

STRUCTURAL GENERAL NOTES

1. General Specifications: Hawaii Department of Transportation, Standard Specifications for Road and Bridge Construction, 2005, together with Special Provisions prepared for this contract.
2. Design Specifications: AASHTO 2004 LRFD Bridge Design Specifications 3rd Edition.
3. Loads:

(A) Dead Load: An allowance of 25 PSF for future wearing surface of asphalt concrete has been provided in the design.

4. Materials:

(A) All concrete strengths shall be as noted below:

Item No.	Structural Parts	Classes of Concrete	Compressive Strength f'c (28 Days)
(1)	All Substructure including Abutments Foundations and Pier Walls	-	5000 PSI
(2)	All Superstructure Including Diaphragm Bolster, Hinge Bolster, Concrete fill at Existing End Diaphragm and Other Repair Work	Rapid Set R Mortar Set or The Quickreat R For member Thickness from 1/2" - 6" Rapid Set R Mortar Set or The Quickreat R For member Thickness for 6" - 36"	7000 PSI 6000 PSI
(3)	Except as noted otherwise, all others	A	3000 PSI

All concrete with the exception of Class A concrete shall have a maximum W/C Ratio 0.45.
The W/C Ratio for Class A concrete shall follow the Standard Specifications.

- (B) The use of any calcium chloride in any concrete is prohibited.
- (C) All reinforcing steel shall be ASTM A615 Grade 60 unless otherwise noted.
- (D) All structural steel shapes and plates shall meet the requirements of ASTM A36 and be hot-dipped galvanized after fabrication, unless noted otherwise.
- (E) Steel pipes shall conform to ASTM A53 Type E or S, Grade B, Schedule 40.
- (F) All anchor bolts, washer and nuts shall be ASTM A449 hot dip galvanized after fabrication, unless otherwise noted.
- (G) Drill and epoxy dowels shall be Hilti Hit RE 500-SD, Simpson Strong-Tie Set XP, or approved equal.
- (H) Expansion anchors shall be ITW Red Head Trubolt Wedge Anchor, Hilti Kwik Bolt 3, Simpson Strong-Tie Strong-Bolt Wedge Anchor.

5. Structural Steel:

- (A) Workmanship shall be in accordance with the latest AASHTO and AWS codes.
- (B) Unless shown otherwise, all embedded bolts, anchors, plates, pipes, inserts, etc. shall be hot-dipped galvanized after fabrication.
- (C) No holes other than those specially detailed shall be allowed through structural steel members.

6. Concrete:

- (A) The minimum cover measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:
- (1) Concrete cast against and permanently exposed to earth = 3"
- (2) All others unless otherwise noted = 2"
- (B) Reinforcing bars shall be detailed in accordance with the latest edition of the ACI Detailing Manual unless otherwise noted.
- (C) Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2".
- (D) All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.
- (E) 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.

Note:

The Contractor shall verify all
controlling field dimensions before
ordering or fabricating any material

7. Construction Notes:

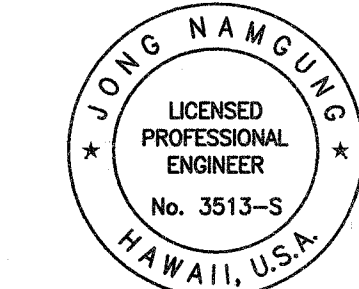
- (A) See Standard Specifications and Special Provisions.
- (B) The Contractor shall verify all dimensions and site conditions and shall report any discrepancies in writing to the Engineer before commencing work or ordering materials.
- (C) The Contractor shall verify all site conditions and not rely upon these plans for existing stream channel location, roads, roadway, gutters, curbs and sidewalks, etc. Conditions may differ from and existing and new structures from damage due to construction. Repairing any damage shall be those shown.
- (D) The Contractor shall be solely responsible for the protection of adjacent properties, utilities at the Contractor's own expense, to the satisfaction of the Engineer.
- (E) The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.
- (F) Large impacting or vibratory type of equipment will not be permitted in the drilling of holes.
- (G) The existing concrete surfaces which new concrete is poured against shall be cleaned and roughened to a full amplitude of 1/4" of an inch.
- (H) Unless otherwise noted all finish grades shall match existing grades.
- (I) Except as otherwise noted, all vertical dimensions are measured plumb.
- (J) All concrete finish see Standard Specifications and Special Provisions.
- (K) Construction joint may be relocated or additional ones added subject to the approval of the Engineer.
- (L) Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4" x 3/4".
- (M) The Contractor shall refer to the existing drawings for the approximate location and size of all existing reinforcing bars prior to drilling.

8. General:

- (A) The scope of work for this project consists of the seismic retrofit construction of Pali Interchange and Nuuanu Separation.
- (B) At the end of each day's work, the Contractor shall remove all equipment and other obstructions to permit free and safe passage of public traffic.
- (C) The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.
- (D) Existing drainage system will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to various contract items.
- (E) The Contractor shall provide for access to and from all existing side streets at all times.
- (F) All saw cutting work shall be considered incidental to Excavation for Reconstruction of Pavement Areas.
- (G) No material and/or equipment shall be stockpiled or otherwise stored within the highway right-of way except at locations designated in writing and approved by the Engineer. If use of location is approved by the Engineer, the Contractor shall obtain a permit to use the property within the highway right-of-way from the State Right-Of-Way Branch.
- (H) Standard detail drawings refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to the corresponding detailed drawings.
- (I) The Contractor shall follow the manufacturer's recommendations for the installation of the drill and epoxy dowels or anchors, epoxy bonding agent, or epoxy grout.
- (J) For existing structure dimensions and information not shown, refer to As-Built drawings dated July 1959, available from Hawaii Department of Transportation.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-H1-1(249)	2010	31	61

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



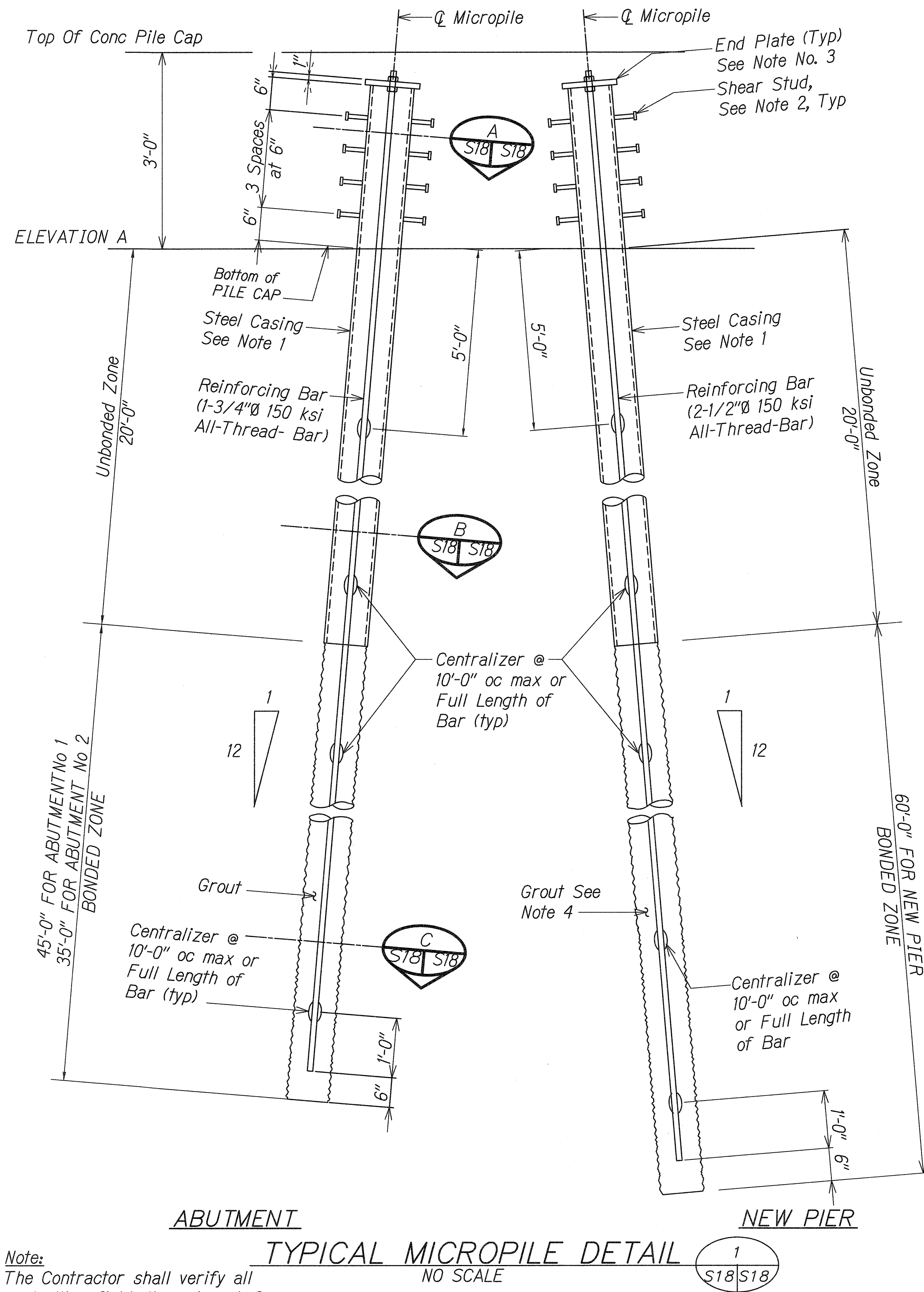
This work was prepared by
me or under my supervision

Jong Namgung 4/30/2012
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

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

1/20/11	Revised Note No.4
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BRIDGE GENERAL NOTES	
INTERSTATE ROUTE H-1	
Seismic Retrofit- Pali Interchange and Nuuanu Separation	
Federal Aid Project No. BR-H1-1(249)	
Scale: As Noted	Date: February 2010
SHEET No. S2 OF 22 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-H1-1(249)	2010	47	61



ABUTMENT

TYPICAL MICROPILE DETAIL

NEW PIER

Note:
The Contractor shall verify all
controlling field dimensions before
ordering or fabricating any material

Notes:

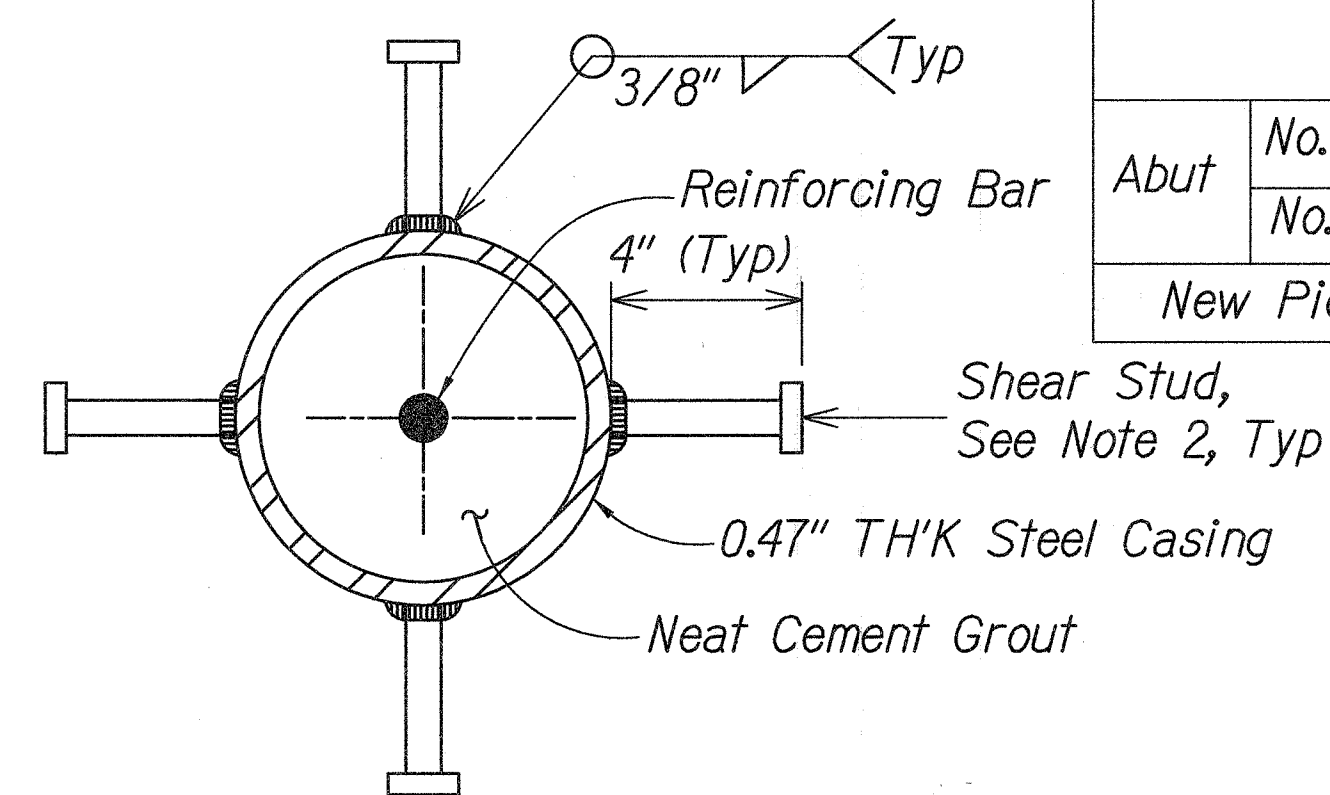
- Steel Casing Pipe Shall Conform to API - N - 80 With Wall Thickness of 0.47".
- 3/4" Welded Head Stud, ASTM A108, Type B, Total 16 per Pile. Minimum Tensile Strength of Weld Shall Be 70 Ksi.
- The Contractor to Determine the End Plate, Hex Nut and Connection to Steel Casing According to Requirements of All Contract Documents. The Contractor to Submit Shop Drawings for Approval by The Engineer.
- Grout Compressive Strength Shall Be Not less Than 4,000 psi at 28 Days.
- Pile Load Test
 - Tension Pile Test is Required At Both Abutment No. 1 And No. 2 Respectively Total 2 Test Piles As Shown On Foundation Plan. The Load Test Shall Be Done Base On The Requirements Of ASTM D3689.
 - One Compression Pile Test is Required At New Pier As Shown On Foundation Plan. The Load Test Shall Be Done Base On The Requirements Of ASTM D1143.
- Pre-production Test Pile Details Shall be Same As Typical Micropile Details shown on this sheet Including Length of Bonded and Unbonded Zone.

Pre Production Micropile Load Test Program

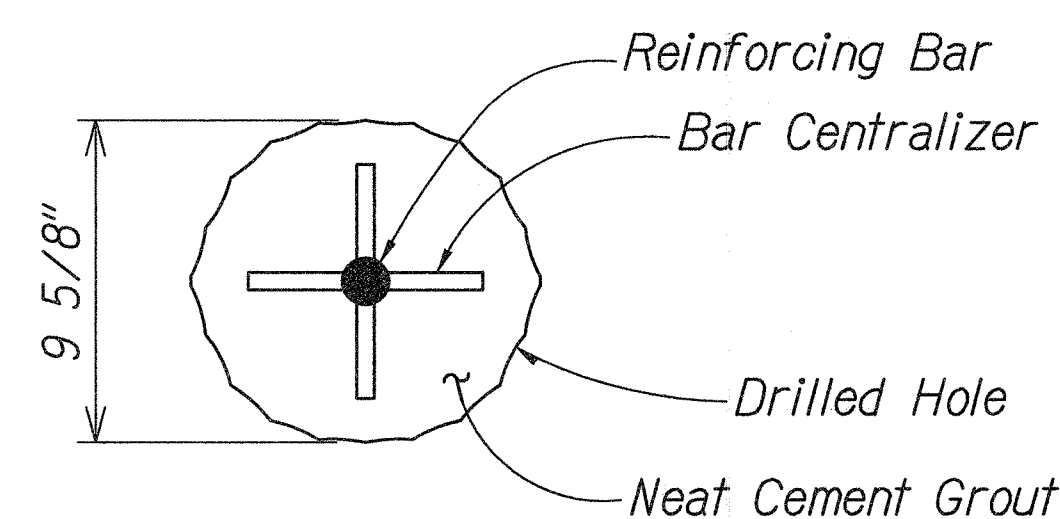
Location	Test Type	Test Pile Length (feet)	Max Test Load (Kips)
Abut	No. 1 Tensile	65	250
	No. 2 Tensile	55	180
New Pier	Compressive	80	250

PILE DATA TABLE

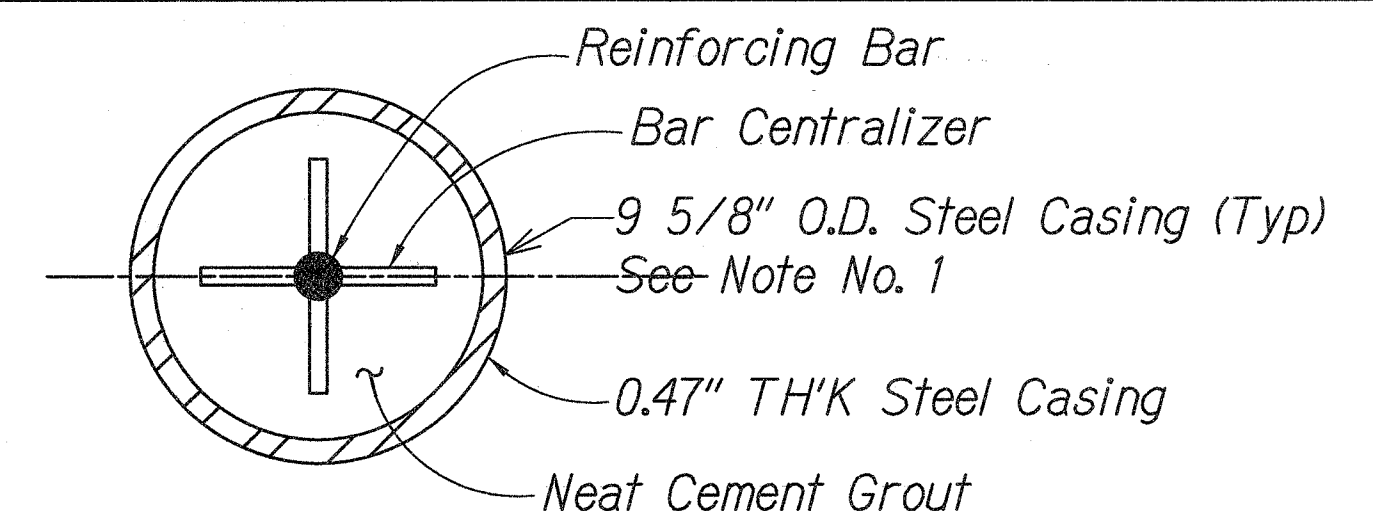
Pier		Nominal Resistance (Including Group Effect) (kips) (Extreme Event 1 Load Demand)		Elevation A (Ft MSL)	Max Lateral Deflection (In)
		Compression	Tension		
Abut	No. 1	160	0	23	1.0
	No. 2	120	0	28.5	1.0
New Pier		200	180	43	1.0



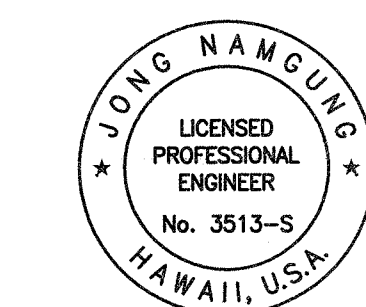
SECTION A
NO SCALE



SECTION B
NO SCALE



SECTION C
NO SCALE



This work was prepared by me or under my supervision

4/30/2012
MITSUNAGA & ASSOCIATES, INC. EXP. DATE
NOTE: Contractor to check and verify dimensions at job before proceeding with work.

DATE	REVISION
1/20/11	Revised Elevation A notes
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION MICROPILE DETAILS INTERSTATE ROUTE H-1 Seismic Retrofit- Pali Interchange and Nuuanu Separation Federal Aid Project No. BR-H1-1(249) Scale: As Noted Date: February 2010	

SHEET No. S18 OF 22 SHEETS

HIGHWAY LIGHTING NOTES:

ELECTRICAL SYMBOL LIST		
SYMBOL		DESCRIPTION
EXISTING	NEW	
		Highway Lighting Standard, Single Luminaire Arm
		Wall Mounted Roadway Lighting Luminaire
		Highway Signage Lighting
		Type "B" Highway Lighting Pullbox
		Junction Box, Wall Mounted
		Existing Pullbox/Handhole, Type As Noted
		Cast Junction Box, Size As Noted On Plans
		Existing Pullbox/Handhole
		Existing Manhole, Type As Indicated
		Detail Indicator: Top Half Denotes Detail Number, Left Denotes Sheet On Which Detail Shown
		Duct Indicator, See Duct Schedule, Sheet E-7
		Note Indicator
	GRS	Galvanized Rigid Steel
	Gnd	Ground
	HECo	Hawaiian Electric Company
	HPS	High Pressure Sodium
	HT	Hawaiian Telcom
	JP	Joint Utility Pole
	NIC	Denotes Not In Contract
	SLPB	Street Light Pullbox
	X	Denotes Demolition/Removal
- e - - - -	- - - - -	Underground Ductline
- e - - - -	- - - - -	Exposed Conduit
* e - - - *		Existing Underground Ductline To Be Removed
* e - - - *		Existing Exposed Conduit To Be Removed
- el - - - -		Existing Exposed Highway Lighting Conduit
* el - - - *		Existing Exposed Highway Lighting Conduit To Be Removed
- el - - - -		Existing Highway Lighting Ductline
* el - - - *		Existing Highway Lighting Ductline To Be Removed

1. The contractor shall notify the State Highways, Highway Lighting and Traffic Supervisor 72 hours in advance before commencing work on the highway lighting system. Phone: 837-8056.
2. The contractor shall have one set of approved plans at job site at all times during the construction work and record all changes which occur during construction of the highway lighting system.
3. Final acceptance and inspection will be undertaken only after all work has been completed.
4. The contractor shall at his expense, keep the project and surrounding area free from dust nuisance and shall be responsible for cleaning and removal of all silt and debris generated by the excavation work and deposited and accumulated within downstream waterways, ditches, drain pipes and on public roadways. Any citations (fines) received by the State for the contractor's noncompliance of any Department of Health regulations shall be deducted from the progress payment.
5. The contractor shall locate existing buried utility lines in the vicinity of the excavation work prior to commencing excavation. As a minimum, an electronic magnetic device for detection of buried lines shall be utilized prior to excavation. Trenches shall be excavated with care. The contractor shall be responsible for damages to existing utilities resulting from his negligence and shall bear cost of repairs to the utilities. Method of repair shall be determined by the State.
6. The contractor shall reconnect electrical power to all existing sign lighting systems and underpass lighting fixtures. The contractor shall provide additional wiring and conduit as required for an operational system, at no additional cost to the State.
7. The electrical contractor shall have personnel on the project that comply with the following qualifications:

a. One (1) licensed supervising electrician in the company.

b. Certified journeyman electrician at each construction location to perform splicing of cables and all required wiring work.
8. Provide conduit expansion fittings to accommodate expansions and deflections where conduits cross seismic control and expansion joints. Expansion fittings shall be of weathertight construction with insulated bushing on end of moveable conduit with factory-formed copper braid ring allowing conduit expansion and contraction. Feraloy end fitting, steel conduit body, zinc electroplate and aluminum cellulose lacquer finish, 8" maximum conduit movement. Refer to structural plans for exact locations of expansion joints.
9. All ductlines to be installed in concrete shall be inspected and approved by the State Inspector and the State Electrical Maintenance Supervisor before placing concrete. Notify the Inspector and Supervisor 48 hours before placing concrete.

10. Temporary Lighting

The contractor shall schedule the construction work in such a manner that highway lighting is provided during all hours of darkness either with new, temporary or existing luminaires or a combination thereof. Temporary wiring and connections may need to be utilized. Temporary wiring may be installed in exposed conduit, where not subject to vehicular damage, or with overhead wiring. Overhead wiring shall be a minimum of 20 feet above roadways at its lowest measured point, unless approved by the Engineer.
- Contractor shall maintain existing circuiting, provide temporary connections to existing highway lights or provide temporary luminaires throughout the construction period. Maintain existing illumination levels utilizing a temporary lighting system, eg. utilizing existing or temporary wiring and connections temporary light standards, etc.

01/20/11 Revised Highway Lighting Note 7a.

DATE REVISION



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Lemnox K. Nishimura
PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2012
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**ELECTRICAL SYMBOL LIST AND
HIGHWAY LIGHTING NOTES**
INTERSTATE ROUTE H-1
**Seismic Retrofit- Pali Interchange
and Nuuanu Separation**
Federal Aid Project No. BR-H1-1(249)
Scale: As Noted Date: February 2010
SHEET No. **E-1** OF **21** SHEETS