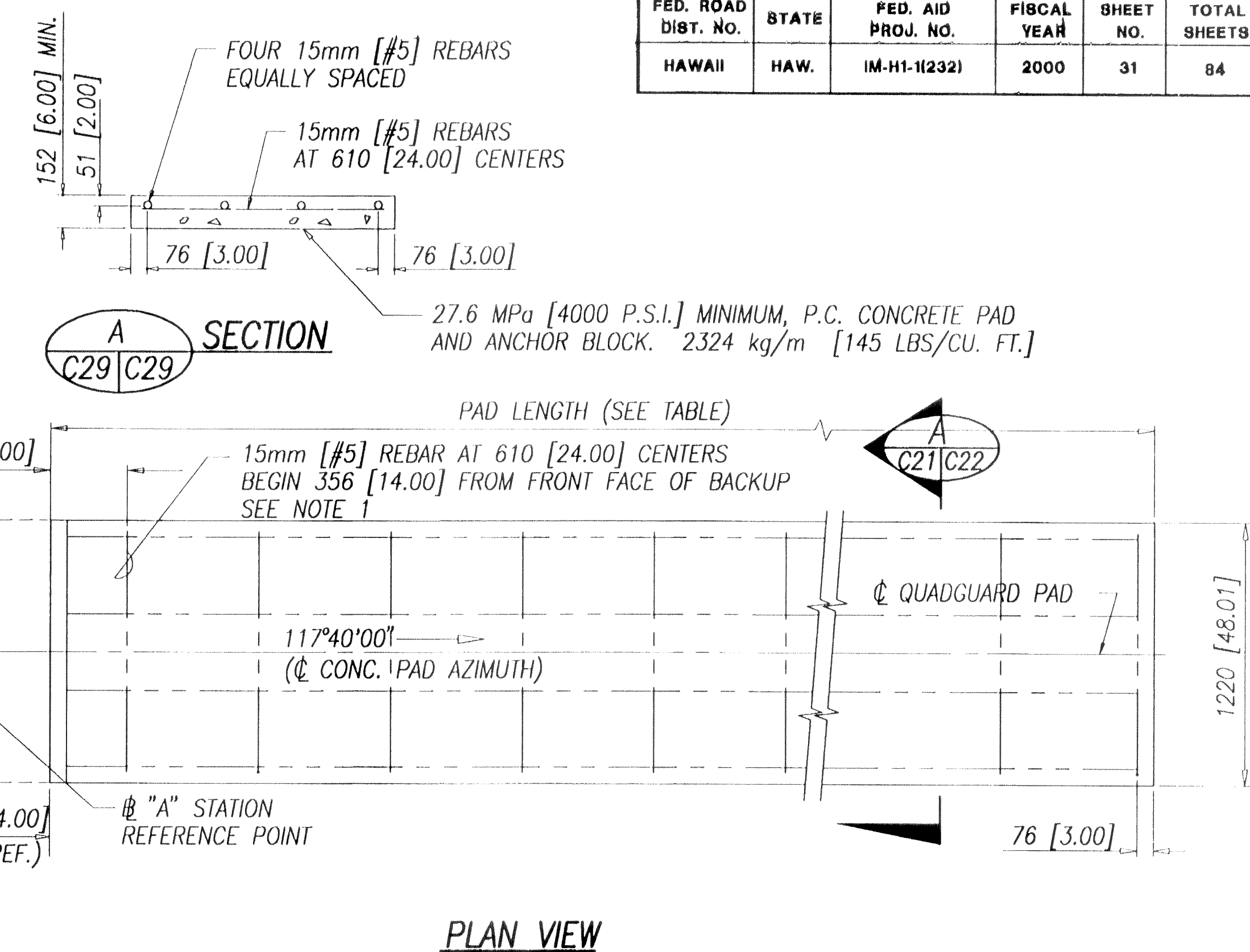
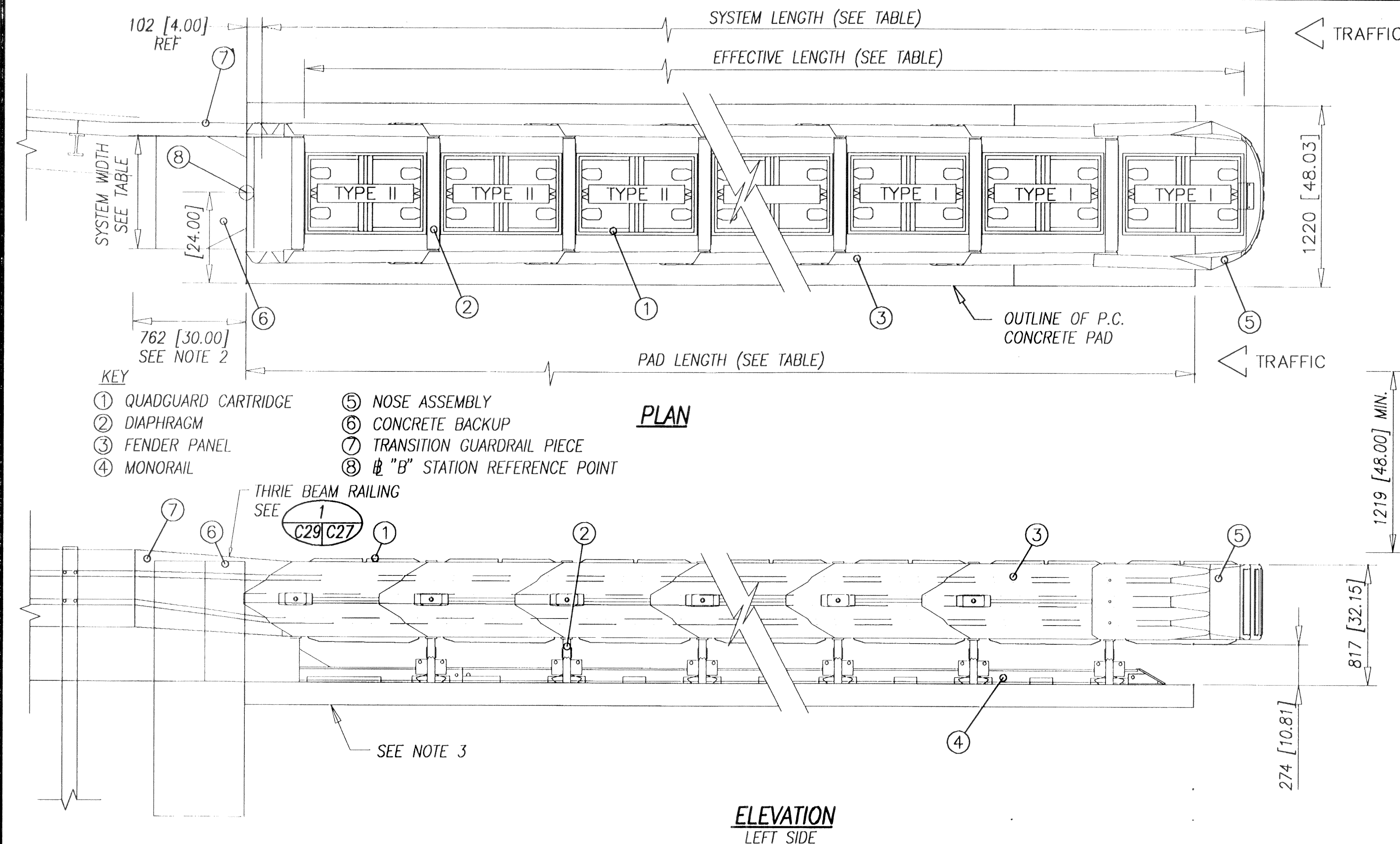


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-11232	2000	31	84



NOTES:

- CROSS SLOPE OF PAD SHALL NOT EXCEED 8%, AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.

QUADGUARD SYSTEM CONCRETE PAD, CONCRETE BACKUP, QG

NOTES:

- IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
- PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 [30.00] MINIMUM.
- 152 [6.00] MINIMUM REINFORCED 27.6 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 [8.00] MINIMUM NON-REINFORCED 27.6 MPa [4000 PSI] P.C. CONCRETE ROADWAY.
- SEE THE "QUADGUARD SYSTEM DESIGN MANUAL" CODED ENE 820-796 FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (312) 467-6750.
- THE CONTRACTOR SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE THRIE BEAM GUARDRAIL.

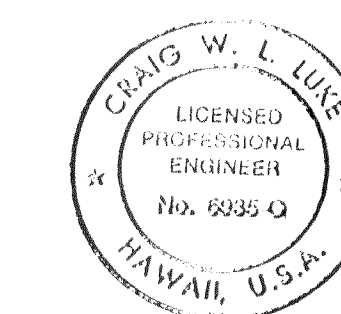
1
C9 C29 QUADGUARD SYSTEM W/ CONCRETE BACKUP
SCALE: 1/2" = 1'

SYSTEM DIMENSIONS

BAYS	36" WIDTH MODEL# YELLOW	SYSTEM LENGTH		EFFECTIVE LENGTH		PAD LENGTH		REBAR REQUIRED		YDS. OF CONC. IN PAD	
		m	ft-in	m	ft-in	m	ft-in	m	ft-in	m ³	YARDS ³
5	QS3605Y	5.83	[19'-1"]	5.40	[17'-8"]	5.49	[18'-0"]	31.39	[103'-0"]	2.12	[2.8]

CRASH CUSHION NOTES:

- THE DETAILS SHOWN HERE ARE FOR THE ASSEMBLY OF A QUADGUARD CRASH CUSHION SYSTEM. THE CONTRACTOR SHALL USE THIS SYSTEM OR AN APPROVED EQUIVALENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE CONCRETE PAD, TRANSITION PIECE TO THRIE BEAM, BACKUP ASSEMBLY, AND ANY OTHER MATERIALS CALLED FOR IN THESE DETAILS. ALL WORK RELATED TO THE CONSTRUCTION OF THE CRASH CUSHION SHALL COMPLY WITH THE MANUFACTURER'S SPECIFICATIONS.



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

SIGNATURE DATE

UNITS OF MEASUREMENT ARE
MILLIMETERS [INCHES] UNLESS
OTHERWISE NOTED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CRASH CUSHION DETAILS - 1

INTERSTATE ROUTE H-1
PUNAHOU ST. OFF-RAMP IMPROVEMENTS
F.A.I. Proj. No. IM-H1-1(232)

Scale: As Shown

Date: 4/28/00

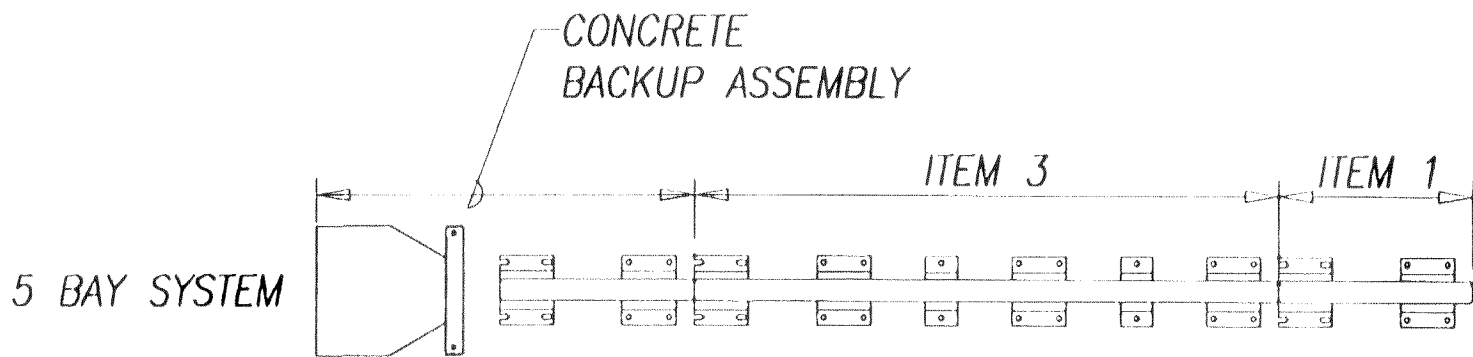
SHEET No. C-29 OF 36 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(232)	2000	32	84

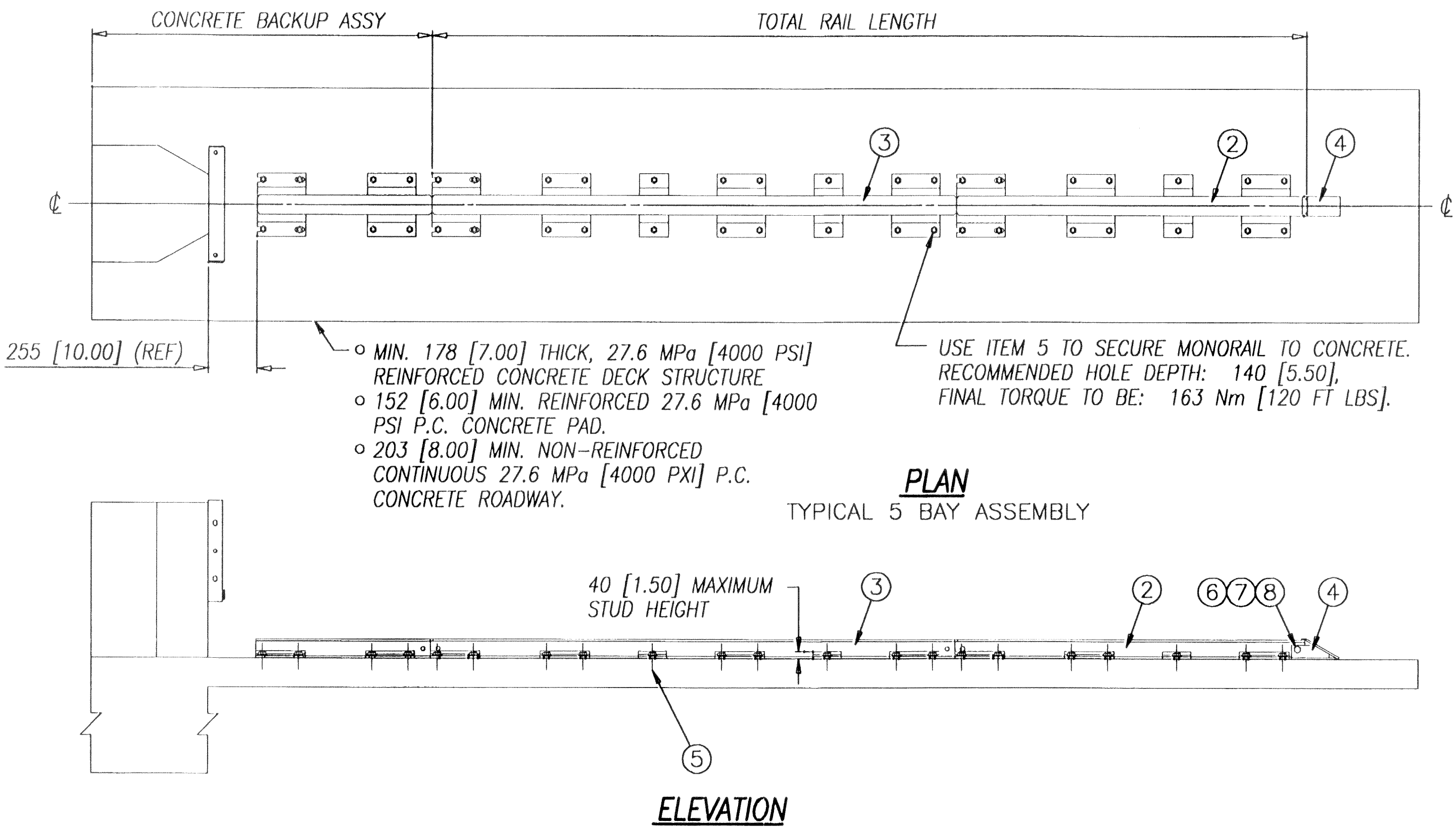
TABLE "L"						
ASSY NO.	NO. OF BAYS	TOTAL RAIL LENGTH	*ITEM 1	*ITEM 2	*ITEM 3	*ITEM 5
3540060-0500	5	3660 [144.1]	1	0	1	5

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D.
1	2760051-0000	MONORAIL, ONE BAY, QG, G	*
2	2760061-0000	MONORAIL, TWO BAY, QG, G	*
3	2760071-0000	MONORAIL, THREE BAY, QG, G	*
4	2760041-0000	END CAP, MONORAIL, QG, G	1.00
5	2535300-0000	ANCHOR, MP-3, PT-KIT, ? X 7, VT	*
6	2699251-0000	BOLT, HX, 3/4 X 3-1/2, G5, G	1.00
7	2704341-0000	NUT, HX, 3/4, G, GR DH	1.00
8	2708201-0000	WASHER, LOCK, 3/4, G	1.00

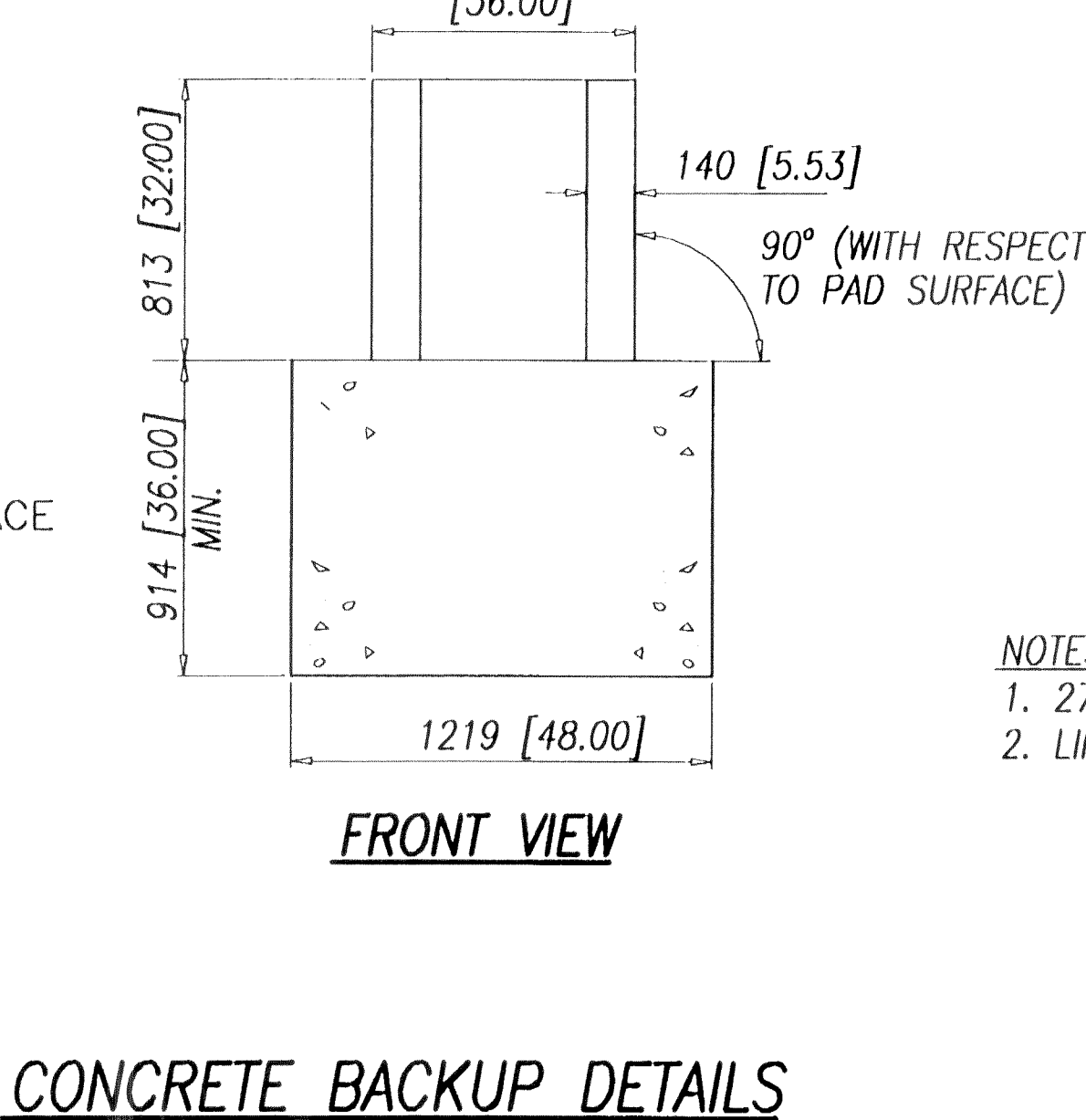
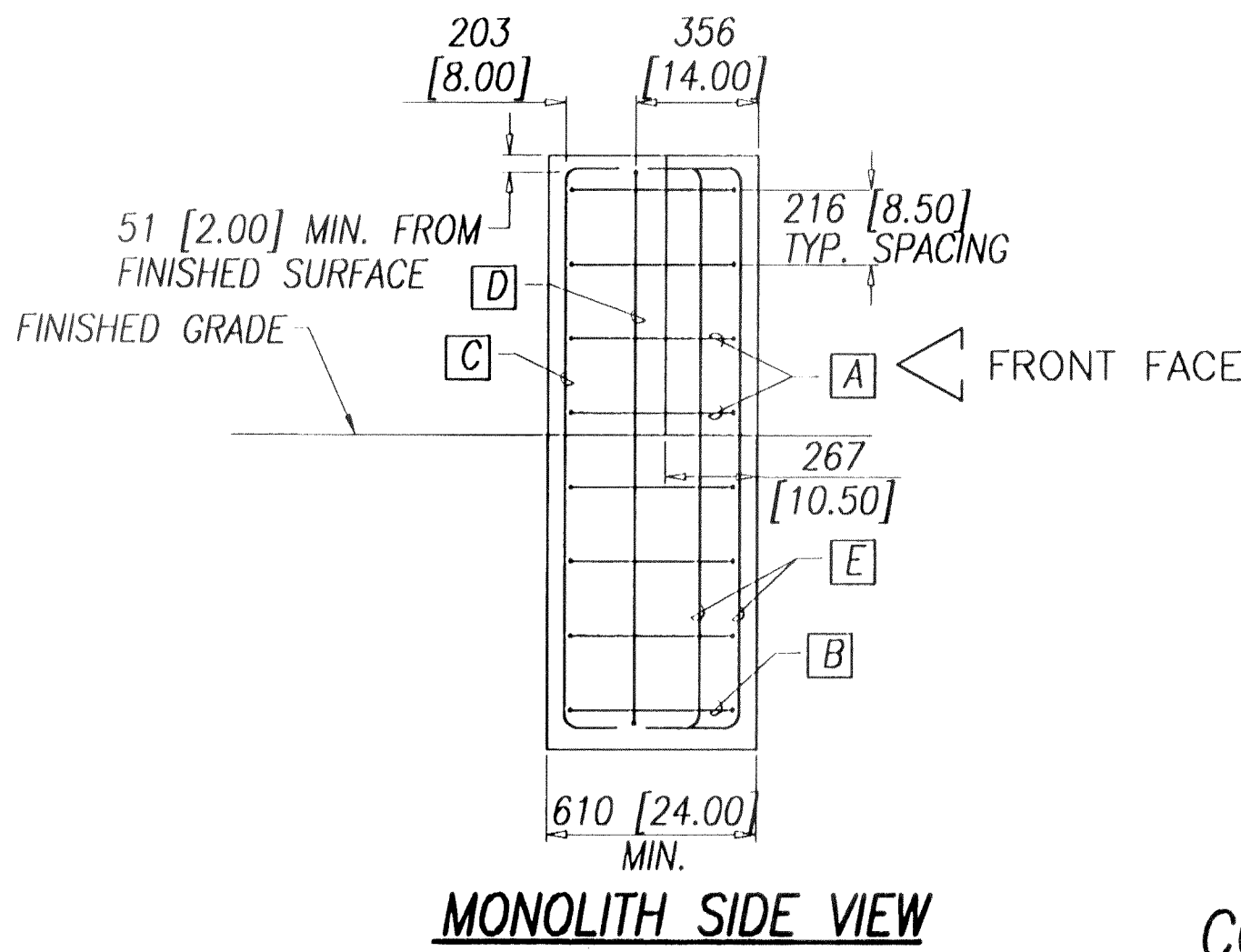
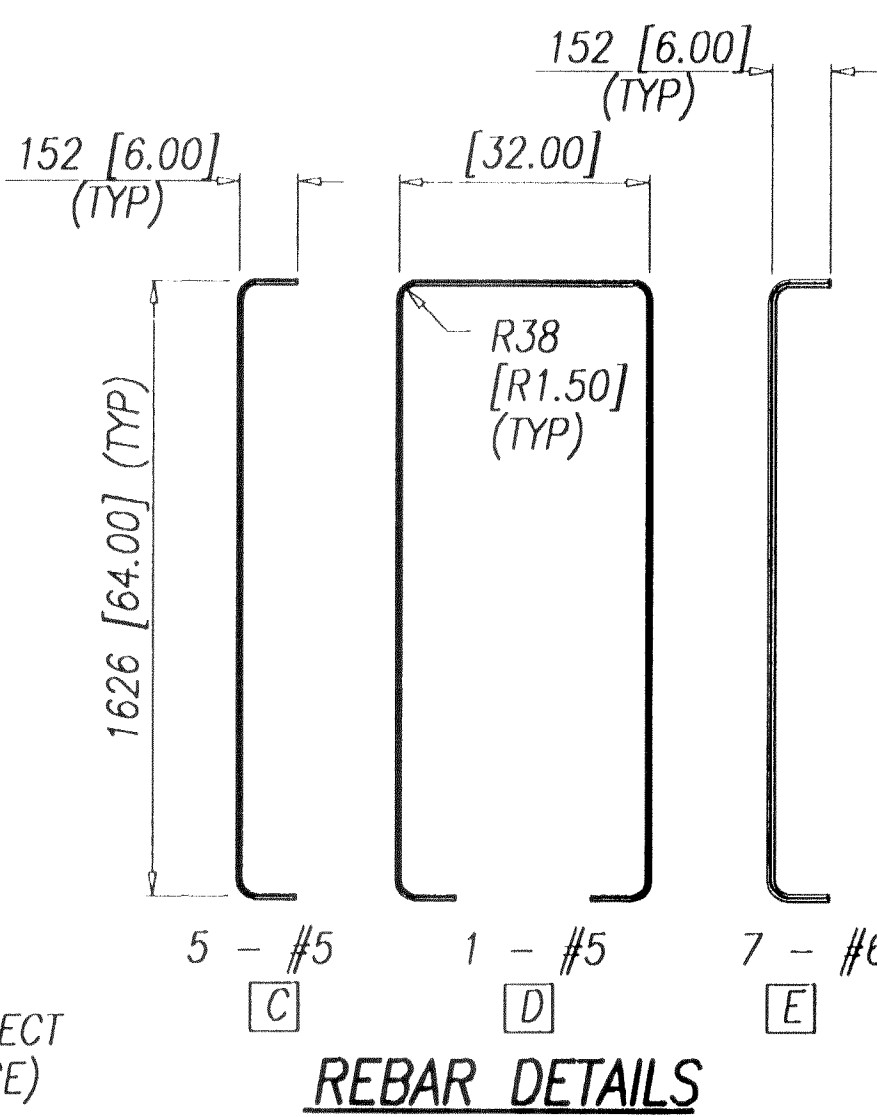
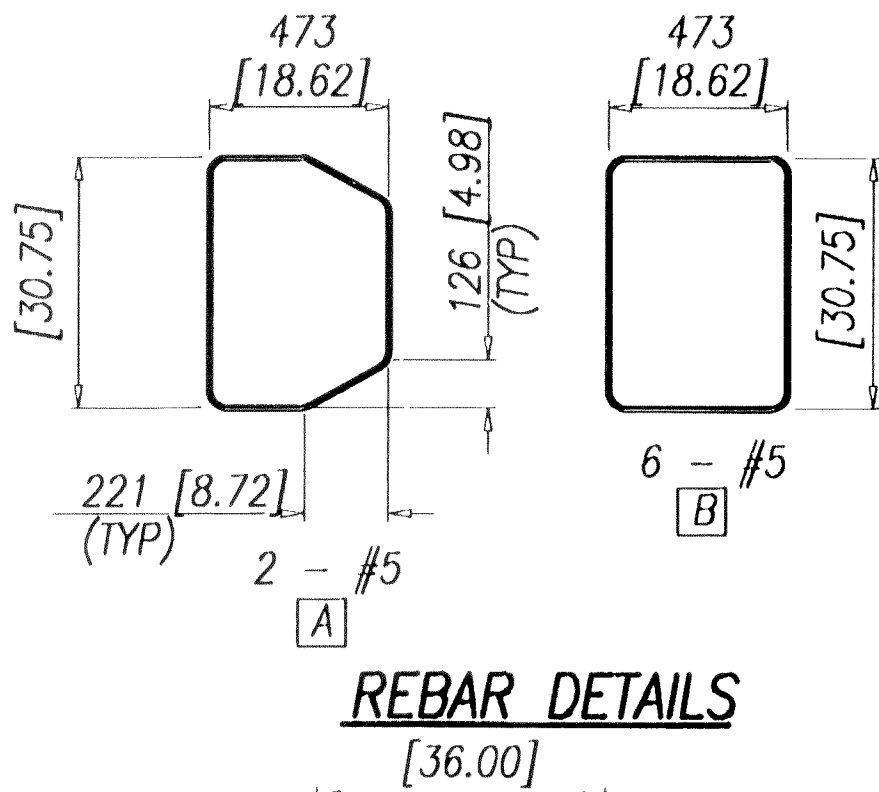
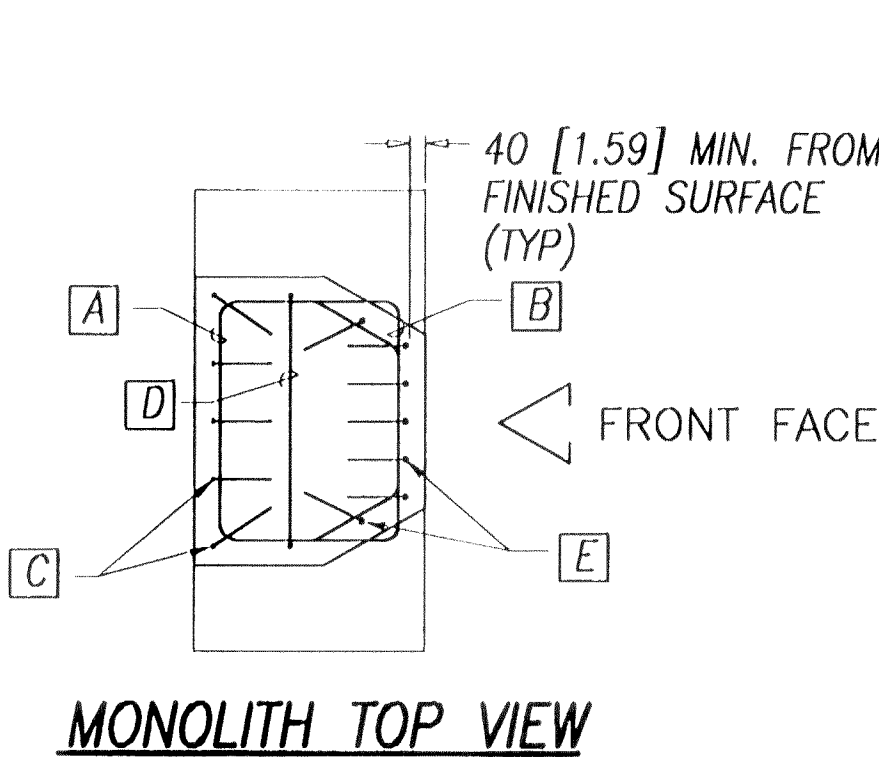
* SEE TABLE



MONORAIL ASSEMBLY LAYOUT (5 BAY SYSTEM)

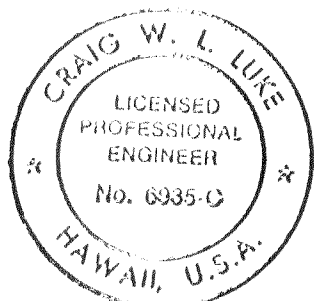


TYPICAL MONORAIL ASSEMBLY, QG W/ CONCRETE BACKUP



- NOTES:
- 27.6 MPa [4000 PSI] PORTLAND CEMENT CONCRETE REQUIRED.
 - LINEAR TOLERANCES TO BE ± 6 [0.25]

UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE: *[Signature]* DATE: 4/28/00

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

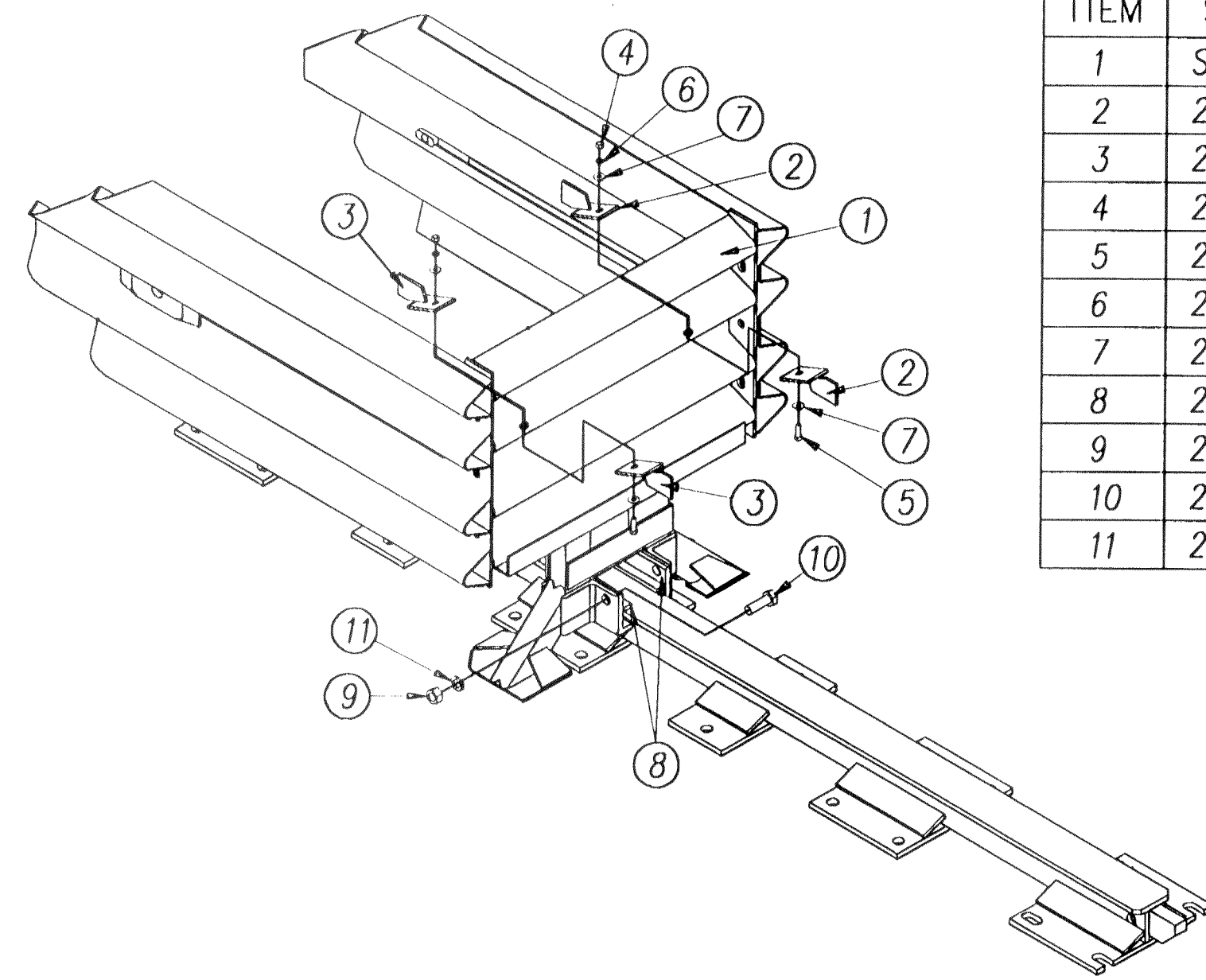
CRASH CUSHION DETAILS- 2

INTERSTATE ROUTE H-1
PUNAHOU ST. OFF-RAMP IMPROVEMENTS
F.A.I. Proj. No. IM-H1-1(232)

Scale: As Shown
Date: 4/28/00

SHEET No. C-30 OF 36 SHEETS

ORIGINAL PLAN NOTE BOOK	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	CHECKED BY	
	NO.	



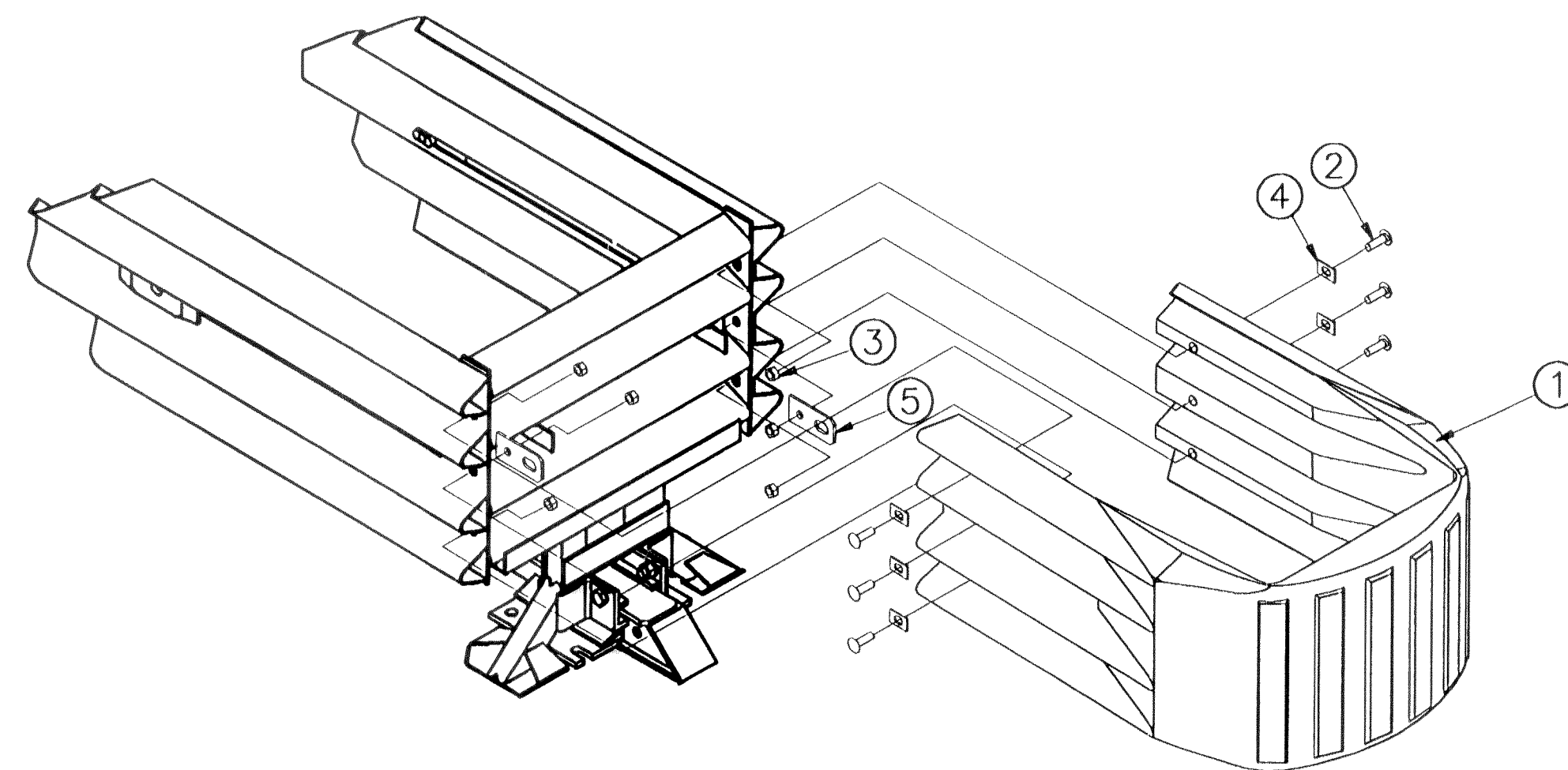
DIAPHRAGM ASSEMBLY, QG

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D.
1	SEE TABLE A	DIAPHRAGM, QB, QG,G	1.00
2	2760101-0000	BRACKET, CARTRIDGE SUPPORT, R, QG, G	2.00
3	2760111-0000	BRACKET, CARTRIDGE SUPPORT, L, QG, G	2.00
4	2704031-0000	NUT, HX, 3/8, G	2.00
5	2701021-0000	BOLT, HX, 3/8 X 1-1/2, G	2.00
6	2708041-0000	WASHER, LOCK, 3/8, G	2.00
7	2708021-0000	BOLT, HX, 3/8 X 1, G	4.00
8	2760091-0000	MONORAIL GUIDE, QG,G	2.00
9	2704341-0000	NUT, HX, 3/4, GR DH	4.00
10	2699121-0000	BOLT, HX, 3/4 X 2, GB,G	4.00
11	2708201-0000	WASHER, LOCK 3/4, G	4.00

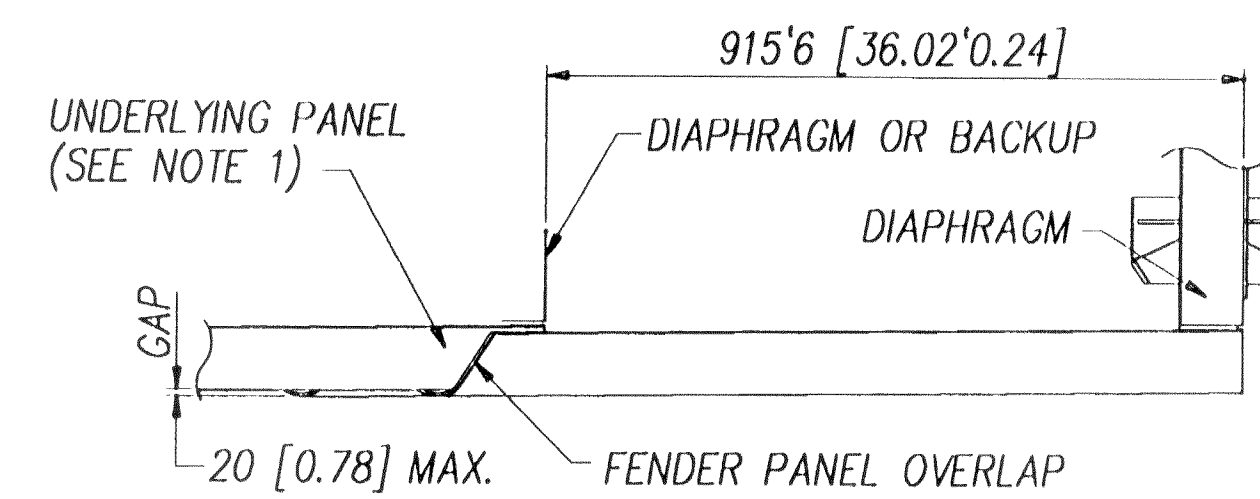
TABLE A		
ASSY. NO.	STOCK NO.	DESCRIPTION
3540071-0000	276011-0000	DIAPHRAGM, QB, 24, QG,G
3540072-0000	2761021-0000	DIAPHRAGM, QB, 30, QG,G
3540073-0000	2761031-0000	DIAPHRAGM, QB, 36, QG,G

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D.
1	3540130-0*00	NOSE, W/SUPPORT BRACKET	1.00
2	2699341-0000	BOLT, RAIL, 5/8 X 2, G	6.00
3	2704191-0000	NUT, HX, 5/8, G, RAIL	6.00
4	2708871-0000	WASHER, BAR, 1/8 X 1-1/4 X 2, W/HOLE, G	6.00
5	2760251-0000	BRACKET, PULL-OUT	2.00

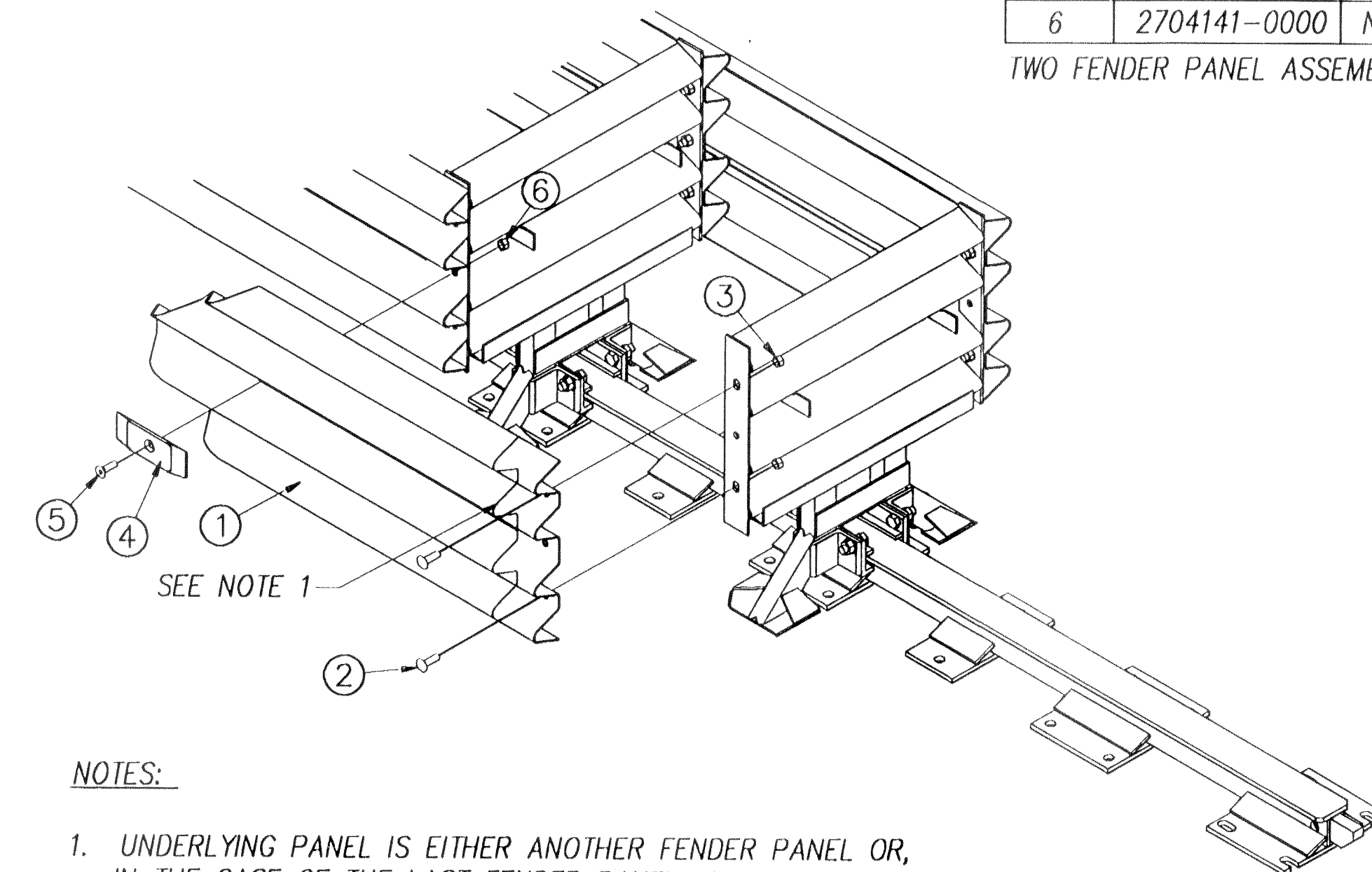
* 0 INDICATES GRAY
* 1 INDICATES YELLOW



NOSE ASSEMBLY, QG



PLAN



NOTES:

1. UNDERLYING PANEL IS EITHER ANOTHER FENDER PANEL OR, IN THE CASE OF THE LAST FENDER PANEL IT COULD BE A BACKUP SIDE PANEL, EXTENSION PANEL OR TRANSITION PANEL.

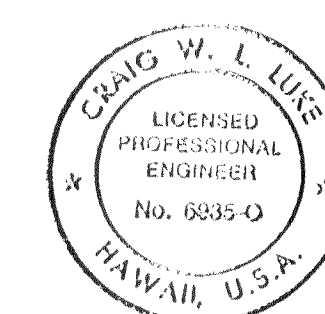
FENDER PANEL ASSEMBLY, QG

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(232)	2000	33	84

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D.
1	2760081-0000	PANEL, FENDER, QG, G	1.00
2	2699341-0000	BOLT, RAIL, 5/8 X 2, G	2.00
3	2704191-0000	NUT, HX, 5/8, G, RAIL	2.00
4	2708841-0000	WASHER, MUSHROOM, CAST QG, G	1.00
5	2701731-0000	BOLT, FL, 5/8 X 3, GB, G, SOCKET	1.00
6	2704141-0000	NUT, HX, 5/8, G	1.00

TWO FENDER PANEL ASSEMBLIES REQUIRED PER BAY

UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE: *[Signature]* DATE: 5/5/00

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CRASH CUSHION DETAILS - 3 INTERSTATE ROUTE H-1 PUNAHOU ST. OFF-RAMP IMPROVEMENTS F.A.I. Proj. No. IM-H1-1(232)
Scale: As Shown Date: 4/28/00

SHEET No. C-31 OF 36 SHEETS