

HIGHWAY LIGHTING NOTES

1.

Design Illumination Level = 0.8 footcandles average maintained.
Design Uniformity Ratio (Average:Minimum) = 3:1
Design Maintenance Factor = 0.76
2.

Luminaire support assemblies shall be designed in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition, with subsequent Interim Revisions. Design parameters shall be in accordance with the following requirements.

A.

Basic Wind Speed: 105 MPH.

B.

Recurrence Interval: 100 Years.

C.

Height And Exposure Factor:
For Luminaire support structures on bridges, the height and exposure factor shall be determined based on the maximum height above the surrounding ground.

D.

Fatigue Importance Factors: Luminaire support structures shall be based on the following:

1)

Fatigue Category I - For all structures where failure would result in the structure falling into the travel way.

2)

Fatigue Category II - For all others.

E.

Galloping: Luminaire support structures shall be designed for galloping-induced cyclic loads.

F.

Vortex Shedding: Nontapered lighting structures shall be designed to resist vortex shedding loads including lighting structures that have tapers less than 0.14 in./ft.

G.

Natural Wind Gust: Lighting support structures shall be designed to resist an equivalent static natural wind gust pressure.

H.

Truck-Induced Gust: Lighting Support structures shall be designed to resist an equivalent static truck gust pressure range based on a truck speed of 65 MPH.

3.

Submit Illumination Calculations using the Proposed Luminaires for review.
- | ELECTRICAL SYMBOL LIST | |
|------------------------|--|
| Symbol | Description |
| | Existing Street Light Standard |
| | Street Light Standard |
| | Utility Company Manhole, Size And Type As Indicated |
| | Utility Company Handhole, Size And Type As Indicated |
| | Street Light Pullbox |
| | Existing Handhole |
| | Existing Manhole |
| | Traffic Signal Controller |
| | Service Equipment |
| | Denotes Demolition/Removal |
| | Edge of Pavement |
| | Edge of Shoulder |
| | Handhole Group |
| | Handhole |
| | Maui Electric Company |
| | Hawaiian Telcom |
| | Oceanic Time Warner Cable |
| | Street Light Pullbox |
| | Ground |
| | Galvanized Rigid Steel |
| | Right of Way |
| | Traffic Signal |
| | Duct Indicator |
| | Underground Ductline, Concrete Encased |
| | Stubout With Cap And Concrete Marker |
| | Existing Ductline |
| | Overhead Conductors (P=Primary, S=Secondary, T=Telephone, V=CATV) |
| | Existing Overhead Conductors (P=Primary, S=Secondary, T=Telephone, V=CATV) |
| | Temporary Overhead Conductors |
| | Note Indicator |
-
- THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. "OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".

[Signature]
ECG, INC. APRIL 30, 2018
LIC. EXP. DATE
- U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION
- U.S. CUSTOMARY
- ELECTRICAL SYMBOL LIST
AND GENERAL NOTES
- DRAWING NO.:
FINAL DESIGN

HAWAIIAN TELCOM GENERAL CONSTRUCTION/
DESIGN 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. At time of Drop-off, The Contractor must:

A.

Provide a copy of your State, City & County or Military Trenching Permit Application Form (Note: If you are excavating on Private Property, this form is not required).

B.

Provide 3 copies of Site Plans, preferably half-size (11"x17")

C.

Completed and signed Hawaiian Telcom Drop-Off Form. This form is available at www.Hawaiiantel.com/customerservice_excavation.html

D.

Contractors should submit drawings a minimum of 2 weeks prior to the start of construction to allow adequate time for review of the plans provided.
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 for any inspection by a designated representative.
4.

The locations 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 locations and shall be liable for any damages to Hawaiian Telcom facilities. Any damage shall be reported immediately to Hawaiian Telcom's Repair Section at #611 (24 hours) or to the Cable Maintenance Department (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 the 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 a breakage into or entry into any structure that contain Hawaiian Telcom Facilities. Temporary cable and duct supports shall be provided wherever 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 structures or facilities.
7.

All applicable construction work shall be done in accordance with the "Hawaiian Telcom Standard Specifications For Placing Telephone Systems" dated January 2007. All subsequent amendments and additions, and all other pertinent standards 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 of facilities, the Contractor shall:

A)

Sheet and/or brace the excavation to prevent slides, cave-ins, or settlements to ensure no movement to Hawaiian Telcom's structures or facilities.

B)

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

9.

The Contractor shall brace all poles or light standards 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.

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

12.

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 depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify locations and depths prior to excavation for the new lines.

13.

Whenever 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.

14.

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 State, shall be borne by the Contractor.

15.

The Contractor shall pump all manholes dry during final inspection.

16.

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

17.

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.

18.

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

19.

Minimum concrete strength shall be:

A)

For Ductline: 2500 PSI at 28 days

B)

For Manhole: 3000 PSI at 28 days or as specified in design notes

20.

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.

21.

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 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.

22.

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.
23.

The Contractor shall measure at least one duct of a common duct run. The Distance Shall be marked on the Record Drawings and submitted to the Hawaiian Telcom Inspector for record keeping.
- SANDWICH ISLES COMMUNICATION, INC.
NOTES:
1.

The locations of existing utilities are approximate Only. The Contractor shall exercise caution and shall maintain proper clearances whenever construction crosses or is in close proximity to Sandwich Isles Communications, Inc. (SIC) Facilities.

2.

Prior to excavating, the Contractor shall call into Hawaii's One Call Center and shall comply with Hawaii Revised Statutes Chapter 269E. Contact Hawaii One Call at 1-866-423-7287.

3.

If required, adjustments shall be made to new construction to provide required clearances from SIC Facilities.

4.

A SIC Inspector or designated Representative is required to be present during a breakage or entry into any structure or conduit system that contain SIC Facilities. Temporary duct or cable support shall be provided wherever necessary or required by SIC Inspector.

5.

The Contractor shall notify SIC Customer Service at least 72 hours prior to excavation, bracing or backfilling of SIC Facilities. Contact SIC Customer Service at 1-888-995-7274. On Oahu call 540-5754,

6.

When excavation is adjacent to, above or below SIC Facilities, the Contractor shall:

A)

Sheet and/or brace the excavation to prevent slides, cave-ins or settlements to ensure no movement or impact to SIC Facilities.

B)

Support existing structures and/or facilities with beams, struts, or underpinning while excavating around or beneath them to prevent any movement or impact to SIC Facilities.
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[Signature]
APRIL 30, 2018
ECS, INC. LIC. EXP. DATE
- | STATE | PROJECT | SHEET NO. |
|-------|-----------------|-----------|
| HI | HI STP SR 30(1) | W2 |
- U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION
- U.S. CUSTOMARY
- UTILITY COMPANY NOTES
- DRAWING NO.:
FINAL DESIGN

OCEANIC TIME WARNER CABLE
CONSTRUCTION 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 locations of existing utilities are approximate only. The Contractor shall verify their locations and shall be responsible for any damages to these utilities as a result of his operations. Adjustments to the new ductline alignment, if required, shall be made to provide the required clearances.

3. The Contractor shall brace all poles or light standards near the new ductline, manhole or handhole during its operations.

4. The Contractor shall saw-cut a.c. pavement, concrete gutter, and concrete sidewalk wherever new manholes, handholes, pullboxes or ductlines are to be placed and shall restore to existing condition or better.

5. 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 depths of the facilities and exercise proper care in excavating in the areas. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

6. 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 State, shall be borne by the Contractor.

7. Prior to the excavation of the ductline, the Contractor shall request that Oceanic Cable Company To locate existing ductline wherever required.

8. The Contractor shall take necessary precaution not to damage existing cables or Ducts. Any work involving existing cables or ducts shall be done in the presence of the Oceanic Cable Company Inspector or his Representative. Temporary cable and duct support shall be provided wherever necessary.

9. The Contractor shall notify the Oceanic Cable Company Inspector 72 hours prior to the start of work on CATV Infrastructure, pouring concrete, or backfilling.

10. 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.

11. Contractor shall provide all materials and furnish all labor and equipment necessary to install the ductline in place complete.

12. 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 conditions and the details as described in the plans.

13. The Contractor, at his own expense, shall keep the project area free from dust nuisance. The work shall be in conformance with The Air Pollution Control Standards and Regulations of the State of Hawaii, Department of Health.
14. The location of CATV Facilities shown on plans are from existing records with varying degrees of accuracy as to its actual fixed location. The Contractor shall use extreme caution when working in close proximity of CATV Facilities.

15. The Contractor shall obtain Excavation Permit Clearance from Oceanic's Engineering Section.

16. Any work required to relocate CATV Facilities shall be done by Oceanic Cable and the Contractor shall be responsible for all coordination requirements and associated costs.

17. Any damage to Oceanic's Facilities shall be reported to OCI's Repair Dispatch Department.

18. The Contractor shall tunnel under existing concrete curb and gutter as necessary to extend conduit into existing CATV pullbox and into the proposed power supply pullbox.

19. All existing improvements that are disturbed during the construction phase shall be restored to its original or better condition at no cost to the State in accordance with the State's standards.

20. At locations where existing CATV pullbox replacement is proposed, The Contractor shall take all necessary precaution not to damage the existing cables in the pullbox. All damages to existing cables shall be repaired by Oceanic Cable and paid for by the Contractor.

21. Coordinate all penetration of telephone pullboxes with Hawaiian Telcom Inspector.

22. Smooth finish inside wall of existing pullboxes and handholes to its original condition or better.

23. All new concrete encased conduit shall be PVC Pipe-Schedule 40. All New direct-buried conduit shall be PVC Pipe-Schedule 80. Use of any other material type (GTS, etc) shall be limited to matching existing facilities. Connection of dissimilar materials to require approval from OTWC Inspector and Engineering Dept.

24. For 3" conduits or larger, the Contractor shall install Neptco WP1800 Muletape or approved equal in all ductlines. Leave Muletape in place for future use as a pull or fish line, unless otherwise noted. Reference GTE Material Code No. 571154. All ducts shall be capped to prevent entry of foreign material during construction and at completion of installation. Endbells are required for conduits 2" and larger.

25. The Contractor Shall place poly cord through out project, and secure in manholes, handholes, and pullboxes.

26. Penetration into pullboxes, if necessary, to be from factory installed opening or from bricks position. Penetration from pullbox walls is not acceptable.

27. Bends In the duct alignment, due to changes in grade shall have a minimum radius of 20-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.

28. Minimum length of conduit used shall not be less than 5-feet in length. Use of partial conduit sections allowable is at OTWC Inspector's discretion.

29. All conduits shall enter through the end "Short Wall" of the pullbox. Entry shall be at 90 degrees (perpendicular) to wall face with bends no less than 12" from exterior wall.
30. A minimum of two (2) precast sections must be used on all 2x4 or 2x6 pullboxes.

31. All new construction shall utilize concrete precast base unless otherwise approved or specified by OTWC Inspector(s).

32. When three (3) or more 4" conduits enter one end wall of any pullbox, only brick bases will be allowed unless otherwise instructed/approved by OTWC Inspector(s).

33. Two minimum layers of bricks to be used lower than the lowest duct entering the pullbox. Top layer of brick to be flush with top of conduit or higher.

34. For upgrade/repairs to existing pull-boxes, bricks may be used and shall always be at least two layers lower than the lowest duct entering the pullbox.

35. At no time shall cement mortar, wood, or any other material be used between precast sections.

36. Leveling or raising of boxes to grade must be done:

A) Pre-Cast Base(s) - using gravel layer under base (Type 3B or equivalent approved by OTWC Inspector)

B) Brick Base(s) - Adjustments to brickwork section. The permanent installation of wooden wedges to accomplish this purpose will not be accepted.

37. 5/8" copper ground rods shall be placed in all pullboxes unless otherwise directed by Oceanic Time Warner Cable. Ground rods will be placed in the corner 3" to 4" from the wall and away from any conduit with no more than 8" sticking up above ground.

38. Trenching to be by hand digging near and across existing utility lines.

39. Minimum clearance between street light standards and fire hydrants shall be three feet.

40. Underground utilities shown hereon is for information only. No Guarantee is made on the accuracy or completeness of said installation.

41. For underground cable locating and marking, five working days advance notice is required. Three working days advance notice is required for any inspection by a Designated Representative. Contractor shall take necessary precaution not to damage any existing cables or ducts. Oceanic's Inspector or Designated Representative is required to be at any job site whenever there will be a breakage into or entry into any structure that contain Oceanic's Facilities.

42. Concrete strength shall be 3000 PSI in 28 days.

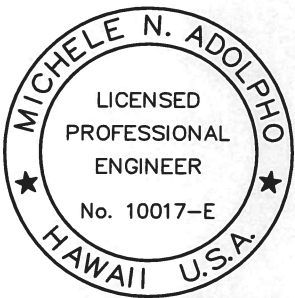
43. Curing and Backfilling. Maintain concrete in a moist condition for 24 hours minimum For 3,000 PSI and 48 hours minimum for 2,500 PSI before compacted backfilling; 72 hours minimum before permitting motor traffic load on ductline. Curing Method shall meet Oceanic TWC's Inspector's approval.

44. Install 4-mil. Thick orange color warning tape 3-inch wide, entire length of trench when placing CATV conduits. Tape should read "Caution Buried Cable Line Below". Manufactured by Harris Industries, Inc., Catalog Number

UT-43 or equivalent tape. Tape to be installed 12-inches below grade.

45. After ductline has been completed, a mandrel with a square front not less than 12-inch long and having a diameter of 1/4-inch less than the inside diameter of 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.

STATE	PROJECT	SHEET NO.
HI	HI STP SR 30(1)	W3



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[Signature]

ECS, INC. APRIL 30, 2018 LIC. EXP. DATE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY

UTILITY COMPANY NOTES