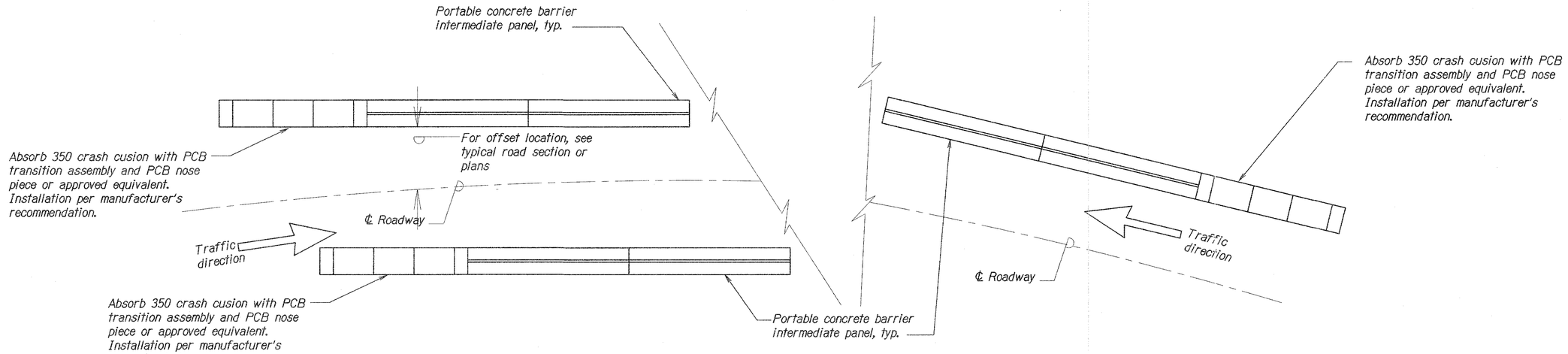
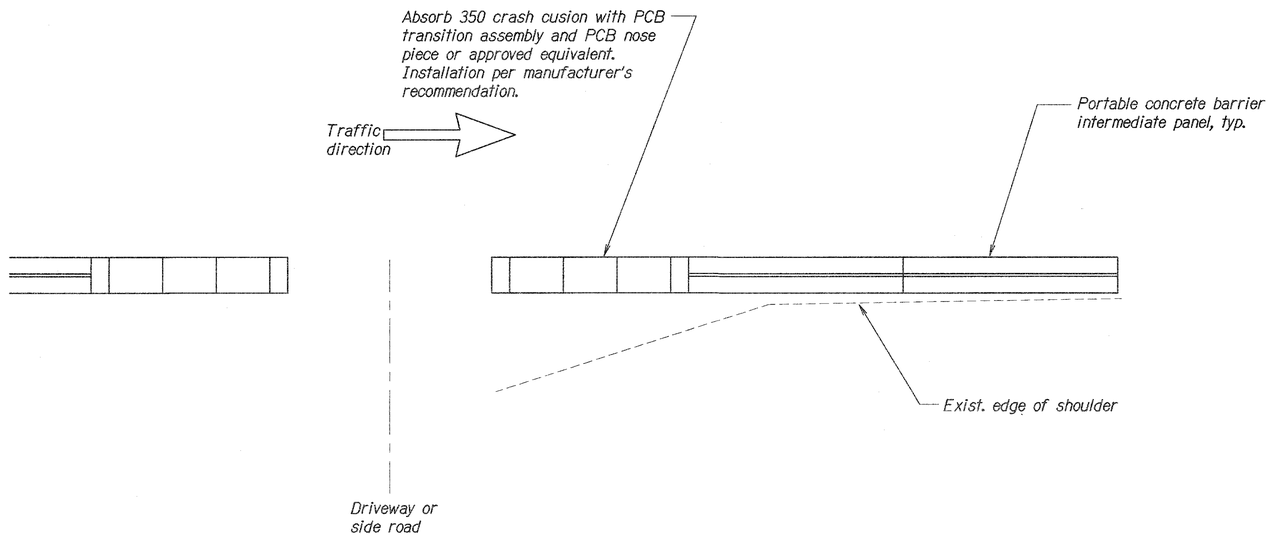
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-083-1(50)	2005	31	81



TEMPORARY CRASH ATTENUATOR FOR PORTABLE CONCRETE BARRIER TERMINAL PANEL

Not To Scale



TEMPORARY CRASH ATTENUATOR FOR PORTABLE CONCRETE BARRIER TERMINAL PANEL AT DRIVEWAY OR SIDE ROAD

Not To Scale

ORIGINAL PLAN	SURVEY PLOTTED BY ____ DATE
NOTE BOOK	DRAWN BY " " "
No.	TRACED BY " " "
	DESIGNED BY " " "
	QUANTITIES BY " " "
	CHECKED BY " " "

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014

MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

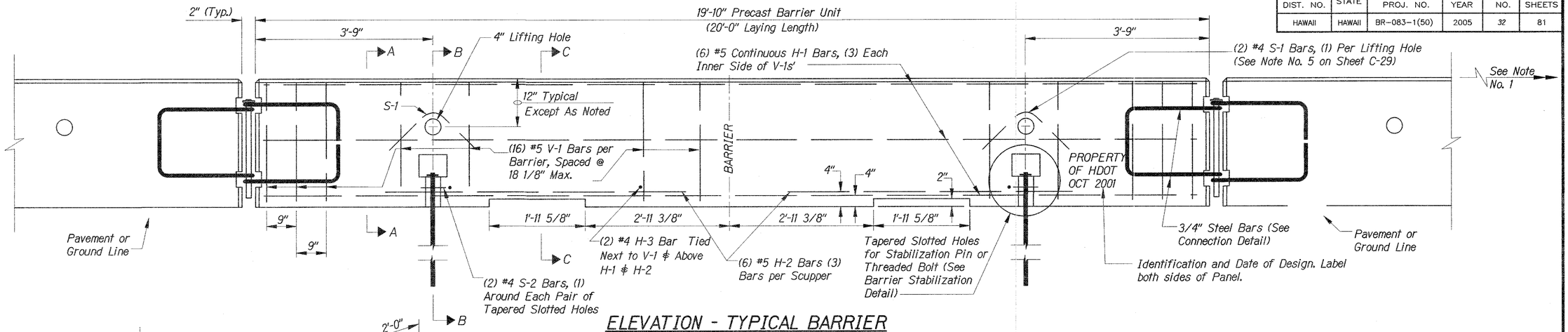
BARRIER DETAILS

KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)

Scale: As Noted Date: August 2004

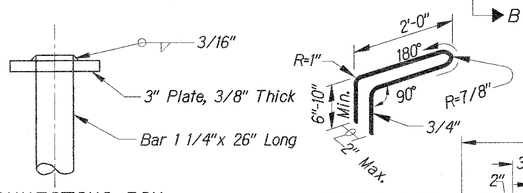
SHEET No. **C-29** OF **51** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-083-1(50)	2005	32	81



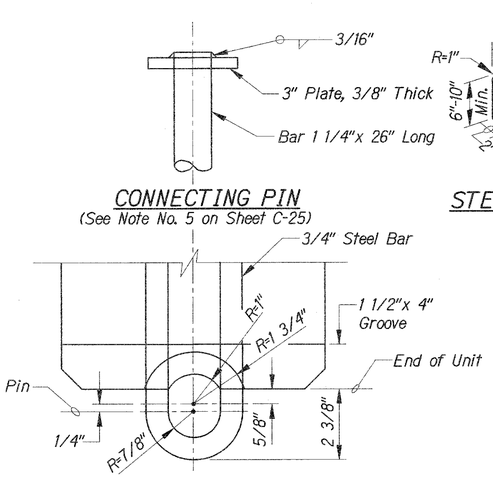
ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL



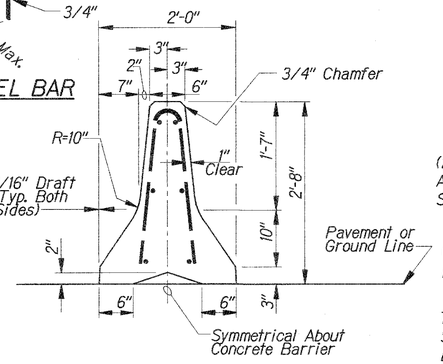
CONNECTING PIN

(See Note No. 5 on Sheet C-25)



SECTION E-E

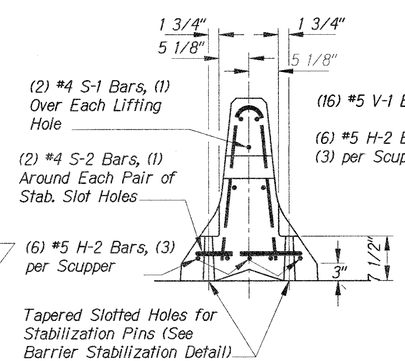
STEEL BAR



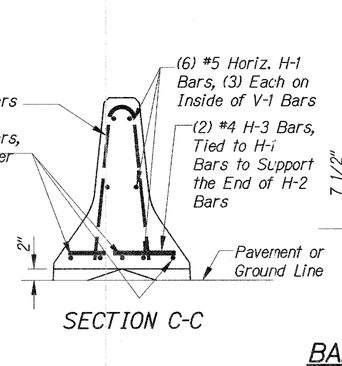
CONNECTION DETAILS

(See Note No. 5 on C-25)

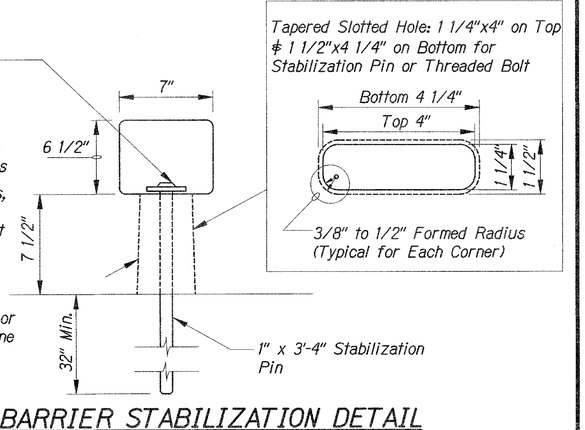
SECTION A-A



SECTION B-B

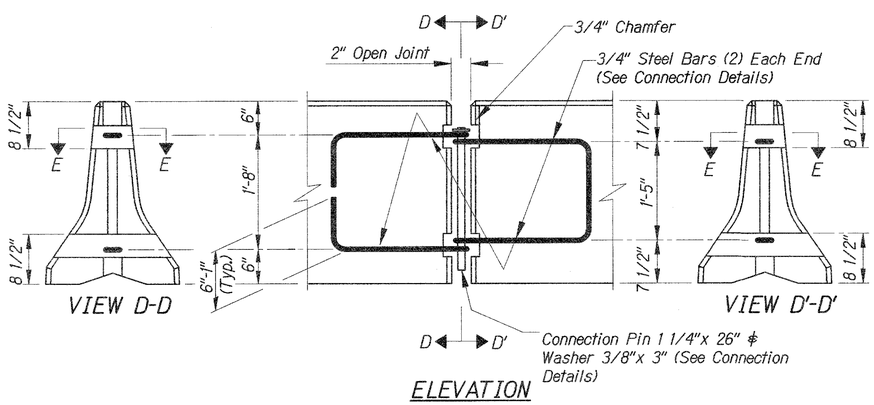


SECTION C-C

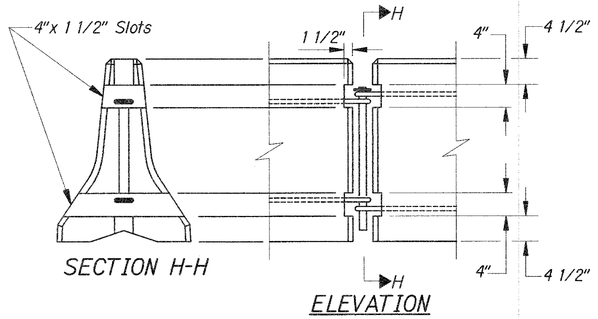


BARRIER STABILIZATION DETAIL

(See Note Nos. 3 & 4 on Sheet C-25)



ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

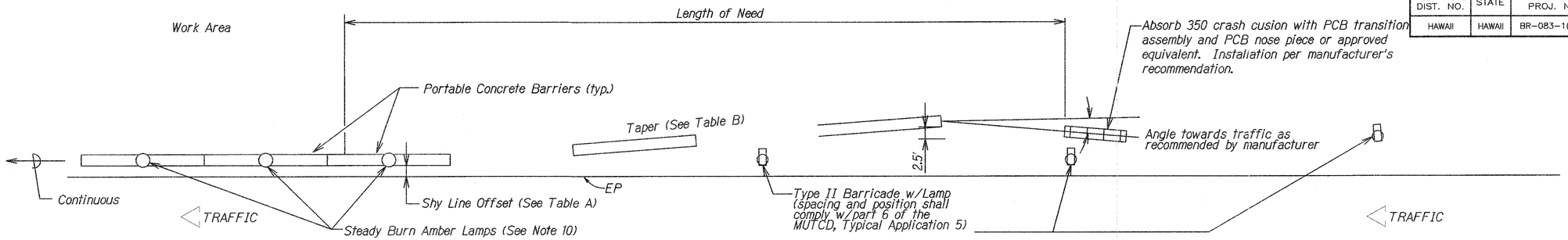
PORTABLE CONCRETE BARRIER-1

KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)

Scale: As Noted Date: August 2004

SHEET No. **C-30** OF **51** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-083-1(50)	2005	33	81

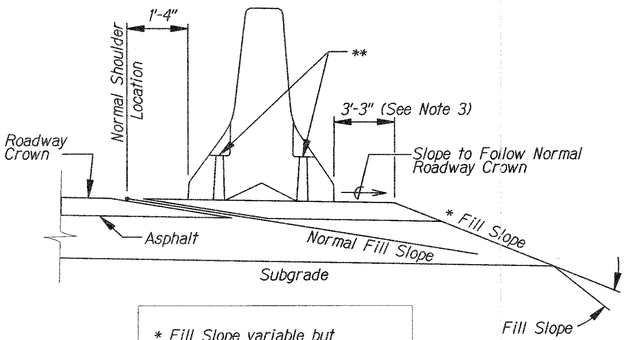


TYPICAL DETAIL - PORTABLE CONCRETE BARRIER END TREATMENT

Scale: 1" = 10'-0"

METAL REINFORCEMENT TABLE

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	Horizontal in Barrier Tied Inside V-1 Bars	#5	(6)	19'-3"
H-2	Centered Above Scuppers Long. ℄ Transversely	#5	(6)	6'-6"
H-3	Tied Above H-1 Bars to Support H-2, Tied to V-1	#4	(2)	1'-6"
S-1	Horizontal in Top of Wing Wall ℄ in Floor Back Wall	#4	(2)	2'-5", 90°, Lifting Hole, R=3 3/8"
S-2	Horizontal Around Slots Between V-1's @ Scuppers	#4	(2)	R=1 1/2", Slots, 5'-1" Bar w/(4) 1 1/2"R Bends ℄ Min. 1'-0" Overlap, 7", 1'-6", Clear to Bar 1" Min.
V-1	Vertical in Barrier (3) Each End ℄ (2) at Each Scupper	#5	(16)	Total Length 4'-9", R=2 3/16", 12°, 9 1/2", 4 3/8", 2'-1 3/8"



* Fill Slope variable but not steeper than 2:1
** No Stabilization Pins (See Note Nos. 3 ℄ 4)

STANDARD INSTALLATION

(See Note No. 1)

TABLE A
SHY LINE OFFSETS *

DESIGN SPEED (mph)	SHY LINE OFFSETS
70	10.0'
65	9.0'
60	8.5'
55	7.0'
50	6.5'
45	6.0'
40	5.0'
35	4.5'
30	3.5'
≤ 25	2.0'

TABLE B
MAXIMUM TAPERS FOR CONCRETE BARRIER

DESIGN SPEED (mph)	TAPER	
	INSIDE SHY LINE	BEYOND SHY LINE
70	30:1	20:1
65	28:1	19:1
60	26:1	18:1
55	24:1	16:1
50	21:1	14:1
45	18:1	12:1
40	17:1	11:1
35	15:1	9:1
≤ 30	13:1	8:1

* Note: Minimum shy line offset for tangent sections shall be 2'-0".

NOTES:

1. For end treatment, layout, crash cushions and where needed see Project Plans or Special Provisions.
2. Barriers must be pinned together and cannot exceed the Table of Maximum Tapers.
3. The concrete barrier "Standard Installation" design allows for 3'-3" of outward lateral movement if the barrier is struck. Barrier installations that require less than the 3'-3" of outward lateral movement should have stabilization pins.
4. ASTM A-36 steel shall be used for the connection pin, connection loops and stabilization pins. A one piece pin with a 3" rounded top may be used in place of the detailed connection pin if the one piece pin meets ASTM A-36 requirements.
5. A 4" white PVC sleeve may be used to form the lifting hole and if used the sleeve is to be left in place.
6. Concrete shall be Class A and reinforcing shall be Grade 60.
7. Identification and date of design will be as follows:

PROPERTY
OF HDOT
OCT 2004

Text letters and numbers shall be shown as on Standard Plan Sht. No. B-01. "PROPERTY OF HDOT" may be changed depending upon ownership. All Portable Concrete Barriers made for HDOT will be subject to rejection, if "PROPERTY OF HDOT" is not imprinted. The Contractor shall bear the cost of the rejected Portable Concrete Barriers.

8. Minimum tangent length for portable Concrete Barrier System shall be 100' (5 units). This minimum does not include the required system length of the Inertial Barrier System.
9. Install steady burn amber lamps on portable concrete barriers @ 20.0' o.c. Installing, maintaining and removing each steady burn amber lamp including changing of batteries and bulbs shall be considered incidental to applicable portable concrete barrier items.
10. The portable concrete barrier shall become the property of the State upon completion of the project and delivered to a location Specified by the Engineer. The delivery shall be incidental to the cost of the barriers.

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
NOTE BOOK
QUANTITIES BY
CHECKED BY
DATE
No.

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PORTABLE CONCRETE BARRIER-2

KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)

Scale: As Noted Date: August 2004

SHEET No. **C-31** OF **51** SHEETS