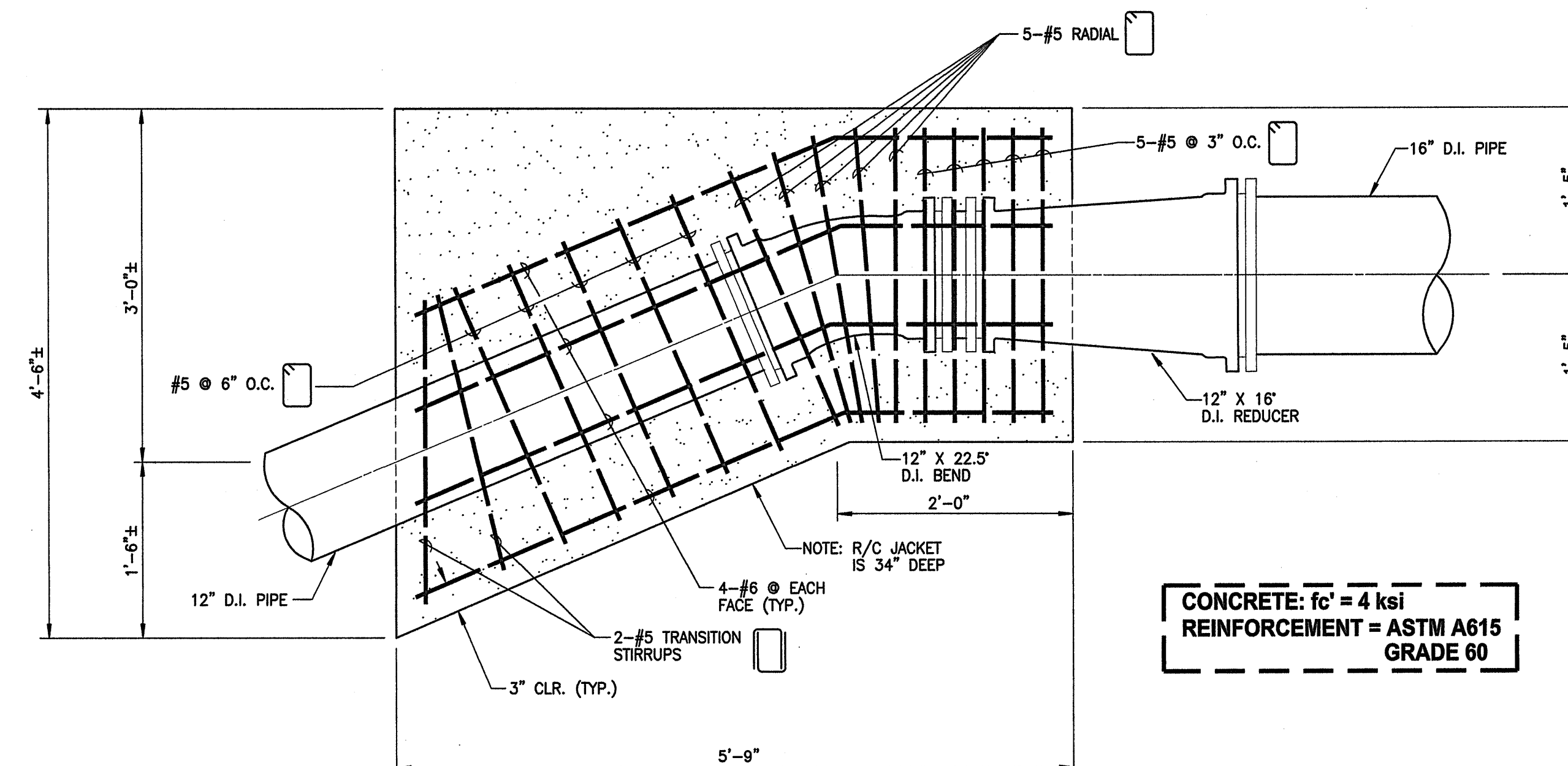


v:\Projdata\04PROJ\04010.10\dwg2004\conplans\det-wtr0.dwg



DETAIL FOR HYBRID R/C JACKET SEGMENT

SCALE: 1" = 1'-0"

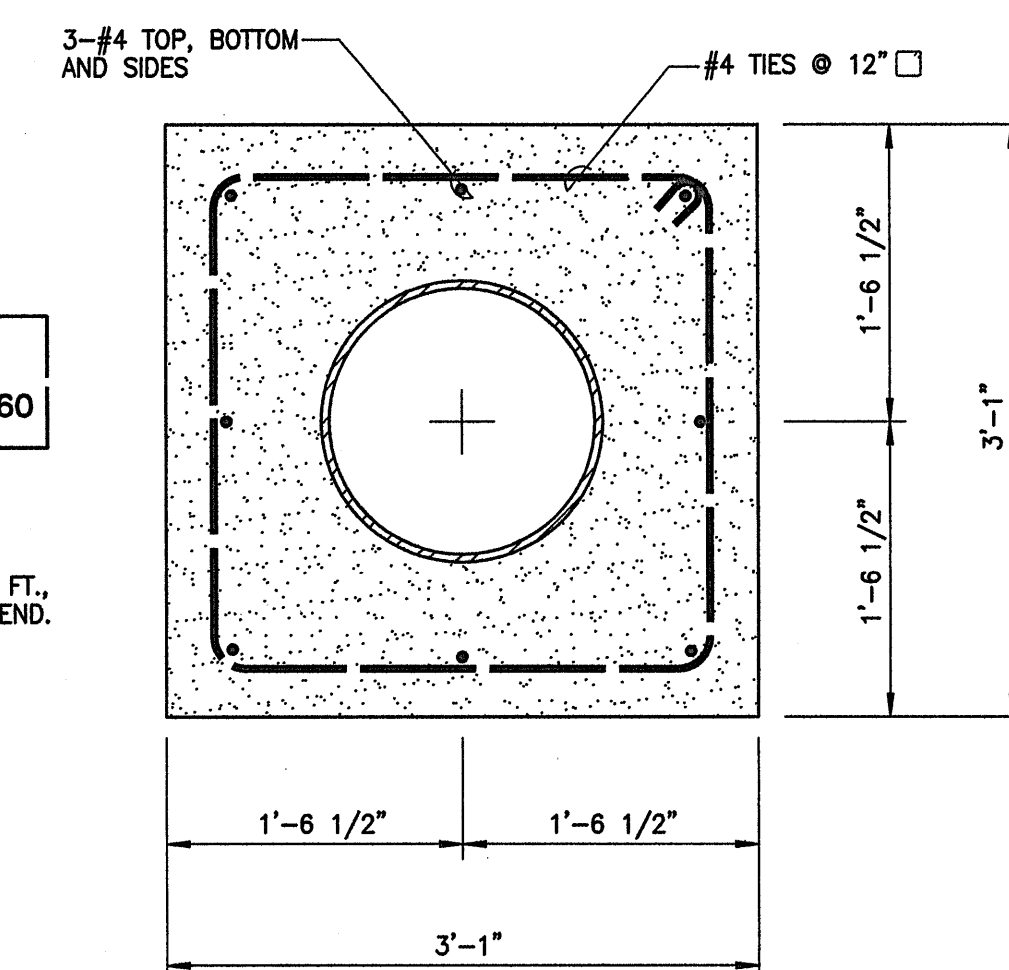
detail/water/brnd-00.dwg

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

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.

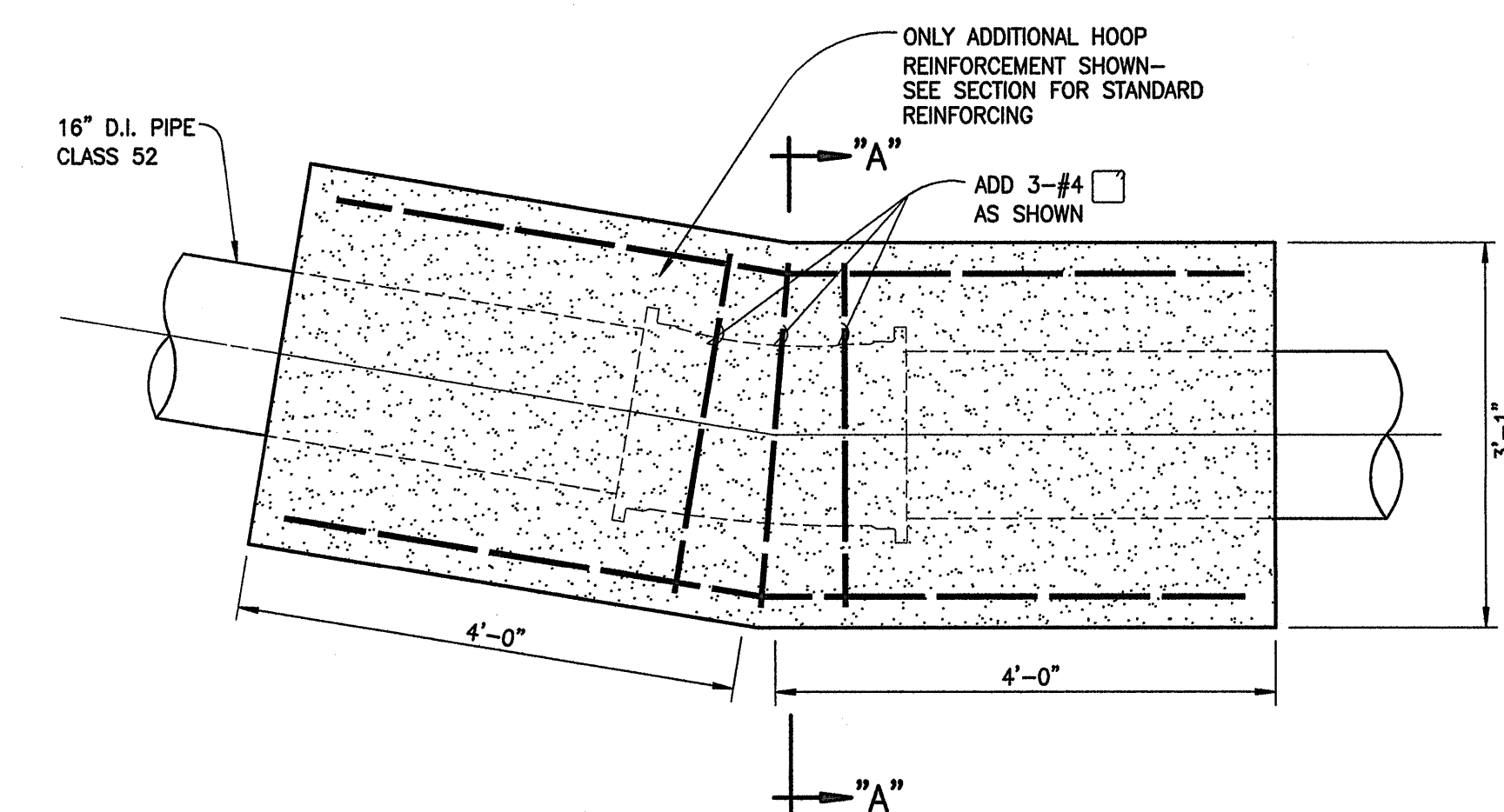


SECTION "A"-"A"

TYPICAL CROSS-SECTION FOR REINFORCED  
CONCRETE JACKET FOR 16" x 11 1/4" BEND

AT STA. 1+38.74

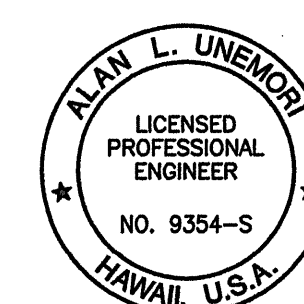
SCALE: 1" = 1' - 0"



PLAN VIEW OF R/C JACKET AT STA. 1+38.74

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

detail/water/brnd-00.dwg



SIGNATURE DATE 11/6/2012

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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  
KIHAI, MAUI, HAWAII

TITLE DETAILS - REINFORCED CONCRETE JACKET

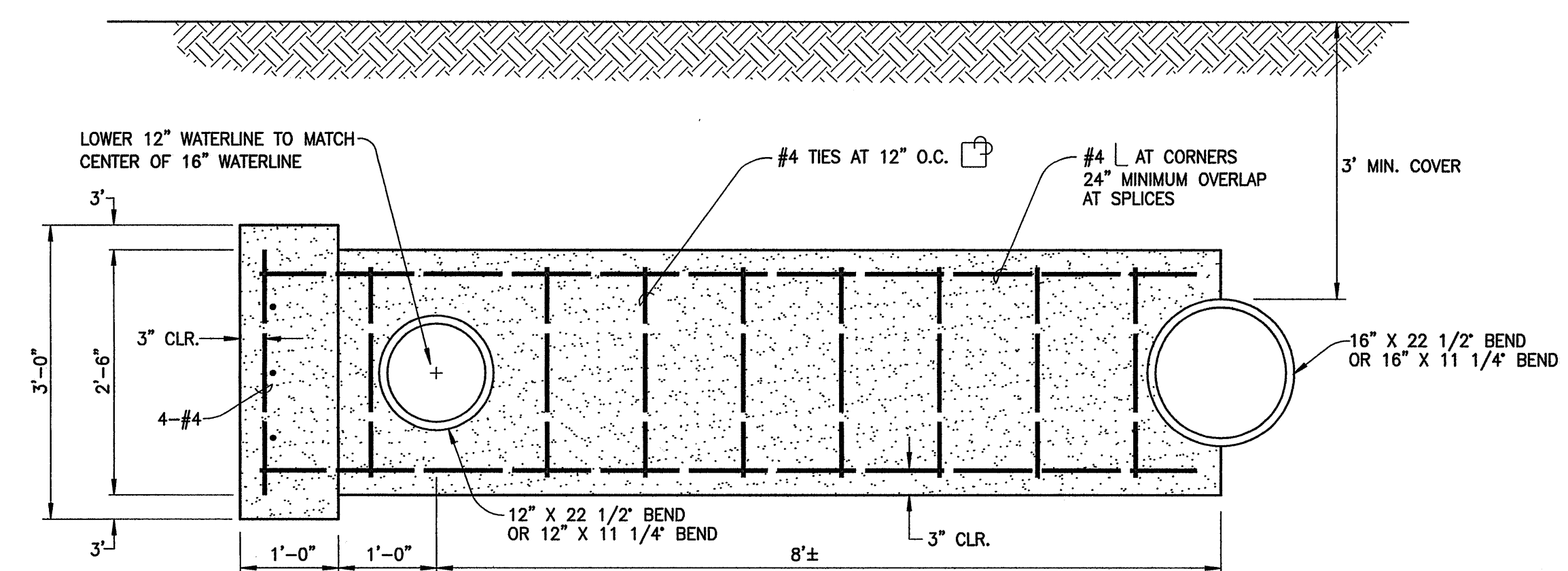
DESIGNED BY	DTU	CHECKED BY	DTU	JOB NUMBER	04010.10
DRAWN BY	WIS	APPROVED BY	DTU	JOB NUMBER	10-10-05
LETTER	DESCRIPTION	DATE	SCALE	DATE	OF SHEETS

12.05

SHEET

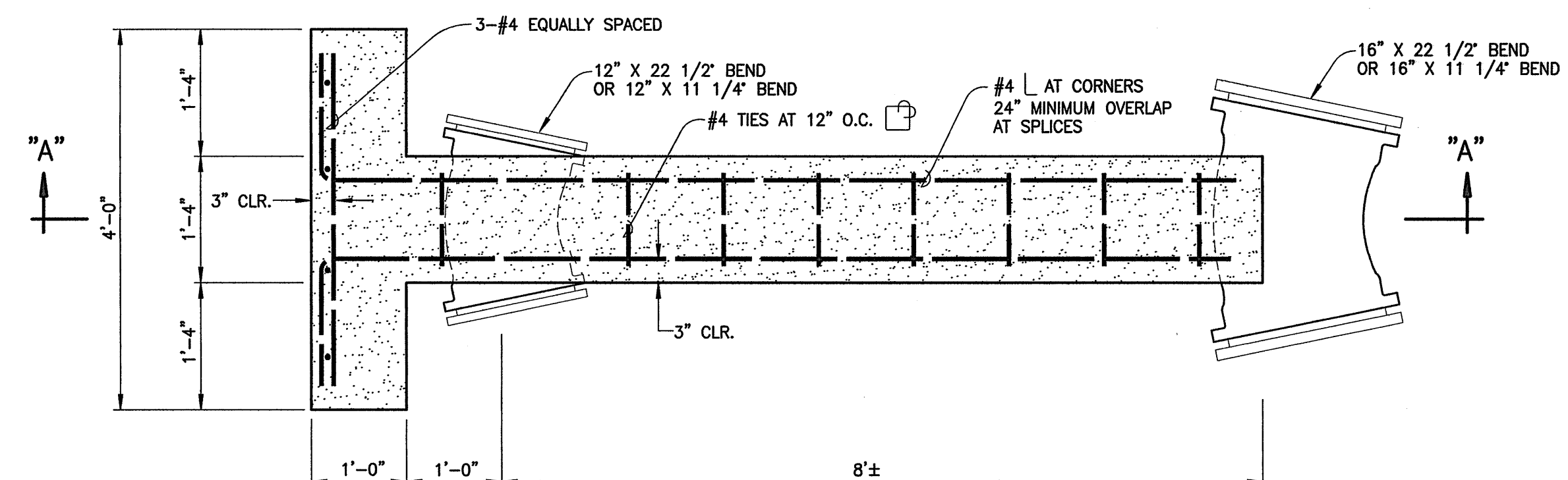
OF SHEETS





SECTION "A" - "A"  
ELEVATION VIEW

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

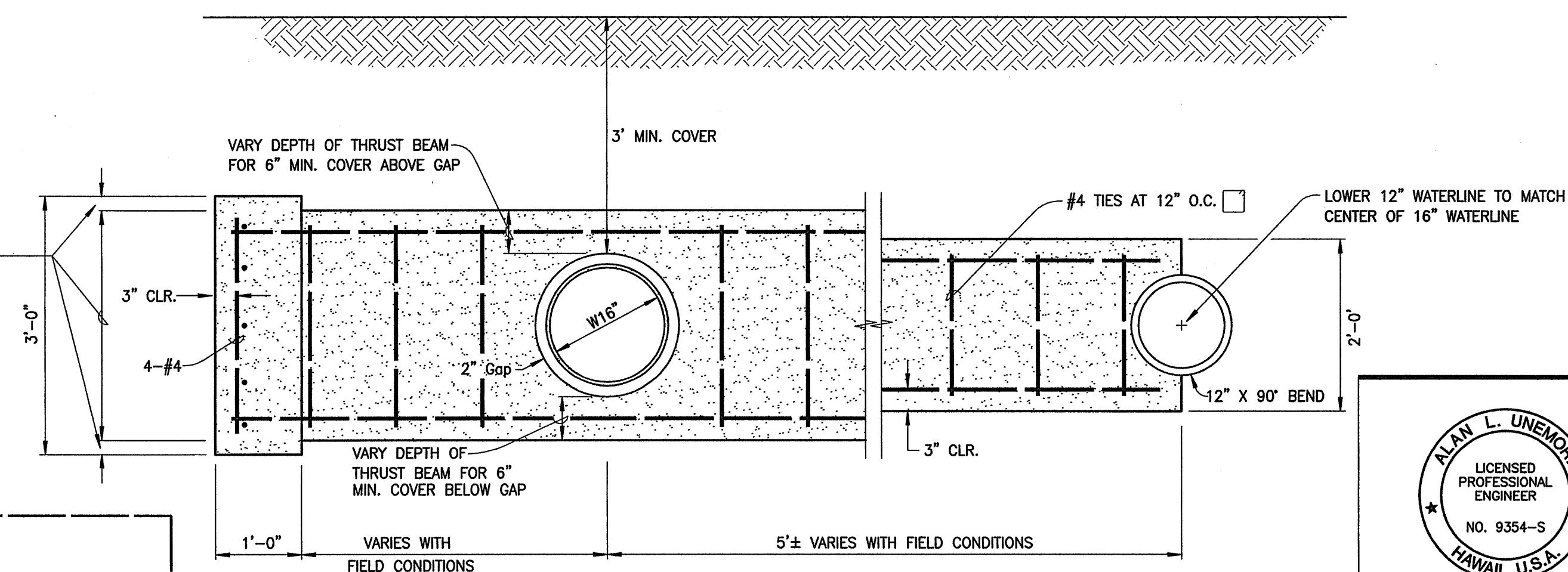


PLAN VIEW

TYPE "SB2" HORIZONTAL THRUST BEAM AT STA. 10+52.79

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


details/water/thrust-bld.dwg



TYPE "SB3" HORIZONTAL THRUST BEAM AT STA. 41+99.50

SCALE: 3/4" = 1'-0" details/water/thrust-bis.dwg

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



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## KAONOULU MARKET PLACE

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

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

DTU	DTU		
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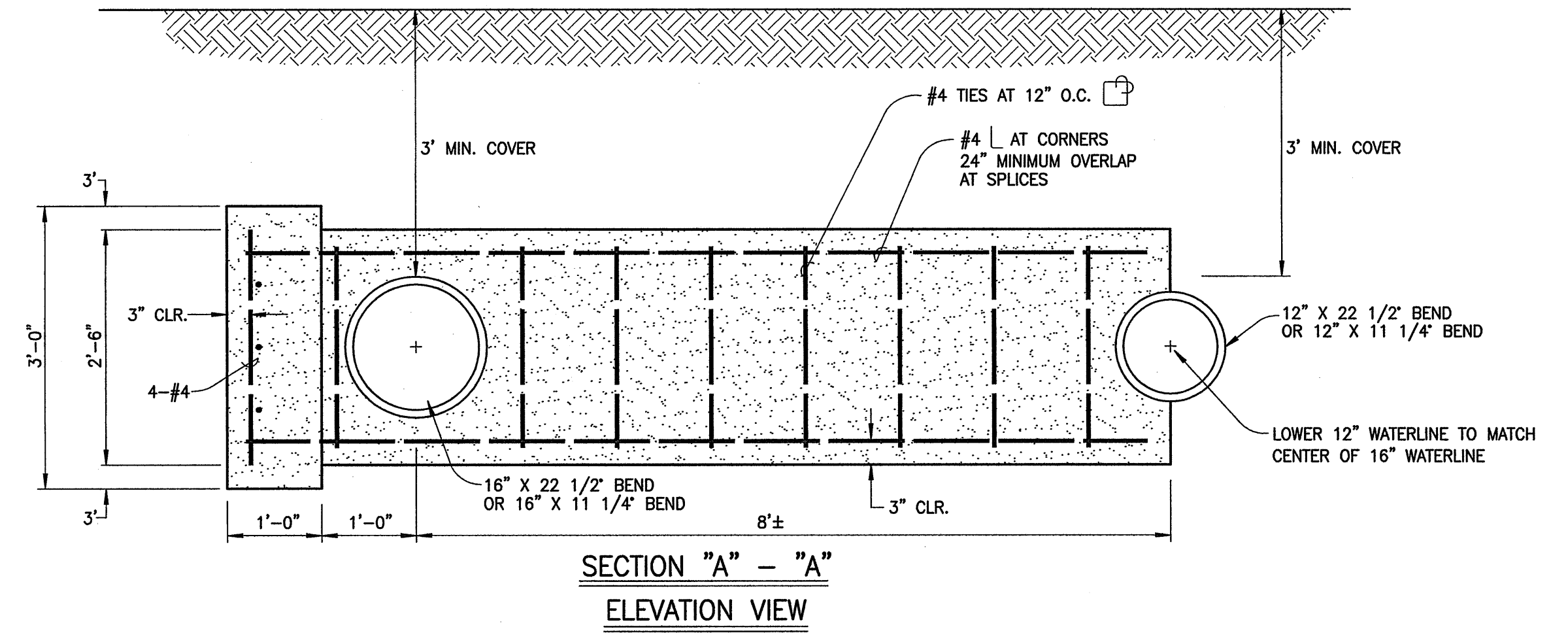
DESIGNED BY	CHECKED BY	04010.10	12.06

WIS	DTU	JOB NUMBER	SHEET
DRAWN BY	APPROVED BY		

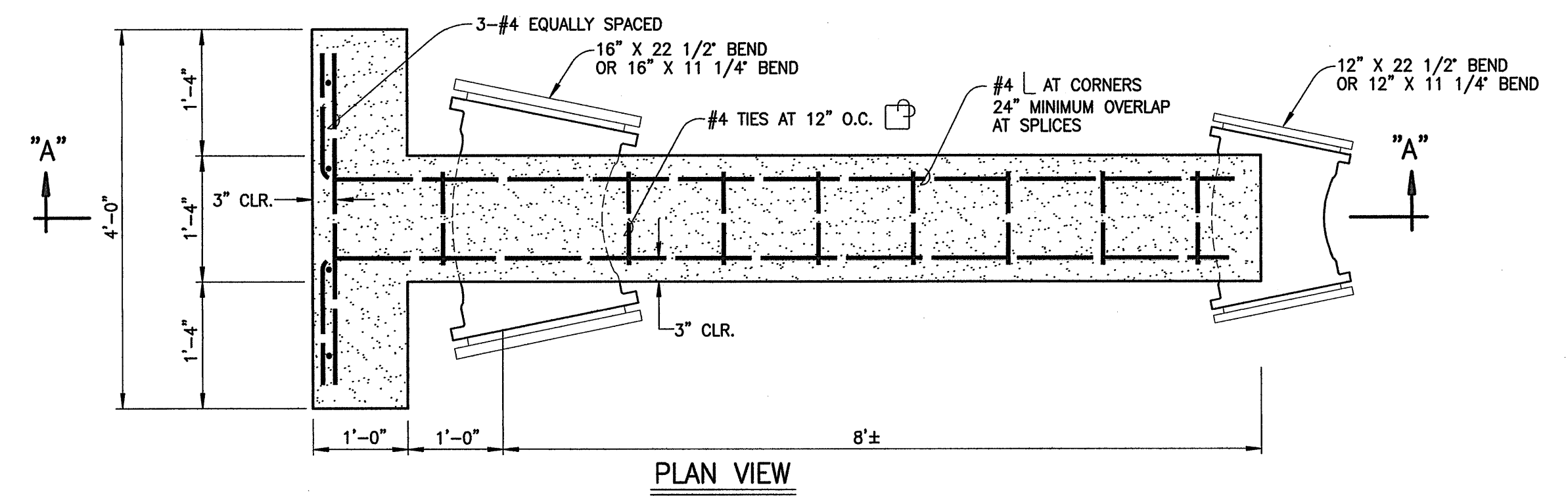
DRAWN BY	APPROVED BY	10-10-05	SHEET
3/4" 1' 0"			

SCALE	$3/4" = 1' - 0"$	DATE	OF	SHEETS
-------	------------------	------	----	--------

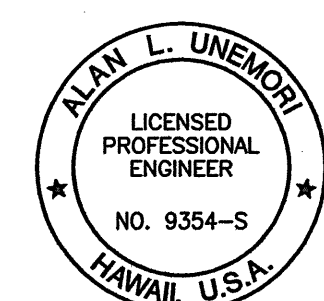
\\Proidata\04PROJ\04010.10\dwg2004\complans\det-water00.dwg



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

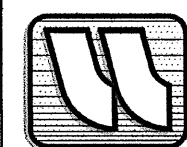


TYPE "SB6" HORIZONTAL THRUST BEAM AT  
STA. 38+71 AND 38+81  
SCALE:  $3/4" = 1'-0"$



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

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**KAONOULU MARKET PLACE**

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

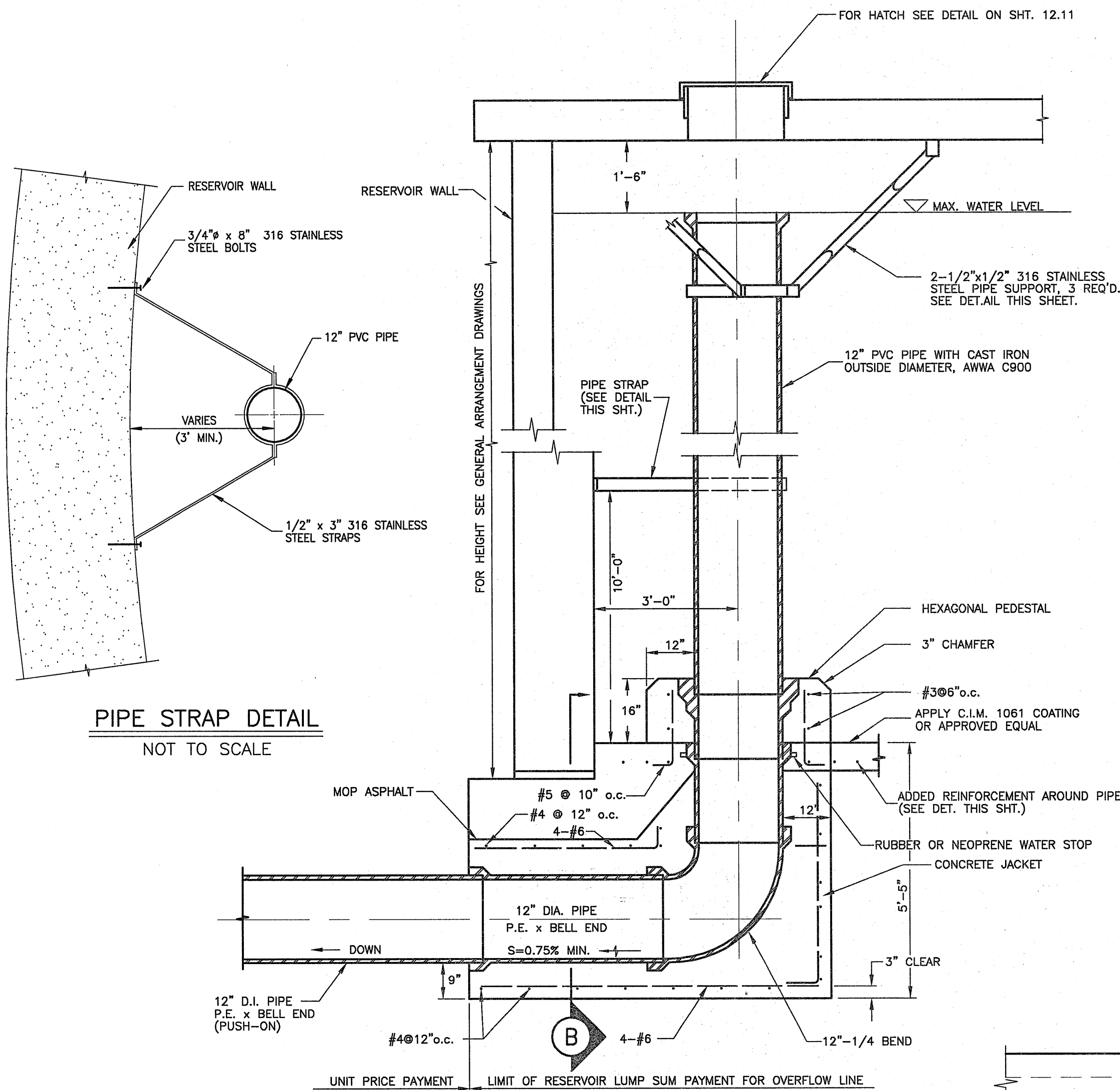
DETAILS - REINFORCED CONCRETE THRUST BEAMS FOR 12" AND 16" OFFSITE WATERLINES

TITLE

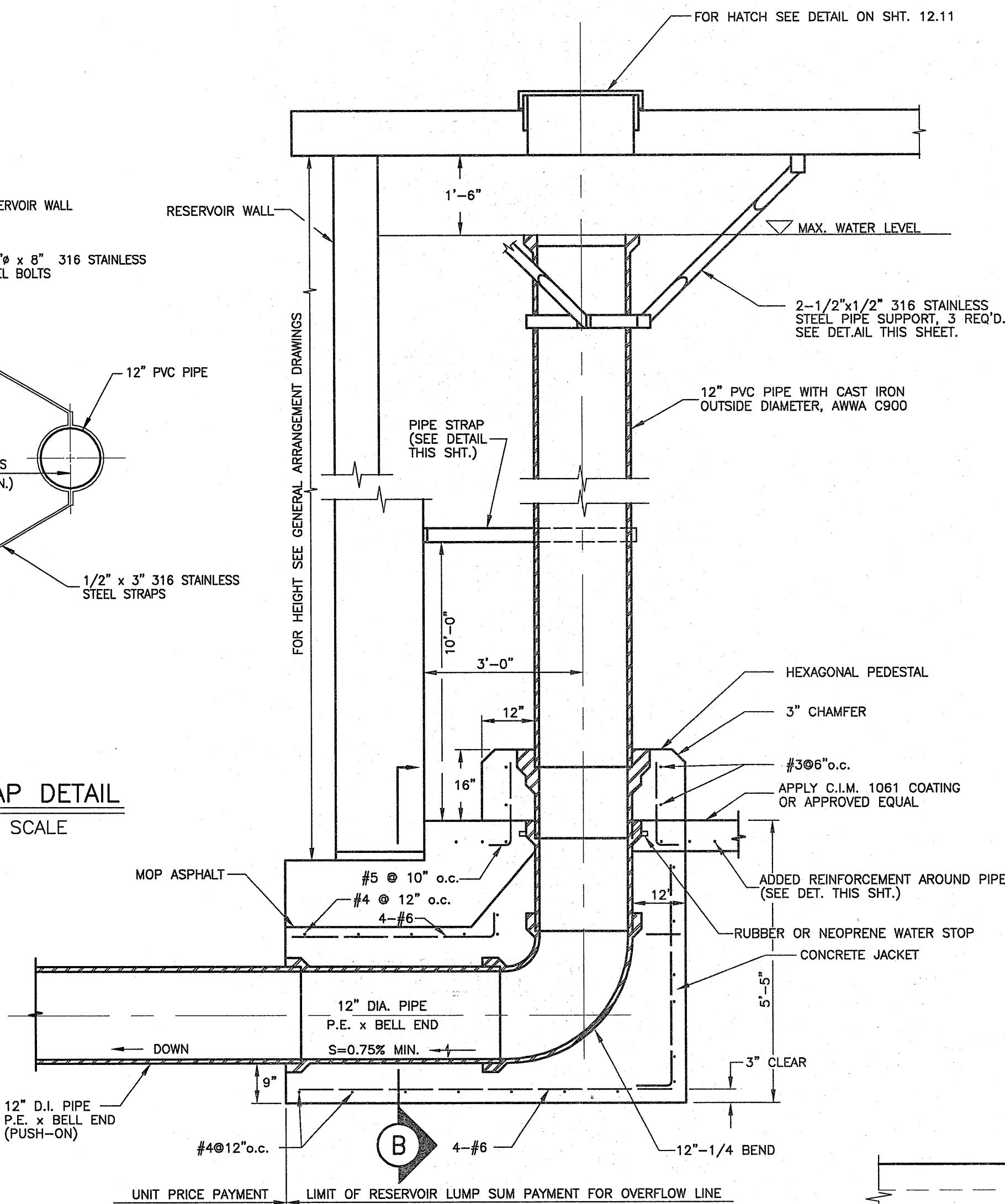
DESIGNED BY	CHECKED BY	04010.10	12.07
DRAWN BY	APPROVED BY	JOB NUMBER	SHEET
SCALE	DATE	10-10-05	OF SHEETS

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

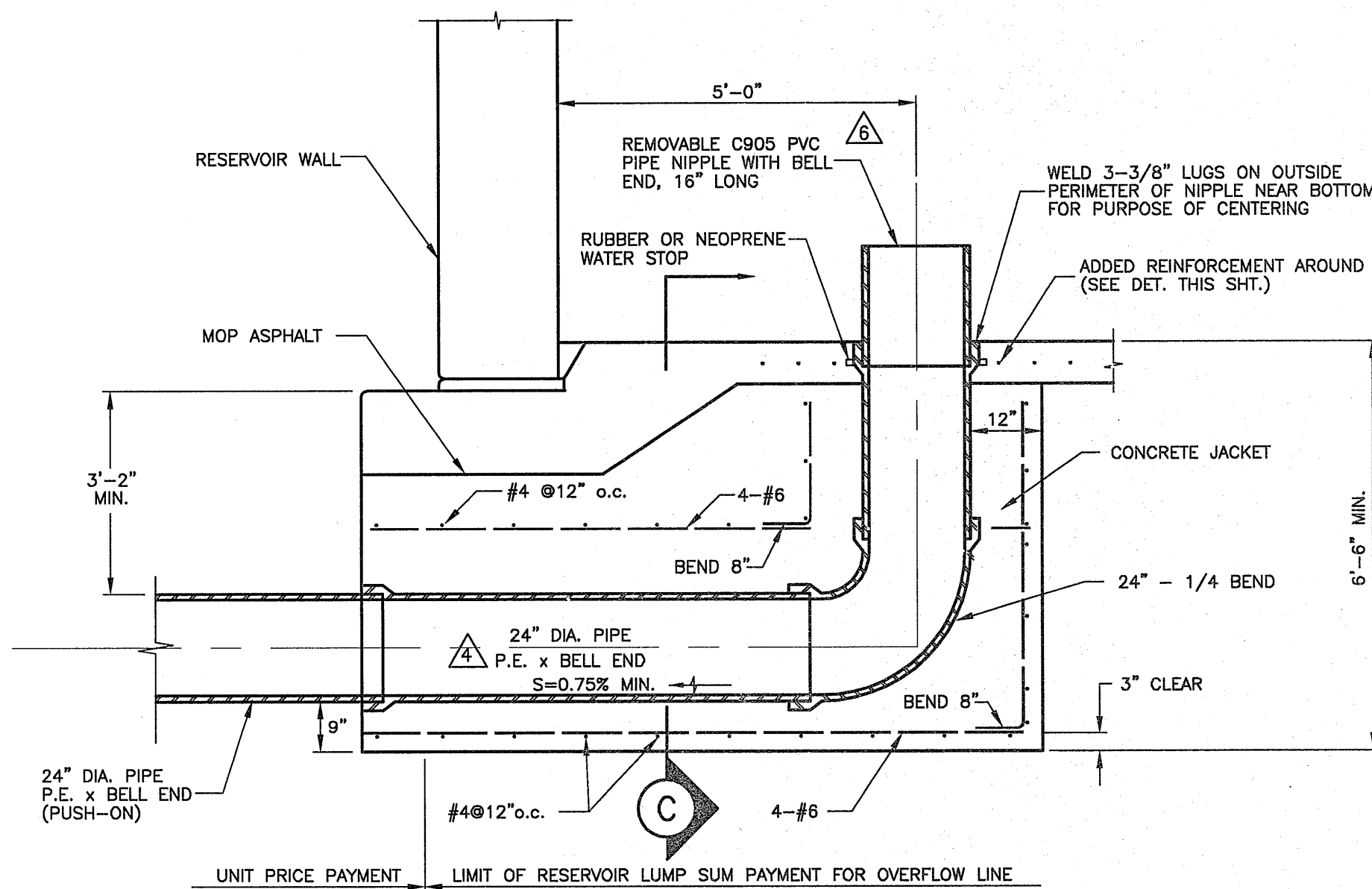




PIPE STRAP DETAIL  
NOT TO SCALE

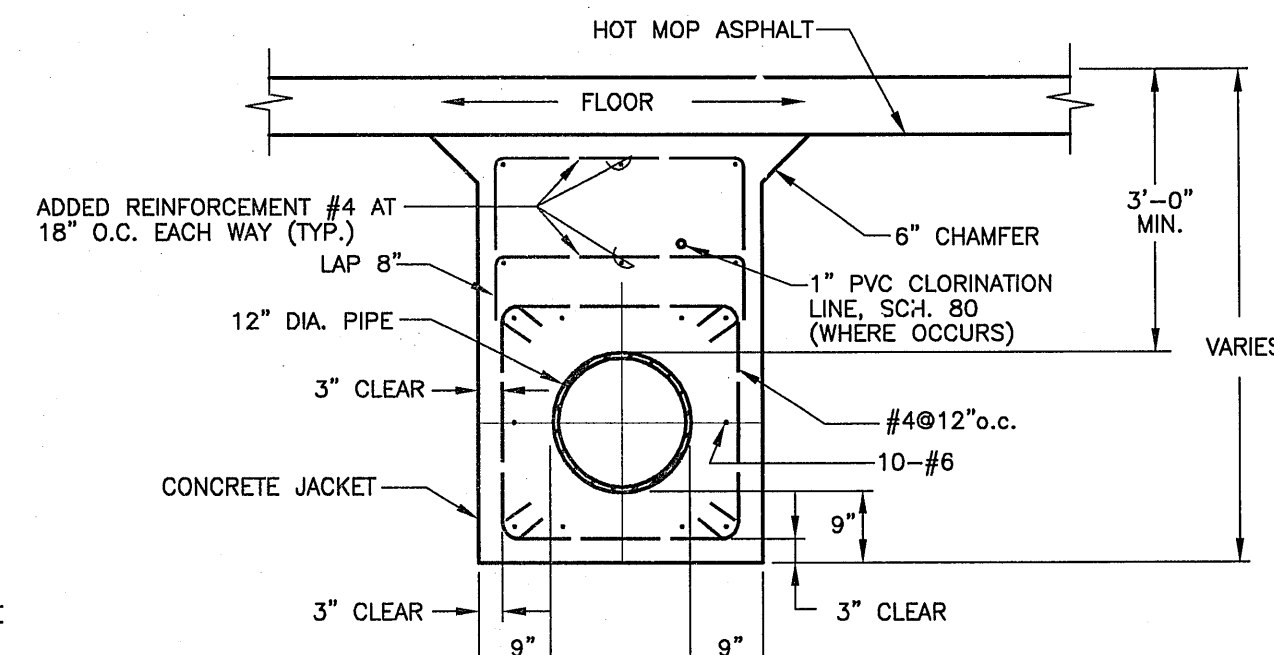


DETAIL OF OVERFLOW  
NOT TO SCALE

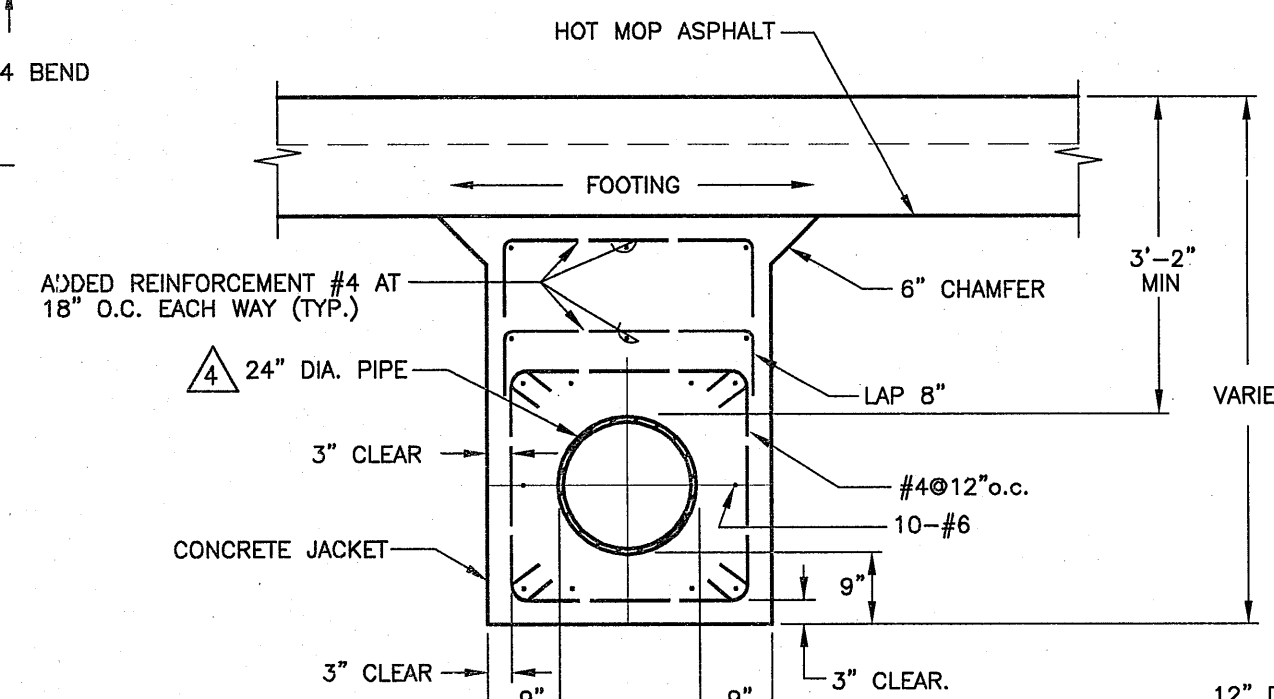


INFLUENT-EFFLUENT LINE  
NOT TO SCALE

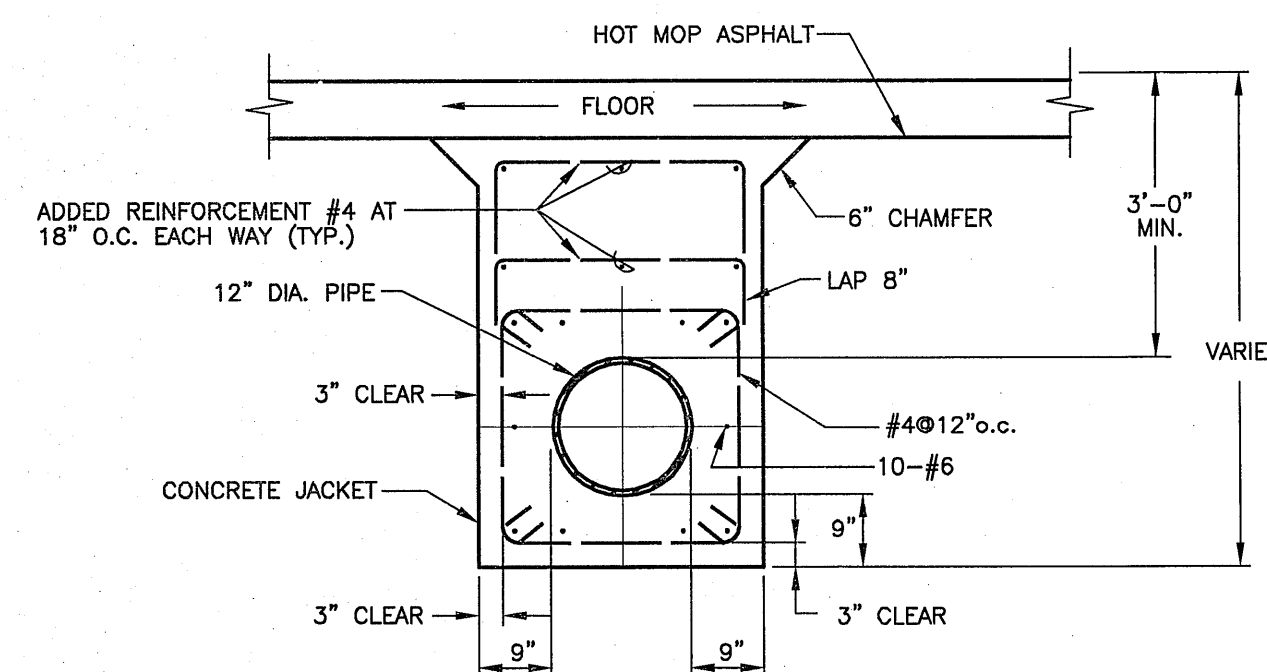
PEDESTAL FOR 12" OVERFLOW  
SCALE: 1/2" = 1'-0"



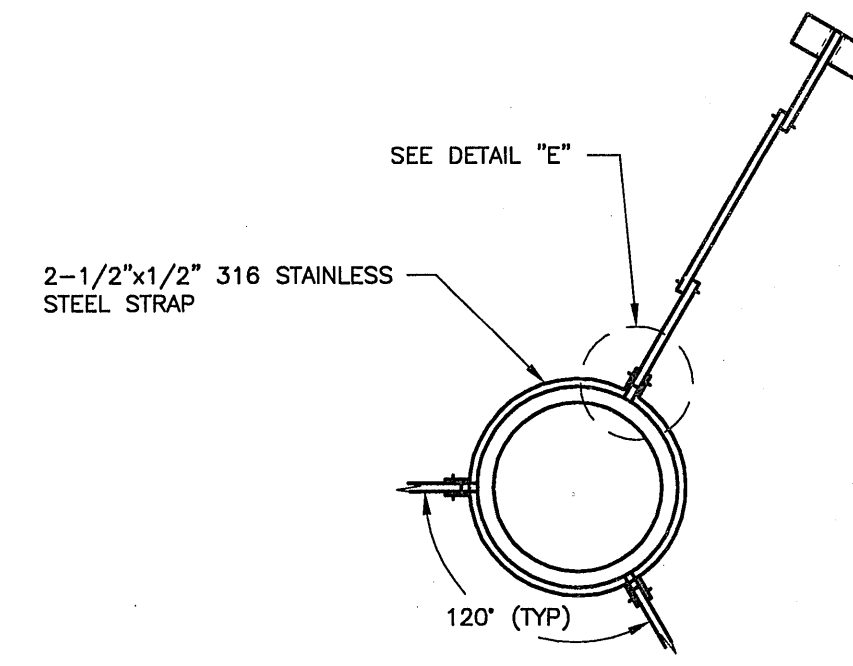
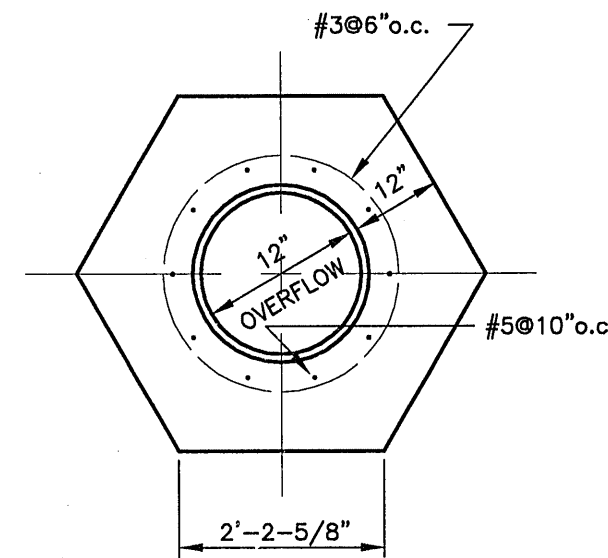
SECTION B  
NOT TO SCALE



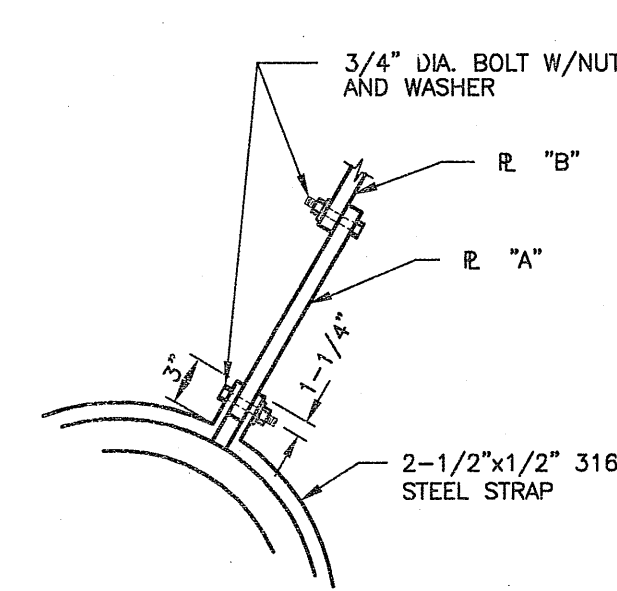
SECTION C  
NOT TO SCALE



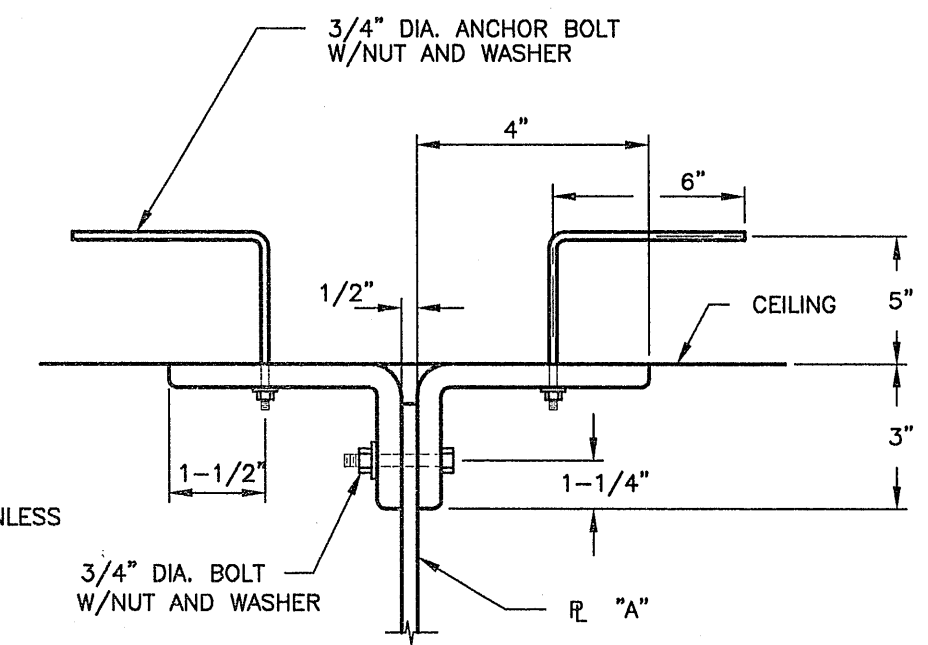
SECTION D  
NOT TO SCALE



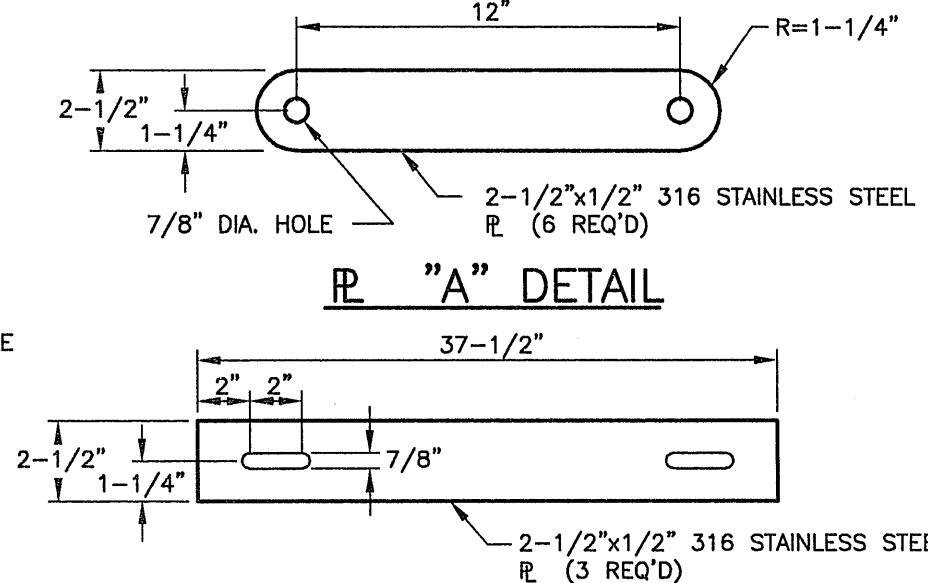
PLAN



DETAIL "E"



CEILING ANCHOR

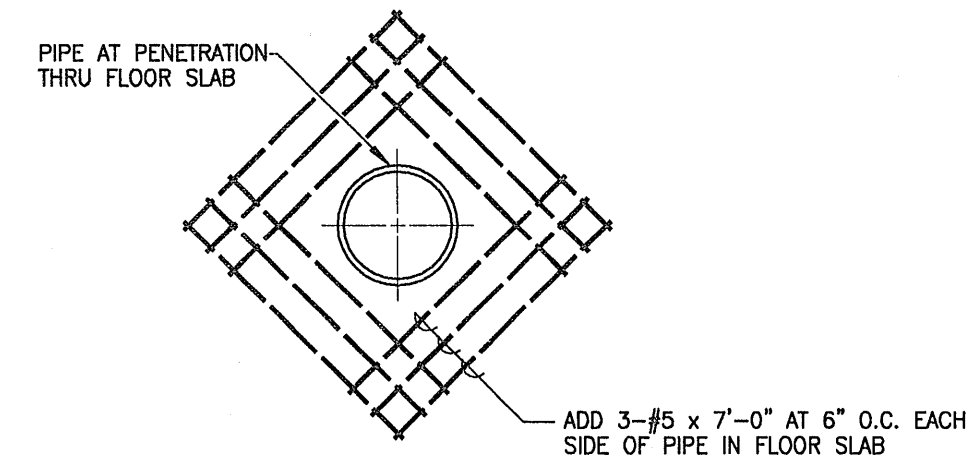


DETAIL "A"

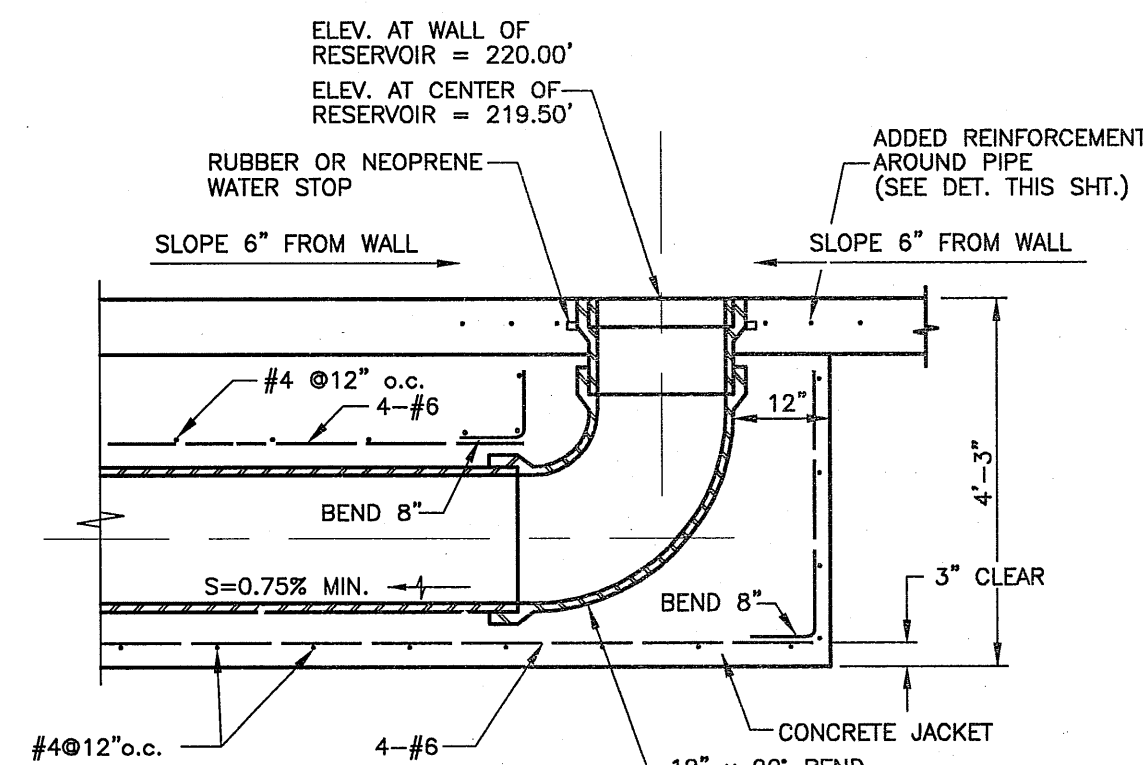
DETAIL "B"

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.

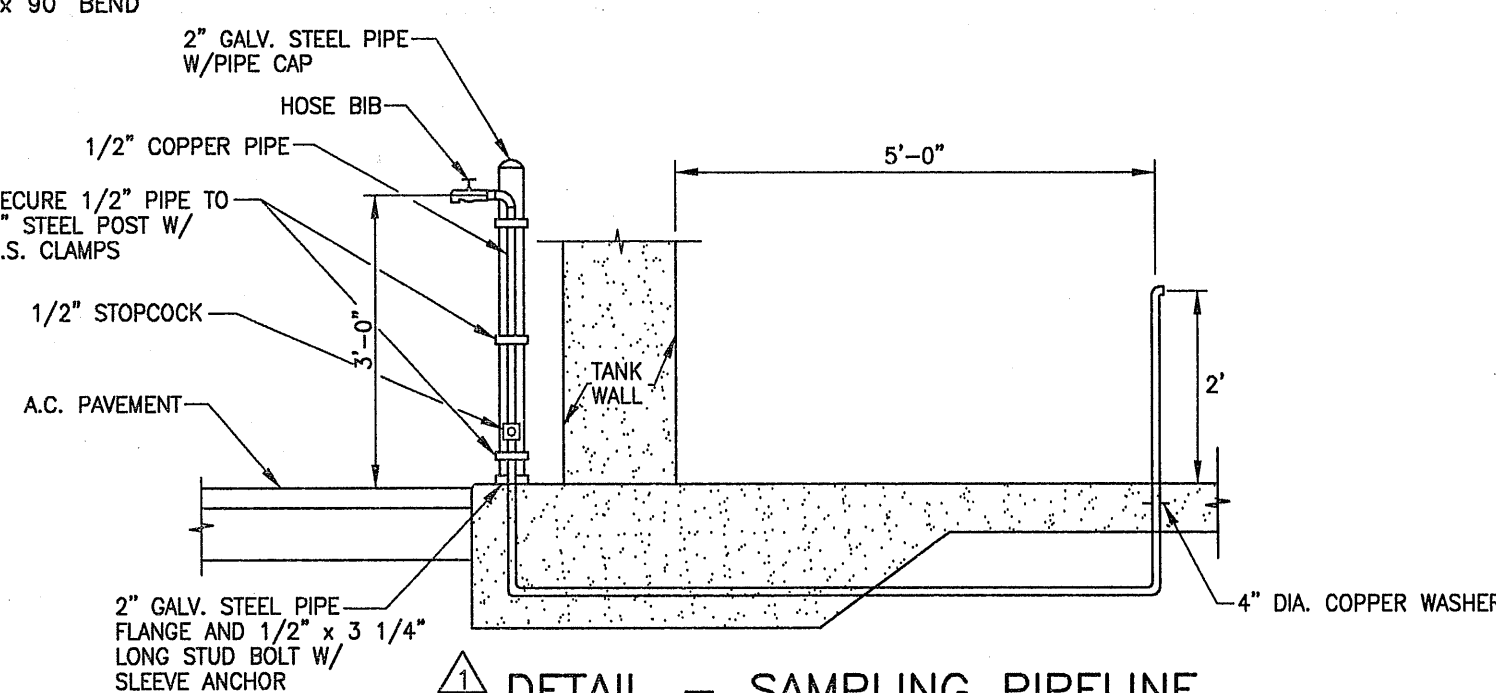
OVERFLOW PIPE SUPPORT DETAILS  
SCALE: NONE



TYPICAL SLAB REINFORCING  
AT PIPE PENETRATION  
NOT TO SCALE

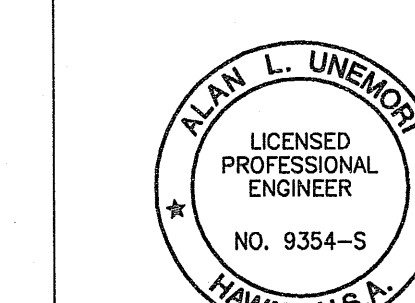


WASHOUT LINE  
NOT TO SCALE



DETAIL - SAMPLING PIPELINE  
SCALE: 1/2" = 1'-0"

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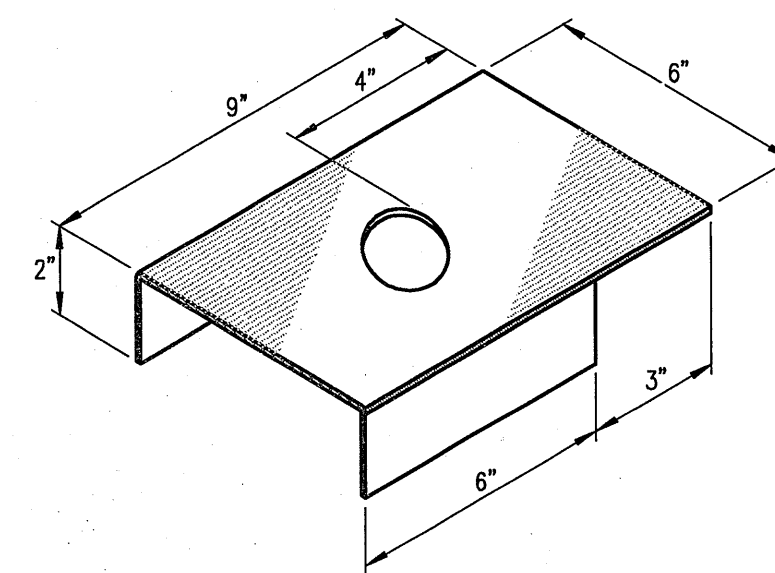
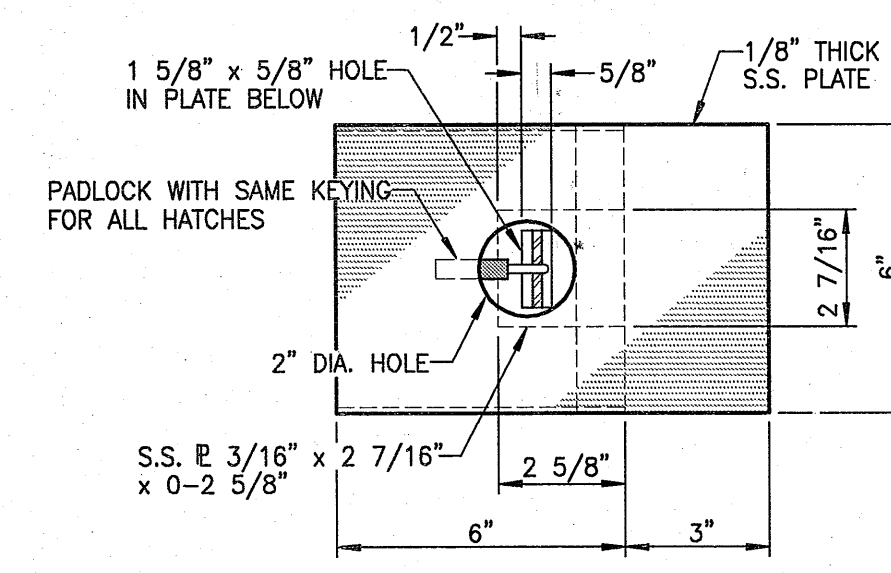
KAONOULU MARKET PLACE  
T.M.K.: (2) 3-9-01 : 16  
KIHAI, MAUI, HAWAII

TITLE: STORAGE TANK DETAILS

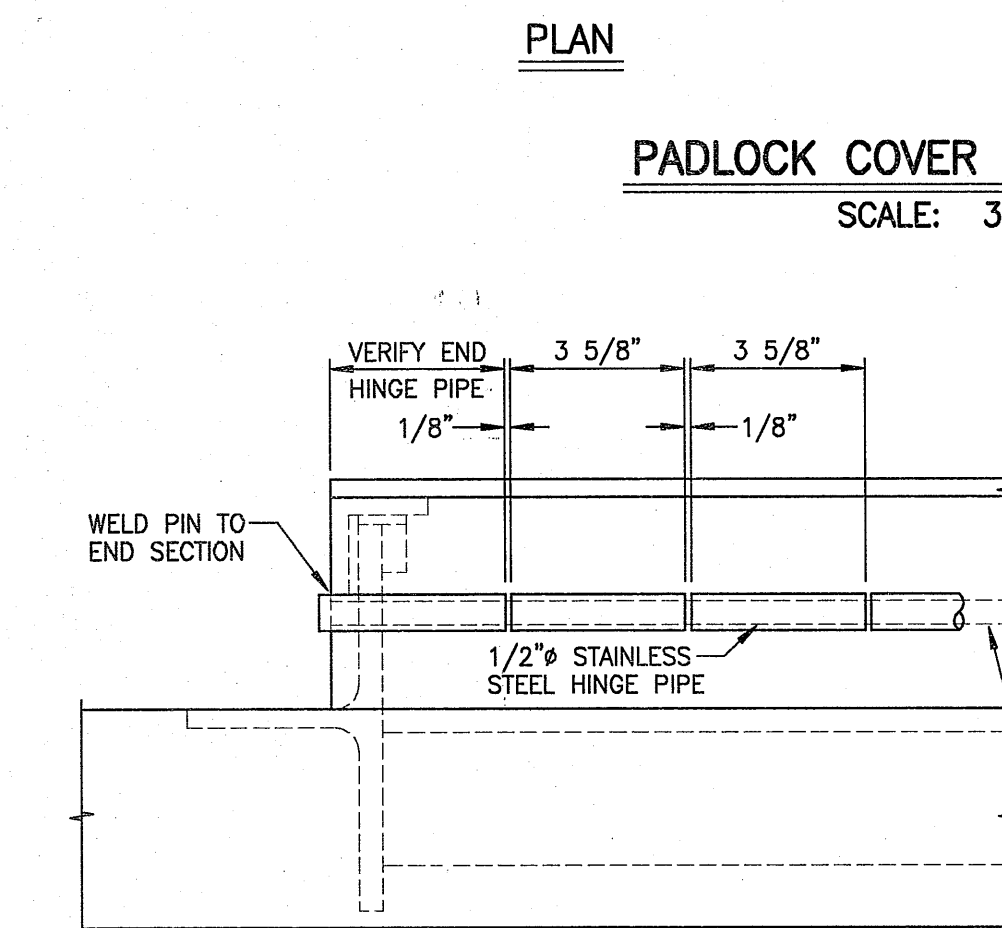
REVISION	DESCRIPTION	DATE
6	Revised Removable Pipe Nipple & Moved Hatch Details to Sht. 12.11	10/01/10
5	Revised Influent-Effluent Line to 24" Dia.	12/12/08
4	Changed Sampling Pipeline Detail, and Materials to Type 316 Steel per DWS Comments.	9/11/06
LETTER	DESCRIPTION	DATE

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"

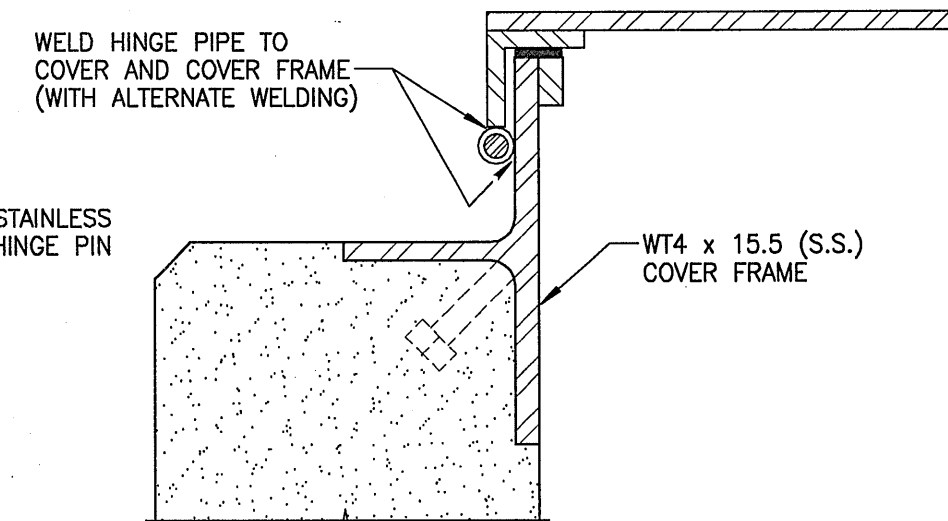
DESIGNED BY	CHECKED BY	DATE	JOB NUMBER	SHEET
ALU	DTU	04010.10	12.10	
DRAWN BY	APPROVED BY	DATE	JOB NUMBER	SHEET
WIS	DTU	10-10-05	12.10	
SCALE	As Shown	DATE	JOB NUMBER	SHEET
			12.10	



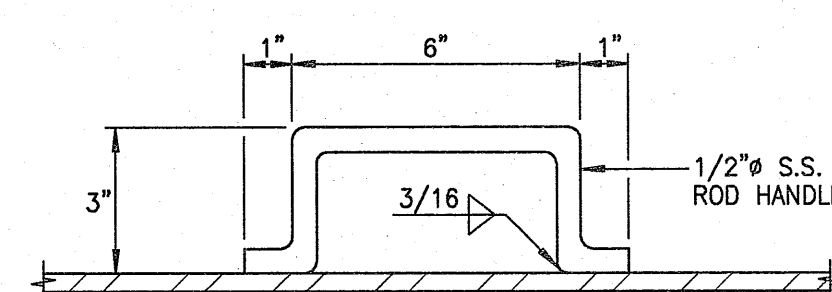
PADLOCK COVER PLATE DETAIL "D"  
SCALE: 3" = 1'-0"



**OVERFLOW HATCH DETAIL**  
SCALE: 3/4" = 1'-0"



SECTION

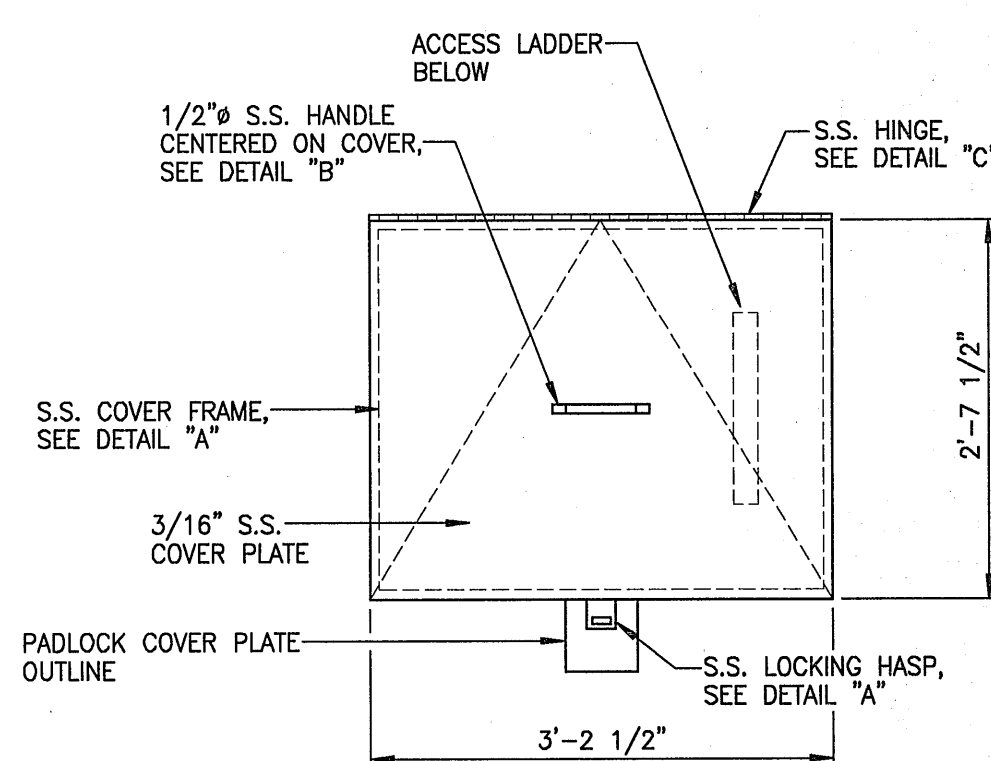


COVER HANDLE DETAIL "B"  
SCALE: 3" = 1'-0"

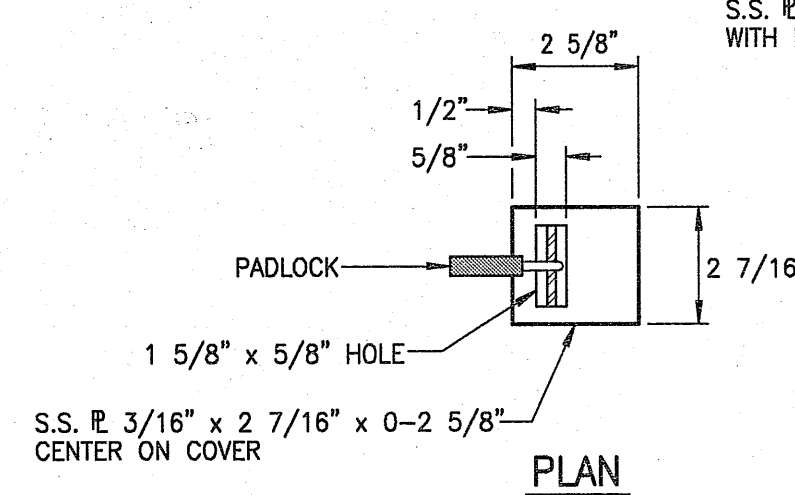
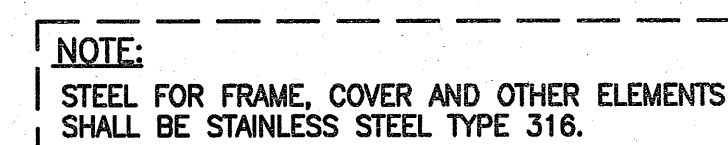


COVER HINGE DETAIL "C"

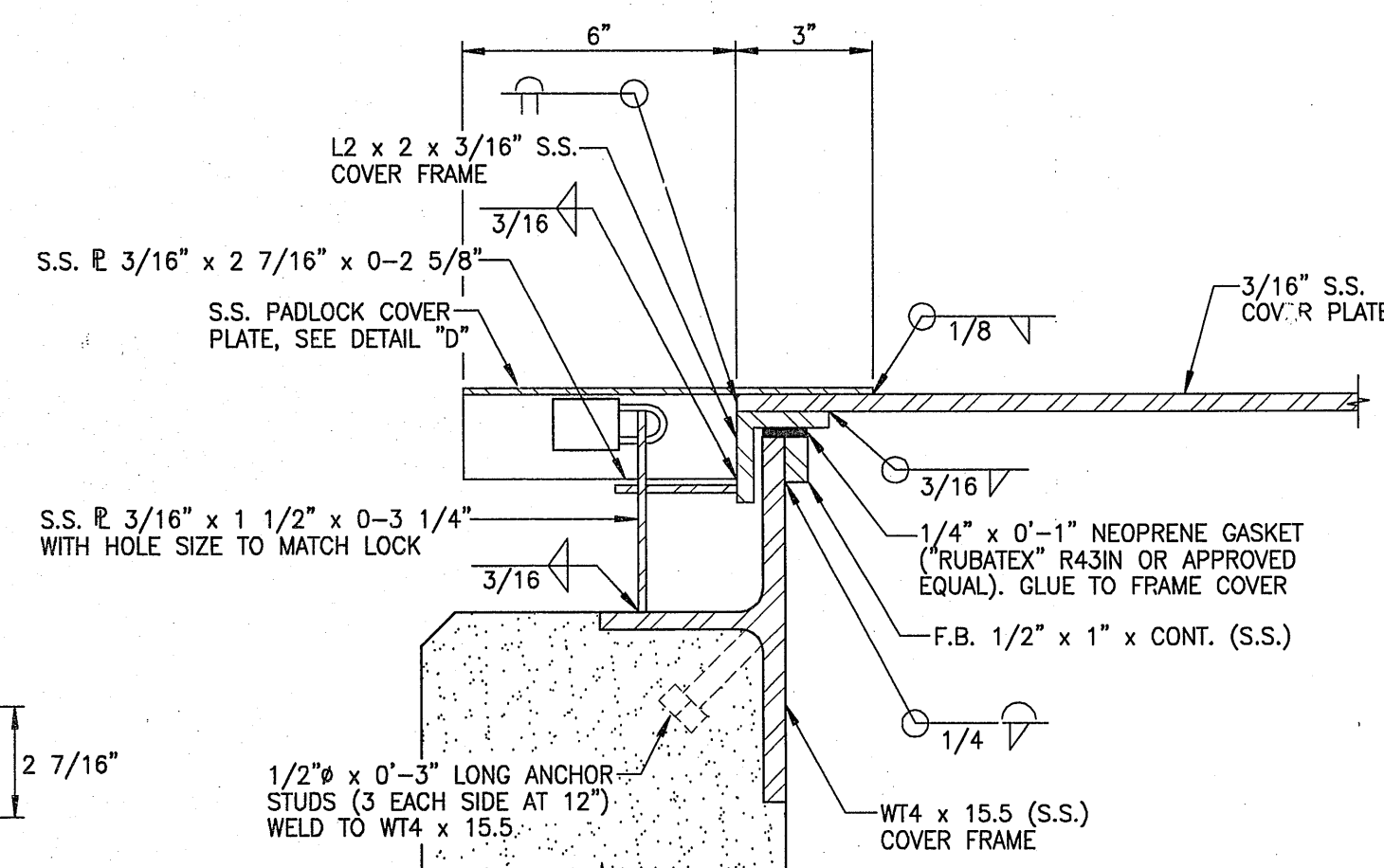
SCALE: 3" = 1'-0"



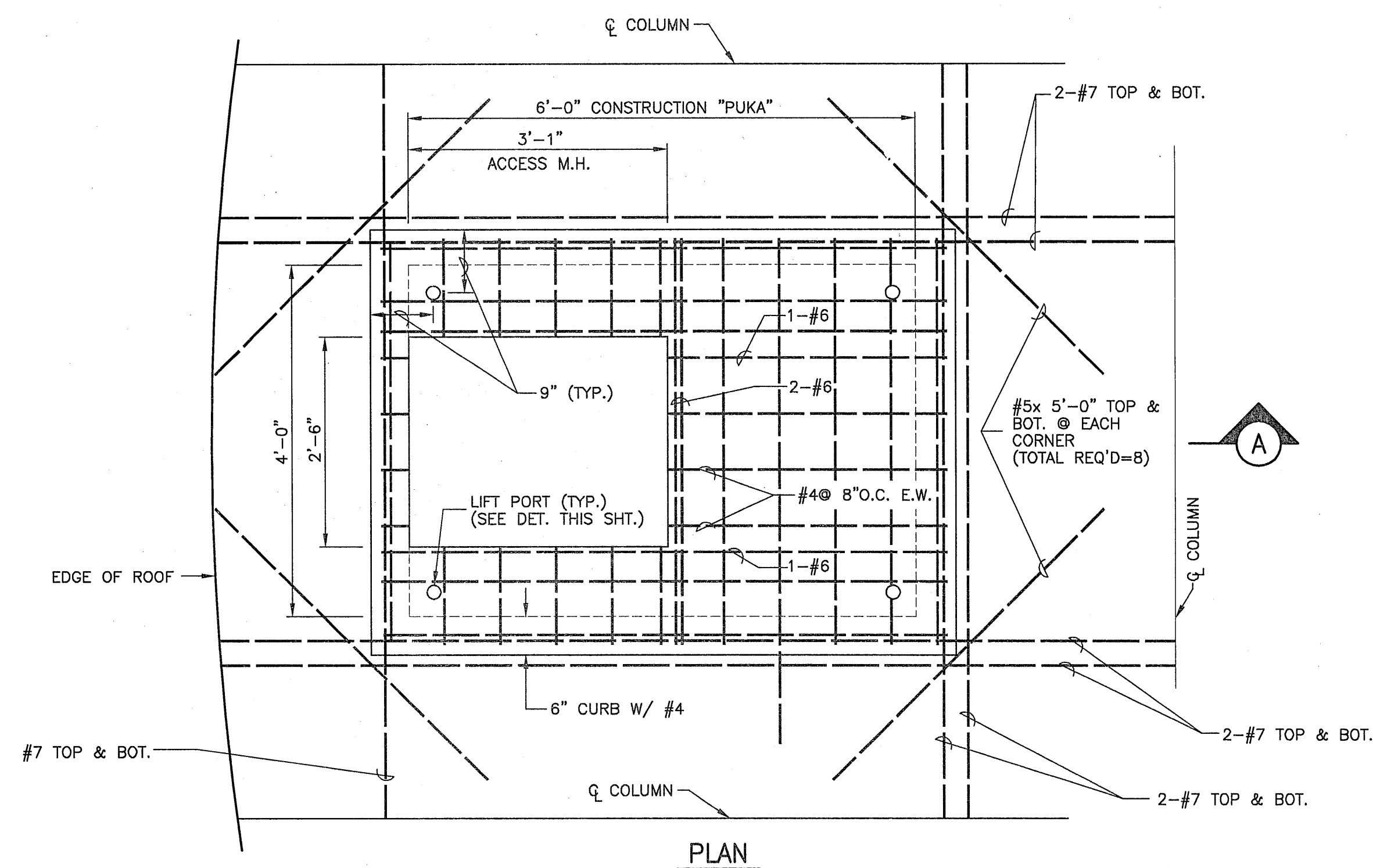
PLAN - ACCESS MANHOLE COVER  
SCALE: 3/4" = 1'-0"



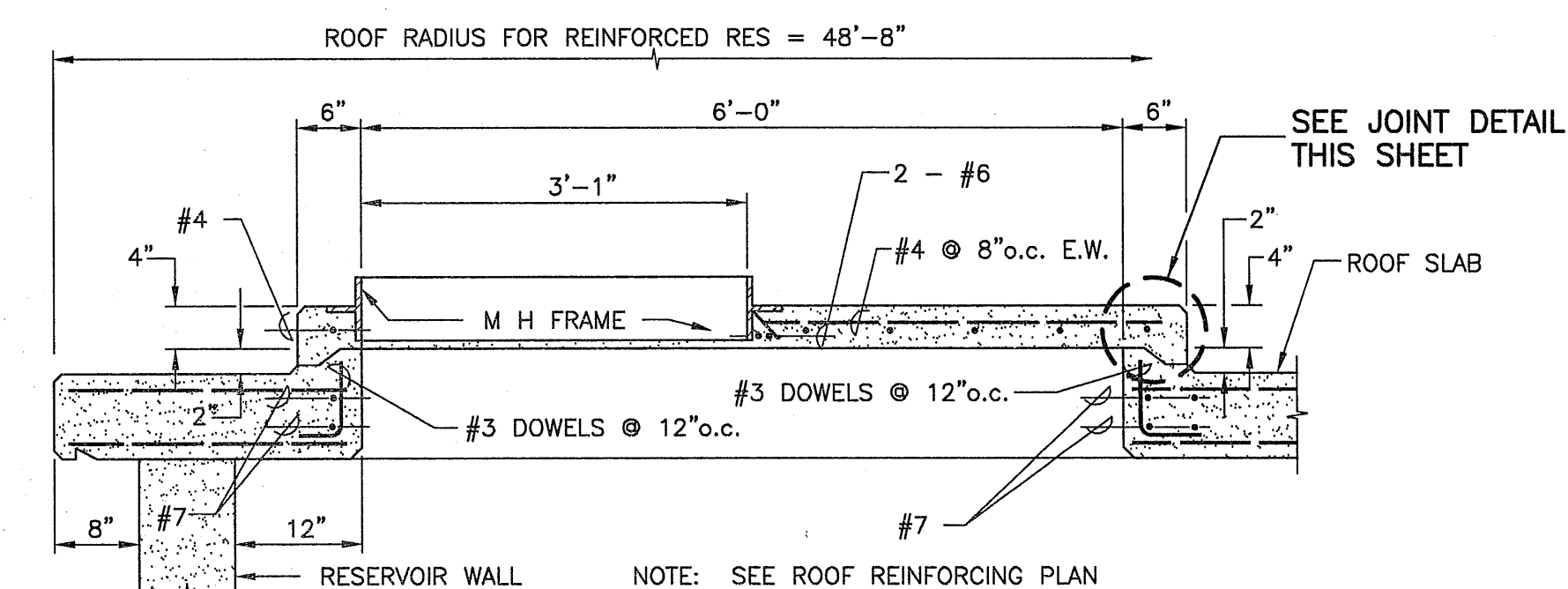
## PLAN



COVER FRAME AND LOCKING HASP DETAIL "A"  
SCALE: 3" = 1'-0"



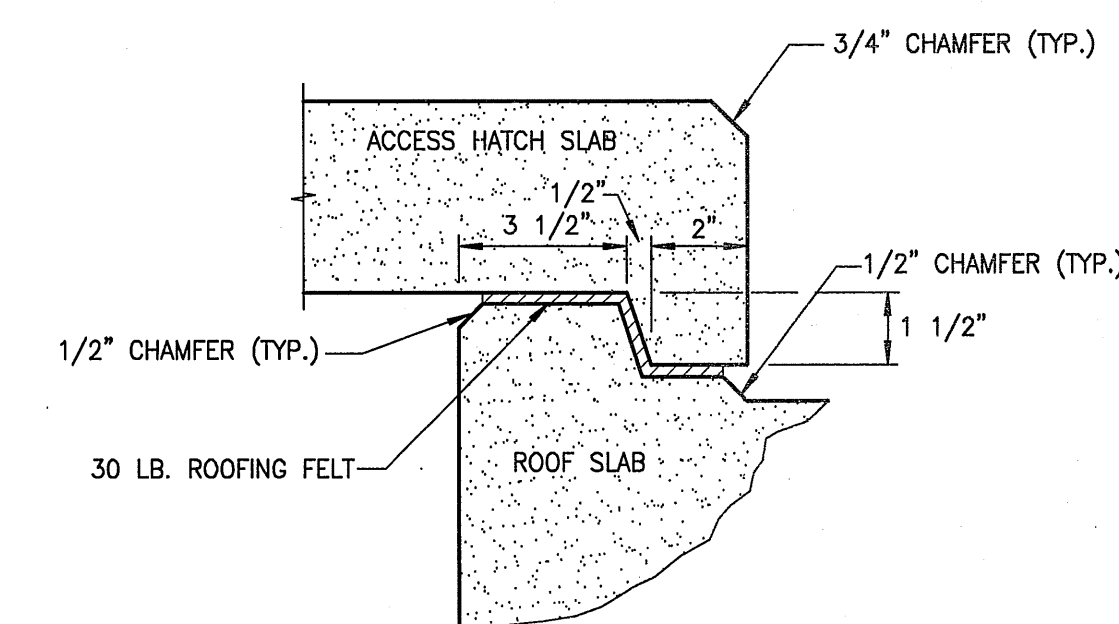
## PLAN



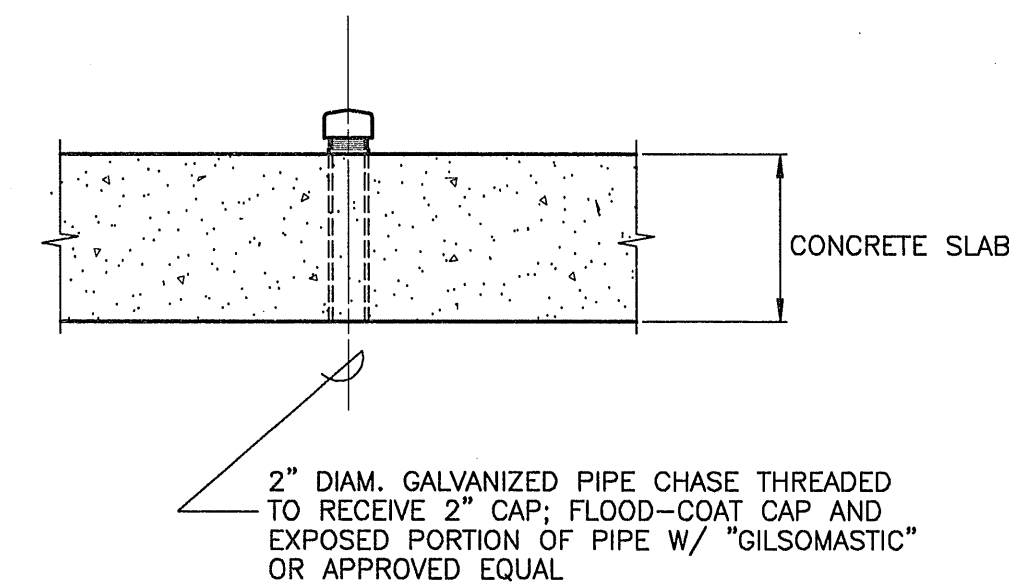
SECTION A

ACCESS HATCH

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



**DETAIL — KEY JOINT FOR ACCESS HATCH**  
SCALE: 3 IN. = 1 FT. — 0 IN.




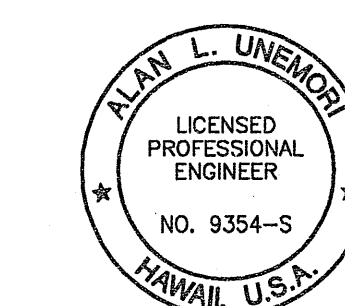
DETAIL -LIFT PORT

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

### ACCESS MANHOLE/OVERFLOW HATCH COVER AND FRAME DETAILS

SCALES AS NOTED




**NOTE:**  
FOR LOCATION IN PLAN VIEW  
SEE ROOF GRID DETAILS AND  
SITE PLAN



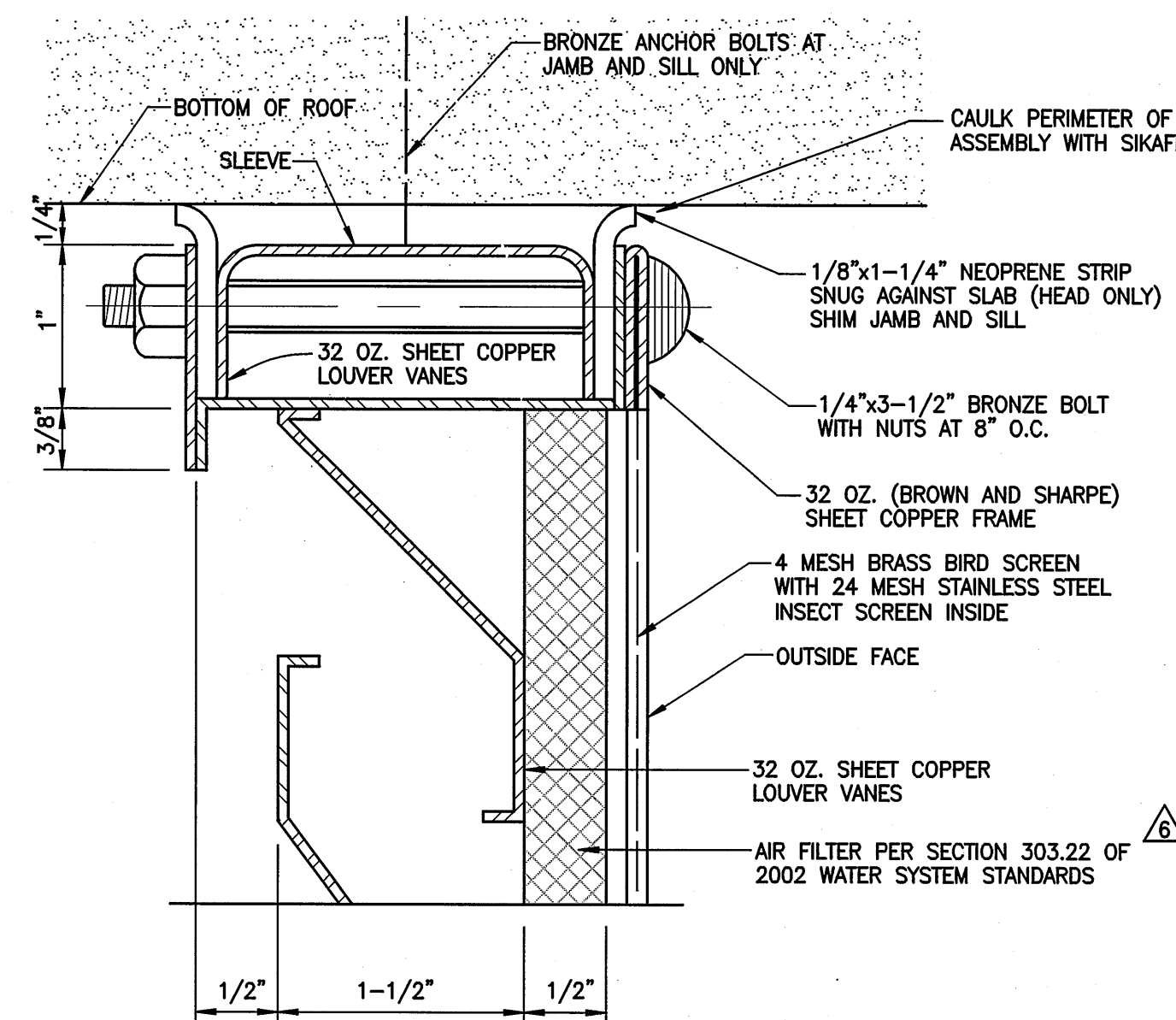
**WARREN S. UNEMORI ENGINEERING, INC.**  
 CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS  
 WELLS STREET PROFESSIONAL CENTER, SUITE 403  
 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

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

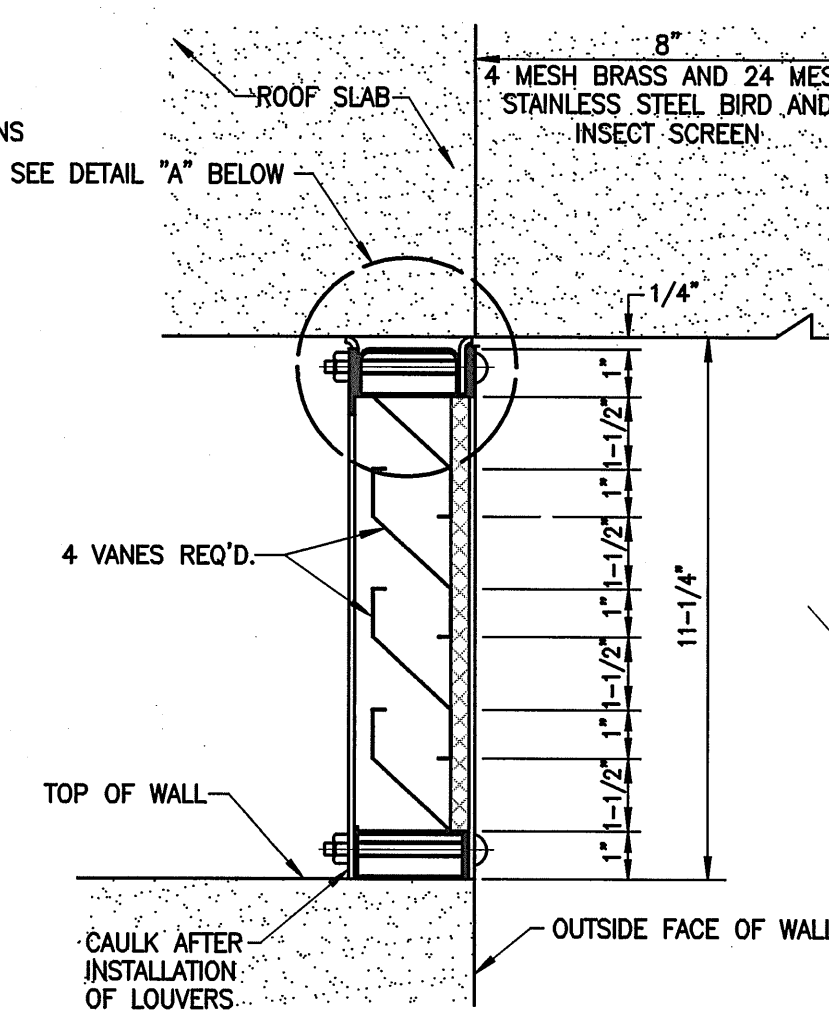
TITLE	STORAGE TANK DETAILS
-------	----------------------

	Added Hatch Details Per DWS Comments	10/01/10	 SIGNATURE _____ DATE <u>3/12/2012</u>	<b>TITLE</b> STORAGE TANK DETAILS			
		Changed Sampling Pipeline Detail, and Materials to Type 316 Steel per DWS Comments.		9/11/06	ALU DESIGNED BY _____ DTU CHECKED BY _____ WIS DRAWN BY _____ DTU APPROVED BY _____	04010.10 JOB NUMBER	<b>12.11</b> SHEET
LETTER	DESCRIPTION	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	DATE 10-10-05	OF _____ SHEETS	

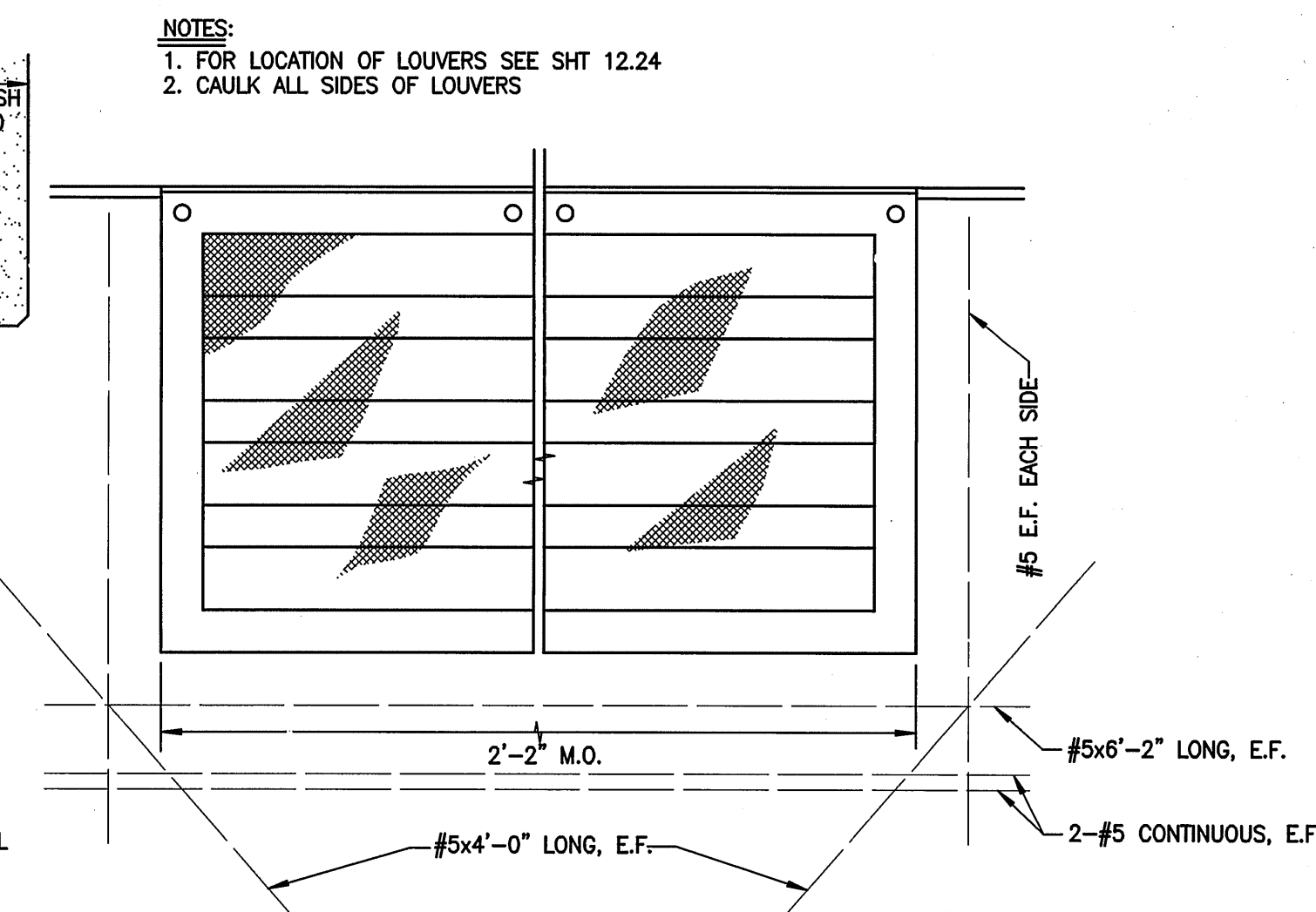




HEAD & JAMB SIMILAR  
DETAIL "A"  
FULL SIZE



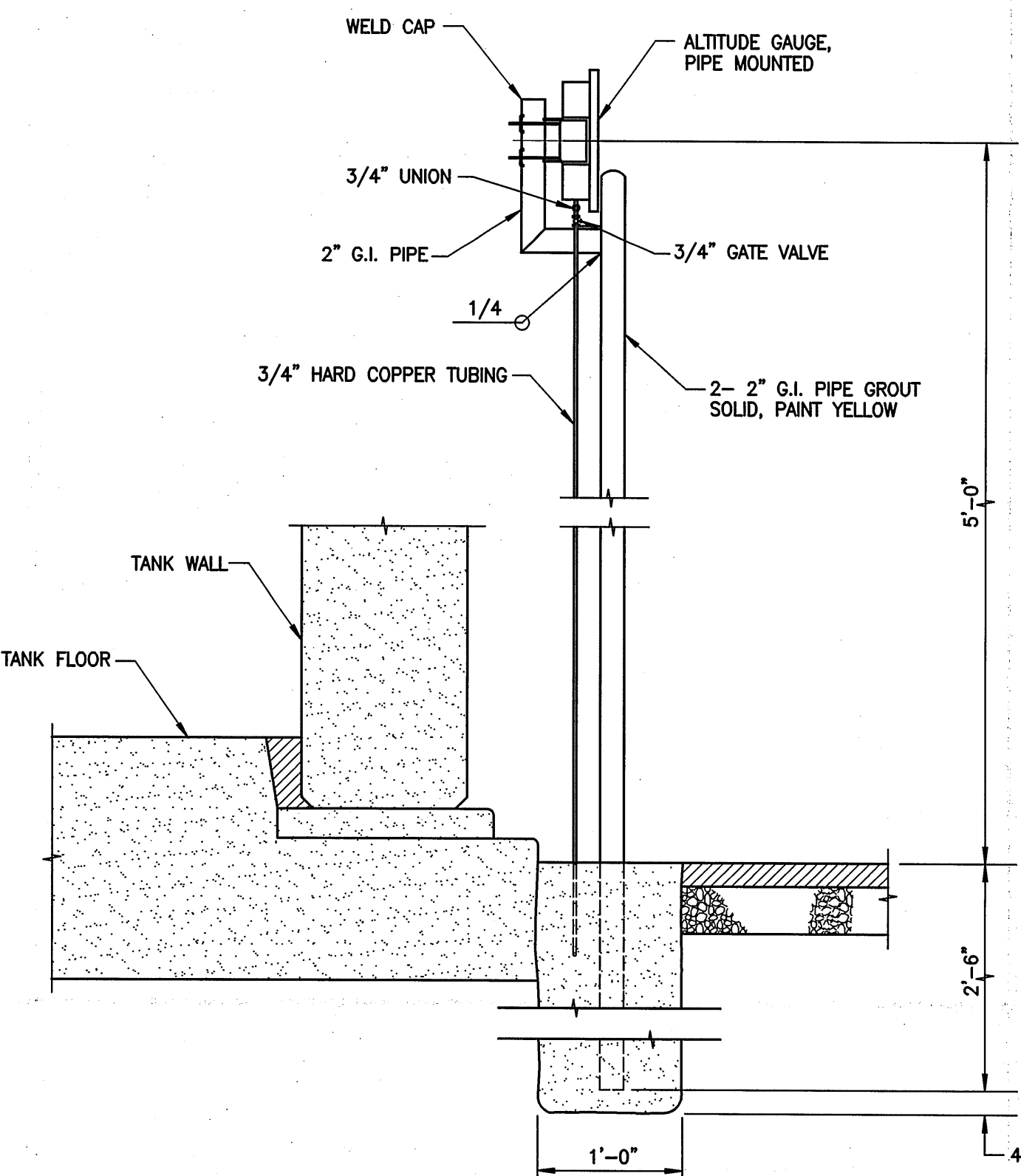
SECTION



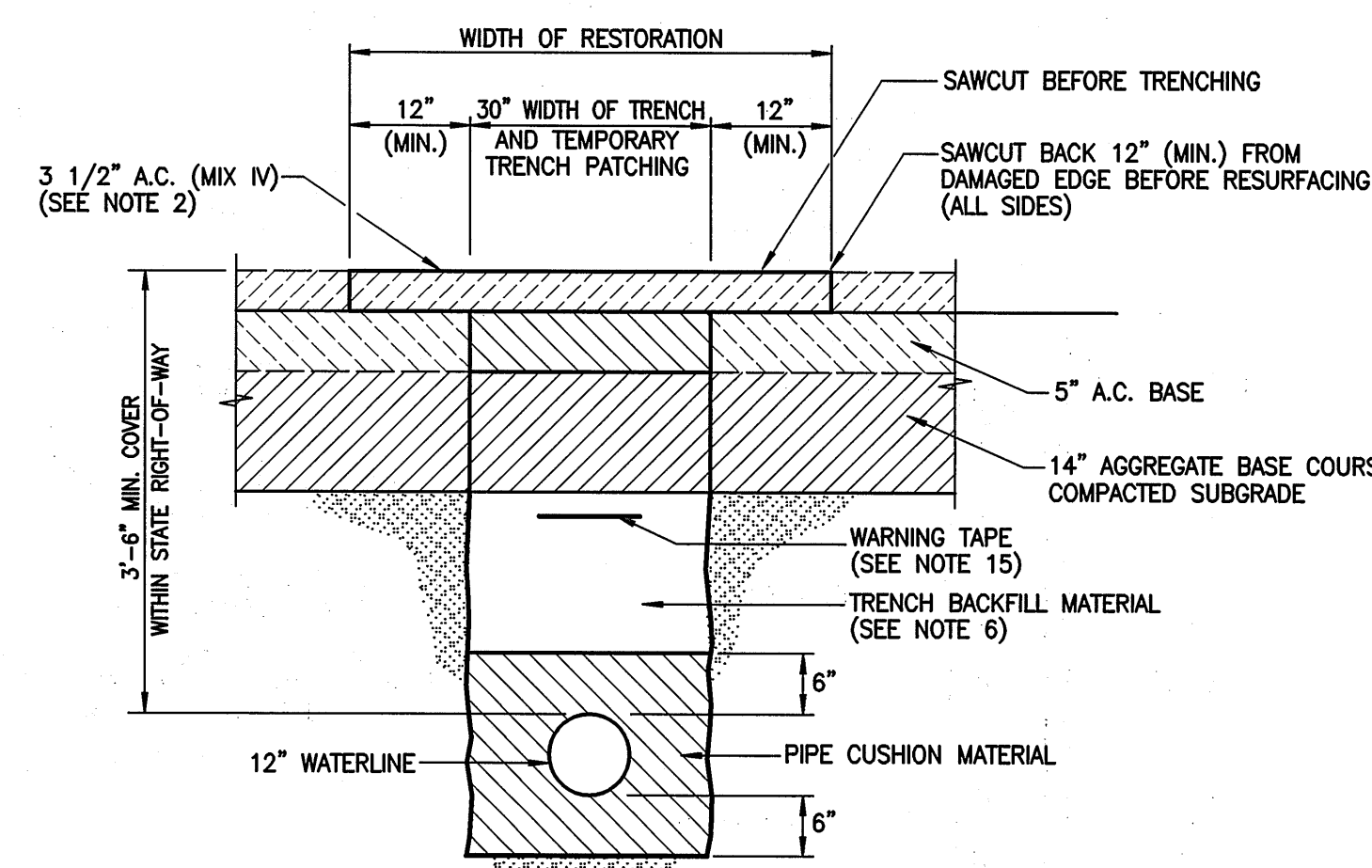
ELEVATION

### LOUVERS DETAILS

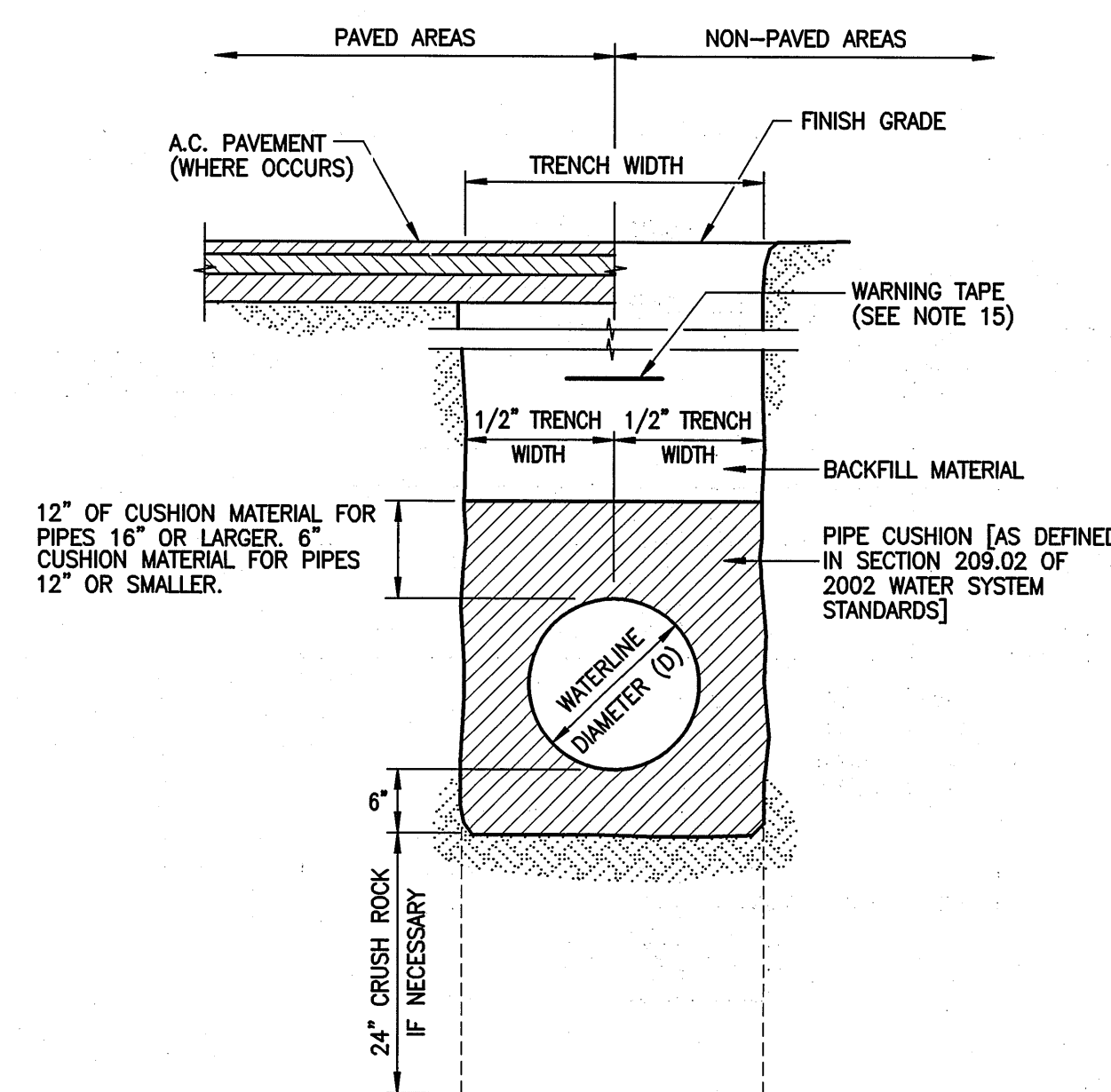
SCALE: 3 IN. = 1 FT. - 0 IN.



SECTION



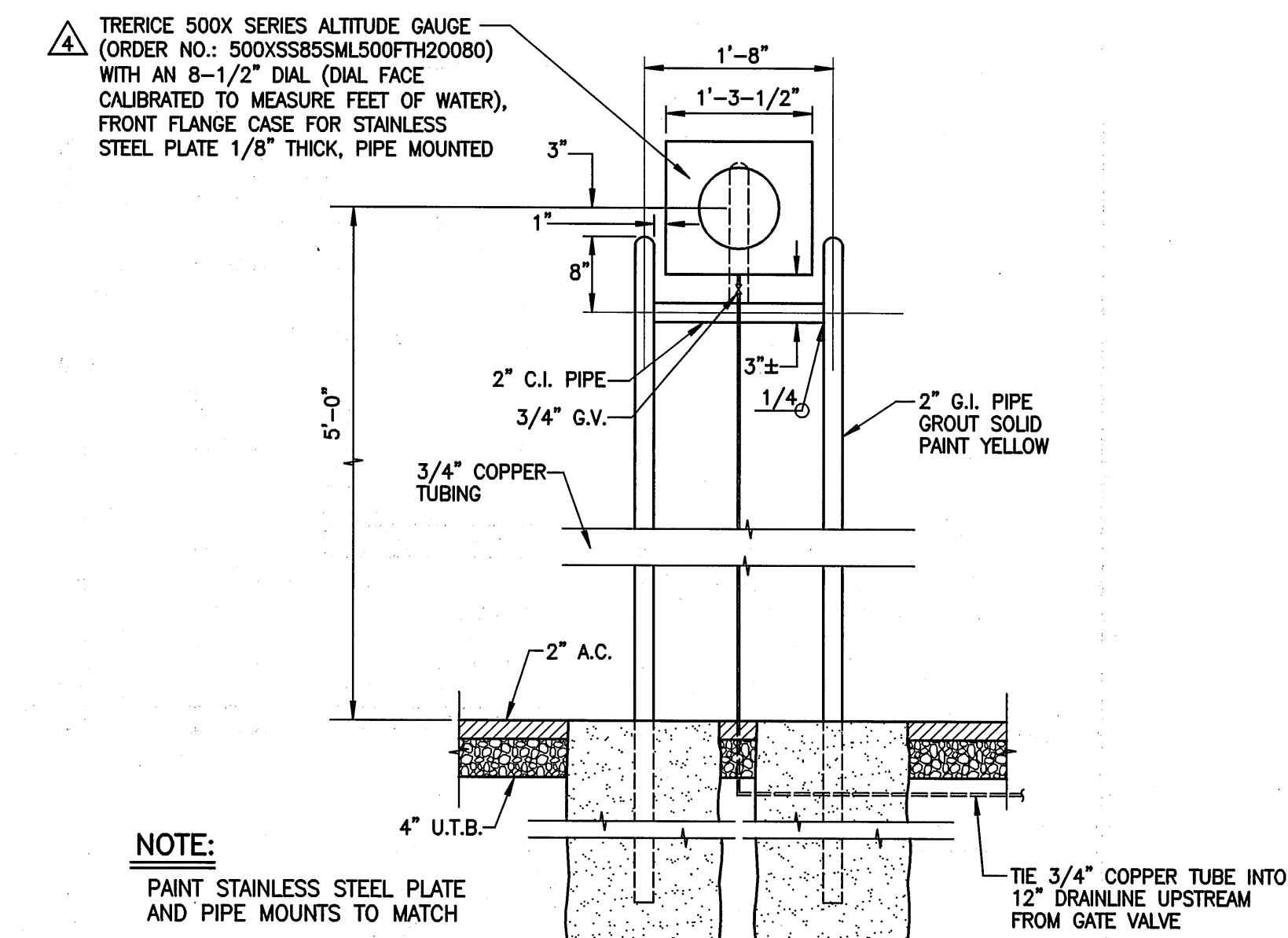
TYPICAL TRENCH SECTION AND PAVEMENT  
RESTORATION SECTION ALONG PIILANI HIGHWAY  
NOT TO SCALE



TYPICAL TRENCH EXCAVATION SECTION  
FOR OFFSITE WATERLINES  
NOT TO SCALE

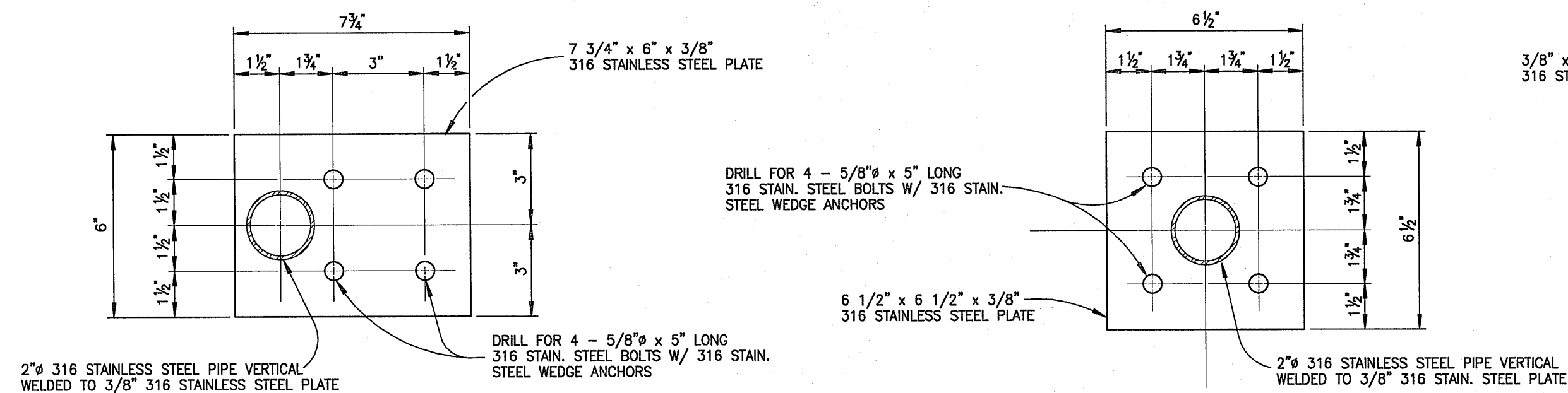
### NOTES:

- 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 GEOTEXTURE 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.



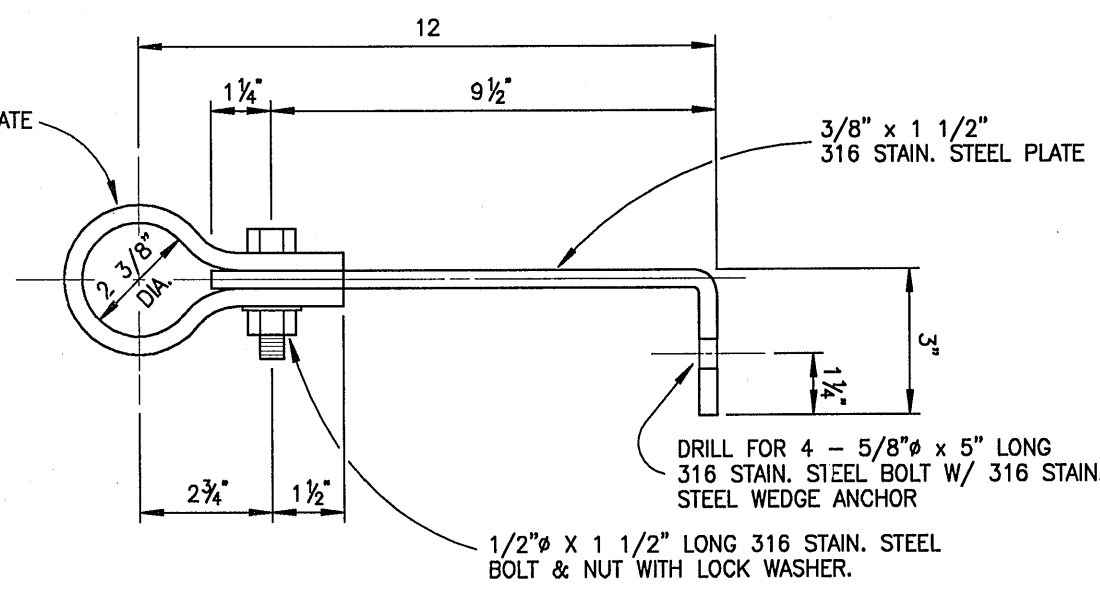
DETAIL - LIQUID LEVEL INDICATOR  
SCALE: 3/4 IN. = 1 FT. - 0 IN.

<b>WARREN S. UNEMORI ENGINEERING, INC.</b> CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793		<b>KAONOULU MARKET PLACE</b> T.M.K.: (2) 3-9-01 : 16 KIHAE, MAUI, HAWAII	
TITLE: STORAGE TANK DETAILS			
DESIGNED BY	DTU	04010.10	12.12
WIS	DTU	JOB NUMBER	
APPROVED BY	APPROVED BY	10-10-05	SHEET
SCALE: As Shown	DATE	OF SHEETS	



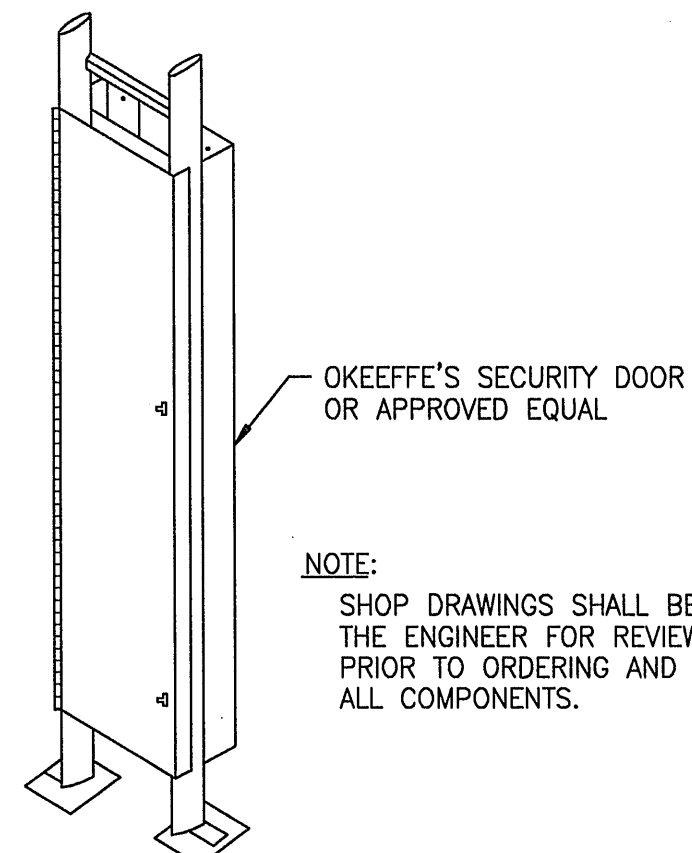
**DETAIL - EXTERIOR BASE PLATE** (1)  
SCALE: 3 IN. = 1 FT. - 0 IN.

**DETAIL - INTERIOR BASE PLATE** (2)  
SCALE: 3 IN. = 1 FT. - 0 IN.

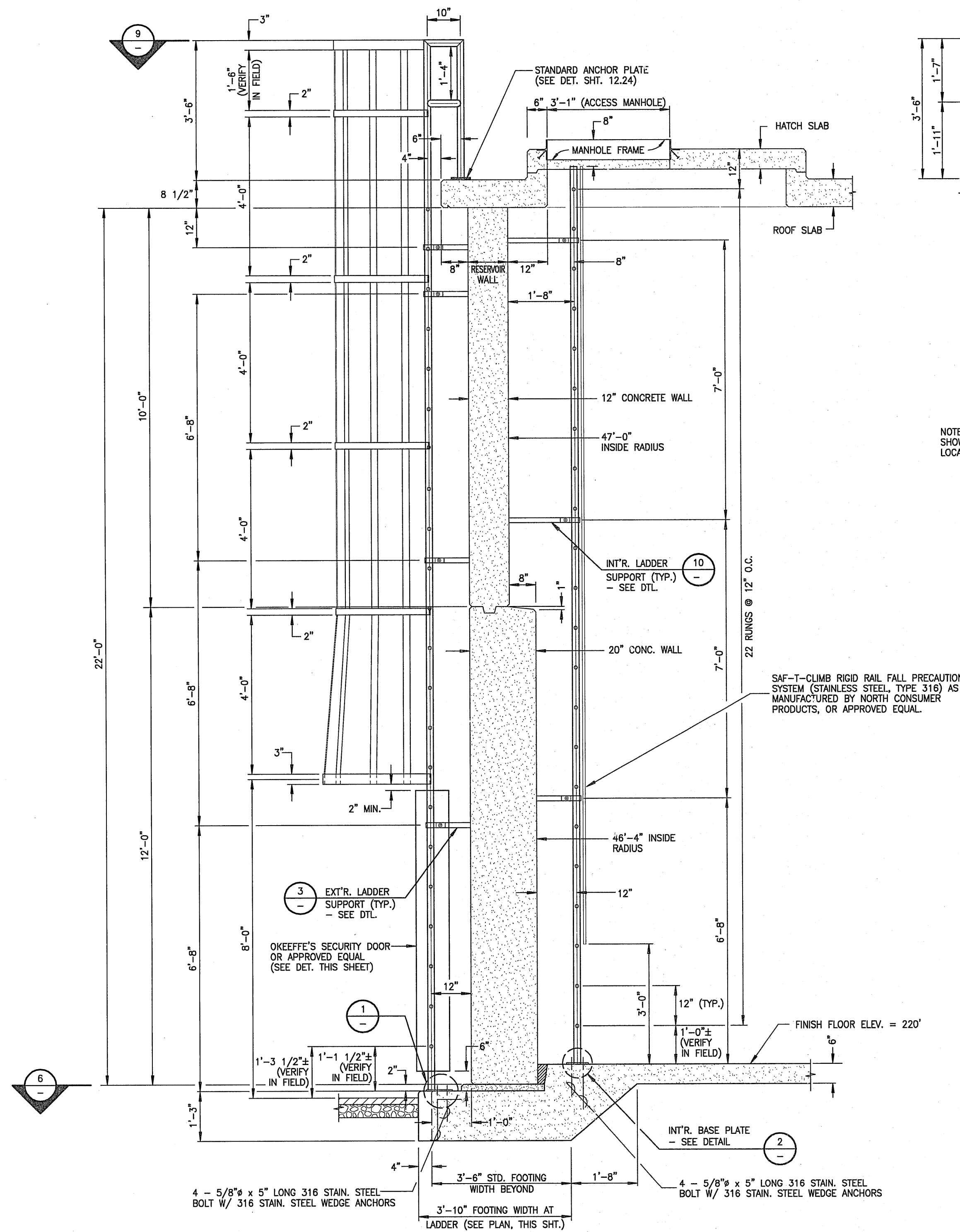


**EXTERIOR LADDER SUPPORT** (3)  
SCALE: 3 IN. = 1 FT. - 0 IN.

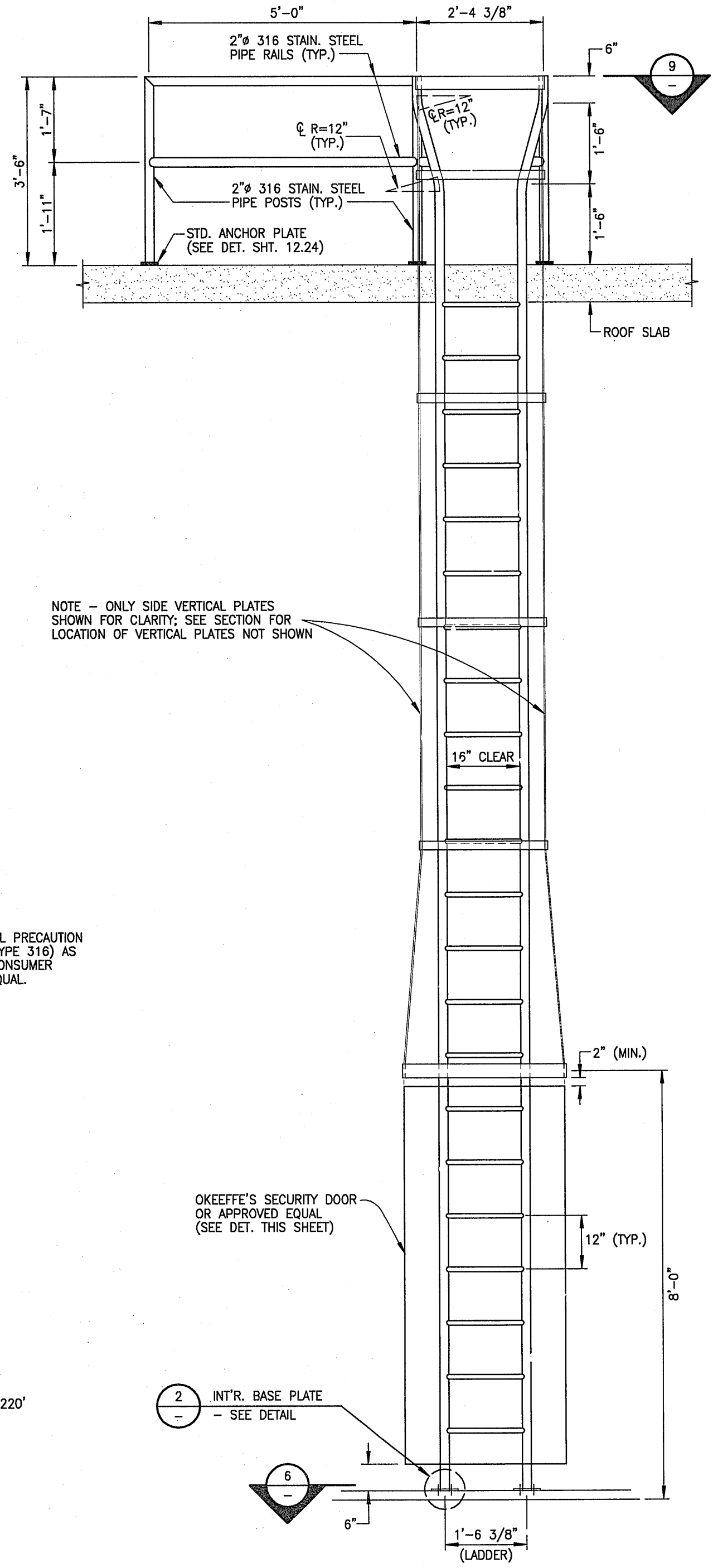
**DETAIL - CLIMB PREVENTIVE SECURITY DOOR**  
NOT TO SCALE



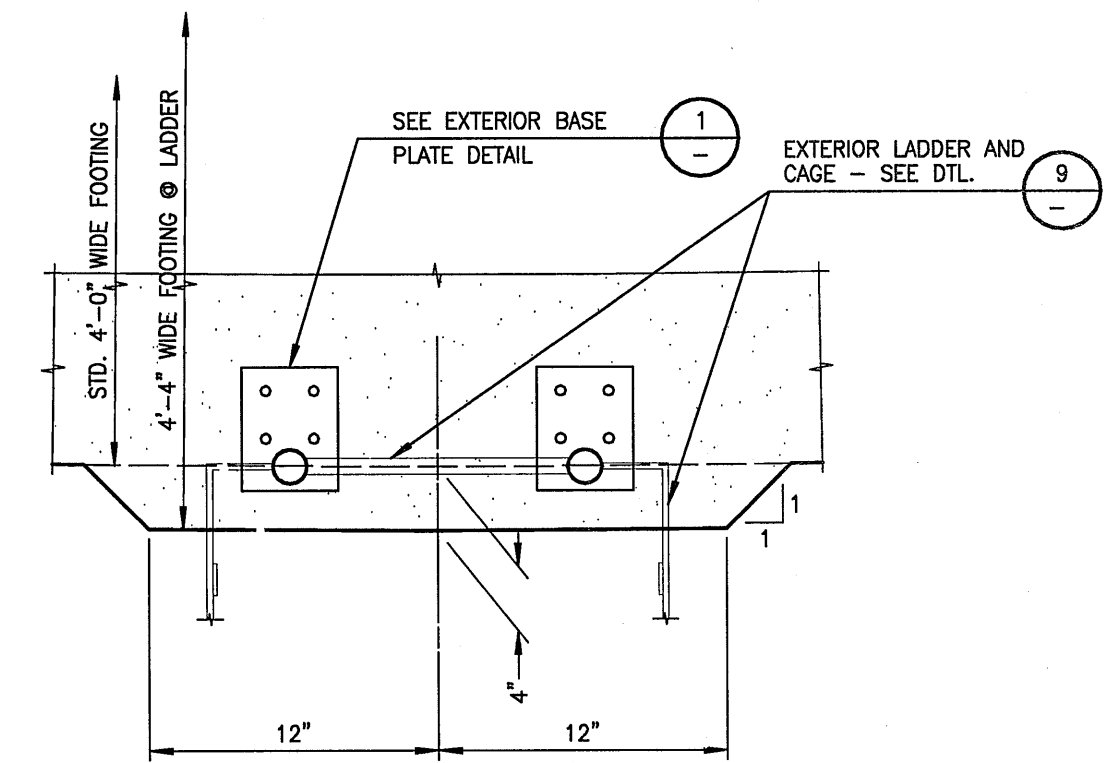
NOTE:  
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING AND FABRICATION OF ALL COMPONENTS.



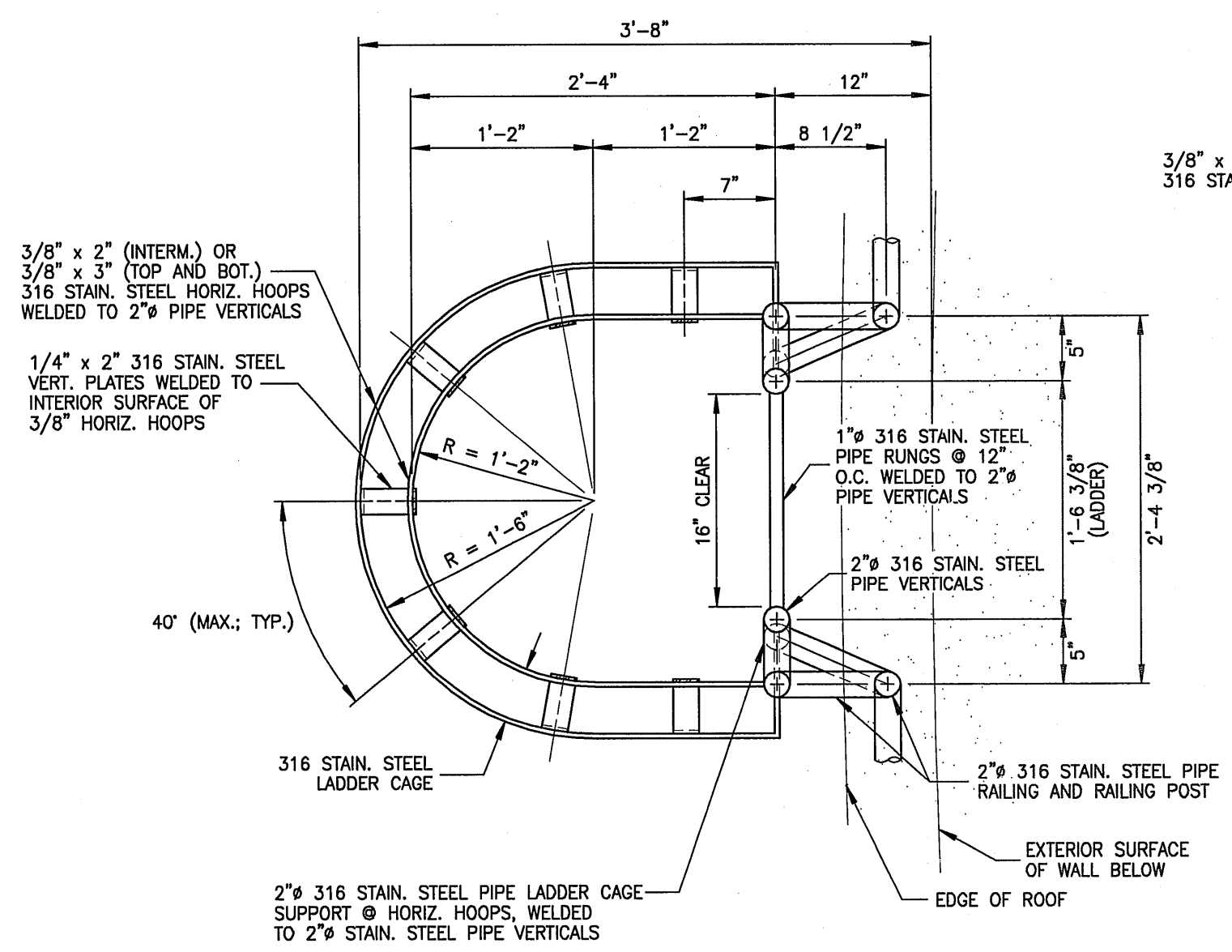
**SIDE ELEVATION**



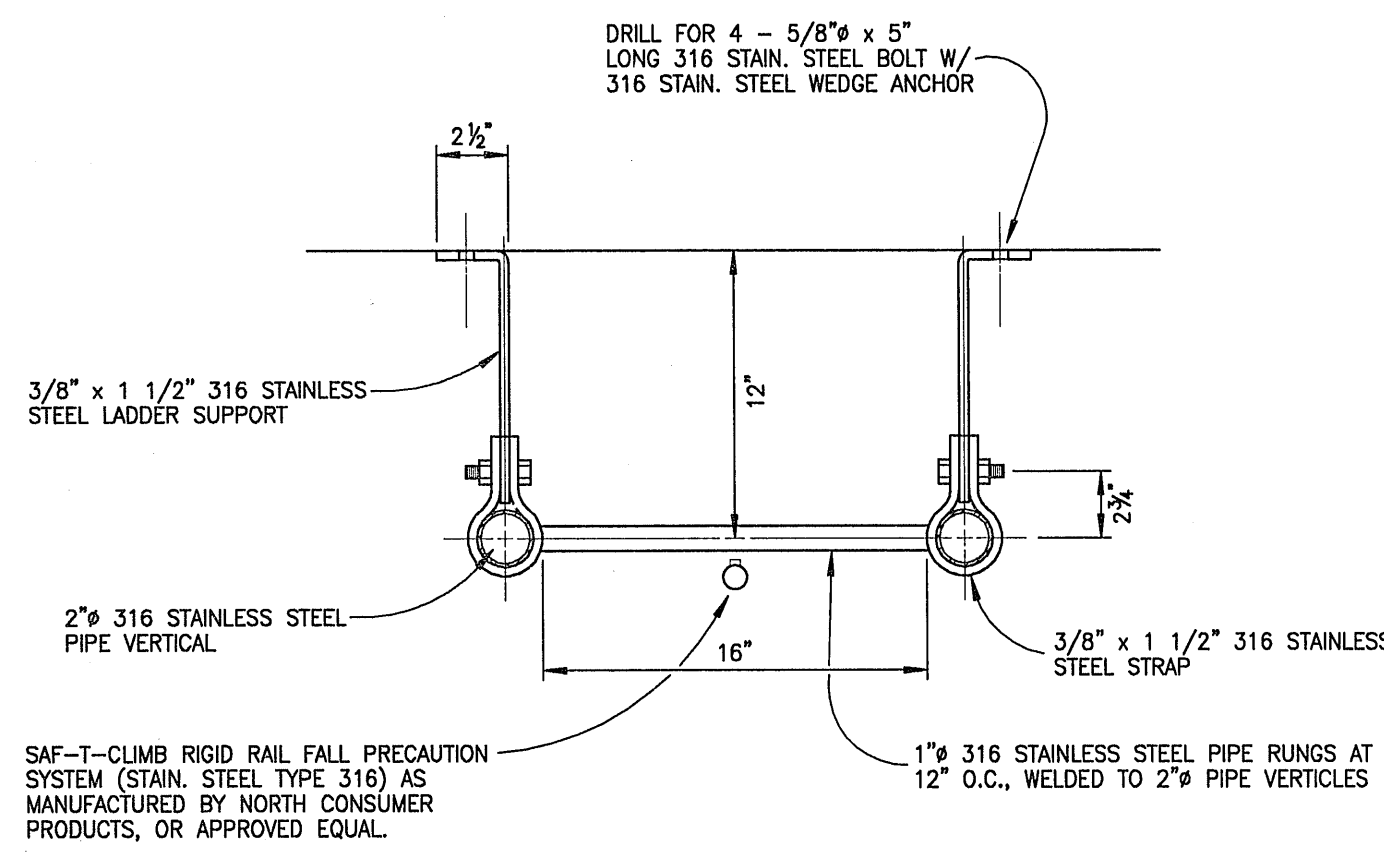
**FRONT ELEVATION**



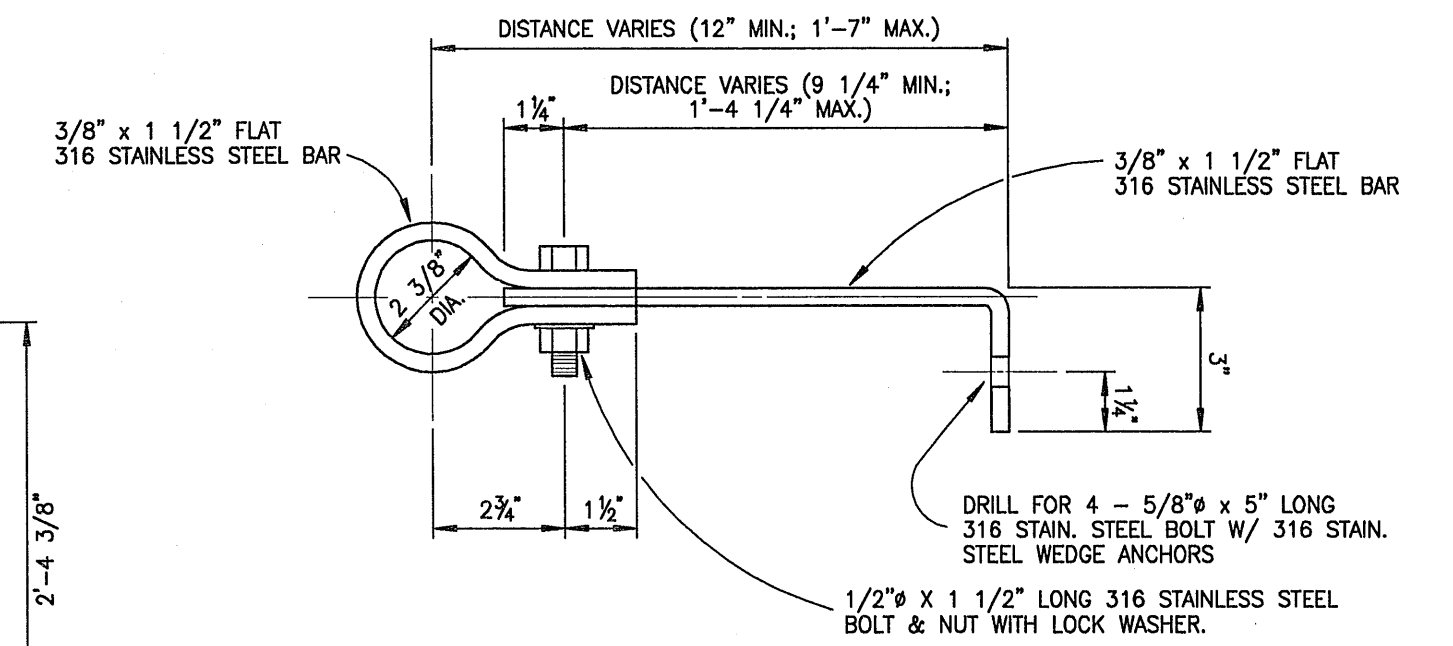
**SECTION - FOOTING AT EXTERIOR LADDER** (6)  
SCALE: 3 IN. = 1 FT. - 0 IN.



**SECTION - EXTERIOR LADDER AND CAGE** (9)  
SCALE: 1 IN. = 1 FT. - 0 IN.



**PLAN - INTERIOR LADDER** (7)  
SCALE: 1 1/2\"/>



**INTERIOR LADDER SUPPORT** (10)  
SCALE: 3 IN. = 1 FT. - 0 IN.

- NOTES:**
1. 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.
  2. 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.
  3. 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.
  4. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING AND FABRICATION OF ALL COMPONENTS.
  5. INTERIOR LADDER SHALL BE FURNISHED WITH SAF-T-CRIMP 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.

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

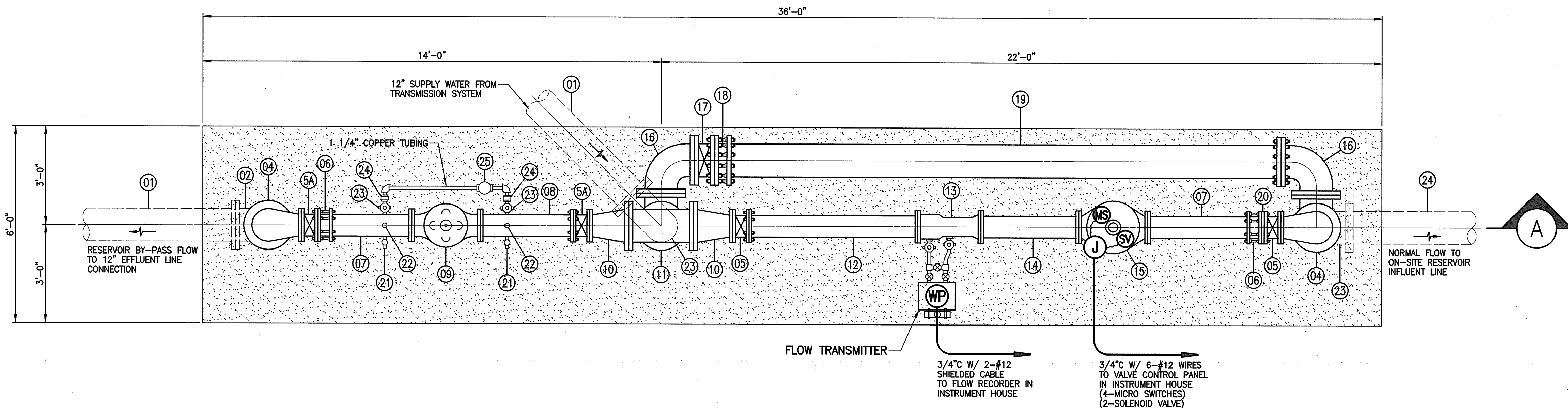
TITLE: STORAGE TANK LADDER DETAILS

DESIGNED BY ALU	CHECKED BY DTU	DATE 04/01/10
DRAWN BY WIS	APPROVED BY DTU	JOB NUMBER 10-10-05
SCALE: As Shown		DATE 10/01/10

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

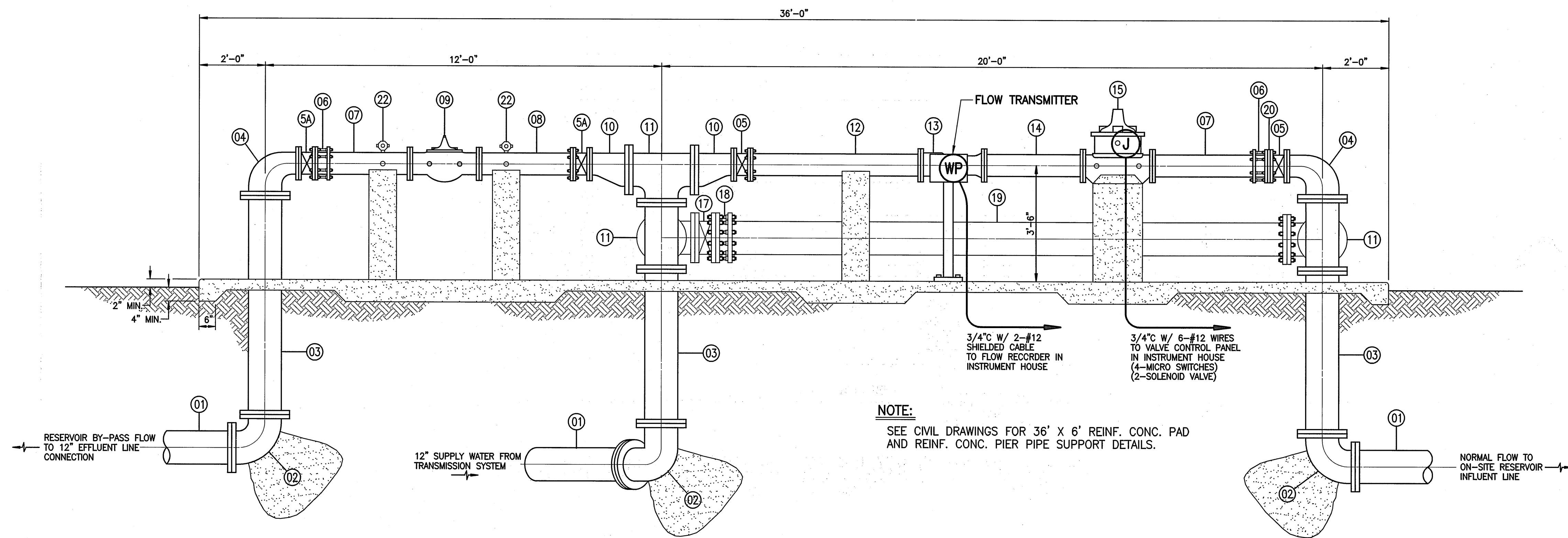
V:\Projects\04PROJ\04010.10\dwg\2004\complan\del-tank-ladder.dwg





# 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

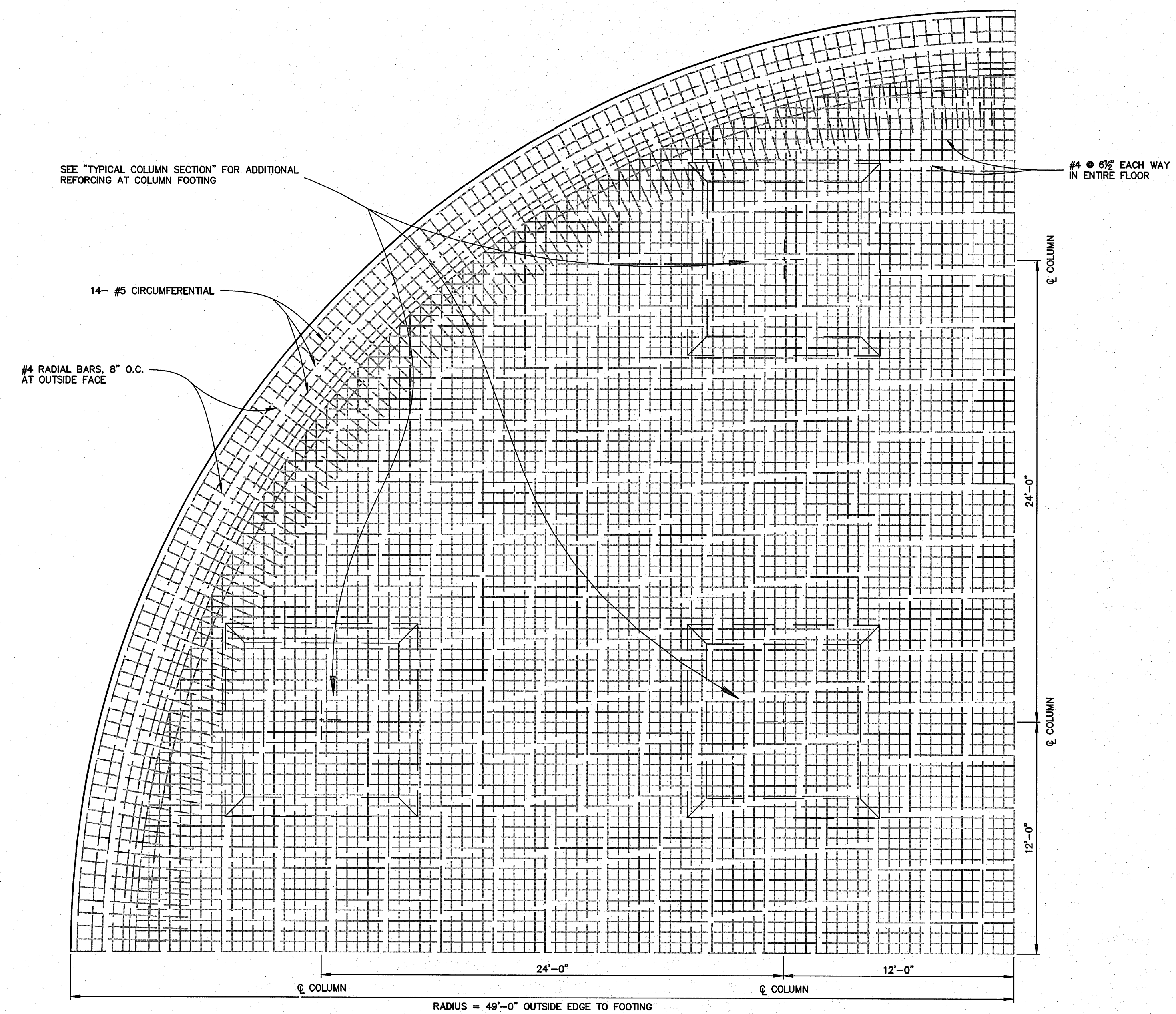
LOCATION	INSTALLED ELEVATION	SUSTAINING PRESSURE
Control Valve @ Sta. 43+23 of Offsite Waterline	219 ft.±	75 psi

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**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	JOB NUMBER: 04010.10	12.14
DRAWN BY: WIS	APPROVED BY: DTU	JOB NUMBER: 10-10-05	
SCALE: AS NOTED	DATE: 10/1/10	DATE: 12/12/08	OF SHEETS: 12



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

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

SIGNATURE: *[Signature]* DATE: 10/10/2004

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"

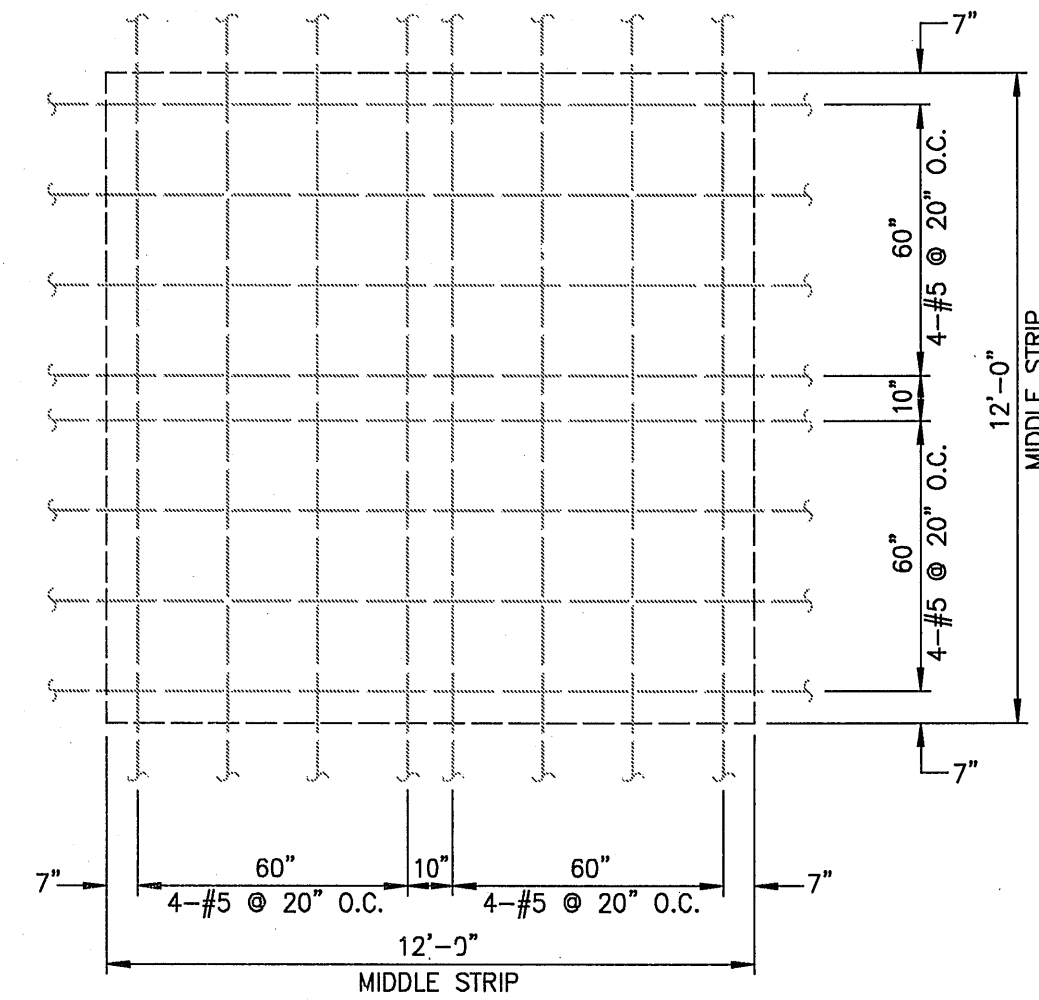
WARREN S. UNEMORI ENGINEERING, INC.  
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WELLS STREET PROFESSIONAL CENTER, SUITE 403  
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

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

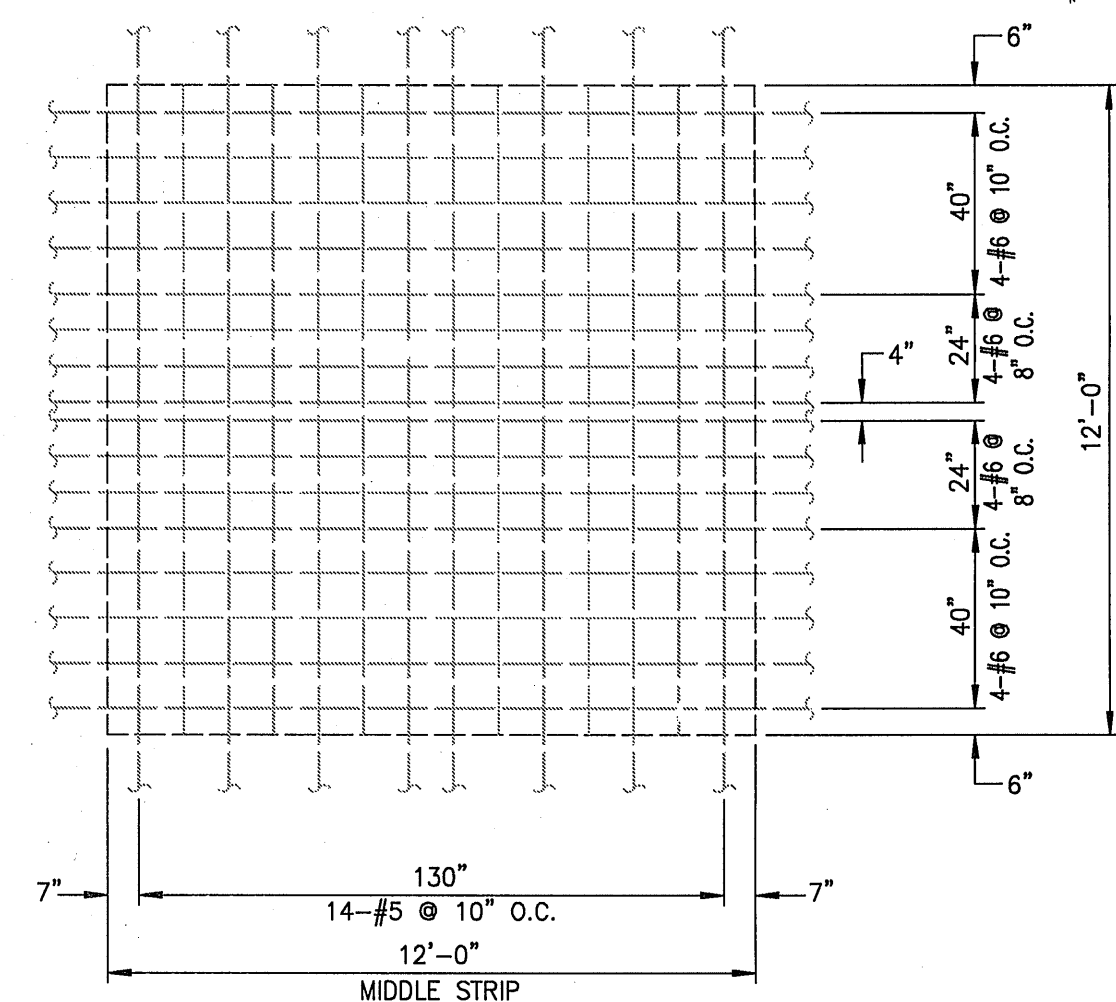
TITLE: STORAGE TANK FLOOR STEEL PLAN

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

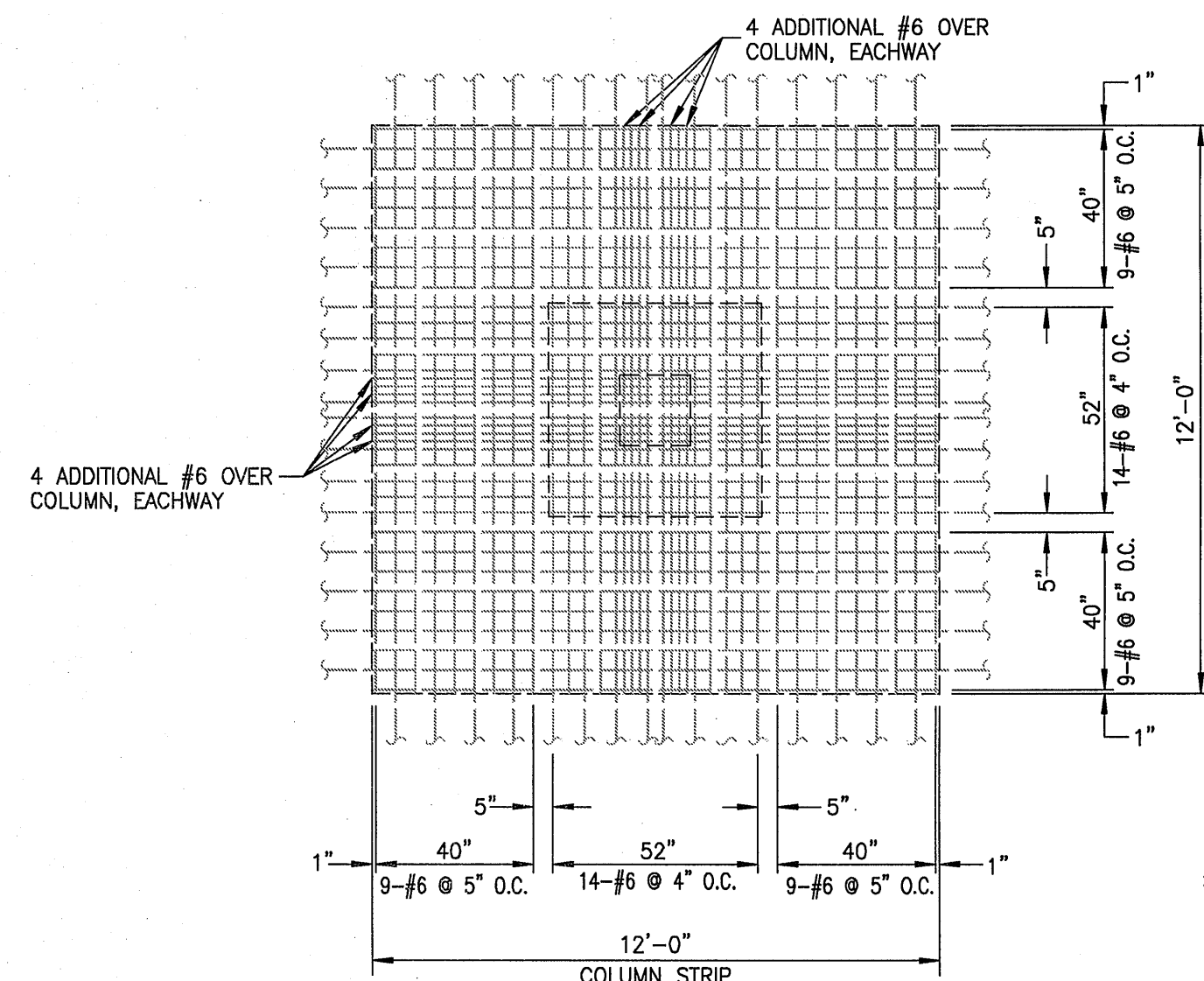




MIDDLE STRIP / MIDDLE STRIP  
NOT TO SCALE



COLUMN STRIP / MIDDLE STRIP  
NOT TO SCALE

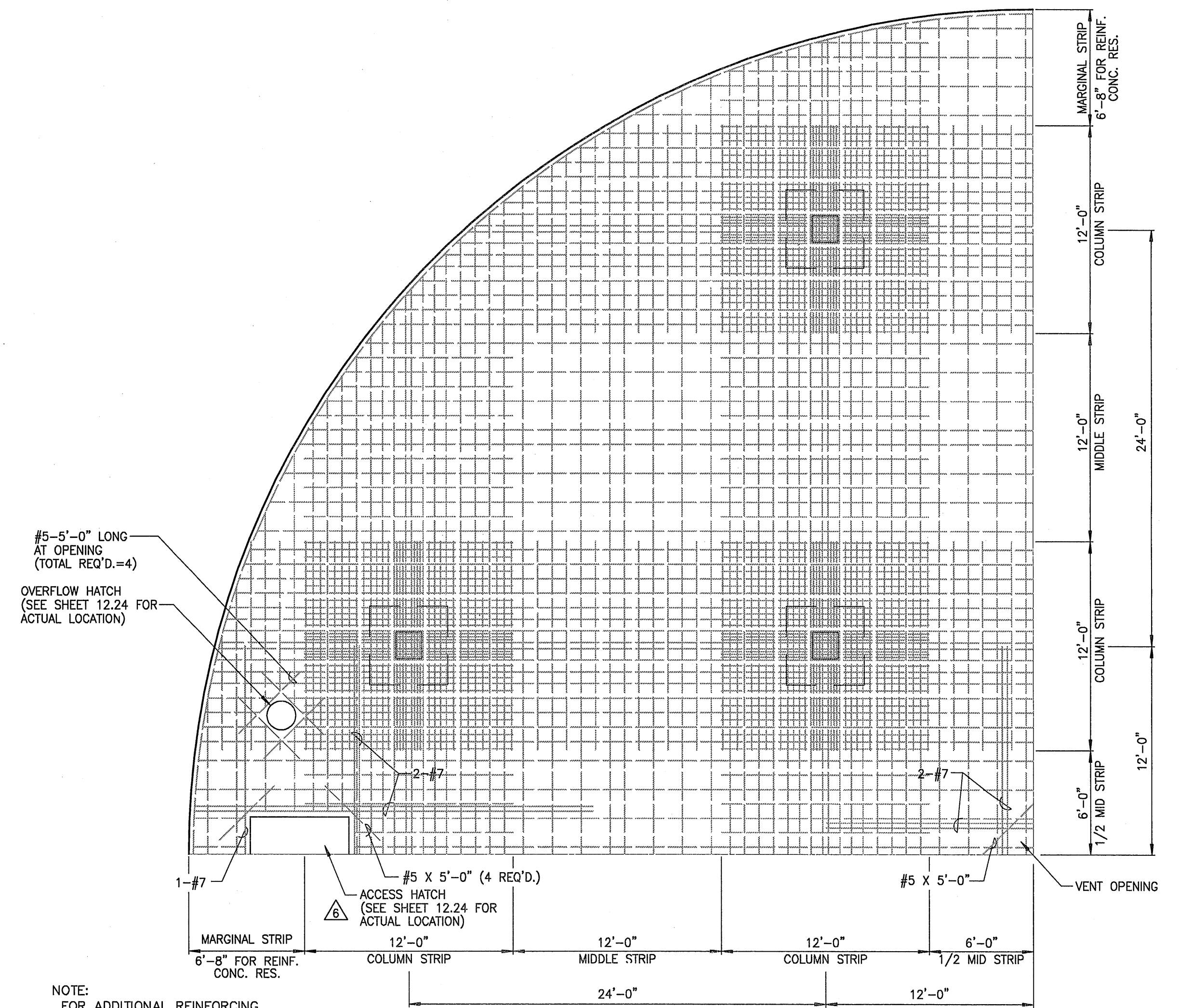


COLUMN STRIP / COLUMN STRIP  
NOT TO SCALE

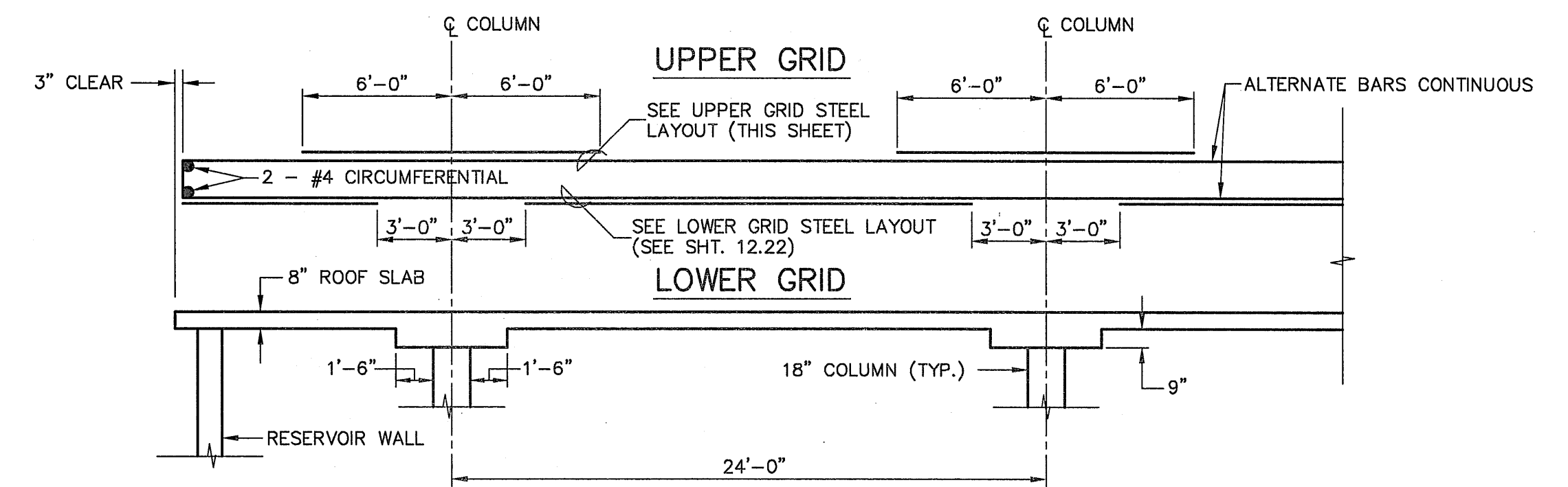
UPPER GRID STEEL LAYOUT  
NOT TO SCALE

#### 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.

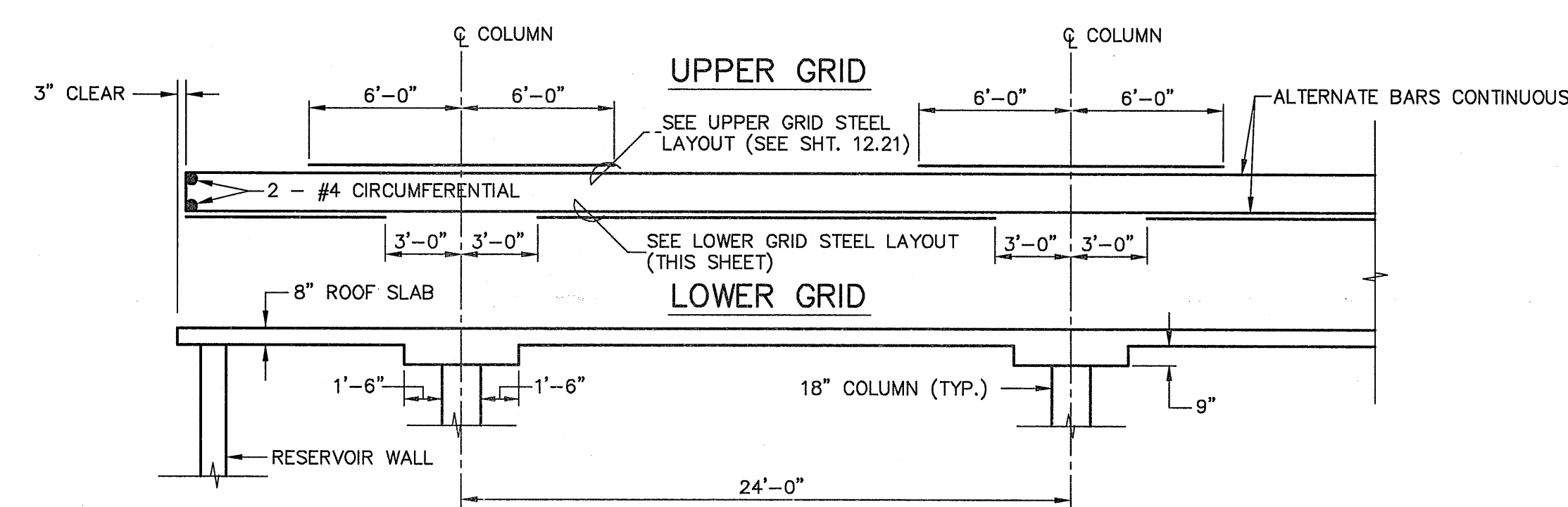
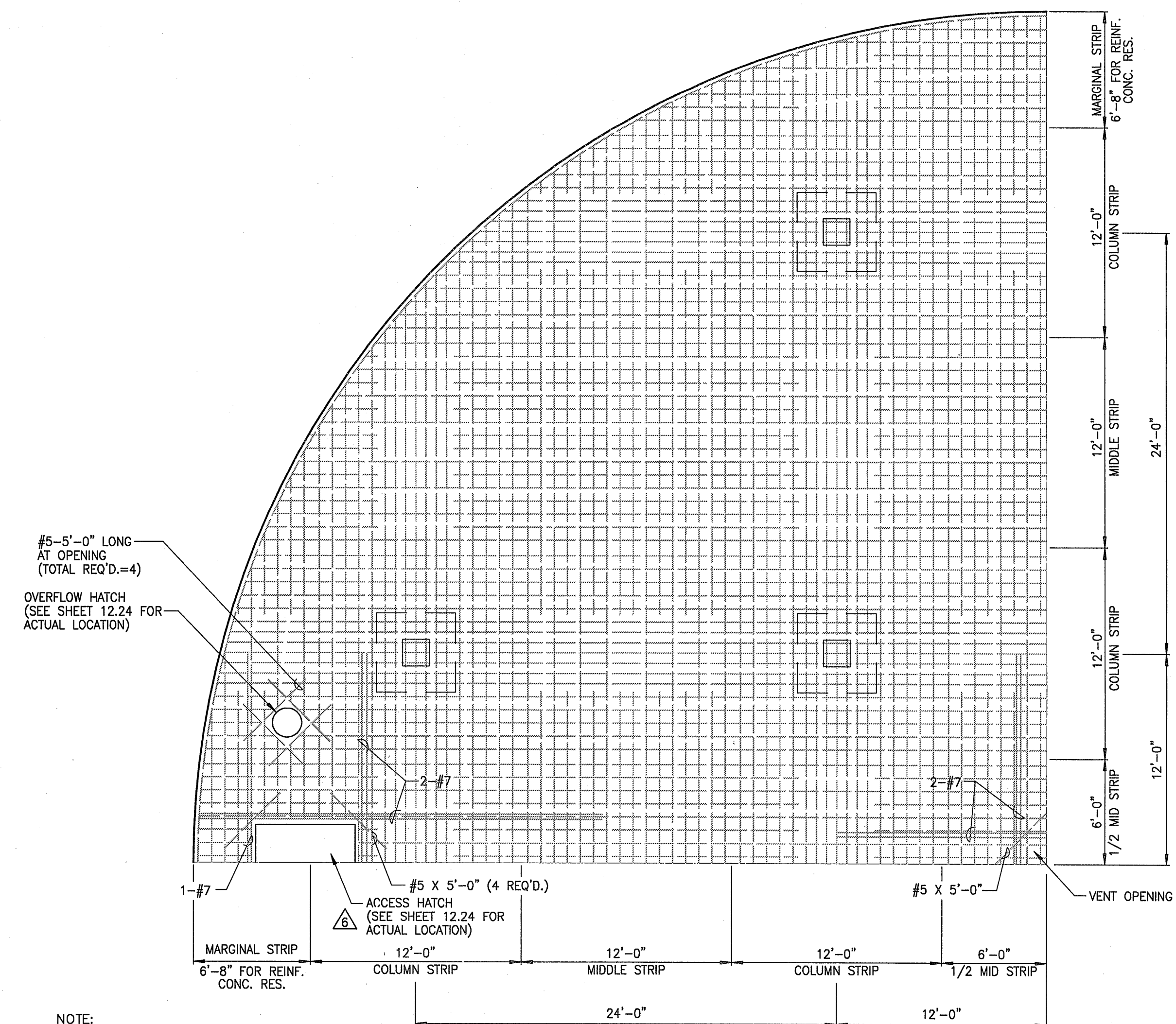
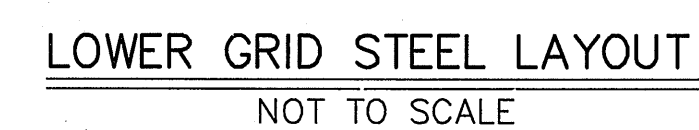
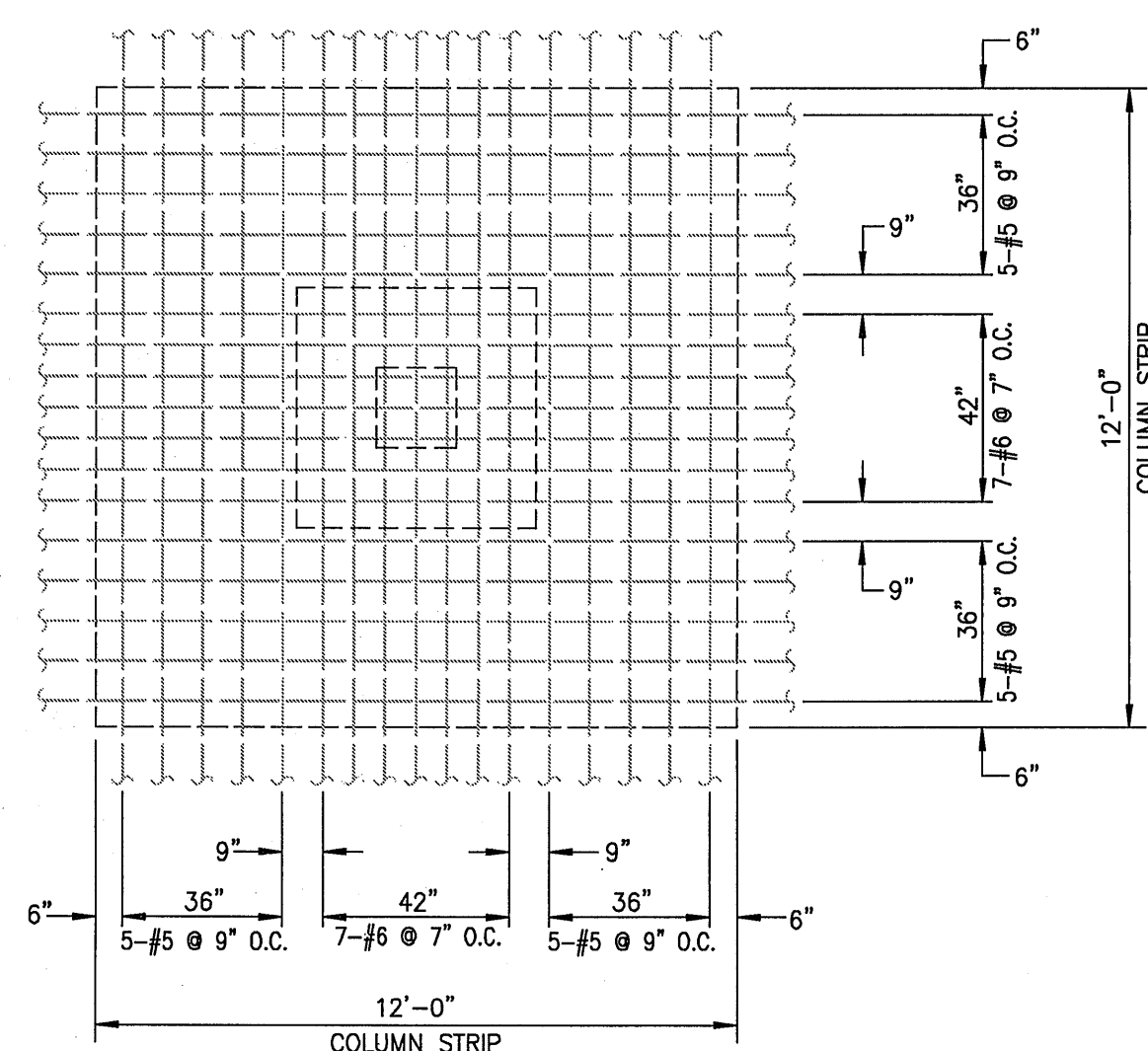
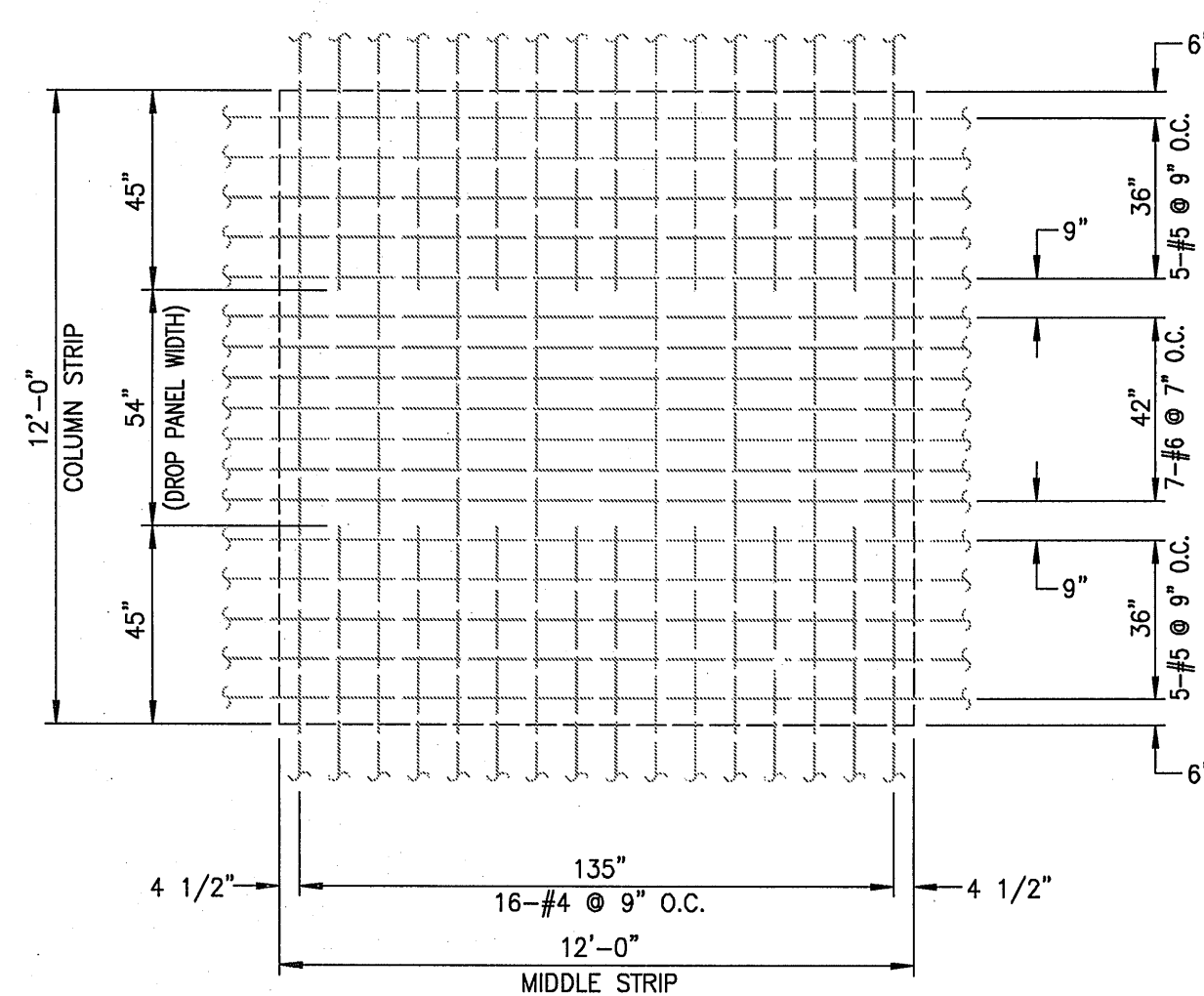
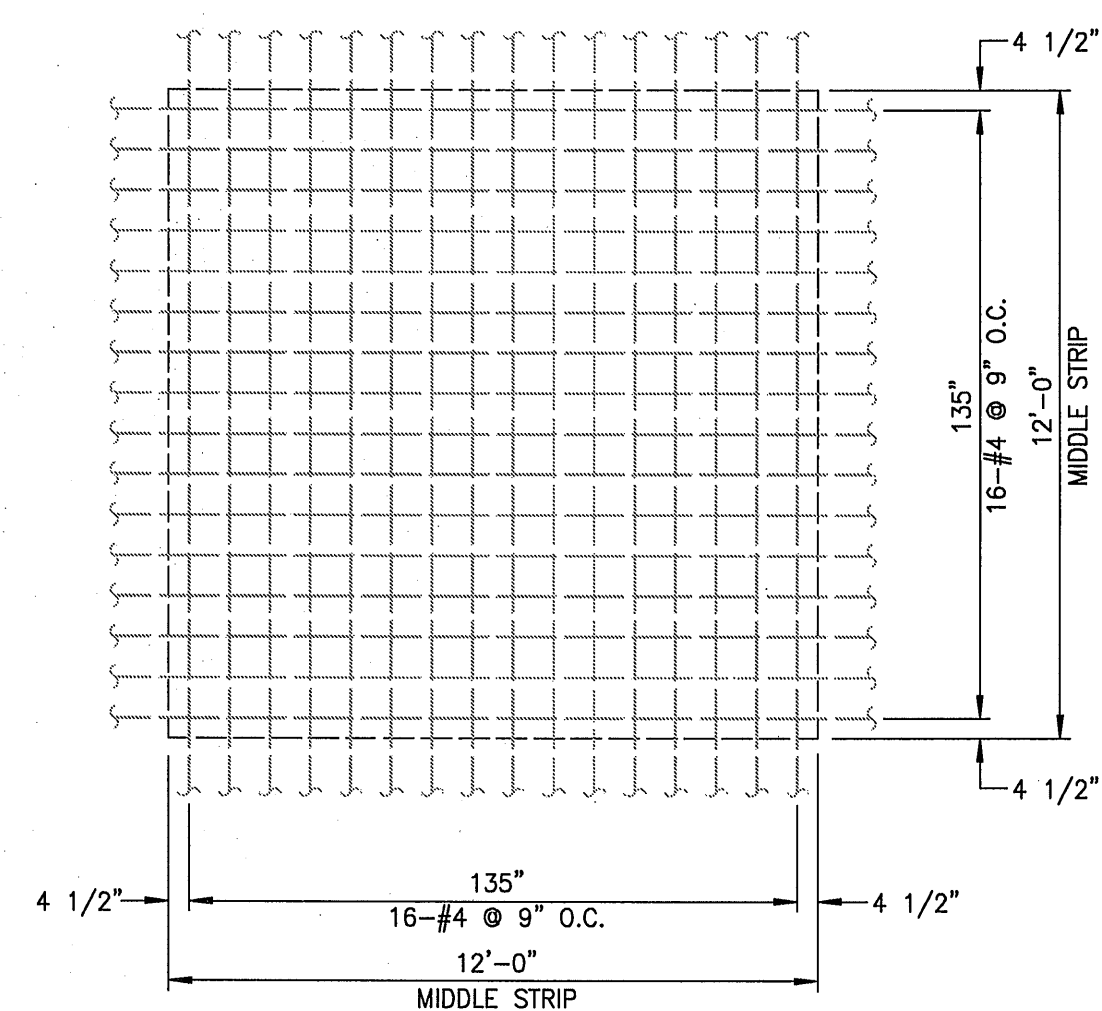


1/4 PLAN ROOF STEEL - UPPER GRID  
SCALE: 3/16 IN. = 1 FT. - 0 IN.



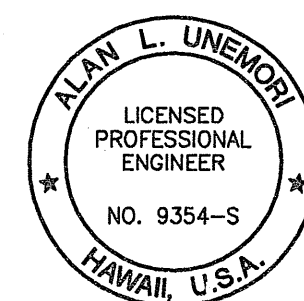
REINFORCING STEEL COLUMN STRIP  
SCALE: 3/16 IN. = 1 FT. - 0 IN.

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TITLE: <b>ROOF UPPER GRID STEEL DETAILS</b>		JOB NUMBER: <b>04010.10</b>	
DESIGNED BY: <b>ALU</b>		CHECKED BY: <b>DTU</b>	
DRAWN BY: <b>WIS</b>		APPROVED BY: <b>DTU</b>	
SCALE: <b>As Shown</b>		DATE: <b>10-10-05</b>	
SHEET: <b>12.21</b>		OF SHEETS: <b>12</b>	



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.



3/12/2012

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\*




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**KAONOULU MARKET PLACE**

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

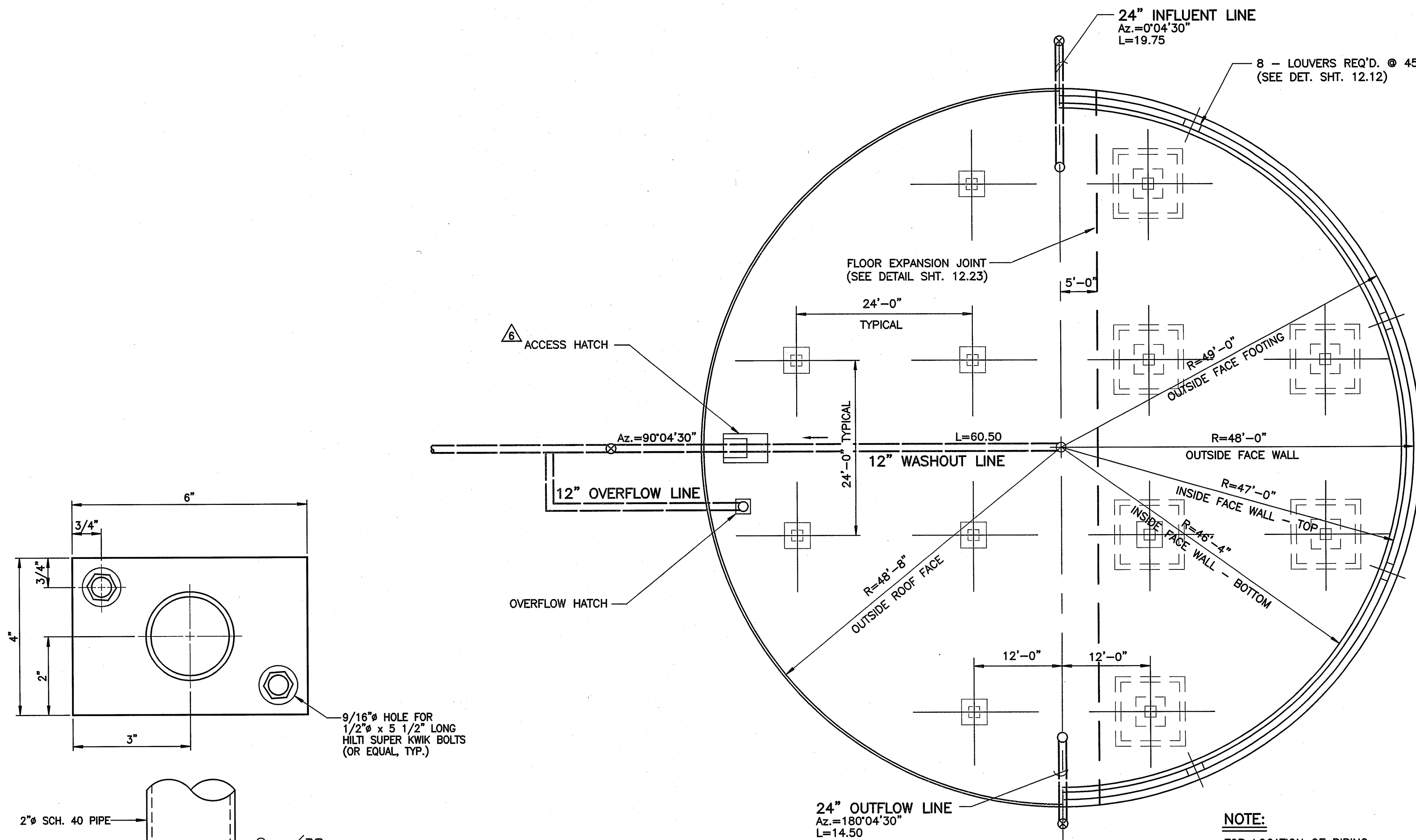
TITLE ROOF LOWER GRID STEEL DETAILS

ALU DESIGNED BY	DTU CHECKED BY	04010.10	12.2
WIS DRAWN BY	DTU APPROVED BY	JOB NUMBER	
SCALE As Shown		10-10-05	SHEET

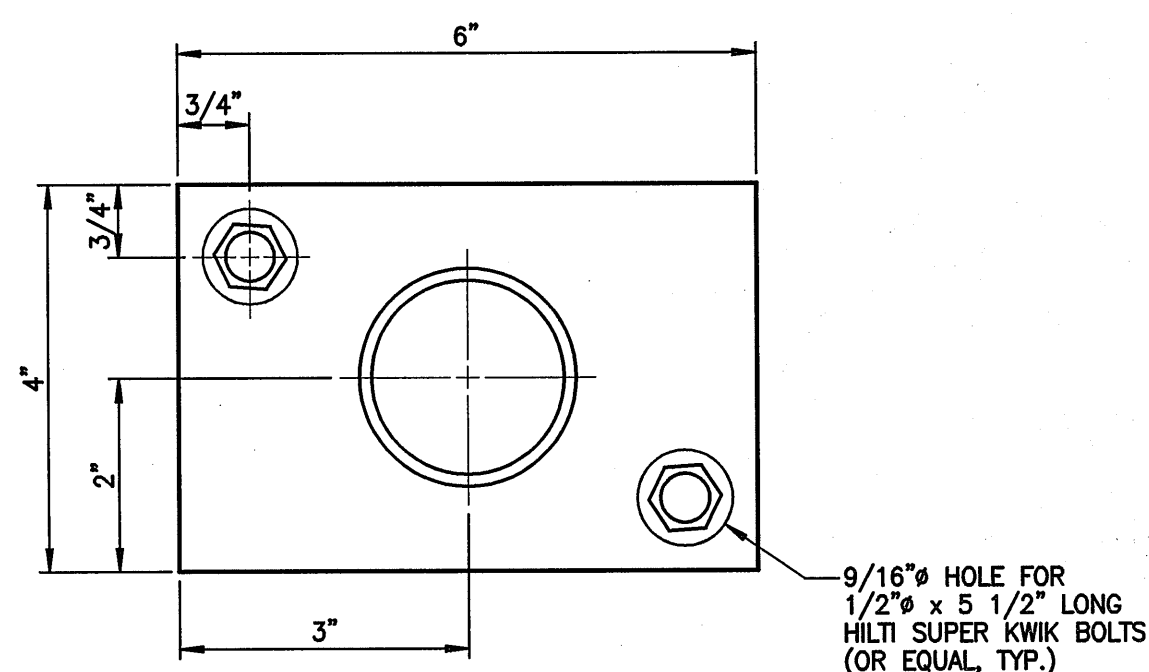
	REVISED HATCH LOCATION	10/01/10
LETTER	DESCRIPTION	DATE



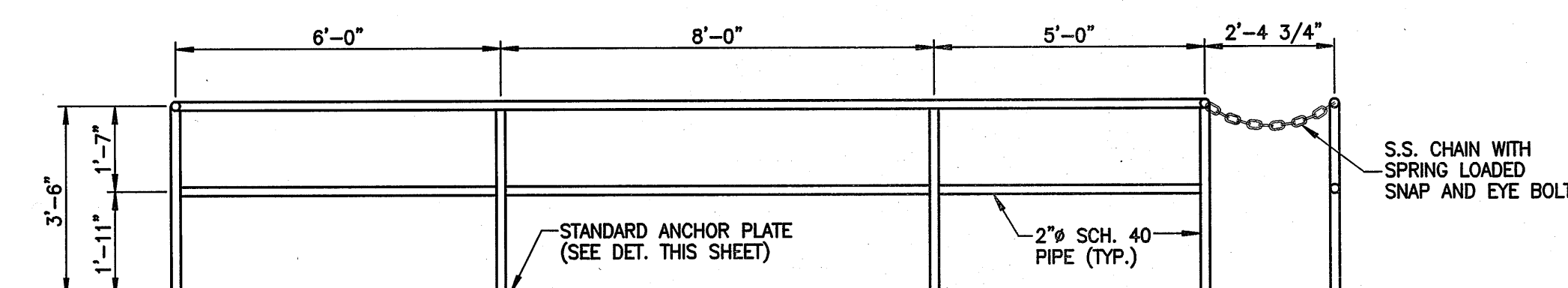




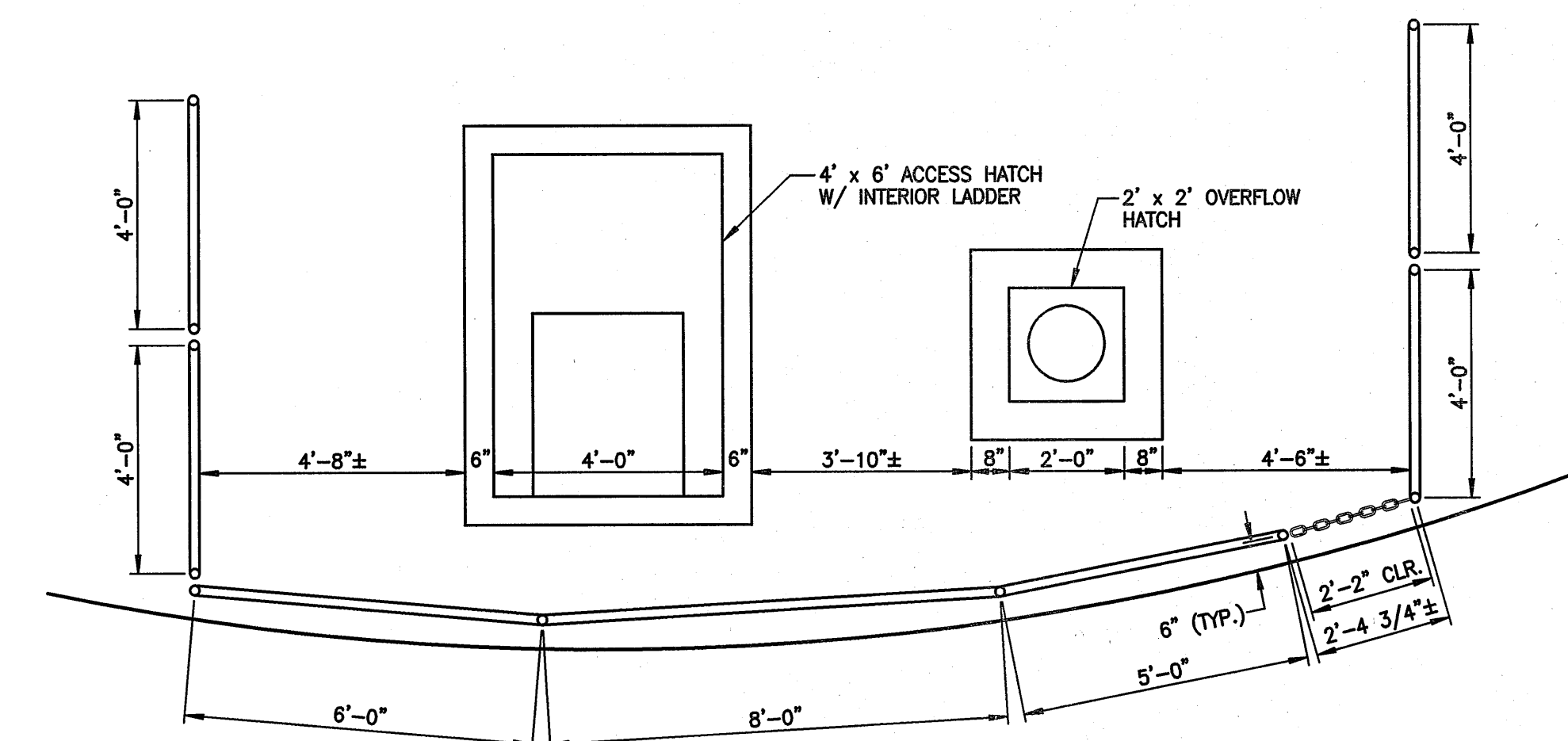
HALF FLOOR PLAN - HALF ROOF PLAN  
SCALE: 3/32" = 1'-0"



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"

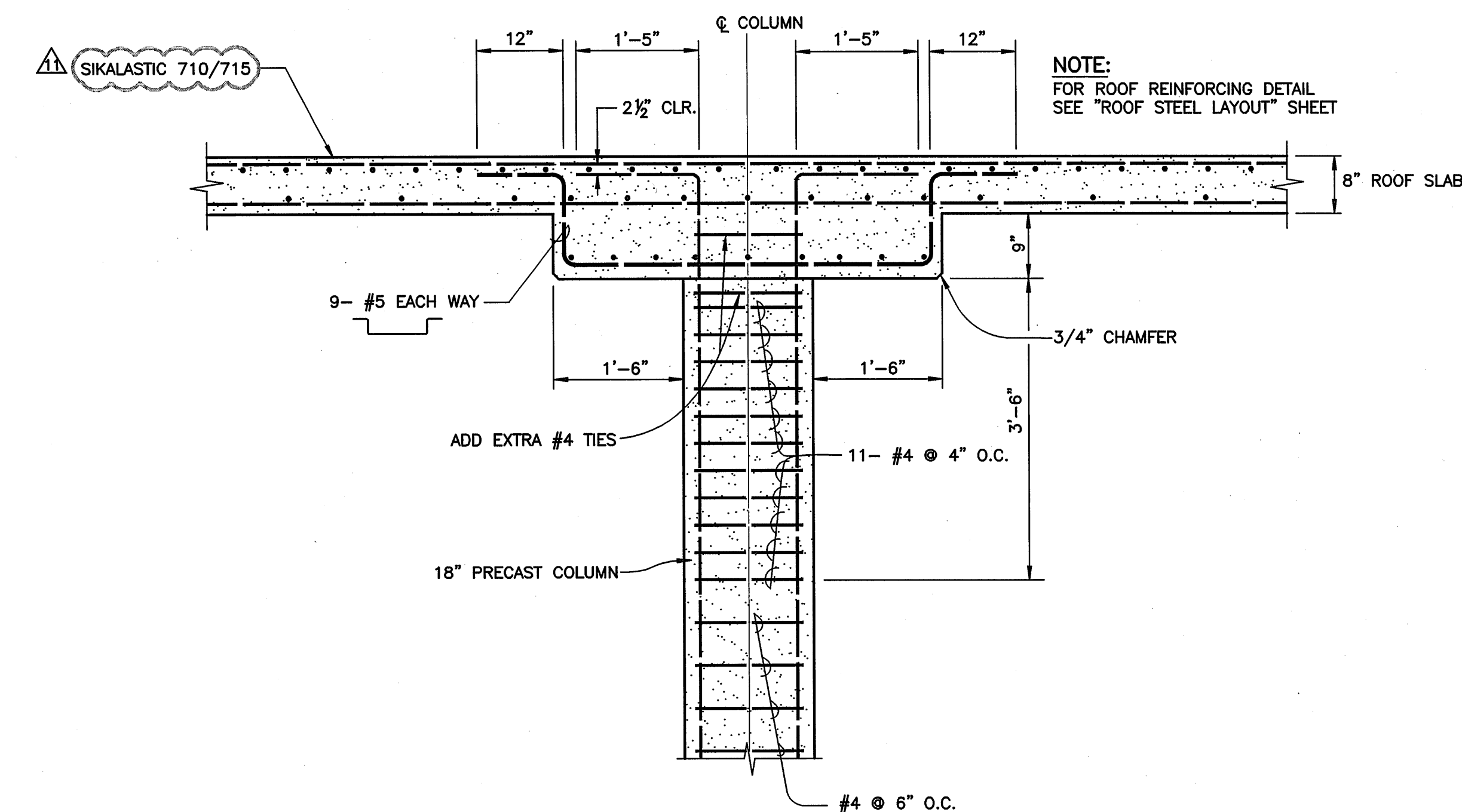
GENERAL NOTES:

- 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.

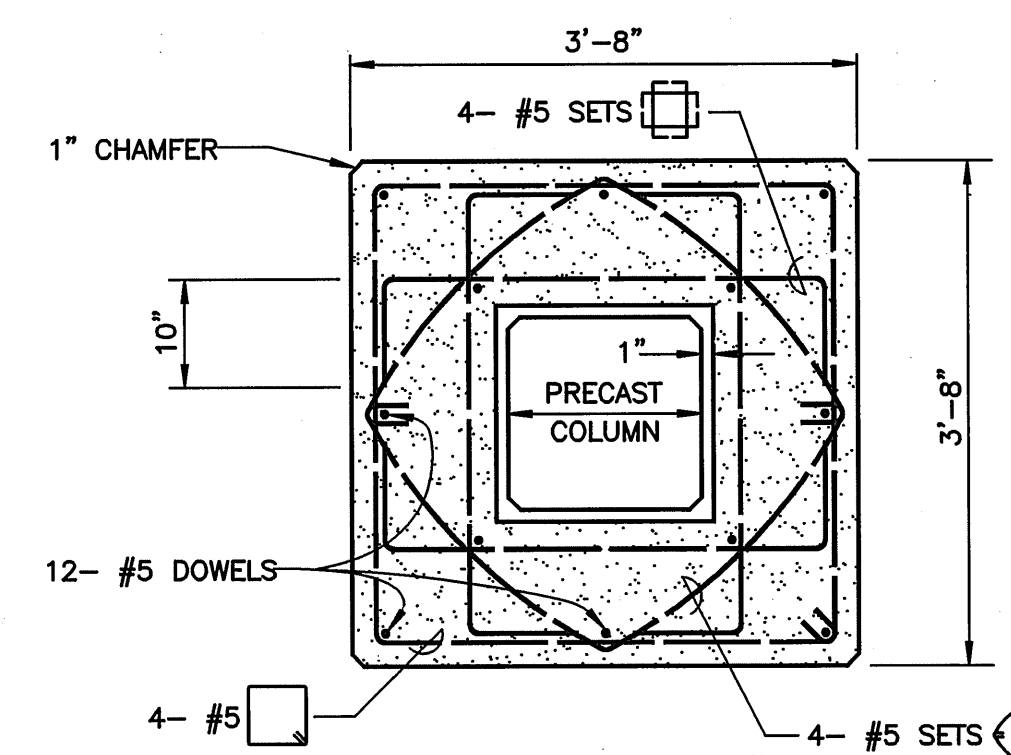
SPECIAL CONSIDERATIONS:

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.

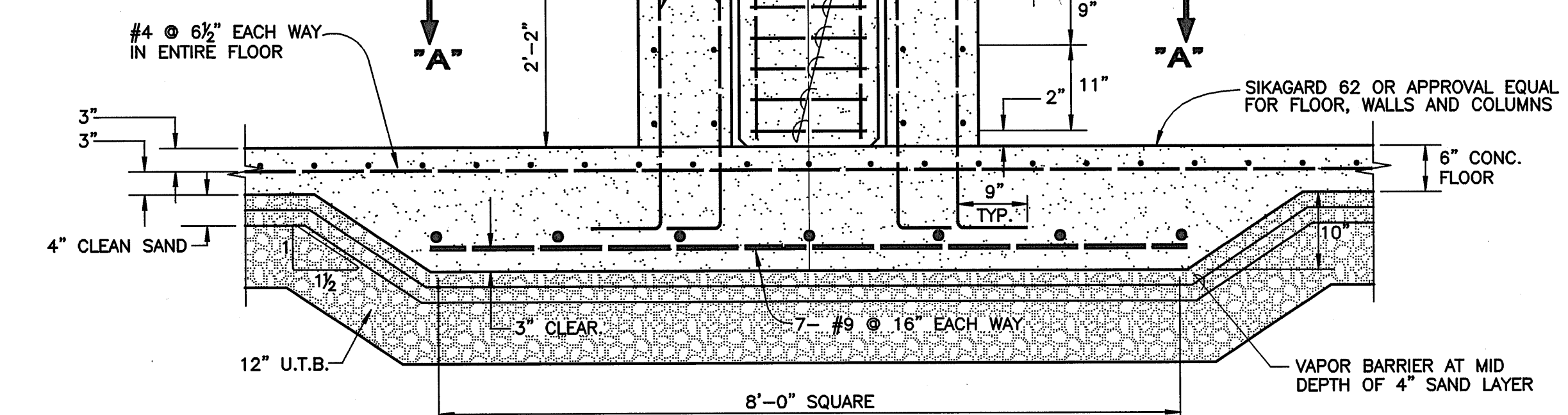
FOLLOWING THE ABOVE PAD PREPARATION, THE PROPOSED STRUCTURE CAN BE SUPPORTED ON SPREAD OR CONTINUOUS FOOTINGS EMBEDDED A MINIMUM OF 12 INCHES BELOW THE LOWEST ADJACENT COMPACTED GRADE.



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.

DESIGNED BY	DTU	4/10/12
CHECKED BY	DTU	10/01/10
DRAWN BY	WIS	
APPROVED BY	DTU	
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**

TITLE

DTU  
DESIGNED BY

DTU  
CHECKED BY

WIS  
DRAWN BY

DTU  
APPROVED BY

As Shown

SCALE

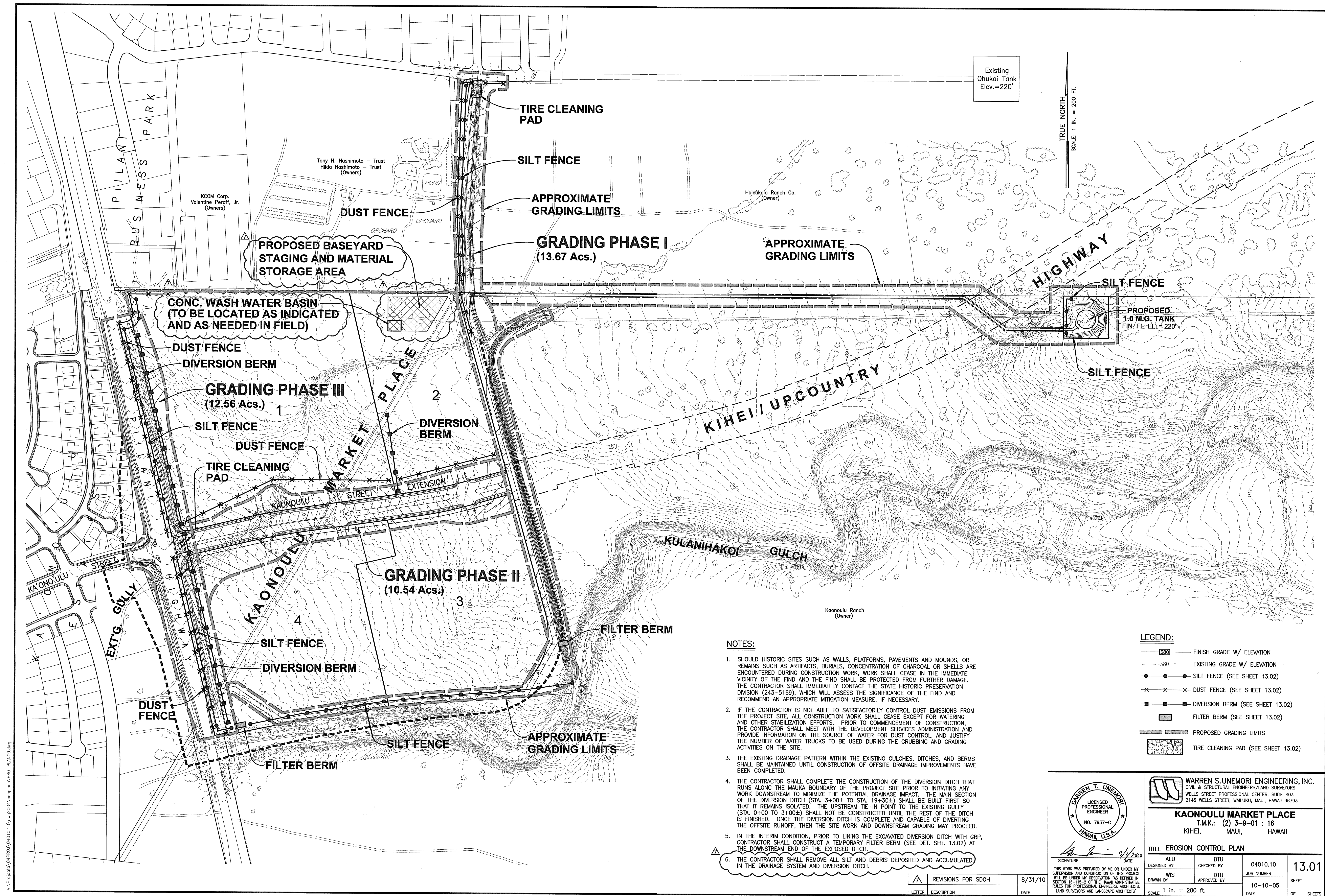
04010.10  
JOB NUMBER

10-10-05  
DATE

12.24  
SHEET

OF SHEETS



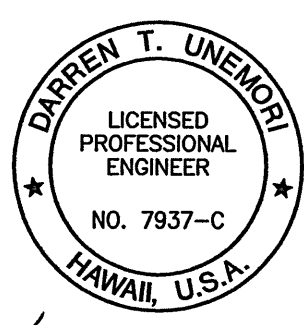


NOTES:

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

TITLE EROSION CONTROL PLAN

DESIGNED BY	DTU	04010.10	13.01
WIS	CHECKED BY	JOB NUMBER	
DRAWN BY	DTU	10-10-05	SHEET
SCALE 1 in. = 200 ft.	APPROVED BY	DATE	

REVISIONS FOR SDOH	8/31/10
LETTER	DESCRIPTION



BEST MANAGEMENT PRACTICES

1. EROSION AND SEDIMENT CONTROL PRACTICES:

A. CONSTRUCTION MANAGEMENT

- 1) GRADING OPERATIONS SHALL BE PLANNED SO AS TO MINIMIZE TIME OF CONSTRUCTION.
- 2) GRADING OPERATIONS SHALL BE PLANNED SO AS TO MINIMIZE SIZE OF THE DISTURBED AREA. THE AREA GRUBBED SHALL NOT EXTEND BEYOND WHAT WILL ACTUALLY REQUIRED FOR GRADING.
- 3) THE PROJECT GRADING LIMITS SHALL BE STAKED PRIOR TO THE START OF CONSTRUCTION.
- 4) UPON COMPLETION OF GRADING ALL EXPOSED AREAS WILL BE GRASSED AS REQUIRED.

B. STABILIZATION TECHNIQUES

- 1) EXISTING GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 30 CALENDAR DAYS PRIOR TO THE START OF GRADING OPERATIONS.
- 2) AREAS THAT REMAIN UNFINISHED FOR MORE THAN 21 CALENDAR DAYS WILL BE HYDROMULCHED TO PROVIDE TEMPORARY SOIL STABILIZATION BY NO LATER THAN THE 14TH DAY AFTER LAST DISTURBANCE.
- 3) AFTER ACHIEVING FINISHED GRADES, ALL SLOPES AND EXPOSED AREAS SHALL BE PERMANENTLY STABILIZED BY HYDROMULCHING WITH GRASS SEED AS SOON AS PRACTICABLE.

C. STRUCTURAL CONTROLS

- 1) SILT FENCES OR FILTER BERMS SHALL BE CONSTRUCTED ALONG THE ENTIRE DOWNSTREAM SIDE OF THE ACTIVE CONSTRUCTION ZONE IN AREAS WHERE ONSITE RUNOFF FLOWS INTO ADJOINING PROPERTIES. FILTER BAGS SHALL BE PLACED AT ALL EXISTING CURB-INLET CATCH BASIN OPENINGS TO REMOVE SILT FROM THE ONSITE RUNOFF.

D. INSPECTION AND MAINTENANCE PROCEDURES

- 1) ALL CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED AS NECESSARY. INSPECTIONS SHALL BE PERFORMED AT LEAST WEEKLY IN DRY PERIODS, AND WITHIN 24 HOURS AFTER ANY RAINFALL 0.5 INCHES OR GREATER OVER A 24-HOUR PERIOD. CONTROL MEASURES SHALL BE CHECKED DAILY DURING PERIODS OF PROLONGED RAINFALL.

E. SCHEDULE FOR IMPLEMENTING CONTROLS

- 1) EROSION AND SEDIMENT CONTROL MEASURES WILL BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN, AND WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
- 2) THE FOLLOWING GENERAL ORDER SHOULD BE USED:
  - A. INSTALLATION OF TIRE CLEANING PAD.
  - B. INSTALLATION OF SILT FENCE AND FILTER BERMS.
  - C. GRADING MAY PROCEED.

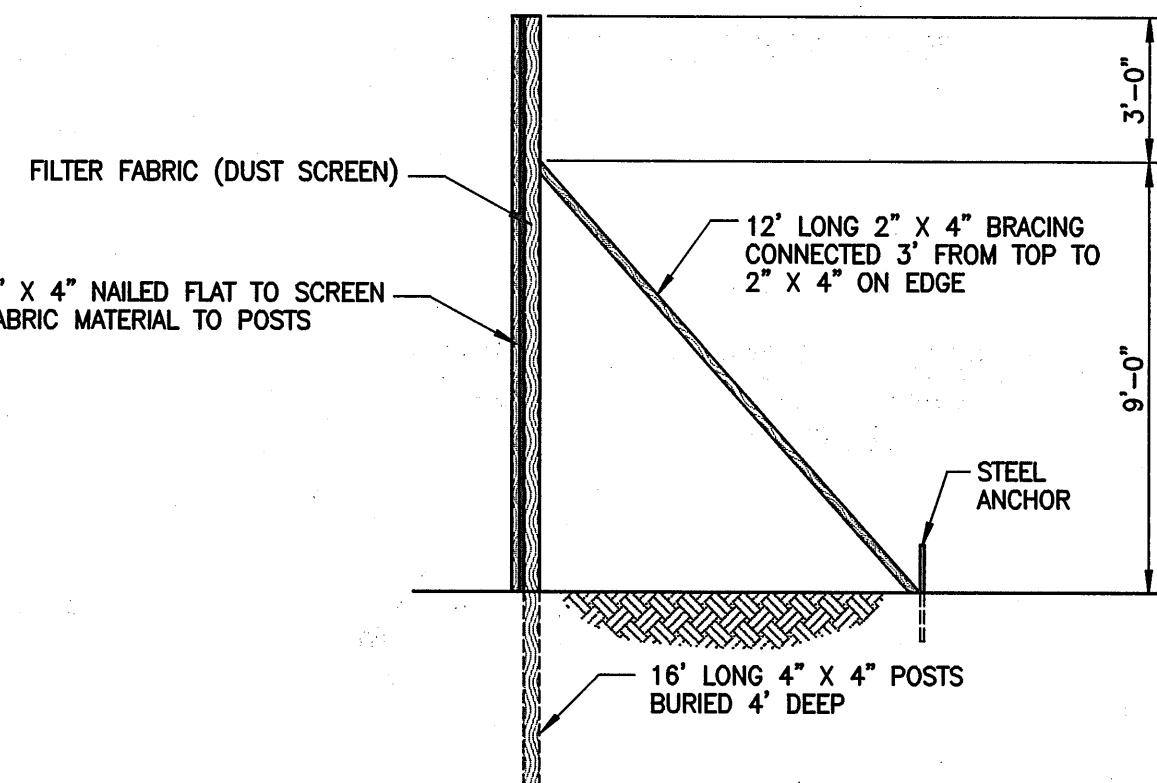
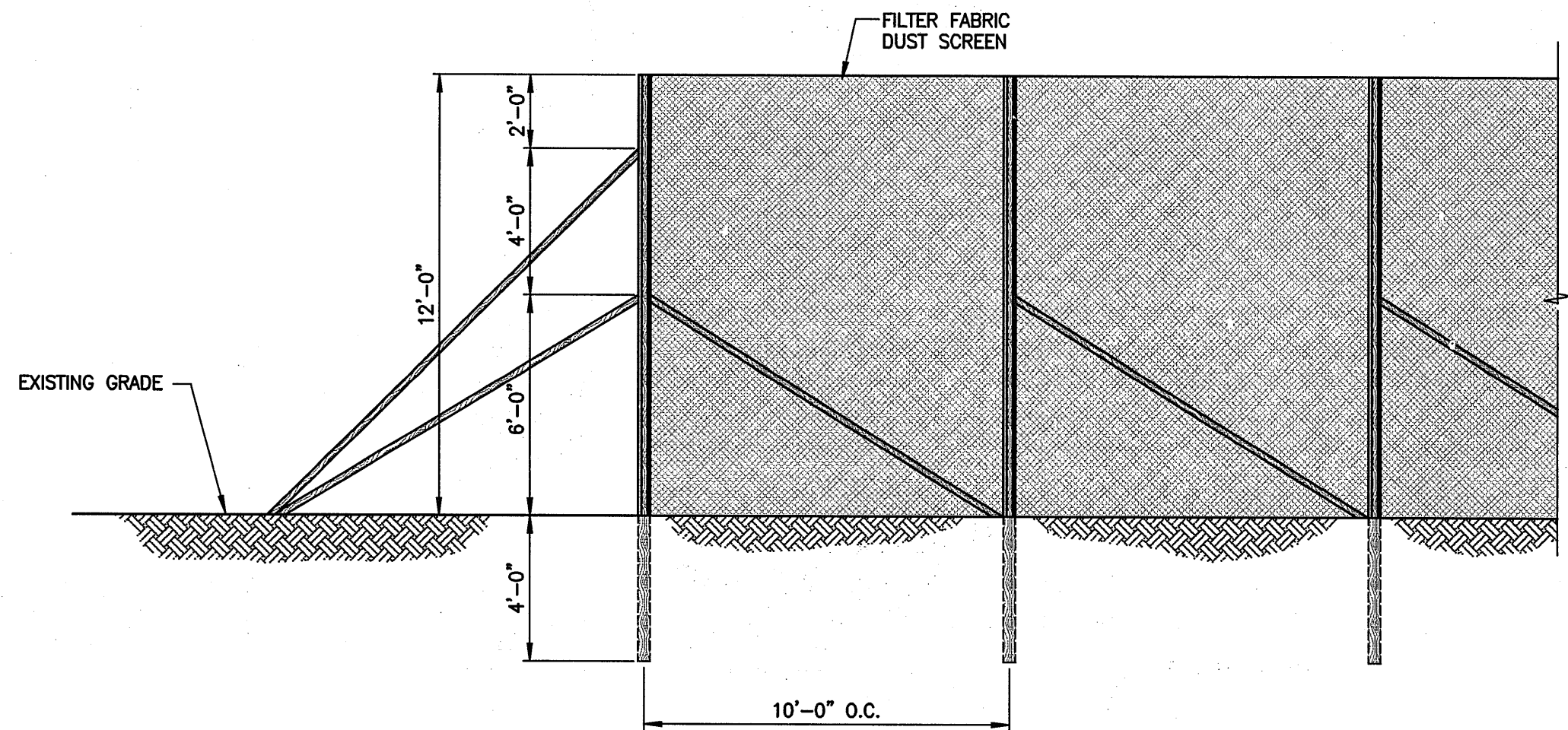
2. DUST CONTROLS:

THE CONTRACTOR SHALL KEEP THE PROJECT AREA AND SURROUNDING AREAS FREE FROM DUST NUISANCE. THE FOLLOWING MITIGATIVE MEASURES WILL BE INCORPORATED:

- A. USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.
- B. CONSTRUCT DUST FENCES IF NECESSARY ALONG PROJECT SITE BOUNDARIES AFFECTED BY PREVAILING WIND DIRECTION.
- C. STATION A WATER TRUCK ON SITE AT ALL TIMES DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION ZONES OR WHEREVER NEEDED ON THE CONSTRUCTION SITE (WEEKENDS AND HOLIDAYS INCLUDED).
- D. GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITIES HAVE CEASED FOR THE DAY AND ON WEEKENDS.

3. OTHER POLLUTION CONTROL PRACTICES:

- A. CONTRACTOR SHALL INSTALL DANDY BEAVER DAM OR DANDY BAG (OR APPROVED EQUAL) AT ALL NEW AND EXISTING INLETS AND DISCHARGE POINTS WHICH MAY RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITY.
- B. MAINTENANCE AND FUELING OF CONSTRUCTION EQUIPMENT SHALL BE PERFORMED ONLY IN DESIGNATED AREAS ENCLOSED BY A CONTAINMENT BERM CONSTRUCTED SO AS TO CONTAIN SPILLS AND PREVENT STORM WATER RUNOFF FROM CARRYING POLLUTANTS TO DOWNSTREAM PROPERTIES.

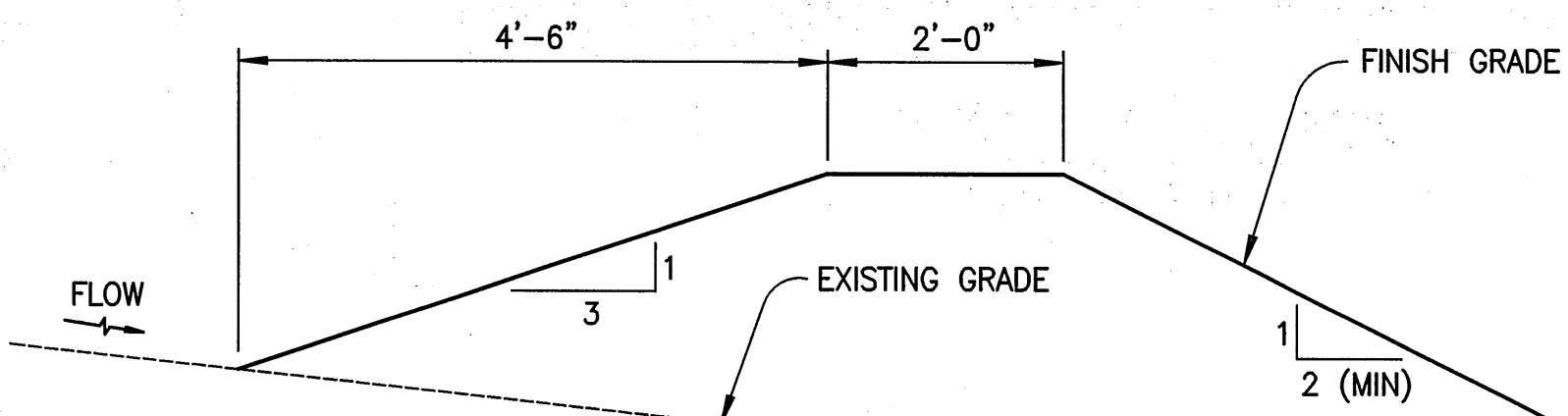


NOTE:

CONTRACTOR SHALL BE RESPONSIBLE FOR RETAINING A STRUCTURAL ENGINEER (LICENSED TO PRACTICE IN THE STATE OF HAWAII) TO DESIGN DUST FENCE AND SHALL SUBMIT STAMPED AND SIGNED DRAWINGS FOR DUST FENCE TO ENGINEER AND COUNTY OF MAUI FOR REVIEW AND APPROVAL, AND FOR SECURING ALL REQUIRED AGENCY PERMITS.

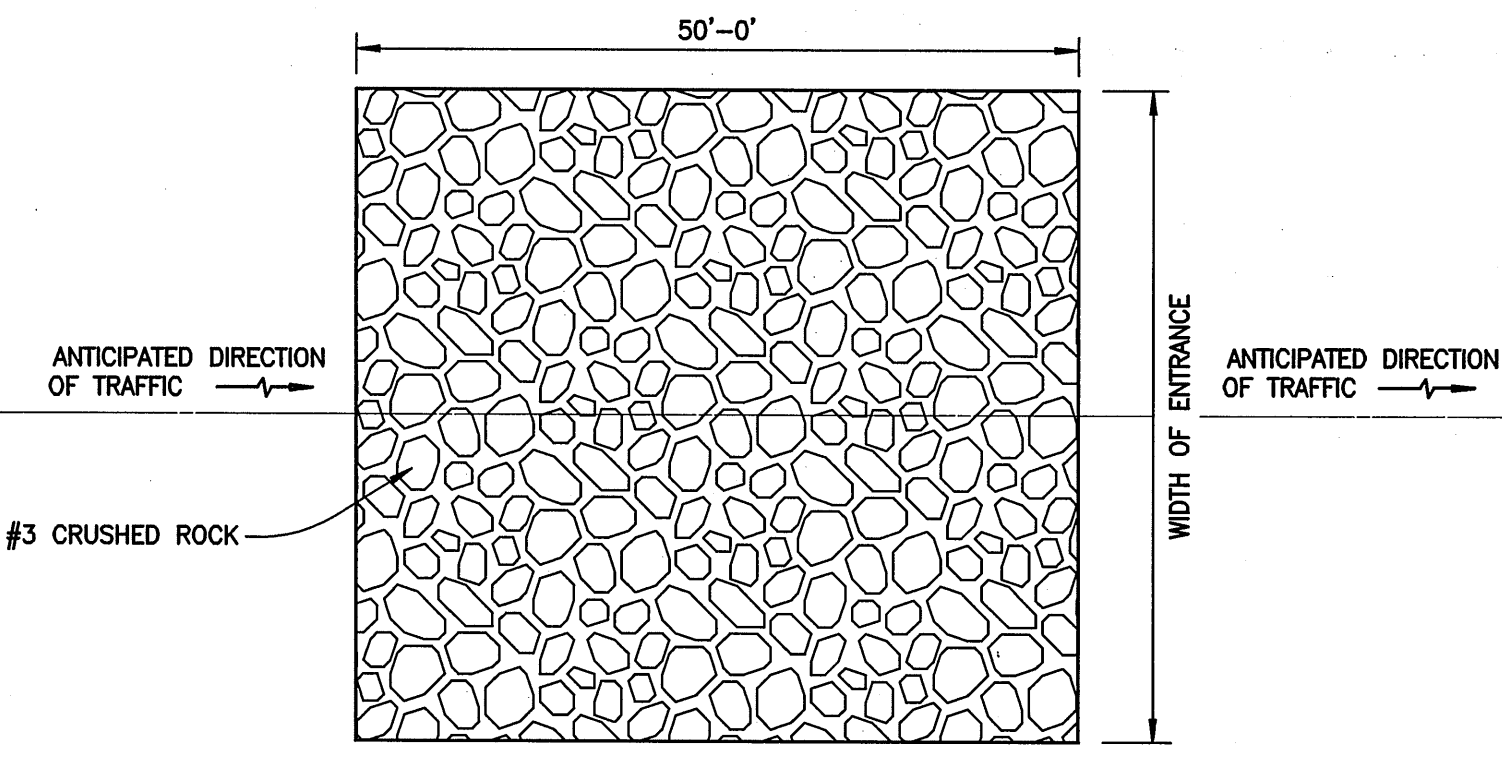
DETAIL - DUST FENCE

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

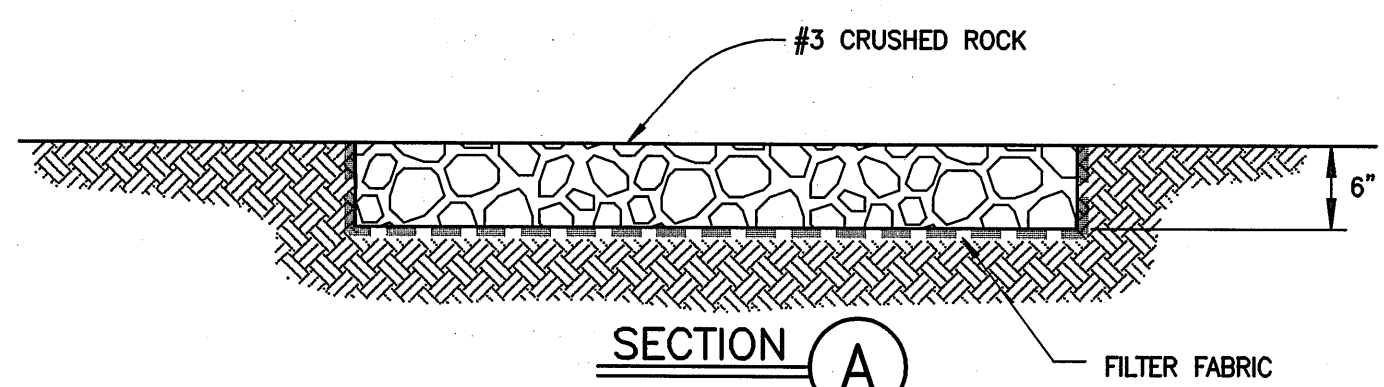


DETAIL - CROSS / DIVERSION BERM

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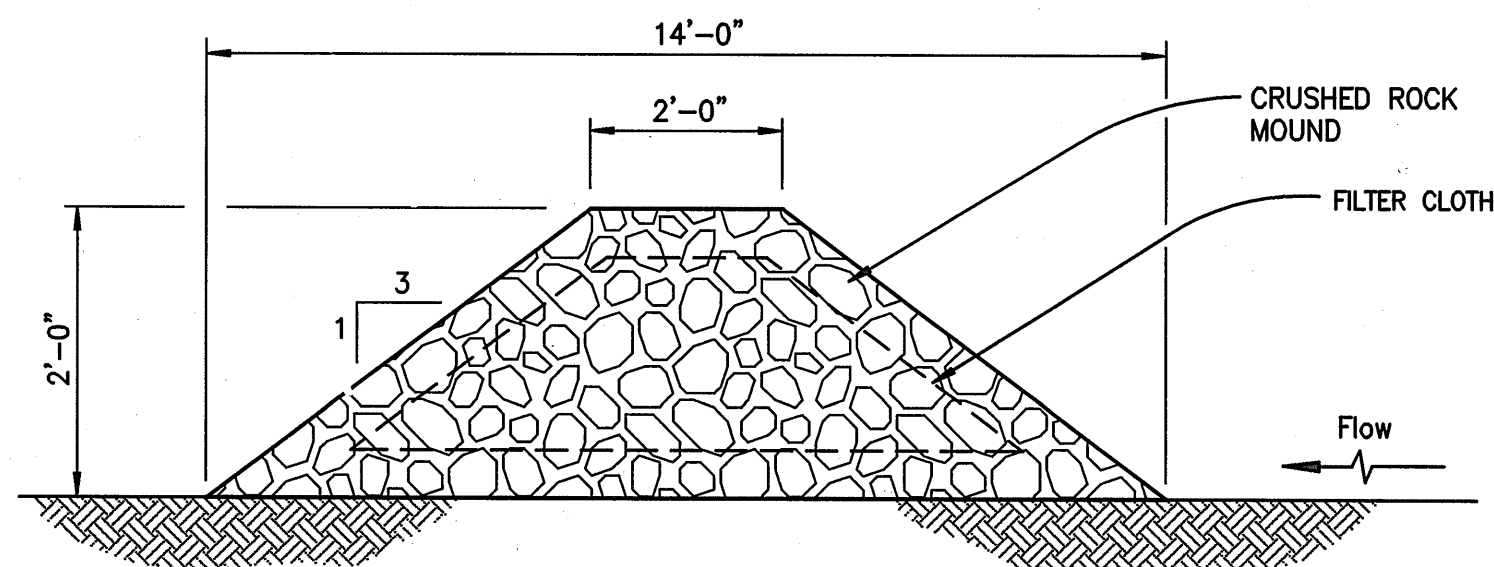


PLAN



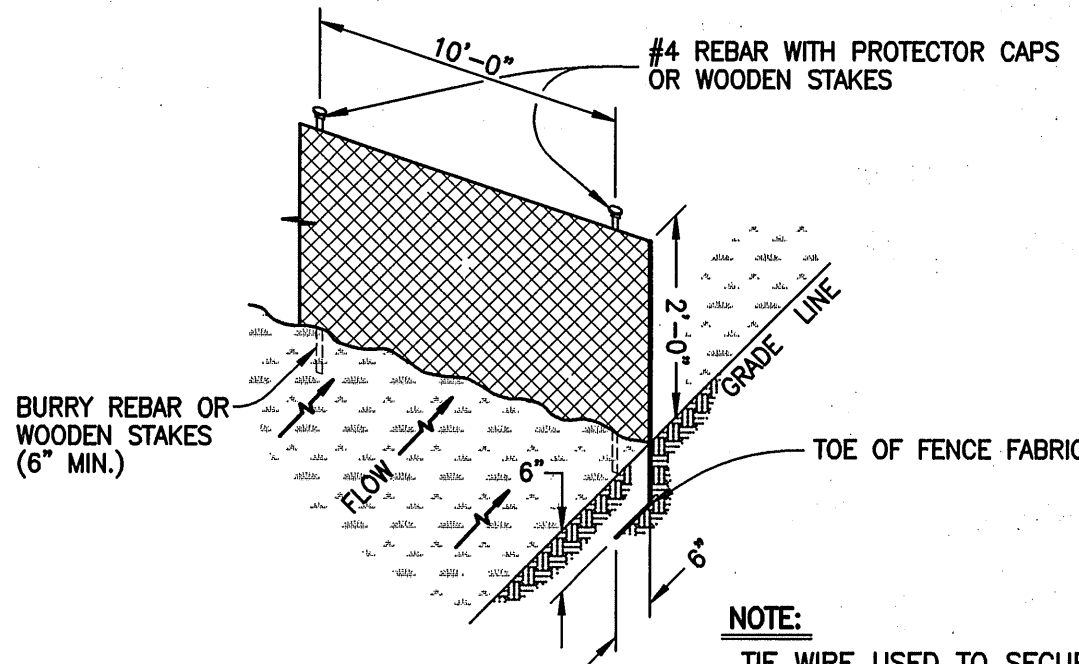
DETAIL - TIRE CLEANING PAD

NOT TO SCALE



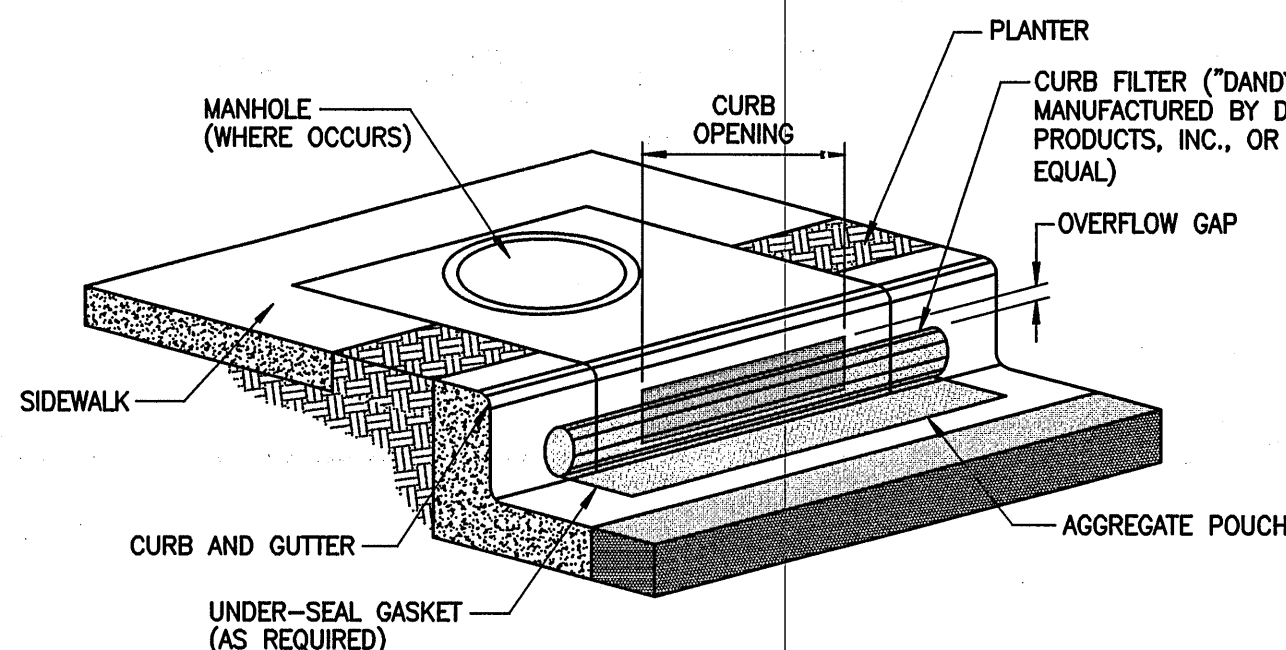
DETAIL - FILTER BERM

NOT TO SCALE



DETAIL - SILT FENCE

NOT TO SCALE



NOTES:

1.0 INSTALLATION:

- 1.1 PLACE DANDY CURB INLET PROTECTION UNIT ON GROUND WITH AGGREGATE POUCH ON STREET SIDE NEAR INLET IT WILL BE INSTALLED ON.
- 1.2 WHERE OIL AND SEDIMENT MODEL IS REQUIRED, TO INSTALL OR REPLACE ABSORBENT, PLACE ABSORBENT SOCK IN POUCH.
- 1.3 FILL POUCH WITH AGGREGATE SUCH AS #5-7, 8'S OR SIMILAR TO A LEVEL (AT LEAST 3/4 FULL) THAT WILL KEEP UNIT IN PLACE DURING A RAIN EVENT AND CREATE A SEAL BETWEEN THE DANDY CURB AND THE SURFACE OF THE STREET. RESEAL VELCRO ACCESS.
- 1.4 CENTER THE UNIT AGAINST CURB OR MEDIAN INLET OPENING SO THAT THE CURB SIDE OF THE UNIT CREATES A SEAL WITH THE CURB OR MEDIAN BARRIER AND INLET STRUCTURE. THERE WILL BE APPROXIMATELY TWELVE (12) INCHES OF THE INLET PROTECTION UNIT OVERHANGING ON EACH SIDE OF THE OPENING. IF THE UNIT IS NOT INSTALLED IN THIS MANNER, IT WILL NOT FUNCTION PROPERLY.

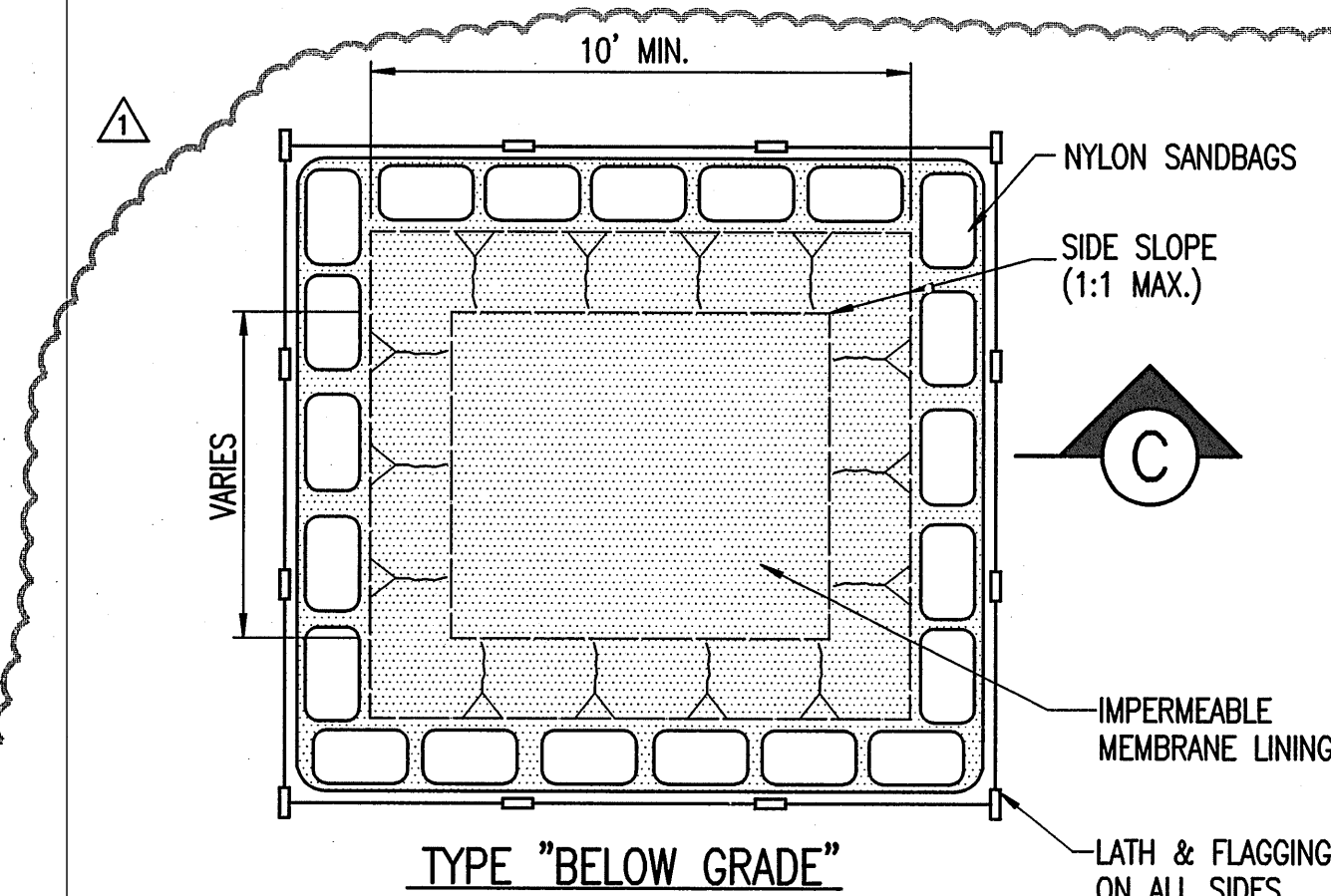
2.0 MAINTENANCE:

- 2.1 THE CONTRACTOR SHALL REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF UNIT AFTER EACH RAIN EVENT OR AS DIRECTED BY ENGINEER. THE CONTRACTOR SHALL DISPOSE OF UNIT NO LONGER IN USE AT AN APPROPRIATE RECYCLING OR SOLID WASTE FACILITY.
- 2.2 WHERE OIL AND SEDIMENT MODEL IS REQUIRED, REMOVE AND REPLACE ABSORBENT WHEN NEAR SATURATION.

- 3.0 ALTERNATIVE CURB INLET PROTECTION WILL BE SUBJECT TO REVIEW AND APPROVAL BY COUNTY AND ENGINEER.

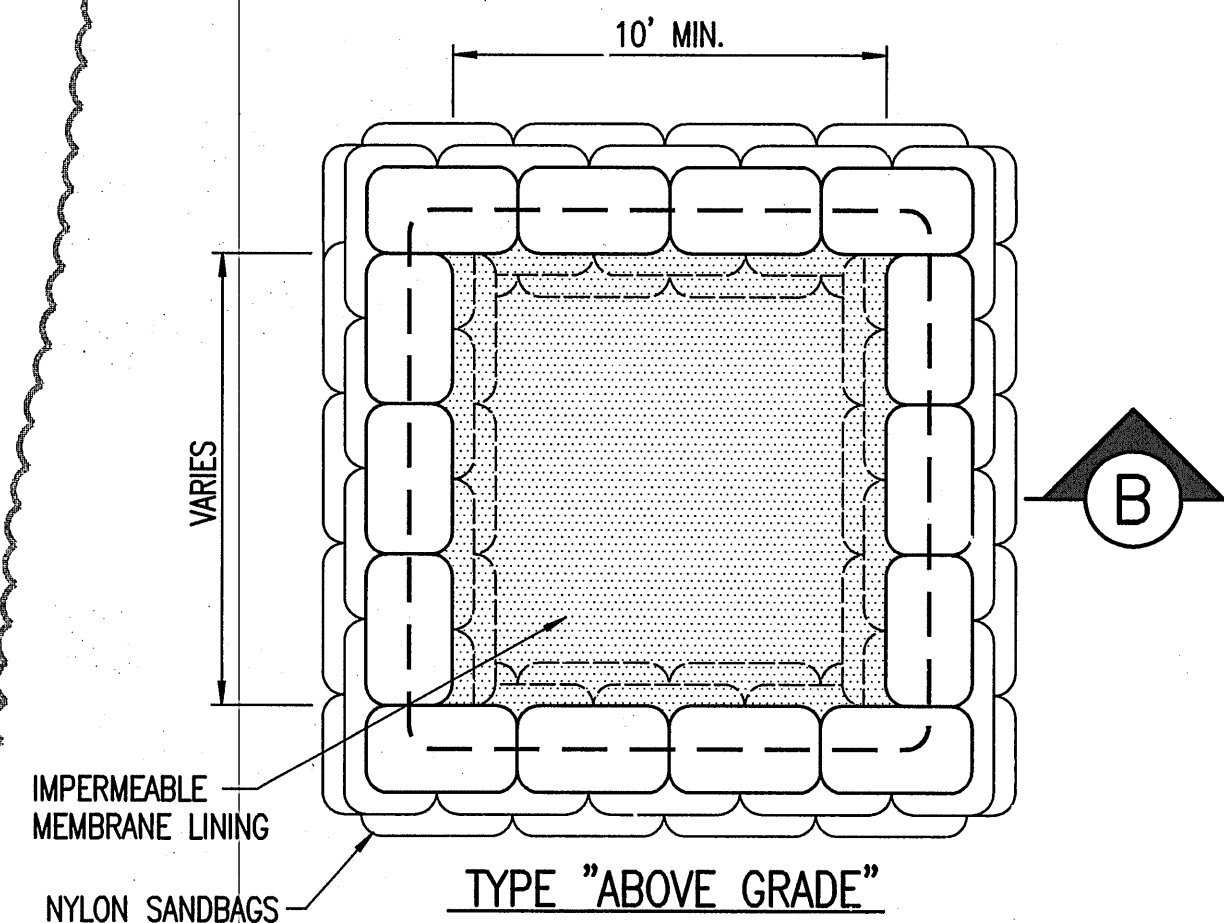
DETAIL - CURB INLET PROTECTION

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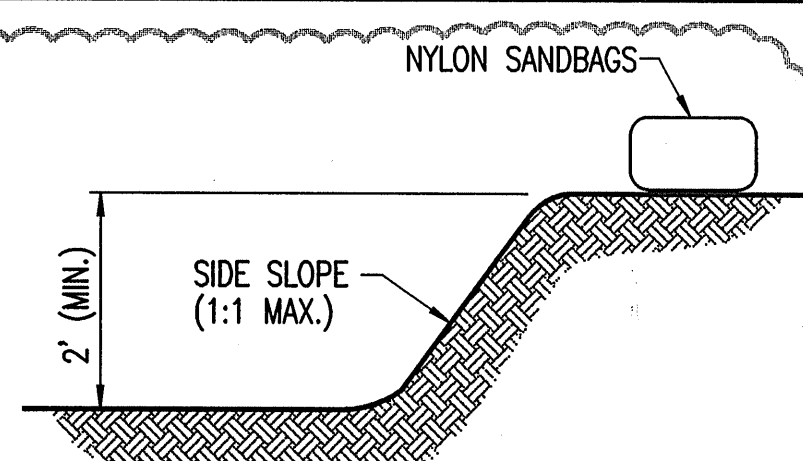
CONCRETE WASH WATER MANAGEMENT (AS REQUIRED)

NOT TO SCALE



CONCRETE WASTE MANAGEMENT (AS REQUIRED)

NOT TO SCALE

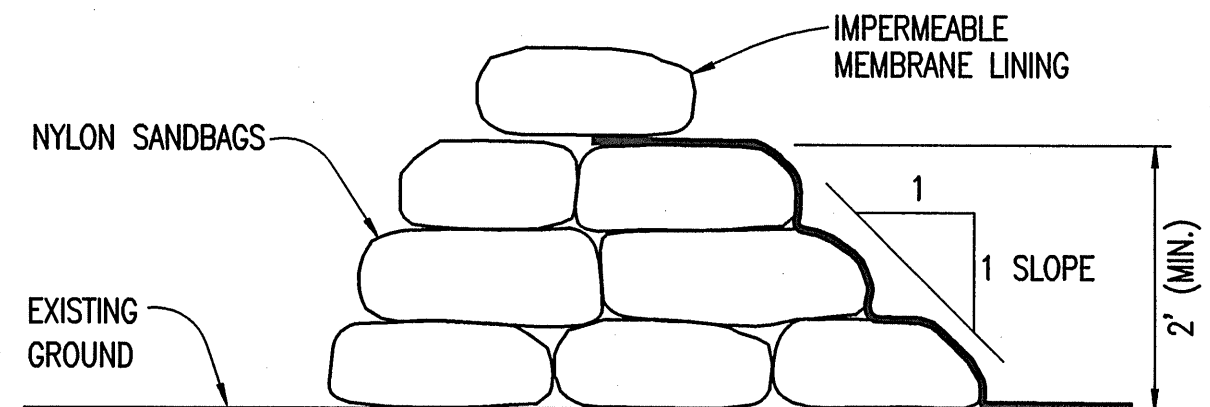


SECTION C

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NOTES:

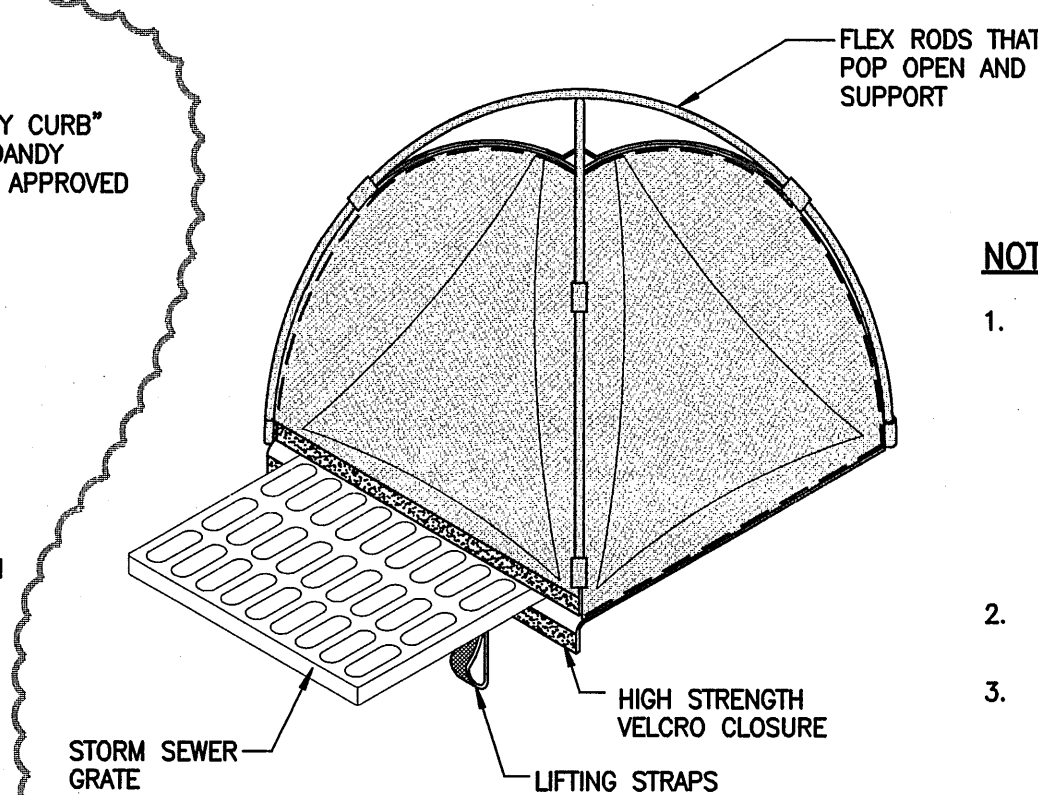
1. ACTUAL LAYOUT TO BE DETERMINED IN FIELD.
2. CONTRACTOR TO VERIFY LOCATION.
3. CONCRETE TRUCK WASH WATER SHALL BE DISPOSED OF OFFSITE OR IN DESIGNATED CONTAINMENT BERMS WITH IMPERMEABLE LINERS TO PREVENT INFILTRATION OR DISCHARGING OF POLLUTANTS DOWNSTREAM.



SECTION B

DETAIL - CONTAINMENT BERM

NOT TO SCALE

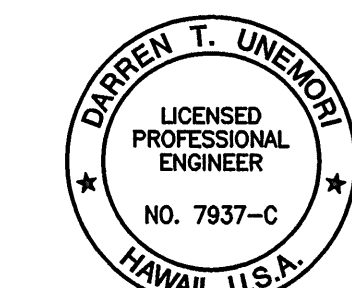


DETAIL - "DANDY POP" INLET PROTECTION SYSTEM

NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL INSPECT & MAINTAIN DANDY POP INLET PROTECTION SYSTEM ON A REGULAR BASIS TO ENSURE PROPER FUNCTION TO KEEP SILT, SEDIMENT AND CONSTRUCTION DEBRIS OUT OF THE STORM WATER SYSTEM. THE CONTRACTOR SHALL REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM PANELS AND SURFACE AND VICINITY OF UNIT AFTER EACH RAIN EVENT OR AS DIRECTED BY ENGINEER/INSPECTOR (FOR OIL AND SEDIMENT MODEL). REMOVE AND REPLACE ABSORBENT WHEN NEAR SATURATION. DISPOSE OF UNIT NO LONGER IN USE AT AN APPROPRIATE RECYCLING OR SOLID WASTE FACILITY.
2. THE DANDY POP INLET PROTECTION UNIT SHALL ENCLOSE THE DRAIN INLET GRATE WITH THE GEOTEXTILE FABRIC.
3. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW & APPROVAL PRIOR TO ORDERING MATERIALS.




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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: EROSION CONTROL NOTES AND DETAILS

DESIGNED BY	DTU	04010.10	13.02
CHECKED BY	DTU	JOB NUMBER	
DRAWN BY	DTU	10-10-05	SHEET
APPROVED BY	DTU	DATE	
SCALE	AS NOTED		OF SHEETS

	REVISIONS FOR SDOH	8/31/10
LETTER	DESCRIPTION	DATE

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



1. CW20-1ad SIGN REQUIRED FOR POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER.
2. SEE TABLE 1 FOR ADDITIONAL DIMENSIONS.
3. ONE LANE ROAD (CW20-4) AND FLAGGER AHEAD (CW20-7) SIGNS SHALL BE REMOVED OR COVERED WHEN NO WORK IS BEING PERFORMED AND LANE IS NOT CLOSED.
4. THE ADVISORY SPEED (XX) SHALL BE DETERMINED BY THE ENGINEER.
5. CONES OR DELINEATORS SHALL BE INSTALLED AT 25' O.C. MAX. ON TAPERS.

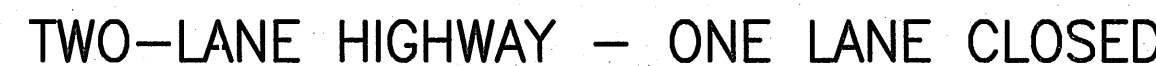


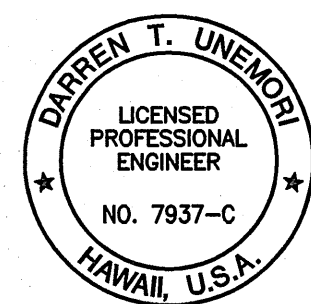
FIGURE 1 - TRAFFIC CONTROL PLAN

1. THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF WORK.
5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
7. SIGNS SPACING (L), TAPER LENGTHS (T) AND SPACINGS OF CONES OR DELINEATORS SHALL BE AS SHOWN IN TABLE 1, UNLESS OTHERWISE NOTED ON THE TRAFFIC CONTROL PLANS.
8. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
9. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
10. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
11. AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION.
12. REPLACE PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS UPON COMPLETION OF WORK.

POSTED SPEED LIMIT ① (M.P.H)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ③		
		W = 12' OR LESS ②	W = GREATER THAN 12' ②		TAPER	TANGENT	WORK AREA
20	250	200	W x 17	35	20	20	10
25	250	200	W x 17	55	25	25	10
30	250	250	W x 20	85	30	30	10
35	250	250	W x 20	120	35	35	10
40	500	350	W x 30	170	40	40	10
45	500	550	W x 45	220	45	45	10
50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

- ① USE ADVISORY SPEEDS WHEN POSTED.
- ② W = WIDTH OF LANE, SHOULDER, OR OFFSET.
- ③ NOT APPLICABLE FOR TWO-LANE HIGHWAYS.

NOT TO SCALE



SIGNATURE \_\_\_\_\_ DATE 12/12/08

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  
WELLS STREET PROFESSIONAL CENTER, SUITE 403  
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

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

ALU	DTU	0101010	1101
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DESIGNED BY	CHECKED BY	04010.10	14.01
		JOB NUMBER	

WIS	DTU	JOB NUMBER	
DRAWN BY	APPROVED BY		SHEET

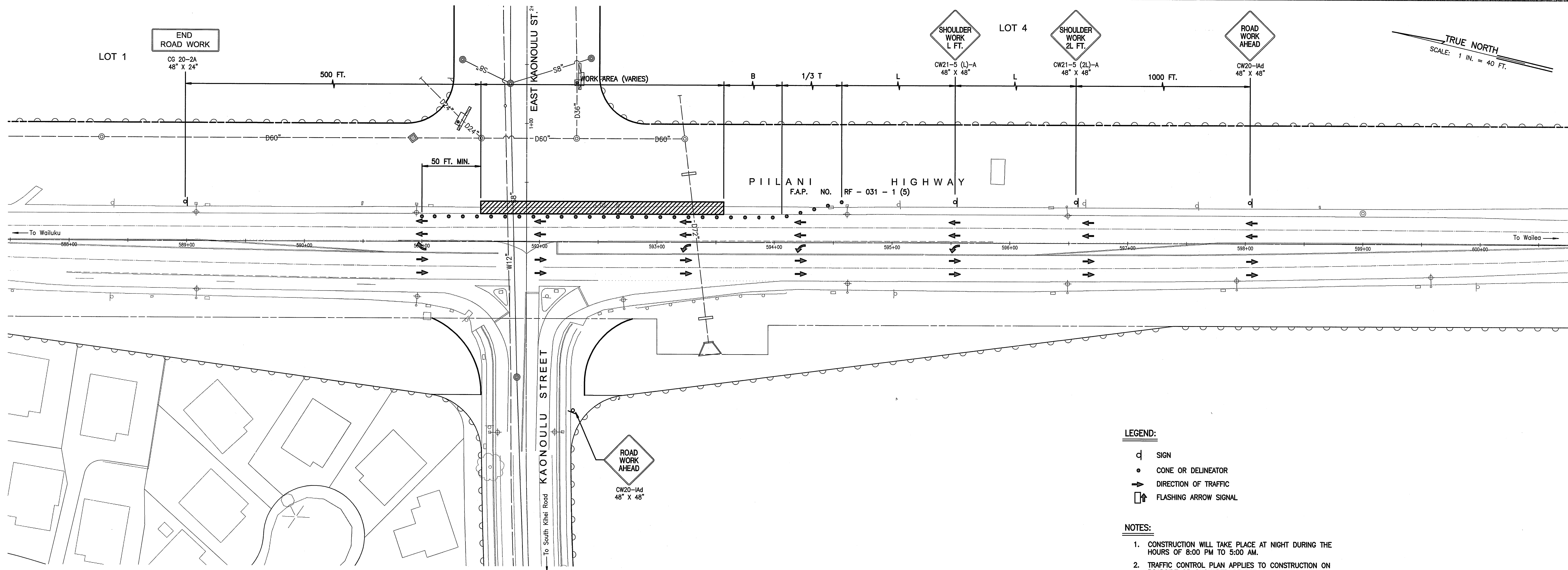
1 in. = 40 ft	10-10-05
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14.01

QUEST

SHEET

OF SHEETS



LEGEND:

- SIGN
- CONE OR DELINEATOR
- DIRECTION OF TRAFFIC
- ⬇ FLASHING ARROW SIGNAL

NOTES:

- CONSTRUCTION WILL TAKE PLACE AT NIGHT DURING THE HOURS OF 8:00 PM TO 5:00 AM.
- TRAFFIC CONTROL PLAN APPLIES TO CONSTRUCTION ON ROADSIDE OR SHOULDER OF BOTH SIDES OF PIILANI HIGHWAY.

TRAFFIC CONTROL PLAN FOR CONSTRUCTION ON SHOULDER OR ROADSIDE OF STATE RIGHT-OF-WAY

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

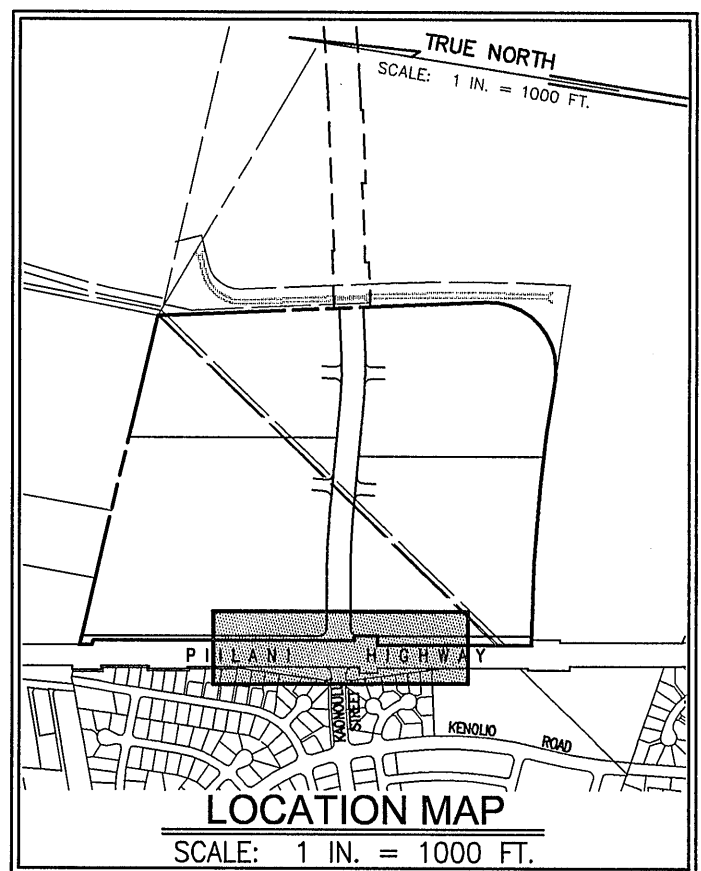
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- FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
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- REPLACE PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS UPON COMPLETION OF WORK.

TABLE 1 FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT ① (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ③		
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40	500	350	W x 30	170	40	40	10
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50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

NOTE:

- USE ADVISORY SPEEDS WHEN POSTED.
- W = WIDTH OF LANE, SHOULDER, OR OFFSET.
- NOT APPLICABLE FOR TWO-LANE HIGHWAYS.



WARREN S. UNEMORI  
LICENSED PROFESSIONAL ENGINEER  
NO. 1569-C  
HAWAII, U.S.A.

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"

LETTER DESCRIPTION DATE

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

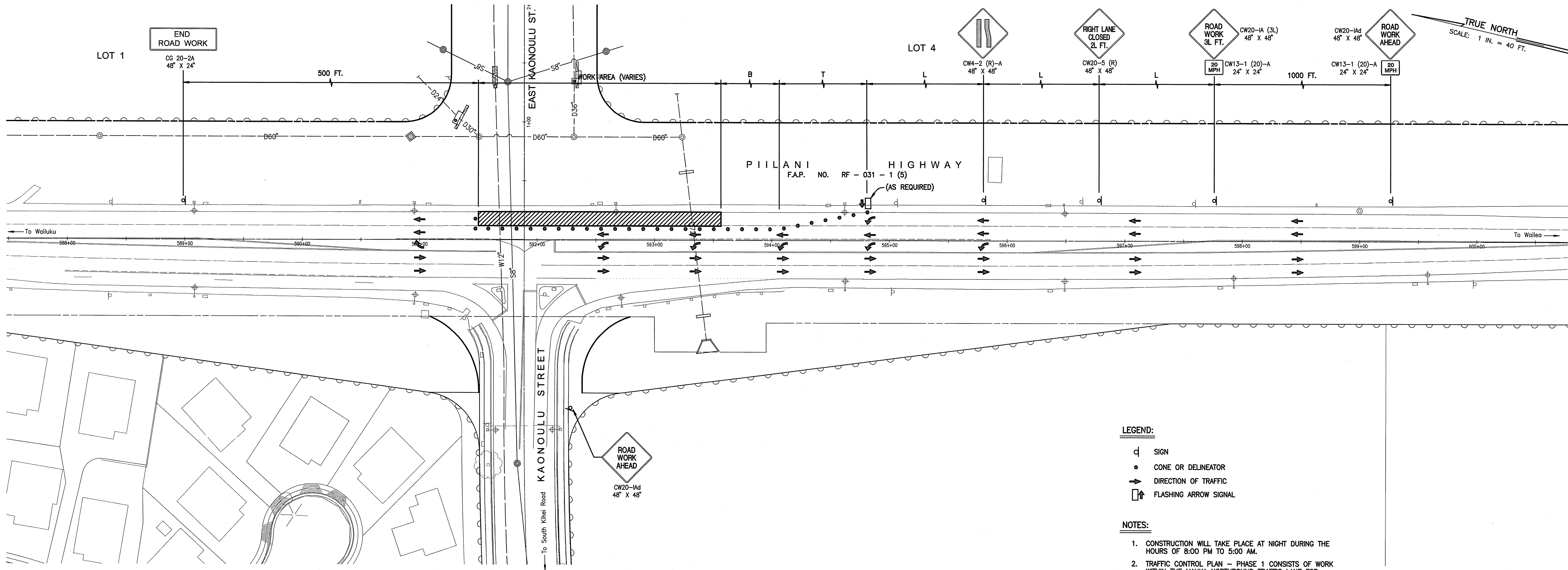
**KAONOULU MARKET PLACE**  
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16  
KIHAI, MAUI, HAWAII

TITLE: TRAFFIC CONTROL PLAN - PIILANI HIGHWAY

DESIGNED BY WSU	CHECKED BY WSU	04010.10 JOB NUMBER	14.10 SHEET
DRAWN BY WIS	APPROVED BY	10-10-05 DATE	OF SHEETS

SCALE 1 in. = 40 ft.





TRAFFIC CONTROL PLAN FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY – PHASE I

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

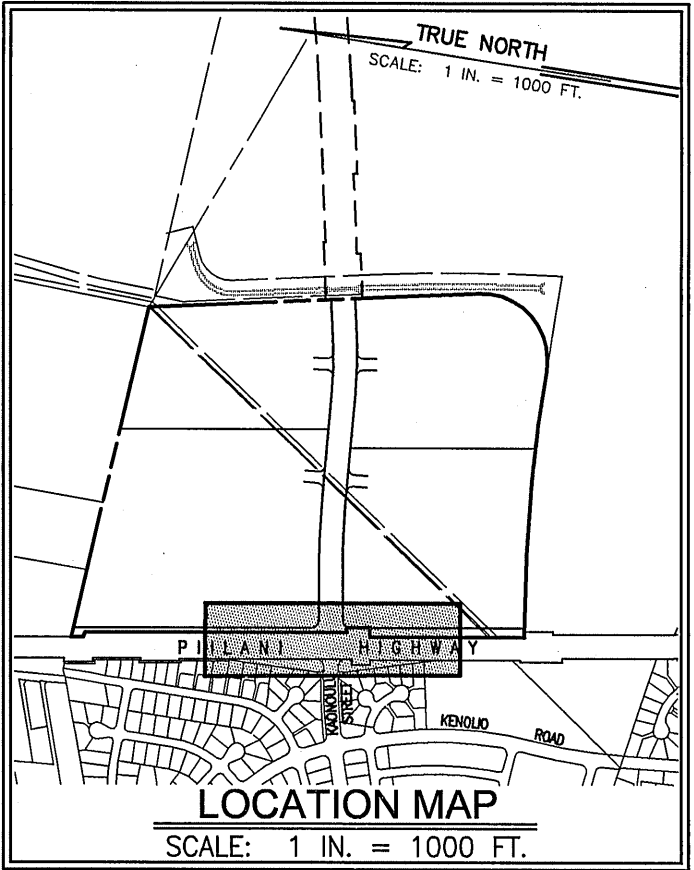
1. THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF WORK.
5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
7. SIGNS SPACING (L), TAPER LENGTHS (T) AND SPACINGS OF CONES OR DELINEATORS SHALL BE AS SHOWN IN TABLE 1, UNLESS OTHERWISE NOTED ON THE TRAFFIC CONTROL PLANS.
8. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
9. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
10. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
11. AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION.
12. REPLACE PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS UPON COMPLETION OF WORK.

TABLE 1 FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT ① (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ③		
		W = 12' OR LESS ②	W = GREATER THAN 12' ②		TAPER	TANGENT	WORK AREA
20	250	200	W x 17	35	20	20	10
25	250	200	W x 17	55	25	25	10
30	250	250	W x 20	85	30	30	10
35	250	250	W x 20	120	35	35	10
40	500	350	W x 30	170	40	40	10
45	500	550	W x 45	220	45	45	10
50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

NOTE:

- ① USE ADVISORY SPEEDS WHEN POSTED.
- ② W = WIDTH OF LANE, SHOULDER, OR OFFSET.
- ③ NOT APPLICABLE FOR TWO-LANE HIGHWAYS.



WARREN S. UNEMORI  
LICENSED PROFESSIONAL ENGINEER  
NO. 1569-C  
HAWAII, U.S.A.

*Warren S. Unemori*  
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 15-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

LETTER DESCRIPTION DATE

WARREN S. UNEMORI ENGINEERING, INC.  
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS  
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

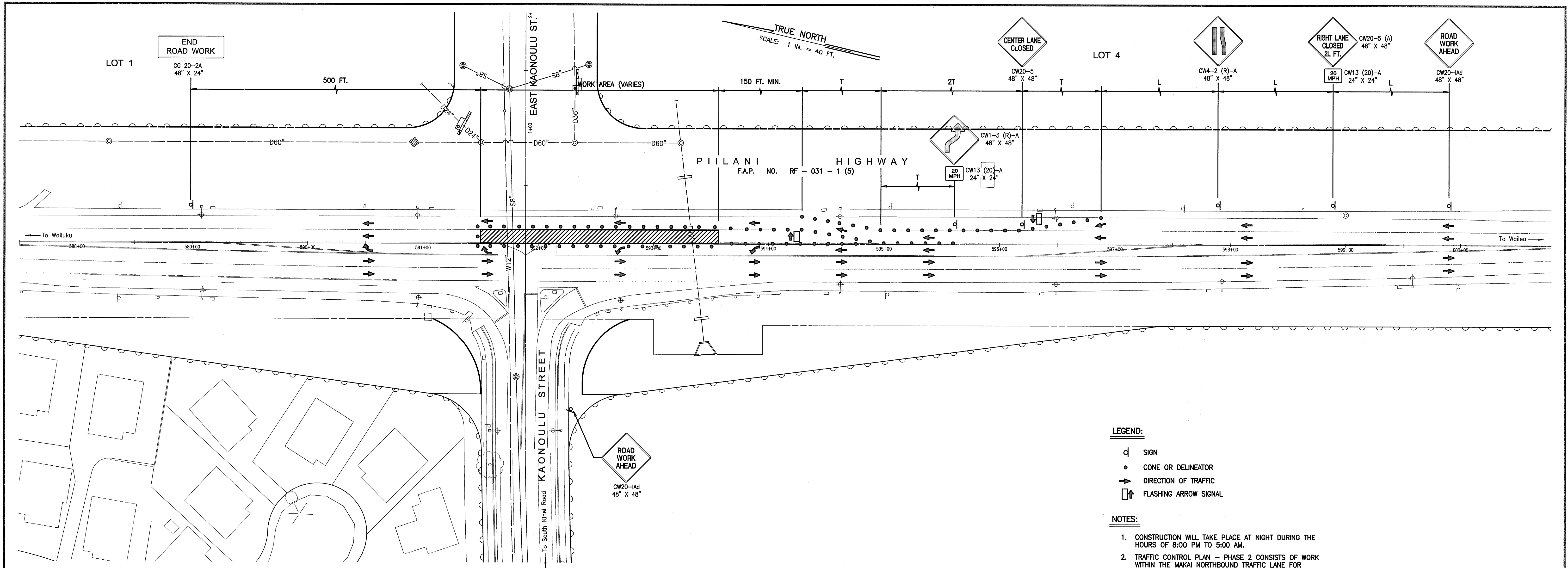
TITLE TRAFFIC CONTROL PLAN – PILI HIGHWAY

ALU DESIGNED BY WSU  
WIS DRAWN BY WSU  
CHECKED BY  
APPROVED BY

04010.10  
JOB NUMBER  
10-10-05  
DATE

14.11  
SHEET  
OF SHEETS

SCALE 1 in. = 40 ft.



# LEGEND:

- d SIGN
- CONE OR DELINEATOR
- ➔ DIRECTION OF TRAFFIC
- ⬆ FLASHING ARROW SIGNAL

# NOTES:

- CONSTRUCTION WILL TAKE PLACE AT NIGHT DURING THE HOURS OF 8:00 PM TO 5:00 AM.
- TRAFFIC CONTROL PLAN - PHASE 2 CONSISTS OF WORK WITHIN THE MAKAI NORTHBOUND TRAFFIC LANE FOR CONSTRUCTION OF THE WATER, SEWER AND DRAINAGE UTILITY CROSSINGS AND PAVEMENT RE-STRIPING.

## TRAFFIC CONTROL PLAN FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY - PHASE 2

### GENERAL NOTES FOR TRAFFIC CONTROL PLAN

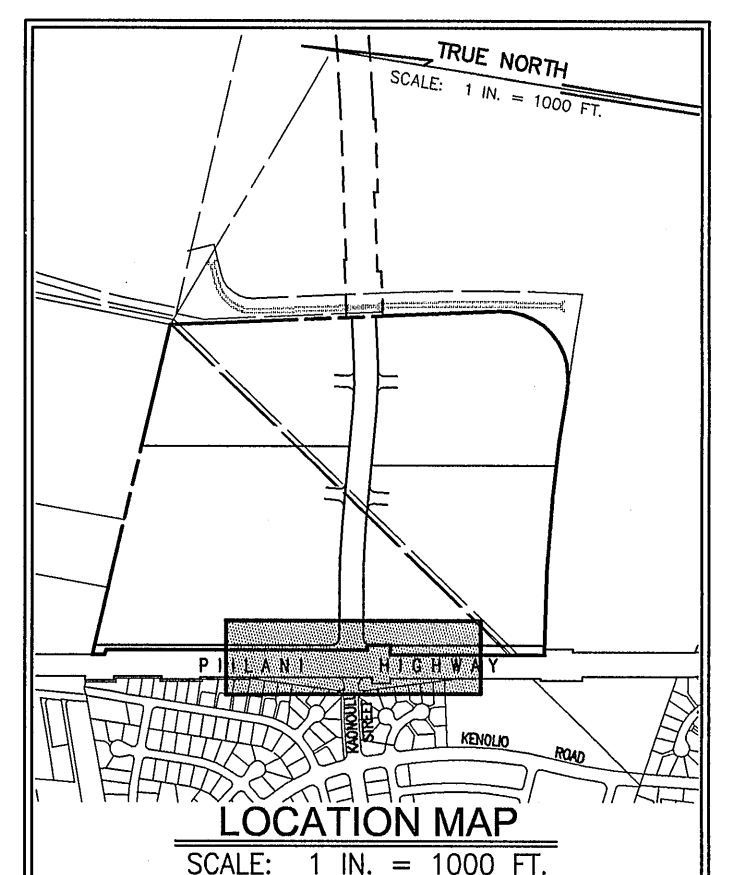
- THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
- CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
- TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
- REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF WORK.
- FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
- WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
- SIGNS SPACING (L), TAPER LENGTHS (T) AND SPACINGS OF CONES OR DELINEATORS SHALL BE AS SHOWN IN TABLE 1, UNLESS OTHERWISE NOTED ON THE TRAFFIC CONTROL PLANS.
- ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
- ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
- THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
- AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION.
- REPLACE PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS UPON COMPLETION OF WORK.

TABLE 1 FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT ① (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ③		
		W = 12' OR LESS ②	W = GREATER THAN 12' ②		TAPER	TANGENT	WORK AREA
20	250	200	W x 17	35	20	20	10
25	250	200	W x 17	55	25	25	10
30	250	250	W x 20	85	30	30	10
35	250	250	W x 20	120	35	35	10
40	500	350	W x 30	170	40	40	10
45	500	550	W x 45	220	45	45	10
50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

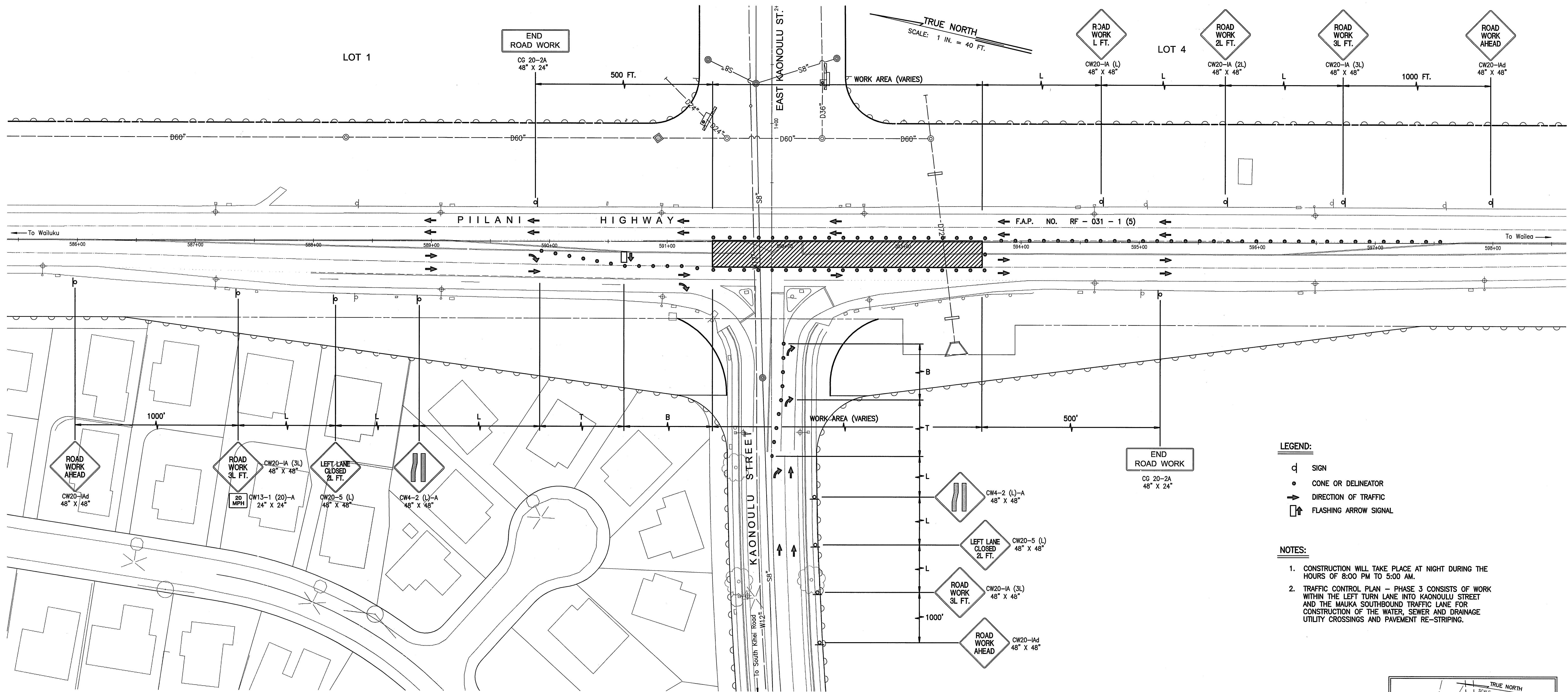
### NOTE:

- USE ADVISORY SPEEDS WHEN POSTED.
- W = WIDTH OF LANE, SHOULDER, OR OFFSET.
- NOT APPLICABLE FOR TWO-LANE HIGHWAYS.



<b>WARREN S. UNEMORI ENGINEERING, INC.</b> CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793		<b>KAONOULU MARKET PLACE</b> T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16 KIHAI, MAUI, HAWAII	
TITLE: TRAFFIC CONTROL PLAN - PILANI HIGHWAY			
DESIGNED BY WSU	CHECKED BY WSU	JOB NUMBER 04010.10	<b>14.12</b> SHEET OF SHEETS
DRAWN BY WIS	APPROVED BY WSU	DATE 10-10-05	
SCALE 1 in. = 40 ft.			





### TRAFFIC CONTROL PLAN FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY - PHASE 3

#### GENERAL NOTES FOR TRAFFIC CONTROL PLAN

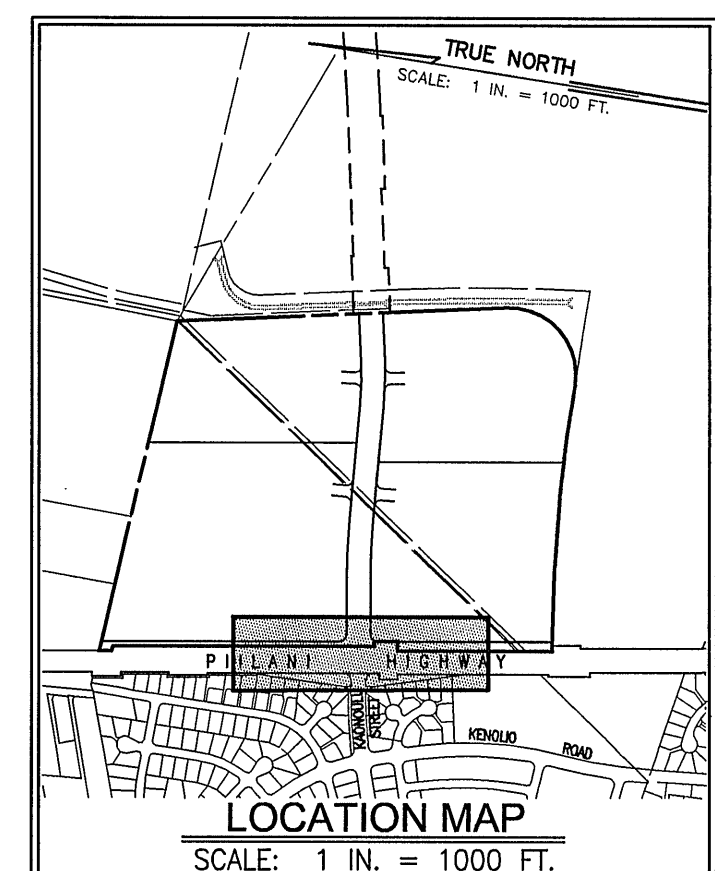
1. THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF WORK.
5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
7. SIGNS SPACING (L), TAPER LENGTHS (T) AND SPACINGS OF CONES OR DELINEATORS SHALL BE AS SHOWN IN TABLE 1, UNLESS OTHERWISE NOTED ON THE TRAFFIC CONTROL PLANS.
8. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
9. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
10. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
11. AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION.
12. REPLACE PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS UPON COMPLETION OF WORK.

TABLE 1 FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT ① (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ③		
		W = 12' OR LESS ②	W = GREATER THAN 12' ②		TAPER	TANGENT	WORK AREA
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25	250	200	W x 17	55	25	25	10
30	250	250	W x 20	85	30	30	10
35	250	250	W x 20	120	35	35	10
40	500	350	W x 30	170	40	40	10
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50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

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**WARREN S. UNEMORI**  
LICENSED PROFESSIONAL ENGINEER  
NO. 1569-C  
HAWAII, U.S.A.

*Warren S. Unemori*  
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.**  
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS  
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

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

TITLE: **TRAFFIC CONTROL PLAN - PIILANI HIGHWAY**

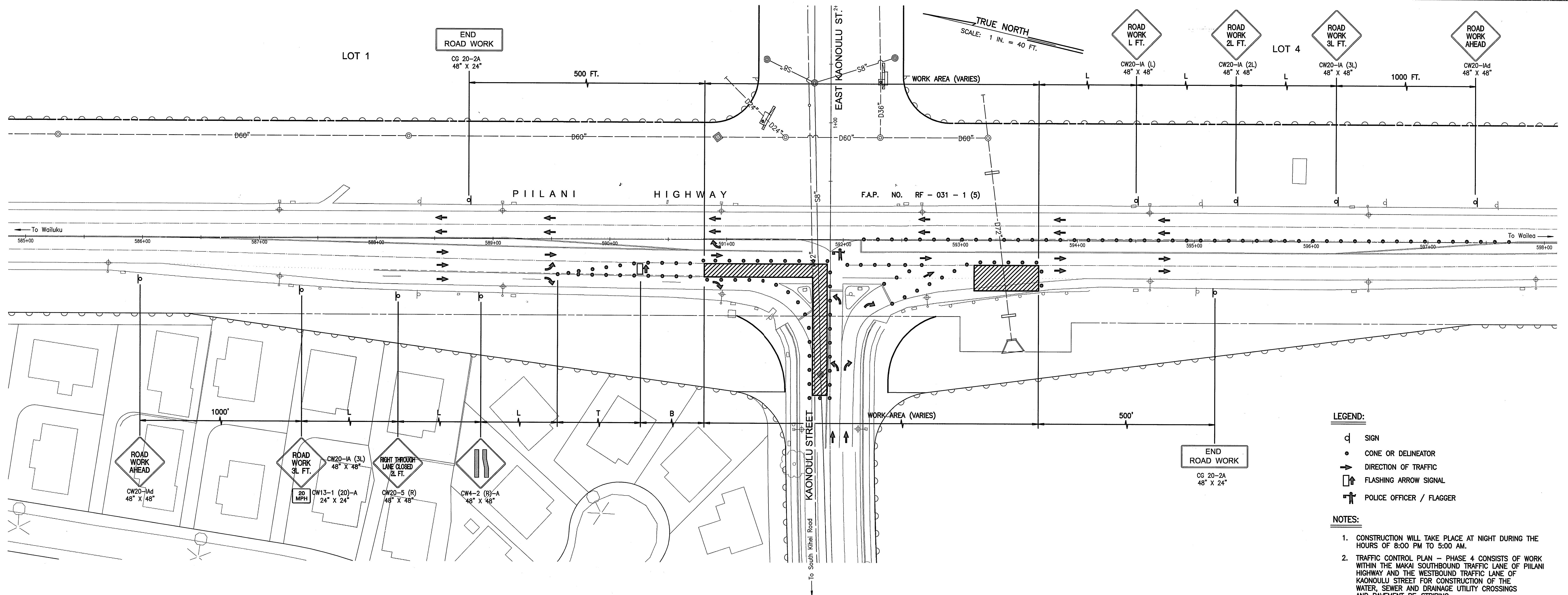
DESIGNED BY	WSU	CHECKED BY	WSU	04010.10
DRAWN BY	WIS	APPROVED BY	WSU	JOB NUMBER
DATE				10-10-05

SCALE 1 in. = 40 ft.

**14.13**

SHEET

OF SHEETS



- LEGEND:**
- ◊ SIGN
  - CONE OR DELINEATOR
  - DIRECTION OF TRAFFIC
  - ⬇ FLASHING ARROW SIGNAL
  - ⚠ POLICE OFFICER / FLAGGER

- NOTES:**
- CONSTRUCTION WILL TAKE PLACE AT NIGHT DURING THE HOURS OF 8:00 PM TO 5:00 AM.
  - TRAFFIC CONTROL PLAN - PHASE 4 CONSISTS OF WORK WITHIN THE MAKAI SOUTHBOUND TRAFFIC LANE OF PILIHI HIGHWAY AND THE WESTBOUND TRAFFIC LANE OF KAONOULU STREET FOR CONSTRUCTION OF THE WATER, SEWER AND DRAINAGE UTILITY CROSSINGS AND PAVEMENT RE-STRIPING.

# TRAFFIC CONTROL PLAN FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY - PHASE 4

## GENERAL NOTES FOR TRAFFIC CONTROL PLAN

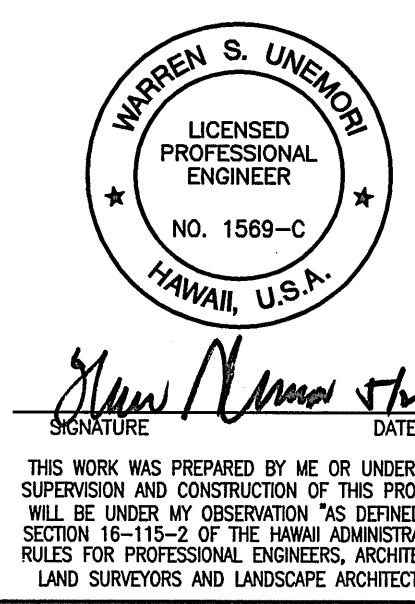
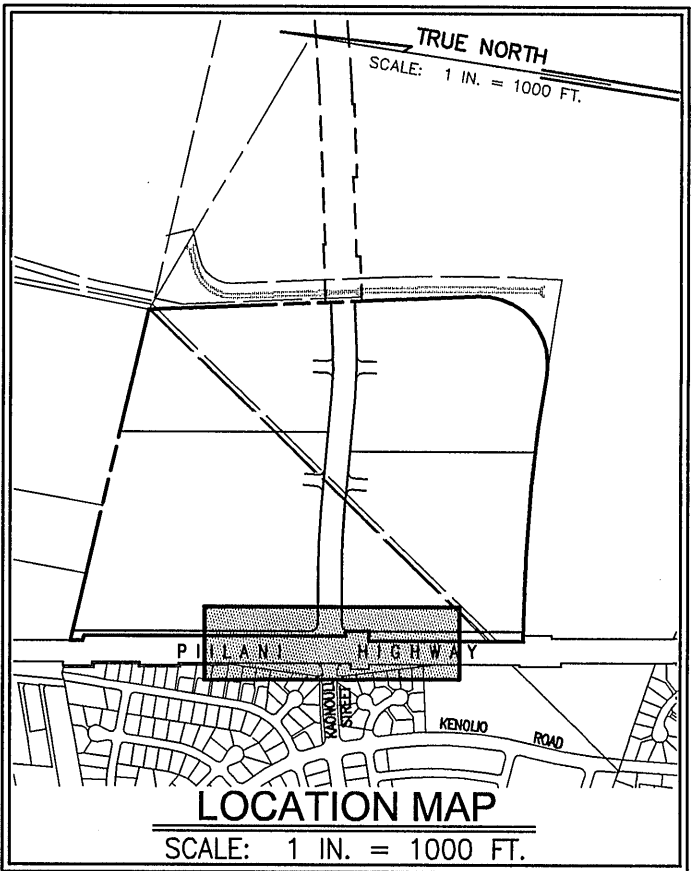
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- CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
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TABLE 1 FOR TRAFFIC CONTROL PLAN

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

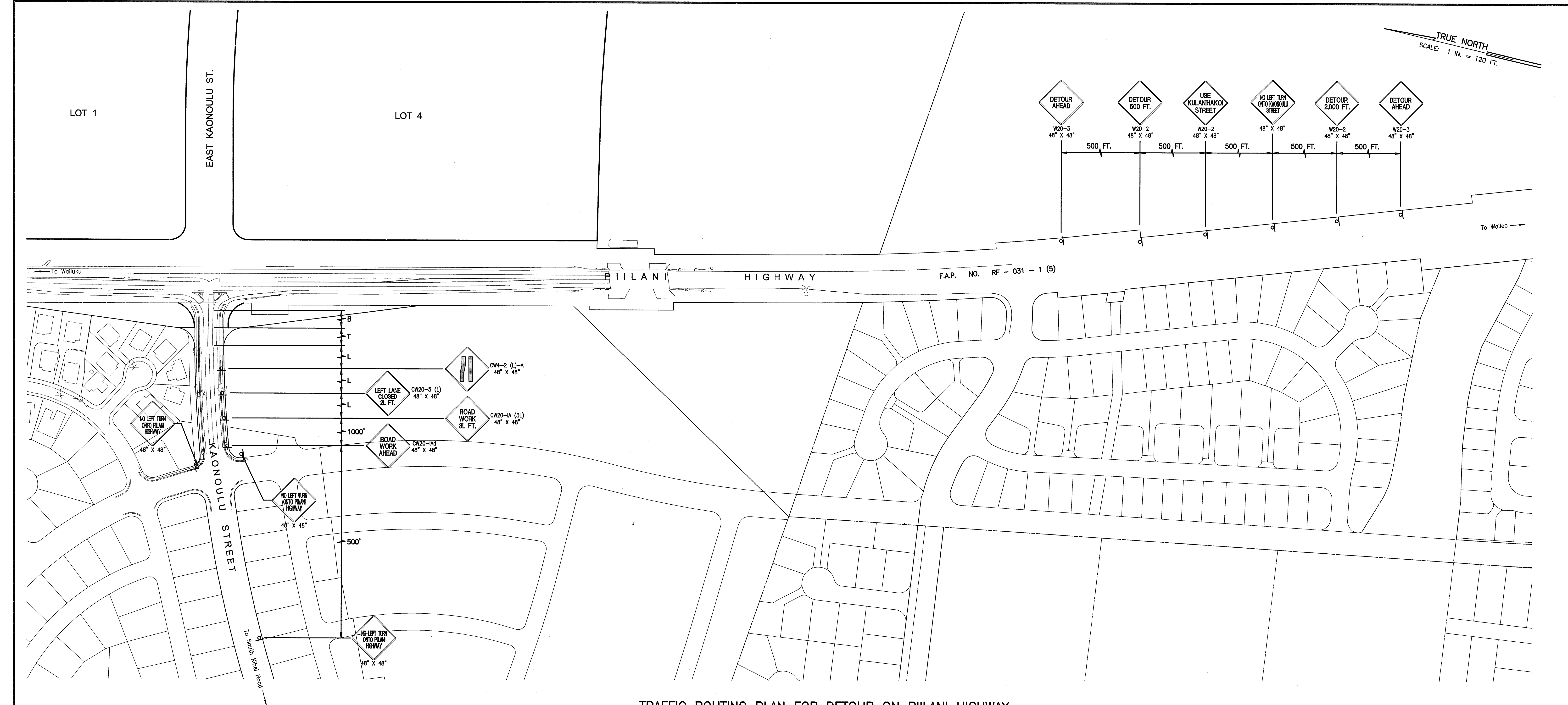
**KAONOULU MARKET PLACE**  
 T.M.K.: (2) 2-2-02 : Por. of Por. 15 and 3-9-01 : 16  
 KIHAI, MAUI, HAWAII

**TITLE: TRAFFIC CONTROL PLAN - PILIHI HIGHWAY**

DESIGNED BY WSU	CHECKED BY WSU	04010.10 JOB NUMBER	14.14 SHEET
DRAWN BY WIS	APPROVED BY WSU	10-10-05 DATE	

SCALE 1 in. = 40 ft.





TRAFFIC ROUTING PLAN FOR DETOUR ON PIIHI HIGHWAY

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

1. THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF WORK.
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TABLE 1 FOR TRAFFIC CONTROL PLAN							
POSTED SPEED LIMIT ① (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ③		
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35	250	250	W x 20	120	35	35	10
40	500	350	W x 30	170	40	40	10
45	500	550	W x 45	220	45	45	10
50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

NOTE:

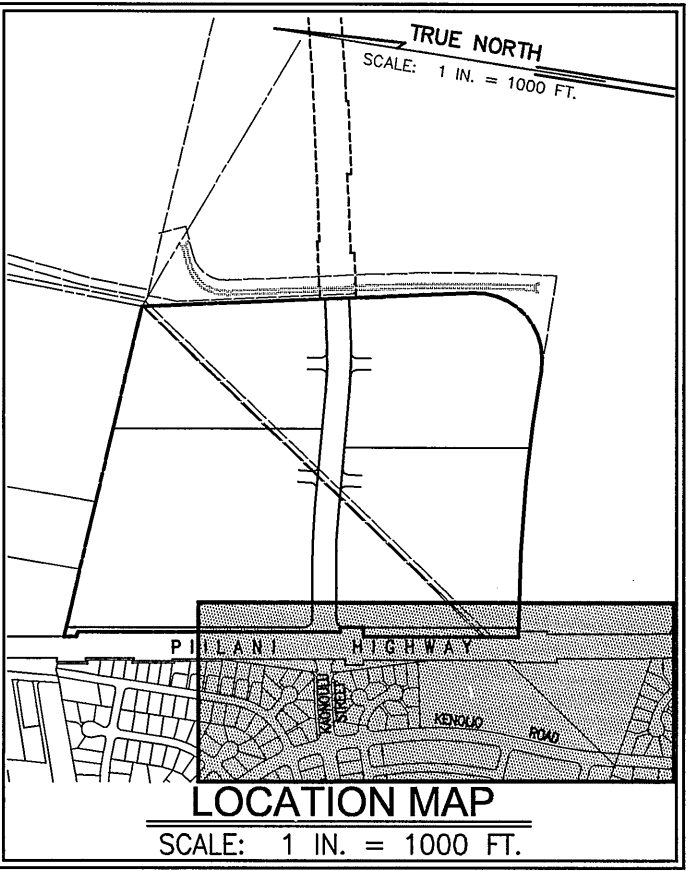
- ① USE ADVISORY SPEEDS WHEN POSTED.
- ② W = WIDTH OF LANE, SHOULDER, OR OFFSET.
- ③ NOT APPLICABLE FOR TWO-LANE HIGHWAYS.

LEGEND:

- SIGN
- CONE OR DELINEATOR
- DIRECTION OF TRAFFIC
- ⬇ FLASHING ARROW SIGNAL

NOTES:

1. CONSTRUCTION WILL TAKE PLACE AT NIGHT DURING THE HOURS OF 8:00 PM TO 5:00 AM.
2. TRAFFIC ROUTING PLAN FOR DETOUR ON PIIHI HIGHWAY WILL BE IMPLEMENTED DURING PHASE 3 AND 4 OF THE TRAFFIC CONTROL PLAN WHEN THERE WILL BE NO LEFT TURN INTO OR OUT OF KAOULOULU STREET AT ITS INTERSECTION WITH PIIHI HIGHWAY.



WARREN S. UNEMORI  
LICENSED PROFESSIONAL ENGINEER  
NO. 1569-C  
HAWAII, U.S.A.

*Warren S. Unemori*  
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.  
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS  
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: TRAFFIC ROUTING PLAN - PIIHI HIGHWAY DETOUR

DESIGNED BY WSU	CHECKED BY WSU	04010.10 JOB NUMBER	14.20 SHEET
DRAWN BY WIS	APPROVED BY WSU	10-10-05 DATE	

SCALE 1 in. = 120 ft.

04010.10/0402004/corplans/traffic-control-00.dwg



CONSTRUCTION NOTES:

PUBLIC WORKS:

- THE CONTRACTOR SHALL OBTAIN THE FOLLOWING PERMITS FROM THE DEVELOPMENT SERVICES ADMINISTRATION (D.S.A.) OF THE DEPARTMENT OF PUBLIC WORKS (D.P.W.), COUNTY OF MAUI, BEFORE ANY WORK IS BEGUN:
  - "WORK TO PERFORM ON COUNTY HIGHWAY PERMIT", TWO (2) WEEKS PRIOR TO COMMENCEMENT OF WORK ON
  - "DRIVEWAY PERMIT", TWENTY-FOUR HOURS PRIOR TO COMMENCEMENT OF WORK ON ANY DRIVEWAY.
  - "GRADING PERMIT", FOUR (4) WEEKS PRIOR TO COMMENCEMENT OF ANY CLEARING AND GRUBBING. A SATISFACTORY DUST AND EROSION CONTROL PLAN AND/OR OUTLINE SHALL BE SUBMITTED BY THE CONTRACTOR.
- EACH PHASE OF ROAD CONSTRUCTION IS TO BE APPROVED BY THE D.P.W., D.S.A., PRIOR TO WORKING ON THE NEXT PHASE OF ROAD CONSTRUCTION.
- COMPACTION REQUIREMENTS: TESTING OF MATERIALS SHALL BE CONDUCTED BY AN APPROVED INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM STANDARD METHODS OR AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, AS FOLLOWS:
  - EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT.
  - AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT.
  - AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT.
  - ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE: THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT.
  - TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.
- CONTRACTOR SHALL SUBMIT ALL TESTING REPORTS INCLUDING RESULTS TO THE COUNTY'S INSPECTION AGENCY FOR REVIEW AND APPROVAL PRIOR TO COUNTY'S ACCEPTANCE OF WORK. THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE COUNTY OF ANY TESTING FAILURES AND CORRECT EACH FAILURE PRIOR TO PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION. NONCOMPLIANCE WILL REQUIRE REMOVAL OF ALL SUBSEQUENT WORK TO CORRECT THE AREA OF FAILURE. ALL COSTS OF TESTING, REMOVAL, AND RECONSTRUCTION, SHALL BE BORNE BY THE CONTRACTOR.
- THE LATEST REVISIONS OF THE STANDARD DETAIL DRAWINGS AND STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.
- THE CONTRACTOR SHALL STRIPE STOP LINES, CROSSWALKS AND OTHER LINES, AS REQUIRED, AND SHALL INSTALL SIGNS IN ACCORDANCE WITH THE LATEST REVISIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, DATED MAY 2003."
- THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY, AND CONVENIENCE OF THE PUBLIC, ALL IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, DATED MAY 2003."
- CONTRACTOR SHALL SUBMIT TO D.P.W., A STRIPING PLAN FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.
- THE DIRECTOR OF PUBLIC WORKS OR THE DIRECTOR OF WATER SUPPLY MAY STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED CONSTRUCTION PLANS OR BE DETRIMENTAL TO THE PUBLIC INTEREST.
- THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE DEVELOPMENT SERVICES ADMINISTRATION FIVE (5) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- RECORD DRAWINGS (ONE (1) TIFF COPY AND SEVEN (7) SETS OF PLANS) ARE TO BE SUBMITTED TO THE DEVELOPMENT SERVICES ADMINISTRATION PRIOR TO FINAL APPROVAL OF THE IMPROVEMENTS AS SHOWN ON THE APPROVED CONSTRUCTION PLANS.
- BENCH MARKS SHALL BE ESTABLISHED AND CERTIFIED BY A REGISTERED SURVEYOR, AND SUBMITTED TO THE DEVELOPMENT SERVICES ADMINISTRATION.
- PURSUANT TO MAUI COUNTY CODE SECTION 3.44.015(C), THE COUNTY OF MAUI IS NOT RESPONSIBLE FOR ANY PARK, ROADWAY, EASEMENT INCLUDING BUT NOT LIMITED TO DRAINAGE, SEWER, ACCESS, RECLAIMED WATER, OR AVIGATION EASEMENT, OR ANY OTHER INTEREST IN REAL PROPERTY SHOWN ON THIS MAP OR SHOWN ON THESE PLANS, UNLESS THE MAUI COUNTY COUNCIL HAS ACCEPTED ITS DEDICATION BY RESOLUTION APPROVED BY A MAJORITY OF COUNCIL'S MEMBERS AT A REGULAR OR SPECIAL MEETING OF THE MAUI COUNTY COUNCIL.

EXISTING UTILITIES:

- THE LOCATION, DEPTH AND TYPE OF THE VARIOUS EXISTING UTILITY LINES SHOWN ON THE CONSTRUCTION PLANS WERE DETERMINED ON THE BASIS OF THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY EXACT LOCATION, DEPTH AND TYPE PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE EXISTING UTILITIES AS SHOWN ON THE CONSTRUCTION PLANS AND IN GROUND, AND NOT PROCEED WITH ANY FURTHER WORK UNTIL WRITTEN NOTIFICATION IS RECEIVED FROM THE ENGINEER.
- ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON PLANS, IF DAMAGED DURING CONSTRUCTION BY THE CONTRACTOR, SHALL BE REPAIRED SOLELY AT HIS EXPENSE.

ENVIRONMENTAL PROTECTION:

- THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE CHIEF ENVIRONMENTALIST SHALL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL KEEP THE PROJECT AREA AND SURROUNDING AREAS FREE FROM DUST NUISANCE, ALL IN ACCORDANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. ALL COSTS SHALL BE BORNE BY THE CONTRACTOR.
- ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS OF THE PUBLIC HEALTH REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND THE COUNTY'S GRADING ORDINANCE.
- ALL CUT AND FILL SLOPES SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED OR WITHIN 14 DAYS OF LAST DISTURBANCE.
- CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT APPROPRIATE SITES. THE CONTRACTOR SHALL INFORM THE ENGINEER OF THE LOCATION OF DISPOSAL SITES. THE DISPOSAL SITE SHALL ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- THE CONTRACTOR SHALL NOT DEMOLISH OR CLEAR ANY STRUCTURE, SITE, OR VACANT LOT WITHOUT FIRST ASCERTAINING THE PRESENCE OR ABSENCE OF RODENTS WHICH MAY ENDANGER THE PUBLIC HEALTH BY DISPERSAL FROM SUCH PREMISES. SHOULD SUCH INSPECTION REVEAL THE PRESENCE OF SUCH RODENTS, THE CONTRACTOR SHALL ERADICATE SUCH RODENTS BEFORE DEMOLISHING OR CLEARING SAID STRUCTURE, SITE OR VACANT LOT.

CLEARING AND GRUBBING:

- NO CLEARING AND GRUBBING MATERIALS SHALL BE DEPOSITED IN COUNTY SANITARY LANDFILLS. CONTRACTOR SHALL MAKE THEIR OWN ARRANGEMENTS FOR SATISFACTORY DEPOSIT OF SAME.

EXISTING GRADES:

- EXISTING GRADES SHALL BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH GRADING WORK. SHOULD ANY DISCREPANCIES BE DISCOVERED IN THE EXISTING GRADES OR DIMENSIONS GIVEN ON THE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER BEFORE PROCEEDING FURTHER WITH ANY WORK, OTHERWISE HE WILL BE HELD RESPONSIBLE FOR ANY COST INVOLVED IN CORRECTION OF CONSTRUCTION PLACED DUE TO SUCH DISCREPANCIES.

PLAN NOTES FOR WATER SYSTEM:

- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER SUPPLY (DWS), IN WRITING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF WORK.
- ALL MATERIALS USED AND METHODS OF CONSTRUCTION OF WATER SYSTEM FACILITIES SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF DWS STANDARDS. CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS OF THE DWS STANDARD DETAILS BEFORE COMMENCING CONSTRUCTION.
- ALL WATER SYSTEM WORK SHALL BE PERFORMED BY CONTRACTORS POSSESSING VALID STATE OF HAWAII CONTRACTOR'S LICENSES, REGARDLESS OF THE VALUE OF THE WORK.
- THE EXACT DEPTH AND LOCATION OF EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES ARE NOT KNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SAME PRIOR TO TRENCHING FOR THE NEW WATERLINE. THE COST OF LOWERING, RELOCATING OR ADJUSTING EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE NEW WATERLINE, UNLESS NOTED OTHERWISE, AND WILL NOT BE PAID FOR SEPARATELY.
- CONCRETE FOR REACTION BLOCKS AND ANCHOR BLOCKS SHALL BE DWS CLASS 2500.
- THE MAXIMUM DISTANCE BETWEEN VALVE AND NUT AND TOP OF VALVE MANHOLE COVER SHALL BE THREE (3) FEET.
- THE CONTRACTOR SHALL SUBMIT A MATERIALS LIST TO DWS FOR APPROVAL PRIOR TO CONSTRUCTION.
- CONNECTION TO DWS SYSTEM:
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL NECESSARY FITTINGS AND OTHER MATERIALS AND EQUIPMENT REQUIRED FOR THE HOOK-UP. HE SHALL VERIFY THE EXACT LOCATION, DEPTH, TYPE, AND CONDITION OF THE EXISTING LINE BEFORE ORDERING MATERIALS FOR THE HOOK-UP. HE SHALL, HOWEVER, CHECK WITH DWS BEFORE EXCAVATING FOR VERIFICATION PURPOSES.
  - WHENEVER FEASIBLE, MECHANICAL JOINT FITTINGS SHALL BE USED FOR BURIED APPLICATIONS, AND FLANGED JOINT FITTINGS SHALL BE USED FOR EXPOSED APPLICATIONS.
  - AUTHORIZED DWS PERSONNEL MAY BE REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY DWS FOR SAID WORK, INCLUDING THE COST OF PRESSURE TESTING AND DISINFECTION.
  - IF THE DWS PROVIDES ONLY INSPECTION AND SUPERVISING OPERATORS, AND DOES NOT PROVIDE PERSONNEL FOR THE ACTUAL CONNECTION, THE CONTRACTOR SHALL PROVIDE ALL PIPEFITTERS AND LABORS TO MAKE THE CONNECTION.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR FOR TRENCH EXCAVATION, BACKFILLING, CLEANING AND CHLORINATION, PAVING, AND OTHER WORK NECESSARY TO COMPLETE THE HOOK-UP, AS DIRECTED BY AND TO THE SATISFACTION OF DWS.
- MINIMUM COVER OVER WATER MAIN, 6" DIAMETER OR LARGER, SHALL BE 3'-0". MINIMUM COVER FOR 4" DIAMETER SHALL BE 2'-6". MINIMUM COVER FOR DIAMETERS LESS THAN 4" SHALL BE 1'-6".
- BOLTS FOR EXPOSED FLANGED DUCTILE IRON PIPE JOINTS SHALL BE EITHER SILICON BRONZE BOLTS AND NUTS OR 316 STAINLESS STEEL BOLTING WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED. T-BOLTS FOR DUCTILE IRON MECHANICAL JOINT (MJ) PIPE AND FITTING CONNECTIONS IN UNDERGROUND SITUATIONS SHALL BE ONE OF THE FOLLOWING SYSTEMS:
  - 316 STAINLESS STEEL T-BOLTS WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED.
  - COR-TEN T-BOLTS AND NUTS WITH HIGH GRADE ZINC SACRIFICIAL ANODES, EQUIVALENT TO "DURATRON" SACRIFICIAL "SAC-NUT" MODULES, INSTALLED ON THE NUTS FOR ALL STANDARD COR-TEN T-BOLTS.
  - COR-TEN T-BOLTS AND NUTS BOTH FACTORY COATED WITH TRIPAC 2000 BLUE COATING SYSTEM BY "TRIPAC FASTENERS".
- ALL BURIED METALS SHALL BE WRAPPED WITH POLY-WRAP. FOR ALL BURIED INSTALLATIONS OF DUCTILE IRON PIPE AND FITTINGS, POLY-WRAP IS REQUIRED EXCEPT WITHIN CONCRETE JACKETS.
- LUBRICATE HYDRANT NOZZLE THREADS WITH NON-TOXIC GREASE.
- THE CONTRACTOR SHALL PAINT AND NUMBER THE FIRE HYDRANT. NUMBERING TO BE FURNISHED BY DWS.
- WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TESTING IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C600, UNDER THE "HYDROSTATIC TESTING" SECTION, TO A PRESSURE OF AT LEAST 1.5 TIMES THE WORKING PRESSURE. UNLESS OTHERWISE STATED IN THE CONSTRUCTION DOCUMENTS OR LIMITED BY THE PRESSURE RATING OF EQUIPMENT, THE PRESSURE TEST AND LEAKAGE TEST SHALL BE PERFORMED AT 225 POUNDS PER SQUARE INCH PRESSURE.
- THE DEVELOPER SHALL SUBMIT A COST LIST ALONG WITH AN AFFIDAVIT FOR THE WATER SYSTEM PRIOR TO ACCEPTANCE.
- THE CONTRACTOR SHALL SUBMIT TWO SETS OF RECORD DRAWINGS VIA A CONSULTANT PRIOR TO ACCEPTANCE OF THE WATER SYSTEM. AN ELECTRONIC IMAGE FILE IN TIF FORMAT SHALL BE PROVIDED TO THE DWS FOR ALL PROJECTS.

PLAN NOTES FOR CHLORINATION OF WATER SYSTEM PIPELINES:

- WATER MAINS AND APPURTENANCES SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. ALL PROCEDURES AND MATERIALS (LIQUID CHLORINE OR CALCIUM HYPOCHLORITE) USED FOR THE CHLORINATION OF THE PROJECT SHALL CONFORM TO AWWA REQUIREMENTS.
- PRIOR TO CHLORINATION, THE PROJECT PIPELINES SHALL BE THOROUGHLY CLEANED. CLEANING OF LINES 8" AND LARGER SHALL BE BY PIGGING USING FOAM PIGS. SMALLER LINES CAN BE FLUSHED IN ACCORDANCE WITH AWWA REQUIREMENTS IF ADEQUATE WATER SUPPLY IS PROVIDED, OTHERWISE BY PIGGING. THE CONTRACTOR SHALL SUBMIT HIS PLAN FOR PIPELINE CLEANING, INCLUDING FITTING REQUIREMENTS FOR PIGGING, FOR APPROVAL PRIOR TO PROCEEDING.
- THE INTERIOR SURFACES OF THE PROJECT SHALL BE EXPOSED TO THE CHLORINATING SOLUTION FOR A MINIMUM OF 24 HOURS AND THE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 10 PPM AFTER SUCH TIME.
- SHOULD CALCIUM HYPOCHLORITE BE USED, NO SOLID AND/OR UNDISSOLVED PORTION OF THE COMPOUND SHALL BE INTRODUCED INTO ANY SECTION OF THE PROJECT TO BE CHLORINATED.
- AT THE END OF THE 24-HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A CHLORINE RESIDUAL OF AT LEAST 10 PPM. MEASUREMENTS FOR CHLORINE RESIDUAL TESTS SHALL BE BY A TRAINED, QUALIFIED TESTER APPROVED BY THE DIRECTOR.
- SHOULD THE RESULTS INDICATE ADEQUATE CHLORINATION, THE PROJECT SHALL BE THOROUGHLY FLUSHED AND FILLED WITH POTABLE WATER FROM THE EXISTING POTABLE WATER SYSTEM AND AGAIN TESTED FOR CHLORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE TEST RESULTS INDICATE THAT THE WATER IN THE PROJECT HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.
- FOLLOWING THE ACCEPTABLE FLUSHING OF THE HIGH CONCENTRATION CHLORINE SOLUTION, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES SHALL BE TAKEN AT LEAST 24 HOURS APART FROM REPRESENTATIVE POINTS IN THE PROJECT AND SUBJECTED TO MICROBIOLOGICAL TESTS PERFORMED BY A CERTIFIED LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH. AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED AND TESTED FROM EVERY 1,200 FEET OF THE NEW WATER MAIN, PLUS ONE SET FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH BRANCH. POSITIVE RESULTS WILL NOT BE ACCEPTABLE AND THE ENTIRE CHLORINATION PROCESS WILL BE REPEATED.
- ANALYSIS FOR RESIDUAL CHLORINE SHALL BE MADE IN ACCORDANCE WITH "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", AMERICAN PUBLIC HEALTH ASSOCIATION, CURRENT EDITION.
- MICROBIOLOGICAL TESTS SHALL BE MADE IN ACCORDANCE WITH "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER", AMERICAN PUBLIC HEALTH ASSOCIATION, CURRENT EDITION.
- THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.

WASTEWATER NOTES:

- ALL WASTEWATER LINES AND APPURTENANCES SHALL CONFORM TO STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984, OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF MAUI.
- ALL SEWERLINE AND APPURTENANCES SHALL FOLLOW THE DESIGN STANDARDS OF THE WASTEWATER RECLAMATION DIVISION, CITY AND COUNTY OF HONOLULU, VOLUMES 1 AND 2, DATED JULY 1993 AND JULY 1984 RESPECTIVELY, UNLESS OTHERWISE NOTED.
- BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL SCHEDULE AND DOCUMENT A PRE-CONSTRUCTION MEETING WITH ALL AGENCIES HAVING UTILITIES AFFECTED BY THE WORK.
- THE DEPARTMENT OF PUBLIC WORKS, WASTEWATER RECLAMATION DIVISION, HAS THE RIGHT TO STOP CONSTRUCTION, SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED PLANS AND SPECIFICATIONS, OR DETRIMENTAL TO THE PUBLIC INTEREST.
- ALL EXISTING WASTEWATER LINES, WHETHER OR NOT SHOWN ON THE PLANS, IF DAMAGED DURING CONSTRUCTION, SHALL BE REPAIRED BY THE CONTRACTOR AND THE CONTRACTOR SHALL PAY ALL EXPENSES.
- THE CONTRACTOR SHALL NOTIFY THE WASTEWATER RECLAMATION DIVISION ONE (1) WEEK PRIOR TO CONNECTION TO ANY EXISTING WASTEWATER LINES.
- SHOULD THE CONTRACTOR EXCAVATE BEYOND THE TRENCH PAY-WIDTH, AS SPECIFIED IN THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984, AND SUCH ACTION RESULTS IN A GREATER LOAD TO THE PIPE, THE CONTRACTOR SHALL PROVIDE, AT THE CONTRACTOR'S EXPENSE, A HIGHER CLASS OF BEDDING MATERIAL THAT WILL WITHSTAND THE ADDED LOAD.
- WASTEWATER LATERALS SHALL BE SIX (6) INCHES IN DIAMETER AT A MINIMUM OF 1% SLOPE, UNLESS APPROVED OTHERWISE.
- AN ADVANCE RISER CONNECTION SHALL BE INSTALLED AT EACH NEW WASTEWATER LATERAL.
- WHERE THE CLEARANCE BETWEEN A WASTEWATER LINE AND A NEW OR EXISTING UTILITY LINE IS EIGHTEEN (18) INCHES OR LESS, THE WASTEWATER LINE SHALL BE CONCRETE JACKED IN ACCORDANCE WITH THE STANDARD DETAILS OF PUBLIC WORKS CONSTRUCTION, DATED SEPTEMBER 1984.
- WHEN THE WASTEWATER MAINS ARE OF A DIFFERENT MATERIAL THAN THE LATERALS, THE CONTRACTOR SHALL INSTALL APPROVED ADAPTERS.
- ALL BACKFILL FOR WASTEWATER TRENCHES SHALL BE COMPACTED IN ONE (1) FOOT LIFTS TO A MINIMUM OF 95% OF ITS MAXIMUM DENSITY.
- WHERE CONSTRUCTION IS TO BE DONE IN PHASES OR INCREMENTS, EACH PHASE OR INCREMENT SHALL BE APPROVED BY WASTEWATER RECLAMATION DIVISION BEFORE THE NEXT PHASE OR INCREMENT IS STARTED.
- ALL WASTEWATER MAINS SHALL PASS A MANHOLE TEST AS A CONDITION OF ACCEPTANCE 30 DAYS AFTER COMPLETION AND BACKFILL. THE MANHOLE DIAMETER SHALL BE 95% OR MORE OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. A CERTIFICATION LETTER FROM THE CONTRACTOR, SIGNED BY THE LUCA INSPECTOR, WILL BE FORWARDED TO THE WASTEWATER RECLAMATION DIVISION.
- PRIOR TO FINAL ACCEPTANCE, ALL WASTEWATER LINES INSTALLED SHALL BE FLUSHED WITH WATER AND ANY ACCUMULATED CONSTRUCTION DEBRIS AND OTHER FOREIGN MATERIALS SHALL BE REMOVED.
- "AS-BUILT" DRAWINGS SHALL BE SUBMITTED AS A CONDITION FOR THE FINAL ACCEPTANCE OF THE PROJECT. IF MAIN TRANSMISSION LINES WILL BE DEDICATED TO THE COUNTY, THE CONTRACTOR SHALL SUBMIT AN AUTOCAD RELEASE 14 DRAWING FILE TO THE WASTEWATER RECLAMATION DIVISION.
- ALL MAIN WASTEWATER LINES WHICH WILL BE DEDICATED TO THE COUNTY OF MAUI SHALL BE INSPECTED BY CLOSED CIRCUIT TELEVISION (CCTV) IN STRICT ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS CCTV POLICY, EFFECTIVE DATE NOVEMBER 1, 1996. FINAL ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON THE PASSING OF ALL REQUIREMENTS OF THIS POLICY.
- ANY CONNECTION MADE UNDER THE WATER TABLE WILL REQUIRE CCTV AT HIGH TIDE TO DETERMINE WATER TIGHTNESS, IN ACCORDANCE WITH DEPARTMENT OF PUBLIC WORKS CCTV POLICY, EFFECTIVE DATE NOVEMBER 15, 1996. FINAL ACCEPTANCE OF THE SYSTEM SHALL BE CONTINGENT UPON THE PASSING OF ALL REQUIREMENTS OF THIS POLICY.
- CONTRACTOR MUST HAVE A SITE SPECIFIC SPILL PREVENTION PLAN (SSSPP) APPROVED BY WWRD PRIOR TO SEWERLINE CONSTRUCTION AND CONNECTION TO EXISTING FACILITIES.

EROSION CONTROL:

THE FOLLOWING MEASURES SHALL BE TAKEN TO CONTROL EROSION DURING THE SITE DEVELOPMENT PERIOD:

- MINIMIZE TIME OF CONSTRUCTION.
- RETAIN EXISTING GROUND COVER UNTIL LATEST DATE TO COMPLETE CONSTRUCTION.
- EARLY CONSTRUCTION OF DRAINAGE CONTROL FEATURES.
- USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.
- STATION WATER TRUCK ON SITE DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION ZONES (WEEKENDS AND HOLIDAYS INCLUDED).
- USE TEMPORARY BERMS AND CUT-OFF DITCHES, WHERE NEEDED, FOR CONTROL OF EROSION.
- GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND ON WEEKENDS.
- ALL CUT AND FILL SLOPES SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED.

EARTHWORK:

DISTANCE FROM TOP OF CUT OR BOTTOM OF FILL TO PROPERTY LINE:

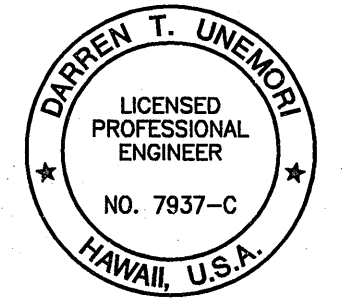
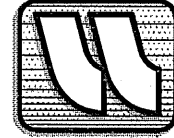
HEIGHT OF CUT OR FILL      DISTANCE FROM PROPERTY LINE

0' TO 2':	1'
MORE THAN 2' TO 4':	2'
MORE THAN 4' TO 6':	3'
MORE THAN 6' TO 10':	4'
MORE THAN 10' TO 15':	5'
MORE THAN 15':	8'

NOTE:

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.

LETTER	DESCRIPTION	DATE

				WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793	
KAONOLU MARKET PLACE					
T.M.K.: (2) 2-2-02 : Por. of Par. 15 and 3-9-01 : 16 KIHEI, MAUI, HAWAII					
TITLE CONSTRUCTION NOTES					
DESIGNED BY		CHECKED BY		04010.10	
WIS		DTU		JOB NUMBER	
DRAWN BY		APPROVED BY		10-10-05	
SCALE		AS NOTED		DATE	
				15.01	
				SHEET	
				OF SHEETS	