

TAI

# The Reinforced Earth Company

8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

## GENERAL NOTES

### DESIGN CRITERIA

- DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE REINFORCED EARTH VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED MATERIALS SHALL CONFORM TO THE CONTRACTING AGENCY'S TECHNICAL SPECIFICATIONS FOR REINFORCED EARTH WALLS.
  - SOILS CHARACTERISTICS ASSUMED FOR DESIGN:  
SELECT GRANULAR BACKFILL (4" MINUS GRANULAR FILL)  
 $\phi = 34$  degrees,  $c = 0$  p.s.f.,  $\gamma = 100$  p.c.f.  
RANDOM BACKFILL  
 $\phi = 34$  degrees,  $c = 0$  p.s.f.,  $\gamma = 100$  p.c.f.  
FOUNDATION MATERIAL  
 $\phi = 30$  degrees,  $c = 0$  p.s.f.
  - THE MAXIMUM APPLIED BEARING PRESSURE AT THE FOUNDATION LEVEL IS AS SHOWN ON THE WALL ELEVATIONS FOR EACH DESIGN CASE. IT IS THE RESPONSIBILITY OF THE OWNER TO DETERMINE THAT THIS APPLIED BEARING PRESSURE IS ALLOWABLE FOR THAT LOCATION.
  - ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED EARTH VOLUME, AS DETERMINED BY THE ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL OR OTHERWISE STABILIZED AS DIRECTED BY THE ENGINEER.
  - REINFORCING STRIPS FOR REINFORCED EARTH WALLS SHALL BE 50mm WIDE AND 4mm & 5mm THICK, AND SHALL CONFORM TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-572 GRADE 65, TYPE 3 GALVANIZATION SHALL BE APPLIED IN ACCORDANCE WITH ASTM A-123. TIE STRIPS SHALL BE STEEL ASTM A570 GRADE 50 GALVANIZED PER ASTM A-123.
- ### WALL CONSTRUCTION
- STATIONS SHOWN ARE ALONG BASE LINE.
  - REINFORCED EARTH WALLS IN CURVES WILL FORM A SERIES OF SHORT CHORDS OF 4.92' EACH TO MATCH DESIRED WALL ALIGNMENT.
  - FOR LOCATION OF REINFORCED EARTH WALLS, SEE SHEET 2 AND CONTRACT DRAWINGS.
  - IF MANHOLES AND DROP INLETS ARE PRESENT, THEY SHALL BE LOCATED AS SHOWN ON WALL ELEVATIONS.
  - IF PILES ARE LOCATED WITHIN THE REINFORCED EARTH VOLUME, THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE REINFORCED EARTH WALL UNLESS A METHOD TO PROTECT THE STRUCTURE, WHICH IS ACCEPTABLE TO THE ENGINEER AND THE REINFORCED EARTH COMPANY, AND IS PROPOSED AND APPROVED IN WRITING.
  - BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR REINFORCED EARTH WALLS TO A LEVEL OF 2" ( $\pm$ ) ABOVE THE TIE STRIPS EMBEDDED IN THE PANELS. INSTALLATION OF REINFORCING STRIPS SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL MATERIAL HAS REACHED THE REQUIRED LEVEL.

### WALL CONSTRUCTION (CONT.)

- COMPACTION AND OPERATION EQUIPMENT SHALL BE KEPT A MINIMUM DISTANCE OF 3'-0" FROM THE BACK FACE OF THE REINFORCED EARTH PANELS. COMPACTION WITHIN 3'-0" OF THE REINFORCED EARTH PANELS SHALL BE ACHIEVED WITH AT LEAST THREE (3) PASSES OF A LIGHTWEIGHT MECHANICAL TAMPER, ROLLER OR VIBRATORY SYSTEM. NO COMPACTION DENSITY TESTS SHALL BE TAKEN WITHIN THE 3 FT. ZONE.
- THE FINISHED GRADE IN FRONT OF THE WALL SHALL NOT BE PLACED AND COMPACTED UNTIL TWO COURSES OF PANELS HAVE BEEN PLACED AND PRIOR TO THE WALL REACHING A HEIGHT OF 20 FEET AS DIRECTED BY THE ENGINEER. FINISHED GRADE BACKFILL SHALL BE COMPACTED TO 95% OF ASTM D-1557, METHODS 'C' OR 'D', UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF ANY GUARDRAIL POSTS BEHIND THE REINFORCED EARTH PANELS. PRIOR TO PLACEMENT OF THE TOP LAYER OF REINFORCING STRIPS, INDIVIDUAL STRIPS MAY BE SKEWED TO AVOID THE POST LOCATIONS IF AUTHORIZED BY THE REINFORCED EARTH COMPANY. ANY DAMAGE DONE TO THE REINFORCING STRIPS DUE TO THE INSTALLATION OF THE GUARDRAIL SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. (SEE DETAILS SHEET 4)
- IF EXISTING OR FUTURE STRUCTURES, PIPES, FOUNDATIONS OR GUARDRAIL POSTS WHICH ARE WITHIN THE REINFORCED EARTH VOLUME INTERFERE WITH THE NORMAL PLACEMENT OF REINFORCING STRIPS AND SPECIFIC DIRECTION HAS NOT BEEN PROVIDED ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE REINFORCED EARTH COMPANY TO DETERMINE WHAT COURSE OF ACTION SHOULD BE TAKEN.
- ALL DETAILING AND CHECKING OF REINFORCING STEEL FOR ANY C.I.P. CONCRETE WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.
- TOP PANELS BENEATH CAST-IN-PLACE COPING SHALL HAVE #4 DOWELS PROTRUDING FROM THEIR TOP EDGE.
- FOR OTHER INFORMATION PERTAINING TO WALL CONSTRUCTION PLEASE REFER TO THE REINFORCED EARTH CONSTRUCTION MANUAL.
- THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER REINFORCING STRIPS DOWNWARD TO AVOID CONFLICTS WITH PAVING AND SUBGRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO SITUATIONS WHERE ROADWAY SUPERELEVATION AND/OR SOIL MIXING ARE ANTICIPATED.
- THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER DRAINAGE IN THE VICINITY OF THE WALL DURING CONSTRUCTION. STORM WATER RUNOFF IS TO BE COLLECTED AND DISCHARGED AWAY FROM THE WALL AND REINFORCED BACKFILL.

### MATERIALS NOTES

#### 21. NOMINAL STRIP LENGTHS

THE REINFORCING STRIP LENGTHS SHOWN ON THE PLANS, MEASURED FROM BACK FACE OF PANEL, ARE THE NOMINAL LENGTHS REQUIRED BY CALCULATION. THE ACTUAL FABRICATED STRIP LENGTHS ARE OFTEN LONGER (UP TO 6") DUE TO MANUFACTURING TOLERANCES. THE REQUIRED HORIZONTAL LIMIT OF GRANULAR BACKFILL IS EQUAL TO THE NOMINAL STRIP LENGTH. ADDITIONAL GRANULAR BACKFILL BEYOND THE NOMINAL STRIP LENGTH IS NOT REQUIRED BY CALCULATION.

#### 22. SELECT BACKFILL QUANTITY

THE SELECT BACKFILL QUANTITY INDICATED BY THE REINFORCED EARTH COMPANY IS CALCULATED BY MULTIPLYING THE NOMINAL STRIP LENGTHS SHOWN ON THE PLANS (PLUS 0 FT.) BY THEIR TRIBUTARY WALL SURFACE AREA AND CONVERTING THE RESULT TO A NEATLINE CUBIC YARD QUANTITY. THIS INFORMATION IS FURNISHED FOR THE CONTRACTOR'S INFORMATION ONLY AND IS NOT INTENDED TO REPRESENT THE ACTUAL QUANTITIES REQUIRED TO COMPLETE THE WORK. THE CONTRACTOR MUST CALCULATE HIS OWN EXCAVATION AND BACKFILL QUANTITIES BASED UPON THE SPECIFIC CONDITIONS OF THE PROJECT.

#### 23. PANEL FINISH

THE PRECAST PANELS FOR THIS PROJECT SHALL HAVE A BUSHHAMMER (RECO RE13 LINER) FINISH UNLESS OTHERWISE SPECIFIED.

#### 24. NOTE TO CONTRACTORS

ONLY THE FOLLOWING MATERIALS ARE SUPPLIED BY THE REINFORCED EARTH COMPANY:  
- ANGLE IRONS  
- PRECAST CONCRETE FACING PANELS  
- REINFORCING STRIPS  
- BOLT SETS (FOR ATTACHING PANELS TO THE REINFORCING STRIPS)  
- BEARING BLOCKS  
- RUBBER SHIMS  
- FILTER CLOTH AND ADHESIVE (FOR PANEL JOINTS ONLY)  
- #14 DYWIDAG BARS AND INSPECTION STRIPS

ANY OTHER MATERIALS CALLED FOR IN THE CONTRACT PLANS OR SPECIFICATIONS ARE TO BE SUPPLIED BY THE CONTRACTOR. ANY JOINT MATERIALS SHOWN AT THE INTERFACE OF PRECAST PANELS AND CAST-IN-PLACE CONCRETE STRUCTURES ARE TO BE SUPPLIED BY THE ERECTION CONTRACTOR. ALL SANDBLASTING, PAINTING, SEALERS OR OTHER SPECIAL APPLIED COATINGS ARE ALSO SUPPLIED/INSTALLED BY THE CONTRACTOR IN THE FIELD FOLLOWING PANEL ERECTION.

- THE REINFORCED EARTH COMPANY SUPPLIES PRECAST CONCRETE FACING PANELS AND ACCESSORIES TO BE USED IN CONJUNCTION WITH OTHER MATERIALS IN THE CONSTRUCTION OF THE REINFORCED EARTH® RETAINING WALLS DETAILED HEREIN. THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL FURNISHED BY THE REINFORCED EARTH COMPANY IS INTENDED TO PROVIDE A GENERAL EXPLANATION OF THE SYSTEM. IT IS THE CONTRACTOR'S OBLIGATION TO DEVISE AND EXECUTE A PROJECT SPECIFIC ERECTION SEQUENCE, PANEL UNLOADING, HANDLING AND BRACING SYSTEM, AND FALL PROTECTION SYSTEM. THE BRACING SYSTEM SHOWN IN THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL IS GENERAL IN NATURE AND DOES NOT ACCOUNT FOR PROJECT SPECIFIC CRITERIA. COMPLIANCE WITH THE GUIDELINES IN THIS MANUAL DOES NOT RELIEVE THE CONTRACTOR OF ITS RESPONSIBILITY TO ADHERE TO THE PROJECT PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS OR COMPLIANCE WITH ALL FALL PROTECTION, SAFETY, LAWS, STANDARDS AND PROCEDURES AT THE JOBSITE. CONTRACTORS SHOULD TAKE SPECIAL PRECAUTIONS TO PREVENT THE PANELS FROM SHIFTING OR FALLING DURING THE ERECTION PROCESS.

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CERTIFIED WITH  
RESPECT TO THE  
INTERNAL STABILITY  
OF REINFORCED EARTH  
STRUCTURES ONLY



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

PROJ. NO. 50E-01-98

PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	1 OF 9
DRAWING COVERS	GENERAL NOTES	SCALE	AS NOTED

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The design contained on these drawings is based on information provided by the owner. On the basis of this information, The Reinforced Earth Company has designed, and is responsible for the internal stability of the structure only. External stability, including foundation and slope stability, is the responsibility of the owner.



TAI

The Reinforced Earth Company

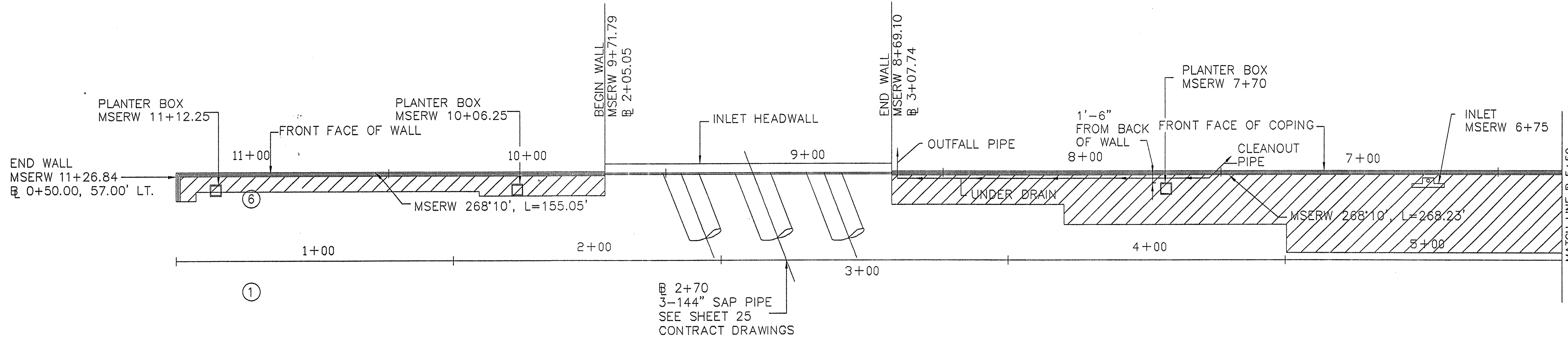
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

"REINFORCED EARTH" is the registered trademark of  
The Reinforced Earth Company.

DESIGNED BY:	3	3/30/99	AS PER COMMENTS
PROJECT ENGR:	2	3/10/99	SHEETS 3-6
CHECKED BY:	1	2/8/99	SHEETS 2-5 AND SHEET 7
ENG. MANAGER	REV.	DATE	DESCRIPTION

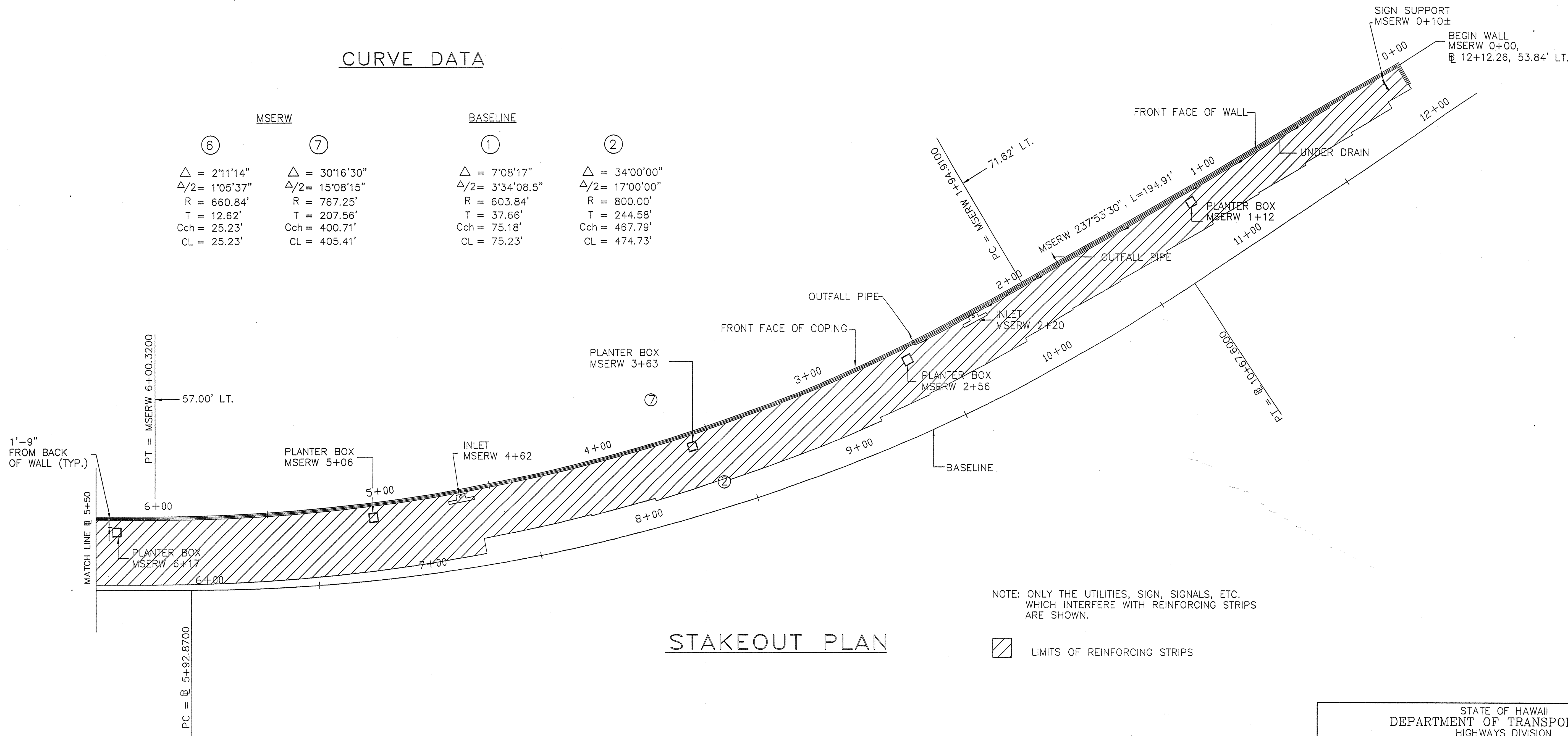
RE 7107 / BASE





# CURVE DATA

MSERW	BASELINE
⑥	①
⑦	②
$\Delta = 2^{\circ}11'14"$ $\Delta/2 = 1^{\circ}05'37"$ $R = 660.84'$ $T = 12.62'$ $Cch = 25.23'$ $CL = 25.23'$	$\Delta = 7^{\circ}08'17"$ $\Delta/2 = 3^{\circ}34'08.5"$ $R = 603.84'$ $T = 37.66'$ $Cch = 75.18'$ $CL = 75.23'$
$\Delta = 30^{\circ}16'30"$ $\Delta/2 = 15^{\circ}08'15"$ $R = 767.25'$ $T = 207.56'$ $Cch = 400.71'$ $CL = 405.41'$	$\Delta = 34^{\circ}00'00"$ $\Delta/2 = 17^{\circ}00'00"$ $R = 800.00'$ $T = 244.58'$ $Cch = 467.79'$ $CL = 474.73'$

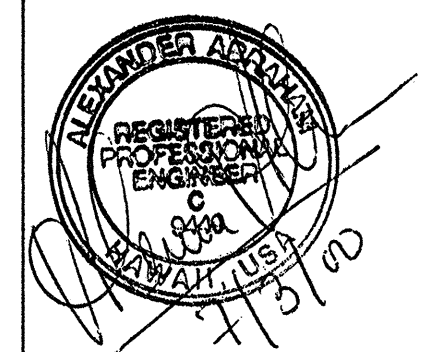


# STAKEOUT PLAN

NOTE: ONLY THE UTILITIES, SIGN, SIGNALS, ETC. WHICH INTERFERE WITH REINFORCING STRIPS ARE SHOWN.

LIMITS OF REINFORCING STRIPS

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
PROJ. NO. 50E-01-98

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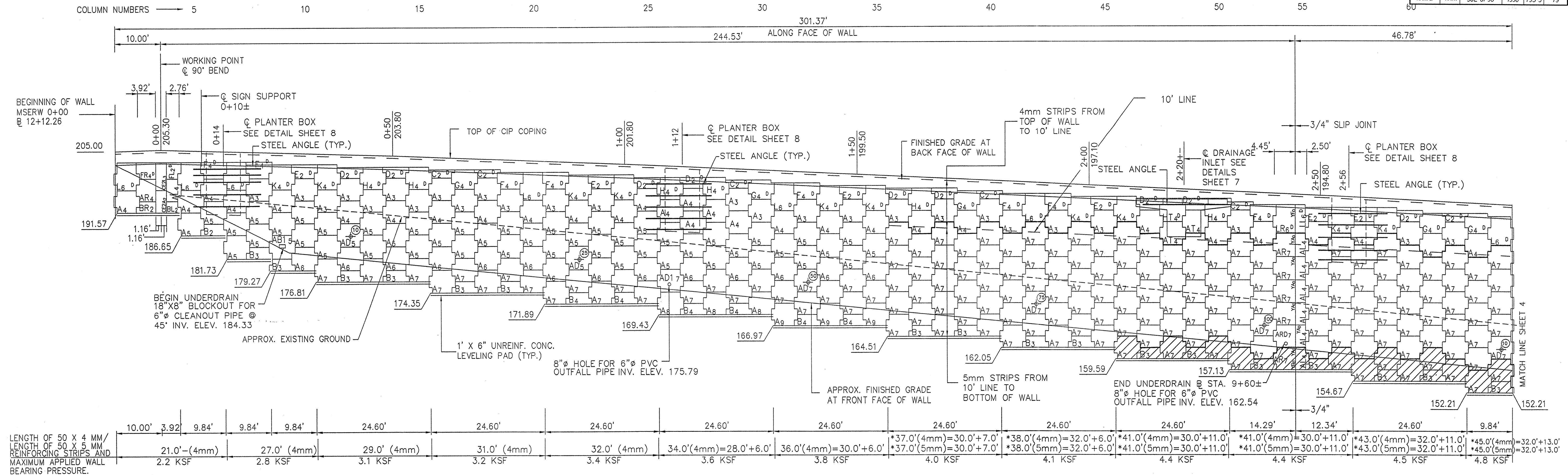
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**The Reinforced Earth Company**  
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175  
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DESIGNED BY:	3	8/3/99	ADDITIONAL PLANTER BOX
PROJECT ENGR:	2	3/30/99	AS PER COMMENTS
CHECKED BY:	1	2/8/99	ADDED WALL OFFSETS TO BASELINE
ENG. MANAGER	REV.	DATE	DESCRIPTION

PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	2 OF 9
DRAWING COVERS	STAKEOUT PLAN	SCALE	AS NOTED





## ELEVATION - FRONT FACE - MSRW

SCALE: 1" = 10'

### NOTES

- DESIGNED LENGTHS OF WALL LEVELLING PADS SHOWN ARE BASED ON INDIVIDUAL PANEL WIDTHS, MEASURED ALONG CENTERLINES OF ALIGNMENT PINS AND/OR CUT EDGES. REFER TO THE LEVELLING PAD STEP DETAIL TO DETERMINE THE REQUIRED LEVELLING PAD LENGTHS AND EXACT STEP LOCATIONS.
- DUE TO THE FACT THAT OUR PANEL ALIGNMENT CONFIGURATION ALLOWS FOR 3/4" OPEN JOINT, (SEE STANDARD PANEL DETAILS ON SHEET 9 OF 9) AROUND EACH PANEL A DRAIN HOLE WITH IN THE PANEL IS NOT REQUIRED.
- SEE SHEET 4 FOR OUTFALL AND CLEANOUT DETAILS
- \* PLACE 4mm STRIPS FROM TOP OF WALL TO 10' BELOW FINISHED GRADE AT TOP OF WALL. PLACE 5mm STRIPS BELOW 10' LINE TO BOTTOM OF WALL

### KEY TO DESIGN PANEL MARKING

AL4  
PANEL TYPE  
NO. OF REINFORCING STRIPS  
MODIFICATION (ONE OR MORE)

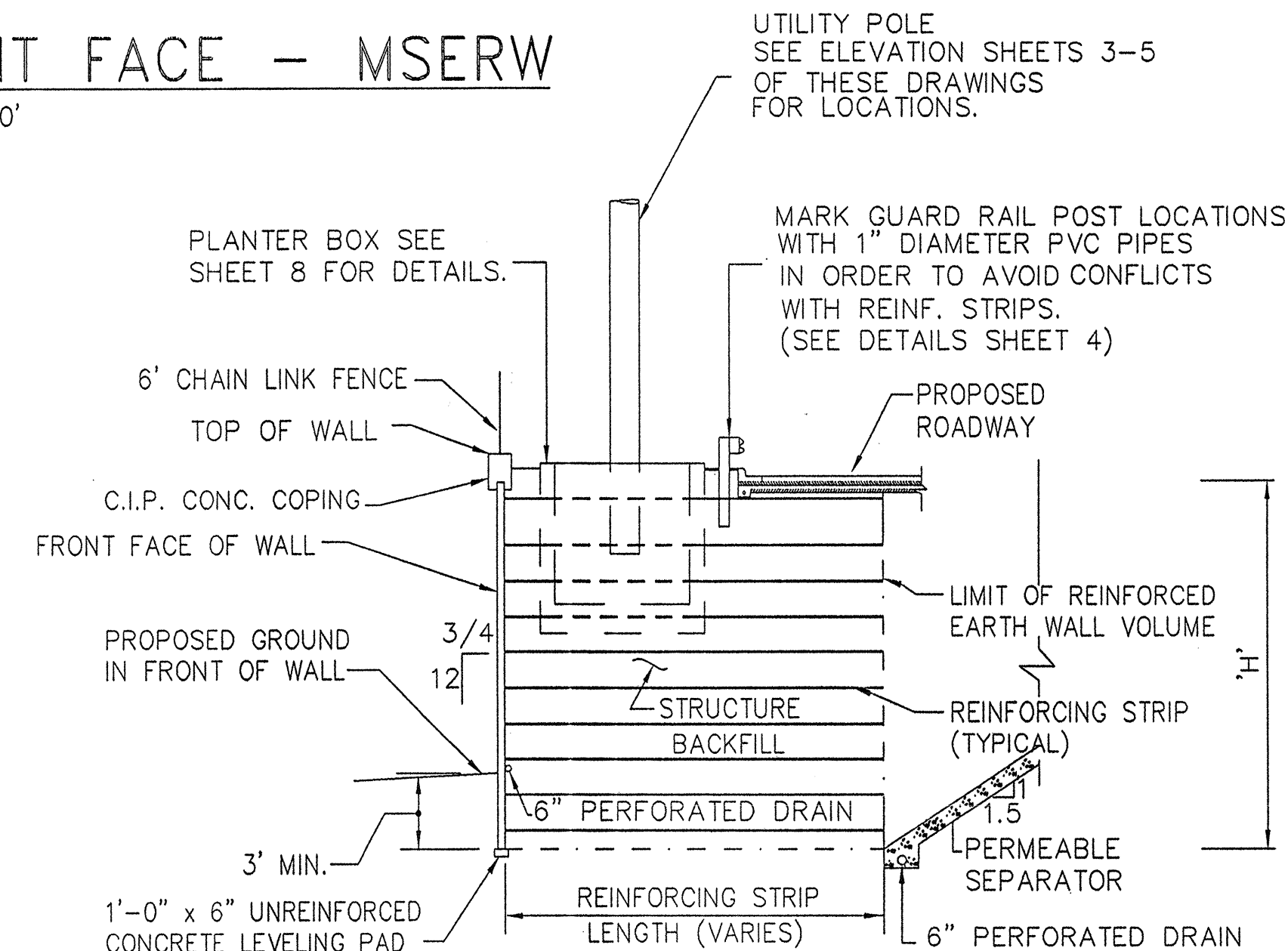
### KEY TO PRECAST PANEL MARKING

AL-4-R4-4.45'  
PANEL TYPE  
MODIFICATION (ONE OR MORE)  
PANEL WIDTH  
PANEL REINFORCEMENT TYPE  
NO. OF REINFORCING STRIPS

(25) -INDICATES LOCATION OF INSPECTION STRIP (SEE DETAIL SHEET 7).

INDICATES R4 PANEL REINFORCEMENT  
INDICATES R6 PANEL REINFORCEMENT

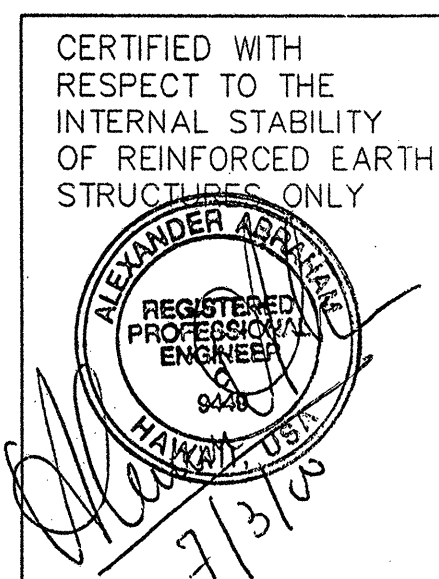
ALL A<sub>3</sub> PANELS REQUIRE R5 PANEL REINFORCEMENT



## TYPICAL WALL SECTION

SCALE: NONE

NOTE:  
UNDERDRAIN NOT NEEDED FROM WALL STA. 2+50 TO 7+50 @ STA. 4+25 TO 9+60, AS STATED IN FOUNDATIONS REPORT.



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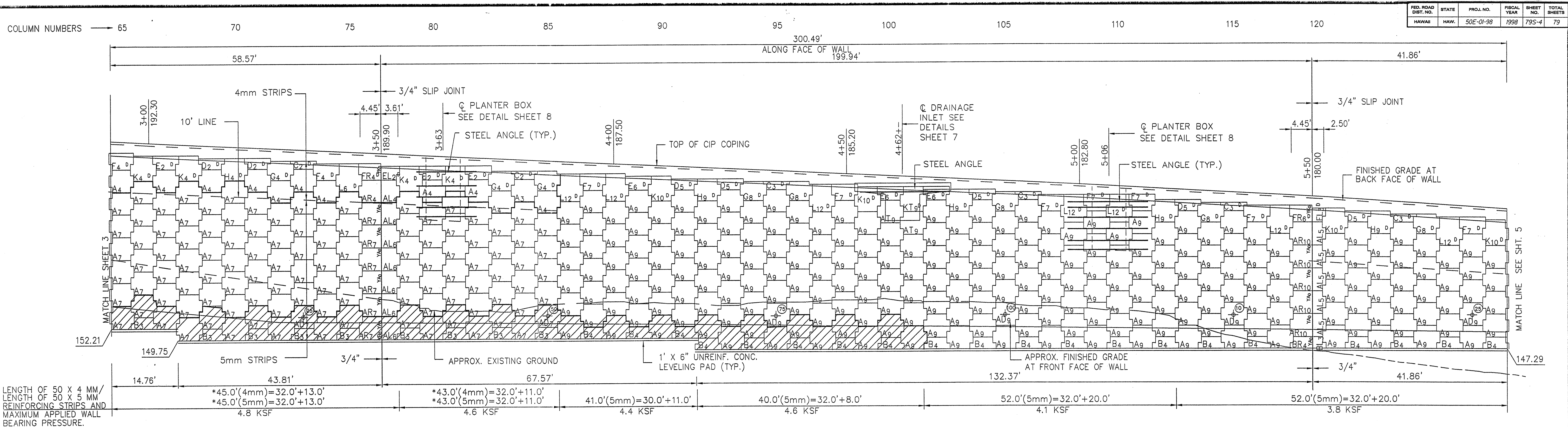
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DESIGNED BY:	3	9/10/99	AS PER COMMENTS
PROJECT ENGR:	2	3/10/99	UNDERDRAIN/OUTFALL/CLEANOUT ADDED
CHECKED BY:	1	2/8/99	PANEL DENSITIES DUE TO REVISED CALCULATIONS WITH 9 GAGE TIE STRIP
ENG. MANAGER	REV.	DATE	DESCRIPTION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PROJ. NO. 50E-01-98			PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE 12/8/98
			LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO. RE 7107
			OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO. 3 OF 9
			DRAWING COVERS	ELEVATION	SCALE AS NOTED





## ELEVATION - FRONT FACE - MSERW

SCALE : 1" = 10'

- NOTES**
- DESIGNED LENGTHS OF WALL LEVELLING PADS SHOWN ARE BASED ON INDIVIDUAL PANEL WIDTHS, MEASURED ALONG CENTERLINES OF ALIGNMENT PINS AND/OR CUT EDGES. REFER TO THE LEVELING PAD STEP DETAIL TO DETERMINE THE REQUIRED LEVELING PAD LENGTHS AND EXACT STEP LOCATIONS.
  - DUE TO THE FACT THAT OUR PANEL ALIGNMENT CONFIGURATION ALLOWS FOR 3/4" OPEN JOINT, ( SEE STANDARD PANEL DETAILS ON SHEET 9 OF 9 ) AROUND EACH PANEL A DRAIN HOLE WITH IN THE PANEL IS NOT REQUIRED.

\* PLACE 4mm STRIPS FROM TOP OF WALL TO 10' BELOW FINISHED GRADE AT TOP OF WALL. PLACE 5mm STRIPS BELOW 10' LINE TO BOTTOM OF WALL

### -KEY TO DESIGN PANEL MARKING

PANEL TYPE **AL4** NO. OF REINFORCING STRIPS  
MODIFICATION (ONE OR MORE)

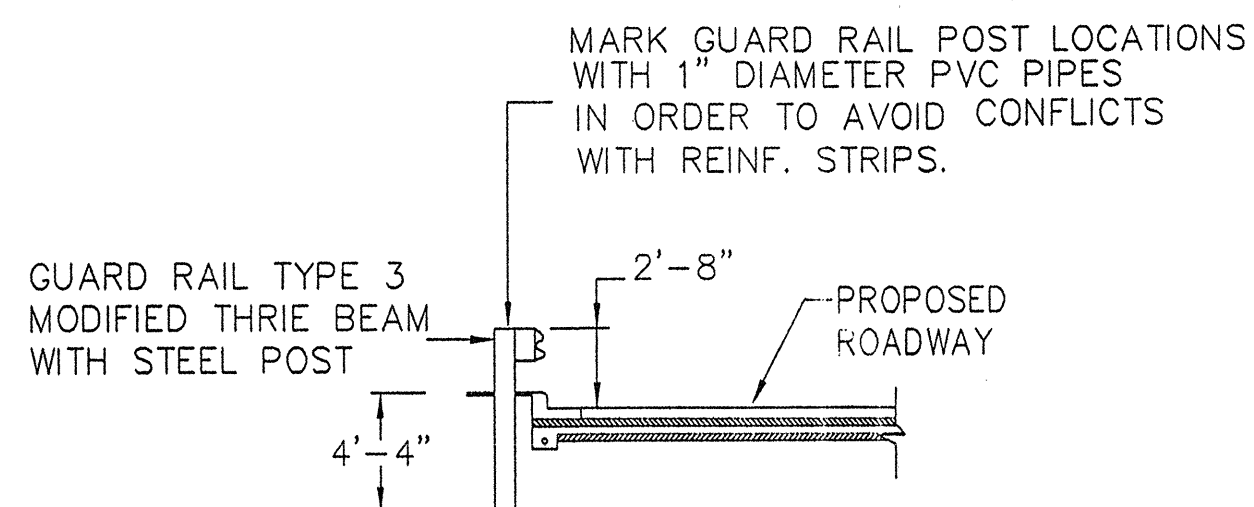
### -KEY TO PRECAST PANEL MARKING

PANEL TYPE **AL-4-R4-4.45'** PANEL WIDTH  
MODIFICATION (ONE OR MORE) PANEL REINFORCEMENT TYPE  
NO. OF REINFORCING STRIPS

(25) -INDICATES LOCATION OF INSPECTION STRIP (SEE DETAIL SHEET 7).

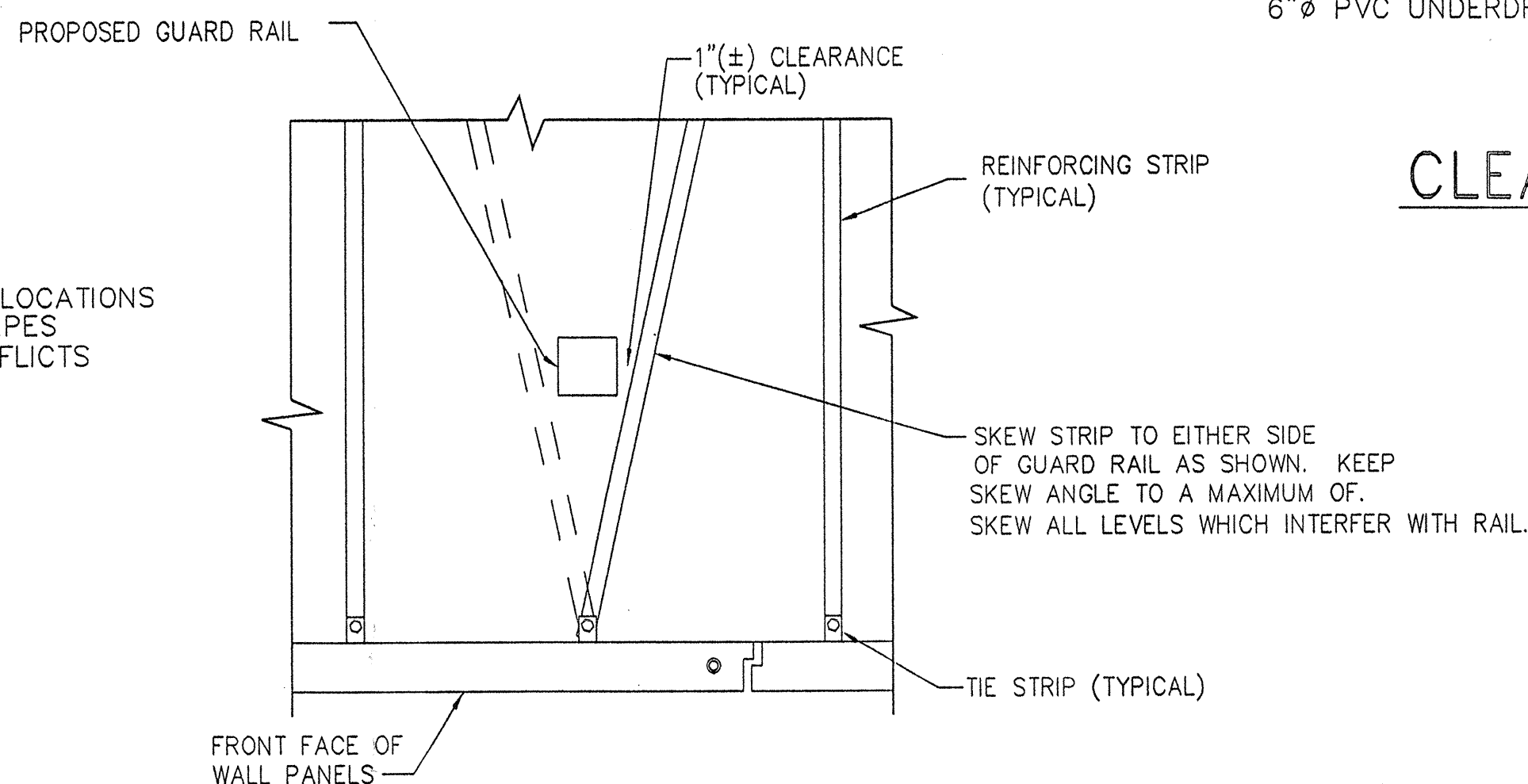
□ INDICATES R4 PANEL REINFORCEMENT  
▨ INDICATES R6 PANEL REINFORCEMENT

ALL A<sub>3</sub> PANELS REQUIRE R5 PANEL REINFORCEMENT



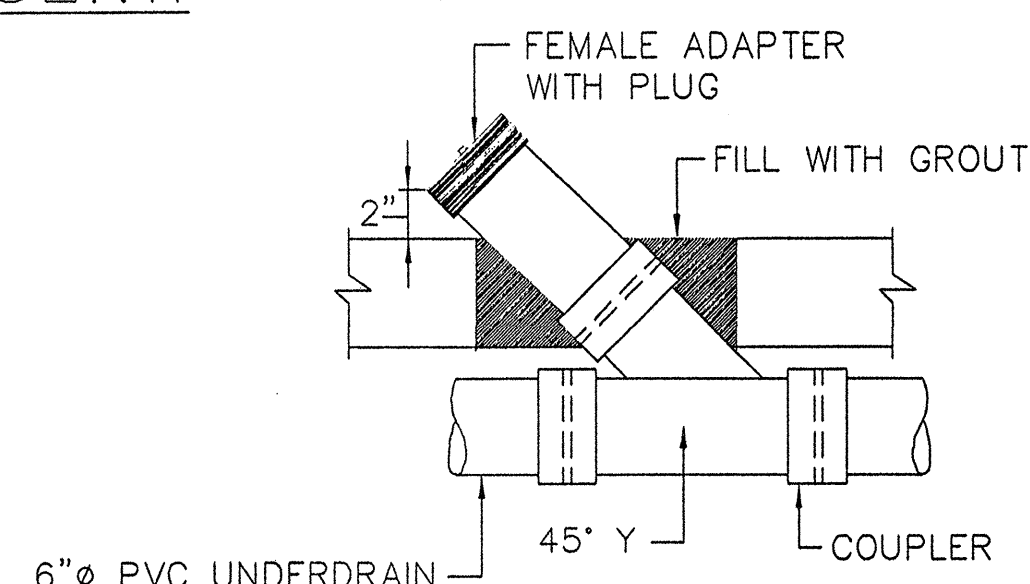
## GUARD RAIL SECTION

SCALE: NTS

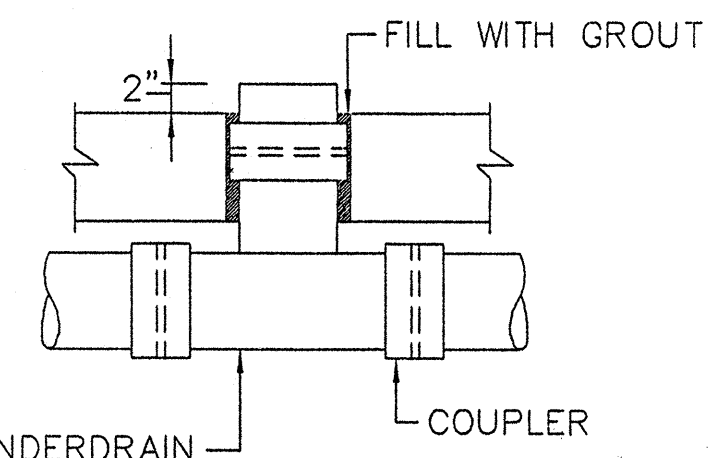


## PARTIAL WALL PLAN AT GUARD RAIL

SCALE: NTS



## CLEANOUT PIPE DETAIL

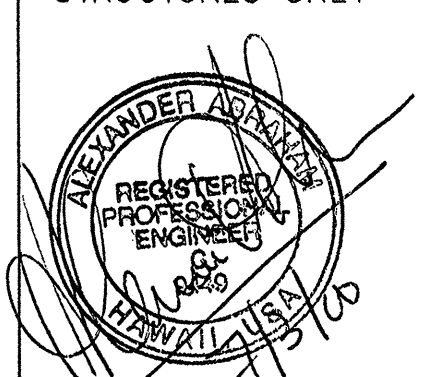


## OUTLET PIPE DETAIL

### UNDERDRAIN NOTES:

- THE PERFORATED 6 INCH PVC PIPE SHALL CONFORM TO ASTM D-2729.
- ALL ENDS OF UNDERDRAIN PIPES SHALL BE PLUGGED.
- THE OUTLETS AND CLEANOUTS SHALL BE 6 INCH NON-PERFORATED PVC PIPES.
- ALL PIPE JOINTS AND FITTINGS SHALL MEET HAWAII DOT SPECIFICATIONS.
- ALL KNOCKOUTS MORTARED. NO CLEANOUTS CONSTRUCTED.

CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

PROJ. NO. 50E-01-98

4 6/26/00 AS BUILTS

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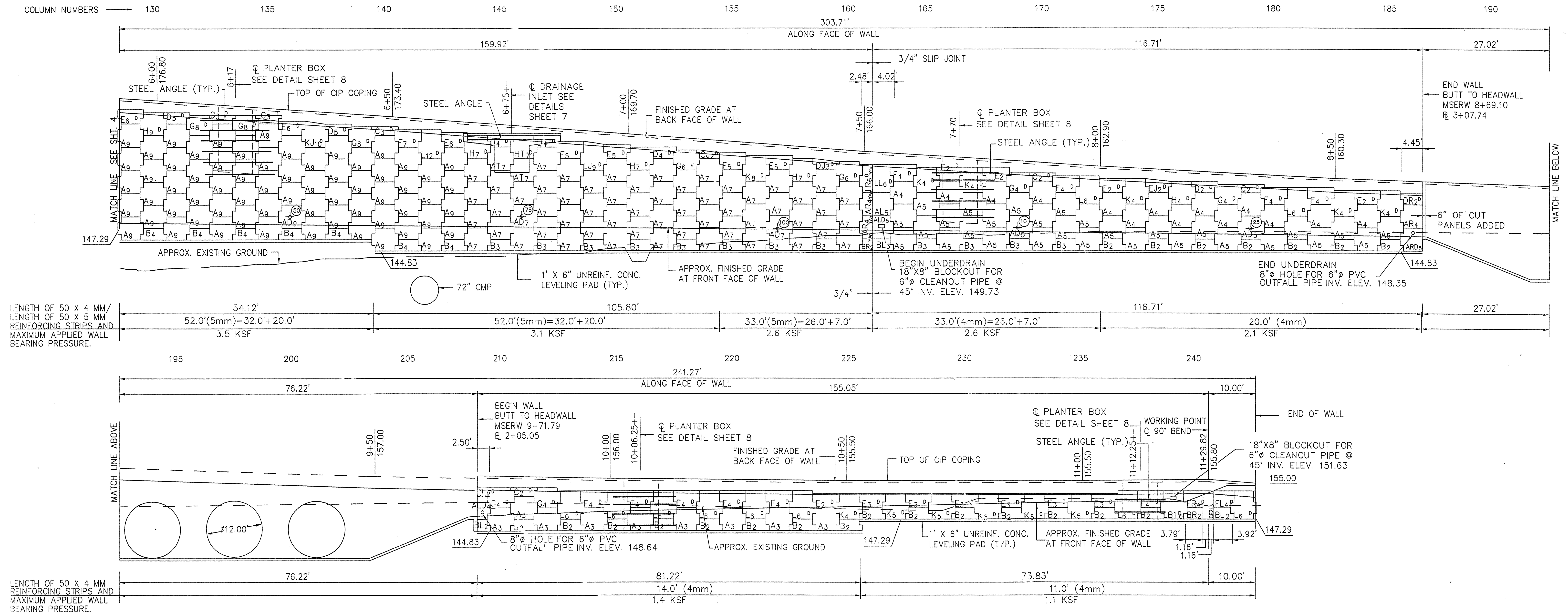
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**The Reinforced Earth Company**  
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DESIGNED BY:	3	9/20/99	AS PER COMMENTS	PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98
PROJECT ENGR:	2	3/10/99	OUTLET/CLEANOUT DETAILS ADDED	LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107
CHECKED BY:	1	2/8/99	PANEL DENSITIES DUE TO REVISED CALCULATIONS WITH 9 GAGE TIE STRIP	OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	4 OF 9
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	ELEVATION	SCALE	AS NOTED

79S-4

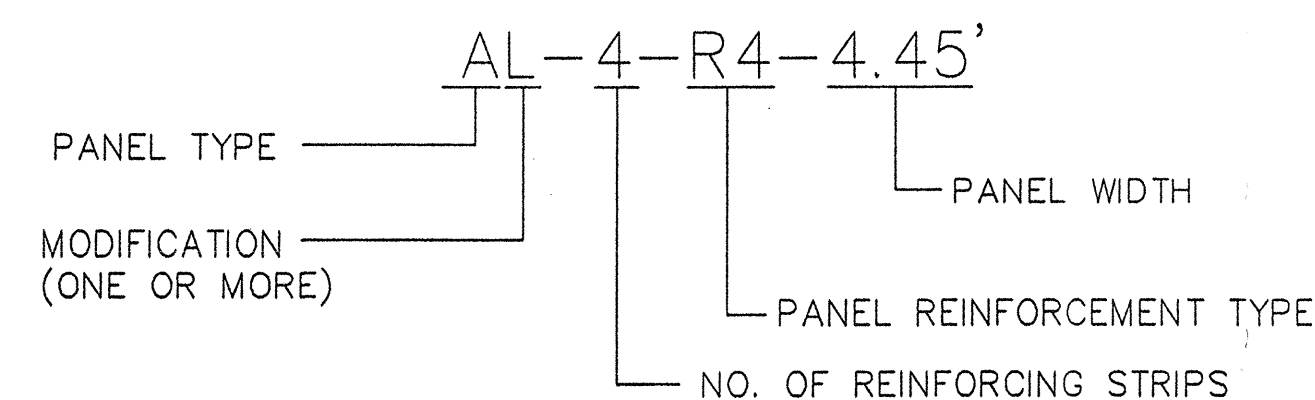




### ELEVATION - FRONT FACE - MSERW

SCALE: 1" = 10'

-KEY TO PRECAST PANEL MARKING



#### ESTIMATED WALL QUANTITIES

MSERW MATERIALS	=	26039.9 S.F.
SELECT GRANULAR BACKFILL MATERIALS	=	37988.8 C.Y.
CONCRETE LEVELING PAD	=	1043.6 L.F.
CONCRETE COPING	=	1044.9 L.F.
REINF. STRIPS	=	313614 L.F.

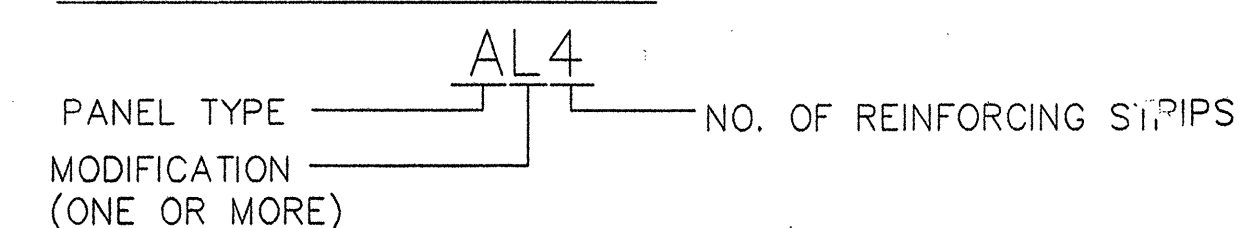
NOTE: SEE ATTACHED QUANTITY TAKEOFF FOR INCIDENTAL ITEM QUANTITIES.

#### NOTES

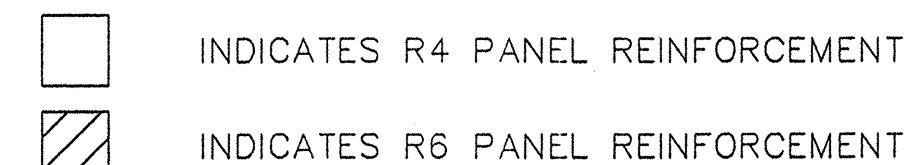
- DESIGNED LENGTHS OF WALL LEVELLING PADS SHOWN ARE BASED ON INDIVIDUAL PANEL WIDTHS, MEASURED ALONG CENTERLINES OF ALIGNMENT PINS AND/OR CUT EDGES. REFER TO THE LEVELING PAD STEP DETAIL TO DETERMINE THE REQUIRED LEVELING PAD LENGTHS AND EXACT STEP LOCATIONS.
- DUE TO THE FACT THAT OUR PANEL ALIGNMENT CONFIGURATION ALLOWS FOR 3/4" OPEN JOINT, (SEE STANDARD PANEL DETAILS ON SHEET 9 OF 9) AROUND EACH PANEL A DRAIN HOLE WITH IN THE PANEL IS NOT REQUIRED.

- SEE SHEET 4 FOR CLEANOUT AND OUTLET DETAILS

#### -KEY TO DESIGN PANEL MARKING



(25) -INDICATES LOCATION OF INSPECTION STRIP (SEE DETAIL SHEET 7).



ALL A<sub>3</sub> PANELS REQUIRE R5 PANEL REINFORCEMENT

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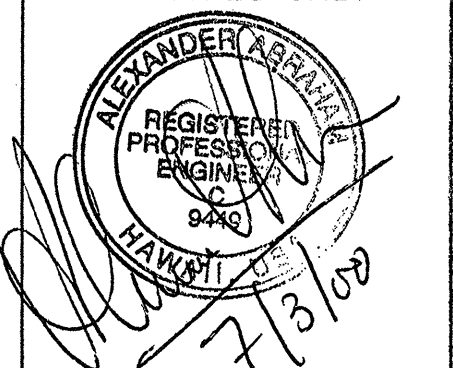
**TAI**  
**The Reinforced Earth Company**  
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

"REINFORCED EARTH" is the registered trademark of The Reinforced Earth Company.

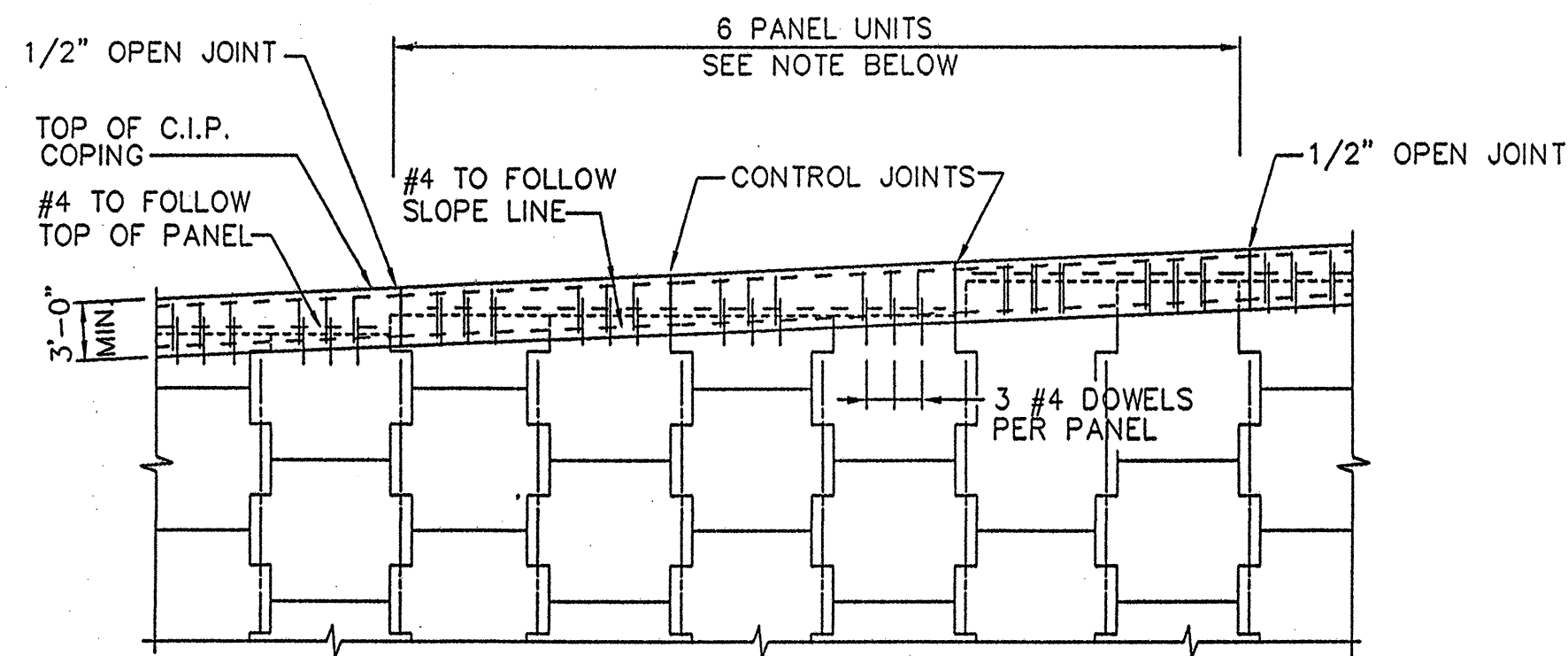
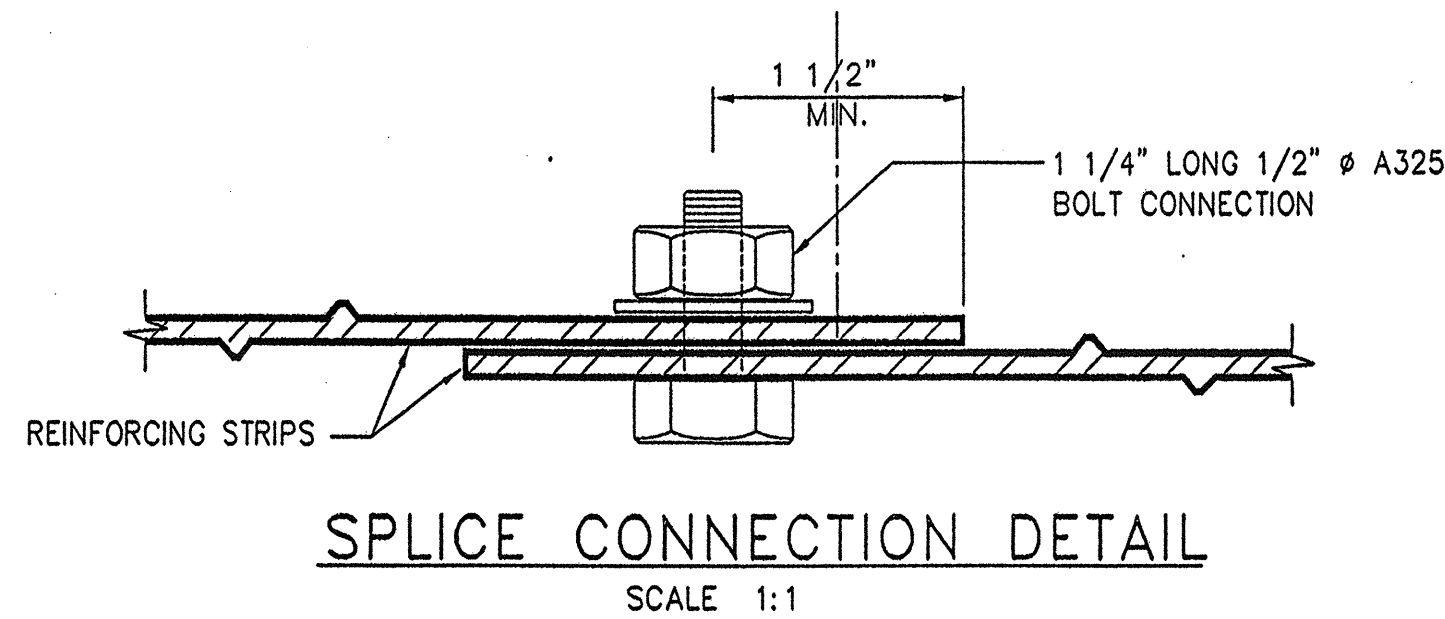
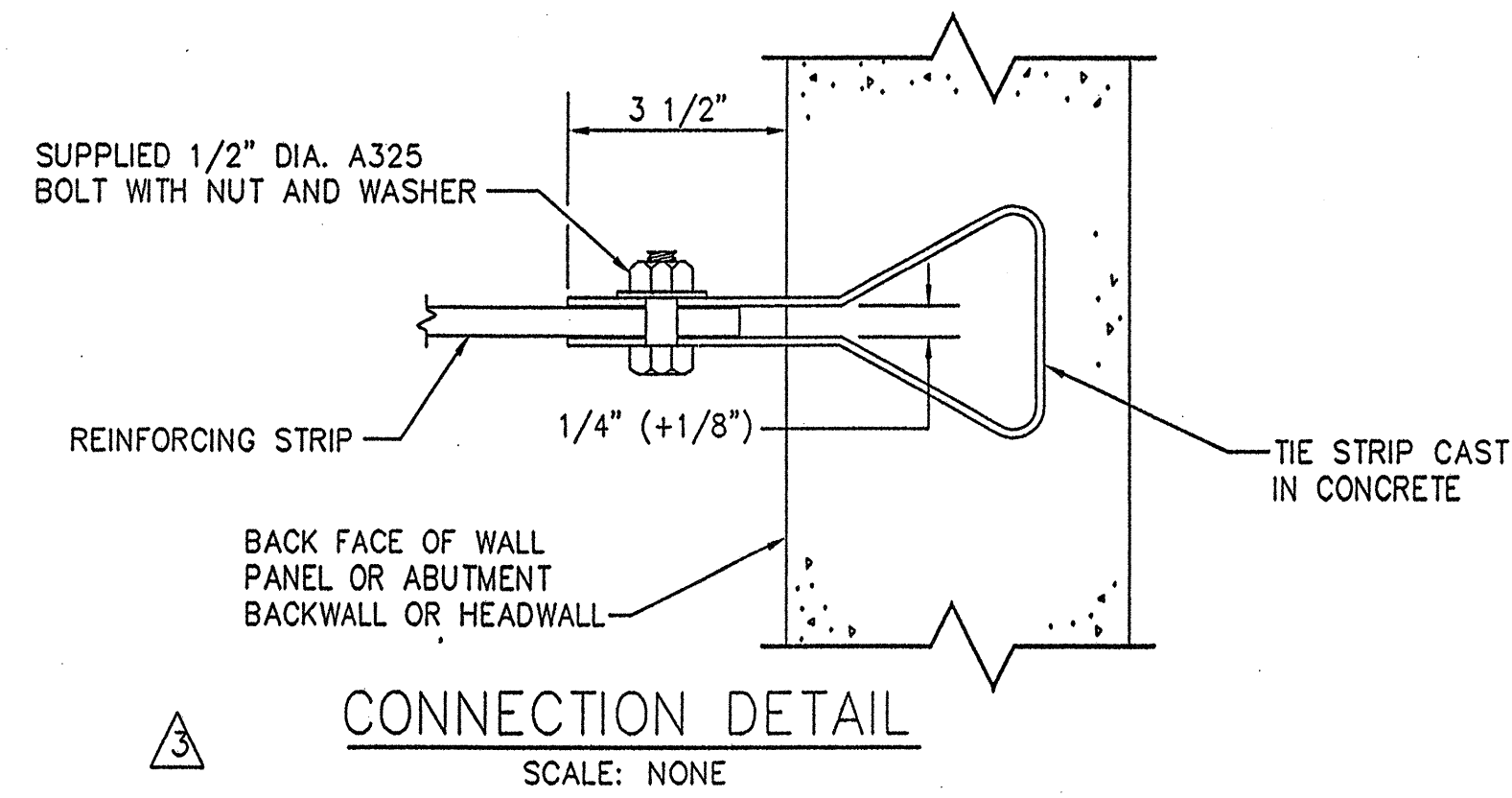
DESIGNED BY:	3	6/26/00 AS BUILTS
PROJECT ENGR:	4	8/3/99 ADDITIONAL PLANTER BOX
CHECKED BY:	2	3/10/99 UNDERDRAIN/CLEANOUTS/OUTLETS ADDED
ENG. MANAGER	1	2/8/99 PANEL DENSITIES DUE TO REVISED CALCULATIONS WITH 9 GAGE TIE STRIP
REV.	DATE	DESCRIPTION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PROJ. NO. 50E-01-98			
PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	5 OF 9
DRAWING COVERS	ELEVATION	SCALE	AS NOTED

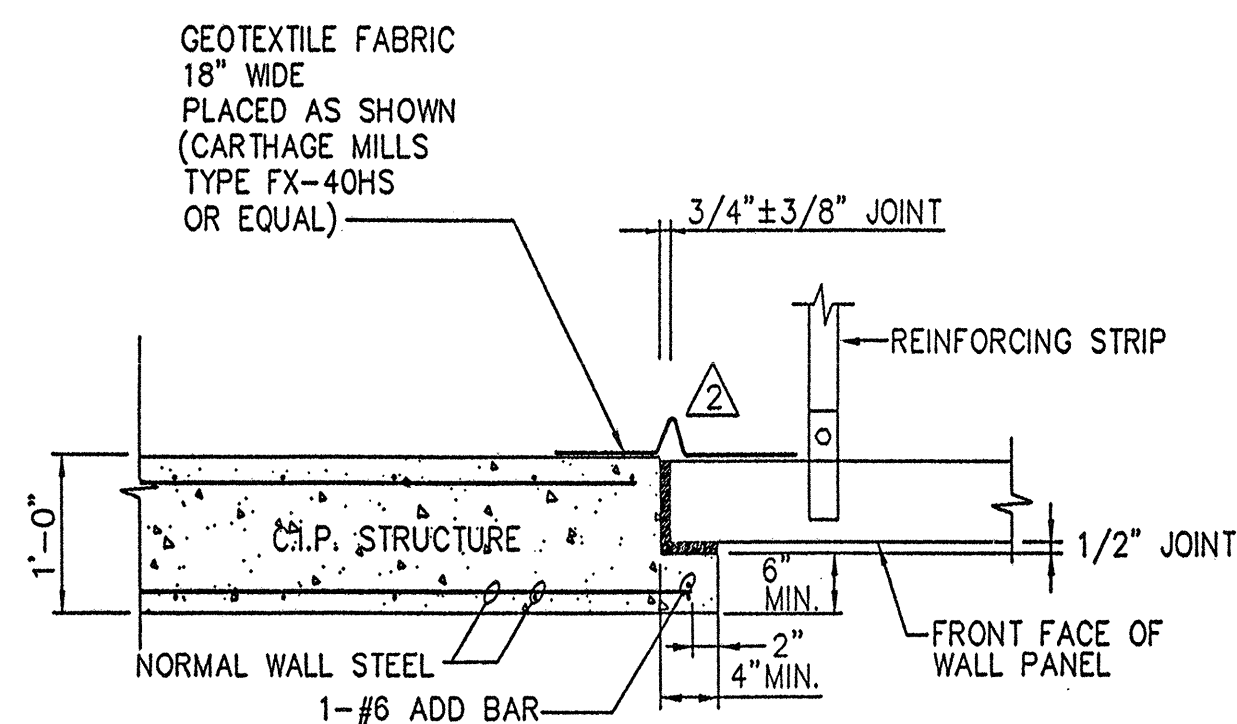
CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY



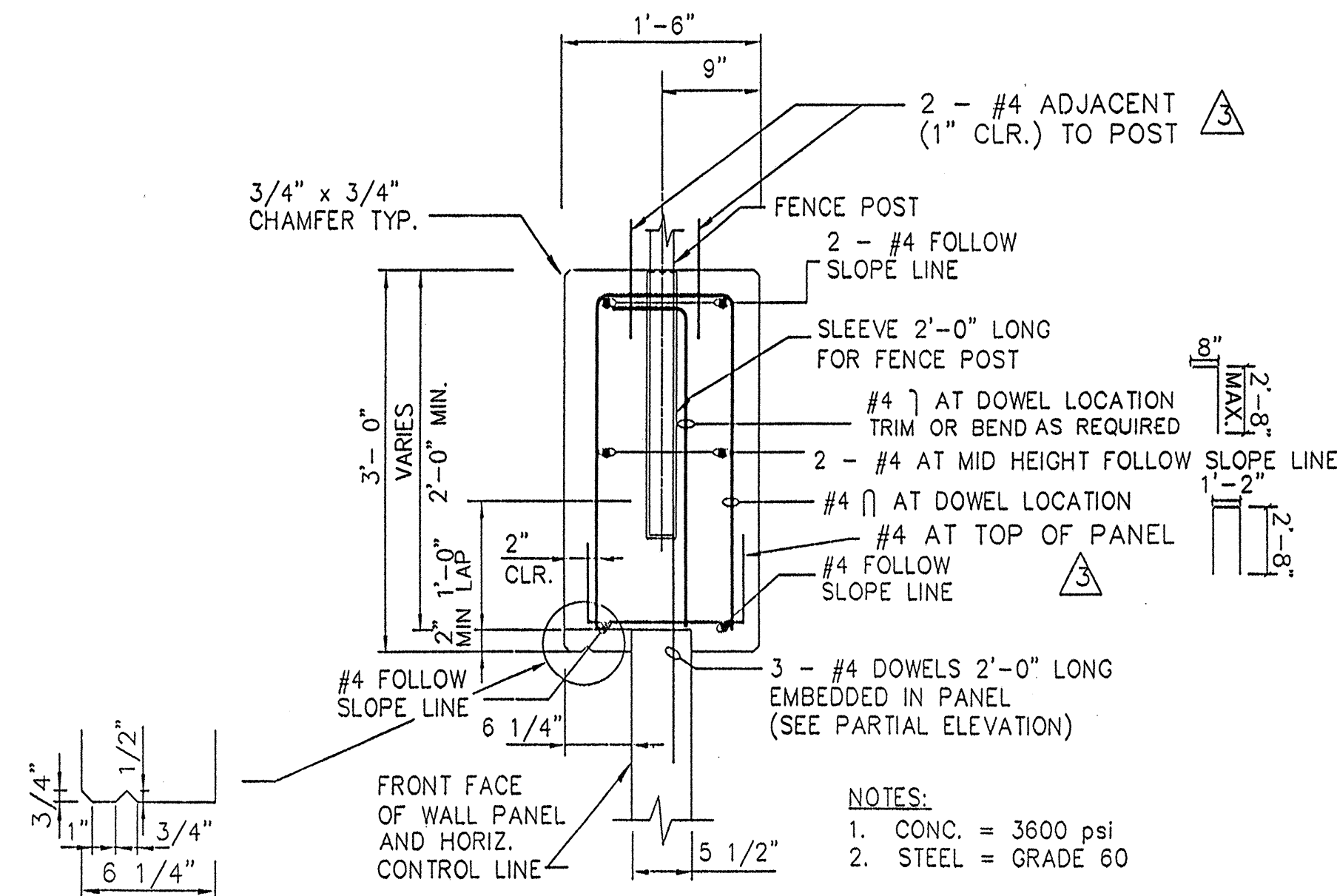




NOTE:  
EXPANSION JOINTS (1/2" OPEN JOINT) IN COPING SHALL BE AT 6 PANEL INTERVALS AND COINCIDE APPROXIMATELY WITH C. OF ALIGNMENT RECESS. REINFORCING STEEL SHALL BE STOPPED 2' SHORT OF EITHER SIDE OF THE JOINTS. CONTROL JOINTS IN BETWEEN THE OPEN JOINTS SHALL BE PROVIDED AT 2 PANEL INTERVALS.  
CHAIN LINK FENCE NOT SHOWN FOR CLAIRITY.



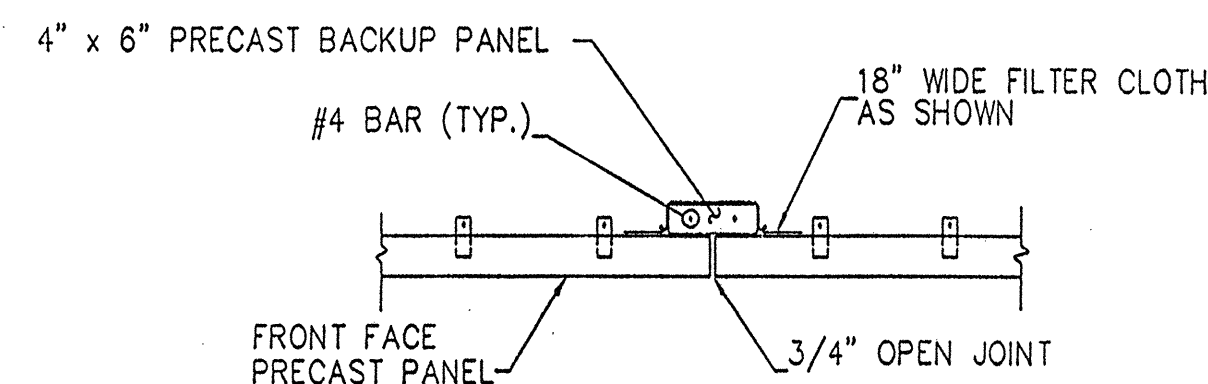
CONNECTION DETAIL @ C.I.P. STRUCTURE  
SCALE: 1" = 1'-0"



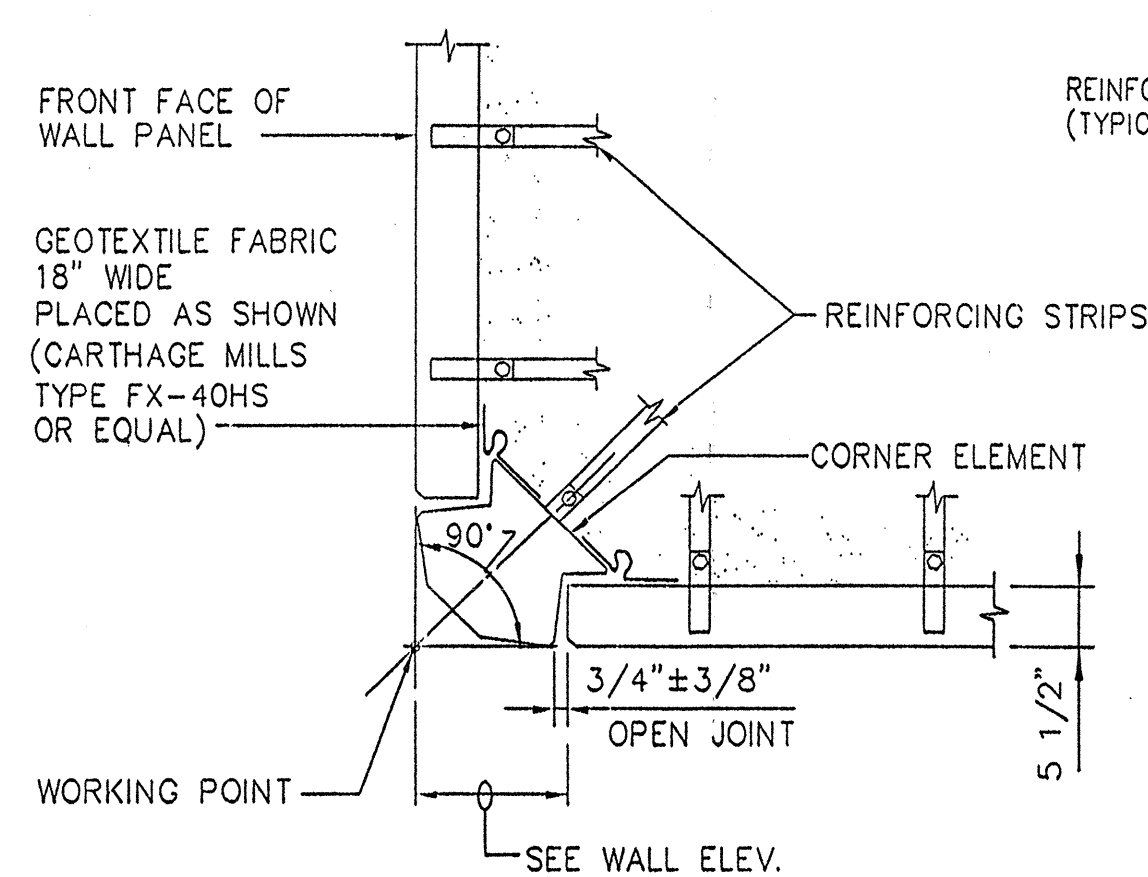
NOTES:  
1. CONC. = 3600 psi  
2. STEEL = GRADE 60

C.I.P. CONC. COPING W/FENCE  
SCALE: 1" = 1'-0"

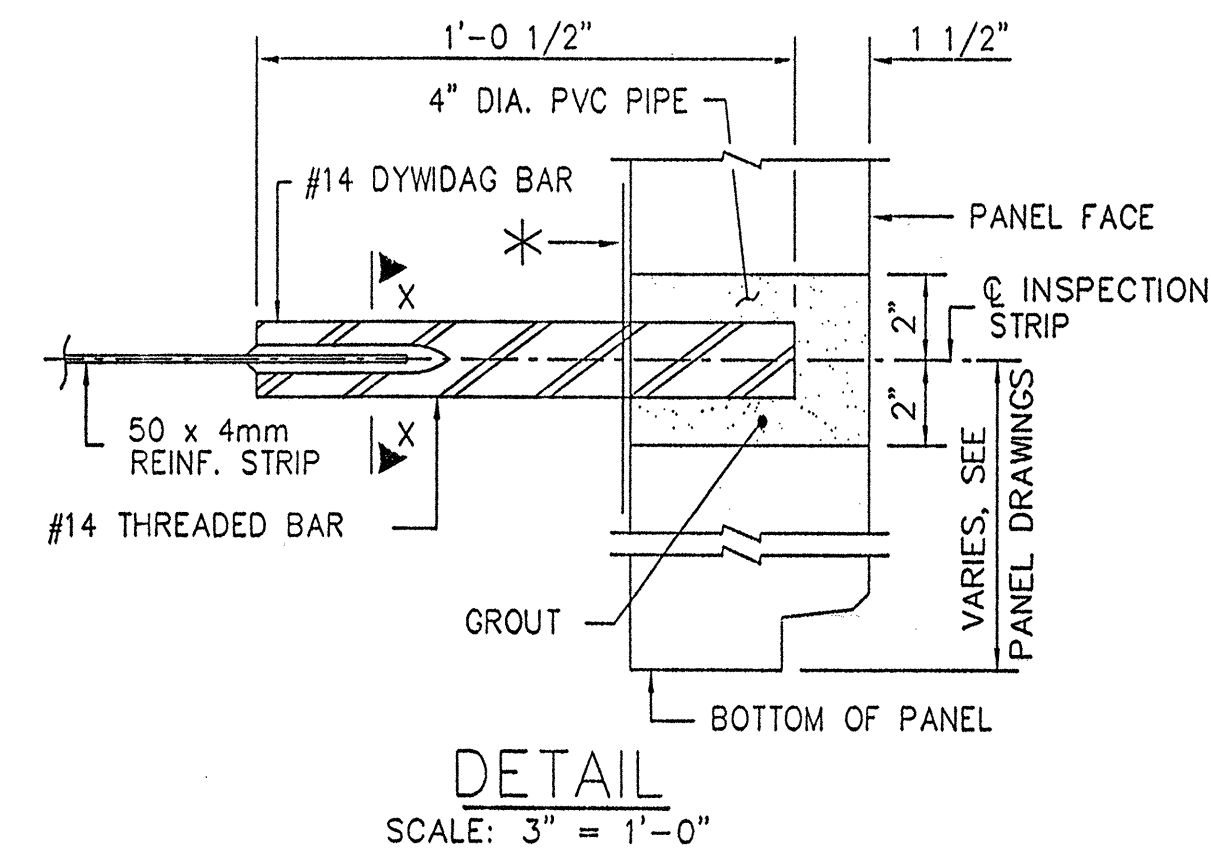
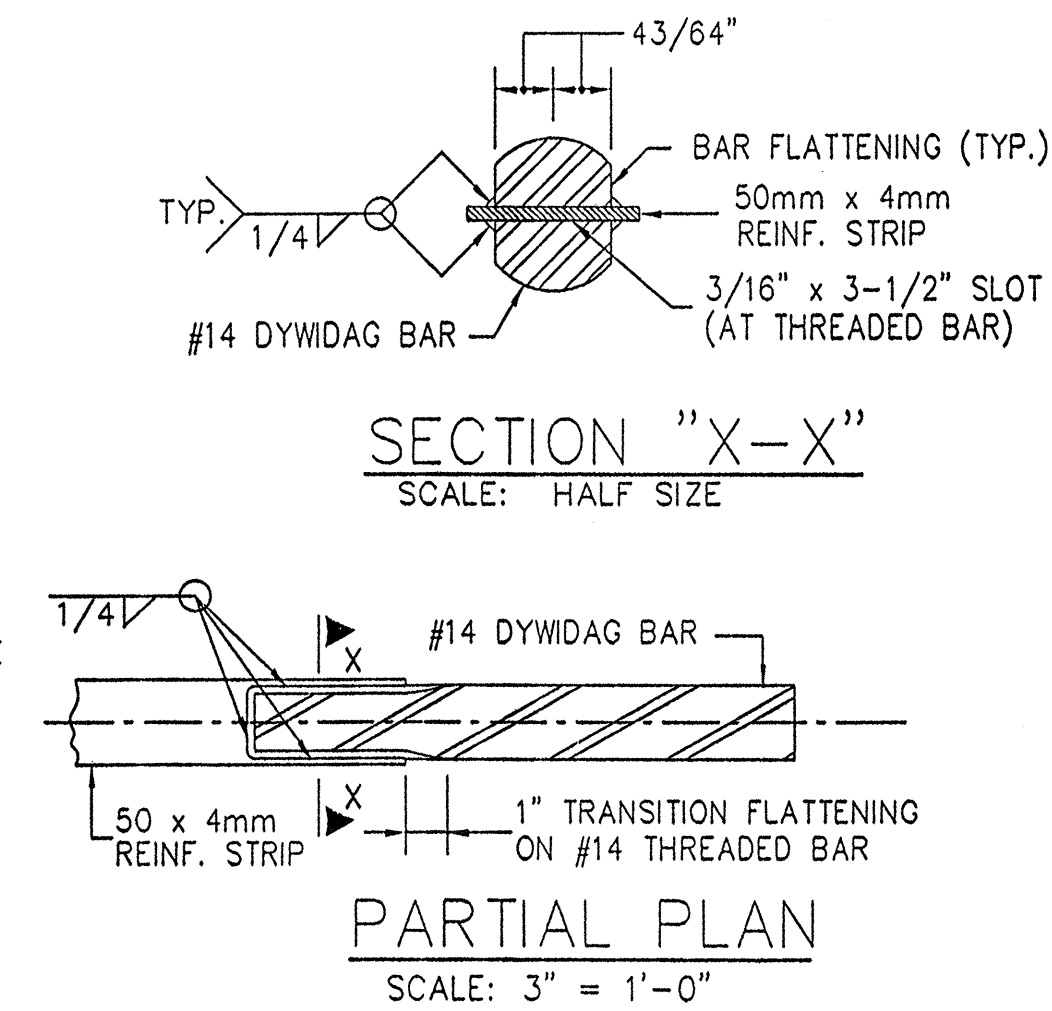
IT IS ACCEPTABLE TO RECO TO INCREASE THE HEIGHT OF COPING UP TO 5 INCHES TO ACCOMMODATE THE ANTICIPATED SETTLEMENT.



BACK UP PANEL DETAIL  
SCALE: 1/2" = 1'-0"



90° CORNER ELEMENT DETAIL  
SCALE: 3/4" = 1'-0"



DETAIL  
SCALE: 3" = 1'-0"

## NOTES

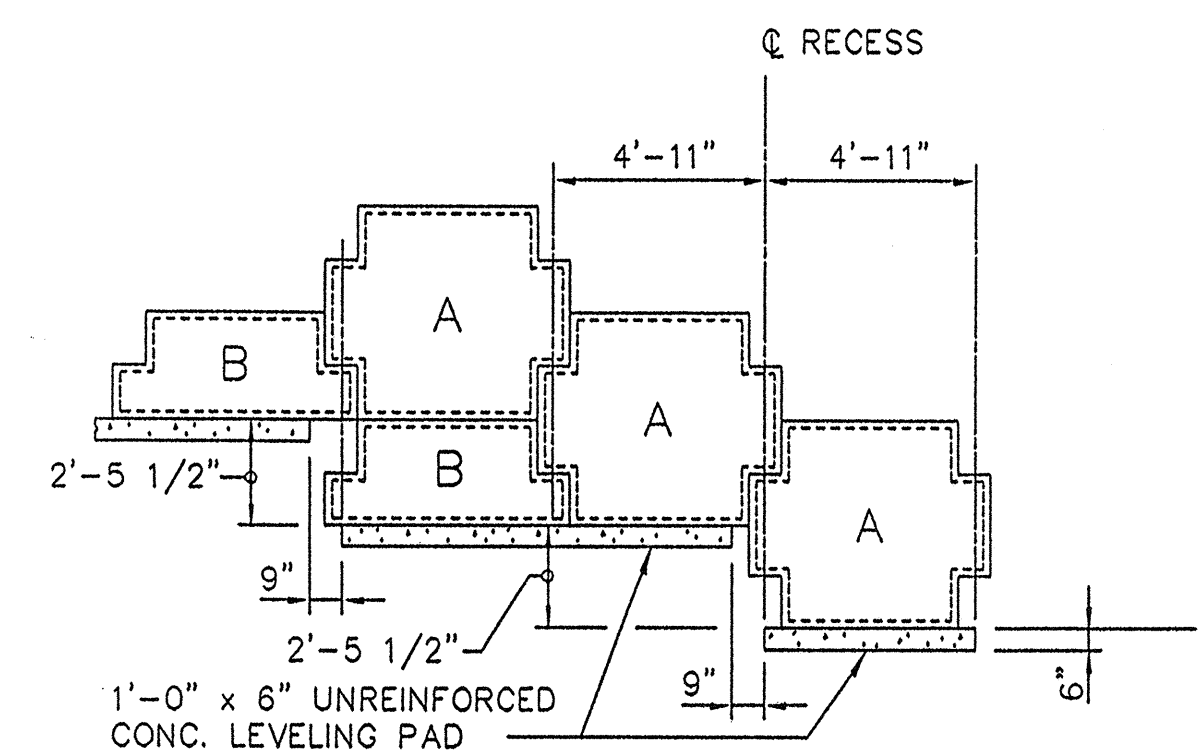
- ALL STEEL PARTS WILL BE GALVANIZED AFTER FABRICATION.
- DYWDAG BARS SHALL BE ASTM DESIGNATION A615 GRADE 60.
- REINFORCING STRIPS SHALL BE 50mm x 4mm x 10'-0" AND SHALL CONFORM TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM-572, GRADE 65.
- THE CONTRACTOR SHALL PROVIDE SPACER(S) TO MAINTAIN DYWDAG BAR IN CENTER OF 4" DIA. OPENING DURING BACKFILL PLACEMENT. PRIOR TO BACKFILLING OVER INSPECTION STRIP, INSPECTION STRIP SHALL BE PLACED SO THAT ITS FINAL POSITION WILL BE HORIZONTAL AND PERPENDICULAR TO WALL PANELS. AFTER BACKFILLING AND COMPACTING, SPACER(S) CAN BE REMOVED (OPTIONAL) FROM FRONT AND DRY PACK OPENING WITH 1,000 TO 1,500 PSI GROUT. TROWEL GROUT SMOOTH AGAINST PANEL FACE.
- FOR LOCATION OF INSPECTION STRIPS REFER TO WALL ELEVATIONS.

INTERVAL IN YEARS FROM TIME OF CONSTRUCTION TO TIME OF REMOVAL OF INSPECTION STRIP.

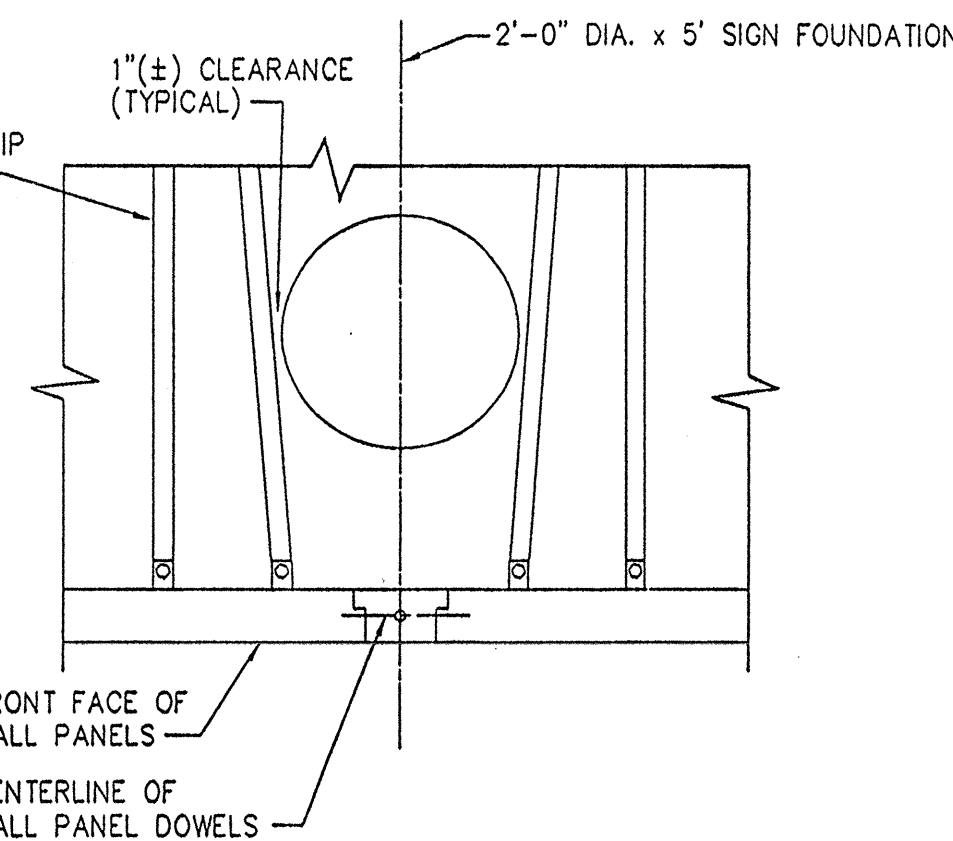
LOCATION OF INSPECTION STRIP PLACEMENT.

PANEL NAME

KEY  
N.T.S.  
(REFER TO WALL ELEVATIONS)



TYPICAL LEVELING PAD STEP DETAIL  
SCALE: 1/4" = 1'-0"



PARTIAL WALL PLAN AT SIGN FOUNDATION  
SCALE: NTS

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

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INTERNAL STABILITY  
OF REINFORCED EARTH  
STRUCTURES ONLY

ALEXANDER A. BROWN  
REGISTERED PROFESSIONAL ENGINEER  
HAWAII  
10/10/98

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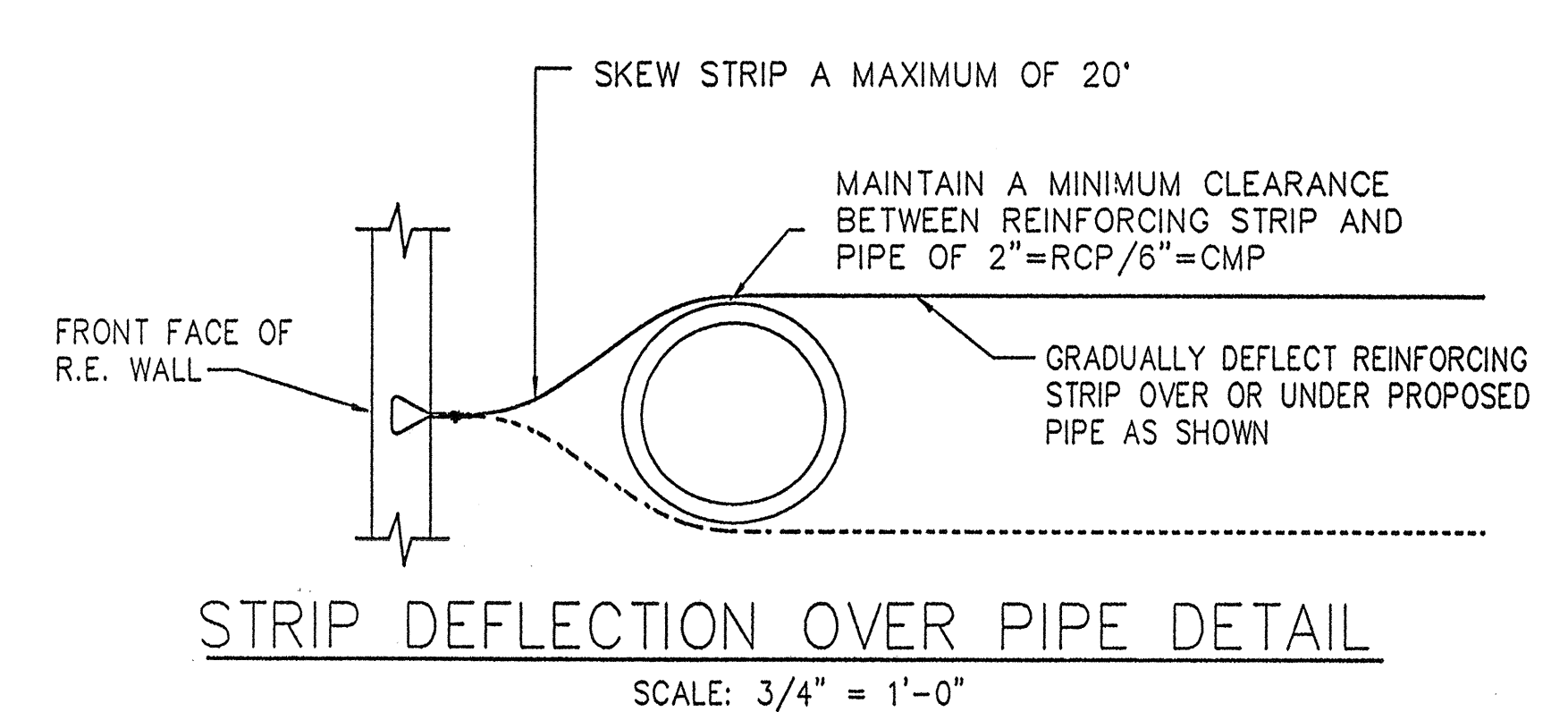
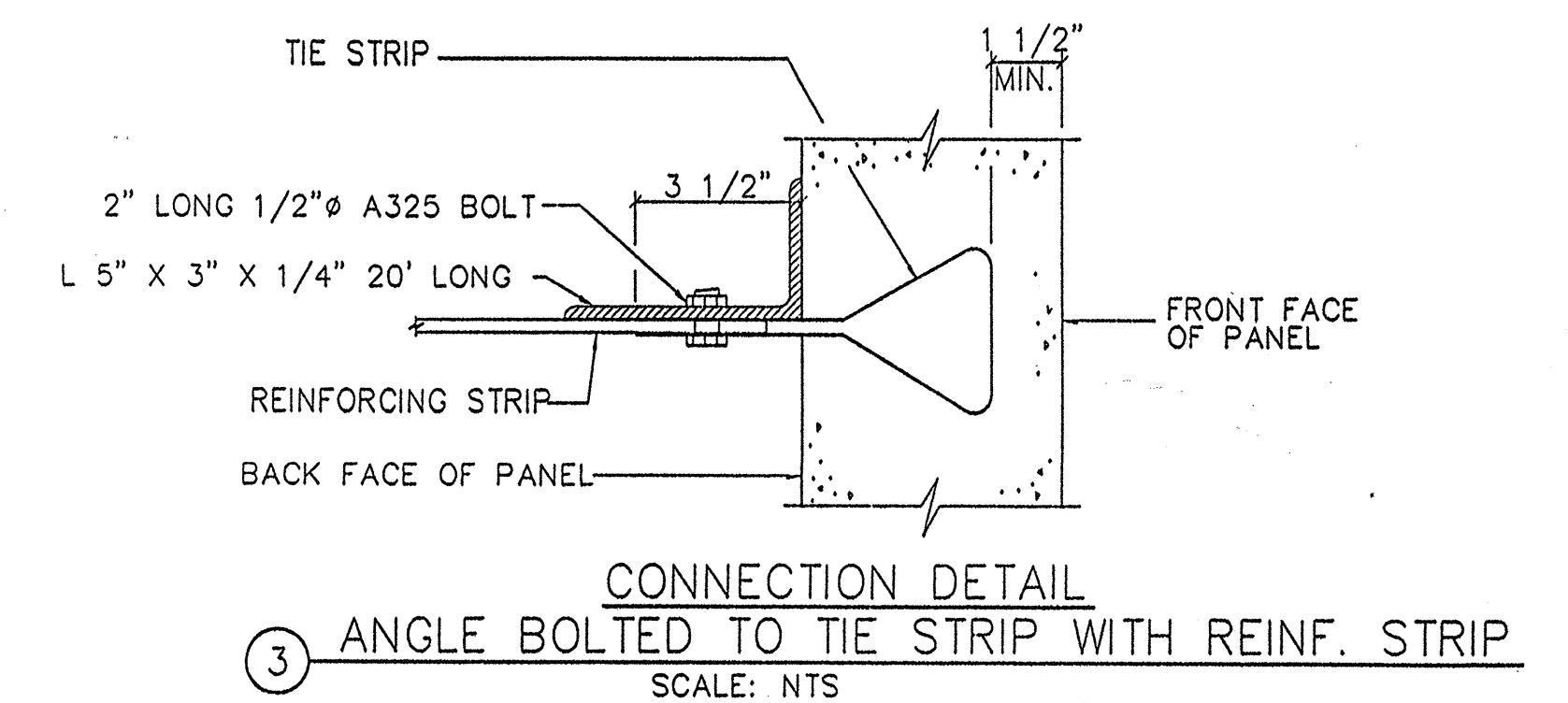
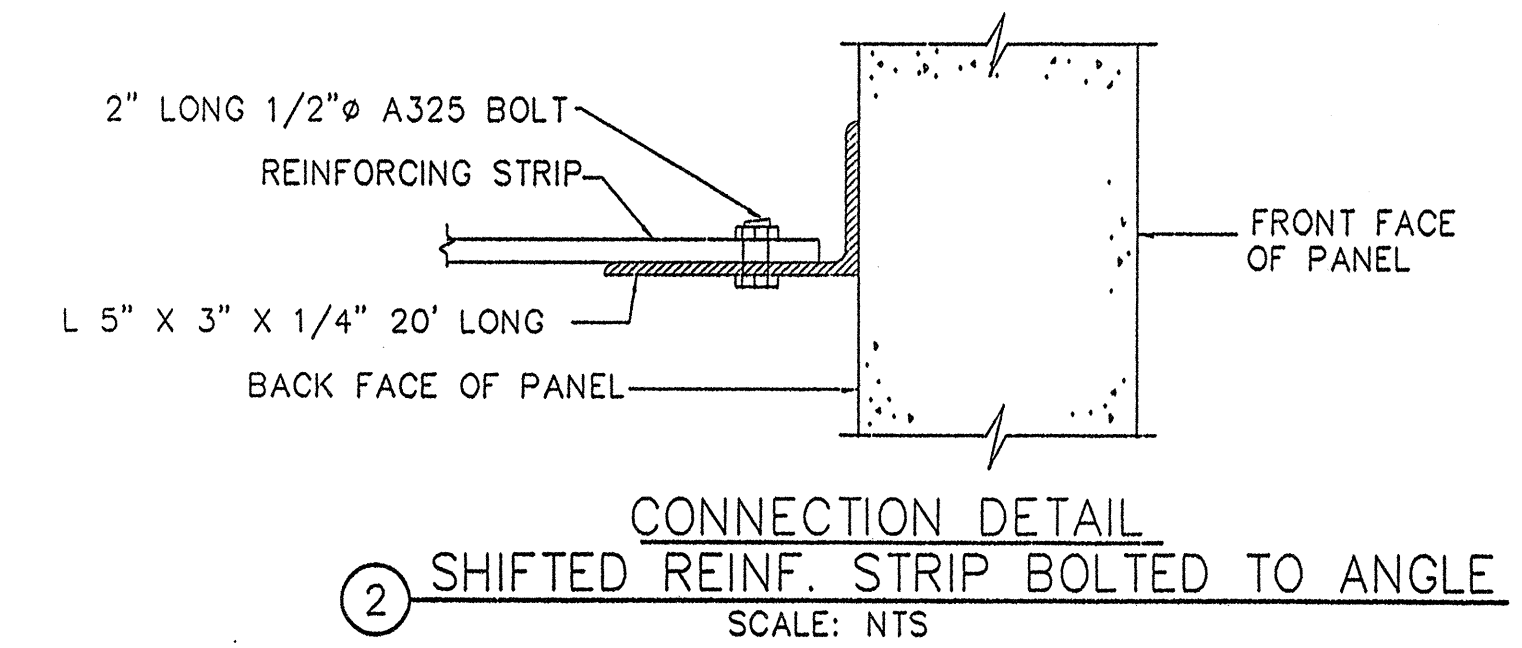
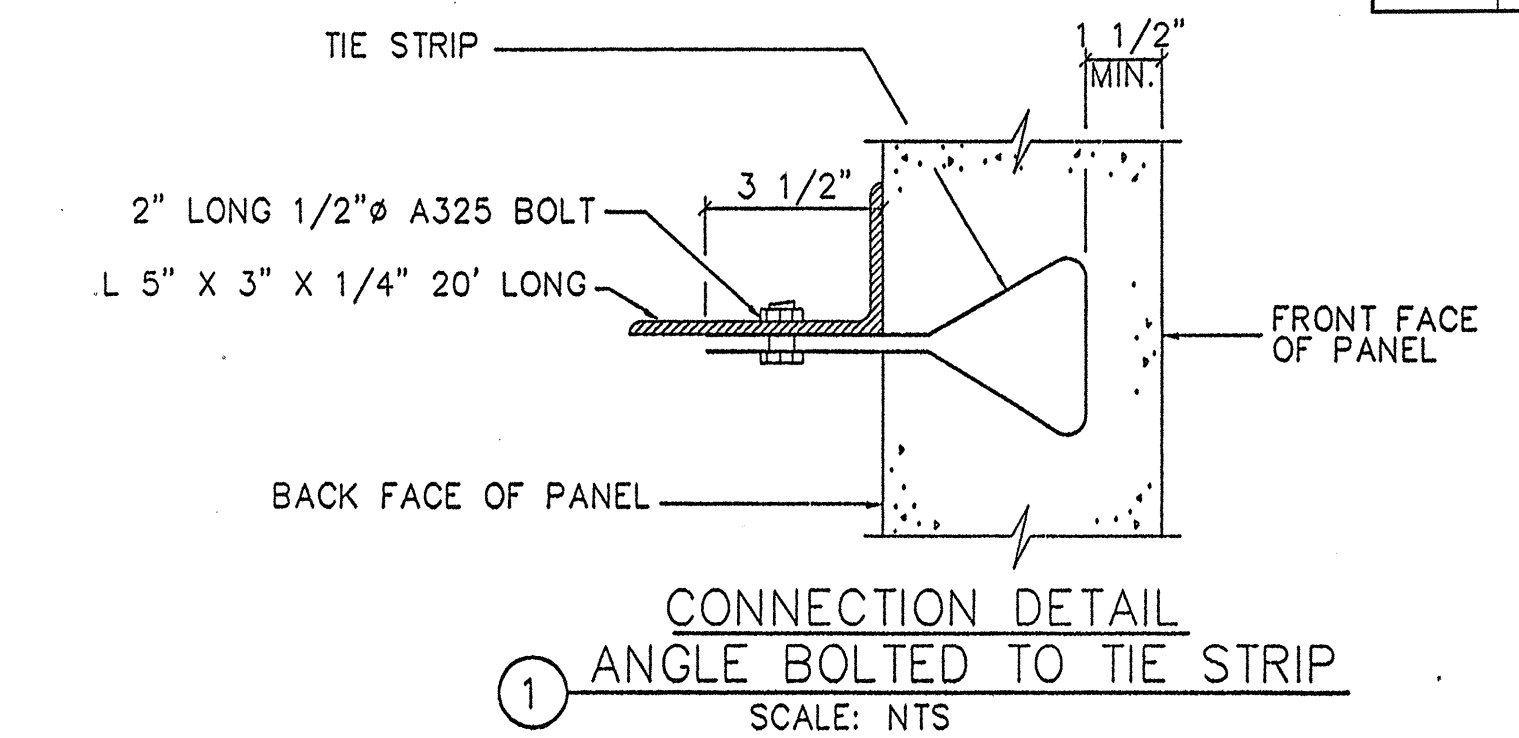
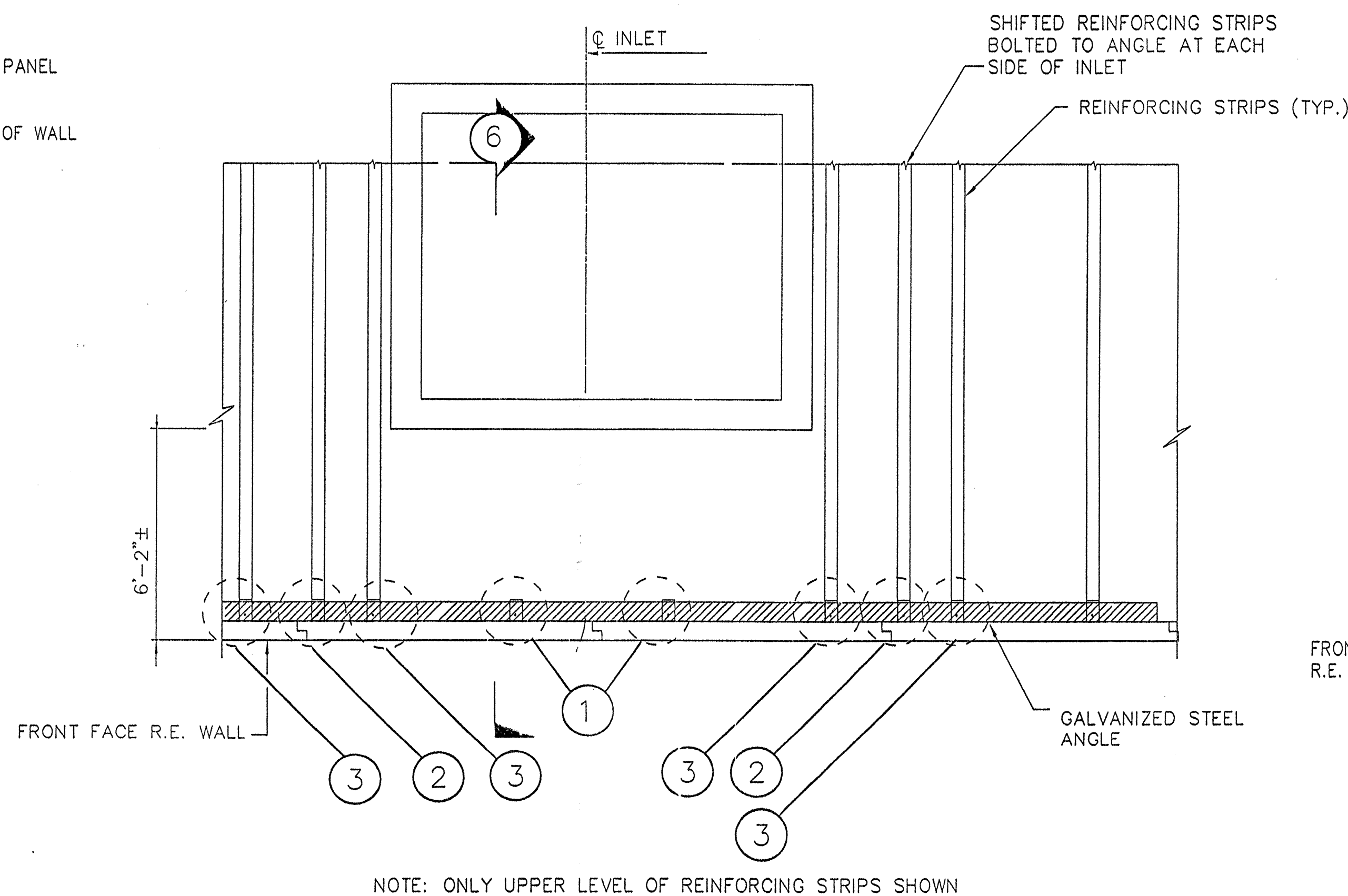
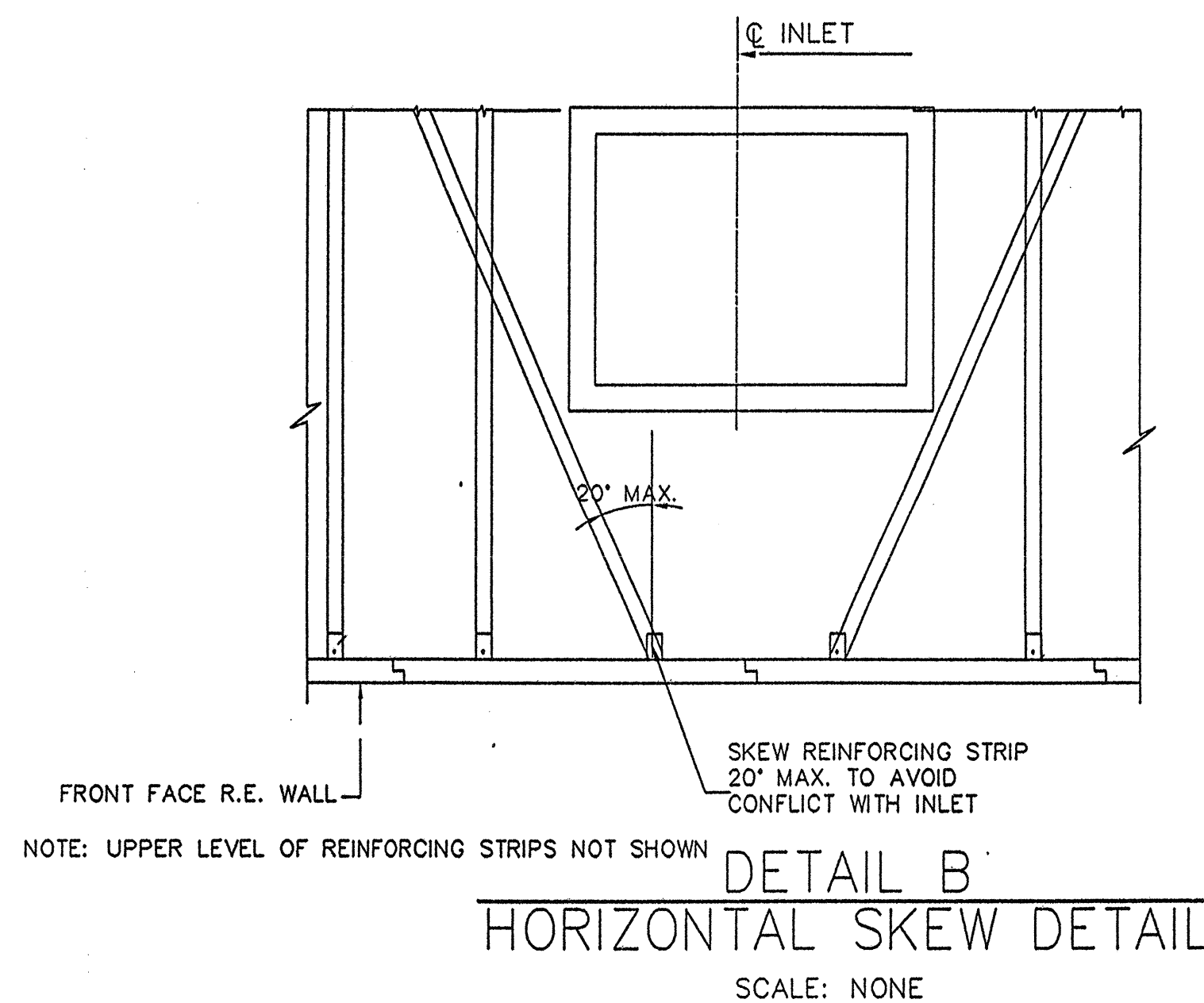
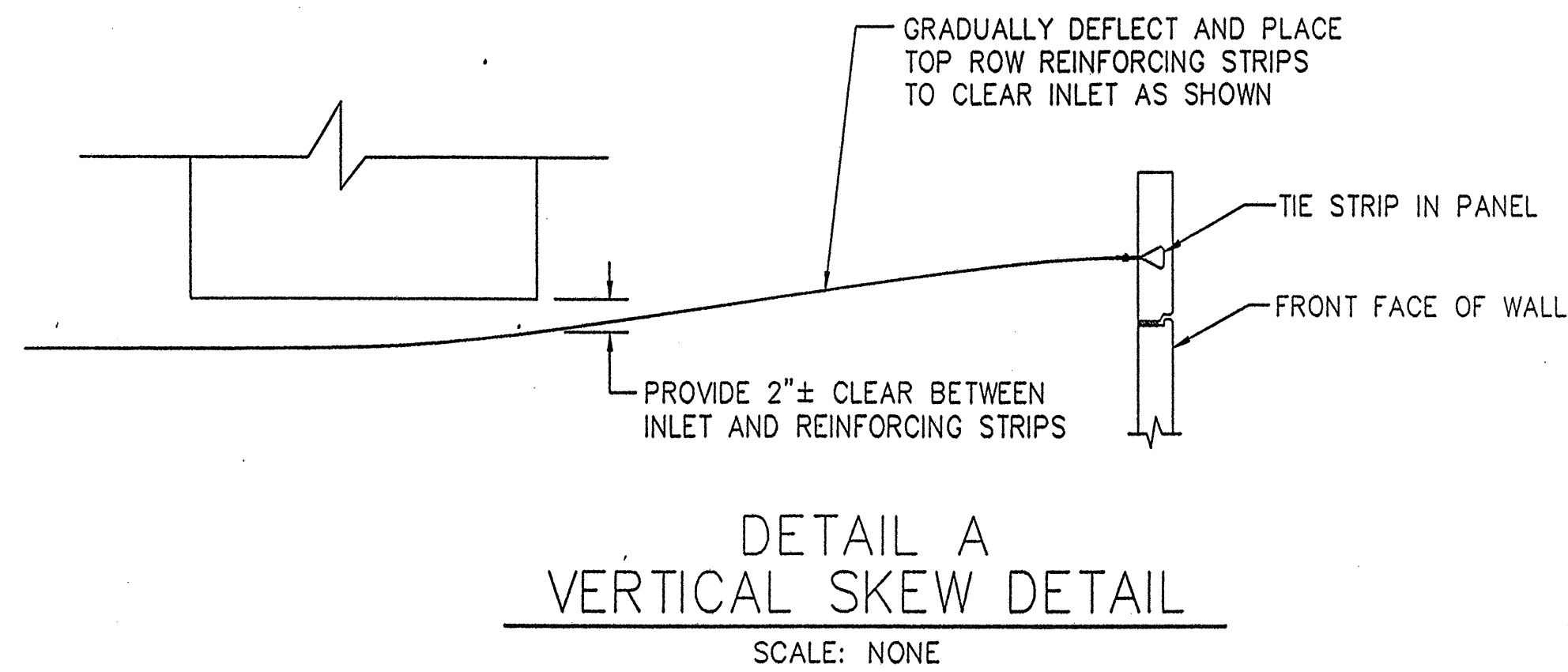
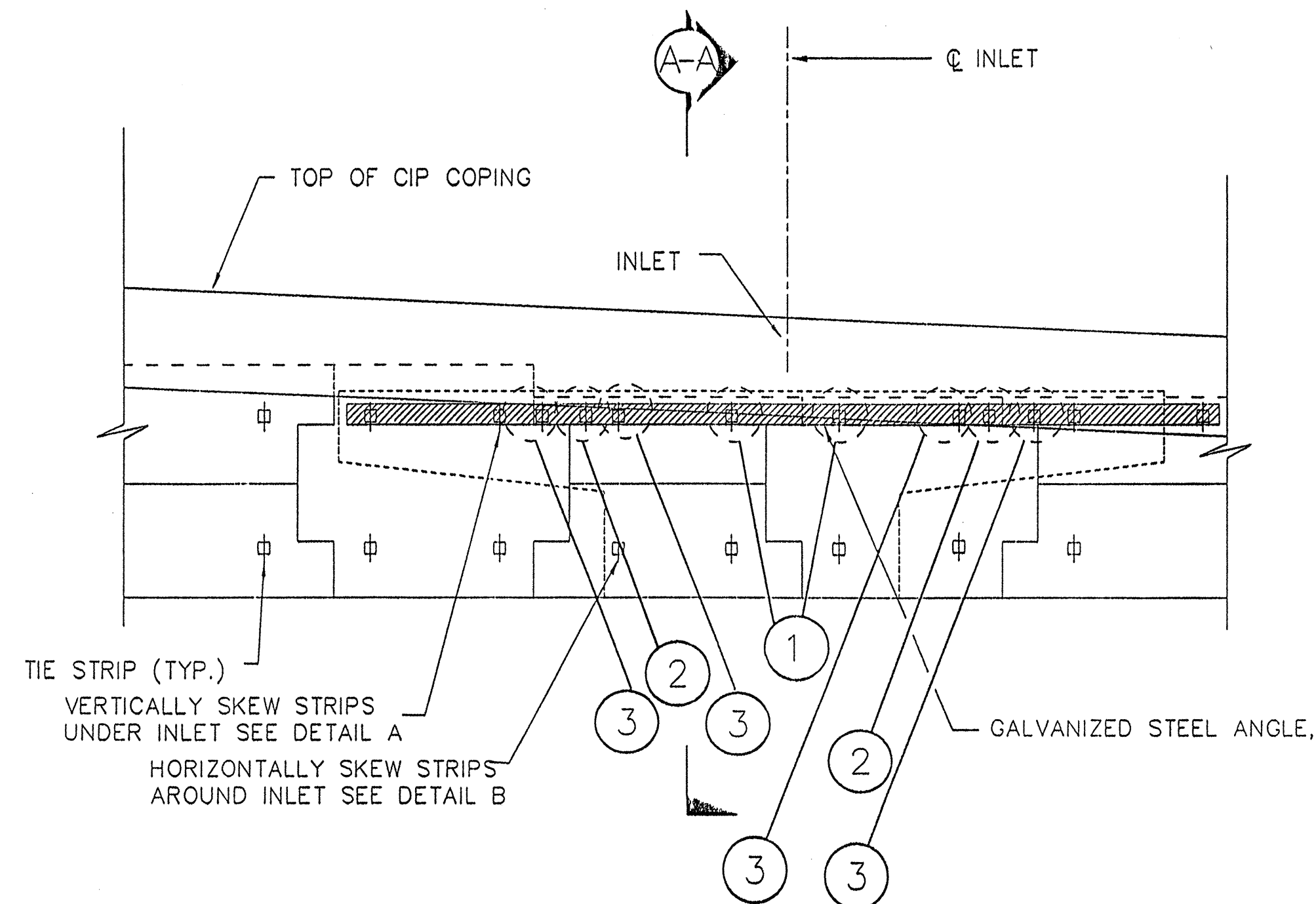
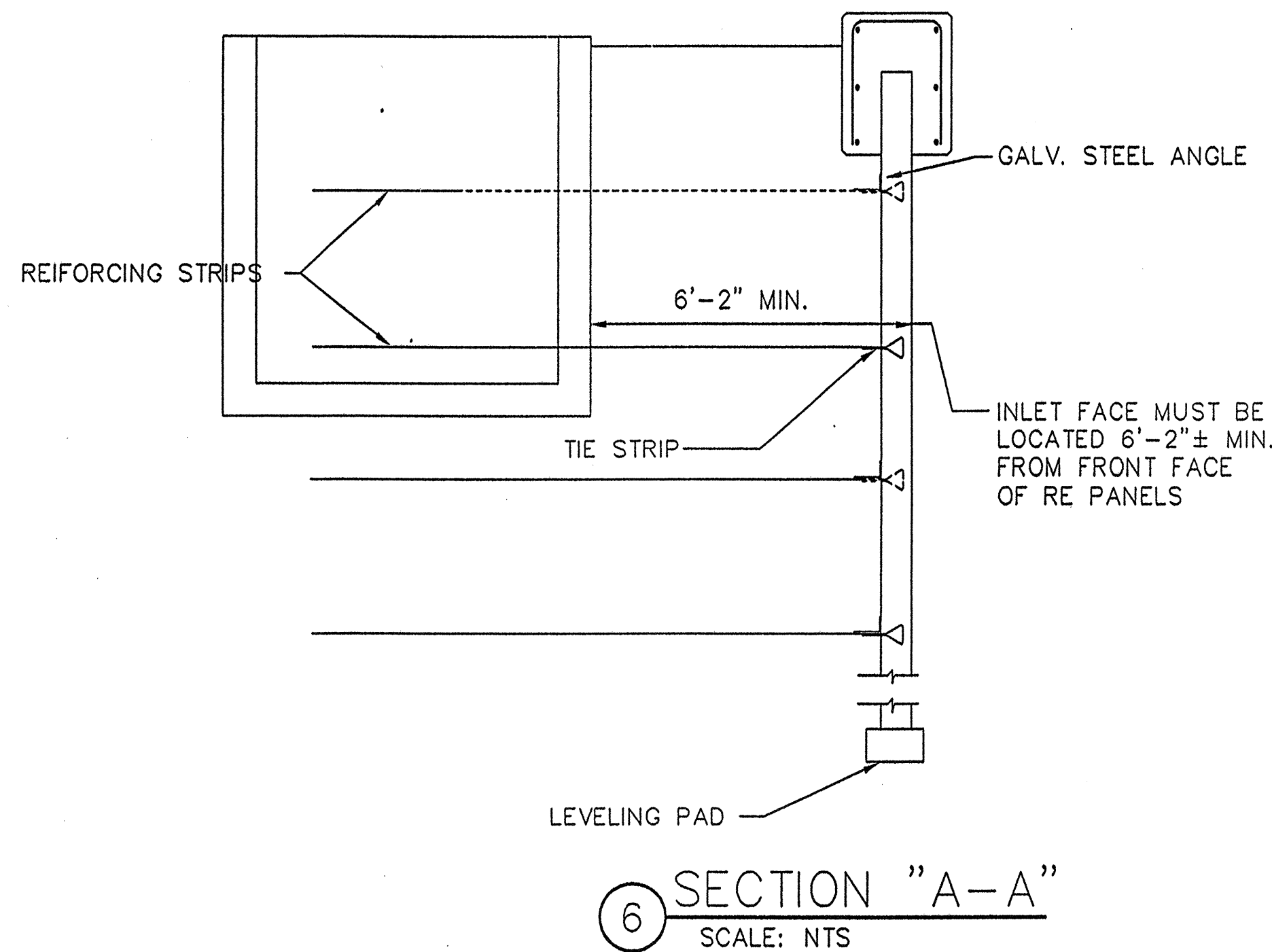
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TAI  
The Reinforced Earth Company  
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DESIGNED BY:	6/26/00	As Builts
PROJECT ENGR:	9/10/99	AS PER COMMENTS
CHECKED BY:	3/31/99	AS PER COMMENTS
ENG. MANAGER	3/10/99	ADDED NOTE TO COPING DETAIL
REV.	DATE	DESCRIPTION

PROJECT NAME	KAUAI HAWAII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	6 OF 9
DRAWING COVERS	DETAILS	SCALE	AS NOTED





CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY

ALEXANDER AND ASSOCIATES  
REGISTERED PROFESSIONAL ENGINEERS  
HAWAII

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
PROJ. NO. 50E-01-98

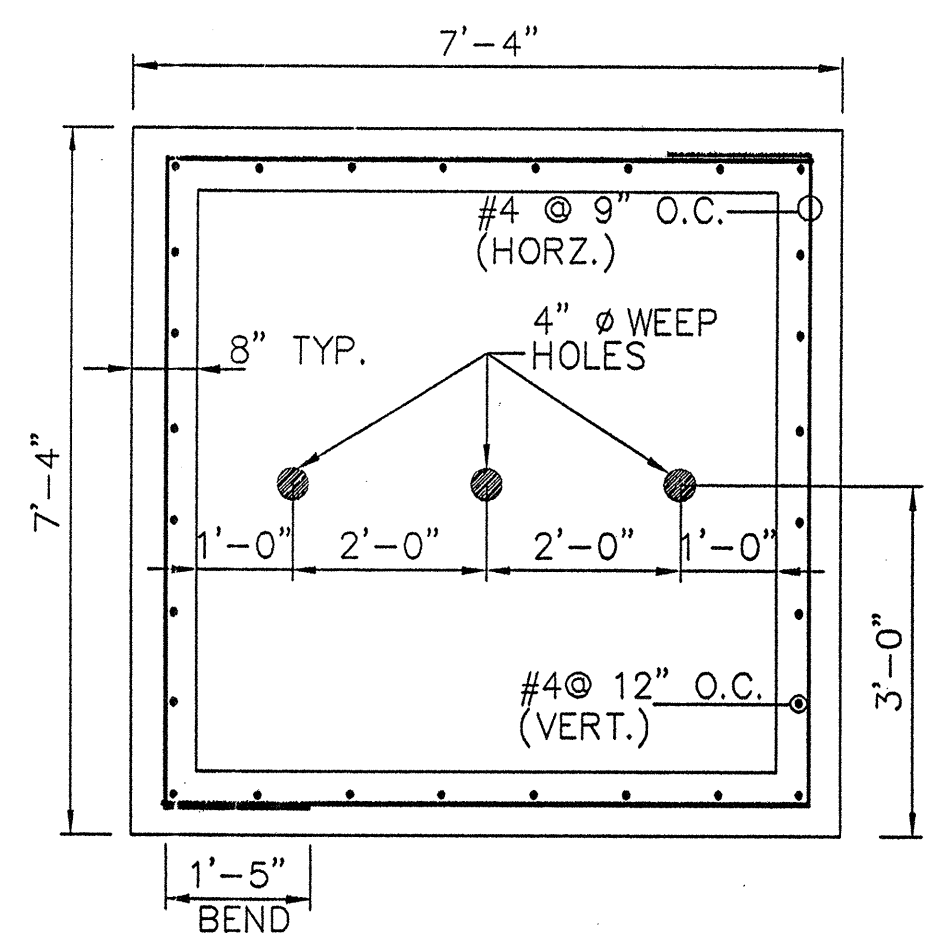
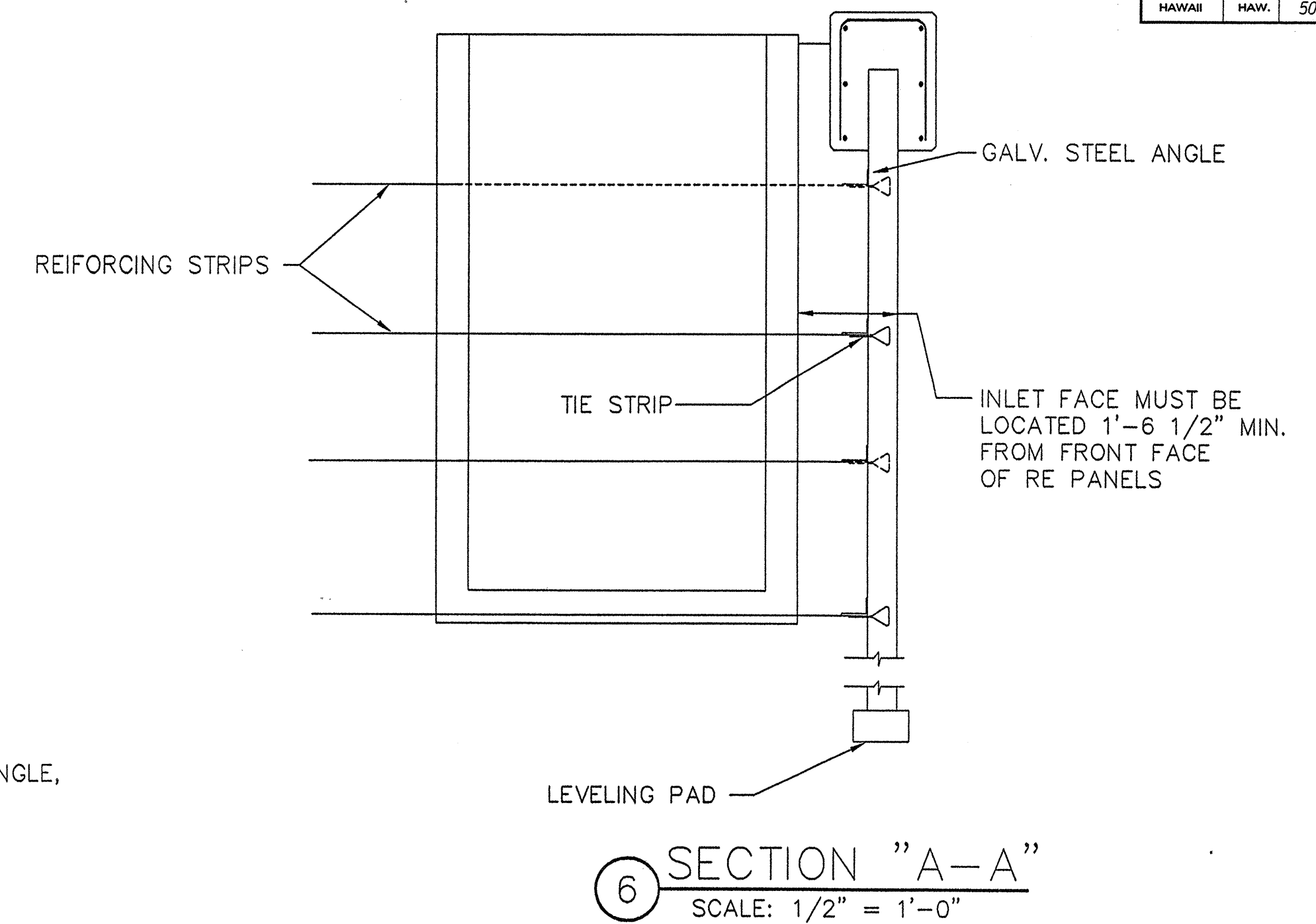
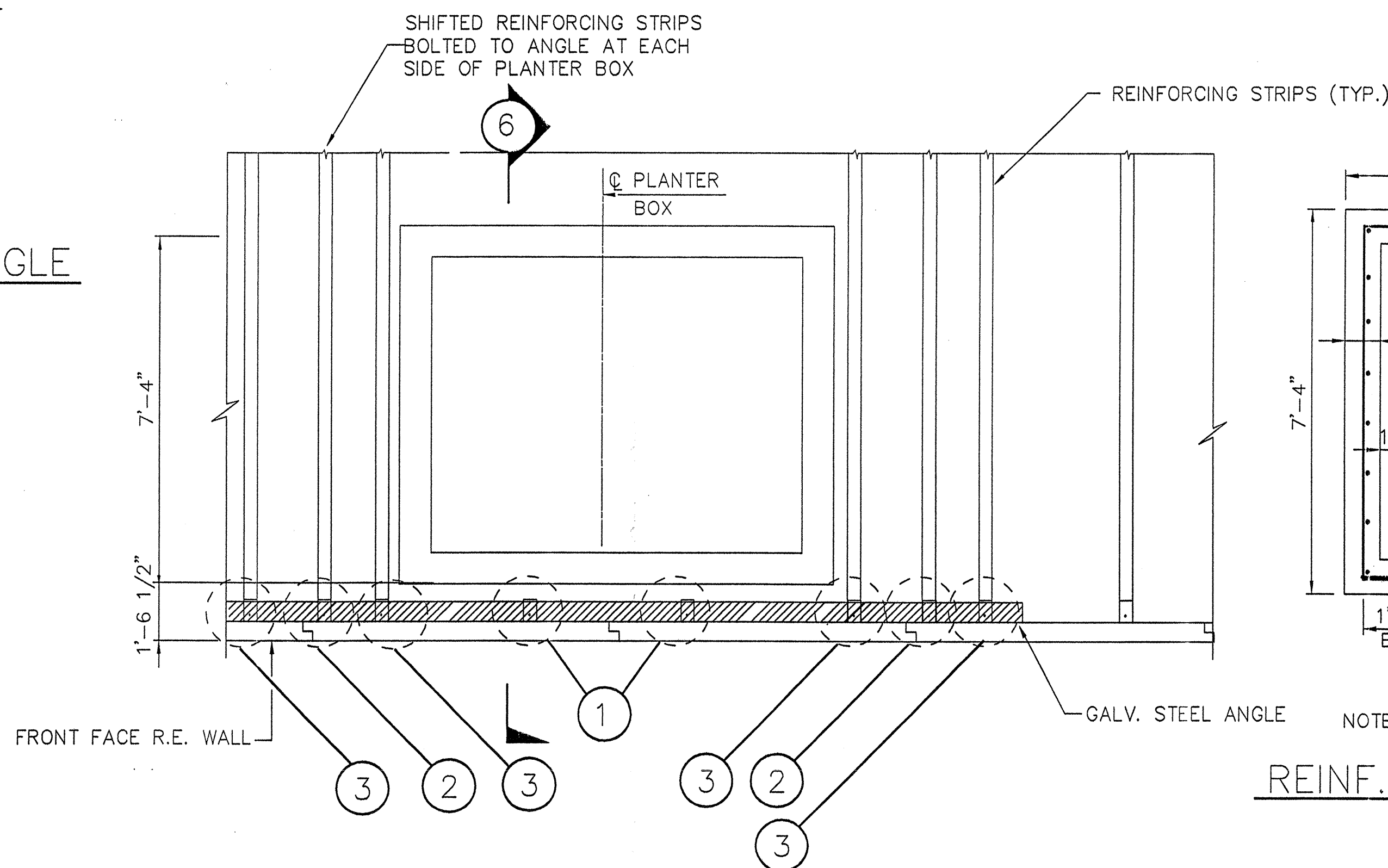
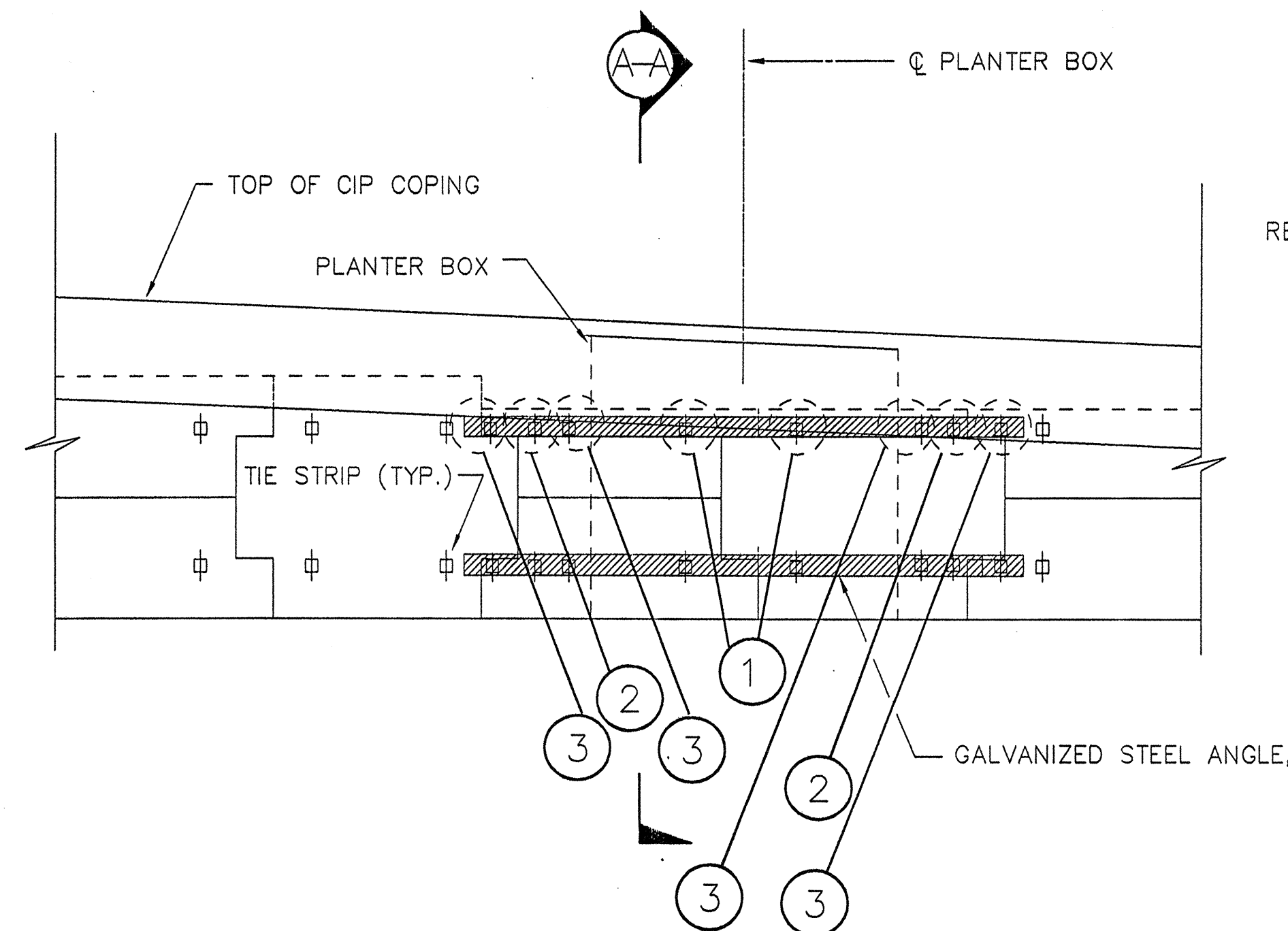
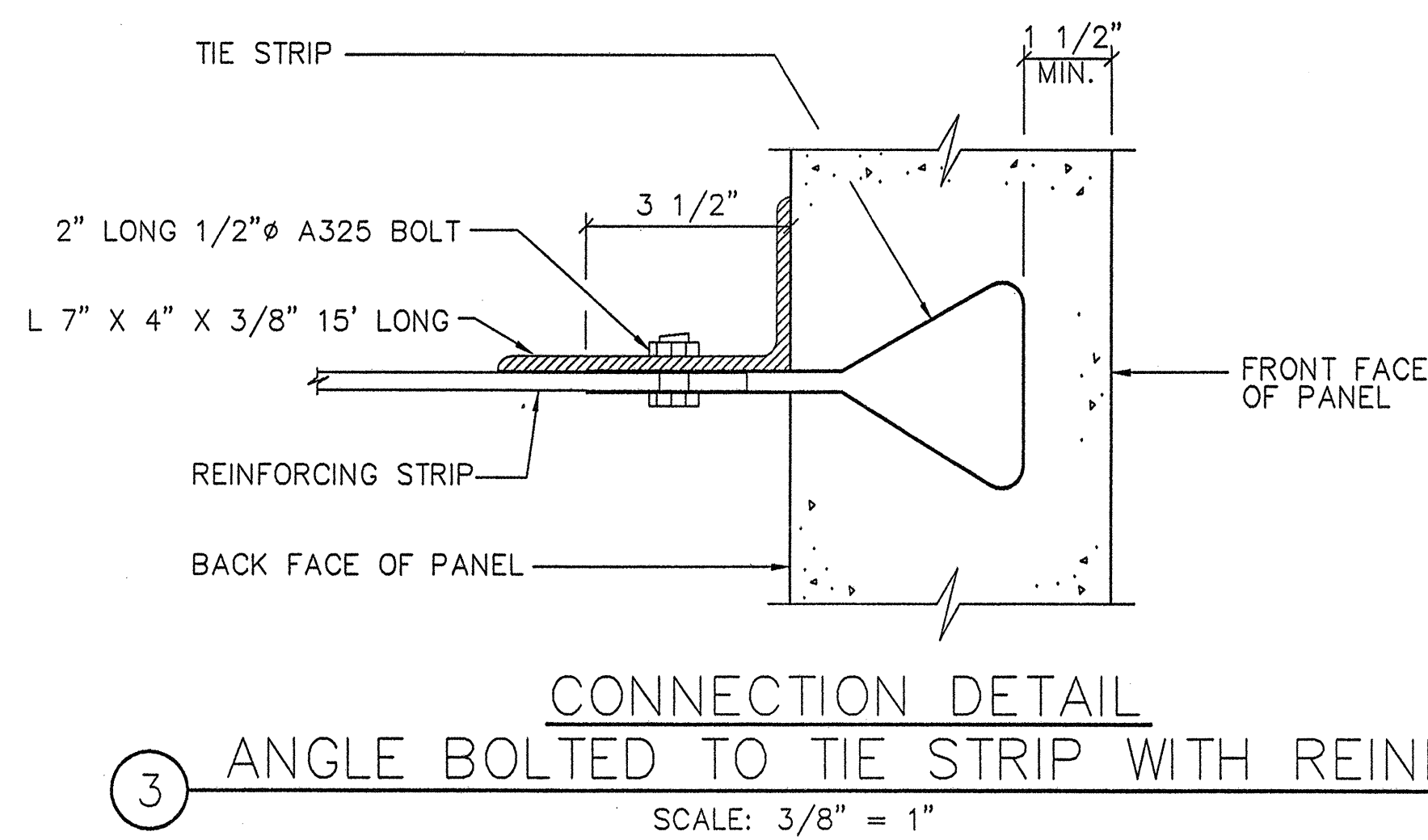
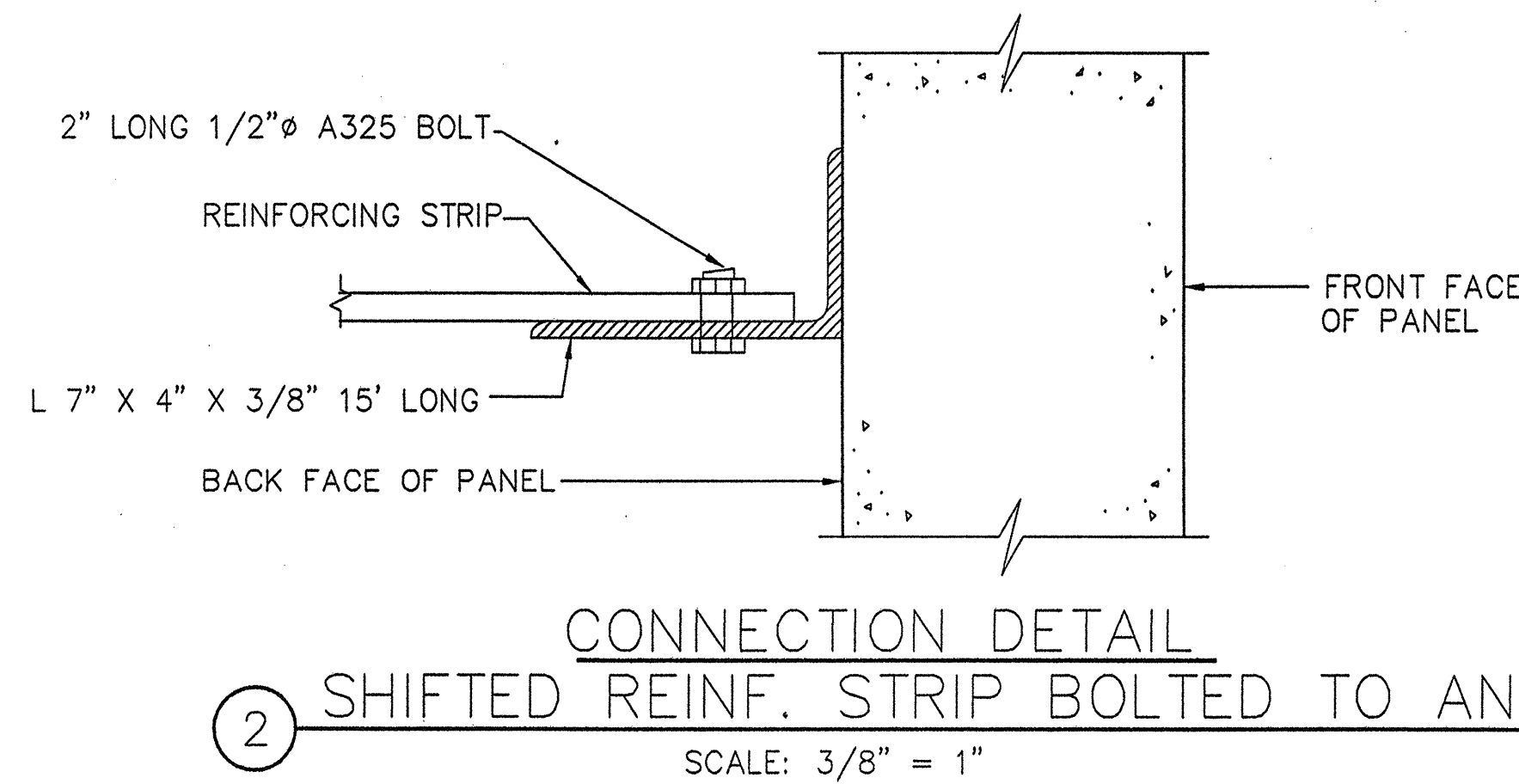
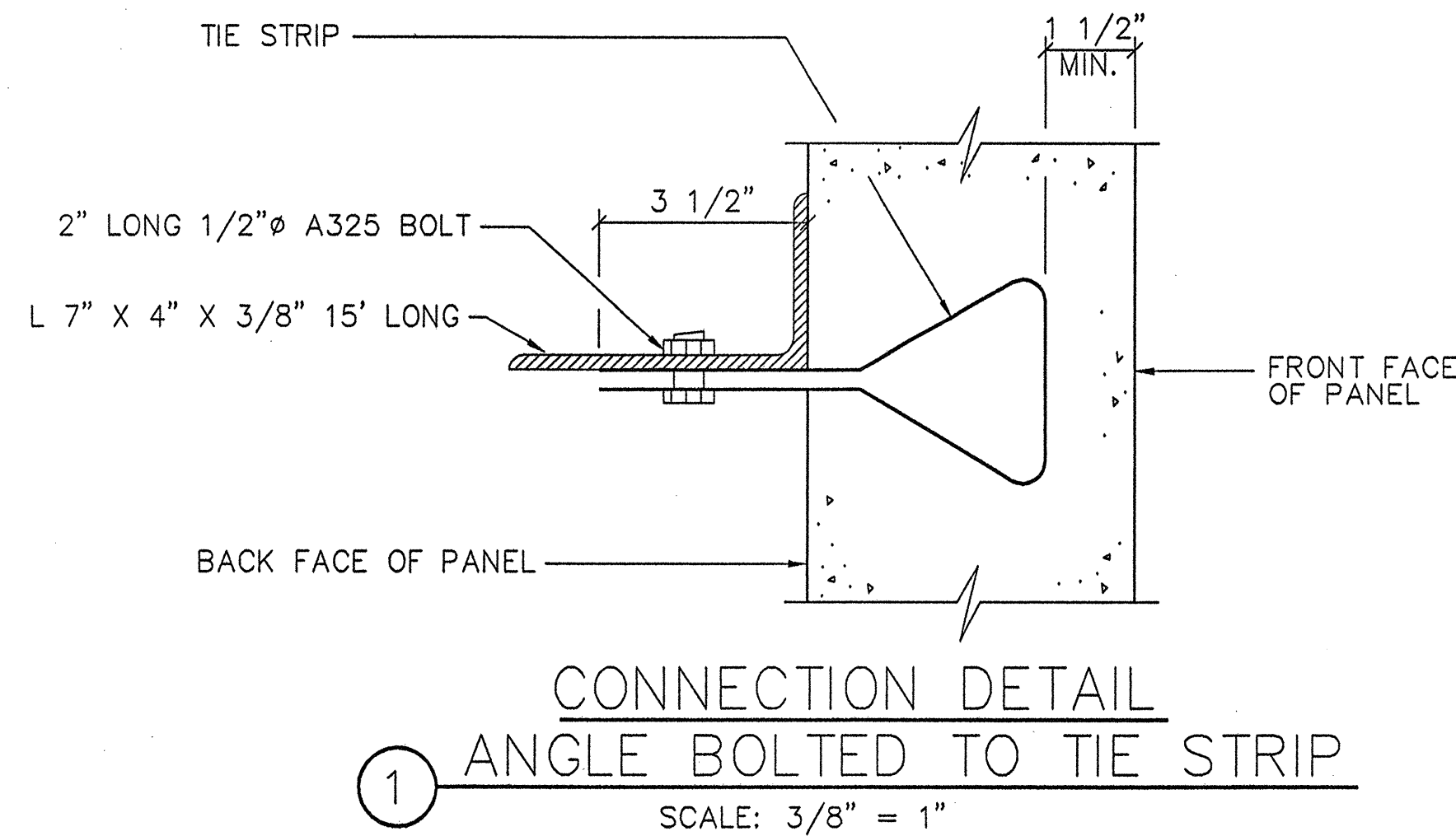
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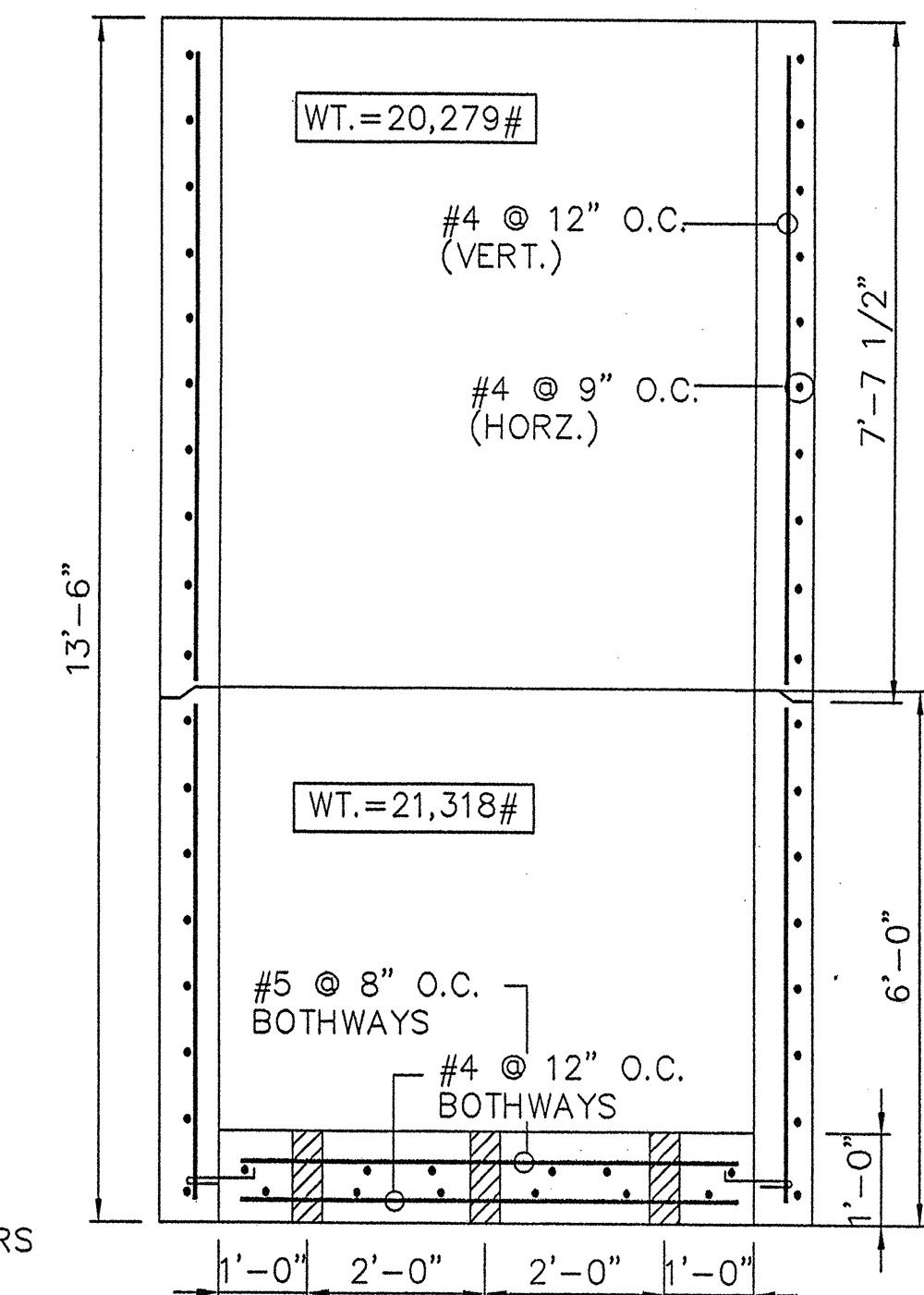
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DESIGNED BY:	3	6/26/00	As Built.
PROJECT ENGR:	2	3/31/99	AS PER COMMENTS
CHECKED BY:	1	2/8/99	ADDED STRIP DEFLECTION DETAIL
ENG. MANAGER	REV.	DATE	DESCRIPTION

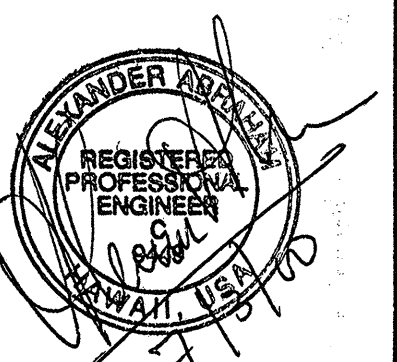
PROJECT NAME	KAUAMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	7 OF 9
DRAWING COVERS	DETAILS	SCALE	AS NOTED



NOTE: DESIGN OF PLANTER BOX BY OTHERS



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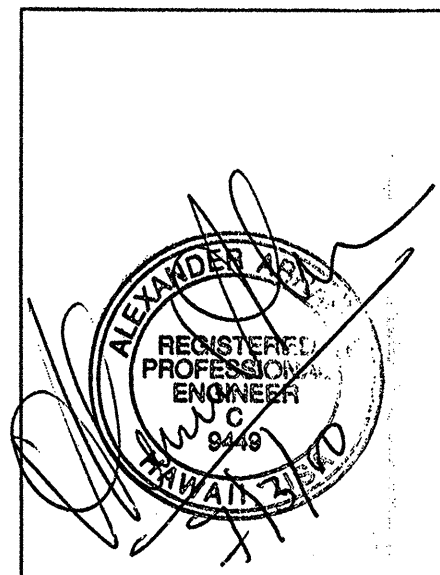
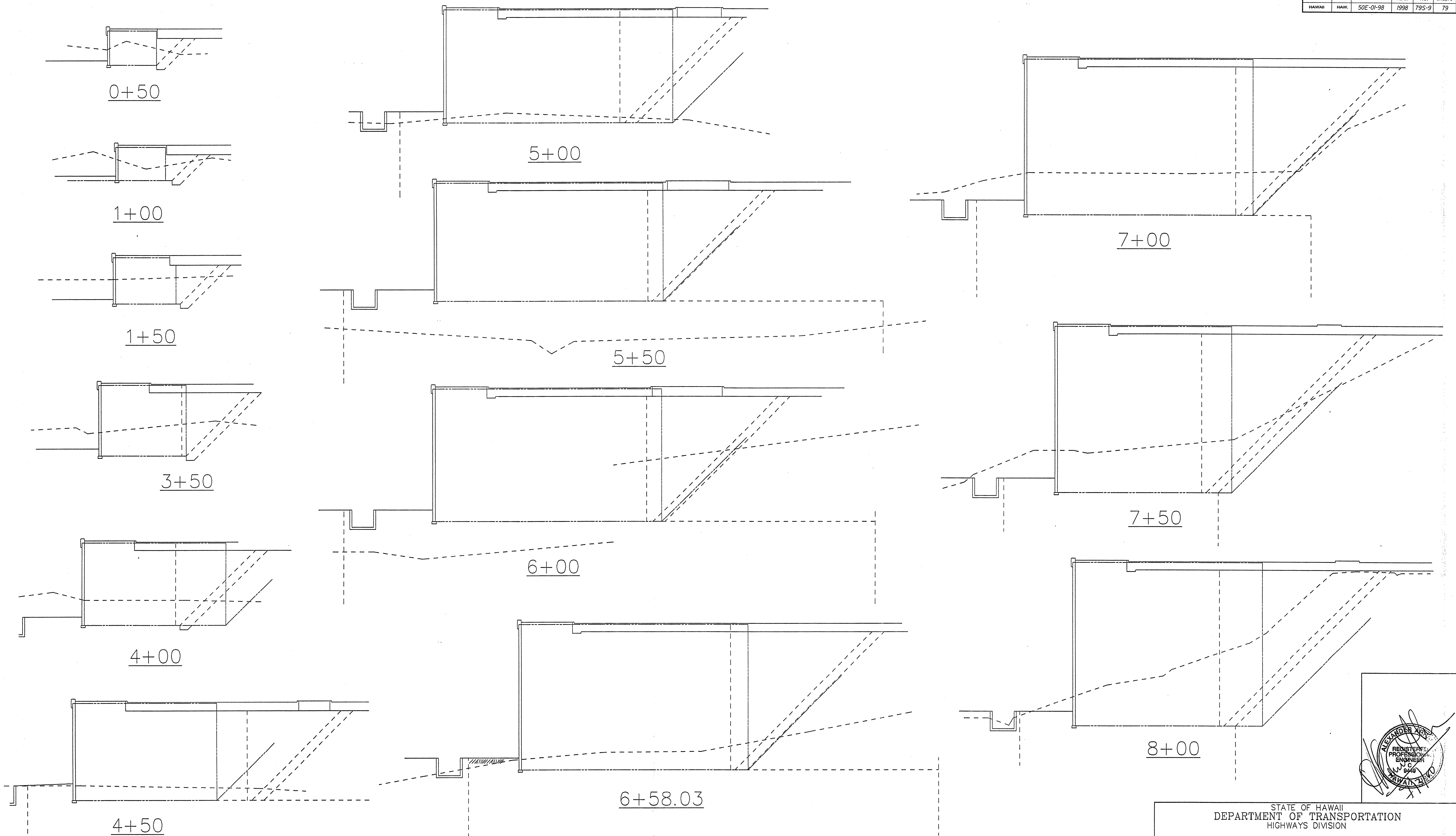
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DESIGNED BY:				
PROJECT ENGR:	2	6/26/00	AS BUILTS	
CHECKED BY:	1	3/31/99	AS PER COMMENTS	
ENG. MANAGER	REV.	DATE	DESCRIPTION	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PROJ. NO. 50E-01-98				
PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE	12/8/98	
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO.	RE 7107	
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO.	8 OF 9	
DRAWING COVERS	DETAILS	SCALE	AS NOTED	




FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	50E-01-98	1998	79S-9	79



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DESIGNED BY:			
PROJECT ENGR:	2	6/26/00	AS BUILT
CHECKED BY:	1	9/20/99	SHEET ADDED
ENG. MANAGER	REV.	DATE	DESCRIPTION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PROJ. NO. 50E-01-98		
PROJECT NAME	KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS	DATE 12/8/98
LOCATION	DISTRICT OF LIHUE ISLAND OF KAUAI	CONTRACT NO. RE 7107
OWNER	HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	DRAWING NO. 8A OF 9
DRAWING COVERS	CROSS SECTIONS	SCALE 1"=10'



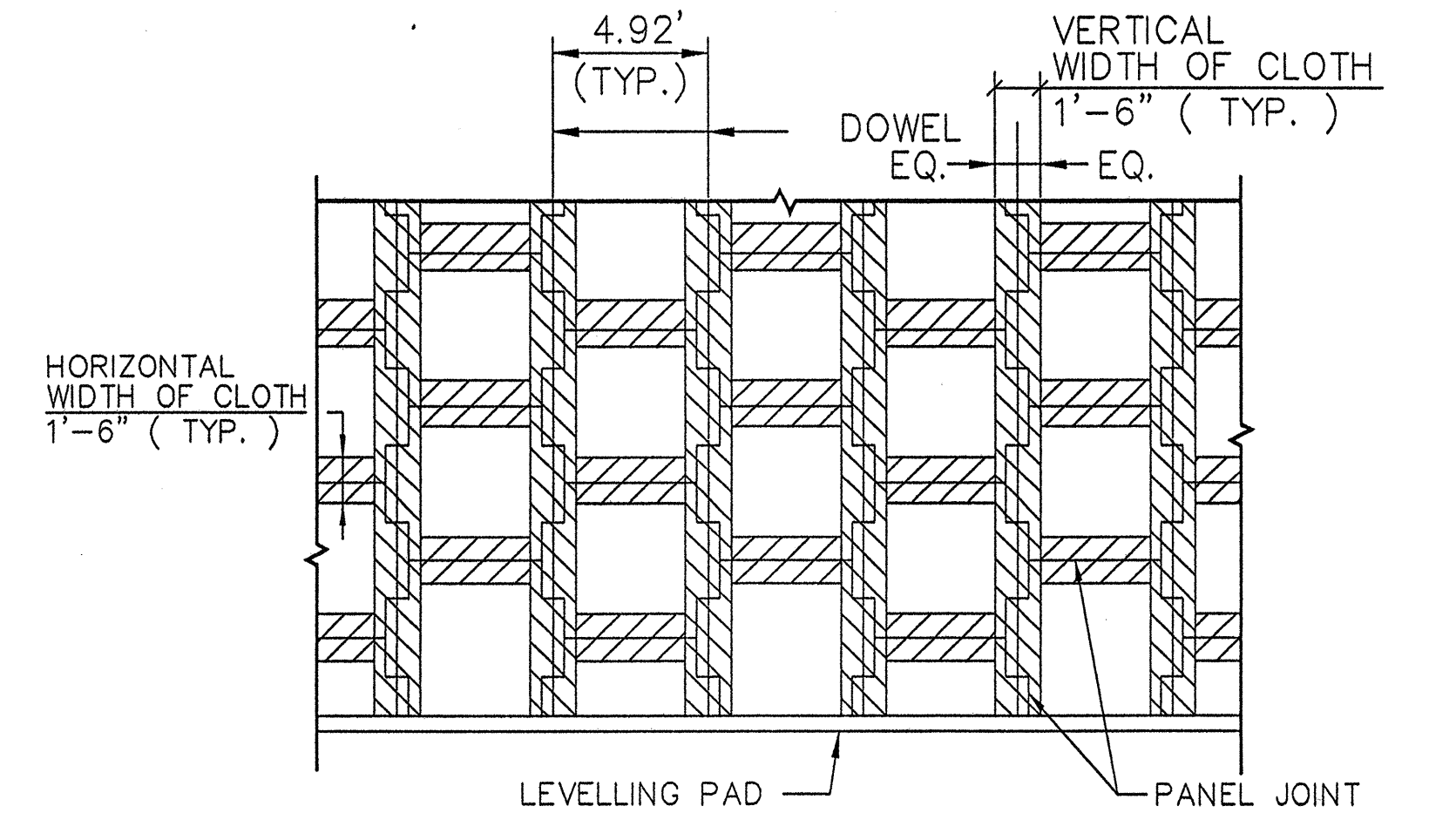




PANEL THICKNESS	REINFORCEMENT DESIGNATION	PANEL REINFORCEMENT	MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING ( KSF )
5 1/2"	R4	4-#3 VERTICAL 3-#4 HORIZONTAL	1.10
	R5	6-#3 VERTICAL 4-#4 HORIZONTAL	0.70
	R6	6-#3 VERTICAL 4-#4 HORIZONTAL	1.60

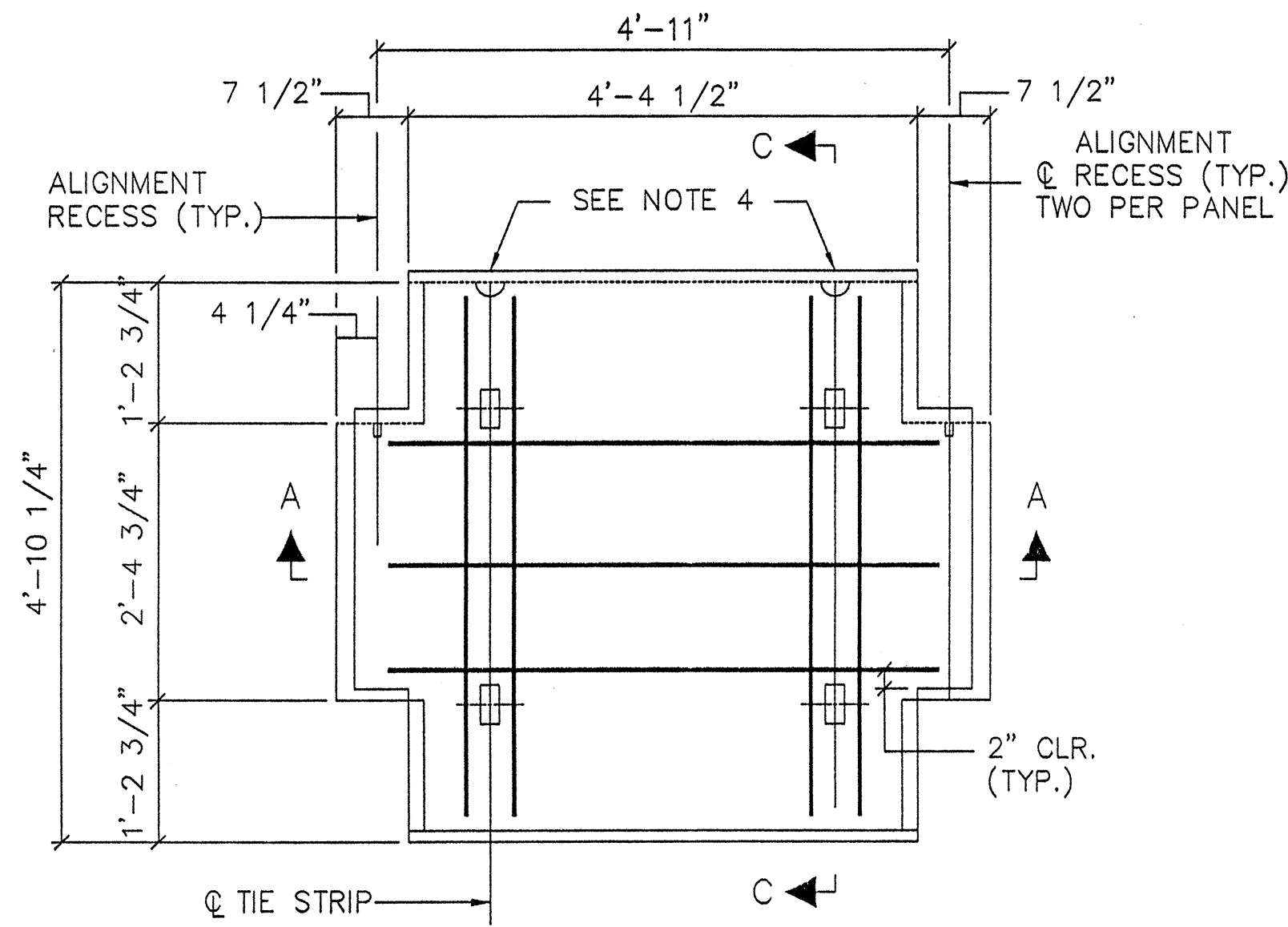
NOTES:

1. REINFORCING STEEL TO BE A615 GRADE 60.
2. 3/8" x 3/8" CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES ( FRONT FACE ONLY ).
3. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
4. ALL PANELS SHALL HAVE TWO LIFTING INSERTS OF ONE TON CAPACITY EACH.
5. PANEL DESIGN THICKNESS IS 5 1/2". THICKNESS OF CONCRETE MUST INCREASE TO ACCOMMODATE ANY ARCHITECTURAL SURFACE FINISH THAT MAY BE SPECIFIED.
6. ACTUAL PANEL REINFORCEMENT FOR ALL PANEL TYPES ON THIS PROJECT IS DESIGNATED ABOVE. R4 ILLUSTRATED FOR INFORMATION ONLY.
7. PANEL FINISH: SHALL BE BUSHHAMMER (RECO RE13) FORM FINISH

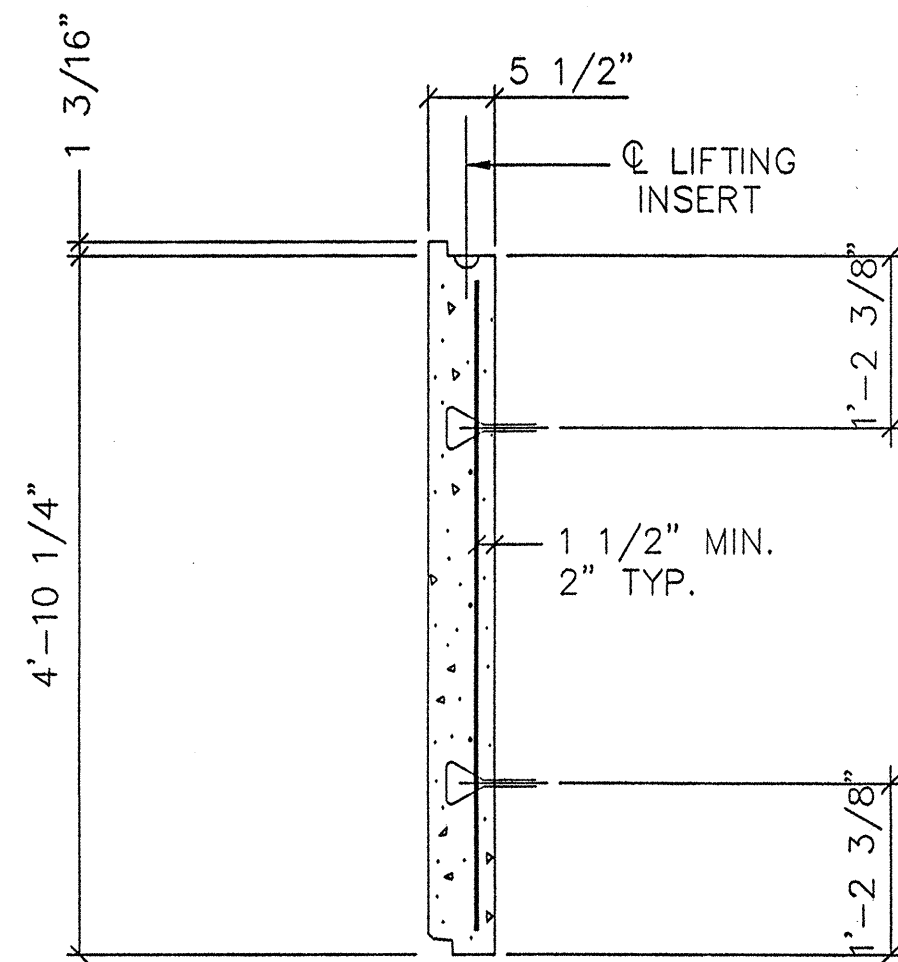


NOTE:  
STRIPS OF FILTER CLOTH SHALL BE PLACED ON BACK FACE OF PANEL, OVER PANEL JOINTS. FILTER CLOTH SHALL BE ADHERED TO BACK FACE OF PANELS USING AN ADHESIVE COMPOUND SUPPLIED BY THE REINFORCED EARTH COMPANY.

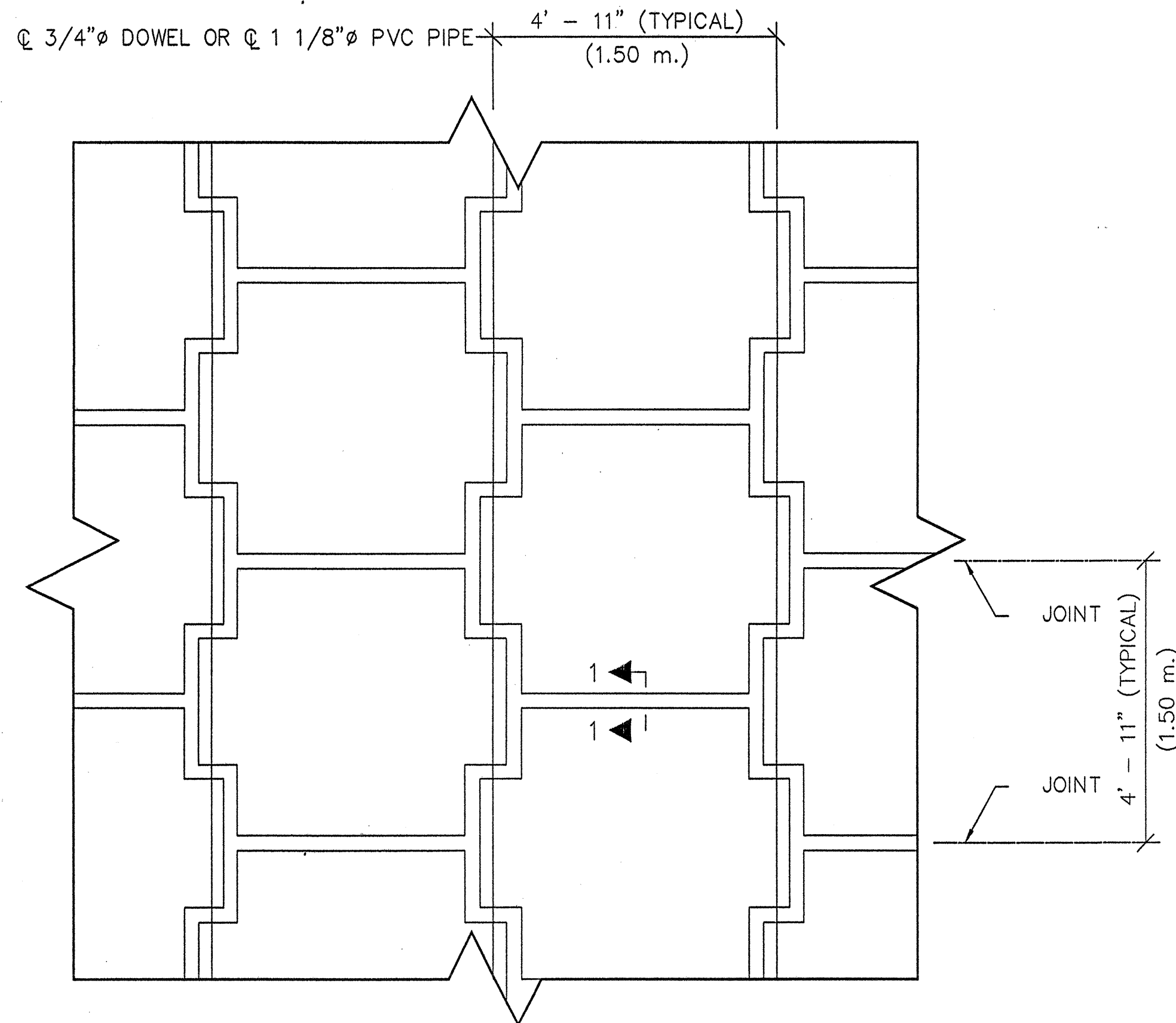
FILTER CLOTH DETAIL  
PARTIAL ELEVATION - BACK FACE  
SCALE: 3/16" = 1'-0"



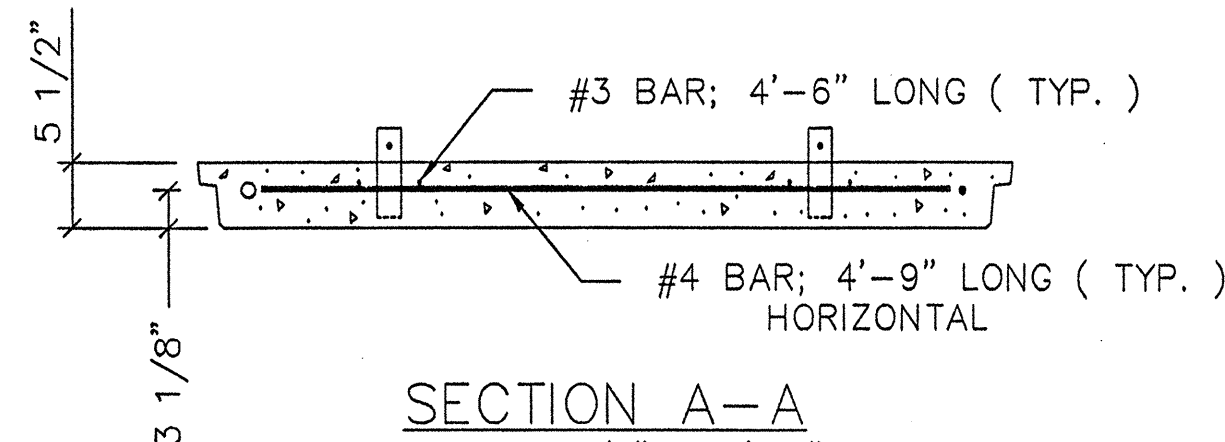
PANEL TYPE "A"  
WITH R4 REINFORCEMENT  
FRONT VIEW  
SCALE: 3/4" = 1'-0"



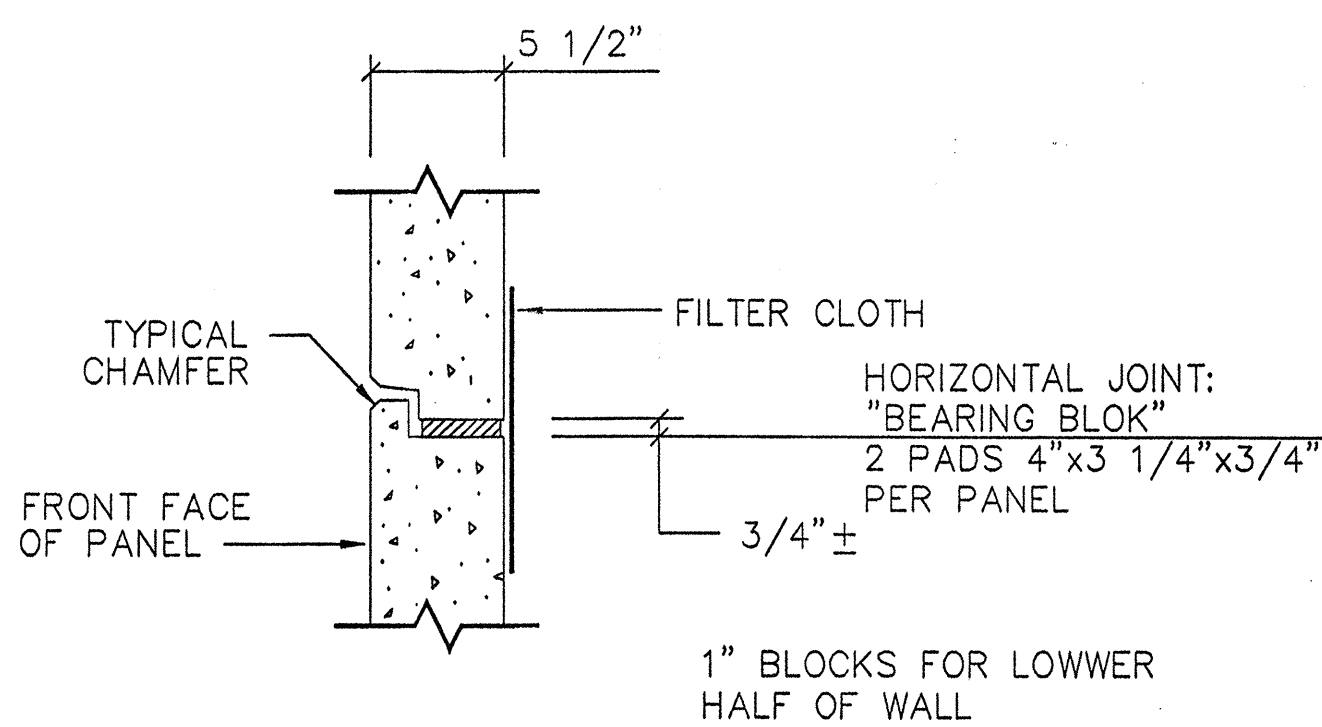
SECTION C-C  
SCALE: 3/4" = 1'-0"



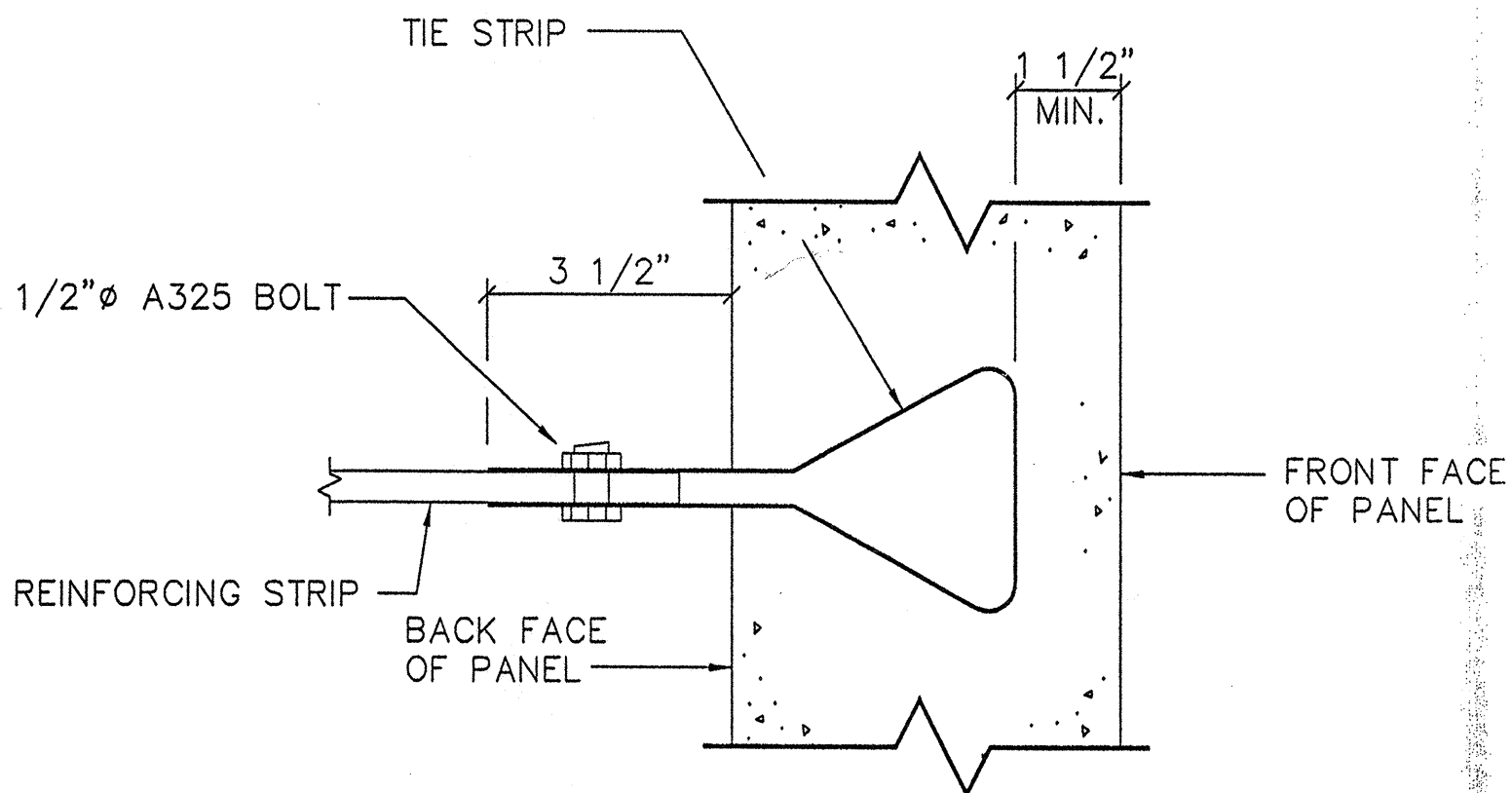
TYPICAL PANEL LAYOUT  
PARTIAL ELEVATION - FRONT FACE  
SCALE: 1/2" = 1'-0"



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



SECTION 1-1



CONNECTION DETAIL  
NO SCALE

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RESPECT TO THE  
INTERNAL STABILITY  
OF REINFORCED EARTH  
STRUCTURES ONLY

ALEXANDER A. ALEXANDER  
REGISTERED  
PROFESSIONAL  
ENGINEER  
HAWAII, U.S.A.  
12/8/98

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"REINFORCED EARTH" is the registered trademark of The Reinforced Earth Company.

DESIGNED BY: [Signature]  
PROJECT ENGR: [Signature]  
CHECKED BY: [Signature]  
ENG. MANAGER: [Signature]  
REV. DATE DESCRIPTION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
PROJ. NO. 50E-01-98  
PROJECT NAME: KAUMUALII HIGHWAY, KUHIO HIGHWAY & RICE STREET INTERSECTION IMPROVEMENTS  
LOCATION: DISTRICT OF LIHUE ISLAND OF KAUAI  
OWNER: HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION  
DRAWING COVERS: STANDARD PANEL DETAILS  
DATE: 12/8/98  
CONTRACT NO.: RE 7107  
DRAWING NO.: 9 OF 9  
SCALE: AS NOTED