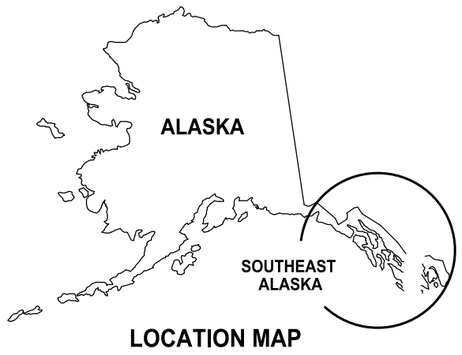
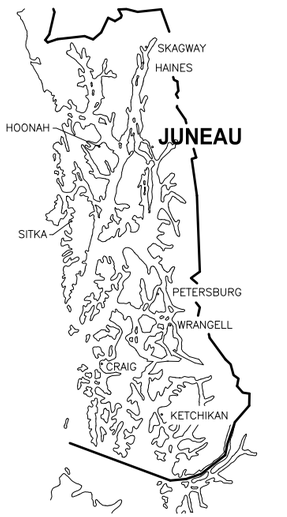
CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

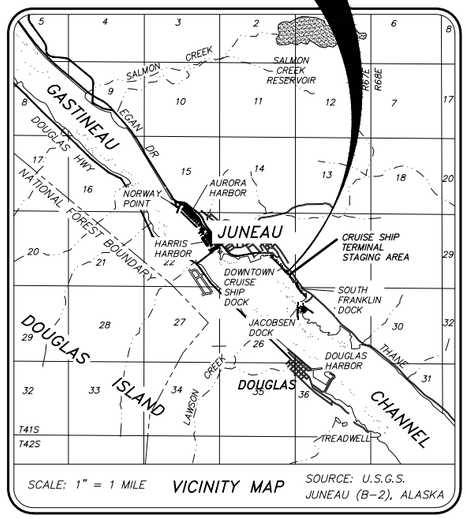


LOCATION MAP



SOUTHEAST ALASKA

THIS PROJECT



DRAWING INDEX

PROJECT SCHEDULE

DESCRIPTION	SCHEDULE
EARLIEST FIELD START	APRIL 1, 2019
SUBSTANTIAL COMPLETION	MAY 11, 2019
FINAL COMPLETION	MAY 18, 2019

CITY & BOROUGH OF JUNEAU — DOCKS & HARBORS

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND ENGINEERS, INC.
9360 Glacier Highway Ste 100
Juneau, Alaska 99801
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www.pndengineers.com

DESIGN: CMG CHECKED: CMG
DRAWN: LRG APPROVED: CMG
SCALE:

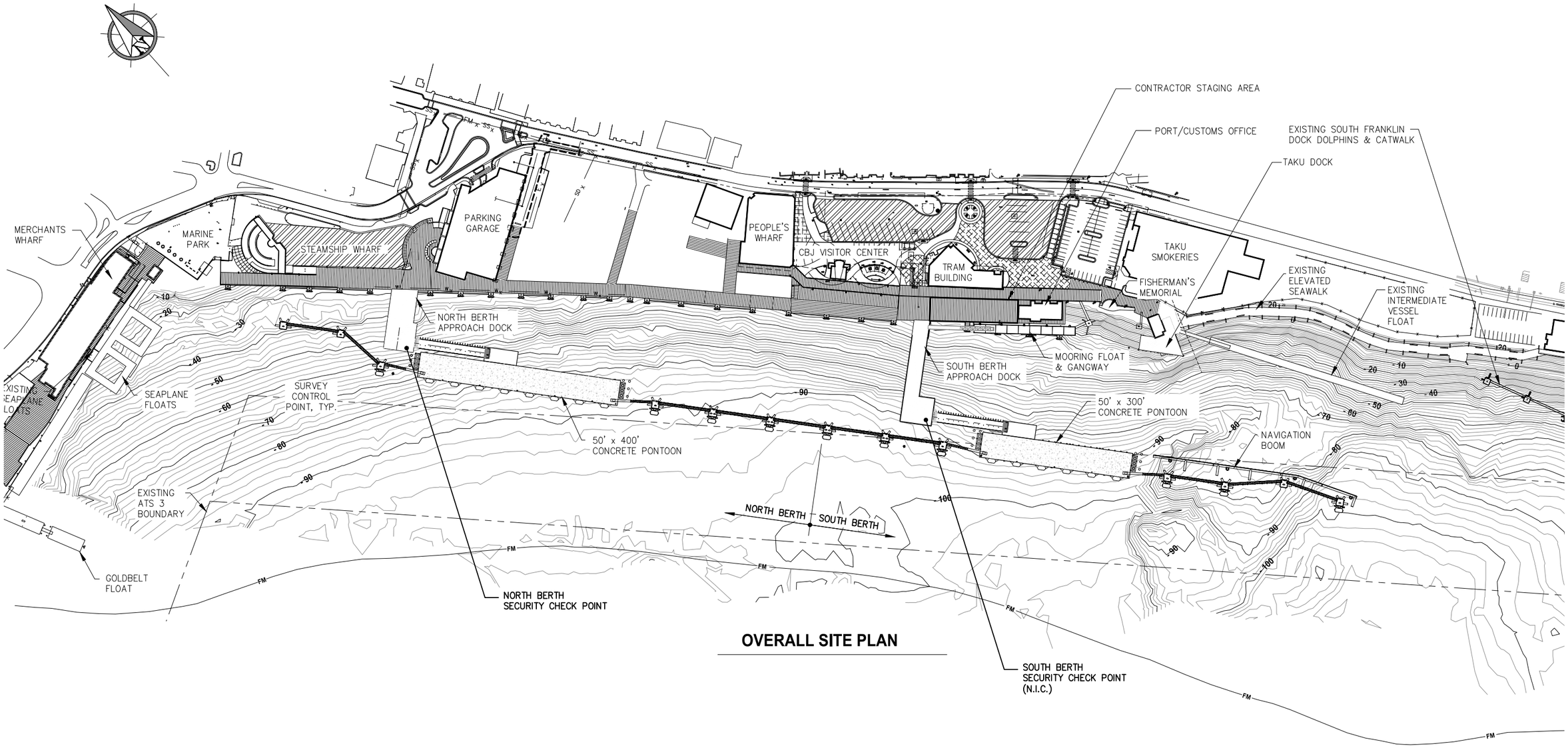
STATE OF ALASKA — 49TH — Christopher Gianotti SE-14256 — REGISTERED PROFESSIONAL ENGINEER
DATE: 1/25/2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

SHEET TITLE: COVER SHEET

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

G0.0



OVERALL SITE PLAN

NOTES:
1. CONTRACTOR SHALL REPAIR ANY DAMAGES INCURRED AT STAGING AREAS DUE TO CONTRACTOR ACTIVITIES.
2. ADDITIONAL OFF-SITE STAGING AREA AVAILABLE AT "LITTLE ROCK DUMP". CONTACT PORT ENGINEER FOR DETAILS.

CITY & BOROUGH OF JUNEAU — DOCKS & HARBORS

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SCALE: SCALE IN FEET 0 100 200 FT.

STATE OF ALASKA — 49TH — Christopher Gianotti SE-14256 — REGISTERED PROFESSIONAL ENGINEER
DATE: 1/25/2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

SHEET TITLE: OVERALL SITE PLAN

G1.0

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

GENERAL NOTES

1.0 CRITERIA

1.1 CODE: 2012 EDITION OF INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE STATE OF ALASKA AND CITY AND BOROUGH OF JUNEAU
STRUCTURAL RISK CATEGORY: II

1.2 LOADS:

A. SNOW

GROUND SNOW LOAD	70 PSF
IMPORTANCE FACTOR Is =	1.0
EXPOSURE FACTOR, Ce =	0.8 (EXPOSURE D, FULLY EXPOSED)
THERMAL FACTOR, Ct =	1.2 UNHEATED SPACE
FLAT ROOF SNOW Load, Pf =	50 PSF MINIMUM PER CBJ

B. WIND

ULTIMATE WIND SPEED	140 MPH
EXPOSURE	C
INTERNAL PRESSURE COEFFICIENT:	+/- 0.55 (UN ENCLOSED STRUCTURE)
STATIC PRESSURE: 43.9 PSF	

D. SEISMIC

SITE CLASS		C - SHALLOW BEDROCK
Ss = 0.53g	Fa = 1.19	SDS= 0.42g
S1 = 0.36g	Fv = 1.44	SD1= 0.34g

BASIC SEISMIC FORCE RESISTING SYSTEM:
STEEL MOMENT FRAMES
RESPONSE MODIFICATION FACTOR, R = 3.5
CS = 0.12g
DESIGN CATEGORY D

2.0 MATERIALS AND CONSTRUCTION

2.1 STRUCTURAL STEEL

A. STEEL SECTIONS SHALL COMPLY WITH THE FOLLOWING:

ANGLES, PLATES	ASTM A 36 (Fy = 36 KSI)
HOLLOW STRUCTURAL SHAPES	ASTM A500, GRADE B, TYPE E OR S (Fy = 46 KSI)
BOLTS, STEEL TO STEEL	ASTM A 325 OF ASTM F 1852
BOLTS IN CONCRETE	ASTM A 307

B. FABRICATION AND ERECTION: FABRICATE AND ERECT STEEL IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE. SUBMIT FABRICATION SHOP DRAWINGS FOR REVIEW.

C. ALL STEEL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A153 OR A123 AS APPROPRIATE. REPAIR ALL DAMAGE TO GALVANIZING PER ASTM A780 USING ZINC ALLOY REPAIR STICK METHOD TOP COATED WITH BRUSH-APPLIED COLD GALVANIZING REPAIR PAINT WHILE STEEL IS STILL WARM.

D. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 STRUCTURAL WELDING CODE BY WELDERS QUALIFIED IN THE PROCESS AND POSITION FOR WHICH THEY ARE WELDING. SUBMIT WELDER QUALIFICATIONS AND WELDING PROCEDURES FOR REVIEW.

E. BOLTS NOTED SC SHALL BE TIGHTENED BEYOND SNUG TIGHT BY "TURN OF THE NUT" METHOD.

2.2 SIDING

A. PHENOLIC PANELS SEE SPECIFICATIONS.

2.3 ROOFING

A. ROOFING SHALL BE AEP SPAN HR 36 24 GA CONNECTED WITH MANUFACTURER'S STANDARD SCREWS.

2.4 WINDOWS

A. BASIS OF DESIGN IS KAWNEER
ALUMINUM FRAMED WINDOWS. SEE SPECIFICATIONS.

2.5 DOORS

SLIDING DOORS SHALL CONSIST OF FABRICATED STEEL FRAMES INFILLED WITH ALUMINUM FRAMED WINDOWS AND STAINLESS STEEL PLATE SUSPENDED FROM A BOX RAIL SYSTEM AS MANUFACTURED BY NATIONAL HARDWARE OR APPROVED EQUAL. HARDWARE SHALL BE GALVANIZED OR STAINLESS STEEL.

ABBREVIATIONS

AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
℄	CENTERLINE
COL	COLUMN
(E)	EXISTING
EA	EACH
EW	EACH WAY
EXIST	EXISTING
fs	FAR SIDE
FT	FEET
ga	GAGE
GLB	GLUED LAMINATED TIMBER BEAM
HSS	HOLLOW STRUCTURAL STEEL
IBC	INTERNATIONAL BUILDING CODE
IN	INCHES
KSI	KIPS (THOUSANDS OF POUNDS) PER SQUARE INCH
LF	LINEAR FEET
nf	NEAR SIDE
NIC	NOT IN CONTRACT
OC	ON CENTER
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
SC	SLIP CRITICAL
SS	STAINLESS STEEL
TYP	TYPICAL
@	AT
ø	DIAMETER

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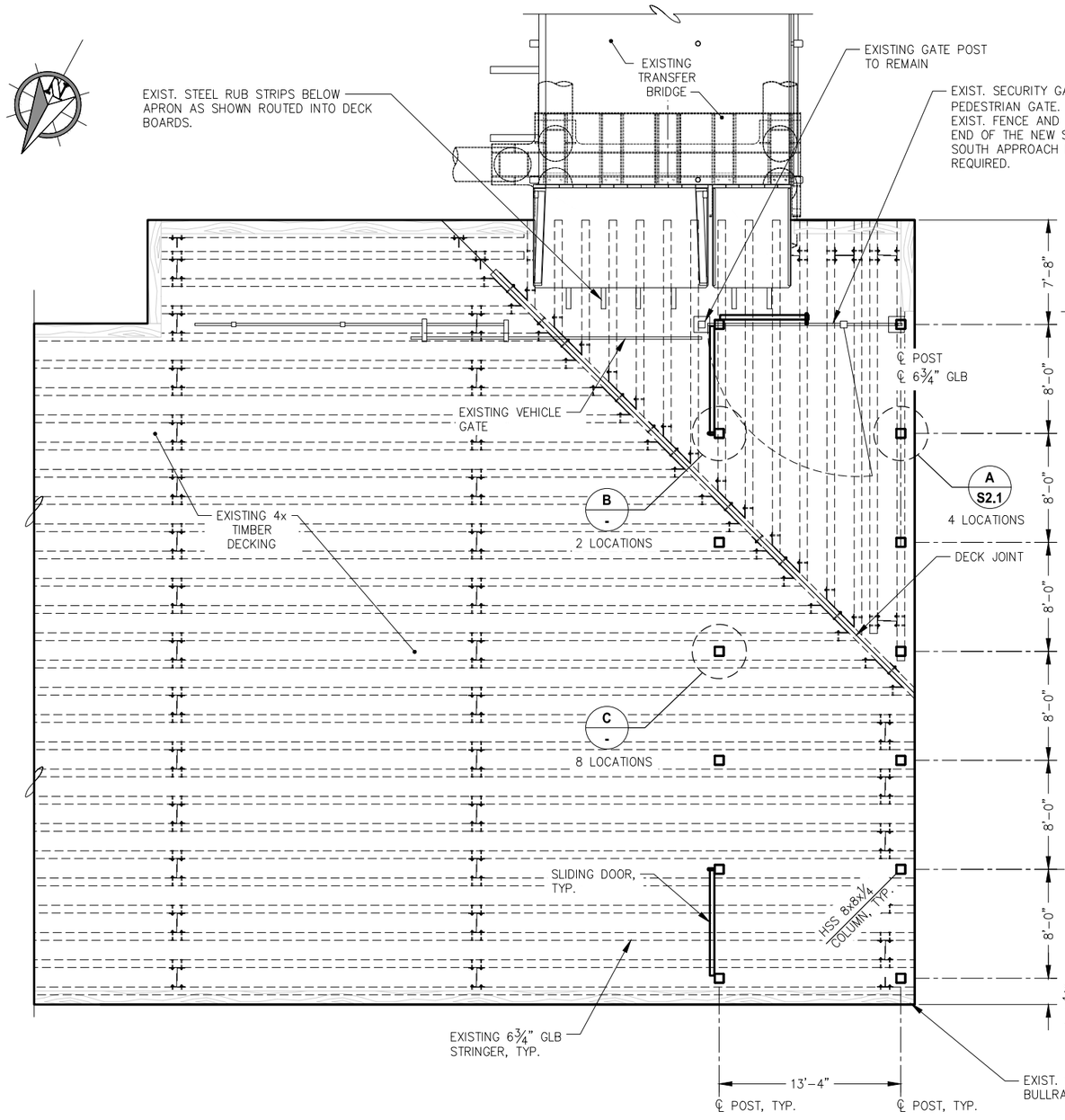
CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

SHEET TITLE:
STRUCTURAL GENERAL NOTES

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

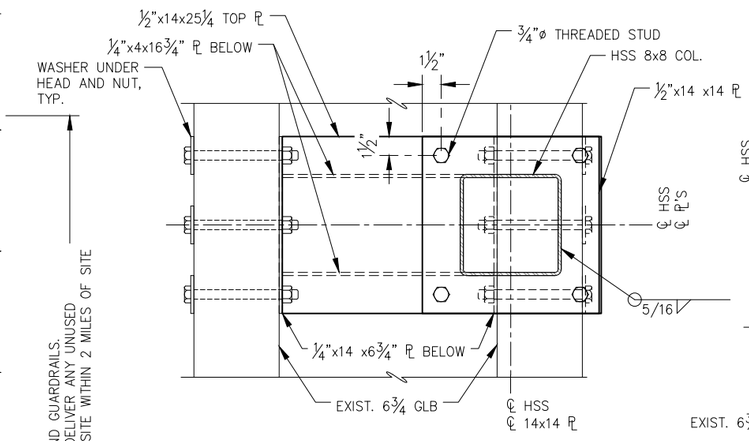
S1.0



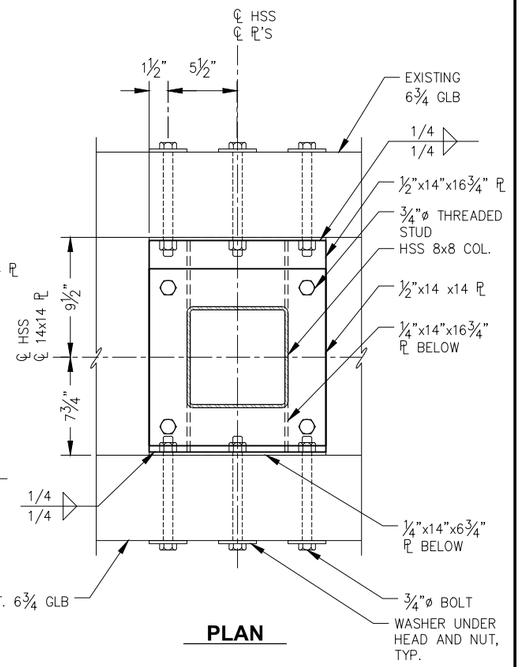
NORTH BERTH APPROACH DOCK - PLAN

SCALE IN FEET
0 5 10 FT.

PLAN NORTH



PLAN



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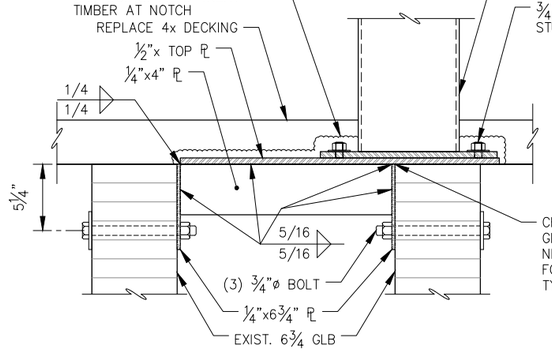
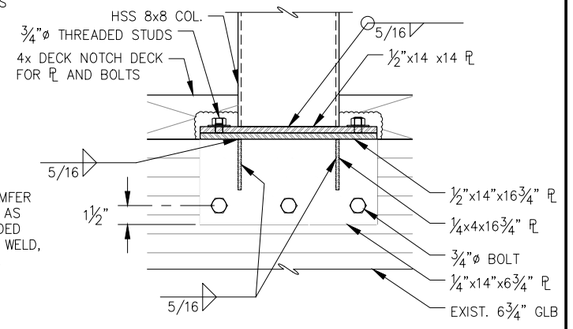


SECTION

B HSS 8x8 TO GLB STRINGER



SECTION

C HSS 8x8 TO GLB STRINGER

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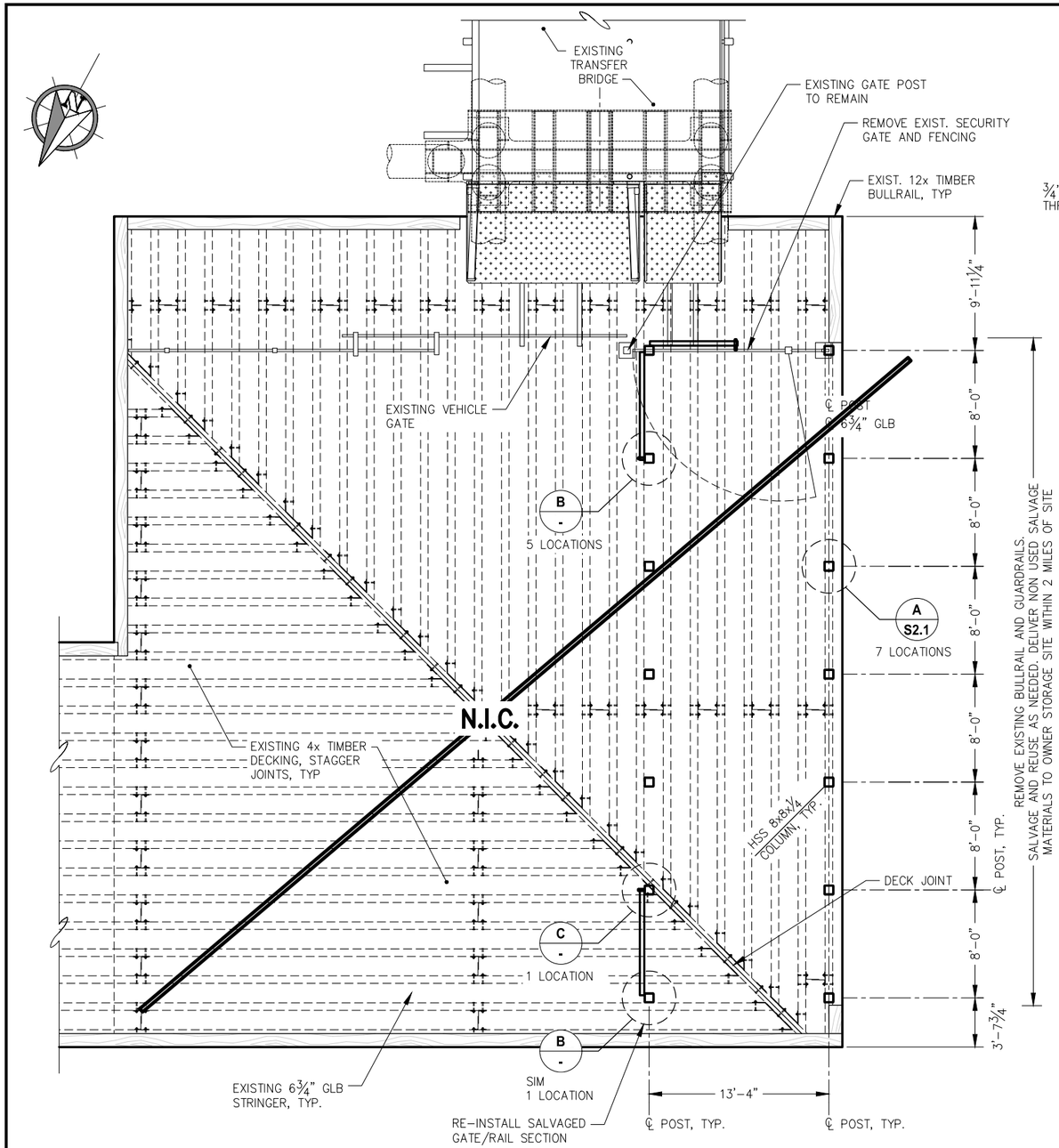
Christopher Gianotti SE-14256
REGISTERED PROFESSIONAL ENGINEER

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

SHEET TITLE:
NORTH BERTH APPROACH DOCK, PLAN AND DETAILS

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

S2.0

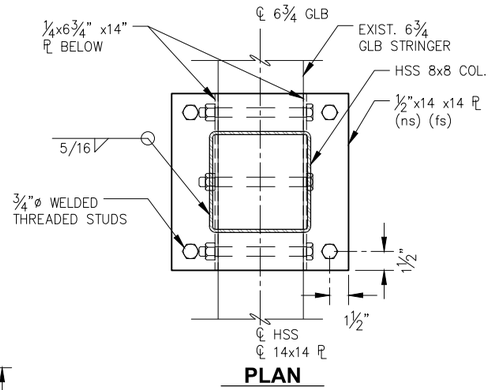


SOUTH BERTH APPROACH DOCK - PLAN

(N.I.C.)

SCALE IN FEET
0 5 10 FT.

PLAN NORTH



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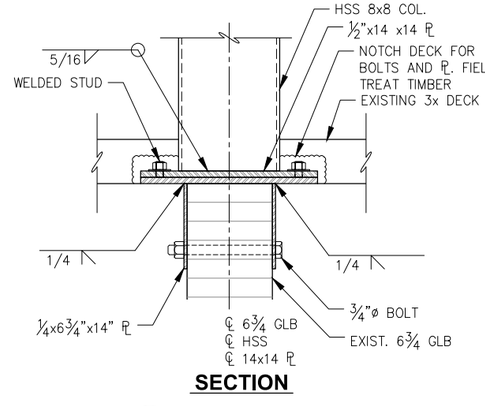

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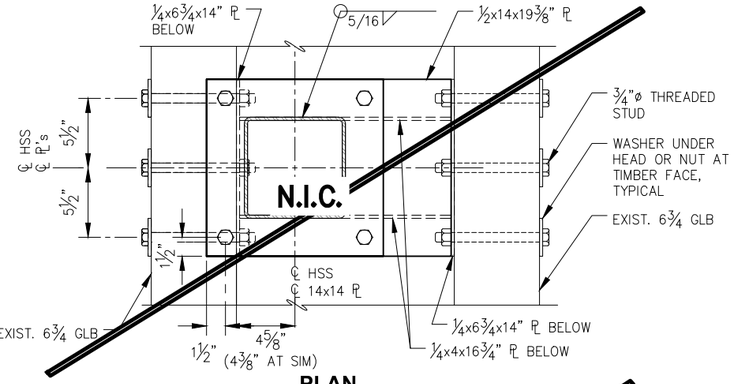
A HSS 8x8 TO GLB STRINGER



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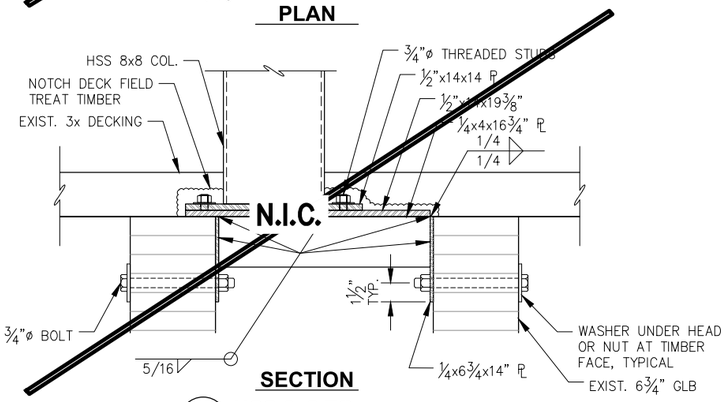

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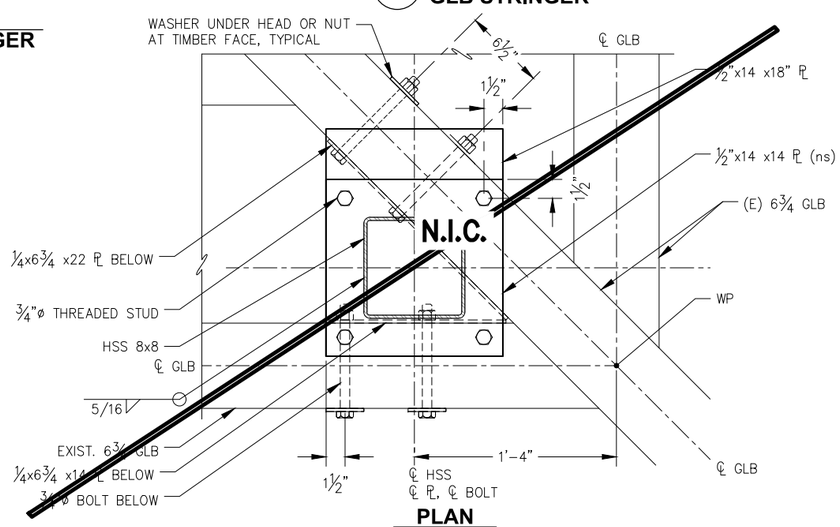

PLAN

C HSS 8x8 TO GLB STRINGER

CITY & BOROUGH OF JUNEAU — DOCKS & HARBORS

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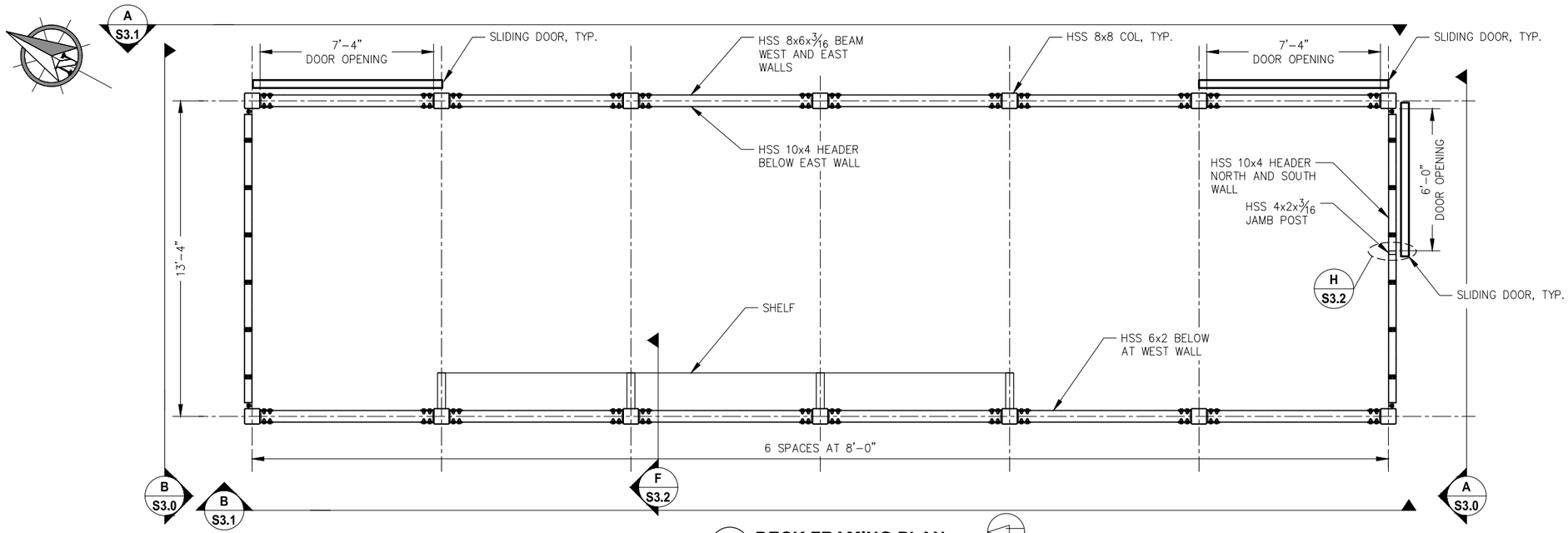
DATE: 1/25/2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

SHEET TITLE:
SOUTH BERTH APPROACH DOCK, PLAN AND DETAILS

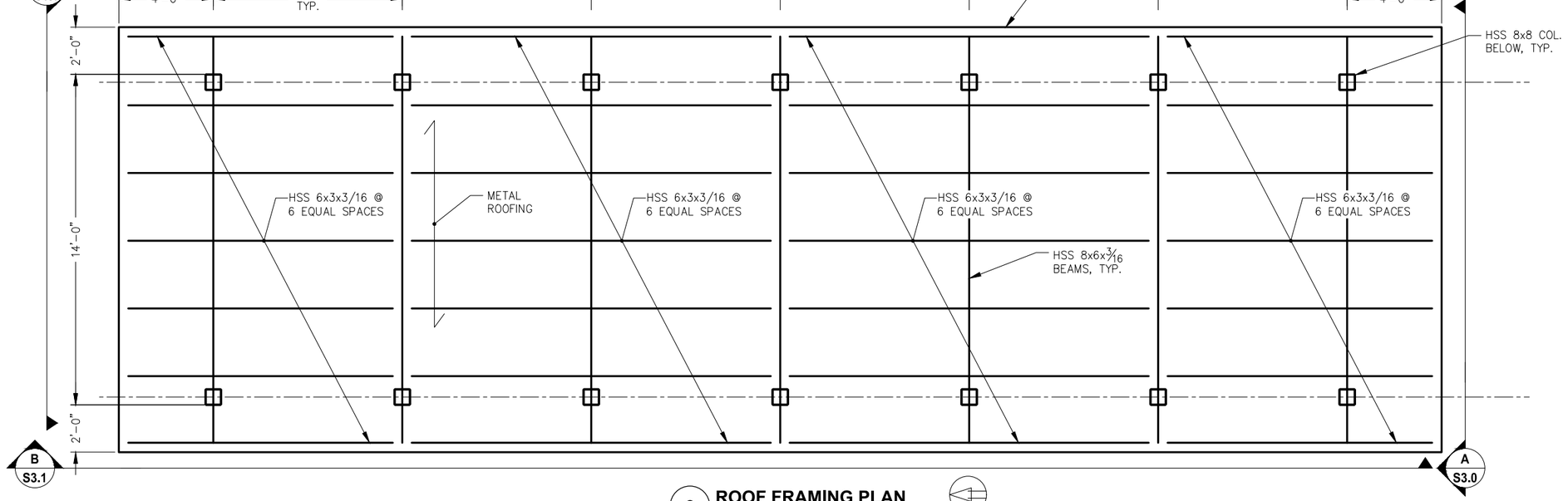
PND PROJECT NO.: 182120
C.A.N. NO.: AECC250

S2.1



1 DECK FRAMING PLAN

PLAN NORTH



2 ROOF FRAMING PLAN

PLAN NORTH

CITY & BOROUGH OF JUNEAU
DOCKS & HARBORS

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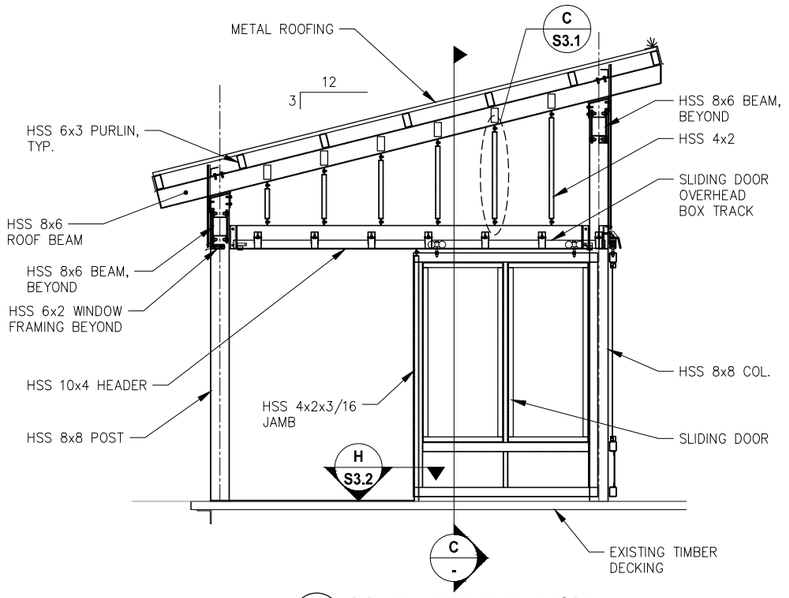
CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

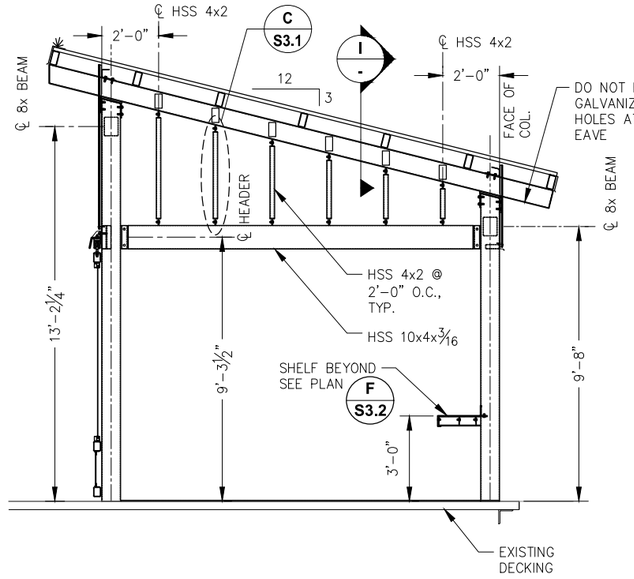
SHEET TITLE:
DECK AND ROOF FRAMING PLANS

PND PROJECT NO.: 182120
C.A.N. NO.: AECC250

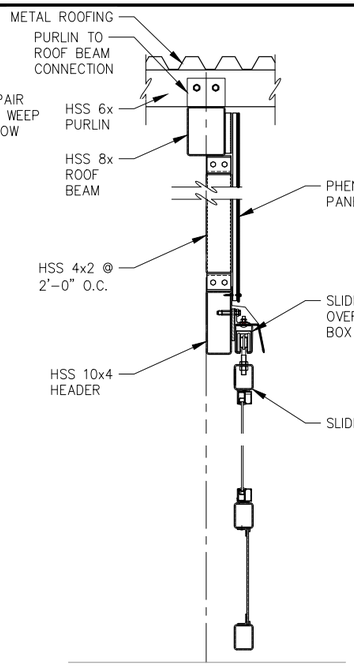
S2.2



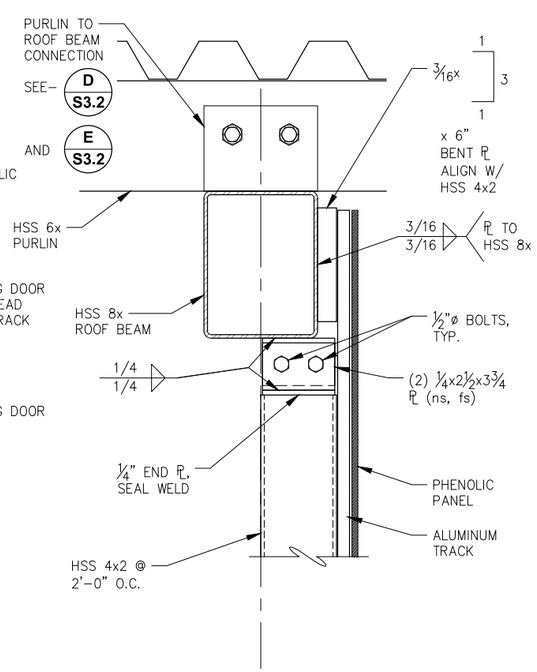
A **SOUTH END ELEVATION**



B **NORTH END ELEVATION**



C **SOUTH WALL SECTION**

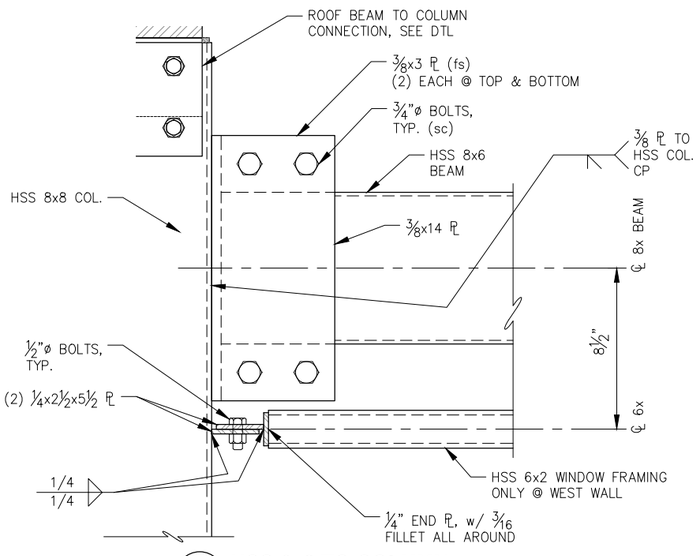


I **HSS 4x2 TO ROOF BEAM CONNECTION**

E **TYPICAL ROOF BEAM TO COLUMN CONNECTION**

F **TYPICAL ROOF BEAM TO COLUMN CONNECTION**

G **HSS 8x BEAM TO COLUMN CONNECTION**



H **HSS 6x2 TO COLUMN**

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CRUISE SHIP BERTH
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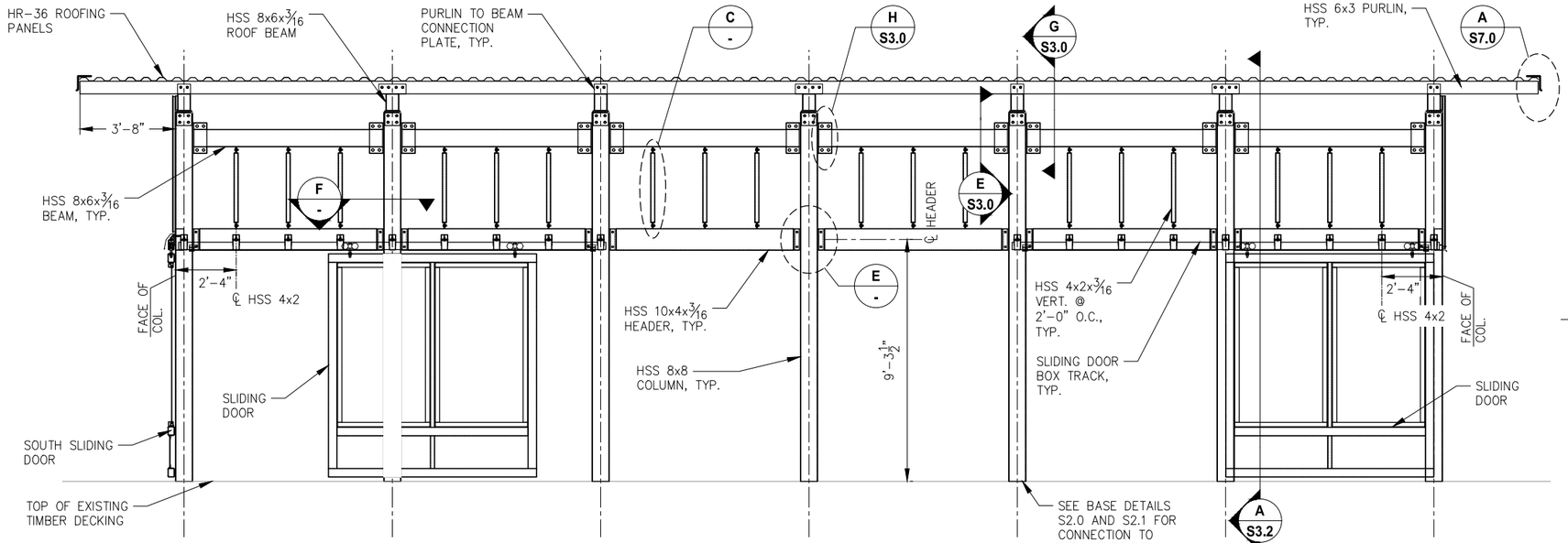
CBJ CONTRACT NO. DH19-050

SHEET TITLE:
END FRAMING ELEVATIONS AND DETAILS

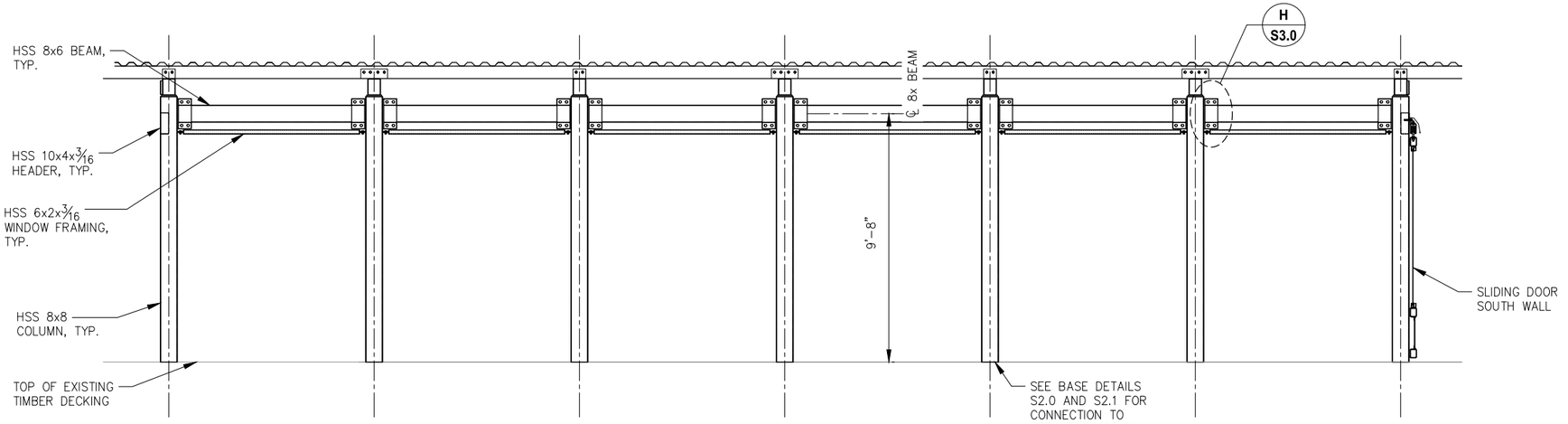
PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

S3.0



A EAST SIDE ELEVATION

SCALE IN FEET
0 2 4ft.



B WEST SIDE ELEVATION

SCALE IN FEET
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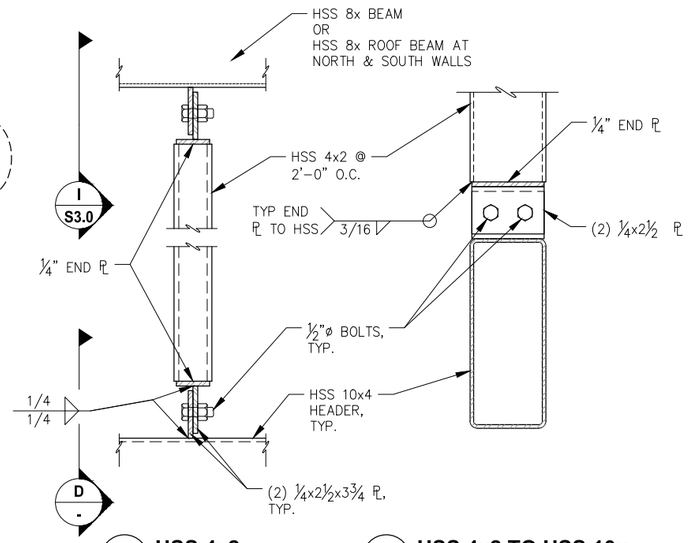
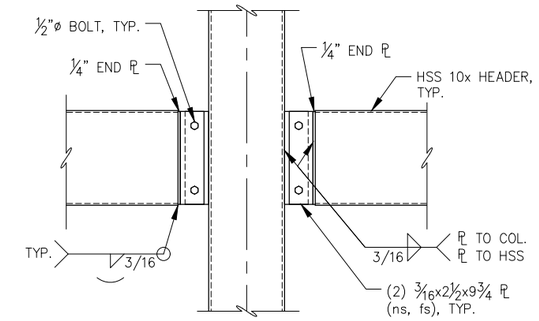


C HSS 4x2

SCALE IN INCHES
0 4 8

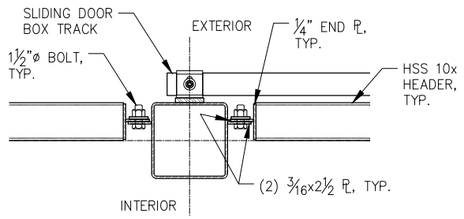
D HSS 4x2 TO HSS 10x

SCALE IN INCHES
0 4 8



E HEADER TO COLUMN

SCALE IN INCHES
0 6 12 IN



F HEADER TO COLUMN PLAN

SCALE IN INCHES
0 6 12 IN

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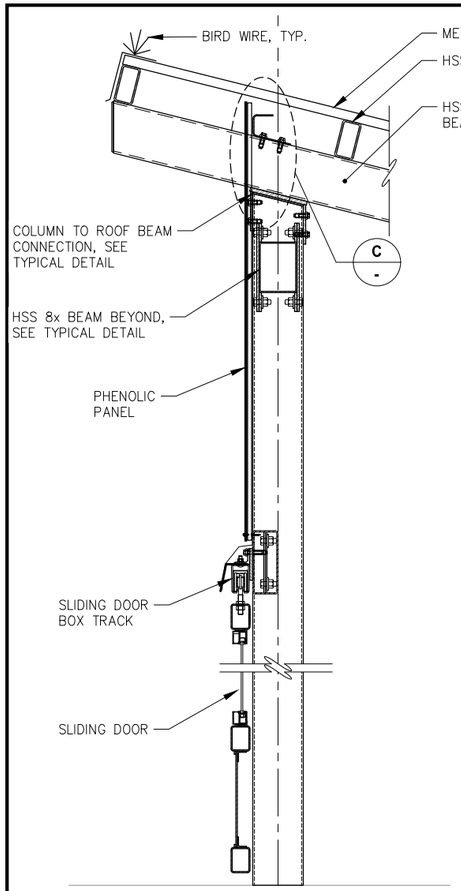
CRUISE SHIP BERTH SECURITY CHECKPOINTS - PHASE 1

CBJ CONTRACT NO. DH19-050

SHEET TITLE: SIDE FRAMING ELEVATIONS AND DETAILS

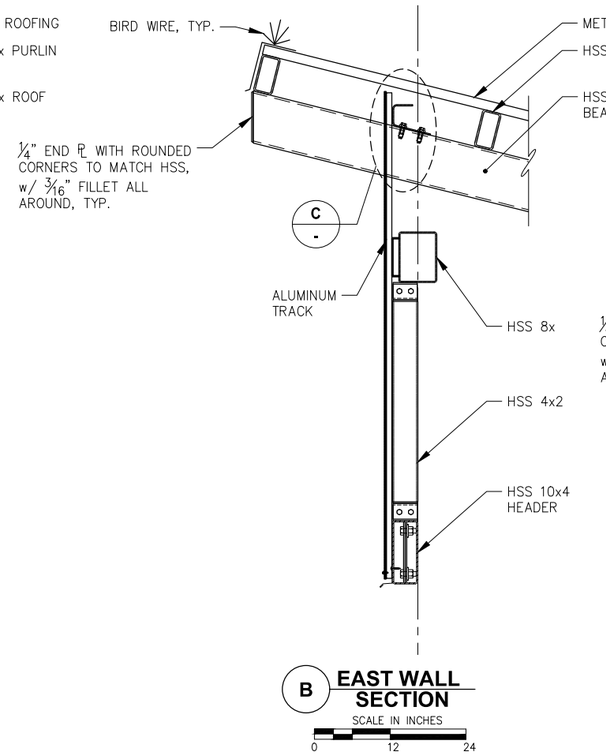
S3.1

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250



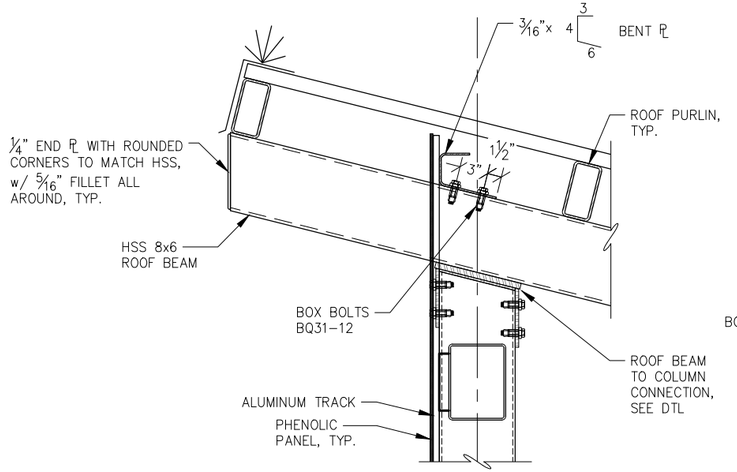
A **EAST WALL SECTION AT DOOR**

SCALE IN INCHES 0 12 24



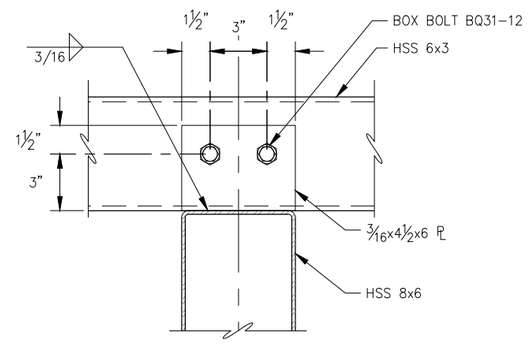
B **EAST WALL SECTION**

SCALE IN INCHES 0 12 24



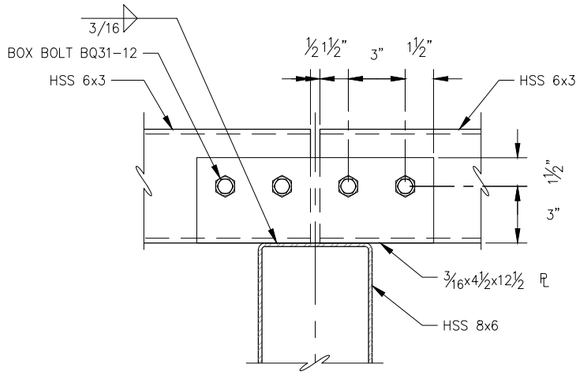
C **EAST WALL SECTION**

SCALE IN INCHES 0 8 16



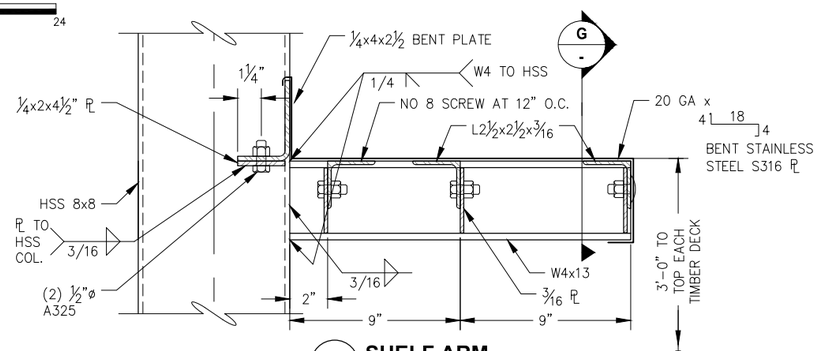
D **PURLIN TO BEAM**

SCALE IN INCHES 0 4 8



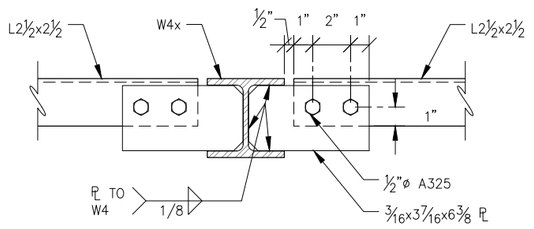
E **PURLIN TO BEAM AT SPLICE**

SCALE IN INCHES 0 4 8



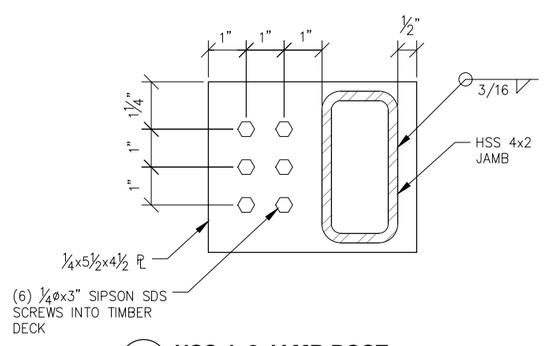
F **SHELF ARM**

SCALE IN INCHES 0 4 8



G **L2-1/2 TO W4**

SCALE IN INCHES 0 4 8



H **HSS 4x2 JAMB POST TO DECK CONNECTION**

SCALE IN INCHES 0 2 4

CITY & BOROUGH OF JUNEAU DOCKS & HARBORS

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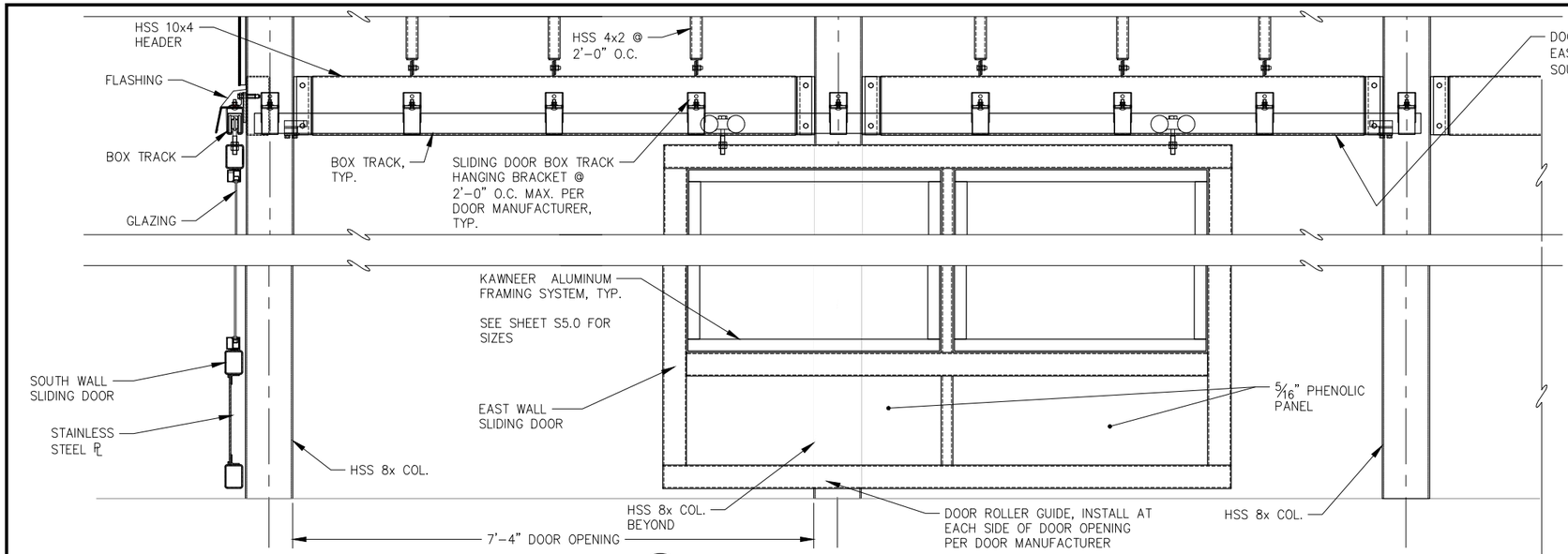
STATE OF ALASKA 49TH Christopher Gianotti SE-14256 REGISTERED PROFESSIONAL ENGINEER

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

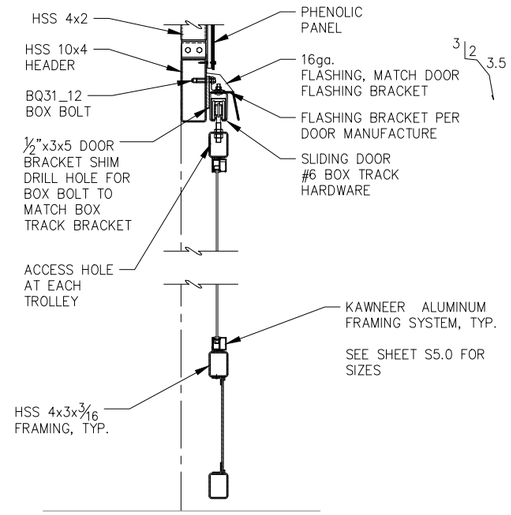
SHEET TITLE: **TYPICAL WALL SECTIONS**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

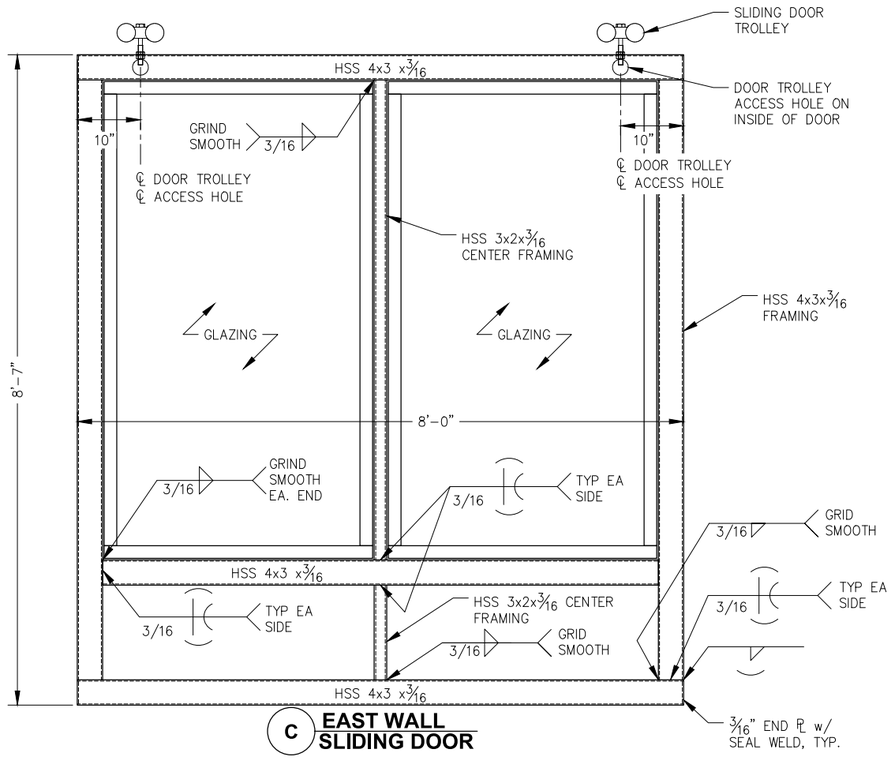
S3.2



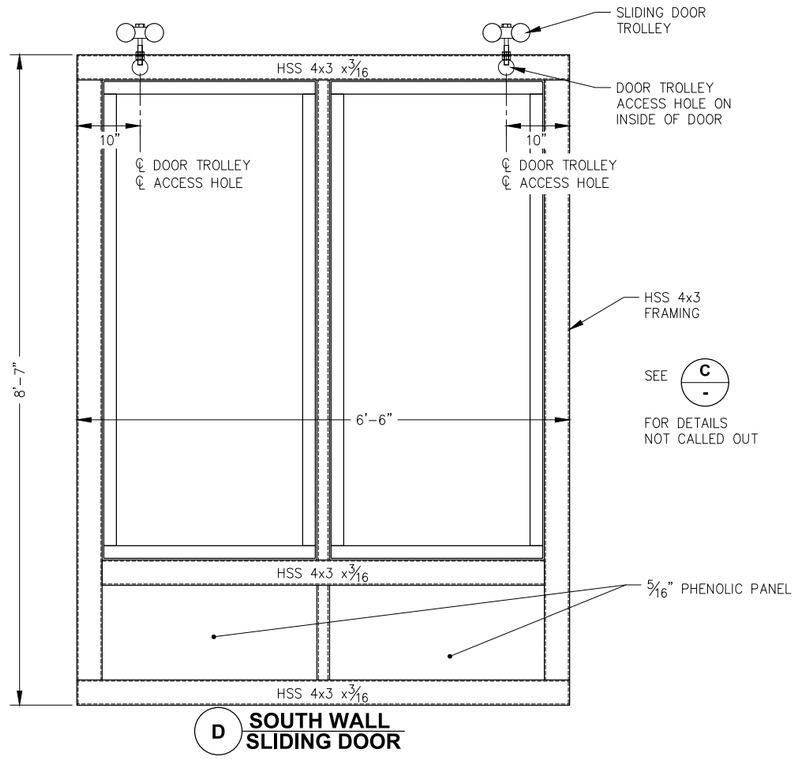
A EAST WALL ELEVATION AT SOUTH DOOR



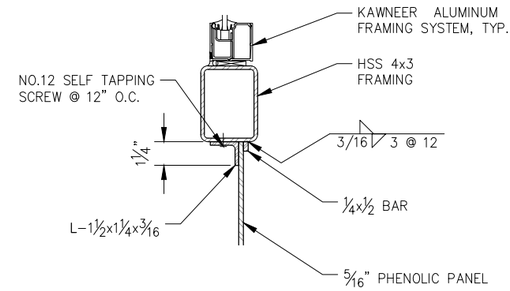
B SLIDING DOOR TYPICAL SECTION



C EAST WALL SLIDING DOOR



D SOUTH WALL SLIDING DOOR



E SLIDING DOOR LOWER FRAME TYPICAL SECTION

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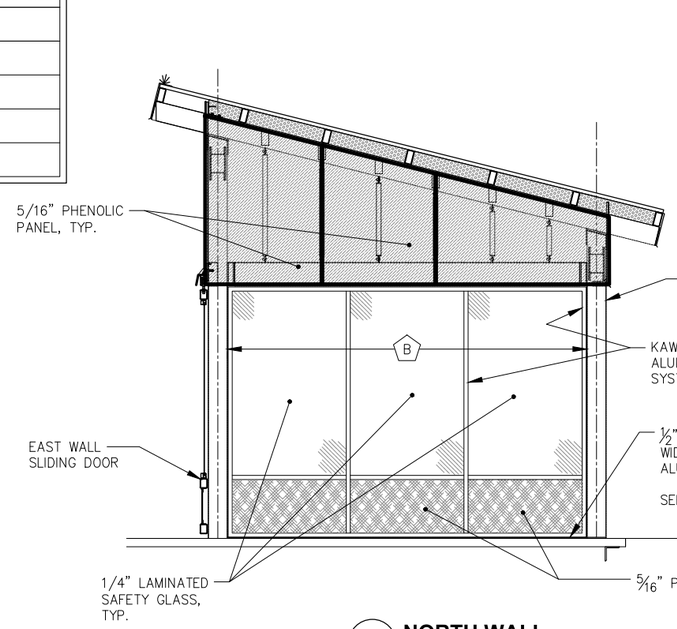
CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

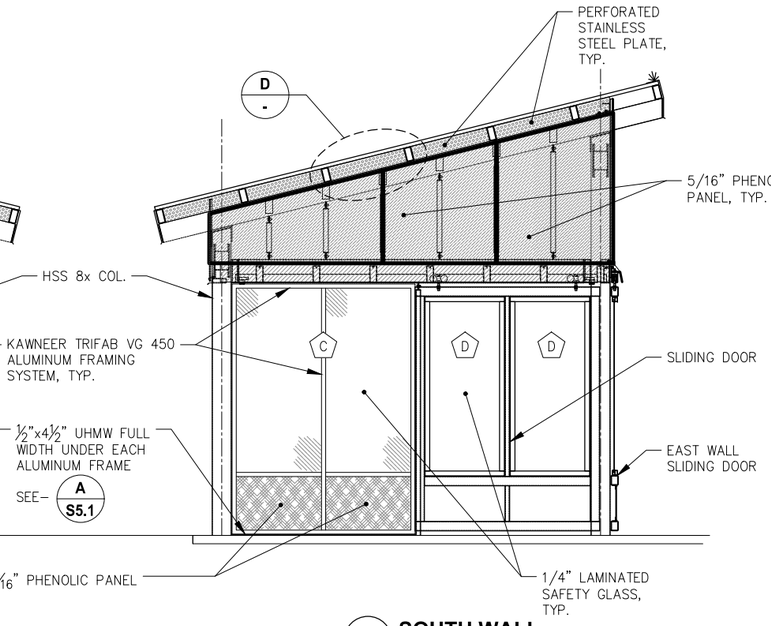
SHEET TITLE: SLIDING DOORS

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

S4.0

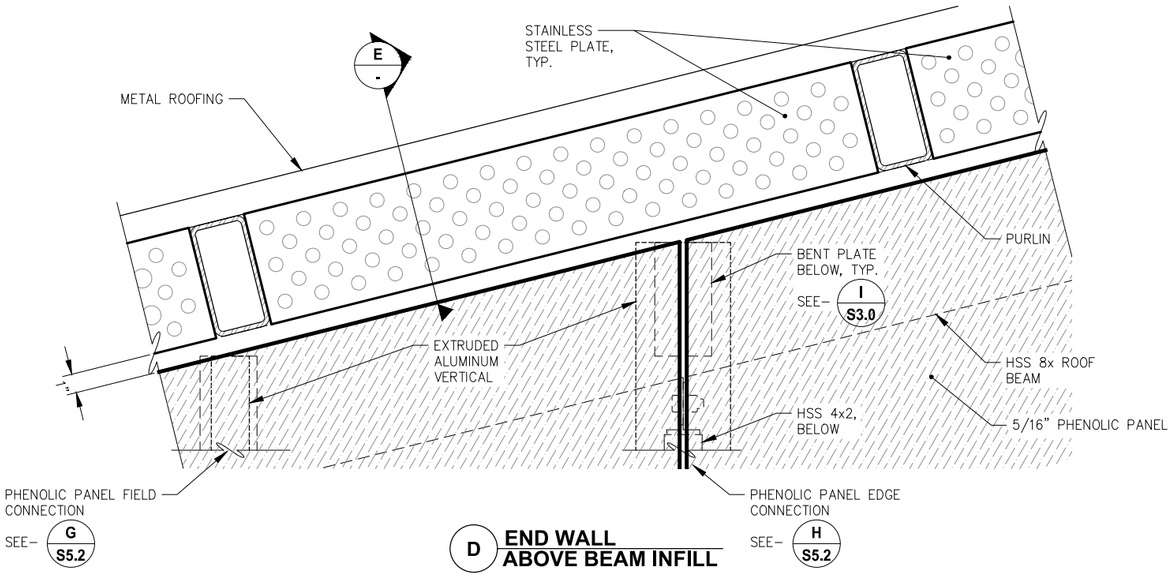
KAWNEER TRIFAB VG 450 ALUMINUM FRAMING SIZE CHART		
SYMBOL	ROUGH OPENING SIZE (WxH)	STOREFRONT FRAME SYSTEM SIZE
A	7'–4" x 8'–10"	2" x 4–1/2"
B	12'–8" x 8'–10"	2" x 4–1/2"
C	6'–6" x 8'–10"	2" x 4–1/2"
D	2'–10" x 6'–4"	2" x 2–1/4"
E	3'–7" x 6'–4"	2" x 2–1/4"



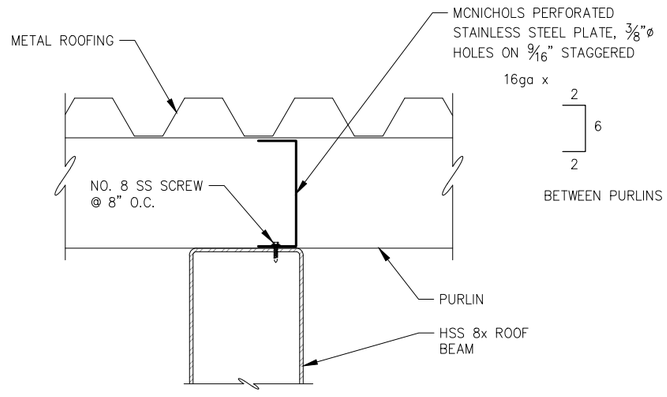


A **NORTH WALL ELEVATION**

B **SOUTH WALL ELEVATION**



D **END WALL ABOVE BEAM INFILL**



E **SECTION AT END WALL INFILL ABOVE BEAM**

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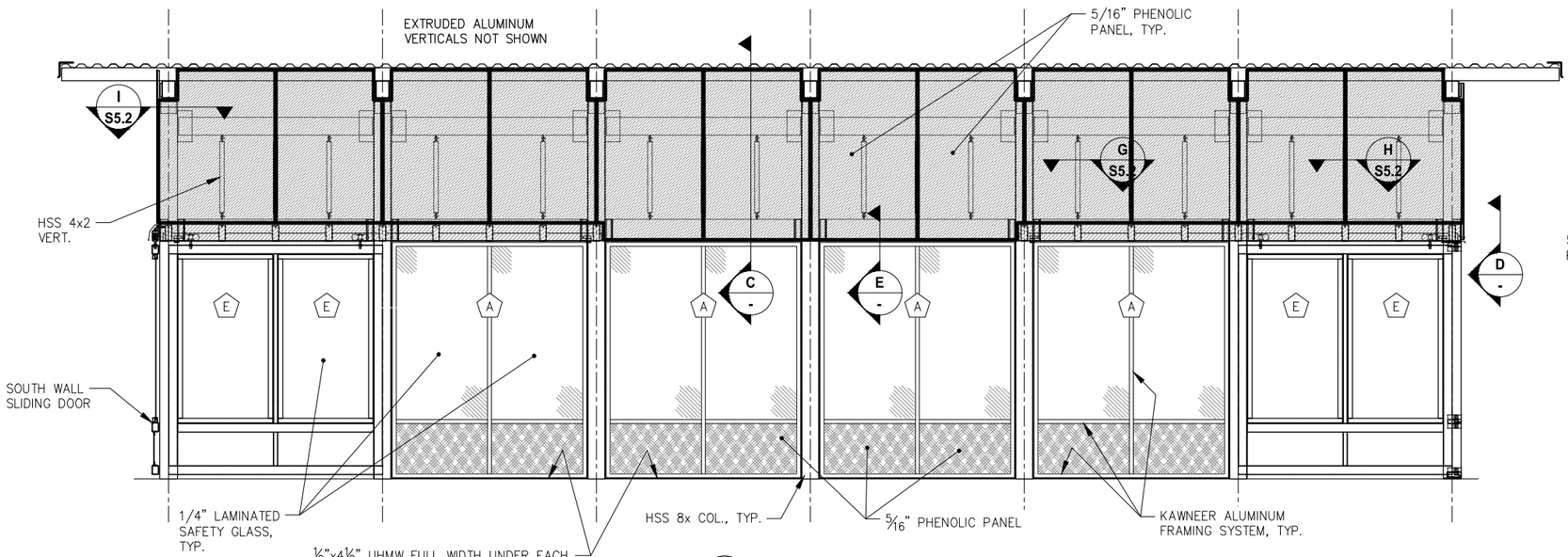
CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

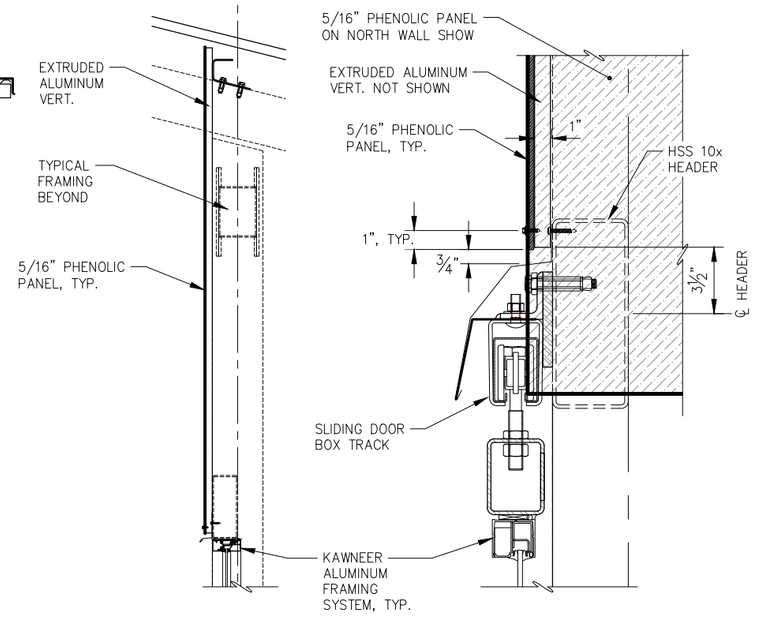
SHEET TITLE: **SIDING AND GLAZING END ELEVATIONS**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

S5.0

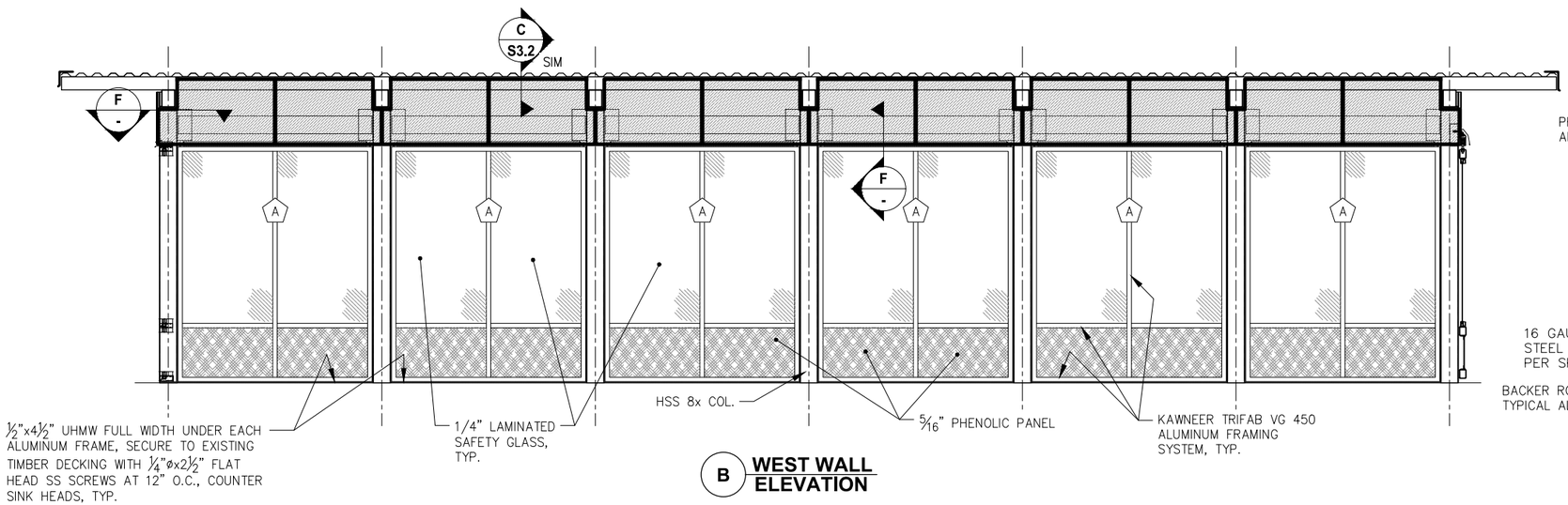


A EAST WALL ELEVATION

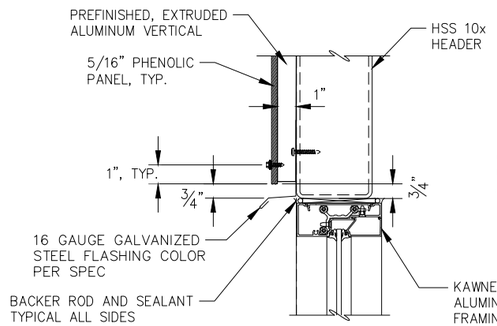


C WEST WALL SECTION

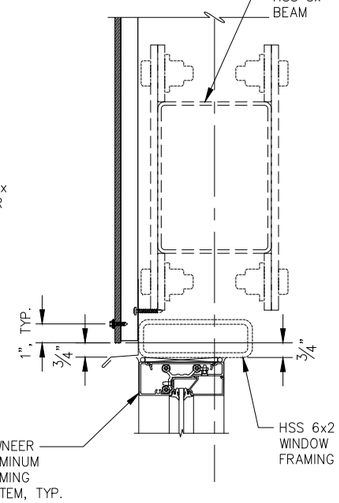
D SECTION AT DOOR HEADER



B WEST WALL ELEVATION



E SECTION AT WINDOW HEADER - EAST WALL



F SECTION AT WINDOW HEADER - WEST WALL

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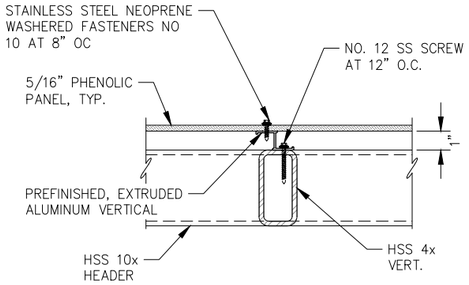
DATE: 1/25/2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

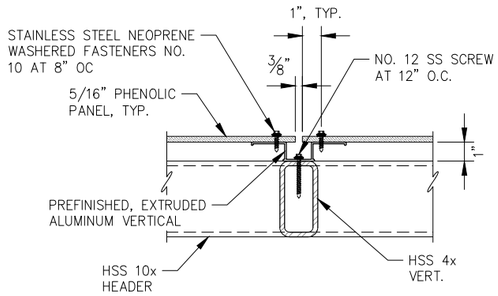
SHEET TITLE: **SIDING AND GLAZING SIDE ELEVATIONS**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

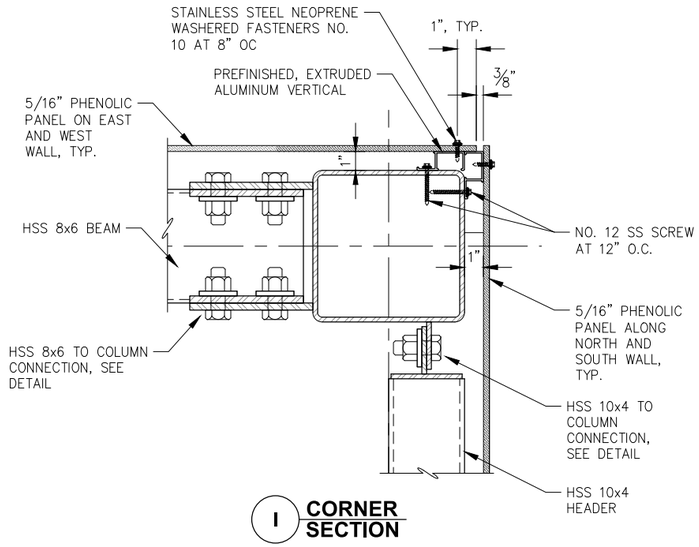
S5.1



G SECTION AT PANEL FIELD CONNECTION



H SECTION AT PANEL EDGE CONNECTION



I CORNER SECTION

CITY & BOROUGH OF JUNEAU DOCKS & HARBORS

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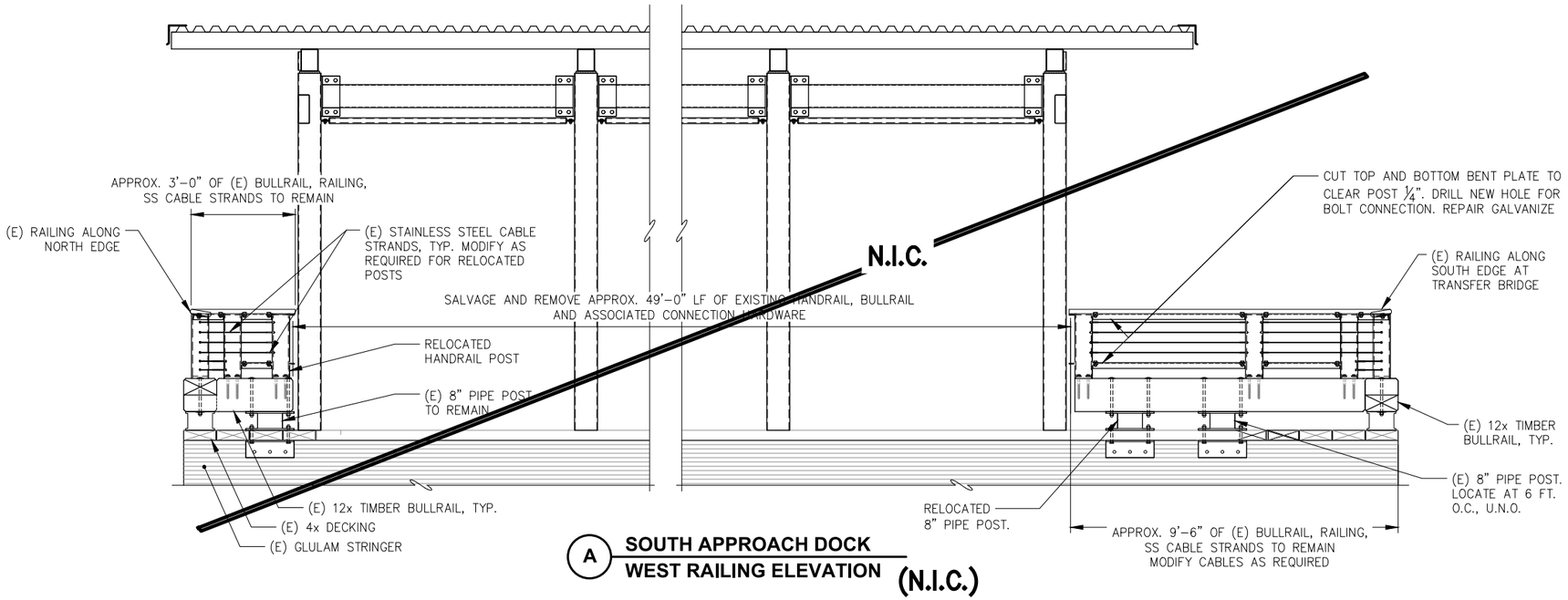
DATE: 1/25/2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

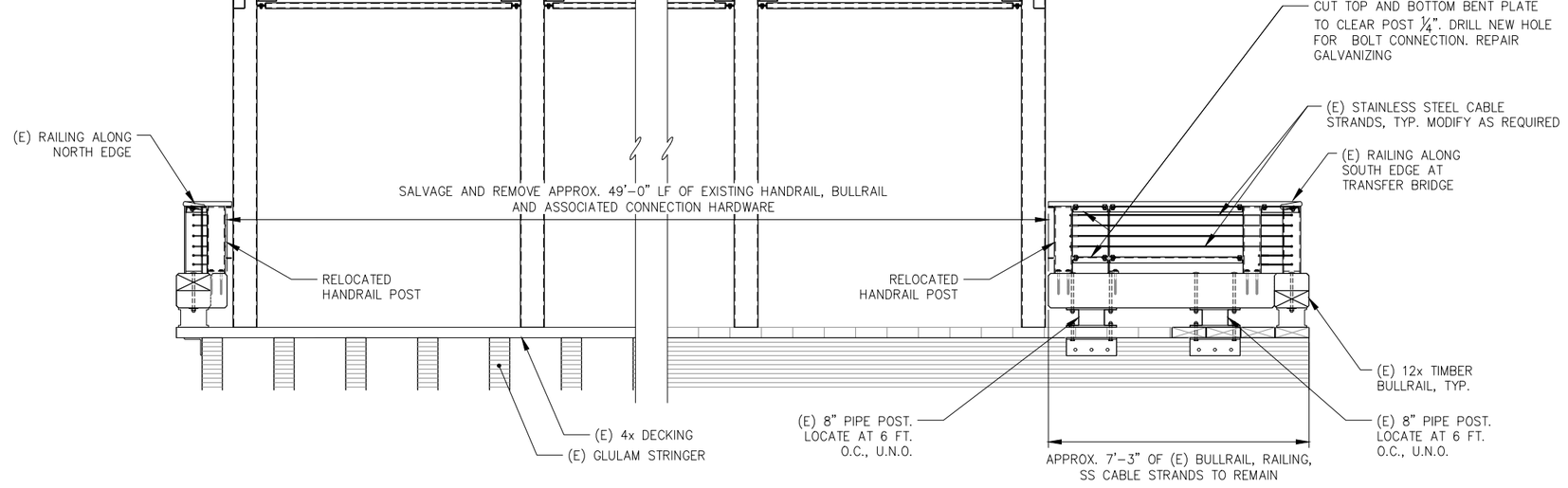
SHEET TITLE: **DETAILS**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

S5.2



A **SOUTH APPROACH DOCK WEST RAILING ELEVATION** **(N.I.C.)**



B **NORTH APPROACH DOCK WEST RAILING ELEVATION**

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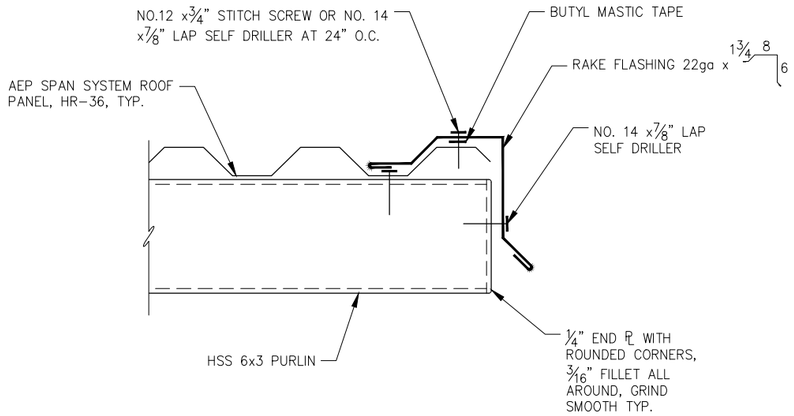
CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

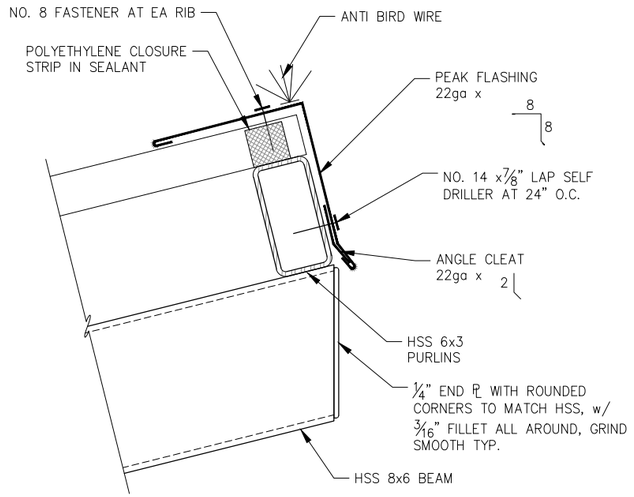
SHEET TITLE: **APPROACH DOCK RAILING ELEVATIONS**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

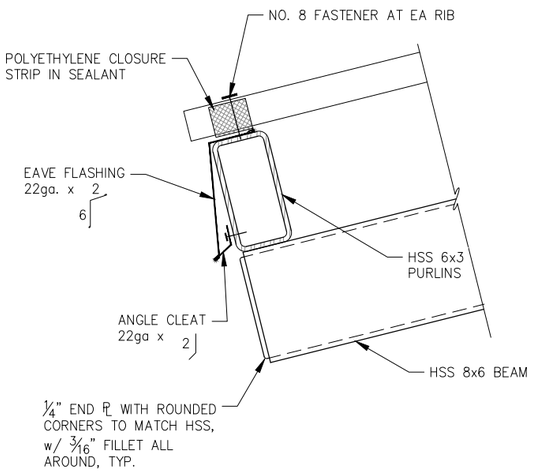
S6.0



A RAKE DETAIL



B PEAK DETAIL



C EAVE DETAIL

NOTE:
1. ATTACH METAL ROOFING WITH NO. 12 SELF TAPPING SCREWS WITH WASHER HEAD AND NEOPRENE WASHER AT 16" OC AT PURLINS WITHIN 4'-0" OF ENDS AND ROOF EDGE AND AT 8" OC WITHIN 4'-0" OF ROOF EDGE AND END

CITY & BOROUGH OF JUNEAU — DOCKS & HARBORS

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DATE: 1/25/2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS - PHASE 1
CBJ CONTRACT NO. DH19-050

SHEET TITLE: **ROOF FLASHING DETAILS**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

S7.0

LEGEND

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
DVR	DRIVER
GFI	GROUND FAULT INTERRUPTED
LV	LOW VOLTAGE
PE	PHOTOELECTRIC CELL
UON	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF

SHEET NOTE SYMBOLS:

(E)	EXISTING TO REMAIN
(N)	NEW
(X)	REMOVE EXISTING

POWER:

- DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE, 46" AFF
- DUPLEX 30A SHORE–TIE PEDESTAL
- JUNCTION BOX
- CONDULET OR CONDUIT BODY
- THERMOSTAT, 46" AFF
- HEATER

DIAGRAM SYMBOLS:

- CIRCUIT BREAKER
- CONTACT
- DISCONNECT OR SWITCH
- GROUND BUS
- GROUND ROD
- METER
- TERMINAL BLOCK
- CURRENT TRANSFORMER
- TRANSFORMER
- HEATER

LIGHTING:

- SURFACE OR SUSPENDED LINEAR LUMINAIRE
- EXTERIOR POLE MOUNTED LUMINAIRE

LIGHTING CONTROLS:

S	SINGLE POLE SWITCH
S_D	DIMMER SWITCH
LC	LIGHTING CONTACTOR
PE	PHOTOELECTRIC CELL

SECURITY DEVICES:

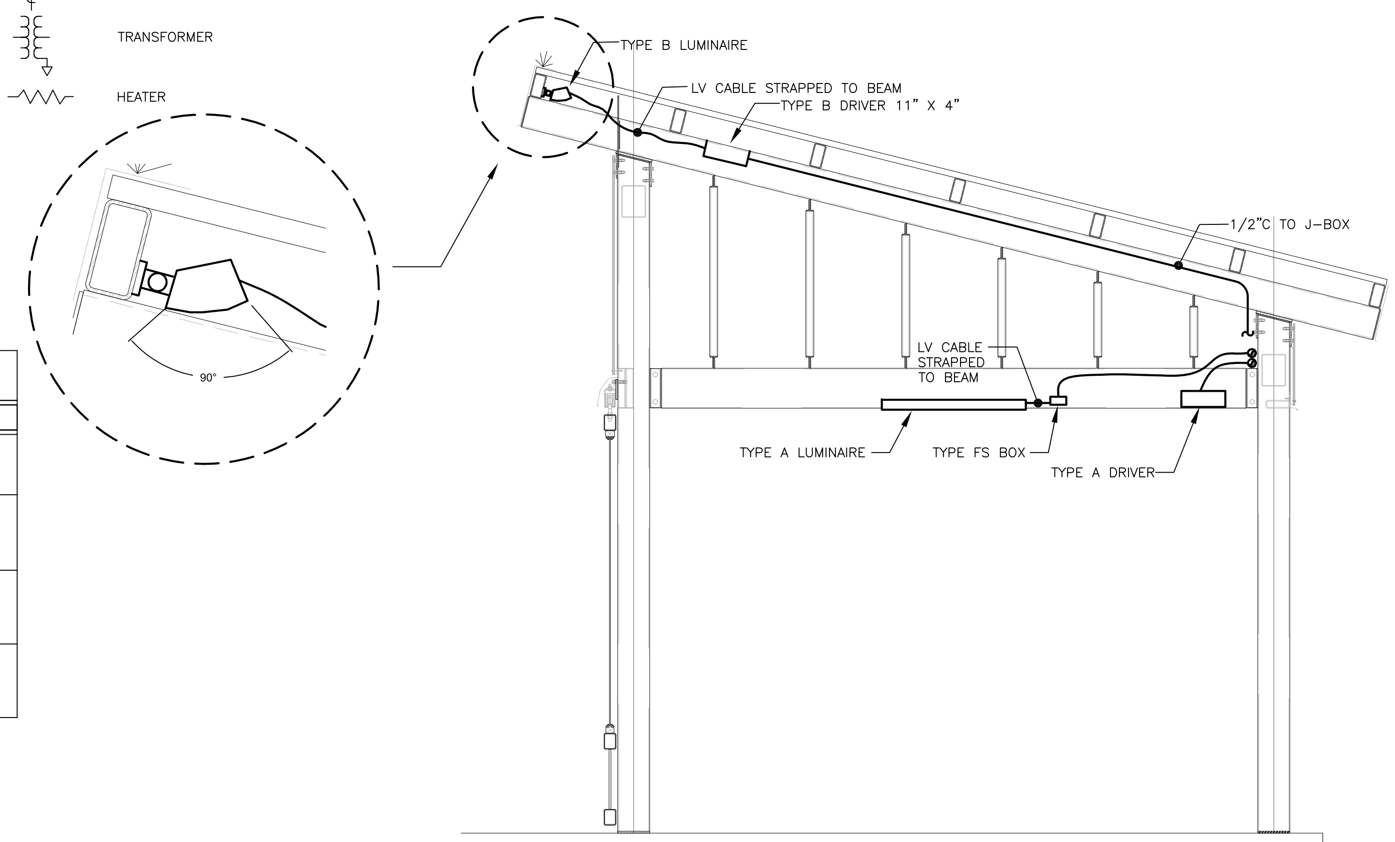
- CAMERA

CONDUIT & CONDUCTORS:

- HOME RUN
- CONDUIT: 1/2" UON.
- UNGROUNDED CONDUCTORS (#12 AWG)
- NEUTRAL: #10 WITH DOT / #12 OTHERWISE
- GROUND CONDUCTOR
- CONDUCTORS NOT SHOWN WHERE ONLY #12 NEUTRAL AND UNGROUNDED CONDUCTOR ARE REQUIRED
- FLEXIBLE CONDUIT

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	LAMPS	REMARKS
A/6	6' SIDE SURFACE MOUNTED EXTERIOR RATED LINEAR LED, ALUMINUM HOUSING, ACRYLIC LENS, 60' SYMMETRIC DISTRIBUTION, REMOTE ELECTRONIC DRIVER, BLACK FINISH	IO LIGHTING 0.05.E.4K.60.101.2.72.3	7.12W/FT VHO WHITE LED 4000K, CRI 70	MOUNT TO SIDE OF BEAM SO LENS IS JUST BELOW BEAM.
B	6' SURFACE MOUNTED EXTERIOR RATED LINEAR LED, ALUMINUM HOUSING, FIELD ADJUSTABLE BRACKET, ACRYLIC LENS, 90' ASYMMETRIC DISTRIBUTION, REMOTE ELECTRONIC DRIVER, ANODISED ALUMINUM FINISH	IO LIGHTING 0.04.E.4K.90ASYM.102.1.72.1	3.52W/FT HO WHITE LED 4000K, CRI 70	MOUNT TO ROOF JOISTS BETWEEN BEAMS. PROVIDE BRACKETS TO MOUNT LUMINAIRE LEVEL WITH TIMBER DECKING. – SEE DETAIL
DVR	11x4x4 ENCLOSURE WITH LED DRIVER, 96W INPUT, 24V OUTPUT	IO LIGHTING 96ND–.75–11x4x4	––	MOUNT TO SIDE OF BEAM.
S_D	0–10V DIMMER SWITCH, INTEGRATED POWER PACK, 120V, 5A, GRAY FINISH	LEGRAND CD4FBLGRY	––	



1 DETAIL – TYPES A & B LUMINAIRE MOUNTING (TYP)

SCALE IN FEET 0 2 4 FT.

Jan 25, 2019 – 3:10pm
F:\Projects\137 PN&D\125 Cruise Ship Dock Security Stations\Drawings\Working\E1.0.dwg (Layout1 tab)

CITY & BOROUGH OF JUNEAU DOCKS & HARBORS

HAIGHT & ASSOCIATES
CONSULTING ELECTRICAL ENGINEERS
526 Main Street, Juneau, AK 99801
(907) 586-9788

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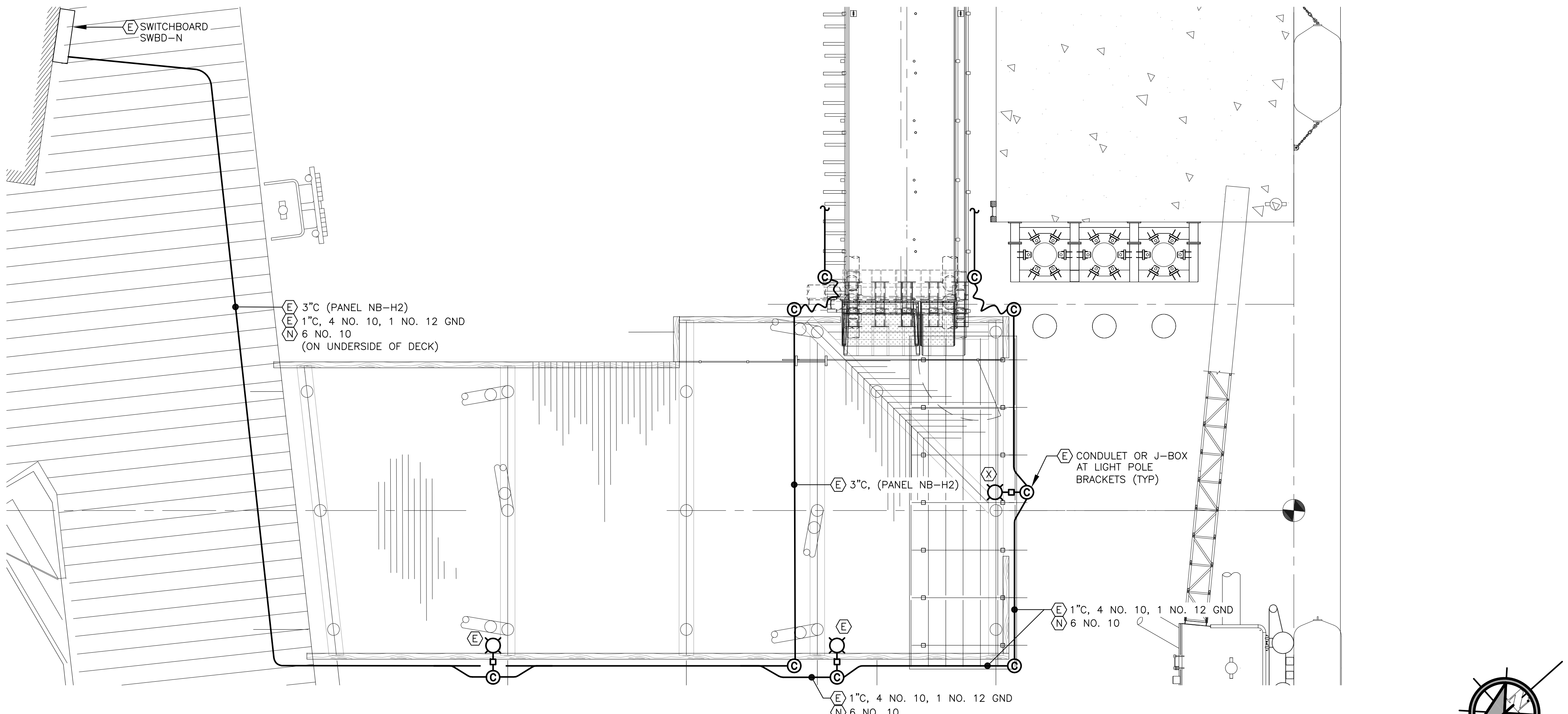
CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: ELECTRICAL LEGEND & SCHEDULE

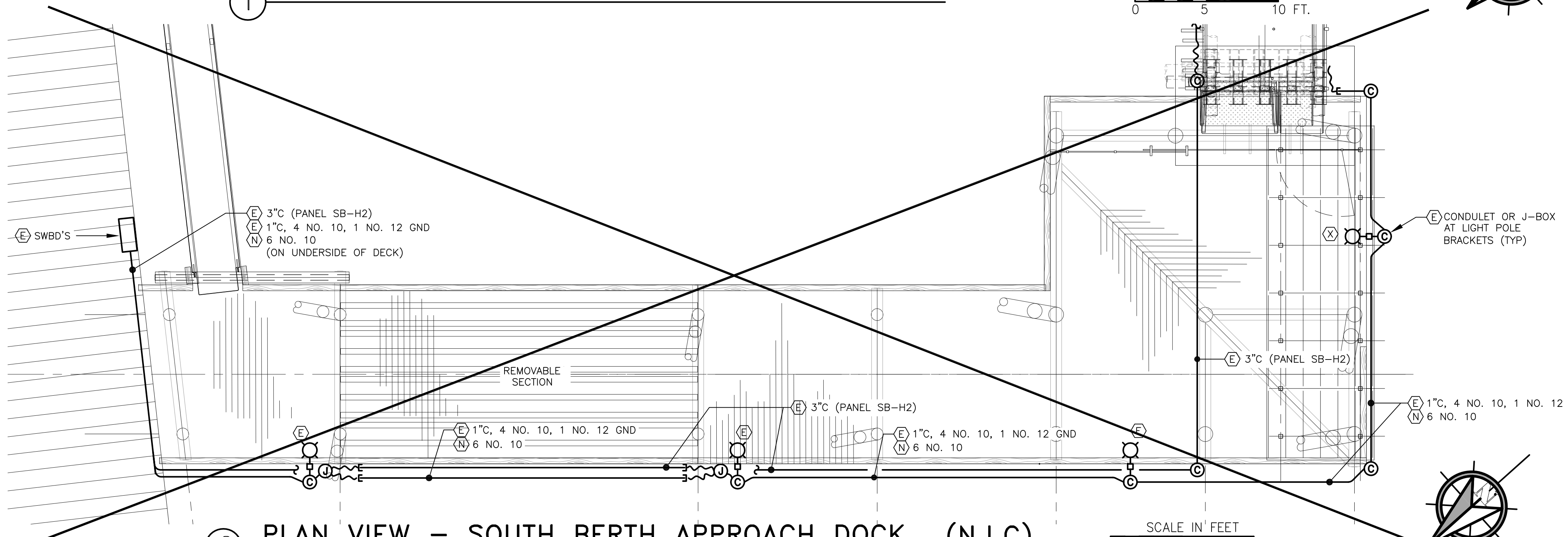
PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E1.0



1 PLAN VIEW – NORTH BERTH APPROACH DOCK

SCALE IN FEET
0 5 10 FT.



2 PLAN VIEW – SOUTH BERTH APPROACH DOCK (N.I.C)

SCALE IN FEET
0 5 10 FT.

HAIGHT & ASSOCIATES
CONSULTING ELECTRICAL ENGINEERS
526 Main Street, Juneau, AK 99801
(907) 586-9788

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CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: PLAN VIEWS

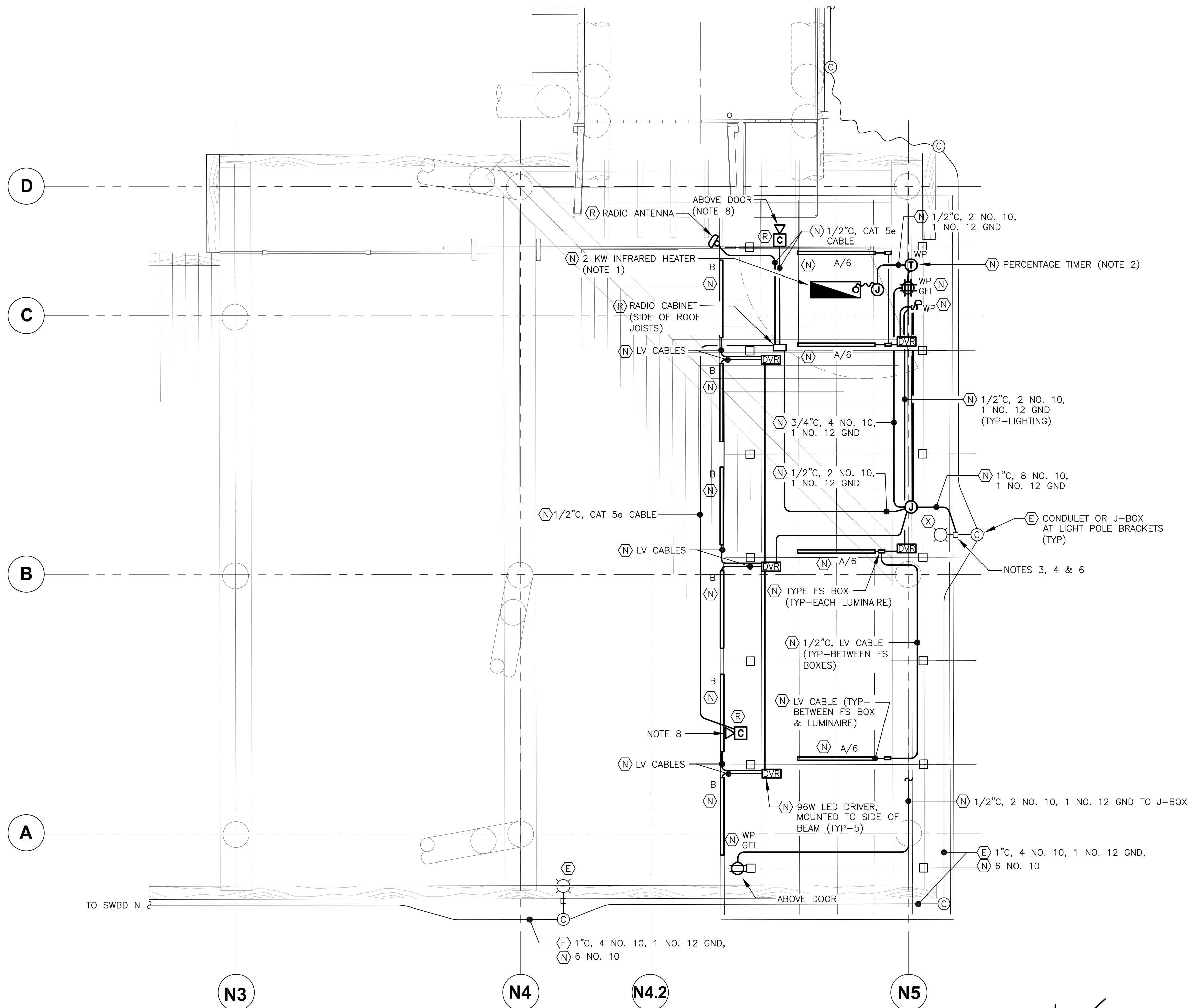
E1.1

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

Jan 25, 2019 – 3:12pm
F:\Projects\137 PN&D\125 Cruise Ship Dock Security Stations\Drawings\Working\E1.1.dwg (E1.1 tab)

NOTES:

1. SUSPEND INFRARED HEATER AT 9'–0" AFF WITH (4 EA) AIRCRAFT CABLES. BASIS OF DESIGN: Q–MARK FRS2–46S WITH (1 EA) F4MS20208 ELEMENT.
2. PERCENTAGE TIMER BASIS OF DESIGN: TORK EJWT.
3. RELOCATE CAMERAS, ANTENNAS, AND RADIO CABINET FROM REMOVED LIGHT POLE TO NEW SECURITY SHELTER. UTILIZE EXISTING CAMERA BRANCH CIRCUIT TO ENERGIZE RELOCATED RADIO CABINET. COORDINATE RADIO AND ANTENNA POSITIONING WITH OWNERS.
4. PROVIDE JUNCTION BOX ON TOP OF EXISTING LIGHT POLE BRACKET IN PLACE OF REMOVED LIGHT POLE.
5. MOUNT LOW VOLTAGE CABLES TO BEAMS WITH CABLE STRAPS, TYP.
6. SALVAGE REMOVED LIGHT POLE AND DELIVER TO OWNER.
7. LIGHTING CONTROL LOW VOLTAGE 0–10V CABLES ARE NOT SHOWN, TYPICAL. LOW VOLTAGE WIRING FOR 0–10V DIMMING SHALL BE INSTALLED WHERE DIMMING CONTROLS ARE INDICATED.
8. MOUNT RELOCATED CAMERAS TO SECURITY SHELTER EXTERIOR. SECURE TO STRUCTURAL STEEL AT 10'–0" AFF. PROVIDE MOUNTING DETAIL TO ENGINEER FOR APPROVAL PRIOR TO CAMERA MOUNTING.



1 PLAN VIEW – NORTH BERTH APPROACH DOCK

SCALE IN FEET 0 5 10 FT.

2 PHOTO – CAMERAS & RADIO EQUIPMENT

NO SCALE

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

REVISIONS

CITY & BOROUGH OF JUNEAU DOCKS & HARBORS

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DESIGN: KHD CHECKED: BCH
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SCALE: AS SHOWN

CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: **NORTH BERTH APPROACH DOCK ELECTRICAL**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E2.0

Jan 25, 2019 – 3:09pm
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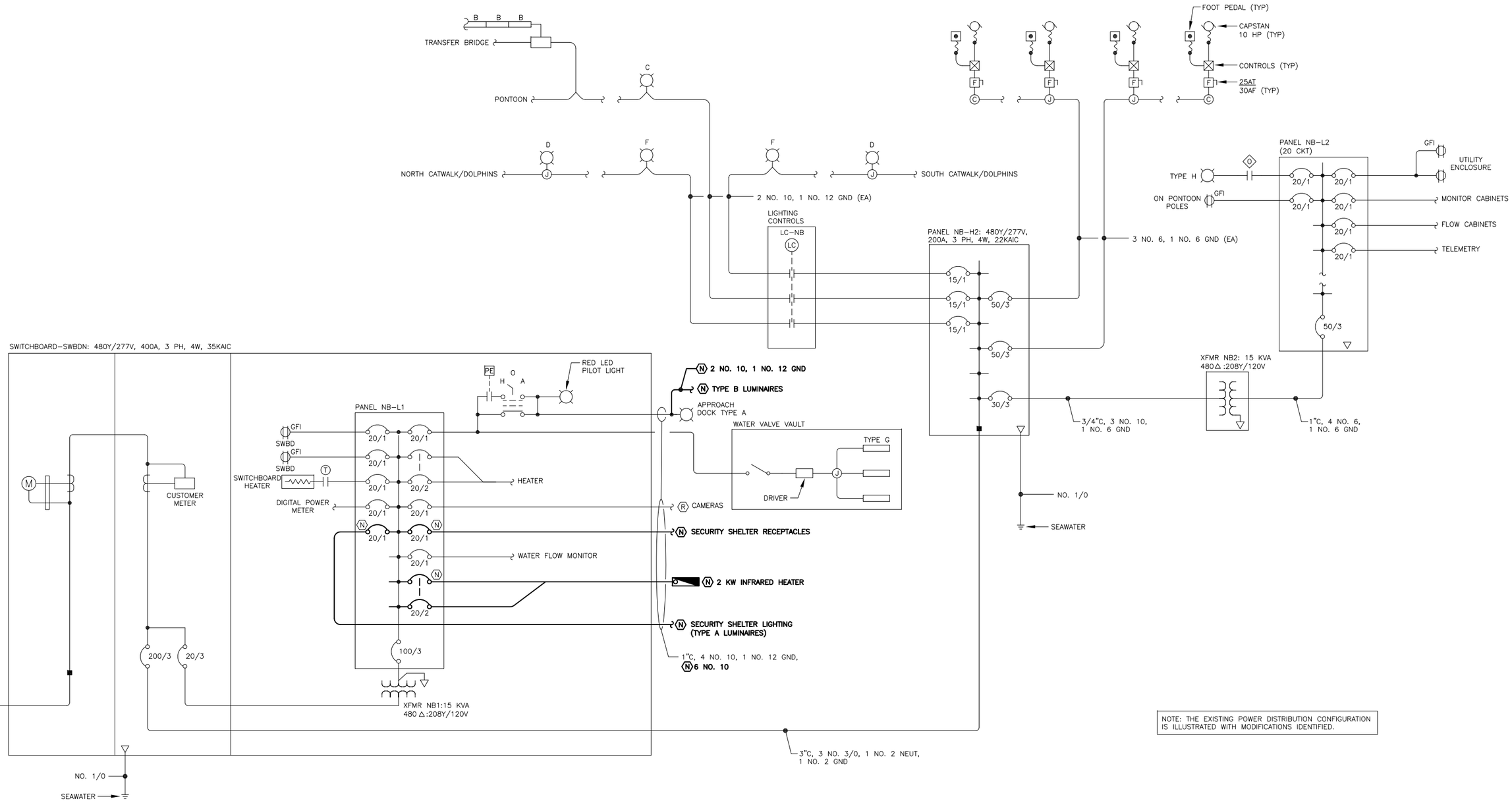

NOTE: THE EXISTING POWER DISTRIBUTION CONFIGURATION IS ILLUSTRATED WITH MODIFICATIONS IDENTIFIED.

1 SINGLE LINE DIAGRAM – NORTH BERTH DISTRIBUTION

NO SCALE

Jan 25, 2019 - 3:08pm
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25 JAN 2019

CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: **SINGLE LINE DIAGRAM - NORTH BERTH DISTRIBUTION**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E2.2

ELECTRICAL SPECIFICATIONS

GENERAL

1.1 DEFINITIONS

a. GFCI: GROUND-FAULT CIRCUIT INTERRUPTER.

b. LFMC: LIQUIDTIGHT FLEXIBLE METAL CONDUIT.

c. RSC: RIGID STEEL CONDUIT.

1.2 SUBMITTALS

a. PRODUCT DATA:

1. CONDUCTORS AND CABLES.
2. CONDUITS, RACEWAYS, AND BOXES.
3. WIRING DEVICES.
4. LUMINAIRES.
5. OVERCURRENT PROTECTIVE DEVICES.
6. HEATERS.

1.3 QUALITY ASSURANCE

a. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.

b. COMPLY WITH NFPA 70.

1.4 COORDINATION

a. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLING ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK.

b. COORDINATE LAYOUT AND INSTALLATION OF RACEWAYS, BOXES, ENCLOSURES, CABINETS, AND SUSPENSION SYSTEM WITH OTHER CONSTRUCTION THAT IS SUPPORTED BY THE STRUCTURE, INCLUDING LIGHT FIXTURES, AND HEATERS.

1.5 FIELD QUALITY CONTROL

a. INSPECT INSTALLED COMPONENTS FOR DAMAGE AND FAULTY WORK, INCLUDING THE FOLLOWING:

1. SUPPORTING DEVICES FOR ELECTRICAL COMPONENTS.
2. ELECTRICAL IDENTIFICATION.
3. ELECTRICAL DEMOLITION.
4. TOUCHUP PAINTING.

b. WIRING DEVICES:

1. AFTER INSTALLING WIRING DEVICES AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST FOR PROPER POLARITY, GROUND CONTINUITY, AND COMPLIANCE WITH REQUIREMENTS.
2. TEST GFCI OPERATION WITH BOTH LOCAL AND REMOTE FAULT SIMULATIONS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

1.6 REFINISHING AND TOUCHUP PAINTING

a. REFINISH AND TOUCHUP PAINT.

1. CLEAN DAMAGED AND DISTURBED AREAS AND APPLY PRIMER, INTERMEDIATE, AND FINISH COATS TO SUIT THE DEGREE OF DAMAGE AT EACH LOCATION.
2. FOLLOW PAINT MANUFACTURER'S WRITTEN INSTRUCTIONS FOR SURFACE PREPARATION AND FOR TIMING AND APPLICATION OF SUCCESSIVE COATS.
3. REPAIR DAMAGE TO GALVANIZED FINISHES WITH ZINC-RICH PAINT RECOMMENDED BY MANUFACTURER.
4. REPAIR DAMAGE TO PAINT FINISHES WITH MATCHING TOUCHUP COATING RECOMMENDED BY MANUFACTURER.

1.7 CLEANING AND PROTECTION

a. ON COMPLETION OF INSTALLATION, INCLUDING OUTLETS, FITTINGS, AND DEVICES, INSPECT EXPOSED FINISH. REMOVE BURRS, DIRT, PAINT SPOTS, AND CONSTRUCTION DEBRIS.

b. PROTECT EQUIPMENT AND INSTALLATIONS AND MAINTAIN CONDITIONS TO ENSURE THAT COATINGS, FINISHES, AND CABINETS ARE WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.

BASIC MATERIALS AND METHODS

1.1 SUPPORTING DEVICES

a. METAL ITEMS FOR USE OUTDOORS, IN DAMP LOCATIONS, OR IN CORROSIVE ENVIRONMENTS: HOT-DIP GALVANIZED STEEL, OR STAINLESS STEEL.

b. SLOTTED-STEEL CHANNEL SUPPORTS: FLANGE EDGES TURNED TOWARD WEB, AND 9/16-INCH-DIAMETER SLOTTED HOLES AT A MAXIMUM OF 2 INCHES O.C., IN WEBS.

1. CHANNEL THICKNESS: SELECTED TO SUIT STRUCTURAL LOADING.
2. FITTINGS AND ACCESSORIES: PRODUCTS OF THE SAME MANUFACTURER AS CHANNEL SUPPORTS.

c. RACEWAY AND CABLE SUPPORTS: MANUFACTURED STRAPS, THREADED C-CLAMPS WITH RETAINERS, CEILING TRAPEZE HANGERS, AND WALL BRACKETS.

d. ELECTRICAL EQUIPMENT INSTALLATION:

1. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
2. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS.

e. ELECTRICAL SUPPORTING DEVICE APPLICATION:

1. DAMP LOCATIONS AND OUTDOORS: HOT-DIP GALVANIZED MATERIALS OR STAINLESS STEEL MATERIALS, U-CHANNEL SYSTEM COMPONENTS.
2. SELECTION OF SUPPORTS: COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. STRENGTH OF SUPPORTS: ADEQUATE TO CARRY PRESENT AND FUTURE LOADS, TIME A SAFETY FACTOR OF AT LEAST FOUR; MINIMUM OF 200-LB DESIGN LOAD.

f. SUPPORT INSTALLATION:

1. INSTALL SUPPORT DEVICES TO SECURELY AND PERMANENTLY FASTEN AND SUPPORT ELECTRICAL COMPONENTS.
2. INSTALL INDIVIDUAL AND MULTIPLE RACEWAY HANGERS AND RISER CLAMPS TO SUPPORT RACEWAYS. PROVIDE U-BOLTS, CLAMPS, ATTACHMENTS, AND OTHER HARDWARE NECESSARY FOR HANGER ASSEMBLIES AND FOR SECURING HANGER RODS AND CONDUITS.
3. SUPPORT PARALLEL RUNS OF HORIZONTAL RACEWAYS TOGETHER ON TRAPEZE- OR BRACKET-TYPE HANGERS.
4. SIZE SUPPORTS FOR MULTIPLE RACEWAY INSTALLATIONS SO CAPACITY CAN BE INCREASED BY A 25 PERCENT MINIMUM IN THE FUTURE.
5. SUPPORT INDIVIDUAL HORIZONTAL RACEWAYS SEPARATE, MALLEABLE-IRON PIPE HANGERS OR CLAMPS.
6. SEPARATELY SUPPORT CAST BOXES THAT ARE THREADED TO RACEWAYS AND USED FOR FIXTURE SUPPORT.
7. INSTALL METAL CHANNEL RACKS FOR MOUNTING CABINETS, PANELBOARDS, DISCONNECT SWITCHES, CONTROL ENCLOSURES, PULL AND JUNCTION BOXES, TRANSFORMERS, AND OTHER DEVICES, UNLESS COMPONENTS ARE MOUNTED DIRECTLY TO STRUCTURAL ELEMENTS OF ADEQUATE STRENGTH.
8. SECURELY FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO THE BUILDING STRUCTURE, UNLESS OTHERWISE INDICATED. PERFORM FASTENING ACCORDING TO THE FOLLOWING UNLESS OTHER FASTENING METHODS ARE INDICATED:

1.2 IDENTIFICATION

a. IDENTIFICATION DEVICES: A SINGLE TYPE OF IDENTIFICATION PRODUCT FOR EACH APPLICATION CATEGORY. USE COLORS PRESCRIBED BY ANSI A13.1, NFPA 70, AND THESE SPECIFICATIONS.

b. TAPE MARKERS FOR WIRE: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE WITH PREPRINTED NUMBERS AND LETTERS.

c. INSTALLATION:

1. INSTALL AT LOCATIONS FOR MOST CONVENIENT VIEWING WITHOUT INTERFERENCE WITH OPERATION AND MAINTENANCE OF EQUIPMENT.
2. SELF-ADHESIVE IDENTIFICATION PRODUCTS: CLEAN SURFACES BEFORE APPLYING.
3. COLOR-CODE 208/120-V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM AS FOLLOWS:
   a. PHASE A: BLACK
   b. PHASE B: RED
   c. PHASE C: BLUE

1.3 DEMOLITION

a. PROTECT EXISTING ELECTRICAL EQUIPMENT AND INSTALLATIONS INDICATED TO REMAIN. IF DAMAGED OR DISTURBED IN THE COURSE OF THE WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY, AND FUNCTIONALITY.

b. ACCESSIBLE WORK: REMOVE EXPOSED ELECTRICAL EQUIPMENT AND INSTALLATIONS, INDICATED TO BE DEMOLISHED, IN THEIR ENTIRETY.

c. REMOVE DEMOLISHED MATERIAL FROM PROJECT SITE.

d. REMOVE, STORE, CLEAN, REINSTALL, RECONNECT, AND MAKE OPERATIONAL COMPONENTS INDICTED FOR RELOCATION.

1.4 CUTTING AND PATCHING

a. CUT, CHANNEL, CHASE, AND DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, AND OTHER SURFACES REQUIRED TO PERMIT ELECTRICAL INSTALLATIONS. PERFORM CUTTING BY SKILLED MECHANICS OF TRADES INVOLVED.

b. REPAIR AND REFINISH DISTURBED FINISH MATERIALS AND OTHER SURFACES TO MATCH ADJACENT UNDISTURBED SURFACES. INSTALL NEW FIREPROOFING WHERE EXISTING FIRESTOPPING HAS BEEN DISTURBED. REPAIR AND REFINISH MATERIALS AND OTHER SURFACES BY SKILLED MECHANICS OF TRADES INVOLVED.

1.5 TOUCHUP PAINT

a. FOR EQUIPMENT: EQUIPMENT MANUFACTURER'S PAINT SELECTED TO MATCH INSTALLED EQUIPMENT FINISH.

b. GALVANIZED SURFACES: ZINC-RICH PAINT RECOMMENDED BY ITEM MANUFACTURER.

GROUNDING

1.1 GROUNDING CONDUCTORS

a. MATERIAL: COPPER, ONLY.

b. EQUIPMENT GROUNDING CONDUCTORS: INSULATED WITH GREEN-COLORED INSULATION.

1.2 CONNECTOR PRODUCTS

a. COMPLY WITH IEEE 837 AND UL 467; LISTED FOR USE FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND CONNECTED ITEMS.

b. BOLTED CONNECTORS: BOLTED-PRESSURE-TYPE CONNECTORS, OR COMPRESSION TYPE.

c. CRIMPED CONNECTORS: HIGH COMPRESSION TYPE, IN KIT FORM, AND SELECTED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

1.3 INSTALLATION

a. IN RACEWAYS, USE INSULATED EQUIPMENT GROUNDING CONDUCTORS.

b. EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS: USE BOLTED PRESSURE CLAMPS.

CONDUCTORS AND CABLES

1.1 CONDUCTOR AND CABLE MATERIAL

a. COPPER COMPLYING WITH NEMA WC 5 OR 7; STRANDED COPPER.

b. INSULATION TYPES: TYPE XHHW COMPLYING WITH NEMA WC 5 OR 7.

1.2 CONDUCTOR AND INSULATION APPLICATIONS

a. EXPOSED BRANCH CIRCUITS, TYPE XHHW, SINGLE CONDUCTORS IN RACEWAY.

b. COORDINATE CONDUCTOR INSULATION TEMPERATURE RATING AND AMPACITY RATING WITH THE TEMPERATURE AND AMPACITY RATING OF THEIR CIRCUIT PROTECTION DEVICES.

c. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.

d. MAKE SPLICES AND TAPS THAT ARE COMPATIBLE WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UNSPLICED CONDUCTORS.

1. USE OXIDE INHIBITOR IN EACH SPLICE AND TAP CONDUCTOR FOR ALL CONDUCTORS.

e. WIRING AT OUTLETS: INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 6 INCHES OF SLACK.

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137 / 125 — B.C. HAIGHT — 25 JAN 2019

CRUISE SHIP BERTH
SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: ELECTRICAL SPECIFICATIONS

E9.0

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

Jan 25, 2019 – 3:08pm
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ELECTRICAL SPECIFICATIONS (CONT.)

RACEWAYS

1.1 CONDUIT AND TUBING

a. RIGID STEEL CONDUIT: ANSI C80.1

b. LFMC: FLEXIBLE STEEL CONDUIT WITH PVC JACKET, FEDERAL SPECIFICATION W-C-566C.

c. FITTINGS: NEMA FB 1; COMPATIBLE WITH CONDUIT AND TUBING MATERIALS.

1.2 INSTALLATION

a. OUTDOORS:

1. EXPOSED: RIGID STEEL.

2. BOXES AND ENCLOSURES: NEMA 250, TYPE 3R OR 4.

b. MINIMUM RACEWAY SIZE: ½-INCH TRADE SIZE.

c. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION.

1. RIGID STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS, UNLESS OTHERWISE INDICATED.

d. INSTALL EXPOSED RACEWAYS, AND RACEWAYS WITHIN ACCESSIBLE SPACES, PARALLEL OR AT RIGHT ANGLES TO NEARBY SURFACES OR STRUCTURAL MEMBERS AND FOLLOW SURFACE CONTOURS AS MUCH AS POSSIBLE.

1. RUN PARALLEL OR BANKED RACEWAYS TOGETHER ON COMMON SUPPORTS.

2. MAKE PARALLEL BENDS IN PARALLEL OR BANKED RUNS. USE FACTORY ELBOWS ONLY WHERE ELBOWS CAN BE INSTALLED PARALLEL; OTHERWISE, PROVIDE FIELD BENDS FOR PARALLEL RACEWAYS.

e. JOIN RACEWAYS WITH FITTINGS DESIGNED AND APPROVED FOR THAT PURPOSE AND MAKE JOINTS TIGHT.

1. USE INSULATING BUSHINGS TO PROTECT CONDUCTORS.

f. TIGHTEN SET SCREWS OF THREADLESS FITTINGS WITH SUITABLE TOOLS.

g. TERMINATIONS:

1. WHERE RACEWAYS ARE TERMINATED WITH LOCKNUTS AND BUSHINGS, ALIGN RACEWAYS TO ENTER SQUARELY AND INSTALL LOCKNUTS WITH DISHED PART AGAINST BOX. USE TWO LOCKNUTS, ONE INSIDE AND ONE OUTSIDE BOX.

2. WHERE RACEWAYS ARE TERMINATED WITH THREADED HUBS, SCREW RACEWAYS OR FITTINGS TIGHTLY INTO HUB SO END BEARS AGAINST WIRE PROTECTION SHOULDER. WHERE CHASE NIPPLES ARE USED, ALIGN RACEWAYS SO COUPLING IS SQUARE TO BOX; TIGHTEN CHASE NIPPLE SO NO THREADS ARE EXPOSED.

BOXES, ENCLOSURES, AND CABINETS

1.1 CAST-METAL OUTLET AND DEVICE BOXES: NEMA FB 1, TYPE FD, WITH GASKETED COVER.

1.2 CAST-METAL PULL AND JUNCTION BOXES: NEMA FB 1, CAST IRON WITH GASKETED COVER.

WIRING DEVICES

1.1 RECEPTACLES

h. GFCI RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE, HEAVY-DUTY GRADE, WITH INTEGRAL NEMA WD 6, CONFIGURATION 5-20R DUPLEX RECEPTACLE; COMPLYING WITH UL 498 AND UL 943. DESIGN UNITS FOR INSTALLATION IN A 2-3/4-INCH-DEEP OUTLET BOX WITHOUT AN ADAPTER.

1.2 SWITCHES

a. SINGLE- AND DOUBLE-POLE SWITCHES: COMPLY WITH DSCC W-C-896F AND UL 20. HEAVY-DUTY GRADE, QUIET TYPE.

1.3 WALL PLATES

a. SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES.

1. PLATE-SECURING SCREWS: METAL WITH HEAD COLOR TO MATCH PLATE FINISH.

2. MATERIAL FOR WET LOCATIONS: CAST ALUMINUM WITH SPRING-LOADED LIFT COVER, AND LISTED AND LABELED FOR USE IN "WET LOCATIONS". COVERS HINGED TO OPERATE VERTICALLY.

1.4 INSTALLATION

a. INSTALL DEVICES AND ASSEMBLIES LEVEL, PLUMB, AND SQUARE WITH BUILDING LINES.

b. ARRANGEMENT OF DEVICES: UNLESS OTHERWISE INDICATED, SURFACE MOUNT, WITH LONG DIMENSION VERTICAL, AND WITH GROUNDING TERMINAL OF RECEPTACLES ON BOTTOM. GROUP ADJACENT SWITCHES UNDER SINGLE, MULTIGANG WALL PLATES.

LIGHTING

1.1 INSTALLATION

a. FIXTURES: SET LEVEL, PLUMB, AND SQUARE WITH THE BUILDING STRUCTURE.

Jan 25, 2019 - 3:11pm
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CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: ELECTRICAL SPECIFICATIONS

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E9.1

LEGEND

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
DVR	DRIVER
GFI	GROUND FAULT INTERRUPTED
LV	LOW VOLTAGE
PE	PHOTOELECTRIC CELL
UON	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF

SHEET NOTE SYMBOLS:

- (E) EXISTING TO REMAIN
- (N) NEW
- (X) REMOVE EXISTING

POWER:

- DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE, 46" AFF
- DUPLEX 30A SHORE-TIE PEDESTAL
- (J) JUNCTION BOX
- (C) CONDULET OR CONDUIT BODY
- (T) THERMOSTAT, 46" AFF
- HEATER

DIAGRAM SYMBOLS:

- CIRCUIT BREAKER
- CONTACT
- DISCONNECT OR SWITCH
- GROUND BUS
- GROUND ROD
- (M) METER
- TERMINAL BLOCK
- CURRENT TRANSFORMER
- TRANSFORMER
- HEATER

LIGHTING:

- SURFACE OR SUSPENDED LINEAR LUMINAIRE
- EXTERIOR POLE MOUNTED LUMINAIRE

LIGHTING CONTROLS:

S	SINGLE POLE SWITCH
S_D	DIMMER SWITCH
LC	LIGHTING CONTACTOR
PE	PHOTOELECTRIC CELL

SECURITY DEVICES:

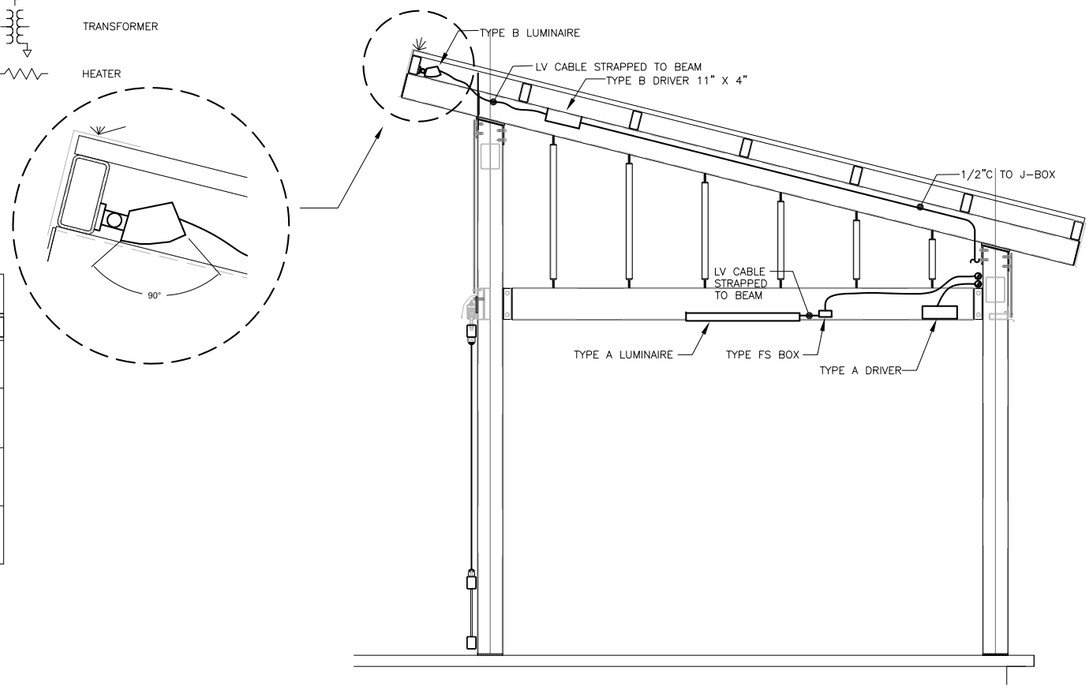
- C CAMERA

CONDUIT & CONDUCTORS:

- HOME RUN
- CONDUIT: 1/2" UON.
- UNGROUNDED CONDUCTORS (#12 AWG)
- NEUTRAL: #10 WITH DOT, #12 OTHERWISE
- GROUND CONDUCTOR
- CONDUCTORS NOT SHOWN WHERE ONLY #12 NEUTRAL AND UNGROUNDED CONDUCTOR ARE REQUIRED
- FLEXIBLE CONDUIT

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	LAMPS	REMARKS
A/6	6' SIDE SURFACE MOUNTED EXTERIOR RATED LINEAR LED, ALUMINUM HOUSING, ACRYLIC LENS, 60° SYMMETRIC DISTRIBUTION, REMOTE ELECTRONIC DRIVER, BLACK FINISH	IO LIGHTING 0.05.E.4K.60.101.2.72.3	7.12W/FT VHO WHITE LED 4000K, CRI 70	MOUNT TO SIDE OF BEAM SO LENS IS JUST BELOW BEAM.
B	6' SURFACE MOUNTED EXTERIOR RATED LINEAR LED, ALUMINUM HOUSING, FIELD ADJUSTABLE BRACKET, ACRYLIC LENS, 90° ASYMMETRIC DISTRIBUTION, REMOTE ELECTRONIC DRIVER, ANODISED ALUMINUM FINISH	IO LIGHTING 0.04.E.4K.90ASYM.102.1.72.1	3.52W/FT HO WHITE LED 4000K, CRI 70	MOUNT TO ROOF JOISTS BETWEEN BEAMS. PROVIDE BRACKETS TO MOUNT LUMINAIRE LEVEL WITH TIMBER DECKING. – SEE DETAIL
DVR	11x4x4 ENCLOSURE WITH LED DRIVER, 96W INPUT, 24V OUTPUT	IO LIGHTING 96ND-.75-11x4x4	--	MOUNT TO SIDE OF BEAM.
S_D	0-10V DIMMER SWITCH, INTEGRATED POWER PACK, 120V, 5A, GRAY FINISH	LEGRAND CD4FBLGRY	--	



1 DETAIL – TYPES A & B LUMINAIRE MOUNTING (TYP)

SCALE IN FEET
0 2 4 FT.

CITY & BOROUGH OF JUNEAU DOCKS & HARBORS

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137 125 QP ALASKA HAIGHT BCH 29 MAR 2019

CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: ELECTRICAL LEGEND & SCHEDULE

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E1.0

Mar 28, 2019 - 9:09am
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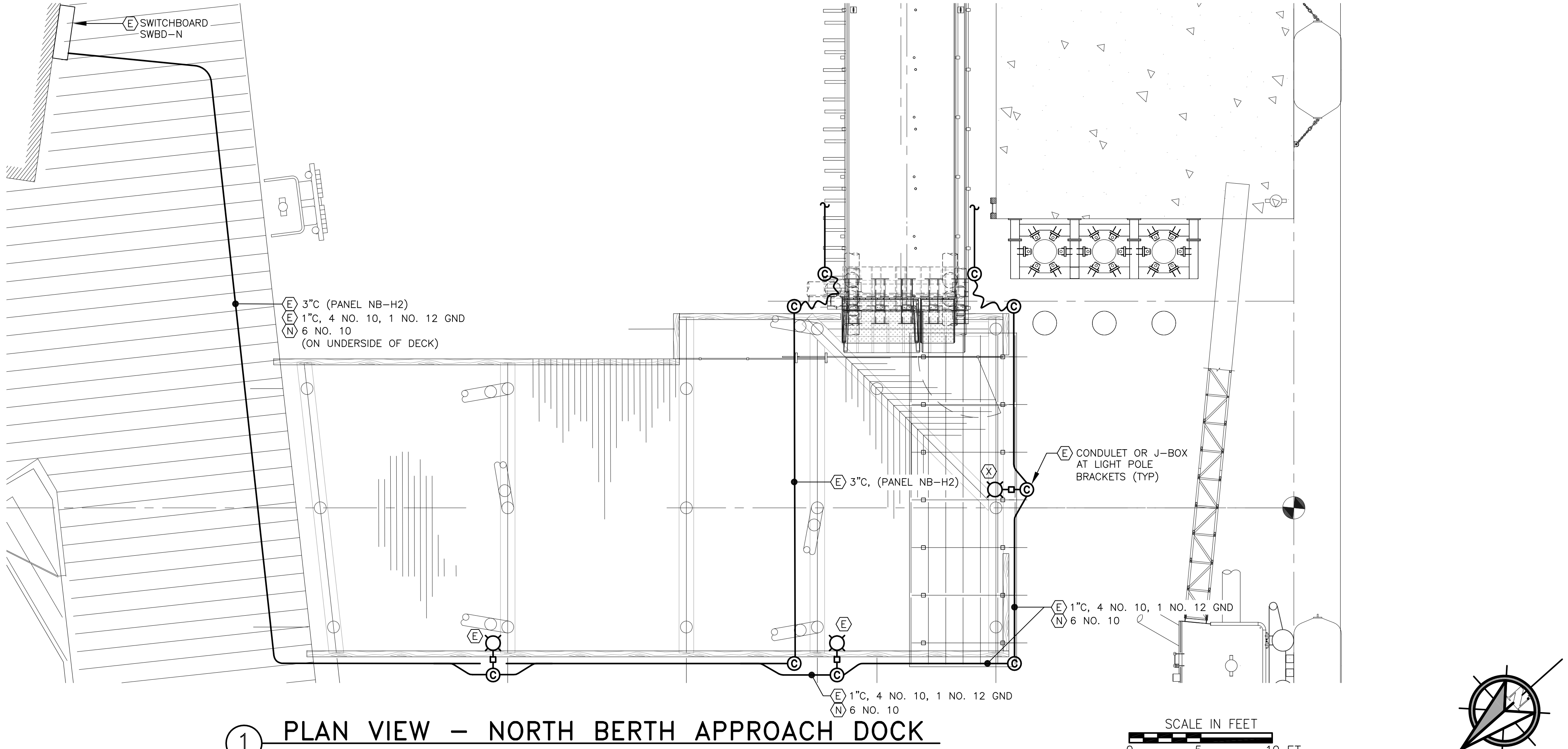
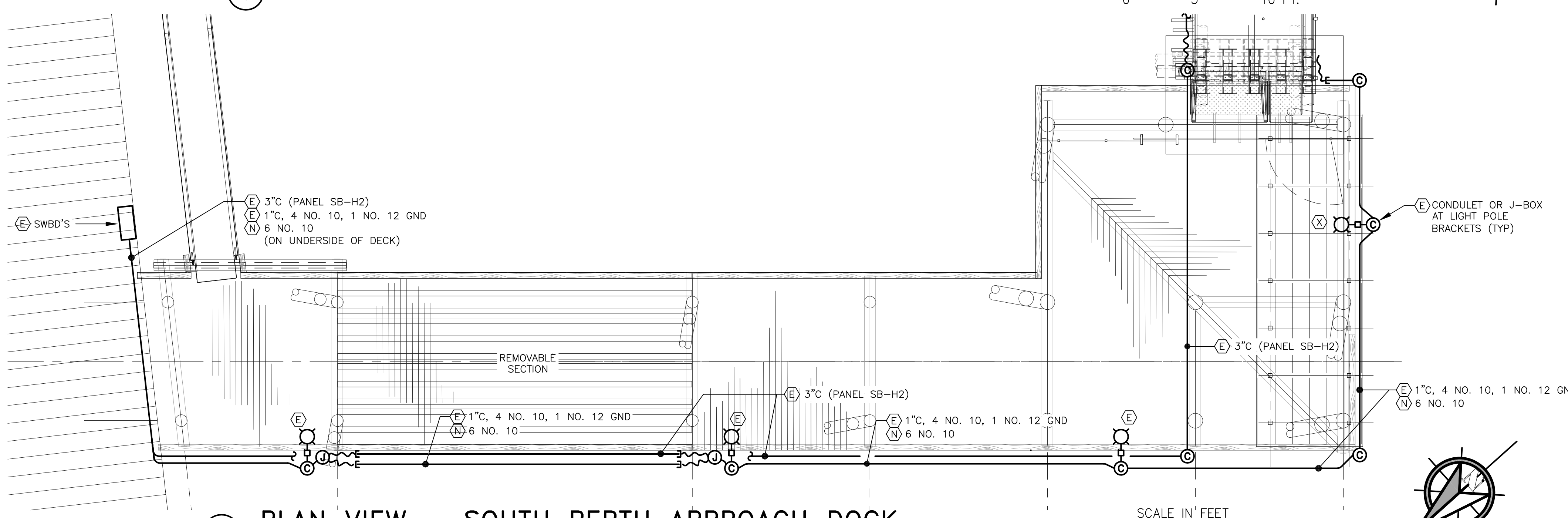


① PLAN VIEW – NORTH BERTH APPROACH DOCK

SCALE IN FEET
0 5 10 FT.



② PLAN VIEW – SOUTH BERTH APPROACH DOCK

SCALE IN FEET
0 5 10 FT.

HAIGHT
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CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: PLAN VIEWS

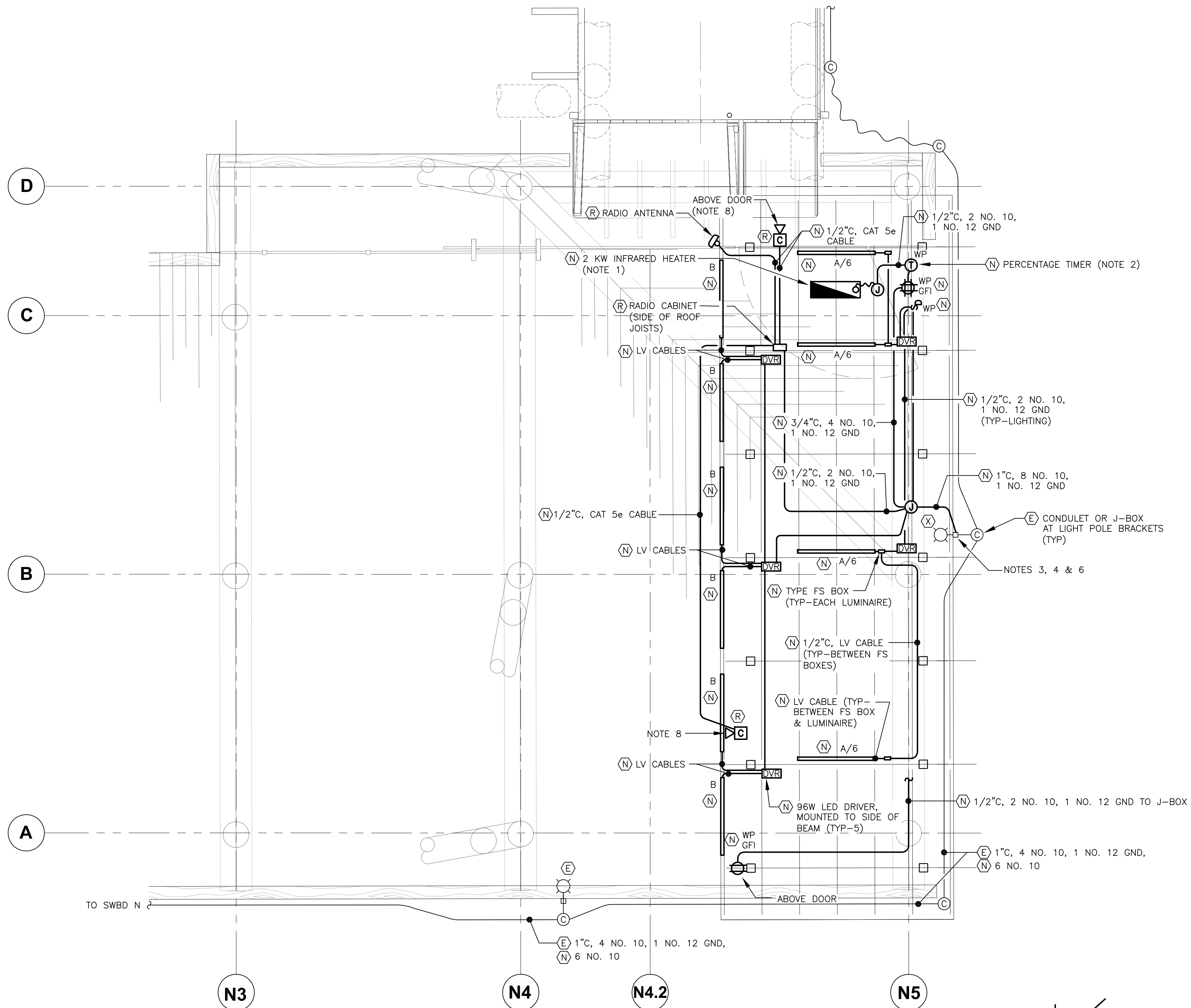
E1.1

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

Mar 29, 2019 – 9:10am
F:\Projects\137 PN&D\125 Cruise Ship Dock Security Stations\Drawings\Working\E1.1.dwg (E1.1 tab)

NOTES:

1. SUSPEND INFRARED HEATER AT 9'–0" AFF WITH (4 EA) AIRCRAFT CABLES. BASIS OF DESIGN: Q–MARK FRS2–46S WITH (1 EA) F4MS20208 ELEMENT.
2. PERCENTAGE TIMER BASIS OF DESIGN: TORK EJWT.
3. RELOCATE CAMERAS, ANTENNAS, AND RADIO CABINET FROM REMOVED LIGHT POLE TO NEW SECURITY SHELTER. UTILIZE EXISTING CAMERA BRANCH CIRCUIT TO ENERGIZE RELOCATED RADIO CABINET. COORDINATE RADIO AND ANTENNA POSITIONING WITH OWNERS.
4. PROVIDE JUNCTION BOX ON TOP OF EXISTING LIGHT POLE BRACKET IN PLACE OF REMOVED LIGHT POLE.
5. MOUNT LOW VOLTAGE CABLES TO BEAMS WITH CABLE STRAPS, TYP.
6. SALVAGE REMOVED LIGHT POLE AND DELIVER TO OWNER.
7. LIGHTING CONTROL LOW VOLTAGE 0–10V CABLES ARE NOT SHOWN, TYPICAL. LOW VOLTAGE WIRING FOR 0–10V DIMMING SHALL BE INSTALLED WHERE DIMMING CONTROLS ARE INDICATED.
8. MOUNT RELOCATED CAMERAS TO SECURITY SHELTER EXTERIOR. SECURE TO STRUCTURAL STEEL AT 10'–0" AFF. PROVIDE MOUNTING DETAIL TO ENGINEER FOR APPROVAL PRIOR TO CAMERA MOUNTING.



1 PLAN VIEW – NORTH BERTH APPROACH DOCK

SCALE IN FEET 0 5 10 FT.

2 PHOTO – CAMERAS & RADIO EQUIPMENT

NO SCALE

Mar 29, 2019 – 9:11am
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REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

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DESIGN: KHD CHECKED: BCH
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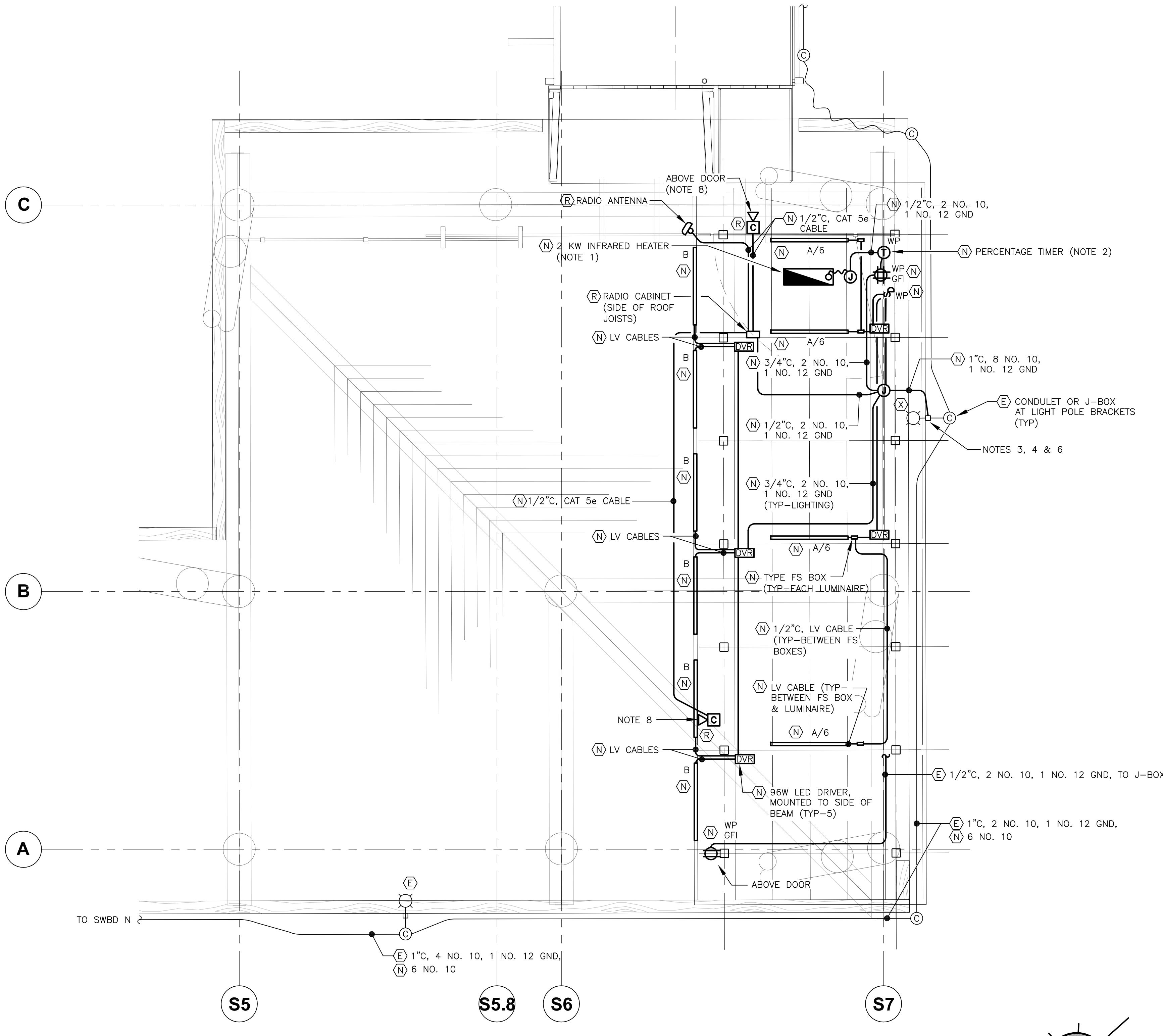
SCALE: AS SHOWN

CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: NORTH BERTH APPROACH DOCK ELECTRICAL

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E2.0



1 PLAN VIEW – SOUTH BERTH APPROACH DOCK

NOTES:

1. SUSPEND INFRARED HEATER AT 9'–0" AFF WITH (4 EA) AIRCRAFT CABLES. BASIS OF DESIGN: Q–MARK FRS2–46S WITH (1 EA) F4MS20208 ELEMENT.
2. PERCENTAGE TIMER BASIS OF DESIGN: TORK EJWT.
3. RELOCATE CAMERAS, ANTENNAS, AND RADIO CABINET FROM REMOVED LIGHT POLE TO NEW SECURITY SHELTER. UTILIZE EXISTING CAMERA BRANCH CIRCUIT TO ENERGIZE RELOCATED CAMERAS AND RADIO CABINET. COORDINATE RADIO AND ANTENNA POSITIONING WITH OWNERS.
4. PROVIDE JUNCTION BOX ON TOP OF EXISTING LIGHT POLE BRACKET IN PLACE OF REMOVED LIGHT POLE.
5. MOUNT LOW VOLTAGE CABLES TO BEAMS WITH CABLE STRAPS, TYP.
6. SALVAGE REMOVED LIGHT POLE AND DELIVER TO OWNER.
7. LIGHTING CONTROL LOW VOLTAGE 0–10V CABLES ARE NOT SHOWN, TYPICAL. LOW VOLTAGE WIRING FOR 0–10V DIMMING SHALL BE INSTALLED WHERE DIMMING CONTROLS ARE INDICATED.
8. MOUNT RELOCATED CAMERAS TO SECURITY SHELTER EXTERIOR. SECURE TO STRUCTURAL STEEL AT 10'–0" AFF. PROVIDE MOUNTING DETAIL TO ENGINEER FOR APPROVAL PRIOR TO CAMERA MOUNTING.

2 PHOTO – CAMERAS & RADIO EQUIPMENT

NO SCALE

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CITY & BOROUGH OF JUNEAU — DOCKS & HARBORS

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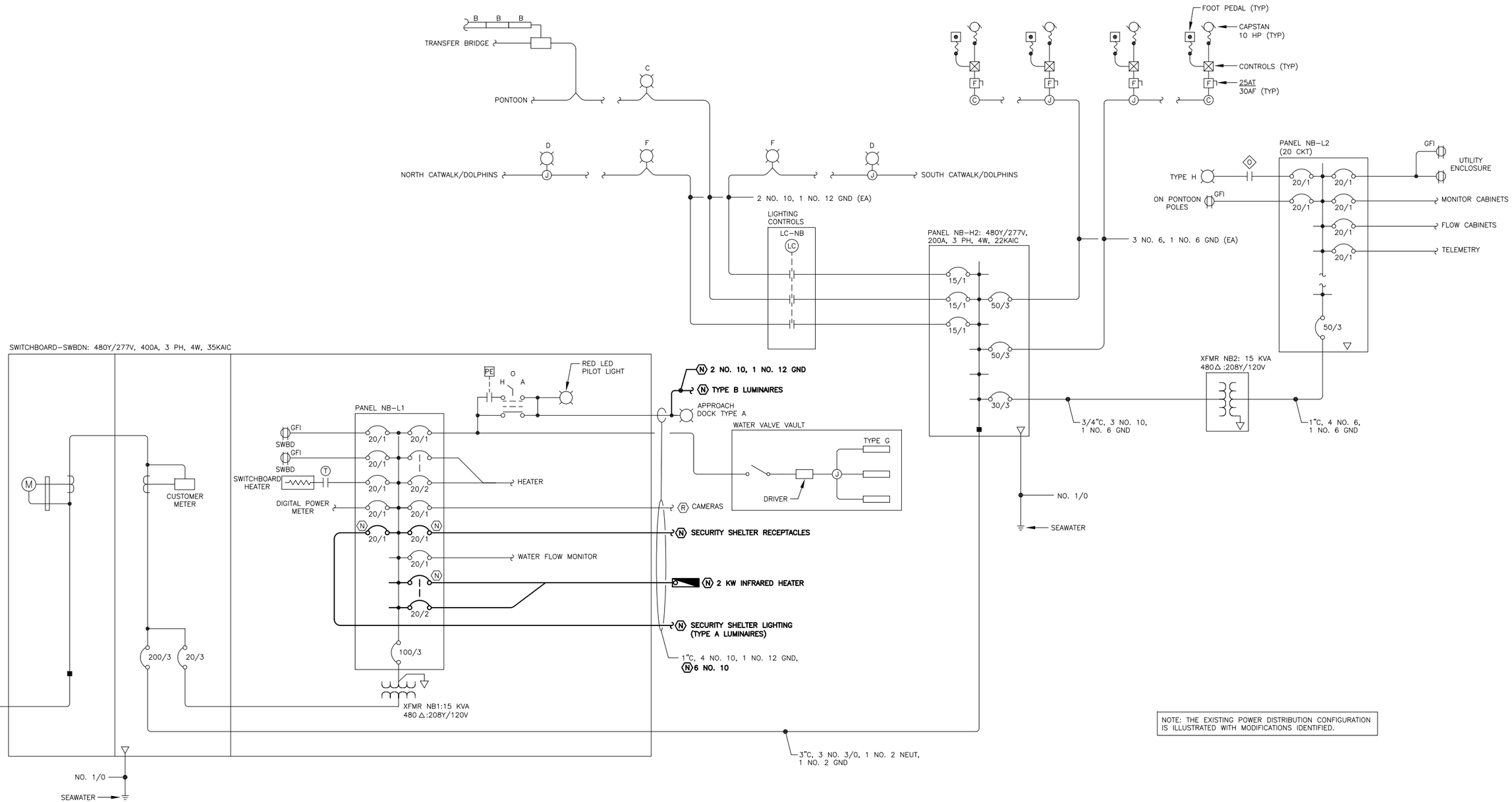
CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: SOUTH BERTH APPROACH DOCK ELECTRICAL

PND PROJECT NO.: 182120
C.A.N. NO.: AECC250

E2.1



NOTE: THE EXISTING POWER DISTRIBUTION CONFIGURATION IS ILLUSTRATED WITH MODIFICATIONS IDENTIFIED.

1 SINGLE LINE DIAGRAM – NORTH BERTH DISTRIBUTION

NO SCALE

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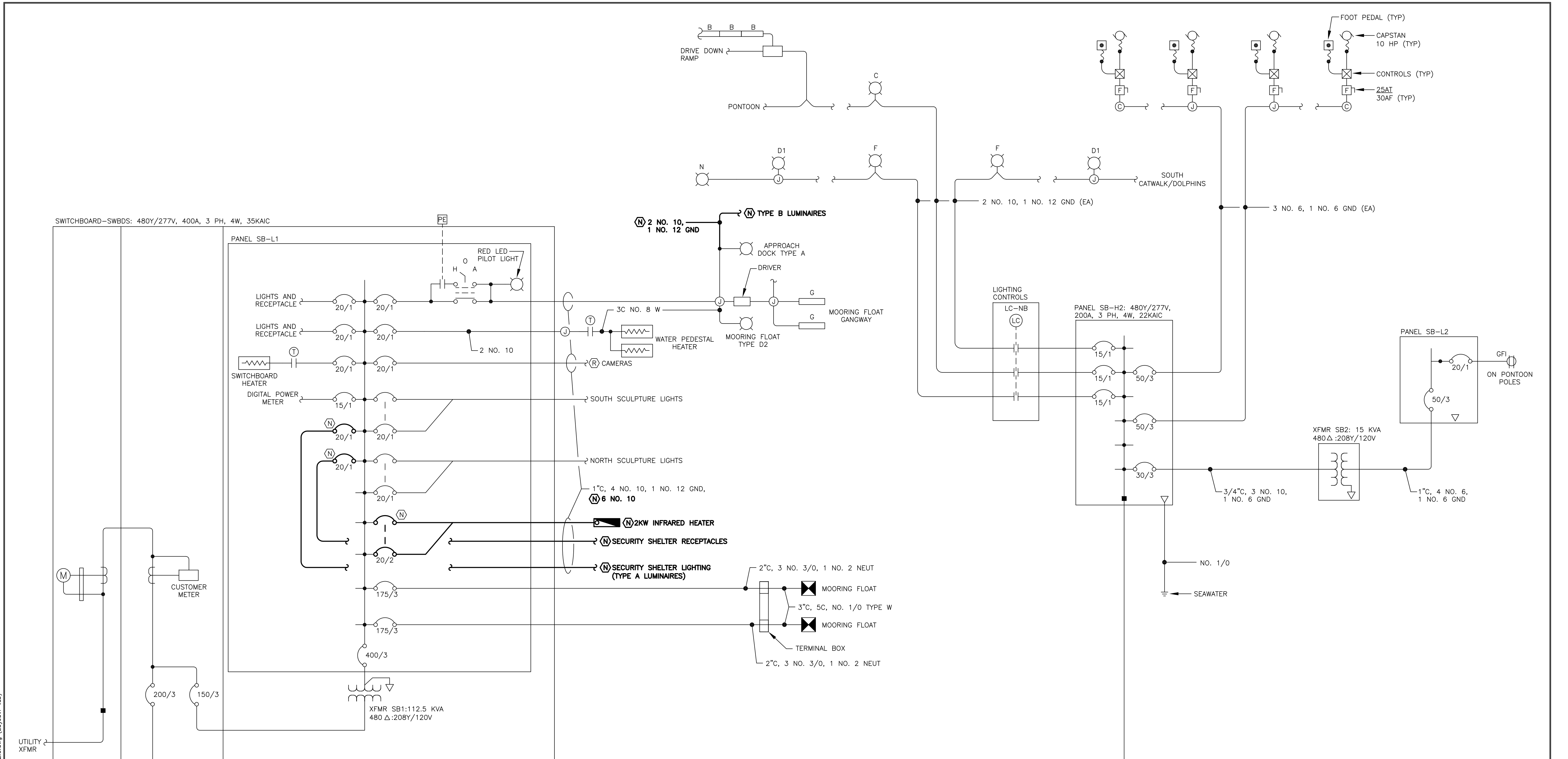
137 125
STATE OF ALASKA
B.C. HAIGHT
EE 8804
29 MAR 2019

CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: **SINGLE LINE DIAGRAM - NORTH BERTH DISTRIBUTION**

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E2.2



NOTE: THE EXISTING POWER DISTRIBUTION CONFIGURATION IS ILLUSTRATED WITH MODIFICATIONS IDENTIFIED.

1 SINGLE LINE DIAGRAM – SOUTH BERTH DISTRIBUTION

NO SCALE

HAIGHT & ASSOCIATES
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CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: **SINGLE LINE DIAGRAM - SOUTH BERTH DISTRIBUTION**

E2.3

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

Mar 29, 2019 – 9:16am
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ELECTRICAL SPECIFICATIONS

GENERAL

1.1 DEFINITIONS
- a. GFCI: GROUND-FAULT CIRCUIT INTERRUPTER.
- b. LFMC: LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
- c. RSC: RIGID STEEL CONDUIT.

1.2 SUBMITTALS
- a. PRODUCT DATA:
  1. CONDUCTORS AND CABLES.
  2. CONDUITS, RACEWAYS, AND BOXES.
  3. WIRING DEVICES.
  4. LUMINAIRES.
  5. OVERCURRENT PROTECTIVE DEVICES.
  6. HEATERS.

1.3 QUALITY ASSURANCE
- a. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
- b. COMPLY WITH NFPA 70.

1.4 COORDINATION
- a. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLING ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK.
- b. COORDINATE LAYOUT AND INSTALLATION OF RACEWAYS, BOXES, ENCLOSURES, CABINETS, AND SUSPENSION SYSTEM WITH OTHER CONSTRUCTION THAT IS SUPPORTED BY THE STRUCTURE, INCLUDING LIGHT FIXTURES, AND HEATERS.

1.5 FIELD QUALITY CONTROL
- a. INSPECT INSTALLED COMPONENTS FOR DAMAGE AND FAULTY WORK, INCLUDING THE FOLLOWING:
  1. SUPPORTING DEVICES FOR ELECTRICAL COMPONENTS.
  2. ELECTRICAL IDENTIFICATION.
  3. ELECTRICAL DEMOLITION.
  4. TOUCHUP PAINTING.
- b. WIRING DEVICES:
  1. AFTER INSTALLING WIRING DEVICES AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST FOR PROPER POLARITY, GROUND CONTINUITY, AND COMPLIANCE WITH REQUIREMENTS.
  2. TEST GFCI OPERATION WITH BOTH LOCAL AND REMOTE FAULT SIMULATIONS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

1.6 REFINISHING AND TOUCHUP PAINTING
- a. REFINISH AND TOUCHUP PAINT.
  1. CLEAN DAMAGED AND DISTURBED AREAS AND APPLY PRIMER, INTERMEDIATE, AND FINISH COATS TO SUIT THE DEGREE OF DAMAGE AT EACH LOCATION.
  2. FOLLOW PAINT MANUFACTURER'S WRITTEN INSTRUCTIONS FOR SURFACE PREPARATION AND FOR TIMING AND APPLICATION OF SUCCESSIVE COATS.
  3. REPAIR DAMAGE TO GALVANIZED FINISHES WITH ZINC-RICH PAINT RECOMMENDED BY MANUFACTURER.
  4. REPAIR DAMAGE TO PAINT FINISHES WITH MATCHING TOUCHUP COATING RECOMMENDED BY MANUFACTURER.

1.7 CLEANING AND PROTECTION
- a. ON COMPLETION OF INSTALLATION, INCLUDING OUTLETS, FITTINGS, AND DEVICES, INSPECT EXPOSED FINISH. REMOVE BURRS, DIRT, PAINT SPOTS, AND CONSTRUCTION DEBRIS.
- b. PROTECT EQUIPMENT AND INSTALLATIONS AND MAINTAIN CONDITIONS TO ENSURE THAT COATINGS, FINISHES, AND CABINETS ARE WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.

BASIC MATERIALS AND METHODS

1.1 SUPPORTING DEVICES
- a. METAL ITEMS FOR USE OUTDOORS, IN DAMP LOCATIONS, OR IN CORROSIVE ENVIRONMENTS: HOT-DIP GALVANIZED STEEL, OR STAINLESS STEEL.
- b. SLOTTED-STEEL CHANNEL SUPPORTS: FLANGE EDGES TURNED TOWARD WEB, AND 9/16-INCH-DIAMETER SLOTTED HOLES AT A MAXIMUM OF 2 INCHES O.C., IN WEBS.
  1. CHANNEL THICKNESS: SELECTED TO SUIT STRUCTURAL LOADING.
  2. FITTINGS AND ACCESSORIES: PRODUCTS OF THE SAME MANUFACTURER AS CHANNEL SUPPORTS.
- c. RACEWAY AND CABLE SUPPORTS: MANUFACTURED STRAPS, THREADED C-CLAMPS WITH RETAINERS, CEILING TRAPEZE HANGERS, AND WALL BRACKETS.
- d. ELECTRICAL EQUIPMENT INSTALLATION:
  1. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
  2. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS.
- e. ELECTRICAL SUPPORTING DEVICE APPLICATION:
  1. DAMP LOCATIONS AND OUTDOORS: HOT-DIP GALVANIZED MATERIALS OR STAINLESS STEEL MATERIALS, U-CHANNEL SYSTEM COMPONENTS.
  2. SELECTION OF SUPPORTS: COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
  3. STRENGTH OF SUPPORTS: ADEQUATE TO CARRY PRESENT AND FUTURE LOADS, TIME A SAFETY FACTOR OF AT LEAST FOUR; MINIMUM OF 200-LB DESIGN LOAD.
- f. SUPPORT INSTALLATION:
  1. INSTALL SUPPORT DEVICES TO SECURELY AND PERMANENTLY FASTEN AND SUPPORT ELECTRICAL COMPONENTS.
  2. INSTALL INDIVIDUAL AND MULTIPLE RACEWAY HANGERS AND RISER CLAMPS TO SUPPORT RACEWAYS. PROVIDE U-BOLTS, CLAMPS, ATTACHMENTS, AND OTHER HARDWARE NECESSARY FOR HANGER ASSEMBLIES AND FOR SECURING HANGER RODS AND CONDUITS.
  3. SUPPORT PARALLEL RUNS OF HORIZONTAL RACEWAYS TOGETHER ON TRAPEZE- OR BRACKET-TYPE HANGERS.
  4. SIZE SUPPORTS FOR MULTIPLE RACEWAY INSTALLATIONS SO CAPACITY CAN BE INCREASED BY A 25 PERCENT MINIMUM IN THE FUTURE.
  5. SUPPORT INDIVIDUAL HORIZONTAL RACEWAYS SEPARATE, MALLEABLE-IRON PIPE HANGERS OR CLAMPS.
  6. SEPARATELY SUPPORT CAST BOXES THAT ARE THREADED TO RACEWAYS AND USED FOR FIXTURE SUPPORT.
  7. INSTALL METAL CHANNEL RACKS FOR MOUNTING CABINETS, PANELBOARDS, DISCONNECT SWITCHES, CONTROL ENCLOSURES, PULL AND JUNCTION BOXES, TRANSFORMERS, AND OTHER DEVICES, UNLESS COMPONENTS ARE MOUNTED DIRECTLY TO STRUCTURAL ELEMENTS OF ADEQUATE STRENGTH.
  8. SECURELY FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO THE BUILDING STRUCTURE, UNLESS OTHERWISE INDICATED. PERFORM FASTENING ACCORDING TO THE FOLLOWING UNLESS OTHER FASTENING METHODS ARE INDICATED:

1.2 IDENTIFICATION
- a. IDENTIFICATION DEVICES: A SINGLE TYPE OF IDENTIFICATION PRODUCT FOR EACH APPLICATION CATEGORY. USE COLORS PRESCRIBED BY ANSI A13.1, NFPA 70, AND THESE SPECIFICATIONS.
- b. TAPE MARKERS FOR WIRE: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE WITH PREPRINTED NUMBERS AND LETTERS.
- c. INSTALLATION:
  1. INSTALL AT LOCATIONS FOR MOST CONVENIENT VIEWING WITHOUT INTERFERENCE WITH OPERATION AND MAINTENANCE OF EQUIPMENT.
  2. SELF-ADHESIVE IDENTIFICATION PRODUCTS: CLEAN SURFACES BEFORE APPLYING.
  3. COLOR-CODE 208/120-V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM AS FOLLOWS:
     - a. PHASE A: BLACK
     - b. PHASE B: RED
     - c. PHASE C: BLUE

1.3 DEMOLITION
- a. PROTECT EXISTING ELECTRICAL EQUIPMENT AND INSTALLATIONS INDICATED TO REMAIN. IF DAMAGED OR DISTURBED IN THE COURSE OF THE WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY, AND FUNCTIONALITY.
- b. ACCESSIBLE WORK: REMOVE EXPOSED ELECTRICAL EQUIPMENT AND INSTALLATIONS, INDICATED TO BE DEMOLISHED, IN THEIR ENTIRETY.
- c. REMOVE DEMOLISHED MATERIAL FROM PROJECT SITE.
- d. REMOVE, STORE, CLEAN, REINSTALL, RECONNECT, AND MAKE OPERATIONAL COMPONENTS INDICTED FOR RELOCATION.

1.4 CUTTING AND PATCHING
- a. CUT, CHANNEL, CHASE, AND DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, AND OTHER SURFACES REQUIRED TO PERMIT ELECTRICAL INSTALLATIONS. PERFORM CUTTING BY SKILLED MECHANICS OF TRADES INVOLVED.
- b. REPAIR AND REFINISH DISTURBED FINISH MATERIALS AND OTHER SURFACES TO MATCH ADJACENT UNDISTURBED SURFACES. INSTALL NEW FIREPROOFING WHERE EXISTING FIRESTOPPING HAS BEEN DISTURBED. REPAIR AND REFINISH MATERIALS AND OTHER SURFACES BY SKILLED MECHANICS OF TRADES INVOLVED.

1.5 TOUCHUP PAINT
- a. FOR EQUIPMENT: EQUIPMENT MANUFACTURER'S PAINT SELECTED TO MATCH INSTALLED EQUIPMENT FINISH.
- b. GALVANIZED SURFACES: ZINC-RICH PAINT RECOMMENDED BY ITEM MANUFACTURER.

GROUNDING

1.1 GROUNDING CONDUCTORS
- a. MATERIAL: COPPER, ONLY.
- b. EQUIPMENT GROUNDING CONDUCTORS: INSULATED WITH GREEN-COLORED INSULATION.

1.2 CONNECTOR PRODUCTS
- a. COMPLY WITH IEEE 837 AND UL 467; LISTED FOR USE FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND CONNECTED ITEMS.
- b. BOLTED CONNECTORS: BOLTED-PRESSURE-TYPE CONNECTORS, OR COMPRESSION TYPE.
- c. CRIMPED CONNECTORS: HIGH COMPRESSION TYPE, IN KIT FORM, AND SELECTED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

1.3 INSTALLATION
- a. IN RACEWAYS, USE INSULATED EQUIPMENT GROUNDING CONDUCTORS.
- b. EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS: USE BOLTED PRESSURE CLAMPS.

CONDUCTORS AND CABLES

1.1 CONDUCTOR AND CABLE MATERIAL
- a. COPPER COMPLYING WITH NEMA WC 5 OR 7; STRANDED COPPER.
- b. INSULATION TYPES: TYPE XHHW COMPLYING WITH NEMA WC 5 OR 7.

1.2 CONDUCTOR AND INSULATION APPLICATIONS
- a. EXPOSED BRANCH CIRCUITS, TYPE XHHW, SINGLE CONDUCTORS IN RACEWAY.
- b. COORDINATE CONDUCTOR INSULATION TEMPERATURE RATING AND AMPACITY RATING WITH THE TEMPERATURE AND AMPACITY RATING OF THEIR CIRCUIT PROTECTION DEVICES.
- c. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.
- d. MAKE SPLICES AND TAPS THAT ARE COMPATIBLE WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UNSPLICED CONDUCTORS.
  1. USE OXIDE INHIBITOR IN EACH SPLICE AND TAP CONDUCTOR FOR ALL CONDUCTORS.
- e. WIRING AT OUTLETS: INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 6 INCHES OF SLACK.

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STATE OF ALASKA — B.C. HAIGHT — EE 8804 — 29 MAR 2019

CRUISE SHIP BERTH SECURITY CHECKPOINTS
CBJ CONTRACT NO. DH19-050

SHEET TITLE: ELECTRICAL SPECIFICATIONS

PND PROJECT NO.: 182120 C.A.N. NO.: AECC250

E9.0

ELECTRICAL SPECIFICATIONS (CONT.)

RACEWAYS

1.1 CONDUIT AND TUBING

a. RIGID STEEL CONDUIT: ANSI C80.1

b. LFMC: FLEXIBLE STEEL CONDUIT WITH PVC JACKET, FEDERAL SPECIFICATION W-C-566C.

c. FITTINGS: NEMA FB 1; COMPATIBLE WITH CONDUIT AND TUBING MATERIALS.

1.2 INSTALLATION

a. OUTDOORS:

1. EXPOSED: RIGID STEEL.

2. BOXES AND ENCLOSURES: NEMA 250, TYPE 3R OR 4.

b. MINIMUM RACEWAY SIZE: ½-INCH TRADE SIZE.

c. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION.

1. RIGID STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS, UNLESS OTHERWISE INDICATED.

d. INSTALL EXPOSED RACEWAYS, AND RACEWAYS WITHIN ACCESSIBLE SPACES, PARALLEL OR AT RIGHT ANGLES TO NEARBY SURFACES OR STRUCTURAL MEMBERS AND FOLLOW SURFACE CONTOURS AS MUCH AS POSSIBLE.

1. RUN PARALLEL OR BANKED RACEWAYS TOGETHER ON COMMON SUPPORTS.

2. MAKE PARALLEL BENDS IN PARALLEL OR BANKED RUNS. USE FACTORY ELBOWS ONLY WHERE ELBOWS CAN BE INSTALLED PARALLEL; OTHERWISE, PROVIDE FIELD BENDS FOR PARALLEL RACEWAYS.

e. JOIN RACEWAYS WITH FITTINGS DESIGNED AND APPROVED FOR THAT PURPOSE AND MAKE JOINTS TIGHT.

1. USE INSULATING BUSHINGS TO PROTECT CONDUCTORS.

f. TIGHTEN SET SCREWS OF THREADLESS FITTINGS WITH SUITABLE TOOLS.

g. TERMINATIONS:

1. WHERE RACEWAYS ARE TERMINATED WITH LOCKNUTS AND BUSHINGS, ALIGN RACEWAYS TO ENTER SQUARELY AND INSTALL LOCKNUTS WITH DISHED PART AGAINST BOX. USE TWO LOCKNUTS, ONE INSIDE AND ONE OUTSIDE BOX.

2. WHERE RACEWAYS ARE TERMINATED WITH THREADED HUBS, SCREW RACEWAYS OR FITTINGS TIGHTLY INTO HUB SO END BEARS AGAINST WIRE PROTECTION SHOULDER. WHERE CHASE NIPPLES ARE USED, ALIGN RACEWAYS SO COUPLING IS SQUARE TO BOX; TIGHTEN CHASE NIPPLE SO NO THREADS ARE EXPOSED.

BOXES, ENCLOSURES, AND CABINETS

1.1 CAST-METAL OUTLET AND DEVICE BOXES: NEMA FB 1, TYPE FD, WITH GASKETED COVER.

1.2 CAST-METAL PULL AND JUNCTION BOXES: NEMA FB 1, CAST IRON WITH GASKETED COVER.

WIRING DEVICES

1.1 RECEPTACLES

h. GFCI RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE, HEAVY-DUTY GRADE, WITH INTEGRAL NEMA WD 6, CONFIGURATION 5-20R DUPLEX RECEPTACLE; COMPLYING WITH UL 498 AND UL 943. DESIGN UNITS FOR INSTALLATION IN A 2-3/4-INCH-DEEP OUTLET BOX WITHOUT AN ADAPTER.

1.2 SWITCHES

a. SINGLE- AND DOUBLE-POLE SWITCHES: COMPLY WITH DSCC W-C-896F AND UL 20. HEAVY-DUTY GRADE, QUIET TYPE.

1.3 WALL PLATES

a. SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES.

1. PLATE-SECURING SCREWS: METAL WITH HEAD COLOR TO MATCH PLATE FINISH.

2. MATERIAL FOR WET LOCATIONS: CAST ALUMINUM WITH SPRING-LOADED LIFT COVER, AND LISTED AND LABELED FOR USE IN "WET LOCATIONS". COVERS HINGED TO OPERATE VERTICALLY.

1.4 INSTALLATION

a. INSTALL DEVICES AND ASSEMBLIES LEVEL, PLUMB, AND SQUARE WITH BUILDING LINES.

b. ARRANGEMENT OF DEVICES: UNLESS OTHERWISE INDICATED, SURFACE MOUNT, WITH LONG DIMENSION VERTICAL, AND WITH GROUNDING TERMINAL OF RECEPTACLES ON BOTTOM. GROUP ADJACENT SWITCHES UNDER SINGLE, MULTIGANG WALL PLATES.

LIGHTING

1.1 INSTALLATION

a. FIXTURES: SET LEVEL, PLUMB, AND SQUARE WITH THE BUILDING STRUCTURE.

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E9.1