Technical Guidelines for Electrical Services Over 400 Amperes
(Former Kitchener-Wilmot Hydro Service Territory)

These guidelines are for property owners, developers, consultants, etc. **("Customers")** to use when coordinating a new or upgrade of electrical service **("Service")** to a property in the City of Kitchener or the Township of Wilmot. They are to be used in conjunction with the Conditions of Service for Enova Power Corp. ("Enova") for the former Kitchener-Wilmot Hydro Inc. service territory, service connection process, the Ontario Building Code **("OBC")**, the Ontario Electrical Safety Code **("OESC"),** and other applicable regulations.

1. GENERAL

1.1 Contact Enova's Victoria Street office – Service Design Section prior to starting design to review service requirements for the property. Conceptual site plan and basic load calculation needs to be provided to assist in determining service requirements.

1.2 Customer to follow Enova's "Service Connection Process for Properties Requiring Site Plan Review" Document.

1.3 All materials, labour, and trucking costs associated with the installation, removal, etc., of Enova owned infrastructure for the purpose of servicing this property is 100% chargeable to the customer.

1.4 In most cases Enova will provide and own transformer(s), cables, and conductors. The customer will install Enova supplied transformers foundations, transformer rooms, and duct bank, as instructed by Enova Power. Refer to the Appendix of this document for general details.

1.5 Under certain conditions Enova may require a "looped" High Voltage service to supply multiple transformers. A looped service requires a High Voltage Switch. Enova Power will supply and install the High Voltage switch. Customer to the switch foundation, switch rooms, and / or all duct structure. See appendix for general details.

2. TYPICAL INFRASTRUCTURE REQUIRED

A typical electrical service may be comprised of any of the following:

i) Underground high voltage duct structure from points of supply to the new service location.

ii) Transformer room(s), Pad mounted transformer(s), Switch Room(s), and submersible switches.

iii) A low voltage duct structure.

iv) An electrical room(s) and metering room(s) in the building.

3. EASEMENT REQUIREMENTS

Easements may be required for Enova owned high voltage infrastructure on private property. The easements are to be free of any structure, other underground utilities, tree roots, etc. The customer may be required to provide easement(s) per the following:

i) 3.0m wide easement over an underground high-voltage duct bank;

ii) 6.2m x 6.8m easement for the installation of a pad-mounted transformer;

iii) 7.0m x 7.0m easement for the installation of a switchgear unit.

4. CLEARANCE REQUIREMENTS

4.1 A building or any other structure shall not be constructed within 7.5 meters, measured horizontally from the center line, of an overhead distribution system pole line owned by Enova (OBC 3.1.19 and OESC 75-708). Permanent structures within the "restricted zone" surrounding overhead lines are prohibited. This restricted zone is defined by Enova standard DWG D11111. When planning to construct a building, customer is also required to provide the extra space required for construction (skyjacks, scaffolding, etc.) and maintenance (window cleaning, painting, etc.)

4.2 An object (crane, hoisting device, backhoe, power shovel, or other vehicle and equipment) shall not be brought closer than 3 meters to an energized overhead conductor owned by Enova Corporation (O.Reg 213/91 -Section 188).

4.3 Enova will not permit a third party contractor to cover up and or provide isolation of its energized overhead conductors that lie along a construction site (O.Reg 213/91 - Section 189).

5. SPACE REQUIREMENTS

5.1 A minimum of 3 meters of clear space is required in front of pad mounted transformers, transformer room(s), submersible switch gear, and switch gear room(s). This area shall have a level surface (grass, concrete, or asphalt).

5.2 Pad mounted transformer foundation and underground switchgear vault foundation shall be a minimum of 3 meters away from a building or any other customer owned structure. This is to accommodate the ground grid installation and future operation/maintenance work.

5.3 A minimum of 1 meter square is required in front of Enova metering equipment. Meter rooms and electrical to have a minimum height of 2.1 meters.

5.4 When required by Enova, a transformer vault room / and high voltage switchgear room shall be provided by the customer for servicing. The transformer vault room and high voltage switchgear room shall be at grade level accessible from directly outside the building.

5.5 When required by Enova power, the customer shall provide Enova with a road that is a minimum 4.6m wide with a minimum 12m turning radius, clear of any obstructions and capable of sustaining a maximum load of 25,000 kg to access the transformer(s), switchgear unit(s) or vault room. Refer to Enova Standard DWG E6341 for access road detail. Any canopy or other parts of the building above the access driveway must be minimum 5.0 m above roadway. Any canopy or other parts of the building above the pad mounted transformer or switchgear vault, must be a minimum of 11 meters above these structures. An 8.5m wide space is required for truck outriggers at the transformer location. Furthermore, extra 2.5m is required between the transformer and the truck to accommodate minimum swing of the truck mounted crane.

6. ACCESS REQUIREMENTS

6.1 The customer must provide or arrange free, safe and unobstructed access to any authorized representative of Enova corporation for the purpose of equipment maintenance, inspection, replacement.

6.2 The customer shall be responsible for supplying Enova corporation with a key to the premises if required to access equipment. Enova may request that the lock be keyed to Enova specifications.

6.3 Meter rooms, for multi-unit metering, shall be accessible to Enova personal via an outside door at grade level.

7. INSTALLATION DETAILS

The customer shall provide the required infrastructure in a location compliant with this document and approved by Enova Power, installed as per the following standards:

7.1 Transformer Installations:

Refer to Enova Standard DWG B10341 for transformer vault design and installation specifications;

7.2 Transformer Room Installations:

Refer to Enova Standard DWG C5553, C5554 and C5555 for installation requirements.

C5554 - Small transformer room -12’W x15’L x9’H – for room type transformer up to 500kVA

C5553 - Medium transformer room -15'W x 20'L x9'H – for room type transformer between 500kVA and 1000kVA

C5555 - Large transformer room - (20'W x 25'L x 9'H) for room type transformer larger than 1000kVA

7.3 Switchgear Vault Installations:

Refer to Enova Standard DWG C9095, B9098 and B9100 for Three phase underground switchgear vault design specification and installation requirement.

7.4 Switchgear Room Installations:

Refer to Enova Standard DWG C5604 for Three phase underground switchgear room design specification and installation requirement.

7.5 Duct bank Installations:

For underground distribution, refer to Enova Standard DWG B3727 for duct bank construction details.

For general underground primary service duct work, refer to Enova Standard DWG C5560 for duct formation details.

7.6 Metering Installations

For metering installation, refer to Enova Standard DWG E9925 and E9926 for installation requirements.

E9925: for 3 Ph transformer rated service metering with metering cabinet

E9926: for 3 Ph transformer rated service metering with LV switchgear

If the site is fed from a customer owned distribution transformer the customer must make provisions for bulk metering to accommodate a transformer discount meter.

Appendices:

C11111 – Clearances to adjacent structures 8.32kV -27.6kV

E6341 – Transformer room access road detail

C5604 – Typical switching room with Vista switch layout

C5554 – Typical small transformer room (12'W x15'L x9'H)

C5553 – Typical medium transformer room (15'W x 20'L x 9'H)

C5555 – Typical large transformer room (20'W x 25'L x 9'H)

B3727 – Duct bank construction details

C5560 – General underground primary service duct formation details

C10341– Three-phase pad-mount transformer foundation c/w entrance way design specifications

C10342– Three-phase pad-mount transformer foundation c/w entrance way installation specifications

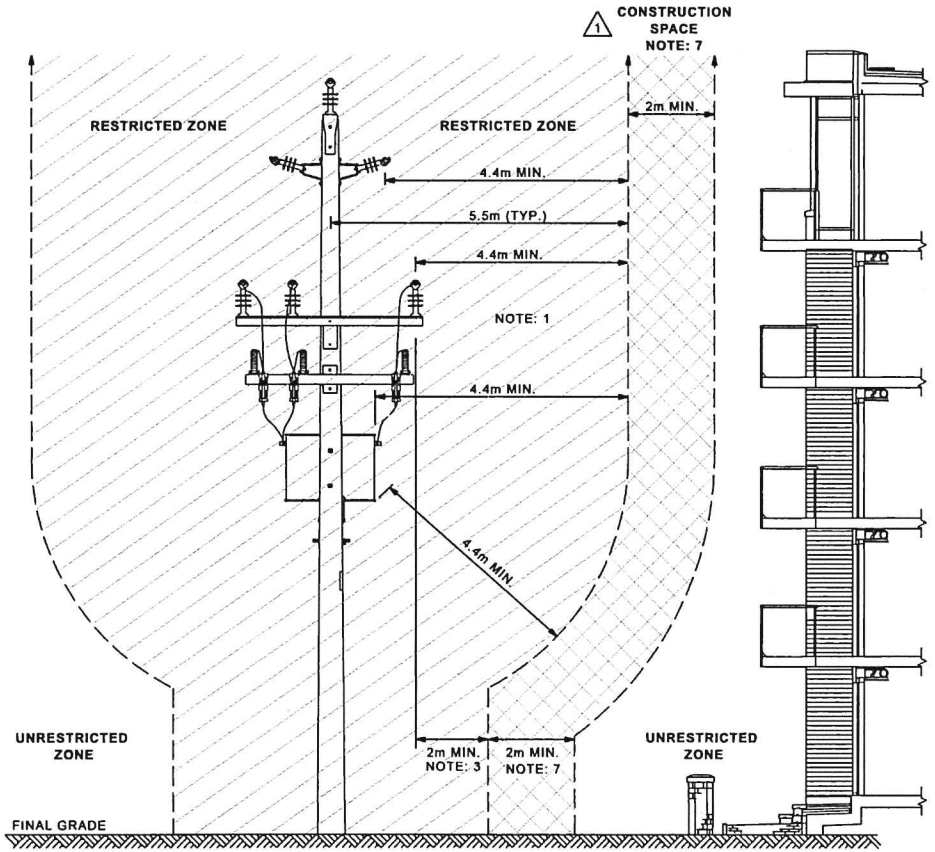
C9095 – Three phase underground switchgear (S & C Vista type) vault precast concrete design specification

B9098 – Steel hinged vault cover for three phase submersible switchgear (S & C Vista type) vault

B9100 – Three Phase underground switchgear vault ground loop installation

E9925 – Metering installation details -transformer rated for 3 Ph service without LV switchgear 120/208V or 347/600V

E9926 – Metering installation details -transformer rated for 3 Ph service with LV switchgear 120/208V or 347/600V



1 NOTES:

1. NO PERMANENT BUILDING OR STRUCTURE SHALL BE PLACED WITHIN 4.4 METRES MEASURED RADIALLY FROM ANY PRIMARY VOLTAGE CONDUCTOR OR EQUIPMENT, MEASURED FROM THE CLOSEST PRIMARY CONDUCTOR (AT REST) TO THE CLOSEST POINT OF THE BUILDING OR STRUCTURE.
2. A MINIMUM HORIZONTAL SEPARATION OF 1.6 METRES FROM THE BUILDING OR STRUCTURE TO THE SECONDARY CONDUCTOR (<750V) SHALL BE MAINTAINED, UNLESS THE SECONDARY CONDUCTORS ARE ATTACHED TO THE BUILDING (EG. A SERVICE CONDUCTOR).
3. NO PERMANENT BUILDING OR STRUCTURE SHALL BE PLACED OR CONSTRUCTED WITHIN 2 METRES HORIZONTAL SEPARATION FROM THE OUTERMOST OVERHEAD PRIMARY CONDUCTOR (AT REST).
4. ZERO VOLTAGE SUPPORT WIRES (I.E. SPAN GUYS) MAY CROSS OVER THE CUSTOMER'S STRUCTURE AND SHALL MAINTAIN AT LEAST 2.5 METRES VERTICAL CLEARANCE TO THE CLOSEST PART OVER THE BUILDING STRUCTURE.
5. CONTACT ENOVA TO DETERMINE SPECIFIC CLEARANCES APPLICABLE TO YOUR PROJECT.
6. CALCULATED CLEARANCES ARE BASED ON CONDUCTORS AT MAXIMUM SWING POSITION, CSA STD C22.3 NO. 1-15 TABLE 12, AND THE ONTARIO HEALTH AND SAFETY ACT (OHSA).
7. CONSTRUCTION SPACE IS TO ACCOMMODATE SCAFFOLDING, SKYJACKS, WINDOW CLEANING, ETC. THERE SHALL BE NO ENCROACHMENT INTO THE RESTRICTED ZONE DURING CONSTRUCTION.

REV No.	DESCRIPTION	DATE & INITIALS
1	CONSTRUCTION SPACE ADDED. NOTES REVISED.	JULY 7/23

Enova

CLEARANCES TO ADJACENT STRUCTURES 8.32KV - 27.6KV

DRAWN	B. BIN	JUL. 21/20	SCALE NONE
DESIGNED	S. WANG	JUNE 18/2021	
CHECKED	S.W.		
APPROVED	G.A. CAMERON	JUNE 24/21	
FILE No.	6061-91-1		

D11111

Enova Power Corp.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: Shaun Way
Signature:
Date: July 20, 2023

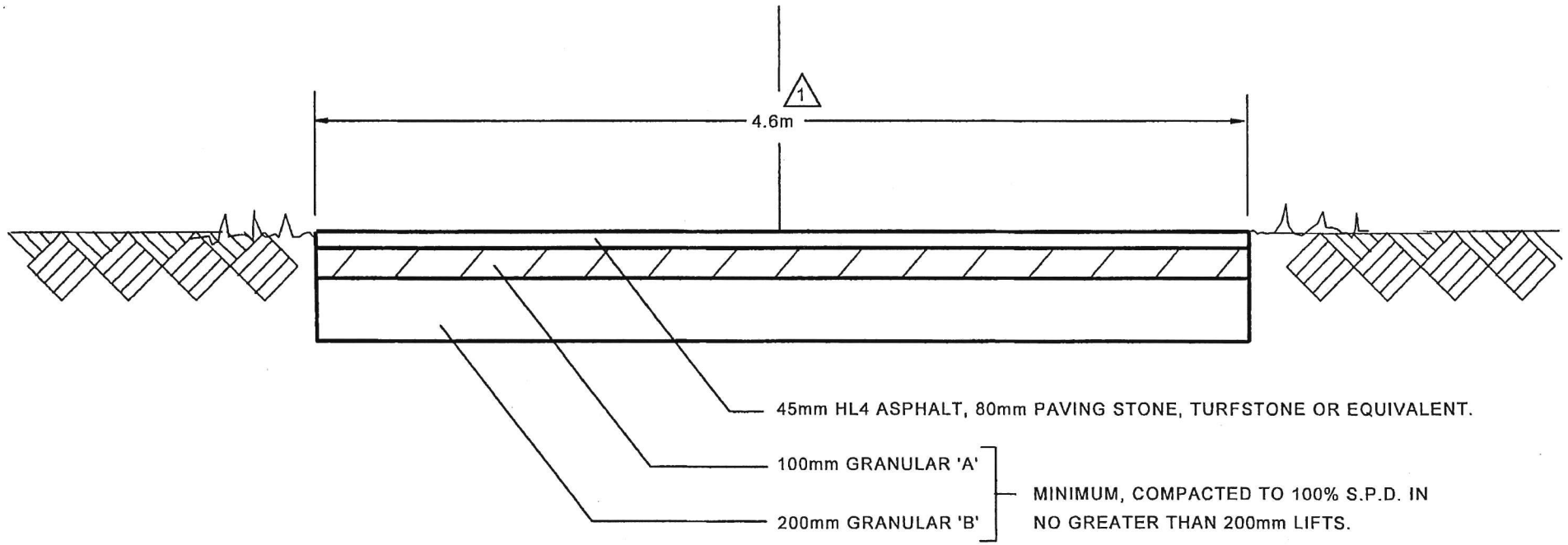
LICENSED PROFESSIONAL ENGINEER
X. WANG
100089939
July 20 2023
PROVINCE OF ONTARIO

REV. 1 APPROVED: July 20th/23

REV 0. SEALED BY X. WANG ON JUNE 23/21

PREVIOUS SEALED REVISIONS

PLOT 6



PLT 4

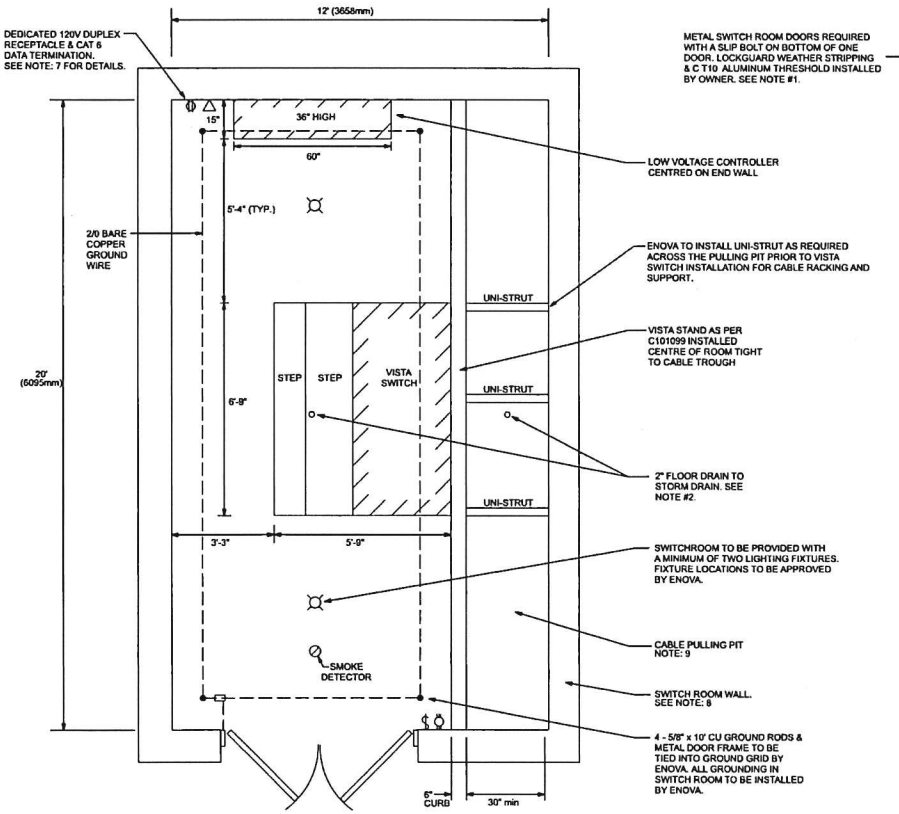
REVISIONS	
1	SIZE REVISED. MAY 11/06 B.B.

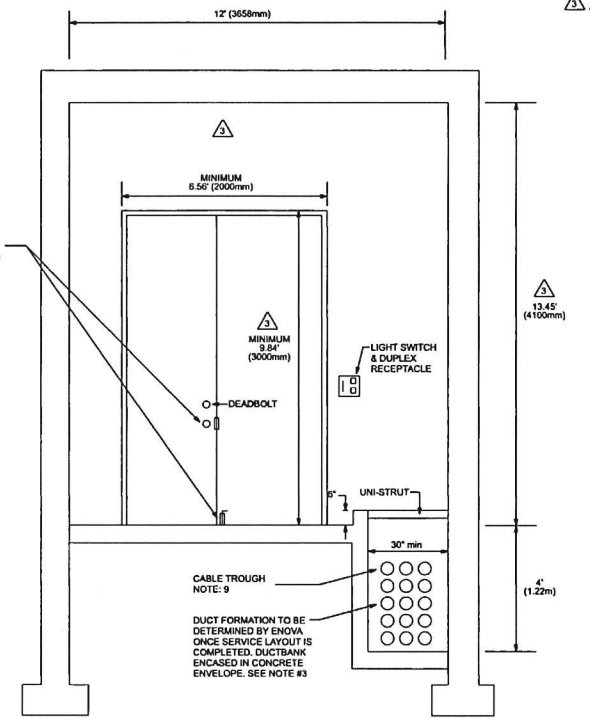
KITCHENER WILMOT HYDRO

TRANSFORMER ROOM ACCESS ROAD DETAIL

DRAWN	JIM TODD	2/17/94
DESIGNED	D. READ	
CHECKED	B.K. D.R. O.	MAR. 3/94
APPROVED	M. BRUCE McKAGUE	MAR. 3/94
FILE		

E
6341





△2 SECTION 'A-A'

3/8" = 1'-0"

△3 △2 NOTES:

1. LOCKGUARD SIMILAR TO PRECISION HARDWARE CAT #1627-L AND CT10 ALUMINUM THRESHOLD REQUIRED ON DOOR, TO BE SUPPLIED AND INSTALLED BY OWNER. OWNER TO INSTALL ONE LOCK SET AND ONE DEAD BOLT SUPPLIED BY ENOVA.
2. WATER SUMP PIT REQUIRED WHEN FLOOR DRAIN IN PULL PIT IS TOO LOW FOR PROPER DRAINAGE TO STORM DRAIN. SEE ENOVA FOR DETAILS. FLOOR DRAINS MAY BE OMITTED WHEN SWITCH ROOM IS INSTALLED INSIDE A BUILDING.
3. ENOVA TO SPECIFY LOCATION OF DUCTBANK ENTRANCE FROM PULLBOX AND TRANSFORMER ROOM PRIOR TO INSTALLATION BY OWNER. ALL DUCTBANKS TO BE INSPECTED BY ENOVA PRIOR TO CONCRETE ENCASEMENT.
4. NO EQUIPMENT, PIPES, DUCTS ETC. FOREIGN TO THE SWITCH ROOM INSTALLATION SHALL ENTER OR PASS THROUGH THE SWITCH ROOM.
5. ANY CHANGES TO APPROVED SWITCH ROOM DIAGRAM BY OWNER MUST HAVE ENOVA APPROVALS.
6. SWITCH ROOM MAY VARY IN SIZE WHEN NUMBER OF SWITCHES REQUIRED FOR PROJECT VARIES.
7. OWNER TO PROVIDE TWO DEDICATED 15A, 120V RECEPTACLES & ONE LIGHT SWITCH WHERE SHOWN. WHEN REQUIRED BY ENOVA, A 27mm CONDUIT & CAT 6 DATA CABLE SHALL BE INSTALLED FROM SWITCH ROOM TO THE ROOF WITH A DEDICATED 15A, 120V RECEPTACLE ON THE ROOF. CONFIRM REQUIREMENTS WITH ENOVA.
8. SWITCH ROOM CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE ONTARIO BUILDING CODE.
9. TYPICAL ROOM CONFIGUIRATION SHOWN WITH CABLE PULLING TROUGH. CABLE TROUGH CAN BE OMITTED & ROOM SIZE REVISED WHILE MAINTAINING A ROOM SIZE A MINIMUM OF 240 SQUARE FEET WITH APPROVAL BY ENOVA.

△2 REFERENCE DRAWINGS

C9099 - THREE PHASE UNDERGROUND SWITCH GEAR (S&C TYPE) CABLE INSTALLATION & GROUNDING

C10109 - STEEL ANGLE FRAME STAND

REV No.	DESCRIPTION	DATE & INITIALS
△3	DOOR HEIGHT & ROOM SIZE REVISED. NOTE 9 ADDED.	JULY 6/23
△2	REDRAWN ON CAD. NOTES & DETAILS REVISED. REFERENCE DRAWINGS ADDED.	JAN. 3/20 M.M.
△1	NOTE 7 ADDED.	DEC. 19/90 B.K. D.S.

Enova Power Corp.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: Shaun Wang
Signature:
Date: July 11, 2023

LICENSED PROFESSIONAL ENGINEER
X. WANG
100089939
July 11, 2023
PROVINCE OF ONTARIO

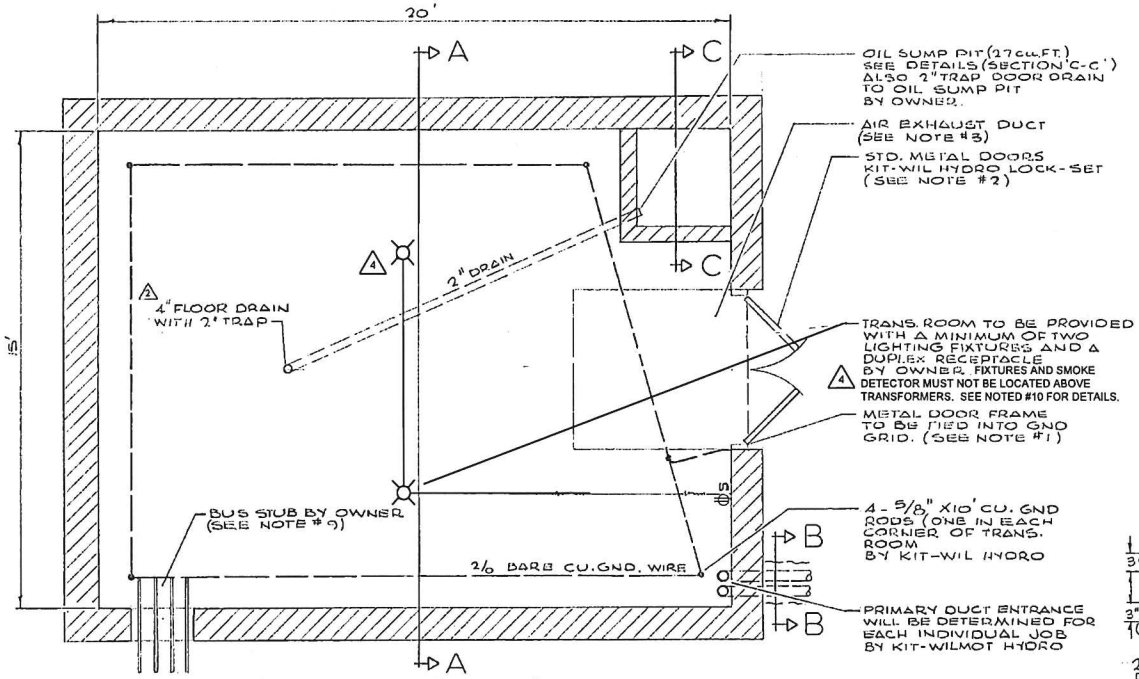
REV. 3 APPROVED:
REV. 2 SEALED BY X. WANG ON APR. 8/20
PREVIOUS SEALED REVISIONS

Enova

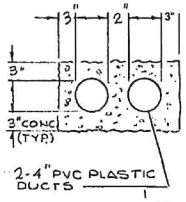
TYPICAL SWITCHING ROOM WITH VISTA SWITCH LAYOUT

DRAWN	JIM TODD	MAY 8/90	SCALE 3/8" = 1' 0"
DESIGNED	B.K. D.S. B.R.	MAY 11/90	
CHECKED	S.W.		C5604
APPROVED	G.A. CAMERON	APR 17/20	
FILE No.	7500-00-00		

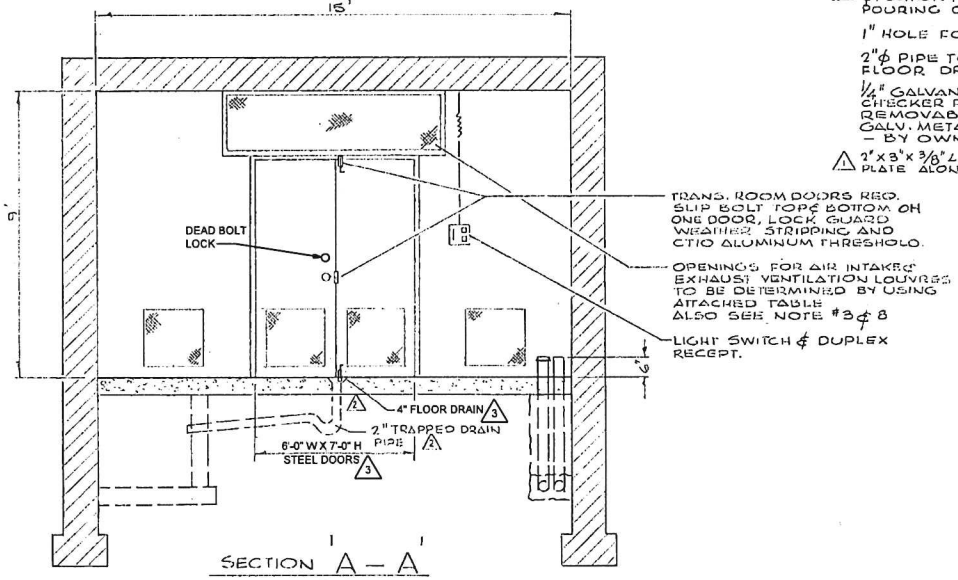
PLOT 4



PLAN OF TRANSFORMER ROOM
SCALE : 3/8" = 1'-0"

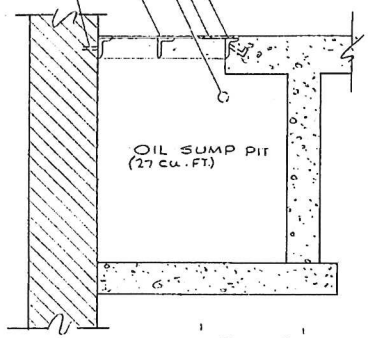


SECTION B - B
NOT TO SCALE



SECTION A - A
SCALE : 3/8" = 1'-0"

1/4" x 1" F.I. WELDED TO 2"x3"x3/8"L ON 2 SIDES. PROVIDE ANCHORS & POSITION FRAME WHEN POURING CONCRETE
1" HOLE FOR ACCESS
2"ϕ PIPE TO TRAPPED FLOOR DRAIN
1/4" GALVANIZED METAL CHECKER PLATE REMOVABLE COVER IN GALV. METAL FRAME - BY OWNER
2"x3"x3/8"L WELDED TO PLATE ALONG CENTRE



SECTION C - C
SCALE : 3/4" = 1'-0"

NOTES:

1. GROUNDING IN TRANSFORMER ROOM TO BE INSTALLED BY KIT-WILMOT HYDRO PRIOR TO POURING OF CONC. FLOOR. (GROUND RODS & GRID).
2. LOCKGUARD SIMILAR TO PRECISION HARDWARE CAT #1627-L AND CT10 ALUMINUM THRESHOLD REQUIRED ON DOOR, TO BE SUPPLIED AND INSTALLED BY OWNER. OWNER TO INSTALL ONE LOCK SET AND ONE DEAD BOLT SUPPLIED BY KITCHENER-WILMOT HYDRO.
3. AIR EXHAUST & INTAKE LOUVRES TO OFFER 60% FREE AIR MOVEMENT WITH 12.5mm MESH GALVANIZED SCREEN INSIDE. AIR EXHAUST DUCT REQ'D TO EXTEND 5' INTO TRANSFORMER ROOM.
4. TRANSFORMER ROOM INCLUDING WALLS, FLOORING, CEILING ETC., SHALL BE CONSTRUCTED ACCORDING WITH THE APPLICABLE REQUIREMENTS OF THE NATIONAL BLDG CODE OF CANADA AND/OR APPLICABLE LOCAL LEGISTRATION ALL WHICH IS CONSTRUCTED BY OWNER.
5. NO EQUIPMENT PIPES, DUCTS, ETC., FOREIGN TO THE TRANSFORMER ROOM INSTALLATION, SHALL ENTER OR PASS THROUGH THE TRANSFORMER ROOM.
6. KIT-WILMOT HYDRO TO SPECIFY LOCATION OF DUCTBANK PRIOR TO INSTALLATION BY OWNER. ALSO, ALL DUCTBANKS TO BE INSPECTED BY KIT-WILMOT HYDRO PRIOR TO CONCRETE ENCASEMENT.
7. ANY CHANGES TO APPROVED TRANSFORMER ROOM DIAGRAM BY OWNER, MUST HAVE KIT-WILMOT HYDRO APPROVALS.
8. VENTING ARRANGEMENTS TO BE DETERMINED BY KIT-WILMOT HYDRO. TYPICAL ARRANGEMENT HAS BEEN SHOWN.
9. THE EXACT LOCATION OF THE SECONDARY ENTRANCE INTO THE TRANSFORMER ROOM WILL BE DETERMINED BY KIT.-WILMOT HYDRO.
10. NO EXTRA EQUIPMENT WILL BE ALLOWED IN TRANSFORMER ROOMS WITHOUT KITCHENER-WILMOT HYDRO INC. APPROVAL. FIXTURES AND SMOKE DETECTOR LOCATIONS TO BE APPROVED BY K-W HYDRO PRIOR TO INSTALLATION.

SECONDARY VOLTAGE	MAIN SWITCH	TRANSF. REQMTS.	VENTING.
125/216VOLT	2000 TO 2500 AMP	3X250 KVA	1600 IN² AIR INTAKE 1600 IN² AIR EXHAUST
347/600VOLT	800 TO 1000 AMP	3X250 KVA	1600 IN² AIR INTAKE 1600 IN² AIR EXHAUST
125/216VOLT	3000 TO 4000 AMP	3X333 KVA	2200 IN² AIR INTAKE 2200 IN² AIR EXHAUST
347/600VOLT	1200 TO 1600 AMP	3X333 KVA	2200 IN² AIR INTAKE 2200 IN² AIR EXHAUST
125/216VOLT	5000 AMP	3X500 KVA	3200 IN² AIR INTAKE 3200 IN² AIR EXHAUST
347/600VOLT	2000 AMP	3X500 KVA	3200 IN² AIR INTAKE 3200 IN² AIR EXHAUST

REV. NO	DESCRIPTION	DATE & INITIALS
4	REVISED LOCATION OF LIGHTS AND SMOKE DETECTORS IN TX ROOM	MAR. 06/08 B.S.
3	THIS REVISION MADE TO SCANNED ORIGINAL. NOTES ADDED FOR NEW DOOR WIDTH. COMM. DUCT REMOVED.	OCT. 16/06 H.T.
2	COMMUNICATION DUCT AND FLOOR DRAIN DETAILS ADDED	2/28/01 JT.
1	NOTES REGARDING INSTALLATION OF FRAME FOR OIL SUMP PIT ADDED	9/29/92 JT

HYDRO - ELECTRIC COMMISSION OF KITCHENER - WILMOT

TYPICAL MEDIUM TRANSFORMER ROOM

15'W X 20'L X 9'H
(4.5m X 6.1m X 2.7m)

DRAWN	JIM TODD	FEB 19 90	SCALE: AS SHOWN
CHECKED	K. Pfaff	Mar 12 90	C 5553
APPROVED			
FILE NO.	7500-80-00		

PLOT 3

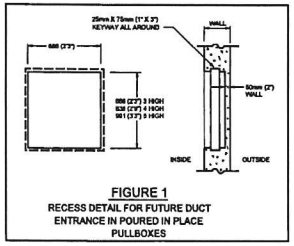


FIGURE 1
RECESS DETAIL FOR FUTURE DUCT ENTRANCE IN POURED IN PLACE PULLBOXES

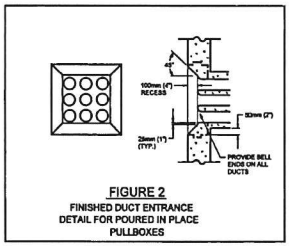


FIGURE 2
FINISHED DUCT ENTRANCE DETAIL FOR POURED IN PLACE PULLBOXES

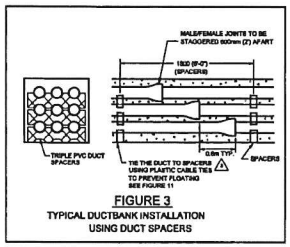


FIGURE 3
TYPICAL DUCTBANK INSTALLATION USING DUCT SPACERS

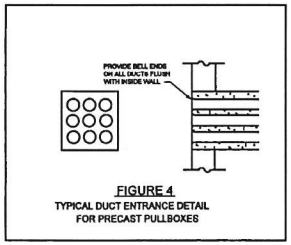


FIGURE 4
TYPICAL DUCT ENTRANCE DETAIL FOR PRECAST PULLBOXES

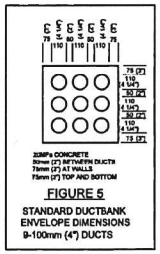


FIGURE 5
STANDARD DUCTBANK ENVELOPE DIMENSIONS 9-100mm (4") DUCTS

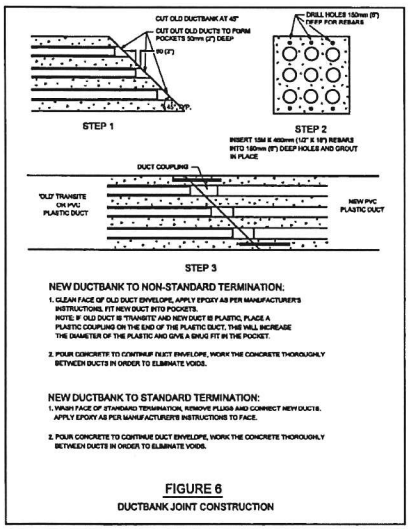
CONSTRUCTION NOTES:

1. USE 32 MPa AIR ENTRAINED CONCRETE FOR ALL POLE RISERS.
2. USE 32 MPa NON-AIR-ENTRAINED PEA STONE CONCRETE FOR ALL DUCTBANK CONSTRUCTION.
3. REINFORCING STEEL TO COMPLY WITH CSA G30.18M92 GRADE 400R.
4. REINFORCE THE DUCTBANK AT ROADCROSSINGS AND AT OTHER LOCATIONS WHERE SHOWN ON THE DRAWINGS, PLACE 15M REINFORCING BARS IN THE BOTTOM LAYER OF CONCRETE, SPACE THE BARS BETWEEN DUCTS EVENLY ACROSS THE WIDTH OF THE DUCT STRUCTURE, OVERLAP ALL JOINTS A MINIMUM OF 1'0"(480mm) AND PROVIDE A MINIMUM 40mm CONCRETE COVER.
5. TO PREVENT INDUCED ELECTRICAL CURRENTS, DO NOT PERMIT ANY METALLIC WIRE OR ROD TO COMPLETELY ENCIRCLE ANY ONE, OR ANY GROUP OF DUCTS WHICH FORM PART OF A DUCT ENVELOPE.
6. FORM THE SIDES OF THE DUCT ENVELOPE TO ENSURE THAT THE WIDTH OR HEIGHT OF THE DUCTBANK DOES NOT EXCEED:
   A) 60" (1397mm) FOR 8 DUCTS WIDE OR HIGH.
   B) 36" (915mm) FOR 5 DUCTS WIDE OR HIGH.
   C) 30" (762mm) FOR 4 DUCTS WIDE OR HIGH.
   D) 24" (610mm) FOR 3 DUCTS WIDE OR HIGH.
   E.) 18" (457mm) FOR 2 DUCTS WIDE OR HIGH.
   F) 12" (305mm) FOR 1 DUCT WIDE OR HIGH.
7. AVOID ABRUPT BENDS, WHEN BENDS ARE TAKEN AT COUPLINGS, REAM THE INSIDE OF THE DUCT ENDS TO ELIMINATE SHARP EDGES.
8. SET DUCTS AT GRADES CONFORMING TO THE DRAWINGS. ENSURE THE DUCTS DRAIN TO PULLBOXES AND THAT NO WATER TRAPS ARE FORMED IN INDIVIDUAL DUCTS.
9. LEVEL BOTTOM OF EXCAVATION AND DEWATER AS REQUIRED.
10. DO NOT PLACE CONCRETE ON EXCAVATED MATERIAL. IF EXCAVATION IS CARRIED TOO DEEP, FILL WITH SUITABLE INORGANIC NATIVE MATERIAL AND COMPACT TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY.
11. AVOID FLOATING DUCTS WHEN PLACING CONCRETE.
12. PREVENT CONCRETE FROM ENTERING DUCTS DURING CONCRETE PLACEMENT.
13. PREVENT EARTH AND OTHER FOREIGN MATERIALS FROM CONTAMINATING THE CONCRETE.
14. DO NOT ENCASE OTHER UTILITIES IN CONCRETE. MAINTAIN A MINIMUM SEPARATION OF 12" (300mm) FROM ANY OTHER UTILITY UNLESS A LESSER CLEARANCE IS SPECIFICALLY APPROVED BY THE ENGINEER. COMMUNICATIONS CABLES OR DUCTS TO BE LAID DIRECTLY ON TOP (ZERO SEPARATION) OF A CONCRETE ENCASED DUCTBANK WHERE BOTH K-W HYDRO AND THE COMMUNICATIONS UTILITY AGREE.
15. MAINTAIN A MINIMUM SEPARATION OF 6'-6" (2.0m) FROM THE INSIDE WALLS OF ADJACENT SWIMMING POOLS. THE MINIMUM SEPARATION MAY BE REDUCED TO 2'-4" (1.0m) IF NO CABLES OPERATING AT A VOLTAGE GREATER THAN 15000 VOLTS PHASE-TO-PHASE WILL BE INSTALLED IN THE DUCTBANK.
16. CLEAN COMPLETED DUCT RUNS BY PULLING AN APPROVED CLEANING DEVICE THROUGH THE DUCTS BY MEANS OF A WINCH LINE. TAIL THE CLEANING DEVICE WITH A SECOND WINCH LINE TO PERMIT WITHDRAWAL IN CASE OF BLOCKAGE. WHEN EXTRACTING WINCH LINE TAIL WITH ONE 1025 POLYPROPYLENE TWINE SIZE 700 IM EACH DUCT, LEAVING IT IN PLACE AS A FISH LINE.
17. USE 100mm (4") AND 50mm (2") D.B. II SUPERDUCT FOR ALL DUCTBANK CONSTRUCTION.

REFERENCE DRAWINGS:

C1621 - DETAIL OF CONCRETE GUARD FOR POLE RISERS (3 DUCTS)

D2627 - DETAIL OF CONCRETE GUARD FOR POLE RISERS (1 DUCTS)



NEW DUCTBANK TO NON-STANDARD TERMINATION:

1. CLEAN FACE OF OLD DUCT ENVELOPE, APPLY EPOXY AS PER MANUFACTURER'S INSTRUCTIONS. FIT NEW DUCT INTO POCKETS.
   NOTE: IF OLD DUCT IS TRANSITE AND NEW DUCT IS PLASTIC, PLACE A PLASTIC COUPLING ON THE END OF THE PLASTIC DUCT. THIS WILL INCREASE THE DIAMETER OF THE PLASTIC AND GIVE A SNUG FIT IN THE POCKET.
2. POUR CONCRETE TO CONTINUE DUCT ENVELOPE, WORK THE CONCRETE THOROUGHLY BETWEEN DUCTS IN ORDER TO ELIMINATE VOIDS.

NEW DUCTBANK TO STANDARD TERMINATION:

1. WASH FACE OF STANDARD TERMINATION, REMOVE PLUGS AND CONNECT NEW DUCTS. APPLY EPOXY AS PER MANUFACTURER'S INSTRUCTIONS TO FACE.
2. POUR CONCRETE TO CONTINUE DUCT ENVELOPE, WORK THE CONCRETE THOROUGHLY BETWEEN DUCTS IN ORDER TO ELIMINATE VOIDS.

FIGURE 6
DUCTBANK JOINT CONSTRUCTION

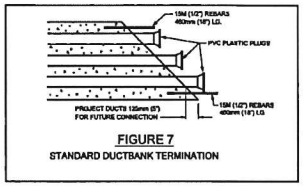


FIGURE 7
STANDARD DUCTBANK TERMINATION

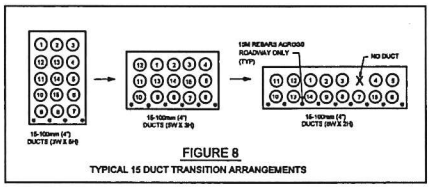


FIGURE 8
TYPICAL 15 DUCT TRANSITION ARRANGEMENTS

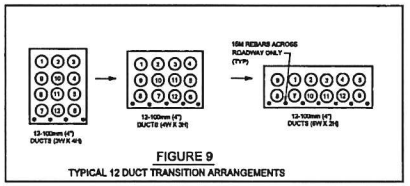


FIGURE 9
TYPICAL 12 DUCT TRANSITION ARRANGEMENTS

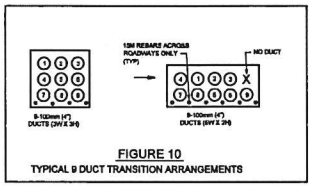
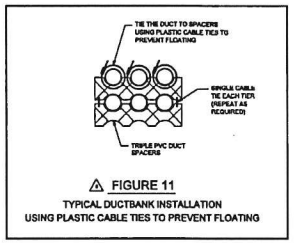
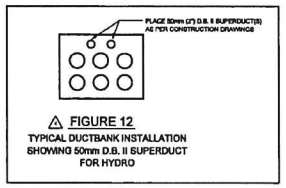


FIGURE 10
TYPICAL 9 DUCT TRANSITION ARRANGEMENTS



⚠ FIGURE 11
TYPICAL DUCTBANK INSTALLATION USING PLASTIC CABLE TIES TO PREVENT FLOATING



⚠ FIGURE 12
TYPICAL DUCTBANK INSTALLATION SHOWING 50mm D.B. II SUPERDUCT FOR HYDRO

NOTE:
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS OUTSIDE OF BRACKETS AND IN INCHES INSIDE OF BRACKETS.

Kitchener-Wilmot Hydro Inc.
Certificate of Approval
The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.
Name of P.Eng.: Lloyd J. Frank
Signature:
Date: August 17, 2006

REV. No.	DESCRIPTION	DATE & INITIALS
⚠	NOTE 14 REVISED. NOTE 15 ADDED. NOTES 16 AND 17 WERE RENUMBERED 15 AND 16.	AUG. 17/06 B.S.
⚠	REVISION TO CONSTRUCTION NOTE #2. PEA STONE SPECIFIED.	JAN. 6/06 K.T. E.K.
⚠	DETAIL ADDED TO SHOW TYPICAL DUCTBANK INSTALLATION OF 50mm D.B. II SUPERDUCT (FIGURE 12). CONSTRUCTION NOTES REVISED TO SHOW TYPE OF DUCT(S) TO BE INSTALLED (NOTE 16).	JAN.6/04 K.T. E.K.
⚠	DETAIL ADDED TO SHOW TYPICAL DUCTBANK INSTALLATION USING CABLE TIES (FIGURE 11). FIGURE 3 ALSO REVISED TO SHOW CABLE TIES AND TO SHOW COUPLINGS STAGGERED. REVISION ADDED TO CONSTRUCTION NOTE 1.	AUG. 12/03 B.S. L.F.
⚠	REDRAWN ON CAD, NEW C SIZE DWG., FIGURES 6, 9 & 10 AND CONSTRUCTION NOTES ADDED.	DEC. 2000 B.F.

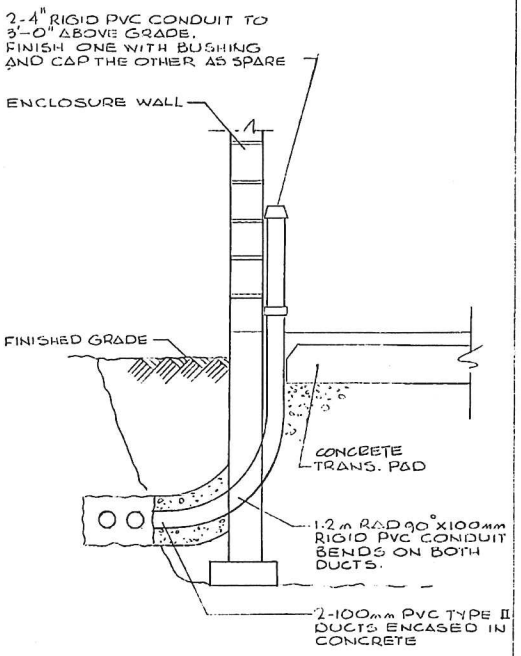
REVISION 2 SEALED BY L. J. FRANK DEC. 19, 2003
REVISION 3 APPROVED: LLOYD J. FRANK
ORIGINAL SEALED BY M.B.McKAGUE

DUCTBANK CONSTRUCTION DETAILS
METRIC AND IMPERIAL MEASURE

DRAWN	S.FERNEYHOUGH	DEC.22/93	SCALE NONE
DESIGNED			
CHECKED	B.K. J.G. E.K.	APR. 14/99	B3727
APPROVED	M.BRUCE McKAGUE	APR.15/99	
FILE No.	9302-01-1		

PLOT 14

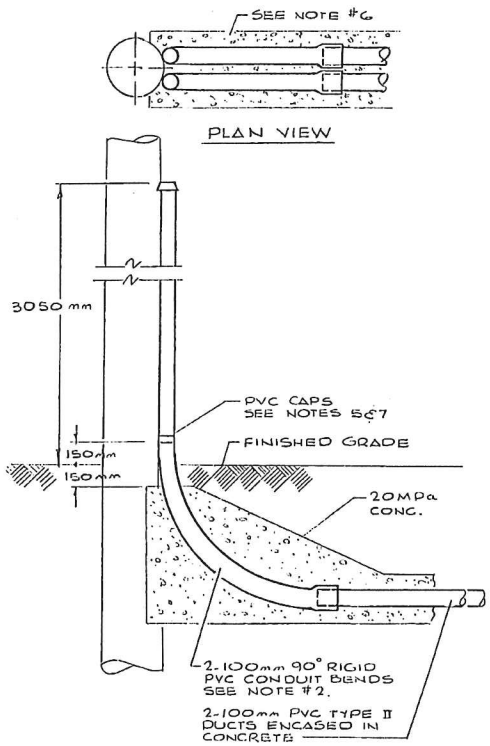
FIGURE 1



⚠1 DETAIL OF DUCT TERMINATION AT TRANSFORMER ENCLOSURE

NOT TO SCALE

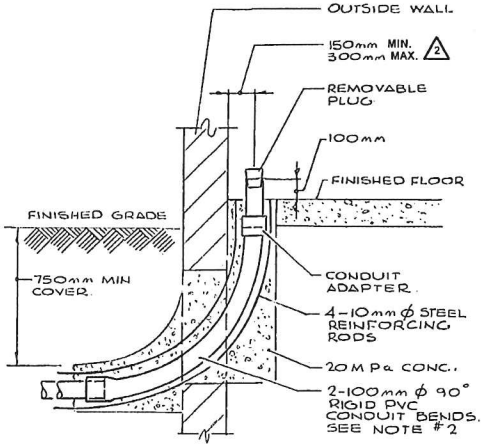
FIGURE 2



DETAIL OF DUCT TERMINATION AT POLE FOR PRIMARY SERVICE

NOT TO SCALE

FIGURE 3



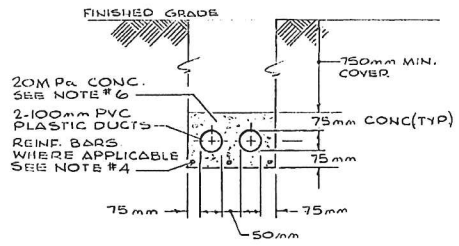
DETAIL OF DUCTBANK TERMINATION THROUGH TRANSFORMER ROOM FLOOR

NOT TO SCALE

NOTES :

1. THE SPECIFIED COVER OF 750mm IS ONLY A MIN. THE GRADE AND COVER OF THE DUCT BANK WILL VARY FOR EACH INDIVIDUAL CASE
2. FOR 100mm CONDUIT BEND, THE MIN. RADIUS SHALL BE 915mm
3. A 5mm POLYPROPYLENE ROPE SHALL BE LEFT IN ALL DUCTS.
4. DUCTS MUST BE REINFORCED WHEN:
   - A - ENTERING BUILDING : A DISTANCE OF 600mm BEYOND COUPLING.
   - B - PASSING UNDER FOOTINGS : 1500mm ON EACH SIDE.
   - C - PASSING THROUGH DISTURBED GROUND.
   - D - PASSING UNDER ROADWAYS.
   - E - TERMINATED IN GROUND FOR FUTURE EXTENSION - SEE DETAIL
5. LOC. OF CONDUIT TERMINATION ON POLE TO BE SPECIFIED FOR EACH JOB BY KIT-WILMOT HYDRO.
6. ALL DUCT PLACEMENT AND DUCT BANK GRADES MUST BE APPROVED BY KIT-WILMOT HYDRO PRIOR TO CONCRETE ENCASEMENT.
7. FOR PRIMARY SERVICE OWNER TO INSTALL 1-100mm X 3050 mm RIGID PVC CONDUIT ON POLE & CAP SPARE DUCT 150mm ABOVE FINISHED GRADE.

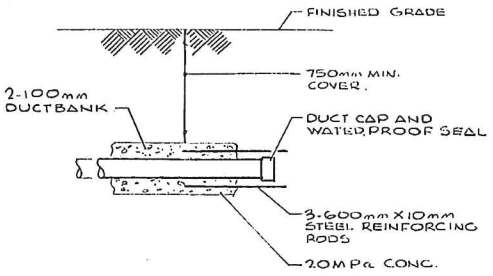
FIGURE 4



DUCT CROSS SECTION

NOT TO SCALE

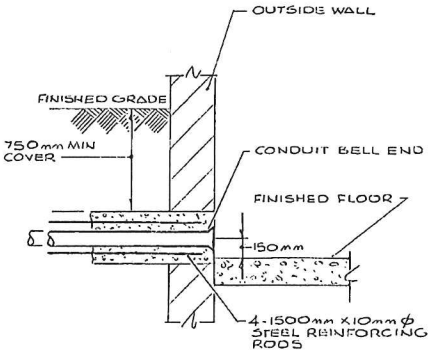
FIGURE 5



DETAIL OF DUCT TERMINATION IN GROUND

NOT TO SCALE

FIGURE 6



DETAIL OF DUCT TERMINATION THROUGH TRANSFORMER ROOM WALL

NOT TO SCALE.

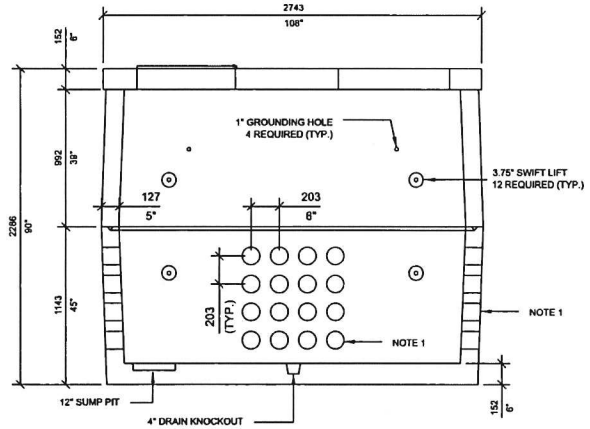
REV. NO.	DESCRIPTION	DATE & INITIALS
⚠2	CHANGED 150mm MAX. TO MIN. & 300mm MIN. TO MAX.	NOV. 7/03 B.B.
⚠1	SECONDARY DUCT TERMINATION REMOVED DUCT TERMINATION AT TRANS. ENCL. ADDED	OCT 26-11 BB/05

HYDRO - ELECTRIC COMMISSION OF KITCHENER - WILMOT

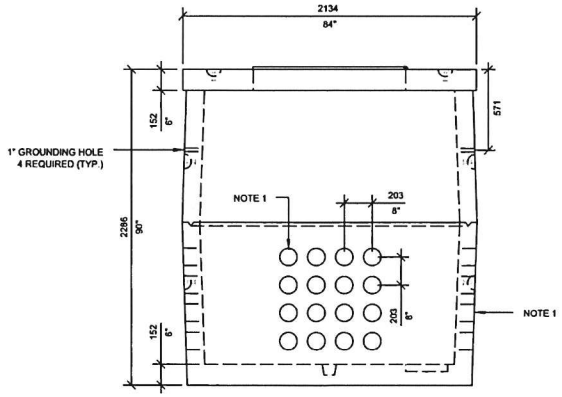
GENERAL UNDERGROUND PRIMARY SERVICE DUCT FORMATIONS.

DRAWN	JIM TODD	MAR 2-90	SCALE AS SHOWN.
CHECKED	K.T. BR. P.E.	MAR 17-90	C 5560
APPROVED			
FILE No.	7500-60-00		

PLOT 1



FRONT VIEW



SIDE VIEW

NOTES:

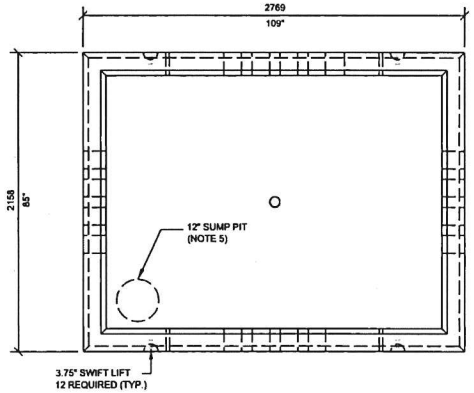
1. CABLE ENTRY OPENINGS - PVC SEALS FOR MAX. 4" INSIDE DIAMETER DUCT.
2. DELIVERY IS MADE BY CRANE-EQUIPPED TRUCKS, EXCAVATION MUST BE READY, SAFE AND ACCESSIBLE FOR UNLOADING FROM THE REAR OF THE TRUCK.
3. MINIMUM OVERHEAD CLEARANCE OF 18FT (5.5m) IS REQUIRED.
4. ALL UNITS MUST BE HANDLED WITH PROPER LIFTING EQUIPMENT (I.E. SPREADER BAR).
5. SUMP PUMP PIT TO BE UNDER THE GALVANIZED DOOR SIDE.
6. LID TO BE ROTATED AND INSTALLED AS PER THE ENOVA SERVICE DRAWING.
7. WATER PRESSURE WAS NOT CONSIDERED IN THE STRUCTURAL DESIGN. REPORT WATER TABLE DURING CONSTRUCTION.
8. PLACE BACKFILL SIMULTANEOUSLY AROUND THE VAULT TO AVOID UNBALANCE LATERAL EARTH PRESSURES.
9. BACKFILL SHOULD BE UNIFORMLY COMPACTED TO A MINIMUM OF 98% MATERIALS SPMDD.

BROOKLIN CONCRETE PRODUCTS - BCP104SW
CONCRETE: 35MPa/5000PSI
AIR ENTRAINMENT: 5-8%
REINFORCEMENT: STEEL TO CSA CAN A23.1 / A23.3. G30.18 Fy=400MPa

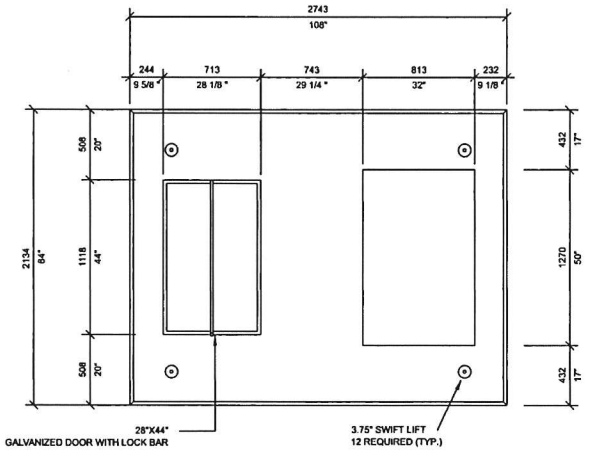
BOTTOM WEIGHT: 10,291LBS / 4,668KG
MIDDLE WEIGHT: 6,237LBS / 2,829KG
TOP WEIGHT: 3,307LBS / 1,500KG
TOTAL WEIGHT: 19,835LBS / 8,997KG

MAX EQUIPMENT WEIGHT: 29,224LBS / 13,256KG

** ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED **



TOP VIEW



LID TOP VIEW

REFERENCE DRAWINGS:

D8821 - THREE PHASE PAD-MOUNT TRANSFORMER CABLE INSTALLATION AND GROUNDING.

D8822 - THREE PHASE PAD-MOUNT TRANSFORMER PRECAST CONCRETE FOUNDATION GROUND LOOP INSTALLATION

D10342 - THREE PHASE PAD-MOUNT TRANSFORMER FOUNDATION C/W ENTRANCE WAY INSTALLATION SPECIFICATION

D10343 - THREE PHASE PAD-MOUNT TRANSFORMER MOUNTING ON FOUNDATION C/W ENTRANCE WAY

Kitchener-Wilmot Hydro Inc.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: Shawn Wang
Signature:
Date: Sep. 5. 2023

LICENSED PROFESSIONAL ENGINEER
X. WANG
100059939
Sep. 5, 2023
PROVINCE OF ONTARIO

REV. 1 APPROVED: Sep. 5/23
REV 0. SEALED BY S. MUSTAFA ON JAN. 27/15
PREVIOUS SEALED REVISIONS

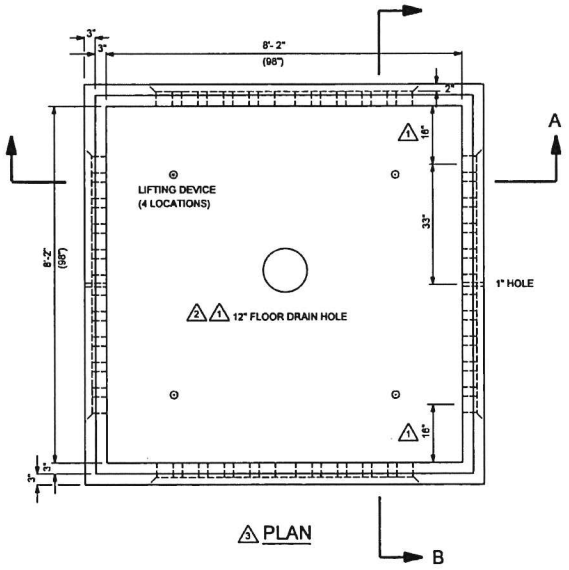
REV No.	DESCRIPTION	DATE & INITIALS
1	VAULT REVISED FROM TWO PIECE TO THREE PIECE BASED ON BROOKLIN BCP104SW VAULT.	AUG. 16/23

Enova

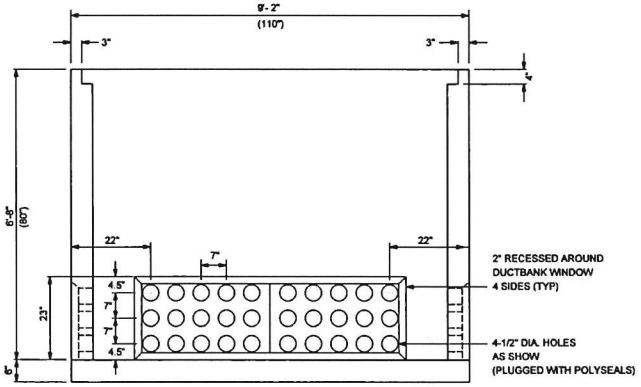
THREE PHASE PAD-MOUNT TRANSFORMER FOUNDATION C/W ENTRANCE WAY DESIGN SPECIFICATIONS

DRAWN	B. BIN	JAN. 6/15	SCALE 1/2" = 1'-0"
DESIGNED	S. MUSTAFA		
CHECKED	S.M.		C 10341
APPROVED	G.A. CAMERON	JAN. 27/15	
FILE No.	6062-06-5		

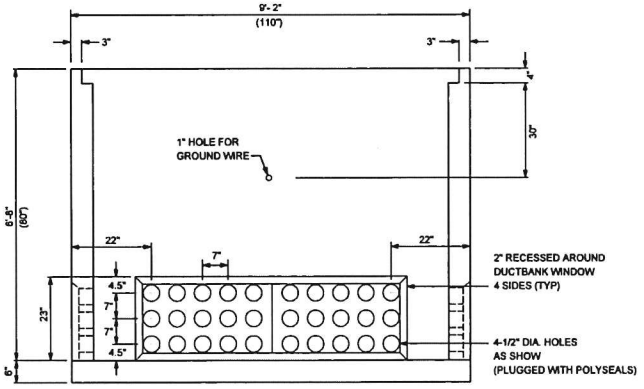
PLOT 3



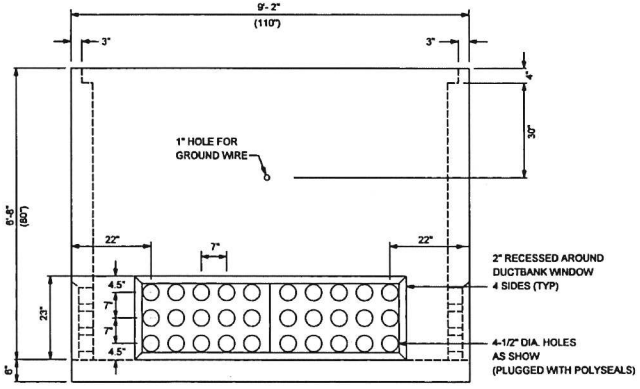
2 PLAN



3 SECTION A-A



2 FRONT VIEW



3 SECTION B-B

GENERAL NOTES:

DESIGN LOAD:
1. WEIGHT OF SWITCHGEAR 700 KG (1543 LBS)

2. PRECAST CONCRETE BOX TO BE DESIGNED TO CARRY WEIGHT OF EQUIPMENT AS WELL AS LATERAL LOADS DUE TO EARTH PRESSURE AND SURCHARGE LOAD OF 200 PSF.

STANDARDS:
1. CSA A23.1/A23.2, CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION.
2. CSA A23.4/A251, MATERIALS AND CONSTRUCTION, QUALIFICATION CODE FOR ARCHITECTURAL AND STRUCTURAL PRECAST CONCRETE.

WEIGHT OF PRECAST CONCRETE:
1. APPROXIMATELY 10,750 KG (23,635 LBS)

DESIGN:
1. PRECAST CONCRETE BOX TO BE DESIGNED BY PRECAST CONCRETE MANUFACTURER.
2. SUBMIT SHOP DRAWINGS TO K-W HYDRO FOR REVIEW PRIOR TO COMMENCEMENT OF MANUFACTURE OF PRECAST CONCRETE. SHOP DRAWINGS TO BE SEALED BY AN ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
3. PRECAST CONCRETE BOX TO BE DESIGNED TO CARRY HANDLING STRESSES.
4. SHOP DRAWINGS TO INDICATE FINISHED WEIGHTS OF PRECAST ELEMENTS.

TOLERANCES:
1. LENGTH OF PRECAST ELEMENTS NOT TO VARY FROM DESIGN LENGTH BY MORE THAN PLUS OR MINUS 5mm.
2. CROSS SECTIONAL DIMENSIONS OF PRECAST ELEMENTS NOT TO VARY FROM DESIGN DIMENSIONS BY MORE THAN PLUS OR MINUS 3mm.
3. DEVIATIONS FROM STRAIGHT LINES NOT TO EXCEED 3mm IN 3m.
4. PRECAST ELEMENTS NOT TO VARY BY MORE THAN PLUS OR MINUS 5mm FROM TRUE OVERALL CROSS SECTIONAL SHAPE AS MEASURED BY DIFFERENCE IN DIAGONAL DIMENSIONS.

QUALITY CONTROL:
1. PRECAST CONCRETE REQUIREMENTS:
   - MINIMUM COMPRESSIVE STRENGTH OF 35MPA AT 28 DAYS
   - CLASS C1 EXPOSURE
   - 5-8% AIR ENTRAINMENT
2. PRECAST ELEMENTS ARE TO BE FINISHED TO STANDARD GRADE TO CSA A23.4, SECTION 24. ELEMENTS SHALL NOT SHOW VISIBLE SPALLING, CRACKING OR EVIDENCE OF CORROSION OF EMBEDDED STEEL.

REFERENCE DRAWINGS

C9096 - THREE PHASE UNDERGROUND SWITCHGEAR - INSTALLATION OF SWITCHGEAR AND PLATFORM SUPPORTS.

C9097 - THREE PHASE UNDERGROUND SWITCHGEAR AND PLATFORM SUPPORT DESIGN DETAILS.

1 B9098 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - FRAME AND COVER DESIGN SPECIFICATIONS.

1 C9099 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - CABLE INSTALLATION AND GROUNDING.

D9100 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - GROUND LOOP INSTALLATION.

D9101 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - INSTALLATION DETAILS.

REV No.	DESCRIPTION	DATE & INITIALS
3	VAULT SIZE CHANGED TO 110" L X 110" W X 86" H. NUMBER OF DUCTS REVISED ON ALL 4 SIDES OF THE VAULT FROM TWO 3 WIDE X 3 HIGH WINDOWS TO ONE 10 WIDE X 3 HIGH WINDOW.	SEP. 11/20 B.B.
2	DRAIN HOLE CHANGED FROM 8" TO 12" DIAMETER.	JUNE 23/14 M.M. G.S.
1	HEIGHT FOR GROUND WIRE HOLD ADJUSTED. DRAIN HOLE SIZE CHANGED FROM 4" TO 6" DIAMETER. OFFSET FOR DUCTBANK WINDOW FROM INSIDE VAULT WALL ADJUSTED. REFERENCE DRAWING NUMBERS REVISED.	DEC. 4/08 B.B.

KITCHENER-WILMOT HYDRO INC.

Kitchener-Wilmot Hydro Inc.
Certificate of Approval

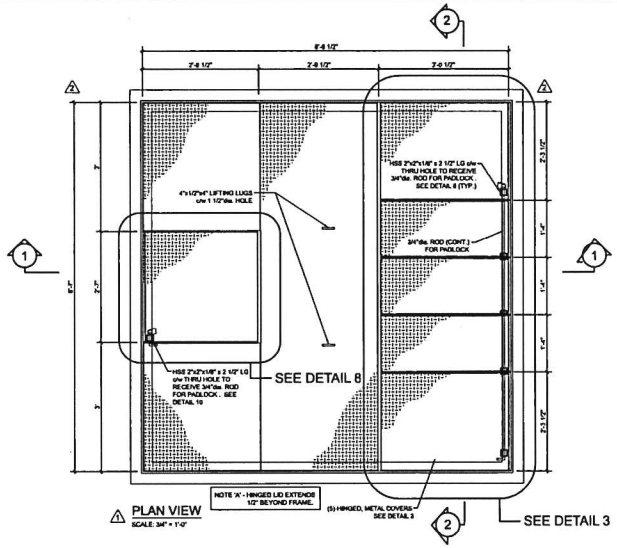
The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: Shawn Wang
Signature:
Date: Oct. 28, 2020

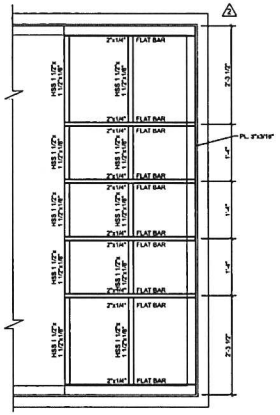
THREE PHASE UNDERGROUND SWITCHGEAR (S & C VISTA TYPE) VAULT-PRECAST CONCRETE DESIGN SPECIFICATION (110" W x 110" L x 86" H)

DRAWN	B. SCHWINDT	FEB. 28/08	SCALE 1/2" = 1'-0"
DESIGNED	G. CAMERON		
CHECKED	G. CAMERON	MAY 2/08	C9095
APPROVED	M. BRUCE McKAGUE	MAY 2/08	
FILE No.	8062-08-6		

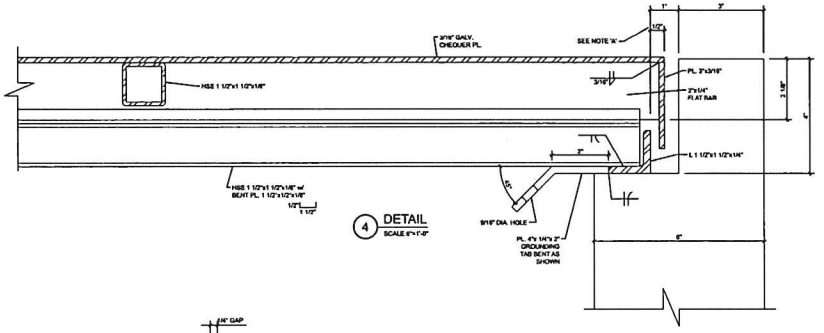
PLOT 6



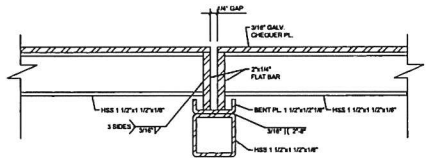
PLAN VIEW
SCALE: 3/4" = 1'-0"



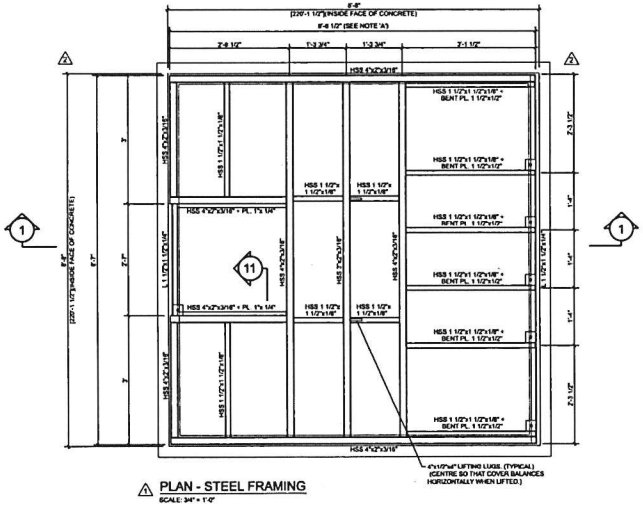
DETAIL 3
PLAN - FRAMING FOR HINGED COVERS
SCALE: 3/4" = 1'-0"



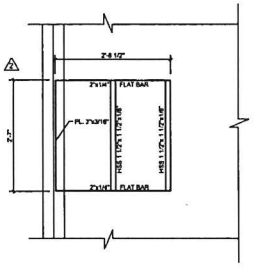
4 DETAIL
SCALE: 6"=1'-0"



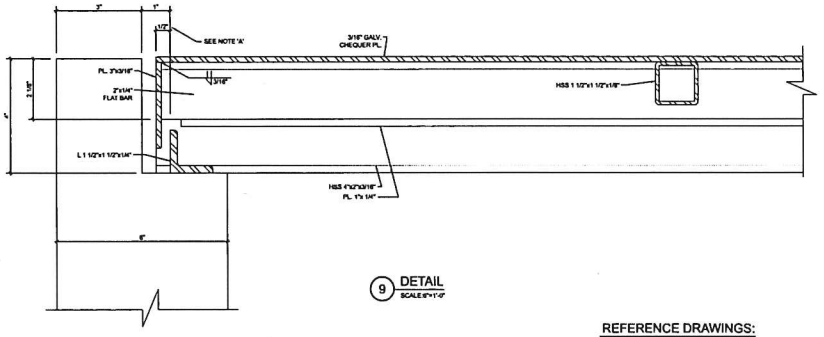
5 DETAIL
SCALE: 6"=1'-0"



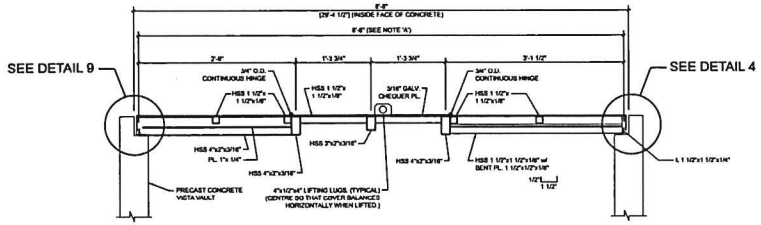
PLAN - STEEL FRAMING
SCALE: 3/4" = 1'-0"



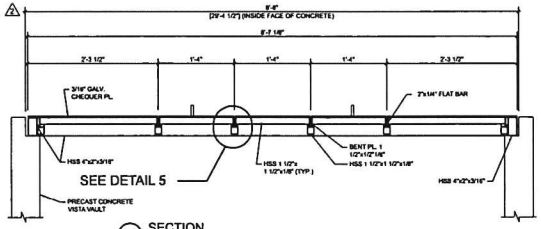
DETAIL 8
PLAN - FRAMING FOR ACCESS WAY COVER
SCALE: 3/4" = 1'-0"



9 DETAIL
SCALE: 6"=1'-0"



1 SECTION
SCALE: 1"=1'-0"



2 SECTION
SCALE: 1"=1'-0"

REFERENCE DRAWINGS:

C 9095 - THREE PHASE SUBMERSIBLE SWITCHGEAR (S & C VISTA TYPE) VAULT PRECAST CONCRETE DESIGN SPECIFICATION

GENERAL NOTES

1. DESIGN STANDARD: CSA S16.01, "LIMIT STATES DESIGN OF STEEL STRUCTURES"
   LOADS: LIVE LOAD = 100 psf
   WEIGHT OF COVER = 875 lbs
2. ALL PARTS TO BE HOT DIPPED GALVANIZED AFTER ALL HOLES HAVE BEEN DRILLED, ALL WELDING HAS BEEN COMPLETED, AND ALL BURRS REMOVED

REV. No.	DESCRIPTION	DATE & INITIALS
2	SIZE OF VAULT COVER REVISED	10 AUG 20 CAL
1	ACCESS WAY ADDED TO COVER	23 JUN 10 CAL

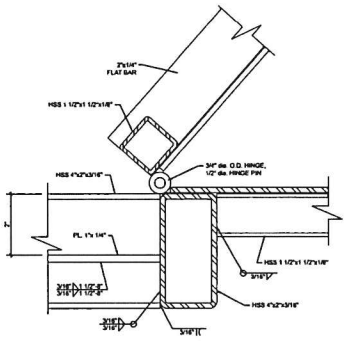
Kitchener-Wilmot Hydro Inc.
Certificate of Approval
The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.
Name of P.Eng.: COLIN LEE
Signature:
Date: SEPT 2010

LICENSED PROFESSIONAL ENGINEER
C. A. LEE
100170
2010
PROVINCE OF ONTARIO

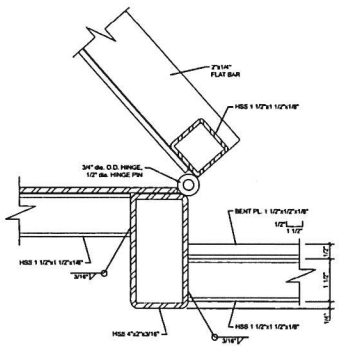
STEEL HINGED VAULT COVER FOR THREE PHASE SUBMERSIBLE SWITCHGEAR (S & C VISTA TYPE) VAULT

DRAWN	B. HEADON	JUNE 2008	SCALE AS SHOWN
DESIGNED	C. LEE		
CHECKED	C. LEE		
APPROVED		13-07-22	B 9098
FILE No.	9062-08-6		SHEET 1 OF 2

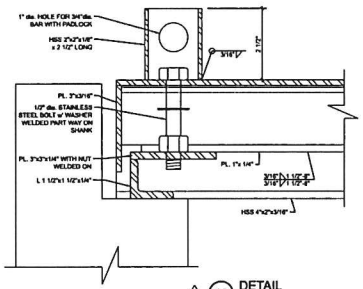
PLOT 4



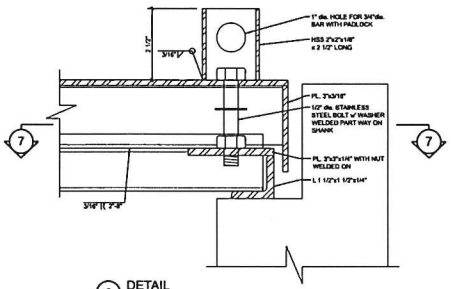
⚠ SECTION - HINGE FOR ACCESS WAY COVER
SCALE: 6" = 1'-0"



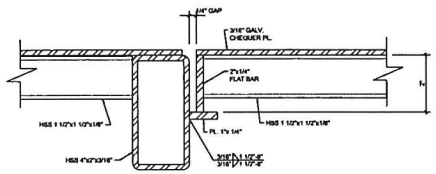
SECTION - HINGE
SCALE: 6" = 1'-0"



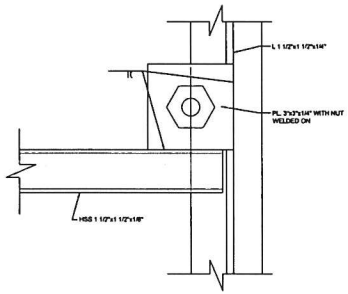
⚠ 10 DETAIL
SCALE 6"=1'-0"



6 DETAIL
SCALE 6"=1'-0"



⚠ 11 SECTION
SCALE 6"=1'-0"



7 SECTION
SCALE 6"=1'-0"

2	SIZE OF VAULT COVER REVISED	10 AUG 20 C.AL
1	ACCESS WAY ADDED TO COVER	23 JUN 10 C.AL
REV. No.	DESCRIPTION	DATE & INITIALS

Kitchener-Wilmot Hydro Inc.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: COLIN LEE
Signature:
Date: NOV 6 2010

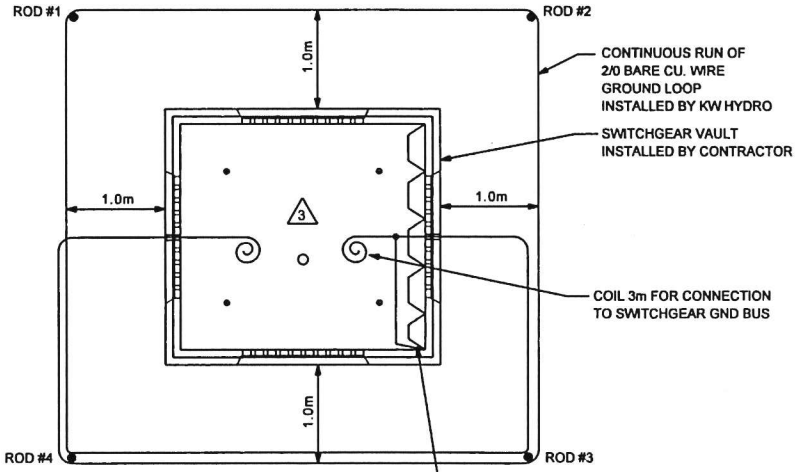
LICENCED PROFESSIONAL ENGINEER
C. A. LEE
11 NOV 2010
PROVINCE OF ONTARIO

STEEL HINGED VAULT COVER FOR THREE PHASE SUBMERSIBLE SWITCHGEAR (S & C VISTA TYPE) VAULT

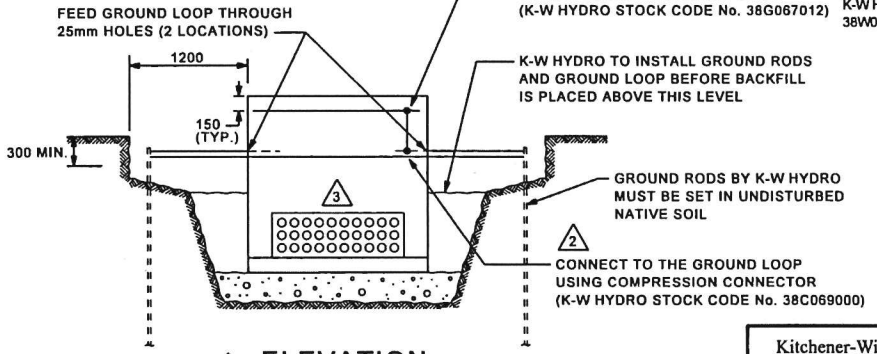
DRAWN	B. HEADON	JUNE 2008	SCALE AS SHOWN
DESIGNED	C. LEE		
CHECKED	C. LEE		
APPROVED		13-Oct-10	
FILE No.	5062-08-6		

B 9098
SHEET 2 OF 2

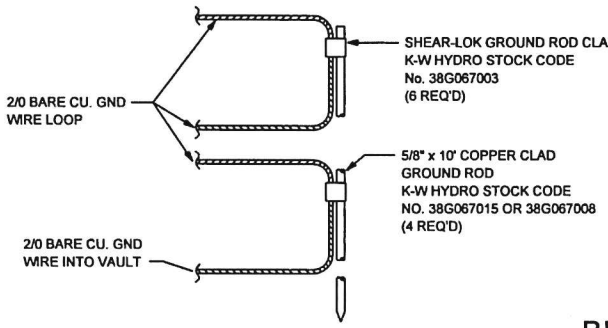
PLOT 2



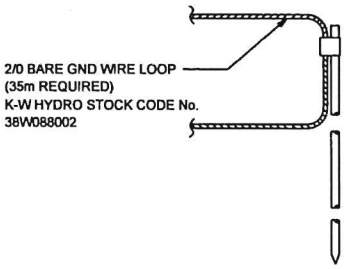
2 PLAN



2 ELEVATION
NOT TO SCALE



GROUND ROD DETAIL
FOR #3 & 4
NOT TO SCALE



GROUND ROD DETAIL
FOR #1 & 2
NOT TO SCALE

REFERENCE DRAWINGS:

C9095 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - PRECAST CONCRETE DESIGN SPECIFICATIONS

1 C9099 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - CABLE INSTALLATION AND GROUNDING DETAILS

D9101 - THREE PHASE UNDERGROUND SWITCHGEAR VAULT - INSTALLATION DETAILS

REV No.	DESCRIPTION	DATE & INITIALS
3	REGULATION 22/04 STAMP ADDED. NUMBER OF CONDUIT HOLES REVISED ON ALL 4 SIDES OF THE VAULT FROM TWO 3 WIDE X 3 HIGH WINDOWS TO ONE 10 WIDE X 3 HIGH WINDOW. SW	SEP.10/20 B.B. BBM
2	BONDING LOOP ADDED FOR SWITCHING SAFETY.	OCT. 12/18 M.M. S.W.
1	REFERENCE DRAWING NUMBER REVISED.	DEC. 4/08 B.B.

KITCHENER-WILMOT HYDRO INC

Kitchener-Wilmot Hydro Inc.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: Shaun Wang
Signature:
Date: Oct. 08, 2020

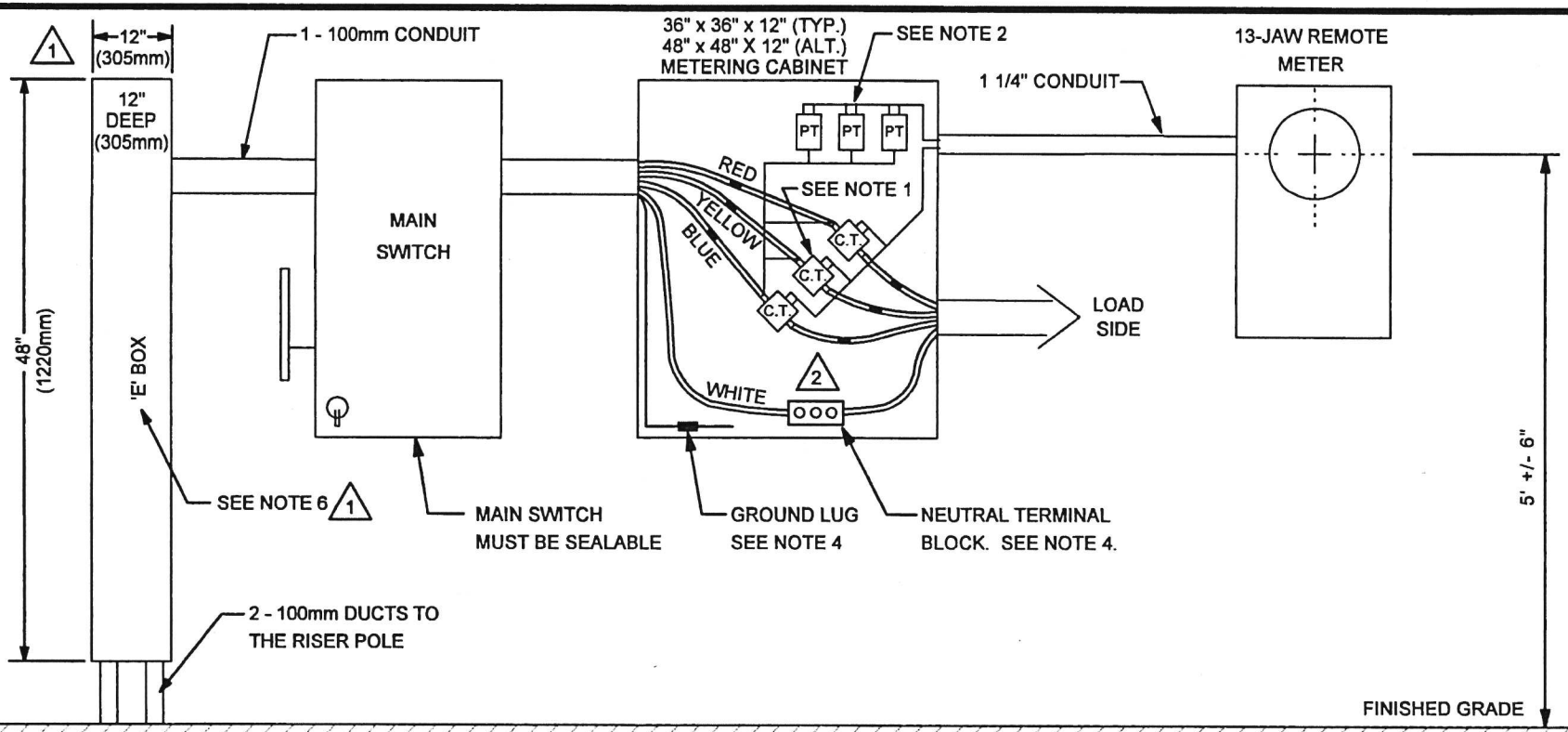
REV 0. SEALED BY G.A. CAMERON ON JUN. 4/18.

PREVIOUS SEALED REVISIONS

THREE PHASE UNDERGROUND SWITCHGEAR GROUND LOOP INSTALLATION

DRAWN	B. BIN	MAR. 11/08	SCALE 1:50 SI
DESIGNED	G. CAMERON		D9100
CHECKED	G.A.C.		
APPROVED	M. BRUCE McKAGUE	JUNE 4/08	
FILE No.	6062-08-6		

PLOT 9



REFERENCE DRAWINGS

E9919 - METER WIRING DIAGRAM 3ø TRANSFORMER RATED 120/208V

E9920 - METER WIRING DIAGRAM 3ø TRANSFORMER RATED 347/600V

3 E10472 - METERING INSTALLATION DETAILS - MULTI UNIT METERING WITHOUT METER CENTRE

NOTES:

1. THE MINIMUM CLEARANCE BETWEEN THE LIVE PARTS OF THE C.T.'S SHOULD BE NO LESS THAN 1".
2. THE INSTALLATION OF THE P.T.'S IS FOR 3 PH. 347/600V ONLY.
1. 3. ALL METERING EQUIPMENT SHALL BE LOCATED INDOORS.
4. ALL CUSTOMER-OWNED EQUIPMENT AND INSTALLATION MUST BE APPROVED BY THE ELECTRICAL SAFETY AUTHORITY.
5. REFER TO ONTARIO ELECTRICAL SAFETY CODE FOR WIRING METHODS INCLUDING GROUNDING AND BONDING REQUIREMENTS.
1. 6. IF THE SPACE IS CONSTRAINED, AN 'E' BOX OF SIZE 24"(H) X 24"(W) X 12"(D) CAN BE USED AS ALTERNATIVE.

PLOT 10

Kitchener-Wilmot Hydro Inc.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: _____

Signature: _____

Date: _____

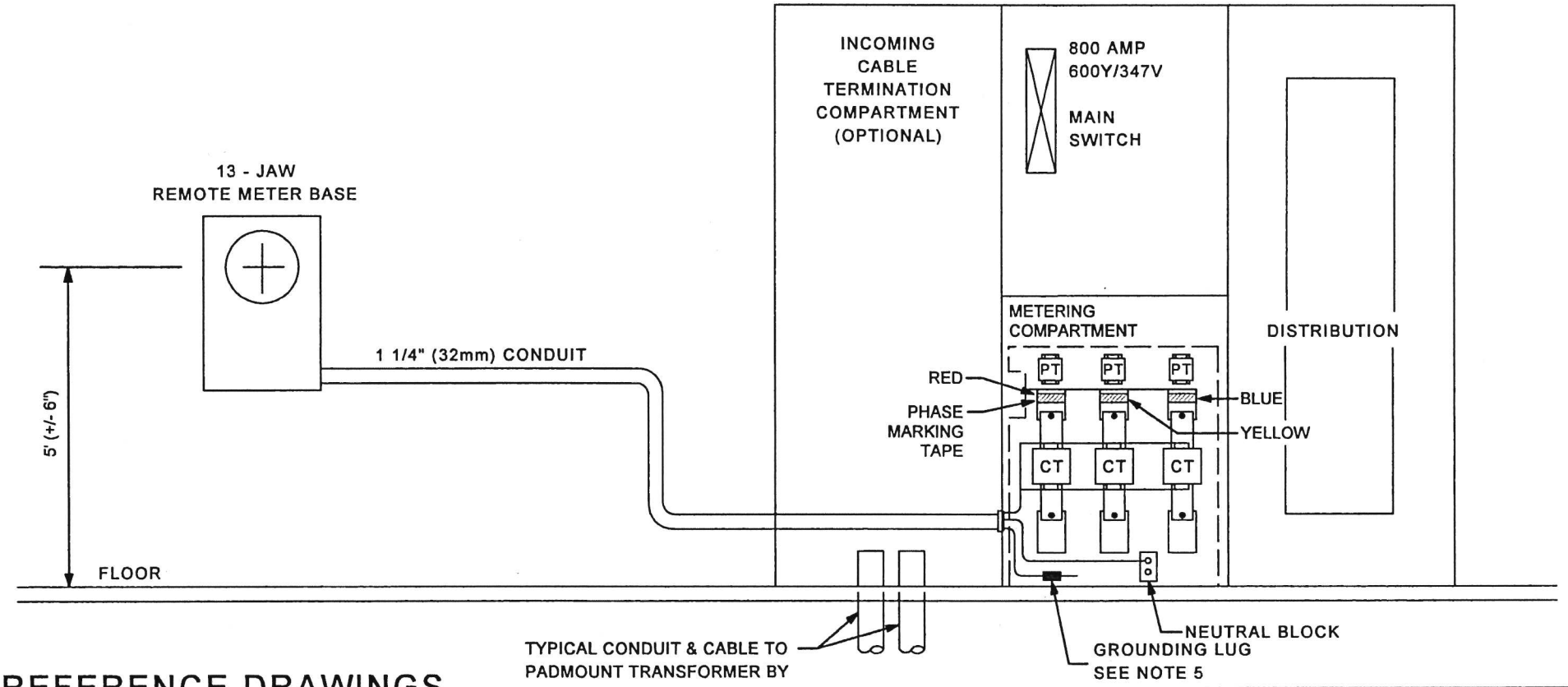
REV No.	DESCRIPTION	DATE & INITIALS
3	REFERENCE DRAWING ADDED.	MAR.11/16 B.B.
2	NEUTRAL TERMINAL BLOCK ADDED. CONDUIT FOR COMMUNICATIONS REMOVED. J.P.T.	NOV. 14/14 B.B. S.W
1	'E' BOX ADDED TO METERING DETAIL. J.P.T.	NOV. 25/13 B.B. S.W.

KITCHENER-WILMOT HYDRO INC.

METERING INSTALLATION DETAILS - TRANSFORMER RATED FOR 3ø SERVICE WITHOUT LV SWITCHGEAR 120/208V OR 347/600V

DRAWN	B. BIN	JULY 26/12	SCALE NONE
DESIGNED	S. WANG		
CHECKED	S.W.		
APPROVED	G.A. CAMERON	1-OCT-2012	
FILE No.			

E
9925



REFERENCE DRAWINGS

E9919 - METER WIRING DIAGRAM 3ø TRANSFORMER RATED 120/208V

E9920 - METER WIRING DIAGRAM 3ø TRANSFORMER RATED 347/600V

E10473 - METERING INSTALLATION DETAILS - MULTI UNIT METERING WITH METER CENTRE. △1

NOTES:

1. THE MINIMUM CLEARANCE BETWEEN THE LIVE PARTS OF THE C.T.'S SHOULD BE NO LESS THAN 1".
2. THE INSTALLATION OF THE P.T.'S IS FOR 3 PH. 347/600V ONLY.
3. ALL C.T.'S OR P.T.'S MUST BE SECURELY FASTENED ON THE BACK PLATE INSIDE THE SWITCHGEAR.
4. ALL CUSTOMER-OWNED EQUIPMENT AND INSTALLATION MUST BE APPROVED BY THE ELECTRICAL SAFETY AUTHORITY.
5. REFER TO ONTARIO ELECTRICAL SAFETY CODE FOR WIRING METHODS INCLUDING GROUNDING AND BONDING REQUIREMENTS.

PLOT 5

Kitchener-Wilmot Hydro Inc.
Certificate of Approval

The installation work covered by this document meets the safety requirements of Section 4 of Ontario Regulation 22/04.

Name of P.Eng.: Shawn Wang

Signature:

Date: July 17, 2017

REV No.	DESCRIPTION	DATE & INITIALS
△2	1" - 90° CONDUIT FOR COMMUNICATION REMOVED	JUL. 13/17 B.U.
△1	REFERENCE DRAWING ADDED.	MAR.11/16 B.B. J.PT.

KITCHENER-WILMOT HYDRO INC.

METERING INSTALLATION DETAILS - TRANSFORMER RATED FOR 3ø SERVICE WITH LV SWITCHGEAR, 120/208V OR 347/600V

DRAWN	B. BIN	JULY 26/12
DESIGNED	S. WANG	
CHECKED	S.W.	
APPROVED	G.A. CAMERON	1-OCT-2012
FILE		

E
9926