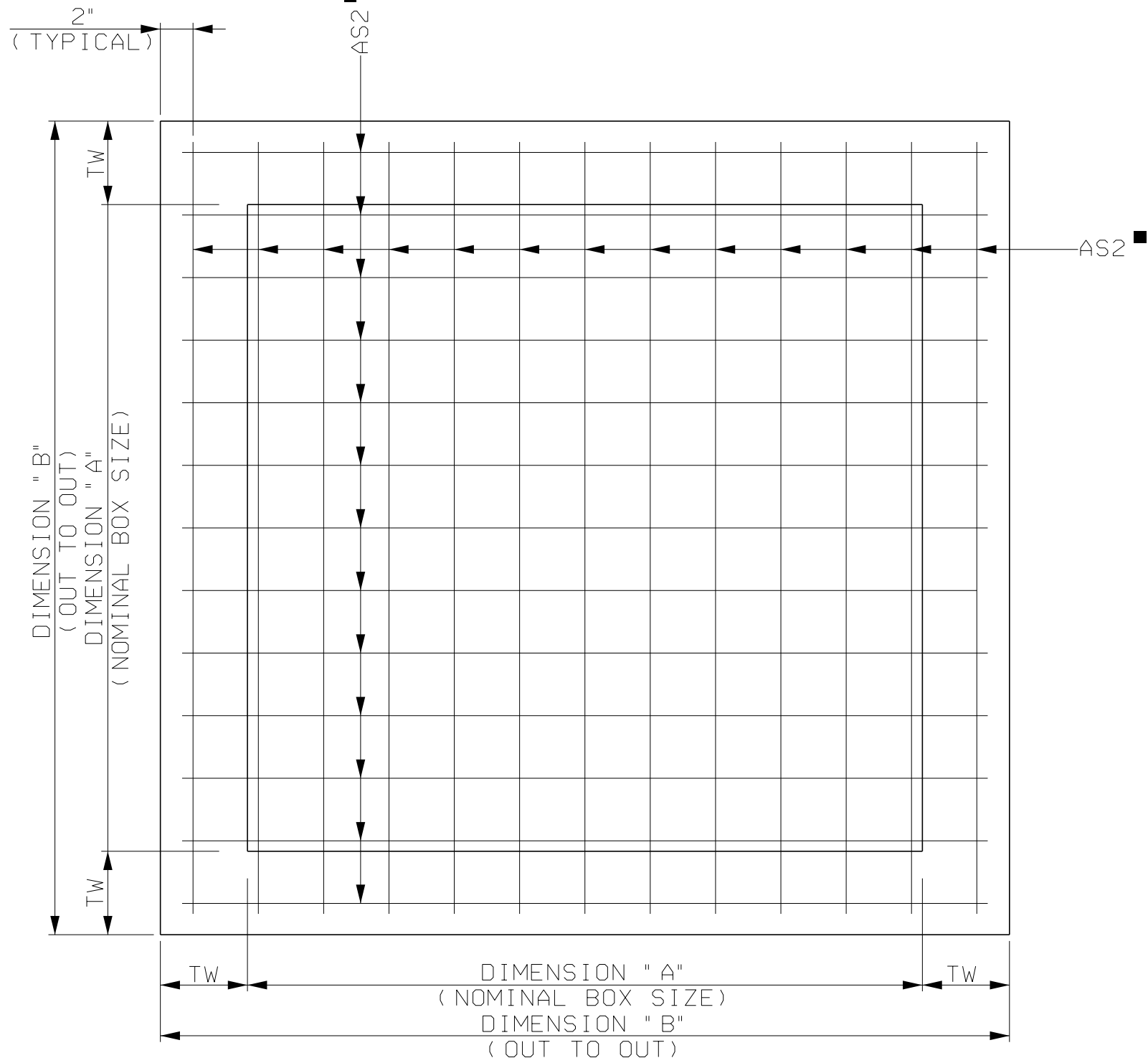
- SEE TYPICAL SECTION AND TABLE OF VALUES FOR MAXIMUM INSTALLATION DEPTHS.
- ALL JOINTS BETWEEN PRECAST UNITS TO BE SEALED WITH BITUMINOUS PLASTIC GASKETS.
- MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH: 4000 P.S.I.
- REINFORCING STEEL: TO BE IN ACCORDANCE WITH THE SPECIFICATIONS. MINIMUM YIELD STRENGTH=60 K.S.I
- SIZING AND LOCATION OF LIFTING DEVICES SHALL BE THE RESPONSIBILITY OF THE FABRICATOR IN ORDER TO ASSURE SAFETY AND BALANCED HANDLING DURING THE TRANSPORTATION AND INSTALLATION OF THE JUNCTION BOX. IF LIFTING HOLES PASS COMPLETELY THROUGH WALL OR SLAB, HOLES SHALL BE SEALED BY FILLING WITH MORTAR AFTER INSTALLATION.
- INVERT CHANNELS ARE REQUIRED IN THE BASE. CHANNELS MAY BE FORMED IN CONCRETE OR CONSTRUCTED LATER USING A CEMENT CONCRETE MORTAR. CHANGES IN DIRECTION OF FLOW SHALL HAVE A TRUE CURVE OF AS LARGE A RADIUS AS SIZE WILL PERMIT AND BE FINISHED UP TO THE CENTER OF PIPE. C.M. PIPE STUB FOR STACK PIPE TO BE PRECAST INTO TOP SLAB AND INCLUDED IN THE COST OF SAME.
- ALL PIPE OPENINGS IN PRECAST UNITS SHALL BE PREFORMED OR CORED.
- PRECAST DIVERTER/INVERT WILL NOT BE PROVIDED FOR BOXES LARGER THAN 6'-0" X 6'-0".

TYPE 1P (15" -30")

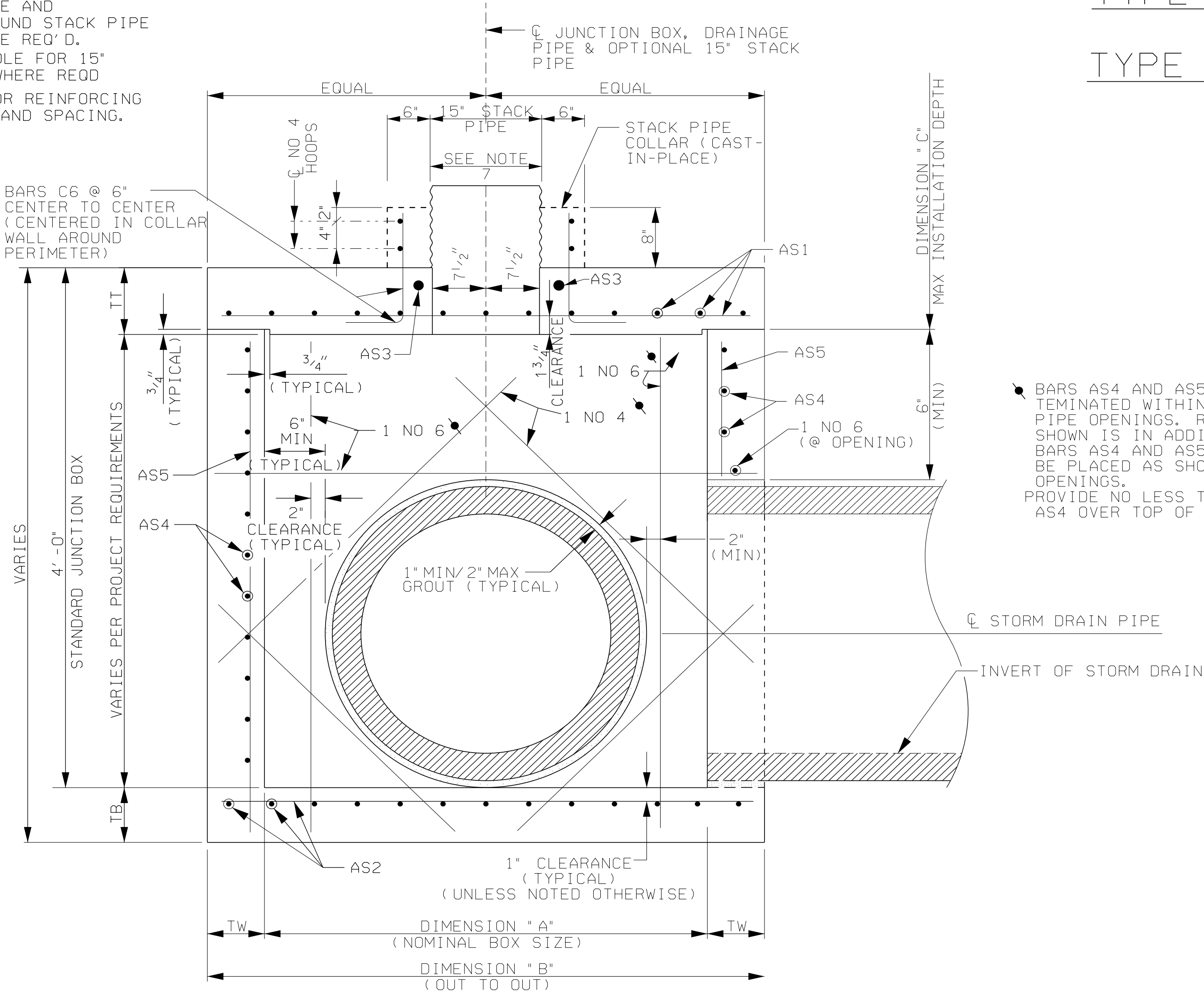
TYPE 2P (36" -72")



FLAT TOP PLAN
(SHOWING REINFORCEMENT)

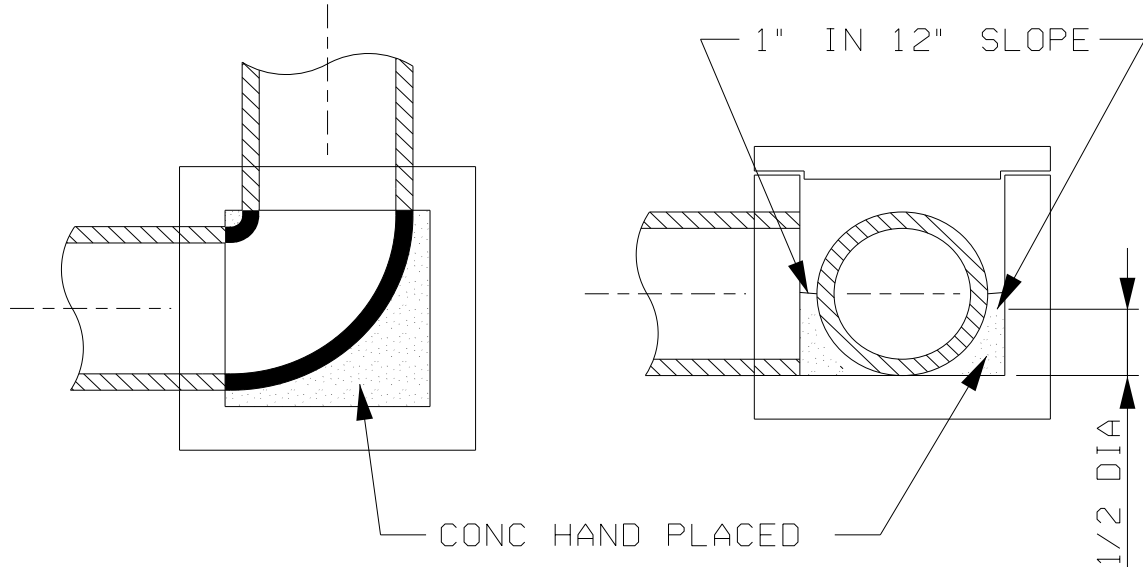


BOTTOM SLAB PLAN
(SHOWING REINFORCEMENT)



SECTION "A-A"

- BARS AS4 AND AS5 TO BE TERMINATED WITHIN 2" OF PIPE OPENINGS. REINFORCEMENT SHOWN IS IN ADDITION TO BARS AS4 AND AS5 AND SHALL BE PLACED AS SHOWN AROUND OPENINGS. PROVIDE NO LESS THAN TWO BARS AS4 OVER TOP OF OPENING.



DETAILS OF DIVERTER/INVERT
SEE NOTES 6 & 9

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS

1. In Table/Values, changed 42" to 48" and 60" to 66" and In General Note 8 changed "Precast" to "Preformed or Cored" on 06-03-08 by W.W.A.

ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

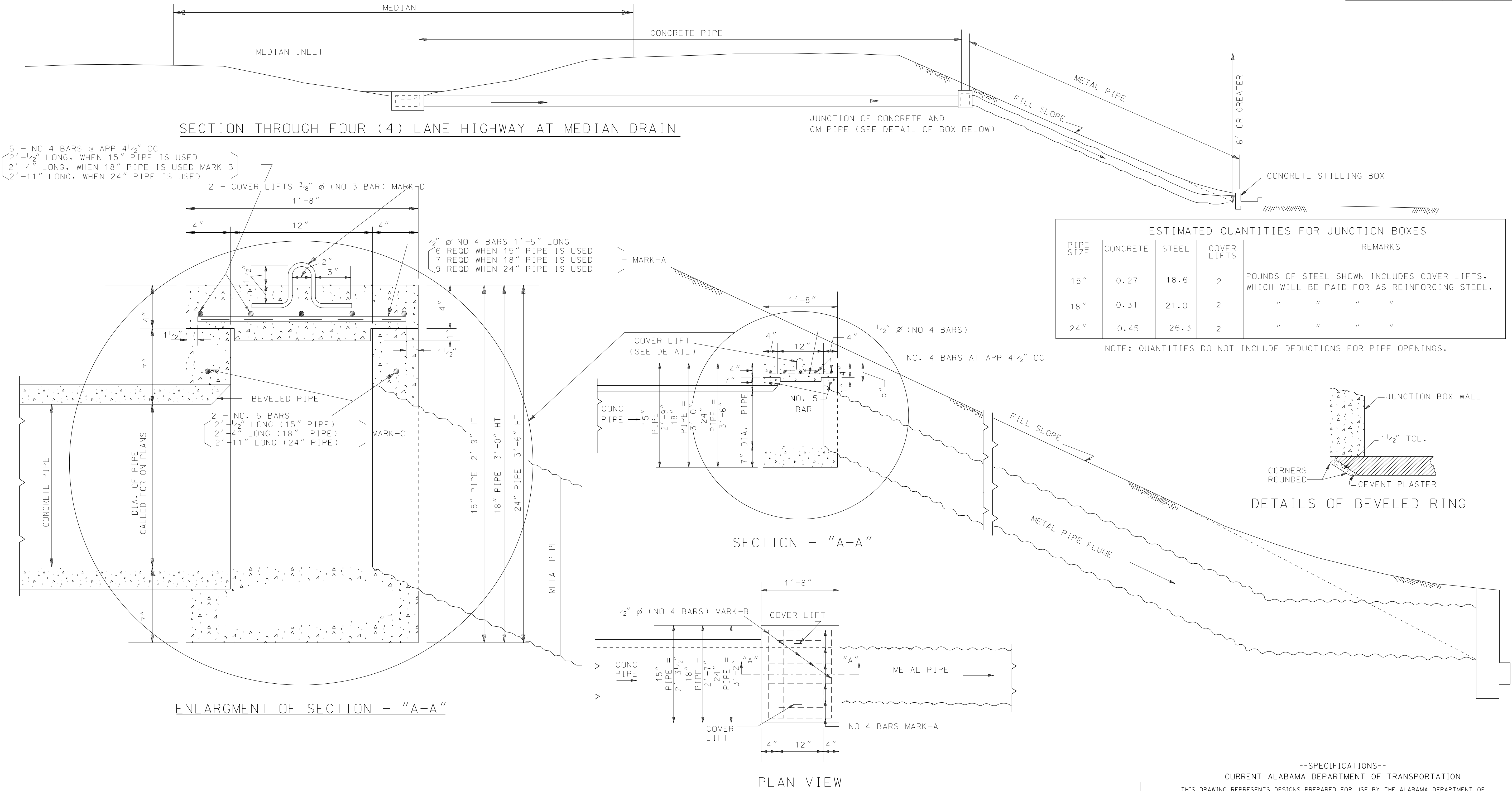
DETAILS OF RECTANGULAR PRECAST JUNCTION BOX TYPES - 1P & 2P

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: _____

SPECIAL DRAWING NO
JB-621-P (SHEET 2 OF 2)

INDEX NO
62164

NOT TO SCALE



DETAILS OF JUNCTION BOX FOR CONNECTING CONCRETE MEDIAN DRAIN TO METAL SLOPE FLUME

--SPECIFICATIONS--
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REVISIONS
1. Added to CADD on 07-07-99 by J.F.T.

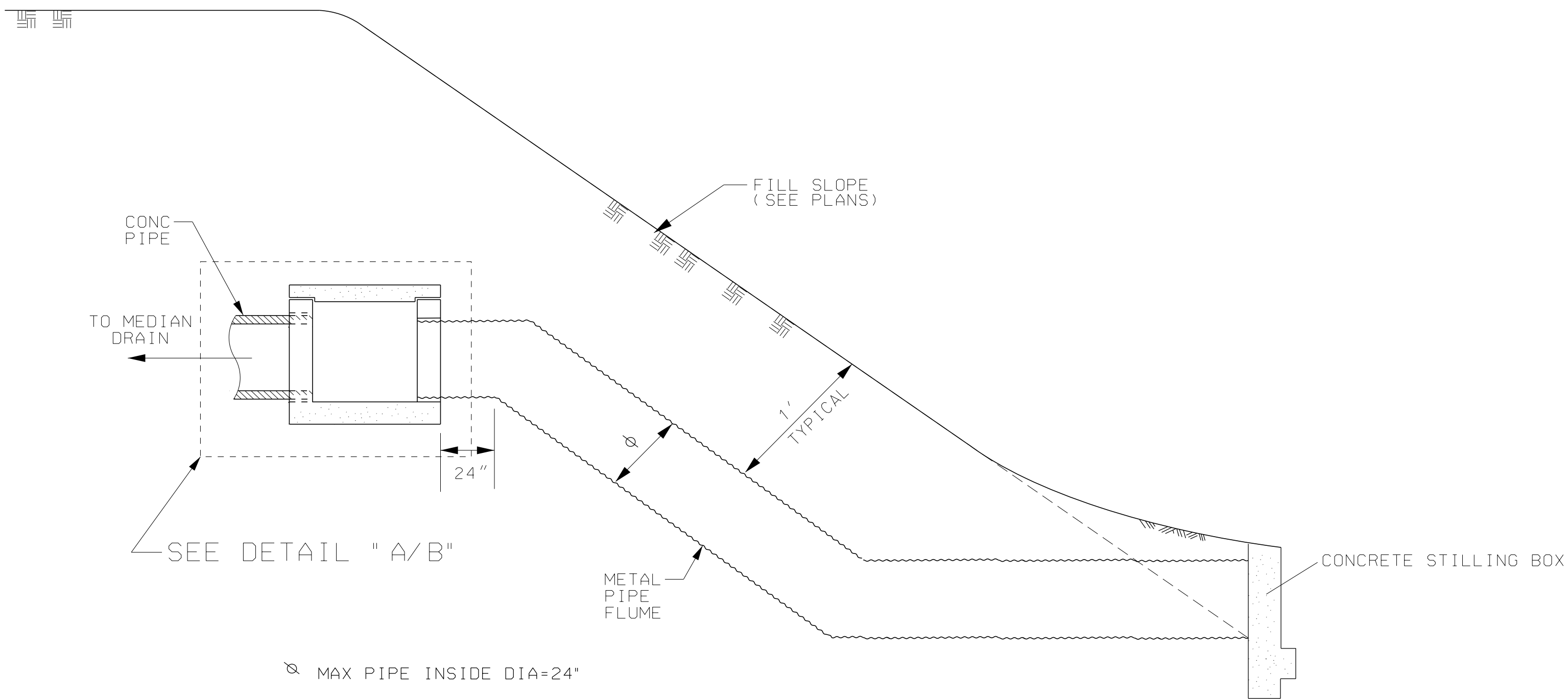
ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050
DESIGN BUREAU SPECIAL DRAWING
DETAILS OF JUNCTION BOX TYPE-3 FOR
CONNECTING CONCRETE MEDIAN DRAIN TO
METAL PIPE FLUME AT FILLS 6'
IN HEIGHT OR GREATER

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 06-09-78

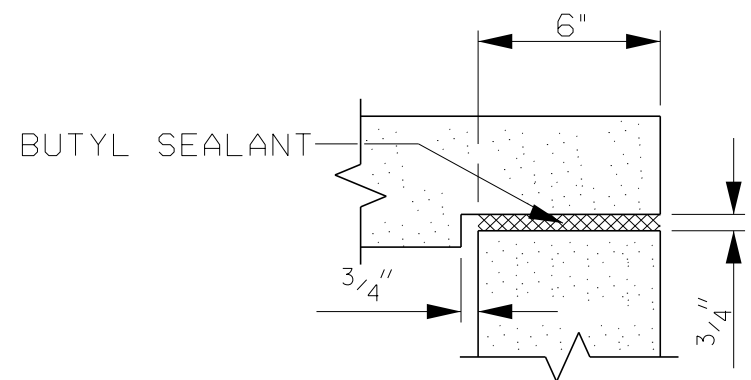
SPECIAL DRAWING NO
JB-620-D

INDEX NO
62167

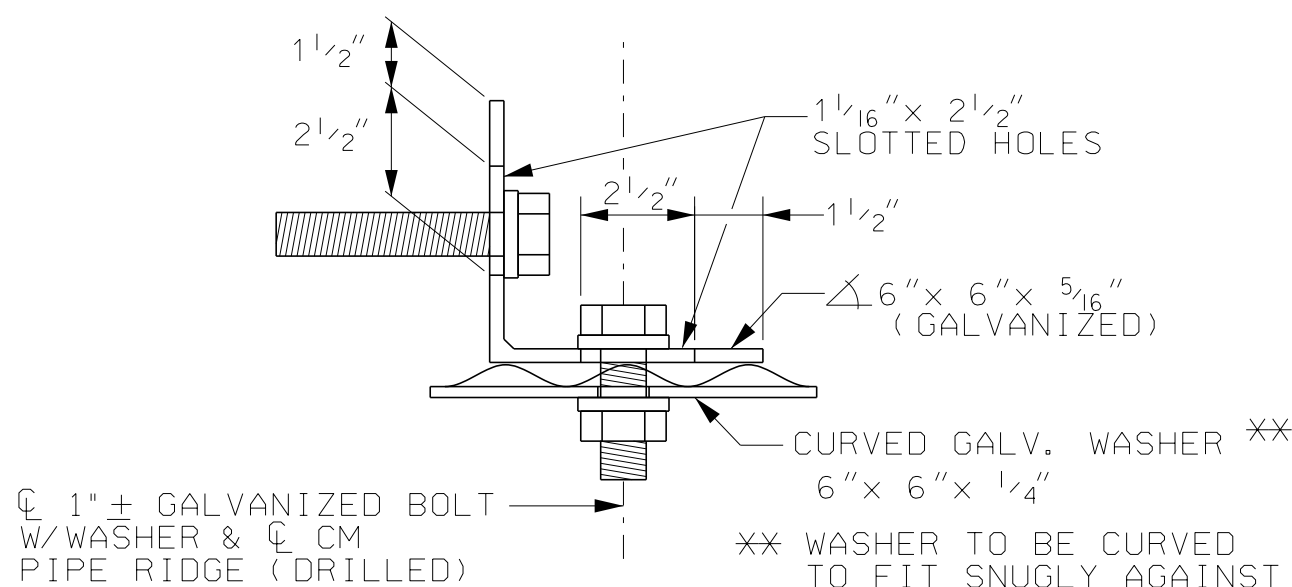
NOT TO SCALE



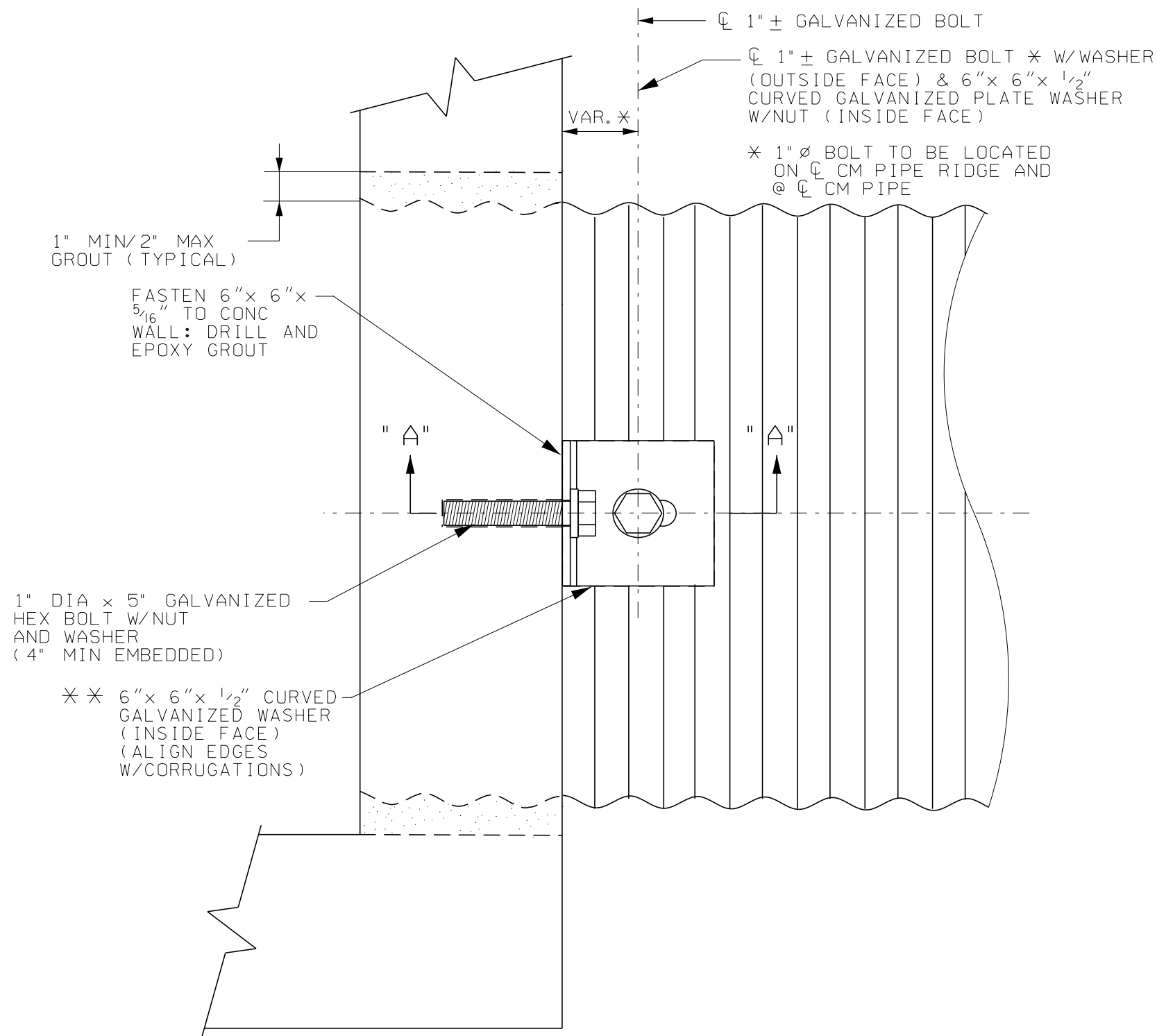
GENERAL INSTALLATION VIEW



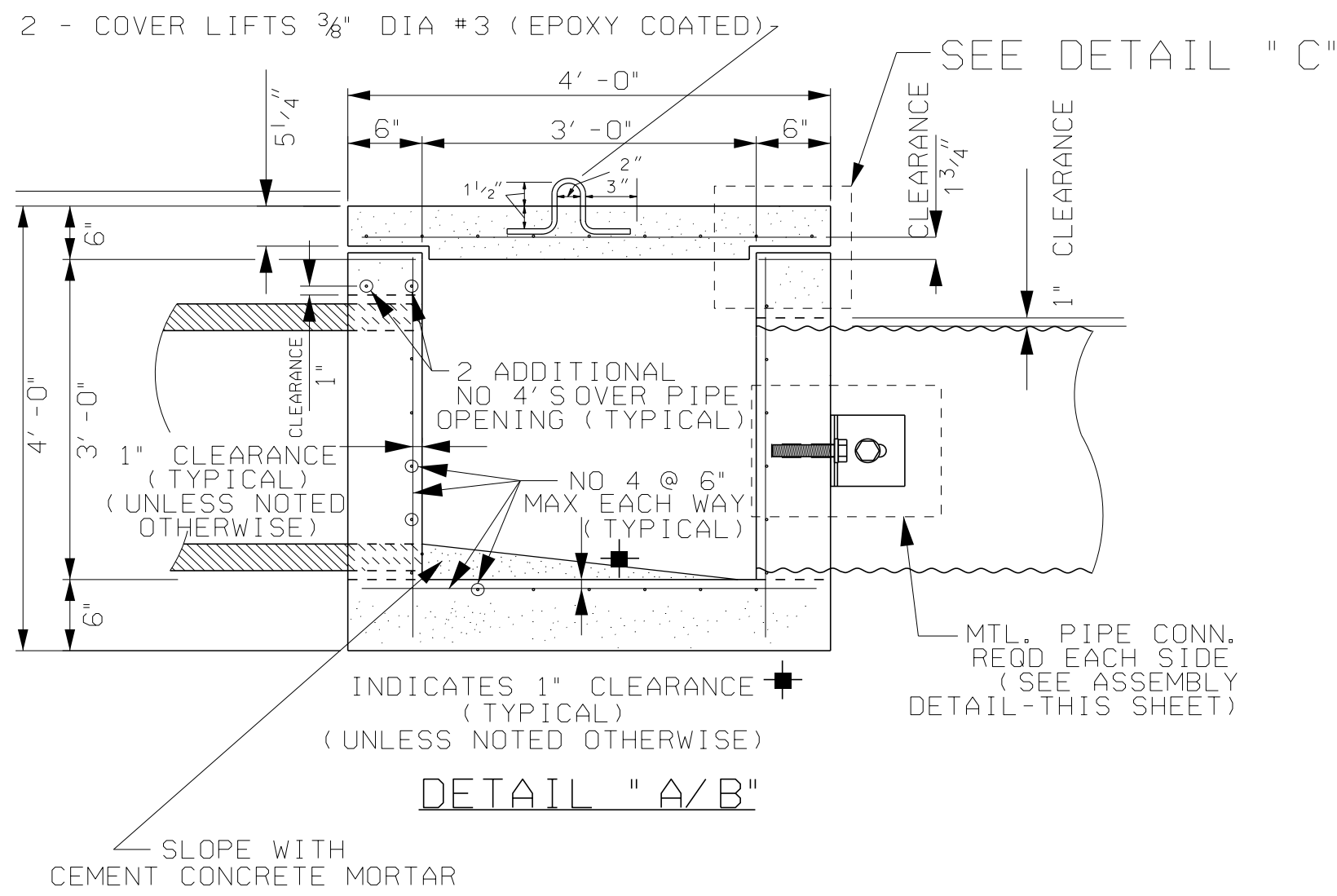
DETAIL "C": TYPICAL PRECAST JOINT DETAIL



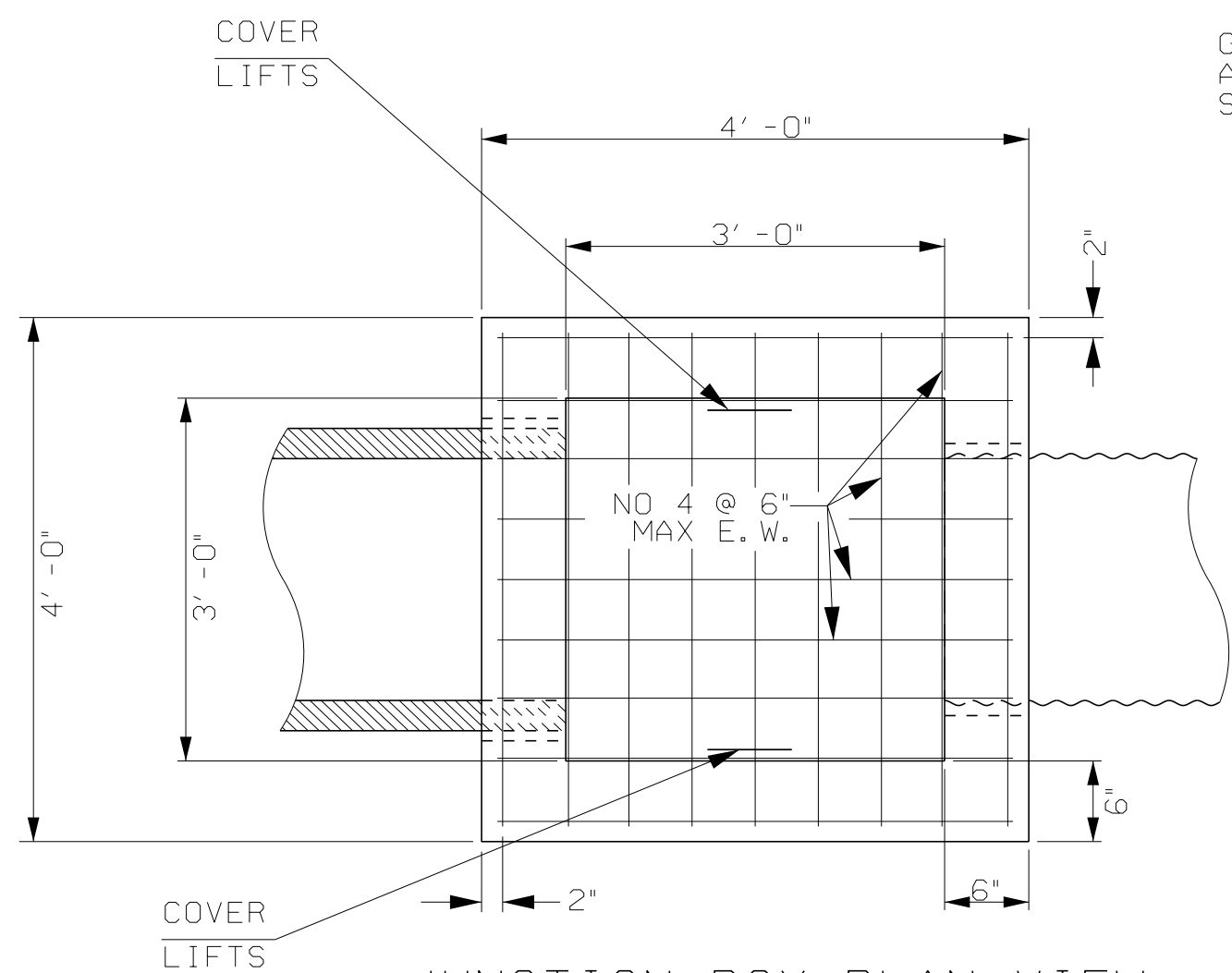
SECTION "A-A"



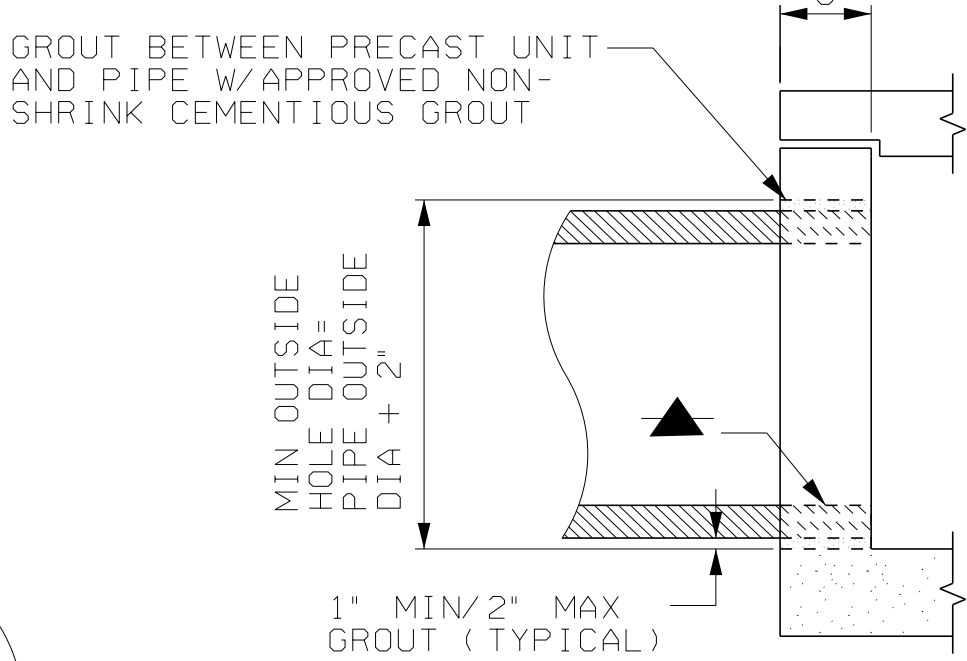
METAL PIPE CONNECTION ASSEMBLY



DETAIL "A/B"



JUNCTION BOX PLAN VIEW




PIPE ENTRANCE INTO BOX
(SHOWN @ RC PIPE)

TYPE 3P

GENERAL NOTES

1. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH: 4000 P.S.I.
2. REINFORCING STEEL: TO BE IN ACCORDANCE WITH SPECIFICATIONS. MINIMUM YIELD STRENGTH=60 K.S.I.
3. WELDED WIRE REINFORCEMENT PROVIDING EQUIVALENT AREAS OF STEEL TO THOSE DENOTED MAY BE SUBSTITUTED FOR REINFORCING BARS. WELDED WIRE REINFORCEMENT TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
4. WALL AND SLAB THICKNESSES INDICATED ARE MINIMUM VALUES, AND MAY BE INCREASED AT THE DISCRETION OF THE PRECAST MANUFACTURER.
5. ALL HARDWARE FOR PIPE CONNECTION ASSEMBLY TO BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A53. BOLTS TO BE IN ACCORDANCE WITH ASTM A307 AND STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH ASTM A36 (FY=36 K.S.I.)
6. METAL SURFACES IN PIPE OR STRUCTURAL STEEL COMPONENTS EXPOSED BY CUTTING AND/OR DRILLING FOR CONNECTION ASSEMBLY WILL REQUIRE A GALVANIZING REPAIR PAINT IN ACCORDANCE WITH THE SPECIFICATIONS.

| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
|--|---|---|
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| REVISIONS |  ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050 | DESIGN BUREAU SPECIAL DRAWING DETAILS OF PRECAST JUNCTION BOX TYPE-3P FOR CONNECTING CONCRETE MEDIAN DRAIN TO METAL PIPE FLUME AT FILLS 6' IN HEIGHT OR GREATER |
| | | |
| Bureau Std Engr: D.J.W. DRAWN BY: J.F.T. DATE DRAWN: 07-25-07 | SPECIAL DRAWING NO JB-620-PD | INDEX NO 62170 |

NOT TO SCALE

BAR LIST

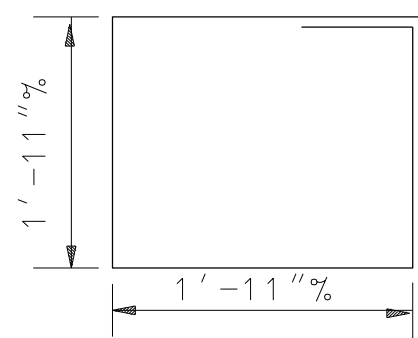
| | |
|------------------|--|
| E ₁ = | L - 4 |
| E ₂ = | W - 4 |
| E ₃ = | H - (SLAB + 4') |
| B = | $\sqrt{\left(\frac{H - \text{SLAB}}{2}\right)^2 + \left(\frac{H - \text{SLAB}}{2}\right)^2}$ |

| | |
|------------------|----------|
| A ₁ = | "W" - 4" |
| A ₂ = | "L" - 4" |
| A ₃ = | "W" - 4" |
| L ₁ = | "W" - 4" |
| L ₂ = | "L" - 4" |

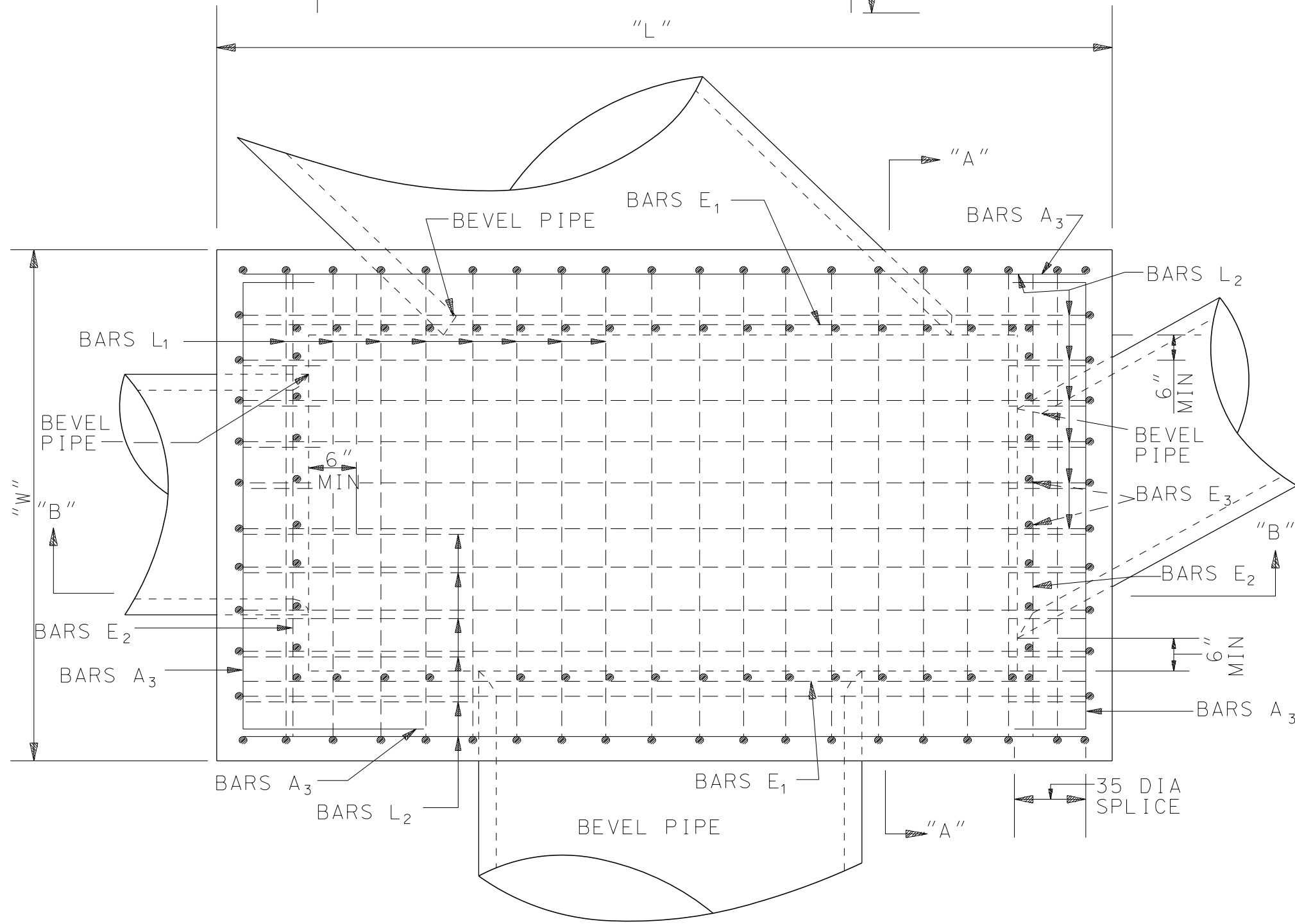
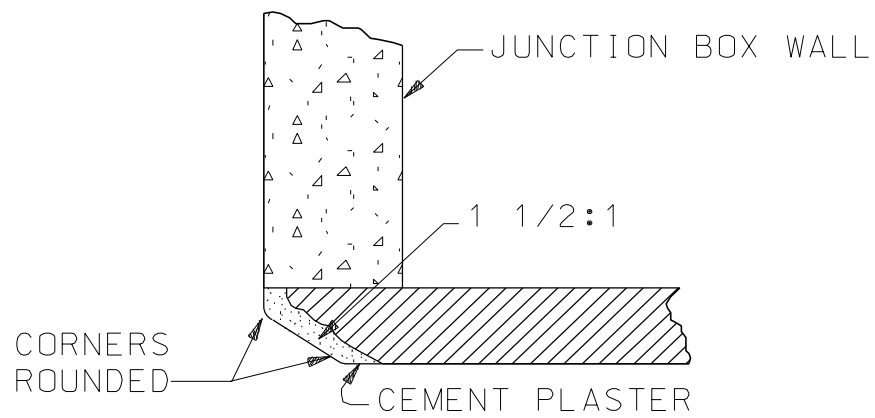
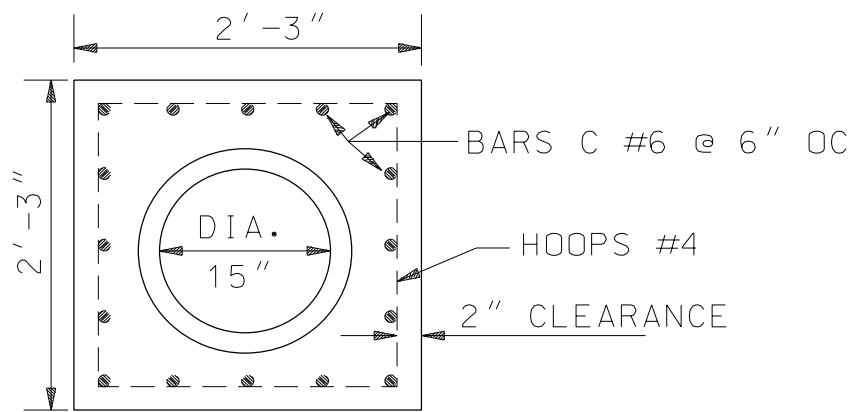
A₁ & A₂ = SLAB - 4"
A₃ = 35 DIA
L₁ & L₂ = H - (SLAB + 4")



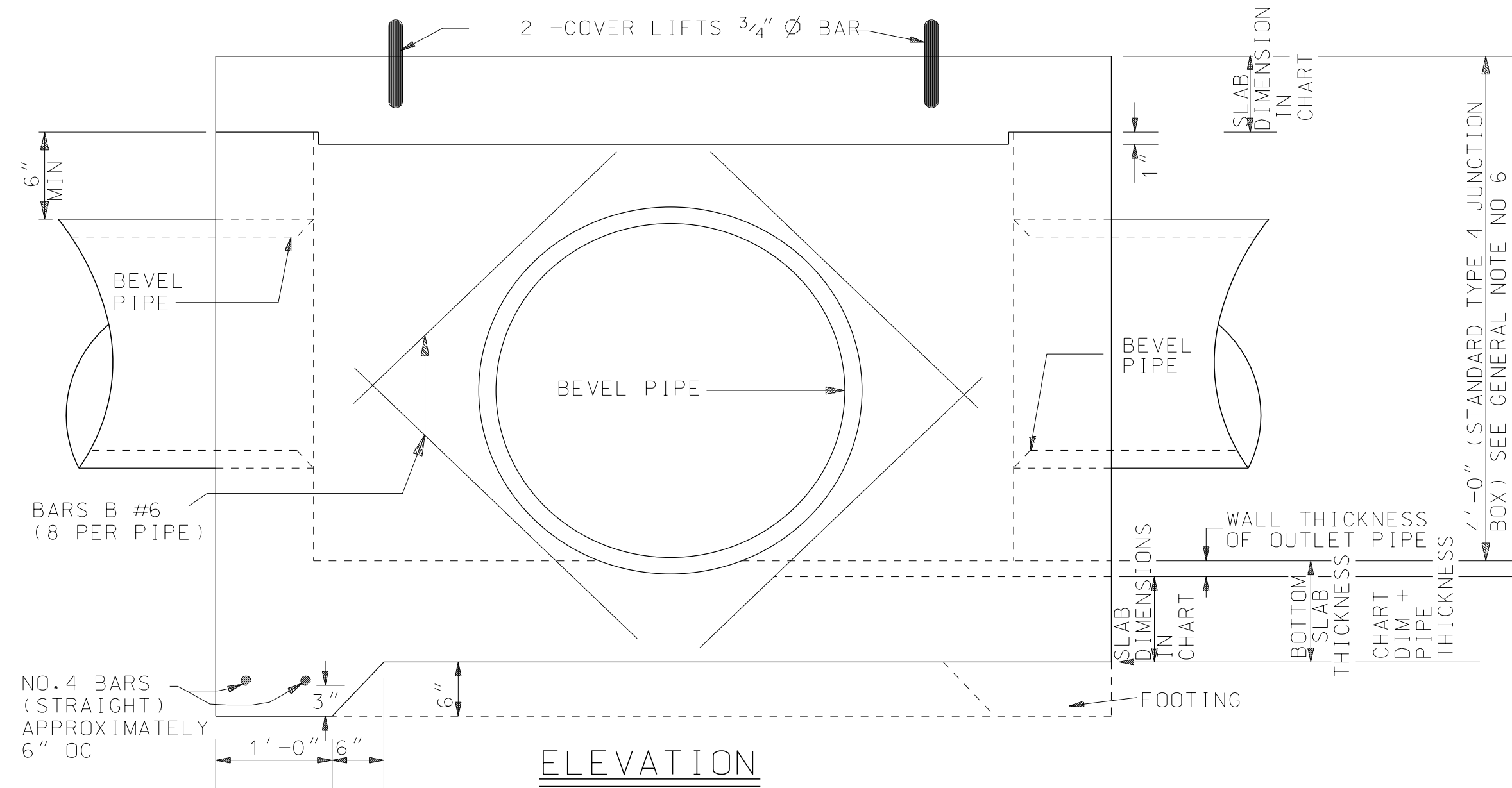
HOOP DETAIL



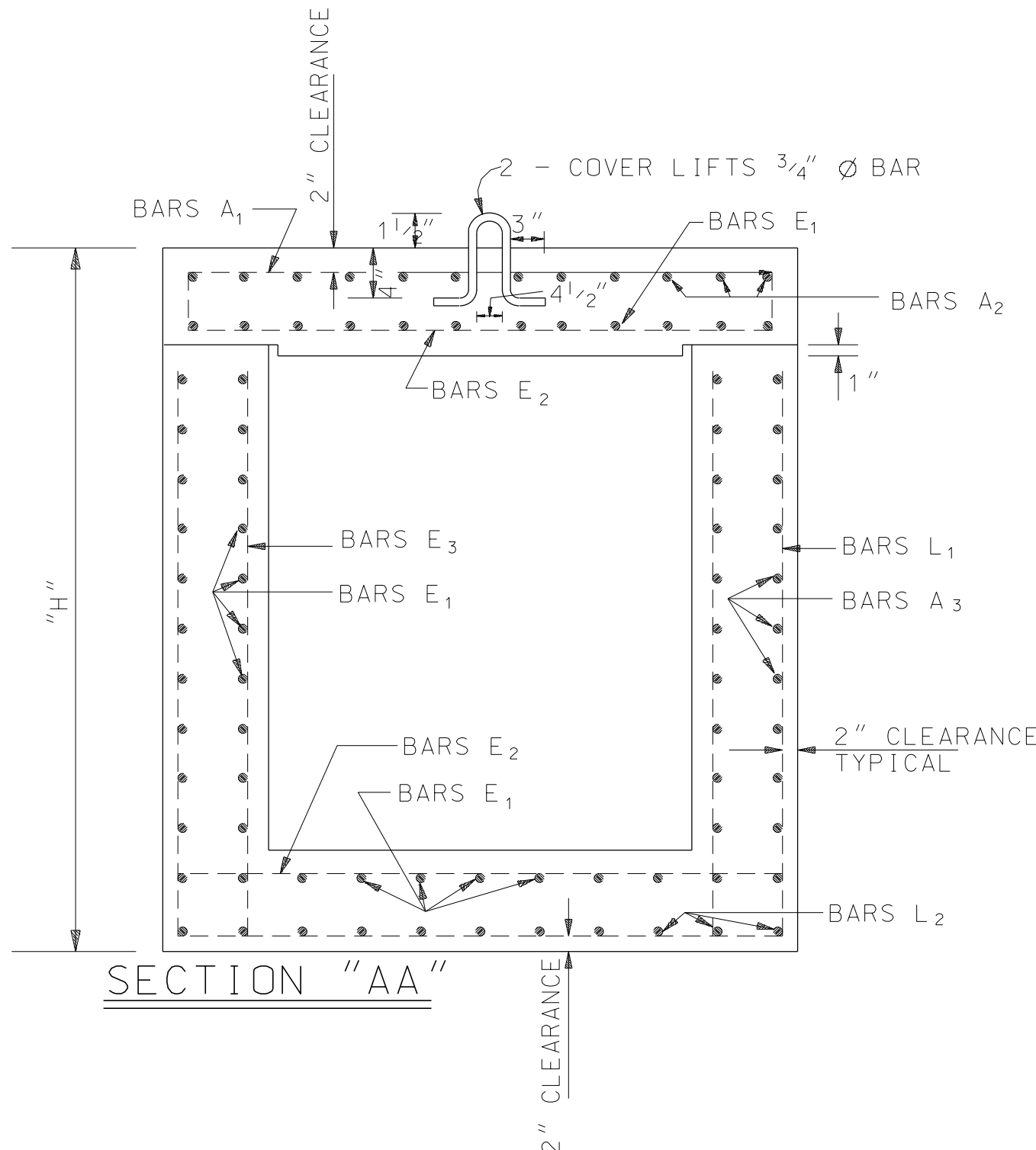
* WHERE STACK PIPE IS NOT REQUIRED, BARS AND CONCRETE TO BE CONGRUENT WITH SURROUNDING SLAB.



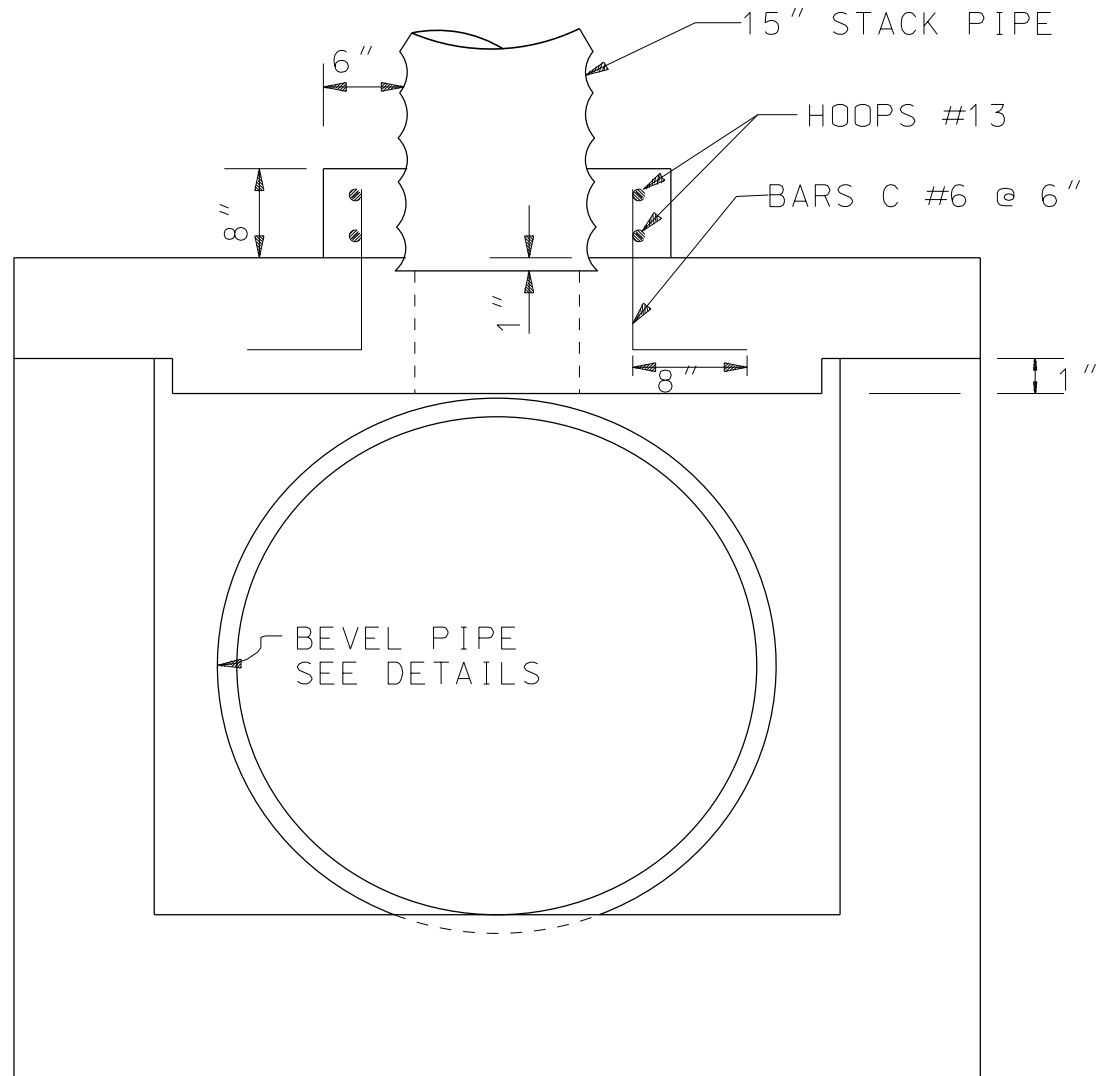
BOTTOM PLAN



ELEVATION



SECTION "AA"



DROP INLET

GENERAL NOTES

1. FOOTINGS ARE REQD WHERE PIPE ENTERS OR EXITS JUNCTION BOX USING PIPE 42" OR LARGER.
2. WHERE STACK PIPE IS REQD FIELD CUTS AND FORMING OF BARS AS SHOWN SHALL BE PERMITTED.
3. STEEL SHALL CLEAR FACES OF CONCRETE 2".
4. MATERIALS USED IN FOOTING AND STACK PIPE COLLAR ARE NOT INCLUDED IN THE QUANTITIES OF JUNCTION BOX.
5. REINFORCING STEEL FOR PIPE ENTRANCE SHALL BE CUT IN FIELD REINFORCING STEEL SHALL NOT BE FABRICATED UNTIL ACTUAL SIZE OF JUNCTION BOX IS ESTABLISHED BY THE ENGINEER IN THE FIELD. IN CASES WHERE INLETS IS ATTACHED DIRECTLY TO JUNCTION BOX TOP SLAB, JUNCTION BOX WALL STEEL SHALL BE EXTENDED INTO INLET WALLS OR AS DIRECTED BY THE ENGINEERS.
6. ADDITIONAL HEIGHT ABOVE 4'-0" DIMENSION SHOWN SHALL BE PAID FOR AS TYPE 4 JUNCTION BOX UNITS MEASURED IN INCREMENTS OF 2'.

FOR BARS E, L, & A

| MAXIMUM SPAN "L" "W" | 10' TO 25' FILL | | 25.1' TO 50' FILL | | 50.1' TO 80' FILL | |
|----------------------|-----------------|-------------|-------------------|-------------|-------------------|-------------|
| | WALL & SLAB | REINF STEEL | WALL & SLAB | REINF STEEL | WALL & SLAB | REINF STEEL |
| 0' - 4' | 8" | #4@ 6" OC | 9" | #4@ 6" OC | 12" | #4@ 6" OC |
| 4.1' - 7' | 9" | #5@ 6" OC | 12" | #6@ 6" OC | 16" | #6@ 6" OC |
| 7.1' - 10' | 12" | #6@ 6" OC | 20" | #6@ 6" OC | 24" | #7@ 6" OC |

--SPECIFICATIONS--

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REVISIONS

1. Added to CAD on 07-01-99 by J.F.T.



ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING
DETAILS OF REINFORCED CONCRETE
JUNCTION BOX TYPE-4 FOR CONCRETE
OR CORRUGATED METAL PIPE
(10'-80' FILL HEIGHT)

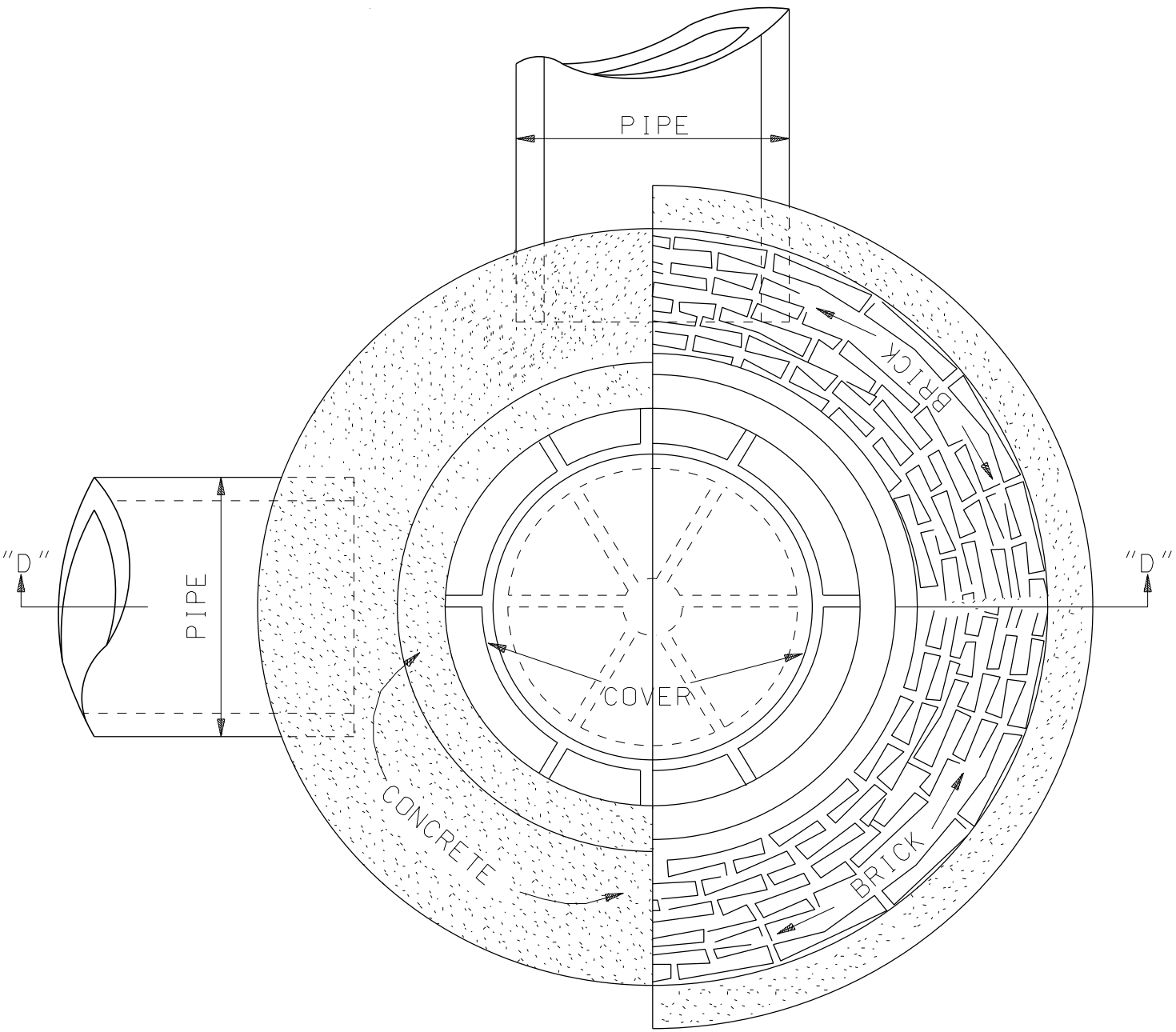
Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 04-18-85

SPECIAL DRAWING NO
JB-620-C

INDEX NO
62173

NOT TO SCALE

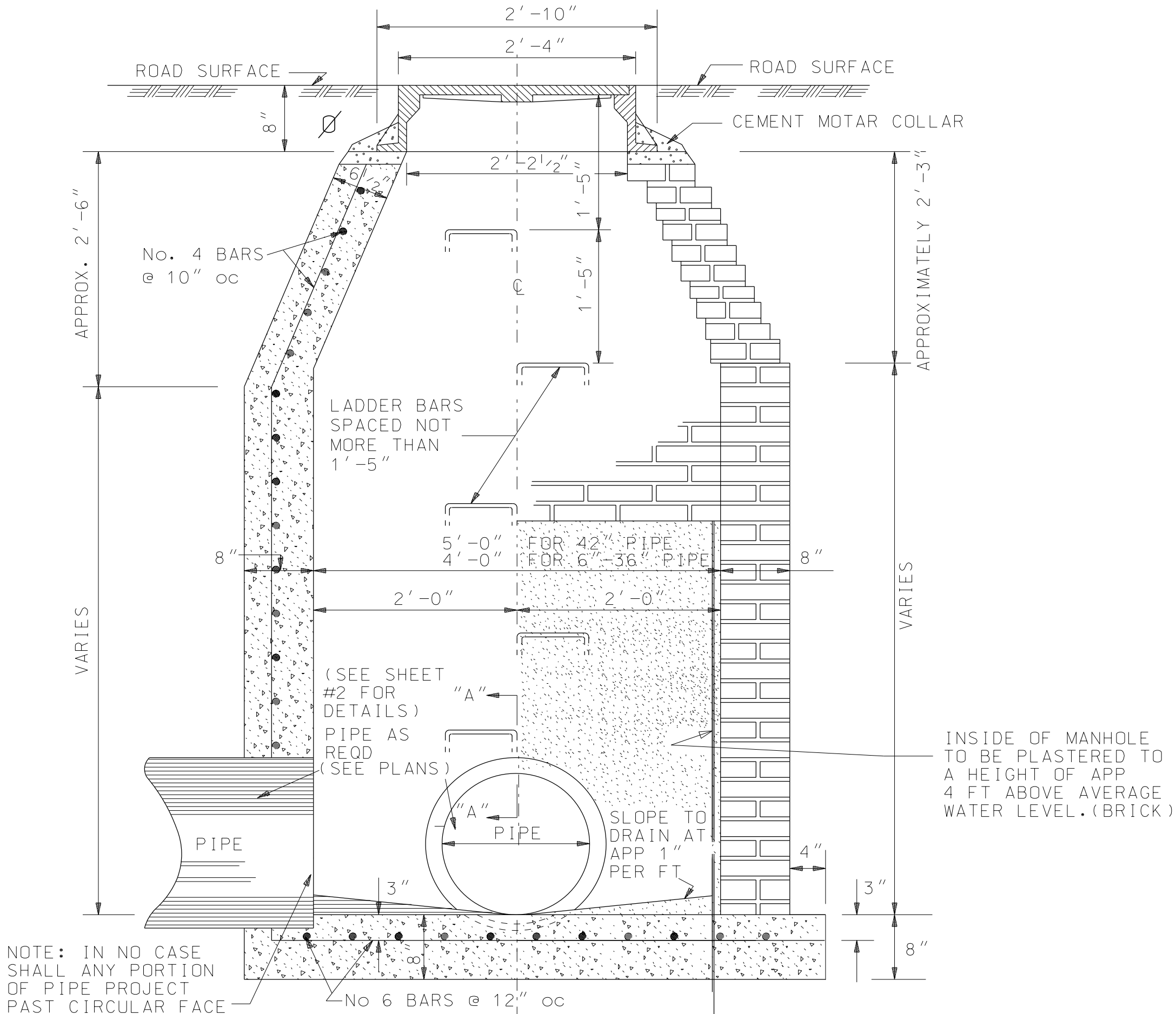
THE JOINTS SHALL BE OF SUCH DESIGN AS WILL PERMIT EFFECTIVE JOINTING TO REDUCE LEAKAGE AND INFILTRATION TO A SATISFACTORY MINIMUM AND TO PERMIT PLACEMENT WITHOUT APPRECIABLE IRREGULARITIES IN THE INTERIOR WALL SURFACE OF THE MANHOLE.



NOTE : BRICKWORK - ALL BRICK SHALL BE LAYED BY THE SHOVE JOINT METHOD AND CARE MUST BE TAKEN TO INSURE THAT ALL JOINTS ARE WELL FILLED. ONLY SEWER BRICK SHALL BE USED.

PLAN VIEW TYPE "L" MANHOLE

NOTE : SEE SHEET 3 OF 5 FOR CONCRETE COVER SLAB USED ON SHALLOW MANHOLE FOR USE WITH CAST IN PLACE CONCRETE MANHOLE.



NOTE: IN NO CASE SHALL ANY PORTION OF PIPE PROJECT PAST CIRCULAR FACE OF STRUCTURE

HALF SECTION CONCRETE-HALF SECTION (BRICK)

SECTION "DD"

TYPE "L" MANHOLE

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REVISIONS

- Added to CADD on 04-27-00 by J.F.T.
- Moved several details to Sheet 4 & 5 of 5 and added (Sh. 1 of 5) on 08-20-07 by W.W.A.
- Deleted Option Note, adjusted drawing description & added Note for Shallow Manhole on 06-04-08 by W.W.A.
- Deleted "See Detail of Beveled Ring Read on End of Outfall Pipe", Removed Beveled Ring in middle of pipe in "TYPE 'L' MANHOLE" (SECTION "DD") on 08-12-11 by J.F.T.



ALABAMA DEPARTMENT
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MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

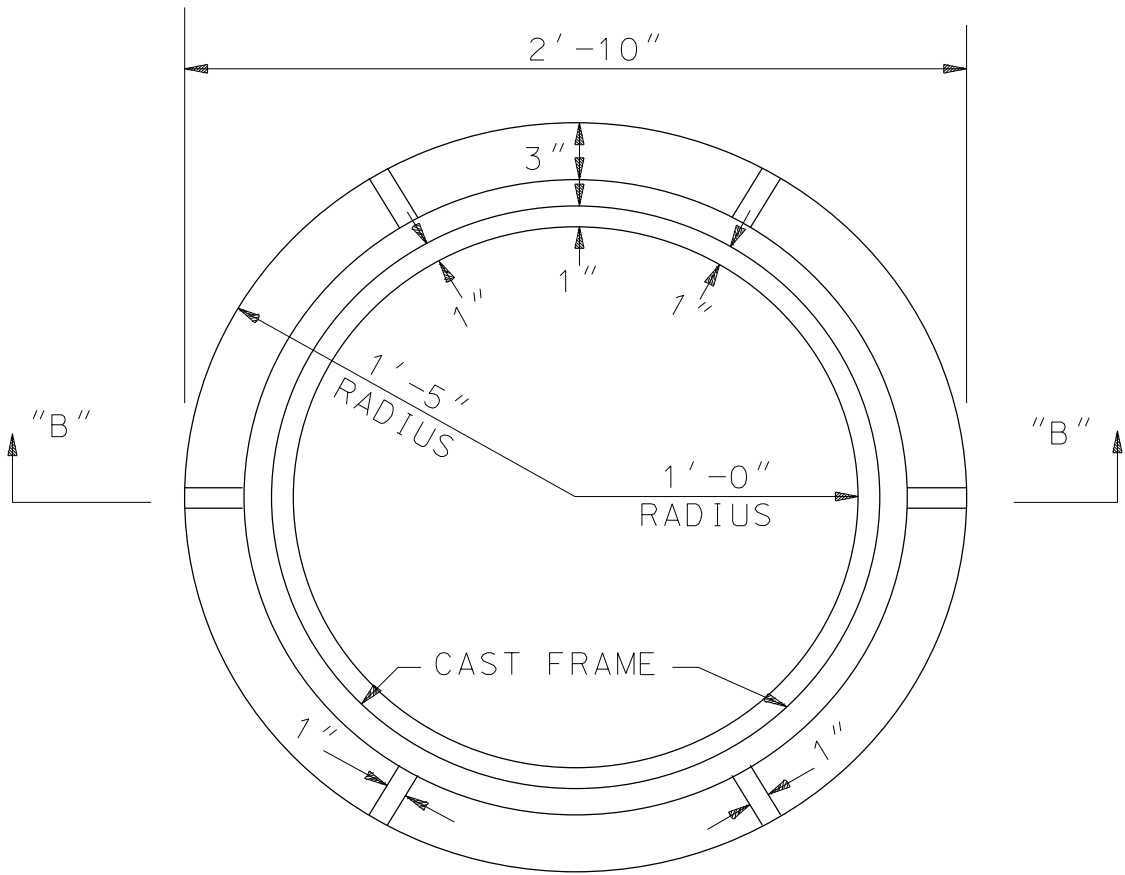
DETAILS OF CONCRETE OR BRICK
MANHOLE (TYPE L) CONSTRUCTED
IN PLACE FOR 6" - 42" PIPE

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 12-20-74

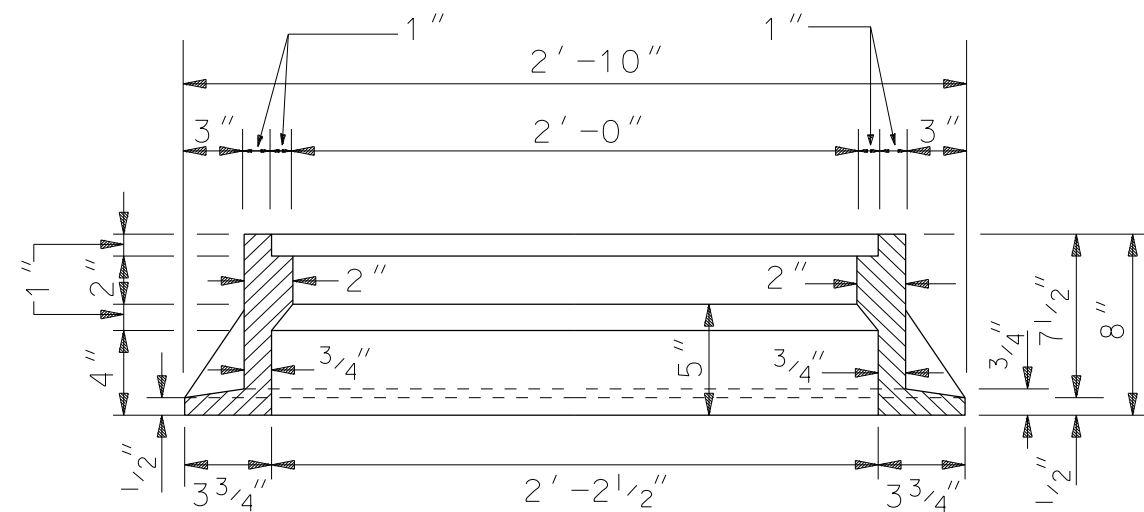
SPECIAL DRAWING NO
MH-621-2 (SHEET 1 OF 5)

INDEX NO
62183

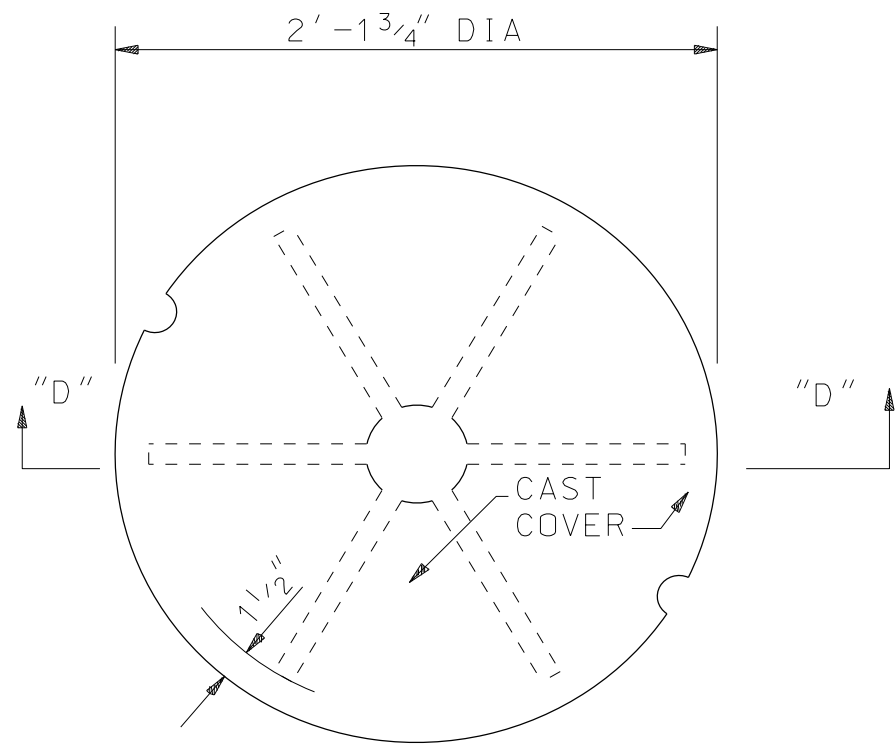
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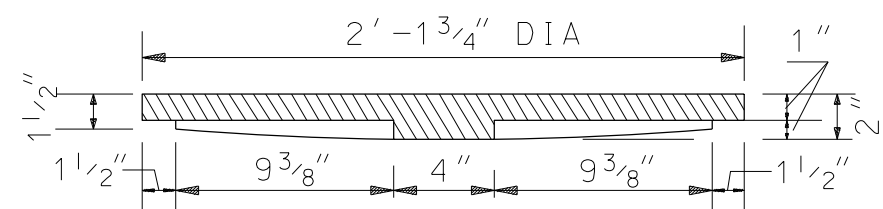
PLAN OF FRAME



FRAME- SECTION "BB"



PLAN OF COVER



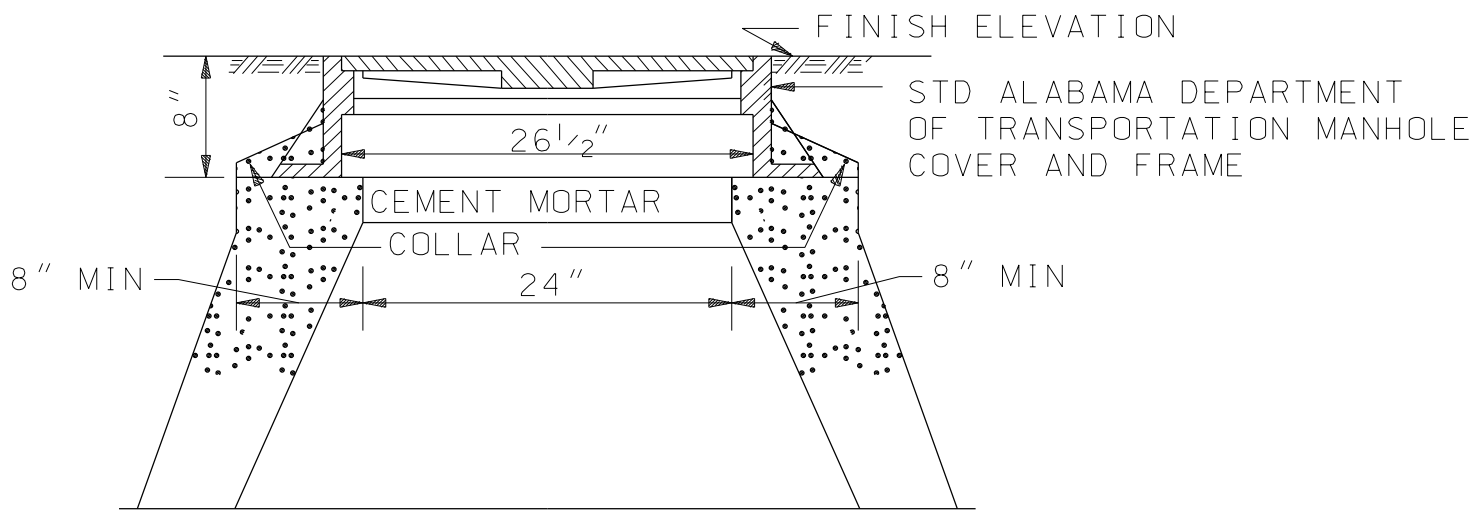
COVER-SECTION "DD"

DETAILS OF CASTINGS FOR FRAME AND COVER FOR STANDARD MANHOLE

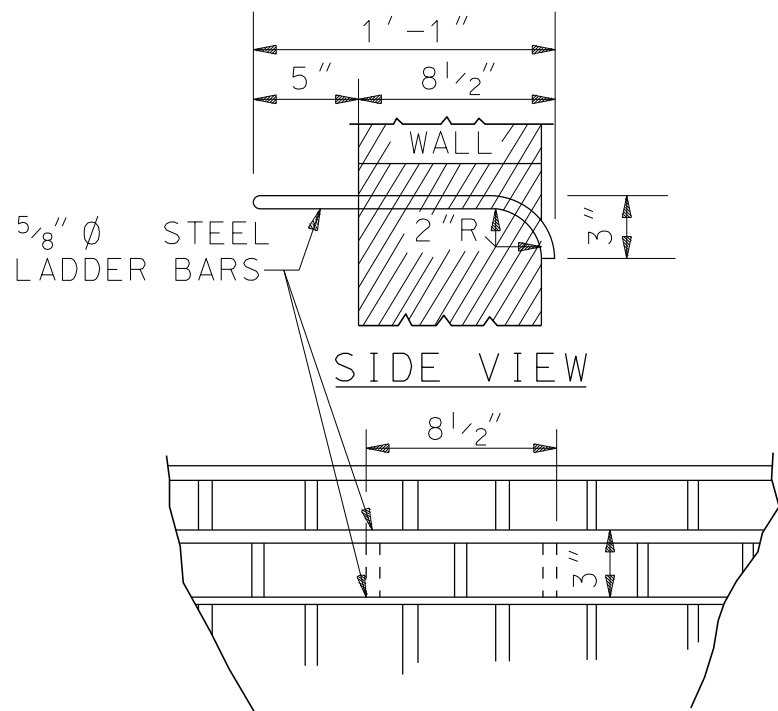
WEIGHT OF CASTING (GRAY IRON)

- 1-FRAME CASTING = 270 POUNDS
1-COVER CASTING = 143 POUNDS

APPROVED POLYMER MANHOLE RING AND FRAME MAY BE USED

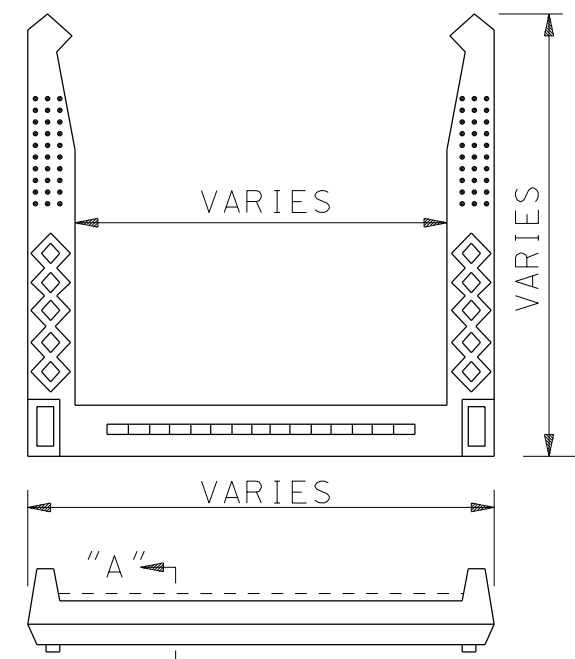
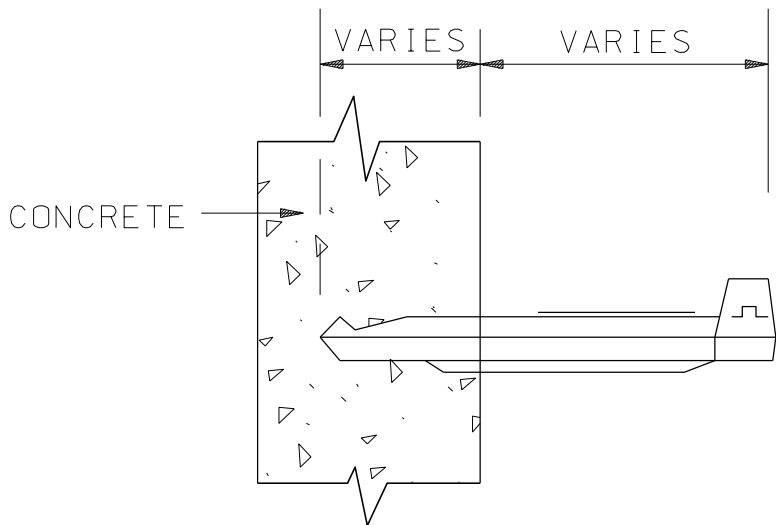


NORMAL INSTALLATION OF MANHOLE COVER



FRONT VIEW
DETAILS OF STEEL LADDER BARS

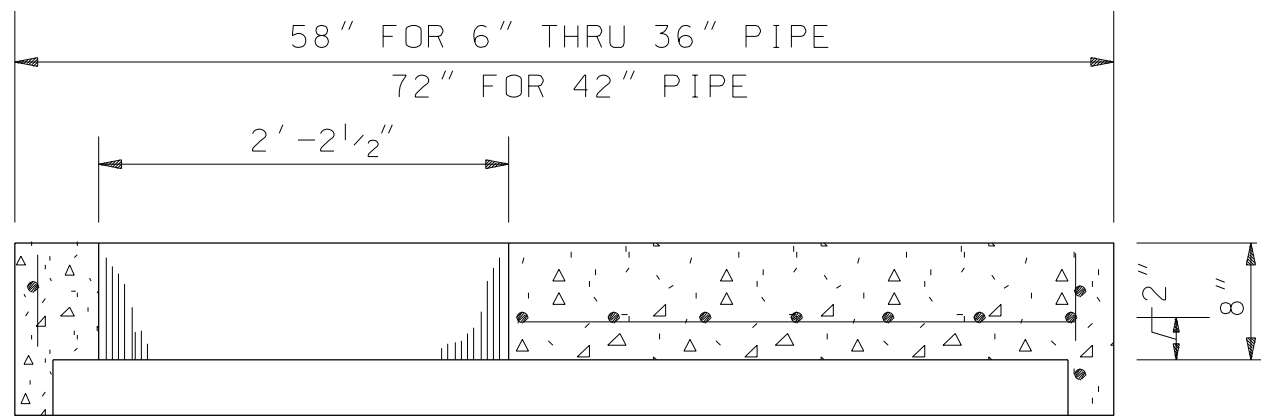
OTHER TYPE AND SHAPE OF LADDER BARS MAY BE USED IF APPROVED BY THE ENGINEER.



PLAN ELEVATION

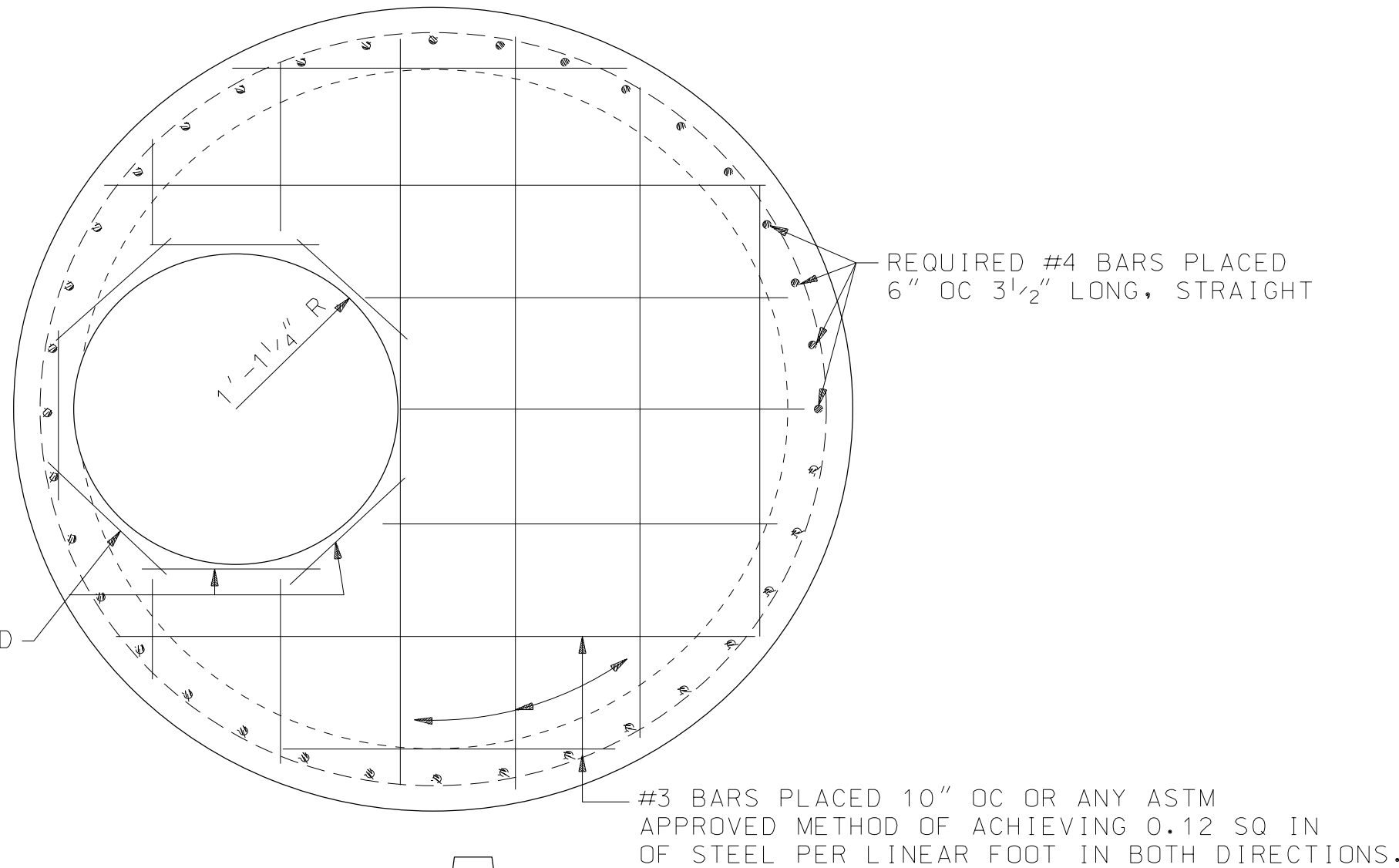
DETAIL OF POLYPROPYLENE STEPS

- STEPS SHALL BE PLACED INTO WET CONCRETE WALL AT TIME OF MANUFACTURE OR MORTARED INTO HOLES AFTER CONCRETE HAS SET.
- DIMENSIONS WILL VARY ACCORDING TO SPECIFIC APPLICATIONS.
- ALL MANHOLE STEPS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-199, SECTION 16.



SPECIAL CONCRETE COVER SLAB FOR USE ONLY WHERE MANHOLE DEPTH IS TOO SHALLOW TO ALLOW TRANSITION SECTION

CAST IN PLACE



REQUIRED #4 BARS PLACED 6" OC 3 1/2" LONG, STRAIGHT


REQUIRED #4 BARS PLACED ON TOP OF #3 BARS & TIED

#3 BARS PLACED 10" OC OR ANY ASTM APPROVED METHOD OF ACHIEVING 0.12 SQ IN OF STEEL PER LINEAR FOOT IN BOTH DIRECTIONS.

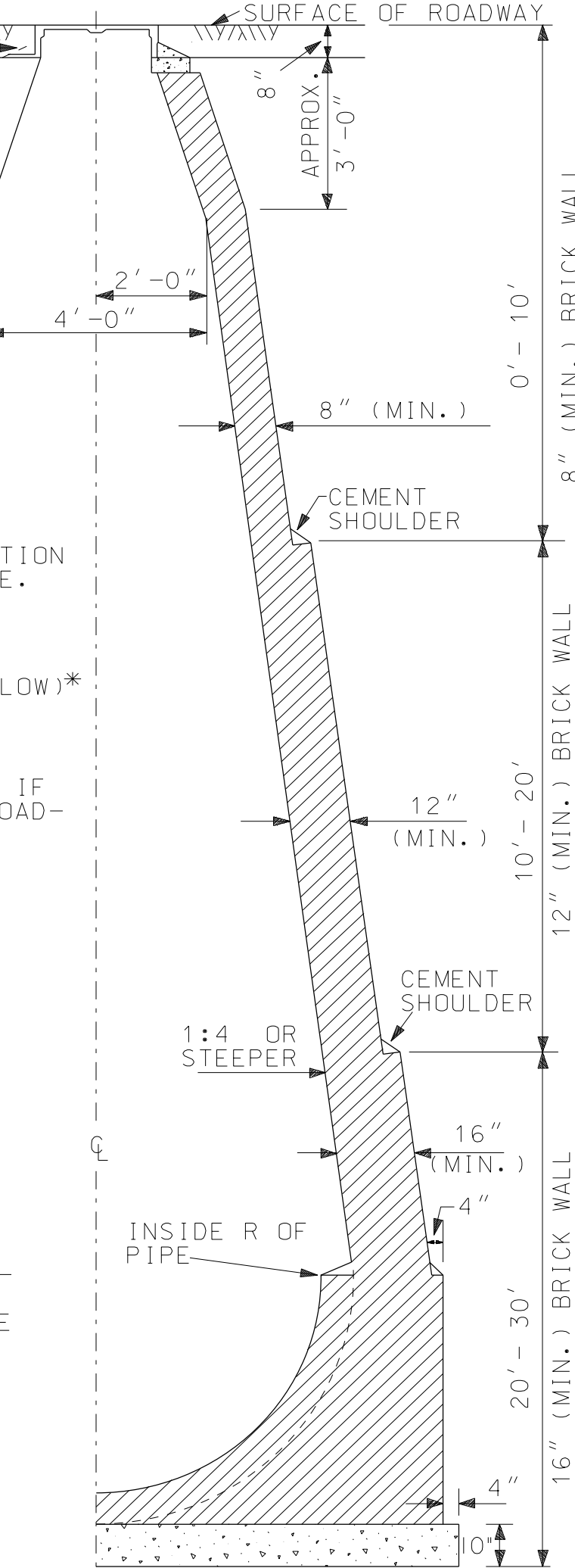
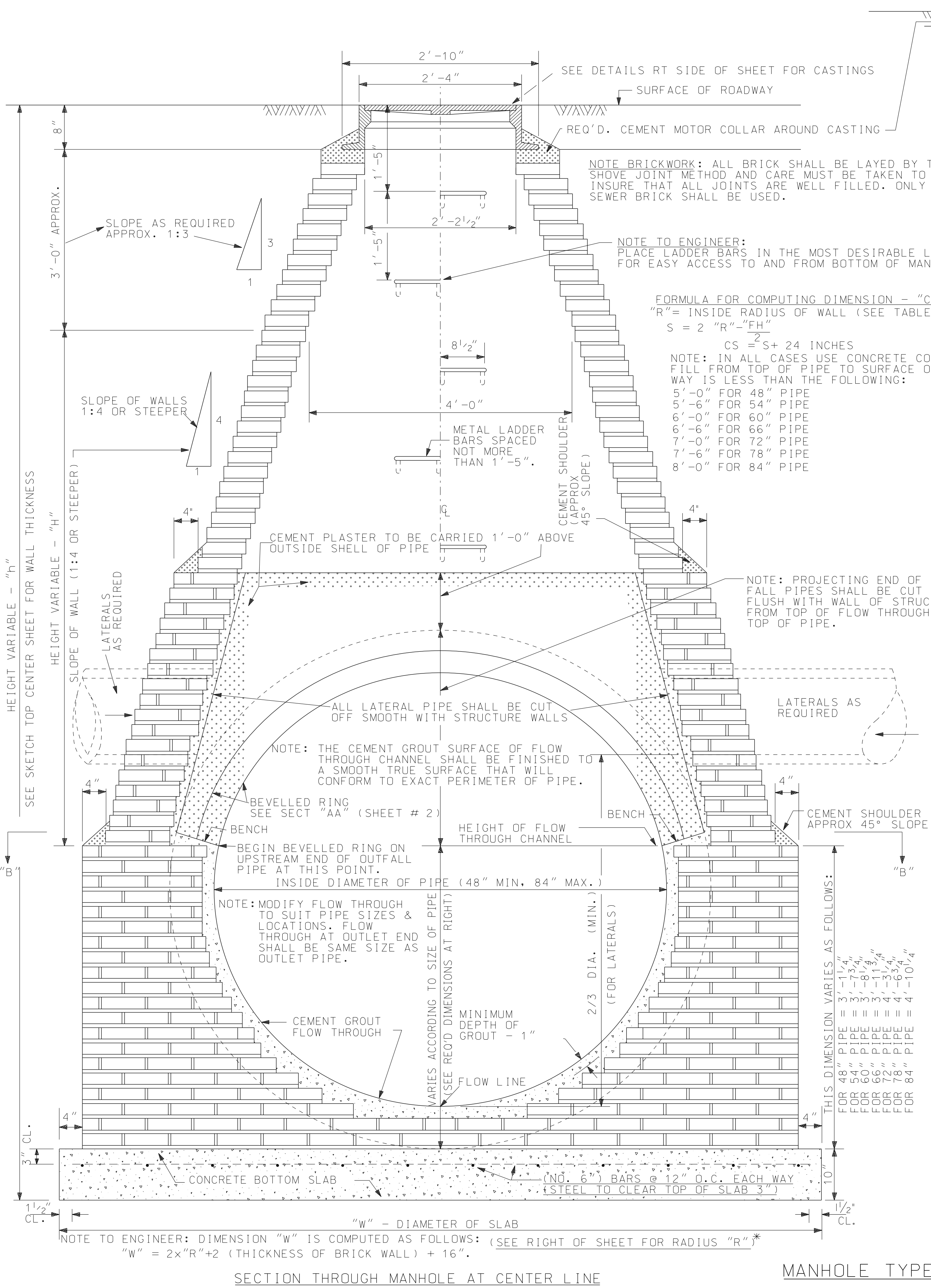
NO 3 DEFORMED BAR

SECTION "AA"

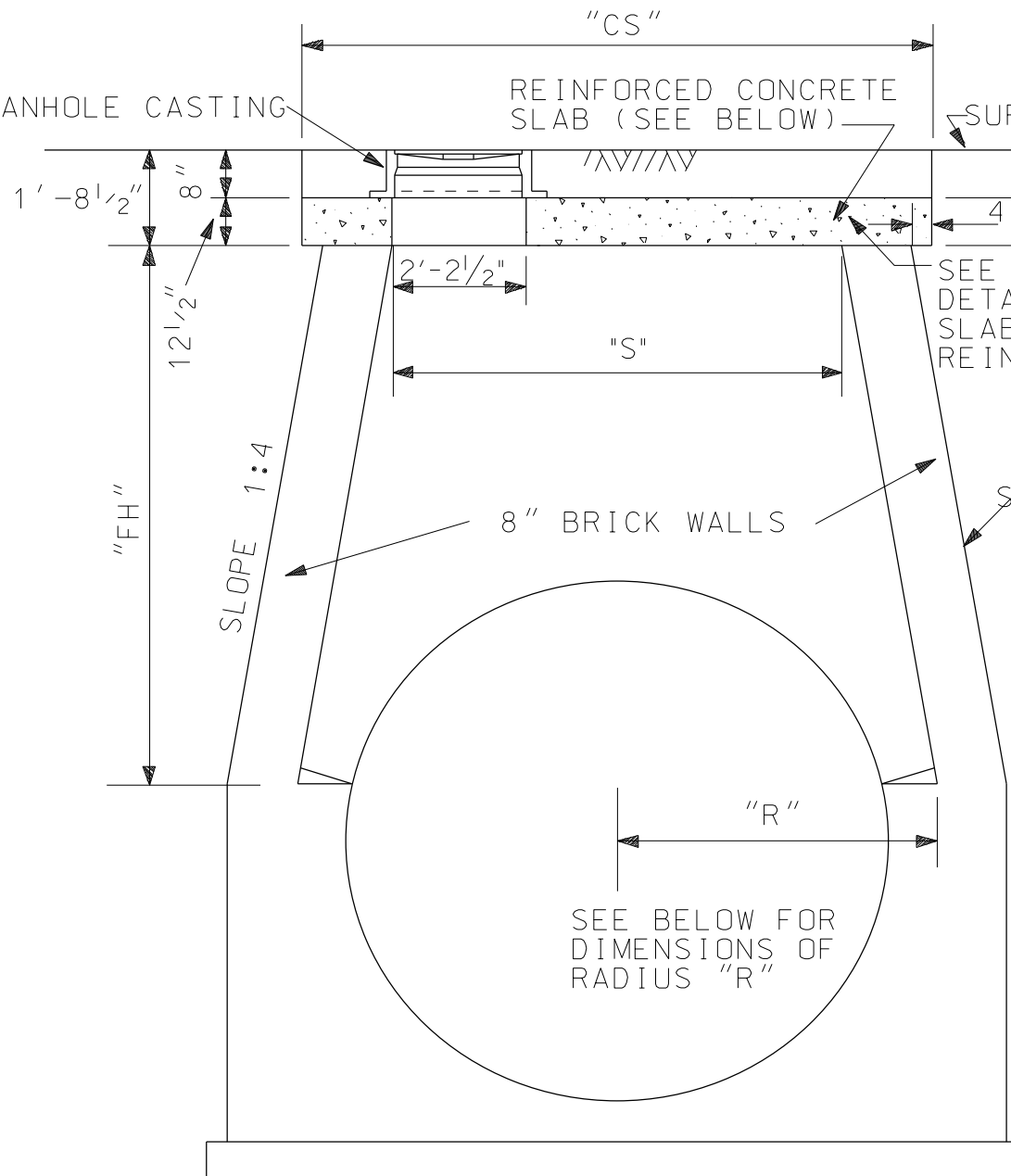
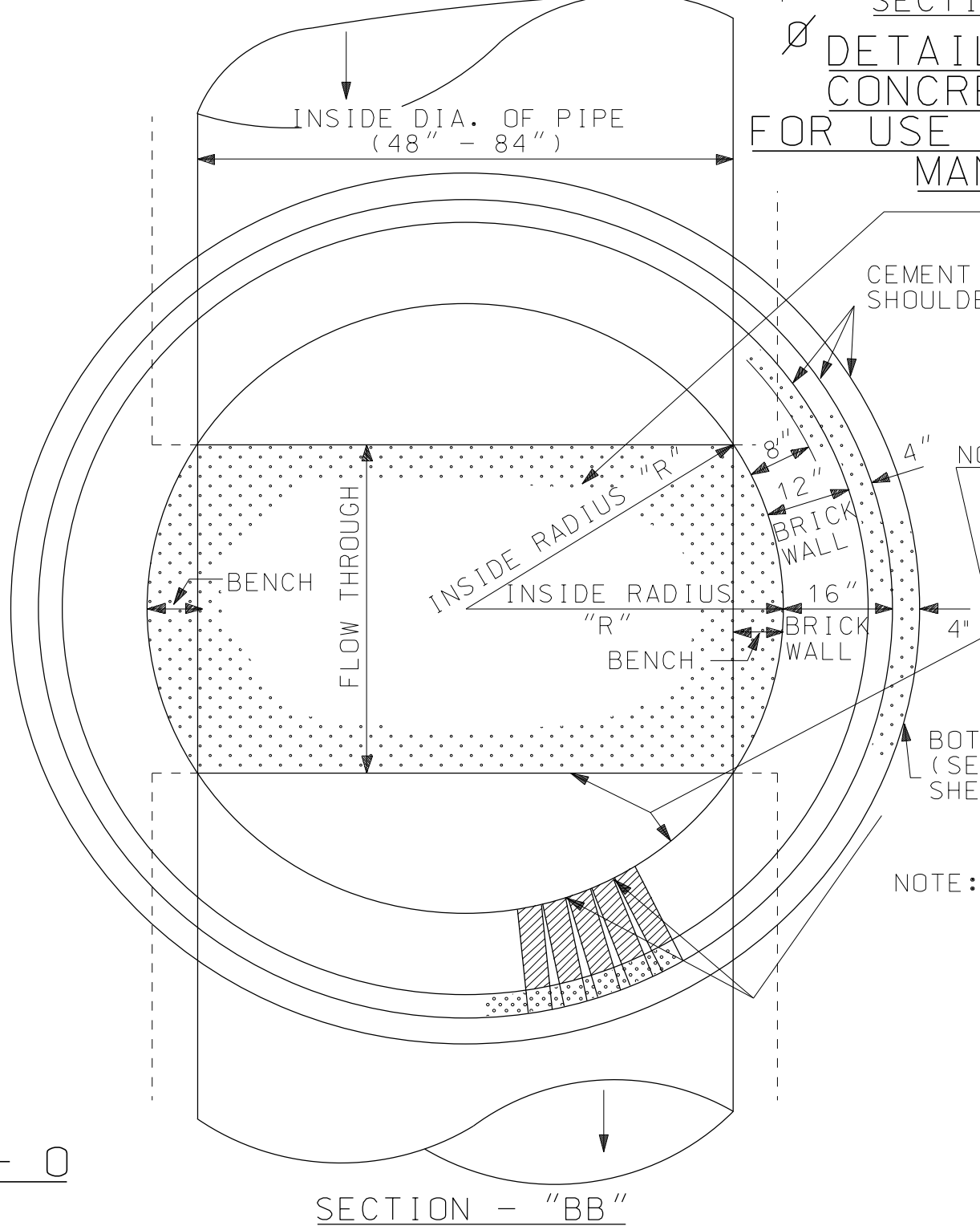
(STEPS SHOWN ARE TO BE USED AS A GUIDE. OTHER TYPES MAY BE USED IF APPROVED.)

| --SPECIFICATIONS-- CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION | | |
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| <div>REVISIONS</div> <div>1. Added Sheet 2 of 5 on 08-20-07 by W.W.A.</div> <div>2. Adjusted Drawing Description and changed "Stream" to "Upstream" on Beveled Ring Detail on 06-04-08 by W.W.A.</div> <div>3. Deleted "PRECAST CONC. WALL" sketch and Note, Deleted BEVELED RING "SECTION A-A" and "DETAIL OF BEVELED RING FOR UPSTREAM END OF OUTFALL PIPE" on 08-17-11 by J.F.T.</div> | | |
| <div> ALABAMA DEPARTMENT OF TRANSPORTATION 1409 COLISEUM BOULEVARD MONTGOMERY, AL 36130-3050</div> | | |
| DESIGN BUREAU SPECIAL DRAWING | | |
| DETAILS FOR PRECAST AND BRICK & CONCRETE (CONSTRUCTED IN PLACE) MANHOLES FOR 6" - 84" PIPE | | |
| SPECIAL DRAWING NO | | |
| Bureau Std Engr: D.J.W. DRAWN BY: _____ DATE DRAWN: 04-19-85 | MH-621-2 (SHEET 2 OF 5) | INDEX NO 62184 |

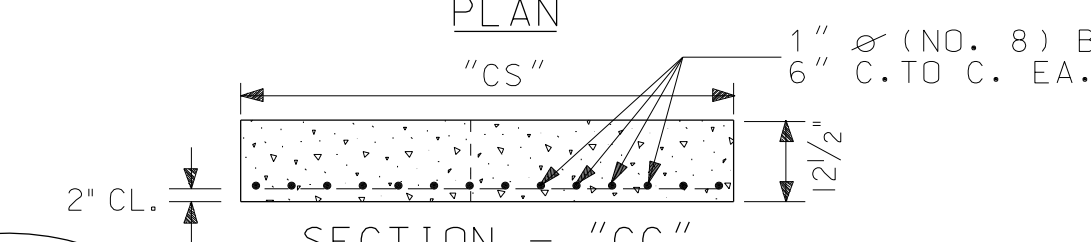
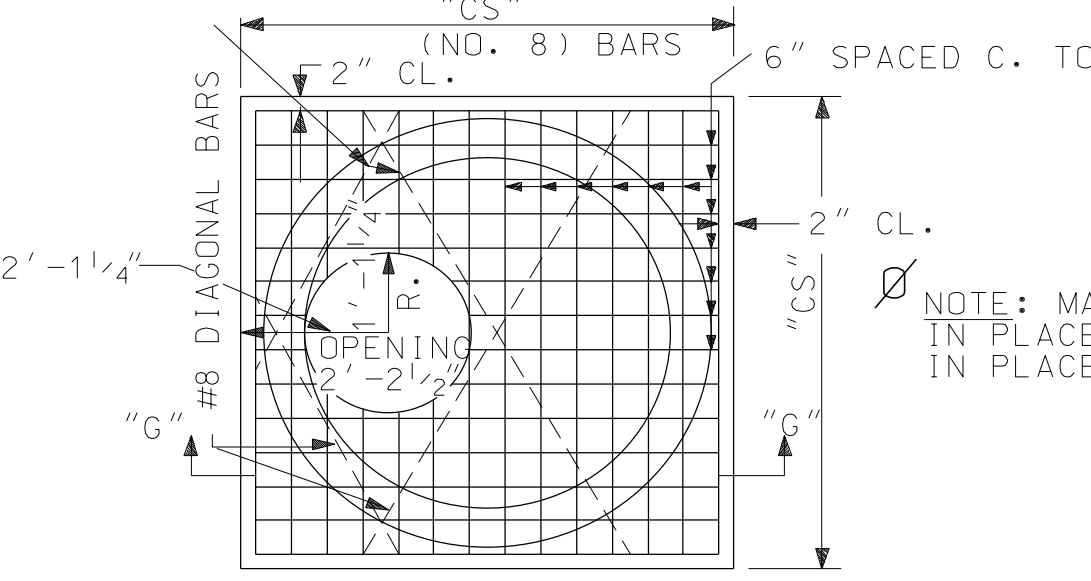
NOT TO SCALE



SKETCH INDICATING LIMITS OF DEPTH, FOR INCREASING THICKNESS OF WALLS

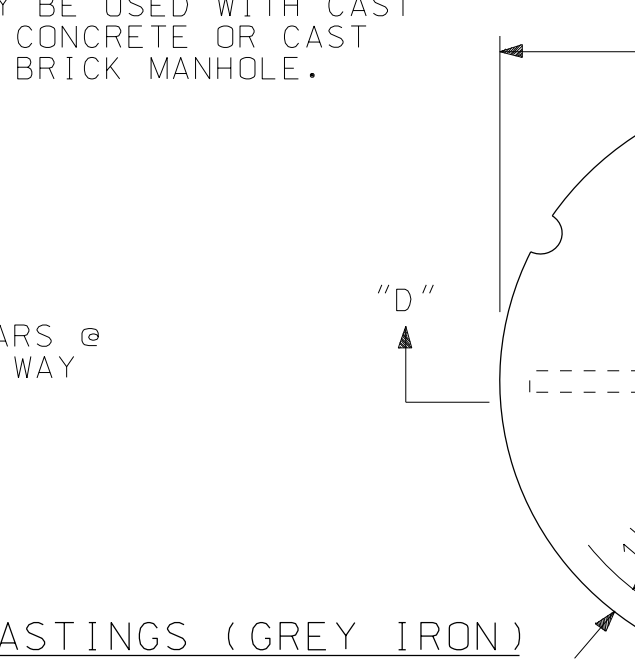
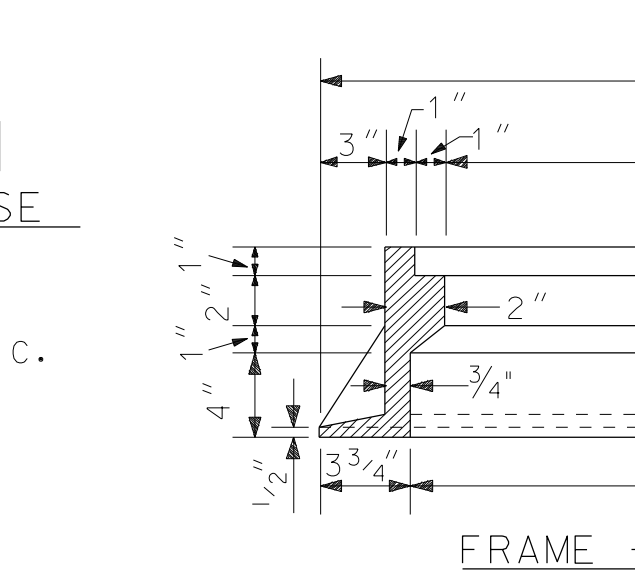
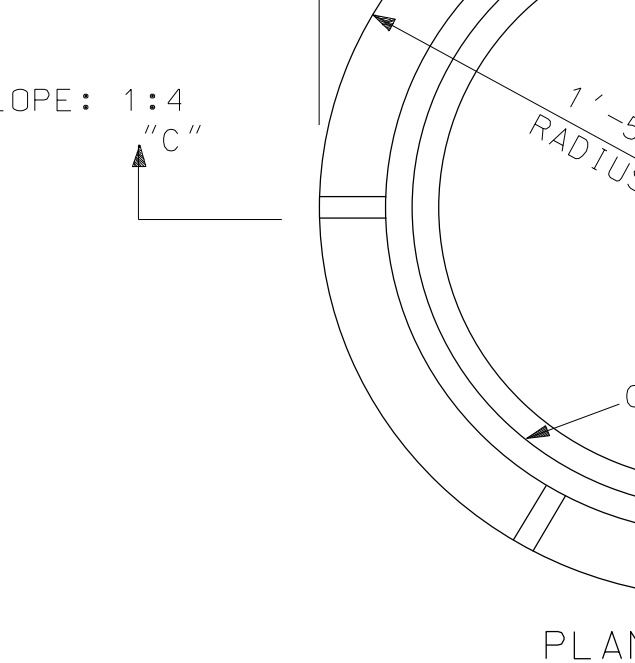
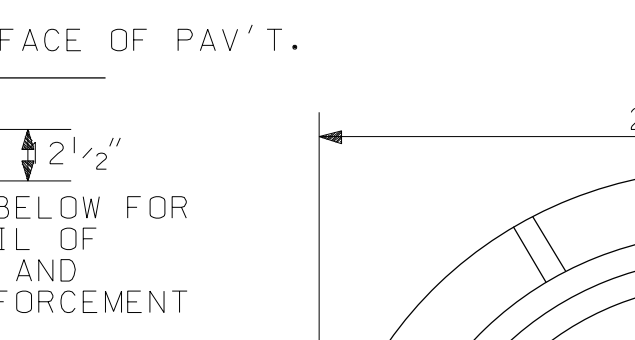


Ø SPECIAL CONCRETE COVER SLAB FOR USE ON SHALLOW OF MANHOLE



Ø DETAIL OF TOP CONCRETE SLAB FOR USE ON SHALLOW MANHOLE

APPROVED POLYMER MANHOLE RING AND FRAME MAY BE USED



WEIGHT OF CASTINGS (GREY IRON)

| |
|------------------------------|
| 1-FRAME CASTING = 270 POUNDS |
| 1-COVER CASTING = 143 POUNDS |

"R" - INSIDE RADIUS OF BRICKWALL*

| |
|---------------------------------------|
| FOR 48" PIPE - RADIUS "R" = 3'-0" |
| FOR 54" PIPE - RADIUS "R" = 3'-6" |
| FOR 60" PIPE - RADIUS "R" = 3'-12" |
| FOR 66" PIPE - RADIUS "R" = 3'-1 1/2" |
| FOR 72" PIPE - RADIUS "R" = 3'-3" |
| FOR 78" PIPE - RADIUS "R" = 3'-9" |
| FOR 84" PIPE - RADIUS "R" = 4'-2" |

DETAILS OF CASTINGS FOR FRAME AND COVER FOR STANDARD MANHOLE

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REVISIONS

| | |
|----|--|
| 1. | Added to CADD on 06-15-00 by J.F.1. |
| 2. | Added Sheet 3 of 5 on 08-20-07 by W.W.A. |
| 3. | Adjusted Drawing Description and added Note to slab used on Shallow Manhole Sketch on 06-04-08 by W.W.A. |

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: J2-17-74

ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

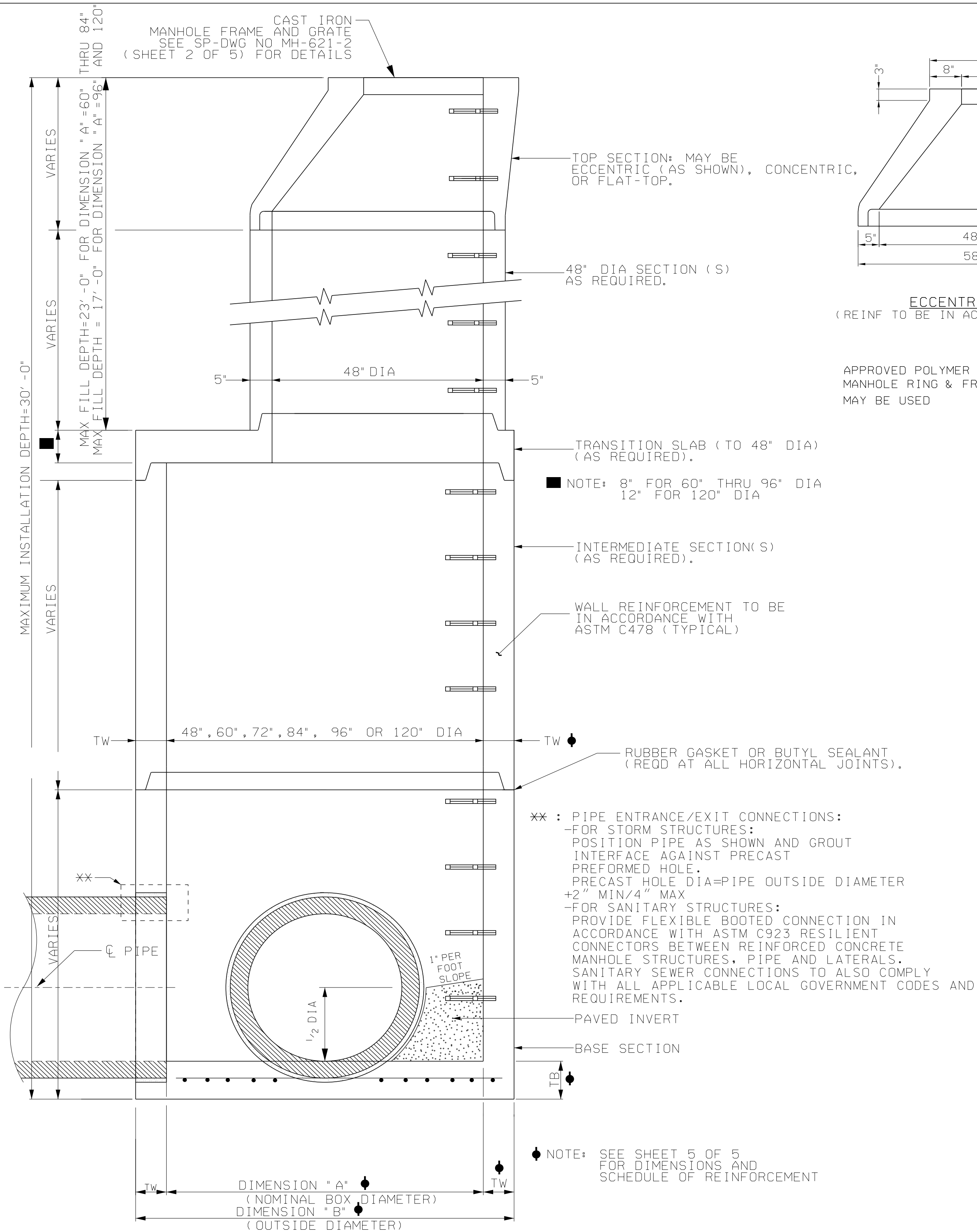
DETAILS OF BRICK MANHOLE (TYPE O) CONSTRUCTED IN PLACE FOR 48" - 84" PIPE

SPECIAL DRAWING NO
MH-621-2 (SHEET 3 OF 5)

INDEX NO
62185

MANHOLE TYPE - O

| REFERENCE PROJECT NO | FISCAL YEAR | SHEET NO |
|-------------------------|----------------|-------------|
| | | |

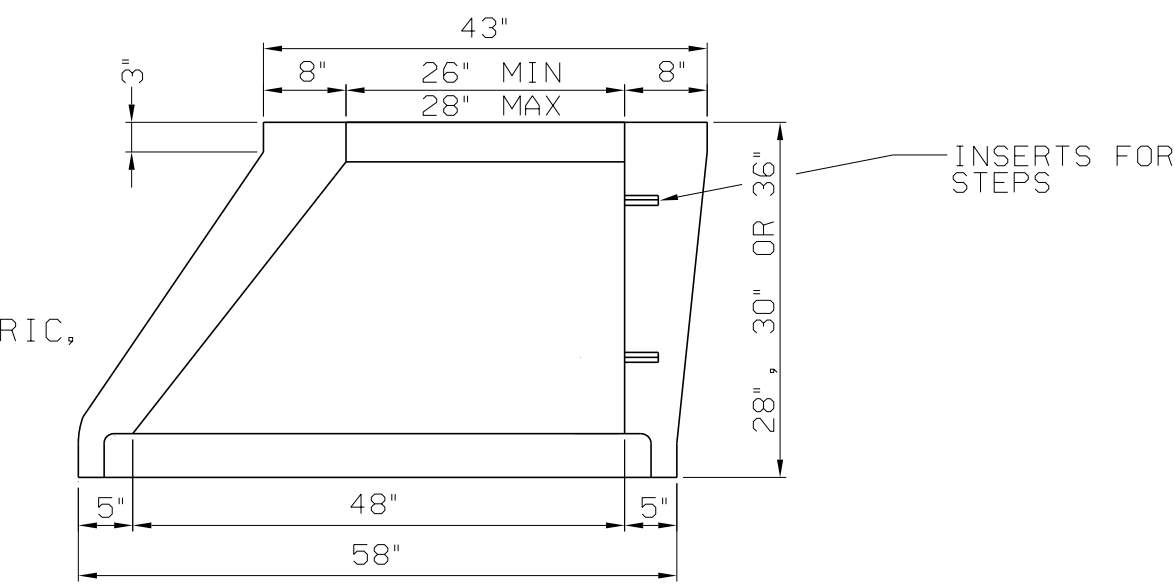


TYPICAL SECTION: PRECAST MANHOLE INSTALLATION

DETAILS OF PRECAST CONCRETE MANHOLE

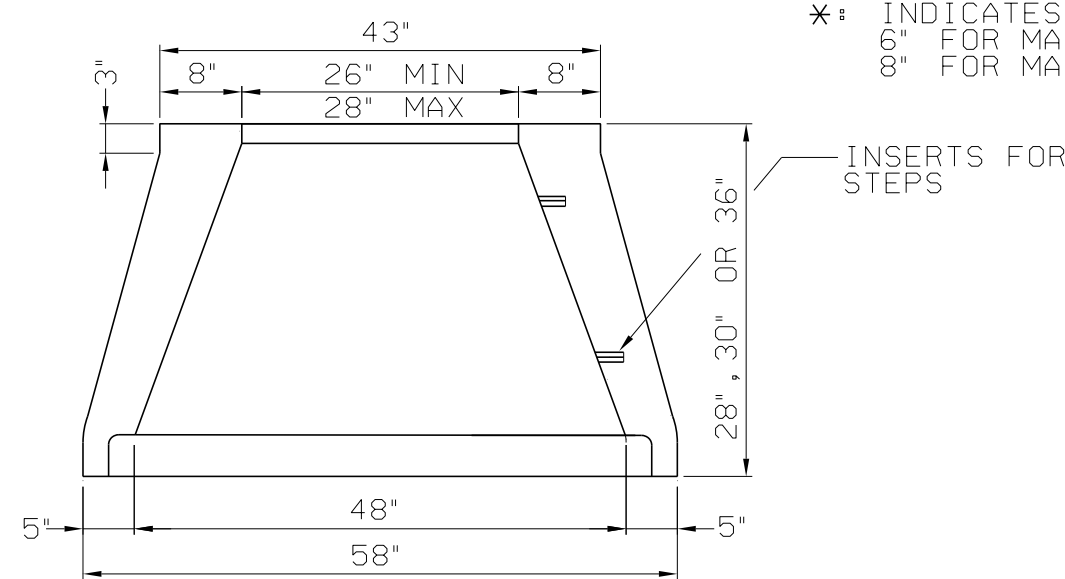
NOTE : THE ABOVE DRAWINGS COVERING PRECAST CONCRETE MANHOLES WERE MADE IN ORDER TO SHOW TYPICAL ACCEPTABLE REQUIREMENTS FOR PRECAST CONCRETE MANHOLES. ALTHOUGH JOINT SHAPES AND OTHER DETAILS ARE SHOWN ON THE DRAWING, OTHER APPROVED JOINT SHAPES AND DETAILS WILL BE ACCEPTABLE, PROVIDED THEY MEET REQUIREMENTS OF THE ALABAMA DEPARTMENT OF TRANSPORTATION. FOR SEALING MANHOLES AGAINST WATER LEAKAGE, ALL RUBBER AND PLASTIC TYPE GASKETS, AND OTHER TYPE SEALERS SHALL BE APPROVED BY THE MATERIALS BUREAU OF THE ALABAMA DEPARTMENT OF TRANSPORTATION BEFORE THEY MAY BE USED.

THE HEIGHT OF PRECAST CONCRETE UNITS SHALL BE SELECTED IN SUCH MANNER THAT DISTANCE FROM FLOW LINE OF PIPE TO FINISHED GRADE (TOP OF MANHOLE COVER) WILL BE EXACT DISTANCE REQUIRED ACCORDING TO PLANS. IF ANY ADJUSTMENT IS REQUIRED OF NOT GREATER THAN (8") EIGHT INCHES THIS LIFT MAY BE MADE WITH MANHOLE BRICK LAID IN CEMENT MORTAR. SEE SHEET 5 OF 5 FOR ADJUSTMENT DETAIL.



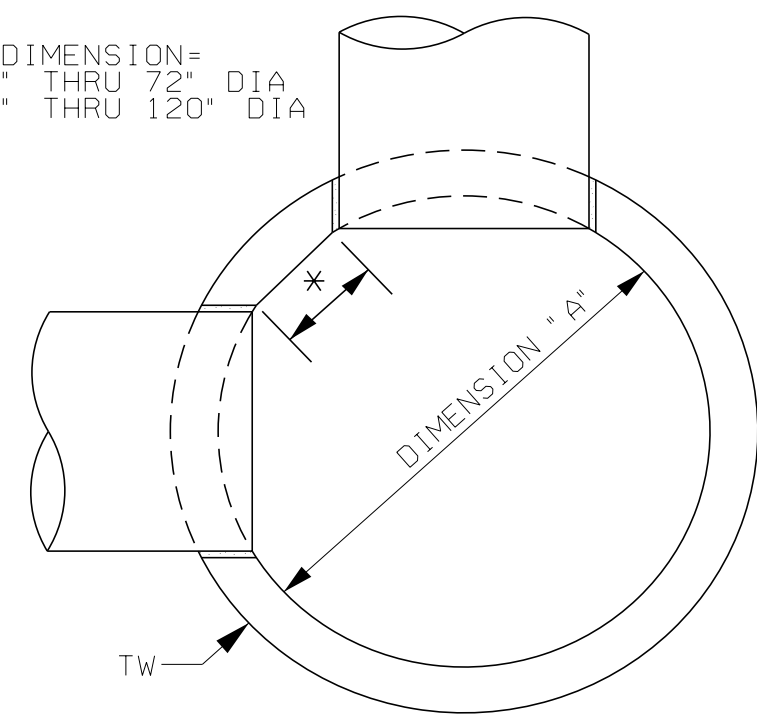
ECCENTRIC CONE
(REINF TO BE IN ACCORDANCE W/ASTM C478)

APPROVED POLYMER
MANHOLE RING & FRAME
MAY BE USED

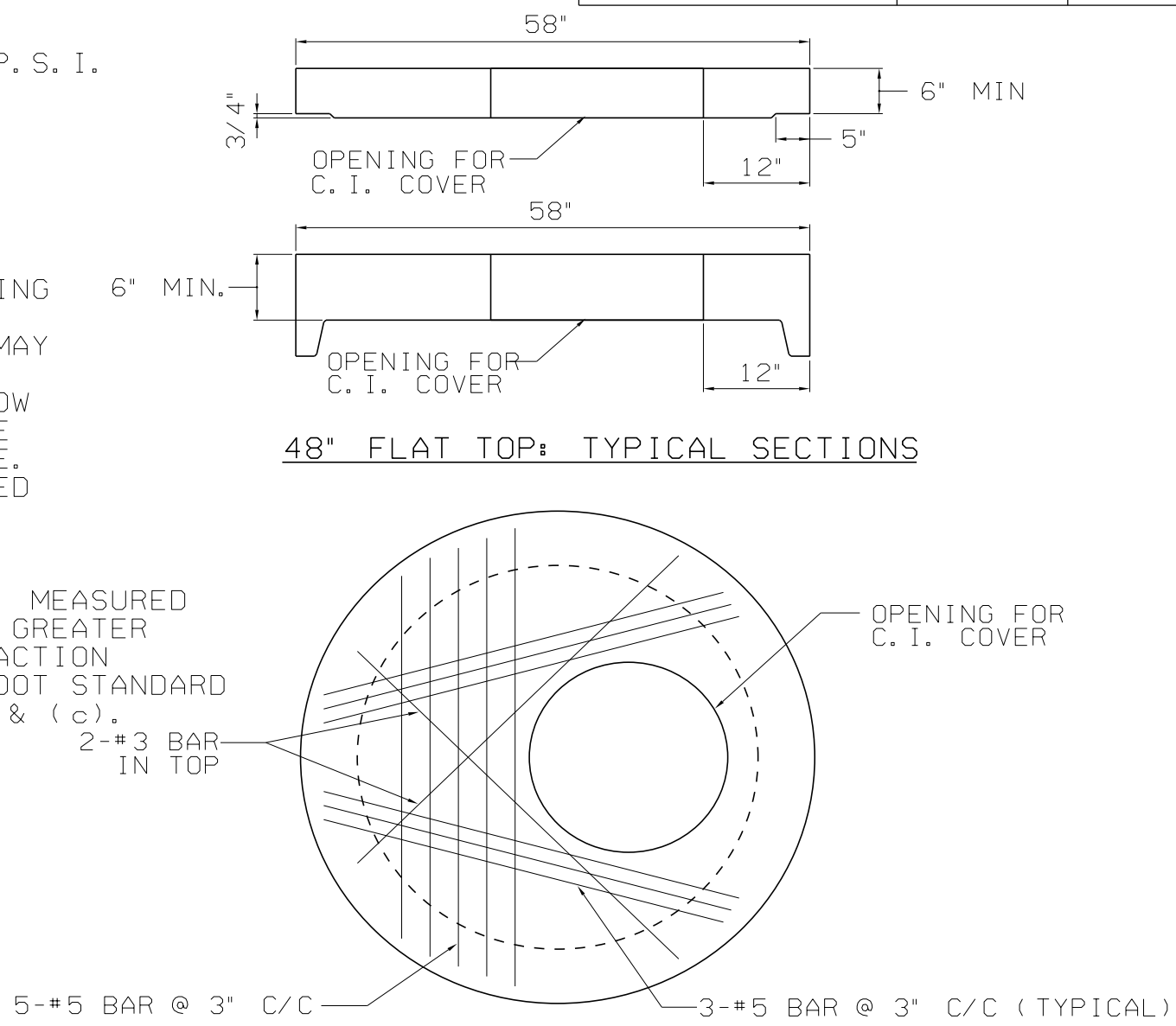


CONCENTRIC CONE
(REINF TO BE IN ACCORDANCE W/ASTM C478)

*: INDICATES MINIMUM DIMENSION=
6" FOR MANHOLES 48" THRU 72" DIA
8" FOR MANHOLES 84" THRU 120" DIA

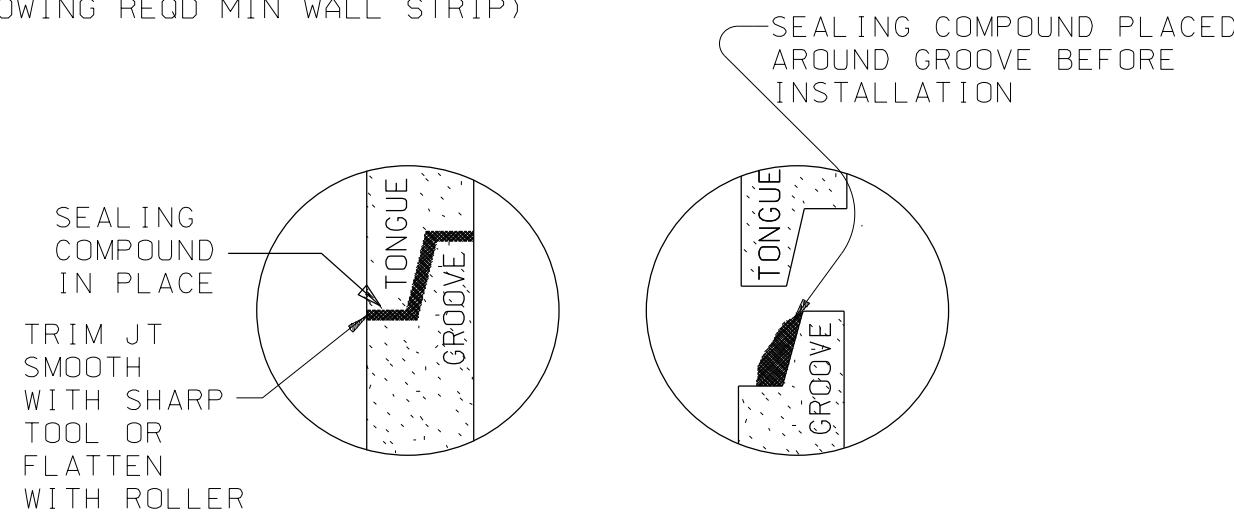


PRECAST MANHOLE: HORIZONTAL SECTION
(SHOWING REQD MIN WALL STRIP)



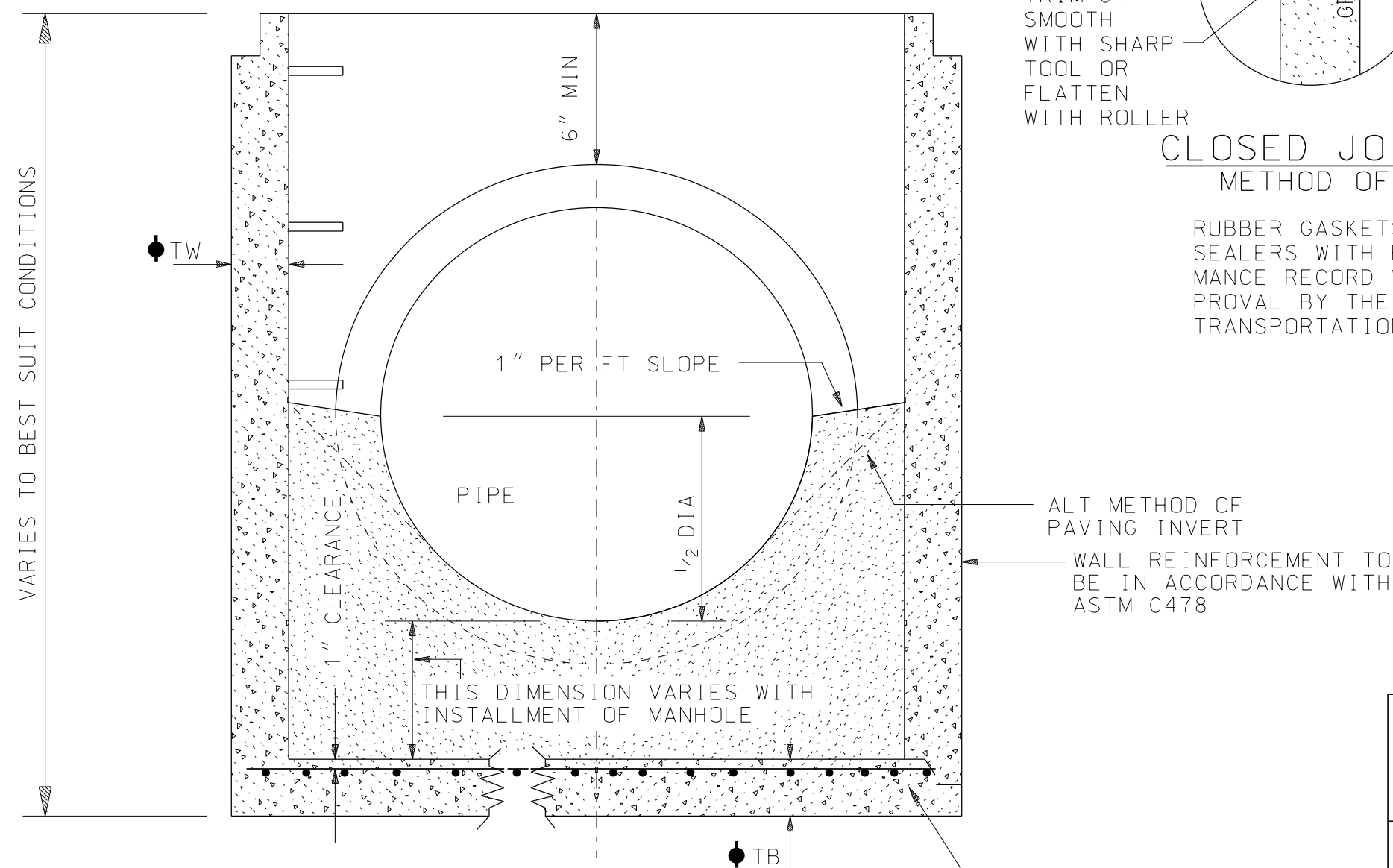
48" FLAT TOP PLAN

NOTE: PLACE REINFORCEMENT STEEL AT 1" CLEARANCE TO
BOTTOM OF SLAB.



| CLOSED JOINT | OPEN JOINT |
|--------------------------|------------|
| METHOD OF SEALING JOINTS | |

RUBBER GASKETS OR OTHER TYPES OF JOINT SEALERS WITH PROVEN SATISFACTORY PERFORMANCE RECORD WILL BE CONSIDERED FOR APPROVAL BY THE ALABAMA DEPARTMENT OF TRANSPORTATION.

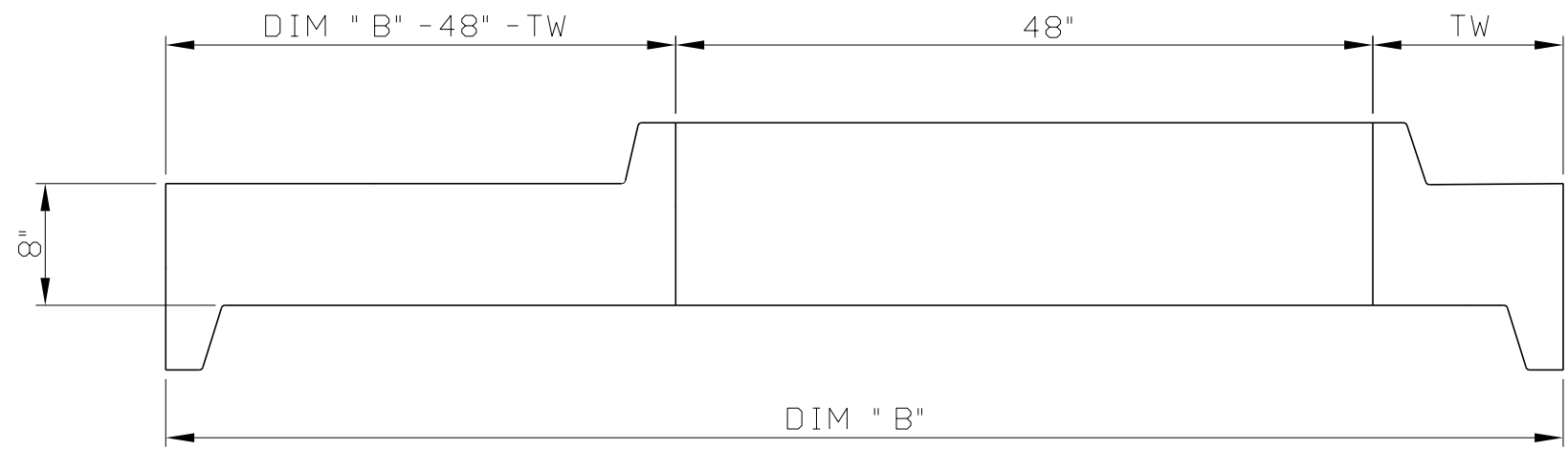


TYPE "M" BASE SECTION - PRECAST

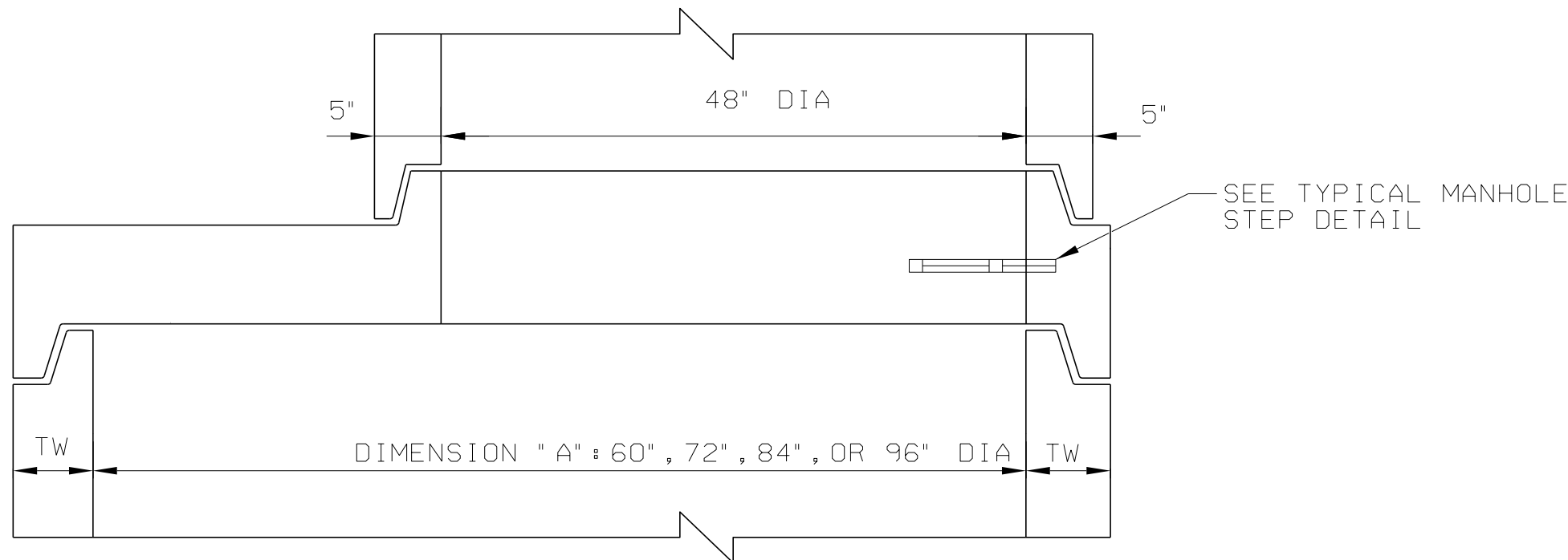
AS1
(SEE SCHEDULE
Sheet 5 OF 5)

TYPE "M" MANHOLE

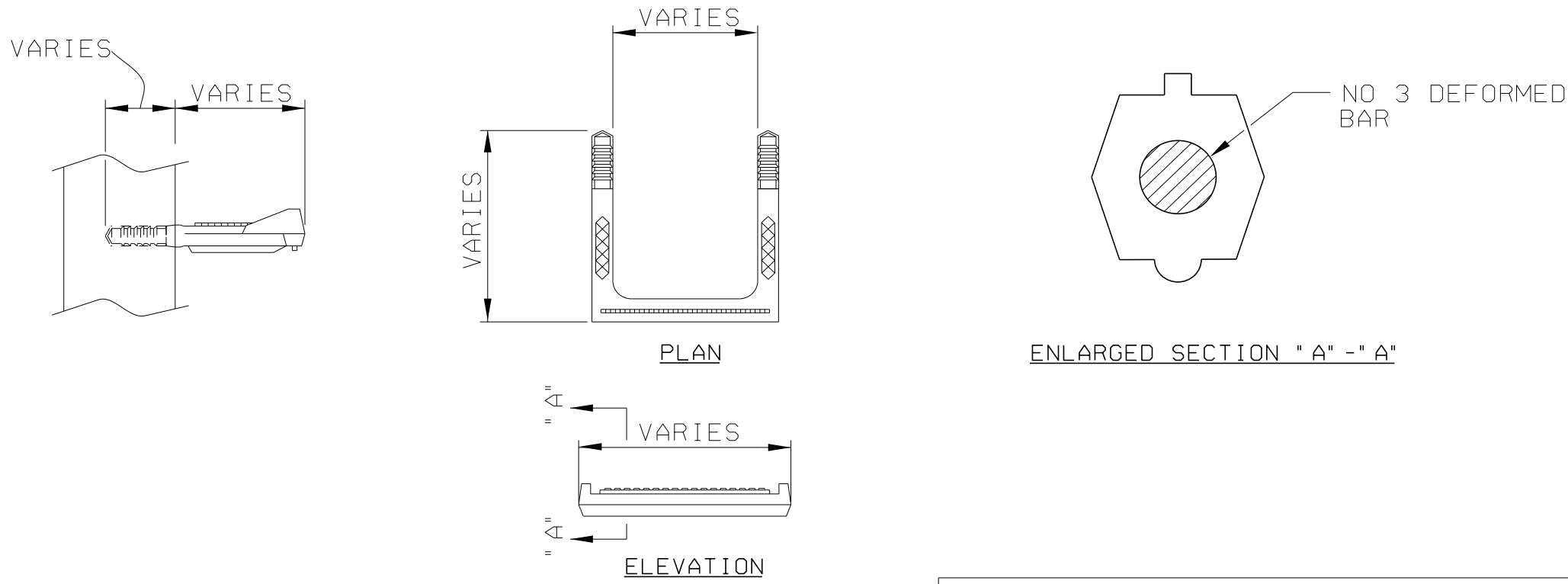
NOT TO SCALE



TYPICAL TRANSITION SECTION TO 48" DIA.



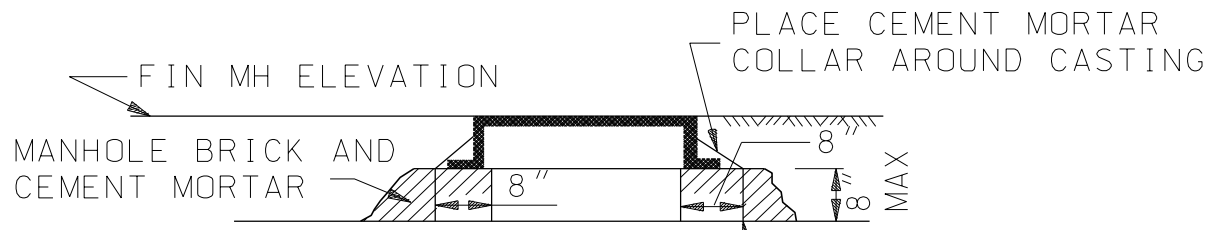
MANHOLE TRANSITION TO 48" DIA. ASSEMBLY



STEPS SHOWN ARE TO BE USED AS A GUIDE. OTHER TYPES MAY BE USED IF APPROVED.

POLYPROPYLENE STEPS

- FOOTNOTES:
- STEPS SHALL BE PLACED IN WET CONCRETE AT THE TIME OF MANUFACTURE OR MORTARED INTO HOLES AFTER CONCRETE HAS SET.
 - DIMENSIONS WILL VARY ACCORDING TO SPECIFIC APPLICATIONS.
 - ALL MANHOLE STEPS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-199, SECTION 16.



NOTE: MAX HT ADJUSTMENT WITH BRICK = 8"

NOTE: WHEN FOUND NECESSARY ON CONSTRUCTION TO ADJUST TOP OF MANHOLE COVER TO MEET FINISH MANHOLE COVER ELEVATION THE NECESSARY LIFT MAY BE MADE WITH MANHOLE BRICK AND CEMENT MORTAR.

MANHOLE HEIGHT ADJUSTMENT

NOTE: SEE "TYPICAL SECTION.." ON DRAWING NO MH-621-2 (4 OF 5), FOR LOCATION OF DIMENSIONS "TW" AND "TB"

| DIMENSIONS | | MAX PIPE INSIDE DIA FOR | | THICKNESS | | REQD REINF IN BASE OR TRANS. SECT. | | |
|------------|----------|-------------------------------|-----|-----------|----|------------------------------------|-----------|-----------|
| | | 90°OR 180° INTERSECTION ANGLE | | TW | TB | AS1 | AS2 | AS3 |
| "A" | "B" | | | | | | | |
| 4' - 0" | 4' - 10" | 18" | 30" | 5" | 6" | #5@8" | | |
| 5' - 0" | 6' - 0" | 24" | 42" | 6" | 8" | #5@8" | 4 - #6@3" | 3 - #6@3" |
| 6' - 0" | 7' - 2" | 30" | 48" | 7" | 8" | #6@6" | 6 - #6@3" | 3 - #6@3" |
| 7' - 0" | 8' - 4" | 36" | 60" | 8" | 8" | #6@6" | 7 - #6@3" | 5 - #6@3" |
| 8' - 0" | 9' - 6" | 42" | 66" | 9" | 8" | #6@4" | 7 - #6@3" | 7 - #6@3" |

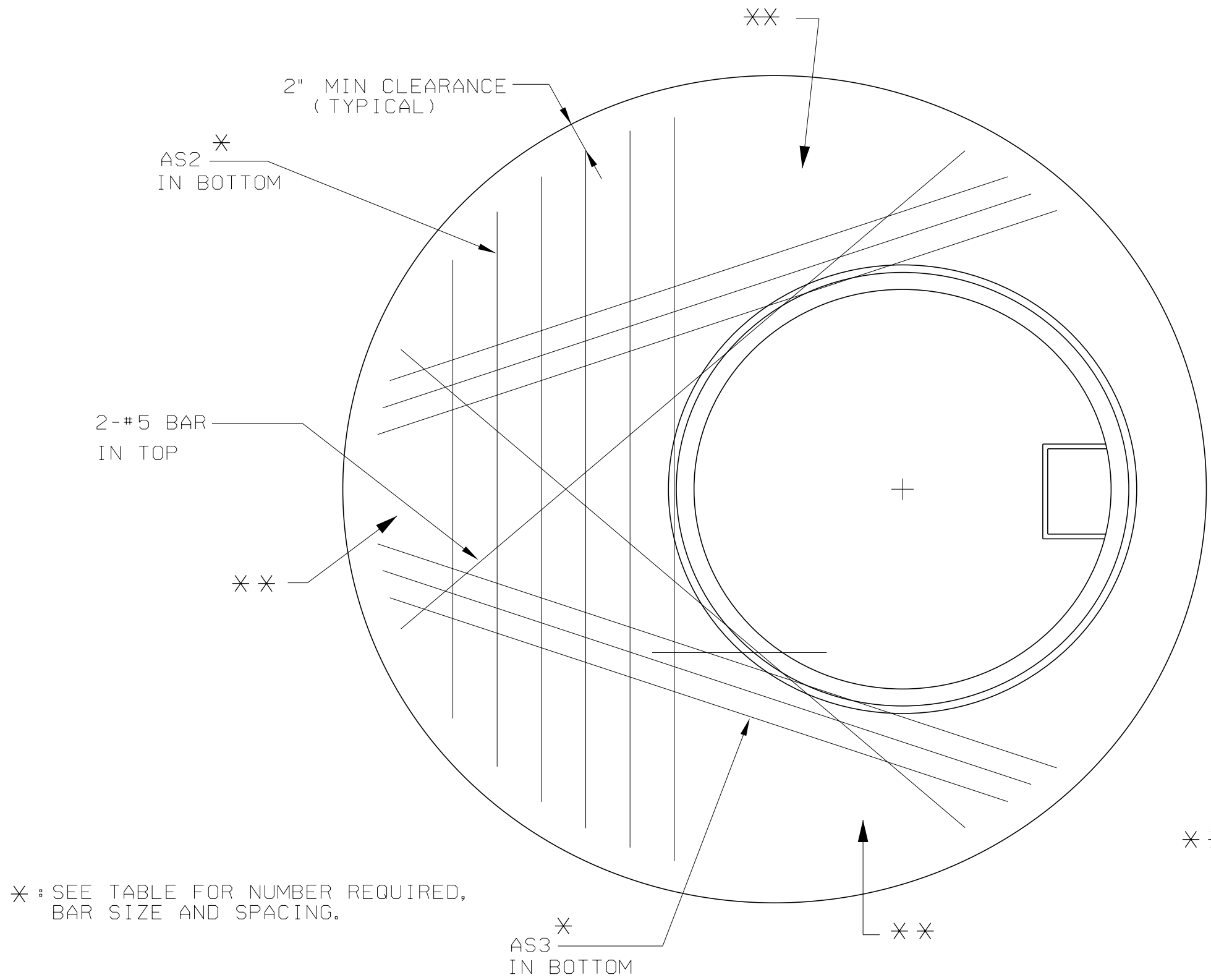
NOTE: WALL REINFORCEMENT TO BE IN ACCORDANCE WITH ASTM C478.

■ ■ ■ : MAXIMUM ENTRANCE/EXIT PIPE SIZES NOT SPECIFICALLY INDICATED IN TABLE SHALL BE CONTROLLED BY THE MINIMUM WALL STRIP BETWEEN INTERSECTING PIPE. SEE HORIZONTAL SECTION FOR ADDITIONAL INFORMATION.

TABLE OF DIMENSIONS AND SCHEDULE OF REINFORCING STEEL

- NOTES:
- WALL AND SLAB THICKNESSES DENOTED ARE MINIMUM VALUES AND MAY BE INCREASED AT THE DISCRETION OF THE PRECAST MANUFACTURER.
 - WELDED WIRE REINFORCEMENT PROVIDING EQUIVALENT AREAS OF STEEL TO THOSE DENOTED ABOVE MAY BE SUBSTITUTED FOR REINFORCING BARS. WELDED WIRE REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

※※ NOTE: PROVIDE A MINIMUM AREA OF REINFORCEMENT OF 0.31 SQUARE INCHES PER FOOT EACH WAY WHERE THE REINFORCEMENT INDICATED IN THIS DETAIL PROVIDES LESS THAN THAT AMOUNT.



※ : SEE TABLE FOR NUMBER REQUIRED, BAR SIZE AND SPACING.

TYPICAL TRANSITION TO 48" SECTION LAYOUT

NOTE: PLACE REINFORCING STEEL AT 1" CLEARANCE TO BOTTOM OF SLAB.

TYPE "M" MANHOLE

--SPECIFICATIONS--

CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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- REVISIONS
- Changed (※※※) Note, changed sizes in Table Dimensions and adjusted drawing description on 06-05-08 by W.W.A.
 - Re-inserted ASI table on 04-30-12 by J.F.T.



ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

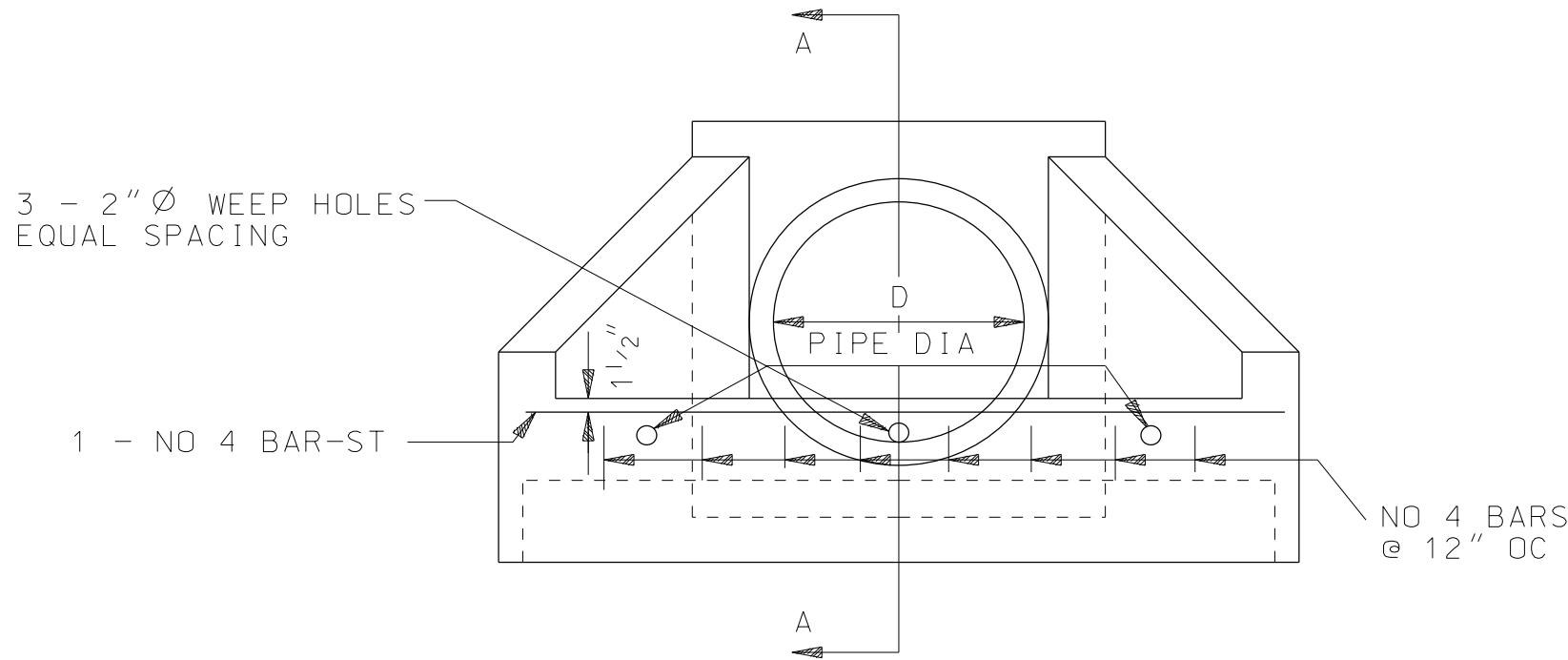
DETAILS OF PRECAST CONCRETE MANHOLE (TYPE M) FOR 6" - 72" PIPE

Bureau Std Engr: D.J.W.
DRAWN BY: _____ DATE DRAWN: 08-20-07

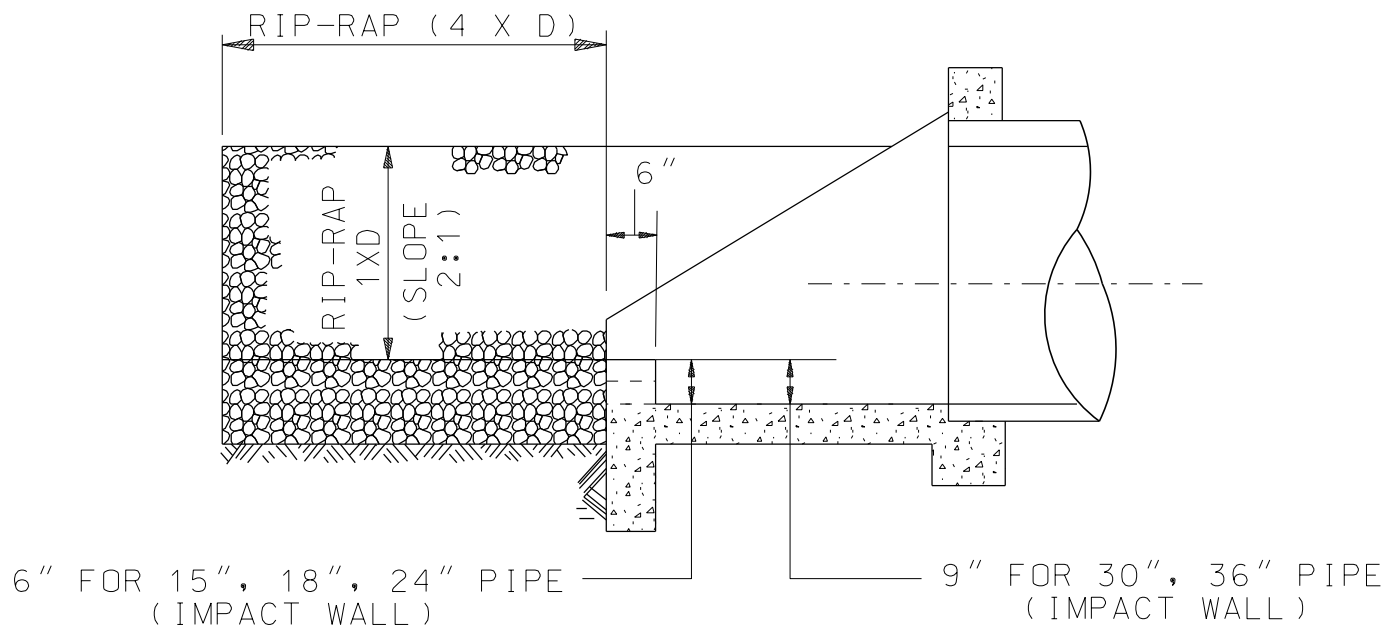
SPECIAL DRAWING NO
MH-621-2 (SHEET 5 OF 5)

INDEX NO
62187

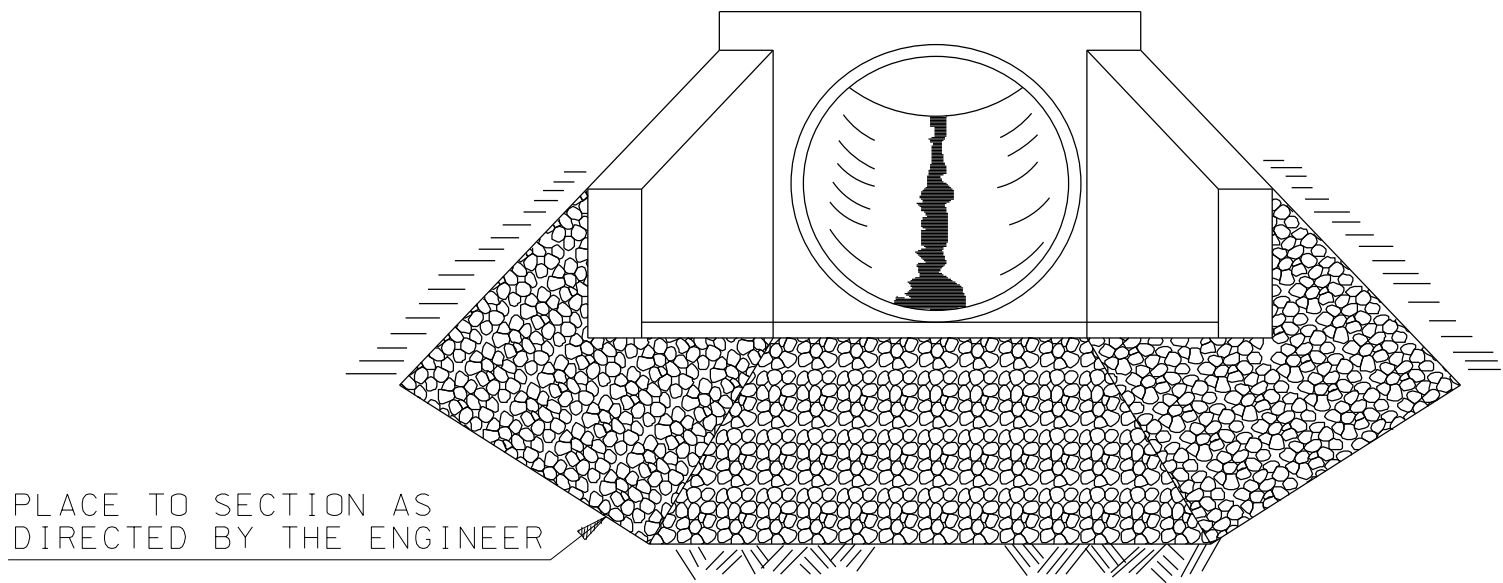
NOT TO SCALE



ELEVATION



SECTION-AA



PERSPECTIVE VIEW

| ESTIMATED QUANTITIES FOR IMPACT WALL (TO BE ADDED TO QUANTITIES FOR FLARED HEADWALL) | | | | | | | | |
|---|-------|-------------|--------|--------|-----------|--------|--------|---------------------------|
| PIPE SIZE | SLOPE | CONC-CU YDS | | | STEEL-LBS | | | ESTIMATED RIP-RAP-TONS |
| | | 0° SK | 30° SK | 45° SK | 0° SK | 30° SK | 45° SK | |
| 15 | 2:1 | .05 | .05 | .05 | 7.0 | 7.0 | 9.0 | 5 |
| 15 | 3:1 | .05 | .05 | .08 | 7.0 | 8.0 | 11.0 | 5 |
| 15 | 4:1 | .05 | .05 | .10 | 7.0 | 9.0 | 14.0 | 5 |
| 18 | 2:1 | .05 | .06 | .08 | 7.5 | 7.5 | 11.0 | 8 |
| 18 | 3:1 | .06 | .07 | .09 | 7.5 | 9.0 | 13.0 | 8 |
| 18 | 4:1 | .07 | .07 | .11 | 8.5 | 10.5 | 16.0 | 8 |
| 24 | 2:1 | .07 | .08 | .10 | 10.0 | 10.0 | 14.0 | 10 |
| 24 | 3:1 | .07 | .10 | .12 | 10.0 | 11.0 | 17.0 | 10 |
| 24 | 4:1 | .12 | .12 | .15 | 11.0 | 13.5 | 21.0 | 10 |
| 30 | 2:1 | .12 | .14 | .17 | 13.0 | 13.0 | 19.0 | 12 |
| 30 | 3:1 | .12 | .20 | .20 | 13.0 | 15.0 | 23.0 | 12 |
| 30 | 4:1 | .13 | .22 | .22 | 14.5 | 18.0 | 28.0 | 12 |
| 36 | 2:1 | .14 | .20 | .20 | 15.0 | 15.0 | 22.0 | 15 |
| 36 | 3:1 | .14 | .26 | .26 | 15.0 | 18.0 | 27.0 | 15 |
| 36 | 4:1 | .16 | .30 | .30 | 17.0 | 21.0 | 33.0 | 15 |

--GENERAL NOTES--


1. LOOSE RIP-RAP TO BE CLASS 2 AND PLACED TO THE SECTION DIRECTED BY THE ENGINEER.

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REVISIONS

1. Added to CADD on 06-21-99 by Joe F. Thomas



**ALABAMA DEPARTMENT
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MONTGOMERY, AL 36130-3050

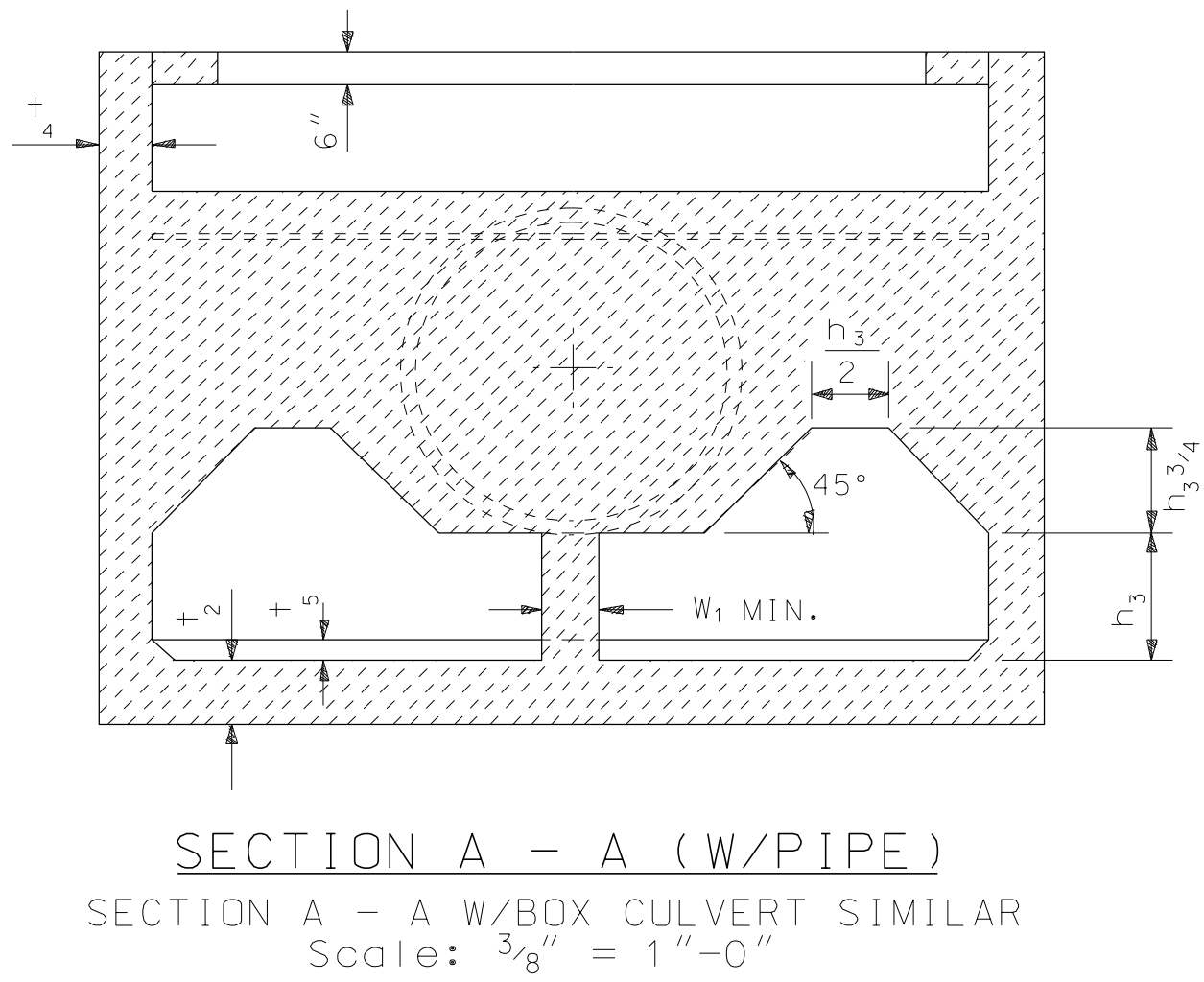
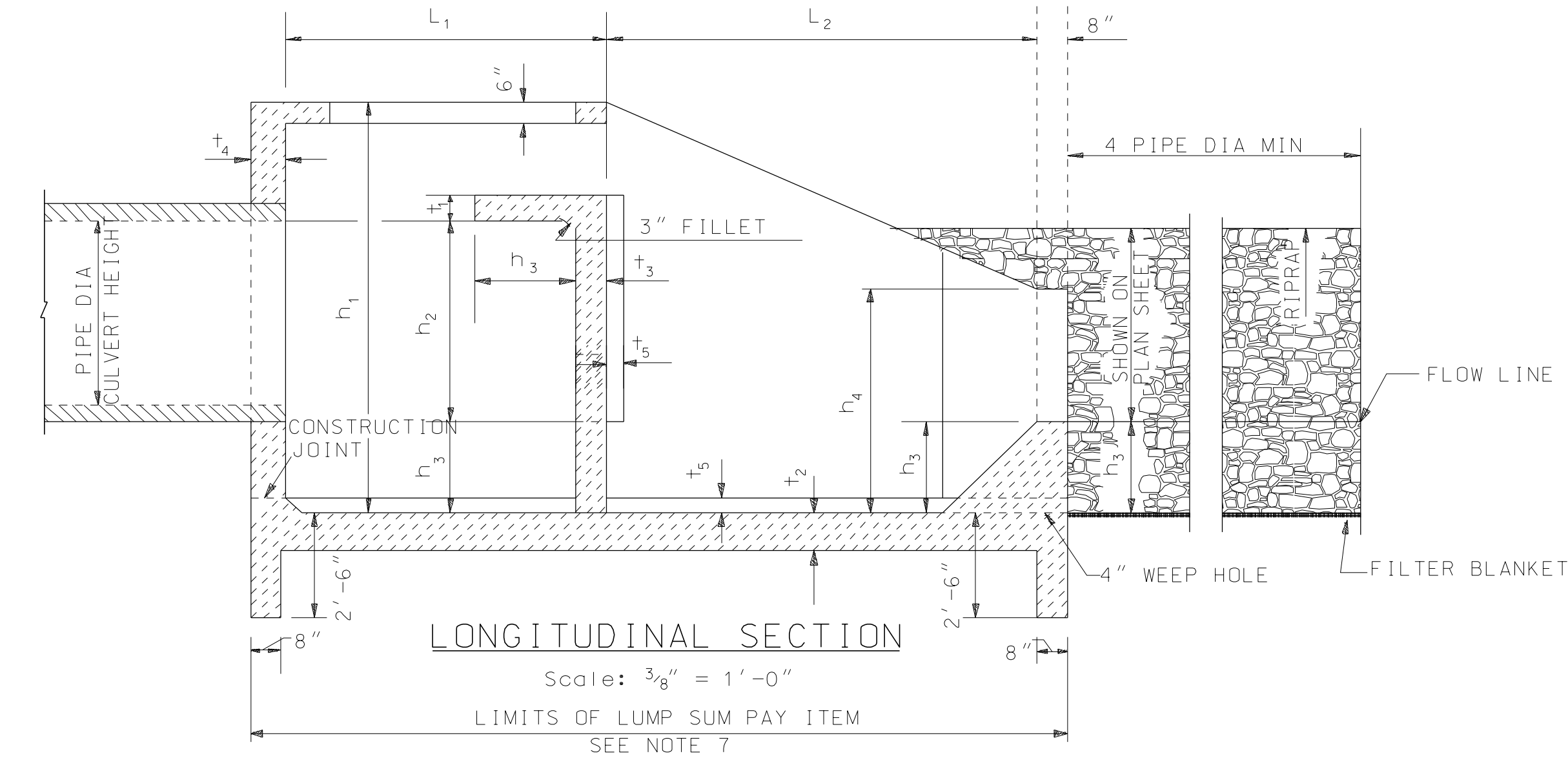
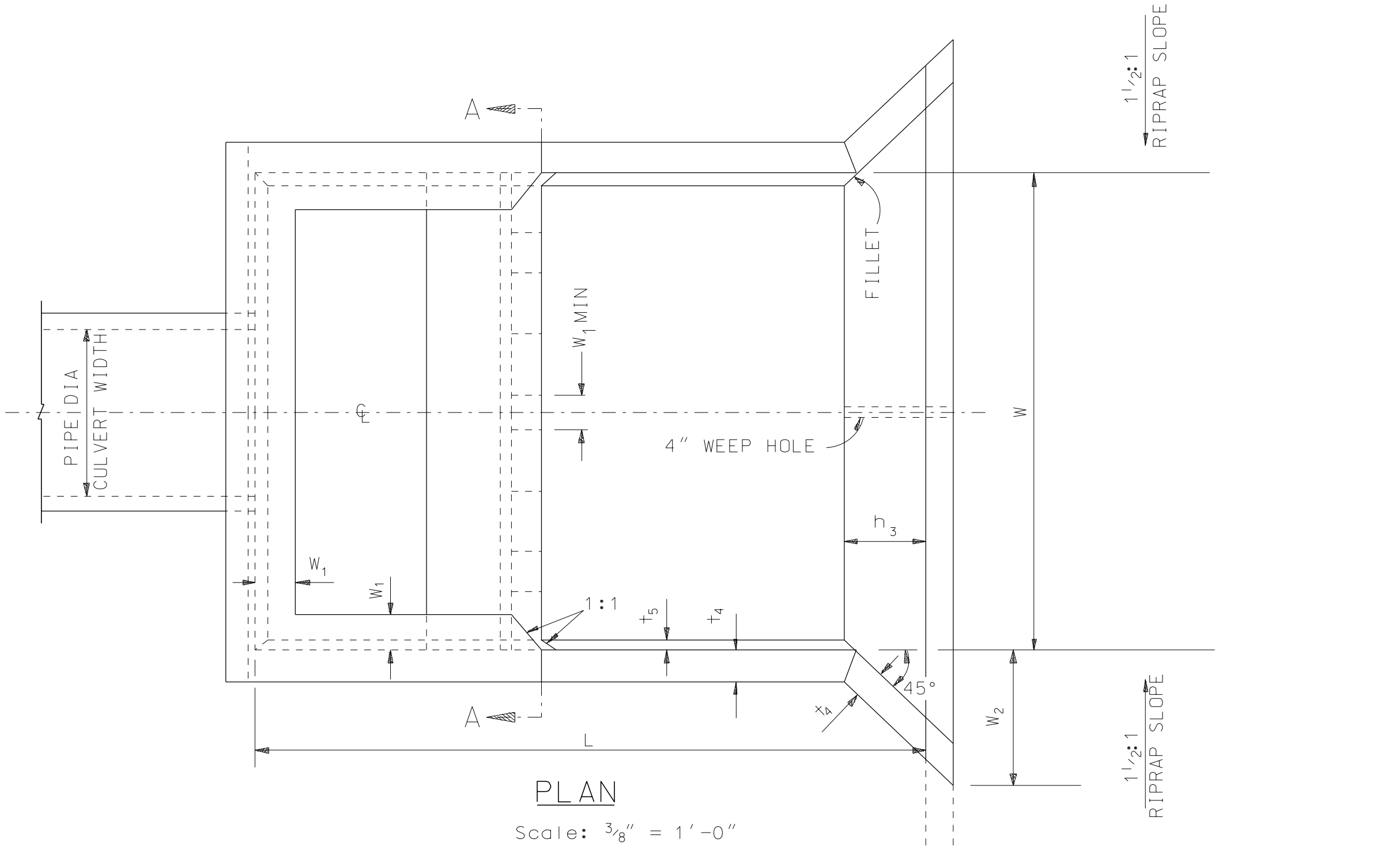
DESIGN BUREAU SPECIAL DRAWING

DETAILS OF IMPACT DISSIPATOR

SPECIAL DRAWING NO
ID-621

INDEX NO
62190

NOT TO SCALE



- NOTES:
- ① TAILWATER DEPTH SHOULD NOT EXCEED $(h_3 + \frac{h_2}{2})$.
 - ② THE BASIN SHOULD BE CONSTRUCTED HORIZONTAL FOR ALL ENTRANCE PIPE OR CULVERTS WITH SLOPES GREATER THAN 15° (-26% GRADE). FOR THESE STEEPER SLOPES, A HORIZONTAL SECTION OF AT LEAST FOUR PIPE OR CULVERT WIDTHS LONG SHOULD BE PROVIDED IMMEDIATELY UPSTREAM OF THE DISSIPATOR. IN EVERY CASE, THE PIPE OR CULVERT INVERT HEIGHT (h_3) SHOULD BE MAINTAINED.
 - ③ WHEN A HYDRAULIC JUMP IS EXPECTED TO FORM IN THE DOWN-STREAM END OF PIPE AND THE ENTRANCE IS SUBMURGED A VENT ABOUT ONE-SIXTH THE PIPE DIAMETER SHOULD BE INSTALLED AT A CONVENIENT LOCATION UPSTREAM FROM THE JUMP.
 - ④ RIPRAP SHOULD BE PLACED DOWNSTREAM OF THE BASIN FOR A LENGTH OF AT LEAST FOUR PIPE OR CULVERT WIDTHS. FOR SOIL TYPES SENSITIVE TO EROSION, RIPRAP LENGTHS SHOULD BE INCREASED ACCORDINGLY. (PAID FOR AS PER SECTION 610)
 - ⑤ THE CONCRETE QUANTITIES WILL BE REDUCED BY THE AMOUNT OF CONCRETE THE PIPE OR BOX CULVERT DISPLACES. REINFORCING STEEL WILL BE CUT TO FIT PIPE OR BOX CULVERT ENTRANCE.
 - ⑥ REINFORCING STEEL WILL BE #4 BARS @ 12" oc EXCEPT AS NOTED. *
 - ⑦ THE BASINS WILL BE PAID FOR PER EACH STANDARD BASIN COMPLETE IN PLACE AS SHOWN ON THE DRAWINGS.
 - ⑧ THE QUANTITIES SHOWN ARE FOR ESTIMATION PURPOSES ONLY.


| TYPE | PIPE DIAMETER | | CULVERT SIZE | | | |
|--|---------------|-----|--------------|--------|--------|--------|
| | MIN | MAX | MIN | | MAX | |
| | | | WIDTH | HEIGHT | WIDTH | HEIGHT |
| 1 | 24" | 30" | — | — | — | — |
| 2 | 30" | 42" | — | — | — | — |
| 3 | 36" | 48" | — | — | — | — |
| 4 | 42" | 60" | 4'-0" | 4'-0" | 9'-0" | 5'-0" |
| 5 | 48" | 66" | 4'-0" | 4'-0" | 10'-0" | 6'-0" |
| 6 | 54" | 72" | 4'-0" | 4'-0" | 10'-0" | 7'-0" |
| 7 | 60" | 72" | 4'-0" | 4'-0" | 12'-0" | 8'-0" |
| 8 | — | — | 4'-0" | 4'-0" | 12'-0" | 10'-0" |
| NOTE: The Stuctural Design is Based on a Maximum Velocity of 24 fps and the Maximum "Q" Shown of the Left. This Box used for the Structural Design Only. | | | | | | |

| SELECTION OF BOX IS BASED ON Q (c.f.s.) (PIPE OR CULVERT SIZE MAY VARY) | | | | | | | | | | | | | | | | ESTIMATED QUANTITIES | | |
|---|-------------------|-------------------------------|----------------|----------------|----------------|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------|----------------|----------------------|-----------------|----------------|
| TYPE | MAX Q (c.f.s.) | Dimensions In Feet And Inches | | | | | | | | | | | | | | Cu Yds Concrete | Lbs Steel Reinf | |
| | | h ₁ | h ₂ | h ₃ | h ₄ | L | L ₁ | L ₂ | t ₁ | t ₂ | t ₃ | t ₄ | t ₅ | W | W ₁ | | | W ₂ |
| 1 | 38 | 4 - 7 | 2 - 3 | 1 - 0 | 2 - 6 | 8 - 0 | 3 - 5 | 4 - 7 | 0 - 8 | 0 - 8 | 0 - 8 | 0 - 8 | 0 - 4 | 6 - 0 | 0 - 6 | 2 - 4 | 6.3 | 939 |
| 2 | 59 | 6 - 2 | 3 - 0 | 1 - 4 | 3 - 4 | 10 - 9 | 4 - 7 | 6 - 2 | 0 - 8 | 0 - 8 | 0 - 8 | 0 - 8 | 0 - 4 | 8 - 0 | 0 - 7 | 2 - 8 | 10.2 | 1440 |
| 3 | 85 | 6 - 11 | 3 - 6 | 1 - 6 | 3 - 9 | 12 - 1 | 5 - 2 | 6 - 11 | 0 - 8 | 0 - 8 | 0 - 8 | 0 - 8 | 0 - 4 | 9 - 0 | 0 - 8 | 2 - 10 | 12.6 | 1776 |
| 4 | 130 | 8 - 5 | 4 - 2 | 1 - 10 | 4 - 7 | 14 - 9 | 6 - 4 | 8 - 5 | 0 - 8 | 0 - 9 | 0 - 9 | 0 - 8 | 0 - 4 | 11 - 0 | 0 - 10 | 3 - 2 | 18.9 | 2494 |
| 5 | 160 | 9 - 2 | 4 - 6 | 2 - 0 | 5 - 0 | 16 - 0 | 6 - 10 | 9 - 2 | 0 - 8 | 0 - 10 | 0 - 10 | 0 - 9 | 0 - 4 | 12 - 0 | 0 - 11 | 3 - 5 | 24.4 | 2880 |
| 6 | 200 | 10 - 0 | 5 - 0 | 2 - 2 | 5 - 5 | 17 - 5 | 7 - 5 | 10 - 0 | 0 - 8 | 0 - 11 | 0 - 10 | 0 - 10 | 0 - 4 | 13 - 0 | 1 - 0 | 3 - 8 | 31.1 | 3430 |
| 7 | 300 | 12 - 3 | 6 - 0 | 2 - 8 | 6 - 8 | 21 - 4 | 9 - 1 | 12 - 3 | 0 - 9 | 1 - 0 | 1 - 0 | 1 - 0 | 0 - 6 | 16 - 0 | 1 - 3 | 4 - 4 | 52.9 | 5030 |
| 8 | 380 | 14 - 7 | 7 - 1 | 3 - 2 | 7 - 11 | 25 - 5 | 10 - 10 | 14 - 7 | 0 - 10 | 1 - 2 | 1 - 1 | 1 - 1 | 0 - 7 | 19 - 0 | 1 - 5 | 4 - 11 | 81.6 | 7153 |

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REVISIONS



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OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

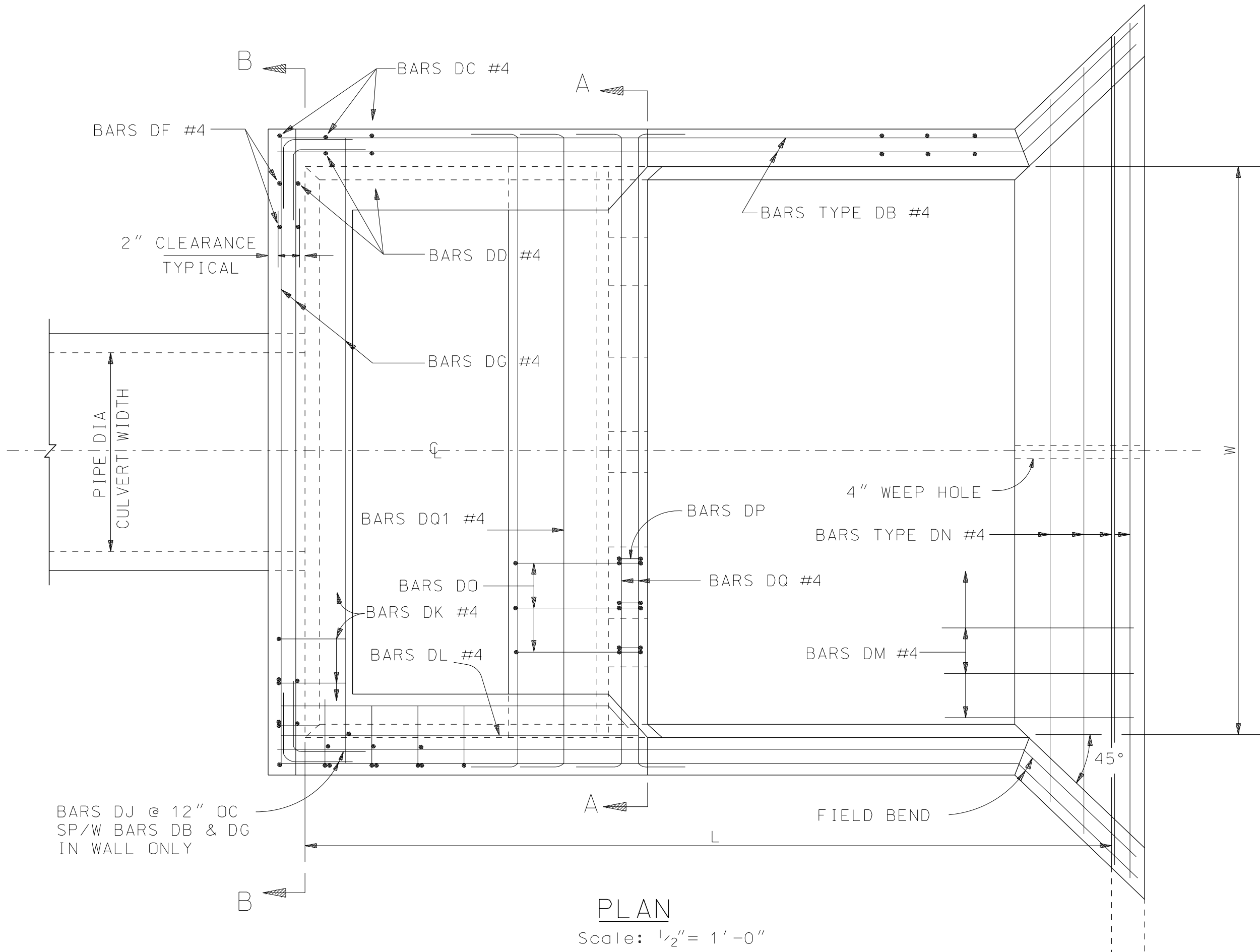
DETAILS OF STILLING BASINS

Bureau Std Engr: D.J.W.
DRAWN BY: R.T. DATE DRAWN: 09-14-1994

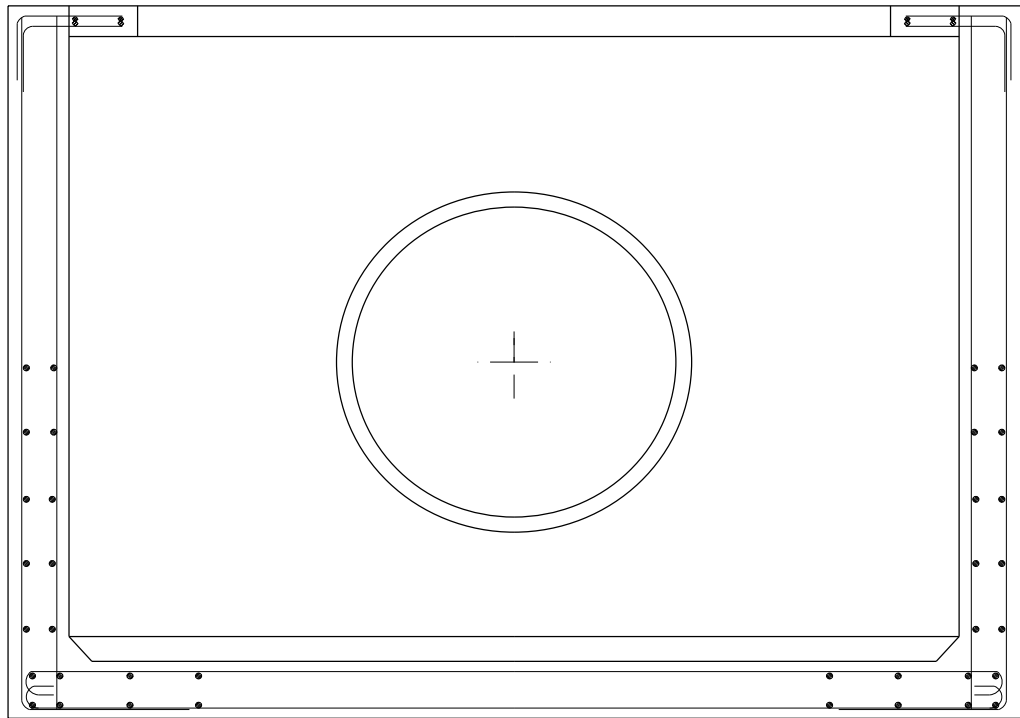
SPECIAL DRAWING NO
SB-621 (SHEET 1 OF 3)

INDEX NO
62193

NOT TO SCALE

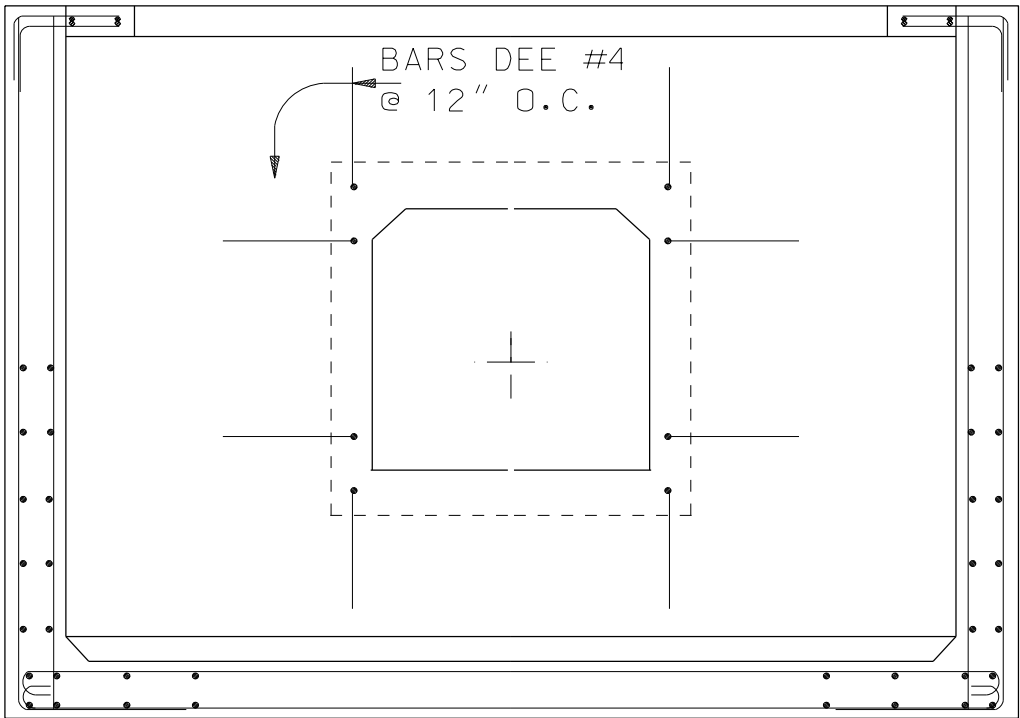


NOTE : NOT ALL REINFORCING BARS ARE SHOWN FOR CLARITY,
SEE SHEET 3 OF 3 FOR THE TOTAL NUMBER OF BARS
FOR EACH BASIN TYPE.



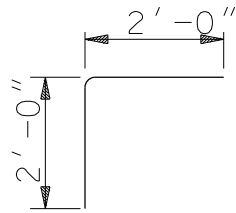
SECTION B - B (W/PIPE)

Scale: 3/8" = 1'-0"

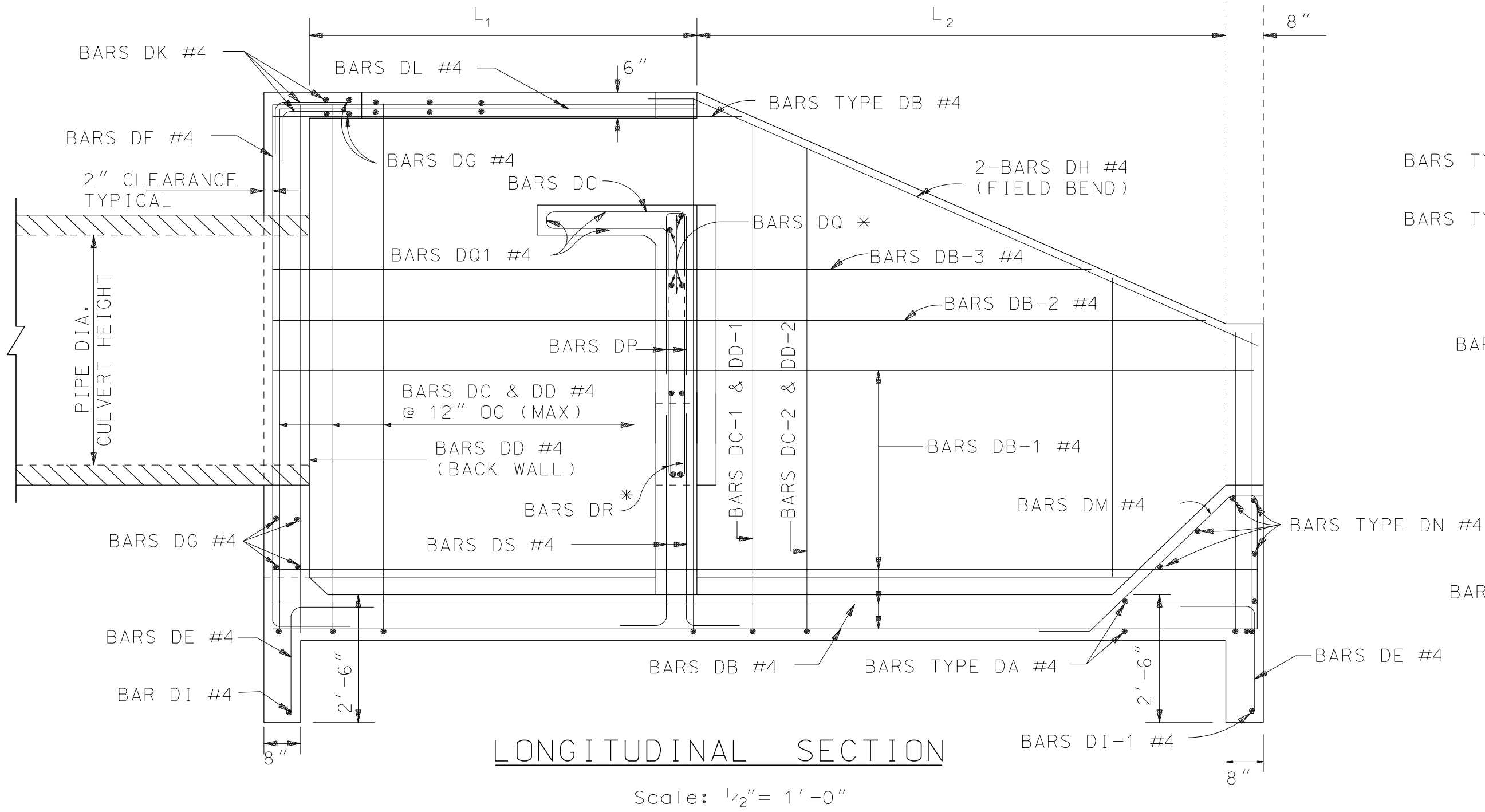


SECTION B - B (W/BOX CULVERT)

Scale: 3/8" = 1'-0"

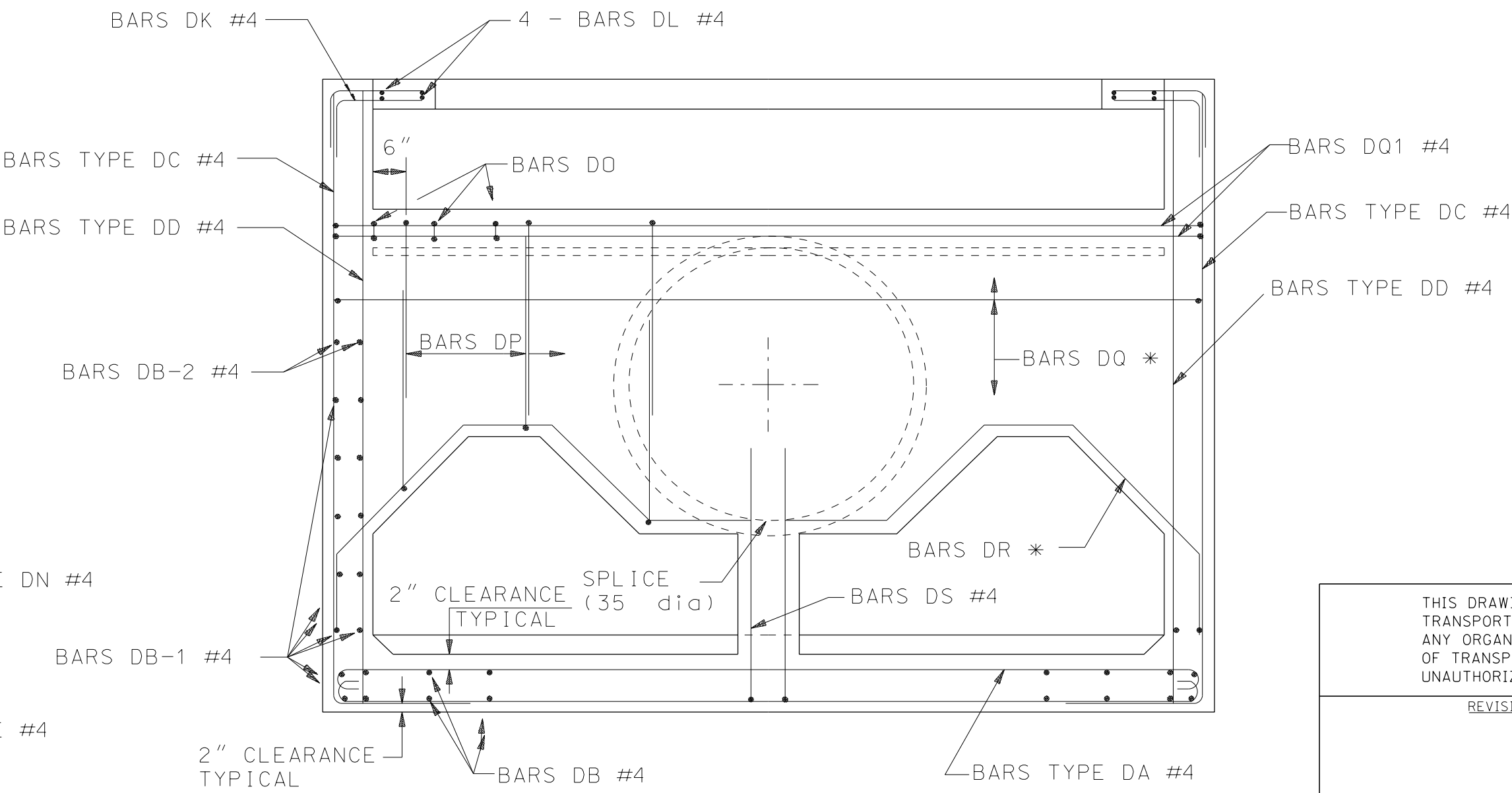


BARS DEE
(BOX CULVERTS ONLY)



LONGITUDINAL SECTION

Scale: 1/2" = 1'-0"



SECTION A - A (W/PIPE)
SECTION A - A W/BOX CULVERT SIMILAR

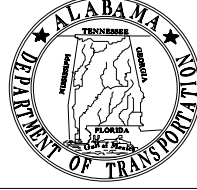
Scale: 1/2" = 1'-0"

| SIZE AND SPACING | | |
|------------------|-------------|-------------|
| TYPE | BARS DQ * | BARS DR * |
| 1 | #4 @ 12" OC | #4 @ 12" OC |
| 2 | #4 @ 12" OC | #4 @ 12" OC |
| 3 | #5 @ 14" OC | #5 @ 12" OC |
| 4 | #5 @ 10" OC | #5 @ 12" OC |
| 5 | #5 @ 9" OC | #5 @ 12" OC |
| 6 | #5 @ 7" OC | #5 @ 12" OC |
| 7 | #5 @ 6" OC | #5 @ 12" OC |
| 8 | #6 @ 6" OC | #6 @ 12" OC |

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REVISIONS



ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050
DESIGN BUREAU SPECIAL DRAWING

DETAILS OF STILLING BASINS

Bureau Std Engr: D.J.W.
DRAWN BY: R.T. DATE DRAWN: 11-21-94

SPECIAL DRAWING NO
SB-621 (SHEET 2 OF 3)

INDEX NO
62194

NOT TO SCALE

REFERENCE
PROJECT NO

FISCAL
YEAR

SHEET
NO

| TYPE 1 | | | | | |
|--------|----|------|--------------|------|-------|
| MARK | No | SIZE | TOTAL LENGTH | "A" | "B" |
| DA | 16 | 4 | 8-0 | 7-0 | — |
| DA1 | 2 | 4 | 8-10 | 7-10 | — |
| DA2 | 2 | 4 | 10-10 | 9-10 | — |
| DB | 12 | 4 | 9-0 | — | — |
| DB1 | 20 | 4 | 9-7½ | — | — |
| DB2 | 4 | 4 | 6-8½ | — | — |
| DB3 | 4 | 4 | 4-6 | — | — |
| DC | 8 | 4 | 6-5 | 1-6 | 4-11 |
| DC1 | 2 | 4 | 6-4 | 1-6 | 4-10 |
| DC2 | 2 | 4 | 5-11 | 1-6 | 4-5 |
| DC3 | 2 | 4 | 5-5½ | 1-6 | 3-11½ |
| DC4 | 2 | 4 | 5-0 | 1-6 | 3-6 |
| DC5 | 2 | 4 | 4-6½ | 1-6 | 3-0½ |
| DC6 | 2 | 4 | 4-4 | 1-6 | 2-10 |
| DD | 13 | 4 | 4-11 | — | — |
| DD1 | 2 | 4 | 4-10 | — | — |
| DD2 | 2 | 4 | 4-5 | — | — |
| DD3 | 2 | 4 | 3-11½ | — | — |
| DD4 | 2 | 4 | 3-6 | — | — |
| DD5 | 2 | 4 | 3-0½ | — | — |
| DD6 | 2 | 4 | 2-10 | — | — |
| DE | 19 | 4 | 3-8 | 1-6 | 2-2 |
| DF | 6 | 4 | 6-4 | 1-6 | 4-10 |
| DG | 12 | 4 | 7-0 | — | — |
| DH | 4 | 4 | 7-8 | — | — |
| DI | 1 | 4 | 7-0 | — | — |
| D11 | 1 | 4 | 9-11 | — | — |
| DJ | 16 | 4 | 3-0 | 1-6 | 1-6 |
| DK | 32 | 4 | 2-3 | 1-6 | 0-9 |
| DL | 8 | 4 | 3-8 | — | — |
| DN1 | 2 | 4 | 9-10 | — | — |
| DN2 | 1 | 4 | 9-2 | — | — |
| DN3 | 1 | 4 | 8-6 | — | — |
| DP | 12 | 4 | 4-0 | 1-10 | 0-4 |
| DO | 6 | 4 | 8-11 | 1-0 | 6-11 |
| DO1 | 3 | 4 | 8-11 | 1-0 | 6-11 |
| DS | 4 | 4 | 4-0 | 1-0 | 3-0 |

| TYPE 2 | | | | | |
|--------|----|------|--------------|------|------|
| MARK | No | SIZE | TOTAL LENGTH | "A" | "B" |
| DA | 22 | 4 | 10-0 | 9-0 | — |
| DA1 | 2 | 4 | 11-6 | 10-6 | — |
| DA2 | 2 | 4 | 13-6 | 12-6 | — |
| DB | 16 | 4 | 11-9 | — | — |
| DB1 | 20 | 4 | 12-6 | — | — |
| DB2 | 4 | 4 | 10-11 | — | — |
| DB3 | 4 | 4 | 8-5½ | — | — |
| DB4 | 4 | 4 | 6-3½ | — | — |
| DC | 12 | 4 | 8-0 | 1-6 | 6-6 |
| DC1 | 2 | 4 | 7-7 | 1-6 | 6-1 |
| DC2 | 2 | 4 | 7-1 | 1-6 | 5-7 |
| DC3 | 2 | 4 | 6-8 | 1-6 | 5-2 |
| DC4 | 2 | 4 | 6-2½ | 1-6 | 4-8½ |
| DC5 | 2 | 4 | 5-9 | 1-6 | 4-3 |
| DC6 | 2 | 4 | 5-3 | 1-6 | 3-9 |
| DC7 | 2 | 4 | 5-2 | 1-6 | 3-8 |
| DD | 19 | 4 | 6-6 | — | — |
| DD1 | 2 | 4 | 6-1 | — | — |
| DD2 | 2 | 4 | 5-7 | — | — |
| DD3 | 2 | 4 | 5-2 | — | — |
| DD4 | 2 | 4 | 4-8½ | — | — |
| DD5 | 2 | 4 | 4-3 | — | — |
| DD6 | 2 | 4 | 3-9 | — | — |
| DD7 | 2 | 4 | 3-8 | — | — |
| DE | 24 | 4 | 3-8 | 1-6 | 2-2 |
| DF | 8 | 4 | 7-11 | 1-6 | 6-5 |
| DG | 16 | 4 | 9-0 | — | — |
| DH | 4 | 4 | 9-8 | — | — |
| DI | 1 | 4 | 9-0 | — | — |
| D11 | 1 | 4 | 12-7 | — | — |
| DJ | 24 | 4 | 3-0 | 1-6 | 1-6 |
| DK | 42 | 4 | 2-4 | 1-6 | 0-10 |
| DL | 8 | 4 | 4-10 | — | — |
| DN1 | 2 | 4 | 12-6 | — | — |
| DN2 | 1 | 4 | 11-10 | — | — |
| DN3 | 1 | 4 | 10-6 | — | — |
| DP | 16 | 4 | 5-0 | 2-4 | 0-4 |
| DO | 8 | 4 | 10-11 | 1-0 | 8-11 |
| DO1 | 3 | 4 | 10-11 | 1-0 | 8-11 |
| DS | 4 | 4 | 4-4 | 1-0 | 3-4 |

| TYPE 3 | | | | | |
|--------|----|------|--------------|-------|------|
| MARK | No | SIZE | TOTAL LENGTH | "A" | "B" |
| DA | 24 | 4 | 11-0 | 10-0 | — |
| DA1 | 2 | 4 | 12-10 | 11-10 | — |
| DA2 | 2 | 4 | 14-10 | 13-10 | — |
| DB | 18 | 4 | 13-1 | — | — |
| DB1 | 24 | 4 | 13-11 | — | — |
| DB2 | 4 | 4 | 10-9 | — | — |
| DB3 | 4 | 4 | 8-6 | — | — |
| DB4 | 4 | 4 | 6-4 | — | — |
| DC | 12 | 4 | 8-9 | 1-6 | 7-3 |
| DC1 | 2 | 4 | 8-7 | 1-6 | 7-1 |
| DC2 | 2 | 4 | 8-1½ | 1-6 | 7-7½ |
| DC3 | 2 | 4 | 7-8 | 1-6 | 6-2 |
| DC4 | 2 | 4 | 7-2½ | 1-6 | 5-8½ |
| DC5 | 2 | 4 | 6-9 | 1-6 | 5-3 |
| DC6 | 2 | 4 | 6-3½ | 1-6 | 4-9½ |
| DC7 | 2 | 4 | 5-10 | 1-6 | 4-4 |
| DC8 | 2 | 4 | 5-7 | 1-6 | 4-1 |
| DD | 21 | 4 | 7-3 | — | — |
| DD1 | 2 | 4 | 7-1 | — | — |
| DD2 | 2 | 4 | 6-7½ | — | — |
| DD3 | 2 | 4 | 6-2 | — | — |
| DD4 | 2 | 4 | 5-8½ | — | — |
| DD5 | 2 | 4 | 5-3 | — | — |
| DD6 | 2 | 4 | 4-9½ | — | — |
| DD7 | 2 | 4 | 4-4 | — | — |
| DD8 | 2 | 4 | 4-1 | — | — |
| DE | 26 | 4 | 3-8 | 1-6 | 2-2 |
| DF | 9 | 4 | 8-8 | 1-6 | 7-2 |
| DG | 18 | 4 | 10-0 | — | — |
| DH | 4 | 4 | 10-6 | — | — |
| DI | 1 | 4 | 10-0 | — | — |
| D11 | 1 | 4 | 13-11 | — | — |
| DJ | 28 | 4 | 3-0 | 1-6 | 1-6 |
| DK | 48 | 4 | 2-5 | 1-6 | 0-11 |
| DL | 8 | 4 | 5-5 | — | — |
| DN1 | 2 | 4 | 13-10 | — | — |
| DN2 | 1 | 4 | 13-2 | — | — |
| DN3 | 1 | 4 | 11-6 | — | — |
| DP | 18 | 4 | 5-8 | 2-8 | 0-4 |
| DO | 8 | 5 | 11-11 | 1-0 | 9-11 |
| DO1 | 3 | 4 | 11-11 | 1-0 | 9-11 |
| DS | 4 | 4 | 4-6 | 1-0 | 3-6 |

| TYPE 4 | | | | | |
|--------|----|------|--------------|------|-------|
| MARK | No | SIZE | TOTAL LENGTH | "A" | "B" |
| DA | 28 | 4 | 13-0 | 12-0 | — |
| DA1 | 2 | 4 | 13-6 | 12-6 | — |
| DA2 | 2 | 4 | 15-6 | 14-6 | — |
| DA3 | 2 | 4 | 17-6 | 16-6 | — |
| DB | 22 | 4 | 15-9 | — | — |
| DB1 | 28 | 4 | 16-8½ | — | — |
| DB2 | 4 | 4 | 13-0 | — | — |
| DB3 | 4 | 4 | 10-9½ | — | — |
| DB4 | 4 | 4 | 8-7 | — | — |
| DC | 14 | 4 | 10-4 | 1-6 | 8-10 |
| DC1 | 2 | 4 | 10-3 | 1-6 | 8-9 |
| DC2 | 2 | 4 | 9-9½ | 1-6 | 8-3½ |
| DC3 | 2 | 4 | 9-4 | 1-6 | 7-10 |
| DC4 | 2 | 4 | 8-10½ | 1-6 | 7-4½ |
| DC5 | 2 | 4 | 8-5 | 1-6 | 6-11 |
| DC6 | 2 | 4 | 7-11½ | 1-6 | 6-5½ |
| DC7 | 2 | 4 | 7-6 | 1-6 | 6-0 |
| DC8 | 2 | 4 | 7-1 | 1-6 | 5-7 |
| DC9 | 2 | 4 | 6-7 | 1-6 | 5-1 |
| DC10 | 2 | 4 | 6-6 | 1-6 | 5-0 |
| DD | 25 | 4 | 8-10 | — | — |
| DD1 | 2 | 4 | 8-9 | — | — |
| DD2 | 2 | 4 | 8-3½ | — | — |
| DD3 | 2 | 4 | 7-10 | — | — |
| DD4 | 2 | 4 | 7-4½ | — | — |
| DD5 | 2 | 4 | 6-11 | — | — |
| DD6 | 2 | 4 | 6-5½ | — | — |
| DD7 | 2 | 4 | 6-0 | — | — |
| DD8 | 2 | 4 | 5-7 | — | — |
| DD9 | 2 | 4 | 5-1 | — | — |
| DD10 | 2 | 4 | 5-0 | — | — |
| DE | 31 | 4 | 3-8 | 1-6 | 2-2 |
| DF | 11 | 4 | 10-3 | 1-6 | 8-9 |
| DG | 20 | 4 | 12-0 | — | — |
| DH | 4 | 4 | 12-3 | — | — |
| DI | 1 | 4 | 12-0 | — | — |
| D11 | 1 | 4 | 16-7 | — | — |
| DJ | 32 | 4 | 3-0 | 1-6 | 1-6 |
| DK | 56 | 4 | 2-7 | 1-6 | 1-1 |
| DL | 8 | 4 | 6-7 | — | — |
| DN1 | 3 | 4 | 16-6 | — | — |
| DN2 | 1 | 4 | 15-10 | — | — |
| DN3 | 1 | 4 | 14-7 | — | — |
| DN4 | 1 | 4 | 13-4 | — | — |
| DP | 22 | 4 | 6-5 | 3-0 | 0-5 |
| DO | 12 | 5 | 13-11 | 1-0 | 11-11 |
| DO1 | 5 | 4 | 13-11 | 1-0 | 11-11 |
| DS | 4 | 4 | 4-11 | 1-0 | 3-11 |

| TYPE 5 | | | | | |
|--------|----|------|--------------|------|-------|
| MARK | No | SIZE | TOTAL LENGTH | "A" | "B" |
| DA | 30 | 4 | 14-2 | 13-2 | — |
| DA1 | 2 | 4 | 15-0 | 14-0 | — |
| DA2 | 2 | 4 | 17-0 | 16-0 | — |
| DA3 | 2 | 4 | 19-0 | 18-0 | — |
| DB | 24 | 4 | 17-1 | — | — |
| DB1 | 28 | 4 | 18-1½ | — | — |
| DB2 | 4 | 4 | 15-6½ | — | — |
| DB3 | 4 | 4 | 13-0½ | — | — |
| DB4 | 4 | 4 | 10-10 | — | — |
| DB5 | 4 | 4 | 8-7½ | — | — |
| DC | 16 | 4 | 11-2 | 1-6 | 9-8 |
| DC1 | 2 | 4 | 10-11 | 1-6 | 9-5 |
| DC2 | 2 | 4 | 10-5½ | 1-6 | 8-11½ |
| DC3 | 2 | 4 | 10-0 | 1-6 | 8-6 |
| DC4 | 2 | 4 | 9-6½ | 1-6 | 8-0½ |
| DC5 | 2 | 4 | 9-1 | 1-6 | 7-7 |
| DC6 | 2 | 4 | 8-7½ | 1-6 | 7-1½ |
| DC7 | 2 | 4 | 8-2 | 1-6 | 6-8 |
| DC8 | 2 | 4 | 7-8½ | 1-6 | 6-2½ |
| DC9 | 2 | 4 | 7-3 | 1-6 | 5-9 |
| DC10 | 2 | 4 | 7-0 | 1-6 | 5-6 |
| DD | 26 | 4 | 9-8 | — | — |
| DD1 | 2 | 4 | 9-5 | — | — |
| DD2 | 2 | 4 | 8-11½ | — | — |
| DD3 | 2 | 4 | 8-6 | — | — |
| DD4 | 2 | 4 | 8-0½ | — | — |
| DD5 | 2 | 4 | 7-7 | — | — |
| DD6 | 2 | 4 | 7-1½ | — | — |
| DD7 | 2 | 4 | 6-8 | — | — |
| DD8 | 2 | 4 | 6-2½ | — | — |
| DD9 | 2 | 4 | 5-9 | — | — |
| DD10 | 2 | 4 | 5-6 | — | — |
| DE | 33 | 4 | 3-8 | 1-6 | 2-2 |
| DF | 12 | 4 | 11-1 | 1-6 | 9-7 |
| DG | 22 | 4 | 13-2 | — | — |
| DH | 4 | 4 | 13-2 | — | — |
| DI | 1 | 4 | 13-2 | — | — |
| D11 | 1 | 4 | 18-1 | — | — |
| DJ | 36 | 4 | 3-0 | 1-6 | 1-6 |
| DK | 58 | 4 | 2-9 | 1-6 | 1-3 |
| DL | 8 | 4 | 7-2 | — | — |
| DN1 | 3 | 4 | 18-0 | — | — |
| DN2 | 1 | 4 | 17-4 | — | — |
| DN3 | 1 | 4 | 15-10 | — | — |
| DN4 | 1 | 4 | 14-4 | — | — |
| DP | 24 | 4 | 6-10 | 3-2 | 0-6 |
| DO | 14 | 5 | 15-1 | 1-0 | 13-1 |
| DO1 | 5 | 4 | 15-1 | 1-0 | 13-1 |
| DS | 4 | 4 | 5-4 | 1-0 | 4-2 |

| TYPE 6 | | | | | |
|--------|----|------|--------------|------|-------|
| MARK | No | SIZE | TOTAL LENGTH | "A" | "B" |
| DA | 34 | 4 | 15-4 | 14-4 | — |
| DA1 | 2 | 4 | 16-6 | 15-6 | — |
| DA2 | 2 | 4 | 18-6 | 17-6 | — |
| DA3 | 2 | 4 | 20-6 | 19-6 | — |
| DB | 26 | 4 | 18-7 | — | — |
| DB1 | 28 | 4 | 19-8 | — | — |
| DB2 | 4 | 4 | 18-4 | — | — |
| DB3 | 4 | 4 | 15-5½ | — | — |
| DB4 | 4 | 4 | 13-3½ | — | — |
| DB5 | 4 | 4 | 11-1 | — | — |
| DB6 | 4 | 4 | 8-11 | — | — |
| DC | 18 | 4 | 12-1 | 1-6 | 10-7 |
| DC1 | 2 | 4 | 11-8 | 1-6 | 10-2 |
| DC2 | 2 | 4 | 11-2½ | 1-6 | 9-8½ |
| DC3 | 2 | 4 | 10-9 | 1-6 | 9-3 |
| DC4 | 2 | 4 | 10-3½ | 1-6 | 8-9½ |
| DC5 | 2 | 4 | 9-10 | 1-6 | 8-4 |
| DC6 | 2 | 4 | 9-4½ | 1-6 | 7-10½ |
| DC7 | 2 | 4 | 8-11 | 1-6 | 7-5 |
| DC8 | 2 | 4 | 8-5½ | 1-6 | 6-11½ |
| DC9 | 2 | 4 | 8-0 | 1-6 | 6-6 |
| DC10 | 4 | 4 | 7-6 | 1-6 | 6-0 |
| DD | 31 | 4 | 10-7 | — | — |
| DD1 | 2 | 4 | 10-2 | — | — |
| DD2 | 2 | 4 | 8-5½ | — | — |
| DD3 | 2 | 4 | 8-0½ | — | — |
| DD4 | 2 | 4 | 8-0½ | — | — |
| DD5 | 2 | 4 | 8-4 | — | — |
| DD6 | 2 | 4 | 7-10½ | — | — |
| DD7 | 2 | 4 | 7-5 | — | — |
| DD8 | 2 | 4 | 6-11½ | — | — |
| DD9 | 2 | 4 | 6-6 | — | — |
| DD10 | 4 | 4 | 6-0 | — | — |
| DE | 36 | 4 | 3-8 | 1-6 | 2-2 |
| DF | 13 | 4 | 12-0 | 1-6 | 10-6 |
| DG | 24 | 4 | 14-4 | — | — |
| DH | 4 | 4 | 14-2 | — | — |
| DI | 1 | 4 | 14-4 | — | — |
| D11 | 1 | 4 | 19-7 | — | — |
| DJ | 40 | 4 | 3-0 | 1-6 | 1-6 |
| DK | 64 | 4 | 2-11 | 1-6 | 1-5 |
| DL | 8 | 4 | 7-10 | — | — |
| DN1 | 3 | 4 | 19-6 | — | — |
| DN2 | 1 | 4 | 18-10 | — | — |
| DN3 | 1 | 4 | 17-1 | — | — |