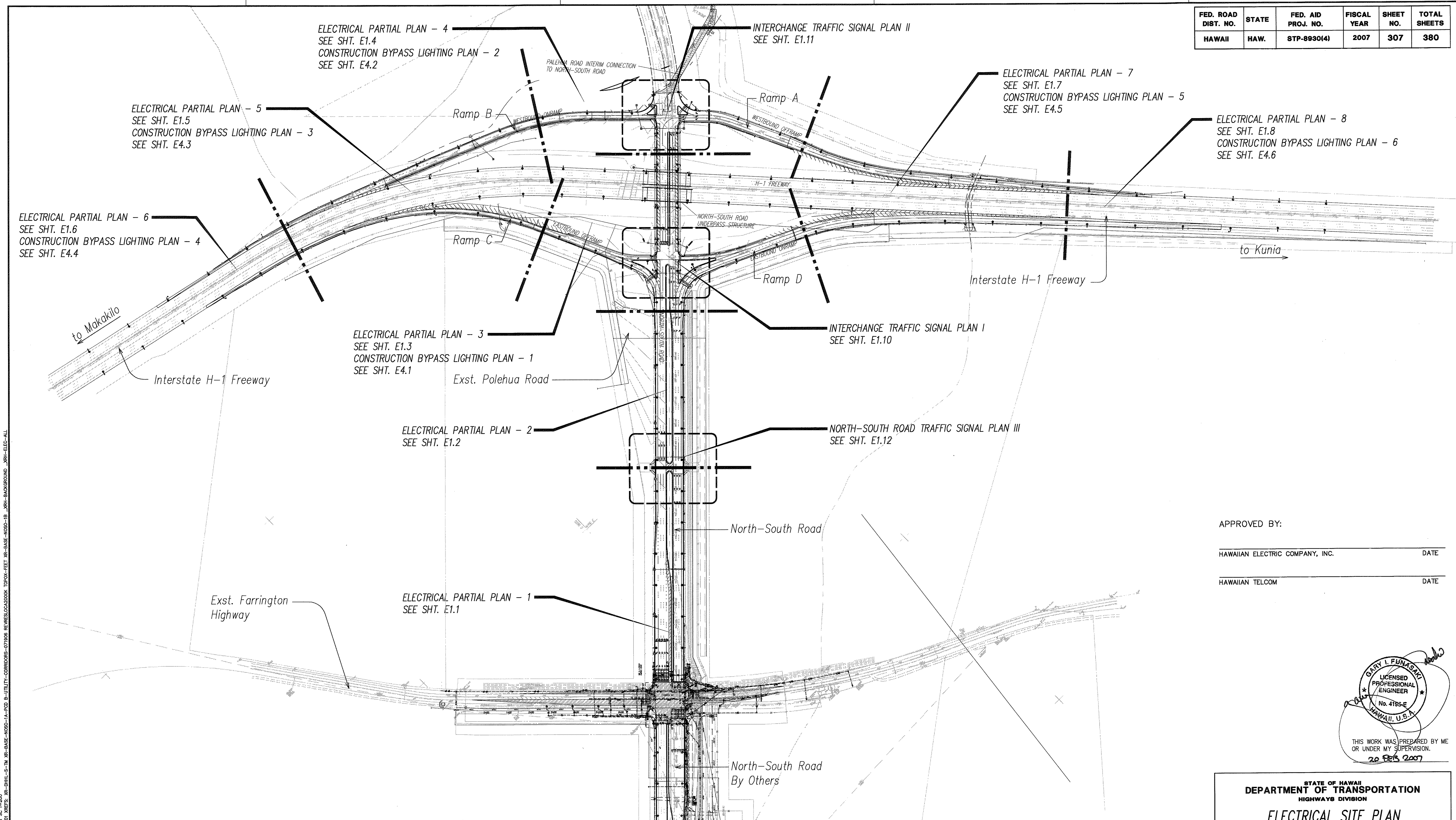
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	307	380



APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

HAWAIIAN TELCOM DATE

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4155-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

NORTH

ELECTRICAL SITE PLAN

SCALE: 1"=200'

200' 100' 0 200' 400' 600'

SCALE: 1"=200'

GRAPHIC SCALE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SITE PLAN

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

Scale: AS NOTED — Date: Feb 21, 2007

SHEET No. E0.1 OF 66 SHEETS

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

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	Street Light Standard, 250W HPS Luminaire, Aluminum Pole with Bracket Arm, Transformer Base & Concrete Foundation. See Detail Sheets E2.11, E2.12, and E2.13
	Temporary Street Light, 150W HPS Luminaire, See Detail A/E4.8
	Existing Street Light
	Remove Existing Street Light
	HTCO 2' X 4' Handhole
	HECo 3' X 5' Pullbox
	HECo 5' X 7' Handhole FC #84
	HECo 4' X 6' Handhole
	HECo Transformer Pad Lot
	HECo Switch Equipment Pad Lot
	Traffic Signal Pullbox, Type "A", See Sheet E2.10
	Traffic Signal Pullbox, Type "B", See Sheet E2.10
	Traffic Signal Pullbox, Type "C", See Sheet E2.10
	WIM Pullbox, Type "C", See Sheet E2.10
	Traffic Bearing WIM Pullbox, See Structural Sheets
	Street Light Pullbox, Type "B", See Sheet E2.10
	Street Light Pullbox, Type "C", See Sheet E2.10
	Existing Street Light Pullbox
	Exst Utility Pole
	Exst Utility Pole to be Removed By Utility Co.
	Exst Guying and Anchor
	Exst Guying and Anchor to be Removed By Respective Utility Co.
	35' Wood Pole and Guy, See Detail A/E4.7

SYMBOL	DESCRIPTION
2-2L	Electric/Signal Ductline with Designators; Indicates Duct Section "A" with "2-2L" Ducts. See Sheets E2.1, E2.2, & E2.3 for Duct Sections and Sheet E2.2 for Conduit Schedules.
	Stub, Cap, & Mark Conduits; Provide Pullwire
—E—	Electric Ductline
—SL—	Street Light Ductline & Wiring
—T—	Signal Ductline
—TS—	Traffic Signal Ductline & Wiring
—e—	Exst Elec/Signal Ductline & Wiring
—sl—	Exst Street Light Ductline & Wiring
—x—sl—x—	Exst Street Light Ductline to be Abandoned In Place
—e/oh—	Exst Elec Overhead Lines
—x—t/oh—x—	Exst Signal Overhead Lines to be Removed By HTCo and Catv
—et/oh—	Exst Elec/Signal Overhead Lines
—SL/OH—	Overhead Street Light Wiring
	Standard Traffic Signal Head
	Standard Traffic Signal and Pedestrian Signal Heads Mounted on 10'-0" Signal Standard
	Programmable Visibility Traffic Signal Head
	Traffic Signal Heads Mounted On Mast Arm Standard, See Sheet E2.16
	Pedestrian Pushbutton
	Farm Vehicle Pushbutton
	Vehicle Loop Detector, See Sheet E2.19
1 M123 C1AB 480V N250 III STATION NO.	State Street Light I.D. Tag, See A/E2.13

SYMBOL	DESCRIPTION
S	Concrete Stub-Out Marker, See Detail D/E2.13
5	Note Symbol; See Sheet
WP	Junction Box, Weatherproof

HECO REFERENCE SPECIFICATIONS

SPEC. NO.	DESCRIPTION
CS7001	Construction of Underground Facilities
CS7003	Construction of Electrical Facilities
CS7202	General Conditions for Construction of Projects
CS9301	Concrete Work
CS9401	Design and Construction of Precast Manholes and Handholes

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

HAWAIIAN TELCOM DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO308	380

HECO REFERENCE DRAWINGS

DWG NO.	DESCRIPTION
16688 Sht. 1&2	Details Handholes & Manholes, UG Standards
100904	Handhole Type 611 UG Standard
100925	Manhole Type 614 Structural Details UG Standards
11249	Material Drawing for Concrete Pad System
22-2005	Type. 3 Phase Padmounted TSF Requirements, Commercial Distribution System
30-5000	Location, Clearances and Protection Details, Pad-Mounted Equipment
30-5001	1 Phase Pad Mounted TSF Concrete Pad URD Installation
30-5011	Concrete Pad For 75 to 300 KVA 3 Phase Padmounted TSF - Conc. Pads, UG Ducts & Structures
Note:	Reference Drawings Referred to in Description of Equipment Schedule.

HIGHWAY LIGHT TAG LEGEND:

1	109+35	Station Number
2	NS 2, C3AB	Light Pole No., Circuit No., Phase Conn.
3	10'	Pole Centerline Offset From Edge of Travelway (BGR Indicates Behind Guardrail; BSW Indicates Behind Sidewalk, BC Indicates Behind Curb, TB Indicates Top of Barrier)
4	15', III	Bracket Arm Length, Light Distribution
5	35'	Luminaire Mounting Height Above Travelway

LEGEND FOR AS-BUILT POSTINGS

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

DATE	REVISION
?/??/08	Revised HHs per HECO

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
25 July 2013

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SYMBOLS

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E0.2 OF 66 SHEETS

"AS-BUILT" CO308

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	309	380

NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY

1. The Contractor shall obtain a permit to perform work upon State Highways from the State Highways' District Engineer, at 727 Kakoi Street, prior to commencement of work within the State's Highway Right-of-Way.
2. Construction and restoration of all existing Highway facilities within the State's Right-of-Way shall be done in accordance with all applicable Sections of the current Standard Specifications For Road, Bridge and Public Works Construction, and the Specifications for Installation of Miscellaneous Improvements Within State Highway, of the State Highways Division.
3. See Contract Documents for Work Hours.
4. The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones and other protective facilities, and shall take all necessary precautions for the protection, convenience, and safety of public traffic. All such protective facilities and precautions to be taken shall conform with the "Administrative Rules of Hawaii Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways", adopted by the Director of Transportation, and the current U.S. Federal Highways Administration "Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI – Standards and Guides for Traffic Control for Street and Highway Construction, Maintenance, Utility and Incident Management Operations". If lane closures are required during construction, a Traffic Control Plan shall be incorporated into the construction plans and must be approved by the Division prior to issuance of the permit.
5. The minimum pavement structure shall consist of:
   a. Residential Driveways
      1) 2" Asphalt Concrete (Mix IV) and 6" Aggregate Base Course, or 2" Asphalt Concrete and 2 1/2" Asphalt Concrete Base Course or Asphalt Concrete.
      2) 4" Class "A" Concrete Reinforced with 6" x 6" W2.9 x W2.9 Wire Mesh on 12" Aggregate Subbase, if deemed necessary by the Engineer.
   b. Commercial Driveways, Sideroads, and Utility Installations on Minor Highways
      1) 2 1/2" Asphalt Concrete (Mix IV), 8" Aggregate Base Course and 12" Subbase, or 2 1/2" Asphalt Concrete and 8" Asphalt Concrete Base Course or Asphalt Concrete.
      2) 6" of Class "A" Concrete Reinforced with 6" x 6" W2.9 x W2.9 Wire Mesh on 12" Aggregate Subbase, if deemed necessary by the Engineer.
6. 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 District Engineer.
7. Compaction tests shall be taken in accordance with the Specifications for installation of miscellaneous improvements within State Highways, as follows:
   a. Subbase: One (1) Compaction Test per lift per 100 lineal feet of roadway.
   b. Base Course: One (1) Compaction Test per lift per 100 lineal feet of roadway.
   c. One (1) Compaction Test per lift per 300 lineal feet of trench.
8. Prior to commencing trench excavation work, the Contractor shall take a profile along the centerline of the proposed utility trench. This information shall be used in the verification of restoring the roadway to its original condition. A copy of the profile shall be submitted to the District Engineer.
9. The Contractor shall provide an adequate and safe non-skid bridging material, including shoring, over trenches in pavement areas. The bridging shall be able to support all types of vehicular traffic.
10. Unless otherwise noted, no trench shall be opened more than 300 feet in advance of installed and tested pipeline and/or ductline.
11. Existing drainage systems shall be functional at all times.
12. The Contractor shall exercise care to minimize damages to existing Highway improvements. All damages shall be repaired by the Contractor, at his expense, to the satisfaction of the District Engineer.
13. All regulatory, guide, and construction signs and barricades shall have a high-intensity reflective background.
14. Driveways shall be kept open unless the Owners of the properties using these rights-of-way are otherwise provided for satisfactorily.
15. Where pedestrian walkways exist, they shall be maintained in a safe and passable condition, or other facilities for pedestrians shall be provided. Passages between walkways at intersections shall likewise be provided.
16. The Contractor shall reference to the satisfaction of the District Engineer, all existing traffic signs, posts, and pavement markings prior to the commencement of construction. The Contractor shall replace or repair all traffic signs, posts, and pavement markings disturbed by his activities, at his expense, unless directed otherwise by the District Engineer or his representative.
17. The Contractor shall exercise care when performing work in or adjacent to the State Highway Right-of-Way. Damages to existing facilities shall be immediately reported to the respective Utility Companies, and/or City or State Agencies. The repair work shall be done at the Contractor's expense.
18. The Contractor shall notify the State Highways' Highway Lighting and Traffic Signal Supervisor (834-4581), three (3) working days prior to commencing work.
19. Traffic signals shall be kept operational during construction, and if deemed necessary by the District Engineer or his representative, a temporary vehicle detection device shall be installed. All work shall be done in accordance to the requirements of the Department of Transportation Services, City and County of Honolulu, and paid for by the Contractor.
20. The Contractor shall notify Oahu Transit Services, Inc. (OTS), Ed Sniffen at 848-4571, or Lowell Tom at 848-4578, two weeks prior to commencing any work. The Contractor shall inform OTS of the location and scope of work, proposed closure of any street or traffic lane, and the need to relocate any bus stop.
21. The Permit to perform work upon State Highways may be revoked because of default in any of the following, but not limited to, conditions:
   a. Work performed before or after permitted hours.
   b. Failure to maintain roadway surfaces in a smooth and safe condition.
   c. Failure to clean up construction debris generated from Project work.
   d. Failure to provide proper traffic control.
   e. Failure to replace damaged pavement markings and signs.

TRAFFIC SIGNALS & TECHNOLOGY NOTES:

1. All work shall be done in accordance with the "Standard Specifications for Public Works Construction", September, 1986, of the Department of Public Works, City and County of Honolulu, except as modified herein or in the Special Provisions.
2. The Contractor shall verify with the respective Utility Companies and Government Agencies, the locations of all electric, telephone, traffic signal, street light, fire alarm, gas, water, sewer, drain, and other lines crossing the excavation path or in excavation areas.
3. Locations of traffic signal conduits shall be staked out by the Contractor and approved by the Engineer prior to any excavation.
4. All structures, pavements, utilities, landscaping, and other topographical features shown on the Intersection Drawings are existing and are to remain unless noted or indicated otherwise.
5. The Contractor shall notify all affected Utility Companies and Government Agencies of their intent to begin construction on any intersection or street at least two (2) weeks prior to the start of such construction.
6. The Contractor may close only one lane of traffic at a time for any reason. during the peak traffic periods from 6:00 to 9:00 a.m. and from 3:00 to 6:00 p.m., Monday through Friday, all lanes shall be kept open and maintained at all times.
7. The Contractor shall notify the Traffic Control Branch, Department of Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone: 523-4589).
8. The Contractor shall be responsible for any damages to the existing traffic signal facilities, including the Traffic Signal Interconnecting System. Any and all damages to these facilities shall be repaired by the Contractor at his cost in accordance with the requirements of the City and County of Honolulu.

GARY L. FUNASAKI
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HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STATE NOTES AND MISCELLANEOUS DETAILS

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E0.3 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	310	380

HAWAIIAN ELECTRIC COMPANY (HECO) NOTES

1. LOCATION OF HECO FACILITIES

The location of HECO's overhead and underground facilities shown on the plans are from existing records with varying degrees of accuracy and are not guaranteed as shown. The Contractor shall verify in the field the locations of the facilities and shall exercise proper care in excavating and working in the area. wherever connections of new utilities to existing utilities and utility crossings are shown, the Contractor shall expose the existing lines at the proposed connections and crossings to verify the depths prior to excavation for the new lines. The Contractor shall be responsible for any damages to HECO's facilities whether shown or not shown on the plans.

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

The Contractor shall comply with the state of Hawaii's Occupational Safety and Health Laws and Regulations, including without limitation, those related to working on or near exposed or energized electrical lines and equipment.

3. EXCAVATION PERMIT

The Contractor shall obtain an excavation permit from HECO's Techinical Division (543–5654) located at 820 Ward Avenue, 4th floor, two weeks prior to starting construction. Please refer to our request number at that time.

4. CAUTION!!! ELECTRICAL HAZARD!!!

Existing HECO overhead and underground lines are energized and will remain energized during construction unless prior special arrangements have been made with HECO. Only HECO personnel are to handle these energized lines and erect temporary guards to protect these lines from damage. The Contractor shall work cautiously at all times to avoid accidents and damage to existing HECO facilities, which can result in electrocution.

5. OVERHEAD LINES

State law (OSHA 1910.269(k)(2B)) requires that a worker and the longest object he or she may contact cannot come closer than a minimum radial clearance of 10 feet when working close to or under any overhead lines rated 50kV and below. For each additional 1kV above 50kV, an additional 0.4 inch shall be added to the 10–foot clearance requirement. The preceding information on line clearance requirements is provided as a convenience and it is the Contractor's responsibility to be informed of and comply with any revisions or amendments to the law.

Should the Contractor anticipate that his work will result in the need to encroach within the minimum required clearance at any time, the Contractor shall notify HECO at least four (4) weeks prior to the planned encroachment so that, if feasible, the necessary protections (e.g. relocate, de–energize, or blanket HECO lines) can be put in place. HECO's cost of safeguarding its lines will be charged to the Contractor.

Contact HECO's Customer Installations Department at 543–7846 for assistance in identifying and safeguarding overhead power lines.

Refer to Section X of HECO's Electric Service Installation Manual for additional guidelines when working around HECO's facilities. A copy may be obtained from HECO's Customer Installations Department.

6. POLE BRACING

A minimum clearance of 10 feet must be maintained when excavating around utility poles and/or their anchor system to prevent weakening or pole support failure. Should work require excavating within 10 feet of a pole and/or its anchor system, the Contractor shall protect, support, secure, and take all other precautions to prevent damage to or leaning of these poles. The Contractor is responsible for all associated costs to brace, repair, or straighten poles. All means of structural support for the pole proposed by the Contractor shall first be reviewed by HECO before implementation. For pole bracing instructions, the Contractor shall call the HECO Construction and Maintenance Dept., Customer & System Superintendent at 543–4223 a minimum of two (2) weeks in advance.

7. UNDERGROUND LINES

The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of underground lines. HECO's existing electrical cables are energized and will remain energized during construction. Only HECO personnel are to break into existing HECO facilities, handle these cables, and erect temporary guards to protect these cables from damage. The cost of HECO's assistance in providing proper support and protection of its underground lines will be charged to the Contractor. Special precautions are required when excavating near HECO's 138kV underground lines (see HECO Instructions to Consultants/Contractors on "excavation near HECO's underground 138kV lines" for detailed requirements).

For verification of underground lines, the Contractor shall call HECO's Underground Division at 543–7049 a minimum of 72 hours in advance.

For assistance in providing proper support and protection of these lines, the Contractor shall call HECO's Construction & Maintenance Dept., Customer & System Superintendent, at 543–4223, a minimum of two (2) weeks in advance.

8. UNDERGROUND FUEL PIPELINES

The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of HECO's underground fuel oil pipelines. Special precautions are required when excavating near HECO's underground fuel oil pipelines (see HECO Instructions to Consultants/Contractors on "excavation near HECO's underground fuel pipelines" for detailed requirements).

9. EXCAVATIONS

When trench excavation is adjacent to or beneath HECO's existing structures or facilities, the Contractor is responsible for:

a) sheeting and bracing the excavation and stabilizing the existing ground to render it safe and secure and to prevent possible slides, cave–ins, and settlements.
b) properly supporting existing structures or facilities with beams, struts, or under–pinnings to fully protect it from damage.
c) backfilling with proper backfill material including special thermal backfill where existing (refer to Engineering Department for thermal backfill specifications).

10. RELOCATION OF HECO FACILITIES

Any work required to relocate or modify HECO facilities shall be done by HECO, or by the Contractor under HECO's supervision. The Contractor shall be responsible for all coordination, and shall provide necessary support for HECO's work, which may include, but not be limited to, excavation and backfill, permits and traffic control, barricading, and restoration of pavement, sidewalks, and other facilities.

All costs associated with any relocation or modification (either temporary or permanent) for the convenience of the Contractor, or to enable the Contractor to perform his work in a safe and expeditious manner in fulfilling his contract obligations shall be borne by the Contractor.

11. CONFLICTS

Any redesign or relocation of HECO's facilities not shown on the plans may be cause for lengthy delays. The Contractor acknowledges that HECO is not responsible for any delay or damage that may arise as a result of any conflicts discovered or identified with respect to the location or construction of HECO's electrical facilities in the field, regardless of whether the Contractor has met the requested minimum advance notices. In order to minimize any delay or impact arising from such conflicts, HECO should be notified immediately upon discovery or identification of such conflict.

12. DAMAGE TO HECO FACILITIES

The Contractor shall be responsible for the protection of all HECO surface and subsurface utilities and shall be responsible for any damages to HECO's facilities as a result of his operations. The Contractor shall immediately report such damages to HECO's Trouble Dispatcher at 548–7961. Repair work shall be done by HECO or by the Contractor under HECO's supervision costs for damages to HECO's facilities shall be borne by the Contractor.

In case of damage or suspected damage to HECO's fuel pipeline, the Contractor shall immediately notify HECO's Honolulu Power Plant Shift Supervisor at 533–2102 (a 24–hour number) so HECO personnel can secure the damaged section and report any oil spills to the proper authorities. all costs associated with the damage, repair, and oil spill cleanup shall be borne by the Contractor.

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES 1

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E0.4 OF 66 SHEETS

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

HAWAIIAN ELECTRIC COMPANY (HECO) NOTES CONT.

13. HECO STAND-BY PERSONNEL

The Contractor may request HECO to provide an inspector to stand-by during construction near HECO's facilities. The cost of such inspection will be charged to the Contractor.

The Contractor shall call the HECO Construction and Maintenance Dept., Customer & System Superintendent at 543-4223 a minimum of 5 working days in advance to arrange for HECO stand-by personnel.

14. CLEARANCES

The following clearances shall be maintained between HECO's ductline and all adjacent structures (charted and uncharted) in the trench:

Structure Type	Minimum Clearance(inches)
Water Lines, Parallel	36 (a)
Water Lines, Crossing	12 (b)
Sewer Lines, Parallel	36 (c)
Sewer Lines, Crossing	24 (d)
Drain Lines, Parallel	12
Drain Lines, Crossing	6 (e)
Electrical and Gas Lines, Parallel	12
Electrical and Gas Lines, Crossing	12
Telephone Lines, Parallel	6 (e)
Telephone Lines, Crossing	6 (e)
Chevron Oil Lines, Parallel	36
Chevron Oil Lines, Crossing	48 below oil line (f)

(a) The minimum horizontal clearances to water lines parallel to electrical ductlines must be increased to 60 inches if the water line is greater than 16 inches in diameter
(b) The minimum vertical clearances to water lines crossing electrical ductlines can be reduced to 6 inches if the electrical ductline structure is concrete encased and is below the water line and the water line is less than 16 inches in diameter.
(c) A minimum horizontal clerance of 36 inches is required between new handholes and existing sewer laterals.
(d) The minimum vertical clearances to sewer pipes crossing electrical ductlines can be reduced to 12 inches if the sewer pipe is jacketed in concrete.
(e) The minimum clearances shall be increased to 12 inches if the electrical ductline is direct buried.
(f) The minimum vertical clearances to oil lines crossing electrical ductlines can be reduced to 24 inches below oil lines if the crossings are encased in 6 inches of concrete.

The Contractor shall notify the Engineer & HECO of any heat sources (power cable duct bank, steamline, etc.) encountered that are not properly identified on the drawing.

The following clearance shall be maintained between HECO's fuel oil pipelines and all adjacent structures: 24-inches, parallel or crossing. The minimum clearance can be reduced to 12 inches (parallel and below only) if the structure is jacketed in concrete.

15. INDEMNITY

The Contractor shall indemnify, defend and hold harmless HECO from and against all losses, damages, claims, and actions, including but not limited to reasonable attorney's fees and costs based upon or arising out of damage to property or injuries to persons, or other tortious acts caused or contributed to by Contractor or anyone acting under its direction or control or on its behalf; provided Contractor's indemnity shall not be applicable to any liability based upon the sole negligence of HECO.

16. SCHEDULE

Contractor shall furnish his construction schedule 45 working days prior to starting work on HECO facilities. Contractor shall give HECO, in writing, 40 working days notice to proceed with HECO's portion of work.

17. AUTHORITY

All construction, restoration work, and inspection shall be subject to whichever governmental agency has authority over the work.

18. SPECIFICATIONS

Construction of HECO's underground facilities shall be constructed in accordance with the latest revisions of HECO Specifications CS7001, CS7003, CS7202, CS9301, and CS9401 and applicable HECO Standards.

19. CONSTRUCTION

Contractor shall furnish all labor, materials, equipment, and services to properly perform and fully complete all work shown on the contract, drawings, and specifications. All materials shall be new and manufactured in the United States of America. All manhole, handhole, and ductline installations shall be inspected and approved by HECO prior to excavation and prior to placing concrete. Contractor shall notify HECO's Inspection Division at 543-4356 at least 48 hours prior to placing concrete.

Contractor to coordinate work to break into HECO's existing electrical facilities with HECO's Underground Division at 543-7871 at least 10 working days in advance.

20. STAKEOUT

The Contractor shall arrange for toneouts of all underground facilities and shall stakeout all proposed HECO facilities within the project area so as to not conflict with any utility (existing or proposed) and any proposed construction or improvement work for verification by HECO before proceeding with HECO work.

21. DUCTLINES

All ductline installations shall be PVC Schedule 40 encased in concrete, unless otherwise noted. All completed ductlines shall be mandrel tested by the Contractor in the presence of HECO's inspector using HECO's Standard Practice. The Contractor shall install a 1/8" polyolefin pull line in all completed ductlines after mandrel testing is complete.

22. JOINT POLE REMOVAL

The last joint pole occupant off the poles shall remove the poles.

23. AS-BUILT PLANS

The Contractor shall provide HECO with two sets of as-built reproducible tracings showing the offsets, stationing, and vertical elevation of the duct line(s) constructed.

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES II

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007
SHEET No. E0.5 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 09:05:30 BY: SL PLOT SC 1"=1'

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	312	380

Hawaiian Telcom (HTCO) Notes

1. The Contractor shall procure and pay for all licenses and permits and shall give all notices necessary and incident to the due and lawful prosecution of the work.

2. The Contractor shall obtain an excavation permit and toning request from Hawaiian Telcom's Excavation Permit Section located at 3239 Ualena St., 3rd flr., two weeks prior to the start of construction. Hours of business are: 8:00 am to 11:00 am and 12:00 pm to 3:30 pm Monday thru Friday, except holidays.

3. Prior to the excavation of the ductline, the Contractor shall request Hawaiian Telcom to locate existing ductline wherever required. For underground cable locating and marking, Five (5) working days advance notice is required. Three (3) working days advance notice is required for any inspection by a designated representative.

4. The location of existing utilities are approximate only. the contractor shall exercise extreme caution and shall maintain proper clearances whenever construction crosses or is in close proximity of Hawaiian Telcom facilities. The Contractor shall verify their location and shall be liable for any damages to Hawaiian Telcom facilities. Any damages shall be reported immediately to Hawaiian Telcom's Repair Section at #611 (24 hours) or to the Excavation Permit Section at 840-1444 (normal working hours, Monday through Friday, except holidays). As a result of his operations, adjustments to the new ductline alignment, if required, shall be made to provide required clearances.

5. The Contractor shall take necessary precaution not to damage existing cables or ducts. A Hawaiian Telcom inspector or designated representative is required to be at any job site whenever there will be breakage into or entry into any structure that contain Hawaiian Telcom facilities. Temporary cable and duct supports shall be provided whenever necessary.

6. The Contractor shall notify Hawaiian Telcom's inspector or designated representative a minimum of 72 hours prior to excavation, bracing or backfilling of Hawaiian Telcom's structures or facilities.

7. All applicable construction work shall be done in accordance with the "Hawaiian Telcom Standard Specifications for Placing Underground Telephone Systems" dated March 1999. All subsequent amendments and addition, and all other pertinent standard for telephone construction. Contractor shall familiarize his personnel by obtaining applicable specifications.

8. When excavation is adjacent to or beneath Hawaiian Telcom's existing structures or facilities, the Contractor shall:

   a) Sheet and/or brace the excavation to prevent slides, cave-ins or settlement ensuring no movement to Hawaiian Telcom's structures or facilities.

   b) Protect existing structures and/or facilities with beams, struts or underpinnings while excavating beneath them to ensure no movement to Hawaiian Telcom's structures or facilities.

9. The Contractor shall brace all poles or light standard near the new ductline, manhole, or handhole during his operations.

10. The Contractor shall saw-cut A.C. pavement and concrete gutter wherever new manholes, handholes, or ductlines are to be placed and shall restore to existing condition or better.

11. After ductline has been completed, a mandrel with a square front not less than 12" long and having a diameter of 1/4" less than the inside diameter of the each duct, shall be pulled through each duct after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth, sand or gravel have been left inside. Ducts shall be completely dry and clean.

12. All ducts and conduits shall have an 1800# polyester mule-tape (NEPTCO, WP1800P, Hawaiian Telcom Material Code No. 571154) installed throughout its entire length. All ducts shall be capped to prevent entry of foreign material during construction and at the completion of installation.

13. The Contractor shall comply with the policy adopted by the Department of Public Works, City and County of Honolulu, concerning the replacement of concrete sidewalks after excavation work.

14. The underground pipes, cables or ductlines known to exist by the Engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depth of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilites are shown on the plans, the Contractor shall expose the existing line at the proposed connections to verify their locatons and depth prior to excavation for the new lines.

15. Wherever connections to existing utilities are shown on the plans, the Contractor shall expose the existing lines prior to excavation of the main trenches to verify their locations and depths.

16. The Contractor, at his own expense, shall keep the project and surrounding area free from dust nuisance. The cost for supplementary measures, which will be required by the City and County, shall be borne by the Contractor.

17. The Contractor shall pump all manholes dry during final inspection.

18. The Contractor shall notify Hawaiian Telcom inspector 24 hours prior to pouring of concrete or backfilling.

19. When connecting to manhole walls, all existing reinforcing bars shall be left intact. Ducts shall be adjusted in the field in order to clear reinforcing.

20. The Contractor shall be responsible for laying out all required lines and grades and shall preserve all bench marks and working points necessary to lay out the work correctly. The new ductline shall be adjusted by the contractor to suit the existing condtions and the details as described in the plans.

21. Minimum concrete strength shall be:
    for ductline, 2500 psi at 28 days
    for manhole, 3000 psi at 28 days or as specified in design notes

22. Bends in the duct alignment, due to changes in grade shall have a minimum radius of 25 feet. All 90 degree c-bends at a pole or at the building floor slab penetration, shall have a bend radius of ten times the diameter of the duct or greater.

APPROVED BY:

HAWAIIAN TELCOM ____________________ DATE

GARY L. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HTCO NOTES

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

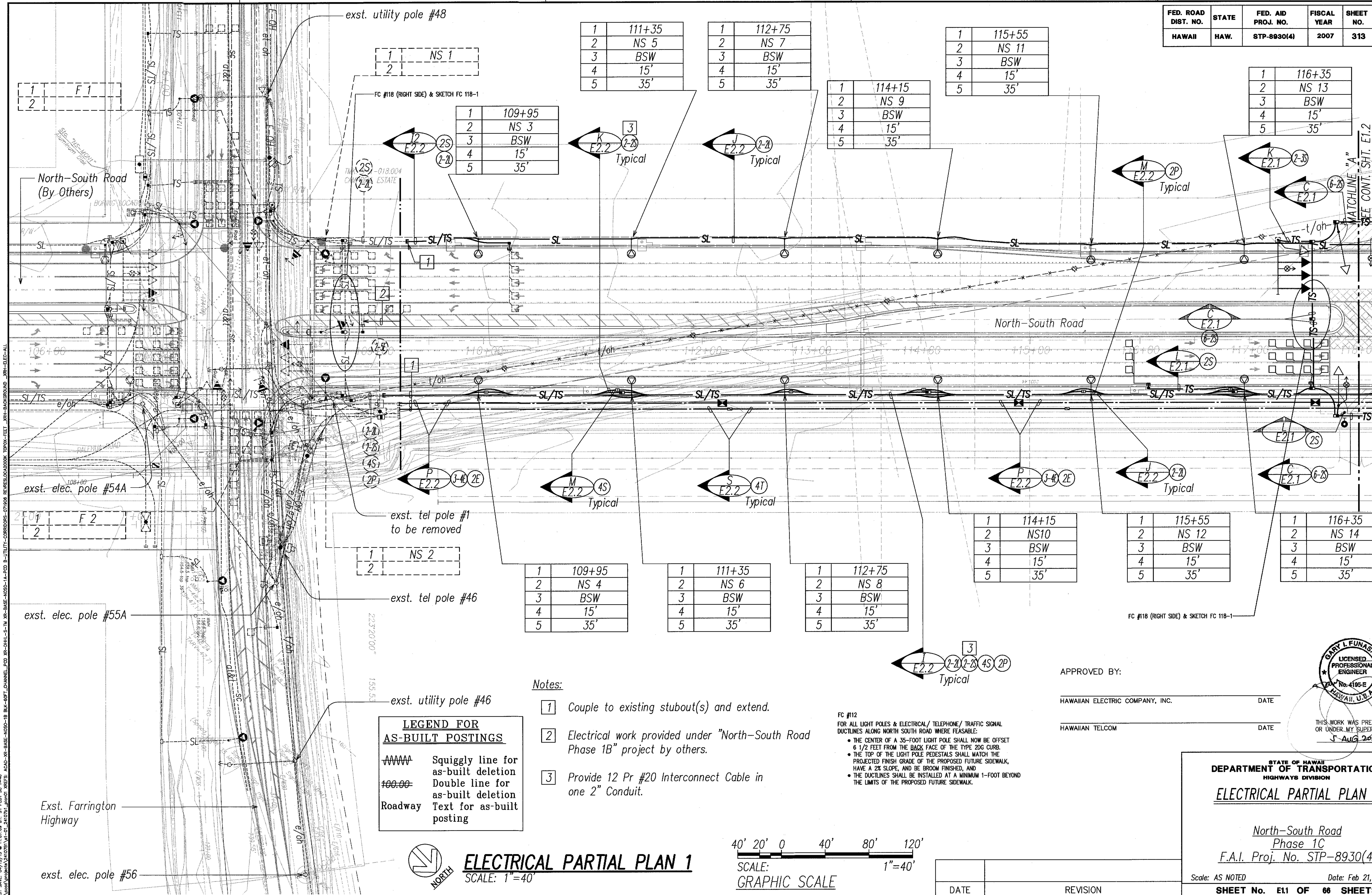
Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E0.6 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	313	380

FEB 21, 2007



1	111+35
2	NS 5
3	BSW
4	15'
5	35'

1	112+75
2	NS 7
3	BSW
4	15'
5	35'

1	115+55
2	NS 11
3	BSW
4	15'
5	35'

1	109+95
2	NS 3
3	BSW
4	15'
5	35'

1	114+15
2	NS 9
3	BSW
4	15'
5	35'

1	116+35
2	NS 13
3	BSW
4	15'
5	35'

1	114+15
2	NS10
3	BSW
4	15'
5	35'

1	115+55
2	NS 12
3	BSW
4	15'
5	35'

1	116+35
2	NS 14
3	BSW
4	15'
5	35'

1	109+95
2	NS 4
3	BSW
4	15'
5	35'

1	111+35
2	NS 6
3	BSW
4	15'
5	35'

1	112+75
2	NS 8
3	BSW
4	15'
5	35'

Notes:

1. Couple to existing stubout(s) and extend.
2. Electrical work provided under "North-South Road Phase 1B" project by others.
3. Provide 12 Pr #20 Interconnect Cable in one 2" Conduit.

FC #112

FOR ALL LIGHT POLES & ELECTRICAL/ TELEPHONE/ TRAFFIC SIGNAL DUCTLINES ALONG NORTH SOUTH ROAD WHERE FEASABLE:

- THE CENTER OF A 35-FOOT LIGHT POLE SHALL NOW BE OFFSET 6 1/2 FEET FROM THE BACK FACE OF THE TYPE 2DG CURB.
- THE TOP OF THE LIGHT POLE PEDESTALS SHALL MATCH THE PROJECTED FINISH GRADE OF THE PROPOSED FUTURE SIDEWALK, HAVE A 2% SLOPE, AND BE BROOM FINISHED, AND
- THE DUCTLINES SHALL BE INSTALLED AT A MINIMUM 1-FOOT BEYOND THE LIMITS OF THE PROPOSED FUTURE SIDEWALK.

LEGEND FOR AS-BUILT POSTINGS

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

ELECTRICAL PARTIAL PLAN 1

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

HAWAIIAN TELCOM DATE

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

5 AUG 2013

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

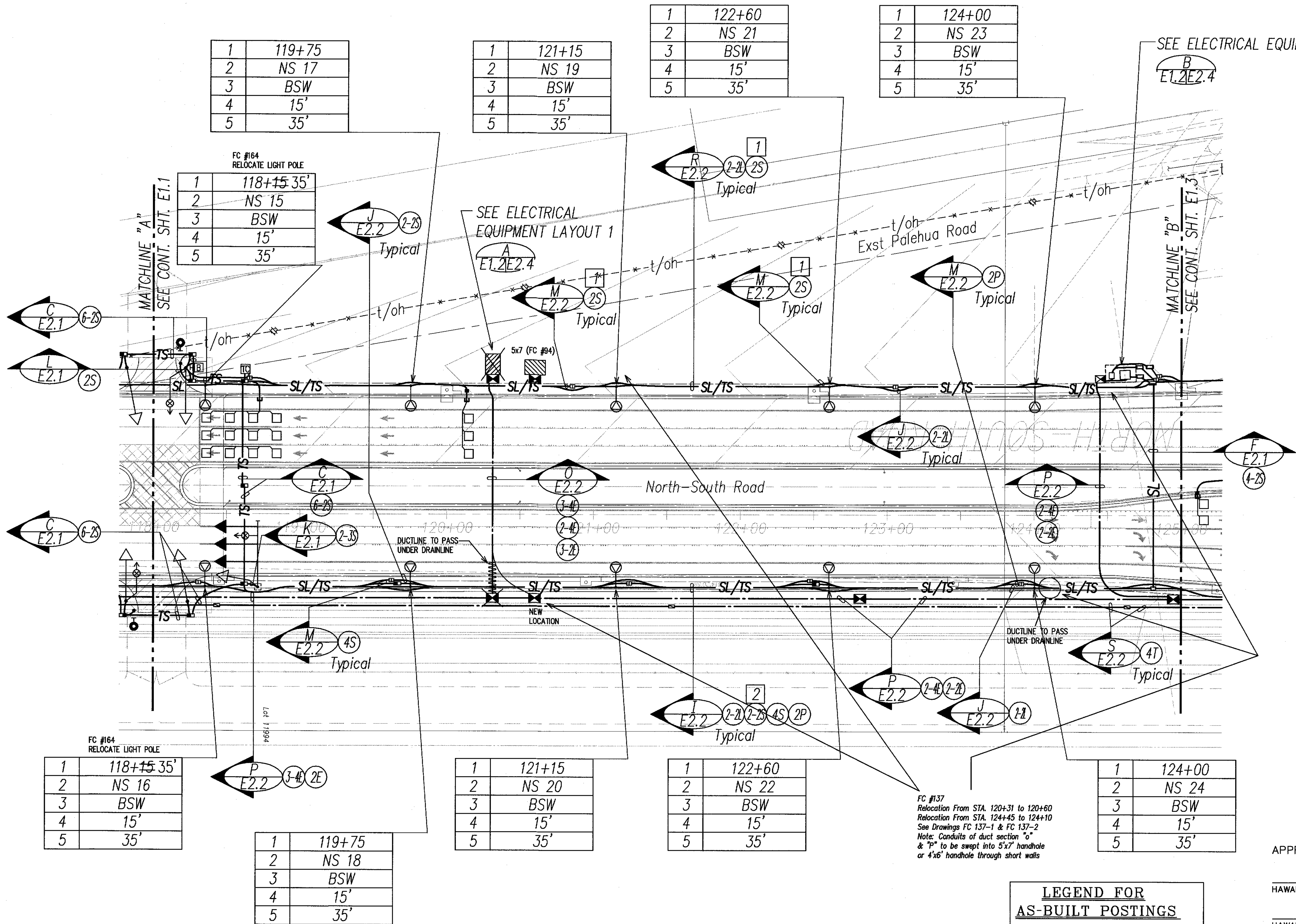
ELECTRICAL PARTIAL PLAN 1

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.1 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	C0314	380



1	118+~~15~~ 35'
2	NS 15
3	BSW
4	15'
5	35'

1	119+75
2	NS 17
3	BSW
4	15'
5	35'

1	121+15
2	NS 19
3	BSW
4	15'
5	35'

1	122+60
2	NS 21
3	BSW
4	15'
5	35'

1	124+00
2	NS 23
3	BSW
4	15'
5	35'

1	118+~~15~~ 35'
2	NS 16
3	BSW
4	15'
5	35'

1	119+75
2	NS 18
3	BSW
4	15'
5	35'

1	121+15
2	NS 20
3	BSW
4	15'
5	35'

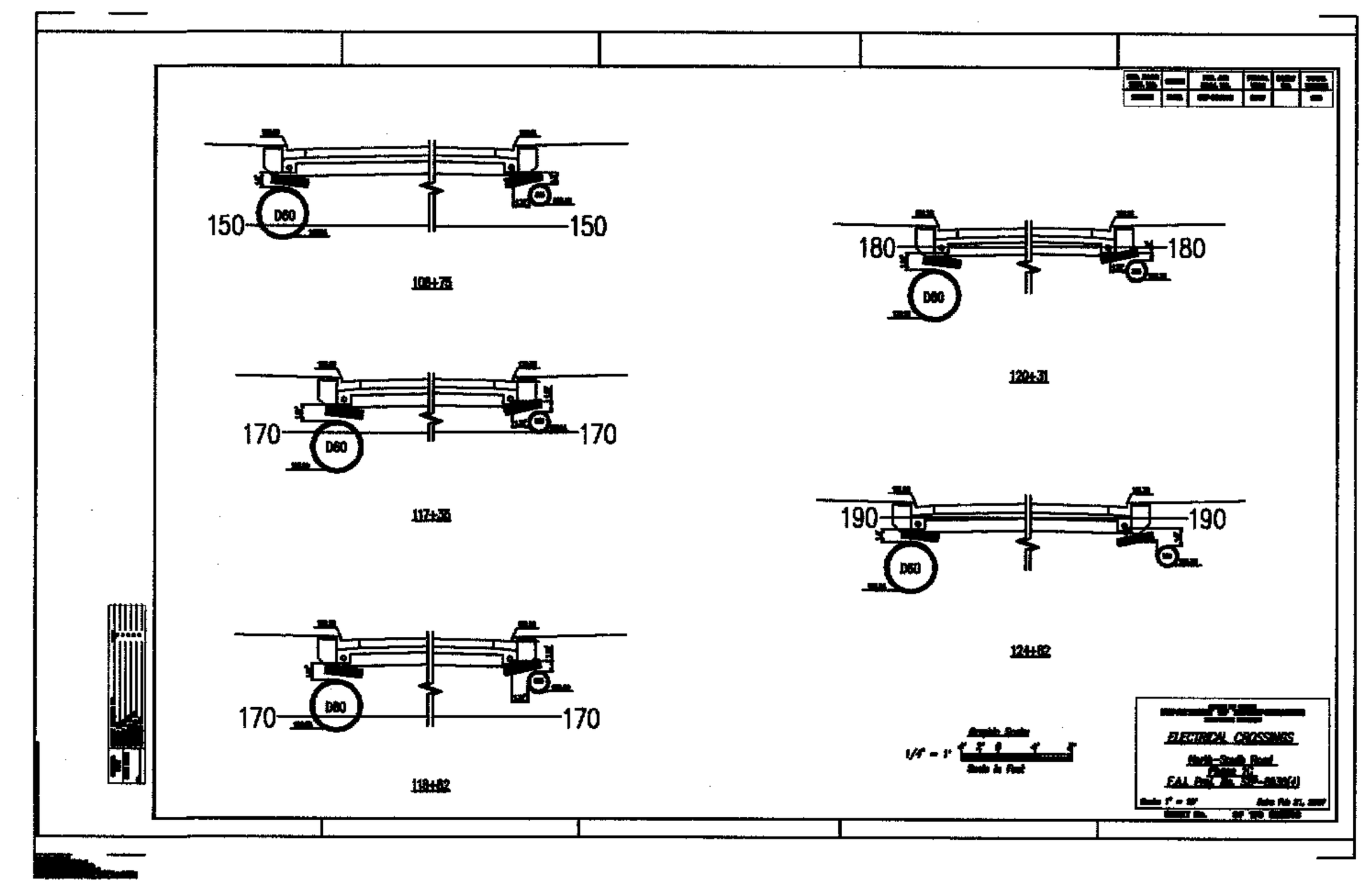
1	122+60
2	NS 22
3	BSW
4	15'
5	35'

1	124+00
2	NS 24
3	BSW
4	15'
5	35'

FC #137
Relocation From STA. 120+31 to 120+60
Relocation From STA. 124+45 to 124+10
See Drawings FC 137-1 & FC 137-2
Note: Conduits of duct section "o" & "P" to be swept into 5'x7' handhole or 4'x6' handhole through short walls

Notes:

1. Provide 3#1/0 RHW-USE, #2 Gnd within.
2. Provide 12 Pr #20 Interconnect Cable in one 2" Conduit.



FC #118

* THE FOLLOWING CROSSINGS AT:

- Sta: 108+75-7x2-inch Traffic Signal
- Sta: 117+52-6x2-inch Traffic Signal (move crossing to Sta. 117+35)
- Sta: 118+62-6x2-inch Traffic Signal
- Sta: 120+31-5x4-inch Electrical, 3x2-inch Electrical
- Sta: 124+44-2x4-inch Electrical, 2x2-inch Electrical
- Sta: 124+82-4x2-inch Traffic Signal

shall be revised as follows:

- The conduits shall be flattened to cross over the drainlines (for the 6x2-inch Traffic Signal ducts, which are stacked 3 over 3, shall be installed 6 flat with the minimum 3-inch concrete encasement and spacing).
- A minimum of 6-inches of trench backfill shall separate the drainline and the bottom of the concrete ductline.
- The ductline shall be installed to maximize the amount of cover as it approaches the drainline. Near or at the drainline, the minimum clearance requirement above the drainline shall be govern the cover over the ductline.
- The thickness of the Aggregate Subbase (ASB) shall be reduced or eliminated to accomodate the ductline.

Please note that the Traffic Signal Crossing at Sta. 117+52 shall be moved to 117+35 to avoid conflict with Special Catch Basin S62. In addition, the Traffic Signal Crossing noted in your RFI at 118+46 is actually scheduled for Sta. 118+62 per Plan Sheet C0314/E1.2. The 118+46 station callout will conflict with Catch Basin N58.

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

HAWAIIAN TELCOM DATE

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4105-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
5 AUG 2013

LEGEND FOR AS-BUILT POSTINGS

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

ELECTRICAL PARTIAL PLAN 2

SCALE: 1"=40'

NORTH

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE

DATE	REVISION
7/??/08	Revised HHs per HECO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 2

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.2 OF 66 SHEETS

"AS-BUILT" C0314

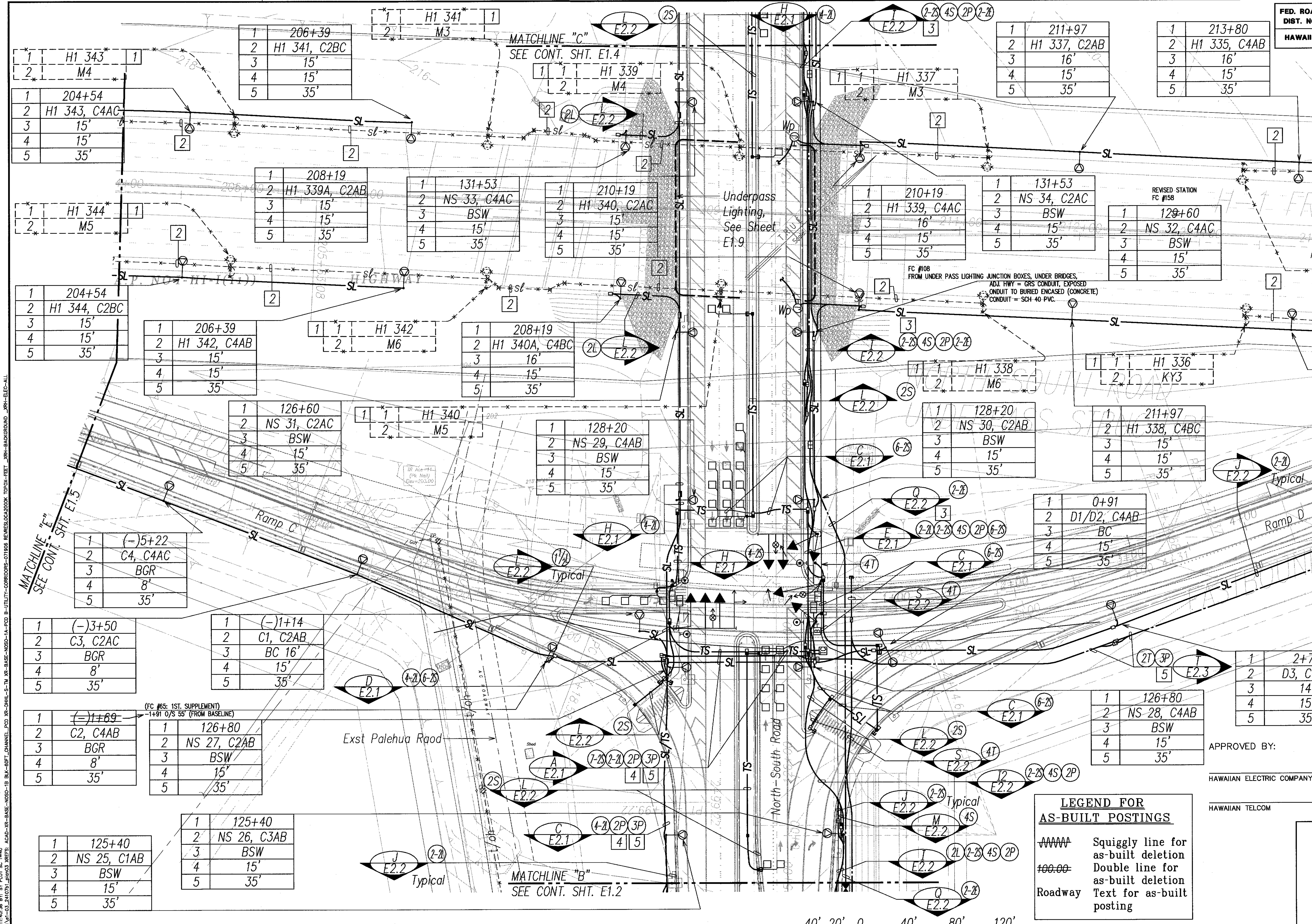
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

RELOCATION OF CABLE SPLICING TO TRANSFORMER BASE OF HWY LIGHT H1

FC #144
TYPE B PULLBOX ELIMINATION ACCEPTABLE @ STA 208+14 IF: ALL 3 PHASE OF CIRCUIT C2 SHALL BE EXTENDED INTO THE LIGHT STANDARD TRANSFORMER BASE
• UNCONNECTED PHASE OF CIRCUIT TO BE TERMINATED & CAPPED.
• 2" CONDUIT TO BE ADDED FOR FUTURE CIRCUIT EXTENSION. SPARE CONDUIT TO BE DIRECTED TOWARD PALEHUA BRIDGE, EXTENDING MIN. DISTANCE OF 5' FROM LIGHT STD FOUNDATION.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 315	380

Note:
1. Remove Exst Street Light and Foundation after New Lighting System is Operational.
2. Remove Exst Wiring and Pullboxes, Abandon Exst Conduits in Place.
3. Provide 12 Pr #20 Interconnect Cable in one 2" Conduit.
4. Provide 3#1, #2 Gnd within (TS).
5. Provide 3#4/0, #2 Gnd within (WIM).



MATCHLINE "C" SEE CONT. SHT. E1.4
MATCHLINE "E" SEE CONT. SHT. E1.5
MATCHLINE "G" SEE CONT. SHT. E1.7
MATCHLINE "B" SEE CONT. SHT. E1.2
Underpass Lighting, See Sheet E1.9
Interstate H-1 Freeway
Ramp C
Ramp D
Exst Palehua Raod
North-South Road
Typical
REVISED STATION FC #158
FC #108 FROM UNDER PASS LIGHTING JUNCTION BOXES, UNDER BRIDGES, ADJ HWY = GRS CONDUIT, EXPOSED CONDUIT TO BURIED ENCASED (CONCRETE) CONDUIT = SCH 40 PVC.
(FC #65: 1ST. SUPPLEMENT) -1+91 O/S 55' (FROM BASELINE)
1 H1 343 / 2 M4
1 204+54 / 2 H1 343, C4AC / 3 15' / 4 15' / 5 35'
1 206+39 / 2 H1 341, C2BC / 3 15' / 4 15' / 5 35'
1 H1 341 / 2 M3
1 H1 339 / 2 M4
1 H1 337 / 2 M3
1 211+97 / 2 H1 337, C2AB / 3 16' / 4 15' / 5 35'
1 213+80 / 2 H1 335, C4AB / 3 16' / 4 15' / 5 35'
1 H1 344 / 2 M5
1 208+19 / 2 H1 339A, C2AB / 3 15' / 4 15' / 5 35'
1 131+53 / 2 NS 33, C4AC / 3 BSW / 4 15' / 5 35'
1 210+19 / 2 H1 340, C2AC / 3 15' / 4 15' / 5 35'
1 210+19 / 2 H1 339, C4AC / 3 16' / 4 15' / 5 35'
1 131+53 / 2 NS 34, C2AC / 3 BSW / 4 15' / 5 35'
1 129+60 / 2 NS 32, C4AC / 3 BSW / 4 15' / 5 35'
1 H1 335 / 2 KZ1
1 204+54 / 2 H1 344, C2BC / 3 15' / 4 15' / 5 35'
1 206+39 / 2 H1 342, C4AB / 3 15' / 4 15' / 5 35'
1 H1 342 / 2 M6
1 208+19 / 2 H1 340A, C4BC / 3 16' / 4 15' / 5 35'
1 H1 338 / 2 M6
1 H1 336 / 2 KY3
1 213+80 / 2 H1 336, C2BC / 3 15' / 4 15' / 5 35'
1 126+60 / 2 NS 31, C2AC / 3 BSW / 4 15' / 5 35'
1 H1 340 / 2 M5
1 128+20 / 2 NS 29, C4AB / 3 BSW / 4 15' / 5 35'
1 128+20 / 2 NS 30, C2AB / 3 BSW / 4 15' / 5 35'
1 211+97 / 2 H1 338, C4BC / 3 15' / 4 15' / 5 35'
1 0+91 / 2 D1/D2, C4AB / 3 BC / 4 15' / 5 35'
1 (-)5+22 / 2 C4, C4AC / 3 BGR / 4 8' / 5 35'
1 4+65 / 2 D4, C2BC / 3 20' / 4 15' / 5 35'
1 (-)3+50 / 2 C3, C2AC / 3 BGR / 4 8' / 5 35'
1 (-)1+14 / 2 C1, C2AB / 3 BC 16' / 4 15' / 5 35'
1 2+73 / 2 D3, C4BC / 3 14' / 4 15' / 5 35'
1 126+80 / 2 NS 28, C4AB / 3 BSW / 4 15' / 5 35'
1 (-)1+69 / 2 C2, C4AB / 3 BGR / 4 8' / 5 35'
1 126+80 / 2 NS 27, C2AB / 3 BSW / 4 15' / 5 35'
1 125+40 / 2 NS 26, C3AB / 3 BSW / 4 15' / 5 35'
1 125+40 / 2 NS 25, C1AB / 3 BSW / 4 15' / 5 35'

ELECTRICAL PARTIAL PLAN 3
SCALE: 1"=40'

GRAPHIC SCALE: 40' 20' 0 40' 80' 120' — SCALE: 1"=40'

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

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

HAWAIIAN TELCOM DATE

GARY I. FUNASAKI — LICENSED PROFESSIONAL ENGINEER — No. 4195-E — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

5 AUG 2013

DATE	REVISION
4/20/07	2 Revised Lighting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 3

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED — Date: Feb 21, 2007

SHEET No. E1.3 OF 66 SHEETS

"AS-BUILT" ADD. 315

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

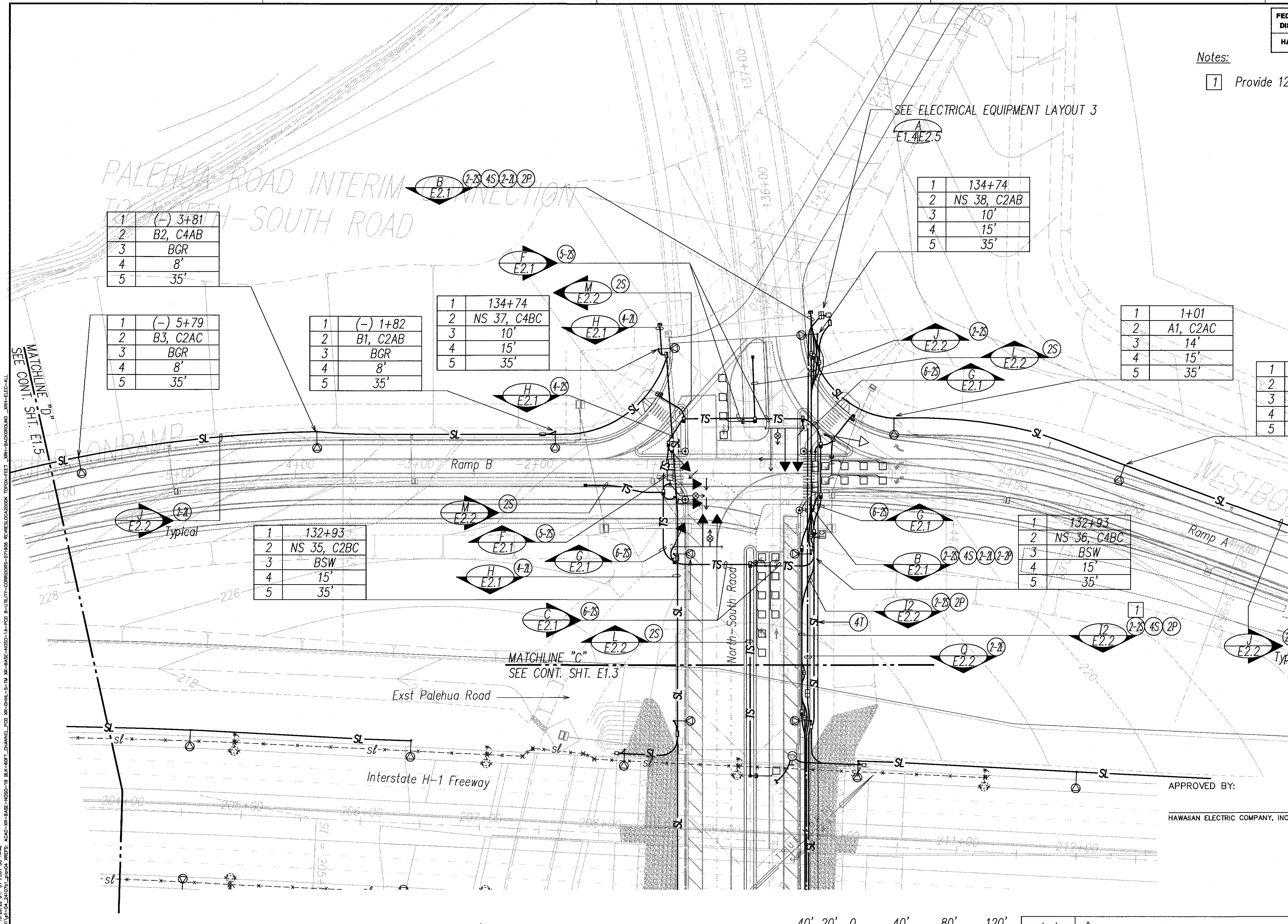
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 316	380

Notes:

[1] Provide 12 Pr #20 Interconnect Cable in one 2" Conduit.

LEGEND FOR AS-BUILT POSTINGS

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



1	(-) 3+81
2	B2, C4AB
3	BGR
4	8'
5	35'

1	(-) 5+79
2	B3, C2AC
3	BGR
4	8'
5	35'

1	(-) 1+82
2	B1, C2AB
3	BGR
4	8'
5	35'

1	134+74
2	NS 37, C4BC
3	10'
4	15'
5	35'

1	134+74
2	NS 38, C2AB
3	10'
4	15'
5	35'

1	1+01
2	A1, C2AC
3	14'
4	15'
5	35'

1	2+89
2	A2, C4AC
3	14'
4	15'
5	35'

1	4+84
2	A3, C2BC
3	14'
4	15'
5	35'

1	132+93
2	NS 35, C2BC
3	BSW
4	15'
5	35'

1	132+93
2	NS 36, C4BC
3	BSW
4	15'
5	35'

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

5 AUG 2013

ELECTRICAL PARTIAL PLAN 4

SCALE: 1"=40'

NORTH

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

DATE	REVISION
5/4/07	3 Revised Light A1
4/20/07	2 Revised Lighting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 4

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.4 OF 66 SHEETS

"AS-BUILT" ADD. 316

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 317	380

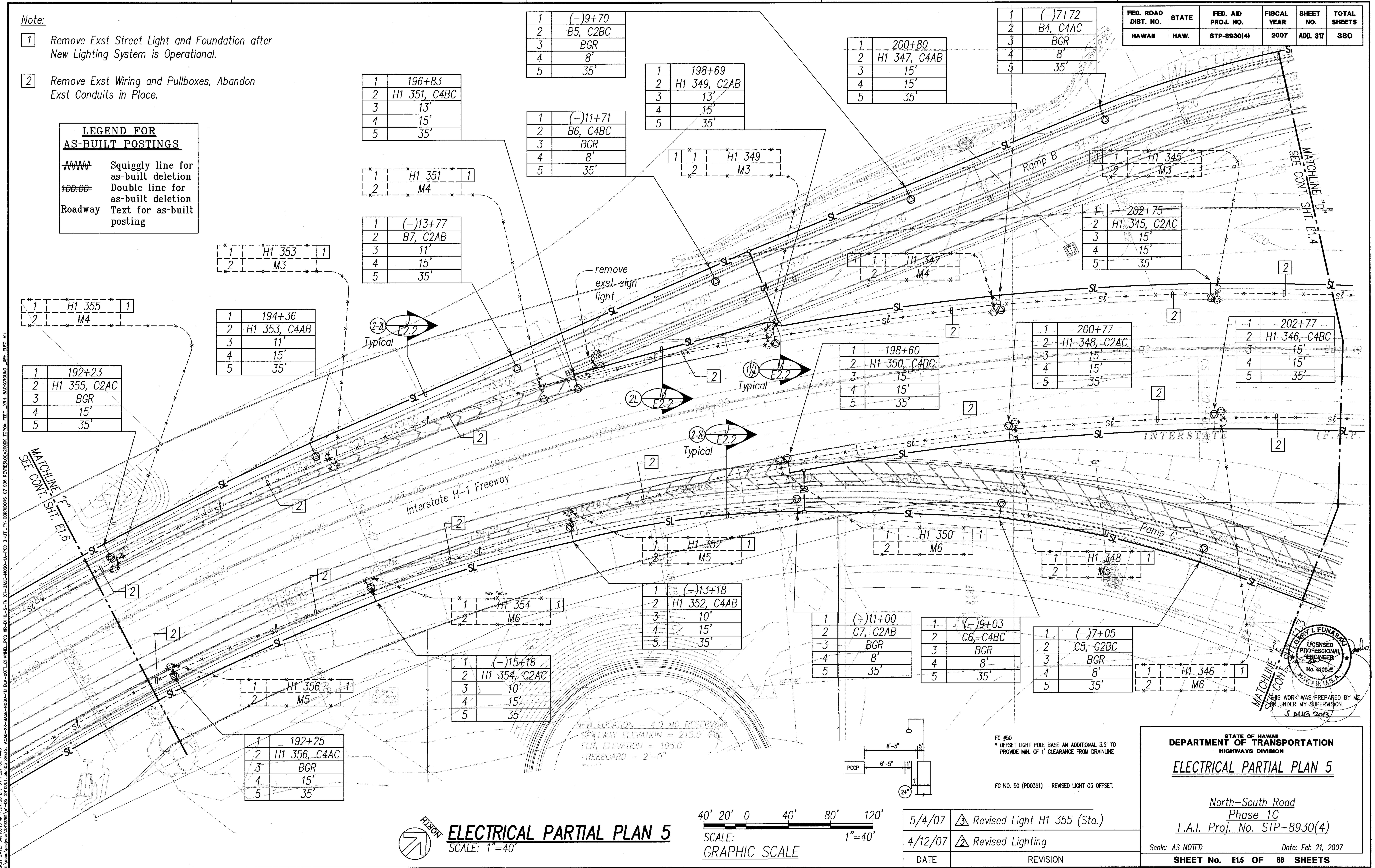
Note:

[1] Remove Exst Street Light and Foundation after New Lighting System is Operational.

[2] Remove Exst Wiring and Pullboxes, Abandon Exst Conduits in Place.

LEGEND FOR AS-BUILT POSTINGS

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



1	192+23
2	H1 355, C2AC
3	BGR
4	15'
5	35'

1	194+36
2	H1 353, C4AB
3	11'
4	15'
5	35'

1	196+83
2	H1 351, C4BC
3	13'
4	15'
5	35'

1	(–)13+77
2	B7, C2AB
3	11'
4	15'
5	35'

1	(–)9+70
2	B5, C2BC
3	BGR
4	8'
5	35'

1	(–)11+71
2	B6, C4BC
3	BGR
4	8'
5	35'

1	198+69
2	H1 349, C2AB
3	13'
4	15'
5	35'

1	200+80
2	H1 347, C4AB
3	15'
4	15'
5	35'

1	(–)7+72
2	B4, C4AC
3	BGR
4	8'
5	35'

1	202+75
2	H1 345, C2AC
3	15'
4	15'
5	35'

1	202+77
2	H1 346, C4BC
3	15'
4	15'
5	35'

1	200+77
2	H1 348, C2AC
3	15'
4	15'
5	35'

1	198+60
2	H1 350, C4BC
3	15'
4	15'
5	35'

1	192+25
2	H1 356, C4AC
3	BGR
4	15'
5	35'

1	(–)15+16
2	H1 354, C2AC
3	10'
4	15'
5	35'

1	(–)13+18
2	H1 352, C4AB
3	10'
4	15'
5	35'

1	(–)11+00
2	C7, C2AB
3	BGR
4	8'
5	35'

1	(–)9+03
2	C6, C4BC
3	BGR
4	8'
5	35'

1	(–)7+05
2	C5, C2BC
3	BGR
4	8'
5	35'

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4135-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

5 AUG 2013

ELECTRICAL PARTIAL PLAN 5

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

DATE	REVISION
5/4/07	△3 Revised Light H1 355 (Sta.)
4/12/07	△2 Revised Lighting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 5

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.5 OF 66 SHEETS

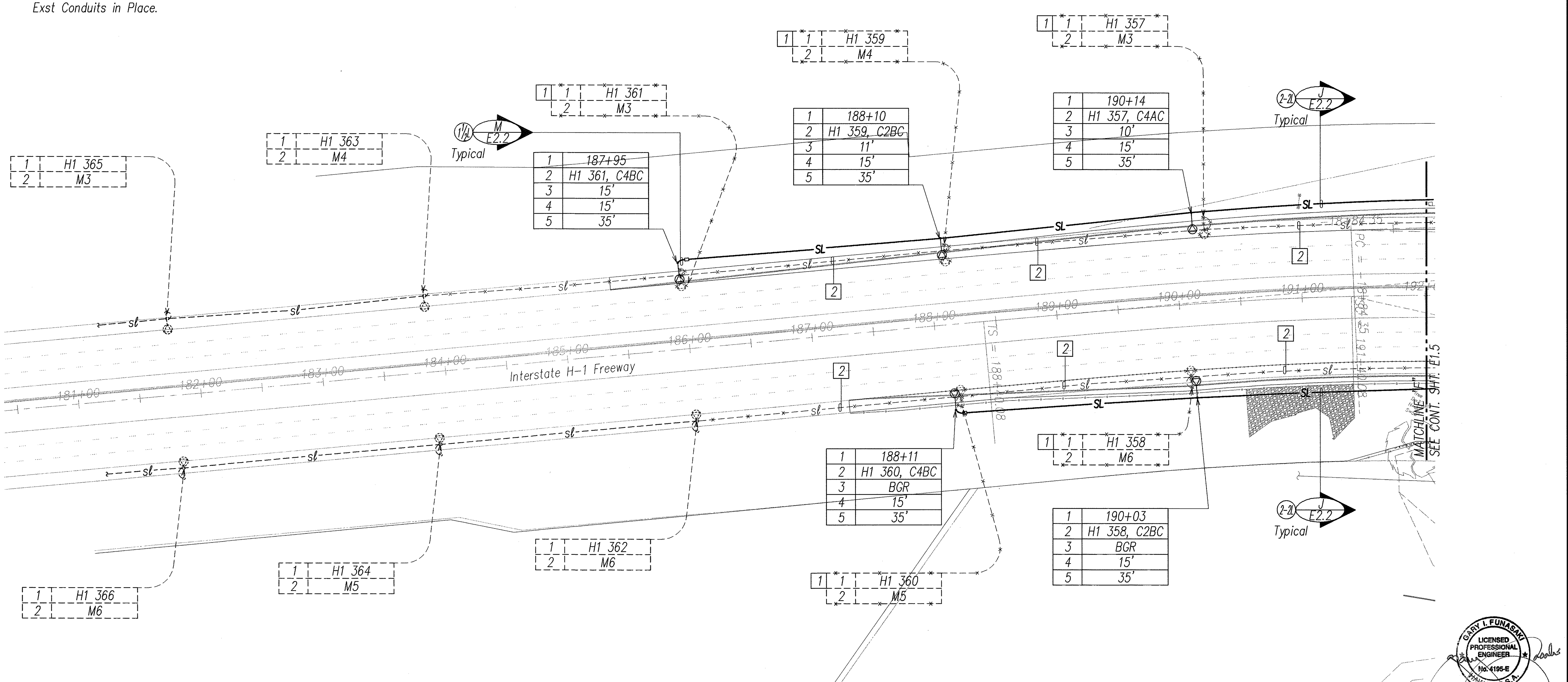
"AS–BUILT" ADD. 317

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 318	380

Note:

[1] *Remove Exst Street Light and Foundation after New Lighting System is Operational.*

[2] *Remove Exst Wiring and Pullboxes, Abandon Exst Conduits in Place.*



1	187+95
2	H1 361, C4BC
3	15'
4	15'
5	35'

1	188+10
2	H1 359, C2BC
3	11'
4	15'
5	35'

1	190+14
2	H1 357, C4AC
3	10'
4	15'
5	35'

1	188+11
2	H1 360, C4BC
3	BGR
4	15'
5	35'

1	190+03
2	H1 358, C2BC
3	BGR
4	15'
5	35'

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

18 April 2007

NORTH

ELECTRICAL PARTIAL PLAN 6

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

DATE	REVISION
4/20/07	2 Revised Lighting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 6

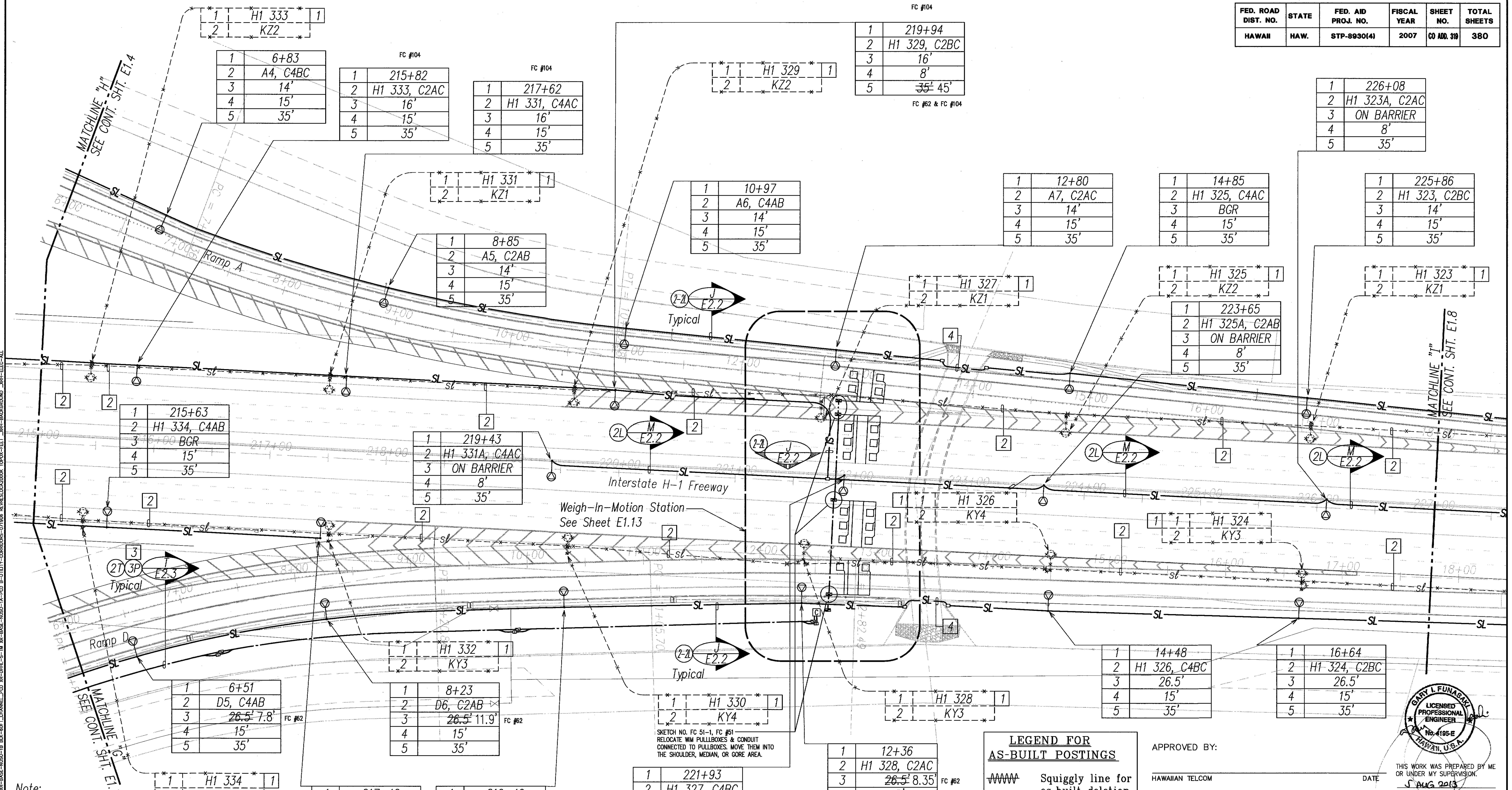
North–South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.6 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO ADD. 319	380



1	6+83
2	A4, C4BC
3	14'
4	15'
5	35'

FC #104

1	215+82
2	H1 333, C2AC
3	16'
4	15'
5	35'

FC #104

1	217+62
2	H1 331, C4AC
3	16'
4	15'
5	35'

FC #104

1	219+94
2	H1 329, C2BC
3	16'
4	8'
5	~~35'~~ 45'

FC #62 & FC #104

1	226+08
2	H1 323A, C2AC
3	ON BARRIER
4	8'
5	35'

1	10+97
2	A6, C4AB
3	14'
4	15'
5	35'

1	12+80
2	A7, C2AC
3	14'
4	15'
5	35'

1	14+85
2	H1 325, C4AC
3	BGR
4	15'
5	35'

1	225+86
2	H1 323, C2BC
3	14'
4	15'
5	35'

1	8+85
2	A5, C2AB
3	14'
4	15'
5	35'

1	223+65
2	H1 325A, C2AB
3	ON BARRIER
4	8'
5	35'

1	215+63
2	H1 334, C4AB
3	BGR
4	15'
5	35'

1	219+43
2	H1 331A, C4AC
3	ON BARRIER
4	8'
5	35'

1	14+48
2	H1 326, C4BC
3	26.5'
4	15'
5	35'

1	16+64
2	H1 324, C2BC
3	26.5'
4	15'
5	35'

1	6+51
2	D5, C4AB
3	~~26.5'~~ 7.8'
4	15'
5	35'

FC #62

1	8+23
2	D6, C2AB
3	~~26.5'~~ 11.9'
4	15'
5	35'

FC #62

1	12+36
2	H1 328, C2AC
3	~~26.5'~~ 8.35'
4	15'
5	35'

FC #62

1	221+93
2	H1 327, C4BC
3	ON BARRIER
4	8'
5	35'

1	217+46
2	H1 332, C2AB
3	15'
4	15'
5	35'

1	219+49
2	H1 330, C4AC
3	26.5'
4	15'
5	35'

Note:

1. Remove Exst Street Light and Foundation after New Lighting System is Operational.
2. Remove Exst Wiring and Pullboxes, Abandon Exst Conduits in Place.
3. Provide 3#4/0, #2 Gnd within (WIM).
4. 2-2" Conduits Concealed in Headwall. See Structural Plans.

NORTH

ELECTRICAL PARTIAL PLAN 7

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

LEGEND FOR AS-BUILT POSTINGS

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

APPROVED BY:

HAWAIIAN TELCOM DATE

DATE	REVISION
7/16/08	Added Barrier Lights
5/4/07	3 Revised Light H1 332 (Ht.)
4/20/07	2 Revised Lighting

GARY L. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

5 AUG 2013

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 7

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.7 OF 66 SHEETS

"AS-BUILT" CO ADD. 319

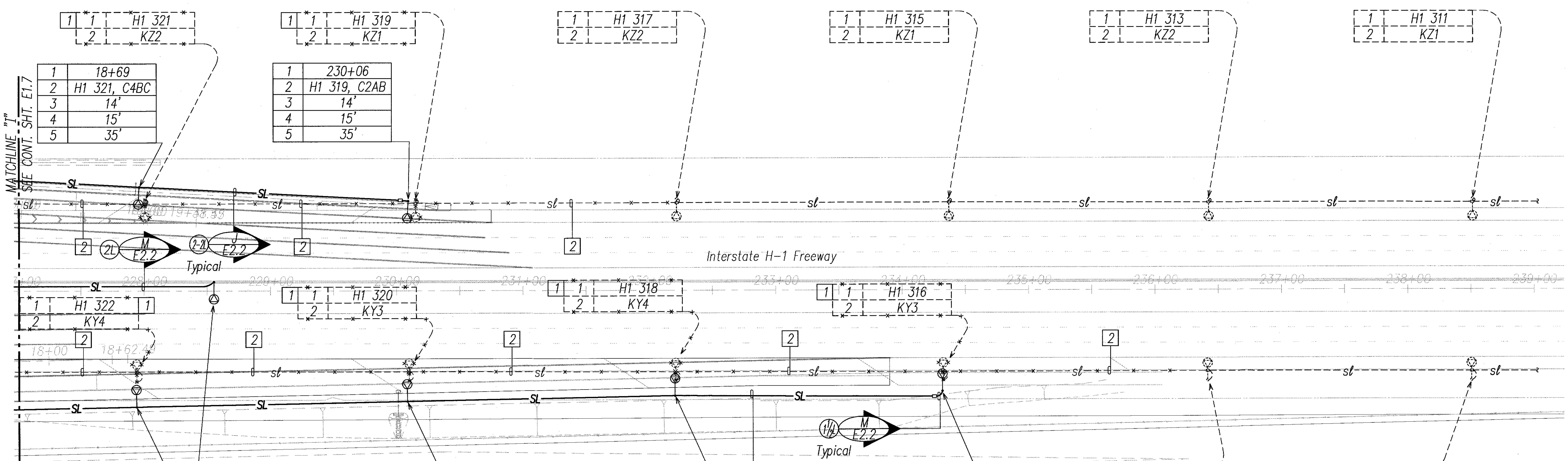
ORIGINAL PLAN	SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY	DATE
NOTE BOOK		
No.		

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO ADD. 320	380

Note:

[1] Remove Exst Street Light and Foundation after New Lighting System is Operational.

[2] Remove Exst Wiring and Pullboxes, Abandon Exst Conduits in Place.



1	18+69
2	H1 321, C4BC
3	14'
4	15'
5	35'

1	230+06
2	H1 319, C2AB
3	14'
4	15'
5	35'

1	18+69
2	H1 322, C4AB
3	26.5'
4	15'
5	35'

1	230+06
2	H1 320, C2AB
3	26.5'
4	15'
5	35'

FC #104

1	228+56
2	H1 321A, C2BC
3	ON BARRIER
4	8'
5	35'

1	232+19
2	H1 318, C4AC
3	26.5'
4	15'
5	35'

1	234+31
2	H1 316, C2AC
3	26.5'
4	15'
5	35'

LEGEND FOR AS-BUILT POSTINGS

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

NORTH

ELECTRICAL PARTIAL PLAN 8

SCALE: 1"=40'

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE

DATE	REVISION
7/16/08	Added Barrier Lights
4/20/07	2 Revised Lighting

GARY L FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 8185-E HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
5 AUG 2013

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PARTIAL PLAN 8

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

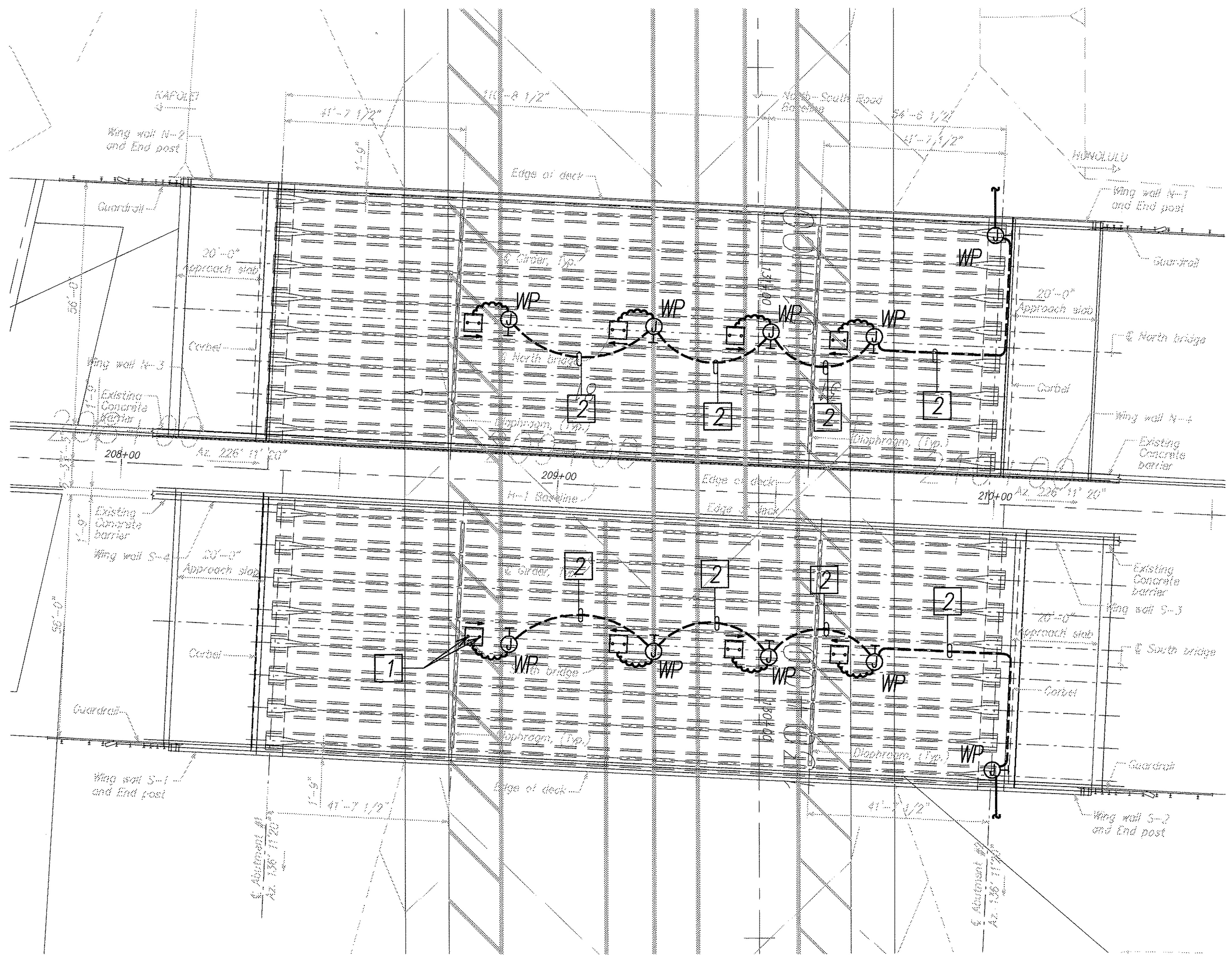
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.8 OF 66 SHEETS

"AS-BUILT" CO ADD. 320

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	321	380

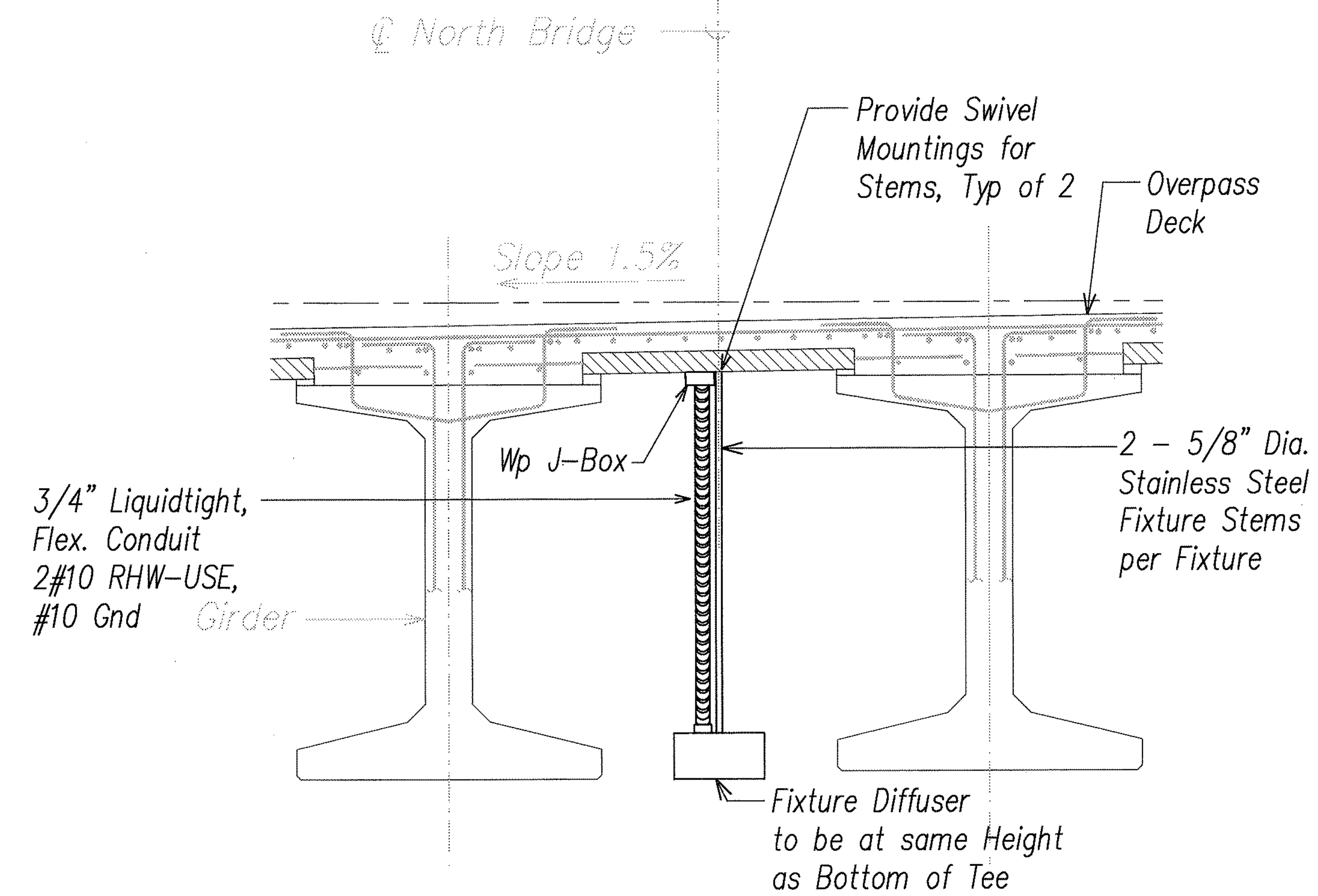


Notes:

1 Provide Concrete Inserts for Mounting Stems. Concrete Inserts shall withstand w 100 LB Pull-Out. Impact Drills shall not be used to Drill Mounting Holes. Avoid all Bridge Structural Reinforcing when Drilling. All Unused Holes shall be filled with Epoxy Grout. Typical.

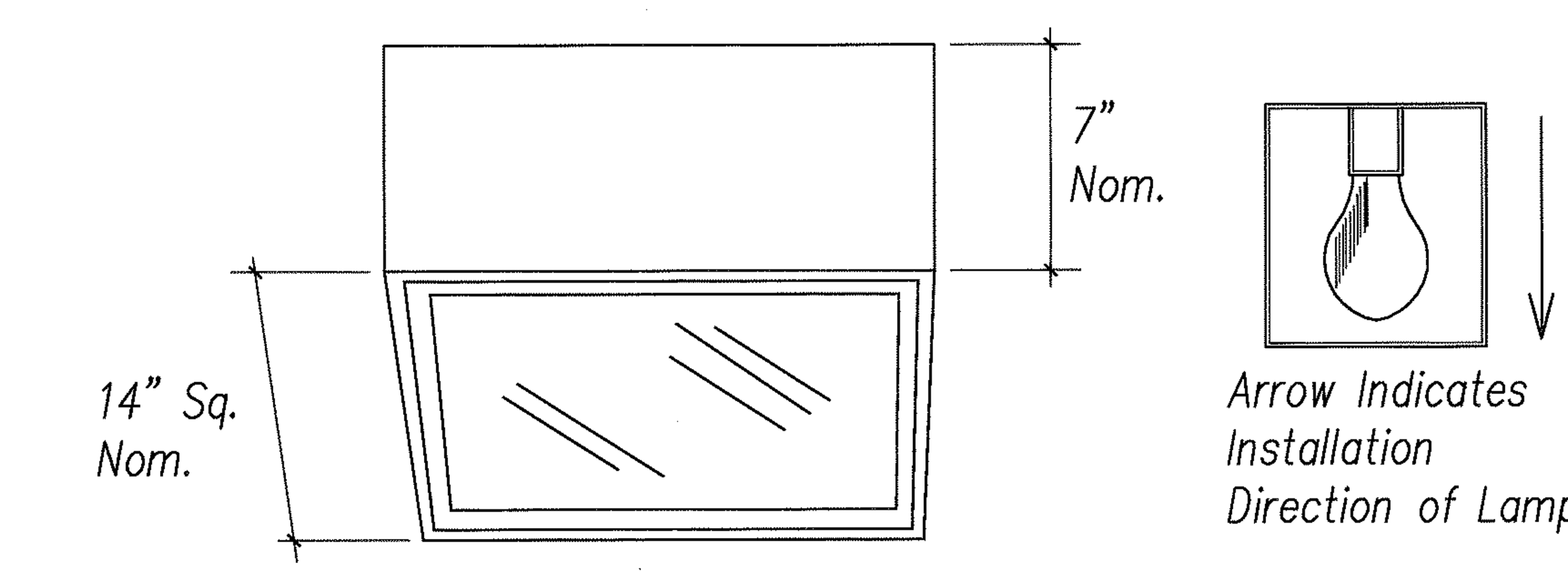
2 3/4" PVC Coated GRS, 3#10 RHW-USE, #10 Gnd.

UNDERPASS LIGHTING PLAN
Scale: 1"=20'-0"



NOTE: All Ceiling Inserts for Fixture Mounting Hardware shall withstand a 100 LB Pull-Out.

B / E1.9 TYPICAL UNDERPASS LIGHT FIXTURE. MTG. DETAIL
NOT TO SCALE



Lamp: 100W HPS, Clear

Description: Extruded Aluminum Chassis with Mitered, Welded Corners, Dark Bronze Anodized Finish, U.L. Listed for Wet Locations, Clear, Tempered Glass Diffuser, Hydroformed Specular Aluminum Reflector with IES Type II Optics, HPF, Constant Wattage Autotransformer Ballast. As a Standard Feature, Fixture shall be Suitable for Stem Mounting.

C / E1.9 UNDERPASS LIGHT FIXTURE DETAIL
NOT TO SCALE

20' 10' 0 20' 40' 60'
SCALE: 1"=20'
GRAPHIC SCALE

DATE	REVISION

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERPASS LIGHTING PLAN

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

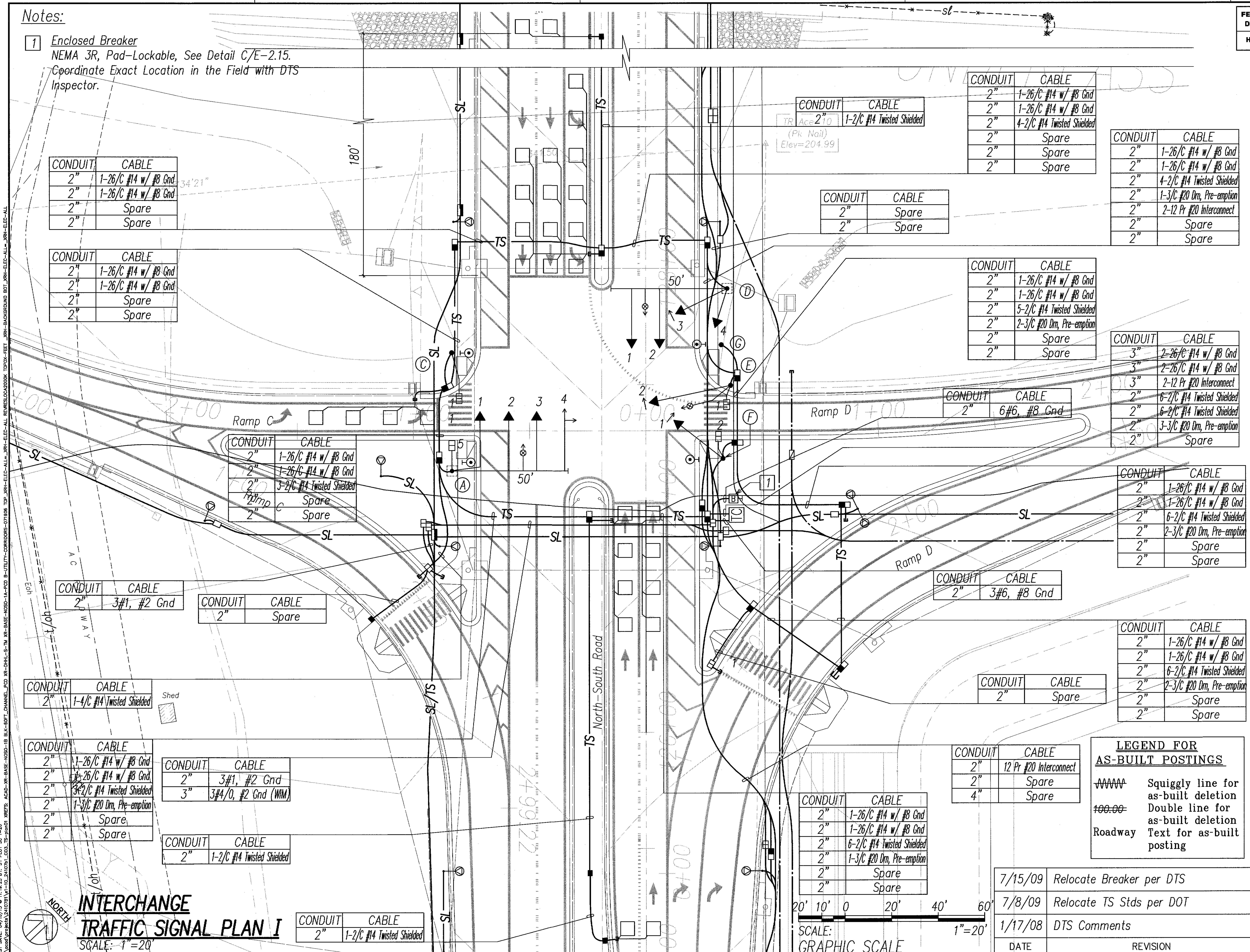
SHEET No. E1.9 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO322	380

Notes:

1 Enclosed Breaker
NEMA 3R, Pad-Lockable, See Detail C/E-2.15.
Coordinate Exact Location in the Field with DTS Inspector.



CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	4-2/C #14 Twisted Shielded
2"	Spare
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	4-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	2-12 Pr #20 Interconnect
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	5-2/C #14 Twisted Shielded
2"	2-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
3"	2-26/C #14 w/ #8 Gnd
3"	2-26/C #14 w/ #8 Gnd
3"	2-12 Pr #20 Interconnect
2"	6-2/C #14 Twisted Shielded
2"	6-2/C #14 Twisted Shielded
2"	3-3/C #20 Dm, Pre-emption
2"	Spare

CONDUIT	CABLE
2"	6#6, #8 Gnd

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	3-2/C #14 Twisted Shielded
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	6-2/C #14 Twisted Shielded
2"	2-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	3#6, #8 Gnd

CONDUIT	CABLE
2"	3#1, #2 Gnd

CONDUIT	CABLE
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	6-2/C #14 Twisted Shielded
2"	2-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	Spare

CONDUIT	CABLE
2"	1-4/C #14 Twisted Shielded

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	3-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	3#1, #2 Gnd
3"	3#4/0, #2 Gnd (WIM)

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	12 Pr #20 Interconnect
2"	Spare
4"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	6-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

TRAFFIC SIGNAL HEAD SCHEDULE

TRAFFIC SIGNAL HEAD TYPE AND DESCRIPTION	POLE LETTER – SIGNAL HEAD NUMBER
12" RYG Traffic Signal Head	
12" RYGA (Left) Traffic Signal Head	A-4 *, D-3, E-2, F-1
12" RYGA Traffic Signal Head	A-1, A-2, A-3, D-1, D-2, D-4
Pedestrian Signal Head	A-1, C-1, E-1, F-2

* Indicates Programmed Visibility Traffic Signal Head

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

DATE	REVISION
7/15/09	Relocate Breaker per DTS
7/8/09	Relocate TS Stds per DOT
1/17/08	DTS Comments

GRAPHIC SCALE
20' 10' 0 20' 40' 60'
SCALE: 1"=20'

INTERCHANGE TRAFFIC SIGNAL PLAN I

SCALE: 1"=20'

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
AUG 2013

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INTERCHANGE TRAFFIC SIGNAL PLAN I

North–South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

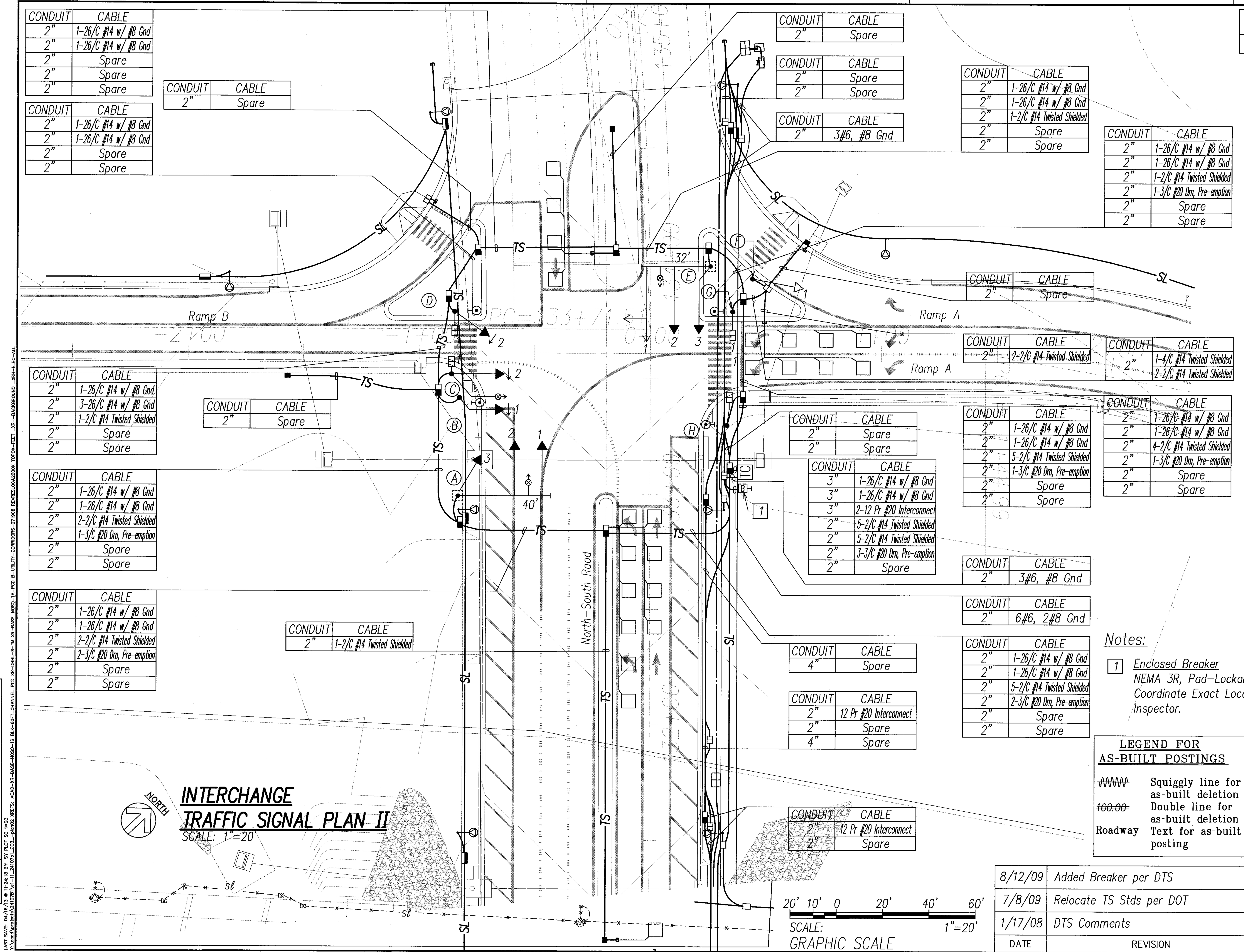
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.10 OF 66 SHEETS

"AS-BUILT" CO322

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO323	380



CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	Spare
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	3-26/C #14 w/ #8 Gnd
2"	1-2/C #14 Twisted Shielded
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	2-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	2-2/C #14 Twisted Shielded
2"	2-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	Spare

CONDUIT	CABLE
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	3#6, #8 Gnd

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	1-2/C #14 Twisted Shielded
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	1-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	Spare

CONDUIT	CABLE
2"	2-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	1-4/C #14 Twisted Shielded 2-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	Spare
2"	Spare

CONDUIT	CABLE
3"	1-26/C #14 w/ #8 Gnd
3"	1-26/C #14 w/ #8 Gnd
3"	2-12 Pr #20 Interconnect
2"	5-2/C #14 Twisted Shielded
2"	5-2/C #14 Twisted Shielded
2"	3-3/C #20 Dm, Pre-emption
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	5-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	4-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	3#6, #8 Gnd

CONDUIT	CABLE
2"	6#6, 2#8 Gnd

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-26/C #14 w/ #8 Gnd
2"	5-2/C #14 Twisted Shielded
2"	2-3/C #20 Dm, Pre-emption
2"	Spare
2"	Spare

CONDUIT	CABLE
4"	Spare

CONDUIT	CABLE
2"	12 Pr #20 Interconnect
2"	Spare
4"	Spare

CONDUIT	CABLE
2"	12 Pr #20 Interconnect
2"	Spare

TRAFFIC SIGNAL HEAD SCHEDULE

TRAFFIC SIGNAL HEAD TYPE AND DESCRIPTION	POLE LETTER – SIGNAL HEAD NUMBER
12" RYG Traffic Signal Head	F-1
12" RYGA (Left) Traffic Signal Head	B-1 C-2 E-1 * D-2
12" RYGA Traffic Signal Head	A-1 A-2 E-2 E-3 A-3
Pedestrian Signal Head	C-1 D-1 G-1 H-1

* Indicates Programmed Visibility Traffic Signal Head

Notes:

1. Enclosed Breaker
NEMA 3R, Pad-Lockable, See Detail C/E-2.15.
Coordinate Exact Location in the Field with DTS Inspector.

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

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
5 AUG 2013

DATE	REVISION
8/12/09	Added Breaker per DTS
7/8/09	Relocate TS Stds per DOT
1/17/08	DTS Comments

20' 10' 0 20' 40' 60'
SCALE: 1"=20'
GRAPHIC SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INTERCHANGE TRAFFIC SIGNAL PLAN II

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

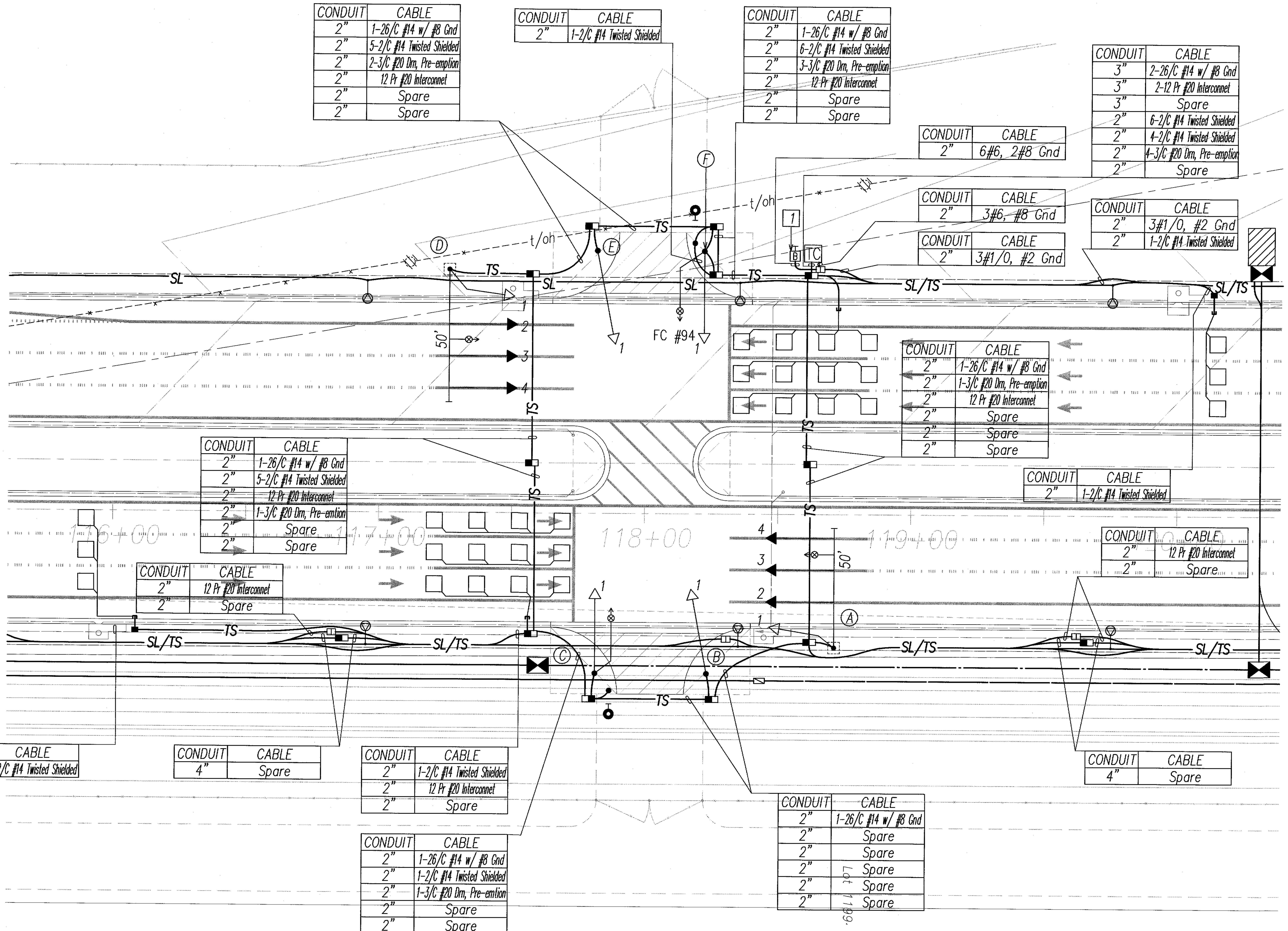
Scale: AS NOTED
Date: Feb 21, 2007

SHEET No. E1.11 OF 66 SHEETS

"AS-BUILT" CO323

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	C0324	380



CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	5-2/C #14 Twisted Shielded
2"	2-3/C #20 Dm, Pre-emption
2"	12 Pr #20 Interconnet
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	6-2/C #14 Twisted Shielded
2"	3-3/C #20 Dm, Pre-emption
2"	12 Pr #20 Interconnet
2"	Spare
2"	Spare

CONDUIT	CABLE
3"	2-26/C #14 w/ #8 Gnd
3"	2-12 Pr #20 Interconnet
3"	Spare
2"	6-2/C #14 Twisted Shielded
2"	4-2/C #14 Twisted Shielded
2"	4-3/C #20 Dm, Pre-emption
2"	Spare

CONDUIT	CABLE
2"	6#6, 2#8 Gnd

CONDUIT	CABLE
2"	3#6, #8 Gnd

CONDUIT	CABLE
2"	3#1/0, #2 Gnd

CONDUIT	CABLE
2"	3#1/0, #2 Gnd
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-3/C #20 Dm, Pre-emption
2"	12 Pr #20 Interconnet
2"	Spare
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	5-2/C #14 Twisted Shielded
2"	12 Pr #20 Interconnet
2"	1-3/C #20 Dm, Pre-emtion
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
2"	12 Pr #20 Interconnet
2"	Spare

CONDUIT	CABLE
2"	12 Pr #20 Interconnet
2"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded

CONDUIT	CABLE
4"	Spare

CONDUIT	CABLE
2"	1-2/C #14 Twisted Shielded
2"	12 Pr #20 Interconnet
2"	Spare

CONDUIT	CABLE
4"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	Spare
2"	Spare
2"	Spare
2"	Spare
2"	Spare

CONDUIT	CABLE
2"	1-26/C #14 w/ #8 Gnd
2"	1-2/C #14 Twisted Shielded
2"	1-3/C #20 Dm, Pre-emtion
2"	Spare
2"	Spare
2"	Spare

TRAFFIC SIGNAL HEAD SCHEDULE

TRAFFIC SIGNAL HEAD TYPE AND DESCRIPTION	POLE LETTER – SIGNAL HEAD NUMBER
12" RYG Traffic Signal Head	A-1, B-1, C-1, D-1, E-1, F-1
12" RYGA (Left) Traffic Signal Head	
12" RYGA Traffic Signal Head	A-2, A-3, A-4, D-2, D-3, D-4
Pedestrian Signal Head	

* Indicates Programmed Visibility Traffic Signal Head

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

Notes:

[1] Enclosed Breaker
NEMA 3R, Pad-Lockable, See Detail C/E-2.15. Coordinate Exact Location in the Field with DTS Inspector.

NORTH

NORTH-SOUTH ROAD TRAFFIC SIGNAL PLAN III

SCALE: 1"=20'

20' 10' 0 20' 40' 60'
SCALE: 1"=20'
GRAPHIC SCALE

DATE	REVISION
7/15/09	Relocate Breaker per DTS
1/17/08	DTS Comments

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
5 AUG 2013

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NORTH-SOUTH ROAD
TRAFFIC SIGNAL PLAN III
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.12 OF 66 SHEETS

"AS-BUILT" C0324

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

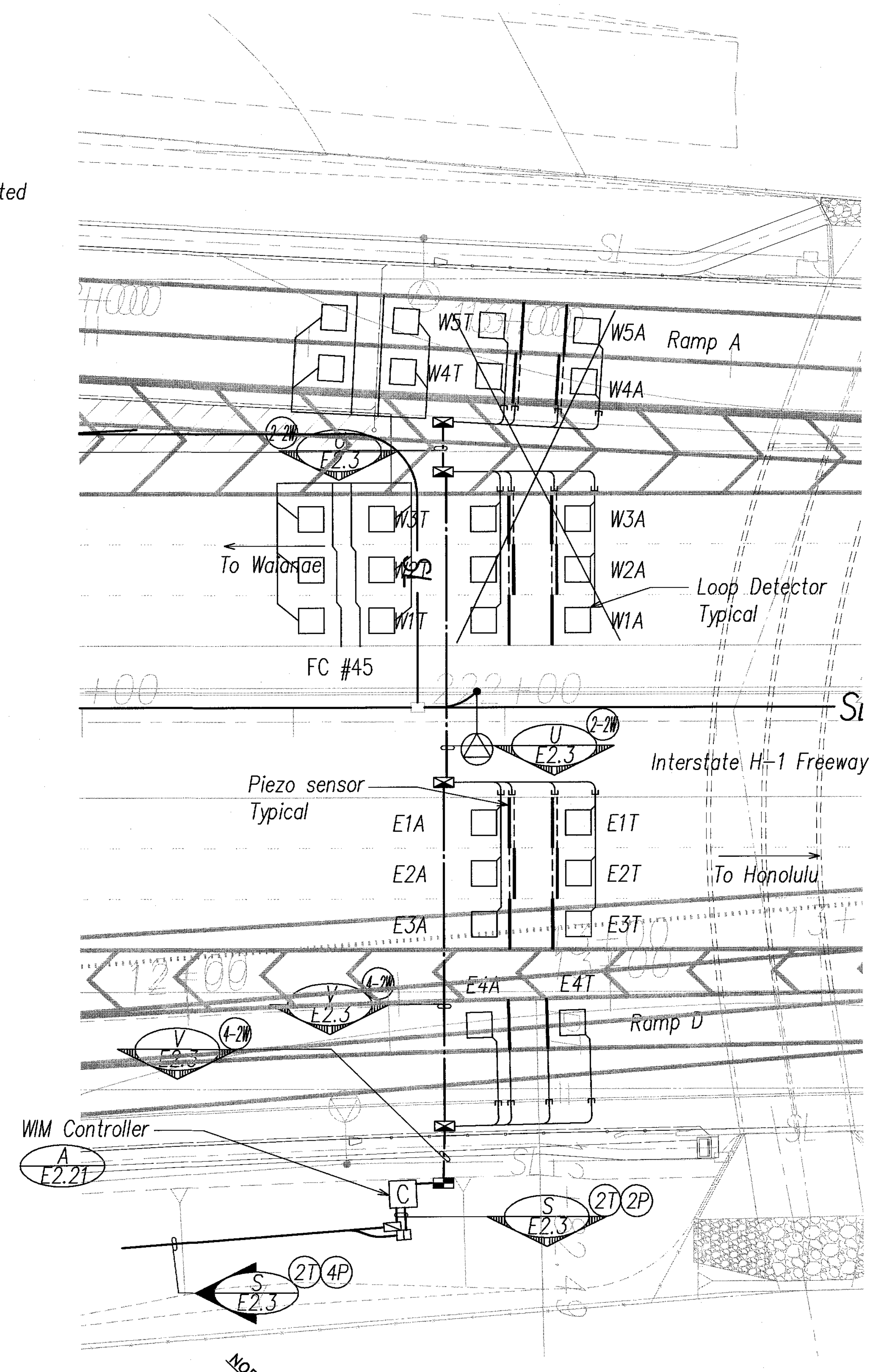
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 325	380

GENERAL NOTES

1. The locations of new inductance loops, piezo sensors, pullboxes and cabinets/junction boxes shall be staked out in the field by the Contractor and approved by the Engineer prior to installation.
2. The Contractor shall inform the Engineer at least three days prior to saw-cutting pavement and installing inductance loops.
3. Continuity of inductance loops, piezo sensors, and lead-in wires shall be tested and warranted by the Contractor for one year from date of acceptance.
4. The Contractor shall restore all affected areas to their original condition. This item of work shall not be paid for separately, but shall be considered incidental to work of other paid items.
5. The Contractor shall verify the locations of the existing utilities and underground structures whether or not shown on plans.
6. The Contractor shall assume that existing underground utilities not shown on the plans may exist, therefore, he shall contact the utility companies for information and toning.
7. The Contractor shall be held liable for any damages incurred to the existing utilities and under ground structures as a result of his operation. All damaged portions shall be replaced in accordance with the Standards and Specifications of the affected utility company at no cost to the STATE.
8. Changes to the contract plans and specifications shall not be permitted, unless otherwise authorized by the Engineer, upon written justification and request for approval by the Contractor.
9. Highway crossing sleeve shall be provided with 36" cover.

GENERAL NOTES

1. Detector loop shall consist of four (4) turns of 1/c #12 meeting IMSA SPEC 51-5 or equivalent embedded in a 3/8" minimum sawcut, except as noted.
2. Loop and lead-in to the first pullbox shall be one continuous wire. Lead-in wires from the same loop shall be twisted in pairs, two turns per foot. DO NOT twist one loop-pairs with another loop-pairs.
3. All lead-in wires shall be crimped with open end lugs that will fit into the terminal board slots snugly.
4. Stager traffic loops on roadway less than 12 foot lane width.
5. The Contractor shall connect the inductance wires on each terminal slot.
6. The left lane in the direction of traffic flow is designated as Lane 1, and the lane next to its right as Lane 2 and so on as indicated on plans.
7. Vacuum and clean sawcut thoroughly before installing sensors and/or cables and filling with hot tar or epoxy sealant.
8. All loop lead-in wires in all enclosures including pullboxes shall be identified and labeled by direction of traffic flow and lane numbers as shown on plans.
9. All cables and wires terminated within an enclosure shall have a minimum 12" additional slack.



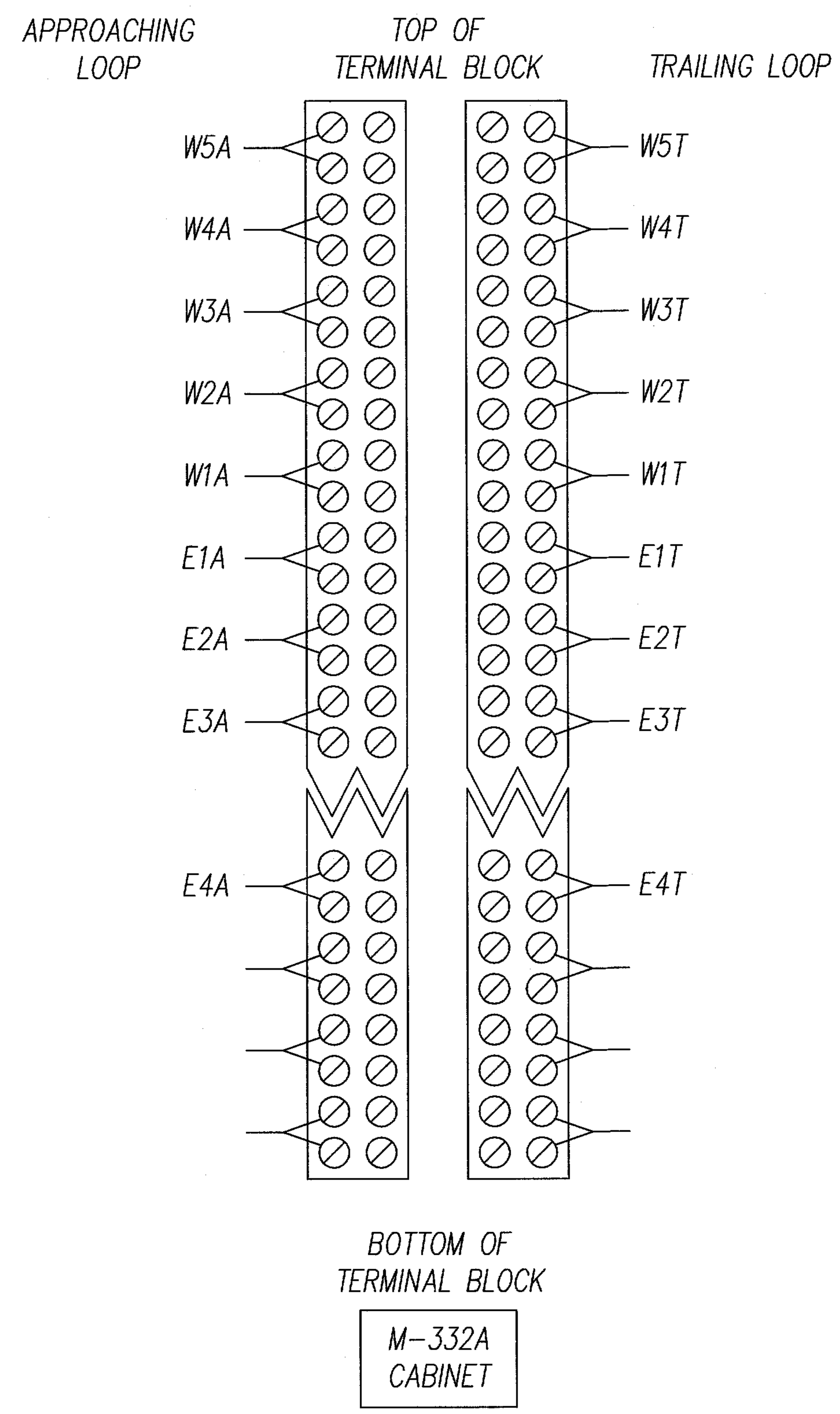
WEIGH-IN-MOTION STATION PLAN
INTERSTATE H-1 STA. 222+00

SCALE: 1"=20'

20' 10' 0 20' 40' 60'

SCALE: 1"=20'

GRAPHIC SCALE



CONNECTING LAYOUT OF LOOP LEAD-IN WIRES TO TERMINAL BLOCK INSIDE M332A CABINET

LEGEND:
W = WEST
E = EAST
A = APPROACHING
T = TRAILING

LEGEND FOR AS-BUILT POSTINGS

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

DATE	REVISION
4/20/07	△ Revised WIM notes

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4199-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WEIGH-IN-MOTION STATION PLAN
INTERSTATE H-1 STA. 222+00

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

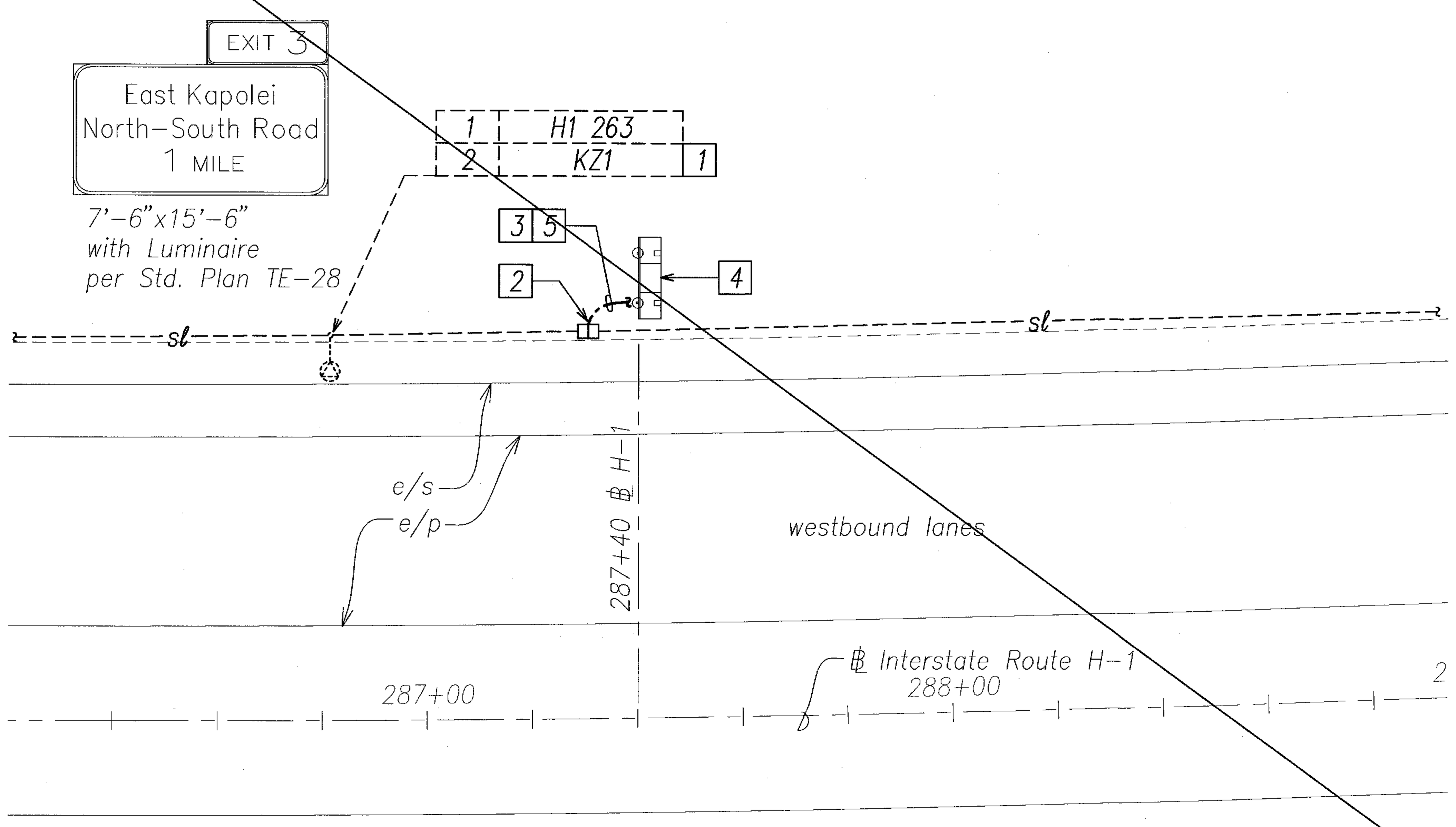
SHEET No. E1.13 OF 66 SHEETS

"AS-BUILT" ADD. 325

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

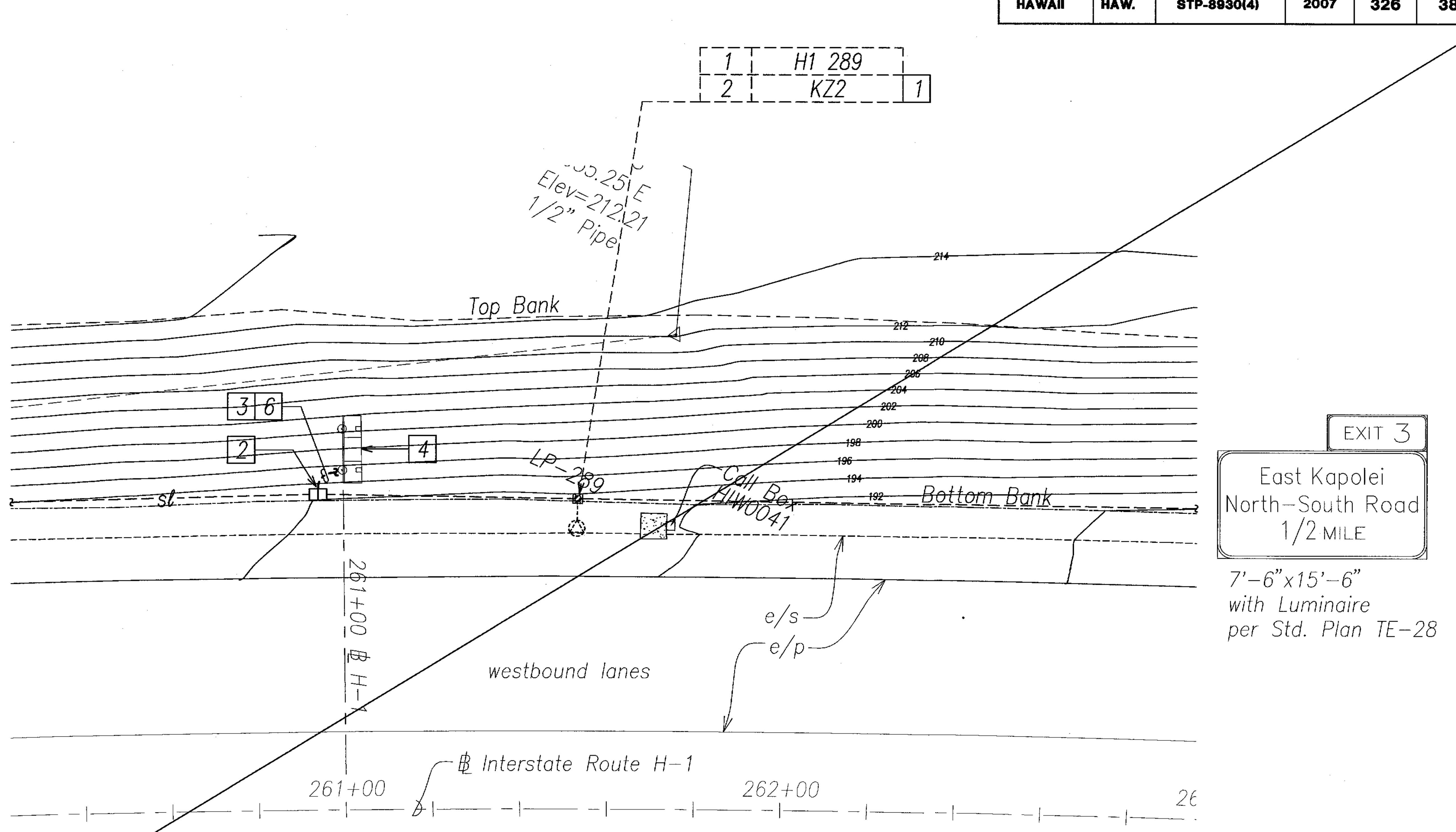
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	326	380

FEB 21, 2007



NORTH

WESTBOUND 1 MILE SIGN LIGHTING PLAN 1
SCALE: 1"=20'



NORTH

WESTBOUND 1/2 MILE SIGN LIGHTING PLAN 1
SCALE: 1"=20'

Notes:

1. See Sheets E5.1 through E5.6 to de-energize existing lighting circuits.
2. De-energize lighting circuits, expose existing ductline, carefully chip existing concrete jacket, intercept existing conduits with pullbox and remove conduits to expose cables.
3. 2"C, 2#6 RHW-USE, #6 Gnd to Sign Lights. Splice to existing cables in pullbox, provide two In-Line Connector Kits with 6A Fuses.
4. Provide Sign Lights and Appurtenances per State Hwys-DOT Standard Plans TE-23 & TE-28.
5. Connect Sign Lights to existing circuit KZ1AB.
6. Connect Sign Lights to existing circuit KZ2AB.

LEGEND FOR AS-BUILT POSTINGS

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

GARY I. FUNASAKI
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No. 6193-E

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5 AUG 2013

20' 10' 0 20' 40' 60'
SCALE: 1"=20'
GRAPHIC SCALE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DESTINATION SIGN LIGHTING PLANS - 1

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED   Date: Feb 21, 2007

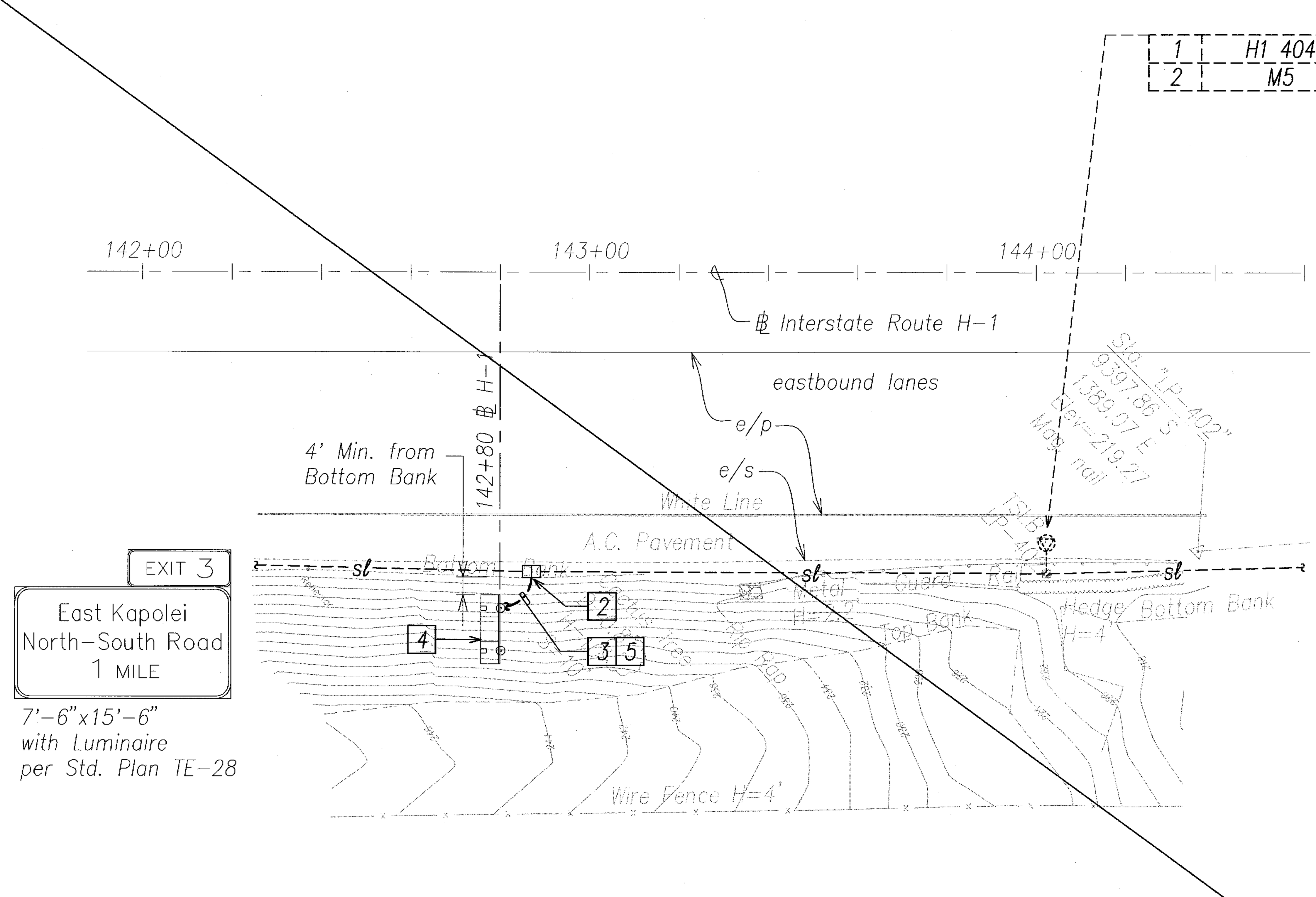
SHEET No. E1.14 OF 66 SHEETS

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

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	327	380

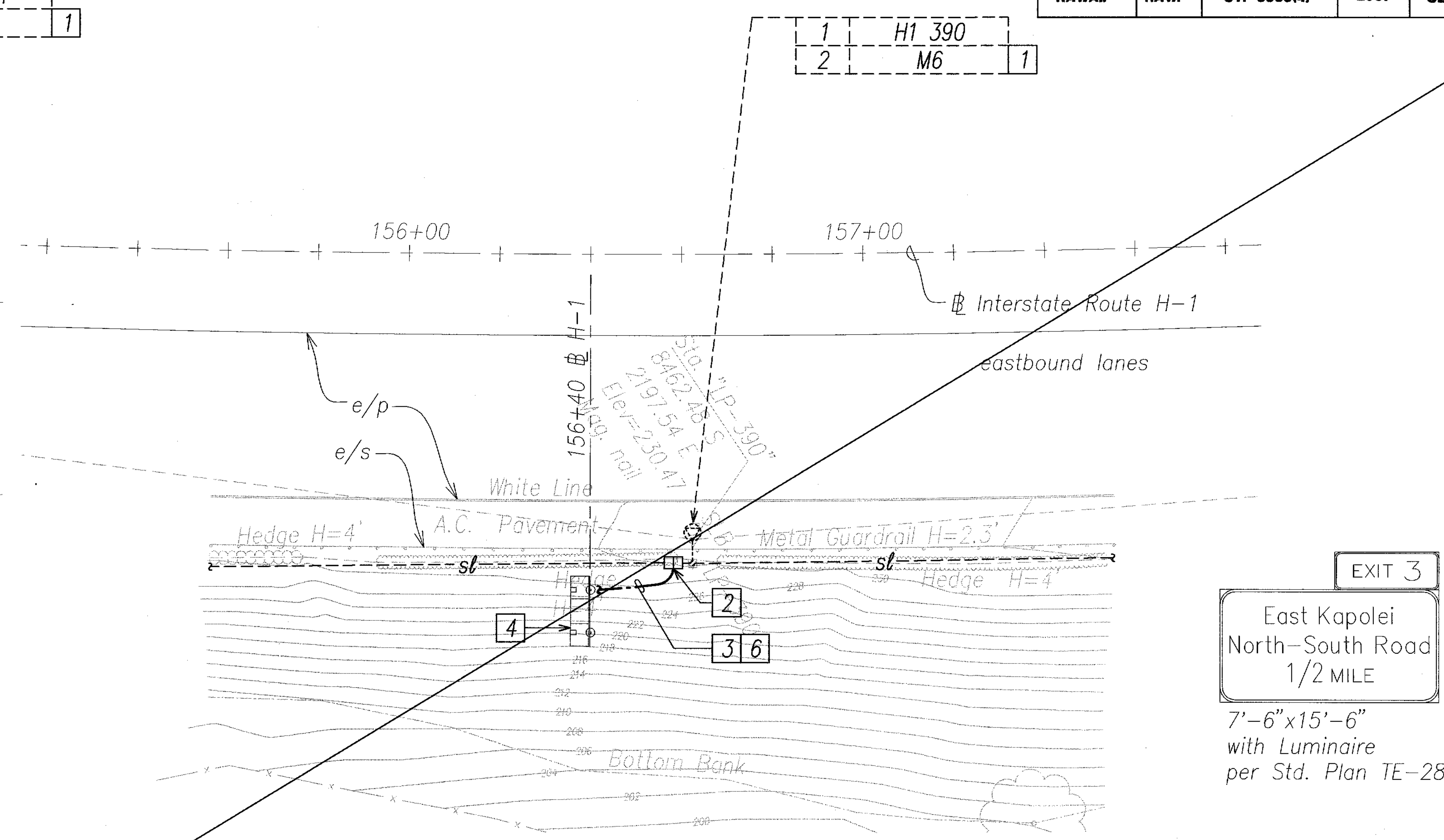
FEB 21, 2007



NORTH

EASTBOUND 1 MILE SIGN LIGHTING PLAN 1

SCALE: 1"=20'



NORTH

EASTBOUND 1/2 MILE SIGN LIGHTING PLAN 1

SCALE: 1"=20'

Notes:

1. See Sheets E5.1 through E5.6 to de-energize existing lighting circuits.
2. De-energize lighting circuits, expose existing ductline, carefully chip existing concrete jacket, intercept existing conduits with pullbox and remove conduits to expose cables.
3. 2"C, 2#6 RHW-USE, #6 Gnd to Sign Lights. Splice to existing cables in pullbox, provide two In-Line Connector Kits with 6A Fuses.
4. Provide Sign Lights and Appurtenances per State Hwys-DOT Standard Plans TE-23 & TE-28.
5. Connect Sign Lights to existing circuit M5AB.
6. Connect Sign Lights to existing circuit M6AB.

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

GARY I. FUNASAKI
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HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

5 AUG 2013

20' 10' 0 20' 40' 60'

SCALE: 1"=20'

GRAPHIC SCALE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DESTINATION SIGN LIGHTING PLANS - 2

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

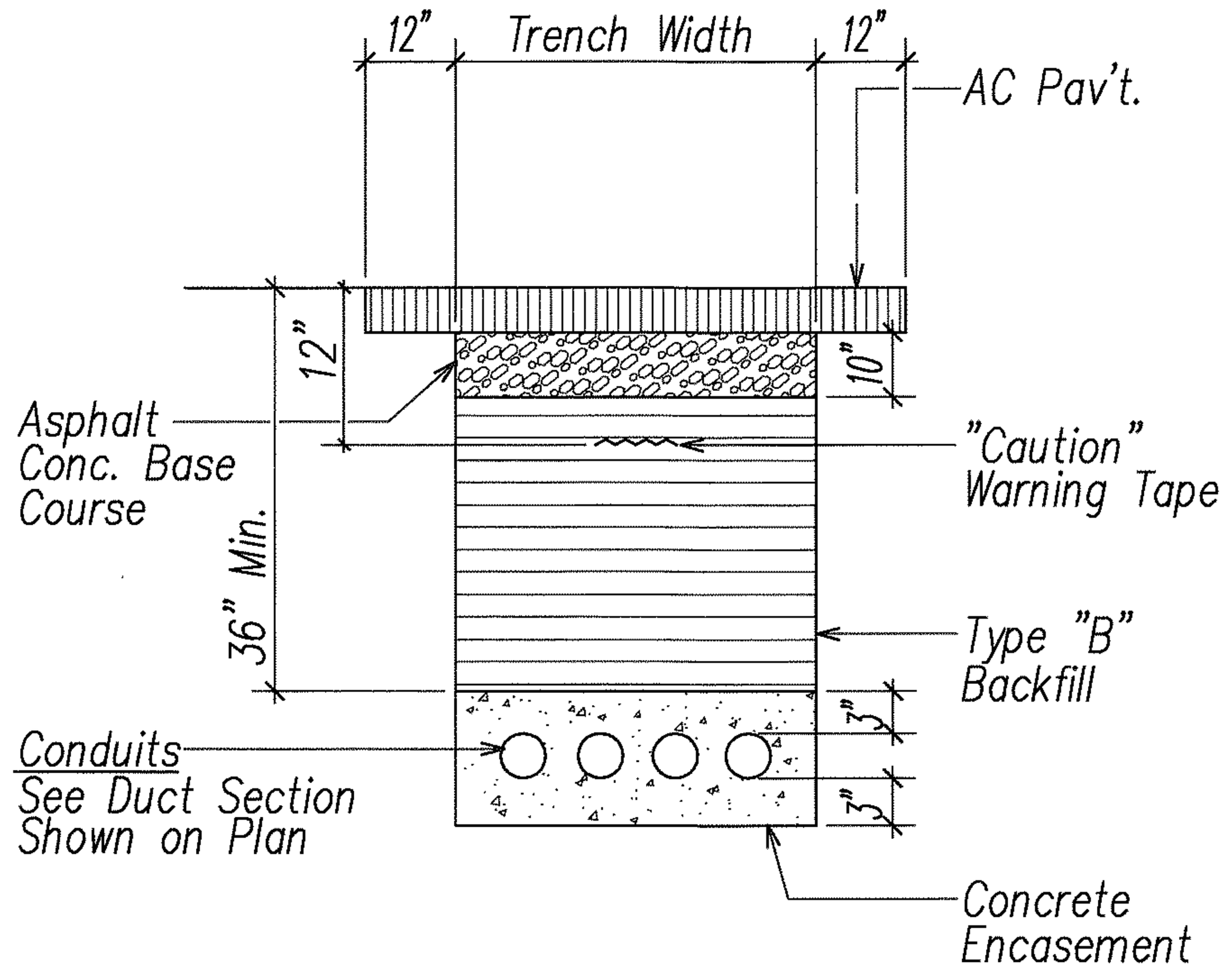
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E1.15 OF 66 SHEETS

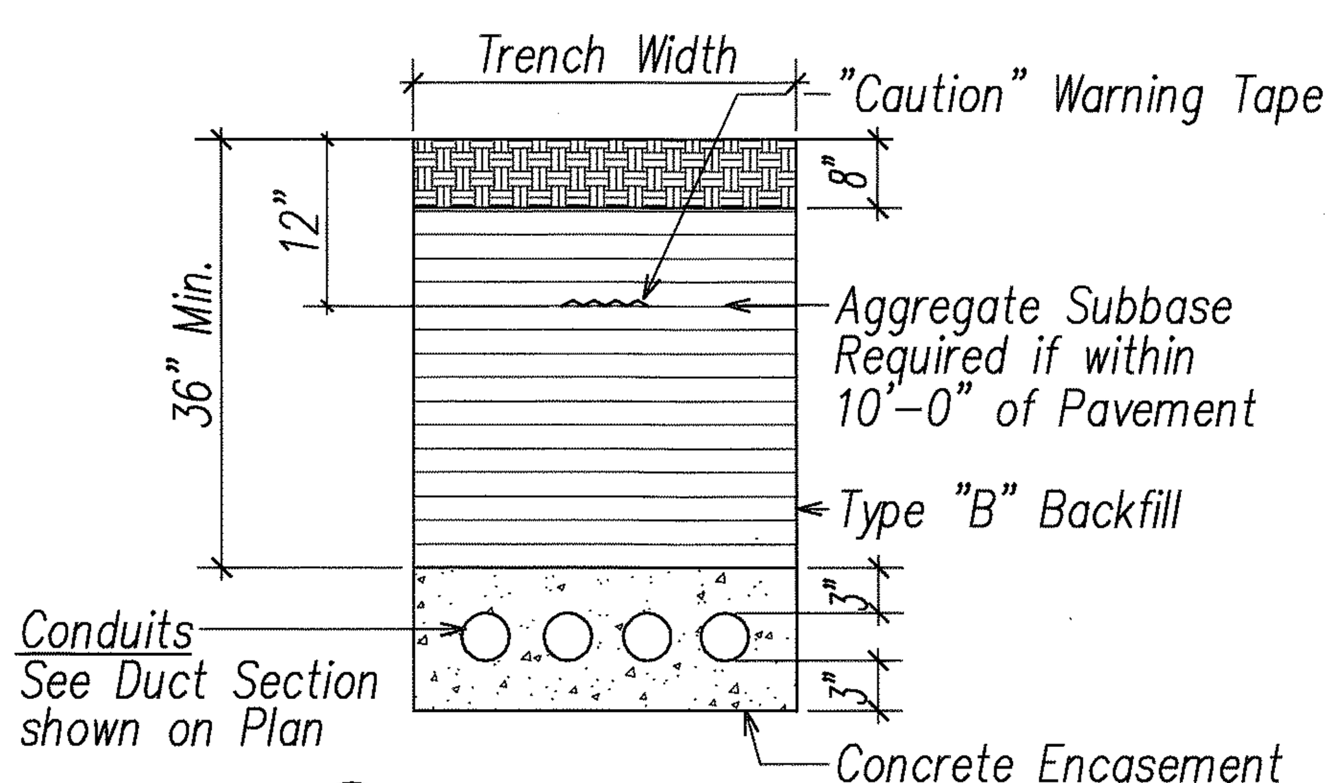
"AS-BUILT" 327

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	328	380



1 Backfill Section
Within State Right-of-Way
Under Roadway & Paved Shoulder



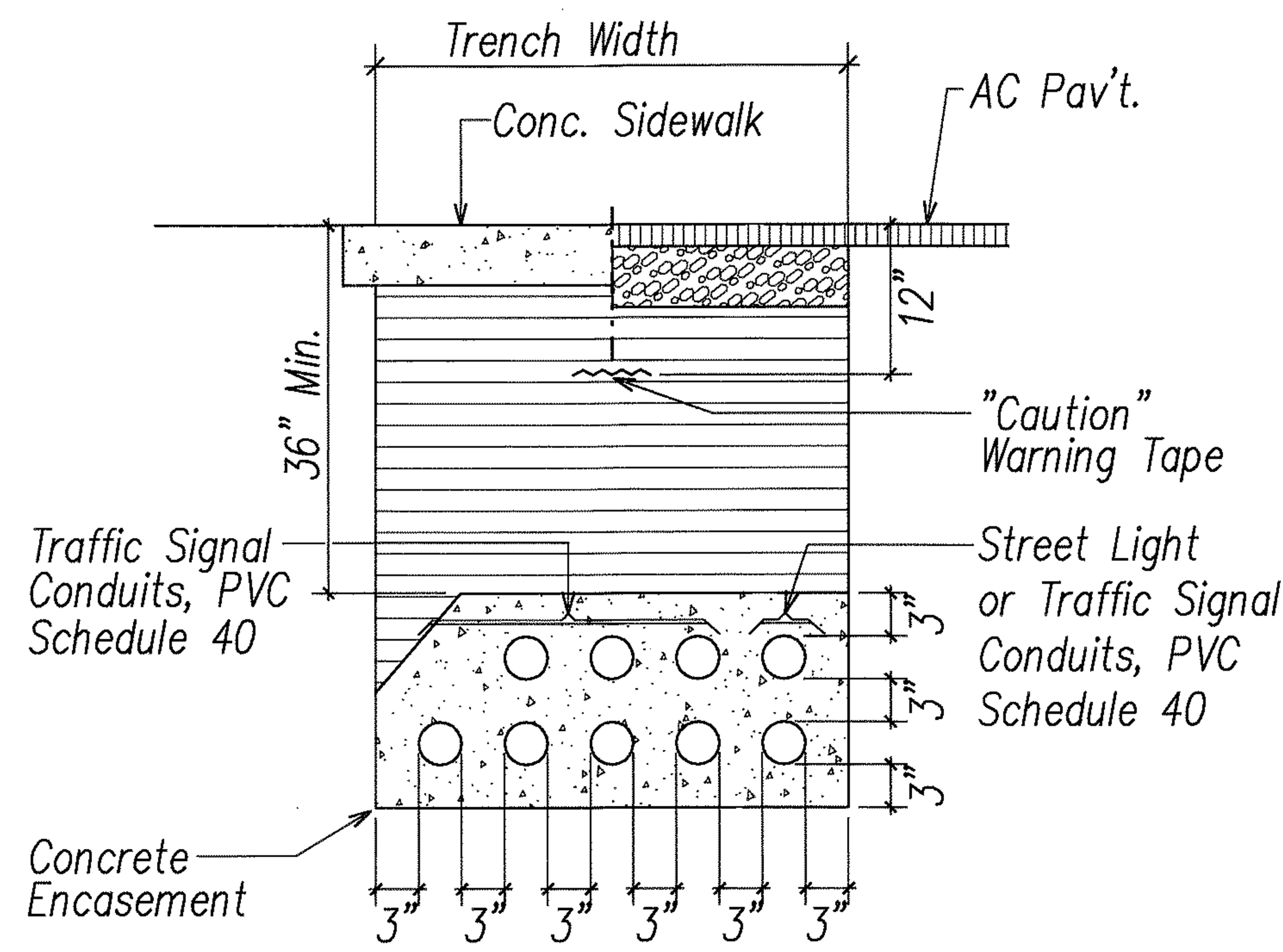
2 Backfill Section
Within State Right-of-Way
Under Unpaved Shoulder

STATE RIGHT-OF-WAY BACKFILL NOTES

- Trench Backfill Material "B"
  1. Sand Equivalent ≥ 2
  2. 8" Max. Lift Loose
  3. 95% Compaction
- Trench Backfill Material "A"
  1. Sand Equivalent ≥ 20
  2. 8" Max. Lift Loose
  3. 95% Compaction
- If Material Below Duct is not Equivalent to Backfill "A", Excavate Material & Provide 3" Backfill Material "A". See Above.
- Concrete – 3" Encasement, Class B.

Note: Base Course & Sub-Base Course per 1985 State Standard Specifications for Highway Construction.

A / E2.1 **STATE RIGHT-OF-WAY TYPICAL BACKFILL SECTIONS & NOTES**
Not to Scale



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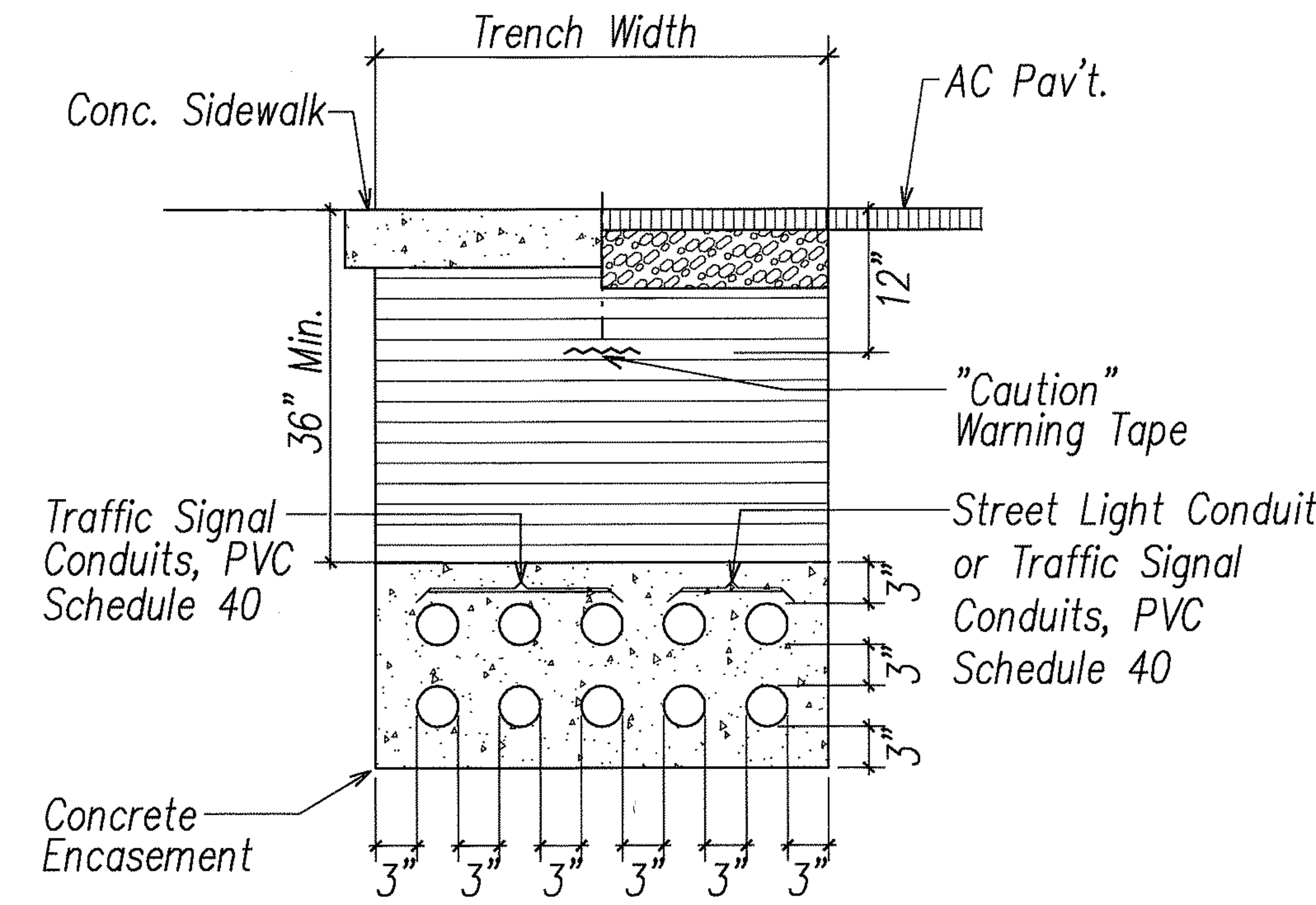

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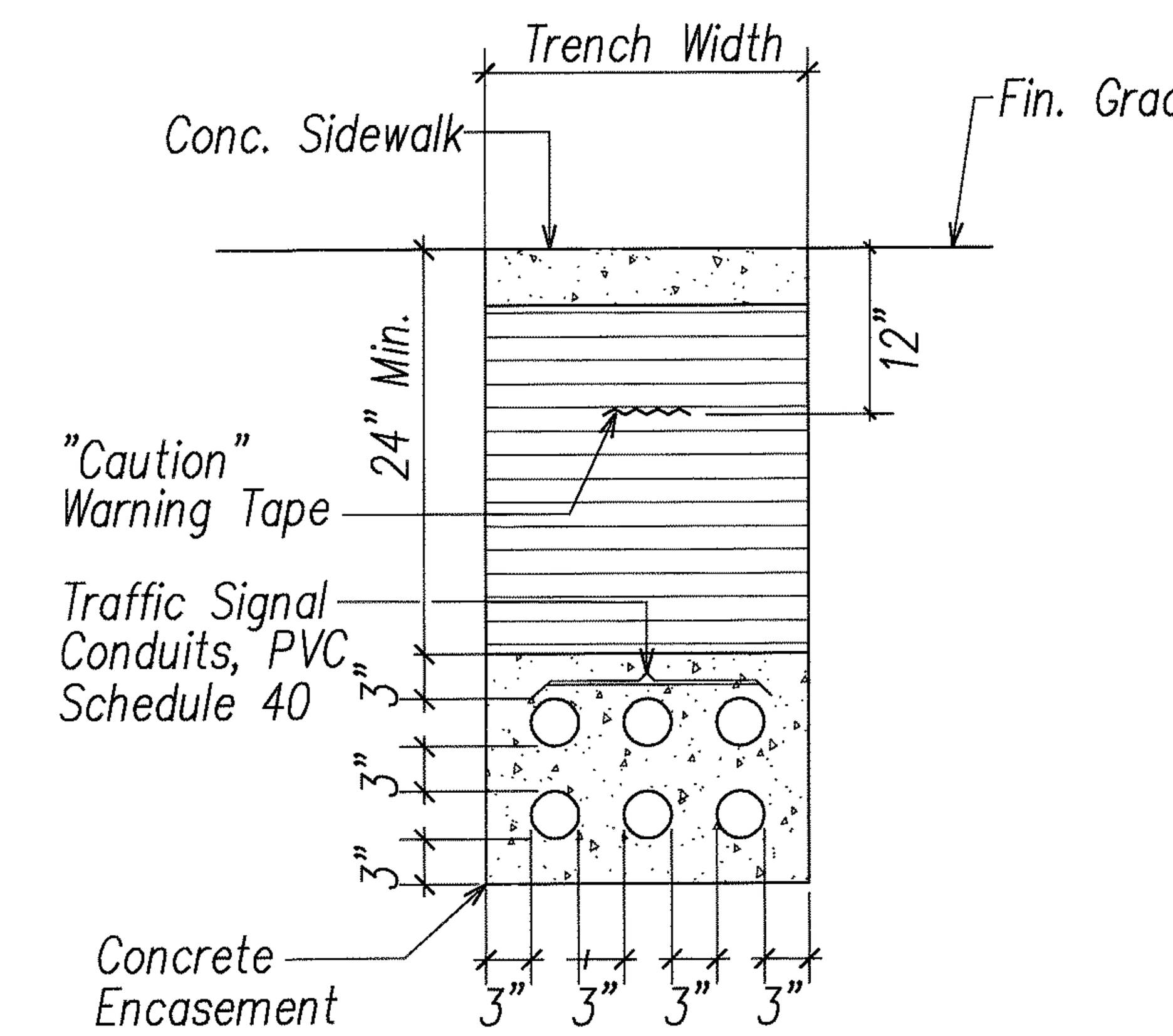

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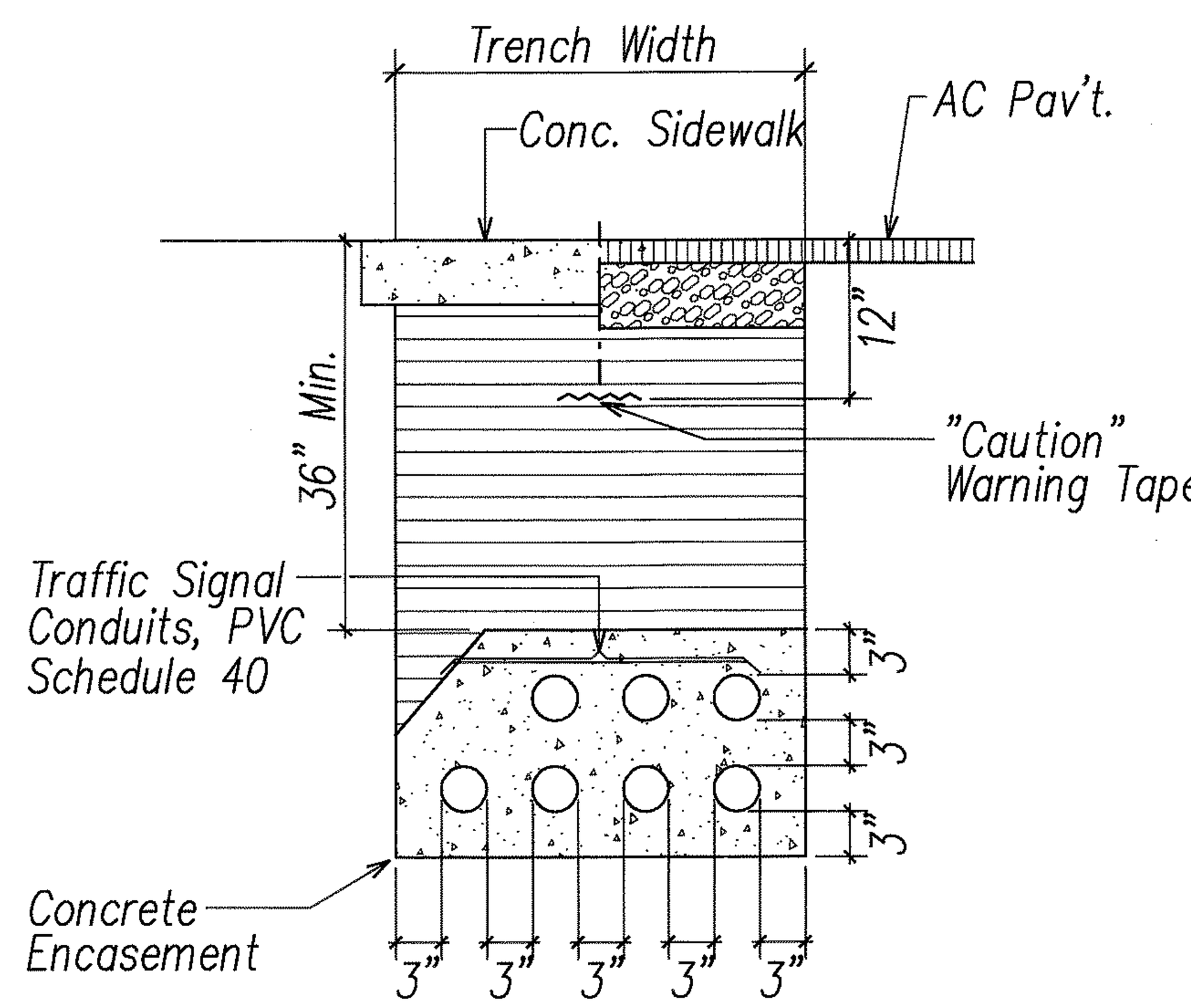

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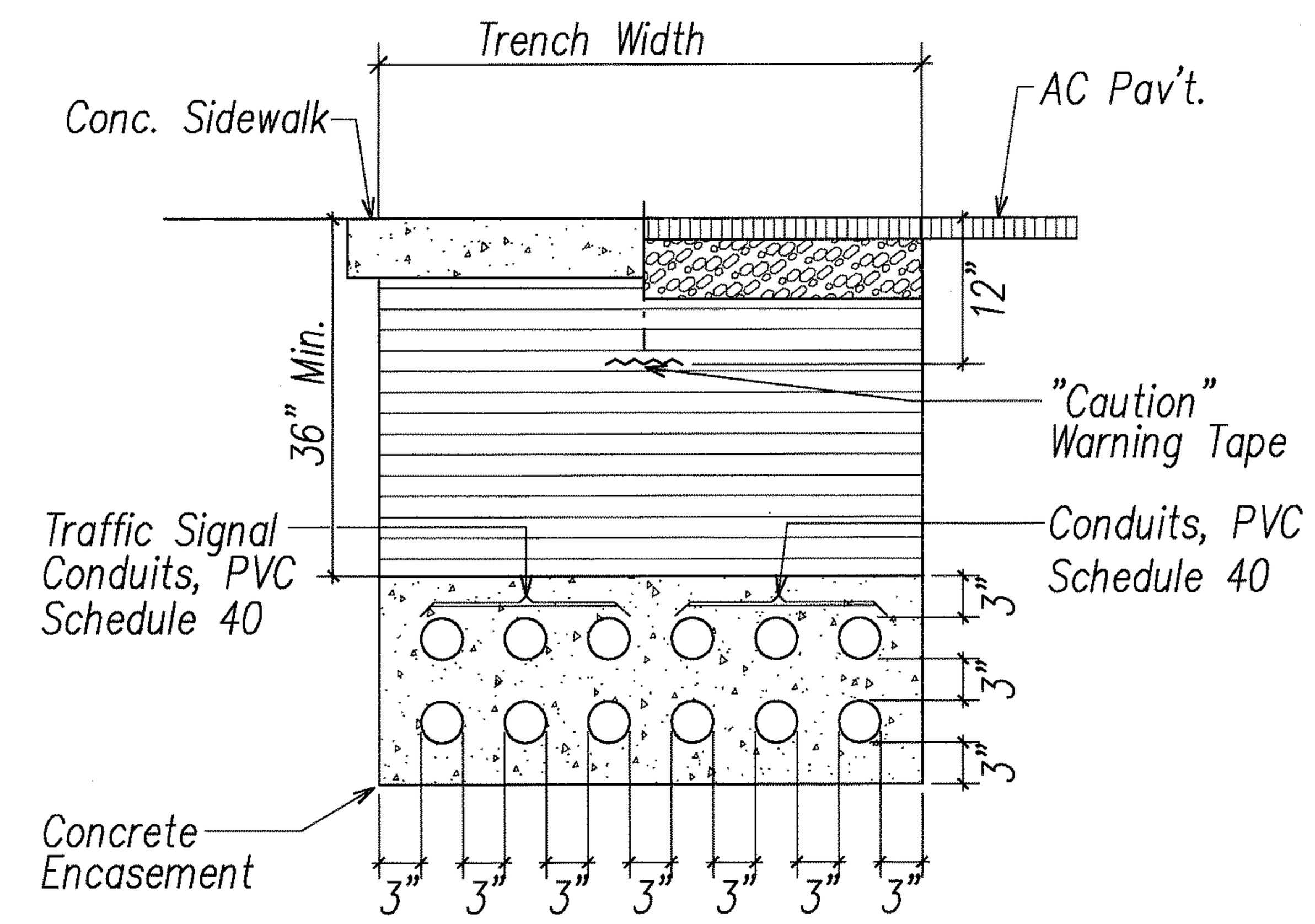

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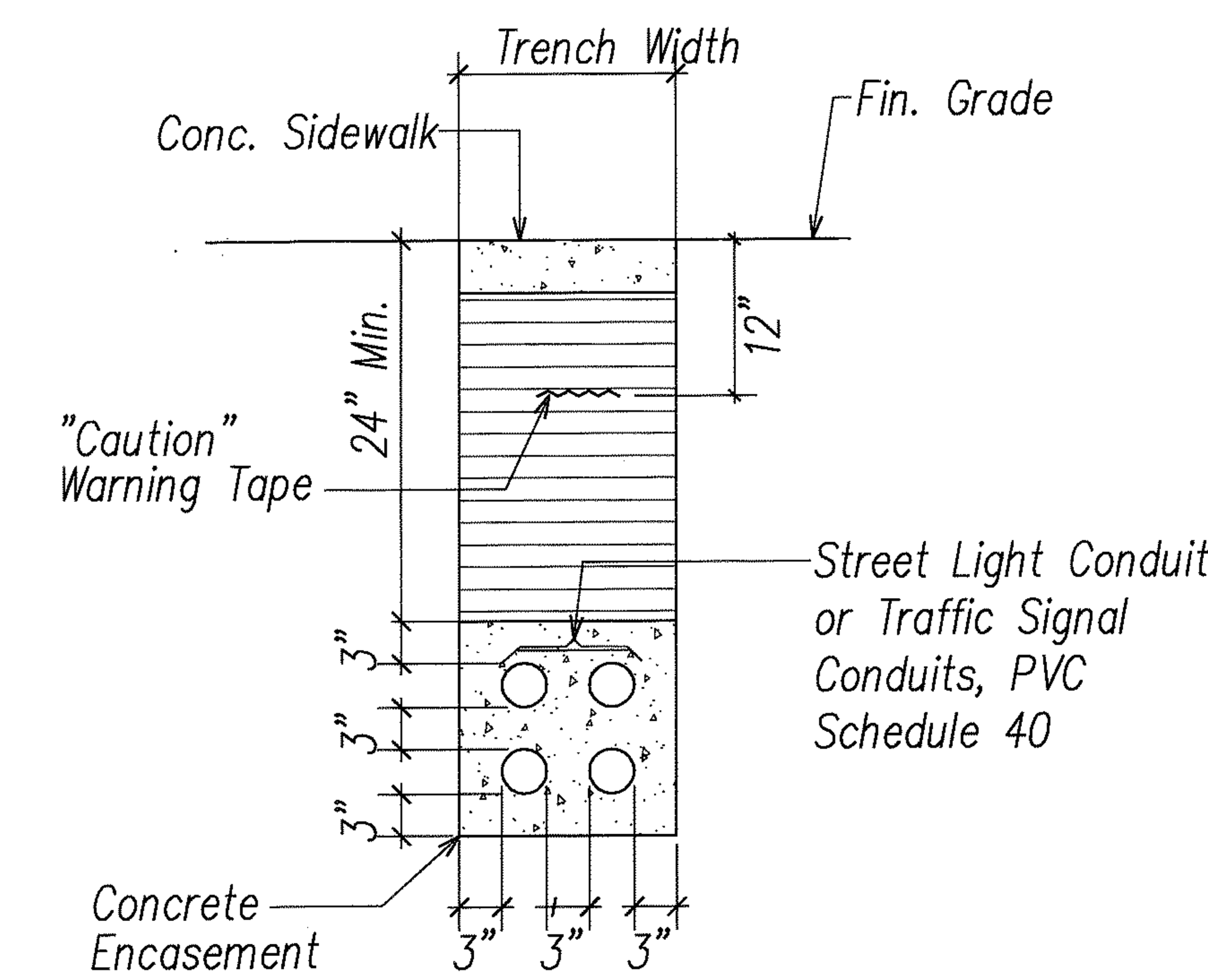

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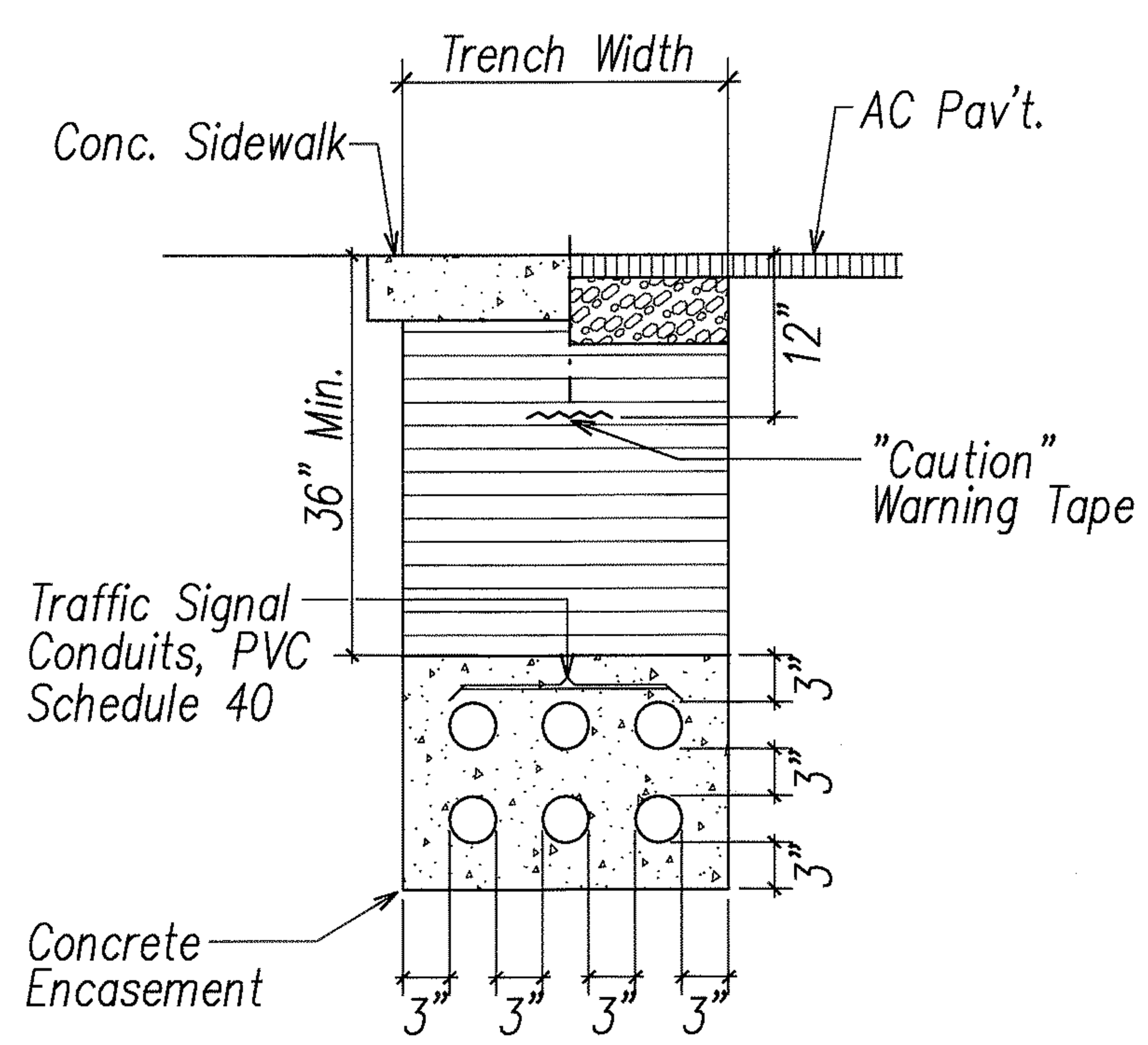

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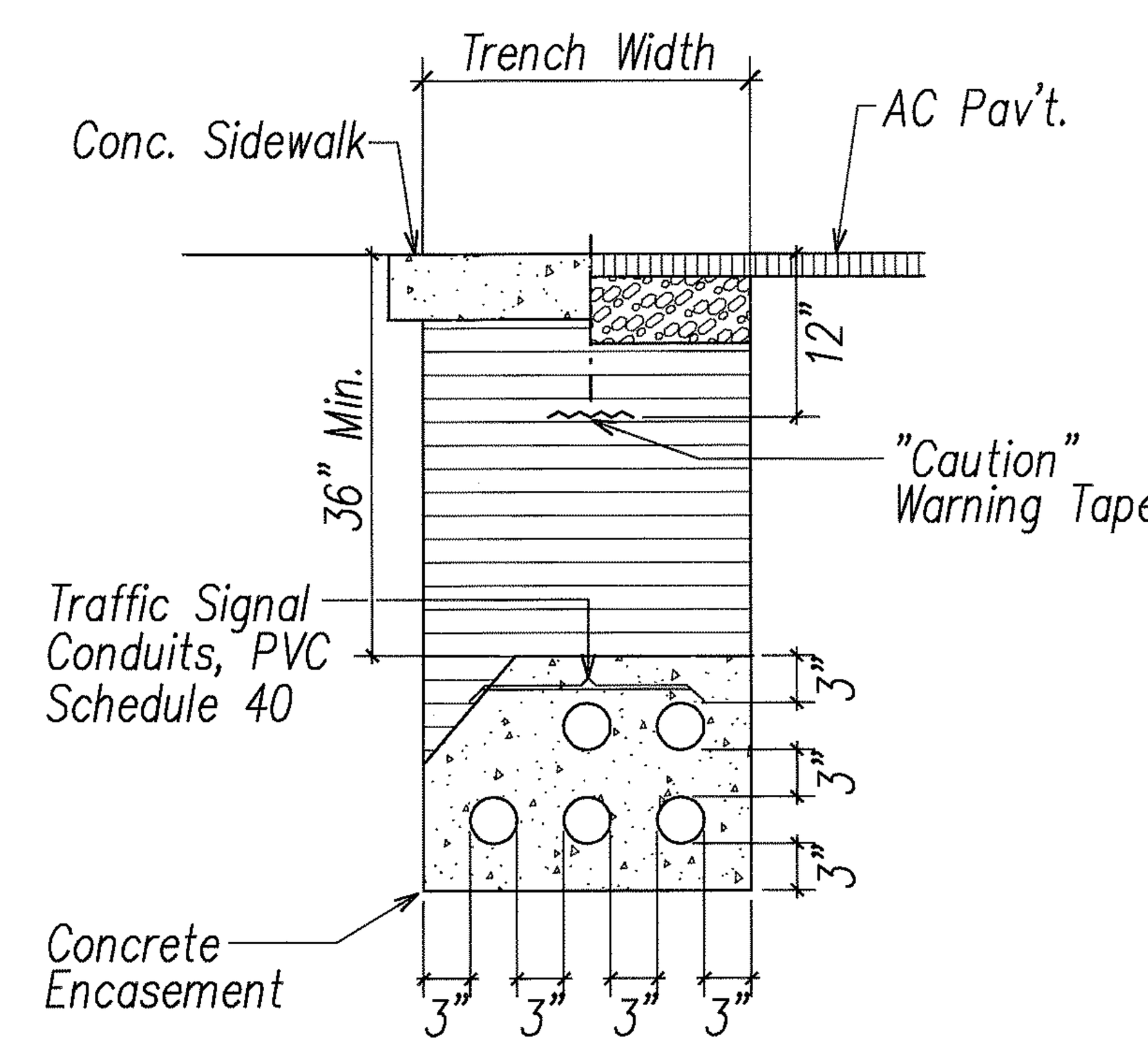

Section F

B / E2.1 **TYPICAL DUCT SECTIONS I**
Not to Scale

APPROVED BY:

CHIEF, MECHANICAL/ELECTRICAL DIVISION
DEPT. OF DESIGN AND CONSTRUCTION
CITY & COUNTY OF HONOLULU

DATE

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20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DUCT SECTIONS I

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

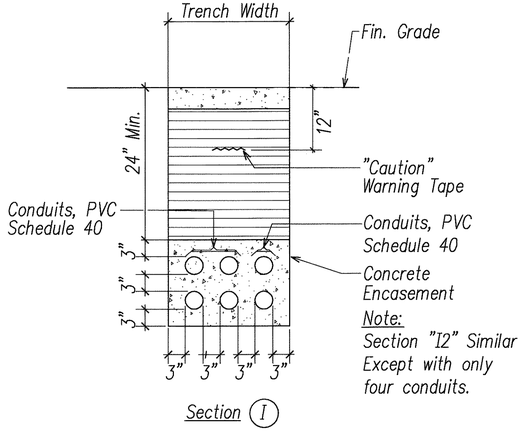
Scale: AS NOTED
Date: Feb 21, 2007

SHEET No. E2.1 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	329	380

CONDUIT SCHEDULE

Item	Description
(2E)	HECo 2" Conduit (PVC Schd. 40)
(1-2E)	HECo 2–2" Conduits (PVC Schd. 40)
(1-4E)	HECo 2–4" Conduits (PVC Schd. 40)
(1-4E)	HECo 3–4" Conduits (PVC Schd. 40)
(2T)	HTCo 2" Conduit
(4T)	HTCo 4" Conduit
(1½L)	Street Light 1½" Conduit
(2L)	Street Light 2" Conduit
(1-2L)	Street Light 2–2" Conduits
(1-2L)	Street Light 4–2" Conduits
(1S)	Traffic Signal 1" Conduit
(2S)	Traffic Signal 2" Conduit
(2-2S)	Traffic Signal 2–2" Conduits
(1-3S)	Traffic Signal 3–2" Conduits
(1-4S)	Traffic Signal 4–2" Conduits
(1-5S)	Traffic Signal 5–2" Conduits
(1-6S)	Traffic Signal 6–2" Conduits
(1-7S)	Traffic Signal 7–2" Conduits
(1-3S)	Traffic Signal 2–3" Conduits
(4P)	Power 2" Conduit
(2P)	Power 4" Conduit
(2W)	WIM 2" Conduit
(2-2W)	WIM 2–2" Conduits
(1-2W)	WIM 4–2" Conduits



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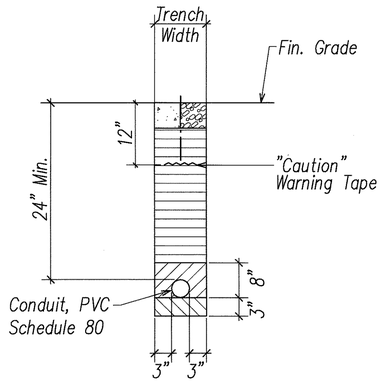

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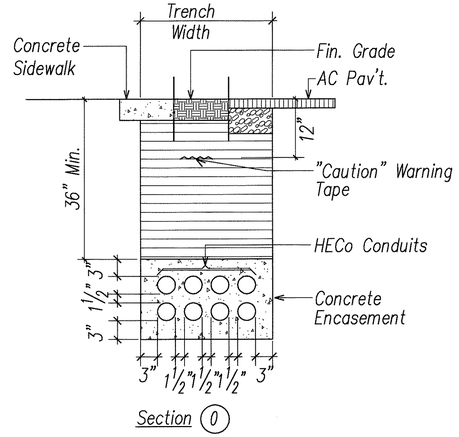

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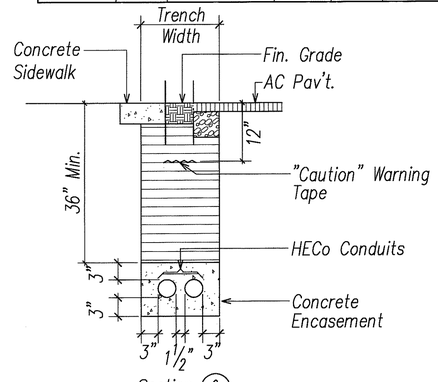

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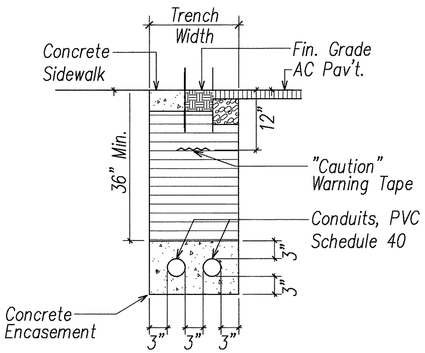

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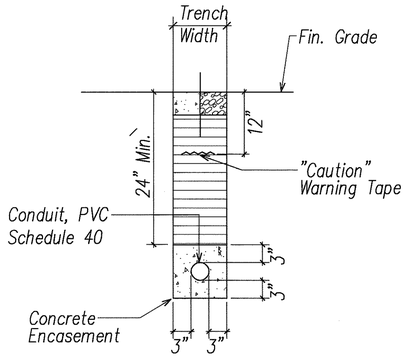

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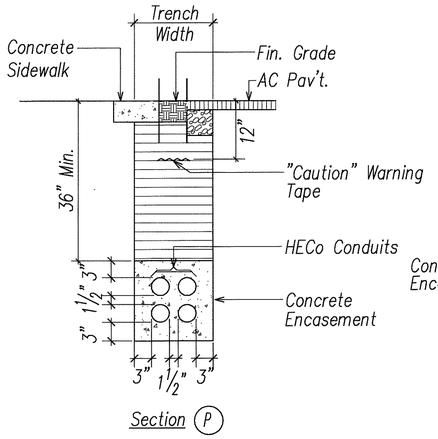

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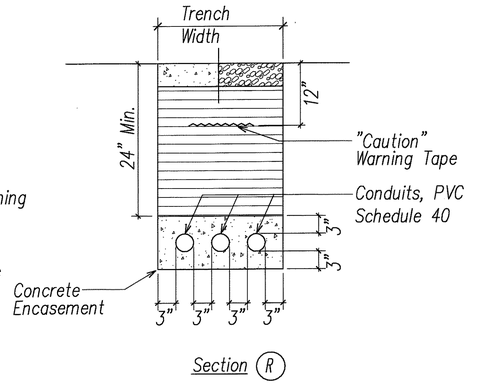

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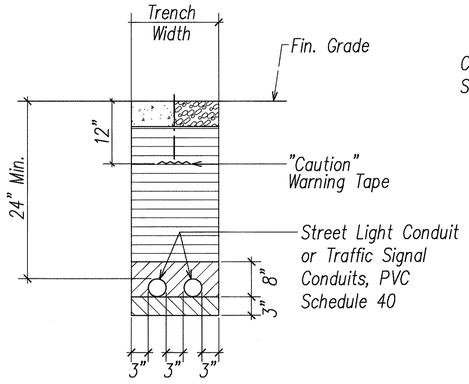

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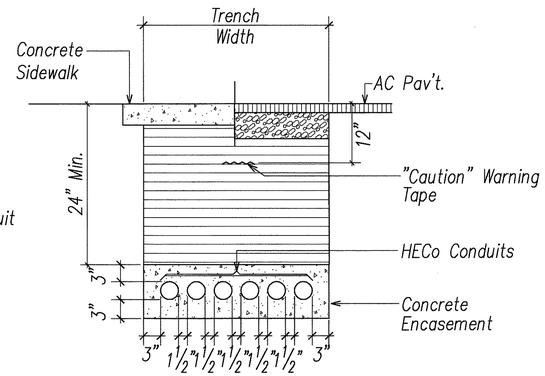


Section (N)

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY DATE

HAWAIIAN TELCOM DATE

A E2.2 **TYPICAL DUCT SECTIONS II**
Not to Scale

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

LAST SAVE: 02/20/07 @ 09:30:41 BY SL PLOT SC: 1"=0"=1"
X:\Local\Projects\2410781\e2-02_2410781_Sht1e_Duct02

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4199-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DUCT SECTIONS II

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

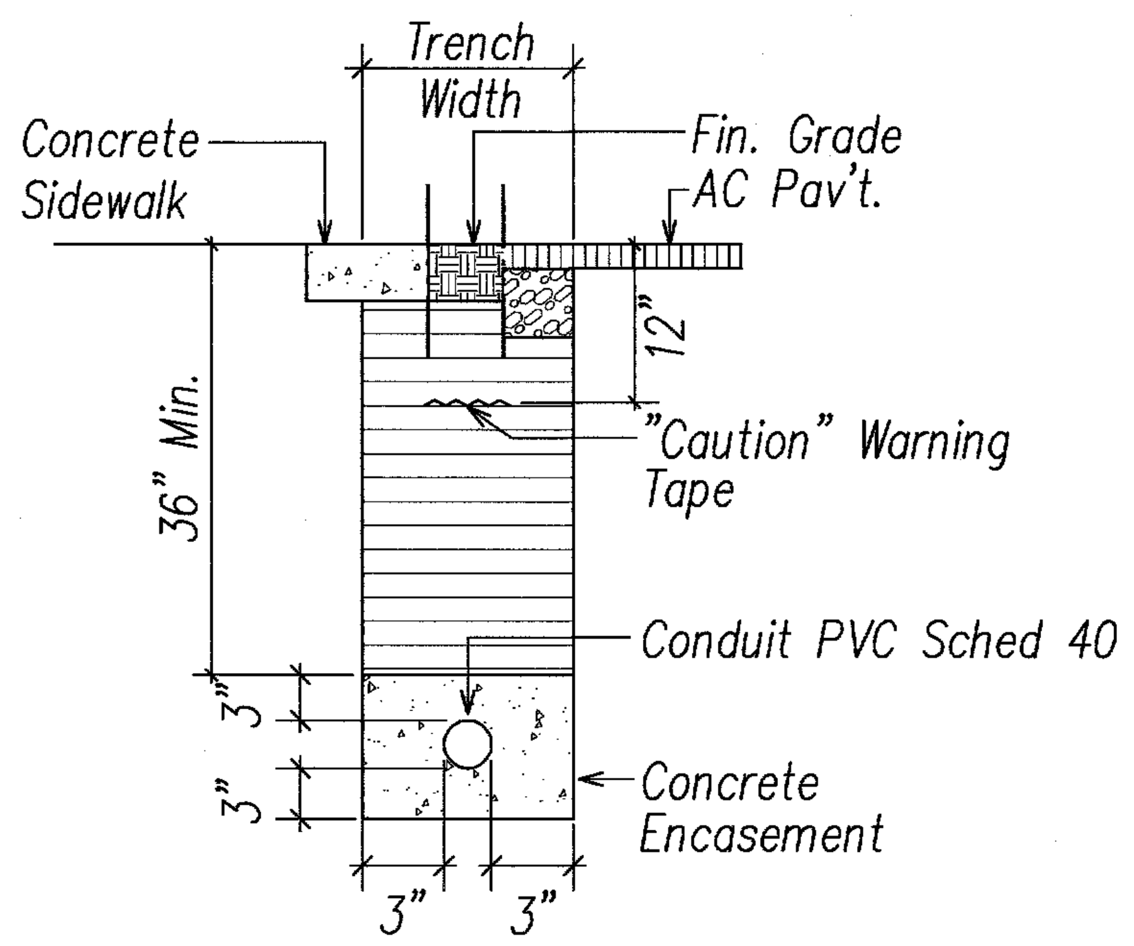
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.2 OF 66 SHEETS

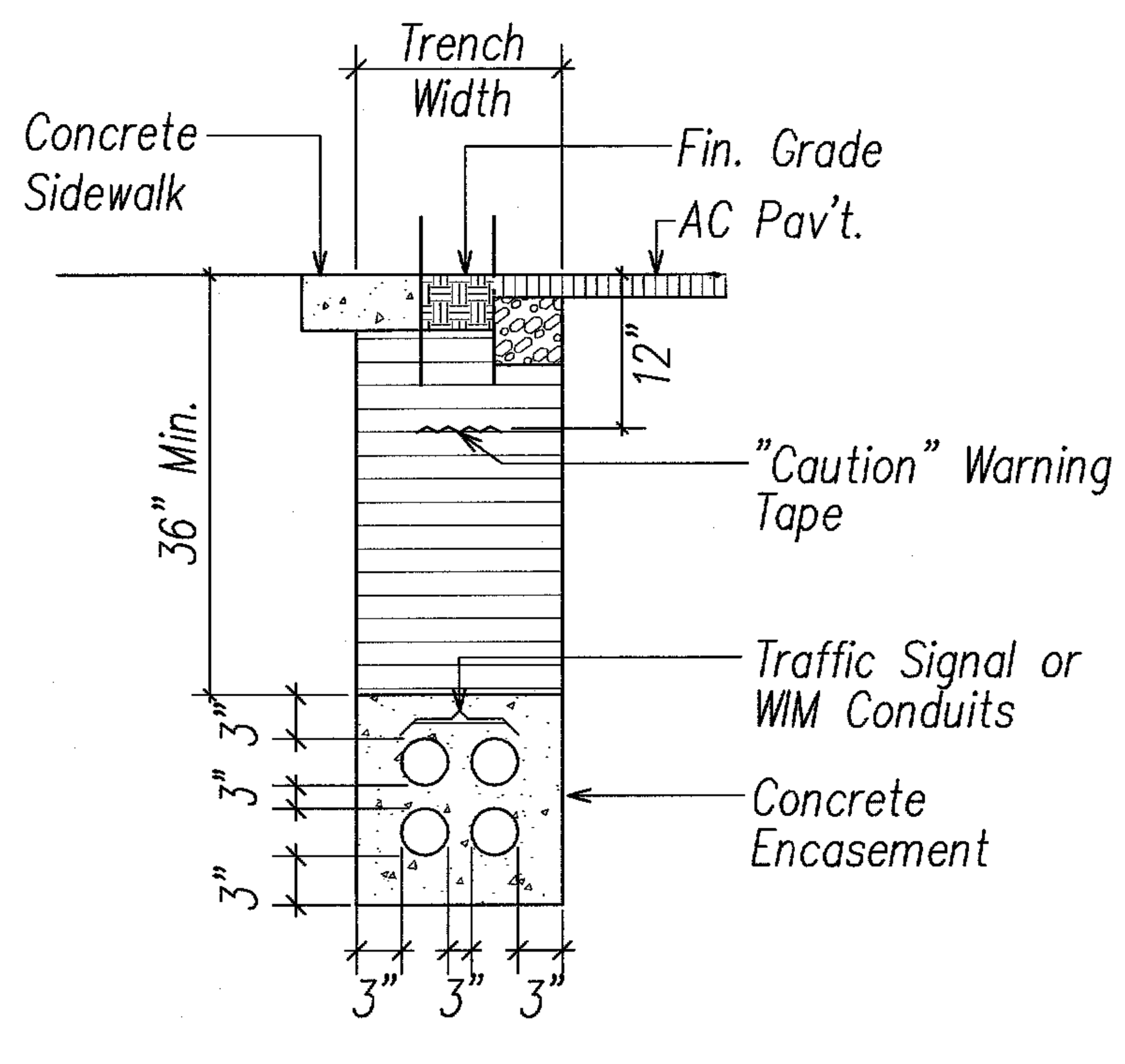
DATE	REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	330	380

FEB 21, 2007



Section (S)



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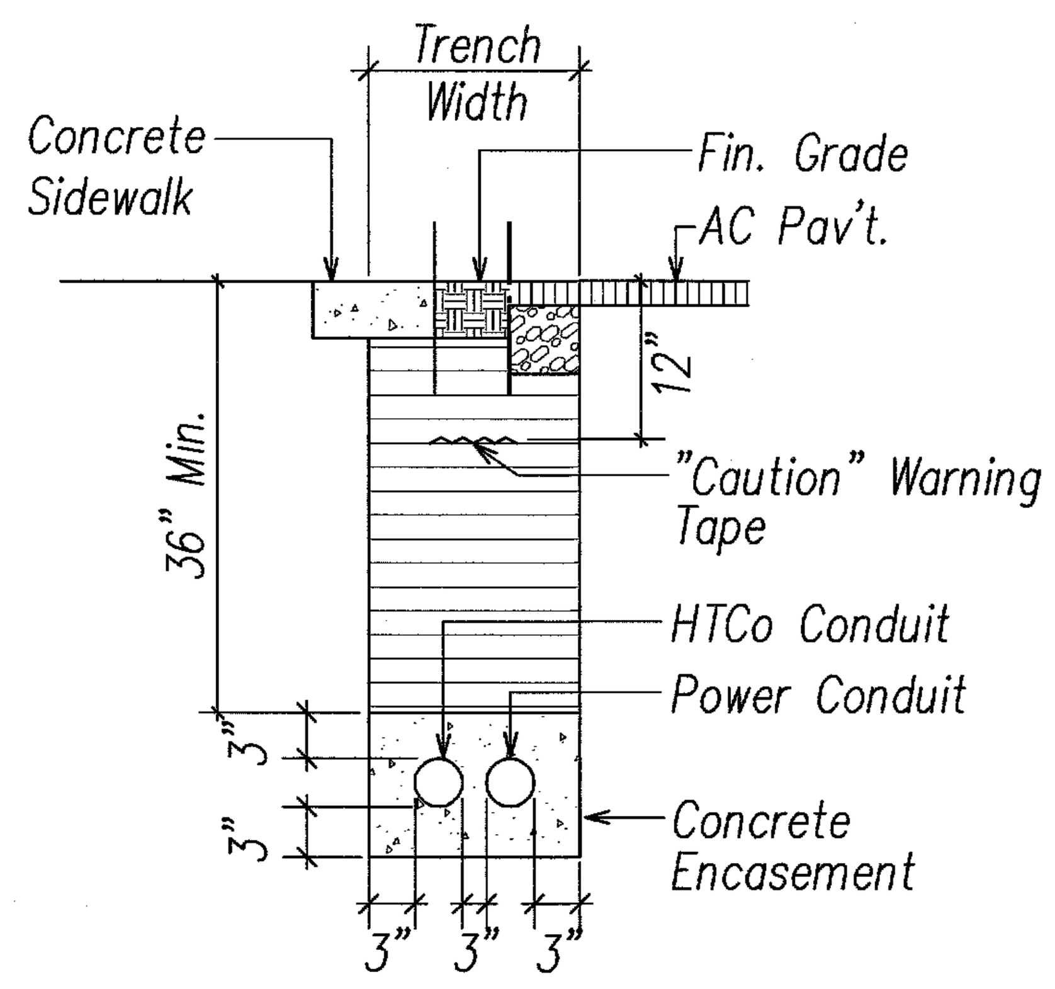
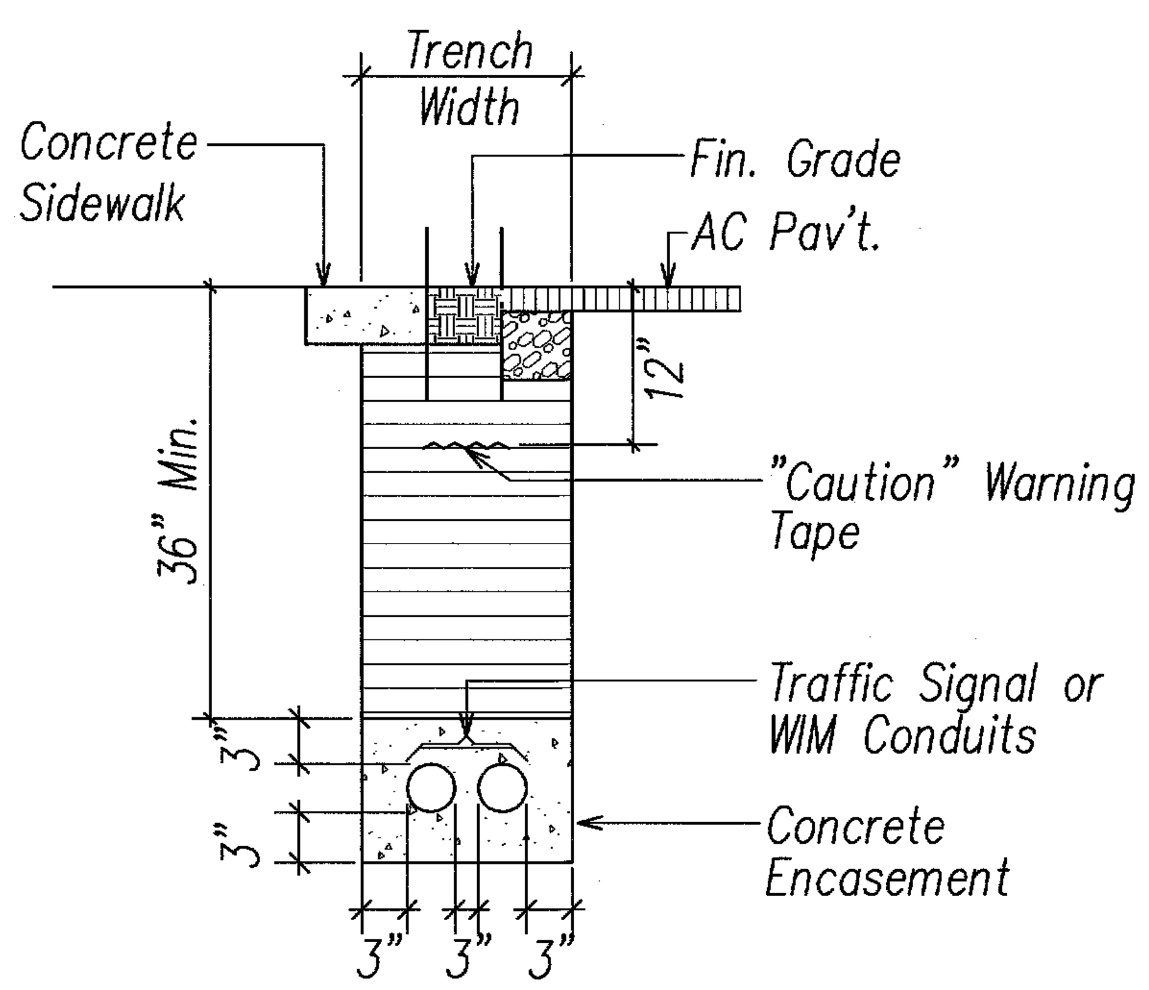


Section (T)

FC #45
* REPARE OF H-1 PAVEMENT FOR WIM TRENCH CROSSING THE H1 FREEWAY WILL NOT FOLLOW THE TYPICAL DETAILS ON THIS PAGE. REPAIR SHALL CONSIST OF REPLACING FULL PANELS BETWEEN TRANSVERSE JOINTS. OVER THE COMPACTED TRENCH BACKFILL:
- 11" PCC PAVEMENT
- 13" AGG SUB BASE

SEE 'TRANSVERSE CONSTRUCTION JOINT @ EXISTING PCC PAVEMENT' DETAIL ON PG ADD 110 / C4.8



Section (U)

A / E2.3 **TYPICAL DUCT SECTIONS III**
Not to Scale

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

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY ____ DATE ____

HAWAIIAN TELCOM ____ DATE ____

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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5 AUG 2013

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DUCT SECTIONS III

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.3 OF 66 SHEETS

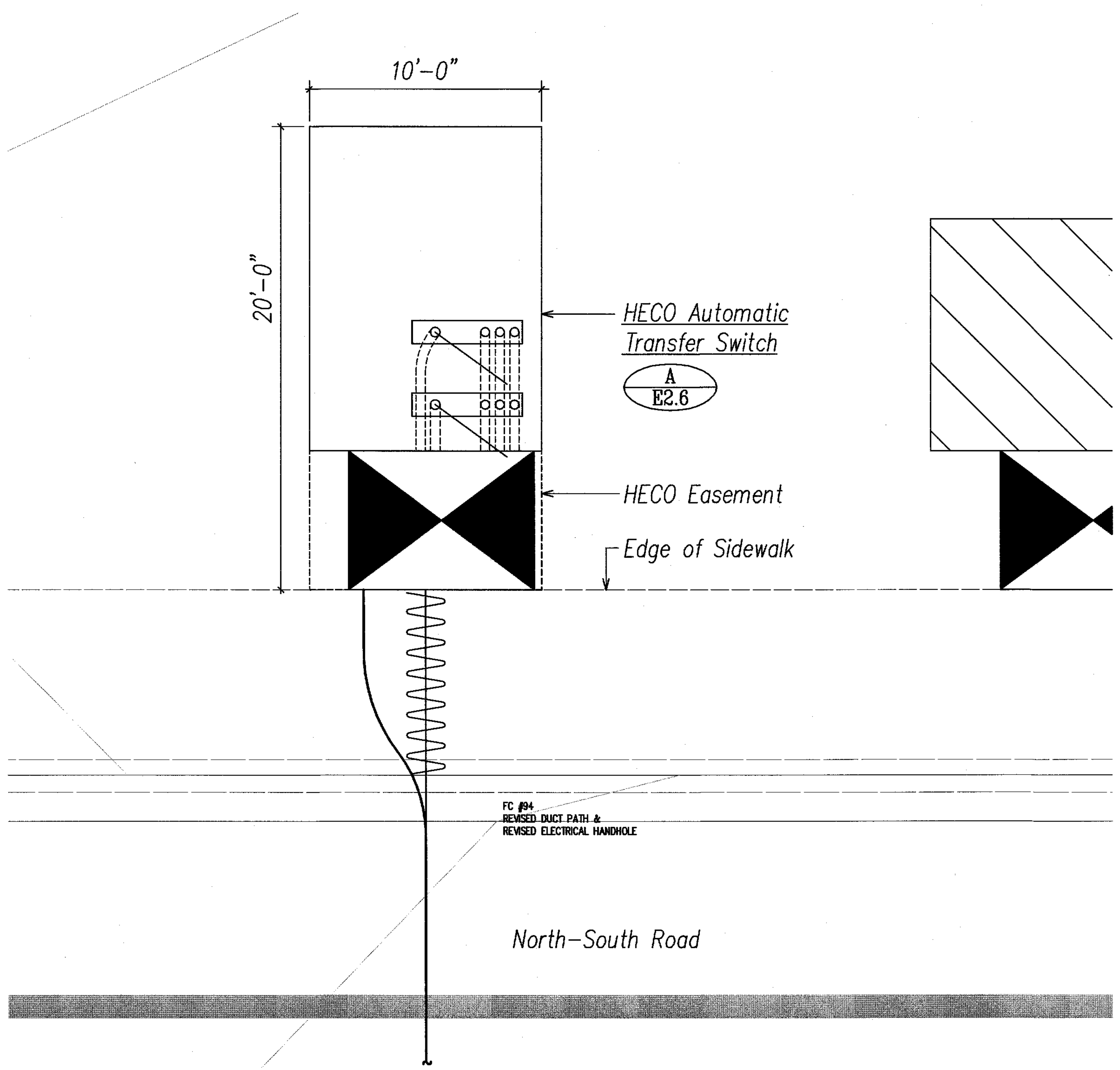
"AS–BUILT"

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

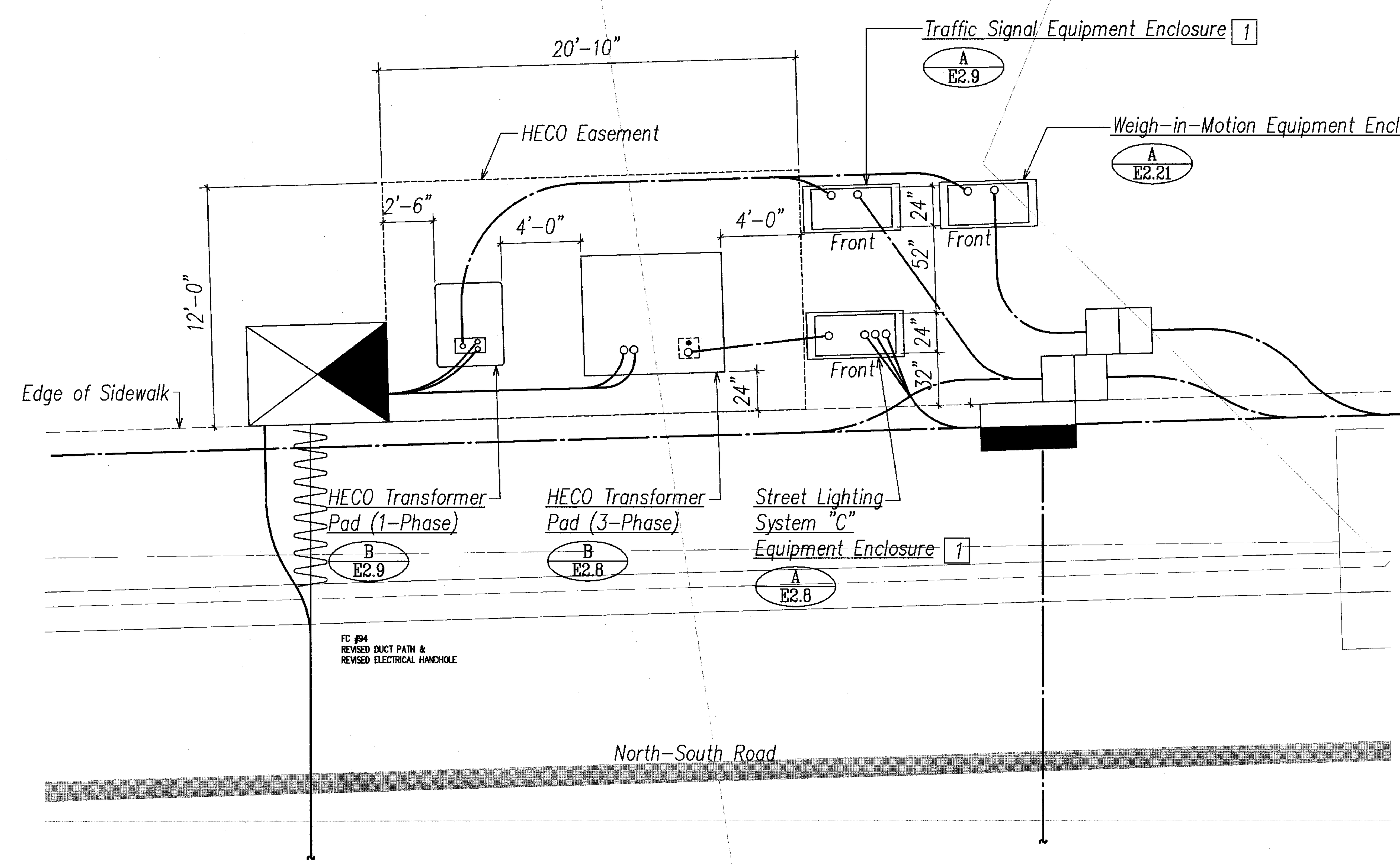
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO331	380

Notes:

[1] Provide a minimum of four feet clear and level workspace clearance in front of metering and service equipment.



A E1.2 E2.4 ELECTRICAL EQUIPMENT LAYOUT 1
SCALE: 1/4"=1'-0"



B E1.2 E2.4 ELECTRICAL EQUIPMENT LAYOUT 2
SCALE: 1/4"=1'-0"

NORTH

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LEGEND FOR AS-BUILT POSTINGS

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

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

4' 2' 0 4' 8' 12'
SCALE: 1/4"=1'-0"
GRAPHIC SCALE

DATE	REVISION
?/??/08	Revised HHs per HECO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL EQUIPMENT LAYOUTS 1 & 2

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

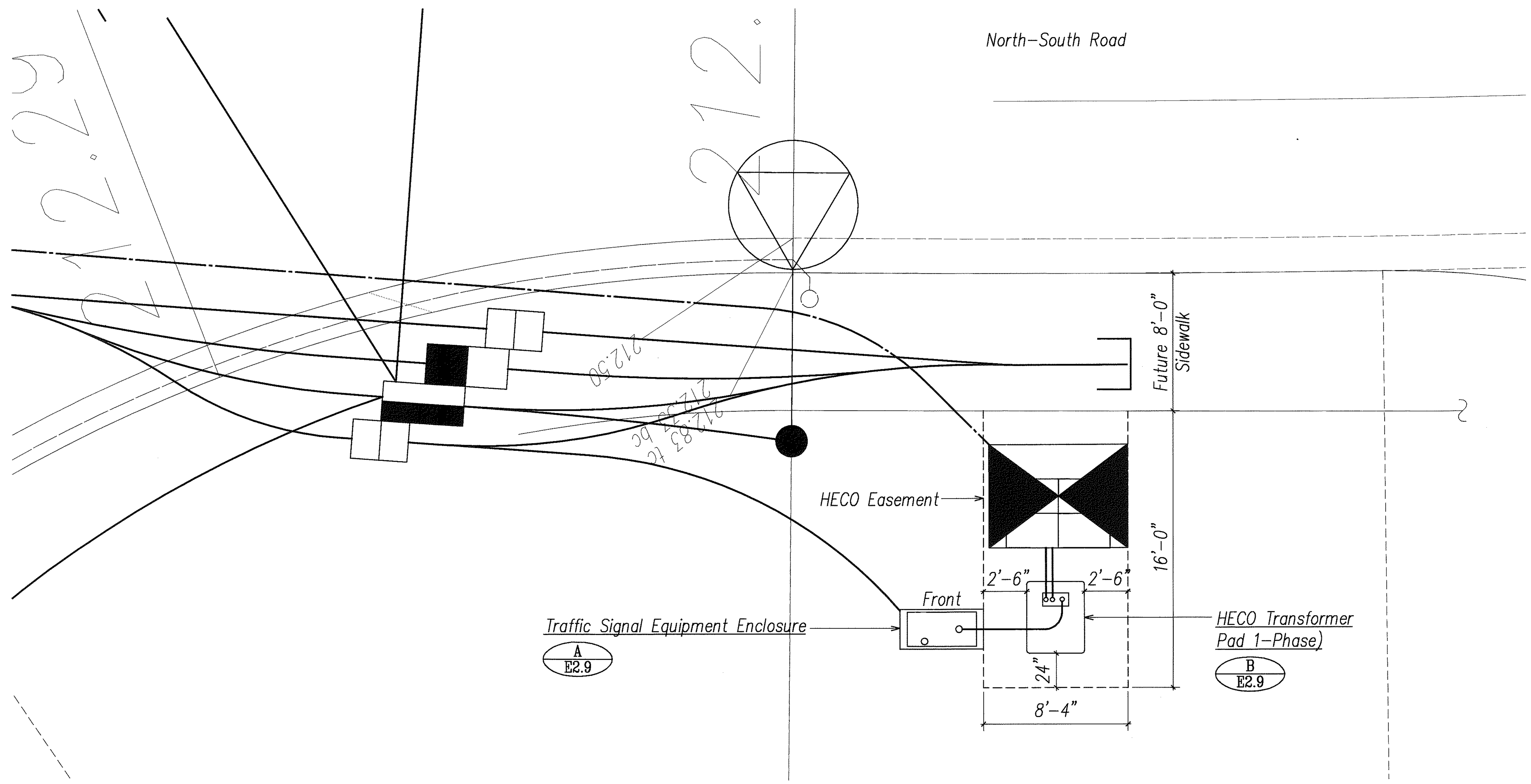
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.4 OF 66 SHEETS

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

"AS-BUILT" CO331

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	332	380



A ELECTRICAL EQUIPMENT LAYOUT 3

NORTH E1.4 E2.5 SCALE: 1/4"=1'=0"

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APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

4' 2' 0 4' 8' 12'
SCALE: 1/4"=1'-0"
GRAPHIC SCALE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL EQUIPMENT LAYOUT 3

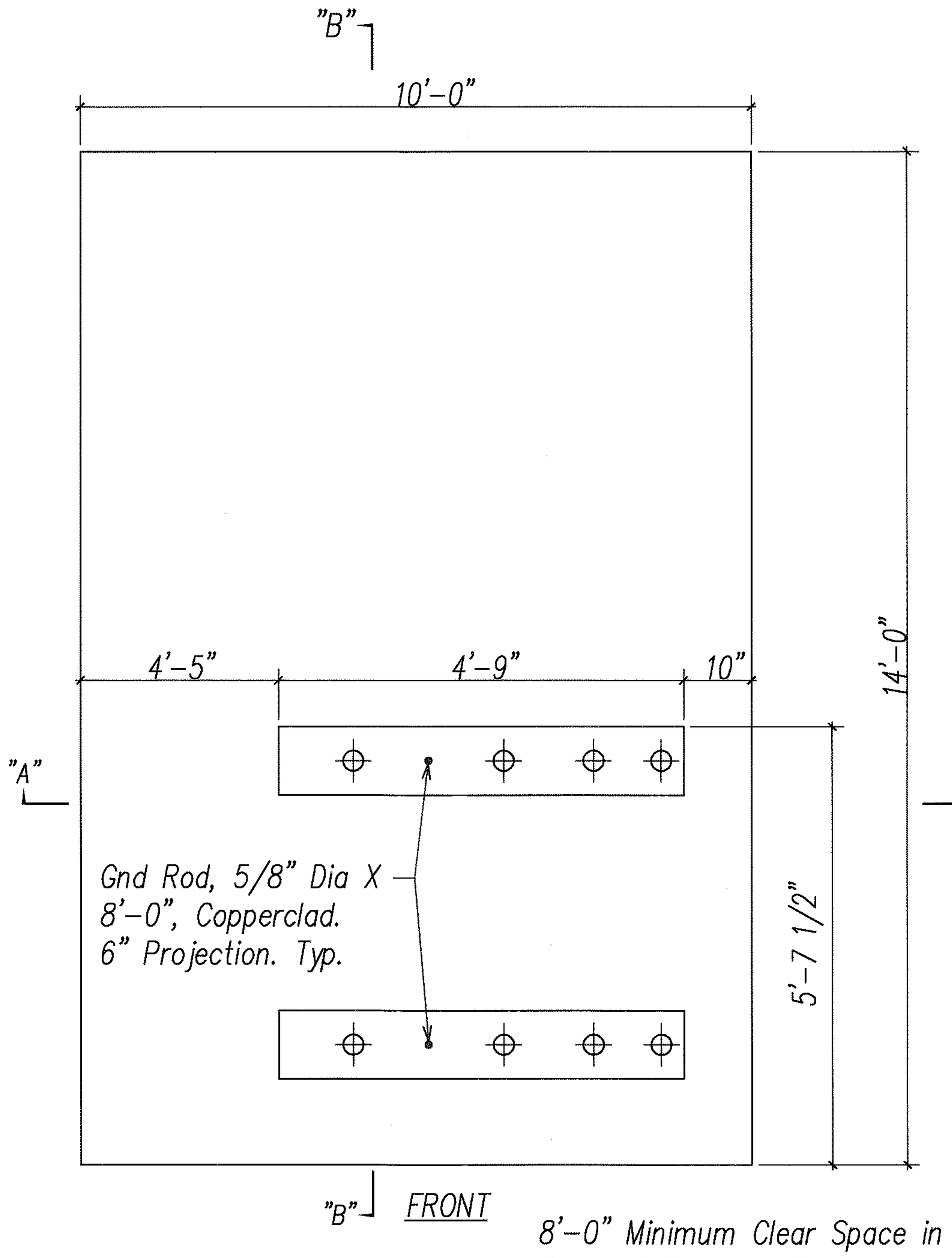
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

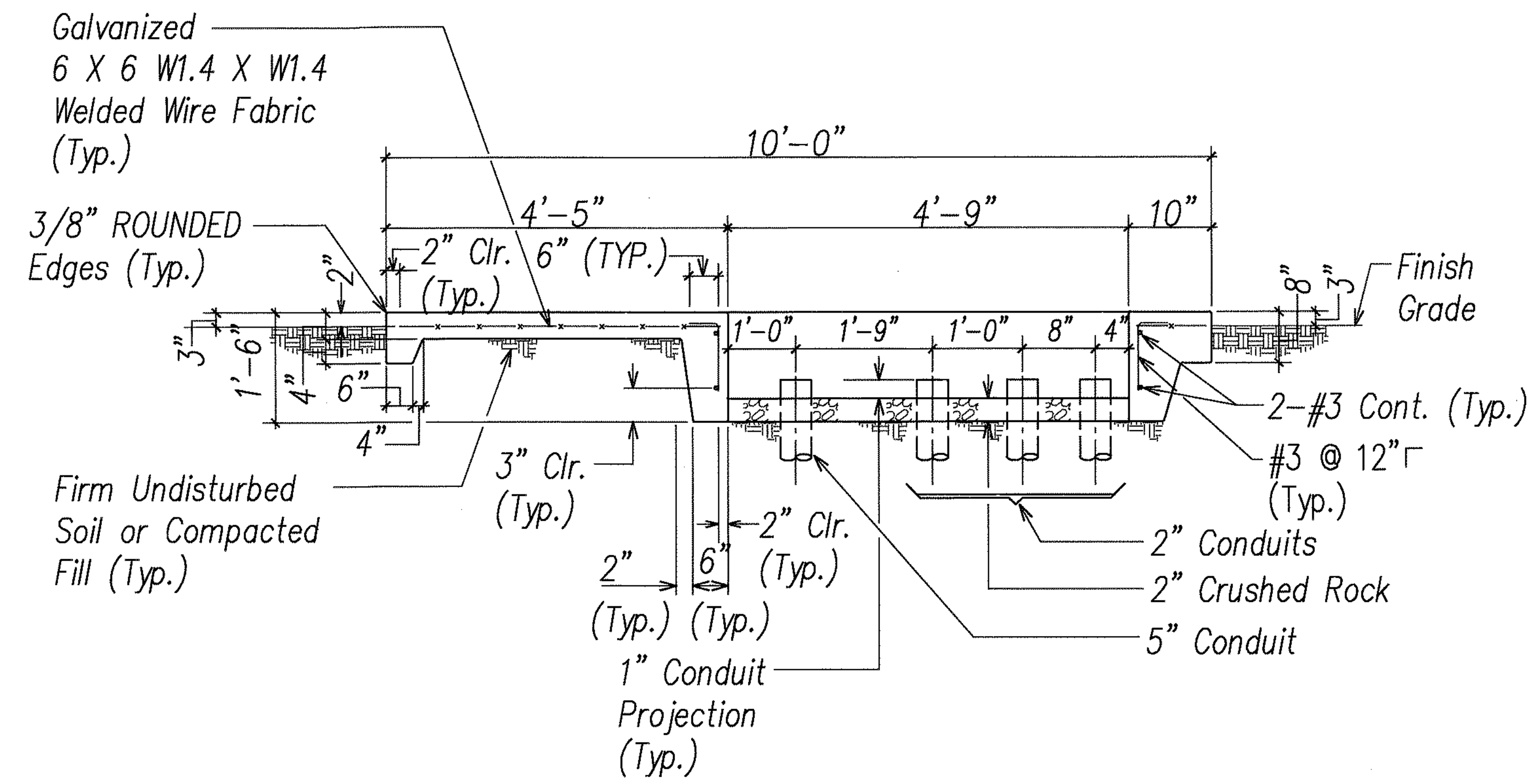
SHEET No. E2.5 OF 66 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

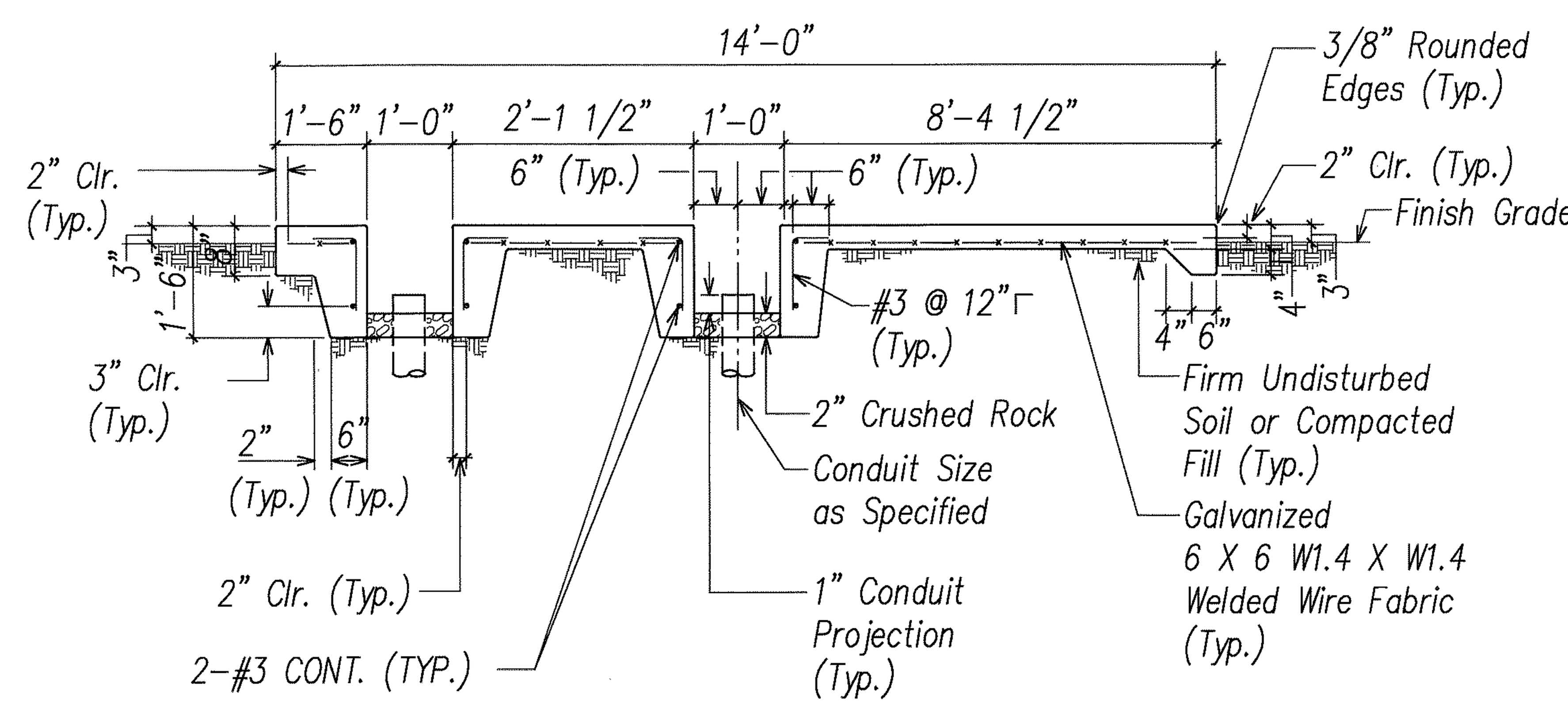
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	333	380



PLAN



SECTION "A-A"



SECTION "B-B"

Notes:

1. Concrete Compressive Strength: 3000 PSI 28 Days. HECO Std. Specification CS7401.
2. Reinforcing: Clean and New Round Deformed Bars (Gr 40) and Galvanized 6 X 6 W1.4 X W1.4 Welded Wire Fabric.
3. Top of Concrete Pad to be Smooth and True. Other Exposed Surfaces to be Smooth and Free from Defects.
4. Construction to Comply with ACI 318 as Amended.
5. Weight of Switchgear Equals 2,150 Pounds.

A / E2.6 **AUTOMATIC TRANSFER SWITCHING EQUIPMENT PAD**
Not to Scale (HECO Std. 30-5040)

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

DATE	REVISION

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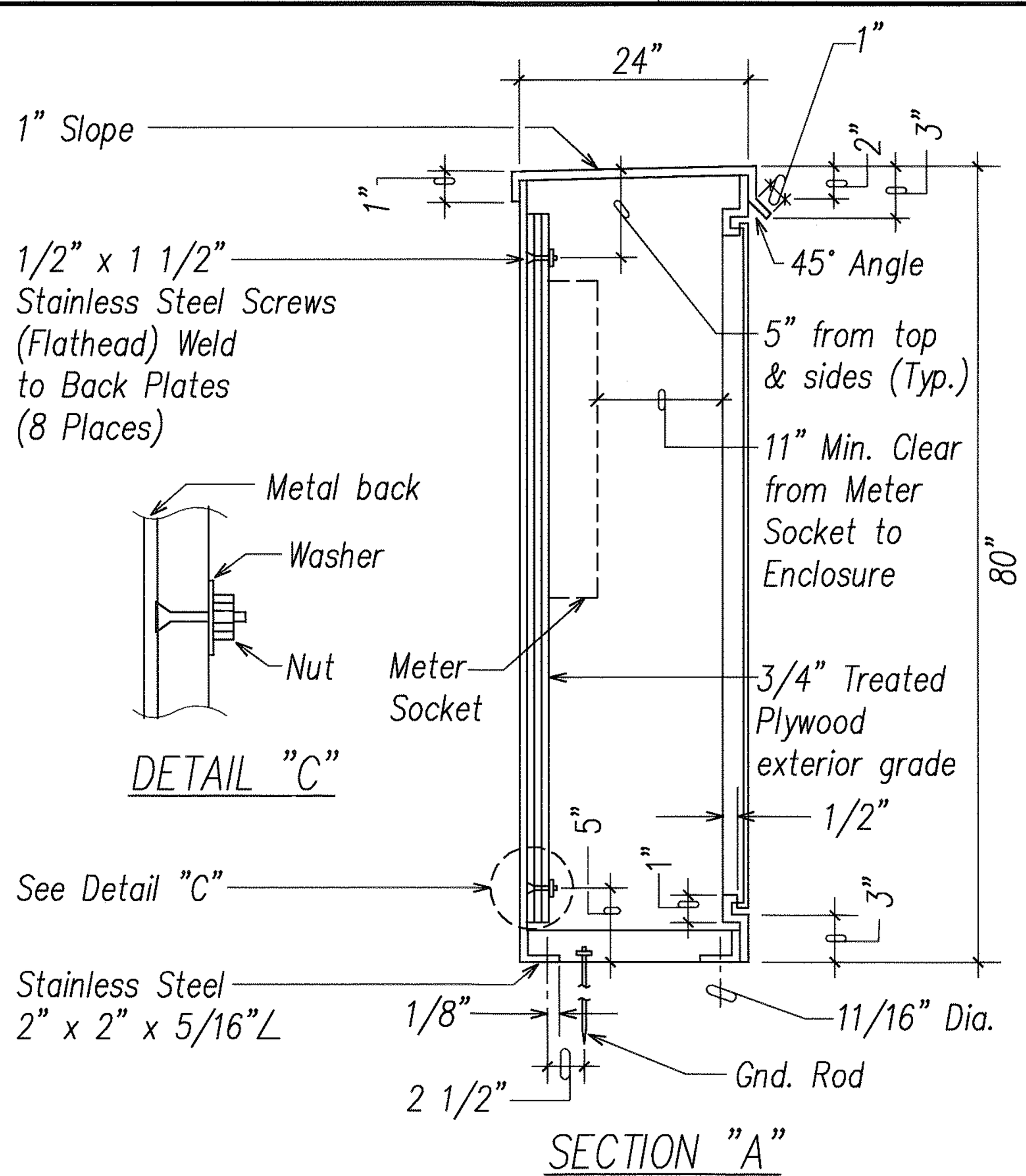
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

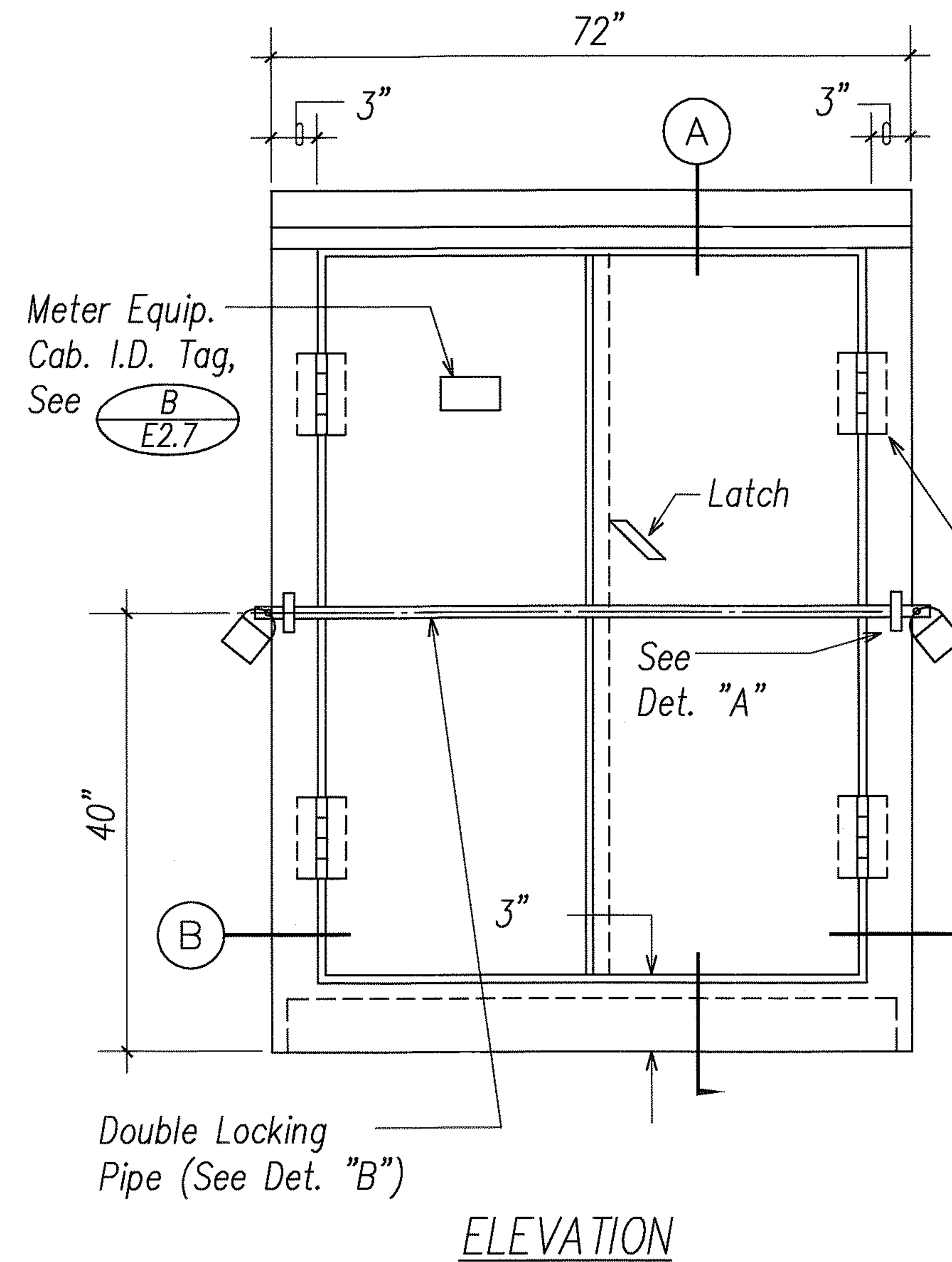
AUTOMATIC TRANSFER SWITCHING EQUIPMENT PAD
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

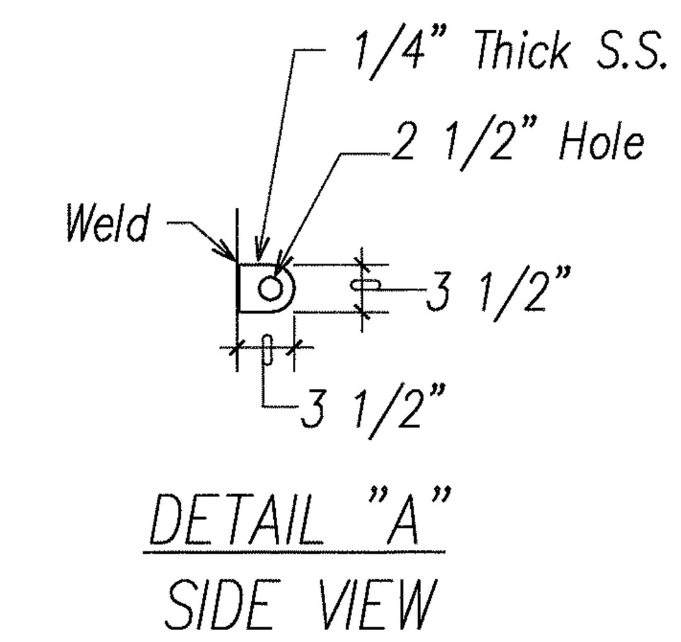
Scale: AS NOTED Date: Feb 21, 2007
SHEET No. E2.6 OF 66 SHEETS

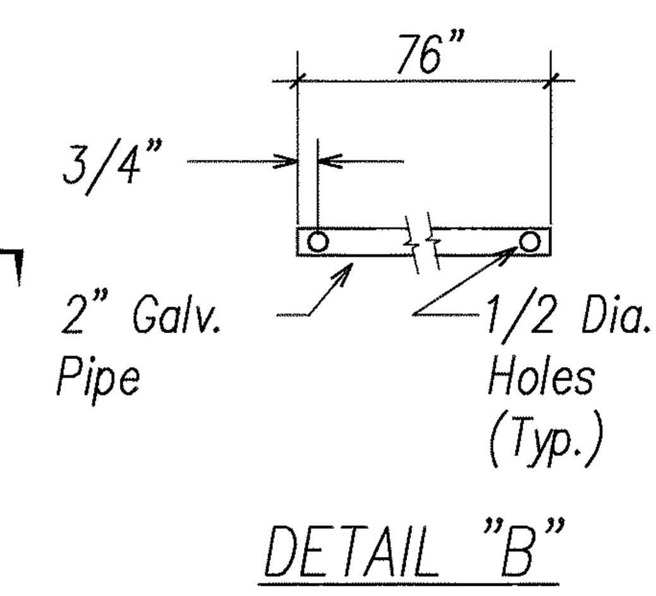
ORIGINAL PLAN / SURVEY PLOTTED BY / DRAWN BY / TRACED BY / NOTE BOOK / DESIGNED BY / QUANTITIES BY / CHECKED BY / DATE / No.

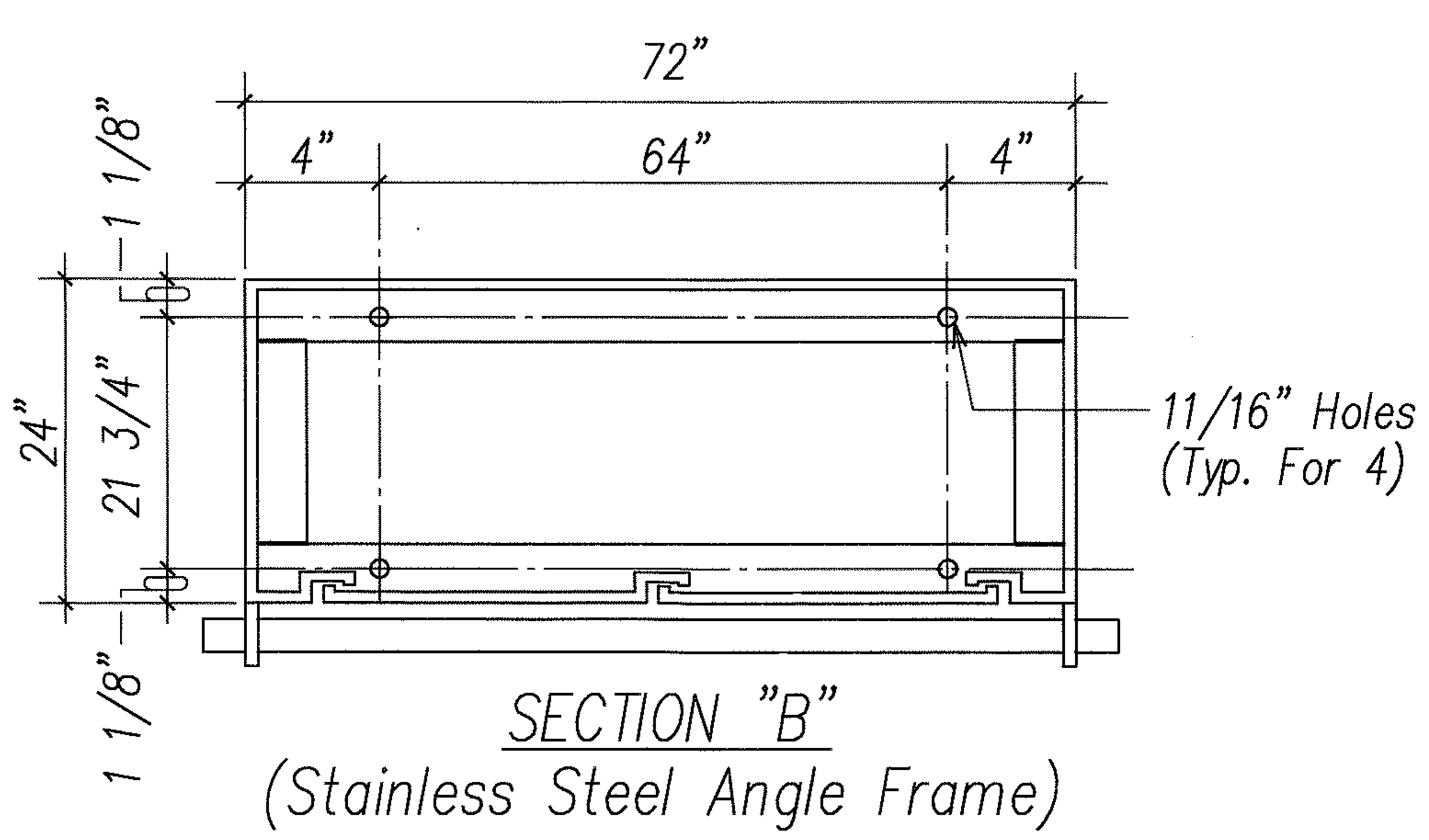
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	334	380

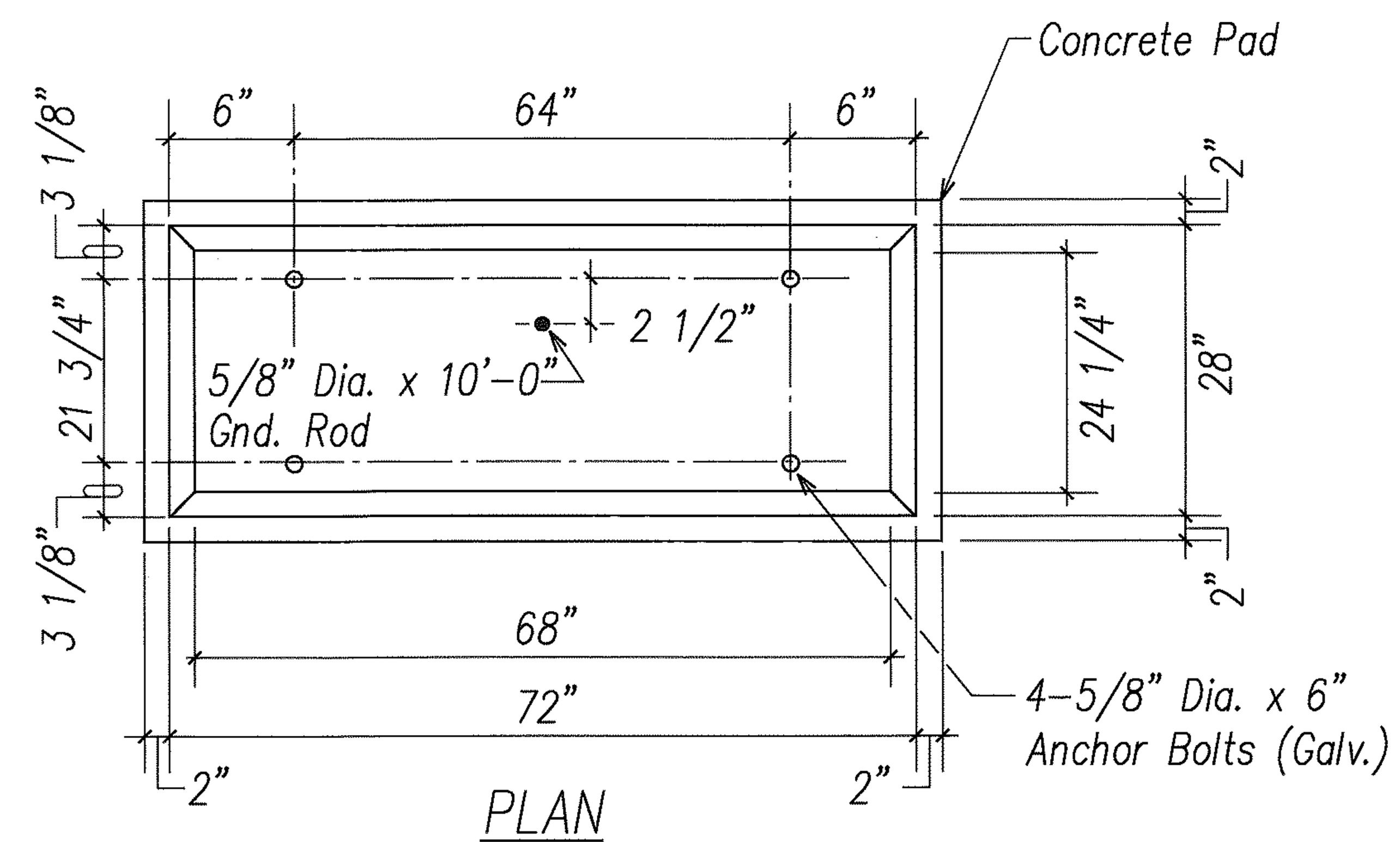


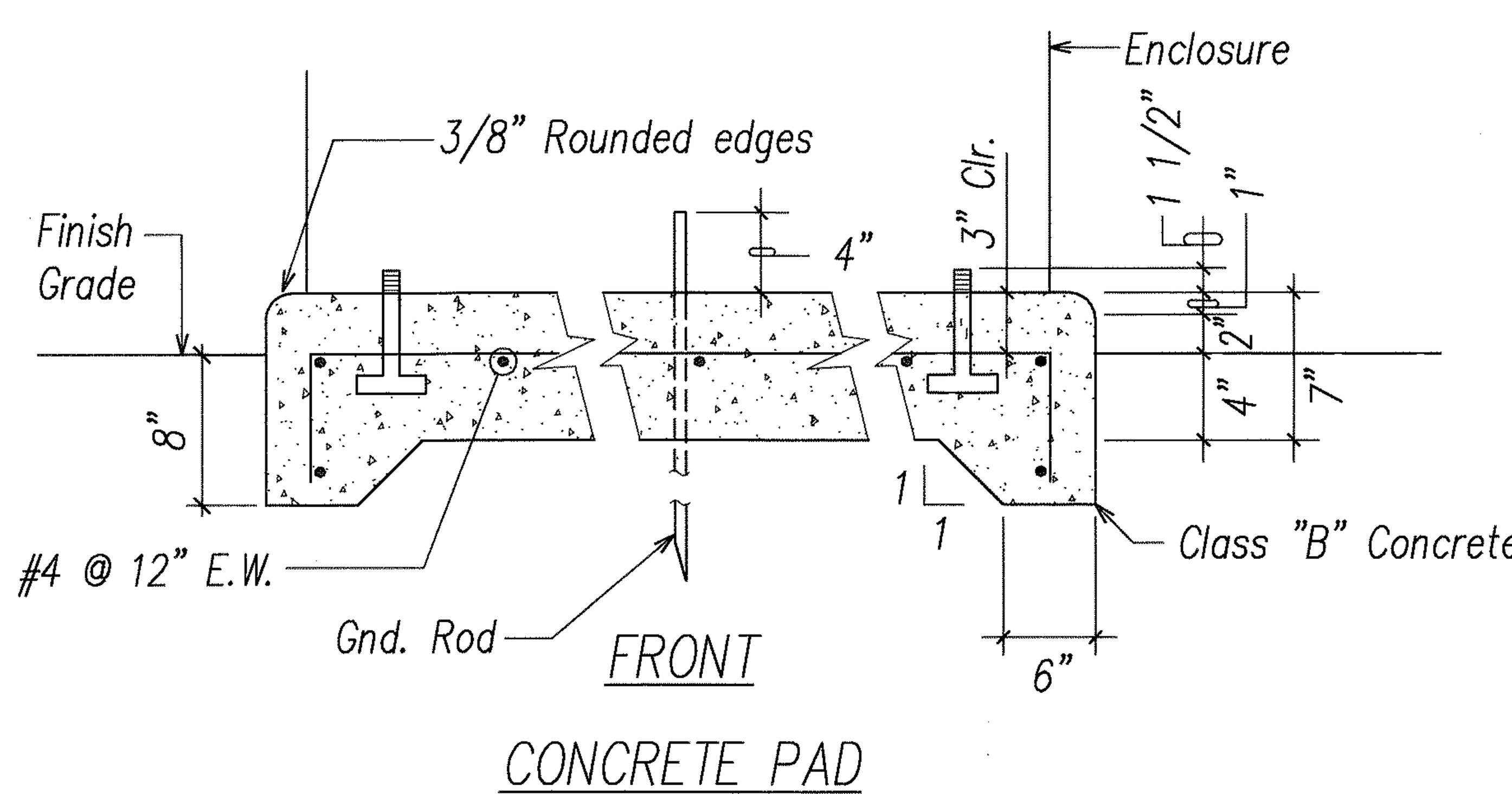








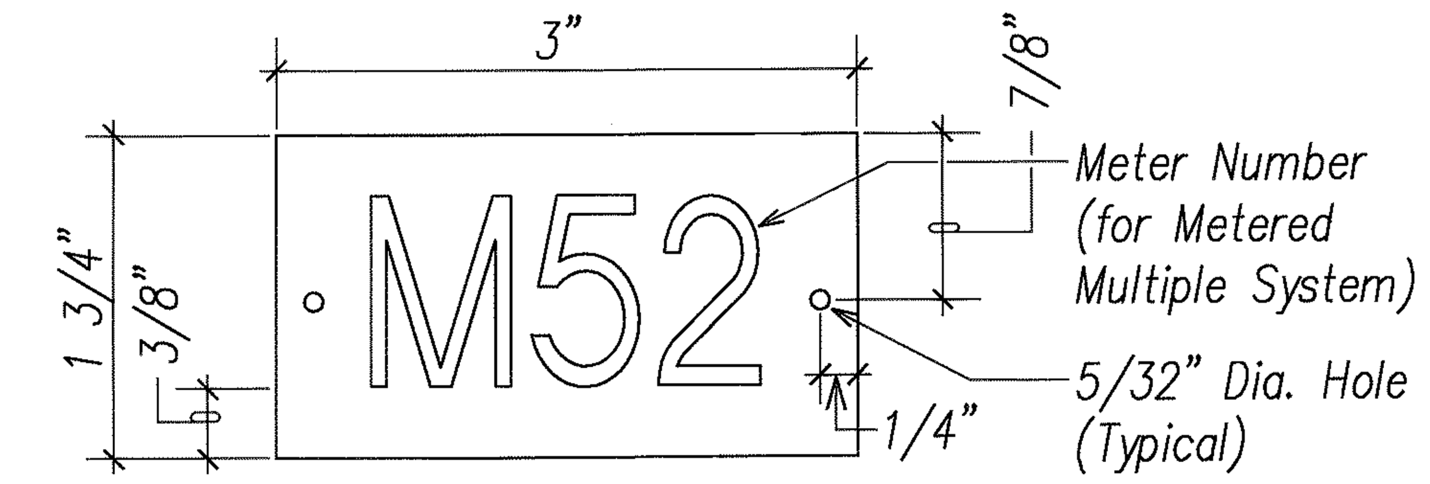




Notes:

1. Cabinet to be primed with one coat shop primer.
2. Made from 10 gauge Type 316 Stainless Steel.
3. Provide epoxy enamel finish, color shall be Munsell 7GY3.29/1.5 Green (two coats). The Munsell color notation is specified in ASTM D 1535.
4. Enclosure shall be NEMA 3R with neoprene gasketing.
5. Padlocks:
   1 – HECo furnished
   1 – Contractor furnished
6. Shop fabrication drawings shall be submitted for approval.
7. Add additional Gnd Rod as required if gnd resistance exceeds 25 ohms (max allowed).
8. Maintain 4'-0" min. clearance fronting cabinet door, unless indicated otherwise.

A / E2.7 COMBINATION METER AND EQUIPMENT CABINET
Not to Scale



Notes:

1. Use 2 ply plastic – black, white. Thickness: black cap sheet – 0.010"; white base sheet – 0.052"
2. Number size shall be 1" high and engraved 1/8" wide, white in color (number as required).
3. Attach to meter enclosure with No. 8 stainless steel drive screws.
4. Numbers are inscribed by cutting through "black cap sheet" to expose "white letters".

B / E2.7 METER EQUIPMENT CABINET I.D. TAG
Not to Scale

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20 FEB 2007

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

METER AND EQUIPMENT ENCLOSURE DETAILS

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

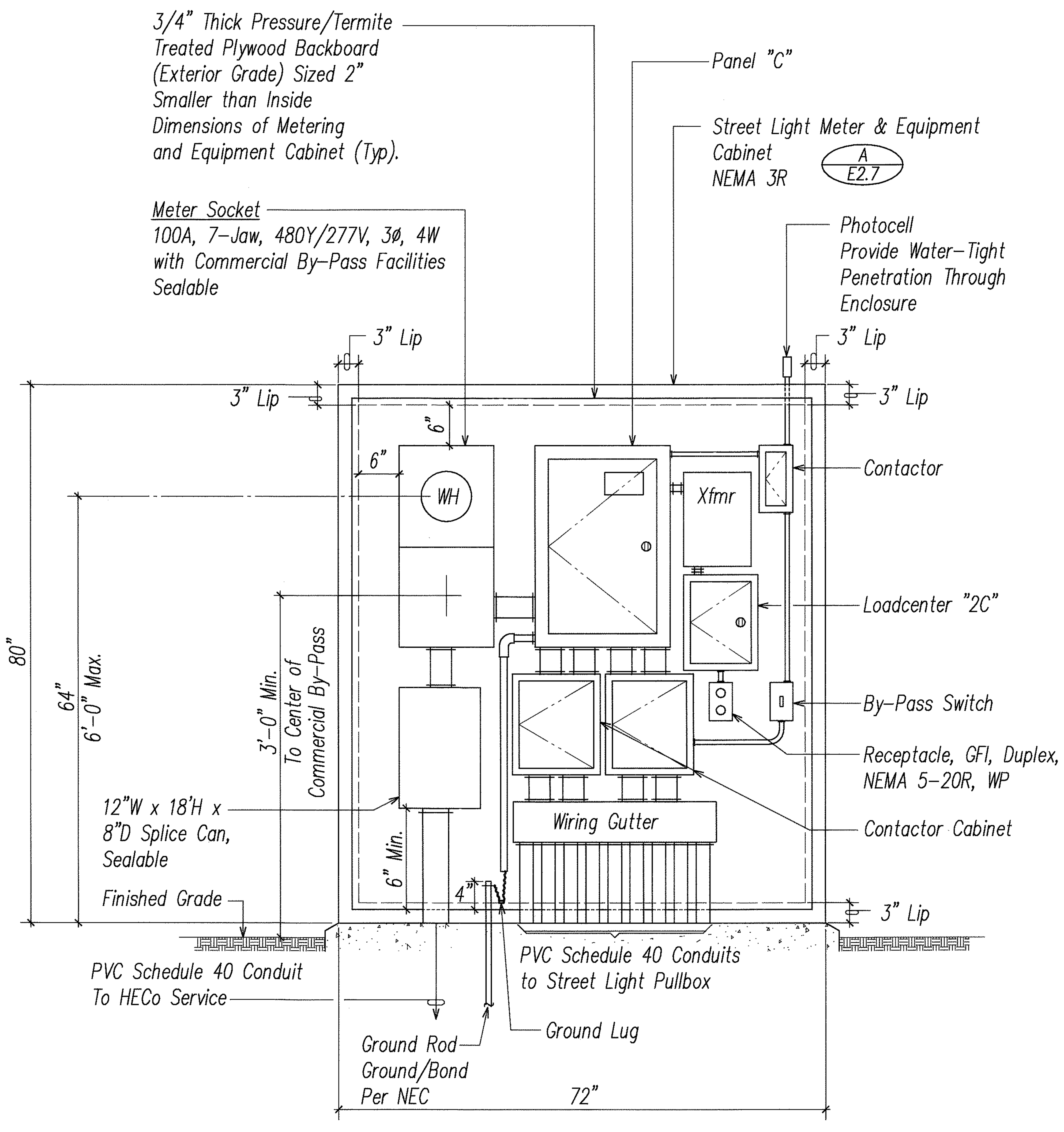
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.7 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 09:34:52 BY: SL PLOT SD 1"-0"=1"

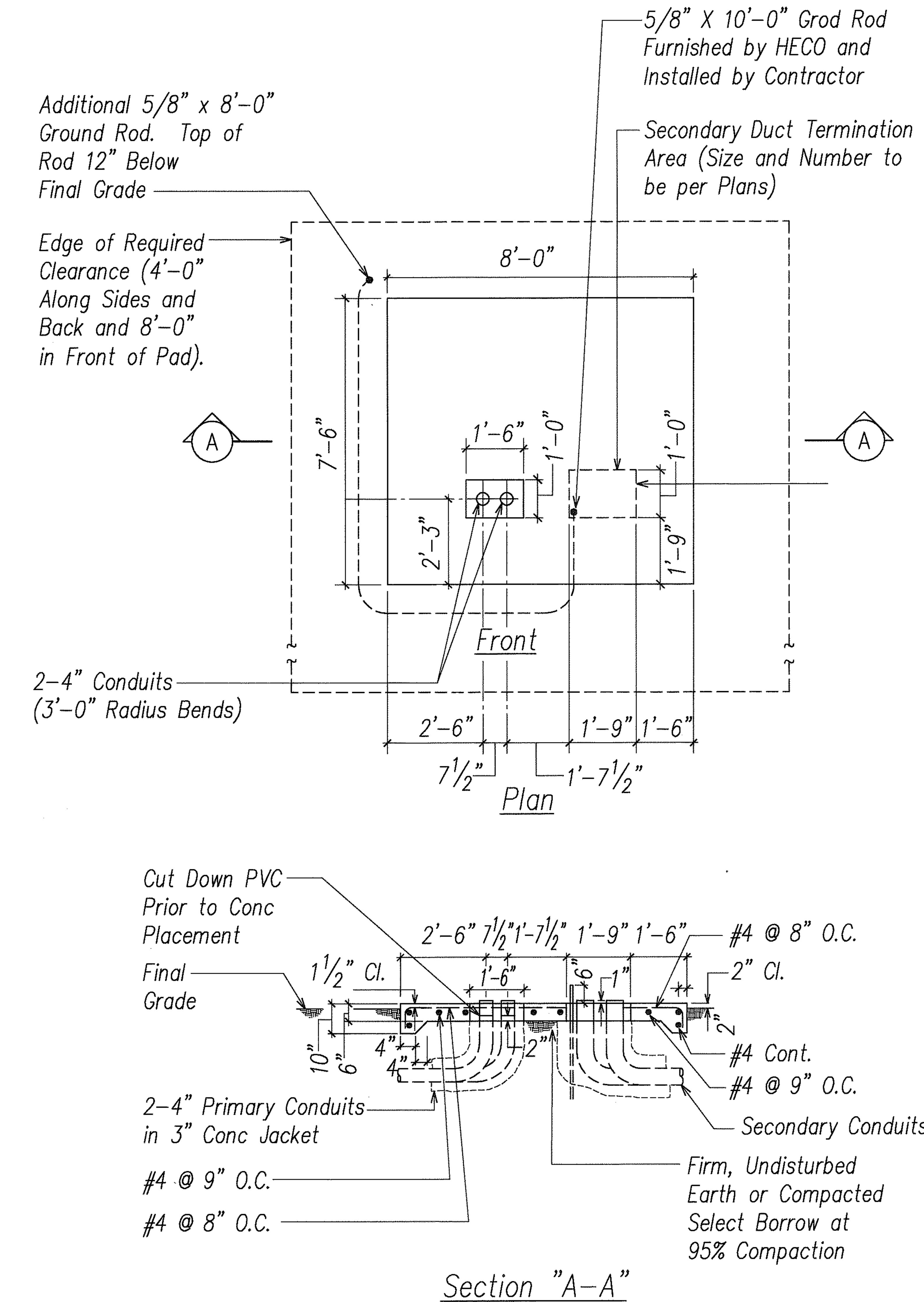
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	335	380



Notes:

1. See One-line Diagram Sheet E3.1.

A / E2.8 **STREET LIGHTING SYSTEM "C" EQUIPMENT ELEVATION**
SCALE: 1"=1'=0"



Notes:

1. See HECo Standard Dwg. No. 30-5000 for locations and clearances.
2. See HECo Standard Dwg. No. 22-2005 for additional requirements.
3. 5/8" dia. x 8'-0" ground rod furnished by HECo and Contractor installed. If ground resistance exceeds 25 ohms, provide additional ground rod or ground wire.
4. Pad to be per HECo Standard Dwg. No. 30-5011.
5. Concrete: 3000 PSI in 28 days.
6. Reinforcing: Clean and new round deformed bars.
7. Construction to comply with ACI 318 as amended.
8. Locate, secure, and cap all conduits before pouring pad.

B / E2.8 **75 – 300 KVA CONCRETE TRANSFORMER PAD DETAIL (3-PHASE)**
Not to Scale (HECO Std 30-5011)

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

1' 6" 0 1' 2' 3'
SCALE: 1"=1'-0"
GRAPHIC SCALE

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

LAST SAVE: 02/20/07 @ 09:35:41 BY: SL PLOT SC 1=1"

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

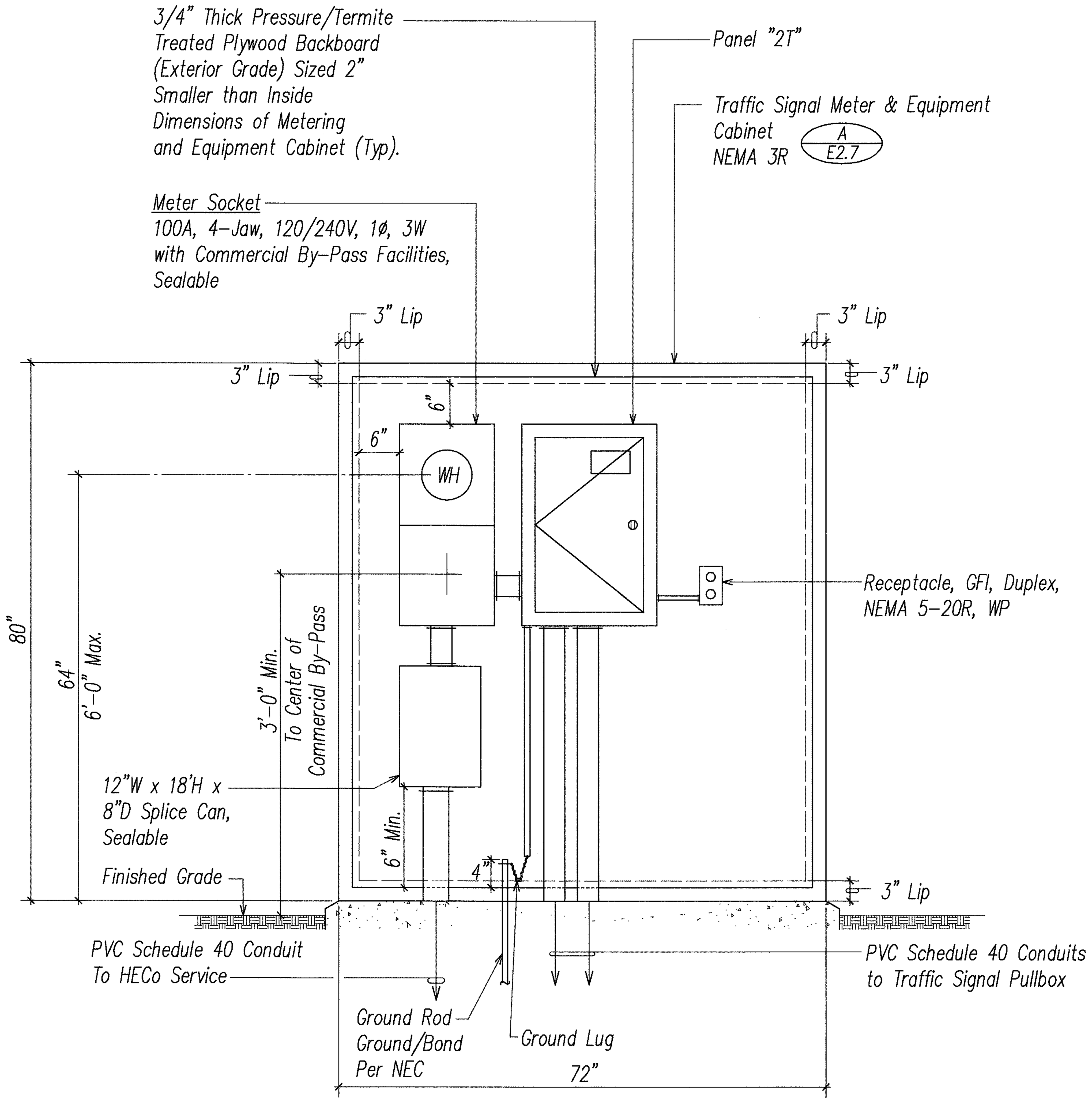
STREET LIGHTING EQUIPMENT ELEVATION

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.8 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	336	380

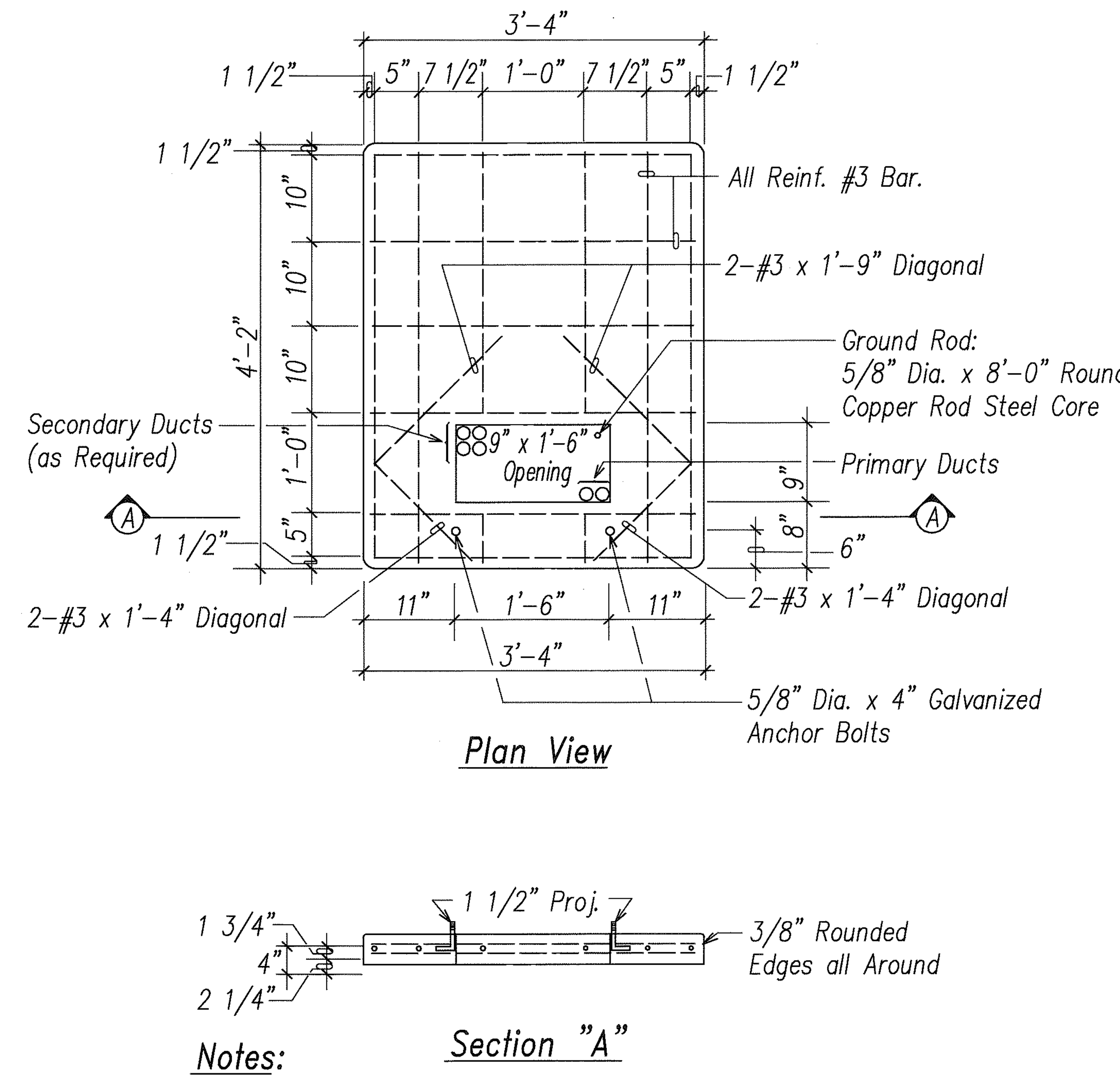


Notes:

1. See One-line Diagram Sheet E2.14.
2. Typical for 2.

A E2.9 TRAFFIC SIGNAL SYSTEM EQUIPMENT ELEVATION

SCALE: 1"=1'=0"



Notes:

1. Compressive strength of concrete: 3000 PSI in 28 days.
2. Reinforcing: Clean and new round deformed bar.
3. Cure concrete by approved method.
4. Top of concrete pad to be smooth, true and level. Other exposed surfaces to be smooth and free from defects.
5. Contractor has option of furnishing cast-in-place or precast.
6. Reinforced concrete transformer pad to be constructed as shown on this sheet & HECo Standard Drawing No. 011249 and No. 30-5001.
7. For use with 1 phase padmounted transformers per HECo Standard Drawing No. 23-1022.

B E2.9 CONCRETE TRANSFORMER PAD DETAIL SINGLE PHASE, 25-167 KVA

Not to Scale

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20 FEB 2007

1' 6" 0 1' 2' 3'

SCALE: 1"=1'-0"

GRAPHIC SCALE

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL EQUIPMENT ELEVATION

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

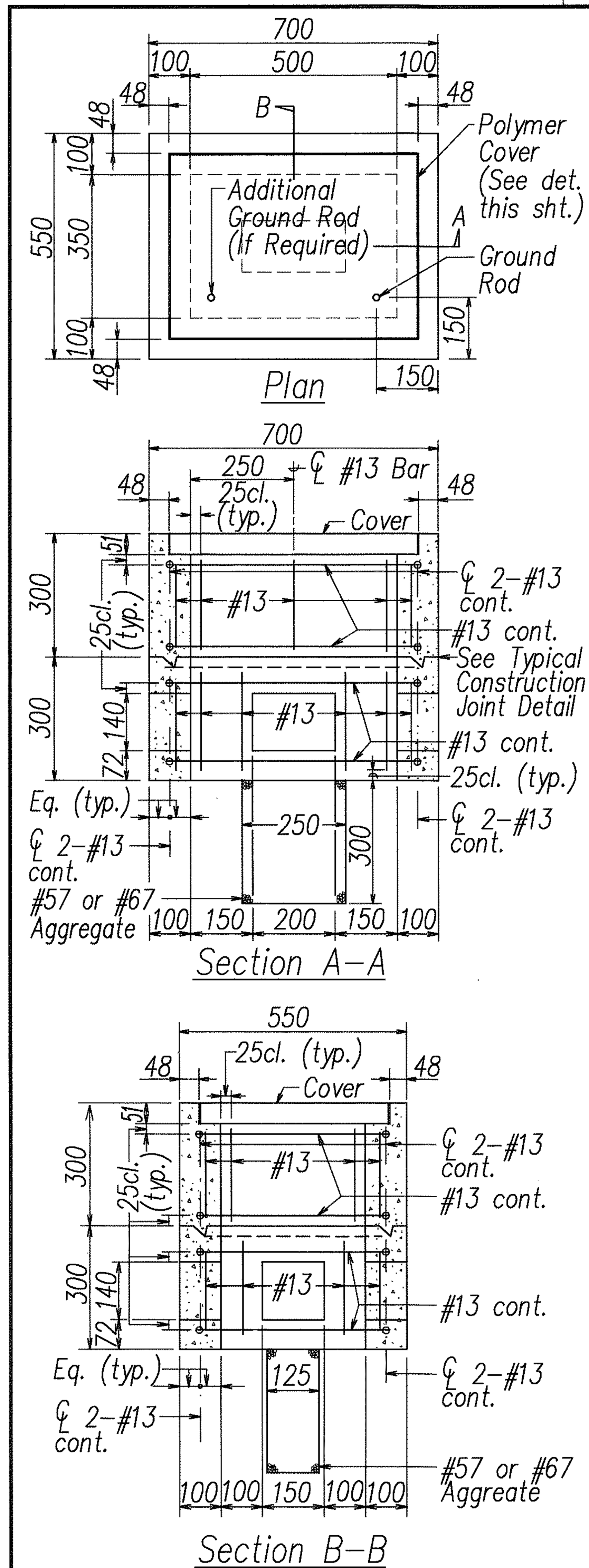
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.9 OF 66 SHEETS

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

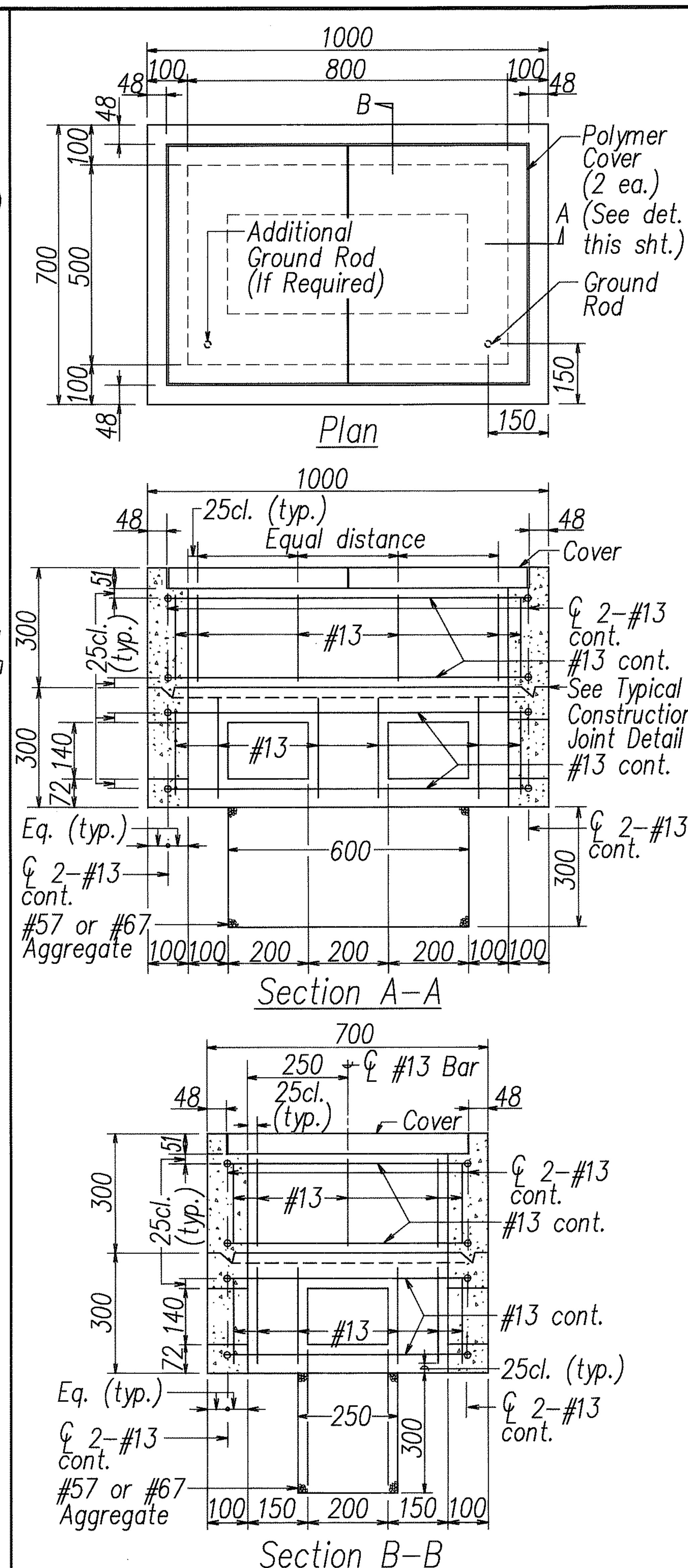
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	337	380

All Dimensions are in Millimeters unless Otherwise shown.



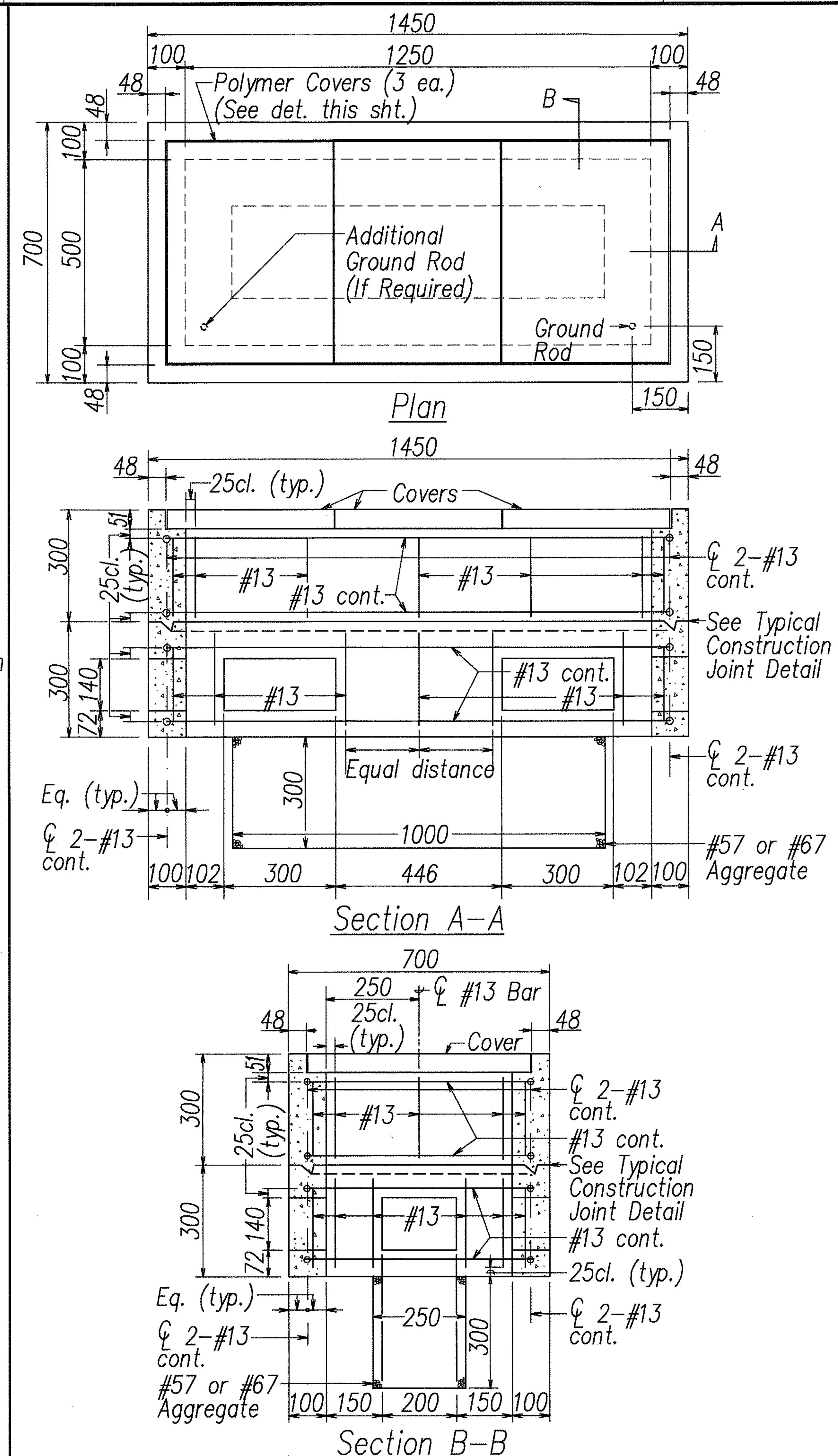
TYPE "A" PULLBOX (Old Type "B")

Scale: 1 : 100



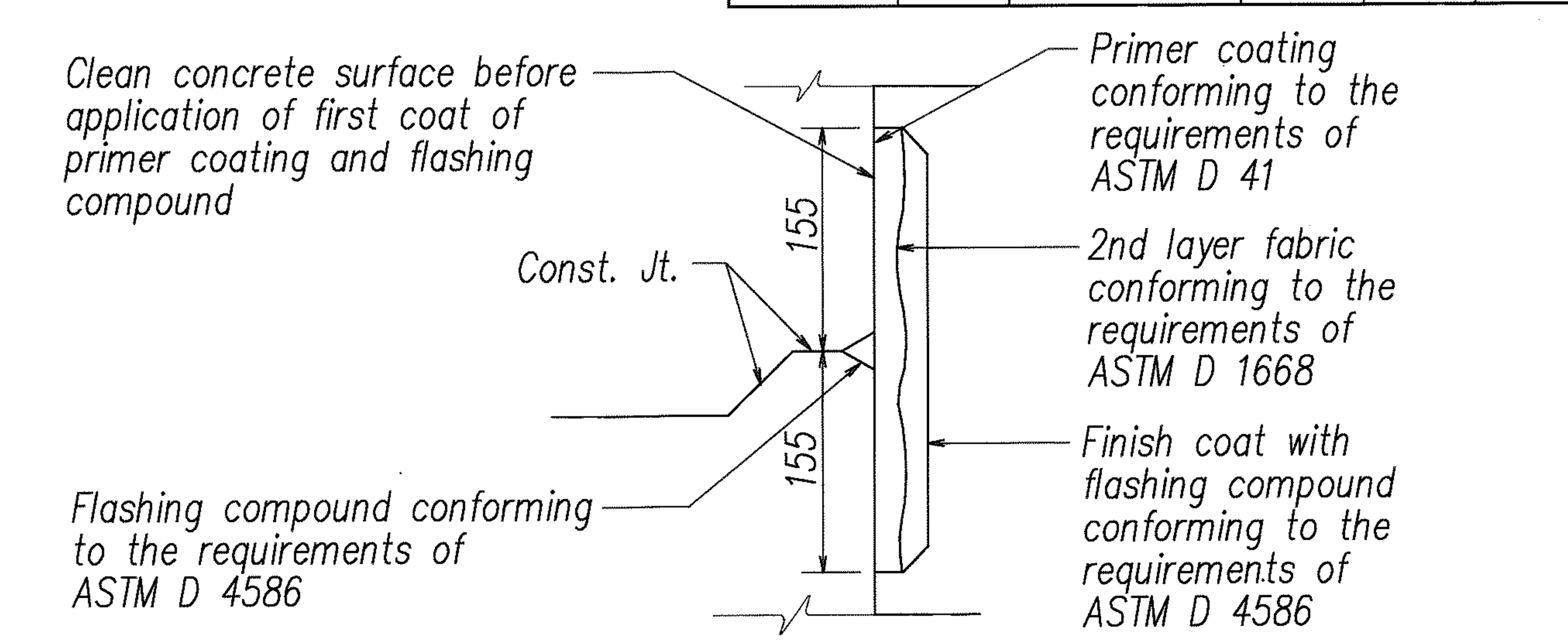
TYPE "B" PULLBOX (Old Type "C")

Scale: 1 : 100



TYPE "C" PULLBOX (Old Type "D")

Scale: 1 : 100

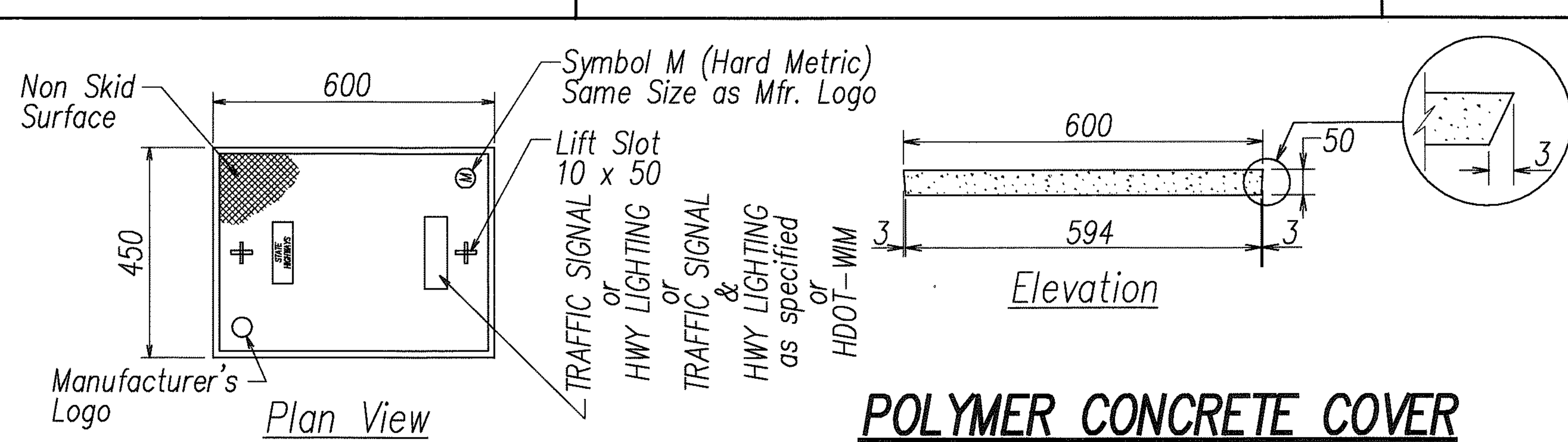


TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

Not to Scale

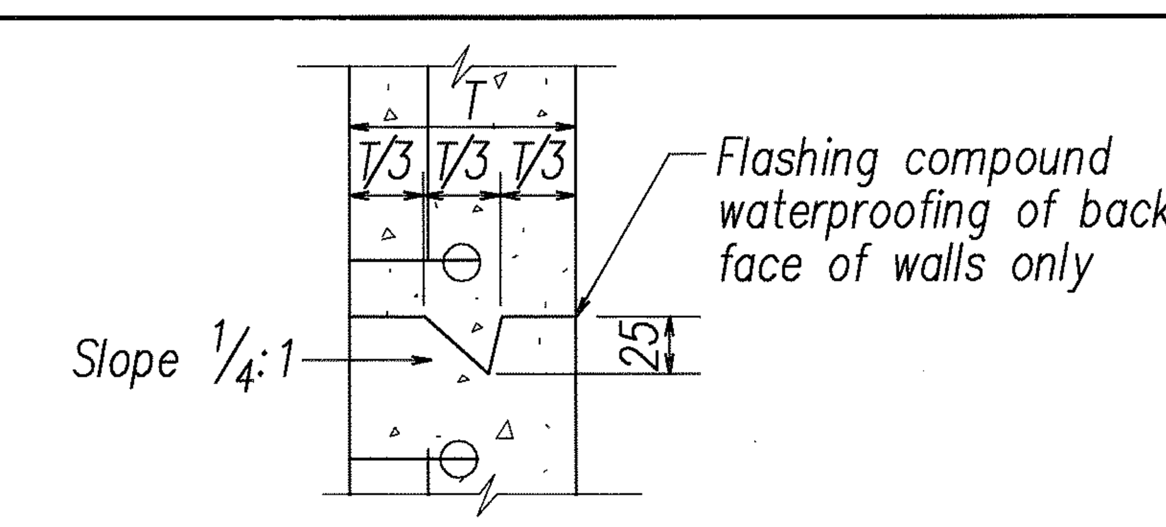
General Notes:

1. Provide a minimum of one 16 ø x 2.5m Copperweld Ground Rod in each pullbox. When directed by the Traffic Signal Inspector/Engineer, install additional Ground Rods. Cost of Ground Rods shall be incidental to the pullboxes.
2. All pre-cast concrete pullboxes shall be manufactured in two pieces.
3. The pullbox with cover shall be capable of supporting an MS 18 Loading.
4. The maximum weight of the pullbox cover shall not exceed 27 kilograms.
5. The openings for the conduits on all pullboxes shall be pre-cast concrete knockouts.
6. After installing the conduits in the openings of the pullboxes, the Contractor shall fill the excess opening in the pre-cast knockouts with concrete mortar.
7. Prior to installing the pullboxes, the Contractor shall level the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
8. All concrete shall be Class A (25MPa, min.)
9. Rebars shall be Grade 300 and all lapped splices shall be 360mm minimum.
10. The #57 or #67 size aggregate shall conform to latest version of AASHTO M43 (ASTM D 448).
11. Type "C" Pullbox shall be installed in a location protected from vehicular traffic (i.e. raised sidewalk, behind A.C. curbs, traffic signal standard or pipe guards).



POLYMER CONCRETE COVER

Not to Scale



TYPICAL CONSTRUCTION JOINT DETAIL

Not to Scale

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LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

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22 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX & COVER DETAILS

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.10 OF 66 SHEETS

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

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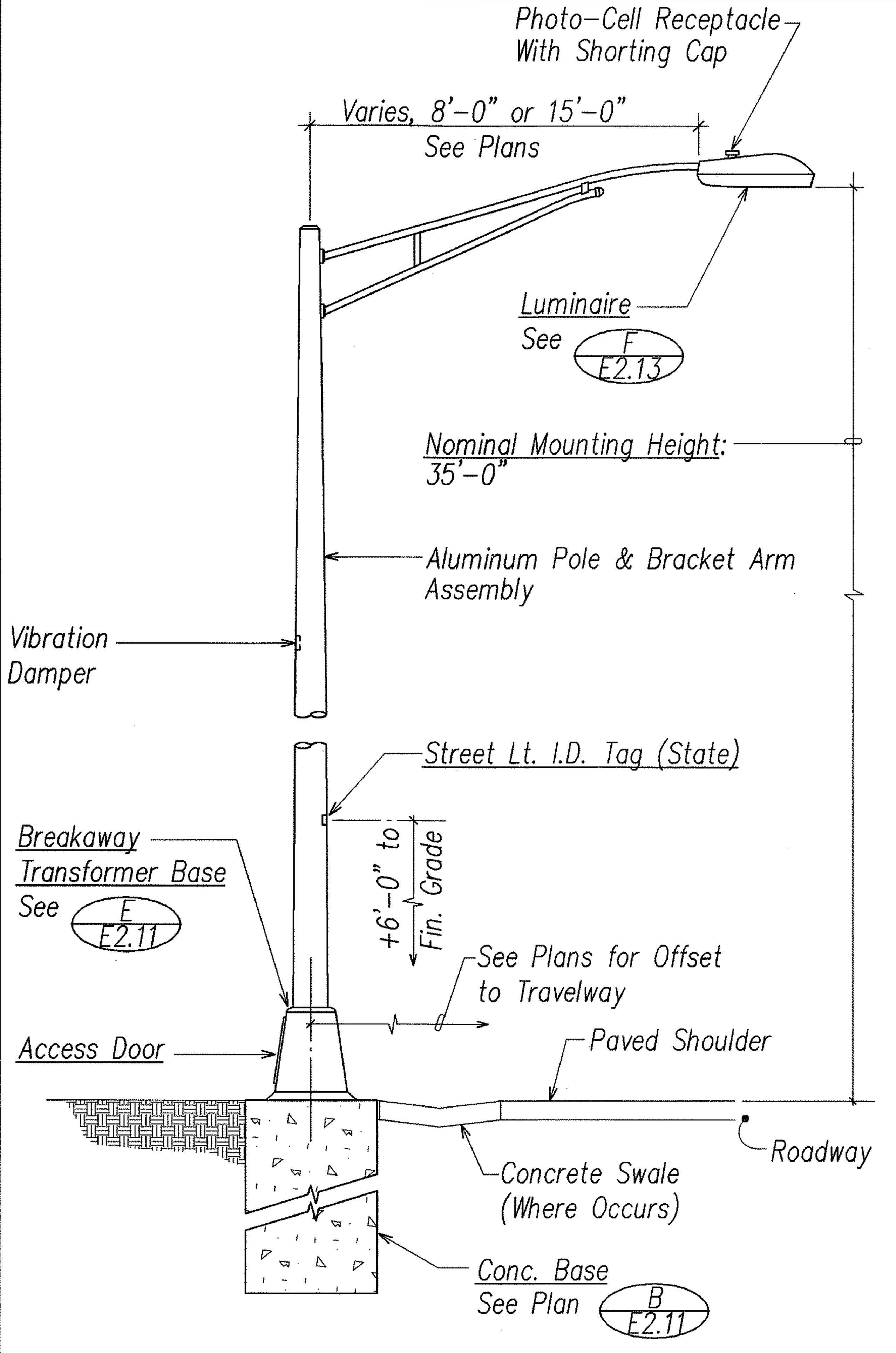
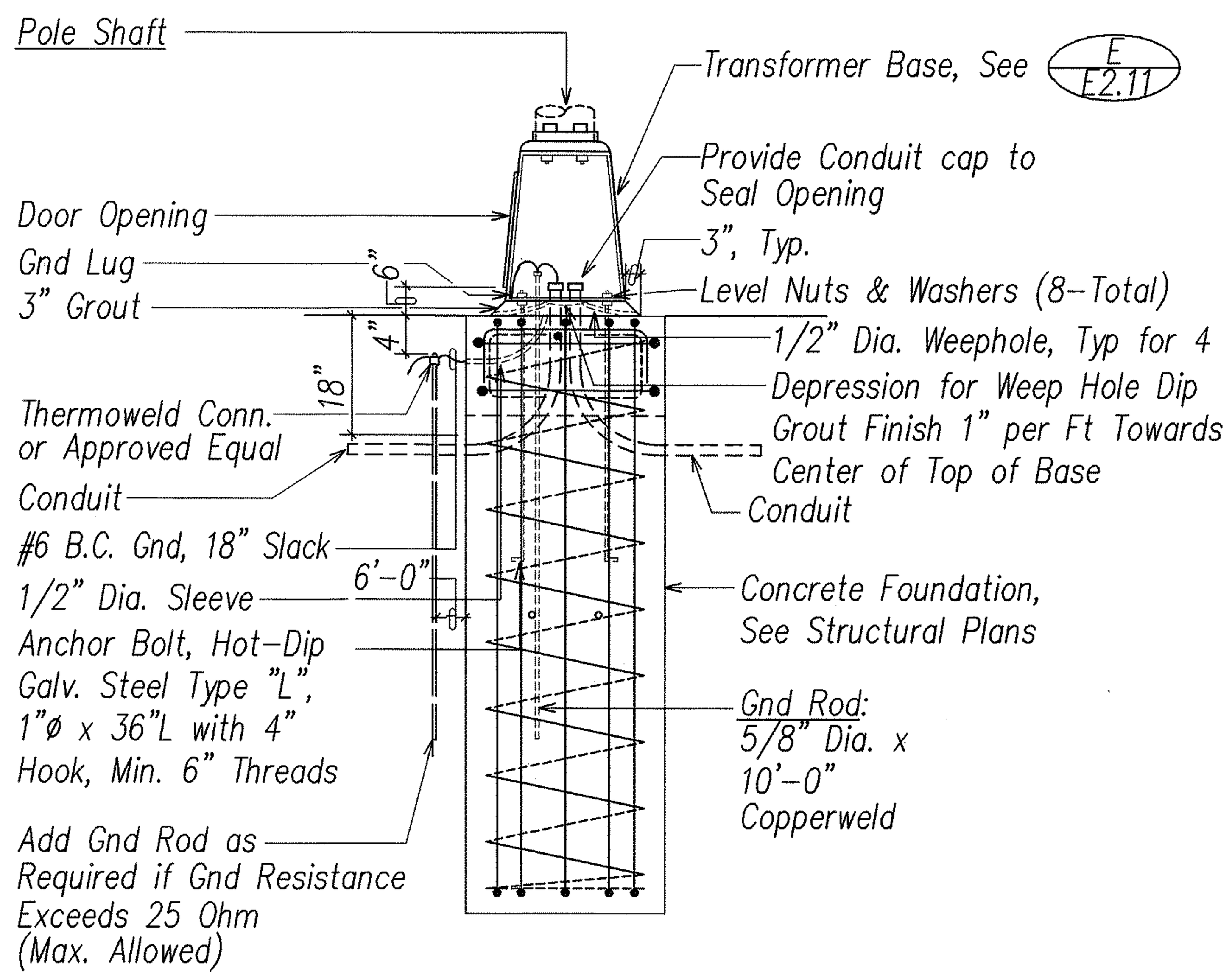
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 338	380

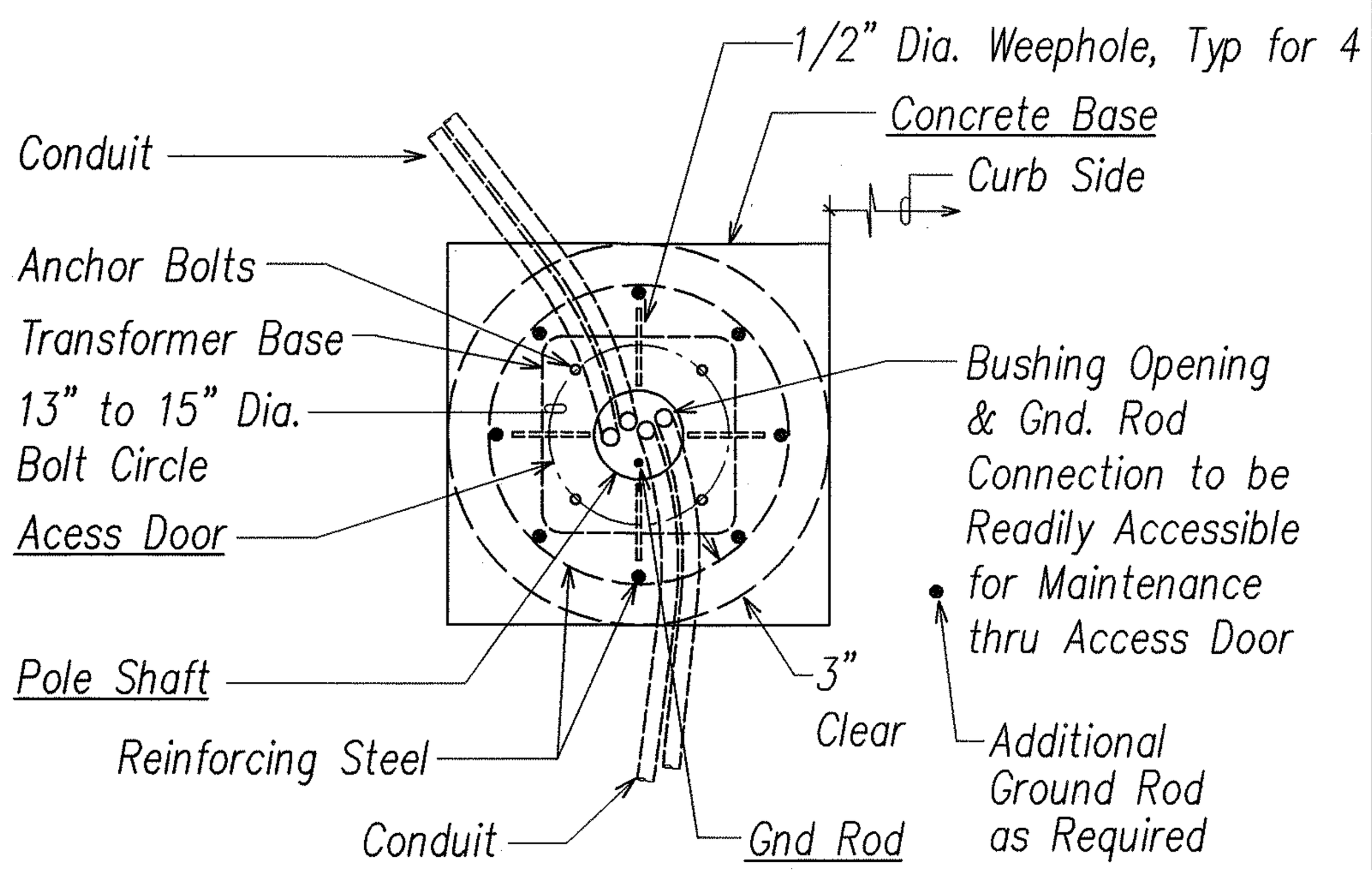


A/E2.11 **STREET LIGHT STANDARD**
Not to Scale

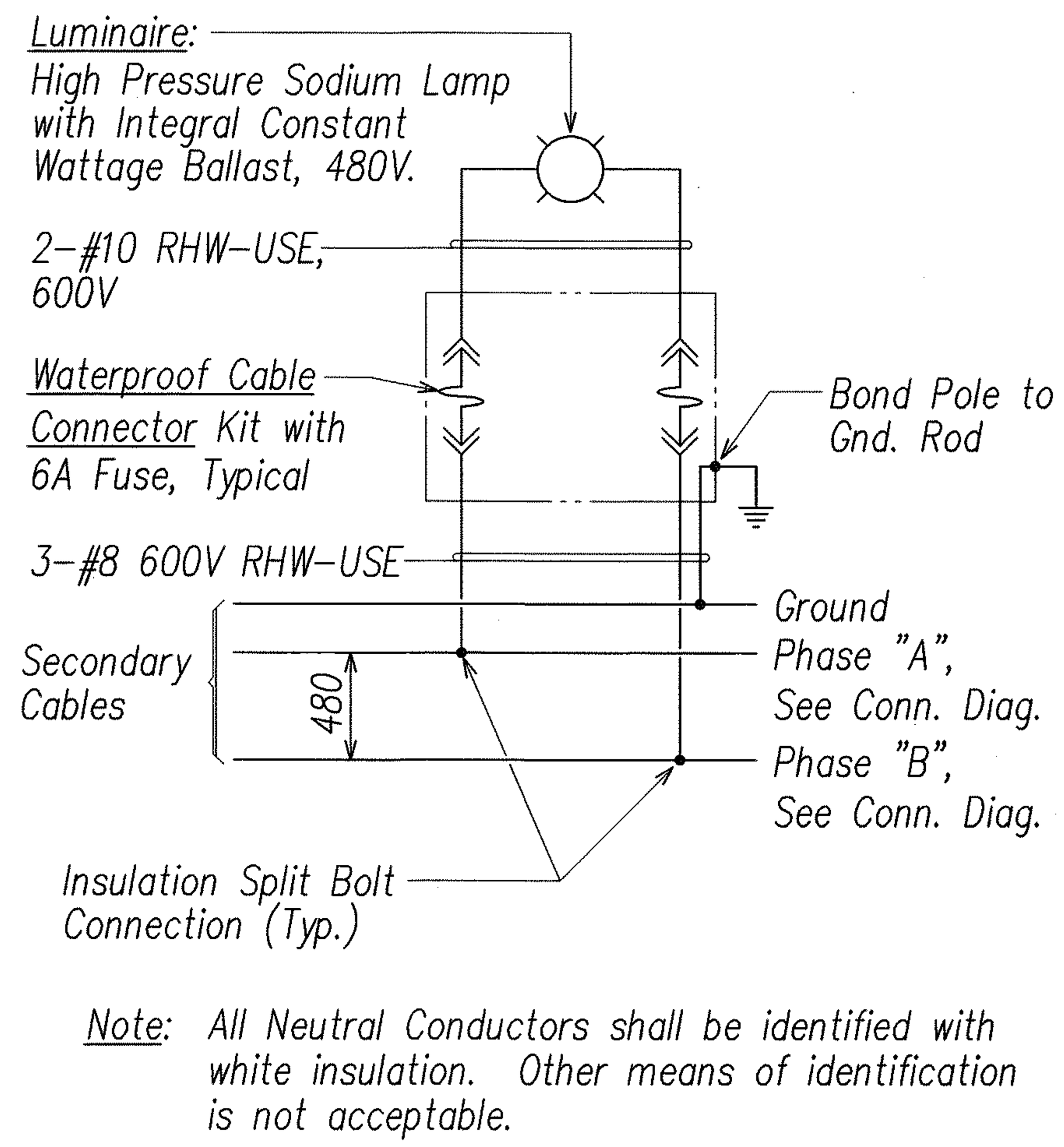


Note: See Concrete Base Plan B/E2.11 & Structural Drawings

C/E2.11 **CONCRETE BASE ELEVATION**
Not to Scale

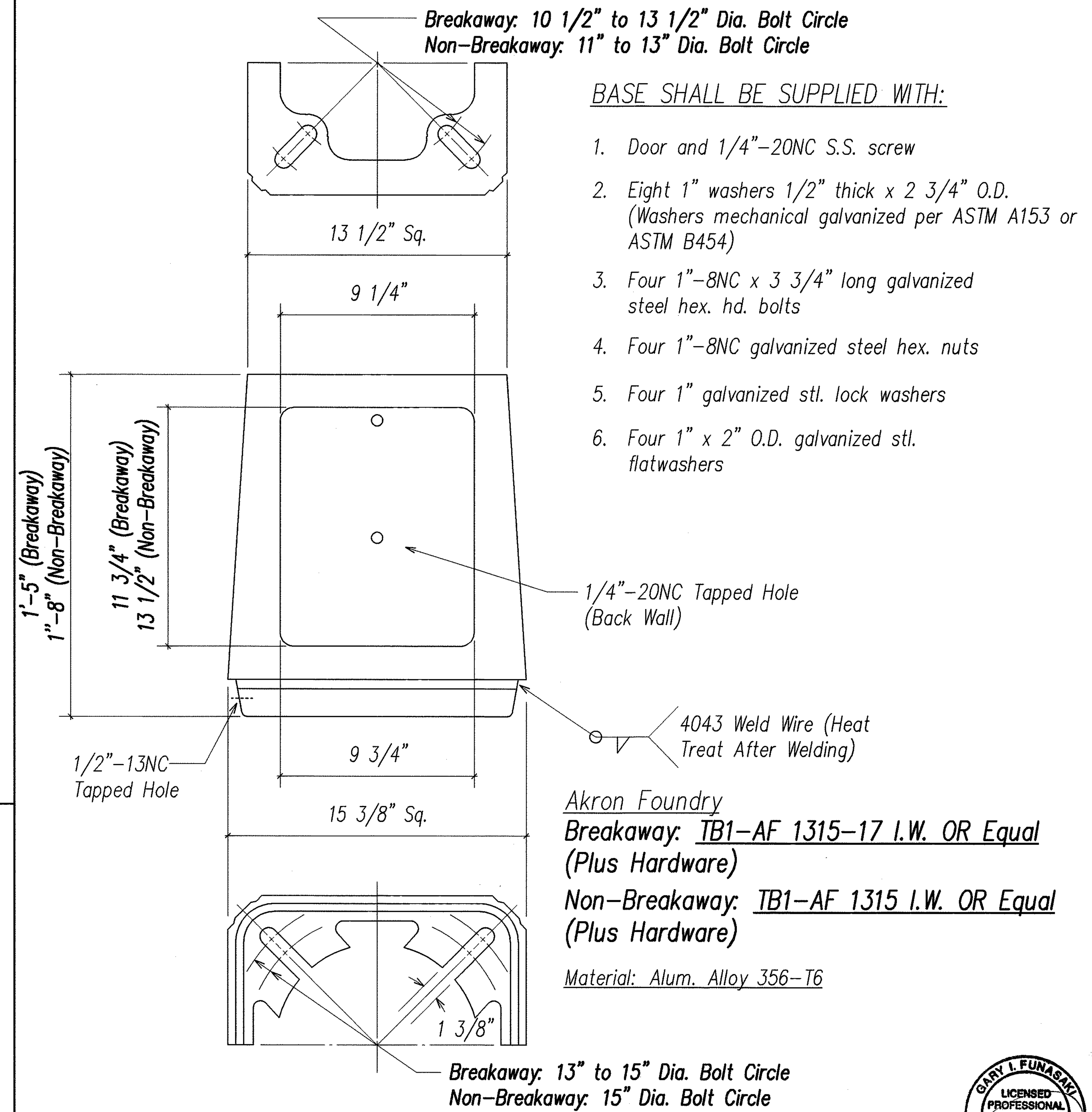


B/E2.11 **CONCRETE BASE PLAN**
Not to Scale



Note: All Neutral Conductors shall be identified with white insulation. Other means of identification is not acceptable.

D/E2.11 **STREET LIGHT CONNECTION DIAGRAM** (480V Metered System)



BASE SHALL BE SUPPLIED WITH:

1. Door and 1/4"-20NC S.S. screw
2. Eight 1" washers 1/2" thick x 2 3/4" O.D. (Washers mechanical galvanized per ASTM A153 or ASTM B454)
3. Four 1"-8NC x 3 3/4" long galvanized steel hex. hd. bolts
4. Four 1"-8NC galvanized steel hex. nuts
5. Four 1" galvanized stl. lock washers
6. Four 1" x 2" O.D. galvanized stl. flatwashers

Akron Foundry
Breakaway: TB1-AF 1315-17 I.W. OR Equal (Plus Hardware)
Non-Breakaway: TB1-AF 1315 I.W. OR Equal (Plus Hardware)
Material: Alum. Alloy 356-T6

E/E2.11 **BREAKAWAY AND NON-BREAKAWAY TRANSFORMER BASE DETAIL**
NOT TO SCALE

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
18 APRIL 2007

DATE	REVISION
4/20/07	△2 Added Luminaire Detail

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT DETAILS I
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

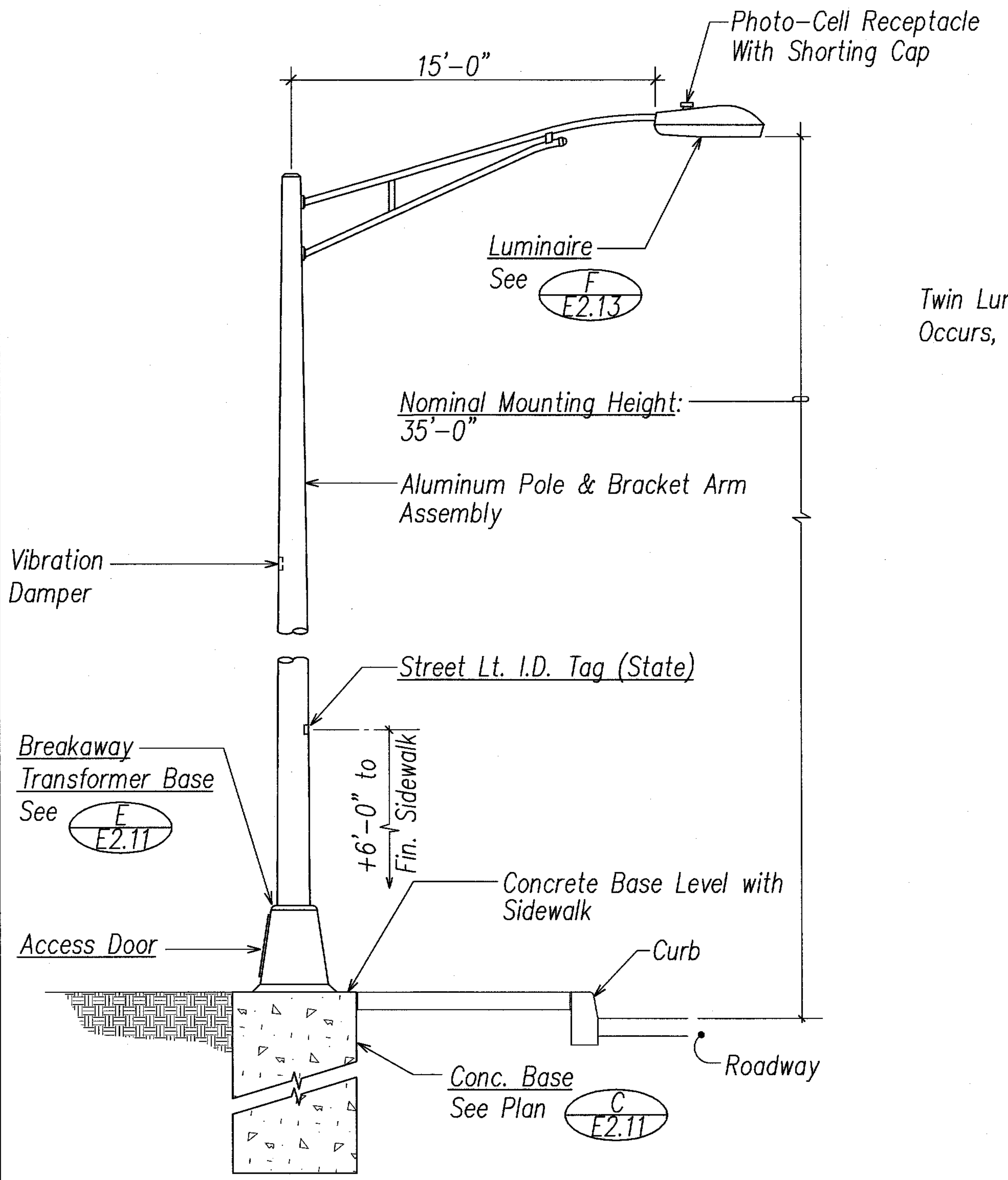
Scale: AS NOTED Date: Feb 21, 2007
SHEET No. E2.11 OF 66 SHEETS

ADD. 338

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

LAST SAVE: 04/18/07 @ 14:32:13 BY: SL PLOT SC 1"=1'

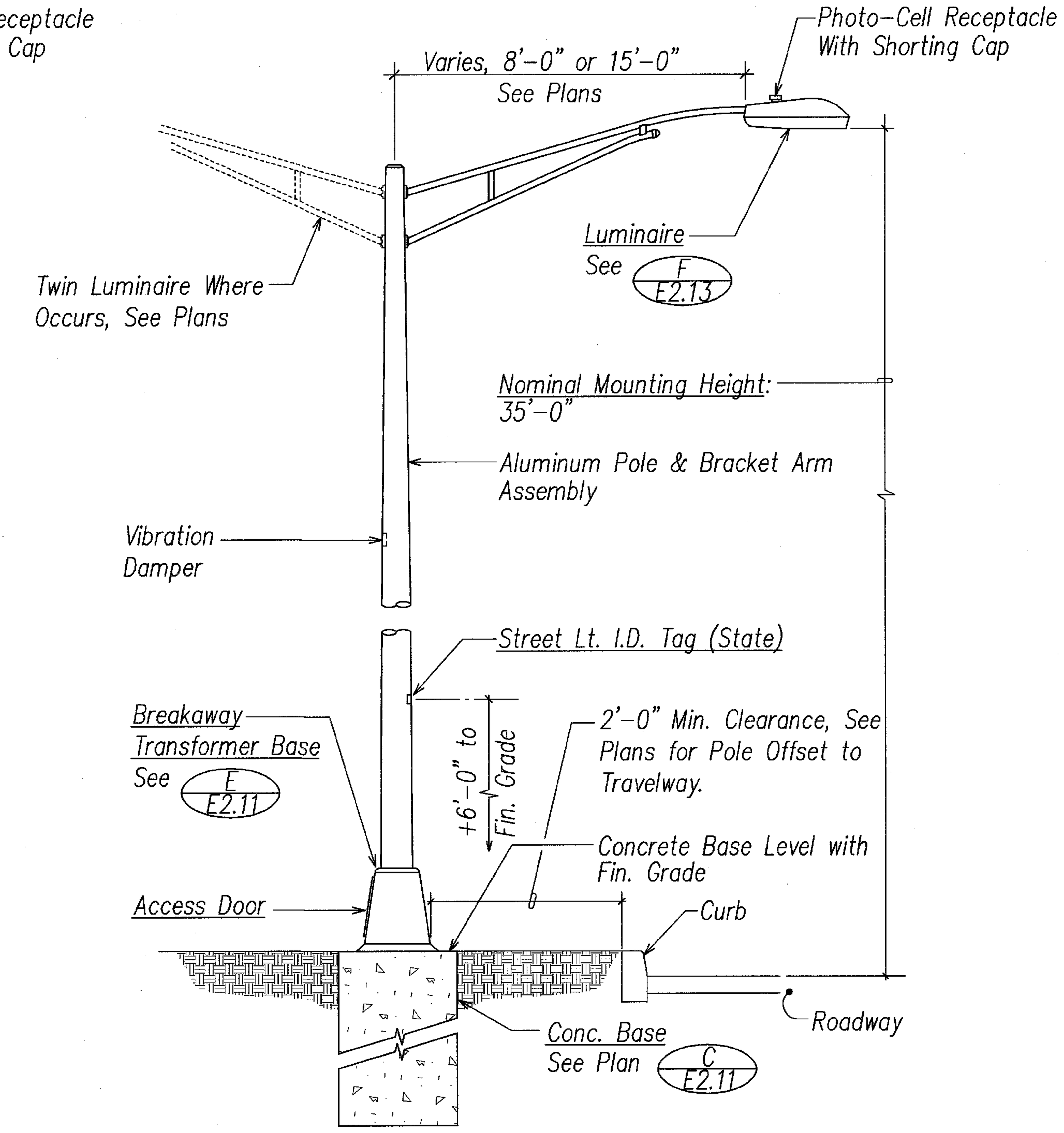
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 339	380



Elevation

A E2.12 STREET LIGHT STANDARD BEHIND SIDEWALK (BSW)

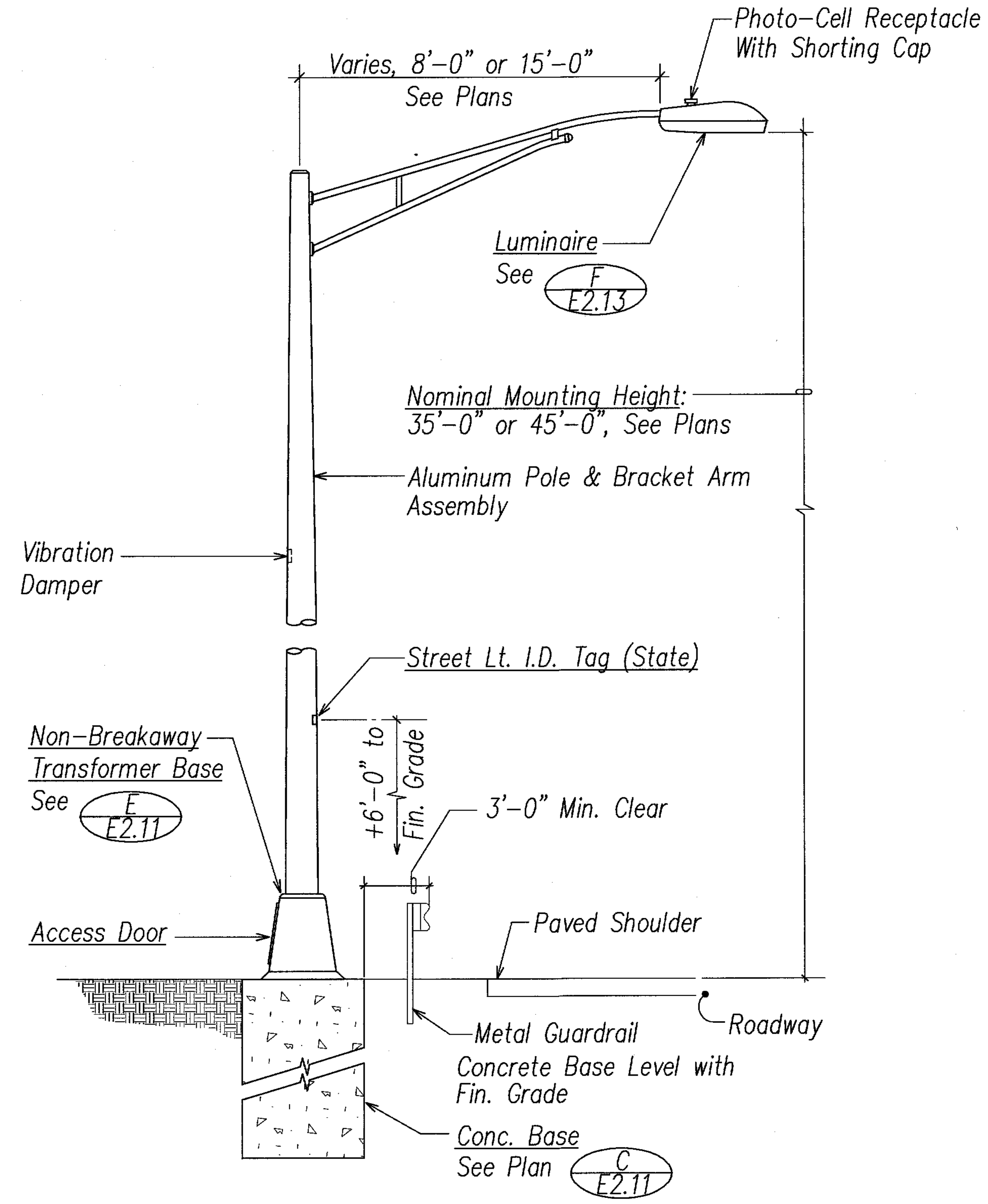
Not to Scale



Elevation

B E2.12 STREET LIGHT STANDARD BEHIND CURB (BC)

Not to Scale



Elevation

C E2.12 STREET LIGHT STANDARD BEHIND GUARDRAIL (BGR)

Not to Scale

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AUG 2013

DATE	REVISION
4/20/07	△ Revised Transf. Base & Luminaire

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT DETAILS II

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E2.12 OF 66 SHEETS

"AS-BUILT" ADD. 339

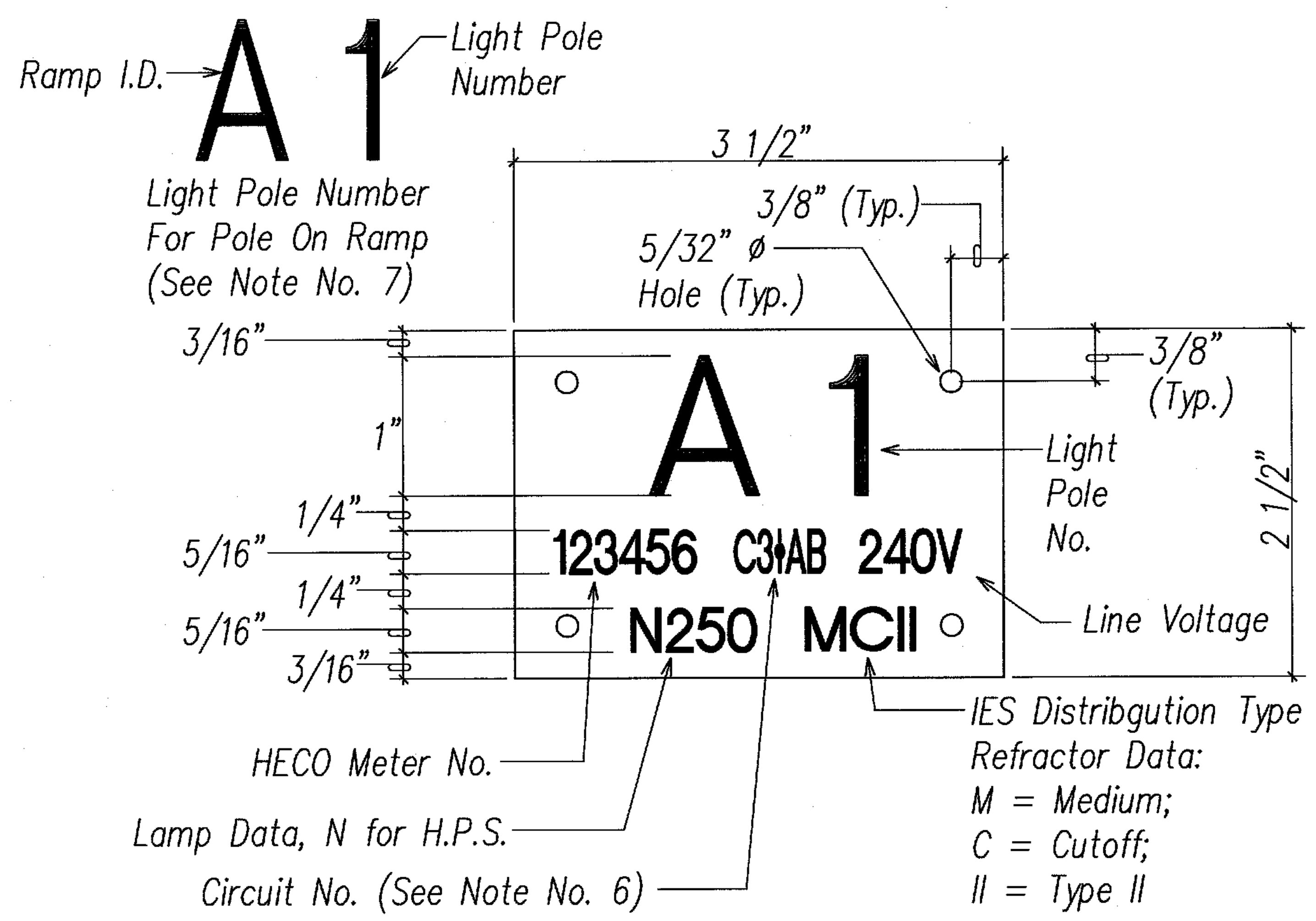
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
NOTE BOOK	QUANTITIES BY	
No.	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 340	380

NEW DESIGN REQUIREMENTS FOR LUMINAIRES, POLE STANDARDS AND TRAFFIC SIGNAL STANDARDS

Highway lighting luminaires, pole standards, bracket arms, traffic signal standards and mast arms being furnished for this project shall conform with the design requirements noted below. Design shall be in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 4th Edition, including the latest interim revisions, published by the American Association of State Highway and Transportation Officials with the following modifications:

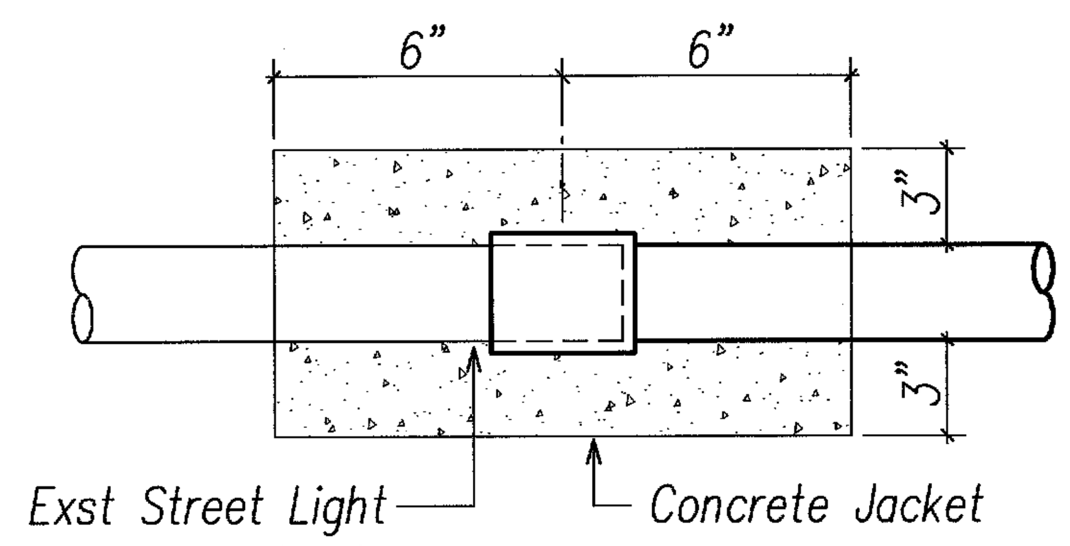
1. Basic Wind Speed [Article 3.8.2] to determine the design wind pressure shall be 105 mph.
2. Wind Importance Factor [Article 3.8.3] noted in Table 3-2 used to determine the design wind pressure shall be based on the following recurrence intervals:
   a. For traffic signal structures: 50 years
   b. For luminaire support structures: 25 years
3. Fatigue Importance Factors [Article 11.6] noted in Table 11-1 for traffic signal structures shall be based on Fatigue Category 1. Luminaire support structures with round cross sections under 50 feet do not need to be designed for fatigue.
4. Galloping [Article 11.7.1]. Traffic signal support structures shall be designed for galloping-induced cyclic loads unless approved vibration mitigation devices are installed.
5. Vortex Shedding [Article 11.7.2]. Nontapered lighting structures shall be designed to resist vortex shedding-induced loads including cantilevered mast arms and lighting structures that have tapers less than 0.14 in/ft.
6. Natural Wind Gust [Article 11.7.3]. Traffic signal structures shall be designed to resist an equivalent static natural wind gust pressure.
7. Truck-Induced Gust [Article 11.7.4]. Traffic signal support structures shall be designed to resist an equivalent static truck gust pressure range based on a truck speed of 20 mph over the posted speed.
8. Equipment manufacturers providing structural supports for luminaires and traffic signals are responsible to provide the Engineer with any information that will impact the current foundation design.



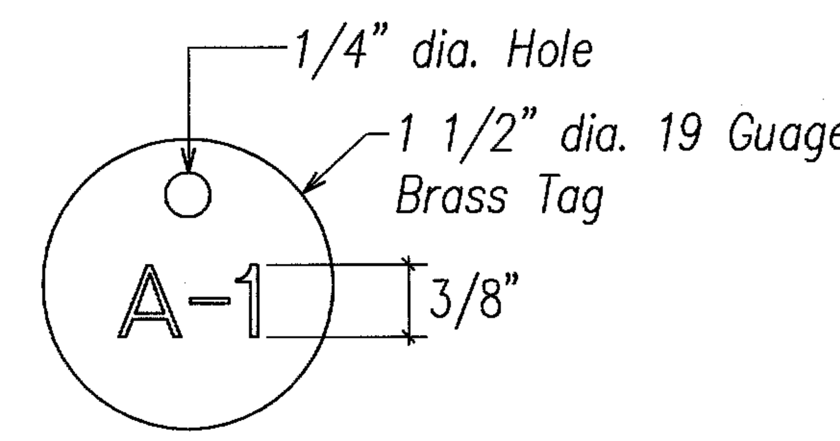
NOTES:

1. Use 3 ply laminated flexible plastic, black-white-black. thickness: black cap sheet-0.010", white base sheet-0.052", black base sheet-0.010".
2. Light pole number size shall be 1" high and engraved 1/8" wide, white in color (number as required).
3. Nomenclature size shall be 5/16" high and engraved 1/32" wide, white in color (meter number, circuit number, line voltage, lamp data and refractor data as required).
4. Attach to aluminum pole with no. 8 stainless steel, 1/2" long drive screws in 1/8" drill hole.
5. Numbers and letters are inscribed by cutting through "black cap sheet" to expose "white letters".
6. Assign circuit number (letter indicates panelboard, number indicates circuit; øAB indicates connection to Phases "A" & "B".
7. For light poles installed on ramp, assign numbers to include ramp I.D. and pole number. legend may be less than one (1) inch in height.
8. Contractor to verify all items of I.D. tag with State D.O.T. prior to fabrication.

A / E2.13 **HIGHWAY LIGHT I.D. TAG DETAIL**
NOT TO SCALE



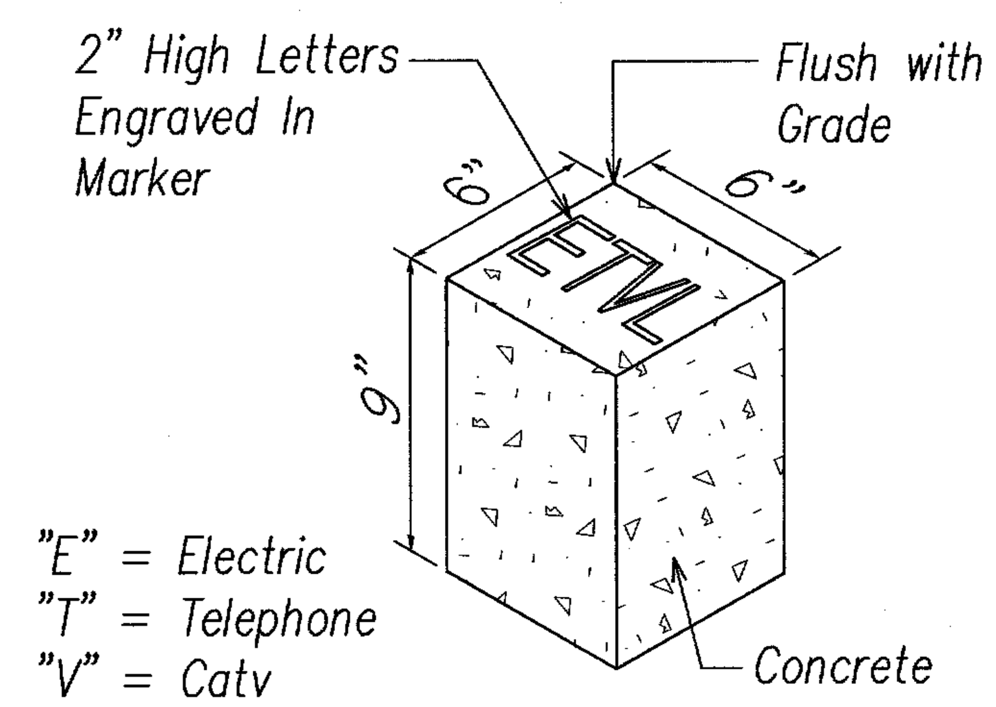
B / E2.13 **TYP CONNECTION TO EXST CONDUIT STUBOUT DETAIL**
NOT TO SCALE



NOTES:

1. Number Size shall be 3/8" high and Punched on Brass Tag.
2. Attach to Circuit Cables with Nylon Weather Resistant Locking Cable Ties, 3/16" wide.

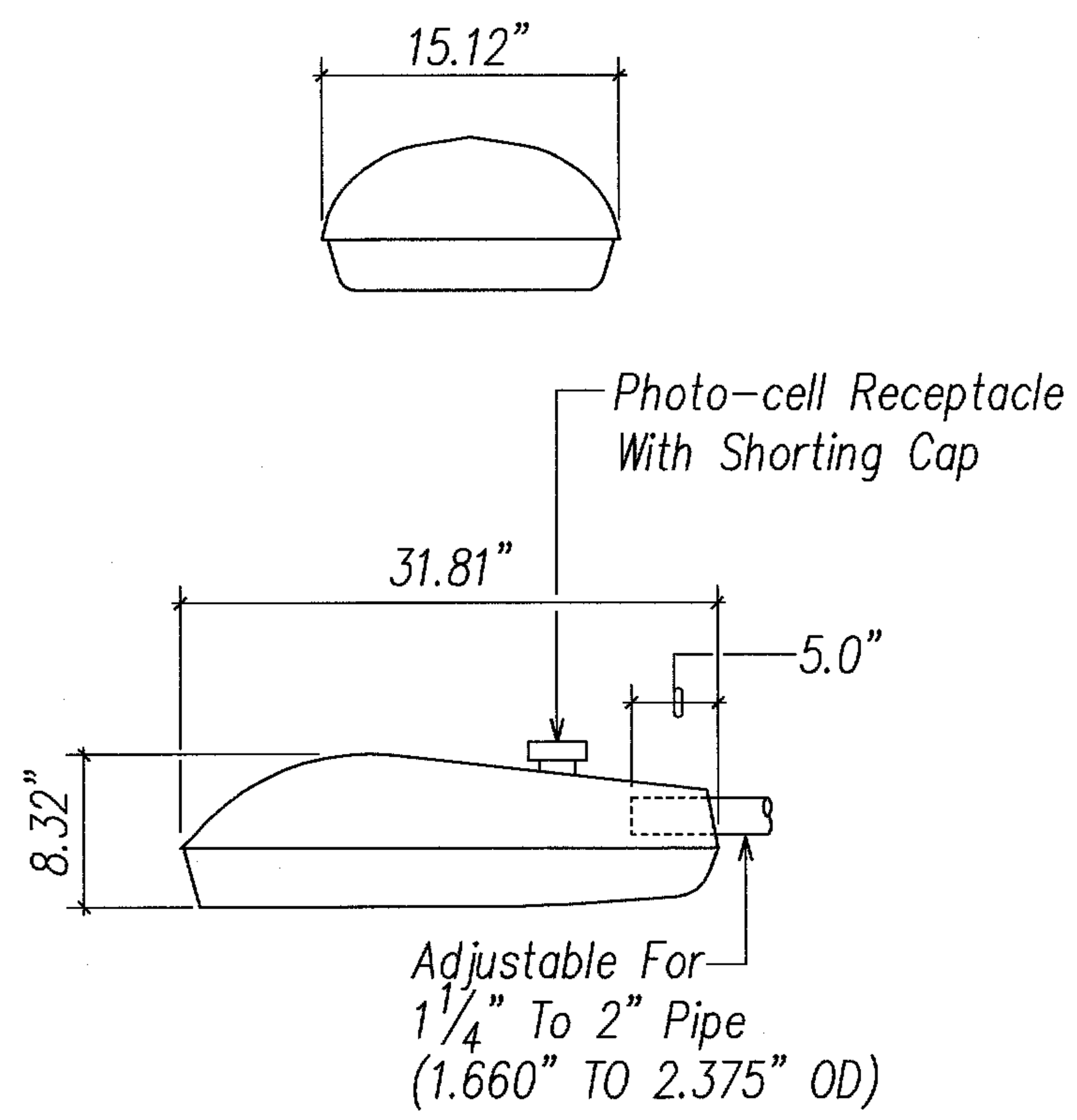
C / E2.13 **STREET LIGHT CIRCUIT CABLE I.D. TAG DETAIL**
NOT TO SCALE



"E" = Electric
"T" = Telephone
"V" = Catv
"L" = Light

D / E2.13 **CONCRETE CONDUIT STUB-OUT MARKER**
Not to Scale

Lamp:	250W HPS, Unless Otherwise Noted
Voltage:	480V
IES Distrib.:	Medium, Cutoff, Type III, Unless Otherwise Noted
EPA:	1.1 Sq. Ft. (Max.)



NOTES:

1. All Dimensions Shown Are Nominal.

E / E2.13 **LUMINAIRE DETAIL**
NOT TO SCALE

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AUG 2013

DATE	REVISION
4/20/07	△2 Added Luminaire Detail

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT DETAILS III

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

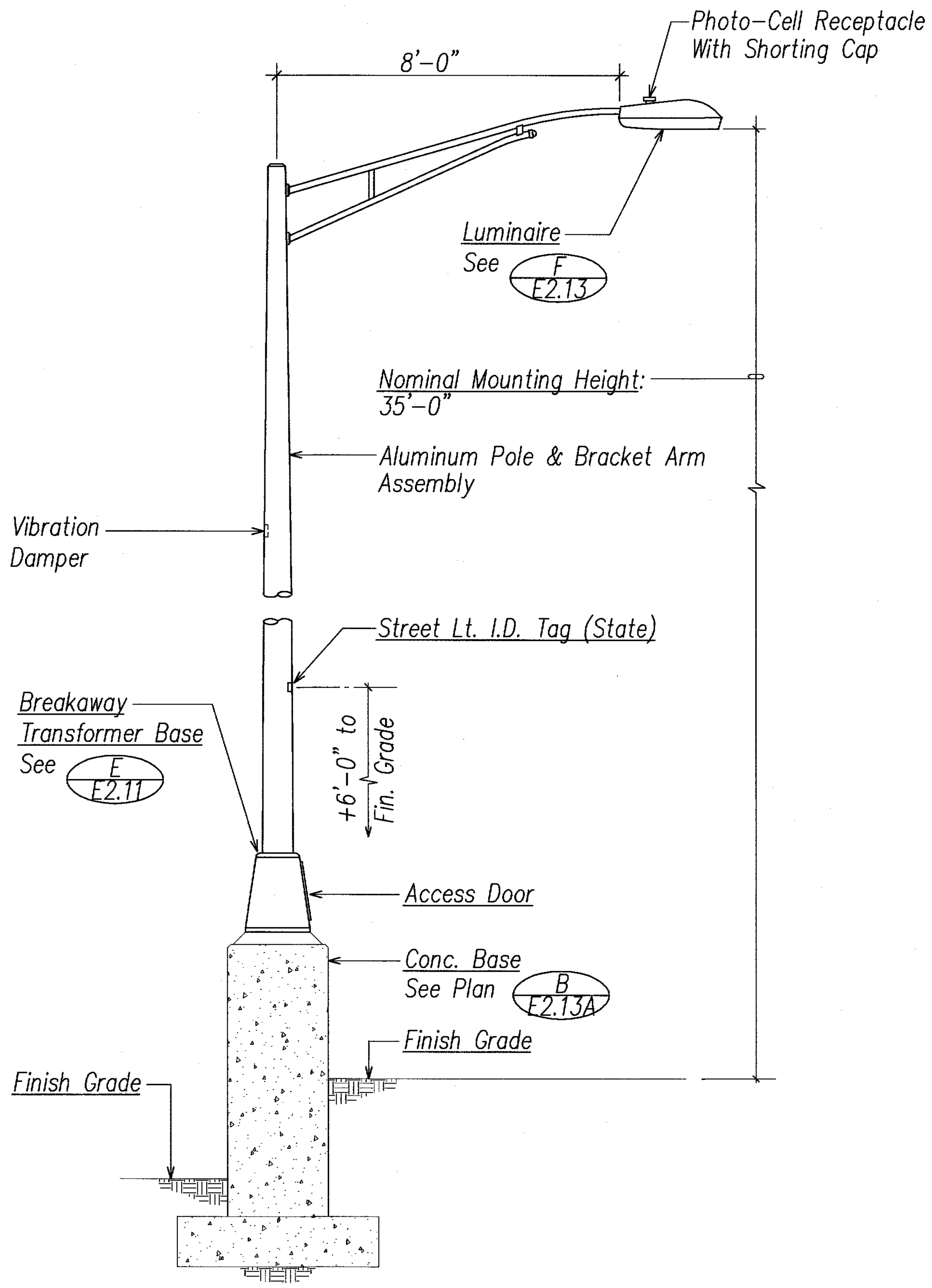
Scale: AS NOTED — Date: Feb 21, 2007

SHEET No. E2.13 OF 66 SHEETS

"AS-BUILT" ADD. 340

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

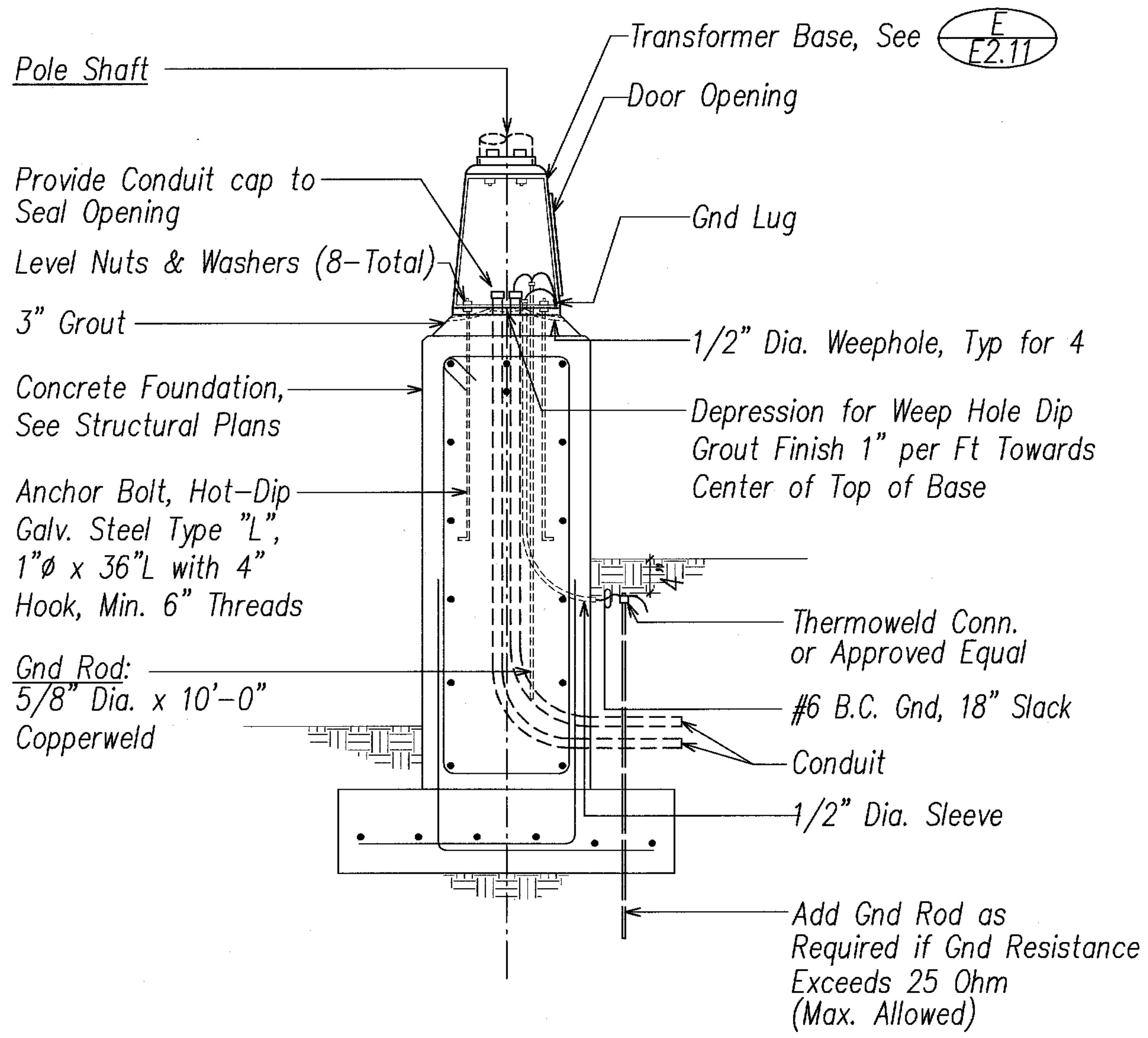
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO 340S-1	380



Elevation

A E2.13A STREET LIGHT STANDARD ON MEDIAN BARRIER

Not to Scale



Note: See Concrete Base Plan B/E2.11 & Structural Drawings

B E2.13A CONCRETE BASE ELEVATION

Not to Scale

GARY L FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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DATE	REVISION
7/16/08	Added Barrier Lights

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT DETAILS IIIA

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

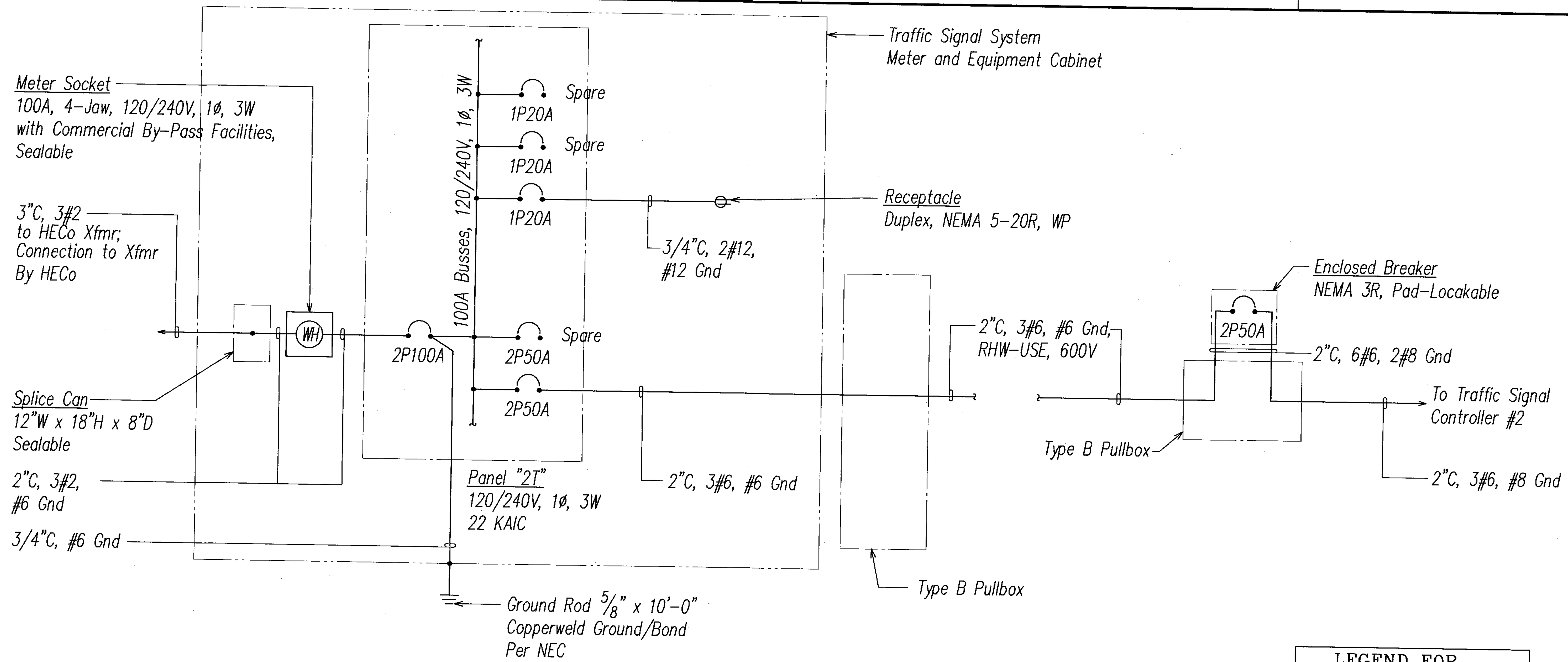
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.13AOF 66 SHEETS

"AS-BUILT" CO 340S-1

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	C0341	380



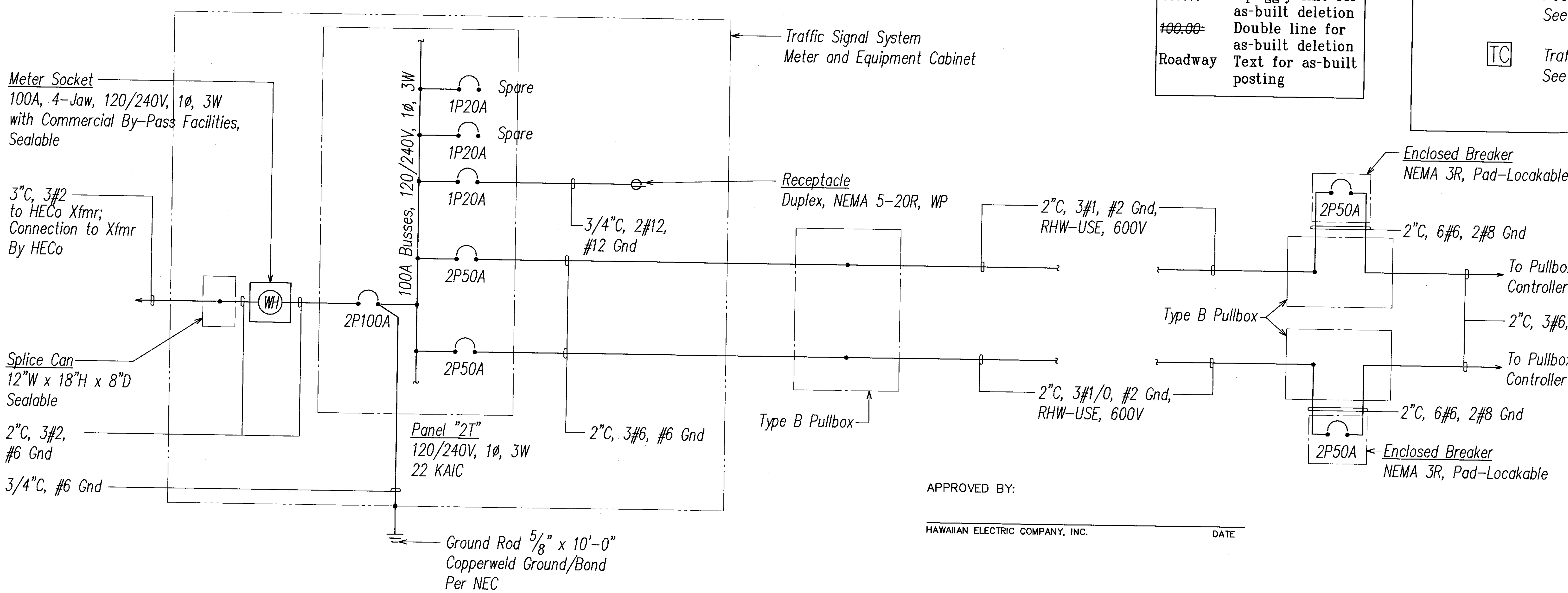
TRAFFIC SIGNAL SYSTEM 2 ONE-LINE DIAGRAM

TRAFFIC SIGNAL LEGEND

- Signal Standard, 10' Height, Pole "B" Indicated, See Detail D/E2.16
- 12" RYG Traffic Signal Head
- 12" RYGA Traffic Signal Head – Straight Ahead Arrow
- 12" RYGA Traffic Signal Head (Left Turn Arrow Indicated)
- 12" RYGA Programmed Visibility Traffic Signal Head (Left Turn Arrow Indicated)
- Traffic Signal Heads, Mounted on Mast Arm., Type II. Spread as Shown on Plan, Pole "A" and 60'-0" Mast Arm Indicated. See Detail A/E2.15.
- Loop Detector, See Details Sheet E2.19. Space Loop Detector Sawcuts Per Details.
- Pedestrian Signal Head, See Mounting Detail, B/E2.16.
- Optical Pre-emption Detector, See Details C & D/E2.17.
- Pedestrian Pushbutton, See Detail C/E2.16.
- TC Traffic Signal Controller See Detail A/E2.17.

LEGEND FOR AS-BUILT POSTINGS

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



TRAFFIC SIGNAL SYSTEMS 1 & 3 ONE-LINE DIAGRAM

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

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DATE	REVISION
8/12/09	Added Breaker per DTS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS I

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

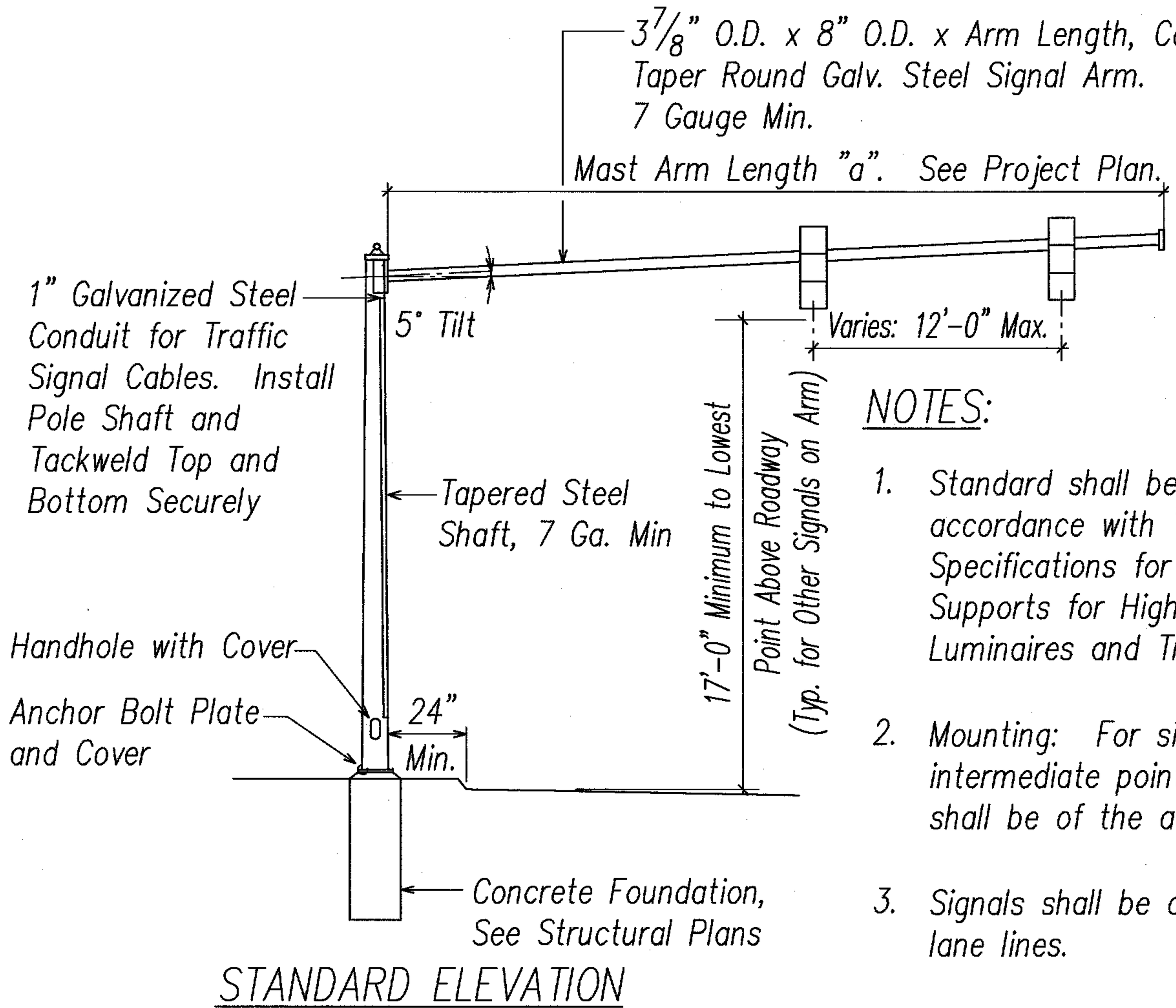
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.14 OF 66 SHEETS

"AS-BUILT" C0341

ORIGINAL PLAN	NOTE BOOK	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO342	380

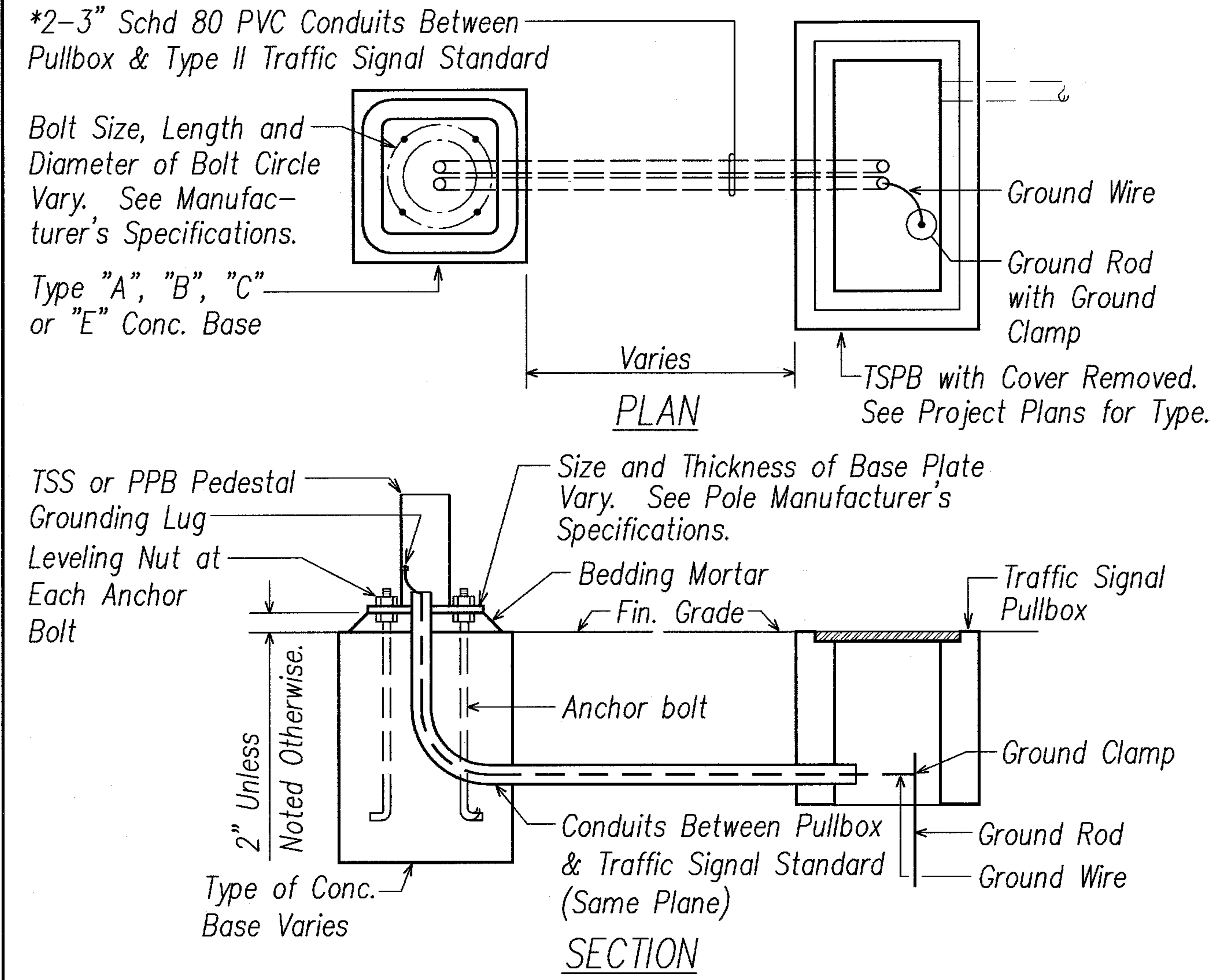


NOTES:

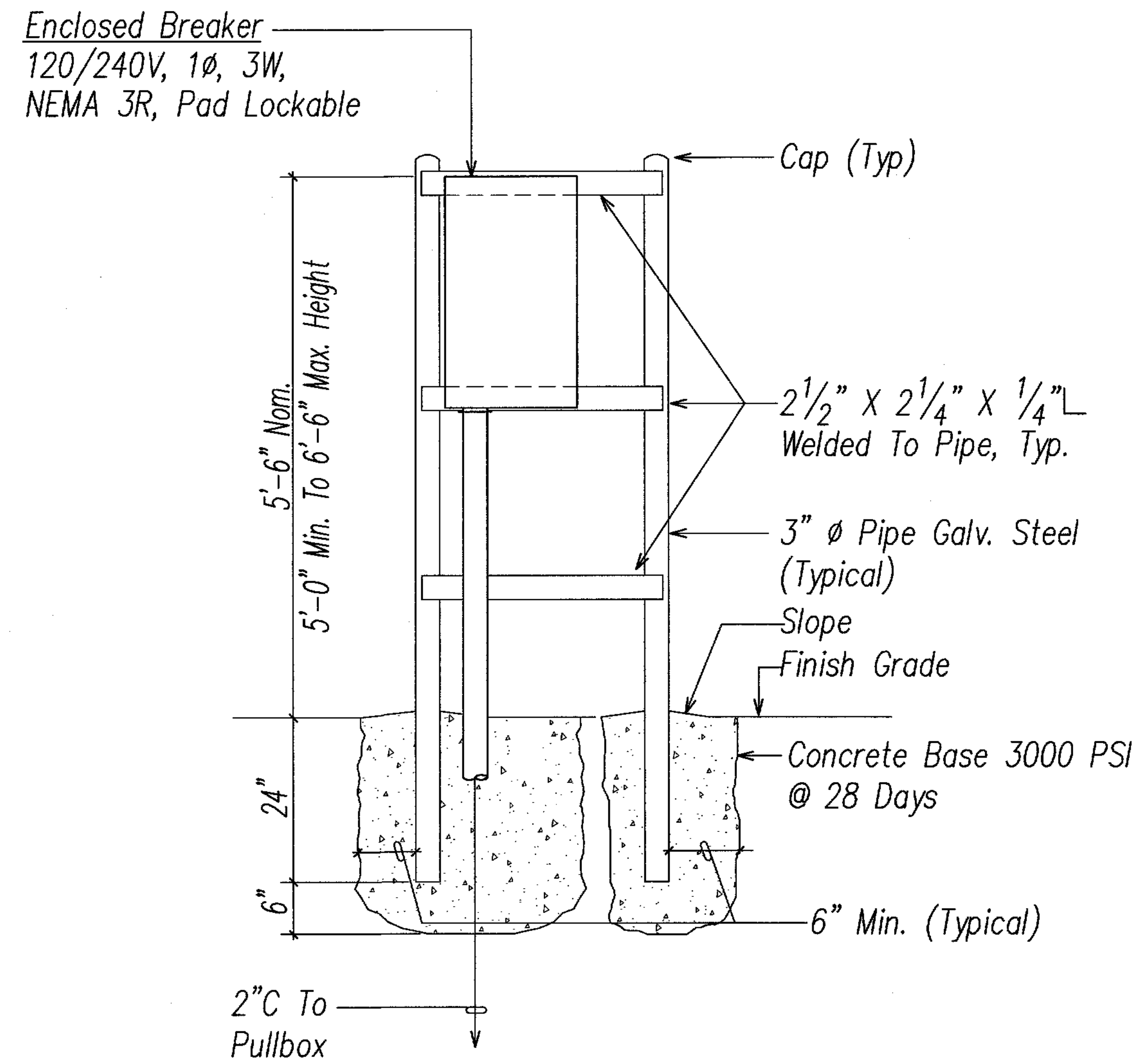
1. Standard shall be designed In accordance with "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals".
2. Mounting: For signals at intermediate points mast arm shall be of the adjustable type.
3. Signals shall be centered over lane lines.
4. Submit shop drawings for approval.

A / E2.15 TYPE II TRAFFIC SIGNAL STANDARD
N.T.S.

NOTES:
* 1-2" Schd 80 PVC Conduits Between Pullbox & Type I Traffic Signal Standard.
*2-3" Schd 80 PVC Conduits Between Pullbox & Type II Traffic Signal Standard



B / E2.15 TYPICAL STANDARD & PEDESTAL DETAIL
N.T.S.



Notes:
Maintain 4' Clear And Level Workspace In Front Of Equipment.
Installation Shall Have Unobstructed, Ready Access To Equipment.

B / E2.15 TYPICAL TRAFFIC SIGNAL BREAKER DETAIL
N.T.S.

ORIGINAL PLAN | NOTE BOOK | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

LEGEND FOR AS-BUILT POSTINGS

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

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
5 AUG 2013

DATE	REVISION
7/15/09	Added Breaker Detail per DTS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS II

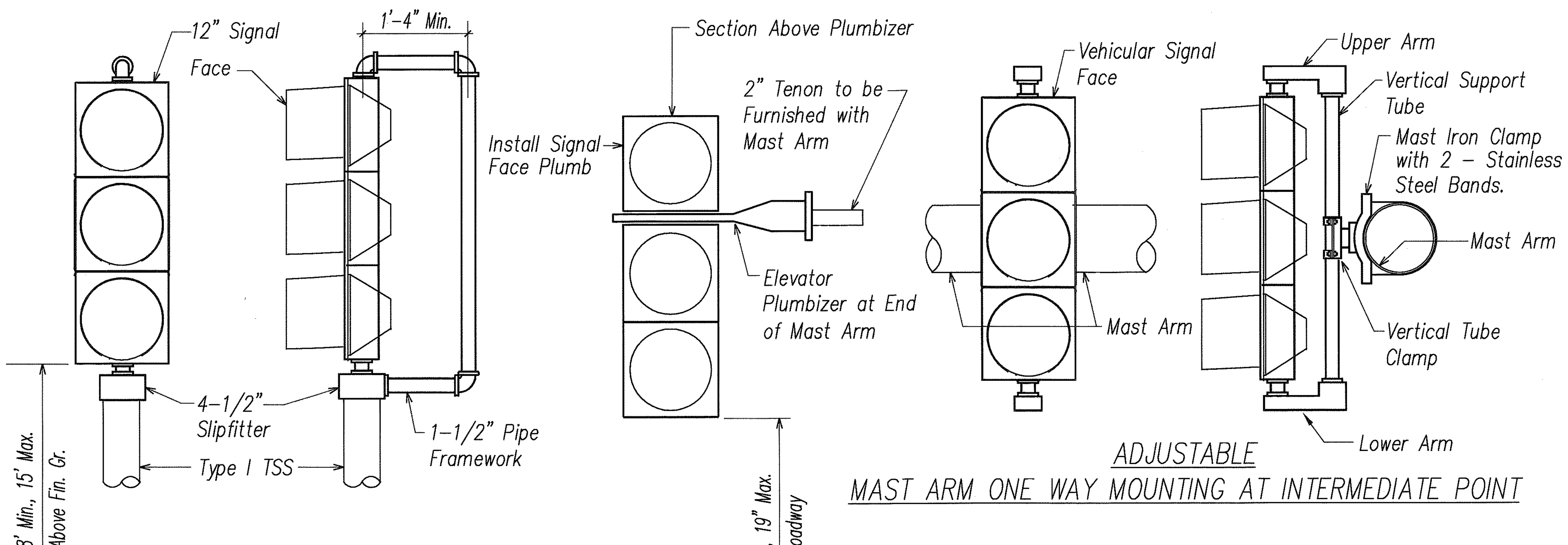
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.15 OF 66 SHEETS

"AS-BUILT" CO342

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	343	380



TOP OF POLE - ONE WAY MOUNTING

NOTES:

Signal as noted on plans.

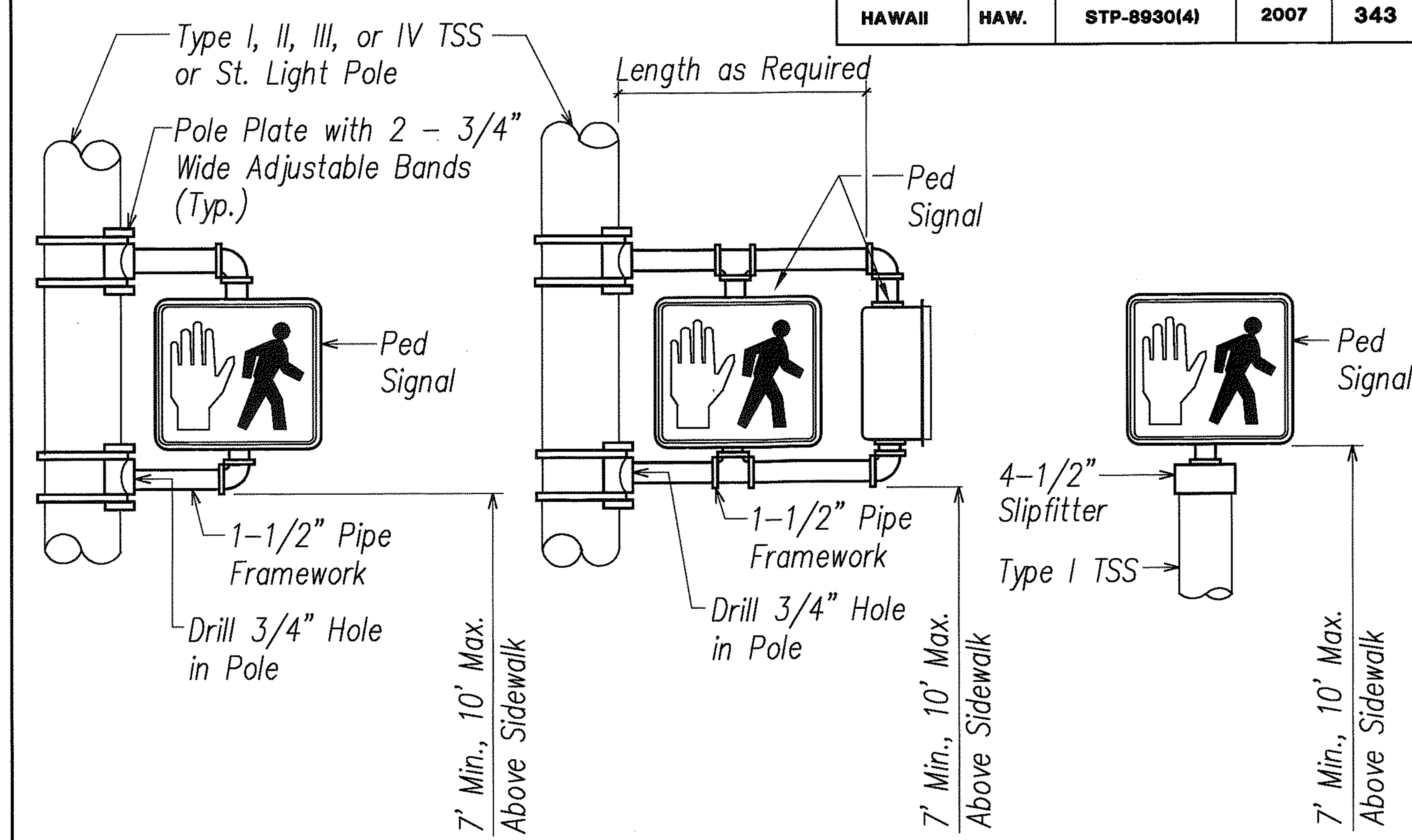
MAST ARM - ONE WAY MOUNTING AT ENDS

ONE WAY MOUNTING AT ENDS

1. Stainless steel bands shall be 1/2" wide x .050" thick, minimum. Tensile strength shall be 100,000 psi minimum.
2. Upper arm, lower arm and vertical support tube shall be of 356 cast aluminum.
3. All wiring shall be concealed.
4. Vertical tube clamp shall be of malleable iron, grade 32510.
5. All aluminum parts shall have an Alodine 1200 finish.

(A / E2.16) VEHICULAR SIGNAL MOUNTING DETAILS

N.T.S.



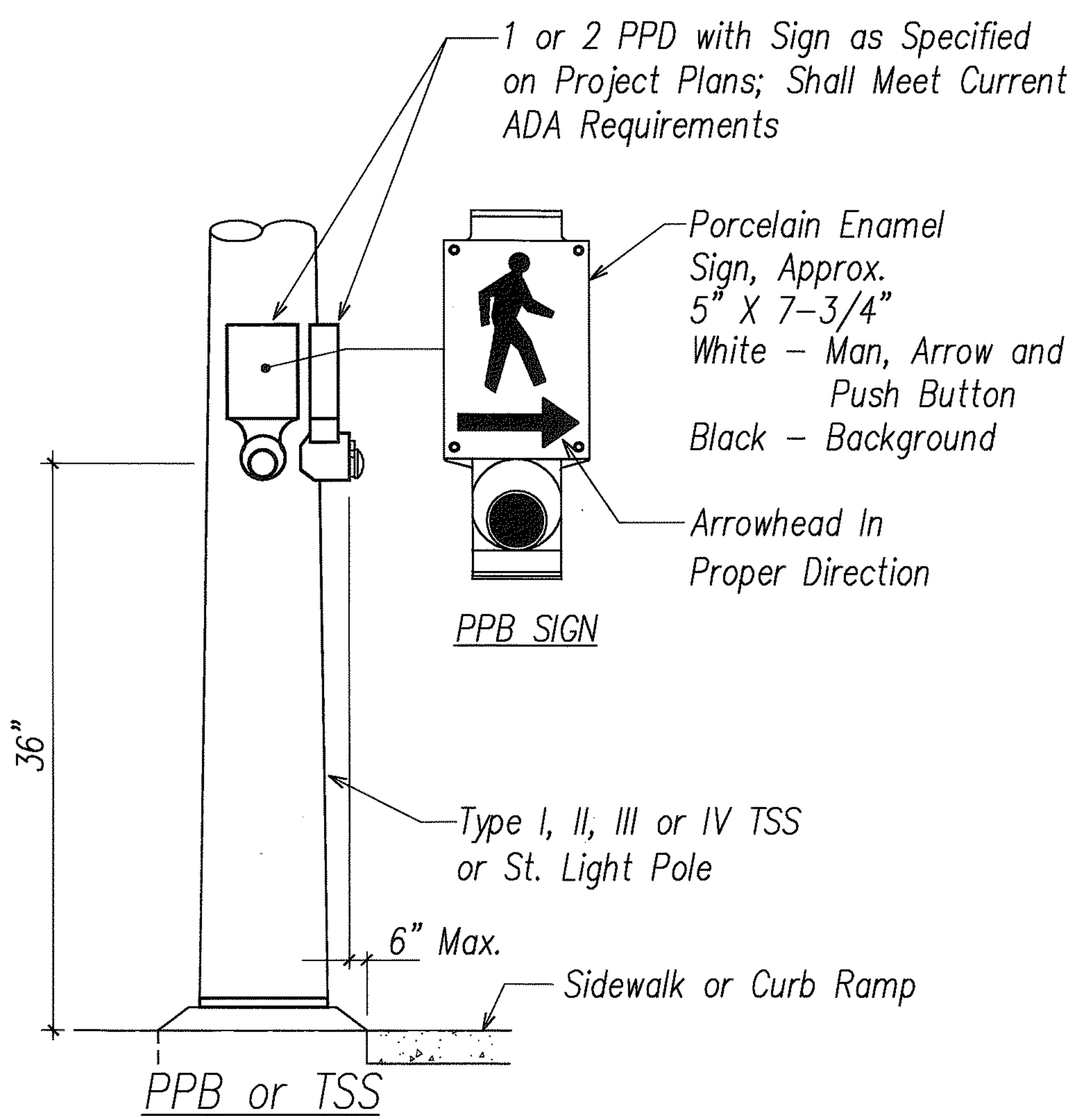
BRACKET MOUNT - ONE WAY

BRACKET MOUNT - TWO WAY

TOP OF POLE - ONE WAY

(B / E2.16) PEDESTRIAN SIGNAL MOUNTINGS

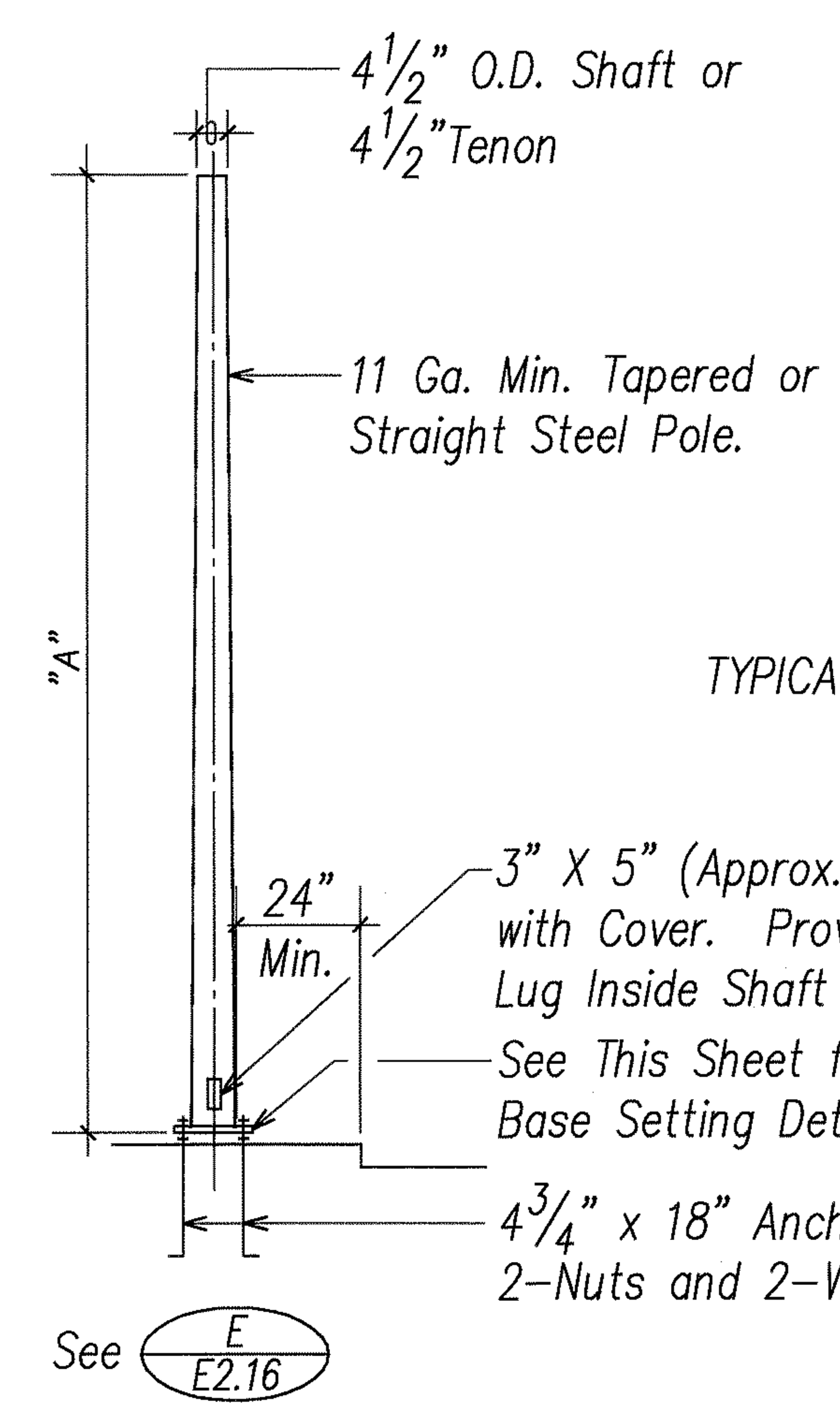
N.T.S.



PPB or TSS

(C / E2.16) PEDESTRIAN PUSHBUTTON DETAILS

N.T.S.



TYPE OF STANDARD	"A"
Type I-10	10

Type

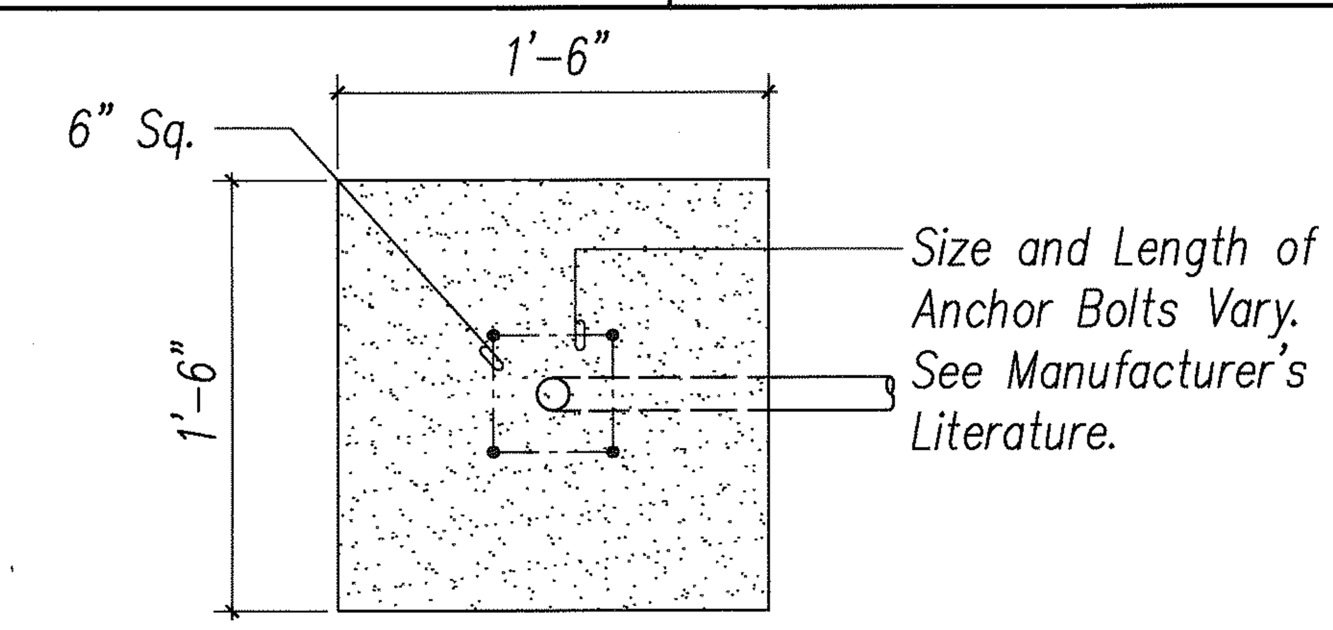
TYPICAL DESIGNATION: I-7

Height "A" (Feet)

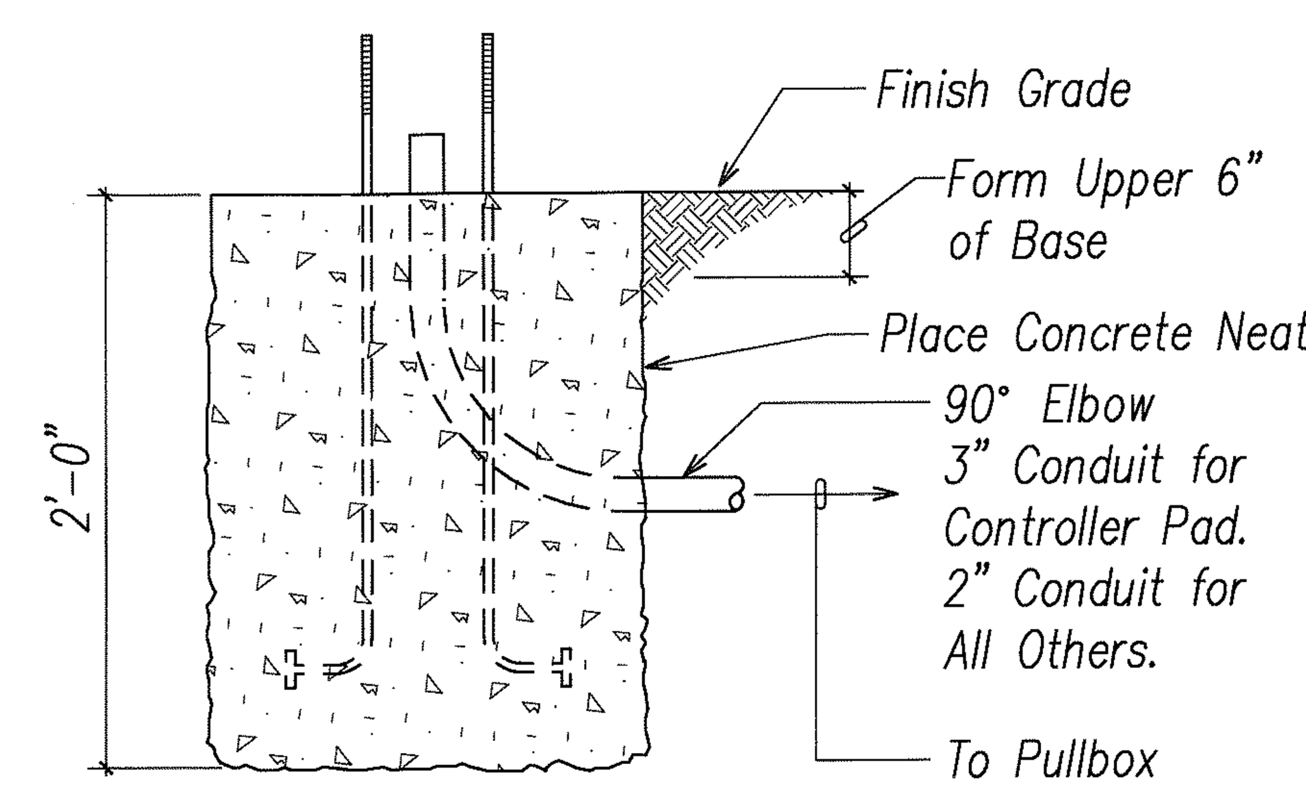
TYPE I T.S.S.

(D / E2.16) TYPICAL STANDARD AND PEDESTAL INSTALLATION

N.T.S.



PLAN



SECTION

NOTES:

1. Concrete shall be Class "B".
2. Type "A" concrete base shall be used for Type I-10, I-7 and I-3 standards.
3. Conduit bend is incidental to concrete base construction.

(E / E2.16) TYPE "A" CONCRETE BASE

N.T.S.

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4193-E HAWAII, U.S.A.

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20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS III

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

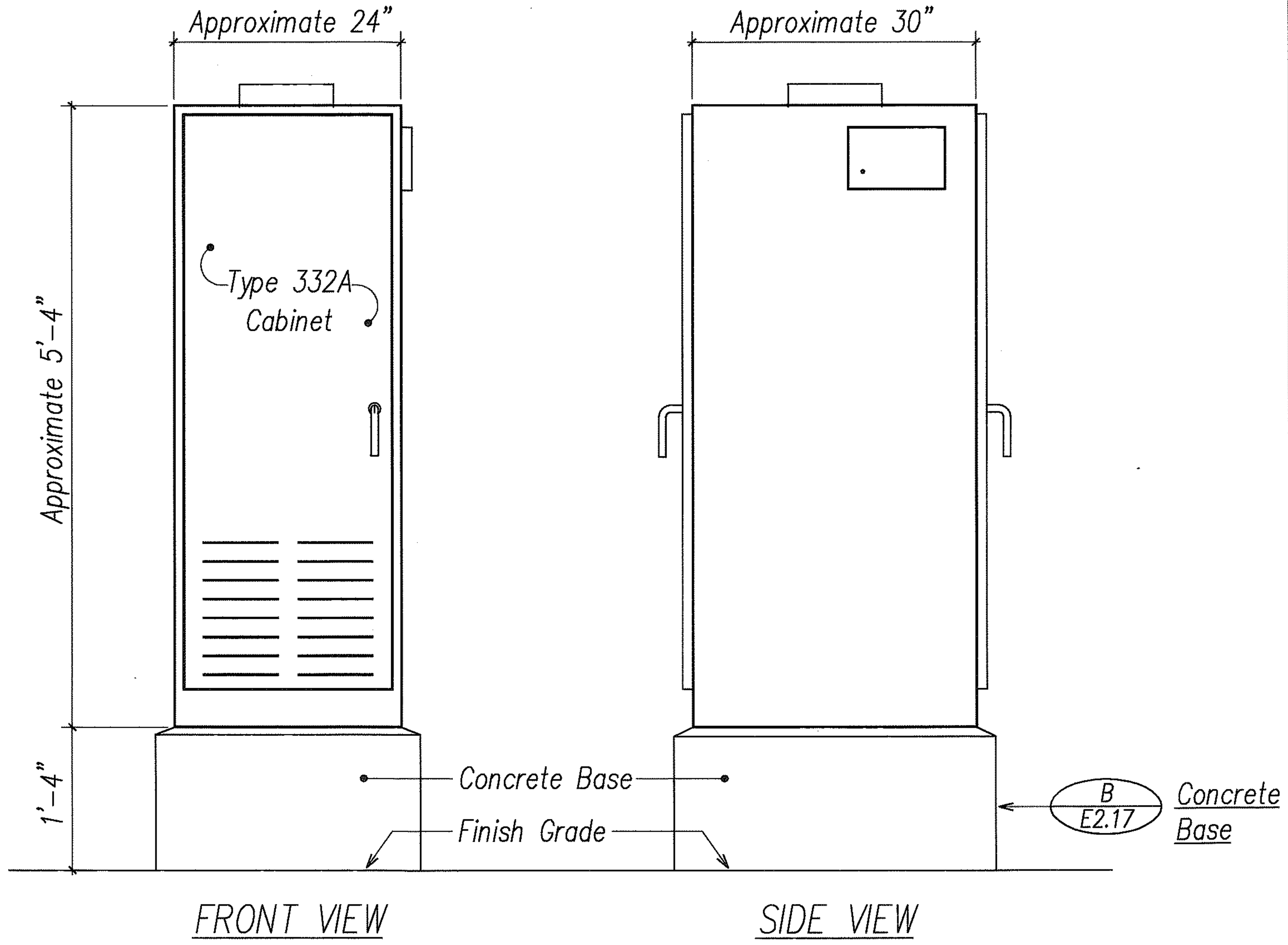
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.16 OF 66 SHEETS

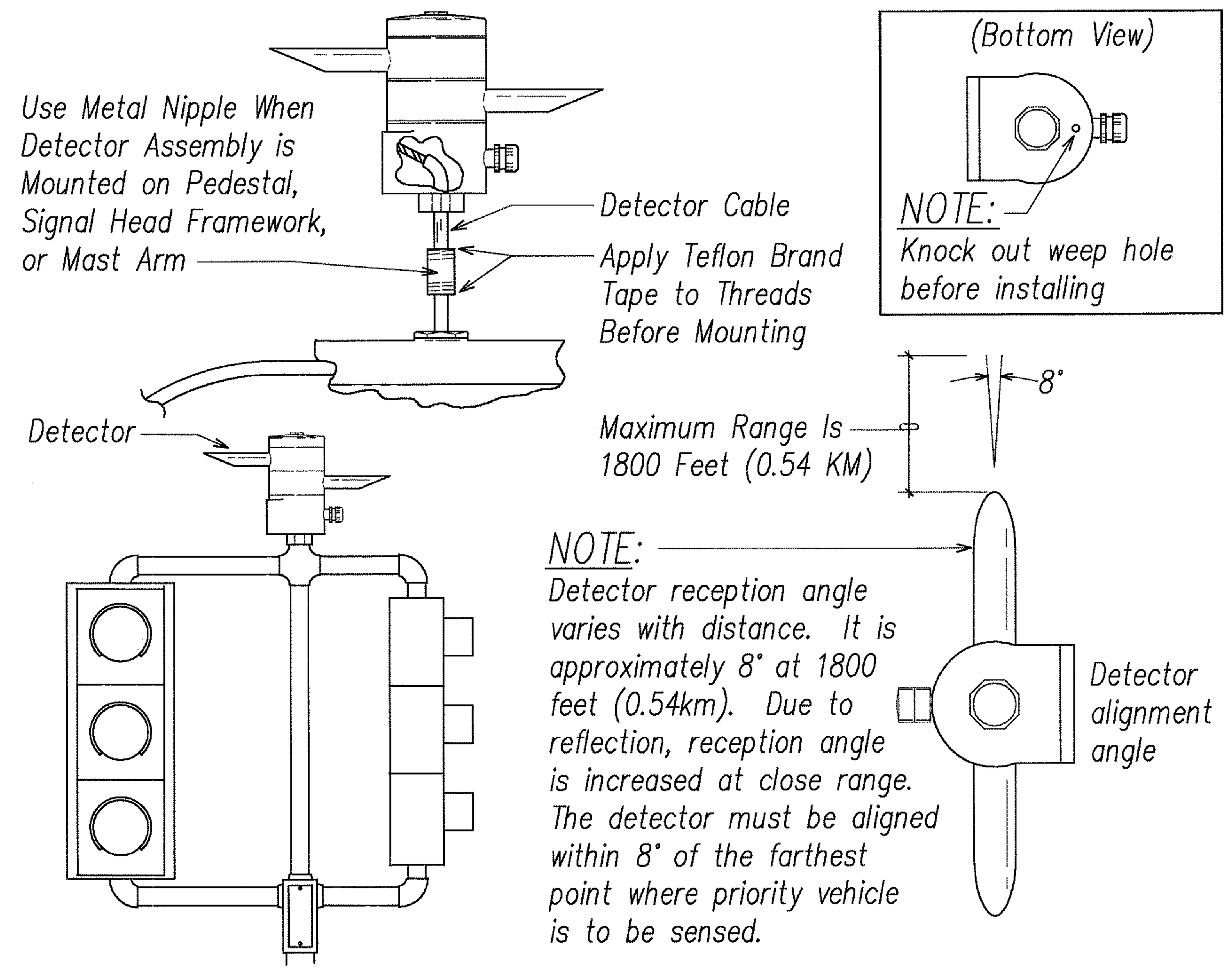
DATE	REVISION

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

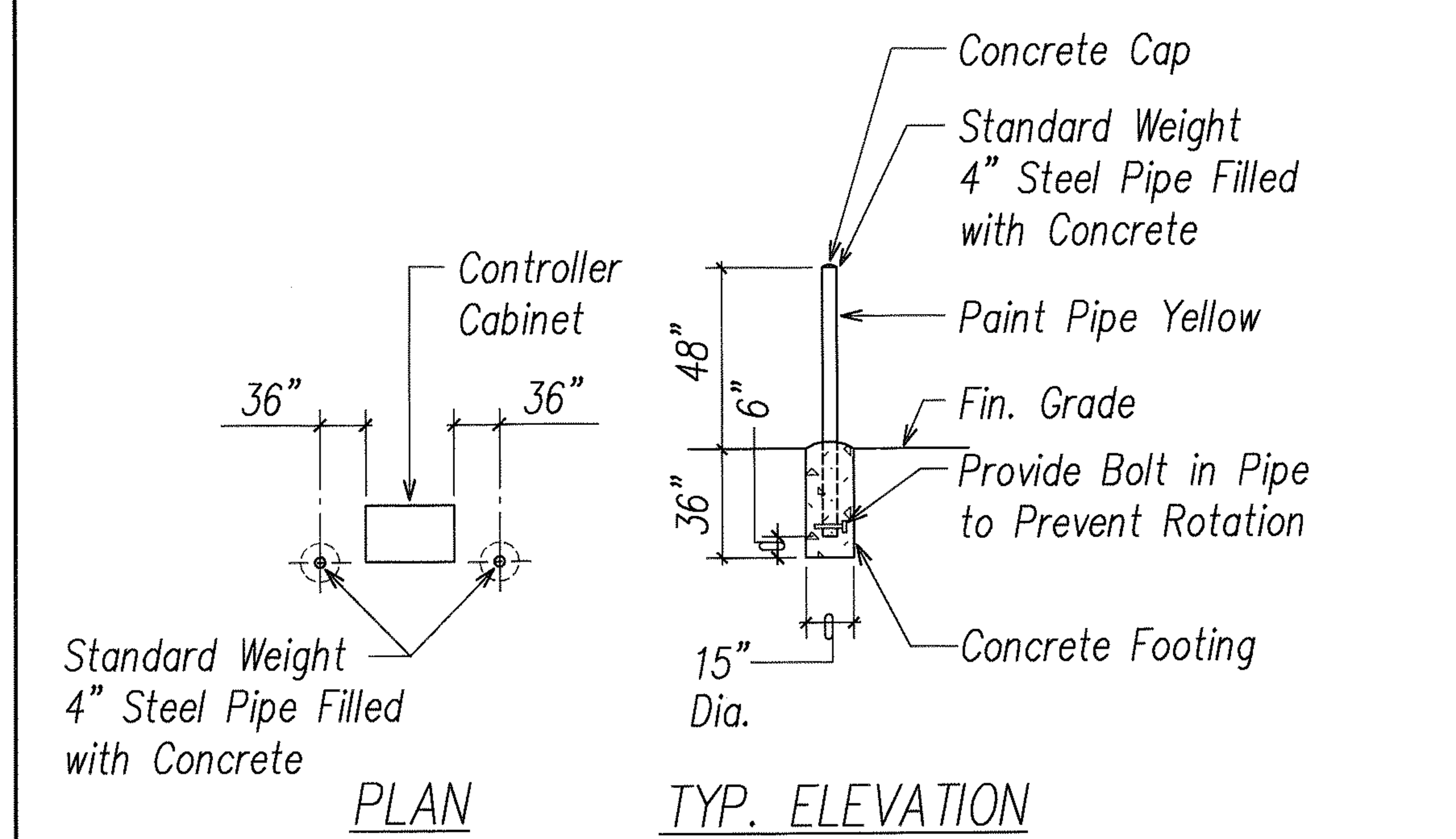
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	344	380



A E2.17 **TYPE 332A TRAFFIC CONTROLLER**
Not to Scale

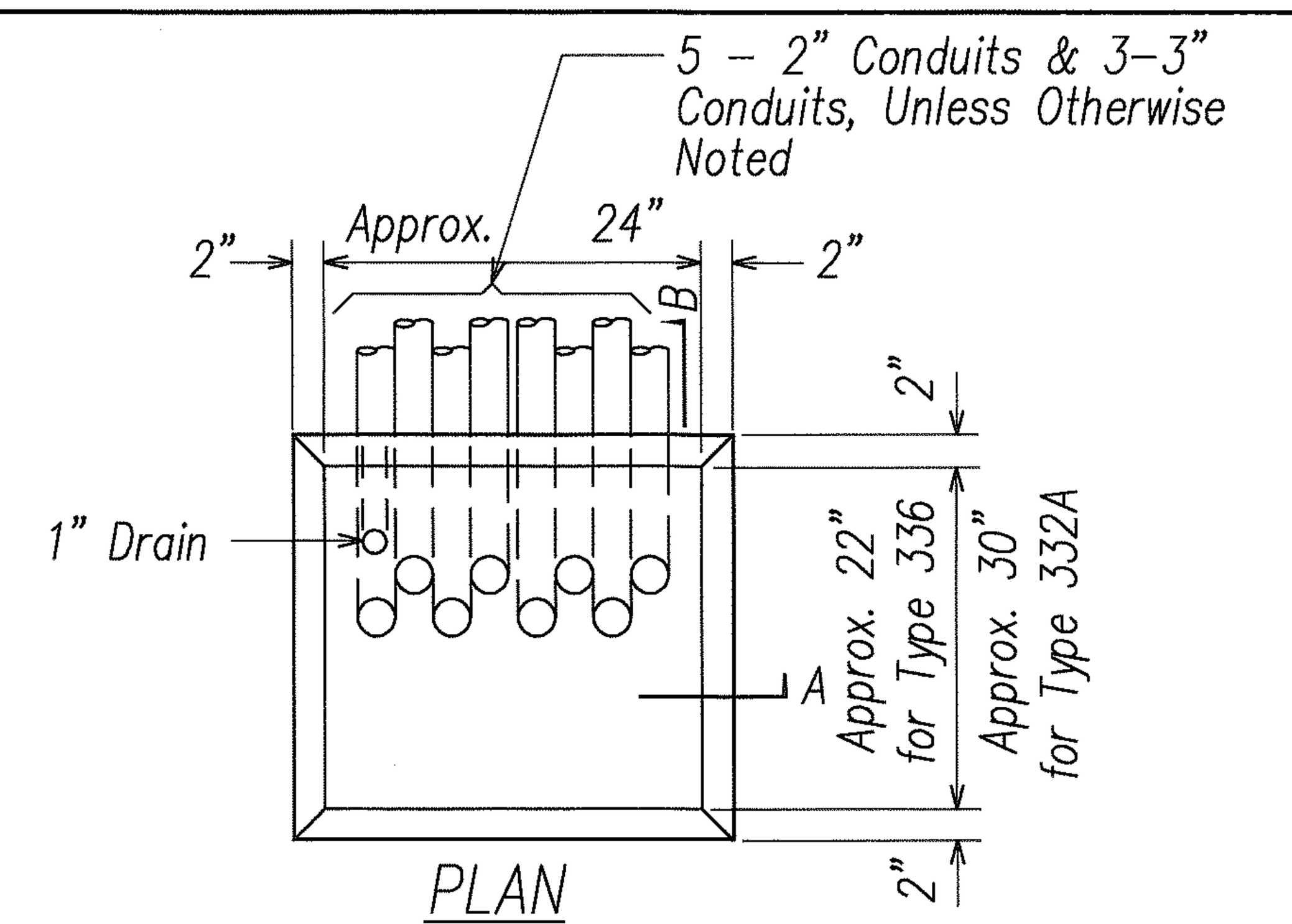


C E2.17 **TYPICAL PEDESTAL/MAST ARM INSTALLATION OF EVP DETECTOR**
Not To Scale

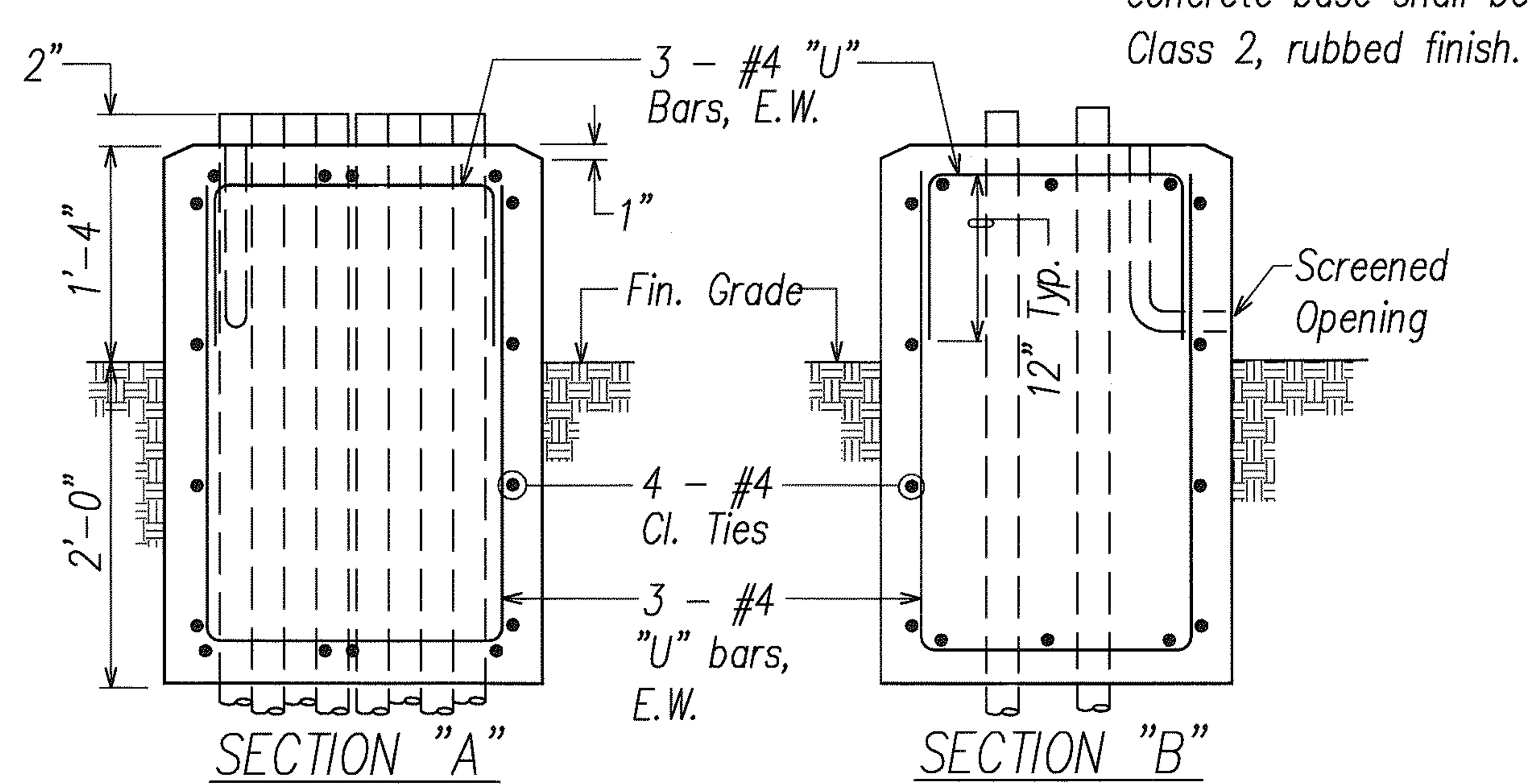


NOTE:
Cost of concret filled galvanized posts shall be incidental to other items of work.

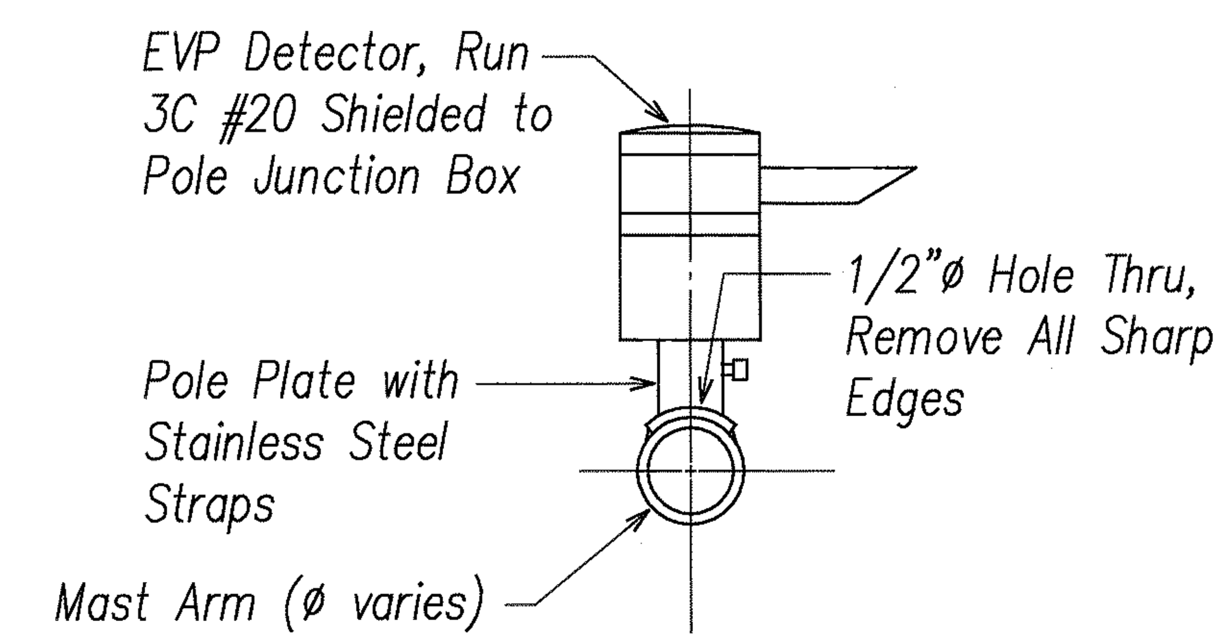
F E2.17 **PIPE GUARD DETAIL**
Not To Scale



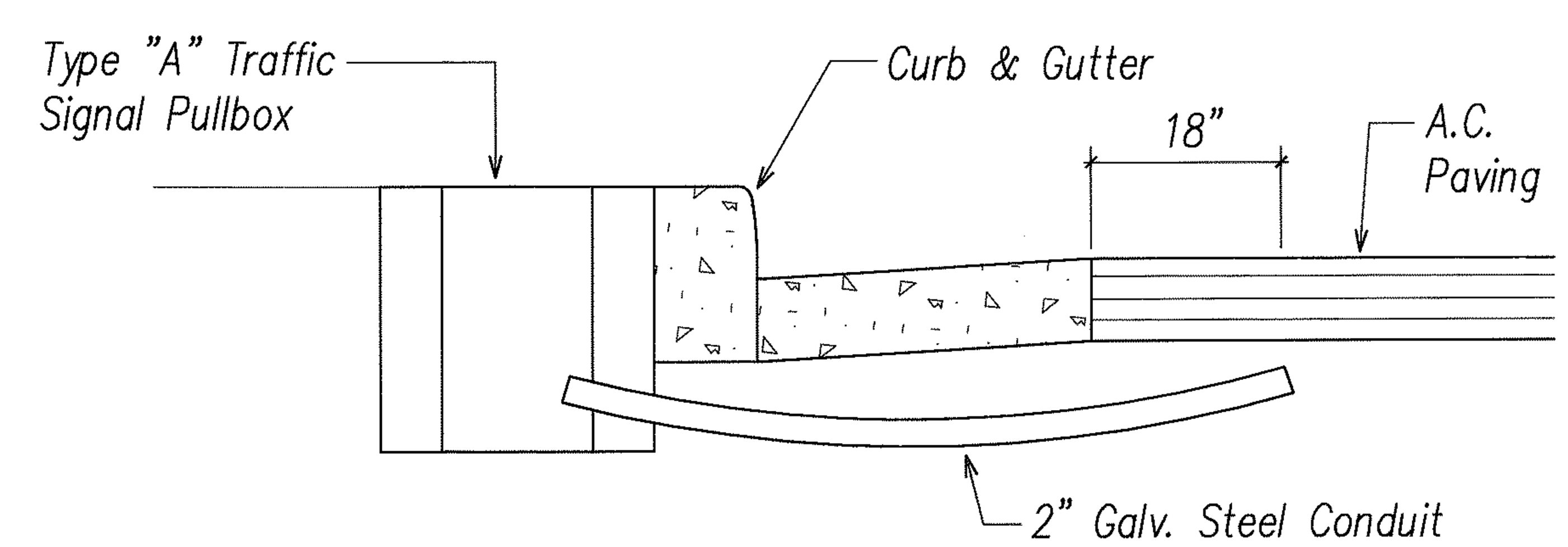
NOTES:
1. Concrete shall be Class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduit bends and drain are incidental to concrete base.
4. Refer to Cabinet Manufacturer's Specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete base shall be given a Class 2, rubbed finish.



B E2.17 **TYPE "D" CONCRETE BASE CONTROLLER CABINET**
Not To Scale



D E2.17 **TYPICAL HORIZONTAL MOUNT OF EVP DETECTOR**
Not To Scale



NOTE: Seal roadway end of conduit after installation.

E E2.17 **LOOP DETECTOR CONDUIT STUB OUT**
Not To Scale

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.
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20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS TRAFFIC SIGNAL DETAILS

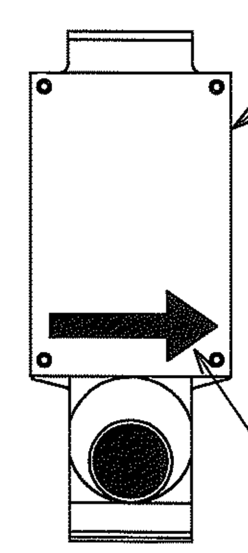
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

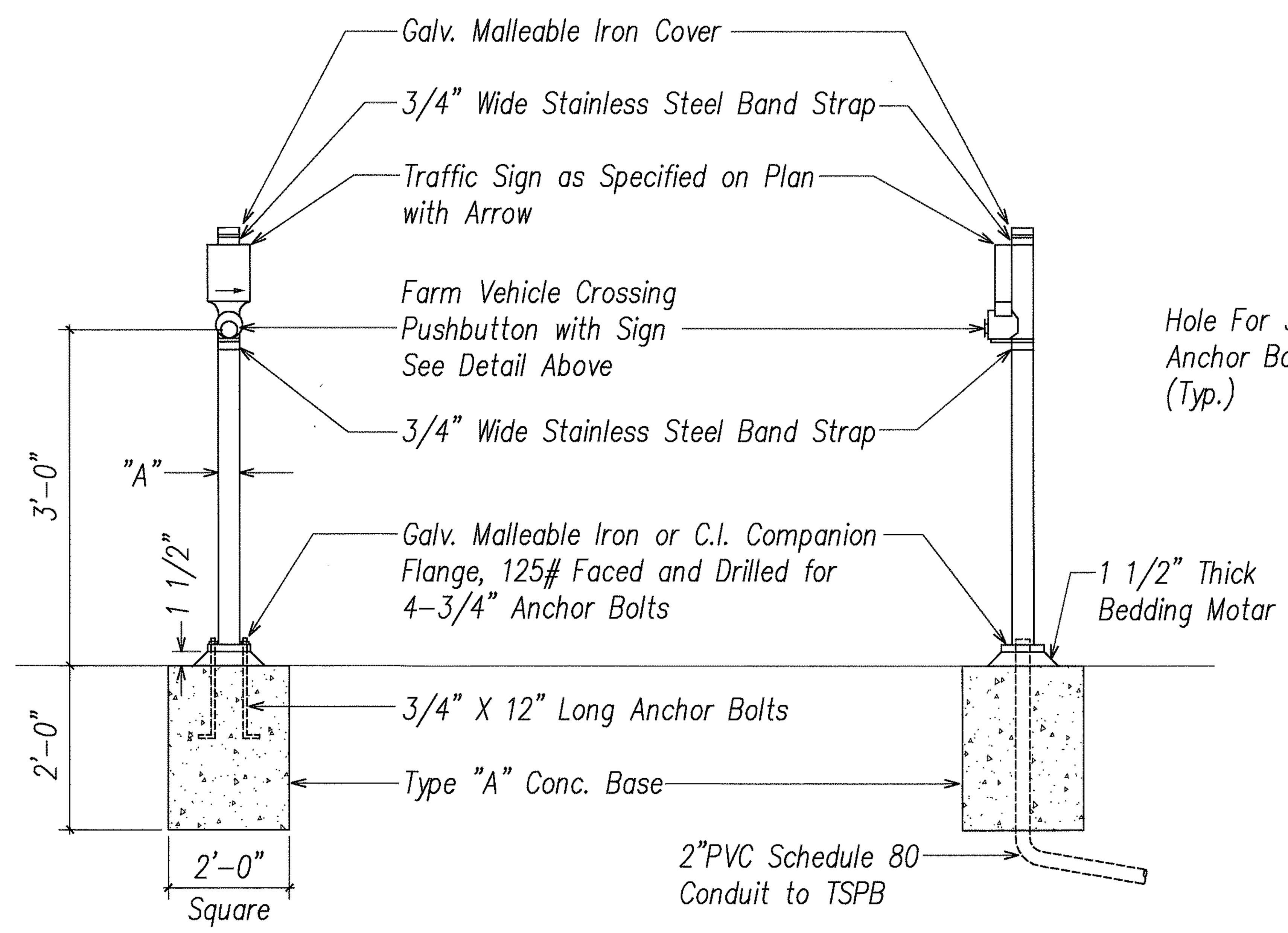
SHEET No. E2.17 OF 66 SHEETS

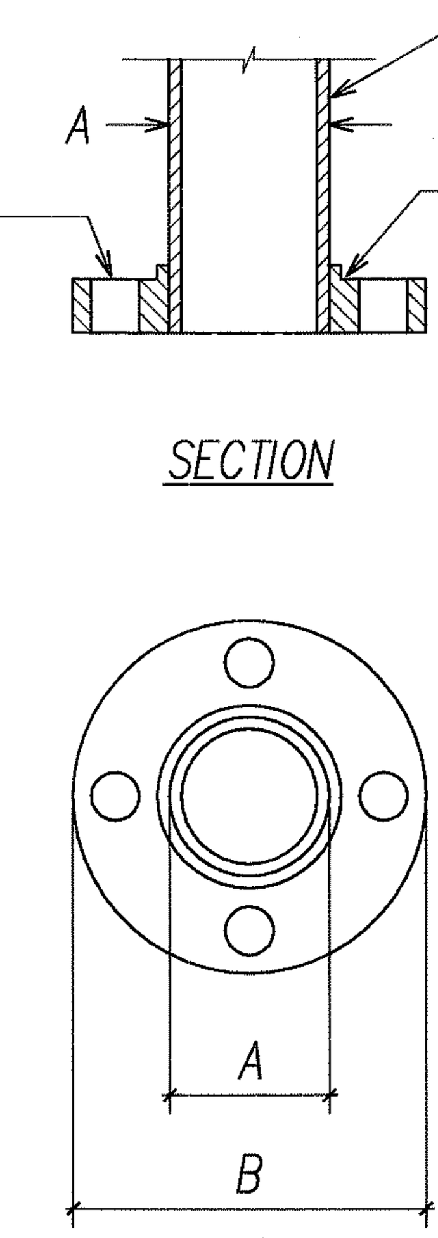
ORIGINAL PLAN / NOTE BOOK / No. / SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY / DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	345	380



PB SIGN





A / E2.18 FARM VEHICLE CROSSING PUSHBUTTON POST AND FOOTING DETAIL

NOT TO SCALE

FLANGE DETAIL

NOTE:

1. Conduits shall Protrude 2" Max above Finished Surface of Foundation.
2. Conduits Shall slope away from Post Foundation.

DATA TABLE FOR PB POST		
AMOUNT OF PB	DIMENSIONS	
	A	B
1	3 1/2"	8"
2-3	4 1/2"	9"

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

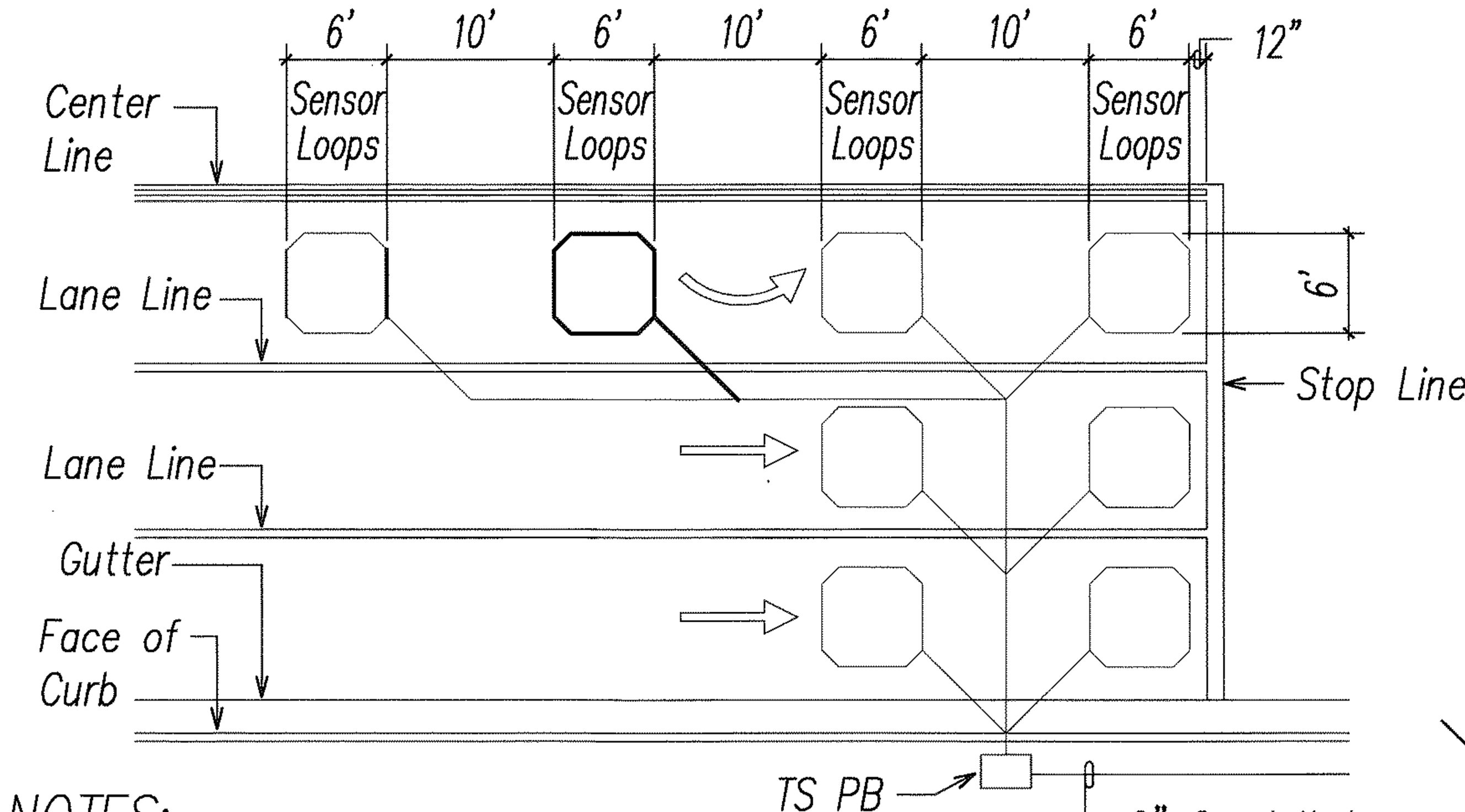
TRAFFIC SIGNAL DETAILS V

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.18 OF 66 SHEETS

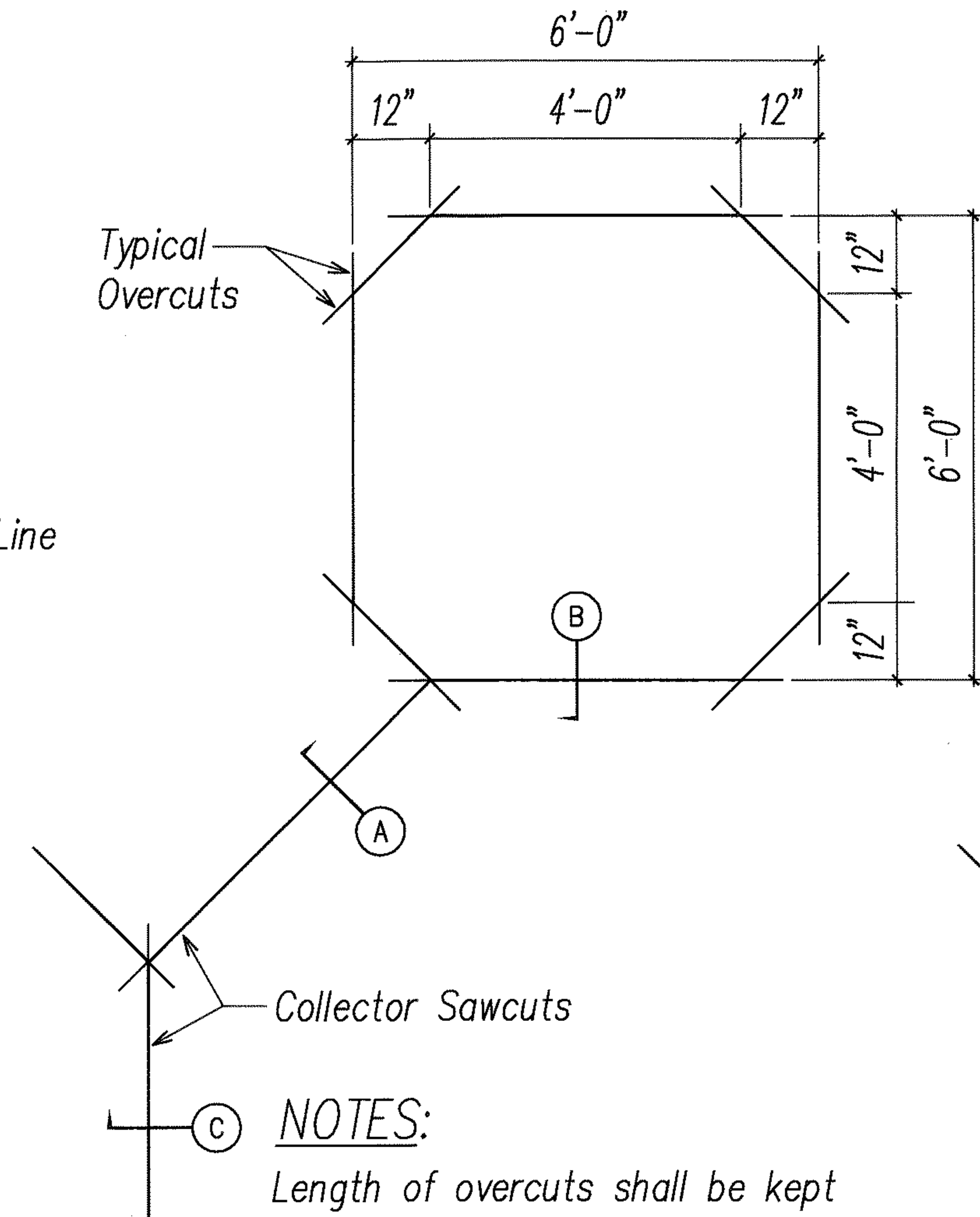
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	346	380



NOTES:

1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per 12".
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

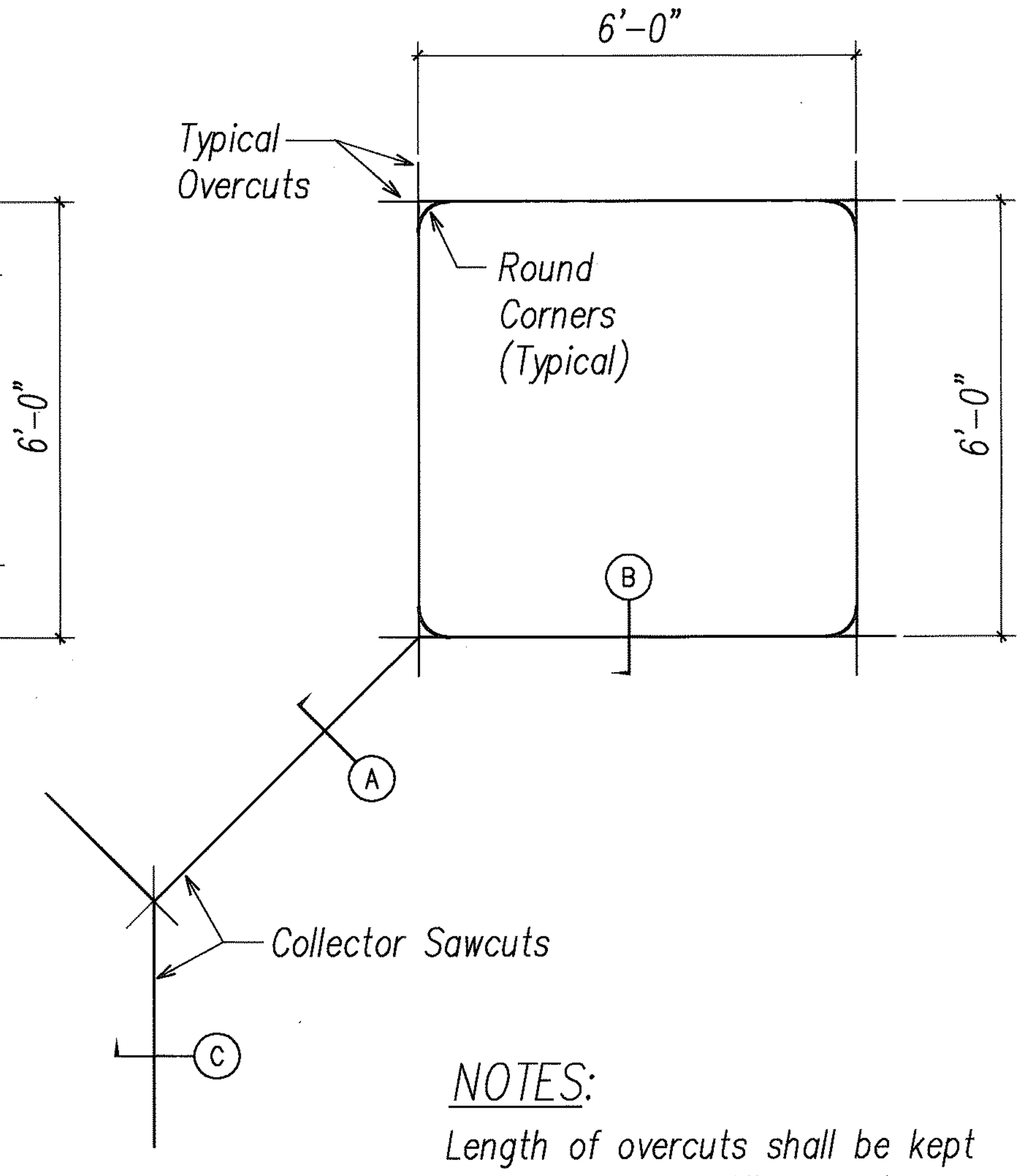
TYPICAL SENSOR LOOP LAYOUT



NOTES:

Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with hot tar.

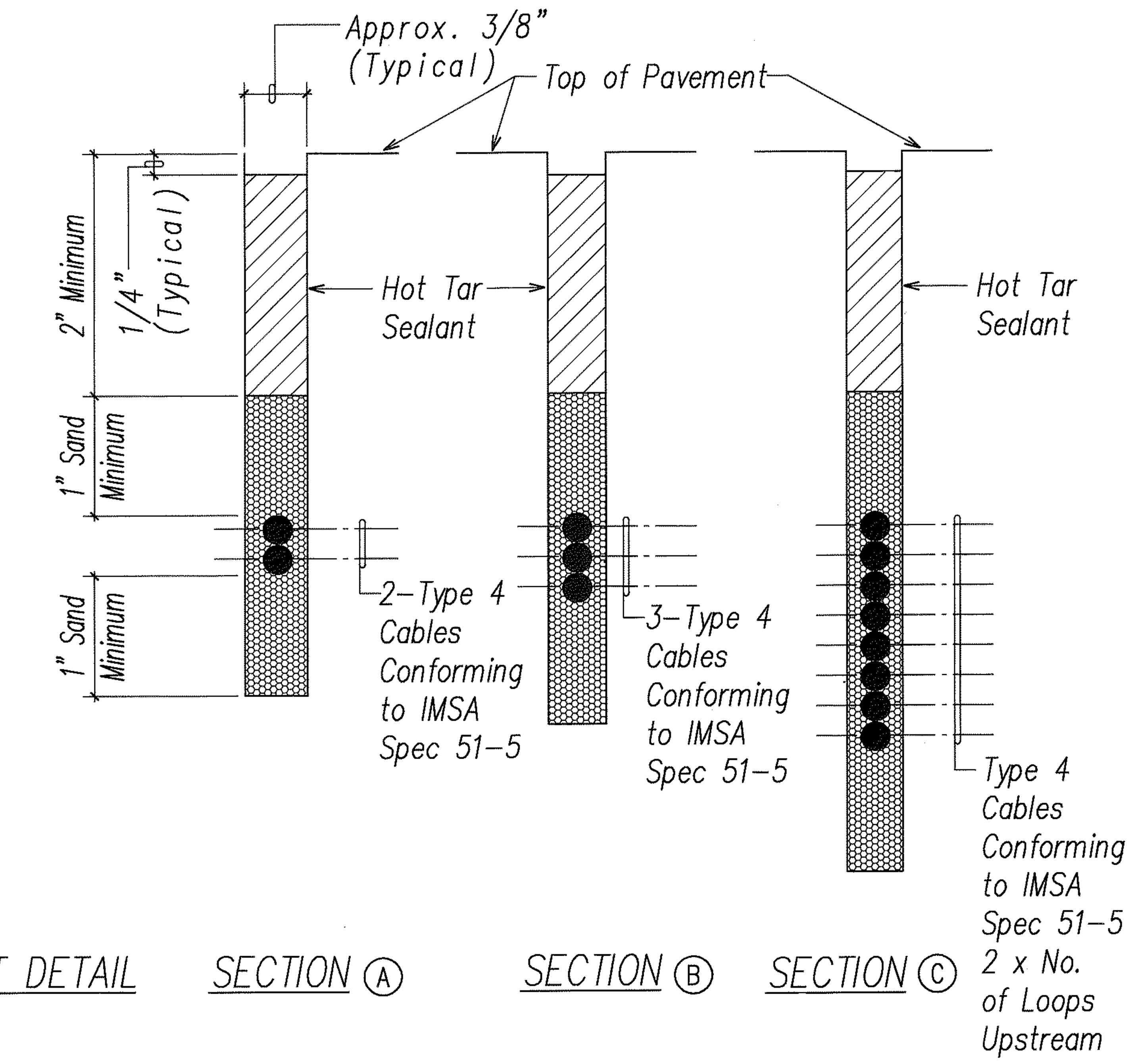
TYPICAL SENSOR LOOP SAWCUT DETAIL



NOTES:

Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with hot tar.

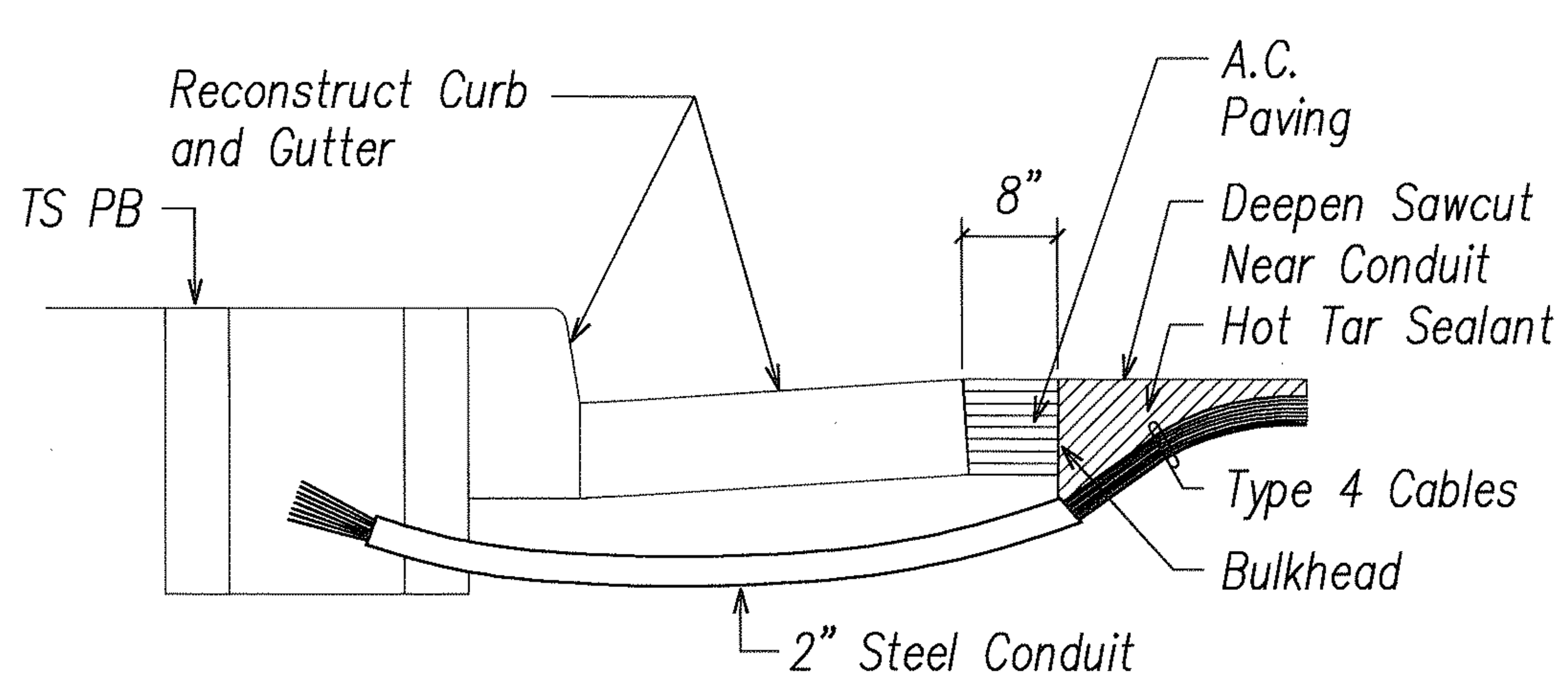
ALTERNATE SENSOR LOOP SAWCUT DETAIL



SECTION (A)

SECTION (B)

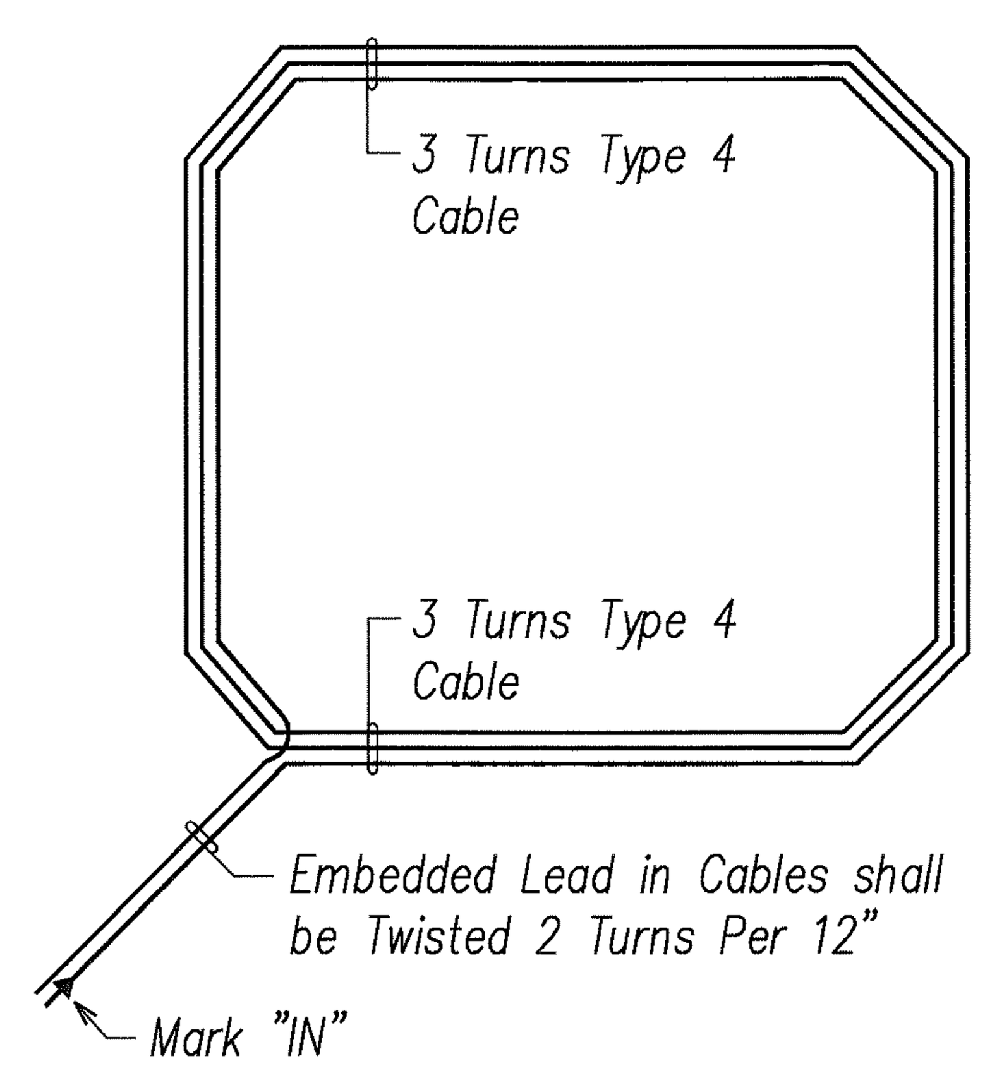
SECTION (C)



NOTES ON CONSTRUCTION AT END OF SAWCUT

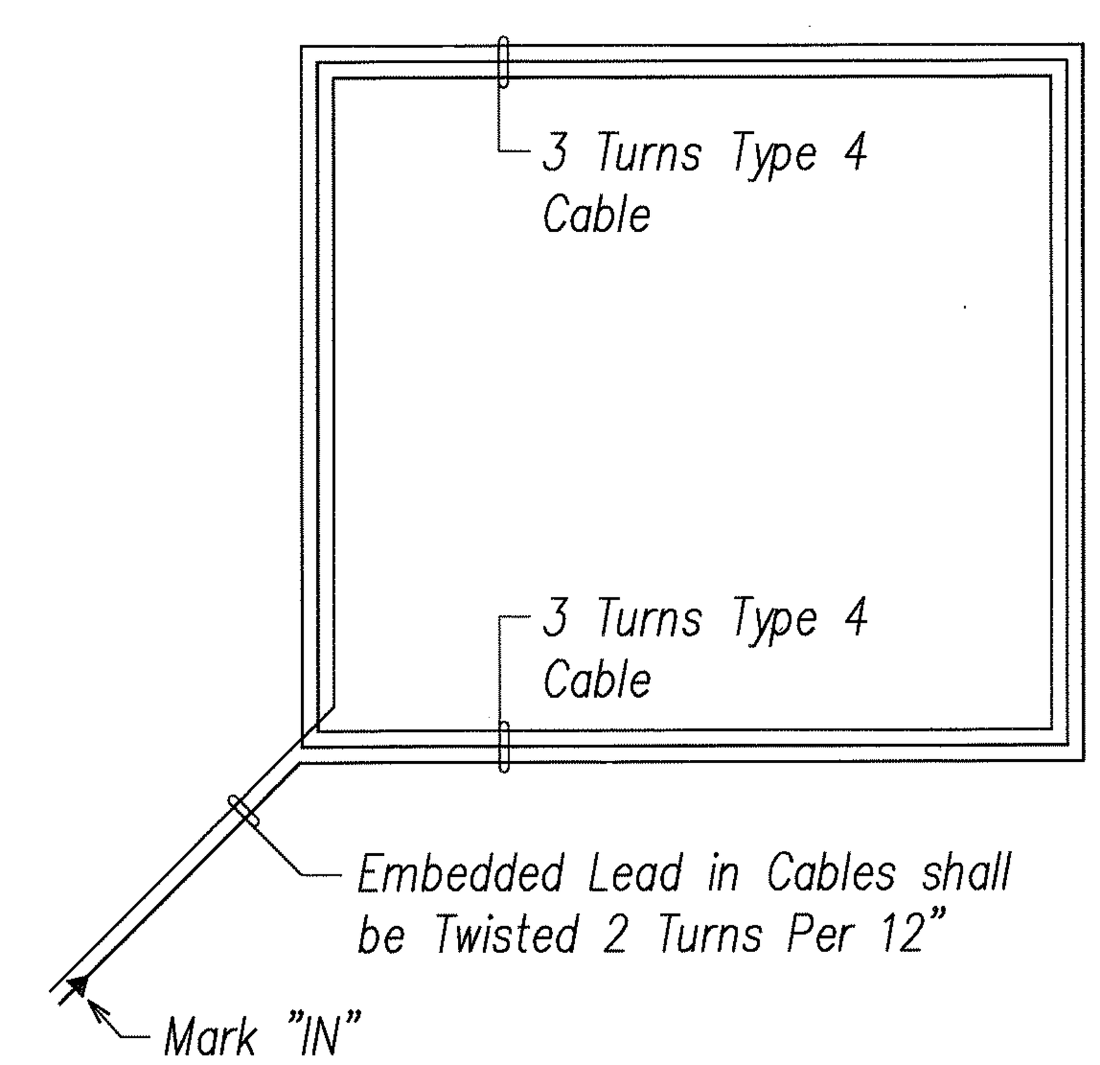
1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place hot tar in sawcut.
4. Backfill over conduit with new A.C.
5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



PLAN

TYPICAL SENSOR LOOP WIRING DIAGRAM



PLAN

ALTERNATE SENSOR LOOP WIRING DIAGRAM

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A / E2.19 **DETECTOR LOOP DETAILS**

Not to Scale

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

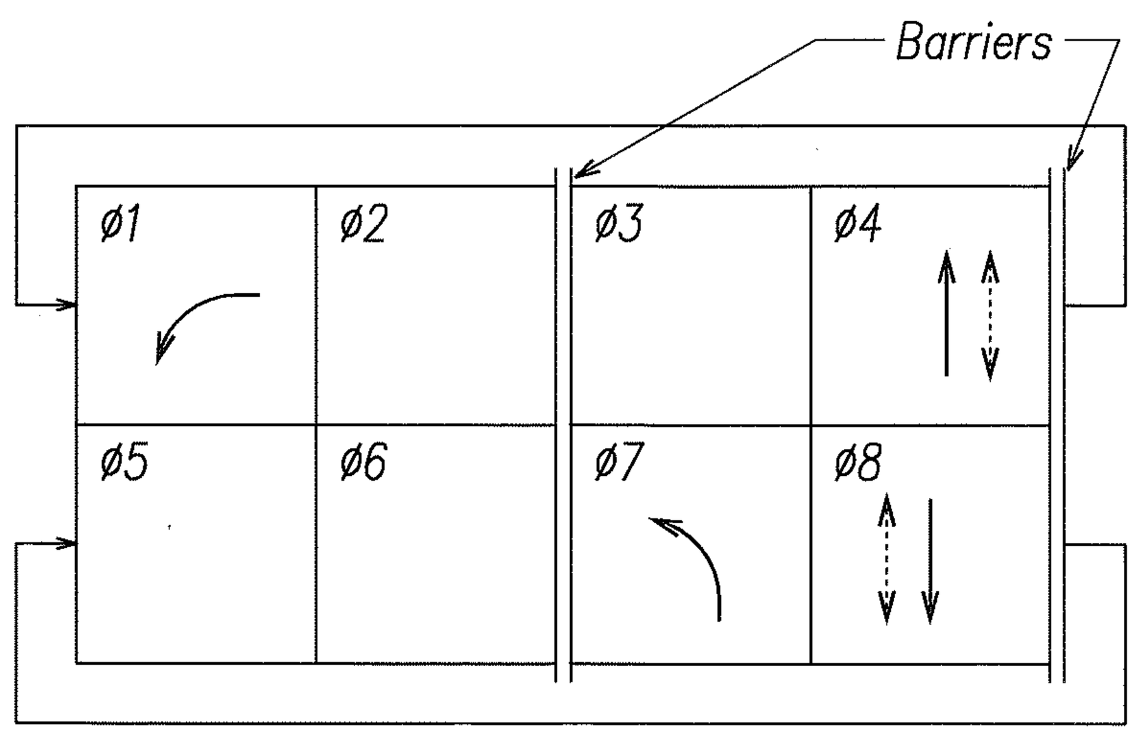
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.19 OF 66 SHEETS

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

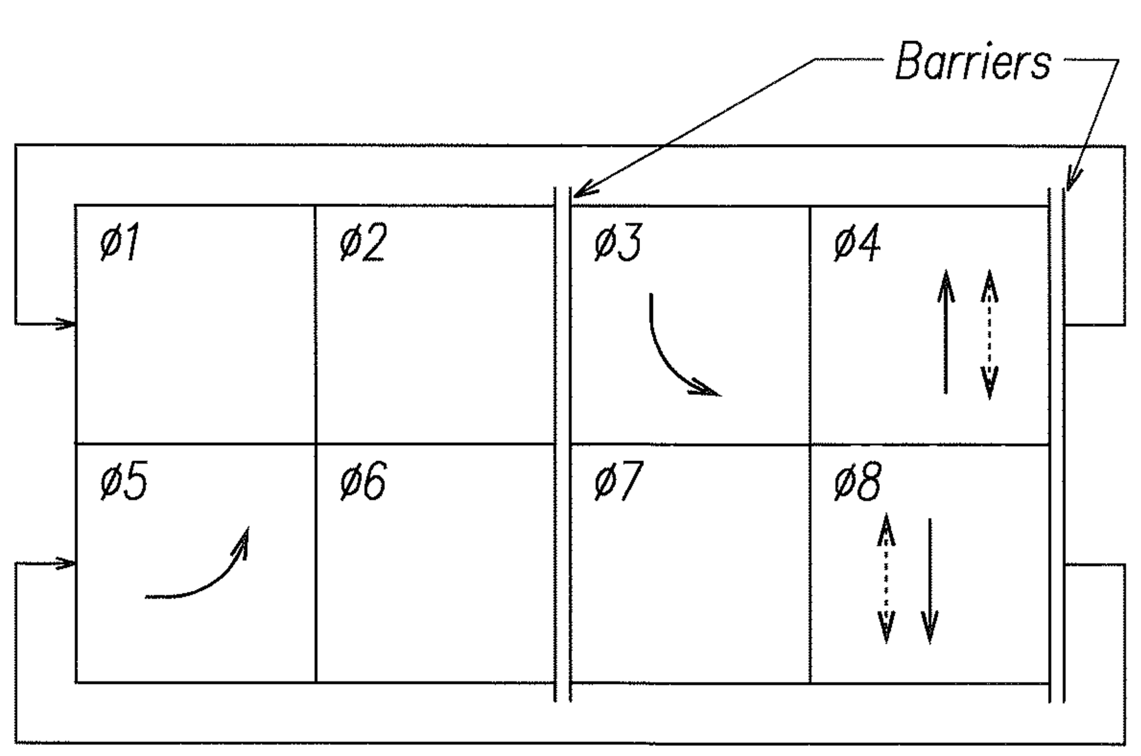
LAST SAVE: 02/20/07 @ 09:46:30 BY: RN PLOT SC 1"=1'

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	347	380



PHASE DIAGRAM

H-1 WB RAMP/NORTH-SOUTH ROAD INTERSECTION
INTERCHANGE TRAFFIC SIGNAL PLAN I



PHASE DIAGRAM

H-1 EB RAMP/NORTH-SOUTH ROAD INTERSECTION
INTERCHANGE TRAFFIC SIGNAL PLAN II

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

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20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

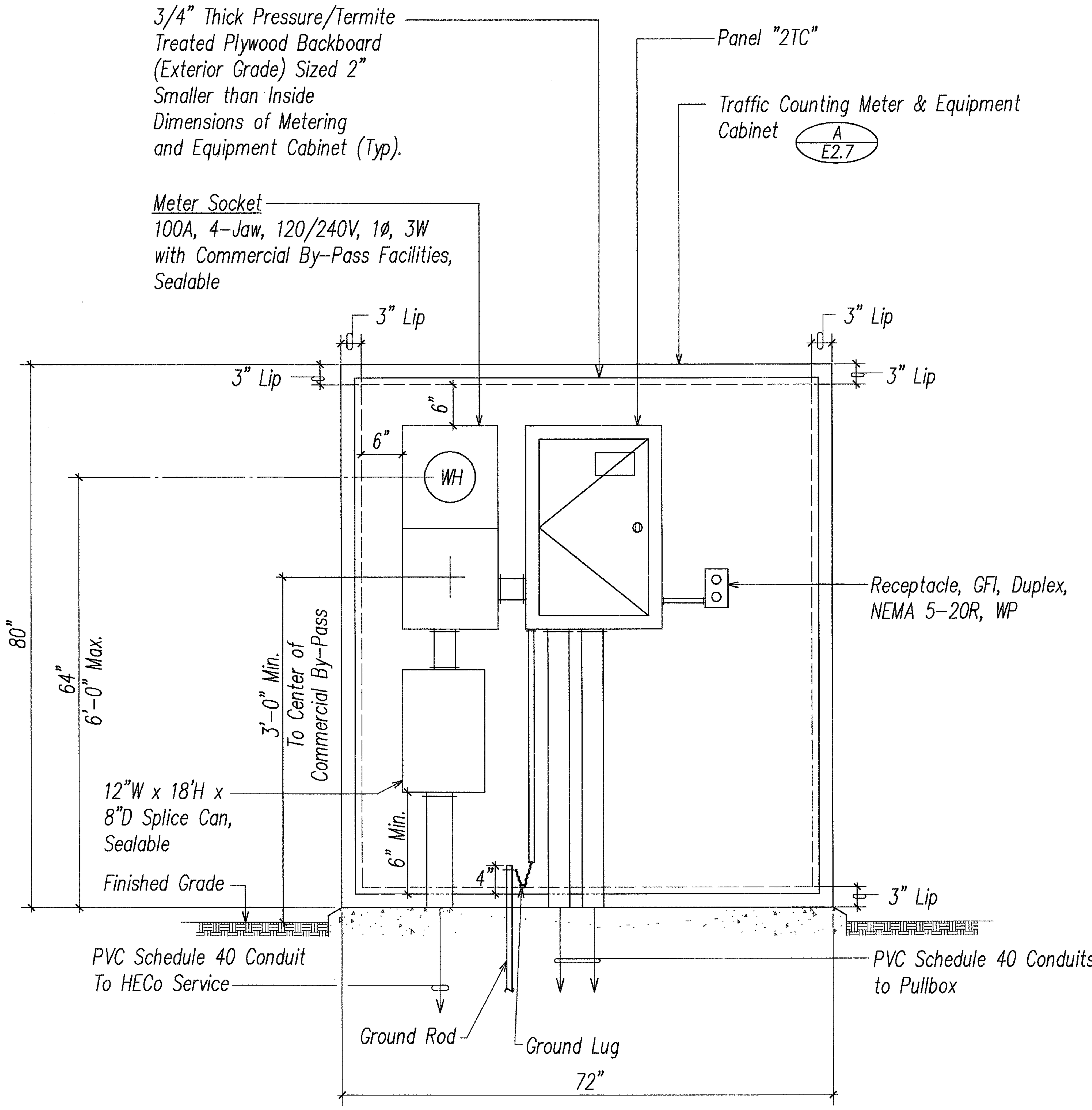
TRAFFIC SIGNAL PHASING DIAGRAMS

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.20 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	348	380

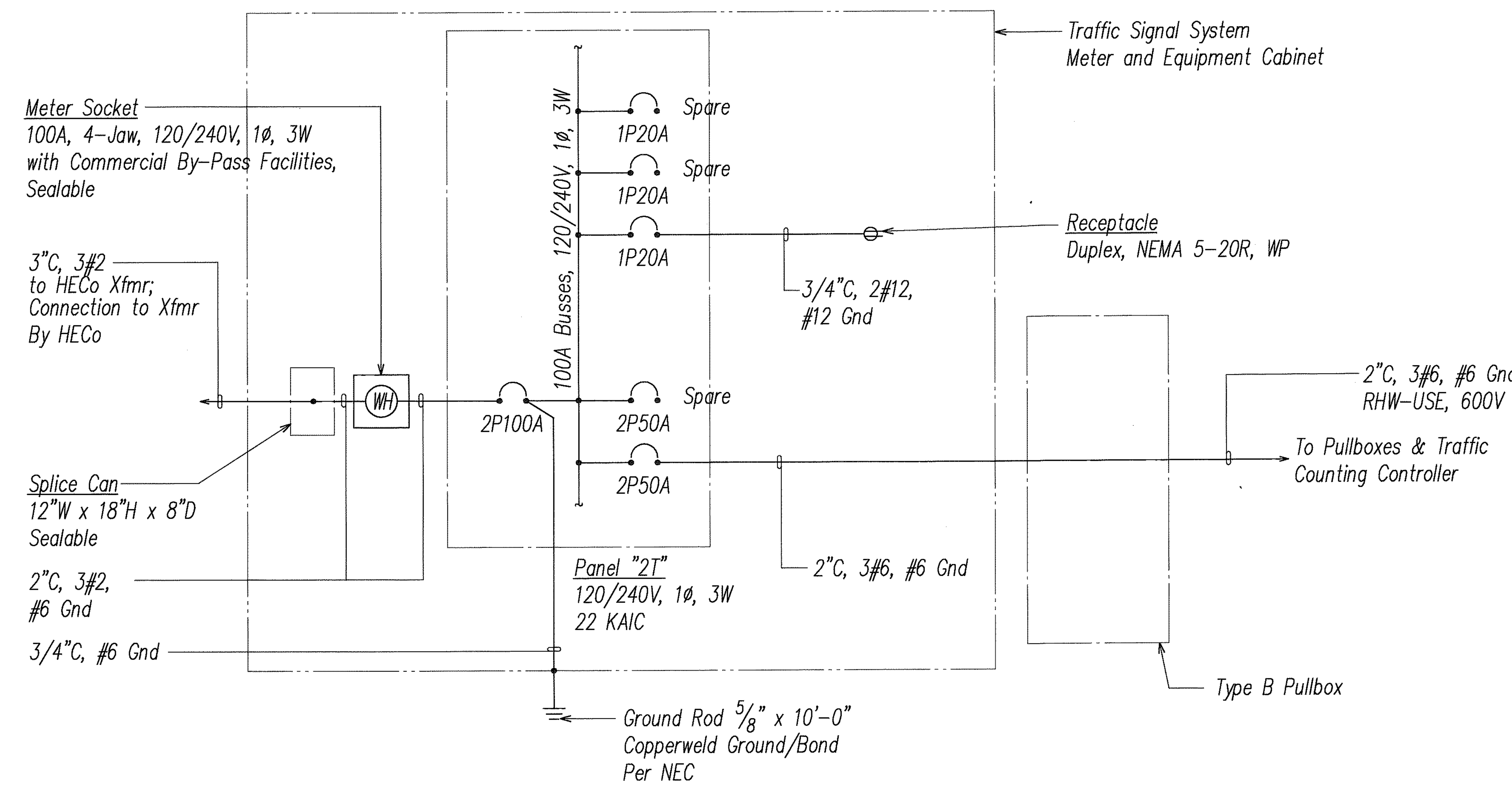


Notes:

1. See One-line Diagram This Sheet.

A E2.21 WEIGH-IN-MOTION SYSTEM EQUIPMENT ELEVATION

SCALE: 1"=1'=0"



WEIGH-IN-MOTION SYSTEM ONE-LINE DIAGRAM

NOT TO SCALE

1' 6" 0 1' 2' 3'

SCALE: 1"=1'-0"

GRAPHIC SCALE

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

DATE	REVISION

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4105-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WEIGH-IN-MOTION EQUIPMENT ELEVATION, ONE-LINE DIAGRAM

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.21 OF 66 SHEETS

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

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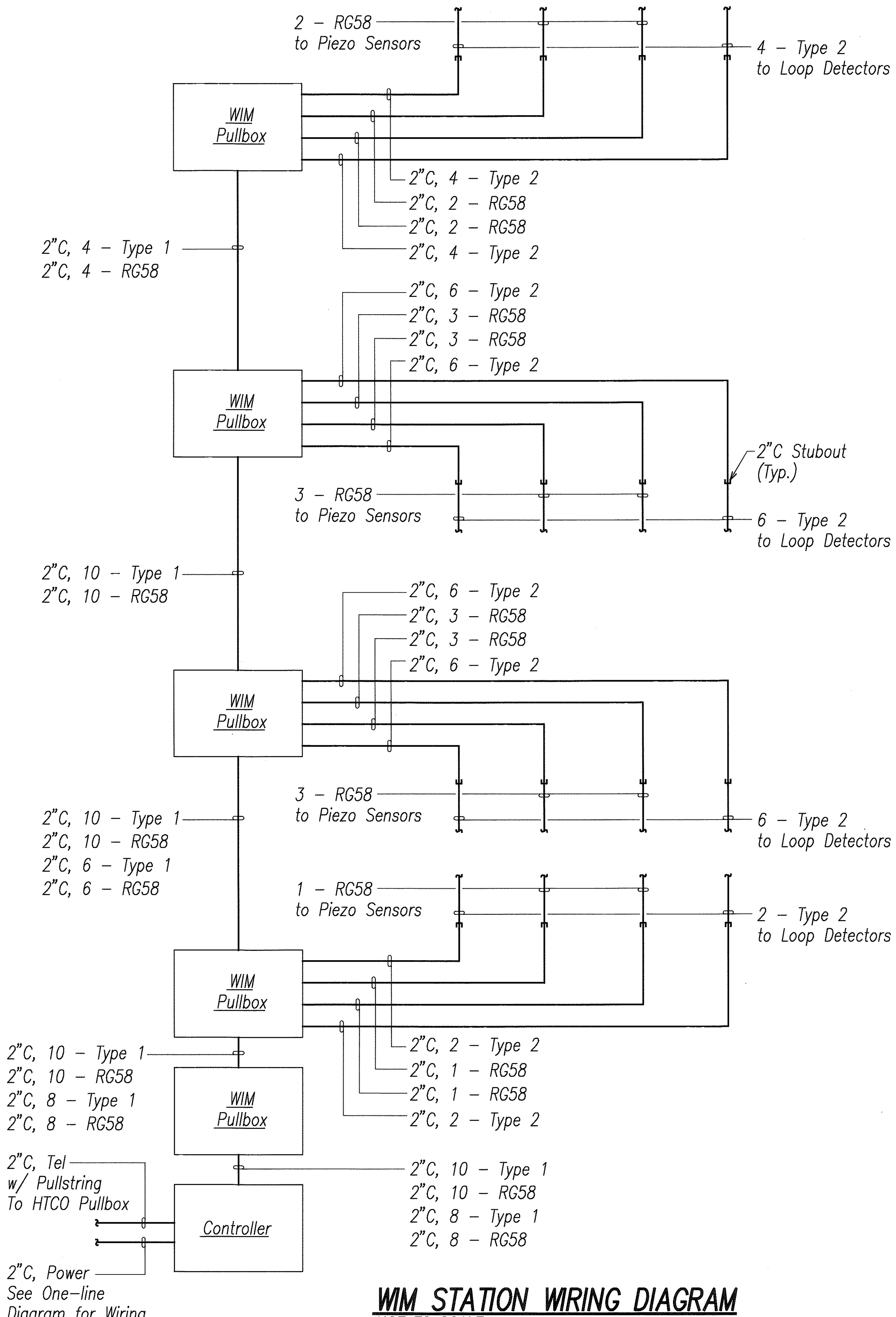

WIM STATION WIRING DIAGRAM
NOT TO SCALE

WIM Station Schedule Of Items Under Lump Sum Pay Item

Item	Quantity	Units
Sitework		
One 3-inch PVC Schedule 40 HECO Conduit Encased in Concrete	40	Lin. Ft.
One 4-inch PVC Schedule 40 HTCO Conduit Encased in Concrete	1,850	Lin. Ft.
One 2-inch PVC Schedule 40 HTCO Conduit Encased in Concrete for Controller	1,230	Lin. Ft.
One 3-inch PVC Schedule 40 Power Conduit Encased in Concrete with 3#4/0, #2 Ground for Controller	1,600	Lin. Ft.
One 2-inch PVC Schedule 40 Power Conduit Encased in Concrete with 3#6, #8 Ground for Controller	10	Lin. Ft.
Two 2-inch PVC Schedule 40 WIM Conduits Encased in Concrete for Controller	85	Lin. Ft.
Four 2-inch PVC Schedule 40 WIM Conduits Encased in Concrete for Controller	100	Lin. Ft.
2-Feet x 4-Feet HTCO Handhole	11	Each
Power Pullbox, Type "B", including Frame & Cover	8	Each
Furnish & Install Metering Cabinet and Service Equipment	1	Each
WIM Pullbox, Type "C", including Frame & Cover	2	Each
WIM Traffic Bearing Pullbox, including Frame & Cover	2	Each
WIM System		
Furnish & Install Piezoelectric Sensor	18	Each
Furnish & Install Vehicle Detector Loops	18	Each
Furnish & Install Loop Detector Cable (1 Each)	L.S.	L.S.
Furnish & Install Piezoelectric Sensor Cable (1 Each)	L.S.	L.S.
Furnish & Install Controller Cabinet, including: structure excavation & backfill for foundation; concrete for foundation (Class B); and furnishing & installing WIM Evaluation & Data Collection Unit	1	Each
Furnish & Install Portable Terminal	1	Each
Train State Personnel (10 Each)	L.S.	L.S.
Testing, including Calibration and Systems Integration Testing and Piezoelectric Sensor Testing (Each)	L.S.	L.S.

Notes:

1. Trench excavation, backfill, pipe penetrations through walls and barriers, concrete for concrete jacket, and pavement sawcutting & patching shall be considered incidental to the cost of the various Conduit items.

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4135-E HAWAII, U.S.A.
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20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WEIGH-IN-MOTION STATION
WIRING DIAGRAM

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

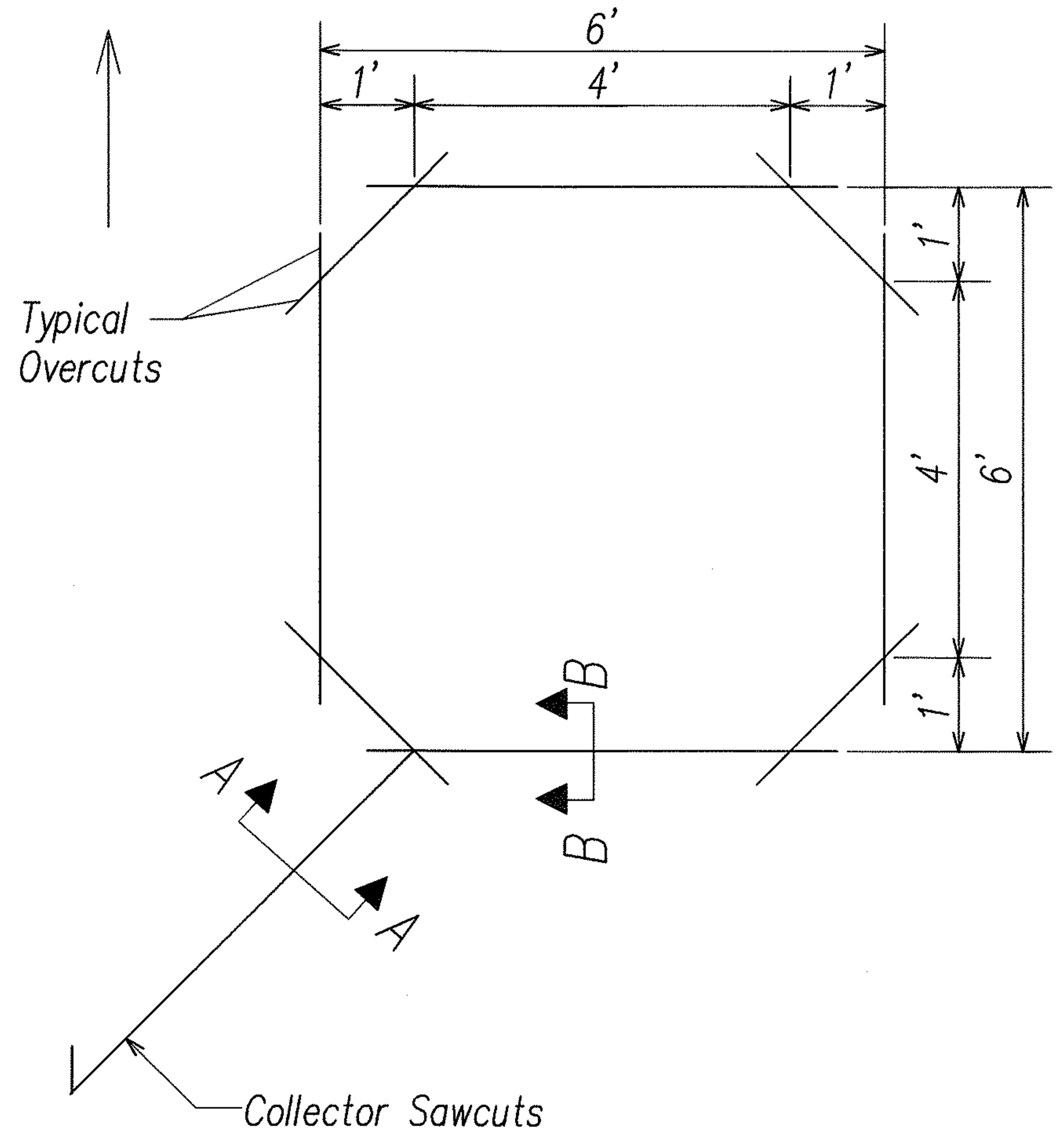
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E-2.22 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 09:48:25 BY: RN PLOT SC 1"=1'

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 350	380

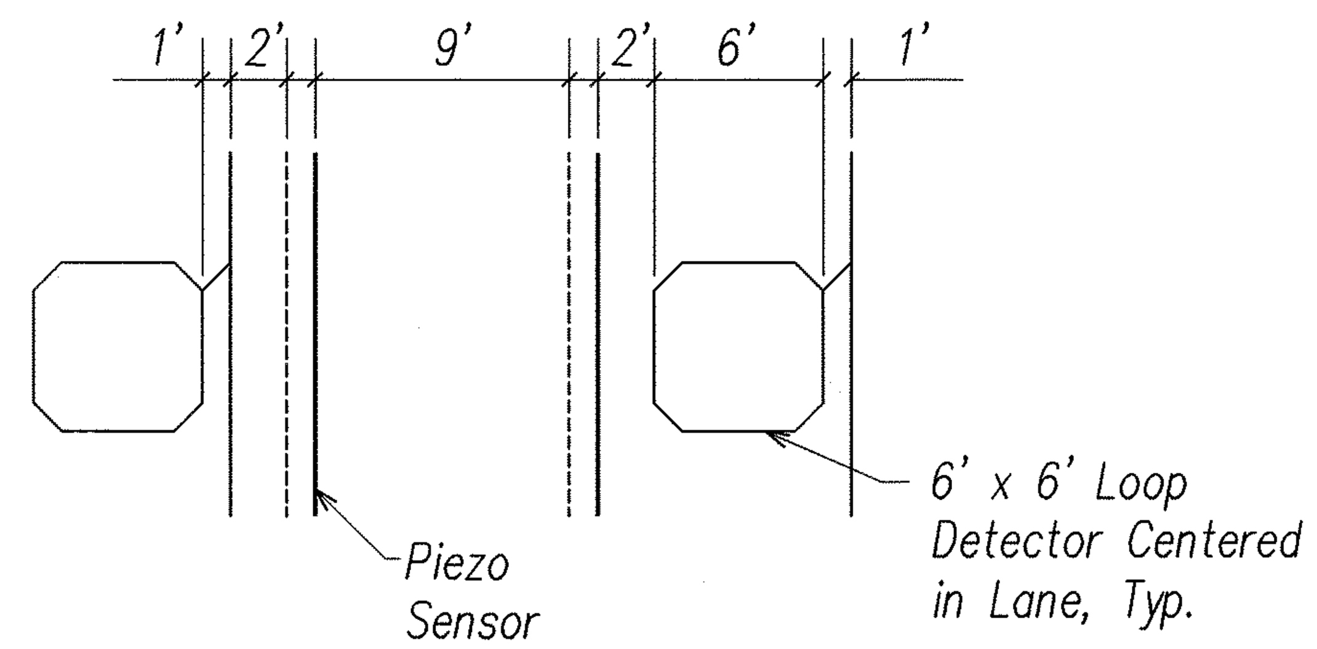


Notes: 1. Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with hot tar.

2. The Contractor shall lay out the loop detectors so that the cutting of the pavement will not cut the existing dowels.

TYPICAL WIM SENSOR LOOP SAWCUT DETAIL

NOT TO SCALE



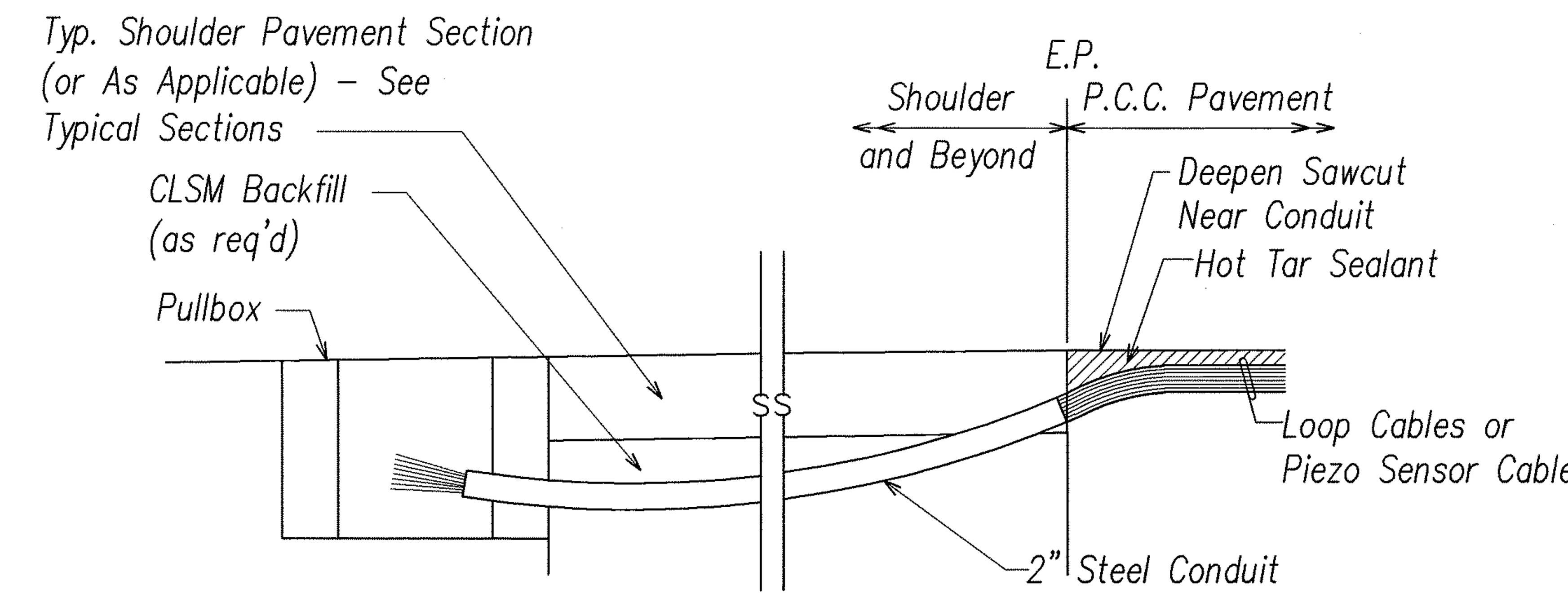
Notes:

1. The Contractor shall submit layout of loop detectors and piezo sensors for approval by the Engineer.

2. The Contractor shall lay out the loop detectors so that the cutting of the pavement will not cut the existing dowels.

TYPICAL WEIGH-IN-MOTION (WIM) SYSTEM LAYOUT

NOT TO SCALE

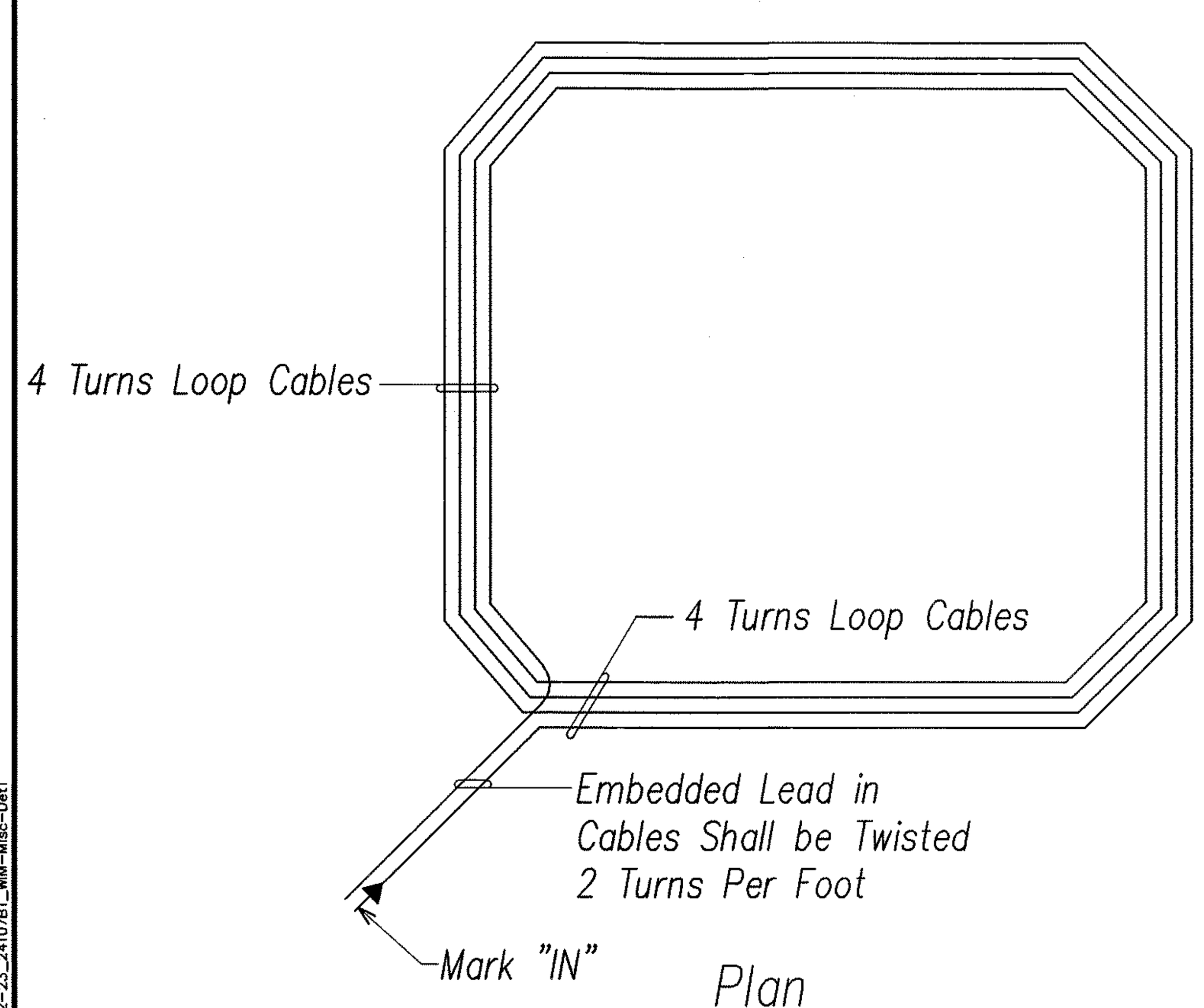


Notes On Construction At End Of Sawcut

1. Seal roadway end of conduit after installation of conductors
2. Place hot tar in sawcut.
3. Backfill over conduit with new CLSM and reconstruct pavement as required.

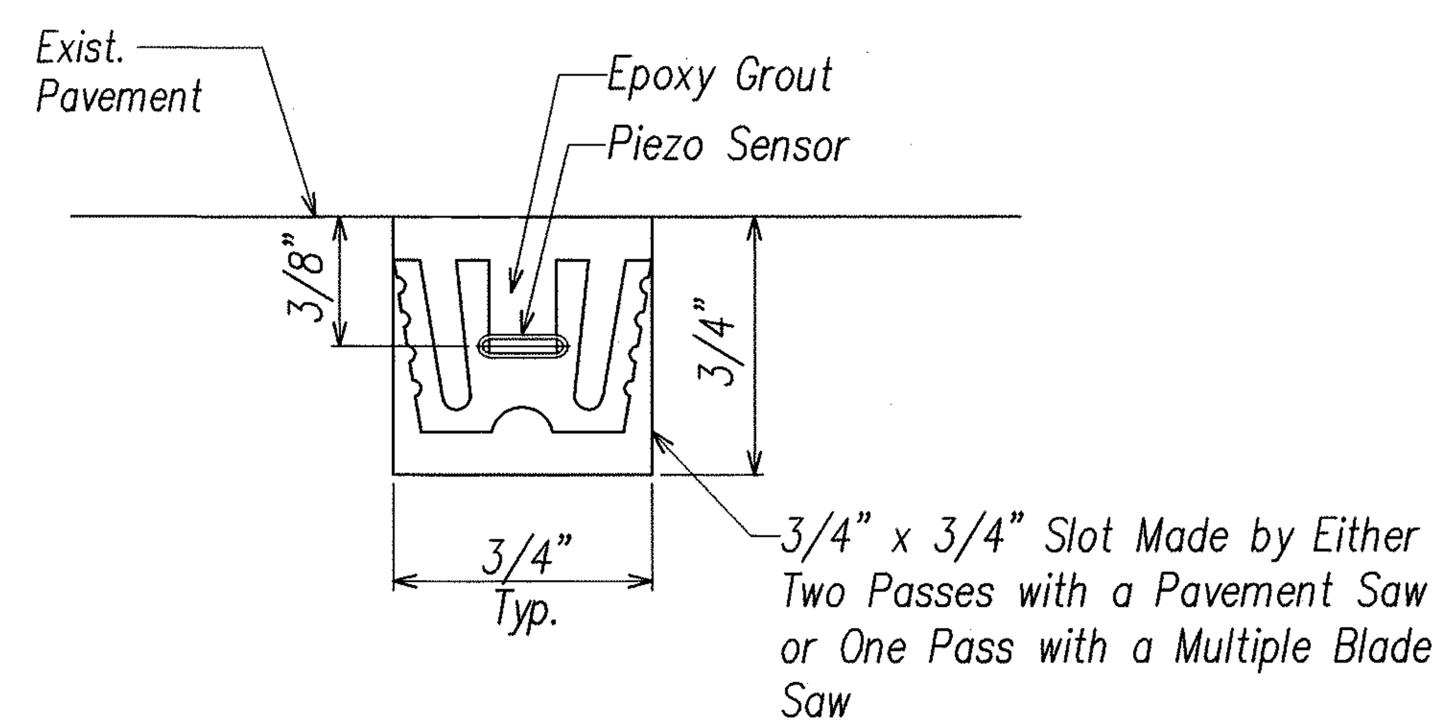
DETAIL OF CONDUIT TO SAWCUT TRANSITION FOR WIM LOOP DETECTION AND PIEZO SENSORS

NOT TO SCALE



TYPICAL WIM SENSOR LOOP WIRING DIAGRAM

NOT TO SCALE



WIM PIEZO SENSOR DETAIL

NOT TO SCALE

GARY L. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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18 April 2007

DATE	REVISION
4/20/07	Revised Titles

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WEIGH-IN-MOTION STATION
MISCELLANEOUS DETAILS I

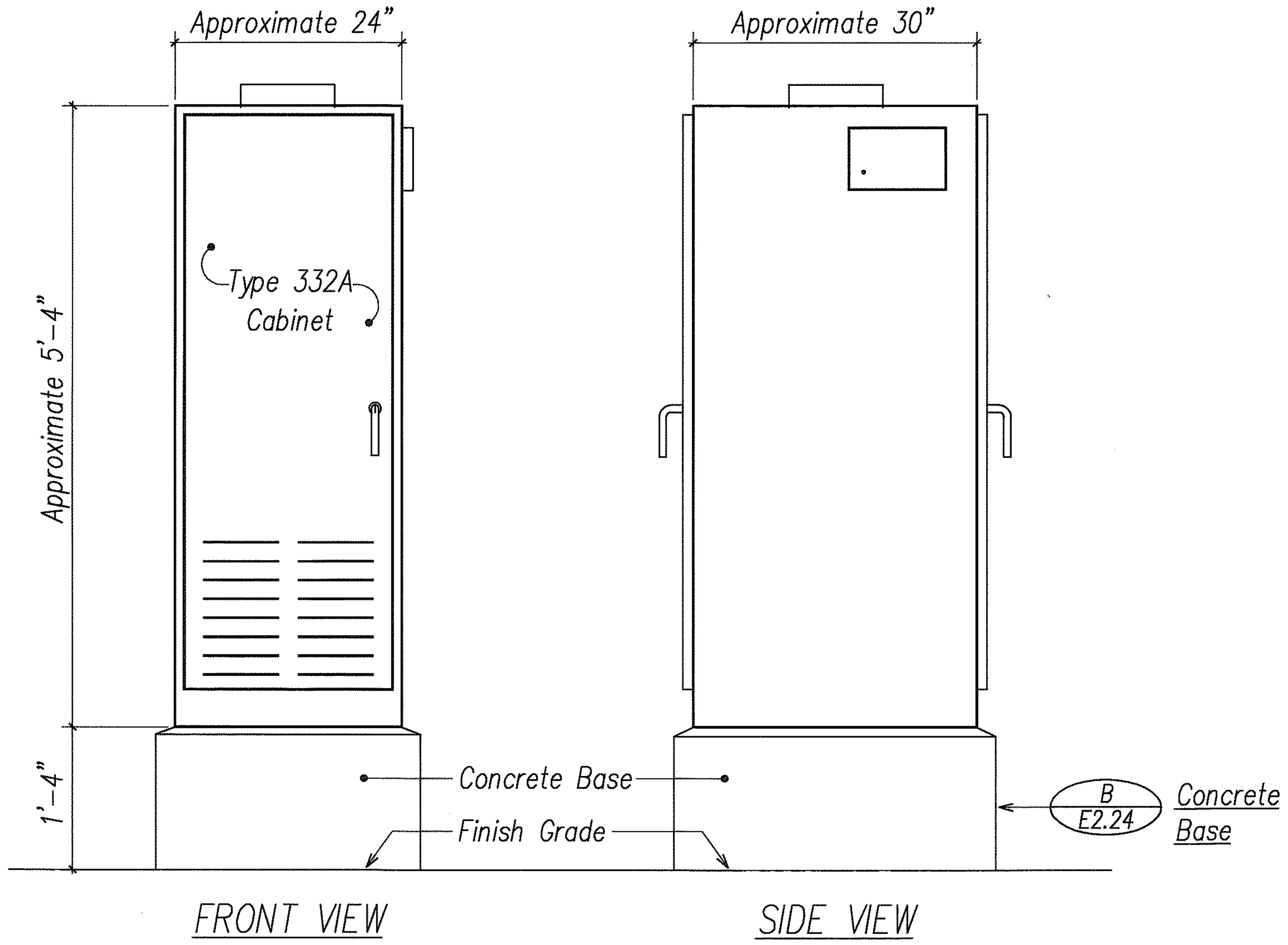
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E-2.23 OF 66 SHEETS

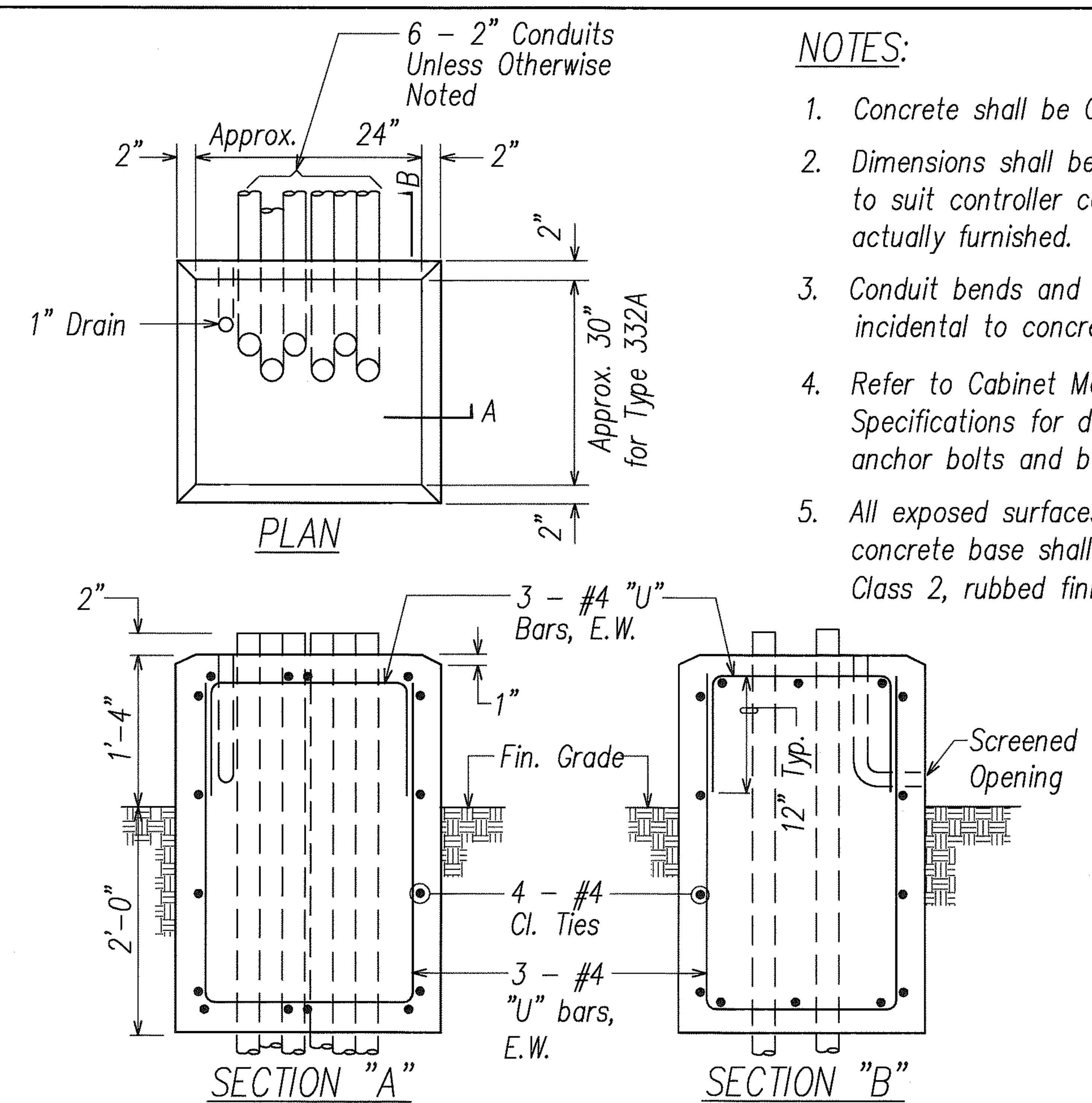
ORIGINAL PLAN | NOTE BOOK | No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	351	380



A E2.24 TYPE 332A WEIGH-IN-MOTION CONTROLLER

Not to Scale



NOTES:

1. Concrete shall be Class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduit bends and drain are incidental to concrete base.
4. Refer to Cabinet Manufacturer's Specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete base shall be given a Class 2, rubbed finish.

B E2.24 CONTROLLER CABINET CONCRETE BASE

Not To Scale

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20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WEIGH-IN-MOTION STATION
MISCELLANEOUS DETAILS II

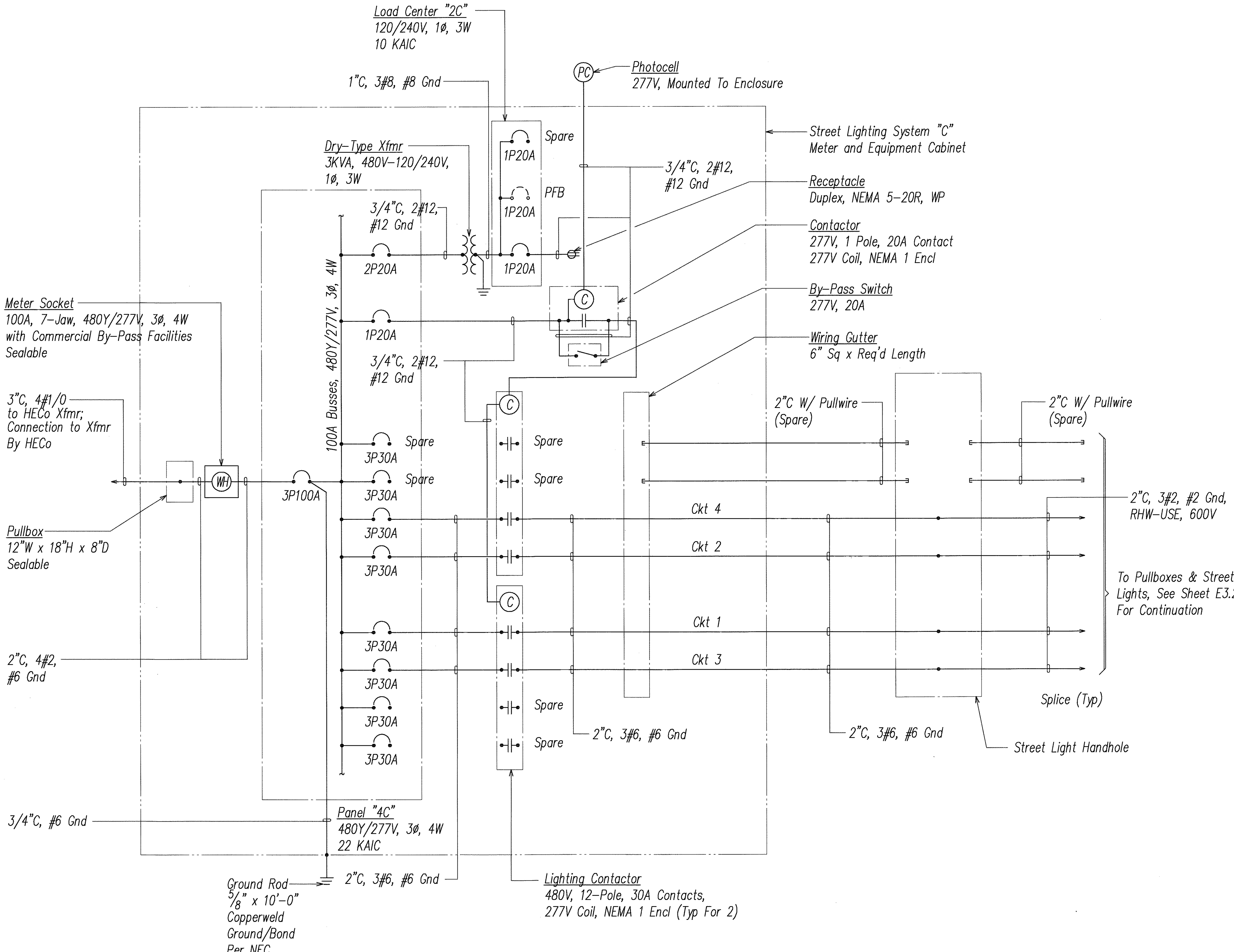
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E2.24 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	352	380



STREET LIGHTING SYSTEM "C" ONE-LINE DIAGRAM

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE

DATE	REVISION

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

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20 Feb 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHTING SYSTEM "C"
ONE-LINE DIAGRAM

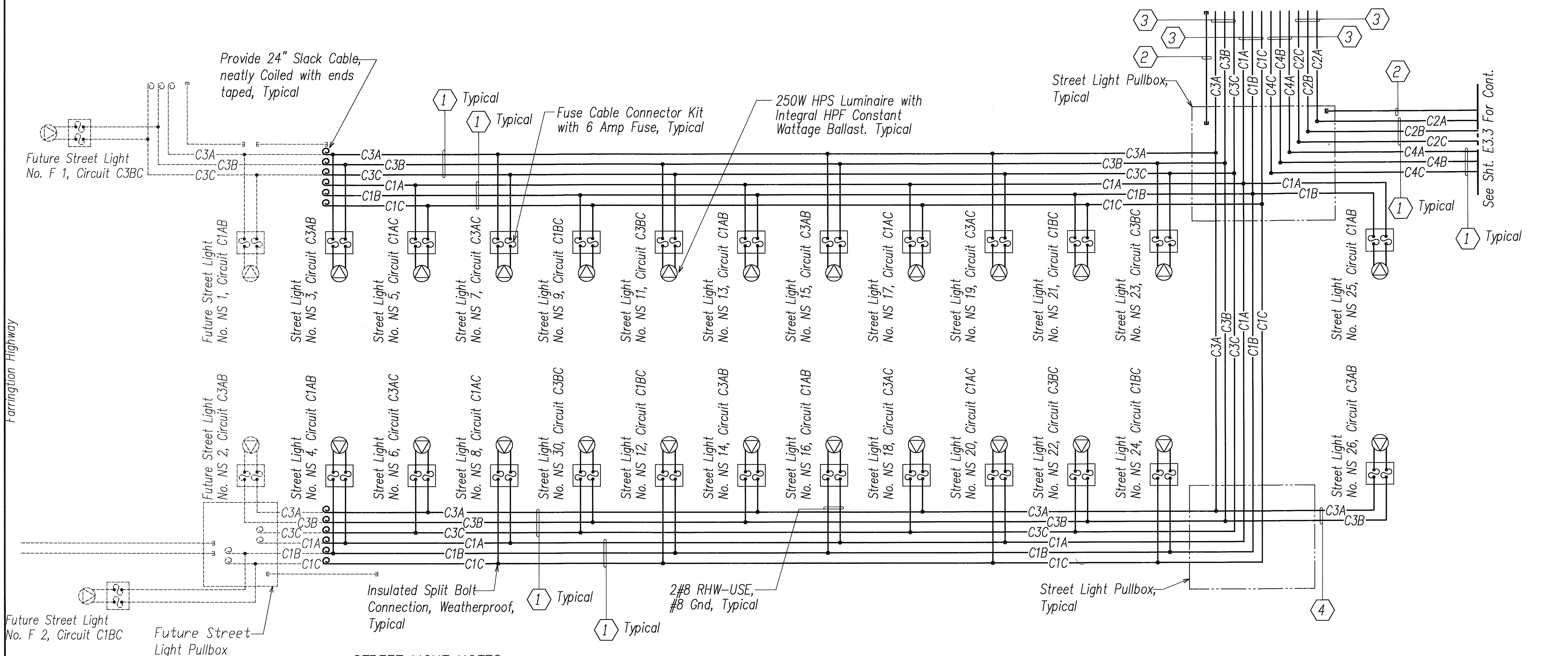
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E-3.1 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	353	380



STREET LIGHT CONDUIT & WIRE SCHEDULE

ITEM	DESCRIPTION
⟨1⟩	2"C, 3#2 RHW-USE, #2 Gnd
⟨2⟩	2-2"C (Spare)
⟨3⟩	2"C, 3#6 RHW-USE, #6 Gnd
⟨4⟩	$1\frac{1}{2}$"C, 2#8 RHW-USE, #8 Gnd
⟨ ⟩	
⟨ ⟩	

STREET LIGHT NOTES:

1. Wire to be RHW-USE, 600V with outer covering.
2. Conduit – PVC Schd. 80 direct buried @ sidewalk Conduit – PVC Schd. 40 with 3" concrete jacket @ road crossing.
3. Contractor shall identify all circuit cables with Circuit Cable I.D. Tags in each pullbox. See detail C/E2.12.
4. All neutral conductors shall be identified with white insulation. Other means of identification are not acceptable.
5. Install pullboxes on 6" of #3 crushed rock base.
6. Seal all conduit ends with duct seal.

STREET LIGHT CONNECTION DIAGRAM I

DATE	REVISION

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4196-E HAWAII, U.S.A.

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20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT CONNECTION DIAGRAM I

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED — Date: Feb 21, 2007

SHEET No. E3.2 OF 66 SHEETS

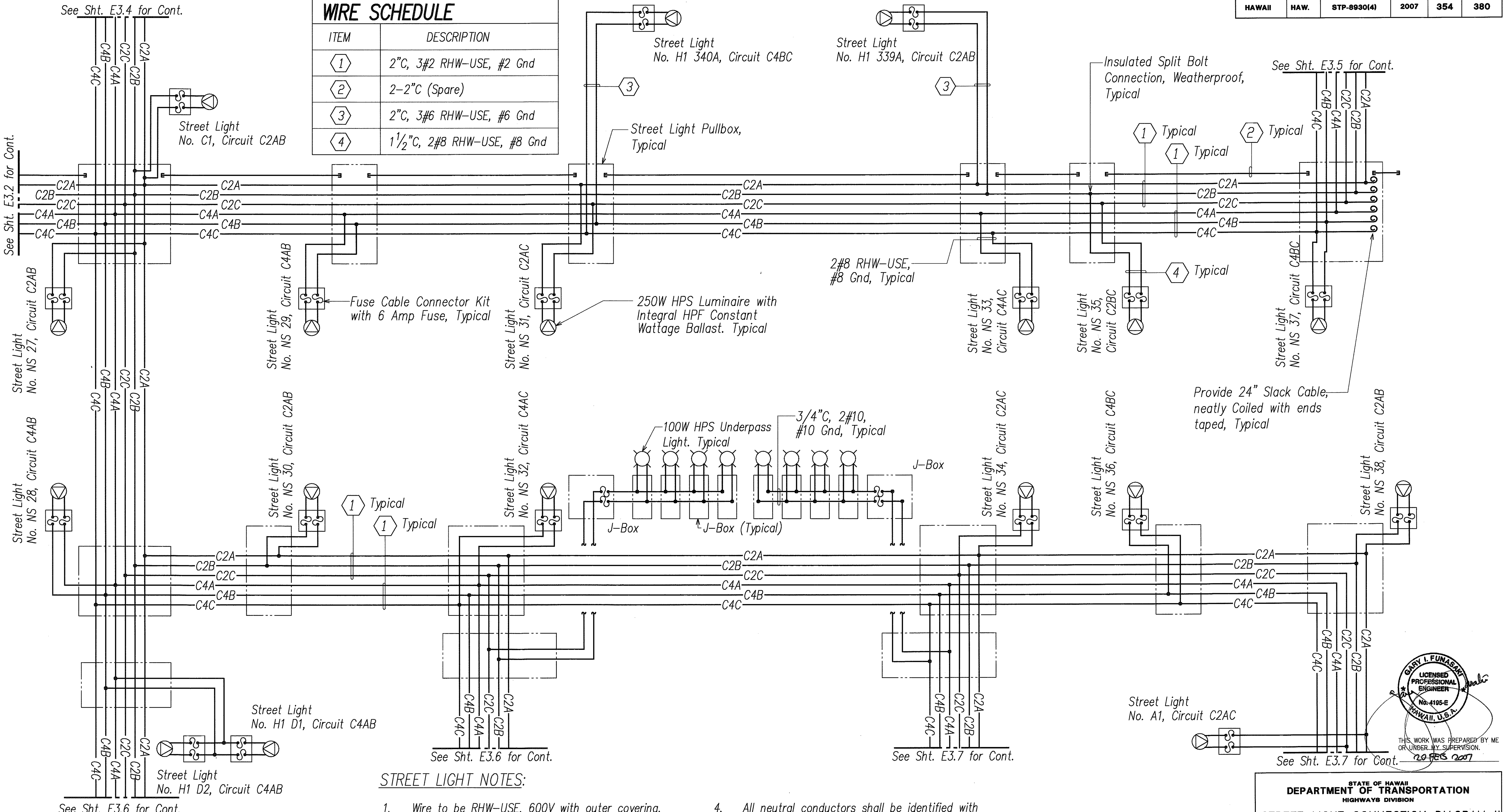
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

LAST SAVE: 02/20/07 @ 09:52:37 BY: SN PLOT SC 1"=1"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	354	380

STREET LIGHT CONDUIT & WIRE SCHEDULE

ITEM	DESCRIPTION
1	2"C, 3#2 RHW-USE, #2 Gnd
2	2-2"C (Spare)
3	2"C, 3#6 RHW-USE, #6 Gnd
4	1 1/2"C, 2#8 RHW-USE, #8 Gnd



STREET LIGHT NOTES:

1. Wire to be RHW-USE, 600V with outer covering.
2. Conduit – PVC Schd. 80 direct buried @ sidewalk
   Conduit – PVC Schd. 40 with 3" concrete jacket @ road crossing.
3. Contractor shall identify all circuit cables with Circuit Cable I.D. Tags in each pullbox. See detail C/E2.12.
4. All neutral conductors shall be identified with white insulation. Other means of identification are not acceptable.
5. Install pullboxes on 6" of #3 crushed rock base.
6. Seal all conduit ends with duct seal.

STREET LIGHT CONNECTION DIAGRAM II

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT CONNECTION DIAGRAM II

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E3.3 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 09:53:20 BY: RN PLOT SC 1"=0'-1"

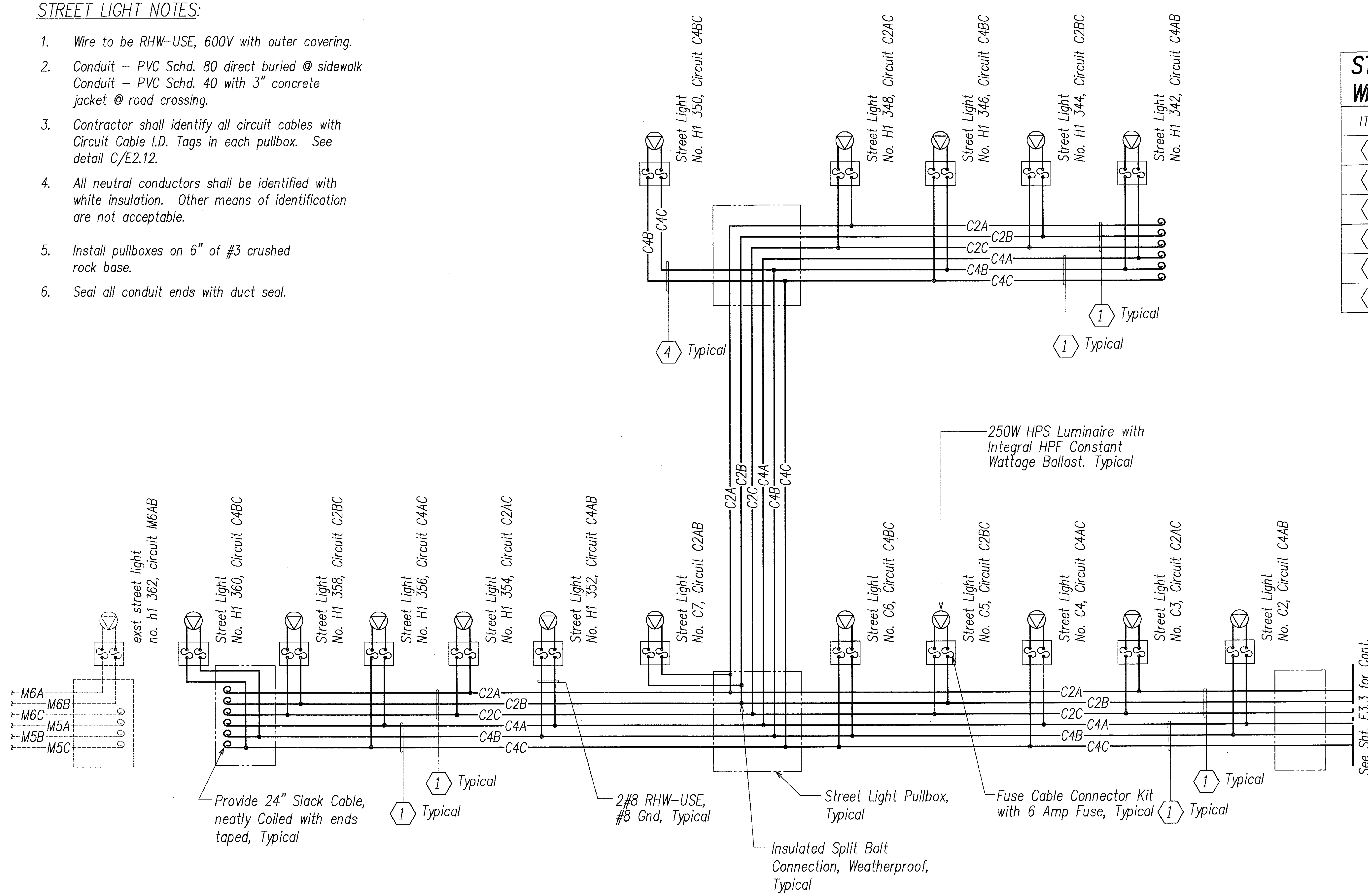
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	355	380

STREET LIGHT NOTES:

1. Wire to be RHW–USE, 600V with outer covering.
2. Conduit – PVC Schd. 80 direct buried @ sidewalk
   Conduit – PVC Schd. 40 with 3" concrete jacket @ road crossing.
3. Contractor shall identify all circuit cables with Circuit Cable I.D. Tags in each pullbox. See detail C/E2.12.
4. All neutral conductors shall be identified with white insulation. Other means of identification are not acceptable.
5. Install pullboxes on 6" of #3 crushed rock base.
6. Seal all conduit ends with duct seal.

STREET LIGHT CONDUIT & WIRE SCHEDULE

ITEM	DESCRIPTION
1	2"C, 3#2 RHW–USE, #2 Gnd
2	2–2"C (Spare)
3	2"C, 3#6 RHW–USE, #6 Gnd
4	$1\frac{1}{2}$"C, 2#8 RHW–USE, #8 Gnd



STREET LIGHT CONNECTION DIAGRAM III

GARY L. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

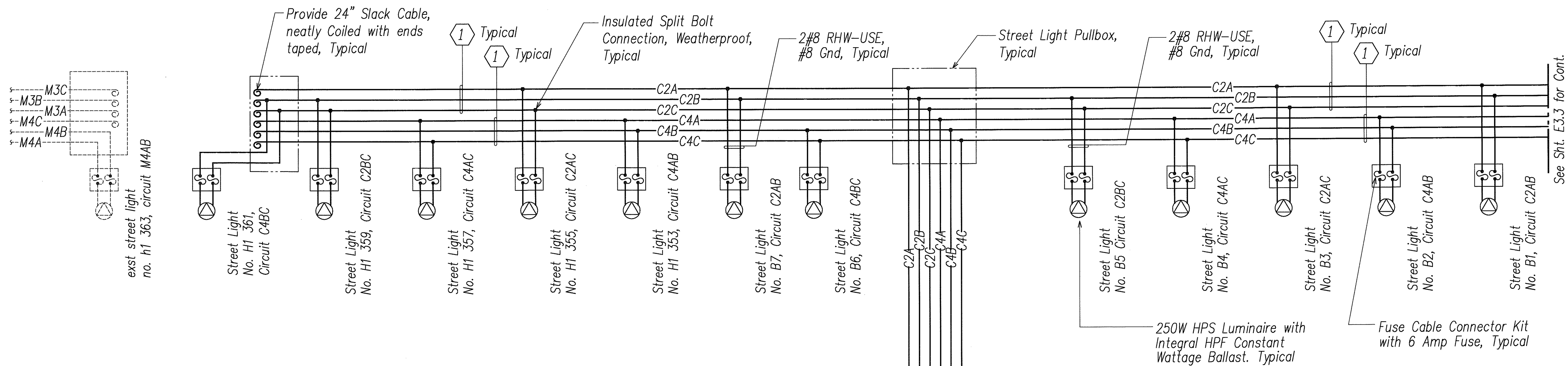
STREET LIGHT CONNECTION DIAGRAM III

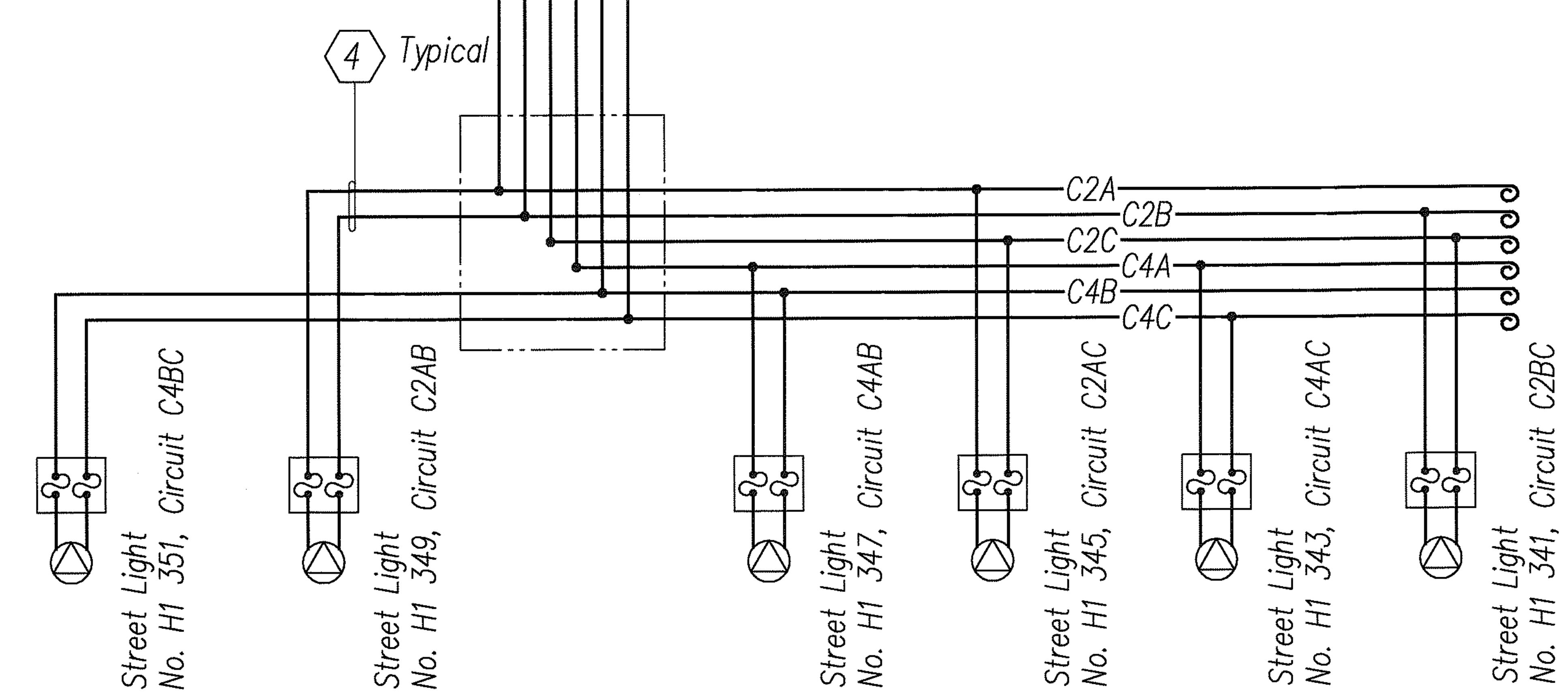
North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E3.4 OF 66 SHEETS

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





STREET LIGHT CONDUIT & WIRE SCHEDULE

ITEM	DESCRIPTION
1	2"C, 3#2 RHW-USE, #2 Gnd
2	2-2"C (Spare)
3	2"C, 3#6 RHW-USE, #6 Gnd
4	$1\frac{1}{2}$"C, 2#8 RHW-USE, #8 Gnd

STREET LIGHT NOTES:

1. Wire to be RHW-USE, 600V with outer covering.
2. Conduit – PVC Schd. 80 direct buried @ sidewalk Conduit – PVC Schd. 40 with 3" concrete jacket @ road crossing.
3. Contractor shall identify all circuit cables with Circuit Cable I.D. Tags in each pullbox. See detail C/E2.12.
4. All neutral conductors shall be identified with white insulation. Other means of identification are not acceptable.
5. Install pullboxes on 6" of #3 crushed rock base.
6. Seal all conduit ends with duct seal.

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STREET LIGHT CONNECTION DIAGRAM IV

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT CONNECTION DIAGRAM IV

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

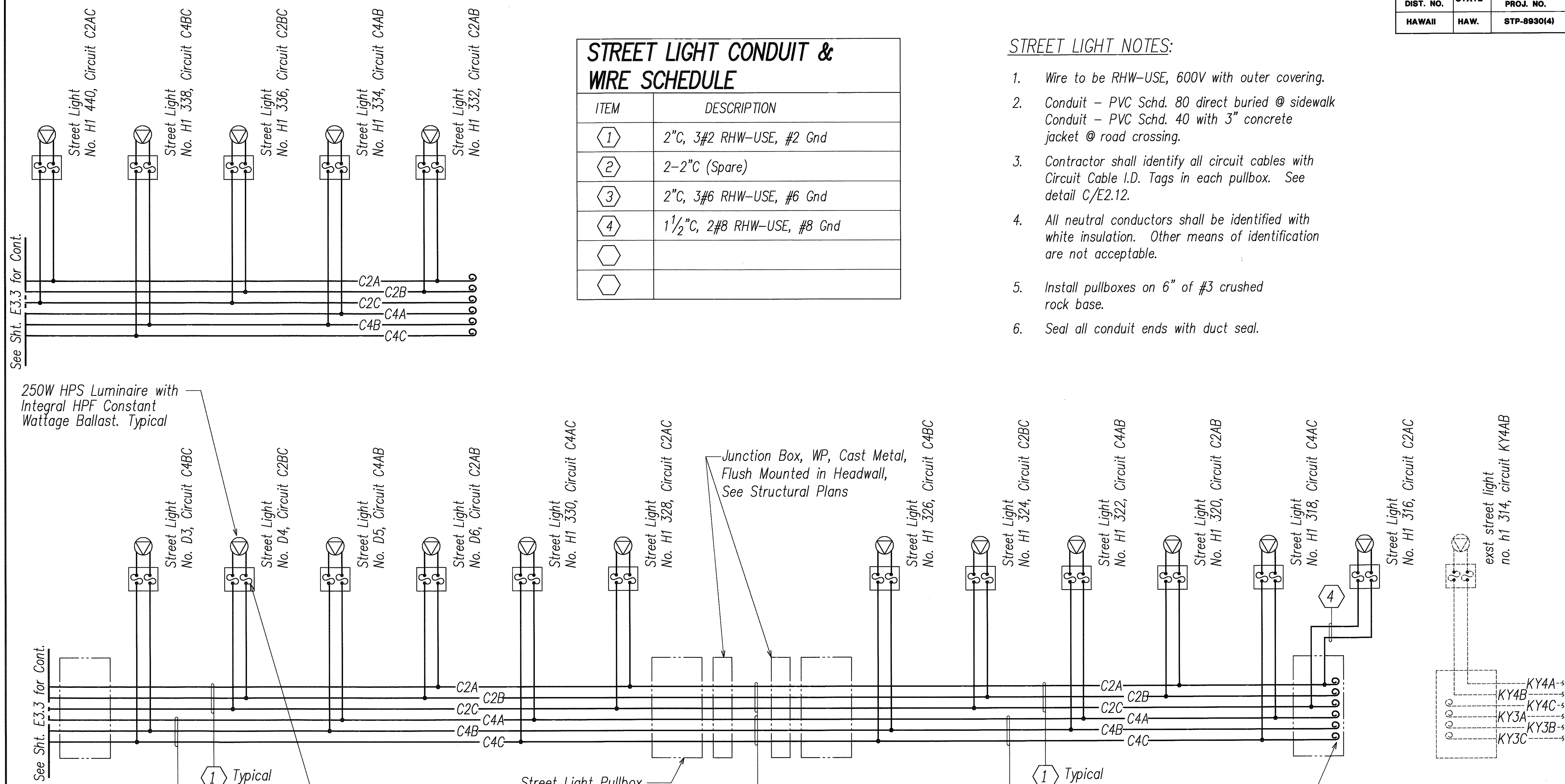
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E3.5 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 09:54:22 BY: RN PLOT SC 1"=1'

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	357	380



STREET LIGHT CONDUIT & WIRE SCHEDULE

ITEM	DESCRIPTION
1	2"C, 3#2 RHW-USE, #2 Gnd
2	2-2"C (Spare)
3	2"C, 3#6 RHW-USE, #6 Gnd
4	$1\frac{1}{2}$"C, 2#8 RHW-USE, #8 Gnd

STREET LIGHT NOTES:

1. Wire to be RHW-USE, 600V with outer covering.
2. Conduit - PVC Schd. 80 direct buried @ sidewalk
   Conduit - PVC Schd. 40 with 3" concrete jacket @ road crossing.
3. Contractor shall identify all circuit cables with Circuit Cable I.D. Tags in each pullbox. See detail C/E2.12.
4. All neutral conductors shall be identified with white insulation. Other means of identification are not acceptable.
5. Install pullboxes on 6" of #3 crushed rock base.
6. Seal all conduit ends with duct seal.

STREET LIGHT CONNECTION DIAGRAM V

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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20 Feb 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT CONNECTION DIAGRAM V

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

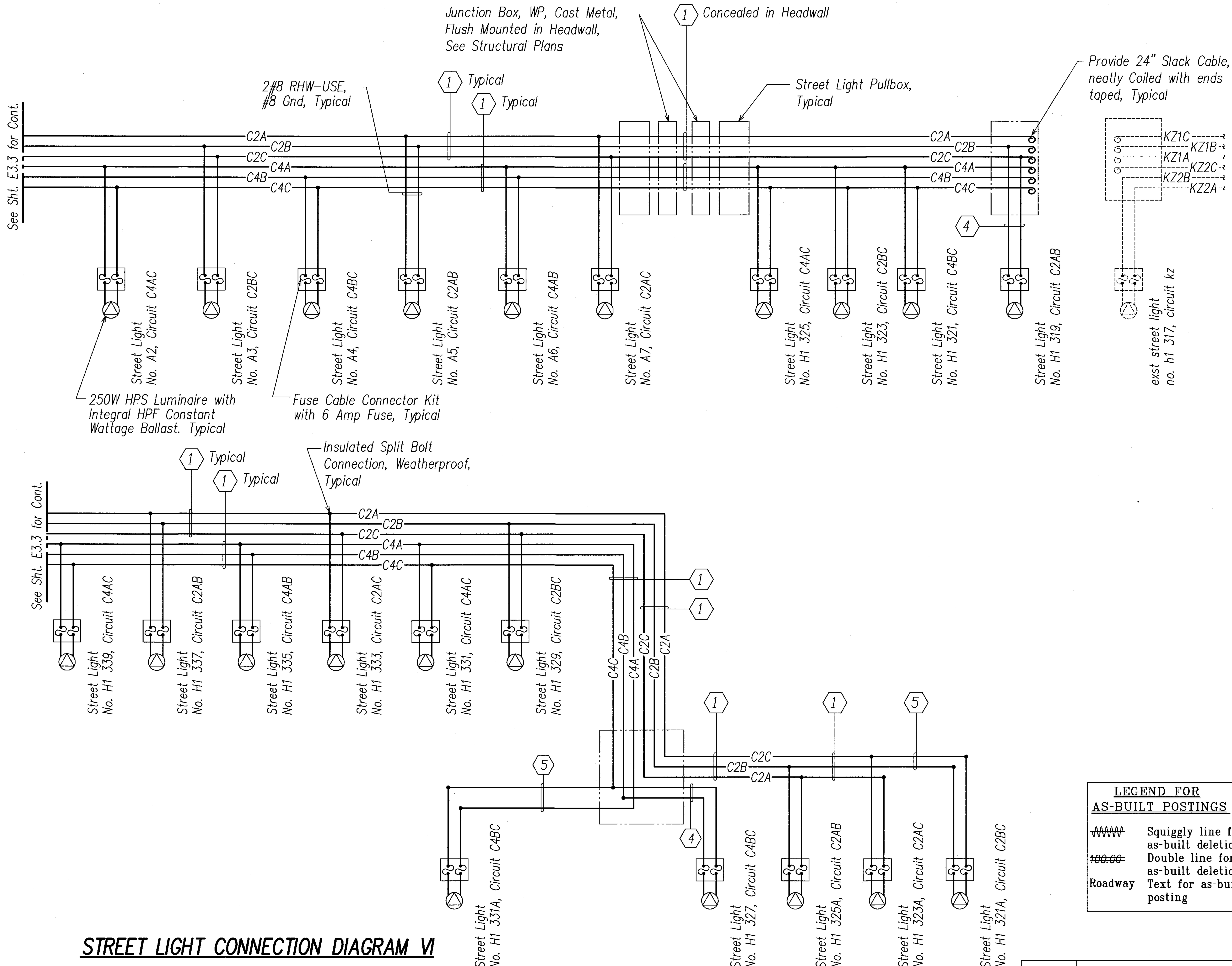
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E3.6 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 09:54:50 BY: SN PLOT SC 1"=1"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO 358	380



STREET LIGHT CONNECTION DIAGRAM VI

STREET LIGHT CONDUIT & WIRE SCHEDULE

ITEM	DESCRIPTION
1	2"C, 3#2 RHW-USE, #2 Gnd
2	2-2"C (Spare)
3	2"C, 3#6 RHW-USE, #6 Gnd
4	$1^1/_2$"C, 2#8 RHW-USE, #8 Gnd
5	2"C, 2#2 RHW-USE, #2 Gnd

STREET LIGHT NOTES:

1. Wire to be RHW-USE, 600V with outer covering.
2. Conduit – PVC Schd. 80 direct buried @ sidewalk Conduit – PVC Schd. 40 with 3" concrete jacket @ road crossing.
3. Contractor shall identify all circuit cables with Circuit Cable I.D. Tags in each pullbox. See detail C/E2.12.
4. All neutral conductors shall be identified with white insulation. Other means of identification are not acceptable.
5. Install pullboxes on 6" of #3 crushed rock base.
6. Seal all conduit ends with duct seal.

LEGEND FOR AS-BUILT POSTINGS

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

DATE	REVISION
7/16/08	Added Barrier Lights

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4105-E HAWAII, U.S.A.
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT CONNECTION DIAGRAM VI

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

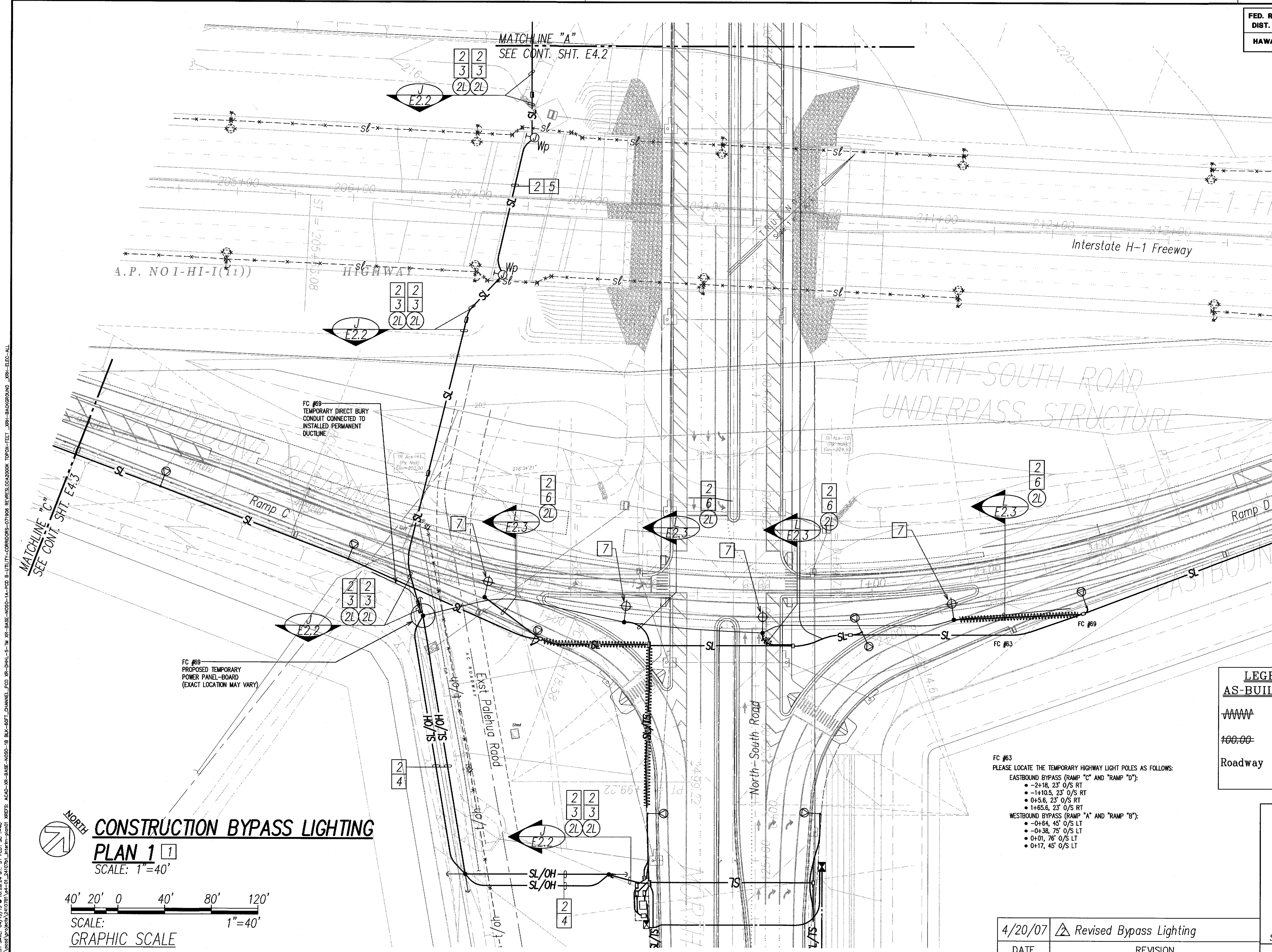
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E3.7 OF 66 SHEETS

"AS-BUILT" CO 358

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 359	380



CONSTRUCTION BYPASS LIGHTING PLAN 1 [1]

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

FC #63
PLEASE LOCATE THE TEMPORARY HIGHWAY LIGHT POLES AS FOLLOWS:

EASTBOUND BYPASS (RAMP "C" AND "RAMP "D"):
- -2+18, 23' O/S RT
- -1+10.5, 23' O/S RT
- 0+5.6, 23' O/S RT
- 1+65.6, 23' O/S RT

WESTBOUND BYPASS (RAMP "A" AND "RAMP "B"):
- -0+64, 45' O/S LT
- -0+38, 75' O/S LT
- 0+01, 76' O/S LT
- 0+17, 45' O/S LT

Note:

1. See Electrical Partial Plans for Lighting, Conduit, and Wiring Requirements.
2. Temporary Street Light Wiring. Remove After Complete Lighting System is Operational.
3. 2"C, 3#1/0 RHW-USE, #2 Gnd.
4. #1/0 Quadraplex Cable.
5. 2-2"C, 3#1/0 RHW-USE, #2 Gnd In Each, Strapped to Exst Wing Wall.
6. 2"C, 2#6 RHW-USE, #6 Gnd.
7. Temporary Street Light, See Detail A/E4.8.

LEGEND FOR AS-BUILT POSTINGS

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

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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5 AUG 2013

DATE	REVISION
4/20/07	△2 Revised Bypass Lighting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION BYPASS LIGHTING PLAN 1

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E4.1 OF 66 SHEETS

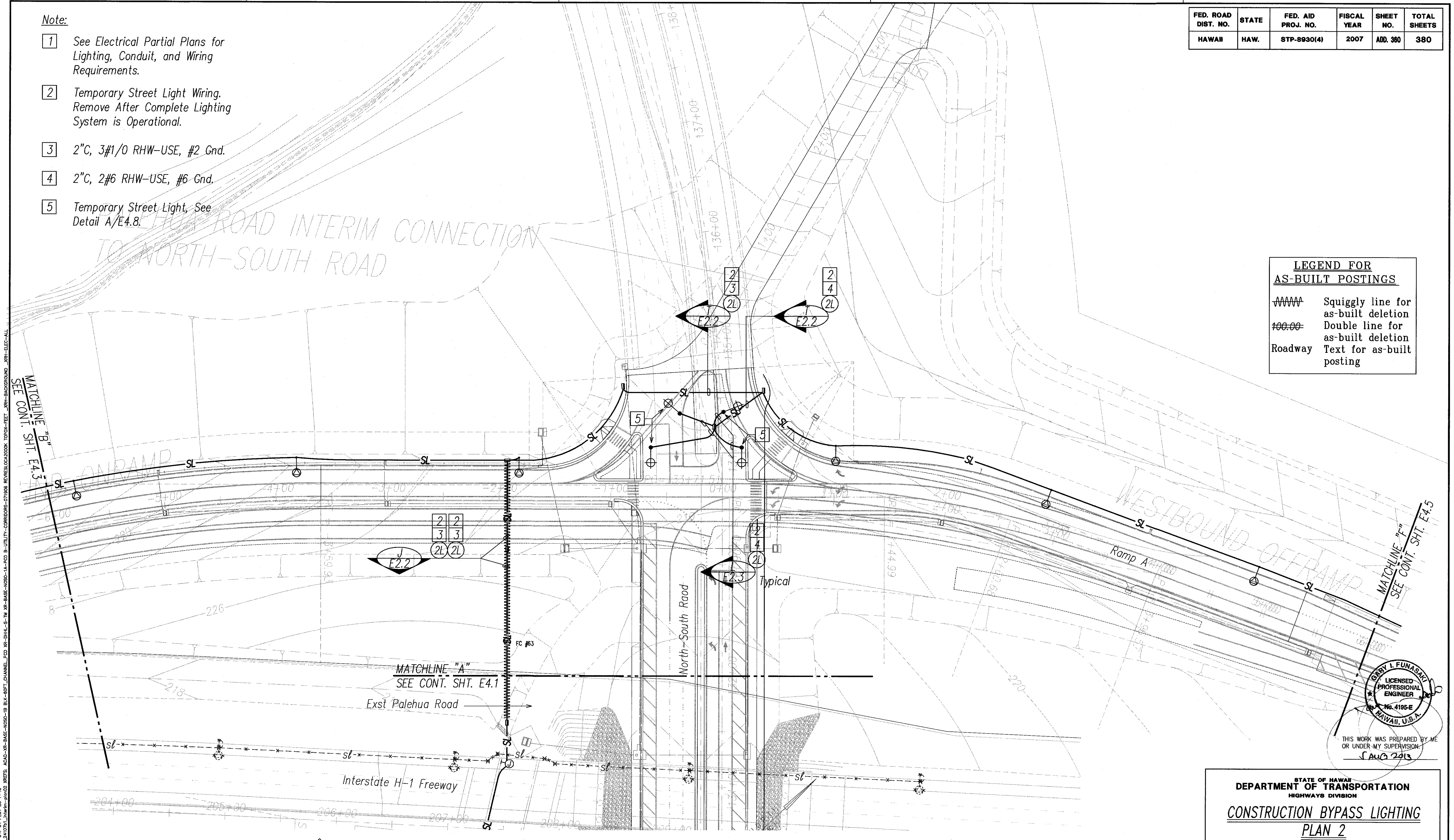
"AS-BUILT" ADD. 359

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	ADD. 360	380

Note:

1. See Electrical Partial Plans for Lighting, Conduit, and Wiring Requirements.
2. Temporary Street Light Wiring. Remove After Complete Lighting System is Operational.
3. 2"C, 3#1/0 RHW-USE, #2 Gnd.
4. 2"C, 2#6 RHW-USE, #6 Gnd.
5. Temporary Street Light, See Detail A/E4.8.



CONSTRUCTION BYPASS LIGHTING PLAN 2 [1]

SCALE: 1"=40'

GRAPHIC SCALE — SCALE: 1"=40' (40' 20' 0 40' 80' 120')

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

DATE	REVISION
4/20/07	△ Revised Bypass Lighting

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.
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5 AUG 2013

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION BYPASS LIGHTING PLAN 2

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED — Date: Feb 21, 2007

SHEET No. E4.2 OF 66 SHEETS

"AS-BUILT" ADD. 360

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	361	380

FEB 21, 2007

Note:

[1] *See Electrical Partial Plans for Lighting, Conduit, and Wiring Requirements.*

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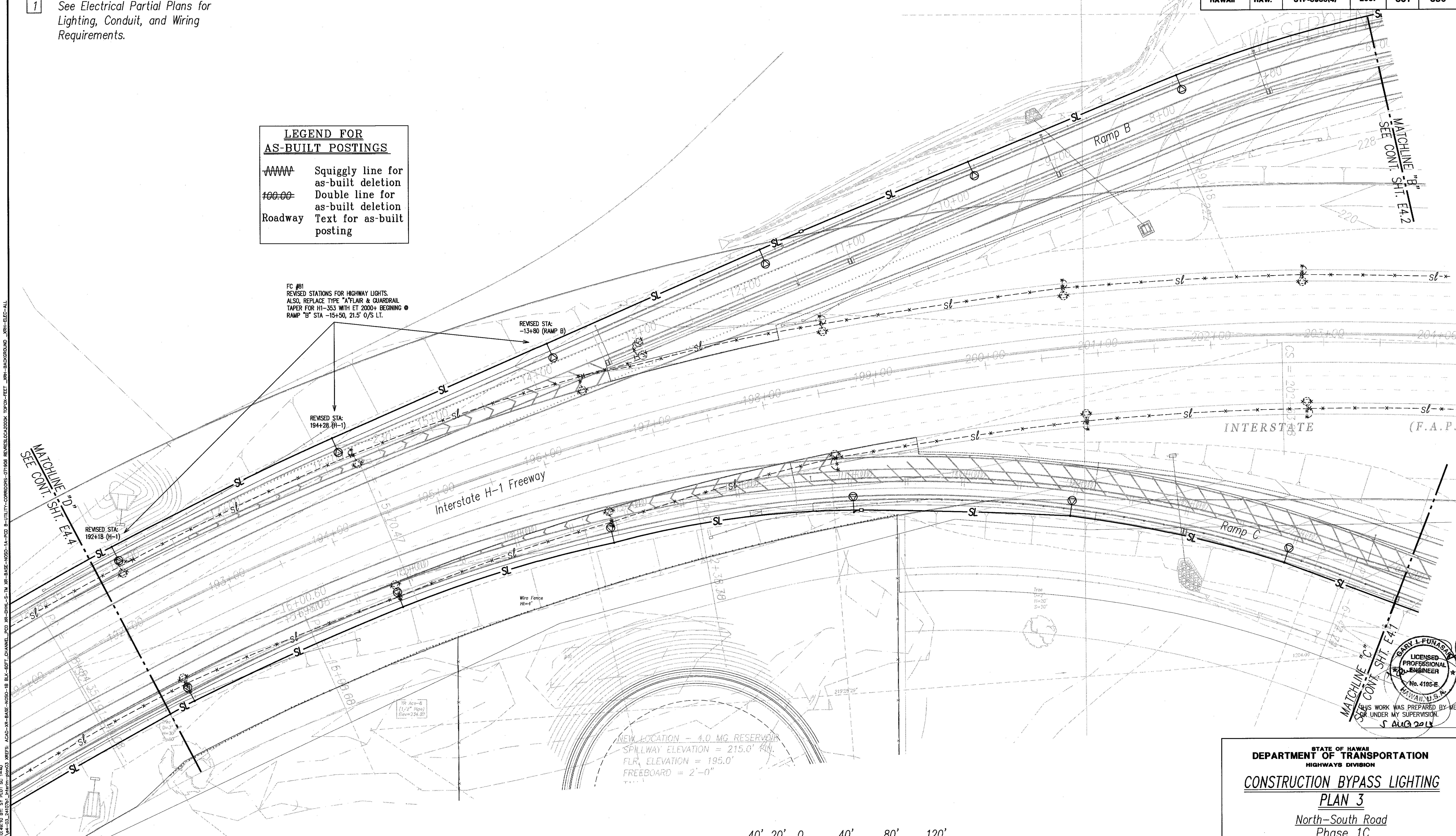
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting



CONSTRUCTION BYPASS LIGHTING PLAN 3 [1]

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

GARY L. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4185-E
HAWAII, U.S.A.

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5 AUG 2013

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION BYPASS LIGHTING PLAN 3

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E4.3 OF 66 SHEETS

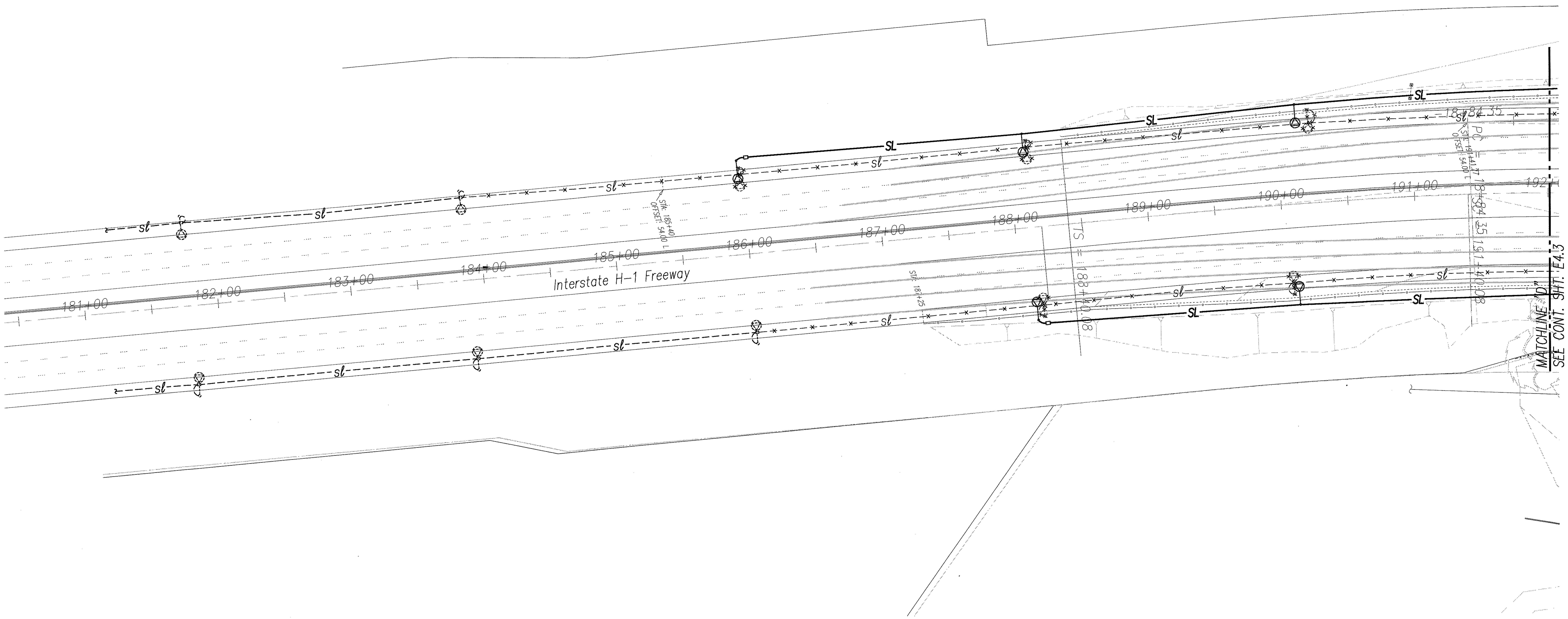
"AS–BUILT"

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	362	380

Note:

[1] See Electrical Partial Plans for Lighting, Conduit, and Wiring Requirements.



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20 FEB 2007

NORTH

CONSTRUCTION BYPASS LIGHTING PLAN 4 [1]

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION BYPASS LIGHTING PLAN 4

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

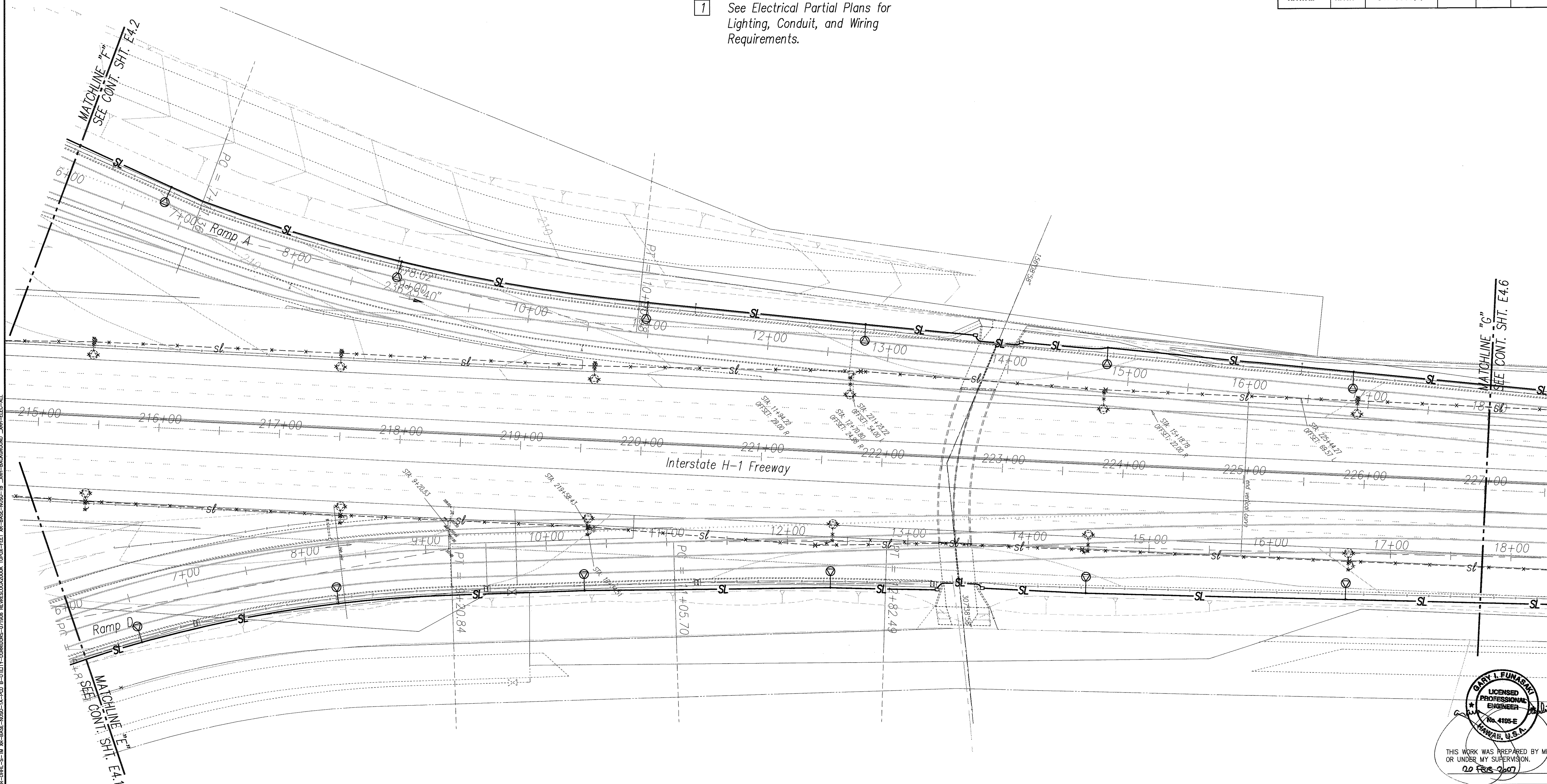
Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E4.4 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	363	380

Note:

[1] *See Electrical Partial Plans for Lighting, Conduit, and Wiring Requirements.*



CONSTRUCTION BYPASS LIGHTING PLAN 5 [1]

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4105-E
HAWAII, U.S.A.

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20 Feb 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION BYPASS LIGHTING PLAN 5

North–South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

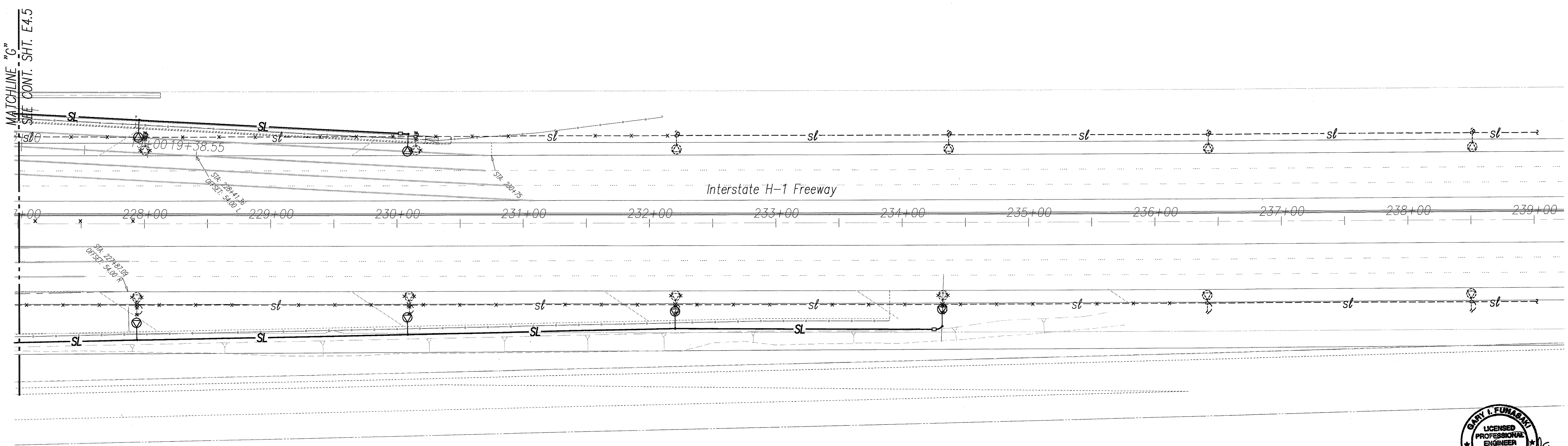
SHEET No. E4.5 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	364	380

Note:

[1] See Electrical Partial Plans for Lighting, Conduit, and Wiring Requirements.



CONSTRUCTION BYPASS LIGHTING PLAN 6 [1]

SCALE: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

DATE	REVISION

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION BYPASS LIGHTING PLAN 6

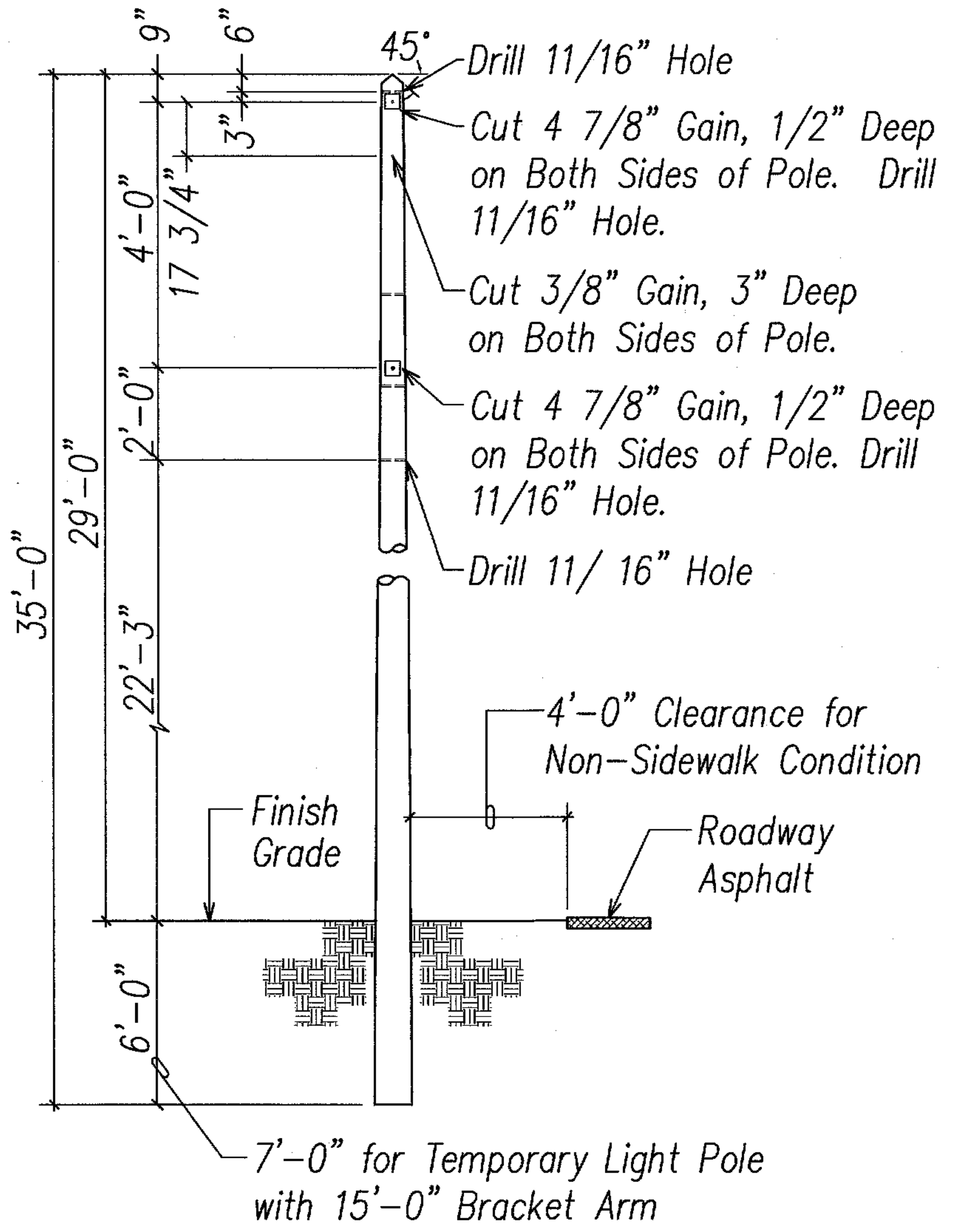
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E4.6 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO 365	380

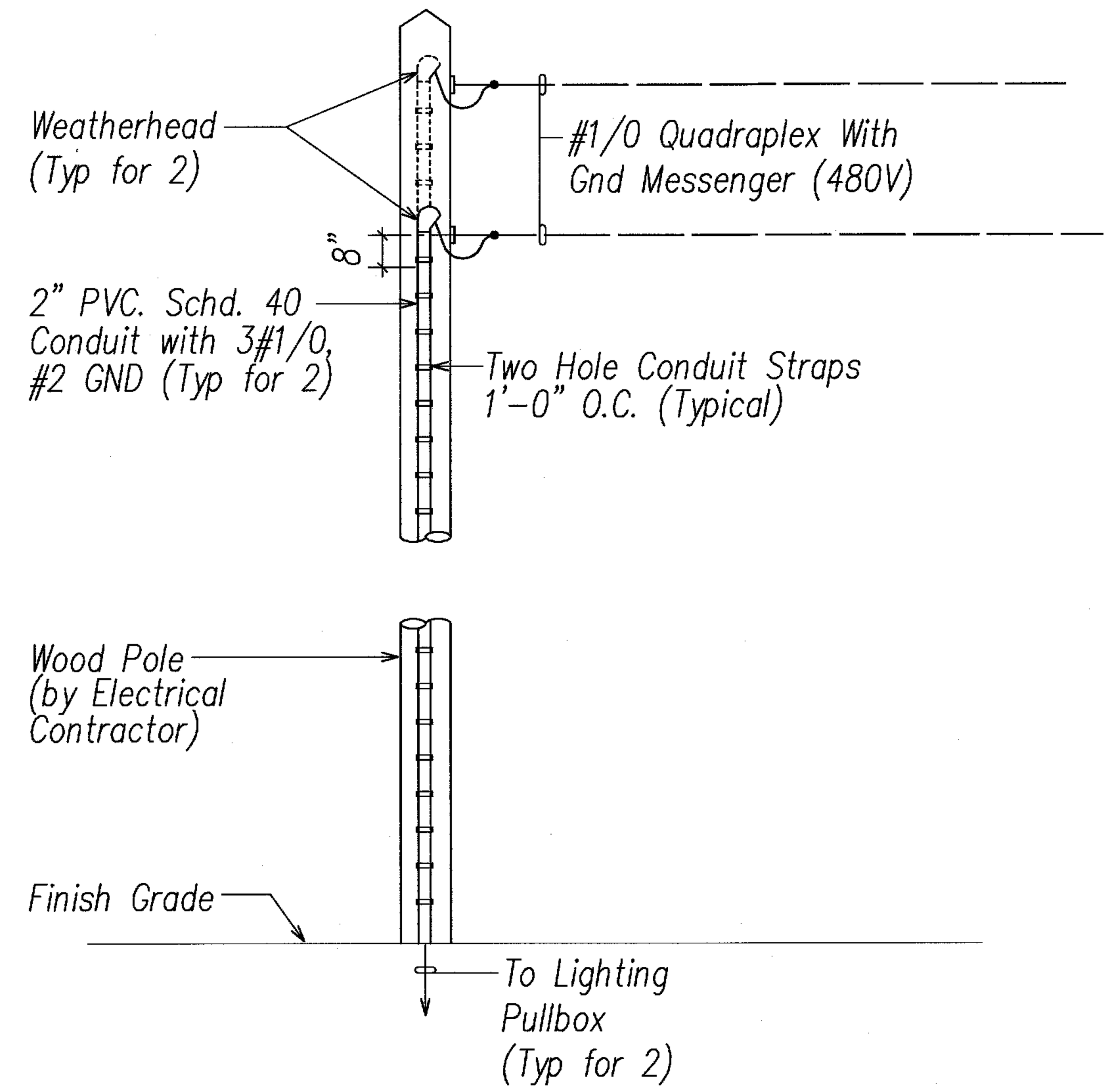


FC #63

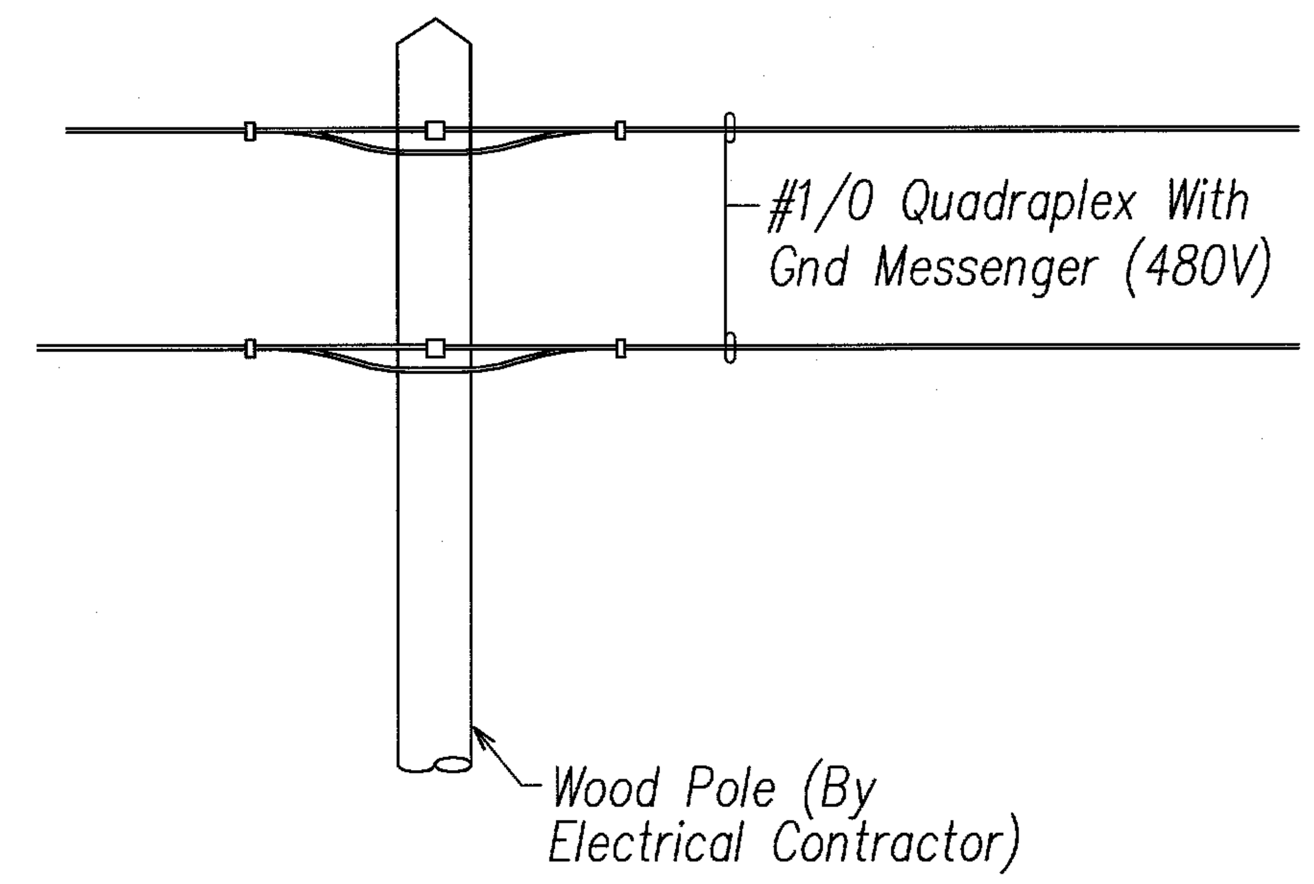
A / E4.7 **WOOD POLE DETAIL (35')**
Not to Scale

NOTES:

1. Minimum top circumference is 23". Minimum circumference at 6'-0" from butt is 35".
2. Pole shall be treated with pentachlorophenol using the "Celon" Process, by licensed Termite Treatment Company.
3. Termite treat the bottom of hole and backfill material with aqueous chemical solution consisting of 0.5% Aldrin or 0.5% Dursban. Minimum 5 gallons of the solution shall be used for each pole. Application shall be performed by Contractor licensed for this type of work. Treatment shall be done as the hole is being backfilled.



B / E4.7 **OVERHEAD DEAD END INSTALLATION**
Not to Scale



C / E4.7 **OVERHEAD TANGENT INSTALLATION**
Not to Scale

LEGEND FOR AS-BUILT POSTINGS

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

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

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5 AUG 2013

DATE	REVISION
3/26/08	Revised Bypass Ltg (RFI 95)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

OVERHEAD DETAILS

North–South Road
Phase 1C
F.A.I. Proj. No. STP–8930(4)

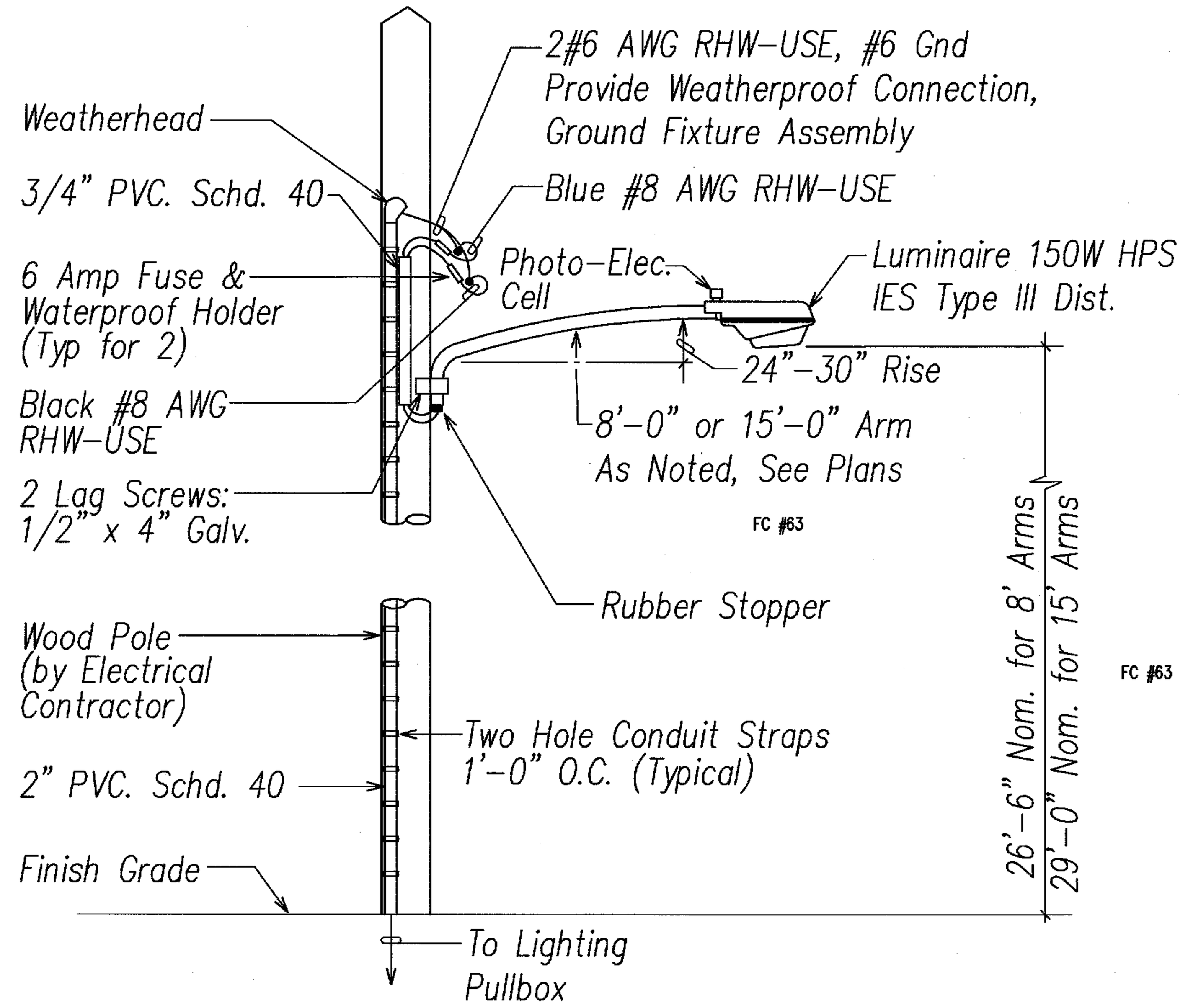
Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E4.7 OF 66 SHEETS

"AS–BUILT" CO 365

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	CO 366	380



A / E4.8 **TEMPORARY STREET LIGHT DETAIL**

Not to Scale

ELECTRICAL SPECIFICATION

1. Mounting Height.
   A. All mounting heights are nominal and indicate distance from top of curb or grade to center of luminaire support at point of luminaire attachment.
   B. For 150 Watt HPS Luminaire -- 26'-0".
2. Bracket Arm.
   A. Bracket arm assembly shall consist of 2" I.P.S. steel pipe.
   B. Pole end shall have steel fitting welded to it, which will permit positioning of arm on plate held only by gravity while arm is secured to pole with cap screws providing weather-resistant connection & smooth wiring raceway.
   C. Face plate shall be designed for wood pole mounting and connecting bolts must be capable of resisting the same moment at yield strength as arm member.
3. Luminaire.
   A. Luminaires shall be standard make and manufactured by a Manufacturer of recognized experience and ability, who is now regularly engaged in the manufacture of street lighting luminaires.
   B. The luminaire shall have a slip-fitter suitable to accept a minimum 4 1/2" straight tenon, 1 5/8" O.D. to 2 3/8" O.D., without the need of rearrangement of any of the mounting components. Mast arm shall be secured by means of two locking bolts. All hardware shall be stainless steel, hot-dipped galvanized, or cadmium plated.
   C. The luminaire housing shall be provided with an EEI-NEMA Standard three terminal twist locking type mounting receptacle for individual photo control. the receptacle shall be pre-wired to the terminal board for the same operating voltage as the ballast.
   D. The terminal strip shall have protective barriers between each terminal. The terminal board shall accommodate wire sizes up to No. 8 AWG.
   E. All luminaire components shall be securely mounted against horizontal and vertical movement.
   F. The new weight of the luminaire, including ballast, designed to operate the high pressure sodium lamp, shall not exceed 25 pounds.
   G. The luminaire light distribution shall be IES Type III, semi-cutoff with glass refractor.
   H. The luminaire shall be supplied without terminal board cover plate.
4. Ballast.
   A. Rated for 480V input of multiple circuit, 60 Hz distribution system. Unit shall consist of a core and coil assembly impregnated with Class "F" Varnish.
   B. Ballast shall be for single HPS lamp, wattages as shown on Drawings, regulated output type, high power factor, capable of maintaining rated output with ±10% variation of input voltage, and conforming to applicable NEMA standards.
5. Photo-Electric Cell.
   A. Photo-electric cell shall be for plug connection on luminaire with weatherproof twist lock receptacle & control of normally closed contacts. Voltage shall be 480V. Turn on range at 0.5 to 2.5 footcandles, turn off range at 6 footcandles maximum, minimum 200 milli-seconds time delay. Expulsion type lightning arrester, full wave rectifier & combination resistor capacitor.
   B. In the event of electronic circuit failure, load shall remain on.
   C. Cadmium sulfide photocell shall be of average sensitivity, hermetically sealed and tested to 100%.
   D. Relay shall have double pole, single throw, double contacts, with contacts normally closed.
   E. Individual components mounted on Bakelite chassis with three locking blades and removable neoprene sealing gasket on bottom side, so designed that the unit may be mounted directly on luminaire heads and adapters that meet EEI-NEMA Standards. Bakelite chassis protected by weatherproof acrylic plastic housing, with aperture for limited field of seeing by photocell and adjustable shutter to control On-Off periods.
   F. Control unit shall be designed for minimum of 5000 On-Off operations at full rated load conditions.
6. Fused Connector.
   A. Fused connector shall be rubber body, watertight, two-section (line side receptacle, load side plug) metallic fuseholder with wire terminal and lead-in wires.
   B. Fuse shall be midget type six ampere cartridge fuse.
7. Galvanized Finish. Bracket arm and all accessories and hardware such as nuts, washers, bolts, and shims shall be hot-dipped galvanized.
8. Connectors. All Connectors shall be AL-CU approved type.
9. Poles. All poles shall be 35 Feet, Class 3, penta in oil treated with pentachlorophenol in hydro carbon solvent, Type A per APWA C1 & C4 Specifications by licensed Termite Treating Co.

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

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5 AUG 2013

DATE	REVISION
3/26/08	Revised Bypass Ltg (RFI 95)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TEMPORARY STREET LIGHT DETAILS

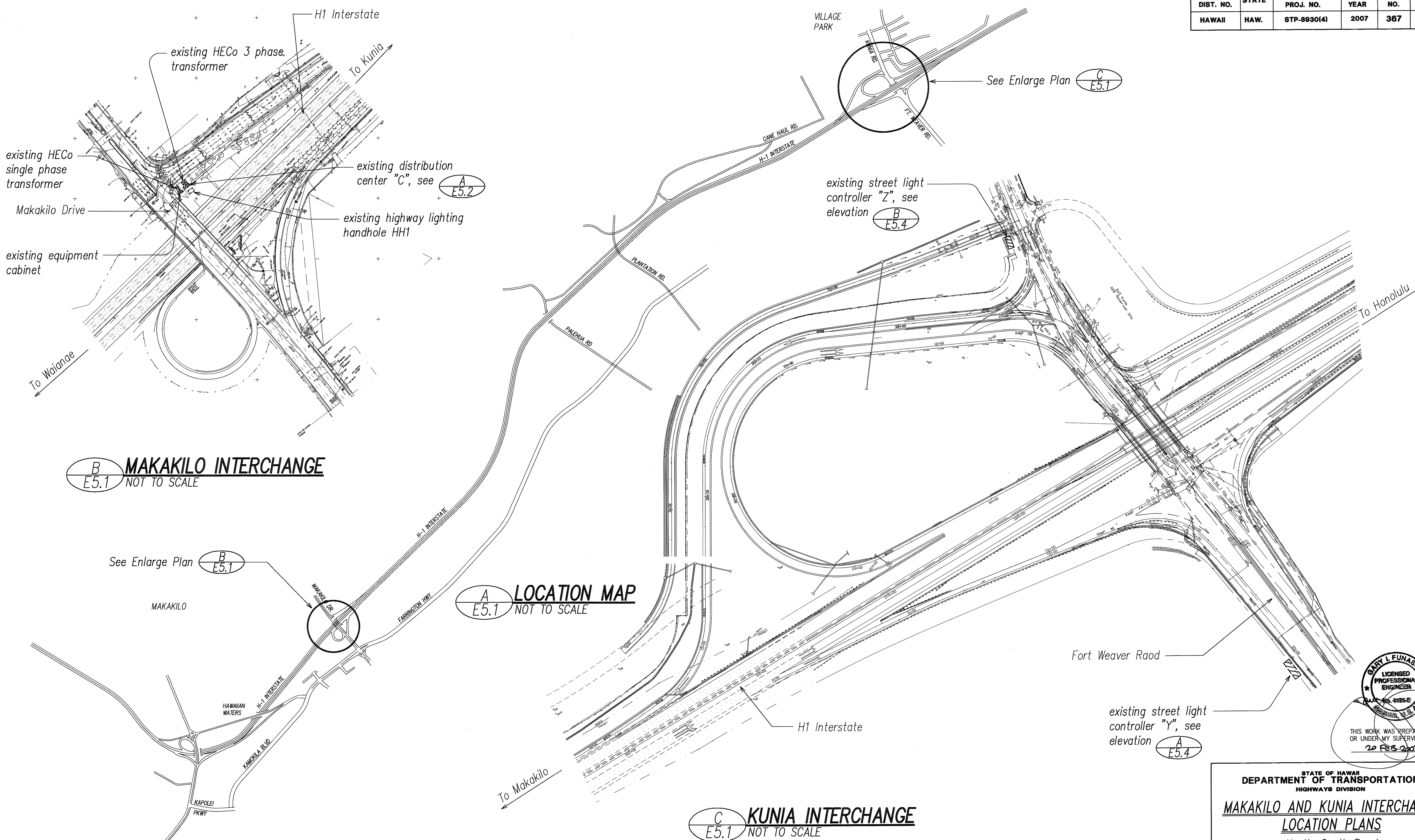
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E4.8 OF 66 SHEETS

"AS-BUILT" **CO 366**

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	367	380



B/E5.1 **MAKAKILO INTERCHANGE**
NOT TO SCALE

A/E5.1 **LOCATION MAP**
NOT TO SCALE

C/E5.1 **KUNIA INTERCHANGE**
NOT TO SCALE

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAKAKILO AND KUNIA INTERCHANGE LOCATION PLANS

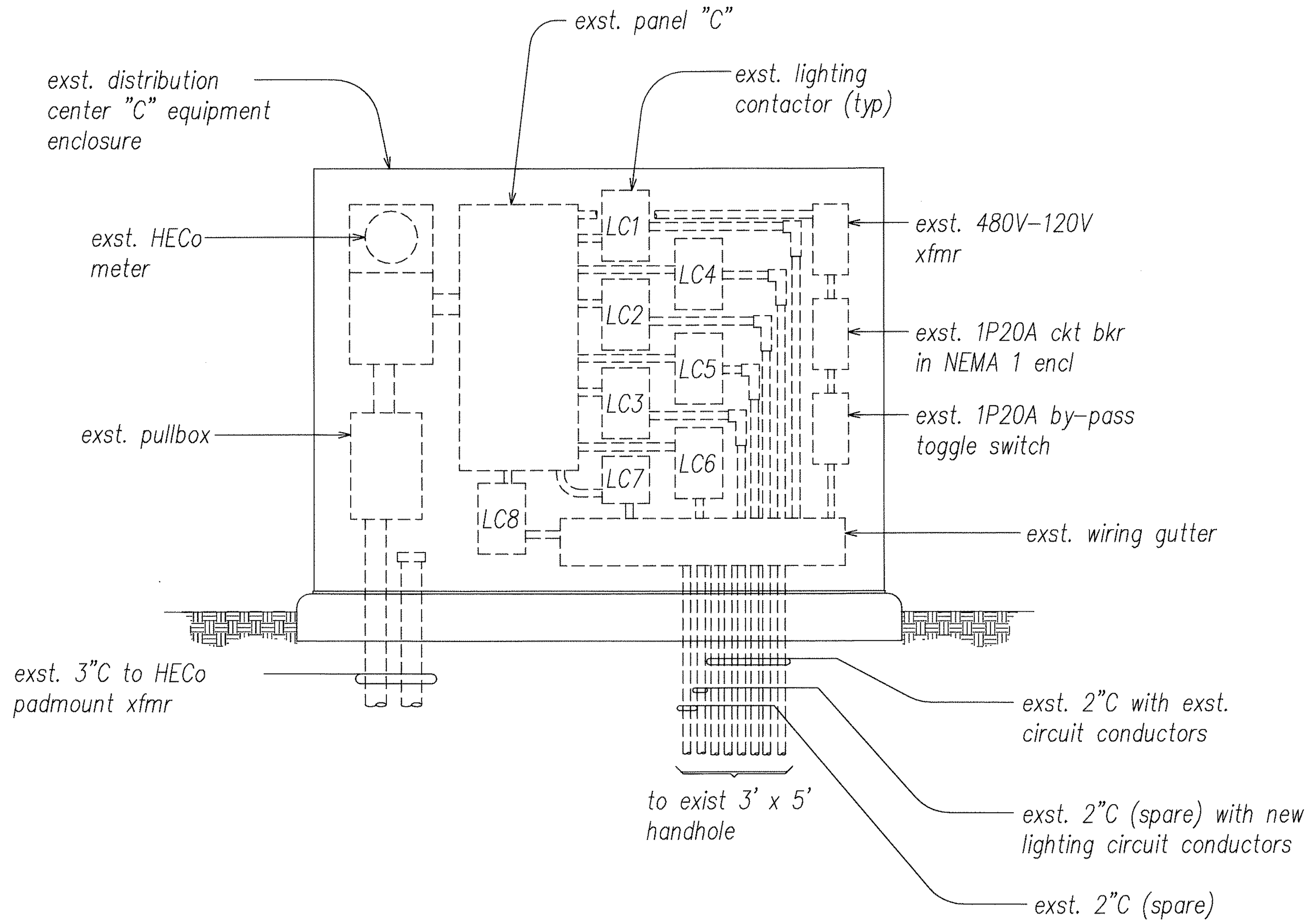
North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED
Date: Feb 21, 2007

SHEET No. E5.1 OF 66 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	368	380



Notes:

1. Contractor Shall Verify Existing Conditions in the Field Prior to Construction.

2. See Existing One-line Diagram Sheet E5.3.

A / E5.2 **MAKAKILO INTERCHANGE EXST EQUIPMENT ELEVATION**
NOT TO SCALE

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LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.
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20 FEB 2007

FOR REFERENCE ONLY

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

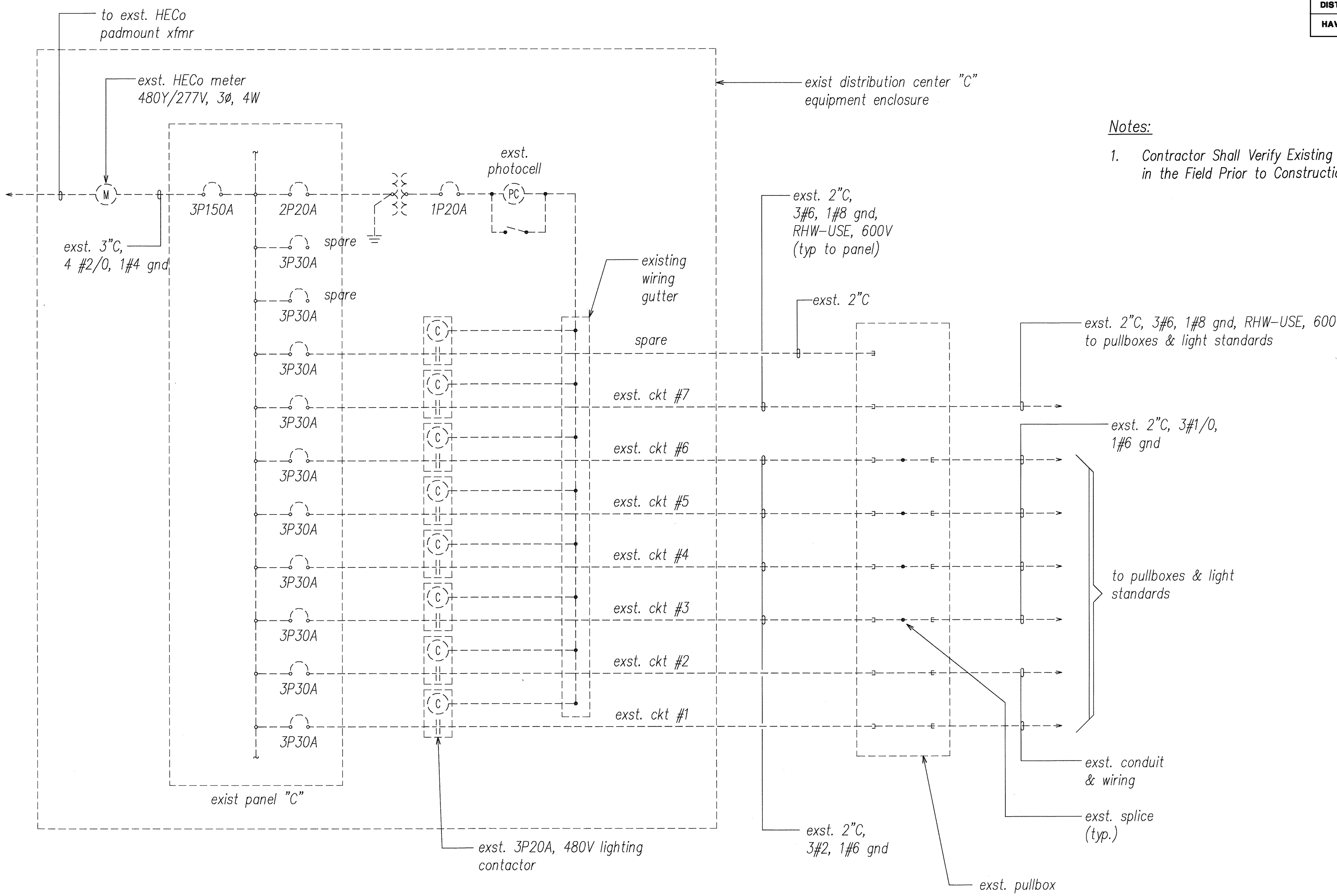
MAKAKILO INTERCHANGE
EXST EQUIPMENT ELEVATION

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E5.2 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	369	380



Notes:

1. Contractor Shall Verify Existing Conditions in the Field Prior to Construction.

A / E5.3 **MAKAKILO INTERCHANGE EXST ONE-LINE DIAGRAM**
NOT TO SCALE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAKAKILO INTERCHANGE
EXST ONE-LINE DIAGRAM

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

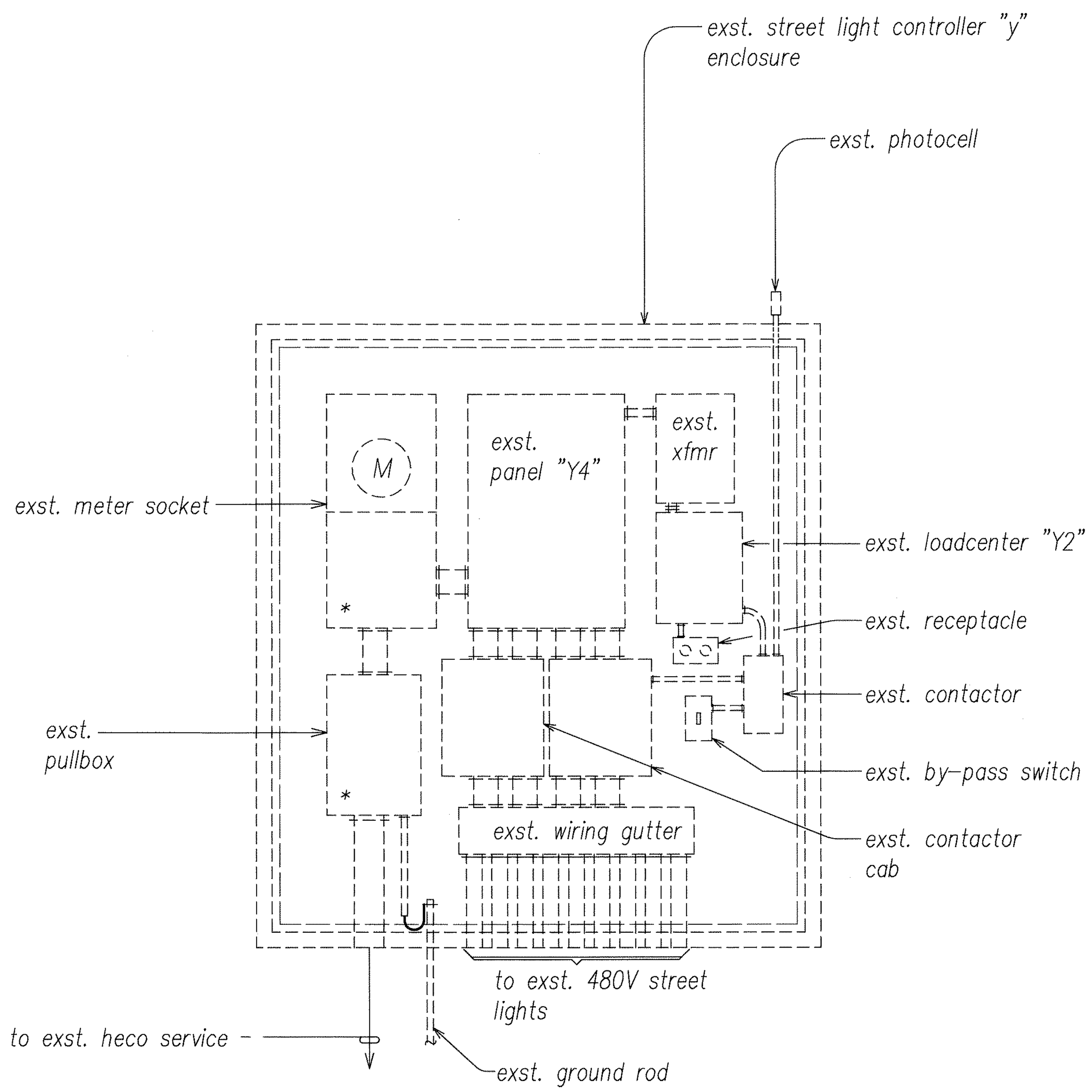
SHEET No. E5.3 OF 66 SHEETS

DATE	REVISION

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

FOR REFERENCE ONLY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	370	380

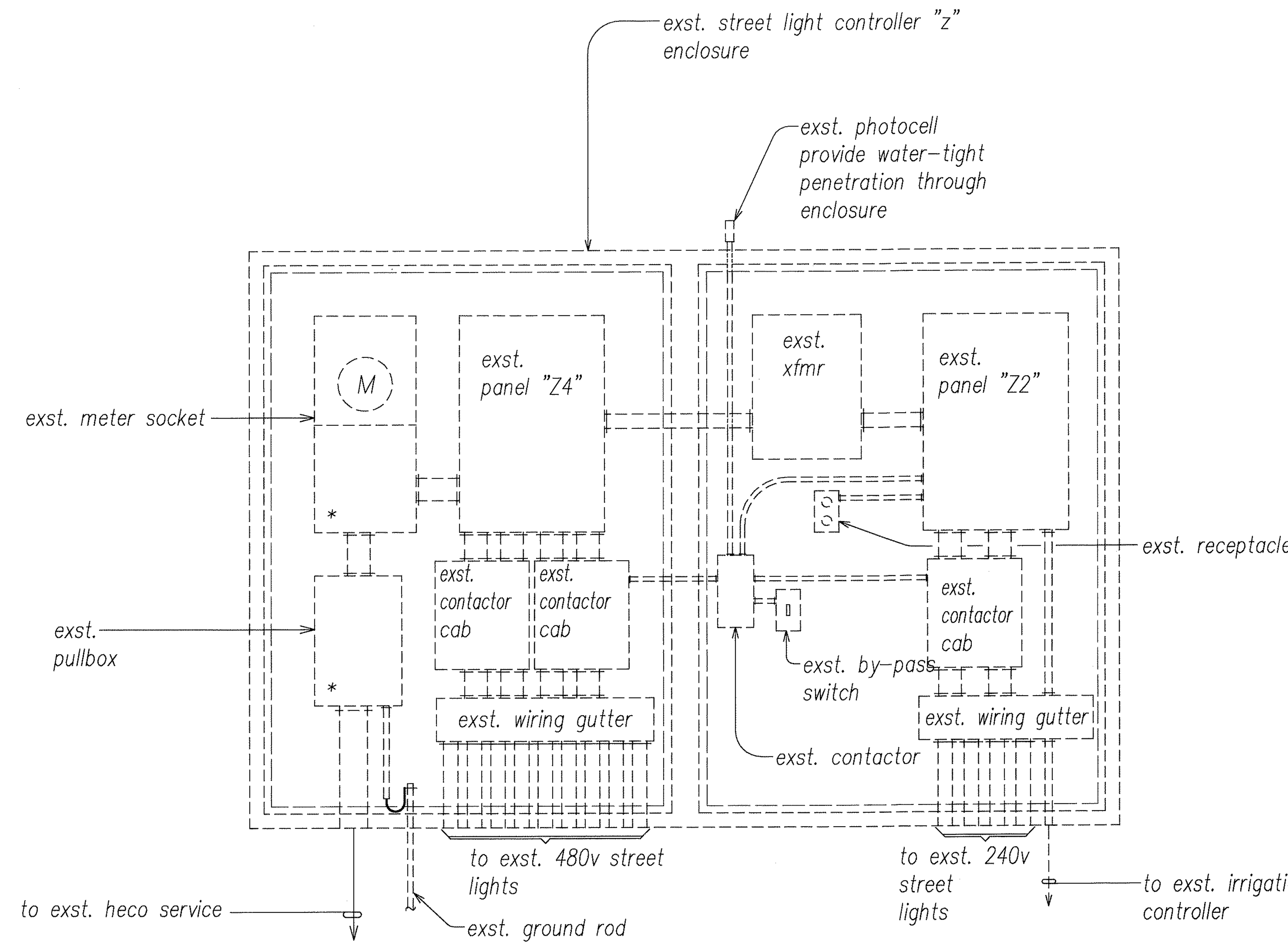


Notes:

1. Contractor Shall Verify Existing Conditions in the Field Prior to Construction.

2. See Existing One-line Diagram Sheet E5.5.

A/E5.4 KUNIA INTERCHANGE EXST EQUIPMENT ELEVATION Y
NOT TO SCALE



Notes:

1. Contractor Shall Verify Existing Conditions in the Field Prior to Construction.

2. See Existing One-line Diagram Sheet E5.6.

B/E5.4 KUNIA INTERCHANGE EXST EQUIPMENT ELEVATION Z
NOT TO SCALE

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

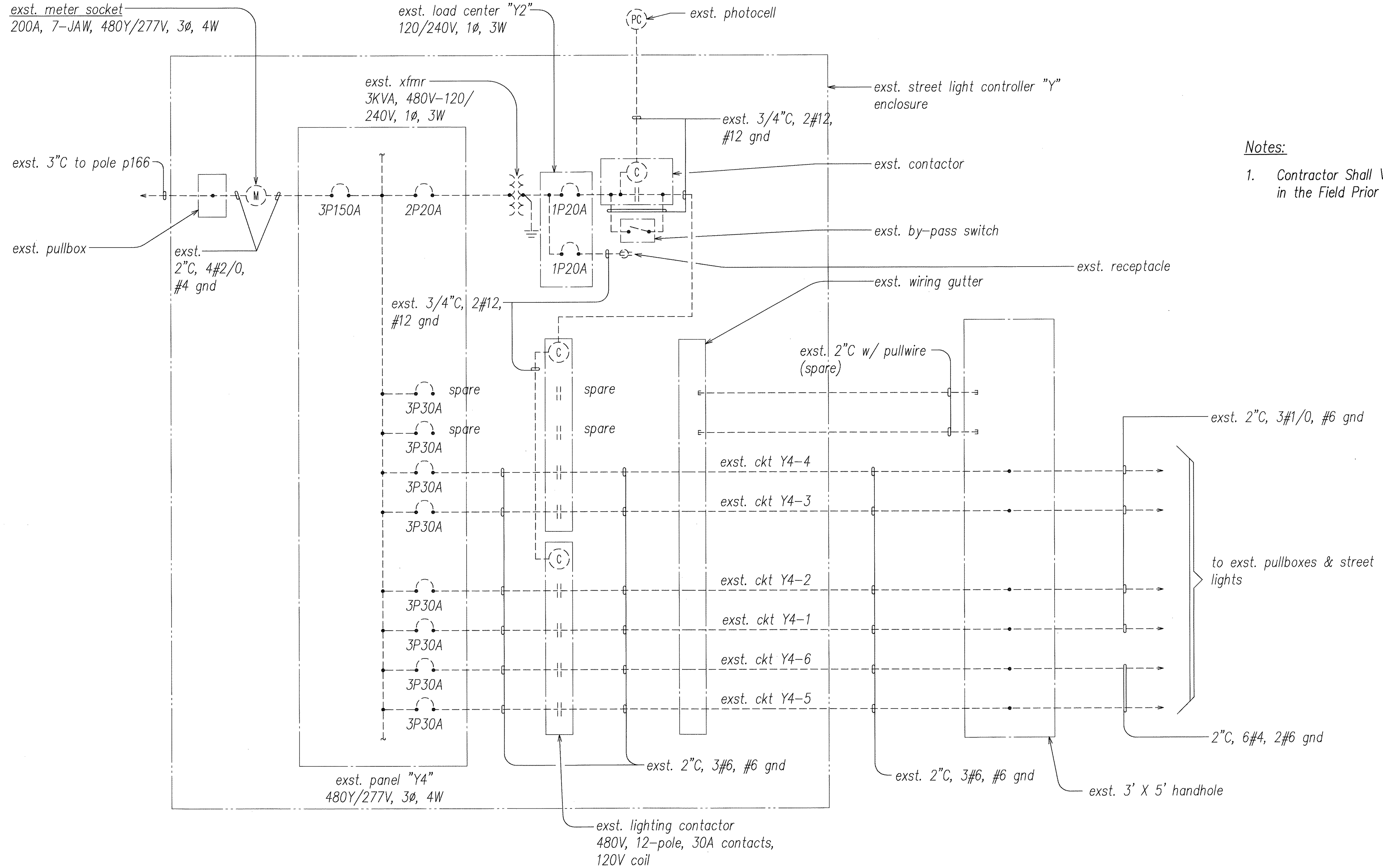
KUNIA INTERCHANGE
EXST EQUIPMENT ELEVATIONS

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E5.4 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	371	380



Notes:

1. Contractor Shall Verify Existing Conditions in the Field Prior to Construction.

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A / E5.5 KUNIA INTERCHANGE EXST ONE-LINE DIAGRAM Y

NOT TO SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE
EXST ONE-LINE DIAGRAM Y

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E5.5 OF 66 SHEETS

DATE	REVISION

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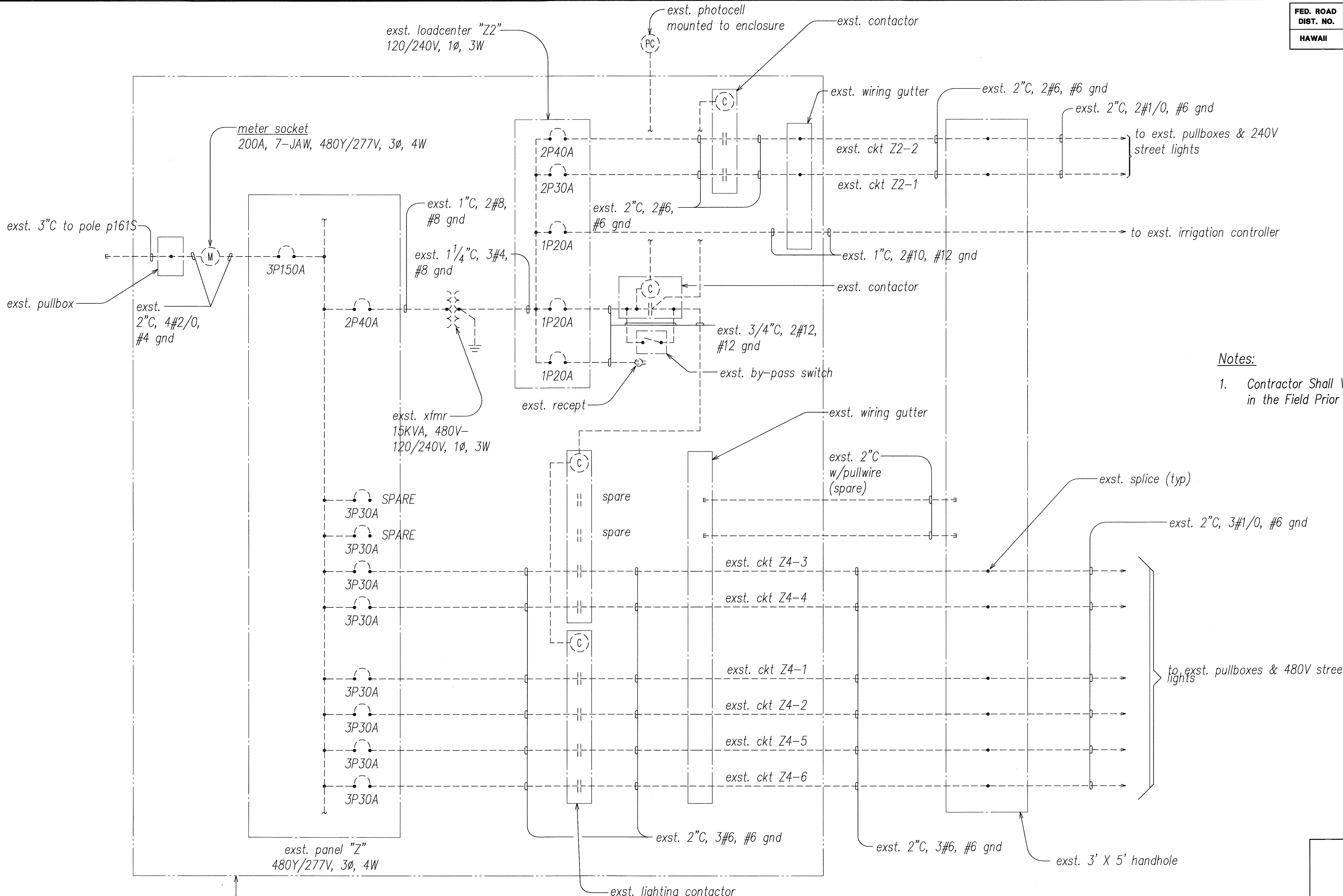
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(4)	2007	372	380



A
E5.6

KUNIA INTERCHANGE EXST ONE-LINE DIAGRAM Z

NOT TO SCALE

Notes:

1. Contractor Shall Verify Existing Conditions in the Field Prior to Construction.

FOR REFERENCE ONLY

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LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

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20 Feb 2007

DATE	REVISION

STATE OF HAWAII
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HIGHWAYS DIVISION

KUNIA INTERCHANGE
EXST ONE-LINE DIAGRAM Z

North-South Road
Phase 1C
F.A.I. Proj. No. STP-8930(4)

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E5.6 OF 66 SHEETS

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

LAST SAVE: 02/20/07 @ 15:03:25 BY: RH PLOT SC 1"=1"