FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	73	152

General:

A. Workmanship and materials shall conform to the building code of the City and County of Honolulu (IBC 2003). However, where reference is made to performance conforming to other standards the more stringent shall apply.

B. The contractor shall compare all the contract documents with each other and report in writing to the engineer all inconsistencies and omissions.

C. The contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing work. Report in writing to the architect all inconsistencies and omissions.

D. The contractor shall be responsible for coordinating the work of all trades.

E. The contractor shall be responsible for methods of construction, workmanship and job safety. The contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.

F. Construction loading shall not exceed design live load unless special shoring is provided. Allowable loads shall be reduced in areas where the structure has not attained full design strength.

G. The contractor shall be responsible for protection of the adjacent properties, structures, streets and utilities during the construction period.

H. Details noted as typical on the structural drawings shall apply in all conditions unless specifically shown or noted.

Design Criteria:

A. Seismic Zone ——— 2

B. Basic wind speed and exposure ——— 105 mph, exposure C

C. Design live loads
   a. Roof ——— 20 psf

D. Allowable foundation bearing capacities (Bearing on on-site soils or properly compacted fill).
   a. Dead load + live load ——— 3,000 psf
   b. Dead load + live load + lateral load ——— 3,900 psf
   See soils report for additional bearing pressure information

Foundation:

A. Foundation design is based on soils report by Hirata and Associates, Inc. dated January 24, 2008.

B. Contractor shall provide for de-watering of excavation from surface water, ground water or seepage.

C. Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary to preserve excavations and earth banks.

D. The project site should be cleared of all vegetation, construction debris, discarded testing materials, including concrete and asphalt cylinders and other deleterious material. Prior to placement of fill, the exposed subgrade should be scarified to a minimum depth of 6 inches, moisture conditioned or dried to slightly above the optimum moisture content, and compacted to a minimum 90 percent compaction as determined by ASTM D 1557.

E. Excavations for footings shall be approved by the geotechnical engineer prior to placement of concrete and reinforcing. Geotechnical engineer shall submit submit letter of compliance to the architect.

F. Contractor shall brace or protect all walls below grade from lateral loads until attaching floors are completely in place and have attained their full design strength.

Concrete:

A. Concrete construction shall conform to American Concrete Institute ACI 318R-02

B. Concrete shall be regular weight hard rock concrete and shall have the following minimum 28 day compressive strengths:
   a. Footings, grade beams ——— 3,000 psi
   b. Slabs on grade ——— 3,000 psi
   C. All other concrete ——— 3,000 psi

C. Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by contractor if permitted by the mix design.

D. All inserts, anchor bolts, plates, and other items to be cast in the concrete shall be hot-dipped galvanized according to ASTM A153 unless otherwise noted

E. Reinforcing bars, anchor bolts, inserts, and other items to be cast in the concrete shall be secured in position prior to placement of concrete.

F. Conduits, pipes, and sleeves passing through a slab or footing and not conforming to typical details shall be located and submitted to the engineer for approval.

G. Conduits, pipes, and sleeves embedded within a slab or wall (other than those merely passing through) shall be:
   a. No larger in outside dimensions than one third the overall slab or wall thickness in which they are embedded.
   b. Placed in the middle one third of slab or wall thickness
   c. Spaced no closer than three diameters or widths on center.

H. Conduits, pipes, and sleeves shall not be placed through or embedded in a beam unless specifically detailed.

I. The contractor shall locate construction joints so as not to impair the strength of the structure and to minimize shrinkage stresses. Submit location of construction joints to the architect for approval, unless otherwise noted.

J. See architectural drawings for chamfers, edge radii, drips, reglets, finishes and other non-structural items not shown or specified on the structural drawings.

K. Non-shrink grout shall be a premixed non-metallic formula, capable of developing a minimum compressive strength of 3,000 psi in 1 day and 5,000 psi in 28 days.

Reinforcing Steel:

A. Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.

B. Welded wire fabric shall conform to ASTM A185, galvanized.

C. Clear concrete cover for reinforcing bars shall be as follows, unless otherwise noted:
   a. Footings, grade beams, etc. Cast against earth ——— 3"
   b. Footings, grade beams, etc. Formed and exposed to earth or weather ——— 2"
   c. Walls
      1. Faces exposed to earth or weather
         #5 bars and smaller ——— 1 1/2"
         #6 bars and larger ——— 2"
      2. Interior faces ——— 1"
   d. Beams and columns
      primary reinforcement, stirrups, ties and spirals ——— 1 1/2"
   e. Structural slabs
      1. Faces exposed to earth or weather ——— 1 1/2"
      2. Interior faces ——— 1"

D. Clear distance between the surface of a bar and any surface of a masonry unit shall be not less than 1/2 inch, unless otherwise noted.

E. Reinforcing steel shall be spliced where indicated on plans. Provide lap splice length per typical details and schedule, unless otherwise noted.

F. Welded wire fabric shall be lapped 8 inches or one full mesh plus 2 inches, whichever is greater.

G. Mechanical splice connectors shall develop in tension 125 percent of the specified minimum yield strength of reinforcing bars.

H. Bar bends and hooks shall be "standard hooks" in accordance with ACI 318.

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

KEN KAZUO HAYASHIDA
LICENSED PROFESSIONAL ENGINEER
No. 6818-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2010
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

SHEET No. S0.1 OF 152 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	74	152

Concrete Masonry Units (CMU):

A. Concrete masonry units shall be type n- ii, normal weight hollow load-bearing units conforming to ASTM C-90 and have a minimum compressive strength of 1,500 psi.

B. Mortar shall be type "m" conforming to ASTM C270 and have a minimum compressive strength of 2,500 psi at 28 days.

C. Grout shall conform to ASTM C476 and have a minimum compressive strength of 2,500 psi at 28 days.

D. All cells and bond courses shall be solid grouted. Cleanouts shall be provided for all grout pours over 5'-4" in height.

E. When grouting is stopped for one hour or longer, horizontal construction joints shall be formed by stopping the grout pour 1 1/2 inches below the top of the uppermost unit.

F. The contractor shall locate construction joints so as not to impair the strength of the structure and to minimize shrinkage stresses. Submit location of construction joints to the architect for approval, unless otherwise noted. Maximum spacing between construction joints shall be 25 feet.

G. Walls shall be constructed in conventional running bond, unless otherwise noted.

H. See architectural drawings for laying pattern, height of units, surface texture, and joint type.

I. Open-ended blocks may be substituted for standard concrete masonry units.

Structural Steel:

A. Fabrication and erection of structural steel shall conform to the American Institute of Steel Construction Manual of Steel Construction, Ninth Edition.

B. Structural steel shall conform to ASTM A36 unless otherwise noted.

C. Steel wide flange sections shall conform to ASTM A992, Grade 50.

D. Steel channels, S, M and HP shapes shall conform to ASTM A572.

E. Steel pipes shall conform to ASTM A53, Grade B.

F. Steel tubes shall conform to ASTM 500, Grade B.

G. Bolts shall conform to ASTM A307, Grade A unless otherwise noted.

H. High-strength bolts shall conform to ASTM A325, type N. Use load indicator washers.

I. Welds and welding procedures shall conform to the structural welding code AWS D1.1 of the American Welding Society.

J. Welding shall be performed by welders prequalified for welding procedures to be used.

K. Welding electrodes shall be E70xx.

L. All steel shall be prime painted in the shop.

M. Exposed steel shall be hot-dipped galvanized.

Structural Steel (cont):

N. All anchor bolts, plates, and other items to be cast in concrete shall be hot-dipped galvanized in an approved fabrication shop according to to ASTM A153 unless otherwise noted.

Metal Deck:

A. Metal deck and accessories shall be of the type and gage called for on the drawings.

B. Metal deck and accessories shall be formed from steel sheets conforming to ASTM 653 Sq Grade 33, minimum yield strength 38 ksi, with G60 galvanized coating.

C. Deck shall be three span continuous where possible. Do not locate single spans at edges or corners.

D. Minimum bearing of decking on supports shall be 2 inches.

E. Welding of metal deck shall be performed by certified light gage steel welders.

Notification of architect and structural engineer:

A. Contractor shall notify architect and structural engineer five working days prior to the following construction milestones.
a. First foundation pour
b. Start of wall construction
c. Start of roof construction

Special inspection:

A. Contractor shall be responsible for ensuring that special inspection of portions of the work, as required by the building code, be made at the appropriate time. The contractor shall give timely notice of when and where inspections are to be made and provide access for the inspector. The contractor shall correct defective work at no additional cost to the owner and pay for re-inspection.

B. The following structural work requires special inspection:
a. Concrete
b. Bolts installed in concrete
c. Reinforcing steel
d. Structural welding
e. Structural masonry
f. See soils report for additional inspection requirements.

ORIGINAL PLAN
NOTE BOOK No.
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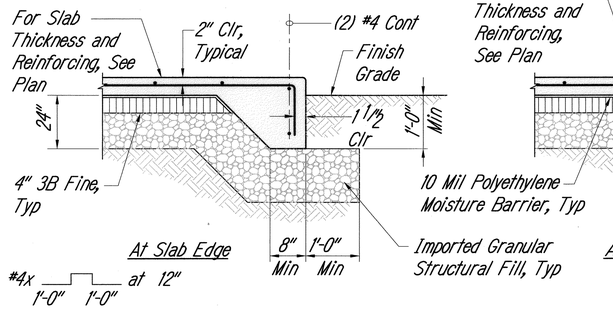
GENERAL NOTES

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

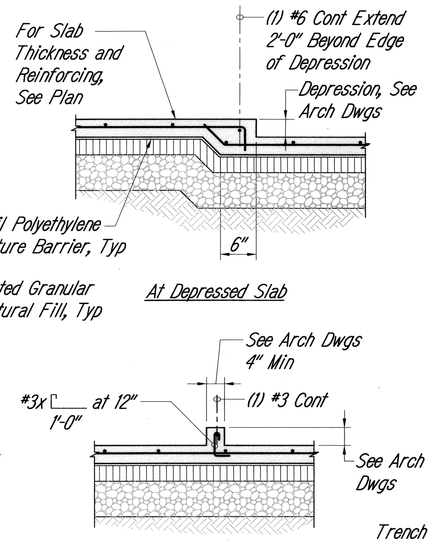
SHEET No. S0.2 OF 152 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	75	152



At Slab Edge

At Equipment Pad

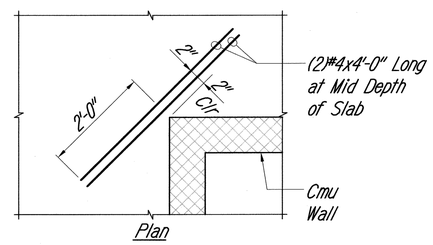


At Depressed Slab

At Curb

TYPICAL SLAB-ON GRADE DETAILS

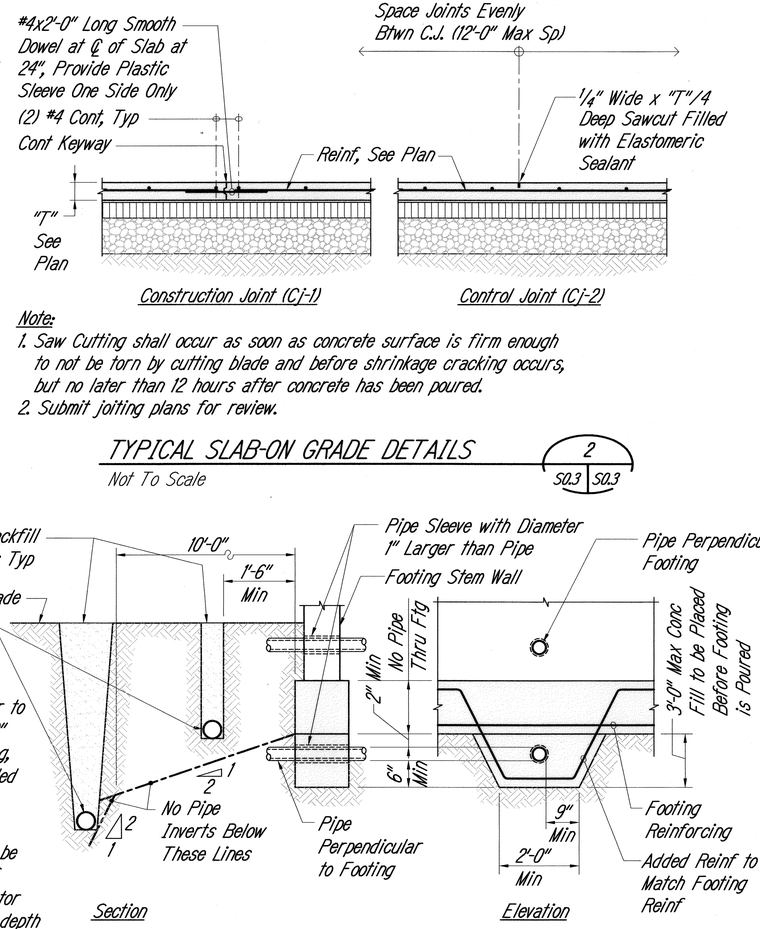
Not To Scale — 1 — S0.3 | S0.3



Plan

TYPICAL REINFORCING AT RE-ENTRANT CORNER DETAIL

Not To Scale — 4 — S0.3 | S0.3



Construction Joint (Cj-1)

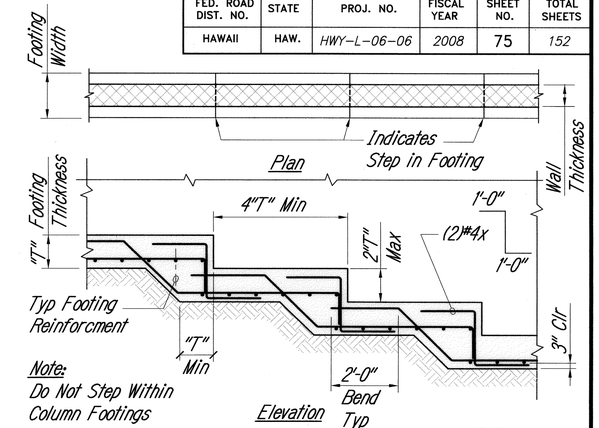
Control Joint (Cj-2)

Note:

1. Saw Cutting shall occur as soon as concrete surface is firm enough to not be torn by cutting blade and before shrinkage cracking occurs, but no later than 12 hours after concrete has been poured.
2. Submit joiting plans for review.

TYPICAL SLAB-ON GRADE DETAILS

Not To Scale — 2 — S0.3 | S0.3



Note:
Do Not Step Within Column Footings

Elevation

TYPICAL STEP FOOTING DETAILS

Not To Scale — 3 — S0.3 | S0.3

Notes:

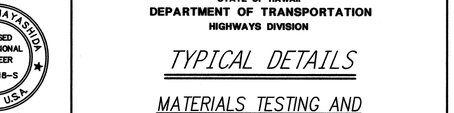
1. For pipe perpendicular to footing more than 3'-0" below bottom of footing, trench may be backfilled with compacted fill, See specifications.
2. Depth of footing may be affected by locaton of pipes. General Contractor shall determine exact depth and location of pipe prior to excavation for footings.

Section

Elevation

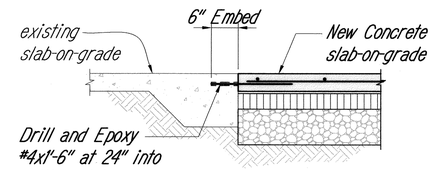
TYPICAL PIPE AT FOOTING DETAIL

Not To Scale — 5 — S0.3 | S0.3



TYPICAL NEW SLAB TO EXISTING SLAB

Not To Scale — 7 — S0.3 | S0.3

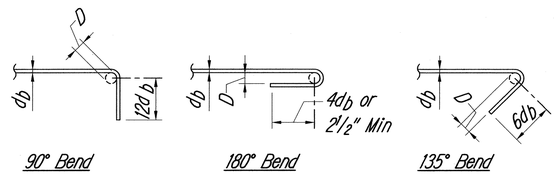


TYPICAL NEW SLAB TO EXISTING SLAB

Not To Scale — 8 — S0.3 | S0.3

Minimum Splice and Embedment Lengths — Concrete Strength = 3,000 PSI					
	Lap Splice		Embedment		
			Straight		With Standard Hook
Bar Size	Top Bars	Other Bars	Top Bar	Other Bars	
#3	28"	22"	22"	18"	10"
#4	38"	30"	30"	22"	12"
#5	48"	36"	36"	28"	14"
#6	56"	44"	44"	34"	18"
#7	82"	64"	64"	48"	20"
#8	94"	72"	72"	56"	22"
#9	106"	82"	82"	62"	26"
#10	118"	92"	92"	70"	28"
#11	132"	102"	102"	78"	32"

Minimum Splice and Embedment Lengths — Concrete Strength = 4,000 PSI					
	Lap Splice		Embedment		
			Straight		With Standard Hook
Bar Size	Top Bars	Other Bars	Top Bar	Other Bars	
#3	26"	20"	20"	16"	8"
#4	34"	26"	26"	20"	10"
#5	42"	32"	32"	24"	12"
#6	50"	38"	38"	30"	16"
#7	72"	54"	54"	42"	18"
#8	82"	62"	62"	48"	20"
#9	92"	70"	70"	54"	22"
#10	102"	80"	80"	62"	26"
#11	114"	88"	88"	68"	28"



Bar Lap

Notes:

1. Length are for concrete with rebar spaced 6 bar diameters min oc. Increase bar length 25% for bars spaced less than 6 bar diameters oc.
2. "Top Bars" are horizontal bars with 12" or more of concrete cast below.

TYPICAL REBAR SPLICE AND EMBEDMENT LENGTH SCHEDULE

Not To Scale — 6 — S0.3 | S0.3

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NOTE BOOK | No.

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HIGHWAYS DIVISION

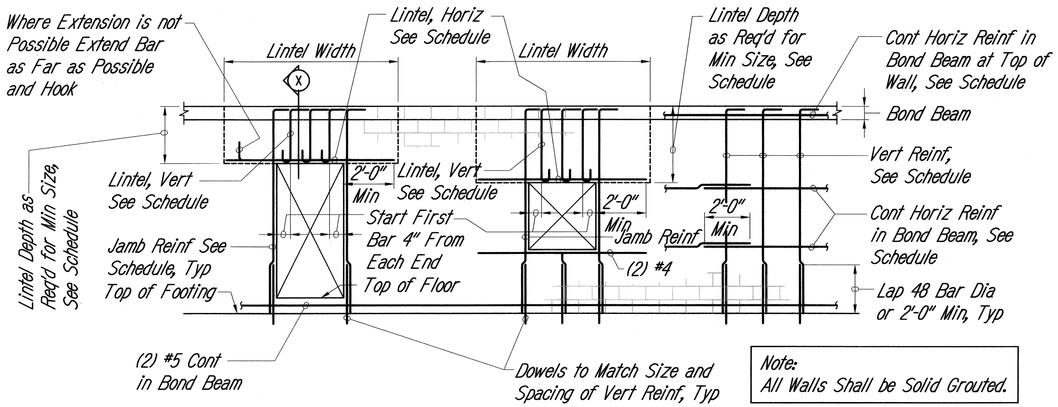
TYPICAL DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

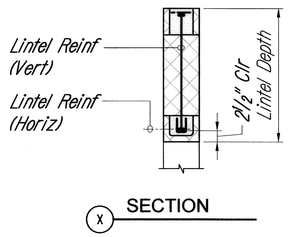
SCALE: AS NOTED — DATE: MAY 2008

SHEET No. S0.3 OF 152 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	76	152



Note:
All Walls Shall be Solid Grouted.



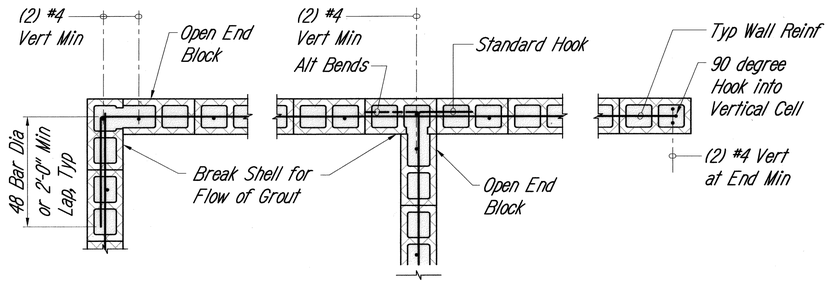
Opening Schedule					
Opening Width	Lintel Depth (Minimum)	Reinforcing			
		Jamb	Lintel Horiz	Lintel Vert	Remarks
W < 5'-0"	2'-8"	(2) #4	(2) #5	#3 at 8"	
5'-1" < W < 7'-0"	2'-8"	(2) #5	(2) #5	#3 at 8"	
7'-1" < W < 9'-0"	4'-0"	(2) #6	(2) #8	#4 at 8"	

Cmu Wall Reinforcing Schedule			
Wall Thickness (Inches)	Bar Size and Spacing		
	Horiz	Vert	Remarks
6	#4 at 32"	#4 at 16"	
8	(2) #4 at 48"	#5 at 24"	

TYPICAL CMU WALL ELEVATION DETAIL

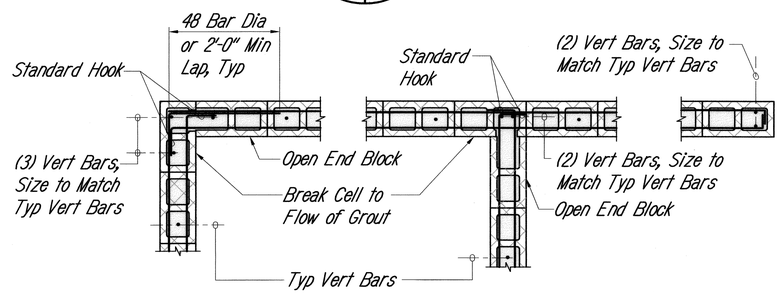
1 — S0.4 | S0.4

Not To Scale



at Corner — at Intersection — at End

Single Mat



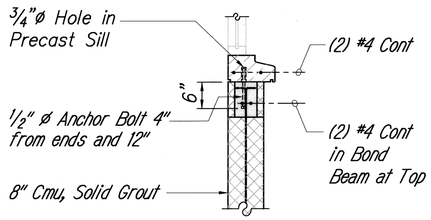
at Corner — at Intersection — at End

Double Mat

CMU WALL REINFORCING AT BOND BEAM

2 — S0.4 | S0.4

Not To Scale



Note:
See Architectural Drawings for Size, Reveal, Drip, Etc of Sill

TYPICAL PRECAST CONCRETE SILL DETAIL

3 — S0.4 | S0.4

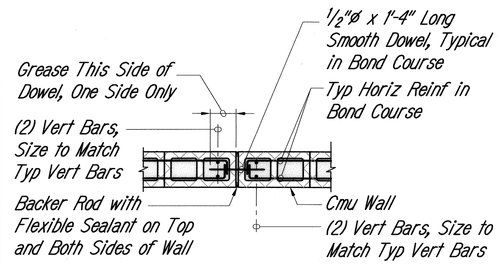
Not To Scale

CMU WALL REINFORCING AT BOND BEAM

2A — S0.4 | S0.4

Not To Scale

Notes:
1. Control joints shall be a maximum of 25'-0" apart and 10'-0" minimum from corners, or as shown on plans.
2. control joints shall be continuous vertical line from top of footing to top of wall.
3. All horizontal reinforcing shall be discontinuous across control joints, except bond course at the top of all walls.



CONTROL JOINT FOR CMU WALLS

4 — S0.4 | S0.4

Not To Scale

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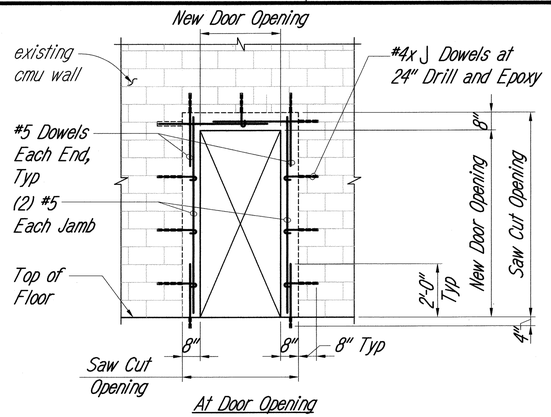
TYPICAL CMU DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

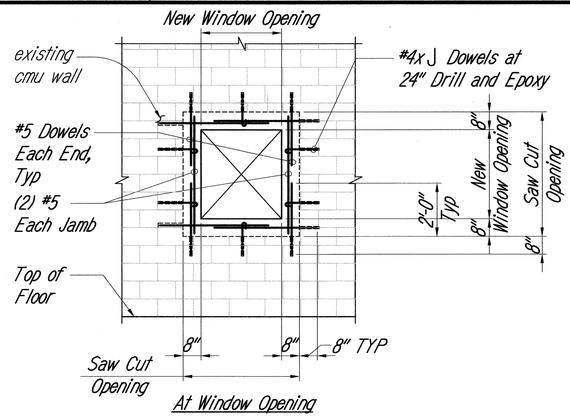
SCALE: AS NOTED — DATE: MAY 2008

SHEET No. S0.4 OF 152 SHEETS

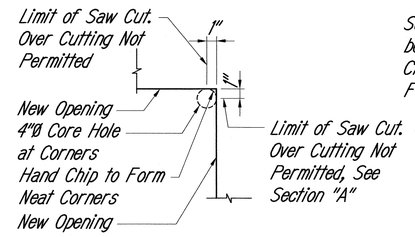
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	77	152



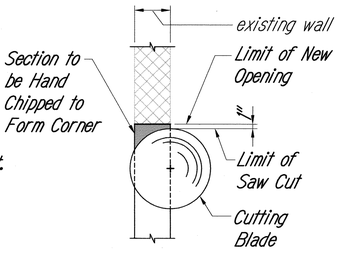
At Door Opening



At Window Opening



Corner

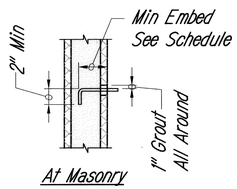


Section "A"

TYPICAL NEW OPENING IN EXISTING CMU WALL

Not To Scale

1 — S0.5 | S0.5



At Masonry

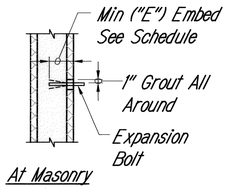
Bolt Diameter	Minimum Embedment
1/2"	4"
5/8"	5"
3/4"	6"
7/8"	7"
1"	7"

Notes:
1. Grout all cells with bolts full height.
2. All expansion bolts shall be Simpson anchors or equal, having the following minimum load values.
3. Where Expansion Anchors Occur at an Ungrouted Cell, Provide 5/8" ø Anchor Bolts and Solid Grout.

TYPICAL ANCHOR BOLT DETAIL

Not To Scale

2 — S0.5 | S0.5



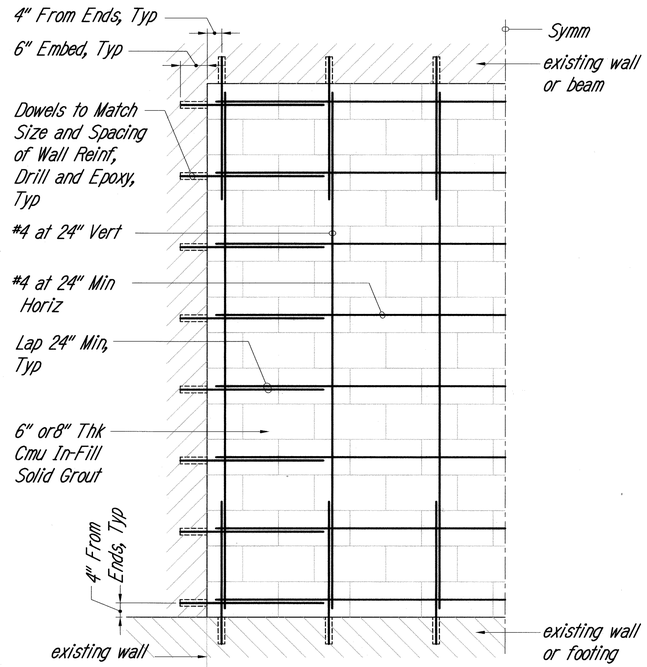
At Masonry

Bolt Diameter	("E") Minimum Embedment	Allowable Shear in Masonry (#)
1/2"	4"	550
5/8"	4"	650
3/4"	5"	800
7/8"	6"	1000
1"	7"	-

TYPICAL EXPANSION BOLT DETAIL

Not To Scale

3 — S0.5 | S0.5

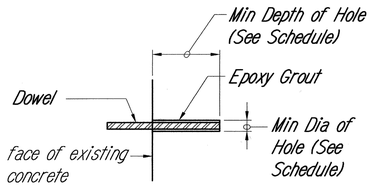


TYPICAL CMU IN-FILL DETAIL

Not To Scale

5 — S0.5 | S0.5

Produce:
1. Drill hole of proper diameter and depth using a carbide tipped drill or corning bit. Avoid cutting existing reinforcing steel by relocating hole slightly.
2. Clean thoroughly by vaccum or air pressure.
3. Make sure that hole is dry and clean before grouting.
4. Place epoxy grout in hole with caulking gun or similar equipment. Start at bottom, fill hole approximately 1/2 full.
5. Coat dowel with same epoxy and insert into hole, forcing material around the sides of the bar and completely filling all voids.
6. Provide support for dowel by tying to rebar or other element until grout has cured.
7. Epoxy Grout: "HY-150" as manufactured by Hilti Corp. (ICBO No. 5193) install in accordance with the manufacturer's printed instructions.



Bar Size	Drill Bit Diameter	Minimum Depth
#3	1/2"	3 1/2"
#4	5/8"	4 1/2"
#5	3/4"	7 1/2"
#6	7/8"	10"
#7	1"	13"
#8	1 1/8"	16"

EPOXY GROUT DETAIL

Not To Scale

4 — S0.5 | S0.5

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KEN KAZUO HAYASHIDA
LICENSED PROFESSIONAL ENGINEER
No. 6818-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2010
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL CMU DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

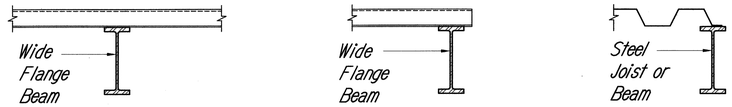
SHEET No. S0.5 OF 152 SHEETS

77

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	78	152

DECK CONNECTION SCHEDULE				
Deck Mark	At Support Per 36" Sheet Width	Side Seam Connector	At Support Parallel to Deck	Remarks
1	(7) 5/8" Puddle Weld	Button Punch at 12"	5/8" Puddle Weld at 12"	Typical U.N.O.

GALVANIZED METAL DECK SCHEDULE					
Metal Deck Location	Deck Type	Minimum Moment of Inertia and Section Modulus	Total thickness Including Conc Topping	Seam Attachment (Minimum)	Weld at Support
Roof	Verco HSB-36 x20Ga Roof Deck	$I = 0.216\ IN^4/FT$ $S = 0.235\ IN^3/FT$	1 1/2" (No Topping)	Top Seam Weld at 12"	3/4"Ø Puddle Weld at 12"



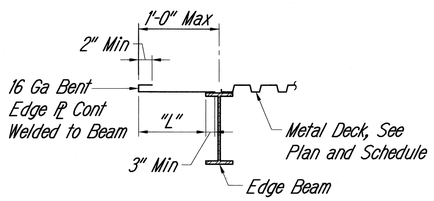
TYPICAL DECK SECTIONS

Metal Deck Notes:

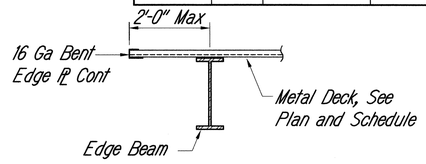
1. Deck Erection Contractor shall Cut Deck to Suit Details at all Framed Openings, Columns, Column Connections and as Indicated on the Drawings.
2. The Openings Shown on the Framing Plans Indicate the General Arrangement and Location Only. Verify Cutting Length of Deck with Architectural, Electrical and Mechanical Drawings.
3. All Welders shall be Certified for Light Gage Steel Welding.
4. All Light Gage Steel Decking and Flashing Shall be Fabricated of Galvanized Sheet Metal Conforming to ASTM A-446.
5. Edge of Perimeter Closure shall be held within 1/2" of the Dimensions Required on the Architectural Drawings unless otherwise noted. Confirm the Location of Beam and Column Center Lines from Fixed Reference Edge Lines.
6. Deck to Bear 2" Min on Supports.

Metal Deck Notes:

a. Metal Deck and Accessories Shall be of the Type and Gage Called for on the Drawings.
b. Metal Deck and Accessories Shall be Formed From Steel Sheets Conforming to ASTM 653 sq Grade 33, Minimum Yield Strength 38 ksi, With G60 Galvanized Coating.
c. Deck Shall be Three Span Continuous Where Possible. do not Locate Single Spans at Edges or Corners.
d. Minimum Bearing of Decking on Supports Shall be 2 Inches.
e. Welding of Metal Deck Shall be Performed by Certified Light Gage Steel Welders.



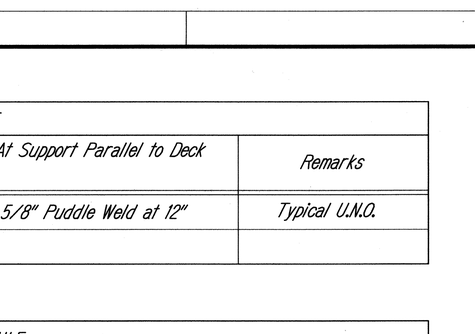
METAL DECK PARALLEL TO EDGE BEAM



METAL DECK PERPENDICULAR TO EDGE BEAM

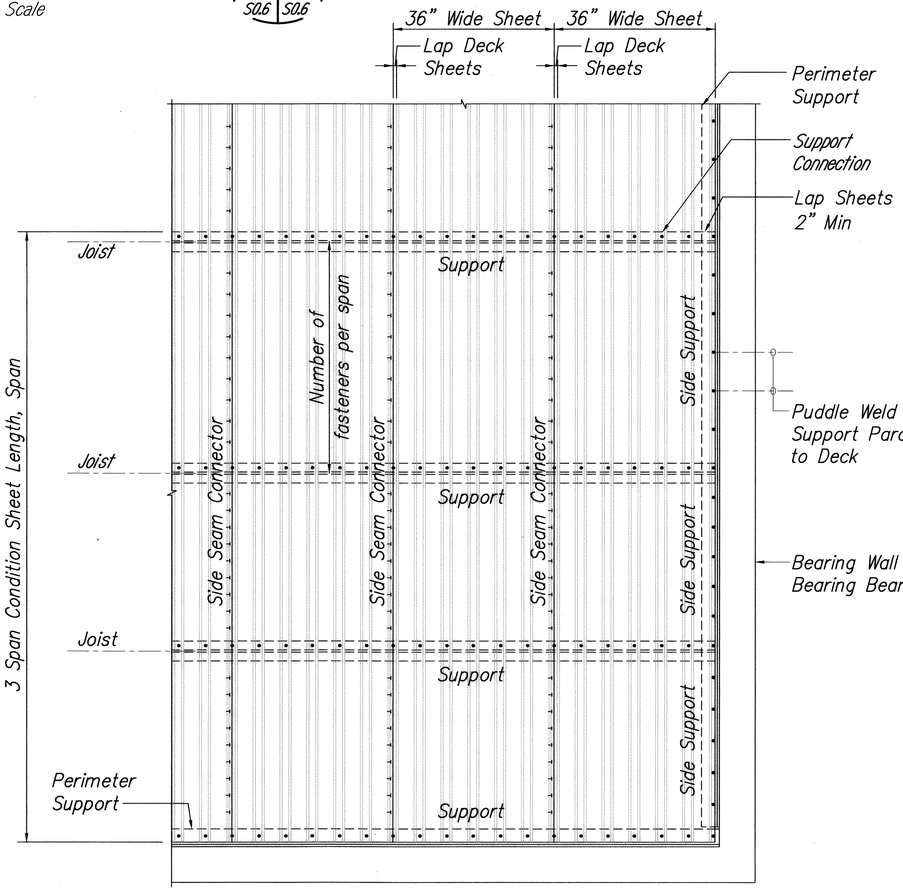
EDGE OF DECK DETAIL 1 S0.6 | S0.6

Not To Scale



Note:
Framing to be Furnished and Installed with Structural Steel. Install 3/16" Plate Deck Closure as Required, Typical

PLAN - TYPICAL DECK OPENING



PLAN - TYPICAL DECK LAYOUT

METAL DECK LAYOUT, SCHEDULE AND NOTES 1 S0.6 | S0.6

Not To Scale

KEN KAZUO HAYASHIDA
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL STEEL DECK DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

SHEET No. S0.6 OF 152 SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
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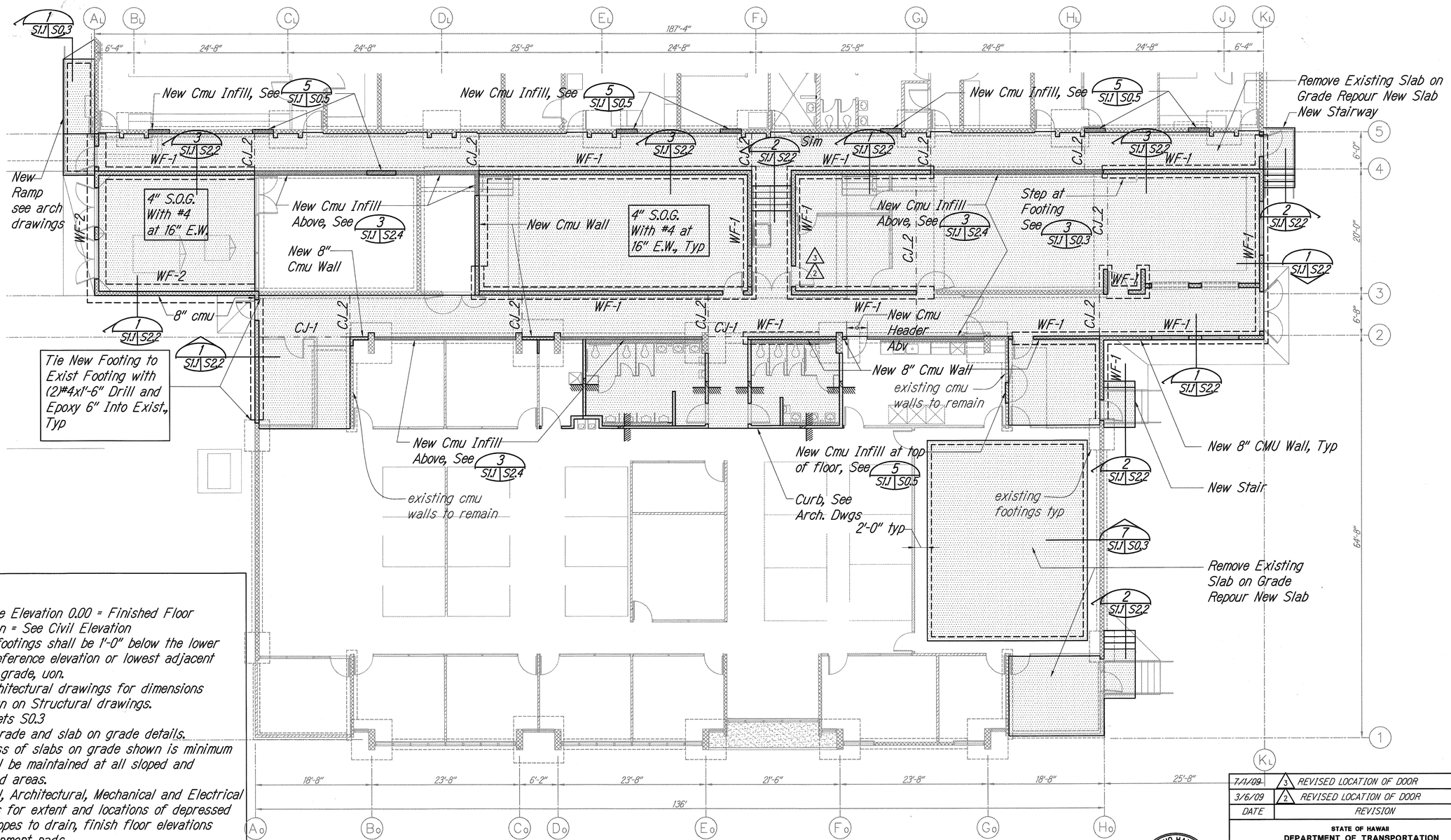
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	C.O. 79	152



Notes:

1. Reference Elevation 0.00 = Finished Floor Elevation = See Civil Elevation
2. Top of footings shall be 1'-0" below the lower of the reference elevation or lowest adjacent finished grade, uon.
3. See Architectural drawings for dimensions not shown on Structural drawings.
4. See sheets S0.3 for subgrade and slab on grade details.
5. Thickness of slabs on grade shown is minimum and shall be maintained at all sloped and depressed areas.
6. See Civil, Architectural, Mechanical and Electrical drawings for extent and locations of depressed slabs, slopes to drain, finish floor elevations and equipment pads.
7. See architectural drawings for fireproofing and waterproofing requirements and details
8. All CMU walls shall be 8", grouted solid unless noted otherwise.
9. See General Notes sheet S0.1 and S0.2 for additional information.

Legend:

WF-1	Indicates wall footing type, See footing schedule on sheet S2.2
CJ-1	Indicates slab joint type, See S0.3
	Indicates full height cmu walls, See S0.4
	Indicates cmu wall infill, See S0.5
	Indicates change in slab elevation, See Architectural Drawings
	Indicates new concrete slab-on-grade,

FOUNDATION PLAN

Scale: 1/8" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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DATE		REVISION
7/1/09	3	REVISED LOCATION OF DOOR
3/6/09	2	REVISED LOCATION OF DOOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FOUNDATION PLAN

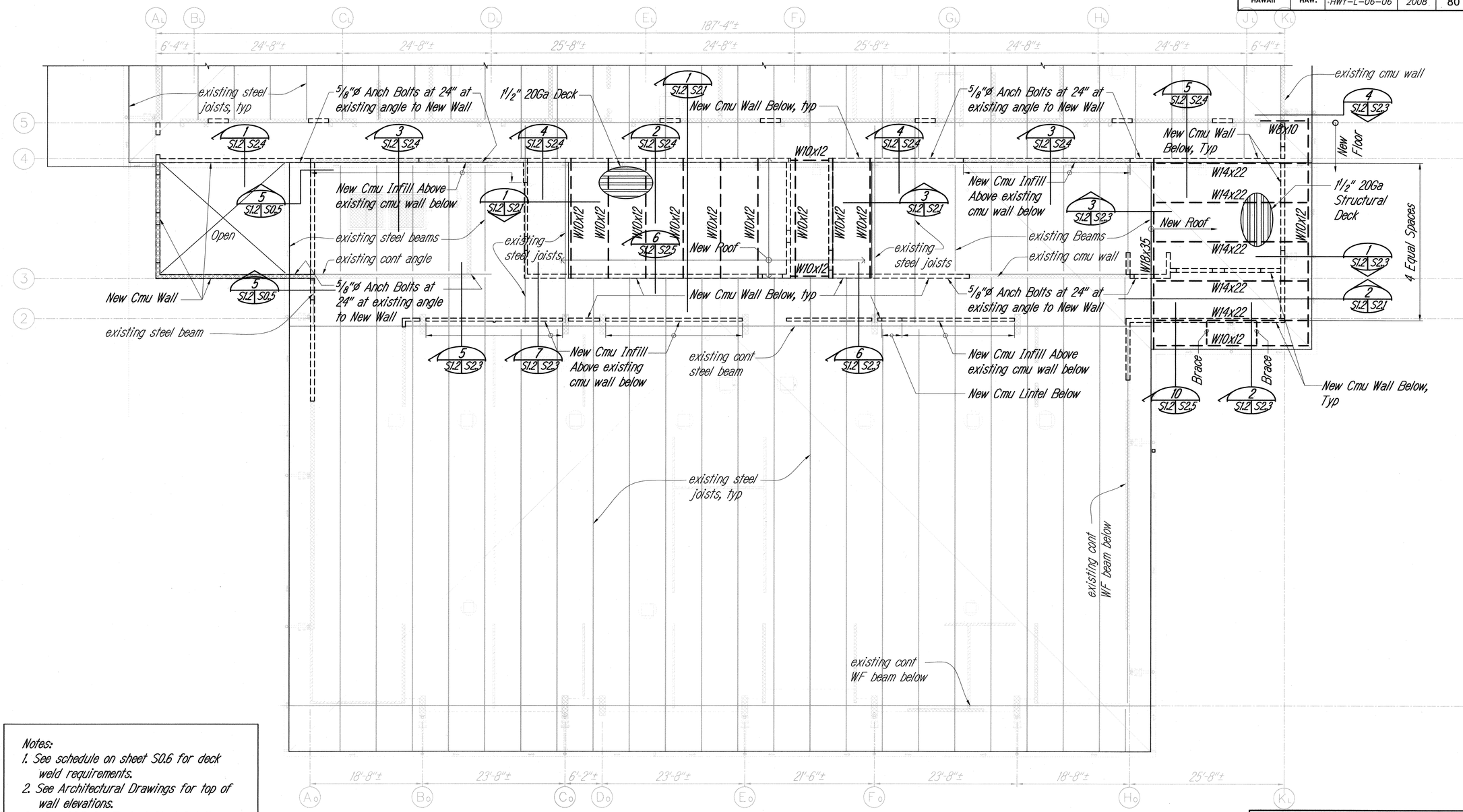
MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

SHEET No. S1.1 OF 152 SHEETS

C.O.79

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	-HWY-L-06-06	2008	80	152



Notes:
1. See schedule on sheet S0.6 for deck weld requirements.
2. See Architectural Drawings for top of wall elevations.
3. See S2.5 for Typical Steel Details.
4. See Architectural Drawings for all required dimensions and balance of information.
5. See Architectural Drawings for all deck bearing elevations and top of wall parapets.

ROOF PLAN
Scale 1/8" =1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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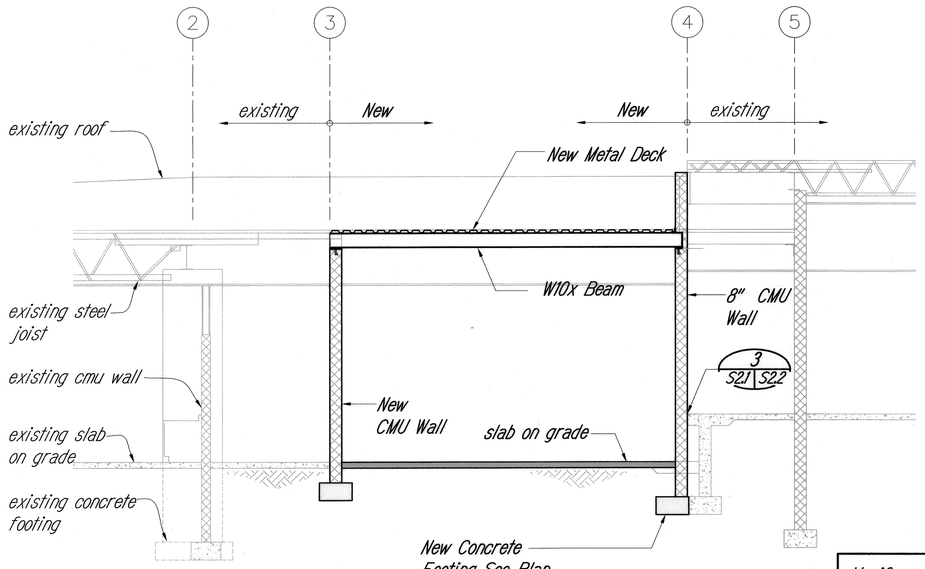
ROOF PLAN

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

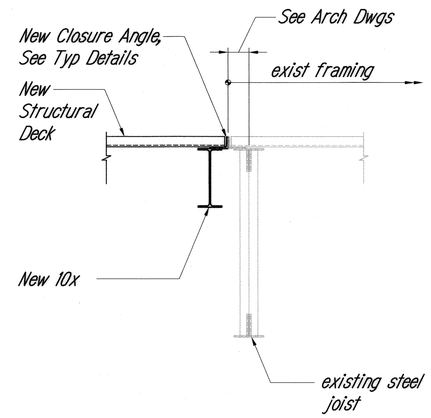
SHEET No. S1.2 OF 152 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	81	152

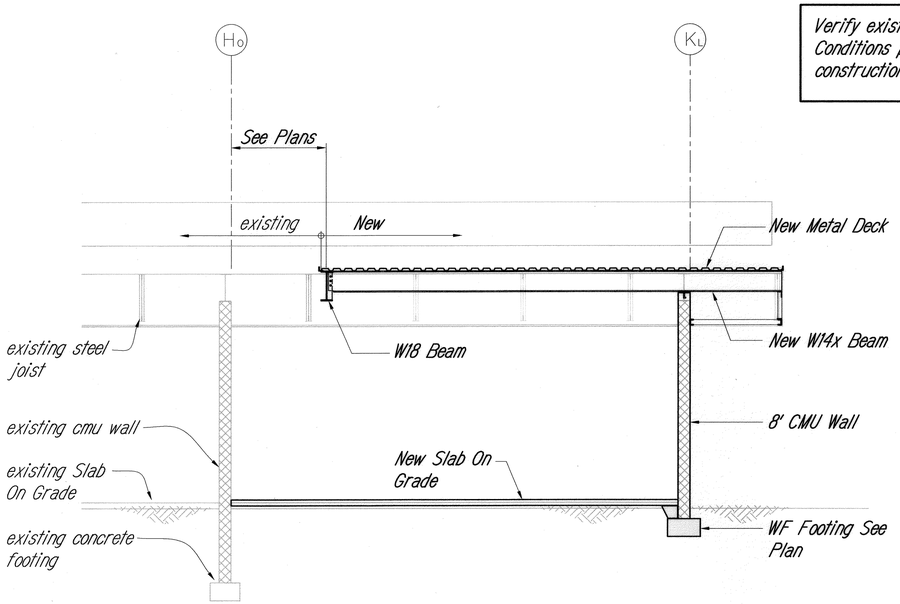


Verify existing Conditions prior to construction

BUILDING SECTION 1
Scale : 1/4" = 1'-0"
S1.1, S1.2 | S2.1



SECTION 3
Scale: 1" = 1'-0"
S1.2 | S2.1



Verify existing Conditions prior to construction

BUILDING SECTION 2
Scale : 1/4" = 1'-0"
S1.1, S1.2 | S2.1

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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BUILDING SECTIONS

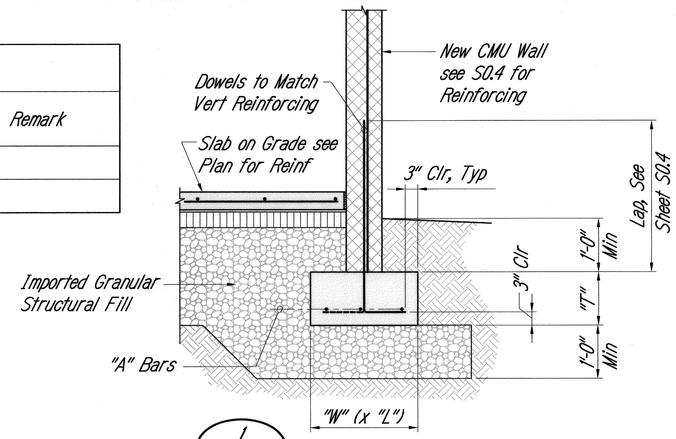
MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

SHEET No. S2.1 OF 152 SHEETS

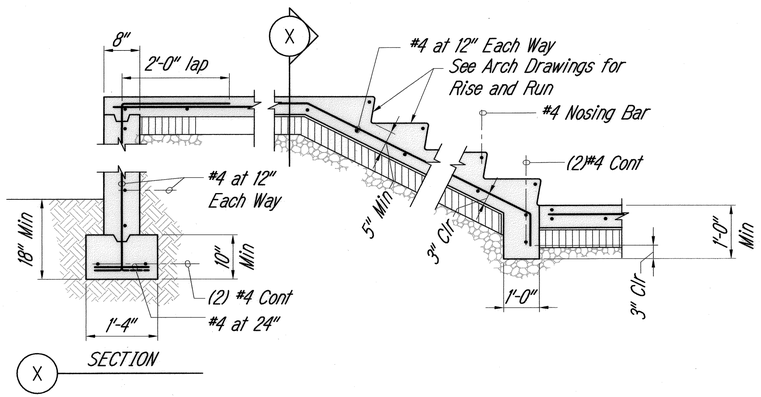
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	82	152

Footing Schedule						
Mark	"T" Thickness	"W" Width	"L" Length	Reinforcing "A" Bars	Reinforcing "B" Bars	Remark
WF-1	1'-0"	2'-0"	Cont	(3) #4		
WF-2	1'-0"	3'-0"	Cont	(4) #5		



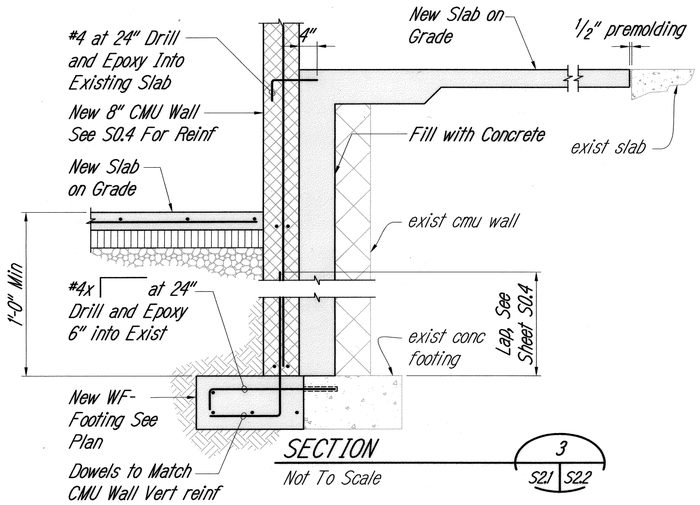
TYPICAL FOOTING DETAIL — 1 (S1.1 | S2.2)

Not To Scale



TYPICAL STAIR-ON-GRADE DETAIL — 2 (S1.1 | S2.2)

Scale 3/4" = 1'-0"



3 (S2.1 | S2.2)

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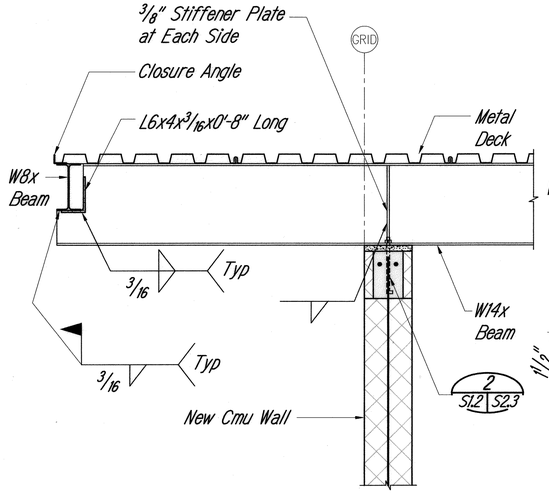
TYPICAL DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

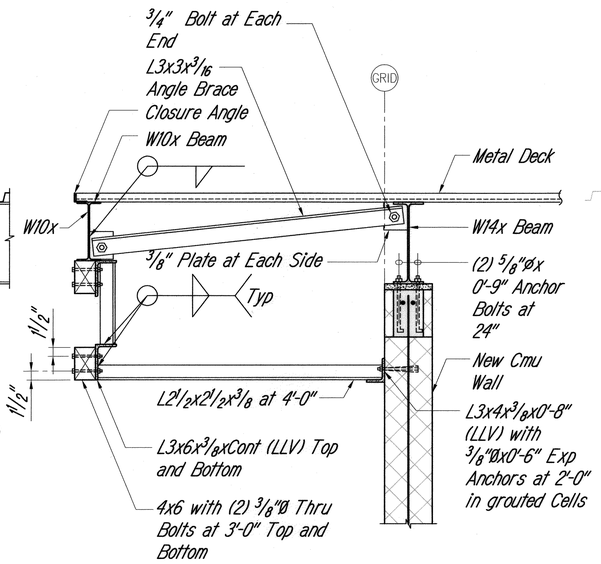
SCALE: AS NOTED DATE: MAY 2008

SHEET No. S2.2 OF 152 SHEETS

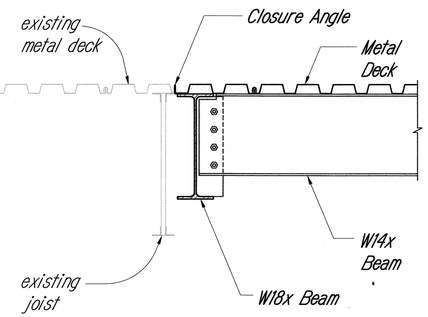
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	83	152



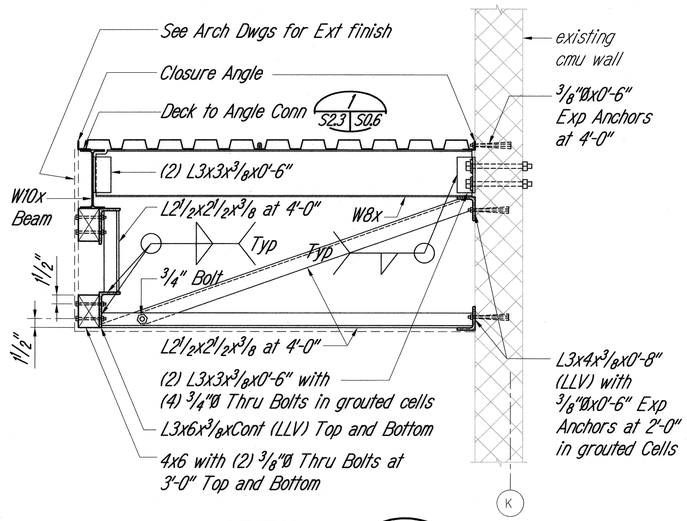
SECTION 1
Scale : 1" = 1'-0"
S1.2 S2.3



SECTION 2
Scale : 1" = 1'-0"
S1.2 S2.3



SECTION 3
Scale : 1" = 1'-0"
S1.2 S2.3



SECTION 4
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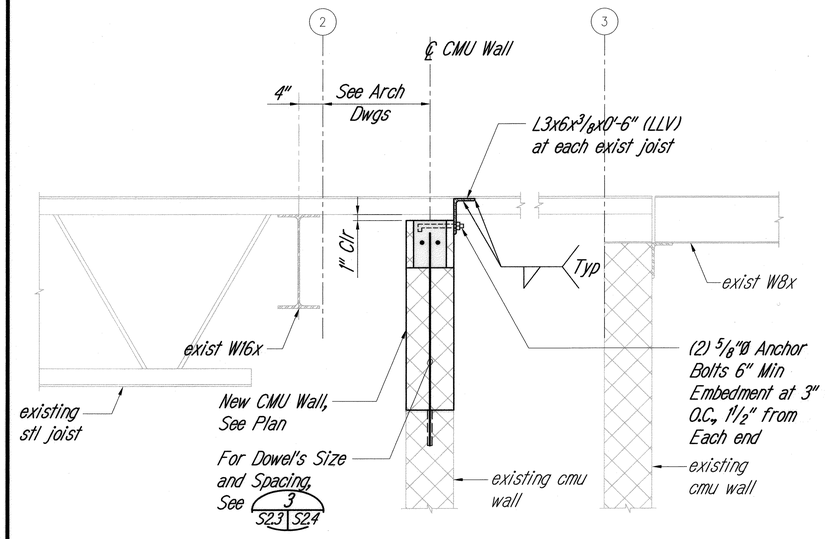
S1.2 S2.3



SECTION 5
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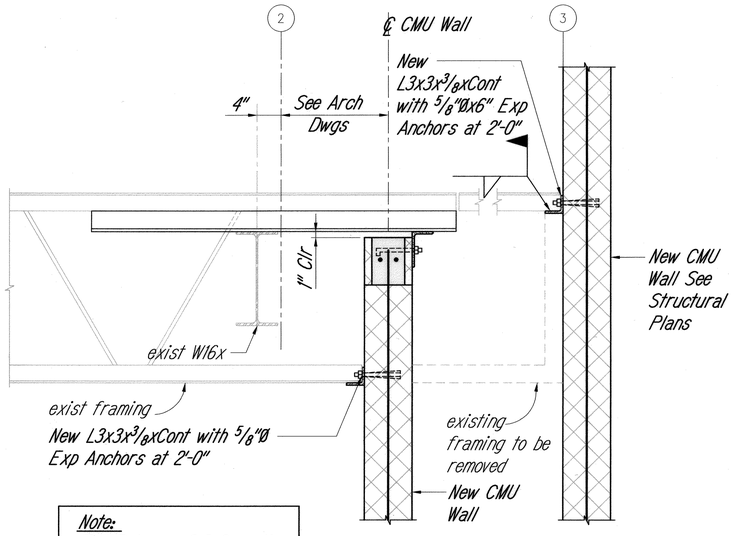
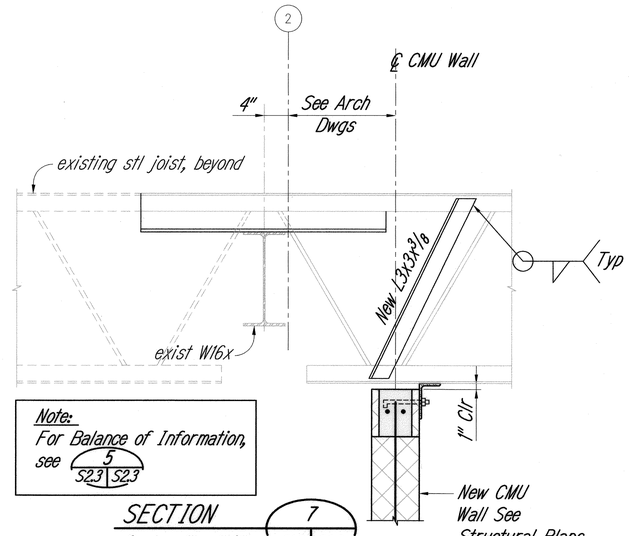
S1.2 S2.3



Note:
For Balance of Information, see 5 S2.3 S2.3

SECTION 6
Scale : 1" = 1'-0"
S1.2 S2.3



Note:
For Balance of Information, see 5 S2.3 S2.3

SECTION 7
Scale : 1" = 1'-0"
S1.2 S2.3

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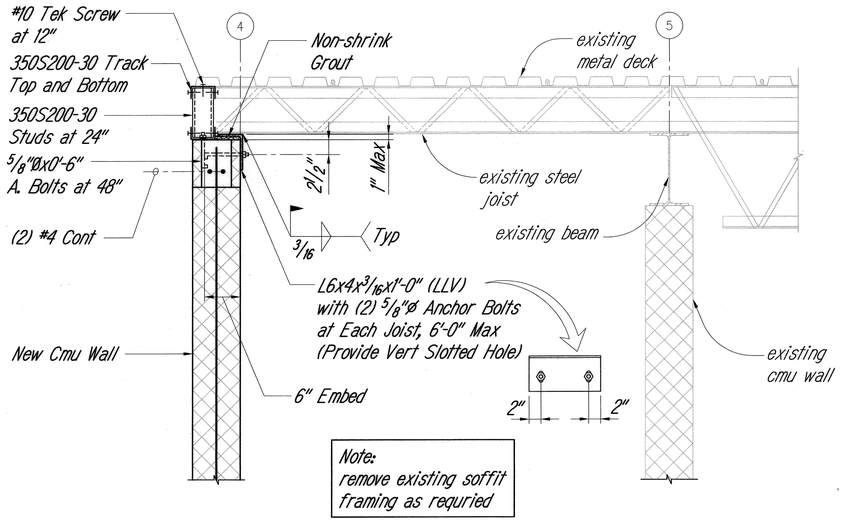
ROOF SECTIONS AND DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

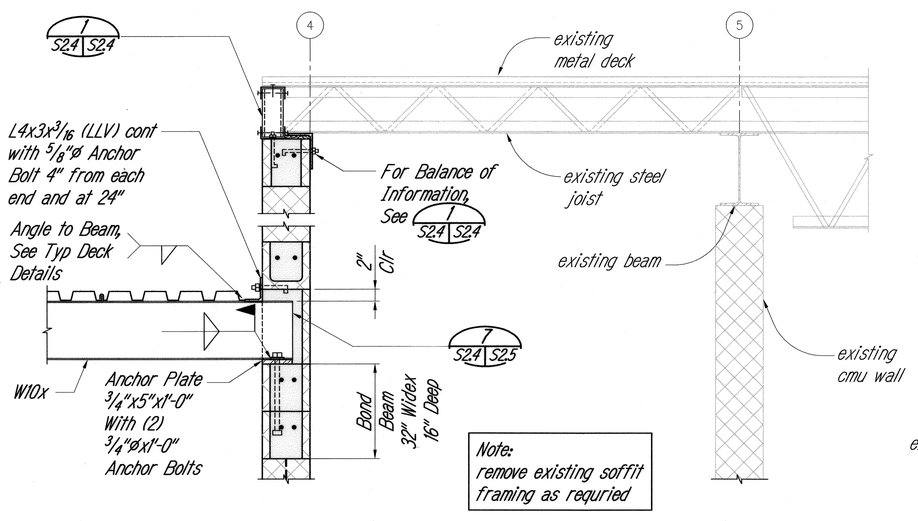
SHEET No. S2.3 OF 152 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	84	152



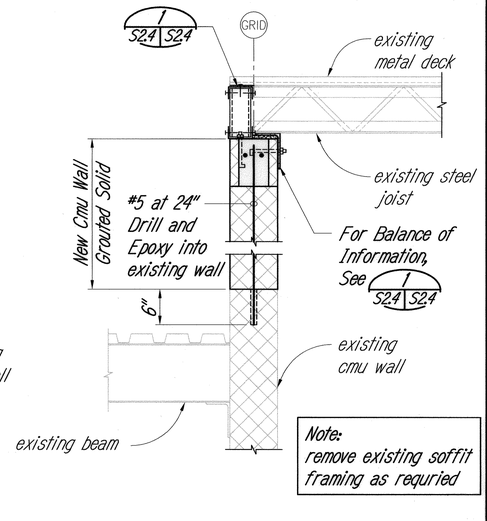
Note:
remove existing soffit framing as requried

SECTION 1
Scale : 1" = 1'-0" S1.2 S2.4



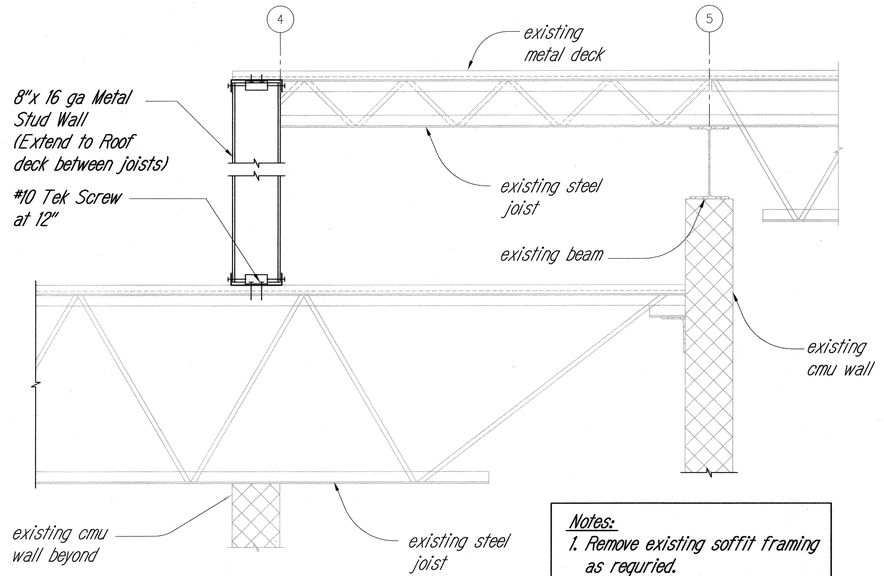
Note:
remove existing soffit framing as requried

SECTION 2
Scale : 1" = 1'-0" S1.2 S2.4



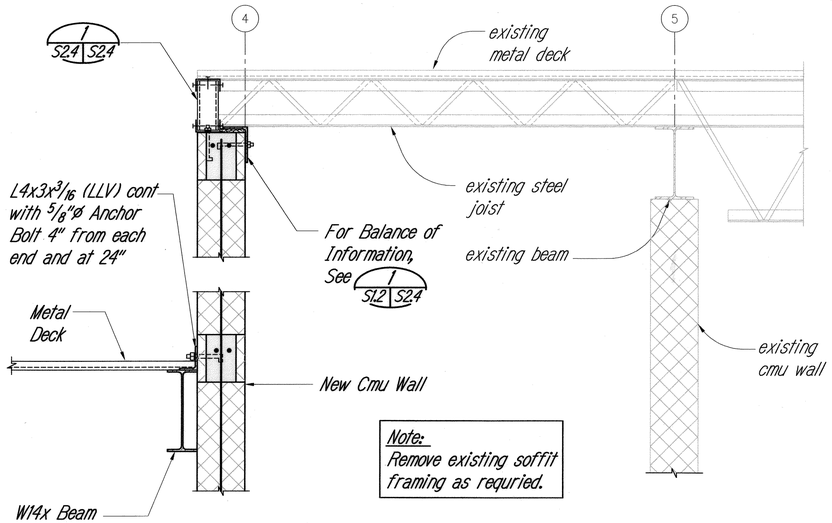
Note:
remove existing soffit framing as requried

SECTION 3
Scale : 1" = 1'-0" S1.1, S1.2 S2.4



Notes:
1. Remove existing soffit framing as requried.
2. Verify existing conditions prior to construction.

SECTION 4
Scale : 1" = 1'-0" S1.2 S2.4



Note:
Remove existing soffit framing as requried.

SECTION 5
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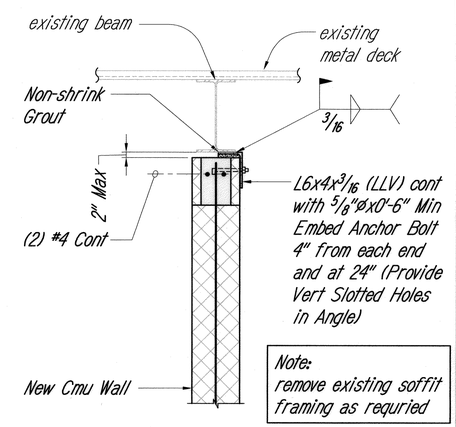

Note:
remove existing soffit framing as requried

SECTION 6
Scale : 1" = 1'-0" S1.2 S2.4

555
555 To

ORIGINAL PLAN	SURVEY PLOTTED BY
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	DATE

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HIGHWAYS DIVISION

ROOF SECTIONS AND DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

SCALE: AS NOTED DATE: MAY 2008

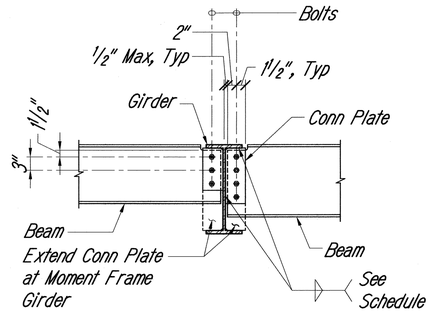
SHEET No. S2.4 OF 152 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-L-06-06	2008	85	152

Beam Connection Schedule			
Beam Size	No of 1"Ø A325 Bolts	Conn Plate	Weld Size
W6 and Smaller	2	3/8"	3/16"
W8 - W10	2	3/8"	3/16"
W12 - W14	3	3/8"	3/16"
W16	4	1/2"	1/4"
W18	5	1/2"	1/4"
W21	6	1/2"	3/8"
W24	7	1/2"	3/8"

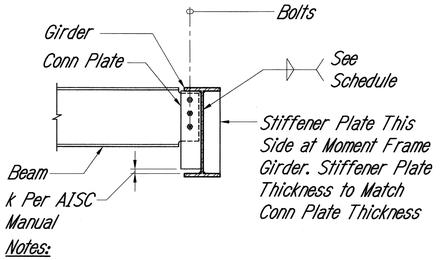
Notes:
1. Fillet weld size shall be as shown unless a greater size is required by AISC Table J2.4.
2. Edge distances and bolt spacing shall meet the requirements of AISC specifications.
3. Double angles may be substituted for connector plates, provide they meet or exceed the requirements of AISC Table 11 framed beam connections bolts.
4. For beam connections mark thus * on plans, see detail 6/S-7.0.
5. When bolts are required to be spaced in two rows, place maximum number of bolts in first row (nearest to column) and symmetrically space balance of bolts in second row.

BEAM CONNECTION SCHEDULE — 1 — S2.5 | S2.5
Not To Scale



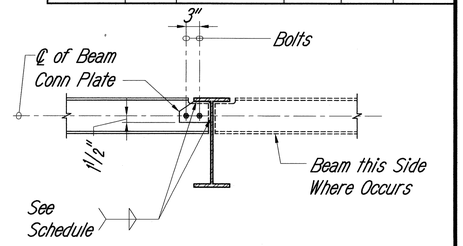
Note:
For bolts, welds, and connection plates, see non-moment beam connection schedule.

TYPICAL BEAM CONNECTION — 2 — S2.5 | S2.5
Not To Scale



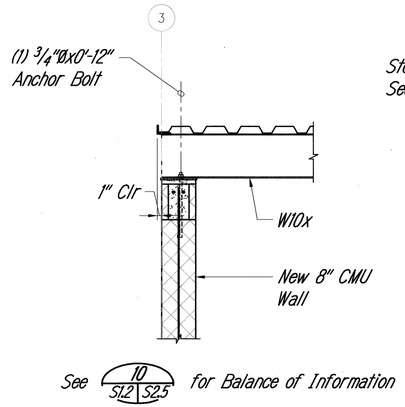
Notes:
1. One sided connection occurs where opposite beams are offset by 12" or more.
2. For balance of information, see typical beam non-moment connection.

ONE-SIDED BEAM CONNECTION — 3 — S2.5 | S2.5
Not To Scale

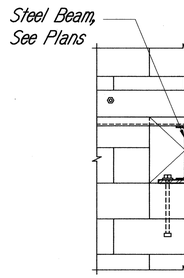


Note:
For bolts, welds, and connection plates, see non-moment beam connection schedule.

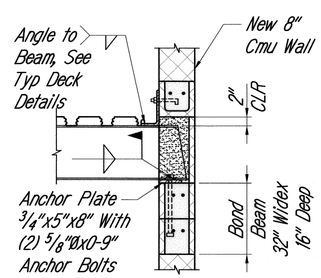
W6 AND SMALLER BEAM CONNECTION — 4 — S2.5 | S2.5
Not To Scale



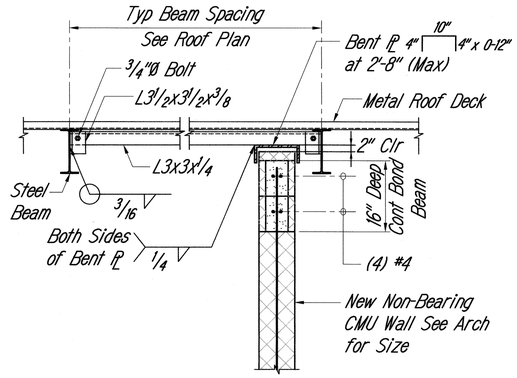
See 10 (S1.2 | S2.5) for Balance of Information



Elevation



Section

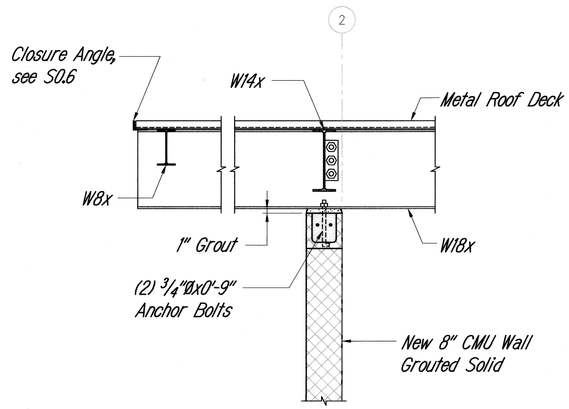


NOT USED — 5 — S1.2 | S2.5
Not To Scale

SECTION — 6 — S1.2 | S2.5
Not To Scale

STRUCTURAL STEEL TO CMU CONNECTION DETAIL — 7 — S2.5 | S2.5
Not To Scale

SECTION — 8 — S2.5 | S2.5
Not To Scale



NOT USED — 9 — - | S2.5
Not To Scale

SECTION — 10 — S1.2 | S2.5
Not To Scale

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

KEN KAZUO HAYASHIDA
LICENSED PROFESSIONAL ENGINEER
No. 6818-S
HAWAII, U.S.A.
EXPIRATION DATE OF THE LICENSE 4/30/2010
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS

MATERIALS TESTING AND RESEARCH FACILITY RENOVATION
Project No. HWY-L-06-06

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SHEET No. S2.5 OF 152 SHEETS