| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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| HAWAII | HAW. | IM-0300(117) | 2009 | 11 | 42 |

## General

1. All materials and workmanship shall conform to the Drawings and Specifications.
2. The Structural Drawings and Specifications represent the finished structure. They do not indicate the method of construction. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to, bracing, shoring for loads due to construction equipment, wind, seismic, etc. Observation visits to the site by the Engineer shall not include inspection of the above items.
3. Civil plans are considered a part of the Structural Design Drawings and are to be used to define detail configuration including, but not limited to, relative location of elevations, locations of all slopes, dimensions, etc.
4. The Contractor shall be solely responsible for protection of adjacent property structures, streets and utilities.
5. The Contractor shall be solely responsible for coordinating the work of all trades and shall check all dimensions. All discrepancies shall be called to the attention of the Engineer and be resolved before proceeding with the work. Existing framing dimensions shall be verified in field by Contractor.
6. Shop drawings required by the Specifications shall be submitted to the Engineer for review prior to fabrication.
7. Notes and details on drawings shall take precedence over General Notes unless stricter requirement noted in General Notes.
8. Design Criteria

   A. Codes:
   Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 2001, 4th Edition and 2002 and 2003 Interim Revisions

   AASHTO LRFD Bridge Design Specifications, 4th Edition, 2007

   B. Dead load as applicable

   C. Wind:
   105 mph, exposure C, Iw=1.0

   Sign Structures shall be designed for a truck induced gust based on a truck speed of 20 mph over posted speed.

   Seismic: Seismic use group – I
   Seismic Design Category – D
   I = 1.0

   Fatigue Importance Factor, IF, shall be based on Fatigue Category I.

9. Special Inspection Requirements

| | | |
|---|---|---|
| A. | Field Welding | = Required |
| B. | High Strength Bolts | = Required |
| C. | Epoxy Embed Connections | = Required |

Inspection and testing services shall be hired and paid for by the Contractor.

## Structural Steel

1. Structural steel shall be detailed, fabricated and erected in accordance with the Specifications.
2. Structural steel sections shall conform to the following ASTM designations:

| | |
|---|---|
| Wide Flanges, Plate Washers | = A572, Grade 50 |
| Channels, Angles, Tees, Plates, Misc. Steel | = A36 |
| Pipes | = A53, Grade B |
| Tubes | = A500, Grade B |

3. All stainless steel bolts and anchor rods shall conform to ASTM F593F (Fy = 30 KSI min), unless otherwise noted.
4. The structural steel fabricator shall furnish shop drawings of all structural steel and steel decking, respectively, for Engineer's review before fabrication.
5. Bolt holes in steel shall be 1/16" larger diameter than nominal size of bolt used, unless otherwise noted.
6. All welds shall be in conformity with the Structural Welding Code AWS D1.1–04 of the American Welding Society.
7. All structural steel and miscellaneous metal except stainless steel shall be hot dip galvanized after fabrication. All welds after hot–dip galvanizing shall be coated with two coats of ZRC cold galvanizing.
8. Apply three coats of weatherproof dark green enamel over Zinc coating in shop conforming to specifications to all structural steel members. Submit coatings to Engineer for review.
9. Aluminum members and surfaces in contact with structural steel shall be isolated with neoprene material as approved by Engineer.
10. All grout (or drypack) below base plates, beams bearing on concrete walls, etc., shall be non–shrink, non–staining, with f'c = 5,000 PSI.
11. All anchors to be embedded in existing concrete bridge shall be located by a full–size template provided by the Contractor. Single base plate templates of four–anchor assembly is not acceptable. Full–size template shall provide locations for all anchors. Separate templates for DMS support and access platform are required. This is required to properly align anchors with base plate holes.

## References

A. Refer to the following State DOT Highways drawings for existing conditions such as reinforcing bars, size of members, elevations, etc.

### Existing Drawing Numbers

1. Ka'amilo Bridge, Details for VMS 38, Support Structures, Interstate Route H–3, F.A.I. Proj. No. I–H3–1(65). March 3, 1996. Sheets SS5, SS14 and SS15.
2. Ka'amilo Street Grade Separation, Bridge Layout Interstate Route H–1, F.A.I. Proj. No. I–H1–1(64):12, Unit 1. 1969. Sheets 1–12 of 12.
3. Liliha Bridge, Details for VMS 41, Support Structures, Interstate Route H–3, F.A.I. Proj. No. I–H3–1(65). March 8, 1996. Sheets SS6, SS14 and SS15.
4. Liliha Separation, Liliha Street, F–090–1(2). 1969. Sheets 1–5 of 5.

## Exterior Screen

1. All screen material including connection ties shall be galvanized steel.
2. Fabric clear spacing shall not exceed 1/2" and wire shall be a minimum of 11 gauge.
3. Connection ties shall be spaced a maximum of 12" on center.

## Epoxy Material

1. Refer to drawings for areas which require epoxy embedded connections.
2. Epoxy adhesive products shall be one of the following products or approved equal:

   A. Simpson Set–XP by Simpson Strong–Tie
   B. Hilti HIT–HY 150 Max Adhesive by Hilti Corporation

   Other proposed adhesive products shall conform to U.S. Department of Transportation, Federal Highway Administration, Technical Advisory, T 5140.30

3. It is recommended that Contractor locate existing steel reinforcing by non–destructive methods within concrete prior to drilling holes for epoxy embedded connections.
4. All epoxy embedded connections shall be special inspected. third–party inspection and testing services shall be hired and paid for by the Contractor.

## Legend

| | | | |
|---|---|---|---|
| BM | Beam | JT | Joint |
| BOT | Bottom | MANU | Manufacturer |
| CC | Center to Center | MAX | Maximum |
| CL, CLR | Clear | MIN | Minimum |
| COL | Column | (N) | New |
| CONC | Concrete | OPEN'G | Opening |
| CONT | Continuous | SS | Stainless Steel |
| DIA | Diameter | STD | Standard |
| DIAG | Diagonal | T&B | Top and Bottom |
| DO | Ditto | THK | Thick |
| EL | Elevation | TYP | Typical |
| (E) | Existing | UON | Unless Otherwise Noted |
| FLR | Floor | | |
| GA | Gauge | VERT | Vertical |
| H | Height | W | Width |
| HORIZ | Horizontal | W/ | With |

NORMAN K. NAGAMINE
LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

Norman K. Nagamine
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
**DEPARTMENT OF TRANSPORTATION**
HIGHWAYS DIVISION

# STRUCTURAL GENERAL NOTES

FREEWAY MANAGEMENT SYSTEM, PHASE 1B
TRAVELER INFORMATION SYSTEM, UNIT 4B:
DYNAMIC MESSAGE SIGN INSTALLATION –
FEDERAL AID PROJECT NO. IM–0300(117)

SCALE: AS NOTED DATE: 7–14–09

**SHEET No.** S–1 **OF** 11 **SHEETS**