



Public Works  
Government Services  
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Travaux publics  
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Canada

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et de génie

Région de l'Ontario

WARKWORTH ONTARIO

CORRECTION SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD # 29, CAMPBELLFORD

CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

R.068488.001



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ORIGINALLY STAMPED  
G01-G09



ORIGINALLY STAMPED  
S01-S03



ORIGINALLY STAMPED  
R01-R03  
M01-M05

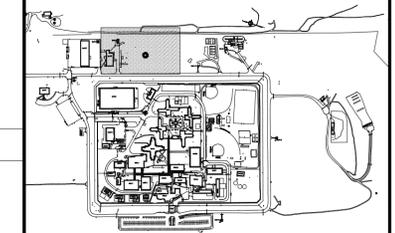


ORIGINALLY STAMPED  
V01



ORIGINALLY STAMPED  
E01-E12

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0	ISSUED FOR BID	2017/10/11
revision	description	date

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A	Detail No. No. du détail
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C	drawing no. – where detailed dessin no. – où détaillé

project title  
titre du projet  
WARKWORTH Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE  
WATER ELEVATED TANK

drawing title  
titre du dessin  
COVER SHEET

drawn by  
dessiné par AQ

designed by  
conc par –

approved by  
approuvé par –

tender  
soumission – project manager  
administrateur de projets

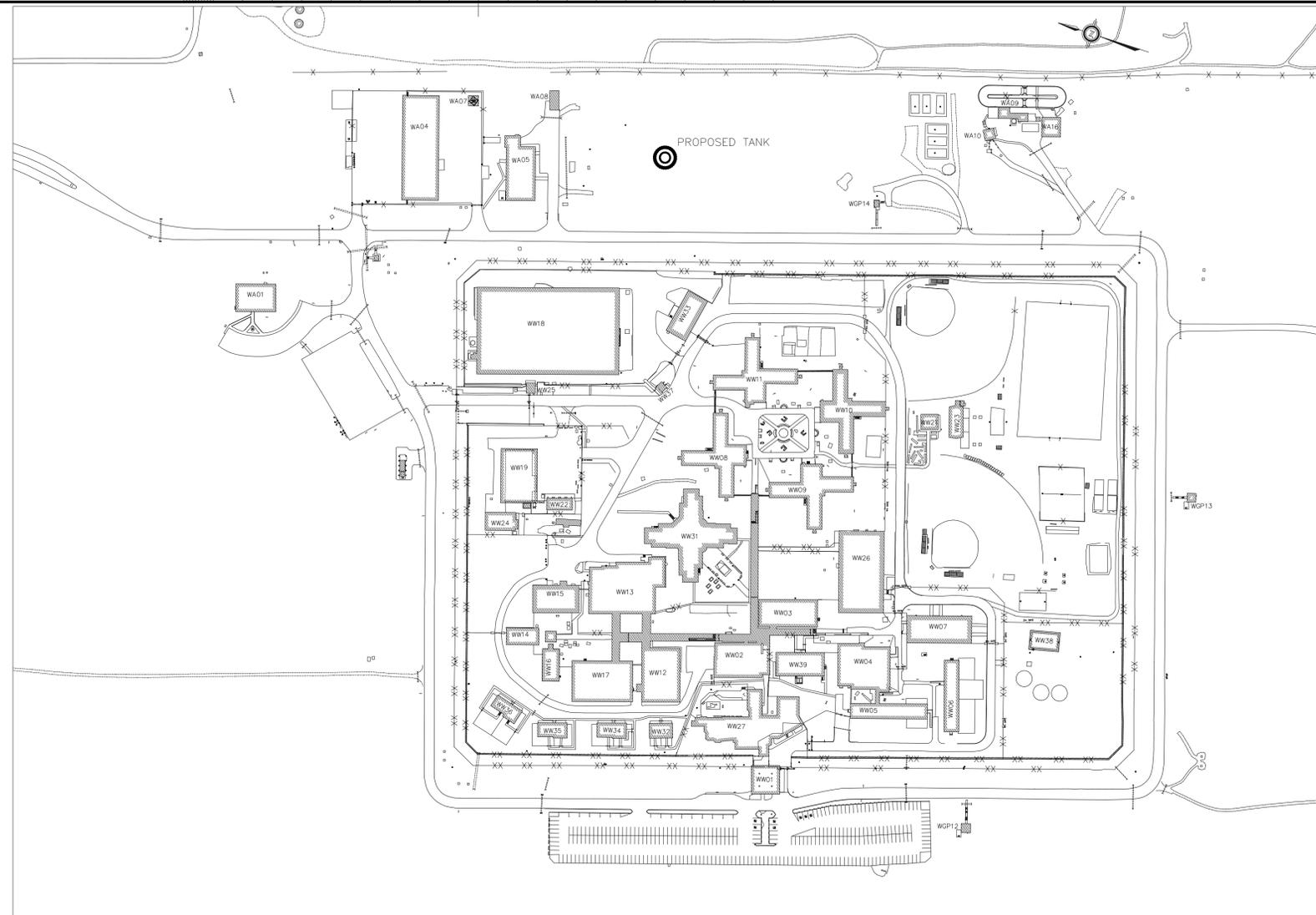
project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. –

**GENERAL NOTES**

1. THE POSITION OF POLE LINES, CONDUITS, SEWERS, WATERMANS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED, BEFORE STARTING WORK THE CONTRACTOR SHALL CONFIRM FOR THEMSELVES THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM.
2. CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY SUPPORT AND/OR RELOCATION OF EXISTING UTILITIES AND SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL CO-ORDINATE AND COMPLY WITH THE REQUIREMENTS OF ALL UTILITIES WHEN CROSSING OR WORKING NEAR THEIR PLANT.
3. CONTRACTOR IS RESPONSIBLE FOR THE SUPPORT OF HYDRO, BELL AND OTHER UTILITY POLES AFFECTED BY CONSTRUCTION ACTIVITIES.
4. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ACCURACY OF ALL TEMPORARY BENCHMARKS ESTABLISHED FOR DESIGN PURPOSES PRIOR TO CONSTRUCTION.
5. EXISTING TREES AND SHRUBS WHICH ARE NOT TO BE REMOVED UNDER THE CONTRACT SHALL BE PROTECTED DURING ALL PHASES OF CONSTRUCTION.
6. WHERE LIMBS OR PORTIONS OF TREES ARE REMOVED TO ACCOMMODATE CONSTRUCTION ACTIVITIES, THEY SHALL BE REMOVED CAREFULLY IN ACCORDANCE WITH ARBORICULTURAL PRACTICES SUBJECT TO DEPARTMENTAL REPRESENTATIVE. ALL DAMAGED LIMBS AND BRANCHES SHALL BE REMOVED LEAVING NO STUBS. TREES AND SHRUBS WHICH DIE OR DECAY WITHIN THE MAINTENANCE PERIOD, OR ARE SEVERELY DAMAGED DURING CONSTRUCTION AS A RESULT OF THE CONTRACTOR'S NEGLIGENCE, SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT NO EXTRA COST TO THE CONTRACT.
7. ALL TOPSOIL SHALL BE STRIPPED AND STOCKPILED SEPARATELY FROM OTHER EXCAVATED MATERIAL BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR USE TOPSOIL FROM ANY SOURCE AS BACKFILL.
8. THE CONTRACTOR IS RESPONSIBLE FOR TRANSPORTING AND DISPOSING OF ALL EXCESS EXCAVATED MATERIAL AND DEBRIS OFF SITE AT AN APPROPRIATE DISPOSAL SITE.
9. THE CONTRACTOR SHALL MATCH PROPOSED GRADES TO EXISTING GRADES AT PROPERTY LINES AND PROVIDE POSITIVE DRAINAGE AWAY FROM EXISTING AND PROPOSED STRUCTURES. CONTRACTOR SHALL PROVIDE SWALES WHERE NECESSARY AND REQUIRED TO ACHIEVE POSITIVE DRAINAGE.
10. ALL ROAD SURFACES DISTURBED BY CONSTRUCTION SHALL BE REINSTATED AS PER THE MINIMUM RESTORATION DETAILS SPECIFIED.
11. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL CONDITIONS OR BETTER. ALL DITCHES DISTURBED BY CONSTRUCTION SHALL BE REGRADED TO PROVIDE POSITIVE DRAINAGE. MINIMUM RESTORATION SHALL INCLUDE TOPSOIL AND SEED.
12. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING GATES AND FENCES.



**EXISTING SITE PLAN**

SCALE 1:500

**WATERMAIN**

1. MINIMUM COVER OF 1.8 m FOR WATERMAIN, AND WATER SERVICES, UNLESS OTHERWISE APPROVED.
2. PVC WATERMANS AND HYDRANT LEADS SHALL BE MINIMUM DR 18 CLASS 235 (AWWA C900-07).
3. ALL HYDRANTS SHALL BE CONSTRUCTED ACCORDING TO OPSD 1105.010. ALL HYDRANTS LEADS, FITTINGS, BENDS, TEES, REDUCERS, AND VALVES SHALL BE CONSTRUCTED AS REQUIRED PER M.O.E.C.C. STANDARDS.
4. MECHANICAL THRUST RESTRAINTS SHALL BE INSTALLED AT ALL FITTINGS, BENDS, TEES, CROSSES, REDUCERS AND VALVES FOR ALL WATERMAIN SIZES. MECHANICAL RESTRAINTS AT JOINTS SHALL BE INSTALLED AT EVERY PIPE JOINT WITHIN 6.1 m OR LESS OF EITHER SIDE OF THE VALVE FOR WATERMANS 100 mm DIAMETER OR LARGER.
5. SACRIFICIAL ANODES SHALL BE INSTALLED ON ALL METALLIC PIPES AND APPURTENANCES, WATER SERVICES AND FITTINGS ACCORDING TO OPSD.
6. ONCE PROPOSED WATERMAIN AND NEW SERVICE CONNECTIONS HAVE BEEN PLACED IN SERVICE, EXISTING WATERMAIN TO BE ABANDONED.
7. WATERMAIN BEDDING SHALL BE GRANULAR "A" ACCORDING TO OPSD 1010, UNLESS SPECIFIED OTHERWISE.
8. PIPES ARE NOT TO BE LAID ON FILL UNTIL THE FIELD DENSITY TEST REPORTS HAVE BEEN SUBMITTED AND APPROVED BY THE ENGINEER.
9. FILL TO BE PLACED TO A MINIMUM OF 600 mm ABOVE THE WATERMAIN GRADES AND TO 3 m MINIMUM ON EACH SIDE PRIOR TO WATERMAIN LAYING COMPACTED TO A MINIMUM OF 100 % OF MAXIMUM DRY DENSITY IN 300 mm LIFTS.
10. SOIL DENSITY TESTS SHALL BE TAKEN ALONG THE CENTRELINE OF THE WATERMAIN AND ON LINES 1.5 m ON EITHER SIDE OF SAME AT A MAXIMUM INTERVAL OF 30 m. TESTS TO BE TAKEN AT EACH 600 mm LIFT.
11. ALL HYDRANTS, TEES, VALVES, BENDS, PLUGS AND EACH PIPE JOINT ARE TO BE MECHANICALLY RESTRAINED.
12. PIPE JOINT DEFLECTIONS ARE NOT ALLOWED.

**EROSION AND SEDIMENT CONTROL**

1. EROSION AND SEDIMENT CONTROL (ESC) MEASURES SHALL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATERWAY. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF INSPECTION OR BOTH.
2. SEDIMENTATION AND EROSION CONTROLS INCLUDING SILT FENCES ARE TO BE IN PLACE PRIOR TO INITIATION OF TOPSOIL STRIPPING OR PRE-GRADING OPERATIONS AND SHALL BE LOCATED TO PREVENT SURFACE RUNOFF FROM LEAVING THE SITE "UNTREATED." CONTRACTOR TO CLEAN ALL CATCH BASINS, MAINTENANCE HOLES, OR ANY OTHER INLETS AND OUTLETS USING A VACUUM TRUCK, AND TO FLUSH EXISTING ON SITE STORM SEWERS AND CULVERTS PRIOR TO, AND AFTER THE SITE CONSTRUCTION ACTIVITIES.
3. ALL SEDIMENTATION AND EROSION CONTROLS ARE TO BE INSPECTED DAILY (AND AFTER ANY STORM EVENT) AND CLEARED OR REPLACED, AS REQUIRED.
4. ALL DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE, AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
5. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LOADED RUNOFF FROM LEAVING THE WORK AREA. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND USED AS NECESSARY.
6. ALL CONSTRUCTION ACTIVITIES INCLUDING MAINTENANCE PROCEDURES WILL BE CONTROLLED TO PREVENT ENTRY OF PETROLEUM PRODUCTS, DEBRIS, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO NEARBY DITCHES, SWALES, STORM DRAINS OR WATERBODIES. VEHICLE REFUELING AND MAINTENANCE MUST BE CONDUCTED IN DESIGNATED AREAS.
7. ALL EROSION CONTROL AND TEMPORARY ROADS, STRUCTURES AND FACILITIES TO BE REMOVED FOLLOWING CONSTRUCTION AND AREAS RESTORED TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.

**SANITARY SEWERS**

8. REMOVE SILT FROM DEWATERING AND OTHER PUMPING OPERATIONS PRIOR TO DISCHARGE.
9. PROVIDE DUST CONTROL AT ALL TIMES INCLUDING THE MAINTENANCE AND CLEANUP (WHEN NECESSARY) OF ROADS ADJACENT TO THE PROJECT.
10. CLEAN OFF TRUCKS AND EQUIPMENT PRIOR TO LEAVING THE SITE TO PREVENT MUD AND DIRT TRACKING ONTO ROADS.
11. PROVIDE SPILL CONTAINMENT CONTROL.
1. MAIN LINE PVC PIPE SHALL BE DR 35.
2. MAINTENANCE HOLES SHALL BE ACCORDING TO OPSD 701.010 (1200 mm), OPSD 701.011 (1500 mm). FRAME AND COVER SHALL BE ACCORDING TO OPSD 401.010 TYPE A CLOSED FOR SANITARY.
3. MAINTENANCE HOLE CHAMBER OPENINGS MUST BE LOCATED ON THE UPSTREAM SIDE OF THE MAINTENANCE HOLE.
4. BENCHING DETAILS SHALL BE ACCORDING TO OPSD 701.021 OR AS SHOWN ON THE DRAWINGS.
5. DROP STRUCTURES SHALL BE ACCORDING TO OPSD 1003.01.
6. SANITARY MAINTENANCE HOLES SHALL HAVE WATERTIGHT FRAMES AND COVERS IN PONDING AREAS ACCORDING TO OPSD 401.030.
7. COORDINATES SHOWN FOR MAINTENANCE HOLES ARE TO CENTRE OF BASE SLAB.
8. FOR ALL OTHER SANITARY AND STORM SEWERS, CLASS B BEDDING SHALL BE USED UNLESS OTHERWISE APPROVED. DEPENDENT ON SOIL TYPE REFER TO OPSD 802.010 TO 802.054.
9. FOR PIPE SUPPORT REQUIRED AT ALL CROSSINGS OVER OR UNDER EXISTING WATERMANS AND SEWERS.

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revision	description	date
0	ISSUED FOR BID	2017/10/19

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A	Detail No.
B	drawing no. - where detail required
C	drawing no. - where detailed

project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**EX. SITE PLAN & GENERAL NOTES**

drawn by  
dessiné par DC

designed by  
conçue par PS

approved by  
approuvé par ET

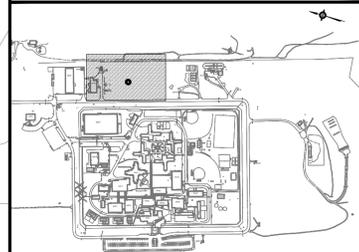
tender  
soumission

project manager  
administrateur de projets

project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. G01



revision	description	date
0	ISSUED FOR BID	2017/10/11

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	Detail No.	drawing no. - where detail required	drawing no. - where detailed
	No. du détail	dessin no. - où détail exigé	dessin no. - où détaillé

project title  
 titre du projet  
**WARKWORTH** Ontario  
 CORRECTIONAL SERVICES CANADA  
 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**PROPOSED ELEVATED TANK  
 ACCESS ROAD  
 PLAN & PROFILE**

0+000 TO 0+065  
 drawn by  
 dessiné par DC

designed by  
 conc par PS

approved by  
 approuvé par ET

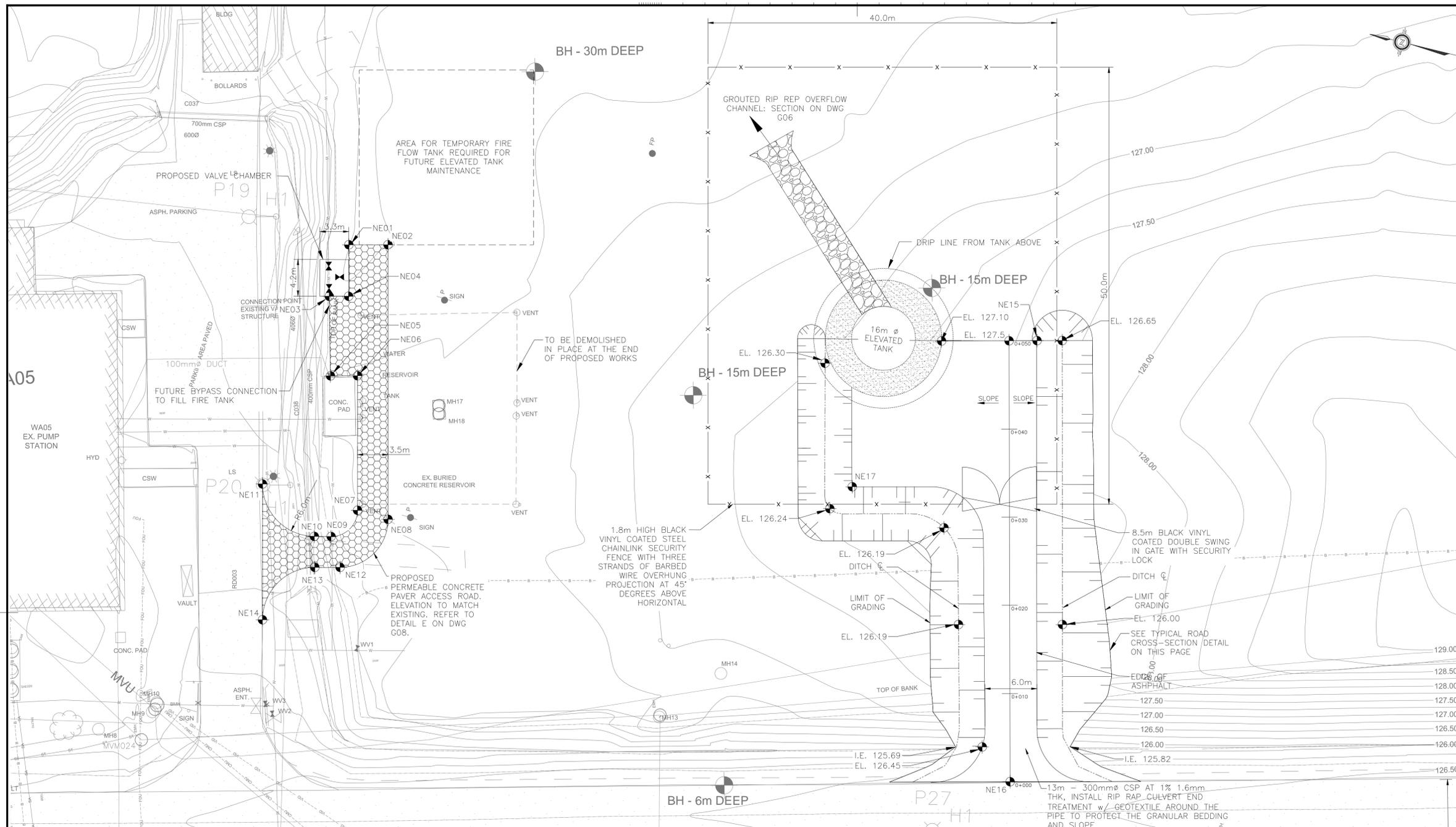
tender  
 soumission

project manager  
 administrateur de projets

project date  
 date du projet 2017/05/16

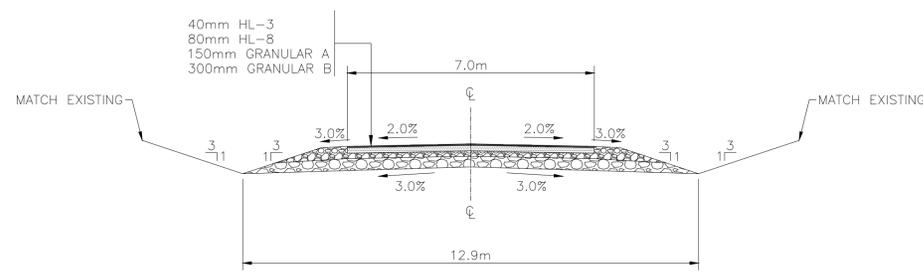
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 no. du projet R.068488.001

drawing no.  
 dessiné no. G02

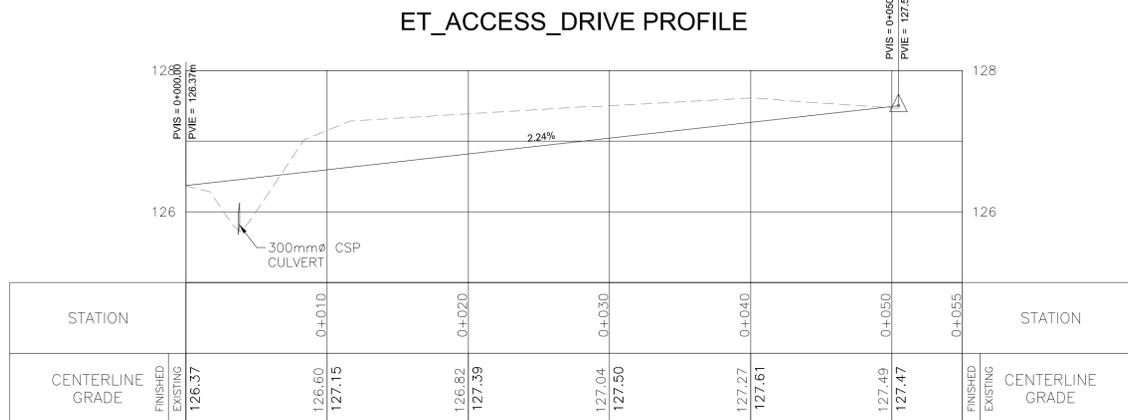


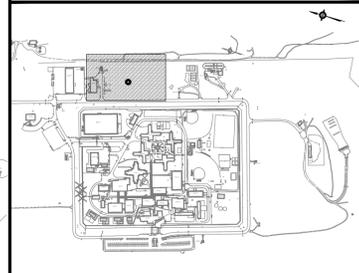
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NE02	4899495.803	275919.596
NE03	4899496.253	275913.296
NE04	4899494.028	275913.991
NE05	4899493.458	275904.624
NE06	4899490.503	275905.537
NE07	4899486.038	275890.801
NE08	4899482.391	275890.836
NE09	4899488.062	275887.053
NE10	4899489.909	275883.509
NE11	4899497.346	275890.525
NE12	4899486.06	275883.978
NE13	4899488.836	275883.137
NE14	4899492.838	275875.655

INT. NO	NORTHING	EASTING	ELEVATIONS
NE15	4899417.144	275931.960	127.44
NE16	4899405.405	275882.782	126.37
NE17	4899432.553	275909.831	126.91



TYPICAL ROAD CROSS-SECTION DETAIL  
 SCALE: NTS





revision	description	date
0	ISSUED FOR BID	2017/10/11

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**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**PROP. 150mmØ SANITARY  
SEWER PLAN & PROFILE**  
1+000 TO 1+065

drawn by  
dessiné par DC

designed by  
conc par PS

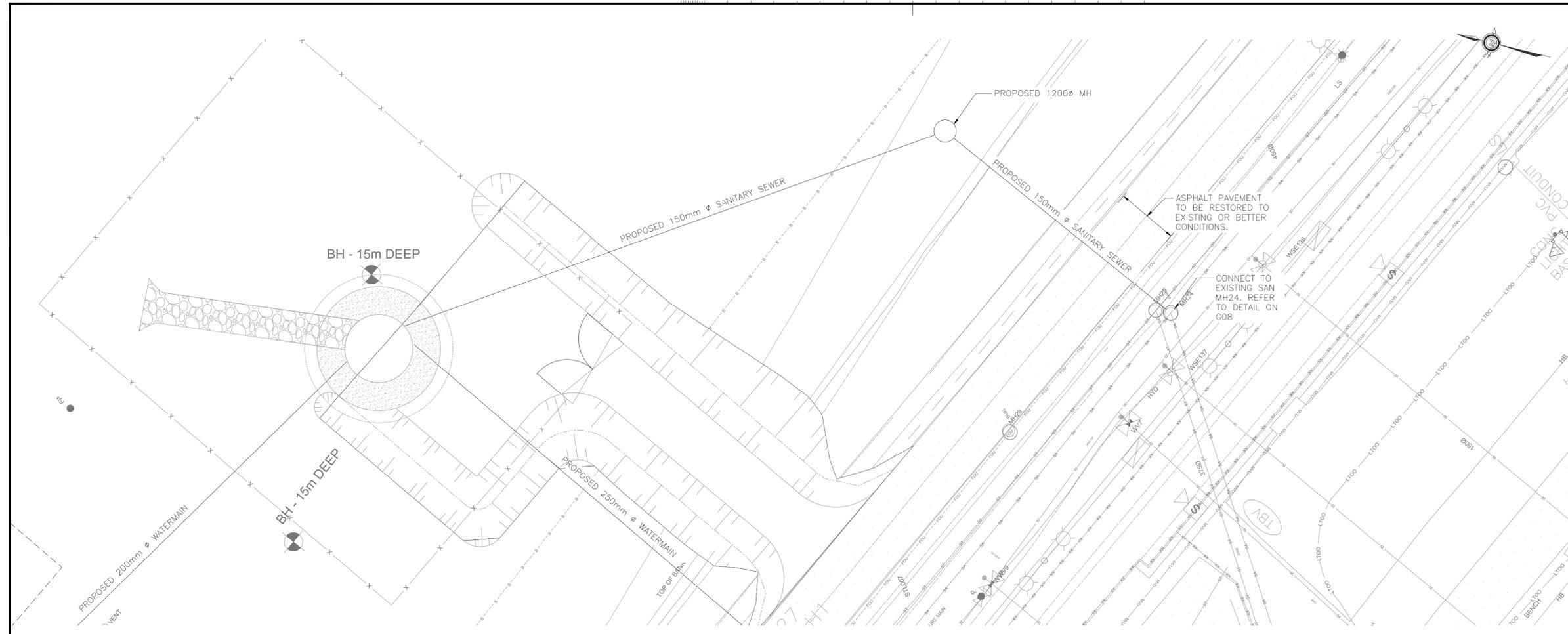
approved by  
approuvé par ET

lender  
soumission project manager  
administrateur de projets

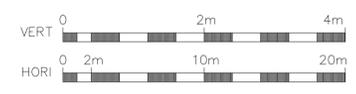
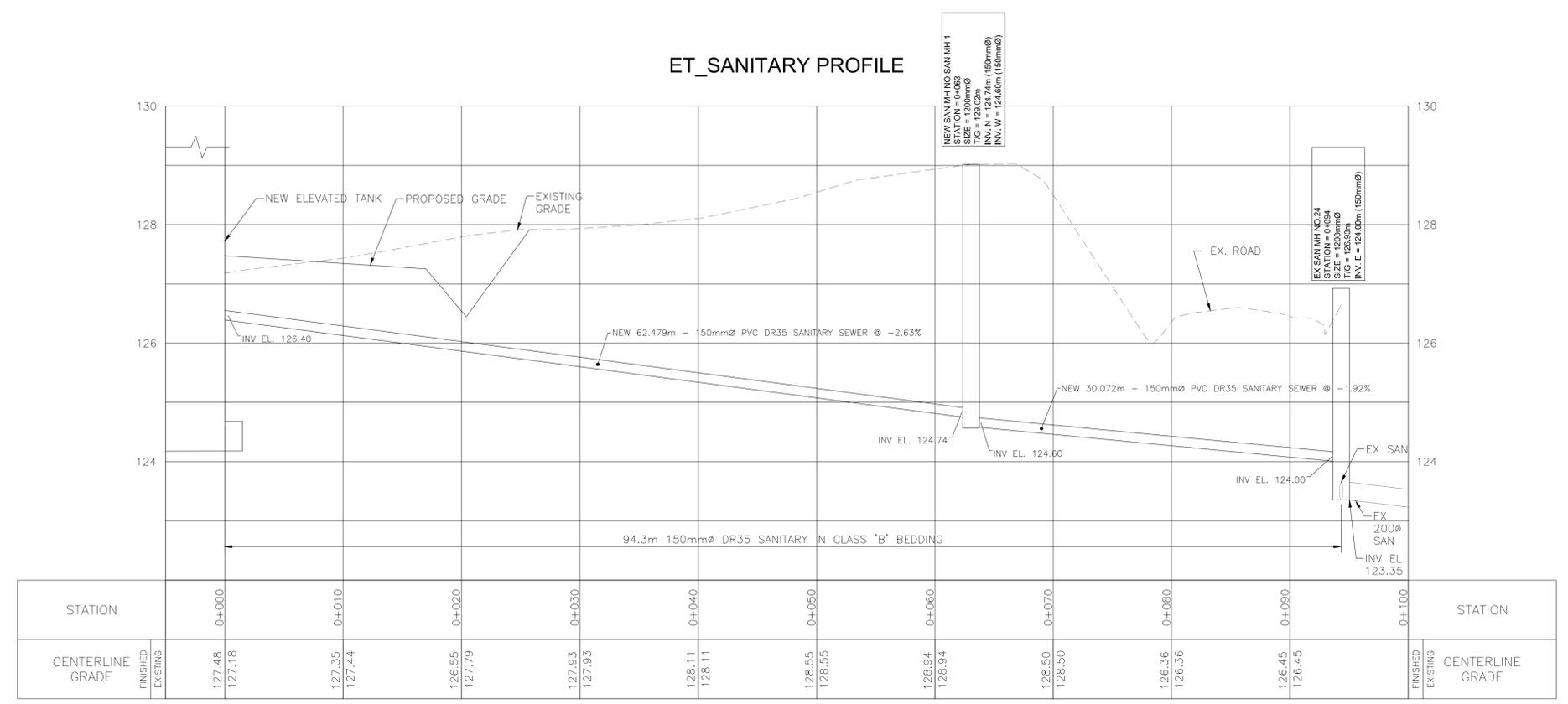
project date  
date du projet 2017/05/16

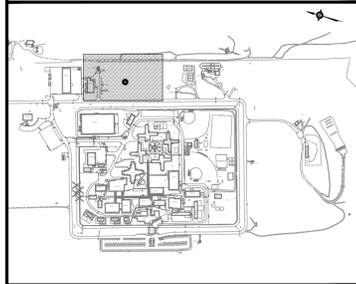
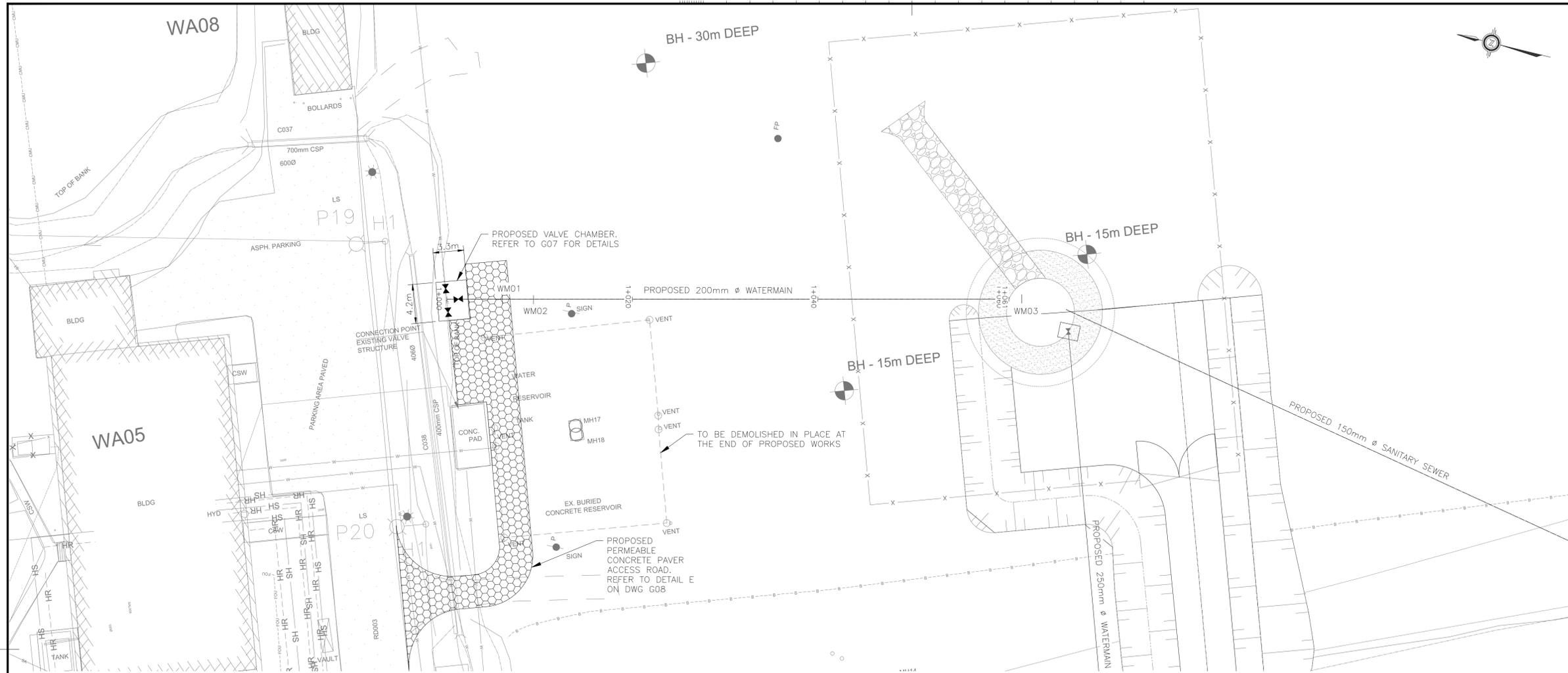
project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. G03



ET\_SANITARY PROFILE





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C	drawing no. - where detailed dessin no. - où détaillé

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**WARKWORTH** Ontario  
 CORRECTIONAL SERVICES CANADA  
 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER ELEVATED TANK

drawing title / titre du dessin  
**PROPOSED WATERMAIN PLAN & PROFILE 1**  
 1+000 TO 1+075

drawn by / dessiné par: DC

designed by / conc par: PS

approved by / approuvé par: ET

tender / soumission: project manager / administrateur de projets

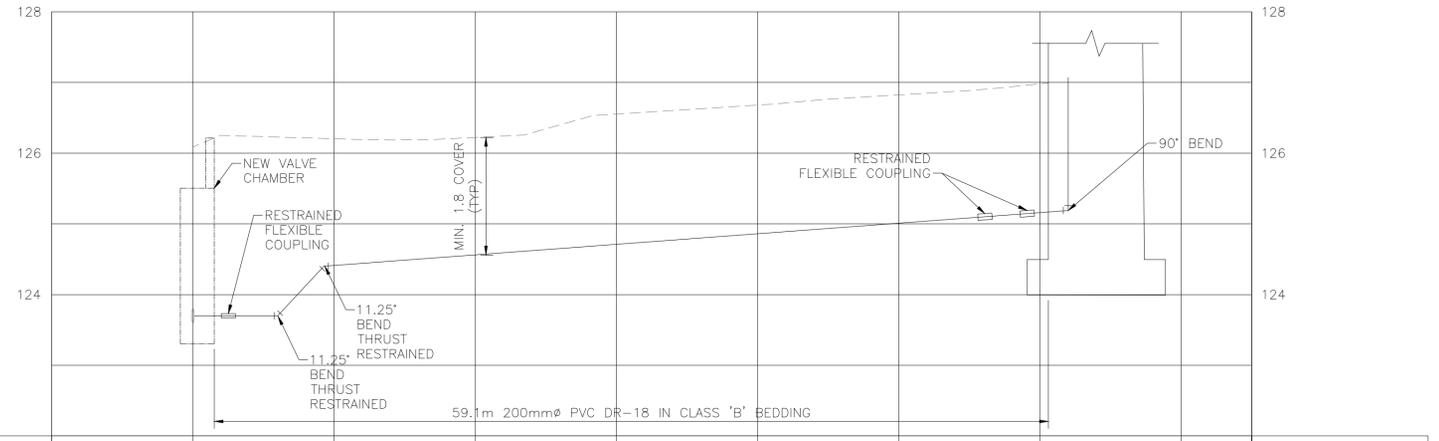
project date / date du projet: 2017/05/16

project no. / no. du projet: R.068488.001

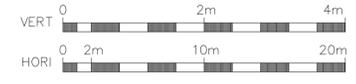
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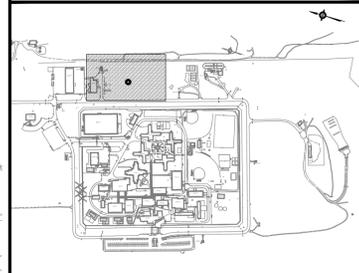
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WM02	-	11.25	4899487.787	275917.406
WM03	-	90	4899436.281	275928.173

200mm WM TO TANK PROFILE



STATION	1+000	1+010	1+020	1+030	1+040	1+050	1+060	1+070	1+075	STATION	
CENTERLINE GRADE	FINISHED 126.09	126.09	126.20	126.20	126.22	126.22	126.55	126.55	126.82	126.82	FINISHED CENTERLINE GRADE
TOP OF WATERMAIN	123.81	123.81	124.52	124.52	124.67	124.67	124.82	124.82	124.97	124.97	TOP OF WATERMAIN





revision	description	date
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	A	B	C
Detail No.			
No. du détail			
drawing no. - where detail required			
dessin no. - où détail exigé			
drawing no. - where detailed			
dessin no. - où détaillé			

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 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**PROPOSED WATERMAIN  
 PLAN & PROFILE 2**

2+000 TO 2+138

drawn by  
 dessiné par SP

designed by  
 conc par PS

approved by  
 approuvé par ET

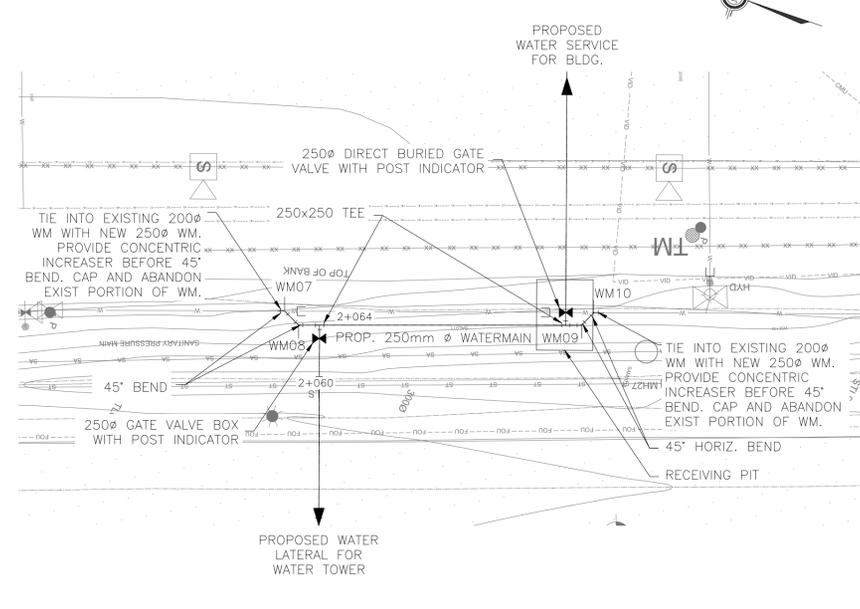
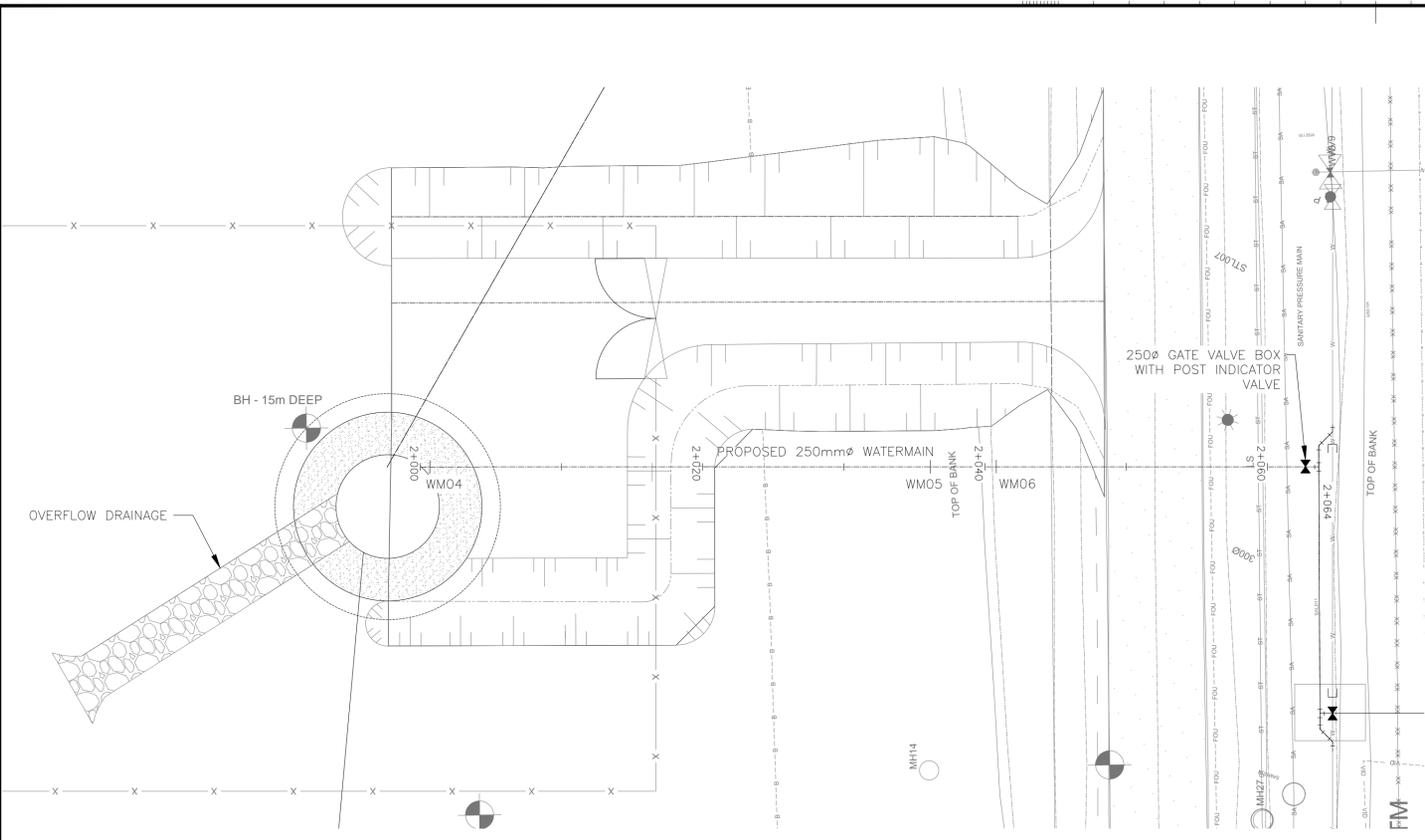
tender  
 soumission

project manager  
 administrateur de projets

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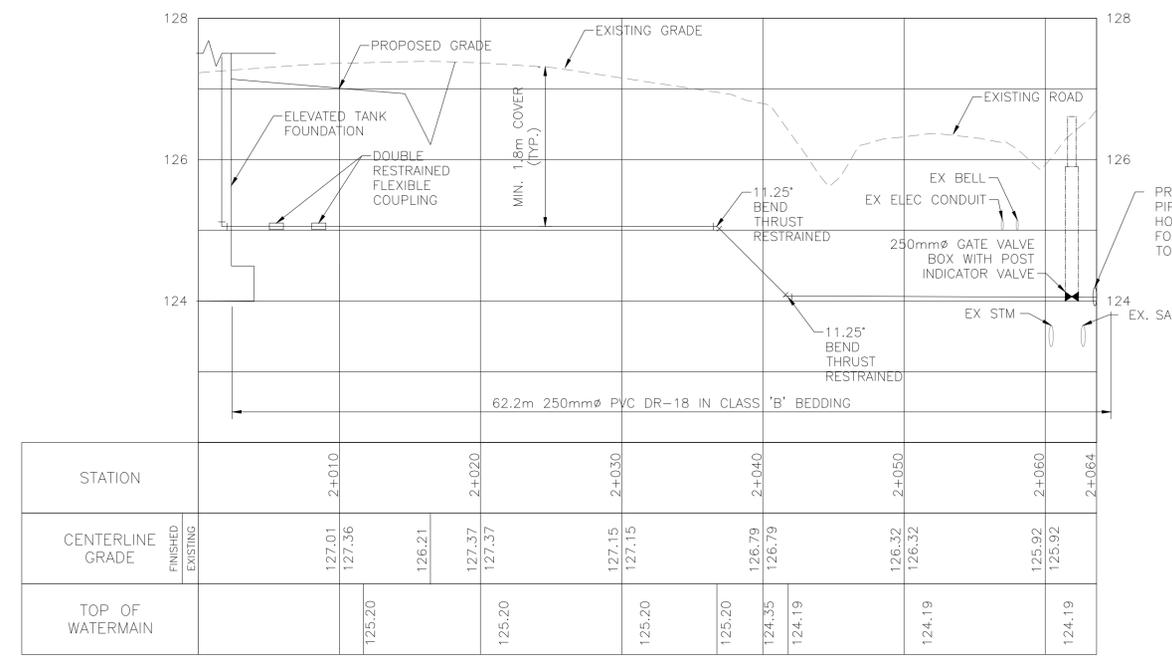
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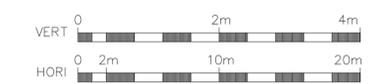
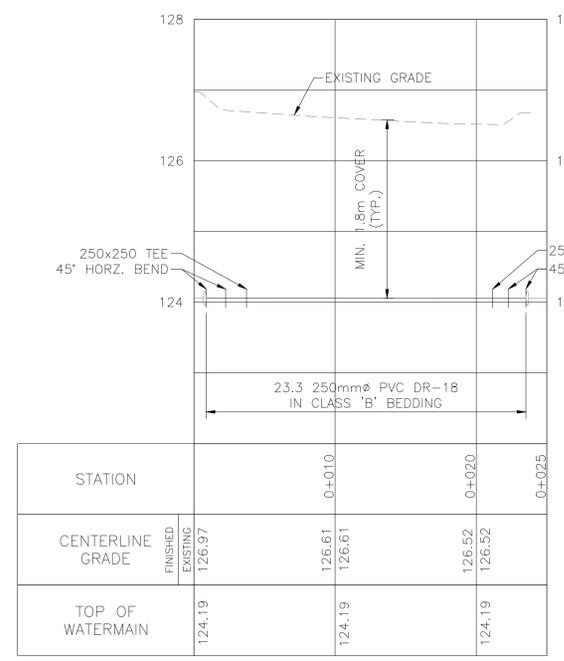
BEND NO.	HOR. BEND (°)	VERT. BEND (°)	NORTHING	EASTING
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WM05	-	11.25	4899420.185	275891.164
WM06	-	11.25	4899418.840	275886.714

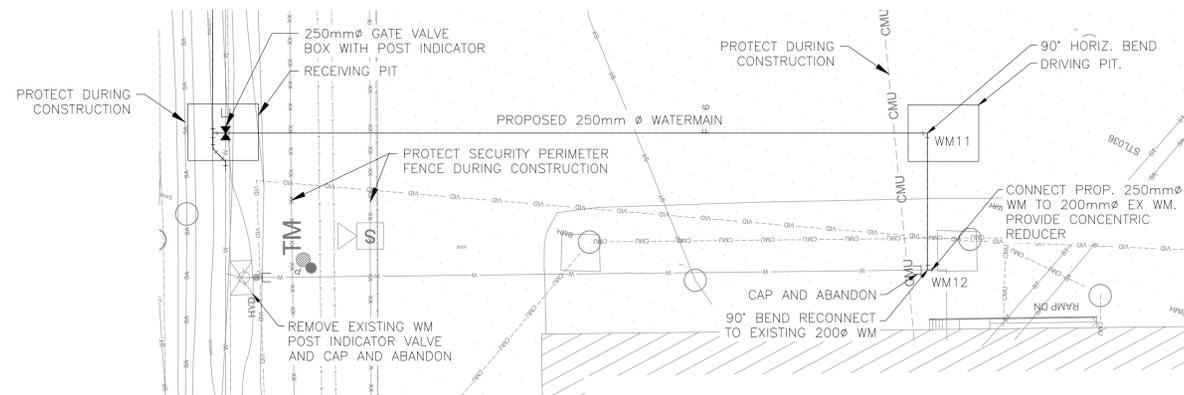
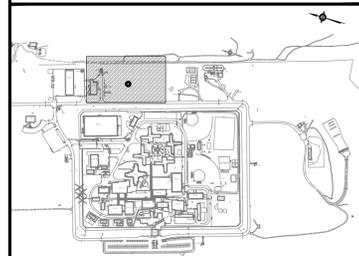
BEND NO.	HOR. BEND (°)	VERT. BEND (°)	NORTHING	EASTING
WM07	45	-	4899409.543	275864.603
WM08	45	-	4899412.192	275864.820
WM09	45	-	4899429.928	275859.357
WM10	45	-	4899430.519	275858.252

250mm WM FROM TANK PROFILE



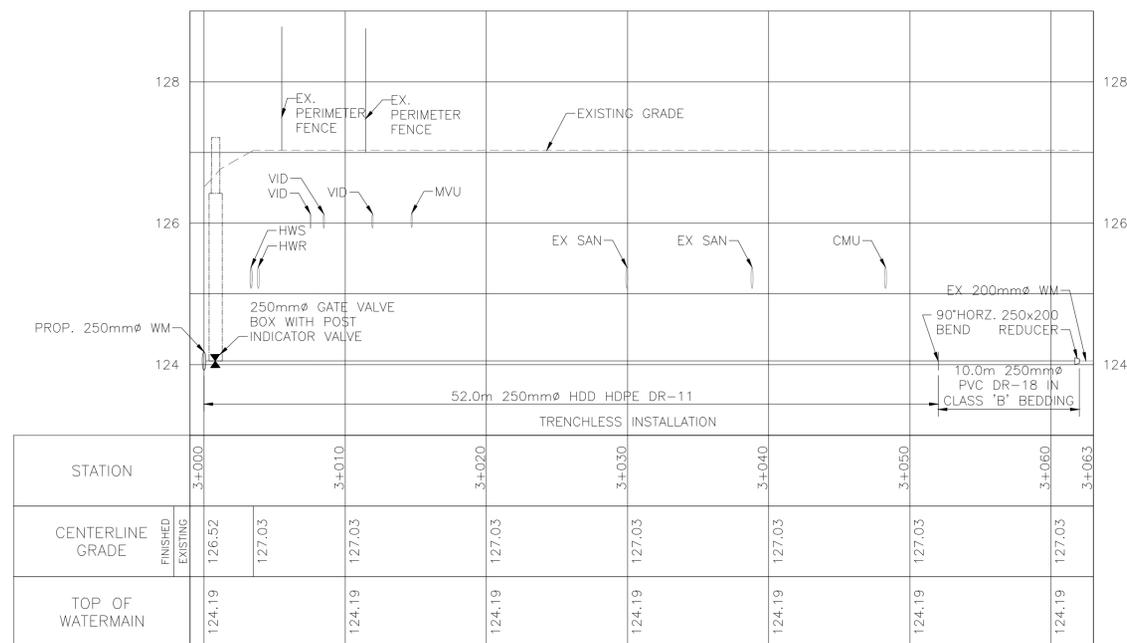
250mm CONN. TO EXISTING WM PROFILE





BEND NO.	HOR. BEND (°)	VERT. BEND (°)	NORTHING	EASTING
WM11	90	-	4899414.187	275811.248
WM12	90	-	4899423.431	275808.439

250mm FROM NEW MAIN TO BLDG PROFILE



revision	description	date
0	ISSUED FOR BID	2017/10/11

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	A	B	C
Detail No.	No. du détail	drawing no. - where detail required	dessin no. - où détail exigé
		drawing no. - where detailed	dessin no. - où détaillé

project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**PROPOSED WATERMAIN  
PLAN & PROFILE 3**  
3+000 TO 3+063

drawn by  
dessiné par SP

designed by  
conçu par PS

approved by  
approuvé par ET

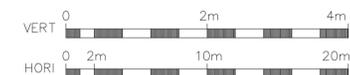
lender  
soumission

project manager  
administrateur de projets

project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

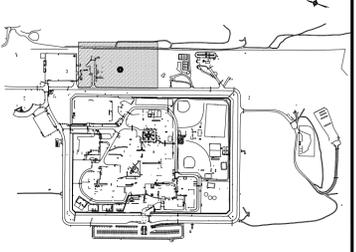
drawing no.  
dessiné no. G06





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	dessin no. - où détail exigé
	drawing no. - where detailed
	dessin no. - où détaillé

project title  
 titre du projet  
**WARKWORTH** Ontario  
 CORRECTIONAL SERVICE CANADA  
 WARKWORTH INSTITUTION  
 COUNTY ROAD # 29 CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**CHAMBER PLANS AND SECTION**

drawn by  
 dessiné par  
 PL

designed by  
 conçu par  
 PS

approved by  
 approuvé par  
 ET

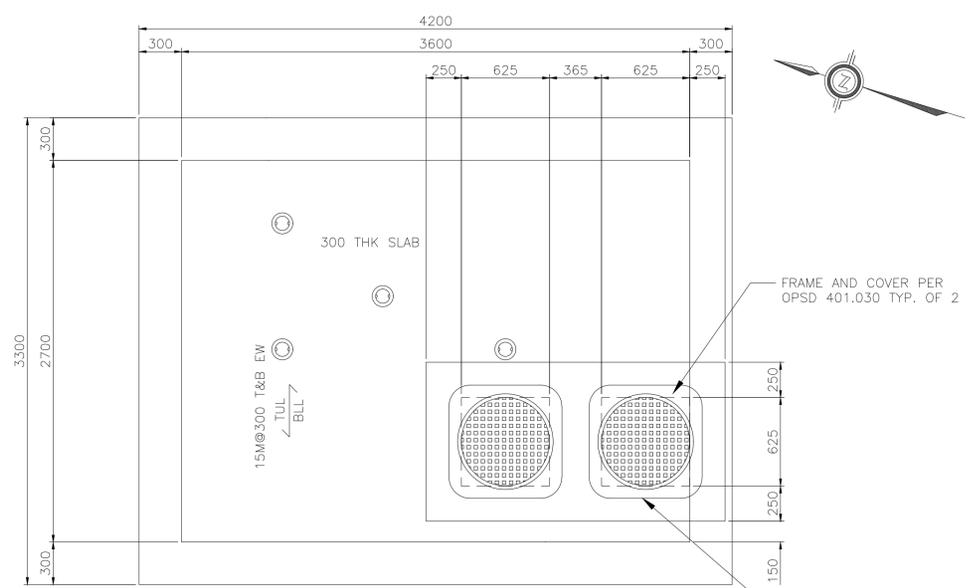
tender  
 soumission  
 ---

project manager  
 administrateur  
 de projets

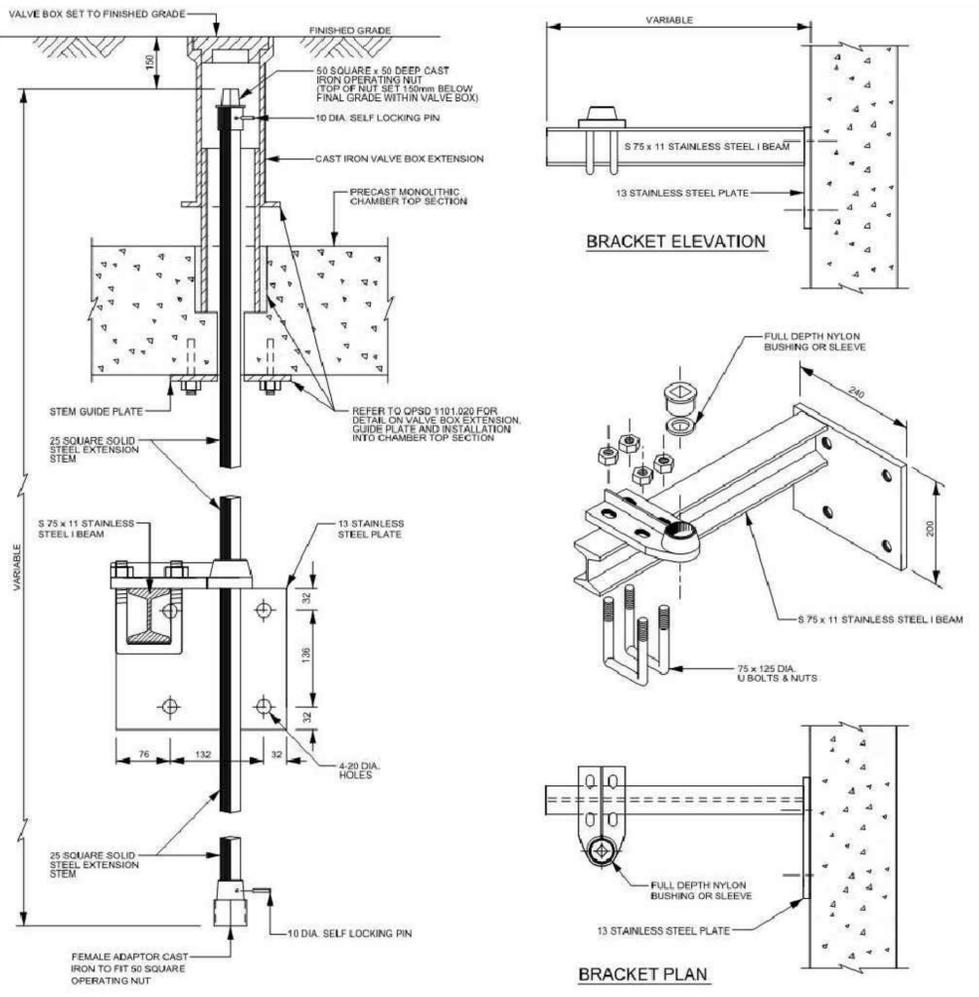
project date  
 date du projet  
 2017/05/16

project no.  
 no. du projet  
 R.068488.001

drawing no.  
 dessiné no.  
 G07

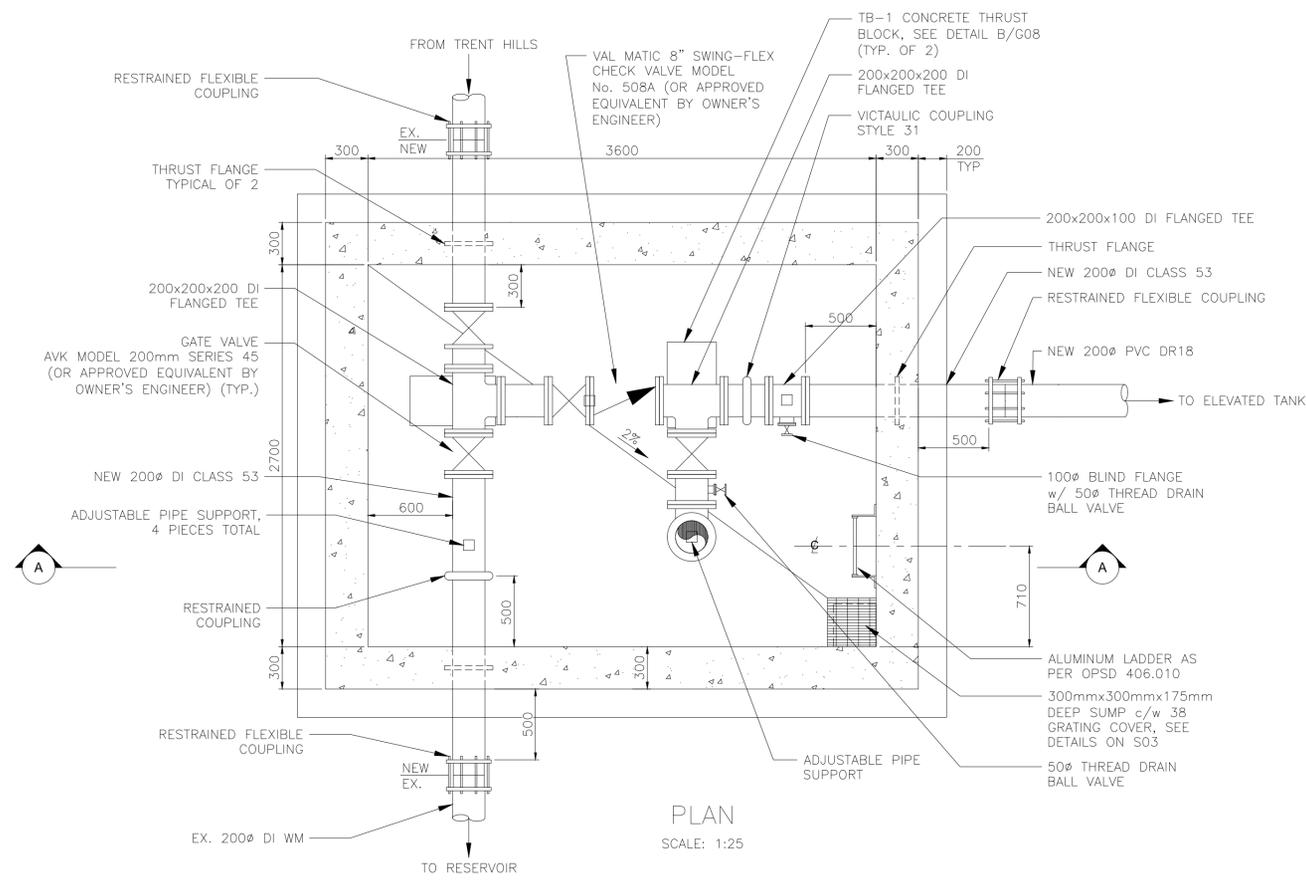


ROOF PLAN  
 SCALE: 1:25

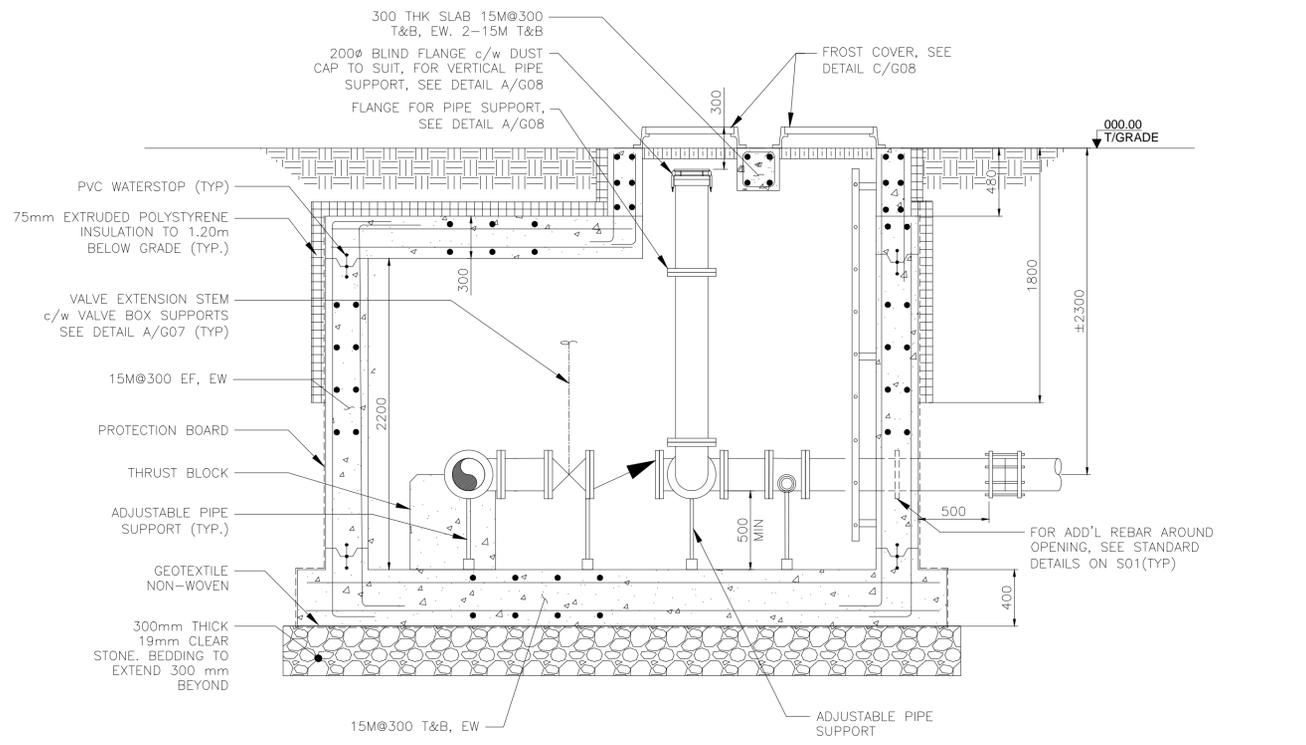


- NOTE**
- STEM EXTENSION BRACKET AND ALL COMPONENTS AND FASTENERS TO BE STAINLESS STEEL.
  - ON EXISTING CHAMBERS FASTEN BRACKET TO WALL USING 15 DIA. x 75 LONG SCREWS WITH 75 LONG EXPANSION SHIELDS.
  - ON PROPOSED CHAMBERS FASTEN BRACKET TO WALL USING 15 DIA. x 200 LONG BOLTS WITH WASHERS AND NUTS.
  - STEM EXTENSION BRACKET ONLY TO USED WHEN DEPTH EQUALS OR EXCEEDS 1.5m FROM SURFACE.
  - ADJUSTMENT TO BE MADE IN ORDER TO BRING OPERATING NUT TO 150mm FROM FINAL GRADE WITHIN VALVE BOX.

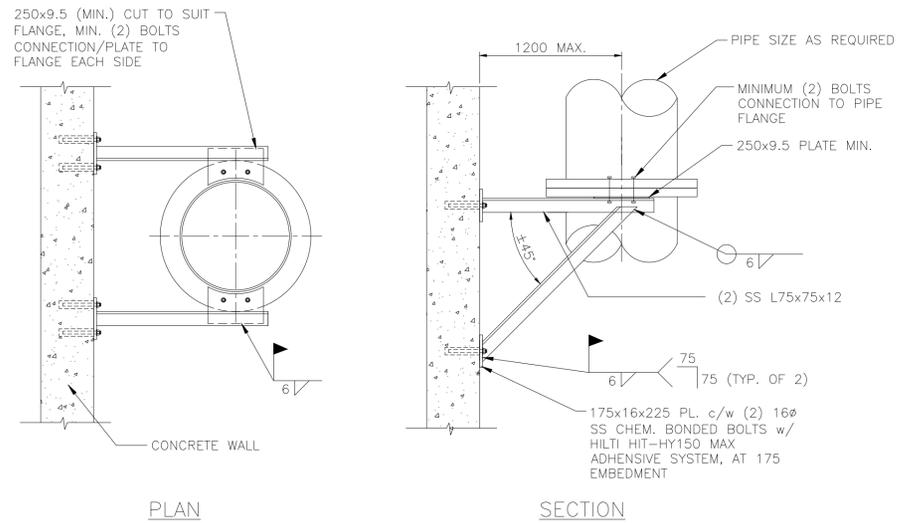
**A** VALVE STEM EXTENSION AND BRACKET DETAIL  
**G07** SCALE: NTS



PLAN  
 SCALE: 1:25



SECTION A-A  
 SCALE: 1:25

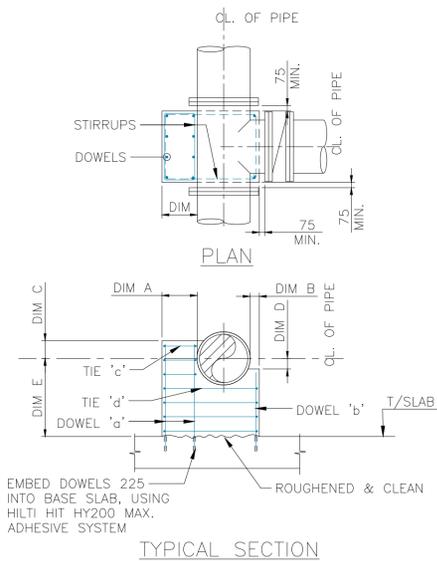


PLAN

SECTION

- NOTES:
1. SUPPORT ASSEMBLY ON EACH SIDE OF PIPE
  2. PIPE SUPPORT LIMITS:  
MAXIMUM PIPE DIAMETER: 750mm  
MAXIMUM PIPE PRESSURE: 1MPa SURGE PRESSURE
  3. PIPE SUPPORT NOT TO BE USED FOR CONCRETE PIPE;
  4. ALL PIPE SUPPORT MATERIALS TO BE STAINLESS STEEL.

**A** SUSPENDED THRUST/SUPPORT ASSEMBLY FOR VERTICAL PIPE  
G07 SCALE: NTS

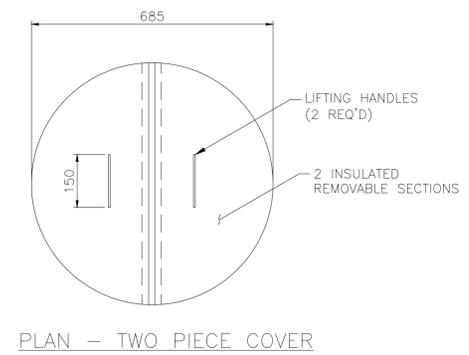


TYPICAL SECTION

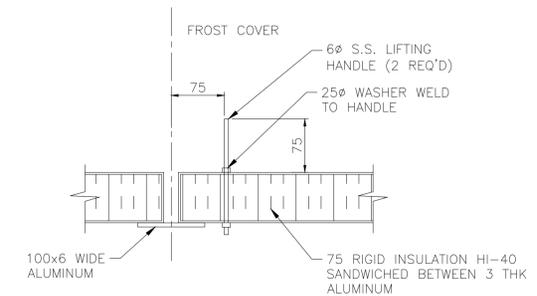
THRUST BLOCK SCHEDULE										
PRESSURE (P.S.I.)	PIPE Ø (I.D. mm)	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	REBAR DOWEL 'a'	REBAR DOWEL 'b'	REBAR TIE 'c'	REBAR TIE 'd'
150	200	300	75	120	50	680	2-15M	2-15M	10M @250	10M @250

CONTRACTOR NOTE:  
DIMENSION 'E' (SLAB TO CL. OF PIPE) FOR DESIGN/PRICING PURPOSES.  
CONTRACTOR TO COORDINATE ELEVATIONS WITH PIPE SUPPLIER AND INFORM ENGINEER OF ANY DIFFERENCES GREATER THAN 100 IN THRUST BLOCK HEIGHT.

**B** TYPICAL CONCRETE THRUST BLOCK DETAILS  
G07 SCALE: NTS

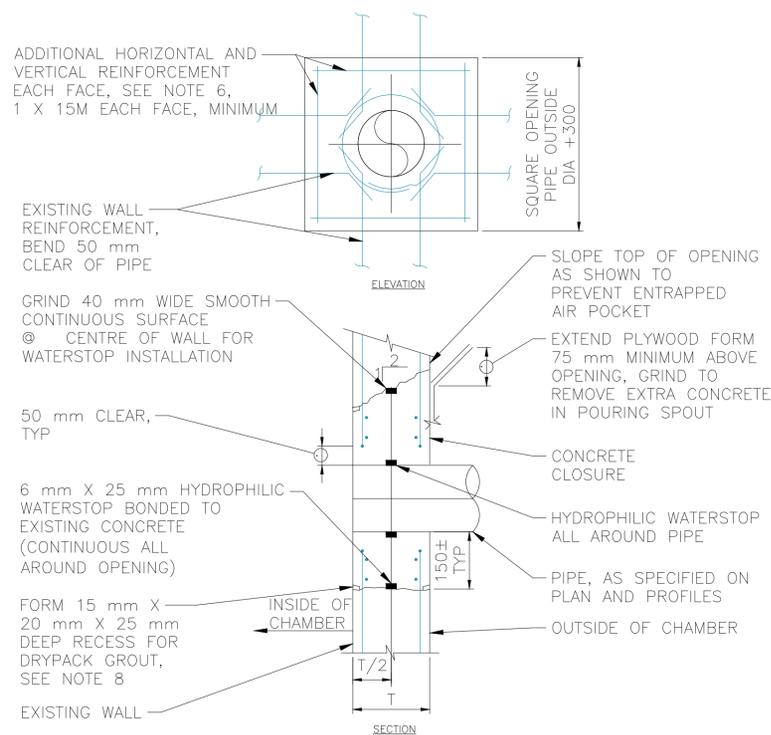


PLAN - TWO PIECE COVER



PARTIAL COVER DETAIL

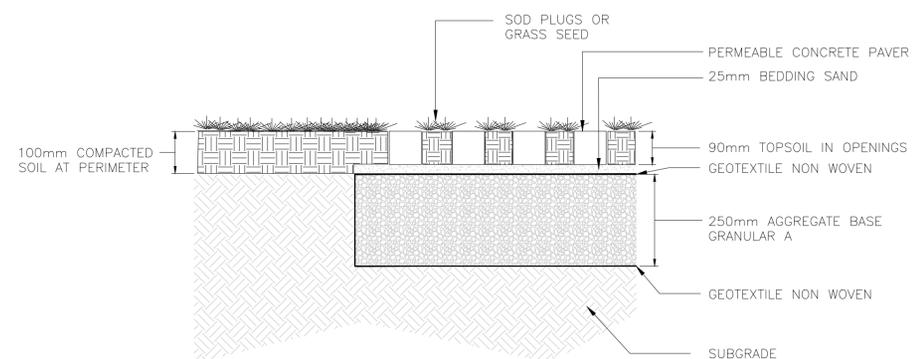
**C** FROST COVER DETAILS  
G07 SCALE: NTS



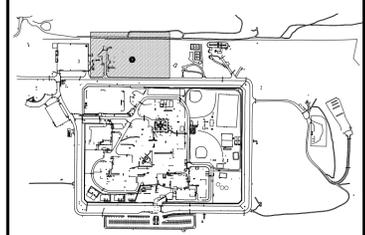
**D** EXISTING CONCRETE WALL PENETRATION  
G07 SCALE: NTS

NOTES:

1. SAW-CUT 25 mm DEEP PIPE OUTSIDE DIAMETER + 300 mm SQUARE SCORE LINE ON EACH FACE OF WALL. VERIFY DEPTH OF CUT TO CLEAR REINFORCING. INCREASE HEIGHT AS NOTED AT TOP ON OUTSIDE FACE FOR POURING.
2. CHIP TO REMOVE THE CONCRETE WITHIN THE SCORE LINE, WHILE PRESERVING THE EXISTING WALL REINFORCING.
3. CUT EXISTING REINFORCING AT CENTER OF OPENING AND BEND TO CLEAR PIPE.
4. GRIND 40 mm WIDE X CONTINUOUS SMOOTH SURFACE ALL AROUND THE OPENING AT CENTER OF WALL. CLEAN SURFACES AND BOND CONTINUOUS HYDROPHILIC WATERSTOP IN PLACE.
5. INSTALL WALL PIPE. (COAT CONCRETE ENCASED PORTION OF PIPE WITH SPECIFIED COATING SYSTEM.)
6. INSTALL ADDITIONAL REINFORCING EACH FACE, EACH SIDE, ABOVE AND BELOW PIPE. HORIZONTAL REINFORCING TO HAVE COMBINED AREA EQUAL TO AREA OF HORIZONTAL REINFORCING CUT. VERTICAL REINFORCING TO HAVE COMBINED AREA EQUAL TO AREA OF VERTICAL REINFORCING CUT.
7. SOAK CONCRETE SURFACES AND WITHIN 15-MINUTES CAST CONCRETE CLOSURE. (CONCRETE CLOSURE MUST BE CAST BEFORE HYDROPHILIC WATERSTOP EXPANDS.) FORM GROOVE ON ALL SIDES OF OPENING EXCEPT AT TOP ON THE POUR SIDE.
8. CLEAN SURFACES OF FORMED GROOVE WITH POWER WIRE BRUSH OR SANDBLASTING AND DRY-PACK WITH NON-SHRINK GROUT AFTER NEW CONCRETE IS MINIMUM OF 28-DAYS OLD.



**E** TURFSTONE PAVERS DETAIL  
G02 SCALE: NTS



revision	description	date
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project title  
titre du projet  
**WARKWORTH** Ontario  
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WARKWORTH INSTITUTION  
COUNTY ROAD # 29 CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

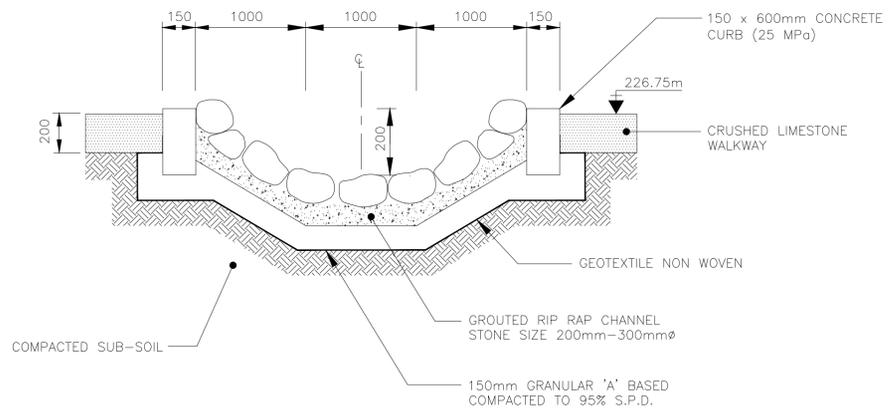
drawing title  
titre du dessin  
**CHAMBER DETAILS**

drawn by dessiné par	EZ
designed by conçue par	PS
approved by approuvé par	ET
tender soumission	---
project manager administrateur de projets	---

project date  
date du projet  
2017/05/16

project no.  
no. du projet  
R.068488.001

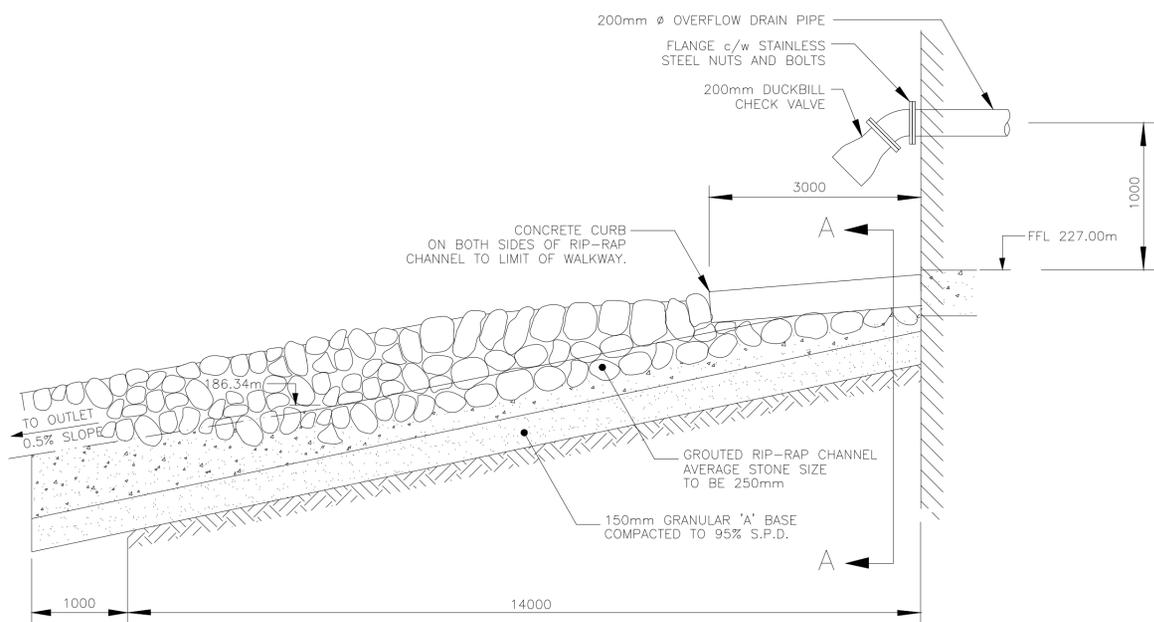
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G08



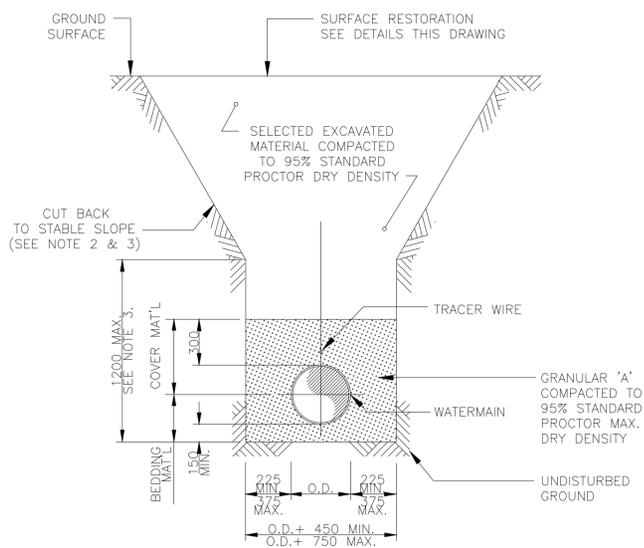
**GRouted RIP RAP OVERFLOW CHANNEL: SECTION A-A**  
SCALE: N.T.S.

SEED MIXTURE TYPE B	
STEEP SLOPES	
SPECIES	PROPORTION
CREeping RED FESCUE	20%
CANADA BLUEGRASS	12%
PERENNIAL RYEGRASS	20%
WHITE CLOVER	8%
BIRDSFOOT TREFOIL	20%
CROWN VETCH	20%
APPLICATION RATE	25 kg/ha

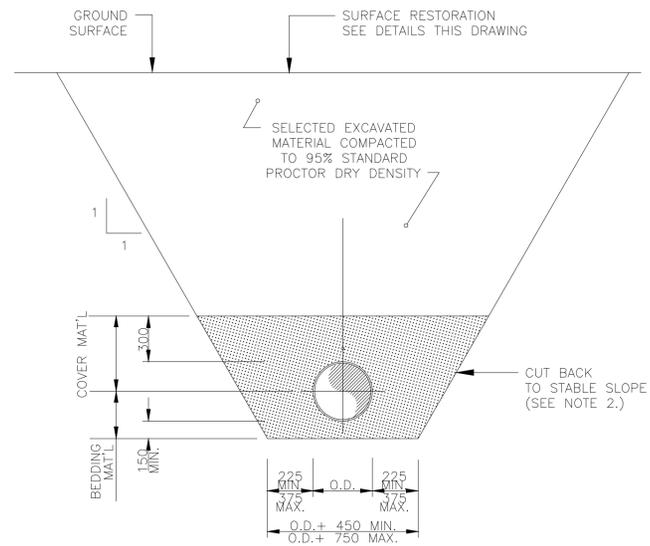
**SEEDING RESTORATION REQUIREMENTS**  
SCALE: N.T.S.



**GRouted RIP RAP OVERFLOW CHANNEL: SECTION**  
SCALE: N.T.S.



**TRENCH THROUGH OPEN AREAS TYPE 1 & 2 SOILS**

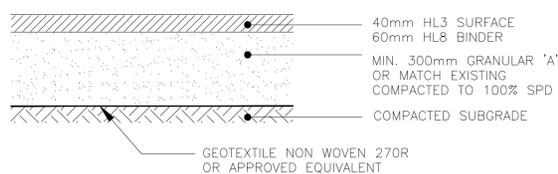


**TRENCH THROUGH OPEN AREAS TYPE 3 SOILS**

**NOTES:**

- SLOPING OF TRENCH WALLS SHALL NOT BE PERMITTED WHERE SUCH SLOPING INTERFERES WITH OTHER EXISTING OR PROPOSED SERVICES OR WHERE INDICATED ON CONTRACT DRAWINGS.
- FOR TYPE 1 AND 2 SOIL ONLY, SHEETING OR TRENCHING SUPPORT SYSTEM TO O.H.S.A. REG. 213/91 SHALL BE USED FOR TYPE 4.
- TRENCH BOX SHALL NOT EXTEND BELOW TOP OF COVER MATERIAL IN ALL INSTANCES.

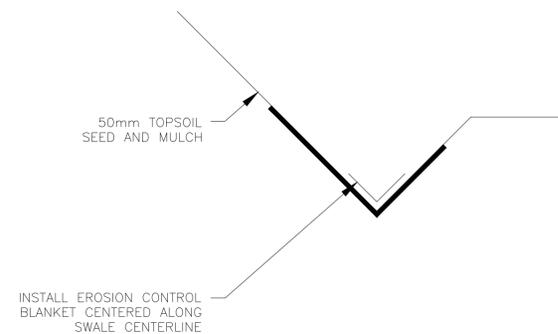
**TRENCH BEDDING DETAILS**  
SCALE: N.T.S.



**NOTES:**

- GRANULAR MATERIAL TO BE COMPACTED TO A DENSITY INDICATED ABOVE IN ACCORDANCE WITH O.P.S.S. 501. ASPHALT MATERIAL SHALL BE COMPACTED TO 97% S.P.D.
- SAWCUT EXISTING ASPHALT TO NEAR STRAIGHT LINES. APPLY ASPHALT CEMENT TO ALL EXPOSED FACES PRIOR TO PAVING.

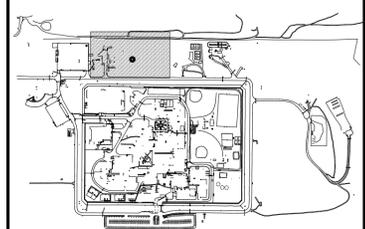
**MIN. ASPHALT SURFACE**  
SCALE: N.T.S.



**NOTES:**

- CONTRACTOR MUST SURVEY EXISTING SWALE GRADE AND LOCATION PRIOR TO ANY WATERMAIN INSTALLATION AND SHALL USE THIS SURVEY TO RESTORE AREA TO EXISTING OR BETTER CONDITIONS.
- RESTORATION OF ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITIONS SHALL BE INCLUDED IN THE UNIT PRICE TENDERED FOR THE WATERMAIN AND SHALL INCLUDE THE COST OF THE EROSION CONTROL BLANKET AS INDICATED.
- ANY SWALE WITH CONTINUOUS FLOW SHALL HAVE THE EROSION CONTROL BLANKET FASTENED TO THE GROUND TO PREVENT MOVEMENT.
- PROVIDE SHOP DRAWING OF THE PROPOSED EROSION CONTROL BLANKET.

**SWALE RESTORATION**  
SCALE: N.T.S.



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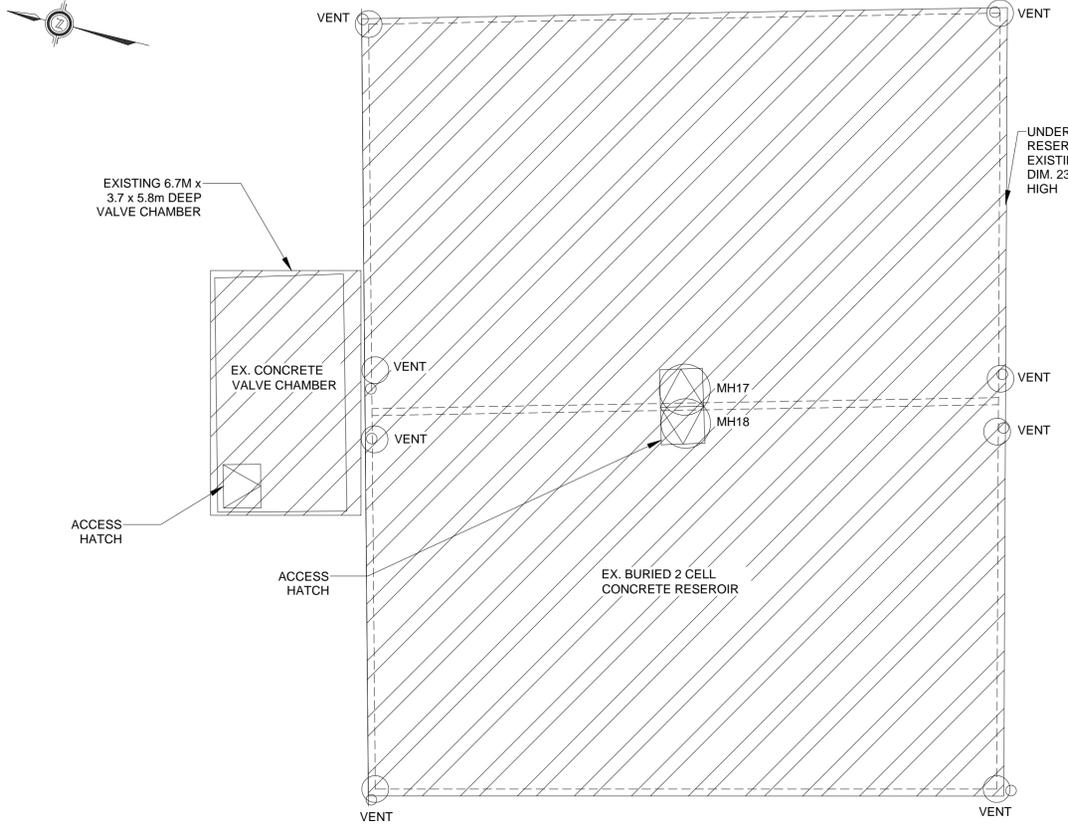
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CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**GENERAL DETAILS**

drawn by dessiné par	DC
designed by conçue par	PS
approved by approuvé par	ET
tender soumission	project manager administrateur de projets
project date date du projet	2017/12/13
project no. no. du projet	R.068488.001
drawing no. dessiné no.	G09



**PLAN**  
SCALE: 1:100



REMOVE VALVE CHAMBER STRUCTURE, INCLUDE HATCH, LADDER RUNGS AND SUMP

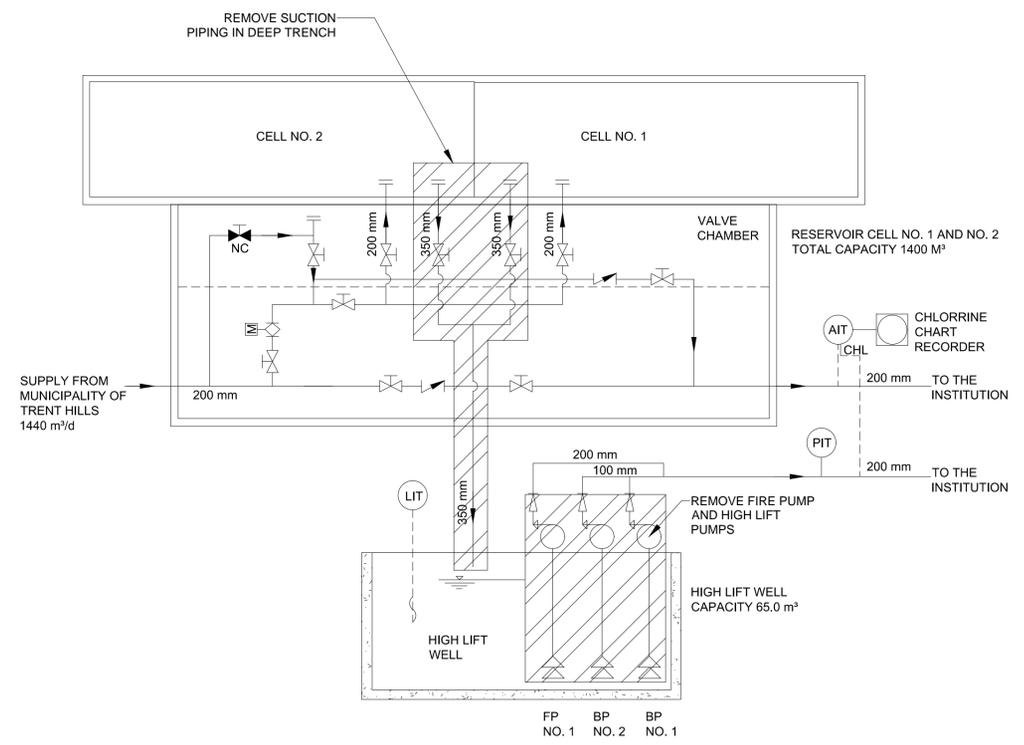
**1 VALVE CHAMBER EXTERIOR**  
SCALE: NTS



REMOVE ALL VENTS

REMOVE EXISTING MANHOLE COVER

**2 RESERVOIR**  
SCALE: NTS



**3 PROCESS FLOW SCHEMATIC**  
SCALE: NTS

**REMOVALS:**

1. THE REMOVAL DRAWINGS ARE BASED ON THE AVAILABLE RECORD DRAWINGS. ACTUAL DETAILS OF CONSTRUCTION MAY NOT BE AS INDICATED ON THESE DRAWINGS. CONTRACTOR TO FIELD VERIFY.
2. REFER TO TECHNICAL SPECIFICATIONS (DIVISION 1) FOR REMOVALS SEQUENCING AND CONSTRUCTION STAGING.
3. ALL REMOVALS WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED SEQUENCE OF CONSTRUCTION AND SUBJECT TO THE RESTRICTIONS OF PERMISSIBLE OUTAGES OF PARTICULAR COMPONENTS OR SYSTEMS.
4. CONTRACTOR TO COORDINATE ALL REMOVALS WITH ALL SUBTRADES.
5. ANY HOLES OR CAVITIES LEFT BY THE REMOVAL OF EQUIPMENT AND ASSOCIATED APPURTENANCES SHALL BE FILLED WITH GROUT OR OTHER FILLER APPROVED BY THE ENGINEER.
6. ALL EMBEDDED, EXPOSED METALS LEFT BY REMOVALS SHALL BE CUT BACK 20mm FROM CONCRETE SURFACE AND REPAIRED WITH NONSHRINK GROUT.
7. DO NOT USE WRECKING BALLS OR SLEDGE HAMMERS FOR DEMOLITION OF CONCRETE UNLESS APPROVED IN WRITING BY THE CONTRACT ADMINISTRATOR. USE ONLY HAND OPERATED PNEUMATIC CHIPPERS, DRILLS OR SAWS.
8. ELECTRICAL REMOVALS TO BE AS PER DRAWING E03.
9. BUILDING MECHANICAL REMOVALS TO INCLUDE ALL UNIT HEATERS AND APPURTENANCES, ALL FIELD DEVICES AND WIRING ASSOCIATED WITH HVAC EQUIPMENT INCLUDING DAMPER MOTORS, SENSORS AND HVAC CONTROLLERS.
10. REMOVE ALL ELECTRICAL DISTRIBUTION AND/OR CONTROL WIRING THAT IS RENDERED REDUNDANT AS A RESULT OF EQUIPMENT REMOVAL, INCLUDING SURFACE MOUNT RACEWAYS, FITTINGS, SUPPORTS, AND WIRING.
11. REMOVE ALL WIRING FROM CONDUITS THAT WERE EMBEDDED IN THE BUILDING STRUCTURE THAT ARE REDUNDANT AS RESULT OF THE EQUIPMENT REMOVAL. CUT AND SEAL REDUNDANT EMBEDDED CONDUITS AT THE POINTS THEY TRANSITION OUT OF THE BUILDING STRUCTURE.
12. REMOVAL OF EQUIPMENT SHALL INCLUDE CONCRETE BASES, SERVICE PIPING CONNECTIONS AND ALL ASSOCIATED ACCESSORIES.
13. REMOVAL OF PIPING SHALL INCLUDE ALL HANGERS, GUIDES, ANCHORS, BRACES AND ALL METAL AND CONCRETE SUPPORTS.

**RESERVOIR AND CHAMBER REMOVALS:**

1. DRAWINGS FOR THE RESERVOIR AND VALVE CHAMBER WERE NOT AVAILABLE AT THE TIME OF TENDER. FOR COSTING PURPOSES ASSUME THE TOP OF THE VALVE CHAMBER IS 600mm ABOVE GRADE, AND THE RESERVOIR HAS 600mm OF SOIL COVER. ASSUME ALL CONCRETE WALLS AND SLABS ARE 500mm THICK. ASSUME THE VALVE CHAMBER HAS AN INTERMEDIATE CONCRETE FLOOR 300mm THICK.
2. EMPTY RESERVOIRS - USE A PORTABLE SUMP PUMP AND PUMP TO NEARBY MANHOLE. COORDINATE WITH WASTEWATER OPERATIONS STAFF FOR ALLOWABLE FLOWRATES AND VOLUMES.
3. ISOLATE SYSTEM BY BLIND FLANGE AT SUPPLY FROM THE TRENT HILLS, AND OUTLETS TO THE HIGHLIFT AND INSTIUTION.
4. ISOLATE ELECTRICALLY AS PER DRAWING E03.
5. REMOVE ALL EQUIPMENT AND WIRING AND ASSOCIATED APPURTENANCES, CUT FLUSH WITH FACE OF CONCRETE.
6. REMOVE TOP AND INTERMEDIATE SLABS.
7. REMOVE WALLS TO 1.6m BELOW GRADE.
8. CORE HOLES IN BASE SLABS FOR DRAINAGE, 300mm DIAMETER, 4 PER RESERVOIR CELL OR CHAMBER. CORE HOLES IN WALLS 300mm DIAMETER AT 300mm ABOVE FLOOR, 4 PER RESERVOIR CELL OR CHAMBER.
9. BACKFILL CHAMBER AND RESERVOIR CELLS WITH SELECT GRANULAR, COMPACTED TO 95% MPDD.

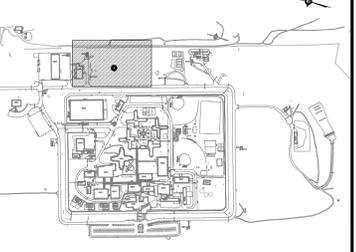
**WA05 BUILDING REMOVALS:**

1. EMPTY CLEARWELL IN BUILDING WA05. USE A PORTABLE SUMP PUMP AND PUMP TO NEARBY MANHOLE. COORDINATE WITH WASTEWATER OPERATIONS STAFF FOR ALLOWABLE FLOWRATES AND VOLUMES. CHLORINE RESIDUALS TO BE MONITORED TO REDUCE IMPACT ON WASTEWATER PLANT.
2. BLIND FLANGE INLET AND OUTLET CONNECTIONS
3. REMOVE ALL PIPING AND VALVES FROM PIPE TRENCH
4. REMOVE PUMPS AND ASSOCIATED APPURTENANCES.
5. FOR ELECTRICAL REMOVALS SEE ELECTRICAL DRAWINGS
6. REMOVE CONCRETE BASES TO 20mm BELOW TOP OF SLAB, AND REPAIR SLAB WITH NON SHRINK REPAIR GROUT FLUSH WITH FINISHED FLOOR.

**LEGEND:**

TO BE REMOVED

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COUNTY ROAD # 29 CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**REMOVALS - VALVE CHAMBER  
AND EXISTING RESERVOIR**

drawn by  
dessiné par **EZ**

designed by  
conçue par **PS**

approved by  
approuvé par **ET**

tender  
soumission --- project manager  
administrateur de projets

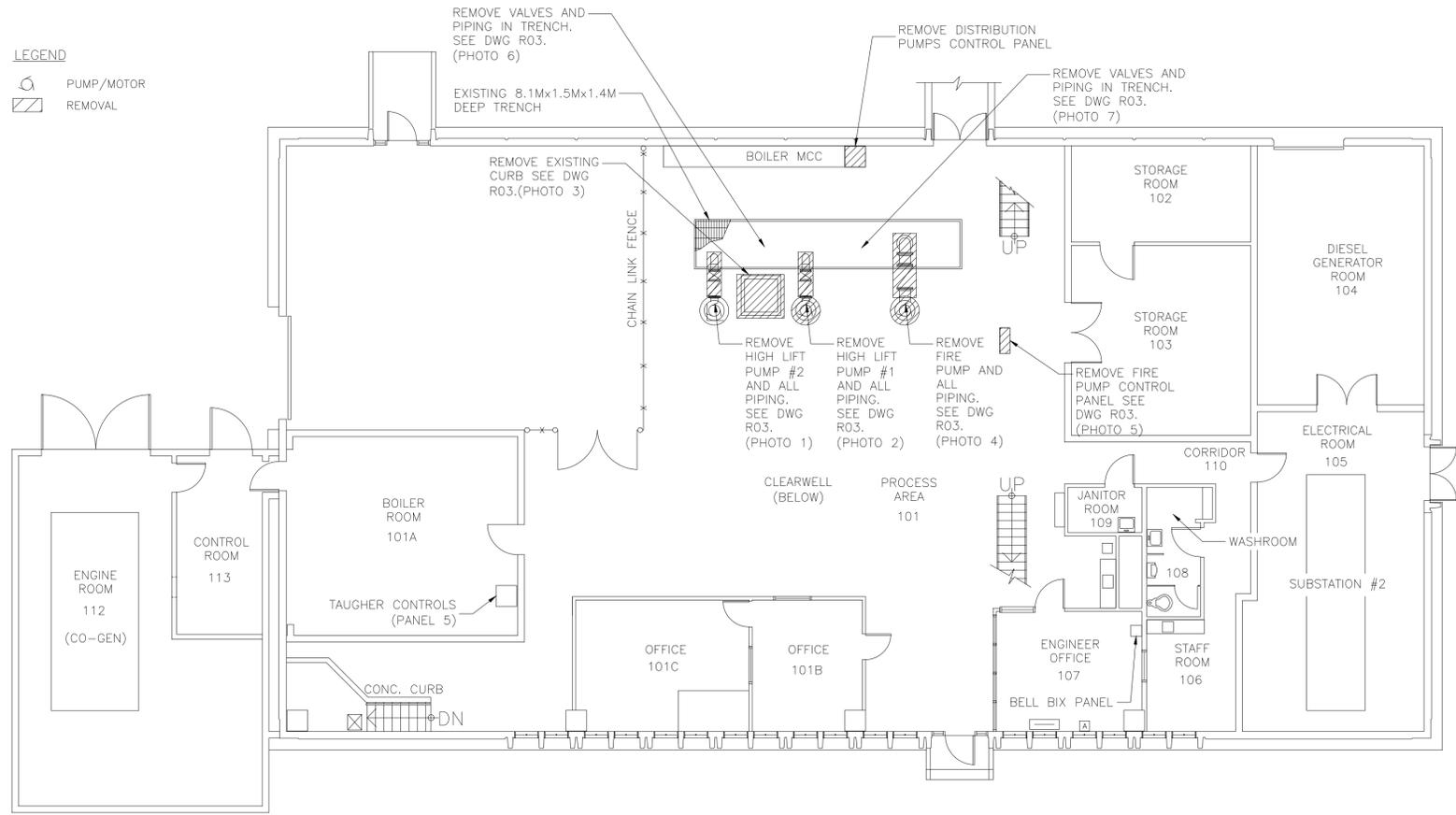
project date  
date du projet **2017/12/13**

project no.  
no. du projet **R.068488.001**

drawing no.  
dessiné no. **R01**

LEGEND

-  PUMP/MOTOR
-  REMOVAL

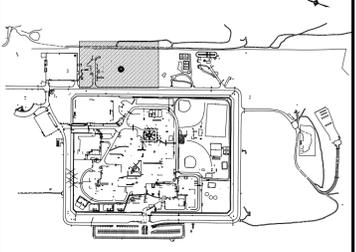


1 FLOOR PLAN - WA05 BUILDING  
SCALE: 1:100

NOTES:

1. REMOVE PUMPS AND CONCRETE PUMP BASES. FILL IN PUMP SUCTION HOLE IN FLOOR WITH METAL PLUG.
2. REMOVE DISCHARGE PIPING AND VALVES IN BURIED CHANNEL.
3. REFER TO PHOTOS ON DRAWING R03.
4. REFER TO DRAWING E03 FOR ADDITIONAL ELECTRICAL REMOVALS.

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	A Detail No. No. du détail
	B drawing no. - where detail required dessin no. - où détail exigé
	C drawing no. - where detailed dessin no. - où détaillé

project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**REMOVALS - WA05 BUILDING  
PLAN**

drawn by  
dessiné par EI

designed by  
conc par PS

approved by  
approuvé par ET

tender  
soumission

project manager  
administrateur de projets

project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. R02

REMOVE HIGH LIFT PUMP #2, MOTOR, PUMP BASE AND ALL ASSOCIATED PIPING AND COMPONENTS. REPAIR FLOOR TO MATCHING EXISTING.



REMOVE EXISTING CURB

**1** HIGH LIFT PUMP # 2  
SCALE: NTS

REMOVE HIGH LIFT PUMP #1, MOTOR, PUMP BASE AND ALL ASSOCIATED PIPING AND COMPONENTS. REPAIR FLOOR TO MATCHING EXISTING.



REMOVE EXISTING CURB

**2** HIGH LIFT PUMP # 1  
SCALE: NTS

REMOVE HIGH LIFT PUMP #2, MOTOR, PUMP BASE AND ALL ASSOCIATED PIPING AND COMPONENTS. REPAIR FLOOR TO MATCHING EXISTING.



REMOVE EXISTING CURB

**3** HIGH LIFT PUMP # 1 & # 2  
SCALE: NTS

REMOVE HIGH LIFT PUMP #1, MOTOR, PUMP BASE AND ALL ASSOCIATED PIPING AND COMPONENTS. REPAIR FLOOR TO MATCHING EXISTING.

REMOVE FIRE PUMP, MOTOR, PUMP BASE AND ALL ASSOCIATED PIPING AND COMPONENTS. REPAIR FLOOR TO MATCHING EXISTING.



REMOVE FIRE PUMP CONTROL PANEL, PANEL BASE AND ALL ASSOCIATED COMPONENTS

**4** FIRE PUMP  
SCALE: NTS



REMOVE FIRE PUMP CONTROL PANEL, PANEL BASE AND ALL ASSOCIATED COMPONENTS

**5** FIRE PUMP CONTROL PANEL  
SCALE: NTS

REMOVE AND DISPOSE OF VALVES AND PIPING IN TRENCH. BLIND FLANGE ALL OPENING TO CLEARWELL AND RESERVOIR.

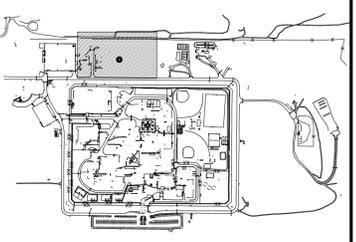


**6** PIPING IN THE TRENCH  
SCALE: NTS

REMOVE AND DISPOSE OF VALVES AND PIPING IN TRENCH. BLIND FLANGE ALL OPENING TO CLEARWELL AND RESERVOIR.



**7** PIPING IN THE TRENCH  
SCALE: NTS



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CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**REMOVALS - WA05 BUILDING  
PHOTO DETAILS**

drawn by  
dessiné par PK

designed by  
conçu par PS

approved by  
approuvé par ET

tender  
soumission

project manager  
administrateur de projets

project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. R03

**LEGEND**  
[Symbol] REMOVAL

**GENERAL NOTES**

- DO NOT SCALE DRAWINGS.
- DESIGN LOADS INDICATED ARE UNFACTORED UNLESS NOTED OTHERWISE.
- DESIGN LIVE LOADS FOR EACH PORTION OF THE STRUCTURE ARE SHOWN. DO NOT EXCEED THESE LOADS DURING CONSTRUCTION.
- STRUCTURAL DESIGN IS BASED ON THE LATEST EDITION OF THE NATIONAL AND ONTARIO BUILDING CODES. SUBSTRUCTURES AND WATER RETAINING TANKS, RESERVOIRS AND CONDUITS HAVE BEEN DESIGNED IN ACCORDANCE WITH CODE REQUIREMENTS FOR ENVIRONMENTAL CONCRETE STRUCTURES (ACI) 350-06 EXCEPT WHERE IT WAS NOT CONSIDERED APPLICABLE.
- FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE OF THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.

**FOUNDATION**

- FOUND ALL FOUNDATIONS ON COMPETENT UNDISTURBED NATIVE SOILS CAPABLE OF SUSTAINING 450 kPa SLS AFTER ALL VARVED CLAYEY SOILS HAVE BEEN REMOVED. THE BEARING ELEVATION CAN BE RAISED BY PLACING ENGINEERED FILL AFTER SUBEXCAVATING THE VARVED CLAYEY DEPOSITS. THE ENGINEERED FILL IS TO BE PLACED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND BE CAPABLE OF SUSTAINING 350kPa SLS. SEE THE GEOTECHNICAL REPORT NUMBER 1531866 BY GOLDER AND ASSOCIATES, FOR INFORMATION ON ELEVATIONS, BEARING CAPACITY, AND REQUIREMENTS FOR THE ENGINEERED FILL.
- SOIL BEARING CAPACITY SPECIFIED MUST BE VERIFIED BY THE SOIL ENGINEER PRIOR TO THE PLACING OF THE FOUNDATIONS OR ENGINEERED FILL AND ANY NON-CONFORMANCE WITH THE SPECIFIED MINIMUM CAPACITIES MUST BE IMMEDIATELY REPORTED TO THE STRUCTURAL ENGINEER.
- FOUND FOOTINGS WHICH ARE EXPOSED TO FREEZING WEATHER A MINIMUM OF 1600 mm BELOW FINISHED GRADE UNLESS SPECIFIED OTHERWISE.
- THE DESIGN OF TEMPORARY WORKS IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTROL OF THE GROUND WATER SHALL BE CARRIED OUT BY A SPECIALIZED FOUNDATION CONSULTANT, ENGAGED BY THE CONTRACTOR. THE COSTS OF ANY ADDITION GEOTECHNICAL INVESTIGATION AND/OR TESTING IS INCIDENTAL TO THE WORK AND WILL NOT BE CONSIDERED AS EXTRA COST TO THE OWNER.
- THE SPECIALIZED FOUNDATION CONSULTANTS SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, TESTING, MONITORING AND, IF REQUIRED, REMOVAL OF TEMPORARY SHORING AND DEWATERING SYSTEMS.
- A SHORING SYSTEM IS NOT REQUIRED IF THE SAFE INCLINATION OF THE SIDES OF THE EXCAVATION IS PROVIDED IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS, EXCAVATION IS MAINTAINED, AND DOES NOT INTERFERE WITH EXISTING STRUCTURES OR ACCESS ON THE SITE.
- PROTECT SOIL FROM FREEZING ADJACENT TO AND BELOW ALL FOOTINGS.
- BACKFILL AGAINST FOUNDATION WALL IN SUCH A MANNER THAT THE LEVEL OF BACKFILLING ON ONE SIDE OF THE WALL IS NEVER MORE THAN 450 mm DIFFERENCE FROM THE LEVEL ON THE OTHER SIDE OF THE WALL UNLESS TEMPORARY SUPPORT FOR THE WALL IS PROVIDED.
- SOFT AREAS UNCOVERED ON EXCAVATION SHALL BE SUB EXCAVATED TO SOUND MATERIAL AND FILLED WITH GRANULAR 'A' SOIL COMPACTED TO 100% STANDARD PROCTOR DRY DENSITY.
- DO NOT EXCEED A RISE OF 7 IN A RUN OF 10 IN THE LINE OF SLOPE BETWEEN ADJACENT FOOTING EXCAVATIONS OR ALONG STEPPED FOOTINGS. FOR STEPPED FOOTINGS, USE STEPS NOT EXCEEDING 600 mm IN HEIGHT AND NOT LESS THEN 1200 mm IN LENGTH.
- PLACE SLAB ON GRADE ON SOIL CAPABLE OF SUSTAINING 24 kPa WITHOUT SETTLEMENT RELATIVE TO THE BUILDING FOOTINGS.
- SEE PROCESS DRAWINGS FOR RECESSES AND DEPRESSIONS IN SLAB ON GRADE AND MAINTAIN SLAB THICKNESS INDICATED ON STRUCTURAL DRAWINGS IN ALL CASES.
- REINFORCE CONCRETE SIDEWALKS OR WALKWAYS WITH 10M BAR @ 400 E.W. IN THE CENTER OF THE CONCRETE, UNLESS NOTED OTHERWISE.

**MATERIALS**

- THE DESIGN REQUIREMENTS FOR THE VARIOUS CONCRETE MIX DESIGNS INDICATED SHALL CONFORM TO THE CHARACTERISTICS DESCRIBED IN THE PROJECT SPECIFICATIONS.
- MINIMUM 28 DAY COMPRESSIVE STRENGTH:  
STRUCTURAL CONCRETE: 30 MPa  
FILL CONCRETE: 20 MPa  
BENCHING: 30 MPa
- ALL REINFORCING BAR SHALL BE GRADE 400 MPa, DEFORMED, CAN/CSA-G30.18.
- CONCRETE BLOCK SHALL CONFORM TO THE LATEST EDITION OF THE RELEVANT CODES AND STANDARDS AND THE BLOCK STRENGTH SHALL BE 15 MPa ON NET AREA.
- MORTAR SHALL BE TYPE "S" UNLESS NOTED OTHERWISE.
- CONCRETE FILL IN REINFORCED MASONRY SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa.
- COLUMN BEARING GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 40 MPa.
- STRUCTURAL STEEL TO CONFORM TO CAN/CSA-G40.21, UNO.  
W SECTIONS: GRADE 350W  
L AND C SECTIONS: GRADE 300W  
HSS SECTIONS: GRADE 350 CLASS 'H'
- ALL PIPE SUPPORTS TO BE 304 STAINLESS STEEL, UNLESS NOTED OTHERWISE.

**CAST-IN-PLACE CONCRETE**

- THE CLEAR DISTANCE BETWEEN REINFORCING STEEL AND SURFACE OF CONCRETE SHALL BE AS FOLLOWS:  
FORMED CONCRETE NOT EXPOSED TO WATER OR WEATHER: 40mm  
FORMED CONCRETE EXPOSED TO WATER, WEATHER OR EARTH: 50mm  
CONCRETE PLACED AGAINST EARTH: 75mm
- UNLESS INDICATED OTHERWISE, ALL DOWELS SHALL HAVE THE SAME SIZE AND SPACING AS THE REINFORCING STEEL TO WHICH THEY ARE SPLICED, AND SHALL HAVE A MINIMUM LAP L1.
- PROTECT ALL AREAS WHERE CONCRETE IS TO BE PLACED WITH A MINIMUM OF 50 mm THICK "MUD" SLAB WHICH WILL FUNCTION AS A WORKING MAT ONLY AND WILL NOT BE CONSIDERED TO PROVIDE A

**CONTRIBUTION TO THE OVERALL SLAB THICKNESS.**

- PROVIDE REINFORCING DOWELS PROJECTING FROM CAST-IN-PLACE CONCRETE INTO BLOCK WALLS TO MATCH VERTICAL REINFORCING IN BLOCK WALLS.

**MASONRY**

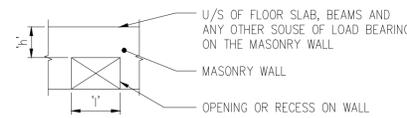
- PROVIDE AND INSTALL LINTELS OVER ALL OPENINGS OR RECESSES IN MASONRY WALLS INCLUDING THOSE FOR MECHANICAL OR ELECTRICAL SERVICES OR EQUIPMENT, IN ACCORDANCE WITH THE REQUIREMENTS OF THE LINTEL SCHEDULE.
- PROVIDE A MINIMUM LENGTH OF 200 mm OF 100% SOLID MASONRY UNITS FOR BEARING IN STEEL, CONCRETE OR REINFORCED MASONRY LINTELS. FILL LINTELS WITH 20 MPa CONCRETE GROUT CONTAINING 10 mm AGGREGATE.
- THE CONCRETE CONTRACTOR MUST PROVIDE REINFORCING DOWELS PROJECTING FROM CAST-IN-PLACE CONCRETE INTO BLOCK WALLS TO MATCH VERTICAL REINFORCING IN BLOCK WALLS. LAPS IN REINFORCING:

WIRE REINFORCING	150
10M	600
15M	750
20M	950
25M	1100
30M	1600
35M	MECHANICAL SPLICE

- FILL CELLS CONTAINING VERTICAL REINFORCING WITH 20 MPa CONCRETE GROUT CONTAINING 10 mm AGGREGATE AND UP TO 250 mm SLUMP. VIBRATE OR PUDDLE TO FILL CELLS COMPLETELY. USING JOINT MORTAR FOR FILLING THE CELLS IS NOT ACCEPTABLE AND WILL REQUIRE RECONSTRUCTION OF WALL.
- PROVIDE CONTINUOUS LADDER TYPE JOINT REINFORCING AT 400 mm c/c AND USE "CORNER-LOK" AT ALL WALL INTERSECTIONS. REINFORCING TO BE GALVANIZED TO ASTM A153 CLASS B2(458g/m<sup>2</sup>). FOR CAVITY WALL AND SINGLE WYTHE: 3.65 mm Ø WIRES(9 GAUGE) FOR COMPOSITE WYTHE: 4.76 mm Ø WIRES
- THE BRICK VENEER MUST BE FASTENED TO THE BACK UP USING "BLOCK SHEAR TIES" BY FERO CORPORATION ([www.ferocorp.com](http://www.ferocorp.com)). REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

WALL THK	UP TO 1200mm	1200mm TO 2030mm
90 mm	1-10M T&B	1-15M T&B
140 mm	1-10M T&B	1-15M T&B
190 mm	2-15M T&B	2-15M T&B
240 mm	2-15M T&B	2-15M T&B

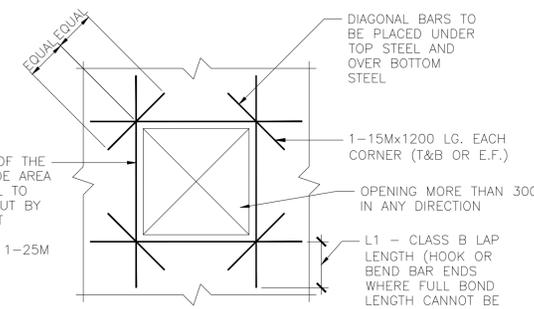
- MINIMUM BEARING FOR BLOCK LINTEL SHALL BE 200 mm UNO.
- FILL VOIDS OR LINTEL BLOCK WITH 20 MPa (300 psi) CONCRETE GROUT. MORTAR IS NOT ACCEPTABLE.
- WHEN 'h' IS SMALLER THAN 'l' ABOVE LINTEL SCHEDULE DOES NOT APPLY. (REFER TO PLAN VIEW OR THE LINTEL SCHEDULE).



CLEAR SPAN	UP TO 1200mm	1200mm TO 1800mm	1800mm TO 2100mm
90 WALL	1L-90x90x8	1L-127x90x8	1L-150x90x8
140 WALL	1L-127x127x8	1L-180x127x8	1L-180x127x8
190 WALL	2L's-90x90x8	2L's-127x90x8	2L's-150x90x8
240 WALL	2L's-100x100x8	2L's-150x100x8	2L's-150x100x8
290 WALL	3L's-90x90x9	3L's-127x90x8	3L's-150x90x8
UP TO 3200mm	W200x27 + PL. 6mm THK IN CENTER OF WALL		

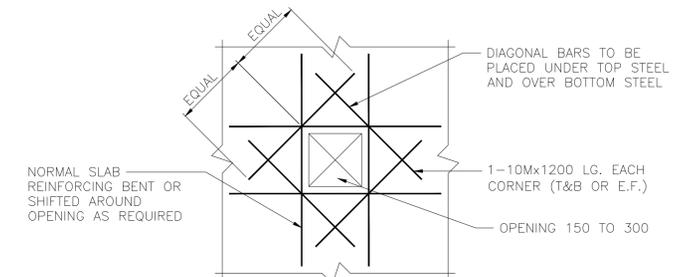
- PAIRS OF LINTEL ANGLES TO BE STITCH WELDED (T&B) @ 600mm c/c
- MINIMUM BEARING FOR STEEL ANGLES SHALL BE 150mm, UNO.
- FOR LINTELS ABUTTING STEEL COLUMNS, CONCRETE WALLS OR OTHER COLUMNS PROVIDE L-90x90x10 FASTENED TO ABUTMENT.
- ALL ANGLES SHALL BE LLV, UNO.
- ALL LOOSE ANGLES SHALL BE HOT DIPPED, GALVANIZED, UNO.

BAR SIZE	STANDARD TENSION LAP SPLICE	TENSION LAP SPLICE FOR TOP BARS	STANDARD 90° HOOK
	L1	L2	L3
10M	400mm	500mm	180mm
15M	600mm	700mm	260mm
20M	700mm	900mm	310mm
25M	1100mm	1400mm	400mm
30M	1300mm	1700mm	510mm
35M	1500mm	2000mm	610mm



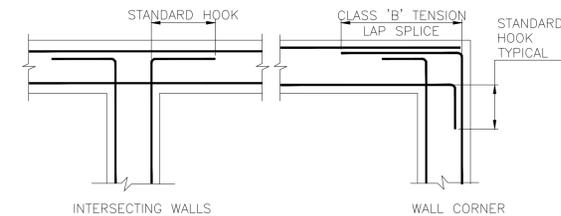
AT EVERY SIDE OF THE OPENING, PROVIDE AREA OF REINF. EQUAL TO HALF OF THAT CUT BY OPENING IN THAT CORRESPONDING DIRECTION PLUS 1-25M (T&B OR E.F.)

**LARGE OPENING IN SLABS OR WALLS**

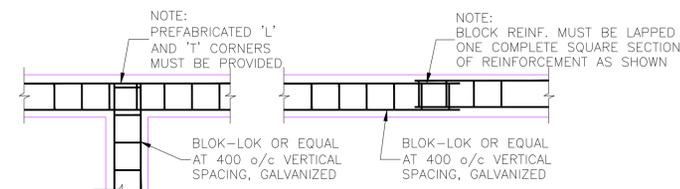


NOTE: DETAILS APPLY FOR SQUARE OR CIRCULAR OPENINGS

**SMALL OPENING IN SLABS OR WALLS**

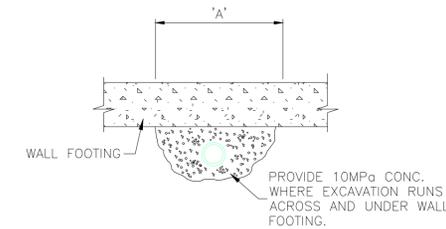


**TYP. WALL CORNER & INTERSECTION DETAILS**



**BONDING DETAILS FOR MASONRY WALLS**

(TYPICAL)

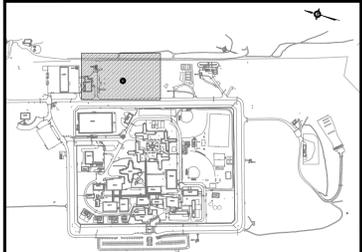


**NOTES:**

- WHERE DIMENSION 'A' EXCEEDS 1800mm FOOTING MUST BE STEPPED.
- PROVIDE 25mm COMPRESSIBLE MATERIAL AROUND PIPE.

**BACKFILL UNDER FOOTING**

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CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin

**GENERAL NOTES AND DETAILS**

drawn by  
dessiné par  
EZ

designed by  
conçue par  
ARP

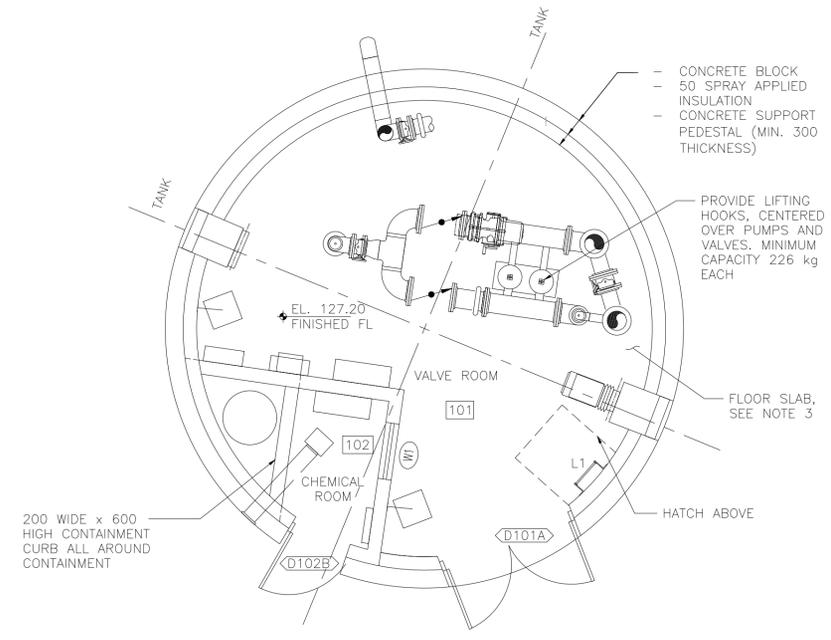
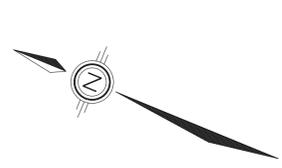
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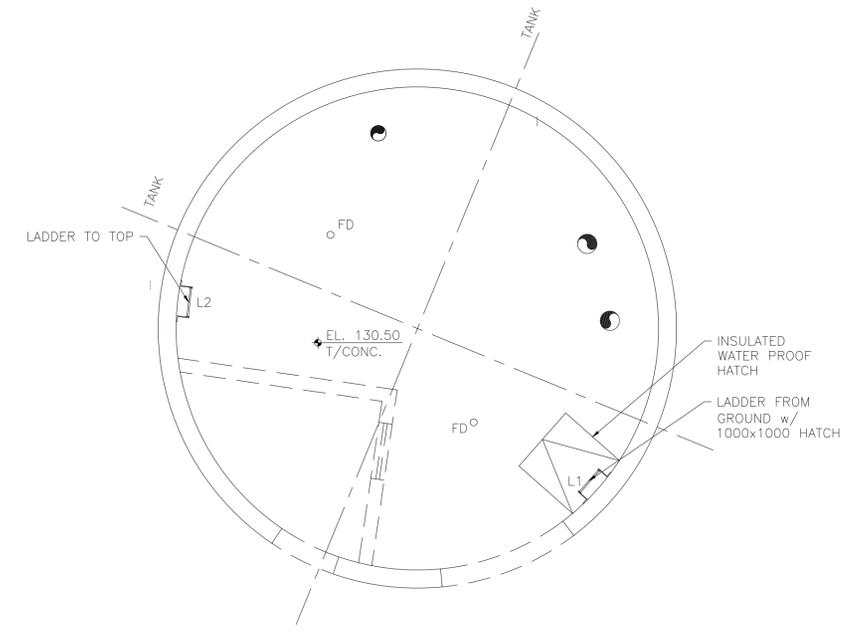
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no. du projet  
R.068488.001

drawing no.  
dessiné no.  
S01



**FLOOR PLAN**  
SCALE: 1:50  
NOTE:  
FOR LOCATION OF FLOOR DRAINS,  
SEE M03. SLOPE FLOOR TO DRAINS.



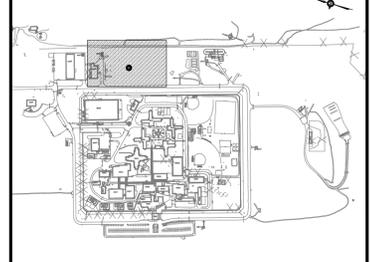
**MEZZANINE PLAN**  
SCALE: 1:50

**NOTES:**

- LOCATIONS OF RISER PIPES ABOVE VALVE CHAMBER CEILING ARE CONCEPTUAL ONLY. EXACT POSITION IS DEPENDENT UPON TANK FLOOR/TANK SLAB DESIGN.
- PROVIDE 226kg CAPACITY (UNFACTORED LOADING) LIFTING HOOKS AND ANCHORS IN THE VALVE CHAMBER CEILING, ABOVE THE BUTTERFLY VALVES, CHECK VALVES AND OTHER HEAVY FITTINGS/ EQUIPMENT.
- FLOOR SLAB:**  
PROVIDE A STRUCTURAL FLOOR SLAB SUPPORTED ON FOUNDATION WALLS AND/OR INDEPENDANT FOOTINGS. THE FOUNDATION WALLS SHALL BE SUPPORTED ON THE TOWER FOUNDATION ON ROCK.
- MEZZANINE CONSTRUCTION SHALL INCLUDE:**
  - GALVANIZED STEEL DECKING EQUAL TO ASTM A653, GRADE 230;
  - MIN. 250 REINFORCED CONCRETE SLAB;
  - A LAYER OF 75mm RIGID INSULATION AND VAPOUR BARRIER;
  - A LAYER OF TOPPING, SLOPED TO DRAIN, WITH A MINIMUM THICKNESS OF 65mm;
  - UPPER SLAB SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE.
- GROUND FLOOR DESIGN LOADS:**
  - D.L. - WEIGHT OF SLAB
  - WEIGHT OF PIPING, EQUIPMENT & THRUST BLOCKS
  - S.I.D.L. 1.0 kPa (MISC. & PARTITIONS)
  - L.L. - MOMENT FROM THRUST BLOCKS
  - 4.8 kPa
  - WEIGHT OF STORED CHEMICALS
- MEZZANINE FLOOR DESIGN LOADS:**
  - D.L. - WEIGHT OF SLAB
  - MISCELLANEOUS MATERIALS
  - WEIGHT OF PIPING
  - L.L. - 2.4 kPa
  - LIFTING HOOKS OFR EQUIPMENT BELOW
- CONTRACTOR TO CO-ORDINATE SIZE OF LOUVER AND DAMPER OPENINGS WITH DRAWING V01.

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\* CENTRE LINES ON DRAWINGS ALIGN WITH TRUE NORTH

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CONSTRUCT NEW POTABLE WATER  
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drawing title  
titre du dessin  
**FLOOR PLAN AND  
MEZZANINE PLAN**

drawn by  
dessiné par **EZ**

designed by  
conçue par **ARP**

approved by  
approuvé par **ET**

tender  
soumission --- project manager  
administrateur de projets

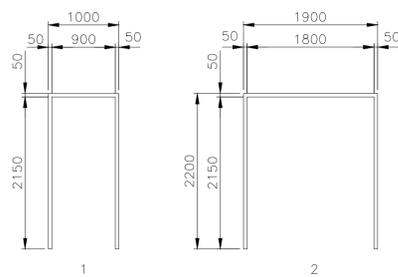
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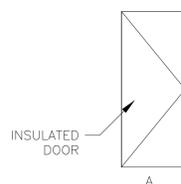
drawing no.  
dessiné no. **S02**

ROOM SCHEDULE															
NO.	ROOM NAME	FLOOR MAT.	BASE MAT.	WALLS								CEILING MATERIAL	CEILING FINISH	HEIGHT	COMMENTS
				NORTH WALL		SOUTH WALL		EAST WALL		WEST WALL					
				MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH				
101	VALVE ROOM	CONC/EPXY	-	CMU	P	CMU	P	CMU	P	CMU	P	CONC	P	3658	
102	CHEMICAL ROOM	CONC/EPXY	-	CMU	P	CMU	P	CMU	P	CMU	P	CONC	P	3658	CHEMICAL RESISTANT COATING UP TO 600 ABOVE FF

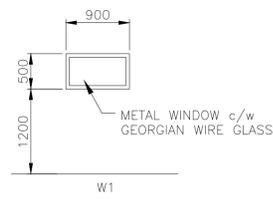
DOOR SCHEDULE W/ HARDWARE																											
TO ROOM NUMBER	MARK	SWING	DOOR LEAF SIZE				FRAME						HARDWARE						DETAILS								
			W	H	T	Qty.	TYPE	MAT.	FIN.	TYPE	MAT.	FIN.	FIRE RAT.	INSULATED	HINGES	OPERATOR	STOP	THRESHOLD	ASTRAGAL	FLUSH BOLTS	TRIM	SIGN	WEATHER STRIPPING	CLOSER	HEAD	JAMB	THRESHOLD
101	D101A	DOUBLE REV RIGHT ACTIVE	900	2150	45	2	A	HM	P	2	HM	P	-	Yes	H1	N/A	DS3	TH1	AS	FB1	DT1	N/A	WS1/2	CL1	-	-	-
102	D102B	LEFT REV	900	2150	45	1	A	FG	P	1	FG	P	-	Yes	H1	E01	DS3	TH1	N/A	N/A	DT1	N/A	WS1/2	CL1	-	-	-



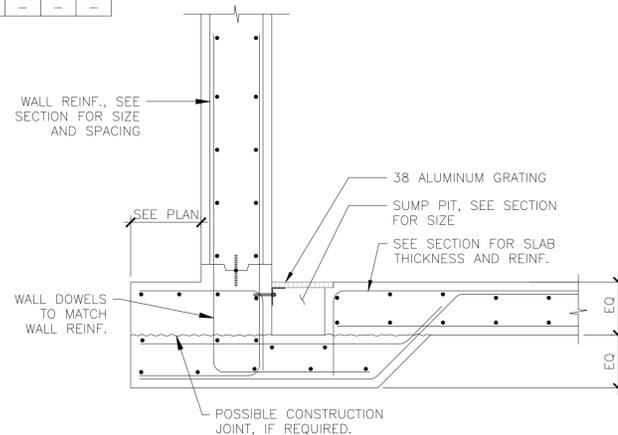
DOOR FRAME LEGEND



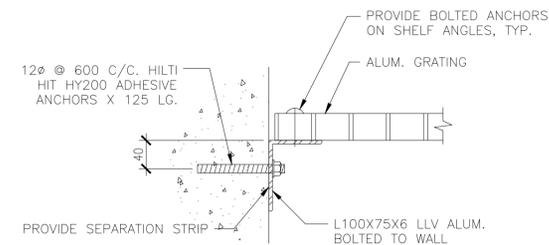
DOOR LEAF LEGEND



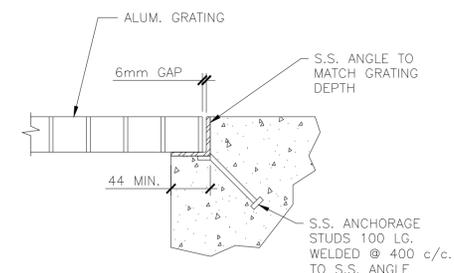
WINDOW LEGEND



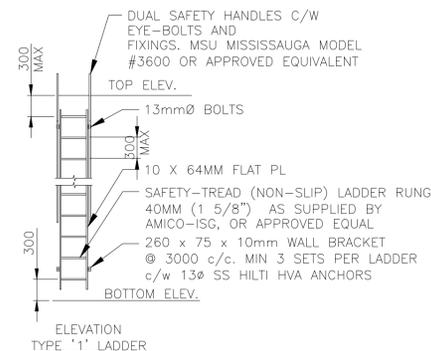
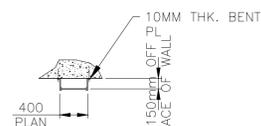
SHALLOW SUMP AT WALL



GRATING SUPPORT ANGLE



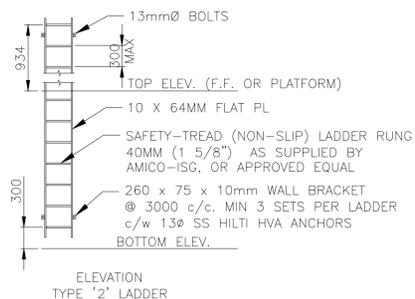
GRATING TYP. BEARING ON CONCRETE DETAIL



ELEVATION TYPE '1' LADDER

LADDER NO.	TYPE	MATERIAL	TOP FLOOR EL.	BOTTOM FLOOR EL.	LOCATION	COMMENTS
L1	1	AL	-	-	GROUND FLOOR	4, 5
L2	2	AL	-	-	MEZZANINE	5
L3	1	AL	-	-	UPPER PLATFORM	5, 4
L4	1	AL	-	-	ROOF	3, 1, 4
L5	1	AL	-	-	UPPER PLATFORM	5, 4
L6	1	AL	-	-	CHAMBER	1, 2

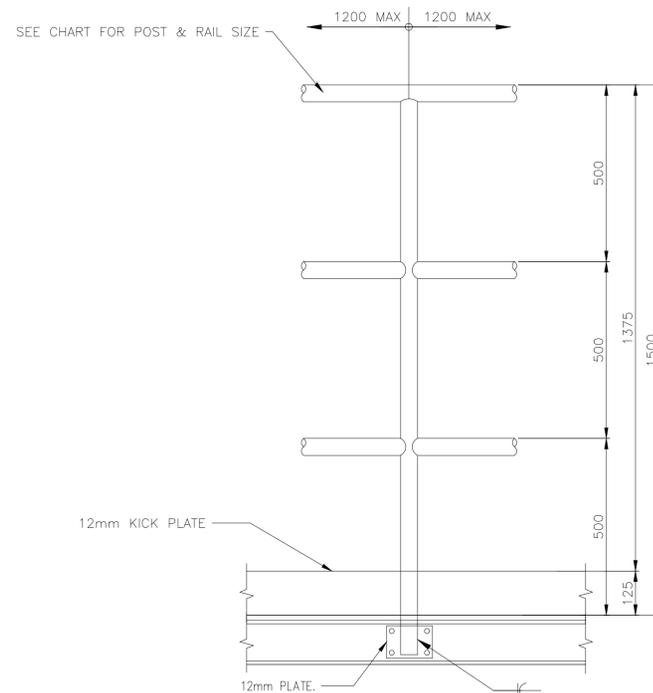
- DUAL SAFETY HANDLES.
- FALL RESTRAINT BY PORTABLE TRIPOD.
- FALL RESTRAINT BY DAVIT BASE.
- ACCESS HANDLE REQUIRED.
- SAFETY RAIL REQUIRED.



ELEVATION TYPE '2' LADDER

NOTE: IF NEW LADDERS ARE TO BE IN FRP, THEN THE EXACT EQUIVALENT OF THE MEMBERS SPECIFIED ON THE CONTRACT DRAWINGS ARE TO BE SUPPLIED & INSTALLED BY THE CONTRACTOR. PRIOR TO FABRICATION THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR REVIEW, STAMPED & SEALED BY AN ONTARIO QUALIFIED ENGINEER.

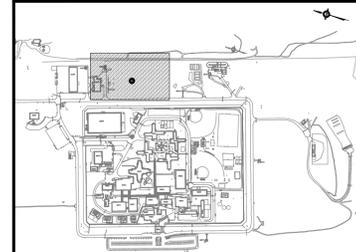
LADDER DETAILS AND SCHEDULE SCALE: NTS



HANDRAIL ON ALUMINUM CURB DETAIL SCALE: NTS

MATERIAL	APPLICATION	POST	RAIL
AL. GRADE 6061-T6 AND S.S. GRADE 316	Handrail (on stairs)	420 SCH 80	420 SCH 40
	Guard (on platform)	480 SCH 40	480 SCH 40
	Guard (platforms > 10m)	480 SCH 80	480 SCH 80
GALV STEEL GRADE	Handrail (on stairs)	420 SCH 40	420 SCH 40
	Guard (on platform)	480 SCH 40	480 SCH 40
	Guard (platform > 10m)	480 SCH 80	480 SCH 80

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revision	description	date
0	ISSUED FOR BID	2017/10/19

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Detail No.	No. du détail
A	drawing no. - where detail required
B	dessin no. - où détail exigé
C	drawing no. - where detailed
	dessin no. - où détaillé

project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICE CANADA  
WARKWORTH INSTITUTION  
COUNTY ROAD # 29 CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

STANDARD DETAILS

drawn by  
dessiné par: EZ  
designed by  
conçue par: ARP  
approved by  
approuvé par: ET

tender  
soumission: --- project manager  
administrateur de projets

project date  
date du projet: 2017/05/16

project no.  
no. du projet: R.068488.001

drawing no.  
dessiné no.: S03

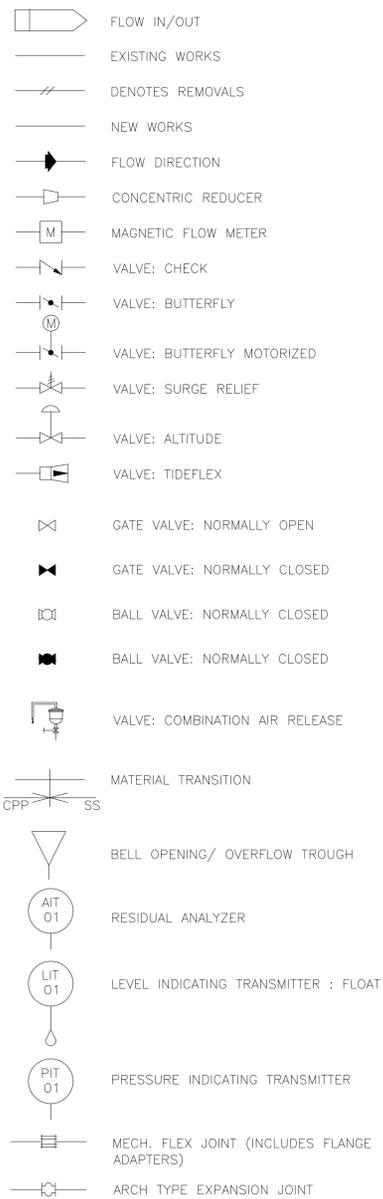
PROCESS NOTES

- ALL INTERIOR ABOVE-GRADE PIPING AND FITTINGS SHALL BE STAINLESS STEEL (S.S.) TYPE 316L SCHEDULE 10S WITH POLISHED FINISH UNLESS OTHERWISE APPROVED BY THE ENGINEER. S.S. FITTINGS SHALL BE PROVIDED AS SHOWN (WELDED OR FLANGED), UNLESS OTHERWISE SHOWN OR APPROVED BY THE ENGINEER AND REGION. FLANGES MUST BE PROVIDED AT ALL VALVES OR INSTRUMENTS. ALL SS BENDS TO BE SMOOTH.
- ALL PIPING, FLANGES, FITTINGS AND ACCESSORIES INSIDE THE STEEL TANK SHALL BE FUSION BONDED, NSF 61 CERTIFIED EPOXY-COATED (INTERNALLY AND EXTERNALLY) STEEL IN ACCORDANCE WITH AWWA C213, WITH NO EXCEPTIONS. PROVIDE NSF 61 CERTIFIED NEOPRENE GASKETS.
- ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL BE CERTIFIED FOR USE UNDER NSF 61.
- ALL PROCESS PIPING, VALVES, FITTINGS, ETC. SHALL BE RATED FOR A MINIMUM COLD WATER WORKING INTERNAL PRESSURE OF 1034 KPA (150 PSI).
- LOCATION OF INLET AND OUTLET RISER PIPES AND OVERFLOW PIPE ABOVE VALVE ROOM CEILING IS CONCEPTUAL ONLY, EXACT POSITION IS DEPENDENT ON SUPPORT STRUCTURE DESIGN BY THE CONTRACTOR AND IS SUBJECT TO REVIEW AND APPROVAL BY ENGINEER.
- ALL EXTENSION STEMS, SUPPORT BRACKETS AND PIPE HANGERS IN THE VALVE ROOMS SHALL BE GALVANIZED STEEL, UNLESS NOTED OTHERWISE. ALL DISSIMILAR METALS TO BE SEPARATED BY A NEOPRENE GASKET OR ISOLATION KITS AS NECESSARY.
- ALL NUTS AND BOLTS ON STAINLESS STEEL PIPING, VALVES AND FITTINGS TO BE 316L STAINLESS STEEL. ALL NUTS AND BOLTS ON D.I. PIPING, VALVES AND FITTINGS TO BE 316L STAINLESS STEEL OR CADMIUM COATED.
- WHERE D.I. OR C.S. PIPING OR VALVES ARE CONNECTED TO STAINLESS STEEL PIPING, USE STAINLESS STEEL NUTS AND BOLTS WITH INSULATOR SLEEVES AND WASHERS TO PREVENT CONTACT BETWEEN DISSIMILAR METALS.
- CONTRACTOR TO PROVIDE 316L STAINLESS STEEL SCHEDULE 10S SPOOL PIECES, SAME LENGTH, FLANGE-TO-FLANGE, AS THE FLOW METERS.
- ALL INTERIOR ABOVE-GRADE PIPING SHALL BE MECHANICALLY RESTRAINED TO RESIST THRUST AND VIBRATION. INSTALL PIPE SUPPORT BRACES AT MAX. 2000MM O/C AND THRUST BRACKETS OR CONCRETE THRUST BLOCKS AT ALL CHANGES OF DIRECTION.
- ALL VALVES TO BE TAGGED, NUMBERED AND LABELLED NORMALLY OPEN (N/O) OR NORMALLY CLOSED (N/C). REFER TO THE VALVE SCHEDULE.
- ALL PROCESS PIPE WALL THIMBLES TO BE CAST IN WALLS COMPLETE WITH THRUST FLANGES. BLOCKOUTS ARE NOT PERMITTED. COORDINATE WITH STRUCTURAL DRAWINGS.
- PRESSURE TRANSMITTERS, SAMPLE POINTS AND PRESSURE GAUGES ARE TO BE INSTALLED ON PIPING C/W S.S. ISOLATION BALL VALVES AND 12MM S.S. BLOCK AND BLEED VALVES. PIPE TAPS SHALL BE OFF THE SIDE OF THE PROCESS PIPING AS DETAILED.
- THE PRESSURE GAUGES ASSOCIATED WITH THE PRESSURE TRANSMITTERS ARE TO BE MOUNTED AT THE SAME ELEVATION.
- THE CONTRACTOR SHALL PREPARE AND SUBMIT PIPING SHOP DRAWING AND SHOW LOCATION OF ALL FLANGES, FITTINGS, COUPLINGS, NIPPLES AND SAMPLE PORTS.
- THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS TO THE ENGINEER FOR REVIEW TO CONFIRM THAT AN EXPANSION JOINT IS NOT REQUIRED ON THE OVERFLOW RISER PIPING. THE CALCULATIONS SHALL SHOW AND CONFIRM THAT THE OVERFLOW PIPING HAS SUFFICIENT STRENGTH TO BE AXIALLY DEFORMED WITHOUT OVER-STRESSING THE RISER, TANK, SUPPORT STRUCTURE OR FOUNDATION AT A FLOW OF 120 MLD.
- THE OVERFLOW PIPE SHALL BE SUPPORTED AND SECURED TO THE CONCRETE PEDESTAL WALL AND TANK FLOOR (NON-LOAD BEARING).
- ALL GRATING REQUIRED FOR MECHANICAL PURPOSES SHALL BE ALUMINUM OR GALVANIZED AS NOTED AND SHALL BE FASTENED DOWN UNLESS OTHERWISE NOTED. WHERE GRATING IS PROVIDED OVER ACCESS TO SUMPS, MANHOLES ETC. LIGHT SECTIONS SHALL BE PROVIDED.
- LOCATION OF ALL HOLES THROUGH CONCRETE AND LOCATION OF CONDUITS IN FLOOR TO BE CONFIRMED BY THE CONTRACTOR AND COORDINATED WITH ALL TRADES. ALL HOLES THROUGH FLOOR AND WALLS TO BE COMPLETELY WATERTIGHT AND FIRE-PROOF.
- THE CONTRACTOR SHALL VIEW ALL CONTRACT DRAWINGS AND SPECIFICATIONS AS ONE CONTRACT AND SHALL FULLY COORDINATE THE WORK WITH ALL THE TRADES.
- ORIENTATION OF HAND WHEELS AND ACTUATORS SHALL BE DETERMINED IN THE FIELD AND SHALL BE ORIENTED TO ALLOW FOR EASY ACCESSIBILITY, OPERATION AND MAINTENANCE. ADJUST TO SUIT FIELD CONDITIONS AT NO ADDITIONAL COST. PROVIDE CHAINS FOR HANDWHEELS GREATER THAN 1800mm ABOVE FINISHED FLOOR.
- THE ENGINEER TO APPROVE THE ROUTES TO BE USED FOR WATER, SERVICE, AIR AND OTHER PIPING INSTALLATIONS (SHOWN SCHEMATICALLY ON THE DRAWING) PRIOR TO THE CONTRACTOR BEGINNING INSTALLATION. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW. ADJUST TO SUIT FIELD CONDITIONS AT NO ADDITIONAL COSTS.
- SUPPLY AND INSTALL 50mm SCH 40 PVC WASHDOWN LINE BESIDE LADDER FROM ATRIUM TO UPPER PLATFORM, INCLUDING SS NPT BALL VALVES AND CAM-LOCK COUPLINGS TO SUIT.
- FOR VALVING REQUIREMENTS FOR ANALYZERS REFER TO THE INSTRUMENTATION DRAWINGS AND SPECIFICATIONS. SAMPLE LINES AND LINES TO CHLORINE ANALYZERS TO BE 316L STAINLESS STEEL TUBING AND FASTENED TO THE WALL WITH INSULATED CLAMPS.
- CONTRACTOR TO COMPLY WITH AWWA STANDARD C652 METHOD 2 DISINFECTION OF WATER STORAGE FACILITIES, AND C651 FOR ALL PIPING.
- PROVIDE DETAILS FOR CONCRETE HOUSEKEEPING PADS AND CONCRETE PIPE SUPPORTS/THRUST BLOCKS.
- ALL DRAINS ON AIR RELEASE TYPE VALVES, ANALYZER ELEMENTS AND HVAC EQUIPMENT TO BE PIPED TO THE NEAREST FLOOR DRAIN, SEE PROCESS DRAWINGS FOR FLOOR DRAIN LOCATIONS AND DETAILS.
- SEE STRUCTURAL DRAWINGS FOR STAIRS, LADDERS, PIPE SUPPORTS, VENT OPENINGS AND OTHER MISCELLANEOUS DETAILS.
- ALL BURIED PIPE WITHIN LIMITS OF FOOTINGS TO BE CONCRETE PRESSURE PIPE OR DUCTILE IRON WITH RESTRAINED JOINTS.
- ALL ELEVATIONS IN METERS AND ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED. ALL LOCATIONS AND DIMENSIONS TO BE FIELD CHECKED AND MEASURED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION.
- PROPER SIGNAGE IS TO BE PROVIDED FOR ROOM IDENTIFICATION EXIT SIGNS.
- THE INLET AND OUTLET RISER PIPES SHALL BE HEAT TRACED AND INSULATED WITH 75mm FIBRE INSULATION, COMPLETE WITH PVC JACKETING FROM THE SERVICE PLATFORM LEVEL TO UNDERSIDE OF THE CONCRETE DOME SLAB.
- DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

GENERAL PLUMBING AND DRAINAGE NOTES

- COORDINATE AND ADJUST AS REQUIRED, THE FINAL LOCATIONS OF ALL MECHANICAL EQUIPMENT, PLUMBING AND DRAINAGE FIXTURES, DUCTWORK AND ABOVEGROUND/UNDERGROUND PIPING WITH PROCESS, STRUCTURAL, ELECTRICAL AND ARCHITECTURAL WORKS.
- ALL PLUMBING AND DRAINAGE DETAILS HAVE NOT BEEN SHOWN FOR CLARITY. THE CONTRACTOR SHALL ENSURE THAT ALL REQUIRED WORK AND MATERIALS RELATED TO PLUMBING AND DRAINAGE SHALL BE SUPPLIED AND INSTALLED IN STRICT ACCORDANCE WITH PART 7 (PLUMBING) OF THE LATEST EDITION OF THE ONTARIO BUILDING CODE.
- THE CONTRACTOR SHALL SUBMIT FOR REVIEW SHOP DRAWINGS OF THE PROPOSED DRAINAGE LAYOUT TO THE DEPARTMENTAL REPRESENTATIVE, A MINIMUM OF FOUR WEEKS PRIOR TO CONSTRUCTION.
- SANITARY DRAIN LINES SHALL BE SLOPED A MINIMUM OF 20mm VERTICAL PER ONE METRE OF HORIZONTAL PIPE.
- THE CONTRACTOR TO COORDINATE WITH ALL OTHER TRADES TO ENSURE THAT ALL DRAINAGE PIPES INSTALLED WITHIN OR BENEATH THE CONCRETE FLOOR DO NOT CONFLICT. THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE DRAIN PIPE LAYOUT TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
- PROVIDE EVERY FLOOR DRAIN WITH ITS OWN P-TRAP, PRIMER LINE AND VENT IN ACCORDANCE WITH THE REQUIREMENTS OF ONTARIO BUILDING CODE, PART 7. INSTALL PRIMER LINES TO THE LOCATION SHOWN ON THE CONTRACT DRAWINGS, AND CAP. COMBINE INDIVIDUAL VENT RISERS INTO COMMON VENTS TO SUIT SITE CONDITIONS.
- SLOPE ALL FLOORS TO PROVIDE POSITIVE DRAINAGE TO FLOOR DRAINS.
- PROVIDE PIPE WRAP INSULATION FOR ALL DRAIN PIPES WITHIN UNHEATED ZONES.
- DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

VALVE & GENERAL PIPING SYMBOLS



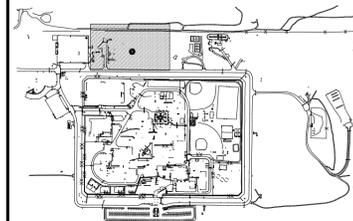
VALVE SCHEDULE - WARKWORTH POTABLE WATER SYSTEM

Valve No	Size (mm)	Type	Operator	Mode	Location	Comments
V001	250	Butterfly	Motorized	N/O	Inlet Line	
V002	100	Butterfly	Motorized	N/C	Recirculation Valve	
HV001	200	Butterfly	Manual	N/O	Facility Inlet Isolation Valve	
HV002	80	Butterfly	Manual	N/O	Pump 2 Inlet Isolation Valve	Supplied by Pump Skid Vendor
HV003	80	Butterfly	Manual	N/O	Pump 2 Outlet Isolation Valve	Supplied by Pump Skid Vendor
HV004	80	Butterfly	Manual	N/O	Pump 1 Inlet Isolation Valve	Supplied by Pump Skid Vendor
HV005	80	Butterfly	Manual	N/O	Pump 1 Outlet Isolation Valve	Supplied by Pump Skid Vendor
HV006	250	Butterfly	Manual	N/O	Tank Inlet Isolation Valve	
HV007	250	Butterfly	Manual	N/O	Facility Outlet Isolation Valve	
HV008	250	Butterfly	Manual	N/O	Tank Outlet Isolation Valve	
HV009	200	Butterfly	Manual	N/C	Tank Drain Valve	
HV010	250	Butterfly	Manual	N/C	Tank Bypass Valve	
HV011	250	Butterfly	Manual	N/O	Tank Bypass/Drain Isolation	
CV001	250	Check	-	-	Tank Inlet Isolation Valve	
CV002	250	Check	-	-	Pump Inlet Isolation Valve	
CV003	80	Check	-	-	Pump 2 Outlet Isolation Valve	
CV004	80	Check	-	-	Pump 1 Outlet Isolation Valve	
CV004	200	Tideflex	-	N/C	Overflow	
AR001		Air Release			Inlet Line	Inlet SS Isolation Ball Valve Sized to Match Air Release Valve

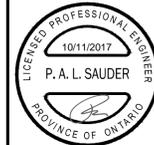
PROCESS INSTRUMENTATION SCHEDULE

Instrument	Physical Tag no.	Size (mm)	Type	I/O Type	Location	Notes
Pressure Switch (Low)	PSL 003	-	-	DI	Pump 2 Discharge	Supplied by Pump Vendor
Pressure Switch (High)	PSH 003	-	-	DI	Pump 2 Discharge	Supplied by Pump Vendor
Pressure Switch (Low)	PSL 004	-	-	DI	Pump 1 Discharge	Supplied by Pump Vendor
Pressure Switch (High)	PSH 004	-	-	DI	Pump 1 Discharge	Supplied by Pump Vendor
Pressure Gage	PI 003	-	-	-	Pump 2 Discharge	Supplied by Pump Vendor
Pressure Gage	PI 004	-	-	-	Pump 1 Discharge	Supplied by Pump Vendor
Pressure Transmitter	PIT 001	-	-	AN	Tower Inlet	
Pressure Gauge	PI 001	-	-	-	Tower Inlet	
Chlorine Residual Analyzer	AIT 001	-	-	AN	Tower Inlet	
Pressure Transmitter	PIT 002	-	-	AN	Tower Outlet	Measures Tank Water Level
Pressure Gauge	PI 002	-	-	-	Tower Outlet	
Chlorine Residual Analyzer	AIT 002	-	-	AN	Tower Outlet	
Flow Transmitter	FIT 001	200mm	Magnetic	AN	Tower Outlet	

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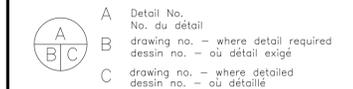


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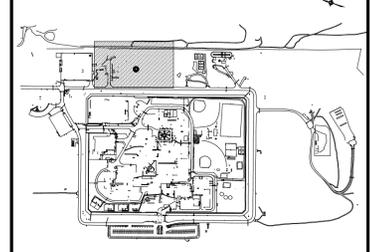
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project title  
 titre du projet  
**WARKWORTH** Ontario  
 CORRECTIONAL SERVICES CANADA  
 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**MECHANICAL LEGENDS**

drawn by dessiné par	PL
designed by conçue par	PS
approved by approuvé par	ET
tender soumission	KH
project manager administrateur de projets	
project date date du projet	2017/05/16
project no. no. du projet	R.068488.001
drawing no. dessiné no.	MO1



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0	ISSUED FOR BID	2017/10/11

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A B C	A	Detail No.
	B	drawing no. - where detail required
	C	drawing no. - where detailed

project title  
 titre du projet  
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 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**PROCESS FLOW SCHEMATIC**

drawn by  
 dessiné par DC

designed by  
 conçu par PS

approved by  
 approuvé par ET

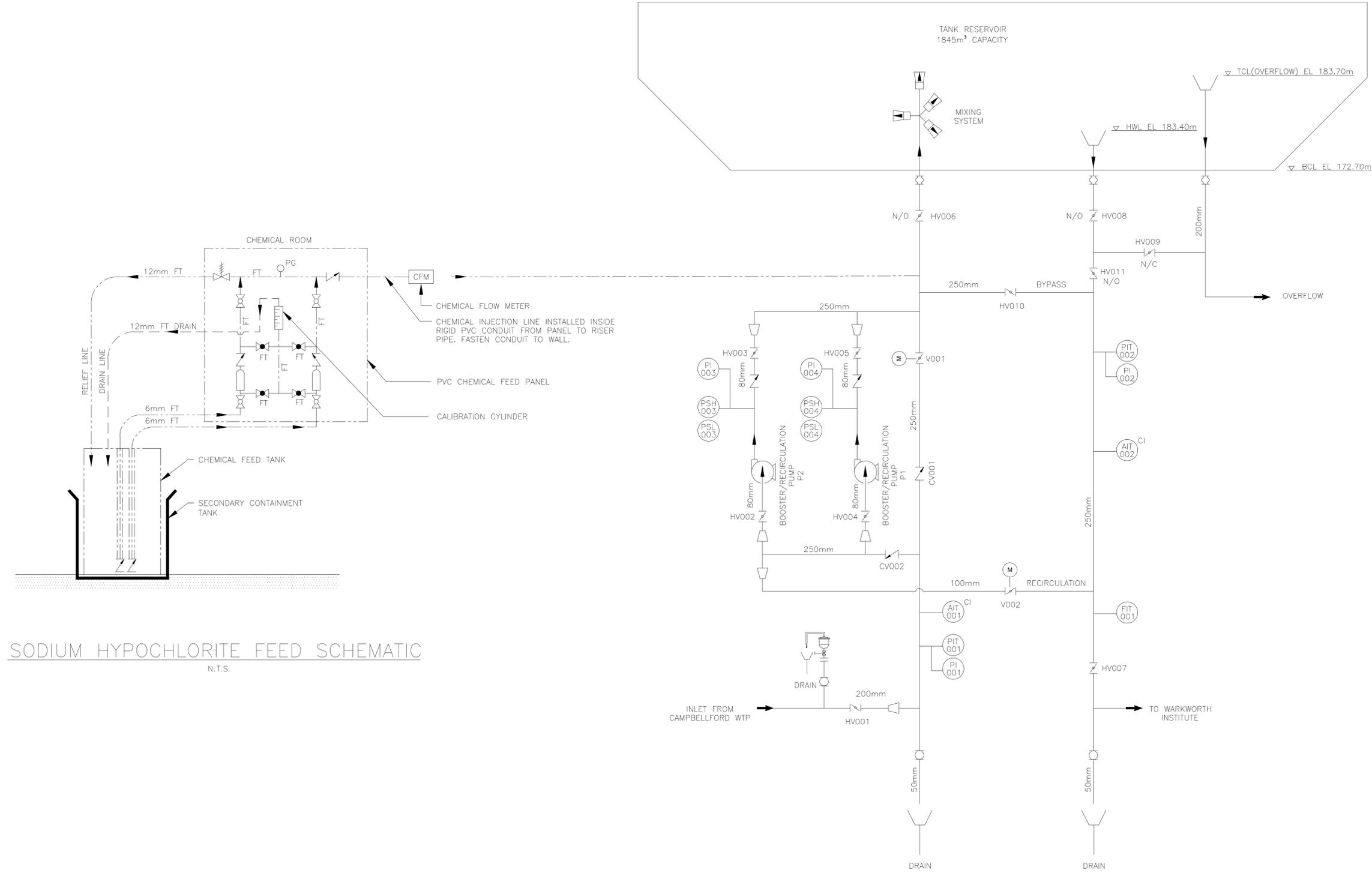
tender  
 soumission

project manager  
 administrateur de projets

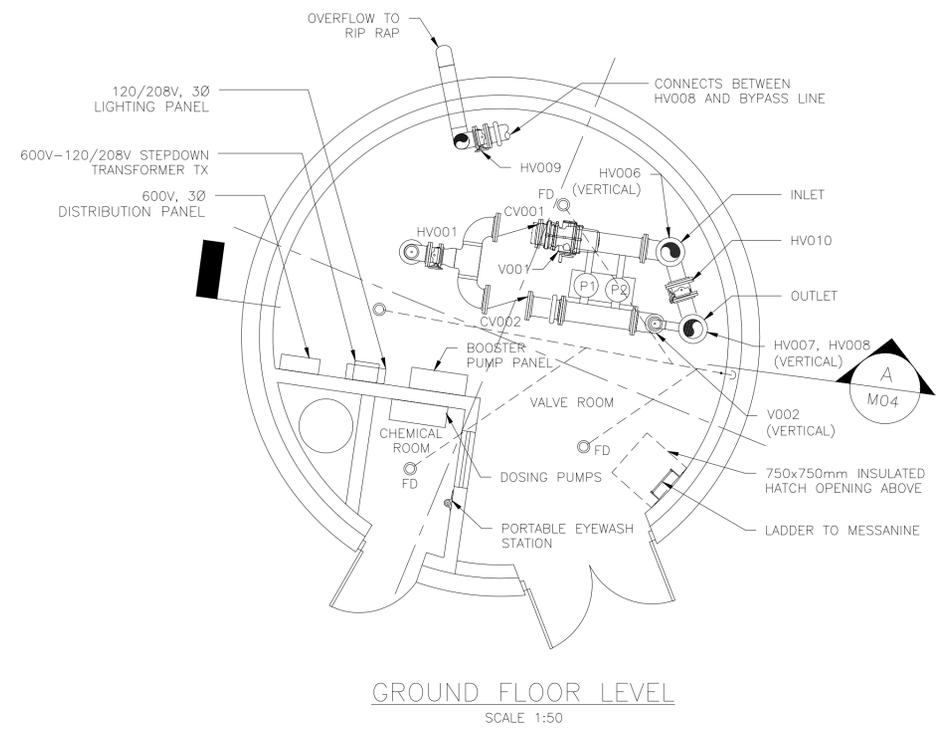
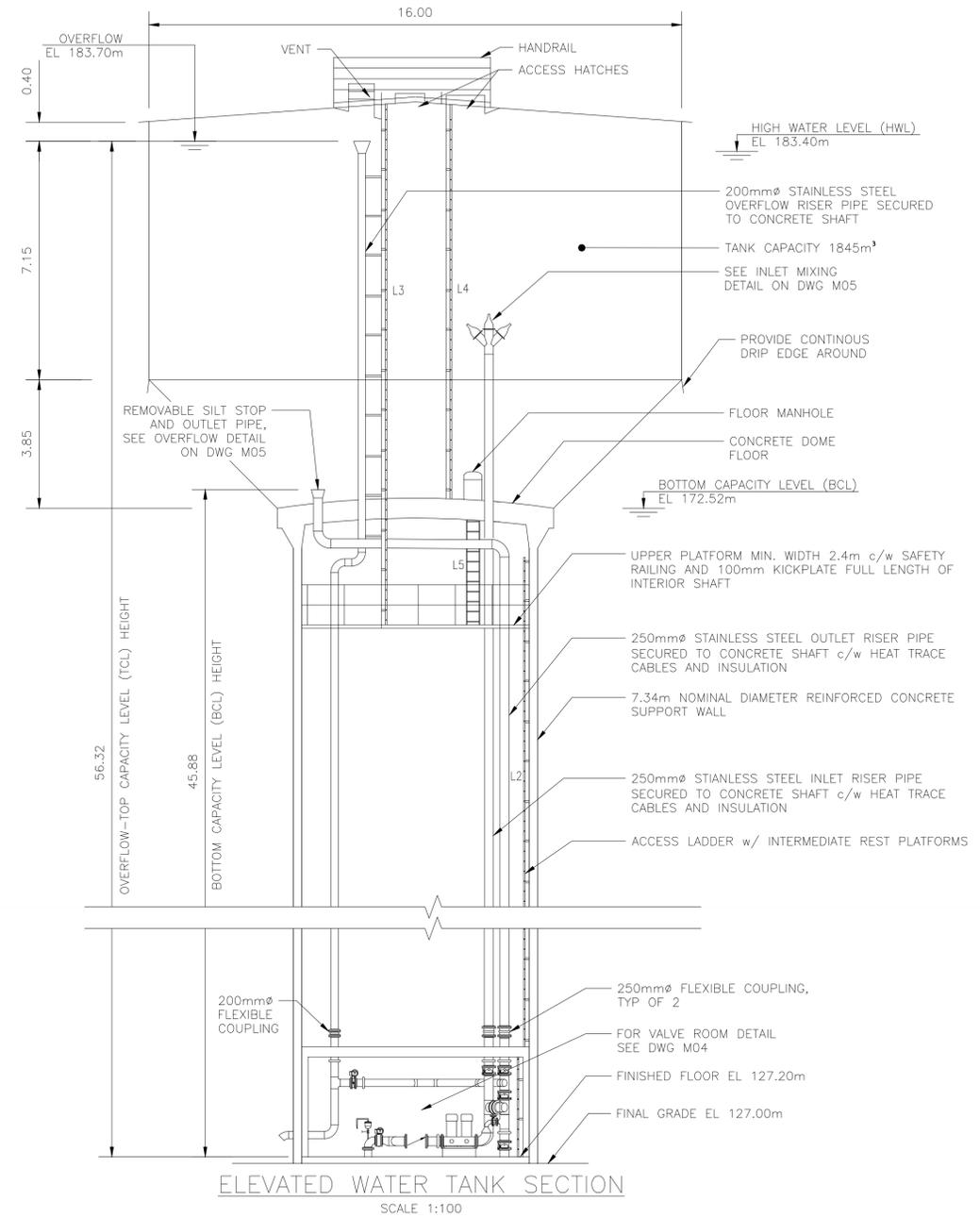
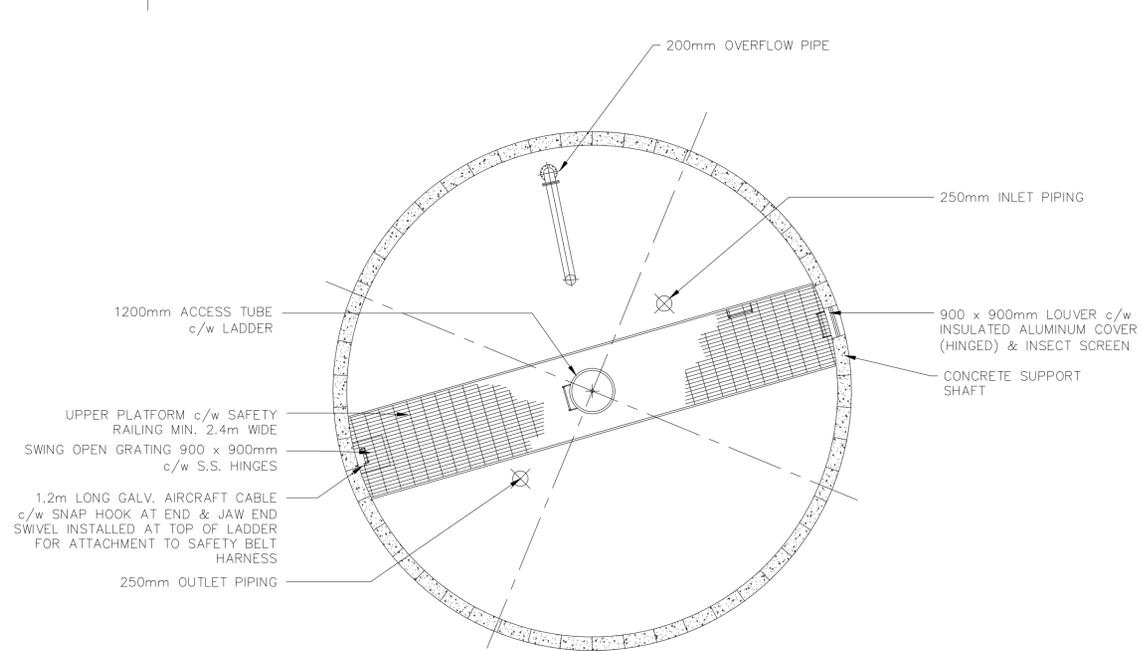
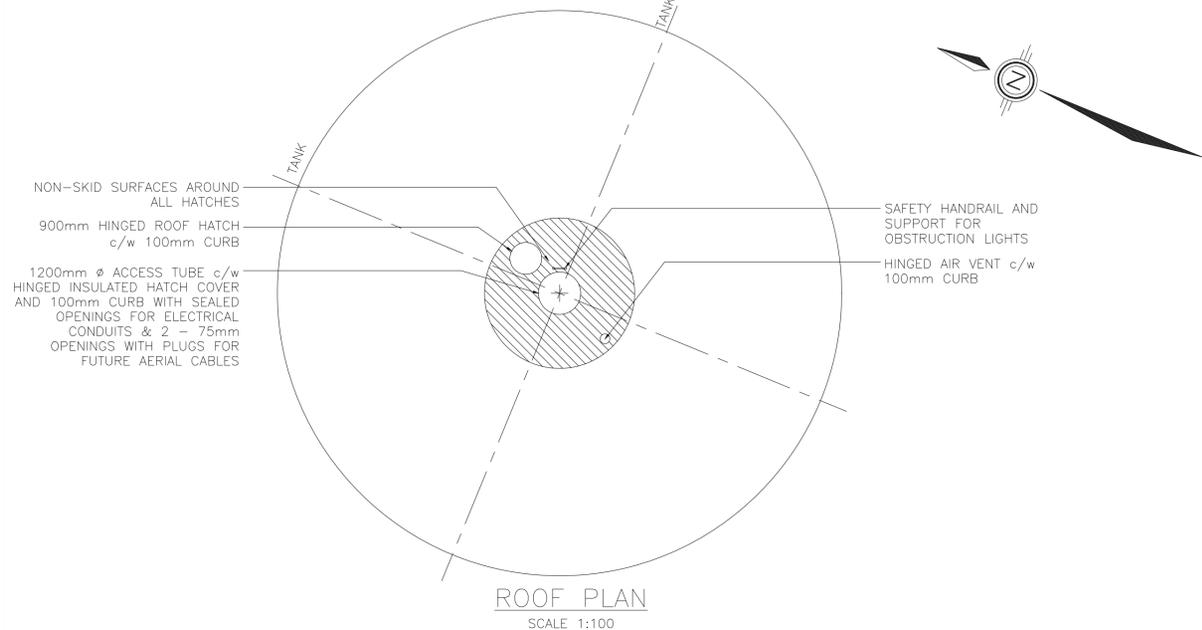
project date  
 date du projet 2017/05/16

project no.  
 no. du projet R.068488.001

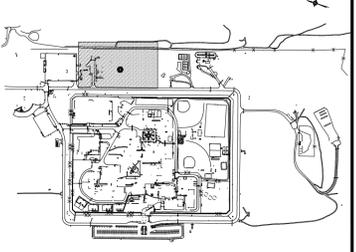
drawing no.  
 dessiné no. M02



**SODIUM HYPOCHLORITE FEED SCHEMATIC**  
 N.T.S.



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\* CENTRE LINES ON DRAWINGS ALIGN WITH TRUE NORTH

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A	Detail No.
B	No. du détail
B/C	drawing no. - where detail required dessin no. - où détail exigé
C	drawing no. - where detailed dessin no. - où détaillé

project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**ELEVATED WATER TANK PLAN AND ELEVATION**

drawn by  
dessiné par DC

designed by  
conçue par PS

approved by  
approuvé par ET

tender  
soumission

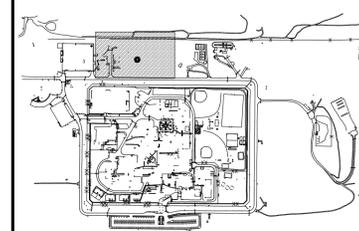
project manager  
administrateur de projets

project date  
date du projet 2017/05/16

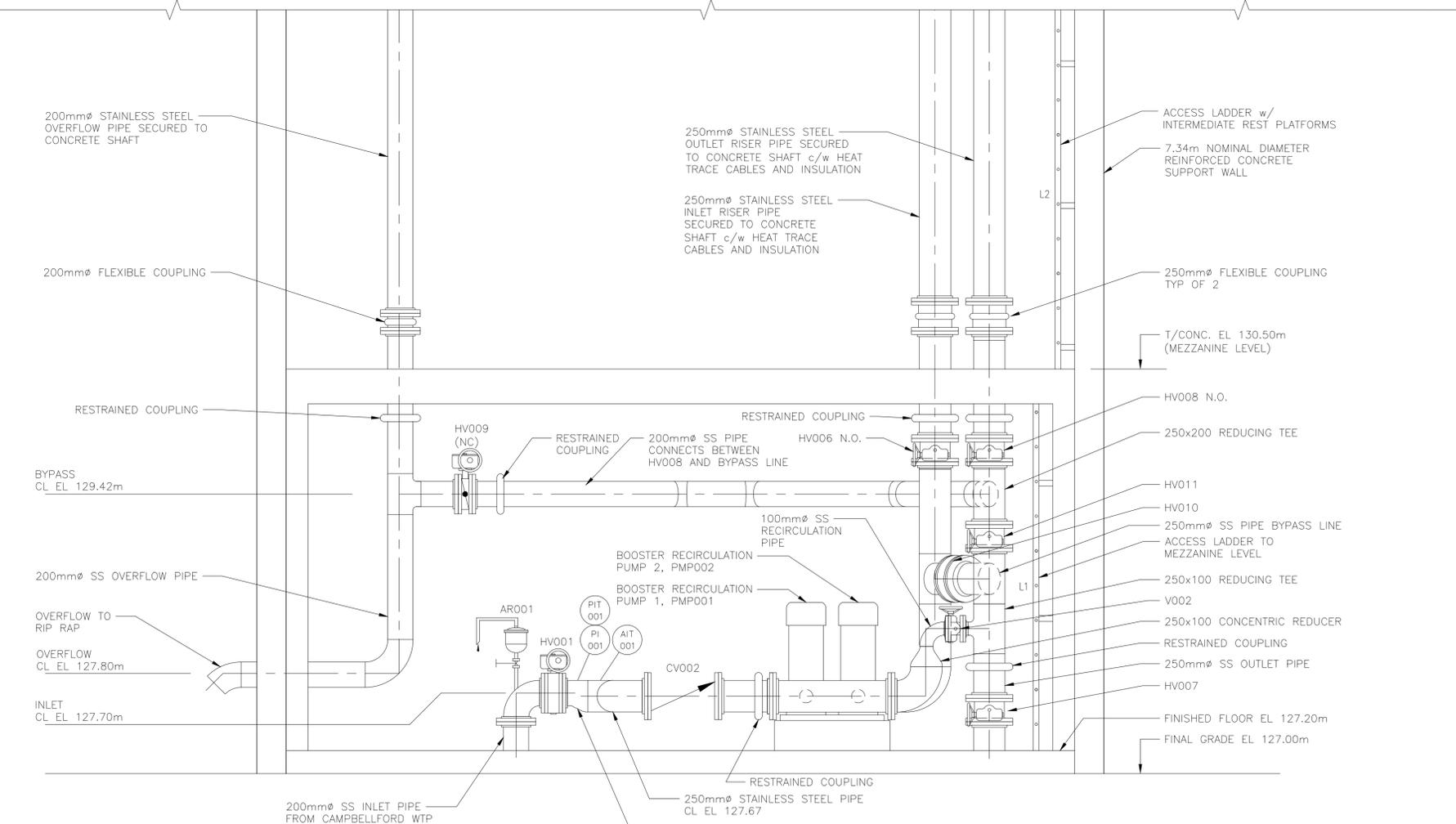
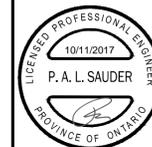
project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. M03

NOTE:  
SLAB FLOOR FOR BASE SHALL BE A STRUCTURAL SLAB WITH FOOTINGS TO ACCOMMODATE DESIGN REQUIREMENTS



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**A WATER TANK VALVE ROOM DETAIL**  
SCALE 1:25

revision	description	date
0	ISSUED FOR BID	2017/10/11

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project title  
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**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**ELEVATED WATER TANK  
VALVE ROOM DETAIL**

drawn by  
dessiné par **PK**

designed by  
conçu par **PS**

approved by  
approuvé par **ET**

tender  
soumission

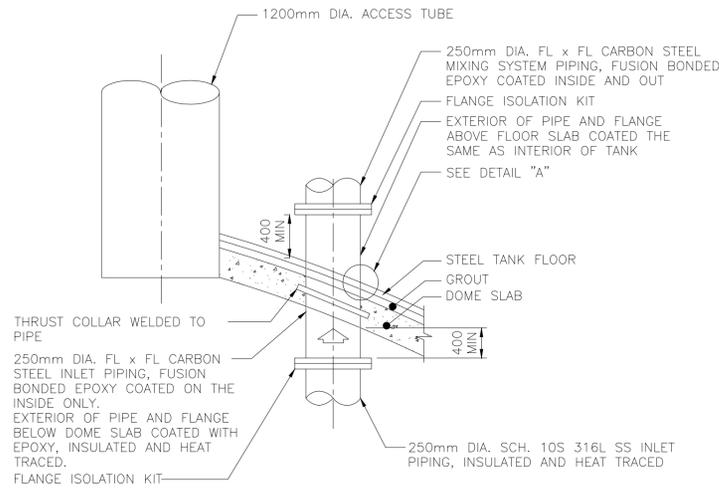
project manager  
administrateur de projets

project date  
date du projet **2017/05/16**

project no.  
no. du projet **R.068488.001**

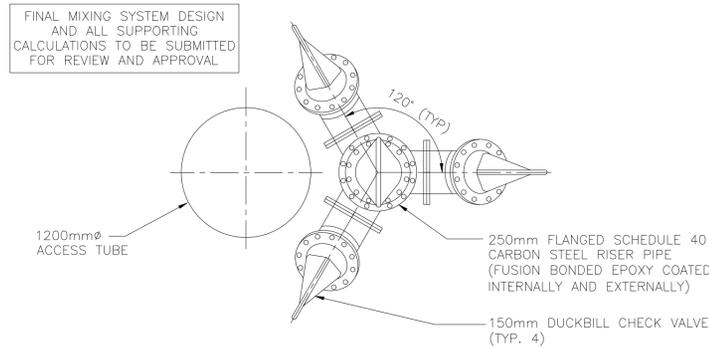
drawing no.  
dessiné no. **M04**

NOTE:  
SLAB FLOOR FOR BASE SHALL BE A STRUCTURAL SLAB WITH  
FOOTINGS TO ACCOMMODATE DESIGN REQUIREMENTS

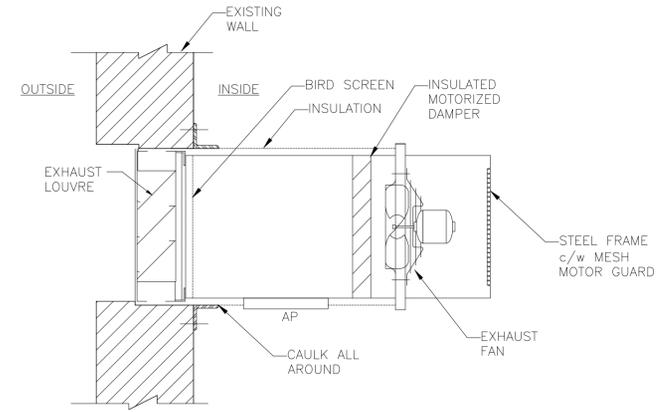


- NOTES:
1. NO DISSIMILAR METALS ALLOW INSIDE TANK WITHOUT APPROVED ISOLATION KIT.
  2. FUSION BONDED EPOXY SHALL BE ANSI/NSF 61 APPROVED TO AWWA C213.

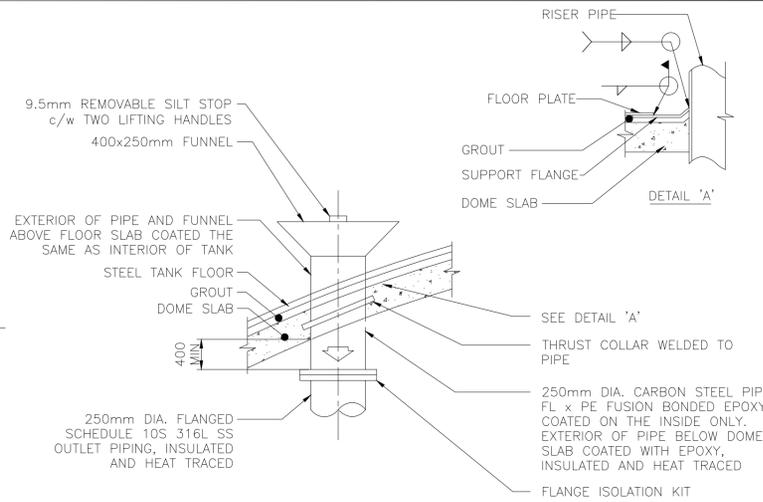
INLET RISER PIPE DETAIL  
NTS



MIXING SYSTEM TYPICAL PLAN DETAIL  
NTS

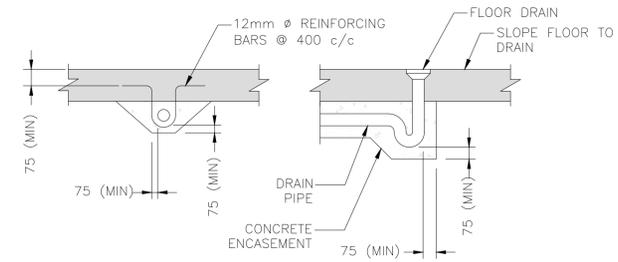


SIDEWALL EXHAUST FAN INSTALLATION ARRANGEMENT  
N.T.S.

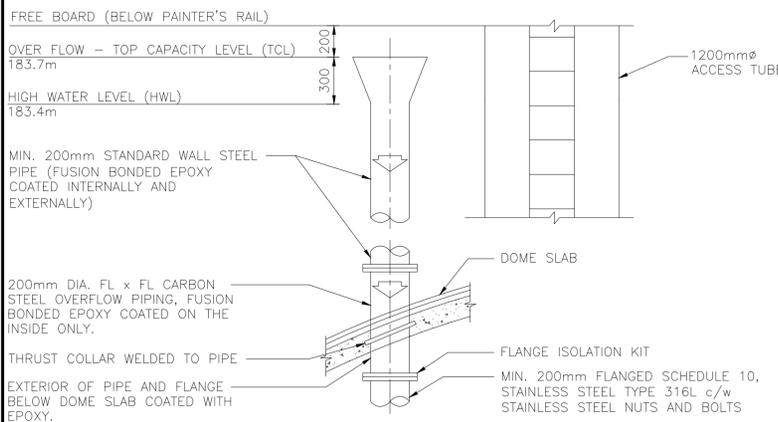


- NOTES:
1. NO DISSIMILAR METALS ALLOW INSIDE TANK WITHOUT APPROVED ISOLATION KIT.
  2. REMOVAL OF SILT STOP MUST ALLOW EMPTYING TANK BY GRAVITY.
  3. FUSION BONDED EPOXY SHALL BE ANSI/NSF 61 APPROVED TO AWWA C213.

OUTLET RISER PIPE AND REMOVABLE SILT TRAP DETAIL  
NTS

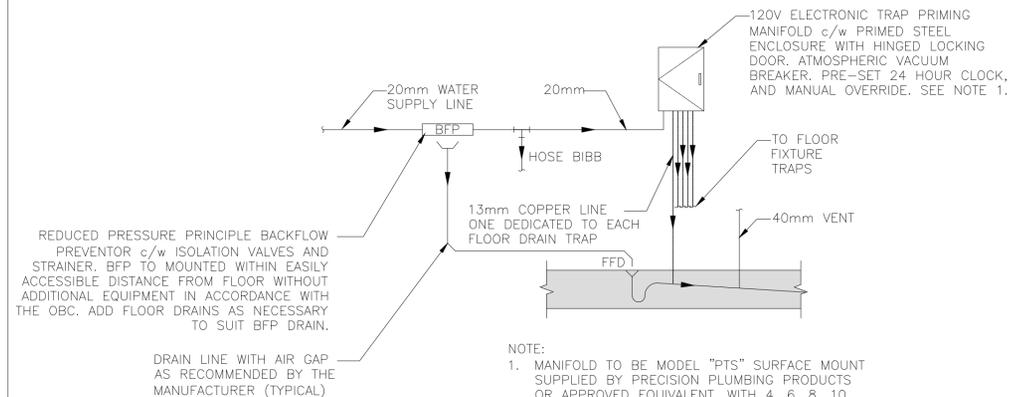


TYPICAL FLOOR DRAIN / DRAIN PIPE BELOW BASE SLAB DETAIL  
NTS



- NOTES:
1. NO DISSIMILAR METALS ALLOWED INSIDE TANK WITHOUT APPROVED ISOLATION KIT.
  2. MINIMUM OVERFLOW RATE IS 30 L/S.
  3. FUSION BONDED EPOXY SHALL BE NSF/ANSI 61 APPROVED

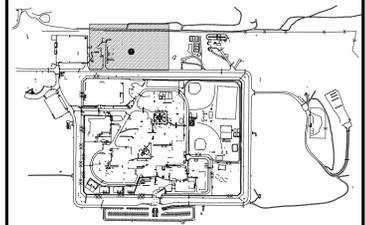
OVERFLOW WEIR DETAIL  
NTS



- NOTE:
1. MANIFOLD TO BE MODEL "PTS" SURFACE MOUNT SUPPLIED BY PRECISION PLUMBING PRODUCTS OR APPROVED EQUIVALENT. WITH 4, 6, 8, 10, 12, 20 OR 30 - 12mm OUTLET CONFIGURATIONS AS REQUIRED.

ELECTRONIC TRAP SEAL PRIMING SYSTEM  
N.T.S.

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project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**DETAILS**

drawn by  
dessiné par  
PL

designed by  
conçu par  
PS

approved by  
approuvé par  
ET

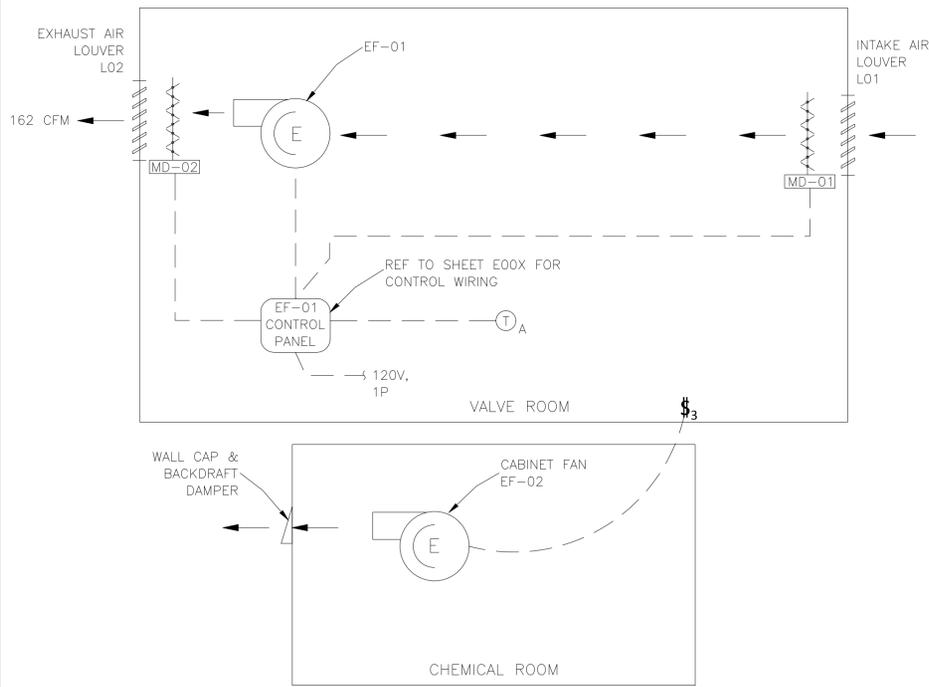
tender  
soumission

project manager  
administrateur de projets

project date  
date du projet  
2017/05/16

project no.  
no. du projet  
R.068488.001

drawing no.  
dessiné no.  
M05



NOTES:  
SEE ELECTRICAL DRAWING FOR CONTROL WIRING SCHEMATICS.

VENTILATION SYSTEM SCHEMATIC  
SCALE: NTS

LOUVER/DAMPER SCHEDULE

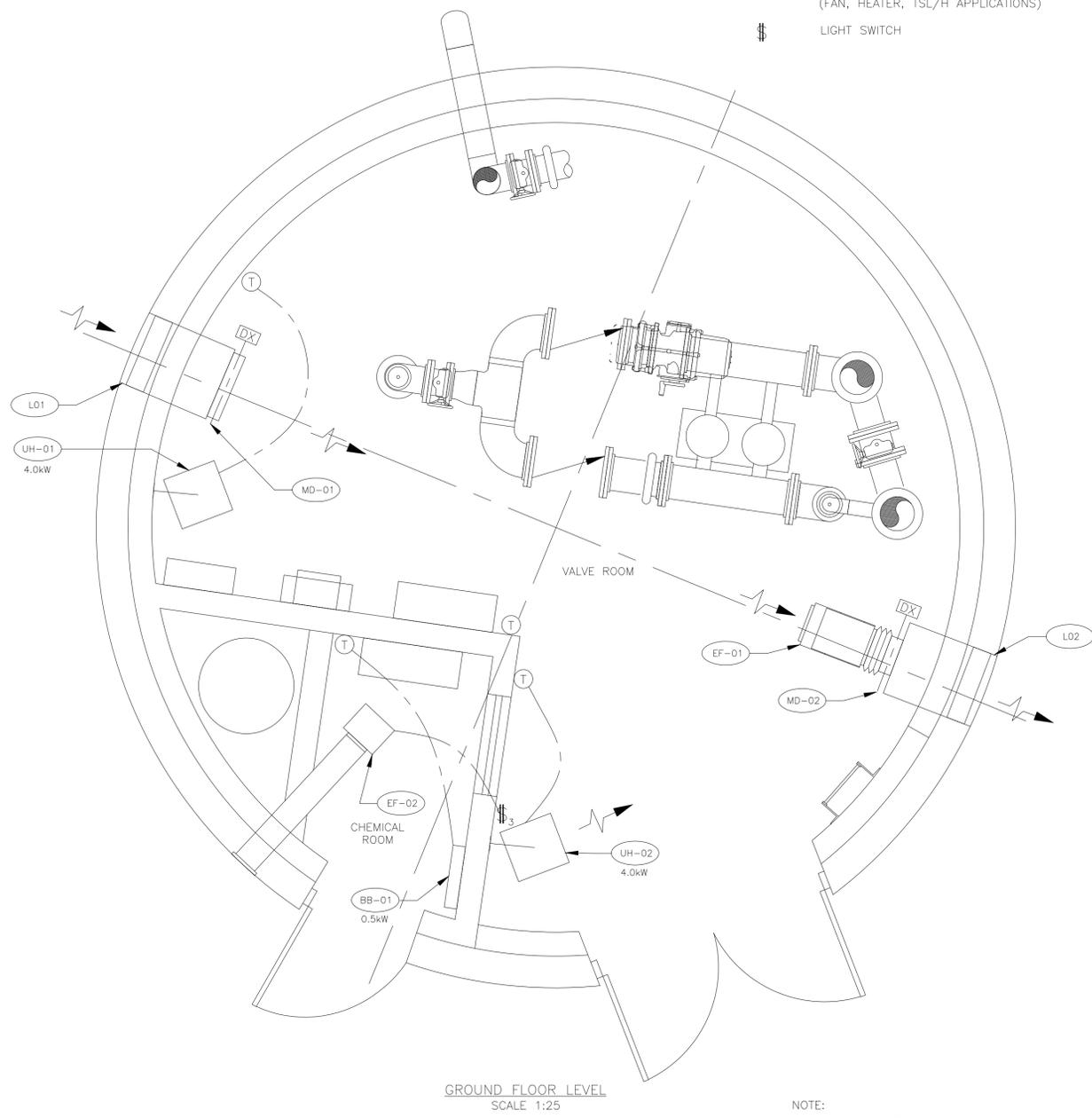
ITEM	LOCATION	SYSTEM	REF.	TYPE	(W)mm	(H)mm	(D)mm	WALL OPENING		COMMENTS
								(W)mm	(H)mm	
LOUVER	VALVE ROOM	AIR INTAKE SYSTEM	L01	A	600	600	150	600	600	COMPLY WITH ARCHITECTURAL COLOUR REQUIREMENTS
	VALVE ROOM	EXHAUST AIR SYSTEM	L02	A	600	600	150	600	600	COMPLY WITH ARCHITECTURAL COLOUR REQUIREMENTS
	CATWALK	GENERAL VENTILATION	L03	B	900	900	50	900	900	PROVIDE INSULATED MANUAL CLOSURE PANEL
DAMPER	VALVE ROOM	AIR INTAKE	MD-01		550	550	100	--	--	INSULATED DAMPER TAMCO 9000 1BF
DAMPER	VALVE ROOM	EXHAUST AIR SYSTEM	MD-02		300	300	100	300	300	INSULATED DAMPER TAMCO 9000 1BF

FAN SCHEDULE

REF	LOCATION	SPECIFICATION	POWER	VOLTAGE	COMMENTS
EF-01	VALVE ROOM	CENTRIFUGAL SQUARE INLINE FAN, HIGH PRESSURE BELT DRIVE, 1281 RPM, 162 CFM, COOK MODEL 70SQN-B.	746W	115V, 1, 60Hz	CONTROL BY T-STAT FAN TO BE CONSTRUCTED OF CORROSIONS RESISTANT MATERIAL AND SHALL INCLUDE A TEFC MOTOR, BELT GUARD, INLET GUARD, DUCT CONNECTOR, SPARE BELT SET, ISOLATORS AND INSTALLATION HARDWARE.
EF-02	CHEMICAL ROOM	COOK INLINE BLOWER MODEL GN-242, 108 CFM @ 0.25SP", 1483 RPM C/W FAN SPEED CONTROLLER AND GEMINI ISOLATOR KIT	25W	115V, 1, 60Hz	CONTROLLED BY LIGHT SWITCH

UNIT HEATER SCHEDULE

REF	LOCATION	MAKE	MODEL	ELECTRICAL LOAD (kW)	VOLTS	PHASE	COMMENTS
UH-01	VALVE ROOM	OUELLET	OAS04036	4.0 kW	600	3	ELECTRIC UNIT HEATER c/w BUILT-IN THERMOSTAT, DISCONNECT SWITCH, COATING: CORROSION RESISTANT COATING
UH-02	VALVE ROOM	OUELLET	OAS04036	4.0 kW	600	3	ELECTRIC UNIT HEATER c/w BUILT-IN THERMOSTAT, DISCONNECT SWITCH, COATING: CORROSION RESISTANT COATING

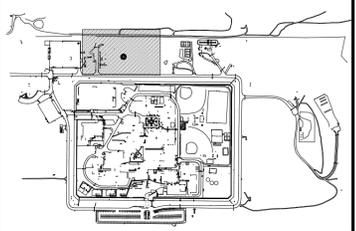


GROUND FLOOR LEVEL  
SCALE 1:25

NOTE:  
SEE DRAWING E07 FOR UNIT HEATER SCHEDULE

- LEGEND**
- MD-XX DAMPER MOTOR ACTUATOR, 120VAC CLOSE/OPEN  
X: DENOTES TAG NUMBER
  - (X) FAN  
X: DENOTES THE FOLLOWING  
S = SUPPLY  
E = EXHAUST
  - ← AIR FLOW DIRECTION
  - CFM CUBIC FEET PER MINUTE
  - ELECTRICAL POWER & CONTROL WIRING
  - ∩ OPPOSITE BLADE DAMPER
  - || LOUVER
  - XX YY DEVICE SYMBOL  
"XX" DENOTES DEVICE TYPE AS FOLLOWS:  
UC = UNIT CONTROLLER  
MICROPROCESSOR BASED
  - VENTILATION SYSTEM CONTROLLER  
JOHNSON CONTROLS MODEL UNIT
  - TE = TEMPERATURE SENSING PRIMARY ELEMENT
  - TS = LINE VOLTAGE ADJUSTABLE TEMPERATURE SWITCH
  - MS = MOTOR STARTER
  - YY DENOTES TAG
  - ⊙ T A LINE VOLTAGE THERMOSTAT TYPE 'A', TEMP RANGE - 5° TO 30°C DIFFERENTIAL 1.0°C, 1-SPDT SWITCH RATED 8.0A 120 V. HONEYWELL MODEL T651A OR APPROVED EQUAL (FAN, HEATER, TSL/H APPLICATIONS)
  - § LIGHT SWITCH

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CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**VENTILATION LAYOUT**

drawn by  
dessiné par DC

designed by  
conçu par PS

approved by  
approuvé par ET

tender  
soumission

project manager  
administrateur de projets

project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

drawing no.  
dessiné no. V01

**GENERAL ELECTRICAL LEGEND**

- TRANSFORMER  
 Δ : DENOTES DELTA CONNECTION  
 ↘ : DENOTES WYE CONNECTION WITH IMPEDANCE GROUND  
 ↙ : DENOTES WYE CONNECTION WITH SOLID GROUND
- CURRENT XMR  
 X: QUANTITY (IF SHOWN)  
 Y: RATIO (IF SHOWN)  
 IF NOT INDICATED, PROVIDE QUANTITY & RATIO TO SUIT PHASING, COORDINATION STUDY REQUIREMENTS AND EQUIPMENT
- ZERO SEQUENCE CURRENT XMR
- FUSE
- NON FUSED INTERRUPTER SWITCH
- FUSED INTERRUPTER LOAD BREAK SWITCH
- FUSED CONTACTOR
- CIRCUIT BREAKER C/W MAG. & THERM TRIP
- CONTACTOR & OVERLOAD
- CONTACTOR-XC  
 BC: BYPASS CONT.  
 CC: CAPACITOR CONT.  
 IC: INLINE CONT.
- FUSED POTENTIAL TRANSFORMER(S)
- CIRCUIT BREAKER MOLDED CASE
- SURGE PROTECTION DEVICE  
 TOTAL PROTECTION SOLUTIONS SERVICE TRACK MODEL ST240 FOR 600V AND MODEL ST80 FOR 120/208VAC APPLICATION.
- SOLID STATE OVERLOAD
- TYPE 'A' NON FUSED DISCONNECT RATED 30A(20HP),600V,3P BRYANT MODEL 30003 IN A PVC BOX SCEPTRE TYPE FSC 15/10 C/W VSC 15/10 WEATHERPROOF TOGGLE COVER PLATE
- SINGLE/THREE PH LOAD
- UTILITY METER C/W 7 JAW METER BASE INSTALLED IN A NEMA 4X LOCKABLE ENCLOSURE WITH A CLEAR LEXSON VIEWING WINDOW
- ELECTRICAL UNIT / BASEBOARD HEATER
- CABLE SCHEDULE TAG
- EQUIPMENT SCHEDULE TAG
- WALL MOUNTED MOTOR STARTER IN A NEMA 12 ENCLOSURE FULL VOLTAGE NON REVERSING "X" DENOTES EEMAC STARTER SIZE
- HYDRO POLE
- VFD VARIABLE FREQUENCY DRIVE
- OPERATING HANDLE FOR 600V DISCONNECT

**POWER LAYOUT LEGEND**

- GROUND ROD  
 19mmx3000mm (GALVANIZED) TOP OF GROUND ROD 600mm BELOW GRADE
- LINE VOLTAGE THERMOSTAT TYPE 'A', TEMP RANGE - 5° TO 30°C DIFFERENTIAL 1.0°C, 1-SPDT SWITCH RATED 8.0A 120 V, HONEYWELL MODEL T651A OR APPROVED EQUAL (FAN, HEATER, TSL/H APPLICATIONS)
- DAMPER MOTOR, 120VAC
- DUPLEX RECEPTACLE, 15A - 120V U GROUND  
 WP: DENOTES WEATHER PROOF  
 GFCI: DENOTES GROUND FAULT CIRCUIT INTERRUPTER
- SPOT ELEVATION
- CONDUIT TAG
- DISCONNECT SWITCH
- COMBINATION STARTER
- THREE PHASE MOTOR
- SINGLE PHASE MOTOR
- INDUSTRIAL ELECTRIC UNIT HEATER C/W INTEGRAL OR REMOTE WALL MOUNT THERMOSTAT AS REQUIRED BY THE APPLICATION
- LOCAL CONTROL PANEL
- 600V, 60A, 4P WELDING RECEPTACLE, NEMA 4, HUBBLE OR APPROVED EQUAL.

**CONDUCTORS**

- EARTH GROUND
- CHASSIS GROUND

**ABBREVIATIONS**

- AA/FA DRY TYPE SELF-COOLED/FORCED AIR COOLED
- AL RIGID ALUMINUM
- ASH SMOKE DETECTOR HIGH ALARM
- ATS AUTOMATIC TRANSFER SWITCH
- AWG AMERICAN WIRE GAUGE
- CSO COMBINED SEWER OVERFLOW
- DIS LOCAL DISCONNECT AUXILIARY POSITION STATUS CONTACT 2A, 120VAC, LATE MAKE EARLY BREAK TO SUIT VFD APPLICATIONS
- IIT HEAT TRACE CONTROLLER
- REC RECEPTACLE
- EMH ELECTRICAL MAN HOLE
- SDBC SOFT DRAWN BARE COPPER
- SPD SURGE PROTECTION DEVICE
- HONI HYDRO ONE NETWORKS INC.
- CN CONCENTRIC NEUTRAL
- XLPE CROSS-LINKED POLYETHYLENE
- CU COPPER CONDUCTOR
- AL ALUMINUM CONDUCTOR
- EMHx ELECTRICAL MANHOLE  
 x DENOTES NUMBER

**LIGHTING LAYOUT LEGEND**

- COLUMBIA LIGHTING, CAT# LXEM4-50LW-RFA-EU, LINEAR LED FIXTURE, 500K, 4250 LUMENS, 120VAC, 36WATTS, RIBBED FROSTED ACRYLIC OPTICS, SURFACE MOUNTED ON CEILING OR APPROVED EQUAL.
- TYPE B - FIXTURE - WALL MOUNTED OUTDOOR LED FIXTURE, 120V, 55W, 5095 LUMENS, 5000°K COLOUR, WIDE THROW, COMPLETE WITH INTEGRAL MOTION SENSOR, PHOTOCCELL, AND AUTO DIMMING FEATURE WHEN AREA IS UNOCCUPIED. DARK SKY COMPLIANT IN ACCORDANCE WITH IESNA RP-33-99. LSI LED PATRIOT WALL SCONCE MODEL XPW53-WT-LED-28-350-CW-UE-BRZ-IMS-PC120V OR APPROVED EQUAL.
- TYPE F - LED LINEAR FIXTURE, 600 mm, ALUMINUM BODY W/GLASS OPTICS, 4000 K, 120 DEGREE OPTICS, WET LOCATION LISTED, TEMP RANGE -20 TO +40 DEG. C., SOLID STATE LUMINAIRE BASELINE BL25AC-2-120-4K-120.
- TYPE O - LED BASED RTO OBSTRUCTION LIGHTS RED LED, 5.5W, 120VAC DUAL FIXTURE. DIALIGHT MODEL RTO-6R07-002 OR APPROVED EQUAL.
- NEMA 4X BATTERY UNIT EMERGENCY LIGHT FIXTURE, 120VAC INPUT, 12VDC OUTPUT, 2 LED HEADS, 10MIN. DELAY.
- NEMA 4X REMOTE EMERGENCY LIGHT FIXTURE WITH 2 LED HEADS.
- NEMA 4X BATTERY UNIT EXIT SIGN, 120VAC INPUT, 12VDC OUTPUT, PICTOGRAM, SINGLE FACE.
- SELF-POWERED EXIT UNIT, 120VAC INPUT, 6VDC OUTPUT, PICTOGRAM, 2 HEADS, COLD-WEATHER RATED, EMERGI-LITE CAT.# ENC1W6N36LACW.
- SINGLE POLE SWITCH, 120V  
 3: DENOTES 3 WAY SWITCH
- PHOTO CELL, 120VAC, 10A

**TERMINALS**

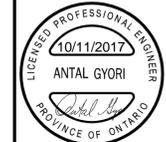
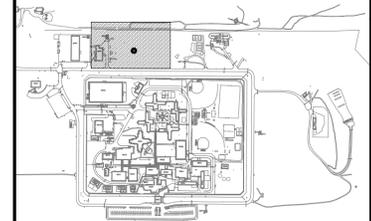
- DEVICE TERMINAL
  - TERMINAL BLOCK IN MOTOR STARTER
  - TERMINAL BLOCK IN PANEL LP-01
  - TERMINAL BLOCK IN CONTROL PANEL
  - INSTRUMENT/DEVICE TERMINAL BLOCK
- FIELD WIRING CONNECTIONS

**SECURITY LAYOUT LEGEND**

- SECURITY SYSTEM LEGEND SYMBOL "XX" DENOTES TYPE OF SECURITY SYSTEM DEVICE AND/OR EQUIPMENT AS FOLLOWS:  
 DS: ELECTRIC DOOR STRIKE  
 DC: DOOR CONTACT  
 MO: ELECTRICALLY ACTUATED MOTORIZED DOOR OPERATOR  
 SS: DOOR STATUS SWITCH  
 HB: HANDICAP ACCESS PUSH BUTTON  
 HO: MAGNETIC HOLD OPEN DEVICE  
 CR: WALL MOUNTED ACCESS CARD READER  
 MS: GENERAL PURPOSE MOTION SENSOR  
 KP: KEY PAD

**INSTRUMENTATION LEGEND**

- COMPACTLOGIX PLC 1769-L36ERM PROCESSOR
- HIRSHMANN MANAGED ETHERNET SWITCH RS20-0800T11SDAE
- ALLEN BRADLEY PANELVIEW PLUS 6
- HUMAN INTERFACE MODULE
- LOCAL/REMOTE SELECTOR SWITCH
- PUSH BUTTON
- PILOT LIGHT  
 X: G = GREEN  
 R = RED  
 A = AMBER



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 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**ELECTRICAL LEGENDS**

drawn by  
 dessiné par PY

designed by  
 conçu par MG

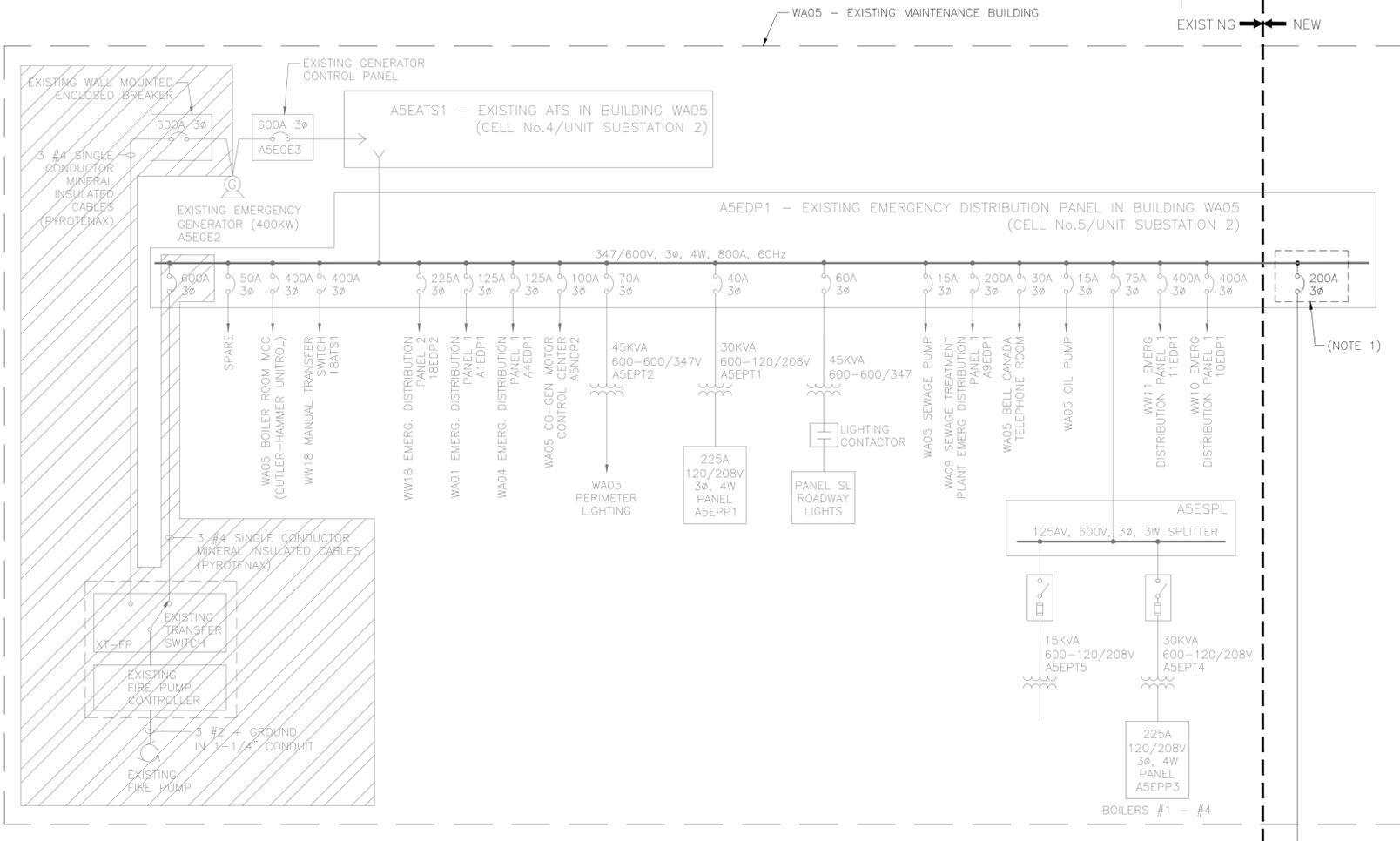
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 approuvé par BS

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 soumission project manager  
 administrateur de projets

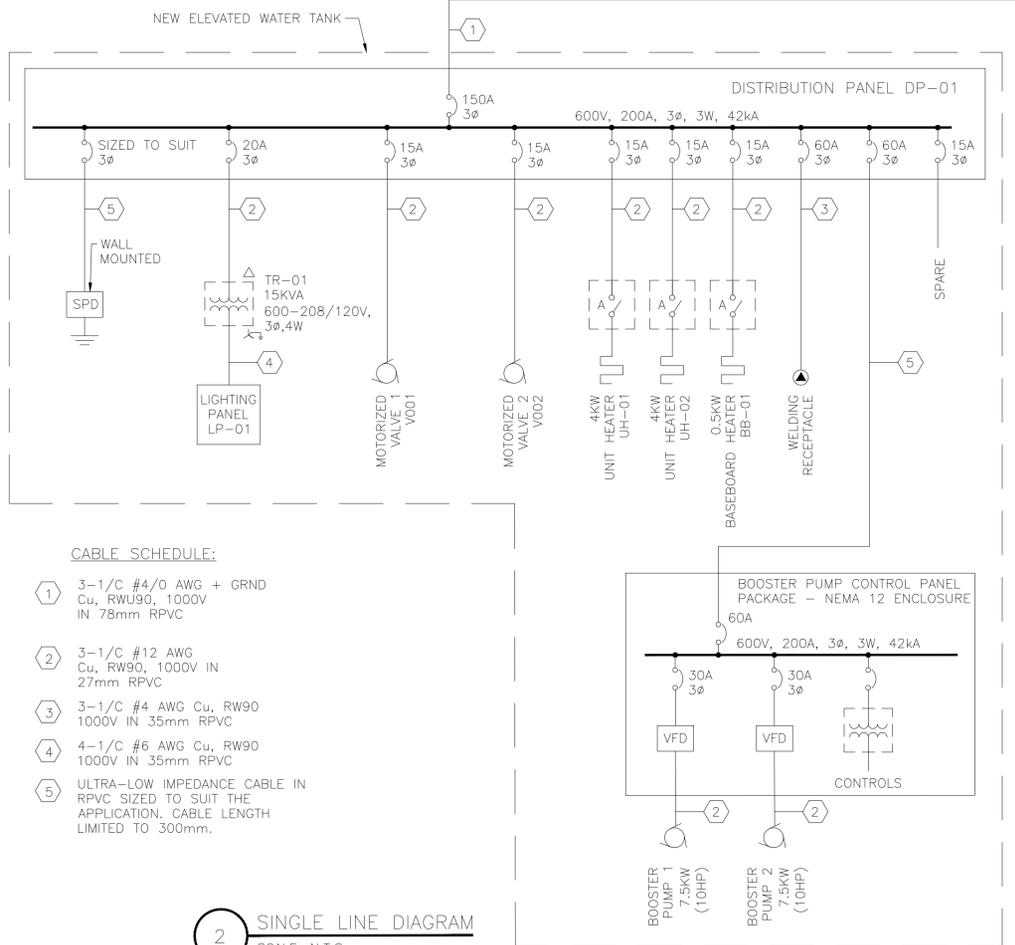
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drawing no.  
 dessiné no. E01



1 EXISTING EMERGENCY DISTRIBUTION PANEL IN BUILDING WA05  
SCALE: N.T.S.



- CABLE SCHEDULE:**
- 1 3-1/C #4/0 AWG + GRND  
Cu, RWU90, 1000V  
IN 78mm RPVC
  - 2 3-1/C #12 AWG  
Cu, RW90, 1000V IN  
27mm RPVC
  - 3 3-1/C #4 AWG Cu, RW90  
1000V IN 35mm RPVC
  - 4 4-1/C #6 AWG Cu, RW90  
1000V IN 35mm RPVC
  - 5 ULTRA-LOW IMPEDANCE CABLE IN  
RPVC SIZED TO SUIT THE  
APPLICATION. CABLE LENGTH  
LIMITED TO 300mm.

2 SINGLE LINE DIAGRAM  
SCALE: N.T.S.

**BRANCH PANEL: LP-01**

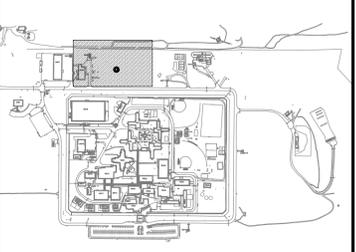
VOLTS: 120/208V  
PHASES: 3  
WIRES: 4

LOCATION: ELEVATED TANK ELECTRICAL ROOM  
FEEDER: DP-01  
ENCLOSURE: NEMA 12 C/W FRONT DOOR

A. BUSSING: 100A  
MAIN BKR: NONE  
MOUNTING: WALL  
NO. CIR: 42  
IR: 14KA

LOCATION	LTG	REC	CIR	BKR	P	A	B	C	P	BKR	CIR	REC	LTG	LOCATION
Receptacles - Valve Room	xx		1	15 A	1	•			1	15 A	2			EM1 Lighting - Valve Room
Exhaust Fan EF-01 Control Panel	5	3	15 A	1		•			1	15 A	4			Exit Signs-EX1, EX2, EX3
	xx		5	15 A	1				1	15 A	6	2		Lighting - Outdoor
	xx		7	15 A	1				1	20 A	8			Booster Pump Control Panel
	xx		9	15 A	1				1	15 A	10		11	Lighting - Pedestal
Exhaust Fan EF-02	xx		11	15 A	1				1	15 A	12		6	Lighting - Valve Room
Lighting - Chemical Room	2		13	15 A	1				1	15 A	14		xx	
	xx		15	15 A	1				1	15 A	16		xx	
Obstruction Lighting	xx		17	15 A	1				1	15 A	18	1		Receptacle - Chemical Room
	xx		19	15 A	1				1	15 A	20		xx	
	xx		21	15 A	1				1	15 A	22		xx	
Receptacles - Mezzanine & Upper Platform	4	23	15 A	1					1	15 A	24		xx	
	xx		25	15 A	1				1	15 A	26			EM2 Lighting - Pedestal, Upper Platform and Access Tube
	xx		27	15 A	1				2	15 A	28			Heat Trace Controller #1 - Trace No.1
	xx		29	15 A	1				2	15 A	30			
Heat Trace Controller #2 - Trace No.1	31		15 A	2					2	15 A	32			Heat Trace Controller #1 - Trace No.2
	33		15 A	1					1	15 A	34		xx	
Heat Trace Controller #2 - Trace No.2	35		15 A	2					1	15 A	36		xx	
	37		15 A	1					3	30 A	40			
	39		15 A	1							42			SPD
	41		15 A	1										

3 ELEVATED TANK LIGHTING PANEL  
SCALE: N.T.S.



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CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**SINGLE LINE DIAGRAM  
& PANEL SCHEDULE**

drawn by  
dessiné par PY

designed by  
conçue par MG

approved by  
approuvée par BS

tender  
soumission

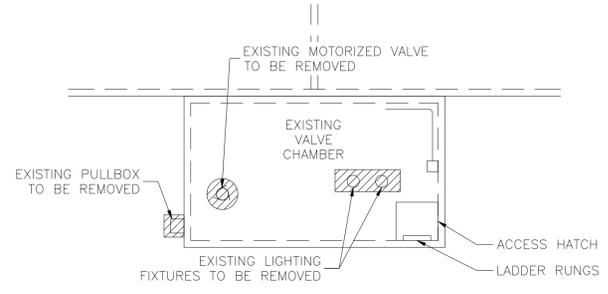
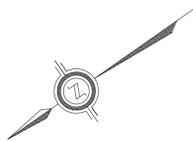
project manager  
administrateur de projets

project date  
date du projet 2017/05/16

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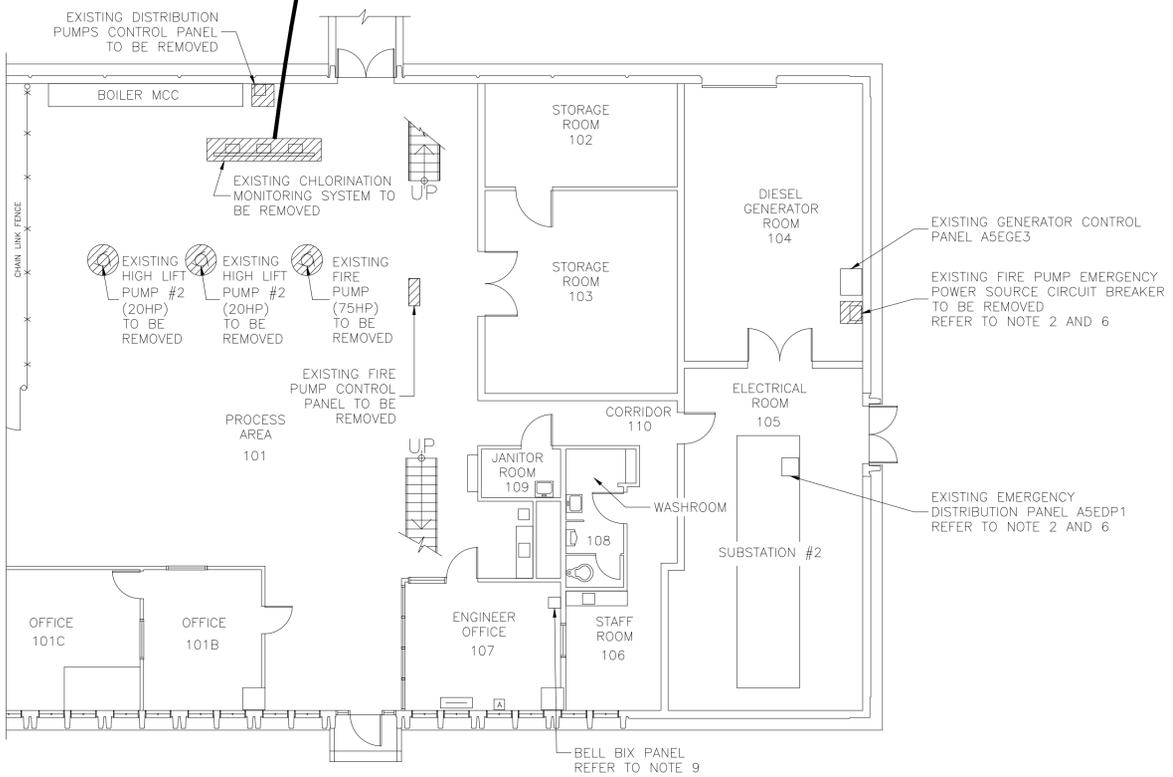
drawing no.  
dessiné no. E02

- NOTES:**
- CONTRACTOR SHALL OBTAIN THE SERVICES OF THE MANUFACTURER OF THE EXISTING DISTRIBUTION PANEL TO RETROFIT WITH A NEW BREAKER COMPARTMENT. BREAKER MAKE AND MODEL SHALL MATCH EXISTING AS MUCH AS PRACTICALLY POSSIBLE.
  - ALL CONDUIT INSTALLED ABOVE GROUND IN OUTDOOR AREAS SHALL BE PVC ENCAPSULATED RIGID METAL CONDUIT.
  - ALL ELECTRICAL, COMMUNICATION AND CONTROL CONDUIT WITHIN BUILDING WA05 SHALL BE EMT.
  - ALL ELECTRICAL, COMMUNICATION AND CONTROL CONDUIT WITHIN THE ELEVATED WATER TOWER SHALL BE RIGID PVC C/W FT4 FLAME SPEED RATING.
  - ALL ELECTRICAL, COMMUNICATIONS AND CONTROLS CONDUIT SHALL BE EXPOSED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
  - ALL LIFE SAFETY CONDUIT SHALL BE EXPOSED RIGID ALUMINUM OR PVC COATED RIGID METAL.
  - REFERENCE P&I DRAWING LEGEND FOR DETAILED DESCRIPTION OF THE INSTRUMENTATION AND FIELD DEVICE SYMBOLS. PROVIDE INSTRUMENTATION IN ACCORDANCE WITH THE P&I DRAWINGS.
  - ALL ELECTRICAL EQUIPMENT MUST BE CSA CERTIFIED. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ESA REVIEW AND INSPECTION.
  - ALL ELECTRICAL DISTRIBUTION AND OVER CURRENT PROTECTION DEVICES SHALL BE 100% RATED.
  - ALL CABLES IN CABLE TRAY INSTALLATIONS SHALL BE SPACED TO SUIT FREE AIR CABLE AMPACITY RATING.
  - ALL DISCONNECTS TO BE ADJACENT TO RESPECTIVE EQUIPMENT.
  - POWER/CONTROL CONDUCTORS TO BE COPPER UNLESS OTHERWISE INDICATED ON THE DRAWINGS.



**LEGEND**  
 PUMP/MOTOR  
 REMOVAL

**2 VALVE CHAMBER – ELECTRICAL DEMOLITION – PLAN VIEW**  
 SCALE: NTS



**1 WA05 BUILDING – ELECTRICAL DEMOLITION – PLAN VIEW**  
 SCALE: NTS

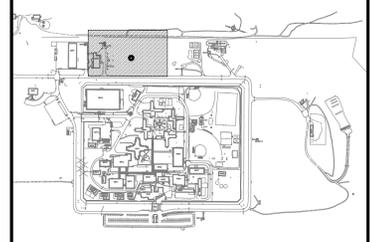
**VALVE CHAMBER NOTES:**

1. THE CONTRACTOR SHALL MAKE ELECTRICALLY DEAD IN A PERMANENT FASHION, ALL ELECTRICAL EQUIPMENT IN AND ON THE VALVE CHAMBER TO ALLOW DEMOLITION OF THE VALVE CHAMBER TO PROCEED SAFELY AND EXPEDITIOUSLY.
2. REMOVE ALL EXISTING WIRING AND EXPOSED CONDUIT FROM THE EXISTING VALVE CHAMBER SUCH THAT THE CONCRETE WALLS OF THE CHAMBER CAN BE KNOCKED DOWN TO 1.6 METERS BELOW GROUND ELEVATION. SEE R01.
3. WITH REGARDS TO THE WIRES, CABLES AND CONDUIT ENTERING THE VALVE CHAMBER AT AN ELEVATION LOWER THAN 1.6 METERS BELOW GROUND ELEVATION, CUT BACK CABLES, WIRES AND CONDUIT ON THE INTERIOR SIDE OF THE WALL, AS MUCH AS PRACTICALLY POSSIBLE. ELECTRICALLY INSULATE THE CUT ENDS OF ABANDONED WIRES AND CABLES. CAP AND SEAL ABANDONED CONDUIT OPENINGS.
4. WITH REGARDS TO THE WIRES, CABLES AND CONDUIT ENTERING THE VALVE CHAMBER AT AN ELEVATION ABOVE 1.6 METERS BELOW GROUND ELEVATION, CUT BACK CABLES, WIRES AND CONDUIT ON THE EXTERIOR SIDE OF THE WALL AS REQUIRED TO ALLOW ADEQUATE CLEARANCE FOR OTHER TRADES TO DEMOLISH THE VALVE CHAMBER. COORDINATE THE CUT-BACK LENGTH WITH THE OTHER TRADES. ELECTRICALLY INSULATE THE CUT ENDS OF ABANDONED WIRES AND CABLES. CAP AND SEAL ABANDONED CONDUIT OPENINGS.
5. WITH REGARD TO WIRES, CABLES AND CONDUIT ENTERING THE BUILDING WA05, CUT BACK CABLES, WIRES AND CONDUIT ON THE INTERIOR SIDE OF THE BUILDING AS MUCH AS PRACTICALLY POSSIBLE. ELECTRICALLY INSULATE THE CUT ENDS OF ABANDONED WIRES AND CABLES. CAP AND SEAL ABANDONED CONDUIT OPENINGS.
6. ALL SECTIONS OF EXISTING WIRING, CABLE AND EXPOSED CONDUIT THAT RESIDES IN BUILDING WA05 AND ARE RELATED TO THE ELECTRICAL EQUIPMENT IN THE VALVE CHAMBER SHALL BE ENTIRELY REMOVED, AS WELL AS ANY RELATED ELECTRICAL APPURTENANCES.
7. WITHIN BUILDING WA05, INSTALL APPROPRIATE PLUGS AND COVERS IN AND ON ELECTRICAL ENCLOSURES THAT REMAIN IN SERVICE, WHERE CONDUIT AND CABLE REMOVALS HAVE LEFT OPEN HOLES IN THOSE ENCLOSURES.
8. WITHIN BUILDING WA05, INSTALL APPROPRIATE SEALS IN ALL WALL AND FLOORS WHERE CONDUIT REMOVALS HAVE LEFT OPEN HOLES, TO MAINTAIN THE FIRE RATING AND STRUCTURAL INTEGRITY OF THE STRUCTURE AND TO SUIT ENVIRONMENTAL CONDITIONS.
9. THE DETAIL SHOWN IS DIAGRAMMATIC. THE INFORMATION PROVIDED IN THE DETAIL IS UNCONFIRMED. THE CONTRACTOR SHALL VERIFY ON SITE THE EXACT QUANTITY, DETAILS AND FUNCTIONS OF THE ELECTRICAL APPARATUS AND THE THEIR POINT OF POWER CONNECTION IN BUILDING WA05.
10. RETURN INSTRUMENTS, CIRCUIT BREAKERS AND CONTROL PANELS TAKEN OUT OF SERVICE TO THE CLIENT OR DISCARD AS INSTRUCTED BY THE CLIENT.
11. DIVISION 15 TO REMOVE MECHANICAL APPARATUS INCLUDING THE MOTORIZED VALVE THAT RESIDES IN THE VALVE CHAMBER.

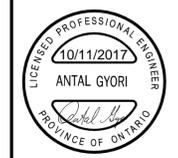
**WA05 BUILDING NOTES:**

1. REMOVE ALL EXISTING WIRING, CABLES AND EXPOSED CONDUIT FROM THE EXISTING DISTRIBUTION PUMPS CONTROL PANEL TO THE BOILER MCC, TO THE HIGH LIFT PUMPS #1 AND #2, AND TO THE PRESSURE AND LEVEL INSTRUMENTATION ASSOCIATED TO THE CONTROL PANEL, AS WELL AS ANY ELECTRICAL APPURTENANCES RELATED TO THE OPERATION OF THE PANEL, THE PUMPS AND THE INSTRUMENTATION.
2. REMOVE ALL EXISTING WIRING, CABLES AND EXPOSED CONDUIT FROM THE EXISTING FIRE PUMP CONTROL PANEL TO SUBSTATION #2 AS WELL AS ANY ELECTRICAL APPURTENANCES RELATED TO THE OPERATION OF THE PANEL, THE PUMP AND THE FIRE ALARM SYSTEM. SEE DETAIL 2 ON E02.
3. REMOVE ALL EXISTING WIRING, CABLES AND EXPOSED CONDUIT FROM THE EXISTING CHLORINATION MONITORING SYSTEM AS WELL AS ANY ELECTRICAL APPURTENANCES RELATED TO THE OPERATION OF THE SYSTEM.
4. CAP AND LABEL ABANDONED CONCEALED CONDUITS.
5. INSTALL APPROPRIATE SEALS IN ALL WALL AND FLOORS WHERE CONDUIT REMOVALS HAVE LEFT OPEN HOLES, TO MAINTAIN THE FIRE RATING AND STRUCTURAL INTEGRITY OF THE STRUCTURE AND TO SUIT ENVIRONMENTAL CONDITIONS.
6. INSTALL APPROPRIATE PLUGS AND COVERS IN AND ON ELECTRICAL ENCLOSURES THAT REMAIN IN SERVICE, WHERE CONDUIT REMOVALS HAVE LEFT OPEN HOLES IN THOSE ENCLOSURES.
7. RETURN INSTRUMENTS, CIRCUIT BREAKERS AND CONTROL PANELS TAKEN OUT OF SERVICE TO THE CLIENT OR DISCARD AS INSTRUCTED BY THE CLIENT.
8. DIVISION 15 TO REMOVE MECHANICAL APPARATUS INCLUDING HIGH LIFT PUMPS #1 AND #2 AND THE FIRE PUMP.
9. CONTRACTOR TO COORDINATE WITH BELL WHEN ADDING THE LANDLINE FROM THE BELL BIX PANEL TO THE DIALER IN THE ELEVATED TANK. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE COMMUNICATION CONDUIT ROUTED FROM THE BIX PANEL TO THE TELEPHONE PORT NEAR THE DIALER IS ROPED AND READY FOR BELL TO COMPLETE THE LANDLINE CONNECTION. BELL IS RESPONSIBLE TO CONNECT THE LANDLINE FROM THE BIX PANEL TO THE TELEPHONE CONNECTION PORT NEAR THE DIALER.

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project title  
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**CHAMBER** Ontario  
 CORRECTIONAL SERVICES CANADA  
 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**ELECTRICAL REMOVALS  
 WA05 BUILDING & VALVE  
 CHAMBER**

drawn by  
 dessiné par EI

designed by  
 conçu par MG

approved by  
 approuvé par BS

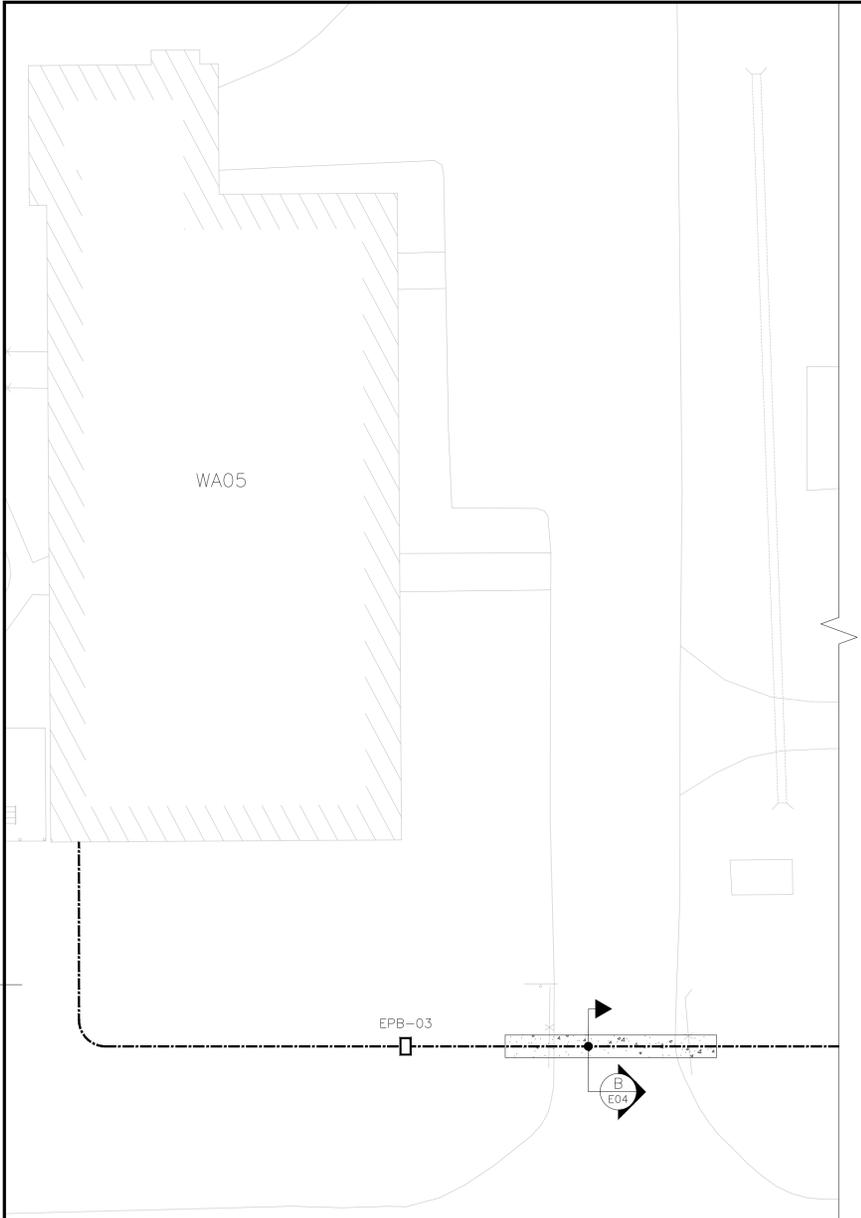
tender  
 soumission

project manager  
 administrateur de projets

project date  
 date du projet 2017/05/16

project no.  
 no. du projet R.068488.001

drawing no.  
 dessiné no. E03



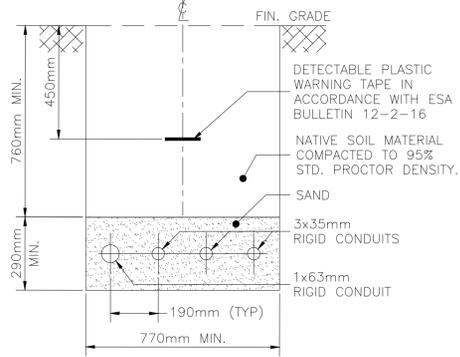
1 SITE PLAN - ELECTRICAL  
SCALE: 1:200



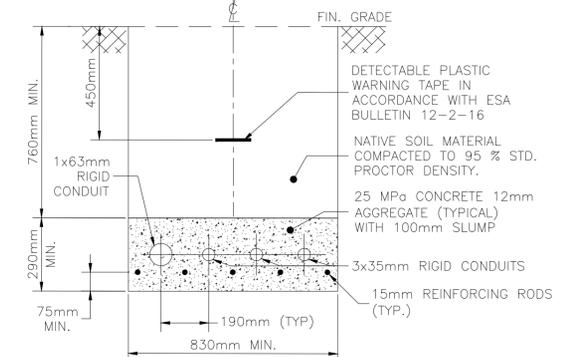
CONDUIT SCHEDULE

DIRECTLY BURIED RIGID PVC DUCTS

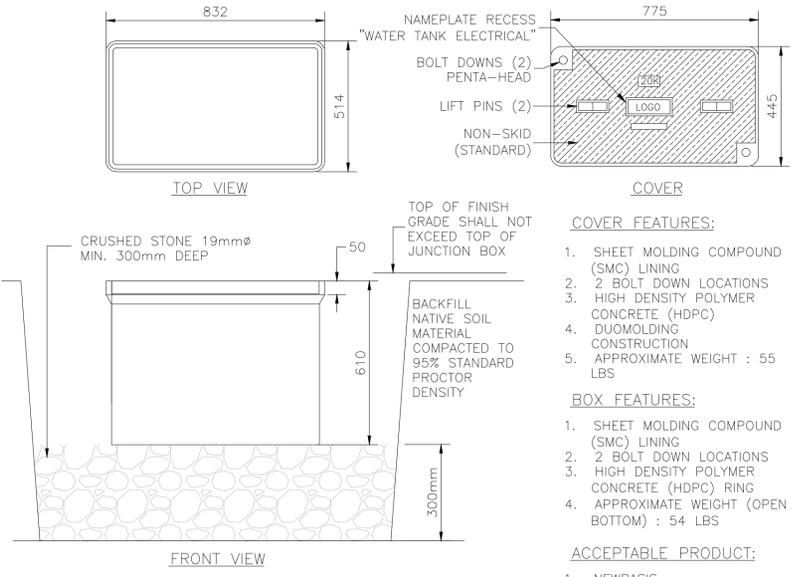
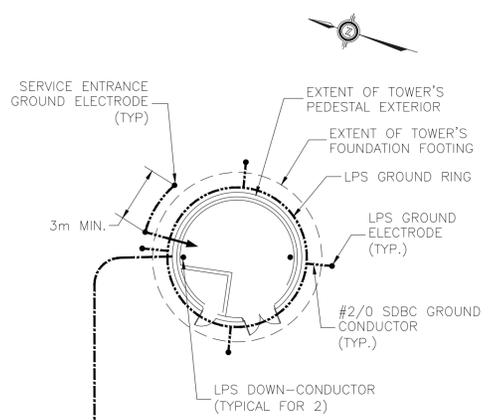
TAG	DESCRIPTION	ORIGIN	DESTINATION	DETAIL
C1	1x63mm (600V POWER) 1x35mm (120V POWER) 1x35mm (BELL COMMUNICATION) 1x35mm (SPARE)	WA05 BUILDING	NEW ELEVATED TANK	A & B



A CROSS SECTION  
E04 SCALE: N.T.S.



B CROSS SECTION  
E04 SCALE: N.T.S.



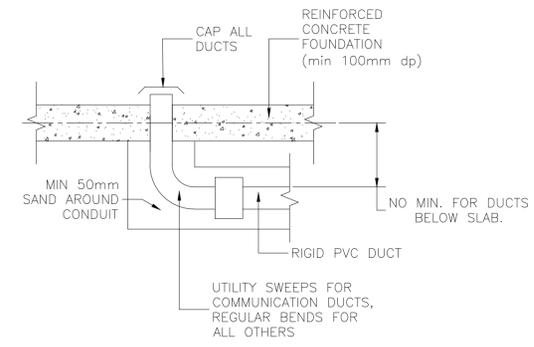
2 TYPICAL UNDERGROUND PULLBOX DETAIL  
SCALE: N.T.S.

PULLBOX NOTES:

1. THE DETAIL SHOWN HERE ILLUSTRATES THE METHOD OF INSTALLATION OF THE PULLBOX ENCLOSURES AND IS NOT COMPLETE IN EVERY DETAIL. THE PULLBOX ENCLOSURE DIMENSIONS PROVIDED ARE NOT CONFIRMED TO BE ADEQUATE FOR ALL APPLICATIONS. THE CONTRACTOR SHALL DETERMINE THE NECESSARY DIMENSIONS AND SELECT THE APPROPRIATE MODEL OF PULLBOX ENCLOSURE. THE PULLBOX ENCLOSURE DIMENSIONS PROVIDED ILLUSTRATE THE MINIMUM ACCEPTABLE DIMENSIONS.

NOTES:

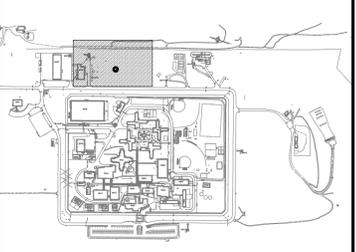
1. EXISTING CONDUITS, SEWERS, WATERMANS AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES MAY NOT BE SHOWN ON THE CONTRACT DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME LIABILITY FOR ANY DAMAGE DONE TO THEM.
2. THE CONTRACTOR SHALL STAKE ALL PROPOSED ELECTRICAL TRENCHING & SHALL OBTAIN APPROVAL FROM THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH TRENCHING.
3. COORDINATE INSTALLATION OF ALL BURIED CONDUIT & DUCTS WITH CIVIL WORKS BEING INSTALLED BELOW GRADE.
4. WHEN RUNNING PARALLEL TO ANOTHER UTILITY THE DUCT BANK SHALL BE MINIMUM 1.5M CLEAR AND IN NO CASE INSTALLED IN THE SAME EXCAVATION.
5. SUPPLY, PLACE AND MAINTAIN SHEETING, BRACING AND SHORING AS REQUIRED TO SUPPORT SIDES OF EXCAVATIONS TO PREVENT MOVEMENT WHICH CAN REDUCE NECESSARY WIDTHS OF EXCAVATIONS OR OTHERWISE INJURE OR DELAY WORK, OR ENDANGER ANY PERSON.
6. DUCT BANKS TO BE SLOPED AWAY FROM THE SUBSTATION AND TOWARDS INTERMEDIATE VAULTS/CHAMBERS. MIN. SLOPE: 75MM IN 30M.
7. RESTORE ALL TRENCHING TO ORIGINAL CONDITION OR BETTER AFTER INSTALLATION OF DUCT BANKS.
8. WHERE REINFORCING BARS ENTER STRUCTURES (I.E. TRANSFORMER VAULT), BARS ARE TO ENTER FULL THICKNESS OF WALL OPENING.
9. MAINTAIN SPACING BETWEEN COMMUNICATION AND POWER CONDUITS AS REQUIRED BY ONTARIO ELECTRICAL SAFETY CODE.
10. ALL CONDUITS ARE RIGID PVC UNLESS OTHERWISE NOTED.
11. ALL DUCTS TO BE TERMINATED AT BOTH ENDS WITH A "BELL END" COUPLING.
12. CONTRACTOR TO PROVIDE AND INSTALL A PULLBOX AT EVERY 50m FOR ALL UNDERGROUND INSTALLATIONS. SEE DETAIL 2.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY SUPPORT AND/OR RELOCATION OF EXISTING UTILITIES AND SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE AND COMPLY WITH THE REQUIREMENTS OF ALL UTILITIES WHEN CROSSING.
14. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE ACCURACY OF ALL TEMPORARY BENCHMARKS ESTABLISHED FOR DESIGN PURPOSES, PRIOR TO STARTING CONSTRUCTION.
15. EXISTING TREES AND SHRUBS WHICH ARE NOT TO BE REMOVED UNDER THE CONTRACT SHALL BE PROTECTED DURING ALL PHASES OF CONSTRUCTION. TREES AND SHRUBS WHICH DIE OR DECAY DURING THE MAINTENANCE PERIOD OR ARE SEVERELY DAMAGED DURING CONSTRUCTION SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT NO EXTRA COST TO THE CONTRACT.
16. ALL TOPSOIL SHALL BE STOCKPILED SEPARATELY FROM OTHER EXCAVATED MATERIAL BY THE CONTRACTOR. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR USE TOPSOIL FROM ANY SOURCE AS BACKFILL IN A TRENCH.
17. ALL ROAD SURFACES DISTURBED BY CONSTRUCTION SHALL BE REINSTATED AS PER THE MINIMUM RESTORATION DETAILS SHOWN.
18. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITIONS OR BETTER. GRASS AREA DISTURBED TO BE RESTORED WITH MINIMUM 100MM TOPSOIL AND SOD.
19. ALL CONTRACTOR LAYDOWN AREAS, STAGING AREAS, STORAGE AND OFFICES TO BE LOCATED WITHIN THE PROPERTY LINE OF THE EXISTING RESERVOIR. CONTRACTOR TO MAINTAIN ACCESS TO TOWN OPERATIONS STAFF AT ALL TIMES.
20. CONDUIT RUNS INSIDE THE ELEVATED TANK ARE NOT SHOWN AND SHALL BE DETERMINED ON SITE.
21. CONDUIT RUNS INSIDE WA05 BUILDING ARE NOT SHOWN AND SHALL BE DETERMINED ON SITE.



3 DUCT BELOW SLAB DETAIL  
SCALE: N.T.S.

NOTES:

1. INSTALL STUB-UPS & CAP ALL DUCTS FOR COMPLETION BY OTHERS.
2. INSTALL GROUND ELECTRODE & RUN EQ'T PIGTAILS FOR CONNECTION TO EQ'T BY OTHERS.



ELECTRICAL SITE PLAN LEGEND:

- LS EXISTING LIGHT STANDARD
- HP HYDRO POLE
- HYD HYDRANT
- CX CONDUIT TAG
- EPB-X ELECTRICAL PULLBOX
- BURIED RIGID CONDUITS
- DIRECTLY BURIED SDBC GROUND CONDUCTORS #2/0
- CONCRETE ENCASED DUCT



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B	dessin no. - où détail exigé
C	drawing no. - where detailed
	dessin no. - où détaillé

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**WARKWORTH** Ontario  
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CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**ELECTRICAL SITE PLAN**

drawn by  
dessiné par PY

designed by  
conc par MG

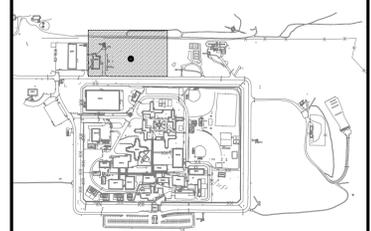
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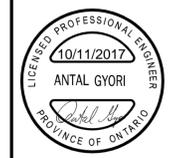
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dessiné no. E04



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	drawing no. - where detailed
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drawing title  
 titre du dessin  
**POWER AND LIGHTING LAYOUT**

drawn by  
 dessiné par PY

designed by  
 conçu par MG

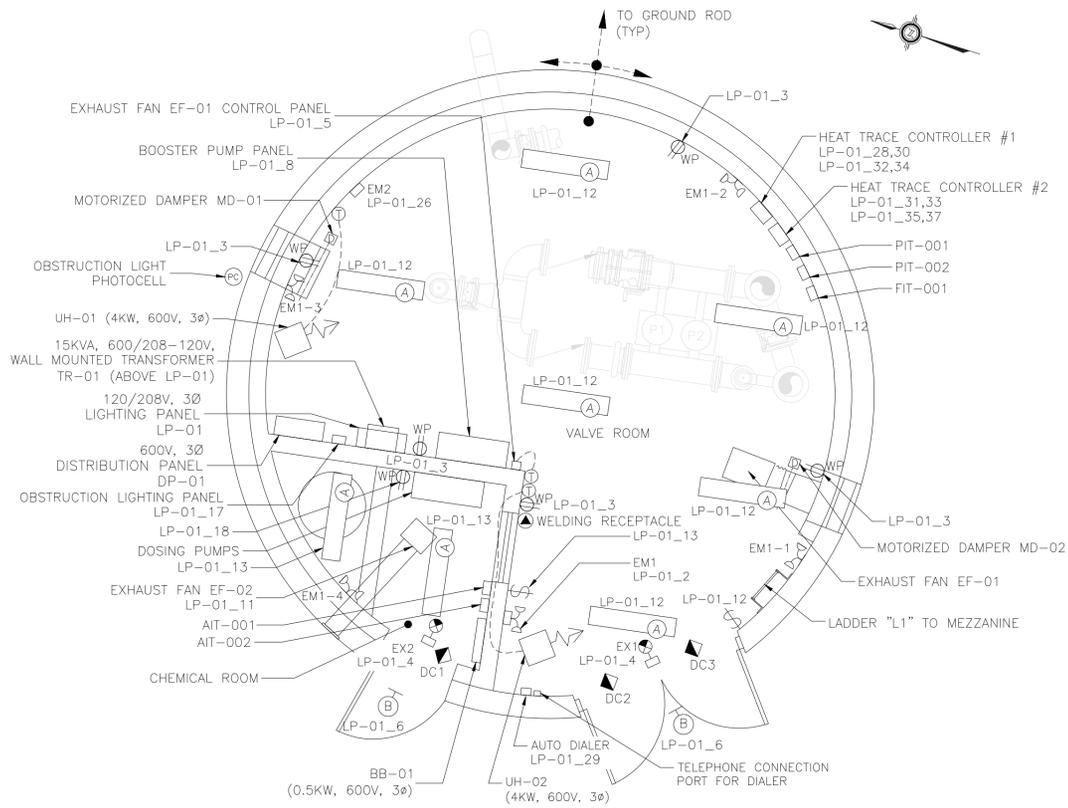
approved by  
 approuvé par BS

tender submission  
 project manager  
 administrateur de projets

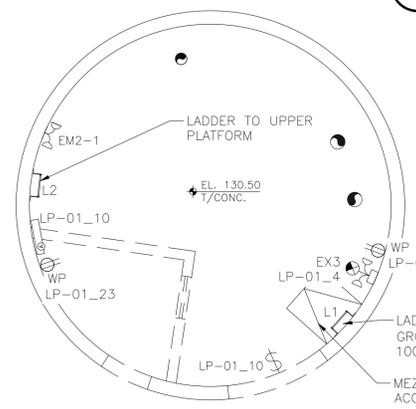
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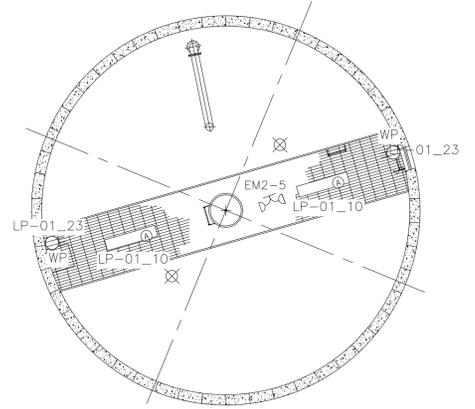
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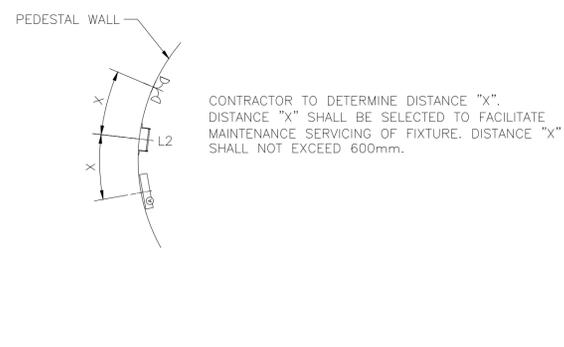
1 FLOOR PLAN - VALVE ROOM  
 SCALE: N.T.S.



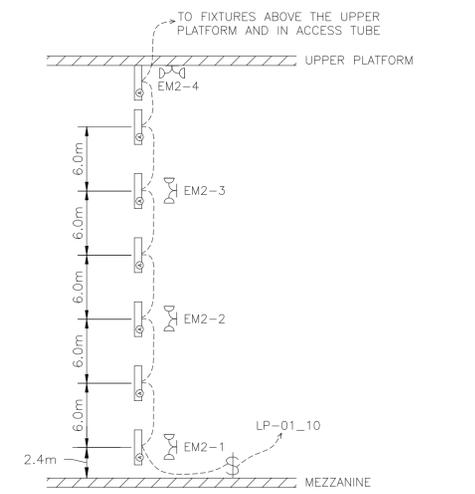
2 FLOOR PLAN - MEZZANINE  
 SCALE: N.T.S.



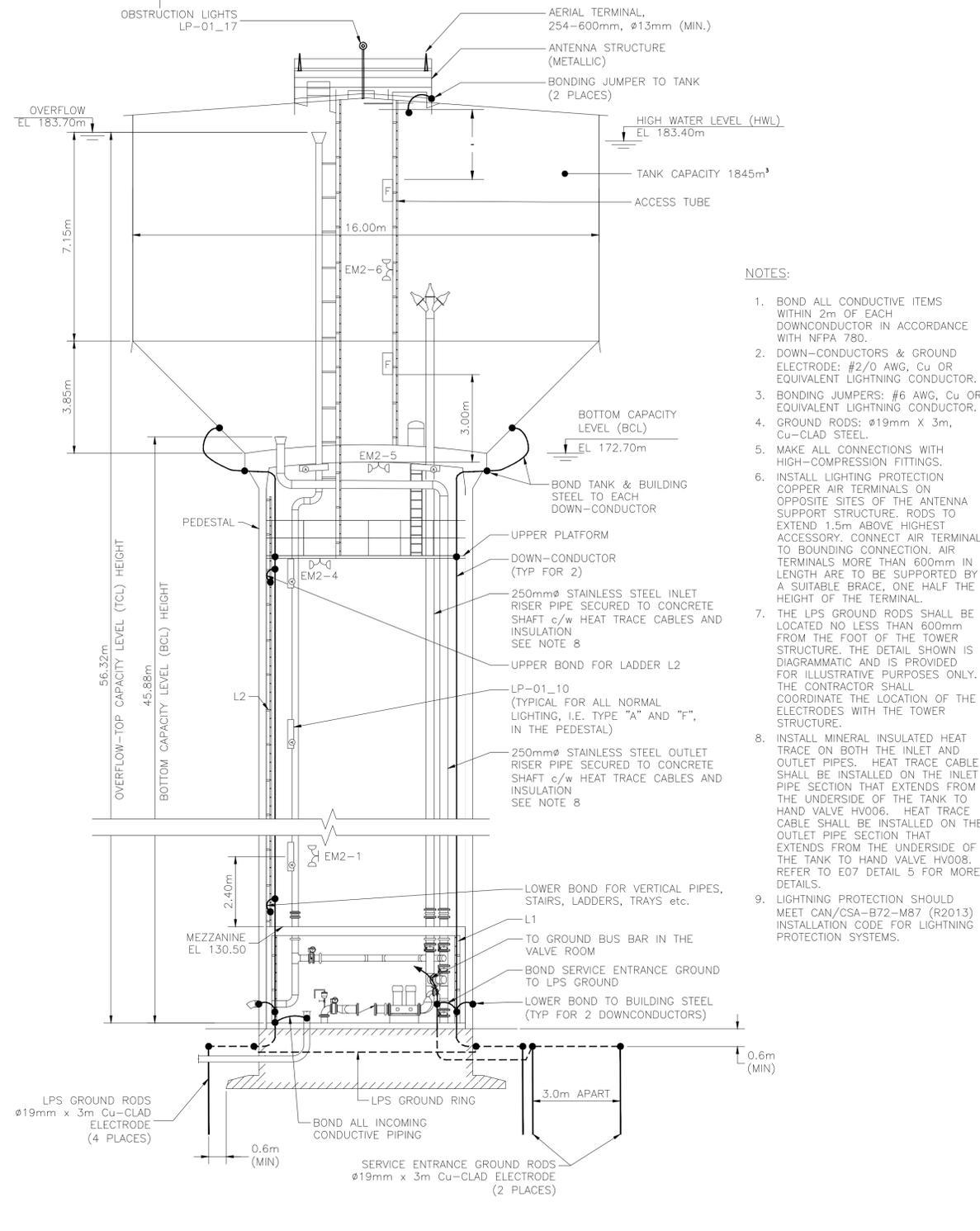
3 FLOOR PLAN - UPPER PLATFORM  
 SCALE: N.T.S.



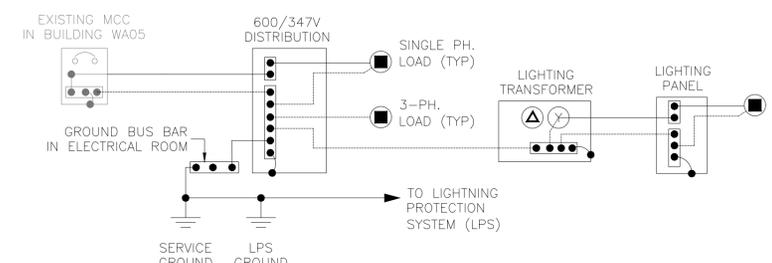
5 NORMAL AND EMERG LTG FIXTURE PLAN ARRANGEMENT AND SPACING - PEDESTAL  
 SCALE: N.T.S.



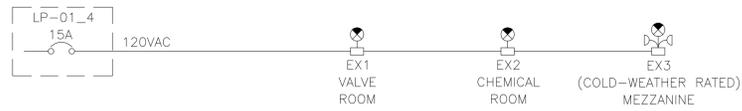
6 NORMAL AND EMERG LTG FIXTURE ELEVATION ARRANGEMENT AND SPACING - PEDESTAL  
 SCALE: N.T.S.



4 LIGHTNING PROTECTION SYSTEM SCHEMATIC & POWER/LIGHTING LAYOUT  
 SCALE: N.T.S.

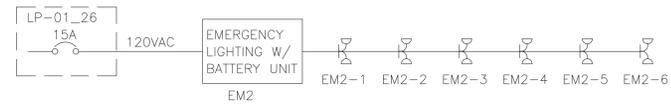


7 GROUNDING & BONDING SCHEMATIC  
 SCALE: N.T.S.



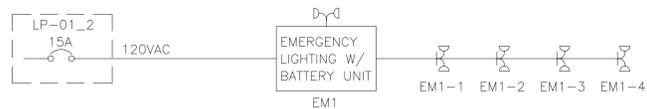
EXIT SIGNS				
TAG NAME	EMERGI-LITE CAT #	DEVICE DESCRIPTION	LOAD (W)	
EX1	EN1WID	SELF-POWERED EXIT PICTOGRAM		
BATTERY UNIT LOAD CAPACITY = 2 HOURS MIN.				TOTAL LOAD (W)
EX2	EN1WID	SELF-POWERED EXIT PICTOGRAM		
BATTERY UNIT LOAD CAPACITY = 2 HOURS MIN.				TOTAL LOAD (W)
EX3	ENC1W6N36LACW	SELF-POWERED EXIT PICTOGRAM SIGN W/2 HEADS 6VDC, COLD WEATHER RATED	9	
BATTERY UNIT LOAD CAPACITY FOR 90 MIN. = 20W			9	TOTAL LOAD (W)

1 EXIT SIGNS  
SCALE: N.T.S.



EMERGENCY LIGHTS - PEDESTAL, UPPER PLATFORM AND ACCESS TUBE				
TAG NAME	EMERGI-LITE CAT #	DEVICE DESCRIPTION	LOAD (W)	
EM2	12ESLNX200U/0	BATTERY UNIT	12	
EM2-1	EF39PDM-LJ	NEMA 4 FIXTURE W/ 2 HEADS	12	
EM2-2			12	
EM2-3			12	
EM2-4			12	
EM2-5			12	
EM2-6			12	
BATTERY UNIT LOAD CAPACITY FOR 90 MIN. = 83W			72	TOTAL LOAD (W)

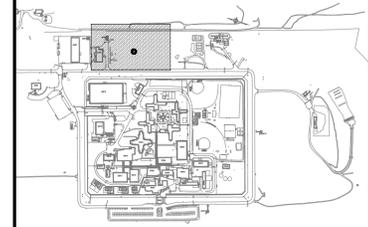
3 EMERGENCY LIGHTING - UPPER PLATFORM AND PEDESTAL  
SCALE: N.T.S.



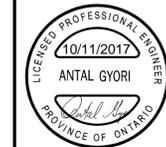
EMERGENCY LIGHTING - MEZZANINE LEVEL (VALVE ROOM)				
TAG NAME	EMERGI-LITE CAT #	DEVICE DESCRIPTION	LOAD (W)	
EM1	12ESLNX200U/2LJ	BATTERY UNIT W/2 HEADS	12	
EM1-1	EF39PDM-LJ	NEMA 4X FIXTURE W/ 2 HEADS	12	
EM1-2			12	
EM1-3			12	
EM1-4			12	
BATTERY UNIT LOAD CAPACITY FOR 90 MIN. = 83W			60	TOTAL LOAD (W)

2 EMERGENCY LIGHTING - VALVE ROOM AND CHEMICAL ROOM  
SCALE: N.T.S.

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CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**EMERGENCY LIGHTING AND  
EXIT SIGNS SCHEDULES**

drawn by  
dessiné par  
PY

designed by  
conçu par  
MG

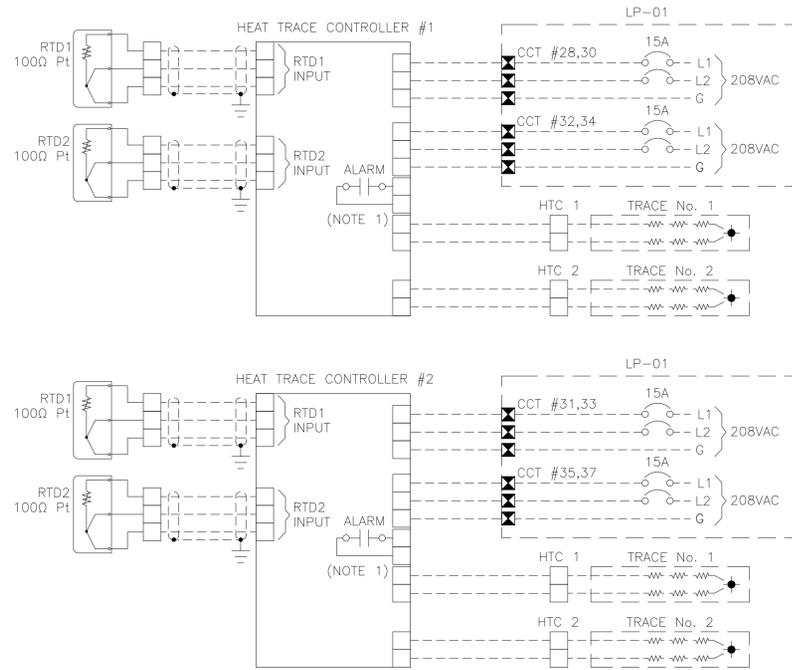
approved by  
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BS

tender  
soumission  
project manager  
administrateur  
de projets

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no. du projet  
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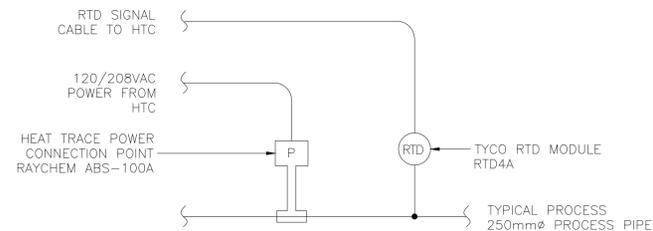
drawing no.  
dessiné no.  
E06



HEAT TRACE NOTES:

- EACH HEAT TRACE PANEL TO INCLUDE A GENERAL ALARM PILOT LIGHT ON THE DOOR EXTERIOR.

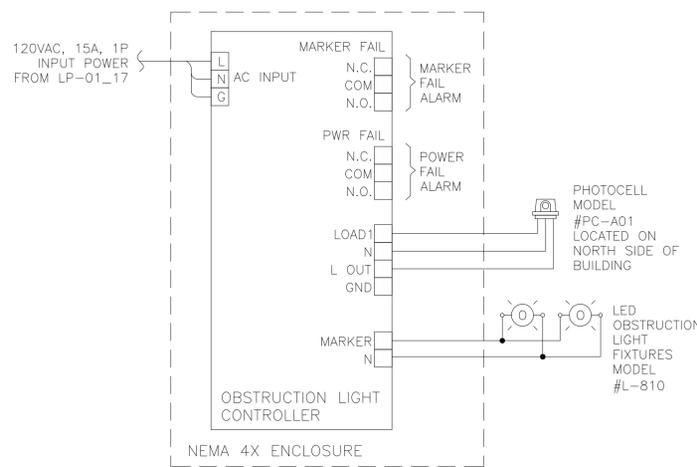
1 HEAT TRACE CONTROLLER DETAIL - DUAL TRACE (TYP.)  
SCALE: N.T.S.



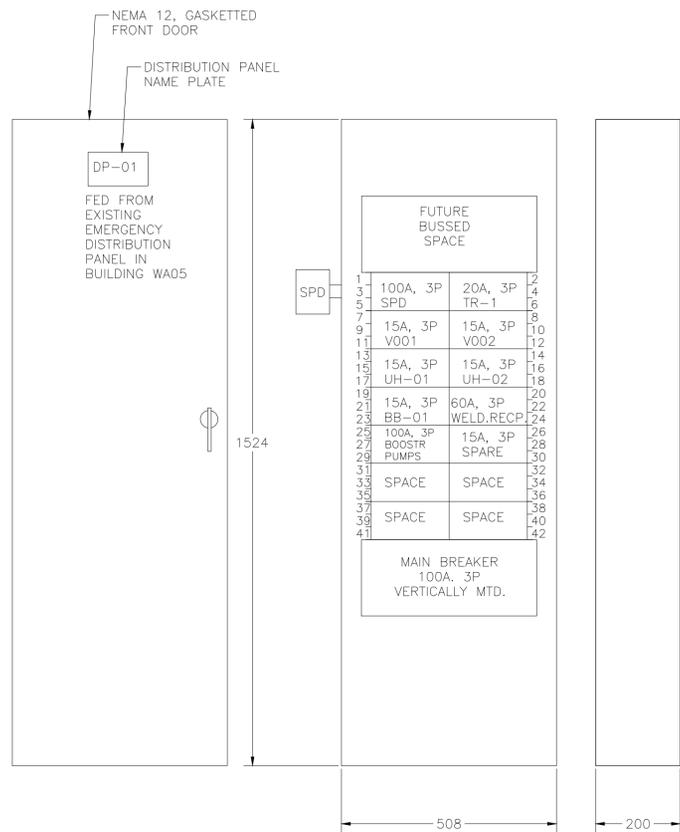
2 HEAT TRACE CROSS SECTION (TYP.)  
SCALE: N.T.S.

DUAL TRACE NOTES:

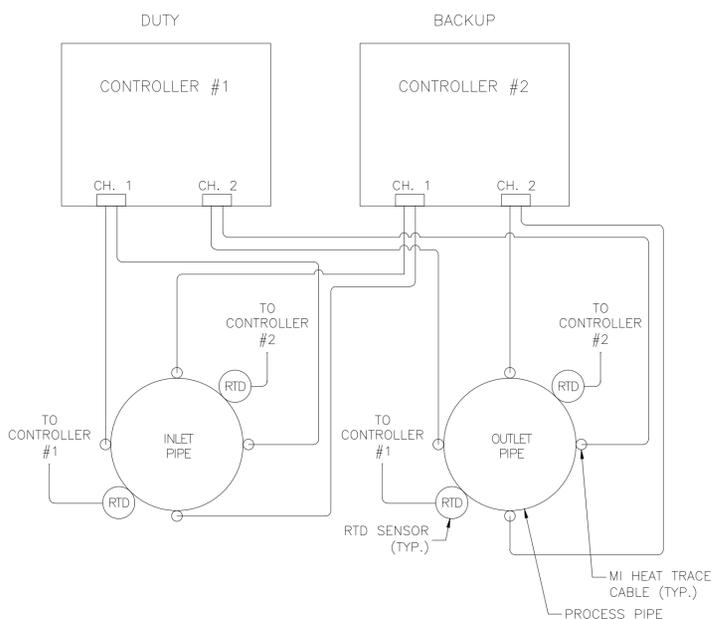
- DUAL TRACE APPLICATIONS: TWO 250mmØ PROCESS PIPES



3 ELECTRICAL CONNECTION - OBSTRUCTION LIGHT  
SCALE: N.T.S.

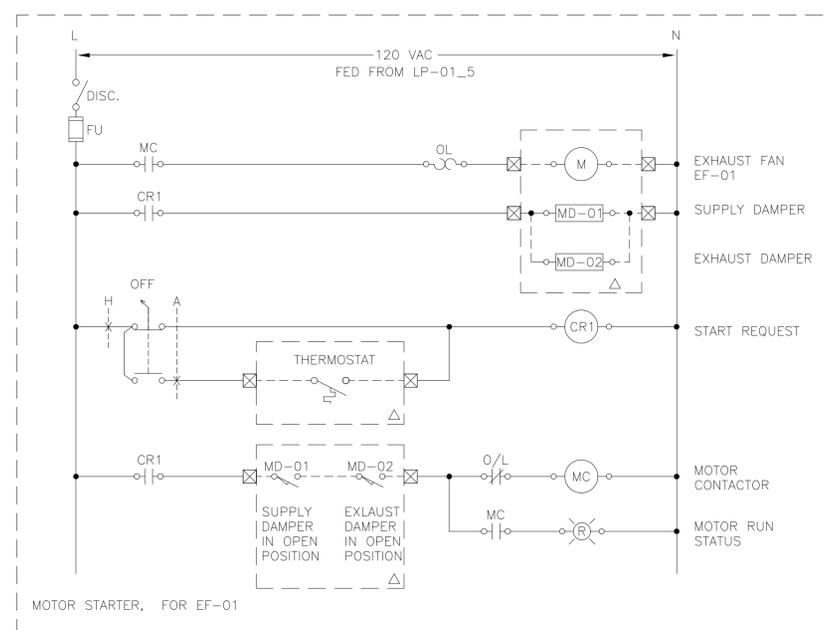


4 PANEL LAYOUT (DP-01)  
SCALE: N.T.S.



5 INLET AND OUTLET PIPEWORK HEAT TRACE WIRING OVERVIEW (TYP.)  
SCALE: N.T.S.

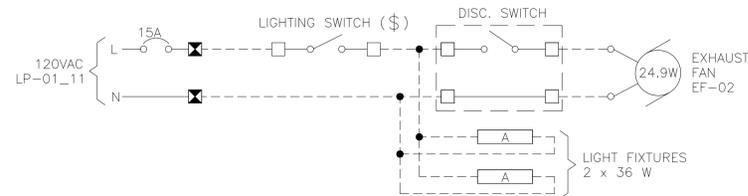
REFER TO E05 DETAIL 4 FOR MORE DETAILS



6 VALVE ROOM EXHAUST FAN (EF-01) STARTER SCHEMATIC  
SCALE: N.T.S.

NOTES:

- COORDINATE WITH VENTILATION CONTROL SYSTEM PACKAGE TO SUIT FAN, DAMPER OPERATION.

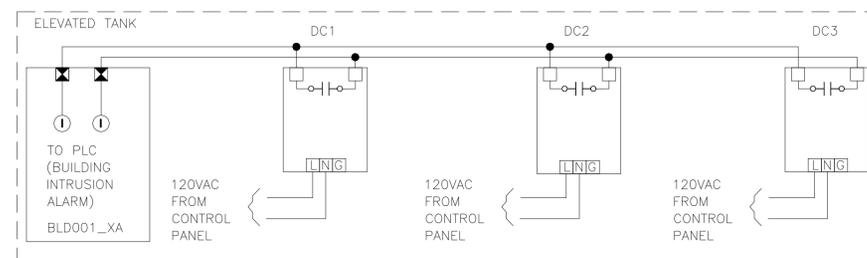


7 CHEMICAL ROOM LIGHTING AND EXHAUST FAN (EF-02) STARTER SCHEMATIC  
SCALE: N.T.S.

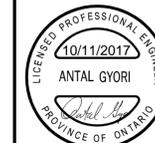
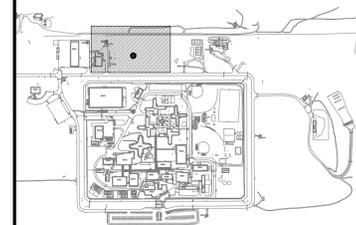
ELECTRICAL UNIT HEATERS SCHEDULE

TAG	AREA SERVED	LOCATION	SPECIFICATION	OUELLET MODEL OR APPROVED EQUAL	KW	VOLTS	PHASE
UH-01	VALVE ROOM	VALVE ROOM	INDUSTRIAL UNIT HEATER C/W BUILT-IN THERMOSTAT	OAS07536-T-DIS40-120	4	600	3
UH-02			OPTIONS: 1. BUILT-IN T-STAT 2. WALL BRACKETS 3. DISCONNECT, 3P, NEMA 4X, ADJACENT EACH UNIT				
BB-01	CHEMICAL ROOM	CHEMICAL ROOM		OFM0502	0.5	600	3

8 ELECTRICAL UNIT HEATERS SCHEDULE  
SCALE: N.T.S.



9 DOOR CONTACTS CONTROL WIRING  
SCALE: N.T.S.



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	dessin no. - où détail exigé
	drawing no. - where detailed
	dessin no. - où détaillé

project title  
titre du projet  
**WARKWORTH** Ontario  
CORRECTIONAL SERVICES CANADA  
WARKWORTH INSTITUTION  
COUNTRY ROAD #29, CAMPBELLFORD  
CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

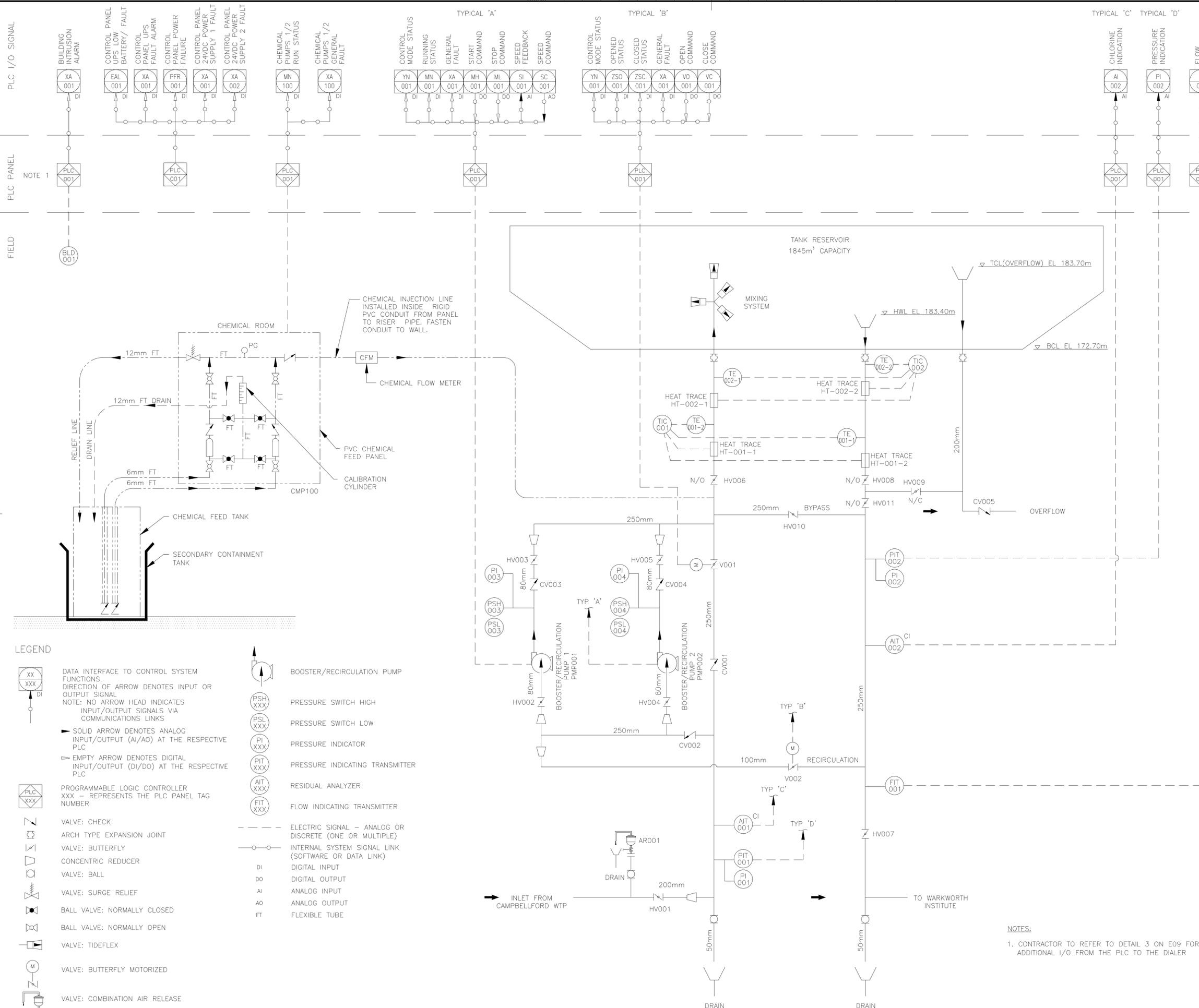
drawing title  
titre du dessin  
**ELECTRICAL DETAILS**

drawn by dessiné par	PY
designed by conçue par	MG
approved by approuvé par	BS
tender soumission	project manager administrateur de projets

project date  
date du projet  
2017/05/16

project no.  
no. du projet  
R.068488.001

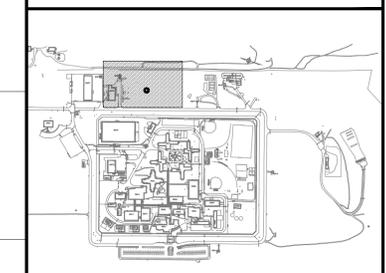
drawing no.  
dessiné no.  
E07



**LEGEND**

	DATA INTERFACE TO CONTROL SYSTEM FUNCTIONS. DIRECTION OF ARROW DENOTES INPUT OR OUTPUT SIGNAL. NOTE: NO ARROW HEAD INDICATES INPUT/OUTPUT SIGNALS VIA COMMUNICATIONS LINKS		BOOSTER/RECIRCULATION PUMP
	SOLID ARROW DENOTES ANALOG INPUT/OUTPUT (AI/AO) AT THE RESPECTIVE PLC		PRESSURE SWITCH HIGH
	EMPTY ARROW DENOTES DIGITAL INPUT/OUTPUT (DI/DO) AT THE RESPECTIVE PLC		PRESSURE SWITCH LOW
	PROGRAMMABLE LOGIC CONTROLLER XXX - REPRESENTS THE PLC PANEL TAG NUMBER		PRESSURE INDICATOR
	VALVE: CHECK		PRESSURE INDICATING TRANSMITTER
	ARCH TYPE EXPANSION JOINT		RESIDUAL ANALYZER
	VALVE: BUTTERFLY		FLOW INDICATING TRANSMITTER
	VALVE: BALL		ELECTRIC SIGNAL - ANALOG OR DISCRETE (ONE OR MULTIPLE)
	VALVE: SURGE RELIEF		INTERNAL SYSTEM SIGNAL LINK (SOFTWARE OR DATA LINK)
	BALL VALVE: NORMALLY CLOSED	DI	DIGITAL INPUT
	BALL VALVE: NORMALLY OPEN	DO	DIGITAL OUTPUT
	VALVE: TIDEFLEX	AI	ANALOG INPUT
	VALVE: BUTTERFLY MOTORIZED	AO	ANALOG OUTPUT
	VALVE: COMBINATION AIR RELEASE	FT	FLEXIBLE TUBE

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Ontario Region  
Travaux publics et Services gouvernementaux Canada  
Services d'architecture et de génie  
Région de l'Ontario



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CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**PROCESS FLOW  
I/O SCHEMATIC**

drawn by  
dessiné par PY

designed by  
conçue par MG

approved by  
approuvée par BS

tender  
soumission

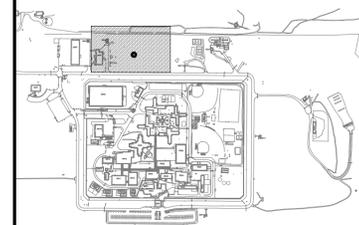
project date  
date du projet 2017/05/16

project no.  
no. du projet R.068488.001

drawing no.  
dessinée no. E08

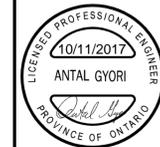
**NOTES:**  
1. CONTRACTOR TO REFER TO DETAIL 3 ON E09 FOR ADDITIONAL I/O FROM THE PLC TO THE DIALER





BOOSTER PUMPS CONTROL SECTION						
ITEM	TAG	QTY	MAKE	MODEL	DESCRIPTION	CERT.
1.0	ENCL	1	EUROBEX		NEMA 12 ENCLOSURE, c/w KEY LOCKING HANDLES, 3POINT LATCHING	CSA
1.1	BP	1	EUROBEX		BACK PANEL	CSA
2	FL1	2	CFI	SB124-120SO	24" 120VAC LIGHT FIXTURE C/W LAMP (ONE FOR EACH SECTION)	CSA
3	LS1,2	2	OMRON	A-20GQ-B7-K	PANEL DOOR ACTIVATED LIGHT SWITCH, 7.5A, c/w SWITCH COVER (PART #: AP-Z) (ONE FOR EACH SECTION)	CSA
4	PS1,2	2	PHOENIX CONTACT	2866750	24VDC 5A POWER SUPPLY, QUINT-PS/1AC/24DC/5	CSA
5	EY	1	PHOENIX CONTACT	2320157	REDUNDANCY MODULE, 2 x 20A (INPUT)MAX, DIODE/12-24DC/2X20/1X40	CSA
6	S-S	1	PHOENIX CONTACT	2856812	120VAC IN/OUT SURGE PROTECTOR, 26A, PT2-PE/S-120AC/FM	CSA
7	CB1, CB2	2	ABB/ENTRELEC	SU201M-C20	120VAC 60HZ 20A 1 POLE CIRCUIT BREAKER	CSA
8			ABB/ENTRELEC	011566121	120VAC FUSE TERMINAL BLOCK WITH INDICATOR c/w FAST ACTING FUSE	CSA
9		AS REQ	ABB/ENTRELEC	011566323	24VDC FUSE TERMINAL BLOCK WITH INDICATOR c/w FAST ACTING FUSE	CSA
10	IL1	1	ALLEN BRADLEY	800FP-LE7	"POWER ON" WHITE CAP EXTENDED PUSH-TO-TEST BUTTON	CSA
				800F-PN5W	WHITE PILOT LIGHT LED	CSA
				800F-X10	NORMALLY OPEN CONTACT	CSA
				800F-X01	NORMALLY CLOSED CONTACT	CSA
11	IL2	1	ALLEN BRADLEY	800FP-LE4	"GENERAL FAULT" RED CAP EXTENDED PUSH-TO-TEST BUTTON	CSA
				800F-PN5R	RED PILOT LIGHT LED	CSA
				800F-X10	NORMALLY OPEN CONTACT	CSA
				800F-X01	NORMALLY CLOSED CONTACT	CSA
12	TB's	AS REQ	ABB/ENTRELEC	011511607	GREY SINGLE DECK TERMINAL BLOCK	CSA
				012511601	BLUE SINGLE DECK TERMINAL BLOCK	CSA
				011568714	SWITCH TERMINAL BLOCK WITH BLADE	CSA
				011836816	SINGLE DECK TERMINAL BLOCK END PLATE	CSA
				011695115	FUSE TERMINAL BLOCK END PLATE	CSA
				010300226	END STOP	CSA
13	DIN	AS REQ	PHOENIX CONTACT	1201730	TS 35x7.5 DIN RAIL, STEEL	CSA
14		AS REQ	PANDUIT	TYPE F	GRAY PVC WIRE DUCT & COVER, SIZE AS ON LAYOUT DRAWING	CSA
15.0	REC1	1	HUBBELL	CR5252I	120VAC 15A DUPLEX RECEPTACLE, NEMA 5-15R, IVORY	CSA
15.1	REC2	1	HUBBELL	RR201	120VAC 20A SIMPLEX RECEPTACLE, NEMA 5-20R, BROWN	CSA
16	RBOX	2	IBERVILLE	BC1110	RECEPTACLE BOX	CSA
17		1	CUSTOM MADE		BREAKER AND FUSE TABLE WITH PLEXIGLASS COVER MOUNTED ON INNER SIDE OF DOOR	CSA
18	UPS1	1	POWERWARE	9130L2000T-XL	120VAC/120VAC UPS,2000VA/1800W, ETHERNET COMPATIBLE	CUL
	EBM1	1	POWERWARE	PW9130N2000T-EBM	EXTENDED BATTERY MODULE FOR 9130L2000T-XL	CUL
		1	POWERWARE	1014018	RELAY INTERFACE CARD UPS, CONTACT RATED 1A/30VAC OR 200mA/60VDC	CUL
19	MBM	1	POWERWARE	58120	MAINTENANCE BYPASS MODULE MOUNTED ON INNER SIDE OF DOOR	CSA
20	EAL, PS1EA, PS2EA, XA	4	OMRON	G2R-1-SN-DC24S	24VDC SPDT INTERPOSING RELAY WITH INDICATOR, CONTACT 10A	CSA
				P2RF-05-E	SCREW TERMINAL SOCKET SPDT INTERPOSING RELAY	CSA
21	PFR, CRHH1, CRH1, CRL1, CRXX, CR*	37	OMRON	G2R-1-SN-AC120S	120VAC SPDT INTERPOSING RELAY WITH INDICATOR, CONTACT 10A	CSA
				P2RF-05-E	SCREW TERMINAL SOCKET SPDT INTERPOSING RELAY	CSA
22	PLC-001	1	ALLEN BRADLEY	1769-PA4	120VAC 60Hz POWER SUPPLY, 200VA MAX @ INPUT	CSA
			ALLEN BRADLEY	1769-L36ERM	CPU MODULE C/W INDUSTRIAL COMPACTFLASH CARD 1784-CF128	CSA
			ALLEN BRADLEY	1769-IA16	16 POINT ISOLATED DISCRETE INPUT MODULE, 120VAC	CSA
			ALLEN BRADLEY	1769-OW16	16 POINT ISOLATED RELAY DISCRETE OUTPUT MODULE, N.O. CONTACT	CSA
			ALLEN BRADLEY	1769-IF4I	4 POINT ANALOG INPUT MODULE, 4-20mA	CSA
			ALLEN BRADLEY	1769-OF4CI	4 POINT ANALOG OUTPUT MODULE, 4-20mA	CSA
23		AS REQ	ILSCO	N-174	COPPER GROUND BAR 6-14 AWG	CSA
24		AS REQ	ILSCO	SLU-125	COPPER GROUND LUG 1/0-6 AWG	CSA
25	ETHS1	1	HIRSCHMANN	RS20-0800T1T1SDAE	MANAGED ETHERNET SWITCH	CSA
26	HMI1	1	ALLEN BRADLEY	PANELVIEW PLUS 6	HMI 7" SCREEN SIZE	CUL
27	WA1	1			4-PORT WORK AREA OUTLET	CSA

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 WARKWORTH INSTITUTION  
 COUNTRY ROAD #29, CAMPBELLFORD  
 CONSTRUCT NEW POTABLE WATER  
 ELEVATED TANK

drawing title  
 titre du dessin  
**BOOSTER PUMPS  
 CONTROL PANEL  
 BILL OF MATERIAL**

drawn by  
 dessiné par  
 PY

designed by  
 conc par  
 MG

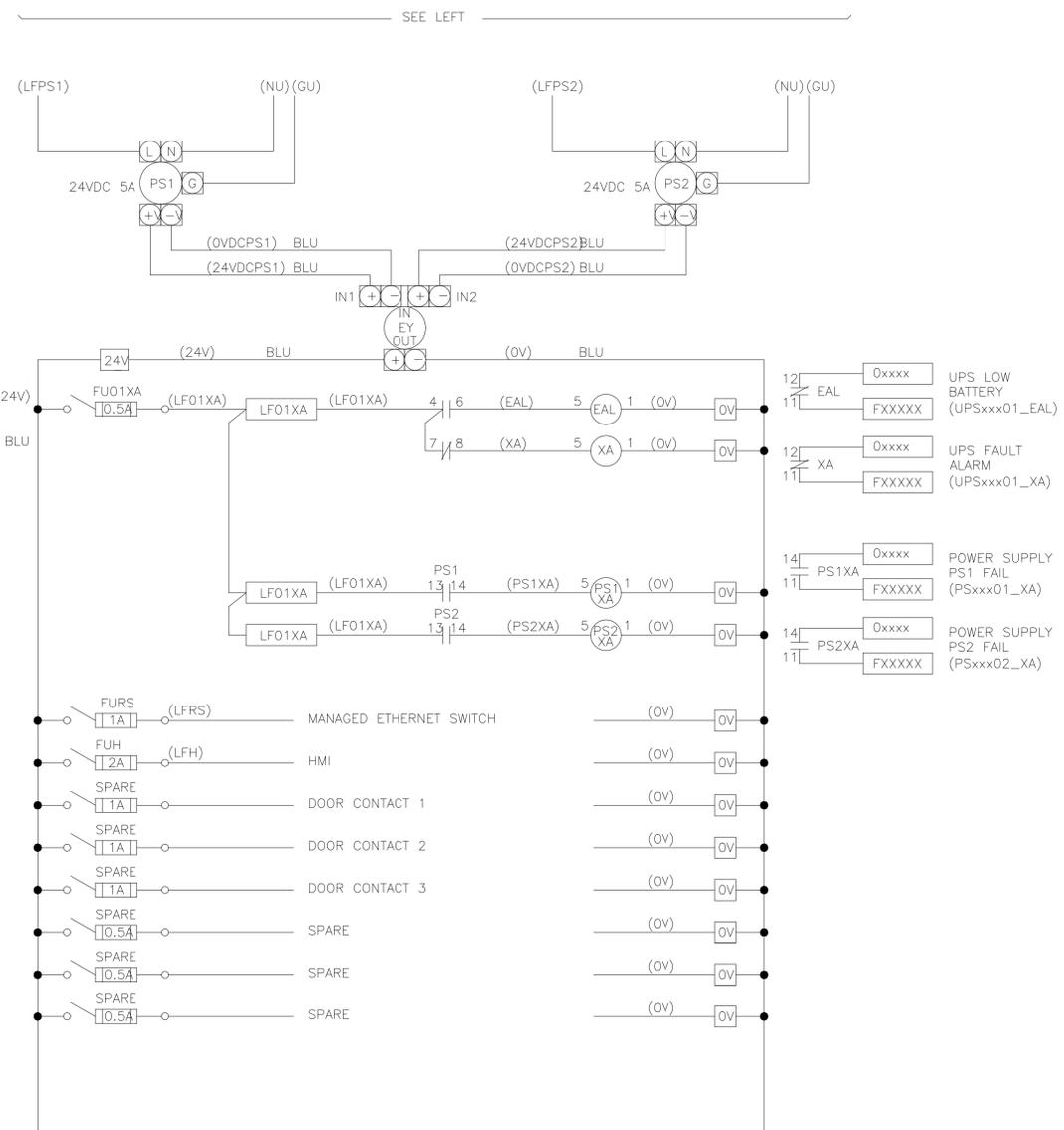
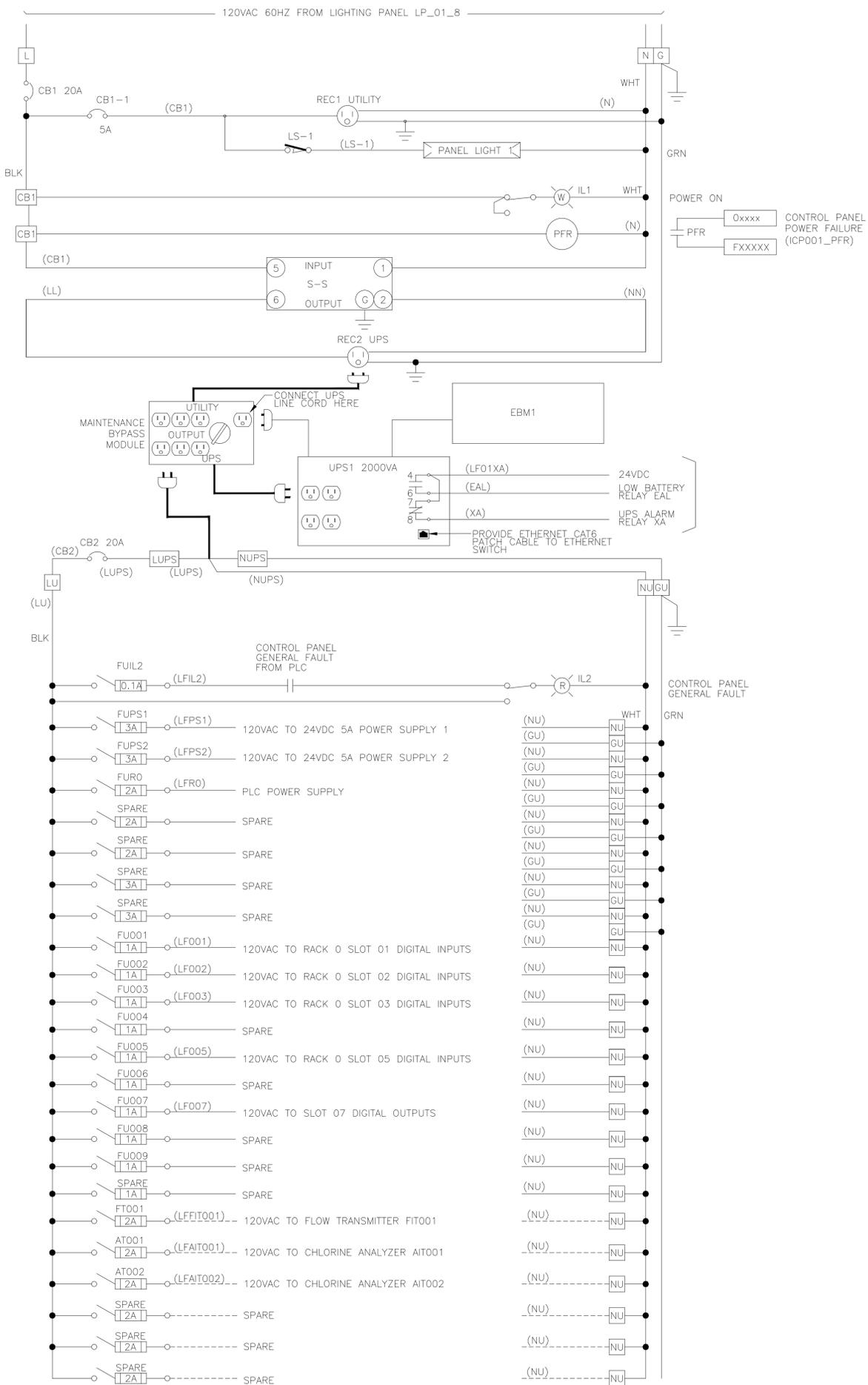
approved by  
 approuvé par  
 BS

tender  
 soumission  
 project manager  
 administrateur de projets

project date  
 date du projet  
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 R.068488.001

drawing no.  
 dessiné no.  
 E10

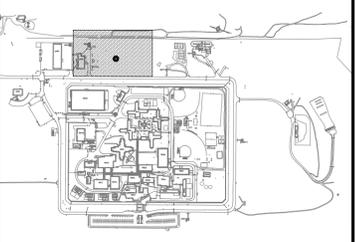


NOTES:

1. CONTRACTOR TO PROVIDE 120VAC UPS POWER TO ALL INSTRUMENTS WITH 120VAC INPUT POWER.

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CONSTRUCT NEW POTABLE WATER  
ELEVATED TANK

drawing title  
titre du dessin  
**BOOSTER PUMPS  
CONTROL PANEL  
POWER DISTRIBUTION**

drawn by  
dessiné par PY

designed by  
conçue par MG

approved by  
approuvé par BS

tender submission  
project manager  
administrateur de projets

project date  
date du projet 2017/05/16

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no. du projet R.068488.001

drawing no.  
dessiné no. E11

