

| LEGEND | |
|--------|-------------------------------------------------------------------|
| SYMBOL | DESCRIPTION |
| | CIRCUIT BREAKER, MOULDED CASE WITH THERMAL & MAGNETIC TRIPS |
| | NEMA SIZE 1 STARTER WITH THERMAL OVERLOAD TRIP |
| | CURRENT TRANSFORMER |
| | CAPACITOR |
| | CONTROL POWER TRANSFORMER (CPT) |
| | FUSE |
| | FUSIBLE DISCONNECT SWITCH |
| | NON-FUSIBLE DISCONNECT SWITCH |
| | DRY-TYPE POWER TRANSFORMER (INDOOR) |
| | OIL-FILLED POWER TRANSFORMER (OUTDOOR) |
| | FAULT INDICATOR WITH FIBRE CABLE ON EACH PHASE |
| | PRIMARY DUCTBANK, UNDERGROUND CONCRETE ENCASED |
| | SECONDARY DUCTBANK, UNDERGROUND CONCRETE ENCASED |
| | LIGHTING DUCT, UNDERGROUND DIRECT BURIED |
| | COMMUNICATION UNDERGROUND DUCTS |
| | PROPOSED ENBRIDGE GAS HEADER |
| | PROPOSED ENBRIDGE GAS FEED |
| | 3-PHASE PAD MOUNTED TRANSFORMER C/W VAULT AND GROUND GRID |
| | 3-PHASE PAD MOUNTED TRANSFORMER C/W LARGER VAULT AND GROUND GRID |
| | POWER PEDESTAL AND VAULT |
| | ROGERS GRADE LEVEL BOX |
| | BELL GRADE LEVEL BOX (BULK-7 SERIES 30"Wx48"Lx36"D) |
| | LIGHT AND POLE (L# DENOTES LIGHT TYPE) |
| | LIGHT BOLLARD |
| | PULLBOX (914mm X 914mm) |
| | HANDHOLE (810mm DIAMETER) |
| | ELECTRIC VEHICLE CHARGING STATION WITH PEDESTAL AND CONCRETE BASE |
| | BOLLARD FOR TRANSFORMER WITH YELLOW HDPE COVER AND RED STRIPE |

| STANDARD ABBREVIATIONS – ELECTRICAL | |
|-------------------------------------|---------------------------------------------------------------|
| ABBREVIATION | DESCRIPTION |
| A | AMPERES (CONTINUOUS) |
| AC | ALTERNATING CURRENT |
| ASYM | ASYMMETRICAL |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AUTO | AUTOMATIC |
| AWG | AMERICAN WIRE GAUGE |
| BU | BATTERY UNIT (EMERGENCY) |
| °C | DEGREE CELSIUS |
| C | CONDUCTOR |
| CCT | CIRCUIT |
| CL | CENTERLINE |
| C/W | COMPLETE WITH |
| CPT | CONTROL POWER TRANSFORMER |
| CSA | CANADIAN STANDARDS ASSOCIATION |
| CT | CURRENT TRANSFORMER |
| Cu | COPPER |
| DC | DIRECT CURRENT |
| DISC | DISCONNECT |
| DPDT | DOUBLE POLE DOUBLE THROW |
| DPST | DOUBLE POLE SINGLE THROW |
| EEMAC | ELECTRICAL AND ELECTRONIC MANUFACTURERS ASSOCIATION OF CANADA |
| EP | EXPLOSION PROOF (SUITABLE FOR CLASS I, ZONE 1) |
| ETM | ELAPSED TIME METER |
| ESA | ELECTRICAL SAFETY AUTHORITY |
| GFI | GROUND FAULT INTERRUPTER |
| GND | GROUND |
| HOA | HAND-OFF-AUTOMATIC |
| HP | HORSEPOWER |
| Hz | HERTZ |
| IEEE | INSTITUTE OF ELECTRICAL & ELECTRONIC ENGINEERS |
| INST | INSTANTANEOUS |
| I/O | INPUT/OUTPUT |
| ISB | INTRINSIC SAFETY BARRIER |
| JB | JUNCTION BOX |
| kAIC | KILO-AMP INTERRUPTING CAPACITY |
| kVA | KILOVOLTAMPERE |
| kW | KILOWATT |
| kWh | KILOWATT HOUR |
| LOR | LOCAL-OFF-REMOTE |
| LUC | LOCAL UTILITY COMPANY (INPOWER) |
| MAN | MANUAL |
| MCC | MOTOR CONTROL CENTRE |
| MH | MANHOLE |
| mm | MILLIMETER |
| MOT | MOTOR |
| N | NEUTRAL |
| NEMA | NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION |
| N/A | NON AUTOMATIC |
| N.O. | NORMALLY OPEN |
| N.C. | NORMALLY CLOSED |
| NP | NAMEPLATE |
| NTS | NOT TO SCALE |
| OESC | ONTARIO ELECTRICAL SAFETY CODE |
| O/H | OVERHEAD |
| O/L | OVERLOAD |
| ON-OFF | ON-OFF |
| PB | PUSHBUTTON |
| PDC | POWER DISTRIBUTION CENTRE |
| PH. OR Ø | PHASE OR DIAMETER |
| PLC | PROGRAMMABLE LOGIC CONTROLLER |
| REM | REMOTE |
| RGS | RIGID GALVANIZED STEEL |
| SN | SOLID NEUTRAL |
| SPDT | SINGLE POLE DOUBLE THROW |
| SPMDD | STANDARD PROCTOR MAXIMUM DRY DENSITY |
| SPST | SINGLE POLE SINGLE THROW |
| SS | STAINLESS STEEL (316) |
| SW | SWITCH |
| SYM | SYMMETRICAL |
| TDC | TIME DELAY ON CLOSING |
| TDDO | TIME DELAY ON DROP-OUT (OR OFF TIMER) |
| TDO | TIME DELAY ON OPENING |
| TDPU | TIME DELAY ON PICK-UP |
| TYP. | TYPICAL |
| U/G | UNDERGROUND |
| VA | VOLT-AMPERE |
| VFD | VARIABLE FREQUENCY DRIVE |
| WH | WEATHERHEAD |
| WP | WEATHERPROOF |

| GENERAL SYMBOLS | |
|-----------------|------------------------------------------------------------------------|
| | DETAIL SYMBOL: X = DETAIL NUMBER YZ = DRAWING NUMBER |
| | SYMBOL INDICATES MODIFICATION OR NEW WORK NOTE (# DENOTES NOTE NUMBER) |

| DRAWING LIST – ELECTRICAL | |
|---------------------------|-----------------------------------------------|
| E1.0 | ELECTRICAL LEGEND |
| E1.1 | ELECTRICAL POWER SITE PLAN |
| E2.1 | ELECTRICAL LIGHTING AND EV CHARGERS SITE PLAN |
| E2.2 | PHOTOMETRIC LIGHTING SITE PLAN |
| E2.3 | LIGHTING DETAILS SHEET No.1 |
| E2.4 | LIGHTING DETAILS SHEET No.2 |
| E3.1 | COMMUNICATION SITE PLAN |
| E3.2 | COMMUNICATION DETAILS |
| E4.1 | TYPICAL DUCT BANK DETAILS |
| E4.2 | DUCTBANK AND SWITCHBOARD ELEVATION DETAILS |
| E4.3 | 3 PHASE TRANSFORMER SPECIFICATIONS |
| E4.4 | USF AND VAULT DETAILS |
| E5.1 | SINGLE LINE DIAGRAM |
| E5.2 | ELECTRICAL POWER PEDESTAL PP-D DETAILS |
| E5.3 | TYPICAL EV CHARGER PEDESTAL DETAILS |
| E5.4 | ELECTRICAL POWER PEDESTAL PP-B DETAILS |
| E5.5 | ELECTRICAL POWER PEDESTAL PP-E DETAILS |
| E5.6 | HANDHOLE AND PULLBOX DETAILS |



KEY PLAN – NTS
BARRIE ONTARIO

NOT FOR CONSTRUCTION

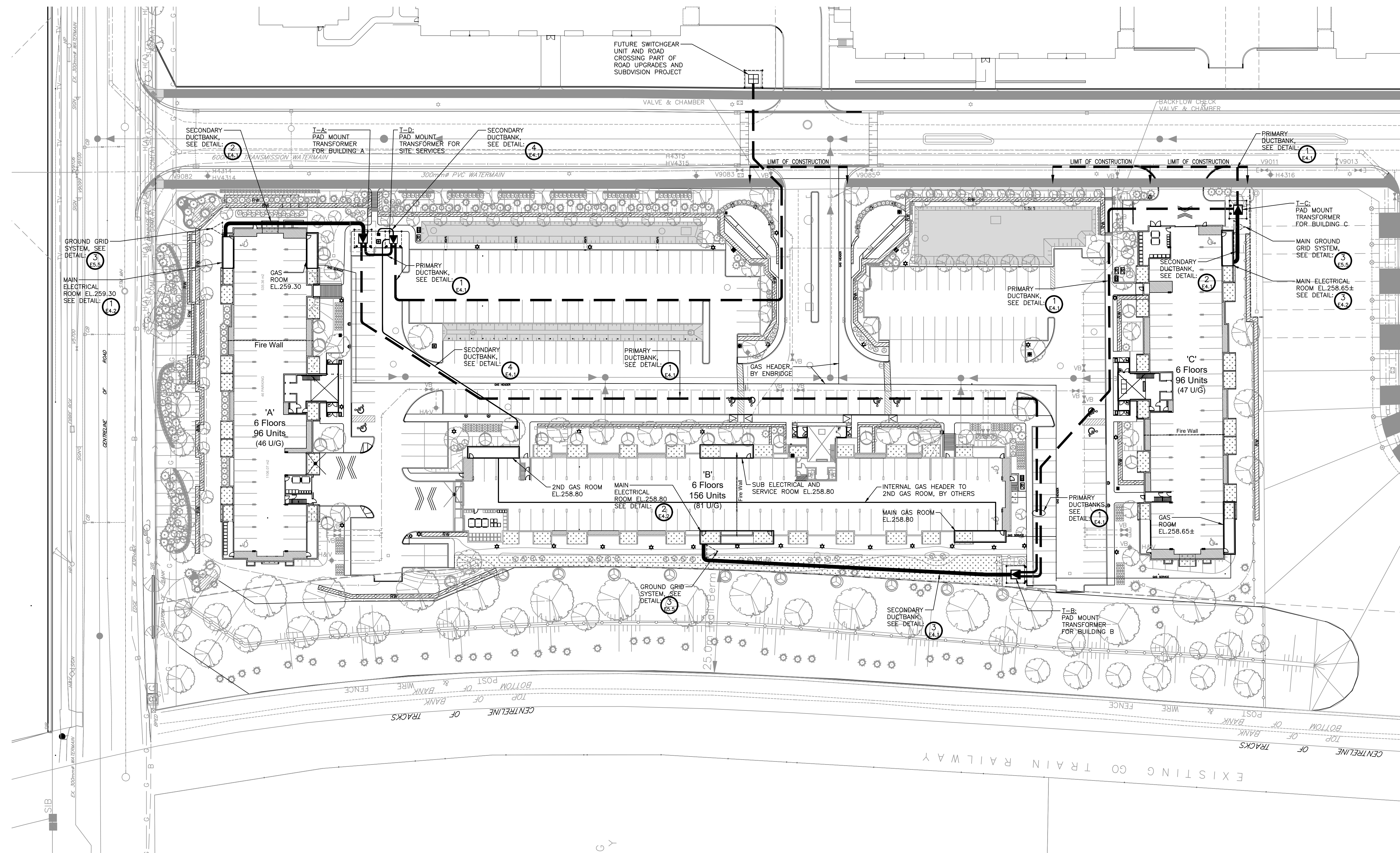
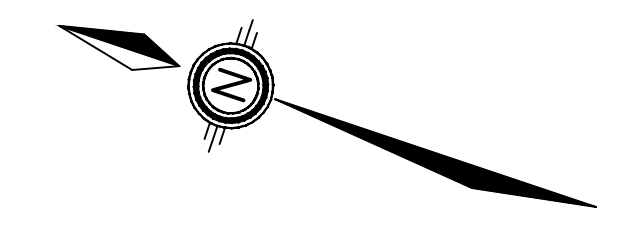
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|-----|-------------------------------------|-------------|---------|
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| 2. | SECOND SUBMISSION TO CITY OF BARRIE | 2021 AUG 31 | GGR |
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PRATT HANSEN GROUP INC.
BISTRO 6 WEST
CITY OF BARRIE

ELECTRICAL LEGEND

| | | | |
|---------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| | | Runge Engineering A Division of Tatham Eng'g Limited 115 Sandford Fleming Drive Collingwood, ON, L9Y 5A6 (705) 445-2565 www.tathameng.com | |
| DESIGN | GGR | SCALE: AS SHOWN | DATE: JANUARY, 2021 |
| DRAWN | JS | PROJECT | DWG. NO |
| CHECKED | GGR | 20137P | E1.0 |



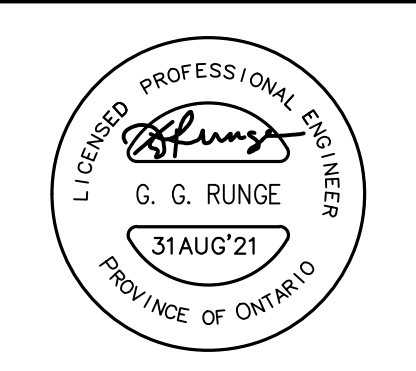
1 ELECTRICAL SITE PLAN – POWER LAYOUT

E1.1
 - SCALE 1:500
 - PROVIDE LARGE UTILITY "SWEEP" FITTINGS FOR ALL DUCT BENDS

NOT FOR CONSTRUCTION

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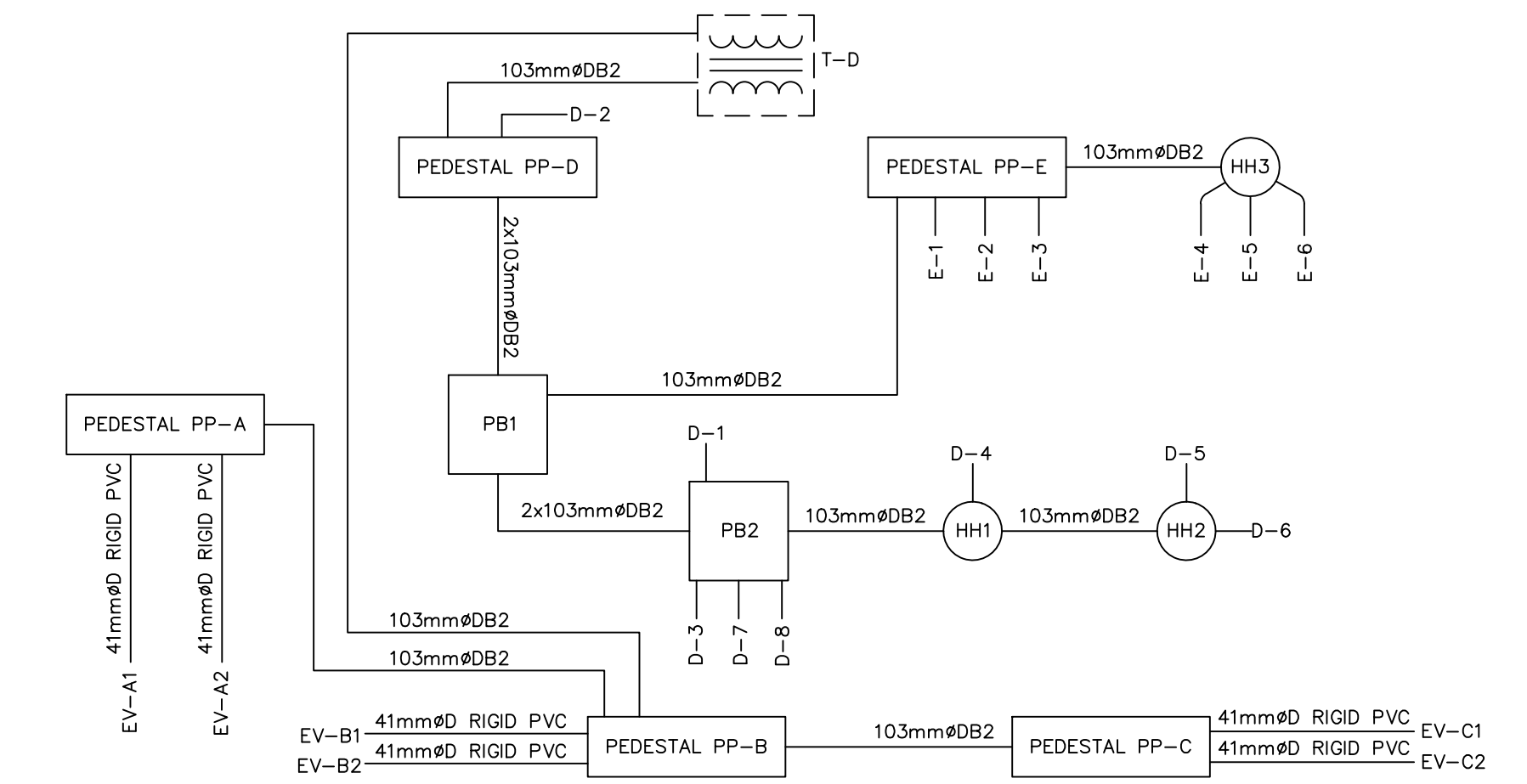
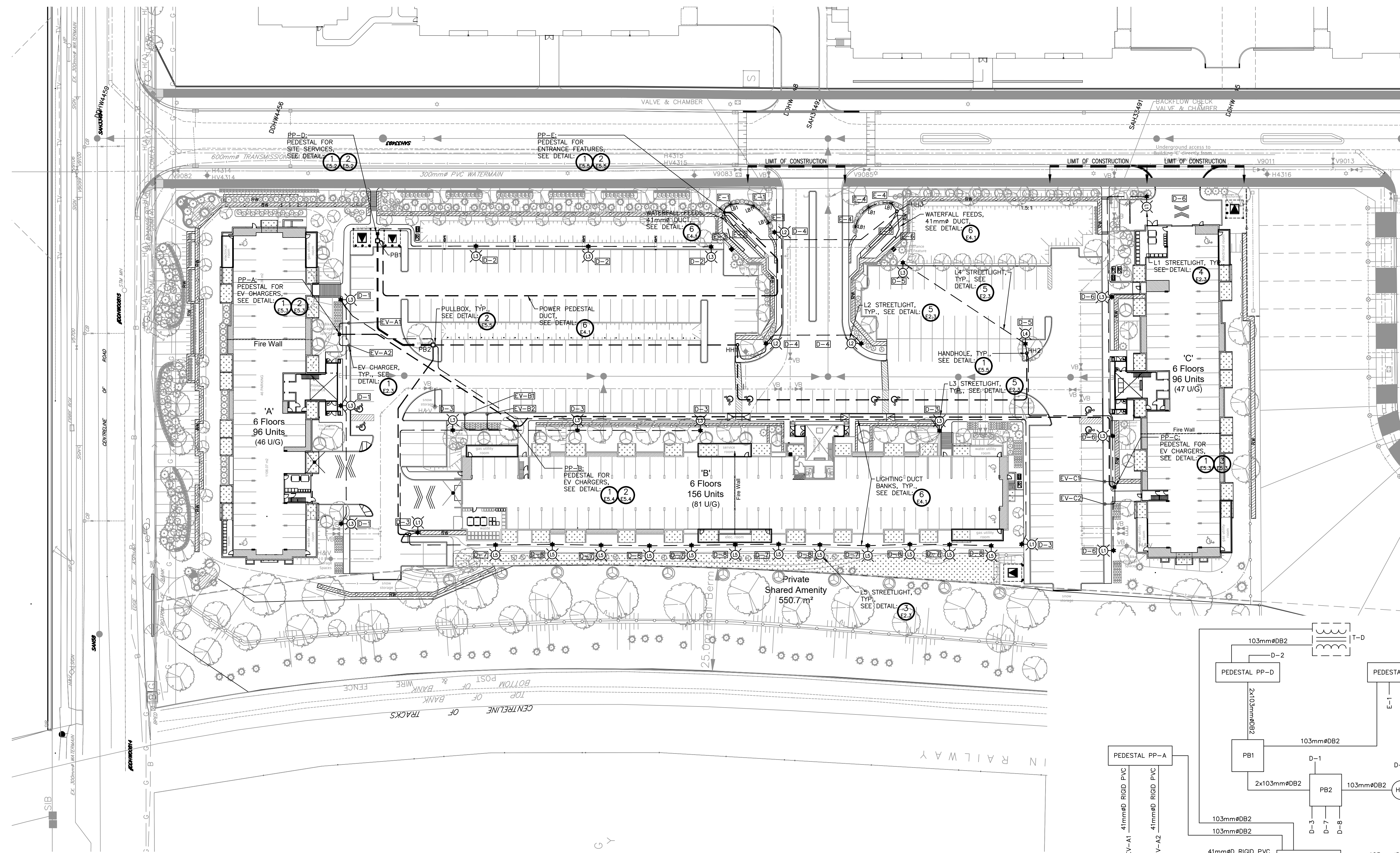
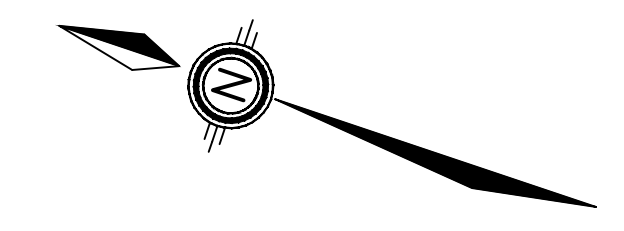


PRATT HANSEN GROUP INC.
 BISTRO 6 WEST
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**ELECTRICAL POWER
 SITE PLAN**

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| CHECKED | GGR | 20137P | E1.1 | |



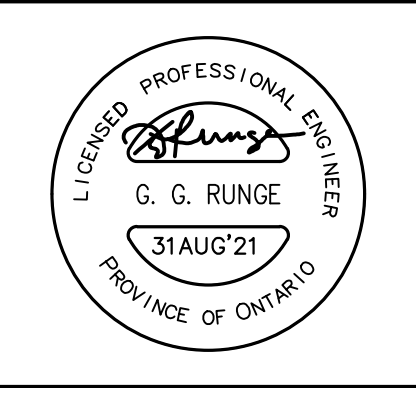
1 ELECTRICAL SITE PLAN – LIGHTING LAYOUT
SCALE 1:500

2 ELECTRICAL SITE PLAN – LIGHTING AND EV CHARGER RISER DIAGRAM
- NTS
- 5.3mm RIGID PVC CONDUIT UNLESS OTHERWISE NOTED
- FOR SINGLE LINE DIAGRAMS (POWER FEEDS) SEE DWGS E5.1 TO E5.4

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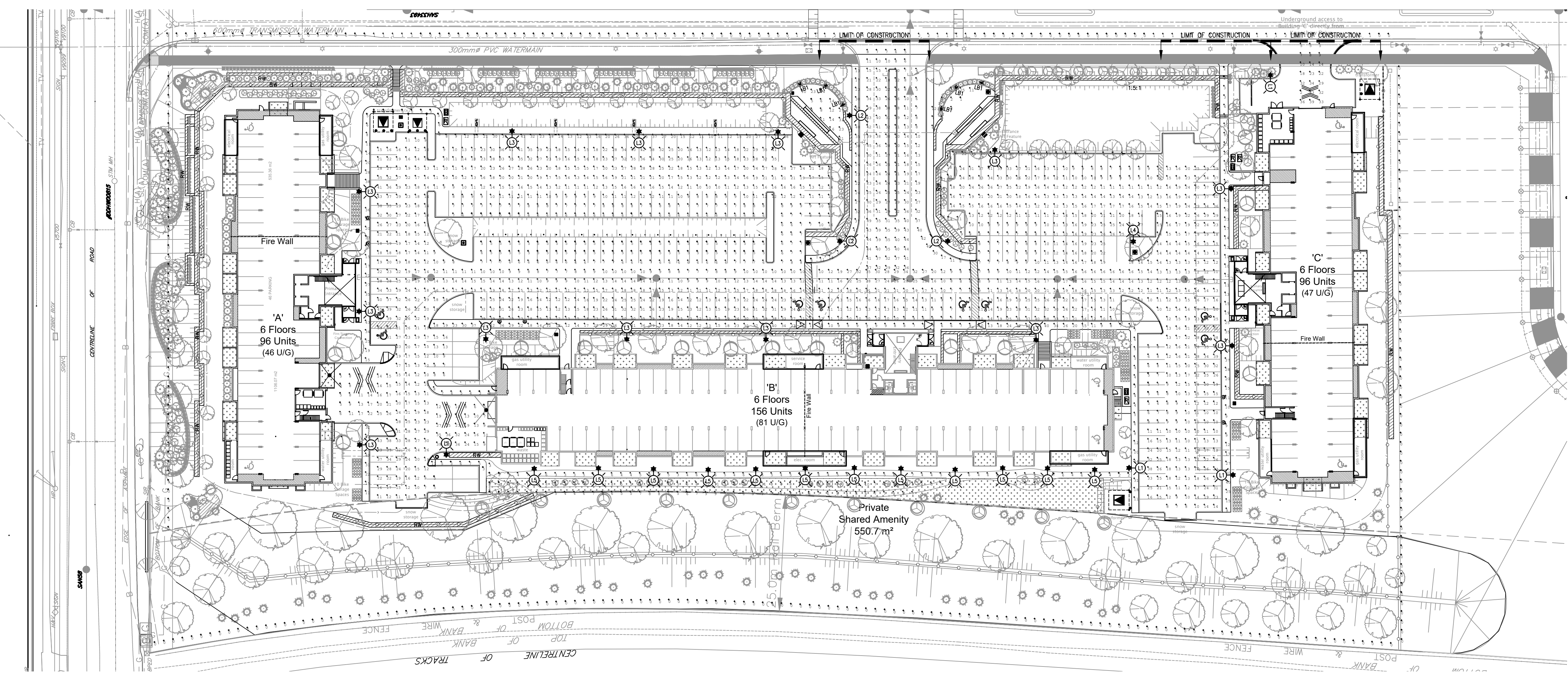
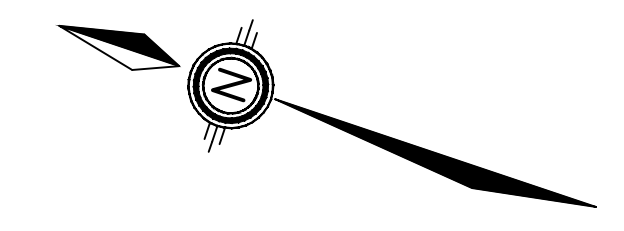
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PRATT HANSEN GROUP INC.
BISTRO 6 WEST
CITY OF BARRIE
ELECTRICAL LIGHTING
AND EV CHARGERS
SITE PLAN

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| CHECKED | GGR | 20137P | E2.1 |



1 ELECTRICAL SITE PLAN – PHOTOMETRIC LAYOUT
 E2.2 – SCALE 1:500

| Calculation Summary | | | | | | | |
|----------------------------------|-------------|-------|------|-----|-----|---------|---------|
| Label | CalcType | Units | Avg | Max | Min | Avg/Min | Max/Min |
| 01 Parking Area 1 | Illuminance | Lux | 15.9 | 45 | 5 | 3.2 | 9.0 |
| 03 _Kneeshaw Entrance Building C | Illuminance | Lux | 20.0 | 43 | 2 | 10.0 | 21.5 |
| 03 _Main Entrance | Illuminance | Lux | 26.6 | 44 | 5 | 5.3 | 8.8 |
| 03 Internal Entrance 1 | Illuminance | Lux | 13.1 | 26 | 5 | 2.6 | 5.2 |
| 03 Internal Entrance 2 | Illuminance | Lux | 18.9 | 43 | 5 | 3.8 | 8.6 |
| 04 Bldg B Rear Fitness | Illuminance | Lux | 6.5 | 12 | 2 | 3.2 | 6.0 |
| 04 Walkway 1 | Illuminance | Lux | 19.1 | 43 | 5 | 3.8 | 8.6 |
| 04 Walkway 2 | Illuminance | Lux | 18.4 | 43 | 3 | 6.1 | 14.3 |
| 04 Walkway 3 | Illuminance | Lux | 27.9 | 42 | 8 | 3.5 | 5.3 |
| 04 Walkway 4 | Illuminance | Lux | 16.4 | 42 | 1 | 16.4 | 42.0 |
| 04 Walkway 5 | Illuminance | Lux | 17.9 | 43 | 2 | 9.0 | 21.5 |
| 04 Walkway 6 | Illuminance | Lux | 24.3 | 41 | 2 | 12.1 | 20.5 |
| 04 Walkway 7 | Illuminance | Lux | 5.7 | 11 | 3 | 1.9 | 3.7 |
| 04 Walkway 8 | Illuminance | Lux | 5.1 | 8 | 3 | 1.7 | 2.7 |
| 05 Entrance Feature Left | Illuminance | Lux | 15.2 | 31 | 5 | 3.0 | 6.2 |
| 05 Entrance Feature Right | Illuminance | Lux | 7.0 | 25 | 1 | 7.0 | 25.0 |
| 09 Light Spill Kneeshaw | Illuminance | Lux | 0.7 | 4 | 0 | N.A. | N.A. |
| 09 Light Spill North | Illuminance | Lux | 0.0 | 0 | 0 | N.A. | N.A. |
| 09 Light Spill South | Illuminance | Lux | 0.0 | 0 | 0 | N.A. | N.A. |
| 09 Light Spill West | Illuminance | Lux | 0.0 | 0 | 0 | N.A. | N.A. |

| Luminaire Schedule | | | | | | |
|--------------------|-----|--------|------------|-------------|-------|--------------------------------------|
| Label | Qty | Arr. | Arr. Watts | Lum. Lumens | LLF | Description |
| L1 | 4 | SINGLE | 40 | 4612 | 0.950 | HD-SL-S-40W-IV-HSS |
| L2 | 3 | SINGLE | 80 | 11077 | 0.950 | HD-SL-S-80W-III+P-HSS |
| L3 | 13 | SINGLE | 100 | 11530 | 0.950 | HD-SL-S-100W-IV-HSS |
| L4 | 1 | SINGLE | 100 | 14185 | 0.950 | HD-SL-S-100W-V |
| L5 | 12 | SINGLE | 40 | 4612 | 0.150 | HD-SL-S-40W-IV-HSS |
| LB1 | 6 | SINGLE | 17.6 | 1746 | 0.100 | B805-CAC-18WLED-3K-120V-IES2-RAL9011 |

2 PHOTOMETRIC CALCULATIONS
 E2.2 – NTS

| | | | | | |
|--|-----|-------------------------------------|-------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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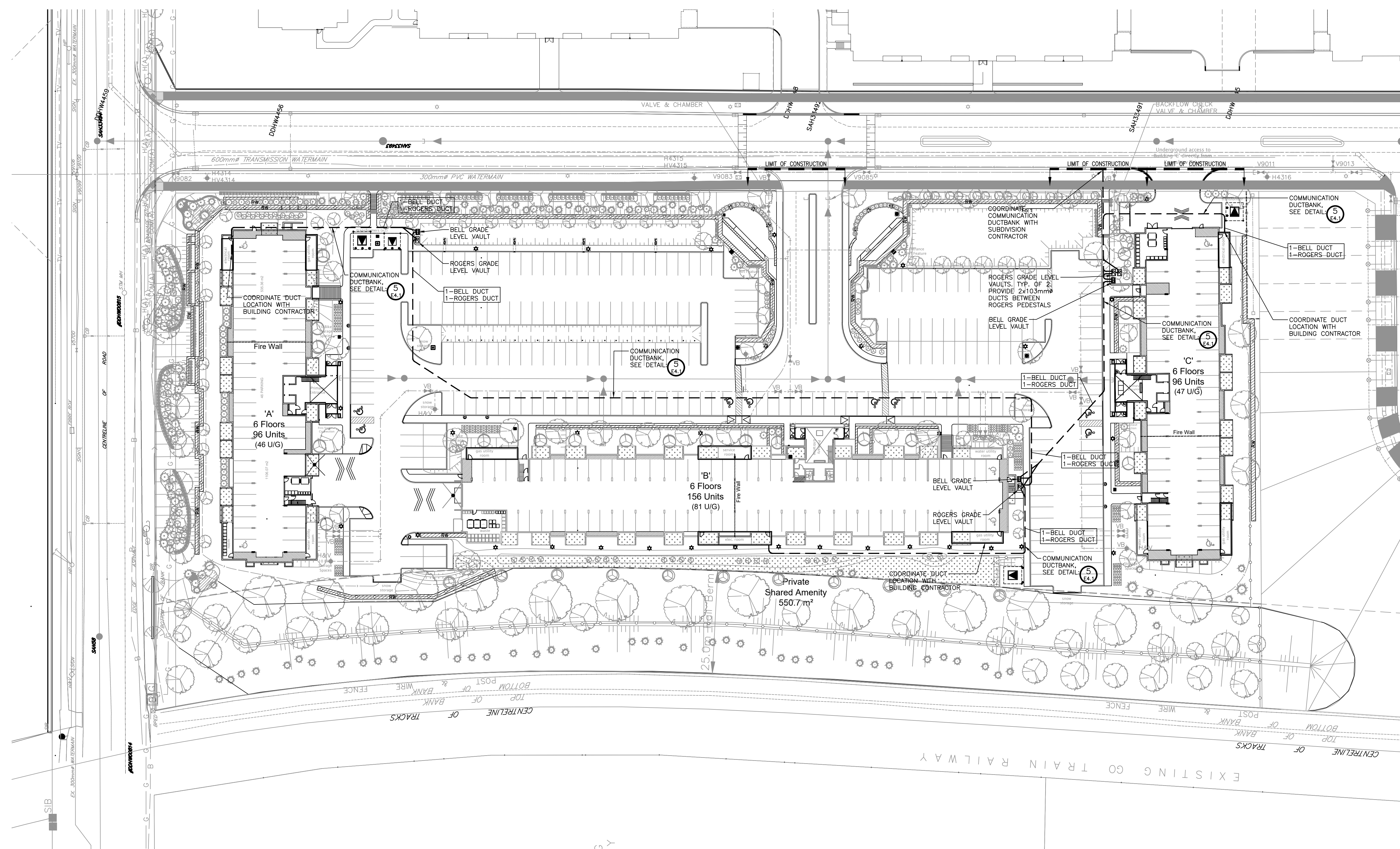
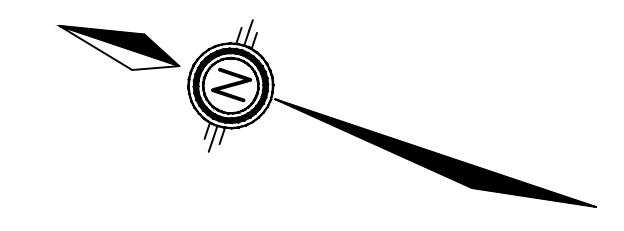
PRATT HANSEN GROUP INC.
 BISTRO 6 WEST
 CITY OF BARRIE

PHOTOMETRIC LIGHTING
 SITE PLAN

RUNGE ENGINEERING

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1 ELECTRICAL SITE PLAN – COMMUNICATION LAYOUT
E3.1 – SCALE 1:500

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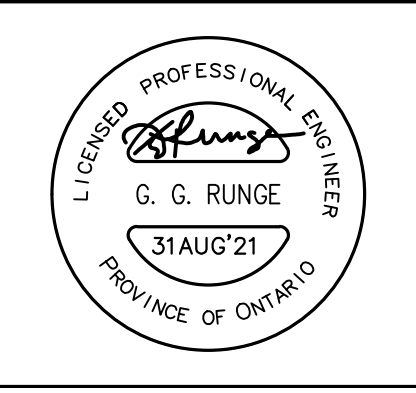
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CITY OF BARRIE

**COMMUNICATION
SITE PLAN**

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| CHECKED | GGR | 20137P | E3.1 | |

**OLDCASTLE ENCLOSURE SOLUTIONS
VAULT INSTALLATION GUIDE**

Overview

Connect offers a full line up of vaults from Oldcastle Enclosure Solutions. With a product offering ranging from HDPE plastic pedestrian rated units to concrete deliberate traffic rated units, there is a vault designed for your application. All units are produced and tested within North America, ensuring that the units meet both environmental and testing requirements.

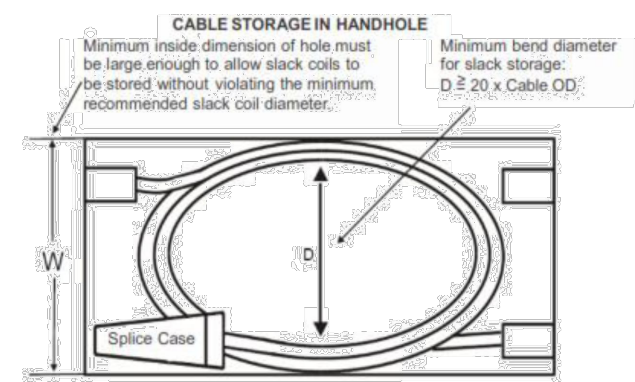
Always follow company mandated health and safety guidelines when installing vaults/handholes and working in or around vaults/handholes such as, but not limited to:

- ✓ Wear proper safety footwear as required
- ✓ Wear proper eye protection as required
- ✓ Wear protective headwear as required
- ✓ Wear leather gloves with protector cuffs whenever practical
- ✓ Use heavy lifting techniques as required

This guide cannot anticipate all situations that could develop in the field. Rather, it represents information applicable to common installation conditions.

The vaults described in this guide are designed to be used with buried cable plant - to ensure proper bending radius is allowed:

- Cable slack storage should be no greater than 40% of the Enclosure Height.
- The standard storage length of OSP Fiber cable is 50' to 100'.
- Cable manufacturers should be consulted for specific product limits.



CONNECT 139 Dearborn Place, Waterloo, ON N2J 4N5
1-877-900-7996 phone: 519.748.4411 fax: 519.748.0466
customerservice@connect-telcom.com
www.connect-telcom.com

**OLDCASTLE ENCLOSURE SOLUTIONS
VAULT INSTALLATION GUIDE**

Installation – Plastic Vaults

This guide cannot anticipate all situations that could develop in the field. Rather, it represents information applicable to common installation conditions.

PROCEDURE WARNING:
Buried Telecommunications Cables. Call before digging.

Site preparation

- Follow local guidelines and job requirements.

Excavation and preparation of enclosure hole.

- Remove material to provide 1-2" of clearance all around the enclosure and 6" - 8" in additional depth allowing for bedding and rodent barrier, with mechanical excavator or hand dig as appropriate.

- Place 3/4" crushed stone at the base of the excavated hole and confirm excavation floor is level. Do not use "river rock" or "round stone" as desired compaction and equivalent resistance to lateral loading will not be met. The rock should be free of soil and organic material.

Removing enclosure from delivery vehicle and pallet.

- Remove shipping band from enclosure if applicable.
- Use proper hook to remove lid from the enclosure Base.
- Using proper lifting techniques secure and remove box from truck.

Enclosure placement into prepared hole.

- Set Vault into the center of the excavated hole on top of the bedding material and adjust height to grade. If applicable, ensure that the vault is parallel with sidewalk or curb.
- Place "X" crushed stone around the sides.
- Install the lid on the vault and position the enclosure to the proper grade level as specified per the job requirement. If necessary, remove lid, make the necessary elevation adjustments and recheck the elevation.
- Remove the lid and mark the vault for duct entry locations. A standard hole saw and/or drill motor may be used. Provide adequate clearance for ovality in ducts. Small clearance between duct and vault may be sealed with expanding polyurethane foam as required.
- Reinstall the lid to vault prior to uniformly backfilling on all four sides. Nut, bolt threads, and cover seat should always be free of dirt and debris before tightening down the bolt.
- Remove stones larger than 3" and larger and compact backfill per engineering specifications. Proper tamping tools such as a mechanical tamping device or hand operated device should be used. (fig 9) A hand shovel or backhoe should never be used for tamping as damage may occur. Remove excess backfill material from the site as applicable.

- NOTE: Backfill material can vary based on product and installation location. It is customary in landscape installations where vehicles are prevented from traffic in or around a vault to use the spoils removed from excavation for backfill.



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**OLDCASTLE ENCLOSURE SOLUTIONS
VAULT INSTALLATION GUIDE**

Installation – Polymer Concrete Vaults

This guide cannot anticipate all situations that could develop in the field. Rather, it represents information applicable to common installation conditions.

PROCEDURE WARNING:
Buried Telecommunications Cables. Call before digging.

Site preparation

- Follow local guidelines and job requirements.

Excavation and preparation of enclosure hole.

- Remove material to provide 1-2" of clearance all around the enclosure and 6" - 8" in additional depth allowing for bedding and rodent barrier, with mechanical excavator or hand dig as appropriate.

- Place 3/4" crushed stone at the base of the excavated hole and confirm excavation floor is level. Do not use "river rock" or "round stone" as desired compaction and equivalent resistance to lateral loading will not be met. The rock should be free of soil and organic material.

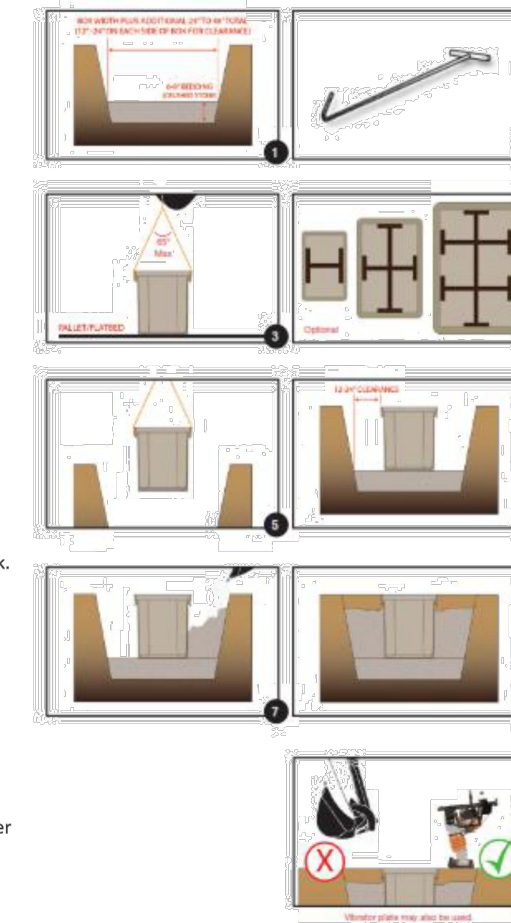
Removing enclosure from delivery vehicle and pallet.

- Remove shipping band from enclosure if applicable.
- Use proper lifting eye tool (T-Handle Hook) to remove lid from the enclosure base (fig 3).
- Using proper lifting techniques secure and remove box from truck.

Enclosure placement into prepared hole.

- Set Vault into the center of the excavated hole on top of the bedding material and adjust height to grade. If applicable, ensure that the vault is parallel with sidewalk or curb. Place "X" crushed stone around the sides.
- Install the lid on the vault and position the enclosure to the proper grade level as specified per the job requirement. If necessary, remove lid, make the necessary elevation adjustments and recheck the elevation.
- Remove the lid and mark the vault for duct entry locations. A standard hole saw and/or drill motor may be used. Provide adequate clearance for ovality in ducts. Small clearance between duct and vault may be sealed with expanding polyurethane foam as required.
- Reinstall the lid to vault prior to uniformly backfilling on all four sides. Nut, bolt threads, and cover seat should always be free of dirt and debris before tightening down the bolt.
- Remove stones larger than 3" and larger and compact backfill per engineering specifications. Proper tamping tools such as a mechanical tamping device or hand operated device should be used. (fig 9) A hand shovel or backhoe should never be used for tamping as damage may occur. Remove excess backfill material from the site as applicable.

- NOTE: Backfill material can vary based on product and installation location. It is customary in landscape installations where vehicles are prevented from traffic in or around a vault to use the spoils removed from excavation for backfill.



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1 ROGERS EQUIPMENT
E3.2 -NTS



**Shutter Box Series
Grade Level Box SGLB 3048, 36" Depth
Unsurpassed "I-Beam" Strength**

The SGLB 3048 is the latest addition to Channell's Shutter Box Series family of grade level boxes. Leading the way with the SGLB 1730 and SGLB 2436, Channell has proven and set new high performance standards in the industry for subsurface thermoplastic enclosures.

The SGLB 3048 features a straight sidewall "I-Beam" construction combined with a high rib design that will greatly enhance the cover's load bearing qualities. Unlike tapered box designs, Channell's strength is accomplished with a straight sidewall design that supports the cover's load across the entire vertical sidewall. Sidewall deflection is neutralized

Meets and is qualified to Telcordia GR-902-CORE specifications. Complies with the applicable elements of ANSI A5CTE 77.2002, for greenbelt placement.



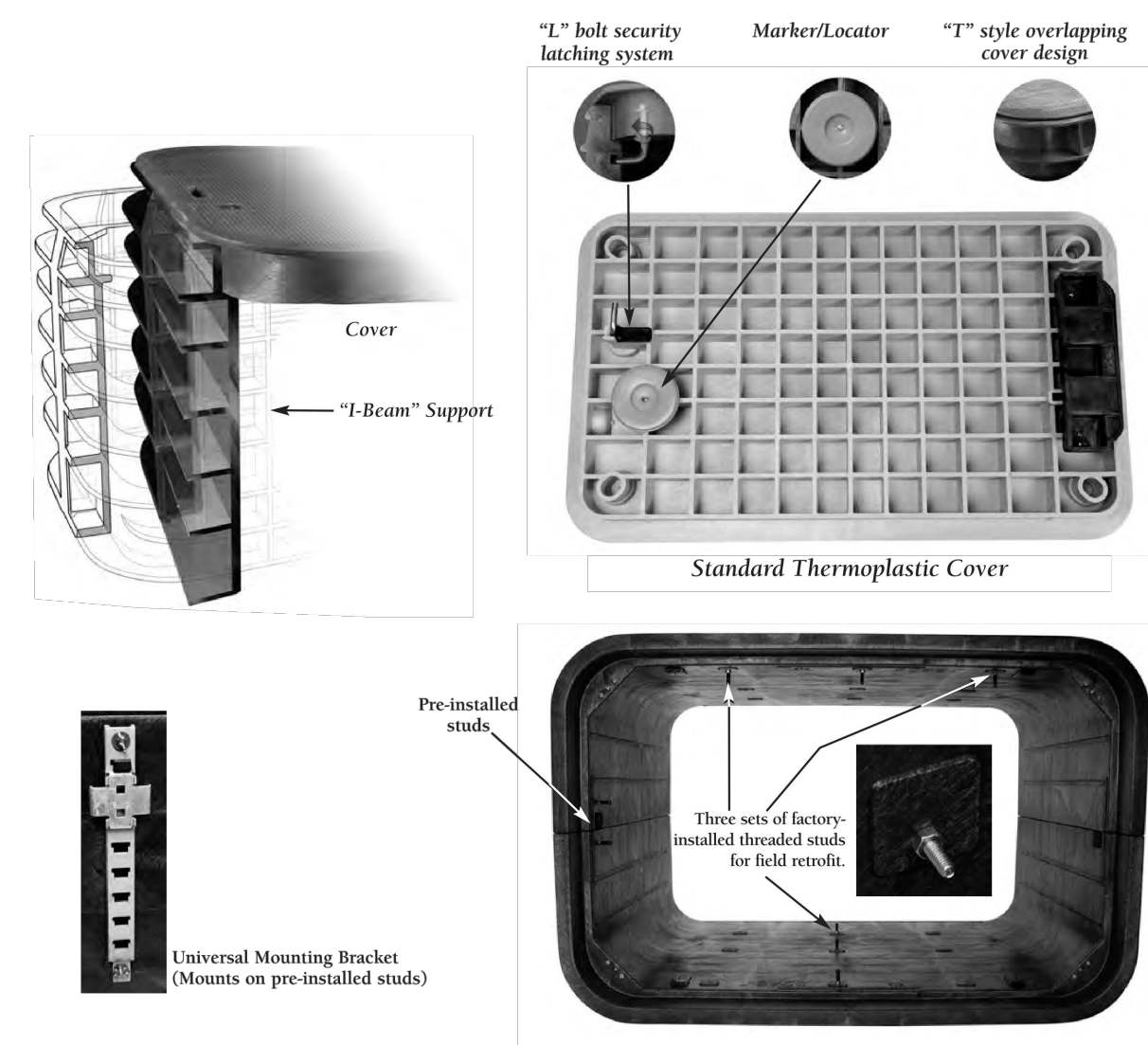
with the addition of a strength member molded into the sidewall. These features allow the SGLB 3048 to be used in various applications, including greenbelt.

Channell's factory installed stud system allows a full range of options including the installation of a galvanized rack system, horizontal brackets and a two-position swing arm bracket, etc. All of these options can be pre-installed at our factory or installed in the field after vault installation. The SGLB 3048 can easily store 650 Ft. (200 meters) of 0.5" diameter fiber cable, in addition to the industry's largest fiber splice cases.

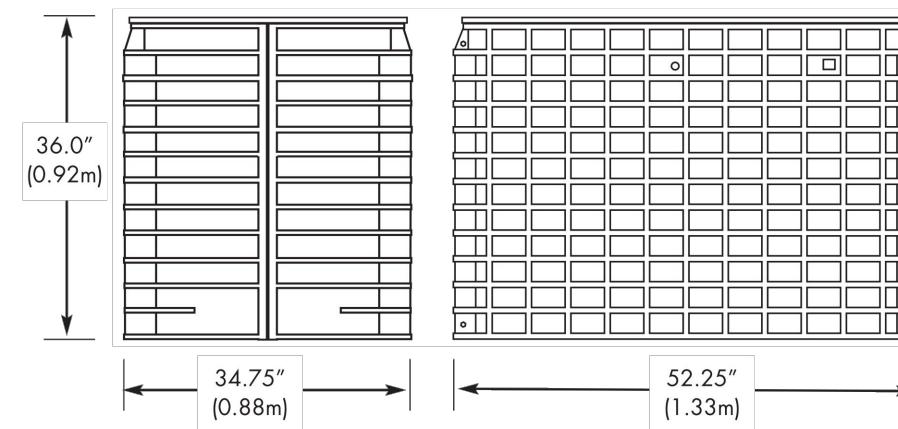
Features

- Straight sidewall "I-beam" design permits higher vertical load-bearing capacity
- Tall cross-ribbed sidewall design eliminates sidewall deflection in extreme soil conditions securing box placement during final grade
- High quality HDPE body with cross-ribbed design and additional molded-in strength member carries load evenly across sidewall
- Solid, single piece thermoplastic covers with a variety of logo markings
- Universal "L" bolt security system (available only on thermoplastic covers) eliminates the worry of the loss of cover bolts
- Unique "T" style overlapping cover design appearance and reduces soil migration into box
- Four winterized drop access points are standard with all SGLB 3048 units
- Cable locator/marker device can be added in a protected recessed area on the underside of the cover

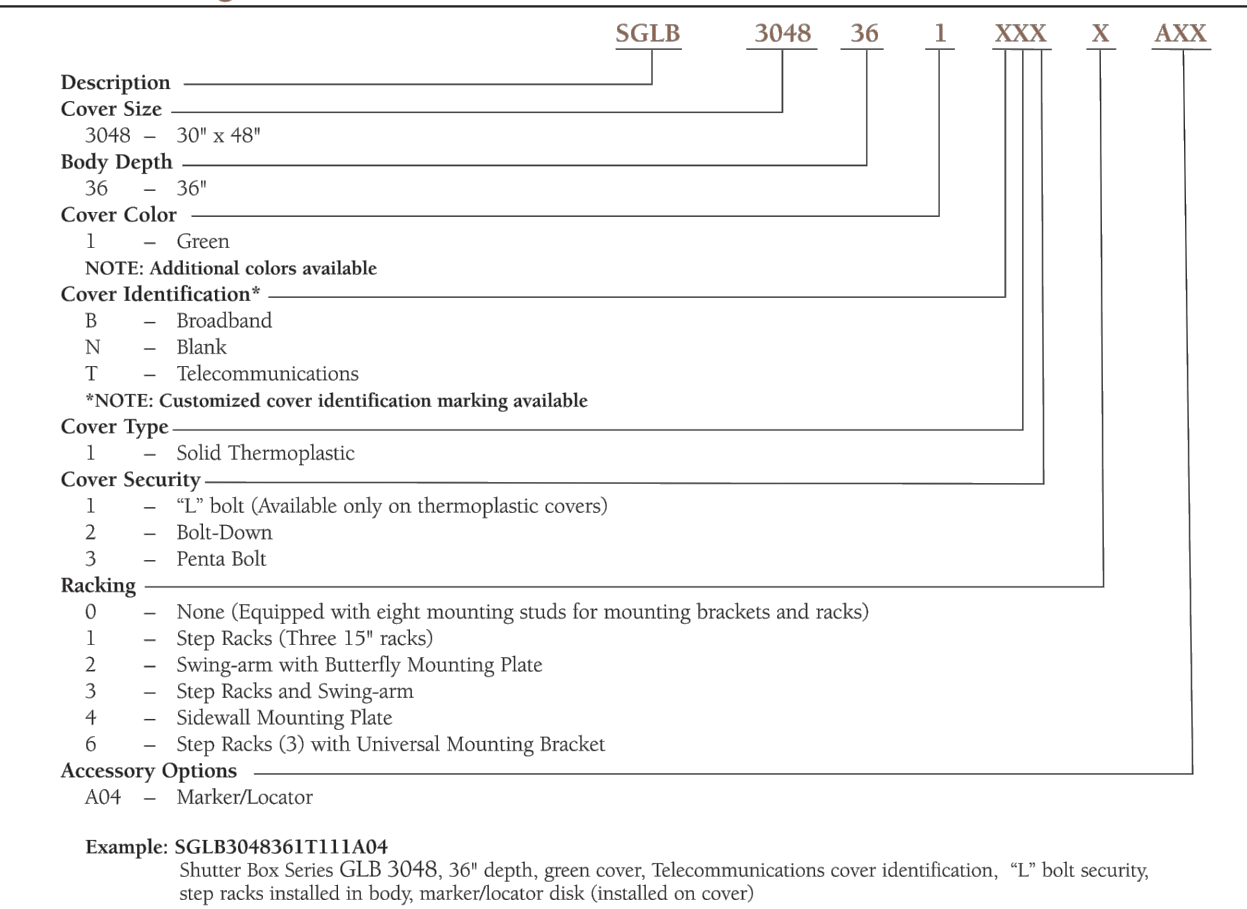
The straight sidewall design of the "Shutter Box" Series grade level boxes allows the load-bearing surface to be fully supported by the "I-Beam" strength of the full sidewall. HDPE wall-design of the box body distributes the cover load over the strongest section of the box wall. Additionally, the sidewall high rib design greatly reduces or totally eliminates sidewall deflection.



Specifications

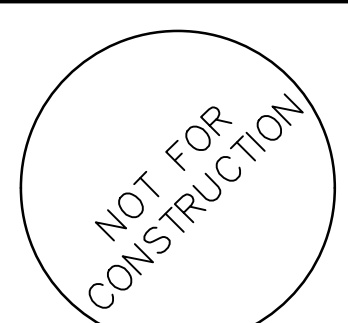


Ordering Information



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2 BELL EQUIPMENT
E3.2 -NTS



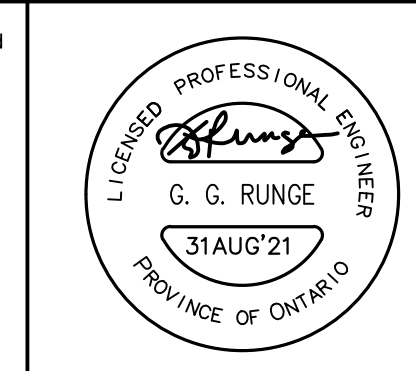
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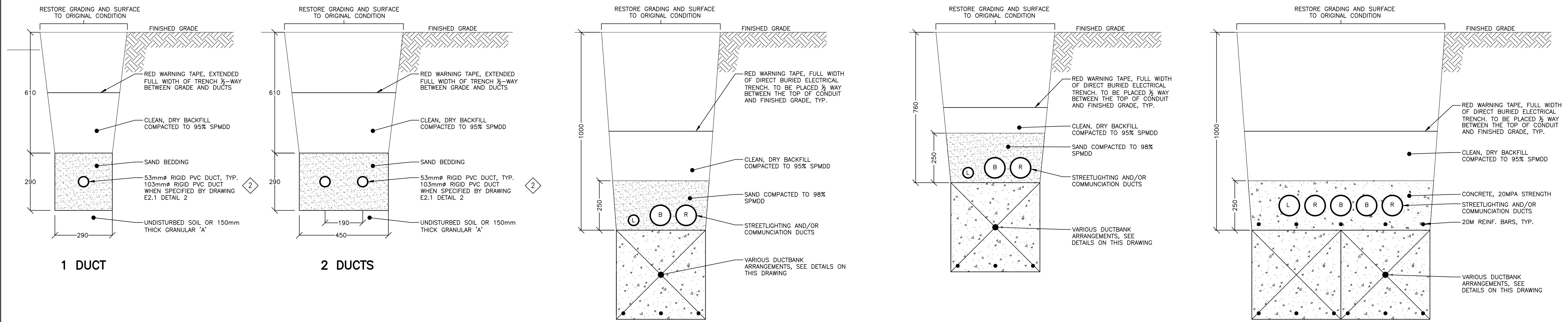
PRATT HANSEN GROUP INC.
BISTRO 6 WEST
CITY OF BARRIE

COMMUNICATION
DETAILS

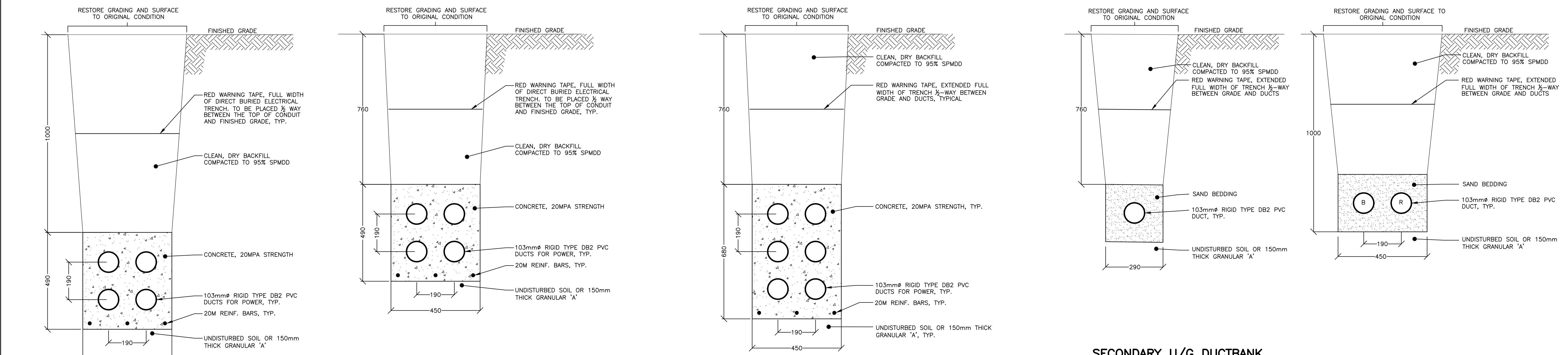
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| DRAWN | JS | PROJECT | DWG. NO | |
| CHECKED | GGR | 20137P | E3.2 | |

Runge Engineering
A Division of Tatham Eng'g Limited
115 Sandford Fleming Drive
Collingwood, ON, L9Y 5A6
(705) 445-2565
www.tathameng.com

- NOTES**
- 1 DUCTBANK NOTES:
 - DIMENSIONS SHOWN IN mm.
 - ALL DUCTS ARE 103mmØ TYPE PVC DB2, UNLESS OTHERWISE NOTED.
 - PROVIDE 915mm "LONG SWEEP BENDS" FOR ALL BENDS: 90°, 45°, AND 22.5° BENDS.
 - PROVIDE FISH ROPE IN EACH SPARE DUCT.
 - INSTALL SPACERS EVERY 1524mm TO ASSEMBLE DUCTBANK. OFFSET OR STAGGER SPACERS.
 - GLUE ALL PVC JOINTS.
 - PROVIDE END-BELLS WHEN FINISHING DUCTS IN CHAMBER OR WALLS.
 - B = BELL DUCTS, R = ROGERS' DUCTS
 - L = LIGHTING, S = SPARE
 - 2 PROVIDE 103mmØ STREET LIGHTING DUCT BETWEEN HANDHOLES AND POWER PEDESTALS AS INDICATED ON DETAIL 2/E2.1



6 E4.1 - NTS 1 2
 7 E4.1 - NTS 1
 8 E4.1 - NTS 1
 9 E4.1 - NTS 1 2



1 E4.1 - NTS 1
 2 E4.1 - NTS 1
 3 E4.1 - NTS 1
 4 E4.1 - NTS 1
 5 E4.1 - NTS 1

NOT FOR CONSTRUCTION

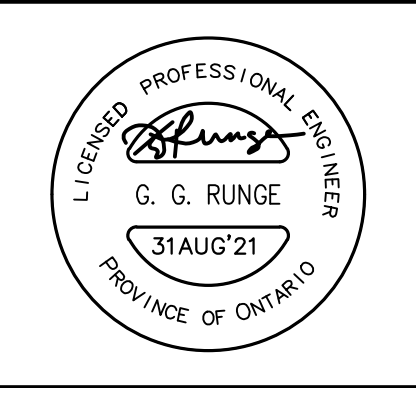
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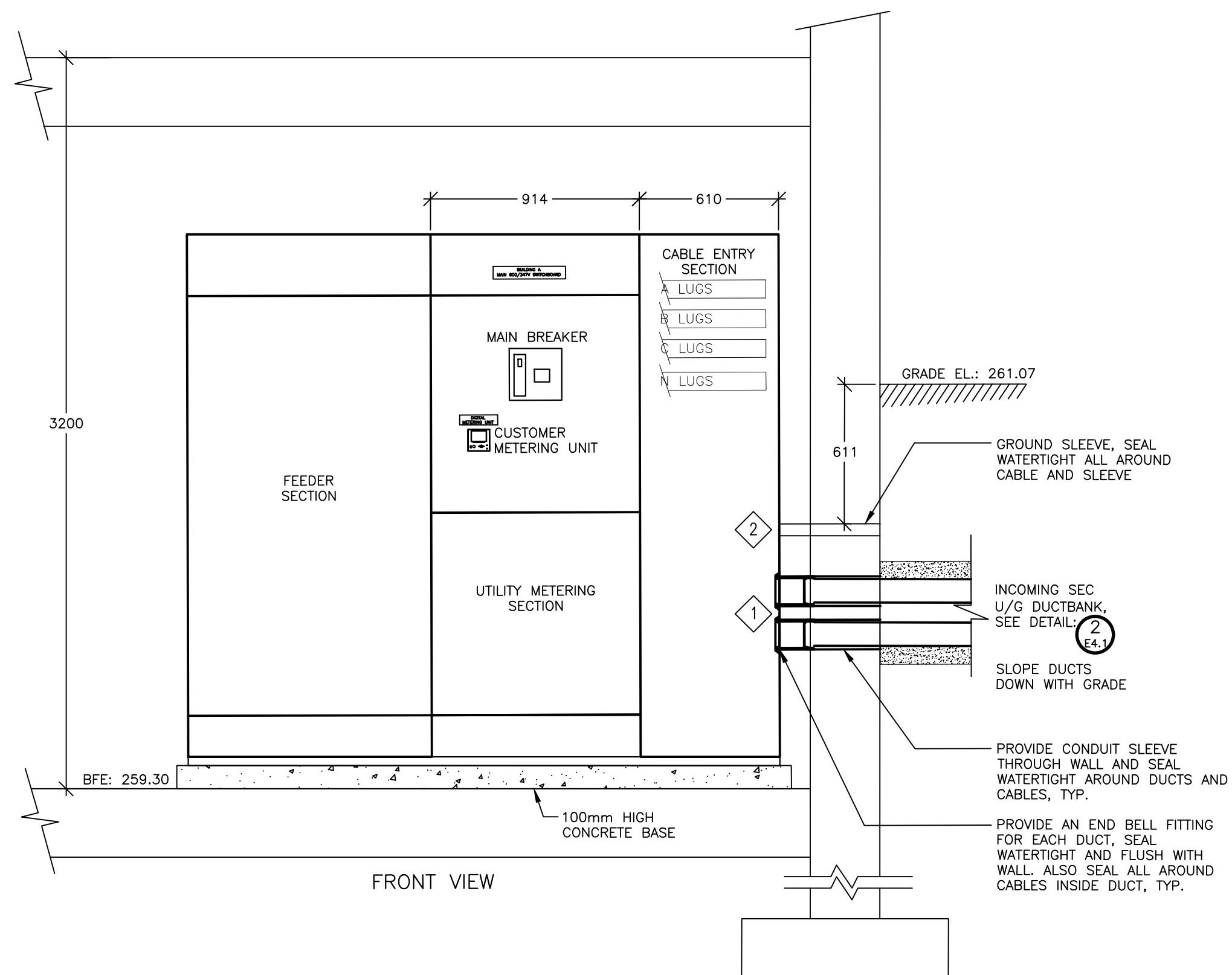
PRATT HANSEN GROUP INC.
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TYPICAL DUCT BANKS DETAILS

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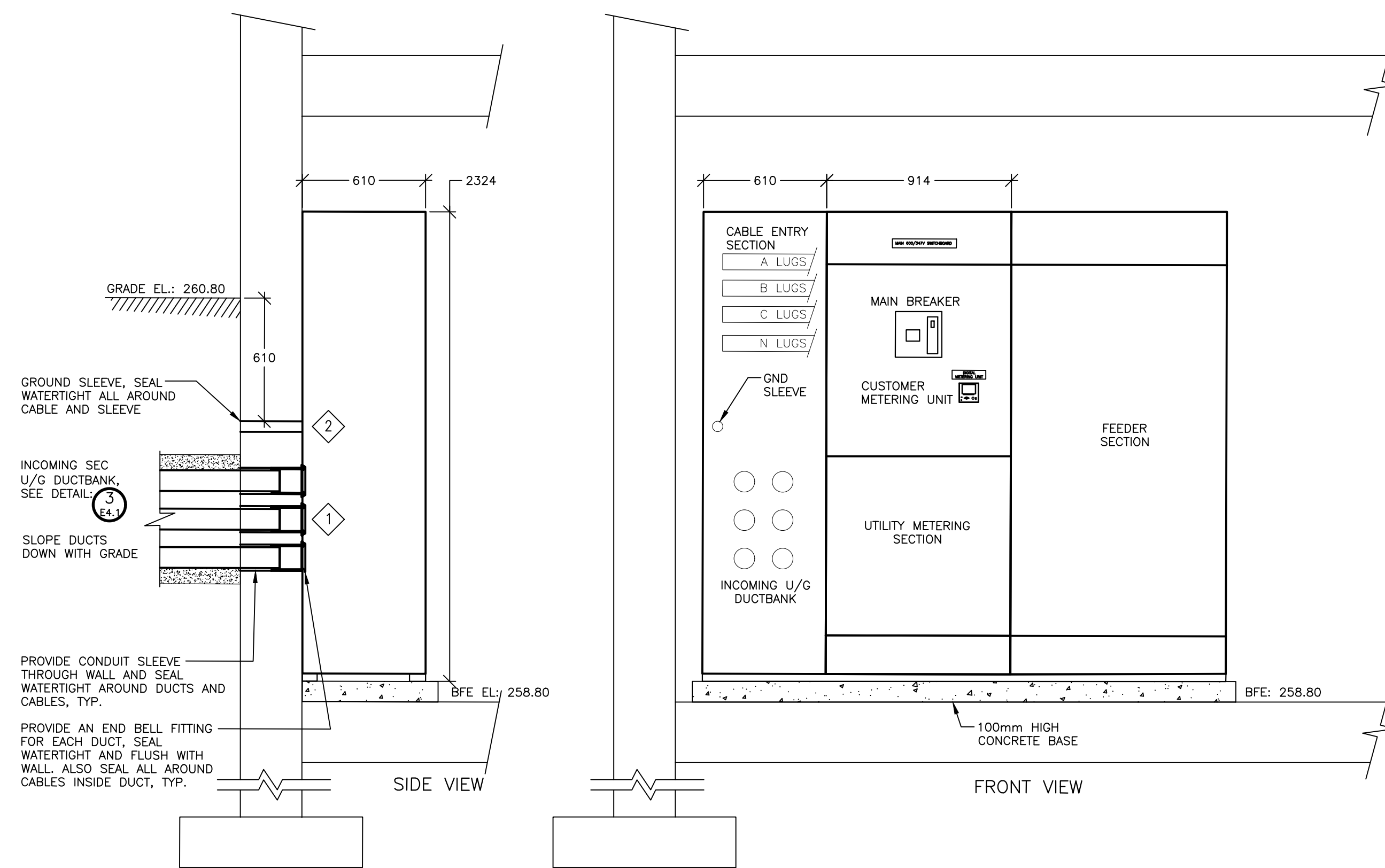
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| DRAWN | JS | PROJECT | DWG. NO | |
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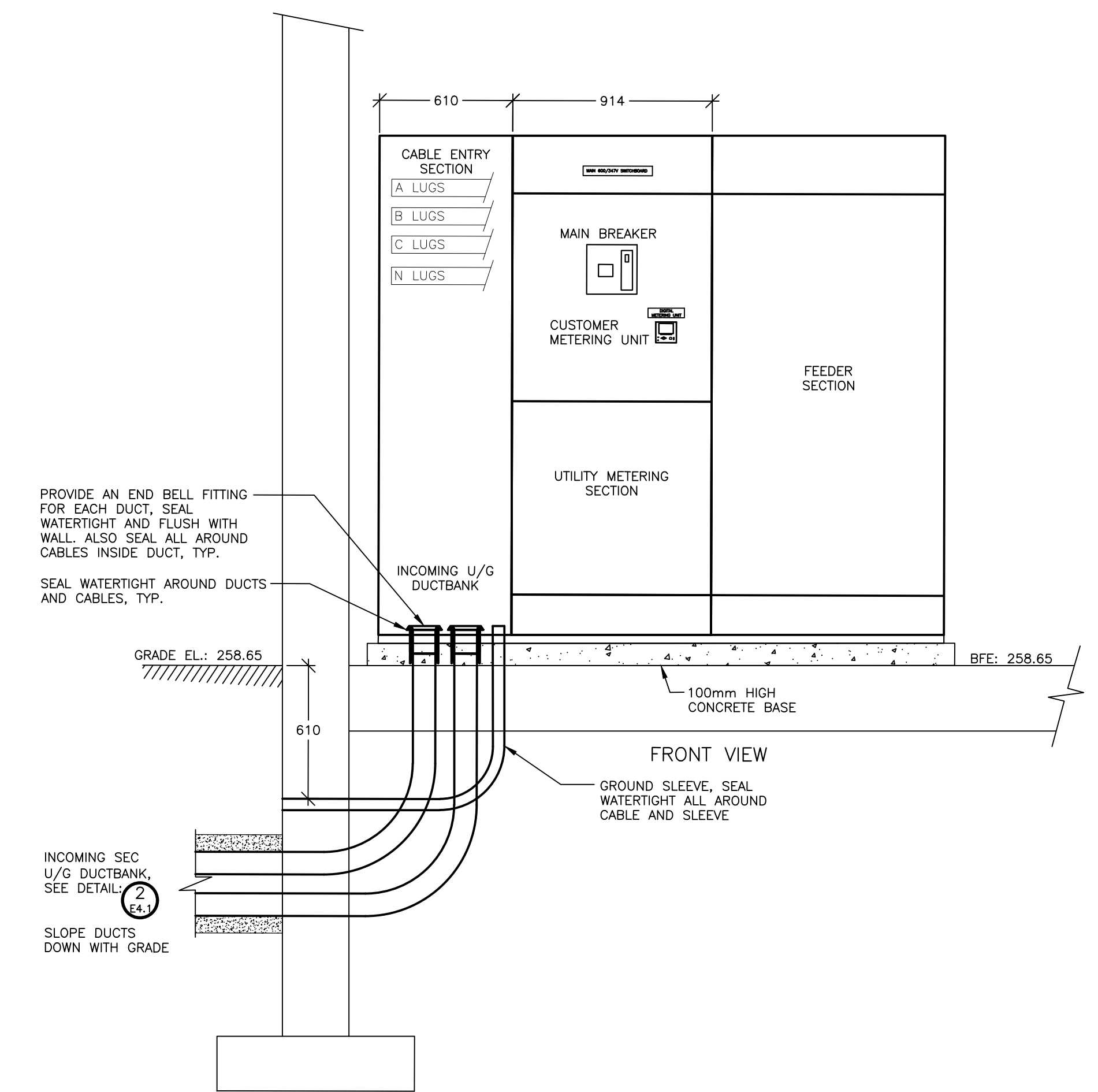


- NOTES**
- 1 CORE DRILL HOLES THRU CONCRETE WALL, COORDINATE DUCT OPENINGS WITH BUILDING CONTRACTOR
 - 2 GROUND SLEEVE, SEAL WATERTIGHT ALL AROUND CABLE AND SLEEVE
 - 3 COORDINATE UNDERGROUND DUCTS TO SWITCHBOARD WITH BUILDING CONTRACTOR.

1 MAIN 600V SWITCHBOARD IN BUILDING A (SERVICE ENTRANCE RATED)
E4.2 - NTS



2 MAIN 600V SWITCHBOARD IN BUILDING B (SERVICE ENTRANCE RATED)
E4.2 - NTS



3 MAIN 600V SWITCHBOARD IN BUILDING C (SERVICE ENTRANCE RATED)
E4.2 - NTS

NOT FOR CONSTRUCTION

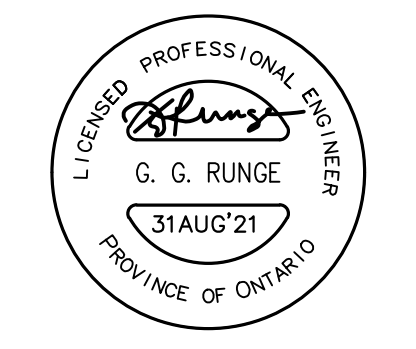
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DUCTBANK AND SWITCHBOARD
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| CHECKED | GGR | 20137P | E4.2 | |

INNISFIL HYDRO ORIGINAL IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

1. **GENERAL REQUIREMENTS**

1.1 All transformers are to be new (not rebuilt) and be of the standard 3 phase distribution type transformer, complete with oil, suitable for customer installations.

1.2 All transformers to be standard profile, three phase padmount design with dead front HV (high voltage) compartment with a maximum profile height of 1200mm in accordance with CSA Standard C227.3 Figure 1.

1.3 To be constructed in accordance with the latest edition of CSA Standard C227.4-M91 and as subreference to the following:

- .1 CSA Standard CSA-C2-M91, Single Phase and Three Phase Distribution Transformers, types ONAN;
- .2 Hydro One Specification M-104M-79, Electrical Insulating Oil;
- .3 ASTM D1818, Test Method for Dielectric Oil;
- .4 ANSI C57.12.28-1988, Pad mounted Equipment Enclosure Integrity;
- .5 CSA Standard W47.1-1992, Certification of Companies for Fusion Welding of Steel Structures;
- .6 CSA Standard W59-1989, Welded Steel Construction (Metal Arc Welding);
- .7 CSA Standard Z299.3-1985, Quality Assurance Program Category 3;
- .8 EEMAC Standard L16-1-1990, Distribution Transformer Warning Labels;
- .9 ISO Standard 9000-1987, Quality Systems - Model for Quality Assurance in Final Inspection and Test;
- .10 ANSI C57.12.25-1990, Requirements for Padmounted, Compartmental-type, Self Cooled Three Phase transformers;
- .11 CEA Specification DTWG-03 (12/93), Low Profile, Three-Phase, dead front Padmounted Distribution Transformer.

1.4 The transformers shall operate without causing interference to radio and television reception or telephone communication circuits higher than limits set forth in CSA Standards C22.4 No.103.

1.5 Transformer approvals are to be submitted with guaranteed no-load and load losses and typical outline drawings complete with details of primary termination equipment.

1.6 Refer to section IHS01-009 "Primary Termination Equipment".

2. **PRIMARY SYSTEM VOLTAGE**

2.1 Innisfil Hydro has two (2) system voltages, 4/8.32KV and 16/27.6KV, grounded system.

2.2 High Voltage insulation class shall be 28KV.

2.3 The Basic Impulse level (BIL) at rated high Voltage shall be as per CSA C227.3 clause 4.3.1 of Table 1 with a minimum of 125KV BIL.

2.4 Where system Voltage is 16/27.6KV units shall be rated at 27.6KV.

2.5 Where system Voltage is 4/8.32KV units shall be designed to use 16KV bushing inserts.

Underground Electrical Plant Installation Page 1

INNISFIL HYDRO IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

3. **SECONDARY SYSTEM VOLTAGE**

3.1 Output secondary Voltages:

- 1 120/208 Volt, 4 wire grounded.
- 2 347/600 Volt, 4 wire grounded.

3.2 Secondary Voltage insulation class shall be 1.2KV.

4. **PRIMARY VOLTAGE TAPS**

4.1 Four 1/2-1/2 high Voltage taps, two above and two below the nominal voltage. Tap switches to be located inside the enclosure and accessible with cables in position and permanently marked.

4.2 Tap positions to be the following percentage of high Voltage windings:

| | | | | | |
|--------------|-------|-------|-------|------|------|
| Tap Position | 1 | 2 | 3 | 4 | 5 |
| Percentage | 105.0 | 102.5 | 100.0 | 97.5 | 95.0 |

4.3 Initial setting of the tap switch shall be factory set on position 3 at 100% of designated high Voltage 27.6KV.

4.4 Taps are to be rated for 200% of the current rating of the tapped winding.

4.5 The tap switch for OFF - CIRCUIT operation shall be externally operated and located in the cable entrance compartment. Switch handle (operator) shall be positioned such that it is clearly visible and accessible with all cables in place.

4.6 Tap positions must be clearly labeled in the HV / LV compartment such that they are not obstructed in any way, cannot be removed. Adhesive taping is not acceptable.

5. **RATED CHARACTERISTICS**

5.1 Standard Sizes

- 1 75KVA, 60 HZ
- 2 150KVA, 60 HZ
- 3 225KVA, 60 HZ
- 4 300KVA, 60 HZ
- 5 500KVA, 60 HZ

5.2 Cooling: ONAN.

5.3 Polarity: Additive.

5.4 Temperature rise test shall be measured by resistance method. The maximum temperature rise of the windings at rated KVA and Voltage shall be 65° C above ambient. Highest ambient air temperature to be considered 40° C.

5.5 The transformer impedance shall be limited to an absolute minimum of 3.5% for all transformers 75KVA and above.

Underground Electrical Plant Installation Page 2

INNISFIL HYDRO IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

5.6 Transformers shall be constructed to withstand the mechanical and thermal stresses induced by the short circuit currents in accordance with CSA Standard C2 Table 6.

5.7 The transformer shall be grounded in the following manner:

- 1 Transformer core shall be electrically connected (grounded) to the tank.
- 2 Two grounding bosses complete with 2 - 9.5mm holes at each location, shall be provided on the transformer tank, one on HV side and one in the LV side.
- 3 Cover of switching compartment shall be bonded with extra flexible braid equivalent to # 2/0 AWG copper.
- 4 Ground spade terminals shall be provided in accordance with CSA C227.3 item 6.4 except that they shall have two holes spaced 44.5mm apart.
- 5 Grounding bracket shall be provided.
- 6 The grounding assembly shall consist of a rigid copper buss, with minimum dimensions of 40mm wide by 6mm thick, bolted to and joining the two ground spade terminals and mounted 75mm from the face of the tank. There shall be a minimum of 6 - 15mm evenly spaced holes on the buss.

5.8 The transformer oil shall meet all of the Hydro One specifications for Electrical Insulating oil, M-104M-79 or latest revision and be non-paraffinic dielectric strength greater than 40KV where tested in accordance with ASTM D1816 using 2 mm electrode spacing.

6. **TRANSFORMER LOSSES**

6.1 Maximum acceptable transformer operating dollar losses are to be calculated using the following Formula: PV = 7.4N + 3.9L

6.2 Where maximum acceptable transformer losses are:

| Rating KVA | Voltage KV | No Load Losses Watts 208/120V | Full Load Losses Watts 600/347V |
|------------|------------------------|-------------------------------|---------------------------------|
| 1. | 75KVA - 27.6 / 8.32KV | 220 | 645 |
| 2. | 75KVA - 27.6KV | 210 | 560 |
| 3. | 150KVA - 27.6 / 8.32KV | 350 | 1,220 |
| 4. | 150KVA - 27.6KV | 350 | 1,100 |
| 5. | 225KVA - 27.6 / 8.32KV | 550 | 1,600 |
| 6. | 225KVA - 27.6KV | 550 | 1,450 |
| 7. | 300KVA - 27.6 / 8.32KV | 600 | 1,800 |
| 8. | 300KVA - 27.6KV | 600 | 1,650 |
| 9. | 500KVA - 27.6 / 8.32KV | 1,200 | 3,100 |
| 10. | 500KVA - 27.6KV | 1,100 | 2,800 |

7. **HOUSING AND ACCESS**

7.1 Transformer tank and switching compartment shall be tamperproof and weatherproof with all accessible openings fitted with a provision for padlocking and a recessed well for the pentahed bolt complete with cup washer locking device.

7.2 Cover to HV and LV compartments to open to 180 degrees maximum.

7.3 Shall be equipped with lifting provisions designed with a safety factor of 5 in accordance with ANSI C56 12.25.1990.

Underground Electrical Plant Installation Page 3

INNISFIL HYDRO IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

7.4 The cover's front sill shall be made removable from the transformer tank and shall be complete with one tamperproof emergency access hole 65mm in diameter.

7.5 The cable entrance compartment shall be as per ANSI C57.12.25.1990 with centre hasp 90mm above the bottom of the sill.

7.6 Transformer shall be equipped with an automatic pressure relief valve to CSA Standard C227.3 item 5.1.6.

7.7 Transformer tank, sill and cover shall be blasted both inside and out or chemically treated to remove all surfaces of rust then coated with two coats of an approved high quality primer with a final dry thickness of 1.5mils. A minimum of two coats shall be applied to exterior and interior surfaces of the assembly. The exterior finish shall conform to EEMAC Standard Y1-2, Equipment Green for Outdoor Electrical Equipment and ANSI C57.12.28-1988 except salt spray test shall be for 1500 hours. Minimum paint thickness shall be 3mils for exterior surfaces and 2.5mils for interior surfaces.

7.9 The surface and finishes shall be resistant to peeling and chipping due to temperature variation induced by the transformer or deterioration under all normal operating conditions.

7.10 The transformer base shall be coated with a bituminous material to prevent the tank bottom from corroding.

7.11 The inside cover of HV / LV compartments to be coated with an anti-condensation "no - drip" compound.

7.12 Transformer base shall have a resilient closed cell gasket on the bottom flange to protect the finish from being scratched during installation and resist the alkalinity of the concrete base.

7.13 All welding shall conform to the latest approved edition of CSA Standard W59.

7.14 Provide external cooling fins where required.

8. **LOW VOLTAGE BUSHINGS**

8.1 Low Voltage bushings shall be one piece integral of the welded type and be equipped with either plated aluminum or plated copper bars with 4 - 14.4mm diameter holes in a line spaced 41.3mm apart. Bushings to be in the vertical plane to provide convenient primary switching and secondary cable connections.

8.2 All secondary cables shall be terminated with compression lugs suitable to the size and type of cable.

8.3 Low Voltage bushings shall be designated X1, X2, X3 and X0.

9. **BUSHING TERMINALS**

9.1 The transformer high Voltage coil shall be terminated with three (radial) and six (loop) internally connected, universal style ESNR flower pot bushing wells bolted in place and in accordance with CSA Standard C227.3-M91 item 6 and Figure 3 and Figure 4. Bushings shall be tilted upwards at 12.5 degrees +/- 2.5 degrees on loop units and horizontal on radial units.

Underground Electrical Plant Installation Page 4

INNISFIL HYDRO IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

9.2 Shall meet the dimensional requirements of ANSI / IEEE Standard 386.

9.3 Primary Bushing wells shall be designated as follows:

- .1 Radial Units H1, H2, and H3.
- .2 Loop Units H1A, H1B, H1C, H2A, H2B and H2C.

9.4 A high Voltage parking stands for each elbow shall be provided between high Voltage bushings H1A - H1B and H1B - H1C.

9.5 Shall accept either the ESNR 160-FT or 160-SOP accessories for feed through or open point applications.

9.6 Acceptable manufacturer to be as per Approved Products Schedule. Refer to section IHS01-002.

10. **DEAD END CAPS**

10.1 All high Voltage bushing terminals shall be capped at factory and shipped to site.

10.2 Refer to drawings for quantity and location of units. All units that are provided with inserts to have the factory installed dead end caps turned over to Innisfil Hydro for spares.

10.3 Load break dead end caps rated at 200amp, 28KV complete with stand off plug rated at 200amp, 28KV.

Refer to section IHS01-009 for "Primary Termination Equipment".

11. **LOAD BREAK SWITCH**

11.1 Primary Voltage internal load break switch shall be a three phase, two position for radial feed, four position for loop feed, rated at 300amp, 28KV.

11.2 Load break switch acceptable manufacturer to be as per Approved Products Schedule. Refer to section IHS01-002.

12. **FUSING**

12.1 Primary protection shall consist of an expulsion type bayonet high Voltage Dual Heat Sensing fuses with internal weak (isolation) link.

12.2 Fuse link sizes to be confirmed by Innisfil Hydro. Asymmetrical rating as directed by Innisfil Hydro.

Underground Electrical Plant Installation Page 5

INNISFIL HYDRO IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

12.3 Standard Fuse Sizes

| KVA | 8.32KV / 27.6KV |
|-----|-----------------|
| 1. | 75 8.0A 3.0A |
| 2. | 150 15.0A 5.0A |
| 3. | 225 25.0A 8.0A |
| 4. | 300 50.0A 15.0A |
| 5. | 500 50.0A 15.0A |

12.4 Primary fusing acceptable manufacturer to be as per Approved Products Schedule. Refer to section IHS01-002.

12.5 Provide to spare fuses in a fuse clip mounted inside HV / LV compartment of each transformer.

13. **MARKINGS**

13.1 No advertising "Decals" to be applied to exterior of units.

13.2 The numerical value only of the KVA and primary Voltage shall be stenciled in white on the top right hand corner of front cover with 50mm high white indelible lettering spaced 25mm apart.

13.3 Directly below the Voltage and KVA the transformers shall be identified with a number as directed by Innisfil Hydro. Number shall be stenciled in white on the top right hand corner of front cover. As-built drawings should show same identification.

13.4 CSA Standard C2-1976 Nameplate information shall be complete with type of winding materials and installed within the HV / LV compartment.

13.5 On each opening compartment of the transformer there shall be a legible / permanent warning sign stating "DANGER - HIGH VOLTAGE". "Zap the Safety Bird" affixed at the centre of the door.

13.6 The transformer shall have the following components inside the HV / LV compartment identified by 15-25mm high stenciled lettering:

- 1. High Voltage terminal designations
- 2. Low Voltage terminal designations
- 3. DV - Dual Voltage switch
- 4. TC - Tap change
- 5. Voltage markings of Voltage selector switch positions
- 6. Tap position of the tap changer
- 7. Open and closed position of the load break switch

14. **MANUFACTURERS**

14.1 Three phase padmount transformers acceptable manufacturer to be as per Approved Products Schedule. Refer to section IHS01-002.

Underground Electrical Plant Installation Page 6

INNISFIL HYDRO IHS01-013

THREE PHASE, TRANSFORMERS Revised on: November 21, 2006

15. **INSTALLATION**

15.1 Transformers will be pretested at factory and shipped to site complete with oil.


15.2 Transformers are to be shipped to site on pallets or crates which are of greater dimensions than the transformer. Transformers are to be secured to the pallets / crates by bolting the base down or with non-metallic straps.

15.3 Transformers will be positioned on bases and grounded in accordance with Innisfil Hydro Standard Detail IHS01-016. Covers to be accessible from road side.

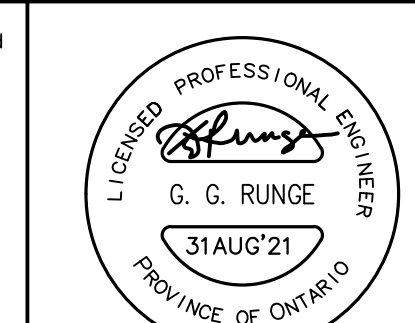

15.4 Primary terminations are to be connected in presence of the Inspector. All secondary terminations inclusive of neutrals to remain untermintated until directed by Innisfil Hydro.

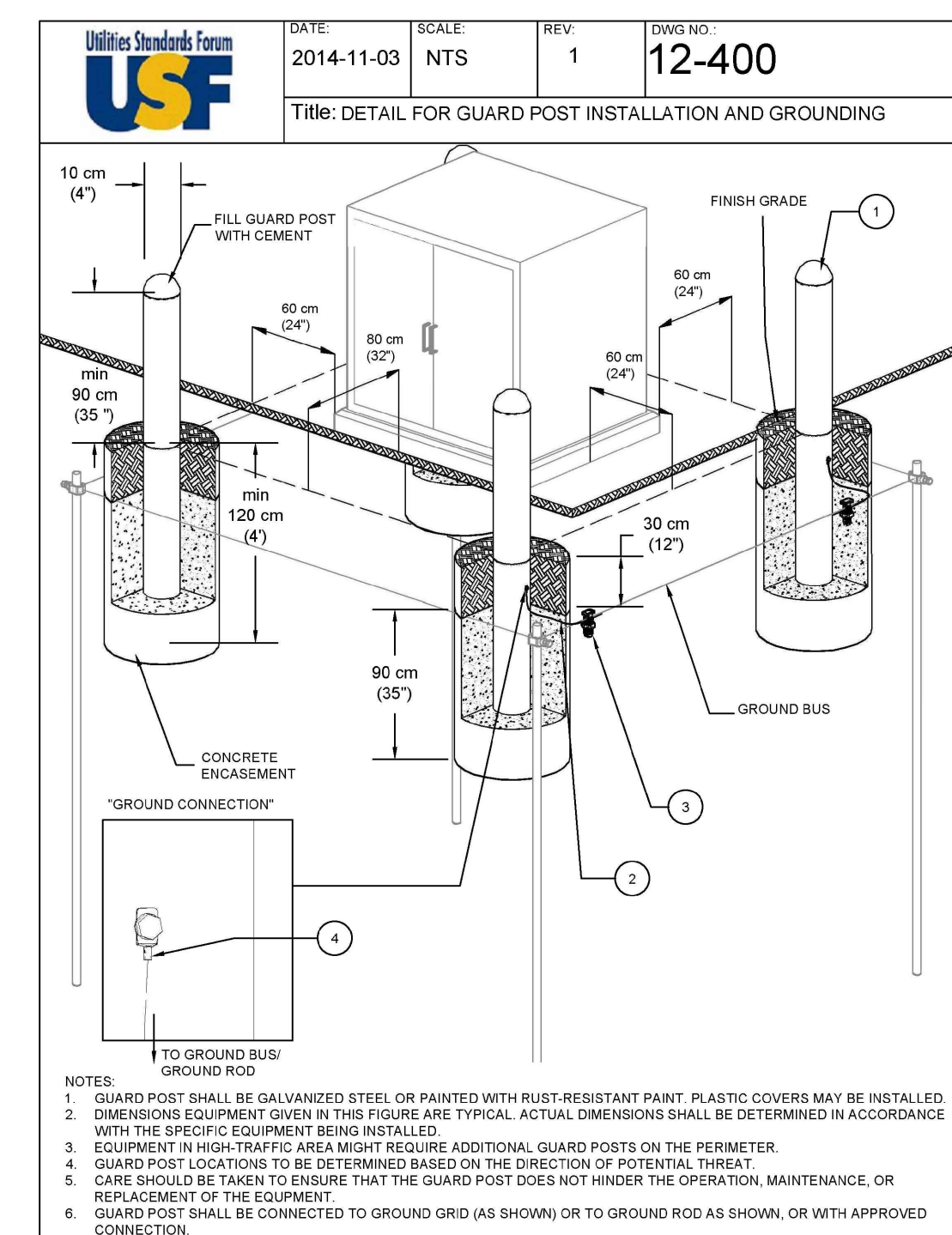
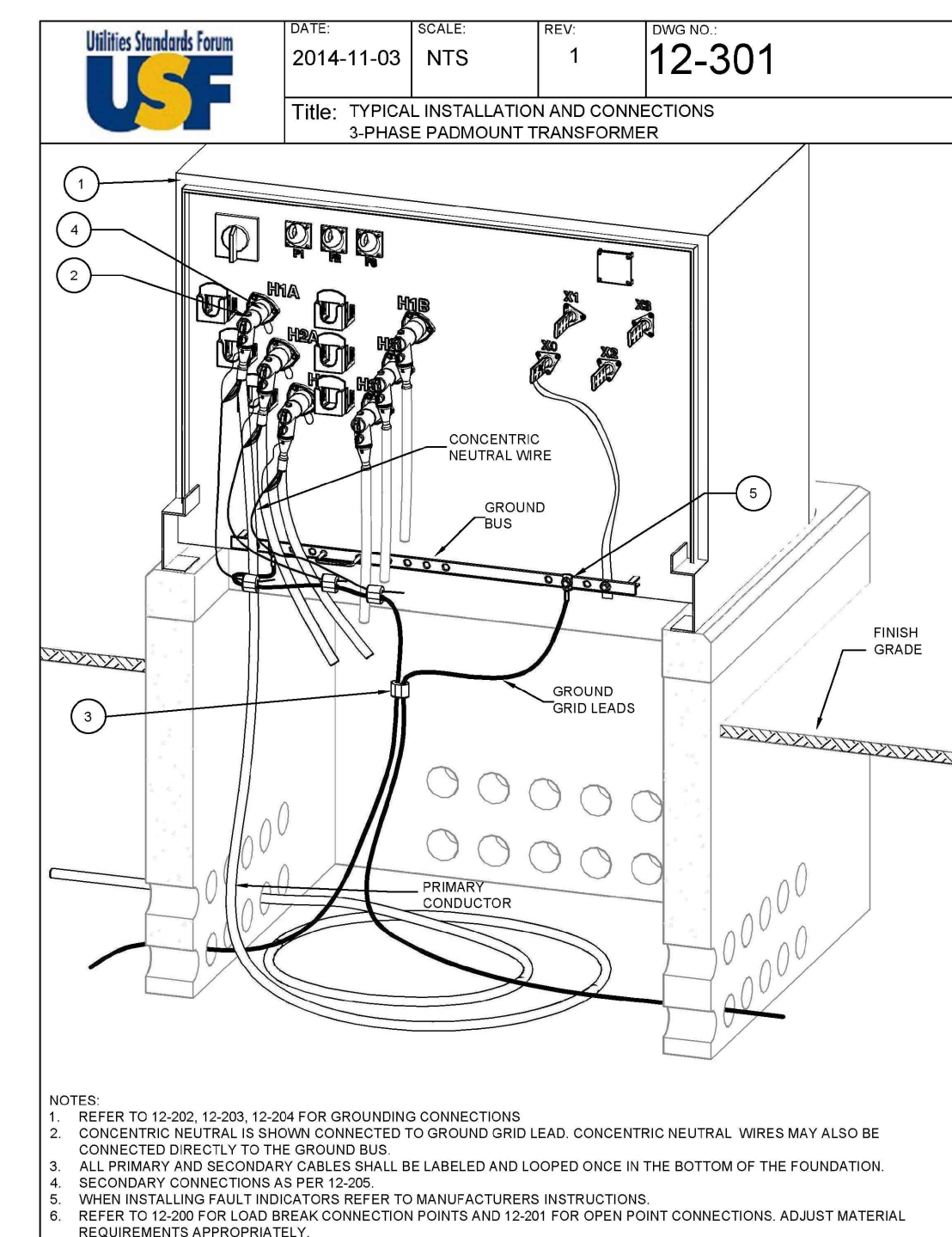
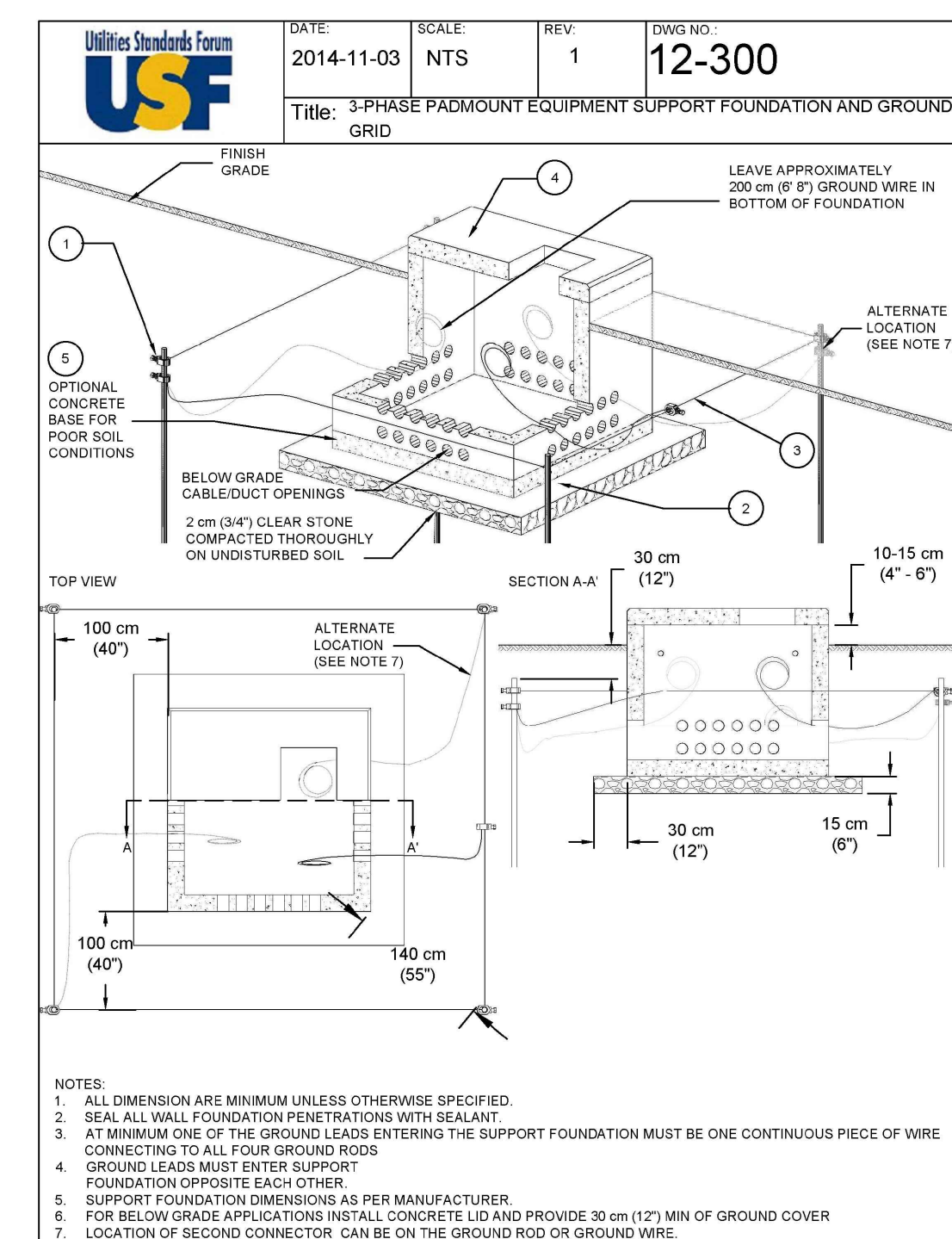
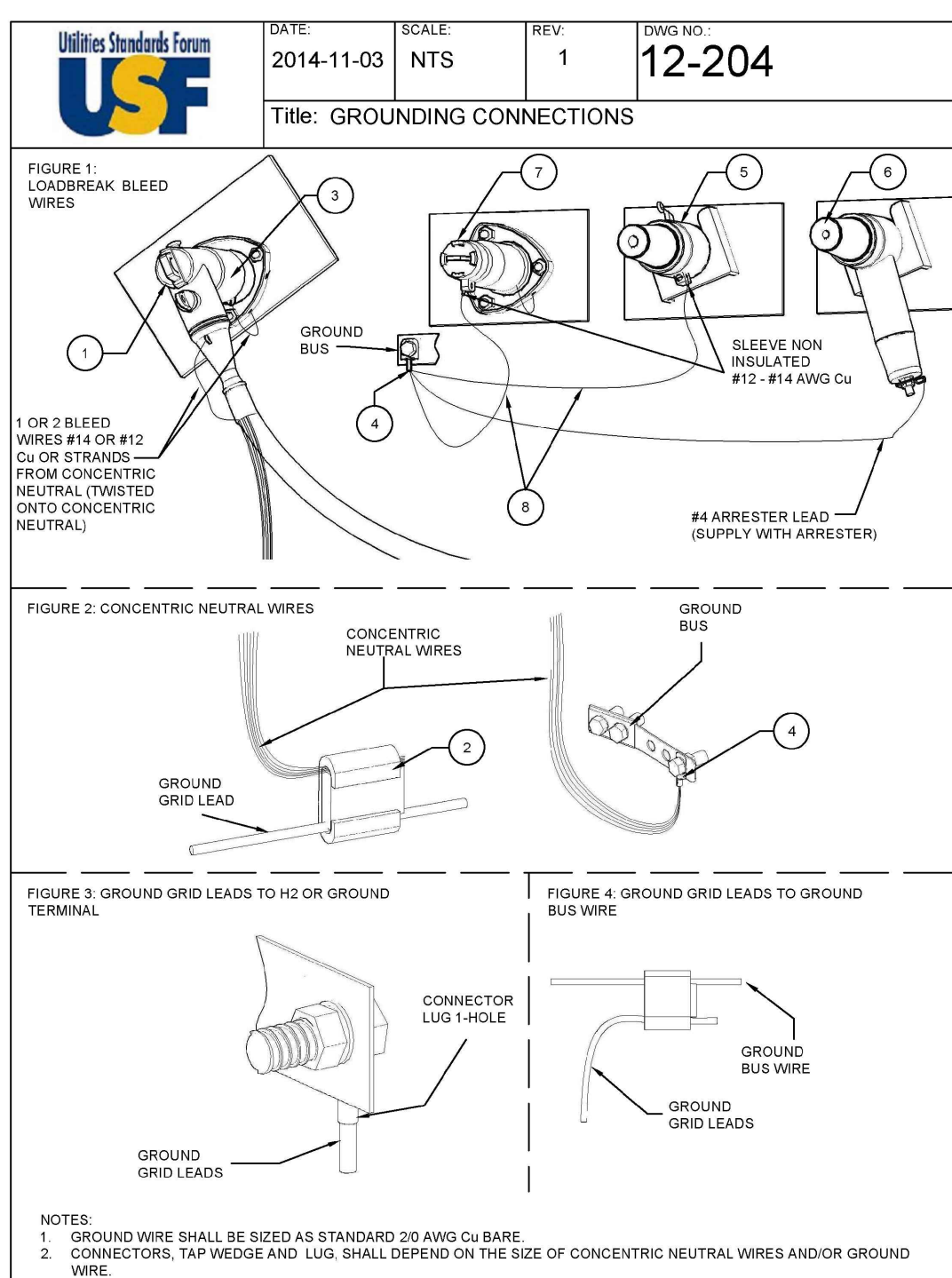
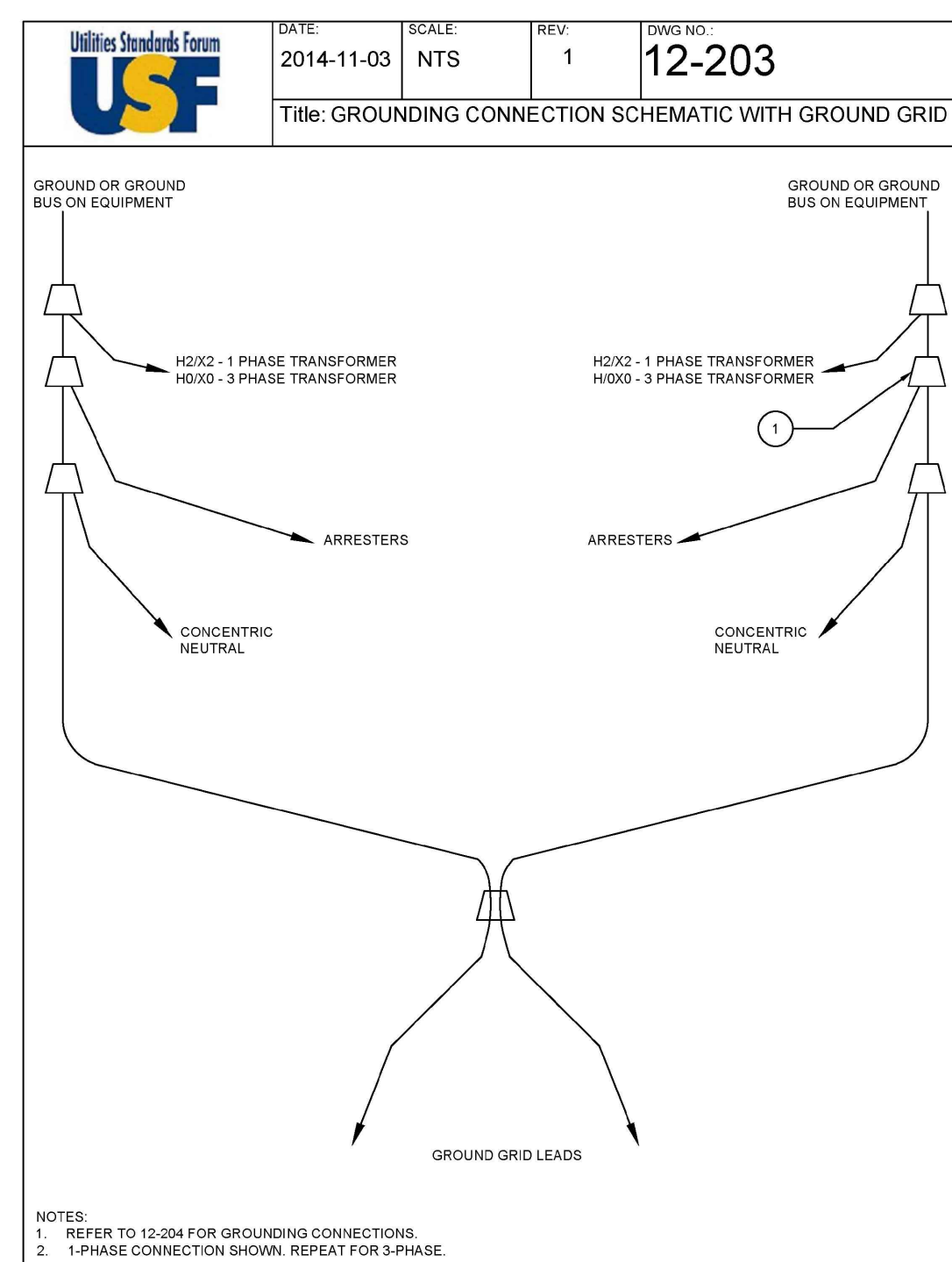
15.5 All damaged components or transformers are to be replaced at contractor's / owner's / developer's expense.

15.6 Install blastwalls and / or guard post as directed by Innisfil Hydro and in accordance with details IHS01-017 and / or IHS01-018.



Underground Electrical Plant Installation Page 7

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1.</td><td>FIRST SUBMISSION TO CITY OF BARRIE</td><td>2021 FEB 12</td><td>GGR</td></tr> <tr><td>2.</td><td>SECOND SUBMISSION TO CITY OF BARRIE</td><td>2021 AUG 31</td><td>GGR</td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>NO.</td><td>REVISIONS</td><td>DATE</td><td>INITIAL</td></tr> </table> | 1. | FIRST SUBMISSION TO CITY OF BARRIE | 2021 FEB 12 | GGR | 2. | SECOND SUBMISSION TO CITY OF BARRIE | 2021 AUG 31 | GGR | | | | | | | | | | | | | | | | | NO. | REVISIONS | DATE | INITIAL | <p>1. This drawing is the exclusive property of Runge & Associates Inc. and the reproduction of any part without prior written consent of this office is strictly prohibited.</p> <p>2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.</p> <p>3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.</p> <p>4. Drawing revision must be noted "Issued For Construction" before any work commences.</p> |  | <p>PRATT HANSEN GROUP INC. BISTRO 6 WEST CITY OF BARRIE</p> <p>3 PHASE TRANSFORMER SPECIFICATIONS</p> |  <p>Runge Engineering A Division of Tatham Eng'g Limited 115 Sandford Fleming Drive Collingwood, ON, L9Y 5A6 (705) 445-2565 www.tathameng.com</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DESIGN</td><td>GGR</td> <td>SCALE: AS SHOWN</td> <td>DATE</td><td>JANUARY, 2021</td> </tr> <tr> <td>DRAWN</td><td>JS</td> <td>PROJECT</td> <td>DWG. NO</td> <td></td> </tr> <tr> <td>CHECKED</td><td>GGR</td> <td>20137P</td> <td>E4.3</td> <td></td> </tr> </table> | DESIGN | GGR | SCALE: AS SHOWN | DATE | JANUARY, 2021 | DRAWN | JS | PROJECT | DWG. NO | | CHECKED | GGR | 20137P | E4.3 | |
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| 2. | SECOND SUBMISSION TO CITY OF BARRIE | 2021 AUG 31 | GGR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| CHECKED | GGR | 20137P | E4.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



MATERIAL LIST 12-203

| Part # | Qty | Description | Part Number |
|--------|----------|-------------|------------------------|
| 1 | as req'd | Connector | U01144, U05284, U05289 |

MATERIAL LIST 12-204

| Part # | Qty | Description | Part Number |
|--------|----------|------------------------|----------------------|
| 1 | as req'd | Elbow, Load Break | U05511 |
| 2 | as req'd | Connector, Wedge Type | Refer to Chart 13-01 |
| 3 | as req'd | Bushing Insert | U06350 |
| 4 | as req'd | Connector, Lug | U05610 |
| 5 | as req'd | Parking Stand | U10800 |
| 6 | as req'd | Parking Stand Arrester | U05185-U05187 |
| 7 | as req'd | Insulating Cap | U05473, U05300 |
| 8 | as req'd | Bleed Wire | U11150 |

MATERIAL LIST 12-300

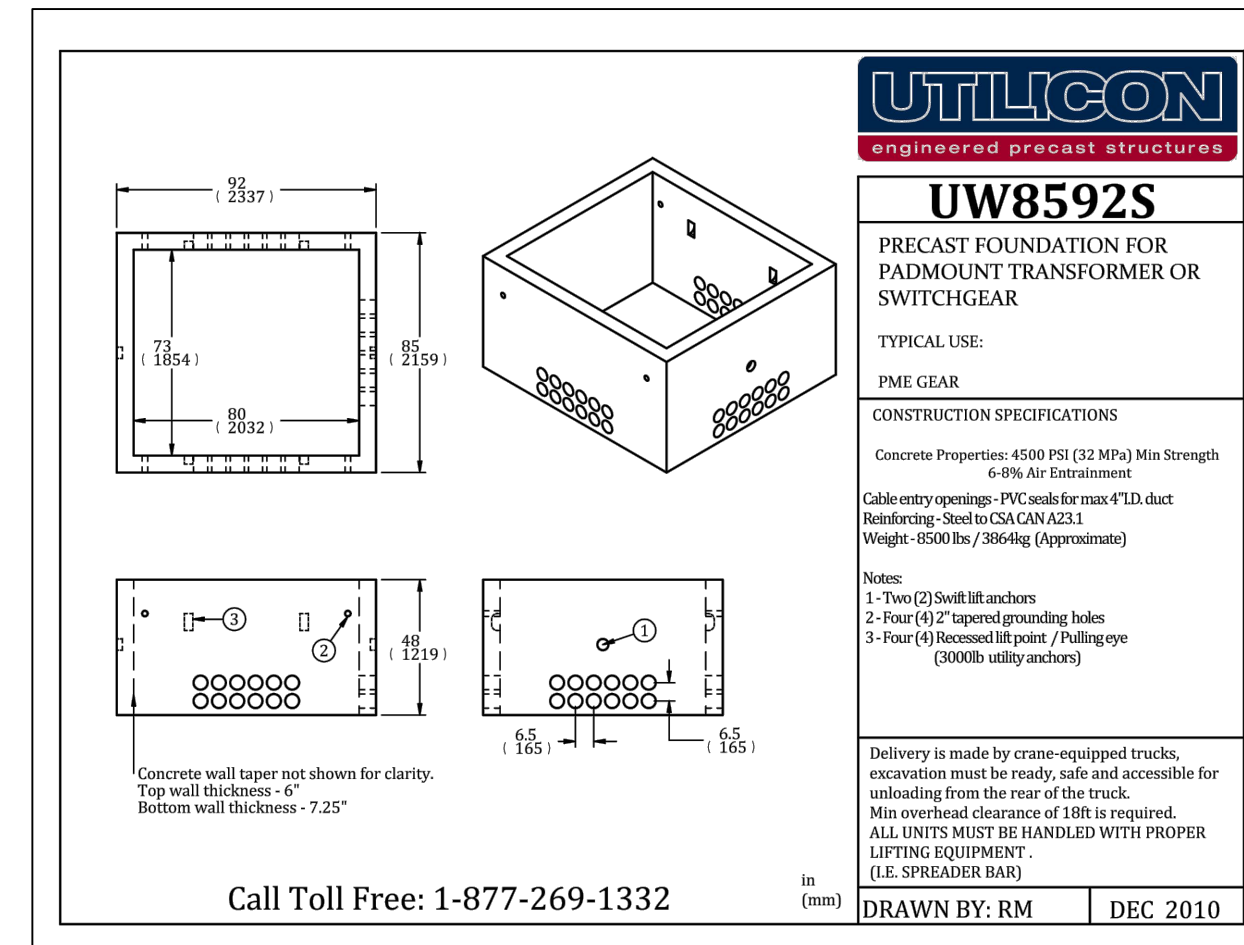
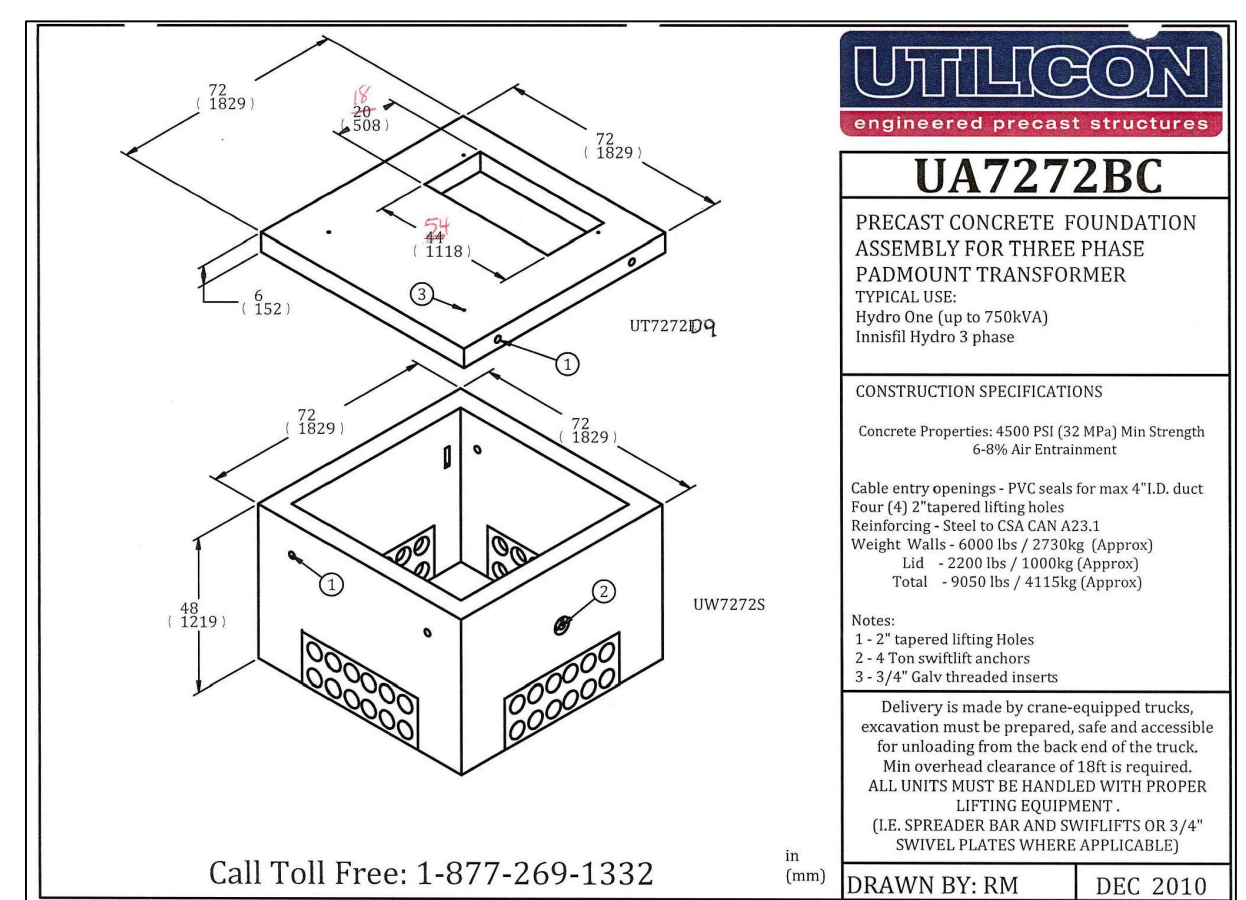
| Part # | Qty | Description | Part Number |
|--------|----------|-----------------------|------------------------|
| 1 | 6 | Connector, Ground Rod | U01144, U06024, U06340 |
| 2 | 4 | Ground Rod | U05812, U00484, U06001 |
| 3 | as req'd | Ground Wire 20 AWG Cu | U10650 |
| 4 | 1 | Foundation | U11200 |
| 5 | Optional | Concrete Base | U06953 |

MATERIAL LIST 12-301

| Part # | Qty | Description | Part Number |
|----------|----------|-------------------------------|------------------------|
| 1 | 1 | Transformer, 3-Phase Padmount | U10900 |
| 2 | as req'd | Elbow, Load Break | U05511 |
| 3 | as req'd | Connector | U01144, U05284, U05289 |
| 4 | as req'd | Bushing Insert | U06350 |
| 5 | as req'd | Connector, Lug | U05610 |
| Optional | as req'd | Feed Thru Insert | U05476-U05478 |
| Optional | as req'd | Bushing Arrester | U10750 |
| Optional | as req'd | Parking Stand | U10800 |
| Optional | as req'd | Feed Thru Parking Stand | U05467 |
| Optional | as req'd | Parking Stand Arrester | U05185-U05187 |
| Optional | as req'd | Elbow Arrester | U11800 |
| Optional | as req'd | Fault Indicators | U05465 |

MATERIAL LIST 12-400

| Part # | Qty | Description | Part Number |
|--------|----------|-----------------------|-------------|
| 1 | as req'd | Guard Post | U11100 |
| 2 | as req'd | Ground Wire 20 AWG Cu | U10650 |
| 3 | as req'd | Connector | U05585 |
| 4 | as req'd | Connector, Lug | U05610 |



1 TRANSFORMER VAULT - UP TO 500KVA
E4.6

2 TRANSFORMER VAULT - 750KVA TO 1500KVA
E4.6

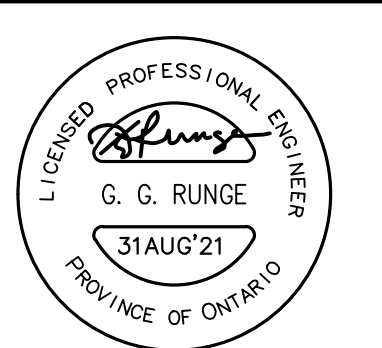
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BISTRO 6 WEST
CITY OF BARRIE

USF AND VAULT DETAILS

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| CHECKED | GGR | 20137P | E4.4 | |

POWER CABLE SCHEDULE

| | |
|-------|--------------------------------------------------------------------------------------------------------------------------|
| PC01 | 3-1C#2/OAWG, AL, 28kV 100%, TR-XLPE, LLDP, 100% CONCENTRIC NEUTRAL IN CONCRETE ENCASED DUCTBANK (4-103mmØ RIGID PVC DB2) |
| PC02 | 4C#25OAWG RWU90 Cu, IN U/G DUCTBANK (OESC DIAGRAM D11, DETAIL #1) |
| PC03 | 4C#2AWG RWU90 Cu, IN U/G DUCTBANK (OESC DIAGRAM D11, DETAIL #1) |
| PC04 | 4C#2/OAWG + #6AWG GND RW90 Cu, IN U/G DUCTBANK |
| PC05 | 4C#250MCM + #6AWG GND RW90 Cu, IN U/G DUCTBANK |
| PC06 | 3C#6AWG + #8AWG GND RW90 Cu, IN 41mmØ U/G RPVC DUCT |
| PC07 | 3C#2/OAWG + #6AWG GND RW90 Cu, IN U/G DUCTBANK |
| 1200A | 12C#500MCM + 4C#500MCM NEUTRALS (4/PHASE, 4-WIRE), Cu, RWU90, IN U/G DUCTBANK (OESC DIAGRAM D11, DETAIL #4) |
| 1600A | 18C#500MCM + 6C#500MCM NEUTRALS (6/PHASE, 4-WIRE), Cu, RWU90, IN U/G DUCTBANK (OESC DIAGRAM D11, DETAIL #6) |

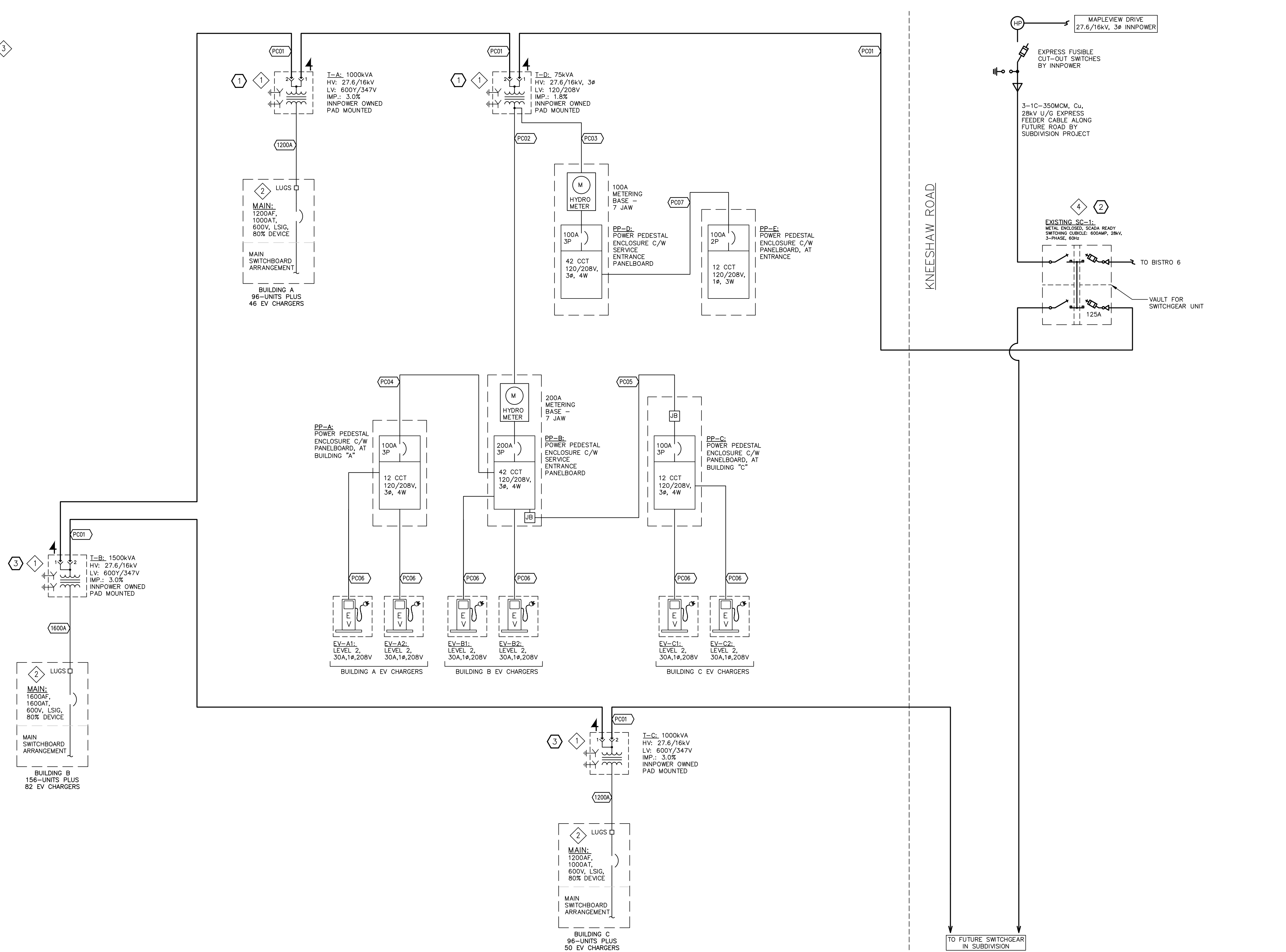
PHASING NOTES FOR TRANSFORMERS:

- 1 PROVIDE TRANSFORMER, VAULT AND SECONDARY SERVICE FOR PHASE 1, INCLUDING PRIMARY AND SECONDARY TERMINATIONS. HI-POT TEST ALL PRIMARY CABLES, TO INNPOWER'S STANDARDS.
- 2 PROVIDE NEW SWITCHGEAR FOR PHASE 1, TO INNPOWER'S STANDARDS
- 3 PROVIDE VAULT AND TRANSFORMER ONLY FOR PHASE 1 INCLUDING PRIMARY TERMINATIONS. COMPLETE SECONDARY SERVICE IN NEXT PHASE, ACCORDINGLY.

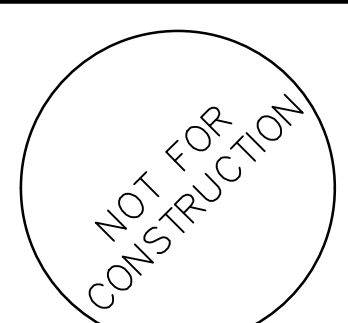
NOTES:

- 1 CONTRACTOR TO COORDINATE WORK WITH LUC (INNPOWER) ACCORDINGLY AND ARRANGE FOR NEW SERVICE. THE FOLLOWING EQUIPMENT WILL BE OWNED AND MAINTAINED BY THE LUC:
 - PAD MOUNT TRANSFORMERS, SWITCHGEAR AND JUNCTION BOX.
- SERVICE ENTRANCE WORK PROVIDED BY ELECTRICAL CONTRACTOR INCLUDES:
 - ALL TRANSFORMERS, AND SWITCHGEAR UNIT
 - PRIMARY DUCTBANK TO PROPERTY LINE, AS PER LUC STANDARDS
 - PRIMARY CABLES AND TERMINATIONS
 - SECONDARY SERVICE DUCTBANK, SECONDARY CABLES AND TERMINATION IN TRANSFORMER AND AT BUILDING SWITCHBOARD.
 - SEALING WATER-TIGHT ALL CABLES IN DUCT, INSIDE BUILDING AT SWITCHBOARD.
 - TRANSFORMER VAULT, BOLLARDS AND GROUND GRID TO LUC STANDARDS.
 - COORDINATE WORK WITH LUC REPRESENTATIVE AND BUILDING CONTRACTOR.
- 2 EACH BUILDING SWITCHBOARD IS SUPPLIED AND INSTALLED BY OTHERS. CONTRACTOR TO COORDINATE SECONDARY DUCTBANK ROUTING AND CABLE CONNECTIONS WITH BUILDING CONTRACTOR. SEAL WATER-TIGHT ALL CABLES IN DUCT, INSIDE BUILDING AT SWITCHBOARD AND AT VAULT END.
- 3 SECONDARY FEEDER CABLES SIZED FOR VOLTAGE DROP TO EV POWER PEDESTALS

ALL TRANSFORMERS WILL BE OWNED AND MAINTAINED BY INNPOWER.
ALL TRANSFORMER SIZES HAVE "NOT YET" BEEN CONFIRMED AND APPROVED BY INNPOWER.



1 E5.1 PROPOSED SINGLE LINE DIAGRAM: 27.6/16kV – 600/347V AND 120/208, 3-PHASE



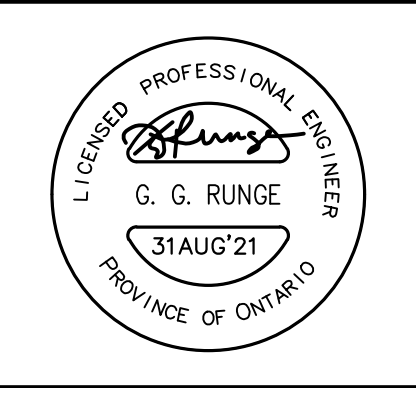
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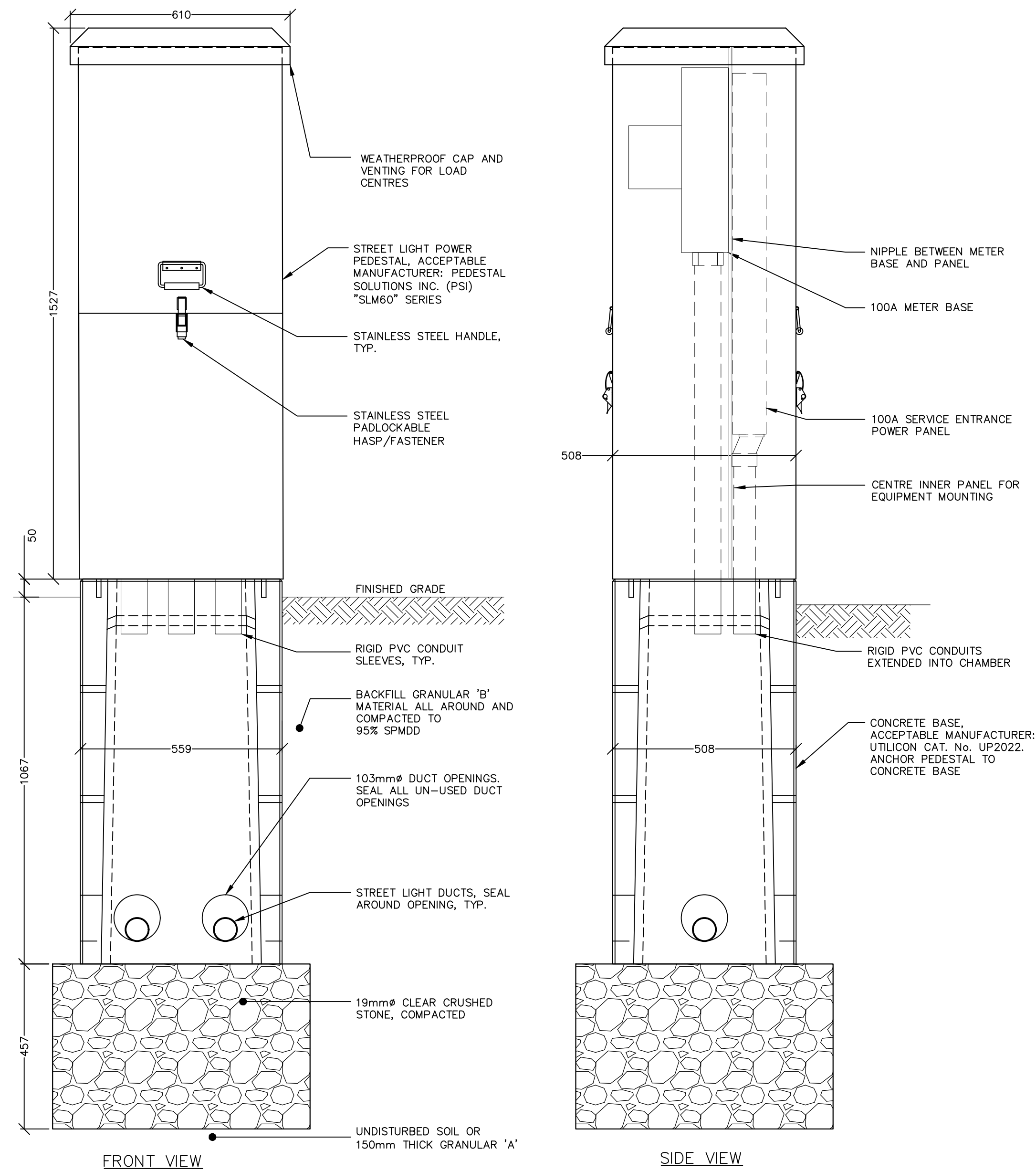
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CITY OF BARRIE

SINGLE LINE DIAGRAM

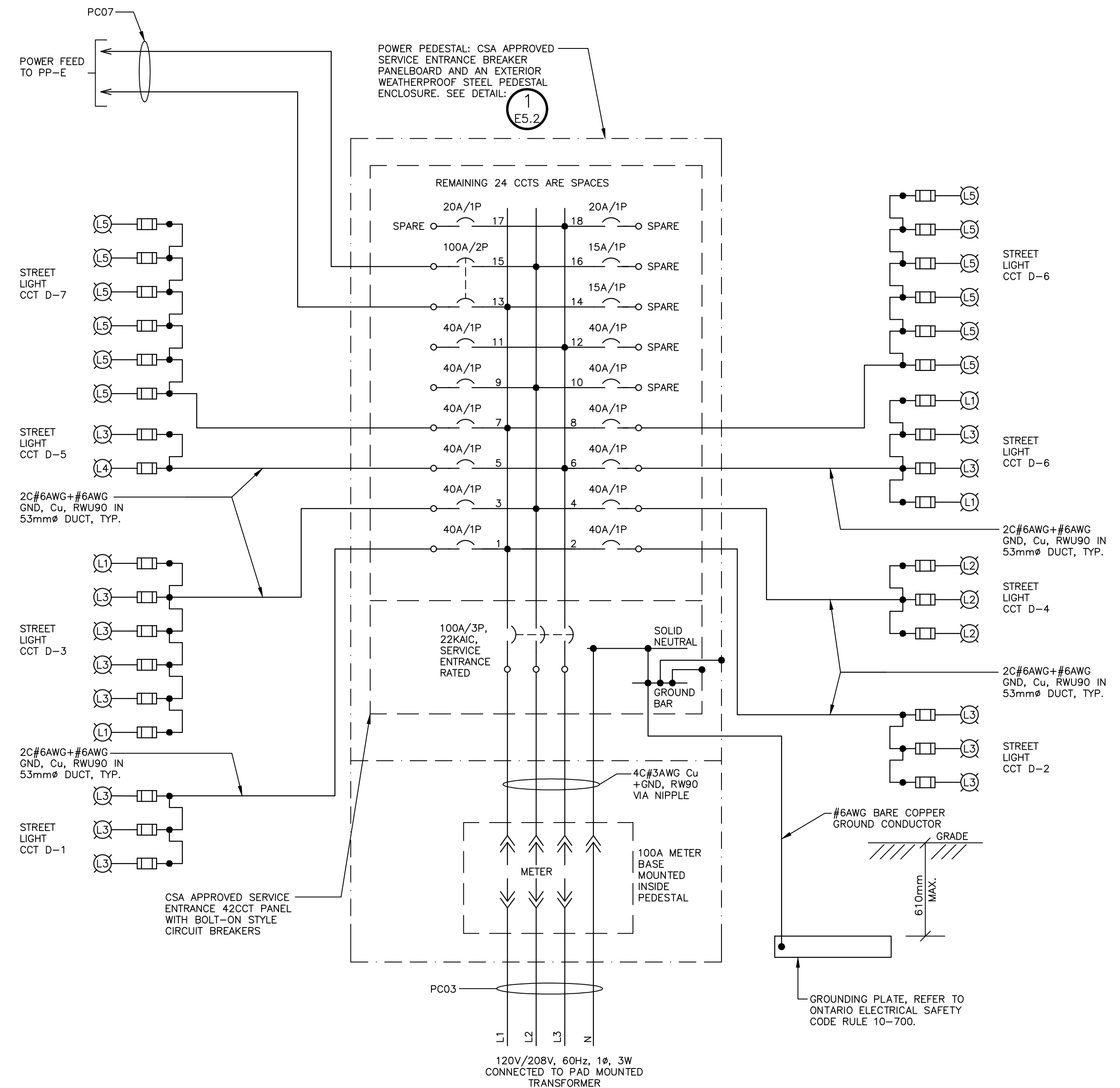
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| CHECKED | GGR | 20137P | E5.1 | |



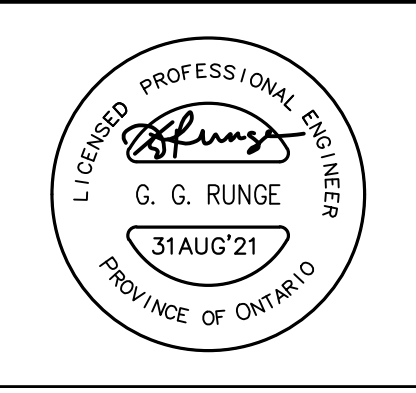
1 PP-D: METERED 3Ø 120/208 POWER PEDESTAL DETAIL
 ES.2 - NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm)



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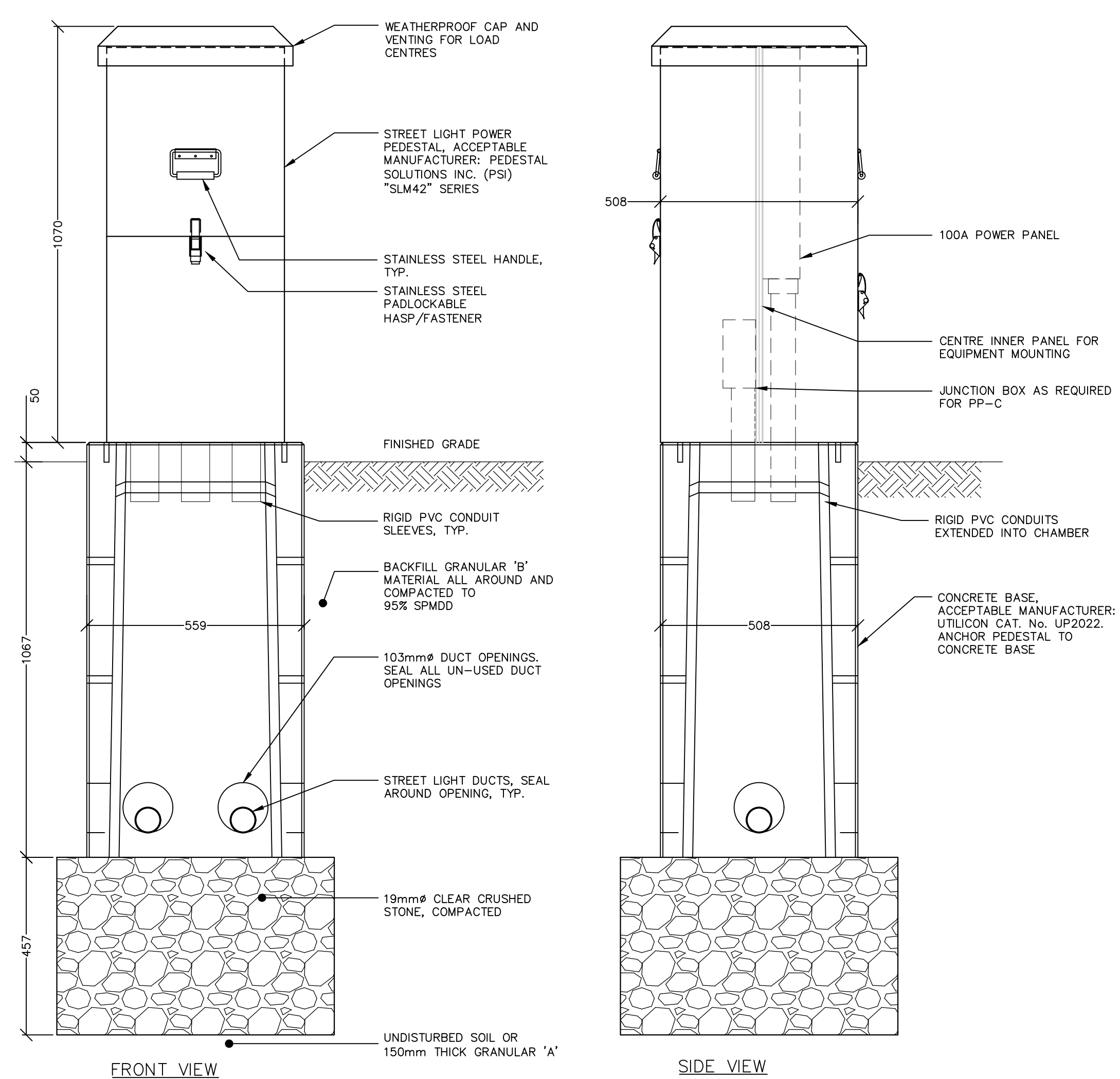
PRATT HANSEN GROUP INC.
 BISTRO 6 WEST
 CITY OF BARRIE

ELECTRICAL POWER PEDESTAL
 PP-D DETAILS

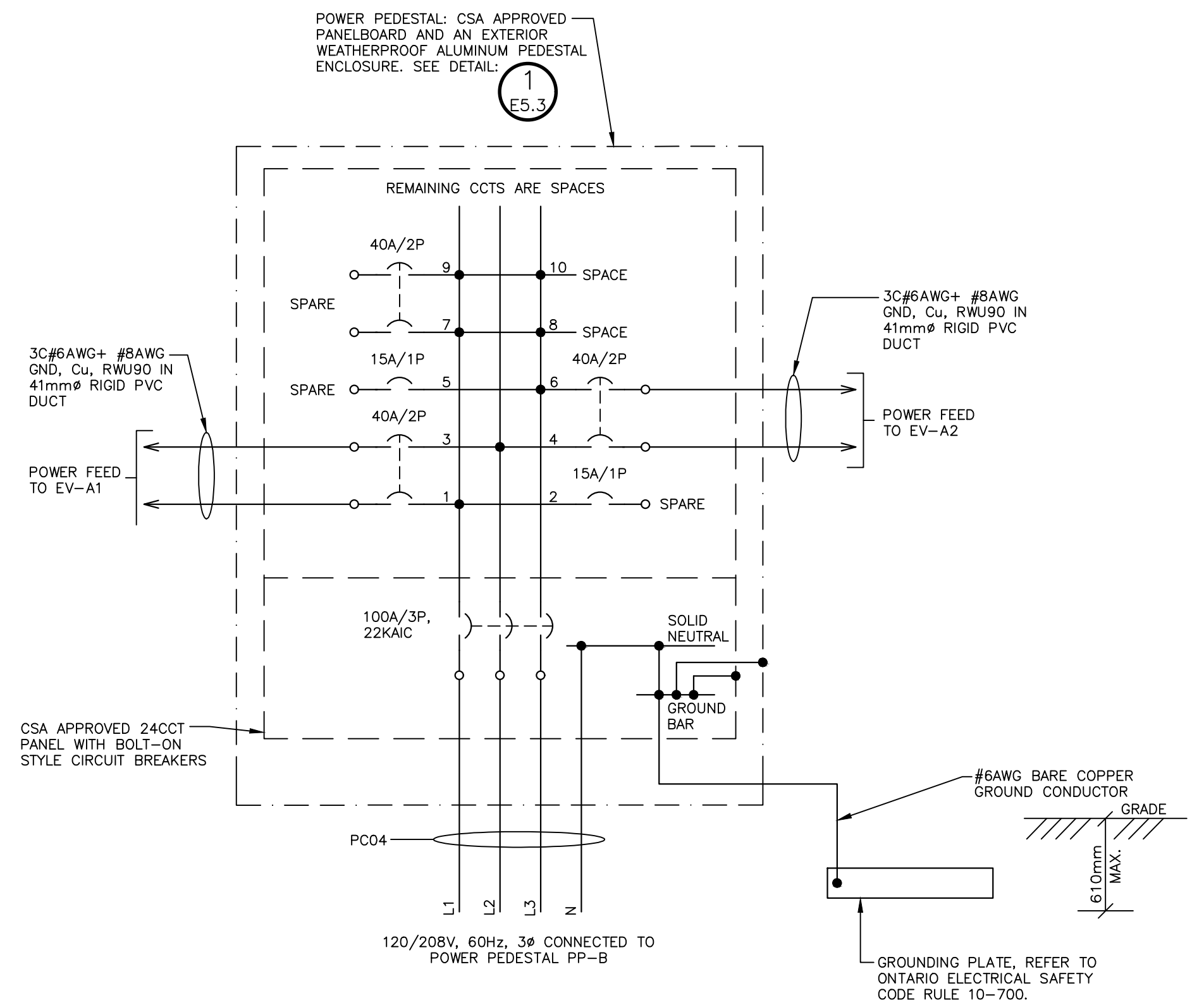
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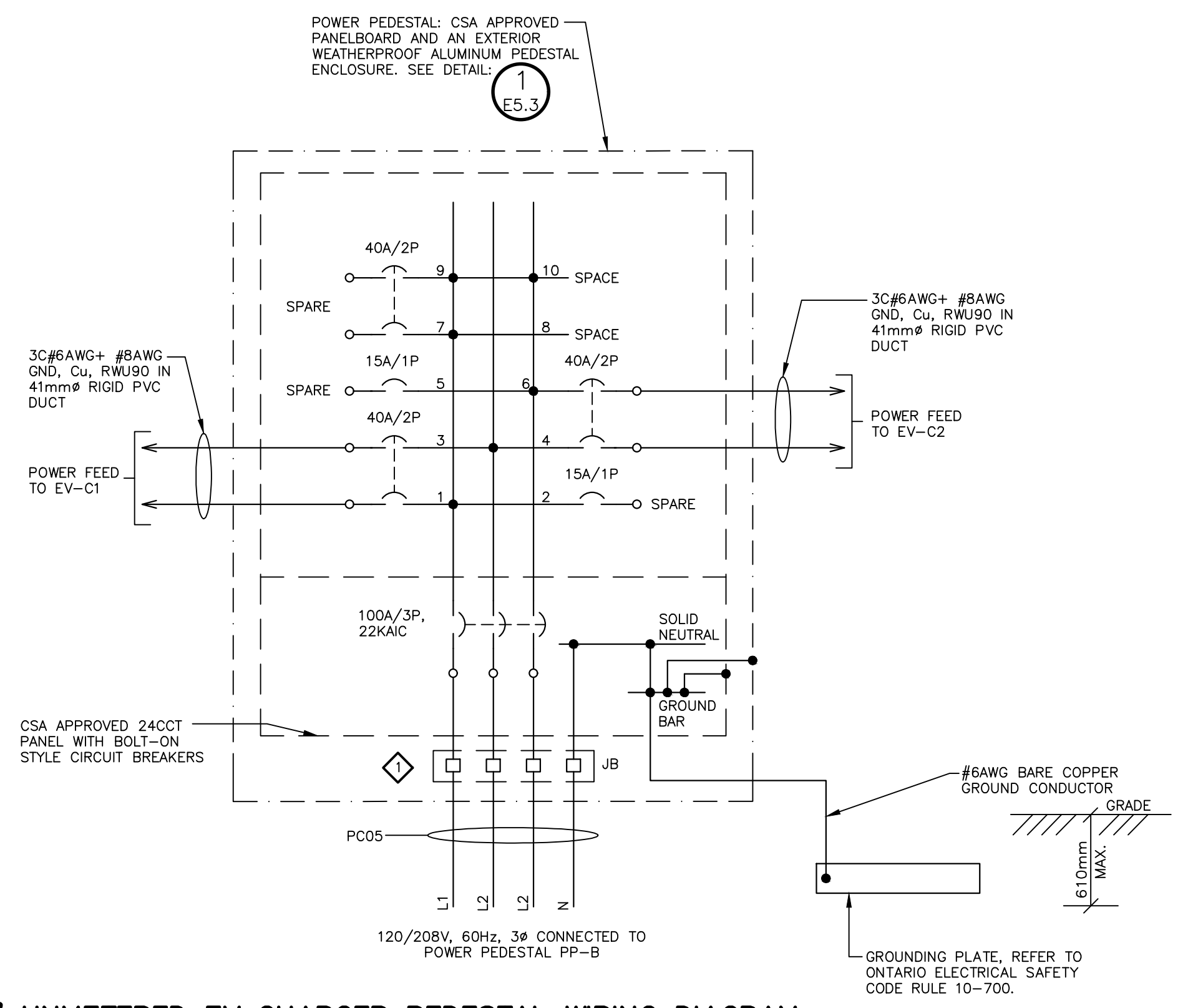
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| DRAWN | JS | PROJECT | DWG. NO | |
| CHECKED | GGR | 20137P | E5.2 | |



1 UNMETERED EV CHARGER PEDESTAL DETAIL, TYPICAL.
 -NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm)
 -TYPICAL FOR PP-A AND PP-C



2 "PP-A" UNMETERED EV CHARGER PEDESTAL WIRING DIAGRAM
 - NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm). SEE DRAWING E5.1 FOR CABLE PC04 DESCRIPTION.



3 "PP-C" UNMETERED EV CHARGER PEDESTAL WIRING DIAGRAM
 - NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm). SEE DRAWING E5.1 FOR CABLE PC05 DESCRIPTION.
 PROVIDE A JUNCTION BOX WITH POWER DISTRIBUTION BLOCKS AT BOTH END TO TRANSITION CONDUCTORS TO FEEDER BREAKER. LOCATE JUNCTION BOX INSIDE PEDESTAL.

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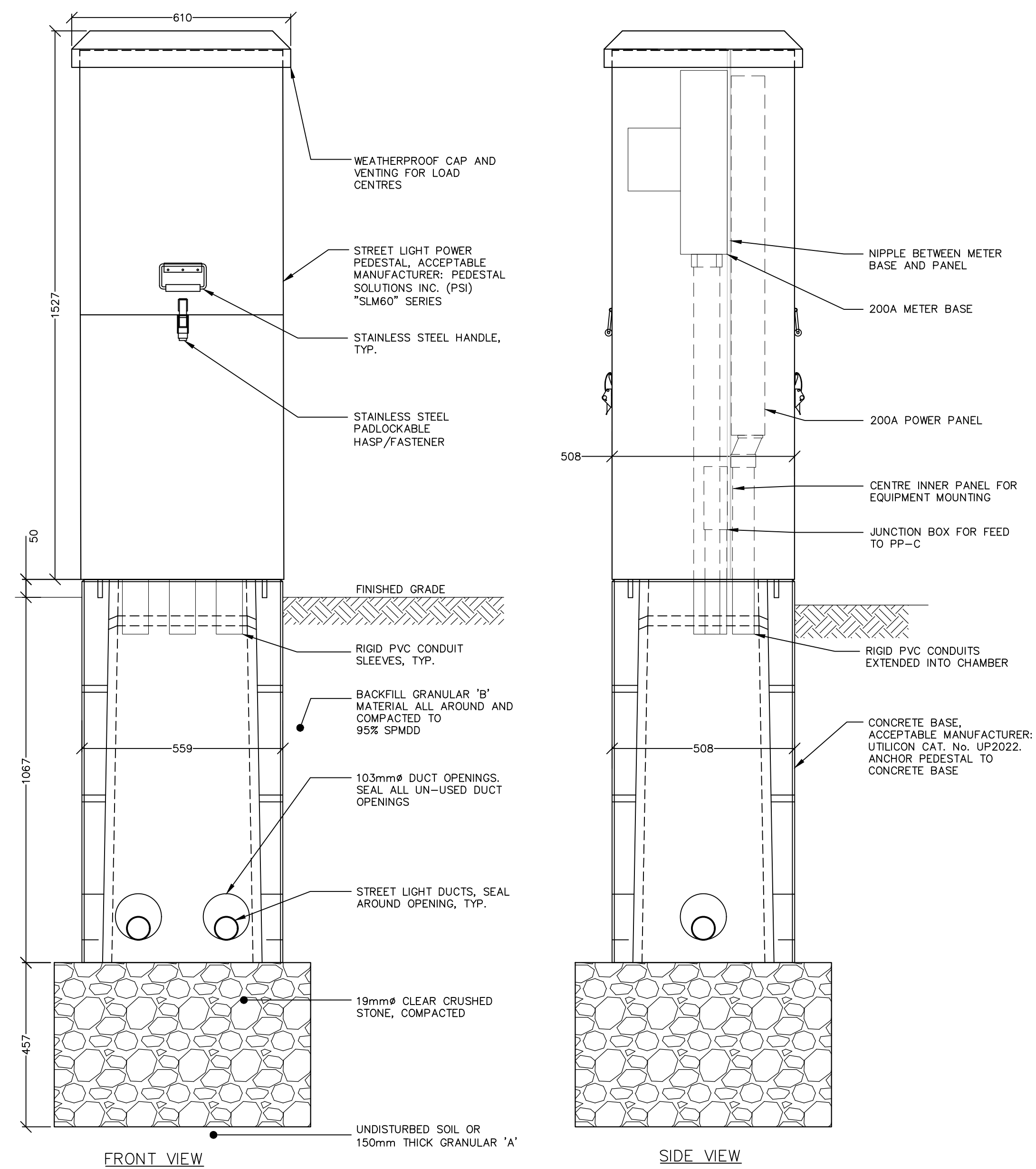
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TYPICAL EV CHARGER PEDESTAL DETAILS

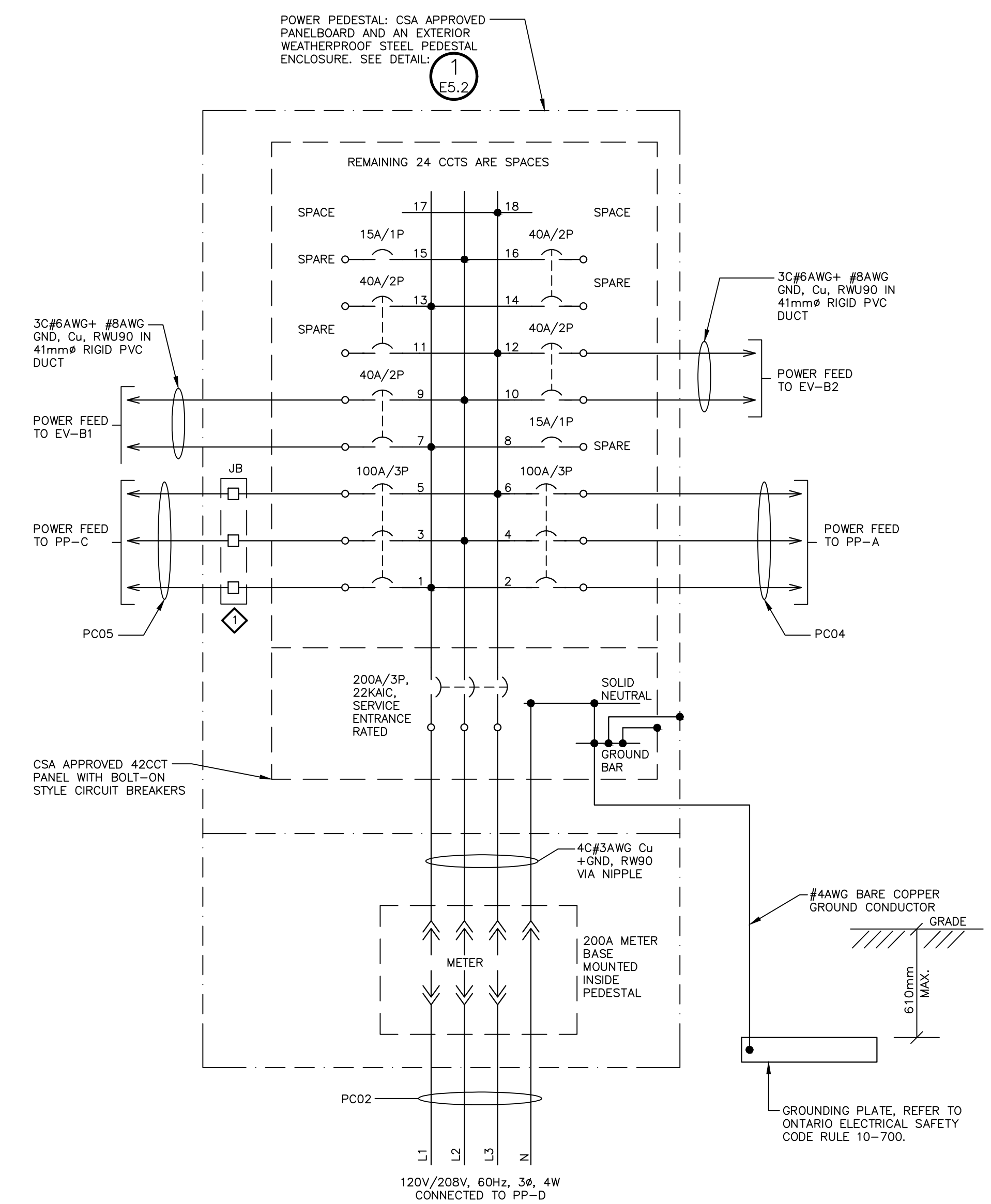
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| CHECKED | GGR | 20137P | E5.3 |



1 PP-B: METERED 3 \varnothing 120/208 POWER PEDESTAL DETAIL
 -NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm)



2 "PP-B" POWER PEDESTAL WIRING DIAGRAM
 - NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm). SEE DRAWING E5.1 FOR CABLES PC02, PC04 AND PC05 DESCRIPTION.
 PROVIDE A JUNCTION BOX WITH POWER DISTRIBUTION BLOCKS AT BOTH ENDS TO TRANSITION CONDUCTORS TO FEEDER. LOCATE JUNCTION BOX INSIDE PEDESTAL.

NOT FOR CONSTRUCTION

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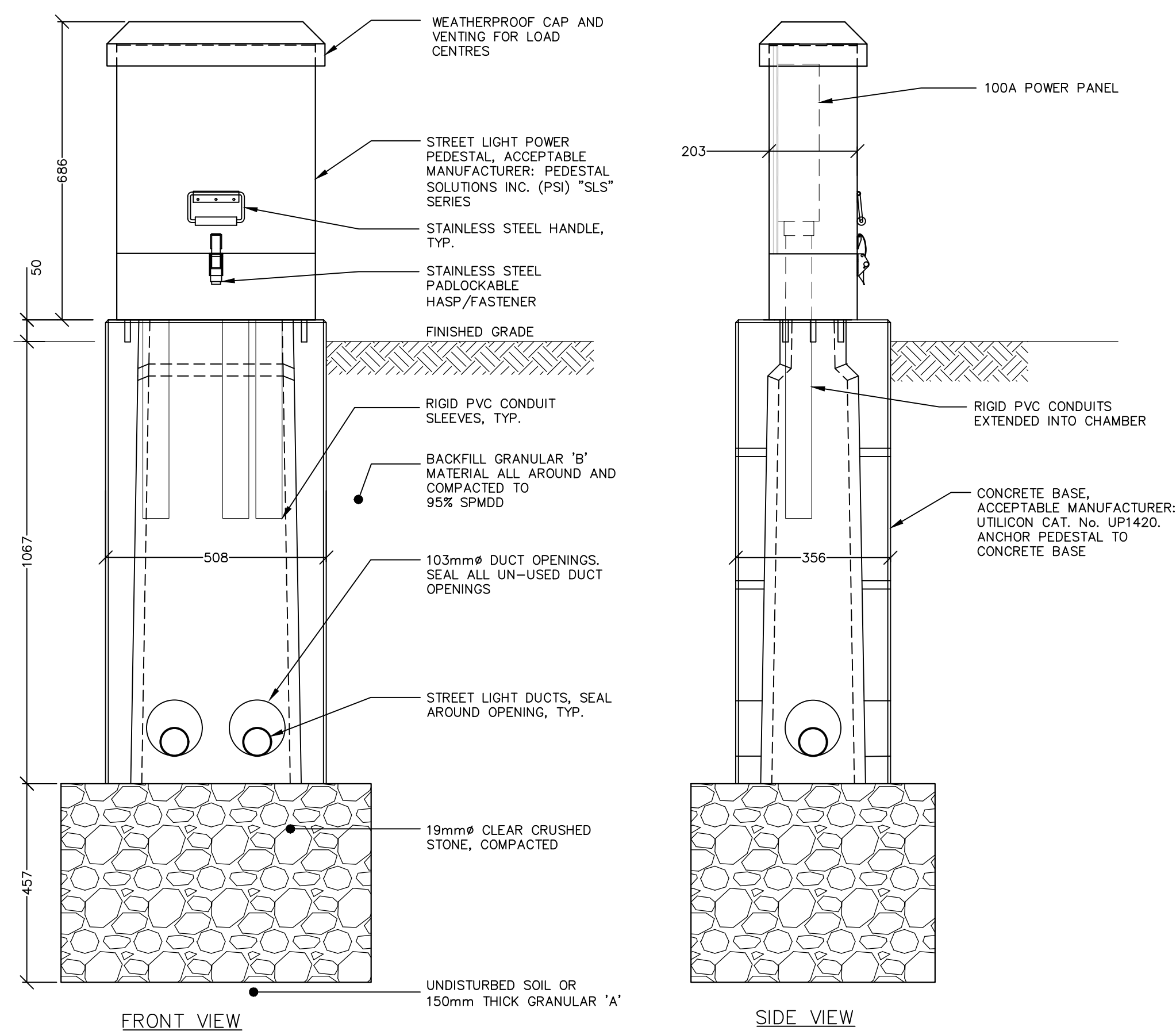
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ELECTRICAL POWER PEDESTAL
 PP-B DETAILS

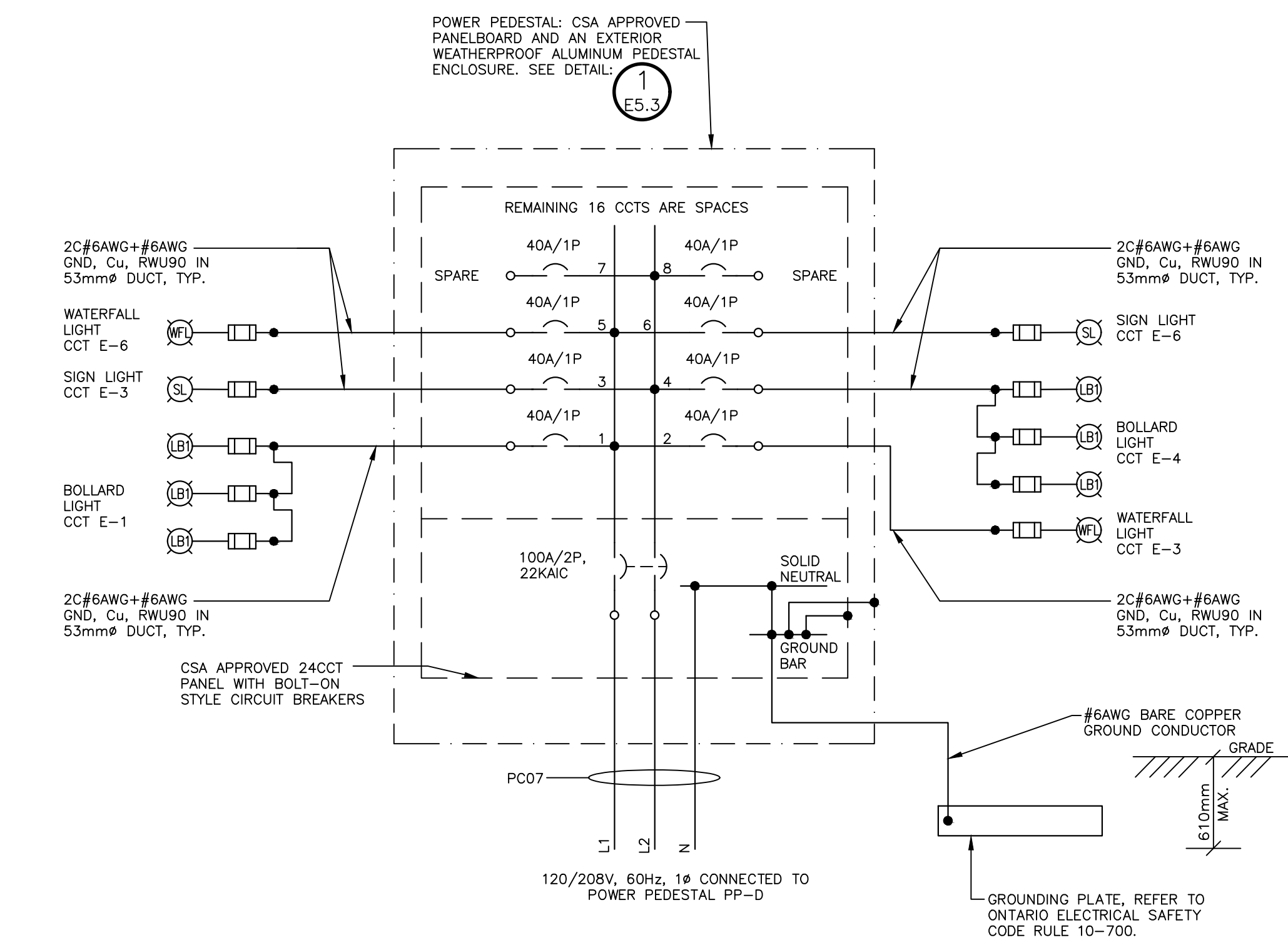
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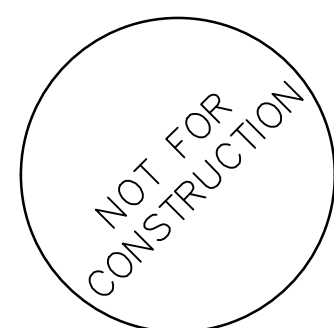
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| CHECKED | GGR | 20137P | E5.4 | |



1 PP-E: UNMETERED 1Ø 120/208 POWER PEDESTAL DETAIL
 E5.4 - NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm)

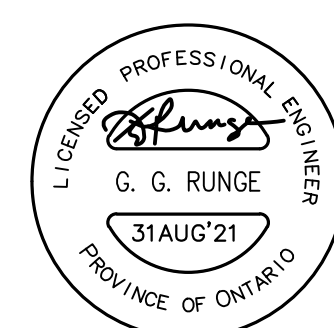


3 "PP-E" UNMETERED POWER PEDESTAL WIRING DIAGRAM
 E5.3 - NTS, DIMENSIONS SHOWN IN MILLIMETRES (mm). SEE DRAWING E5.1 FOR CABLE PC07 DESCRIPTION.



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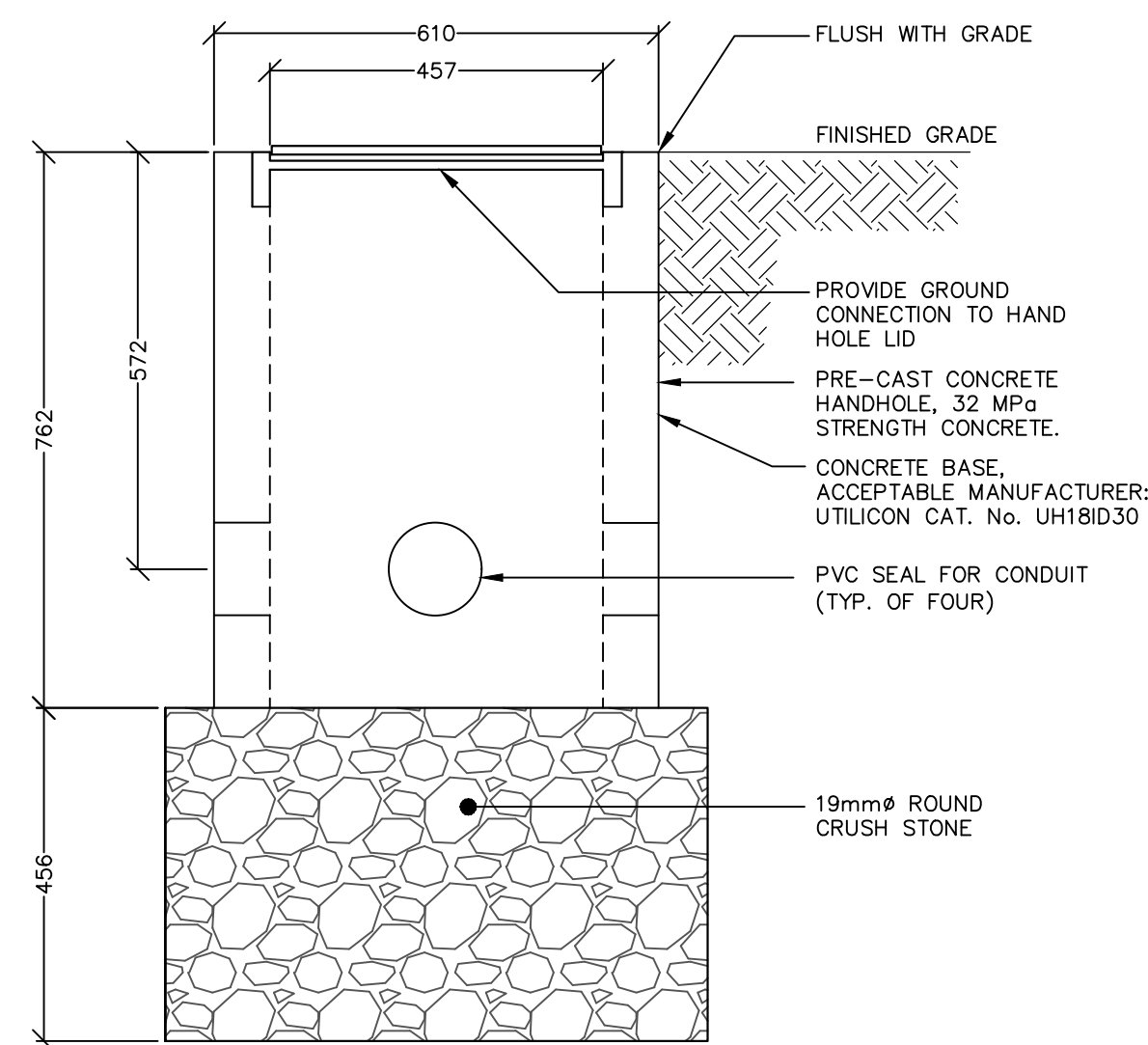
PRATT HANSEN GROUP INC.
 BISTRO 6 WEST
 CITY OF BARRIE

ELECTRICAL POWER PEDESTAL
 PP-B DETAILS

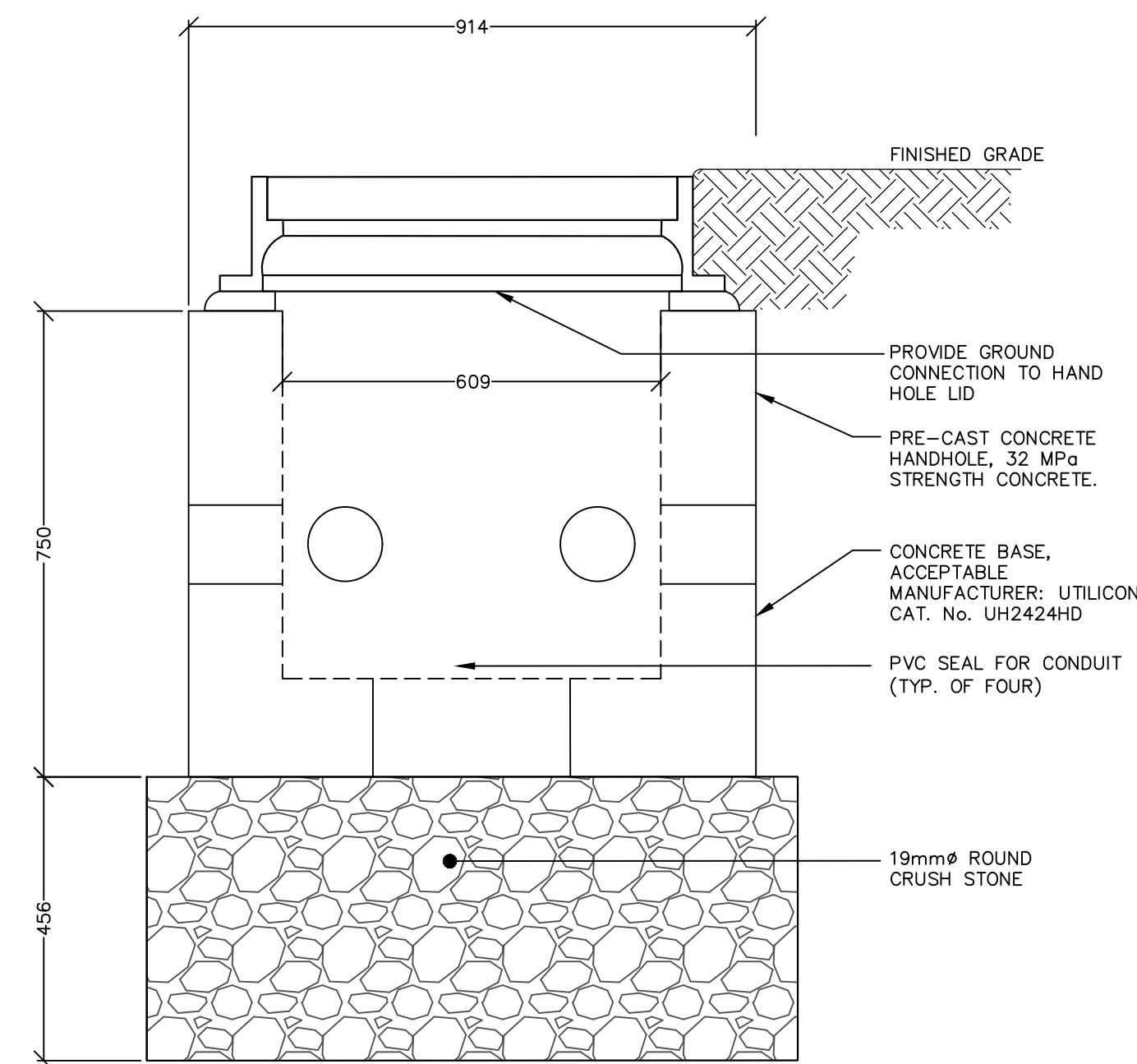


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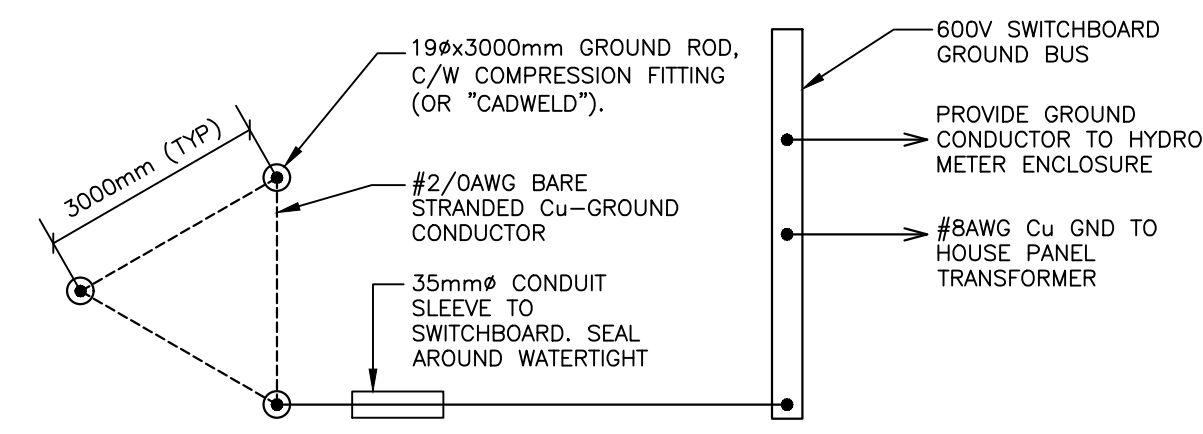
| DESIGN | GGR | SCALE: AS SHOWN | DATE | JANUARY, 2021 |
|---------|-----|-----------------|----------|---------------|
| DRAWN | JS | PROJECT | DWG. NO. | |
| CHECKED | GGR | 20137P | E5.5 | |



1 HAND HOLE DETAIL, TYPICAL
 E5.5
 - NTS, DIMENSIONS SHOWN IN MILLIMETERS (mm)
 - REFERENCE OPSD 2112.02 AND 2117.02 STANDARDS
 - TYPICAL DETAIL FOR HANDHOLES HH1 TO HH8



2 PULL BOX 1 (PB1) DETAIL
 E5.5
 - NTS, DIMENSIONS SHOWN IN MILLIMETERS (mm)
 - REFERENCE OPSD 2112.040, OPSD 2117.02, OPSD 401.01 TYPE A STANDARDS

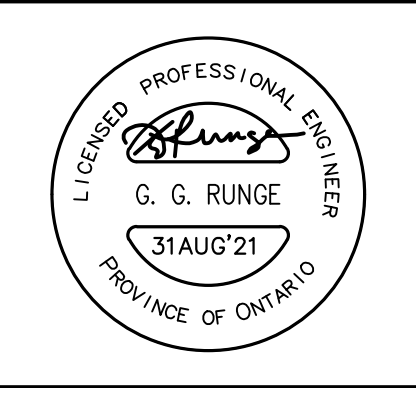


3 TYP., GROUND GRID DETAIL
 E5.5
 • NTS, DIMENSIONS SHOWN IN mm
 • ONLY MAIN ELECTRICAL EQUIPMENT SHOWN
 • TYPICAL GROUND GRID FOR EACH BUILDING

NOT FOR CONSTRUCTION

| NO. | REVISIONS | DATE | INITIAL |
|-----|-------------------------------------|-------------|---------|
| 1. | FIRST SUBMISSION TO CITY OF BARRIE | 2021 FEB 12 | GGR |
| 2. | SECOND SUBMISSION TO CITY OF BARRIE | 2021 AUG 31 | GGR |
| | | | |
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 2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
 3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
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PRATT HANSEN GROUP INC.
 BISTRO 6 WEST
 CITY OF BARRIE

HANDHOLE AND PULLBOX DETAILS

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| DRAWN | JS | PROJECT | DWG. NO | |
| CHECKED | GGR | 20137P | E5.6 | |