

# VILLAGE OF PEMBERTON WELLHOUSE GENERATOR INSTALLATION

CONTRACT 2021-02

ISSUED FOR TENDER

PEMBERTON, BRITISH COLUMBIA

APRIL 2021

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**REV. 1**

ISSUED FOR TENDER

**GENERAL NOTES:**

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH:
  - THE MASTER MUNICIPAL CONSTRUCTION DOCUMENT AND STANDARD DETAIL DRAWINGS (MMCD 2009), LATEST EDITION (PLATINUM EDITION) AND VILLAGE OF PEMBERTON SUPPLEMENTARY SPECIFICATIONS AND DETAILED DRAWINGS UNLESS OTHERWISE NOTED;
  - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED THEREIN;
  - MINISTRY OF ENVIRONMENT AND/OR FEDERAL DEPARTMENT OF FISHERIES AND OCEANS;
  - MINISTRY OF TRANSPORTATION "BC TRAFFIC CONTROL MANUAL FOR WORK ON ROADWAYS", LATEST EDITION; AND
  - WORKSAFEBC, LATEST EDITION.

THE CONTRACTOR SHALL MAINTAIN ON SITE COPIES OF THE ABOVE DOCUMENTS AND SHALL ENSURE THAT ALL SUB CONTRACTORS ARE THOROUGHLY FAMILIAR WITH THE APPLICABLE SECTIONS OF THE DOCUMENTS.
- THE CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING STREETS, SERVICES, SIGNS, LANDSCAPING, DRIVEWAY LETDOWNS, PRIVATE LANDSCAPING, OR PRIVATE IMPROVEMENTS THAT MAY BE DAMAGED AS A RESULT OF CONSTRUCTION. REPAIRS TO EXISTING CITY SERVICES SUCH AS WATER, SANITARY SEWER, STORM SEWER, AND STREET OR TRAFFIC LIGHTING SHALL BE MADE BY THE CITY AT COST TO THE CONTRACTOR. REPAIRS TO EXISTING SURFACE WORKS MAY BE DONE BY THE CONTRACTOR AT THE DISCRETION OF THE CONTRACT ADMINISTRATOR.
- THE LOCATION OF EXISTING UTILITIES IS COMPILED FROM OWNER AND UTILITY SUPPLIED RECORD DRAWINGS AND ARE CONSIDERED APPROXIMATE ONLY. THE EXACT LOCATION AND EXTENT OF UTILITIES SHOULD BE DETERMINED BY CONSULTING THE LOCAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND INVERT ELEVATION BY HAND OR HYDROVAC EXCAVATION BEFORE CONSTRUCTION OF UTILITY CROSSINGS AND SHALL BE RESPONSIBLE FOR RESTORATION OF ANY DAMAGE TO EXISTING UTILITIES. ANY COSTS ASSOCIATED WITH UTILITY CONFLICTS THAT WERE NOT PRELOCATED WILL BE THE CONTRACTORS RESPONSIBILITY.
- REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR A MINIMUM 72 HOURS PRIOR TO CONSTRUCTION TO ENSURE THAT THE LINE AND GRADE OF THE PROPOSED MAIN CAN BE ADJUSTED TO SUIT FIELD CONDITIONS AS REQUIRED.
- RESTORATION OF EXISTING DRIVEWAYS, CURBS, STAIRS AND WALKWAYS TO CONFORM TO VILLAGE SPECIFICATIONS AND TO BE INCIDENTAL TO THE UNIT PRICES IN THE CONTRACT FOR MAINLINE AND SERVICE CONNECTIONS.
- EVERY EFFORT IS TO BE MADE TO SAVE EXISTING LANDSCAPING WITHIN THE ROAD R.O.W. LANDSCAPING IS TO BE RESTORED TO ITS ORIGINAL OR BETTER CONDITION. IN THE EVENT OF LANDSCAPING REMOVAL THE PROPERTY OWNER SHALL BE ADVISED OF THE REMOVAL AND THE LANDSCAPING PLACED IN OWNERS PROPERTY UPON THEIR REQUEST.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PRESERVE EXISTING SURVEY MONUMENTS, BENCHMARKS AND LEGAL SURVEY PINS ON AND ADJACENT TO THE WORK SITE. THIS INCLUDES THE GPS, HIGH-PRECISION MONUMENTS
- THE CONTRACTOR SHALL GIVE THE VILLAGE OF PEMBERTON AT LEAST TWO (2) WORKING DAYS NOTICE IF IT IS APPARENT OR LIKELY THAT A LEGAL BENCHMARK OR SURVEY PIN WILL BE DISTURBED DURING THE COURSE OF CONSTRUCTION. FAILURE TO COMPLY WITH THIS REQUIREMENT WILL RENDER THE CONTRACTOR LIABLE FOR THE EXPENSE OF HAVING THE SURVEY MARKER REPLACED BY A REGISTERED BRITISH COLUMBIA LAND SURVEYOR.
- CONTRACTOR TO CONFIRM AND MATCH EXISTING ELEVATIONS UNLESS NOTED.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, AND FOR COORDINATING THE VARIOUS PARTS OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THERE IS NO DISRUPTION TO SERVICE, AND IF DISRUPTION IS ANTICIPATED, TO NOTIFY THE ENGINEER A MINIMUM OF 72 HOURS PRIOR, AND OBTAIN APPROVAL FOR THE DISRUPTION.
- ALL GRASS AREAS TO BE REINSTATED WITH 100mm TOPSOIL AND HYDROSEEDING IN RURAL AREAS OR SODDED IN URBAN AREAS TO EXISTING OR BETTER CONDITION. CONTRACTOR TO RESTORE EXISTING LANDSCAPING, DRIVEWAYS, CURBS, SIDEWALKS TO EXISTING OR BETTER CONDITION FOLLOWING CONSTRUCTION.
- THE CONTRACTOR IS TO PROTECT AND/OR STABILIZE EXISTING POLES DURING CONSTRUCTION.
- CONTRACTOR TO COMPLY FULLY WITH VILLAGE OF PEMBERTON STANDARDS AND COORDINATE WITH ELECTRICAL UTILITY AND VOP OPERATIONS AS REQUIRED TO CONSTRUCT AND COMMISSION THE STATION.
- ALL ADJACENT SURFACES TO BE PROTECTED FROM DAMAGE AND REINSTATED TO ORIGINAL CONDITION OR BETTER WHERE DISTURBED.
- CONTRACTOR TO COORDINATE ACTIVITIES WITH BC HYDRO AND PROVIDE ALL NECESSARY REQUIREMENTS TO COMPLETE WORKS ADJACENT TO EXISTING OVERHEAD HYDRO.
- CONTRACTOR TO PROTECT EXISTING STRUCTURES AND UTILITIES DURING CONSTRUCTION.

**STRUCTURAL NOTES**

- ALL DIMENSIONS IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
- ALL ELEVATIONS ARE GIVEN IN METERS (m) UNLESS NOTED OTHERWISE.
- SCALE INDICATED ON DRAWING IS APPROPRIATE SCALE AT FULL SIZE.
- DESIGN PARAMETERS:**  
 WIND LOADING  $1/50 = 0.559kPa$   
 SNOW LOADING  $S_s = 5.28kPa$   
 $S_r = 0.66kPa$   
 SEISMIC LOADING  $I = 1.25$   
 $S(0.2) = 0.621$   
 $S(0.5) = 0.464$   
 $S(1.0) = 0.276$   
 $S(2.0) = 0.155$   
 $PGA = 0.280$   
 BASE SLAB DESIGNED FOR THE FOLLOWING BEARING PRESSURES:  
 $SLS = 50kPa$   
 $ULS = 75kPa$
- THE CONTRACTOR SHALL EXAMINE ALL CONTRACT DOCUMENTS, CHECK DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE OWNER FOR CLARIFICATION PRIOR TO COMMENCING CONSTRUCTION. DISCREPANCIES NOT REPORTED ARE THE RESPONSIBILITY OF THE CONTRACTOR. CHECK AND VERIFY ALL DIMENSIONS BEFORE COMMENCING WITH ANY WORK. NOTIFY THE OWNER OF ANY ERRORS OR OMISSIONS.
- DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION".
- ALL COMPONENTS, STRUCTURAL OR OTHERWISE, NOT INCLUDED IN THESE DRAWINGS ARE THE RESPONSIBILITIES OF THEIR RESPECTIVE DESIGNER.
- CONTRACTOR TO CONFIRM AND MATCH EXISTING ELEVATION.
- CONTRACTOR TO CONFIRM:  
 9.1. PAD DIMENSIONS WITH GENSSET SHOP DRAWINGS.

**CAST-IN-PLACE CONCRETE**

- THE CONTRACTOR SHALL SUBMIT A REPORT OUTLINING THE PROPOSED MIX DESIGN FOR EACH CLASSIFICATION OF CONCRETE TO THE OWNER FOR REVIEW AND ACCEPTANCE AT LEAST 2 WEEKS IN ADVANCE OF WHEN CONCRETE PRODUCTION IS SCHEDULED TO COMMENCE. REVIEW AND ACCEPTANCE OF THE MIX DESIGN BY THE DESIGN OWNER DOES NOT CONSTITUTE ACCEPTANCE OF THE CONCRETE. ACCEPTANCE OF THE CONCRETE WILL BE BASED SOLELY ON THE TEST RESULTS OF THE CONCRETE PLACED ON THE PROJECT. NO CONCRETE SHALL BE PLACED PRIOR TO RECEIVING OWNER ACCEPTANCE OF THE MIX DESIGN. EACH MIX DESIGN SUBMITTAL SHALL INCLUDE THE FOLLOWING:
  - NAME OF THE PROPOSED SUPPLIER.
  - PROJECT SPECIFICS.
  - DISTANCE AND EXPECTED TRAVEL TIME FROM BATCH PLANT TO PROJECT SITE.
  - EXPECTED METHOD OF BATCHING, TRANSPORTING AND PLACING CONCRETE.
  - SPECIFIED MIX PARAMETER REQUIREMENTS.
  - NAME AND CONTACT INFORMATION OF INDEPENDENT, CERTIFIED QUALITY CONTROL TESTING FIRM AND/OR CERTIFIED TESTING PERSONNEL.
- ADDENDUM TO A23.1-04 "CONCRETE MIX PROPORTIONS" CONCRETE SLAB SHALL MEET THE REQUIREMENTS GIVEN IN THE FOLLOWING TABLE:
 

MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (MPa)	NOMINAL SIZE OF COARSE AGGREGATE (mm)	AIR CONTENT (%)	SLUMP (mm)	MAXIMUM W/C RATIO BY MASS	ADMIXTURE AS REQUIRED	EXPOSURE CLASS
35	20	6 ± 1	60 ± 20	0.45	AEA & WRA	C-1
- ALL REINFORCING MARKED AS "ME" IS EPOXY COATED, MARKED "G" IS GALVANIZED, OR MARKED "SS" IS STAINLESS STEEL.
- THE MAXIMUM PROPORTION OF AGGREGATE PASSING 5mm SCREEN SHALL BE 38% OF THE TOTAL MASS OF AGGREGATE.
- FLY ASH OR OTHER POZZOLANS USED AS ADMIXTURES SHALL CONFORM TO ASTM C618-12 "STANDARD SPECIFICATION FOR FLY ASH AND RAW OR CALCINED NATURAL POZZOLAN FOR USE IN CONCRETE".
- AIR ENTRAINMENT ADMIXTURES, AEA, SHALL CONFORM TO ASTM C260/C260M-10a "STANDARD SPECIFICATION FOR AIR-ENTRAINING ADMIXTURES FOR CONCRETE".
- SLUMP TO BE MEASURED BEFORE ADDITION OF WATER REDUCING ADMIXTURES, WRA, (SUPER PLASTICIZERS). SUPER PLASTICIZERS MAY BE USED TO OBTAIN HIGHER SLUMPS FOR WORKABILITY, WITH PRIOR APPROVAL FROM THE OWNER.
- EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED 20mm, UNLESS NOTED OTHERWISE.
- DIMENSIONAL TOLERANCES FOR CONCRETE WORK SHALL BE GIVEN IN CAN/CSA A 23.1-09 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION".
- ALL CONCRETE SHALL BE CURED IN ACCORDANCE WITH CAN/CSA A23.1-09 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION".
- ALL FORMWORK SHALL BE DESIGNED, SUPPLIED, AND INSTALLED IN ACCORDANCE WITH CAN/CSA-S269.3-M92-(R2013), "CONCRETE FORMWORK".

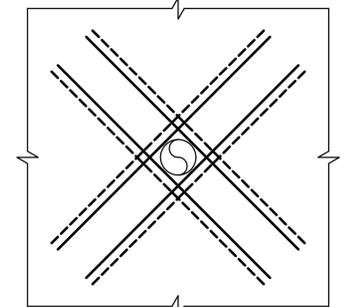
**REINFORCEMENT**

- SPACING OF BARS SHOWN ON THE DRAWINGS IS FROM CENTER-TO-CENTER OF BARS.
- REINFORCING STEEL SHALL CONFORM TO CAN/CSA-G30.18 GRADE 400W, UNLESS NOTED OTHERWISE.
- MINIMUM CONCRETE COVER FOR REINFORCING STEEL, UNLESS NOTED OTHERWISE ON DRAWINGS IS:  
 -FACES CAST AGAINST THE EARTH AND PERMANENTLY EXPOSED TO EARTH = 75mm  
 -ELSEWHERE = 60mm
- DEVELOPMENT LENGTH AS FOLLOWS:
 

	UNCOATED VERTICAL BARS	UNCOATED HORIZONTAL BARS	UNCOATED TOP HORIZONTAL BARS *
15M	400mm	500mm	650mm
- LAP SPLICES SHALL BE STAGGERED WITH MINIMUM LAP LENGTH AS FOLLOWS:
 

	UNCOATED	UNCOATED TOP BARS*
15M	600mm	650mm

\* TOP BARS DEFINED AS BARS WITH MORE THAN 300mm OF FRESH CONCRETE BELOW THE DEVELOPMENT LENGTH OR SPLICE
- SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF THE REINFORCING IS SPLICED AT ANY ONE LOCATION, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- WELDING OF REINFORCEMENT IS NOT PERMITTED WITHOUT WRITTEN APPROVAL BY THE OWNER. REINFORCEMENT BARS TO BE WELDED SHALL BE BILLET STEEL BARS CONFORMING TO CSA-G30.18-09 "CARBON STEEL BARS FOR CONCRETE REINFORCEMENT OR CSA W186-M1990 (R2012) WELDING OF REINFORCED CONCRETE CONSTRUCTION" DESIGNATION "W".
- MECHANICAL COUPLERS FOR REINFORCEMENT BARS WILL BE USED SUBJECT TO OWNER'S APPROVAL AND SHALL DEVELOP NOT LESS THAN 120% OF THE YIELD STRENGTH OF THE BAR.
- ADDITIONAL BARS AROUND OPENINGS ARE AS SHOWN:



ADD'L 15M REBAR TOP AND BOT, TYP UNO

**EXCAVATION, SUPPORT AND PROTECTION**

- THE OWNER SHALL BE NOTIFIED IMMEDIATELY IN THE EVENT OF ANY NON-ELASTIC GROUND MOVEMENT SUCH AS, BUT NOT LIMITED TO, SLOUGHING BEYOND THE SPECIFIED EXCAVATION FACE, BREAKAGE OF SERVICES AND/OR SLOPE FAILURE. IF DEEMED NECESSARY BY THE OWNER, THE SLOPE SHALL BE BACKFILLED AND WORK STOPPED IN THE AREA.
- THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 48 HOURS BEFORE COMMENCING EXCAVATION. EACH STAGE OF EXCAVATION MUST BE APPROVED BY THE OWNER BEFORE PROCEEDING WITH THE NEXT STAGE OF EXCAVATION OR BACKFILLING.

**FOUNDATION**

- GROUND CONDITIONS MAY VARY. REFER TO THE GEOTECHNICAL REPORT.
- EXCAVATE TO LINES AND GRADES AS INDICATED ON THE DRAWINGS.
- ALL EXCAVATIONS AND COMPLETED STRUCTURAL BACKFILL SHALL BE INSPECTED AND APPROVED PRIOR TO PROCEEDING WITH ANY FURTHER FOUNDATION WORK.
- FIELD DENSITY TEST REPORTS TO BE REVIEWED BY GEOTECHNICAL ENGINEER PRIOR TO SLAB CONSTRUCTION.
- PLACE A MINIMUM OF 500mm THICK ENGINEERED FILL BASE COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY (MPMDD). ENGINEERED FILL SHOULD CONSIST OF AN APPROVED GRANULAR MATERIAL SUCH AS 75mm MINUS WELL-GRADED PIT-RUN SAND AND GRAVEL WITH NO MORE THAN 5% FINES PASSING THE #200 SIEVE OR APPROVED EQUIVALENT. ENGINEERED FILL TO BE PLACED AND COMPACTED IN LIFTS NO GREATER THAN 300mm. ENGINEERED FILL TO BE REVIEWED BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
- PLACE A MINIMUM OF 150mm THICK DRAINAGE LAYER OF COMPACTED 19mm CLEAR CRUSH. PLACE POLYETHYLENE SHEETING DIRECTLY BENEATH THE CONCRETE SLAB.

**QUALITY CONTROL**

- QUALITY CONTROL FOR FABRICATED COMPONENTS SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. THE DOCUMENTS SHALL INCLUDE, BUT ARE NOT LIMITED TO:
  - STEEL MILL TEST CERTIFICATED (OR EQUIVALENT) FOR EACH COMPONENT.
  - PLANT REBAR INSPECTIONS PRIOR TO POUR FOR EACH COMPONENT.
  - CONCRETE TEST RESULTS FOR EACH COMPONENT.
- SHOP DRAWINGS SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE FOR REVIEW AT LEAST FOURTEEN (14) DAYS PRIOR TO FABRICATION/POURING. FABRICATION/POURING SHALL NOT PROCEED WITHOUT REVIEWED SHOP DRAWINGS.

File: G:\Projects\32000032700\32730\_PEM\_Vellhouse\_Generator02\_CADD\00\_Drafting\2\0405\_Genset\_32730.dwg

PLOT DATE: April 19, 2021

REV NO	REVISIONS	DATE	DRAWN	APPRD
1	ISSUED FOR TENDER	2021/04/14	RV	GS
2				
3				
4				
5				



7400 Prospect Street, Pemberton, BC, V0N 2L0

**WELLHOUSE GENERATOR INSTALLATION**  
CIVIL NOTES AND DETAILS

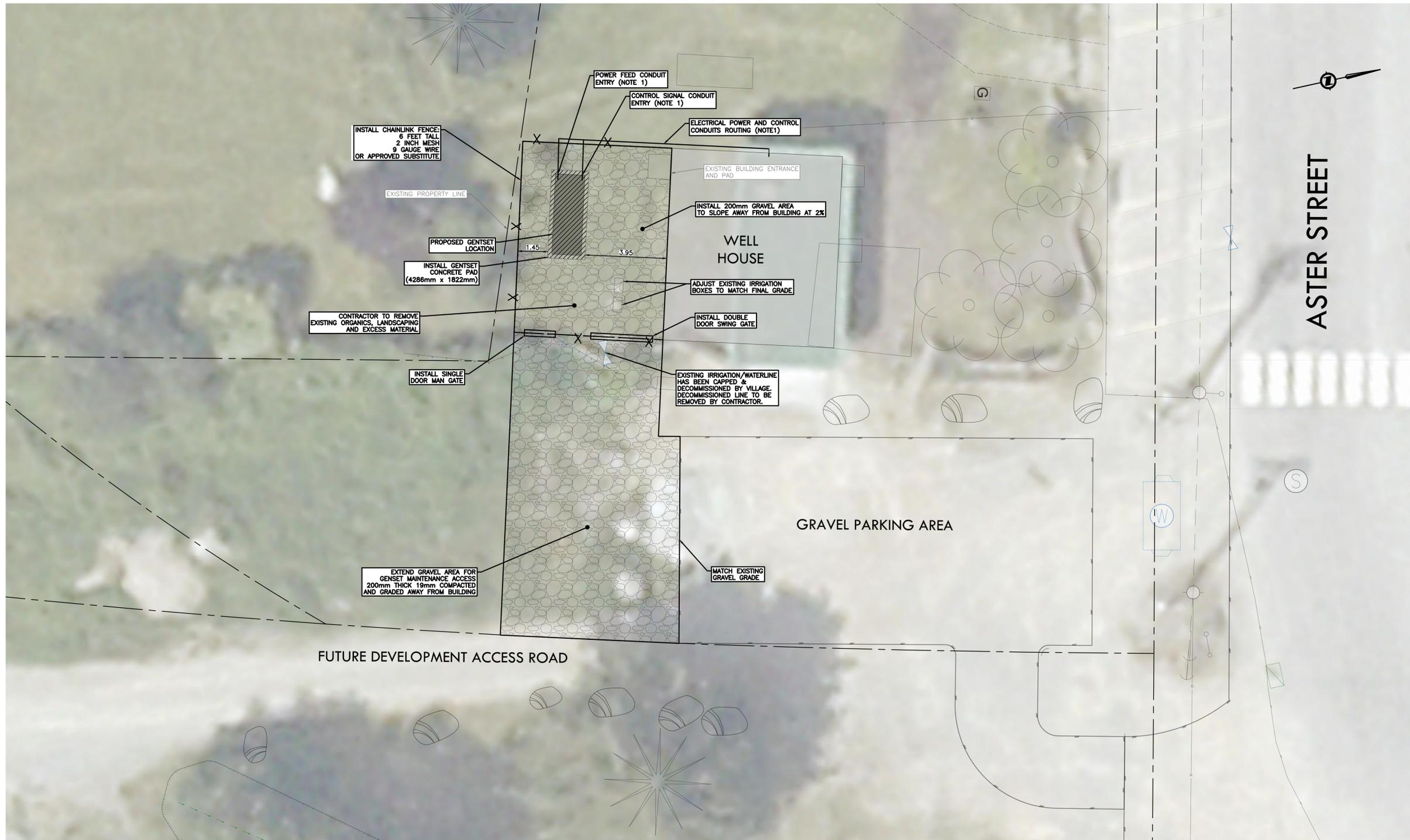


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ISSUED FOR TENDER DESIGN NO.

SCALE	1:100	DATE	APR-14	DWG. NO.
DRAWN BY	RV	DESIGN BY	JT	01 OF 05
CHECKED BY	GS	APPROVED BY	GS	REV. 1

**32730**



**NOTES:**  
 1. REFER TO ELECTRICAL DRAWINGS FOR NUMBER AND SIZES OF CONDUITS. REFER TO ELECTRICAL DRAWINGS FOR CONDUIT BUILDING PENETRATION DETAILS. REFER TO CONCRETE PAD DETAIL ON SHEET 3 FOR CONDUIT CONCRETE PAD PENETRATION DETAILS.

1:100 0 2 6m

ISSUED FOR TENDER

DESIGN NO.

32730

PLOT DATE: April 24, 2021

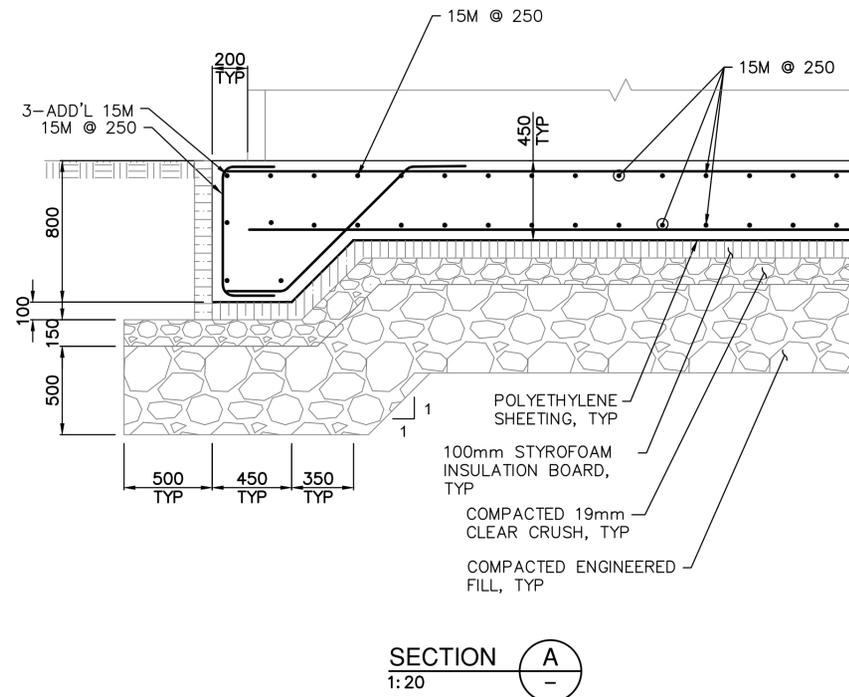
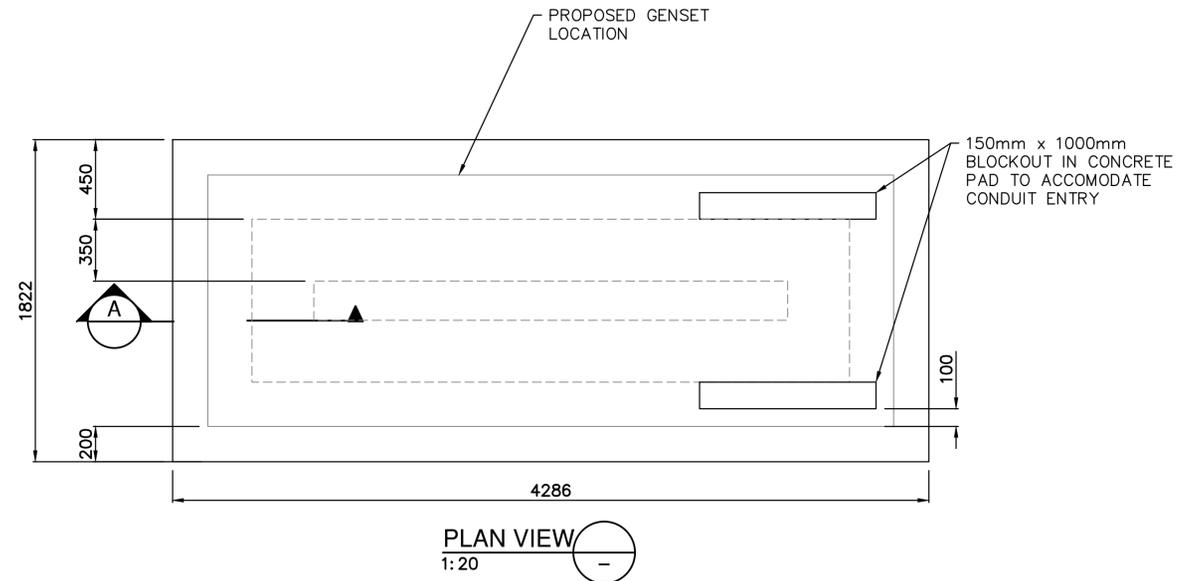
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1	ISSUED FOR TENDER	2021/04/20	RV	GS
2	--	--	--	--
3	--	--	--	--
4	--	--	--	--
5	--	--	--	--



**WELLHOUSE GENERATOR INSTALLATION**  
 CIVIL SITE PLAN



SCALE	DATE	DWG. NO.
1:100	APR-20	02 OF 05
DRAWN BY: RV	DESIGN BY: RV	
CHECKED BY: GS	APPROVED BY: GS	REV. 1



File: G:\Projects\32000032700\32730\_PEM\_Wellhouse\_Generator\02\_CADD\02\_Drafting\210405\_Genset\_32730.dwg

PLOT DATE: April 19, 2021

REV NO	REVISIONS	DATE	DRAWN	APPRD
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2	--	--	--	--
3	--	--	--	--
4	--	--	--	--
5	--	--	--	--



## WELLHOUSE GENERATOR INSTALLATION CIVIL CONCRETE PAD DETAILS



ISSUED FOR TENDER DESIGN NO.

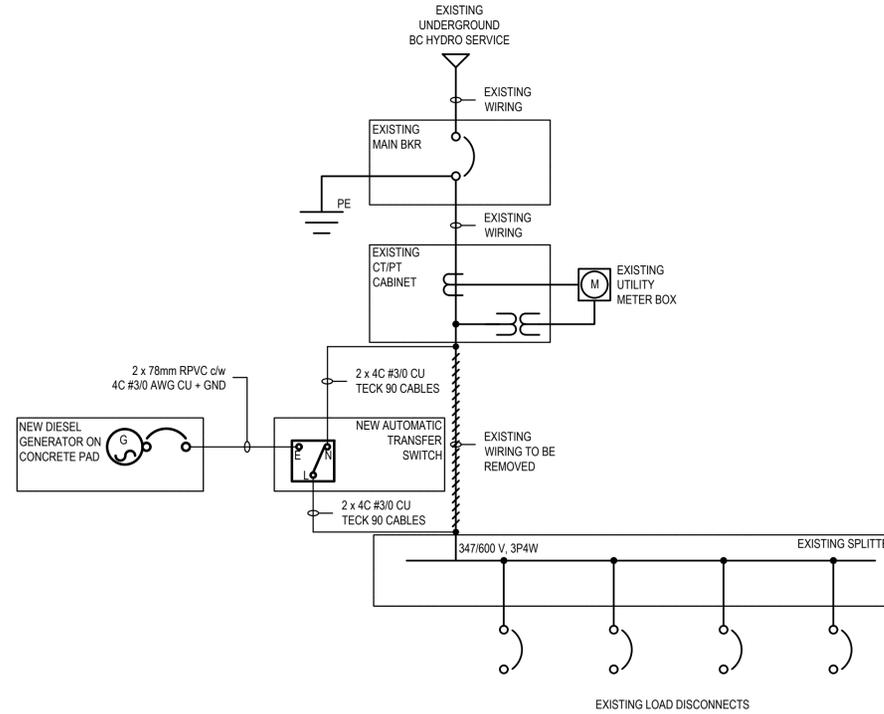
SCALE	1:20	DATE	APR-14	DWG. NO.
DRAWN BY	RV	DESIGN BY	JT	03 OF 05
CHECKED BY	GS	APPROVED BY	GS	REV. 1

# 32730

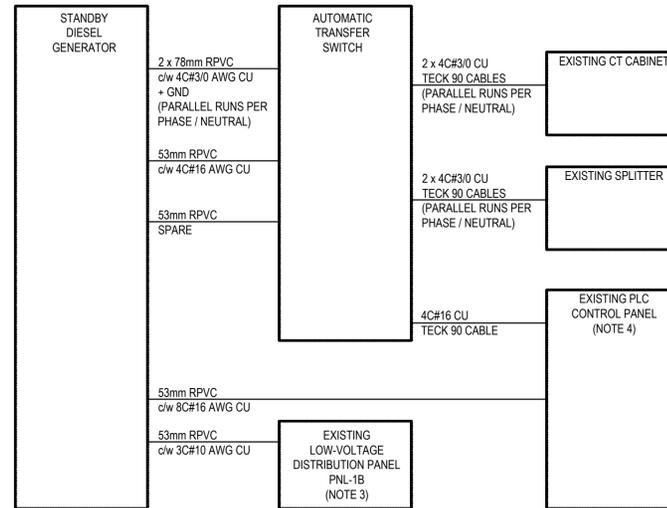
DESTROY ALL PRINTS BEARING PREVIOUS NO.

# SPECIFICATIONS

- 1.0 GENERAL
- 1.1 WORK SHALL INCLUDE THE FURNISHING OF ALL LABOR AND MATERIALS, UNLESS SPECIFICALLY NOTED OTHERWISE, TO COMPLETE AND PUT INTO OPERATING CONDITION ALL ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
- 1.2 INSTALLATION SHALL CONFORM TO SEISMIC STANDARD AS OUTLINED IN BRITISH COLUMBIA BUILDING CODE.
- 1.3 ALL MATERIALS, SUPPLIED UNDER THIS CONTRACT, SHALL BE NEW, INDUSTRIAL GRADE AND CARRY CSA APPROVAL. MAINTAIN UNIFORMITY OF MANUFACTURER FOR ANY PARTICULAR ITEM.
- 1.4 INSTALLATION SHALL MEET ALL THE REQUIREMENTS OF CANADIAN ELECTRICAL CODE, PART 1 - C22.1, AS ADOPTED AND AMENDED BY BC REGULATORY AUTHORITY.
- 1.5 INSTALLATION SHALL MEET ALL THE STANDARD SPECIFICATIONS AND DETAILS OUTLINED IN MMCD, PLATINUM EDITION, 2009.
- 1.6 RESPONSIBILITY AS TO WHICH TRADE PROVIDES REQUIRED ARTICLES OR MATERIALS RESTS SOLELY WITH THE GENERAL CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALTIES OR MATERIALS.
- 1.7 AT COMPLETION, ELECTRICAL INSTALLATION SHALL BE LEFT IN A CLEAN FINISHED CONDITION TO SATISFACTION OF THE RMOW.
- 2.0 SCOPE OF WORK
- 2.1 PROVIDE ALL NECESSARY ELECTRICAL SERVICES FOR A COMPLETE AND OPERABLE SYSTEM INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING MAIN COMPONENTS:
  1. PERMITS, BONDS AND WARRANTIES;
  2. INSTALLATION OF VENDOR SUPPLIED EQUIPMENT INCLUDING GENSET AND AUTOMATIC TRANSFER SWITCH;
  3. EXISTING EQUIPMENT DEMOLITION / REPLACEMENT, AS SHOWN;
  4. BC HYDRO COORDINATION FOR CT CABINET ACCESS, AS REQUIRED;
  5. CABLES, CONDUITS, DISCONNECTS, CONNECTIONS AS IDENTIFIED;
  6. GENSET CONCRETE PAD AS PER CIVIL / STRUCTURAL DESIGN;
  7. PROVISIONS FOR FUTURE CONNECTION AS SHOWN.
- 2.2 OBTAIN REQUIRED PERMITS TO COMPLETE THE WORK.
- 2.3 UPON COMPLETION OF WORK, SUBMIT CERTIFICATE OF ACCEPTANCE FROM INSPECTION AUTHORITY TO THE ENGINEER.
- 2.4 SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT AND DEVICES SUPPLIED UNDER THIS CONTRACT.
- 2.5 THE ENGINEER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY ALTERNATIVES PROPOSED.
- 2.6 THE LOCATION AND ARRANGEMENT OF ELECTRICAL EQUIPMENT AS SHOWN ON THE DRAWINGS IS A CLOSE APPROXIMATION ONLY. SUBMIT SCALABLE SHOP DRAWINGS WITH LOCATION AND ARRANGEMENT OF ELECTRICAL EQUIPMENT. THE ENGINEER RESERVES THE RIGHT TO APPROVE SHOP DRAWINGS AND RECOMMEND CHANGES. ALL SUCH CHANGES SHALL BE DONE AT NO COST TO THE OWNER.
- 2.7 PROVIDE 1 YEAR WRITTEN WARRANTY FOR ALL EQUIPMENT AND SYSTEMS SUPPLIED UNDER DIVISION 16.
- 3.0 CUTTING AND PATCHING
- 3.1 CO-ORDINATE WITH GENERAL CONTRACTOR FOR ALL CUTTING AND PATCHING REQUIRED FOR THE ELECTRICAL INSTALLATION. STRUCTURAL MEMBERS SHALL NOT BE CUT WITHOUT THE CONSENT OF THE STRUCTURAL ENGINEER.
- 4.0 AS-BUILT DRAWINGS
- 4.1 AT THE END OF THE JOB, CONTRACTOR SHALL SUBMIT AS-BUILT RECORD DRAWINGS WITH NEATLY RECORDED AND ACCURATE INFORMATION.
- 5.0 OPERATION AND MAINTENANCE MANUALS
- 5.1 THE ELECTRICAL CONTRACTOR SHALL PROVIDE O & M MANUALS IN ELECTRONIC COPY IN PDF FORMAT.
- 5.2 THE MANUAL SHALL INCLUDE A CERTIFICATION/WARRANTY SECTION, WHICH IS TO CONTAIN TEST RESULTS, LETTERS OF COMPLIANCE, INSPECTION, PERMITS AND WARRANTIES, ETC.
- 5.3 THE MANUALS SHALL INCLUDE A SHOP DRAWINGS AND MAINTENANCE PROCEDURES SECTION WITH EACH EQUIPMENT TYPE DIVIDED BY SUBSECTION TABBING.
- 6.0 WIRE AND CABLING
- 6.1 ALL WIRING SHALL BE TECK 90 COPPER WITH 600 VOLT INSULATION AND BEAR CSA LABELING, SEAL TIGHT, UNLESS SPECIFIED OTHERWISE.
- 6.2 THE MINIMUM SIZE OF THE CONDUCTOR FOR POWER WIRING SHALL BE NO. 12 AWG.
- 6.3 COLOR CODING OF CONDUCTORS SHALL BE AS PER CANADIAN ELECTRICAL CODE.
- 6.4 PROVIDE RAIN TIGHT FITTINGS FOR ALL CABLE AND CONDUIT CONNECTIONS.
- 6.5 MINIMUM SIZE OF CONTROL WIRING CONDUCTOR SHALL BE NO. 16 AWG FOR DISCRETE SIGNAL WIRING AND NO. 18 AWG FOR ANALOG SIGNAL WIRING. ANALOG SIGNAL WIRING SHALL BE SHIELDED TWISTED PAIR CABLE WITH NYLON JACKET CSA TYPE C1C1C1C. ALL WIRING INSIDE CONTROL PANEL SHALL BE INSTALLED IN ENCLOSED PLASTIC WIRE-WAYS.
- 6.6 ALL WIRING INSIDE CONTROL PANEL SHALL BE TERMINATED AT TERMINAL BLOCKS. USE APPROPRIATE FACTORY SUPPLIED JUMPERS TO MAKE CONNECTIONS. NO DOUBLE-LUGGING IS ALLOWED AT TERMINAL BLOCKS.
- 6.7 ALL CONDUCTORS SHALL BE TAGGED AT EACH END WITH MACHINE PRINTED HEAT SHRINK LABELS.
- 6.8 ALL EQUIPMENT, INCLUDING TERMINAL BLOCKS SHALL BE LABELED WITH MACHINE PRINTED PLASTIC LABELS.
- 6.9 COLOR CODING OF CONTROL CONDUCTORS SHALL BE AS PER FOLLOWING COLOR SCHEME: RED - 24VDC POSITIVE; BLUE - 24VDC NEGATIVE; BROWN - DISCRETE INPUTS / OUTPUTS; YELLOW - INTRINSICALLY SAFE CIRCUITS.
- 7.0 EXISTING CONTROL PANEL CONNECTION
- 7.1 ALL CONDUCTORS SHALL BE TERMINATED AT TERMINAL BLOCKS INSIDE EXISTING CONTROL PANEL. PROVIDE ADDITIONAL TERMINAL BLOCKS, TO MATCH EXISTING, AS NEEDED.
- 7.2 PROVIDE LABELING AS NOTED.
- 8.0 ALTERNATES
- 8.1 ALTERNATES SHALL ONLY BE CONSIDERED AT THE TIME OF BIDDING. PROVIDE A LIST OF ALTERNATE MATERIALS, ALONG WITH ASSOCIATED COST SAVINGS.
- 8.2 OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY ALTERNATIVES PROPOSED.
- 9.0 TESTING AND COMMISSIONING
- 9.1 GENSET AND AUTOMATIC TRANSFER SWITCH SHALL BE TESTED AND COMMISSIONED BY SUPPLIER ONSITE. PLC AND SCADA PROGRAMMING SHALL BE PROVIDED BY OWNER'S REP. CONTRACTOR SHALL PROVIDE A JOURNEYMAN FOR ASSISTANCE WITH TESTING AND COMMISSIONING, AS REQUESTED BY THE OWNER. ALL COSTS INCURRED BY CONTRACTOR TO PROVIDE JOURNEYMAN ASSISTANCE DURING TESTING AND COMMISSIONING SHALL BE INCLUDED IN BID PRICING BY CONTRACTOR. NO EXTRAS SHALL BE CONSIDERED AT A LATER DATE.
- 10.0 LABELING
- 10.1 CONDUIT AND CABLE TAGS SHALL BE 3-PLY LAMINATE PLASTIC MATERIALS, WITH ENGRAVED LETTERING. PROVIDE WHITE LETTERS AGAINST BLACK BACKGROUND. TAG HEIGHT SHALL BE MAXIMUM 19 mm, WITH MAXIMUM OF TWO (2) LINES PER TAG. LETTER HEIGHT SHALL BE 5 mm. WIDTH OF TAG SHALL BE ADJUSTED TO SUIT INFORMATION DISPLAYED.
- 10.2 ALL WIRE AND TERMINAL TAGS SHALL BE SLEEVE TYPE PRE-PRINTED TAGS. BLACK LETTERING ON WHITE BACKGROUND. MINIMUM LETTER HEIGHT OF 1.5 mm. GRAFOPLAST TRASP SYSTEM OR APPROVED EQUIVALENT. WIRES SHALL BE TAGGED IDENTICALLY AT EACH TERMINATION END.
- 10.3 TAG DISPLAY INFORMATION SHALL BE SUBMITTED FOR CONSULTANT APPROVAL, ALONG WITH THE SHOP DRAWINGS SUBMITTALS.



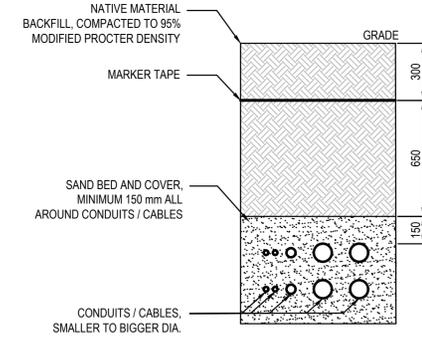
SINGLE LINE DIAGRAM



NOTES:

1. REFER TO VENDOR SHOP DRAWINGS FOR WIRING TERMINATIONS AT GENERATOR / AUTOMATIC TRANSFER SWITCH. FOLLOW VENDOR DIRECTIONS ONSITE OR OBTAIN DIRECTIONS IN ADVANCE FROM VENDOR IN ADVANCE.
2. CORE HOLES IN EXISTING WALL SEPARATIONS, FOR CONDUIT PENETRATIONS. SEAL ALL WALL PENETRATIONS, USING APPROVED SEALANT. OBTAIN DIRECTIONS FROM ENGINEER, AS REQUIRED.
3. PROVIDE 30A-2P BREAKER IN EXISTING LOW VOLTAGE POWER DISTRIBUTION PANEL (PNL 1B), TO SUIT EXISTING PANEL-BOARD FOR POWER-FEED TO GENERATOR AUXILIARY LOAD PANEL.
4. REFER TO PLC CONTROL PANEL SHOP DRAWINGS, AVAILABLE ONSITE, FOR TERMINATION OF CONTROL WIRING FROM GENERATOR / AUTOMATIC TRANSFER SWITCH. GENERATOR SIGNALS INCLUDE GENERATOR RUNNING AND GENERATOR ALARM. AUTOMATIC TRANSFER SWITCH SIGNAL INCLUDE 'LOAD POSITION AT GENERATOR'. WIRE TO SPARE DISCRETE INPUTS AT TERMINALS 3/19, 4/13, 5/18. EACH DISCRETE INPUT SIGNAL POWER SHALL BE WIRED FROM FUSES HF10, HF11 & HF12 RESPECTIVELY.

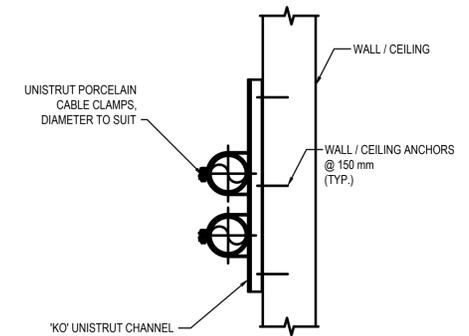
CABLE / CONDUIT BLOCK DIAGRAM



NOTES:

1. FINISHED GRADE AS INDICATED ON CIVIL DRAWINGS. WHEN DISTURBING EXISTING SURFACES, FINISH SURFACE TO MATCH ORIGINAL SURFACE CONDITION, UNLESS NOTED OTHERWISE.
2. PROVIDE IMPORTED GRANULAR SAND BACK-FILL FOR BEDDING AND COVER, AS PER CIVIL SPECIFICATIONS.
3. WIDTH OF TRENCH SHALL BE AS PER PROJECT REQUIREMENTS. DO NOT OVER-EXCAVATE.

TYPICAL TRENCH DETAIL



NOTES:

1. PROVIDE UNISTRUT FRAME SUPPORT FOR INSTALLING EACH WALL-MOUNT CABLE, CONDUIT, DEVICE OR EQUIPMENT.
2. DIRECT ANCHORING TO WALL SHALL NOT BE PERMITTED.
3. WALL-ENVELOPE PENETRATIONS SHALL BE CO-ORDINATED WITH BUILDING CONTRACTOR. PROVIDE DETAILS FOR APPROPRIATE METHOD OF PENETRATION, FOR BUILDING CONSULTANT'S REVIEW PRIOR TO STARTING WORK.

TYPICAL WALL CLAMP DETAIL

PLOT DATE: April 19, 2021

REV NO	REVISIONS	DATE	DRAWN	APPRD
1	ISSUED FOR TENDER	2021/04/19	RV	GS
2				
3				
4				
5				



7400 Prospect Street, Pemberton, BC, V0N 2L0

## WELLHOUSE GENERATOR INSTALLATION ELECTRICAL SPECIFICATIONS AND DETAILS



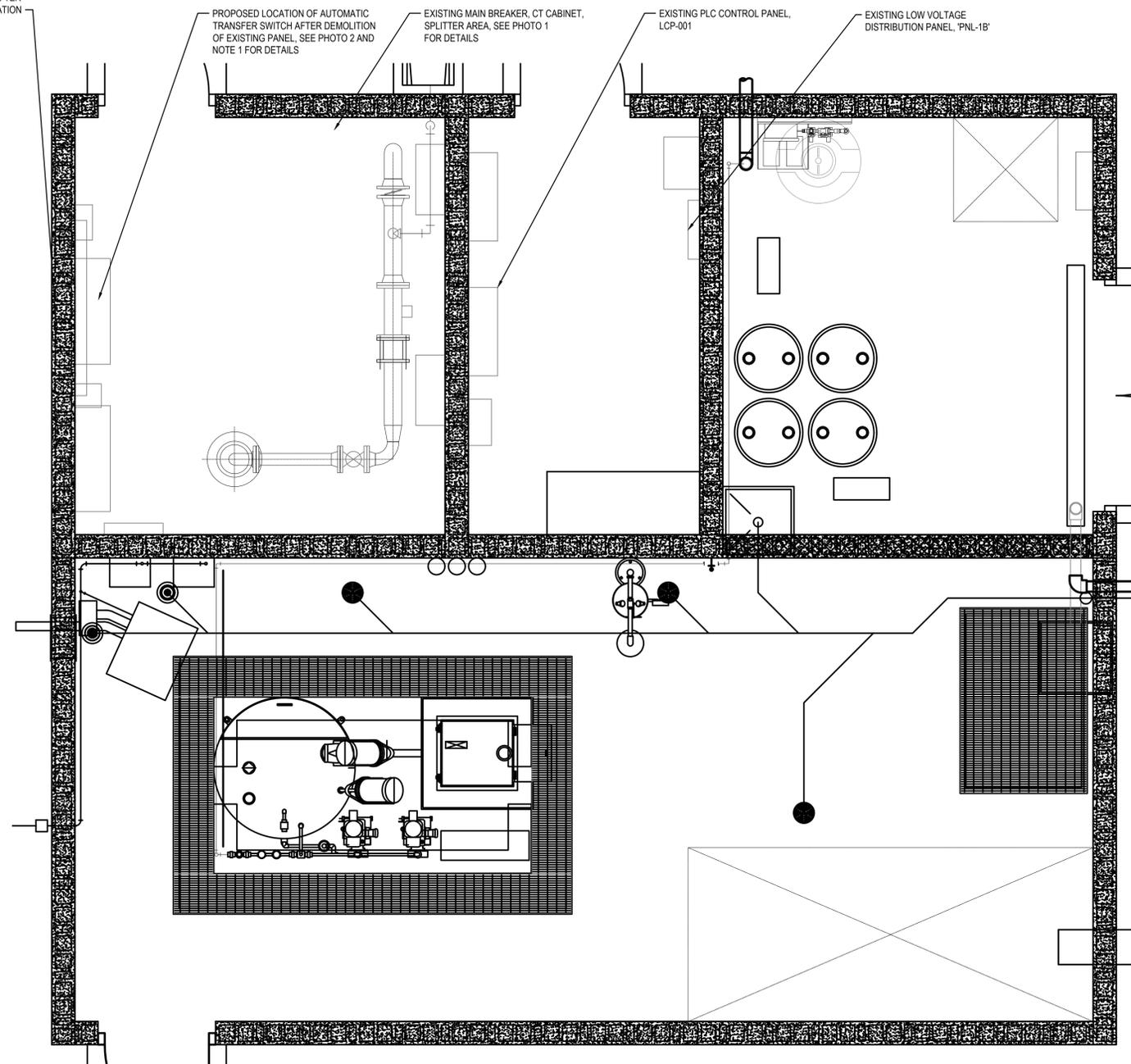
#101, 38026 Second Ave., Squamish, B.C. V8B 0C3  
T: (604)815-4646 F: (604)815-4647

ISSUED FOR TENDER DESIGN NO.

# 32730

SCALE	NTS	DATE	APR-19	DWG. NO.
DRAWN BY	RV	DESIGN BY	AG	04
CHECKED BY	GS	APPROVED BY	GS	05
				REV. 1

PENETRATE WALL AT 24" A.F.F. FOR GENSET CONDUITS ENTRY INTO BUILDING, SEAL ALL PENETRATIONS WITH MOISTURE-PROOF SEALANT AFTER INSTALLATION



ELECTRICAL EQUIPMENT LAYOUT

EXISTING 347/600V, 3PH4W SPLITTER

EXISTING CT CABINET



PHOTO 1

PROVIDE NEW ENCLOSURE FOR HOUSING RELOCATED DC POWER SUPPLY, TERMINAL BLOCKS AND WIRING FROM RESERVOIR CONTROL PANEL

RELOCATE DC POWER SUPPLY AND RESERVOIR CONTROLS WIRING, PRIOR TO DEMOLITION OF EXISTING RESERVOIR CONTROL PANEL; INSTALL NEW AUTOMATIC TRANSFER SWITCH AS THIS LOCATION

REMOVE EXISTING REDUNDANT EQUIPMENT, AFTER SITE INVESTIGATION



PHOTO 2

NOTES

- INVESTIGATE, WITH OPERATOR'S ASSISTANCE, TO DETERMINE ALL REDUNDANT EQUIPMENT INSIDE EXISTING RESERVOIR CONTROL PANEL. TRACE ALL EXISTING WIRING LEADING FROM AND TO THE RESERVOIR CONTROL PANEL TO DETERMINE INACTIVE WIRING. RELOCATE ALL ACTIVE EQUIPMENT AND WIRING INCLUDING BUT NOT LIMITED TO DC POWER SUPPLY, FUSE / TERMINAL BLOCKS TO A NEW ENCLOSURE BESIDES EXISTING RESERVOIR CONTROL PANEL. AFTER SUCCESSFUL RELOCATION, DEMOLISH EXISTING RESERVOIR CONTROL PANEL AND INSTALL NEW AUTOMATIC TRANSFER SWITCH IN THIS LOCATION. OBTAIN RULING FROM ENGINEER AS NEEDED.

File: G:\Projects\32000032700\32730\_PEM\_Wellhouse\_Generator02\_CADD\20\_Drawing\21\0405\_Genset\_32730.dwg

PLOT DATE: April 20, 2021

REV NO	REVISIONS	DATE	DRAWN	APPRD
1	ISSUED FOR TENDER	2021/04/19	RV	GS
2				
3				
4				
5				



7400 Prospect Street, Pemberton, BC, V0N 2L0

WELLHOUSE GENERATOR INSTALLATION  
ELECTRICAL EQUIPMENT LAYOUT



#101, 38026 Second Ave., Squamish, B.C. V8B 0C3  
T: (604)815-4646 F: (604)815-4647

ISSUED FOR TENDER

DESIGN NO.

32730

SCALE	1:25	DATE	APR-19	DWG. NO.
DRAWN BY	RV	DESIGN BY	AG	05
CHECKED BY	GS	APPROVED BY	GS	05
				REV. 1

DESTROY ALL PRINTS BEARING PREVIOUS NO.