FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	290	371

CANE HAUL ROAD PEDESTRIAN BRIDGE GENERAL NOTES:

1. General Specifications:
Hawaii Department of Transportion, Standard Specifications for Road and Bridge Construction, 1994, together with Special Provisions prepared for this contract.

2. Design Specifications:
(A) AASHTO 2004 LRFD Bridge Design Specification (Third Edition) and its subsequent interim specification with interim supplements and modifications by the Highway Division, Department of Transportation, State of Hawaii.

(B) AASHTO/AWS D1.5M/D1.5 Bridge Welding Code, Latest Edition.

3. Loads:

(A) Live Load: 100 psf

(B) Seismec Loads: Aceleration coefficient - 0.18
Seismic Performance Zone - 2
Importance Category - Other Bridges

4. Materials:

(A) All concrete except Precast Prestressed Concrete Beam shall have a 28-day cylinder compressive strength of 4,000 psi.

(B) For concrete strength of Precast Prestressed Concrete Beam, see Sht. S2-6.

(C) Tetraguard AS20 shrinkage reducing admixture (SRA) shall be included in the concrete mix for the deck. The required dosage shall be 128 ounces per cubic yard of concrete and follow all manufacturer's recommendations

(D) All reinforcing steel shall be ASTM A615 Grade 60 unless otherwise noted.

(E) All structural steel shall be ASTM A36 hot dip galvanized after fabrication, unless otherwise noted.

(F) All Type I Metal Bikeway Railings shall be steel structural Tubing conforming to ASTM A500 Grade B and shall be hot-dipped galvanized after fabrications.

(G) All Type I Metal Bikeway Railing Anchor Bolts shall be steel bolts conforming to ASTM A307. Anchor bolts shall be hot-dipped galvanized.

(H) All Type I Metal Bikeway Railing Anchor Bolt Nuts shall be steel nuts conforming to ASTM A563. Nuts shall be hot-dipped galvanized.

(I) All Type I Metal Bikeway Railing Anchor Bolt washers shall be steel washers conforming to ASTM F436. Washers shall be hot-dipped galvanized.

(J) All welds shall be made using E70XX electrodes. Welds shall be performed by a qualified welder.

5. Reinforcement:

(A) The minimum covering measured from the surfaces of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:

(1) Deck

A. Top bars = 2" with a tolerances of - 0 inch and +3/8 inch.

B. Bottom bars = 1½" except as otherwise noted.

(2) Abutment Walls and Wing Walls = 2" to ties or outermost reinforcing except as otherwise noted.

(3) Concrete cast against and permanently esposed to earth = 3"

(4) All other unless otherwise noted = 2"

(B) Reinforcing bars shall be detailed in accordance with the latest edition of ACI Defailing Manual for reinforced concrete structures.

(C) Minimum clear spacing between parallel bars shall be 1½ times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1½ times the maximum size of the coarse aggregate or 1½".

(E) All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.

(D) Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than one foot in each direction, in which case alternate intersections shall be tied.

(F) Vertical wall bars be arranged in such manner as to avoid interference with girder and deck bars above as directed by the Engineer.

6. Ginder Bearings:

(A) Girder concrete bearing seat shall be poured monolithically with supporting structure. Top of concrete bearing seat shall be finished with steel trowel to a smooth level surface to the elevation shown on plans. Grind down high spots as needed to provide an even bearing surface to 1/16"± tolerance.

(B) The concrete seat and elastomeric pad shall be placed as shown.

7. Construction Notes:

(A) See Standard Specifications and Special Provisions.

(B) In general, top of concrete deck slab shall be constructed to follow the bridge vertical and horizontal curves and superelevations.

(C) Except as otherwise noted, all vertical dimensions are measured plumb.

(D) For concrete finish see Standard Specifications and Special Provisions.

(E) Contruction joints may be relocated or additional ones added subject to the approval of the Engineer.

(F) Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4".

(G) Contractor shall verify footing elevations before fabricating footing and wall reinforcing.

(H) Elastomaric bearing pads shall be secured to the concrete bearing surface with adhesives or other means necessary as approved by the Engineer.

8. General:

(A) Standard detail drawings refer to all structures in general, except for modifications as may be requiered for special conditions. For such modifications refer to the corresponding detailed drawings.

9. Foundation:

Footings are embeded min. 5 feet below finish grade.

Footings should also be embeded such that a horizontal distance of 5 feet is maintained between the bottom edge of footing and slope face.

(A) Allowable bearing value (net) = 4,000 psf for service limit state
= 7,200 psf for strength limit state
= 12,000 psf for extreme event limit state

(B) Coefficient of friction = 0.49 for strength limit state
= 0.58 extreme event limit state

(C) Passive earth pressure = 235 pcf for strength limit state
= 470 pcf for extreme event limit state

(D) Active earth pressure = 40 pcf

(E) Internal friction angle = 30 degrees

10. Load Capacity Ratings:

(A) Inventory Rating
Design Load Rating = 2.19 X (Pedestrian LL = 100 PSF)

(B) Operating Rating
Design Load Rating = 3.85 X (Pedestrian LL = 100 PSF)

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

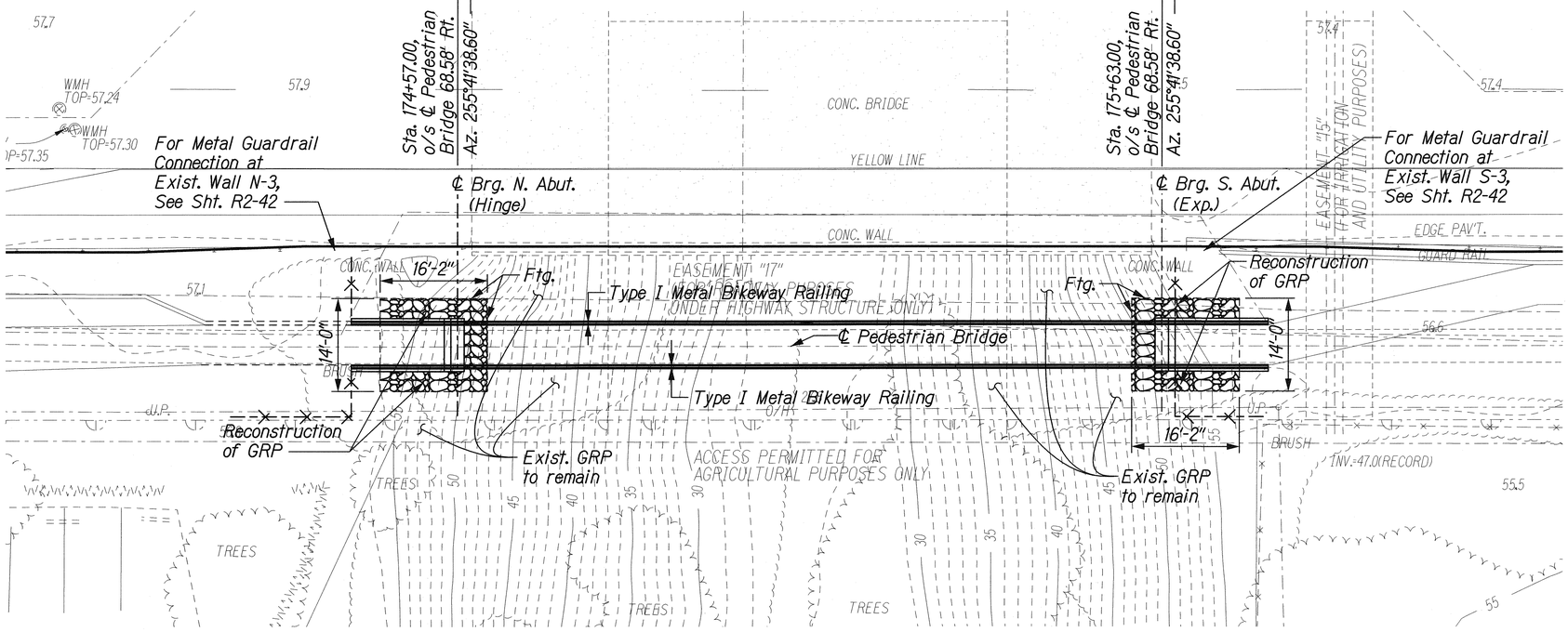
CANE HAUL RD. PEDESTRIAN BRIDGE
GENERAL NOTES

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

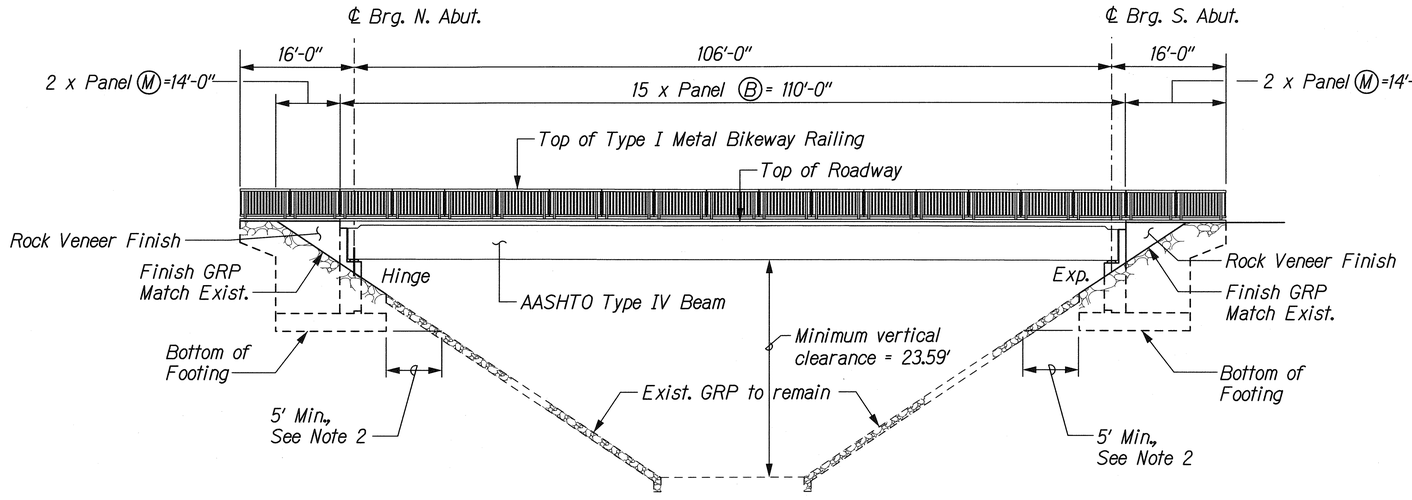
Scale: None Date: Feb. 22, 2008

SHEET No. S2-1 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	291	371



PLAN
Scale: 1" = 10'



ELEVATION
Scale: 1" = 10'

Notes:

1. For Panels Ⓑ, and Ⓜ, see Table A on Sht. S2-9.
2. A horizontal distance of 5 feet min. shall be maintained. If the horizontal distance is less than 5 feet, the footing shall be lowered to meet the requirement and height of wall stem shall be adjusted accordingly without changing the top of wall stem elevations

TRUE NORTH

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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HIGHWAYS DIVISION

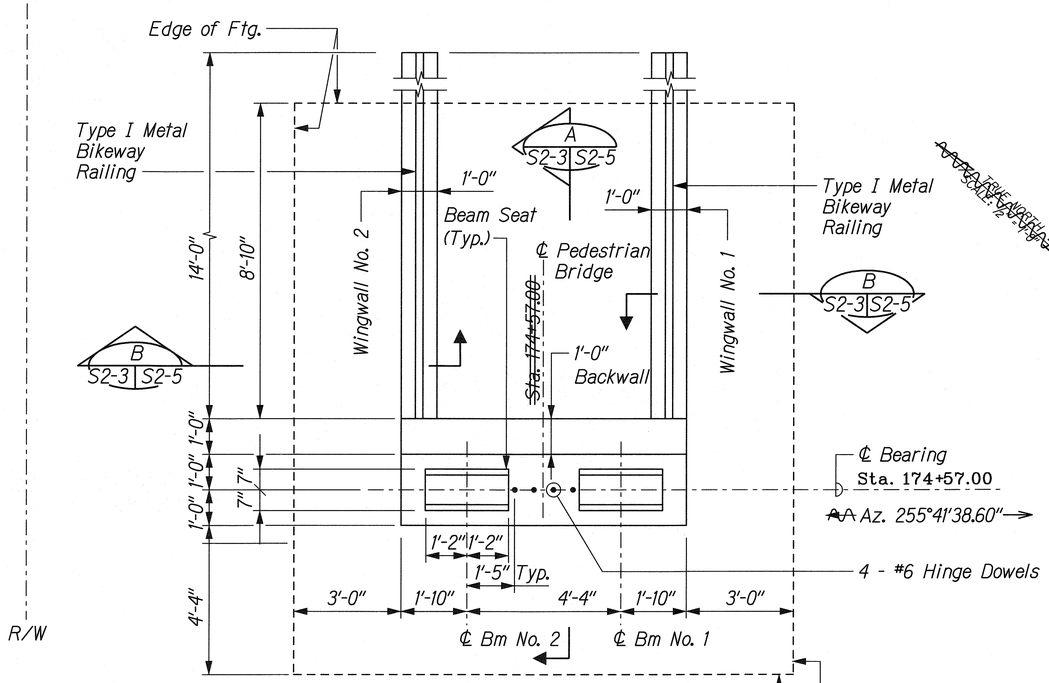
CANE HAUL RD. PEDESTRIAN BRIDGE
PLAN AND ELEVATION

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Noted Date: Feb. 22, 2008

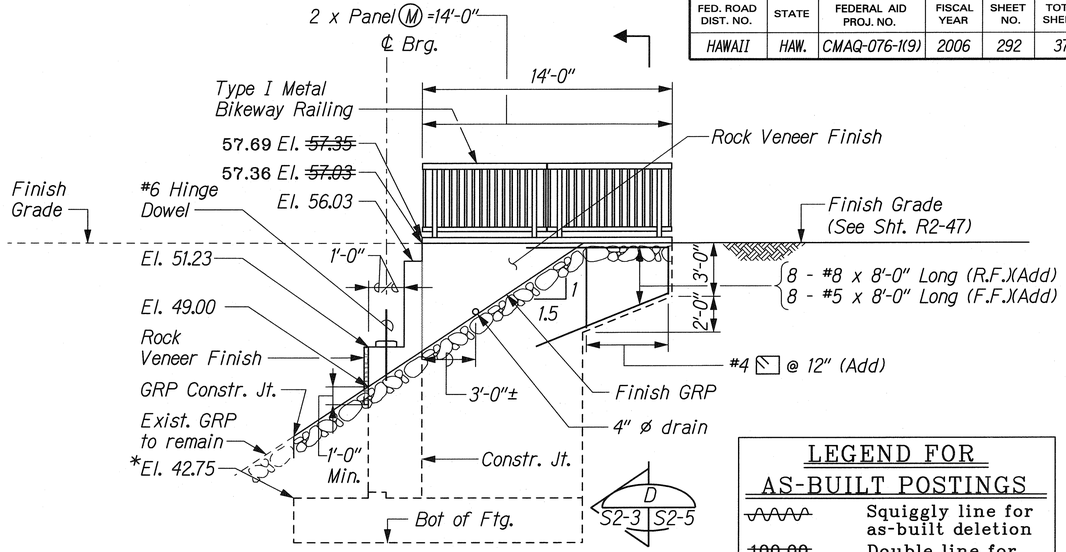
SHEET No. S2-2 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	292	371



NORTH ABUTMENT PLAN

Scale: ½" = 1'-0"



WINGWALL NO. 1 ELEVATION

Scale: ¼" = 1'-0"

LEGEND FOR AS-BUILT POSTINGS	
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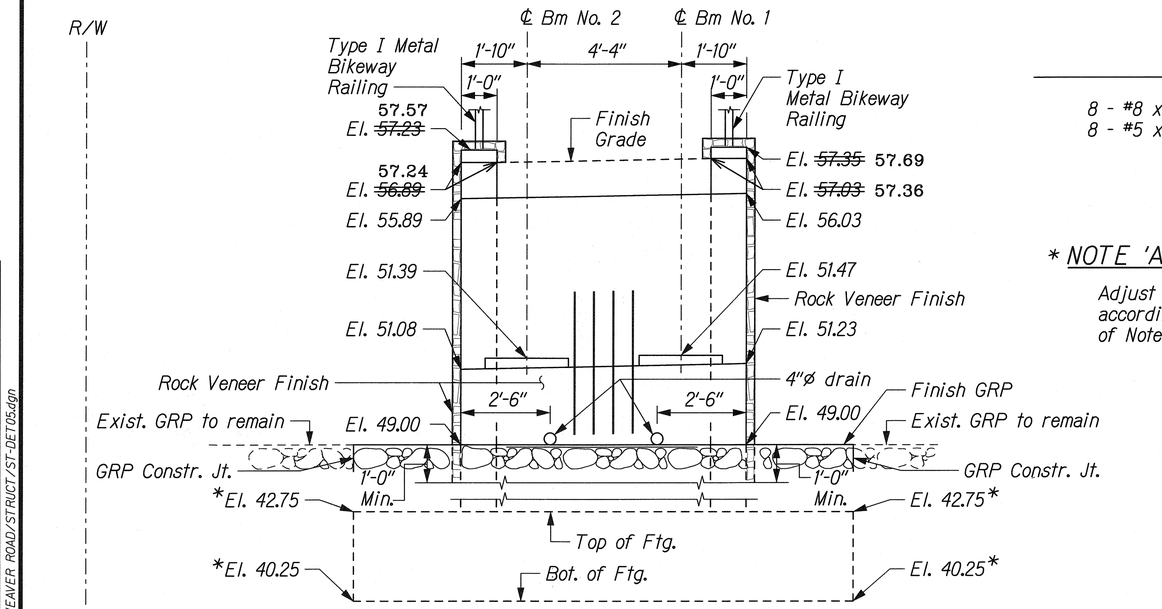
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting



NORTH ABUTMENT ELEVATION

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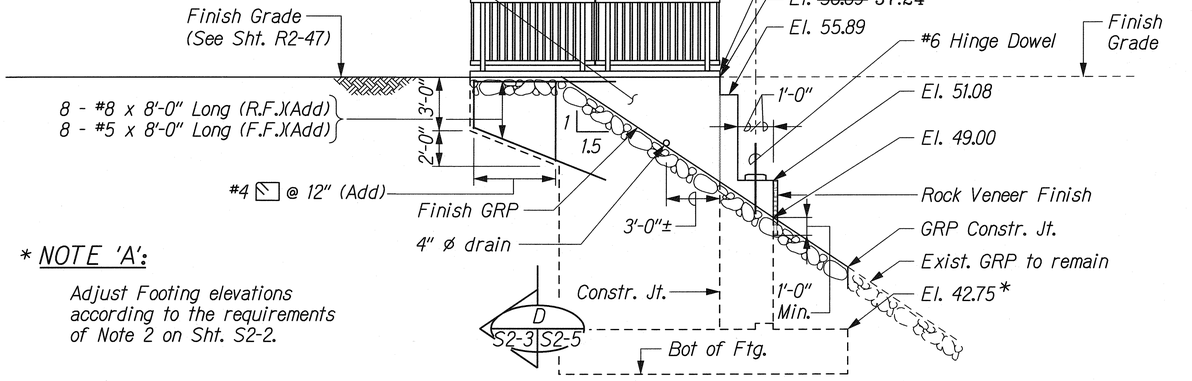

WINGWALL NO. 2 ELEVATION

Scale: ¼" = 1'-0"

* NOTE 'A':

Adjust Footing elevations according to the requirements of Note 2 on Sht. S2-2.

NOTES:

1. For location plan, see Sheet No. S2-2.
2. For Beam Seat details, see Sheet. No. S2-5.
3. For Type I Metal Bikeway Railing, see Sheet. No. S2-8 & S2-9.
4. All concrete shall have 28-day compressive strength (fc') of 4,000 psi.
5. All rebar shall be ASTM A615 Gr. 60.

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

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HIGHWAYS DIVISION

CANE HAUL RD. PEDESTRIAN BRIDGE
ABUTMENT DETAILS - 1

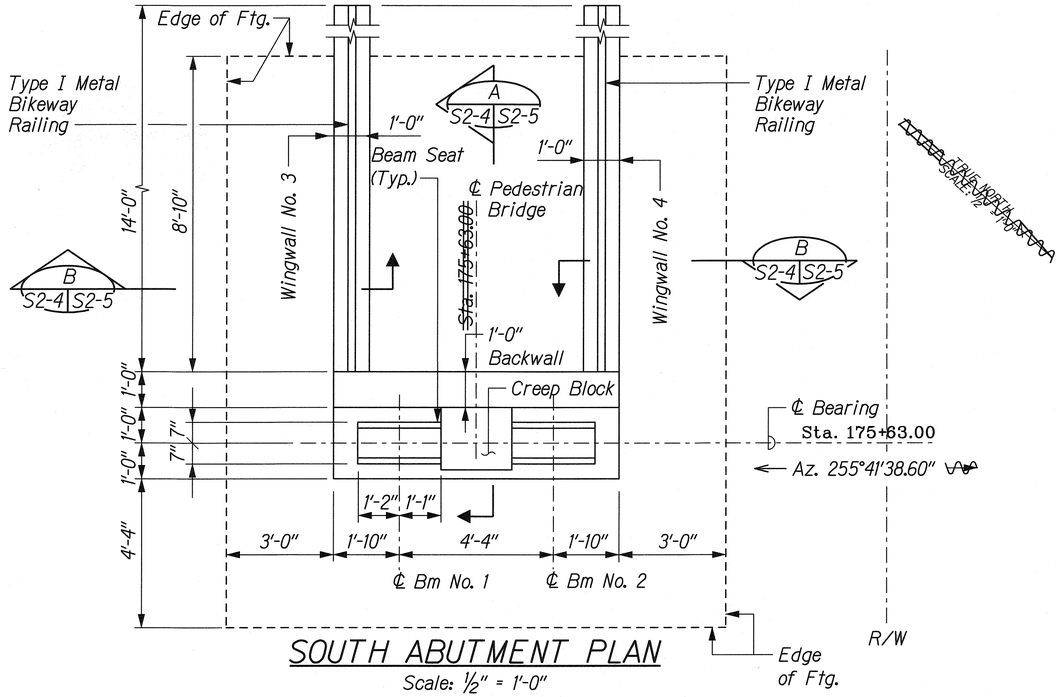
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Noted Date: Feb. 22, 2008

SHEET No. S2-3 OF 9 SHEETS

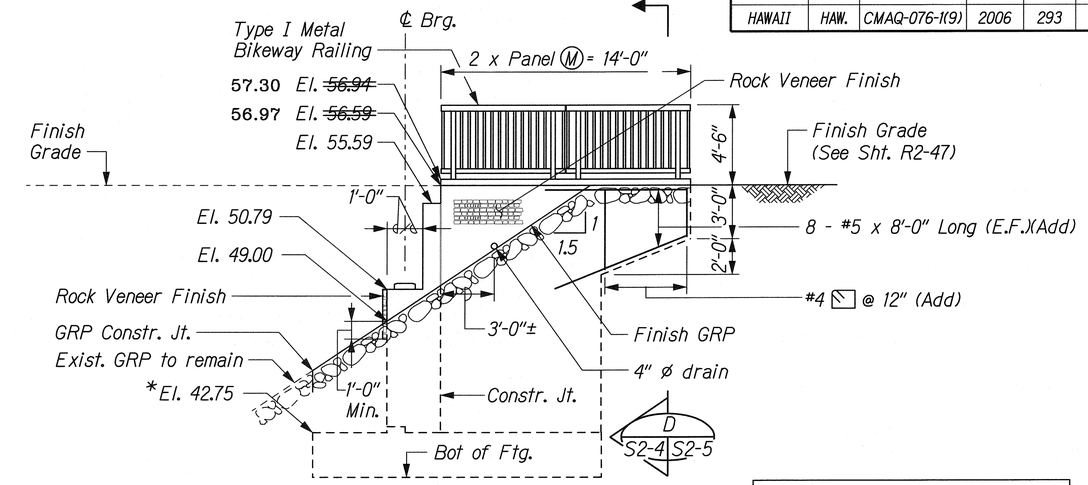
AS BUILT 292

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	293	371



SOUTH ABUTMENT PLAN

Scale: ½" = 1'-0"



WINGWALL NO. 4 ELEVATION

Scale: ¼" = 1'-0"

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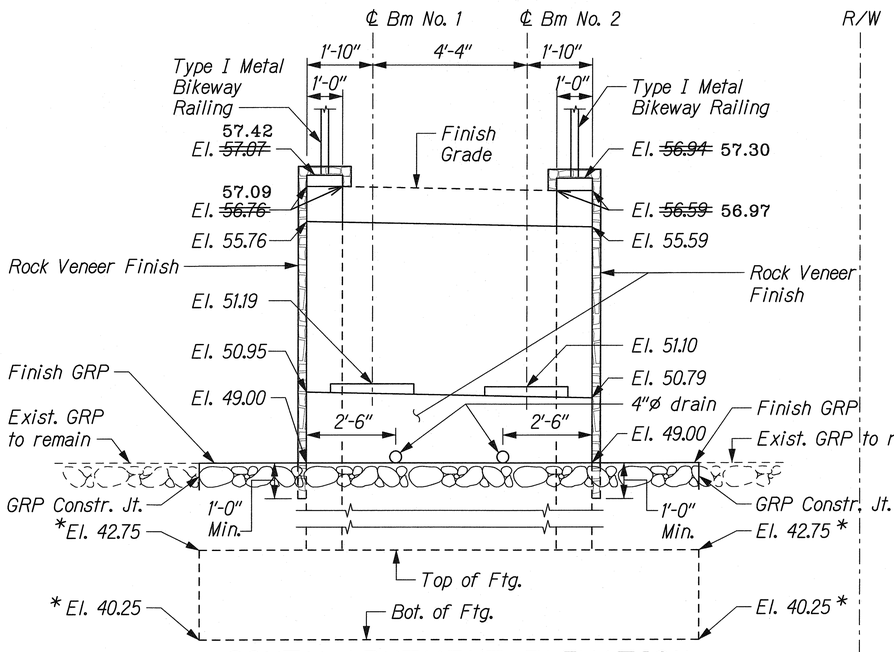
Roadway	Text for as-built posting

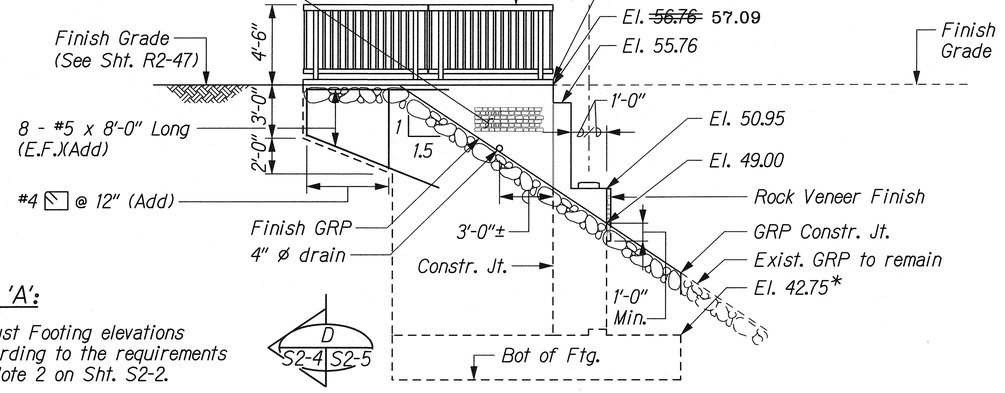


SOUTH ABUTMENT ELEVATION

Scale: ½" = 1'-0"

* NOTE 'A':

Adjust Footing elevations according to the requirements of Note 2 on Sht. S2-2.



WINGWALL NO. 3 ELEVATION

Scale: ¼" = 1'-0"

NOTES:

1. For location plan, see Sheet No. S2-2.
2. For Beam Seat and Creep Block details, see Sheet. No. S2-5.
3. For Type I Metal Bikeway Railing, see Sheet. No. S2-8 & S2-9.
4. All concrete shall have 28-day compressive strength (fc') of 4,000 psi.
5. All rebar shall be ASTM A615 Gr. 60.

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

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HIGHWAYS DIVISION

CANE HAUL RD. PEDESTRIAN BRIDGE
ABUTMENT DETAILS - 2

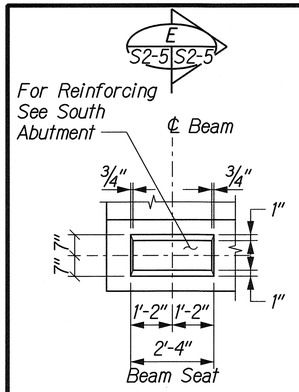
FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Noted | Date: Feb. 22, 2008

SHEET No. S2-4 OF 9 SHEETS

AS BUILT 293

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	294	371



PLAN
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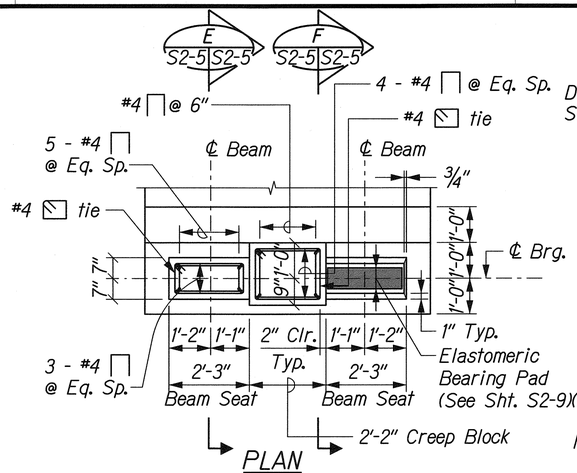
Scale: ½" = 1'-0"



PLAN
@ SOUTH ABUTMENT
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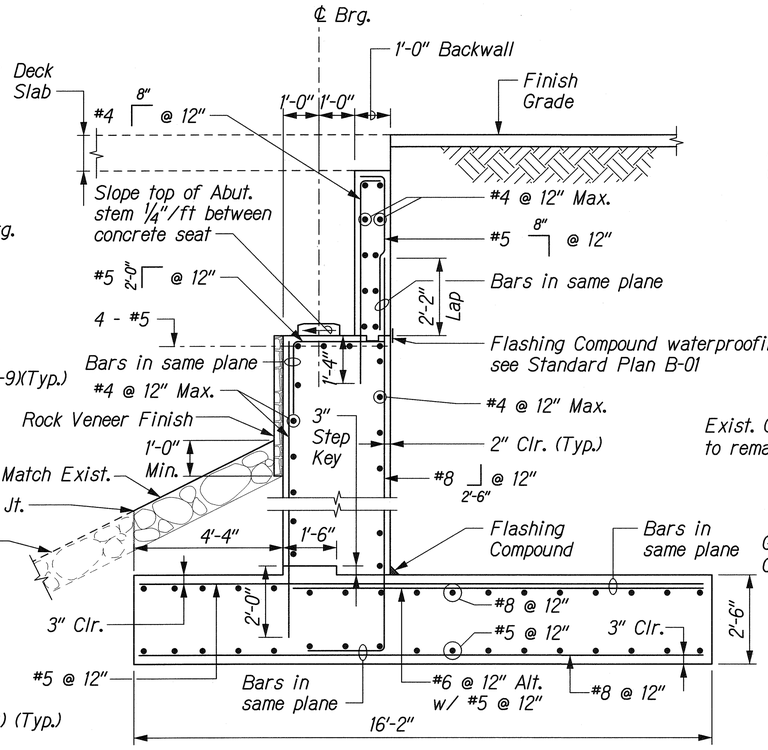

SECTION
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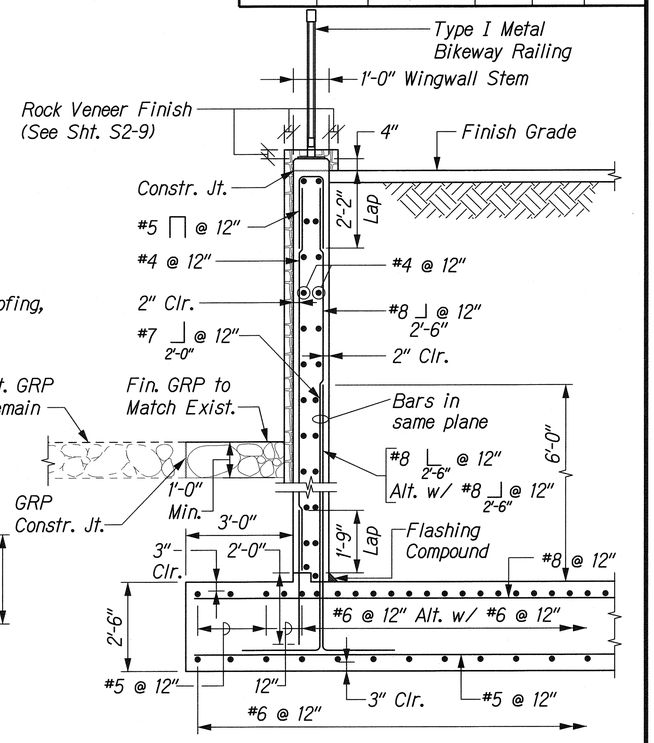
A
S2-5
S2-3, S2-4



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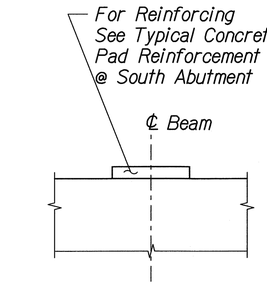
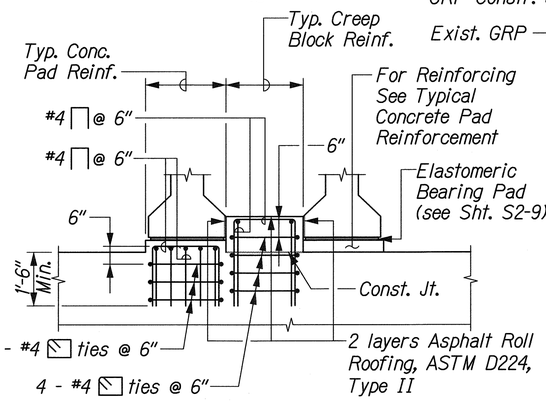
B
S2-5
S2-3, S2-4



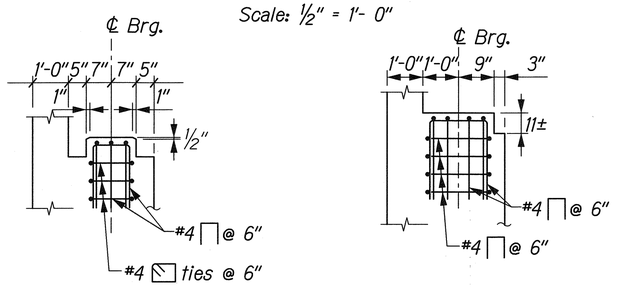
ELEVATION
AND REINFORCEMENT
@ NORTH ABUTMENT



ELEVATION
AND REINFORCEMENT
@ SOUTH ABUTMENT

BEAM SEAT AND CREEP BLOCK DETAILS

Scale: ½" = 1'- 0"



SECTION
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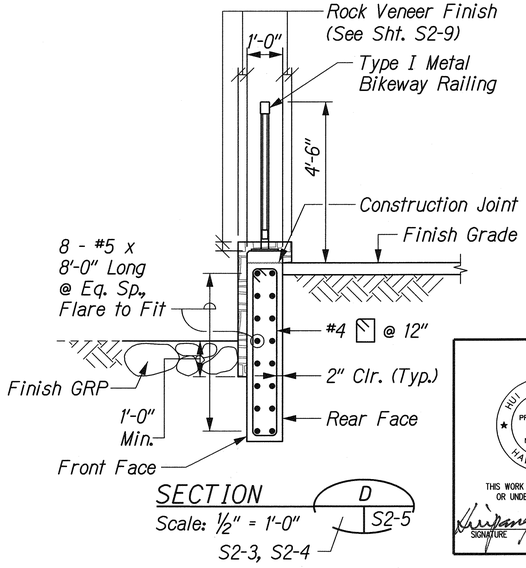
E
S2-5 S2-5

SECTION
Scale: ½" = 1'-0"
F
S2-5 S2-5



SECTION
Scale: ½" = 1'-0"
D
S2-5
S2-3, S2-4

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HIGHWAYS DIVISION

CANE HAUL RD. PEDESTRIAN BRIDGE
ABUTMENT DETAILS - 3

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Noted Date: Feb. 22, 2008

SHEET No. S2-5 OF 9 SHEETS

ORIGINAL PLAN
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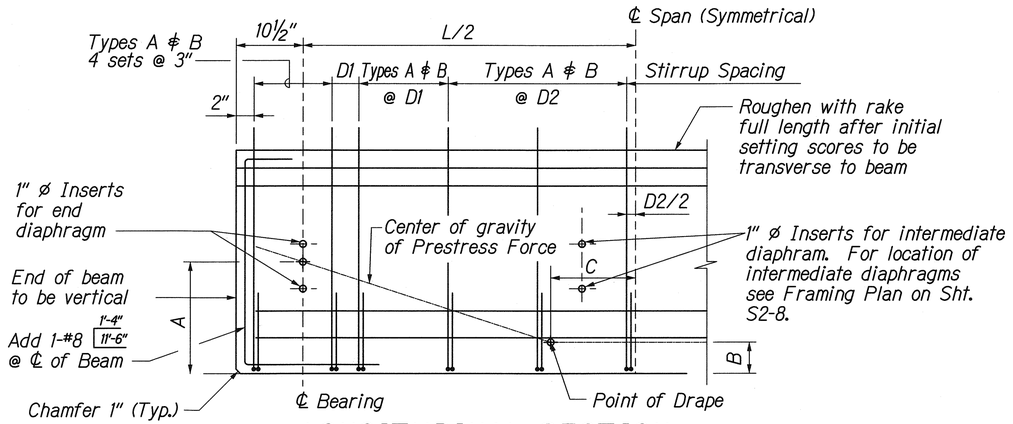
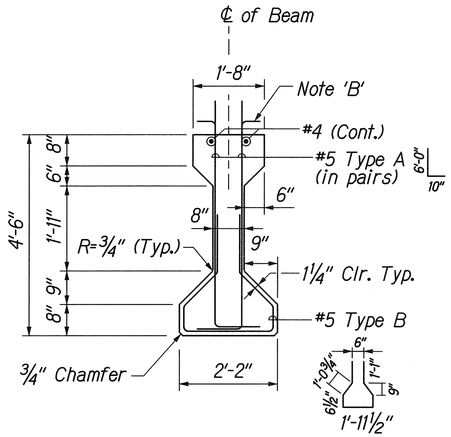
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	295	371



LONGITUDINAL SECTION

N.T.S.

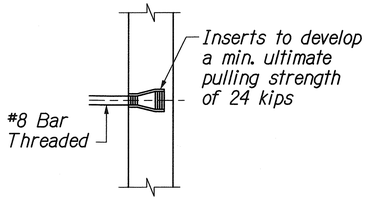


AASHTO TYPE IV TYPICAL BEAM SECTION

N.T.S.

PRESTRESSED BEAM NOTES:

1. Minimum Concrete strength for precast/prestressed concrete beam shall be 6000 psi at 28 days.
2. Minimum compressive strength of concrete at transfer, see Table this Sheet.
3. Prestressing strands shall be ½" diameter, 270 ksi, low-relax strands conforming to ASTM A 416. The estimated total losses due to creep, shrinkage, elastic shortening, and relaxation of steel are 43,900 psi.
4. Non-prestressed reinforcing steel in prestressed beam shall be Grade 60 unless otherwise noted. For properties, see State Standard Specifications.
5. The calculated camber includes the effect of the initial prestress force and the weight of the beam after removal from the bed. Negative values shown for calculated camber indicate a net upward deflection. The calculated camber values shown do not account for any camber growth of the beam. The actual camber shall not exceed the calculated camber shown on the plans by more than 100% at time of installation.
6. The dead load deflection includes the combined effects of the weight of beam, slab, haunch, diaphragm, and concrete railing.
7. Strand release sequence shall not induce any lateral deflection of the beam. For Strand release procedures, see Special Provisions.
8. The Contractor shall submit his proposed strand releasing sequence to the Engineer for acceptance.
9. During curing, care shall be taken to avoid any lateral deflection of the beam due to improper orientation.
10. Lifting devices shall be placed as close as possible to the centerline of bearings of the beam. Details and locations of lifting devices shall be submitted to the Engineer for acceptance. Such approval does not relieve the Contractor of his responsibilities if beam is damaged due to the failure of the lifting device.
11. For details of end and intermediate diagrams see Sheet No. S2-7.



INSERT DETAIL

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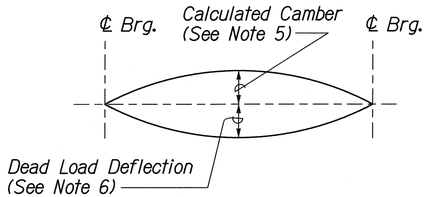


CAMBER DIAGRAM

NOTE 'A':

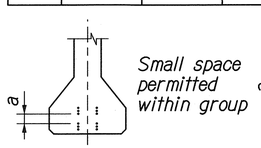
For low relaxation strands, the stress immediately prior to transfer shall not exceed 0.75 fs', where fs' is the ultimate tensile strength of prestressing steel.

NOTE 'B':

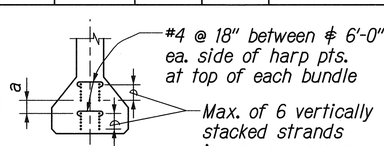
Bend bars in field 2" below top of deck. All reinforcing dimensions are out to out.

BEAM SCHEDULE

BEAM TYPE	INITIAL PRESTRESS FORCE (KIPS) (BEFORE ANY LOSS)	FINAL PRESTRESS FORCE (KIPS) (AFTER ALL LOSSES)	CALCULATED CAMBER SEE NOTE 5	DEAD LOAD DEFLECTION SEE NOTE 6	LOCATION OF CENTER OF GRAVITY OF PRESTRESSED FORCE			STIRRUPS		REQUIRED MIN. ULT. CONC. STRENGTH BEFORE RELEASE OF STRANDS (PSI)	REMARKS
					DIST A	DIST B	DIST. TO PT. OF DRAPE C	NO. OF STIRRUPS @ SPACING D1	NO. OF STIRRUPS @ SPACING D2		
IV	1239.3	970.63	-1.283"	1.195"	14.19"	5.73"	10'-6"	25 @ 12"	Balance @ 18"	4500	



CASE I



CASE II

ARRANGEMENT AND CLEARANCE FOR PRETENSIONED STRANDS

1. Strands may be bundled in groups as shown.
2. The min. distance "a" between groups or individual strands is 2" for ½" ø Strands.
3. "a" is measured between centers of adjacent strands.

BUNDLING OF PRESTRESSED REINFORCEMENT

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

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HUI PANG CHEN — LICENSED PROFESSIONAL ENGINEER — No. 3865-S — HAWAII, U.S.A.

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SIGNATURE — 04/30/10 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

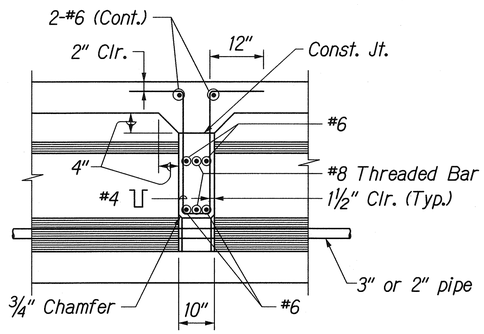
CANE HAUL RD. PEDESTRIAN BRIDGE
BEAM DETAILS - 1

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

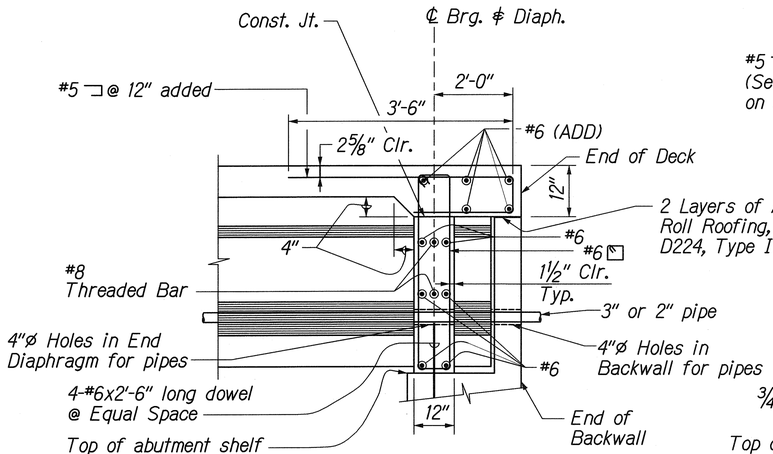
Scale: Not to Scale Date: Feb. 22, 2008

SHEET No. S2-6 OF 9 SHEETS

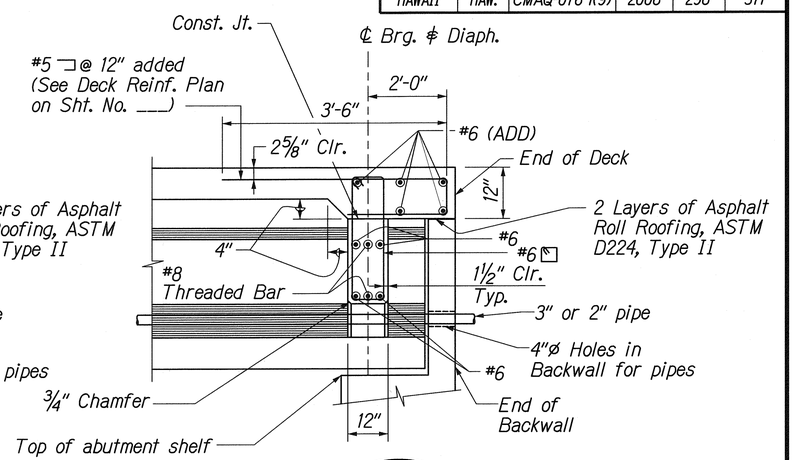
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	296	371



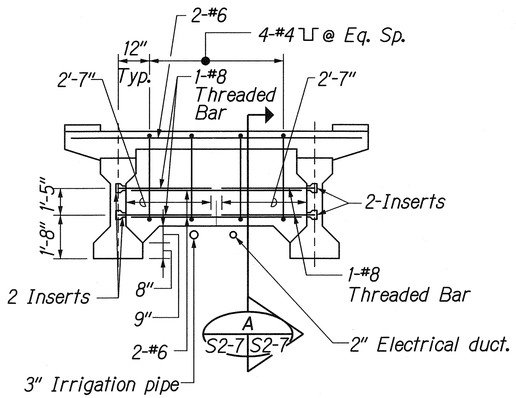
SECTION A S2-7 S2-7



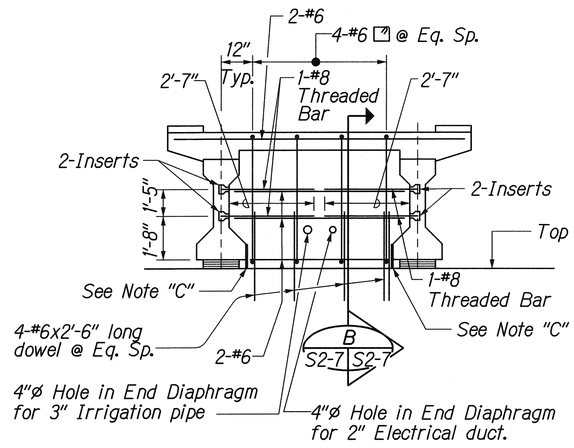
SECTION B S2-7 S2-7



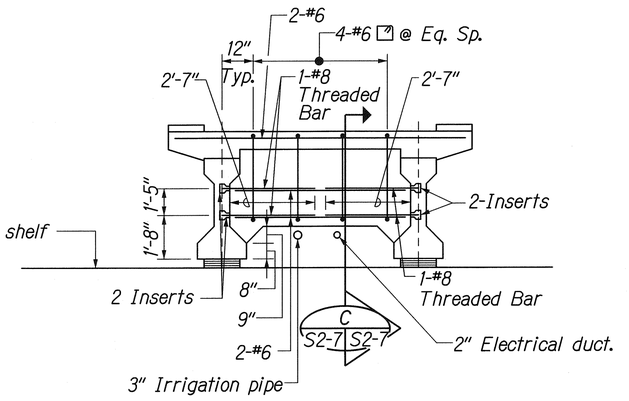
SECTION C S2-7 S2-7



INTERMEDIATE DIAPHRAGM



AT HINGE BEARING



AT EXPANSION BEARING

TYPICAL INTERMEDIATE DIAPHRAGM DETAILS

N.T.S.

TYPICAL END DIAPHRAGM DETAILS

N.T.S.

NOTE 'C':

Provide styrofoam to protect the elastomeric pads from concrete encroachment prior to placing end diaphragm concrete at the hinge bearing. Provide two layers Asphalt Roll Roofing ASTM D224, Type II.

		DATE
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	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

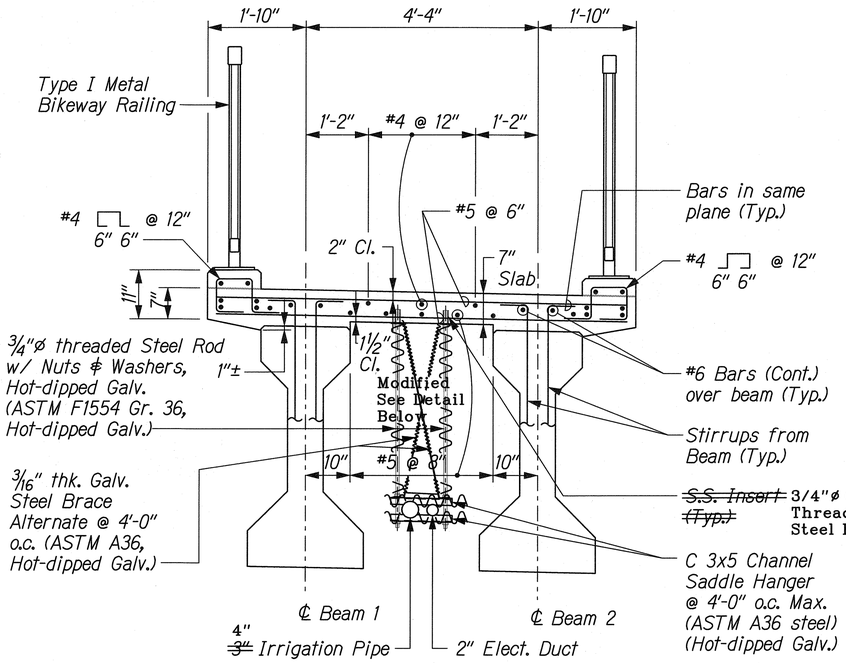
CANE HAUL RD. PEDESTRIAN BRIDGE
BEAM DETAILS - 2

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Shown Date: Feb. 22, 2008

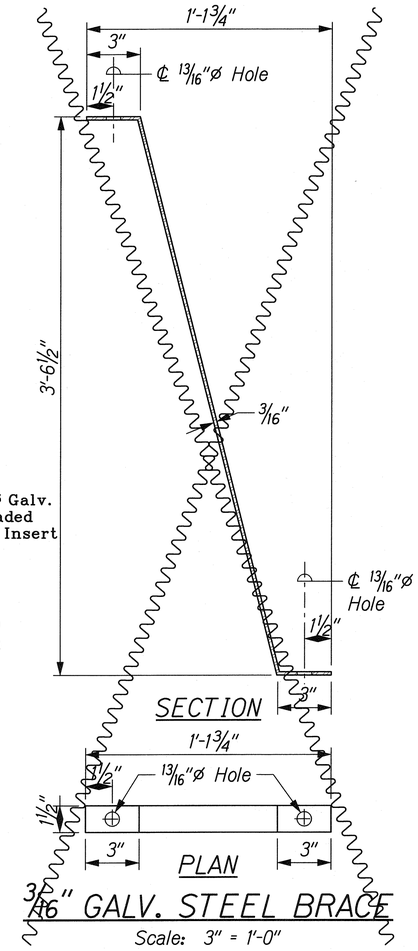
SHEET No. S2-7 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	297	371



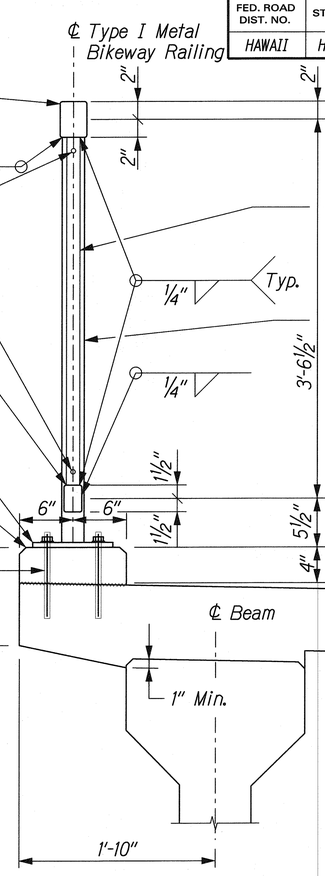
TYPICAL SECTION (LOOK UPSTATION)

Scale: ¾" = 1'-0"



3/16" GALV. STEEL BRACE

Scale: 3" = 1'-0"

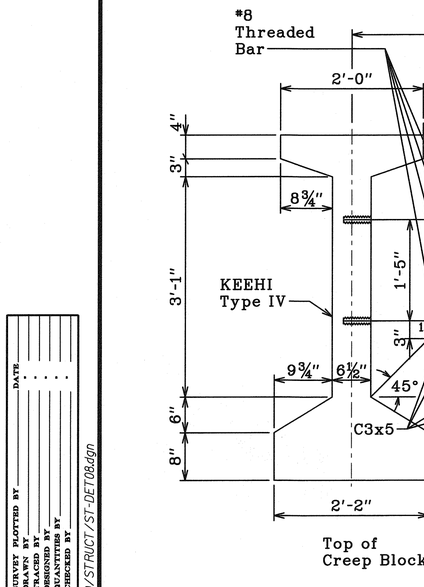


NOTES:

1. For Metal Bikeway Railing, see this Sheet.
2. "L" denotes the total length of beam along Level line.
3. All railing posts and picket railings are plumb. Adjust top railing, bottom railing and base plate to fit the slope of top of concrete railings.

TYPE I METAL BIKEWAY RAILING TYPICAL SECTION

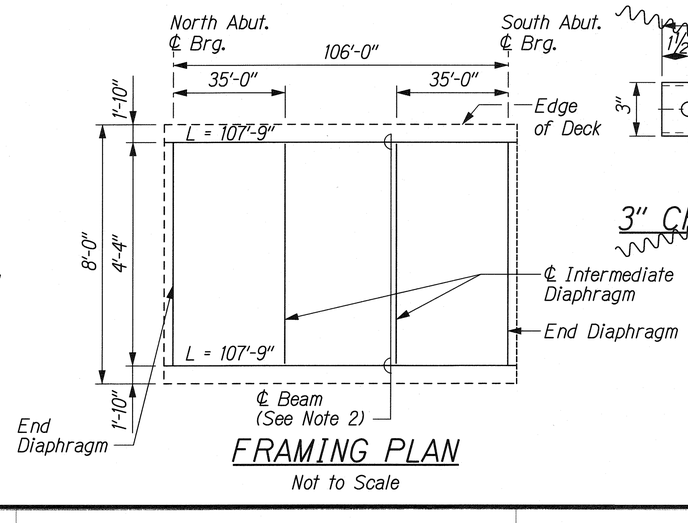
Scale: 1½" = 1'-0"



CANE HAUL ROAD PEDESTRIAN BRIDGE UTILITY HANGER

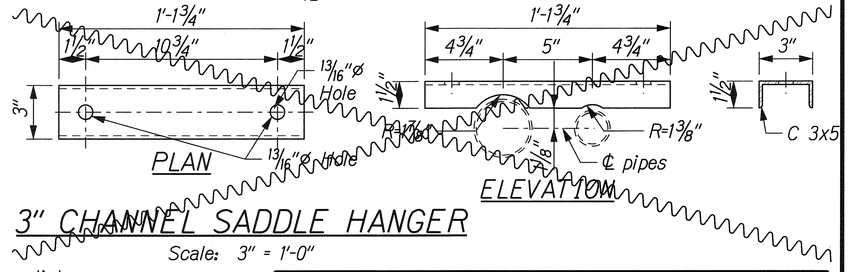
Scale: 1"=1'-0"

(See Material Specified in this Sheet)



FRAMING PLAN

Not to Scale



3" CHANNEL SADDLE HANGER

Scale: 3" = 1'-0"

LEGEND FOR AS-BUILT POSTINGS

∿∿∿	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

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

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HUI PANG CHEN
LICENSED PROFESSIONAL ENGINEER
No. 3865-S
HAWAII, U.S.A.

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SIGNATURE 04/30/10 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CANE HAUL RD. PEDESTRIAN BRIDGE DECK REINFORCING AND RAILING

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Shown Date: Feb. 22, 2008

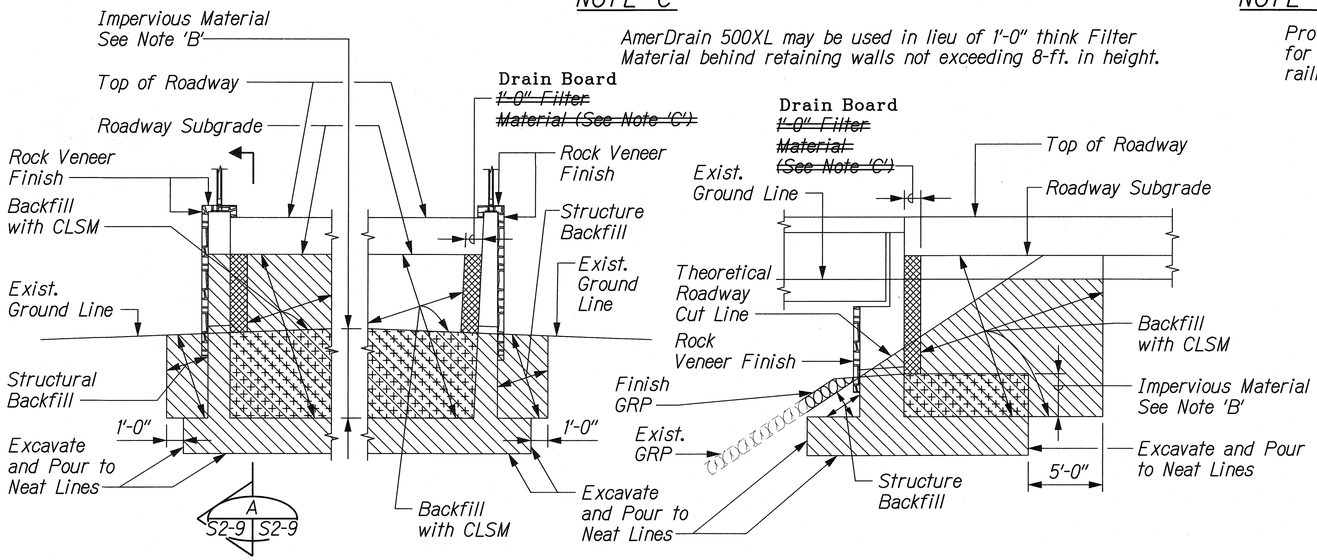
SHEET No. S2-8 OF 9 SHEETS

AS BUILT 297

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	298	371

NOTE 'C'

AmerDrain 500XL may be used in lieu of 1'-0" think Filter Material behind retaining walls not exceeding 8-ft. in height.



CROSS SECTION

SECTION A S2-9 | S2-9

NOTE 'A'

Hatched areas denote the payment limits of structure excavation. All other excavation shall be Roadway Excavation.

NOTE 'B'

Impervious material as selected by the Engineer shall be incidental to structure backfill. The subgrade upon which filter material is to be placed shall be made impervious as possible by pneumatic tamping or other approved methods.

PAYMENT LIMITS

Not to Scale

LEGEND

- Denotes Structural Excavation (See Note 'A')
- Denotes Impervious Material (See Note 'B')
- Drain Board ~~Denotes Filter Material~~ (See Note 'C')

NOTE 'D'

Provide Vent holes for galvanization as required for TS members at Top & Bottom railings, Picket railings and posts.

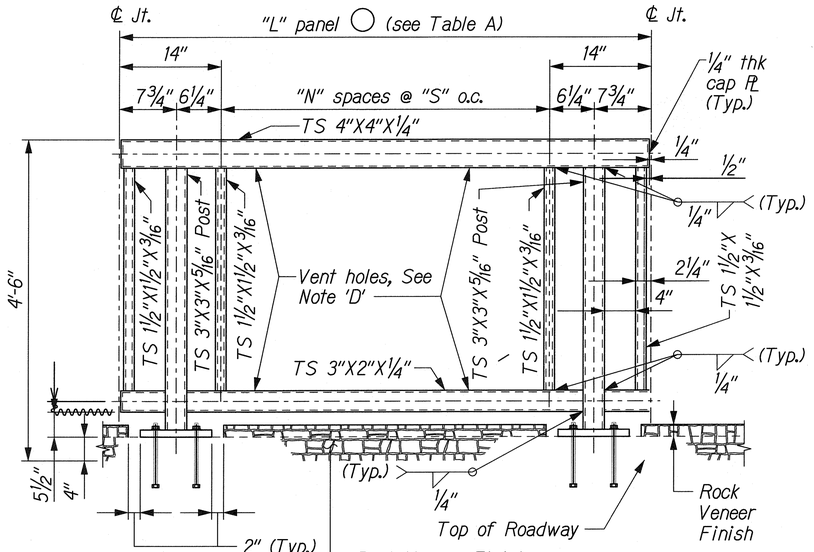
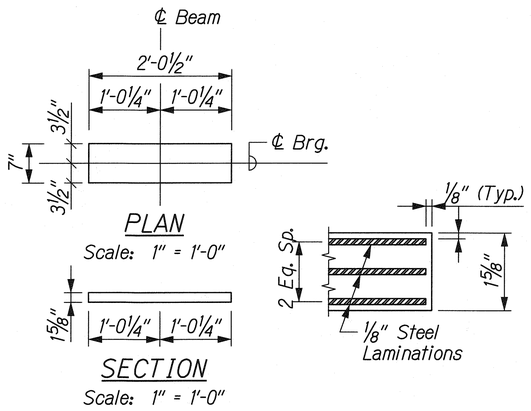


Table A-Type I Metal Bikeway Railing Panel Length

Panel ◯	Panel Length "L"	"N" Spaces	Spacing "S"
Ⓑ	7'-4"	11	$5\frac{15}{32}$"±
Ⓜ	7'-0"	11	$5\frac{3}{32}$"±

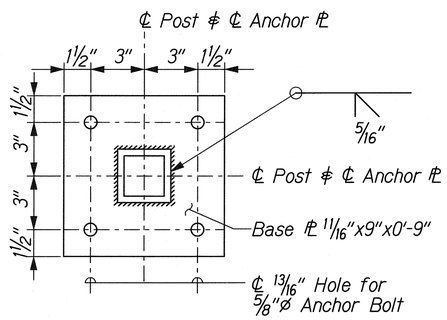
TYPE I METAL BIKEWAY RAILING PANEL ARRANGEMENT

Scale: 1"=1'-0"



ELASTOMERIC BEARING PAD DETAILS

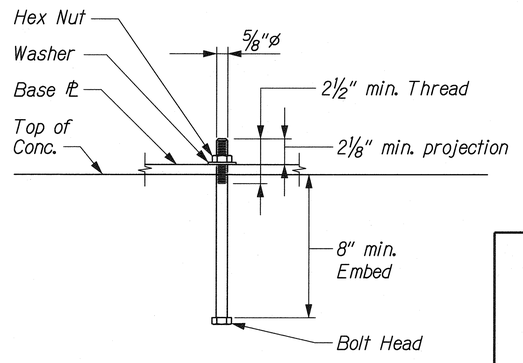
Not to Scale



PLAN

BASE PLATE DETAIL

Scale: 3" = 1'-0"



ANCHOR BOLT DETAIL

Scale: 3" = 1'-0"

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CANE HAUL RD. PEDESTRIAN BRIDGE MISCELLANEOUS DETAILS

FORT WEAVER ROAD WIDENING
VICINITY OF AAWA DRIVE TO GEIGER ROAD

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SHEET No. S2-9 OF 9 SHEETS

AS BUILT 298

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

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