

GENERAL:

- A. Workmanship and materials shall conform to the building code of the County of Maui (Uniform Building Code 1997). 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 Loads _____ 2A
- B. Basic wind speed and exposure _____ 80 mph, exposure D
- 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 _____ 1,000 psf
b. Dead load + live load + lateral load _____ 1,300 psf
See soils report for additional bearing pressure information

FOUNDATION:

- A. Contractor shall provide for de-watering of excavation from surface water, ground water or seepage.
- B. Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary to preserve excavations and earth banks.
- C. 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.
- D. Excavations for footings shall be approved by the geotechnical engineer prior to placement of concrete and reinforcing. Geotechnical engineer shall submit letter of compliance to the architect.
- E. 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 the Hawaii Standard Specifications for Bridge and Road Construction, 2005 as modified by the State of Hawaii Department of Transportation.
- 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:

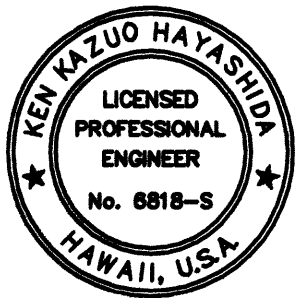
- A. Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.
- B. Welded wire fabric shall conform to ASTM A185, galvanized.
- C. Clear concrete cover for reinforcing bars shall be as follows, unless otherwise noted:
a. Footings, grade beams, etc. Cast against earth _____ 3"
b. Footings, 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"

REINFORCING STEEL
(CONT):

- 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.
- STRUCTURAL STEEL:
- A. Fabrication and erection of structural steel shall conform to the Hawaii Standard Specifications for Bridge and Road Construction, 2005 as modified by the State of Hawaii Department of Transportation.
- 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.
- 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 ASTM A153 unless otherwise noted.
- O. All structural steel shall be hot-dipped galvanized.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-06-06M	2010	13	18

ORIGINAL SURVEY PLOTTED BY _____ DATE _____
DRAWN BY _____
DESIGNED BY _____
NOTED BY _____
CHECKED BY _____
No. _____



EXPIRATION DATE OF LICENSE 4/30/2012
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
STRUCTURE GENERAL NOTES	
KEANAE BASEYARD MAINTENANCE and REPAIRS Project No. HWY-M-06-06M	
Scale: AS NOTED	Date: APRIL 2010
SHEET No. 5-100 OF 18 SHEETS	

STRUCTURAL COLD-FORMED METAL FRAMING:

- A. Fabrication and erection of gage metal structures shall be in accordance with the American Iron and Steel Institute Specifications, latest edition.
- B. Cold-formed steel members and accessories shall be of the type and gage called for on the drawings. Member designations are per Metal Stud Manufacturer's Association.
- C. All members 54, 68, and 97 mils thick shall meet the requirements of ASTM A 653 Sq Grade 50. All members 33 and 43 mils thick shall meet the requirements of ASTM A 653 Sq Grade 33.
- D. Prefabricated framing hardware shall be Simpson Strong Tie galvanized, or approved equal. Install per manufacturer's recommendations.
- E. Screws shall be self-drilling, self-tapping, gage metal screws. Minimum edge distance and center to center spacing shall be 3/4 inch.
- F. Place a layer of 30# roofing felt between all cold-formed metal members and concrete or masonry surfaces.

COLD-FORMED STEEL PURLINS:

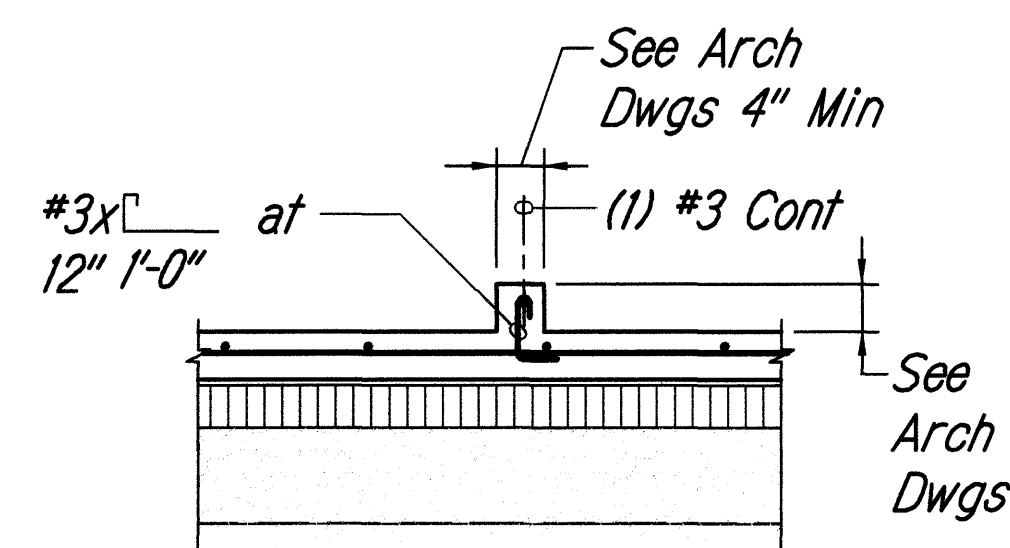
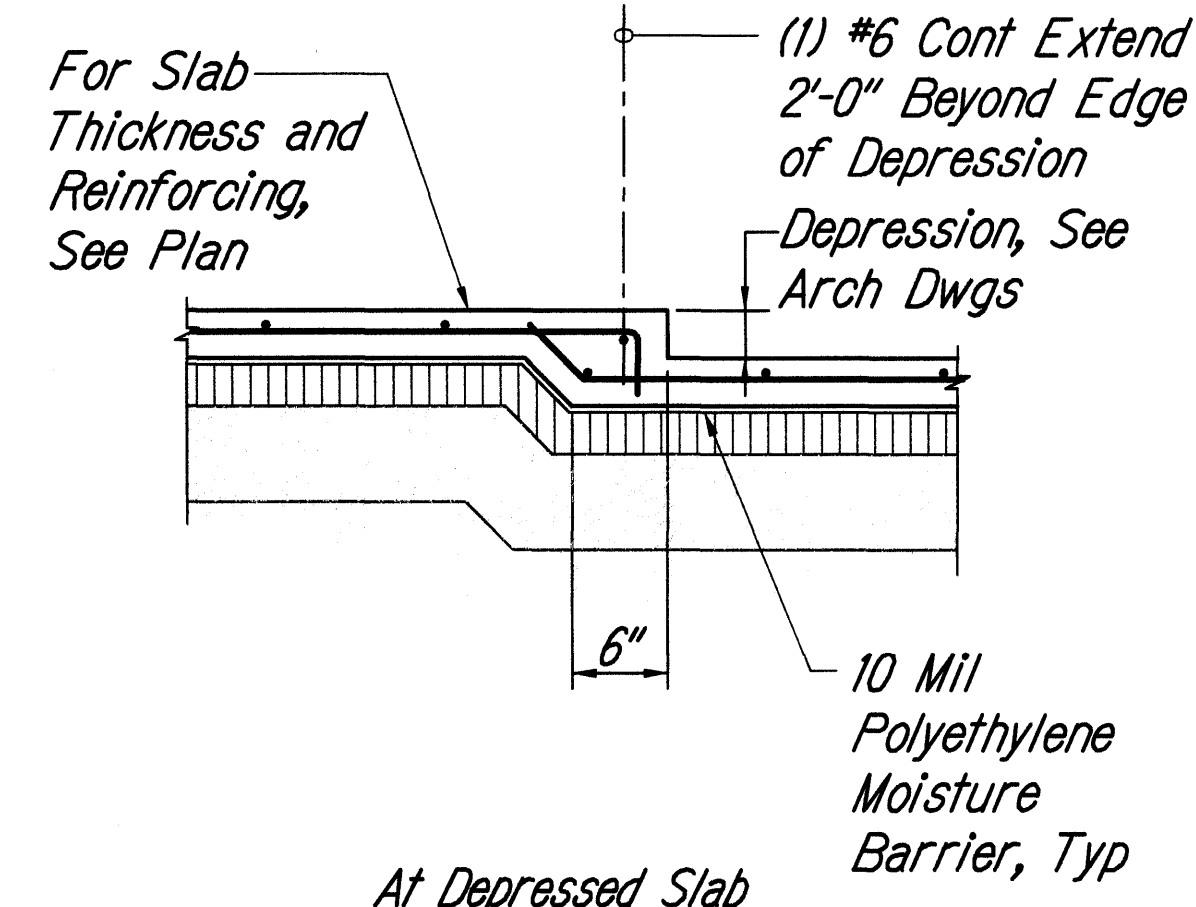
- A. Fabrication and erection of gage metal structures shall be in accordance with the American Iron and Steel Institute Specifications, latest edition.
- B. Cold-formed steel purlins and accessories shall be of the type and gage called for on the contract documents.
- C. Purlins shall span over two or more supports.
- D. Cold-formed steel purlins shall meet the requirements of ASTM A 570. Minimum yield strength of steel shall be 55,000 psi.
- E. Cold formed steel purlins shall have the following minimum section properties:
a. 8"x 12 Gage Z-purlin: $ixx = 17.21 \text{ in}^4$, $S_{min} = 3.73 \text{ in}^3$
b. 8"x 12 Gage Eave strut: $ixx = 14.21 \text{ in}^4$, $S_{min} = 2.51 \text{ in}^3$
c. 8"x 12 Gage C-purlin: $ixx = 17.23 \text{ in}^4$, $S_{min} = 3.68 \text{ in}^3$
- F. Contractor shall submit shop drawings to the engineer for approval prior to fabrication. Shop drawings shall indicate layout, framing and supports with dimensions, sections, type and location of attachments and details of accessories.

**NOTIFICATION OF ARCHITECT AND
AND STRUCTURAL ENGINEER:**

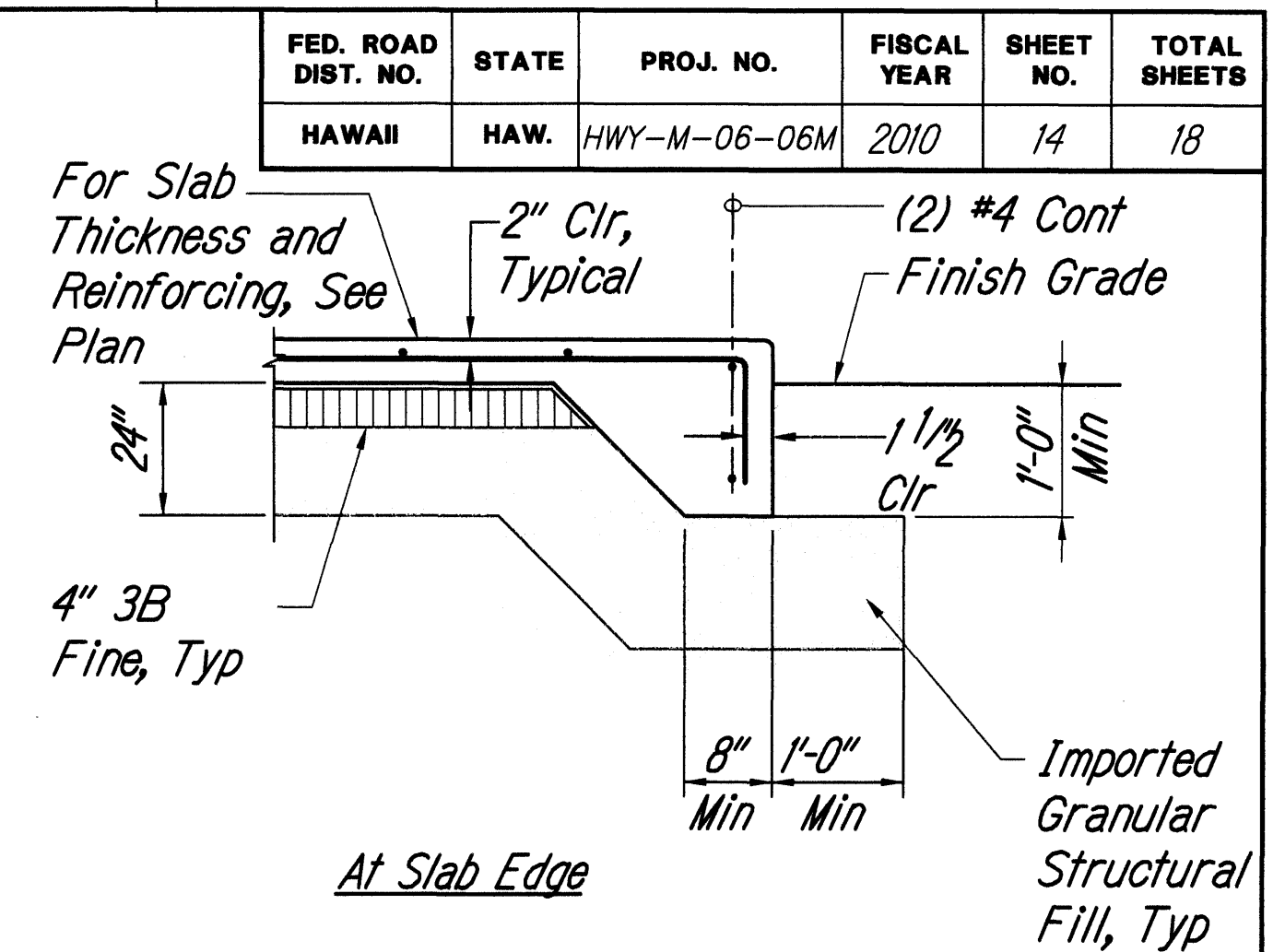
- A. Contractor shall notify architect and structural engineer five working days prior to the following construction milestones.
a. First foundation pour
b. Start of wall construction
c. Start of floor construction
d. Start of roof construction

SPECIAL INSPECTION:

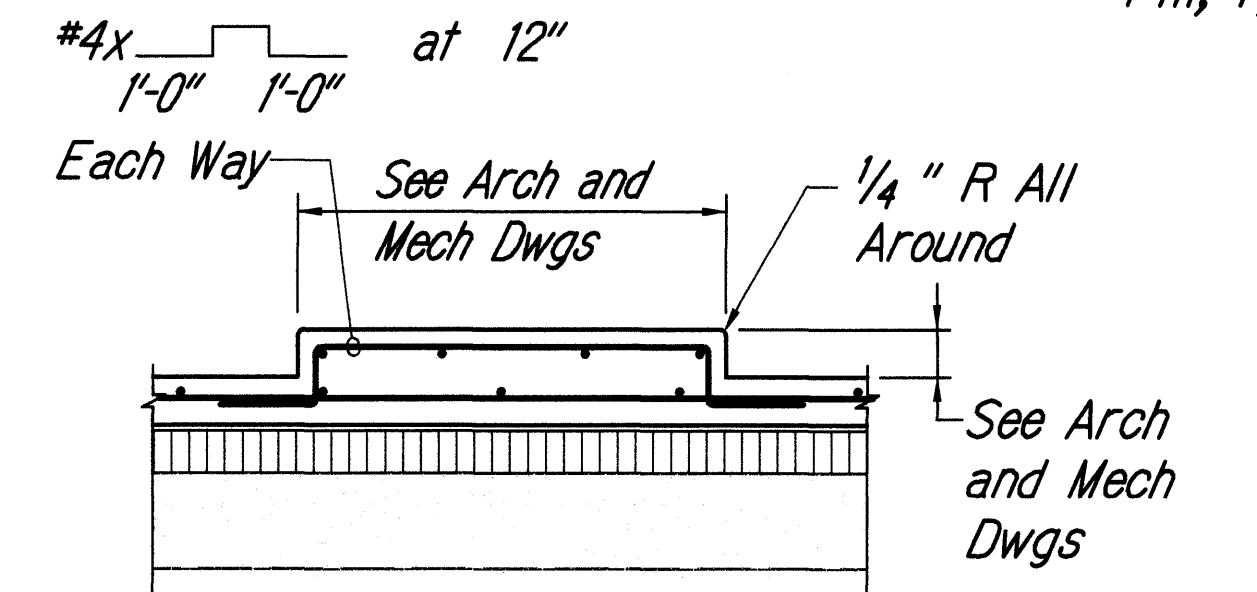
- A. Contractor shall be responsible for ensuring that special inspection of portions of the work, as required by the building code of the County of Maui, be made at the appropriate time. The contractor shall give timely notice of when and where inspections are to be made and provide access for the inspector. The contractor shall correct defective work at no additional cost to the owner and pay for re-inspection. (no special inspection required for 2500 psi concrete).
- B. The following structural work requires special inspection:
a. Concrete
b. Bolts installed in concrete
c. Reinforcing steel
d. Structural welding
e. High strength bolting



At Curb



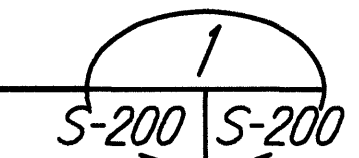
At Slab Edge



At Equipment Pad

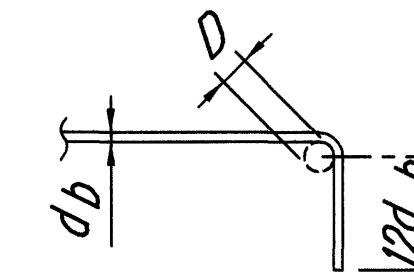
TYPICAL SLAB-ON-GRADE DETAILS

Not To Scale

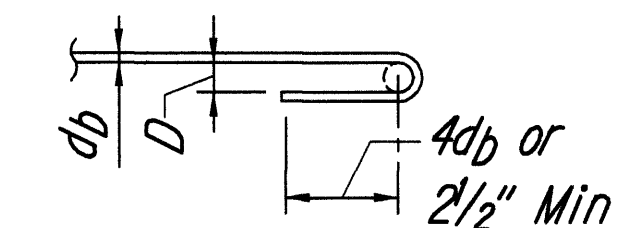


Notes:

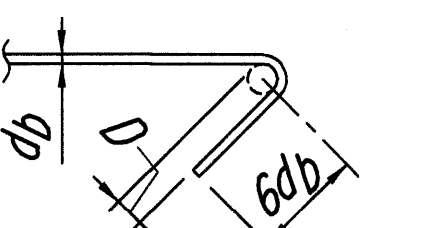
1. Length are for concrete with rebar spaced 6 bar diameters min oc. Increase bar length 25% for bars spaced less than 6 bar diameters oc.
2. "Top Bars" are horizontal bars with 12" or more of concrete cast below.



90° Bend



180° Bend



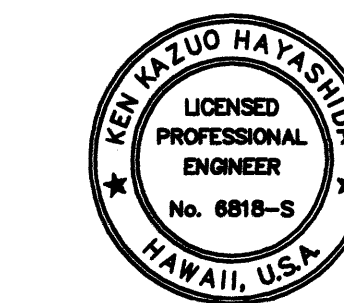
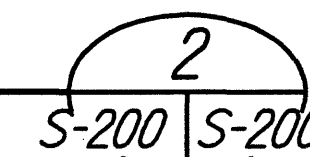
135° Bend

D = 6db for #8 and Smaller
D = 8db for #9 to #11

Minimum Splice and Embedment Lengths					
Concrete Strength = 3,000 PSI					
Bar Size	Lap Splice		Embedment		With Standar Hook
	Top Bars	Other Bars	Straight		
			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"	30"

**TYPICAL REBAR SPLICE AND
EMBEDMENT LENGTH SCHEDULE**

Not To Scale



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**STRUCTURE GENERAL NOTES
AND TYPICAL DETAILS**

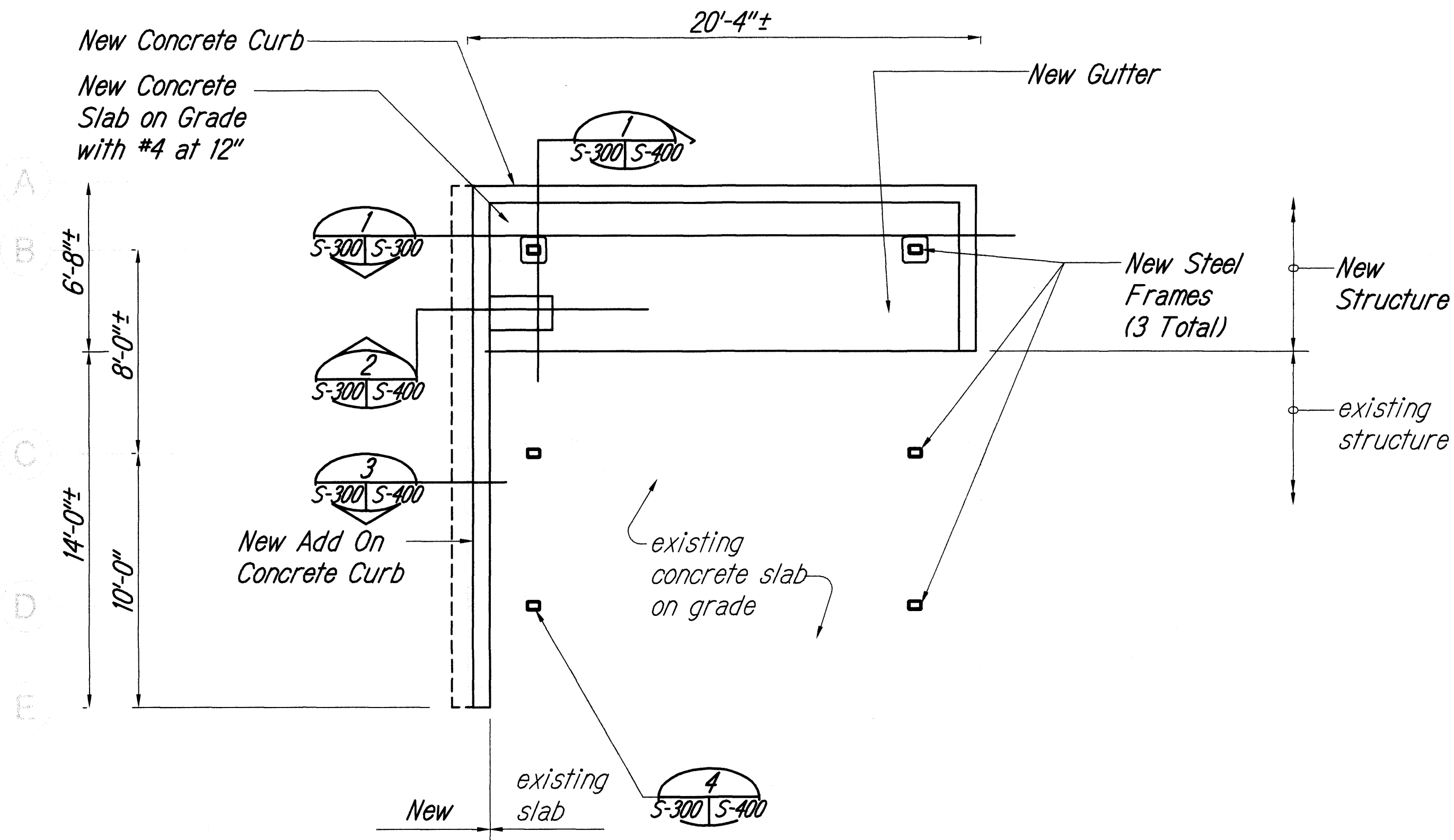
KEANAE BASEYARD
MAINTENANCE and REPAIRS
Project No. HWY-M-06-06M

Scale: AS NOTED Date: APRIL 2010

SHEET No. S-200 OF 18 SHEETS

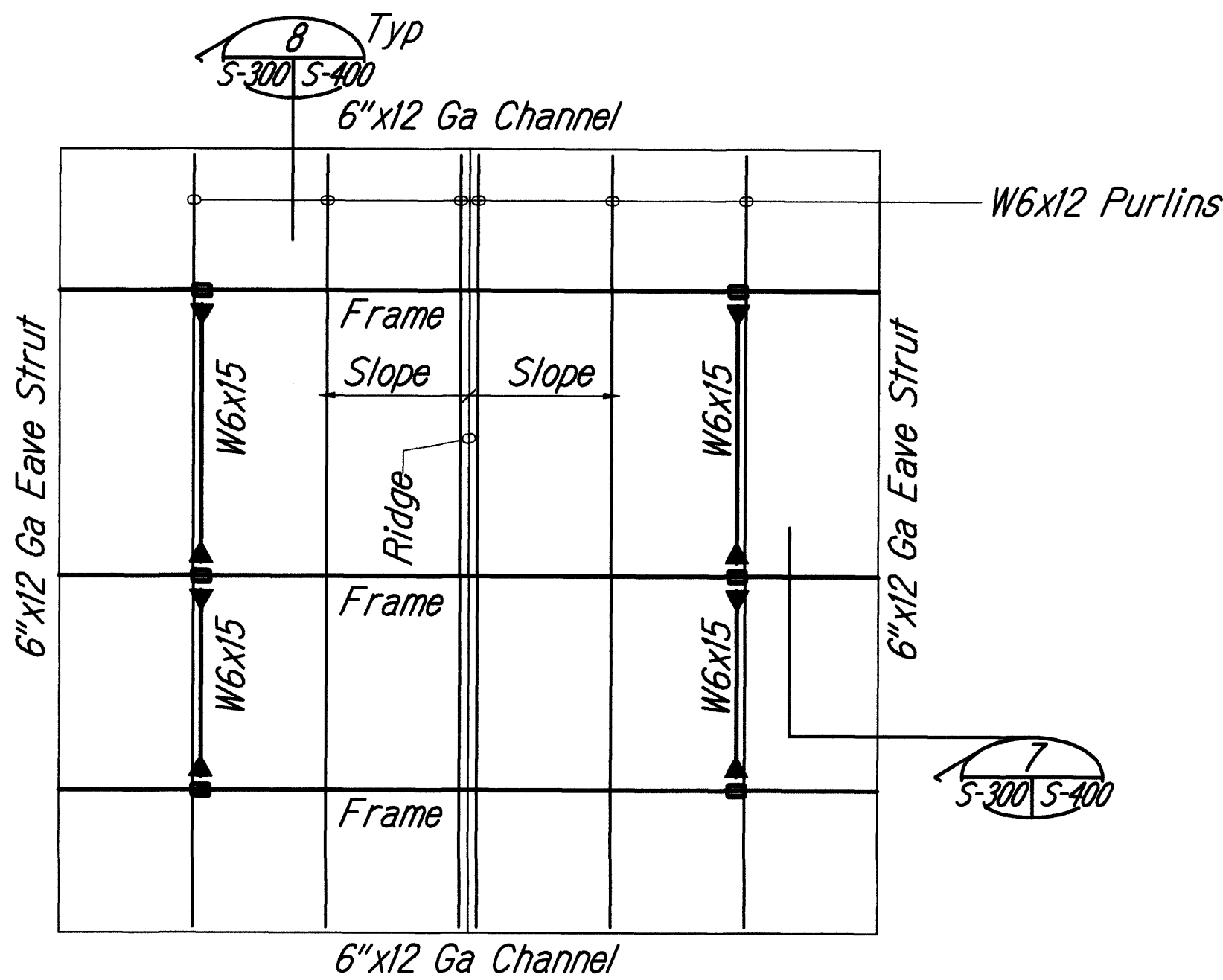
ORIGINAL PLAN	DATE
DESIGNED BY	12-20/06
NOTED BY	
QUANTITIES BY	
CHECKED BY	
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-06-06M	2010	15	18



FOUNDATION PLAN

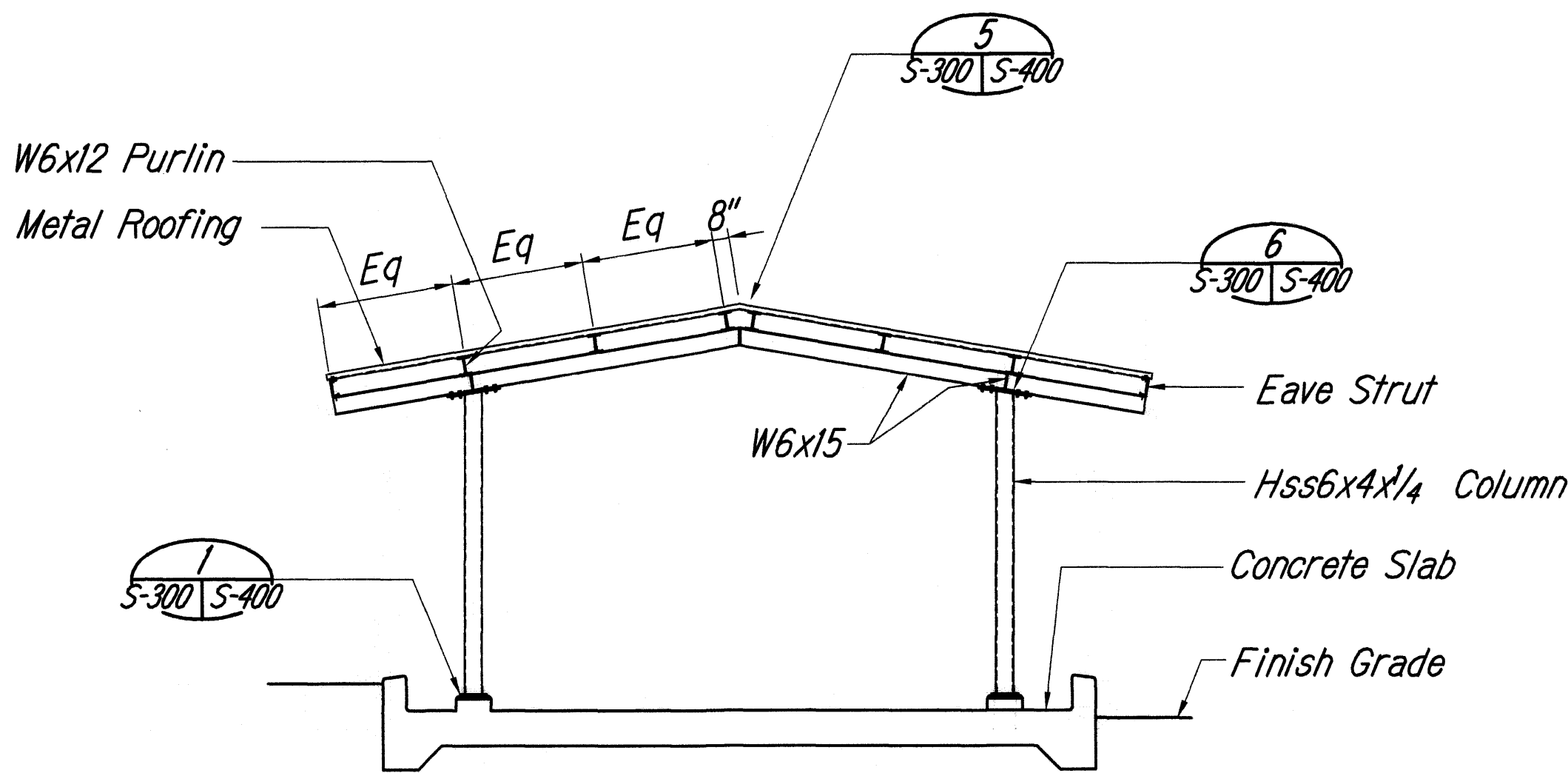
Scale 1/4" = 1'-0"



Note:
Hot-dipped galvanized and
paint all steel members

ROOF FRAMING PLAN

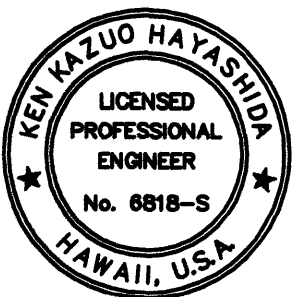
Scale 1/4" = 1'-0"



BUILDING SECTION

Scale: 1/4" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DESIGNED BY	8/30/06
QUANTITIES BY	DESIGNED BY	
CHECKED BY	DESIGNED BY	
No.		



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**FDN AND ROOF FRAMING
PLANS BUILDING SECTION**
KEANAE BASEYARD
MAINTENANCE and REPAIRS
Project No. HWY-M-06-06M

Scale: AS NOTED
Date: APRIL 2010
SHEET No. 5-300 OF 18 SHEETS

