

# FISHERIES AND OCEANS



## LIGHT TOWER REFURBISHMENT 2015

CAPE RACE, NL

PROJECT NO.: F6879-151006  
ISSUED FOR TENDER

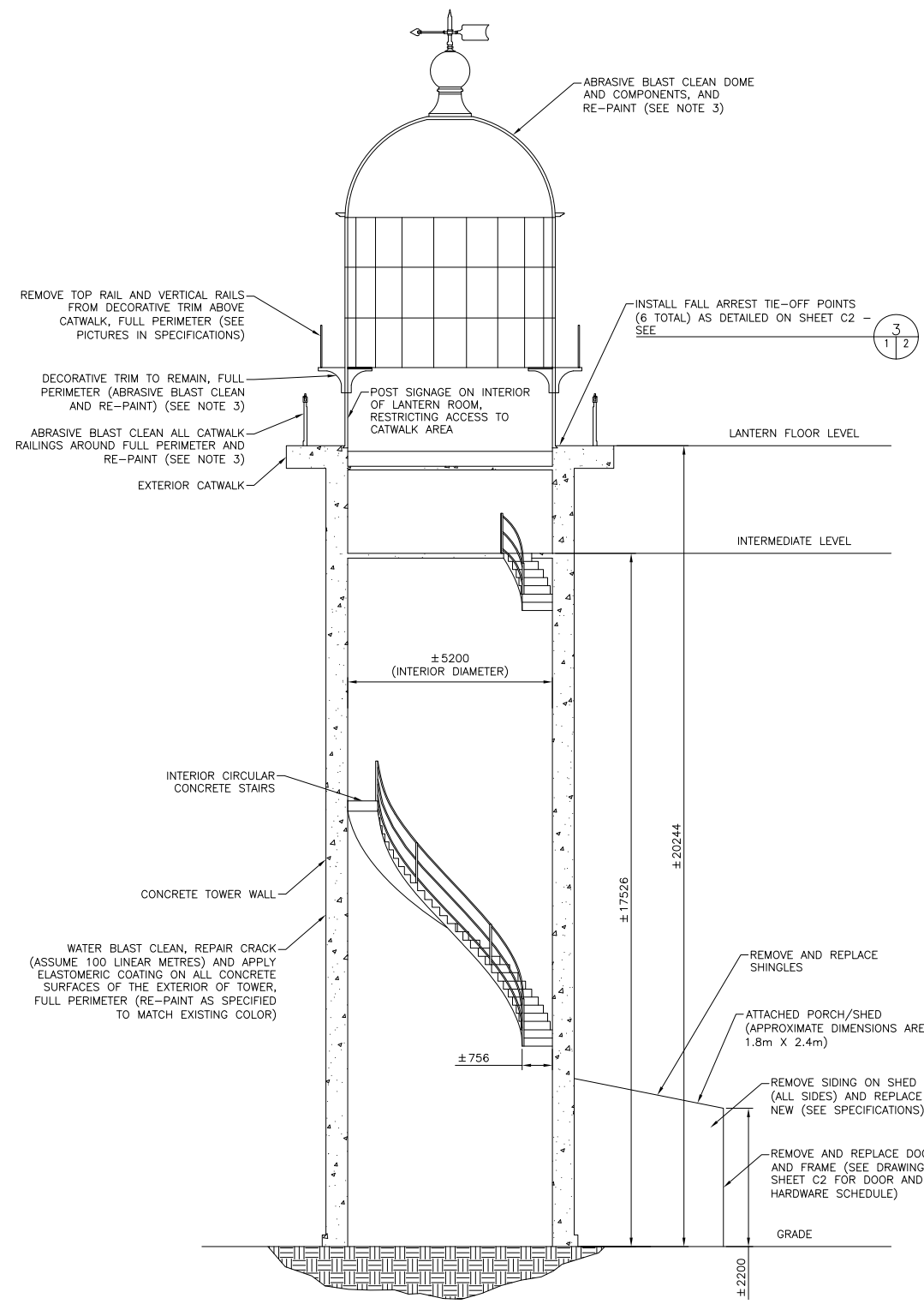
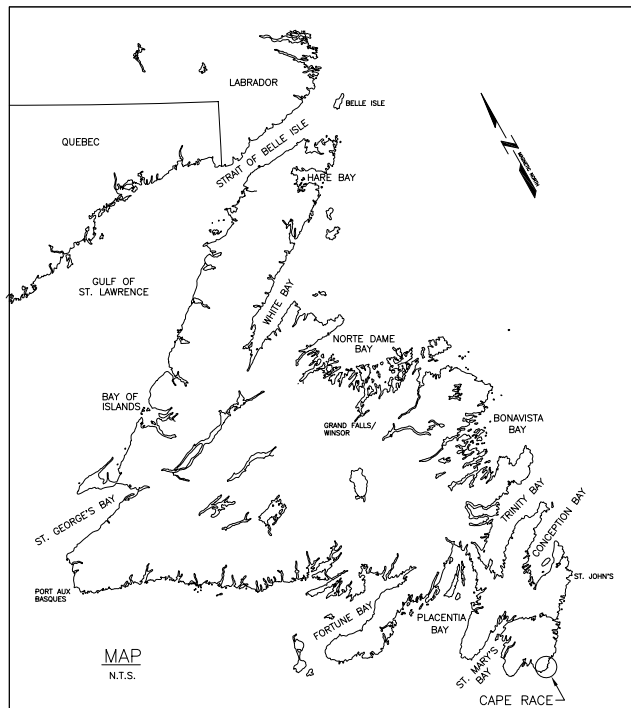
DATE: MARCH 11, 2015

CLIENT/OWNER:  
DEPARTMENT OF FISHERIES & OCEANS,  
REAL PROPERTY, SAFETY & SECURITY

PRIME CONSULTANTS:  
AFN ENGINEERING INC./CROSBIE ENGINEERING LTD.

### DRAWING LIST:

<u>TITLE</u>	
01K1101A051C1	WORK PLAN
01K1101A051C2	DETAILS
01K1101A051E1	LIGHTHOUSE ELEVATION
01K1101A051E2	ELECTRICAL DETAILS AND SPECIFICATION



WORK PLAN  
SCALE: N.T.S.



- NOTES:
1. DIMENSIONS SHOWN ARE IN MILLIMETRES. CONSIDER DIMENSIONS SHOWN TO BE APPROXIMATE. PICTURES OF THE SITE ARE INCLUDED IN THE SPECIFICATIONS.
  2. FOR NEW LIGHTNING PROTECTION SYSTEM, SEE ELECTRICAL DRAWINGS.
  3. IMPLEMENT MEASURES TO LIMIT OCCUPATIONAL EXPOSURE TO LEAD DURING ABRASIVE BLASTING OPERATIONS. MINIMUM REQUIREMENTS INCLUDE AN ENCLOSED WORK AREA COMPLETE WITH CLEAN ROOM, SHOWER ROOM AND DIRTY ROOM, WITH NEGATIVE AIR UNITS IN WORK AREA. FOR THE PURPOSES OF TRANSPORTATION AND DISPOSAL, SPENT ABRASIVES, WHICH WOULD INCLUDE THE LEAD PAINT REMOVED FROM THE SURFACES OF THE TOWER, ARE CONSIDERED TO BE NON-HAZARDOUS (ANALYTICAL RESULTS ARE APPENDED TO THE SPECIFICATIONS). ALL SCAFFOLDING USED IN THE WORK IS TO BEAR THE STAMP OF A PROFESSIONAL ENGINEER, LICENSED BY PEG-NL TO PRACTICE IN NL.
  4. WATER PRESSURE FOR BLAST CLEANING OF TOWER EXTERIOR CONCRETE TO BE DEFINED BY PAINT MANUFACTURER.
  - 5.

Fisheries and Oceans  
Pêches et Océans

Real Property, Safety & Security  
Biens immobiliers, protection et sécurité

REGISTERED PROFESSIONAL ENGINEER  
NEIL C. HUNT  
11/03/15  
DATE

PROVINCE OF NEWFOUNDLAND  
PERMIT HOLDER  
This Permit Allows  
APN ENGINEERING INC.  
To practice Professional Engineering in Newfoundland and Labrador.  
Permit No. as issued by APEGNL F0292  
which is valid for the year 2015.

B	ISSUED FOR TENDER	11/03/15	P.H.	N.H.
A	ISSUED FOR REVIEW	12/02/15	P.H.	N.H.
no.	revision	date	by	approved
no.	revision	date	par	approuvé

Project - projet  
LIGHT TOWER REFURBISHMENT 2015  
CAPE RACE, NL

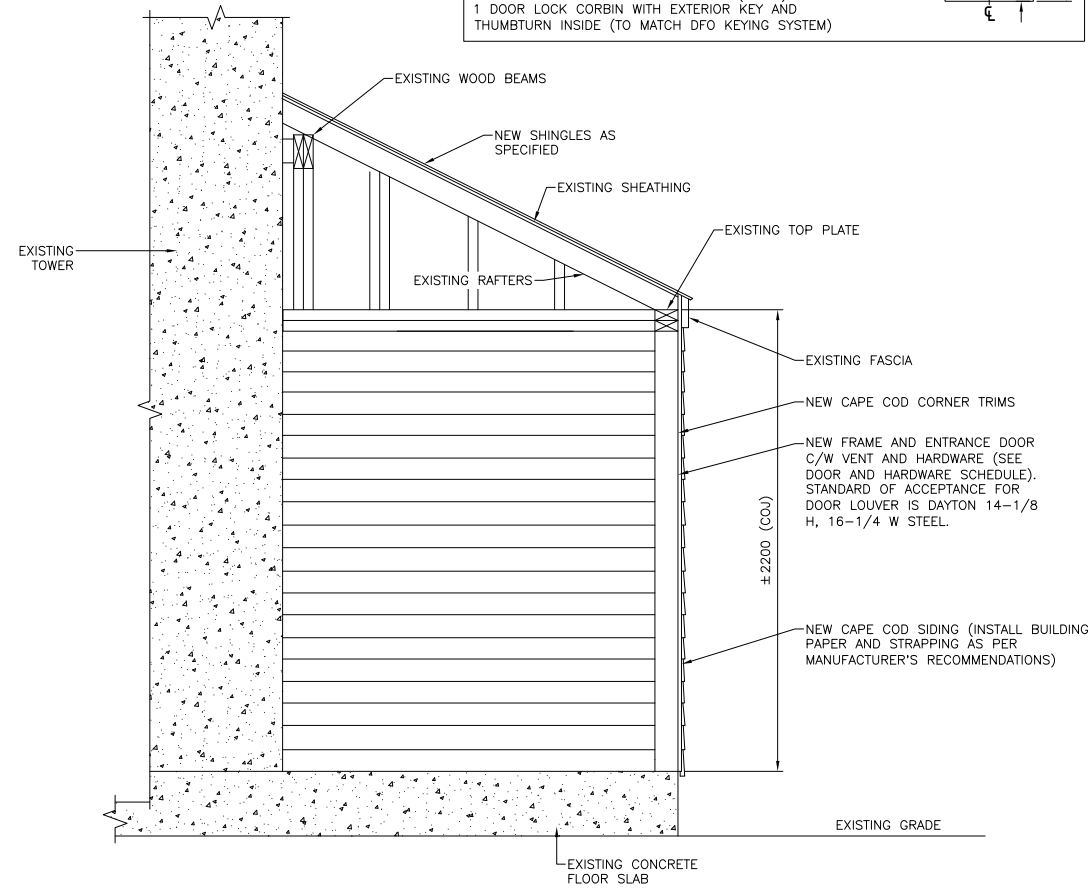
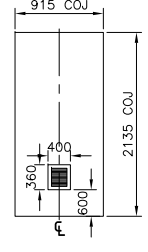
Drawing - dessin  
WORK PLAN

drawn - dessiné	P.H.	designed - dessiné par	N.H.
date - date	MARCH 11, 2015	checked - vérifié	N.H.
scale - échelle	AS SHOWN	approved for tender - approuvé pour l'offre	
project no. - projet no.	F6879-151006	drawing no. - no du dessin	01K1101A051C1
		sheet - feuille	C1

- NOTES:
- COJ = CONFIRM ON JOB
  - CONSIDER DETAILS TO BE APPROXIMATE. COORDINATE ALL WORK ON SITE WITH THE DEPARTMENTAL REPRESENTATIVE TO SUIT EXISTING CONDITIONS.
  - RE-INSTATE EXISTING SIGNS AND FIXTURES ON SHED AFTER NEW SIDING HAS BEEN INSTALLED.

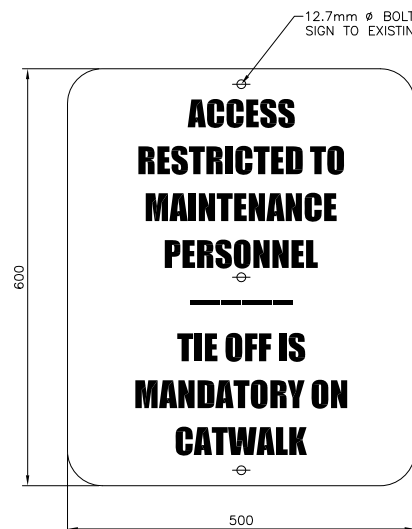
**NEW DOOR AND HARDWARE SCHEDULE**

DOOR SIZE = 915 X 2135 X 45 (COJ) THE INTENT IS TO MATCH THE EXISTING DOOR SIZE (ACCURATELY MEASURE EXISTING OPENING SIZE AND ORDER FRAME/DOOR TO SUIT)  
 DOOR TYPE = HOLLOW METAL  
 FRAME TYPE = 50mm PRESSED STEEL FRAME  
 1 CONTINUOUS HINGE CH-951 X SIZE REQUIRED (630)  
 1 EXIT DEVICE 9300B-01-476-TV/SNB (630)  
 1 DOOR CLOSER 8901DS-TB/SNB (689)  
 1 SET WEATHER STRIPPING 1500N X SIZE REQUIRED (AN)  
 1 WATER DRIP-HEAD-AW2 X SIZE REQUIRED (AN)  
 1 WATER DRIP-BOTTOM-AW1 X SIZE REQUIRED (MF)  
 1 THRESHOLD ATP5 X SIZE REQUIRED (ALUM.)  
 1 DOOR LOCK CORBIN WITH EXTERIOR KEY AND THUMBTURN INSIDE (TO MATCH DFO KEYING SYSTEM)



**SHED/PORCH UPGRADES**

SCALE: N.T.S.



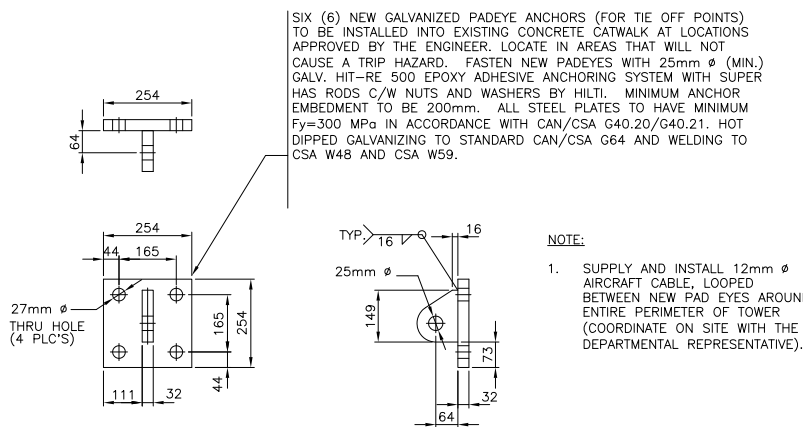
**SIGN INSIDE HATCH DOOR**

SCALE: 1:5



NOTES:

- CONFIRM DIMENSIONS OF NEW SIGN IN THE FIELD (TO BE SUITABLE FOR EXISTING HATCH DOOR SIZE).
- CONFIRM BOLTING DETAIL IN THE FIELD (TO BE SUITABLE FOR EXISTING HATCH DOOR MATERIAL).

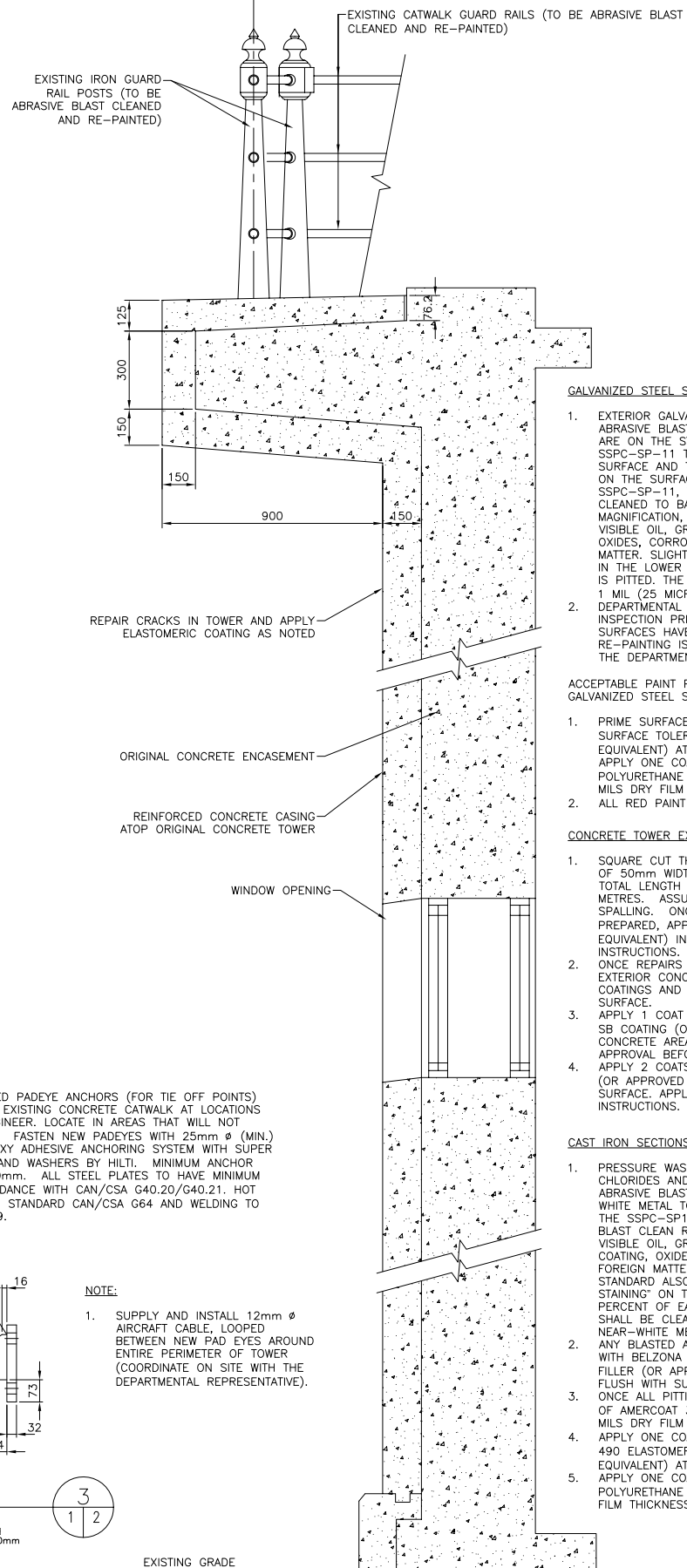


**TIE OFF POINTS**

SCALE: 1:10



~ DOME (NOT SHOWN) TO BE ABRASIVE BLAST CLEANED AND RE-PAINTED ~



**GALVANIZED STEEL SECTIONS:**

- EXTERIOR GALVANIZED STEEL SECTIONS: PRESSURE WASH OR ABRASIVE BLAST TO REMOVE ALL EXISTING COATING THAT ARE ON THE STEEL SURFACE. POWER TOOL CLEAN SSPC-SP-11 TO ROUGHEN THE EXPOSED GALVANIZED SURFACE AND TO REMOVE ALL RUST THAT HAS DEVELOPED ON THE SURFACE. TO MEET THE REQUIREMENTS OF SSPC-SP-11, THE SURFACE IS TO BE POWER TOOL CLEANED TO BARE METAL. WHEN VIEWED WITHOUT MAGNIFICATION, THE SURFACE SHALL BE FREE OF ALL VISIBLE OIL, GREASE, DIRT, DUST, MILL SCALE, RUST, PAINT, OXIDES, CORROSION PRODUCTS, AND OTHER FOREIGN MATTER. SLIGHT RESIDUES OF RUST AND PAINT MAY BE LEFT IN THE LOWER PORTION OF PITS IF THE ORIGINAL SURFACE IS PITTED. THE SURFACE PROFILE SHALL NOT BE LESS THAN 1 MIL (25 MICRONS).
- DEPARTMENTAL REPRESENTATIVE WILL CONDUCT AN INSPECTION PRIOR TO RE-PAINTING TO CONFIRM THAT THE SURFACES HAVE BEEN PREPARED PROPERLY. NO RE-PAINTING IS TO BE INITIATED WITHOUT THE APPROVAL OF THE DEPARTMENTAL REPRESENTATIVE.

ACCEPTABLE PAINT PRODUCTS (OR APPROVED EQUIVALENTS) FOR GALVANIZED STEEL SECTIONS, ARE AS FOLLOWS:

- PRIME SURFACE BY APPLYING 2 COATS OF AMERLOCK 2 SURFACE TOLERANT EPOXY COATING (OR APPROVED EQUIVALENT) AT 5-7 MILS DRY FILM THICKNESS PER COAT. APPLY ONE COAT OF AMERSHIELD HIGH SOLIDS POLYURETHANE COATING (OR APPROVED EQUIVALENT) AT 3-5 MILS DRY FILM THICKNESS.
- ALL RED PAINT TO BE "COAST GUARD RED".

**CONCRETE TOWER EXTERIOR REPAIR AND COATING:**

- SQUARE CUT THE OPENED CRACKED AREAS TO A MINIMUM OF 50mm WIDTH TO A MINIMUM DEPTH OF 25mm. ASSUME TOTAL LENGTH OF CONCRETE CRACKS IS 100 LINEAR METRES. ASSUME AN ADDITIONAL 50m<sup>2</sup> OF CONCRETE SPALLING. ONCE CRACKS AND SPALLED AREAS HAVE BEEN PREPARED, APPLY MASTER EMACO N425 (OR APPROVED EQUIVALENT) IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALLOW REPAIRS TO CURE.
- ONCE REPAIRS HAVE CURED, PRESSURE WASH THE ENTIRE EXTERIOR CONCRETE STRUCTURE TO REMOVE ALL LOOSE COATINGS AND OTHER CONTAMINANTS THAT ARE ON THE SURFACE.
- APPLY 1 COAT TOUCH UP COAT OF MASTER PROTECT HB300 SB COATING (OR APPROVED EQUIVALENT) TO ANY BARE CONCRETE AREAS. OBTAIN DEPARTMENTAL REPRESENTATIVE'S APPROVAL BEFORE PROCEEDING WITH SUBSEQUENT COATS.
- APPLY 2 COATS OF MASTER PROTECT HB300 SB COATING (OR APPROVED EQUIVALENT) TO THE ENTIRE CONCRETE SURFACE. APPLY AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

**CAST IRON SECTIONS:**

- PRESSURE WASH USING FRESH WATER TO REMOVE ALL CHLORIDES AND CONTAMINANTS THAT ARE ON THE SURFACE. ABRASIVE BLAST THE SUBSTRATE TO SSPC-SP-10 NEAR WHITE METAL TO ACHIEVE AN ANCHOR PROFILE OF 2.0 MILS. THE SSPC-SP10'S DEFINITION OF A NEAR-WHITE METAL BLAST CLEAN REQUIRES THE SURFACE TO BE FREE OF ALL VISIBLE OIL, GREASE, DIRT, MILL SCALE, RUST, COATING, OXIDES, CORROSION PRODUCTS, AND OTHER FOREIGN MATTER WHEN VIEWED WITHOUT MAGNIFICATION. THE STANDARD ALSO PROVIDES REQUIREMENTS FOR "RANDOM STAINING" ON THE SURFACE WHICH SHALL NOT EXCEED FIVE PERCENT OF EACH UNIT AREA OF SURFACE. THE SURFACE SHALL BE CLEANED OF OIL, GREASE, AND DUST AFTER THE NEAR-WHITE METAL BLASTING PROCEDURE.
- ANY BLASTED AREAS THAT SHOW PITTING ARE TO BE FILLED WITH BELZONA 1111 SUPER METAL PASTE GRADE METALLIC FILLER (OR APPROVED EQUIVALENT). PITS SHOULD BE FILLED FLUSH WITH SURROUNDING STEEL AREA PRIOR TO PRIMING.
- ONCE ALL PITTING HAS BEEN ADDRESSED APPLY ONE COAT OF AMERCOAT 370 EPOXY (OR APPROVED EQUIVALENT) AT 5 MILS DRY FILM THICKNESS.
- APPLY ONE COAT (BY PLURAL SPRAY) OF PPG AMERTHANE 490 ELASTOMERIC POLYUREA HIBRID COATING (OR APPROVED EQUIVALENT) AT 80 MILS DRY FILM THICKNESS.
- APPLY ONE COAT OF PPG AMERSHIELD HIGH SOLIDS POLYURETHANE (OR APPROVED EQUIVALENT) AT 3 MILS DRY FILM THICKNESS.

**SHED/PORCH UPGRADES**

SCALE: N.T.S.



B	ISSUED FOR TENDER	11/03/15	P.H.	N.H.
A	ISSUED FOR REVIEW	12/02/15	P.H.	N.H.
no.	revision	date	by	approved
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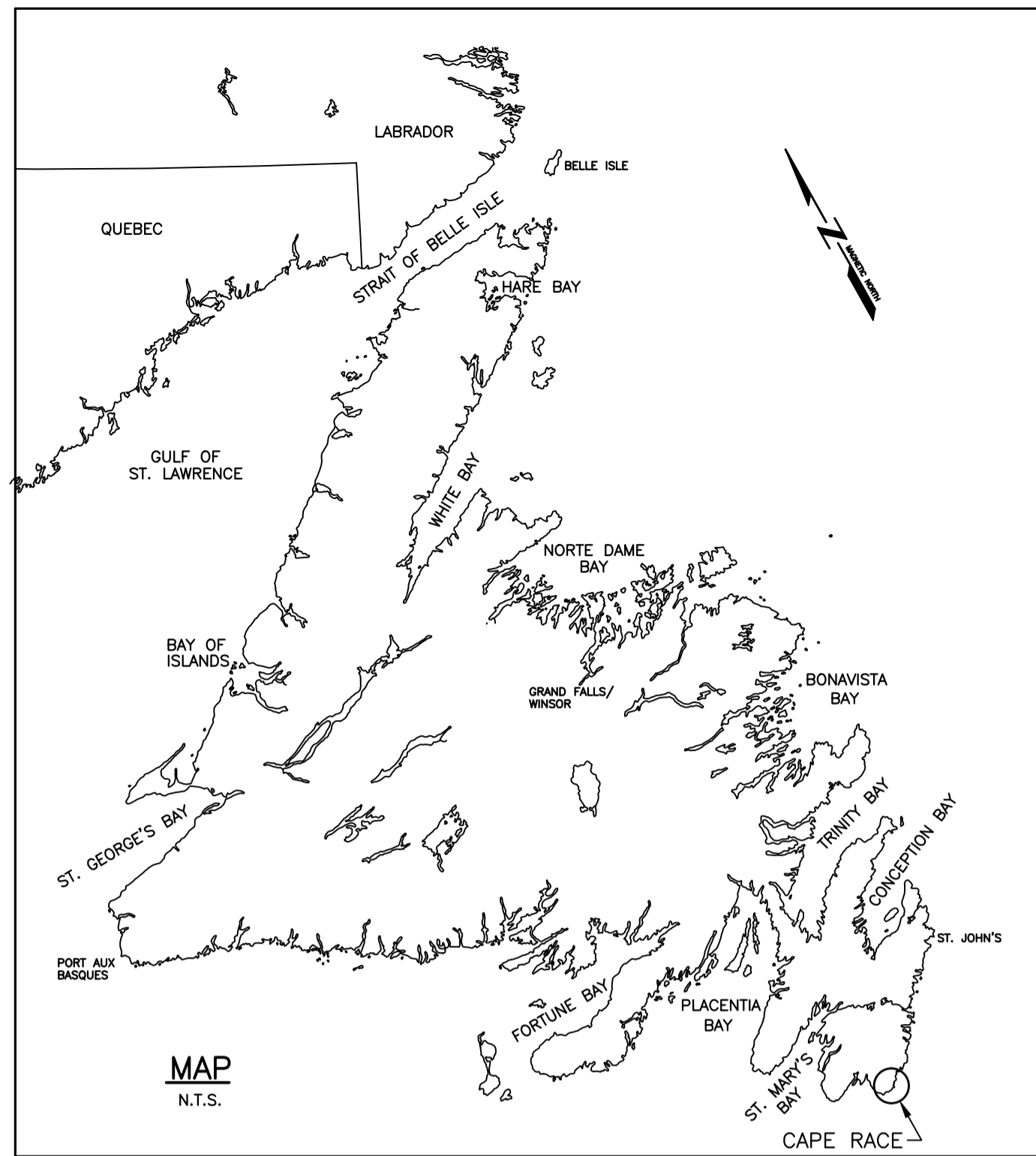
Project - projet

**LIGHT TOWER REFURBISHMENT 2015**  
CAPE RACE, NL

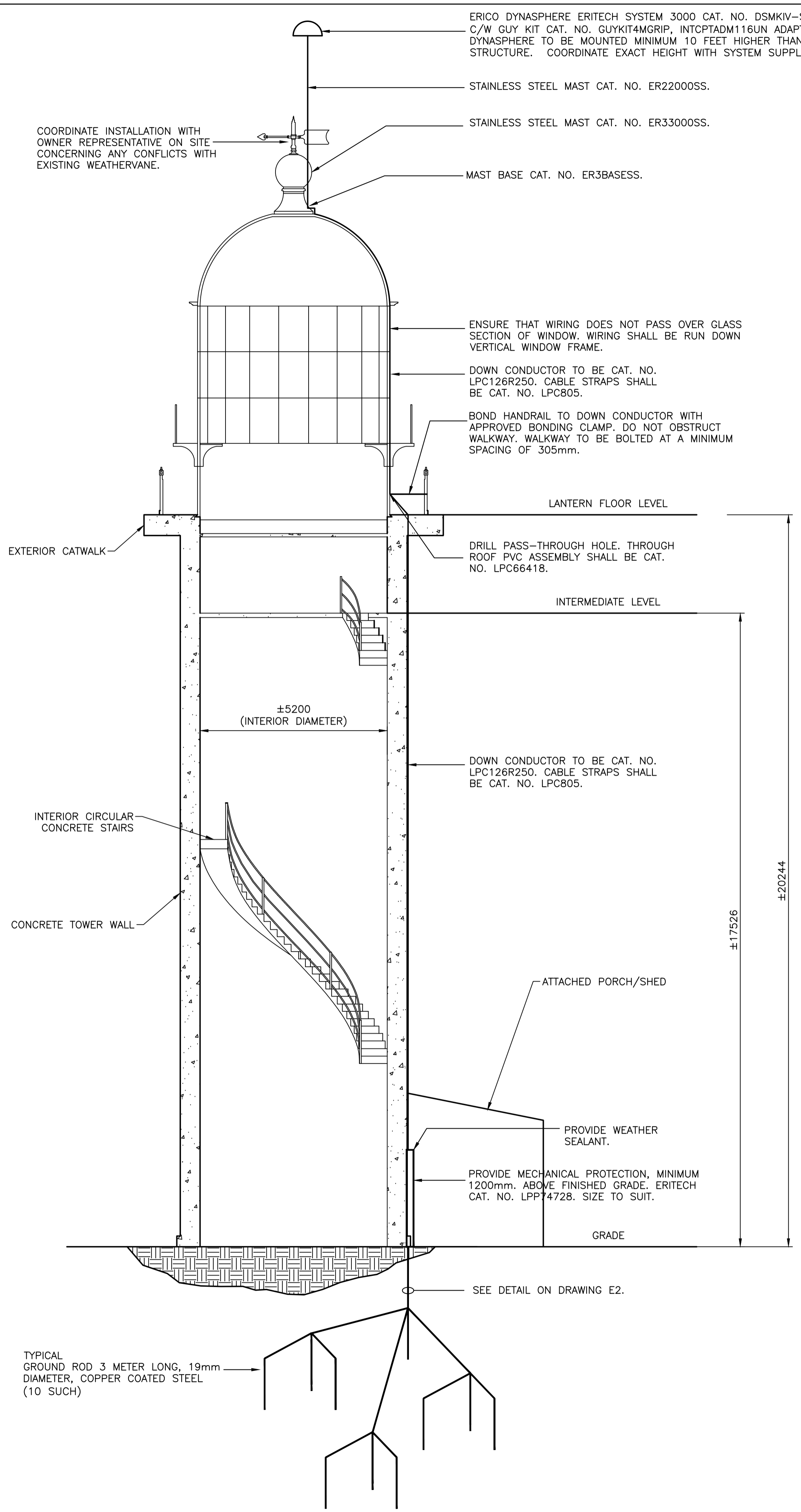
Drawing - dessin

**DETAILS**

drawn - dessine	P.H.	designed - dessinée par	N.H.
date - date	MARCH 11, 2015	checked - vérifié	N.H.
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project no. - projet no.	F6879-151006	drawing no. - no du dessin	01K1101A051C2
		sheet - feuille	C2



CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIAL, WIRING, CONDUIT, MOUNTING HARDWARE, BRACKETS, SCREWS, BOLTS, CABLES, WELDING, ETC. AS RECOMMENDED BY THE MANUFACTURER IN ORDER TO PROVIDE A COMPLETE OPERATIONAL SYSTEM. CONTRACTOR SHALL ALSO ALLOW IN TENDER PRICE ALL COST ASSOCIATED WITH THE MANUFACTURER VISITING THE SITE DURING EQUIPMENT INSTALLATION TO ENSURE COMPLETE SYSTEM IS INSTALLED AND WORKING AS PER MANUFACTURERS INSTRUCTIONS. AT THE COMPLETION OF WORK THE CONTRACTOR SHALL PROVIDE A LETTER ISSUED BY THE MANUFACTURER STATING THAT THE COMPLETE SYSTEM IS OPERATIONAL AND WORKING AS PER THE MANUFACTURERS INSTRUCTIONS.



**LIGHTHOUSE ELEVATION**  
NOT TO SCALE

**Fisheries and Oceans** / **Pêches et Océans**  
Real Property, Safety & Security / Biens immobiliers, protection et sécurité

PROVINCE OF NEWFOUNDLAND PERMIT HOLDER Class "A" This Permit Allows **CROSBIE ENGINEERING LIMITED**  
To practice Professional Engineering in Newfoundland and Labrador Permit No. as issued by PEG-NL 00123 which is valid for the year 2015.

REGISTERED PROFESSIONAL ENGINEER **PEG** KENNETH R.P. NEIL 27/03/15 DATE NEWFOUNDLAND & LABRADOR

0	ISSUED FOR TENDER	27/03/15	D.R.	K.N.
A	ISSUED FOR REVIEW	18/02/15	D.R.	K.N.
no.	revision	date	by	approved
no.	revision	date	par	approuve

Project - projet  
**LIGHT TOWER REFURBISHMENT 2015 - CAPE RACE, NL**

Drawing - dessin  
**LIGHTHOUSE ELEVATION**

drawn - dessine	D.R.	designed - dessine par	K.N.
date - date	FEBRUARY 18, 2015	checked - verifie	K.N.
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project no. - projet no.	F6879-151006	drawing no. - no du dessin	01K1101A051E1
		sheet - feuille	<b>E1</b>

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REGISTERED PROFESSIONAL ENGINEER KENNETH R.P. NEIL 27/03/15 DATE

**ELECTRICAL SPECIFICATION**

**GENERAL REQUIREMENTS**

1. PROVIDE ALL MATERIALS, LABOUR, SCAFFOLDS, TOOLS & EQUIPMENT NECESSARY TO COMPLETE THE ELECTRICAL INSTALLATION & LEAVE ALL SYSTEMS READY FOR OPERATION.
2. DO THE COMPLETE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CANADIAN ELECTRICAL CODE C22.1-2015 & ALL LOCAL & PROVINCIAL CODES.
3. CLEAN ALL ELECTRICAL EQUIPMENT AFTER CONSTRUCTION INCLUDING LIGHTING, HEATING, RECEPTACLES, PANELS, SWITCHES AND FIRE ALARM DEVICES.
4. ALL MATERIALS SHALL BE NEW & CSA APPROVED. ANY PRODUCTS NOT CSA APPROVED TO BE PASSED BY INSPECTION AUTHORITY PRIOR TO ACCEPTANCE.
5. ALL ELECTRICAL INSTALLATIONS AND MATERIALS SHALL CONFORM TO CEC CODE JURISDICTION.
6. PROVIDE DEDICATED GROUNDING CONDUCTOR TO ALL ELECTRICAL INSTALLATIONS.
7. THE CONTRACTOR SHALL GUARANTEE ALL NEW MATERIAL & WORKMANSHIP FOR A PERIOD OF 1 YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER.
8. SUBMIT TO ELECTRICAL INSPECTION AUTHORITY, A COPY OF PLANS FOR EXAMINATION AND APPROVAL. MAKE CHANGES AND ALTERATIONS AS REQUIRED BY THE INSPECTION AUTHORITY.
9. OBTAIN & PAY FOR ALL FEES & PERMITS REQUIRED BY ANY AUTHORITY HAVING JURISDICTION. SUBMIT DRAWINGS AND SPECIFICATION TO INSPECTION AUTHORITIES FOR EXAMINATION AND APPROVAL PRIOR TO COMMENCEMENT OF WORK.
10. QUALIFIED TRADES PEOPLE SHALL BE USED FOR ALL DISCIPLINES OF THE ELECTRICAL WORK REQUIRED FOR THIS PROJECT.
11. PROTECT EXPOSED LIVE EQUIPMENT DURING CONSTRUCTION FOR PERSONNEL SAFETY. SHIELD AND MARK ALL LIVE PARTS "LIVE 120 VOLTS", OR WITH APPROPRIATE VOLTAGE. PROVIDE FOR INSTALLATION OF TEMPORARY DOORS FOR ROOMS CONTAINING EXPOSED ELECTRICAL EQUIPMENT IF REQUIRED BY ENGINEER OR INSPECTION AUTHORITY.
12. THE ENGINEER WILL PROVIDE THE CONTRACTOR WITH TWO EXTRA SETS OF WHITE PRINTS ON WHICH HE SHALL CLEARLY MARK IN RED INK AS THE JOB PROGRESSES, ALL CHANGES AND DEVIATIONS FROM THAT SHOWN ON CONTRACT DRAWINGS. ON COMPLETION FORWARD TO THE ENGINEER THE TWO SETS OF DRAWINGS INDICATING ALL SUCH CHANGES AND DEVIATIONS.
13. CONTRACTOR TO SUBMIT TO ENGINEER TWO COMPLETE SETS OF MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL MAJOR ELECTRICAL EQUIPMENT. SUBMIT IN HARD COVER BINDERS. INCLUDE COMPLETE SET OF SHOP DRAWINGS.
14. CLEAN AND TOUCH UP SURFACES OF SHOP EQUIPMENT SCRATCHED OR MARRED DURING SHIPMENT OR INSTALLATION, TO MATCH ORIGINAL PAINT.
15. LUGS, TERMINALS, SCREWS USED FOR TERMINATION OF WIRING TO BE SUITABLE FOR COPPER CONDUCTORS.
16. PROVIDE WARNING SIGNS TO MEET REQUIREMENTS OF INSPECTION DEPARTMENT AND ENGINEER.
17. SUBMIT SHOP DRAWINGS FOR: A) LIGHTNING PROTECTION SYSTEM
18. SUBSTITUTION OF PRODUCTS AS EQUALS WILL BE CONSIDERED ONCE 3 COPIES OF MANUFACTURER'S DATA AND WORKING DRAWINGS HAVE BEEN SUBMITTED TO ENGINEER A MINIMUM OF 10 DAYS PRIOR TO TENDER CLOSING.

**IDENTIFICATION AND LABELS**

1. INSTALL LAMICOID NAMEPLATES ON ALL JUNCTION BOXES.
2. IDENTIFY ELECTRICAL EQUIPMENT WITH LAMACOID NAMEPLATES.
 

NAMEPLATE SIZES			
SIZE 1	10 X 90 MM	1 LINE	3 MM HIGH LETTERS
SIZE 2	12 X 70 MM	1 LINE	5 MM HIGH LETTERS
SIZE 3	12 X 70 MM	2 LINES	3 MM HIGH LETTERS
SIZE 4	20 X 90 MM	1 LINE	8 MM HIGH LETTERS
SIZE 5	20 X 90 MM	2 LINES	5 MM HIGH LETTERS
SIZE 6	25 X 100 MM	1 LINE	12 MM HIGH LETTERS
SIZE 7	25 X 100 MM	2 LINES	6 MM HIGH LETTERS
3. LAMACOID TO BE 3MM THICK, BLACK WITH WHITE LETTERING AND A MATT FINISH, MECHANICALLY ATTACHED WITH MACHINE SCREWS OR RIVETS.

**EXISTING CONDITIONS**

1. BEFORE SUBMITTING A TENDER, EXAMINE THE SITE AND THE LOCAL CONDITIONS AFFECTING THE WORK UNDER THIS DIVISION AND VERIFY THAT THE WORK CAN BE SATISFACTORILY CARRIED OUT AS SHOWN ON THE PLANS WITHOUT CHANGES.
2. ADVISE THE ENGINEER AT LEAST SEVEN DAYS BEFORE TENDERS CLOSE OF ANY CONFLICT OR INTERFERENCE FAILURE TO DO SO IMPLIES ACCEPTANCE OF EXISTING CONDITIONS AND THAT ALL ALLOWANCES AS MAY BE NECESSARY TO COMPLETE THE WORK ARE INCLUDED IN THE TENDER.

**CUTTING, PATCHING, SLEEVES AND HOLES**

1. PERFORM ALL CUTTING REQUIRED. PATCHING AND PAINTING IN AREAS TO BE FINISHED TO BE PERFORMED BY OTHER TRADES, PROVIDED CUTTING IS PERFORMED IN ADVANCE OF FINISHING. COSTS FOR CUTTING PERFORMED AFTER COMPLETION OF FINISHING WORK TO BE THE RESPONSIBILITY OF THIS TRADE.
2. PENETRATIONS (NEW AND ABANDONED) OF FIRE WALLS OR SEPARATIONS ARE TO BE SEALED WITH AN APPROVED SYSTEM. ACCEPTABLE SYSTEMS ARE HILTI OR APPROVED ALTERNATIVE.
3. PRIOR TO CUTTING OR DRILLING INTO STRUCTURAL MEMBERS OBTAIN CONSULTANT APPROVAL.

**TESTING, ACCEPTANCE AND GUARANTEE**

THE WORK OF THIS CONTRACTOR SHALL BE TESTED AND INSTALLED AND ANY DEVICES NOT OPERATIONAL SHALL BE REMEDIED IMMEDIATELY. TESTS REQUIRED BY LOCAL AUTHORITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. WHEN THE WORK IS COMPLETED, IT SHALL BE TESTED IN ITS ENTIRETY, AND SHALL BE IN GOOD WORKING ORDER BEFORE THE OWNER'S CERTIFICATE OF ACCEPTANCE SHALL BE ISSUED.

A WRITTEN GUARANTEE SHALL BE SUPPLIED TO THE OWNER BY THE CONTRACTOR COVERING THE PROMPT MAKING GOOD OF ANY AND ALL DEFECTS IN MATERIAL AND WORKMANSHIP FOR THE PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE AND THE MAKING GOOD OF ANY SUCH DEFECTS SHALL BE COMPLETELY THE RESPONSIBILITY OF THE CONTRACTOR.

THE CONTRACTOR WILL BE RESPONSIBLE FOR THE SUPPLY OF SUFFICIENT POWER ON A TEMPORARY BASIS TO ALLOW TESTING OF ALL EQUIPMENT AND SYSTEMS. THESE WILL BE TESTED IN THE PRESENCE OF THE ENGINEER.

FURNISH MANUFACTURER'S CERTIFICATE OR LETTER CONFIRMING THAT ENTIRE INSTALLATION AS IT PERTAINS TO EACH SYSTEM HAS BEEN INSTALLED TO MANUFACTURER'S INSTRUCTIONS.

**MATERIAL SPECIFIED**

1. MANUFACTURER'S NAME WITH CLAUSE "OR APPROVED EQUAL". THE TENDER PRICE SHALL BE BASED ON THE NAMED MATERIAL, WHERE SUBSTITUTIONS ARE TO BE PROPOSED FOR MATERIALS BEARING THE CLAUSE "OR APPROVED EQUAL", APPROVAL OF THE SUBSTITUTE ITEM MUST BE OBTAINED FROM THE ENGINEER AT LEAST SEVEN DAYS PRIOR TO THE CLOSING DATE OF THE TENDER. THE PROPOSED SUBSTITUTION SHALL SHOW PRODUCT NAME AND COMPLETE SPECIFICATION AND BE EQUAL TO, OR BETTER THAN THE NAMED ITEM. NO INCREASE IN THE TENDER PRICE SHALL BE MADE FOR SUCH A SUBSTITUTION SHOULD IT BE ACCEPTED. ACCEPTED EQUALS WILL BE LISTED IN AN ADDENDUM FIVE DAYS PRIOR TO THE TRADE CLOSING DATE.
2. WHERE ADDITIONAL MANUFACTURERS ARE NAMED UNDER ARTICLES ENTITLED "APPROVED MANUFACTURERS", THE CHOICE OF WHICH OF THE MANUFACTURERS NAMED IN REFERENCE TO A PARTICULAR ARTICLE IS TO BE USED, SHALL BE THE CONTRACTORS.
3. WHERE APPROVALS ARE GRANTED FOR THE USE OF OTHER EQUIPMENT ANY AND ALL CHANGES OR ADDITIONS REQUIRED FOR THE INSTALLATION OR OPERATION OF THE APPROVED EQUIPMENT WILL BE MADE BY THE CONTRACTOR AT HIS OWN EXPENSE AND NO CLAIMS WILL BE APPROVED FOR ANY SUCH CHANGES. NOTWITHSTANDING APPROVAL OF SHOP DRAWINGS. EQUIPMENT THAT IS ACCEPTED AND INSTALLED AND THEN DOES NOT PERFORM AS REPRESENTED BY ORIGINAL SUBMITTED DATA SHALL BE REPLACED BY THE CONTRACTOR WITH EQUIPMENT AS SPECIFIED, AT NO CHARGE TO THE OWNER.
4. COMPLETE SYSTEM SHALL BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL MOUNTING HARDWARE, BRACKETS, NUTS, SUPPORTS, CABLE, ETC. AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL SYSTEM. AT END OF PROJECT, MANUFACTURER SHALL VISIT SITE AND PROVIDE LETTER INDICATING COMPLETE SYSTEM IS INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS AND SYSTEM IS IN PROPER WORKING ORDER.

**LIGHTNING PROTECTION COMPONENTS**

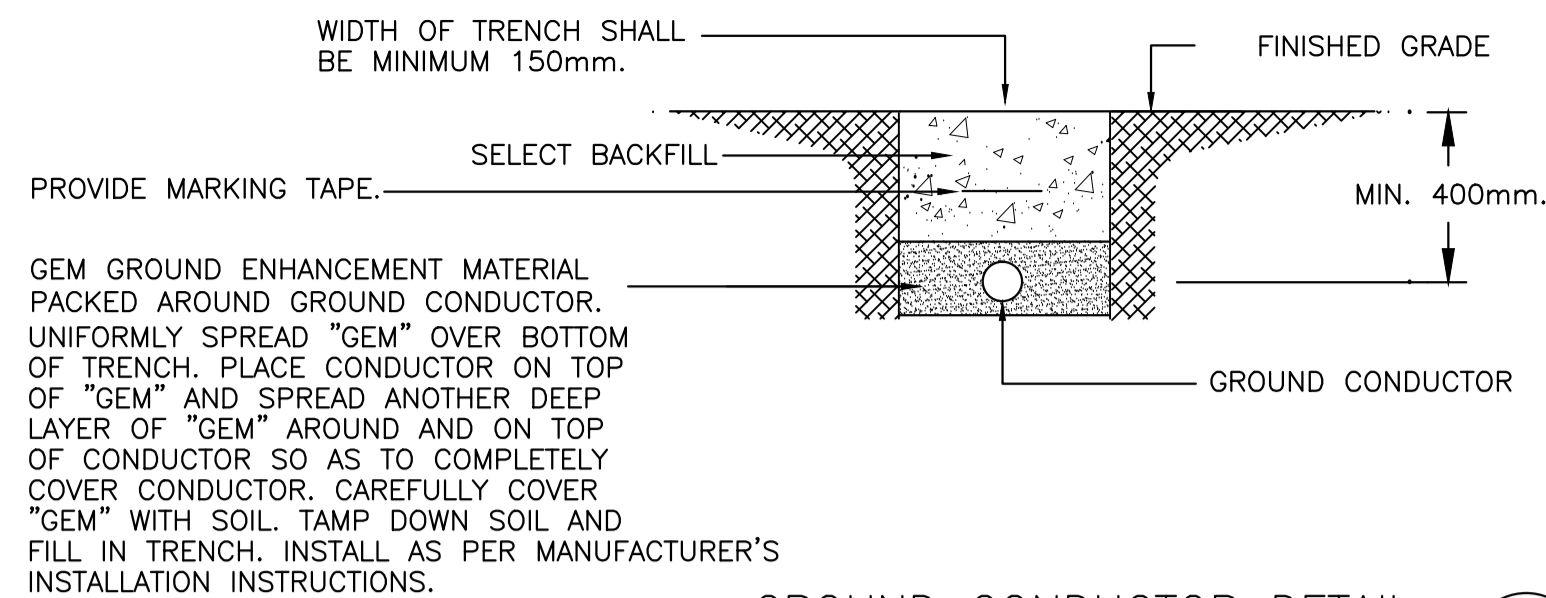
1. THE LIGHTNING PROTECTION SYSTEM SHALL INCLUDE BUT MAY NOT BE LIMITED TO THE FOLLOWING COMPONENTS:

**ERICO PART # DESCRIPTION**

ERICO PART #	DESCRIPTION
D/SMKIVSS	ERICO® DYNASPHERE, MKIV, SS
INTCPTADM116UN	ERICO SYSTEM 3000 OR SI TERMINAL TO ER2 MAST
ER22000SS	STAINLESS STEEL MAST, MIDDLE SECTION, SS, 6-1/2 FT.
ER33000SS	STAINLESS STEEL MAST, LOWER SECTION, SS, 9-4/5 FT.
ER3BASESS	STAINLESS STEEL, MAST BASE, ER3 SERIES
GUYKIT4M/GRIP	GUYKIT, 13 FT. VERTICAL HEIGHT WITH GRIPS
CABTISS	STAINLESS STEEL CABLE TIES
LPC870	PIPE CLAMP, CU, UP TO 1.5" OD PIPE
LPC66418	COPPER THRU-ROOF ASSEMBLIES, CABLE CONNECTOR 18"
LPC126R250	CABLE, ROPELAY, CU, 28 X 14 GAUGE
LECV	LIGHTNING EVENT COUNTER, LEC V, DIGITAL DISPLAY
LPC810	COPPER STAMPED ADHESIVE CABLE HOLDER
LPP899BK	ADHESIVE, BLACK, 10.30Z. M-1 STRUCTURAL SEALANT - SINGLE TUBE
LPC805	CABLE STRAPS
LPP74728	PVC PROTECTOR

**GROUNDING**

GRC188D	MOLD,CABLE TO GRD ROD,VERT ELL HORZ CABLE
613400	3/4" X 10' COPPER BONDED GROUND ROD 10 MIL
GYE182G	MOLD,CABLE TO GRD ROD,VERT X HORZ THRU CABLE
115PLUSF20	CADWELD® PLUS GROUNDING WELDING MATERIAL - TYPE F20
A800A09F65	CABLE, CU, BARE, 2/0 CONCENTRIC, 65"
GEM25A	GROUND ENHANCEMENT MATERIAL - 25 LB. BAG WITH HANDLE
T416B	HIGH DENSITY POLYETHYLENE INSPECTION WELL 10" ROUND X 10" DEEP
XLL160	CADWELD MOLD HANDLE CLAMP
T313	CARD CLOTH CABLE CLEANING BRUSH
T394	MOLD CLEANING BRUSH - NATURAL BRISTLE
B13718	STEEL DRIVING SLEEVE FOR 3/4" COPPER BONDED POINTED GROUND RODS
PLUSUCU	IMPROVED DESIGN - CADWELD® PLUS CONTROL UNIT



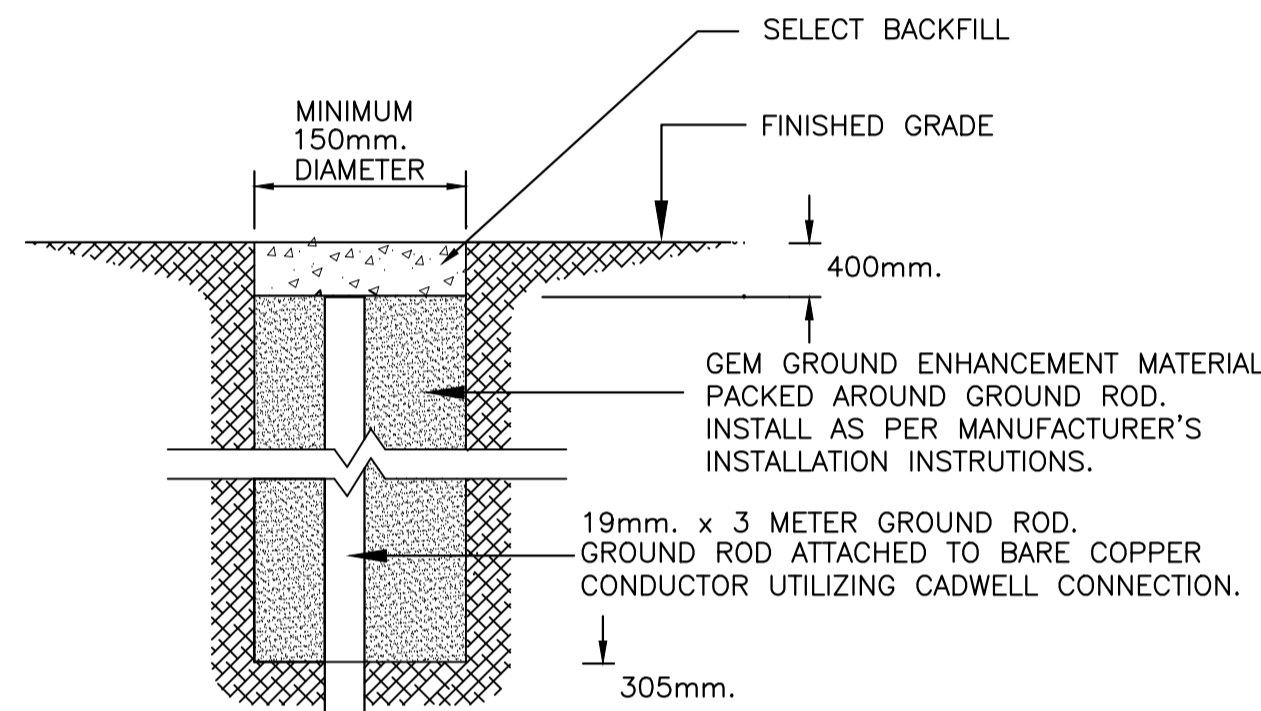
GROUND CONDUCTOR DETAIL

N.T.S.



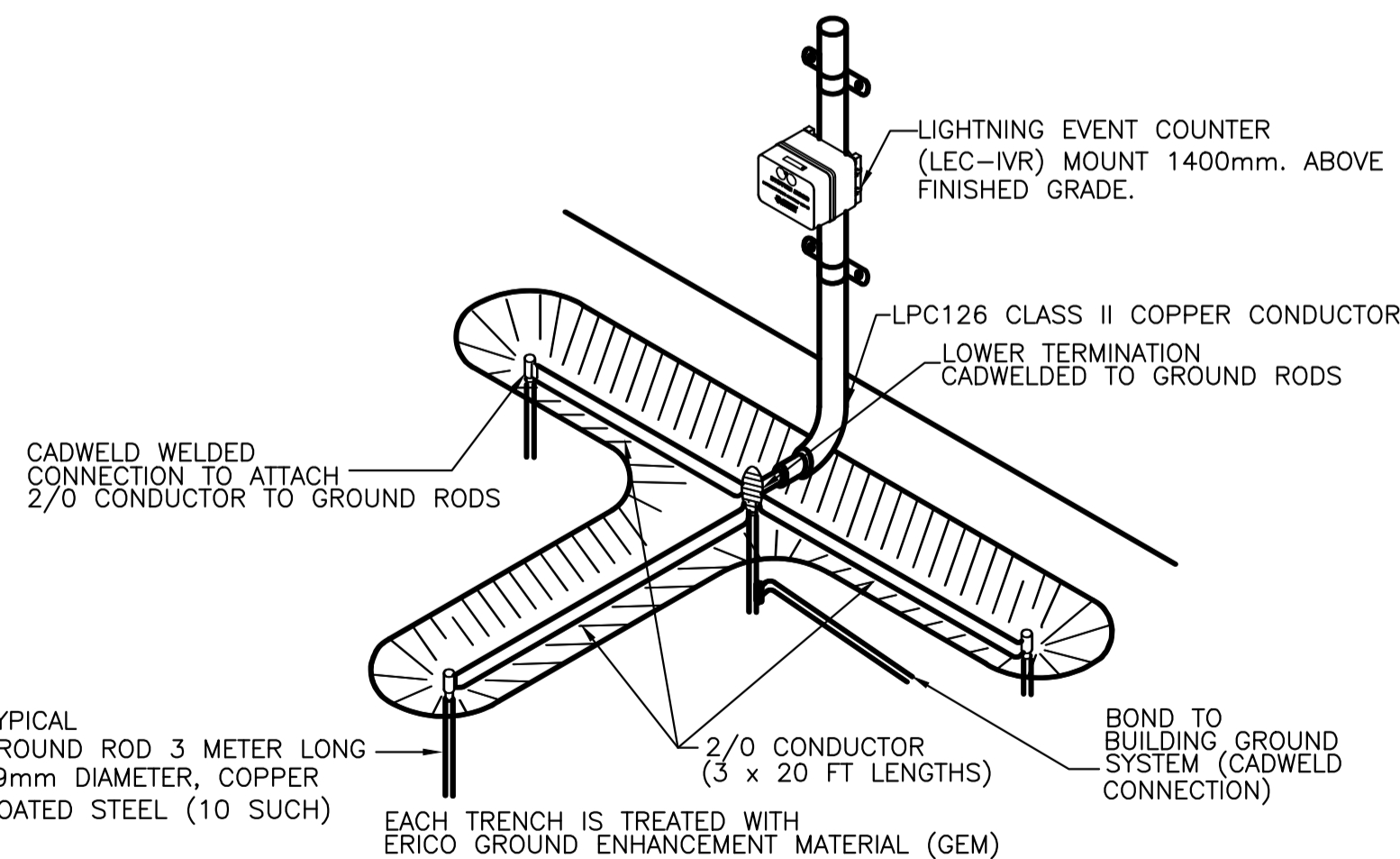
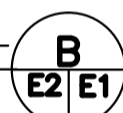
**GROUNDING NOTES:**

1. PROVIDE TRENCHING AND ATTACH CONDUCTOR TO BEDROCK USING GEM MATERIAL.
2. BARE COPPER CONDUCTOR TO BE SPACED A MINIMUM OF 1200mm APART.
3. DRILL BEDROCK AND INSTALL GROUND RODS. DRILL HOLE DIAMETER MINIMUM OF 76mm.
4. GEM MATERIAL TO BE INSTALLED AS PER MANUFACTURERS INSTRUCTIONS.
5. THE MAIN EXTERNAL BURIED GROUND IMPEDANCE TO TRUE EARTH SHALL BE LESS THAN 15 OHMS OR ADDITIONAL GROUND RODS OR COUNTERPOISES SHALL BE USED.
6. ALL BURIED GROUND CONNECTORS SHALL BE CADWELD TYPE AND SHALL BE INSTALLED AT 400mm. BELOW FINISHED GRADE.
7. GROUND RODS SHALL BE 3 METERS LONG, 19mm. DIAMETER COPPER COATED STEEL. GROUND RODS SHALL BE BURIED VERTICALLY AT AN ANGLE OF NOT MORE THAN 30° FROM VERTICAL SUCH THAT THE TOP OF THE ROD IS INSTALLED AT 400mm. BELOW FINISHED GRADE.



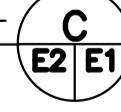
GROUND ROD DETAIL

N.T.S.



TYPICAL GROUNDING DETAIL

N.T.S.



1. EACH RADIAL CONSISTS OF A TRENCH 6 METERS IN LENGTH AND APPROX. 400mm. DEEP. 6 METERS OF 2/0 CONDUCTOR IS LAID IN EACH TRENCH AND IS ATTACHED TO A GROUND ROD USING CADWELD WELDED CONNECTIONS. THE 2/0 CONDUCTOR IS TERMINATED TO THE GROUND SYSTEM USING GY CADWELD MOLD. TREAT EACH TRENCH WITH ERICO GROUND ENHANCEMENT MATERIAL. INSTALL AS PER MANUFACTURERS INSTRUCTIONS.

0	ISSUED FOR TENDER	27/03/15	D.R.	K.N.
A	ISSUED FOR REVIEW	18/02/15	D.R.	K.N.
no.	revision	date	by	approved
no.	revision	date	par	approve

Project - projet

LIGHT TOWER  
REFURBISHMENT 2015 -  
CAPE RACE, NL

Drawing - dessin

ELECTRICAL DETAILS AND  
SPECIFICATION

drawn - dessine	D.R.	designed - dessine par	K.N.
date - date	FEBRUARY 18, 2015	checked - verifie	K.N.
scale - echelle		approved for tender - approuve pour l'offre	
AS SHOWN			
project no. - projet no.	drawing no. - no du dessin	sheet - feuille	
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