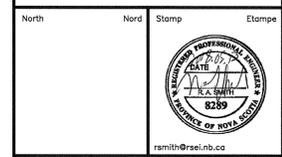




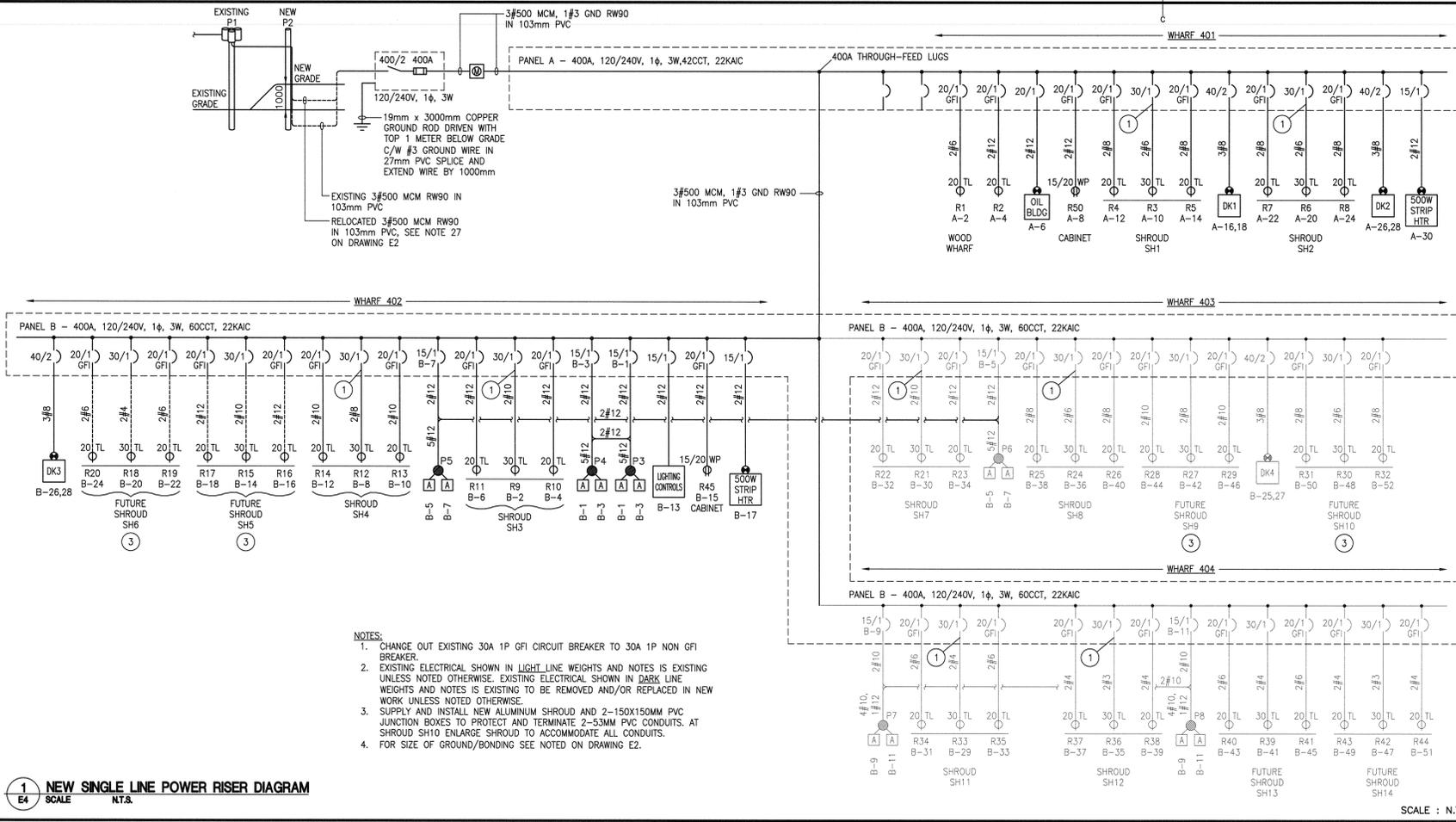
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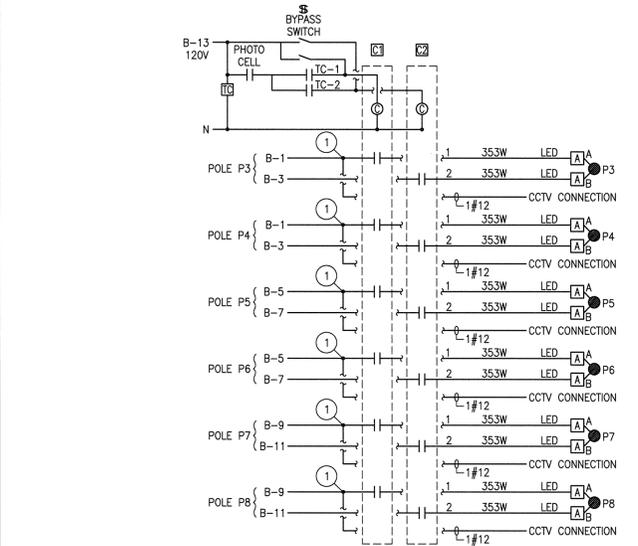


North Nord Stamp Etampe



- NOTES:
- CHANGE OUT EXISTING 30A 1P GFI CIRCUIT BREAKER TO 30A 1P NON GFI BREAKER.
 - EXISTING ELECTRICAL SHOWN IN LIGHT LINE WEIGHTS AND NOTES IS EXISTING UNLESS NOTED OTHERWISE. EXISTING ELECTRICAL SHOWN IN DARK LINE WEIGHTS AND NOTES IS EXISTING TO BE REMOVED AND/OR REPLACED IN NEW WORK UNLESS NOTED OTHERWISE.
 - SUPPLY AND INSTALL NEW ALUMINUM SHROUD AND 2-150X150MM PVC JUNCTION BOXES TO PROTECT AND TERMINATE 2-53MM PVC CONDUITS. AT SHROUD SH10 ENLARGE SHROUD TO ACCOMMODATE ALL CONDUITS.
 - FOR SIZE OF GROUND/BONDING SEE NOTED ON DRAWING E2.

1 NEW SINGLE LINE POWER RISER DIAGRAM
SCALE: N.T.S.



- NOTE:
- FOR OFF-SEASON WHARF USAGE WITH MINIMUM LIGHTING AND 24/7 POWER TO CCTV CAMERAS TURN OFF BREAKERS FOR CIRCUITS B-3, B-7 AND B-11.

2 WHARF LIGHTING CONTROL DETAIL
SCALE: N.T.S.

CANADIAN ELECTRICAL CODE - SECTION 78
NEW WHARF ELECTRICAL LOAD
BEAR POINT WHARF

1. WHARF LOADS

| | | | |
|------------------|----------------|--------------|-------------|
| 1. Derrick motor | 40A, 2P, CB | 32A x 240V = | 7,680 watts |
| 2. Receptacles | 20A, 1P, CB | 16A x 120V = | 1,920 watts |
| | 30A, 1P, CB | 24A x 120V = | 2,880 watts |
| 3. Light fixture | LED floodlight | | 353 watts |

2. LOADING WITH DIVERSITY C.E.C. 78-056 (PANEL B)

| | | | |
|---|--|---------|----------------|
| 1. 100% OF 1 st FOUR (4) RECEPTACLES/LOADS | | | |
| Two (2) Derricks (DK3,DK4) x 32A x 240V = | | 15,360W | |
| Two (2) receptacles (R9,R12) x 24A x 120V = | | 5,760W | 21,120W |
| 2. 65% OF NEXT FOUR (4) RECEPTACLES | | | |
| Four (4) receptacles (R15,R18,R21,R24) x | | | 7,488W |
| 24A x 120V x 65% = | | | |
| 3. 50% OF NEXT FIVE (5) RECEPTACLES | | | |
| Five (4) receptacles (R27,R30,R33,R36, R39) x | | | 7,200W |
| 24A x 120V x 50% = | | | |
| 4. 25% OF NEXT SIXTEEN (16) RECEPTACLES | | | |
| One (1) receptacles (R42) x | | | 720W |
| 24A x 120V x 25% = | | | |
| Fifteen (15) receptacles (R10,R11,R13 | | | 7,200W |
| R14,R16,R17,R19,R20,R22,R23,R25, R26, | | | |
| R28,R29, R31) x 16A x 120V x 25% = | | | |
| 5. 20% OF NEXT TWENTY (20) RECEPTACLES | | | |
| Ten (10) receptacles (R32,R34, | | | 3,840W |
| R35,R37,R38,R40,R41,R43,R44,R45) x | | | |
| 16A x 120V x 20% = | | | |
| 6. Twelve (12) LED light fixtures - 353W x 12 = | | | 4,236W |
| 7. Cabinet strip heater = | | | 500W |
| 8. Cabinet light controls = | | | 100W |
| Total: | | | 52,404W |

Panel 'b' size = 52,404W = 218A x 1.25 = 273A.
240V

Use 400A through-feed lugs on Panel 'A' to feed Panel 'B' and allowing for a distance of 34 meters and 2% voltage drop the feeder would be 38350 MCM copper although 38500 MCM would be used to meet Code for equal size bus

3. LOADING WITH DIVERSITY C.E.C. 78-056 (PANEL A)

| | | | |
|---|--|--|----------------|
| 1. 100% OF 1 st FOUR (4) RECEPTACLES | | | |
| (Four (4) Derricks x 32A x 240V) = | | | 30,720W |
| 2. 65% OF NEXT FOUR (4) RECEPTACLES | | | |
| (R3,R6,R9,R12 - 4 x 24A x 120V x 65%) = | | | 7,488W |
| 3. 50% OF NEXT FIVE (5) RECEPTACLES | | | |
| (R15,R18,R21,R24,R27 - 5 x 24A x 120V x 50%) = | | | 7,200W |
| 4. 25% OF NEXT SIXTEEN (16) RECEPTACLES | | | |
| (R30,R33,R36,R39,R42 - 5 x 24A x 120V x 25%) = | | | 3,600W |
| (R1,R2,R4,R5,R7,R8,R10,R11,R13,R14 | | | 4,800W |
| 10 x 16A x 120V x 25%) = | | | |
| 5. 20% OF NEXT TWENTY (20) RECEPTACLES | | | |
| (R16,R17,R19,R20,R22,R23,R25,R26,R29,R29, | | | 7,680W |
| R31,R32,R34,R35,R37,R38,R40,R41,R43,R44 | | | |
| 20 x 16A x 120V x 20%) = | | | |
| 6. Twelve (12) LED light fixtures - 353W x 12 = | | | 4,236W |
| 7. Oil Shed Building - 16A x 120V x 100% = | | | 1,920W |
| 8. Cabinet strip heaters - 2 x 500W = | | | 500W |
| 9. Lighting contact - 1 x 100W = | | | 100W |
| Total: | | | 69,244W |

10% spare capacity: 6,924W
Overall Total: 76,168W

Service size required = 76,168W = 313A x 1.25 = 391A.
240V

Service will be sized at 400A, 120/240V, 1F, 3W.

3 LOAD CALCULATIONS
SCALE: N.T.S.

POWER SUPPLY: 120/240V, 1PH, 3W
MAINS: 400A
NUMBER OF CIRCUITS: 42

| DESCRIPTION | WATTAGE | | # BRK | CIRCUIT | # BRK | WATTAGE | | DESCRIPTION |
|---------------------|---------|-------|-------|---------|-------|---------|-------|--------------------------------|
| | A | B | | | | A | B | |
| SPARE | 1 | 20 | 1 | a | 2 | 20 | 1 | WOOD WHARF RECEPTACLE R1 |
| SPARE | 1 | 20 | 1 | b | 4 | 20 | 1 | WOOD WHARF RECEPTACLE R2 |
| SPARE | 1 | 15 | 5 | a | 8 | 20 | 1 | WOOD WHARF RECEPTACLE R3 |
| SPARE | 1 | 15 | 7 | b | 8 | 20 | 1 | WOOD WHARF RECEPTACLE R4 |
| SPARE | 2 | 40 | 9 | a | 10 | 30 | 1 | SH1 RECEPT R5 |
| SPARE | 1 | 11 | 1 | b | 12 | 20 | 1 | SH1 RECEPT R6 |
| SPARE | 1 | 13 | 1 | a | 14 | 20 | 1 | SH1 RECEPT R7 |
| SPARE | 1 | 15 | 1 | b | 16 | 40 | 2 | DERRICK #1 |
| SPARE | 1 | 17 | 1 | a | 18 | 20 | 1 | DERRICK #2 |
| SPARE | 1 | 19 | 1 | b | 20 | 30 | 1 | SH2 RECEPT R8 |
| SPARE | 1 | 21 | 1 | a | 22 | 20 | 1 | SH2 RECEPT R9 |
| SPARE | 1 | 23 | 1 | b | 24 | 20 | 1 | SH2 RECEPT R10 |
| SPARE | 1 | 25 | 1 | a | 26 | 40 | 2 | DERRICK #2 |
| SPARE | 1 | 27 | 1 | b | 28 | 40 | 2 | DK4 |
| SPARE | 1 | 29 | 1 | a | 30 | 15 | 1 | PANEL 'A' CABINET STRIP HEATER |
| SPARE | 1 | 31 | 1 | b | 32 | | | |
| SPARE | 1 | 33 | 1 | a | 34 | | | |
| SPARE | 1 | 35 | 1 | b | 36 | | | |
| SPARE | 1 | 37 | 1 | a | 38 | | | |
| SPARE | 1 | 39 | 1 | b | 40 | | | |
| SPARE | 1 | 41 | 1 | a | 42 | | | |
| PHASE LOADS: | 29874 | 29874 | | | | 16740 | 16240 | |
| TOTAL LOAD: | 49728 | 49728 | | | | | | |
| TOTAL PHASE LOADS | 48614 | 48114 | | | | | | |
| +/- 5% | 30707 | 33855 | | | | | | |
| CURRENT (A) @ 240V: | 233 | 33855 | | | | | | |

POWER SUPPLY: 120/240V, 1PH, 3W
MAINS: 400A
NUMBER OF CIRCUITS: 80

| DESCRIPTION | WATTAGE | | # BRK | CIRCUIT | # BRK | WATTAGE | | DESCRIPTION |
|----------------------------------|---------|-------|-------|---------|-------|---------|-------|----------------|
| | A | B | | | | A | B | |
| POLE P3 & P4 PARTIAL LITS | 706 | 706 | 1 | 15 | 1 | 4 | 2 | SH2 RECEPT R9 |
| POLE P5 & P6 PARTIAL LITS | 706 | 706 | 1 | 15 | 3 | 4 | 2 | SH2 RECEPT R10 |
| POLE P7 & P8 PARTIAL LITS | 706 | 706 | 1 | 15 | 5 | 8 | 2 | SH2 RECEPT R11 |
| POLE P9 & P10 PARTIAL LITS | 706 | 706 | 1 | 15 | 7 | 8 | 2 | SH2 RECEPT R12 |
| POLE P11 & P12 PARTIAL LITS | 706 | 706 | 1 | 15 | 9 | 10 | 2 | SH2 RECEPT R13 |
| POLE P13 & P14 PARTIAL LITS | 706 | 706 | 1 | 15 | 11 | 12 | 2 | SH2 RECEPT R14 |
| LIGHTING CONTROL | 100 | 100 | 1 | 15 | 13 | 14 | 30 | SH2 RECEPT R15 |
| PANEL 'B' CABINET RECEPTACLE R43 | 1920 | 1920 | 1 | 20 | 15 | 16 | 20 | SH2 RECEPT R16 |
| PANEL 'B' CABINET STRIP HEATER | 500 | 500 | 1 | 15 | 17 | 18 | 20 | SH2 RECEPT R17 |
| SPARE | 1 | 20 | 1 | 19 | 1 | 20 | 30 | SH2 RECEPT R18 |
| SPARE | 1 | 20 | 1 | 21 | 1 | 22 | 20 | SH2 RECEPT R19 |
| SPARE | 1 | 20 | 1 | 23 | 1 | 24 | 20 | SH2 RECEPT R20 |
| DERRICK #4 | 3840 | 3840 | 2 | 40 | 25 | 26 | 40 | DERRICK #4 |
| DK4 240V, 1P | 27 | 27 | 1 | 30 | 40 | 2 | 3840 | DK4 240V, 1P |
| SH11 RECEPT R23 | 2880 | 1920 | 1 | 30 | 29 | 30 | 30 | SH1 RECEPT R21 |
| SH12 RECEPT R24 | 1920 | 1920 | 1 | 20 | 31 | 32 | 20 | SH1 RECEPT R22 |
| SH13 RECEPT R25 | 1920 | 1920 | 1 | 20 | 33 | 34 | 20 | SH1 RECEPT R23 |
| SH14 RECEPT R26 | 2880 | 1920 | 1 | 30 | 35 | 36 | 30 | SH1 RECEPT R24 |
| SH15 RECEPT R27 | 1920 | 1920 | 1 | 20 | 37 | 38 | 20 | SH1 RECEPT R25 |
| SH16 RECEPT R28 | 1920 | 1920 | 1 | 20 | 39 | 40 | 20 | SH1 RECEPT R26 |
| SH17 RECEPT R29 | 2880 | 1920 | 1 | 30 | 41 | 42 | 30 | SH1 RECEPT R27 |
| SH18 RECEPT R30 | 1920 | 1920 | 1 | 20 | 43 | 44 | 20 | SH1 RECEPT R28 |
| SH19 RECEPT R31 | 1920 | 1920 | 1 | 20 | 45 | 46 | 20 | SH1 RECEPT R29 |
| SH20 RECEPT R32 | 2880 | 1920 | 1 | 30 | 47 | 48 | 30 | SH1 RECEPT R30 |
| SH21 RECEPT R33 | 1920 | 1920 | 1 | 20 | 49 | 50 | 20 | SH1 RECEPT R31 |
| SH22 RECEPT R34 | 1920 | 1920 | 1 | 20 | 51 | 52 | 20 | SH1 RECEPT R32 |
| SPARE | 1 | 20 | 1 | 53 | 1 | 54 | | SPARE |
| SPARE | 1 | 55 | 1 | 56 | | | | SPARE |
| SPARE | 1 | 57 | 1 | 58 | | | | SPARE |
| SPARE | 1 | 59 | 1 | 60 | | | | SPARE |
| PHASE LOADS: | 19998 | 21318 | | | | 30720 | 30360 | |
| TOTAL PHASE LOADS | 30718 | 31678 | | | | | | |
| +/- 5% | 32887 | 33539 | | | | | | |
| CURRENT (A) @ 240V: | 247 | 33539 | | | | | | |

- NOTES:
- CHANGING OUT EXISTING 30A 1P GFI CIRCUIT BREAKER TO 30A 1P NON GFI CIRCUIT BREAKER.
 - RELOCATE 40A 2P CIRCUIT BREAKER FOR DERRICK DK4 FROM B-38-40 TO B-25,27.

4 PANEL SCHEDULES
SCALE: N.T.S.

PANEL 'A' - VOLTAGE DROP/WIRE SIZE CALCULATIONS

| RECEPTACLE LOAD WATTS | RATING AMPS | VOLTS | CIRCUIT | RATED CURRENT | DISTANCE METERS (m) | VOLTAGE DROP | WIRE SIZE |
|--------------------------|-------------|-------|---------|---------------|---------------------|--------------|-----------|
| R1 1920 | 20 | 120V | A-2 | 16 | 56 | <3% | 2#6 |
| R2 1920 | 20 | 120V | A-4 | 16 | 18 | <3% | 2#12 |
| R3 2880 | 30 | 120V | A-10 | 24 | 35 | <3% | 2#6 |
| R4 1920 | 20 | 120V | A-12 | 16 | 35 | <3% | 2#8 |
| R5 1920 | 20 | 120V | A-14 | 16 | 35 | <3% | 2#8 |
| R6 2880 | 30 | 120V | A-20 | 24 | 32 | <3% | 2#6 |
| R7 1920 | 20 | 120V | A-22 | 16 | 32 | <3% | 2#8 |
| R8 1920 | 20 | 120V | A-24 | 16 | 32 | <3% | 2#8 |
| DK1 7680 | 40 | 240V | A-16,18 | 32 | 42 | <3% | 3#8 |
| DK2 7680 | 40 | 240V | A-26,28 | 32 | 34 | <3% | 3#8 |
| PANEL A STRIP HEATER 500 | 15A | 120V | A-30 | 12 | 1 | <3% | 2#12 |
| OIL BUILDING 1920 | 20 | 120V | A-6 | 16 | 18 | <3% | 2#10 |
| PANEL A R50 1920 | 20 | 120V | A-8 | 16 | 1 | <3% | 2#12 |

PANEL 'B' - VOLTAGE DROP/WIRE SIZE CALCULATIONS

| RECEPTACLE LOAD WATTS | RATING AMPS | VOLTS | CIRCUIT | RATED CURRENT | DISTANCE METERS (m) | VOLTAGE DROP | WIRE SIZE |
|-----------------------|-------------|-------|---------|---------------|---------------------|--------------|-----------|
| R9 2880 | 30A | 120V | B-2 | 24 | 10 | <3% | 2#12 |
| R10 1920 | 20A | 120V | B-4 | 16 | 10 | <3% | 2#12 |
| R11 1920 | 20A | 120V | B-6 | 16 | 10 | <3% | 2#12 |
| R12 2880 | 30A | 120V | B-8 | 24 | 26 | <3% | 2#8 |
| R13 1920 | 20A | 120V | B-10 | 16 | 26 | <3% | 2#10 |
| R14 1920 | 20A | 120V | B-12 | 16 | 26 | <3% | 2#10 |
| R15 2880 | 30A | 120V | B-14 | 24 | 17 | <3% | 2#10 |
| R16 1920 | 20A | 120V | B-16 | 16 | 17 | <3% | 2#12 |
| R17 1920 | 20A | 120V | B-18 | 16 | 17 | <3% | 2#12 |
| R18 2880 | 30A | 120V | B-20 | 24 | 50 | <3% | 2#4 |
| R19 1920 | 20A | 120V | B-22 | 16 | 50 | <3% | 2#6 |
| R20 1920 | 20A | 120V | B-24 | 16 | 50 | <3% | 2#6 |
| R21 2880 | 30A | 120V | B-30 | 24 | 20 | <3% | 2#10 |
| R22 1920 | 20A | 120V | B-32 | 16 | 20 | <3% | 2#12 |
| R23 1920 | 20A | 120V | B-34 | 16 | 20 | <3% | 2#12 |
| R24 2880 | 30A | 120V | B-36 | 24 | 40 | <3% | 2#6 |
| R25 1920 | 20A | 120V | B-38 | 16 | 40 | <3% | 2#8 |
| R26 1920 | 20A | 120V | B-40 | 16 | 40 | <3% | 2#8 |
| R27 2880 | 30A | 120V | B-42 | 24 | 26 | <3% | 2#8 |
| R28 1920 | 20A | 120V | B-44 | 16 | 26 | <3% | 2#10 |
| R29 1920 | 20A | 120V | B-46 | 16 | 26 | <3% | |