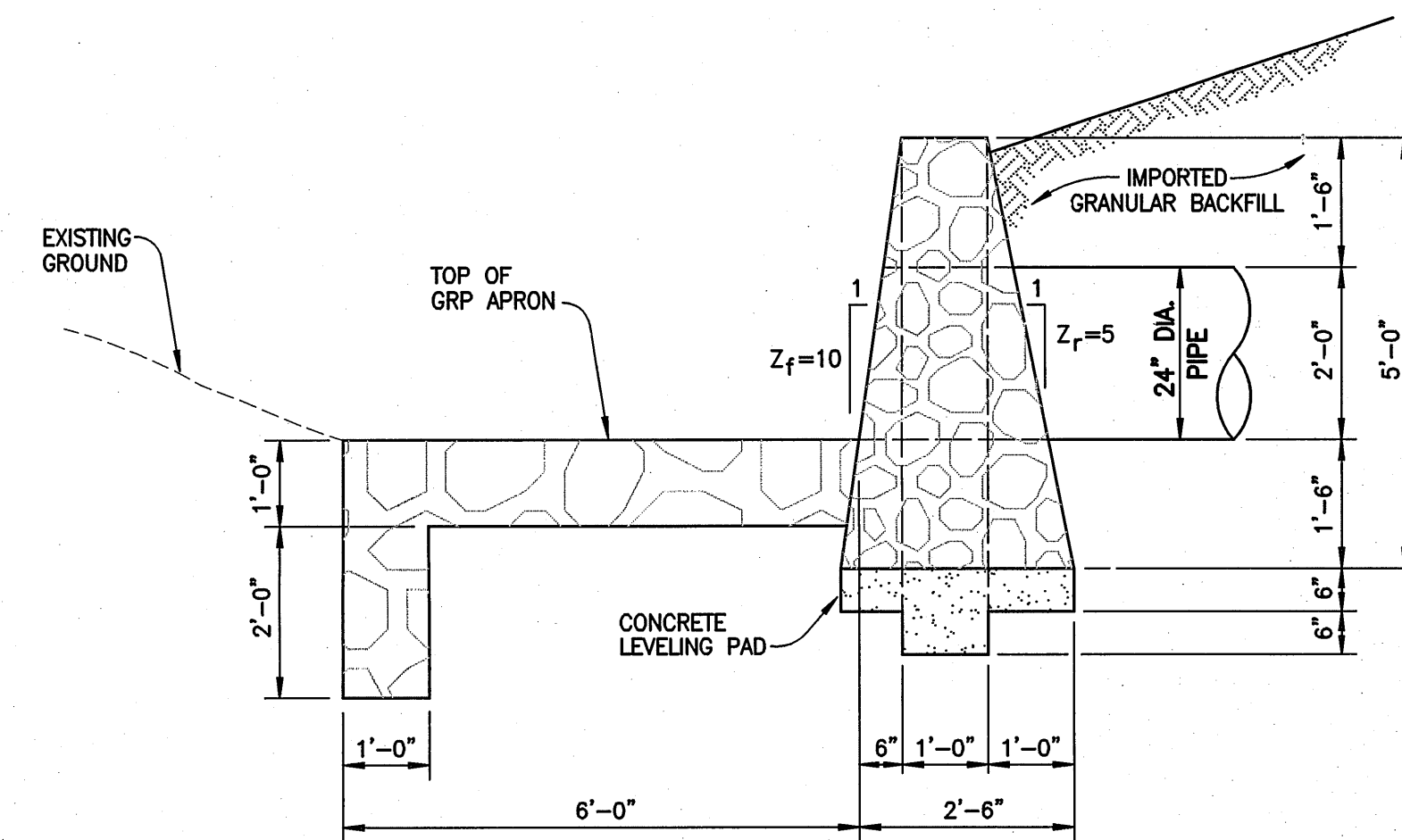
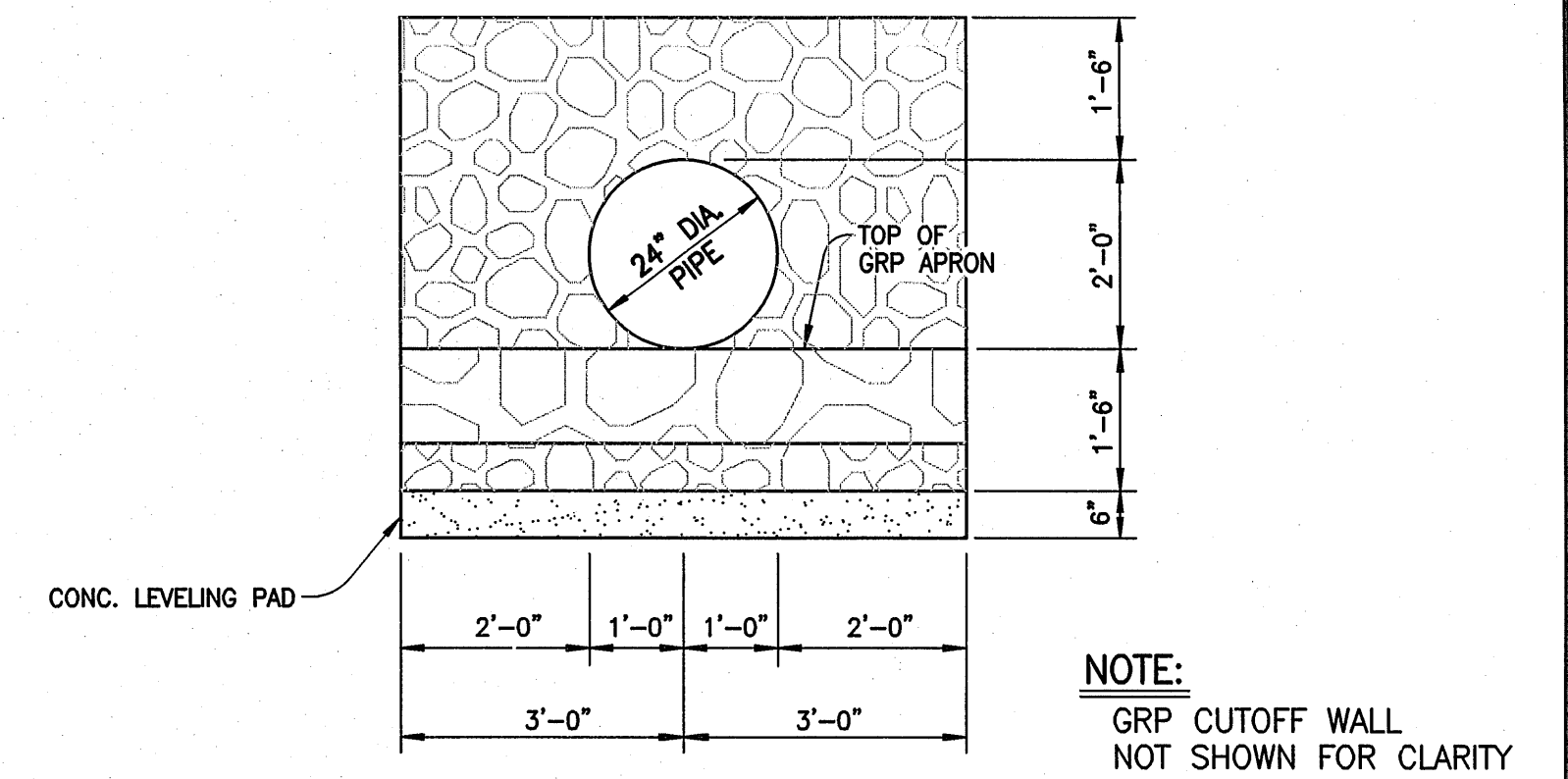
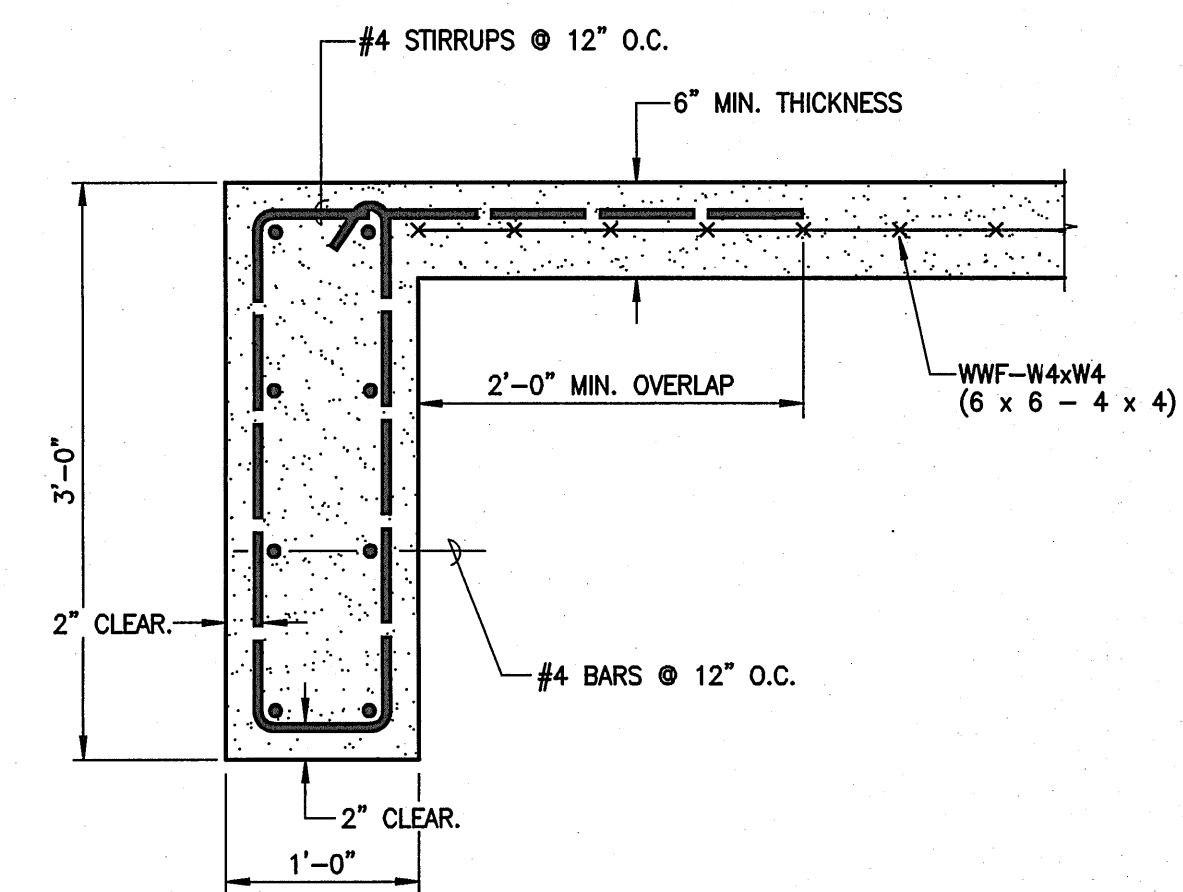




SECTION "A"-"A"
SIDE ELEVATION VIEW OF INLET/OUTLET AT 24" CULVERT CROSSING
SCALE: 1/2" = 1'-0"

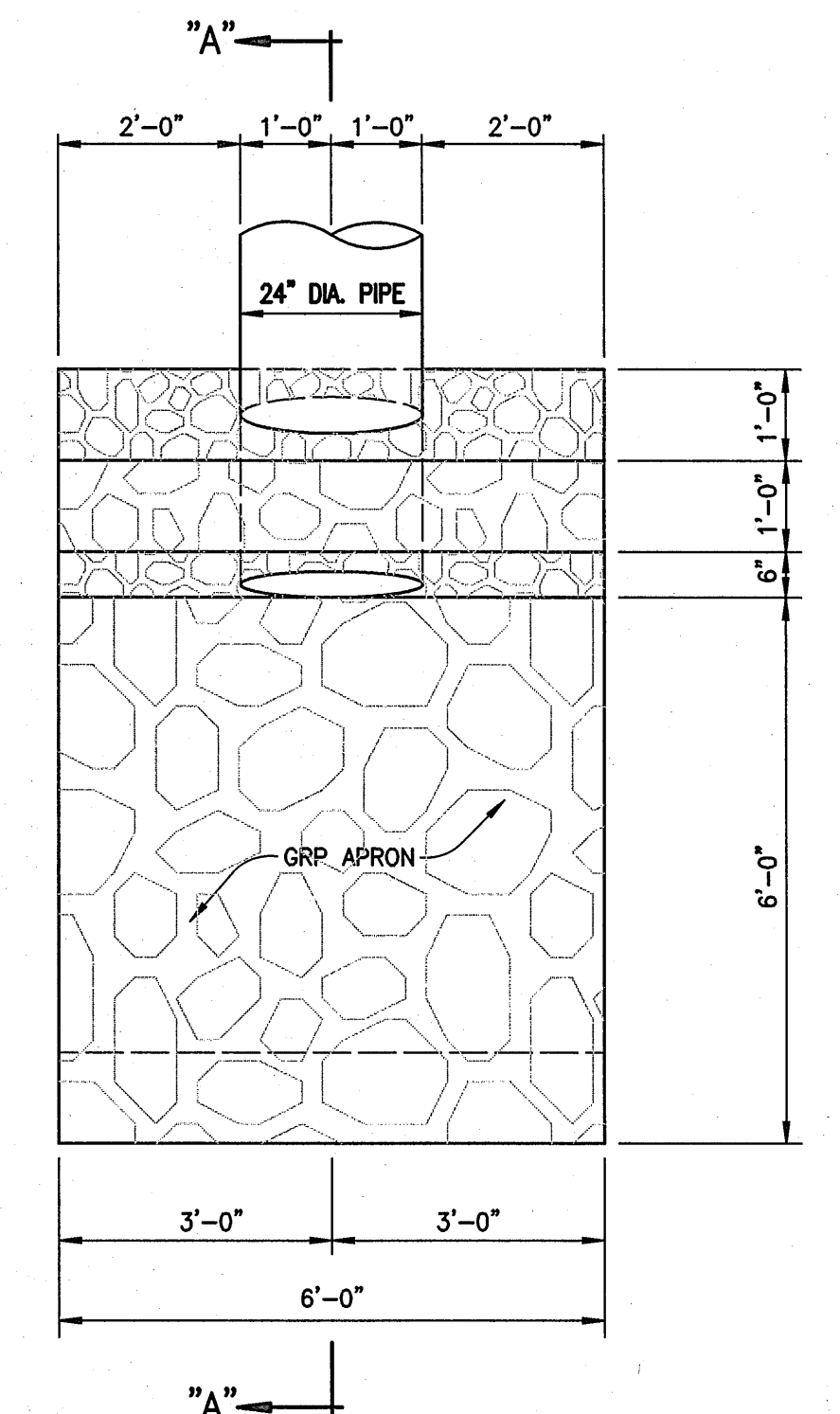


FRONT ELEVATION VIEW OF INLET/OUTLET
AT 24" CULVERT CROSSING
SCALE: 1/2" = 1'-0"

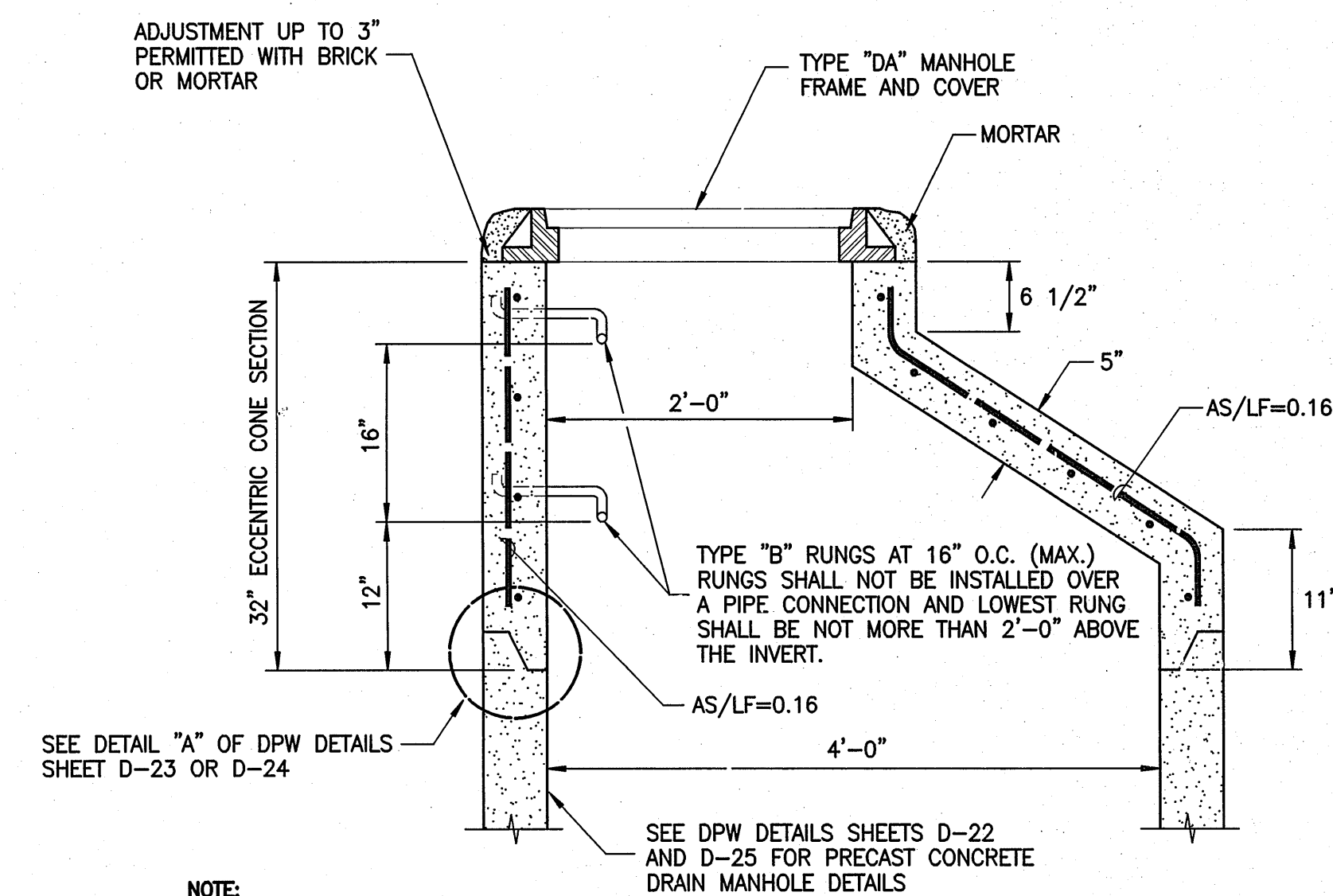


DETAIL - CONCRETE CUTOFF WALL FOR
DIVERSION DITCH (STA. 0+00)
SCALE: 1" = 1'-0"

NOTE:
GRP CUTOFF WALL FOR DIVERSION DITCH AT STA. 0+50 SHALL FOLLOW CUTOFF WALL SHOWN ABOVE IN SECTION "A"-"A" DETAIL.

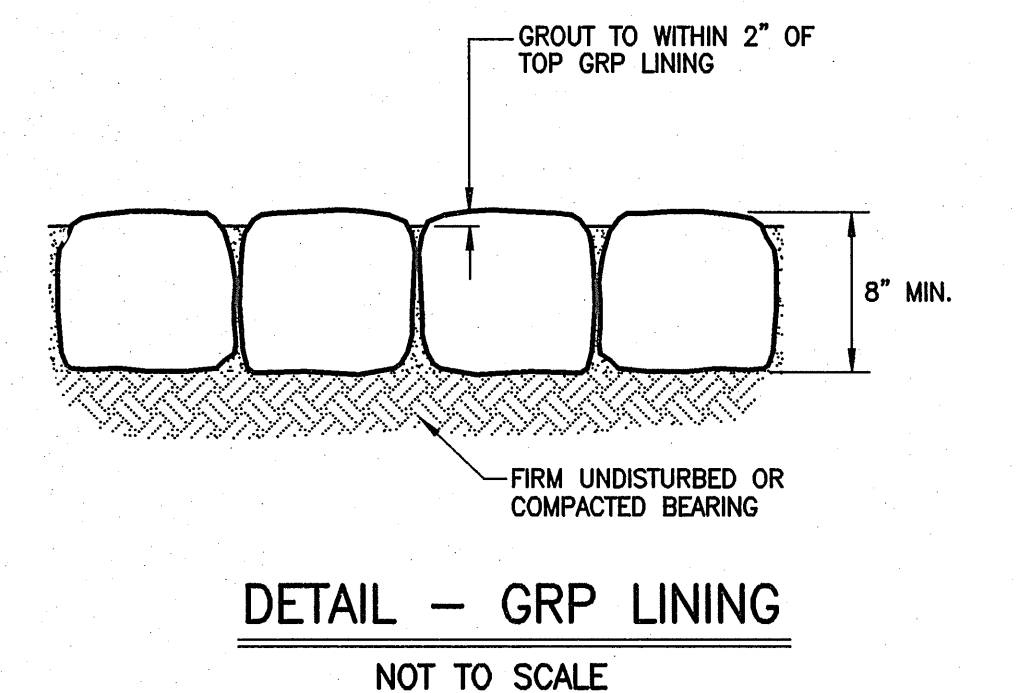


TOP VIEW OF INLET/OUTLET AT
24" CULVERT CROSSING
SCALE: 1/2" = 1'-0"



- NOTE:
1. THE CONTRACTOR AT THEIR OPTION MAY SUBSTITUTE PRE-CAST CONCRETE DRAIN MANHOLE WITH ECCENTRIC CONE FOR HELICAL CAP DRAIN MANHOLE.

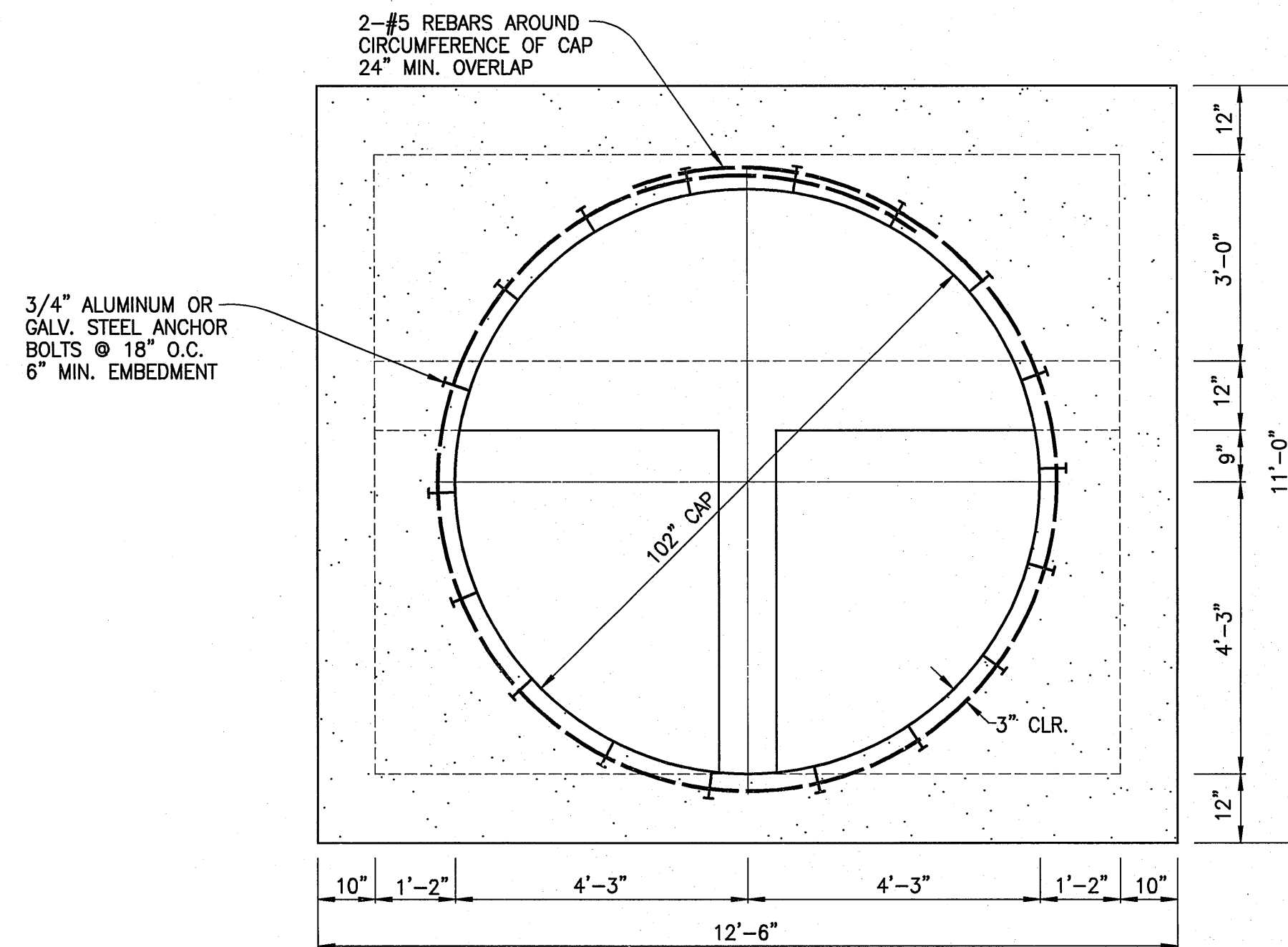
PRE-CAST CONC. ECCENTRIC DRAIN MANHOLE CONE
SCALE: 1" = 1'-0"



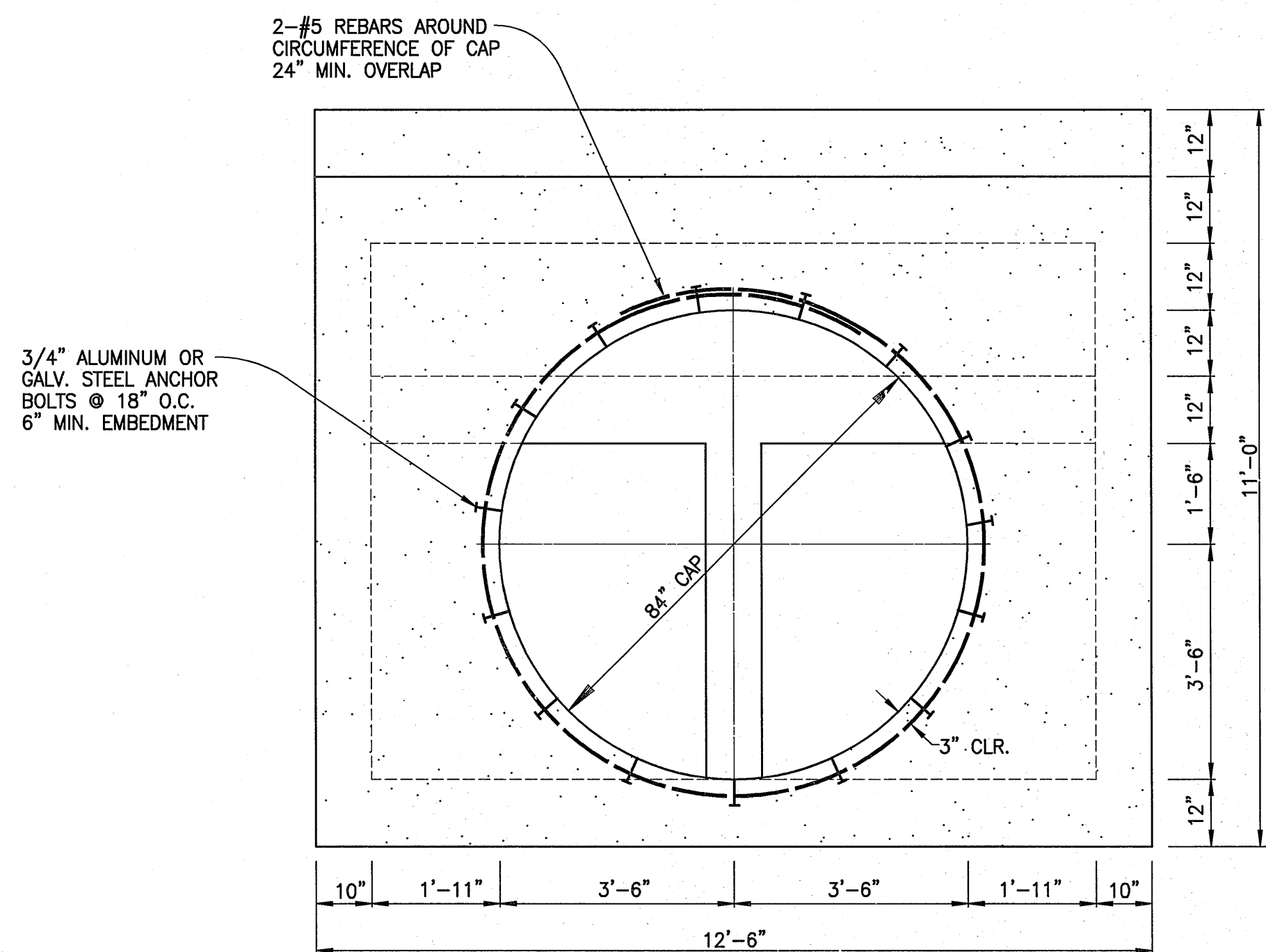
DETAIL - GRP LINING
NOT TO SCALE

		WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793	
KAONOULU MARKET PLACE T.M.K.: (2) 2-2-02 : Por. of Por. 15 and 3-9-01 : 16 KIHAI, MAUI, HAWAII		TITLE: DRAINAGE DETAILS	
DESIGNED BY: ALU DRAWN BY: WIS SCALE: AS NOTED	CHECKED BY: DTU APPROVED BY: DTU	04010.10 JOB NUMBER 10-10-05 DATE	10.05 SHEET OF SHEETS

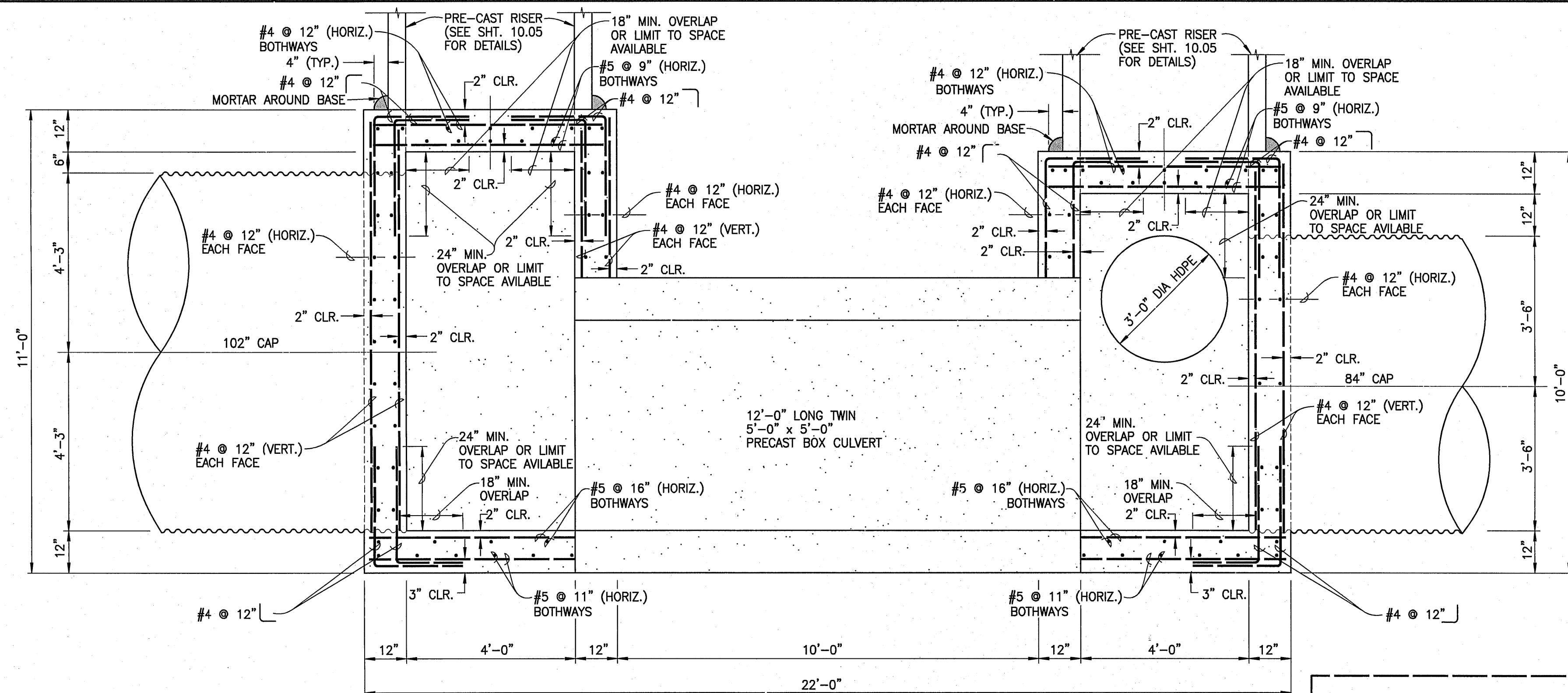
LETTER	DESCRIPTION	DATE
A	ADDED ECCENTRIC DRAIN MANHOLE CONE DETAIL	10/22/08



SECTION "C"-"C"
BACK VIEW OF 84" TO 102" CAP TRANSITION STRUCTURE
SCALE: 1/2" = 1'-0"

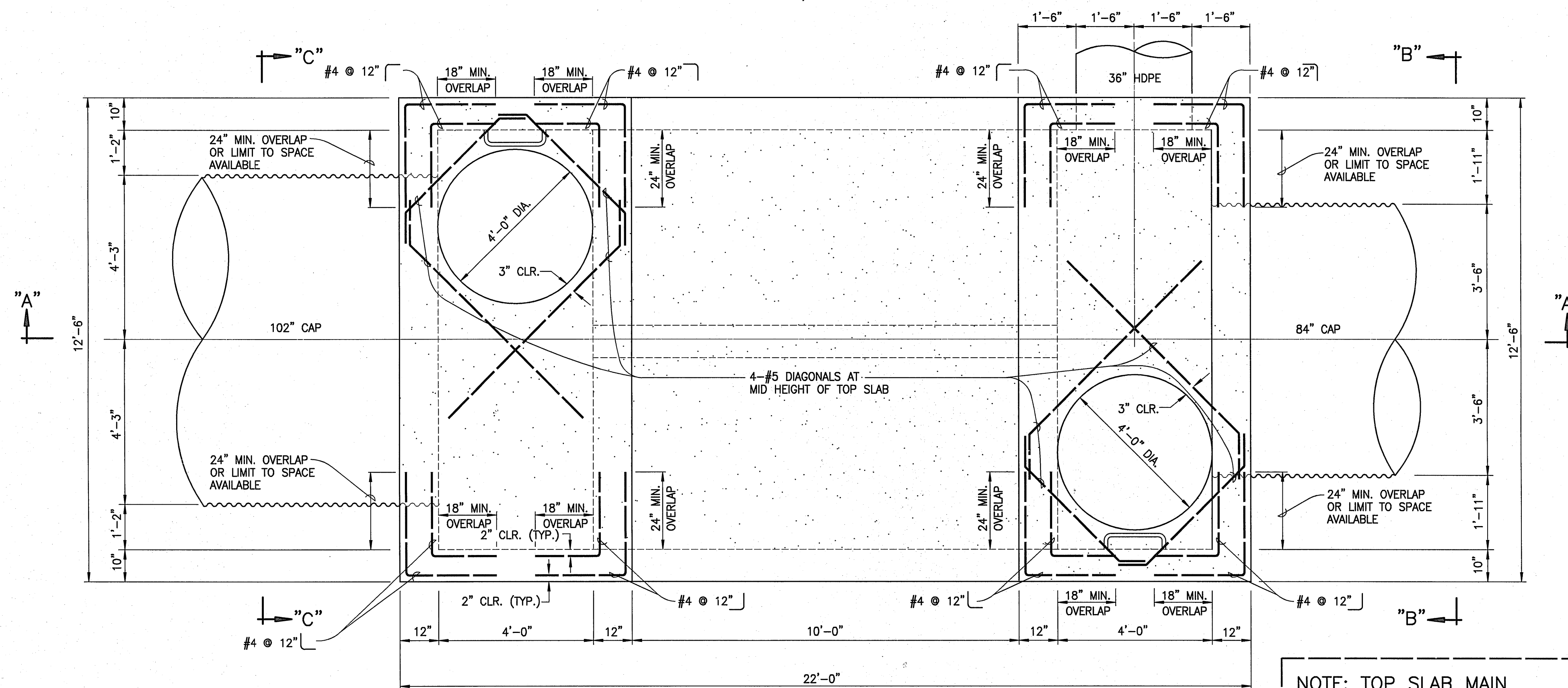


SECTION "B"-"B"
FRONT VIEW OF 84" TO 102" CAP TRANSITION STRUCTURE
SCALE: 1/2" = 1'-0"



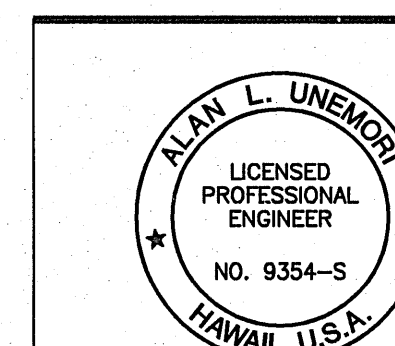
SECTION "A"-"A"
ELEVATION VIEW OF 84" CAP TO 102" CAP TRANSITION STRUCTURE #2
SCALE: 1/2" = 1'-0"

NOTE: PRECAST TWIN 5'x5' BOX
CURRENT REINFORCEMENT
NOT SHOWN FOR CLARITY



PLAN VIEW OF 84" CAP TO 102" CAP TRANSITION STRUCTURE #2
SCALE: 1/2" = 1'-0"

NOTE: TOP SLAB MAIN
REINFORCEMENT NOT
SHOWN FOR CLARITY



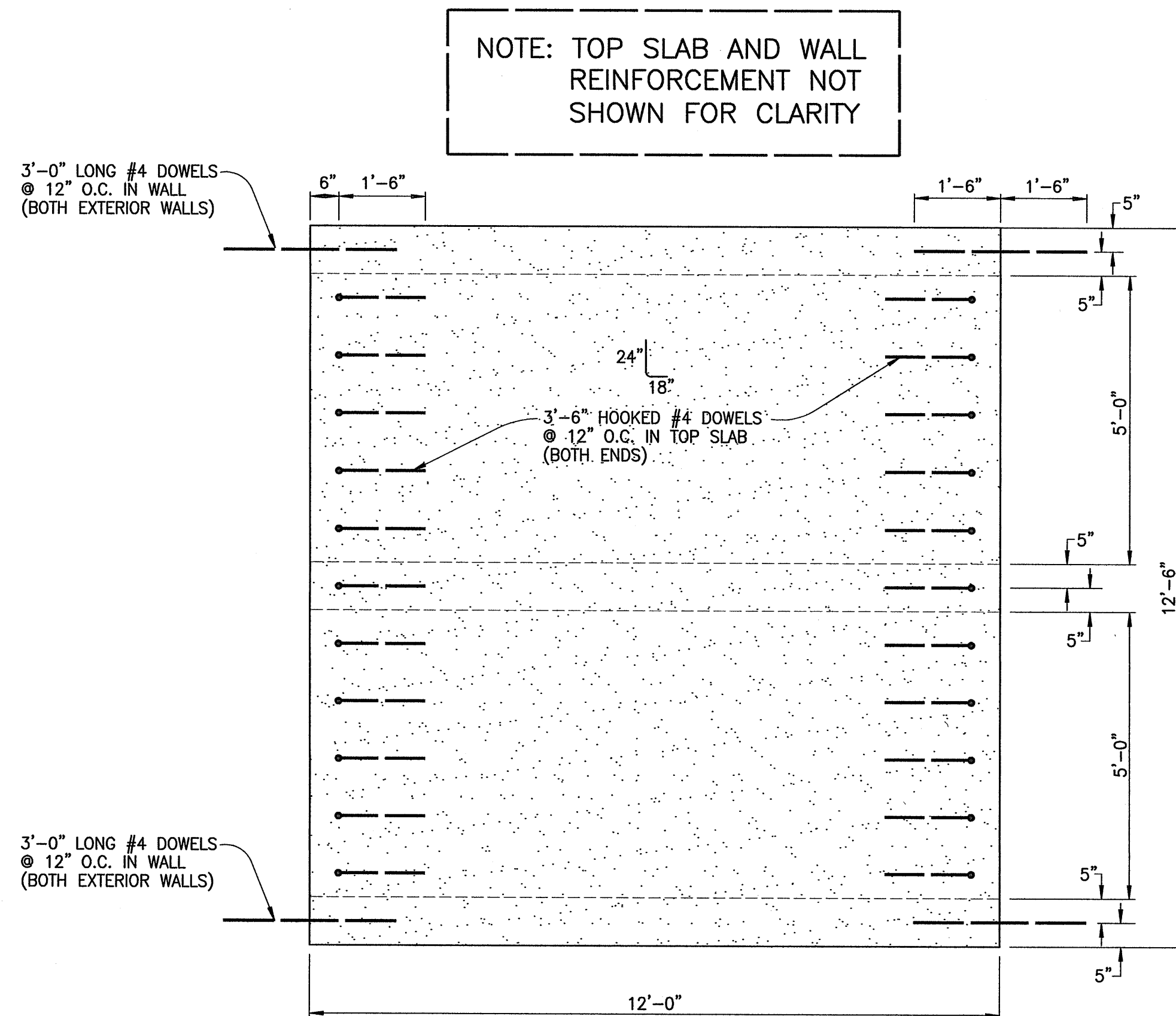
SIGNATURE: *[Signature]* DATE: 10/30/2008
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED" IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS

WARREN S. UNEMORI ENGINEERING, INC.
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2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793
KAONOULU MARKET PLACE
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHAI, MAUI, HAWAII

TITLE: DRAINAGE DETAILS

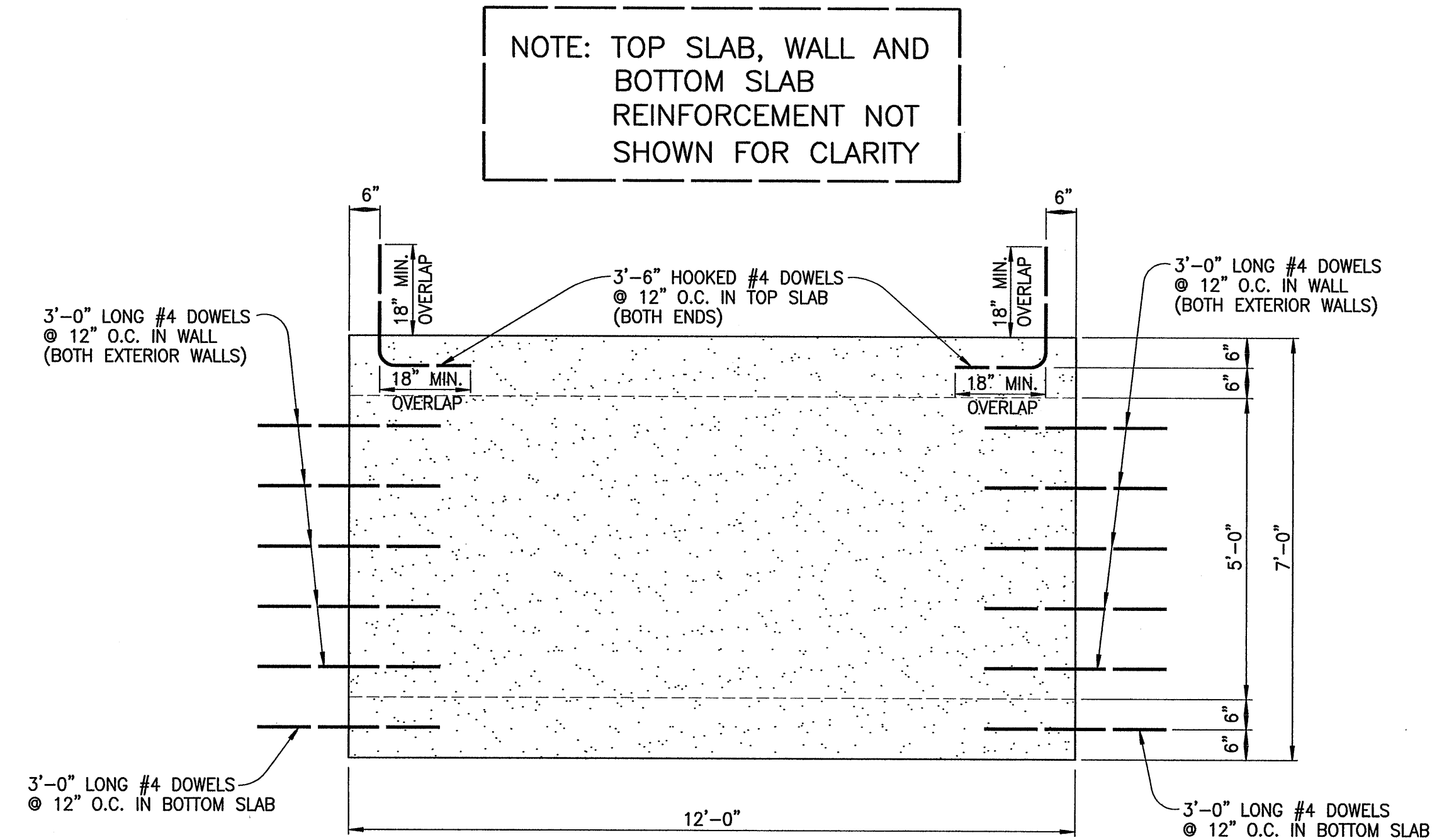
3	SHEET ADDED IN ITS ENTIRETY	10/22/08
LETTER	DESCRIPTION	DATE

ALU	WSU	04010.10	10.06
DESIGNED BY	CHECKED BY	JOB NUMBER	
WIS	WSU	10-10-05	
DRAWN BY	APPROVED BY	DATE	
SCALE	AS NOTED		



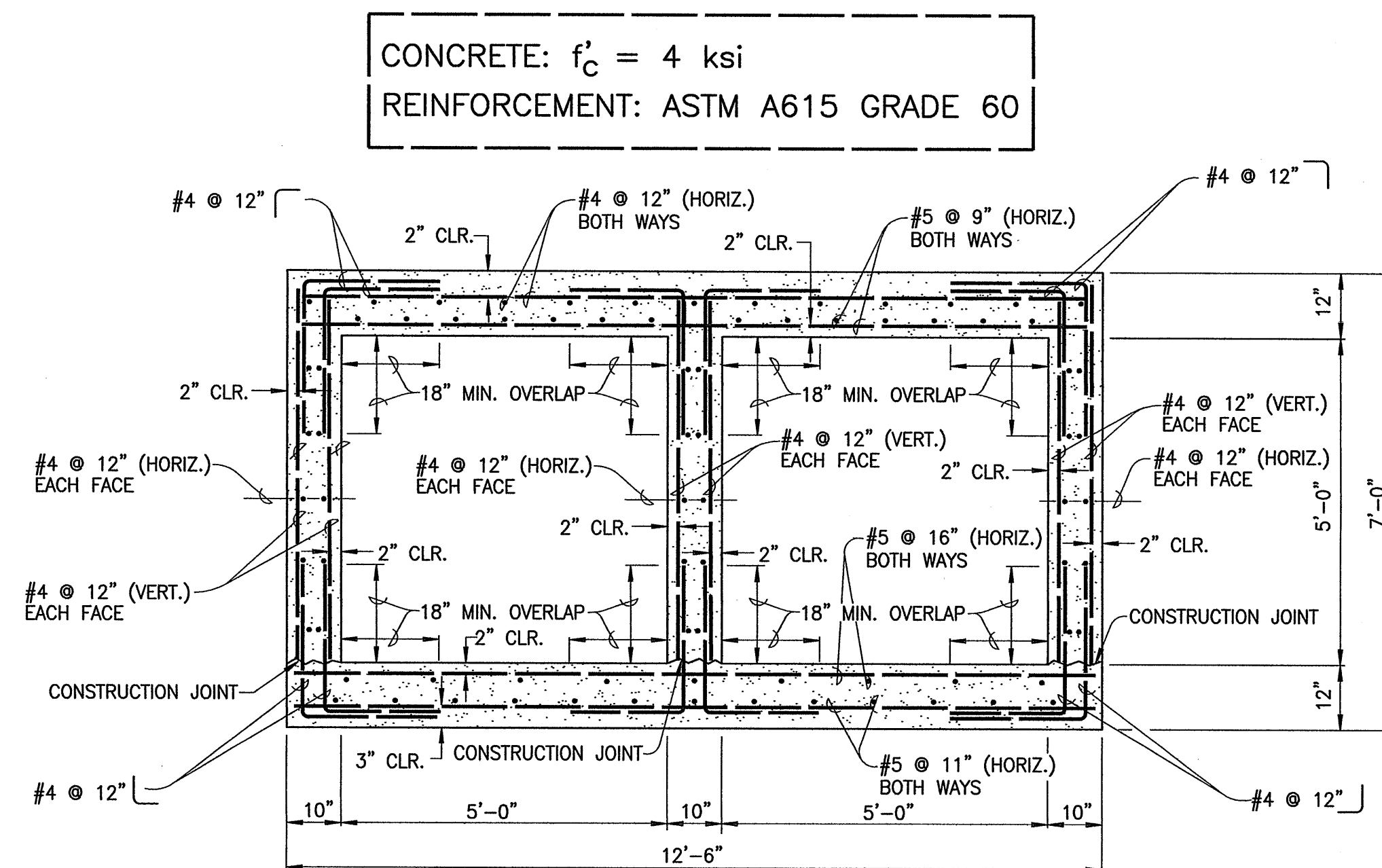
REBARS FOR PRECAST TWIN 5' x 5' BOX CULVERT
TO 84" CAP AND 102" CAP CAST-IN-PLACE VAULTS

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



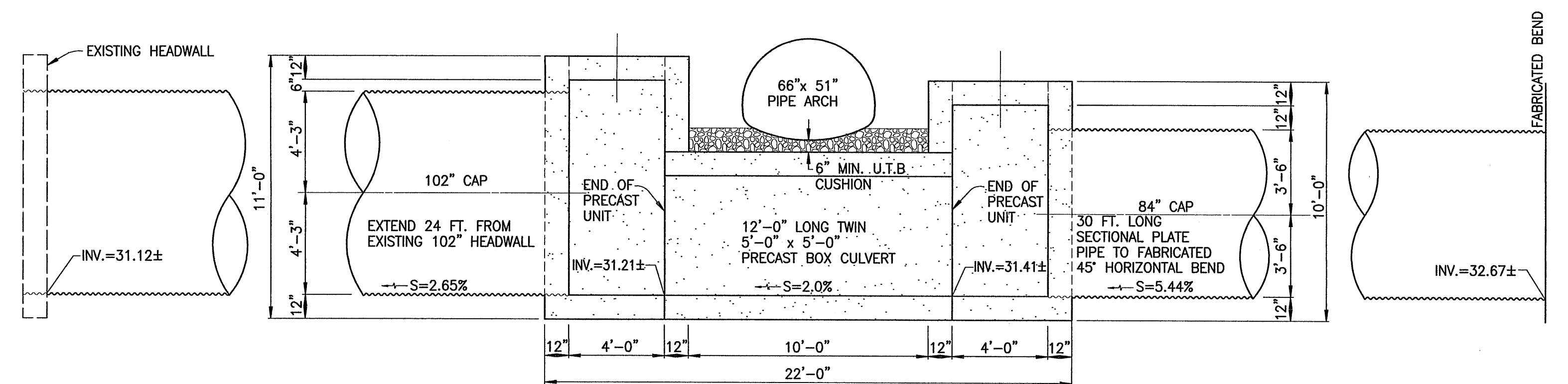
REBARS FOR PRECAST TWIN 5' x 5' BOX CULVERT
TO 84" CAP AND 102" CAP CAST-IN-PLACE VAULTS

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



REBARS IN PRECAST TWIN 5' x 5' BOX CULVERT

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

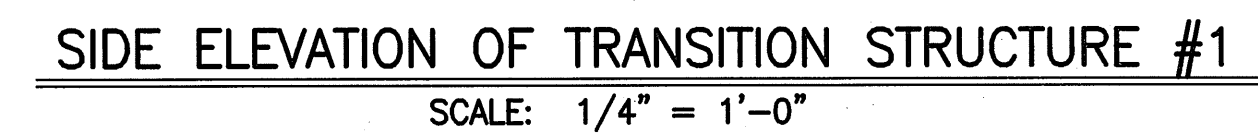
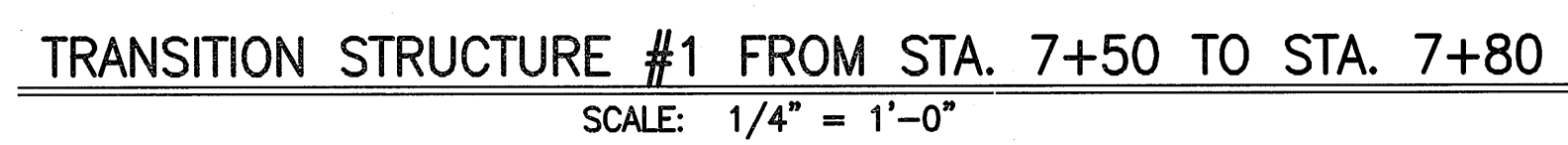


SECTION "A-A"

ELEVATION VIEW OF 84" CAP TO 102" CAP TRANSITION STRUCTURE #2

SCALE: 1/4" = 1'-0"

 WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793		KAONOULU MARKET PLACE T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16 KIHAEI, MAUI, HAWAII	
TITLE DRAINAGE DETAILS			
ALU DESIGNED BY WIS DRAWN BY	DTU CHECKED BY DTU APPROVED BY	04010.10 JOB NUMBER 10-10-05 DATE	10.07 SHEET OF SHEETS
SCALE AS NOTED		SIGNATURE DATE 1/3/2009	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS.			







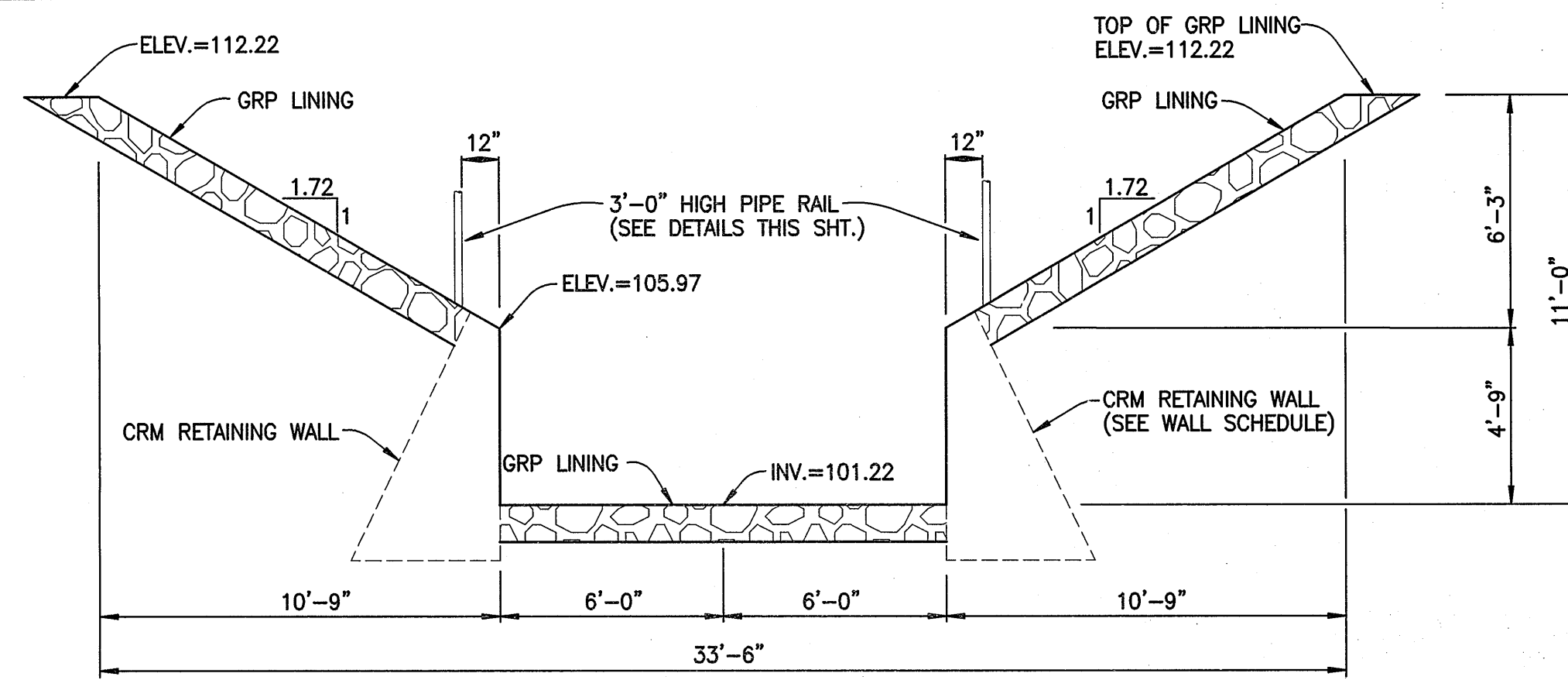
WARREN S. UNEMORI ENGINEERING, INC.
 CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
 2145 WELLS STREET PROFESSIONAL CENTER, SUITE 403
 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOOLU MARKET PLACE

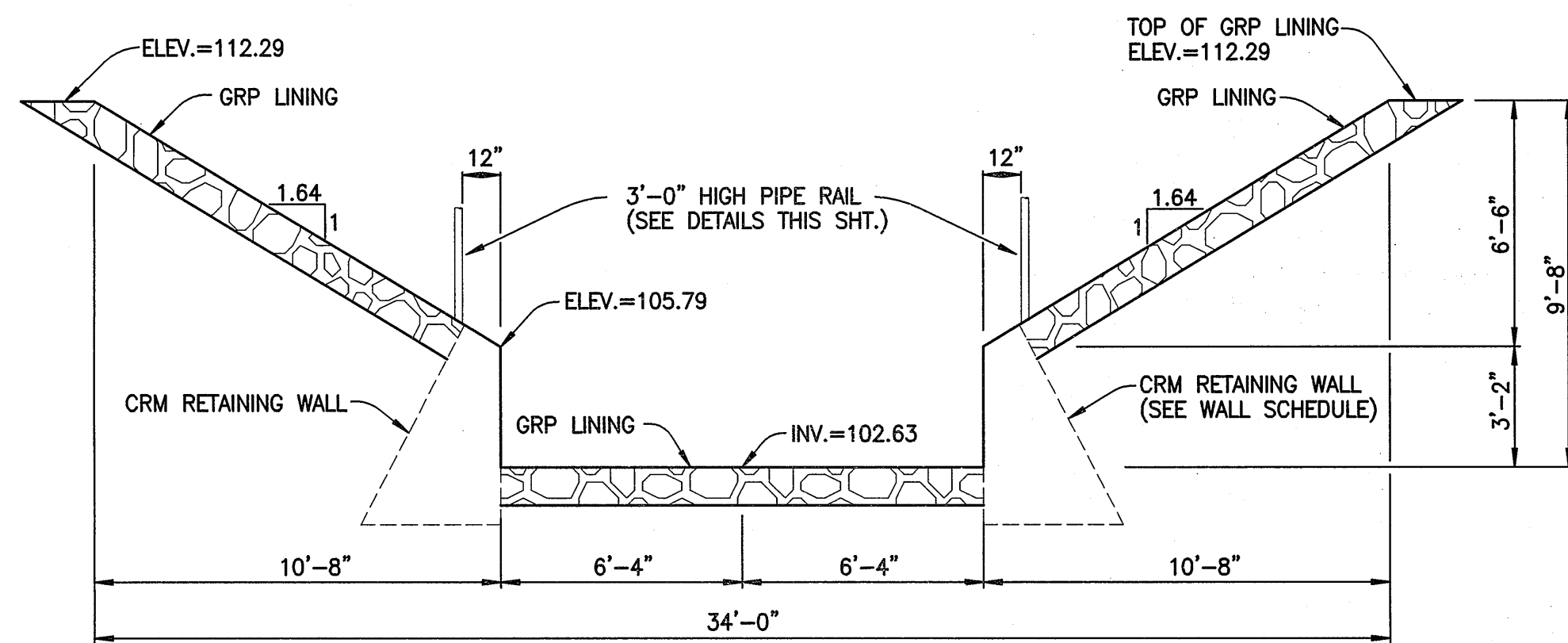
T.M.K.: (2) 3-9-01 : 16

KIHEI, MAUI, HAWAII

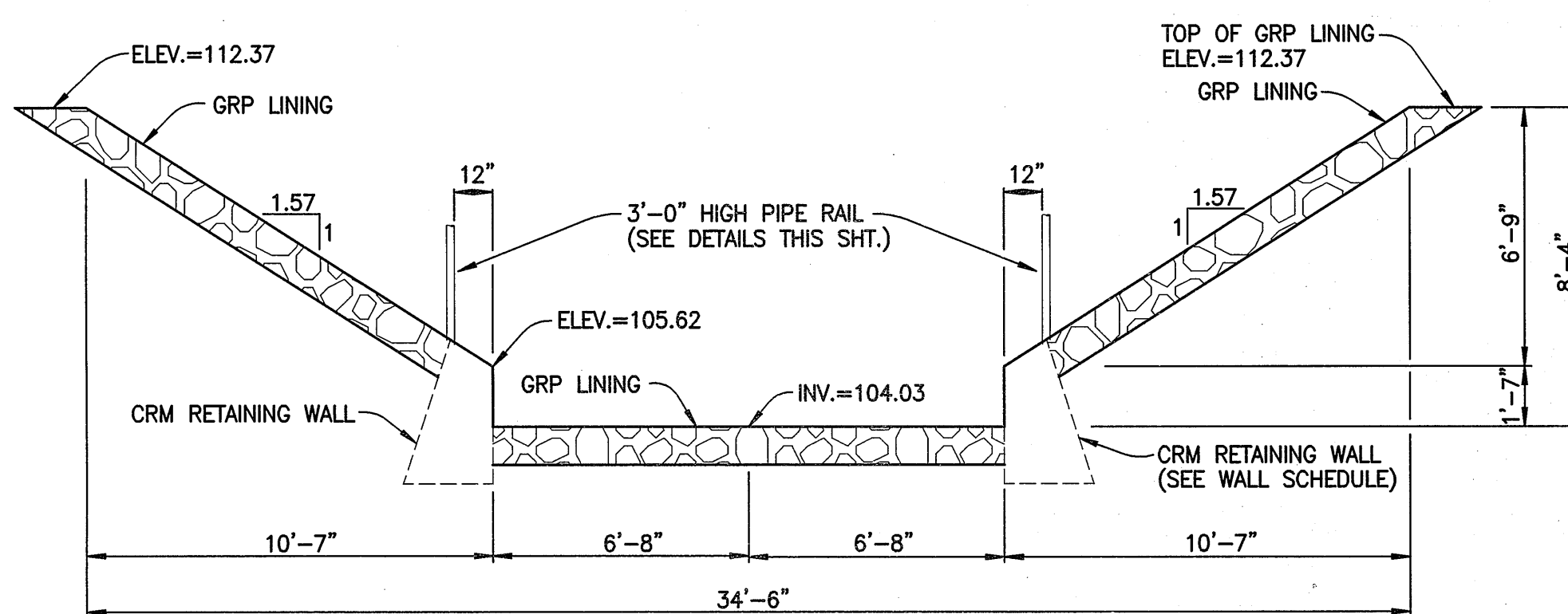
TITLE DRAINAGE DETAILS			
SIGNATURE	DATE	ALU DESIGNED BY DTU CHECKED BY	04010.10
<i>10/30/87</i>		WIS DRAWN BY DTU APPROVED BY	JOB NUMBER 10-10-05
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"		SCALE AS NOTED	SHEET 10.08 OF SHEETS



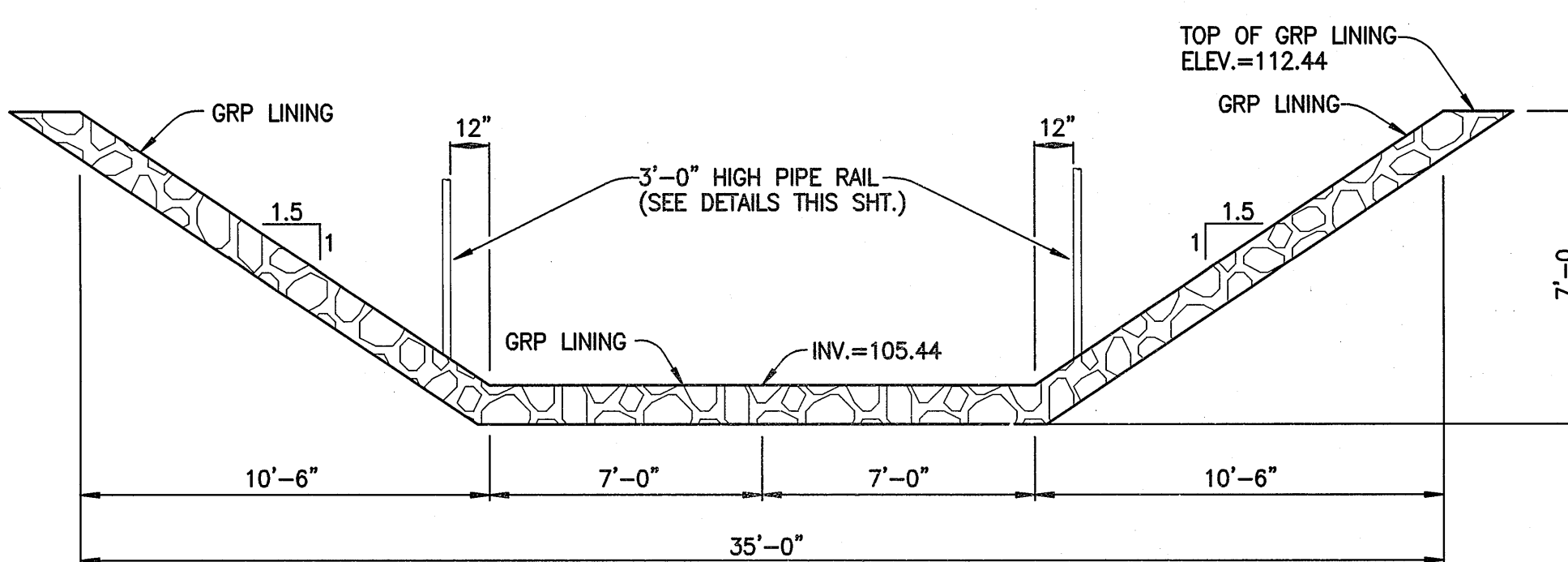
CROSS-SECTION AT STA. 7+65
SCALE: 1/4" = 1'-0"



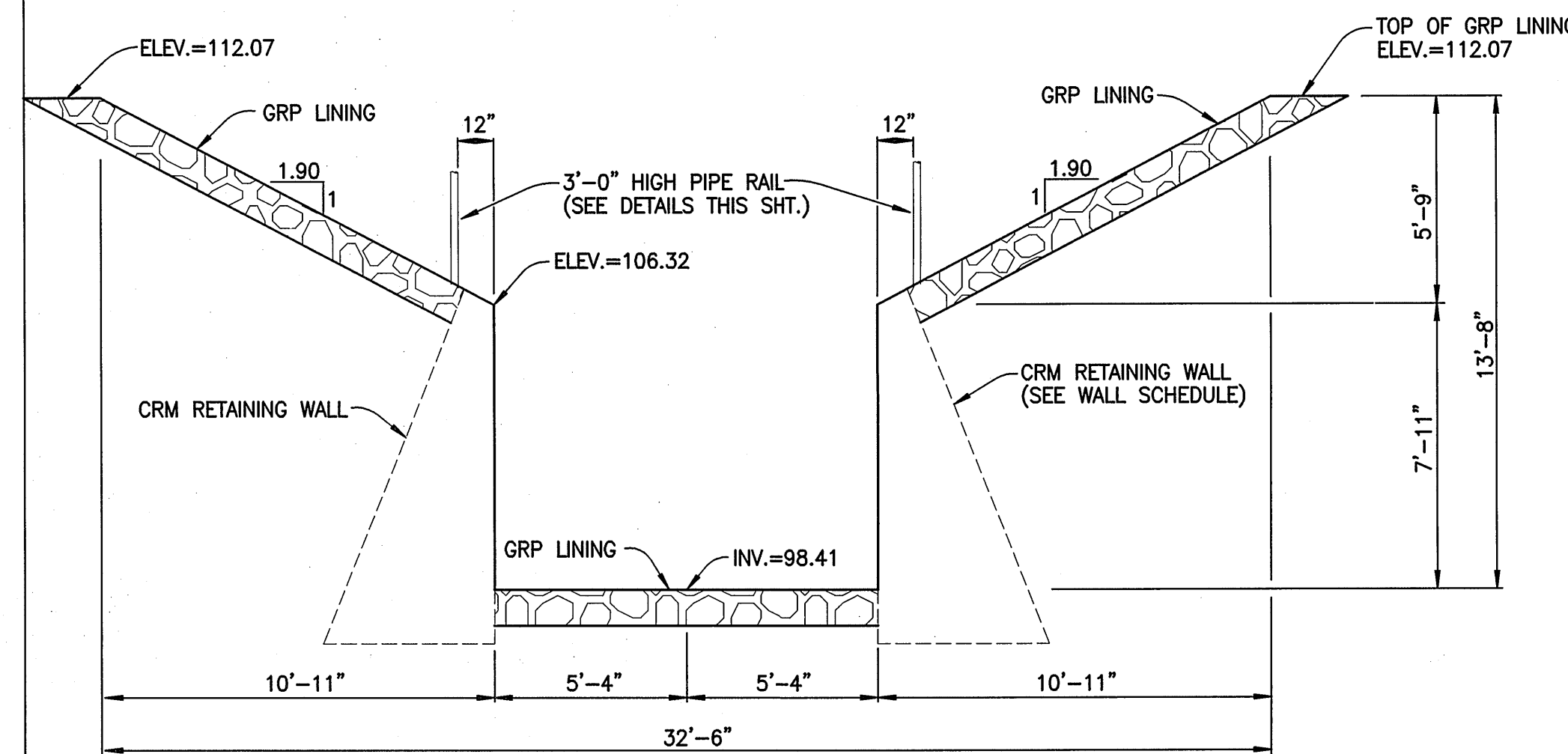
CROSS-SECTION AT STA. 7+60
SCALE: 1/4" = 1'-0"



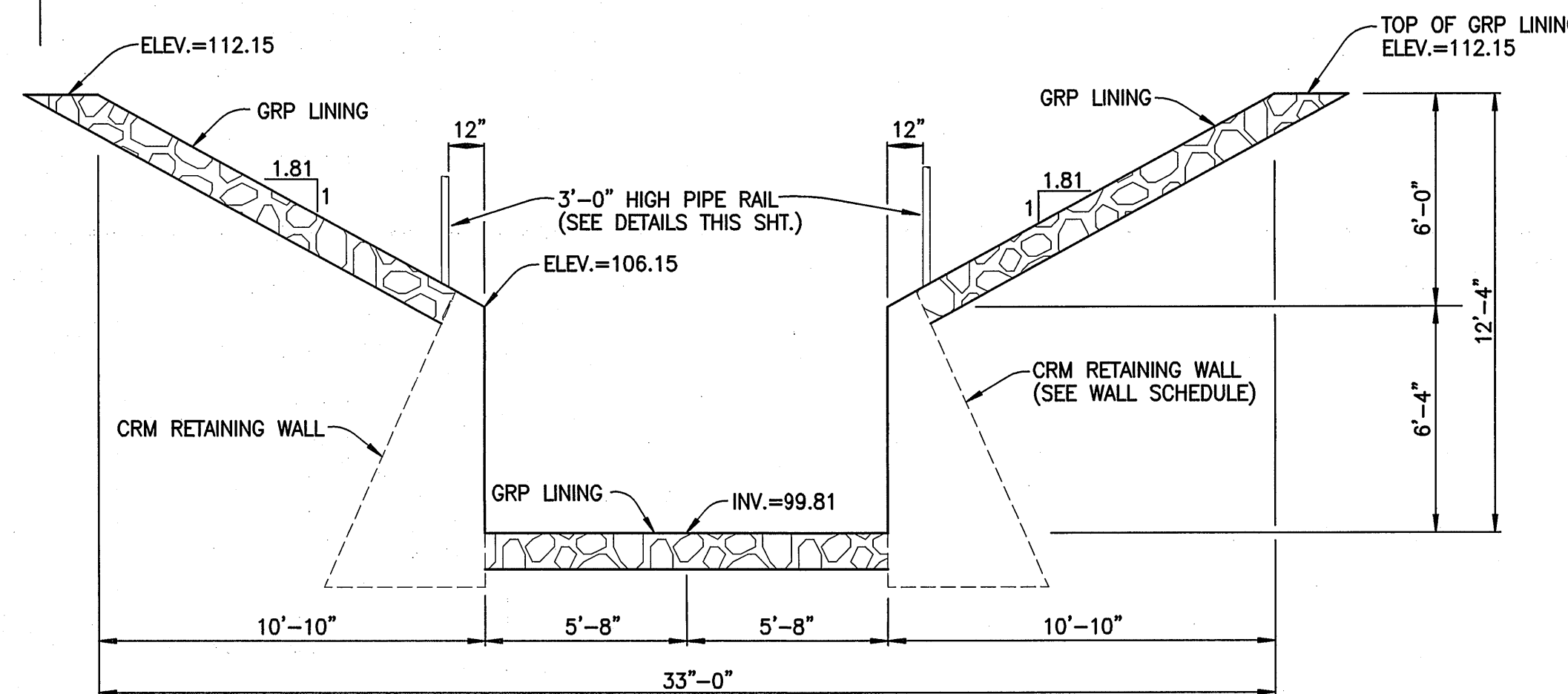
CROSS-SECTION AT STA. 7+55
SCALE: 1/4" = 1'-0"



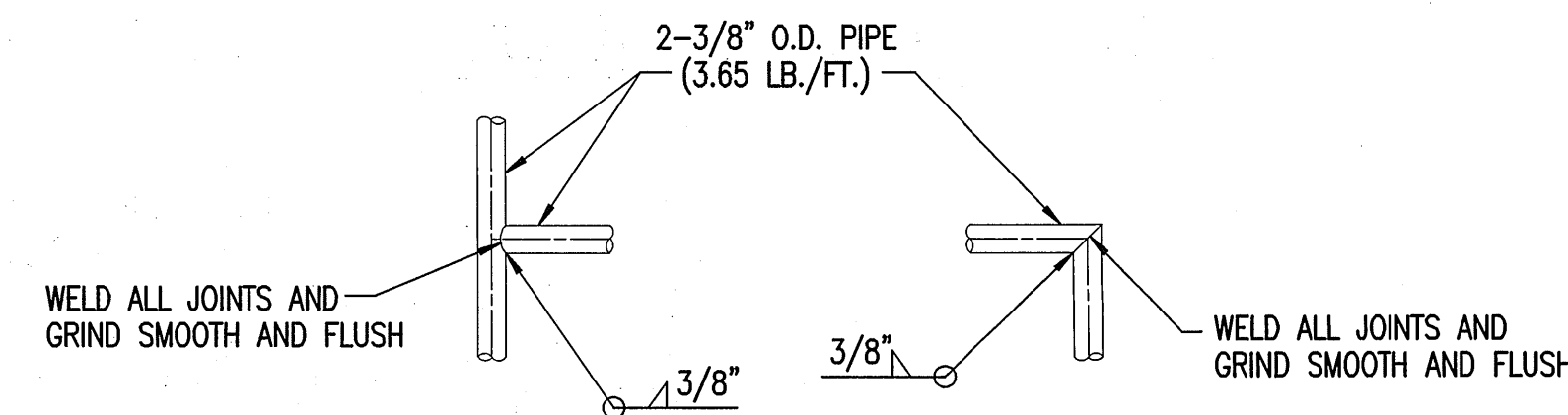
CROSS-SECTION AT STA. 7+50
SCALE: 1/4" = 1'-0"



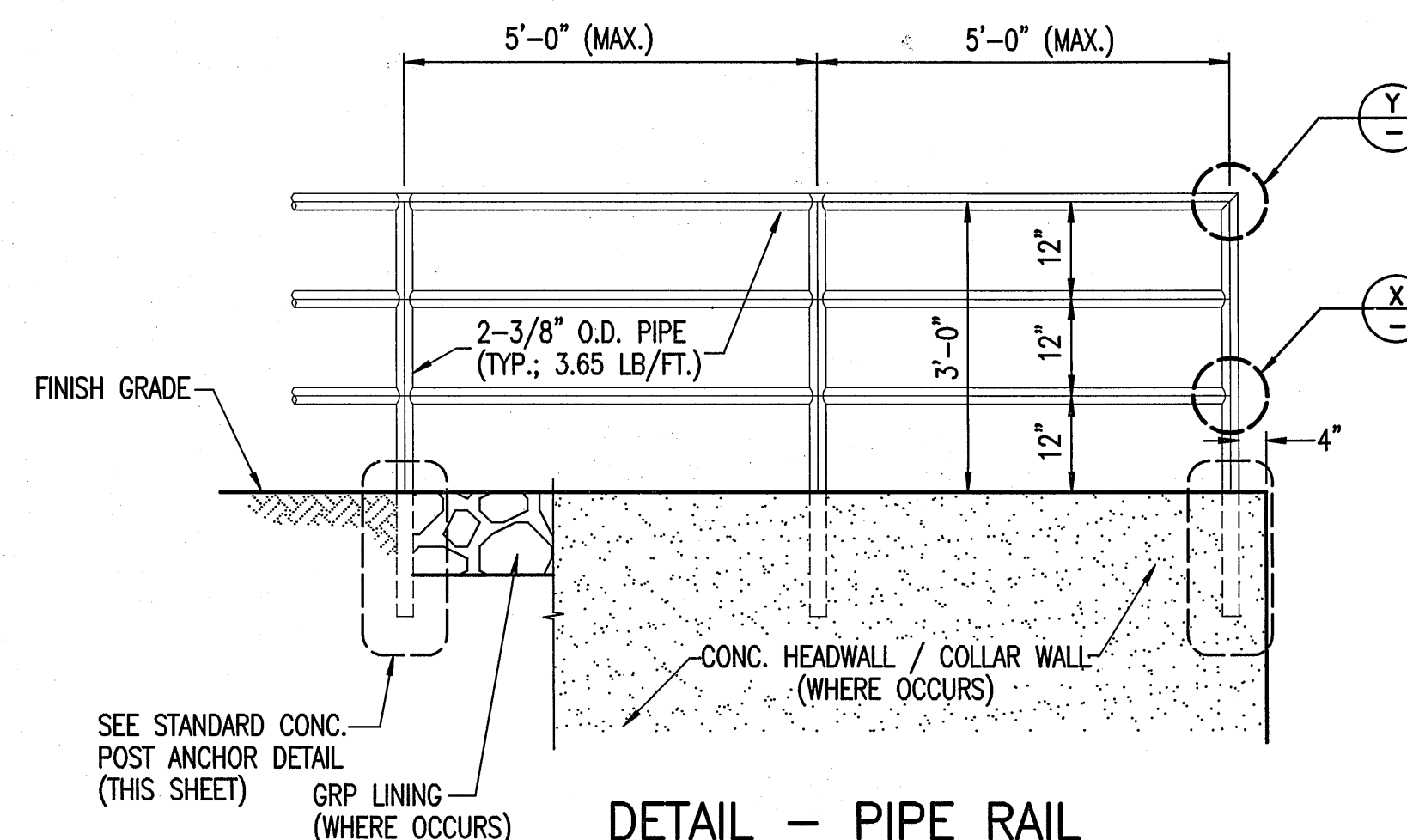
CROSS-SECTION AT STA. 7+75
SCALE: 1/4" = 1'-0"



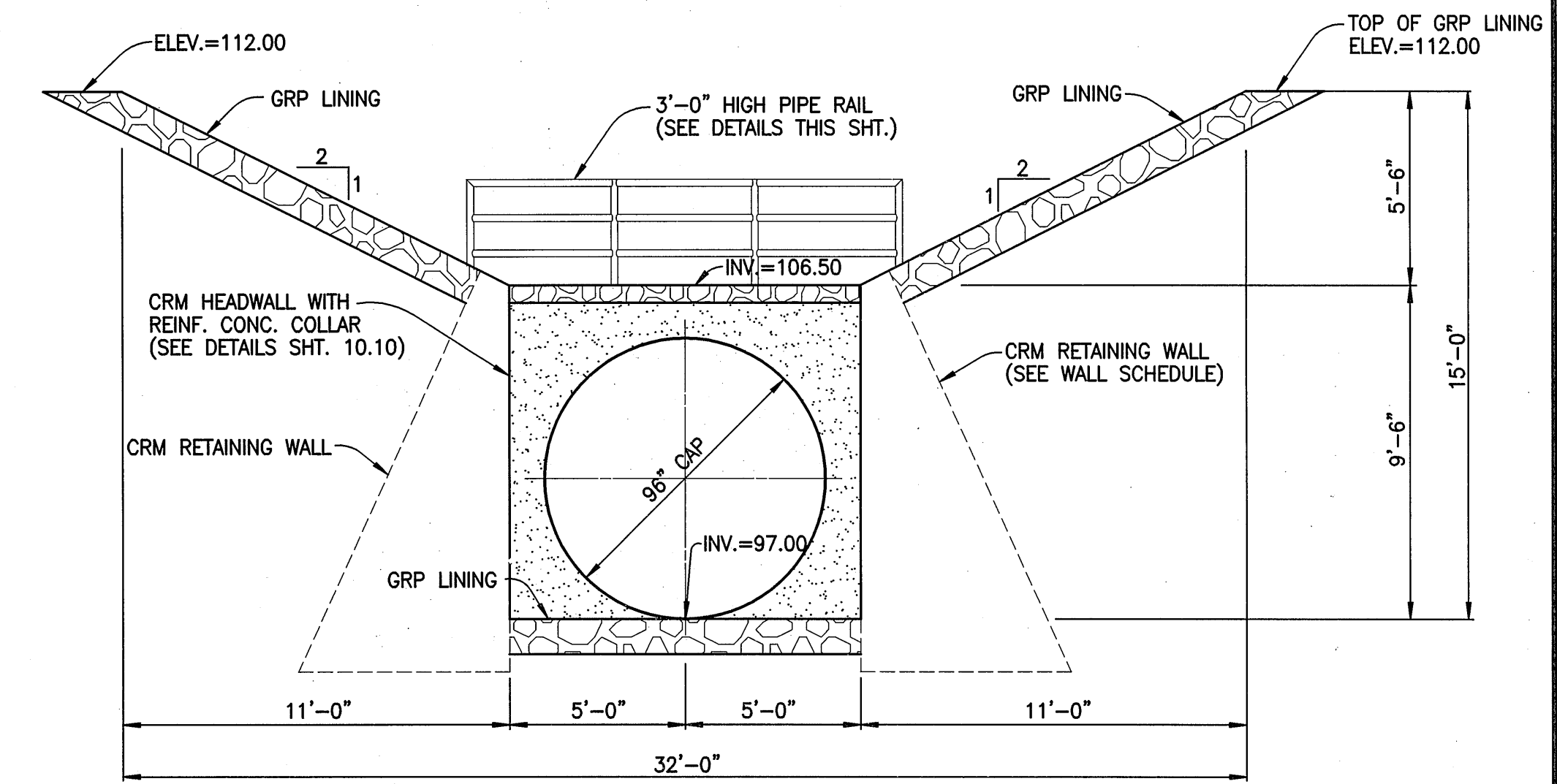
CROSS-SECTION AT STA. 7+70
SCALE: 1/4" = 1'-0"



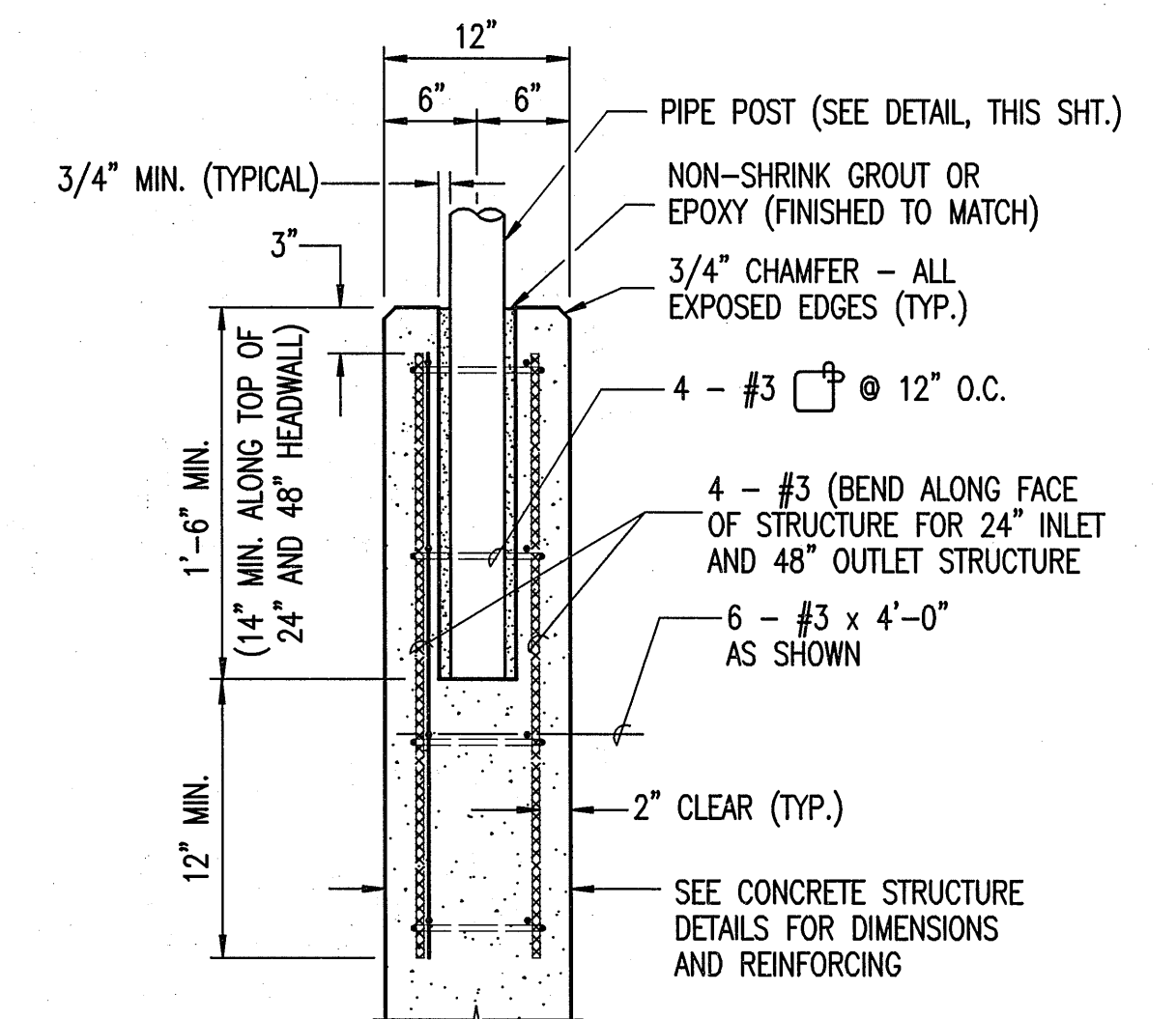
DETAIL X
SCALE: 1/2 IN. = 1 FT.



DETAIL - PIPE RAIL
NOT TO SCALE



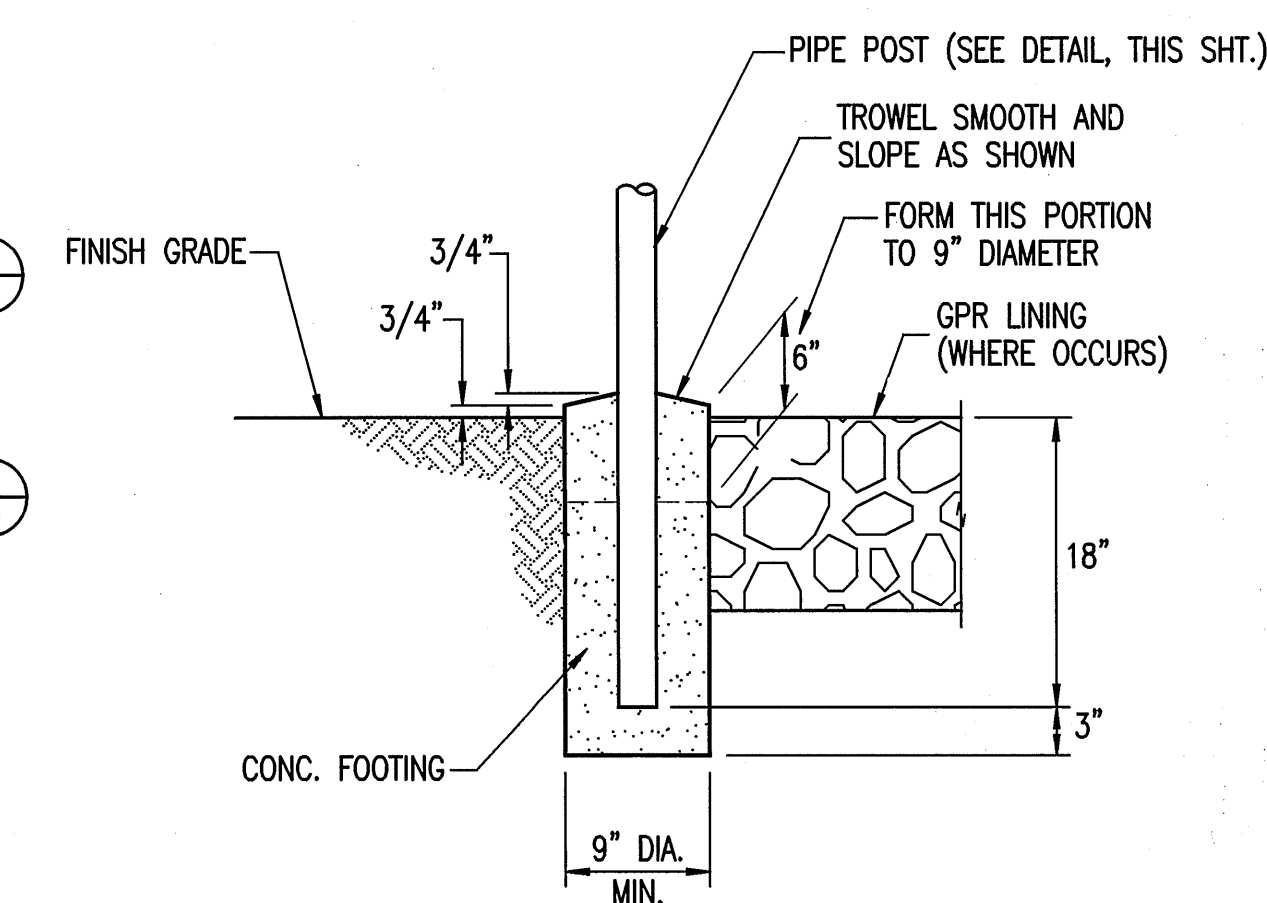
CROSS-SECTION AT STA. 7+80
SCALE: 1/4" = 1'-0"



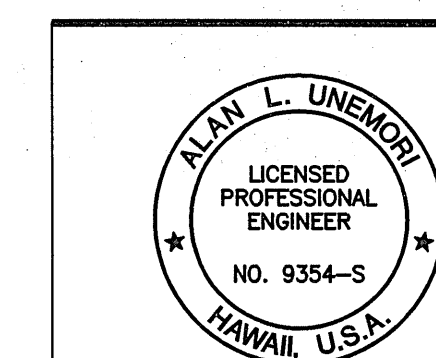
DETAIL - REINF. CONC. POST ANCHOR
SCALE: 1 IN. = 1 FT.

NOTES:

1. RAILING SHALL BE HOT-DIPPED, GALVANIZED AFTER FABRICATION. WELDS & DAMAGED GALVANIZING SHALL BE COATED WITH APPROVED GALVANIZING REPAIR COMPOUND.
2. ALL MISCELLANEOUS ITEMS SHALL BE A.S.T.M. A36.
3. ALL ROUGH EDGES ON PIPE FRAME SHALL BE GROUND SMOOTH.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO ORDERING OF MATERIALS.
5. ALL END CAPS, WHERE REQ'D., SHALL BE WELDED METAL PLATES. FRICTION FIT CAPS SHALL NOT BE PERMITTED.



DETAIL - STANDARD CONCRETE POST ANCHOR
SCALE: 1 IN. = 1 FT.

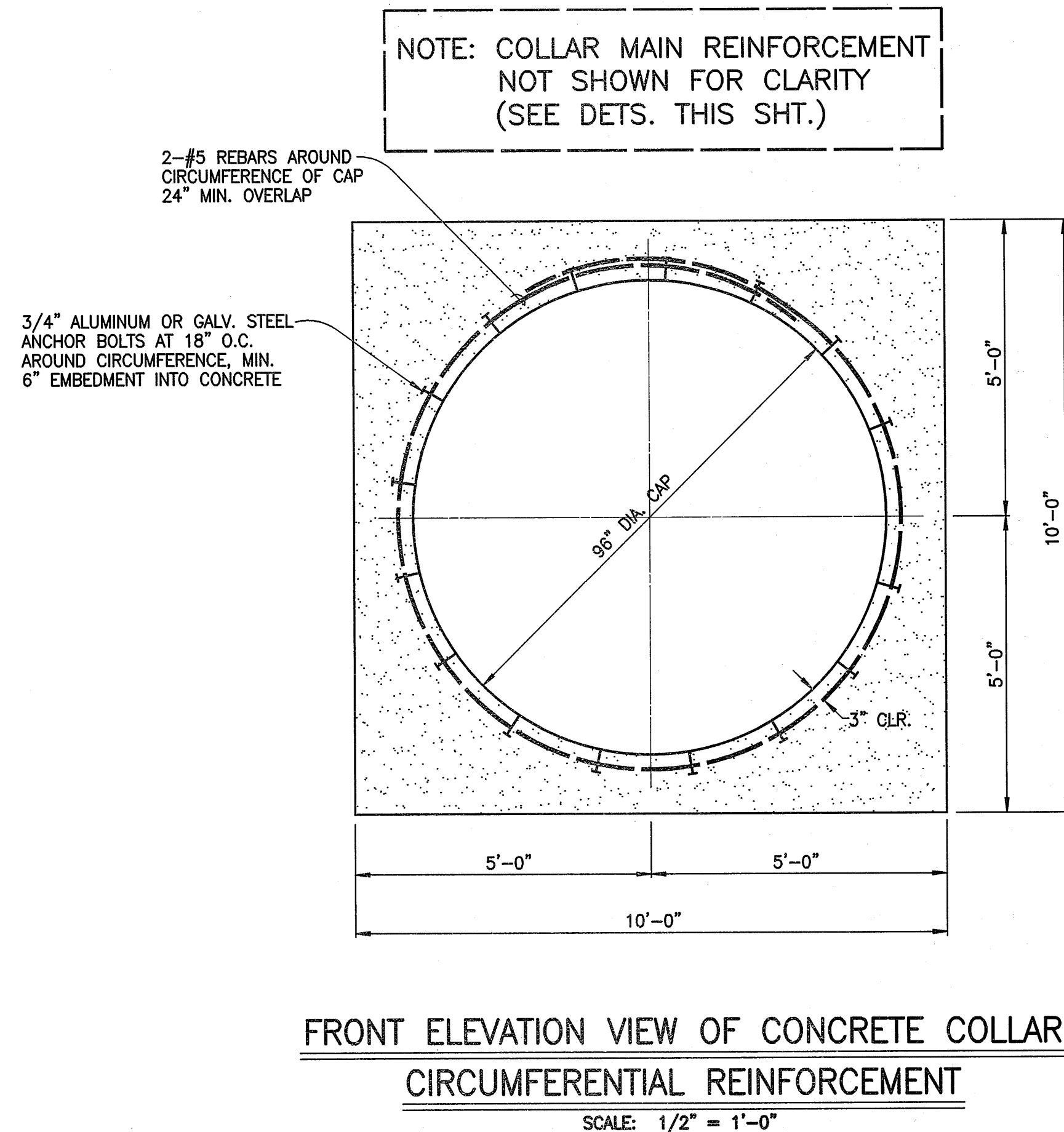


WARREN S. UNEMORI ENGINEERING, INC.
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2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793
KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAI, MAUI, HAWAII

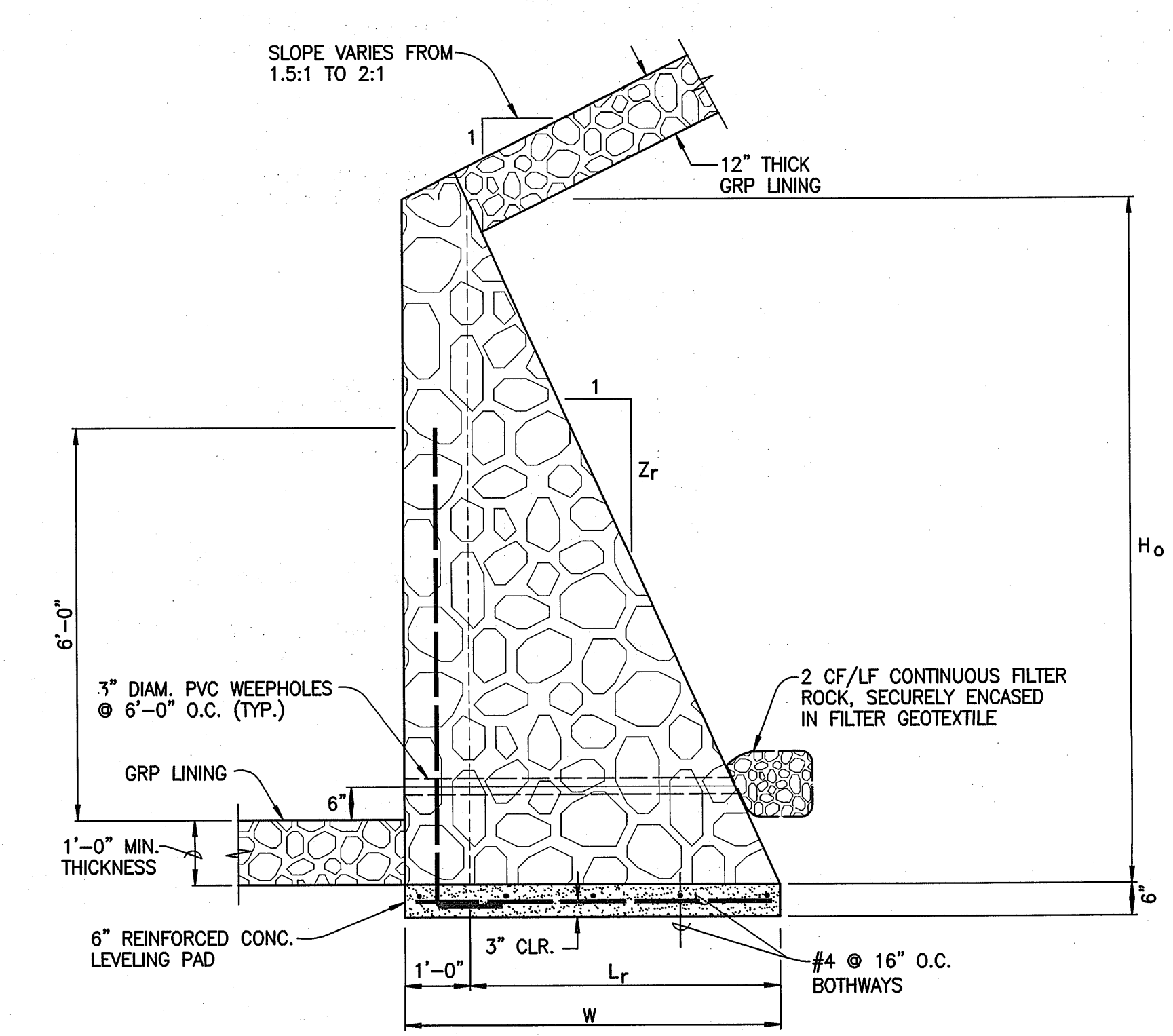
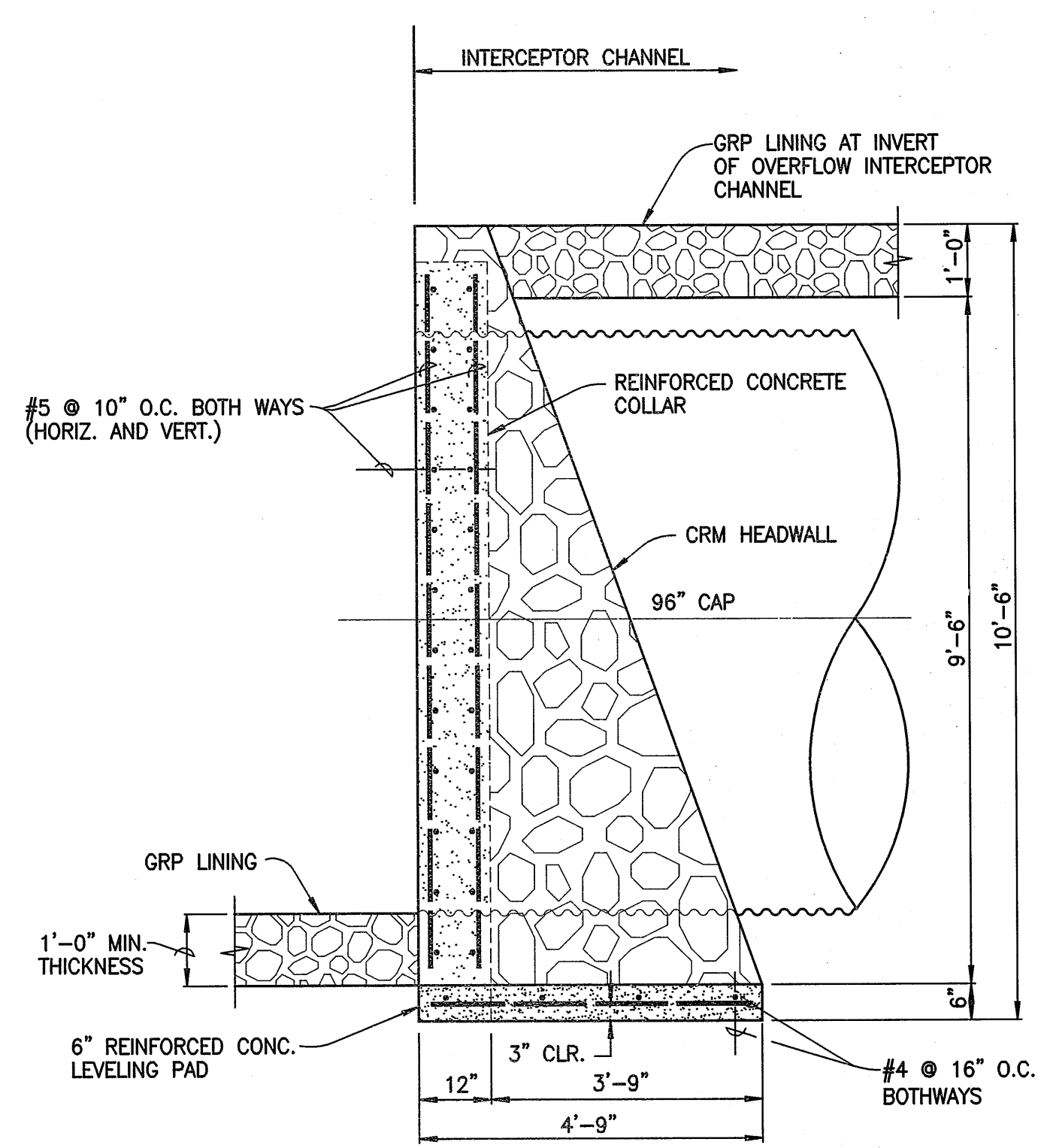
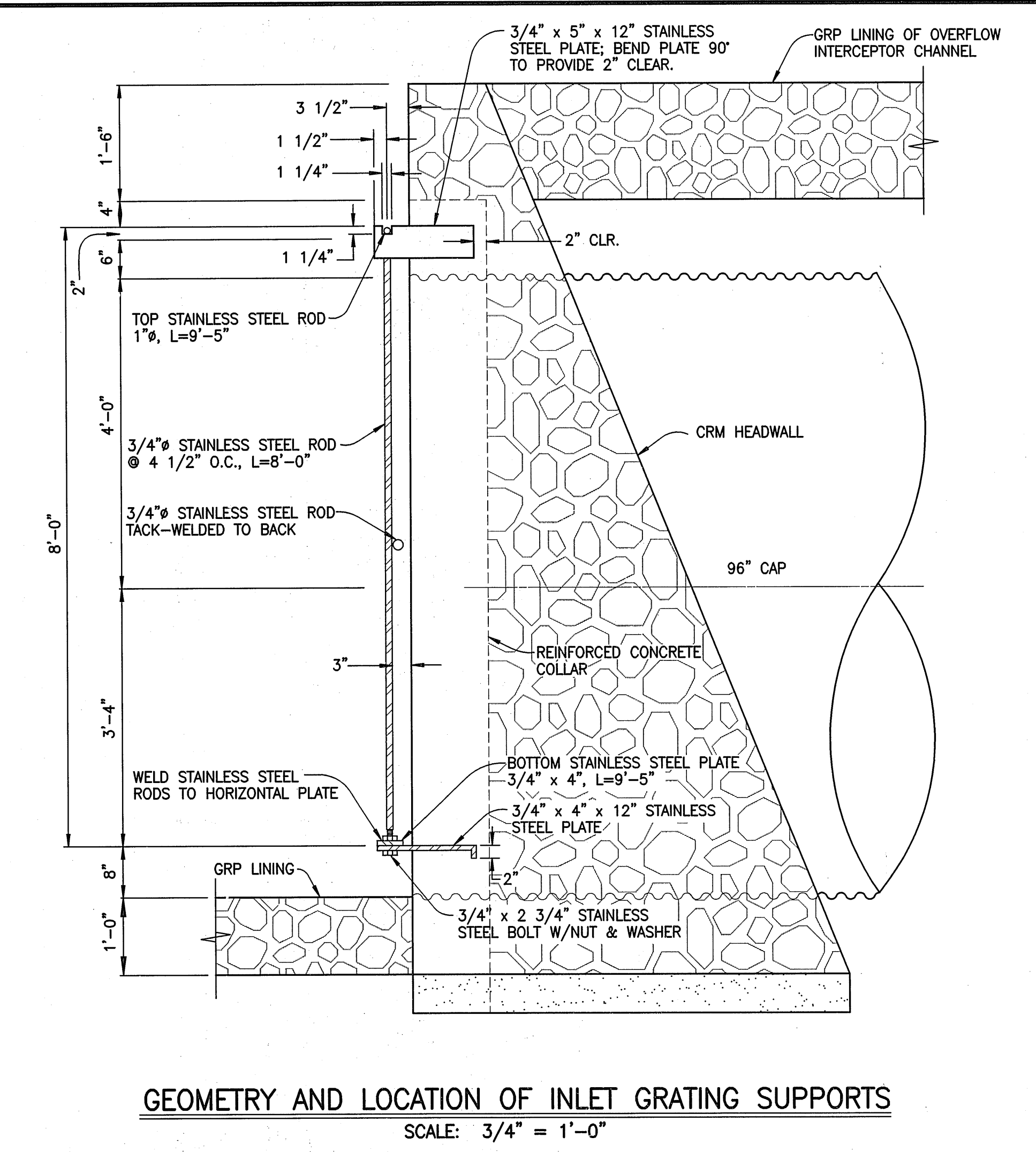
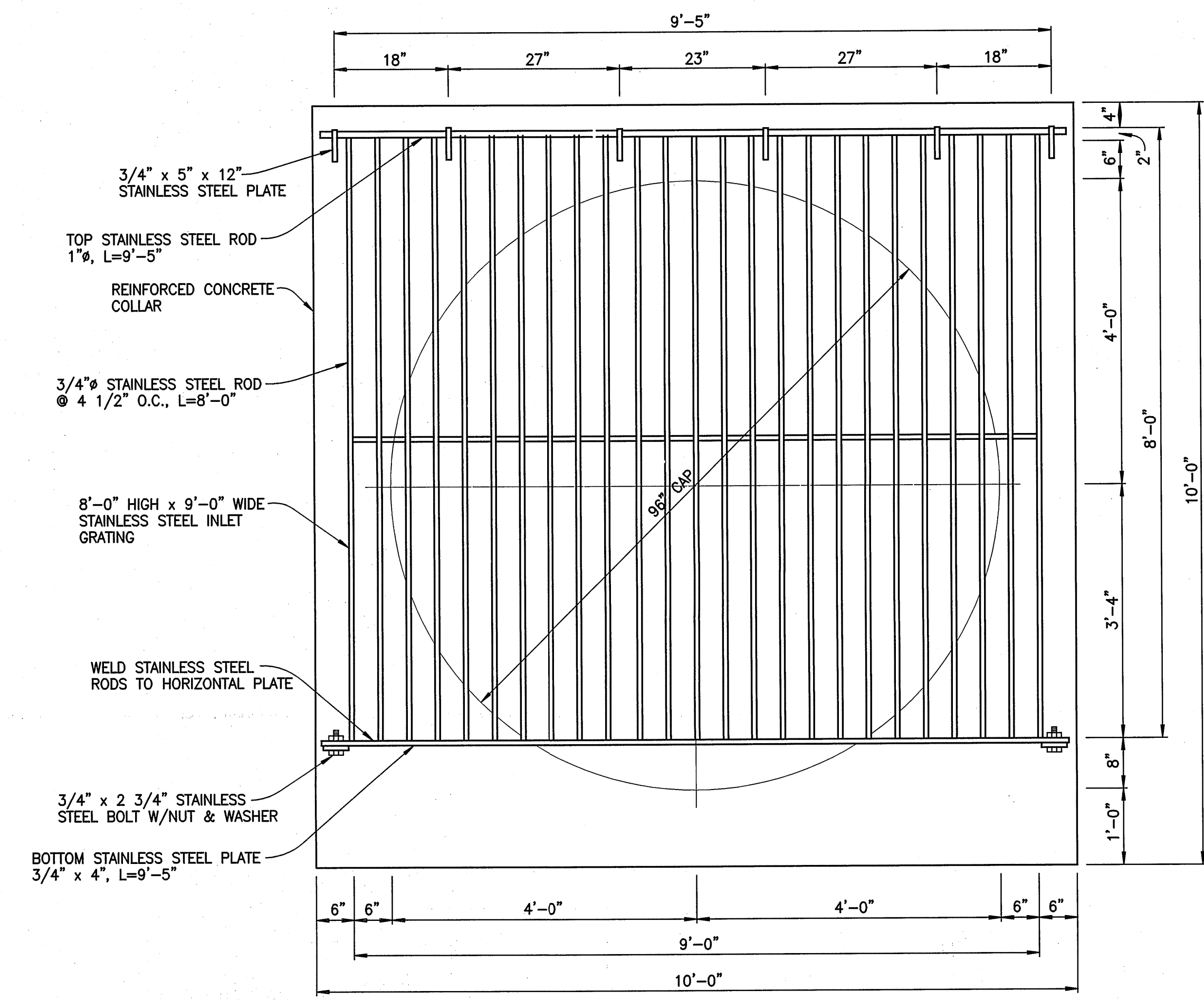
TITLE: DRAINAGE DETAILS			
DESIGNED BY	CHECKED BY	DATE	
DRAWN BY	APPROVED BY	DATE	
SCALE	AS NOTED	DATE	

LETTER	DESCRIPTION	DATE

10.09
SHEET
OF SHEETS



CONCRETE: $f'_c = 4$ ksi
REINFORCEMENT: ASTM A615 GRADE 60



Component	Sta	Wall Height, H _o (ft)	Backslope	Z _r	L _r	W
Wingwall	7+50	0	1.5:1	N/A	N/A	N/A
	7+55	2' - 6"	1.57:1	2.00	1' - 3"	2' - 3"
	7+60	4' - 2"	1.64:1	1.65	2' - 7"	3' - 7"
	7+65	5' - 9"	1.72:1	1.60	3' - 8"	4' - 8"
	7+70	7' - 4"	1.81:1	1.60	4' - 9"	5' - 9"
	7+75	8' - 11"	1.90:1	1.65	5' - 6"	6' - 6"
	7+80	10' - 6"	2.0:1	2.25	4' - 9"	5' - 9"
Headwall	7+80	10' - 6"	Level	2.90	3' - 9"	4' - 9"

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KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAI, MAUI, HAWAII

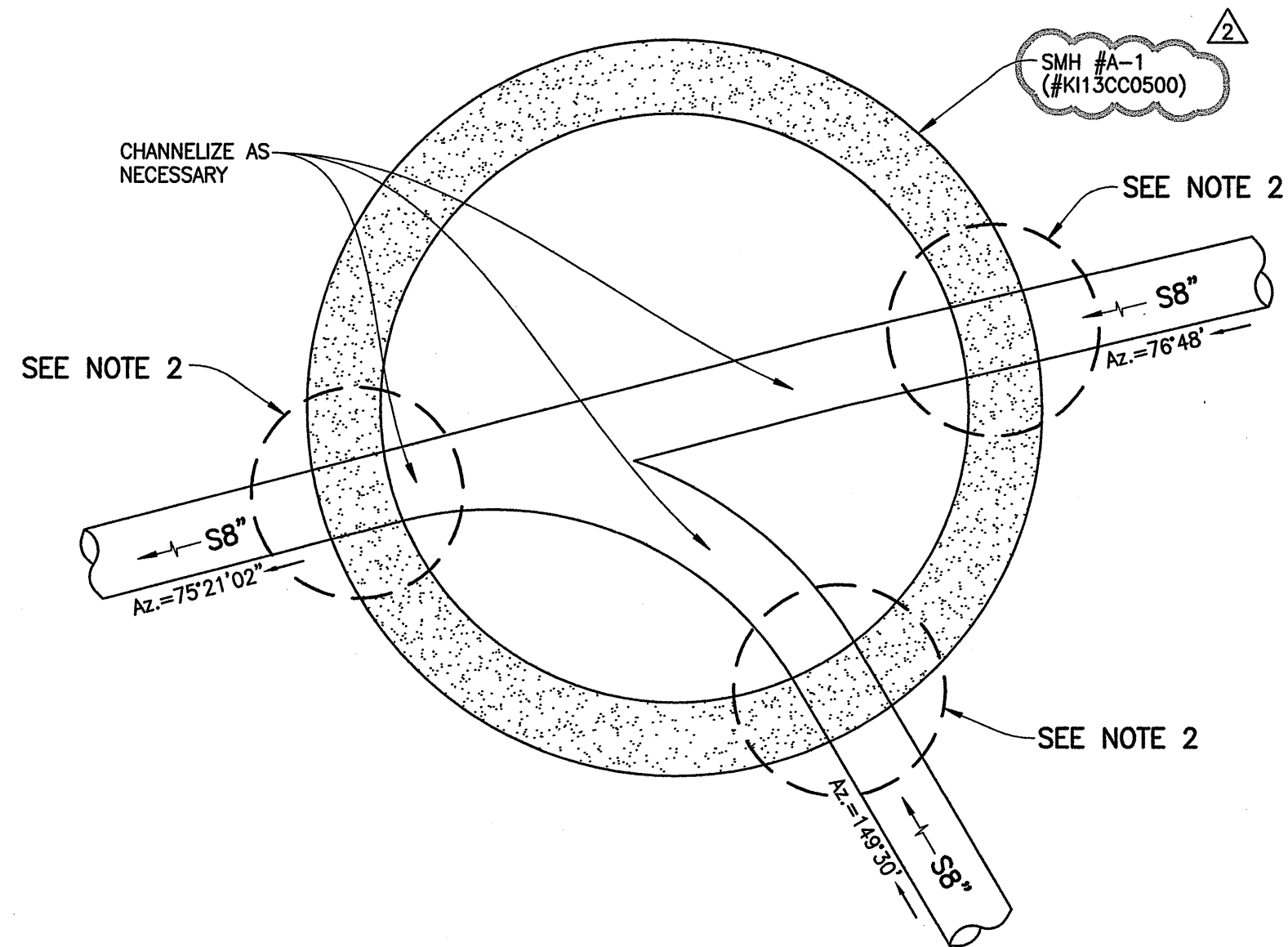
TITLE: DRAINAGE DETAILS

DESIGNED BY ALU	CHECKED BY DTU	DATE 10/30/2002
DRAWN BY WIS	APPROVED BY DTU	

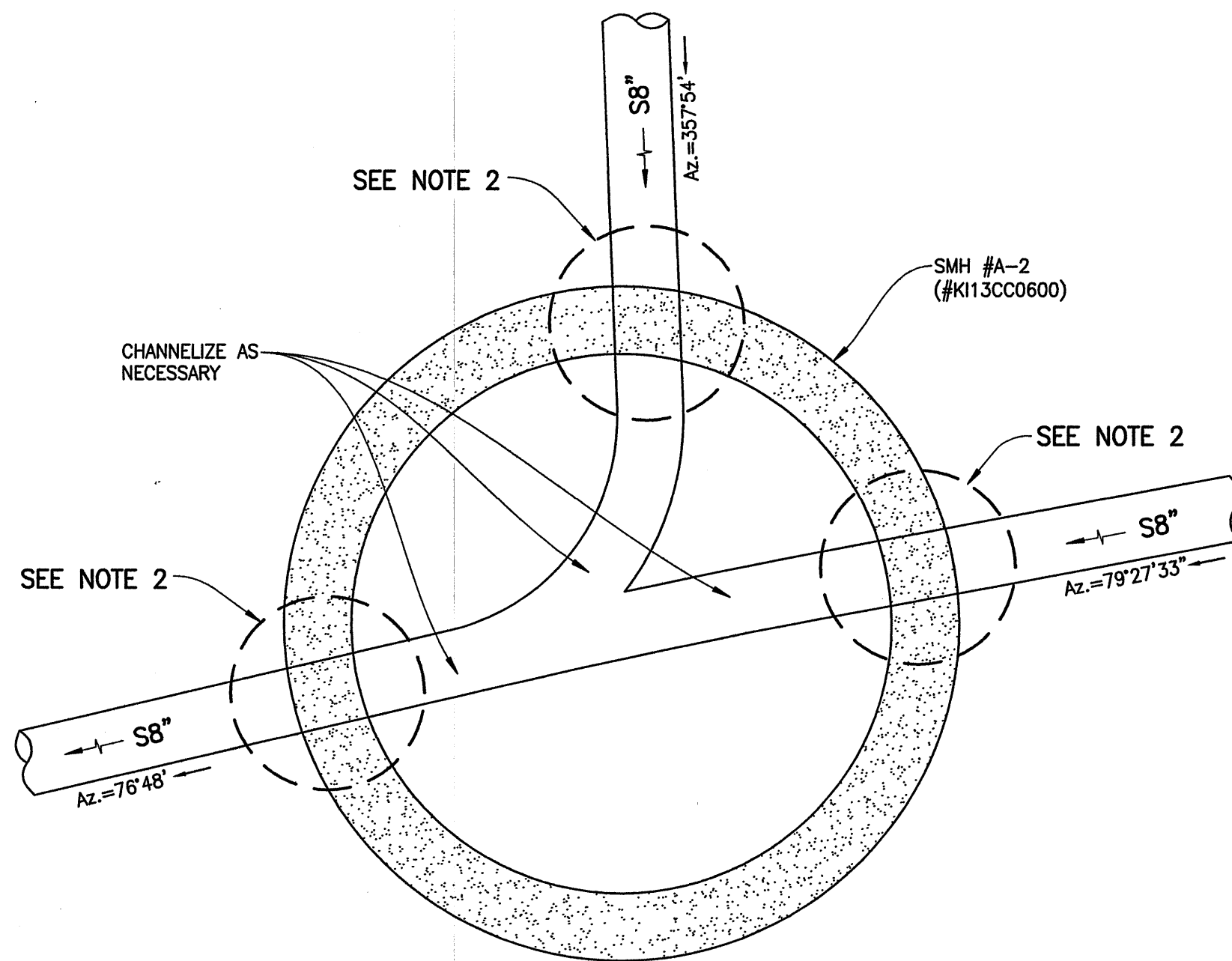
SCALE: AS NOTED

10.10
SHEET

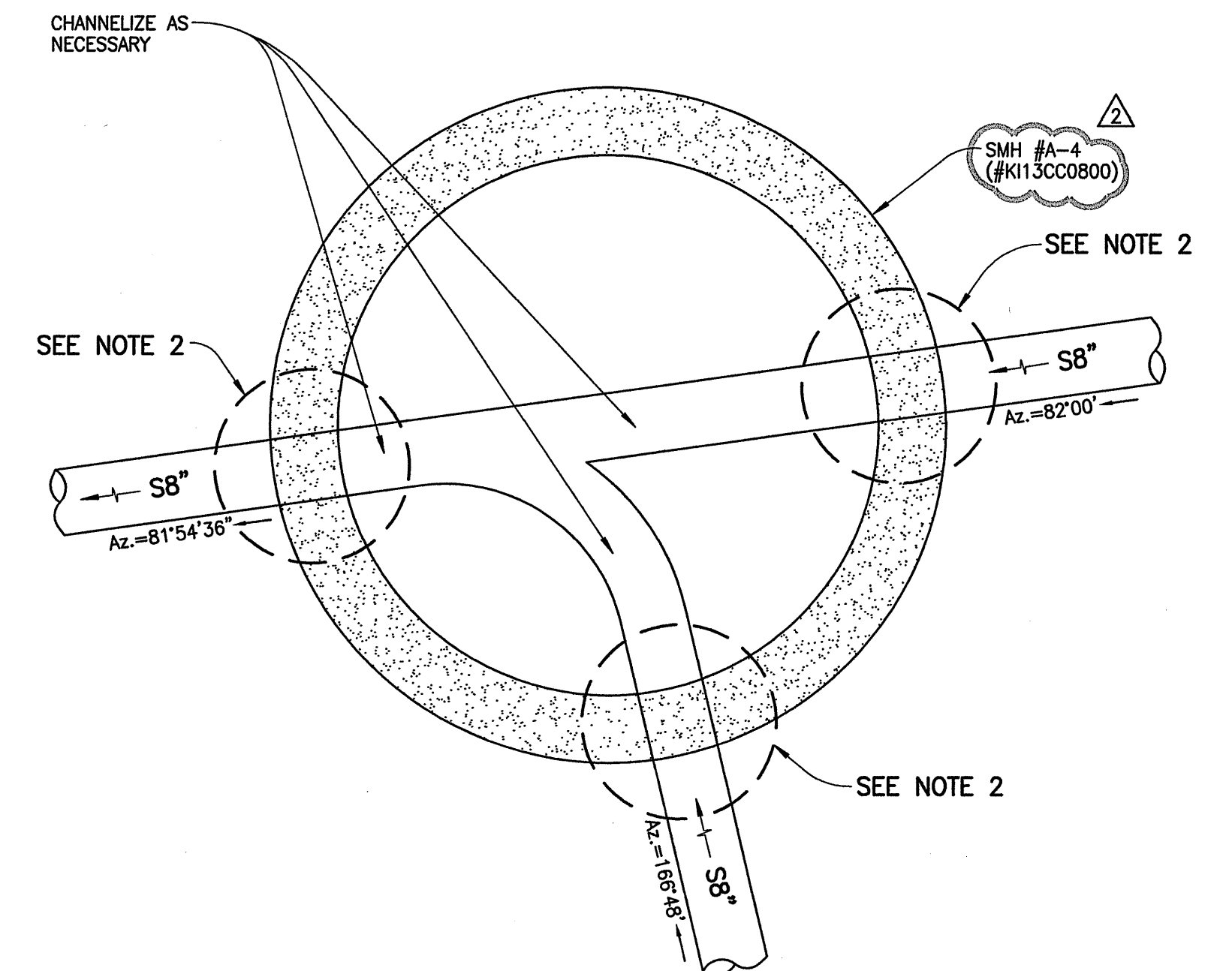
10-10-05
DATE



**DETAIL – CHANNELIZATION OF
SMH #A-1 (#K113CC0500)**
NOT TO SCALE



**DETAIL – CHANNELIZATION OF
SMH #A-2 (#K113CC0600)**
NOT TO SCALE



**DETAIL – CHANNELIZATION OF
SMH #A-4 (#K113CC0800)**
NOT TO SCALE

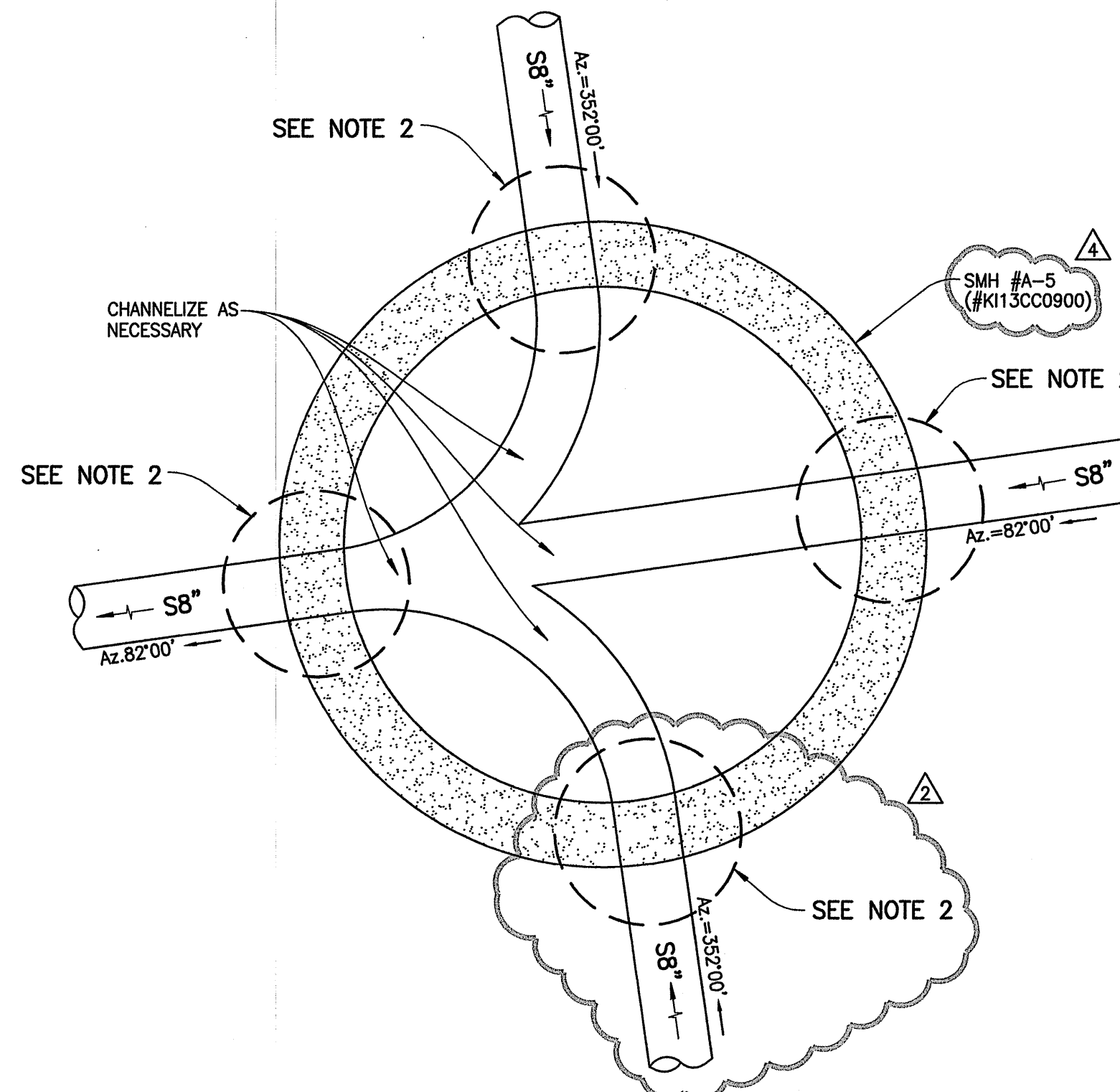
NOTES:

1. FOR CONNECTION OF NEW SEWERLINE INTO EXISTING MANHOLE, CONTRACTOR SHALL USE A-LOK X-CEL GASKET FIELD SLEEVE AS DISTRIBUTED BY WALKER INDUSTRIES LTD., OR APPROVED EQUAL. INSTALLATION SHALL BE AS RECOMMENDED BY MANUFACTURER.
2. FOR ALL NEW SEWERLINE / NEW MANHOLE CONSTRUCTION, CONTRACTOR SHALL USE A-LOK X-CEL GASKET AS DISTRIBUTED BY WALKER INDUSTRIES LTD., OR APPROVED EQUAL. INSTALLATION SHALL BE AS RECOMMENDED BY MANUFACTURER.

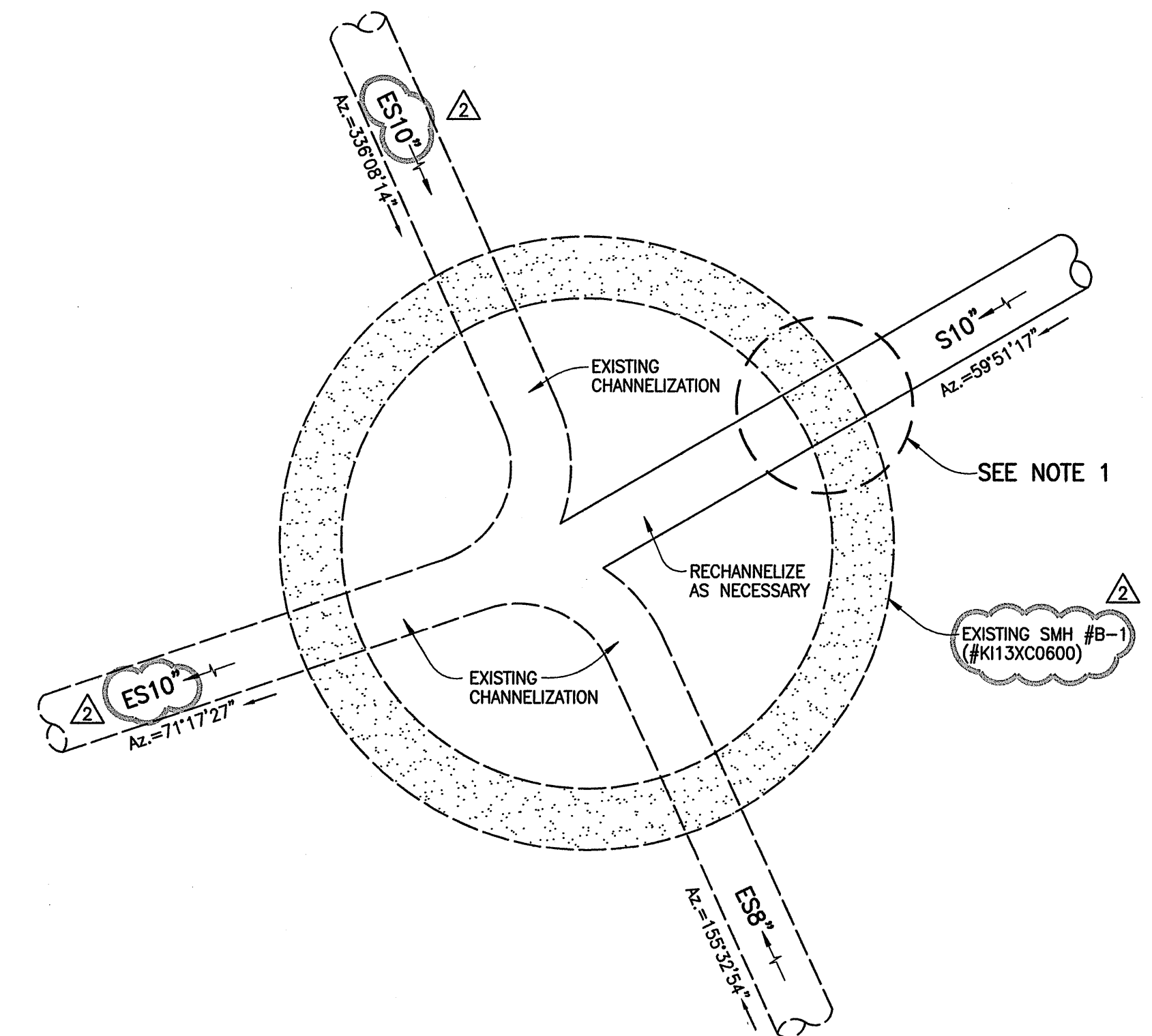
STANDARD SEWER DETAILS

THE FOLLOWING DETAILS AS SHOWN ON "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, STATE OF HAWAII", ARE SPECIFICALLY REFERENCED WITHIN THESE PLANS AND SHALL BE CONSIDERED PART OF THE CONSTRUCTION DRAWINGS. (THIS SHALL NOT BE CONSTRUED TO RELIEVE CONTRACTOR FROM COMPLYING WITH ALL PERTINENT PARTS OF THE FOREMENTIONED LIST, STANDARD DETAILS AND STANDARDS.)

PLATE	CONTENTS
S-6	LATERALS
S-7	ADVANCE RISER CONNECTION
S-9	CHIMNEY
S-10	INDEX TO SEWER MANHOLE DETAILS
S-11, S-12	MANHOLE NOTES
S-13	PRE-CAST CONCRETE PLAIN MANHOLE
S-15	PRE-CAST CONCRETE SHALLOW DROP MANHOLE
S-16	PRE-CAST CONCRETE SHALLOW DROP MANHOLE-BUTT JOINT DETAILS
S-22	PRE-CAST CONCRETE ECCENTRIC MANHOLE CONE
S-31	MANHOLE COVER-TYPE SA
S-32	MANHOLE FRAME-TYPE SA
S-47	PVC PIPE-BEDDING REQUIREMENTS
S-48	PVC PIPE-RESILIENT MANHOLE CONNECTION



**DETAIL – CHANNELIZATION OF
SMH #A-5 (#K113CC0900)**
NOT TO SCALE



**DETAIL – RE-CHANNELIZATION
OF EXISTING SMH #B-1 (#K113XC0600)**
NOT TO SCALE

REMOVED LOT 1 SEWER LATERAL AT SMH #A-1 PER WWRD COMMENT	11/28/11
ADJUSTMENTS TO LOT 1 LATERALS	10/18/11
REVISED PER WWRD COMMENTS	12/12/08
REVISED PER WWRD COMMENTS	10/01/08

DARREN T. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 7937-C
HAWAII, U.S.A.

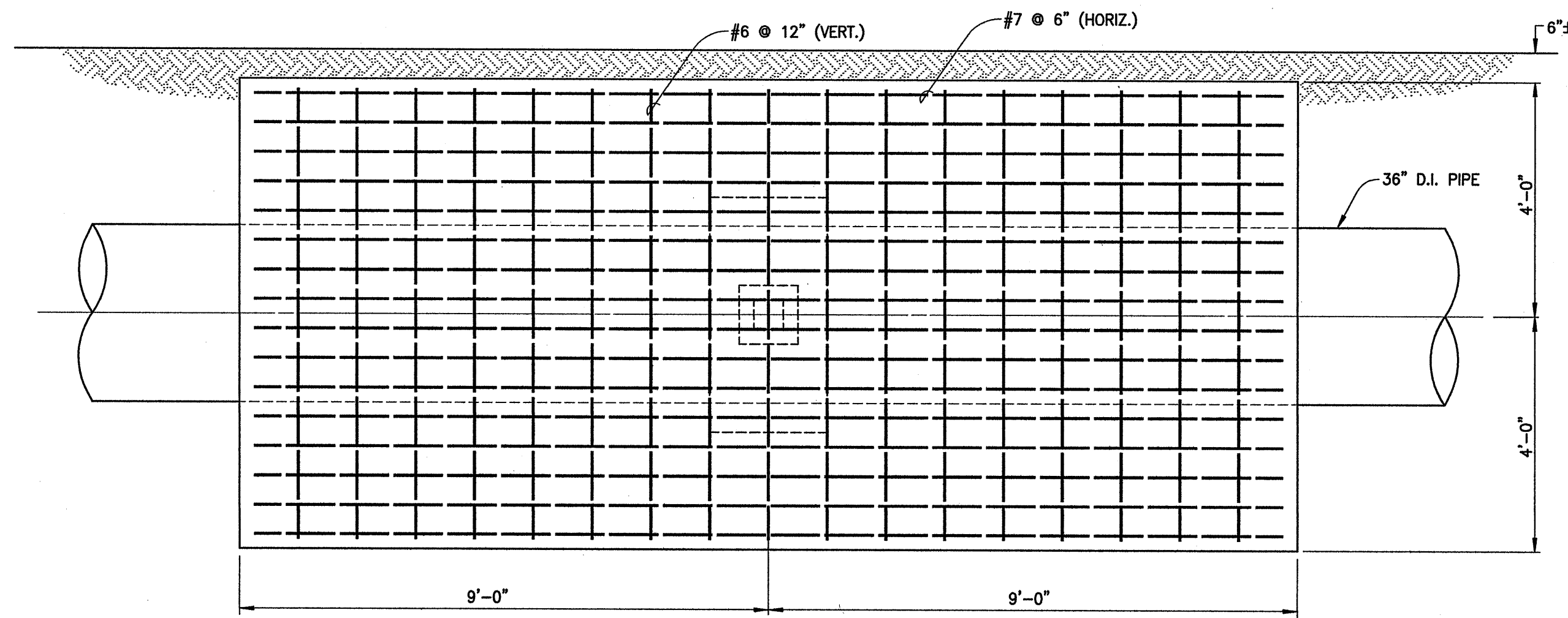
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
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KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAEI, MAUI, HAWAII

TITLE SEWER DETAILS

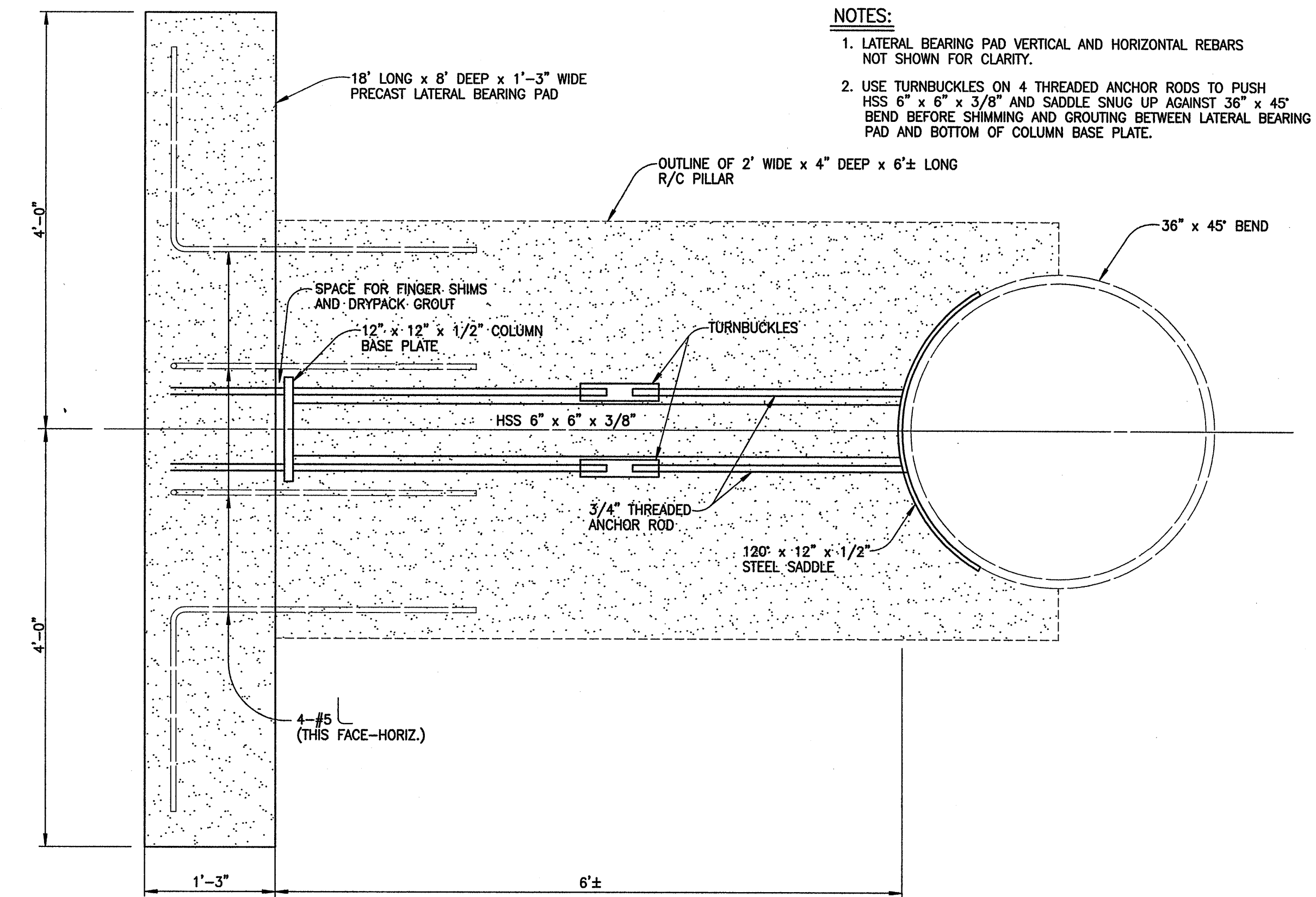
DTU DESIGNED BY	DTU CHECKED BY	04010.10
WIS DRAWN BY	DTU APPROVED BY	10-10-05
SCALE	AS NOTED	DATE

11.01
SHEET
OF SHEETS

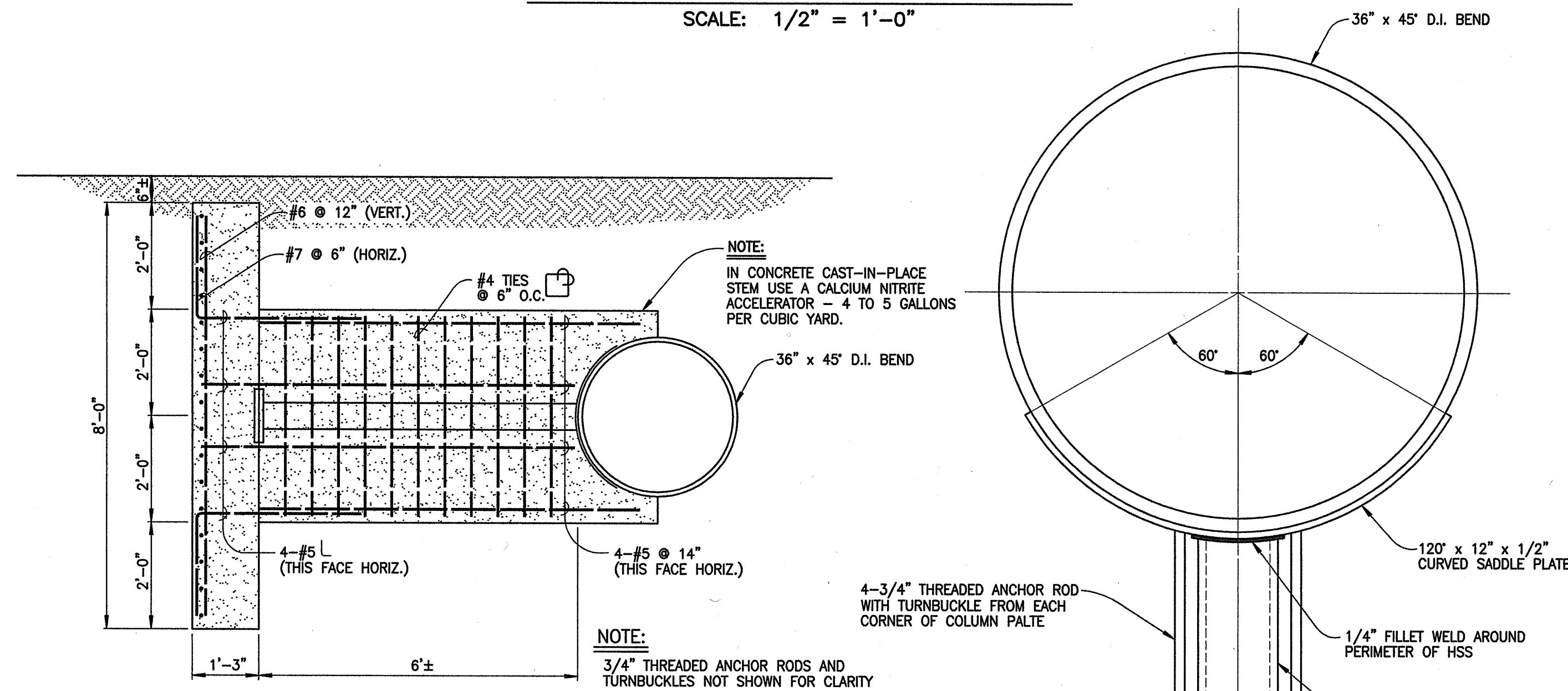


SECTION "B" - "B" BACK ELEVATION VIEW
SCALE: 1/2" = 1'-0"

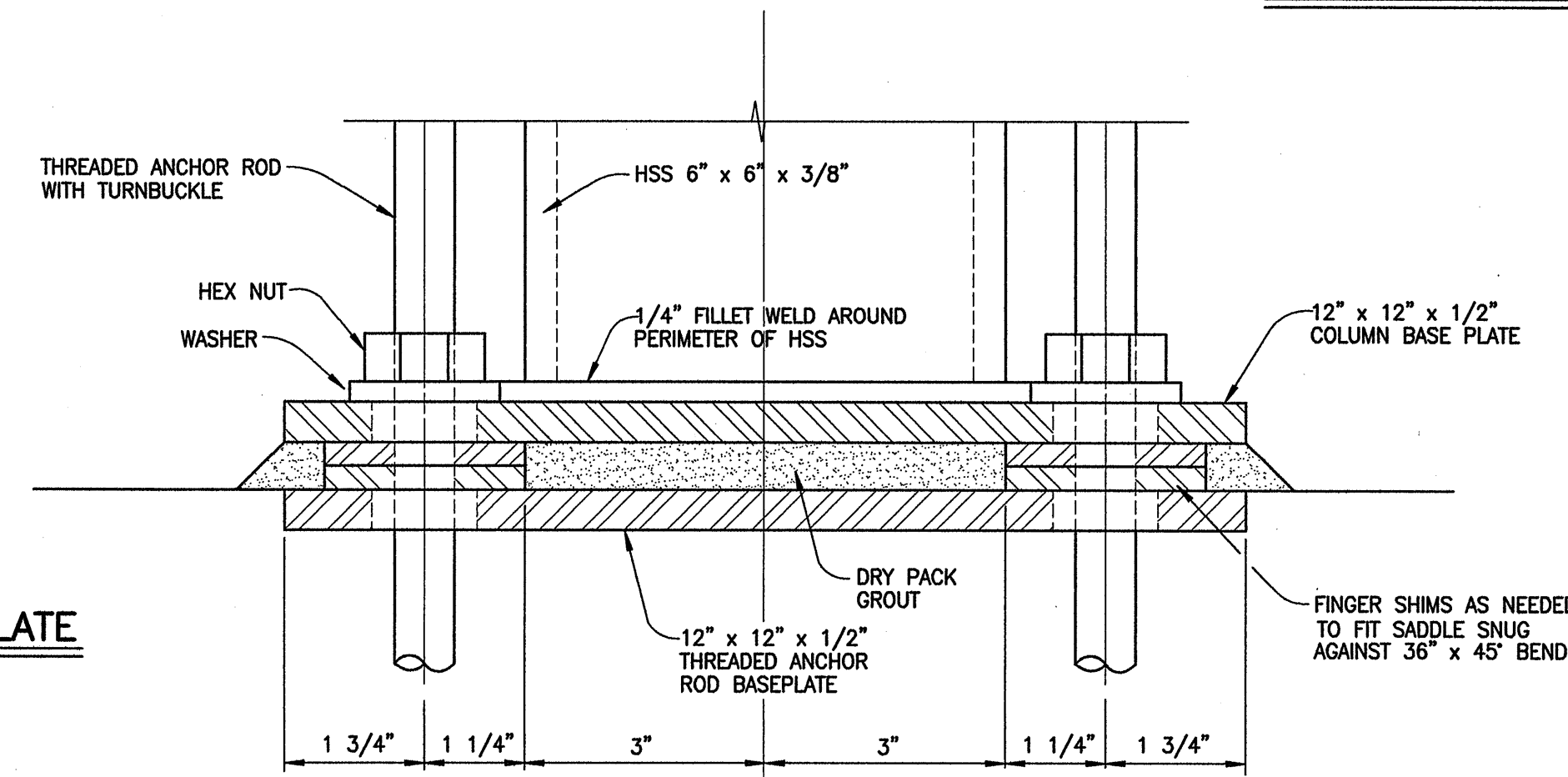
- INSTALLATION PROCEDURE FOR 36" X 45" BEND HYBRID THRUST BEAM WITH THREADED ROD AND TURNBUCKLES.**
1. PRECAST 18'-0" X 8'-0" X 1'-3" THICK BEARING PAD WITH REINFORCEMENT SHOWN, INCLUDING THE L-SHAPED #5 COLUMN REINFORCEMENT, 4 - 3/4" THREADED ANCHOR RODS (BOTTOM HALF), AND 12" X 12" X 1/2" THREADED ANCHOR ROD BASEPLATE.
 2. MANUFACTURE THE 120" X 12" X 1/2" SADDLE WELDED TO THE HSS 6" X 6" X 3/8" WHOSE BASE IS WELDED TO A 12" X 12" X 1/2" COLUMN BASEPLATE.
 3. ALSO WELD THE 4 - 3/4" THREADED ANCHOR RODS (TOP HALF) TO THE SADDLE.
 4. ASSEMBLE THE HSS 6" X 6" X 3/8" WITH SADDLE AND THREADED RODS (TOP HALF) TO THE PRECAST 18'-0" X 8'-0" X 1'-3" BEARING PAD WITH USING THE TURNBUCKLES TO CONNECT TO THE THREADED RODS (BOTTOM HALF). THIS CAN BE DONE EITHER BEFORE TRANSPORT TO THE FIELD OR ONCE IN THE FIELD.
 5. IN THE FIELD INSTALL THE 36" X 45" D.I. BEND.
 6. INSTALL THE BEARING PAD PLUS HSS WITH SADDLE ASSEMBLY WITHIN A FEW INCHES OF THE BASE OF THE 36" X 45" D.I. BEND.
 7. USE THE TURNBUCKLES TO ADJUST THE LENGTH OF THE HSS STRUT ASSEMBLY TO FIT SNUGLY AGAINST THE BASE OF THE 36" X 45" BEND.
 8. INSERT FINGER SHIMS TO SUPPORT THE BASE PLATE FLUSH AGAINST THE PRECAST BEARING PAD.
 9. ADD DRY PACK GROUT BETWEEN THE BASE PLATE AND THE PRECAST BEARING PAD.
 10. COMPACT AND BACKFILL THE BEARING SIDE OF THE PRECAST BEARING PAD TO SUPPORT THE THRUST OF THE 36" X 45" BEND.
 11. BEFORE (OR AFTER) THE LIVE CONNECTION IS MADE AND THE 36" D.I. WATERLINE IS FULLY OPERATIONAL, ADD THE REINFORCEMENT REQUIRED FOR THE CAST-IN-PLACE CONCRETE STEM, INCLUDING THE 10 - #5 COLUMN BARS AND THE #4 COLUMN TIES @ 6" O.C.
 12. FORM AND CAST-IN-PLACE THE CONCRETE PEDESTAL.
 13. COMPACT AND BACKFILL THE CONCRETE PEDESTAL AND 36" X 45" BEND ASSEMBLY.



DETAILS OF 3/4" THREADED ANCHOR RODS WITH
TURNBUCKLES, COLUMN BASE PLATE AND 120" X 12" X 1/2"
STEEL SADDLE SURROUNDING HSS X 6" X 6" X 3/8"
SCALE: 1" = 1'-0"

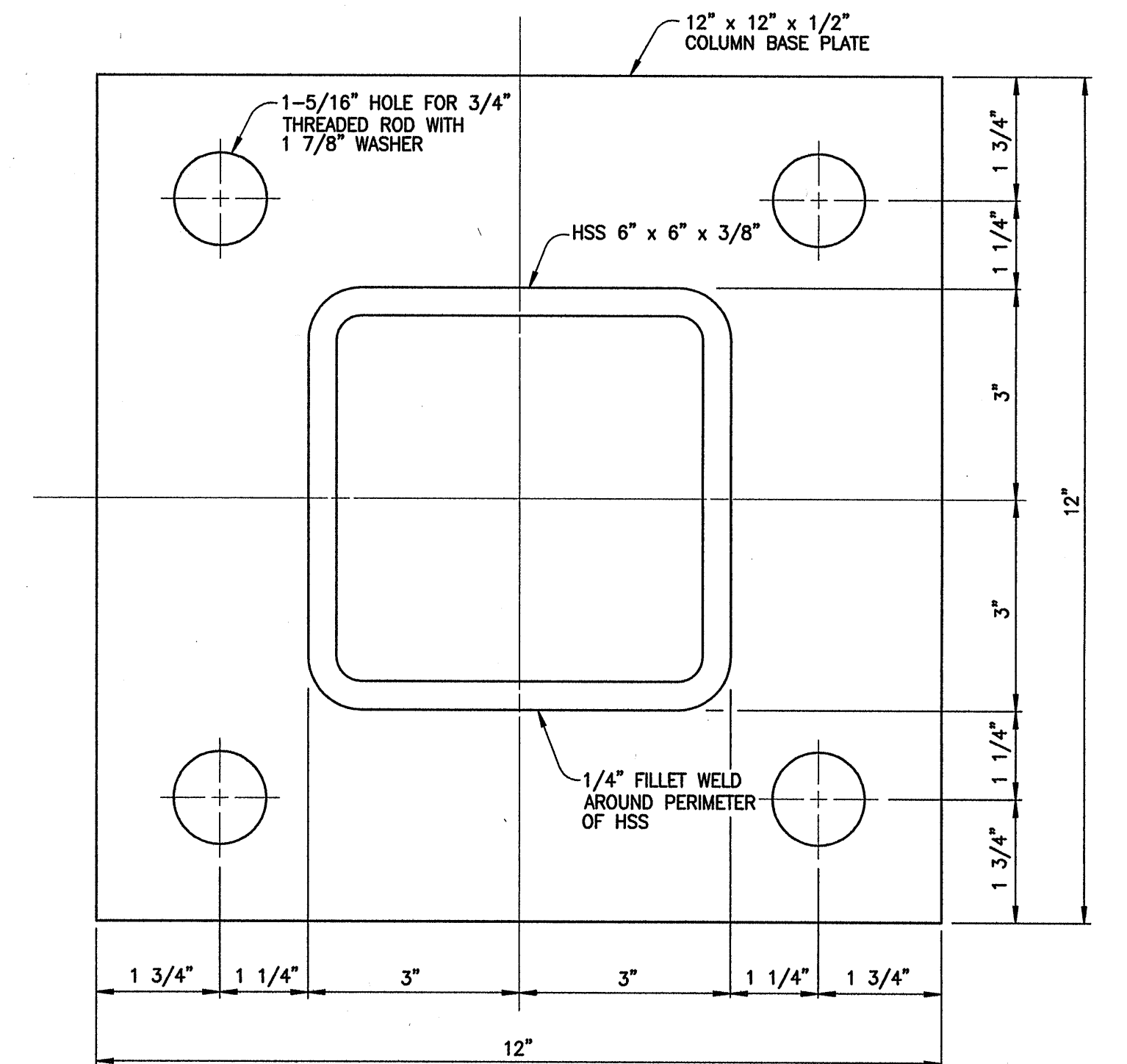


SECTION "A" - "A" SIDE ELEVATION VIEW
SCALE: 1/2" = 1'-0"



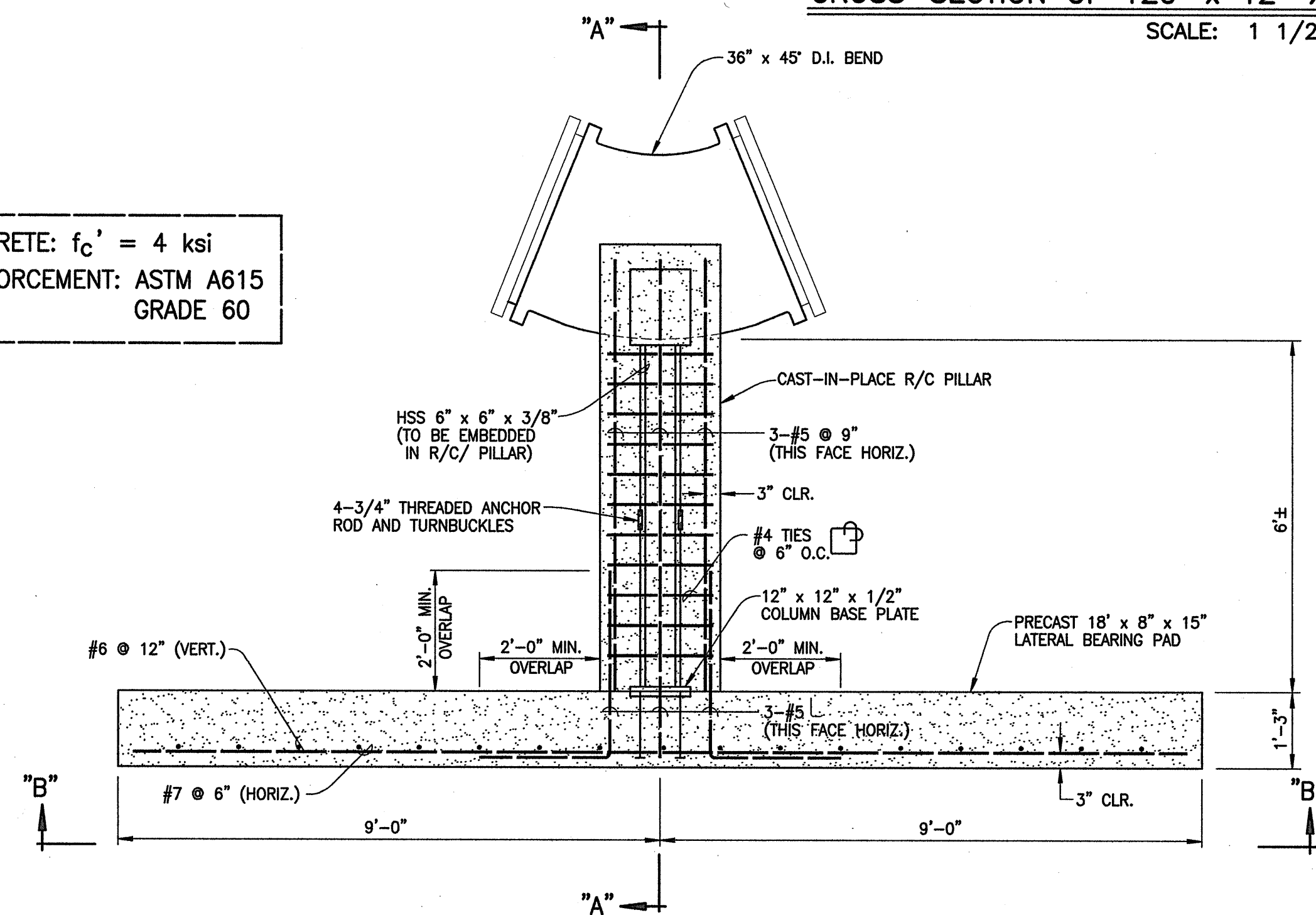
CROSS-SECTION OF 120" X 12" X 1/2" CURVED SADDLE PLATE
SCALE: 1 1/2" = 1'-0"

COLUMN BASE PLATE ASSEMBLY
SCALE: 1/2" = 1"

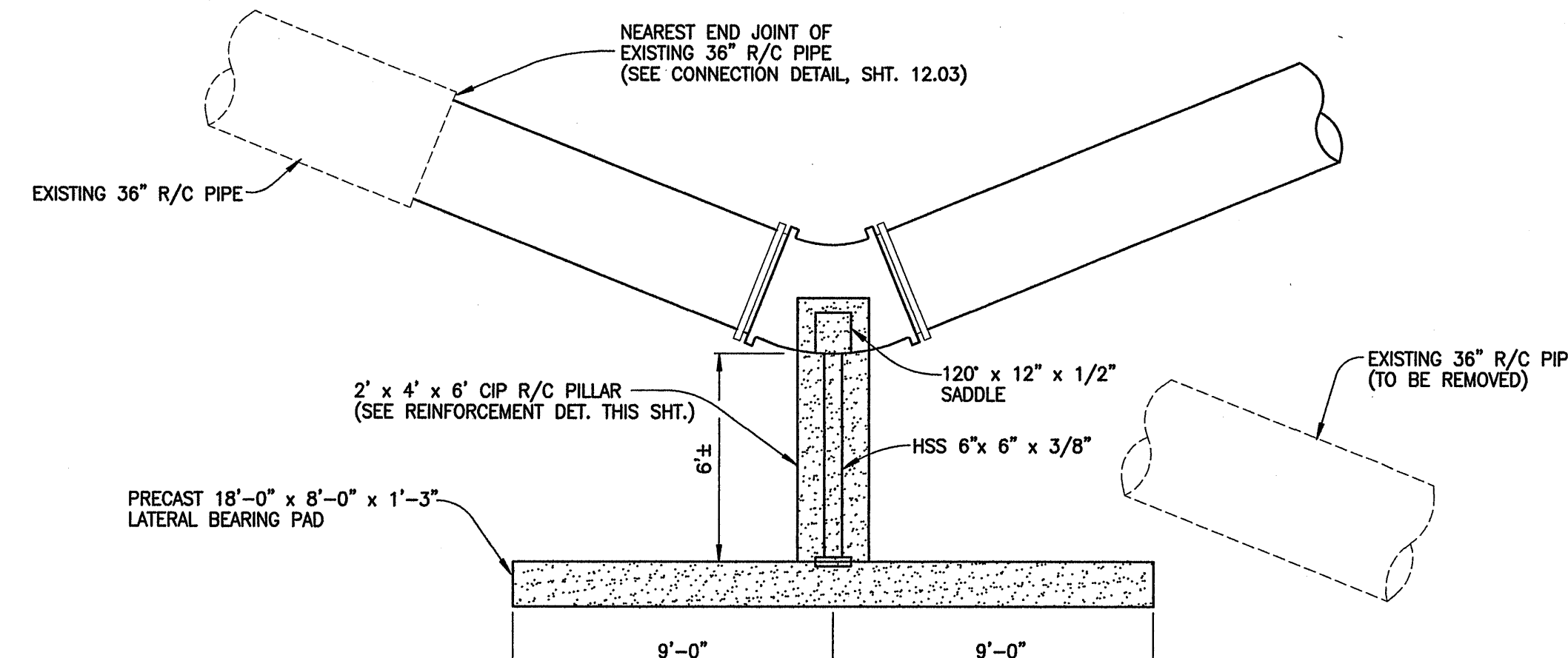


DETAILS OF COLUMN BASE PLATE
SCALE: 1/2" = 1"

CONCRETE: $f_c' = 4$ ksi
REINFORCEMENT: ASTM A615
GRADE 60



PLAN VIEW OF 36" X 45" BEND HYBRID
THRUST BEAM AT STA. 600+50±
SCALE: 1/2" = 1'-0"



PLAN VIEW SHOWING LOCATION OF 36" X 45" BEND
CONNECTING TO EXISTING 36" R/C PIPE STA. 600+50±
SCALE: 1/4" = 1'-0"

REVISION	DESCRIPTION	DATE
1	REVISED PER DWS COMMENTS	07/02/12

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9384-S
HAWAII, U.S.A.

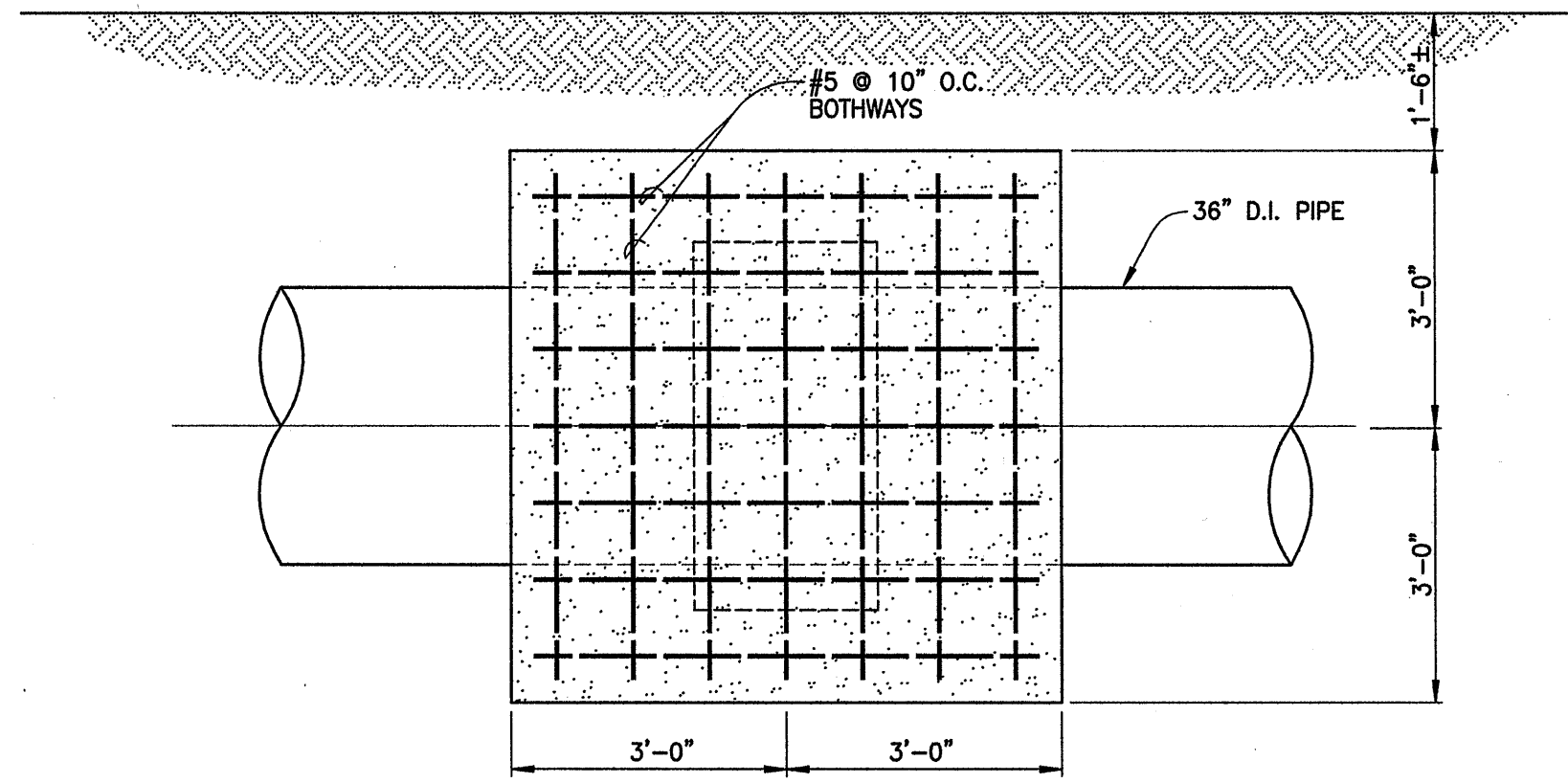
SIGNATURE: *[Signature]* DATE: 7/2/2012

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 15-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

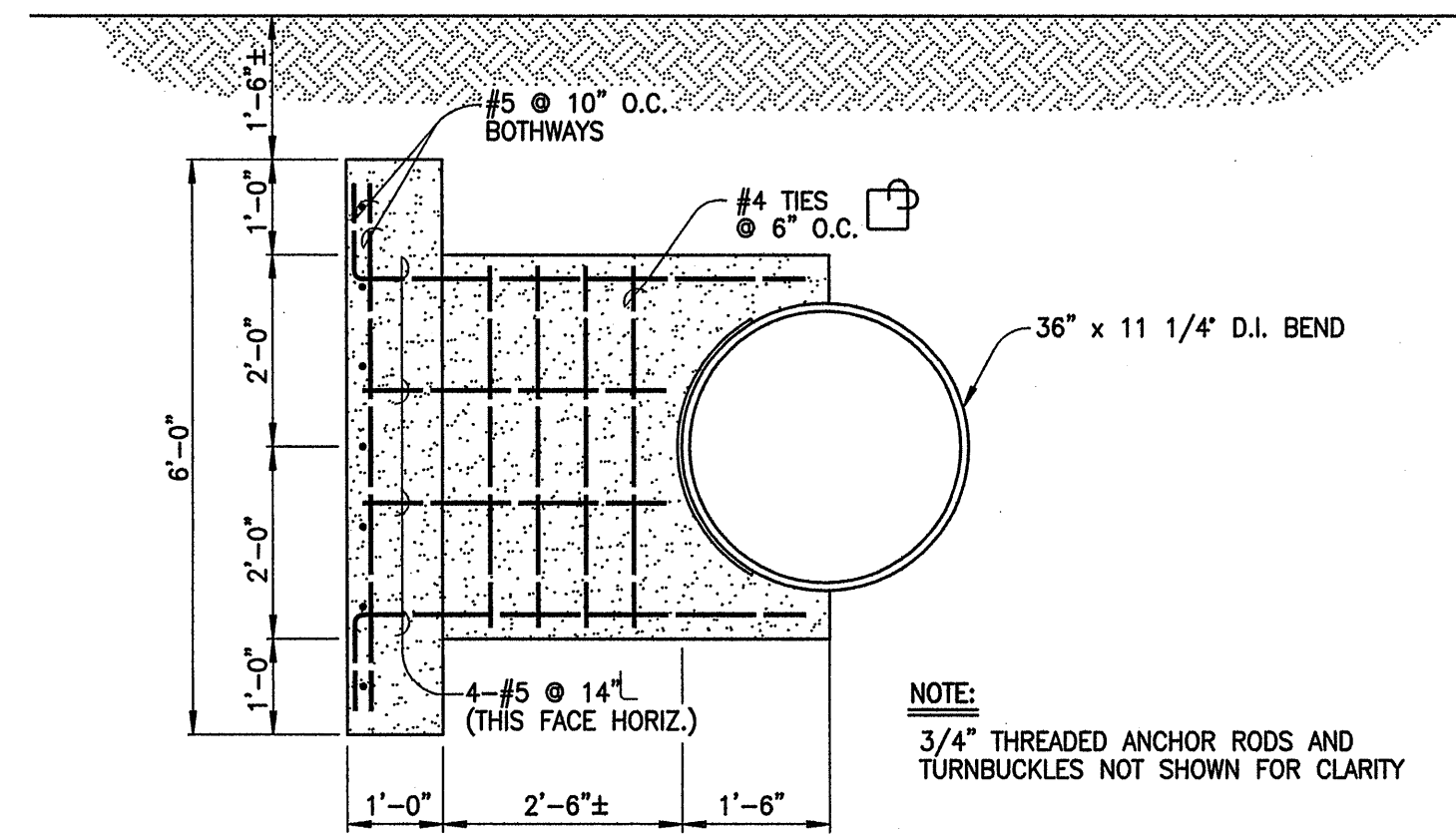
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII
DETAILS OF REINFORCED CONCRETE ANCHOR AND THRUST BLOCKS FOR RELOCATED 36" WATERLINE

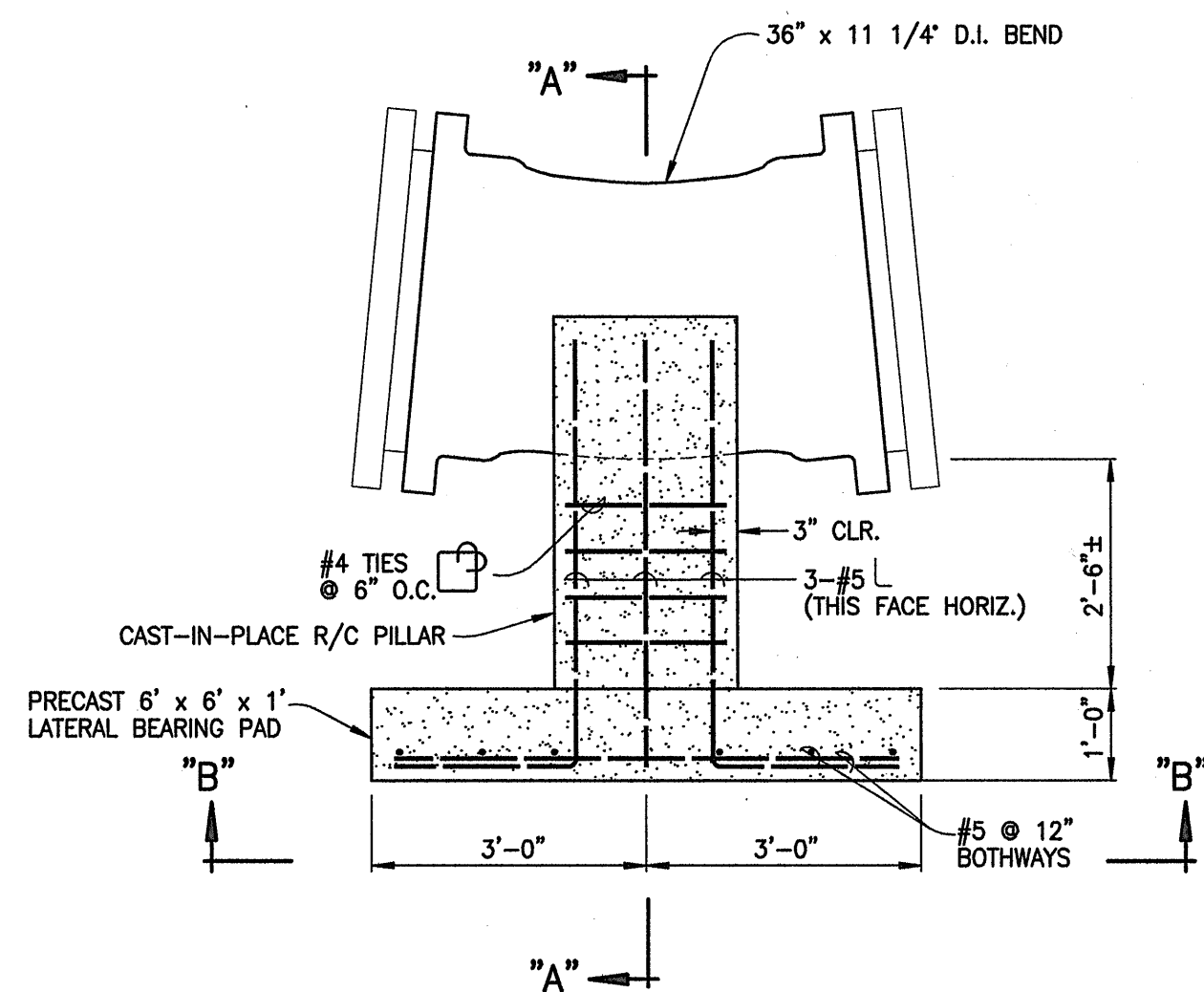
DESIGNED BY	DTU	04010.10	12.01
DRAWN BY	DTU	JOB NUMBER	
DATE	DATE	10-10-05	SHEET
SCALE	AS NOTED	DATE	OF SHEETS



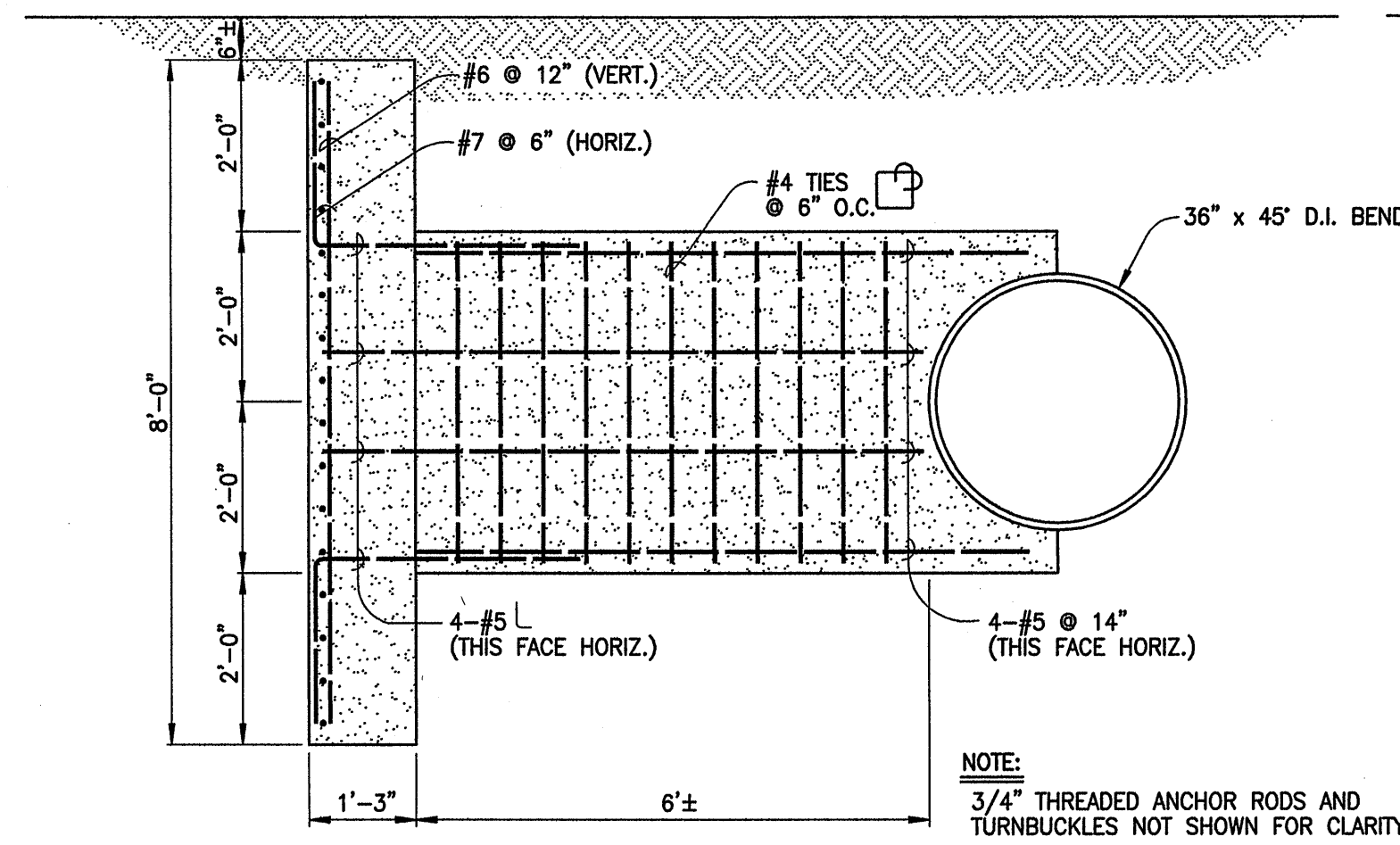
SECTION "B"-"B" BACK ELEVATION VIEW
SCALE: 1/2" = 1'-0"



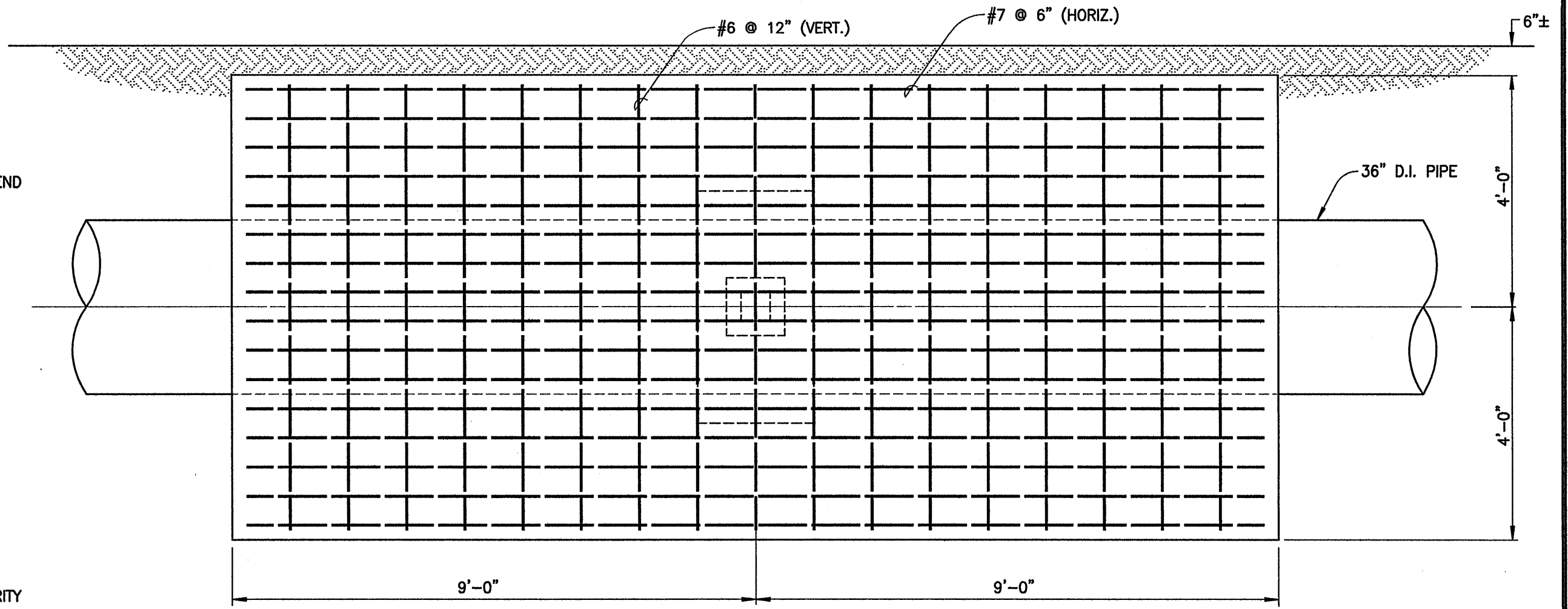
SECTION "A"-"A" SIDE ELEVATION VIEW
SCALE: 1/2" = 1'-0"



PLAN VIEW OF 36" x 11 1/4" BEND THRUST BEAM
SCALE: 1/2" = 1'-0"

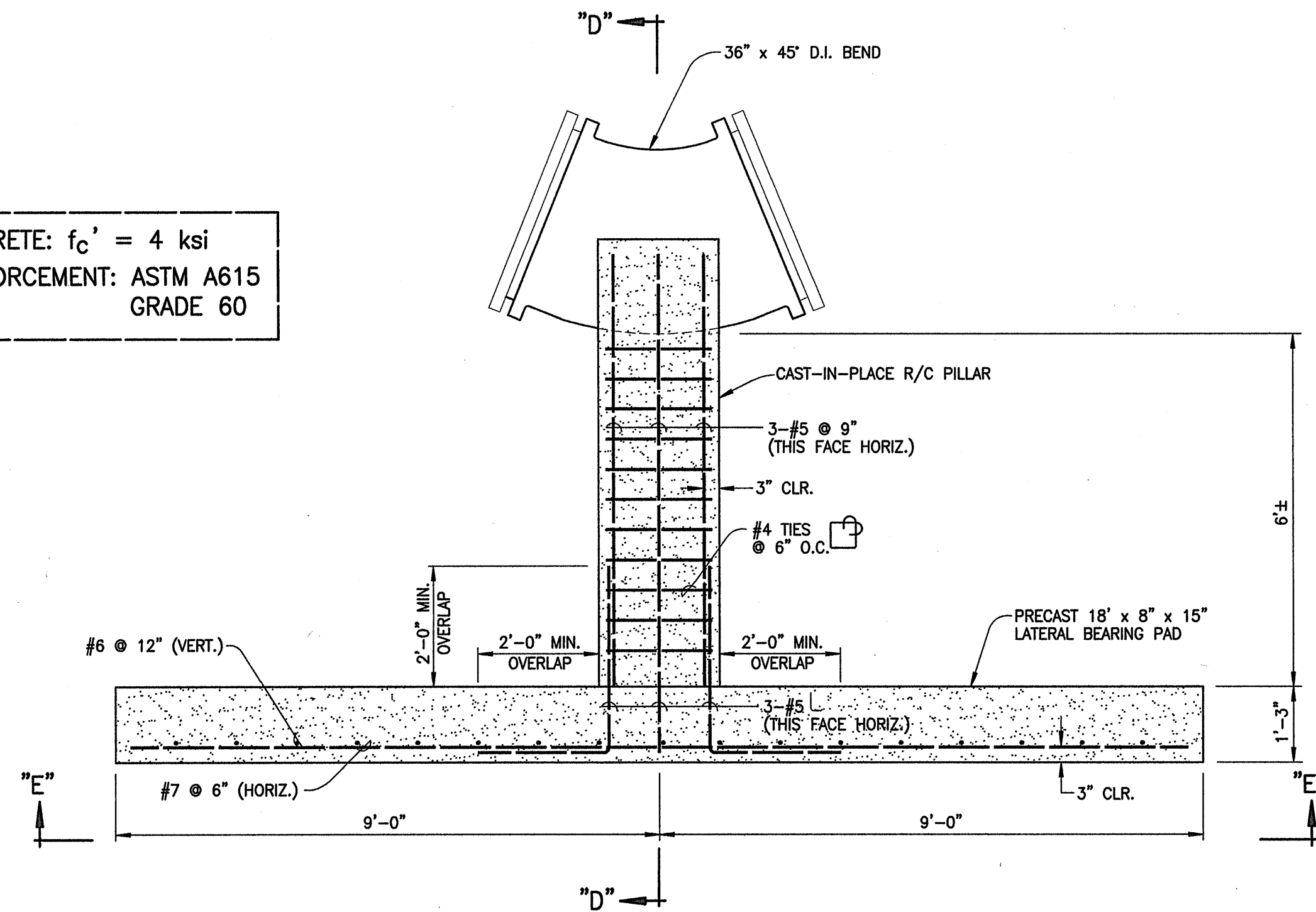


SECTION "D"-"D" SIDE ELEVATION VIEW
SCALE: 1/2" = 1'-0"

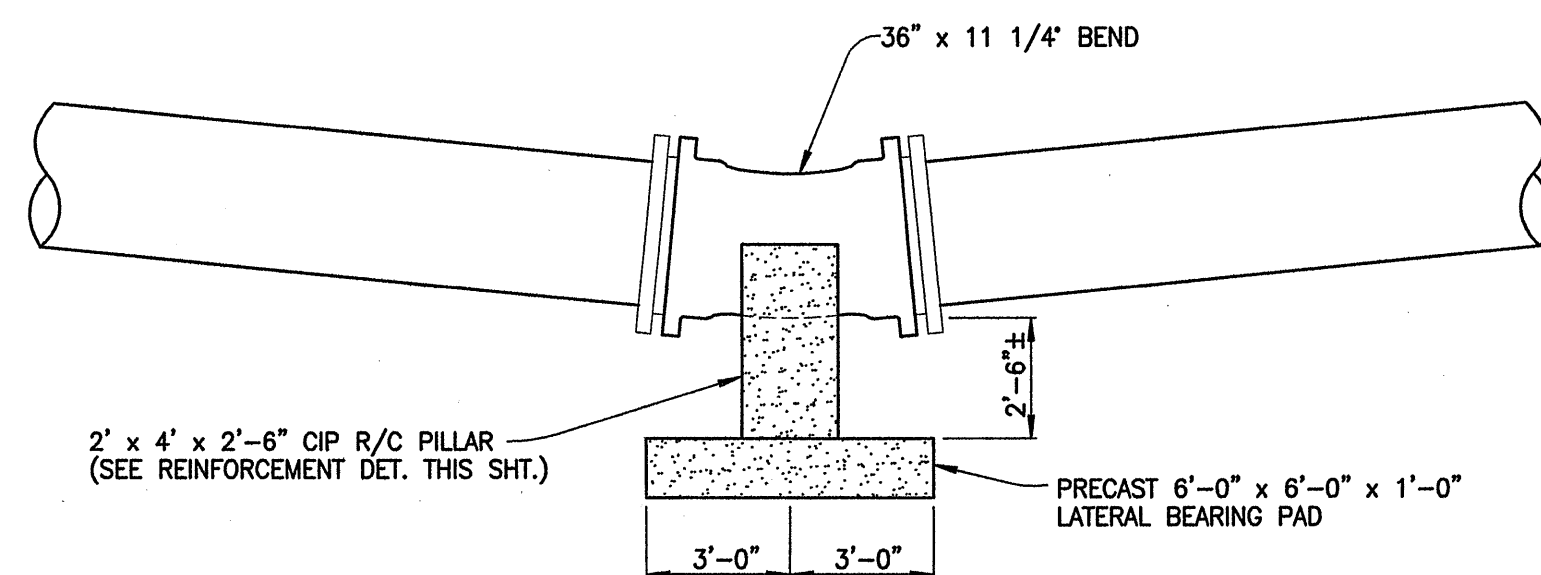


SECTION "E"-"E" BACK ELEVATION VIEW
SCALE: 1/2" = 1'-0"

CONCRETE: $f_c' = 4$ ksi
REINFORCEMENT: ASTM A615
GRADE 60

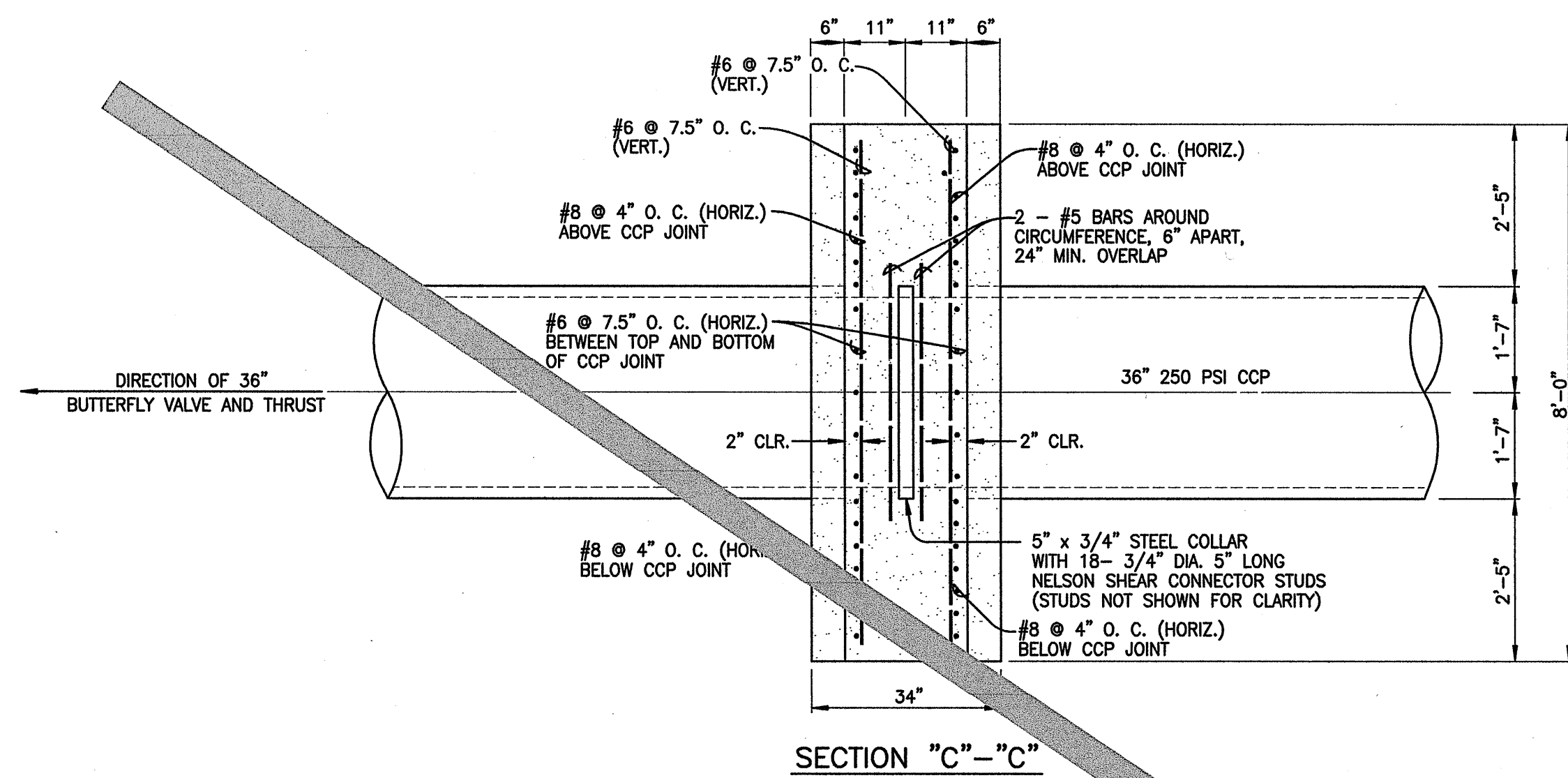


PLAN VIEW OF 36" x 45" BEND STANDARD CAST-IN-PLACE THRUST BEAM
SCALE: 1/2" = 1'-0"

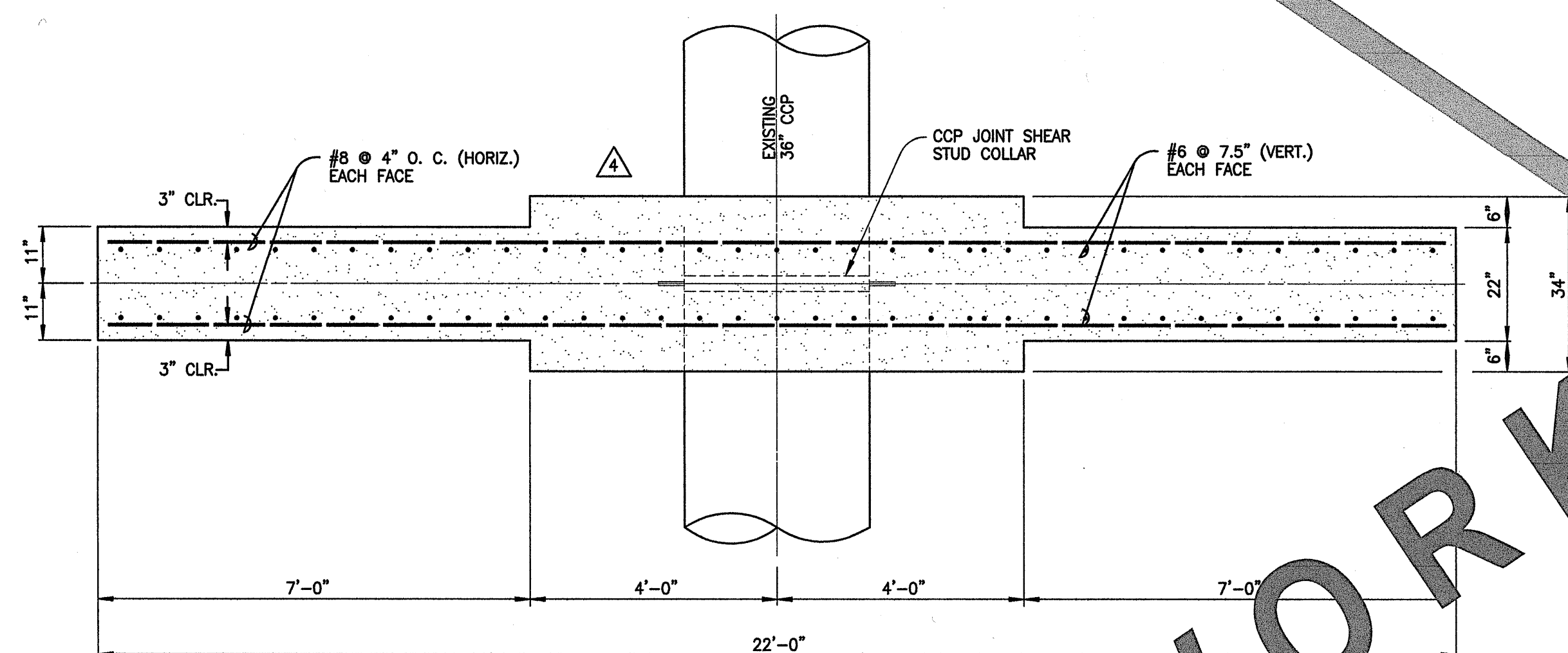


PLAN VIEW SHOWING LOCATION OF 36" x 11 1/4" BEND AT STA. 0+50.21
SCALE: 1/4" = 1'-0"

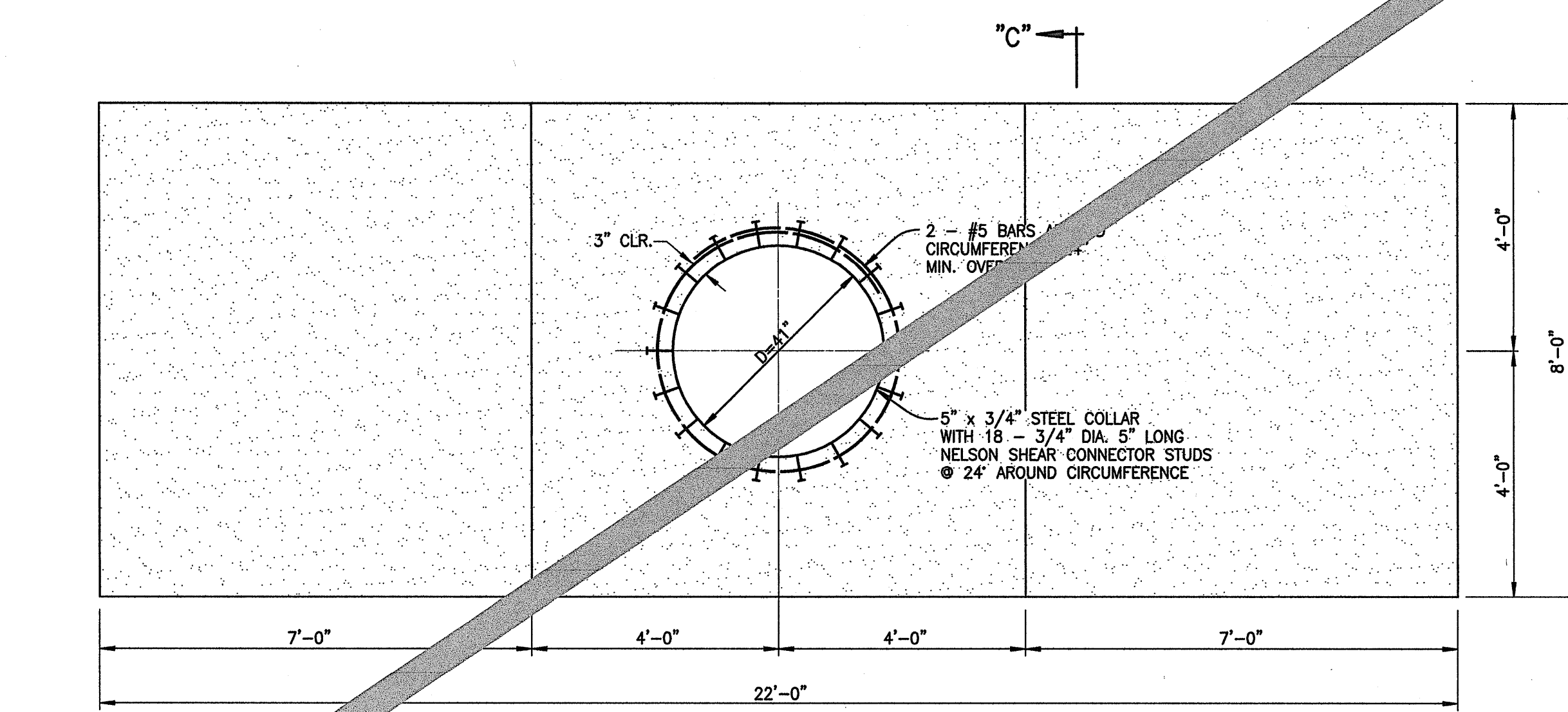
		WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793	
KAONOULU MARKET PLACE T.M.K.: (2) 3-9-01 : 16 KIHEI, MAUI, HAWAII		DETAILS OF REINFORCED CONCRETE THRUST BEAMS FOR RELOCATED 36" WATERLINE	
DTU DESIGNED BY WIS DRAWN BY	DTU CHECKED BY DTU APPROVED BY	04010.10 JOB NUMBER 10-10-05 DATE	12.02 SHEET OF SHEETS
SCALE AS NOTED		THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"	



SECTION "C"-"C"
GEOMETRY OF THRUST BEAM FOR 36" BUTTERFLY VALVE
SCALE: 1/2" = 1'-0"



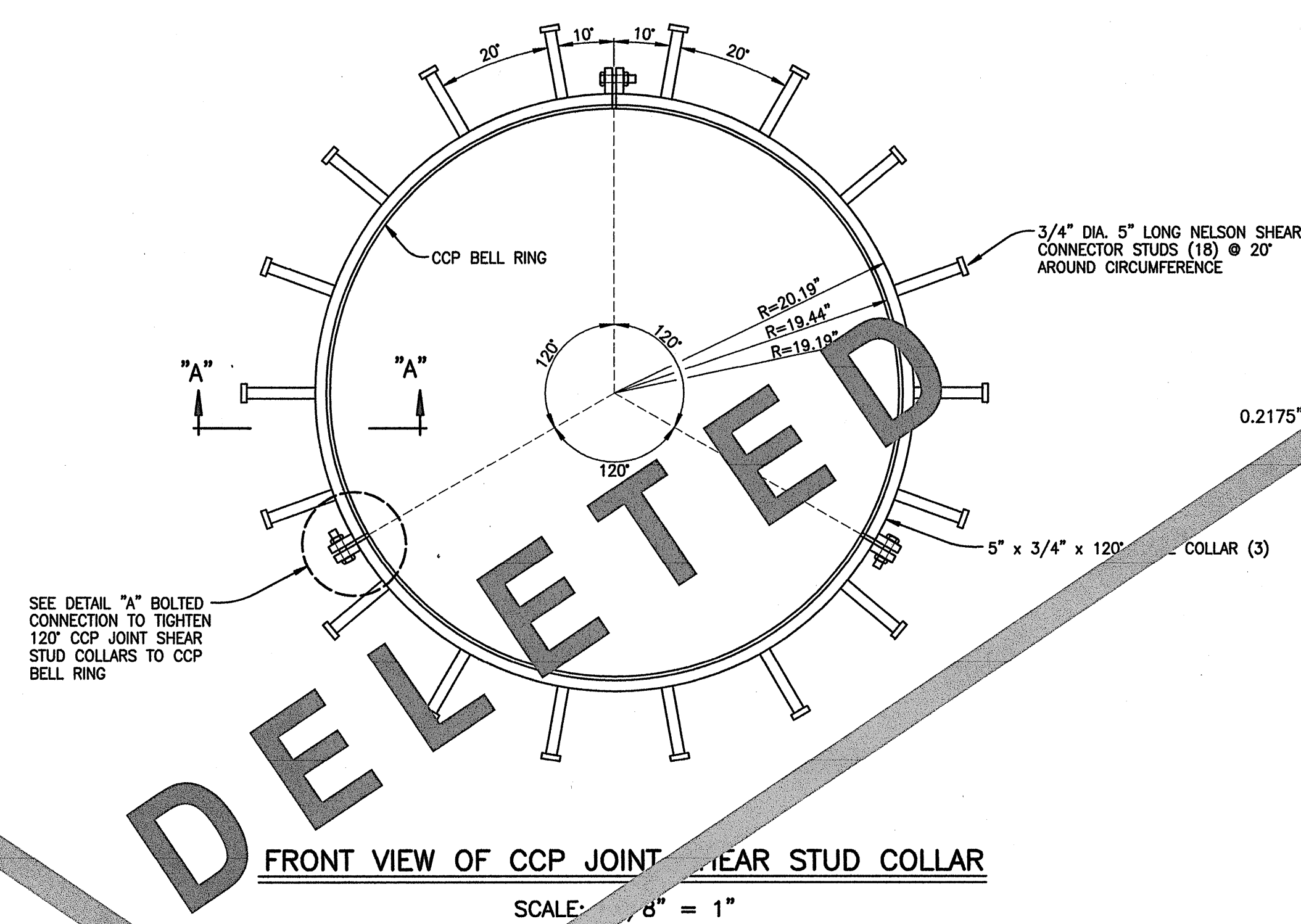
PLAN VIEW
GEOMETRY OF THRUST BEAM FOR 36" BUTTERFLY VALVE
SCALE: 1/2" = 1'-0"



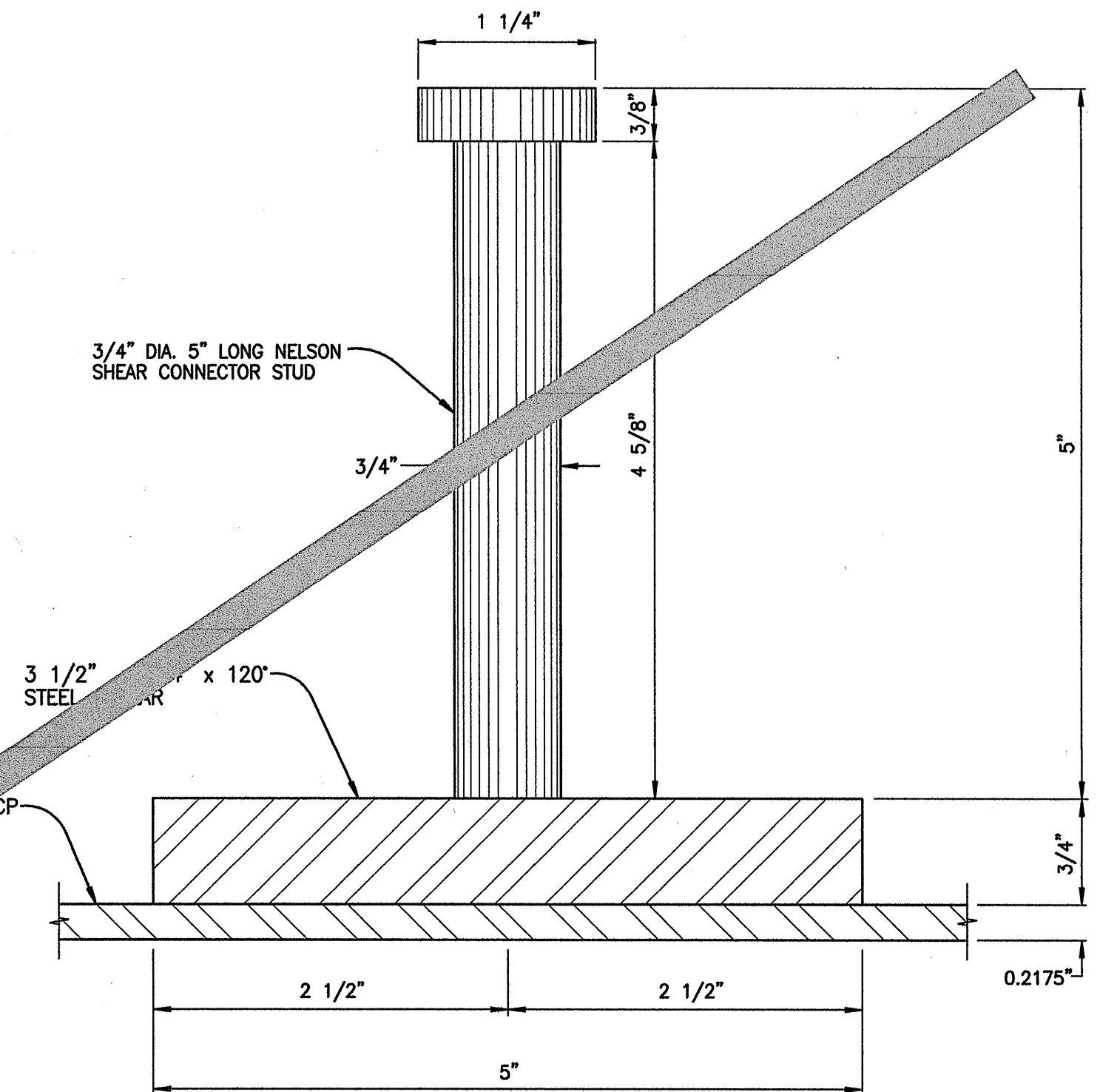
GEOMETRY OF THRUST BEAM FOR 36" BUTTERFLY VALVE
SCALE: 1/2" = 1'-0"

NOTE: HORIZONTAL AND VERTICAL
REBARS NOT SHOWN FOR CLARITY
CONCRETE: $f_c' = 4$ ksi
REINFORCEMENT: ASTM A615
GRADE 60

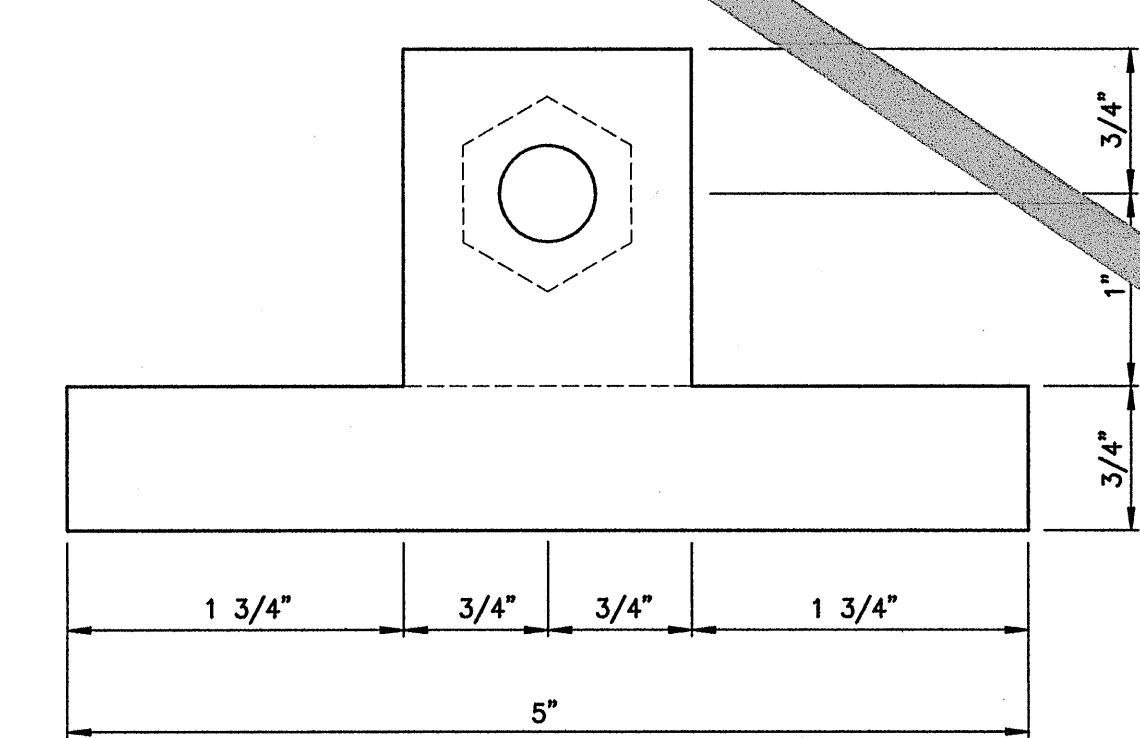
STEEL: ASTM A36
NELSON SHEAR CONNECTION STUDS:
ASTM A108 GRADE C-1010 THROUGH C-1020
 $F_u = 65$ ksi
 $F_y = 51$ ksi



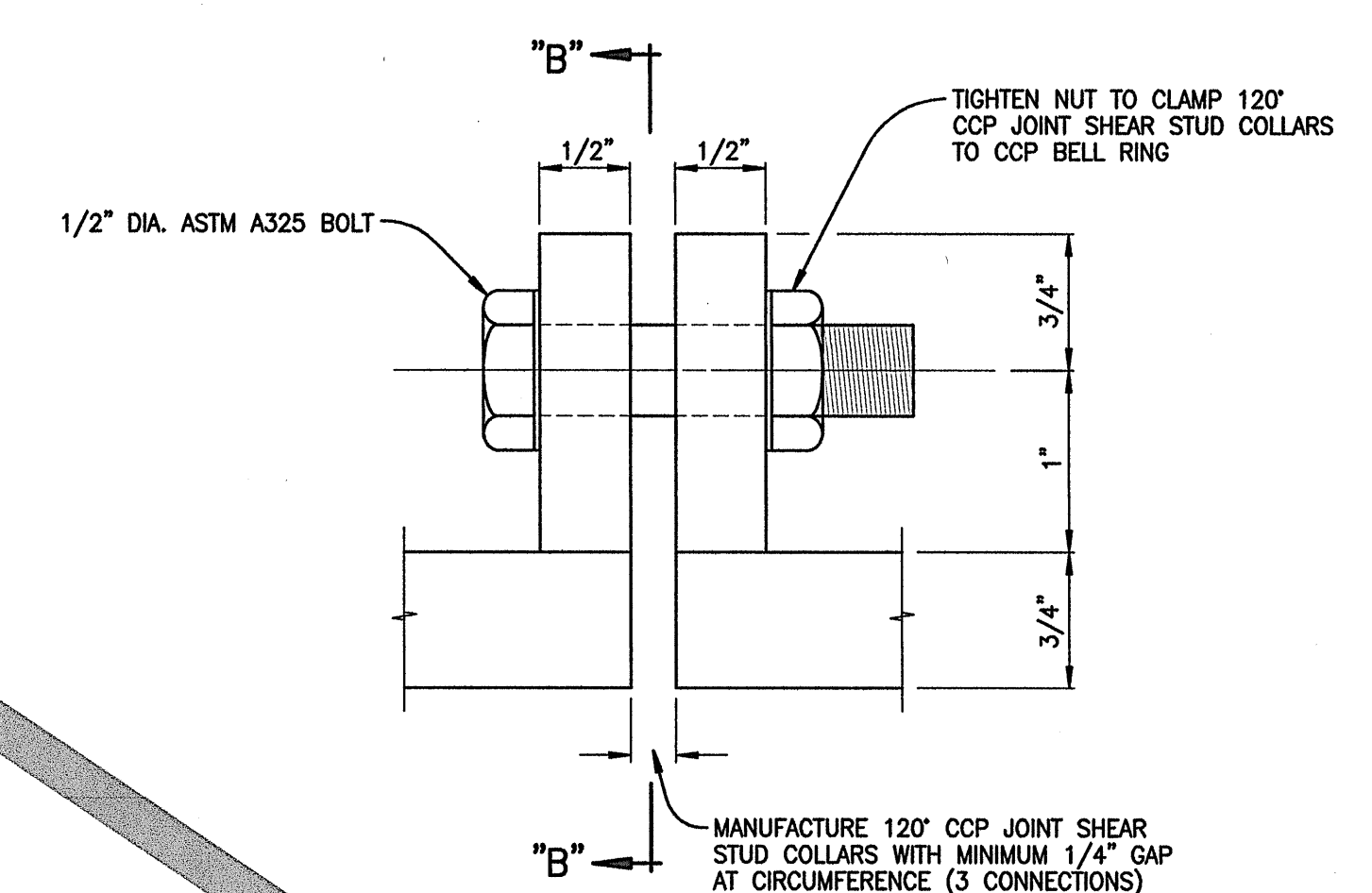
FRONT VIEW OF CCP JOINT SHEAR STUD COLLAR
SCALE: 1/8" = 1"



SECTION "A"-"A" - CROSS-SECTION OF
CCP JOINT SHEAR STUD COLLAR
SCALE: 1" = 1"



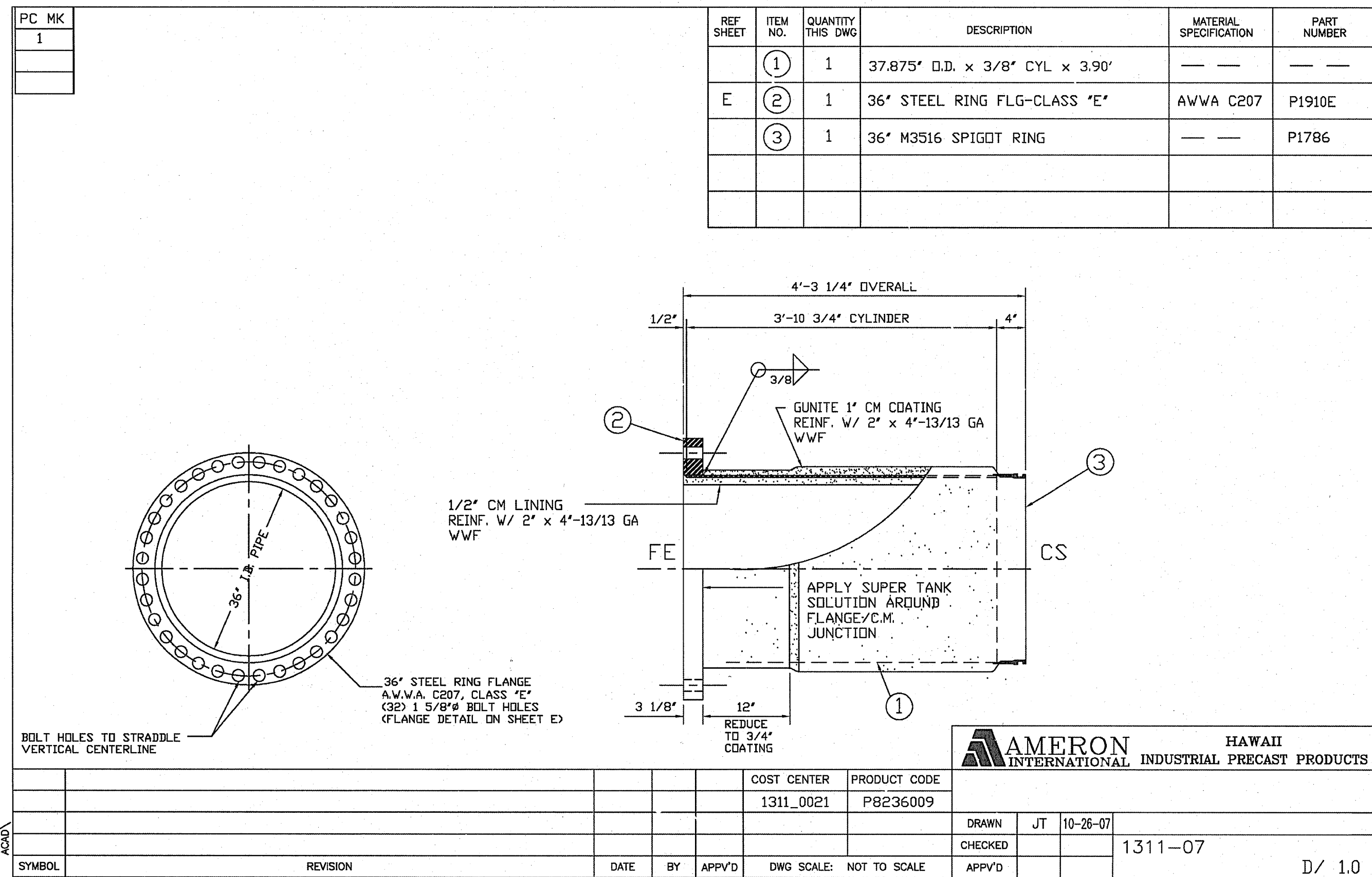
BOLTED CONNECTION TO TIGHTEN 120" CCP JOINT
SHEAR STUD COLLARS TO CCP BARREL
SCALE: 1" = 1"



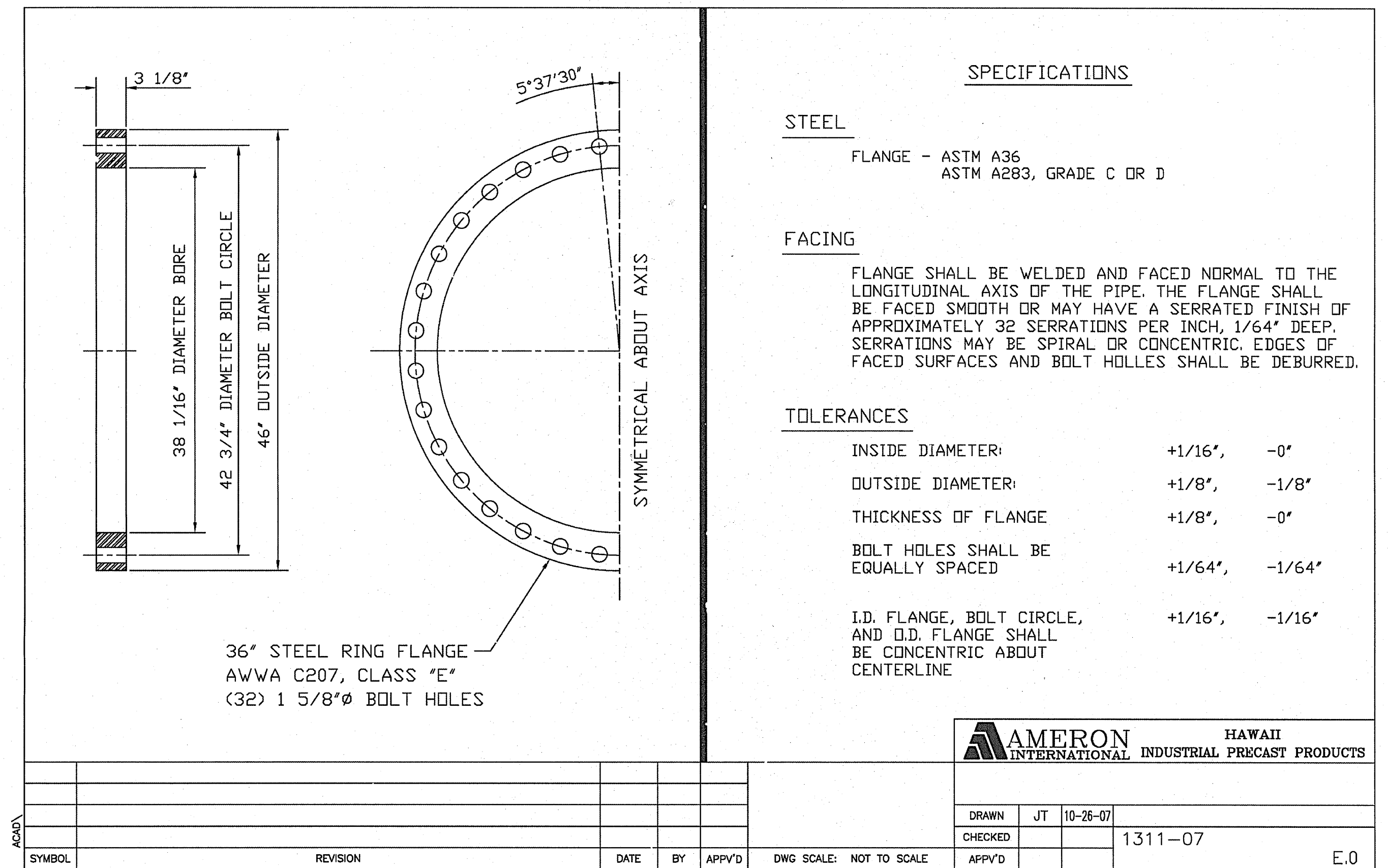
DETAIL "A" - BOLTED CONNECTION TO TIGHTEN 120"
CCP JOINT SHEAR STUD COLLARS TO CCP BARREL
SCALE: 1" = 1"

		WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS 403 WELLS STREET PROFESSIONAL CENTER, SUITE 403 WELLS STREET, WAILUKU, MAUI, HAWAII 96793	
KAONANU MARKET PLACE T.M.K. 3-9-01 : 16 KIHEI, HAWAII DETAILS OF REINFORCED CONCRETE THRUST TITLE BEAM AND SHEAR STUD COLLAR		DTU DESIGNED BY: WIS DTU CHECKED BY: DTU DTU DRAWN BY: WIS DTU APPROVED BY: DTU	
SIGNATURE: _____ DATE: 07/02/12		JOB NUMBER: 04010.10 DATE: 10-10-05	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS		SCALE: AS NOTED	

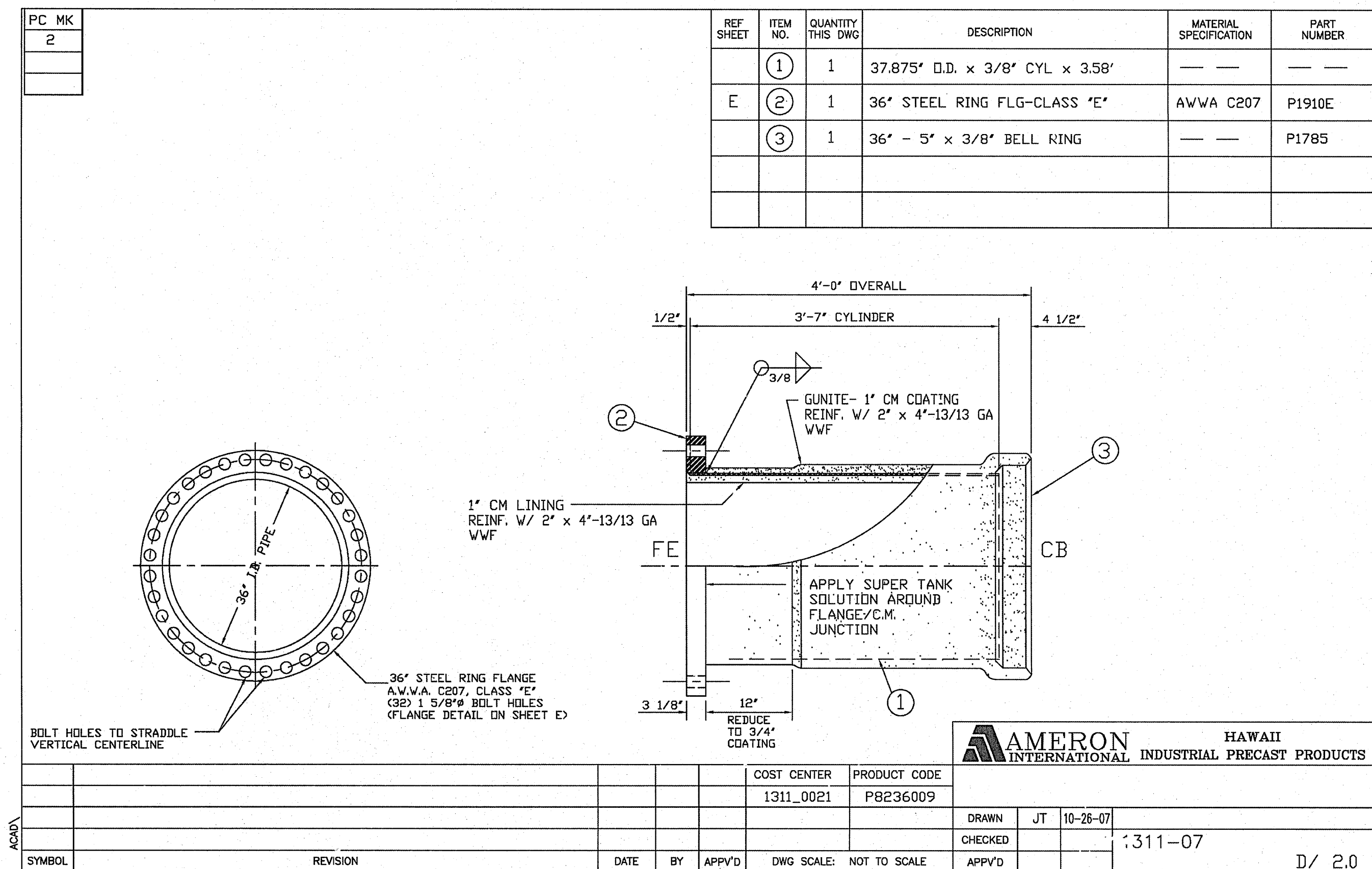
LETTER	DESCRIPTION	DATE
A	REVISED PER DWS COMMENTS	07/02/12
A	INTERIOR PORTION OF THRUST BEAM WIDENED	12-12-08



36" AMERON CCP X FLANGE ADAPTER - MALE
NOT TO SCALE



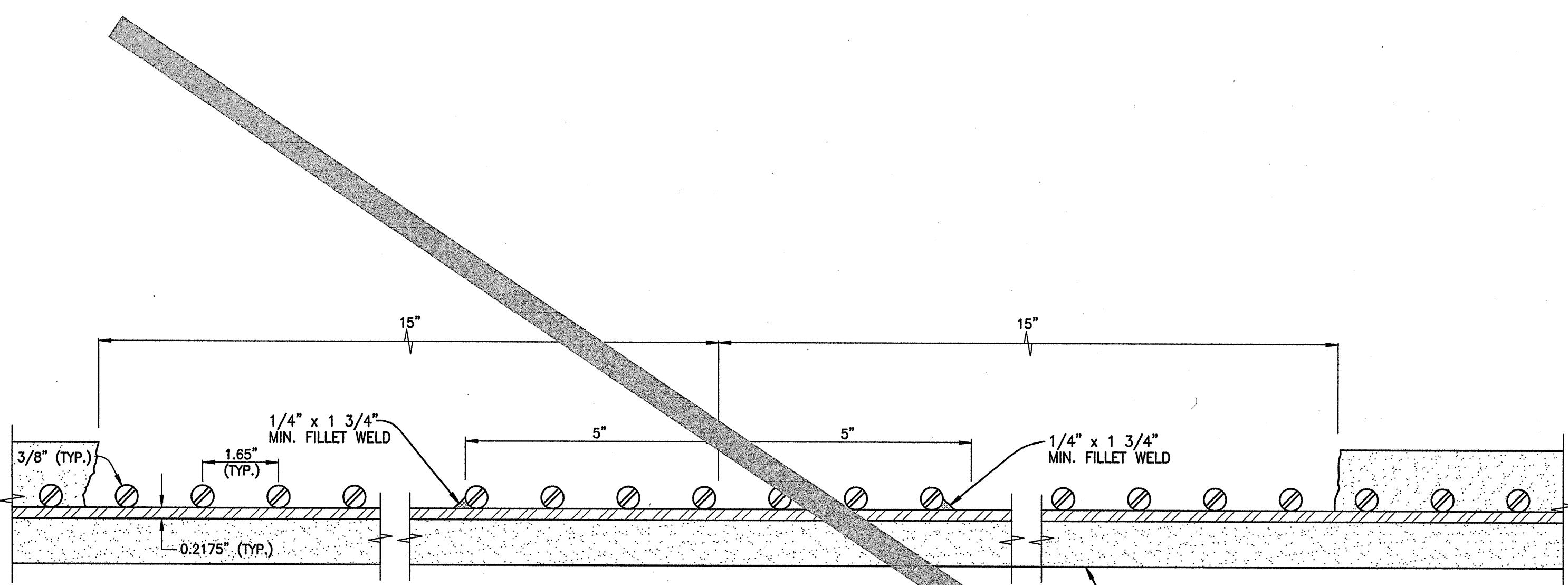
36" AMERON CCP X FLANGE ADAPTER - BOLT PATTERN SPECIFICATIONS
NOT TO SCALE



36" AMERON CCP X FLANGE ADAPTER - FEMALE
NOT TO SCALE

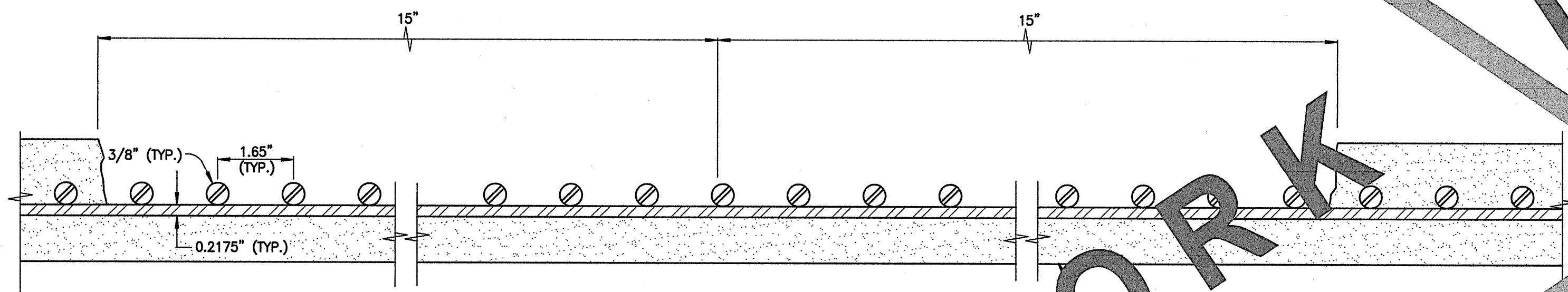
ALAN L. UNEMORI LICENSED PROFESSIONAL ENGINEER NO. 9354-S HAWAII, U.S.A.		WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793	
KAONOULU MARKET PLACE T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16 KIHEI, MAUI, HAWAII			
TITLE DETAILS OF AMERON 36" CCP X FLANGE ADAPTER			
DESIGNED BY ALU	CHECKED BY DTU	DATE 12/12/08	JOB NUMBER 04010.10
DRAWN BY WIS	APPROVED BY DTU	DATE 10-10-05	SHEET 12.03B
SCALE AS NOTED		DATE 10-10-05	

△	SHEET ADDED IN ITS ENTIRETY	12/12/08
LETTER	DESCRIPTION	DATE



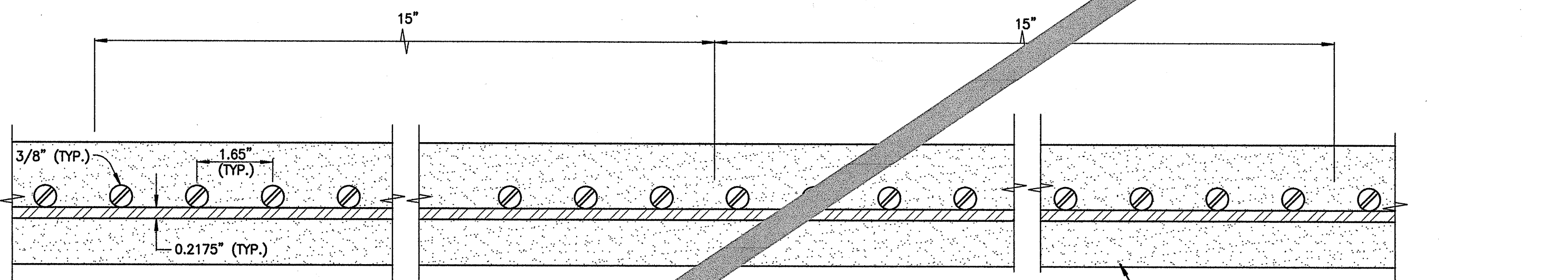
STEP 3 - FILLET WELD OUTERMOST SPIRAL BARS WITHIN 10 INCHES OF INTENDED SHEAR STUD COLLAR LOCATION.

SCALE: 1/2" = 1"



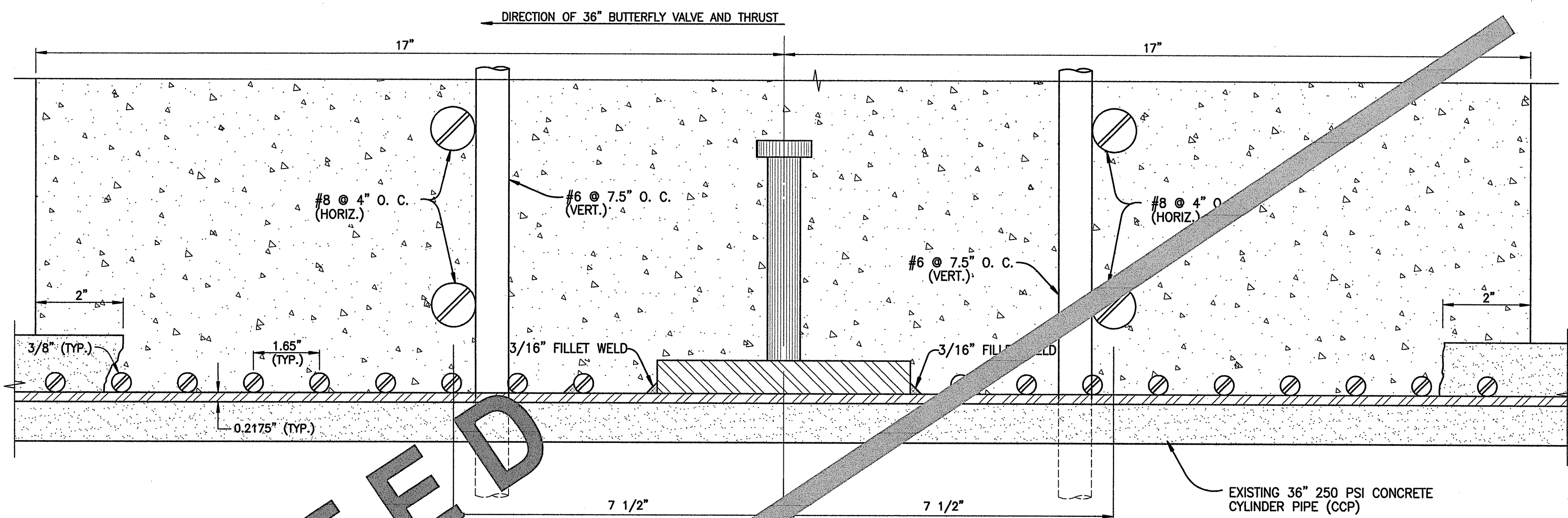
STEP 2 - CHIP AWAY CONCRETE COVER TO EXPOSE 18" WIDE STEEL CYLINDER AND BELL AROUND ENTIRE CIRCUMFERENCE

SCALE: 1/2" = 1"



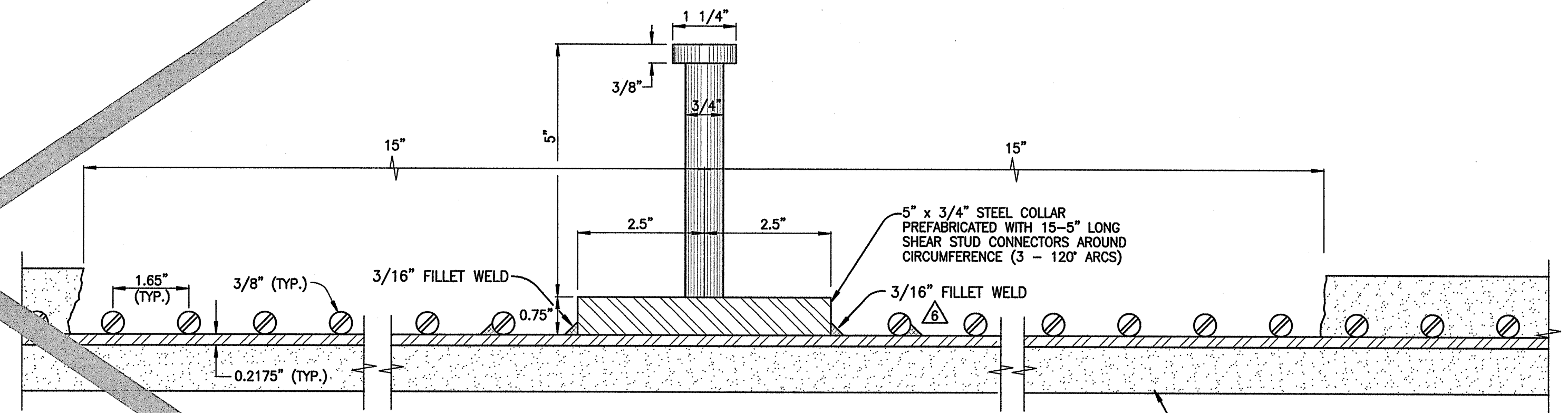
STEP 1 - UNCOVER SOIL OVER AND AROUND EXISTING 36" CCP PIPE AT JOINT

SCALE: 1/2" = 1"



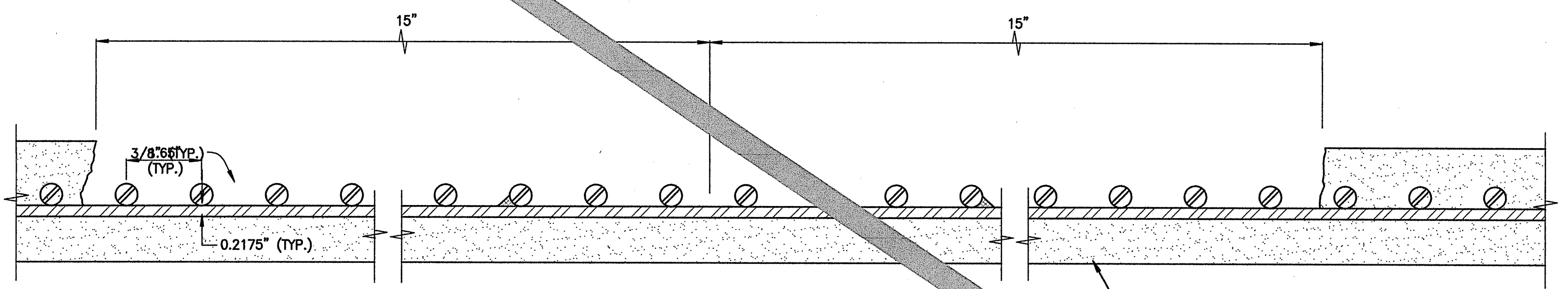
STEP 6 - CONSTRUCT 22" (3/8" MIDSECTION) THICK x 22'-0" LONG x 8'-0" HIGH THRUST BEAM

SCALE: 1/2" = 1"



STEP 5 - WELD 5" x 3/4" STEEL COLLAR PREFABRICATED WITH 15-5" LONG SHEAR STUD CONNECTORS AROUND CIRCUMFERENCE

SCALE: 1/2" = 1"



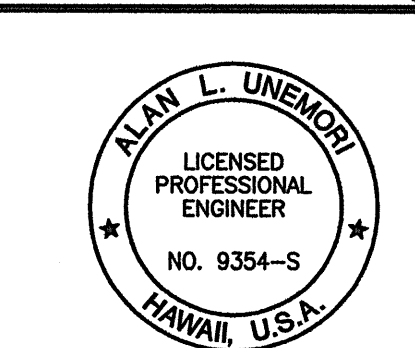
STEP 4 - REMOVE SPIRAL WRAPPED BARS INSIDE TACK WELDED BARS

SCALE: 1/2" = 1"

CONCRETE: $f'_c = 4$ ksi
REINFORCEMENT: ASTM A615
GRADE 60

V:\Projects\041010\041010.dwg

LETTER	DESCRIPTION	DATE
A	REVISED PER DWS COMMENTS	07/02/12
B	REVISE WELD PER DWS COMMENTS	10/01/10



SIGNATURE
DATE

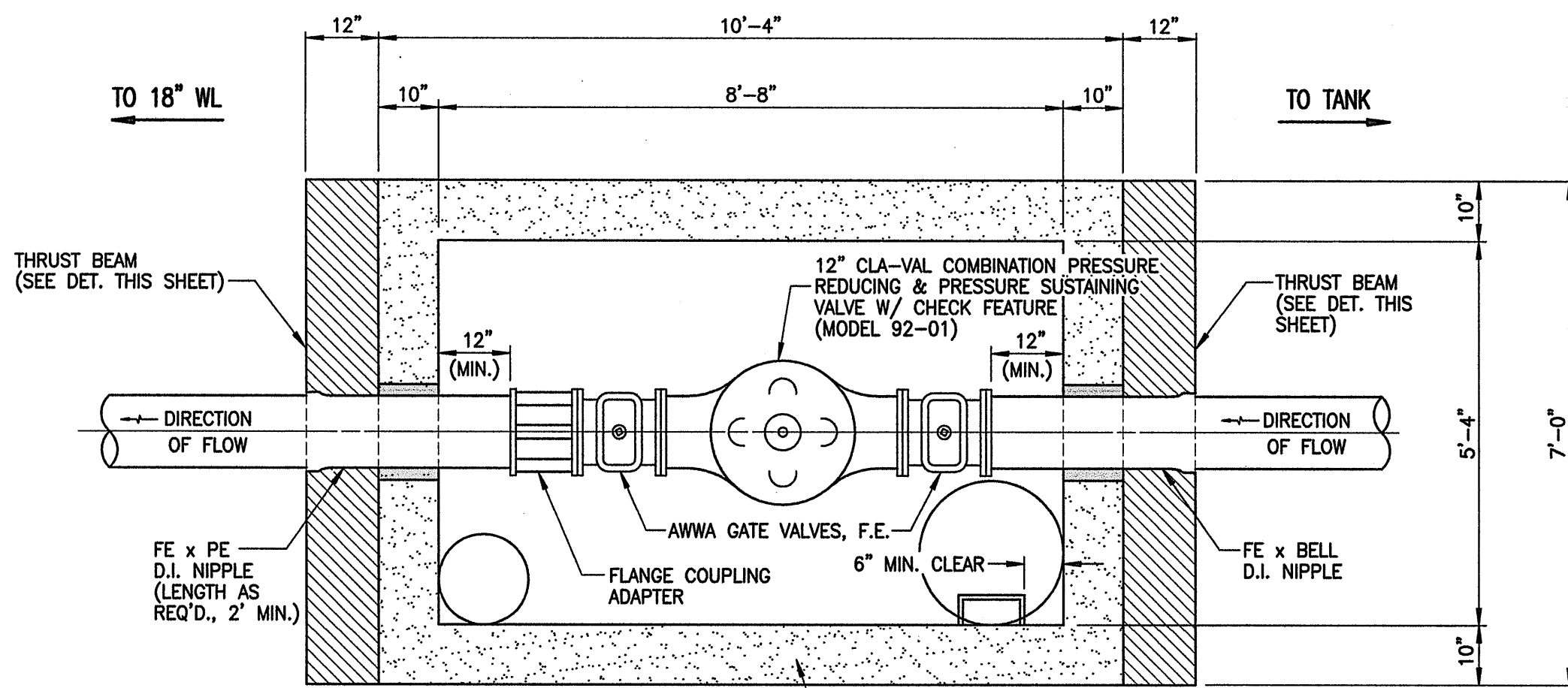
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
1111 WELLS STREET PROFESSIONAL CENTER, SUITE 403
WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONANU MARKET PLACE
T.M.K. 3-9-01 : 16
KIHEI, HAWAII

DETAIL OF RECOMMENDED CONSTRUCTION OF
TITLE THRUST BEAM AT CCP JOINT

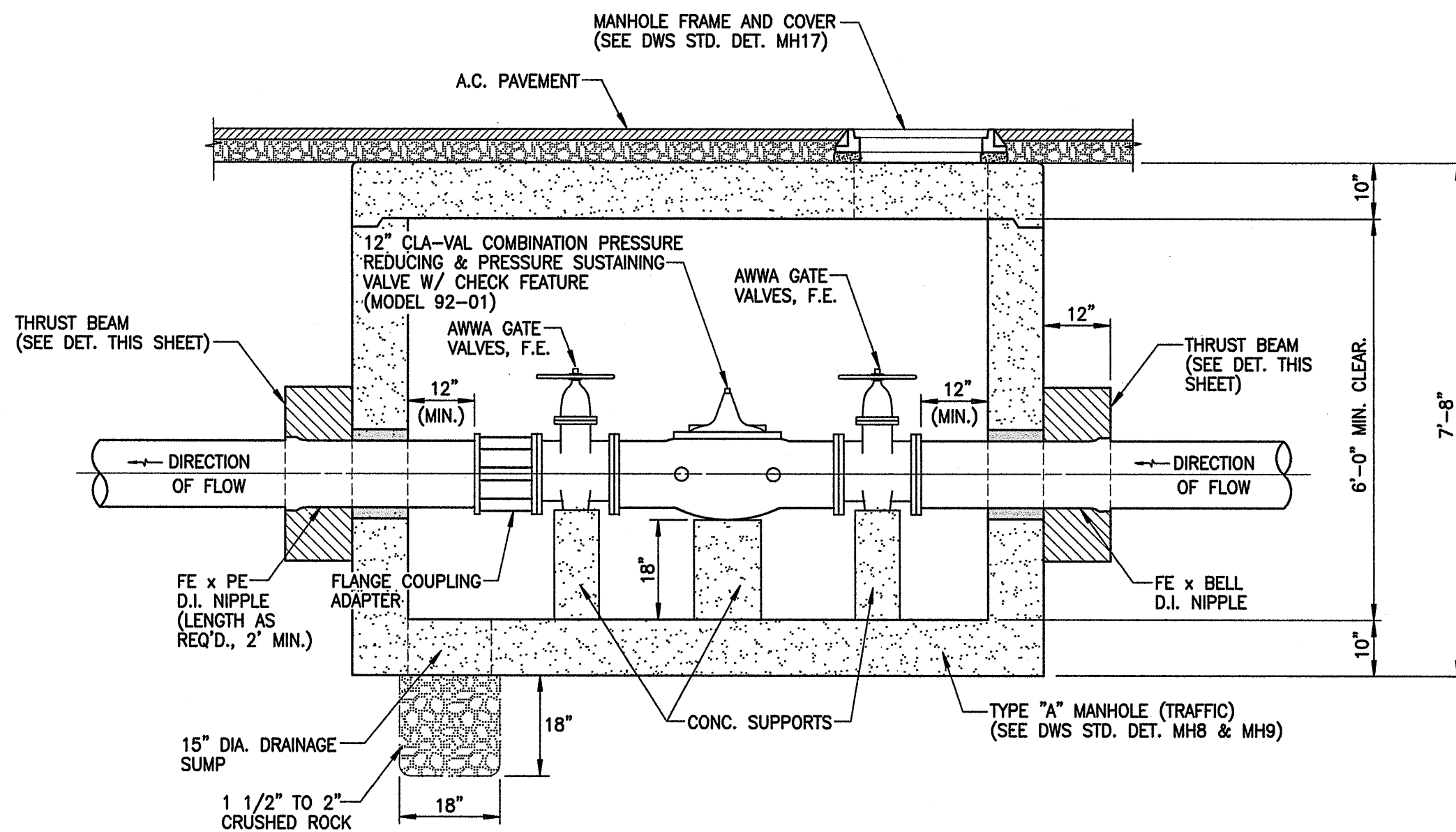
DESIGNED BY	DTU	DATE	04010.10
CHECKED BY	DTU	JOB NUMBER	12.03C
WIS	DTU	DATE	10-10-05
APPROVED BY	DTU	DATE	

SCALE AS NOTED



NOTE:
SEE DWS STD. DETAILS MH8 & MH9 FOR
REINFORCING AND ALL OTHER INFORMATION
NOT EXPLICITLY SHOWN ON PLAN.

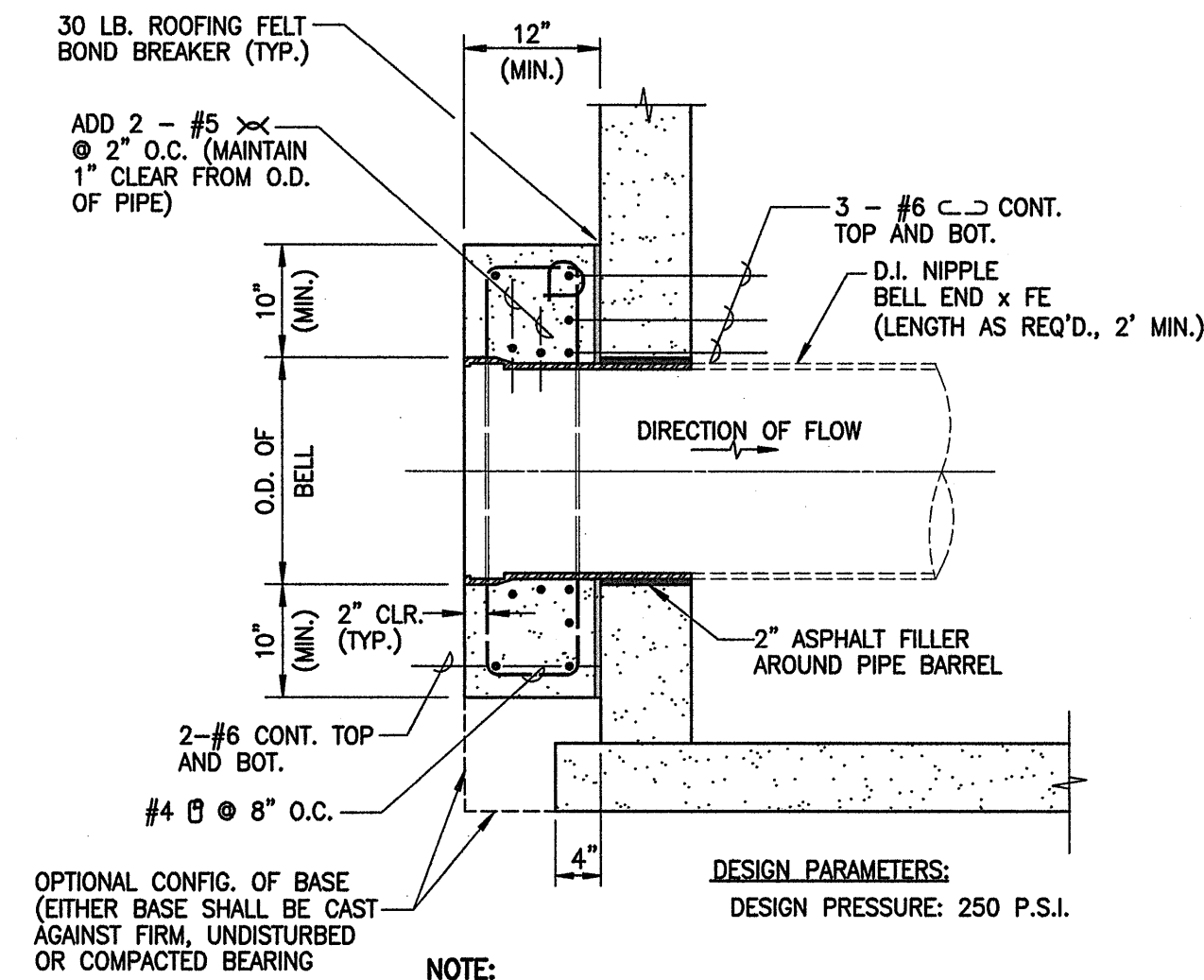
PLAN
TYPE "A" MANHOLE (TRAFFIC)
(SEE DWS STD. DET. MH8 & MH9)



ELEVATION

DETAIL - 12" CHECK VALVE ASSEMBLY

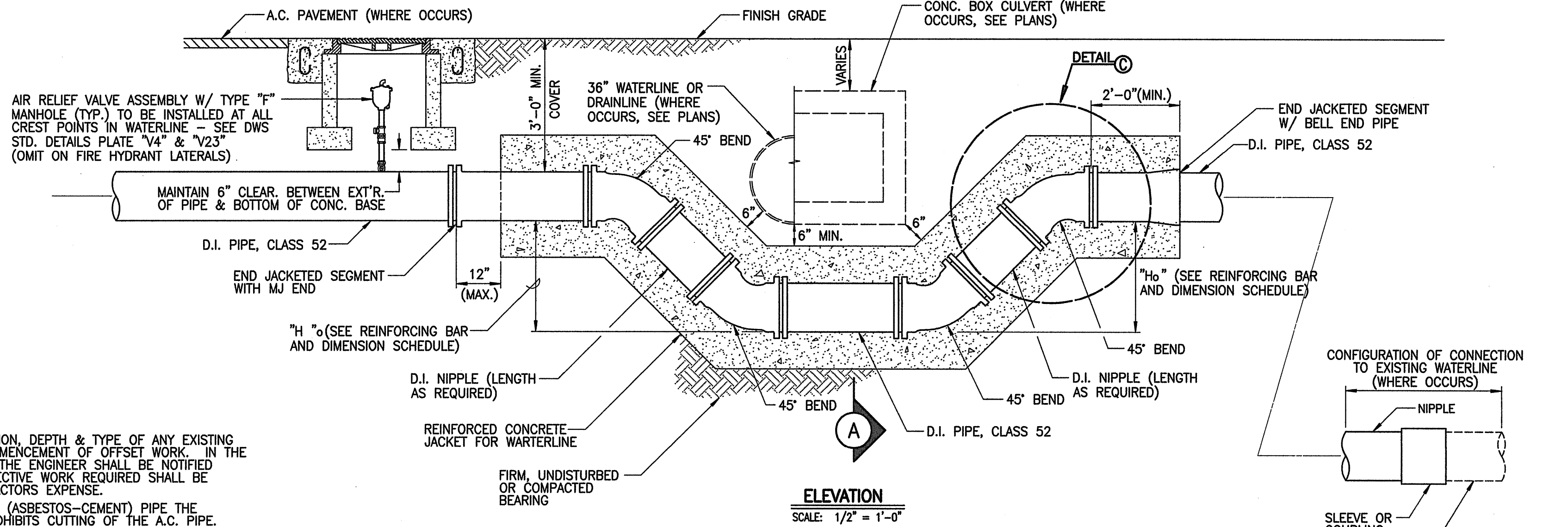
SCALE: 1/2" = 1'-0"



NOTE:
THRUST BEAM TO BE CONSTRUCTED ON BOTH
ENDS OF MANHOLE WALL AND OVER THE ENTIRE
LENGTH OF THE MANHOLE.

DETAIL - CHECK VALVE MANHOLE THRUST BEAM

SCALE: 3/4" = 1'-0"



ELEVATION
SCALE: 1/2" = 1'-0"

1 DETAIL - REINF. CONC. WATERLINE JACKET FOR VERTICAL OFFSETS

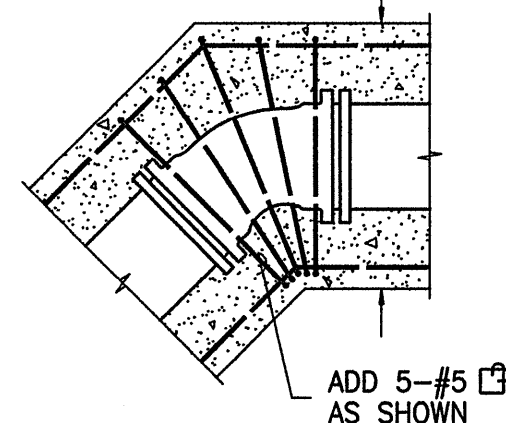
SCALE: 1/2" = 1'-0"

NOTES:

- CONTRACTOR SHALL CONFIRM LOCATION, DEPTH & TYPE OF ANY EXISTING UTILITIES CROSSINGS PRIOR TO COMMENCEMENT OF OFFSET WORK. IN THE EVENT ANY DISCREPANCIES OCCUR, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, OTHERWISE ANY CORRECTIVE WORK REQUIRED SHALL BE PERFORMED SOLELY AT THE CONTRACTORS EXPENSE.
- FOR CONNECTIONS TO EXISTING A.C. (ASBESTOS-CEMENT) PIPE THE DEPARTMENT OF WATER SUPPLY PROHIBITS CUTTING OF THE A.C. PIPE. CONTRACTOR SHALL REMOVE ONE (1) COMPLETE SECTION OF A.C. PIPE AT EACH CONNECTION TO THE EXISTING A.C. WATERLINE AND REPLACE SAME WITH EQUIVALENT DIAMETER DUCTILE IRON PIPE (CLASS 52).
- WHEREVER CONSTRUCTION JOINTS ARE REQUIRED 6" RUBBER OR NEOPRENE WATERSTOPS SHALL BE INSTALLED. WATERSTOP SHALL BE OF THE TYPE SPECIFIED AND MANUFACTURED BY THE KIRKILL COMPANY, OR APPROVED EQUAL.
- SEE REINFORCING BAR & DIMENSION SCHEDULE FOR REINFORCING AND DIMENSIONS.
- ALL INTERIOR JOINTS AND FITTINGS SHALL BE "MJ".

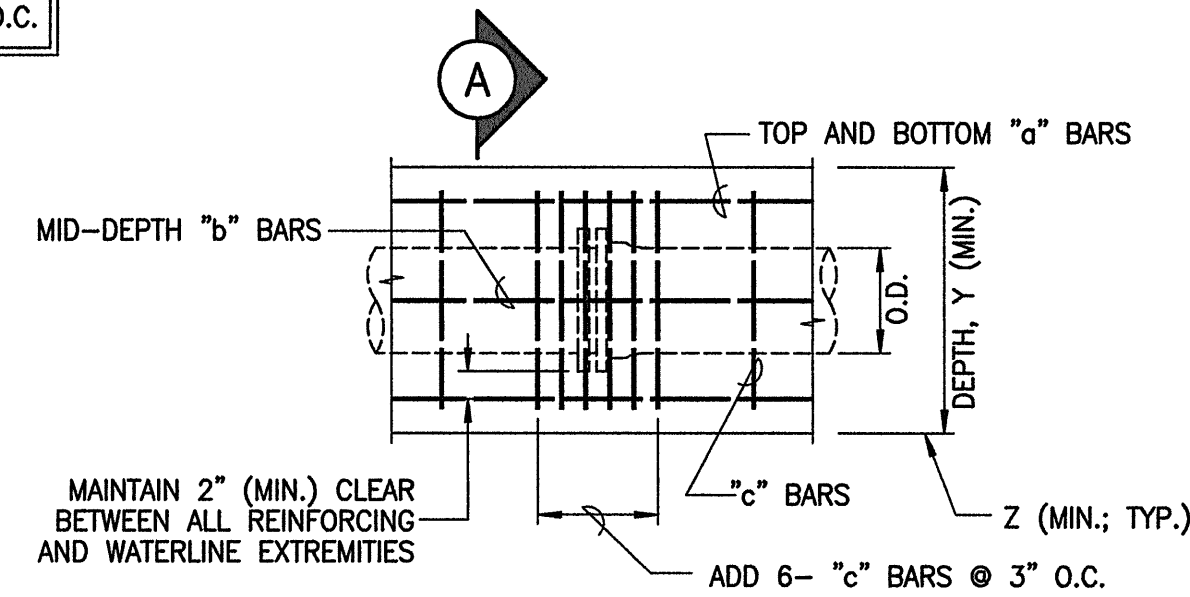
REINFORCING BAR & DIMENSION SCHEDULE							
DIAMETER	H ₀ (MAX.)	X	Y	Z	TOP & BOTTOM "a" BARS	"b" BARS	"c" BARS
6" & SMALLER	4'-0"	2'-3"	2'-3"	10"	2-#6 T&B	2-#6	#4 @ 12" O.C.
6" & SMALLER	5'-0"	2'-3"	2'-3"	10"	2-#6 T&B	2-#6	#4 @ 12" O.C.
6" & SMALLER	6'-0"	2'-3"	2'-3"	10"	2-#6 T&B	2-#6	#4 @ 12" O.C.
6" & SMALLER	7'-0"	2'-3"	2'-3"	10"	2-#7 T&B	2-#6	#4 @ 12" O.C.
6" & SMALLER	8'-0"	2'-3"	2'-3"	10"	2-#7 T&B	2-#6	#4 @ 12" O.C.
12"	4'-0"	2'-8"	2'-8"	10"	4-#6 T&B	2-#6	#5 @ 12" O.C.
12"	5'-0"	2'-8"	2'-8"	10"	2-#6 T&B AND 2-#7 T&B	2-#7	#5 @ 12" O.C.
12"	6'-0"	3'-0"	3'-0"	1'-0"	2-#6 T&B AND 2-#7 T&B	2-#7	#5 @ 12" O.C.
12"	7'-0"	3'-0"	3'-0"	1'-0"	4-#7 T&B	2-#7	#5 @ 12" O.C.
12"	8'-0"	3'-0"	3'-0"	1'-0"	5-#7 T&B	2-#7	#5 @ 12" O.C.
16"	4'-0"	3'-8"	3'-8"	1'-2"	5-#6 T&B	2-#6	#5 @ 12" O.C.
16"	5'-0"	3'-8"	3'-8"	1'-2"	2-#6 T&B AND 3-#7 T&B	2-#7	#5 @ 12" O.C.
16"	6'-0"	3'-8"	3'-8"	1'-2"	5-#7 T&B	2-#7	#5 @ 12" O.C.
16"	7'-0"	4'-0"	4'-0"	1'-4"	4-#8 T&B	2-#8	#5 @ 12" O.C.
16"	8'-0"	4'-0"	4'-0"	1'-4"	5-#8 T&B	2-#8	#5 @ 12" O.C.

ONLY ADDITIONAL REINFORCEMENT
SHOWN - SEE SECTION FOR STD.
REINFORCING



DETAIL - ADDITIONAL REINFORCEMENT AT BENDS

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



3 DETAIL - CONC. JACKET AT INTERIOR JOINTS

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

LETTER	DESCRIPTION	DATE
10	REVISED PER DWS COMMENTS	01/06/12
6	REVISED 12" CHECK VALVE ASSEMBLY	10/01/10

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHIE, MAUI, HAWAII

TITLE WATER DETAILS

DESIGNED BY DTU	CHECKED BY DTU	JOB NUMBER 04010.10	12.04
DRAWN BY WIS	APPROVED BY DTU	DATE 10-10-05	

SCALE: AS NOTED

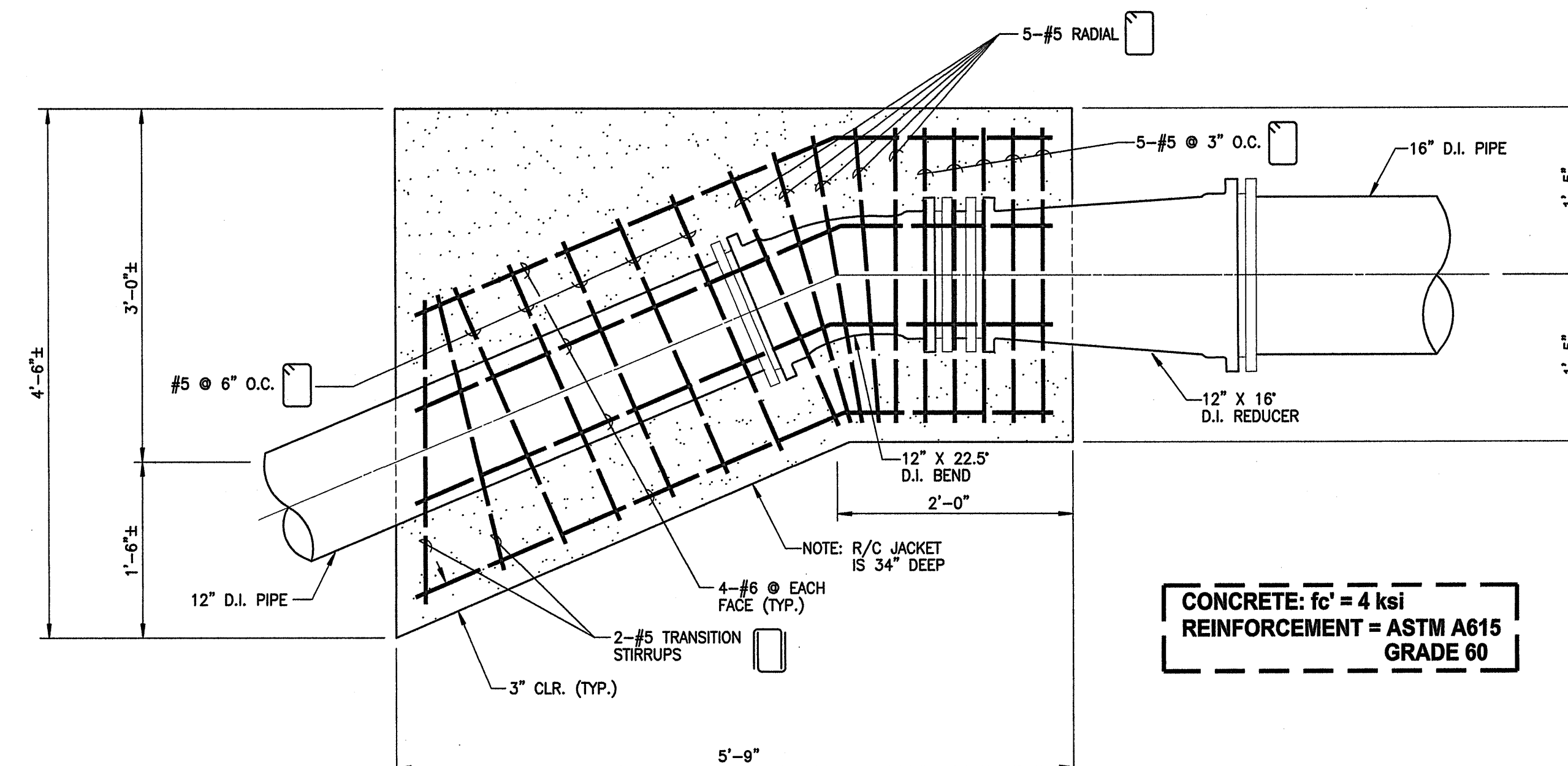
UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

3/12/2012

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS.

DATE
01/06/12

DATE
10/01/10

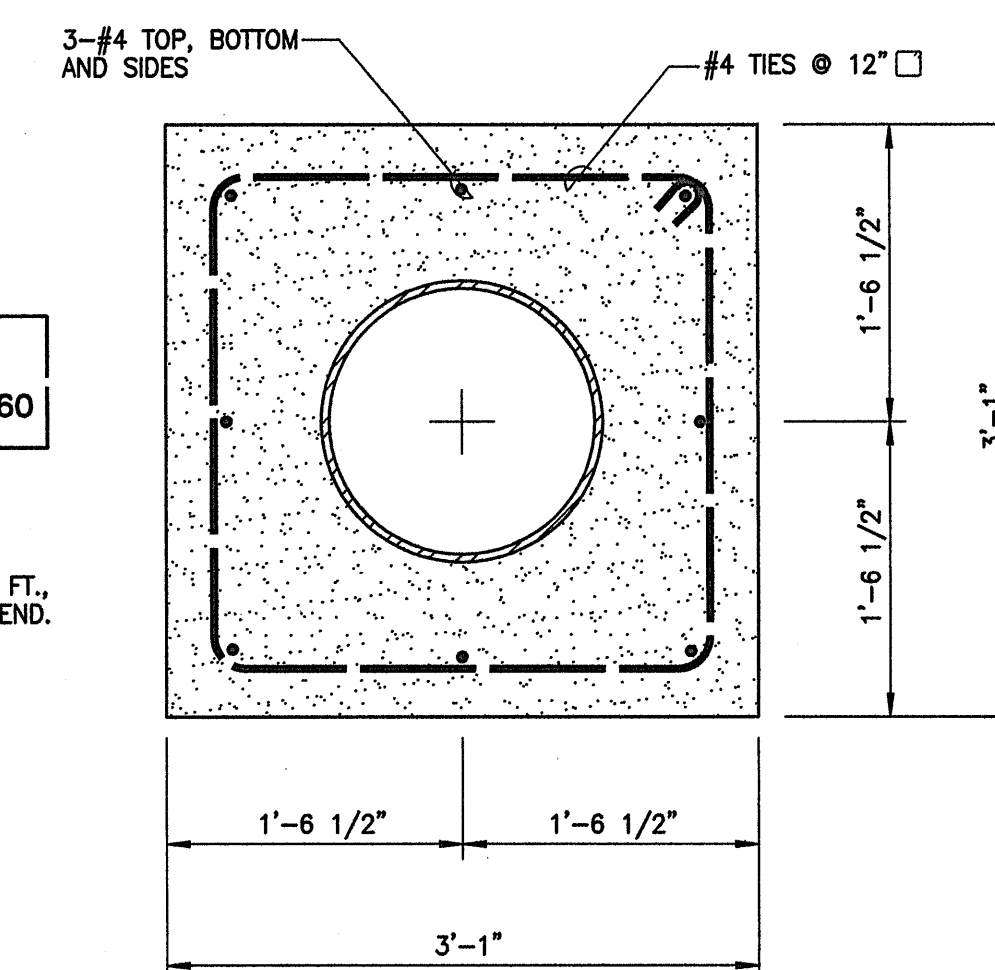


DETAIL FOR HYBRID R/C JACKET SEGMENT
SCALE: 1" = 1'-0"

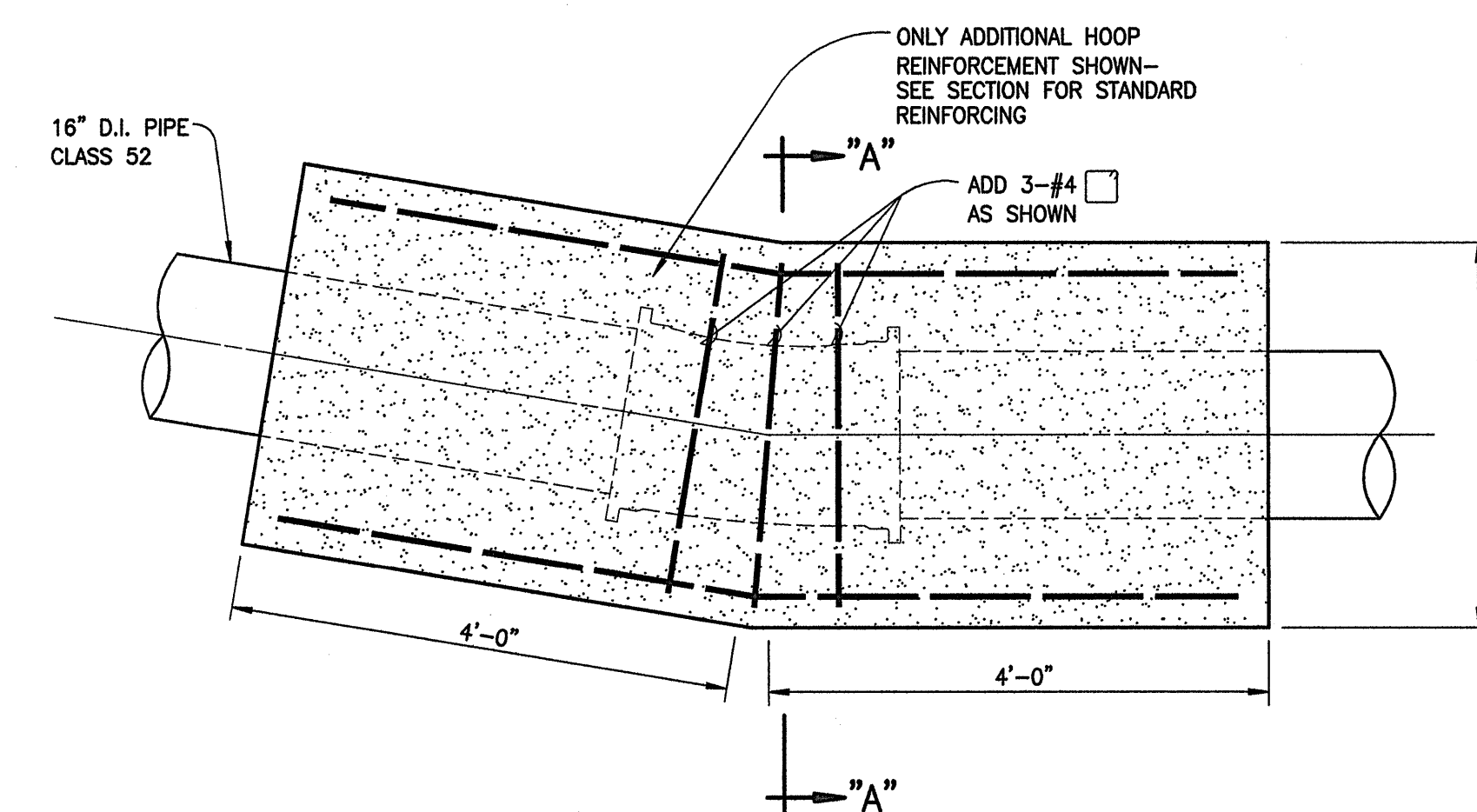
CONCRETE: $f'_c = 4$ ksi
REINFORCEMENT: ASTM A615 GRADE 60

NOTES:

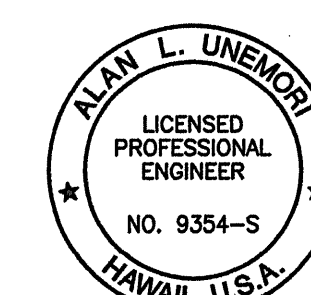
1. MINIMUM LENGTH OF R/C JACKET IS 6 FT., 3 FT. EACH SIDE OF 16" x 11 1/4" BEND.



SECTION "A"-"A"
TYPICAL CROSS-SECTION FOR REINFORCED
CONCRETE JACKET FOR 16" x 11 1/4" BEND
AT STA. 1+38.74
SCALE: 1" = 1' - 0"



PLAN VIEW OF R/C JACKET AT STA. 1+38.74
SCALE: 3/4" = 1'-0"



SIGNATURE
DATE
11/6/2012

WARREN S. UMEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
2145 WELLS STREET, WALLUKU, MAUI, HAWAII 96793

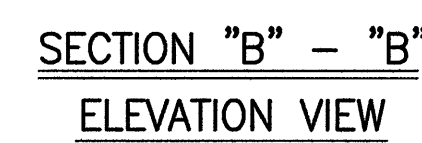
KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAEI, MAUI, HAWAII

TITLE DETAILS - REINFORCED CONCRETE JACKET

	Revisions Per DWS	01/06/12
	Outflow Waterline Upsized to 16"	10/06/11
LETTER	DESCRIPTION	DATE

DESIGNED BY	DTU	CHECKED BY	DTU	JOB NUMBER	04010.10
DRAWN BY	WIS	APPROVED BY	DTU	10-10-05	SHEET
SCALE	3/4" = 1'-0"	DATE		OF	SHEETS

12.05



5-#4 EQUALLY SPACED

1'-0"

1'-10"

3" CLR.

1'-10"

1'-0"

22" ±

12" D.I. PIPE

#4 AT CORNERS
24" MINIMUM OVERLAP
AT SPLICES

16" X 45" BEND

2" Gap

3" CLR.

#4 TIES AT 12" O.C.

2" Gap

1'-0"

VARIABLES WITH
FIELD CONDITIONS

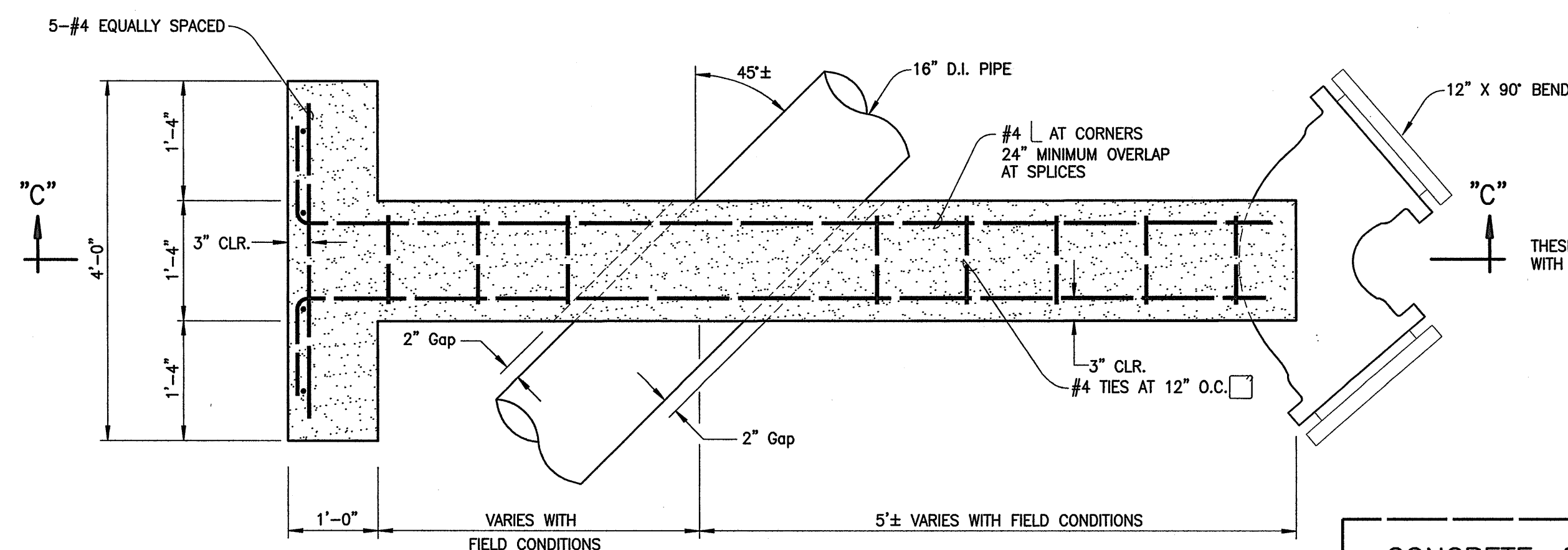
5' ± VARIATION WITH FIELD CONDITIONS

"B"

"B"

PLAN VIEW

SCALE: $3/4" = 1'-0"$



PLAN VIEW

SCALE: $3/4" = 1'-0"$

3'-0"

3" CLR.

4-#4

VARY DEPTH OF THRUST BEAM FOR 6" MIN. COVER ABOVE GAP

3' MIN. COVER

2" Gap

W16"

VARY DEPTH OF THRUST BEAM FOR 6" MIN. COVER BELOW GAP

1'-0"

VARIABLES WITH FIELD CONDITIONS

5'± VARIES WITH FIELD CONDITIONS

3" CLR.

#4 TIES AT 12" O.C.

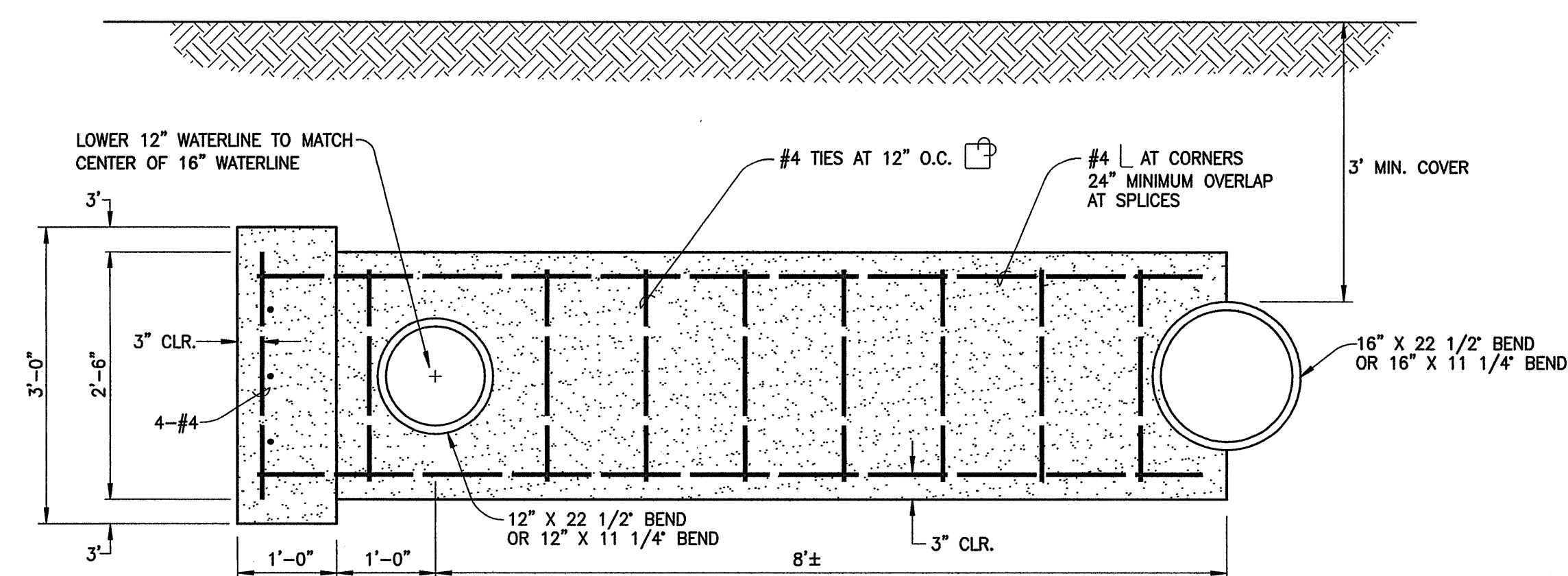
LOWER 12" WATERLINE TO MATCH CENTER OF 16" WATERLINE

2'-0"

12" X 90° BEND

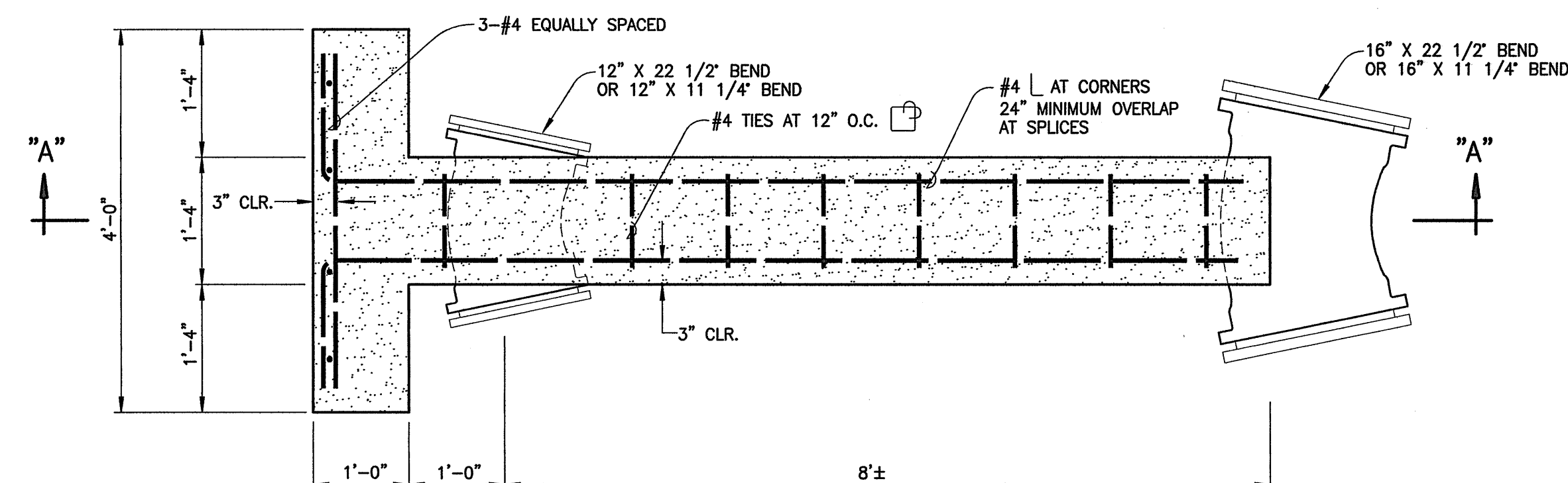
ALAN L. UNEMOTO
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

SECTION "C" - "C"
ELEVATION VIEW



SECTION "A" - "A"
ELEVATION VIEW

CONCRETE: $f_c' = 4$ ksi
REINFORCEMENT: ASTM A615 GRADE 60



PLAN VIEW

STA. 35+96 AND 36+06

SCALE: $3/4" = 1'-0"$ details/water/thrst-bik.dwg



10/17/2011

SIGNATURE	DATE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"	



WARREN S. UNEMORI ENGINEERING, INC.
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KAONOULU MARKET PLACE

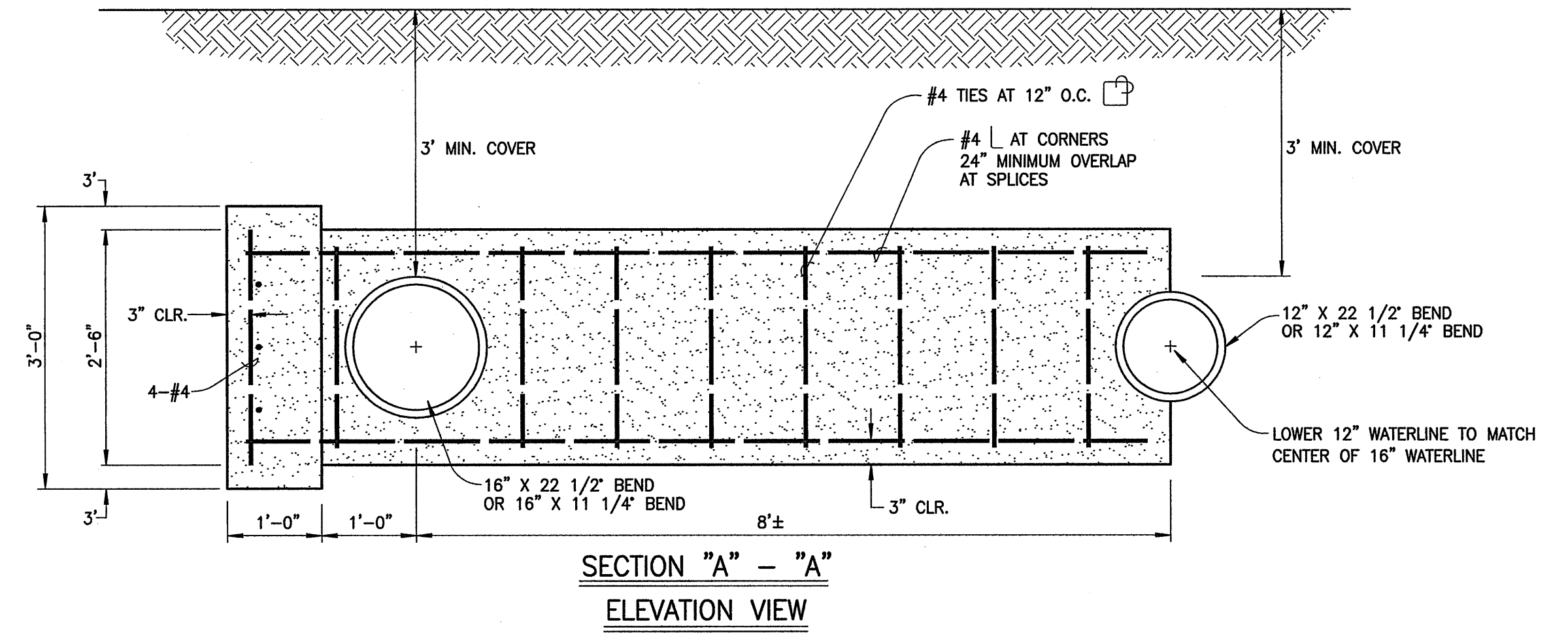
T.M.K.: (2) 3-9-01 : 16

TITLE DETAILS - REINFORCED CONCRETE THRUST BEAMS FOR 12" AND 16" OFFSITE WATERLINES

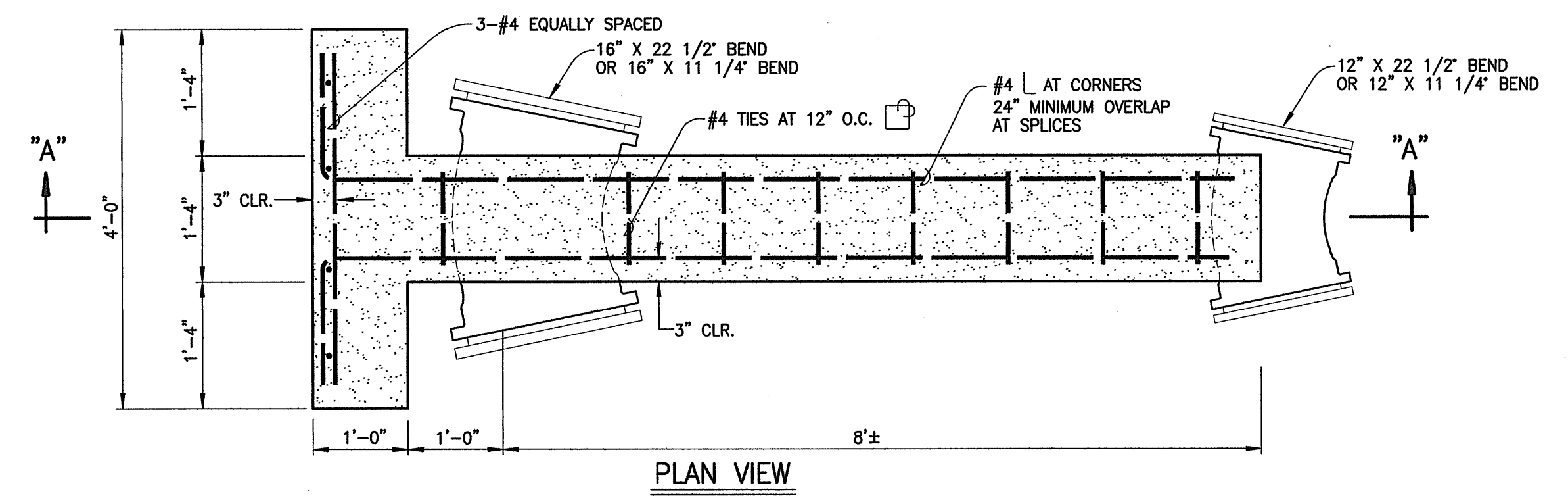
DTU DESIGNED BY		DTU CHECKED BY		04010.10		12.0	
WIS DRAWN BY		DTU APPROVED BY		JOB NUMBER		SHEET	
SCALE 3/4"=1'-0"				10-10-05		OF SHEETS	

12.06

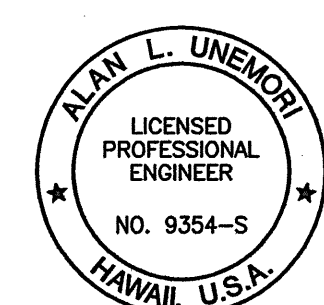
SHEET



CONCRETE: $f_c' = 4$ ksi
REINFORCEMENT: ASTM A615 GRADE 60

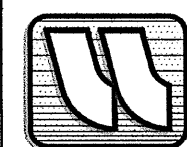


TYPE "SB6" HORIZONTAL THRUST BEAM AT
STA. 38+71 AND 38+81
SCALE: $3/4" = 1'-0"$



SIGNATURE: *[Signature]* DATE: 10/17/2011

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 10-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"



WARREN S. UNEMORI ENGINEERING, INC.
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2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE

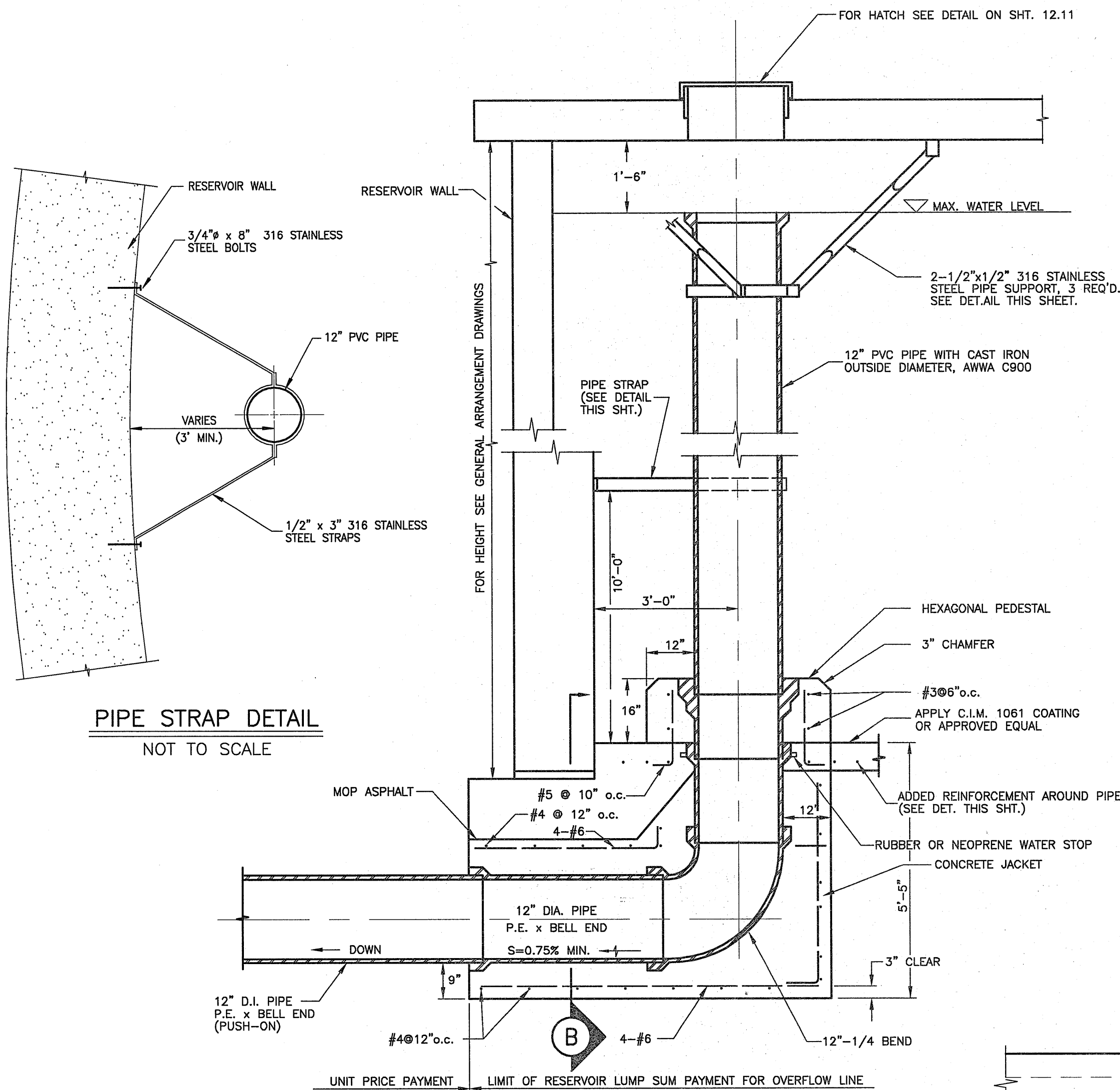
T.M.K.: (2) 3-9-01 : 16
KIHAEI, MAUI, HAWAII

DETAILS - REINFORCED CONCRETE THRUST BEAMS FOR 12" AND 16" OFFSITE WATERLINES

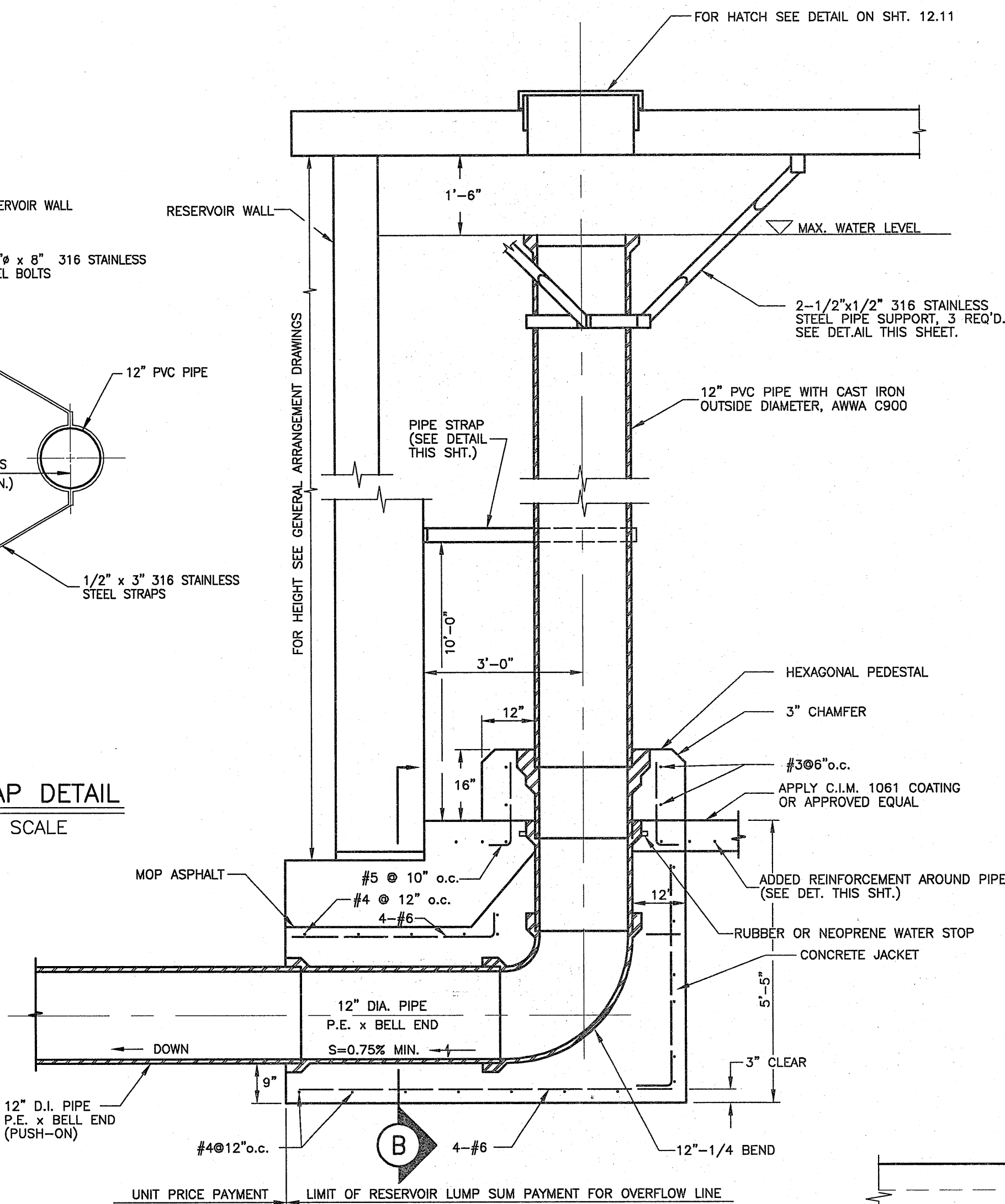
TITLE

DESIGNED BY	CHECKED BY	04010.10	12.07
WIS	DTU	JOB NUMBER	
DRAWN BY	APPROVED BY	10-10-05	SHEET
SCALE: $3/4" = 1'-0"$	DATE	OF	SHEETS

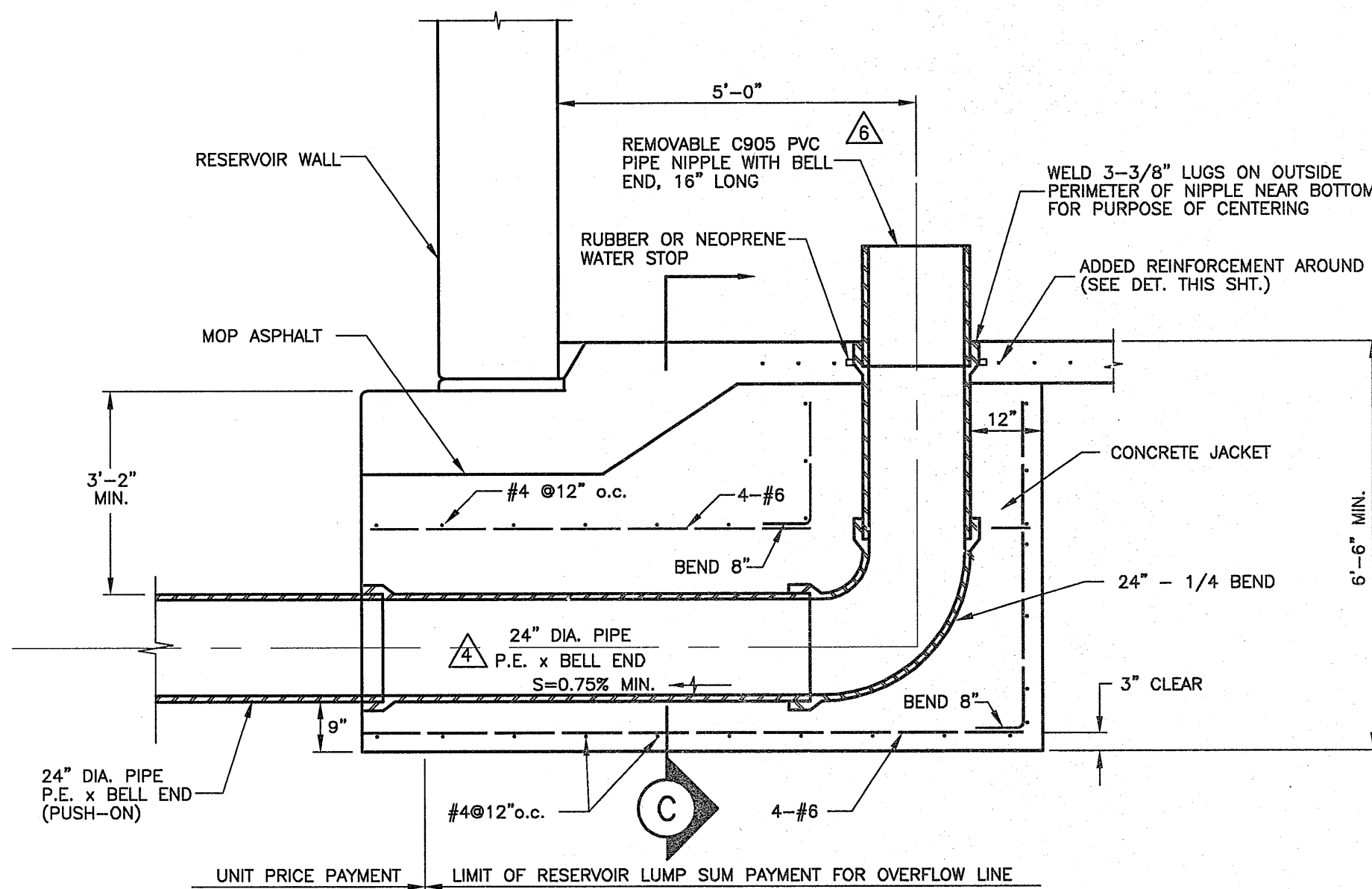
8	Outflow Waterline Upsized to 16"	10/06/11
1	Revised Tank Inflow Line	5/9/08
LETTER	DESCRIPTION	DATE



PIPE STRAP DETAIL
NOT TO SCALE

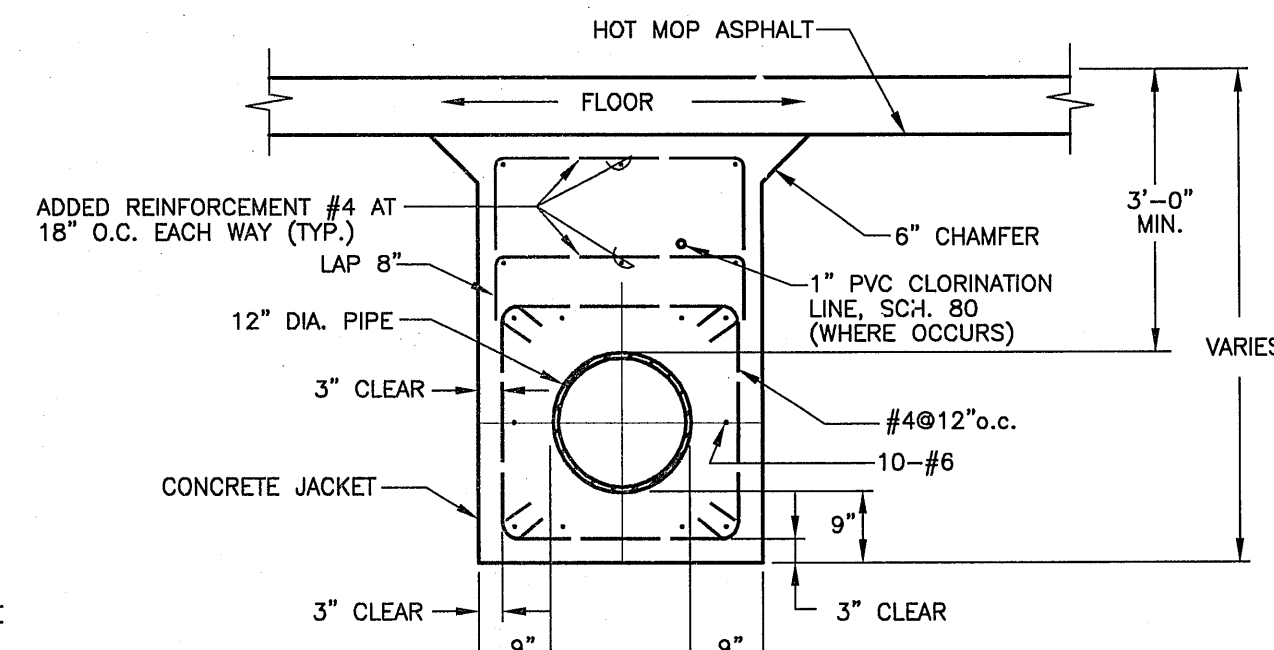


DETAIL OF OVERFLOW
NOT TO SCALE

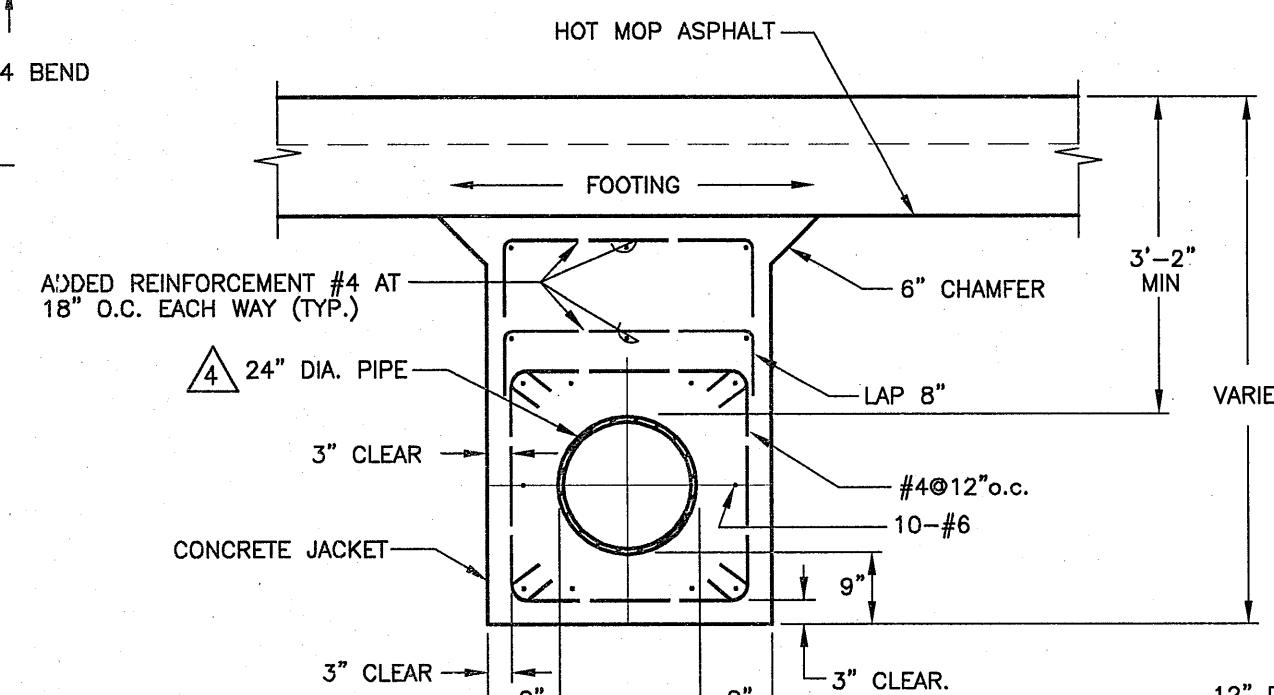


INFLUENT-EFFLUENT LINE
NOT TO SCALE

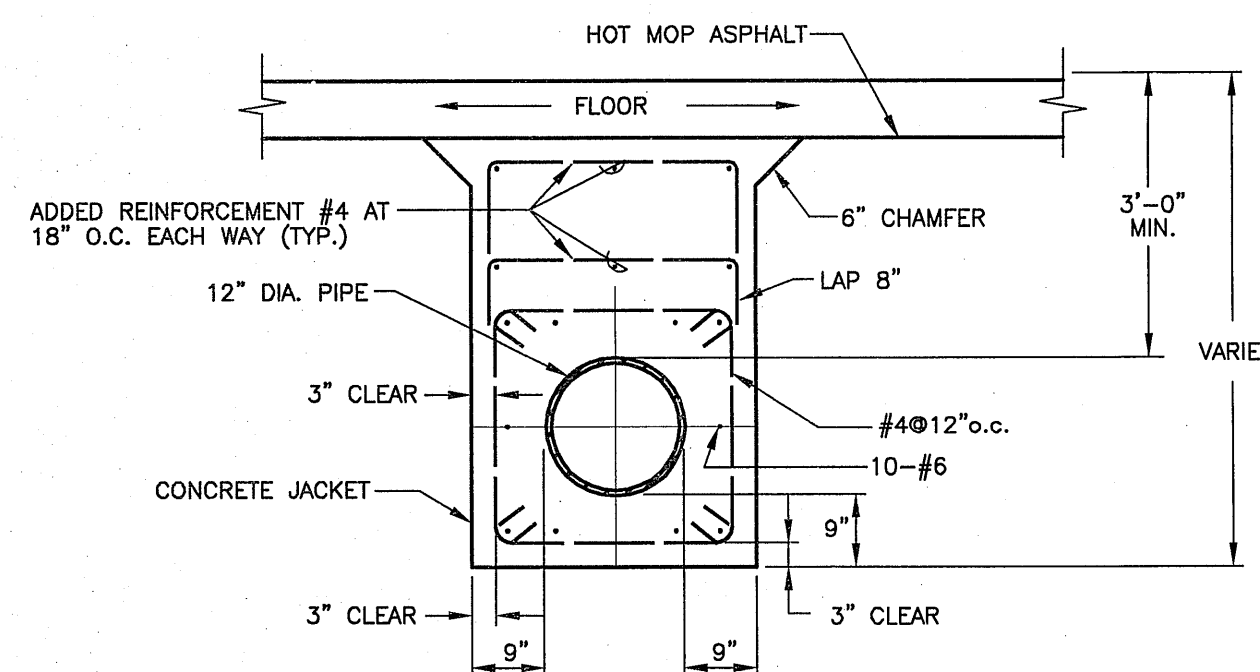
PEDESTAL FOR 12" OVERFLOW ⑧
SCALE: 1/2" = 1'-0"



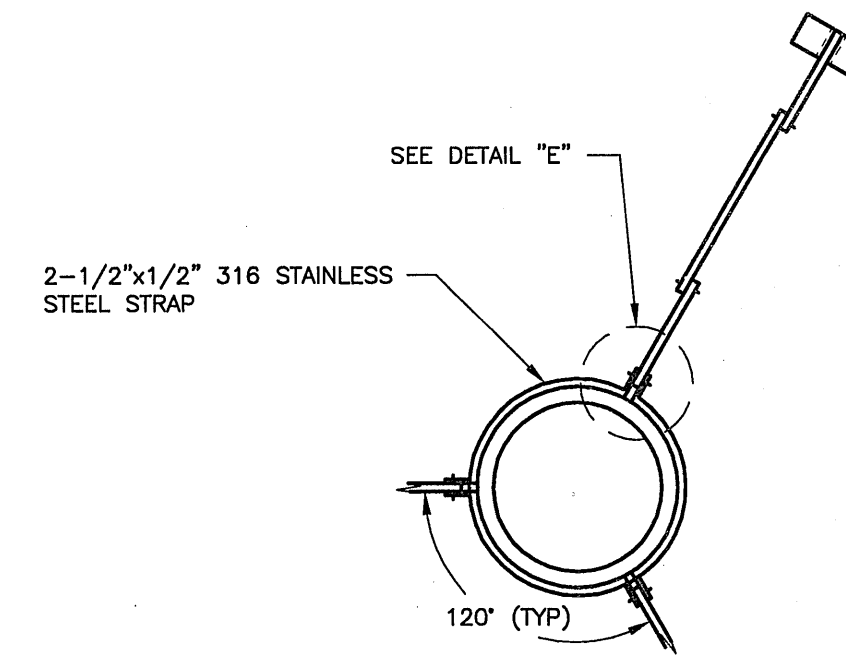
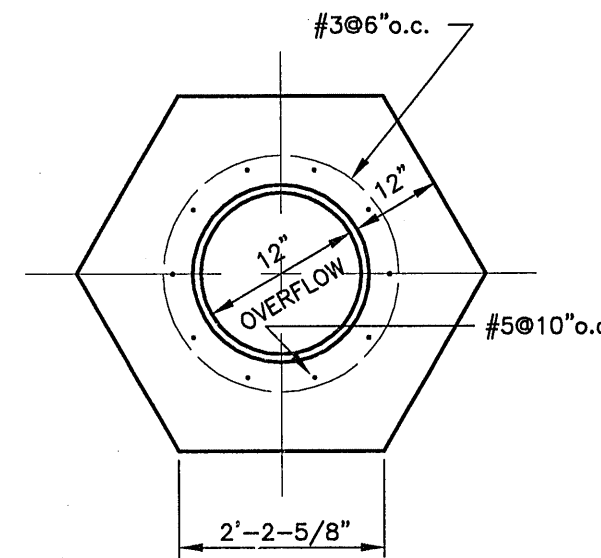
SECTION B
NOT TO SCALE



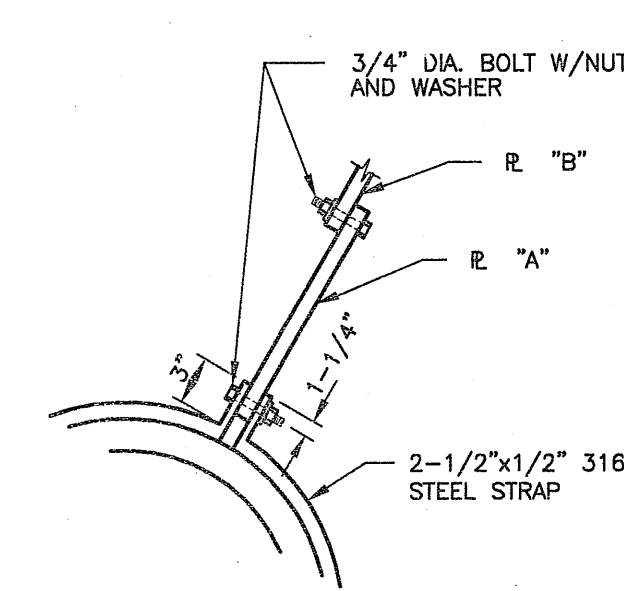
SECTION C
NOT TO SCALE



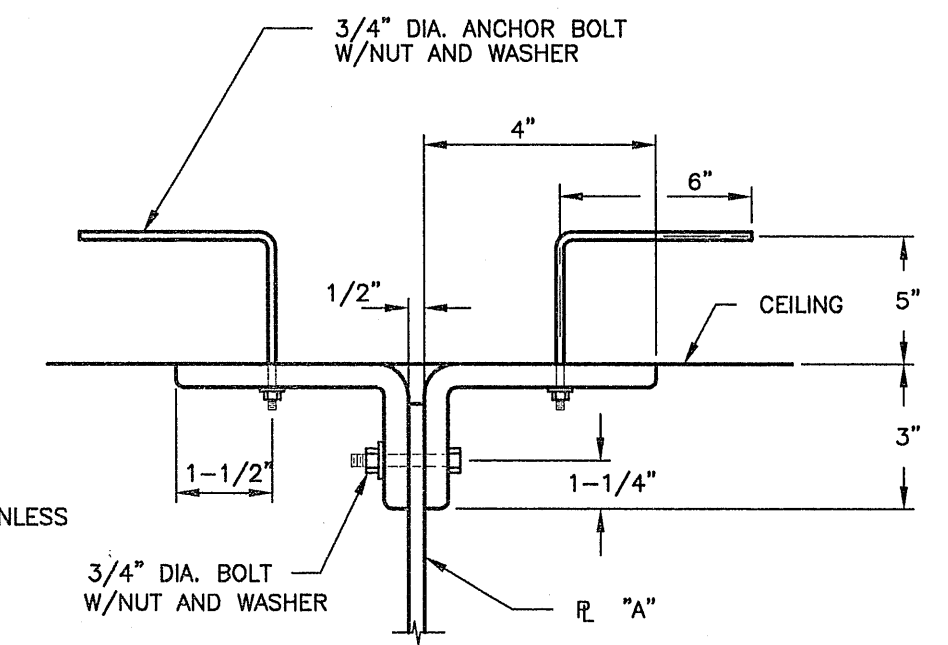
SECTION D
NOT TO SCALE



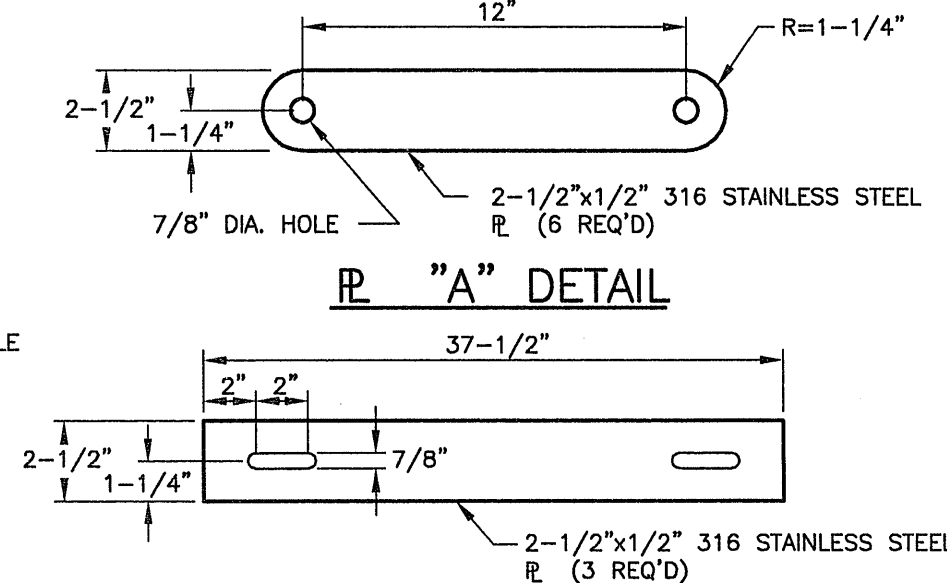
PLAN



DETAIL "E"



CEILING ANCHOR

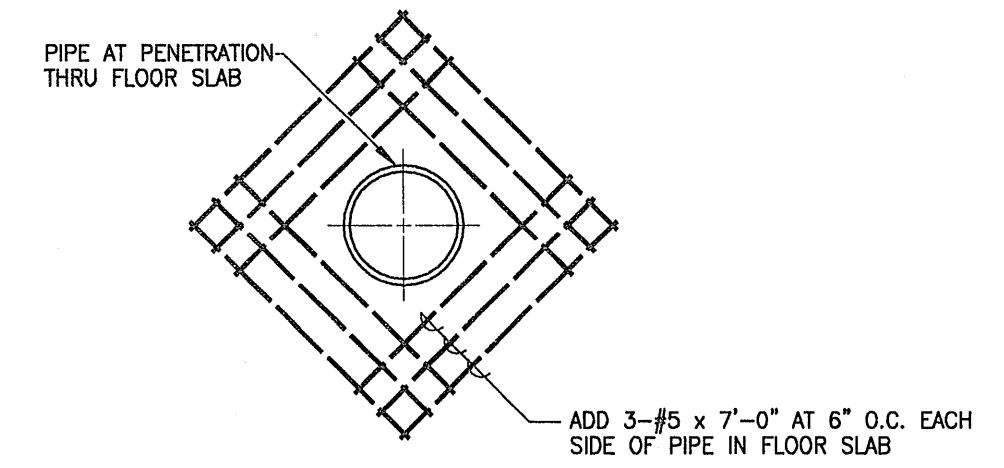


DETAIL "A"

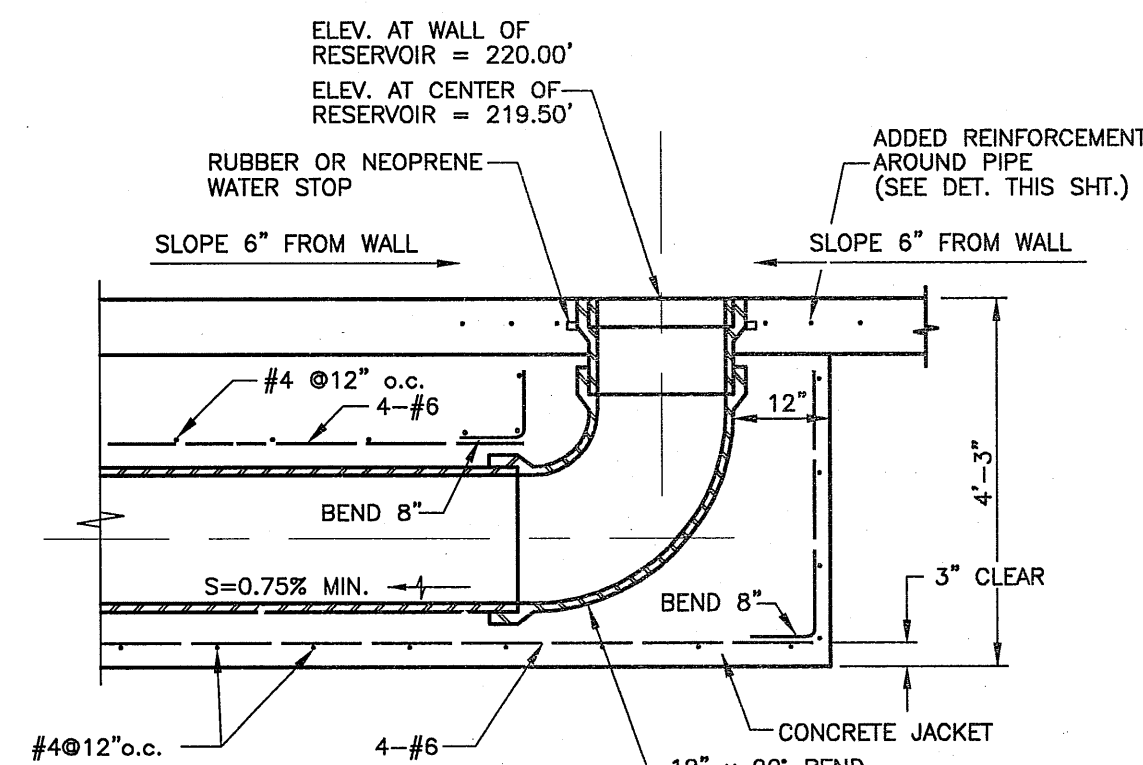
DETAIL "B"

NOTE: ALL BOLTS, NUTS, WASHERS, AND ANCHOR BOLTS FOR OVERFLOW PIPE SUPPORT SHALL BE AISI 316 STAINLESS STEEL OR APPROVED EQUAL. SUBMIT 6 SHOP DRAWINGS FOR APPROVAL.

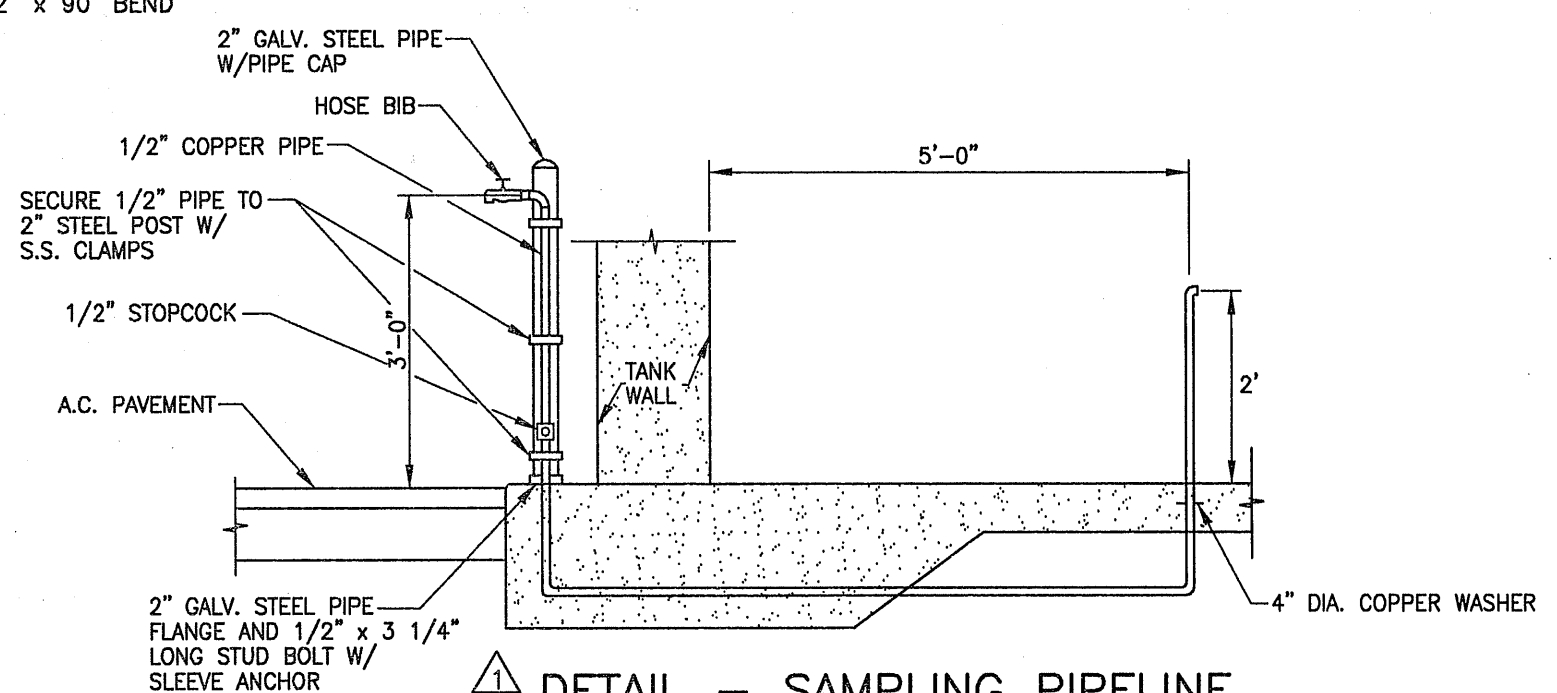
OVERFLOW PIPE SUPPORT DETAILS
SCALE: NONE



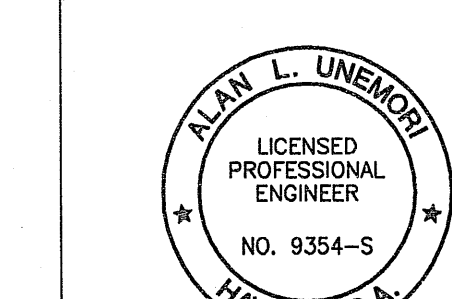
TYPICAL SLAB REINFORCING
AT PIPE PENETRATION
NOT TO SCALE



WASHOUT LINE
NOT TO SCALE



- NOTES:
1. NIPPLES & FITTINGS SHALL BE COPPER.
 2. ISOLATE ALL COPPER FITTINGS FROM REINFORCED STEEL.
 3. SOLDER SHALL BE 1/8" DIAMETER AND SHALL CONTAIN NOT MORE THAN 0.2 PERCENT LEAD.
 4. SEE SITE UTILITY PLAN, SHT. 6.24 FOR LOCATION.



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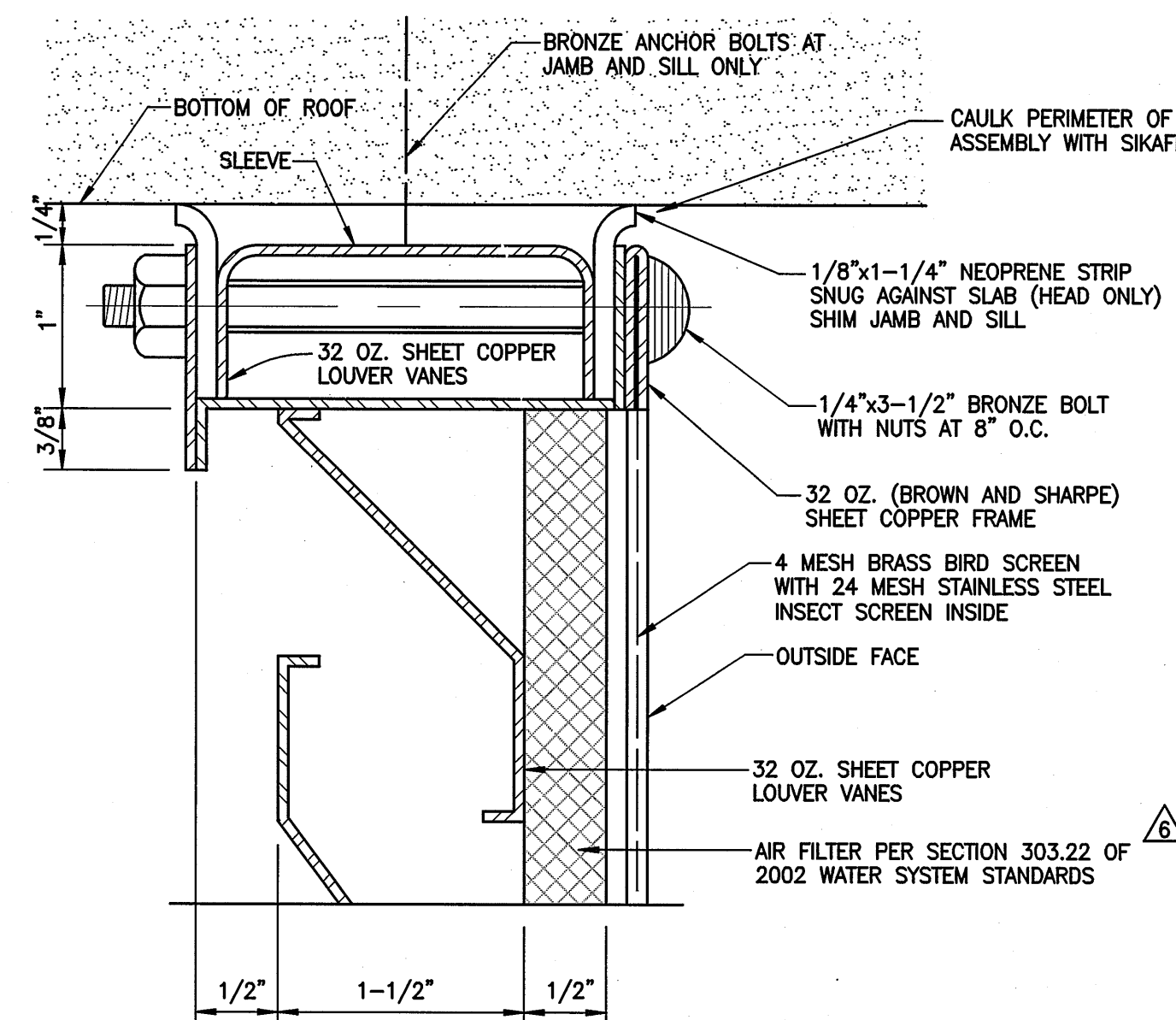
KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAI, MAUI, HAWAII

TITLE: STORAGE TANK DETAILS

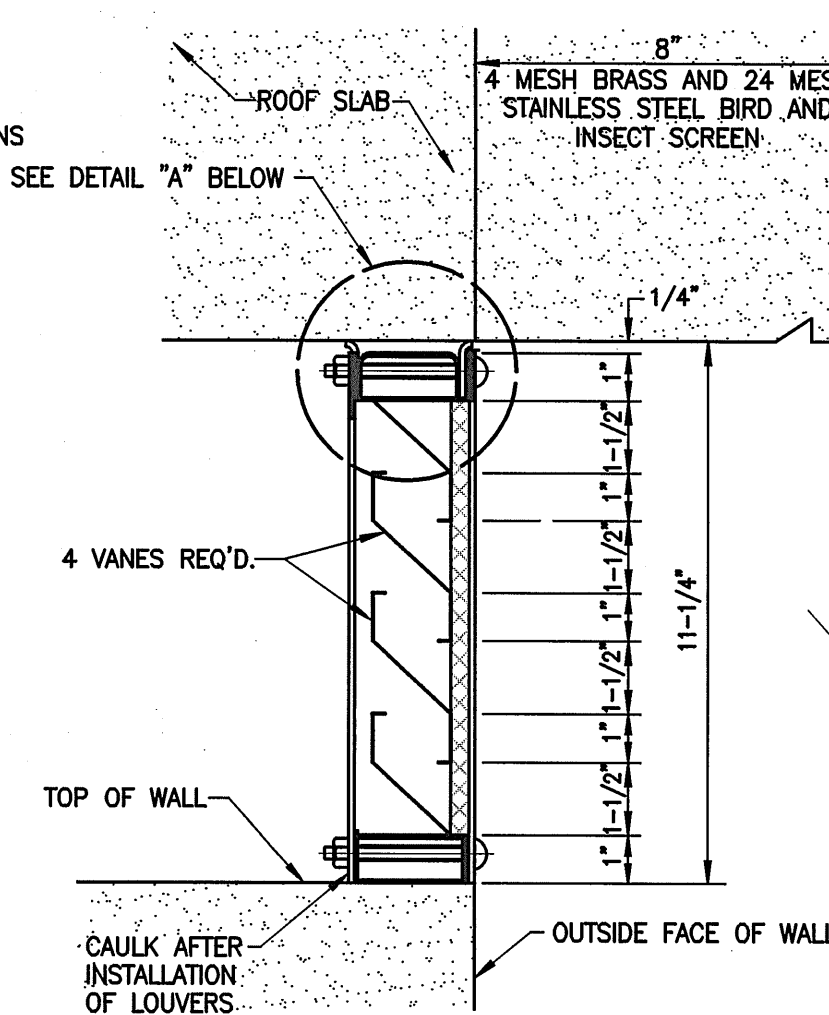
REVISION	DESCRIPTION	DATE
6	Revised Removable Pipe Nipple & Moved Hatch Details to Sht. 12.11	10/01/10
5	Revised Influent-Effluent Line to 24" Dia.	12/12/08
4	Changed Sampling Pipeline Detail, and Materials to Type 316 Steel per DWS Comments.	9/11/06
LETTER	DESCRIPTION	DATE

SIGNATURE: [Signature]
DATE: 3/12/2012
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

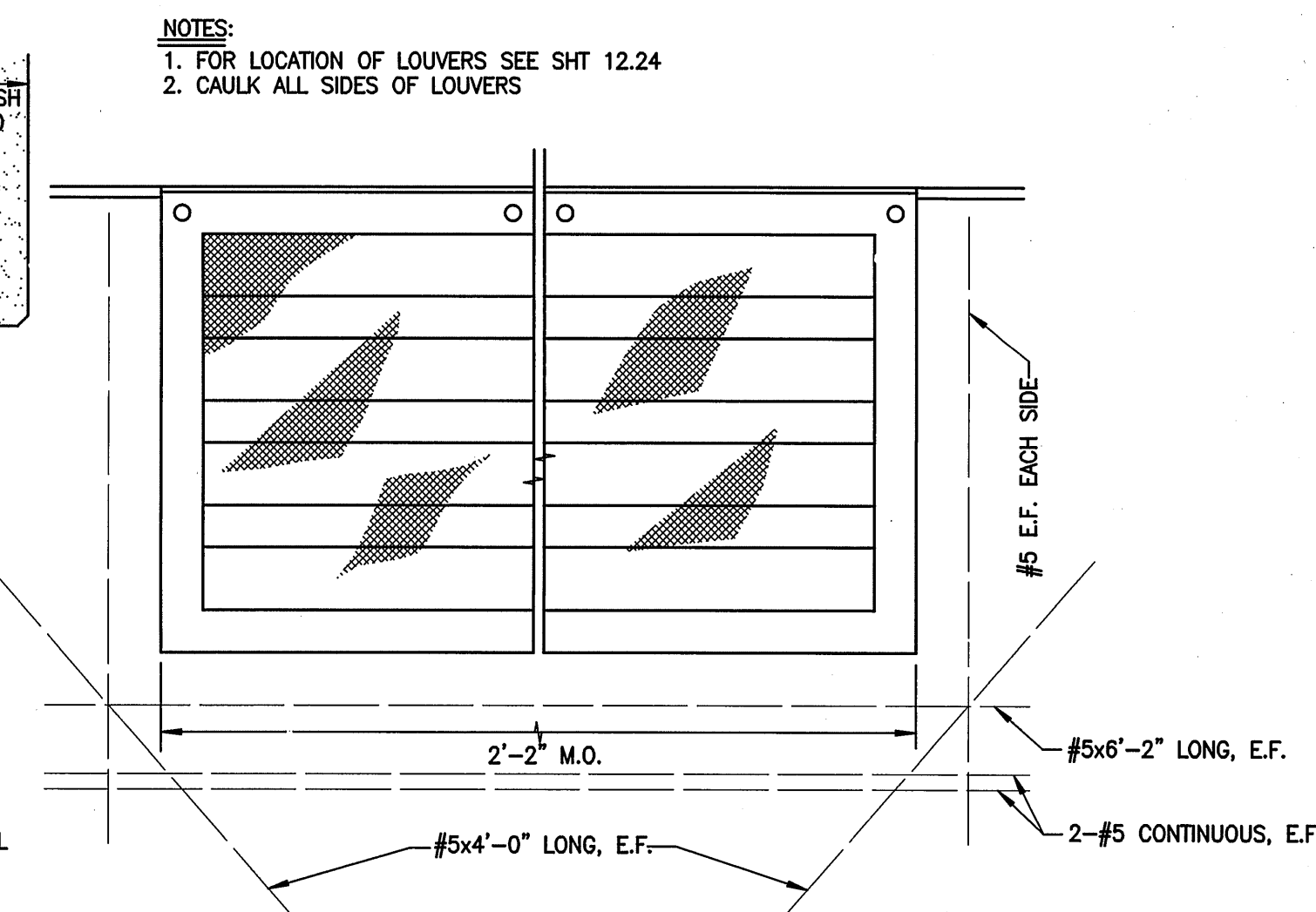
DESIGNED BY	CHECKED BY	DATE	JOB NUMBER	SHEET
ALU	DTU	04010.10	12.10	
DRAWN BY	APPROVED BY	DATE	JOB NUMBER	SHEET
WIS	DTU	10-10-05	12.10	
SCALE	As Shown	DATE	JOB NUMBER	SHEET
			12.10	



HEAD & JAMB SIMILAR
DETAIL "A"
FULL SIZE



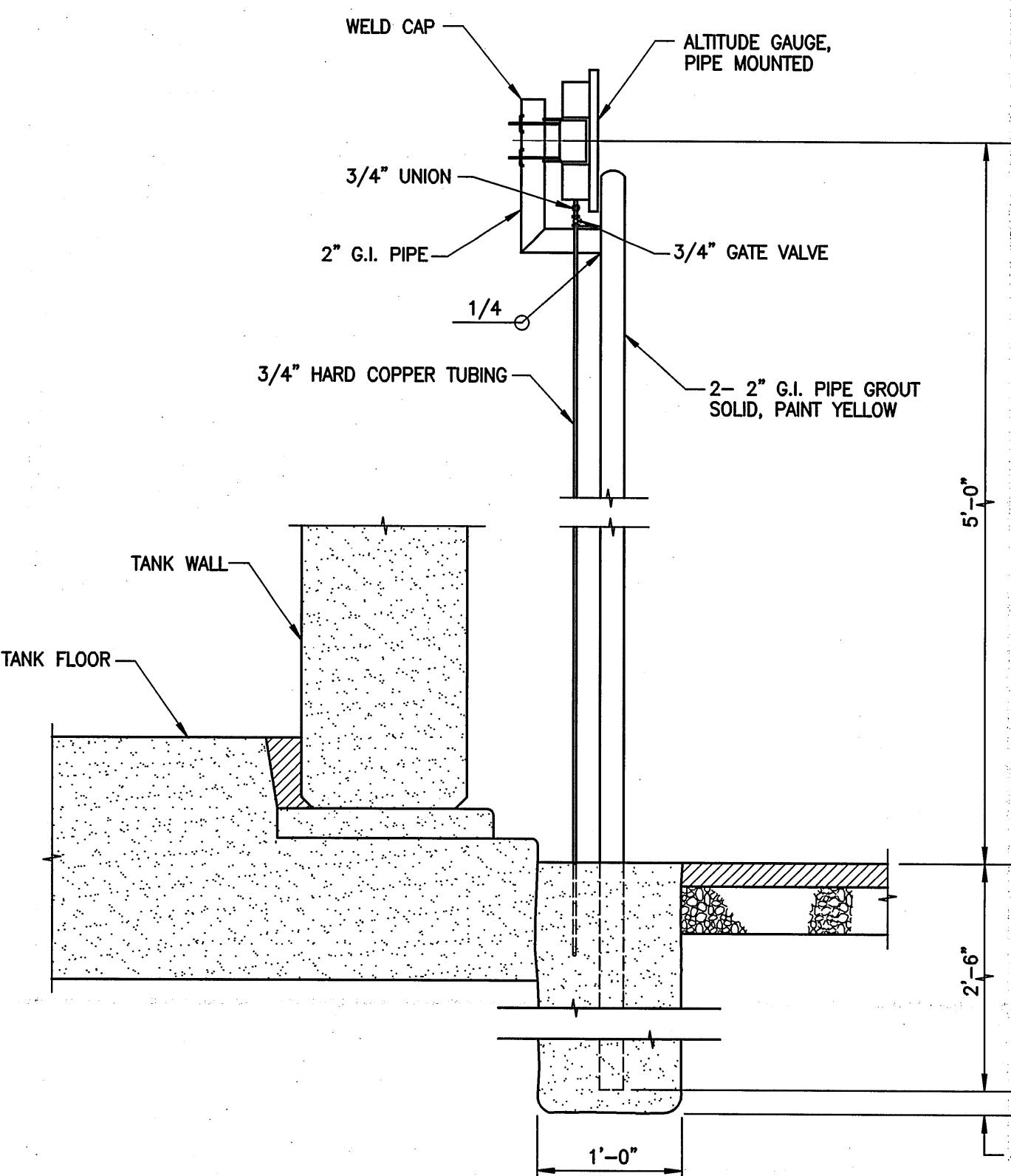
SECTION



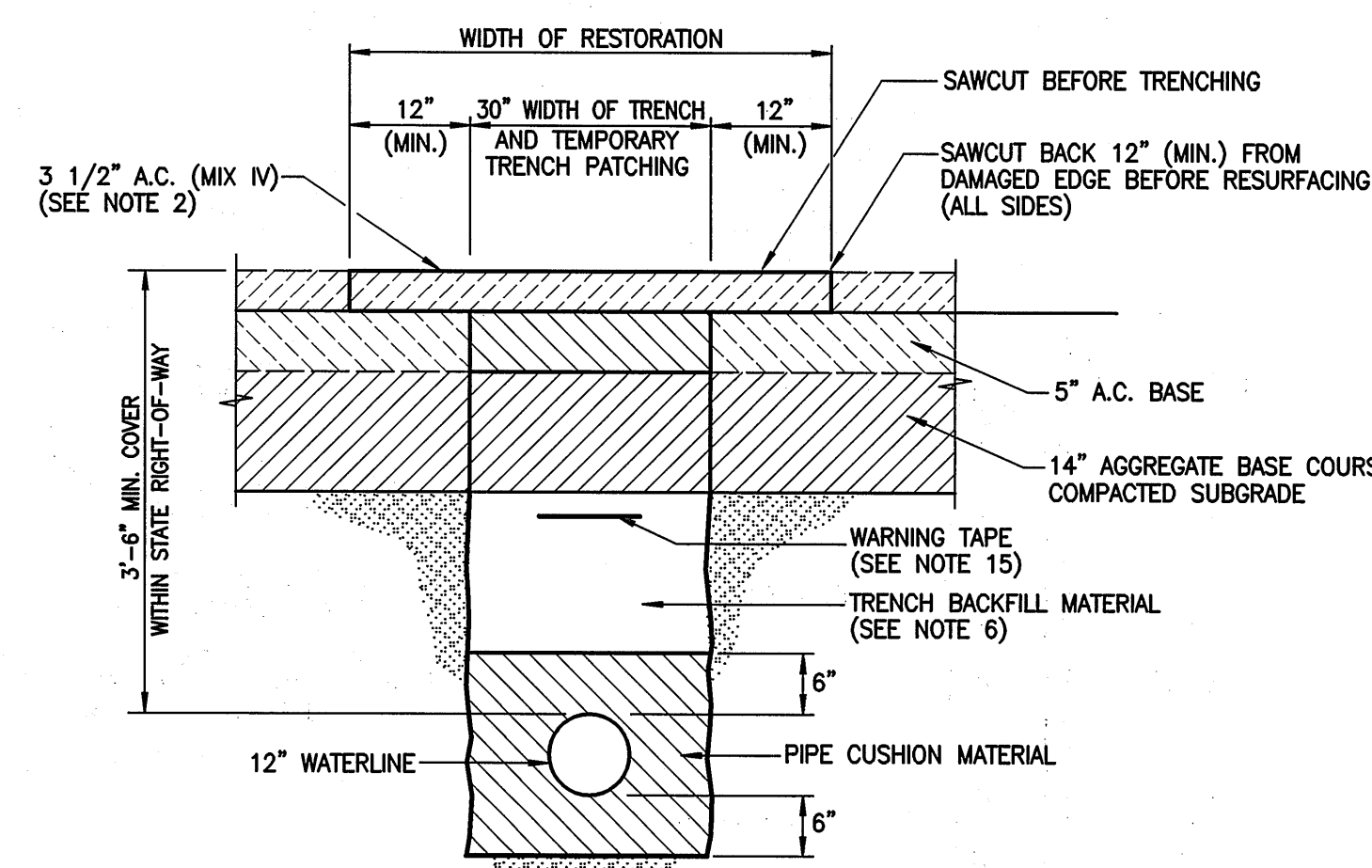
ELEVATION

LOUVERS DETAILS

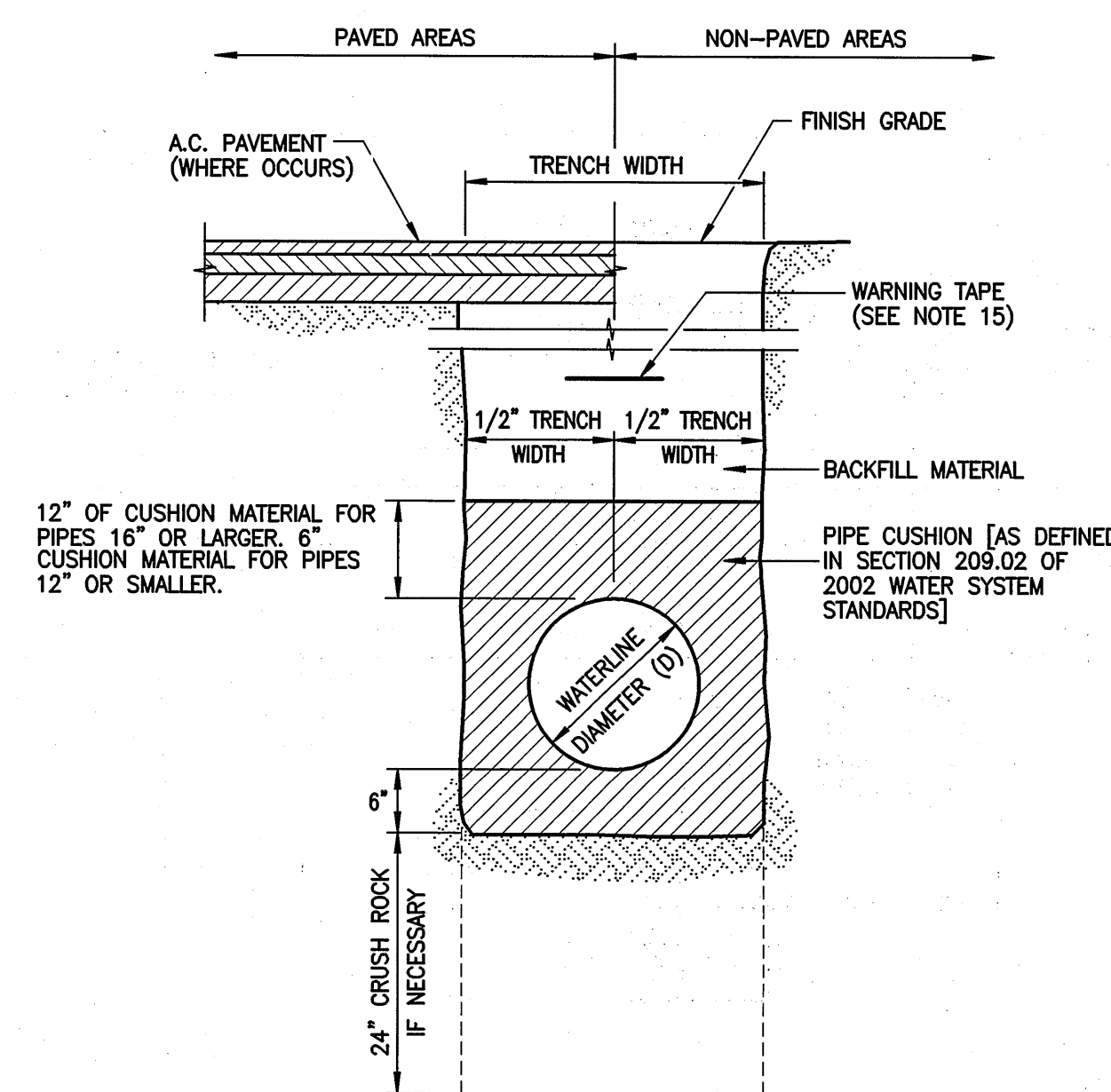
SCALE: 3 IN. = 1 FT. - 0 IN.



SECTION



TYPICAL TRENCH SECTION AND PAVEMENT
RESTORATION SECTION ALONG PIILANI HIGHWAY
NOT TO SCALE

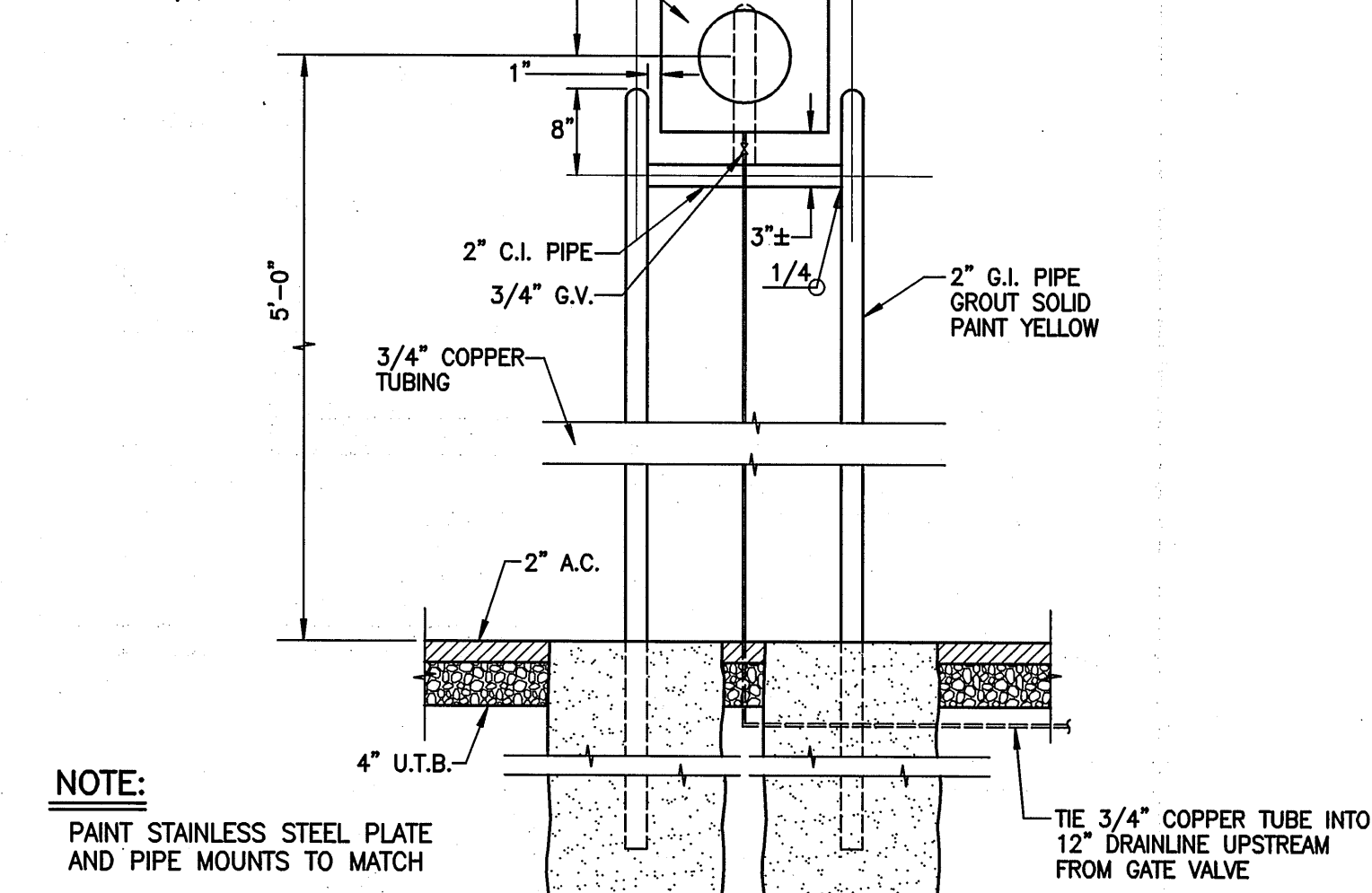


TYPICAL TRENCH EXCAVATION SECTION
FOR OFFSITE WATERLINES
NOT TO SCALE

NOTES:

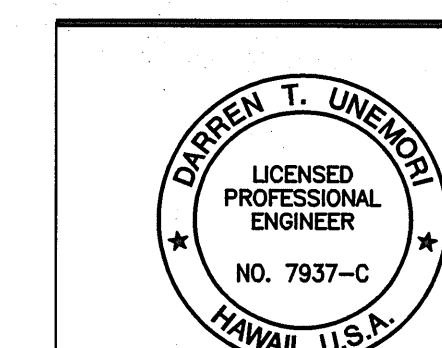
- RESTORE PAVEMENT TO MATCH EXT'G PAVEMENT SECTION.
- MINIMUM THICKNESS OF PAVEMENT:
PIILANI HIGHWAY
3 1/2" AC PAVEMENT (MIX IV)
5" A.C. BASE
14" AGGREGATE BASE COURSE
COMPACTED SUBGRADE
- EXCAVATION FOR EXTRA 24" WIDTH OF REPAVING TO BE INCLUDED WITH TRENCH EXCAVATION.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY COLD PATCH IF RESTORATION WORK CANNOT BE MADE WITHIN 24 HOURS AFTER BACKFILL HAS BEEN COMPLETED.
- PRIME COAT SHALL BE PLACED ON NEW AGGREGATE BASE COURSE AND EXISTING AGGREGATE BASE COURSE PRIOR TO PLACING OF A.C.
- TRENCH BACKFILL AND BED COURSE MATERIAL SHALL CONFORM TO SECTION 703, "AGGREGATES" OF THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2005)". PIPE CUSHION SHALL FOLLOW DWS STANDARD 209.02.
- INSTALLATION OF WATERLINES SHALL CONFORM TO SECTION 624, "WATER SYSTEM" OF THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2005)".
- TRENCH WIDTH SHALL CONFORM TO TABLE 624.03-1 OF SECTION 624.03(B) OF THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2005)".
- CONTRACTOR SHALL INSTALL BIOBARRIER ROOT CONTROL SYSTEM AS MANUFACTURED BY REEMAY, INC. OR APPROVED EQUIVALENT. CONTRACTOR SHALL CUT ALL EXISTING ROOTS PROTRUDING INTO PIPE TRENCH AND PLACE 10 LINEAL FEET OF ROOT BARRIER WHEN TRENCH WALL LIES WITHIN 24" OF EXISTING TREE.
- CONTRACTOR SHALL MAINTAIN AND RESTORE EXISTING SWALES ALONG ROADWAY SHOULDERS TO PROVIDE ADEQUATE DRAINAGE.
- ALL EXPOSED AREAS ARE TO BE GRASSED.
- THE CONTRACTOR SHALL RESTRIPE CENTERLINE, STOPBARS, AND REPLACE ALL PAVEMENTS MARKERS.
- THE TRENCH SECTION IN UNPAVED AREAS SHALL BE BACKFILLED WITH A CROWN APPROXIMATELY THREE (3) INCHES HIGHER THAN THE ADJOINING UNDISTURBED GROUND TO KEEP SURFACE RUNOFF AWAY FROM THE BACKFILLED TRENCH AREA. ADD GEOTEXTILE OVER BACKFILL TO PREVENT EROSION.
- GRUBBING ALONG THE LENGTH OF WATERLINE SHALL BE LIMITED TO 15 FT. WIDTH. ALL EXPOSED AREAS NOT WITHIN A ROADWAY SHALL BE GRASSED IMMEDIATELY FOLLOWING INSTALLATION OF WATERLINE.
- WARNING TAPE SHALL BE IN ACCORDANCE WITH SECTIONS 212.08 AND 302.03 OF 2002 WATER SYSTEM STANDARDS.

△ TRERICE 500X SERIES ALTITUDE GAUGE (ORDER NO.: 500XSS85SML500FTH20080) WITH AN 8-1/2" DIAL (DIAL FACE CALIBRATED TO MEASURE FEET OF WATER), FRONT FLANGE CASE FOR STAINLESS STEEL PLATE 1/8" THICK, PIPE MOUNTED



DETAIL - LIQUID LEVEL INDICATOR

SCALE: 3/4 IN. = 1 FT. - 0 IN.

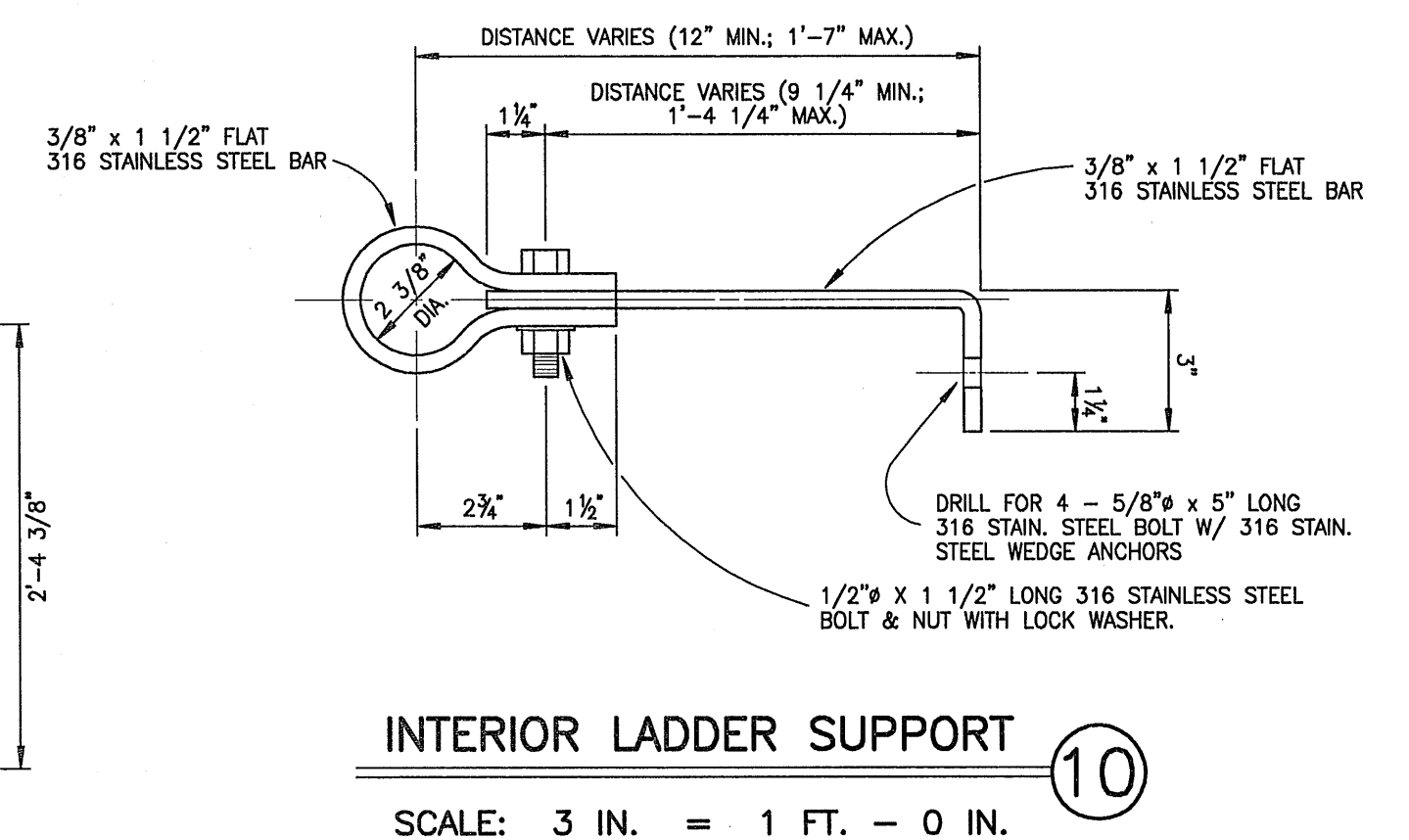
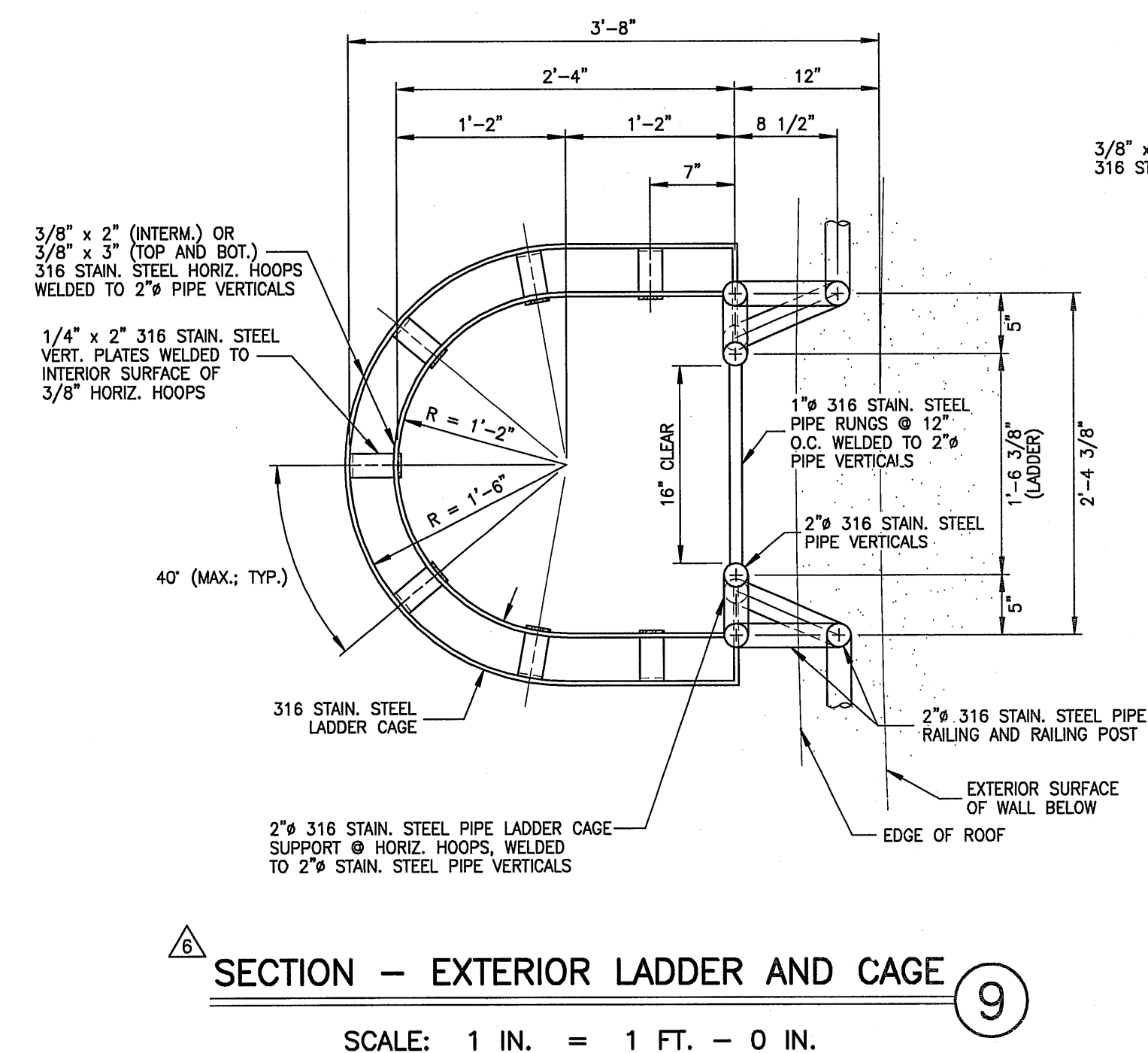
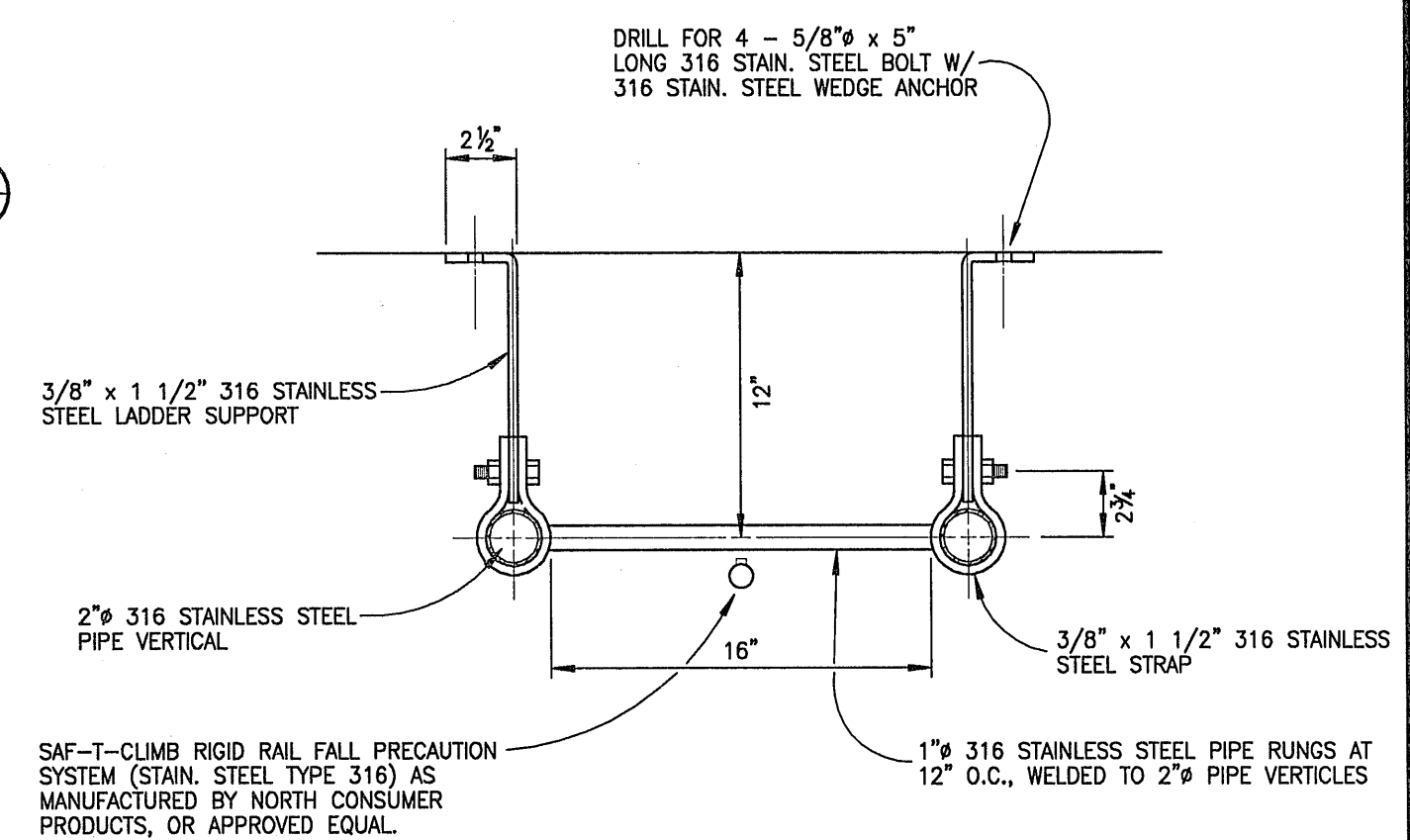
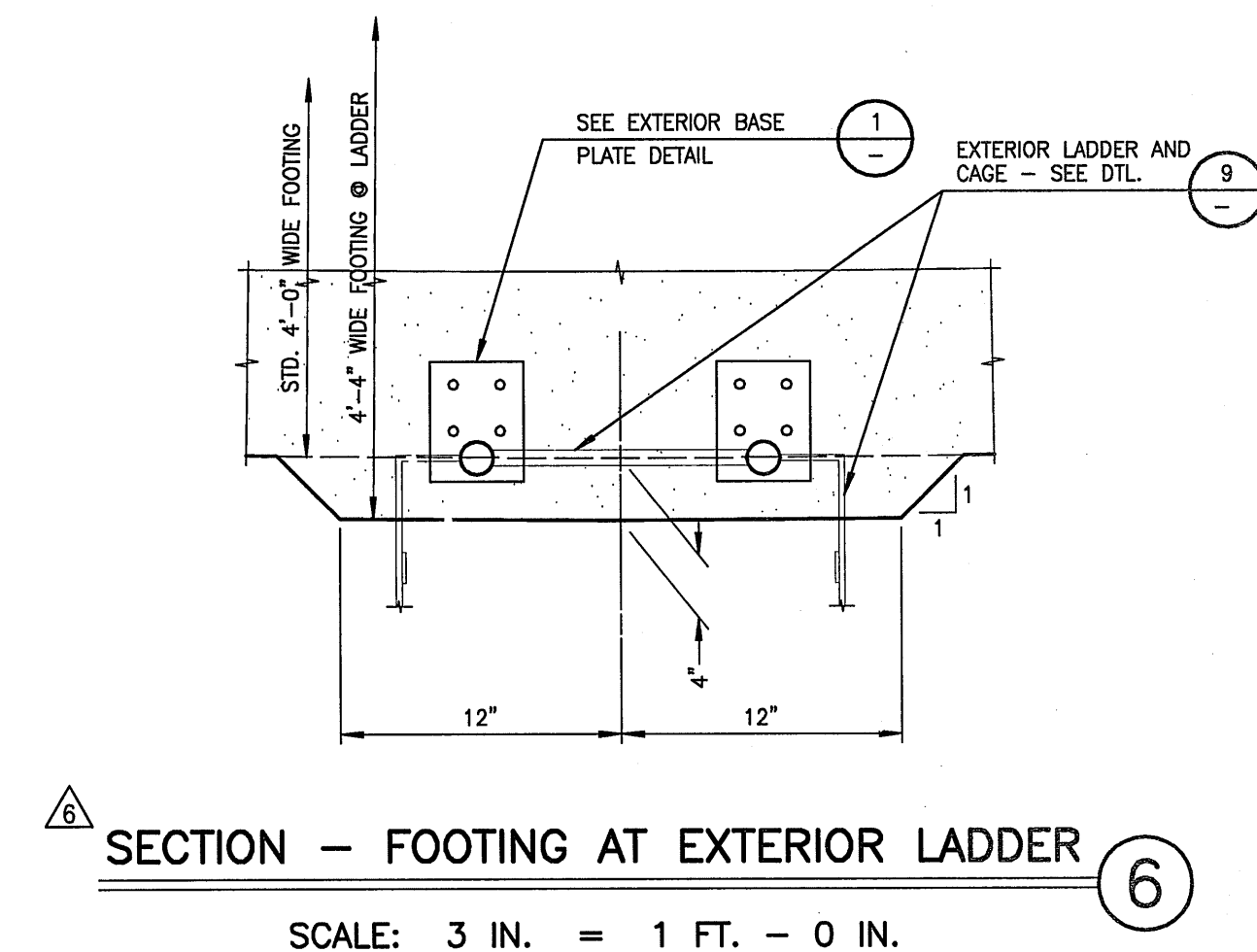
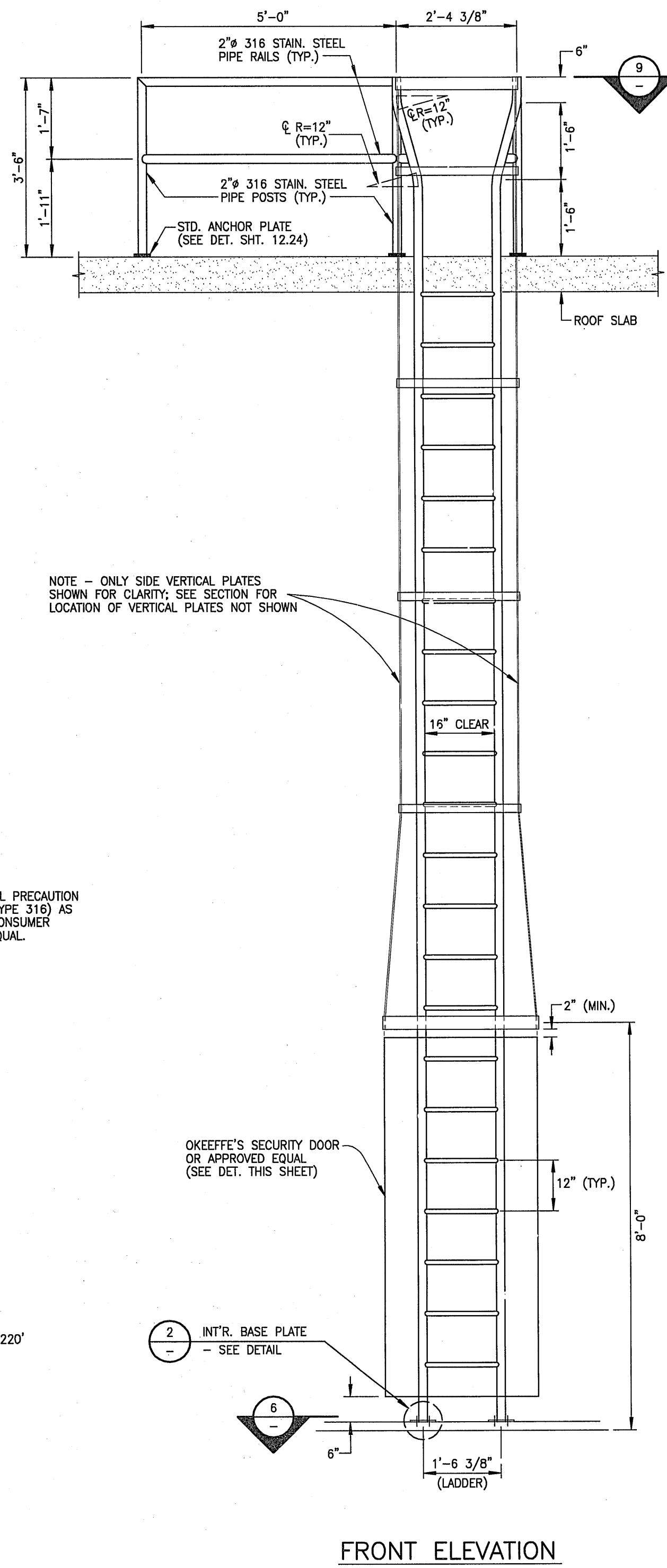
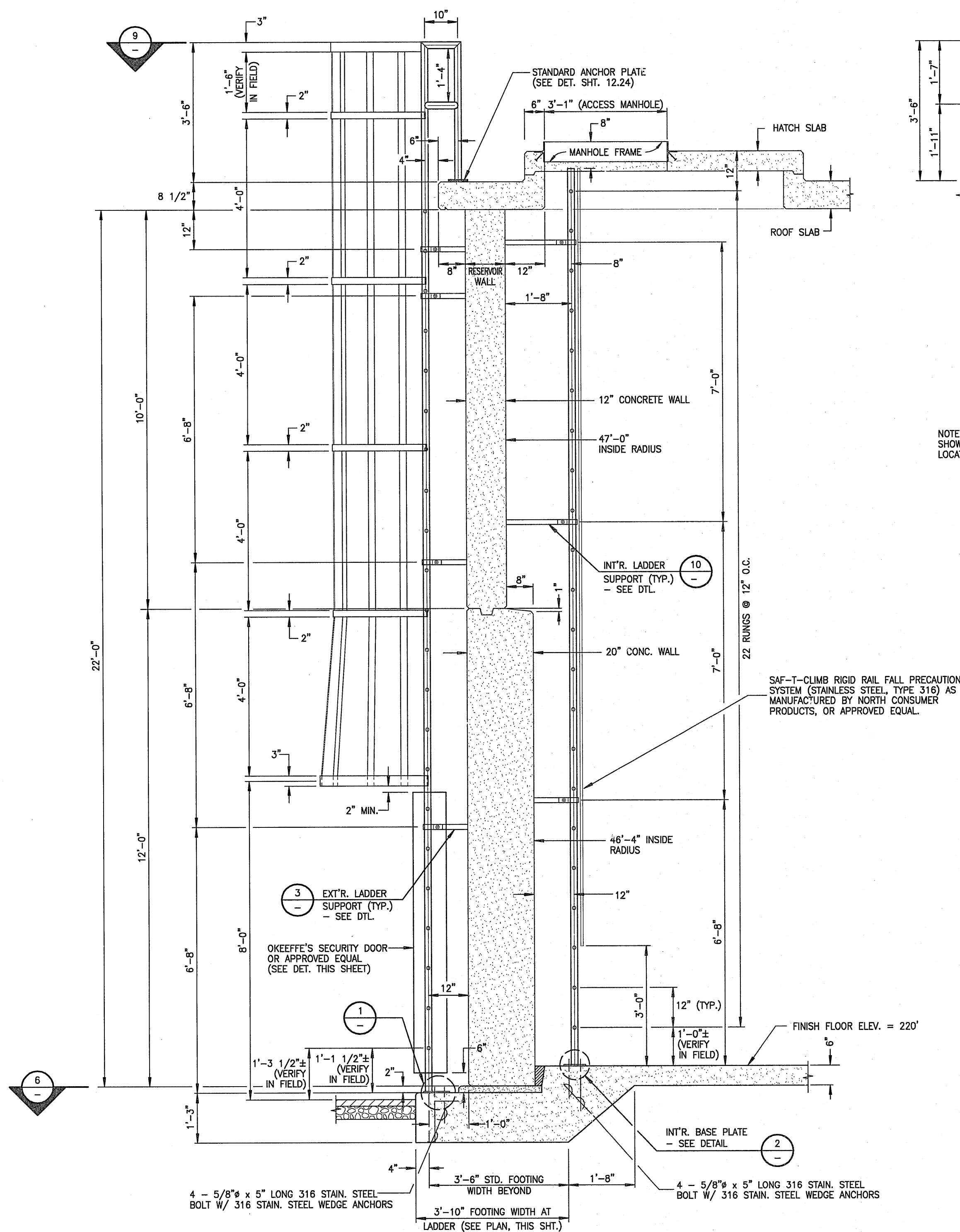
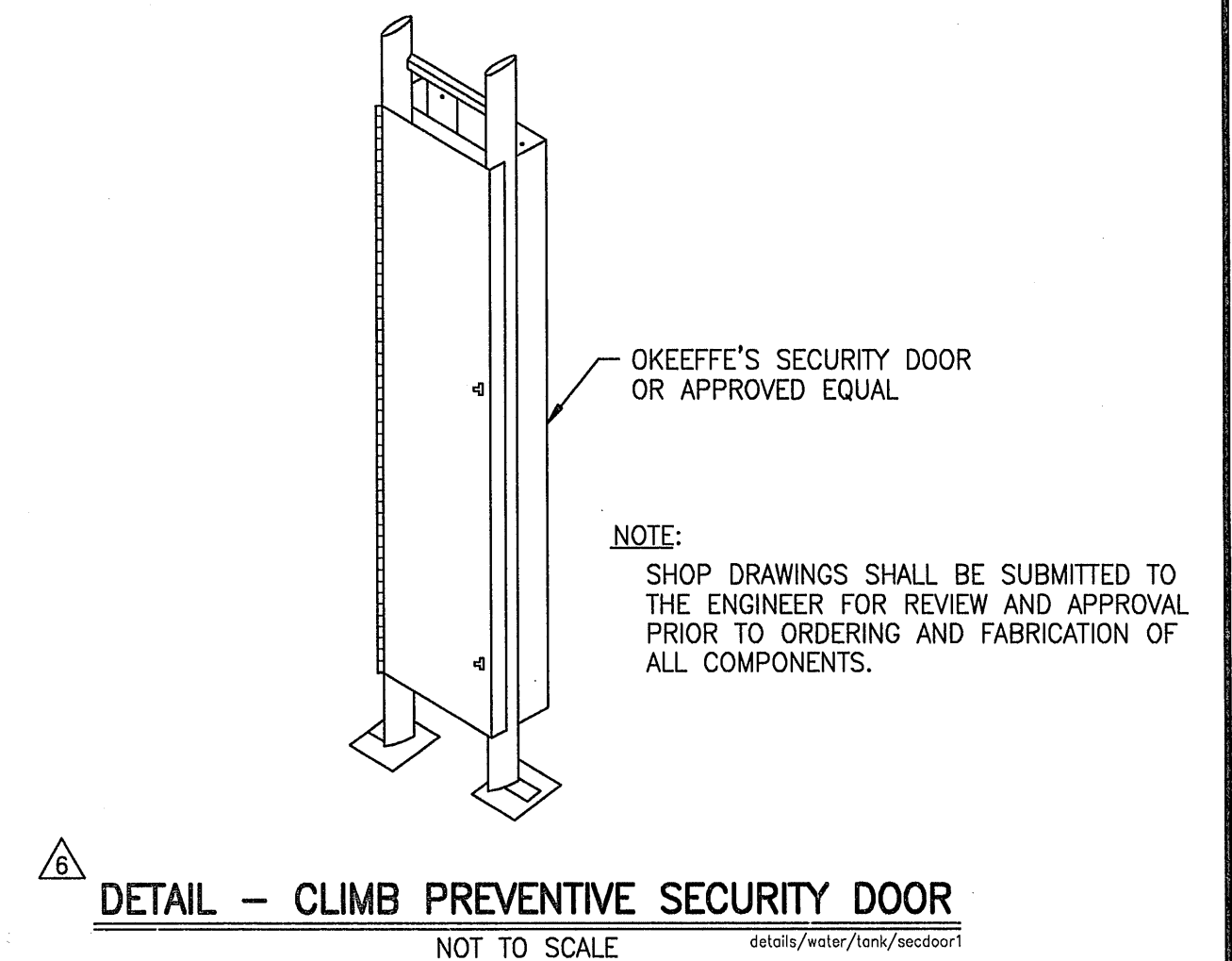
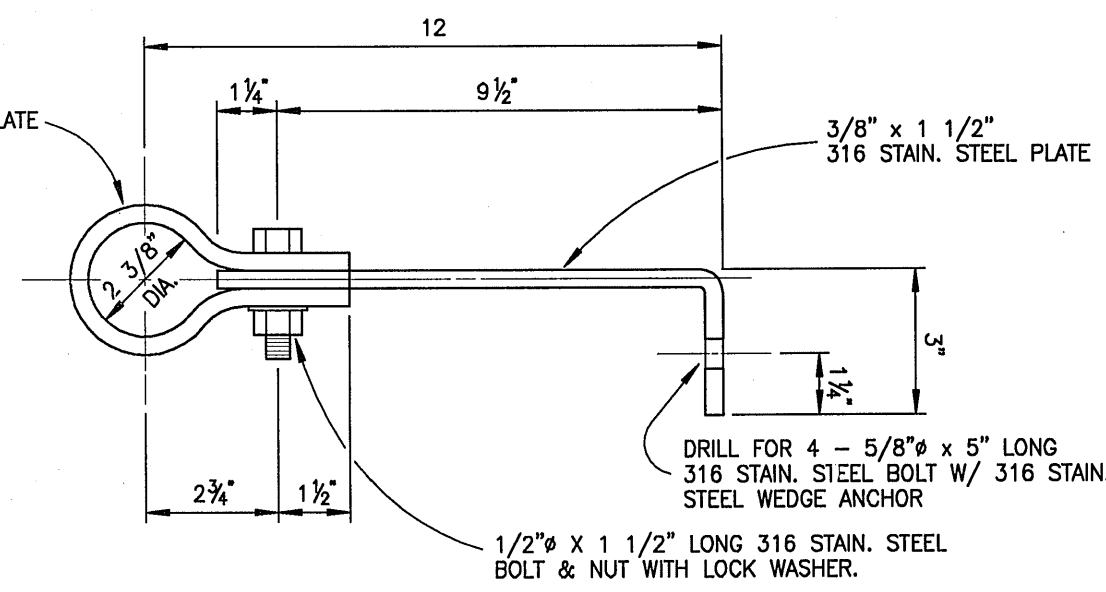
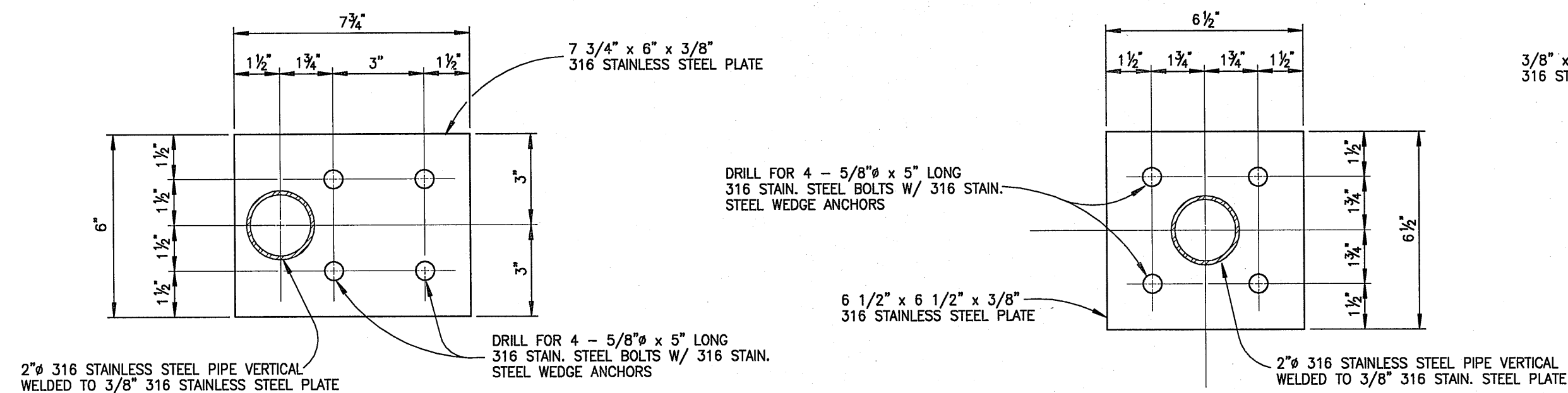


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KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHIE, MAUI, HAWAII

TITLE STORAGE TANK DETAILS

DESIGNED BY	DTU	04010.10	12.12
DRAWN BY	DTU	JOB NUMBER	SHEET
APPROVED BY	DTU	10-10-05	OF SHEETS
SCALE	As Shown	DATE	



- NOTES:**
- ALL MISCELLANEOUS METALS, PIPES, FASTENERS & RELATED ACCESSORY COMPONENTS, UNLESS OTHERWISE SPECIFIED, SHALL BE STAINLESS STEEL, ASTM A 312 TYPE 316. TYPE 316 SHALL BE USED WHERE FIELD WELDING IS REQUIRED OR WELDED FABRICATION WITH SUBSEQUENT SOLUTION HEAT TREATMENT IS NOT POSSIBLE.
 - ALL ROUGH OR SHARP EDGES SHALL BE GROUND SMOOTH. ALL WELDED JOINTS SHALL BE GROUND SMOOTH AND FLUSH WITH ADJOINING METAL AND SHALL BE FREE OF CRACKS, PITS, OR CREVICES.
 - ALL PIPE, UNLESS OTHERWISE SPECIFIED, SHALL BE SCHEDULE 40S (STANDARD WALL) OR BETTER. PIPE VERTICAL FOR INTERIOR LADDER SHALL BE SCHEDULE 80S (EXTRA STRONG) OR BETTER.
 - SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING AND FABRICATION OF ALL COMPONENTS.
 - INTERIOR LADDER SHALL BE FURNISHED WITH SAF-T-CLIMB RIGID RAIL FALL PRECAUTION SYSTEM (STAINLESS STEEL, TYPE 316), AS MANUFACTURED BY NORTH CONSUMER PRODUCTS, OR APPROVED EQUAL. TWO (2) COMPLETE SETS OF ALL ACCESSORIES SHALL BE FURNISHED TO THE DEPARTMENT OF WATER SUPPLY.

WARREN S. UNEMORI ENGINEERING, INC.
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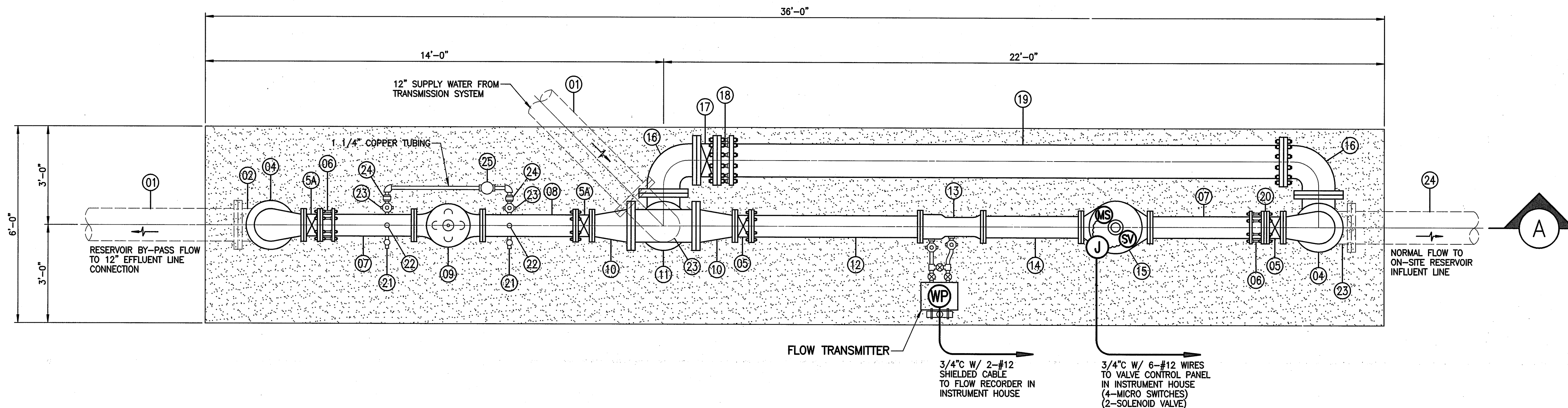
KAONOULU MARKET PLACE
 T.M.K.: (2) 3-9-01 : 16
 KIHAI, MAUI, HAWAII

TITLE: STORAGE TANK LADDER DETAILS

DESIGNED BY	DTU	04010.10
WIS	DTU	JOB NUMBER
DRAWN BY	APPROVED BY	10-10-05
SCALE	As Shown	DATE

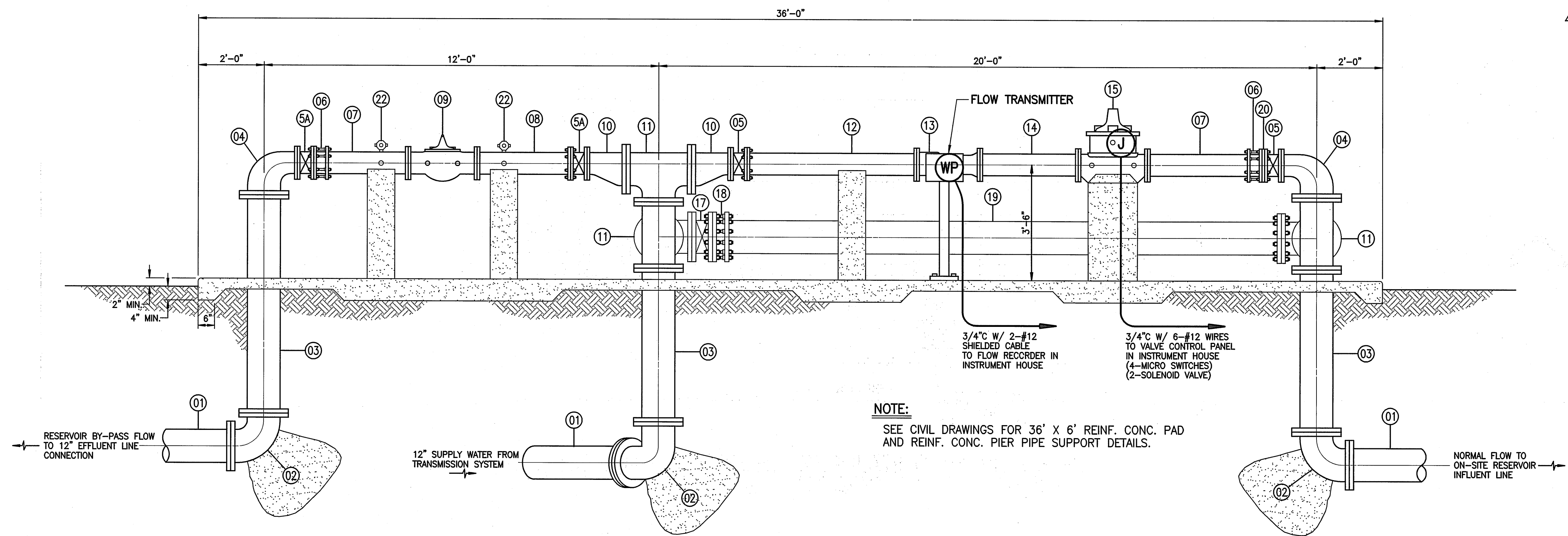
12.13 SHEET

DETAIL - INTERIOR AND EXTERIOR LADDER (8)
 SCALE: 1/2 IN. = 1 FT. - 0 IN.



CONTROL VALVE AND PRESSURE REGULATING VALVE PIPING PLAN

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



NOTE:
SEE CIVIL DRAWINGS FOR 36' X 6' REINF. CONC. PAD
AND REINF. CONC. PIER PIPE SUPPORT DETAILS.

SECTION A

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

MATERIALS LIST		
ITEM	QTY.	DESCRIPTION
01	3	12" FE-PE PIPE, 2'-0" LONG
02	3	12" FL. 90° BEND W/ CONC. BLOCK
03	3	12" FL. PIPE, LENGTH TO FIT
04	2	12" X 8" FL. RED 90° BEND, 12" C-F
05	2	8" FL. GATE VALVE, NRS W/ HANDWHEEL
05A	2	8" FL. GATE VALVE, NRS W/ HANDWHEEL (TO REMAIN CLOSED UNDER NORMAL OPERATION)
06	2	8" FLANGE COUPLING ADAPTER W/ S.S. TIE BOLTS
07	2	8" FE-PE PIPE, (LENGTH TO FIT - 12" MIN.)
08	1	8" FL. PIPE, 18" MIN. LENGTH, W/ CONC. PIER SUPPORT
09	1	8" CLA-VAL ANTI-CAVITATION PRV MODEL 90-01KO W/ CHECK FEATURE, FLANGED.
10	2	12" X 8" ECCENTRIC FL. REDUCER
11	3	12" X 12" FL. TEE
12	1	8" FL. PIPE, 4'-0" LONG W/ CONC. PIER SUPPORT
13	1	8" UNIVERSAL VENTURI TUBE, 23" F-F
14	1	8" FL. PIPE, 3'-0" LONG
15	1	8" CLA-VAL ROF CONTROL VALVE MODEL 43-01, F.E. F-F W/ X101 VALVE POSITION INDICATOR, EPOXY COATING, CHECK FEATURE, KO ANTI-CAVITATION TRIM AND CONC. PEIR.
16	2	12" FL. 90° BEND
17	1	12" FL. GATE VALVE, OS & Y (TO REMAIN CLOSED UNDER NORMAL OPERATION)
18	1	12" FLANGE COUPLING ADAPTER W/ S.S. TIE BOLTS
19	1	12" FE-PE PIPE, LENGTH TO FIT W/ 3 MIN. CONC. PIER SUPPORTS
20	1	ORIFICE
21	2	1/2" HOSE BIB CONNECTION
22	2	3/4" CORP. STOP
23	2	1 1/4" CORP. STOP
24	2	1 1/4" UNION
25	1	1 1/4" CLA-VAL PRV-90 SERIES

NOTE:
ALL FLANGES AND FITTINGS SHALL BE DUCTILE IRON, RATED FOR
250 PSI WORKING PRESSURE, FACED AND DRILLED IN ACCORDANCE
WITH ANSI B16.1 CLASS 125 OR CLASS 250 AS REQUIRED.

INITIAL VALVE SETTINGS

LOCATION	INSTALLED ELEVATION	THEORETICAL INLET (UPSTREAM) PRESSURE	OUTLET (DOWNSTREAM) PRESSURE SETTINGS	
			1 1/4" PRV (Cla-Val Model 90 Series)	8" PRV (Cla-Val Model 90 Series)
PRV @ Sta. 43+23 of Offsite Waterline	219 ft.±	110 psi	2 psi	5 psi

LOCATION	INSTALLED ELEVATION	SUSTAINING PRESSURE
Control Valve @ Sta. 43+23 of Offsite Waterline	219 ft.±	75 psi

DARREN T. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 7937-C
HAWAII, U.S.A.

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAI, MAUI, HAWAII

TITLE STORAGE TANK CONTROL VALVE

DESIGNED BY: ALU
CHECKED BY: DTU
WIS
APPROVED BY: DTU

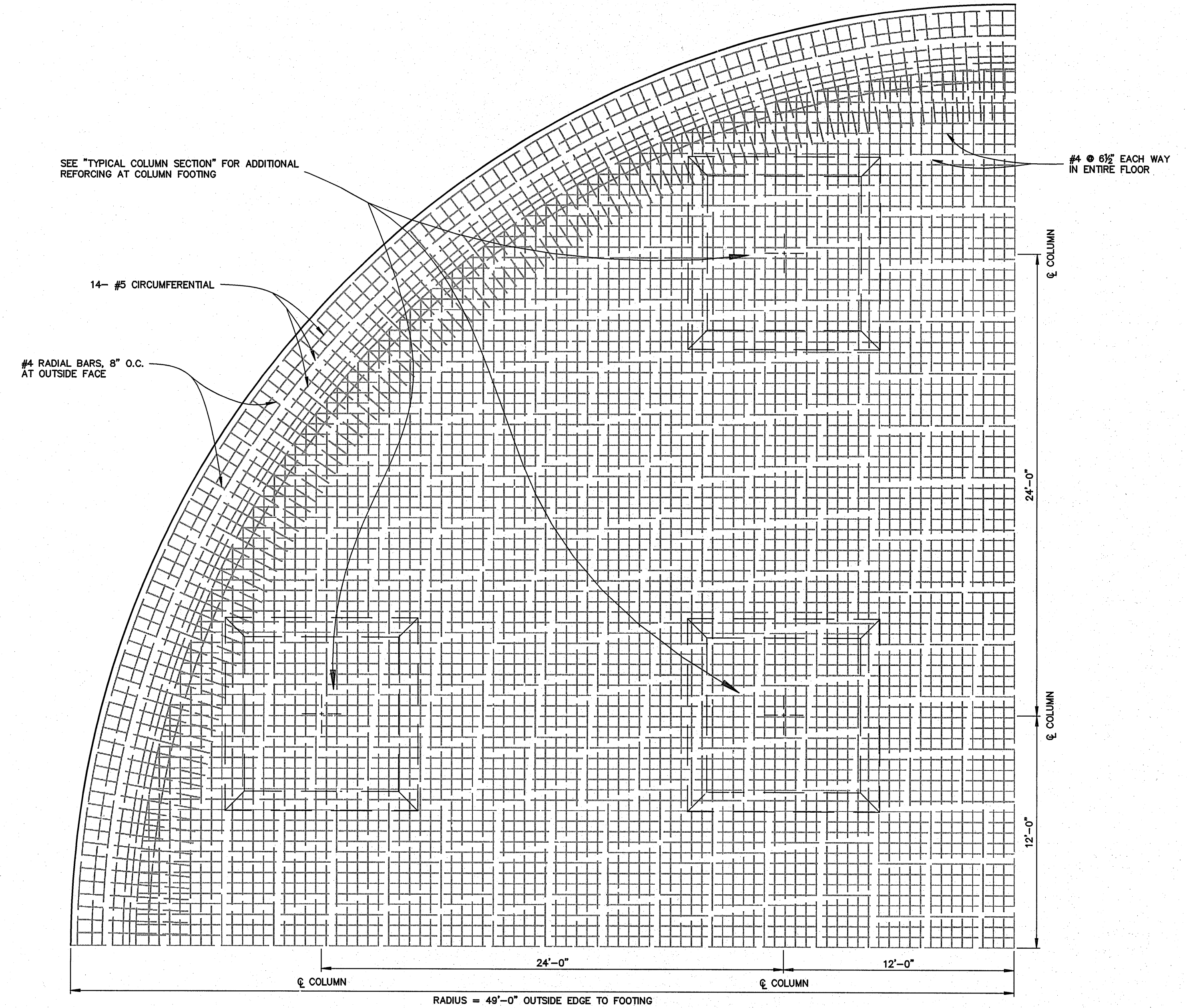
DATE: 10/01/10
DATE: 12/12/08

DATE: 10-10-05
DATE: 12.14

LETTER: DESCRIPTION: DATE:

SCALE: AS NOTED

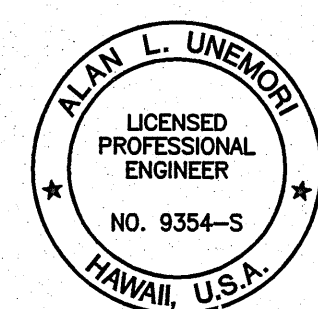
DATE: 10-10-05
DATE: 12.14



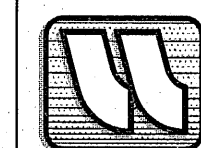
NOTE:
ALL LAPS IN THE SAME PLANE SHALL BE STAGGERED 40 DIAMETERS

REINFORCING STEEL
1/4 FLOOR PLAN
SCALE: 1/4" = 1'-0"

04010.10/6wg2004/comp/plan/DET-TANK-FLOOR.DWG



SIGNATURE: *Alan L. Unemori* DATE: 10/10/05
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS SET FORTH IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"



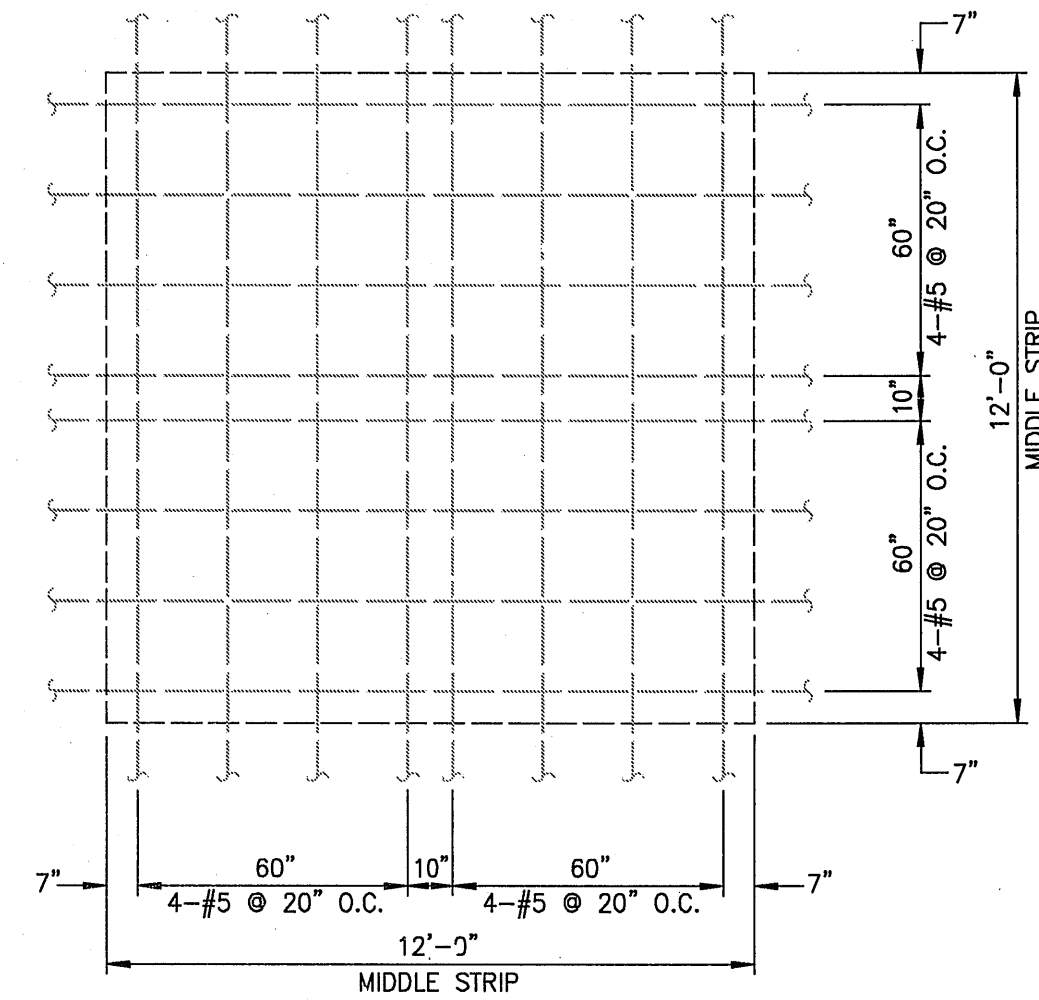
WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16
KIHEI, MAUI, HAWAII

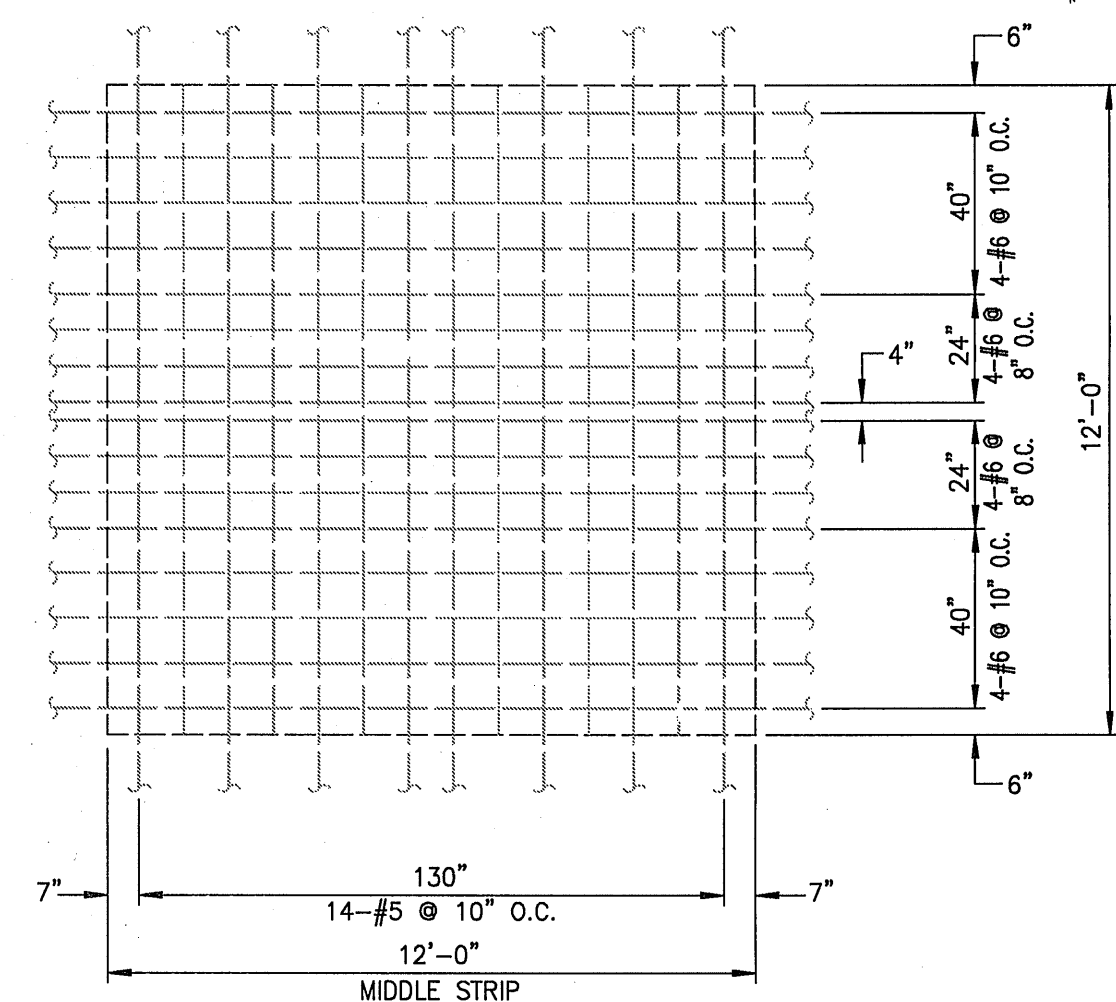
TITLE: STORAGE TANK FLOOR STEEL PLAN

DESIGNED BY: ALU	CHECKED BY: DTU	04010.10	12.20
DRAWN BY: WIS	APPROVED BY: DTU	JOB NUMBER	
SCALE: As Shown		10-10-05	SHEET
		DATE	OF SHEETS

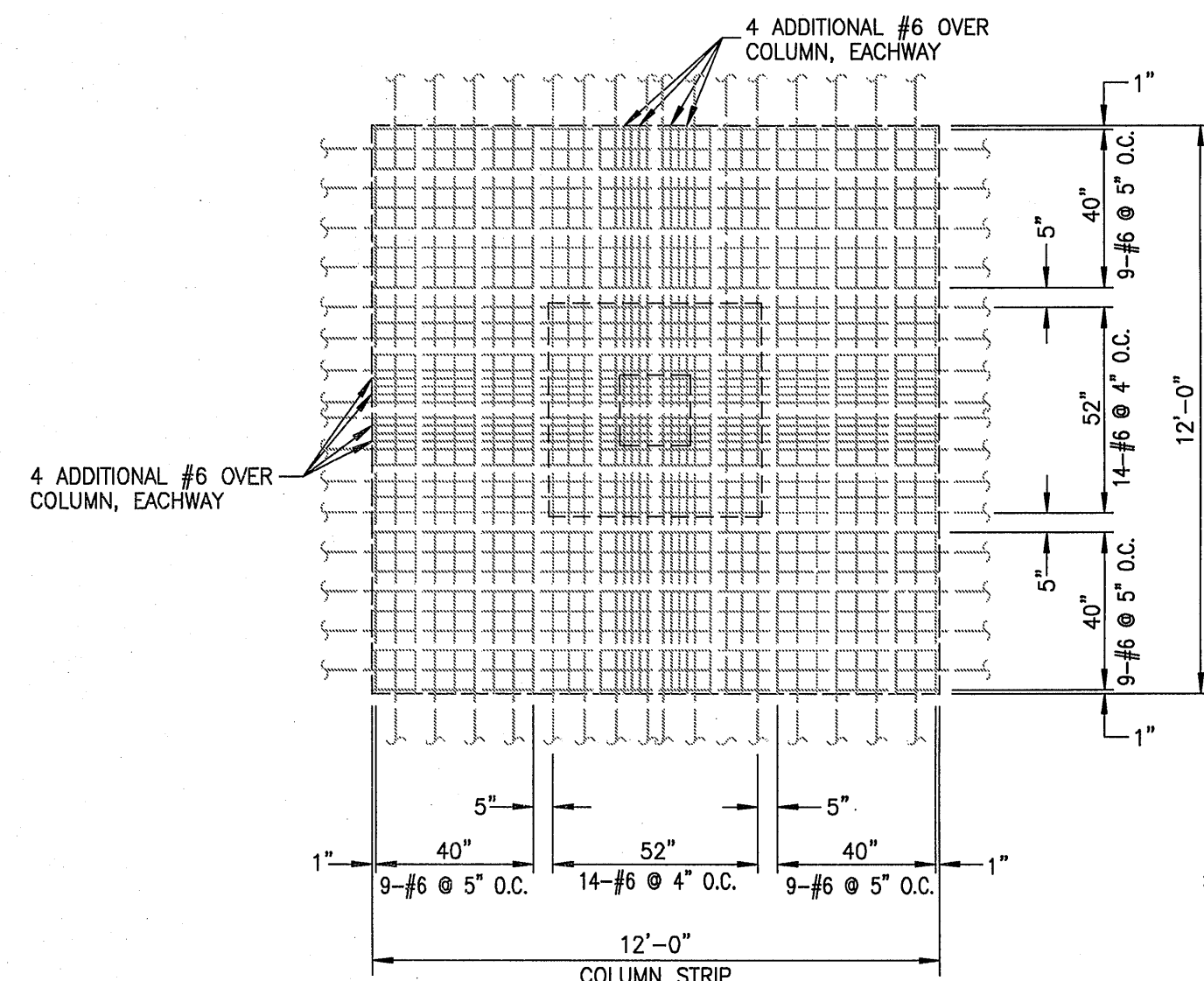
LETTER	DESCRIPTION	DATE



MIDDLE STRIP / MIDDLE STRIP
NOT TO SCALE



COLUMN STRIP / MIDDLE STRIP
NOT TO SCALE

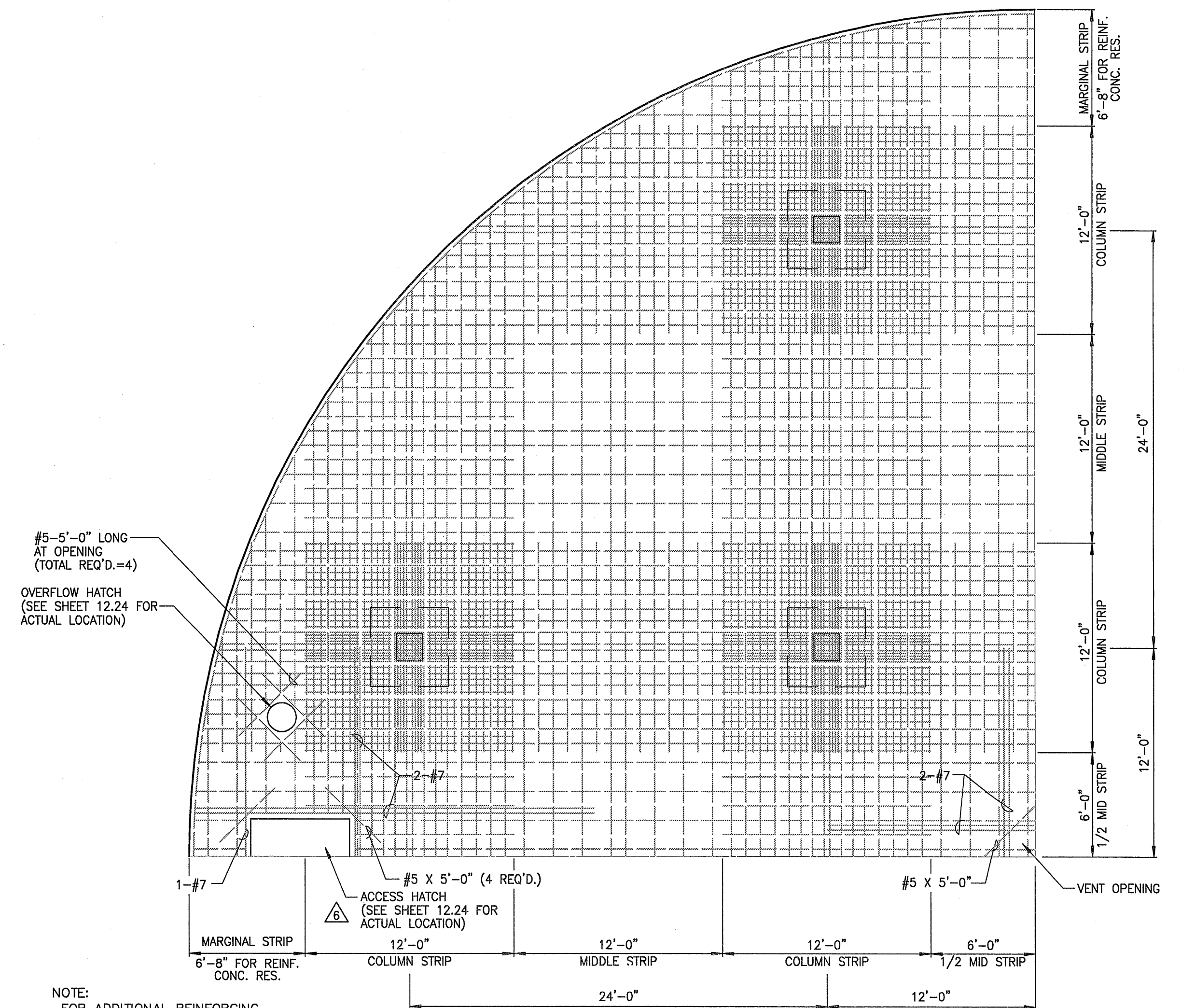


COLUMN STRIP / COLUMN STRIP
NOT TO SCALE

UPPER GRID STEEL LAYOUT
NOT TO SCALE

NOTES:

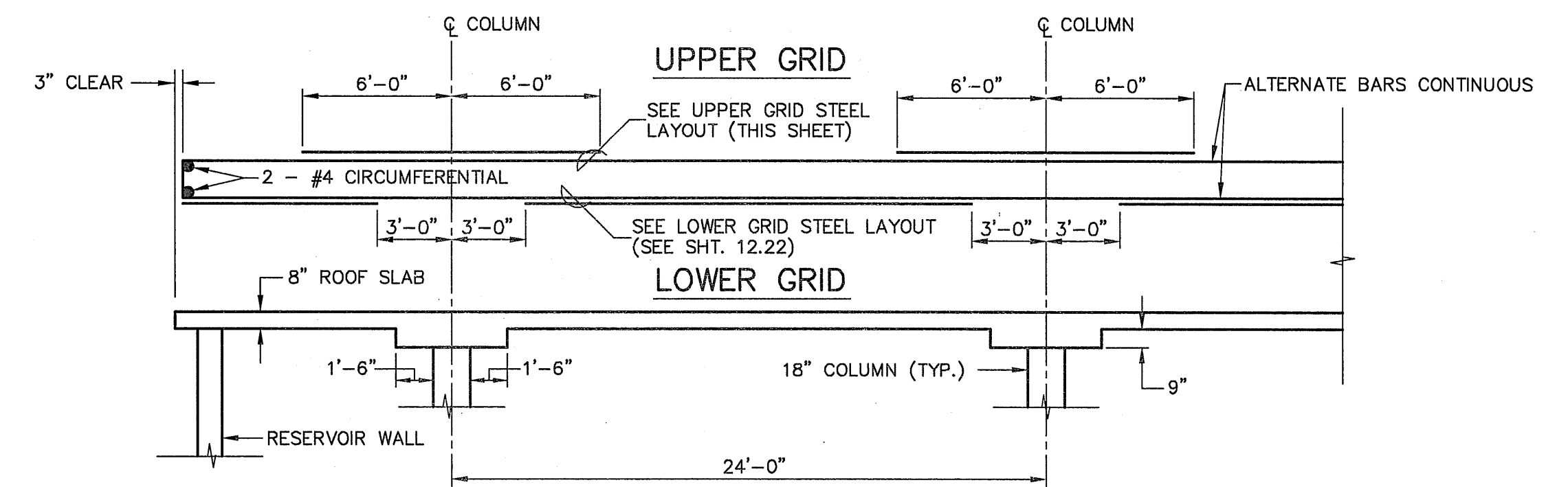
- CONCRETE COVER OVER REINFORCING STEEL IN ROOF SLAB:
1-1/2" AT TOP OF SLAB
1" AT BOTTOM OF SLAB
3" AT OUTSIDE EDGE OF SLAB
- ALL ROOF SLAB REINFORCING STEEL IN THE UPPER GRID SHALL BE LAPPED WITHIN THE MIDDLE STRIP AND THE LOWER GRID SHALL BE LAPPED WITHIN THE COLUMN STRIP.
- ALL LAPS ON THE SAME PLANE, SHALL BE STAGGERED 40 DIAMETERS.



NOTE:
FOR ADDITIONAL REINFORCING
STEEL AT OPENING SEE
"ACCESS HATCH DETAIL"

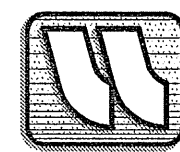
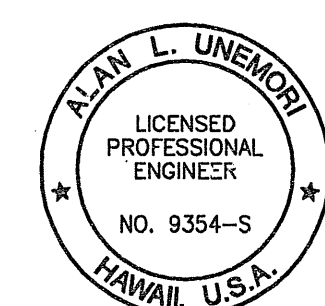
1/4 PLAN ROOF STEEL - UPPER GRID

SCALE: 3/16 IN. = 1 FT. - 0 IN.



REINFORCING STEEL COLUMN STRIP

SCALE: 3/16 IN. = 1 FT. - 0 IN.



WARREN S. UNEMORI ENGINEERING, INC.
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KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

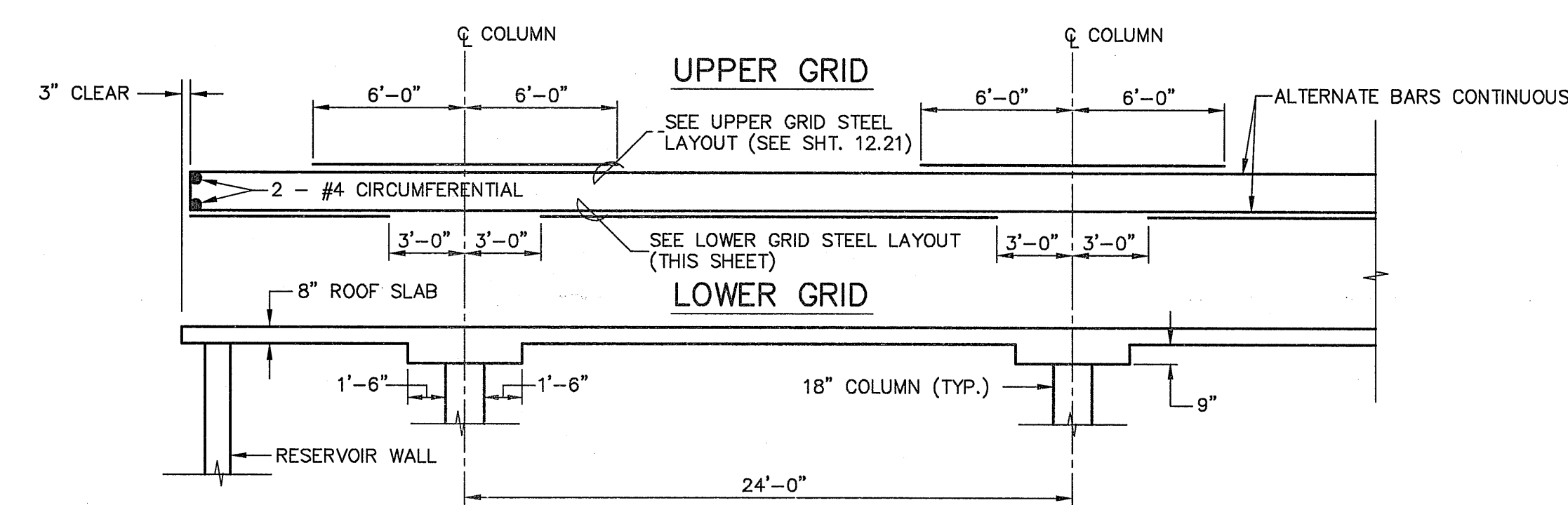
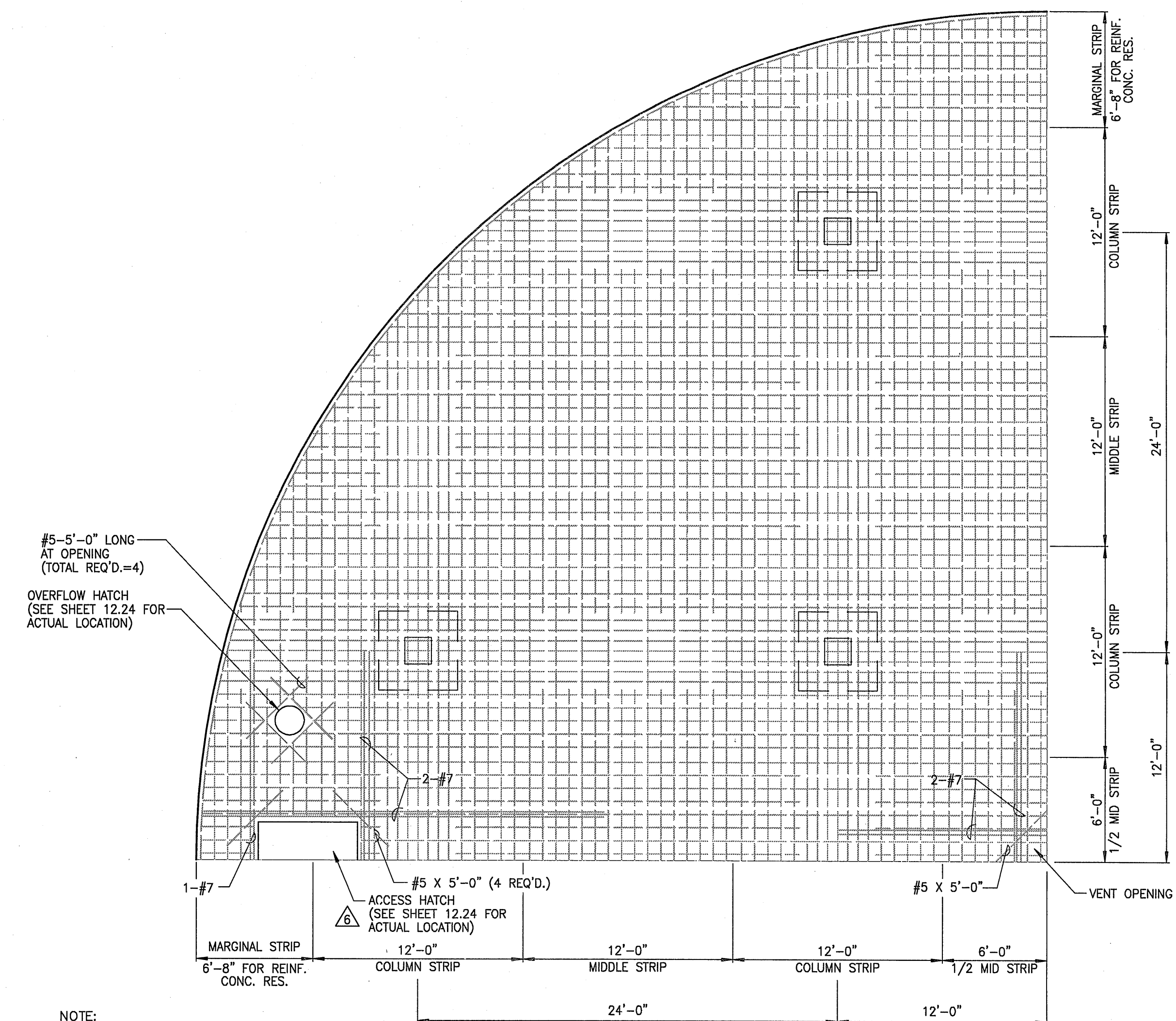
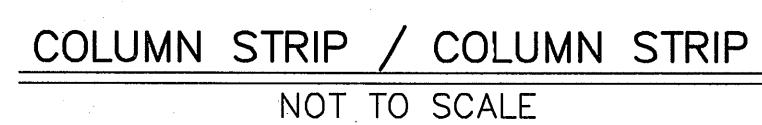
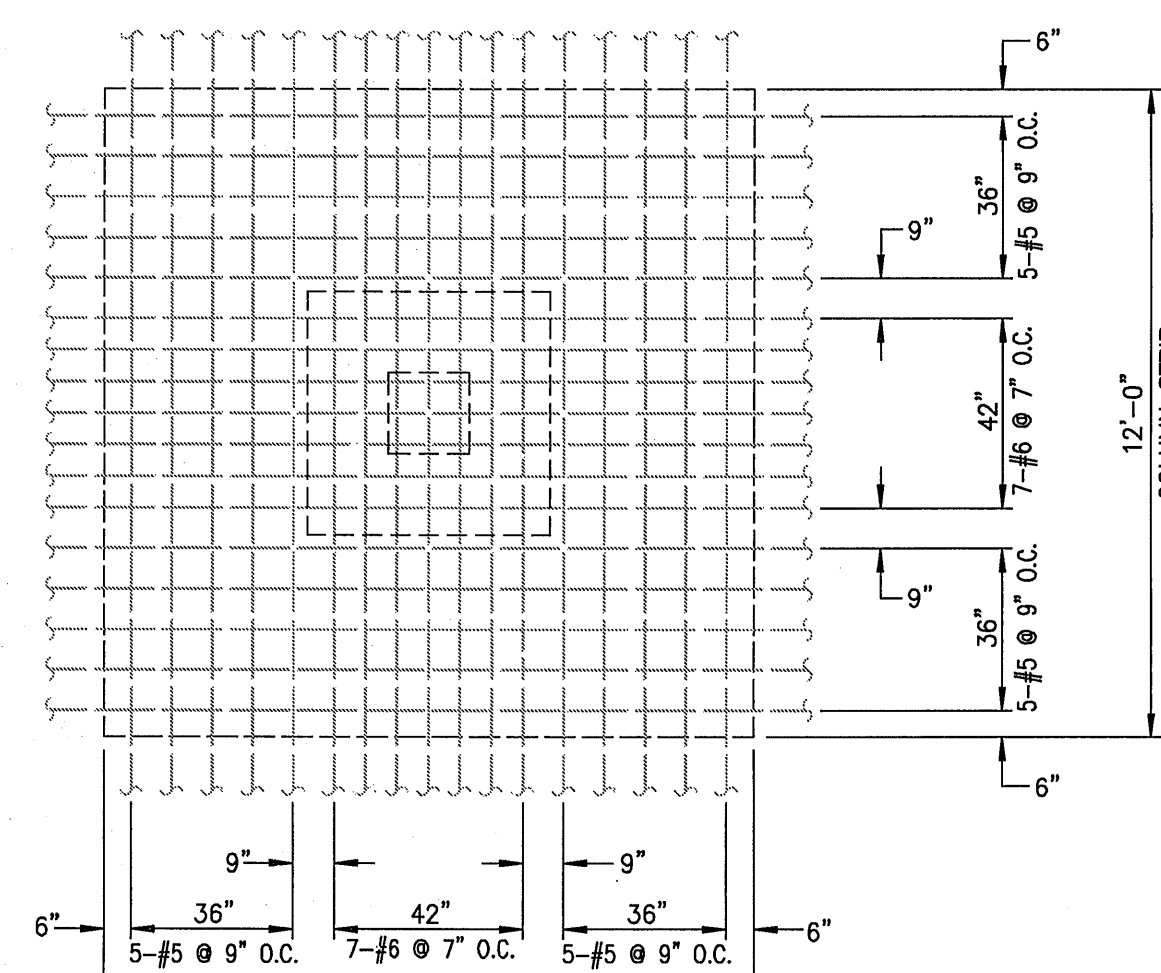
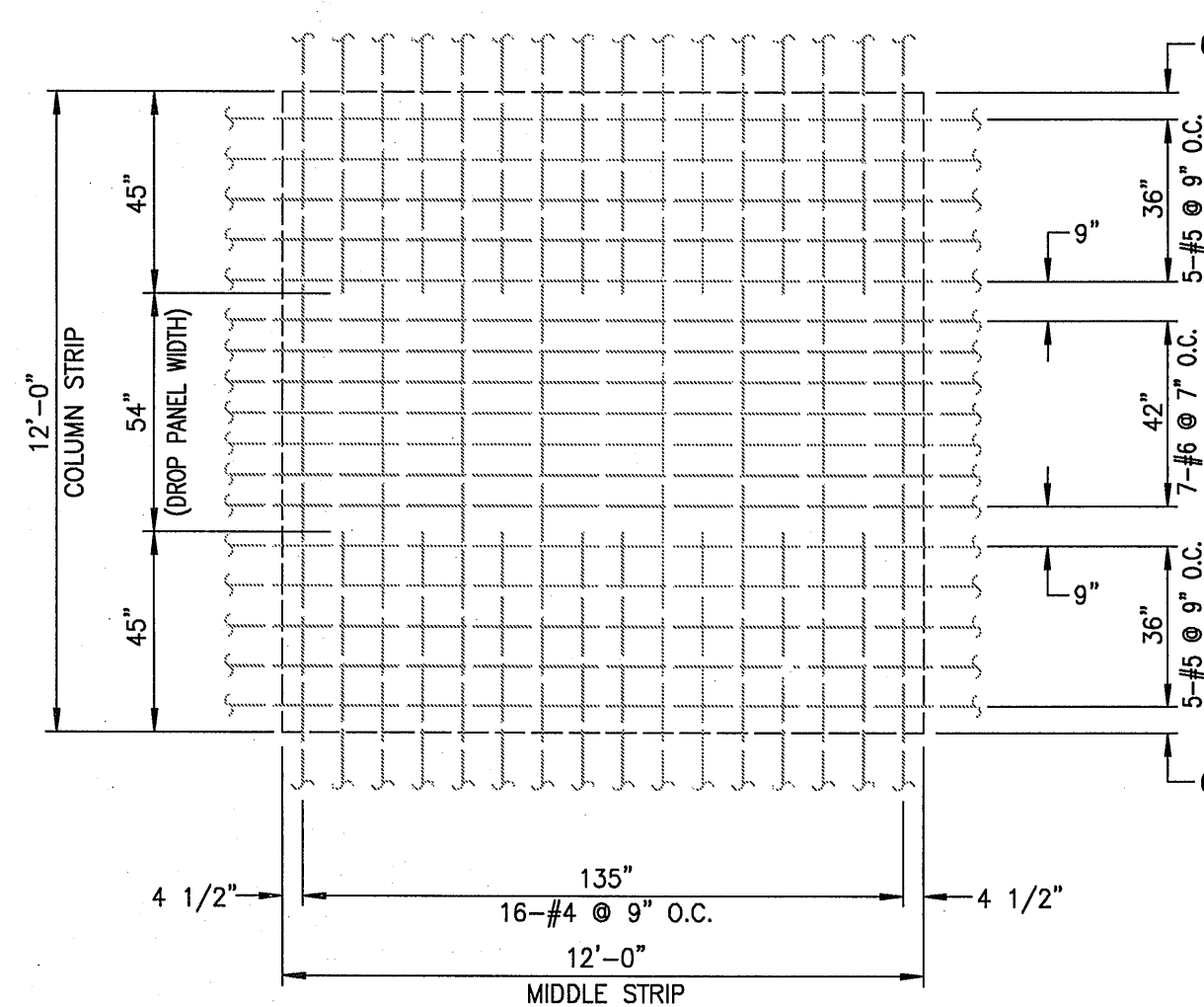
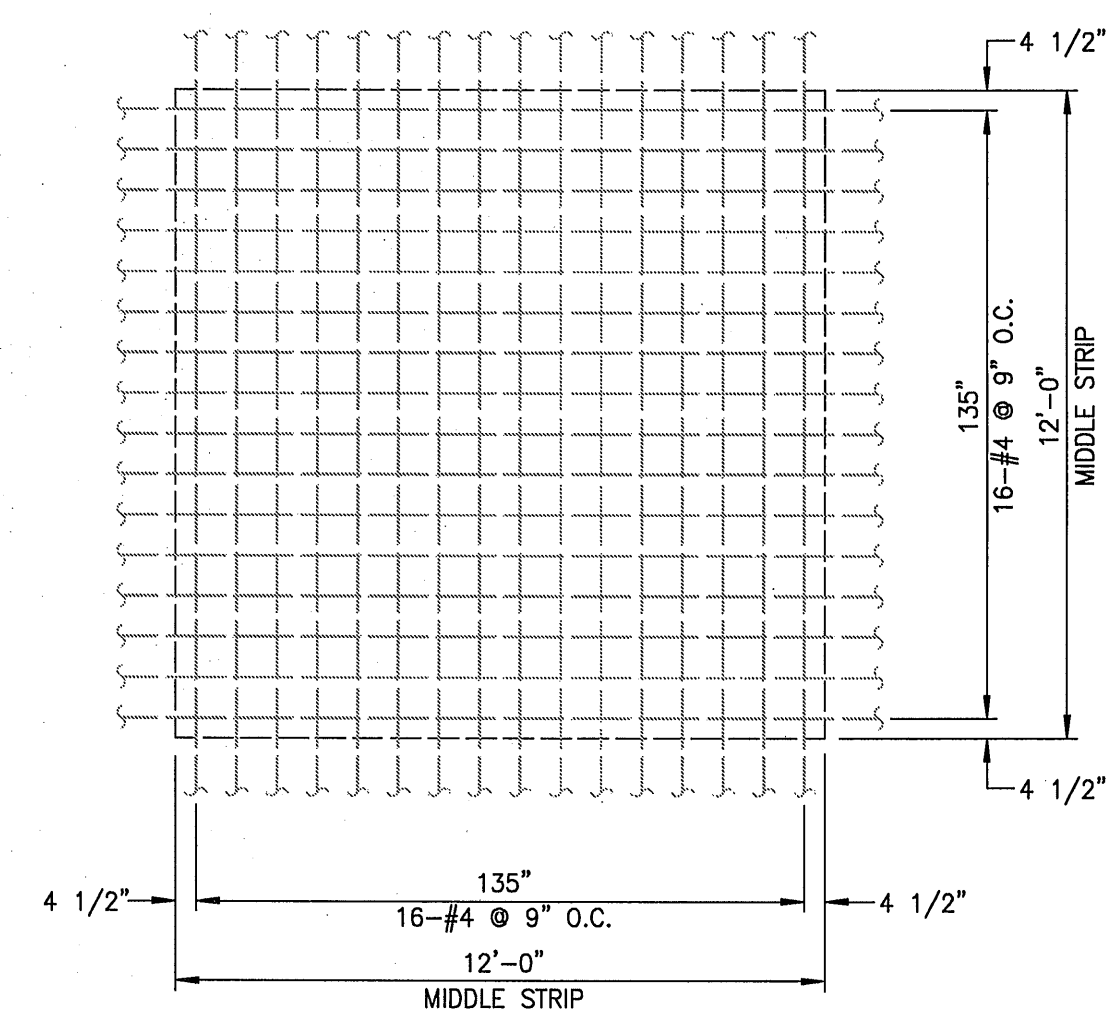
TITLE **ROOF UPPER GRID STEEL DETAILS**

SIGNATURE *Alay L. Unemori* DATE *3/1/2012*

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 15-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS.

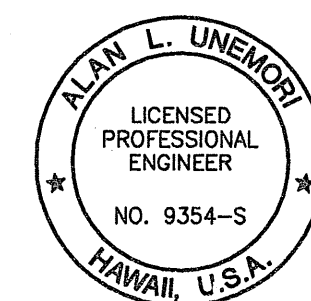
LETTER	DESCRIPTION	DATE
△	REVISED HATCH LOCATION	10/01/10

ALU DESIGNED BY	DTU CHECKED BY	04010.10 JOB NUMBER	12.21 SHEET
WIS DRAWN BY	DTU APPROVED BY	10-10-05 DATE	
SCALE As Shown			OF SHEETS



NOTES:

1. CONCRETE COVER OVER REINFORCING STEEL IN ROOF SLAB:
1-1/2" AT TOP OF SLAB
1" AT BOTTOM OF SLAB
3" AT OUTSIDE EDGE OF SLAB
2. ALL ROOF SLAB REINFORCING STEEL IN THE UPPER GRID SHALL BE LAPPED WITHIN THE MIDDLE STRIP AND THE LOWER GRID SHALL BE LAPPED WITHIN THE COLUMN STRIP.
3. ALL LAPS ON THE SAME PLANE, SHALL BE STAGGERED 40 DIAMETERS.



SIGNATURE 3/12/2012
DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

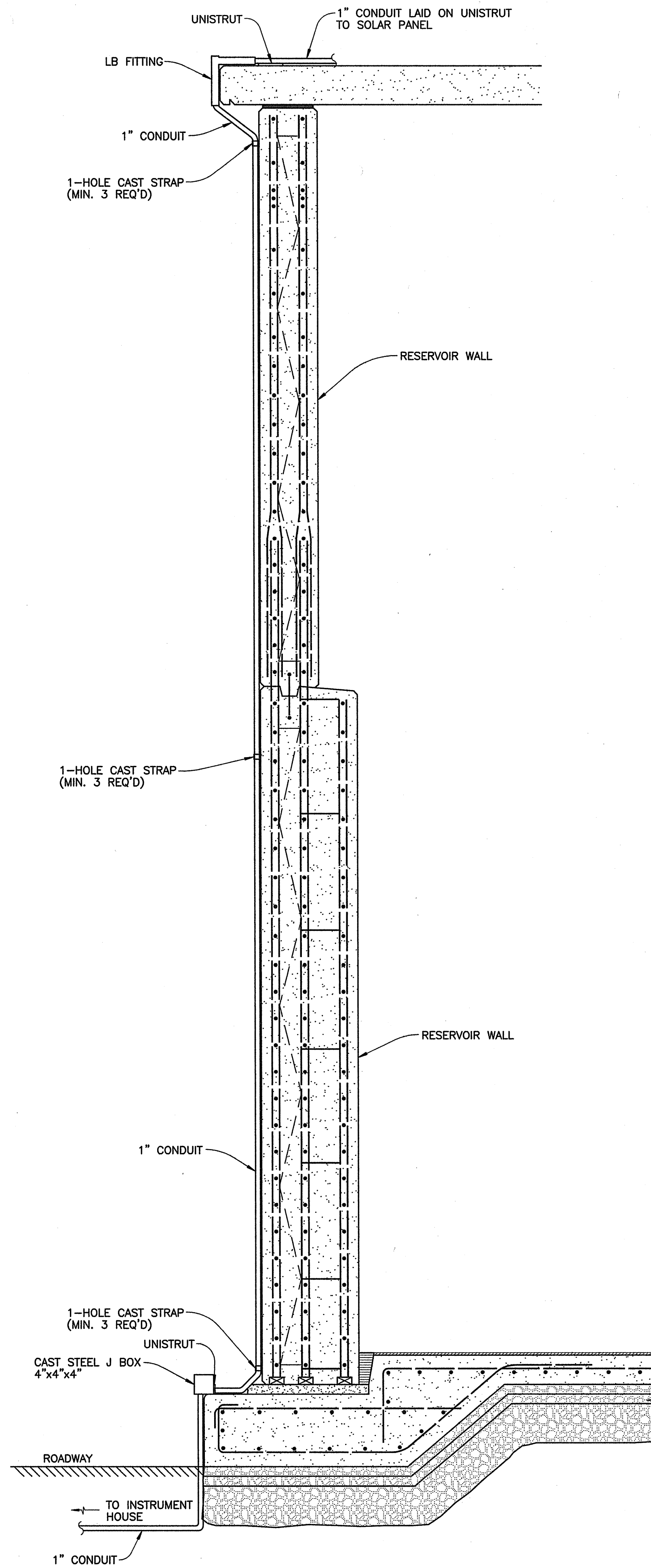


KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHEI, MAUI, HAWAII

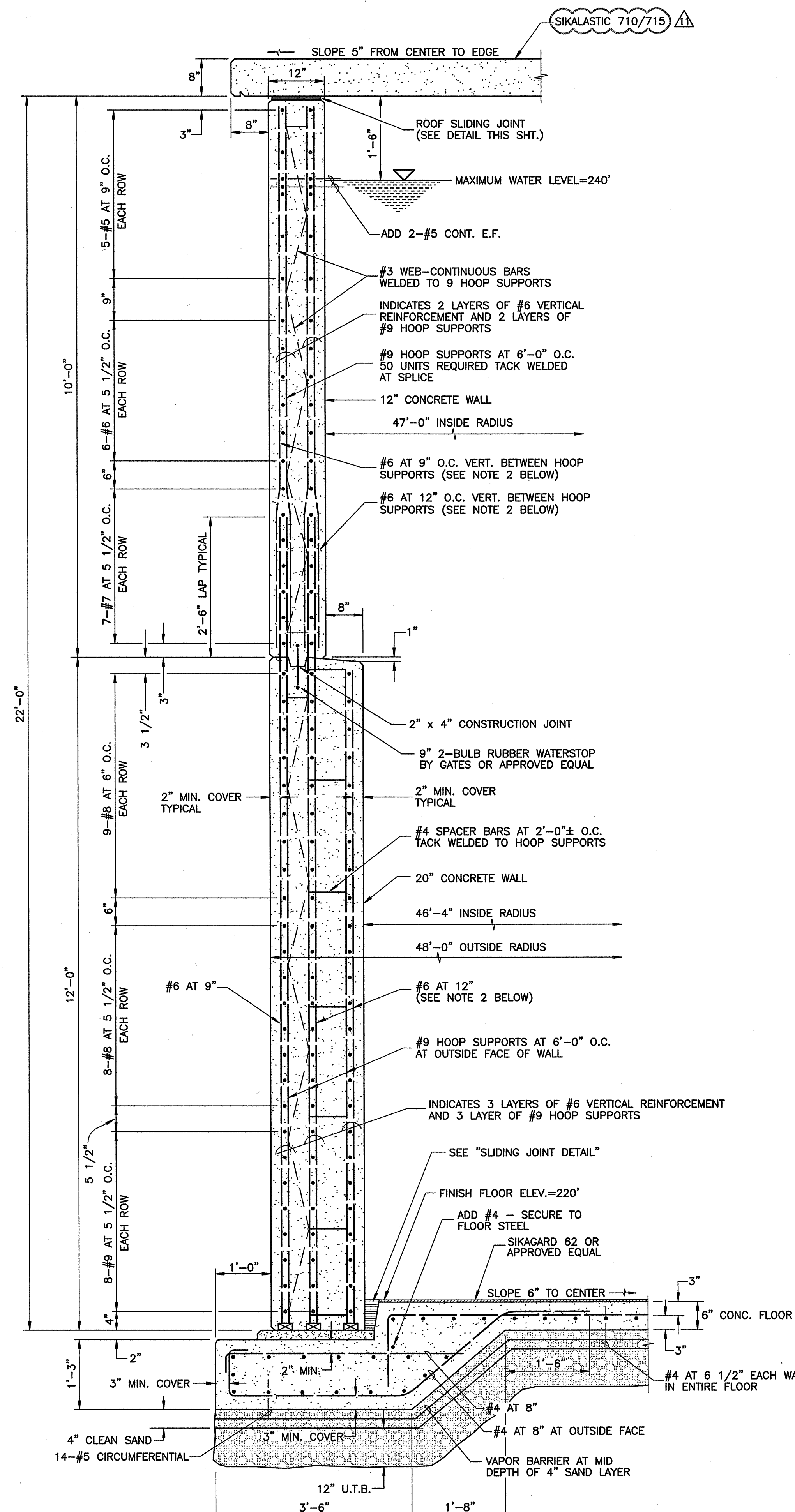
TITLE ROOF LOWER GRID STEEL DETAILS

ALU DESIGNED BY	DTU CHECKED BY	04010.10	12.22
WIS DRAWN BY	DTU APPROVED BY	JOB NUMBER	
SCALE As Shown		10-10-05	SHEET

	REVISED HATCH LOCATION	10/01/10
LETTER	DESCRIPTION	DATE

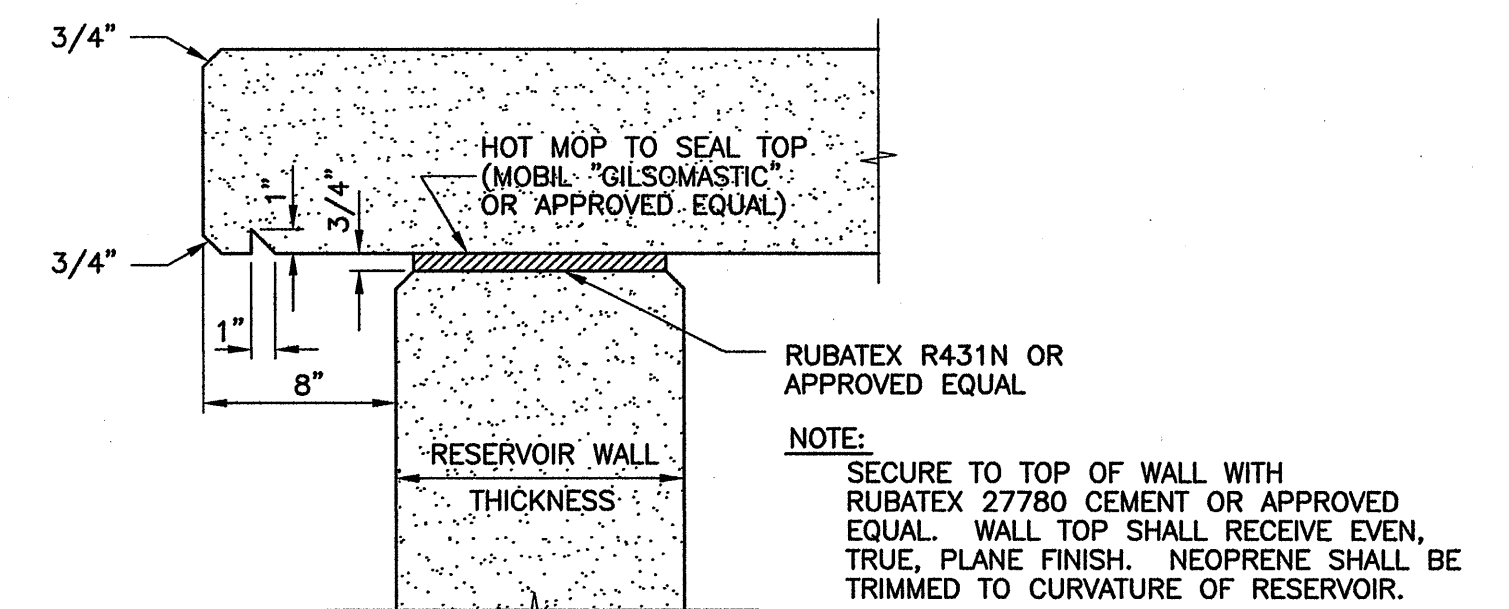


DETAIL - CONDUIT ROUTING BETWEEN
SOLAR PANEL AND INSTRUMENT HOUSE
SCALE: 3/4 IN. = 1 FT. - 0 IN.

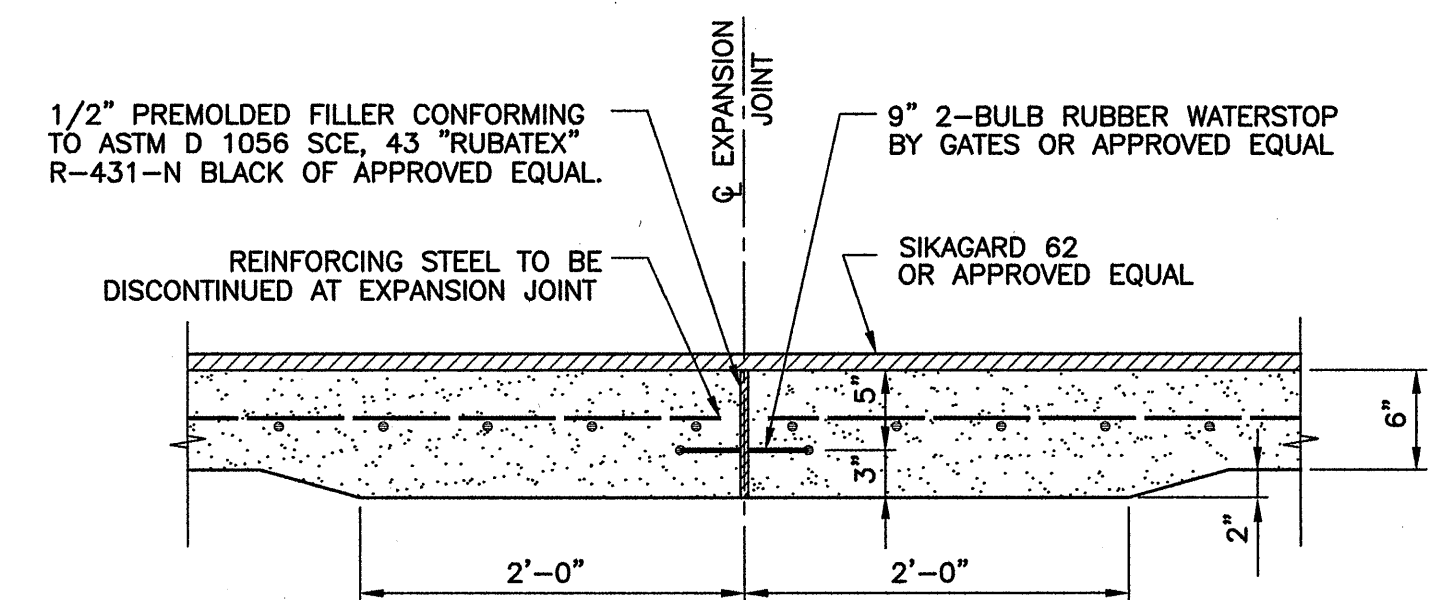


TYPICAL WALL SECTION
SCALE: 3/4 IN. = 1 FT. - 0 IN.

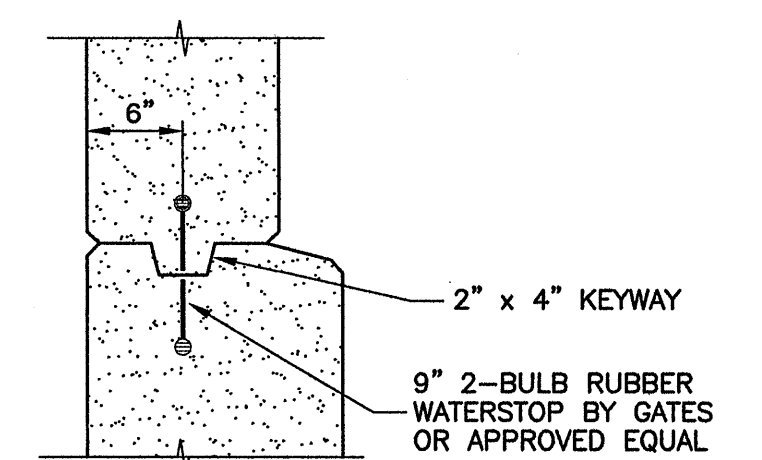
- NOTES:
- CHAMFER TO BE 3/4" UNLESS SHOWN OTHERWISE.
 - STEEL LAYOUT IS DIAGRAMATIC ONLY 6 VERTICALS SHALL BE IN THE SAME PLANE WITH HOOP SUPPORTS.



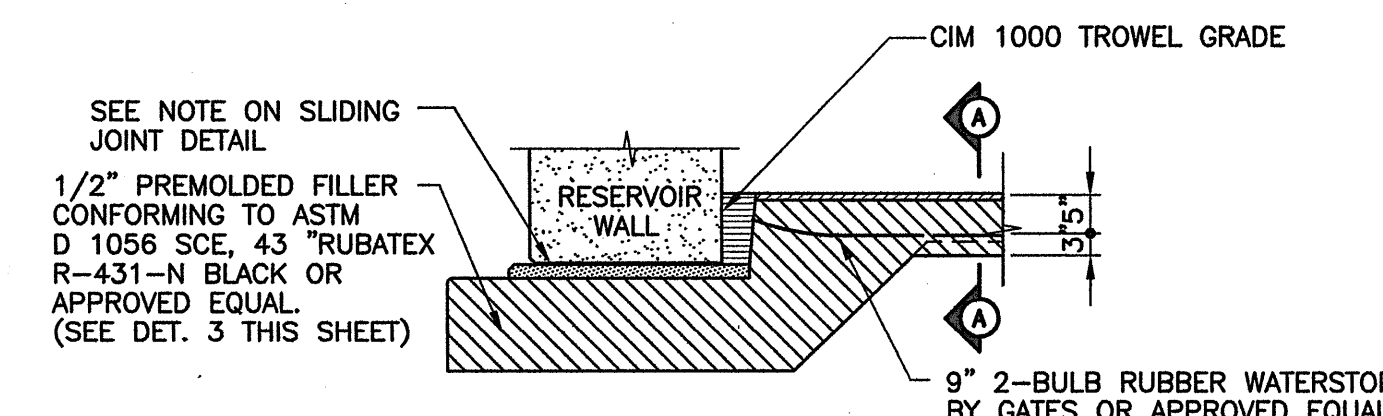
DETAIL OF ROOF SLIDING JOINT
SCALE: 1-1/2 IN. = 1 FT. - 0 IN.



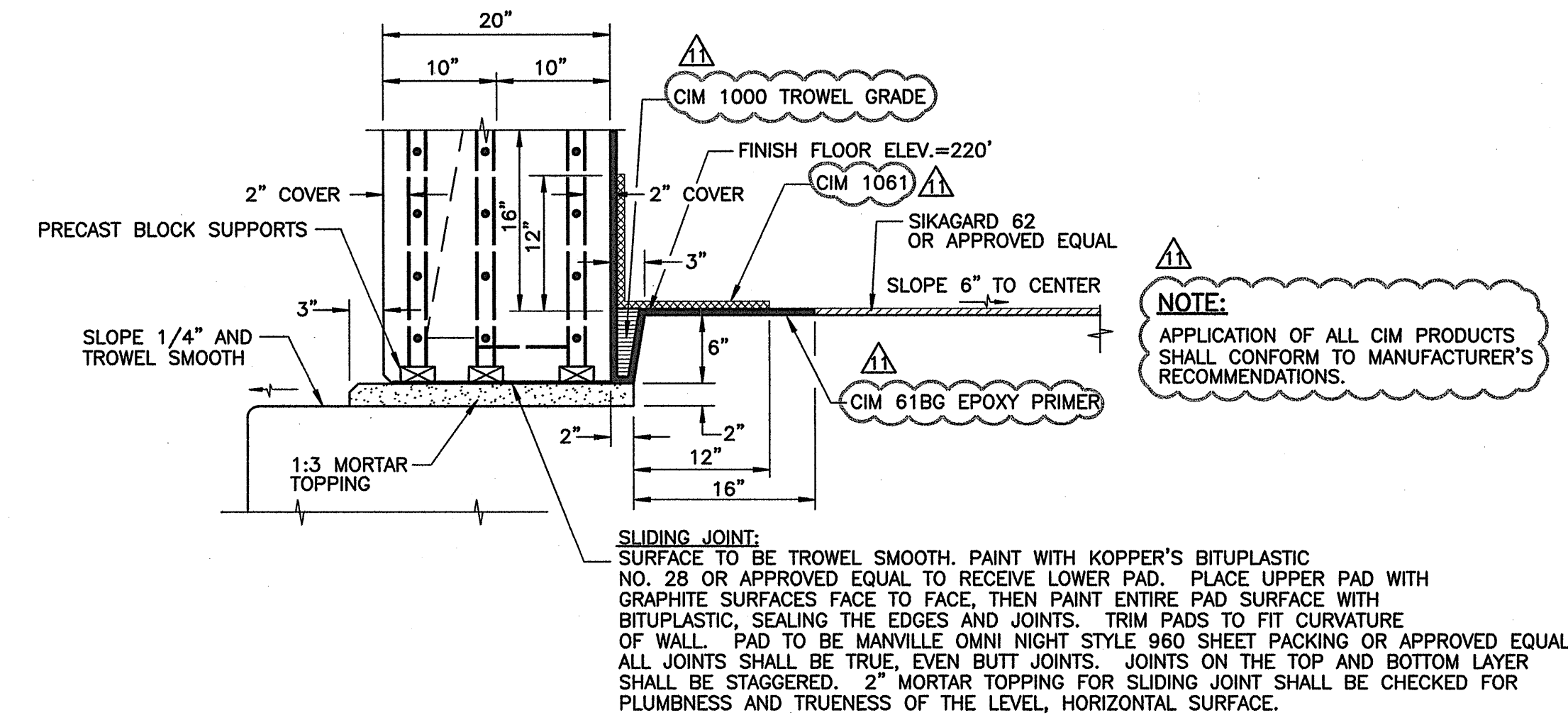
SECTION "A-A"
FLOOR EXPANSION JOINT DETAIL
SCALE: 1 IN. = 1 FT. - 0 IN.



CONSTRUCTION JOINT DETAIL
SCALE: 1 IN. = 1 FT. - 0 IN.

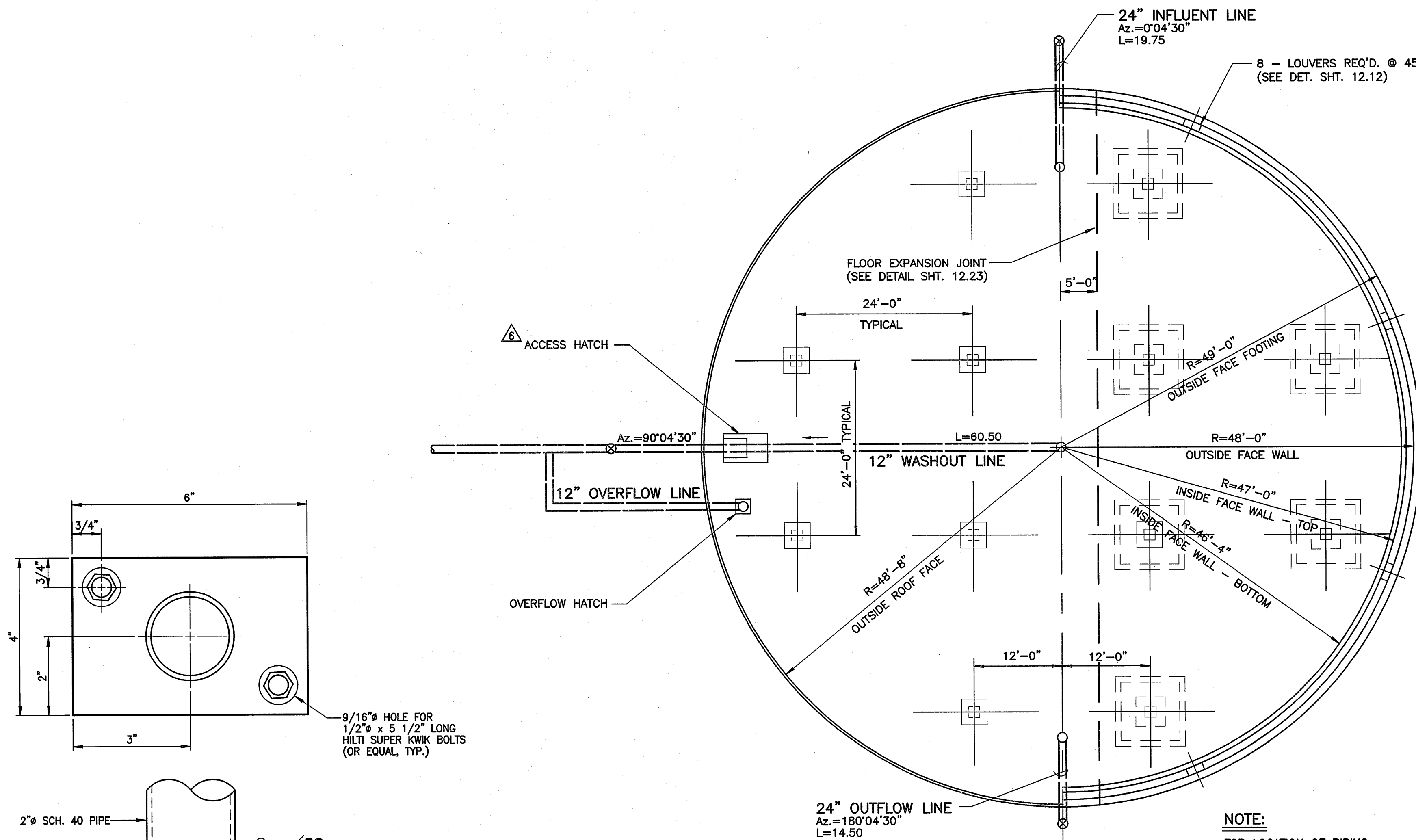


FLOOR WATERSTOP AT WALL FOOTING
SCALE: 2 IN. = 1 FT. - 0 IN.

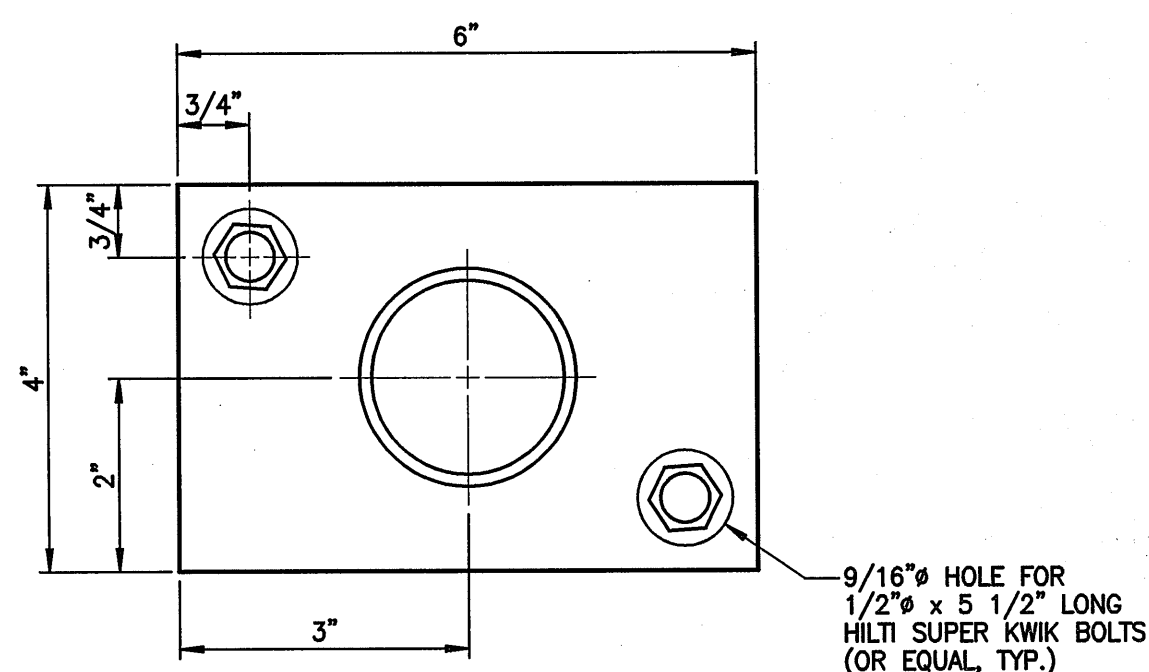


SLIDING JOINT DETAIL
SCALE: 1 IN. = 1 FT. - 0 IN.

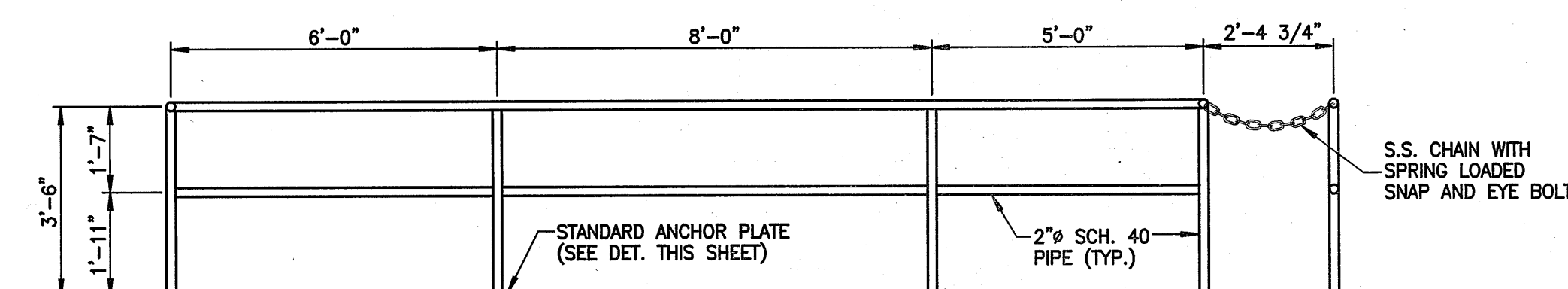
 WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793		KAONOULU MARKET PLACE T.M.K.: (2) 3-9-01 : 16 KIHAI, MAUI, HAWAII STORAGE TANK COLUMN AND WALL DETAILS	
LICENSED PROFESSIONAL ENGINEER NO. 9354-S HAWAII, U.S.A.	DATE: 4/10/12 SIGNATURE: [Signature]	DTU DESIGNED BY: [Signature] DTU CHECKED BY: [Signature] WIS DRAWN BY: [Signature] DTU APPROVED BY: [Signature]	04010.10 JOB NUMBER 10-10-05 DATE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS.		SCALE: As Shown	12.23 SHEET OF SHEETS



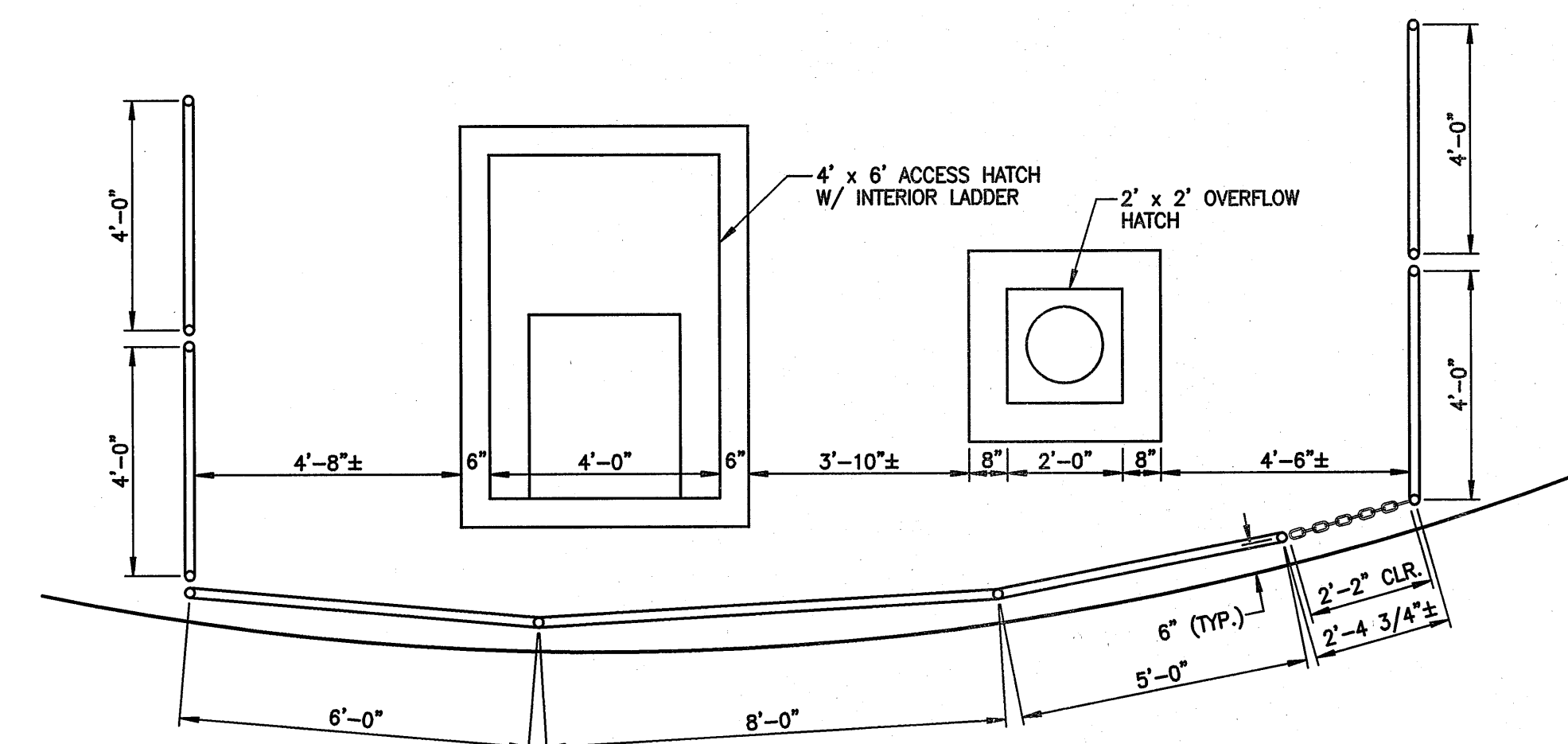
HALF FLOOR PLAN - HALF ROOF PLAN
SCALE: 3/32" = 1'-0"



STANDARD ANCHOR PLATE DETAIL
NOT TO SCALE



ELEVATION
SCALE: 3/8" = 1'-0"



PLAN VIEW OF GUARDRAILS ON TANK ROOF
SCALE: 3/8" = 1'-0"

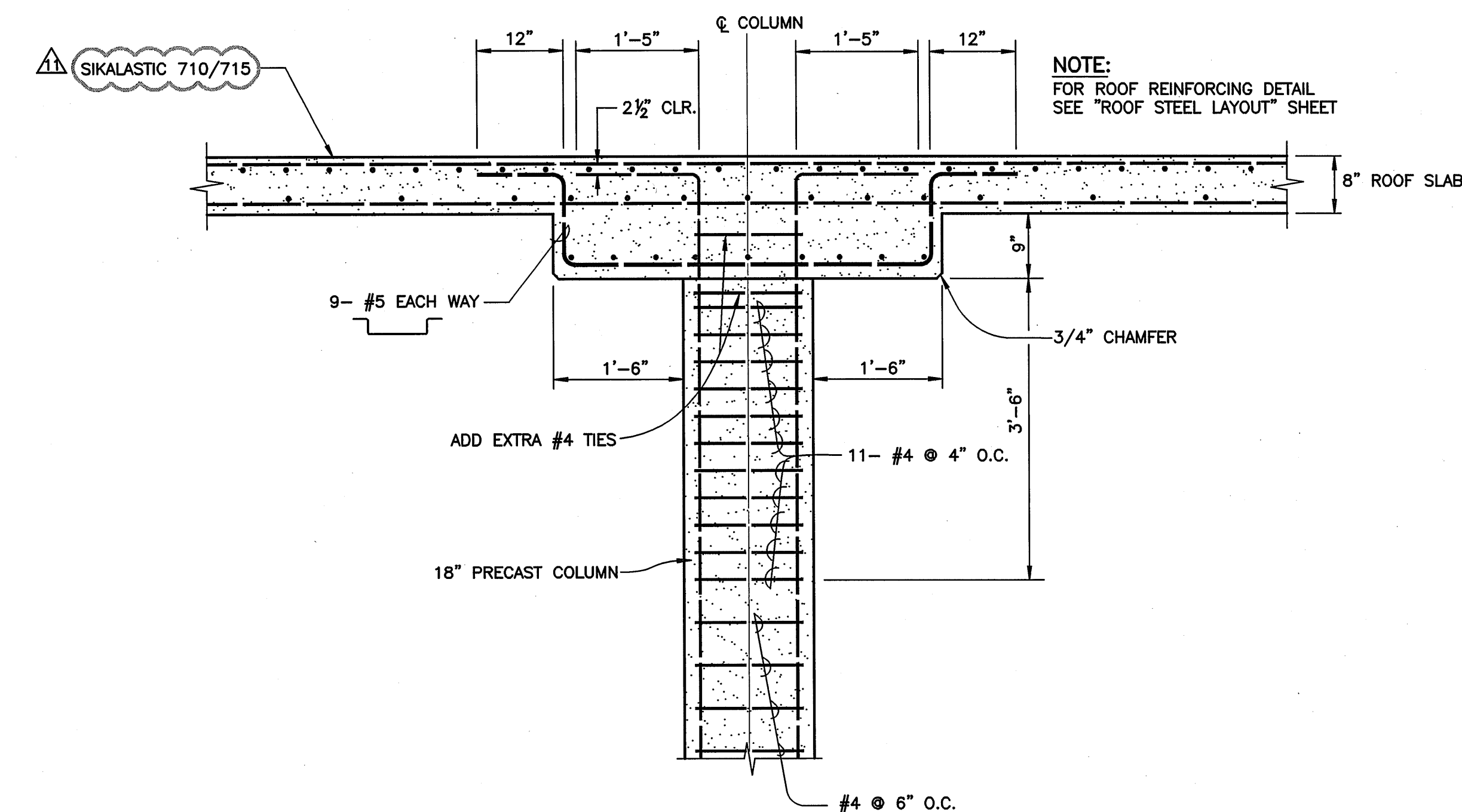
GENERAL NOTES:

- ALLOWABLE STRESSES:
WALL, ROOF AND COLUMNS $f_c' = 4000$ psi
FOOTING AND FLOOR SLAB $f_c' = 4000$ psi
BENDING - ROOF SLAB $f_s = 20,000$ psi
BENDING - WALL $f_s = 18,000$ psi
RING WALL CIRCUMFERENTIAL STEEL $f_s = 10,000$ psi
MAX. SOIL $f_{soil} = 4000$ psf
HYDROSTATIC AND SHRINKAGE LOAD $f_c = 350$ psi
COLUMNS, ROOF SLAB, WALL $f_y = 60,000$ psi
- DESIGN LIVE LOAD ON ROOF IS 20 psf
- DESIGN SEISMIC LOAD IS AS PER U.S. SEISMIC ZONE 2B.
- ALL INTERSECTIONS AND SPLICES OF RUBBER WATERSTOPS TO BE JOINED BY VULCANIZING OR OTHER APPROVED MEANS TO FORM A WATERTIGHT CONNECTION.
- LOWER 4 1/2" OF WALL TO BE POURED WITH CLASS "E-M" CONCRETE.
- RESERVOIR FLOOR TO BE POURED IN ALTERNATE SECTION AND CURED FOR AT LEAST 7 DAYS BEFORE POURING ADJACENT SECTION.
- ALL LAPS IN THE SAME PLANE SHALL BE STAGGERED 40 DIAMETERS.
- ONCE THE RESERVOIR FLOOR IS POURED, 6"± OF WATER SHALL BE MAINTAINED IN THE RESERVOIR FOR THE REMAINDER OF THE PROJECT.
- TESTING OF CYLINDERS SHALL BE PAID FOR BY THE CONTRACTOR. SIX (6) CYLINDERS PER POUR - APPROX. 30 CYLINDERS REQUIRED.
- MOLDS TO BE SUPPLIED BY B.W.S.
- ALL EXTERIOR CONCRETE SURFACES SHALL RECEIVE AN ARCHITECTURAL FINISH AS SPECIFIED IN THE WATER SYSTEM STANDARDS SECTION 402.8, CONCRETE SURFACE FINISHES.

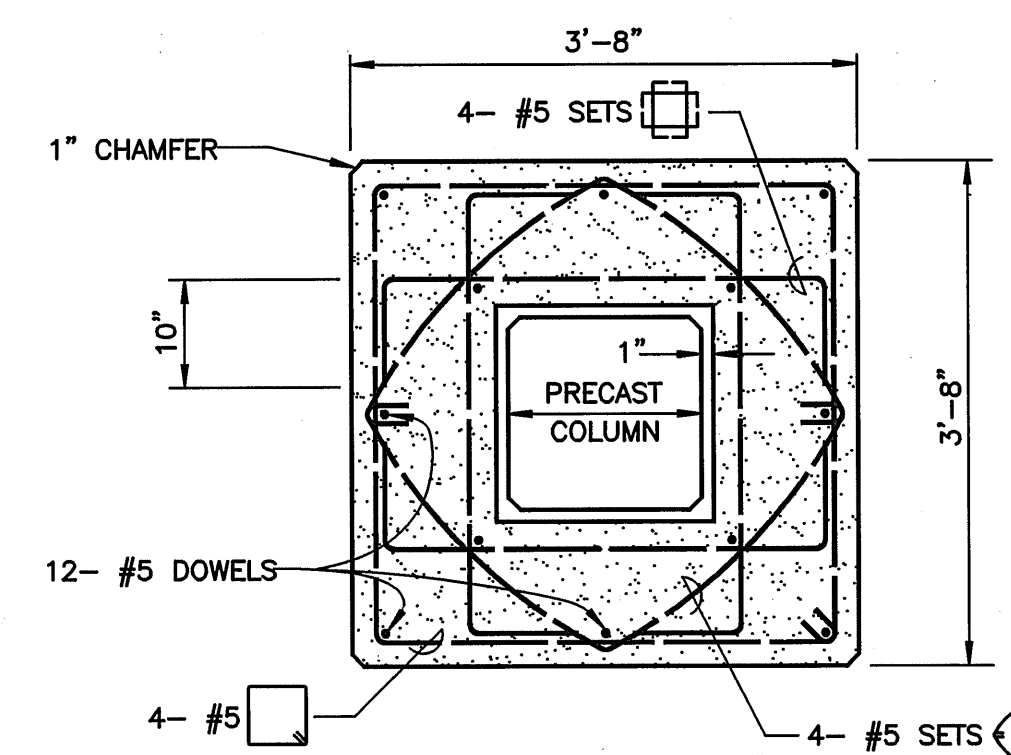
SPECIAL CONSIDERATIONS:

FINISHED FLOOR ELEVATION FOR THE WATERTANK IS SET AT +220.0' MSL. IN ORDER TO MINIMIZE THE ADVERSE EFFECTS OF DIFFERENTIAL SETTLEMENT OF THIS WATERTANK, IT IS RECOMMENDED THAT THE ENTIRE TANK PAD BE OVER-EXCAVATED TO ELEVATION +217.0' AND THEN PROOF-ROLLED WITH A VIBRATORY SHEEPSFOOT COMPACTOR WEIGHING NOT LESS THAN 20,000 POUNDS. NOTE: SOME ROCK OUTCROPS MAY BE ENCOUNTERED ON THE MAUKA SIDE OF THE TANK DURING THIS MASS-EXCAVATION. PROOF-ROLLING OF THE EXISTING SOILS AT ELEVATION +217.0' SHALL BE CONTINUED UNTIL A DENSE/UNYIELDING SURFACE HAS BEEN ACHIEVED AS DETERMINED BY THE PROJECT GEOTECHNICAL ENGINEER. FOLLOWING PROOFROLLING THE TANK PAD SUBGRADE AT ELEVATION +217.0', THE PAD MAY BE FILLED WITH IMPORTED 1.5 INCH MINUS GRANULAR STRUCTURAL FILL (UTB OR SELECT BORROW) COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY. THE IMPORTED STRUCTURAL FILL SHALL CONTAIN NOT MORE THAN 15 PERCENT PASSING THE #200 SIEVE.

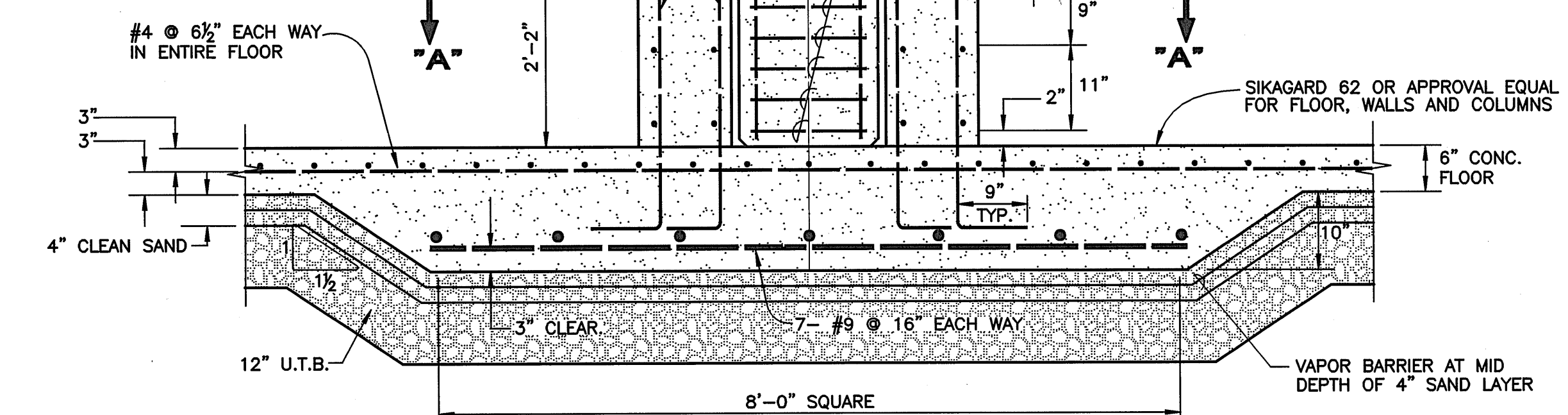
FOLLOWING THE ABOVE PAD PREPARATION, THE PROPOSED STRUCTURE CAN BE SUPPORTED ON SPREAD OR CONTINUOUS FOOTINGS EMBEDDED A MINIMUM OF 12 INCHES BELOW THE LOWEST ADJACENT COMPACTED GRADE.



TYPICAL COLUMN SECTION
SCALE: 3/4" = 1'-0"



SECTION "A-A"
BASE CONNECTION FOR
PRECAST COLUMN
SCALE: 3/4" = 1'-0"



NOTE:

PRECAST COLUMNS SHALL BE CAST IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE SPECIFICATIONS UNDER "CONCRETE WORK". A MINIMUM OF 4 COLUMNS SHALL BE CAST AT ANY ONE OPERATION FOR CONVENIENCE OF INSPECTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 24 HOURS IN ADVANCE OF THE TIME WHEN HE INTENDS TO CAST THE COLUMNS.

	TANK COATINGS ADDED FOR DWS	4/10/12
	ADDED RAILING DETAILS & REMOVED BUILT-UP ROOFING	10/01/10
LETTER	DESCRIPTION	DATE

ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 9354-S
HAWAII, U.S.A.

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KAONOULU MARKET PLACE
T.M.K.: (2) 3-9-01 : 16
KIHAI, MAUI, HAWAII

STORAGE TANK COLUMN AND WALL DETAILS

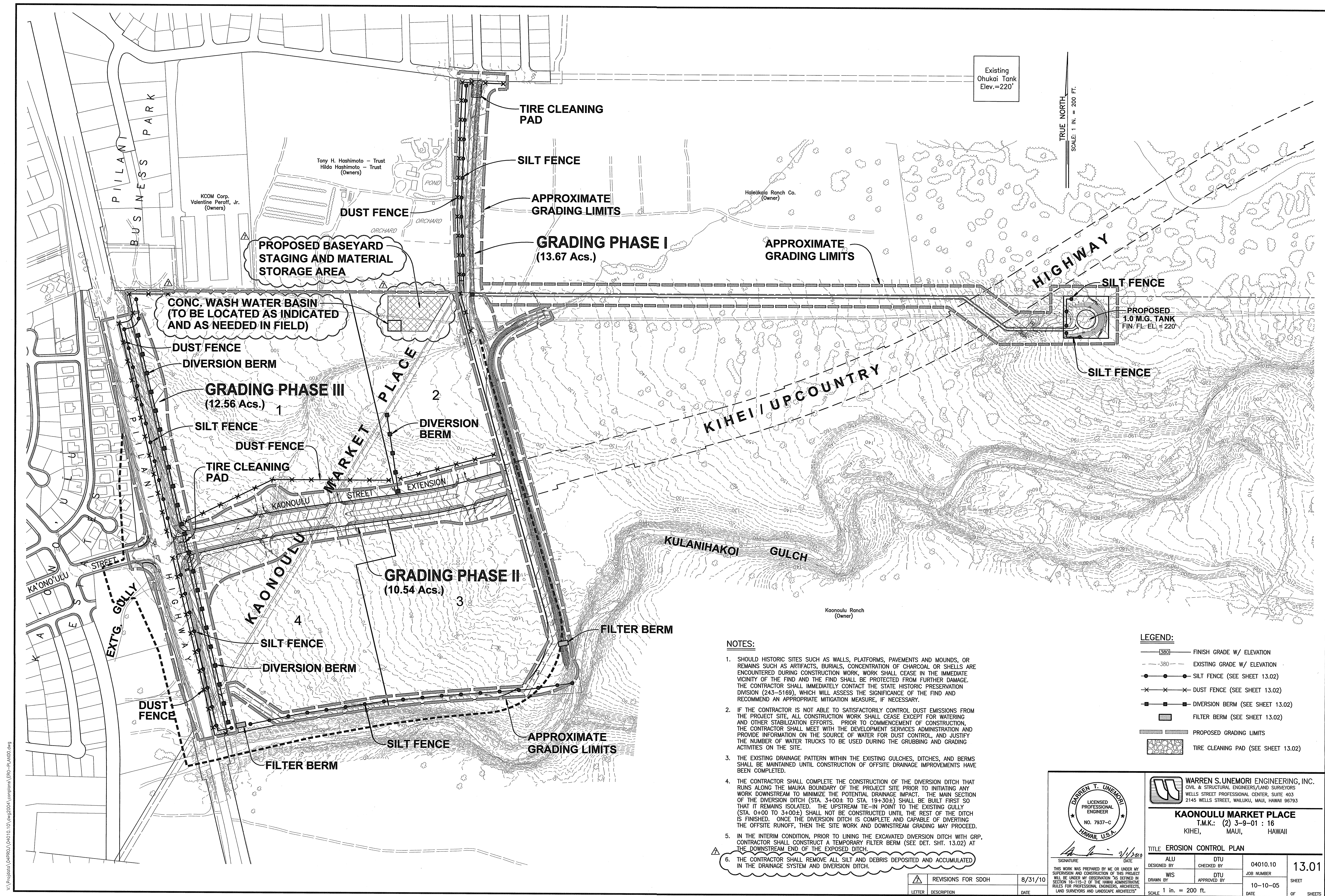
12.24
SHEET
OF SHEETS

DTU DESIGNED BY
WIS DRAWN BY

DTU CHECKED BY
DTU APPROVED BY

04010.10
JOB NUMBER
10-10-05
DATE

SCALE: As Shown

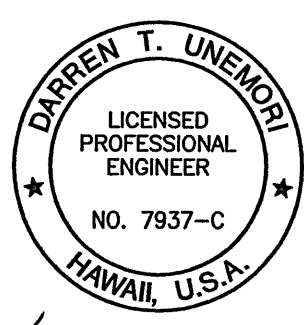


NOTES:

1. SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS ARE ENCOUNTERED DURING CONSTRUCTION WORK, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (243-5169), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.
2. IF THE CONTRACTOR IS NOT ABLE TO SATISFACTORILY CONTROL DUST EMISSIONS FROM THE PROJECT SITE, ALL CONSTRUCTION WORK SHALL CEASE EXCEPT FOR WATERING AND OTHER STABILIZATION EFFORTS. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL MEET WITH THE DEVELOPMENT SERVICES ADMINISTRATION AND PROVIDE INFORMATION ON THE SOURCE OF WATER FOR DUST CONTROL, AND JUSTIFY THE NUMBER OF WATER TRUCKS TO BE USED DURING THE GRUBBING AND GRADING ACTIVITIES ON THE SITE.
3. THE EXISTING DRAINAGE PATTERN WITHIN THE EXISTING GULCHES, DITCHES, AND BERMS SHALL BE MAINTAINED UNTIL CONSTRUCTION OF OFFSITE DRAINAGE IMPROVEMENTS HAVE BEEN COMPLETED.
4. THE CONTRACTOR SHALL COMPLETE THE CONSTRUCTION OF THE DIVERSION DITCH THAT RUNS ALONG THE MAUKA BOUNDARY OF THE PROJECT SITE PRIOR TO INITIATING ANY WORK DOWNSTREAM TO MINIMIZE THE POTENTIAL DRAINAGE IMPACT. THE MAIN SECTION OF THE DIVERSION DITCH (STA. 3+00± TO STA. 19+30±) SHALL BE BUILT FIRST SO THAT IT REMAINS ISOLATED. THE UPSTREAM TIE-IN POINT TO THE EXISTING GULLY (STA. 0+00 TO 3+00±) SHALL NOT BE CONSTRUCTED UNTIL THE REST OF THE DITCH IS FINISHED. ONCE THE DIVERSION DITCH IS COMPLETE AND CAPABLE OF DIVERTING THE OFFSITE RUNOFF, THEN THE SITE WORK AND DOWNSTREAM GRADING MAY PROCEED.
5. IN THE INTERIM CONDITION, PRIOR TO LINING THE EXCAVATED DIVERSION DITCH WITH GRP, CONTRACTOR SHALL CONSTRUCT A TEMPORARY FILTER BERM (SEE DET. SHT. 13.02) AT THE DOWNSTREAM END OF THE EXPOSED DITCH.
6. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS DEPOSITED AND ACCUMULATED IN THE DRAINAGE SYSTEM AND DIVERSION DITCH.

LEGEND:

- 380 — FINISH GRADE W/ ELEVATION
- 380 — EXISTING GRADE W/ ELEVATION
- ● ● SILT FENCE (SEE SHEET 13.02)
- × × × DUST FENCE (SEE SHEET 13.02)
- ■ ■ DIVERSION BERM (SEE SHEET 13.02)
- ▬ FILTER BERM (SEE SHEET 13.02)
- — — PROPOSED GRADING LIMITS
- ▨ TIRE CLEANING PAD (SEE SHEET 13.02)



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TITLE EROSION CONTROL PLAN

DESIGNED BY	DTU	04010.10	13.01
CHECKED BY	CHECKED BY	JOB NUMBER	
DRAWN BY	DTU	10-10-05	
APPROVED BY	DATE	DATE	OF SHEETS

REVISIONS FOR SDOH	8/31/10
LETTER	DESCRIPTION