Key

CCTV Camera

Variable Message Sign — VMS

Fiber

Future Fiber

Existing Fiber

Ethernet Switch In Cabinet

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.
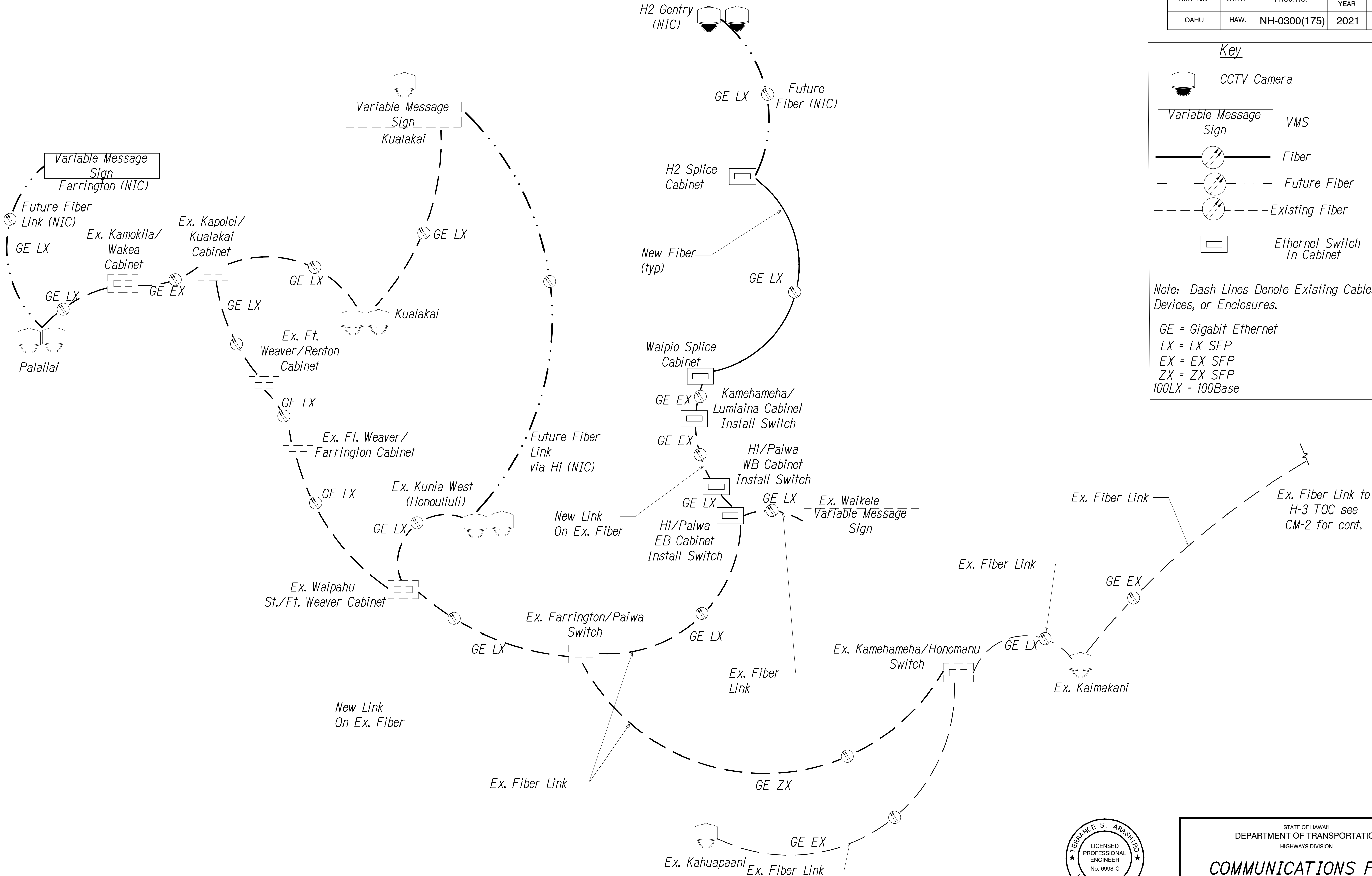
GE = Gigabit Ethernet
LX = LX SFP
EX = EX SFP
ZX = ZX SFP
100LX = 100Base

H2 Gentry (NIC)

GE LX — Future Fiber (NIC)

H2 Splice Cabinet

New Fiber (typ)

GE LX

Variable Message Sign Kualakai

GE LX

Variable Message Sign Farrington (NIC)

Future Fiber Link (NIC)

GE LX

Ex. Kamokila/ Wakea Cabinet

Ex. Kapolei/ Kualakai Cabinet

GE LX

GE EX

GE LX

GE LX

Kualakai

Palailai

Ex. Ft. Weaver/Renton Cabinet

GE LX

Ex. Ft. Weaver/ Farrington Cabinet

GE LX

Future Fiber Link via H1 (NIC)

Ex. Kunia West (Honouliuli)

GE LX

GE LX

Waipio Splice Cabinet

GE EX — Kamehameha/ Lumiaina Cabinet Install Switch

GE EX

H1/Paiwa WB Cabinet Install Switch

New Link On Ex. Fiber

GE LX

H1/Paiwa EB Cabinet Install Switch

GE LX

Ex. Waikele Variable Message Sign

Ex. Fiber Link

Ex. Fiber Link to H-3 TOC see CM-2 for cont.

Ex. Fiber Link

GE EX

Ex. Waipahu St./Ft. Weaver Cabinet

Ex. Farrington/Paiwa Switch

GE LX

Ex. Fiber Link

Ex. Kamehameha/Honomanu Switch

GE LX

Ex. Kaimakani

GE LX

New Link On Ex. Fiber

Ex. Fiber Link

GE ZX

Ex. Kahuapaani

GE EX

Ex. Fiber Link

SCHEMATIC COMMUNICATION PLAN
Not to Scale

LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches) scale accordingly)

STATE OF HAWAII
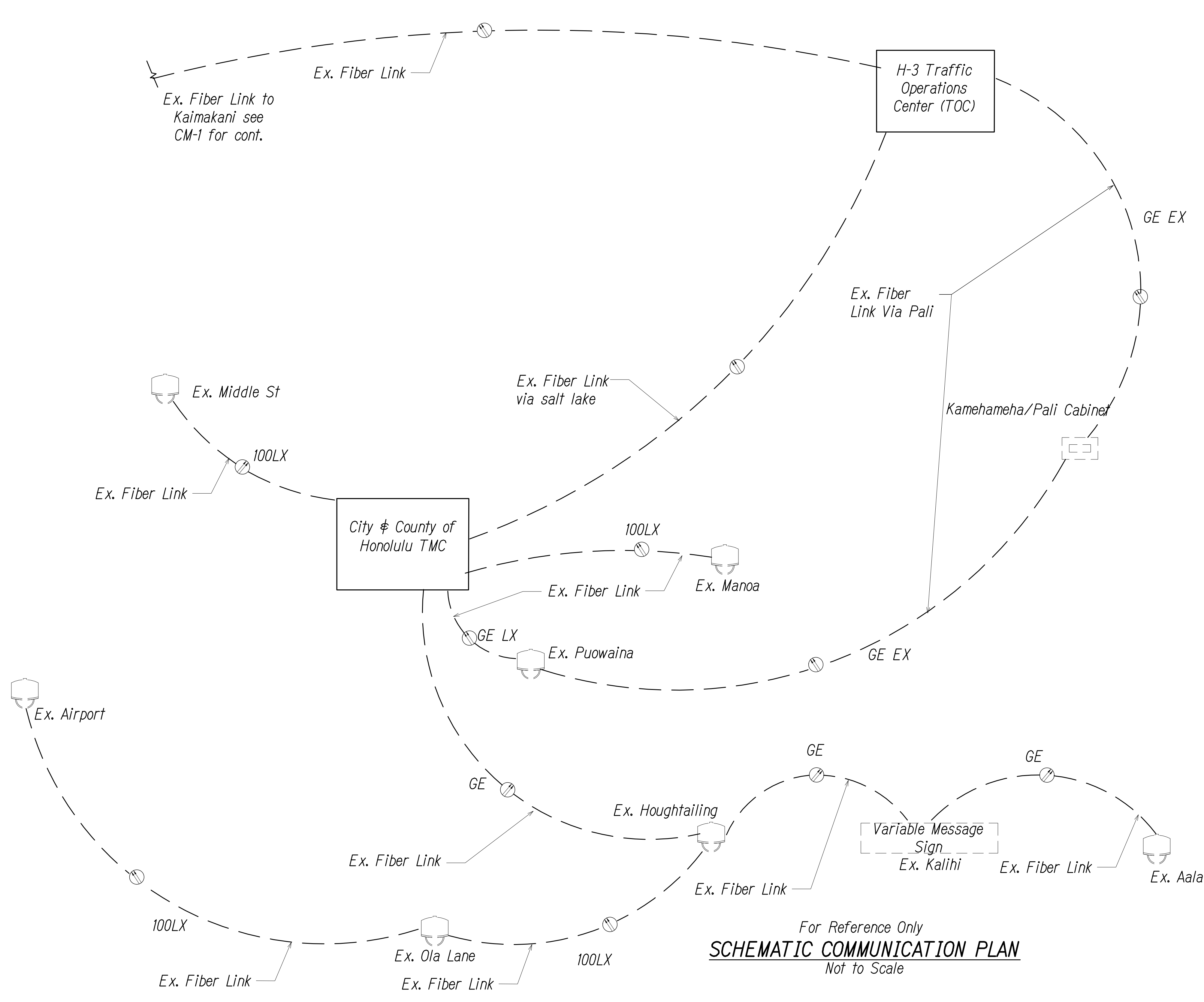DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-1 OF 12 SHEETS

16

Key

CCTV Camera

Variable Message Sign — VMS

——⊘—— Fiber

– –⊘– – Future Fiber

- - ⊘ - - Existing Fiber

▭ Ethernet Switch In Cabinet

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

GE = Gigabit Ethernet
LX = LX SFP
EX = EX SFP
ZX = ZX SFP
100LX = 100Base

Ex. Fiber Link

Ex. Fiber Link to Kaimakani see CM-1 for cont.

H-3 Traffic Operations Center (TOC)

GE EX

Ex. Fiber Link Via Pali

Ex. Middle St

Ex. Fiber Link via salt lake

Kamehameha/Pali Cabinet

100LX

Ex. Fiber Link

City & County of Honolulu TMC

100LX

Ex. Fiber Link — Ex. Manoa

GE LX — Ex. Puowaina

GE EX

Ex. Airport

GE

Ex. Houghtailing

GE

GE

Ex. Fiber Link

Variable Message Sign

Ex. Fiber Link — Ex. Kalihi — Ex. Fiber Link — Ex. Aala

100LX

For Reference Only
SCHEMATIC COMMUNICATION PLAN
Not to Scale

Ex. Fiber Link

Ex. Ola Lane

100LX

Ex. Fiber Link

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-2 OF 12 SHEETS

Key

CCTV Camera

Variable Message Sign — VMS

⊘ — Fiber

⊘ — Future Fiber

⊘ — Existing Fiber

Ethernet Switch In Cabinet

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

GE = Gigabit Ethernet
LX = LX SFP
EX = EX SFP
ZX = ZX SFP
100LX = 100Base

Note

1. Modifications In Existing Cabinets - Contractor shall verify if fiber is spliced through at cabinet or connected via patch panel. If fiber is on patch panel Contractor shall test and determine fiber assignment and connect via jumpers.
2. Coordinate and verify with City DTS & Engineer before performing any splices.
3. Contractor shall document all splices and assignments used.
4. Install LX 1000Base SFP in each new switch connection unless noted otherwise.

See Waikele Connection Sht. CM-4

Ex. City Cabinet
Lumiaina St./Pulelo St.
See Note 1

Ex. City Cabinet
Lumiaina St./Wakele D/W
See Note 1

Ex. City Cabinet
Paiawa St./Lumiaina St.
See Note 1

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City Cabinet
Paiawa St./H1 WB On Ramp
Install Switch
See Sht. CM-11

Ex. City Cabinet
Lumiaina St./Lumiauau St.
See Note 1

Ex. City Cabinet
Kamehamhea Hwy./Lumiaina St.
Install Switch
See Sht. CM-6

Ex. City Cabinet
Kamehamhea Hwy./Waipio Uka St.
See Note 1

Ex. City Cabinet
Kamehamhea Hwy./Ka Uka Blvd.
See Note 1

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City Cabinet
Ka Uka Blvd./Moaniani St.
See Note 1

Ex. City Cabinet
Ka Uka Blvd./Ukee (North) St.
See Note 1

Ex. City Cabinet
Ka Uka Blvd./Waipio Uka/Puahi St.
See Note 1

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City 72F single mode fiber optic cable

Ex. City Cabinet
Ka Uka Blvd./Ukee St.
See Note 1

Ex. City Cabinet
H2/Ka Uka Blvd.
NB On-Ramp
See Sht. CM-5

Waipio Splice Cabinet
See Sht. CM-9

H2 Splice Cabinet
See Sht. CM-8

72F single mode fiber optic cable

72F single mode fiber optic cable

Future fiber optic cable (NIC)

SYSTEM BLOCK DIAGRAM - Waipio Connection
Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
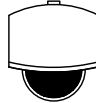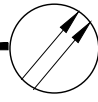HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-3 OF 12 SHEETS

LICENSED PROFESSIONAL ENGINEER
No. 6998-C
TERRANCE S. ARASHIRO
HAWAI'I, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

APRIL 30, 2024
LIC. EXP. DATE

LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches scale accordingly)

ORIGINAL PLAN — NOTE BOOK No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

Key

CCTV Camera

Variable Message Sign — VMS

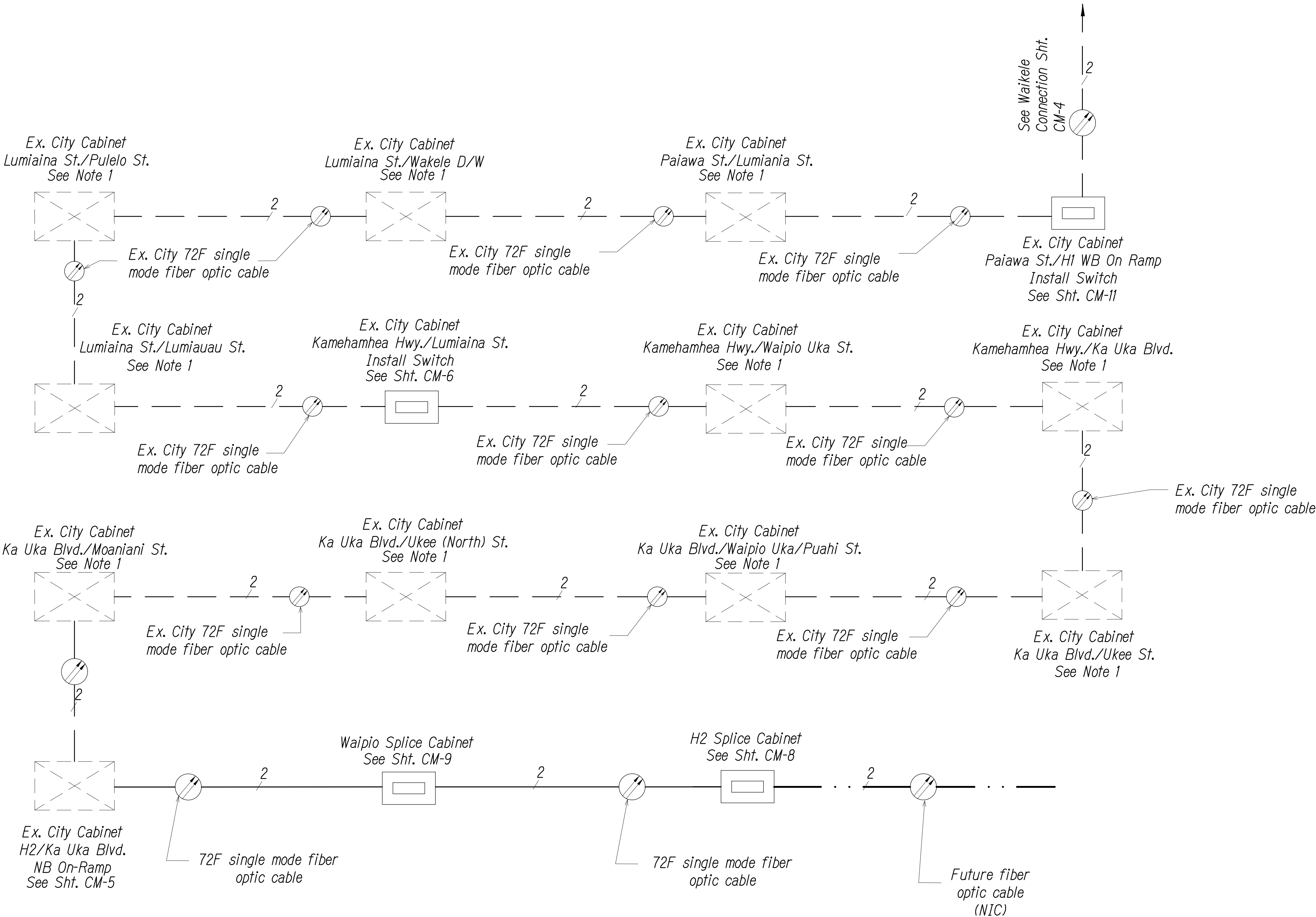———— Fiber

– · – · – Future Fiber
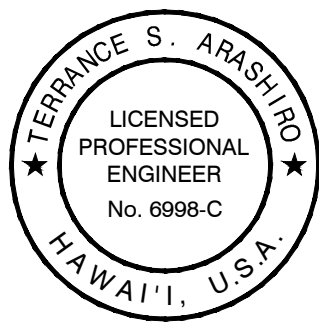
– – – Existing Fiber

Ethernet Switch In Cabinet

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

GE = Gigabit Ethernet
LX = LX SFP
EX = EX SFP
ZX = ZX SFP
100LX = 100Base

Note

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2. Coordinate and verify with City DTS & Engineer before performing any splices.
3. Contractor shall document all splices and assignments used.
4. Install LX 1000Base SFP in each new switch connection unless noted otherwise.

Ex. City Cabinet
Kaonohi St./Kamehameha Hwy.
(no work)

Ex. City Cabinet
Kaahumanu St./Kamehameha Cabinet
(no work)

Ex. City Cabinet
H1/Kamehameha
(no work)

Kaimakani Connection

2   2   2   2

Ex. City 72F single mode fiber optic cable (typ.)

Ex. City 72F single mode fiber optic cable (typ.)

Ex. City 72F single mode fiber optic cable (typ.)

Future Waiau VMS connection (NIC)

Ex. City Cabinet
Farrington Hwy./Kamehameha Hwy.
(no work)

Ex. City Cabinet
H1/Farrington Hwy. (Waiawa IC)
(no work)

Ex. City Cabinet
Acacia St./Kamehameha Hwy.
(no work)

2   2   2

Ex. City 72F single mode fiber optic cable (typ.)

Ex. City 72F single mode fiber optic cable (typ.)

Ex. City 72F single mode fiber optic cable (typ.)

Ex. City Cabinet
Kamehameha Hwy./Waimano Home Rd. (no work)

2

Ex. City Cabinet
Paiawa St./Farrington Hwy.
(No Work)

Ex. City Cabinet
Paiawa St./Waipahu St.
(No Work)

Ex. City Cabinet
Paiawa St./H1 EB On-Ramp
Install Switch
See Sht. CM-10

Waikele VMS
(No Work)
Variable Message Sign

2   2   2   2

Ex. City Cabinet
Kahualii St./Farrington Hwy.
(no work)

Ex. City 72F single mode fiber optic cable (typ.)

Ex. City 18/18 hybrid fiber optic cable (typ.)

Ex. City 18/18 hybrid fiber optic cable (typ.)

Ex. 24F single mode fiber optic cable

2

Kunia Connection

See Waipio Connection Sht. CM-3

2

SYSTEM BLOCK DIAGRAM - Waikele Connection
Not to Scale

TERRANCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAI'I, U.S.A.

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APRIL 30, 2024
LIC. EXP. DATE

LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches scale accordingly)
0   1   2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
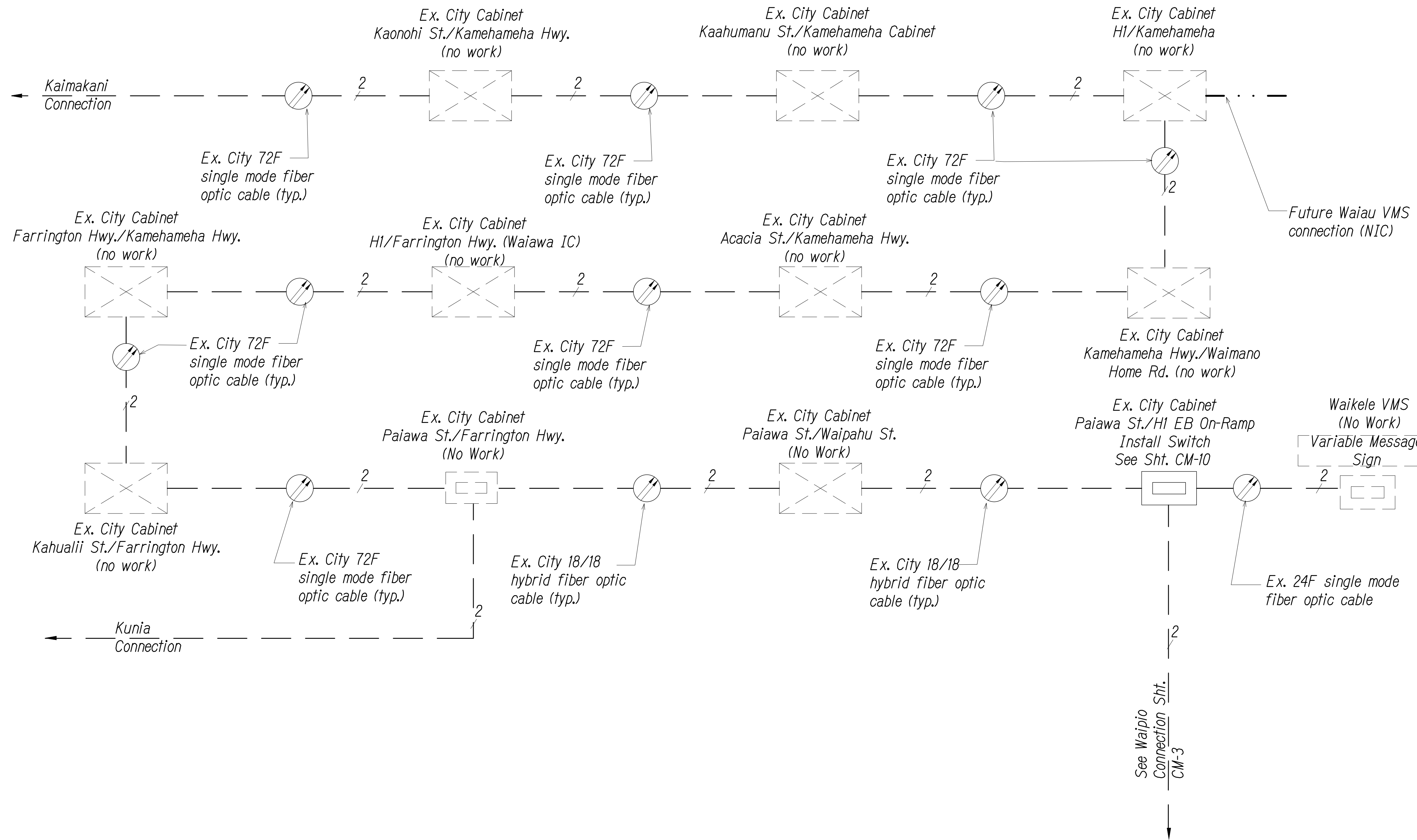Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-4 OF 12 SHEETS

Key

- ⊏—• Equipment Connection Fiber Optic Jumper
- ⊏—⊏ Patch Panel Fiber Optic Jumper
- ⊠—⊏ Fiber Optic Pigtail
- ▬ Bare Fiber Left Coiled In Splice Tray
- ✕ Existing Splice
- ⊠ Fusion Splice
- ▦ Patch Panel Module
- — — — Fiber

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

Ex. City CCTV Cabinet at:

H2/Ka Uka Blvd.

Splice Tray

72F Single Mode Fiber Optic Cable to: Waipio Splice Cabinet

Waipio SW TX
Waipio SW RX

White Tube

White/Blue	White/Blue
White/Orange	White/Orange
White/Green	(Dark) White/Green
White/Brown	(Dark) White/Brown
White/Slate	(Dark) White/Slate
White/White	(Dark) White/White
White/Red	(Dark) White/Red
White/Black	(Dark) White/Black
White/Yellow	(Dark) White/Yellow
White/Violet	(Dark) White/Violet
White/Rose	(Dark) White/Rose
White/Aqua	(Dark) White/Aqua

Kamehameha/Lumiaina SW RX
Kamehameha/Lumiaina SW TX

White Tube

Ex. 72F Single Mode Fiber Optic Cable from Ka Uka Blvd./Moaniani St.

Orange Tube
Green Tube
Brown Tube
Slate Tube

Blue Tube
Green Tube
Brown Tube
Slate Tube

Blue Tube

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
Blue/Violet
Blue/Rose
Blue/Aqua

Orange Tube

Notes:
1. Remove exist. white bundle from patch panel and splice as shown
2. Coordinate with City DTS & Engineer before performing any splicing or work. Contractor shall document fiber assignments for splices made.

REV 10-1-2020
SPLICING AND CONNECTION DETAIL – Ex. City Cabinet H2 at Ka Uka
Not to Scale

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches, scale accordingly)
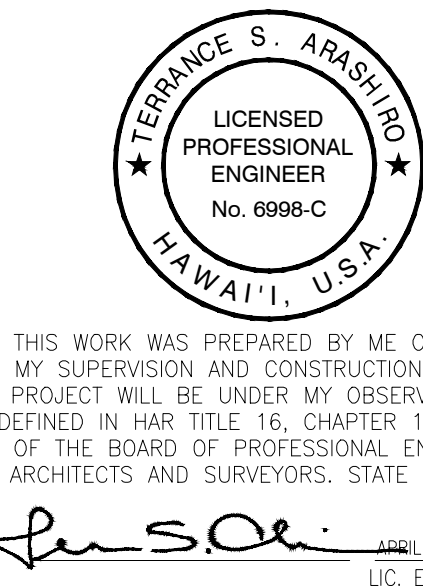
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

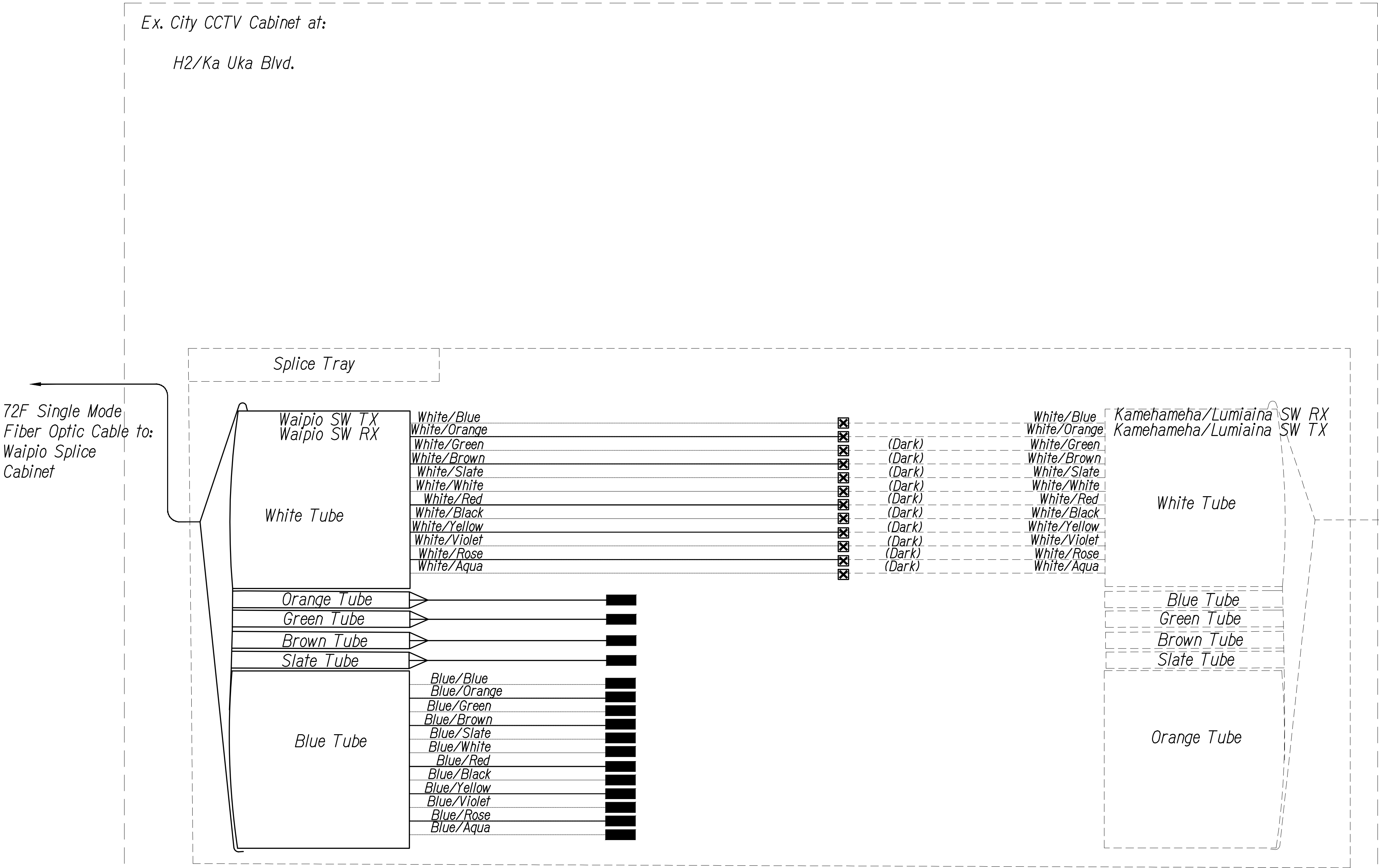Scale: As Shown   Date: October 15, 2021

SHEET No. CM-5 OF 12 SHEETS

Key

- Equipment Connection Fiber Optic Jumper
- Patch Panel Fiber Optic Jumper
- Fiber Optic Pigtail
- Bare Fiber Left Coiled In Splice Tray
- × Existing Splice
- ⊠ Fusion Splice
- Patch Panel Module
- Fiber

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

Ex. 72F Single Mode FOC to Kamehameha/Lumiauau

Ex. Cabinet at Kamehameha/Lumiaina

Cisco IE4000 Ethernet Switch

TX RX TX RX   10/100 Ports

1000 Ports

Install EX 1000Base SFP, cost of installation shall be incidental

TX RX TX RX

1000 Ports

Install GFE switch See Sheet CM-12 for network topology

White Tube
White/Blue, White/Orange, White/Green, White/Brown, White/Slate, White/White, White/Red, White/Black, White/Yellow, White/Violet, White/Rose, White/Aqua

Orange Tube, Green Tube, Brown Tube, Slate Tube, Blue Tube

Rack-Mounted Interconnect Center

Ex. 72F Single Mode Fiber Optic Cable from Ex. City Waipio Uka /Kamehnameha Cabinet

Ex. 72F Single Mode Fiber Optic Cable to Ex. City Lumiaina/ Lumiauau Cabinet

Waipio SW TX	White/Blue	White/Blue	Paiwa/H1 WB SW TX
Waipio SW RX	White/Orange	White/Orange	Paiwa/H1 WB SW RX
	White/Green	White/Green	
	White/Brown	White/Brown	
	White/Slate	White/Slate	
	White/White	White/White	
	White/Red	White/Red	
	White/Black	White/Black	
	White/Yellow	White/Yellow	
	White/Violet	White/Violet	
	White/Rose	White/Rose	
	White/Aqua	White/Aqua	

White Tube / White Tube

Orange Tube — Orange Tube
Green Tube — Green Tube
Brown Tube — Brown Tube
Slate Tube — Slate Tube

Blue Tube
Blue/Blue, Blue/Orange, Blue/Green, Blue/Brown, Blue/Slate, Blue/White, Blue/Red, Blue/Black, Blue/Yellow, Blue/Violet, Blue/Rose, Blue/Aqua

Notes:

1. Coordinate with City DTS & Engineer before performing any splicing or work. Contractor shall document fiber assignments for splices made.
2. Install 1000Base LX SFP unless otherwise noted, cost of installation shall be incidental

REV- 2-11-2020

SPLICING AND CONNECTION DETAIL - Ex. City Kamehameha/Lumiaina Cabinet
Not to Scale

LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches scale accordingly)

0   1   2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-6 OF 12 SHEETS

See Sheet SY-34 & 35 for network topology

CCTV

CCTV

CAT5E STP Cable

CCTV Power

Equipment Cabinet at H2 Gentry CCTV

NIC

Cisco IE4000 Ethernet Switch

1000 Ports
TX RX TX RX

10/100 Ports

1000 Ports
TX RX TX RX

See Sheet SY-34 & 35 for network topology

Key

- Equipment Connection Fiber Optic Jumper
- Patch Panel Fiber Optic Jumper
- Fiber Optic Pigtail
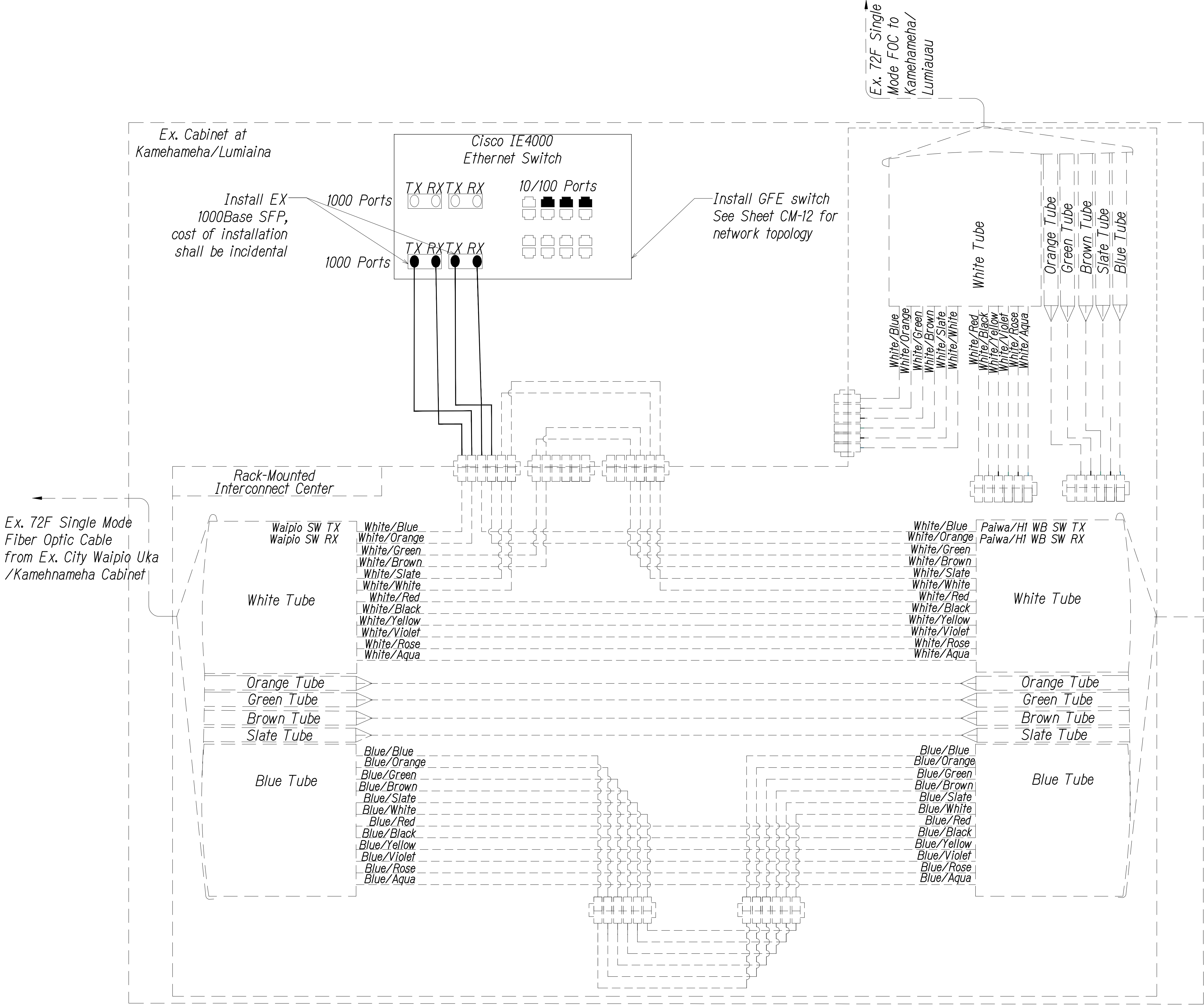- Bare Fiber Left Coiled In Splice Tray
- × Existing Splice
- Fusion Splice
- Patch Panel Module
- Fiber

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

Patch Panel Module (Typ.)

Rack-Mounted Interconnect Center

72F Single Mode Fiber Optic Cable to H2 VMS

H2 VMS TX
H2 VMS RX

White Tube

| White/Blue |
| White/Orange |
| White/Green |
| White/Brown |
| White/Slate |
| White/White |
| White/Red |
| White/Black |
| White/Yellow |
| White/Violet |
| White/Rose |
| White/Aqua |

Orange Tube
Green Tube
Brown Tube
Slate Tube

Blue Tube

| Blue/Blue |
| Blue/Orange |
| Blue/Green |
| Blue/Brown |
| Blue/Slate |
| Blue/White |
| Blue/Red |
| Blue/Black |
| Blue/Yellow |
| Blue/Violet |
| Blue/Rose |
| Blue/Aqua |

SPLICING AND CONNECTION DETAIL - H2 GENTRY CCTV
Not to Scale

0   1   2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches, scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-7 OF 12 SHEETS

Key

- ▭—● Equipment Connection Fiber Optic Jumper
- ▭—▭ Patch Panel Fiber Optic Jumper
- ✕—▭ Fiber Optic Pigtail
- ▬ Bare Fiber Left Coiled In Splice Tray
- ✕ Existing Splice
- ☒ Fusion Splice
- ⬚ Patch Panel Module
- — Fiber

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

H2 Splice Cabinet

VMS Controller
CAT-5E STP   Ethernet

Cisco IE4000 Ethernet Switch
TX RX TX RX   10/100 Ports
1000 Ports
TX RX TX RX
1000 Ports

Install GFE switch See Sheet CM-12 for network topology

24F Ex. Single Mode FOC to H2 Gentry CCTV

H2 Gentry CCTV RX
H2 Gentry CCTV TX

Blue Tube

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
White/Violet
Blue/Rose
Blue/Aqua

Orange Tube

Future H2 North (Median) CCTV (NIC)

Install Patch Panel Module (Typ.)

To Future H2 South CCTV (NIC)

72F Single Mode Fiber Optic Cable to Waipio Splice Cabinet

White/Blue
White/Orange
White/Green
White/Brown
White/Slate
White/White
White/Red
White/Black
White/Yellow
White/Violet
White/Rose
White/Aqua

Waipio SW TX
Waipio SW RX

White Tube

x 12   Orange Tube
x 12   Green Tube
x 12   Brown Tube
x 12   Slate Tube

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
Blue/Violet
Blue/Rose
Blue/Aqua

Blue Tube

Rack-Mounted Interconnect Center

Install Patch Panel Module (Typ.)

Notes:
Install 1000Base LX SFP unless otherwise noted, cost of installation shall be incidental

SPLICING AND CONNECTION DETAIL - H2 Splice Cabinet
Not to Scale

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

TERRANCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAI'I, U.S.A.

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APRIL 30, 2024
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
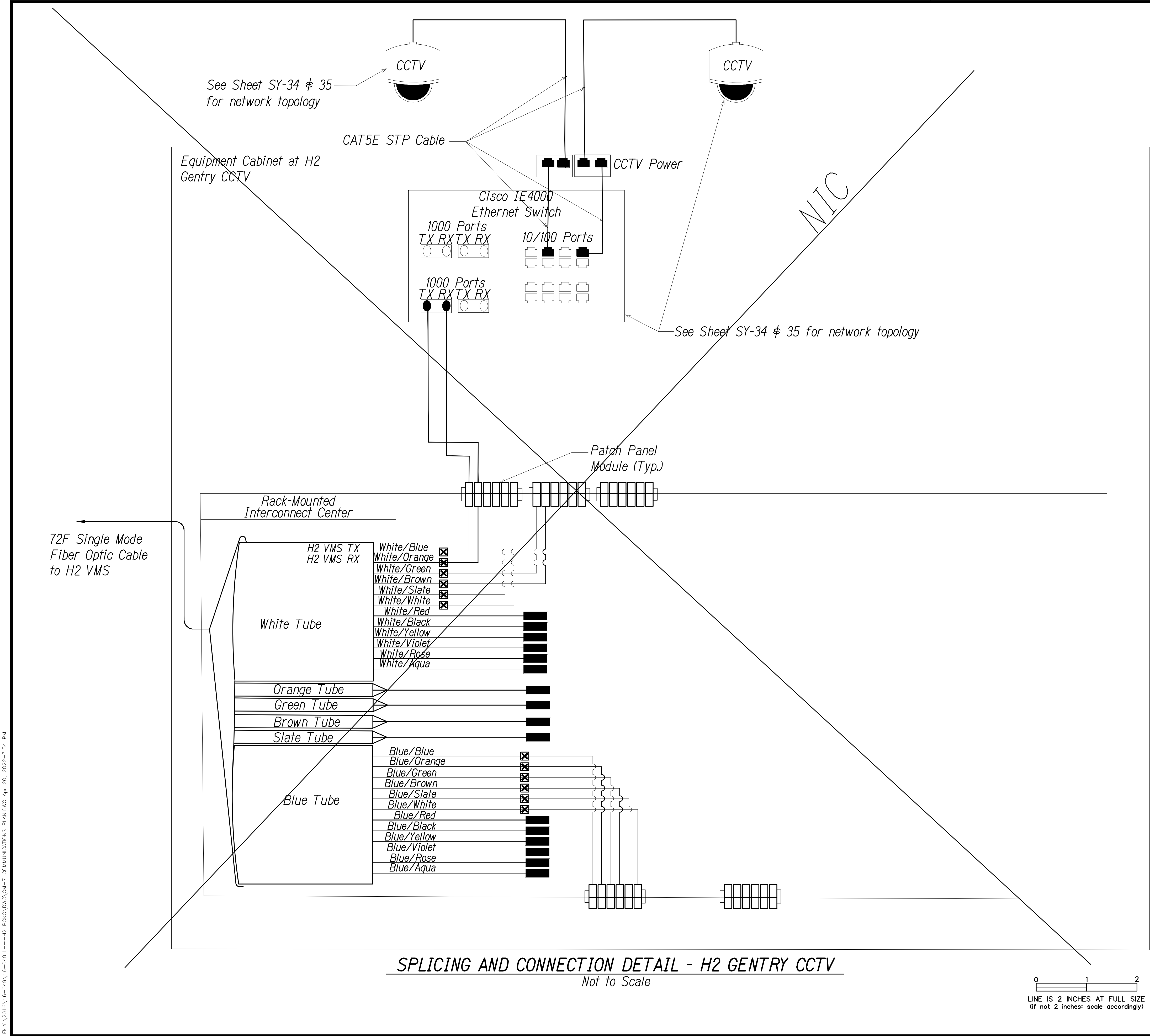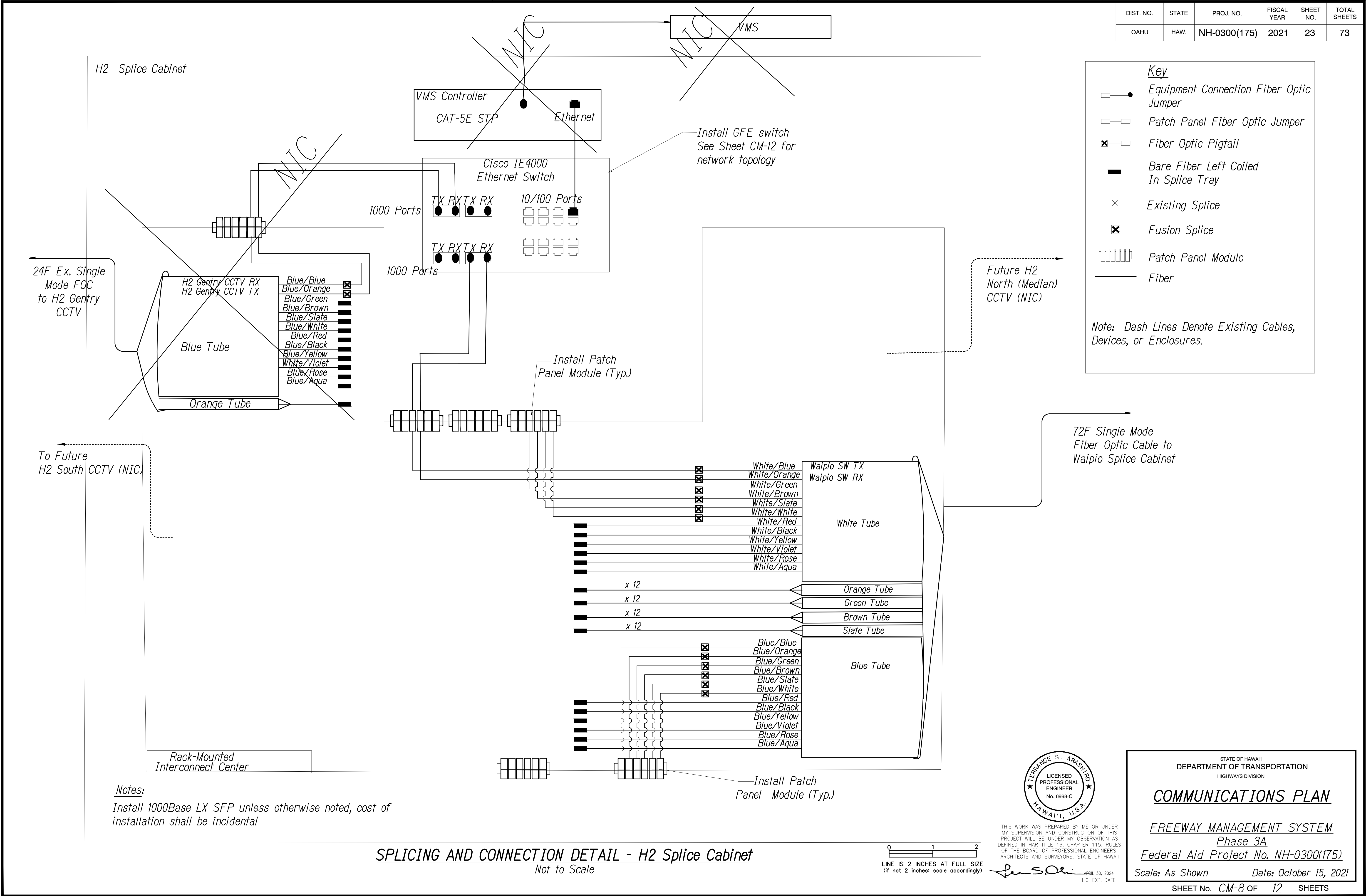Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

NIC

CCTV

CCTV

NIC

See Sheet SY-34 & 35
for network topology

Waipio Splice
Cabinet

CAT5E STP Cable

CCTV Power

See Sheet CM-12 for
network topology

Install EX
1000Base SFP,
cost of installation
shall be incidental

Cisco IE4000
Ethernet Switch

Install GFE switch
See Sheet CM-12 for
network topology

TX RX TX RX   10/100 Ports

1000 Ports

Notes:

Install 1000Base LX SFP unless otherwise noted, cost of
installation shall be incidental

TX RX TX RX

1000 Ports

Key

- ● Equipment Connection Fiber Optic Jumper
- ▢ Patch Panel Fiber Optic Jumper
- ⊠▢ Fiber Optic Pigtail
- ▬ Bare Fiber Left Coiled In Splice Tray
- × Existing Splice
- ⊠ Fusion Splice
- ▯▯▯ Patch Panel Module
- — Fiber

Note: Dash Lines Denote Existing Cables,
Devices, or Enclosures.

Patch Panel
Module (Typ.)

Rack-Mounted
Interconnect Center

72F Single Mode
Fiber Optic Cable
from H2 Splice
Cabinet

72F Single Mode
Fiber Optic Cable to
Ex. City H2/Ka Uka Cabinet

H2 VMS RX	White/Blue		White/Blue	Kamehameha/Lumiaina SW RX
H2 VMS TX	White/Orange		White/Orange	Kamehameha/Lumiaina SW TX
	White/Green		White/Green	
	White/Brown		White/Brown	
	White/Slate		White/Slate	
	White/White		White/White	
	White/Red		White/Red	

White Tube

White Tube

White/Black
White/Yellow
White/Violet
White/Rose
White/Aqua

White/Black
White/Yellow
White/Violet
White/Rose
White/Aqua

Orange Tube	x 12 (splice color for color typ.)	Orange Tube
Green Tube	x 12	Green Tube
Brown Tube	x 12	Brown Tube
Slate Tube	x 12	Slate Tube

Blue Tube

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
Blue/Violet
Blue/Rose
Blue/Aqua

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
Blue/Violet
Blue/Rose
Blue/Aqua

Blue Tube

REV- 10-1-2020

SPLICING AND CONNECTION DETAIL – Waipio Splice Cabinet
Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021
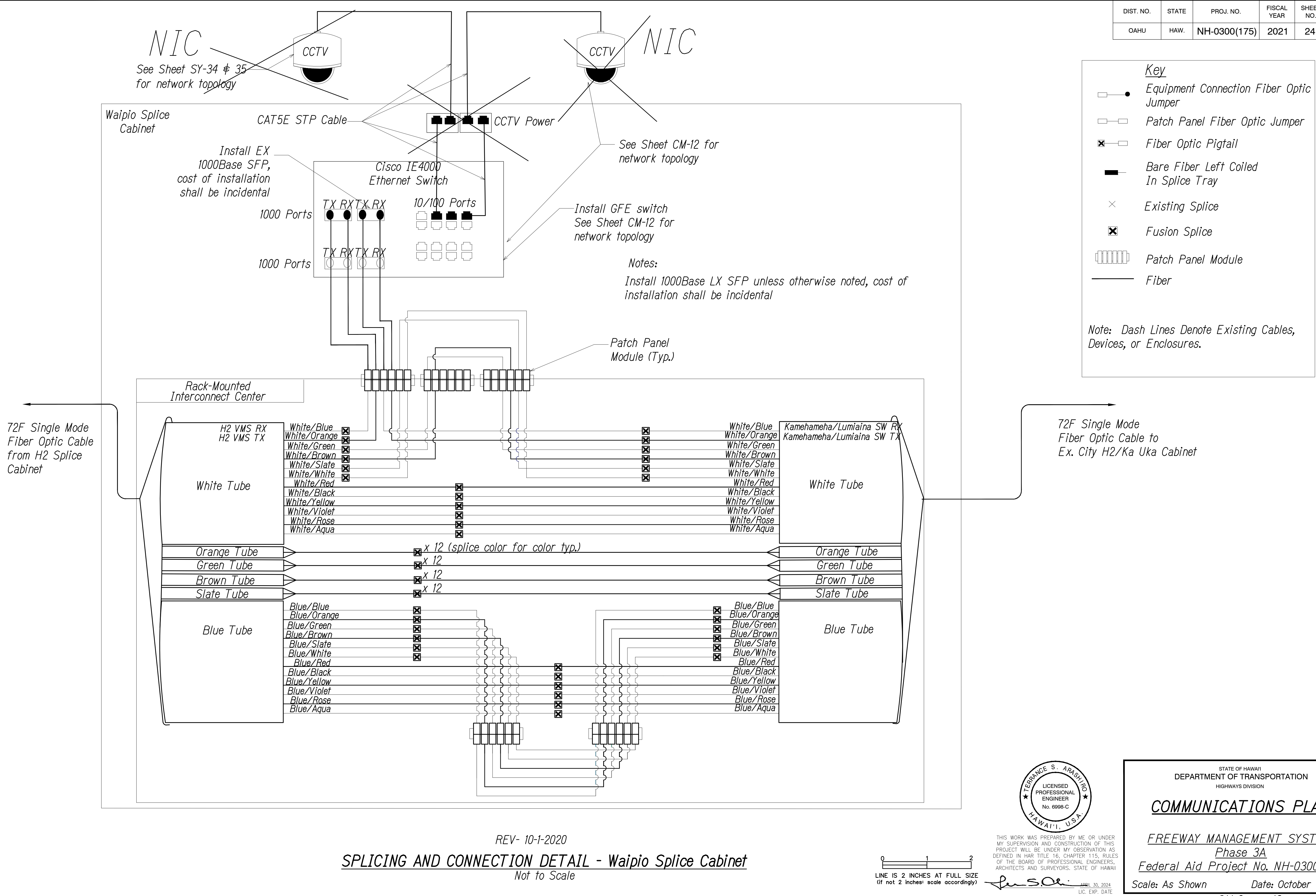
SHEET No. CM-9 OF 12 SHEETS

Key

- Equipment Connection Fiber Optic Jumper
- Patch Panel Fiber Optic Jumper
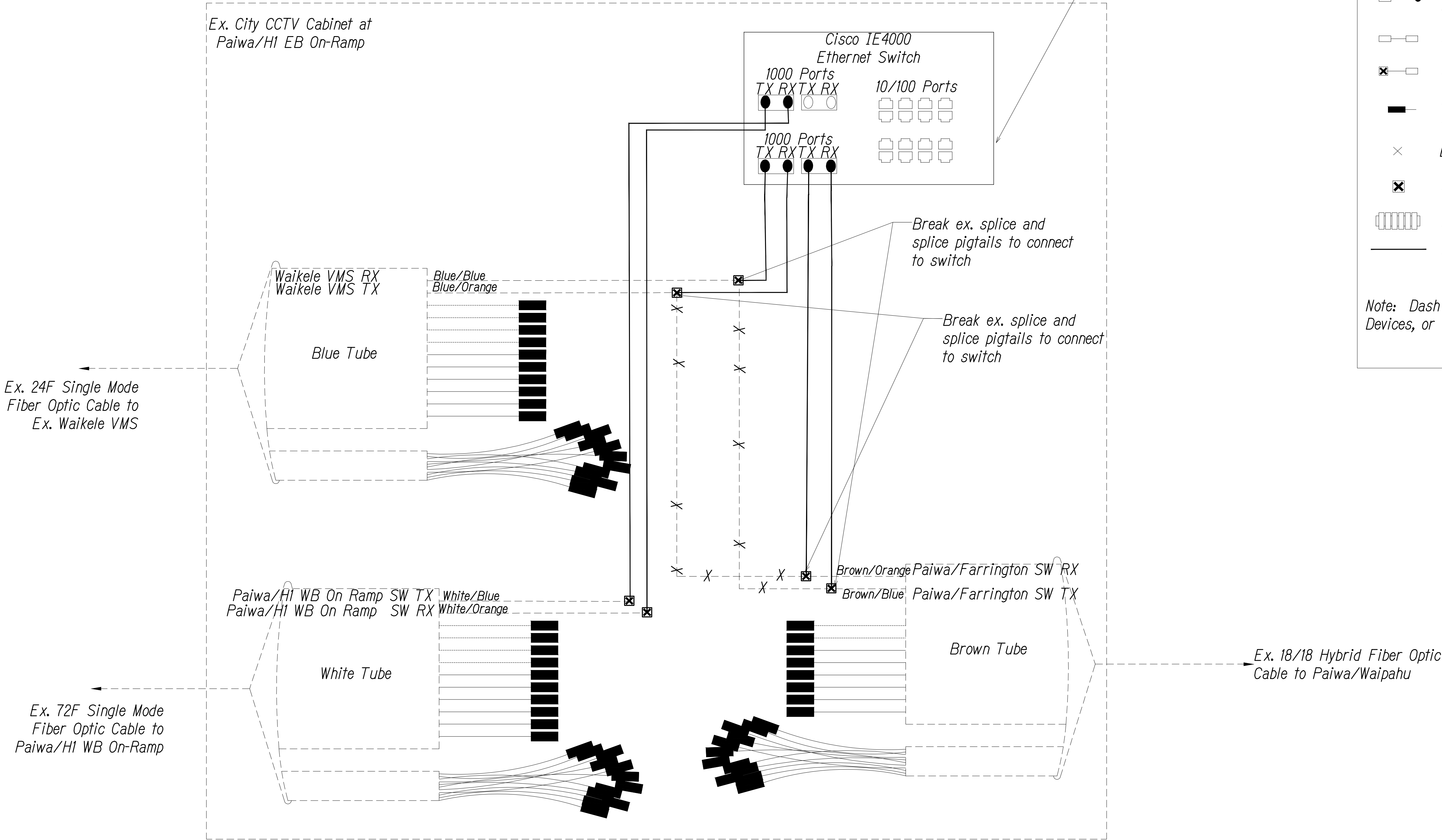- Fiber Optic Pigtail
- Bare Fiber Left Coiled In Splice Tray
- × Existing Splice
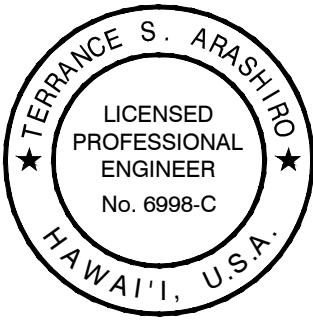- Fusion Splice
- Patch Panel Module
- Fiber

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

Install GFE switch
See Sheet CM-12 for
network topology

Ex. City CCTV Cabinet at
Paiwa/H1 EB On-Ramp

Cisco IE4000
Ethernet Switch

1000 Ports
TX RX TX RX   10/100 Ports

1000 Ports
TX RX TX RX

Waikele VMS RX
Waikele VMS TX

Blue/Blue
Blue/Orange

Break ex. splice and
splice pigtails to connect
to switch

Blue Tube

Break ex. splice and
splice pigtails to connect
to switch

Ex. 24F Single Mode
Fiber Optic Cable to
Ex. Waikele VMS

Brown/Orange Paiwa/Farrington SW RX

Brown/Blue Paiwa/Farrington SW TX

Paiwa/H1 WB On Ramp SW TX   White/Blue
Paiwa/H1 WB On Ramp SW RX   White/Orange

Brown Tube

White Tube

Ex. 18/18 Hybrid Fiber Optic
Cable to Paiwa/Waipahu

Ex. 72F Single Mode
Fiber Optic Cable to
Paiwa/H1 WB On-Ramp

SPLICING AND CONNECTION DETAIL - Ex. Paiwa/H1 EB On-Ramp
Not to Scale

Notes:

1. Coordinate with City DTS & Engineer before performing any splicing or work. Contractor shall document fiber assignments for splices made.
2. Install 1000Base LX SFP unless otherwise noted, cost of installation shall be incidental

TERRANCE S. ARASHIRO
LICENSED
PROFESSIONAL
ENGINEER
No. 6998-C
HAWAI'I, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER
MY SUPERVISION AND CONSTRUCTION OF THIS
PROJECT WILL BE UNDER MY OBSERVATION AS
DEFINED IN HAR TITLE 16, CHAPTER 115, RULES
OF THE BOARD OF PROFESSIONAL ENGINEERS,
ARCHITECTS AND SURVEYORS, STATE OF HAWAII

APRIL 30, 2024
LIC. EXP. DATE

LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches, scale accordingly)
0   1   2

STATE OF HAWAII
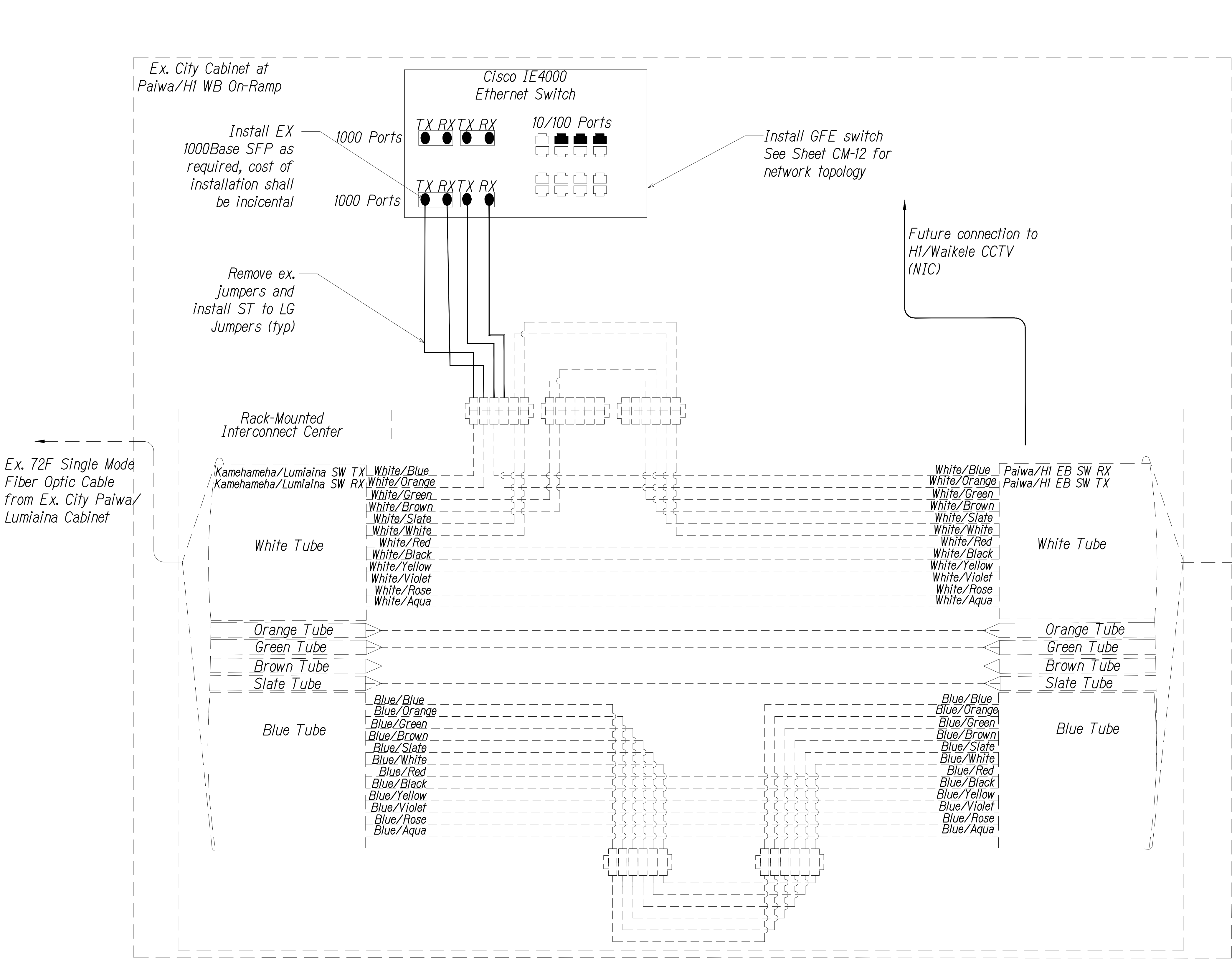DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-10 OF 12 SHEETS

Key

- ▭—• Equipment Connection Fiber Optic Jumper
- ▭—▭ Patch Panel Fiber Optic Jumper
- ☒—▭ Fiber Optic Pigtail
- ▬ Bare Fiber Left Coiled In Splice Tray
- × Existing Splice
- ☒ Fusion Splice
- ▥ Patch Panel Module
- — Fiber

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

Ex. City Cabinet at Paiwa/H1 WB On-Ramp

Cisco IE4000 Ethernet Switch

TX RX TX RX   10/100 Ports
1000 Ports

TX RX TX RX
1000 Ports

Install EX 1000Base SFP as required, cost of installation shall be incidental

Install GFE switch See Sheet CM-12 for network topology

Remove ex. jumpers and install ST to LG Jumpers (typ)

Future connection to H1/Waikele CCTV (NIC)

Ex. 72F Single Mode Fiber Optic Cable from Ex. City Paiwa/ Lumiaina Cabinet

Rack-Mounted Interconnect Center

Ex. 72F Single Mode Fiber Optic Cable to Ex. City Paiwa/ H1 EB On-Ramp Cabinet

Kamehameha/Lumiaina SW TX — White/Blue
Kamehameha/Lumiaina SW RX — White/Orange
White/Green
White/Brown
White/Slate
White/White
White/Red
White/Black
White/Yellow
White/Violet
White/Rose
White/Aqua

White/Blue — Paiwa/H1 EB SW RX
White/Orange — Paiwa/H1 EB SW TX
White/Green
White/Brown
White/Slate
White/White
White/Red
White/Black
White/Yellow
White/Violet
White/Rose
White/Aqua

White Tube

White Tube

Orange Tube
Green Tube
Brown Tube
Slate Tube

Orange Tube
Green Tube
Brown Tube
Slate Tube

Blue Tube

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
Blue/Violet
Blue/Rose
Blue/Aqua

Blue/Blue
Blue/Orange
Blue/Green
Blue/Brown
Blue/Slate
Blue/White
Blue/Red
Blue/Black
Blue/Yellow
Blue/Violet
Blue/Rose
Blue/Aqua

Blue Tube

Notes:

1. Coordinate with City DTS ≠ Engineer before performing any splicing or work. Contractor shall document fiber assignments for splices made.
2. Install 1000Base LX SFP unless otherwise noted, cost of installation shall be incidental

REV- 2-7-2020

SPLICING AND CONNECTION DETAIL - Ex. City Paiwa/H1 WB On-Ramp Cabinet
Not to Scale

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HAWAI'I, U.S.A.
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(if not 2 inches) scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
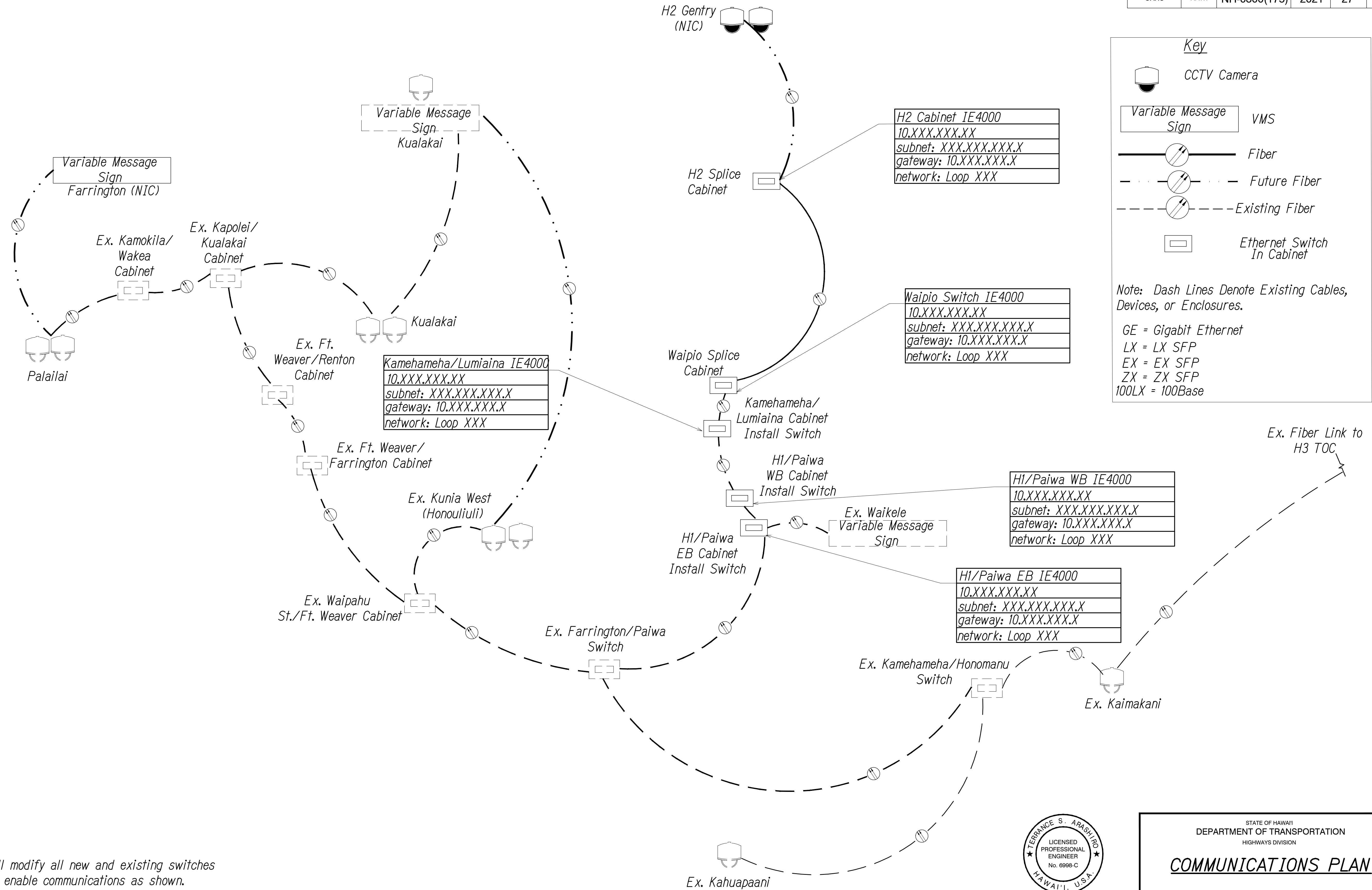HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-11 OF 12 SHEETS

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ORIGINAL PLAN
NOTE BOOK No.
DATE

Key

CCTV Camera

Variable Message Sign — VMS

Fiber

Future Fiber

Existing Fiber

Ethernet Switch In Cabinet

Note: Dash Lines Denote Existing Cables, Devices, or Enclosures.

GE = Gigabit Ethernet
LX = LX SFP
EX = EX SFP
ZX = ZX SFP
100LX = 100Base

H2 Gentry
(NIC)

Variable Message Sign
Kualakai

H2 Cabinet IE4000
10.XXX.XXX.XX
subnet: XXX.XXX.XXX.X
gateway: 10.XXX.XXX.X
network: Loop XXX

H2 Splice Cabinet

Variable Message Sign
Farrington (NIC)

Ex. Kamokila/ Wakea Cabinet

Ex. Kapolei/ Kualakai Cabinet

Kualakai

Waipio Switch IE4000
10.XXX.XXX.XX
subnet: XXX.XXX.XXX.X
gateway: 10.XXX.XXX.X
network: Loop XXX

Ex. Ft. Weaver/Renton Cabinet

Kamehameha/Lumiaina IE4000
10.XXX.XXX.XX
subnet: XXX.XXX.XXX.X
gateway: 10.XXX.XXX.X
network: Loop XXX

Waipio Splice Cabinet

Palailai

Kamehameha/ Lumiaina Cabinet Install Switch

Ex. Ft. Weaver/ Farrington Cabinet

Ex. Fiber Link to H3 TOC

H1/Paiwa WB Cabinet Install Switch

H1/Paiwa WB IE4000
10.XXX.XXX.XX
subnet: XXX.XXX.XXX.X
gateway: 10.XXX.XXX.X
network: Loop XXX

Ex. Kunia West (Honouliuli)

Ex. Waikele Variable Message Sign

H1/Paiwa EB Cabinet Install Switch

H1/Paiwa EB IE4000
10.XXX.XXX.XX
subnet: XXX.XXX.XXX.X
gateway: 10.XXX.XXX.X
network: Loop XXX

Ex. Waipahu St./Ft. Weaver Cabinet

Ex. Farrington/Paiwa Switch
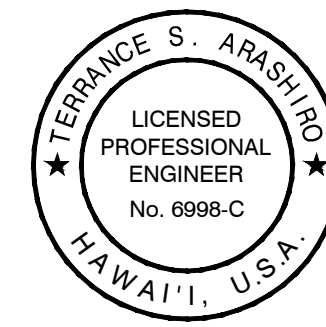
Ex. Kamehameha/Honomanu Switch

Ex. Kaimakani

Notes:

1. Contractor shall modify all new and existing switches as required, to enable communications as shown.

2. IP addresses to be provided by the Engineer at later date.

Ex. Kahuapaani

NETWORK TOPOLOGY
Not to Scale

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

COMMUNICATIONS PLAN

FREEWAY MANAGEMENT SYSTEM
Phase 3A
Federal Aid Project No. NH-0300(175)

Scale: As Shown   Date: October 15, 2021

SHEET No. CM-12 OF 12 SHEETS

DATE

ORIGINAL PLAN
NOTE BOOK
No.

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