CITY OF HAMILTON

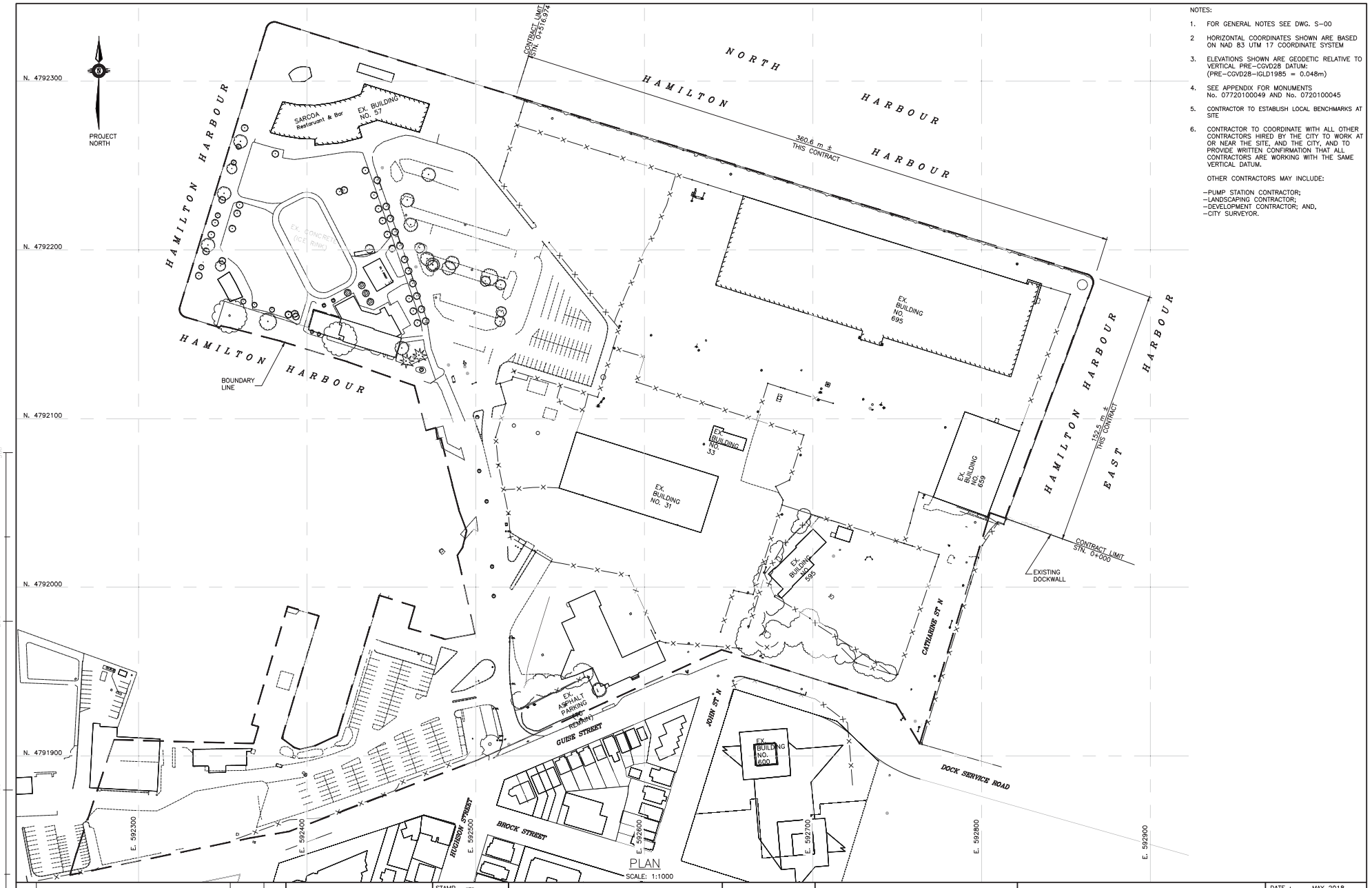
HAMILTON WEST HARBOUR PIER 8 SHOREWALL RECONSTRUCTION CONTRACT NO. C13-33-18

Hamilton

ISSUED FOR CONSTRUCTION

11-13-2018

wsp



PLAN
SCALE: 1:1000

NOTES:

1. FOR GENERAL NOTES SEE DWG. S-00
2. HORIZONTAL COORDINATES SHOWN ARE BASED ON NAD 83 UTM 17 COORDINATE SYSTEM
3. ELEVATIONS SHOWN ARE GEODETIC RELATIVE TO VERTICAL PRE-CGVD28 DATUM: (PRE-CGVD28-IGLD1985 = 0.048m)
4. SEE APPENDIX FOR MONUMENTS No. 07720100049 AND No. 0720100045
5. CONTRACTOR TO ESTABLISH LOCAL BENCHMARKS AT SITE
6. CONTRACTOR TO COORDINATE WITH ALL OTHER CONTRACTORS HIRED BY THE CITY TO WORK AT OR NEAR THE SITE, AND THE CITY, AND TO PROVIDE WRITTEN CONFIRMATION THAT ALL CONTRACTORS ARE WORKING WITH THE SAME VERTICAL DATUM.

OTHER CONTRACTORS MAY INCLUDE:

- PUMP STATION CONTRACTOR;
- LANDSCAPING CONTRACTOR;
- DEVELOPMENT CONTRACTOR; AND,
- CITY SURVEYOR.

FRAME SIZE 566x801mm
DRAWING SIZE A1(595x841mm)
S:\WA\2017\1\171-15660-00\Design\2_TECH\3_DAD_CAD\2018\XXX IFC dwg\S-01.dwg

0	ISSUED FOR CONSTRUCTION	11/13/2018	B.R.
	REVISIONS	DATE	INITLS

DESIGNED BY E.K.
DRAWN BY B.R.
CHECKED BY E.K./J.V./B.F.
APPROVED BY P.S.

STAMP
LICENSED PROFESSIONAL ENGINEER
E. KANDIAH
100078583
11/13/2018
PROVINCE OF ONTARIO

wsp
600 COCHRANE DRIVE, 5TH FLOOR
MARKHAM, ONTARIO
CANADA L3R 5K3
PHONE: 905-475-7270 FAX: 905-475-5994
www.wsp.com

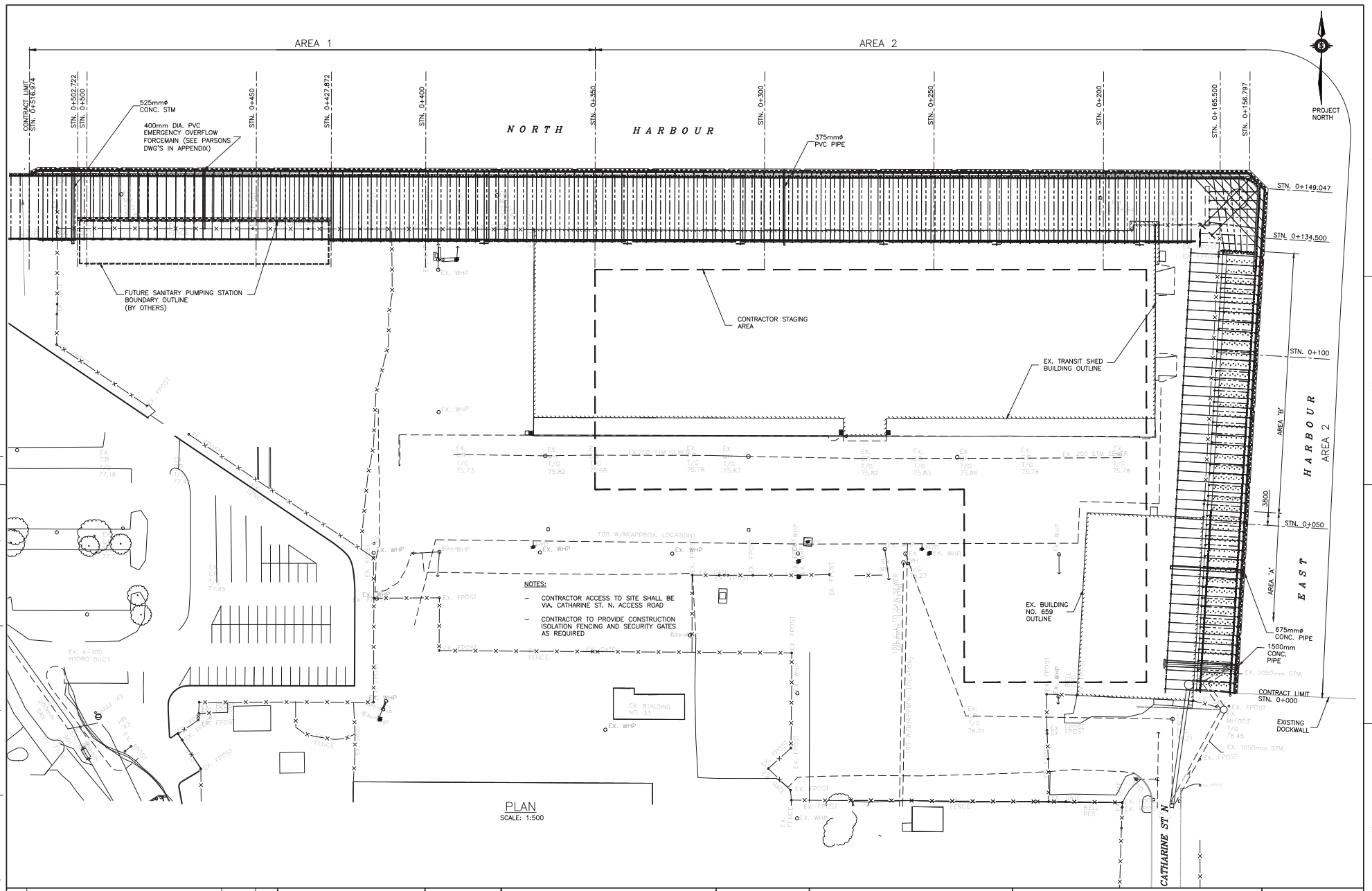
VERIFY SCALE
BAR IS 25mm ON ORIGINAL DRAWING.
0 25mm
IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

ALL (PUBLIC) SAFETY EQUIPMENT AND ASSOCIATED REQUIREMENTS ARE NOT INCLUDED WITHIN THE SCOPE OF THIS SHOREWALL RECONSTRUCTION PROJECT AND WILL BE COMPLETED BY OTHERS (I.E. LIFE RINGS AND THROW ROPES, ACTIVE MARINA SIGNAGE, AND APPROPRIATE WARNING SIGNAGE AND BARRIERS REGARDING THE INHERENT DANGERS OF BEING AND WALKING ALONG A PIER DURING PERIODS OF STORMS OR OTHERWISE.)

CITY OF HAMILTON

CITY OF HAMILTON
PIER 8 SHOREWALL RECONSTRUCTION
EXISTING SITE PLAN

DATE :	MAY 2018
SCALE:	AS SHOWN
FILE No.:	171-15660-00
CONTRACT No.:	C13-33-18
DRAWING No.:	S-01



PLAN
SCALE: 1:500

0	ISSUED FOR CONSTRUCTION	11/13/2018	B.R.
	REVISIONS	DATE	INITLS

DESIGNED BY E.K.
DRAWN BY B.R.
CHECKED BY E.K./J.V./B.F
APPROVED BY P.S.

STAMP: LICENSED PROFESSIONAL ENGINEER — E. KANDIAH — 100078583 — 11/13/2018 — PROVINCE OF ONTARIO

wsp
600 COCHRANE DRIVE, 5TH FLOOR
MARKHAM, ONTARIO
CANADA L3R 5K3
PHONE: 905-475-7270 FAX: 905-475-5994
www.wsp.com

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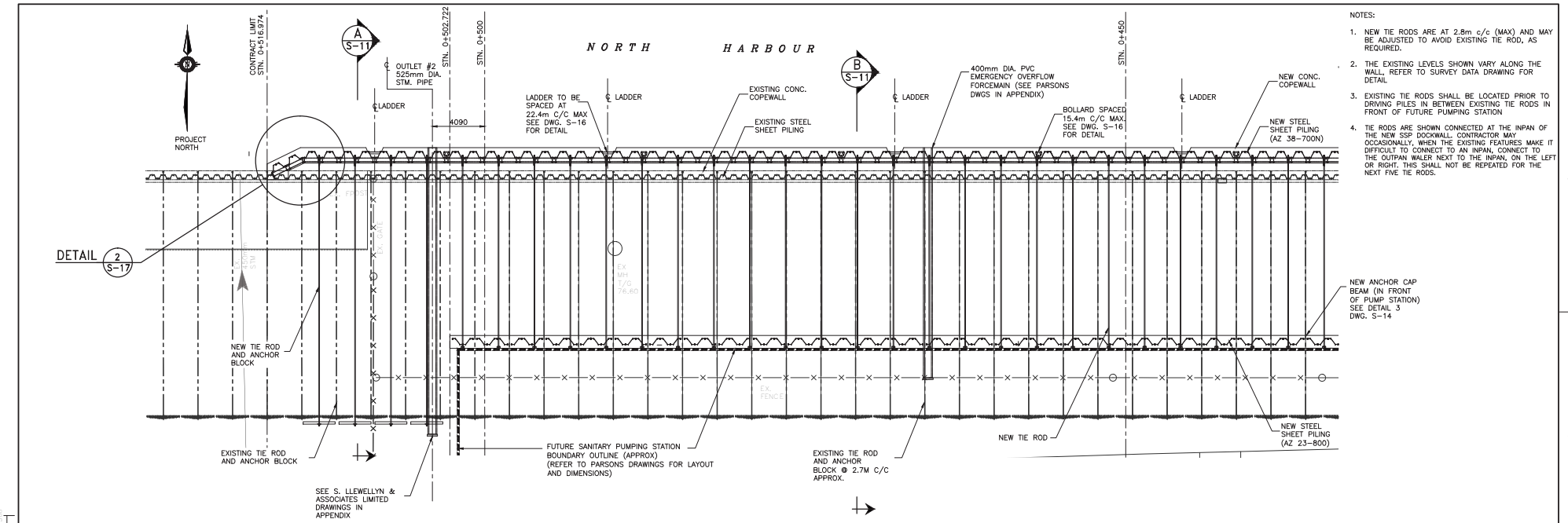
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CITY OF HAMILTON

HAMILTON HARBOUR
PIER 8 SHOREWALL RECONSTRUCTION
GENERAL ARRANGEMENT

DATE :	MAY 2018
SCALE:	AS SHOWN
FILE No.:	171–15660–00
CONTRACT No.:	C13–33–18
DRAWING No.:	S–03

FRAME SIZE 566x801mm
DRAWING SIZE A1(595x841mm)
S:\WA\2017\1\171-15660-00\Design\E_TECH\S_DAD_CAD\2018\XXX IFC dwg\S-03.dwg

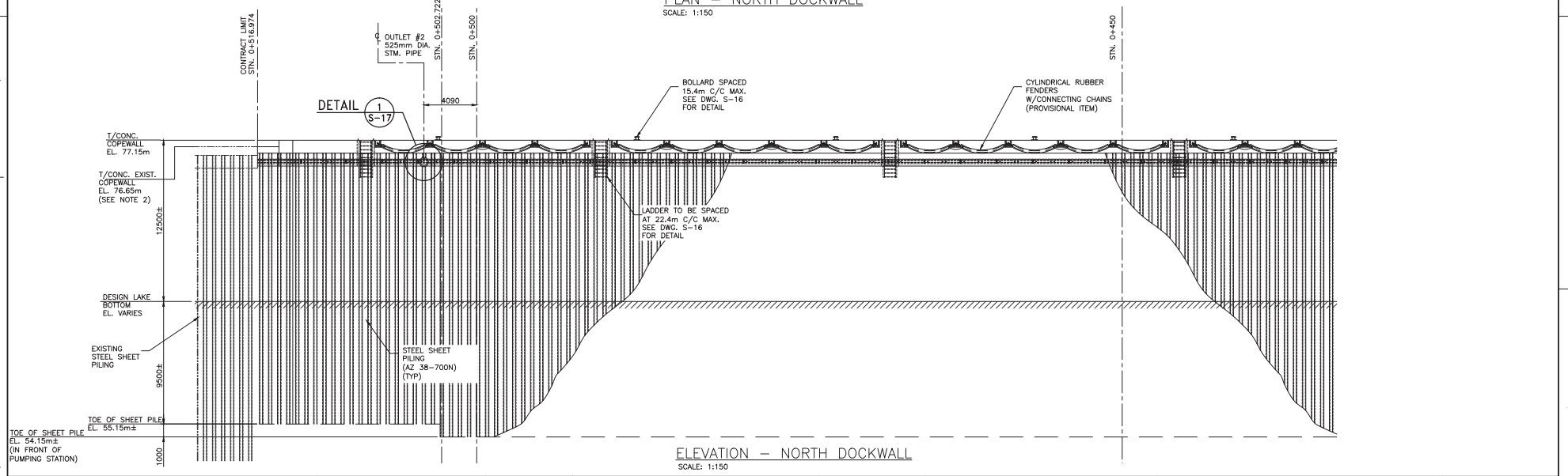


NOTES:

1. NEW TIE RODS ARE AT 2.8m c/c (MAX) AND MAY BE ADJUSTED TO AVOID EXISTING TIE ROD, AS REQUIRED.
2. THE EXISTING LEVELS SHOWN VARY ALONG THE WALL, REFER TO SURVEY DATA DRAWING FOR DETAIL.
3. EXISTING TIE RODS SHALL BE LOCATED PRIOR TO DRIVING PILES IN BETWEEN EXISTING TIE RODS IN FRONT OF FUTURE PUMPING STATION
4. TIE RODS ARE SHOWN CONNECTED AT THE INPAN OF THE NEW SSP DOCKWALL. CONTRACTOR MAY OCCASIONALLY, WHEN THE EXISTING FEATURES MAKE IT DIFFICULT TO CONNECT TO AN INPAN, CONNECT TO THE OUTPAN WALER NEXT TO THE INPAN, ON THE LEFT OR RIGHT. THIS SHALL NOT BE REPEATED FOR THE NEXT FIVE TIE RODS.

PLAN – NORTH DOCKWALL

SCALE: 1:150



ELEVATION – NORTH DOCKWALL

SCALE: 1:150

0	ISSUED FOR CONSTRUCTION	11/13/2018	B.R.
	REVISIONS	DATE	INITLS

DESIGNED BY E.K.
DRAWN BY B.R.
CHECKED BY E.K./J.V./B.F.
APPROVED BY P.S.

STAMP: LICENSED PROFESSIONAL ENGINEER E. KANDIAH 100078583 11/13/2018 PROVINCE OF ONTARIO

wsp
600 COCHRANE DRIVE, 5TH FLOOR
MARKHAM, ONTARIO
CANADA L3R 5K3
PHONE: 905-475-7270 FAX: 905-475-5994
www.wsp.com

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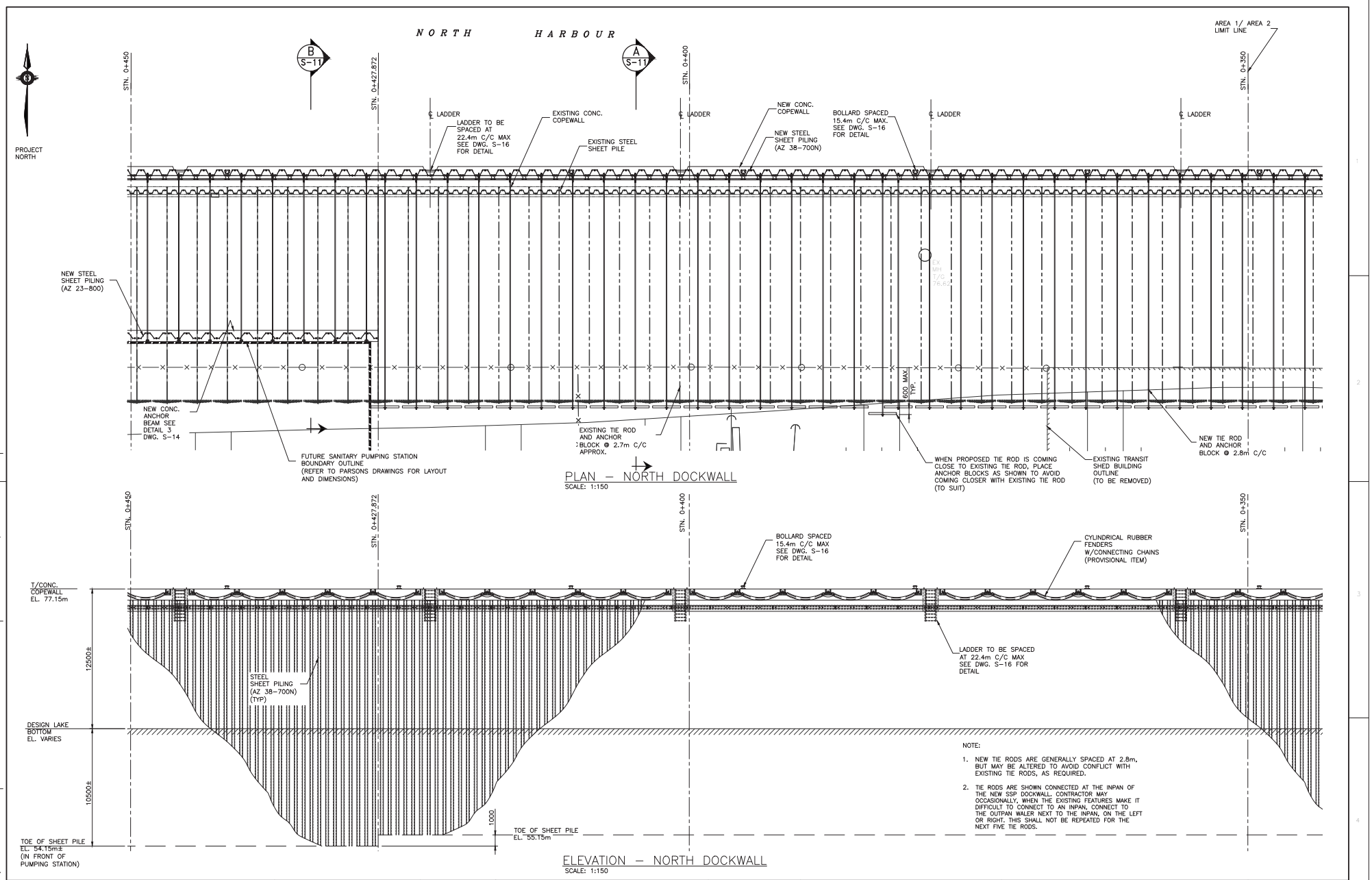
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CITY OF HAMILTON

HAMILTON HARBOUR
PIER 8 SHOREWALL RECONSTRUCTION
NORTH DOCKWALL – PLAN AND ELEVATION
STN. 0+516.974 TO 0+450

DATE :	MAY 2018
SCALE:	AS SHOWN
FILE No.:	171-15660-00
CONTRACT No.:	C13-33-18
DRAWING No.:	S-04

FRAME SIZE 566x801mm
DRAWING SIZE A1(595x841mm)
S:\WM\2017\(17)\171-15660-00\Design\E_TECH\S_DWG_CAD\2018\XXX IFC dwg\S-04.dwg



A	ISSUED FOR CONSTRUCTION	11/13/2018	B.R.
	REVISIONS	DATE	INTLS

DESIGNED BY E.K.
DRAWN BY B.R.
CHECKED BY E.K./J.V./B.F.
APPROVED BY P.S.

STAMP: LICENSED PROFESSIONAL ENGINEER E. KANDIAH 100078583 11/13/2018 PROVINCE OF ONTARIO

wsp
600 COCHRANE DRIVE, 5TH FLOOR
MARKHAM, ONTARIO
CANADA L3R 5K3
PHONE: 905-475-7270 FAX: 905-475-5994
www.wsp.com

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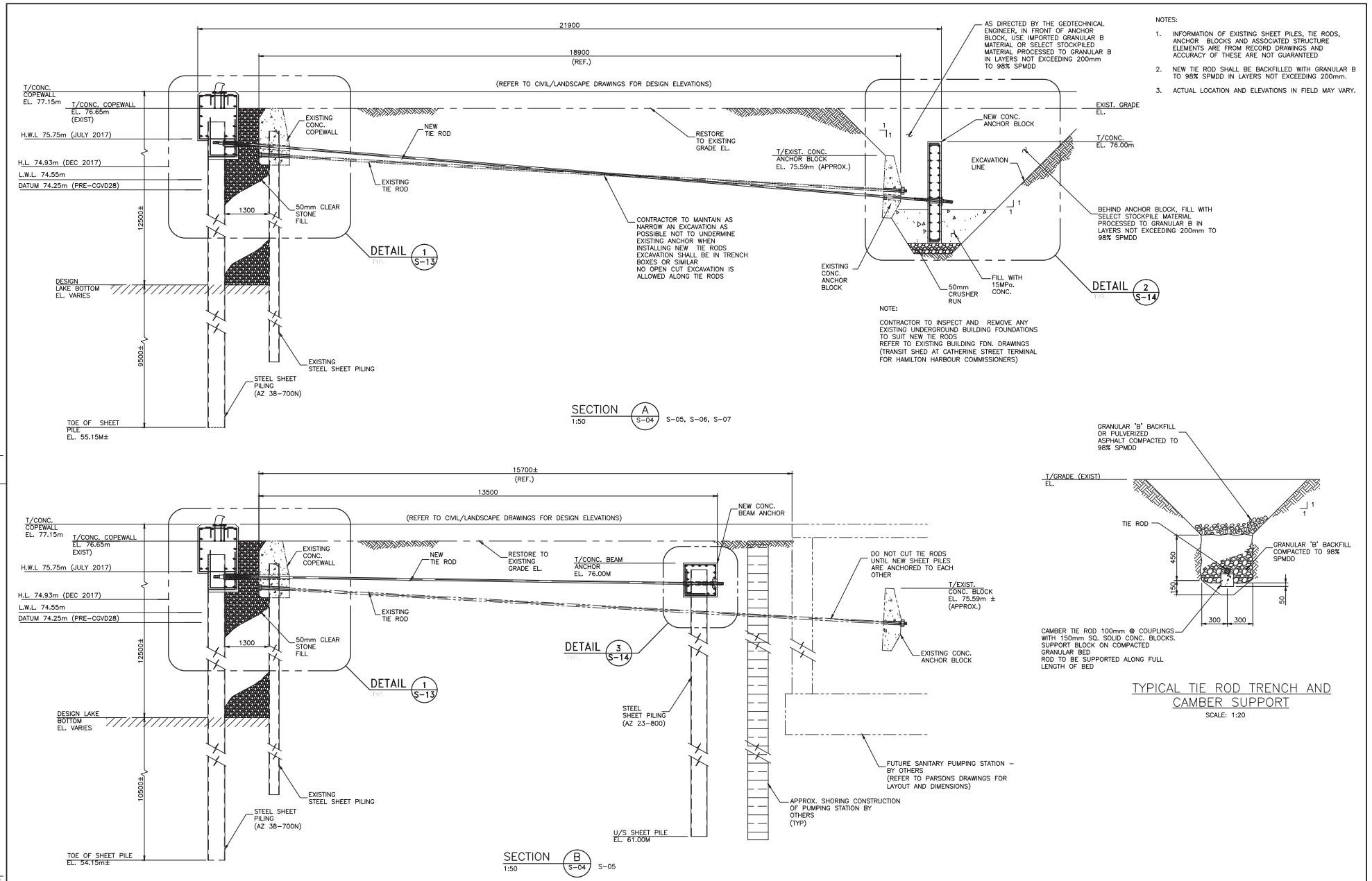
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CITY OF HAMILTON

HAMILTON HARBOUR
PIER 8 SHOREWALL RECONSTRUCTION
PLAN AND ELEVATION – NORTH DOCKWALL
STN. 0+450 TO 0+350

DATE :	MAY 2018
SCALE:	AS SHOWN
FILE No.:	171-15660-00
CONTRACT No.:	C13-33-18
DRAWING No.:	S-05

FRAME SIZE 566x801mm
DRAWING SIZE A1(595x841mm)
S:\WA\2017\1\171-15660-00\Design\E_TECH\S_DWG_CAD\2018\XXX IFC dwgS-05.dwg



0	ISSUED FOR CONSTRUCTION	11/13/2018	B.R.
	REVISIONS	DATE	INTLS

DESIGNED BY E.K.
DRAWN BY B.R.
CHECKED BY E.K./J.V./B.F.
APPROVED BY P.S.

STAMP: LICENSED PROFESSIONAL ENGINEER E. KANDIAH 100078583 11/13/2018 PROVINCE OF ONTARIO

wsp
600 COCHRANE DRIVE, 5TH FLOOR
MARKHAM, ONTARIO
CANADA L3R 5K3
PHONE: 905-475-7270 FAX: 905-475-5994
www.wsp.com

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CITY OF HAMILTON

HAMILTON HARBOUR
PIER 8 SHOREWALL RECONSTRUCTION
SECTIONS – NORTH DOCKWALL

DATE :	MAY 2018
SCALE:	AS SHOWN
FILE No.:	171-15660-00
CONTRACT No.:	C13-33-18
DRAWING No.:	S-11

FRAME SIZE 566x801mm
DRAWING SIZE A1(595x841mm)
S:\WA\2017\171-15660-00\Design\E_TECH\S_DWG_CAD\2018\XXX IFC dwg\S-11_Rev B.dwg

CITY OF HAMILTON

NEW MUNICIPAL WASTEWATER PUMPING STATION HC062
ON PIER 8 IN THE CITY OF HAMILTON
CONTRACT NO. C13-07-19

Hamilton

ISSUED FOR TENDER

DRAWING INDEX

SH. No.	DWG. No.	DRAWING TITLE
		GENERAL
1		COVER SHEET
2	G-001	DRAWING INDEX (1)
3	G-002	DRAWING INDEX (2)
4	G-100	GENERAL NOTES
		CIVIL
5	C-100	CONSTRUCTION SITE LIMIT
6	C-200	SANITARY SEWERS - PLAN AND PROFILE - SEWER INLET & OVERFLOW
7	C-300	FORCEMAINS - PLAN AND PROFILE - PUMPING STATION CONNECTION
8	C-400	EROSION AND SEDIMENT CONTROL PLAN
		PROCESS
9	P-100	PIER 8 WASTEWATER PUMPING STATION - WET WELL & SANITARY STORAGE TANK PLANS
10	P-101	PIER 8 WASTEWATER PUMPING STATION - WET WELL & SANITARY STORAGE TANK SECTIONS A-A & B-B
11	P-102	PIER 8 WASTEWATER PUMPING STATION - WET WELL & SANITARY STORAGE TANK SECTIONS C-C & D-D
12	P-103	PIER 8 WASTEWATER PUMPING STATION - WET WELL SECTION E-E
13	P-120	PIER 8 WASTEWATER PUMPING STATION - ODOUR CONTROL ROOM - GROUND FLOOR PLAN
14	P-121	PIER 8 WASTEWATER PUMPING STATION - VALVE ROOM PLAN
15	P-122	PIER 8 WASTEWATER PUMPING STATION - SECTION A-A
16	P-123	PIER 8 WASTEWATER PUMPING STATION - SECTION B-B
17	P-124	PIER 8 WASTEWATER PUMPING STATION - SECTION C-C & D-D
18	P-125	PIER 8 WASTEWATER PUMPING STATION - SUMP PUMP SECTIONS
19	P-126	PIER 8 WASTEWATER PUMPING STATION - PIPE & DUCT SLEEVE DETAIL
20	P-127	PIER 8 WASTEWATER PUMPING STATION - PIPE SUPPORT DETAIL
		ARCHITECTURAL
21	A-000	COVER SHEET
22	A-001	SITE PLAN
23	A-002	SERVICE LEVEL PLAN
24	A-003	GROUND FLOOR PLAN
25	A-004	ROOF PLAN AND DETAILS
26	A-005	OVERALL ELEVATIONS
27	A-006	DETAILED BUILDING ELEVATIONS (1)
28	A-007	DETAILED BUILDING ELEVATIONS (2)
29	A-008	CROSS SECTION
30	A-009	CROSS SECTION AND DETAILS
31	A-010	WALL SECTIONS AND DETAILS (1)
32	A-011	WALL SECTIONS (1)
33	A-012	WALL SECTIONS (2)
34	A-013	DETAILS
35	A-014	SCHEDULES AND TYPICAL DETAILS

SH. No.	DWG. No.	DRAWING TITLE
		STRUCTURAL
36	S-100	SANITARY STORAGE TANK - STRUCTURAL PILE LAYOUT
37	S-101	SANITARY STORAGE TANK - STRUCTURAL TOP SLAB REINFORCEMENT
38	S-102	SANITARY STORAGE TANK - STRUCTURAL BOTTOM SLAB REINFORCEMENT
39	S-103	SANITARY STORAGE TANK - STRUCTURAL SECTIONS (1)
40	S-104	SANITARY STORAGE TANK - STRUCTURAL SECTIONS (2)
41	S-200	PUMPING STATION - STRUCTURAL BASEMENT SLAB
42	S-201	PUMPING STATION - STRUCTURAL SECTIONS
43	S-202	PUMPING STATION - STRUCTURAL GROUND SLAB
44	S-203	PUMPING STATION - STRUCTURAL BOUNDARY WALL
45	S-500	GENERAL NOTES & DRAWING LIST
46	S-501	TYPICAL DETAILS
47	S-502	PUMPING STATION PLANS, SCHEDULE, ROOF NOTES & DESIGN DATA
48	S-503	PUMPING STATION ELEVATIONS, WALL REINFORCEMENT & LINTEL SCHEDULE
49	S-504	PUMPING STATION SECTIONS-1
50	S-505	PUMPING STATION SECTIONS-2
51	S-506	PUMPING STATION TOWER ELEVATIONS, PLANS AND DETAILS
		INSTRUMENTATION
52	I-000	GENERAL LEGEND AND SYMBOLS
53	I-001	P&ID (1)
54	I-002	P&ID (2)
55	I-003	P&ID WATER SERVICE
56	I-101	PAC CONTROL PANEL HC062CP001 - PAC PANEL LAYOUT
57	I-102	PAC CONTROL PANEL HC062CP001 - PAC PANEL LAYOUT WIRING DIAGRAM 1
58	I-103	PAC CONTROL PANEL HC062CP001 - PAC PANEL LAYOUT WIRING DIAGRAM 2
59	I-104	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 0 CPU
60	I-105	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 1 & SLOT 2 ETHERNET CARDS
61	I-106	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 3 DO LOOP DIAGRAM
62	I-107	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 4 DO LOOP DIAGRAM
63	I-108	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 5 SPARE
64	I-109	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 6 AO LOOP DIAGRAM
65	I-110	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 7 SPARE & 8 DI LOOP DIAGRAM
66	I-111	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 9 & 10 DI LOOP DIAGRAM
67	I-112	PAC CONTROL PANEL HC062CP001 - RACK 0 SLOT 11 DI LOOP DIAGRAM & MODBUSS
68	I-113	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 0 ETHERNET CARD & SLOT 1 SPARE
69	I-114	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 2 & 3 DI LOOP DIAGRAM
70	I-115	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 4 & 5 DI LOOP DIAGRAM
71	I-116	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 6 & 7 DI LOOP DIAGRAM
72	I-117	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 8 SPARE
73	I-118	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 9 AI LOOP DIAGRAM
74	I-119	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 10 AI LOOP DIAGRAM

No.	REVISIONS	DATE	INTLS
1	DRAFT PRELIMINARY DESIGN	DEC. 2015	J. H.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY R.A.
APPROVED BY J.H.

STAMP

STAMP

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Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

GENERAL
DRAWING INDEX
1 OF 2

DATE : JUNE 2016
SCALE: ---
FILE No.: 475964-G-001
CONTRACT No.: C13-06-16
DRAWING No.:
G-001

G:\475964-PIER 8\1 General\457964-S-C-001 & C-002.dwg
PLOT DATE: Jan 14, 2019-4:32pm BY:(ja0015290)

DRAWING INDEX

SH. No.	DWG. No.	DRAWING TITLE
		INSTRUMENTATION
75	I-120	PAC CONTROL PANEL HC062CP001 - RACK 1 SLOT 11 & 12 SPARE
76	I-121	PAC CONTROL PANEL HC062CP001 - TERMINAL BLOCK DETAIL 1
77	I-122	PAC CONTROL PANEL HC062CP001 - TERMINAL BLOCK DETAIL 2
78	I-123	PAC CONTROL PANEL HC062CP001 - TERMINAL BLOCK DETAIL 3
79	I-124	PAC CONTROL PANEL HC062CP001 - TERMINAL BLOCK DETAIL 4
80	I-201	INSTRUMENT LAYOUT 1
81	I-202	INSTRUMENT LAYOUT 2
82	I-203	INSTRUMENT LAYOUT 3
83	I-301	NETWORK ARCHITECTURE
84	I-302	WAN PANEL HC062WAN01 - INTERIOR AND EXTERIOR WAN PANEL LAYOUT
85	I-303	WAN PANEL HC062WAN01 - CAT6a PORT ASSIGNMENT
86	I-401	BACKUP CONTROL PANEL - BACK PANEL WIRING DIAGRAM 1
87	I-402	BACKUP CONTROL PANEL - BACK PANEL WIRING DIAGRAM 2
88	I-403	BACKUP CONTROL PANEL - BACK PANEL WIRING DIAGRAM 3
89	I-404	BACKUP CONTROL PANEL - BACK PANEL LAYOUT
		ELECTRICAL
90	E-101	ELECTRICAL LEGEND & ABBREVIATIONS
91	E-102	ELECTRICAL SITE PLAN
92	E-103	SITE PLAN DETAILS
93	E-104	SINGLE LINE DIAGRAM
94	E-105	MCC ELEVATION
95	E-106	LIGHTING LAYOUT 1
96	E-107	LIGHTING LAYOUT 2
97	E-108	LIGHTING LAYOUT 3
98	E-109	POWER LAYOUT 1
99	E-110	POWER LAYOUT 2
100	E-111	ELECTRICAL DETAILS 1
101	E-112	ELECTRICAL DETAILS 2
102	E-113	EXHAUST FAN STARTER SCHEMATIC
103	E-114	PUMP STARTER SCHEMATIC 1
104	E-115	PUMP STARTER SCHEMATIC 2
105	E-116	LIGHTNING PROTECTION DETAILS 1
106	E-117	LIGHTNING PROTECTION DETAILS 2

SH. No.	DWG. No.	DRAWING TITLE
		MECHANICAL, HVAC & PLUMBING
107	M-101	MECHANICAL SITE PLAN, DRAWING LIST AND LEGEND
108	M-102	MECHANICAL SERVICE FLOOR PLUMBING PLAN
109	M-103	MECHANICAL GROUND FLOOR PLUMBING PLAN
110	M-104	MECHANICAL SERVICE FLOOR HVAC PLAN
111	M-105	MECHANICAL GROUND FLOOR HVAC PLAN
112	M-106	MECHANICAL ROOF PLAN
113	M-107	MECHANICAL DETAILS 1
114	M-108	MECHANICAL DETAILS 2
115	M-109	MECHANICAL SCHEDULE
116	M-201	GENSET COMBUSTION EXHAUST SYSTEM LAYOUT

No.	REVISIONS	DATE	INTLS
2	ISSUED FOR TENDER	AUG 2018	A.A.
1	ISSUED FOR 90% DETAILED DESIGN	AUG 2017	A.A.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY R.A.
APPROVED BY J.H.

STAMP: REGISTERED PROFESSIONAL ENGINEER — J. A. HIMANEN — 16/08/2018 — PROVINCE OF ONTARIO

STAMP

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Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

GENERAL
DRAWING INDEX
2 OF 2

DATE : AUGUST 2018
SCALE: ---
FILE No.: 475964-G-002
CONTRACT No.:
DRAWING No.:
G-002

G:\475964\1. General\457964-S-c-001 & G-002.dwg
PLOT DATE: Aug 16, 2018 - 12:16pm BY:(pd015290)

GENERAL NOTES

GENERAL:

1. ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HAMILTON CONSTRUCTION AND MATERIAL SPECIFICATION, AND ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH GENERAL AND SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS.
3. REQUIRED SHOP DRAWINGS SHALL BE BASED ON FIELD MEASUREMENT AND LAYOUT VERIFICATION BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE TOTAL SCOPE OF WORK AND ALL REQUIRED COORDINATES.
5. THE CONTRACTOR IS RESPONSIBLE FOR A THOROUGH SITE EXAMINATION TO BE SATISFIED AS TO THE ACTUAL SITE CONDITIONS PRIOR TO SUBMISSION OF HIS PRICE FOR THE WORK.
6. CONTRACTOR TO ENSURE THAT SUPPLIERS ARE ON-SITE DURING CONSTRUCTION TO ENSURE THAT THEIR PRODUCTS ARE PROPERLY INSTALLED ACCORDING TO MANUFACTURER RECOMMENDATIONS.
7. CONTRACTOR MUST COMPLY WITH CONFINED SPACE ENTRY REQUIREMENTS UNDER THE OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA) AND ITS REGULATIONS WHEN REQUIRED.
8. CONTRACTOR TO SUBMIT A CONSTRUCTION SITE SETUP PLAN TO THE ENGINEER AND OWNER SHOWING PROPOSED LAY DOWN AREAS, SITE TRAILERS, SITE ACCESS GATES, MUD MATS AND TEMPORARY ACCESS ROADS. THE PLAN MUST BE SUBMITTED FOR APPROVAL PRIOR TO MOBILIZATION OF CONTRACTOR TO THE SITE.
9. THE CONTRACTOR MUST CHECK ALL DIMENSIONS PRIOR TO COMMENCING WORK AND REPORT ANY DISCREPANCIES TO THE ENGINEER.

UTILITY LOCATES:

1. THE LOCATION OF ALL EXISTING UNDER/ABOVE GROUND UTILITIES AND STRUCTURES SHOWN ON DRAWINGS IS APPROXIMATE ONLY. THE ACCURACY OF THE LOCATION OF SUCH UTILITIES IS NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL SUCH UTILITIES AND STRUCTURES BY CONSULTING WITH THE APPROPRIATE AUTHORITIES OR UTILITY COMPANIES CONCERNED PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION OF ALL UTILITIES DURING CONSTRUCTION.
2. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION AS REQUIRED.
3. THE CONTRACTOR SHALL BE SATISFIED AS TO THE ACTUAL LOCATION AND DEPTH OF ANY UTILITY AND SHALL BE LIABLE FOR ALL, OR ANY DAMAGES TO EXISTING UTILITIES.
4. ANY TEMPORARY RELOCATION AND ADJUSTMENT OF UTILITIES SHALL BE DONE IN CONSULTATION WITH RELEVANT UTILITY COMPANIES, WITH THE OWNER AND ENGINEER BEING COPIED ON ALL COMMUNICATION.
5. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICTS WITH EXISTING UTILITIES AND STRUCTURES.
6. EXCAVATION REQUIRED WITHIN PROXIMITY OF UTILITY LINES AND WITHIN DRIP LINE OF TREES DESIGNATED TO REMAIN SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE UTILITY COMPANIES OR THE OWNER.
7. ALL WORK IN PROXIMITY TO ELECTRICAL CONDUCTORS SHALL BE PERFORMED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AND THE ELECTRICAL UTILITY SAFETY RULES BY THE INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION.

TRAFFIC CONTROL:

1. CONTRACTOR TO MAINTAIN ONE LANE OPEN FOR TRAFFIC AT ALL TIMES DURING THE COURSE OF WORK. PROVIDE FLAG-PERSONS OR TEMPORARY SIGNALS FOR TRAFFIC CONTROL IN ACCORDANCE WITH CITY OF HAMILTON REQUIREMENTS.

RELEVANT REPORTS:

1. REFER TO APPENDICES OF THE CONTRACT DOCUMENTS FOR GEOTECHNICAL REPORT.
2. REFER TO APPENDICES OF THE CONTRACT DOCUMENTS FOR HYDROGEOLOGIC INVESTIGATION REPORT.
3. REFER TO APPENDICES OF THE CONTRACT DOCUMENTS FOR ARBORIST REPORT.

TREE PROTECTION AND MANAGEMENT:

1. REFER TO DRAWINGS TREE PROTECTION PLAN FIGURES 1 TO 8 DATED DEC-16-2016.
2. AT A MINIMUM, THE SUPERVISOR OR CREW LEADER MUST HAVE A MINIMUM QUALIFICATION OF ISA CERTIFIED ARBORIST OR ONTARIO COLLEGE OF TRADES CERTIFIED ARBORIST, WITH MINIMUM OF TWO YEARS OF EXPERIENCE.
3. WHEN REQUIRED, TREE PRUNING SHALL FOLLOW ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES FOR TREE PRUNING. ALL CUTS MUST BE MADE USING THE PROPER METHODS, WITH PROPER COLLAR CUTS ON ALL LIMBS THAT ARE TO REMAIN ON THE TREE. FLUSH CUTS, AND TEAR CUTS ARE NOT ALLOWED.
4. WHEN REQUIRED, TREE REMOVALS SHALL INCLUDE FULL TREE REMOVAL INCLUDING STUMPING AND ROOTS, AND DISPOSAL OF ALL WASTE MATERIALS, SITE CLEANUP OF EXCESS DEBRIS, INCLUDING BUT NOT LIMITED TO FOLIAGE, BRUSH, AND SAWDUST. REMOVALS MUST BE DONE IN A SAFE MATTER AND FOLLOW ALL LABOUR LAWS AS OUTLINED IN THE OCCUPATIONAL HEALTH & SAFETY ACT - CONDENSED (ONTARIO GREEN BOOK).
5. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE TO THE APPLICABLE REGULATIONS INCLUDED IN THE OCCUPATIONAL HEALTH AND SAFETY ACT (R.S.O), 1990, AS AMENDED AND ALL REGULATIONS MADE PURSUANT OF THE ACTS.
6. ALL WORK WILL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST EDITION OF "THE ARBORIST INDUSTRY SAFE WORK PRACTICES" GUIDE.

EROSION AND SEDIMENTATION CONTROL:

1. ALL CONTROL MEASURES SHALL BE INSTALLED AS PER THE DRAWINGS PRIOR TO CONSTRUCTION.
2. CHECK DAMS AND SILTATION CONTROL FENCE SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO PREVENT SEDIMENT FLOWING ONTO ADJACENT LANDS AND WATERCOURSES.
3. ALL POINTS OF CONSTRUCTION EGRESS OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADS OR ABUTTING PROPERTIES.
4. EROSION AND SEDIMENTATION CONTROLS WILL BE LEFT IN PLACE UNTIL VEGETATION HAS RE-ESTABLISHED AND ALL PREVIOUSLY EXPOSED AREAS ARE STABLE.
5. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH OPSD STANDARD DRAWINGS AND OPSS SPECIFICATIONS OR TO THE SATISFACTION OF THE ENGINEER AND REGULATORY AUTHORITIES, INCLUDING HCA.
6. SILT FENCE DETAILS SHALL BE AS PER CITY OF HAMILTON SITE PLAN GUIDELINES.

SOIL MANAGEMENT PLAN:

1. CONTRACTOR TO PREPARE A SOIL MANAGEMENT PLAN PRIOR TO THE COMMENCEMENT OF CONSTRUCTION TO ENSURE THAT EXCESS SOIL EXCAVATED FROM THE SITE IS BEING DISPOSED OF AT A LOCATION APPROVED BY THE OWNER AND THE ENGINEER. SOIL MANAGEMENT PLAN MUST BE PREPARED IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT'S DOCUMENT 'MANAGEMENT OF EXCESS SOIL - A GUIDE FOR BEST MANAGEMENT PRACTICES' (JANUARY 2014) IN CONJUNCTION WITH THE OPSS 180 REQUIREMENTS.

SURFACE DRAINAGE:

1. CONTRACTOR IS RESPONSIBLE FOR THE SURFACE DRAINAGE PLAN AND TO MAINTAIN POSITIVE FLOW DURING CONTRACT PERIOD.

LAYOUT:

1. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE TOTAL SCOPE OF WORK AND ALL REQUIRED COORDINATES. ANY ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO COMMENCING WORK.
2. ALL LINE AND GRADE WORK PER DRAWINGS AND SPECIFICATIONS SHALL BE LAID OUT BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO OR BY AN ONTARIO LAND SURVEYOR.

ROUGH CARPENTRY:

1. CARPENTRY WORKS TO COMPLY WITH: CANADIAN STANDARDS ASSOCIATION (CSA), CSA B111, WIRE NAILS, SPIKES AND STAPLES; CAN/CSA G164, HOT DIP GALVANIZING OF IRREGULARLY SHAPED ARTICLES; CAN/CSA O141, SOFTWOOD LUMBER; AND NATIONAL LUMBER GRADES AUTHORITY (NLGA) STANDARD GRADING RULES FOR CANADIAN LUMBER.
2. LUMBER IDENTIFICATION: BY GRADE STAMP OF AN AGENCY CERTIFIED BY CANADIAN LUMBER STANDARDS ACCREDITATION BOARD.
3. DELIVERY, STORAGE AND HANDLING: STORE MATERIALS IN DRY LOCATIONS, LEAVE 150 MM CLEARANCE TO FLOOR OR GROUND. PROTECT FIRE RETARDANT TREATED MATERIALS AGAINST MOISTURE.
4. LUMBER MATERIAL: PRESSURE-TREATED, SOFTWOOD, S4S, MOISTURE CONTENT 19% OR LESS IN ACCORDANCE WITH CAN/CSA O141 AND NLGA STANDARD GRADING RULES FOR CANADIAN LUMBER. BOARD SIZES TO BE: "STANDARD" OR BETTER GRADE. DIMENSION SIZES TO BE: "STANDARD" LIGHT FRAMING OR BETTER GRADE. POST AND TIMBERS SIZES TO BE: "STANDARD" OR BETTER GRADE.
5. BOLTS: 12.5 MM DIAMETER UNLESS INDICATED OTHERWISE, COMPLETE WITH NUTS AND WASHERS. PROPRIETARY FASTENERS TO BE TOGGLE BOLTS, EXPANSION SHIELDS AND LAG BOLTS, OR SCREWS RECOMMENDED FOR PURPOSE BY MANUFACTURER.
6. PREPARATION AND INSTALLATION: WOOD TO BE PRESSURE TREATED IN FACTORY, PRIOR TO DELIVERY TO SITE. INSTALL TIMBER BULKHEADS AND ASSOCIATED WOOD WORKS AS INDICATED, ALIGN AND PLUMB SURFACES SQUARE, AND SECURE USING GALVANIZED STEEL FASTENERS.
7. FRAME, ANCHOR, AND FASTEN CROSS MEMBERS TO PROVIDE NECESSARY STRENGTH AND RIGIDITY. COUNTERSINK BOLTS WHERE NECESSARY TO PROVIDE CLEARANCE FOR OTHER WORK.

RESTORATION:

1. ANY TEMPORARY RELOCATION AND ADJUSTMENT OF UTILITIES SHALL BE DONE IN CONSULTATION WITH THE RELEVANT UTILITY COMPANIES.
2. THE SURFACE OF THE WORKING AREA SHALL BE FINE GRADED UNLESS DIRECTED OTHERWISE BY THE ENGINEER. ALL WASTE MATERIALS SHALL BE REMOVED AND DISPOSED AT AN APPROVED LOCATION. EXCESS MATERIALS RESULTING FROM FINE GRADING SHALL BE DISPOSED TO A LANDFILL OR SUCH OTHER LOCATION AS APPROVED BY THE ENGINEER.
3. DISTURBED AREAS WITHIN OWNER PROPERTY, MUNICIPAL RIGHT OF WAY, PERMANENT AND TEMPORARY EASEMENTS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER TO SATISFY THE REQUIREMENTS OF CITY OF HAMILTON.
4. ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION BY THE CONTRACTOR AT NO COST TO THE OWNER.
5. ALL OTHER AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR BETTER BY THE CONTRACTOR AT NO COST TO THE OWNER.
6. ALL EQUIPMENT AND MATERIALS NOT USED IN THE WORK SHALL BE REMOVED AT THE END OF CONSTRUCTION.
7. ALL EXCESS EXCAVATED MATERIAL, RUBBLE AND BUILDING MATERIALS TO BE DISPOSED OFFSITE, TO A SITE ARRANGED FOR BY THE CONTRACTOR.
8. WHERE NEW PAVING OR EARTHWORK MEETS EXISTING PAVING OR EARTHWORK, SMOOTHLY BLEND LINE AND GRADE OF EXISTING WITH NEW.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING THE LOCATIONS OF ALL SITE ELEMENTS TO BE RESET IN THEIR SAME HORIZONTAL LOCATION.

KEY DEFINITIONS:

1. REFER TO CONTRACT DOCUMENTS FOR DEFINITIONS.

No.	REVISIONS	DATE	INTLS
2	ISSUED FOR TENDER	AUG 2018	A.A.
1	ISSUED FOR 90% DETAILED DESIGN	AUG 2017	A.A.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY R.A.
APPROVED BY J.H.

STAMP: REGISTERED PROFESSIONAL ENGINEER - J. A. HIMANEN - 16/08/2018 - PROVINCE OF ONTARIO

STAMP

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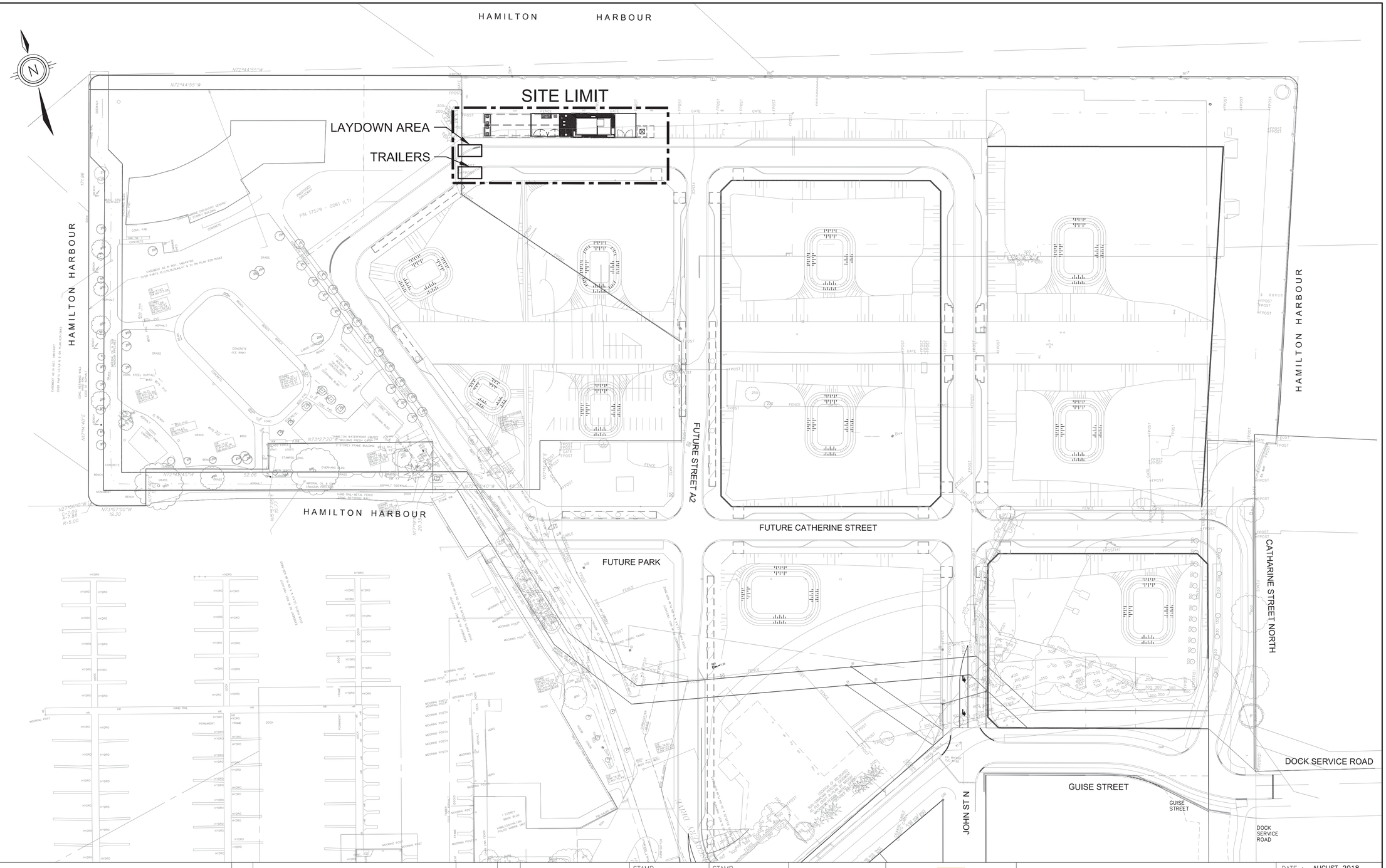
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

GENERAL
GENERAL NOTES

DATE : AUGUST 2018
SCALE: ---
FILE No.: 475964-G-100
CONTRACT No.:
DRAWING No.: G-100

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PLOT DATE: Aug 16, 2018 - 12:06pm BY:(gd015290)



No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY R.A.
APPROVED BY J.H.

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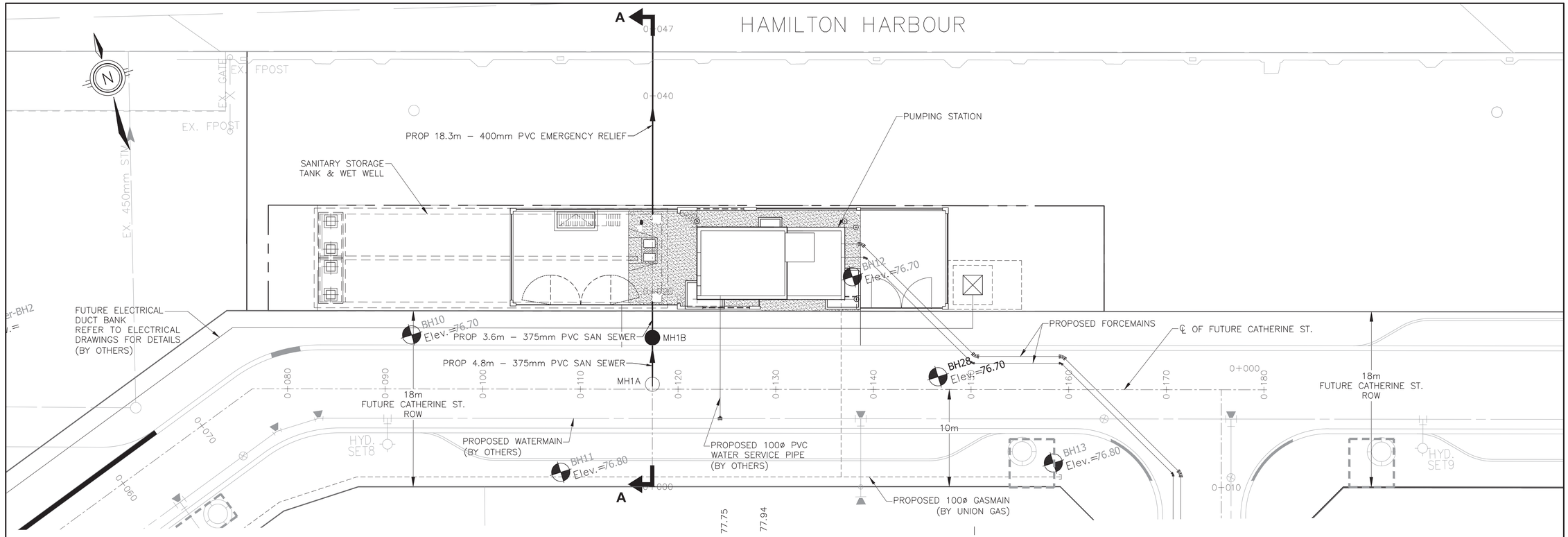
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

CIVIL
CONSTRUCTION SITE LIMIT

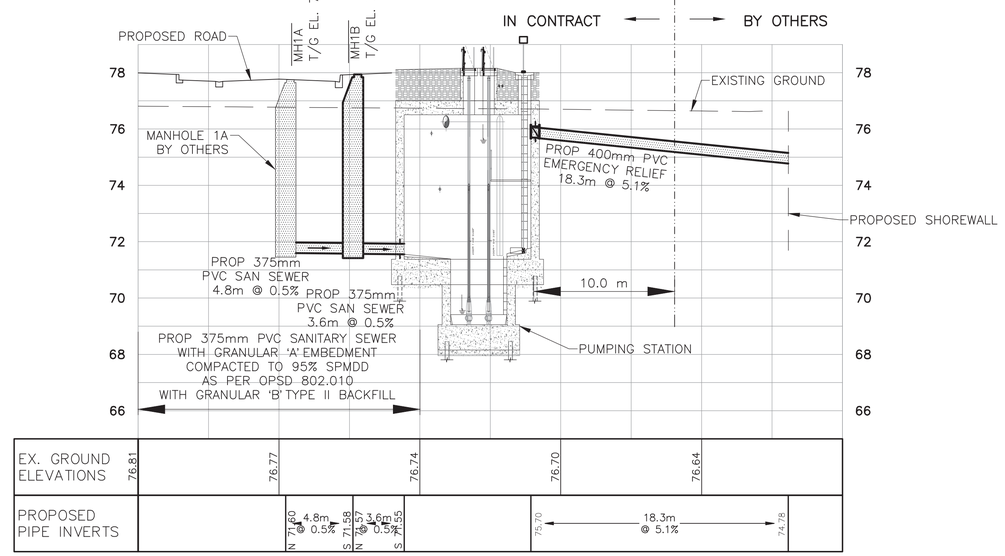
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CONTRACT No.:
DRAWING No.: C–100

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PLOT DATE: Aug 16, 2018 - 12:21 pm BY:(p0015290)



PROFILE SCALE

H: 1:200
V: 1:100



SECTION A–A

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY A.A.
APPROVED BY J.H.

STAMP
REGISTERED PROFESSIONAL ENGINEER
J. A. HIMANEN
16/08/2018
PROVINCE OF ONTARIO

STAMP

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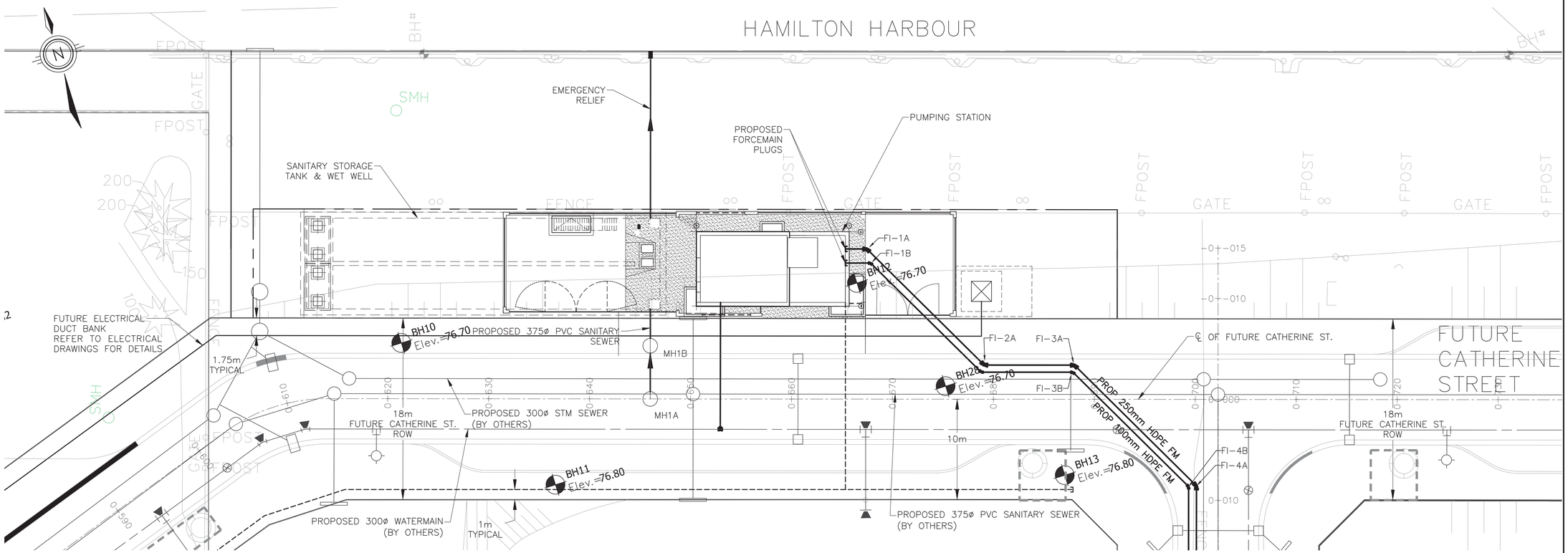
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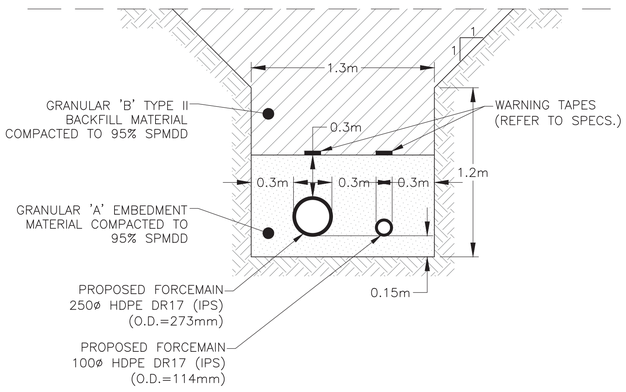
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

CIVIL
SANITARY SEWERS – PLAN AND PROFILE
SEWER INLET

DATE : AUGUST 2018
SCALE: 1:200
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CONTRACT No.:
DRAWING No.:
C–200

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PLOT DATE: Aug 16, 2018 - 1:36pm BY:(g0015290)



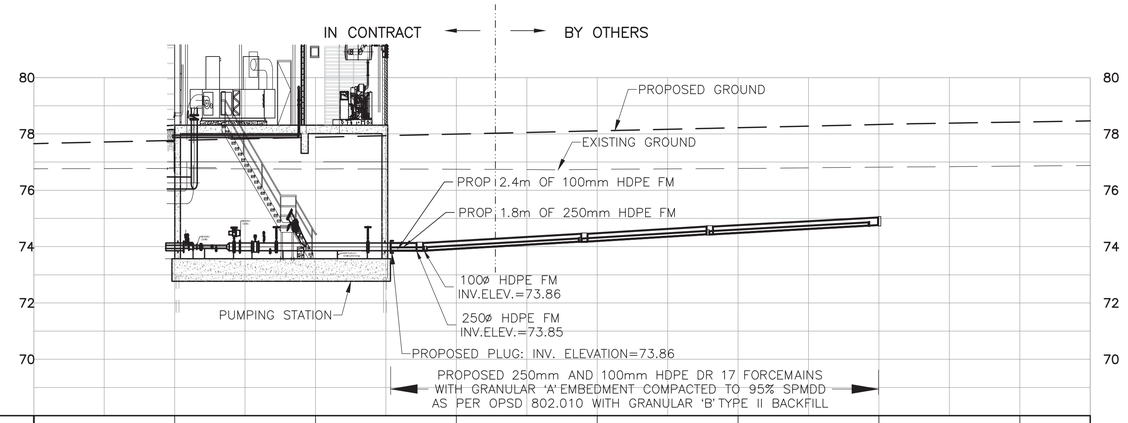


FORCEMAINS TYPICAL TRENCH SECTION (EXCEPT AS INDICATED)

SCALE: 1:20

PROFILE SCALE

H: 1:200
V: 1:100



EX. GROUND ELEVATIONS	76.77	76.76	76.75	76.74	76.77	76.82	76.86
STATIONS	0+650	0+660	0+670	0+680	0+690	0+700	0+710

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY R.A.
APPROVED BY J.H.

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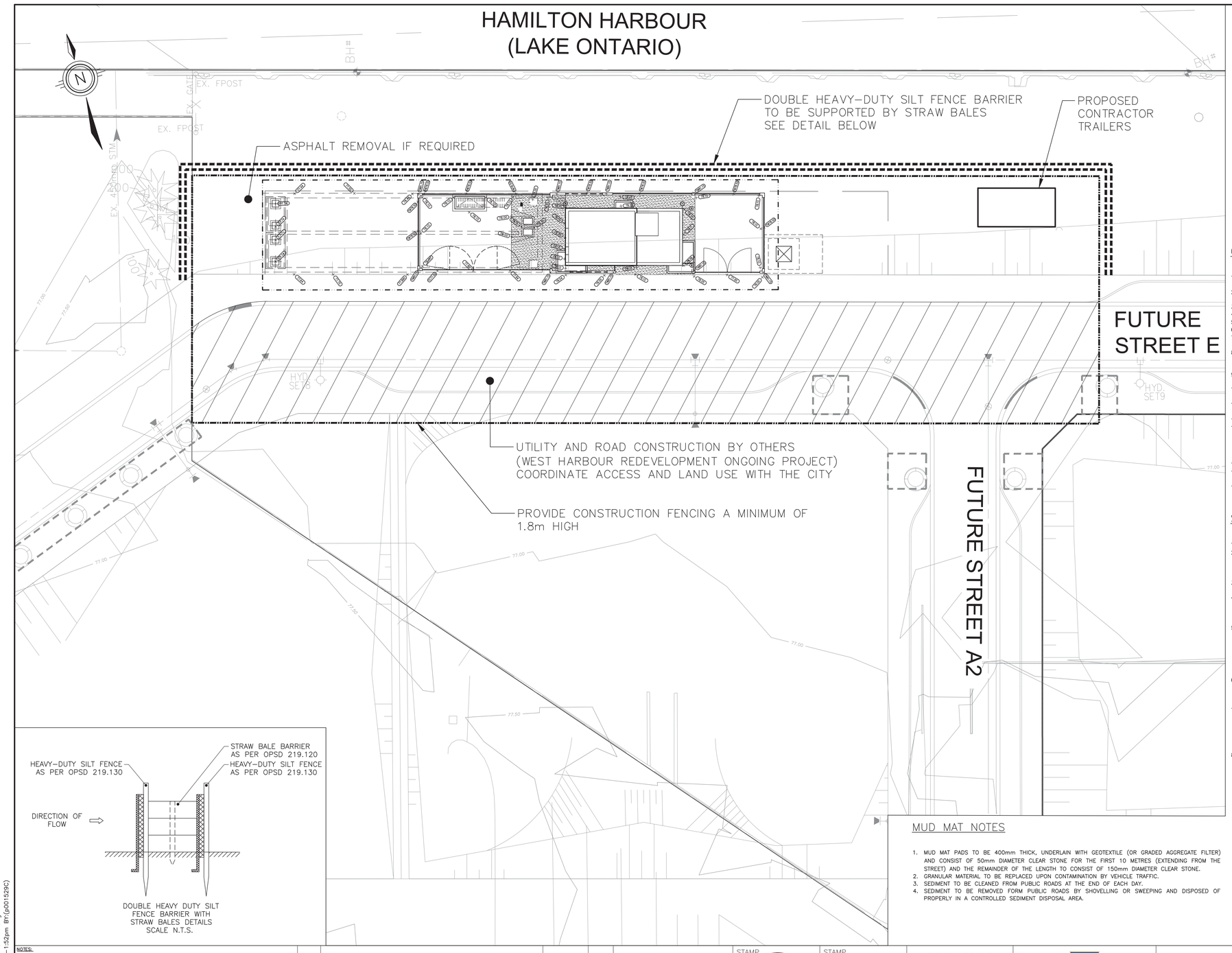
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

CIVIL
FORCEMAINS – PLAN AND PROFILE
PUMPING STATION CONNECTION

DATE : AUGUST 2018
SCALE: 1:200
FILE No.: ---
CONTRACT No.:
DRAWING No.: C-300

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PLOT DATE: Aug 16, 2018 - 1:46pm BY: (pl001529c)



DOUBLE HEAVY DUTY SILT
FENCE BARRIER WITH
STRAW BALES DETAILS
SCALE N.T.S.

LEGEND

- SITE BOUNDARY
- DOUBLE HEAVY–DUTY SILT FENCE (OPSD 219.130) W/ STRAW BALES (OPSD 219.120)
- GRADING LIMITS
- 168.00 EXISTING CONTOUR
- EXISTING VEGETATION
- +XX.XX PROPOSED GRADE ELEVATION
- UTILITY AND ROAD CONSTRUCTION BY OTHERS
- PROPOSED STORM SEWER

GENERAL NOTES

1. SEDIMENT BARRIERS AND TEMPORARY CONSTRUCTION ACCESS TO BE INSTALLED PRIOR TO ANY TOPSOIL STRIPPING
2. ALL SEDIMENT CONTROL DEVICES TO BE DAILY INSPECTED AND MAINTAINED IN PROPER WORKING ORDER UNTIL AREA IS STABILIZED
3. ALL CONSTRUCTION VEHICLES TO ENTER AND EXIT SITE FROM APPROVED DESIGNATED LOCATIONS.
4. CATCHBASIN SEDIMENT CONTROL DEVICES TO BE INSTALLED IMMEDIATELY AFTER BASE ASPHALT
5. ALL AREAS BE SEEDED/STABILIZED WITHIN 15 DAYS OF EXPOSURE
6. ALL TOPSOIL STOCKPILES SHALL BE SURROUNDED WITH SEDIMENT FENCE
7. STREET SWEEPING/CATCHBASIN CLEANING PROGRAM TO BE IMPLEMENTED UPON COMPLETION OF BASE ASPHALT TO THE SATISFACTION OF THE MUNICIPALITY, TRCA AND MTO
8. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ARE TO BE LEFT IN PLACE UNTIL THE SITE IS FULLY RESTORED AND STABILIZED INCLUDING FINAL DITCHING.
9. ANY WATER ORIGINATING FROM THE WORK AREA SHALL BE CLEAN AND FREE OF SEDIMENT PRIOR TO ENTERING WATERBODIES OR DITCHES LEADING TO WATERBODIES.
10. SILT FENCES SHALL BE INSTALLED IN A MANNER THAT MINIMIZES THE BUILD UP OF WATER AT LOW POINTS ALONG THE FENCE.
11. ACCUMULATION OF WATER OR SEDIMENT BEHIND SEDIMENT/EROSION CONTROLS SHALL BE CLEANED OUT AS REQUIRED TO ENSURE PROPER FUNCTION OF SUCH CONTROLS IS MAINTAINED.
12. EXPOSED SOILS/FILL SHALL BE COVERED AND STABILIZED WITHIN 15 DAYS OF EXPOSURE OR PLACEMENT.
13. WEIGHT DISSIPATION MEASURES SUCH AS MATS MAY BE REQUIRED TO MINIMIZE RUTTING AND DESTABILIZATION OF VALLEY AND FLOODPLAIN DURING CONSTRUCTION AND WILL BE USED AT THE DISCRETION OF THE CONSTRUCTION MANAGER OR DELEGATE. THE CONTRACTOR SHALL REVIEW THE SITE PRIOR TO THE START OF THE WORK AND DETERMINE IF ANY ADDITIONAL STABILIZATION MEASURES ARE REQUIRED.
14. DEWATERING OF EXCAVATIONS IS TO BE CARRIED OUT IN ACCORDANCE WITH OPSS 518 AND OPSS 805.
15. SILTY/SEDIMENT LADEN WATER FROM WORK AREA IS TO BE PUMPED TO FILTER BAGS OR EQUAL APPROVED PRIOR TO DISCHARGE.
16. GROUNDWATER DISCHARGE THAT IS CLEAR MAY BE DISCHARGED TO LAKE ONTARIO SUBJECT TO THE APPROVALS HAVING JURISDICTION.

SITE MANAGEMENT

1. SITE ACCESS TO BE COORDINATED WITH THE CITY AT PRECONSTRUCTION MEETING.
2. EROSION AND SEDIMENT CONTROL (ESC) MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION
3. DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE, AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
4. ALL IN–WATER AND NEAR WATER WORKS WILL BE CONDUCTED IN THE DRY WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS. ALL WORK THAT WILL IMPACT REGULATED REDSIDE DACE HABITAT MUST BE CONDUCTED WITHIN MNRF'S REDSIDE DACE/COLDWATER CONSTRUCTION TIMING WINDOW OF JULY 1 TO SEPTEMBER 15
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 LADEN RUNOFF FROM LEAVING THE WORK AREAS. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, INCLUDING SEDIMENT, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS. MTO OR DESIGNATED DESIGN CONSULTANT SHOULD BE IMMEDIATELY CONTACTED. ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND USED AS NECESSARY.
6. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO THE WATER. VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED A MINIMUM OF 30 METERS FROM THE WATER.
7. THE PROPONENT/CONTRACTOR SHALL MONITOR THE WEATHER SEVERAL DAYS IN ADVANCE OF THE ONSET OF THE PROJECT TO ENSURE THAT THE WORKS WILL BE CONDUCTED DURING FAVORABLE WEATHER CONDITIONS. SHOULD AN UNEXPECTED STORM ARISE, THE CONTRACTOR WILL REMOVE ALL UNFIXED ITEMS FROM THE REGIONAL STORM FLOOD PLAIN THAT WOULD HAVE THE POTENTIAL TO CAUSE A SPILL OR AN OBSTRUCTION TO FLOW, E.G., FUEL TANKS, PORTA–POTTIES, MACHINERY, EQUIPMENT, CONSTRUCTION MATERIALS, ETC.
8. ALL DEWATERING/UNWATERING SHALL BE TREATED AND RELEASED TO THE ENVIRONMENT AT LEAST 30 METERS FROM A WATERCOURSE OR WETLAND AND ALLOWED TO DRAIN THROUGH A FILTER BAG SYSTEM. NO DEWATERING EFFLUENT SHALL BE SENT DIRECTLY TO ANY WATERCOURSE, WETLAND OR FOREST, OR ALLOWED TO DRAIN ONTO DISTURBED SOILS WITHIN THE WORK AREA. THESE CONTROL MEASURES SHALL BE MONITORED FOR EFFECTIVENESS AND MAINTAINED OR REVISED TO MEET THE OBJECTIVE OF PREVENTING THE RELEASE OF SEDIMENT LADEN WATER.

MUD MAT NOTES

1. MUD MAT PADS TO BE 400mm THICK, UNDERLAIN WITH GEOTEXTILE (OR GRADED AGGREGATE FILTER) AND CONSIST OF 50mm DIAMETER CLEAR STONE FOR THE FIRST 10 METRES (EXTENDING FROM THE STREET) AND THE REMAINDER OF THE LENGTH TO CONSIST OF 150mm DIAMETER CLEAR STONE.
2. GRANULAR MATERIAL TO BE REPLACED UPON CONTAMINATION BY VEHICLE TRAFFIC.
3. SEDIMENT TO BE CLEANED FROM PUBLIC ROADS AT THE END OF EACH DAY.
4. SEDIMENT TO BE REMOVED FORM PUBLIC ROADS BY SHOVELLING OR SWEEPING AND DISPOSED OF PROPERLY IN A CONTROLLED SEDIMENT DISPOSAL AREA.

TOPSOIL STRIPPING NOTES

1. ALL TEMPORARY SEDIMENT CONTROL (I.E. SEDIMENT FENCE, ROCK CHECK DAMS AND CONSTRUCTION ACCESS) TO BE INSTALLED AND INSPECTED BY THE MTO PRIOR TO ANY TOPSOIL STRIPPING WORKS.
2. CONTRACTOR TO ENSURE THAT SEDIMENT LADEN RUN–OFF IS DIRECTED TO APPROPRIATE ESC CONTROLS THROUGHOUT THE STAGED CONSTRUCTION PROCESS, INCLUDING TRANSITIONAL WORKS BETWEEN STAGES.
3. TOPSOIL PILE AREA TO BE STRIPPED AND PLACED AT PRE–GRADE ELEVATION PRIOR TO PLACEMENT OF TOPSOIL.

NOTES:
1. SILTATION CONTROL FENCES SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO PREVENT SILT/SEDIMENT FROM FLOWING ONTO ADJACENT LANDS AND WATERCOURSES.
2. ALL EROSION AND SEDIMENT CONTROLS SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH OPSD STANDARDS AND OPSS SPECIFICATIONS OR TO THE SATISFACTION OF THE CONSULTANT AND REGULATORY AUTHORITIES.
3. CONTRACTOR TO PROVIDE TEMPORARY MUD MATS, WHEEL WASH STATION, STREET SWEEPING, AD GATES AT ALL SITE ENTRANCE/EXIT POINTS. ALL SITE ACCESS POINTS ARE TO BE APPROVED BY THE ENGINEER.
4. CONTRACTOR TO SUBMIT A CONSTRUCTION MANAGEMENT PLAN TO THE ENGINEER AND OWNER SHOWING PROPOSED LAYDOWN AREAS, SITE TRAILERS, SITE ACCESS GATES AND TEMPORARY ACCESS ROADS. THE PLAN MUST BE SUBMITTED FOR APPROVAL PRIOR TO MOBILIZATION OF CONTRACTOR TO THE SITE.

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

DESIGNED BY A.A.
DRAWN BY Z.S.
CHECKED BY R.A.
APPROVED BY J.H.

STAMP: REGISTERED PROFESSIONAL ENGINEER — J. A. HIMANEN — 16/08/2018 — PROVINCE OF ONTARIO

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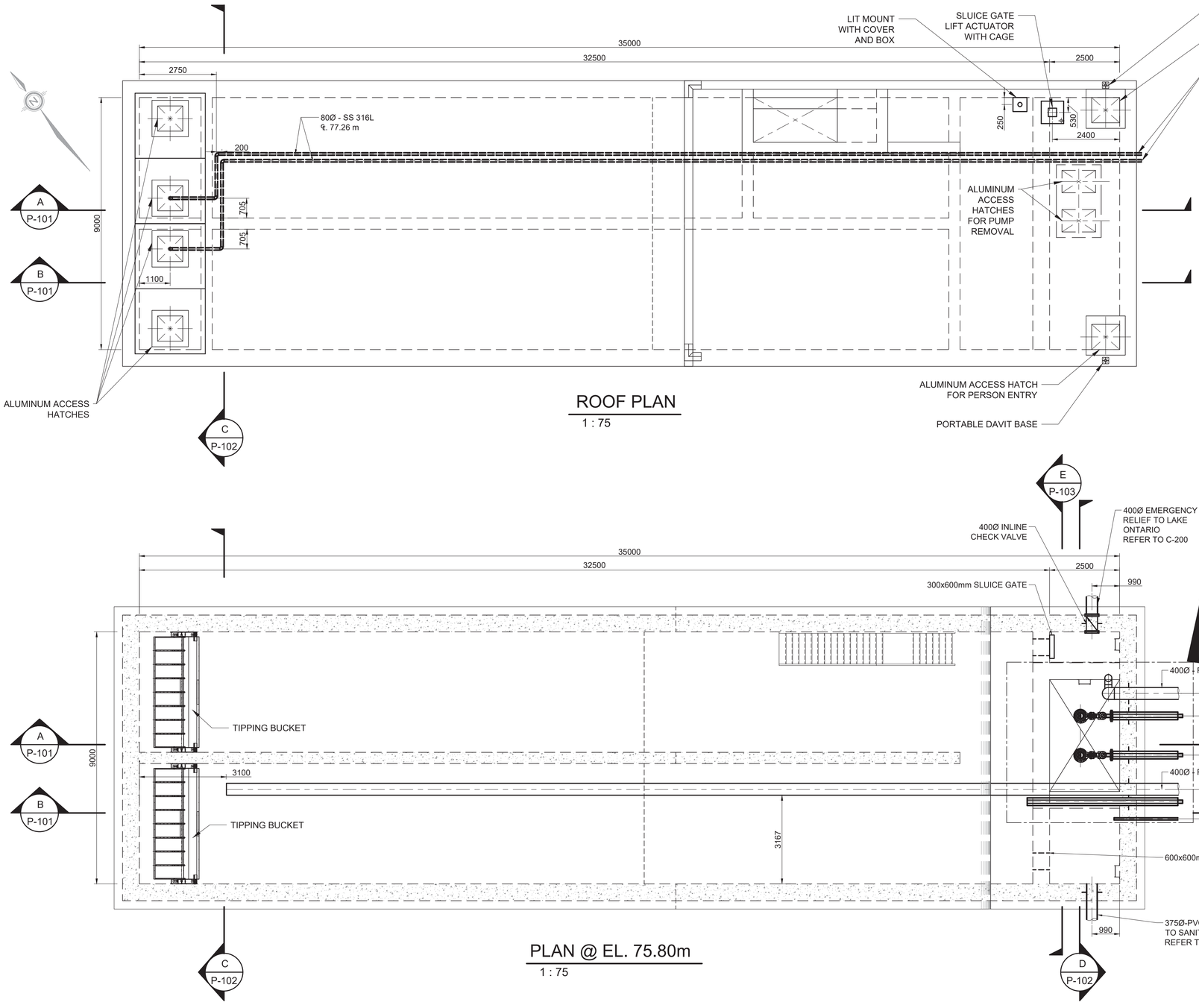
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

CIVIL
EROSION AND SEDIMENT CONTROL PLAN

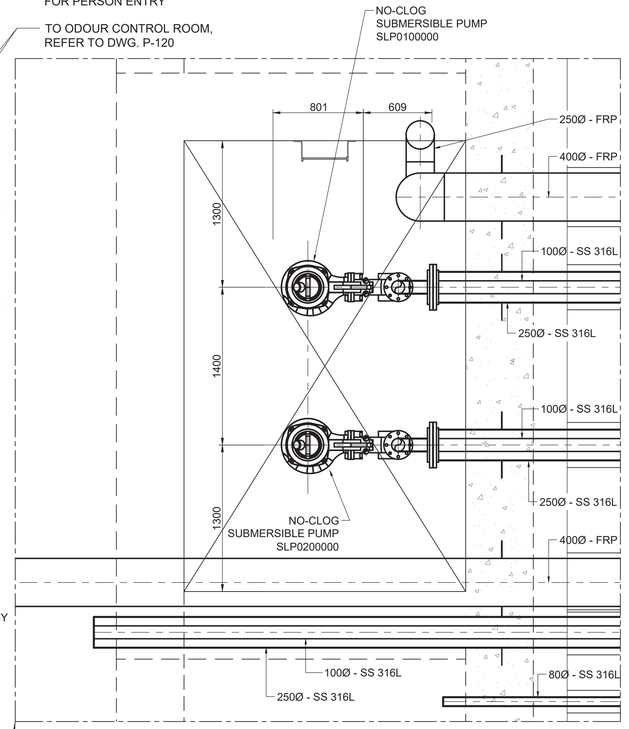
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CONTRACT No.:
DRAWING No.: C–400

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PLOT DATE: Aug 16, 2018 - 1:52pm BY: (jp001529C)



ROOF PLAN
1 : 75

PLAN @ EL. 75.80m
1 : 75



DETAIL
1 : 25

NOTES

1. PROVIDE SLEEVES ON PIPES & DUCTS BETWEEN SERVICE BUILDING AND WET WELL AS PER DWG. P-126.

0 1 2 3 4 5m
SCALE 1:75

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

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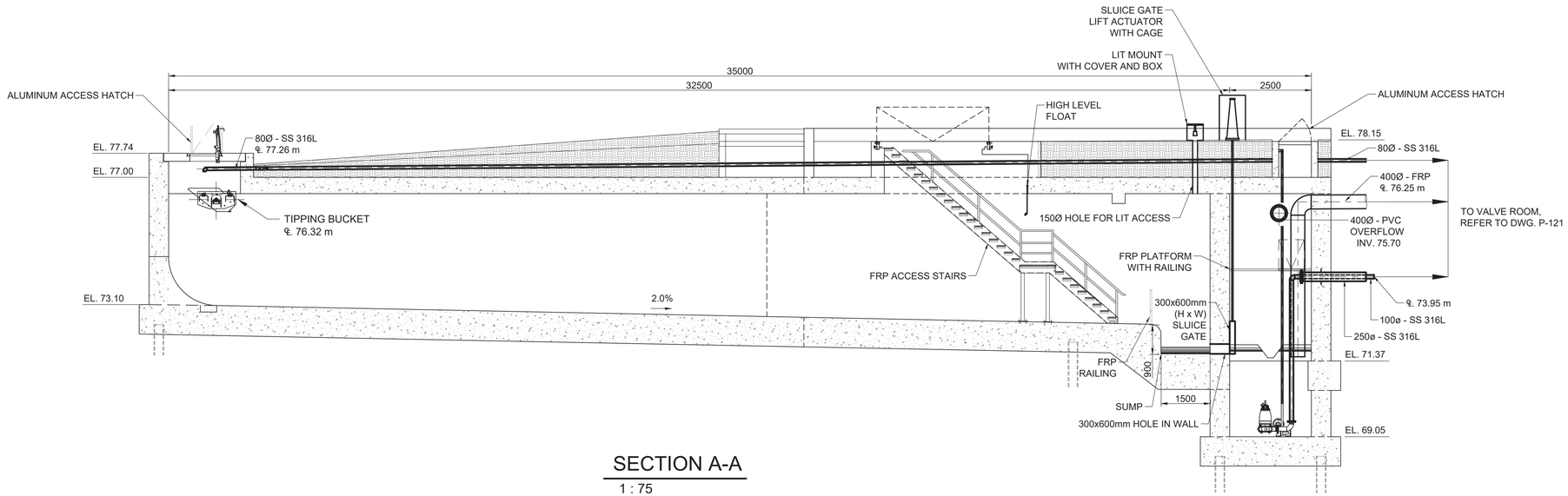
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

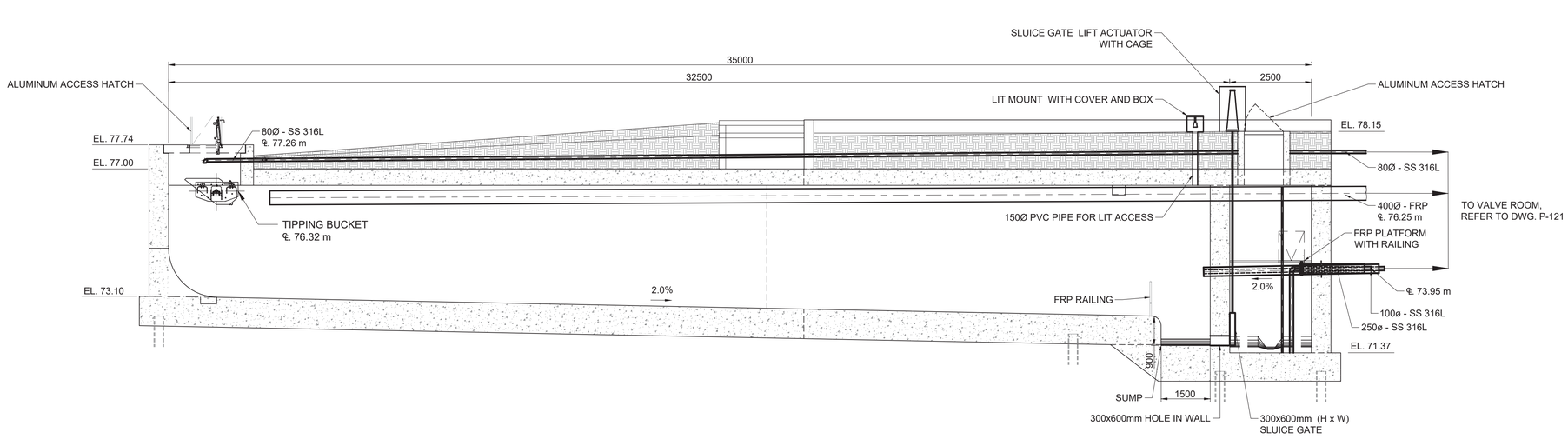
PROCESS
PIER 8 WASTEWATER PUMPING STATION
WET WELL & SANITARY STORAGE TANK PLANS

DATE : AUGUST 2018
SCALE: AS SHOWN
FILE No.:
CONTRACT No.:
DRAWING No.: P-100



SECTION A-A

1 : 75



SECTION B-B

1 : 75

0 1 2 3 4 5m

SCALE 1:75

No.	REVISIONS	DATE	INTLS
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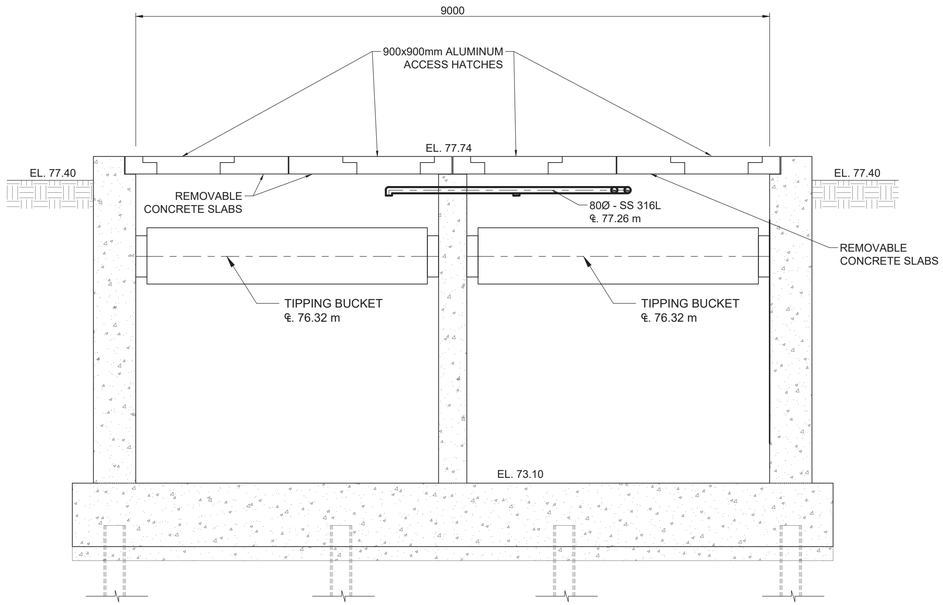
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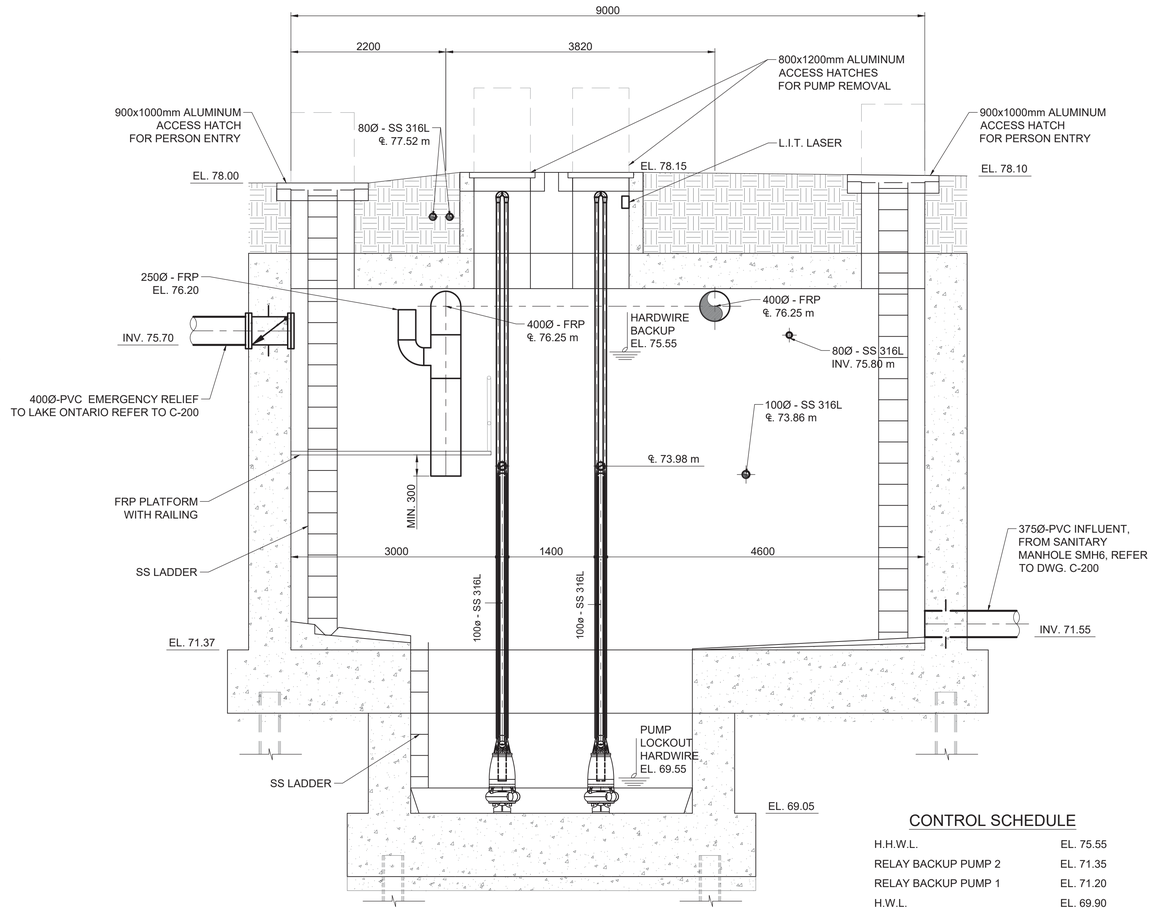
PROCESS
PIER 8 WASTEWATER PUMPING STATION
WET WELL & SANITARY STORAGE TANK SECTIONS A-A & B-B

DATE : AUGUST 2018
SCALE: AS SHOWN
FILE No.:
CONTRACT No.:
DRAWING No.:
P-101



SECTION C-C

1 : 40



SECTION D-D

1 : 40

CONTROL SCHEDULE

H.H.W.L.	EL. 75.55
RELAY BACKUP PUMP 2	EL. 71.35
RELAY BACKUP PUMP 1	EL. 71.20
H.W.L.	EL. 69.90
L.W.L.	EL. 69.75
RELAY BACKUP ALL PUMPS STOP	EL. 69.60

0 1 2 3 4m

SCALE 1:40

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

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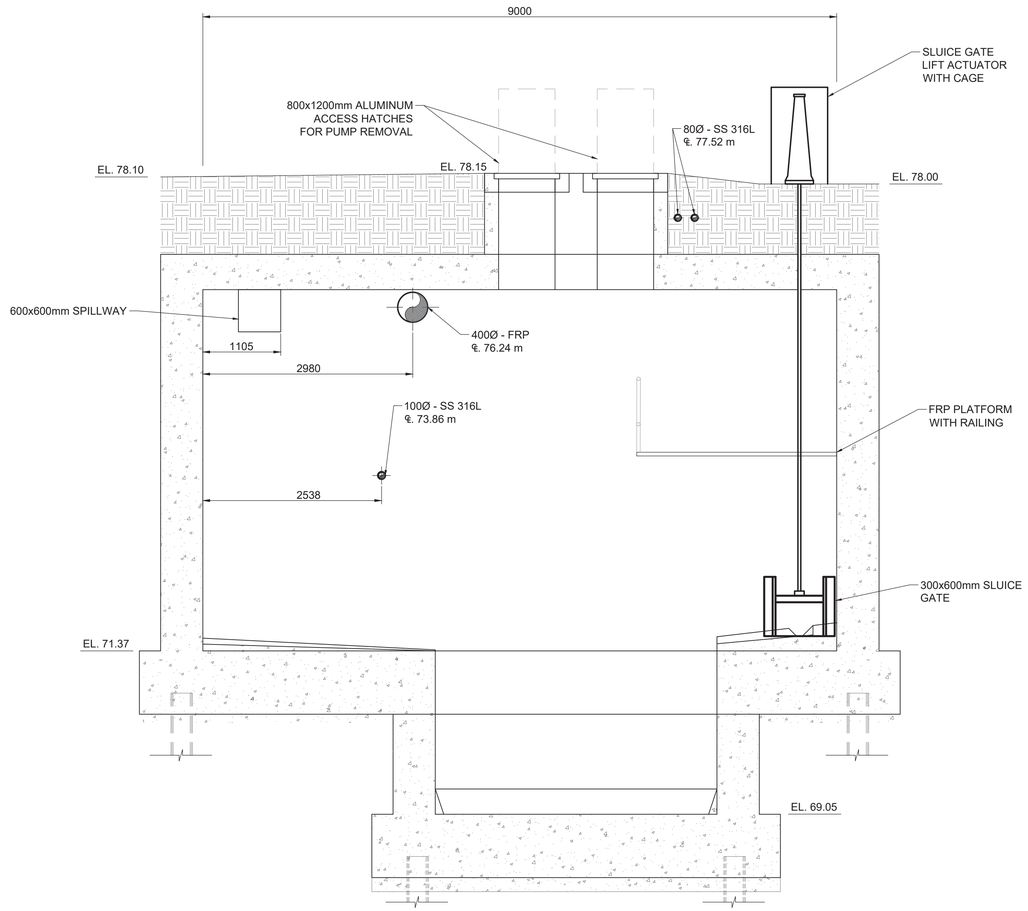
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PROCESS
PIER 8 WASTEWATER PUMPING STATION
WET WELL & SANITARY STORAGE TANK SECTIONS C-C & D-D

DATE : AUGUST 2018
SCALE: AS SHOWN
FILE No.:
CONTRACT No.:
DRAWING No.: P-102



SECTION E-E

1 : 40

0 1 2 3 4m

SCALE 1:40

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

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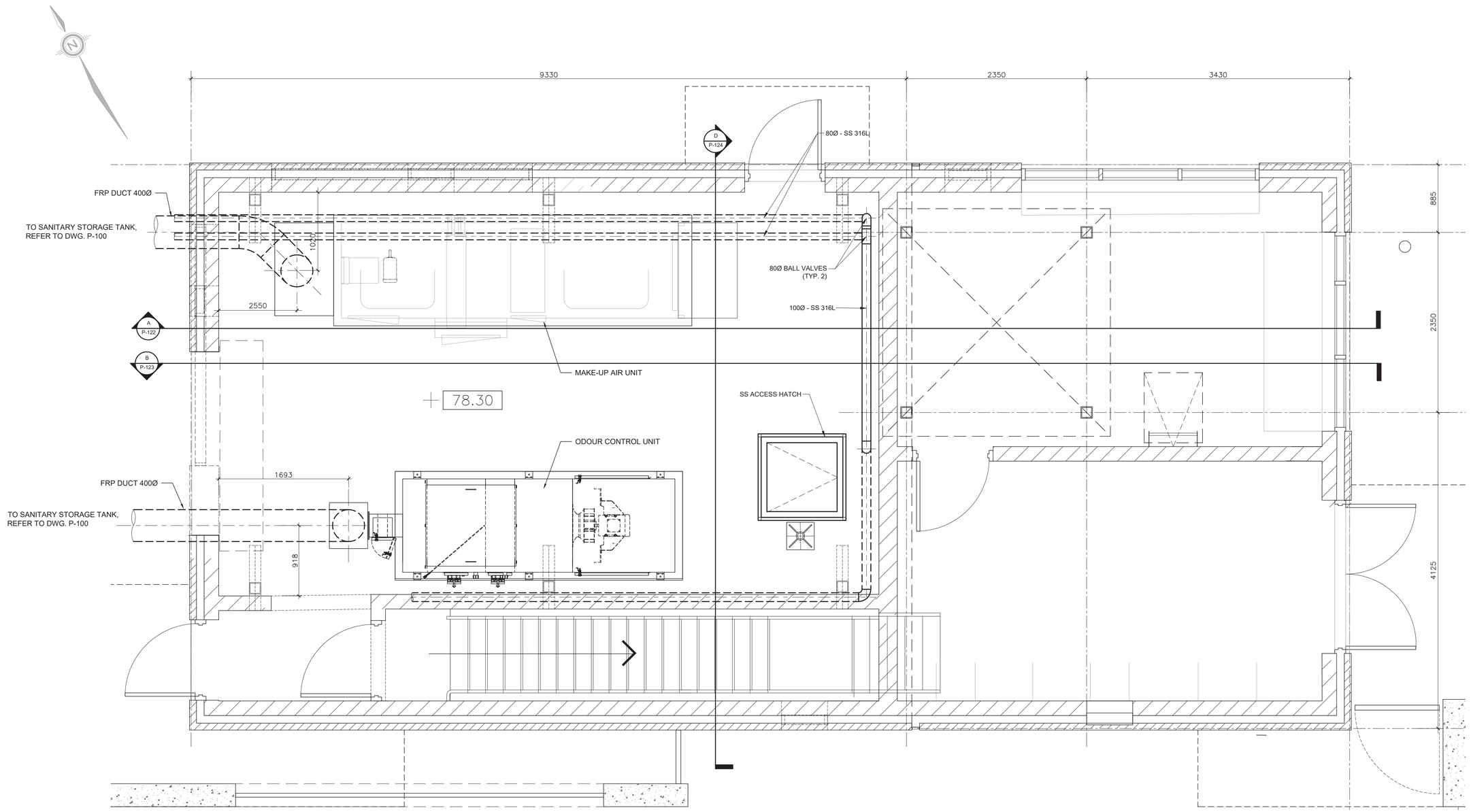
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PROCESS
PIER 8 WASTEWATER PUMPING STATION
WET WELL SECTION E-E

DATE : AUGUST 2018
SCALE: AS SHOWN
FILE No.:
CONTRACT No.:
DRAWING No.:
P-103



GROUND FLOOR PLAN

1 : 25

0 1 2m

SCALE 1:25

NOTES

1. PROVIDE SLEEVES ON PIPES & DUCTS BETWEEN SERVICE BUILDING AND WET WELL AS PER DWG. P-126.

No.	REVISIONS	DATE	INTLS
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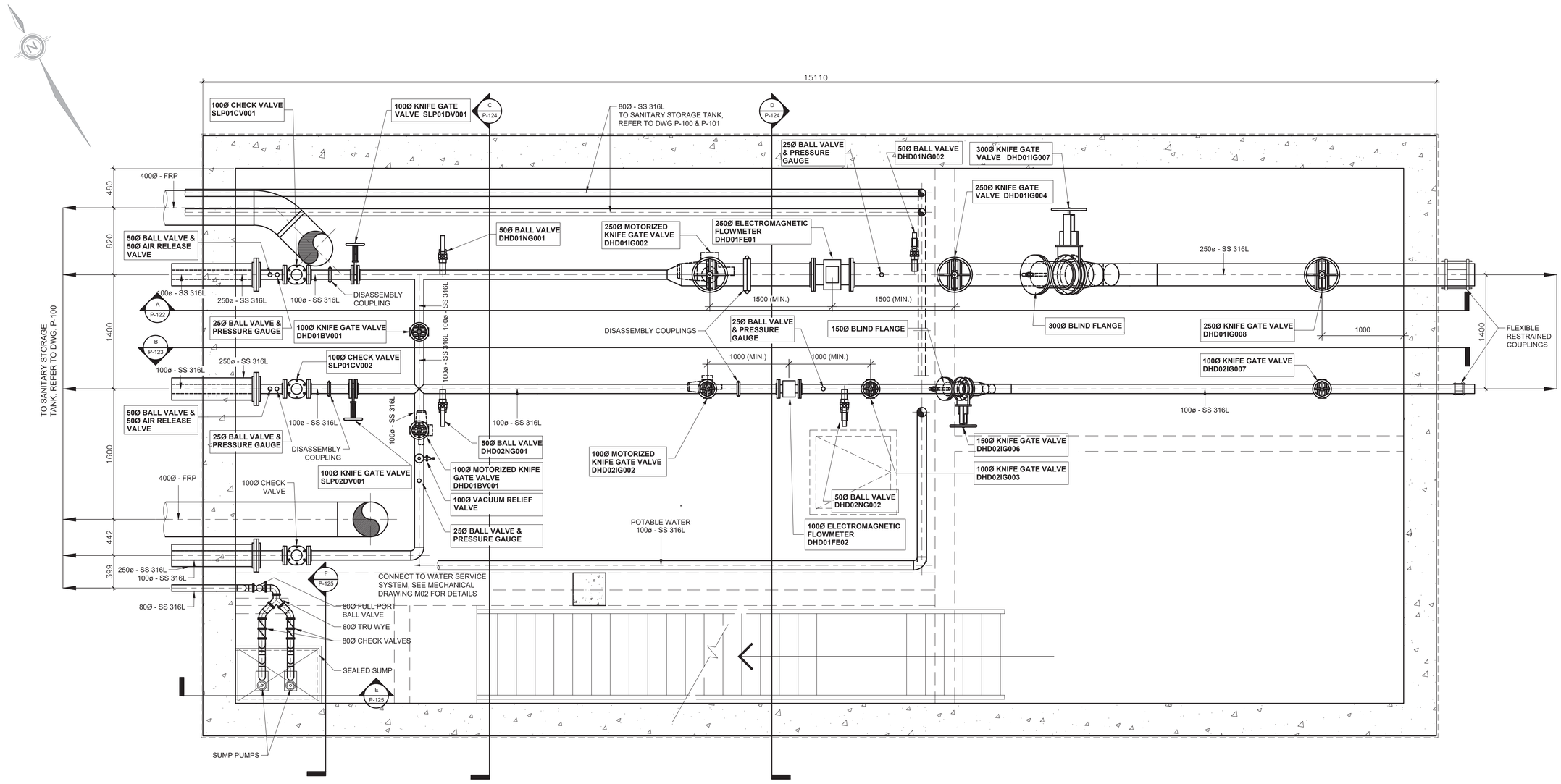
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

PROCESS
PIER 8 WASTEWATER PUMPING STATION
ODOR CONTROL ROOM - GROUND FLOOR PLAN

DATE : AUGUST 2018
SCALE: 1 : 25
FILE No.:
CONTRACT No.:
DRAWING No.:
P-120



VALVE ROOM PLAN

1 : 25

0 1 2m

SCALE 1:25

NOTES

1. PROVIDE SLEEVES ON PIPES & DUCTS BETWEEN SERVICE BUILDING AND WET WELL AS PER DWG. P-126.
2. AIR VALVES TO BE PIPED TO NEAREST FLOOR DRAIN

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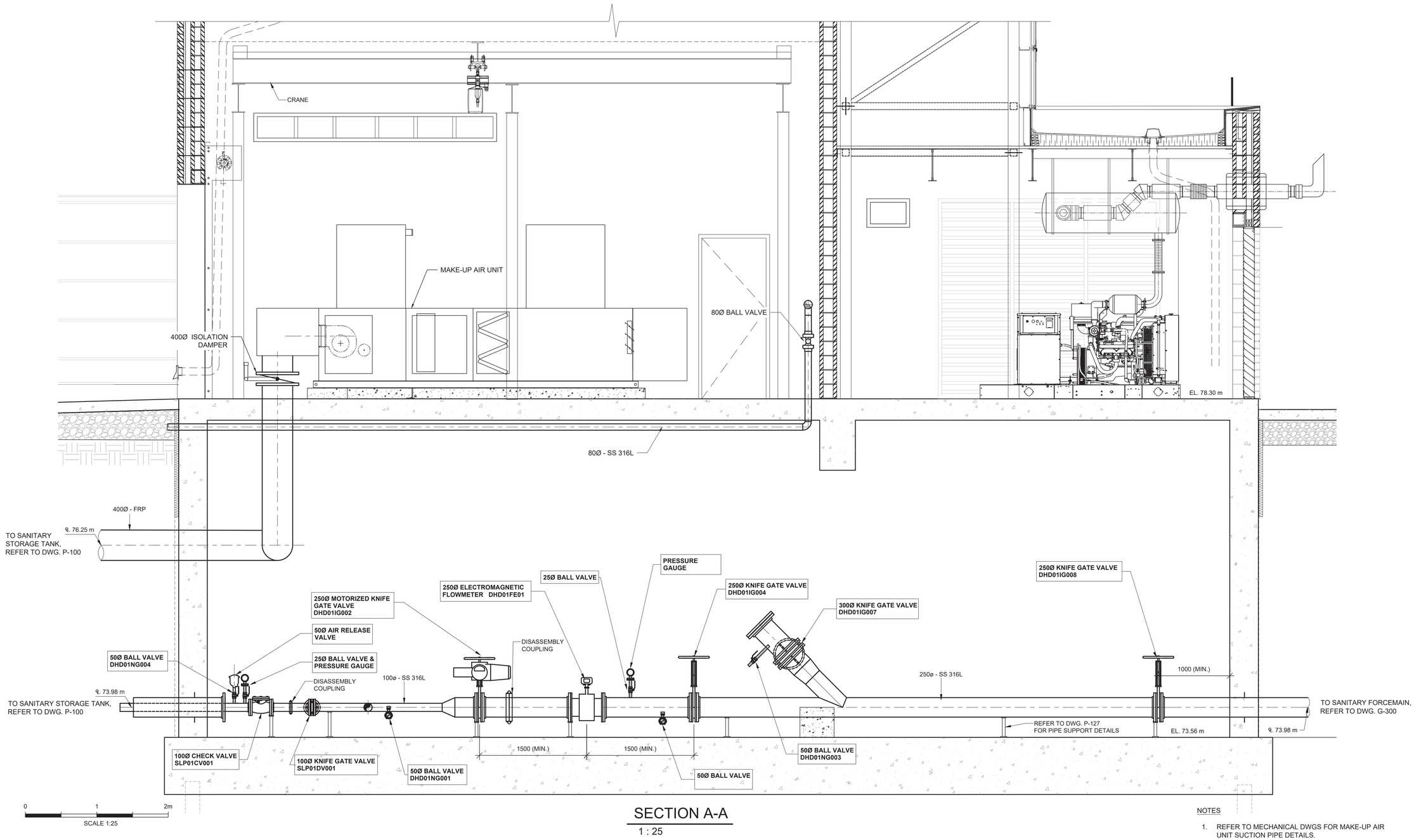
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PROCESS
PIER 8 WASTEWATER PUMPING STATION
VALVE ROOM PLAN

DATE : AUGUST 2018
SCALE: 1 : 25
FILE No.:
CONTRACT No.:
DRAWING No.:
P-121



SECTION A-A

1 : 25

NOTES

1. REFER TO MECHANICAL DWGS FOR MAKE-UP AIR UNIT SUCTION PIPE DETAILS.

No.	REVISIONS	DATE	INTLS
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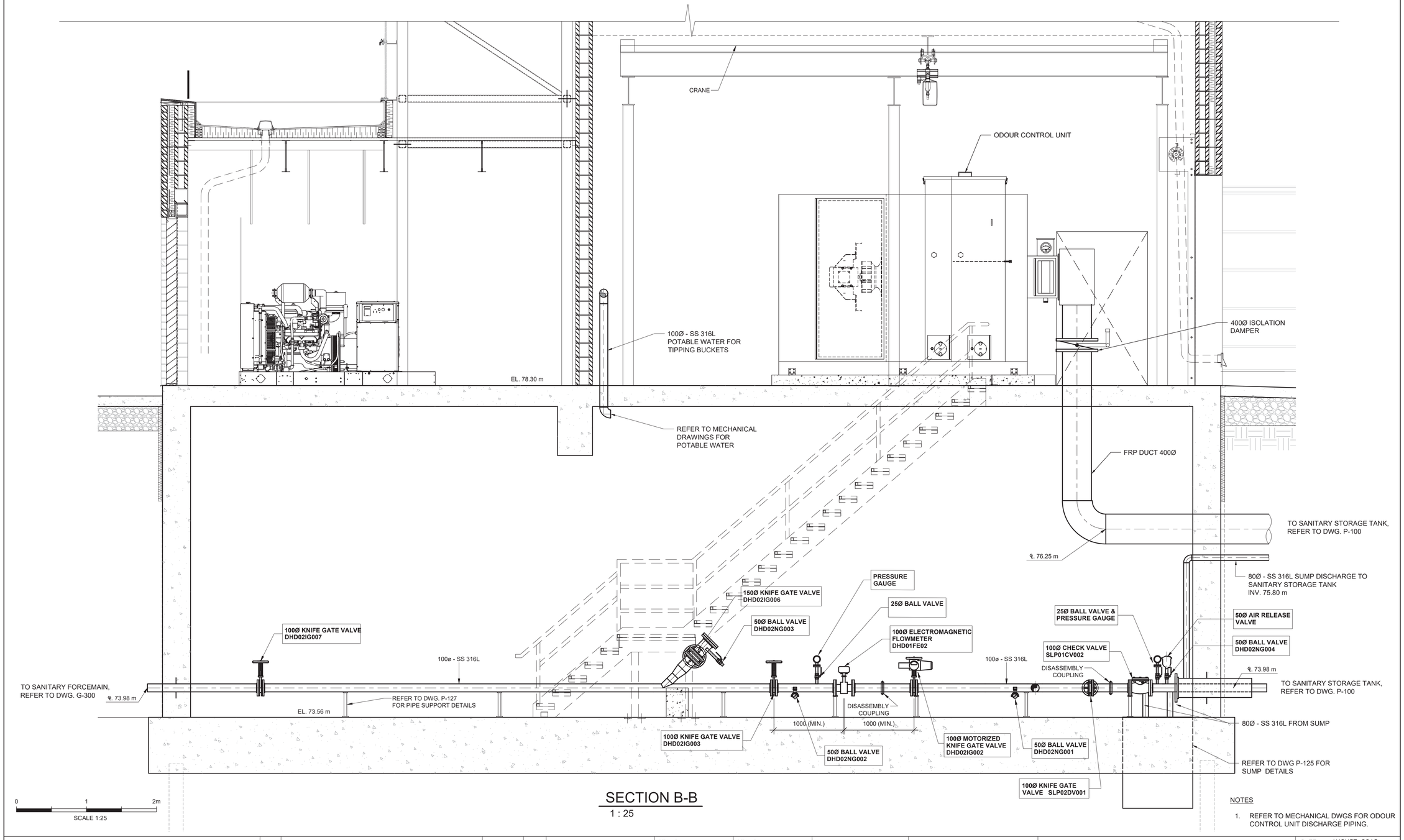
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PROCESS
PIER 8 WASTEWATER PUMPING STATION
SECTION A-A

DATE : AUGUST 2018
SCALE: 1 : 25
FILE No.:
CONTRACT No.:
DRAWING No.: P-122



SECTION B-B

1 : 25

NOTES

1. REFER TO MECHANICAL DWGS FOR ODOUR CONTROL UNIT DISCHARGE PIPING.

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

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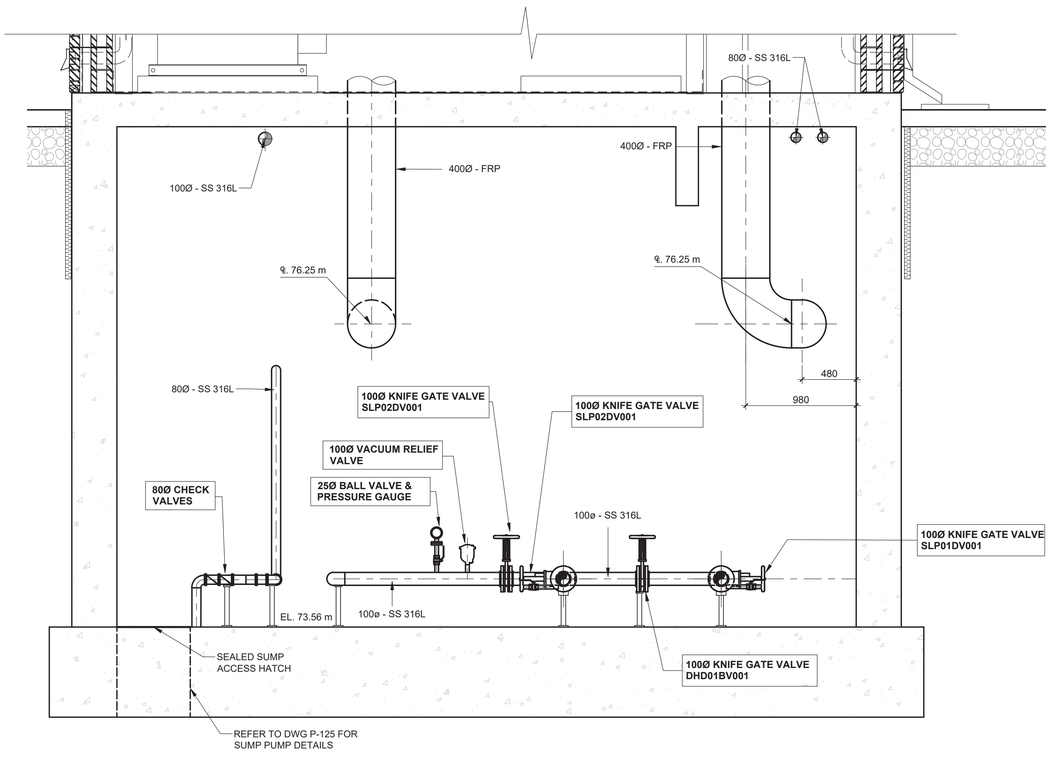
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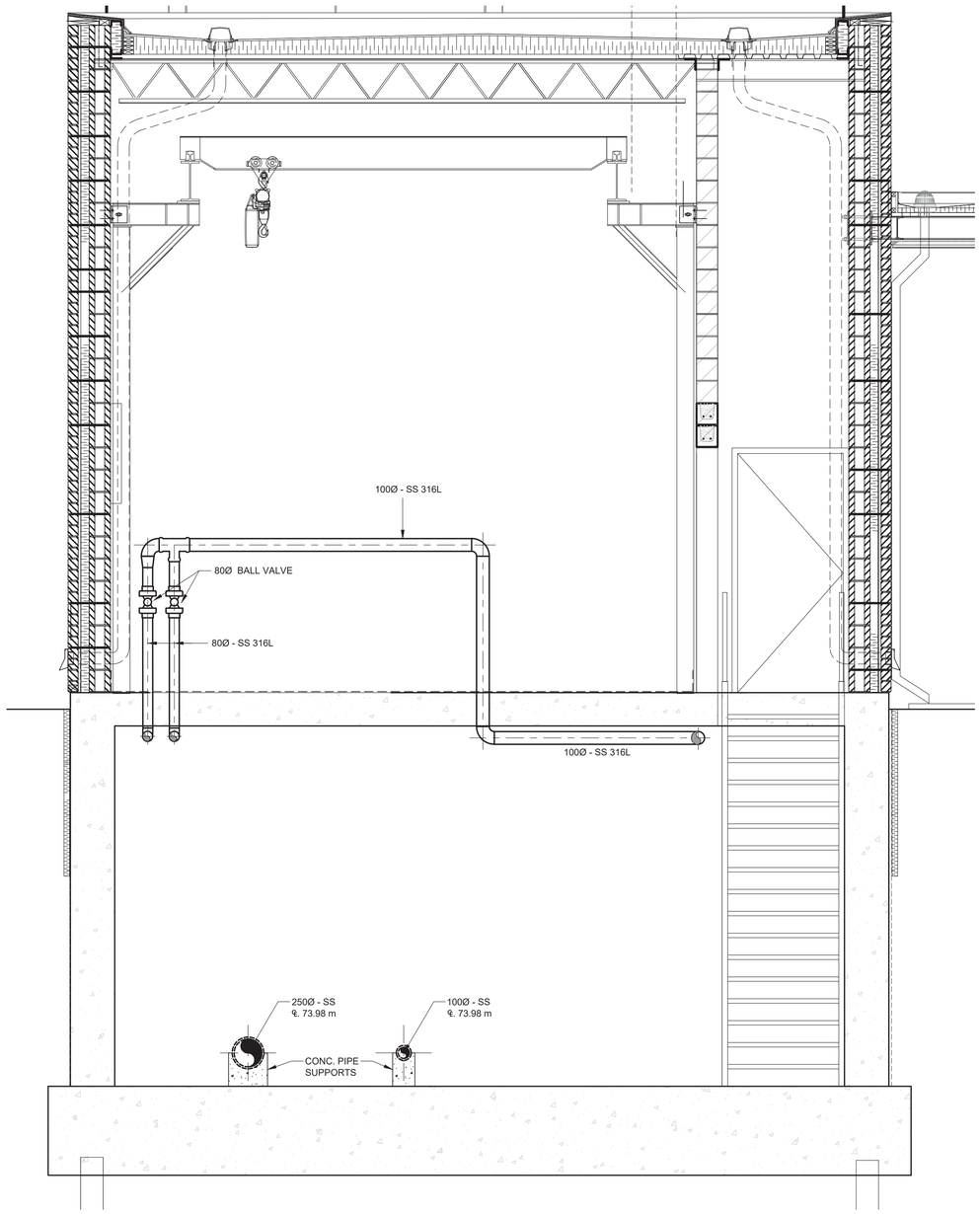
PROCESS
NEW PIER 8 WASTEWATER PUMPING STATION
SECTION B-B

DATE : AUGUST 2018
SCALE: 1 : 25
FILE No.:
CONTRACT No.:
DRAWING No.: P-123



SECTION C-C

1 : 25



SECTION D-D

1 : 25

0 1 2m

SCALE 1:25

No.	REVISIONS	DATE	INTLS
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PROCESS

PIER 8 WASTEWATER PUMPING STATION

SECTION C-C & D-D

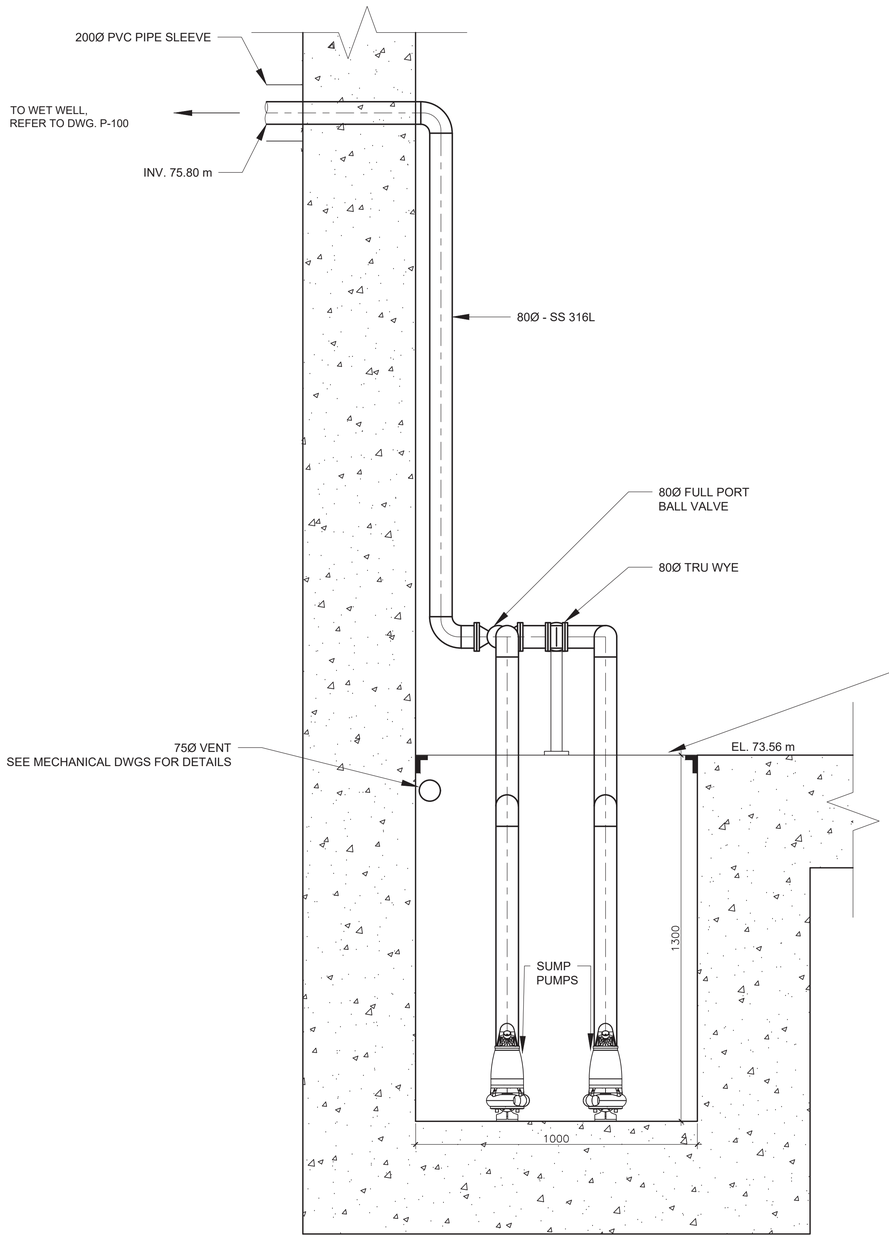
DATE : AUGUST 2018

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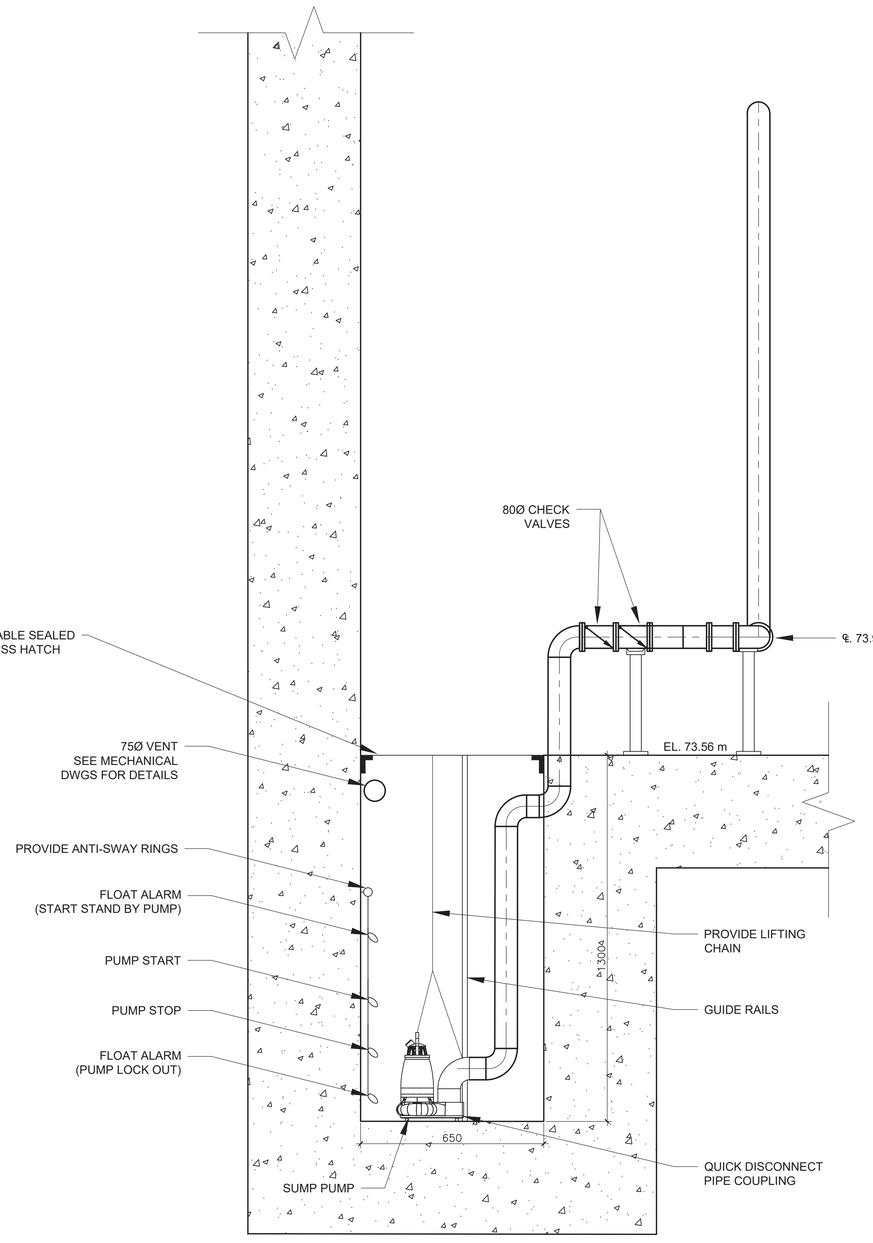
CONTRACT No.:

DRAWING No.: P-124



SECTION E-E

1 : 10



SECTION F-F

1 : 10

NOTES

1. PROVIDE SLEEVES ON PIPES BETWEEN SERVICE BUILDING AND WET WELL AS PER DWG. P-126.

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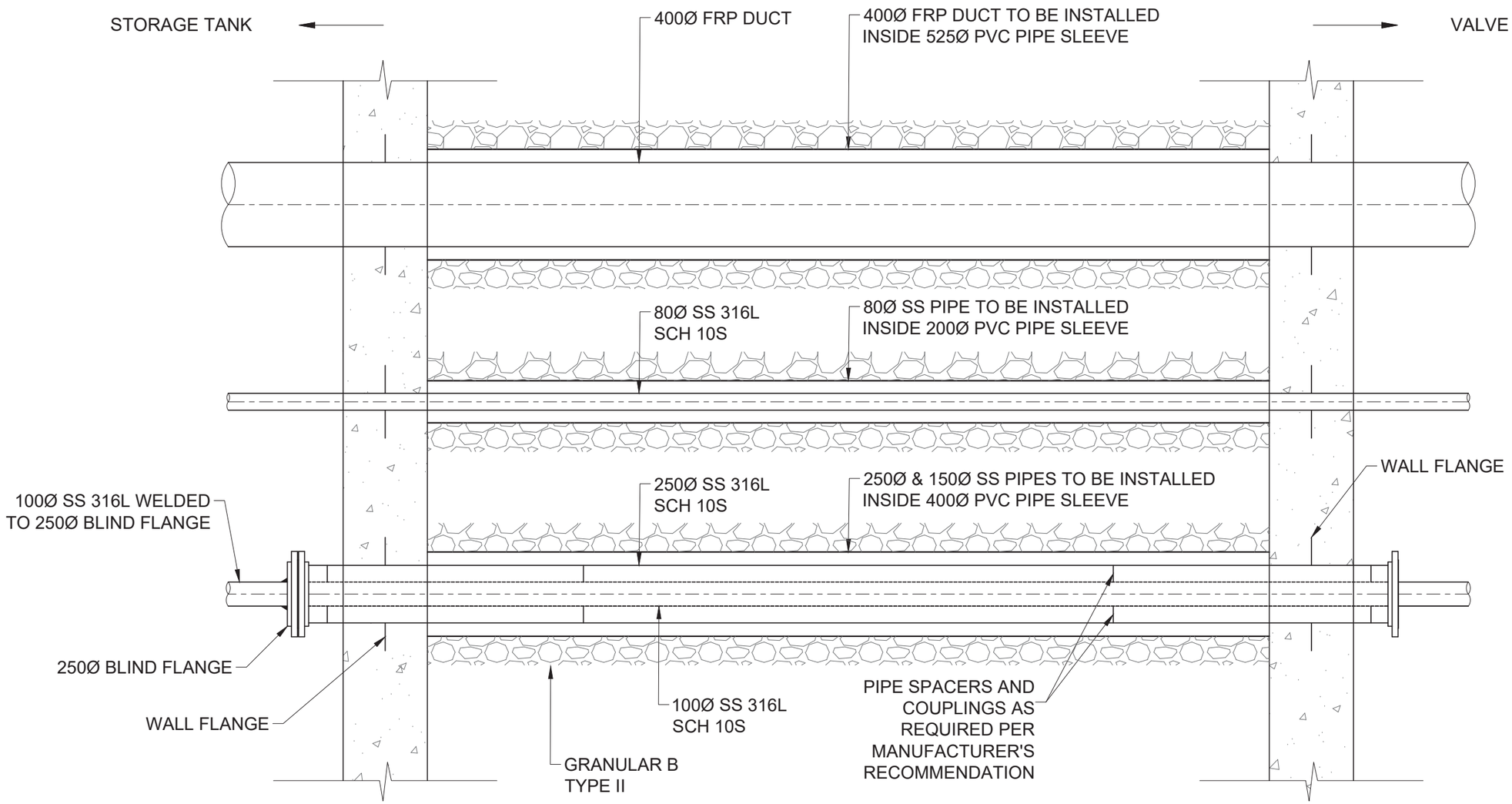
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

PROCESS
PIER 8 WASTEWATER PUMPING STATION
SUMP PUMP SECTIONS

DATE : AUGUST 2018
SCALE: 1 : 10
FILE No.:
CONTRACT No.:
DRAWING No.: P-125



NOTES

1. PVC SLEEVE TO REST ON GRANULAR FILL CENTERED AROUND PROTECTED PIPE.

No.	REVISIONS	DATE	INTLS
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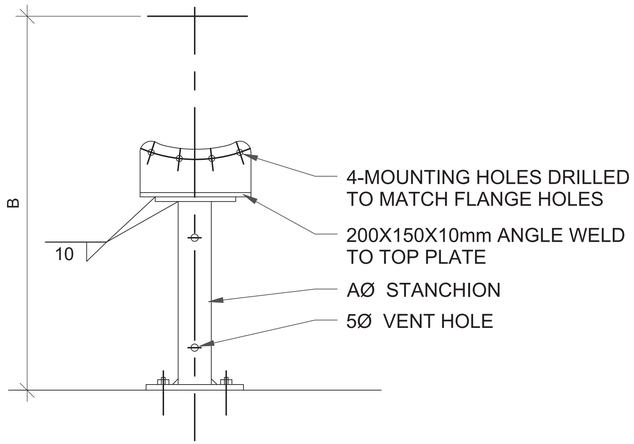
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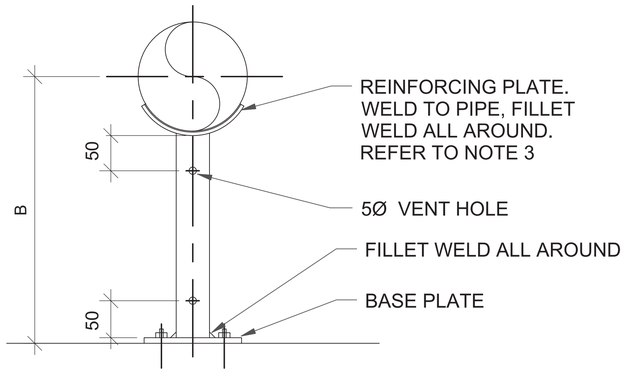
PROCESS
PIER 8 WASTEWATER PUMPING STATION
PIPE & DUCT SLEEVE DETAIL

DATE : AUGUST 2018
SCALE: 1 : 10
FILE No.:
CONTRACT No.:
DRAWING No.:
P-126



FLANGE PIPE SUPPORT

PIPE DIAMETER (mm)	50	65	80	100	125	150	200	250	300	350	400	450	500	600	750	900	1050	1200
A	40	50	65	75	100	100	150	150	200	200	200	250	250	300	300	400	400	400
B	1200	1200	1200	1500	2000	2000	2500	2500	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
C	150	150	150	200	200	200	250	250	300	300	300	400	400	500	500	600	600	600
D	115	115	115	150	150	150	200	200	240	240	240	300	300	380	380	480	480	480
PLATE THICKNESS	6	6	6	6	10	10	10	10	13	13	13	19	19	19	25	25	25	25
E DIA. / No. HOLES	15 / 2	15 / 2	15 / 2	15 / 4	15 / 4	15 / 4	20 / 4	20 / 4	20 / 4	20 / 4	20 / 4	25 / 4	25 / 4	25 / 4	25 / 4	25 / 4	25 / 4	25 / 4
F / BOLT DIA.	100 / M12 GALVANISED						100 / M16 GALVANISED					150 / M20 GALVANISED						



HORIZONTAL PIPE SUPPORT

NOTES:

1. STANCHION MATERIAL SS SCH 80 PIPE FOR 50 TO 100 DIA, ALL LARGER PIPE DIA'S USE SCH 40 OR AS PER SPECIFICATIONS.
2. BASE PLATE TO BE STAINLESS STEEL.
3. REINFORCING PLATE TO BE CUT FROM A SECTION OF PIPE. LENGTH EQUAL TO WIDTH (WIDTH DETERMINED BY 120° ANGLE). REQUIRED ON ALL PIPES 500 DIA OR LARGER.
4. REINFORCING PLATE TO BE SAME THICKNESS AS PIPE MATERIAL. WIDTH DETERMINED BY120° ANGLE.
5. TOP VENT HOLE REQUIRED ONLY IF STANCHION OS 1500mm OR LONGER. PLUG WELD VENT HOLES AFTER INSTALLATION OF STANCHION IS TO BE SUBMERGED IN WATER.
6. SHOP PRIME WITH 2 COATS OF RED OXIDE OR GALVANISE AS PER SPECIFICATION. TOUCH UP FIELD WELDS WITH RED OXIDE OR GALVICON.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

PROCESS
PIER 8 WASTEWATER PUMPING STATION
PIPE SUPPORT DETAIL

DATE : AUGUST 2018
SCALE: N.T.S.
FILE No.:
CONTRACT No.:
DRAWING No.:
P-127

ABBREVIATIONS

AB	Anchor Bolt	H2O	Water	T	Tread
AC	Air Conditioning	HB	Hose Bibb	TB	Towel Bar
ACC	Access	HC	Hollow Core	T&B	Top and Bottom
ACOUS	Acoustical	HDR	Header	TBC	Top of Back of Curb
ACT	Acoustical Ceiling Tile	HDWR	Hardware	TEL	Telephone
AD	Area Drain, Access Door	HM	Hollow Metal	TEM	Tempered
ADD	Addendum	H/M	Hollow Metal	TEMP	Temperature, Temporary
ADD'L	Additional	HMF	Hollow Metal Frame	TER	Terrazzo
ADJ	Adjacent, Adjustable	HND	Hand	TG	Tempered Glass
AFF	Above Finished Floor	HORIZ	Horizontal	TGL	Tempered Glass
AGGR	Aggregate	HP	High Point	T&G	Tongue & Groove
AL	Aluminum	HP	Horsepower	THERM	Thermostat
ALUM	Aluminum	HR	Hour	THK	Thick
ALT	Alternate	HT	Height	THLD	Threshold
ANCH	Anchor	HT	Height	TO	Top of
ANOD	Anodized	HTR	Heater	TOC	Top of Concrete
AN	Anodized	HVAC	Heating, Ventilating and Air Conditioning		Top of Curb
AP	Access Panel			TOG	Top of Grating
APPROX	Approximate	HW	Hot Water		Top of Gutter
ARCH	Architect(ural)	HWD	Hardwood	TOS	Top of Steel
ASPH	Asphalt	HWH	Hot Water Heater		Top of Slab
ATF	Automatic Transmission Fluid	HWS	Hot Water Supply	TOW	Top of Wall
AUTO	Automatic	HWY	Highway	TRANS	Transfer
AUX	Auxiliary			TS	Textured Surface
A/V	Audio Visual	ID	Inside Diameter	TSTAT	Thermostat
AVG	Average	INCAN	Incandescent	TV	Television
		INCL	Include(d)	TYP	Typical
B	Bollard	INS	Insulated		
BATH	Bathroom	INT	Interior	UNFIN	Unfinished
BC	Back of Curb	INTMED	Intermediate	UON	Unless Otherwise Noted
BD	Board	INV	Invert	UR	Urinal
BE	Baked Enamel	IR	Iron	U/S	Underside
BET	Between	I.S.D.	Insulated metal sectional overhead door	USGA	U.S. Gauge
BEV	Beveled				
BF	Board Feet	JAN	Janitor	V	Vat
BITUM	Bituminous	JST	Joist	VAR	Varnish, Varies
BLDG	Building	JT	Joint	VB	Vapour Barrier
BLKG	Blocking	JS	Janitor shelving	VCT	Vinyl Composition Tile
BM	Benchmark, Beam	K	Kip	VENT	Ventilation
BRZ	Bronze	KIT	Kitchen	VERT	Vertical
BTM	Bottom	KO	Knockout	VEST	Vestibule
BRG	Bearing	KVA	Kilovolt – Amperes	VIF	Verify in Field
BUR	Built Up Roof	KW	Kilowatt	VOL	Volume
CA	Compressed Air	L	Length	VSF	Vinyl Safety Floor
CA13	Compressed Air (1/2" OD)	LAM	Laminate	VTR	Vent Through Roof
CA19	Compressed Air (3/4" OD)	LAV	Lavatory	VWC	Vinyl Wall Covering
CAB	Cabinet	LH	Left hand	W	West, Wide
CAP	Capacity	LIN	Linear	W/	With
CB	Concrete Block	LIQ	Liquid	WC	Water Closet
CB	Catch Basin	LKR	Locker	WD	Wood
CEM	Cement(itious)	LP	Low Point	WDO	Window
CER	Ceramic	LT	Light	WF	Water Fountain
CFM	Cubic Feet Per Minute	LV	Liquid Vinyl	WGL	Wire Glass
CHAM	Chamfer			W/O	Without
CIP	Cast-In-Place	MACH	Machine(ry)	WP	Waterproofing
CIRC	Circumference	MAG	Magnetic	WR	Water Resistant
CC	Curb Cut	MAR	Marble	WRM	Washroom
CJ	Control Joint	MAS	Masonry	WSCT	Wainscot
CK	Caulk(ing)	MAT	Material	WT	Weight
C/L	Centerline	MAX	Maximum	WWF	Welded Wire Fabric
CLG	Ceiling	MECH	Mechanical	WWF	Windshield Washer Fluid
CLO	Closet	MED	Medium		
CLR	Clear(ance)	MEMB	Membrane		
CM	Centimeter(s)	MEZZ	Mezzanine		
CMU	Concrete Masonry Unit	MFR	Manufacturer		
CO	Clean Out	MH	Manhole/Mahogany		
COL	Colour	MIN	Minimum		
CL	Column	MIR	Mirror		
COMB	Combination	MISC	Miscellaneous		
CONC	Concrete	mm	Millimeter(s)		
CONF	Conference	MO	Masonry Opening		
CONSTR	Construction	MTD	Mounted		
CONT	Continuous	MTL	Metal		
CONTR	Contractor	MUL	Mullion		
CORR	Corridor, Corrugated	N	North/Natural		
CPT	Carpet	NIC	Not In Contract		
CSNK	Countersink	NO	Number		
CT	Ceramic Tile	NOM	Nominal		
C/W	COMPLETE WITH	NRC	Noise Reduction Coefficient		
CTR	Counter	NTS	Not To Scale		
CU	Cubic				
CW	Cold Water	OC	On Center(s)		
CX	Connection	OD	Outside Diameter		
		OFF	Office		
DAMP	Dampproofing	OH	Opposite Hand		
DBL	Double	OHD	Overhead Door		
DEF	Diesel Exhaust Fluid	OPNG	Opening		
DEG	Degree	OPP	Opposite		
DEMO	Demolish, Demolition	(P)	Paint		
DEPT	Department	PAR	Parallel		
DF	Drinking Fountain	PART	Particle		
DG	Double Glazing	PAVE	Pavement		
DIA	Diameter	PBB	Passenger Boarding Bridge		
DIAG	Diagram, Diagonal	PC	Precast Concrete		
DIM	Dimension	P.C.D.	Polycarbonate overhead door		
DIV	Division	PED	Pedestrian		
DL	Dead Load	PEN	Penetration		
DN	Down	PERF	Perforate(d)		
DS	Downspout	PERM	Perimeter		
DTL/DET	Detail	PKG	Parking		
DWG	Drawing	P/E	Pre-Engineered		
DWR	Drawer	P/L	Property Line		
		PL	Plate		
E	East	PLAM	Plastic Laminate		
EA	Each	PLAS	Plaster		
EB	Expansion Bolt	PLBG	Plumbing		
EJ	Expansion Joint	PLYWD	Plywood		
EL	Elevation	PNEU	Pneumatic		
ELEC	Electric(al)	PNT	Painted		
ELEV	Elevator, Elevation	POL	Polished		
ENCL	Enclose(ure)	PREFAB	Prefabricate(d)		
EO	Engine Oil	PREFIN	Prefinished		
EQUIP	Equipment	PRESTR	Prestressed		
ESC	Escalator	PRIM	Primary		
EST	Estimate	PR	Pressed Steel		
EW	Each Way	PSF	Pounds per Square Foot		
EWC	Electric Water Cooler	PSI	Pounds per Square Inch		
EWH	Electric Water Heater	PTD	Painted		
ELAS	Elastomeric	PT	Point		
EX	Existing	P.T.	Pressured Treated		
EXH	Exhaust	PTEN	Post-Tensioned		
EXP	Expansion, Exposed	PTN	Partition		
EXT	Exterior	PVMT	Pavement		
		PWR	Power Drop		
F	Fahrenheit				
FA	Fire Alarm	QT	Quarry Tile		
FAC	Fire Alarm Cabinet	QTY	Quantity		
FBO	Furnished By Other				
FCO	Floor Clean-Out	R	Riser		
FD	Floor Drain, Fire Damper	RAD	Radius		
FDN	Foundation	RCP	Reflected Ceiling Plan		
FE	Fire Extinguisher	RD	Roof Drain		
FEC	Fire Extinguisher Cabinet	RE:	Reference		
FFL	Finished Floor Line	RECPT	Receptacle		
FG	Frosted Glass	REFR	Refrigerator		
FH	Fire Hydrant	REG	Register		
FHC	Fire Hose Cabinet	REINF	Reinforce(d), (ing)		
FHR	Fire Hose Reel	REQ'D	Required		
FHV	Fire Hose Valve	RESIL	Resilient		
FIG	Figure	REV	Revision(s), Revised		
FIN	Finish	RH	Right Hand		
FIX	Fixture	RM	Room		
FL	Flow Line	RO	Rough Opening		
FLASH	Flashing	ROW	Right of Way		
FLR	Floor	RPM	Revolutions per Minute		
FLUOR	Fluorescent	R.S.D	Rolling steel door		
FLEX	Flexible	RUB	Rubber Flooring		
FOC	Face of Concrete	RVS	Reverse (Side)		
FOF	Face of Finish	R.W.L.	Rain Water Leader		
FOM	Face of Masonry				
FOS	Face of Studs	S	South		
FPM	Feet Per Minute	SAN	Sanitary		
FR	Fire Resistant(once)	SB	Sandblast		
FRAC	Fractured	SC	Solid Core/Special Coating		
FRP	Fibreglass Reinforced Plastic	SCHED	Schedule		
FT	Foot (Feet)	SD	Soap Dispenser		
FTG	Footing	SE	Schluter Edge		
FURN	Furnish, Furnished	SEC	Section, Second		
FURR	Furred(ing)	SG	Solid Grout Filled/ Single Glazed		
FUT	Future	SHT	Sheet		
FVC	Fire Valve Cabinet	SHTHG	Sheathing		
		SIM	Similar		
GA	Gauge	SNT	Sealant		
GALV	Galvanized	SOG	Slab On Grade		
GB	Grab Bar	SPECS	Specifications		
GC	General Contract(or)	SPKL	Sprinkler		
GEN	Generator	SPKR	Speaker		
GFRC	Glassfibre Reinforced Concrete	SQ	Square		
GND	Ground	SST	Stainless Steel		
GWB	Gypsum Wallboard	S/S	Slop Sink		
GL	Glass	SSL	Structural Slab Level		
GLY	Glycol	ST	Stain		
GYP	Gypsum	STA	Station		
GR	Grease	STD	Standard		
G.R.	Glass Rolling 3'-6" A.F.F.	STL	Steel		
G.R.C.	Glass Reinforced Cement	STOR	Storage		
		STRUCT	Structural		
		SUSP	Suspended		
		SYS	System		
		SYM	Symmetrical		

LEGEND

DRAWING TITLE

DETAIL / DRAWING NAME

NAME 1 / A1 — DETAIL No. / DRAWING No.

0 1:100 FULL SIZE 5

SCALE

1A — NEW GRID

1 / A005 — BUILDING SECTIONS MARK; DETAIL / SECTION NUMBER

1 / A005 — WALL SECTIONS MARK; DETAIL / SECTION NUMBER; SHEET WHERE DETAIL / SECTION IS FOUND

1 / A000 — INTERIOR ELEVATION MARK; INTERIOR ELEVATION NUMBER; SHEET WHERE DETAIL / SECTION IS FOUND

X / XXX — ENLARGED DETAIL OR PLAN INDICATOR; DETAIL / DRAWING NUMBER; SHEET WHERE DETAIL / SECTION IS FOUND

AREA BLOWN UP, BUBBLE MAY VARY IN SIZE AND SHAPE

G000A — DOOR INDICATOR; DOOR NUMBER

NORTH ARROW

PROJECT NORTH IS CLOSE TO TRUE NORTH.

ELEVATION MARKERS

USED ON BUILDING ELEVATIONS, BUILDING SECTIONS, WALL SECTIONS AND DETAILS. ELEVATION 77.10 IS SET TO GROUND FLOOR ELEVATION

77.10 — TOP OF FINISH FLOOR ELEVATION

LINEWORK

BREAK LINE

HIDDEN LINE

CENTER LINE

ROOM NAME 000 — ROOM NAME INDICATOR; ROOM NAME/DESIGNATION; ROOM NUMBER

+ 000 — CEILING HEIGHT

A1 — MATERIAL AND FINISH TAG

D-1 — DOOR NUMBER

1 — REVISION NUMBER

P1 — PARTITION TYPE

PIER 8 HAMILTON HARBOUR

Hamilton

OBC MATRIX

X
For Office Use Only
Folder Number_____

Location:	PIER 8 CITY OF HAMILTON						**Ward Number:**			
Project Description:	WASTE WATER PUMPING STATION						**OBC Reference**			
X New	Addition		☐ Alteration		☐ Change of Use	X Part 3			☐ Part 11	
Major Occupancy: A__, B_, C, D, E, F 3			Subsidiary: A _ B ,☐ C, D, E, F _							
Building Area (m²) Existing:			New:	112.10 SM	Total:					
Gross Area	Existing:		New:		Total:					
Number of Storeys	Above grade :	1	Below grade :	1						
Height of Building (m) :	11.8 M									
Building Classification(s): 3.2.2. 80	GROUP F, DIVSION 3, 1 STOREY									
Number of Streets/Access Routes:										
Sprinkler System:	☐ entire building ☐ basement only		in lieu of roof rating X not required							
Standpipe required:	☐ Yes X No		Provided: Yes No							
Fire Alarm required:	☐ Yes X No		Provided: Yes No							
Water Service/Supply is adequate	☐ Yes ☐ No									
High Building: 3.2.6.	☐ Yes X No									
Construction	Combustible	Non-combustible	X Both							
Mezzanine(s) Area m²	N/A									
Total Occupancy Load	N/A persons	Based on	m²/person	Design of building						
Barrier-free Design	☐ Yes X No (Explain)	NOT OCCUPIED ON A FULL TIME OR DAILY BASIS								
Hazardous Substances	☐ Yes X No									
Kitchen Exhaust	Yes X No	Spray Painting Operation	☐ Yes X No							

Required Fire Resistance Rating Horizontal Assemblies FRR		Listed Design No. or Description (SG-2)	**Required Fire Resistance Rating** Supporting Members FRR		Li or
Floors .75	Hours		Floors .75	Hours	
Roof ---	Hours		Roof ---	Hours	
Mezzanine ---	Hours		Mezzanine ---	Hours	

Spatial Separation – Construction of Exterior Walls

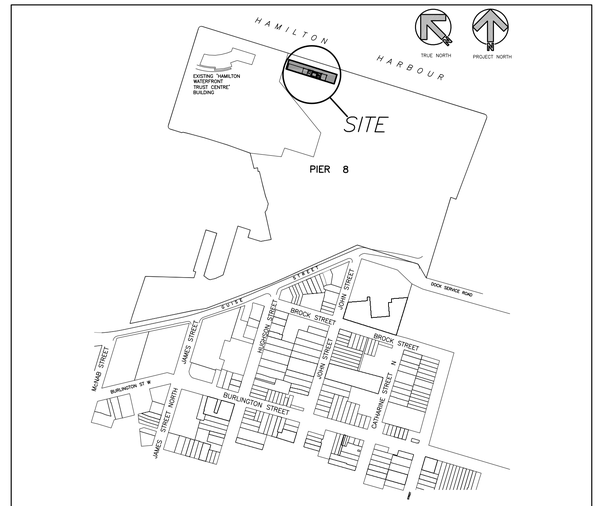
Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Comb Design or Const Description	omb. Constr. onc. Cladding	Non-comb. Constr.
North	80.85	8.0	LESS 3:1	33 %	16.2 %				
South	80.85	1.2	LESS 3:1	NIL					
East	30.36	26.55	LESS 3:1	100%					
West	44.88	43.90	LESS 3:1	100%					

Design Professional Name: WILMA KWAN

Design Professional Signature: _____

Company Name: PARSONS PROFESSIONAL SERVICES INC.

Phone: 905 943 0510 **Fax:** _____ **Date:** _____



KEY PLAN
scale: NTS

ARCHITECTURAL DRAWING LIST

A–000	ARCHITECTURAL COVER SHEET
A–001	ARCHITECTURAL SITE PLAN
A–002	ARCHITECTURAL SERVICE LEVEL PLAN
A–003	ARCHITECTURAL GROUND FLOOR PLAN
A–004	ARCHITECTURAL ROOF PLAN AND DETAILS
A–005	ARCHITECTURAL OVERALL ELEVATIONS
A–006	ARCHITECTURAL DETAILED BUILDING ELEVATIONS
A–007	ARCHITECTURAL DETAILED BUILDING ELEVATIONS
A–008	ARCHITECTURAL CROSS SECTION
A–009	ARCHITECTURAL CROSS SECTION AND DETAILS
A–010	ARCHITECTURAL WALL SECTIONS AND DETAILS
A–011	ARCHITECTURAL WALL SECTIONS
A–012	ARCHITECTURAL WALL SECTIONS
A–013	ARCHITECTURAL DETAILS
A–014	ARCHITECTURAL SCHEDULES AND TYPICAL DETAILS

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2	90% DRAWINGS	09–18–17	M.C.
1	DRAFT PRELIMINARY DESIGN	APRIL 2017	M.C.

DESIGNED BY _____
DRAWN BY _____
CHECKED BY _____
APPROVED BY _____

STAMP

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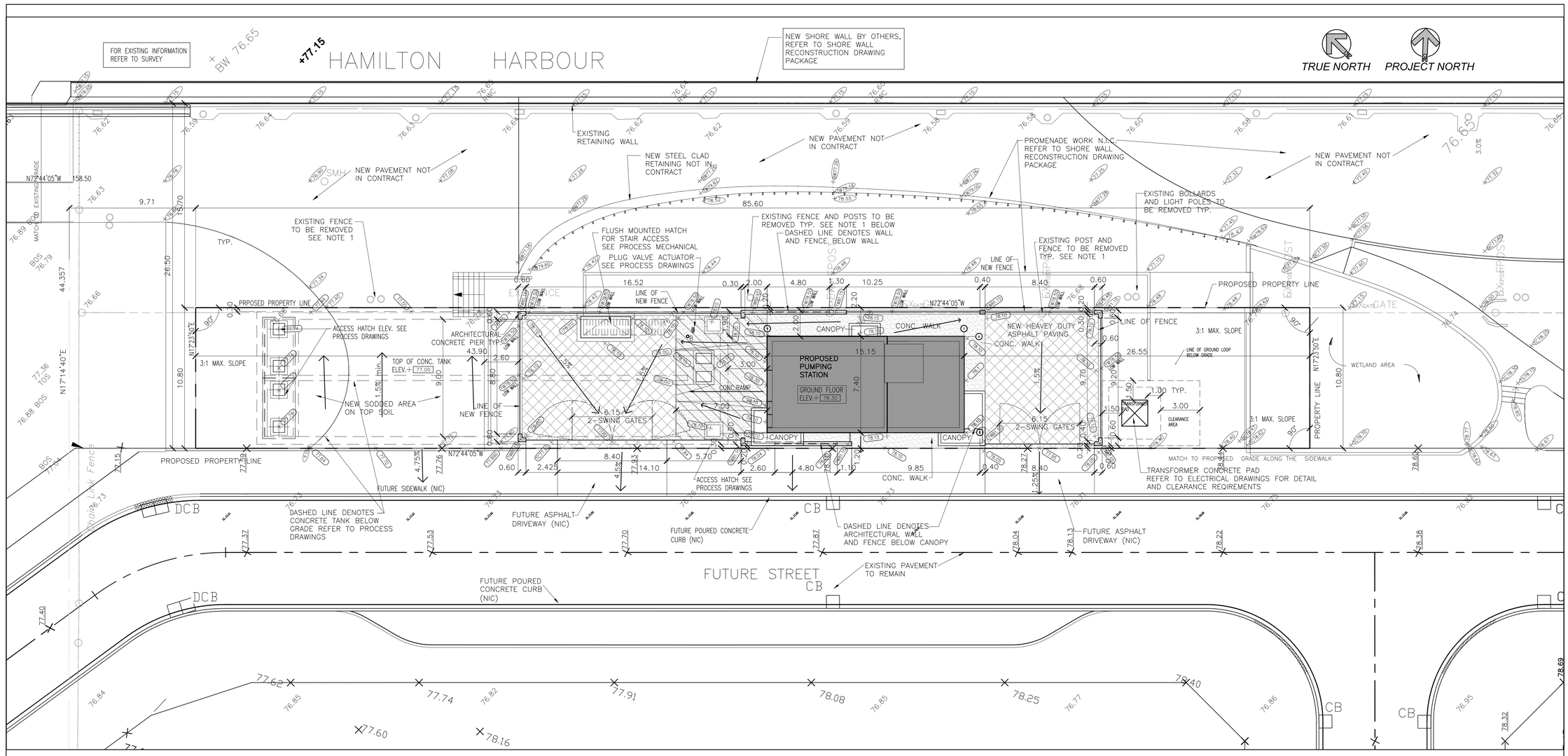
Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL COVER SHEET

DATE : APRIL, 2017
SCALE: NTS
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.: A–000

G:\475964\4 Architectural_Architectural-current_ 04-05-2017_\A0-cover sheet.dwg
PLOT DATE: Aug 16, 2018–9:17am BY:(g0050329)



SITE INFORMATION TAKEN FROM DRAFT PLAN OF SUBDIVISION
PIER 8 HAMILTON HARBOUR PRODUCED BY:
S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS CONSULTING ENGINEERS
Tel. (905) 631-6978 Tel. (905) 631-6978 Fax
(905) 631-8927 Fax (905) 631-8927
email: info@sla.on.ca email: info@sla.on.ca
3228 South Service Road, Suite #105 East Wing,
Burlington, Ont., L7N 3H8

NOTES:

1. EXISTING LIGHT POLES AND FENCE TO BE REMOVED AND DELIVERED IN GOOD CONDITION TO CITY AT CHEDOOKES YARD AT 141 STUDHOLMES DRIVE.
2. REFER TO SOIL REPORT FOR THE DESIGN OF SLAB ON GRADE
3. FOR BOUNDARY OF WORK REFER TO CIVIL DRAWINGS

LEGEND

- PROPOSED FINISHED FLOOR OR TOP OF SLAB +00.00
- EXISTING GRADE ELEVATIONS TO REMAIN x00.00
- PROPOSED GRADE ELEVATIONS FOR ROAD AND ROAD ALLOWANCE +00.00
- PROPOSED TOP OF CURB ELEVATIONS FOR ROAD TC 00.00
- PROPOSED ELEVATIONS NOT IN CONTRACT +79.00
- PROPOSED TOP OF WALL ELEVATIONS NOT IN CONTRACT +TW 79.00
- PROPOSED BOTTOM OF WALL ELEVATIONS NOT IN CONTRACT +BW 77.26
- PROPOSED GRADE ELEVATIONS +00.00
- PROPOSED TOP OF CURB ELEVATIONS +TC 00.00
- PROPOSED TOP OF CONC. WALLS ELEVATIONS +TW 00.00
- PROPOSED TOP OF LOW CONCRETE WALL ELEVATIONS +TW 00.00 LOW WALL
- EXISTING GRADE ELEVATIONS x00.00
- DIRECTION OF SLOPE AND PERCENTAGE 0.02%

ASPHALT PAVING AT DRIVE-WAY AND SITE ENTRANCE ONLY:

- NEW HEAVY DUTY ASPHALT PAVING OPSD STANDARDS SEE CIVIL DRAWINGS
- REINFORCED CONCRETE SLAB OPSD STANDARDS SEE STRUCTURAL DRAWINGS
- CONCRETE WALK: 100MM CONCRETE SLAB ON COMPACTED FILL
- BASE: 150MM OF GRANULAR "A"
- ARCHITECTURAL CONCRETE PIER SIMILAR TO DETAIL 2/A-012
- ARCHITECTURAL CONCRETE WALL SIMILAR TO DETAIL 2/A-012

STATISTICS

PROPOSED LOT-		924.48 SM
LOT COVERAGE PROPOSED		12.12 %
GROUND FLOOR	–	112.10 SM
SERVICE LEVEL	–	111.21 SM
PAVED AREA		
HEAVY DUTY ASHPALT		
WEST SIDE	–	244.68 SM
EAST SIDE	–	91.91 SM
TOTAL	–	336.59 SM
CONCRETE PAVING INCLUDING WALK-WAYS	–	114.32 SM

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TRUE NORTH PROJECT NORTH

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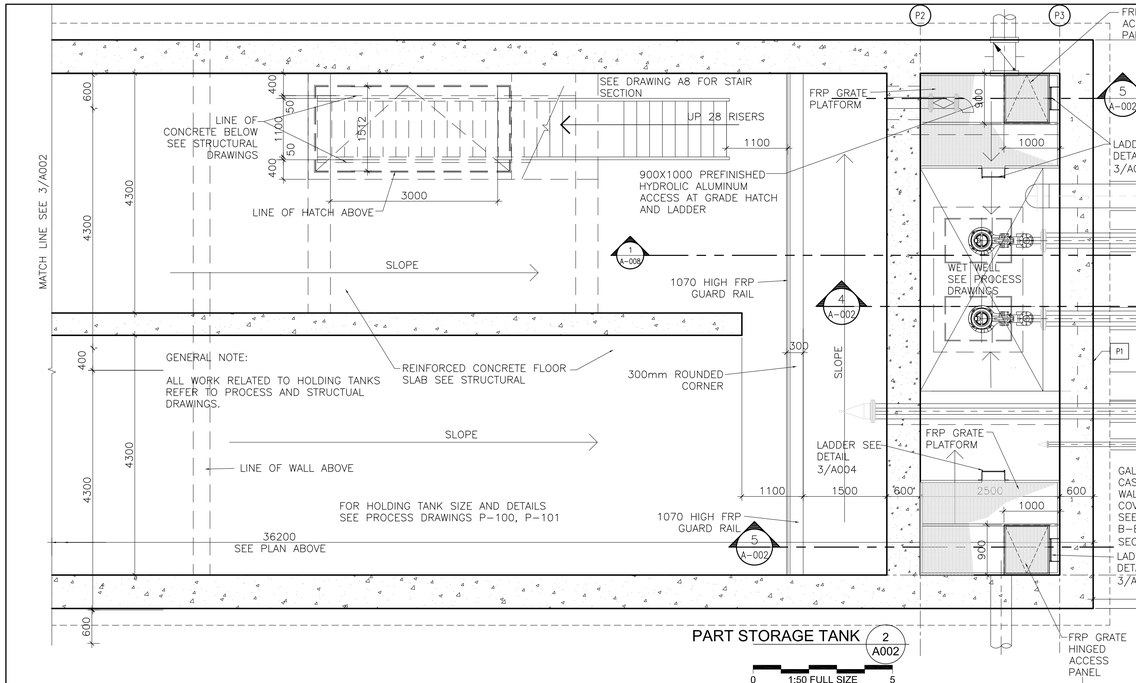
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
SITE PLAN

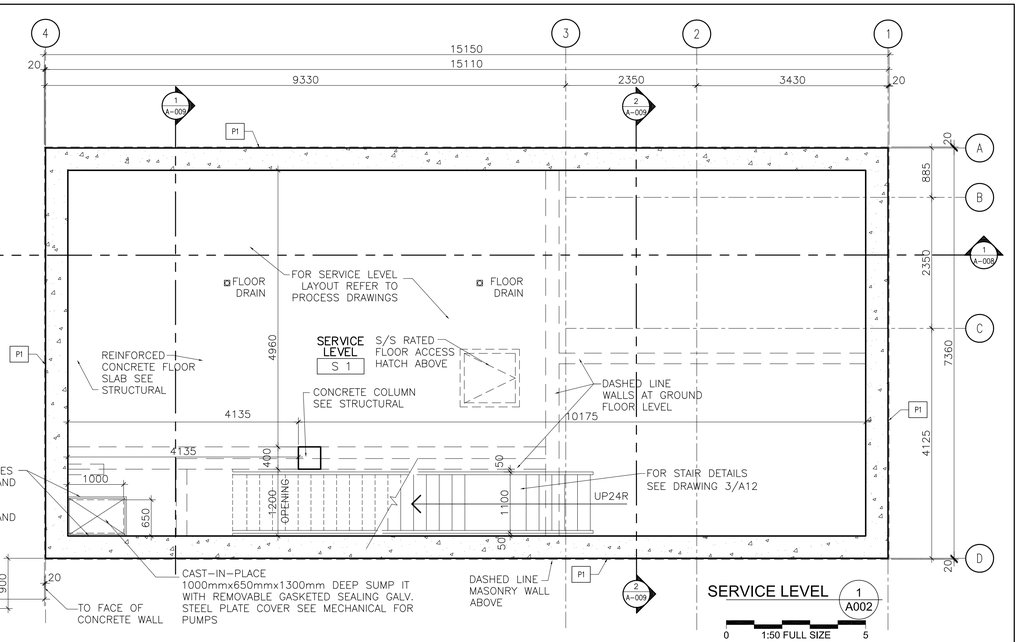
DATE : APRIL, 2017
SCALE: 1:150
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: A-001

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PLOT DATE: Aug 16, 2018-9:18am By:(p0050328)



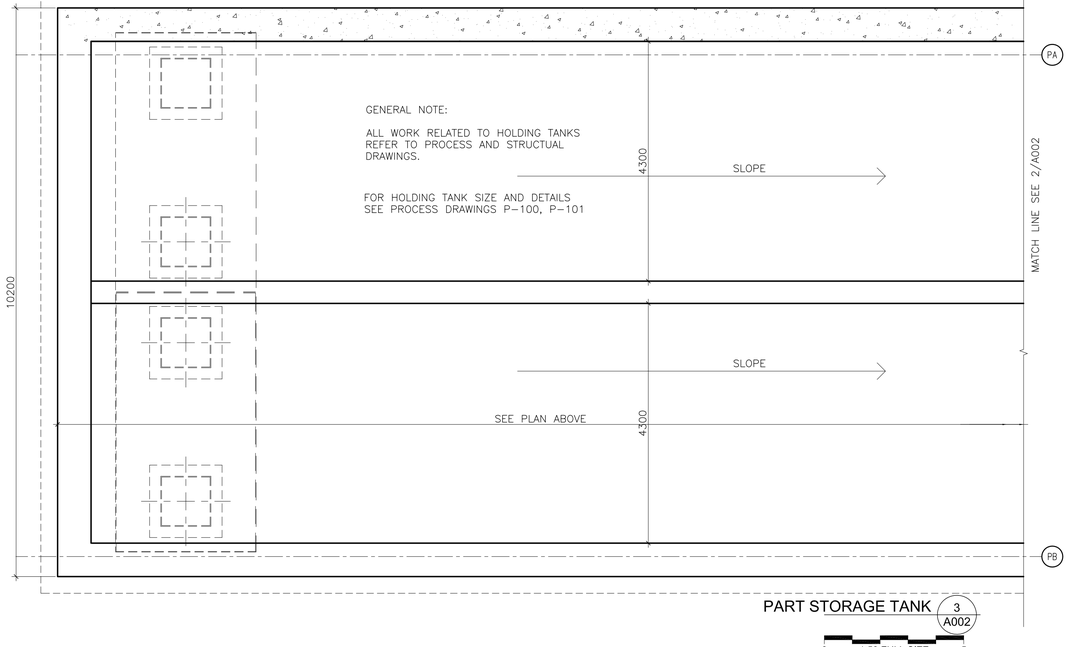
PART STORAGE TANK 2 A002

0 1:50 FULL SIZE 5



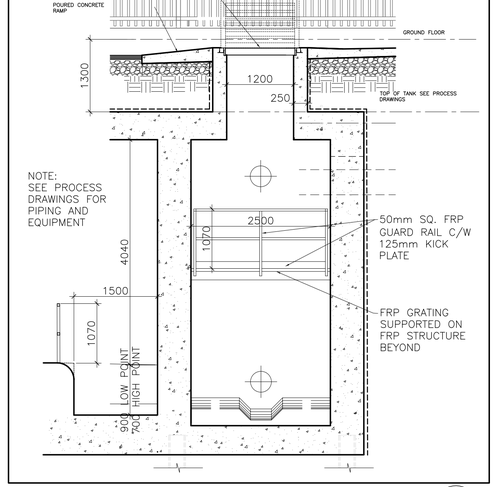
SERVICE LEVEL 1 A002

0 1:50 FULL SIZE 5



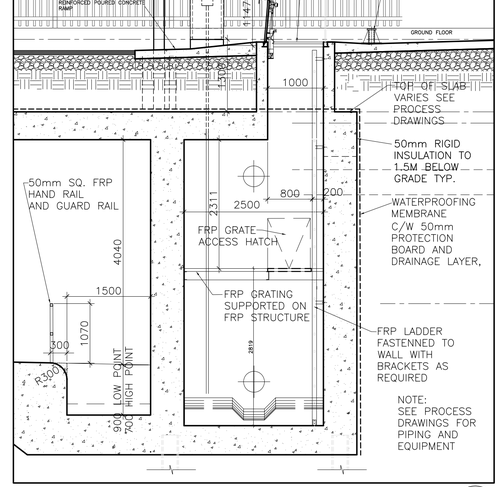
PART STORAGE TANK 3 A002

0 1:50 FULL SIZE 5



WET WELL 4 A002

0 1:50 FULL SIZE 5



PART STORAGE TANK 5 A002

0 1:50 FULL SIZE 5

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
SERVICE LEVEL PLAN

DATE : APRIL, 2017
SCALE: 1:50
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: A-002

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PLOT DATE: Aug 16, 2018 - 9:27am BY:(pa0050326)

RETAINING WALL BY OTHERS N.I.C.

WORK OUTSIDE PROPOSED PROPERTY LINE BY PUBLIC WORKS DEPARTMENT CITY OF HAMILTON

CONCRETE CURB BY OTHERS N.I.C.

NOTE: FOR SITE GRADING REFER TO SITE PLAN

PREFINISHED ALUMINUM ORNAMENTAL FENCE TYP.

900X1000 PREFINISHED HYDROLIC ALUMINUM ACCESS HATCH SEE SECTION A8

G.I. DAVIT SOCKET SET IN CONCRETE SLAB

LOW POURED CONCRETE WALL

G.I. DAVIT SOCKET SET IN CONCRETE SLAB

PLUG VALVE ACTUATOR SET IN A PAINTED GALVANIZED STEEL LOCKABLE WATERPROOF CABINET ON A 150 HIGH CONCRETE PAD SEE PROCESS DRAWINGS

POURED CONCRETE PIER

PREFINISHED ALUMINUM ORNAMENTAL FENCE TYP.

PREFINISHED ALUMINUM ACOUSTICAL LOUVRES ABOVE SEE MECHANICAL

RAIN WATER LEADER THROUGH WALL TO SPLASH PAD

POURED CONCRETE PIER

LOW PO CONCR

RAIN WATER LEADER THROUGH WALL TO SPLASH PAD

CRANE BEAM SUPPORT TYPICAL REFER TO STRUCTURAL DRAWINGS

PREFINISHED ALUMINUM ACOUSTICAL LOUVRES ABOVE SEE MECHANICAL

CANOPY ABOVE

PREFINISHED ALUMINUM CHANNEL SET INTO MASONRY

CONCRETE WALKWAY SEE SITE PLAN

FOR EQUIPMENT SEE ELECTRICAL AND MECHANICA DRAWINGS

ACOUSTICAL LOUVRES SEE MECHANICAL

BOLLARD SEE DETAIL 3/A009

WET WELL CONTROL SEE ELECTRICAL

WINDOW ABOVE

REIN. CONCRETE SLAB

OPENING BELOW

LINE OF HATCH ABOVE

HEAVY DUTY HYDROLIC HATCH SET FLUSH WITH PAVING C/W SAFETY PANELS SEE PROCESS DRAWINGS

PREFINISHED ALUMINUM ORNAMENTAL FENCE TYP.

HEAVEY DUTY ASPHALT PAVING SEE SITE PLAN

WET WELL SEE PROCESS DRAWINGS

HEAVY DUTY HYDROLIC HATCH SET FLUSH WITH PAVING C/W SAFETY PANELS SEE PROCESS DRAWINGS

PREFINISHED ALUMINUM ACOUSTICAL LOUVRES ABOVE SEE MECHANICAL

FOR EQUIPMENT SEE PROCESS DRAWINGS

CRANE BEAM OVER

LINE OF TOWER ABOVE

HSS COLUMNS REFER TO STRUCTURAL DRAWINGS

ACOUSTICAL LOUVRES SEE MECHANICAL

762mmx914mm ROOF ACCESS HATCH ABOVE WITH LADDER SEE DETAIL 3/A-004

ODOR CONTROL G 1 78.30

S/S RATED FLOOR HATCH C/W REMOVABLE GUARD RAIL

GENERATOR ROOM G 3

150MM HIGH CONCRETE PAD

BOLLARD SEE DETAIL 3/A9

REIN. CONCRETE SLAB SEE STRUCTURAL TYP. 3750

CRANE MONO RAIL OVER

1070 HIGH REMOVABLE GUARD RAIL, PROVIDE FLUSH MOUNTED DAVITS FOR ADDING GUARD RAIL C/W COVERS

FOR HOLDING TANK SEE PROCESS DRAWINGS P-100,P-101

REIN. CONCRETE RAMP

DUCT UP THROUGH ROOF SEE MECH

FLOOR DRAIN

CRANE BEAM OVER

G.I. DAVIT

CRANE BEAM OVER

LINE OF WALL ABOVE FOR ELECTRICAL RM.LAYOUT SEE ELECTRICAL DRAWINGS

ELECTRICAL ROOM G 4

150MM HIGH CONCRETE PAD

CANOPY ABOVE

RAIN THRO SPLA DETAI

CONC

LOW POURED CONCRETE WALL

BOLLARD SEE DETAIL 3/A9

LINE OF STORAGE TANK BELOW

HEATER

STAIR G 2

ELECTRICAL PANELS

PREFINI ALUMIN ORNAME GATE

SIMILAR

CONCRETE WALKWAY SEE SITE PLAN

CANOPY ABOVE

GAS METER

PROPERTY LINE

PREFINISHED ALUMINUM ORNAMENTAL GATES

PREFINISHED ALUMINUM ORNAMENTAL FENCE TYP.

900X1000 PREFINISHED HYDROLIC ALUMINUM ACCESS HATCH SEE SECTION A8

G.I. DAVIT SOCKET SET IN CONCRETE SLAB

CANOPY ABOVE

CONCRETE WALKWAY SEE SITE PLAN

GREEN WALL

POURED CONCRETE PIER

POURED CONCRETE PIER

PREFINISHED ALUMINUM ACOUSTICAL LOUVRES ABOVE SEE MECHANICAL

RAIN WATER LEADER THROUGH WALL TO SPLASH PAD

PREFINISHED ALUMINUM CHANNEL SET INTO MASONRY

POURED CONCRETE F

PREFINISHED ALUMINUM ACOUSTICAL LOUVRES ABOVE SEE MECHANICAL

FOR CONTINUED GROUND FOOR SEE A-03A

LEGEND

¾ HOUR FIRE RATED WALL

NOTE: CURBS, PAVING AND ROAD WORK BY OTHERS

NOTE: FOR WINDOW LOCATIONS REFER TO ELEVATIONS

GROUND FLOOR PLAN 3 A003

0 1:50 FULL SIZE 5

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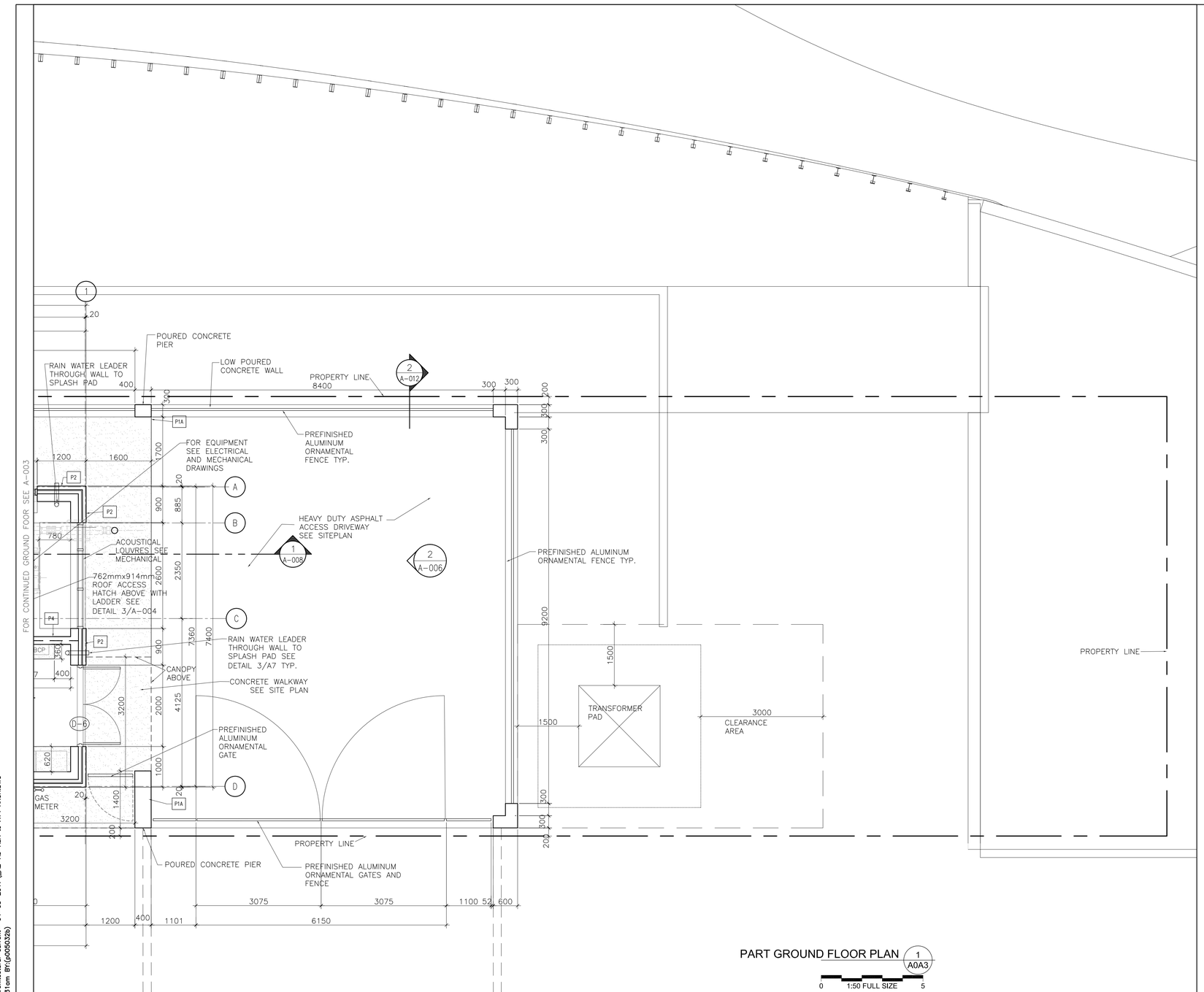
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
GROUND FLOOR PLAN

DATE : APRIL, 2017
SCALE: 1:50
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: A-003

G:\47596\4\4 Architectural_Architectural-current- 04-05-2017_A2-A3-A3a to A14 ARCH.DWG
PLOT DATE: Aug 16, 2018-9:28am BY:(p0056032b)



PART GROUND FLOOR PLAN 1 A0A3

0 1:50 FULL SIZE 5

G:\47596#\1 Architectural_Architectural-current- 04-05-2017_A2-A3-A3A to A14 ARCH.DWG
PLOT DATE: Aug 16, 2018-9:31am BY:(p0050326)

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TRUE NORTH

PROJECT NORTH

No.	REVISIONS	DATE	INTLS
4	ISSUED FOR 100% DETAILED DESIGN	06-05-18	M.C.
3	SITE PLAN REGRADED TO SUIT SUBDIVISION NEW ELEVATIONS	04-10-18	M.C.
2	90% DRAWINGS	09-18-17	M.C.
1	DRAFT PRELIMINARY DESIGN	APRIL 2017	M.C.

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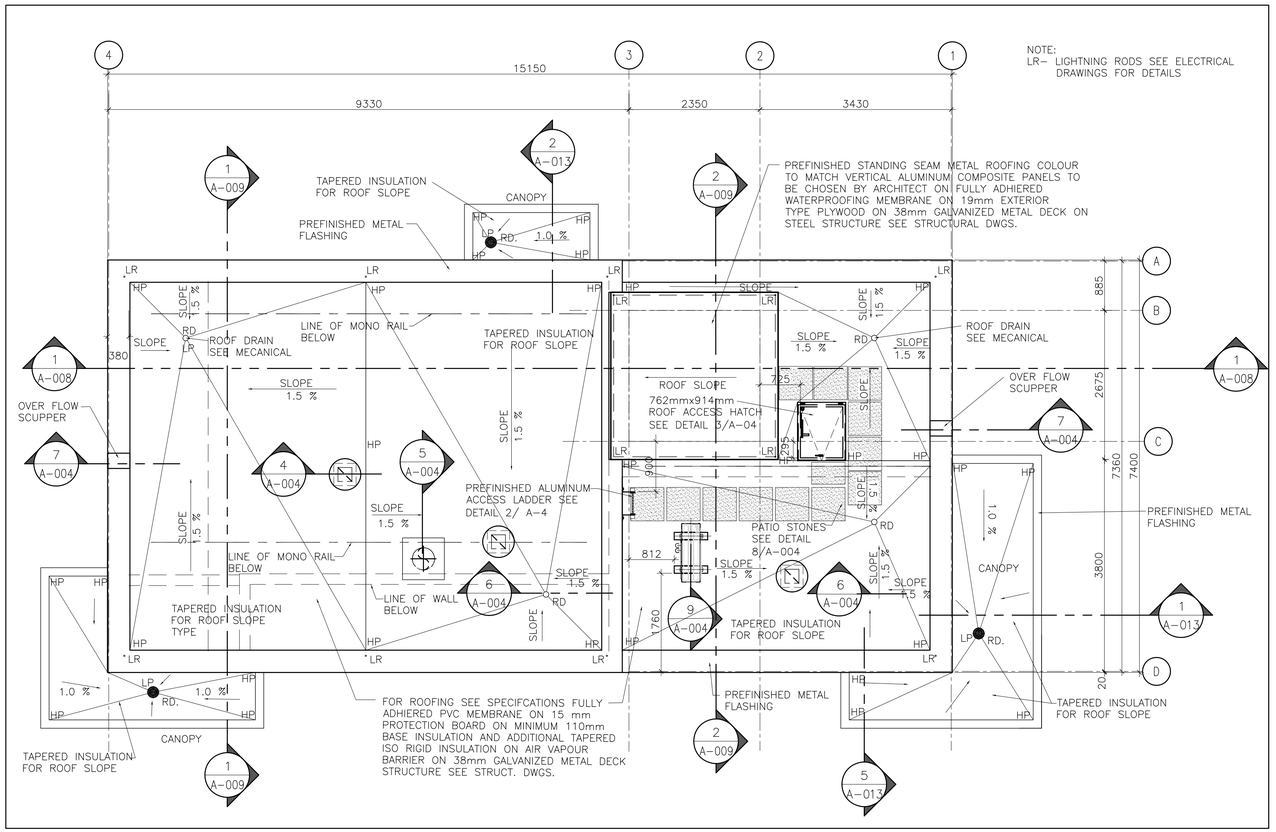
Hamilton

PARSONS

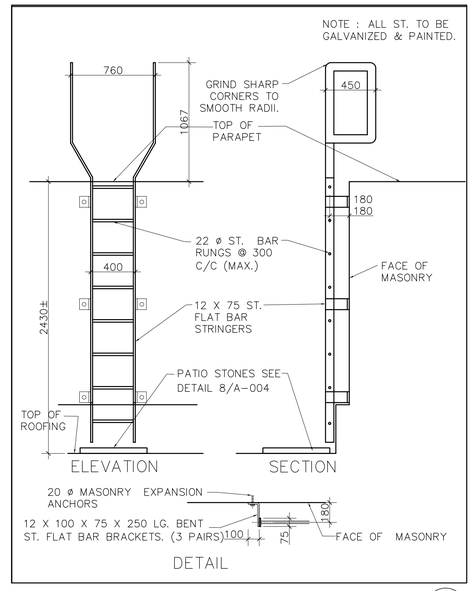
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
PART GROUND FLOOR PLAN

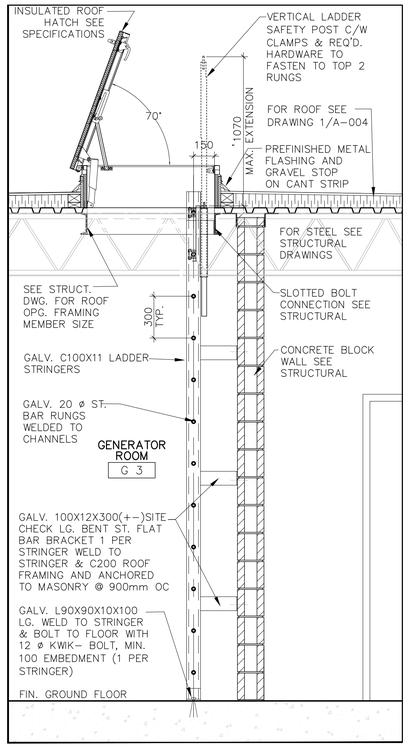
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DRAWING No.: A-03A



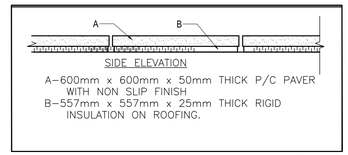
ROOF PLAN 1 A-004
0 1:50 FULL SIZE 5



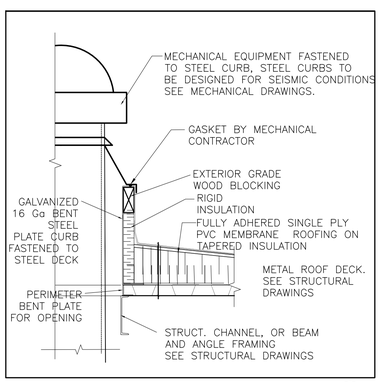
ROOF ACCESS LADDER 2 A-004
0 1:25 FULL SIZE 5



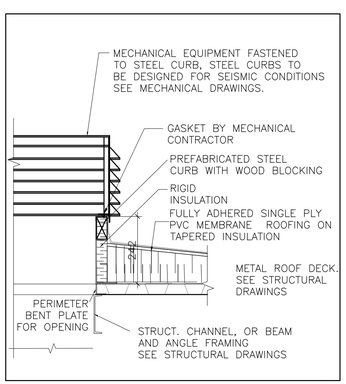
ROOF ACCESS LADDER AND HATCH 3 A-004
0 1:20 FULL SIZE 5



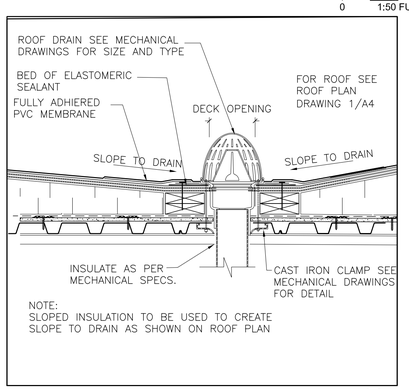
CONCRETE PAVER ROOF DETAIL 8 A-004
0 NTS FULL SIZE 5



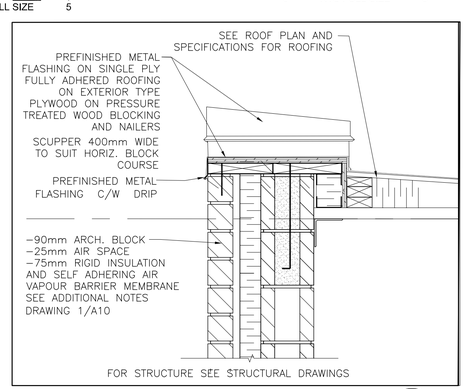
MECHANICAL EXHAUST OR SUPPLY VENT 4 A-004
0 1:10 FULL SIZE 5



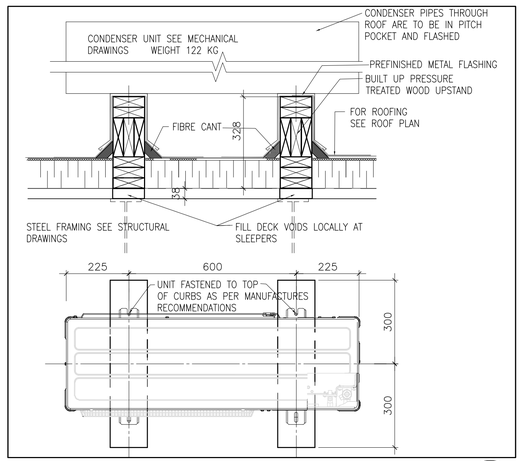
VENTILATOR CURB DETAIL 5 A-004
0 1:10 FULL SIZE 5



ROOF DRAIN DETAIL 6 A-004
0 1:10 FULL SIZE 5



OVER FLOW SCUPPER DETAIL 7 A-004
0 1:10 FULL SIZE 5



MECH. UNIT CURB SUPPORT DETAIL 9 A-004
0 1:10 FULL SIZE 5

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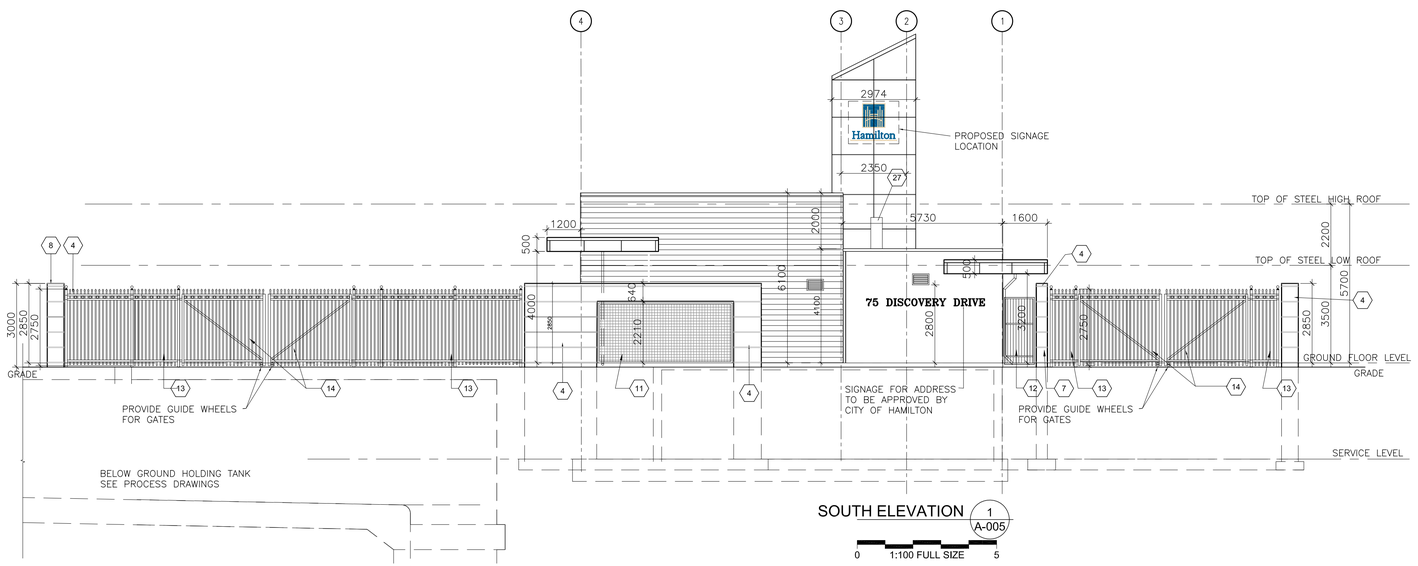
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
ROOF PLAN AND DETAILS

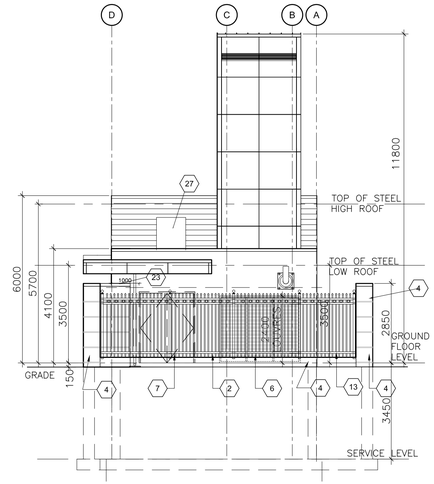
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DRAWING No.: A–004

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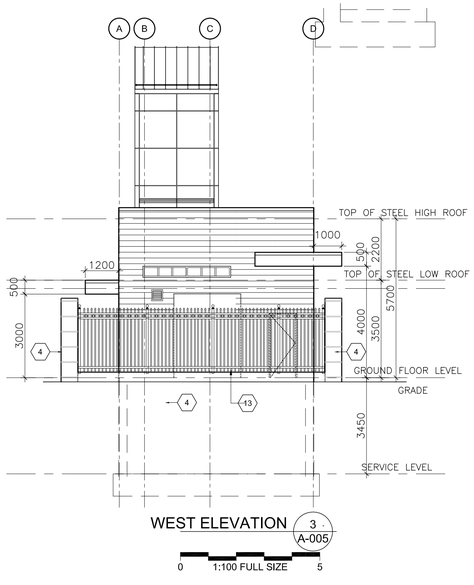
SOUTH ELEVATION 1 A-005

0 1:100 FULL SIZE 5



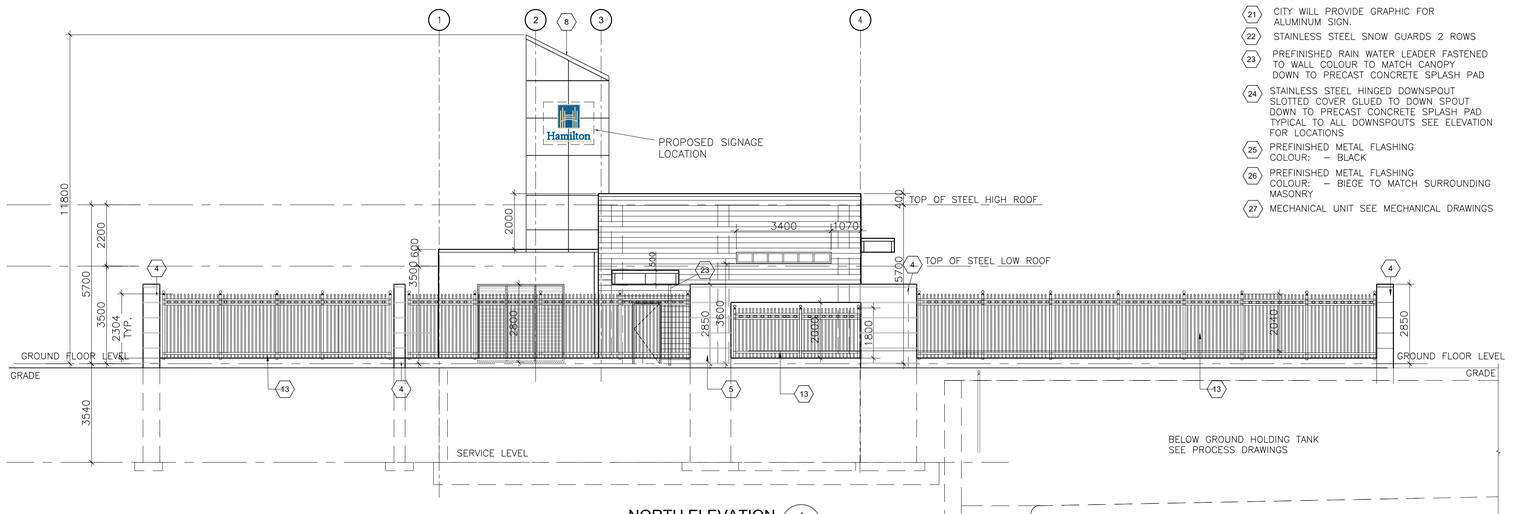
EAST ELEVATION 2 A-005

0 1:100 FULL SIZE 5



WEST ELEVATION 3 A-005

0 1:100 FULL SIZE 5



NORTH ELEVATION 4 A-005

0 1:100 FULL SIZE 5

MATERIAL AND FINISH LEGEND

1. ARCHITECTURAL STONE COLOUR: CHARCOAL
2. VENEER FACE STONE COLOUR: LIGHT BIEGE
3. PREFINISHED ALUMINUM COMPOSITE PANELS COLOUR: WHITE
4. CAST IN PLACE ARCHIECTURAL CONCRETE SMOOTH FINISH C/W REVEALS HIGH AND LOW WALLS
5. PREFINISHED ANODIZED ALUMINUM WINDOWS CURTAIN WALL WITH DOUBLE GLAZED SEALED GLASS UNITS COLOUR: – BLACK
6. PREFINISHED ACOUSTICAL ANODIZED ALUMINUM LOUVRES COLOUR: TO MATCH SURROUNDING MASONRY
7. PAINTED INSULATED GALV. METAL DOORS COLOUR:
8. PREFINISHED GALV. METAL EXPOSED FLASHING COLOUR: WHITE
9. PREFINISHED ALUMINUM COMPOSITE PANEL WITH RECESSED JOINTS AS PER ELEVATIONS CANOPY COLOUR: BLACK
10. PREFINISHED ANODIZED ALUMINUM FLASHING COLOUR: TO MATCH CANOPY – BLACK
11. PAINTED GALV. METAL TUBULAR FRAME WITH 50mmX50mmX6mm WIRE MESH GREEN WALL COLOUR: – BLACK
12. PRE–FINSHED ALUMINUM ORNAMENTAL GATE C/W LOCKING DEVICE COLOUR – BLACK
13. PRE–FINISHED ALUMINUM ORNAMENTAL FENCE COLOUR: – BLACK
14. PRE–FINISHED ALUMINUM ORNAMENTAL FENCE GATE C/W GUIDE WHEELS, AND LOCKING DEVICE COLOUR: TO MATCH GRILLE FENCE – BLACK
15. PREFINISHED GALV. LOW PROFILE STANDING SEAM ROOF COLOUR: WHITE TO MATCH COMPOSITE PANELS
16. PREFINISHED ANOD. ALUMINUM LOUVRED VENT C/W INSECT SCREEN COLOUR: WHITE
17. THROUGH WALL GENERATOR EXHAUST PIPE IN A THROUGH WALL THIMBLE
18. PREFINISHED MANUALLY OPERATED INSULATED ROLLING STEEL DOOR COLOUR TO MATCH SURROUNDING MASONRY
19. STAINLESS STEEL SNOW GUARDS 2 ROWS
20. RECESSED PREFINISHED ALUMINUM CHANNEL INSERT COLOUR – BLACK
21. CITY WILL PROVIDE GRAPHIC FOR ALUMINUM SIGN.
22. STAINLESS STEEL SNOW GUARDS 2 ROWS
23. PREFINISHED RAIN WATER LEADER FASTENED TO WALL COLOUR TO MATCH CANOPY DOWN TO PRECAST CONCRETE SPLASH PAD
24. STAINLESS STEEL HINGED DOWNSPOUT SLOTTED COVER GLUED TO DOWN SPOUT DOWN TO PRECAST CONCRETE SPLASH PAD TYPICAL TO ALL DOWNSPOUTS SEE ELEVATION FOR LOCATIONS
25. PREFINISHED METAL FLASHING COLOUR: – BLACK
26. PREFINISHED METAL FLASHING COLOUR: – BIEGE TO MATCH SURROUNDING MASONRY
27. MECHANICAL UNIT SEE MECHANICAL DRAWINGS

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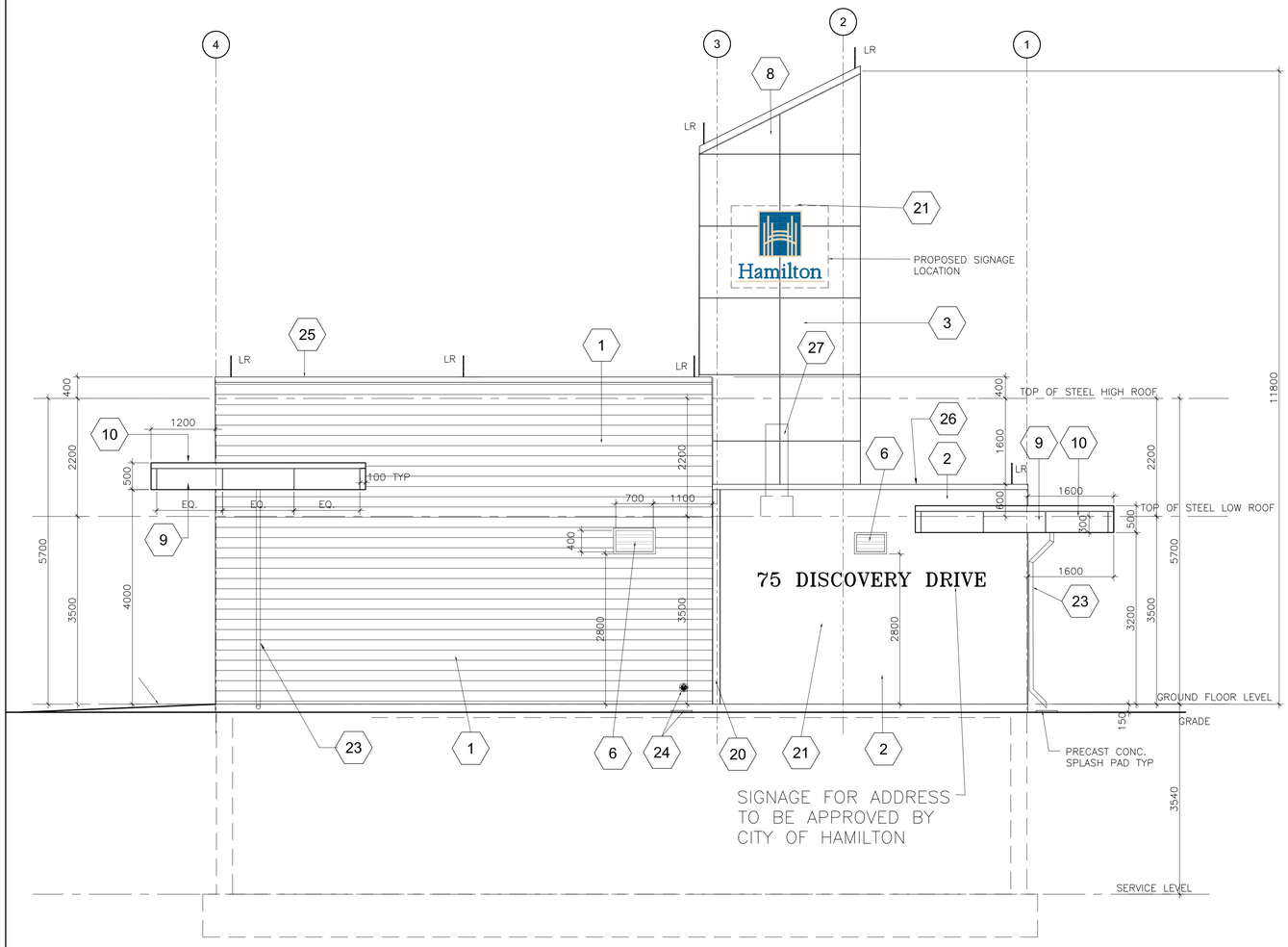
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
OVER ALL ELEVATIONS

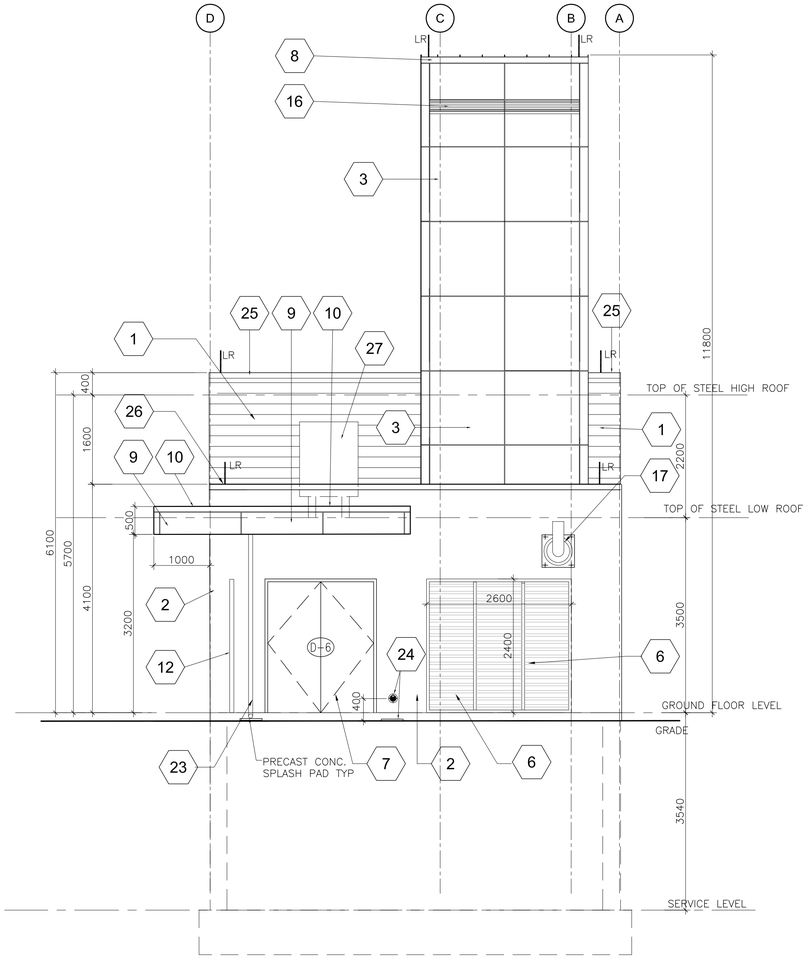
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FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.: A–005

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PLOT DATE: Aug 16, 2018–9:33am BY:(p0050302b)



SOUTH ELEVATION 1 A-006

0 1:50 FULL SIZE 5



EAST ELEVATION 2 A-006

0 1:50 FULL SIZE 5

NOTE:
FOR MATERIAL LEGEND SEE DRAWING A5

No.	REVISIONS	DATE	INTLS
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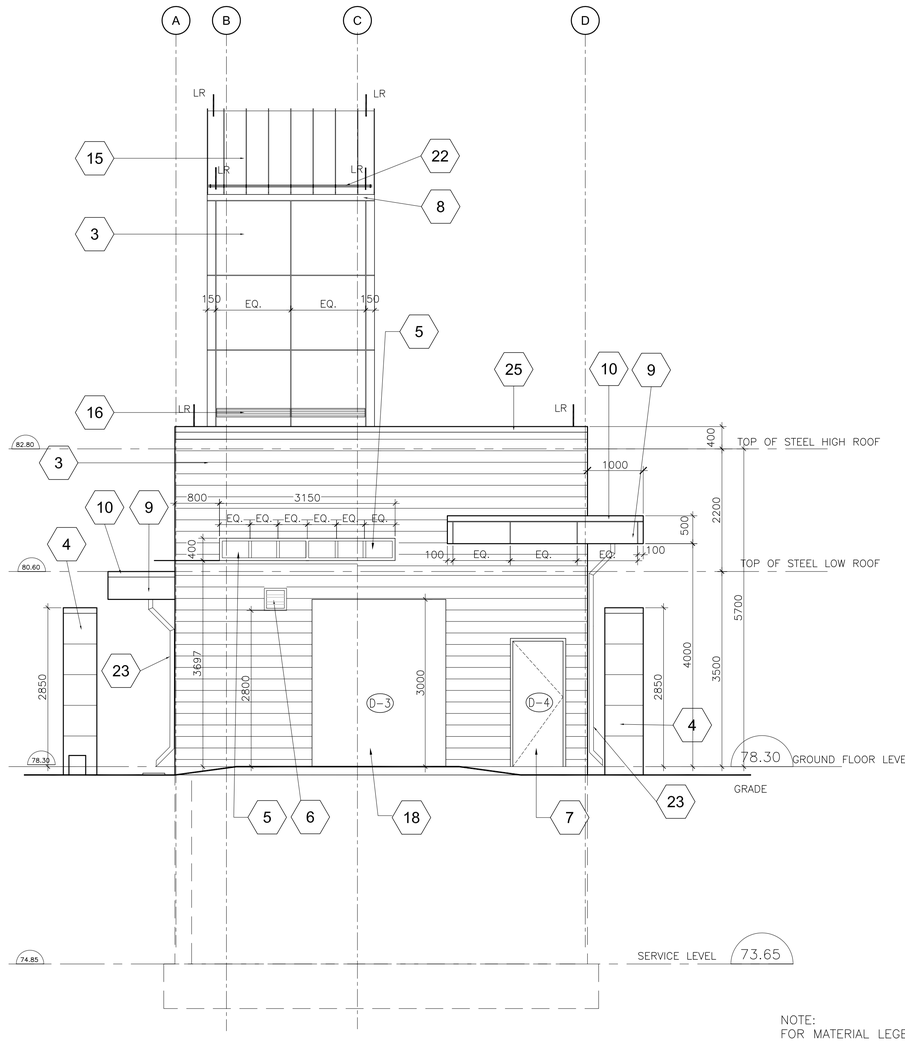
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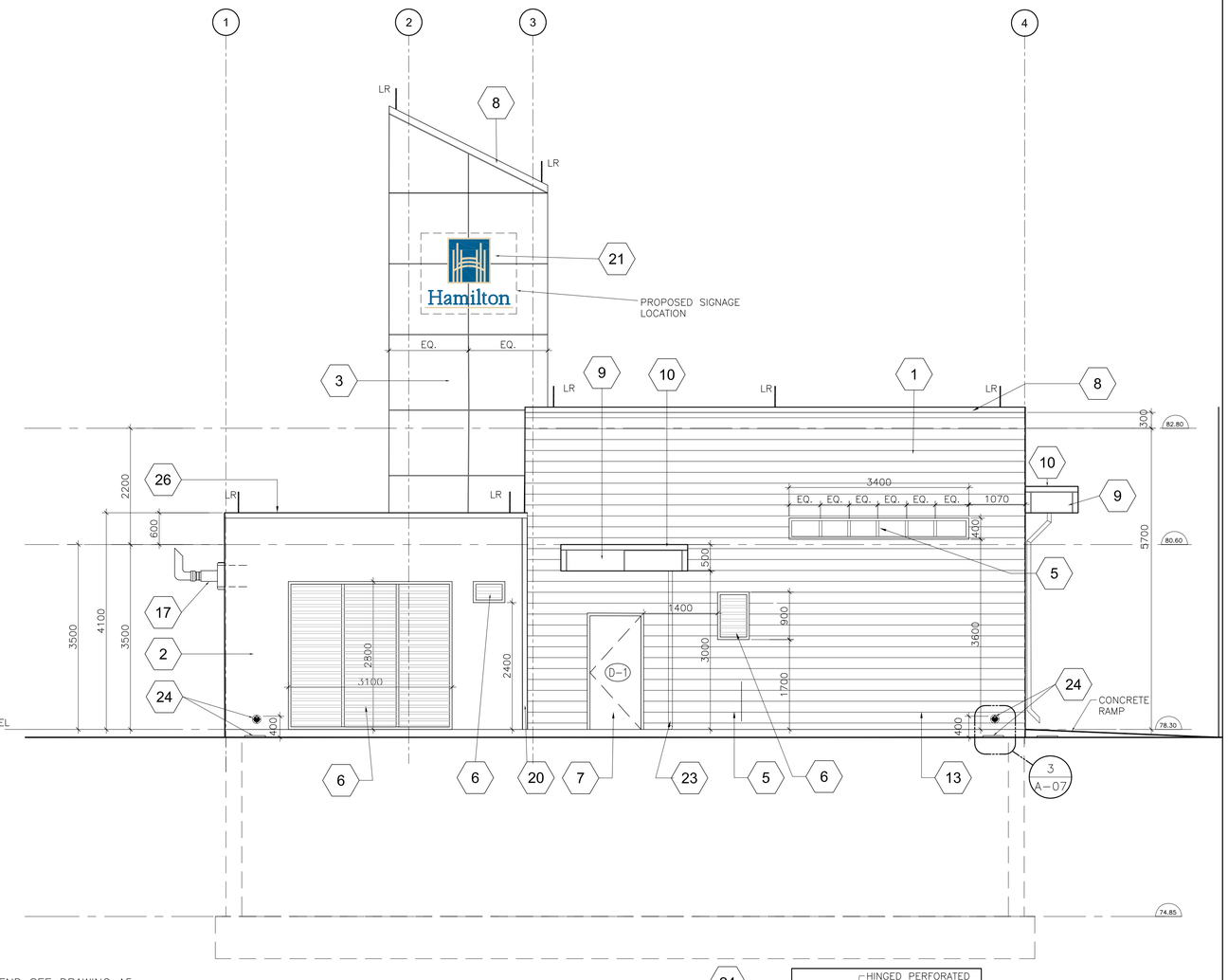
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
DETAILED BUILDING ELEVATIONS

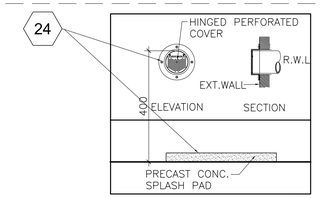
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PLOT DATE: Aug 16, 2018-9:34am BY:(p0050326)





NOTE:
FOR MATERIAL LEGEND SEE DRAWING A5



WEST ELEVATION 1 A-007
0 1:50 FULL SIZE 5

NORTH ELEVATION 2 A-007
0 1:50 FULL SIZE 5

RWL OUTLET DETAIL 3 A-007
0 NTS 5

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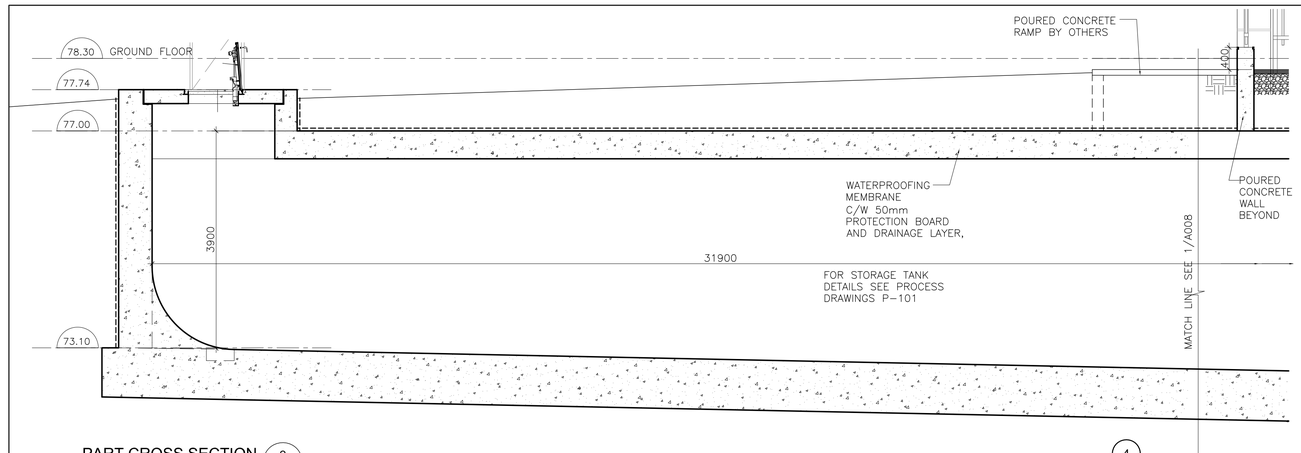
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
DETAILED BUILDING ELEVATIONS

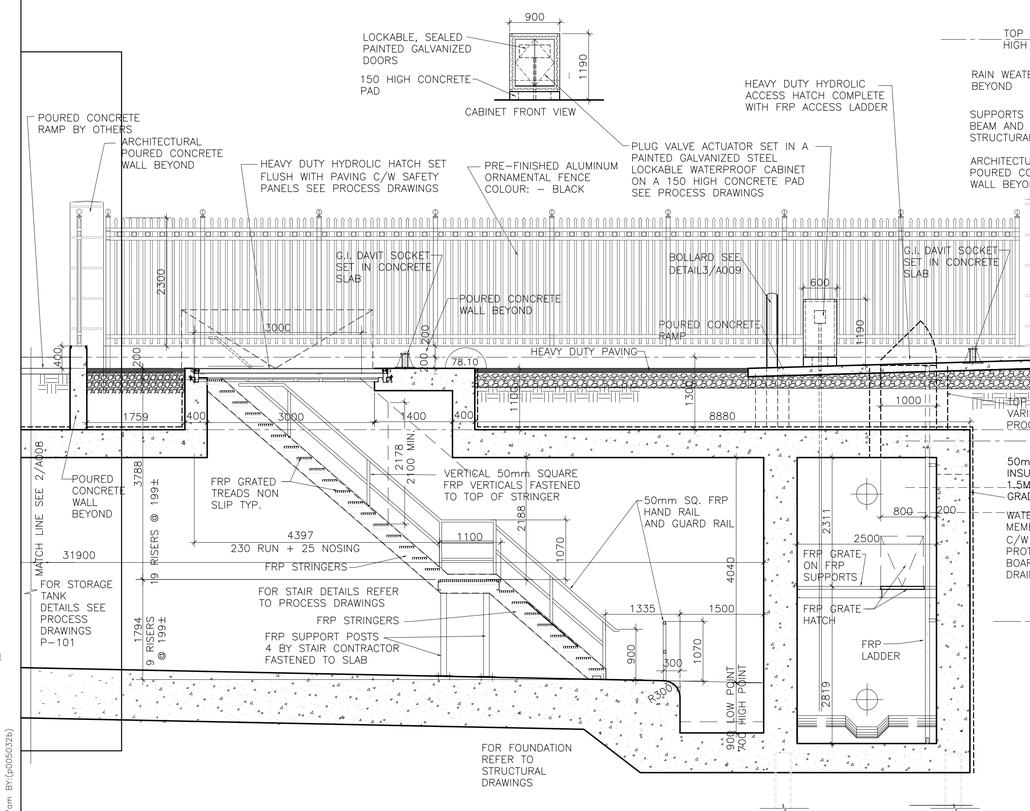
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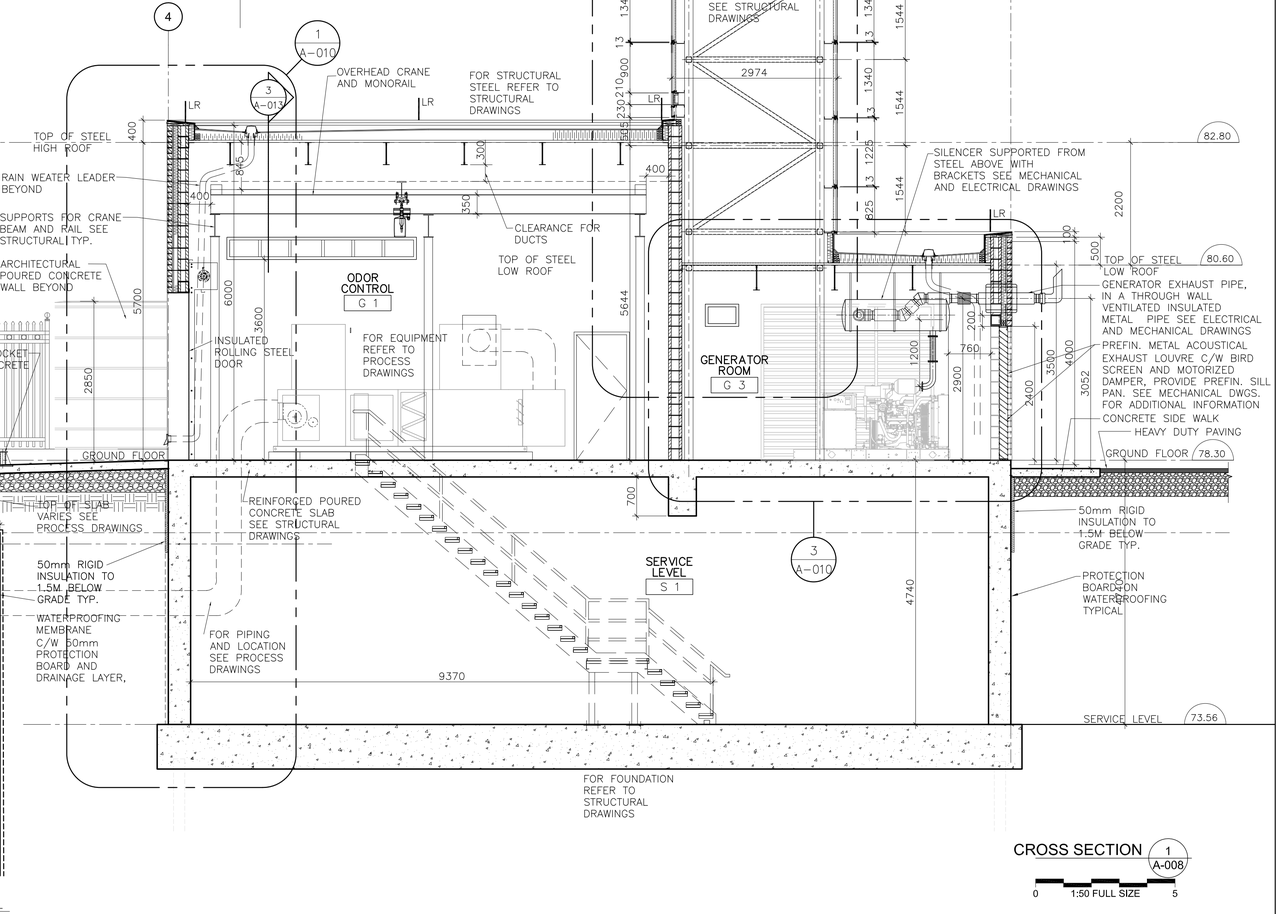
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PART CROSS SECTION 2 A-008

0 1:50 FULL SIZE 5





CROSS SECTION 1 A-008

0 1:50 FULL SIZE 5

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTRUAL CROSS SECTION

DATE : APRIL, 2017

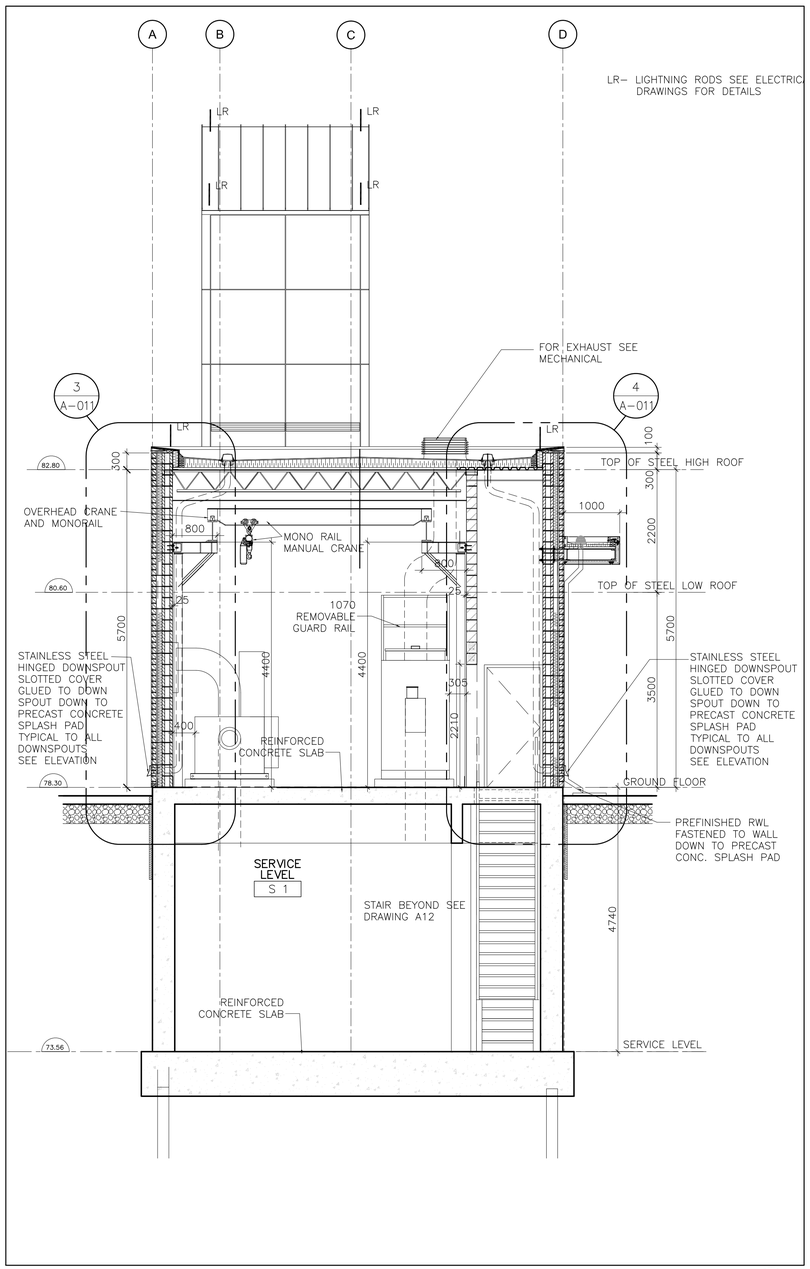
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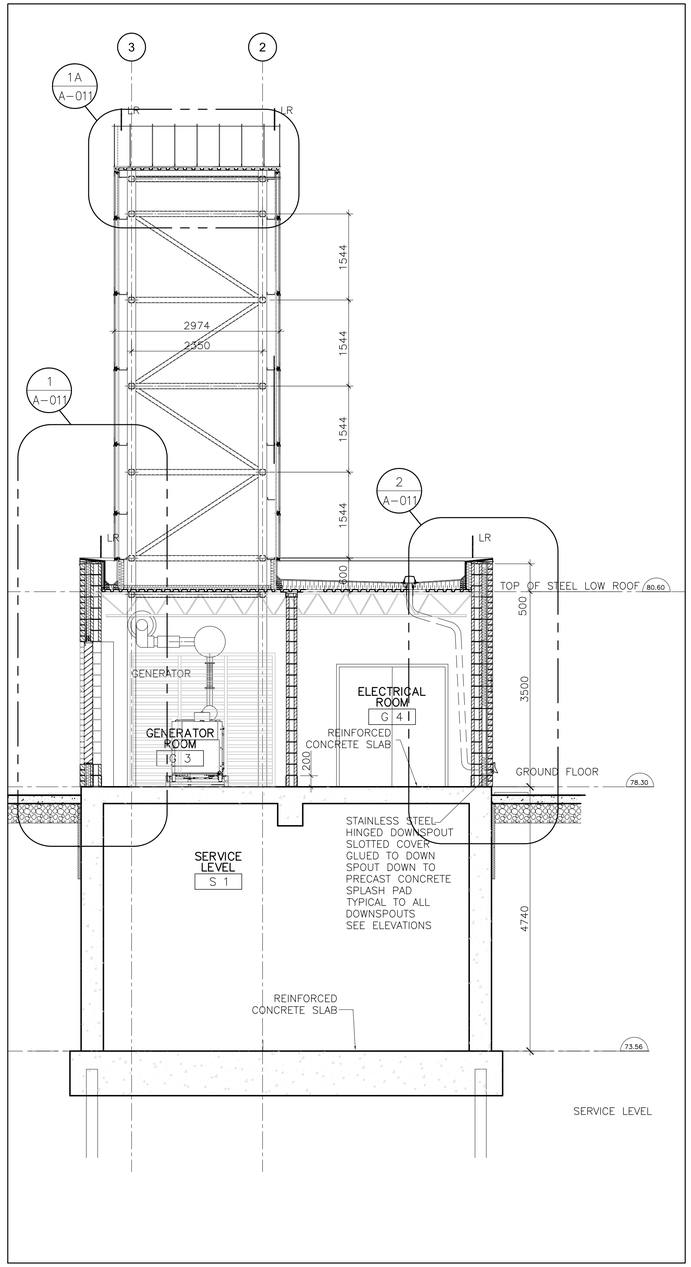
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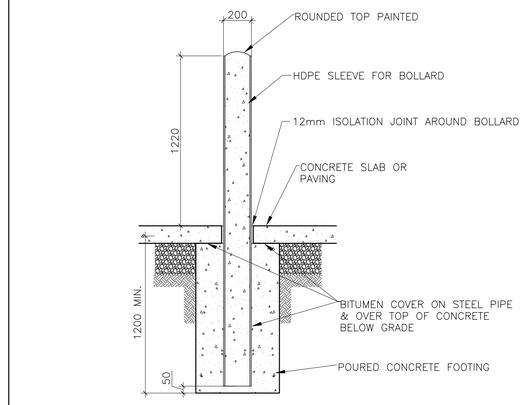
WALL SECTION 1 A-009

0 1:50 FULL SIZE 5



WALL SECTION 2 A-009

0 1:50 FULL SIZE 5



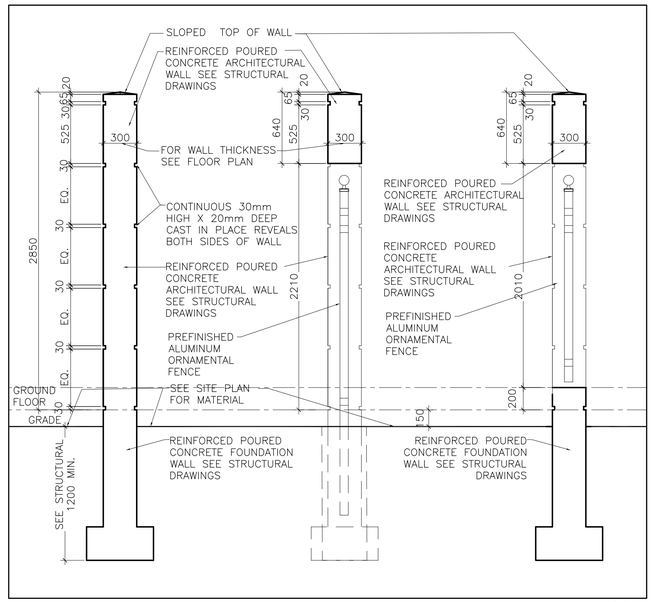
BOLLARD NOTES:

1) DOOR JAMBS : CENTRELINE OF BOLLARD TO BE LOCATED CENTRELINE OF DOOR JAMBS (UNLESS NOTED OTHERWISE).

2) COLUMN PROTECTION: CONFIRM FINAL LOCATION PRIR TO SETTING FOR COLUMN PROTECTION.

WALL SECTION 3 A-009

0 1:20 FULL SIZE 5



TYP. POURED CONCRETE WALL AND PIERS 4 A-009

0 1:25 FULL SIZE 5

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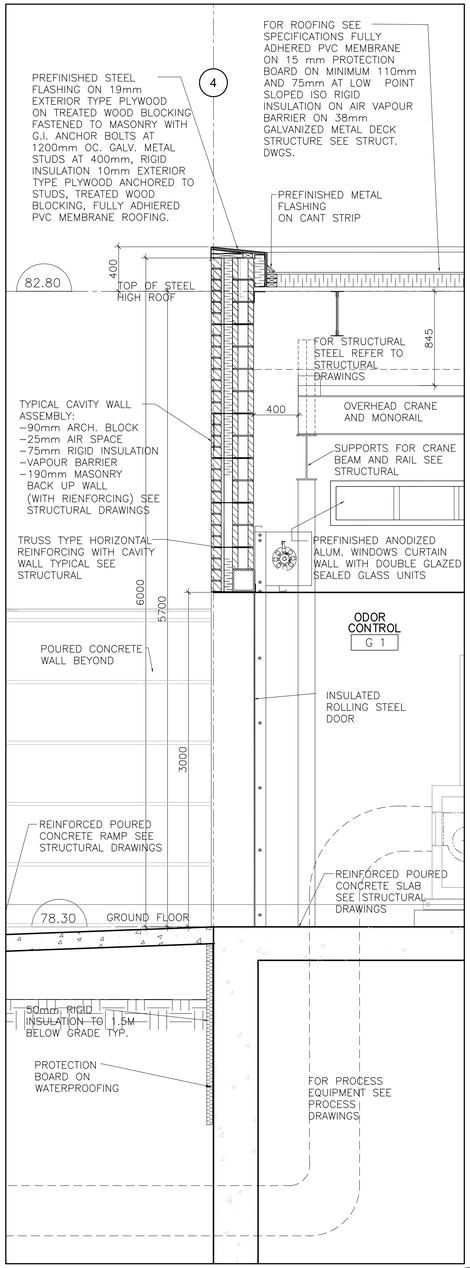
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
CROSS SECTION AND DETAILS

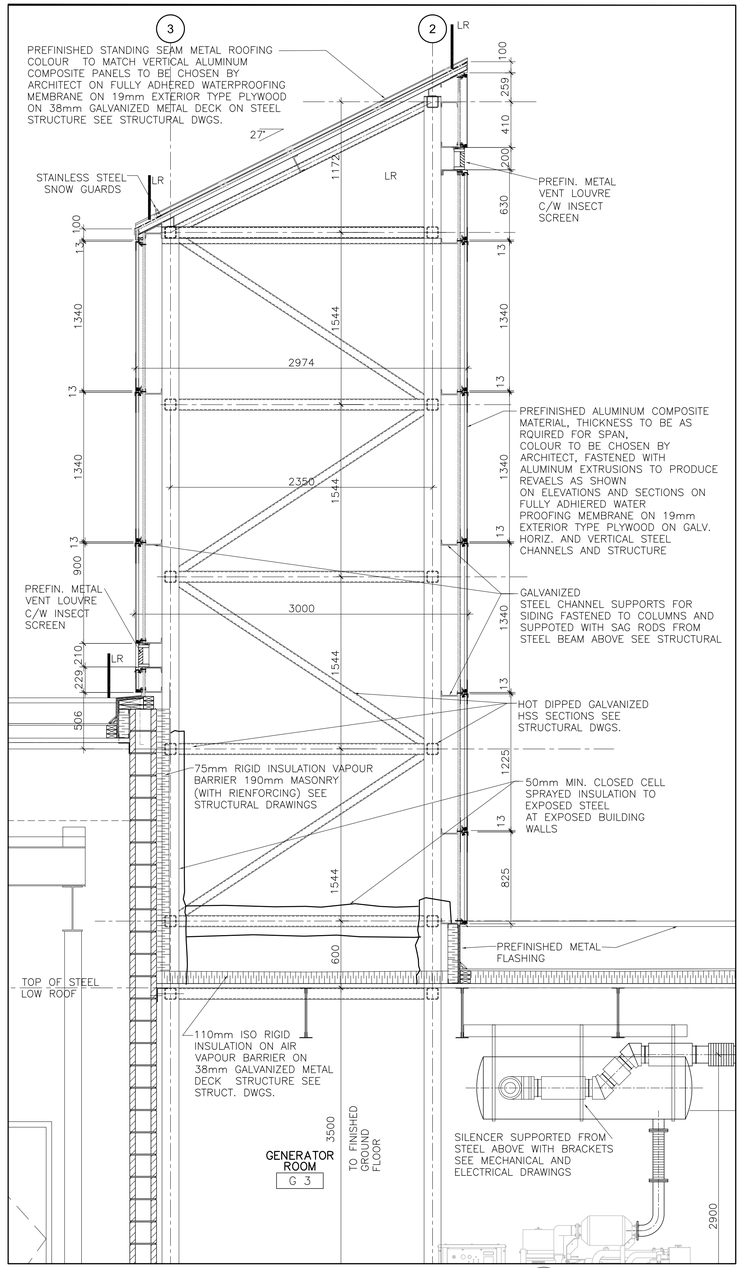
DATE : APRIL, 2017
SCALE: 1:50 OR AS NOTED
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DRAWING No.: A–009

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PLOT DATE: Aug 16, 2018–9:50am BY:(g0050329)



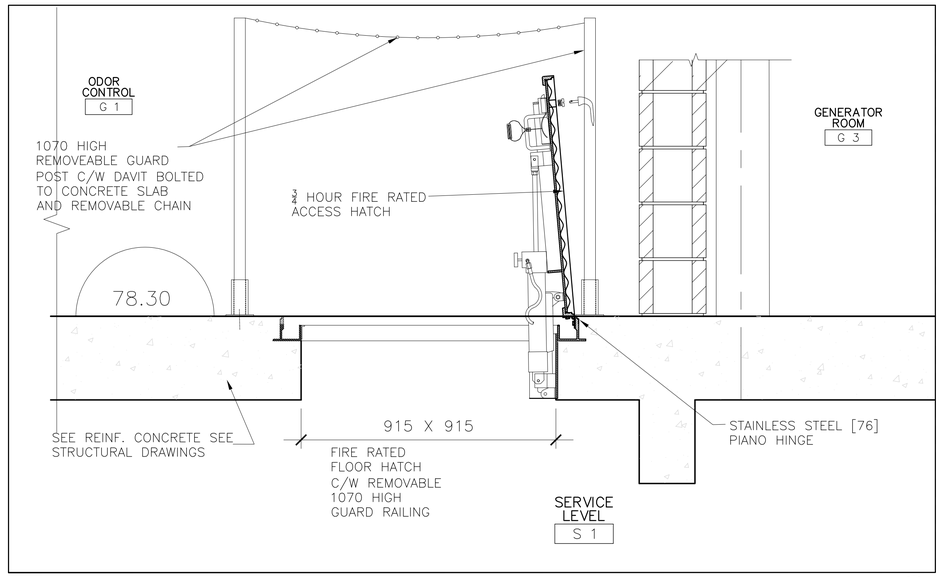
WALL SECTION 1 A-010

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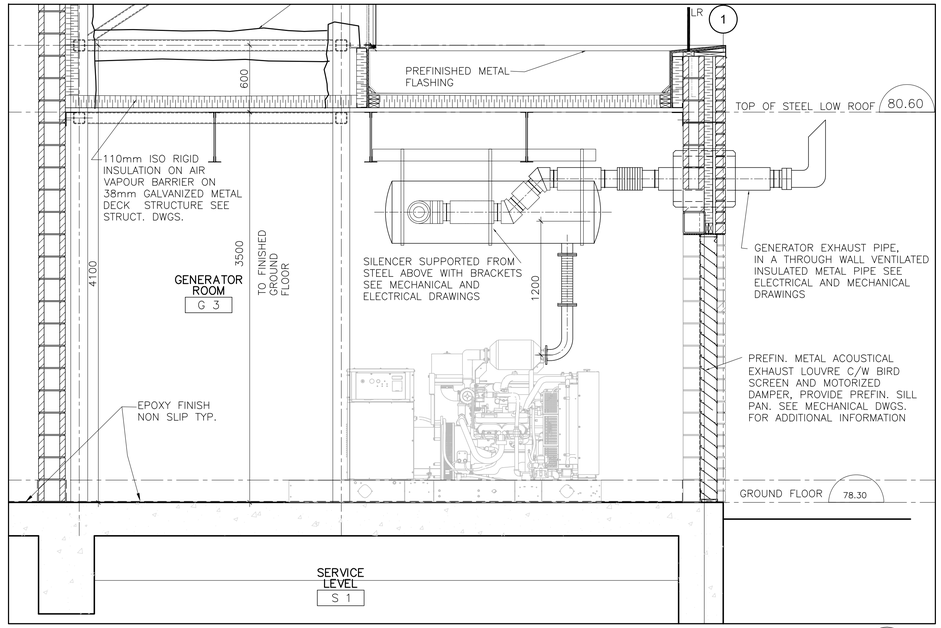
PARTIAL WALL SECTION 2 A-010

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RATED FLOOR HATCH 4 A-010

0 1:10 FULL SIZE 5



WALL SECTION 3 A-010

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4	ISSUED FOR 100% DETAILED DESIGN	06-05-18	M.C.
3	SITE PLAN REGRADED TO SUIT SUBDIVISION NEW ELEVATIONS	04-10-18	M.C.
2	90% DRAWINGS	09-18-17	M.C.
1	DRAFT PRELIMINARY DESIGN	APRIL 2017	M.C.

DESIGNED BY

DRAWN BY

CHECKED BY

APPROVED BY

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Hamilton

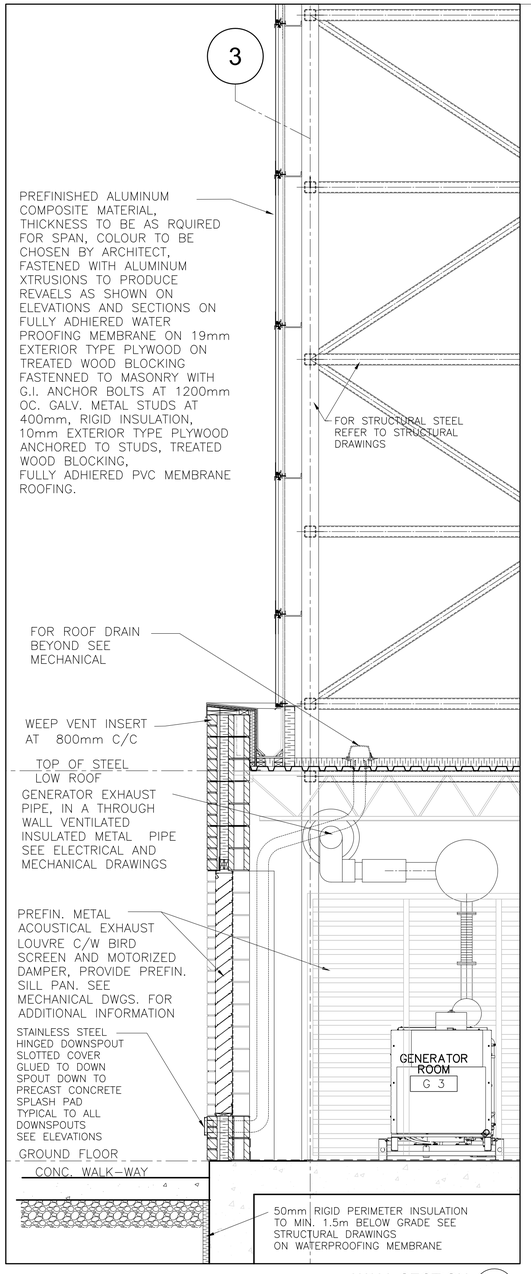
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
WALL SECTIONS AND DETAILS

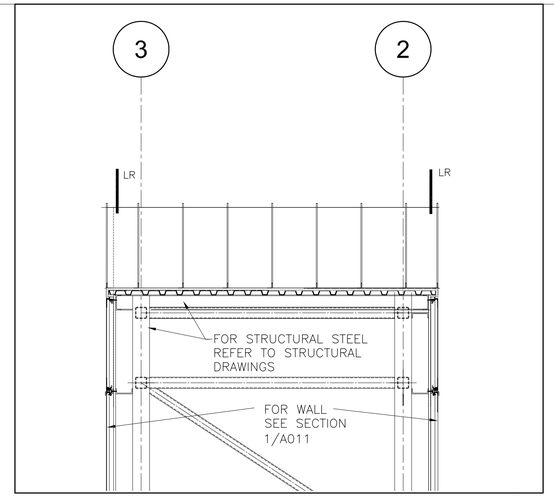
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CONTRACT No.:	C13-06-16
DRAWING No.:	A-010

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PLOT DATE: Aug 16, 2018-9:39am BY:(g0050329)



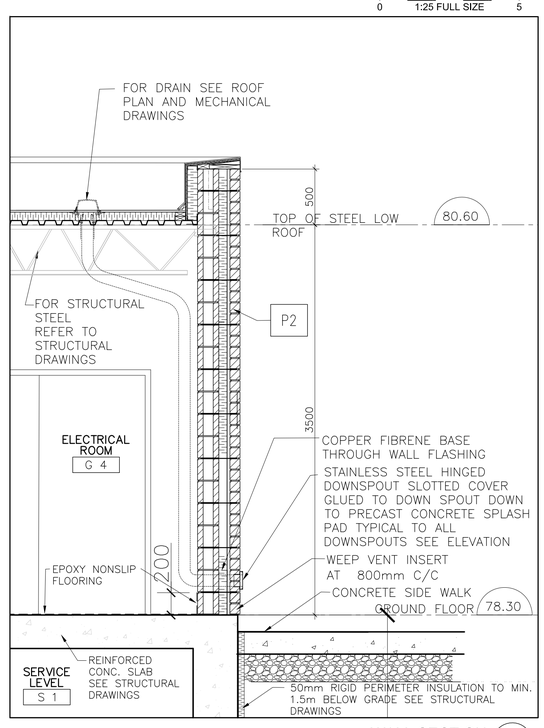
WALL SECTION 1 A-011

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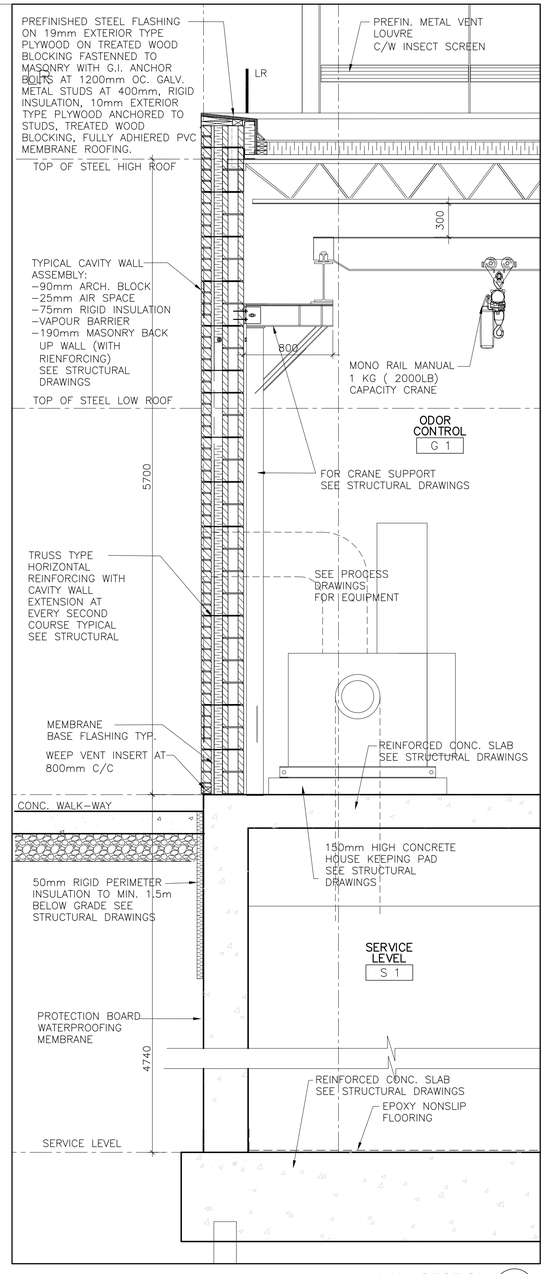
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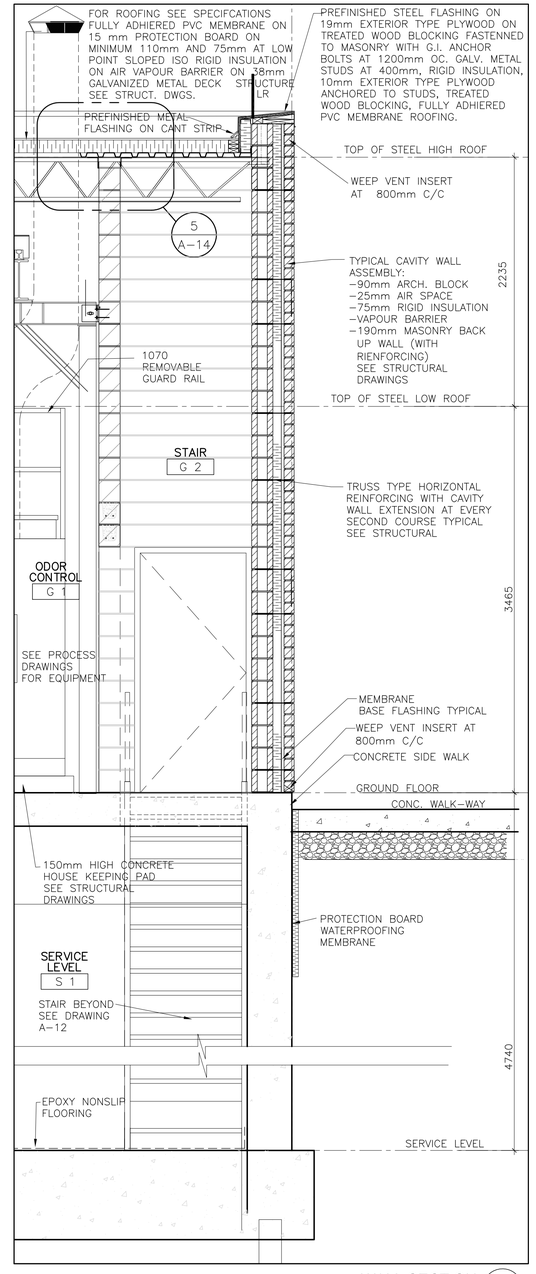
WALL SECTION 2 A-011

0 1:25 FULL SIZE 5



WALL SECTION 3 A-011

0 1:25 FULL SIZE 5



WALL SECTION 4 A-011

0 1:25 FULL SIZE 5

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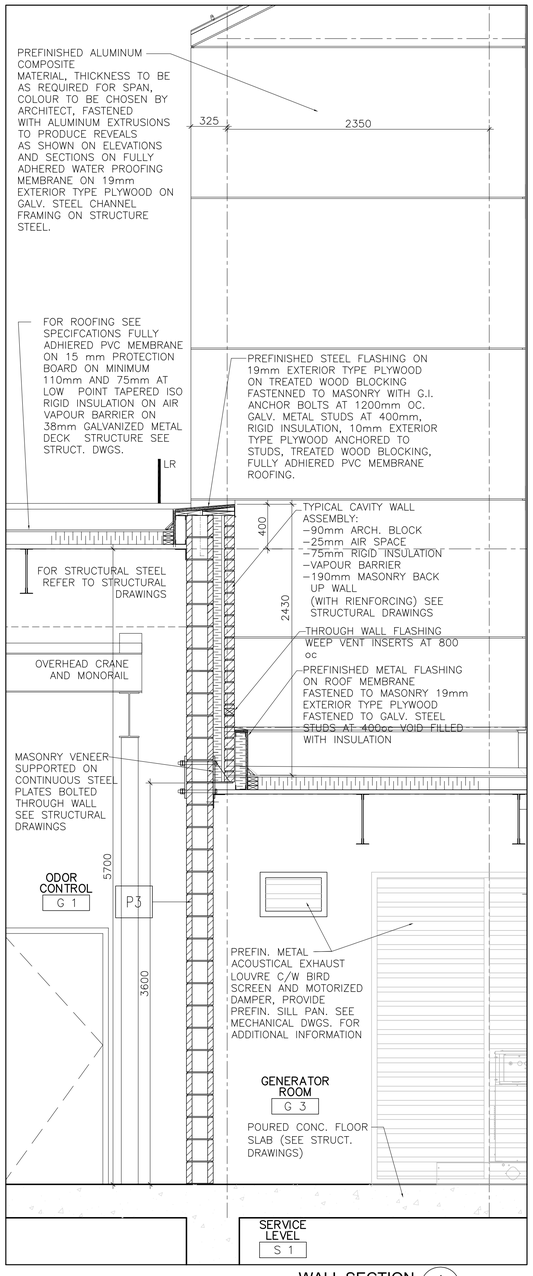
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ARCHITECTURAL
WALL SECTIONS

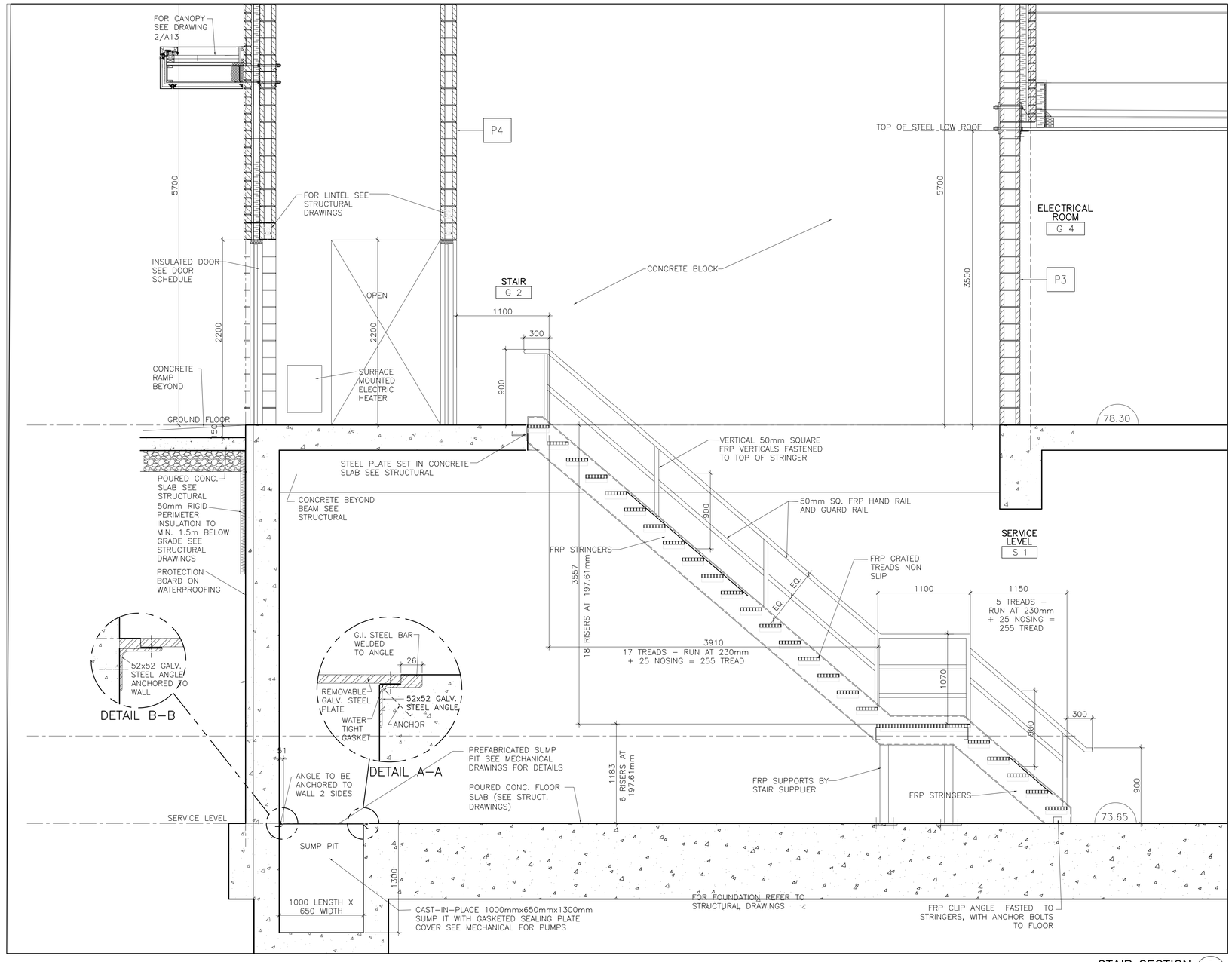
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DRAWING No.: A-011

G:\475864\4 Architectural_Architectural-current- 04-05-2017_A2-A3-A3A to A14 ARCH.DWG
PLOT DATE: Aug 16, 2018-9:57am BY:(gp005032b)



WALL SECTION 1 / A12

0 1:25 FULL SIZE 5



STAIR SECTION 3 / A12

0 1:25 FULL SIZE 5

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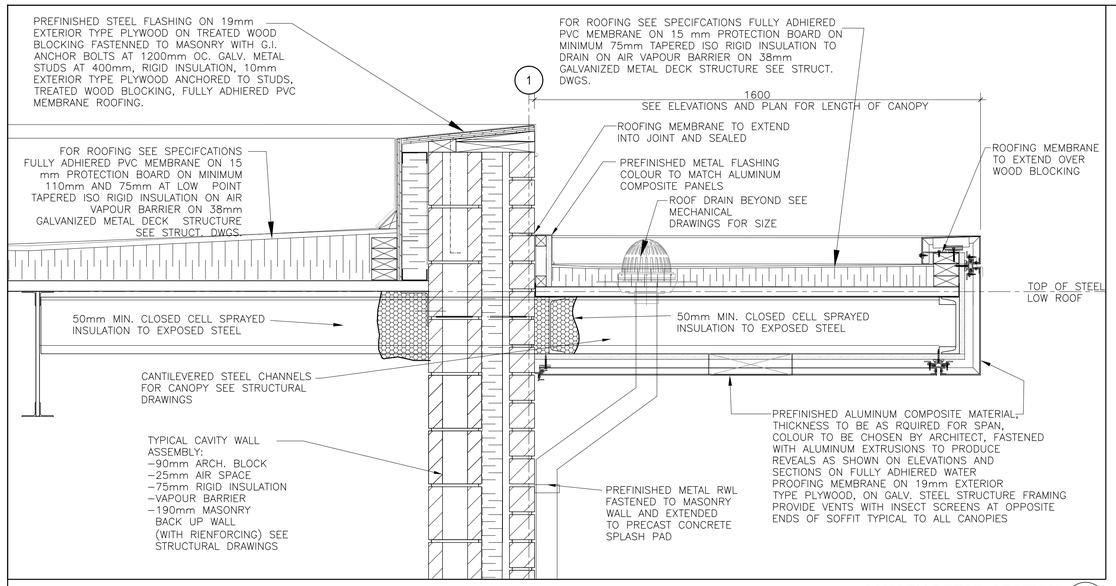
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
WALL SECTIONS

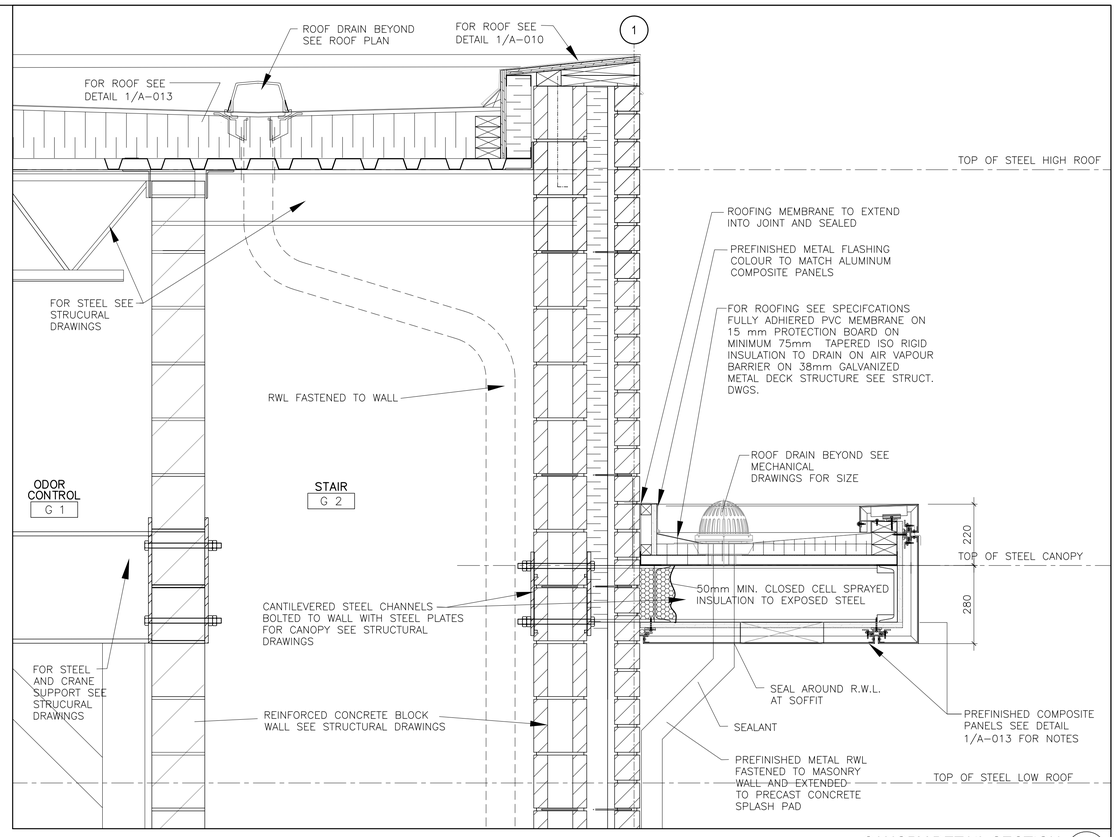
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DRAWING No.: A–012

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PLOT DATE: Aug 16, 2018–9:41am BY:(g0050328)



CANOPY DETAIL SECTION 1 A-013

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CANOPY DETAIL SECTION 2 A-013

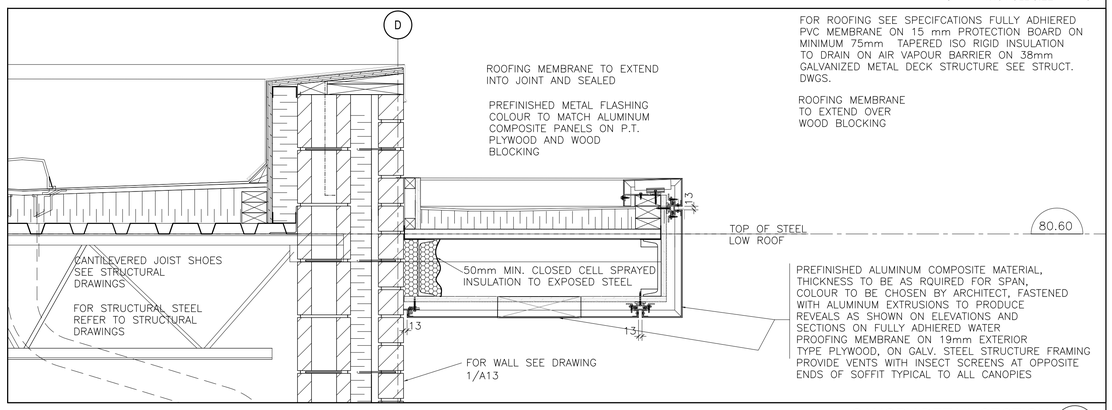
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SECTION AT HIGH WINDOW 3 A-013

0 1:10 FULL SIZE 5

SECTION DETAIL AT VENT 4 A-013

0 1:10 FULL SIZE 5



CANOPY DETAIL SECTION 5 A-013

0 1:10 FULL SIZE 5

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL DETAILS

DATE : APRIL, 2017
SCALE: 1:--
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: A-013

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PLOT DATE: Aug 16, 2018 - 9:45am BY:(p005032b)

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR MATERIAL: CONCRETE	FLOOR FINISH: SPARK PROOF TOPPING	FLOOR FINISH: CONC. HARDENER AND SEALER	FLOOR FINISH: EPOXY COATING NON SLIP, AND WATER PROOF	BASE	WALLS MATERIAL: CONCRETE BLOCK	WALLS MATERIAL: CONCRETE WALL	WALLS FINISH: PAINTED	WALLS FINISH: EPOXY WALL COATING	CEILINGS MATERIAL: EXPOSED STRUCTURE	CEILINGS MATERIAL: POURED CONCRETE	CEILINGS FINISH: PAINTED	CEILINGS FINISH: PAINTED EPOXY	REMARKS
S1	SERVICE LEVEL	•			•			•		•	•			•	
G1	ODOR CONTROL	•			•		•			•	•			•	
G2	STAIR	•			•		•			•	•			•	STAIRS PREFINISHED FRP RAILINGS, GRATED TREADS AND STRINGERS TYP.
G3	GENERATOR ROOM	•			•		•			•	•			•	
G4	ELECTRICAL ROOM	•			•		•			•	•			•	

DOOR SCHEDULE

DOOR NUMBER	DOOR LOCATION	DOOR LEAF SIZE W x H x TH	DOOR TYPE	DOOR: INSULATED GALVANIZED STEEL	DOOR: HOLLOW GALVANIZED STEEL	DOOR: PREFINISHED REINFORCED INSULATED FRP	DOOR: PREFINISHED REINFORCED FRP	DOOR: 16G ARBL C/W 1/4 AR. LRBL DOOR	DOOR: PERFORATED GALV. ROLLING STEEL O/H DOOR	FRAME: FRAME TYPE	FRAME: PREFINISHED FRP	FRAME: WELDED STEEL GALVANIZED	HARDWARE: INSULATED	HARDWARE: PAINT	HARDWARE: BY DOOR MANUFACTURER	HARDWARE: BUTT HINGES BY DOOR MANUFACTURER	HARDWARE: HOLD OPEN DEVICE	HARDWARE: LOCK SET HIGH SECURITY	HARDWARE: LATCH SET	HARDWARE: PANIC HARDWARE	HARDWARE: SECURITY CONTACTS	HARDWARE: CLOSER	HARDWARE: PRIVACY LOCK	HARDWARE: KICK PLATE	HARDWARE: DOOR STOP	HARDWARE: ALUMINUM THRESHOLD	HARDWARE: WEATHERSTRIPPING	REMARKS
D1	G1 TO EXTERIOR	1-950 X 2150 X 45	A	•					•	2			•	•	•	•		•	•		•				•	•	CHAIN CHECK
D2	G2 TO G1	1-950 X 2150 X 45	A	•					•	1				•	•	•		•	•		•				•	•	
D3	G1 TO EXTERIOR	1-2400 X 3000 OPENING SIZE	C					•	•	3			•	•	•			•									MANUALLY OPERATED, VISION PANELS, C/W ALL HARDWARE
D4	G1 TO EXTERIOR	1-950 X 2150 X 45	A	•					•	2			•	•	•	•		•	•		•				•	•	CHAIN CHECK
D5	G3 TO G4	1-950 X 2150 X 45	A	•				•		1				•	•	•		•									
D6	G4 TO EXTERIOR	2-900 X 2350 X 45	B	•					•	2			•	•	•	•		•	•		•				•	•	CHAIN CHECK, COORDINATOR TOP AND BOTTOM FLUSH BOLTS

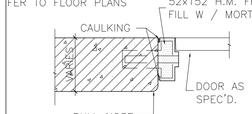
NOTE:
CONTRACTOR WILL KEY THE LOCKS TO THE CITY OF HAMILTON REQUIREMENTS AT THE END OF CONSTRUCTION

ROOM AND DOOR FINISH SCHEDULE 1 / A14

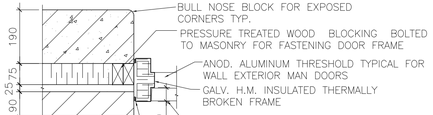
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FRAME TYPES

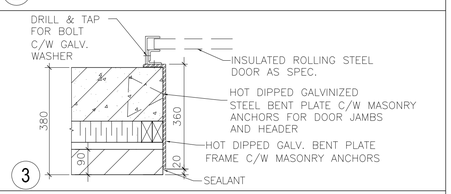
R WALL TYPES
FER TO FLOOR PLANS



1



2

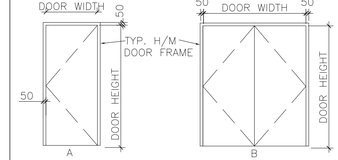


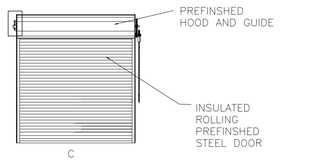
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FRAME DETAILS 2 / A-014

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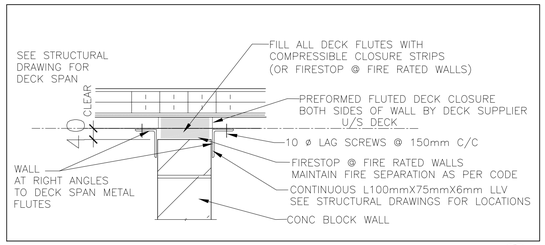
DOOR ELEVATIONS AND FRAME





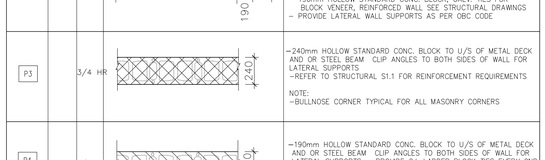
DOOR AND FRAME ELEVATIONS 3 / A-014

0 1:50 FULL SIZE 5



MASONRY LATERAL SUPPORT FOR INTERIOR WALLS AT ROOF 4 / A-014

0 1:10 FULL SIZE 5



MASONRY LATERAL SUPPORT FOR INTERIOR WALLS AT ROOF 5 / A-014

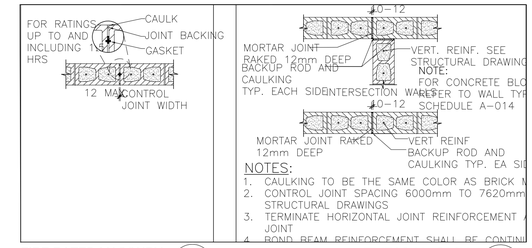
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PARTITION SCHEDULE

TYPE	STC	FRR	CONSTRUCTION	DESCRIPTION
P1				TYPICAL EXTERIOR CONCRETE FOUNDATION – WALL THICKNESS VARIES SEE STRUCTURAL DRAWINGS
P1A				FREE STANDING REINFORCED POURED CONCRETE ARCHITECTURAL WALL WITH HORIZONTAL REVEALS BOTH SIDES OF WALL.
P2			90 100 190 380	TYPICAL EXTERIOR CAVITY WALL ASSEMBLY: – 90mm ARCH. BLOCK VENEER, SEE ELEVATIONS FOR TYPE ANCHORED TO CONCRETE BLOCK BACKUP WALL – 25mm AIR SPACE – 75mm RIGID INSULATION – SELF ADHERING AIR VAPOUR BARRIER MEMBRANE ON – 190mm HOLLOW STANDARD CONC. BLOCK, GALV. TIES FOR BLOCK VENEER, REINFORCED WALL SEE STRUCTURAL DRAWINGS – PROVIDE LATERAL WALL SUPPORTS AS PER OBC CODE
P3		3/4 HR	240	–240mm HOLLOW STANDARD CONC. BLOCK TO U/S OF METAL DECK AND OR STEEL BEAM CLIP ANGLES TO BOTH SIDES OF WALL FOR LATERAL SUPPORTS –REFER TO STRUCTURAL S1.1 FOR REINFORCEMENT REQUIREMENTS NOTE: –BULLNOSE CORNER TYPICAL FOR ALL MASONRY CORNERS
P4		3/4 HR	190	–190mm HOLLOW STANDARD CONC. BLOCK TO U/S OF METAL DECK AND OR STEEL BEAM CLIP ANGLES TO BOTH SIDES OF WALL FOR LATERAL SUPPORTS, PROVIDE C.J. LADDER BLOCK TIES EVERY 2ND COURSE. WALL REINFORCED SEE STRUCTURAL DRAWINGS EXPOSED CORNERS TO BE BULLNOSED.
P5			13 HORIZONTAL SUPPORT CHANNELS SEE STRUCTURAL	–PREFINISHED ALUMINUM COMPOSITE PANEL –FULLY ADHERED WATER PROOFING MEMBRANE –19mm EXTERIOR TYPE PLYWOOD –GALVANIZED HORIZONTAL AND VERTICAL CHANNELS NOTE: REFER TO ELEVATIONS & SECTIONS FOR COLOUR & REVEAL LOCATIONS

PARTITION SCHEDULE 6 / A-014

0 1:25 FULL SIZE 5

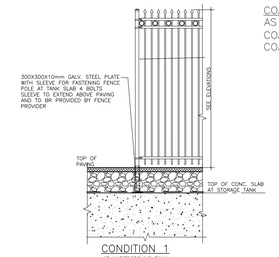


FIRE RATED MASONRY CONTROL JOINT DETAIL 7 / A-014

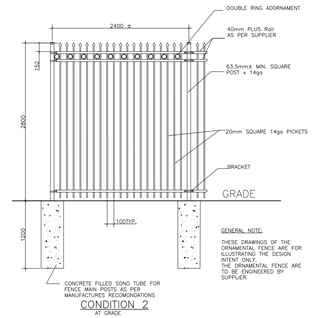
TYPICAL CMU CONTROL JOINT (CJ) 8 / A-014

0 1:10 FULL SIZE 5

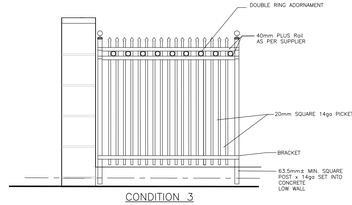
COATING SYSTEM BASE MATERIALS
AS PER FENCE SUPPLIER UNIFORM ZINC COATING (HOT DIP) ZINC PHOSPHATE COATING EPOXY PRIMER ACRYLIC TOPCOAT



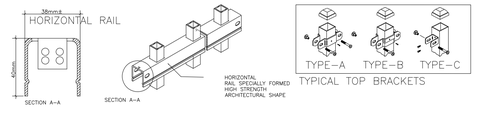
CONDITION 1
AT UNDERGROUND TANK



CONDITION 2
AT GRADE



CONDITION 3



TYPICAL TOP BRACKETS

FENCE DETAILS 9 / A-014

0 1:50 FULL SIZE 5

G:\47596-PIER 8\4 Architectural_Architectural-current- 04-05-2017_A2-A3-A3A to A14 ARCH (MN).DWG
PLOT DATE: Jan 03, 2019-2:42pm BY:(p0050326)

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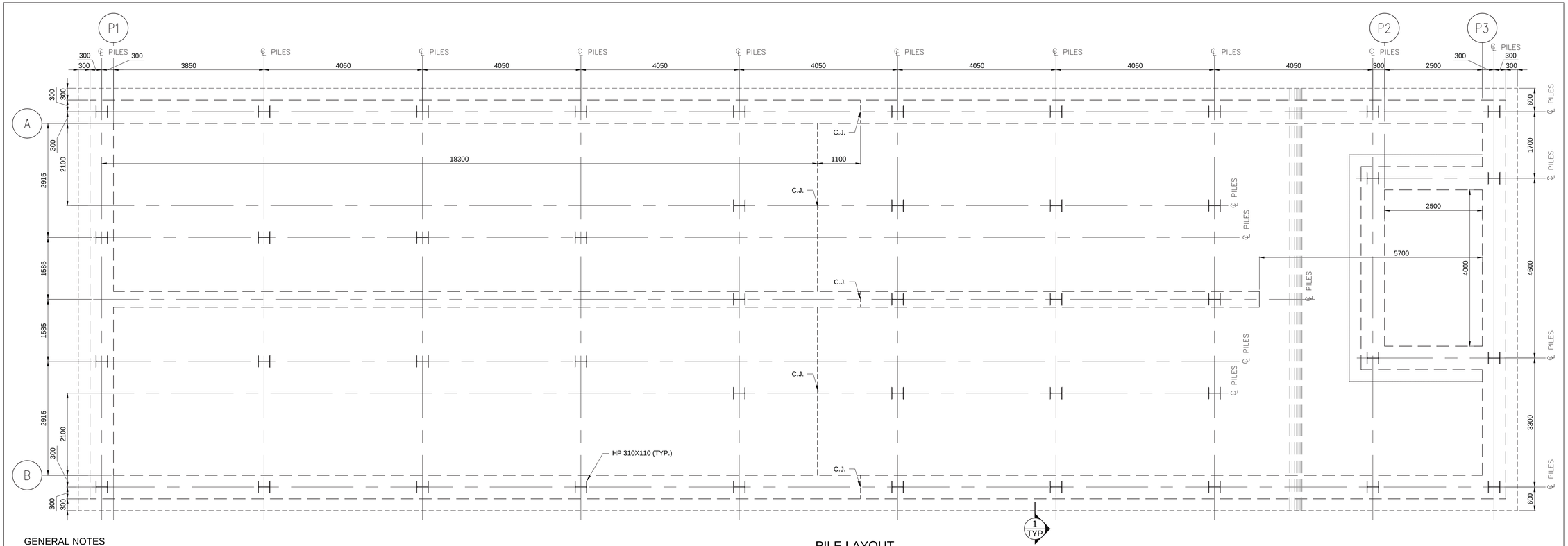
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ARCHITECTURAL
SCHEDULES AND TYPICAL DETAILS

DATE : APRIL, 2017
SCALE: 1:50 OR AS NOTED
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: A-014



GENERAL NOTES

1. STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONTRACT DRAWINGS AND DOCUMENTS.
2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
3. THE CONTRACTOR SHALL EXAMINE THE SITE TO VERIFY CONDITIONS BEFORE COMMENCING FABRICATION OF THE WORK.
4. ALL STANDARDS AND SPECIFICATIONS ARE TO BE THE LATEST EDITION.
5. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LATEST ISSUES OF CSA STANDARDS, 2006 ONTARIO BUILDING CODE AND THE CONTRACT SPECIFICATIONS.
6. ALL SHOP DRAWINGS TO BE PREPARED IN METRIC SI UNITS.
7. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION PROCEDURES INCLUDING PROVISION OF SHORING AND BRACING AND FOR COMPLIANCE WITH HEALTH AND SAFETY LEGISLATION.
8. LAYOUT AND DIMENSIONS OF STRUCTURAL DRAWINGS TO BE VERIFIED BY THE CONTRACTOR ON SITE.
9. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
10. REFER TO THE DRAWING FOR SPECIFIED LOADS.

CONCRETE

1. CONCRETE DESIGN AND CONSTRUCTION SHALL CONFORM TO CSA STANDARDS A23.1, A23.2 AND A23.3.
2. CONCRETE CLASS (CSA):

WALLS	CLASS A-3	35 MPa
FLOOR AND BASE SLAB	CLASS A-3	35 MPa
BEAMS	CLASS A-3	35 MPa
HAUNCH	CLASS A-3	35 MPa
PRECAST PANEL	CLASS A-3	35 MPa

3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO CAN/CSA G30.18 GRADE 400, EXCEPT THAT BARS TO BE WELDED SHALL BE GRADE 400W.
4. UNLESS NOTED OTHERWISE, ALL BAR SPLICES SHALL BE CLASS 'B' TENSION LAP SPLICES.
5. CLEAR COVER TO REINFORCING, UNLESS NOTED OTHERWISE, SHALL BE:

CAST AGAINST EARTH	100mm
EXPOSED TO WEATHER	70mm
WALLS, BEAMS & SLABS	50mm

6. FOR LOCATION OF FLOOR DRAINS, MECHANICAL PIPING AND UNDER-SLAB DUCTWORK SEE MECHANICAL DRAWINGS.
7. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION OF REINFORCING STEEL. SHOP DRAWINGS SHALL INDICATE ALL MATERIAL GRADES, DIMENSIONS AND DETAILS OF REINFORCING, INCLUDING ALL SPLICE LOCATIONS, CONCRETE COVER AND ANCHOR DETAILS.

CONSTRUCTION NOTES

1. NO MASS CONCRETE SHALL BE POURED UNTIL THE NATIVE SOIL AND ITS CONDITION HAS BEEN INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER.
2. OVEREXCAVATION OF SOIL SHALL BE REPLACED WITH MASS CONCRETE.
3. CONSTRUCTION JOINTS AT LOCATIONS OTHER THAN THOSE SHOWN SHALL BE APPROVED BY THE ENGINEER.
4. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND THE WALLS AFTER THE FLOOR SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH.
5. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND THE WALLS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THEN 500mm.
6. CONSTRUCTION JOINTS SHALL BE FORMED WITH 100 WIDE X 50 DEEP KEY WATERSTOPS.
7. ALL CONCRETE INSIDE EDGES AND OUTSIDE EDGES TO BE CHAMFERED 20X20mm, UNLESS NOTED OTHERWISE.

H-PILE NOTES

1. PILES TO BE HP 310x110 STEEL "H" PILES.
2. PILE SPACINGS ARE MEASURED AT THE UNDERSIDE OF PILE CAPS/SLABS.
3. PILE LENGTHS SHOWN ARE THEORETICAL LENGTHS BELOW CUT-OFF AND ARE BASED ON ESTIMATED TIP ELEVATIONS. FINAL LENGTHS AND TIP ELEVATIONS SHALL BE DETERMINED ON SITE FROM PILE DRIVING RECORDS.
4. WELDING SHALL CONFORM TO CSA STANDARD W59 AND SHALL BE DONE BY A WELDER QUALIFIED UNDER CSA STANDARD W47.
5. PILES TO HAVE THE FACTORED AXIAL RESISTANCE AND TO REACH BEDROCK.
6. ALL PILES SHALL BE FITTED WITH TITUS TYPE BEARING POINTS OR EQUIVALENT.

H-PILE DESIGN DATA

FACTORED AXIAL RESISTANCE AT ULS = 1760 kN/PILE
SLS = 1470 kN/PILE

H-PILE DATA

LOCATION	NO. REQUIRED	LENGTH (mm)	BATTER
STORAGE TANK	44	30,000	VERTICAL

PILE LAYOUT

1:50

WATERPROOFING

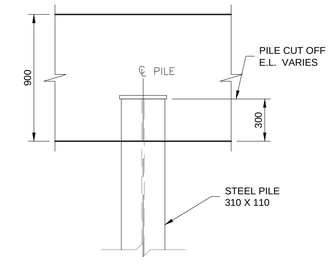
1. WATERPROOFING MEMBRANE UNDER BASEMENT SLAB AND ON BASEMENT SLAB EDGES TO BE PRECON COMPOSITE SHEET MEMBRANE BY W.R. MEADOWS, OR APPROVED EQUIVALENT. WRAP MEMBRANE UP ONTO SLAB EDGES AND SEAL CORNERS.
2. BASEMENT WALL WATERPROOFING MEMBRANE TO BE MEL-ROL BY W.R. MEADOWS, OR APPROVED EQUIVALENT. APPLY MEMBRANE IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
3. TOP SLAB WATERPROOFING MEMBRANE TO BE HYDRALASTIC 836 BY W.R. MEADOWS, OR APPROVED EQUIVALENT. APPLY MEMBRANE IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
4. STORE AND APPLY MEMBRANES IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS, INCLUDING SURFACE PREPARATION, LAPS AT EDGES AND CORNERS, EDGE TREATMENTS, CORNER TREATMENTS, AND DETAILING AT PENETRATIONS.
5. WRAP WALL MEMBRANE DOWN OVER SLAB EDGE MEMBRANE BY AT LEAST 200 mm AND SEAL AS RECOMMENDED BY MANUFACTURER.

JOINT SEALANT

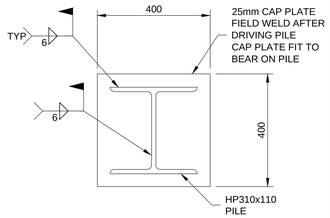
1. JOINT SEALANT FOR PRE CAST PANEL TO BE DECK-O-SEAL GUN GRADE WITH KOOL-ROD BY W.R. MEADOWS, OR APPROVED EQUIVALENT. APPLY MEMBRANE IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.

LEGEND

E.S	DENOTES EACH SIDE
E.F	DENOTES EACH FACE
VEF	DENOTES VERTICAL EACH FACE
T&B	DENOTES TOP AND BOTTOM
C.J.	DENOTES CONSTRUCTION JOINT
L.L	DENOTES LOWER LEVEL
U.L	DENOTES UPPER LEVEL
I.F	DENOTES INNER FACE
O.F	DENOTES OUTER FACE



SECTION 1 TYP
1:20



TYPICAL PILE CAP PLATE DETAIL

1:10

BEAM SCHEDULE

BEAM	'b'	'h'	LONGITUDINAL BARS LAYER	SIZE	NUMBER	ADDITIONAL REINFORCEMENT	STIRRUPS SIZE	STIRRUPS SPACING	REMARKS
B1	400	VARIES	BOTTOM	20M	4	2-20M TOP	15M	250	
			TOP	20M	4				
B2	400	900	BOTTOM	25M	4	4-25M TOP	15M	100	
			TOP	25M	4				
B3	400	900	BOTTOM	25M	4	4-25M TOP	15M	100	
			TOP	25M	4				
B4	400	1600	BOTTOM	20M	4	2-20M TOP	15M	250	
			TOP	20M	4				
B5	400	1000	BOTTOM	20M	4	4-25M TOP	15M	100	
			TOP	25M	4				
B6	1000	500	I.F.	20M	4	4-20M I.F.	15M	250	
			O.F.	20M	4	4-20M O.F.			
B7	1000	900	I.F.	25M	4	4-25M I.F.	15M	100	
			O.F.	25M	4	4-25M O.F.			

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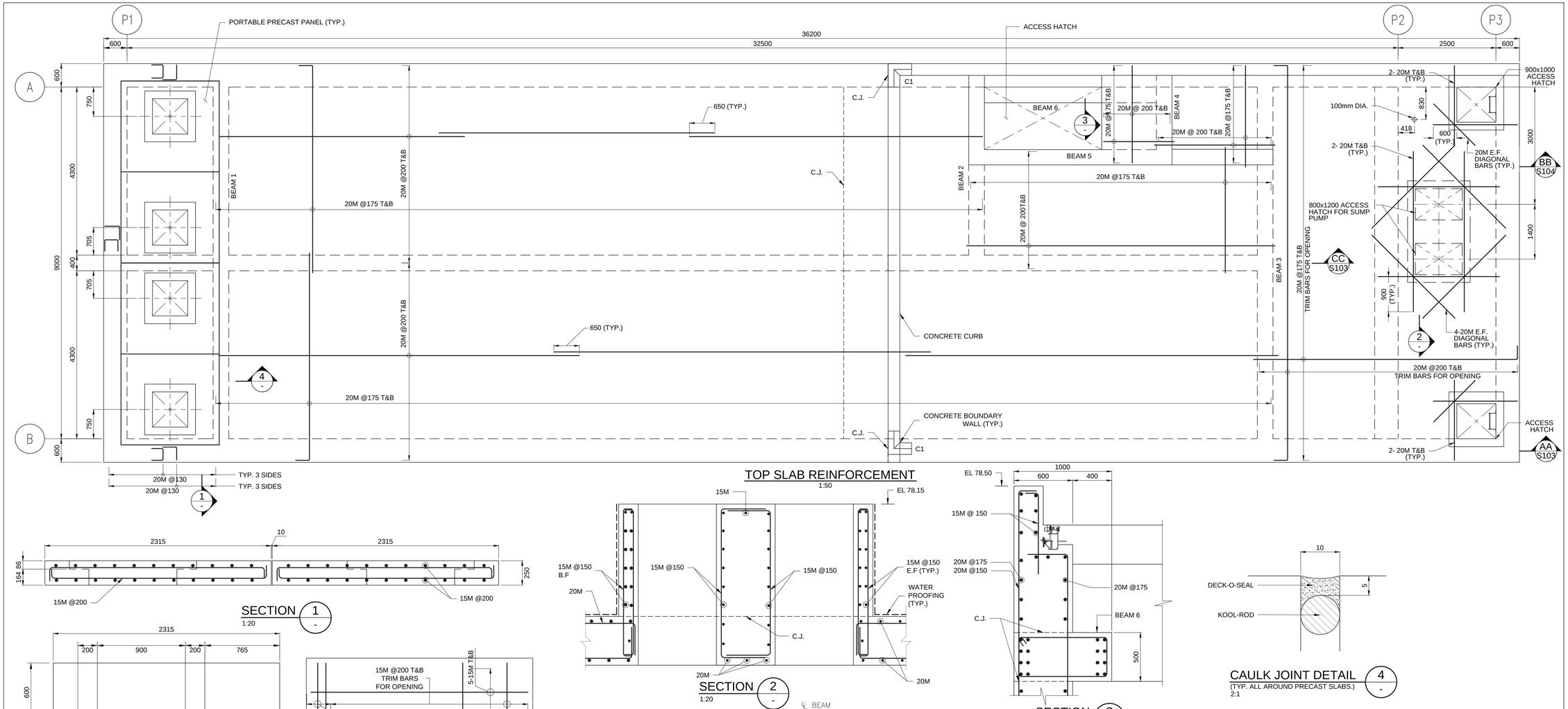
Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

SANITARY STORAGE TANK
STRUCTURAL PILE LAYOUT

DATE : AUGUST, 2017
SCALE:
FILE No.:
CONTRACT No.: C11-01-16
DRAWING No.: S100

\\XCAN52FS01\Water\47596A\5 Structural\Parsons structural below ground\Pier 8-Sanitary Storage Tank.dwg
PLOT DATE: Aug 15, 2018 - 11:23am BY:(jd092229C)

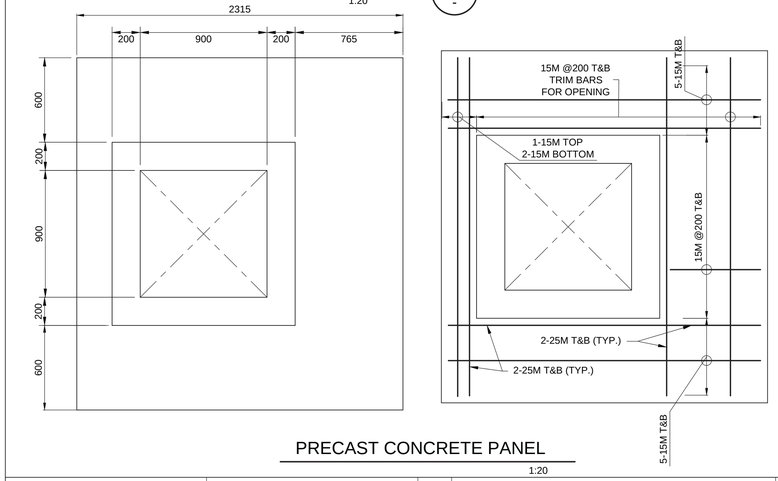


TOP SLAB REINFORCEMENT

1:50

SECTION 2
1:20

SECTION 3
1:20



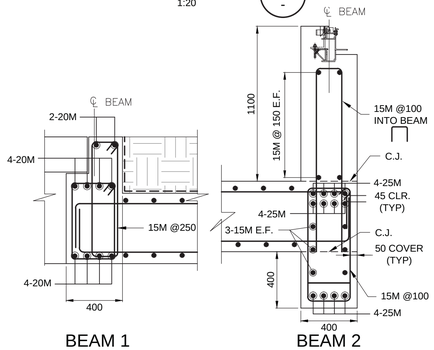
SECTION 1
1:20

PRECAST CONCRETE PANEL

1:20

CAULK JOINT DETAIL (TYP. ALL AROUND PRECAST SLABS.)

2:1

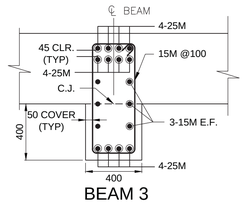


BEAM 1

1:20

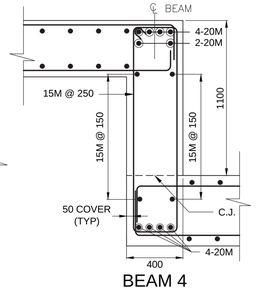
BEAM 2

1:20



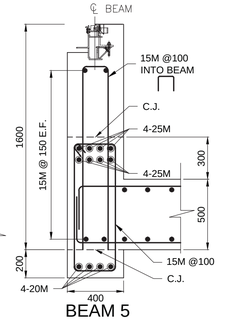
BEAM 3

1:20



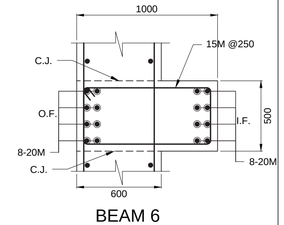
BEAM 4

1:20



BEAM 5

1:20



BEAM 6

1:20

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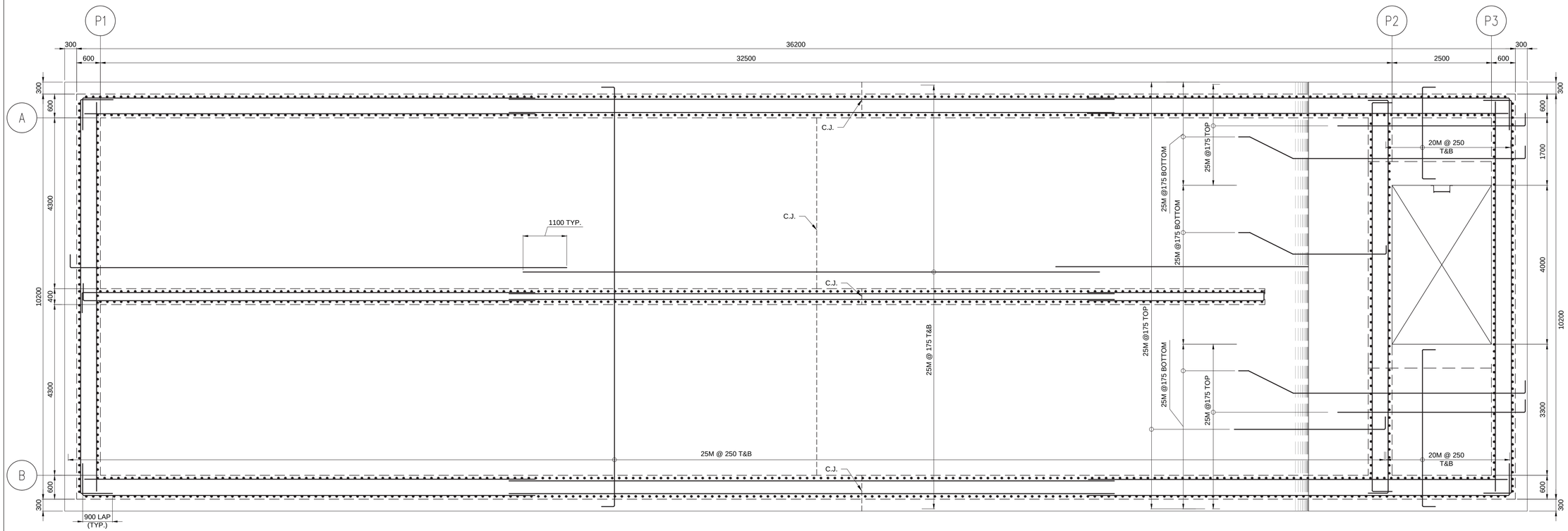
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

SANITARY STORAGE TANK
STRUCTURAL TOP SLAB REINFORCEMENT

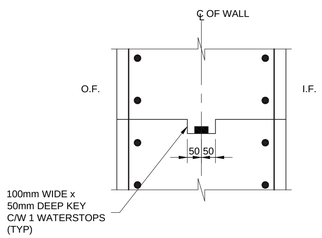
DATE : JUNE, 2018
SCALE:
FILE No.:
CONTRACT No.: C11-01-16
DRAWING No.: S101

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PLOT DATE: Aug 15, 2018 - 1:24pm BY:(p0092290)



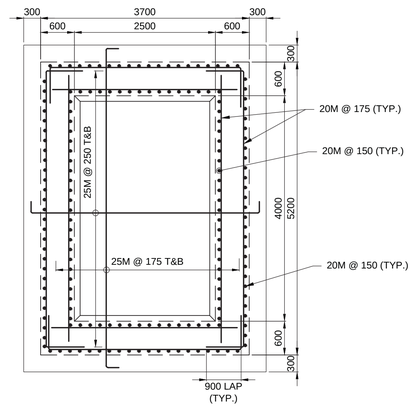
BOTTOM SLAB REINFORCEMENT

1:50



WALL CONSTRUCTION JOINT (TYP)

1:10



PLAN AT ELEVATION 69.05

1:50

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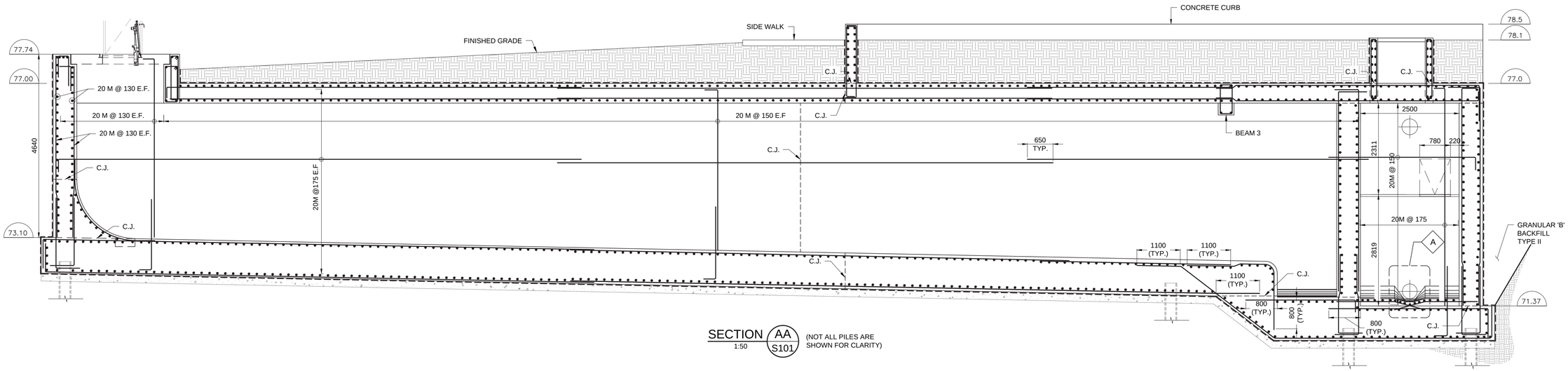
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

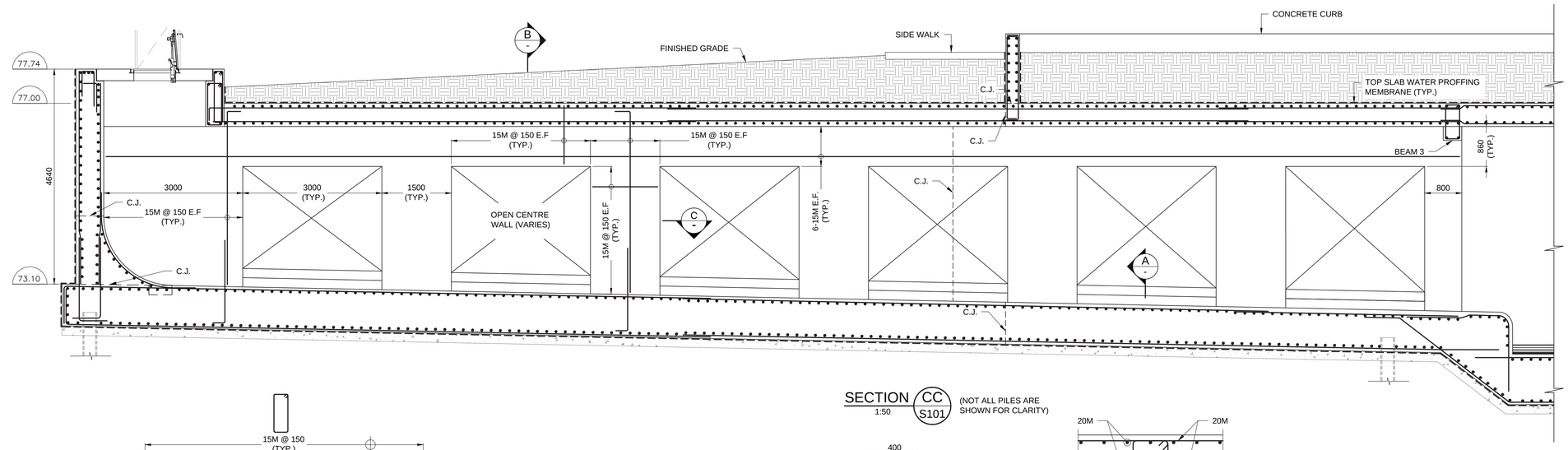
SANITARY STORAGE TANK
STRUCTURAL BOTTOM SLAB REINFORCMENT

DATE : JUNE, 2018
SCALE:
FILE No.:
CONTRACT No.: C11-01-16
DRAWING No.: S102

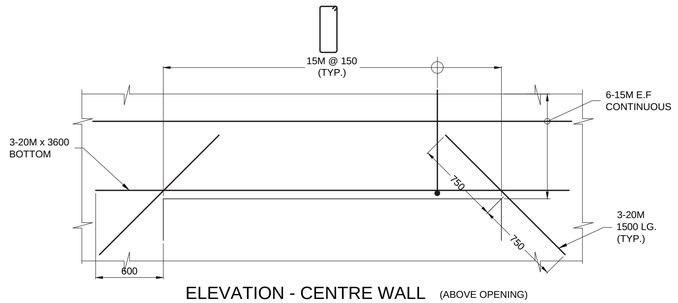
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PLOT DATE: Aug 15, 2018 - 11:24am BY:jg0092290



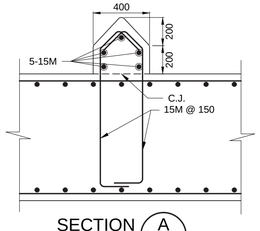
SECTION AA (S101) 1:50 (NOT ALL PILES ARE SHOWN FOR CLARITY)



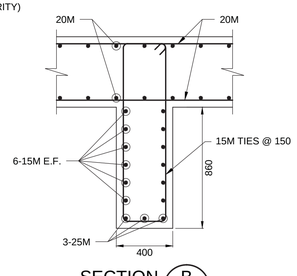
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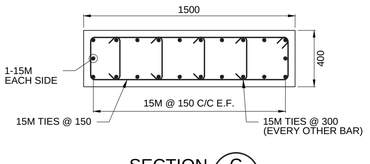
ELEVATION - CENTRE WALL (ABOVE OPENING) 1:25



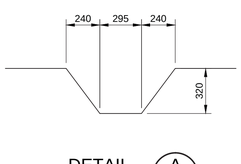
SECTION A (-) 1:20



SECTION B (-) 1:20



SECTION C (-) 1:20



DETAIL A (-) 1:20

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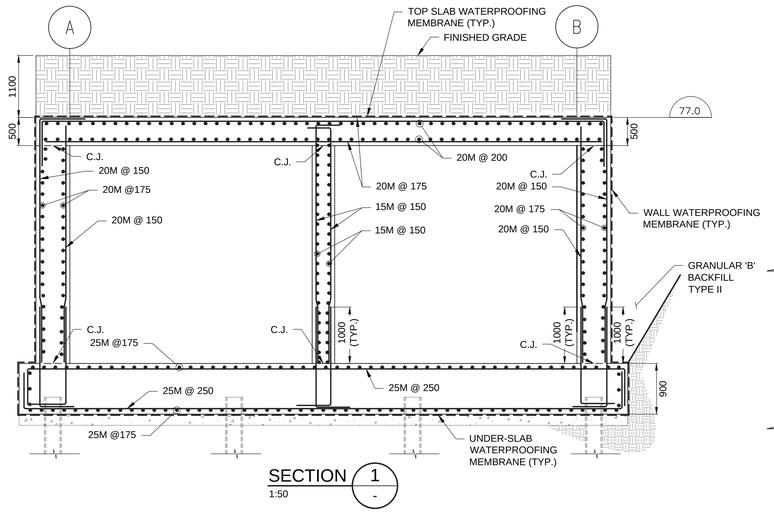
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

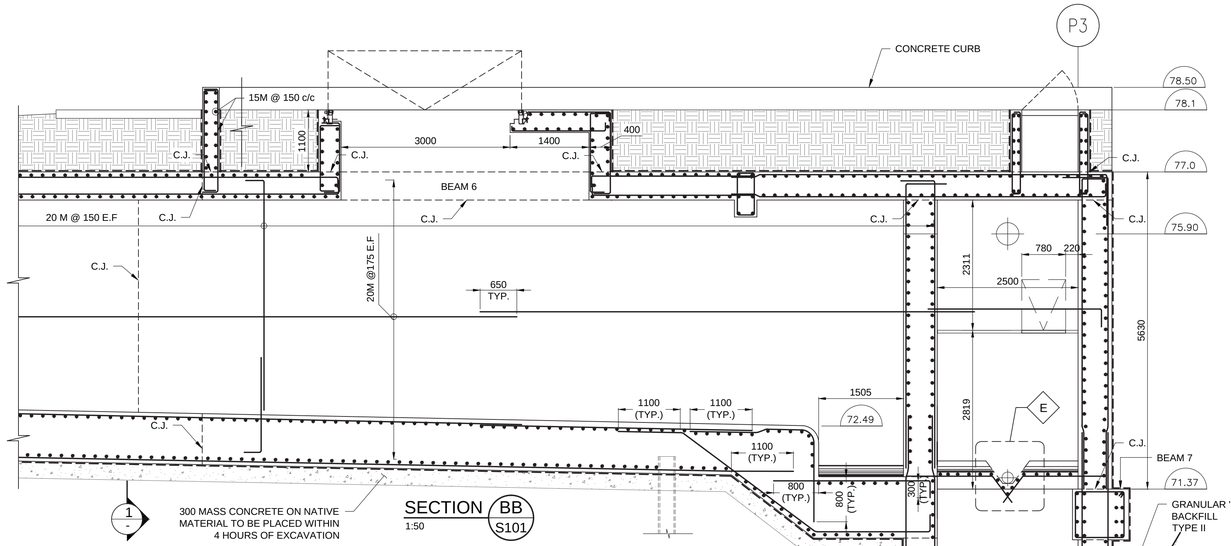
SANITARY STORAGE TANK
STRUCTURAL SECTIONS–I

DATE : JUNE, 2018
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CONTRACT No.: C11–01–16
DRAWING No.: S103

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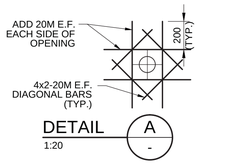


SECTION 1
1:50

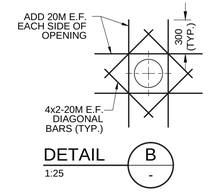


1
300 MASS CONCRETE ON NATIVE MATERIAL TO BE PLACED WITHIN 4 HOURS OF EXCAVATION

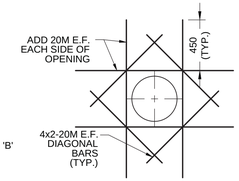
SECTION BB
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S101



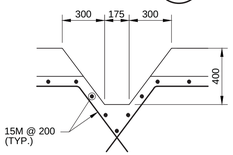
DETAIL A
1:20



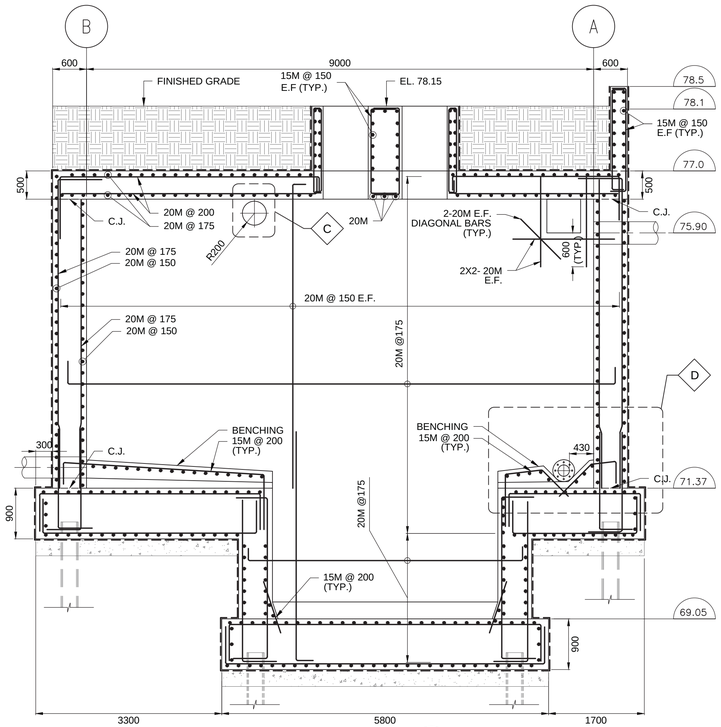
DETAIL B
1:25



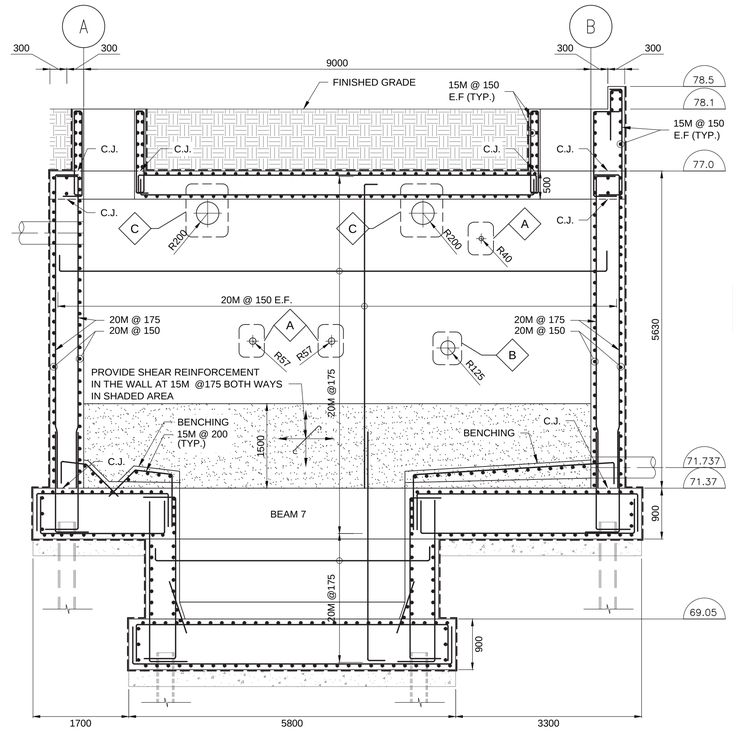
DETAIL C
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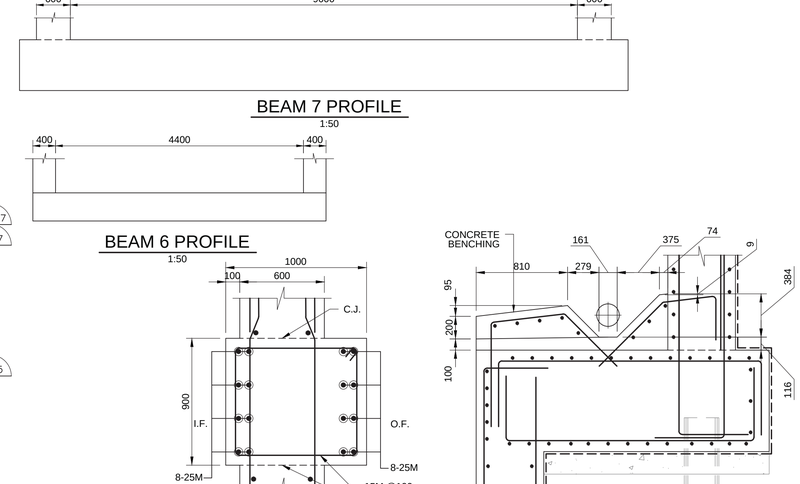
DETAIL E
1:20



SECTION 2
1:50



SECTION 3
1:50



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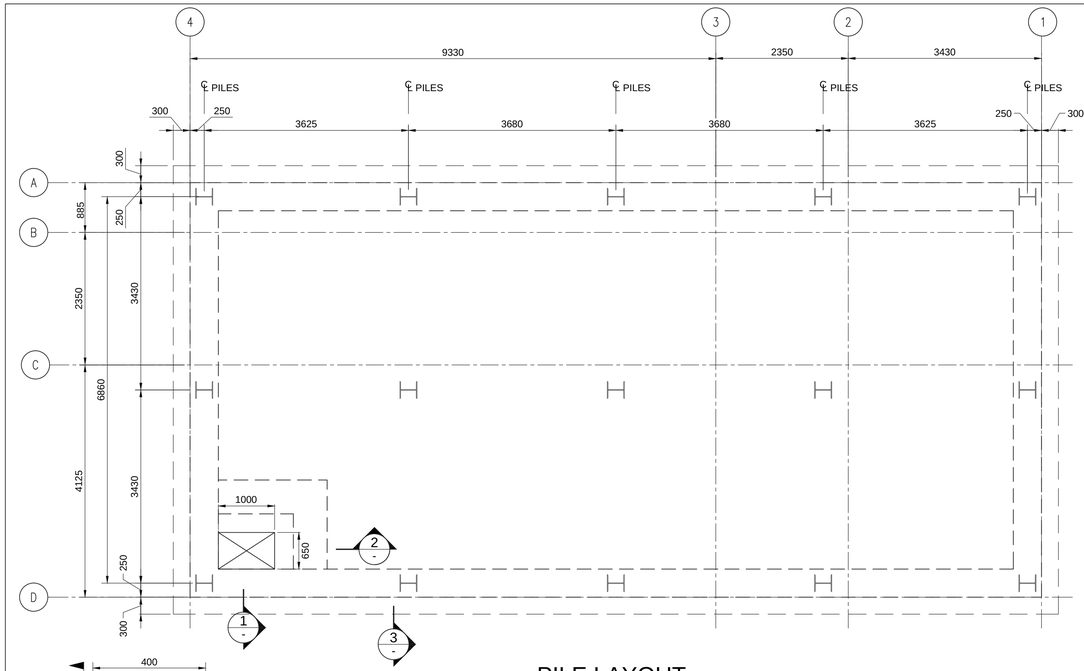
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

SANITARY STORAGE TANK
STRUCTURAL SECTIONS–II

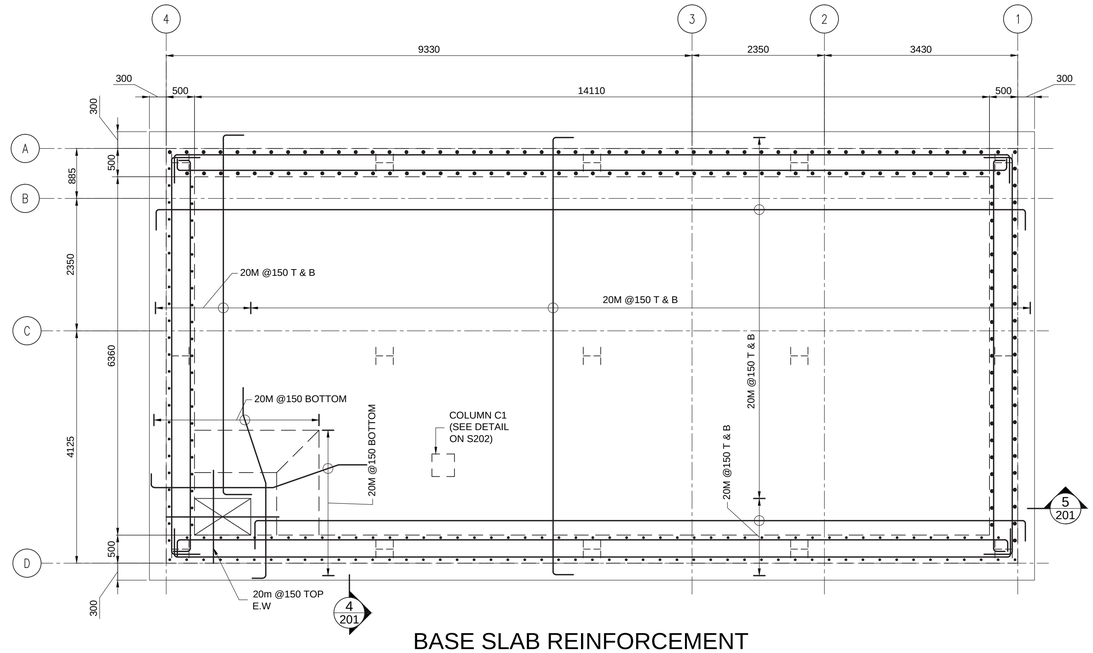
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PLOT DATE: Aug 16, 2018 - 10:05am BY:(pd092296)



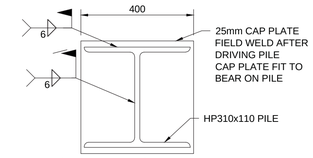
PILE LAYOUT

1 : 50



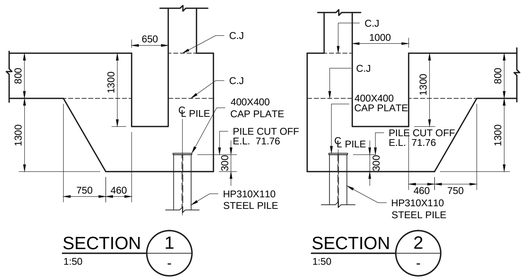
BASE SLAB REINFORCEMENT

1 : 50



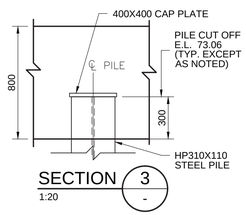
TYPICAL PILE CAP PLATE DETAIL

1:10



SECTION 1
1:50

SECTION 2
1:50



SECTION 3
1:20

GENERAL NOTES

1. STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONTRACT DRAWINGS AND DOCUMENTS.
2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
3. THE CONTRACTOR SHALL EXAMINE THE SITE TO VERIFY CONDITIONS BEFORE COMMENCING FABRICATION OF THE WORK.
4. ALL STANDARDS AND SPECIFICATIONS ARE TO BE THE LATEST EDITION.
5. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LATEST ISSUES OF CSA `STANDARDS, 2006 ONTARIO BUILDING CODE AND THE CONTRACT SPECIFICATIONS.
6. ALL SHOP DRAWINGS TO BE PREPARED IN METRIC SI UNITS.
7. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION PROCEDURES INCLUDING PROVISION OF SHORING AND BRACING AND FOR COMPLIANCE WITH HEALTH AND SAFETY LEGISLATION.
8. LAYOUT AND DIMENSIONS OF STRUCTURAL DRAWINGS TO BE VERIFIED BY THE CONTRACTOR ON SITE.
9. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
10. REFER TO THE DRAWING FOR SPECIFIED LOADS.

CONCRETE

1. CONCRETE DESIGN AND CONSTRUCTION SHALL CONFORM TO CSA STANDARDS A23.1, A23.2 AND A23.3.
2. CONCRETE CLASS (CSA):

WALL AND BASE SLAB	CLASS A-3	35 MPA
BEAMS	CLASS A-3	35 MPA
FLOOR SLAB	CLASS A-3	35 MPA
COLUMN	CLASS A-3	35 MPA

3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO CAN/CSA G30.18 GRADE 400, EXCEPT THAT BARS TO BE WELDED SHALL BE GRADE 400W.
4. UNLESS NOTED OTHERWISE, ALL BAR SPLICES SHALL BE CLASS 'B' TENSION LAP SPLICES.
5. CLEAR COVER TO REINFORCING, UNLESS NOTED OTHERWISE, SHALL BE:

CAST AGAINST EARTH	100mm
EXPOSED TO WEATHER	70mm
WALLS, BEAMS & SLABS	50mm

6. FOR LOCATION OF FLOOR DRAINS, MECHANICAL PIPING AND UNDER-SLAB DUCTWORK SEE MECHANICAL DRAWINGS.
7. APPLY NON-METALLIC FLOOR SEAL AND HARDENER TO FLOOR SLAB OF PUMPING STATION: CONCHEM TRIPLE SEAL OR EQUIVALENT. APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
8. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION OF REINFORCING STEEL. SHOP DRAWINGS SHALL INDICATE ALL MATERIAL GRADES, DIMENSIONS AND DETAILS OF REINFORCING, INCLUDING ALL SPLICE LOCATIONS, CONCRETE COVER AND ANCHOR DETAILS.

CONSTRUCTION NOTES

1. NO MASS CONCRETE SHALL BE POURED UNTIL THE NATIVE SOIL AND ITS CONDITION HAS BEEN INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER.
2. OVEREXCAVATION OF SOIL SHALL BE REPLACED WITH MASS CONCRETE.
3. CONSTRUCTION JOINTS AT LOCATIONS OTHER THAN THOSE SHOWN SHALL BE APPROVED BY THE ENGINEER.
4. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND THE WALLS AFTER THE FLOOR SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH.
5. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND THE WALLS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THEN 500mm.
6. CONSTRUCTION JOINTS SHALL BE FORMED WITH 100 WIDE X 50 DEEP KEY WATERSTOPS.
7. ALL CONCRETE INSIDE EDGES AND OUTSIDE EDGES TO BE CHAMFERED 20X20mm, UNLESS NOTED OTHERWISE.

WATERPROOFING

1. WATERPROOFING MEMBRANE UNDER BASEMENT SLAB AND ON BASEMENT SLAB EDGES TO BE PRECON COMPOSITE SHEET MEMBRANE BY W.R. MEADOWS, OR APPROVED EQUIVALENT. WRAP MEMBRANE UP ONTO SLAB EDGES AND SEAL CORNERS.
2. BASEMENT WALL WATERPROOFING MEMBRANE TO BE MEL-ROL BY W.R. MEADOWS, OR APPROVED EQUIVALENT. APPLY MEMBRANE IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
3. STORE AND APPLY MEMBRANES IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS, INCLUDING SURFACE PREPARATION, LAPS AT EDGES AND CORNERS, EDGE TREATMENTS, CORNER TREATMENTS, AND DETAILING AT PENETRATIONS
4. WRAP WALL MEMBRANE DOWN OVER SLAB EDGE MEMBRANE BY AT LEAST 200 mm AND SEAL AS RECOMMENDED BY MANUFACTURER

H-PILE NOTES

1. PILES TO BE HP 310x110 STEEL "H" PILES.
2. PILE SPACINGS ARE MEASURED AT THE UNDERSIDE OF PILE CAPS.
3. PILE LENGTHS SHOWN ARE THEORETICAL LENGTHS BELOW CUT-OFF AND ARE BASED ON ESTIMATED TIP ELEVATIONS. FINAL LENGTHS AND TIP ELEVATIONS SHALL BE DETERMINED ON SITE FROM PILE DRIVING RECORDS.
4. WELDING SHALL CONFORM TO CSA STANDARD W59 AND SHALL BE DONE BY A WELDER QUALIFIED UNDER CSA STANDARD W47.
5. PILES TO HAVE THE FACTORED AXIAL RESISTANCE AND TO REACH BEDROCK.
6. ALL PILES SHALL BE FITTED WITH TITUS TYPE BEARING POINTS OR EQUIVALENT.

H-PILE DESIGN DATA

FACTORED AXIAL RESISTANCE AT ULS = 1760 kN/PILE
SLS = 1470 kN/PILE

H-PILE DATA

LOCATION	NO. REQUIRED	LENGTH (mm)	BATTER
PUMPING STATION	15	30 000	VERTICAL

LEGEND

ES	DENOTES EACH SIDE
EF	DENOTES EACH FACE
VEF	DENOTES VERTICAL EACH FACE
T&B	DENOTES TOP AND BOTTOM
C.J.	DENOTES CONSTRUCTION JOINT
L.L	DENOTES LOWER LEVEL
U.L	DENOTES UPPER LEVEL
E.W	DENOTES EACH WAY

BEAM SCHEDULE

BEAM	LONGITUDINAL BARS 'b'	'h'	LAYER	SIZE	NUMBER	ADDITIONAL REINFORCEMENT	STIRRUPS SIZE	SPACING	REMARKS
B1	450	800	BOTTOM	20M	4	4-20M TOP	15M	200	
			TOP	20M	4				
B2	450	700	BOTTOM	20M	4	3-20M TOP	15M	200	
			TOP	20M	4				
B3	500	1000	BOTTOM	20M	2	3-15M BOTTOM L.L 4-15M BOTTOM L.L 4-25M TOP	15M	200	
			TOP	25M	5				

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No.	REVISIONS	DATE	INTLS

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CHECKED BY BIA
APPROVED BY BIA

LICENSED PROFESSIONAL ENGINEER
B. I. ARCHIBALD
AUG 14, 2018
PROVINCE OF ONTARIO

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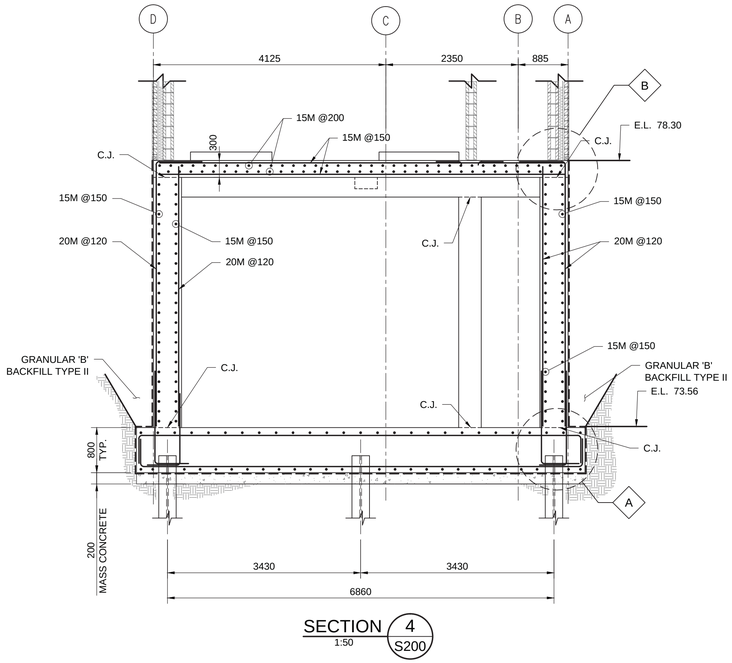
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

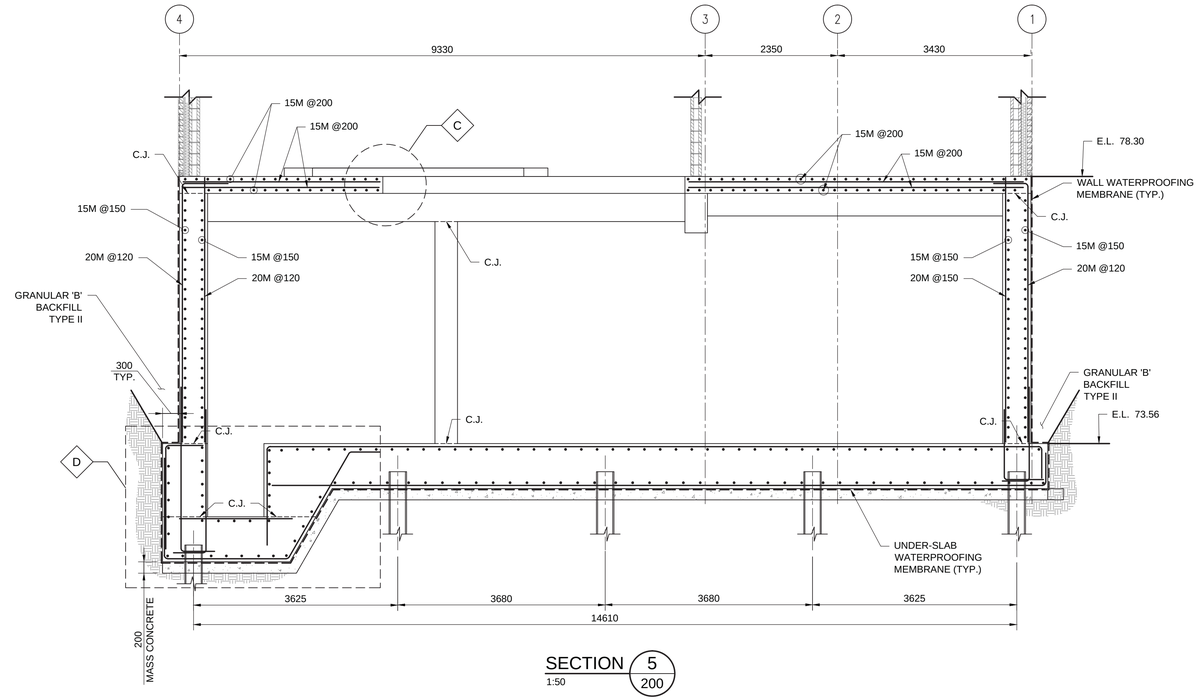
PUMPING STATION
STRUCTURAL BASEMENT SLAB

DATE : JUNE, 2018
SCALE:
FILE No.:
CONTRACT No.: C11-01-16
DRAWING No.: S200

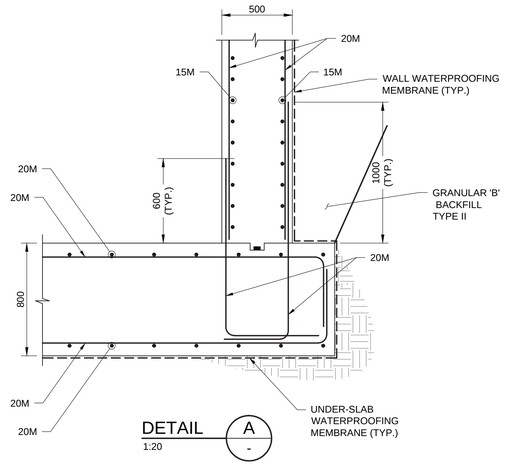
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PLOT DATE: Aug 15, 2018 - 11:44am BY:(jd039229c)



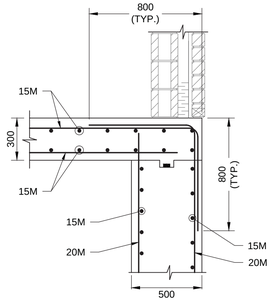
SECTION 4 — 1:50 — S200



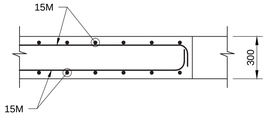
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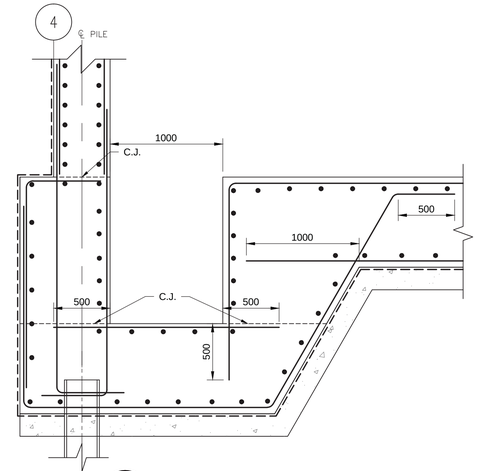
DETAIL A — 1:20 — -



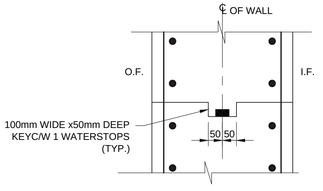
DETAIL B — 1:20 — -



DETAIL C — 1:20 — -



DETAIL D — 1:25 — -



WALL CONSTRUCTION JOINT (TYP) — 1:10

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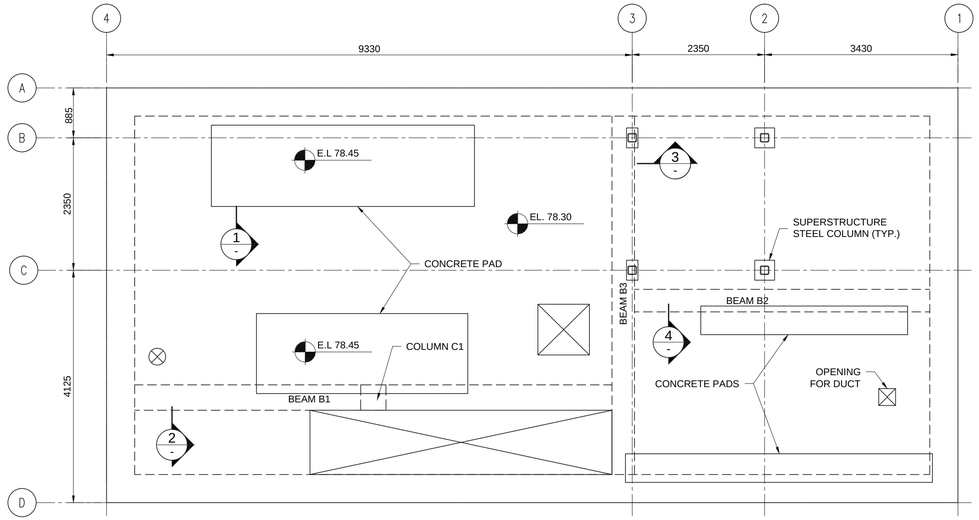
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

PUMPING STATION
STRUCTURAL SECTIONS

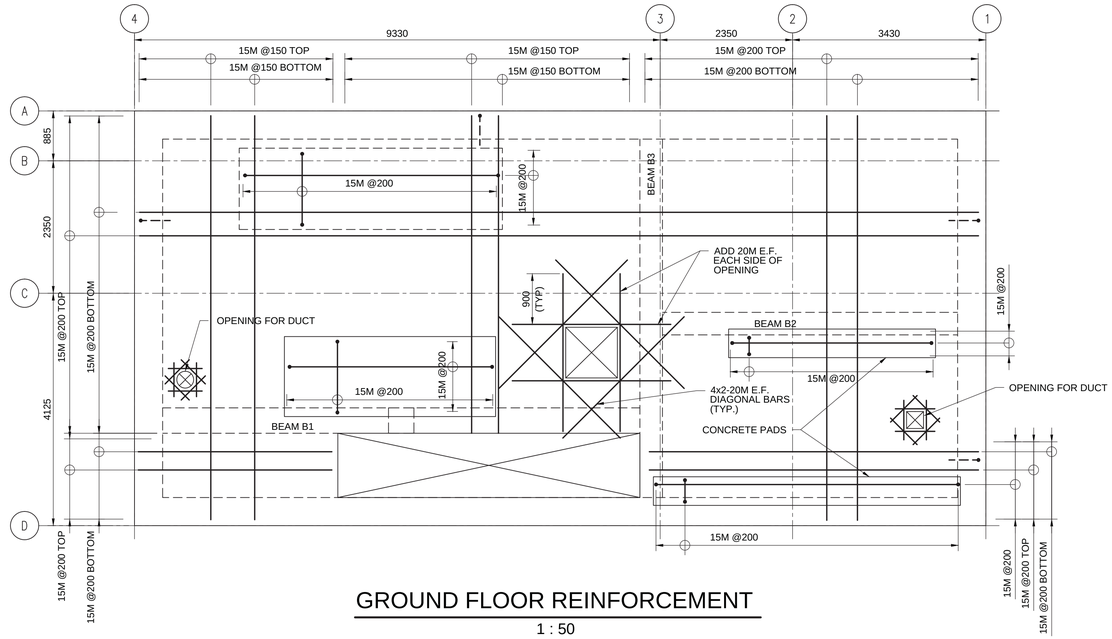
DATE : JUNE, 2018
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CONTRACT No.: C11-01-16
DRAWING No.: S201

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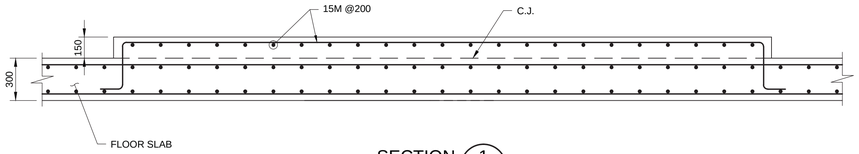
PLAN - GROUND FLOOR

1 : 50

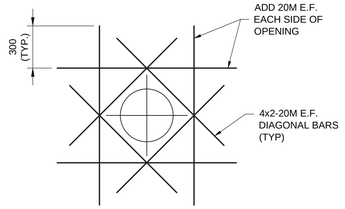


GROUND FLOOR REINFORCEMENT

1 : 50

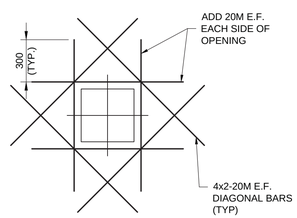


SECTION 1
1:20



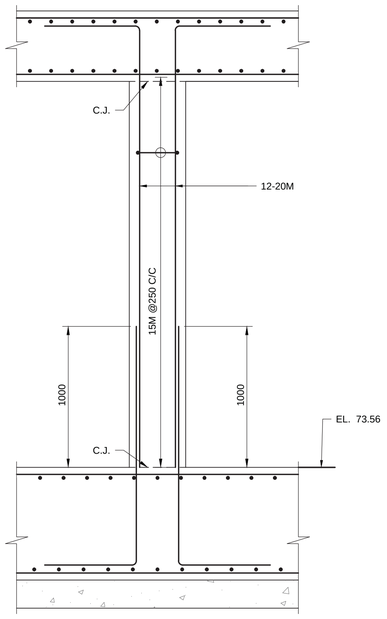
CIRCULAR DUCT OPENING DETAIL

1:20



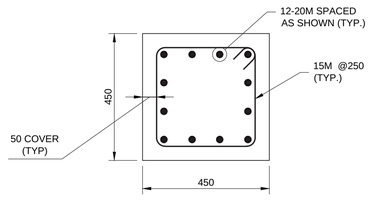
SQUARE DUCT OPENING DETAIL

1:20



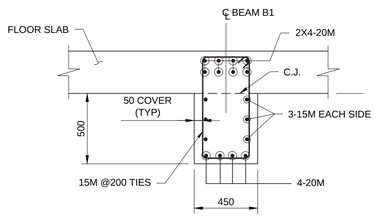
ELEVATION C1

1:20

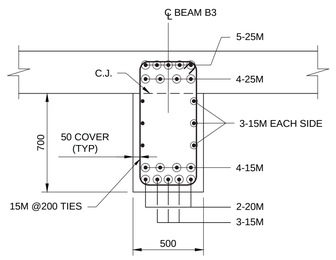


COLUMN C1

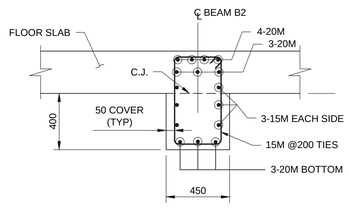
1:10



SECTION 2
1:20



SECTION 3
1:20



SECTION 4
1:20

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LICENSED PROFESSIONAL ENGINEER
B. I. ARCHIBALD
AUG 14, 2018
PROVINCE OF ONTARIO

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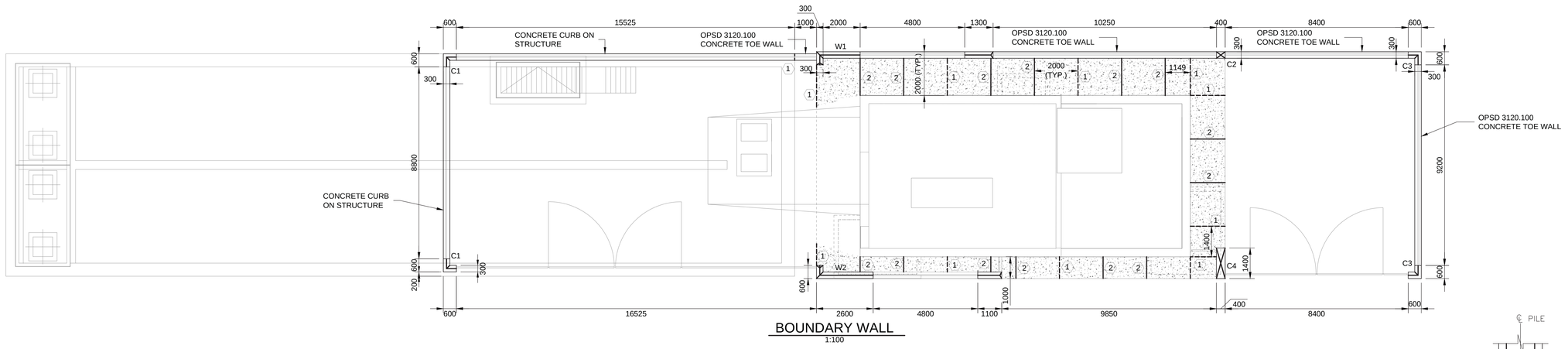
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

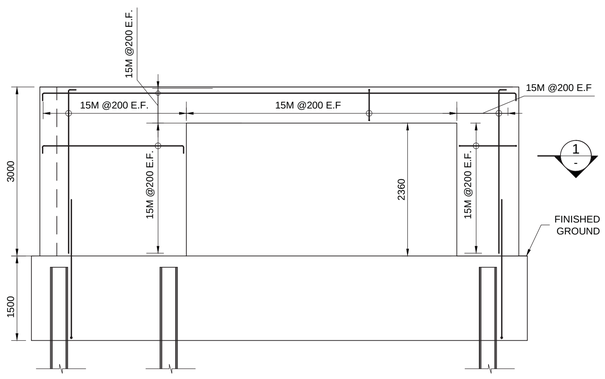
PUMPING STATION
STRUCTURAL GROUND SLAB

DATE : JUNE, 2018
SCALE:
FILE No.:
CONTRACT No.: C11-01-16
DRAWING No.: S202

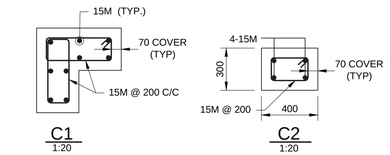
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PLOT DATE: Aug 14, 2018 - 3:20pm BY:(gp0922gc)



BOUNDARY WALL
1:100

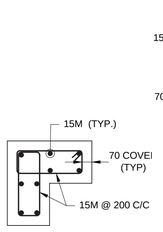


ELEVATION W1 & W2
1:50

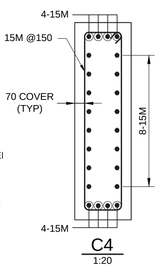


C1
1:20

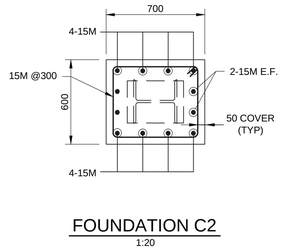
C2
1:20



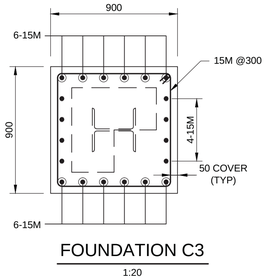
C3
1:20



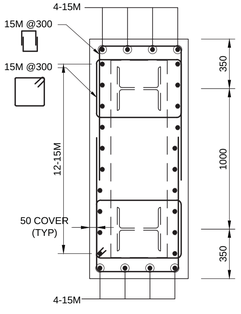
C4
1:20



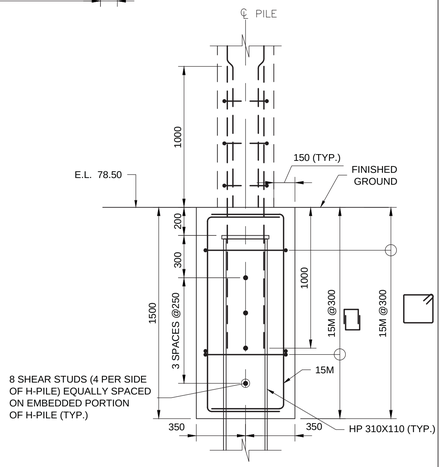
FOUNDATION C2
1:20



FOUNDATION C3
1:20



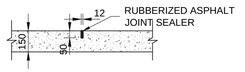
FOUNDATION C4
1:20



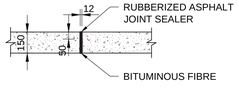
TYPICAL FOUNDATION DETAIL
1:20



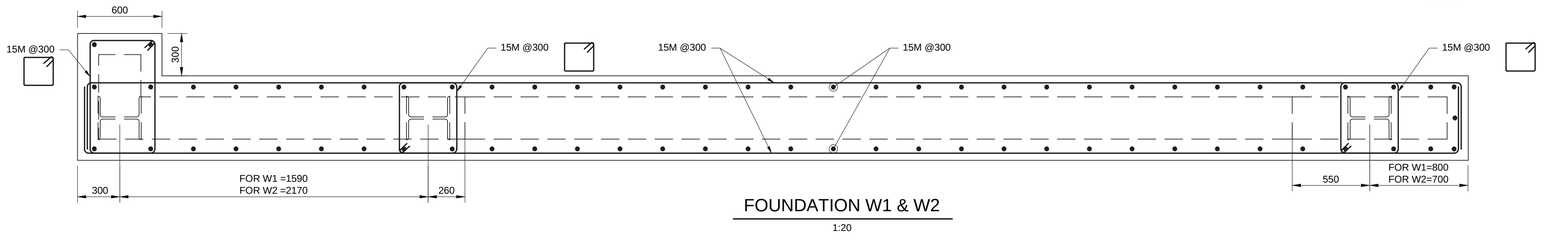
SECTION 1 / -
1:20



TYPICAL CONTROL JOINT
1:20



TYPICAL EXPANSION JOINT
1:20



FOUNDATION W1 & W2
1:20

1 — — EXPENSION JOINT

2 ——— CONTROL JOINT

NOTES

1. SEE ARCHITECTURAL DRAWING FOR FINISH DETAIL
2. EXTEND C1, C2, C3 AND C4 REINFORCEMENT 800mm INTO FOOTING /WALLS.

H-PILE DESIGN DATA

FACTORED AXIAL RESISTANCE AT — ULS = 1760 kN/PILE, SLS = 1470 kN/PILE

H-PILE DATA

LOCATION	NO. REQUIRED	LENGTH (mm)	BATTER
PIER 8	11	30 000	VERTICAL

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DESIGNED BY BIA/MFA
DRAWN BY NC
CHECKED BY BIA
APPROVED BY BIA

LICENSED PROFESSIONAL ENGINEER — B. I. ARCHIBALD — AUG 14, 2018 — PROVINCE OF ONTARIO

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Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

PUMPING STATION
STRUCTURAL BOUNDARY WALL

DATE : AUGUST, 2017
SCALE:
FILE No.:
CONTRACT No.: C11-01-16
DRAWING No.: S203

\\XCAN52FS01\Water\47596A\5 Structural\Parsons structural below ground\Pier 8-Pumping Station.dwg
PLOT DATE: Aug 14, 2018-3:16pm BY:(ja0092296)

GENERAL NOTES

A. EXAMINATION OF SITE AND DRAWINGS

1. STUDY THE SOIL REPORT, BORE HOLES AND WATER CONDITION BEFORE SUBMITTING THE TENDER PRICE.
2. VISIT THE SITE AND EXAMINE IT FOR ALL CHARACTERISTIC FEATURES AFFECTING NEW CONSTRUCTION. COMPARE THE ACTUAL ORIGINAL ELEVATIONS WITH THOSE SHOWN ON PLAN. CHECK ALL DIMENSIONS, LEVELS AND DETAILS SHOWN ON STRUCTURAL DRAWINGS AGAINST MECHANICAL, ELECTRICAL, LANDSCAPE AND OTHER RELEVANT DRAWINGS. REPORT ANY DISCREPANCIES TO CONSULTANT BEFORE SUBMITTING PRICE. REPORT ANY DISCREPANCY TO THE CONSULTANT BEFORE COMMENCEMENT OF WORK.
3. EXISTING STRUCTURE IS SHOWN DOTTED AND SHALL REMAIN, UNLESS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS. ANY STRUCTURE NOT SHOWN DOTTED SHALL BE ASSUMED TO BE NEW.
4. OBTAIN ALL DETAILS AND DIMENSIONS OF EXISTING WORK IN FIELD AND INCORPORATE SAME INTO NEW CONSTRUCTION. IF DETAILS VARY FROM WHAT IS ASSUMED IN DRAWINGS CONTACT CONSULTANT IMMEDIATELY.
5. WHERE TWO OR MORE INTERPRETATIONS CAN BE MADE FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS RELATING TO STRUCTURAL ITEMS, THE MOST EXPENSIVE INTERPRETATION SHALL BE ASSUMED FOR PRICING.
6. NO ALLOWANCE WILL BE MADE FOR DIFFICULTIES ENCOUNTERED OR EXPENSES INCURRED RESULTING FROM CONDITIONS CONSIDERED KNOWN AT THE TIME THE TENDERS ARE OPEN.
7. COMPLY WITH THE PROVINCIAL BUILDING CODE, NATIONAL BUILDING CODE, CANADIAN CONSTRUCTION CODE, LOCAL BY–LAWS AND ALL REGULATIONS SET BY AUTHORITIES HAVING JURISDICTION. THE MORE STRINGENT REQUIREMENTS SHALL APPLY IN CASE OF DISCREPANCIES OR CONFLICTS.
8. UNDER NO CIRCUMSTANCES SHALL STRUCTURAL DRAWINGS BE USED TO DETERMINE THE EXTENTS OF DEMOLITION. DEMOLITION MUST BE COORDINATED BY THE GENERAL CONTRACTOR BY USING ARCHITECT DRAWINGS.
9. CONSULTANT SHALL NOT TAKE RESPONSIBILITY FOR AREAS TO BE DEMOLISHED NOT SHOWN ON STRUCTURAL DRAWINGS. GENERAL CONTRACTOR MUST COORDINATE DEMOLITIONS WITH ARCHITECT/MECHANICAL & ELECTRICAL DRAWINGS. SHOULD DEMOLITION ON OTHER DRAWINGS INTERFERE WITH THE INTENT OF THE STRUCTURAL DRAWINGS, DO NOT PROCEED WITH WORK UNTIL ISSUES HAVE BEEN RESOLVED WITH ALL CONSULTANTS.

B. PLANNING OF CONSTRUCTION

1. ALL REQUIREMENTS FOR MECHANICAL EQUIPMENT AND ANY OTHER TRADES OR SERVICES AFFECTING THE STRUCTURE, SHALL BE ESTABLISHED IN CONSULTATION WITH CORRESPONDING MANUFACTURERS OR SUPPLIERS AND THE CONSULTANT.
2. DRAINAGE SHALL BE WORKED IN CONFORMITY TO RELEVANT DETAILS. REPORT ANY DEVELOPING PROBLEMS TO ARCHITECT AND OBTAIN THE NECESSARY INSTRUCTIONS BEFORE PROCEEDING WITH CONSTRUCTION.
3. REPORT ANY DEVELOPING PROBLEMS TO THE CONSULTANT AND OBTAIN THE NECESSARY INSTRUCTIONS INSTRUCTIONS BEFORE PROCEEDING WITH CONSTRUCTION
4. LOCATION OF CONSTRUCTION JOINTS SHALL BE PLANNED IN ADVANCE AND IN CONSULTATION WITH THE CONSULTANT.
5. MAXIMUM SPACING BETWEEN VERTICAL CONSTRUCTION JOINTS SHALL BE 9000mm. CONSULTANTS APPROVAL SHALL BE OBTAINED FOR LOCATION AND DETAILS OF CONSTRUCTION JOINTS, IF REQUIRED OTHERWISE BY SITE CONDITION.
6. CHASES FOR SLABS AND POCKETS FOR BEAMS SHALL BE PROVIDED IN WALLS AND OTHER STRUCTURAL ELEMENTS.

C. CONSTRUCTION PROCEDURES AND SAFETY

1. CONSULTANT SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION SAFETY, MEANS, TECHNIQUES AND CONSTRUCTION PROCEDURES OR ANY TEMPORARY WORK AS MAY BE REQUIRED BY THE CONSTRUCTOR TO BUILD AND COMPLETE THE STRUCTURE IN CONFORMITY WITH CONTRACT DOCUMENTS. CONTRACTOR TO RETAIN AN INDEPENDENT STRUCTURAL ENGINEER TO CARRY OUT THE NECESSARY TECHNIQUES TO BE USED TO BUILD AND COMPLETE THE STRUCTURE ACCORDING TO THE CONTRACT DOCUMENTS AND SAFETY GUIDELINES FROM LOCAL CODES/AUTHORITIES. CONTRACTOR SHALL SUPPLY DRAWINGS STAMPED BY A PROFESSIONAL ENGINEER TO CONSULTANT.
2. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISIONS FOR CONSTRUCTION STRESSES AND FOR SUFFICIENT TEMPORARY BRACING TO KEEP THE STRUCTURE PLUMB AND IN TRUE ALIGNMENT AT ALL PHASES OF THE WORK, UNTIL COMPLETION (INCLUDING MASONRY WALLS, FLOOR AND ROOF DECKS, ETC). ANY BRACING MEMBERS SHOWN ON PLANS ARE THOSE REQUIRED FOR THE FINISHED STRUCTURE, AND MAY NOT BE SUFFICIENT FOR ERECTION PURPOSES.
3. ALL CONSTRUCTION WORK FOR TEMPORARY SHORING AND BRACING OF EXISTING STRUCTURE SHALL BE DONE ONLY AFTER PERMISSION HAS BEEN GRANTED BY THE CONSTRUCTION HEALTH AND SAFETY BRANCH OF THE GOVERNING MINISTRY OF LABOUR.
4. PROTECT EXISTING BUILDINGS, TREES, FENCING, UTILITIES POLES, CABLES, ACTIVE UNDERGROUND SERVICES AND PAVING ON THE SITE OR ANY ADJOINING PROPERTIES FROM DAMAGE. ANY DAMAGE RESULTING FROM THIS CONSTRUCTION WORK SHALL BE MADE GOOD TO THE APPROVAL OF THE CONSULTANT AT NO COST TO THE OWNER.
5. TRUCKS, CRANES, HOISTS, OR ANY HEAVY EQUIPMENT OR MATERIALS ARE NOT ALLOWED TO ENTER ANY STRUCTURAL FLOOR OR ROOF AREA UNLESS SPECIFICALLY DESIGNED AND DESIGNATED FOR THESE PURPOSES. INSTALL TEMPORARY BARRIERS TO PREVENT ACCIDENTAL OVERLOADING DURING CONSTRUCTION. DESIGN, INSTALL AND MAINTAIN ADEQUATE SHORING SYSTEM AS REQUIRED TO CARRY ANY SUCH TEMPORARY LOADING FROM CONSTRUCTION MATERIALS AND/OR EQUIPMENT.
6. NOTIFY CONSULTANT IMMEDIATELY UPON DISCOVERY OF ANY CONSTRUCTION ERROR, OMISSION, DEFECTIVE WORK, ETC., SO THAT THE MOST ECONOMICAL REMEDIAL MEASURES MAY BE DESIGNED AT THE EARLIEST POSSIBLE TIME.
7. DO NOT PROCEED WITH ANY REPAIR WORK UNTIL INSPECTION AND WRITTEN INSTRUCTIONS ARE OBTAINED FROM THE CONSULTANT.
8. GENERAL CONTRACTOR SHALL NOTIFY MECHANICAL/ELECTRICAL CONTRACTORS THAT SUPPORTS AND THE DESIGN OF SUCH SUPPORTS TO CARRY MECHANICAL/ELECTRICAL EQUIPMENT SHALL BE BY THE MECHANICAL/ELECTRICAL CONTRACTORS. OBTAIN STRUCTURAL ENGINEERS APPROVAL TO CONNECT TO EXISTING BUILDING STRUCTURE. DESIGN OF SUPPORTS SHALL BE STAMPED BY A QUALIFIED STRUCTURAL ENGINEER RETAINED BY THE MECHANICAL/ELECTRICAL CONTRACTOR.

ANALYSIS AND DESIGN OF STRUCTURE

1. CENTER ALL BASE PLATES, PIERS AND FOOTINGS UNDER COLUMNS/ WALLS, EXCEPT WHERE NOTED ON PLANS.
2. ALL COLUMNS AND WALLS SHALL BE CENTERED ON GRID LINES EXCEPT WHERE ONE OR TWO FACES ARE SHOWN ON THE GRID LINES OR A LOCATING DIMENSION IS SHOWN.
3. EXAMINE ALL DRAWINGS, SPECIFICATIONS AND REMAINING CONTRACT DOCUMENTS TO OBTAIN ALL APPLICABLE LOADINGS. REPORT ANY DISCREPANCIES TO THE CONSULTANT.
4. BASEMENT WALLS AND EARTH RETAINING WALL HAVE BEEN DESIGNED ON THE ASSUMPTION THAT ANY POSSIBLE WATER PRESSURE WILL BE PREVENTED BY THE INSTALLATION OF ADEQUATE PERIMETER DRAINAGE AND BACKFILL USED IS FREE DRAINING. REFER TO THE SOIL REPORT. ALWAYS POUR FRONT FACE OF RETANING WALL FOUNDATION TOE AGAINST UNDISTURBED SOIL.

REVIEW OF CONSTRUCTION

A. GENERAL

1. CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR FULL SUPERVISION OF CONSTRUCTION WORK. SITE VISITS AND REVIEW BY DESIGN ENGINEER OR HIS REPRESENTATIVE ARE INTENDED FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. HIS REVIEW SHALL NOT MEAN THAT CONSULTANT, HAS SEEN ALL CONSTRUCTION PROCEDURES. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONSTRUCTOR PERFORMING THE WORK. REVIEW BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR ERRORS AND OMISSIONS AND FOR MEETING ALL THE REQUIREMENTS OF THE CONSTRUCTION AND CONTRACT DOCUMENTS.
2. NOTIFY CONSULTANT 24 HOURS IN ADVANCE OF ANY REQUIRED SITE VISIT. NO ACCEPTANCE WILL BE GIVEN FOR ANY WORK THAT HAS NOT BEEN REVIEWED BY OUR REPRESENTATIVE.
3. NOTIFY CONSULTANT SUFFICIENTLY IN ADVANCE OF OPERATIONS TO ALLOW FOR ASSIGNMENT OF LABORATORY PERSONNEL & SCHEDULING OF TEST, SHOP INSPECTIONS, ETC.
4. PAY COSTS FOR UNCOVERING AND MAKING GOOD WORK THAT IS COVERED BEFORE REQUIRED INSPECTION OR TESTING IS COMPLETED & ACCEPTED BY THE CONSULTANT

SHOP DRAWINGS

1. SUBMIT STRUCTURAL STEEL, STEEL JOIST AND STEEL DECK SHOP DRAWINGS FOR STRUCTURAL ENGINEERS REVIEW BEFORE FABRICATION. ALL SHOP DRAWINGS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER UNDER JURISDICTION.

STRUCTURAL STEEL NOTES

1. ALL MATERIALS, COMPONENTS AND WORKMANSHIP SHALL CONFORM TO CURRENT C.S.A. STANDARD S16.1
2. ALL STRUCTURAL STEEL TO BE OF NEW MATERIAL CONFORMING TO C.S.A. STANDARD G40.20/G40.21 – GRADE 350W, GRADE 350W CLASS 'H' FOR HSS SECTIONS.
3. ALL STEEL WORK SHALL BE GIVEN ONE COAT OF APPROVED PRIMER.
4. QUALIFIED INSPECTORS WILL BE EMPLOYED BY THE OWNER FOR THIS WORK. INSPECTION ORGANIZATION UNDERTAKING TO INSPECT WELDING SHALL BE QUALIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF CSA W178.1– (LATEST EDITION) "QUALIFICATION CODE FOR WELDING INSPECTION ORGANIZATIONS" AND APPROVED BY THE CANADIAN WELDING BUREAU
5. DESIGN CONNECTIONS IN ACCORDANCE WITH THE HANDBOOK OF STEEL CONSTRUCTION BY THE CANADIAN INSTITUTE OF STEEL CONSTRUCTION FOR LOADS SHOWN OR REQUIRED.
6. HEADER CONNECTIONS SHALL BE USED AT ENDS OF ALL BEAMS.
7. ALL CONNECTIONS SHALL BE WELDED OR HIGH TENSILE BOLTED CONFORMING TO ASTM A325
8. WELDING SHALL CONFORM TO LATEST C.S.A. SPECIFICATION W59 AND BE UNDERTAKEN BY A FABRICATOR APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF C.S.A. W47.
9. MIN. SIZE OF WELDS TO BE 6mm (1/4") EXCEPT FOR SEAL WELDS.
10. ALL EXPOSED WELDS TO BE CONTINUOUS AND GROUND SMOOTH.
11. STRUCTURAL STEEL MEMBERS SHALL NOT BE SPLICED UNLESS APPROVED BY THE STRUCTURAL ENGINEER IN WRITING.
12. MASONRY WALLS SHALL BE ANCHORED TO ABUTTING COLUMNS AND BEAMS BY ADJUSTABLE GALVANIZED 38mm ($1\frac{1}{2}$") x 5mm ($\frac{3}{16}$") MASONRY ANCHORS AT 400 (16") VERTICAL AND 2000 (6'–7") HORIZONTALLY.
13. PROVIDE LATERAL SUPPORT TO TOP OF MASONRY PARTITION WALLS WHERE REQUIRED. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS, AND SEE DETAILS ON TYPICAL DETAILS DRAWING.
14. WEDGE OF THE FLUTES OF STEEL ROOF DECK UNDER WOOD SLEEPERS CARRYING ROOF TOP UNITS (THIS SHALL ALSO APPLY TO ROOF TOP UNITS WITH METAL CURBS)
15. PROVIDE L65x65x5 FRAME AROUND OPENINGS IN STEEL DECK GREATER THAN 450 (18") BUT LESS THAN 1200 (48") IN SIZE.
16. REINFORCE ALL OPENINGS IN DECK 450 (18") IN SIZE AND SMALLER WITH L55x55x5 ALL AROUND.
17. SUPPLY AND INSTALL ALL DECK CLOSURES WHERE REQUIRED.

MASONRY NOTES

1. ALL MASONRY WORK (MATERIALS AND WORKMANSHIP) IS TO BE IN ACCORDANCE WITH THE LOCAL BUILDING CODE AND CSA STANDARDS CAN3 A370 AND CAN3 A371 LATEST EDITION AND TO BE DESIGNED AS PER CAN3– S304–LATEST EDITION.
   COMPRESSIVE STRENGTH OF MATERIALS USED FOR LOAD BEARING AND PANEL WALLS SHALL BE IN EXCESS OF THE FOLLOWING VALUES:
   A. MASONRY UNITS
      – HOLLOW CONCRETE BLOCK 8.4 MPa
      – SOLID CONCRETE BLOCK (GROSS AREA) 20.0 MPa
      – BRICK 21.0 MPa
2. TYPE 'S' MORTAR SHALL BE USED FOR MASONRY BELOW GRADE, MIN. STRENGTH f'm=12.4MPa.
3. TYPE 'N' MORTAR SHALL BE USED FOR MASONRY ABOVE GRADE, MIN. STRENGTH f'm=5.2MPa.
4. GROUT TO BE A MINIMUM OF 20MPa.
5. PROVIDE LINTELS FOR ALL OPENINGS AND/OR RECESSES IN MASONRY WALLS SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS, INCLUDING THOSE FOR MECHANICAL OR ELECTRICAL SERVICES OR EQUIPMENT. (SEE LINTEL SCHEDULE ON SCHEDULE DRAWING).
6. FOR LOCATION AND DETAILS OF MASONRY CONTROL JOINTS SEE RELEVANT ARCH. DRAWING.
7. ALL HORIZONTAL REINFORCEMENT SHALL BE GALVANIZED AND CONTINUOUS BETWEEN LATERAL SUPPORTS.
8. ALL SIDE RODS AND CROSS RODS TO BE 3.6mm DIA. (TYPICAL UNLESS NOTED)
9. USE APPROVED ANCHORS TO ATTACH 90mm FACE BRICK.
10. PROVIDE DOWELS FROM FOUNDATION WALLS INTO WALLS ABOVE TO MATCH WALL REINFORCEMENT ABOVE. DOWELS TO PROJECT 600mm ABOVE AND BELOW TOP OF FOUNDATION WALL.
11. HORIZONTAL REINFORCEMENT SHALL BE PROVIDED AT THE TOP OF EVERY MASONRY FOUNDATION WALL AT THE TOP AND BOTTOM OF EVERY WALL OPENING, IN THE COURSE IMMEDIATELY BELOW THE ROOF AND FLOOR LEVELS, AND AT THE TOP OF EVERY PARAPET WALL.
12. **THE FOLLOWING REINFORCEMENT SHALL BE PROVIDED FOR**

MASONRY WALLS	HORIZONTAL REINFORCEMENT	VERTICAL
EXTERIOR WALLS		
CAVITY WALLS (190 BLOCK+90 BRICK)	**DW142 DUR–O–WALL TRUSS STANDARD OR APPROVED EQUIVALENT AT EVERY BLOCK COURSE**	**SEE ELEVATIONS**
INTERIOR WALLS		
190mm	**DW100 DUR–O–WALL TRUSS STANDARD OR APPROVED EQUIVALENT AT EVERY SECOND BLOCK COURSE**	**MIN. 15M@600c/c**

13. INTERSECTING OR ABUTTING WALLS SHALL BE BONDED ADEQUATELY TOGETHER
14. SECURE ALL MASONRY WALLS TO ABUTTING STRUCTURAL MEMBERS WITH 38mmx5mm GALVANIZED ADJUSTABLE METAL ANCHORS AT 400mm O.C. VERTICALLY AND 2000mm HORIZONTALLY.
15. PROVIDE 100% SOLID MASONRY BEARINGS AS FOLLOWS:

LOCATION	LENGTH– PARALLEL TO SPAN	WIDTH– PERPENDICULAR TO SPAN	VERTICAL DEPTH
UNDER STEEL BEAMS	200mm (8")	400mm (16")	400mm (16")
UNDER STEEL LINTELS	150mm (6")	AT LEAST EQUAL TO STEEL LINTEL WIDTH	400mm (16")

16. PROVIDE MINIMUM 25mm (1") GROUT UNDER ALL PLATES AND BASE PLATES.
17. PROVIDE ONE COURSE OF SOLID BLOCK AT TOP OF ALL EXTERIOR MASONRY FOUNDATION WALLS.

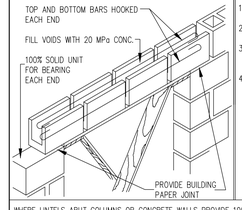
LINTEL SCHEDULE

PROVIDE LINTELS OVER ALL OPENINGS AND RECESSES IN MASONRY PARTITIONS AND WALLS AS SCHEDULED BELOW UNLESS NOTED OTHERWISE ON PLAN FOR LOCATION SEE ARCHITECTURAL DRAWINGS.

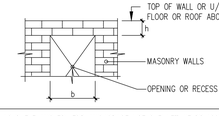
MAX. CLEAR SPAN	REINFORCED BLOCK OR TILE LINTEL – NON BEARING PARTITIONS – 100 THICK TYPE	REINF.	150 THICK TYPE	REINF.	STRUCTURAL STEEL LINTELS – BEARING WALLS – 200 THICK TYPE	MATERIAL	250 THICK TYPE	MATERIAL	300 THICK TYPE	MATERIAL	OVER 300
1200	100	1–10M T&B	200 150	1–10M T&B	⌐⌐	2 ℄ 90x90x6	⌐⌐	L 125x90x8 LLH + L 90x90x6	⌐⌐	3 ℄ 90X90X6	SAME AS FOR 300THICK EXCEPT ADD 1 ANGLE FOR EVERY ADDITIONAL 100 OF MASONRY.
1800	DO	1–15M T&B	DO	1–15M T&B	⌐⌐	2 ℄ 90x90x8	⌐⌐	L 125x90x8 LLH + L 90x90x8	⌐⌐	3 ℄ 90X90X8	
2100					⌐⌐	2 ℄ 125x90x8 LLV	⌐⌐	L 125x125x8 + L 125x90x8 LLV	⌐⌐	3 ℄ 125X90X8 LLV	

MIN. LENGTH OF BEARING TO BE 200 AT EACH SUPPORT.

MINIMUM LENGTH OF BEARING TO BE 150 AT EACH SUPPORT



1. DOUBLE ANGLES OVER 1800 CLEAR SPAN SHALL BE BOLTED BACK TO BACK L.L.B.B. WITH 16 DIAM. BOLTS @ 600 C/C OR EQUIVALENT STICH WELD SHALL BE PROVIDED
2. WHERE LINTEL CONSISTS OF COMPONENTS NOT BEARING ON COMMON ELEVATION PROVIDE STEEL PACKING TO ENSURE EVEN BEARING.
3. WHERE TYPES ⌐⌐ ⌐ ⌐⌐ ⌐⌐ ARE USED ATTACH PLATES AND ANGLES TO MAIN SECTIONS WITH 6 FILLET WELDS 50 LONG @ 1300 c/c. FOR DOUBLE CHANNELS PROVIDE 16 DIAM. BOLTS WITH SEPARATORS @ 900 MAX.
4. WHEN 'h' IS SMALLER THAN 'b' CONSULT ENGINEER FOR SIZE OF LINTELS TO BE USED.



WHERE LINTELS ABUT COLUMNS OR CONCRETE WALLS PROVIDE 100x100x10 SHELF ANGLES; FOR ANCHORAGE USE 6 FILLET WELDS 100 LONG OR 19mm ø INSERT ANCHORS.

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No.	REVISIONS	DATE	INTLS
4	ISSUED FOR PRE–TENDER	AUG16–18	J.S.
3	ISSUED FOR 100% DETAILED DESIGN	JUN07–18	J.S.
2	ISSUED FOR REVIEW AND COMMENTS	AUG10–17	J.S.
1	ISSUED FOR REVIEW AND COMMENTS	JUN05–17	J.S.

DESIGNED BY T.P.
DRAWN BY A.V.
CHECKED BY J.S.
APPROVED BY J.S.

STAMP

LICENSED PROFESSIONAL ENGINEER J. SAMUEL 100076504 AUG.16/18 PROVINCE OF ONTARIO

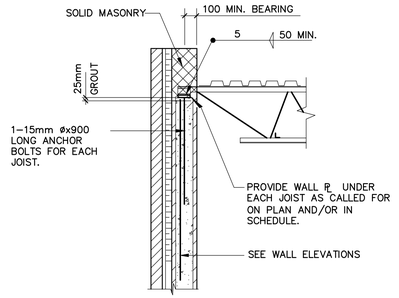
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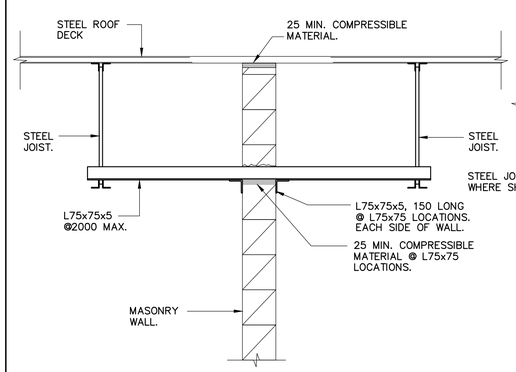
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL
GENERAL NOTES & DRAWING LIST

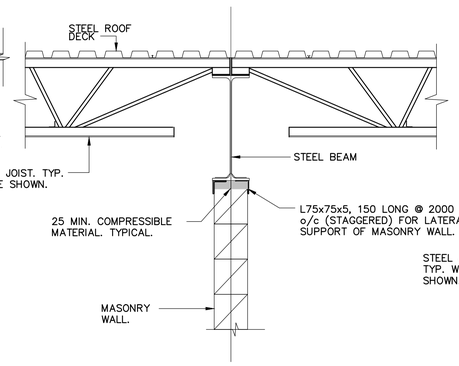
DATE : APRIL, 2017
SCALE: N.T.S.
FILE No.: 2017–JPS–056
CONTRACT No.: C13–06–16
DRAWING No.: S500



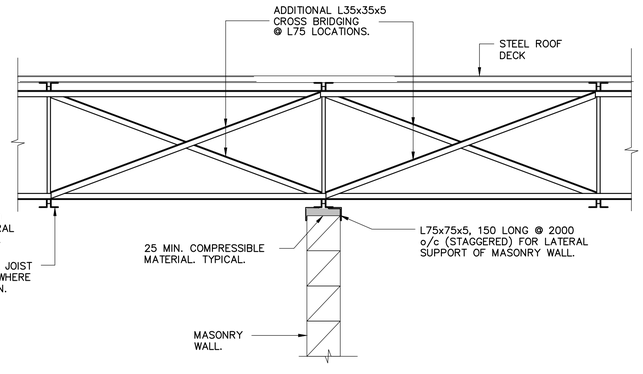
JOISTS BEARING ON MASONRY



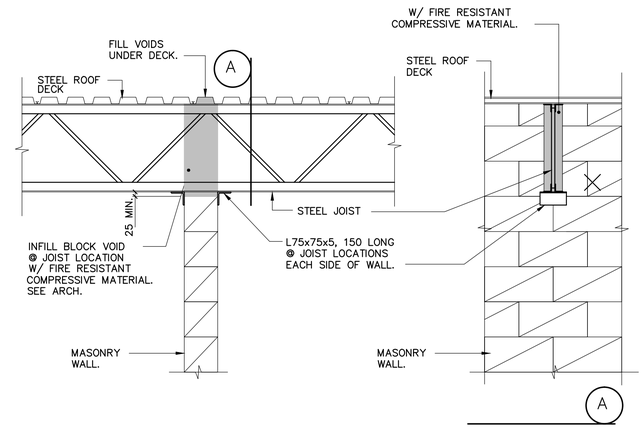
TYPICAL WALL PARALLEL TO JOIST DETAIL



TYPICAL WALL BENEATH BEAM DETAIL



TYPICAL WALL BENEATH JOIST DETAIL



MASONRY WALL PERPENDICULAR TO JOIST

LATERAL SUPPORT OF MASONRY PARTITION WALLS

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VERIFY SCALE
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL
TYPICAL DETAILS

DATE : APRIL, 2017
SCALE: N.T.S.
FILE No.: 2017-JPS-056
CONTRACT No.: C13-06-16
DRAWING No.: S501

MEMBER SCHEDULE:

"A"	:	L76x76x6.4 BOLTED TO THE MASONRY WALL. SEE SECTIONS.
"B"	:	L76x76x9.5 BOLTED TO THE MASONRY WALL. SEE SECTIONS.
"C"	:	2–L76x76x6.4 WELDED BACK TO BACK AT UNDERSIDE OF DECK. (HORIZONTAL TRUSS MEMBERS). DESIGN CONNECTIONS FOR Af=+/–90kN
"D"	:	L76x76x6.4
"E"	:	C200x17
BR1	:	BRACKET, C200x17, SEE SECTIONS
iLB1	:	HSS178x178x6.4, LINTEL BEAM, SEE TYPICAL LINTEL SECTION.
iLB2	:	2–L150x89x6.4, LINTEL BEAM
iLB3	:	2–L150x89x6.4, LINTEL BEAM

ROOF FRAMING NOTES

UNLESS NOTED OTHERWISE ON DRAWINGS, THE FOLLOWING NOTES SHALL GOVERN.

1. U/S OF ROOF STEEL DECK ELEVATION TO BE:
   EL 5.7m HIGH LINE (H.L.)
   EL 3.5m LOW LINE (L.L.)
   FROM FINISHED GROUND FLOOR ELEV. 00000 UNLESS NOTED OTHERWISE ON PLAN.
2. a) PROVIDE 1 ROW OF HORIZONTAL BRIDGING AT FIRST CHORD PANEL POINT AT EACH END OF JOIST. PROVIDE ADDITIONAL CROSS BRIDGING AS INDICATED ON PLANS. ALL X–BRIDGING CONNECTIONS TO BE BOLTED.

   b) STEEL CONTRACTOR SHALL DESIGN, SUPPLY AND ERECT REMINDER OF HORIZONTAL JOIST BRIDGINGS OF SUFFICIENT SIZE AND SPACINGS IN ACCORDANCE WITH CSA S16.1 LATEST EDITION.
3. PROVIDE ROOF SLOPE BY ADJUSTING BEAM AND/OR JOIST AND/OR COLUMN ELEVATIONS.
4. SLOPE BEAM TO COLUMN CONNECTIONS TO ACHIEVE ROOF SLOPES.
5. WHERE ROOF DECK CHANGES DIRECTION OF SPAN, SLOPE OR IS BEING CUT AT A SKEW, STRUCTURAL STEEL CONTRACTOR SHALL PROVIDE SUITABLE ANGLE OR BENT PLATE TO SUPPORT EDGE OF DECK.
6. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION, SIZE, AND NUMBER OF ROOF OPENINGS AND ROOF TOP UNITS.
7. JOIST SUPPLIER SHALL BE RESPONSIBLE FOR OBTAINING UP TO DATE INFORMATION REGARDING THE LOCATION AND SIZE OF ROOF TOP UNITS, OPENINGS, SPRINKLER LINES AND WATER/GAS FILLED PIPES TO BE HUNG FROM JOISTS FOR THE DESIGN OF ROOF JOISTS.
8. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR UPLIFT FORCES AS CALLED FOR IN NATIONAL BUILDING CODE, PROVINCIAL CODES, AND LOCAL MUNICIPALITY BY–LAWS. POST DISASTER BUILDING.
9. BASIC SPECIFIC DESIGN LOADS FOR ROOF: (SEE CLIMATIC LOADS)
   LIVE LOADS: (U.N.O ON PLANS) – DESIGN BASED ON THE MAXIMUM OF THE FOLLOWING:
   SNOW + RAIN (HIGH ROOF) = 1.60 kPa
   SNOW + RAIN (LOW ROOF) = 2.60 kPa (AVERAGE SNOW PILE EFFECT DUE TO TOWER AND CONDENSER UNIT)
   RAIN/ WATER RETENTION (MAX. 150) = 1.50 kPa
   SUPERIMPOSED DEAD LOADS:
   (U.N.O ON PLANS) = 1.00 kPa
10. FRAME THE MECH. OPENINGS WITH C200x17 AND FRAME SUPPORT FOR RTU'S WITH C250x23 U.N.O.
11. STEEL ROOF DECK SHALL BE P3615, MANUFACTURED BY CANAM OR EQUIVALENT.

    RD1(U.N.O.)
    38mm (1 1/2") DEEP CONTINUOUS OVER MIN. 3 SPANS. THICKNESS TO BE 0.76mm (.030") MIN., UNLESS NOTED ON PLAN.
12. STEEL ROOF DECK SHALL BE ATTACHED TO CONTINUOUS STEEL MEMBER AT FRONT, BACK AND SIDE WALLS.
13. ROOF DECK SHALL BE CONNECTED AS FOLLOWS:

ROOF DIAPHRAGM DETAILS

ROOF DECK	TRANSVERSE PUDDLE WELDS/UNIT/SUPPORT	BUTTON PUNCHED (MAX. SPACING)
RD1	4	600 c/c

NOTE:
– TRANSVERSE PERIMETER WELDS TO BE AT 150mm o/c
– LONGITUDINAL PERIMETER WELDS TO BE AT EVERY JOIST AND DECK ANGLE CONNECTOR, 300 MM MAX.

14. FOR REMAINDER OF NOTES, SEE GENERAL NOTES SHEET & SPECIFICATIONS.

DESIGN LOADS (SPECIFIED)

ROOF
HIGH AND LOW ROOF

HIGH ROOF, SNOW LOAD + RAIN	1.60 kPa + S.B.U. (SNOW BUILD UP)
LOW ROOF, SNOW LOAD + RAIN	2.60 kPa + S.B.U. (SNOW BUILD UP)
DEAD LOAD	1.00 kPa (EXCLUDING THE WT OF MAIN FRAMING MEMBERS)
BRIDGE CRANE CAPACITY	2 TON

CLIMATIC DESIGN LOADS

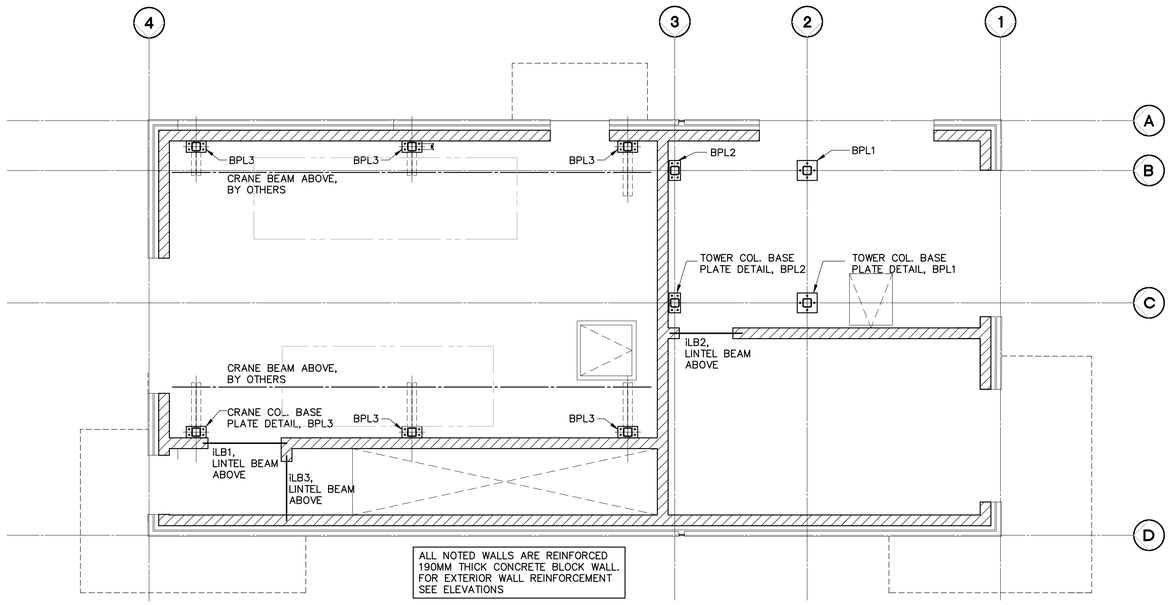
MUNICIPAL WASTEWATER PUMPING STATION (MWPS) ON PIER 8 IN CITY OF HAMILTON HAS BEEN ASSIGNED AS A POST–DISASTER IMPORTANCE CATEGORY BUILDING
STRUCTURE OF THE BUILDING HAS BEEN DESIGNED IN COMPLIANCE AND OUR UNDERSTANDING OF THE CURRENT 2012 ONTARIO BUILDING CODE.

1. SNOW ACCUMULATION ON THE ROOF OF MWPS ON PIER 8 IN HAMILTON, BELOW ESCARPMENT–EAST OF HIGHWAY 403, AS PER TABLE 1.2 OF SB–1
Ss= 1.1 kPa, GROUND SNOW LOAD
Sr= 0.4 kPa, RAIN LOAD
POST–DISASTER IMPORTANCE FACTOR, Is = 1.25

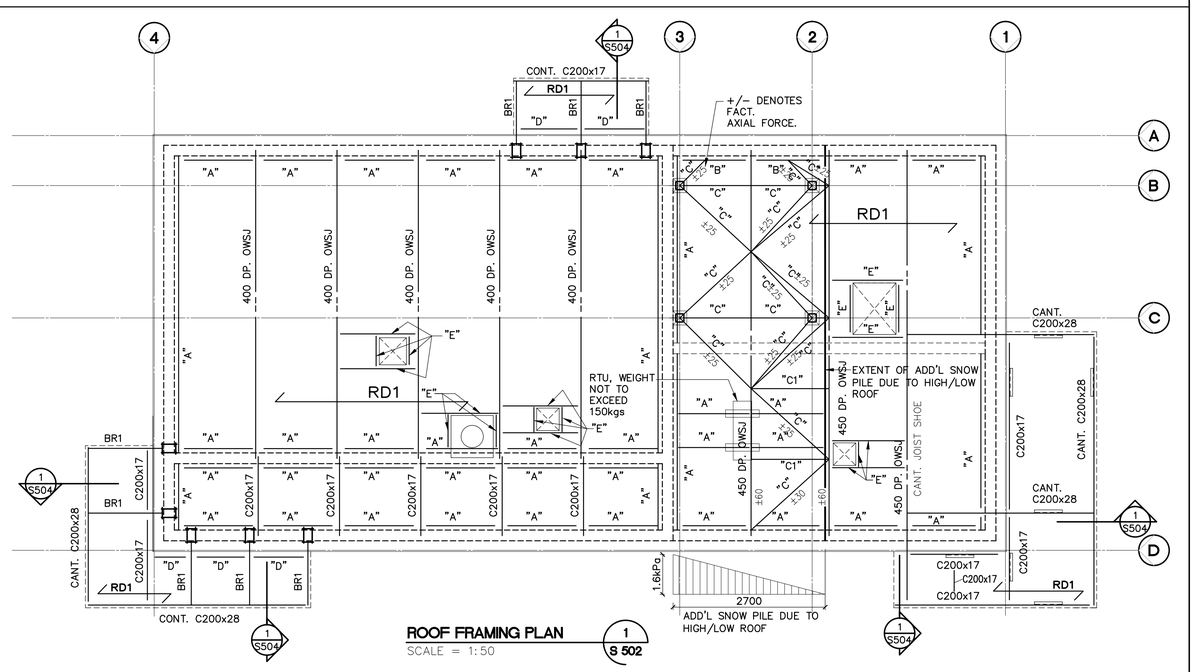
2. THE REFERENCE WIND VELOCITY PRESSURE SPECIFIC TO MWPS ON PIER 8 IN HAMILTON, BELOW ESCARPMENT–EAST OF HIGHWAY 403, AS PER TABLE. 1.2 OF SB–1
1/50 = 0.46 kPa
POST–DISASTER IMPORTANCE FACTOR, Iw = 1.25

3. SEISMIC DATA SPECIFIC TO MWPS ON PIER 8 IN HAMILTON, BELOW ESCARPMENT–EAST OF HIGHWAY 403, AS PER TABLE 1.2 OF SB–1
Sa(0.2)=0.320 Sa(0.5)=0.170 Sa(1.0)=0.064 Sa(2.0)=0.022
POST–DISASTER IMPORTANCE FACTOR, Ie = 1.50
SITE CLASS = C,

LATERAL LOADS (SPECIFIED)
WIND : 1.18kPa
EARTHQUAKE : 258kN



GROUND FLOOR PLAN 2 S 502
SCALE = 1:50



ROOF FRAMING PLAN 1 S 502
SCALE = 1:50

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2	ISSUED FOR REVIEW AND COMMENTS	AUG10–17	J.S.
1	ISSUED FOR REVIEW AND COMMENTS	JUN05–17	J.S.

DESIGNED BY T.P.
DRAWN BY A.V.
CHECKED BY J.S.
APPROVED BY J.S.

STAMP

LICENSED PROFESSIONAL ENGINEER
J. SAMUEL
100076504
AUG.16/18
PROVINCE OF ONTARIO

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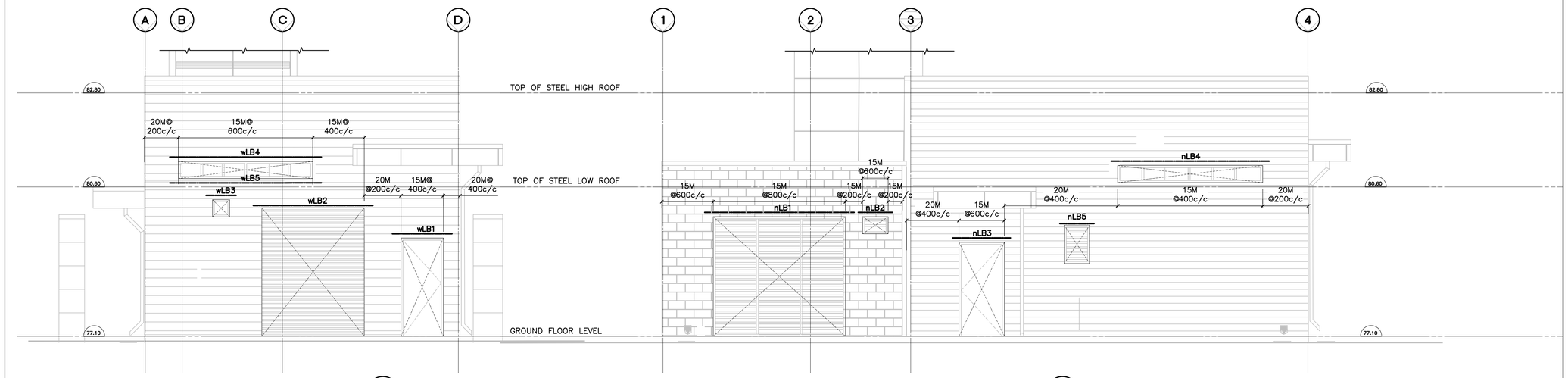
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL
PLANS, SCHEDULE, ROOF NOTES & DESIGN DATA

DATE :	APRIL, 2017
SCALE:	AS NOTED
FILE No.:	2017–JPS–056
CONTRACT No.:	C13–06–16
DRAWING No.:	S502

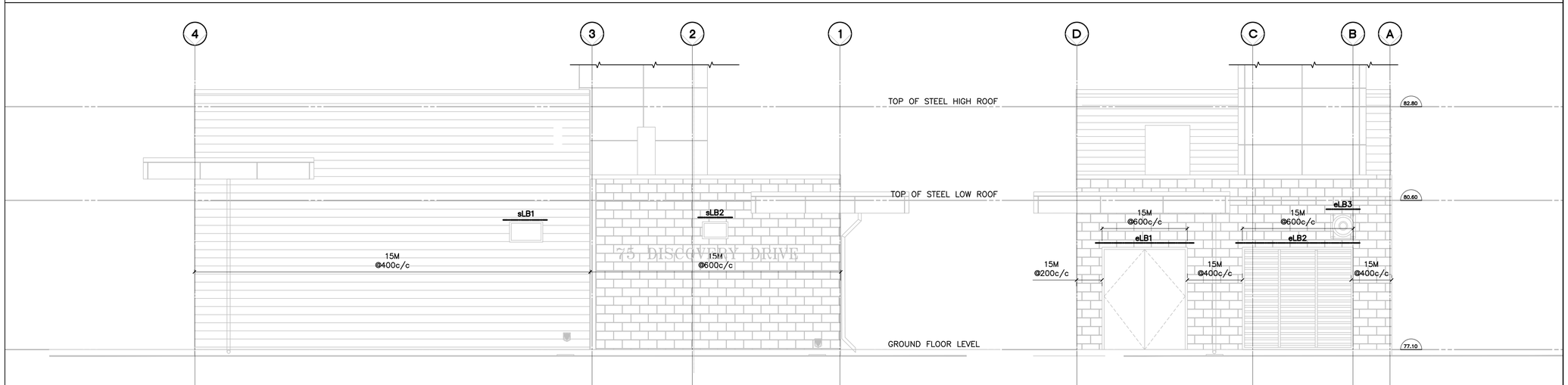
LINTEL SCHEDULE

MARK	SIZE OF LINTEL	REMARKS
eLB1, eLB2 nLB1, nLB3, nLB4 wLB1, wLB2, wLB4	HSS178x178x9.5 + 9.5mm THICK PLATE + STIFFENERS	SEE TYPICAL SECTION
wLB5	HSS178x178x6.4	SEE TYPICAL SECTION
eLB3 sLB1, sLB2 nLB2, nLB5 wLB3	2–L150x89x6.4 + LOOSE LINTEL	SEE TYPICAL SECTION



WEST ELEVATION (4 / S 503)
SCALE = 1:50

NORTH ELEVATION (3 / S 503)
SCALE = 1:50



SOUTH ELEVATION (2 / S 503)
SCALE = 1:50

EAST ELEVATION (1 / S 503)
SCALE = 1:50

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1	ISSUED FOR REVIEW AND COMMENTS	JUN05–17	J.S.

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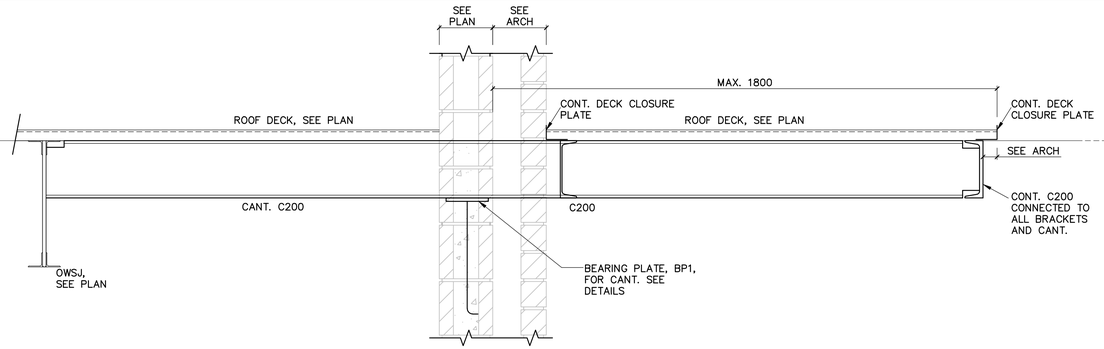
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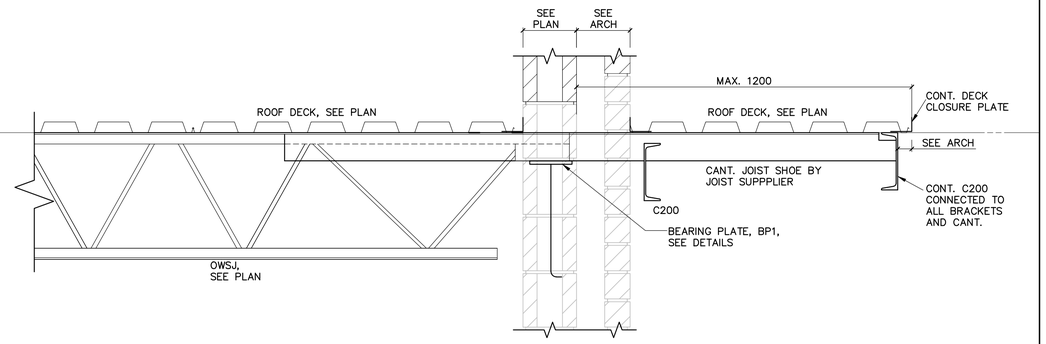
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL ELEVATIONS, WALL REINFORCEMENT & LINTEL SCHEDULE

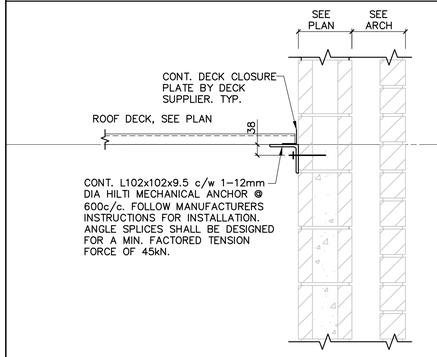
DATE :	APRIL, 2017
SCALE:	1:50
FILE No.:	2017–JPS–056
CONTRACT No.:	C13–06–16
DRAWING No.:	S503



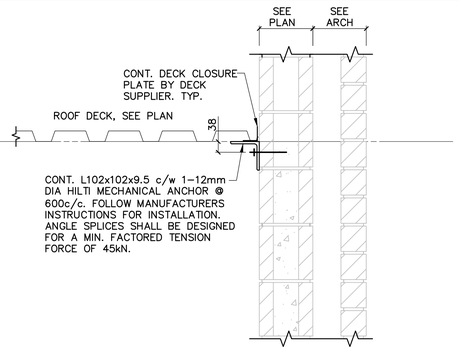
CANOPY SECTION 2
SCALE = 1:10 — S 504



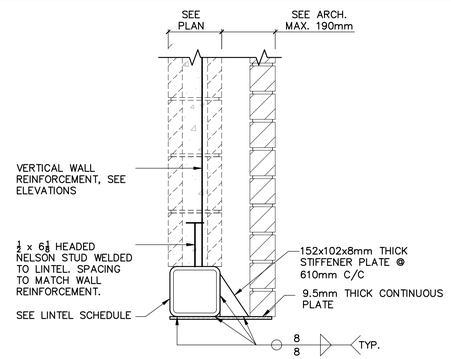
CANOPY SECTION 1
SCALE = 1:10 — S 504



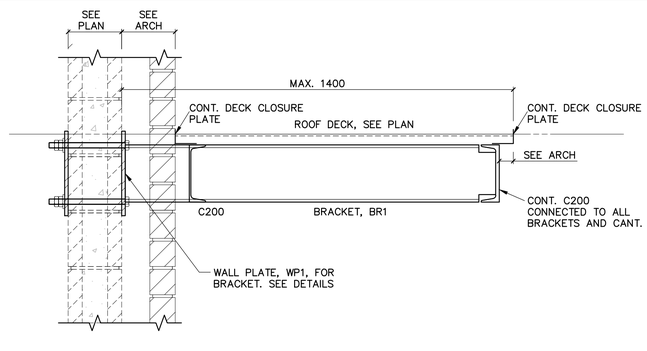
TYPICAL DECK SUPPORT-1 6
SCALE = 1:10 — S504



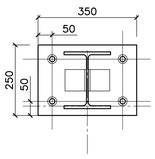
TYPICAL DECK SUPPORT-2 5
SCALE = 1:10 — S504



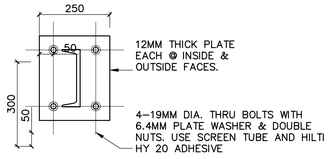
LINTEL SECTION 4
SCALE = 1:10 — S 504



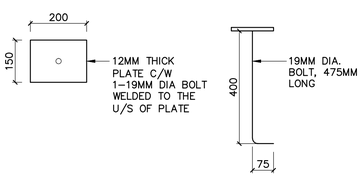
CANOPY SECTION 3
SCALE = 1:10 — S 504



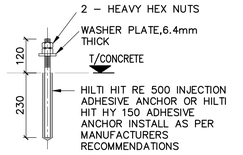
WALL PLATE DETAIL, WP1 14
SCALE = 1:10 — S 504
TYPICAL FOR CANOPY CONNECTIONS



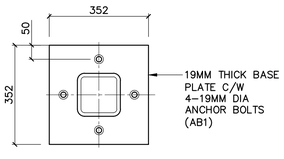
WALL PLATE DETAIL, WP1 13
SCALE = 1:10 — S 504
TYPICAL FOR CANOPY CONNECTIONS



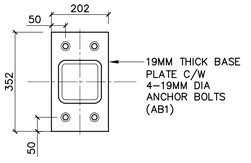
BEARING PLATE DETAIL, BP1 12
SCALE = 1:10 — S 504
TYPICAL FOR ROOF JOISTS, C200's & LINTEL BEAMS



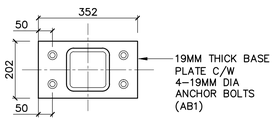
ANCHOR BOLT, AB1 11
SCALE = 1:10 — S 504



BASE PLATE DETAIL, BPL1 10
SCALE = 1:10 — S 504



BASE PLATE DETAIL, BPL2 9
SCALE = 1:10 — S 504



BASE PLATE DETAIL, BPL3 8
SCALE = 1:10 — S 504

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1	ISSUED FOR REVIEW AND COMMENTS	JUN05-17	J.S.

DESIGNED BY T.P.
DRAWN BY A.V.
CHECKED BY J.S.
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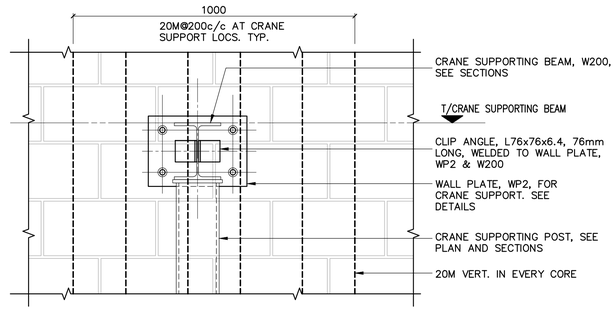
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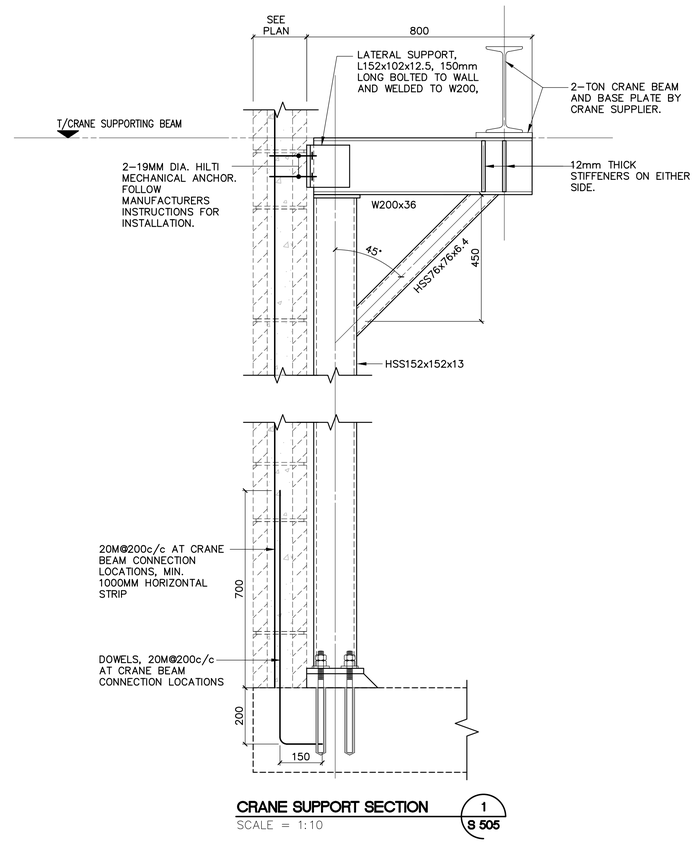
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL SECTIONS-1

DATE :	APRIL, 2017
SCALE:	AS NOTED
FILE No.:	2017-JPS-056
CONTRACT No.:	C13-06-16
DRAWING No.:	S504



LATERAL SUPPORT-CRANE BEAM 2 / S 505
SCALE = 1:10 (WALL ELEVATION)



CRANE SUPPORT SECTION 1 / S 505
SCALE = 1:10

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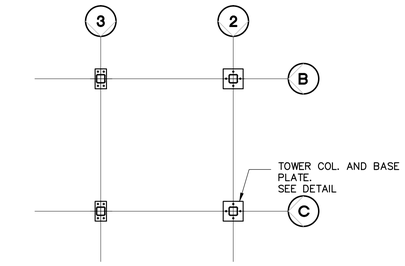
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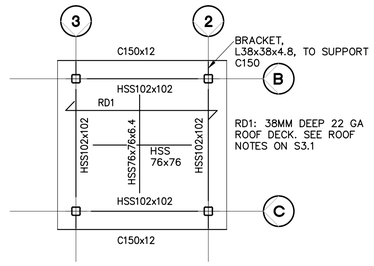
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL SECTIONS-2

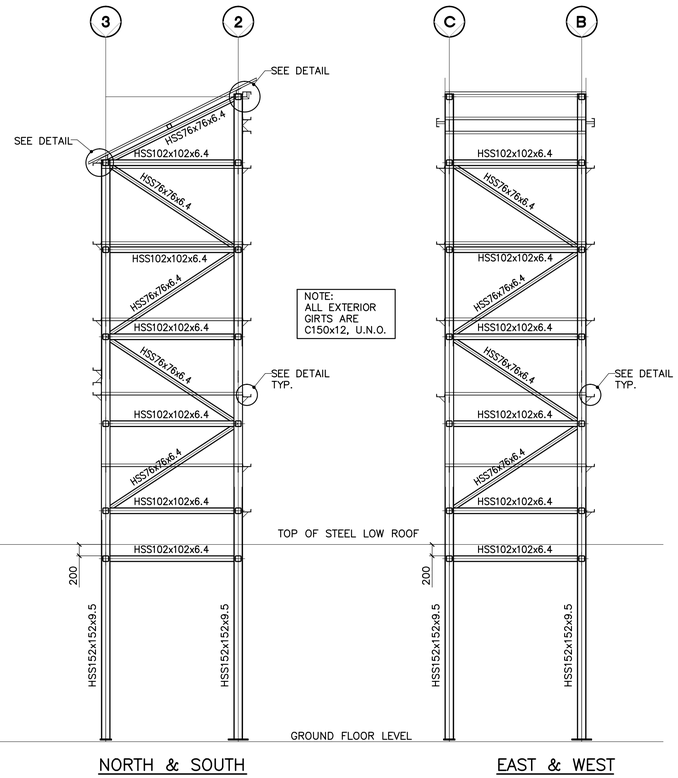
DATE : APRIL, 2017
SCALE: AS NOTED
FILE No.: 2017-JPS-056
CONTRACT No.: C13-06-16
DRAWING No.: S505



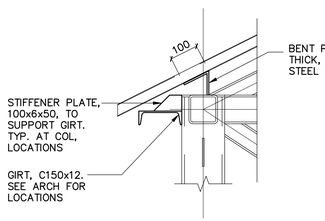
TOWER BASE PLAN 3 / S 506
SCALE = 1:50



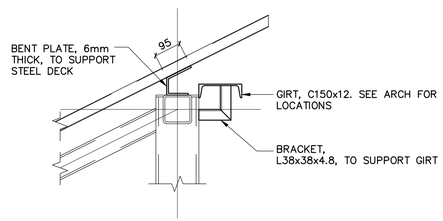
TOWER ROOF PLAN 2 / S 506
SCALE = 1:50



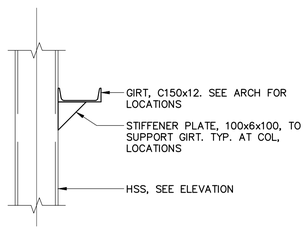
TOWER ELEVATION 1 / S 506
SCALE = 1:50



SUPPORT DETAIL 6 / S 506
SCALE = 1:10



SUPPORT DETAIL 5 / S 506
SCALE = 1:10



GIRT DETAIL 4 / S 506
SCALE = 1:10

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING STRUCTURAL
TOWER ELEVATIONS, PLANS AND DETAILS

DATE :	APRIL, 2017
SCALE:	AS NOTED
FILE No.:	2017-JPS-056
CONTRACT No.:	C13-06-16
DRAWING No.:	S506

EQUIPMENT

- ASC — ADJUSTABLE SPEED CONTROLLER (ELEC)
- ASD — ADJUSTABLE SPEED DRIVE (MECH)
- BLOWER OR CENTRIFUGAL FAN
- SLIDING VANE COMPRESSOR
- EJECTOR, PNEUMATIC
- RAG — RIGHT ANGLE GEAR
- GENERATOR
- MIXER
- MIXER, HORIZONTAL SURFACE
- M — MOTOR
- PUMP, CENTRIFUGAL
- PUMP, DIAPHRAGM
- PUMP, DIAPHRAGM OPERATED
- PUMP, GEAR
- PUMP, METERING
- PUMP, SUBMERSIBLE

MISCELLANEOUS DEVICES

- UTILITY STATION
- VAB — VACUUM BREAKER (BFP TYPE)
- IA — INSTRUMENT AIR
- SS — SAMPLER
- C — CONTROL UNIT
- P — PURGE OR FLUSHING CONNECTION

PROCESS LINES

- PRIMARY PROCESS FLOW
- SECONDARY PROCESS FLOW
- EXISTING PIPING AND EQUIPMENT
- EXISTING PIPING AND EQUIPMENT TO BE DECOMMISSIONED/ABANDONED
- EXISTING PIPING AND EQUIPMENT TO BE REMOVED

PROCESS AND SIGNAL CROSS REFERENCE SYSTEM

DRAWING CONTINUATION IS SHOWN AS:

I–XX (CONTINUED ON NEXT DWG.)

(CONTINUED FROM PREVIOUS DWG.) I–XX

SCADA AND CONTROL IDENTIFICATION

NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.

- COMPUTER OR DISTRIBUTED CONTROL SYSTEM FUNCTION BLOCK
  - LETTERS, TAG NUMBERS, ABBREVIATIONS AND OTHER ANNOTATIONS ARE A TWO CHARACTER ALPHA NUMERIC CODE BASED ON INSTRUMENTATION TABLE
- 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 (DI)
  - SOLID ARROW DENOTES ANALOG INPUT/OUTPUT (AI/AO) AT THE RESPECTIVE RTU/PLC
  - EMPTY ARROW DENOTES DIGITAL INPUT/OUTPUT (DI/DO) AT THE RESPECTIVE RTU/PLC
- XXX 123 — PROGRAMMABLE LOGIC CONTROLLER, SYSTEM FUNCTION BLOCK AND ELECTRIC SIGNAL OR DATA LINK INTERFACE
  - 'XXX' DENOTES AUTOMATION HARDWARE CLASSIFICATIONS:
    - PLC: PROGRAMMABLE LOGIC CONTROLLER
    - RTU: REMOTE TELEMETRY UNIT
    - RIO: REMOTE INPUT/OUTPUT MODULE
    - OEM: ORIGINAL EQUIPMENT MANUFACTURER MICROPROCESSOR BASED AUTOMATION
  - '123' THREE DIGITAL CODE TO IDENTIFY CONTROL PANEL AND AUTOMATION EQUIPMENT DESIGNATION. FIRST TWO DIGITS "12" INDICATE CONTROL PANEL DESIGNATION. THIRD DIGIT "3" INDICATES THE SPECIFIC AUTOMATION HARDWARE NUMBER WITHIN THE SPECIFIC CONTROL PANEL.

- SHARED DISPLAY/CONTROL ACCESSIBLE TO OPERATOR ON MAIN CONTROL CONSOLE
- PANEL MOUNTED AUXILIARY OPERATOR DEVICE NOT NORMALLY ON MAIN CONTROL CONSOLE
- FIELD MOUNTED OPERATOR DEVICE
- CONNECTION TO/FROM FIELD MOUNTED PLC OR RTU
- CONNECTION TO/FROM A CENTRAL OR MASTER PLC OR RTU NORMALLY ACCESSIBLE TO OPERATOR
- CONNECTION TO/FROM A PLC OR RTU IN AN AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
- CONNECTION TO/FROM A CENTRAL OR MASTER PLC OR RTU NOT NORMALLY ACCESSIBLE TO OPERATOR OR MOUNTED BEHIND THE PANEL
- CONNECTION TO/FROM A PLC OR RTU IN AN AUXILIARY LOCATION NOT NORMALLY ACCESSIBLE TO OPERATOR OR MOUNTED BEHIND THE PANEL

- TE XXX — TEMPERATURE ELEMENT
- TI XXX — TEMPERATURE INDICATOR
- TIT XXX — TEMPERATURE INDICATING TRANSMITTER
- PS XXX — PRESSURE SWITCH
- PI XXX — PRESSURE INDICATOR
- PIT XXX — PRESSURE INDICATING TRANSMITTER
- LIT XXX — LEVEL INDICATING TRANSMITTER
- AE XXX — ANALYZING ELEMENT
- FIT XXX — FLOW INDICATING TRANSMITTER
- FIELD MOUNTED INSTRUMENT
- PRIMARY LOCATION OR PANEL MOUNTED INSTRUMENT (IN CONTROL ROOM)
- INSTRUMENT MOUNTED BEHIND PANEL (IN CONTROL ROOM)
- (**) SECONDARY LOCATION OR LOCAL PANEL MOUNTED INSTRUMENT. (**) DENOTES LOCAL PANEL IDENTIFICATION
- (**) INSTRUMENT MOUNTED BEHIND LOCAL CONTROL PANEL (**) DENOTES LOCAL PANEL IDENTIFICATION
- ALARM TO AUTO DIALER
- COMMON ALARM TO AUTO DIALER
- CONTROL INTERLOCK FUNCTION, SEE SCHEMATICS AND SYSTEM SPECIFICATIONS FOR SPECIFIC FUNCTION
- SINGLE INSTRUMENT HOUSING CONTAINING TWO (OR MORE) INSTRUMENTATION FUNCTIONS
- AIT XXX (XX) — ANALYZING INDICATING TRANSMITTER
- HS XXXX (YY) — SELECTOR HAND SWITCH (MAINTAINED CONTACT)
- HMS XXXX (YY) — PUSH BUTTON SPRING RETURN HAND SWITCH (MOMENTARY CONTACT)

NOTE XX :

TURB = TURBIDITY
DO = DISSOLVED OXYGEN
ORP = OXIDATION REDUCTION POTENTIAL
TSS = TOTAL SUSPENDED SOLIDS
BOD = BIOCHEMICAL OXYGEN DEMAND

NOTE YY :

A/M = AUTO/MANUAL
C/M = COMPUTER/MANUAL
C/L = COMPUTER/LOCAL
F/R = FORWARD/REVERSE
H/O/A = HAND/OFF/AUTO
L/R = LOCAL/REMOTE
LOS = LOCKOUT STOP
O/C = OPEN/CLOSE
O/S/C = OPEN/STOP/CLOSE
S/S = START/STOP
O/A/O = ON/AUTO/OFF
ST = START
SP = STOP
E/S = EMERGENCY/STOP

VALVES AND OTHER FLOW CONTROL DEVICES

- THREE WAY VALVE SOLENOID VALVE
- GATE VALVE
- PLUG VALVE
- BALL VALVE
- BUTTERFLY VALVE
- BUTTERFLY DAMPER VALVE
- GLOBE VALVE
- KNIFE GATE VALVE
- DIAPHRAGM VALVE
- ANGLE VALVE
- FLOAT VALVE
- PINCH VALVE
- ALTITUDE VALVE (LEVEL CONTROL VALVE)
- STOP LOG GATES (SLG)
- SLUICE GATES (SG)
- NEEDLE VALVE
- DUCKBILL CHECK VALVE
- CHECK VALVE
- BALL CHECK VALVE
- REDUCED PRESSURE BACKFLOW PREVENTER
- DOUBLE CHECK VALVE BACKFLOW PREVENTER
- PUMP DISCHARGE VALVE (TRIPLE DUTY)
- GAUGE OR ROOT VALVE
- BALANCING COCK
- CIRCUIT BALANCING VALVE
- THERMOSTATICALLY CONTROLLED VALVE
- AIR RELEASE VALVE
- PIPE SIZE CHANGE
- WEIR
- PRESSURE REGULATING VALVE (EXTERNAL SENSING)
- PRESSURE REGULATING VALVE (INTERNAL SENSING)
- BACK PRESSURE REGULATING VALVE
- PRESSURE AND VACUUM RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE RELIEF VALVE
- IN–LINE, SPRING LOADED RELIEF VALVE
- MUD VALVE
- TELESCOPING VALVE
- NOZZLE
- FIRE HYDRANT & VALVE
- GENERAL HYDRANT

FLOW AND LEVELING SYMBOLS

- FE MAG — MAGNETIC FLOW METER
- FE VM — VENTURI FLOW METER
- FE MAS — MASS AIRFLOW SENSOR
- FE — AIRFLOW SENSOR WITH ORIFICE PLATE
- FE — SONIC FLOWMETER
- LS — LEVEL SWITCH
- FI — FLOW INDICATING ROTAMETER
- LE XXX — LEVEL ELEMENT
- LE XXX — LEVEL ELEMENT (ULTRA SONIC)
- LE XXX — LEVEL ELEMENT (RADAR)
- WM — WATER METER

INSTRUMENT LINE SYMBOLS

- CONNECTION TO PROCESS
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL (GENERAL)
- HYDRAULIC SIGNAL
- CAPILLARY TUBE
- SONIC SIGNAL
- SOFTWARE OR DATA LINK SIGNAL
- MECHANICAL LINK

PIPING IDENTIFICATION

XXX – XX – XX – X–X

- XXX — LINE SIZE
- XX — COMMODITY
- XX — PIPING LINE CODE
- X — SPECIAL TREATMENT

GENERAL NOTES

1. THIS DRAWING IS GENERAL IN NATURE. NOT ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE USED IN THIS PROJECT.
2. PROCESS FLOW DIAGRAMS ARE SCHEMATIC IN NATURE. SOME EQUIPMENT AND PIPING NOT SHOWN FOR CLARIFY OF THE MAIN PROCESS FLOW, CROSS REFERENCING WITH PROCESS DRAWINGS ARE REQUIRED.
3. REFER TO P&IDS FOR ADDITIONAL PROCESS COMPONENT INFORMATION.
4. ALL NON SHADED VALVES ARE NORMALLY OPEN, UNLESS INDICATED OTHERWISE.

COMMODITY

AA	PROCESS AIR	RAS	RETURN ACTIVATED SLUDGE
ALUM	ALUM	RSW	RAW SEWAGE WATER
BPH	BYPASS HEADER	S	SUPERNATANT
BWW	BACKWASH WASH WASTE	SAM	SAMPLE LINE
CA	COMPRESSED AIR	SAN	SANITARY SEWER
DHWS	DOMESTIC HOT WATER SUPPLY	SCE	SECONDARY CLARIFIER EFFLUENT
DR	DRAIN	SCUM	SCUM LINE
DS	DIGESTED SLUDGE	SS	PROCESS SLUDGE
EW	EFFLUENT WATER	SU	SLUDGE UNLOADING
MLSS	MIXED LIQUOR SUSPENDED SOLIDS	TE	TREATED EFFLUENT
OV	OVERFLOW	VP	VENT PLUMBING
POTW	POTABLE WATER	WAS	WASTE ACTIVATED SLUDGE

ACTUATOR SYMBOLS

- FIRST LETTER(S)
- SUCCEEDING LETTER(S)
- BB — CLARIFYING ABBREVIATION
- FIT — TAG NUMBER

TAG NUMBER TO BE BASED ON EQUIPMENT CODING SYSTEM NUMBER. SEE SPECIAL PROJECTS DESIGN MANUAL FOR DETAILS.

PIPING LINE CODE AND SPECIAL TREATMENT

AL	ALUMINUM	ET	HEAT TRACING
DI	DUCTILE IRON	I	INSULATION
PVC	POLYVINYL CHLORIDE	H	HOSE
SS	STAINLESS STEEL	CU	COPPER

INSTRUMENT IDENTIFICATION TABLE

LETTER	FIRST LETTER: MEASURED OR INITIATING VARIABLE	FIRST LETTER: MODIFIER	SUCCEEDING LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING LETTERS: OUTPUT FUNCTION	SUCCEEDING LETTERS: MODIFIER
A	ANALYSIS (2)		ALARM		
B	BURNER, COMBUSTION			CLOSE, STOP, DECREASE (1)	
C				CONTROL	
D	DENSITY	DIFFERENTIAL		OPEN, START, INCREASE (1)	
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			FAIL (1)
G			GLASS, VIEWING DEVICE		
H	HAND				HIGH (OPENED)
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW (CLOSED)
M	MOTOR, MOTION (1)	MOMENTARY		MOTOR (1)	MIDDLE OR INTERMEDIATE
N					ON OR OPERATE (1)
O			ORIFICE, RESTRICTION		OVERLOAD (1)
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION	PUMP (1)	
Q	QUANTITY (2)	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (2)		MULTIFUNCTION (2)	MULTIFUNCTION (2)	MULTIFUNCTION (2)
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (2)		UNCLASSIFIED (2)	UNCLASSIFIED (2)	UNCLASSIFIED (2)
Y	EVENT, STATE, PRESENCE			RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION			DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

(1) USER'S CHOICE
(2) WHEN USED, SYMBOL OR SIGNAL LINE IS ANNOTATED.

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

DESIGNED BY D. N. / P. Y.
DRAWN BY H. ZHOU
CHECKED BY J. HIMANEN
APPROVED BY J. HIMANEN

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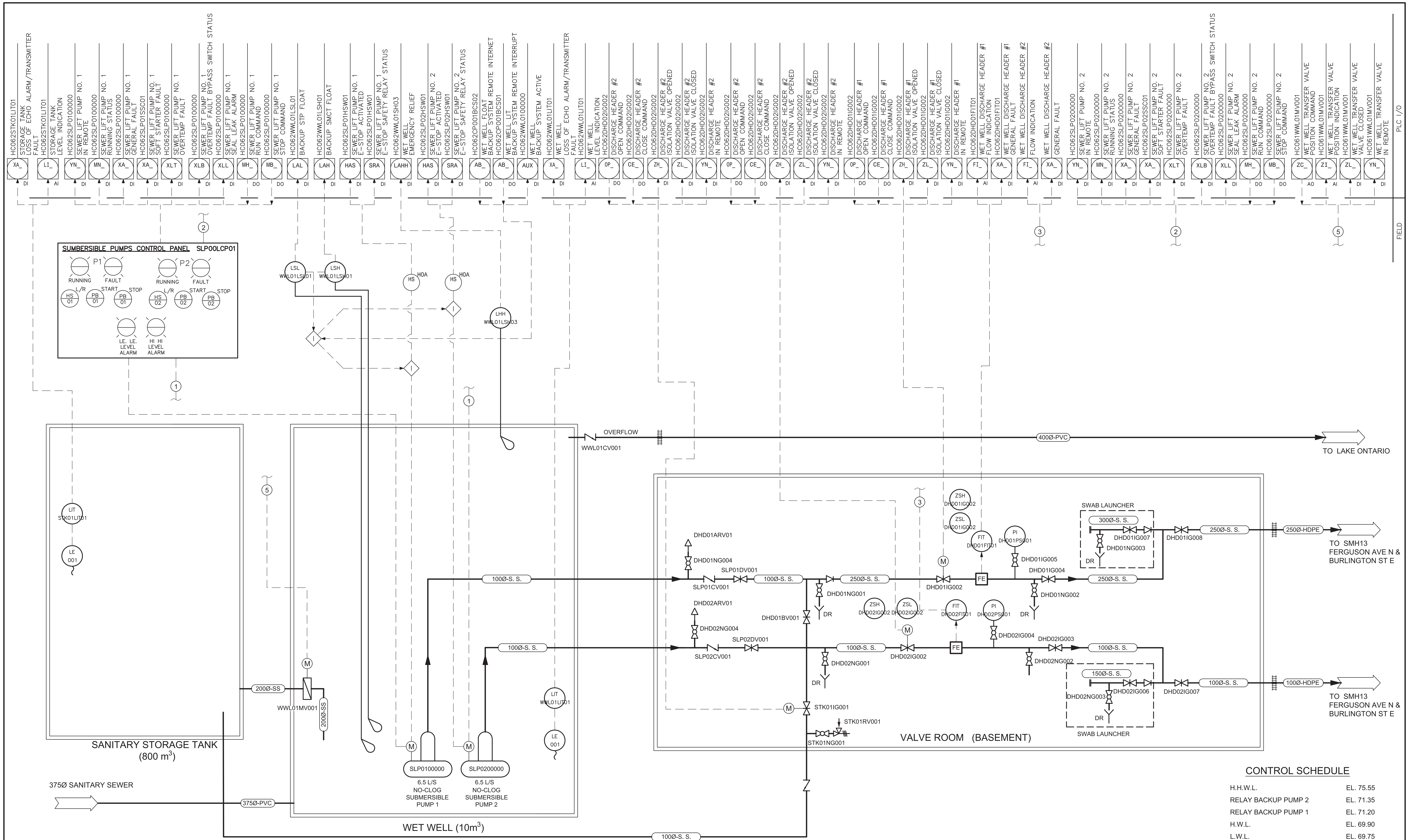
Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

INSTRUMENTATION
NEW PIER 8 WASTEWATER PUMPING STATION
GENERAL LEGEND AND SYMBOLS

DATE : AUGUST 2018
SCALE:
FILE No.: ---
CONTRACT No.:
DRAWING No.: I-000

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PLOT DATE: Aug 16, 2018–2:12pm BY:(p0015926)



CONTROL SCHEDULE

H.H.W.L.	EL. 75.55
RELAY BACKUP PUMP 2	EL. 71.35
RELAY BACKUP PUMP 1	EL. 71.20
H.W.L.	EL. 69.90
L.W.L.	EL. 69.75
RELAY BACKUP ALL PUMPS STOP	EL. 69.60

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

DESIGNED BY D. N. / B. D.
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APPROVED BY J. HIMANEN

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REGISTERED PROFESSIONAL ENGINEER
J. A. HIMANEN
16/08/2018
PROVINCE OF ONTARIO

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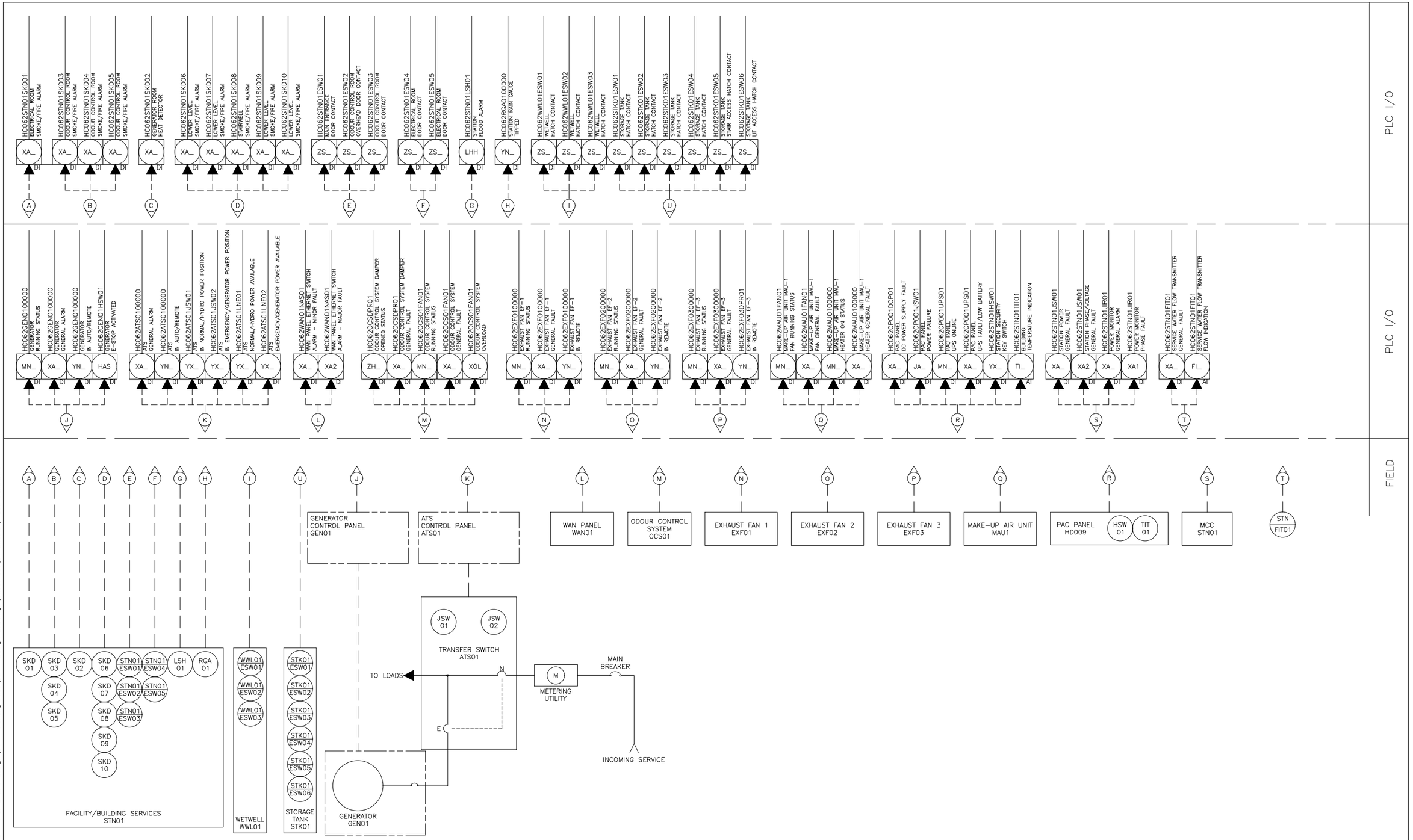
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

INSTRUMENTATION
NEW PIER 8 WASTEWATER PUMPING STATION
P&ID

DATE : AUGUST 2018
SCALE:
FILE No.: ---
CONTRACT No.:
DRAWING No.: I-001

G:\475964\6 Instrumentation\475964-I-101BD.dwg
PLOT DATE: Aug 16, 2018-2:13pm BY:(p001529C)



NOTES:

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.V.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

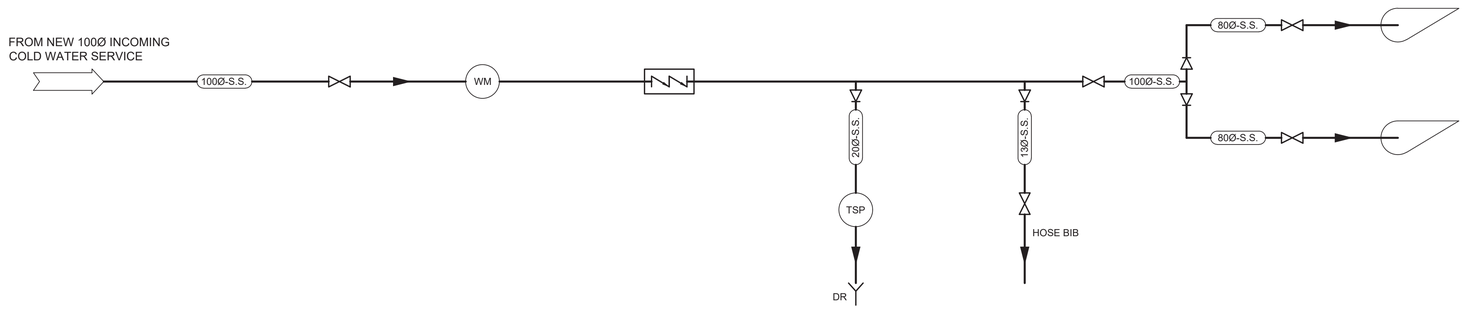
INSTRUMENTATION
P&ID

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-002

10/08/18
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PLC I/O

FIELD



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PLOT DATE: Aug 16, 2018-2:13pm BY:(p0015236)

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR TENDER	AUG 2018	A.A.

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CHECKED BY J. HIMANEN
APPROVED BY J. HIMANEN

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

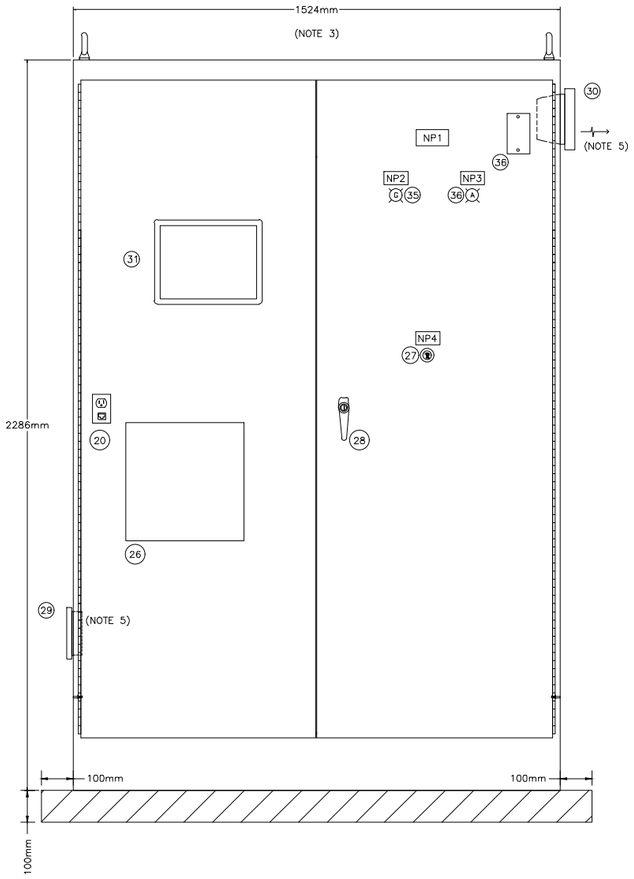
INSTRUMENTATION
NEW PIER 8 WASTEWATER PUMPING STATION
P&ID WATER SERVICE

DATE : AUGUST 2018
SCALE:
FILE No.: ---
CONTRACT No.:
DRAWING No.: I-003

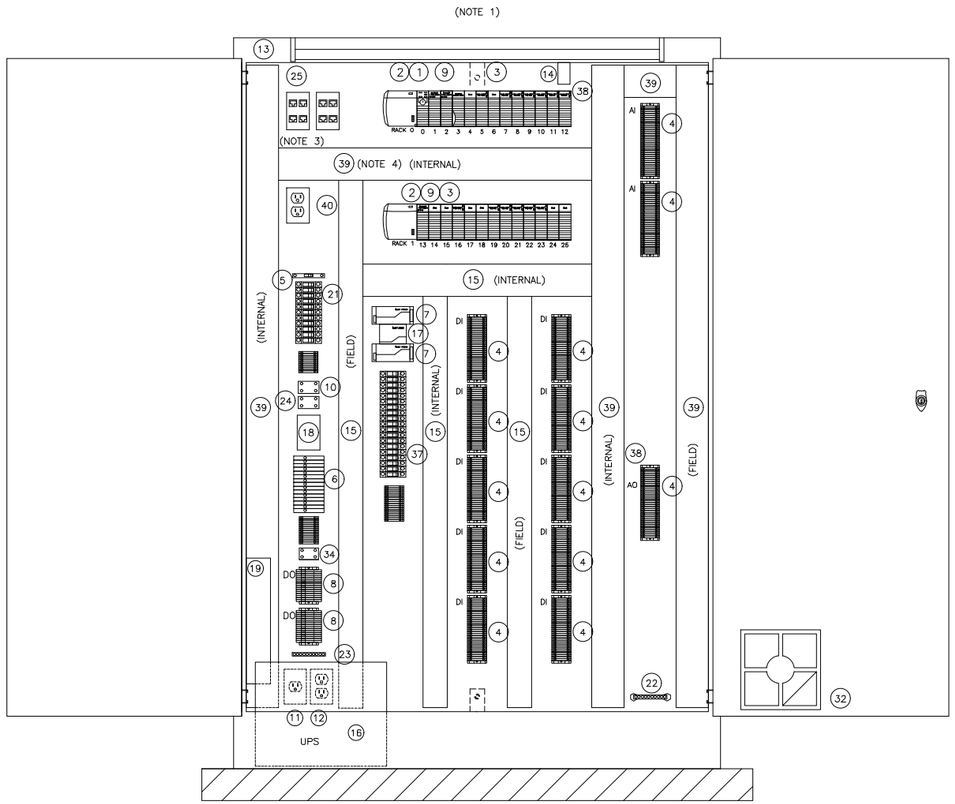
WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG –	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

#	ITEM DESCRIPTION
1	CONTROLLOGIX 1756–L73
2	CONTROLLOGIX POWER SUPPLY 1756–PA75
3	CONTROLLOGIX I/O CARDS DIGITAL INPUT : 1756–IV16 DIGITAL OUT PUT : 1756–OW16I ANALOG INPUT : 1756–IF8I ANALOG OUTPUT : 1756–OF8I
4	STANDARD TERMINALS
5	MAIN BREAKER
6	FUSED KNIFE SWITCH DISCONNECTS WITH BLOWN FUSE INDICATOR
7	24V POWER SUPPLY
8	DIGITAL OUTPUT RELAYS
9	CONTROLLOGIX ETHERNET MODULE 1756–ENZTR
10	POWER FAIL RELAY
11	20A SIMPLEX RECEPTACLE FOR UPS POWER
12	DUPLEX UTILITY RECEPTACLE
13	FLUORESCENT LIGHT
14	DOOR LIGHT SWITCH
15	2" WIDE BY 3" DEEP WIRE WAY
16	UPS
17	24VDC REDUNDANCY MODULE
18	SURGE SUPPRESSOR
19	UPS BYPASS POWER DISTRIBUTION UNIT
20	COMBINATION 120VAC/RJ45/USB RECEPTACLE
21	120VAC CIRCUIT BREAKERS
22	ISOLATED GROUND
23	ELECTRICAL GROUND

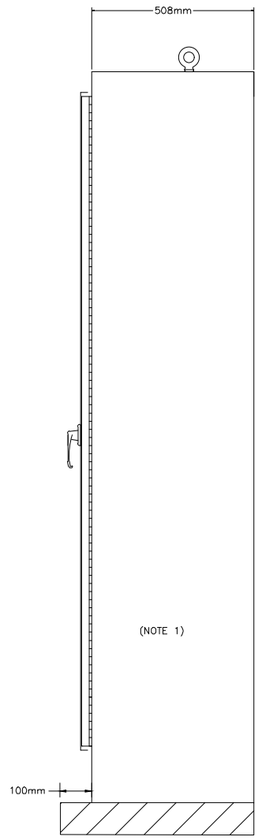
#	ITEM DESCRIPTION
24	UPS BYPASS RELAY (15A RATED CONTACTS)
25	WORK AREA OUTLET/COPPER PATCH PANEL
26	FOLDING LAPTOP TRAY
27	SECURITY KEY SWITCH
28	3 POINT LOCKING DOOR HANDLE
29	PANEL VENT
30	PANEL FAN
31	PANEL COMPUTER
32	DRAWING POCKET
33	INTRINSICALLY SAFE RELAY
34	TEMPERATURE CONTROL SWITCH
35	SYSTEM OK PILOT LIGHT
36	SCADA ALARM PILOT LIGHT
36	TEMPERATURE TRANSMITTER
37	24VDC CIRCUIT BREAKERS
38	MODBUS COMMUNICATION MODULE PROSOFT MVI56E–MNET
39	3" WIDE BY 3" DEEP WIRE WAY
40	120VAC RECEPTACLE



FRONT DOOR VIEW



BACKPLATE VIEW



RIGHT SIDE VIEW

NAME PLATE LEGEND			
	LINE 1	LINE 2	LINE 3
NP1	HC062CP001		
NP2	SYSTEM	OK	
NP3	SCADA	ALARM	
NP4	SECURITY	DISARMED–ARMED	

NOTES:
1. CONDUITS ARE NOT PERMITTED TO ENTER THE TOP OF THE PANEL WITHOUT APPROVAL FROM THE CITY SCADA GROUP OR THE CONSULTANT. BOTTOM ENTRY OR SIDE ENTRY WITHIN 300mm OF INTRINSICALLY SAFE WIRING.
2. INTRINSICALLY SAFE WIRING MAY ENTER THE PANEL ON THE SIDE OF THE PANEL WITHIN 150mm OF THE TOP OF THE PANEL. INTRINSICALLY SAFE WIRING IS TO REMAIN ISOLATE FROM ALL OTHER PANEL AND FIELD WIRING.
3. THE CONTROL PANEL IS TO BE SUPPLIED WITH ALL COMMUNICATION PATCH CABLING INSTALLED (ETHERNET, USB, ETC.).
4. PAC TO BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
5. FANS/VENTS TO BE INSTALLED AS REQUIRED BY ENVIRONMENTAL CONDITIONS.

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

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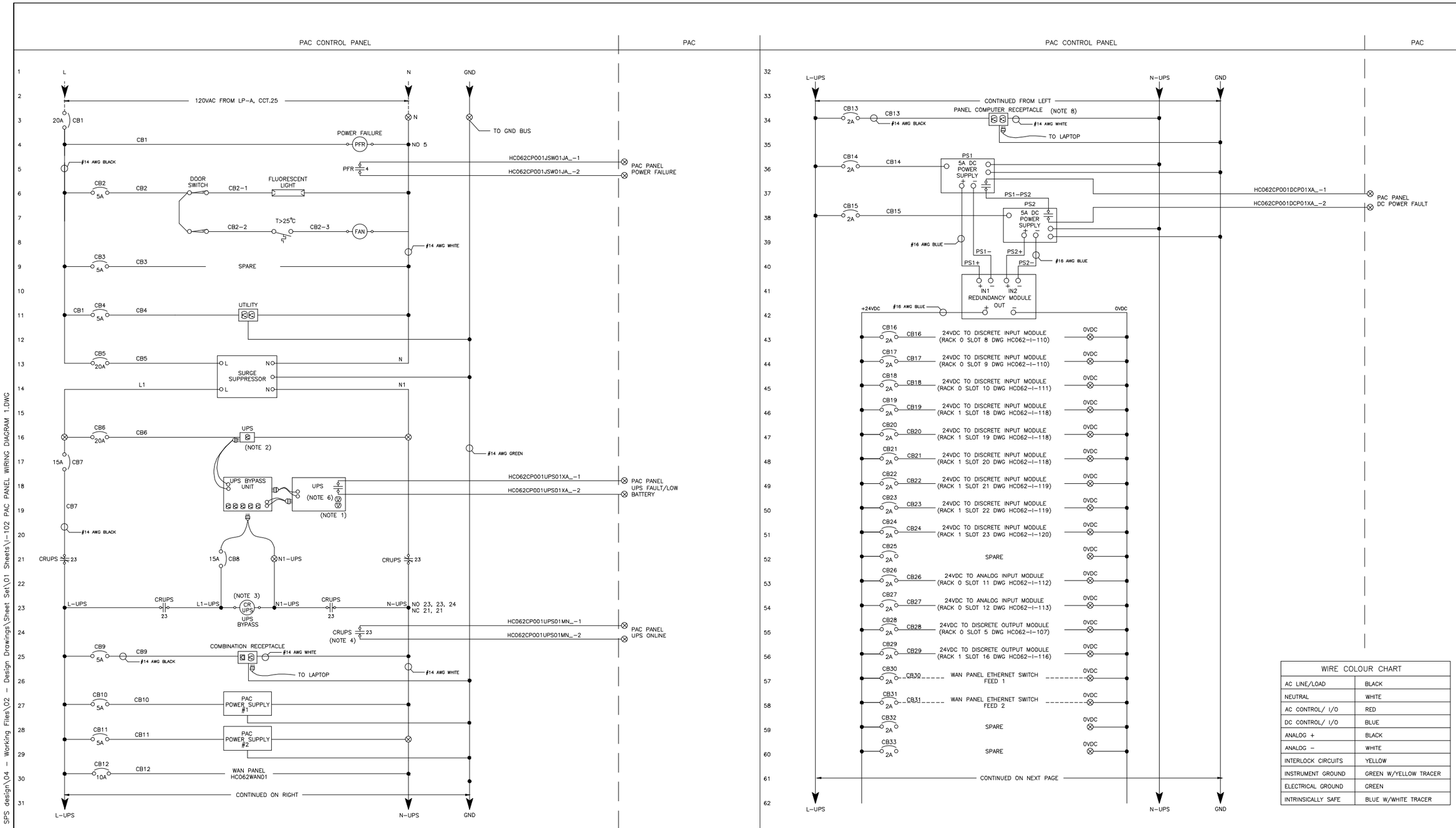
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
PAC PANEL LAYOUT

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.:
I–101

10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–101 PAC PANEL LAYOUT.DWG



WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG –	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

NOTES:
1. THERE ARE TO BE NO CONDUIT ENTRIES DIRECTLY BELOW OR BESIDE THE UPS.
2. THE DEDICATED UPS RECEPTACLE TO BE LABELED 'UPS'.
3. CRUPS RELAY TO BE A 3PDT BREAK BEFORE MAKE TYPE RELAY WITH 15A RATED CONTACTS.
4. CRUPS RELAY TO BE WIRED TO PLC INPUT TO INDICATE THE UPS HAS BEEN BYPASSED.
5. ALL BREAKER SIZES TO BE CONFIRMED WITH DESIGN ENGINEER.
6. CONTRACTOR TO SUPPLY UPS WITH ETHERNET SNMP CONNECTIVITY.
7. CONTRACTOR TO SUPPLY ALL ETHERNET/USB PATCH CABLING.
8. PROVIDE ORANGE DUPLEX RECEPTACLE FOR PANEL COMPUTER.

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

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DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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M.A. PRESTI
100008752
PROVINCE OF ONTARIO

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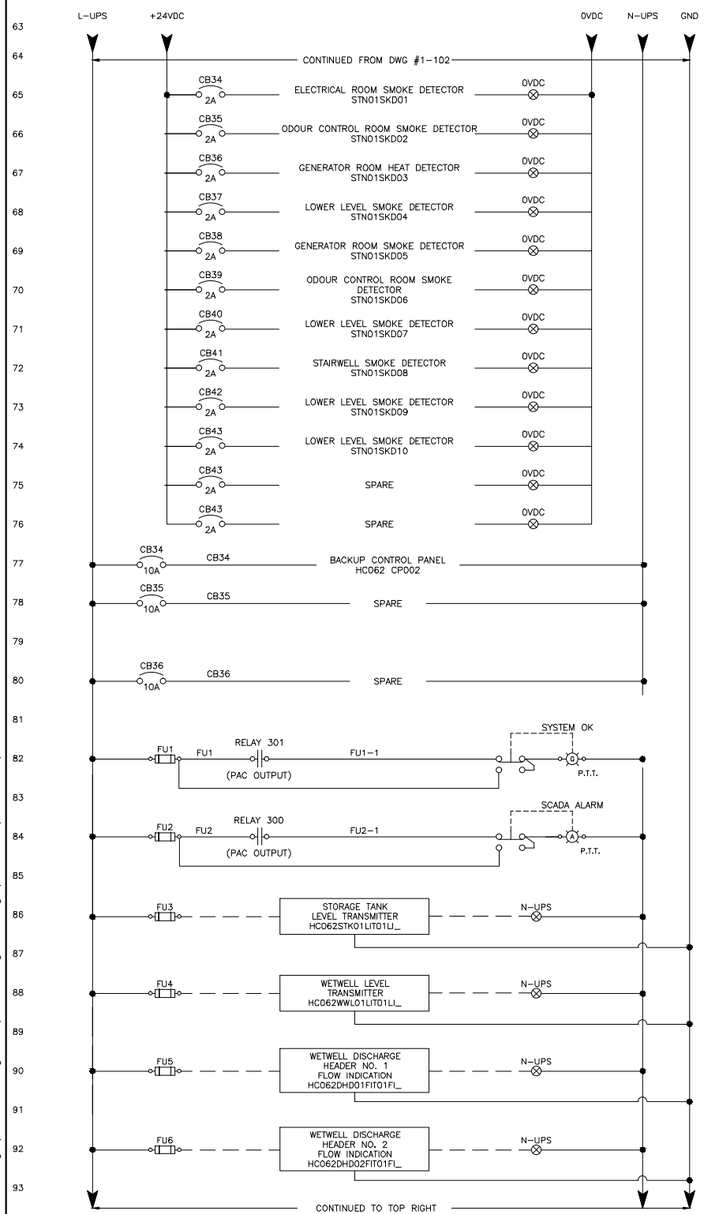
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
PAC PANEL WIRING DIAGRAM 1

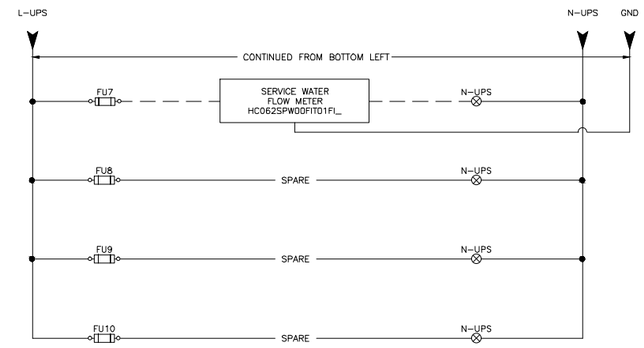
DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-102

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-102 PAC PANEL WIRING DIAGRAM 1.DWG

PAC PANEL CONTROL | PAC | PAC PANEL CONTROL | PAC



WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG –	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER



INTENTIONALLY LEFT BLANK

NOTES:

1. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT RELAY CR1 IS ENERGIZED WHEN THE LOW FLOAT IS FLOATING.
2. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT TIMER TRH1 IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING.
3. RELAY 1006 IS CONTROLLED BY A PAC OUTPUT TO ALLOW REMOTE INTERRUPTION OF BACKUP SYSTEM FOR THE WETWELL.
4. FLOATS ARE TO BE WIRED FAIL-SAFE.
5. HATCH/DOOR CONTACTS ARE TO BE WIRED IN SERIES AND FAIL-SAFE.
6. CONTACT FROM MCC TO BE CONFIGURED SUCH THAT IT OPENS ON PUMP FAILURE.
7. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT RELAY CRHHX IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
PAC PANEL WIRING DIAGRAM 2

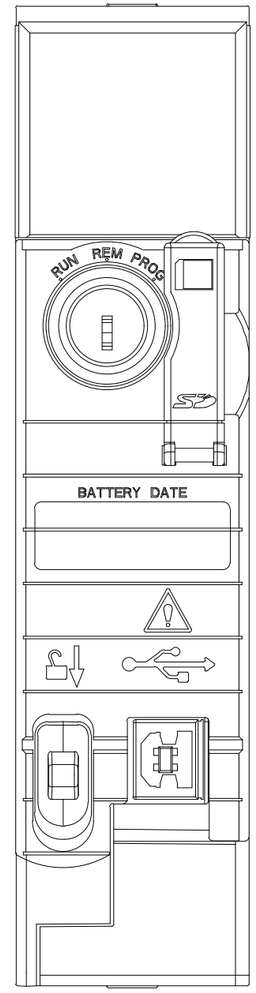
DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-103

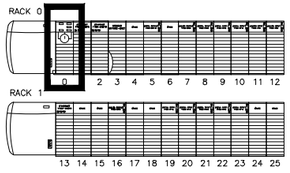
10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-103 PAC PANEL WIRING DIAGRAM 2.DWG

	FIELD DEVICE/MCC	PAC CONTROL PANEL PROCESSOR RACK 0 SLOT 0

INTENTIONALLY LEFT BLANK

1756–L73
SLOT 0 (RACK 0 SLOT 0)





NOTES:

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No.	REVISIONS	DATE	INTLS
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DRAWN BY L.M.
CHECKED BY R.V.
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100008752
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

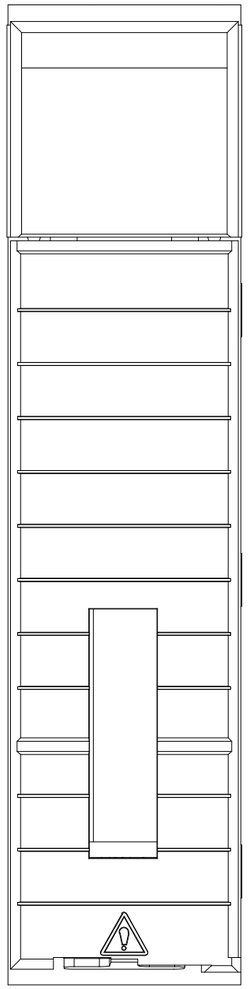
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 0 CPU

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.:
I–104

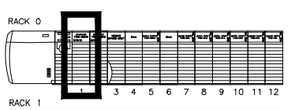
10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–104 RACK 0 SLOT 0 CPU.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL ETHERNET CARD RACK 0 SLOT 1	FIELD DEVICE/MCC	PAC CONTROL PANEL ETHERNET CARD RACK 0 SLOT 2

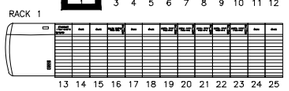
1756–EN2TR
SLOT 1 (RACK 0 SLOT 1)



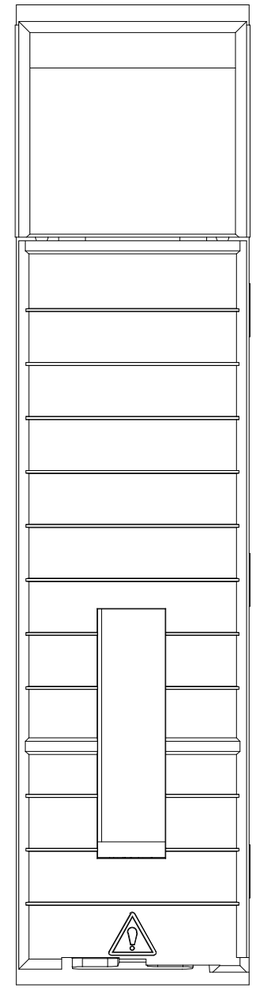
RACK 0



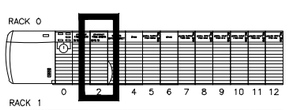
RACK 1



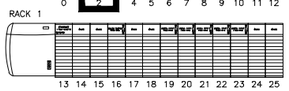
1756–EN2TR
SLOT 2 (RACK 0 SLOT 2)



RACK 0



RACK 1



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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 1 & SLOT 2 ETHERNET CARDS

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.:
I–105

10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–105 RACK 0 SLOT 1 & SLOT 2 ETHERNET CARDS.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 0 SLOT 03	FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 0 SLOT 04

POWER MONITOR

STATION CURRENT INDICATION (HC062STN01JIR01II_) — HC062STN01JIR01II_

STATION VOLTAGE INDICATION (HC062STN01JIR01EI_) — HC062STN01JIR01EI_

STATION FREQUENCY INDICATION (HC062STN01JIR01FRQ) — HC062STN01JIR01FRQ

STATION REAL POWER INDICATION (kW) (HC062STN01JIR01JI_) — HC062STN01JIR01JI_

STATION POWER FACTOR INDICATION (HC062STN01JIR01JP_) — HC062STN01JIR01JP_

STATION REACTIVE POWER INDICATION (kVAR) (HC062STN01JIR01JR_) — HC062STN01JIR01JR_

STATION COMPLEX POWER INDICATION (kVA) (HC062STN01JIR01JV_) — HC062STN01JIR01KVA

SLP01 SOFT STARTER

SLP01 CURRENT INDICATION (HC062SLP01MPR01II_) — HC062SLP01MPR01II_

SLP01 VOLTAGE INDICATION (HC062SLP01MPR01EI_) — HC062SLP01MPR01EI_

(NOTE 1)

SLP02 SOFT STARTER

SLP02 CURRENT INDICATION (HC062SLP02MPR01II_) — HC062SLP02MPR01II_

SLP02 VOLTAGE INDICATION (HC062SLP02MPR01EI_) — HC062SLP02MPR01EI_

GENERATOR

GENERATOR CURRENT INDICATION (HC062GEN0100000II_) — HC062GEN0100000II_

GENERATOR VOLTAGE INDICATION (DC099GEN0100000EI_) — DC099GEN0100000EI_

GENERATOR FREQUENCY INDICATION (HC062GEN010000FRQ) — HC062GEN0100000FRQ

GENERATOR VOLTAGE INDICATION PHASE A (HC062GEN010000EI1) — HC062GEN0100000EI1

GENERATOR VOLTAGE INDICATION PHASE B (HC062GEN010000EI2) — HC062GEN0100000EI2

GENERATOR VOLTAGE INDICATION PHASE C (HC062GEN010000EI3) — HC062GEN0100000EI3

MVI156E-MNET
SLOT 3 (RACK 0 SLOT 3)

10/100

E1

LINK/ACT

CONFIG

1756-N2
SLOT 04 (RACK 0 SLOT 04)

RACK 0

0 1 **3** 5 6 7 8 9 10 11 12

RACK 1

13 14 15 16 17 18 19 20 21 22 23 24 25

RACK 0

0 1 2 **4** 6 7 8 9 10 11 12

RACK 1

13 14 15 16 17 18 19 20 21 22 23 24 25

NOTES:
1. DRAWING IS NOT REPRESENTATIVE OF PHYSICAL NETWORK STRUCTURE.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 3 MODBUS & SLOT 4 SPARE

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-106

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-106 RACK 0 SLOT 3 MODBUS & SLOT 4 SPARE.dwg

FIELD DEVICE/MCC

PAC CONTROL PANEL RACK 0 SLOT 05

1756-OW16I
SLOT 05 (RACK 0 SLOT 05)

DC OUTPUT

ST 0 1 2 3 4 5 6 7 OK
ST 8 9 10 11 12 13 14 15

+24VDC FROM CB28
0VDC CB28

SCADA ALARM PILOT LIGHT (HC062PAC0100000XA_)
HC062PAC0100000XA_-2 → RELAY 500 → 0VDC
HC062PAC0100000XA_-1 → 0:05/00
0VDC → CB28 → DC-0 (+)
0:05/00 → OUT-0

SYSTEM OK PILOT LIGHT (HC062PAC0100000YX_)
HC062PAC0100000YX_-2 → RELAY 501 → 0VDC
HC062PAC0100000YX_-1 → 0:05/01
0VDC → CB28 → DC-1 (+)
0:05/01 → OUT-1

SPARE
RELAY 502 → 0VDC
0:05/02 → CB28 → DC-2 (+)
0:05/02 → OUT-2

SEWAGE LIFT PUMP No. 1 MCC

SEWAGE LIFT PUMP No. 1 RUN COMMAND (HC062SLP0100000MH_)
HC062SLP0100000MH_-2 → RELAY 503 → 0VDC
HC062SLP0100000MH_-1 → 0:05/03
0VDC → CB28 → DC-3 (+)
0:05/03 → OUT-3

SEWAGE LIFT PUMP No. 1 STOP COMMAND (HC062SLP0100000MB_)
HC062SLP0100000MB_-2 → RELAY 504 → 0VDC
HC062SLP0100000MB_-1 → 0:05/04
0VDC → CB28 → DC-4 (+)
0:05/04 → OUT-4

SPARE
RELAY 505 → 0VDC
0:05/05 → CB28 → DC-5 (+)
0:05/05 → OUT-5

BACKUP SYSTEM CONTROL PANEL HC062CP001

WETWELL LIT BACKUP SYSTEM REMOTE INTERRUPT (HC062CP001BCS01AB_)
HC062CP001BCS01AB_-2 → RELAY 506 → 0VDC
HC062CP001BCS01AB_-1 → 0:05/06
0VDC → CB28 → DC-6 (+)
0:05/06 → OUT-6

WETWELL FLOAT BACKUP SYSTEM REMOTE INTERRUPT (HC062CP001BCS02AB_)
HC062CP001BCS02AB_-2 → RELAY 507 → 0VDC
HC062CP001BCS02AB_-1 → 0:05/07
0VDC → CB28 → DC-7 (+)
0:05/07 → OUT-7

SPARE
RELAY 508 → 0VDC
0:05/08 → CB28 → DC-8 (+)
0:05/08 → OUT-8

RACK 0
0 1 2 3 5 7 8 9 10 11 12
RACK 1
13 14 15 16 17 18 19 20 21 22 23 24 25

CONTINUED ON RIGHT

FIELD DEVICE/MCC

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

PAC CONTROL PANEL RACK 0 SLOT 05

CONTINUED FROM LEFT

SPARE

DISCHARGE HEADER VALVE No.1

DISCHARGE HEADER NO. 1 ISOLATION VALVE OPEN COMMAND (HC062DHD01IG001OP_)
HC062DHD01IG001OP_-2 → RELAY 509 → 0VDC
HC062DHD01IG001OP_-1 → 0:05/09
0VDC → CB28 → DC-9 (+)
0:05/09 → OUT-9

DISCHARGE HEADER NO. 1 ISOLATION VALVE CLOSE COMMAND (HC062DHD01IG001CE_)
HC062DHD01IG001CE_-2 → RELAY 510 → 0VDC
HC062DHD01IG001CE_-1 → 0:05/10
0VDC → CB28 → DC-10 (+)
0:05/10 → OUT-10

SPARE
RELAY 511 → 0VDC
0:05/11 → CB28 → DC-11 (+)
0:05/11 → OUT-11

SPARE
RELAY 512 → 0VDC
0:05/12 → CB28 → DC-12 (+)
0:05/12 → OUT-12

SPARE
RELAY 513 → 0VDC
0:05/13 → CB28 → DC-13 (+)
0:05/13 → OUT-13

SPARE
RELAY 514 → 0VDC
0:05/14 → CB28 → DC-14 (+)
0:05/14 → OUT-14

SPARE
RELAY 515 → 0VDC
0:05/15 → CB28 → DC-15 (+)
0:05/15 → OUT-15

NOT USED
NOT USED

STORAGE TANK ISOLATION VALVE

STORAGE TANK ISOLATION VALVE OPEN COMMAND (HC062STK01IG001OP_)
HC062STK01IG001OP_-2
HC062STK01IG001OP_-1

STORAGE TANK ISOLATION VALVE CLOSE COMMAND (HC062STK01IG001CE_)
HC062STK01IG001CE_-2
HC062STK01IG001CE_-1

NOTES:

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DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

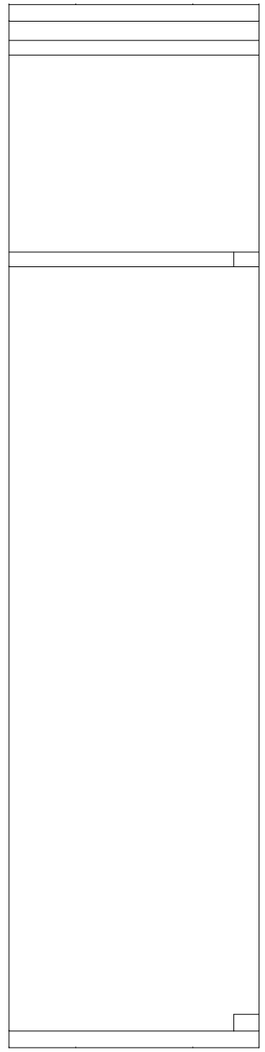
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 5 DO LOOP DIAGRAM

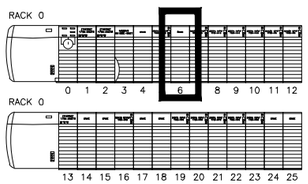
DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-107

10/08/18 P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-107 RACK 0 SLOT 5 DO LOOP DIAGRAM.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 0 SLOT 06	

1756–N2
SLOT 06 (RACK 0 SLOT 06)





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100008752
Aug 10 '18
PROVINCE OF ONTARIO

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 6 SPARE

DATE :	10/08/18
SCALE:	
FILE No.:	
CONTRACT No.:	C13–06–16
DRAWING No.:	I–108

10/08/18 P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–108 RACK 0 SLOT 6 SPARE.dwg

FIELD DEVICE/MCC

PAC CONTROL PANEL RACK 0 SLOT 07

1756-OF8I
SLOT 07 (RACK 0 SLOT 07)

ANALOG OUTPUT

CAL
OK

SEWAGE PUMP No. 1
SPEED SETPOINT (FUTURE)
(HC062SLP01VFD01SC_)

HC062SLP01VFD01SC_+ → 700+ → 0:07.00+ → OUT_0/V
HC062SLP01VFD01SC_+ → 700+ → 0:07.00+ → OUT_0/1
HC062SLP01VFD01SC_− → 700− → 0:07.00− → RTN_0
SHLD → NOT USED

OUT_1/V

SPARE

701+ → 0:07.01+ → OUT_1/1
701− → 0:07.01− → RTN_1
SHLD → NOT USED

OUT_2/V

WETWELL TRANSFER VALVE
POSITION COMMAND
(HC062WWL01MV001ZC_)

HC062WWL01MV001ZC_+ → 702+ → 0:07.02+ → OUT_2/1
HC062WWL01MV001ZC_− → 702− → 0:07.02− → RTN_2
SHLD → NOT USED

OUT_3/V

SPARE

703+ → 0:07.03+ → OUT_3/1
703− → 0:07.03− → RTN_3
SHLD → NOT USED

OUT_4/V

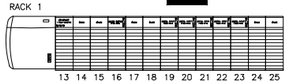
SEWAGE LIFT PUMP No. 2
SPEED SETPOINT (FUTURE)
(HC062SLP02VFD01SC_)

HC062SLP02VFD01SC_+ → 704+ → 0:07.04+ → OUT_4/1
HC062SLP02VFD01SC_− → 704− → 0:07.04− → RTN_4
SHLD → NOT USED

RACK 0



RACK 1



CONTINUED ON RIGHT

FIELD DEVICE/MCC

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

SPARE

SPARE

SPARE

PAC CONTROL PANEL RACK 0 SLOT 07

OUT_5/V

705+ → 0:07.05+ → OUT_5/1
705− → 0:07.05− → RTN_5
SHLD → NOT USED

OUT_6/V

706+ → 0:07.06+ → OUT_6/1
706− → 0:07.06− → RTN_6
SHLD → NOT USED

OUT_7/V

707+ → 0:07.07+ → OUT_7/1
707− → 0:07.07− → RTN_7
SHLD → NOT USED

NOT USED
NOT USED
NOT USED
NOT USED
NOT USED

NOTES:

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 7 AO LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-109

10/08/18
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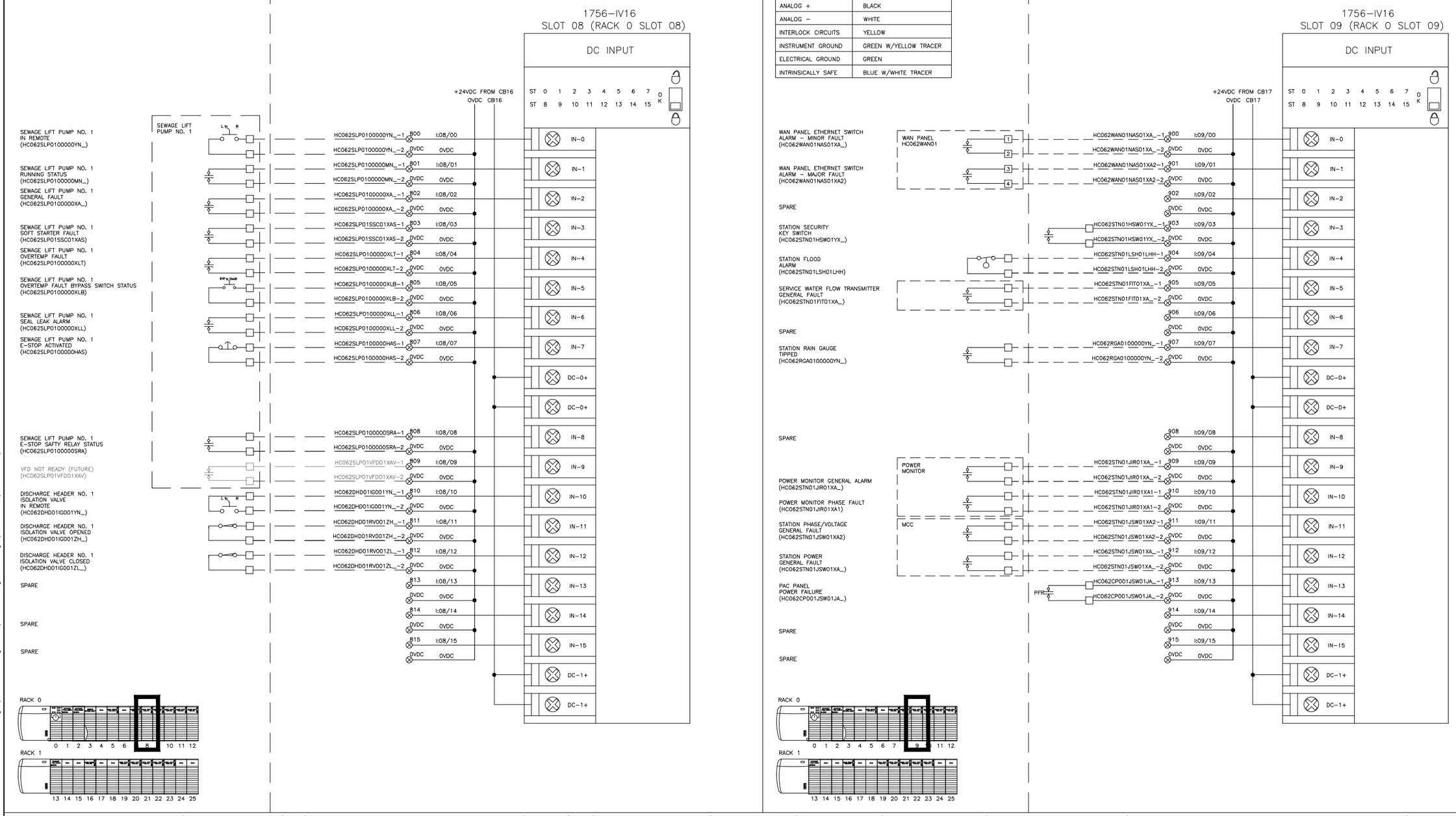
FIELD DEVICE/MCC

PAC CONTROL PANEL RACK 0 SLOT 08

FIELD DEVICE/MCC

PAC CONTROL PANEL RACK 0 SLOT 09

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER



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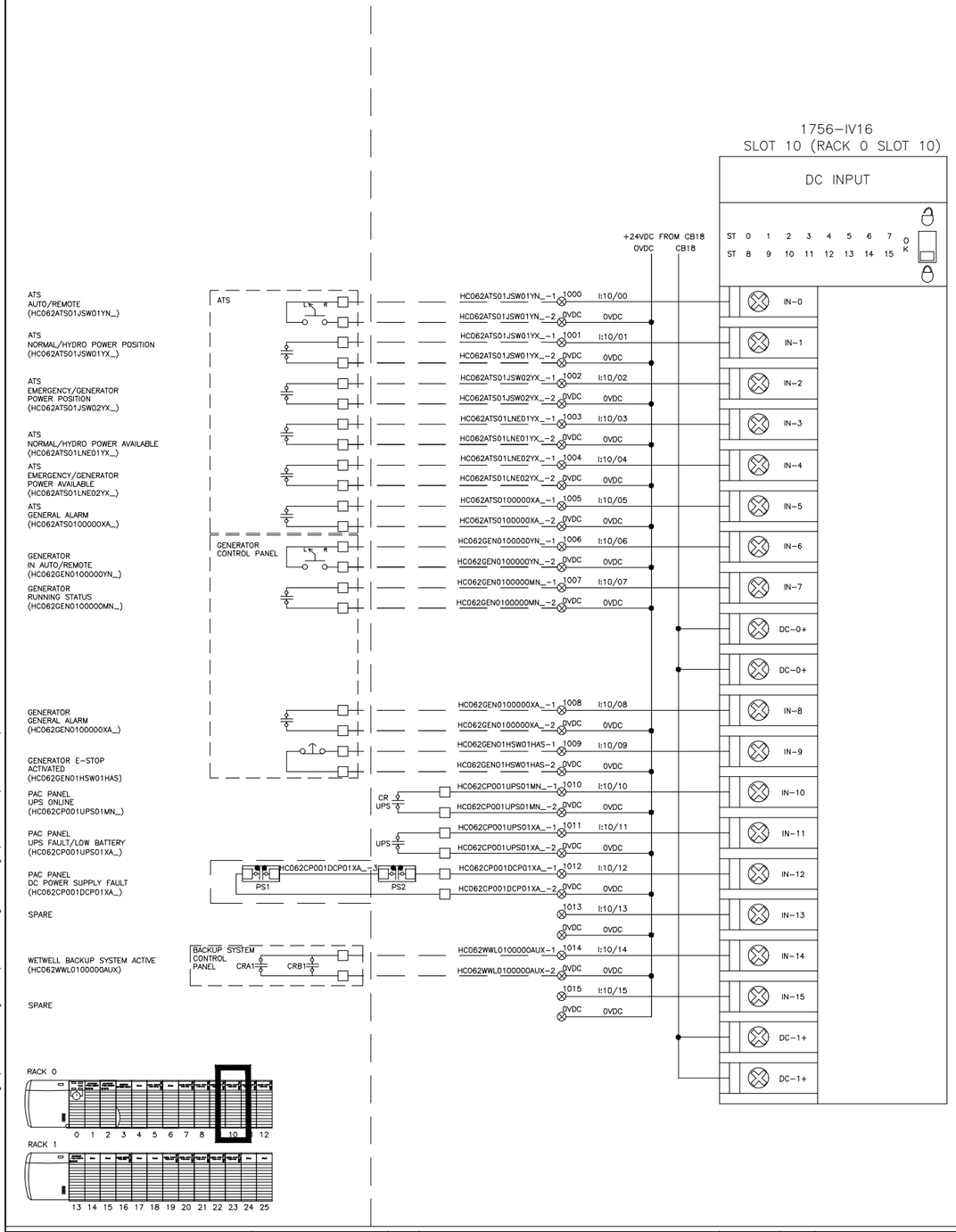
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 8 & 9 DI LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-110

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-110 RACK 0 SLOT 8 & 9 DI LOOP DIAGRAM.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 0 SLOT 10	



WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG –	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

INTENTIONALLY LEFT BLANK

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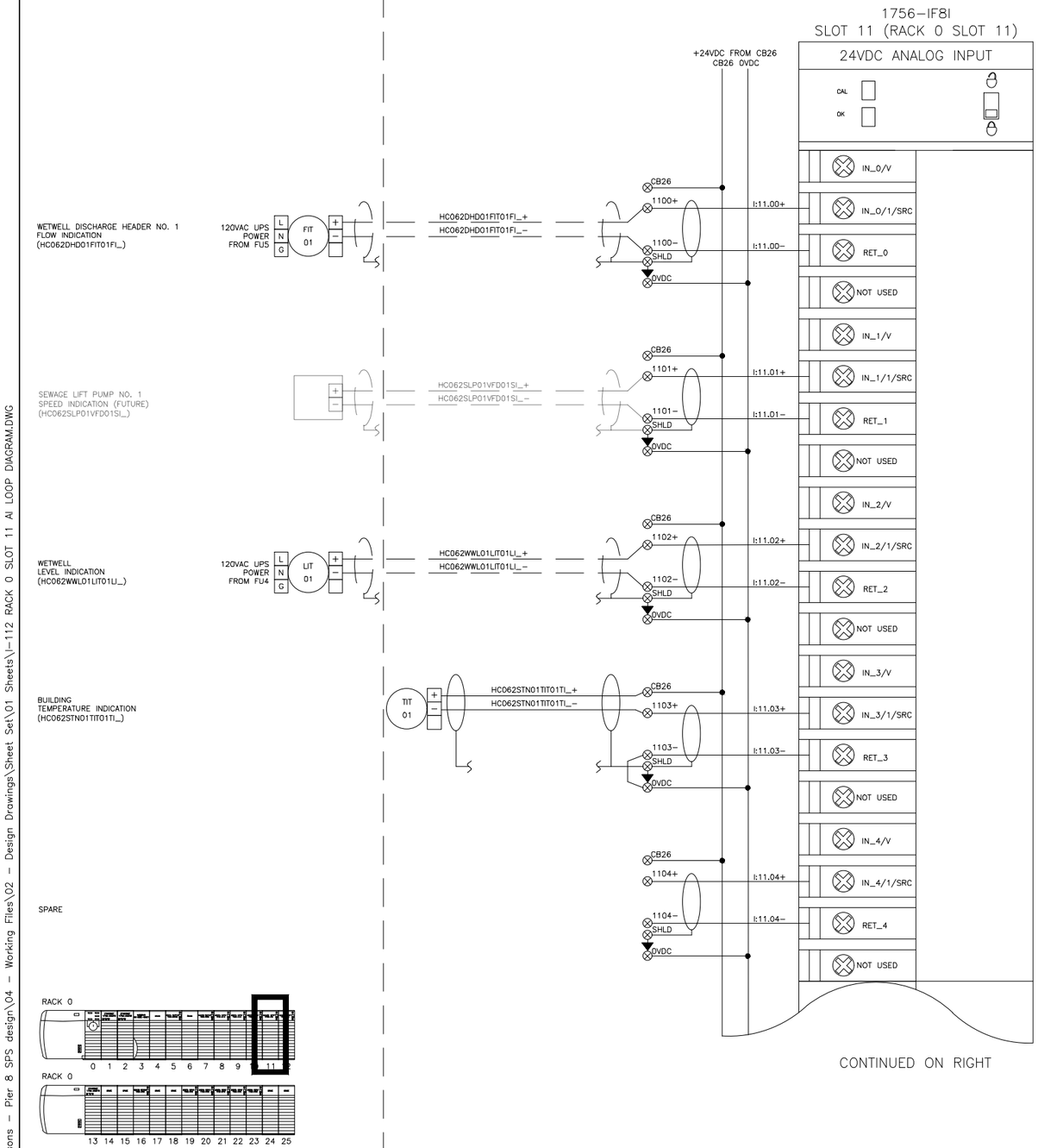
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 10 DI LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I–111

10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–111 RACK 0 SLOT 10 DI LOOP DIAGRAM.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 0 SLOT 11	FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 0 SLOT 11



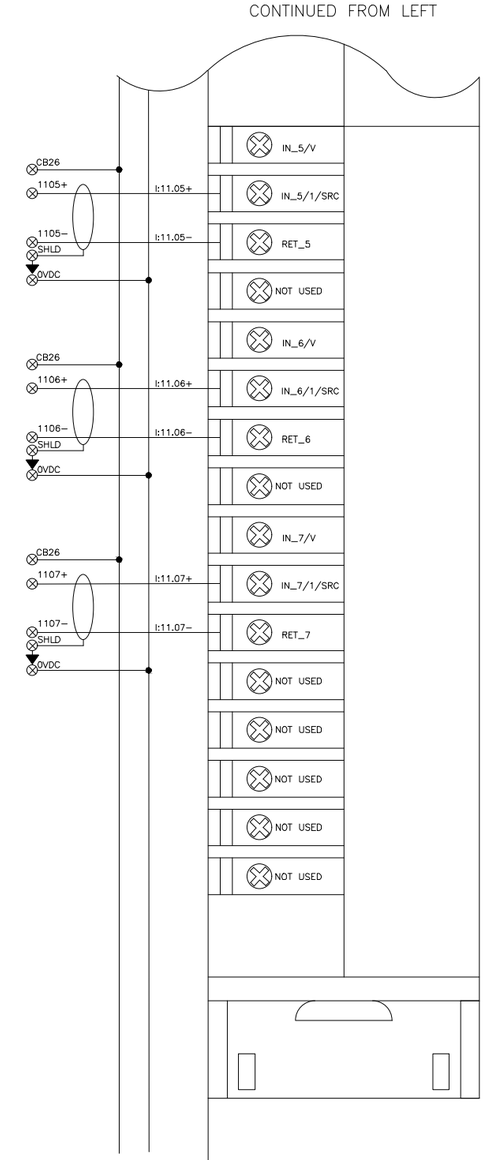
WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG -	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

SPARE

SPARE

SPARE

SPARE



NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

STAMP: LICENSED PROFESSIONAL ENGINEER, M. A. PRESTI, 100008752, Aug 10 18, PROVINCE OF ONTARIO

VERIFY SCALE
BAR IS 25mm ON ORIGINAL DRAWING.
0 25mm
IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 11 AI LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-112

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-112 RACK 0 SLOT 11 AI LOOP DIAGRAM.DWG

FIELD DEVICE/MCC | PAC CONTROL PANEL RACK 0 SLOT 12 | FIELD DEVICE/MCC | PAC CONTROL PANEL RACK 0 SLOT 12

1756-IF8I
SLOT 12 (RACK 0 SLOT 12)

+24VDC FROM CB27
CB27 0VDC

24VDC ANALOG INPUT

CAL
OK

WETWELL DISCHARGE HEADER NO. 2
FLOW INDICATION
(HC062DHD02FIT01FI_)

120VAC UPS POWER FROM FU6
L N G
FIT 02
+ −

HC062DHD02FIT01FI_+
HC062DHD02FIT01FI_−

CB27
1200+ → I:12.00+ → IN_0/V
1200+ → I:12.00+ → IN_0/1/SRC
1200− → I:12.00− → RET_0
SHLD
0VDC
NOT USED

SEWAGE LIFT PUMP NO. 2
SPEED INDICATION (FUTURE)
(HC062SLP02VFD01SI_)

HC062SLP02VFD01SI_+
HC062SLP02VFD01SI_−

CB27
1201+ → I:12.01+ → IN_1/V
1201+ → I:12.01+ → IN_1/1/SRC
1201− → I:12.01− → RET_1
SHLD
0VDC
NOT USED

STORAGE TANK
LEVEL INDICATION
(HC062STK01LIT01LI_)

120VAC UPS POWER FROM FU3
L N G
LIT 02
+ −

HC062STK01LIT01U_+
HC062STK01LIT01U_−

CB27
1202+ → I:12.02+ → IN_2/V
1202+ → I:12.02+ → IN_2/1/SRC
1202− → I:12.02− → RET_2
SHLD
0VDC
NOT USED

SERVICE WATER
FLOW INDICATION
(HC062STN01FIT01FI_)

120VAC UPS POWER FROM FU7
L N G
FIT 03
+ −

HC062STN01FIT01FI_+
HC062STN01FIT01FI_−

CB27
1203+ → I:12.03+ → IN_3/V
1203+ → I:12.03+ → IN_3/1/SRC
1203− → I:12.03− → RET_3
SHLD
0VDC
NOT USED

WETWELL TRANSFER GATE
POSITION INDICATION
(HC062WWL01IG001ZI_)

MV 001
+ −

HC062WWL01IG001ZI_+
HC062WWL01IG001ZI_−

CB27
1204+ → I:12.04+ → IN_4/V
1204+ → I:12.04+ → IN_4/1/SRC
1204− → I:12.04− → RET_4
SHLD
0VDC
NOT USED

CONTINUED ON RIGHT

RACK 0
0 1 2 3 4 5 6 7 8 9 10 12

RACK 0
105 114 125 135 147 158 169 270 281 292 203 24 25

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

SPARE

SPARE

SPARE

SPARE

CONTINUED FROM LEFT

CB27
1205+ → I:12.05+ → IN_5/V
1205+ → I:12.05+ → IN_5/1/SRC
1205− → I:12.05− → RET_5
SHLD
0VDC
NOT USED

CB27
1206+ → I:12.06+ → IN_6/V
1206+ → I:12.06+ → IN_6/1/SRC
1206− → I:12.06− → RET_6
SHLD
0VDC
NOT USED

CB27
1207+ → I:12.07+ → IN_7/V
1207+ → I:12.07+ → IN_7/1/SRC
1207− → I:12.07− → RET_7
SHLD
0VDC
NOT USED
NOT USED
NOT USED
NOT USED
NOT USED

NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

STAMP
LICENSED PROFESSIONAL ENGINEER
M. A. PRESTI
100008752
PROVINCE OF ONTARIO

VERIFY SCALE
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0 ____ 25mm
IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

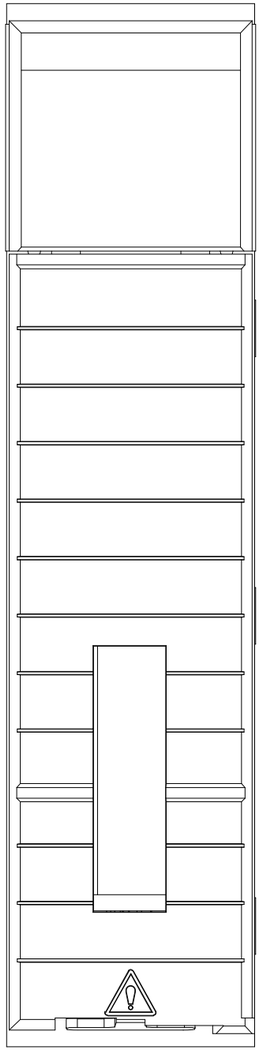
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 0 SLOT 12 AI LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-113

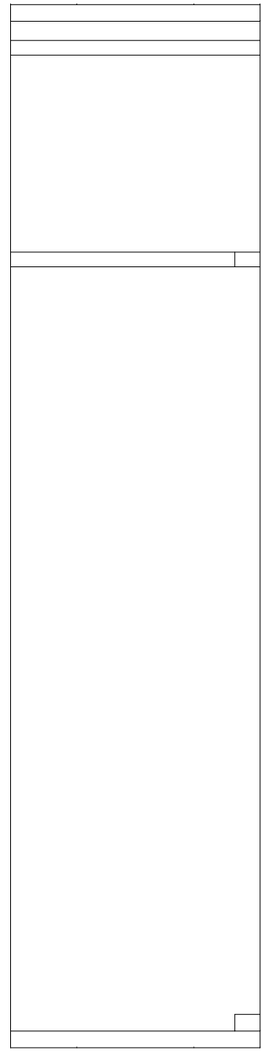
10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-113 RACK 0 SLOT 12 AI LOOP DIAGRAM.DWG

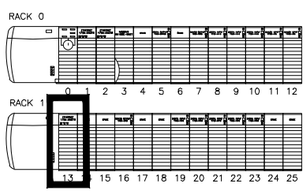
FIELD DEVICE/MCC	PAC CONTROL PANEL ETHERNET CARD RACK 1 SLOT 13	FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 14

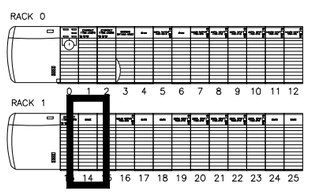
1756–EN2TR
SLOT 13 (RACK 1 SLOT 13)



1756–N2
SLOT 14 (RACK 1 SLOT 14)







NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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LICENSED PROFESSIONAL ENGINEER
M.A. PRESTI
100008752
Aug 10 18
PROVINCE OF ONTARIO

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

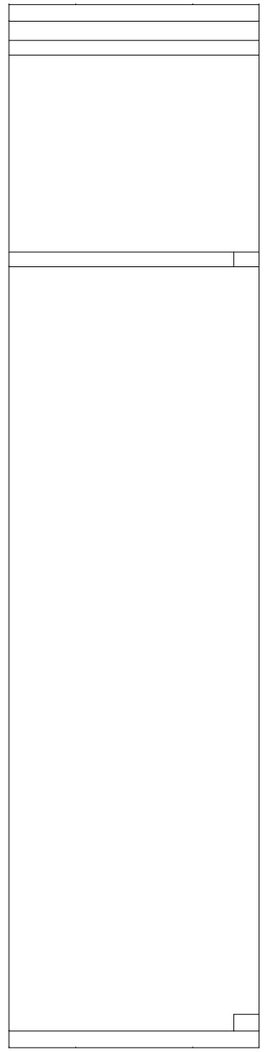
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 13 ETHERNET CARD & SLOT 14 SPARE

DATE :	10/08/18
SCALE:	
FILE No.:	
CONTRACT No.:	C13–06–16
DRAWING No.:	I–114

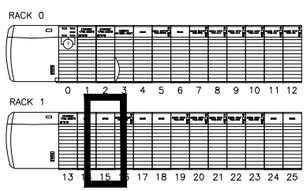
10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–114 RACK 1 SLOT 13 ETHERNET CARD & SLOT 14 SPARE.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 15

1756–N2
SLOT 15 (RACK 1 SLOT 15)



INTENTIONALLY LEFT BLANK



NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.V.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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LICENSED PROFESSIONAL ENGINEER
M. A. PRESTI
100008752
Aug 10 '18
PROVINCE OF ONTARIO

VERIFY SCALE
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 15 SPARE

DATE :	10/08/18
SCALE:	
FILE No.:	
CONTRACT No.:	C13–06–16
DRAWING No.:	I–115

10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–115 RACK 1 SLOT 15 SPARE.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 16	FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 16

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

1756-OW16I
SLOT 16 (RACK 1 SLOT 16)

DC OUTPUT

ST 0 1 2 3 4 5 6 7 OK
ST 8 9 10 11 12 13 14 15

+24VDC FROM CB29
0VDC CB29

SEWAGE LIFT PUMP No. 2

SEWAGE LIFT PUMP No. 2 RUN COMMAND (HC062SLP0200000MH_)
SEWAGE LIFT PUMP No. 2 STOP COMMAND (HC062SLP0200000MB_)
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

HC062SLP0200000MH_-2
HC062SLP0200000MH_-1
HC062SLP0200000MB_-2
HC062SLP0200000MB_-1

RELAY 1600	0VDC	0:16/00	CB29
RELAY 1601	0VDC	0:16/01	CB29
RELAY 1602	0VDC	0:16/02	CB29
RELAY 1603	0VDC	0:16/03	CB29
RELAY 1604	0VDC	0:16/04	CB29
RELAY 1605	0VDC	0:16/05	CB29
RELAY 1606	0VDC	0:16/06	CB29
RELAY 1607	0VDC	0:16/07	CB29
RELAY 1608	0VDC	0:16/08	CB29

DC-0 (+) OUT-0
DC-1 (+) OUT-1
DC-2 (+) OUT-2
DC-3 (+) OUT-3
DC-4 (+) OUT-4
DC-5 (+) OUT-5
DC-6 (+) OUT-6
DC-7 (+) OUT-7
DC-8 (+) OUT-8

CONTINUED ON RIGHT

CONTINUED FROM LEFT

SPARE

STORAGE TANK ISOLATION VALVE OPEN COMMAND (HC062STK01IG0010P_)
STORAGE TANK ISOLATION VALVE CLOSE COMMAND (HC062STK01IG001CE_)
SPARE

STORAGE TANK ISOLATION VALVE

HC062STK01IG0010P_-2
HC062STK01IG0010P_-1
HC062STK01IG001CE_-2
HC062STK01IG001CE_-1

DISCHARGE HEADER NO. 2 ISOLATION VALVE OPEN COMMAND (HC062DHD02IG0010P_)
DISCHARGE HEADER NO. 2 ISOLATION VALVE CLOSE COMMAND (HC062DHD02IG001CE_)
SPARE

DISCHARGE HEADER VALVE No.2

HC062DHD02IG0020P_-2
HC062DHD02IG0020P_-1
HC062DHD02IG002CE_-2
HC062DHD02IG002CE_-1

RELAY 1609	0VDC	0:16/09	CB29
RELAY 1610	0VDC	0:16/10	CB29
RELAY 1611	0VDC	0:16/11	CB29
RELAY 1612	0VDC	0:16/12	CB29
RELAY 1613	0VDC	0:16/13	CB29
RELAY 1614	0VDC	0:16/14	CB29
RELAY 1615	0VDC	0:16/15	CB29

DC-9 (+) OUT-9
DC-10 (+) OUT-10
DC-11 (+) OUT-11
DC-12 (+) OUT-12
DC-13 (+) OUT-13
DC-14 (+) OUT-14
DC-15 (+) OUT-15
NOT USED
NOT USED

RACK 0
0 1 2 3 4 5 6 7 8 9 10 11 12
RACK 1
13 14 15 16 17 18 19 20 21 22 23 24 25

NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

STAMP: LICENSED PROFESSIONAL ENGINEER M.A. PRESTI 100008752 Aug 10 '18 PROVINCE OF ONTARIO

VERIFY SCALE
BAR IS 25mm ON ORIGINAL DRAWING.
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IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

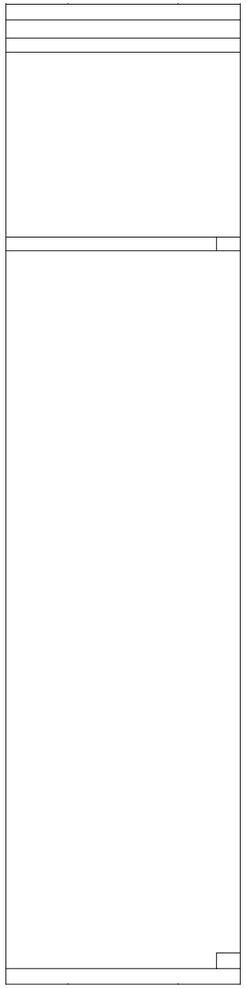
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 16 DO LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-116

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-116 RACK 1 SLOT 16 DO LOOP DIAGRAM.DWG

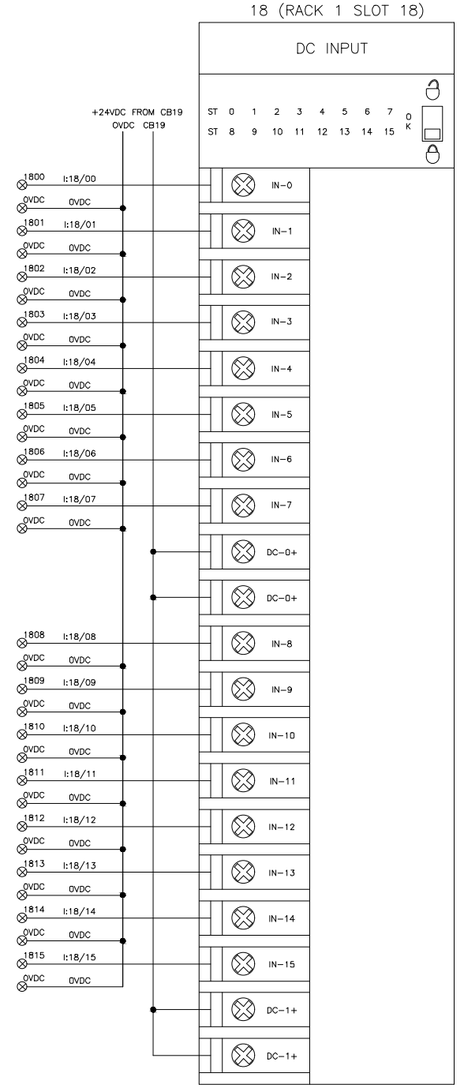
FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 17	FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 18

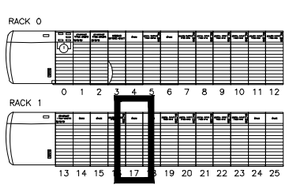
1756-N2
SLOT 17 (RACK 1 SLOT 17)

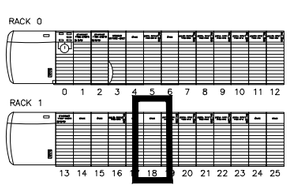


SPARE
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SPARE
SPARE

1756-IV16
18 (RACK 1 SLOT 18)







NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

STAMP
LICENSED PROFESSIONAL ENGINEER
M.A. PRESTI
100008752
10 08 18
PROVINCE OF ONTARIO

VERIFY SCALE
BAR IS 25mm ON ORIGINAL DRAWING.
0 25mm
IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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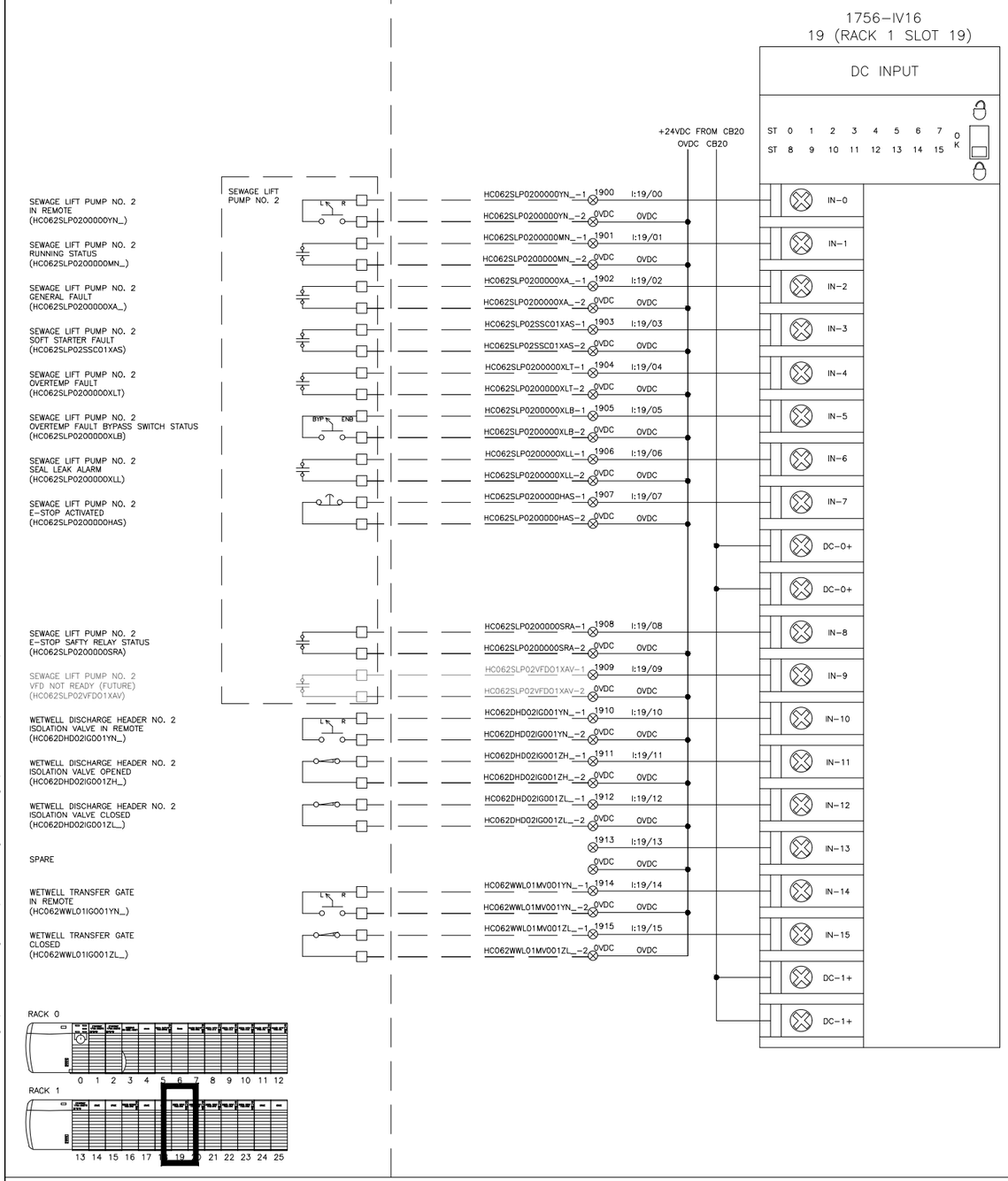
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

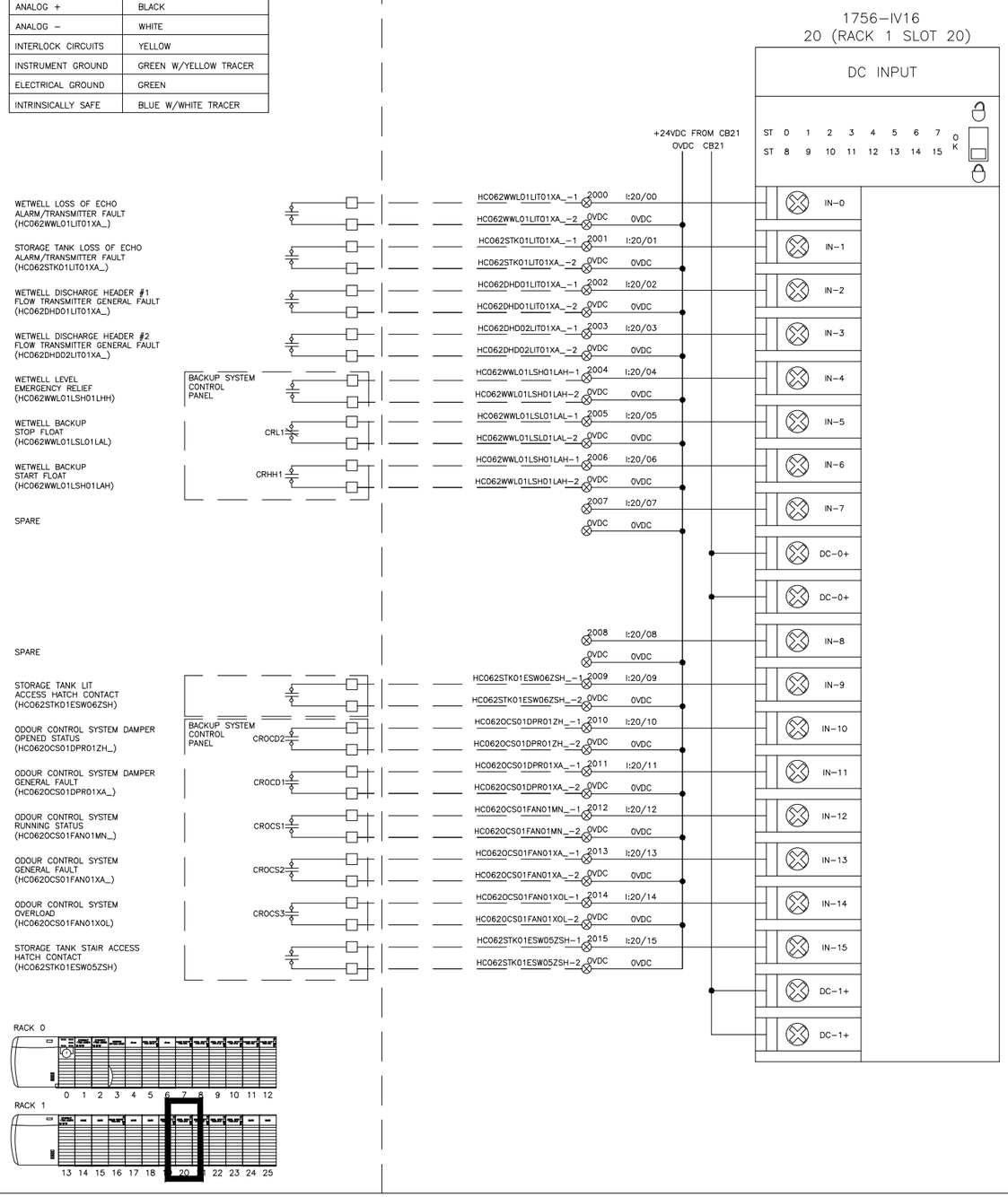
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 17 SPARE & 18 DI LOOP DIAGARAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-117

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-117RACK 1 SLOT 17 SPARE & 18 DI LOOP DIAGRAM.DWG

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG –	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER





NOTES:

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

STAMP: LICENSED PROFESSIONAL ENGINEER M. A. PRESTI 100008752 Aug 10 '18 PROVINCE OF ONTARIO

VERIFY SCALE
BAR IS 25mm ON ORIGINAL DRAWING.
0 25mm
IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 19 & 20 DI LOOP DIAGRAM

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.: I–118

10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–118 RACK 1 SLOT 19 & 20 DI LOOP DIAGRAM.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 21	FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 22

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

1756−IV16
SLOT 21 (RACK 1 SLOT 21)

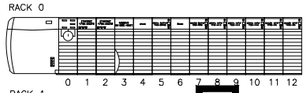
DC INPUT

ST 0 1 2 3 4 5 6 7 O K
ST 8 9 10 11 12 13 14 15

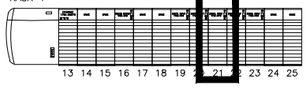
+24VDC FROM CB22 — 0VDC CB22

EXHAUST FAN EF−1 IN REMOTE HC062EXF0100000YN_	EXHAUST FAN 1	HC062EXF0100000YN_−1	2100	I:21/00	IN−0
		HC062EXF0100000YN_−2	0VDC	0VDC	
EXHAUST FAN EF−1 RUNNING STATUS HC062EXF0100000MN_		HC062EXF0100000MN_−1	2101	I:21/01	IN−1
		HC062EXF0100000MN_−2	0VDC	0VDC	
EXHAUST FAN EF−1 GENERAL FAULT HC062EXF0100000XA_		HC062EXF0100000XA_−1	2102	I:21/02	IN−2
		HC062EXF0100000XA_−2	0VDC	0VDC	
EXHAUST FAN EF−2 IN REMOTE HC062EXF0200000YN_	EXHAUST FAN 2	HC062EXF0200000YN_−1	2103	I:21/03	IN−3
		HC062EXF0200000YN_−2	0VDC	0VDC	
EXHAUST FAN EF−2 RUNNING STATUS HC062EXF0200000MN_		HC062EXF0200000MN_−1	2104	I:21/04	IN−4
		HC062EXF0200000MN_−2	0VDC	0VDC	
EXHAUST FAN EF−2 GENERAL FAULT HC062EXF0200000XA_		HC062EXF0200000XA_−1	2105	I:21/05	IN−5
		HC062EXF0200000XA_−2	0VDC	0VDC	
EXHAUST FAN EF−3 IN REMOTE HC062EXF0300000YN_	EXHAUST FAN 3	HC062EXF0300000YN_−1	2106	I:21/06	IN−6
		HC062EXF0300000YN_−2	0VDC	0VDC	
EXHAUST FAN EF−3 RUNNING STATUS HC062EXF0300000MN_		HC062EXF0300000MN_−1	2107	I:21/07	IN−7
		HC062EXF0300000MN_−2	0VDC	0VDC	
					DC−0+
					DC−0+
EXHAUST FAN EF−3 GENERAL FAULT HC062EXF0300000XA_		HC062EXF0300000XA_−1	2108	I:21/08	IN−8
		HC062EXF0300000XA_−2	0VDC	0VDC	
SPARE			2109	I:21/09	IN−9
			0VDC	0VDC	
MAKE−UP AIR UNIT MAU−1 FAN RUNNING STATUS HC062MAU01FAN01MN_	MAKE UP AIR UNIT	HC062MAU01FAN01MN_−1	2110	I:21/10	IN−10
		HC062MAU01FAN01MN_−2	0VDC	0VDC	
MAKE−UP AIR UNIT MAU−1 FAN GENERAL FAULT HC062MAU01FAN01XA_		HC062MAU01FAN01XA_−1	2111	I:21/11	IN−11
		HC062MAU01FAN01XA_−2	0VDC	0VDC	
MAKE−UP AIR UNIT MAU−1 HEATER ON STATUS HC062MAU0100000MN_		HC062MAU0100000MN_−1	2112	I:21/12	IN−12
		HC062MAU0100000MN_−2	0VDC	0VDC	
MAKE−UP AIR UNIT MAU−1 HEATER GENERAL FAULT HC062MAU0100000XA_		HC062MAU0100000XA_−1	2113	I:21/13	IN−13
		HC062MAU0100000XA_−2	0VDC	0VDC	
SPARE			2114	I:21/14	IN−14
			0VDC	0VDC	
SPARE			2115	I:21/15	IN−15
			0VDC	0VDC	
					DC−1+
					DC−1+

RACK 0



RACK 1



1756−IV16
SLOT 22 (RACK 1 SLOT 22)

DC INPUT

ST 0 1 2 3 4 5 6 7 O K
ST 8 9 10 11 12 13 14 15

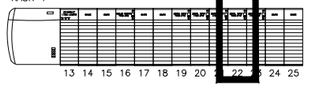
+24VDC FROM CB23 — 0VDC CB23

ODOUR CONTROL ROOM OVERHEAD DOOR CONTACT (HC062STN01ESW02ZSH)	BACKUP SYSTEM CONTROL PANEL CROC2	HC062STN01ESW02ZSH−1	2200	I:22/00	IN−0
		HC062STN01ESW02ZSH−2	0VDC	0VDC	
ELECTRICAL ROOM DOOR CONTACT (HC062STN01ESW05ZSH)		HC062STN01ESW05ZSH−1	2201	I:22/01	IN−1
		HC062STN01ESW05ZSH−2	0VDC	0VDC	
WETWELL HATCH CONTACT (HC062WWL01ESW02ZSH)	BACKUP SYSTEM CONTROL PANEL CRWHA2	HC062WWL01ESW02ZSH−1	2202	I:22/02	IN−2
		HC062WWL01ESW02ZSH−2	0VDC	0VDC	
STORAGE TANK HATCH CONTACT (HC062STK01ESW02ZSH)	CRSHA2	HC062STK01ESW02ZSH−1	2203	I:22/03	IN−3
		HC062STK01ESW02ZSH−2	0VDC	0VDC	
STORAGE TANK HATCH CONTACT (HC062STK01ESW04ZSH)	CRSHA4	HC062STK01ESW04ZSH−1	2204	I:22/04	IN−4
		HC062STK01ESW04ZSH−2	0VDC	0VDC	
ODOUR CONTROL ROOM SMOKE/FIRE ALARM (HC062STN01SKD05XA_)		HC062STN01SKD05XA_−1	2205	I:22/05	IN−5
		HC062STN01SKD05XA_−2	0VDC	0VDC	
ODOUR CONTROL ROOM SMOKE/FIRE ALARM (HC062STN01SKD04XA_)		HC062STN01SKD06XA_−1	2206	I:22/06	IN−6
		HC062STN01SKD06XA_−2	0VDC	0VDC	
STAIRWELL SMOKE/FIRE ALARM (HC062STN01SKD08XA_)		HC062STN01SKD08XA_−1	2207	I:22/07	IN−7
		HC062STN01SKD08XA_−2	0VDC	0VDC	
					DC−0+
					DC−0+
LOWER LEVEL SMOKE/FIRE ALARM (HC062STN01SKD09XA_)		HC062STN01SKD09XA_−1	2208	I:22/08	IN−8
		HC062STN01SKD09XA_−2	0VDC	0VDC	
LOWER LEVEL SMOKE/FIRE ALARM (HC062STN01SKD10XA_)		HC062STN01SKD10XA_−1	2209	I:22/09	IN−9
		HC062STN01SKD10XA_−2	0VDC	0VDC	
SPARE			2210	I:22/10	IN−10
			0VDC	0VDC	
SPARE			2211	I:22/11	IN−11
			0VDC	0VDC	
SPARE			2212	I:22/12	IN−12
			0VDC	0VDC	
STORAGE TANK ISOLATION VALVE IN REMOTE (HC062STK01IG001YN_)	STORAGE TANK ISOLATION VALVE	HC062STK01IG001YN_−1	2213	I:22/13	IN−13
		HC062STK01IG001YN_−2	0VDC	0VDC	
STORAGE TANK ISOLATION VALVE OPENED STATUS (HC062STK01IG001ZH_)		HC062STK01IG001ZH_−1	2214	I:22/14	IN−14
		HC062STK01IG001ZH_−2	0VDC	0VDC	
STORAGE TANK ISOLATION VALVE CLOSED STATUS (HC062STK01IG001ZL_)		HC062STK01IG001ZL_−1	2215	I:22/15	IN−15
		HC062STK01IG001ZL_−2	0VDC	0VDC	
					DC−1+
					DC−1+

RACK 0



RACK 1



NOTES:

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No.	REVISIONS	DATE	INTLS
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DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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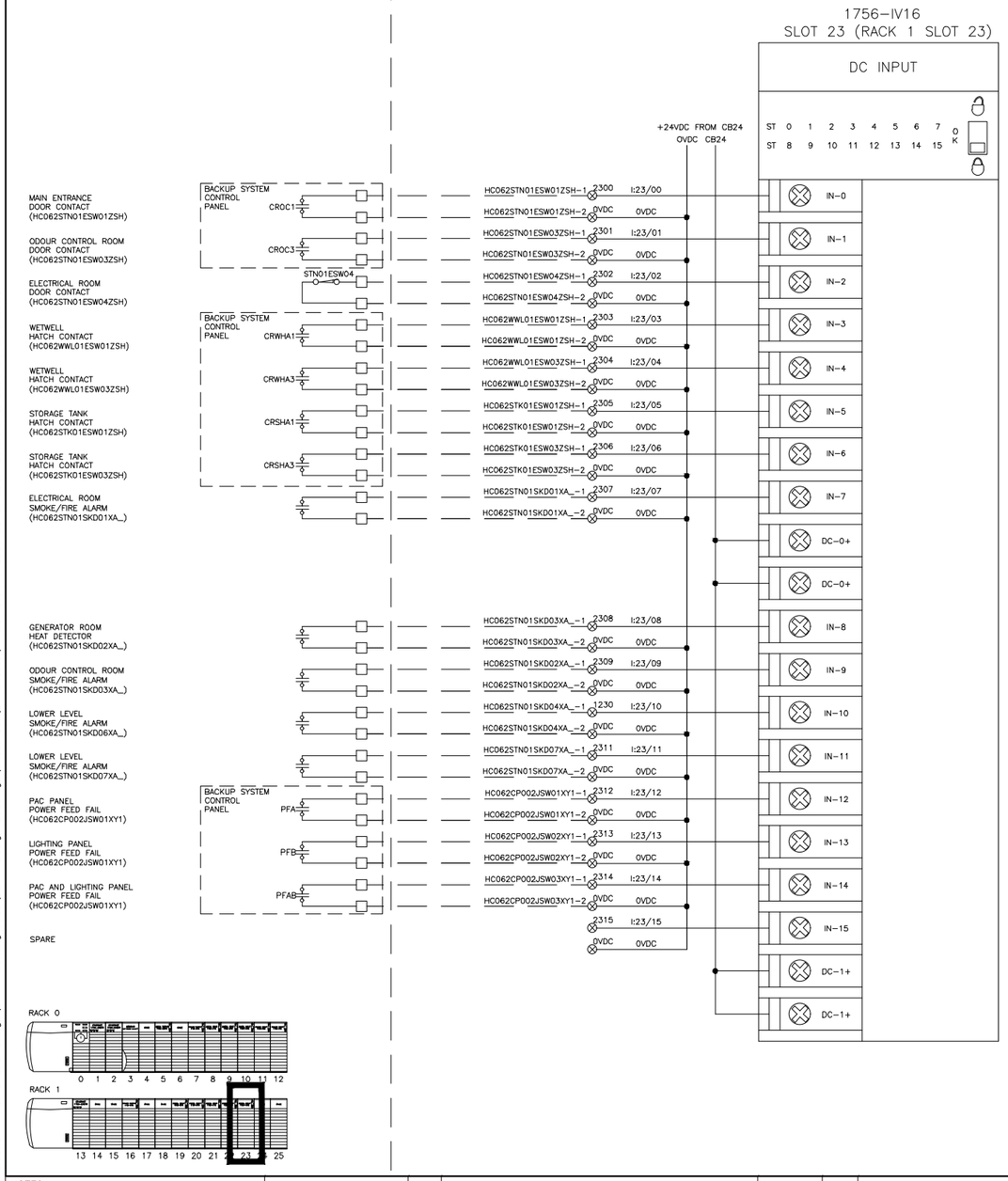
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 21 & 22 DI LOOP DIAGRAM

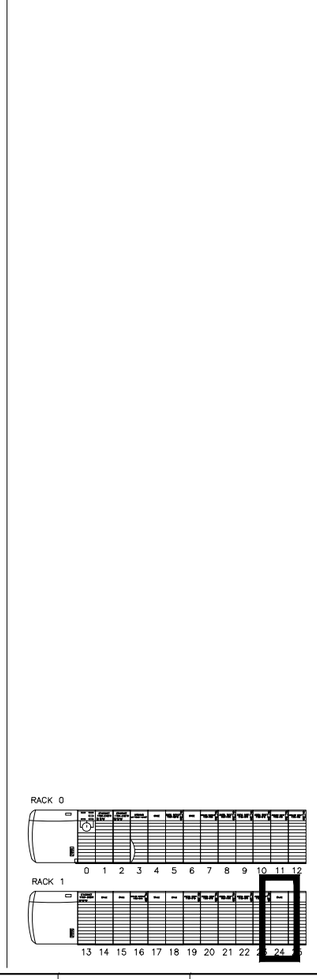
DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13−06−16
DRAWING No.: I−119

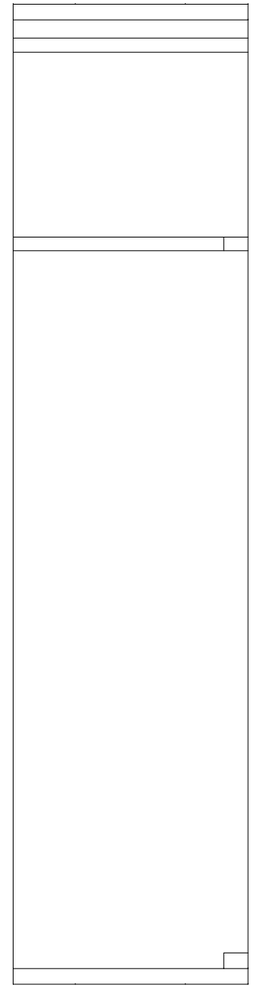
10/08/18
P:\Projects\17126 − Parsons − Pier 8 SPS design\04 − Working Files\02 − Design Drawings\Sheet Set\01 Sheets\I−119 RACK 1 SLOT 21 & 22 DI LOOP DIAGRAM.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 23	FIELD DEVICE / MCC	PAC CONTROL PANEL RACK 1 SLOT 24



WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG –	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER





NOTES:

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

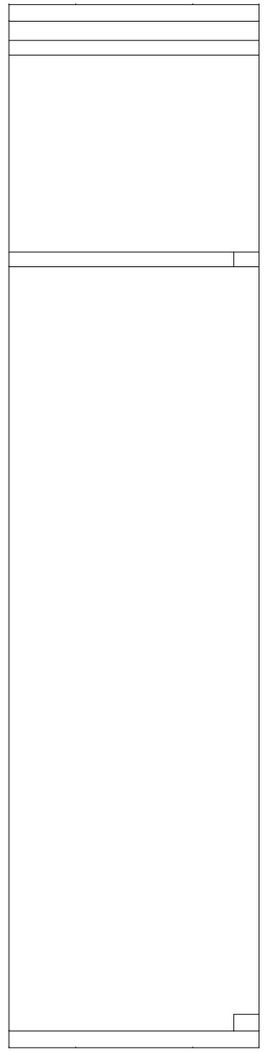
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 23 DI LOOP DIAGRAM & SLOT 24 SPARE

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.: I–120

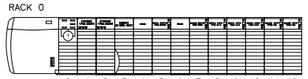
10/08/18
P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–120 RACK 1 SLOT 23 DI LOOP DIAGRAM & SLOT 24 SPARE.DWG

FIELD DEVICE/MCC	PAC CONTROL PANEL RACK 1 SLOT 25	

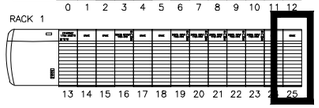
1756–N2
SLOT 25 (RACK 1 SLOT 25)



RACK 0



RACK 1



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10/08/18 P:\Projects\17126 – Parsons – Pier 8 SPS design\04 – Working Files\02 – Design Drawings\Sheet Set\01 Sheets\I–121 RACK 1 SLOT 25 SPARE.DWG

NOTES:

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No.	REVISIONS	DATE	INTLS
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
RACK 1 SLOT 25 SPARE

DATE :	10/08/18
SCALE:	
FILE No.:	
CONTRACT No.:	C13–06–16
DRAWING No.:	I–121

MODULE 8		
	○	
○	800	○
○	CB16	○
○	801	○
○	CB16	○
○	802	○
○	CB16	○
○	803	○
○	CB16	○
○	804	○
○	CB16	○
○	805	○
○	CB16	○
○	806	○
○	CB16	○
○	807	○
○	CB16	○
○	808	○
○	CB16	○
○	809	○
○	CB16	○
○	810	○
○	CB16	○
○	811	○
○	CB16	○
○	812	○
○	CB16	○
○	813	○
○	CB16	○
○	814	○
○	CB16	○
○	815	○
○	CB16	○
	○	

MODULE 9		
	○	
○	900	○
○	CB17	○
○	901	○
○	CB17	○
○	902	○
○	CB17	○
○	903	○
○	CB17	○
○	904	○
○	CB17	○
○	905	○
○	CB17	○
○	906	○
○	CB17	○
○	907	○
○	CB17	○
○	908	○
○	CB17	○
○	909	○
○	CB17	○
○	910	○
○	CB17	○
○	911	○
○	CB17	○
○	912	○
○	CB17	○
○	913	○
○	CB17	○
○	914	○
○	CB17	○
○	915	○
○	CB17	○
	○	

MODULE 10		
	○	
○	1000	○
○	CB18	○
○	1001	○
○	CB18	○
○	1002	○
○	CB18	○
○	1003	○
○	CB18	○
○	1004	○
○	CB18	○
○	1005	○
○	CB18	○
○	1006	○
○	CB18	○
○	1007	○
○	CB18	○
○	1008	○
○	CB18	○
○	1009	○
○	CB18	○
○	1010	○
○	CB18	○
○	1011	○
○	CB18	○
○	1012	○
○	CB18	○
○	1013	○
○	CB18	○
○	1014	○
○	CB18	○
○	1015	○
○	CB18	○
	○	

RACK 0
DIGITAL INPUT TERMINAL BLOCK DETAIL

NOTES:
1. ALL TERMINAL BLOCKS ARE TO BE LABELED ON BOTH SIDES OF THE TERMINALS.
2. ALL I/O TERMINAL BLOCKS ARE TO BE IDENTIFIED BY A MODULE NUMBER TERMINAL LABEL.

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
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DESIGNED BY L.M.
DRAWN BY L.M.
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
TERMINAL BLOCK DETAIL 1

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-122

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-122 TERMINAL BLOCK DETAIL 1.DWG

MODULE 18	
1800	
CB19	
1801	
CB19	
1802	
CB19	
1803	
CB19	
1804	
CB19	
1805	
CB19	
1806	
CB19	
1807	
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1810	
CB19	
1811	
CB19	
1812	
CB19	
1813	
CB19	
1814	
CB19	
1815	
CB19	

MODULE 19	
1900	
CB20	
1901	
CB20	
1902	
CB20	
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CB20	
1904	
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1910	
CB20	
1911	
CB20	
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CB20	
1913	
CB20	
1914	
CB20	
1915	
CB20	

MODULE 20	
2000	
CB21	
2001	
CB21	
2002	
CB21	
2003	
CB21	
2004	
CB21	
2005	
CB21	
2006	
CB21	
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2009	
CB21	
2010	
CB21	
2011	
CB21	
2012	
CB21	
2013	
CB21	
2014	
CB21	
2015	
CB21	

MODULE 21	
2100	
CB22	
2101	
CB22	
2102	
CB22	
2103	
CB22	
2104	
CB22	
2105	
CB22	
2106	
CB22	
2107	
CB22	
2108	
CB22	
2109	
CB22	
2110	
CB22	
2111	
CB22	
2112	
CB22	
2113	
CB22	
2114	
CB22	
2115	
CB22	

MODULE 22	
2200	
CB23	
2201	
CB23	
2202	
CB23	
2203	
CB23	
2204	
CB23	
2205	
CB23	
2206	
CB23	
2207	
CB23	
2208	
CB23	
2209	
CB23	
2210	
CB23	
2211	
CB23	
2212	
CB23	
2213	
CB23	
2214	
CB23	
2215	
CB23	

MODULE 23	
2300	
CB24	
2301	
CB24	
2302	
CB24	
2303	
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2304	
CB24	
2305	
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2310	
CB24	
2311	
CB24	
2312	
CB24	
2313	
CB24	
2314	
CB24	
2315	
CB24	

RACK 1
DIGITAL INPUT TERMINAL BLOCK DETAIL

NOTES:
1. ALL TERMINAL BLOCKS ARE TO BE LABELED ON BOTH SIDES OF THE TERMINALS.
2. ALL I/O TERMINAL BLOCKS ARE TO BE IDENTIFIED BY A MODULE NUMBER TERMINAL LABEL.

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
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DESIGNED BY L.M.
DRAWN BY L.M.
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APPROVED BY R.V.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
TERMINAL BLOCK DETAIL 2

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-123

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-123 TERMINAL BLOCK DETAIL 2.DWG

MODULE 11	
CB26	
1120+	
1120−	
SHLD	
OVDC	
CB26	
1101+	
1101−	
SHLD	
OVDC	
CB26	
1102+	
1102−	
SHLD	
OVDC	
CB26	
1103+	
1103−	
SHLD	
OVDC	
CB26	
1104+	
1104−	
SHLD	
OVDC	
CB26	
1105+	
1105−	
SHLD	
OVDC	
CB26	
1106+	
1106−	
SHLD	
OVDC	
CB26	
1107+	
1107−	
SHLD	
OVDC	

MODULE 12	
CB27	
1200+	
1200−	
SHLD	
OVDC	
CB27	
1201+	
1201−	
SHLD	
OVDC	
CB27	
1202+	
1202−	
SHLD	
OVDC	
CB27	
1203+	
1203−	
SHLD	
OVDC	
CB27	
1204+	
1204−	
SHLD	
OVDC	
CB27	
1205+	
1205−	
SHLD	
OVDC	
CB27	
1206+	
1206−	
SHLD	
OVDC	
CB27	
1207+	
1207−	
SHLD	
OVDC	

RACK 0
8 CHANNEL ANALOG INPUT TERMINAL BLOCK DETAIL
(NOTE 3)

MODULE 7	
700+	
700−	
SHLD	
701+	
701−	
SHLD	
702+	
702−	
SHLD	
703+	
703−	
SHLD	
704+	
704−	
SHLD	
705+	
705−	
SHLD	
706+	
706−	
SHLD	
707+	
707−	
SHLD	

RACK 0
8 CHANNEL ANALOG OUTPUT TERMINAL BLOCK DETAIL
(NOTE 3)

NOTES:
1. ALL TERMINAL BLOCKS ARE TO BE LABELED ON BOTH SIDES OF THE TERMINALS.
2. ALL I/O TERMINAL BLOCKS ARE TO BE IDENTIFIED BY A MODULE NUMBER TERMINAL LABEL.
3. THE "+" TERMINALS FOR ANALOG INPUTS AND OUTPUTS ARE TO BE DISCONNECTING.

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No.	REVISIONS	DATE	INTLS
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DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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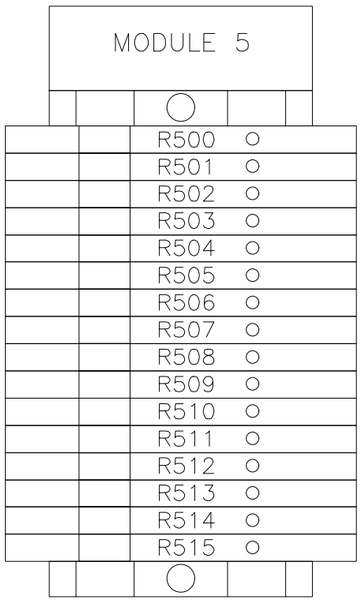
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

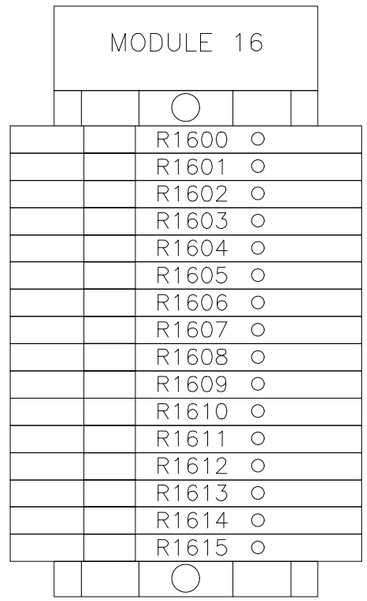
INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
TERMINAL BLOCK DETAIL 3

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-124

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-124 TERMINAL BLOCK DETAIL 3.DWG



RACK 0
DIGITAL OUTPUT TERMINAL BLOCK DETAIL



RACK 1
DIGITAL OUTPUT TERMINAL BLOCK DETAIL

NOTES:
1. ALL TERMINAL BLOCKS ARE TO BE LABELED ON BOTH SIDES OF THE TERMINALS.
2. ALL I/O TERMINAL BLOCKS ARE TO BE IDENTIFIED BY A MODULE NUMBER TERMINAL LABEL.
3. THE '+' TERMINALS FOR ANALOG INPUTS AND OUTPUTS ARE TO BE DISCONNECTING.

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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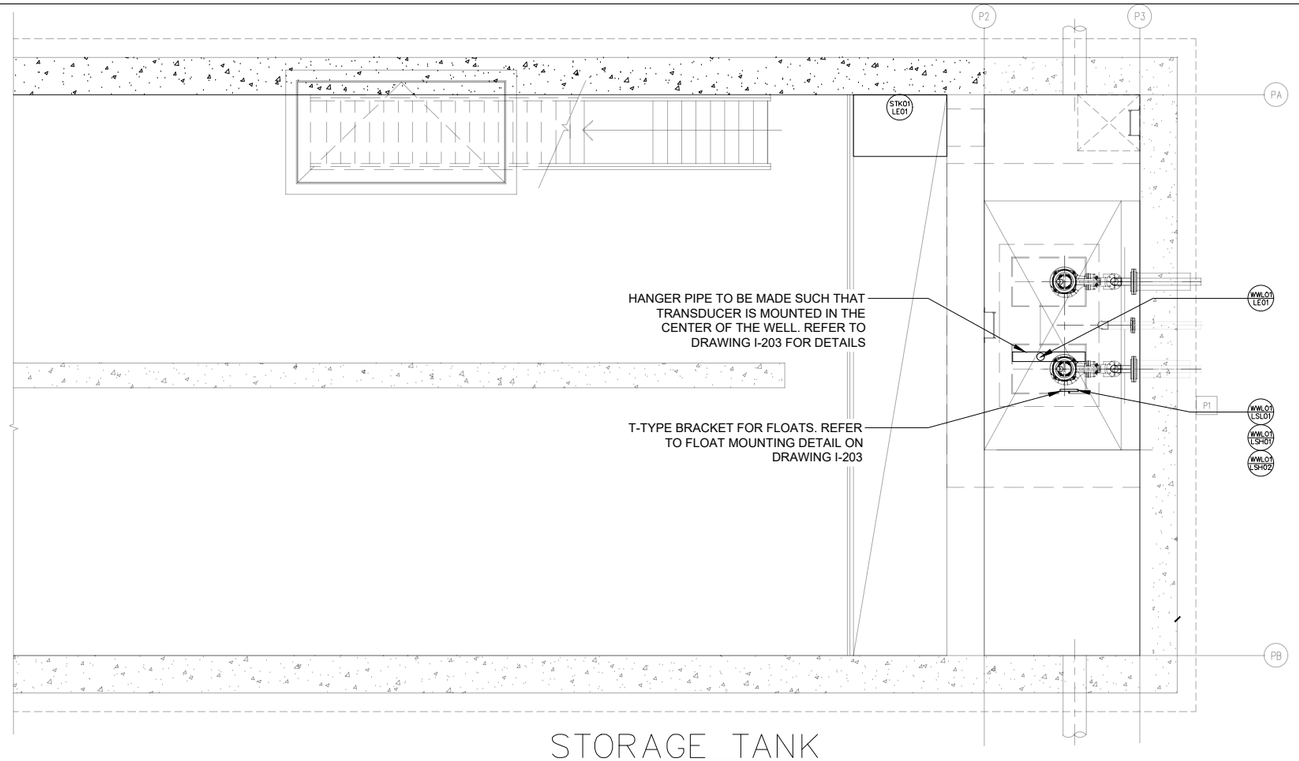
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PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
PAC CONTROL PANEL HC062CP001
TERMINAL BLOCK DETAIL 4

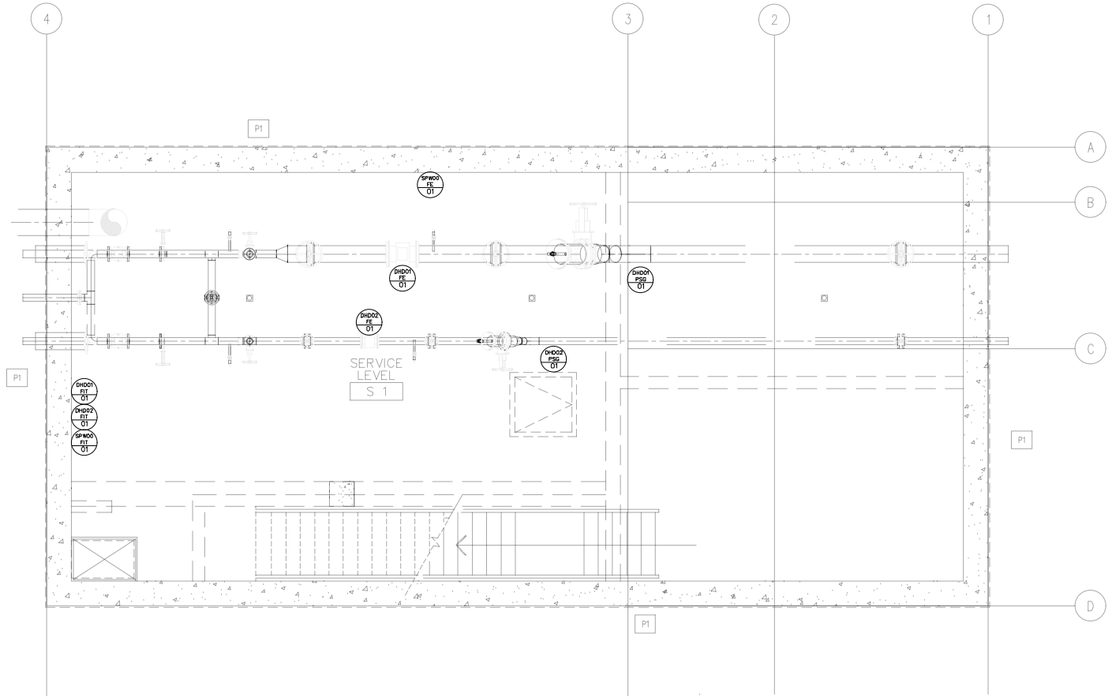
DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-125

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-125 TERMINAL BLOCK DETAIL 4.DWG



STORAGE TANK

SCALE: 1:50



SERVICE LEVEL

SCALE: 1:50



NOTES:

1. SHOP DRAWINGS FOR ALL MATERIAL & EQUIPMENT MUST BE SUBMITTED FOR REVIEW PRIOR TO PROCEEDING WITH WORK.
2. ALL FIELD DEVICES, SWITCHES, ETC TO BE SUPPORTED WITH STAINLESS STEEL ANGLE/CHANNEL/PLATE AS REQUIRED. ALL FABRICATION TO BE WELDED.
3. DO NOT MIX VOLTAGES IN SAME CONDUIT OR DUCT.
4. PROVIDE EYS SEALS FOR ALL DUCTS/CONDUITS SERVING CLASS 1, DIV 1 AREAS.
5. THE DRAWINGS ARE INTENDED FOR GENERAL LAYOUT ONLY.
6. THE CONTRACTOR TO CONFIRM AND COORDINATE LOCATIONS OF ALL FIELD INSTRUMENTATION WITH MECHANICAL DRAWINGS, PACKAGE EQUIPMENT LAYOUT & SCHEMATICS AND EQUIPMENT SHOP DRAWINGS.
7. ALL CONDUIT UTILIZED IN THE CLASSIFIED HAZARDOUS AREAS TO BE PVC ENCAPSULATED RIGID METAL CONDUIT PLASTIBOND TYPE.
8. ALL FIELD WIRING TO BE LABELED AND DEVICE IDENTIFIED WITH LAMCOID & LPXX CIRCUIT DESIGNATION.

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

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DRAWN BY L.M.

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APPROVED BY R.V.

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LICENSED PROFESSIONAL ENGINEER
M. A. PRESTI
100008752
Aug 10 18
PROVINCE OF ONTARIO

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
ELECTRICAL
INSTRUMENT LAYOUT 1

DATE : 10/08/18

SCALE:

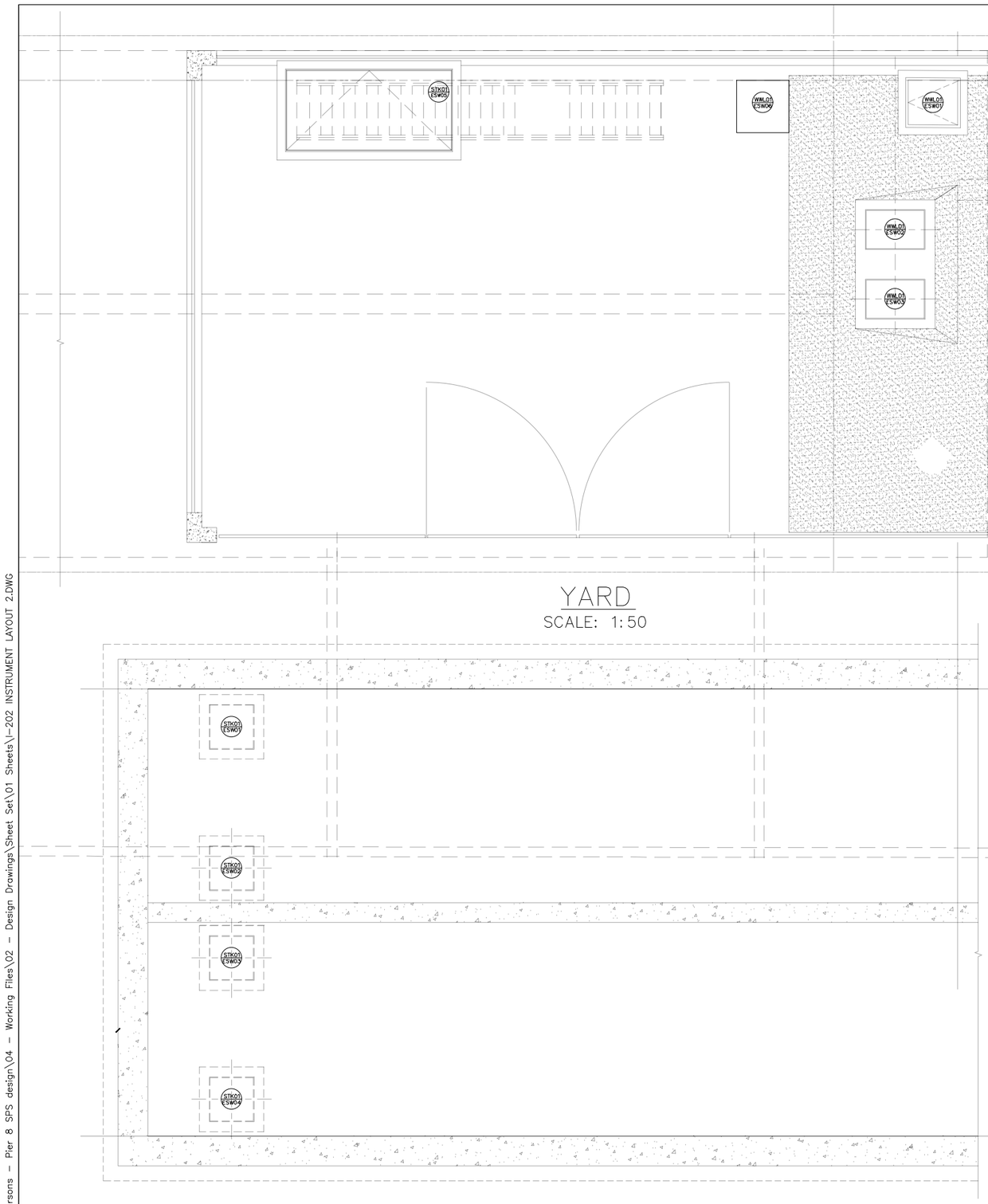
FILE No.:

CONTRACT No.: C13-06-16

DRAWING No.:

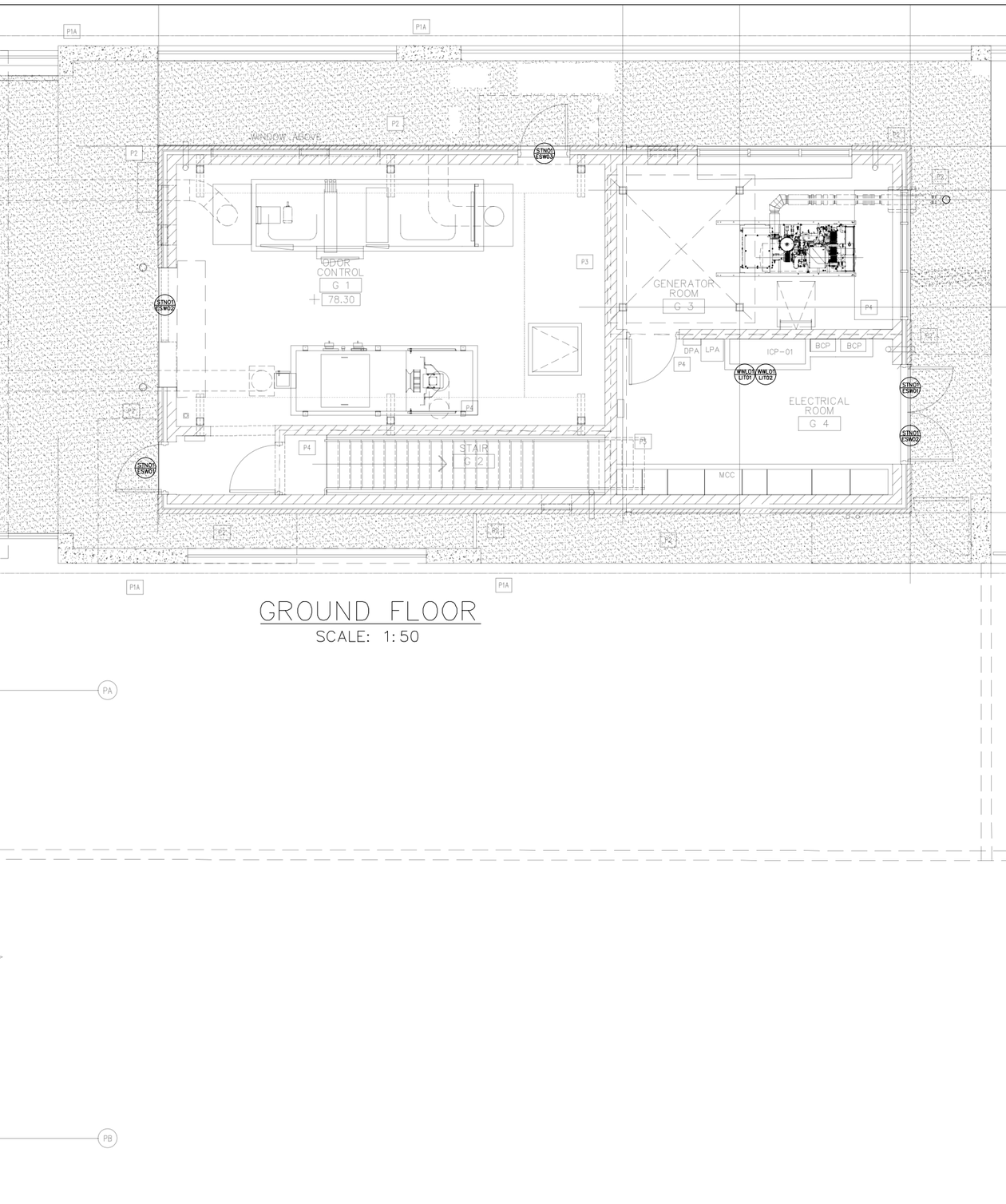
I-201

10/08/18 P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-201 INSTRUMENT LAYOUT 1.DWG



YARD

SCALE: 1:50



GROUND FLOOR

SCALE: 1:50

NOTES:

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No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

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APPROVED BY R.V.

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LICENSED PROFESSIONAL ENGINEER
M. A. PRESTI
100008752
Aug 10 '18
PROVINCE OF ONTARIO

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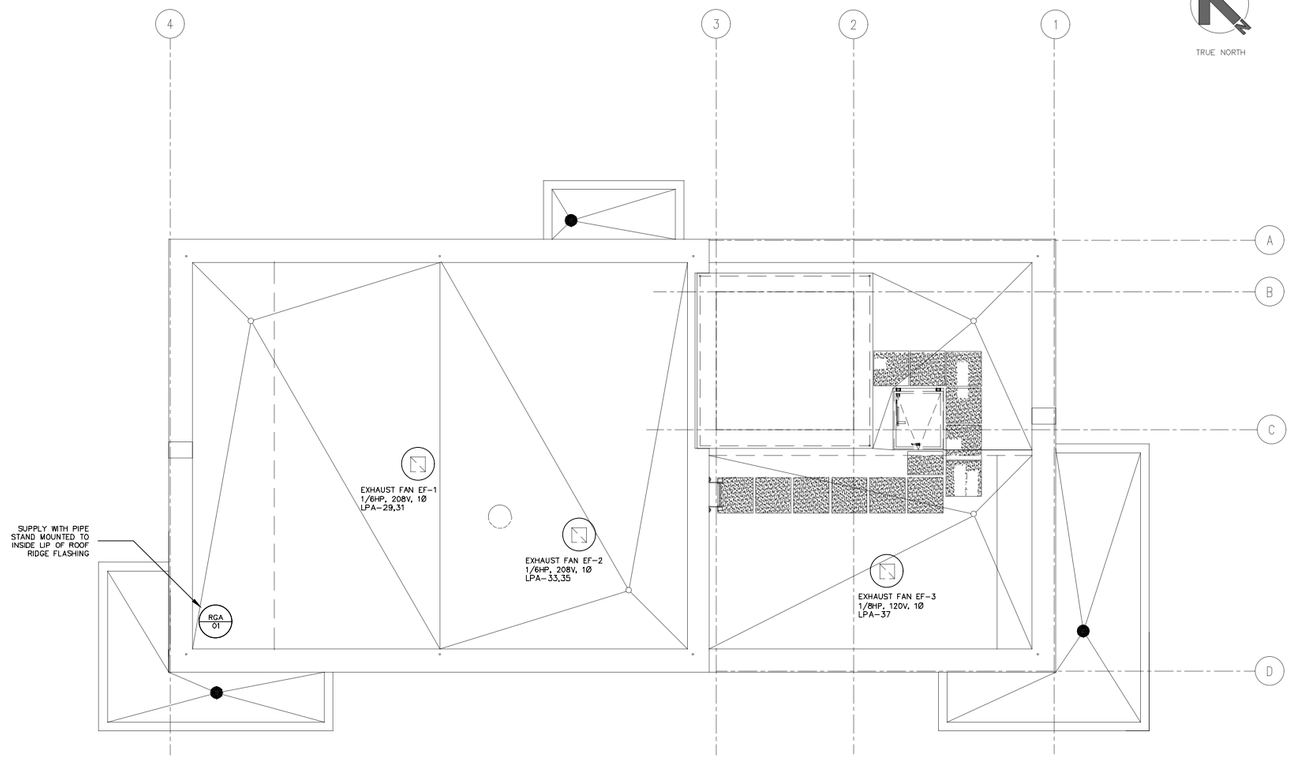
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
ELECTRICAL
INSTRUMENT LAYOUT 2

DATE :	10/08/18
SCALE:	
FILE No.:	
CONTRACT No.:	C13-06-16
DRAWING No.:	I-202

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-202 INSTRUMENT LAYOUT 2.DWG



ROOF

SCALE: 1:50

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-203 INSTRUMENT LAYOUT 3.DWG

NOTES:

1. SHOP DRAWINGS FOR ALL MATERIAL & EQUIPMENT MUST BE SUBMITTED FOR REVIEW PRIOR TO PROCEEDING WITH WORK.
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100008752
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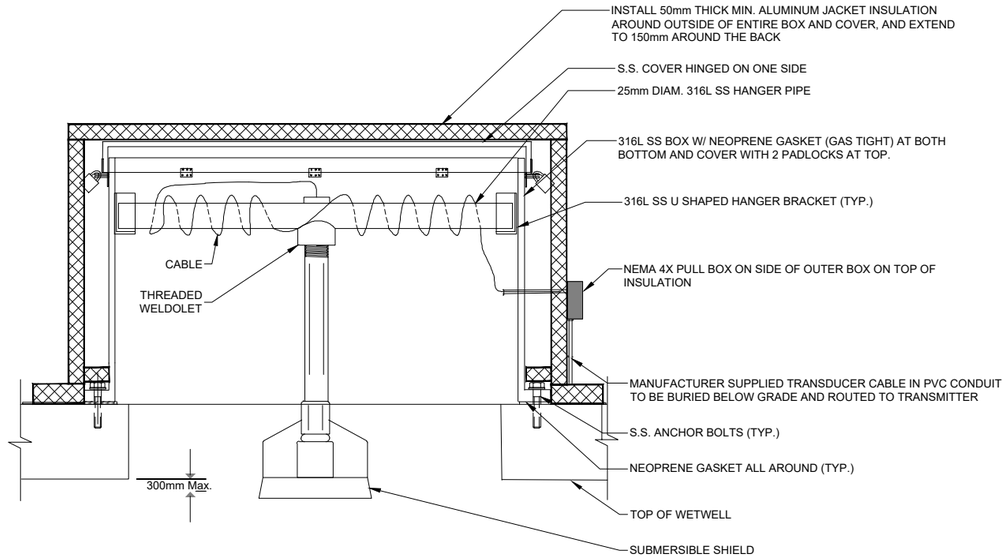
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

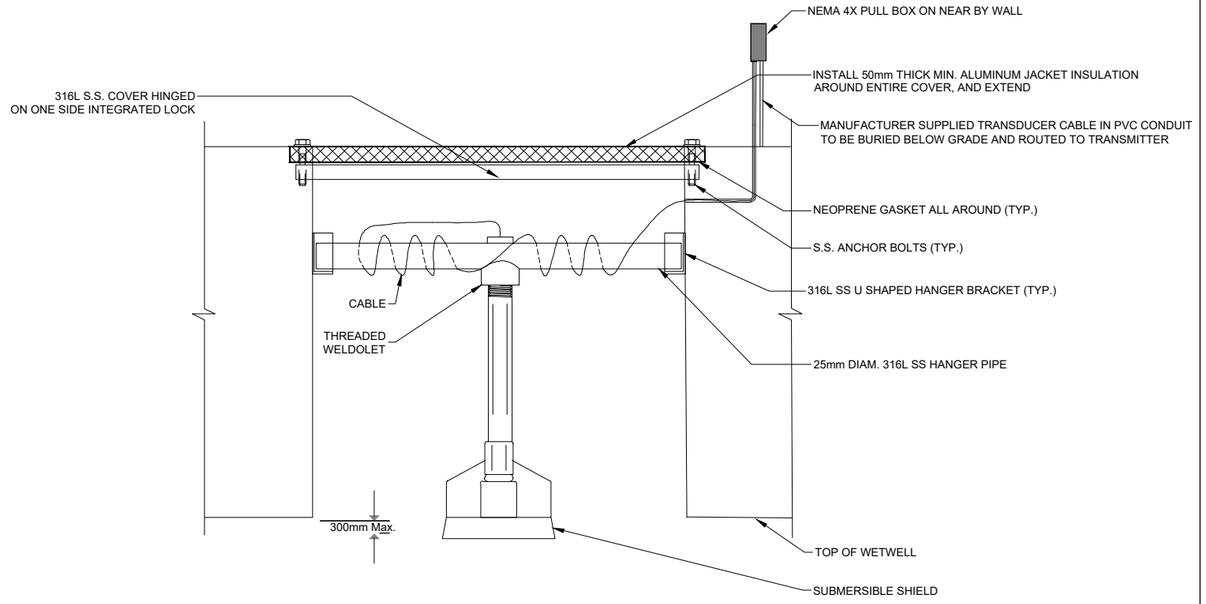
INSTRUMENTATION AND CONTROLS

INSTRUMENT LAYOUT 3

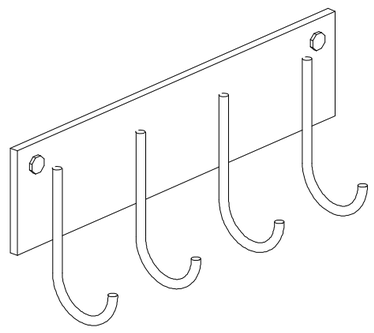
DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-203



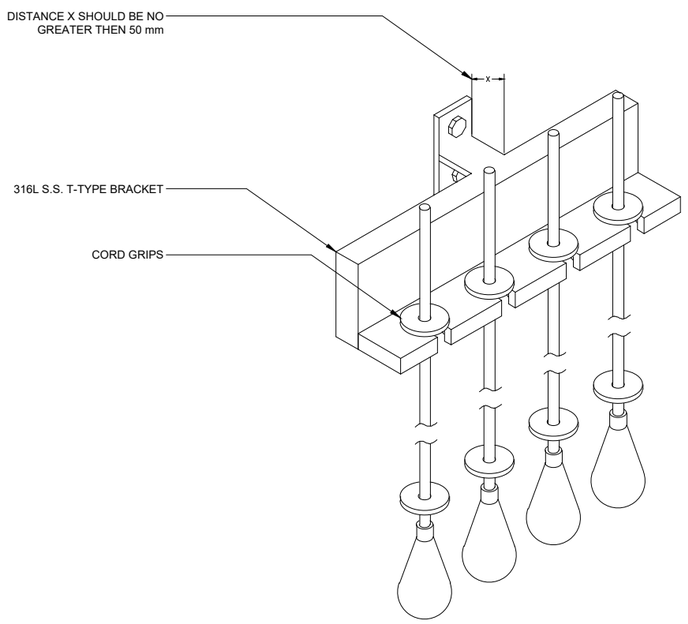
MOUNTING DETAIL FOR ULTRASONIC TRANSDUCER ABOVE GRADE



MOUNTING DETAIL FOR ULTRASONIC TRANSDUCER BELOW GRADE



FLOAT CABLE SUPPORT DETAIL



FLOAT MOUNTING BRACKET DETAIL

NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
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DESIGNED BY L.V.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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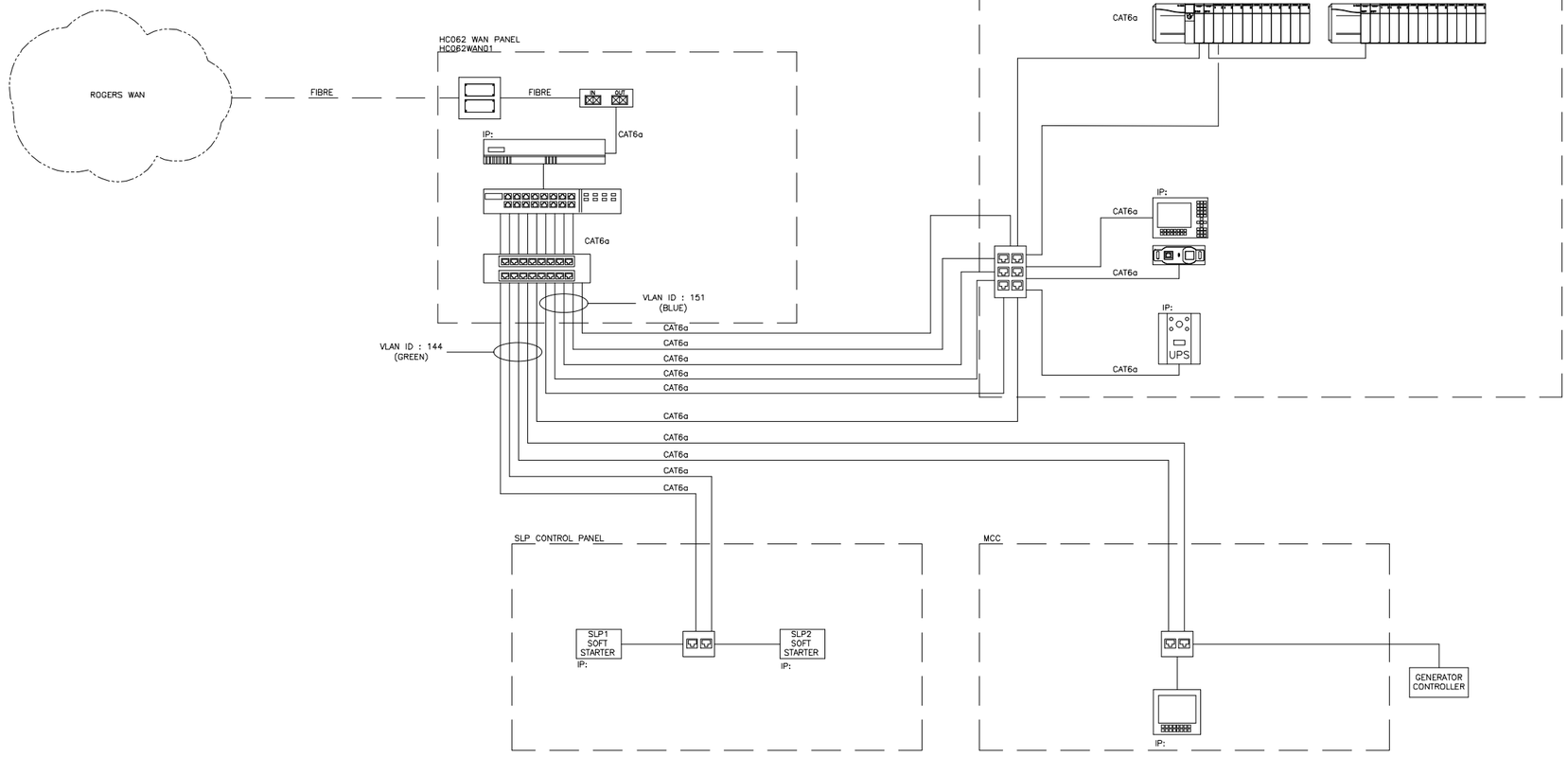
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
ELECTRICAL
TRANSDUCER MOUNTING DETAIL

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-204

10/08/18 P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-204 TRANSDUCER MOUNTING DETAIL.DWG



SYMBOL LEGEND

- EVDO MODEM
- ADSL MODEM
- WIRELESS ROUTER
- ETHERNET SWITCH
- ROUTER/FIREWALL
- PROGRAMMABLE AUTOMATION CONTROLLER (ALLEN–BRADLEY CONTROLLOGIX)
- PROGRAMMABLE AUTOMATION CONTROLLER (ALLEN–BRADLEY COMPACTLOGIX)
- FIBRE/UTP MEDIA CONVERTER OR SINGLE MODE TO MULTIMODE CONVERTER
- LAPTOP ACCESS PORT
- FIBRE PATCH PANEL
- COMPUTER
- LAPTOP
- OPERATOR INTERFACE TERMINAL
- POWER MONITOR
- WIRELESS ACCESS POINT
- RADIO LINK
- DATALOGGER
- UNINTERRUPTABLE POWER SUPPLY
- WORK AREA OUTLET
- TELEPHONE JACK
- COPPER PATCH PANEL

NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.M.
DRAWN BY L.M.
CHECKED BY R.V.
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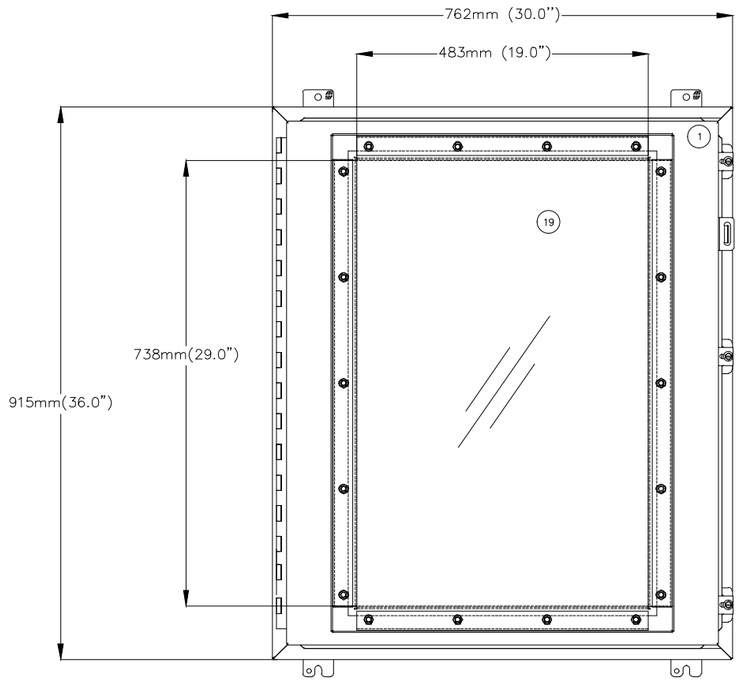
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS

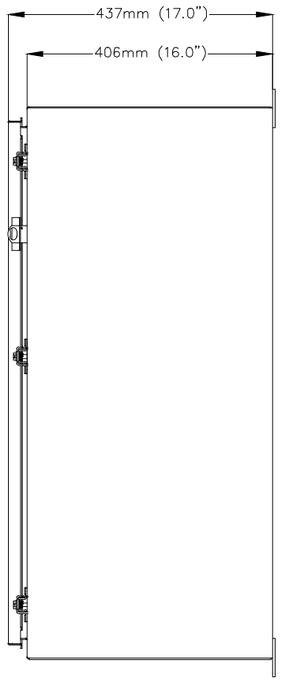
NETWORK ARCHITECTURE

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13–06–16
DRAWING No.: I–301

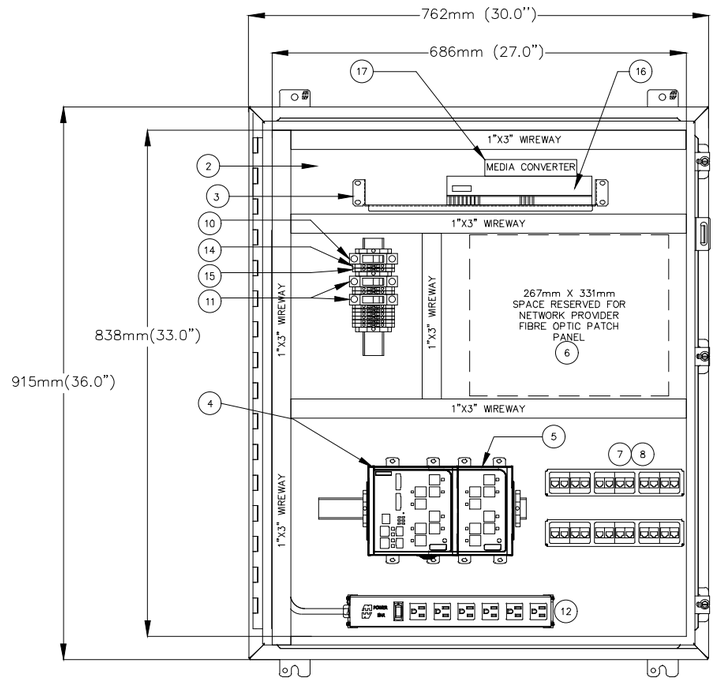
10/08/18
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PANEL EXTERIOR VIEW

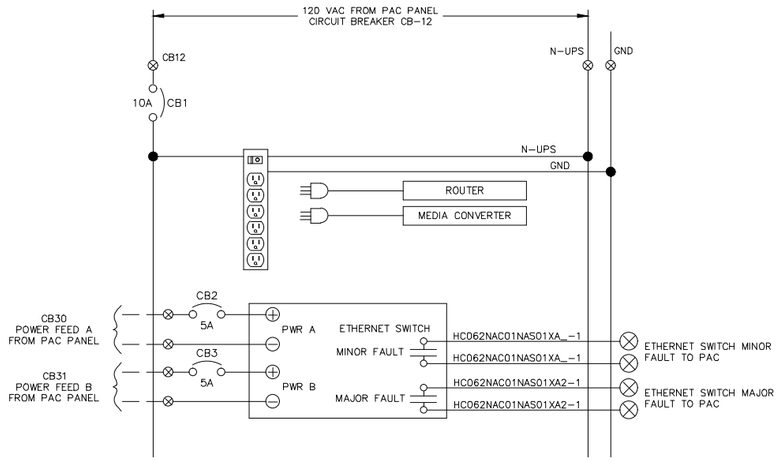


PANEL RIGHT SIDE VIEW



PANEL INTERIOR VIEW

WAN PANEL COMPONENTS				
ITEM	PART NUMBER	SUPPLIER	DESCRIPTION	QUANTITY
1	1418M16	HAMMOND	NEMA 12 ENCLOSURE, 914mm X 762mm X 406mm	1
2	18P3327	HAMMOND	STEEL INNER MOUNTING PANEL, 838mm X 686mm	1
3	AS REQUIRED	AS REQUIRED	FIXED SHELF, 356mm W X 242mm (MINIMUM SHELF DIMENSIONS SHOWN)	1
4	1783-MS10T	ALLEN BRADLEY	8-PORT 10/100 ETHERNET WITH 2 DUAL-PURPOSE UPLINKS NETWORK SWITCH (147H x 152W x 112D mm)	1
5	1783-MX08T	ALLEN BRADLEY	EXPANSION MODULE WITH 8 10/100 BASE-T COPPER ETHERNET PORTS	1
6	AS REQUIRED	AS REQUIRED	FIBRE OPTIC PATCH PANEL	SUPPLIED BY OTHERS
7	CWPP12WBL	PANDUIT	12-PORT COPPER PATCH PANEL WITH WALL MOUNT BRACKET (44H x 229W x 63.5D mm)	2
8	CJ6X88TGBL	PANDUIT	CAT6A RJ45 JACK MODULE (BLACK COLOUR)	16
9	STP6XYYMBU	PANDUIT	CAT6A STP COPPER PATCH CORDS, BLUE, WHERE YY IS THE LENGTH	8
10	1489-A1C150	ALLEN BRADLEY	CIRCUIT BREAKER, 15A, SINGLE POLE, CSA C22.2 NO. 5.1	1
11	1489-A1C050	ALLEN BRADLEY	CIRCUIT BREAKER, 5A, SINGLE POLE, CSA C22.2 NO. 5.1	2
12	1584H6A1	HAMMOND	POWER BAR, 6 RECEPTACLE, 120 VAC, C/W ON/OFF SWITCH	1
13	F1X3WH6/COVER C1WH6	PANDUIT	WIRE DUCT AND COVER, WHITE, 25.4mm X 76.2mm	AS REQUIRED
14	WDU4	PHOENIX CONTACT	STANDARD TERMINAL BLOCK	AS REQUIRED
15	WPE4	PHOENIX CONTACT	STANDARD GROUND TERMINAL BLOCK	AS REQUIRED
16	881-K9	CISCO	ETHERNET TO ETHERNET ROUTER, 48mm X 325mm X 249mm	SUPPLIED BY OTHERS
17	AS REQUIRED	AS REQUIRED	MEDIA CONVERTER, FIBRE OPTIC/RJ45 COPPER	SUPPLIED BY OTHERS
18	AS REQUIRED	AS REQUIRED	ADSL MODEM	SUPPLIED BY OTHERS
19	1481WN42919	HAMMOND	VIEW WINDOW, STEEL FRAME, 736mm X 482mm	1
20	STP6X1MGR	PANDUIT	CAT6A STP COPPER PATCH CORDS, GREEN 1 METER IN LENGTH	8



WIRING SCHEMATIC

NOTES:

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
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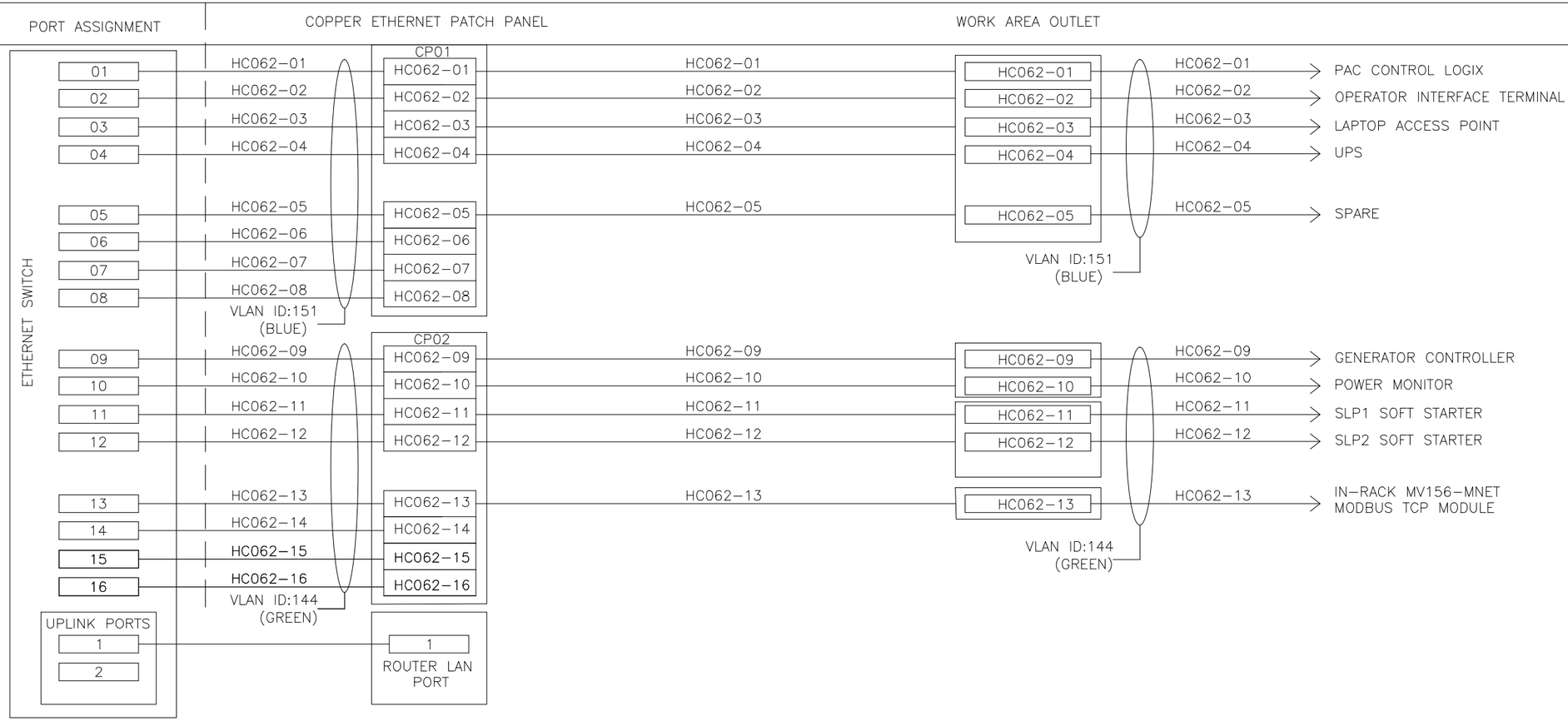
Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
WAN PANEL HC062WAN01
INTERIOR AND EXTERIOR WAN PANEL LAYOUT

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-302

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-302 INTERIOR AND EXTERIOR WAN PANEL LAYOUT.DWG



NOTES:

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
WAN PANEL HC062WAN01
CAT6a PORT ASSIGNMENT

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: I-303

10/08/18
P:\Projects\17126 - Parsons - Pier 8 SPS design\04 - Working Files\02 - Design Drawings\Sheet Set\01 Sheets\I-303 CAT6A PORT ASSIGNMENT.DWG

PAC PANEL CONTROL

PAC

PAC PANEL CONTROL

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

120VAC FROM PAC PANEL CB34

120VAC FROM LP-A CCT 27

L-A L-B N-A N-B

CB1 10A CB2 10A

TRA

CR1

PFA

PAC PANEL TIMER RELAY (5 SECS)
NO 5
NC 9

PAC PANEL POWER FEED RELAY
NO 16, 16
NC 16,16

PAC PANEL POWER FAIL RELAY
NO 7

PFA 6 — HC062CP002JSW01XY1−1 — BACKUP CONTROL PANEL PAC PANEL POWER FEED FAIL
HC062CP002JSW01XY1−2

PAC PANEL FEED

FU1

P.T.T.

TRB

LIGHTING PANEL TIMER RELAY (10 SECS)
NO 10

CR2

LIGHTING PANEL POWER FEED RELAY
NO 15, 15

PFB

LIGHTING PANEL POWER FAIL RELAY
NO 12

PFB 11 — HC062CP002JSW02XY1−1 — BACKUP CONTROL PANEL LIGHTING PANEL POWER FEED FAIL
HC062CP002JSW02XY1−2

LIGHTING PANEL FEED

FU2

CR2 10 CR1 5 CR1 5 CR2 10 CR1 5 CR1 5

L N

PFAB

POWER FAIL RELAY
NO 19

PFAB 18 — HC062CP002JSW03XY1−1 — BACKUP CONTROL PANEL PAC & LIGHTING PANEL POWER FEED FAIL
HC062CP002JSW03XY1−2

CB3 5A FU3

ISR 1

WWL01LSH01 CH2 (NOTE 2) (NOTE 4)

TRH1

HIGH LEVEL CONTROL TIMER
PRESET FOR 30 SEC.
NO 25,48

TRH1 23 — HC062WWL01LSH01LAH−1 — BACKUP START FLOAT STATUS
HC062WWL01LSH01LAH−2

WWL01LSL01 CH1 (NOTE 1)

CRL

LOW LEVEL CONTROL RELAY
NO 48
NC 28

CRL1 27 — HC062WWL01LSL01LAL−1 — BACKUP STOP FLOAT STATUS
HC062WWL01LSL01LAL−2

CONTINUED ON RIGHT

L CB3 N

L CB3 N

CONTINUED FROM LEFT

FU4

ISR 2

WWL01LSH02 CH2 (NOTE 7) (NOTE 4)

CRH11

WETWELL LEVEL EMERGENCY RELIEF NO 42

CRH11 41 — HC062WWL01LSH02LHH−1 — WETWELL LEVEL EMERGENCY RELIEF STATUS
HC062WWL01LSH02LHH−2

CH1 (NOTE 7)

BACKUP SYSTEM RESET

(NOTE 3) PLC RELAY 307 (HC062CP001BCS02AB_)

CRL1 27

TRH1 18 CRA1 48

CRA1

FLOAT BACKUP SYSTEM RELAY NO 49,56,57,59

(NOTE 4) PLC RELAY 306 (HC062CP001BCS01AB_)

LIT01−R1 LIT01−R2

CRB1 51

CRB1

LIT BACKUP SYSTEM RELAY NO 52,56,57,60

CRA1 48 CRB1 51 — START PUMP1 TO MCC

CRA1 48 CRB1 51 — HC062WWL0100000AUX−1 — WETWELL BACKUP SYSTEM ACTIVE
HC062WWL0100000AUX−2

CRA1 48 CRB1 51

BACKUP SYSTEM ACTIVE

P.T.T.

TR1

START PUMP2 DELAY TIMER
PRESET FOR 5 SEC.
NO 63

PUMP 1 FAIL FROM MCC (NOTE 6)

TR1 60 — START PUMP2 TO MCC

CONTINUED ON DWG I−402

L N

NOTES:

1. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT RELAY CRL1 IS ENERGIZED WHEN THE LOW FLOAT IS FLOATING.
2. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT TIMER TRH1 IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING.
3. RELAY 100A IS CONTROLLED BY A PAC OUTPUT TO ALLOW REMOTE INTERRUPTION OF BACKUP SYSTEM FOR THE WETWELL.
4. FLOATS ARE TO BE WIRED FAIL-SAFE.
5. HATCH/DOOR CONTACTS ARE TO BE WIRED IN SERIES AND FAIL-SAFE.
6. CONTACT FROM MCC TO BE CONFIGURED SUCH THAT IT OPENS ON PUMP FAILURE.
7. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT RELAY CRHX IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.V.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

STAMP

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VERIFY SCALE

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Hamilton

PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
BACKUP CONTROL PANEL
BACKUP PANEL WIRING DIAGRAM 1

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13−06−16
DRAWING No.:
I−401

P:\Projects\17126 − Parsons − Pier 8 SPS design\04 − Working Files\02 − Design Drawings\Sheet Set\01 Sheets\I−401 BACKUP PANEL WIRING DIAGRAM 1.DWG
10/08/18

PAC PANEL CONTROL	PAC	PAC PANEL CONTROL	PAC

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER

L — CONTINUED FROM I-401 — L

CB4 2A

ISR 3 (L, N)
- WWL01ESW01ZSH — CH2 (NOTE 2)
- WWL01ESW02ZSH — CH1 (NOTE 1)

CRWHA1 → WETWELL HATCH 1 CONTROL RELAY NO 80
- CRWHA1 — 78
- HC062WWL01ESW01ZSH-1 → WETWELL HATCH 1 OPEN STATUS
- HC062WWL01ESW01ZSH-2 → WETWELL HATCH 1 OPEN STATUS

CRWHA2 → WETWELL HATCH 2 CONTROL RELAY NO 84
- CRWHA2 — 82
- HC062WWL01ESW02ZSH-1 → WETWELL HATCH 2 OPEN STATUS
- HC062WWL01ESW02ZSH-2 → WETWELL HATCH 2 OPEN STATUS

CB5 2A

ISR 4 (L, N)
- WWL01ESW03ZSH — CH2 (NOTE 2)
- CH1 (NOTE 1)

CRWHA3 → WETWELL HATCH 3 CONTROL RELAY NO 90
- CRWHA3 — 88
- HC062WWL01ESW03ZSH-1 → WETWELL HATCH 3 OPEN STATUS
- HC062WWL01ESW03ZSH-2 → WETWELL HATCH 3 OPEN STATUS

CB6 2A

ISR 5 (L, N)
- STK01ESW01ZSH — CH2 (NOTE 2)
- STK01ESW02ZSH — CH1 (NOTE 1)

CRSHA1 → STORAGE TANK HATCH 1 CONTROL RELAY NO 100
- CRSHA1 — 98
- HC062STK01ESW01ZSH-1 → STORAGE TANK HATCH 1 OPEN STATUS
- HC062STK01ESW01ZSH-2 → STORAGE TANK HATCH 1 OPEN STATUS

CRSHA2 → STORAGE TANK HATCH 2 CONTROL RELAY NO 104
- CRSHA2 — 102
- HC062STK01ESW02ZSH-1 → STORAGE TANK HATCH 2 OPEN STATUS
- HC062STK01ESW02ZSH-2 → STORAGE TANK HATCH 2 OPEN STATUS

CONTINUED ON RIGHT

L — N

L — CONTINUED FROM LEFT — N

CB7 2A

ISR 6 (L, N)
- STK01ESW03ZSH — CH2 (NOTE 2)
- STK01ESW04ZSH — CH1 (NOTE 1)

CRSHA3 → STORAGE TANK HATCH 3 CONTROL RELAY NO 116
- CRSHA3 — 114
- HC062STK01ESW03ZSH-1 → STORAGE TANK HATCH 3 OPEN STATUS
- HC062STK01ESW03ZSH-2 → STORAGE TANK HATCH 3 OPEN STATUS

CRSHA4 → STORAGE TANK HATCH 4 CONTROL RELAY NO 120
- CRSHA4 — 118
- HC062STK01ESW04ZSH-1 → STORAGE TANK HATCH 4 OPEN STATUS
- HC062STK01ESW04ZSH-2 → STORAGE TANK HATCH 4 OPEN STATUS

CB8 2A

ISR 7 (L, N)
- STK01ESW05ZSH — CH2 (NOTE 2)
- STK01ESW06ZSH — CH1 (NOTE 1)

CRSHA5 → STORAGE TANK STAIR ACCESS HATCH CONTROL RELAY NO 126
- CRSHA5 — 124
- HC062STK01ESW05ZSH-1 → STORAGE TANK STAIR ACCESS HATCH OPEN STATUS
- HC062STK01ESW05ZSH-2 → STORAGE TANK STAIR ACCESS HATCH OPEN STATUS

CRSHA6 → STORAGE TANK LEVEL TRANSDUCER ACCESS HATCH CONTROL RELAY NO 130
- CRSHA6 — 128
- HC062STK01ESW06ZSH-1 → STORAGE TANK LEVEL TRANSDUCER ACCESS HATCH OPEN STATUS
- HC062STK01ESW06ZSH-2 → STORAGE TANK LEVEL TRANSDUCER ACCESS HATCH OPEN STATUS

CB9 2A

ISR 8 (L, N)
- STN01ESW01ZSH — CH2 (NOTE 2)
- STN01ESW02ZSH — CH1 (NOTE 1)

CROC1 → MAIN ENTRANCE DOOR CONTROL RELAY NO 136
- CROC1 — 134
- HC062STN01ESW01ZSH-1 → MAIN ENTRANCE DOOR OPEN STATUS
- HC062STN01ESW01ZSH-2 → MAIN ENTRANCE DOOR OPEN STATUS

CROC2 → ODOUR CONTROL SYSTEM OVERHEAD DOOR CONTROL RELAY NO 140
- CROC2 — 138
- HC062STN01ESW02ZSH-1 → ODOUR CONTROL SYSTEM OVERHEAD DOOR OPEN STATUS
- HC062STN01ESW02ZSH-2 → ODOUR CONTROL SYSTEM OVERHEAD DOOR OPEN STATUS

CONTINUED ON DWG I-403

L — N

NOTES:
1. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT RELAY CRL1 IS ENERGIZED WHEN THE LOW FLOAT IS FLOATING.
2. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT TIMER TRH1 IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING.
3. RELAY 100M IS CONTROLLED BY A PAC OUTPUT TO ALLOW REMOTE INTERRUPTION OF BACKUP SYSTEM FOR THE WETWELL.
4. FLOATS ARE TO BE WIRED FAIL-SAFE.
5. HATCH/DOOR CONTACTS ARE TO BE WIRED IN SERIES AND FAIL-SAFE.
6. CONTACT FROM MCC TO BE CONFIGURED SUCH THAT IT OPENS ON PUMP FAILURE.
7. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT RELAY CRHHX IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING

NLS ENGINEERING

No.	REVISIONS	DATE	INTLS
0	ISSUED FOR TENDER	AUG2018	LM

DESIGNED BY L.V.
DRAWN BY L.M.
CHECKED BY R.V.
APPROVED BY R.V.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

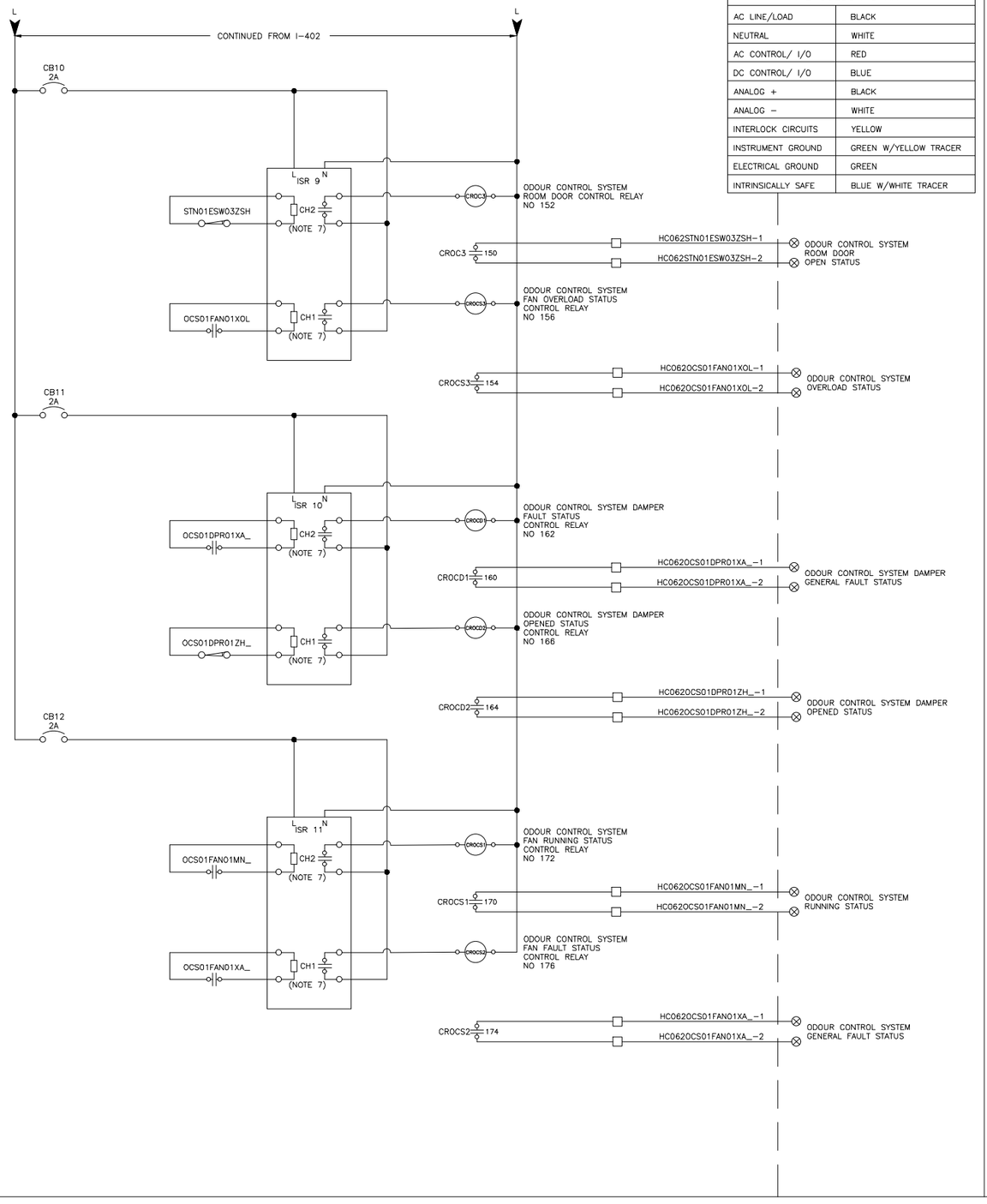
INSTRUMENTATION AND CONTROLS
BACKUP CONTROL PANEL
BACKUP PANEL WIRING DIAGRAM 2

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-402

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10/08/18

PAC PANEL CONTROL | PAC | PAC PANEL CONTROL | PAC

WIRE COLOUR CHART	
AC LINE/LOAD	BLACK
NEUTRAL	WHITE
AC CONTROL/ I/O	RED
DC CONTROL/ I/O	BLUE
ANALOG +	BLACK
ANALOG −	WHITE
INTERLOCK CIRCUITS	YELLOW
INSTRUMENT GROUND	GREEN W/YELLOW TRACER
ELECTRICAL GROUND	GREEN
INTRINSICALLY SAFE	BLUE W/WHITE TRACER



INTENTIONALLY LEFT BLANK

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10/08/18

NOTES:

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2. DIP SWITCHES ON THE ISR ARE TO BE SET SUCH THAT TIMER TRH1 IS ENERGIZED WHEN THE HIGH FLOAT IS FLOATING.
3. RELAY 100M IS CONTROLLED BY A PAC OUTPUT TO ALLOW REMOTE INTERRUPTION OF BACKUP SYSTEM FOR THE WETWELL.
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NLS ENGINEERING

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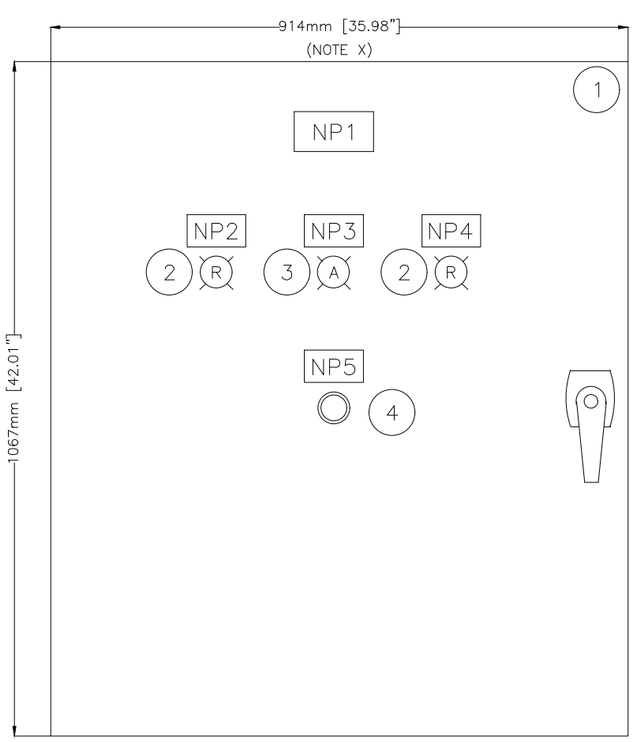
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

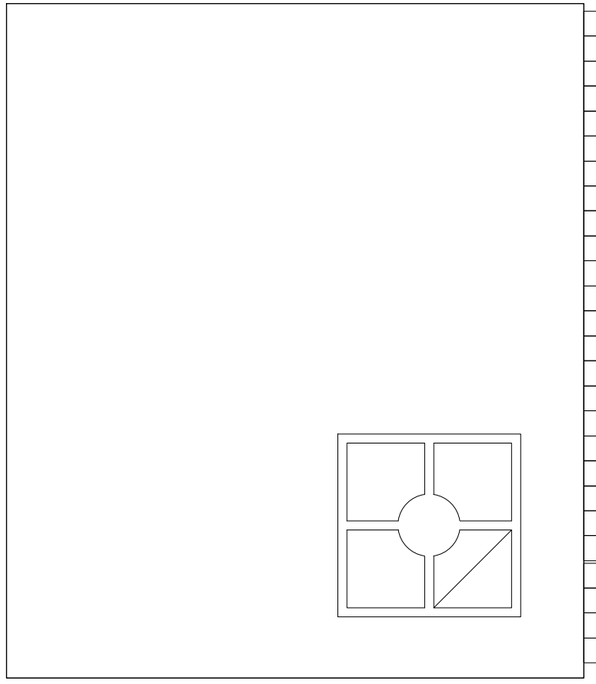
INSTRUMENTATION AND CONTROLS
BACKUP CONTROL PANEL
BACKUP PANEL WIRING DIAGRAM 3

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-403

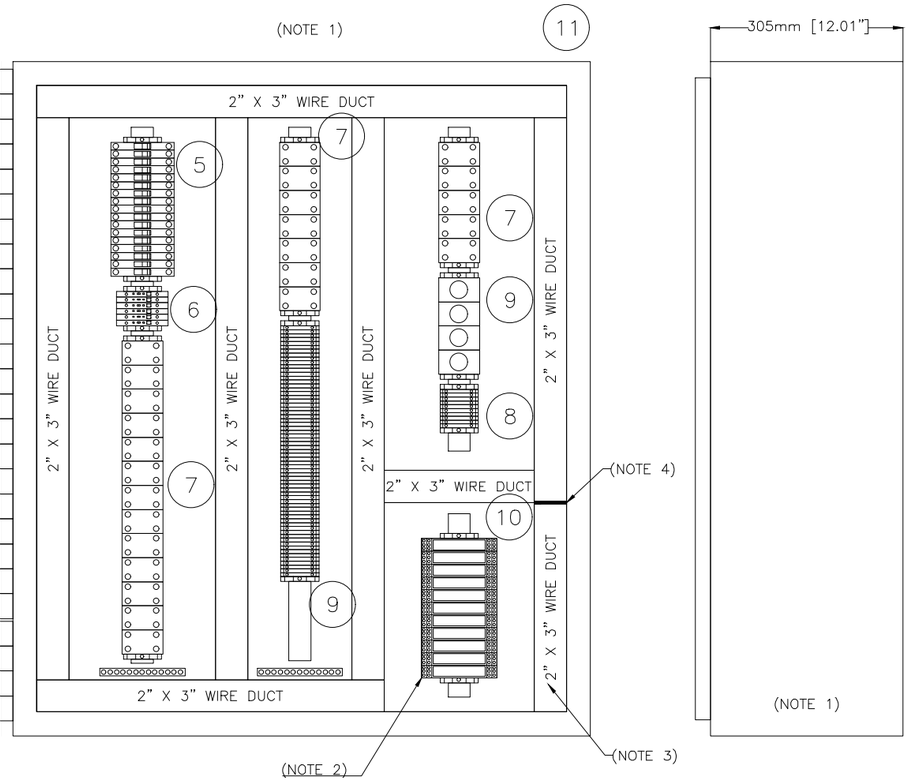
NAME PLATE LEGEND		
	LINE 1	LINE 2
NP1	HC062CP002	BACKUP SYSTEM CONTROL PANEL
NP2	PAC PANEL FEED	POWER ON
NP3	WETWELL BACKUP	SYSTEM ACTIVE
NP4	LIGHTING PANEL FEED	POWER ON
NP5	WETWELL BACKUP	SYSTEM RESET



FRONT VIEW



BACKPLATE VIEW



RIGHT SIDE VIEW

#	ITEM DESCRIPTION
1	42"X36"X12" HAMMOND ENCLOSURE
2	"POWER ON" PILOT LIGHT (RED)
3	"BACKUP SYSTEM ACTIVE" PILOT LIGHT (AMBER)
4	"BACKUP SYSTEM RESET" PUSHBUTTON (BLACK)
5	120VAC 10A CIRCUIT BREAKER
6	FUSED KNIFE SWITCH DISCONNECTS WITH BLOWN FUSE INDICATOR
7	AC CONTROL RELAYS
8	STANDARD TERMINAL BLOCKS
9	TIMER RELAYS
10	INTRINSICALLY SAFE RELAYS
11	2" X 3" WIRE DUCT

NOTES:

1. CONDUITS ARE NOT PERMITTED TO ENTER THE TOP OF THE PANEL WITHOUT APPROVAL FROM THE CITY SCADA GROUP OR THE CONSULTANT. BOTTOM ENTRY OR SIDE ENTRY WITHIN 300mm OF INTRINSICALLY SAFE WIRING.
2. INTRINSICALLY SAFE WIRING MAY ENTER THE PANEL ON THE RIGHT-HAND SIDE OF THE PANEL WITHIN 150mm OF THE BOTTOM OF THE PANEL. INTRINSICALLY SAFE WIRING IS TO REMAIN ISOLATED FROM ALL OTHER PANEL AND FIELD WIRING.
3. WIRE DUCT FOR INTRINSICALLY SAFE CIRCUITS ONLY.
4. PHYSICAL BARRIER TO BE INSTALLED TO ISOLATE INTRINSICALLY SAFE CIRCUIT WIREWAY FROM ALL OTHER WIREWAY.
5. BACKUP PANEL TO BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 HC062 IN THE CITY OF HAMILTON

INSTRUMENTATION AND CONTROLS
BACKUP CONTROL PANEL
BACKUP PANEL LAYOUT

DATE : 10/08/18
SCALE:
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
I-404

10/08/18
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SINGLE LINE DIAGRAM LEGEND

TRANSFORMER RATING AS SHOWN ON THE SINGLE LINE DIAGRAM
△ : DENOTES DELTA CONNECTION
: DENOTES WYE CONNECTION WITH IMPEDANCE GROUND
: DENOTES WYE CONNECTION WITH SOLID GROUND

(X) Y:5 — 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 – ZCT

52 — STORED ENERGY CIRCUIT BREAKER DRAWOUT TYPE COMPLETE WITH INTEGRAL SOLID STATE 50/51, 50/51G OVERCURRENT PROTECTION

52 — STORED ENERGY CIRCUIT BREAKER (FIXED) COMPLETE WITH INTEGRAL SOLID STATE 50/51, 50/51G OVERCURRENT PROTECTION

FUSE

NON FUSED INTERRUPTER SWITCH

FUSED INTERRUPTER LOAD BREAK SWITCH

FUSED CONTACTOR

CIRCUIT BREAKER C/W MAG. & THERM TRIP

CONTACTOR & OVERLOAD

XC — CONTACTOR–XC
BC: BYPASS CONT.
CC: CAPACITOR CONT.
IC: INLINE CONT.

FUSED POTENTIAL TRANSFORMER(S)

PFCC — POWER FACTOR CORRECTION CAPACITOR SIZED TO SUIT MOTOR HP

CIRCUIT BREAKER MOULDED CASE. PROVIDE INTEGRAL SOLID STATE 50/51, 50/51G OVERCURRENT PROTECTION TO SUIT ALL 600VAC BREAKERS RATED >=1000A

SOLID STATE OVERLOAD

GROUND

THREE PHASE MOTOR

SINGLE PHASE MOTOR

S — 3ø SELECTOR SWITCH

49 — THERMAL OVERLOAD RELAY DEVICE

50/51 G — TIMED/INST GROUND OVER CURRENT RELAY

50 — INSTANTANEOUS OVER CURRENT RELAY DEVICE

51 — TIMED OVER CURRENT RELAY DEVICE

63 C — TANK SUDDEN PRESSURE RELAY

63 Q — LIQUID LEVEL RELAY

86 — LOCKOUT RELAY DEVICE

87 — DIFFERENTIAL PROTECTIVE RELAY DEVICE

V — VOLTAGE METER

A — AMMETER

F — FREQUENCY METER

PF — POWER FACTOR METER

KW — KILOWATT METER

DM — DIGITAL METERING

LA — LIGHTNING ARRESTOR

STRESS CONE

STRESS CONE/CABLE TERMINATION (PROVIDE ALUMA–FORM 31–AP MOUNTING BRACKET FOR POLE TERMINATION'S)

ELECTRICAL CONTROL & STATUS SIGNALS

LA — SURGE ARRESTOR – STATION CLASS

ELECTRICAL UNIT HEATER

WELDING OUTLET 600V, 3ø

FC — TRANSFORMER ONAF FAN CONTROLS ENCLOSURE RATED NEMA 4X NON METALLIC

BB — CABLE SCHEDULE TAG

M/U — UTILITY METERING

TP — TEST POINT

AT — AUTOMATIC TRANSFER CONTROLLER

PM — PHASE MONITOR SSAC MODEL DLMHBRAAA, 600V, 3ø

SPD — SURGE PROTECTIVE DEVICE

SS — SOLID STATE SOFT STARTER

ATS — AUTOMATIC TRANSFER SWITCH

AA/FA — DRY TYPE SELFCOOLED/FORCED AIR COOLED

ONAN — OIL IMMERSED, SELF COOLED

ONAF — OIL IMMERSED, FORCED AIR COOLED

HV–SG — DENOTES HIGH VOLTAGE SWITCHGEAR

DIS — LOCAL DISCONNECT AUXILIARY POSITION STATUS CONTACT 2A, 120VAC, LATE MAKE EARLY BREAK TO SUIT VFD APPLICATIONS.

MFR — MULTIFUNCTION PROTECTION RELAY

MFR1 — MULTI FUNCTION RELAY GE SR750

MFR2 — MULTI FUNCTION RELAY GE SR350

MFR3 — MULTI FUNCTION RELAY GE SR469

MFR4 — MULTI FUNCTION RELAY GE SR489

X BUS — BUS CONTINUATION SYMBOL
X: DENOTES BUS/CONDUCTOR CONTINUATION IDENTIFIER TAG. MATCHING TAG'S INDICATE POINTS OF CONTINUATION

G — GENERATOR

KX — KIRK KEY INTERLOCK
X: PER APPLICATION DESCRIPTION

LINE REACTOR

VARIABLE FREQUENCY DRIVE C/W HARMONIC LINE FILTER

HYDRO POLE

HPX–Y — HYDRO POLE DESIGNATIONS
X = HYDRO ONE CIRCUIT #
1: EXISTING CIRCUIT
Y = HYDRO POLE NUMBER (E.G. 1,2)

NORMALLY OPEN RELAY CONTACT

NORMALLY CLOSED RELAY CONTACT

MCC — MOTOR CONTROL CENTER

EMH — ELECTRICAL MANHOLE

DP — DISTRIBUTION PANEL

LP — LIGHTING PANEL

C3 — DUCT TAG

EYS SEAL

M — UTILITY METER

T1 — TRANSFORMER TAG

BELL TELEPHONE OUTLET

BC/CC — CONTACTOR
CC = CAPACITOR CONTACTOR
BC = BYPASS CONTACTOR

X XP — HEAVY DUTY SAFETY SWITCH NEMA 4X, SS, NON FUSED, 600V, 3P
X: DENOTES AMPACITY RATING AS FOLLOWS:
A=30A (20HP)
B=60A (50HP)
C=100A (75HP)
D=200A (150HP)
ALL DISCONNECTS TO INCLUDE A LATE MAKE, EARLY BREAK AUXILIARY 120V, 2A STATUS CONTACT LOCALLY MOUNTED
XP: DENOTES NEMA CLASS 7

LIGHTING LAYOUT LEGEND

(A) — CROUSE HINDS HAZARD GARD XPL CLASS 1, DIV. 1 XPL4 LED, 63 WATTS, 5000K CEILING MOUNTED

(B) — LSI EG3 ENCLOSED AND GASKETED – ANGLE LENS EG3 4 FOOT COOL WHITE LED, 60 WATTS, WALL MOUNTED AND CEILING MOUNTED, 120VAC. WALL MOUNTED SHALL USE EG345MB ACCESSORY

C — CROUSE HINDS CLASS 1, DIV. 1 EV LED 36 WATTS, COOL COLOR TEMPERATURE C701 WALL MOUNTED, 120VAC WITH GUARD

D

LSI LED TRADITIONAL WALL PACK, 5000K, 50 WATTS MODEL NUMBER:
SWPM–WB–LED–PL1–50–UE–BRZ–PD. WALL MOUNTED WITH PHOTO CELL

P — OUTDOOR – PHOTOCELL

EMERGENCY LIGHTING UNIT, 120V AC, 24V DC C/W 2 FLOOD LIGHT HEADS, 9 WATTS EACH. UNIT TO BE LUMACELL MODEL RG24S350TF/2LH–TD10 ENCLOSURE PVC. 10 MINUTE TIMEDELAY ON RETRANSFER TO NORMAL POWER.

XP — EMERGENCY LIGHT HEAD (TWIN) LUMACELL RS20 9W (2–LAMP) LUMACELL RS10 9W (1–LAMP)
XP: DENOTES EXPLOSION PROOF

XP — EXIT LIGHT 120V AC, 24V DC. POLYENCLOSURE. LUMACELL LER 1100.
XP: DENOTES EXPLOSION PROOF

3 4 XP — SINGLE POLE SWITCH
3: DENOTES 3 WAY SWITCH
4: DENOTES 4 WAY SWITCH
XP: DENOTES CLASS 1, DIV 1

DUPLEX RECEPTACLE

K — DOOR ENTRY KEY SWITCH

HEAT DETECTOR, 200'F FIXED TEMPERATURE C/W ONE(1) OUTPUT DRY CONTACT.

SMOKE DETECTOR, C/W ONE(1) OUTPUT DRY CONTACT

XX — SECURITY SYSTEM LEGEND SYMBOL "XX" DENOTES TYPE OF SECURITY SYSTEM DEVICE AND/OR EQUIPMENT AS FOLLOWS:
SS: DOOR STATUS SWITCH

OS — OCCUPANCY SENSOR

I — INTERCOM SYSTEM

POWER LAYOUT LEGEND

M — HYDRO METER, NEMA 3 ENCLOSURE C/W/ LEXAN WINDOW FOR VIEWING & PROVISION FOR LOCKING WITH A PAD LOCK. SIZE TO SUIT.

GROUND ROD, COPPER CLAD 19mm ø x 3000mm

T A — LINE VOLTAGE THERMOSTAT, TEMP RANGE – 5° TO 30°C DIFFERENTIAL 1.0°C, 1–SPDT SWITCH RATED 8.0A 120 V. HONEYWELL MODEL T651A (EXHAUST FAN)

V — SOLID STATE VARIABLE SPEED CONTROL.

D — DAMPER MOTOR

BELL TELEPHONE OUTLET

WP GF XP — DUPLEX RECEPTACLE, 15A – 120V U GROUND
WP: DENOTES WEATHER PROOF
GF: DENOTES GROUND FAULT PROTECTION
XP: DENOTES EXPLOSION PROOF

CONCRETE ENCASED DUCT

DIRECTLY BURIED DUCT

OVERHEAD POWER LINE

XP — ANY DEVICE DENOTED "XP" IS RATED TO SUIT CLASS 1, DIV 1 ENVIRONMENTS

X XP — HEAVY DUTY SAFETY SWITCH NEMA 4X, SS NON FUSED 600V, 3ø DISCONNECT
X: DENOTES TYPE AS FOLLOWS:
A=30A
B=60A
C=100A
D=200A
IF NO TYPE IS SHOWN, SEE SINGLE LINE DIAGRAM FOR RATING.
XP: DENOTES NEMA CLASS 7

T — TIME DELAY SWITCH – PENN MODEL AM12
SNAP ON: LIGHT ON IMMEDIATELY; FAN ON WITHIN 15 SEC.
SNAP OFF; LIGHT OFF IMMEDIATELY; FAN REMAINS ON FOR 10 MINUTES; (ADJUSTBLE 0–10MIN)

LP — DENOTES LIGHTING PANEL

DP — DENOTES DISTRIBUTION PANEL

EF — DENOTES EXHAUST FAN

SF — DENOTES SUPPLY FAN

E — E–STOP, MUSHROOM TYPE, MECHANICAL LATCH

P.T.T — DENOTES PUSH TO TEST

JB — JUNCTION BOX NEMA 4 OR NEMA 7 TO SUIT AREA CLASSIFICATION

ICP — INSTRUMENTATION CONTROL PANEL

H — HEAT TRACING

GENERAL NOTES:

1. ALL ELECTRICAL CONDUIT SHALL BE EXPOSED EXCEPT IN STAIRWELLS WHERE IT SHALL BE CONCEALED AND FIRE RATED IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS.
2. ALL CONTROLS & COMMUNICATIONS CONDUIT SHALL BE EXPOSED.
3. ALL NEW MCC'S AND ALL COMPONENTS WITHIN THE MCC SHALL HAVE A 42KA INTERRUPT RATING UNLESS OTHERWISE INDICATED.
4. ALL SAFETY SWITCHES IN NON HAZARDOUS AREAS SHALL BE HEAVY DUTY, NEMA 4X TO SUIT.
5. ALL INDOOR ELECTRICAL AND CONTROLS CONDUIT SHALL BE RIGID ALUMINUM.
6. ALL POWER DISTRIBUTION CABLE INSTALLED UNDER THIS PROJECT SHALL BE COPPER.
7. PROVIDE LIQUID TIGHT METAL ARMOUR FLEXIBLE CONDUIT FOR ALL MOTOR TERMINATIONS. FLEX CONNECTIONS NOT TO EXCEED MAX. ALLOWABLE LENGTH PERMITTED UNDER THE ONTARIO ELECTRICAL SAFETY CODE – LATEST REVISION.
8. REFERENCE P&I DRAWING LEGEND FOR DETAILED DESCRIPTION OF THE INSTRUMENTATION AND FIELD DEVICE SYMBOLS.
9. ALL NEW POWER DISTRIBUTION CABLES SHALL BE CONTINUOUS FROM PRIMARY OVER CURRENT PROTECTION SUPPLY POINT TO THE LOAD APPLICATION TERMINATION. NO SPLICES ARE PERMITTED.
10. ALL WIRING AND MOTOR CIRCUIT PROTECTION MUST COMPLY WITH REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE – 2015 LATEST REVISION.
11. THE CONTRACTOR TO SUBMIT DRAWINGS TO THE ELECTRICAL SAFETY AUTHORITY (ESA) FOR REVIEW PRIOR TO COMMENCING WITH WORK.
12. ALL ELECTRICAL EQUIPMENT & INSTALLATION TO BE INSPECTED BY THE ESA.
13. ALL ELECTRICAL EQUIPMENT MUST BE CSA. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ESA REVIEW AND INSPECTION.
14. ALL ELECTRICAL DISTRIBUTION AND OVER CURRENT PROTECTION DEVICES SHALL BE 100% RATED.
15. PROVIDE INTEGRAL GROUND FAULT PROTECTION IN ALL BREAKERS THAT ARE GREATER THAN OR EQUAL TO 1000 AMP RATING.
16. ALL 600V DISTRIBUTION EQUIPMENT INCLUDING ALL DISTRIBUTION COMPONENTS, BUS SYSTEMS AND OVER CURRENT PROTECTION SHALL BE RATED 42KA TO SUIT INTERRUPT CAPACITY UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
17. THE CONTRACTOR IS REQUIRED TO SUPPLY AND INSTALL AS BUILD LAMINATED 'D' SIZE WALL MOUNTED ELECTRICAL SINGLE LINE DIAGRAMS IN THE ELECTRICAL ROOM.
18. ALL LIGHT SWITCHES REQUIRING AUX. CONTACTS FOR CONTROL TO BE DPDT.
19. LOCAL HYDRO AUTHORITY IS ALECTRA.
20. ALL CABLES IN CABLE TRAY INSTALLATIONS SHALL BE SPACED TO SUIT FREE AIR CABLE AMPACITY RATING.
21. DO NOT MIX 120V & 600V POWER CABLING.
22. PROVIDE GROUND FAULT DETECTION ON ALL 600V MAIN BREAKERS IN MCC'S.

NOTES:

ALL ELECTRICAL AND CONTROLS CONDUIT INSTALLED UNDER THIS PROJECT SHALL BE EXPOSED UNLESS OTHERWISE INDICATED IN THE DRAWINGS.

ESA PLAN REVIEW NOTIFICATION
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PLOT DATE: Aug 16, 2018–2:19pm BY:(BJ–TWORZYANSKI)

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MARKHAM, ONTARIO 905.946.8686

No.	REVISIONS	DATE	INTLS
3	ISSUED FOR TENDER	08–16–18	P.T.
2	90% DRAWINGS	09–18–17	A.T.
1	DRAFT PRELIMINARY DESIGN	APRIL 2017	A.T.

DESIGNED BY P.T.
DRAWN BY J.Z.
CHECKED BY A.T.
APPROVED BY A.T.

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

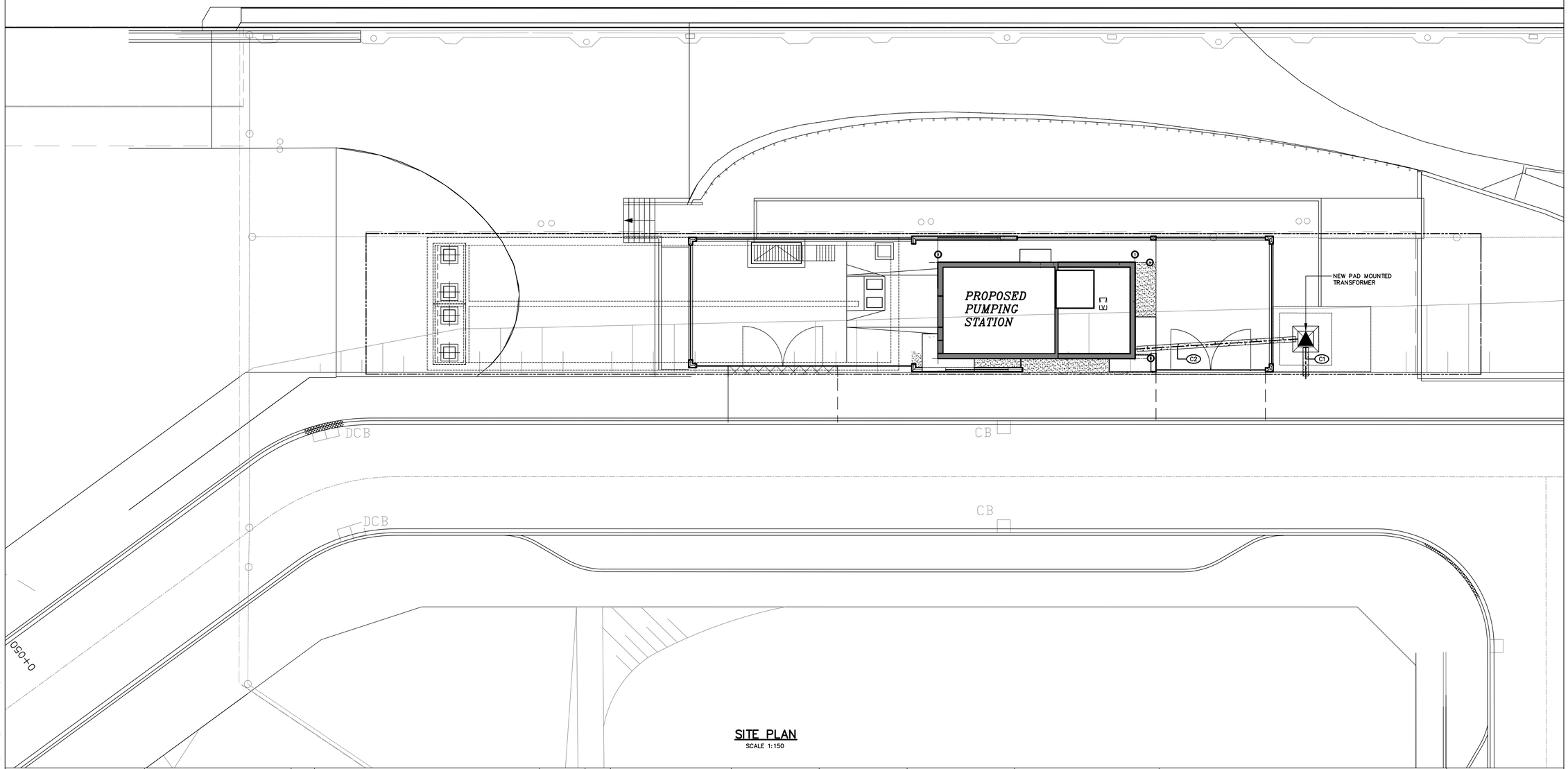
ELECTRICAL
ELECTRICAL LEGEND & ABBREVIATIONS

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13–06–16
DRAWING No.:	E–101

DUCT SCHEDULE				
TAG	DESCRIPTION	ORIGIN	DESTINATION	COMMENTS
C1	CONCRETE ENCASED DUCT BANK 4–100mmø (POWER)	PROPERTY LINE	NEW PAD MOUNTED TRANSFORMER	
C2	CONCRETE ENCASED DUCT BANK 4–100mmø (POWER) 1–50mmø (CONTROLS)	NEW PAD MOUNTED TRANSFORMER	NEW PUMP STATION MCC	

LEGEND

- PAD MOUNTED TRANSFORMER
- HP — HYDRO POLE
- DIRECTLY BURIED DUCT BANK
- CONCRETE ENCASED DUCT BANK
- C1 — CONDUIT TAG



SITE PLAN
SCALE 1:150

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PLOT DATE: Aug 16, 2018-2:19pm BY:(BJ-TWORZYANSKI)

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TRUE NORTH | PROJECT NORTH

No.	REVISIONS	DATE	INTLS
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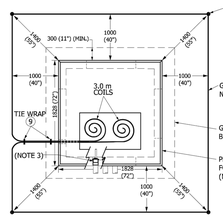
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL

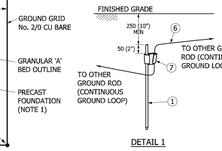
ELECTRICAL SITE PLAN

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-102

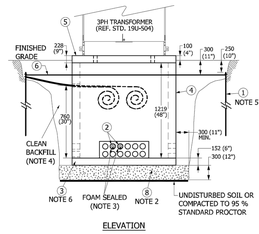
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PLAN VIEW



DETAIL 1



ELEVATION

NOTES:

1. THE FOUNDATION SHALL BE ORIENTED AS PER CONSTRUCTION DRAWING WITH TOP SURFACE HAVING A MAXIMUM 1% SLOPE.
2. GRANULAR 'A' BEDDING, FOUNDATION AND GROUND GRID INSTALLATION ARE ALL SUBJECT TO HORIZON UTILITIES CORPORATION INSPECTION.
3. DUCTS AND GROUND WIRE ENTRY HOLES SEALED WITH FOAM OR EQUIVALENT.
4. PLACE BACKFILL IN THOROUGHLY COMPACTED 300mm LAYERS.
5. REFER TO STD. 41U-110 (DETAIL 4) FOR GROUND ROD INSTALLATION.
6. FOUNDATION BASE TO BE SOLID TYPE, (NOT RING-TYPE).

++ - QUANTITY/LENGTH TO SUIT

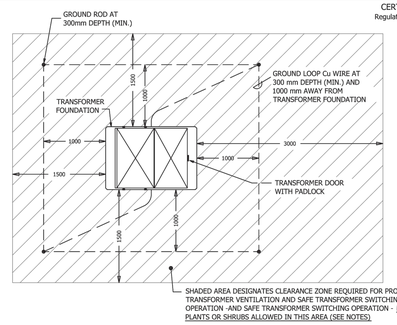
BILL OF MATERIALS

ITEM	DESCRIPTION	QTY	EXIST. #
1	ROD, GROUND, 10' x 3/4"	4	ROG10
2	SEALANT, FOAM, DUCT	++	SZD
3	FOUNDATION BASE 72" x 72" x 6"	1	SPB7272
4	FOUNDATION WALL 72" x 72" x 48"	1	SPW7272
5	FOUNDATION COVER 72" x 72" x 9"	1	SPT7272
6	WIRE, 2/0 AWG Cu	++	WCB20
7	CLAMP GROUND ROD 3/4"	6	AMG275
8	GRANULAR 'A' 3/4" (20mm)	++	NO1341
9	STRAP CABLE NYLON LRG	2	SCN527

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED

horizon UTILITIES Looking beyond	DRAWING STATUS	BY	DATE DD/MM/YY	FOUNDATION AND GROUND GRID FOR THREE-PHASE PAD-MOUNTED TRANSFORMER	REFERENCE DRAWINGS: 19U-504 41U-110	DRAWINGS NOT TO SCALE
	DRAWN:	AESZ	03/04/14		DRAWING # 19U-362	SHEET # 1 / REVISION # 1
	CHECKED:	BK	03/04/14			
	APPROVED:	BK	04/04/14			

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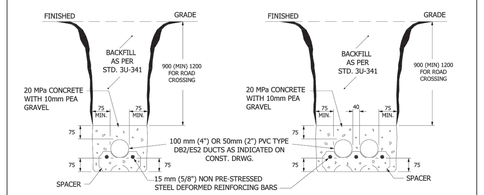


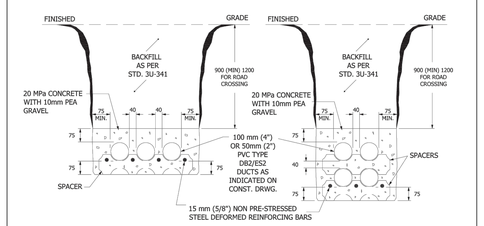
NOTES:

1. FOR ALL INSTANCES, INCLUDING TOWNHOUSE COMPLEXES, A 3.0 m CLEARANCE SHALL BE MAINTAINED FROM TREES, HYDRANTS, AND ABOVE GRADE UTILITY STRUCTURES.
2. ANY AND ALL OBJECTS WITHIN THE OBSTRUCTION FREE AREA, ARE SUBJECT TO REMOVAL WITHOUT ANY PRIOR NOTICE SHOULD OPERATIONAL OR EMERGENCY CONDITIONS EXIST.
3. HORIZON UTILITIES CORPORATION SHALL NOT BE HELD RESPONSIBLE FOR ANY COSTS ASSOCIATED WITH THE REMOVAL OR RESULTING DAMAGE TO ANY OBJECTS WITHIN THE OBSTRUCTION FREE AREA. (THE DEVELOPER/OWNER ASSUMES ALL RESPONSIBILITY FOR ENCROACHING WITHIN THE OBSTRUCTION FREE AREA.)
4. CIVIL DRAWINGS TO BE REVIEWED TO ENSURE TRANSFORMER PLACEMENT DOES NOT OVERLAP OR INTERFERE WITH DEEP SERVICES.
5. SINGLE PHASE TRANSFORMERS SHALL BE A MINIMUM OF 3.0m FROM DOORS, WINDOWS OR VENTILATION INLETS/OUTLETS. TRANSFORMERS WITHIN THE 3.0m LIMIT SHALL BE PROTECTED BY AN INTERNAL CURRENT-LIMITING FUSE AND EQUIPPED WITH A PRESSURE RELIEF DEVICE OR REQUIRE A SUITABLE BARRIER (BLAST WALL) (O.E.S.C. RULE 26-242).

horizon UTILITIES Looking beyond	DRAWING STATUS	BY	DATE DD/MM/YY	SINGLE PHASE PAD MOUNTED TRANSFORMER CLEARANCES	REFERENCE DRAWINGS:	DRAWINGS NOT TO SCALE
	REDRAWN:	JH	28/06/07		DRAWING # 19U-525	SHEET # 1 / REVISION #
	CHECKED:	CR	29/07/05	LINEAR DIMENSIONS SHOWN IN MILLIMETERS		
	APPROVED:	CR	29/07/05			

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Regulation 22/04





horizon UTILITIES Looking beyond	DRAWING STATUS	BY	DATE DD/MM/YY	TYPICAL ARRANGEMENT FOR DUCTS ENCASED IN CONCRETE FOR 1,2,3,4 DUCTS	REFERENCE DRAWINGS: 3U-341	DRAWINGS NOT TO SCALE
	REDRAWN:	JH	12/06/07		DRAWING # 3U-343	SHEET # 1 / REVISION #
	CHECKED:	ND	25/05/05	LINEAR DIMENSIONS SHOWN IN MILLIMETERS		
	APPROVED:	CR	25/05/05			

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1. DESIGN CONSIDERATIONS

1.1. BENDS AND TURNS IN A DUCT RUN SHALL BE ACCOMPLISHED BY A GRADUAL SWEEP. ALL 90 DEGREE CHANGES IN DIRECTION SHALL BE MADE OF 1.5 METRE (60") RADIUS ELBOW AND BE LIMITED TO NO GREATER THAN THREE (3) PER RUN.
NOTE: DUCT RUN SHALL BE DESIGNED SUCH THAT CABLE PULLING TENSIONS DO NOT EXCEED SPECIFIED LIMITS.

1.2. DUCT BANKS SHALL BE BURIED WITH A MINIMUM COVER OF 900 MILLIMETRES, WITH THE EXCEPTION OF ROAD CROSSINGS WHICH SHALL BE BURIED WITH A MINIMUM COVER OF 1200 MILLIMETRES. RED CAUTION TAPE SHALL BE INSTALLED APPROX. HALFWAY BETWEEN THE INSTALLATION AND GRADE LEVEL.
TRENCH RESTORATION SHALL BE MADE UP OF CLEAN BACKFILL ON DUCT BANKS INSTALLED UNDER LAWNS AND PARKWAYS. DUCT BANKS ALONG BOULEVARDS OR ACROSS ROADS SHALL HAVE BACKFILL MATERIALS AND TRENCH RESTORATION TO CONFORM WITH THE MUNICIPAL OR REGIONAL AUTHORITY, AS REQUIRED.

1.3. CUSTOMER'S DUCT BANK SHALL HAVE A MINIMUM SLOPE OF 1% AWAY FROM THE BUILDING. CONSULT HORIZON UTILITIES CORP. INSPECTOR WHERE THE ABOVE REQUIREMENT CANNOT BE MET (ie. FRENCH DRAIN REQUIRED).

1.4. THE AREA WITHIN TWO METERS AT EACH END OF A DUCT BANK SHALL BE FREE OF ANY FOREIGN OBJECTS SUCH AS CABLES OR PIPES, FOR BACKHOE DIGGING.

1.5. DUCT BANK SHALL BE TERMINATED IN A LANDSCAPED AREA AT THE LOCATION GIVEN BY HORIZON UTILITIES CORP.

1.6. CONFIGURATIONS NOT COVERED BY HORIZON UTILITIES CORPORATION STANDARDS 3U-343 TO 3U-348 SHALL BE ARRANGED IN A SIMILAR MANNER SUBJECT TO HORIZON UTILITIES CORP. APPROVAL.

2. DUCT BANK CONSTRUCTION

2.1. THE DUCT SHALL BE 100 MILLIMETRES (4") OR 50 MILLIMETRES (2") DIAMETER, PVC TYPE DB2/ES2 (SOLID WALL ONLY) C/W BELL END AND BE APPROVED AS PER C.S.A. STANDARD C22.2 No. 211.1 (LATEST REVISION) AND HORIZON UTILITIES CORP.

2.2. ALL FITTINGS AND BENDS SHALL BE PVC TYPE DB2/ES2, APPROVED SOLVENT CEMENT SHALL BE USED TO JOIN ALL DUCTS, FITTINGS AND BENDS AT MINIMUM 30 MINUTES PRIOR TO POURING CONCRETE.

2.3. ALL DUCTS AT THE FACE OF THE DUCT BANK SHALL BE ORIENTED AND TERMINATED WITH EITHER BELL ENDS SUPPORTING CABLES OR PLUGS FOR SPARE DUCTS.

2.4. DUCTS SHALL BE SUPPORTED WITH APPROVED SPACERS EVERY 1.5 METRES (5 ft) AND BE ANCHORED SO AS NOT TO FLOAT DURING CONCRETE POURING.

2.5. WHERE SPECIFIED ON CONSTRUCTION DRAWINGS, ALL DUCT BANKS SHALL BE REINFORCED WITH NON PRE-STRESSED 15 MILLIMETRE (5/8") DEFORMED STEEL REINFORCING BARS. - GRADE 400 AND CONFORMED WITH C.S.A. G30.12 (LATEST REVISION). STEEL REINFORCING BARS SHALL BE INSTALLED CONTINUOUSLY, MINIMUM 300 MILLIMETRES OVERLAP AND TIED, AND BE LOCATED AT THE BOTTOM OF THE DUCT BANK AS PER HORIZON UTILITIES CORPORATION STANDARD 3U-343 TO 3U-348.

horizon UTILITIES Looking beyond	DRAWING STATUS	BY	DATE DD/MM/YY	CONCRETE ENCASED DUCT BANK REQUIREMENTS	REFERENCE DRAWINGS: 3U-343 3U-348	DRAWINGS NOT TO SCALE
	DRAWN:	JM	08/11/07		DRAWING # 3U-348	SHEET # 1 of 2 / REVISION # 0
	CHECKED:	AT	01/06/07			
	APPROVED:	BM	07/12/07			

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2. DUCT BANK CONSTRUCTION (CONT'D)

2.6. STEEL REINFORCING BARS SHALL BE EXTENDED BEYOND THE DUCT BANK FOR FUTURE DUCT BANK EXTENSION. REINFORCING BARS SHALL BE PASSED CONTINUOUSLY FROM ONE DUCT BANK TO THE OTHER.

2.7. DUCTS SHALL BE ENCASED IN 20MPa CONCRETE WITH 10 mm PEA GRAVEL AGGREGATE. SLUMP MUST NOT EXCEED 100 mm (4") UNDER STANDARD SLUMP TEST. EARTH UNDER DUCT BANK SHALL BE THOROUGHLY COMPACTED PRIOR TO DUCT BANK INSTALLATION TO ELIMINATE SETTLING OF FINISHED DUCT BANK.

2.8. ALL DUCTS SHALL BE MANDRELLED AND BE CLEANED AFTER DUCT BANK INSTALLATION.

2.9. ALL DUCTS SHALL BE EQUIPPED WITH 10 mm (3/8") DIAMETER POLYPROPYLENE ROPE. ALL DUCTS SHALL HAVE THE ENDS SEALED WITH AN APPROVED DUCT PLUG IMMEDIATELY AFTER DUCT BANK INSTALLATION.

2.10. END OF DUCT BANK AND ROAD CROSSING SHALL BE MARKED WITH A RED ELECTRONIC MARKER (LIST NO.: MAOR) AND A RED 2" X 4" STAKE.

3. DUCT BANK CONSTRUCTION

3.1. CUSTOMER'S DUCT BANK INSTALLATION SHALL BE SUBJECTED TO HORIZON UTILITIES CORP. INSPECTION AND ACCEPTANCE PRIOR TO POURING OF CONCRETE OR ANY BACKFILL MATERIAL, OR WILL NOT BE PASSED. CUSTOMER SHALL CONTACT HORIZON UTILITIES CORP., MANAGER OF OUTSIDE CONTRACTORS AT (905) 540-3234 TO ARRANGE FOR INSPECTION 48 HOURS IN ADVANCE OF POURING CONCRETE.

3.2. THE CUSTOMER SHALL FOLLOW DIRECTIONS GIVEN BY HORIZON UTILITIES CORP. INSPECTOR FOR ANY SITUATION NOT COVERED IN THIS SPECIFICATION.

3.3. DUCTS SHALL BE PROBED PRIOR TO CABLE INSTALLATION. CABLE SHALL NOT BE INSTALLED IN DUCT WHICH DOES NOT ALLOW PASSAGE OF A TEST MANDREL SIZED TO 95 % OF THE DIAMETER OF THE PVC TYPE DB2/ES2 DUCT.

3.4. LANDSCAPING, PAVING AND CURBS SHALL NOT BE COMPLETED UNTIL HORIZON UTILITIES CORP. CABLE INSTALLATION IS COMPLETE. OTHERWISE, ALL RESTORATION SHALL BE DONE BY THE CUSTOMER AT THEIR EXPENSE.

horizon UTILITIES Looking beyond	DRAWING STATUS	BY	DATE DD/MM/YY	CONCRETE ENCASED DUCT BANK REQUIREMENTS	REFERENCE DRAWINGS: 3U-343 3U-348	DRAWINGS NOT TO SCALE
	DRAWN:	JM	30/04/07		DRAWING # 3U-341	SHEET # 2 of 2 / REVISION # 0
	CHECKED:	AT	01/06/07			
	APPROVED:	BM	07/12/07			

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DESIGNED BY P.T.
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ELECTRICAL

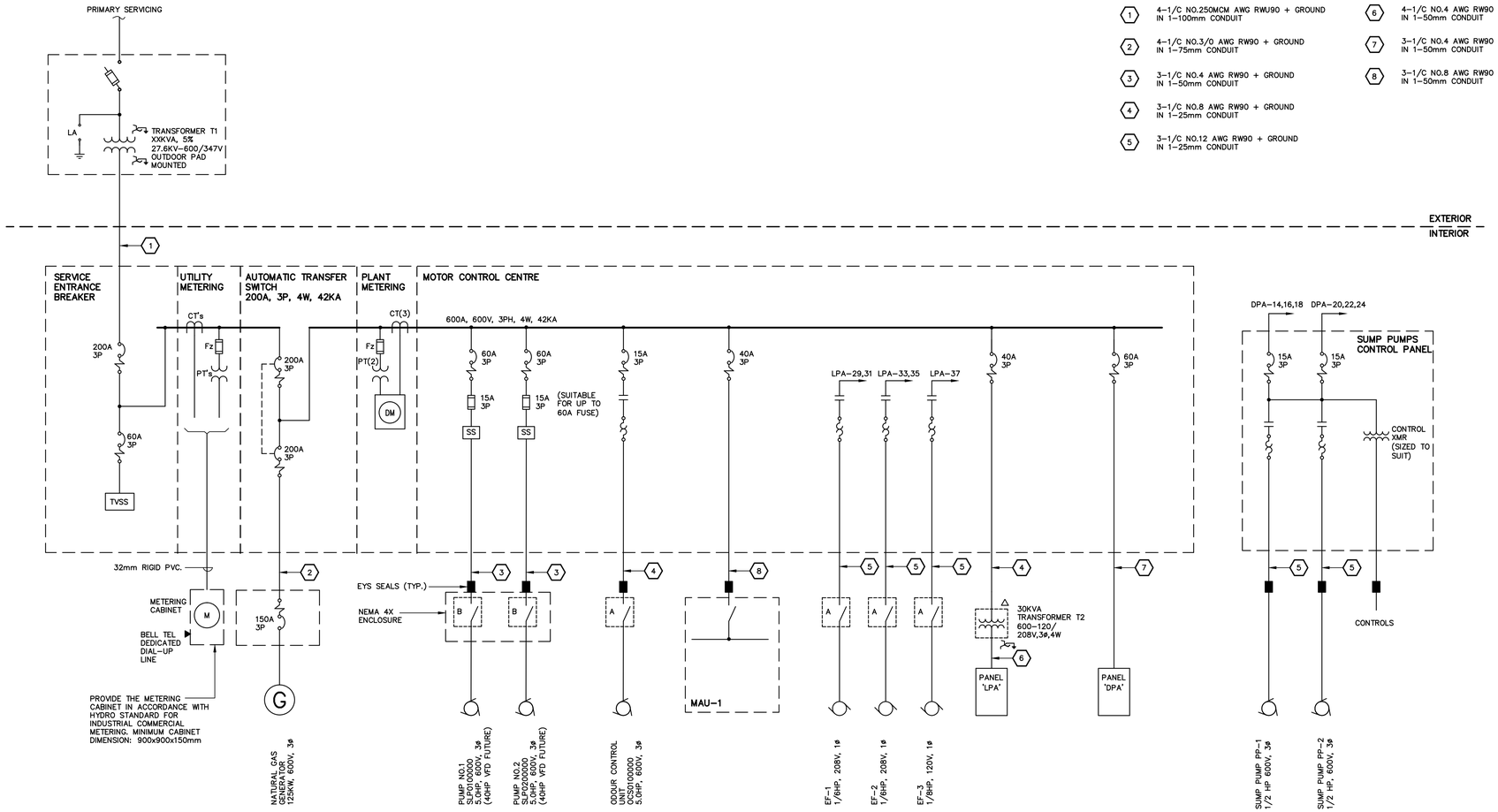
SITE PLAN DETAILS

DATE : APRIL, 2017
SCALE: AS SHOWN
FILE No.: XX
CONTRACT No.: C13-06-16
DRAWING No.: E-103

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PLOT DATE: Aug 16, 2018-2:19pm BY:(BJ-TWORZYANSKI)

CABLE SCHEDULE

(1) 4–1/C NO.250MCM AWG RWU90 + GROUND IN 1–100mm CONDUIT	(6) 4–1/C NO.4 AWG RW90 + GROUND IN 1–50mm CONDUIT
(2) 4–1/C NO.3/0 AWG RW90 + GROUND IN 1–75mm CONDUIT	(7) 3–1/C NO.4 AWG RW90 + GROUND IN 1–50mm CONDUIT
(3) 3–1/C NO.4 AWG RW90 + GROUND IN 1–50mm CONDUIT	(8) 3–1/C NO.8 AWG RW90 + GROUND IN 1–50mm CONDUIT
(4) 3–1/C NO.8 AWG RW90 + GROUND IN 1–25mm CONDUIT	
(5) 3–1/C NO.12 AWG RW90 + GROUND IN 1–25mm CONDUIT	



SINGLE LINE DIAGRAM
N.T.S.

NOTES:

1. THE CONTRACTOR SHALL COORDINATE WITH THE HYDRO AUTHORITY METERING REQUIREMENTS. PROVIDE METERING CT'S & PT'S AS REQUIRED BY THE HYDRO UTILITIES.
2. MOTOR CONTROL CENTRE (MCC) TO BE A NEMA CLASS II, C/W TYPE 'B' WIRING, FULL LENGTH COPPER GROUND BUS, NEMA TYPE 1 ENCLOSURE WITH GASKETED DOORS.
3. SURGE PROTECTION TO BE PROVIDED ON ALL PHASES IN ACCORDANCE WITH CSA STD. C22.1 – 1978
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL MOTOR NAMEPLATE DATA FOR COORDINATION OF PROTECTIVE DEVICES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SECONDARY POWER DISTRIBUTION FROM THE PAD MOUNTED TRANSFORMER TO THE 600V MCC.
6. SECONDARY POWER FEED TO BE IN COMPLIANCE WITH HYDRO AUTHORITY HAVING JURISDICTION'S REQUIREMENTS FOR UNDERGROUND DISTRIBUTION.
7. DIRECTLY BURIED DUCTS TO BE INSTALLED 1.0 m BELOW FINISHED GRADE WITH 150 mm SAND BEDDING AND COVER UNLESS OTHERWISE INDICATED. BACKFILL WITH GRANULAR 'A' MATERIAL COMPACTED TO 98% S.P.M.D.D. UNLESS OTHERWISE INDICATED.
8. MOTOR CONTROL CENTRE TO HAVE A 100% RATED FULL LENGTH COPPER NEUTRAL BUS.
9. ALL WIRING AND MOTOR CIRCUIT PROTECTION MUST COMPLY WITH REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE – LATEST REVISION.
10. THE CONTRACTOR TO SUBMIT DRAWINGS TO THE ELECTRICAL SAFETY AUTHORITY (ESA) FOR REVIEW PRIOR TO COMMENCING WITH WORK.
11. ALL ELECTRICAL EQUIPMENT & INSTALLATION TO BE INSPECTED BY THE ESA.
12. ALL ELECTRICAL EQUIPMENT MUST BE CSA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ESA REVIEW AND INSPECTION.
13. THE CONTRACTOR TO PROVIDE A COMPLETE SHORT CIRCUIT AND PROTECTION COORDINATION STUDY INCLUDING PROPOSED 27.6KV, 600V, 208V, 240V AND 120V DISTRIBUTION PRIOR TO ANY NEW SWITCHGEAR SHOP DRAWING SUBMISSIONS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED DATA, AND IMPLEMENTING AND TESTING ALL COORDINATION STUDY RECOMMENDATIONS AND SETTINGS.
14. MAIN SWITCHGEAR TO BE CONTRUCTED IN ACCORDANCE WITH CSA STD. C22.2 –No.31
15. PROVIDE ALL REQUIRED FITTINGS, STRAIN RELIEF CONNECTORS, FASTENINGS, JUNCTION BOXES, ETC.
16. THE CONTRACTOR TO VERIFY ALL DIMENSIONS AS REQUIRED.
17. GENERATOR NEUTRAL TO BE BONDED TO NEUTRAL IN THE ATS. MAIN INCOMING NEUTRAL TO BE TERMINATED IN THE ATS.
18. TRANSFORMERS T2 TO BE INSTALLED 2700mm AFFL. PROVIDE REQUIRED WALL SUPPORTS.
19. THE GENSET AND ATS GROUNDING SHALL COMPLY WITH ONTARIO ELECTRICAL SAFETY CODE RULE 10–204(1)(D) AND BULLETIN 10–10–2.
20. THE MCC'S LAYOUTS MUST FIT THE AVAILABLE FLOOR SPACE.
21. THE CONTRACTOR TO VERIFY ALL DIMENSIONS AS REQUIRED.
22. THE CONTRACTOR SHALL MEGGER ALL NEW FEEDER CABLES THAT WILL SERVICE THE NEW ELECTRICAL INSTALLATIONS. THE CONTRACTOR SHALL MEGGER ALL MOTOR CONDUCTORS PRIOR TO TERMINATING THEM IN THE RESPECTIVE NEW MOTOR CONTROL CENTER. THE CONTRACTOR SHALL REPLACE ANY CONDUCTOR THAT FAILS THE MEGGER TESTING.
23. TVSS BREAKER TO BE SIZED TO SUIT.
24. ALL MCC BREAKERS TO BE 100% RATED.

TRANSFORMER SCHEDULE

TAG	RATING –KVA	VOLTAGE	LOCATION
T1	XXX	27.6KV/600–347V	OUTDOOR PAD MOUNTED XMR
T2	30	600V/120–208V	PUMP STATION

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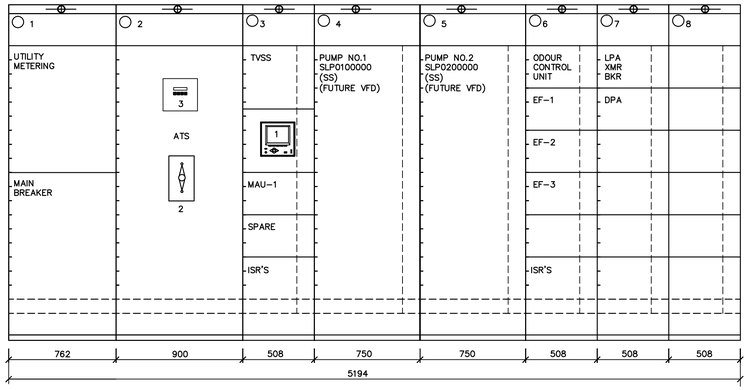
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PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

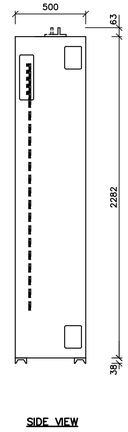
ELECTRICAL

SINGLE LINE DIAGRAM

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13–06–16
DRAWING No.:	E–104



FRONT VIEW



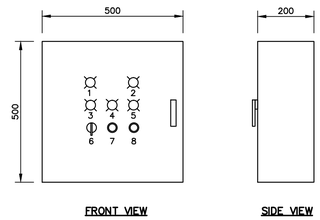
SIDE VIEW

MOTOR CONTROL CENTRE ELEVATION

N.T.S.

MCC ITEM DESCRIPTION

ITEM	DESCREIPTION
1	DIGITAL METER
2	MANUAL ROTARY TRANSFER MECHANISM
3	AUTOMATIC TRANSFER SWITCH CONTROLLER



FRONT VIEW SIDE VIEW

PUMP REMOTE CONTROL PANEL (WALL MOUNTED) TYPICAL FOR PUMP NO.1 & NO.2

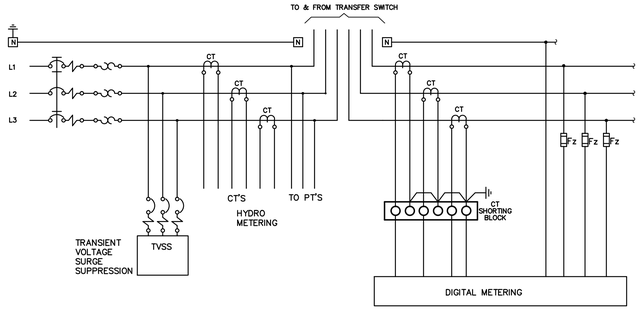
N.T.S.

FRONT OF PANEL ITEM DESCRIPTION

ITEM	DESCREIPTION
1	SYSTEM READY INDICATING LIGHT – WHITE
2	GENERAL FAULT INDICATING LIGHT – AMBER
3	MOTOR RUNNING INDICATING LIGHT – RED
4	MOTOR STOPPED INDICATING LIGHT – GREEN
5	SOFT STARTER FAULT INDICATING LIGHT – AMBER
6	2 POSITION SELECT SWITCH – LOCAL/REMOTE
7	PUMP START P.B.
8	PUMP STOP P.B.

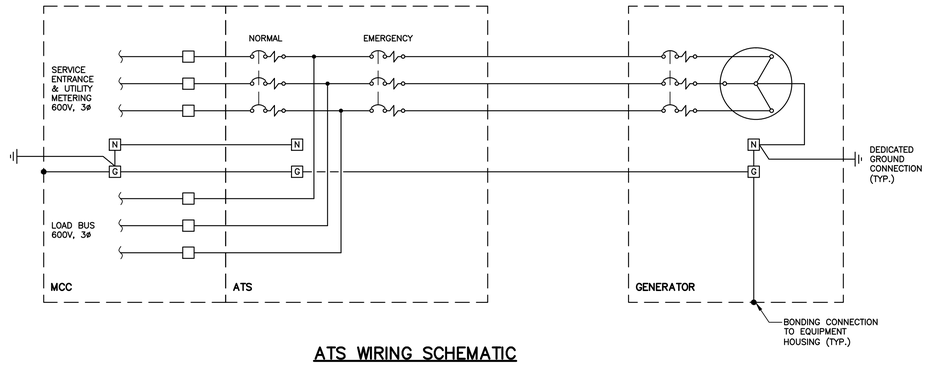
NOTES:

1. THE CONTRACTOR TO COORDINATE MCC SHIPPING SPLITS FOR ENTRY INTO THE PUMP STATION THRU DOORWAYS.
2. MCC POWER CABLING TO BE BOTTOM ENTRY/EXIT FOR SERVICE ENTRANCE AND POWER FEEDS TO PUMPS.
3. THE CONTRACTOR SHALL COORDINATE MOTOR NAMEPLATE DATA WITH MCC STARTERS.
4. THE CONTRACTOR SHALL COORDINATE CONDUIT/DUCT ENTRIES WITH MCC LAYOUT & SHIPPING SPLITS.
5. PROVIDE HOUSE KEEPING PADS FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.
6. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF UTILITY METERING CT'S & PT'S WITH THE LOCAL UTILITY.
7. THE MCC STARTER ENCLOSURES TO BE SIZED TO SUIT INSTALLATION OF A FUTURE VFD WITH MIRUS HARMONIC FILTER. MIRUS FILTER TO BE INSTALLED ON TOP OF THE MCC.



SERVICE ENTRANCE & DIGITAL METERING WIRING SCHEMATIC

N.T.S.



ATS WIRING SCHEMATIC

N.T.S.

Z:\Public\A-DWG\2016\1607-Pier 8 SPS\1607-E105.dwg
PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)

B.J. TWORZYANSKI LTD.
CONSULTING ENGINEERS
MARKHAM, ONTARIO 905.946.8686

No.	REVISIONS	DATE	INTLS
3	ISSUED FOR TENDER	08-16-18	P.T.
2	90% DRAWINGS	09-18-17	A.T.
1	DRAFT PRELIMINARY DESIGN	APRIL 2017	A.T.

DESIGNED BY P.T.
DRAWN BY J.Z.
CHECKED BY A.T.
APPROVED BY A.T.

STAMP: LICENSED PROFESSIONAL ENGINEER P.J. TWORZYANSKI AUG16, 2018 PROVINCE OF ONTARIO

STAMP

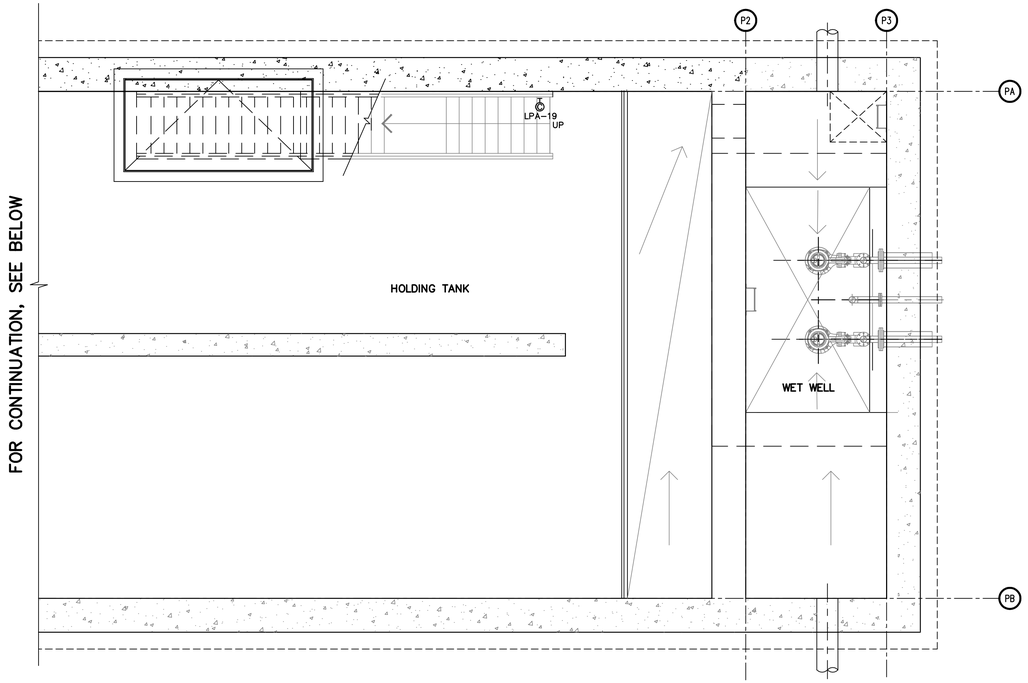
VERIFY SCALE
BAR IS 25mm ON ORIGINAL DRAWING.
0 25mm
IF NOT 25mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

Hamilton
PARSONS

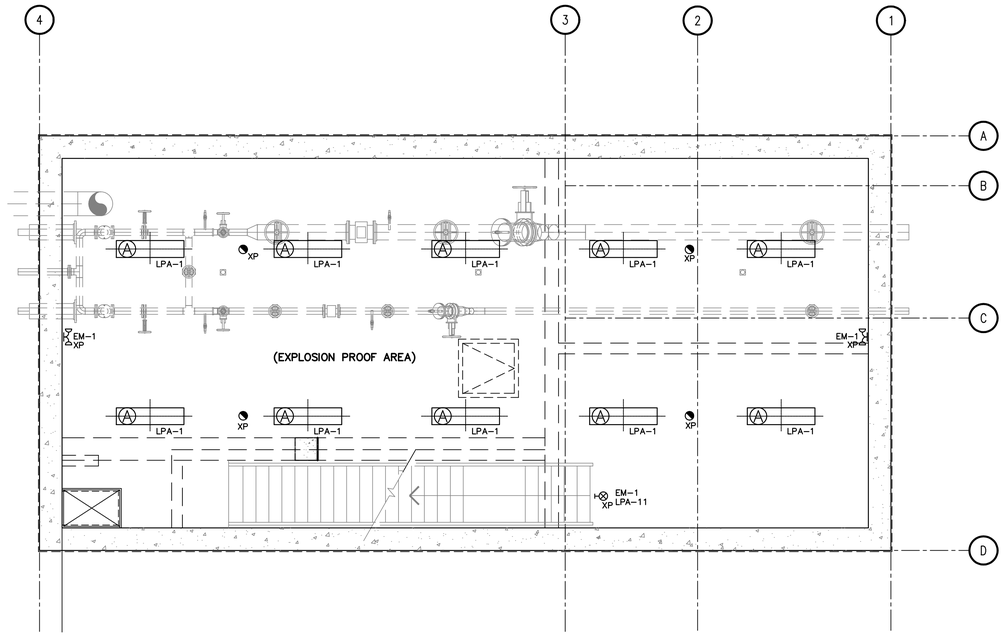
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
MCC ELEVATION

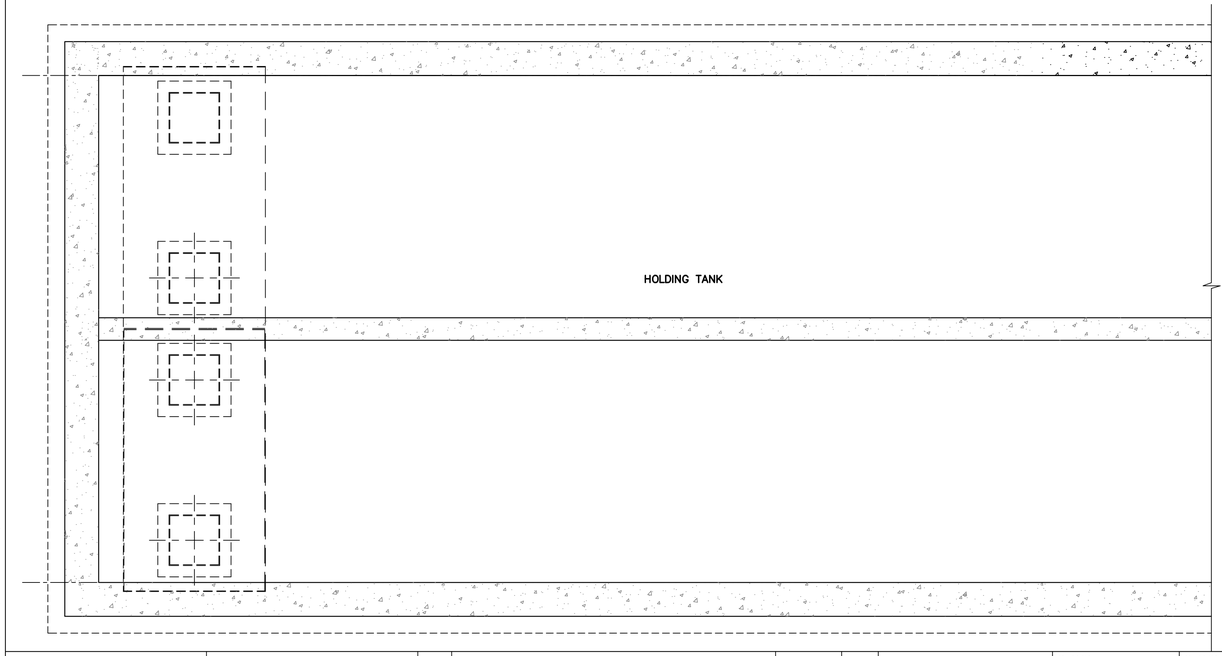
DATE : APRIL, 2017
SCALE: AS SHOWN
FILE No.: XX
CONTRACT No.: C13-06-16
DRAWING No.: E-105



FOR CONTINUATION, SEE BELOW



FLOOR – LOWER LEVEL
SCALE 1:50



FOR CONTINUATION, SEE ABOVE

Z:\Public\A-DWG\2016\1607-Pier 8 SPS\1607-E106.dwg
PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)

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TRUE NORTH

PROJECT NORTH

No.	REVISIONS	DATE	INTLS
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LICENCED PROFESSIONAL ENGINEER
P.J. TWORZYANSKI
AUG16, 2018
PROVINCE OF ONTARIO

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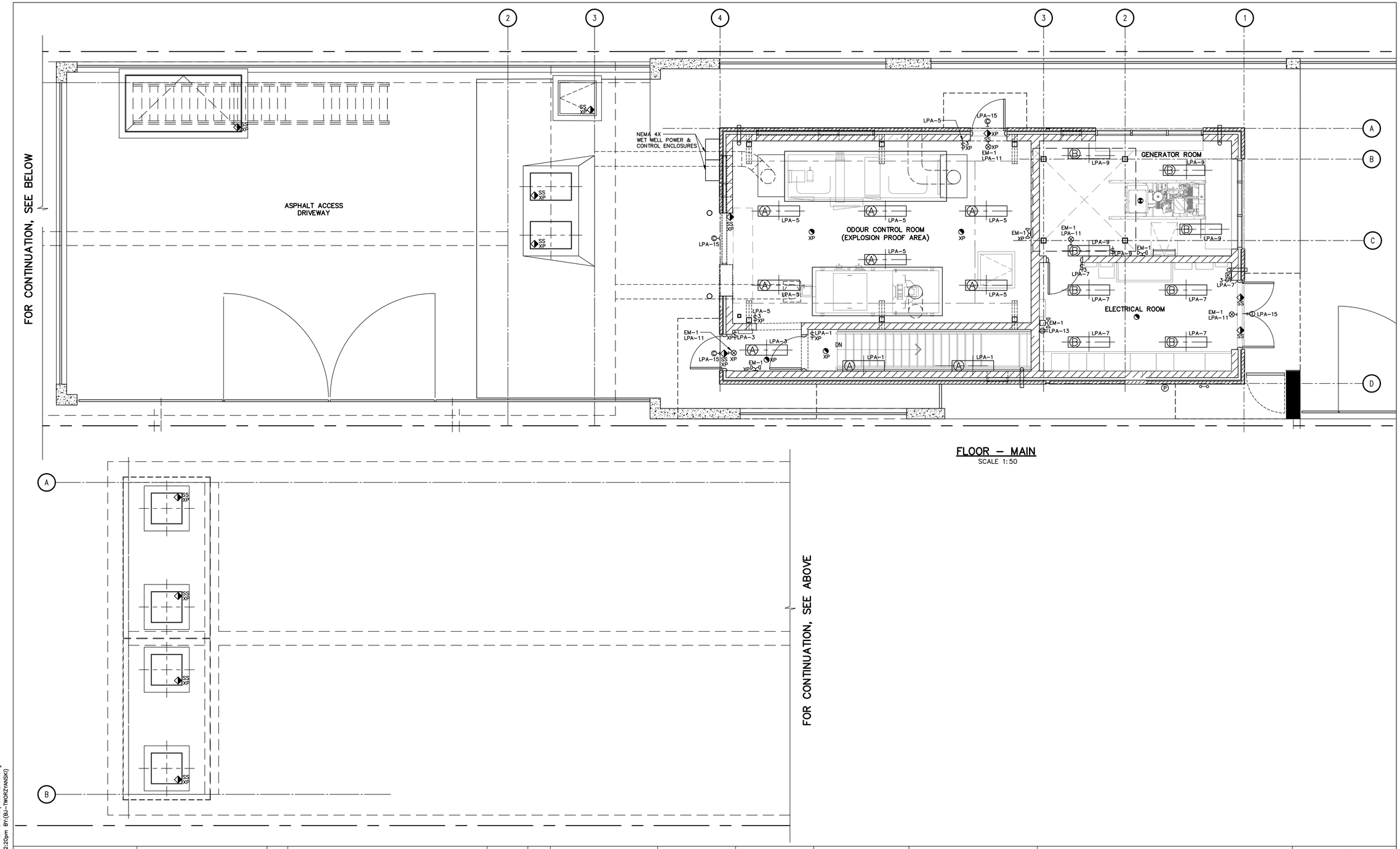
VERIFY SCALE
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PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
LIGHTING LAYOUT 1

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-106



FLOOR – MAIN
SCALE 1:50

Z:\Public\A-DWG\2016\1607-Pier 8 SPS\1607-E107.dwg
PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)

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TRUE NORTH

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AUG16, 2018
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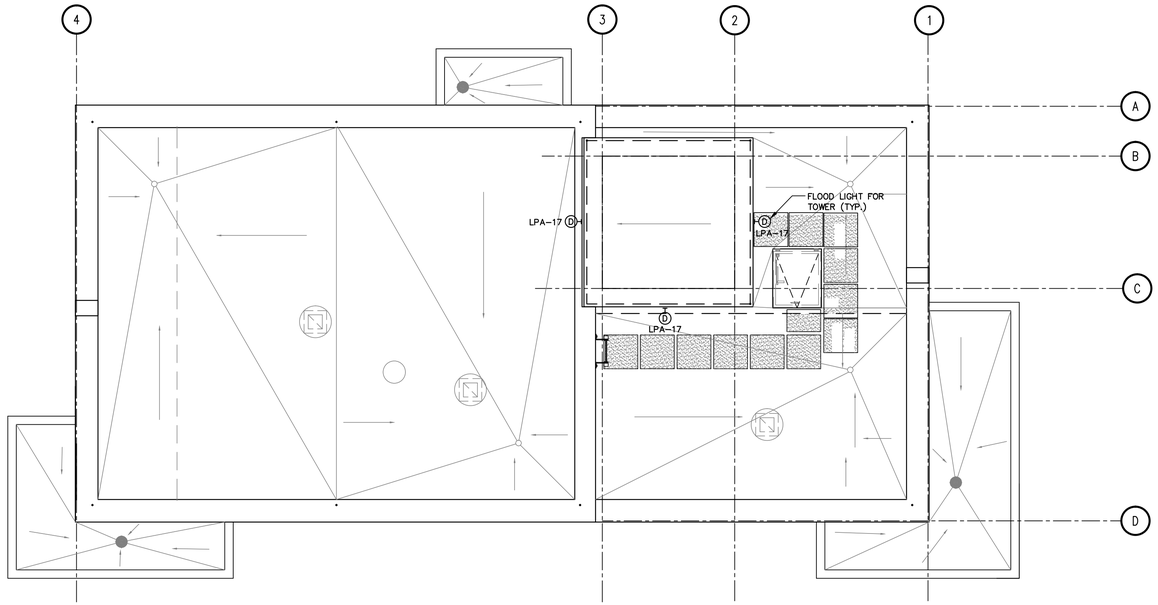
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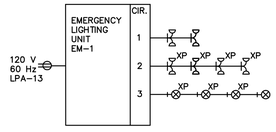
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
LIGHTING LAYOUT 2

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-107



FLOOR – ROOF
SCALE 1:50



CIR. No.	WATTS
1	9 X 4 = 36
2	9 X 8 = 72
3	9 X 4 = 36

144W TOTAL

EMERGENCY LIGHTING DISTRIBUTION (TYP.)
N.T.S.

Z:\Public\A-DWG\2016\1607-Pier 8 SPS\1607-E108.dwg
PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)

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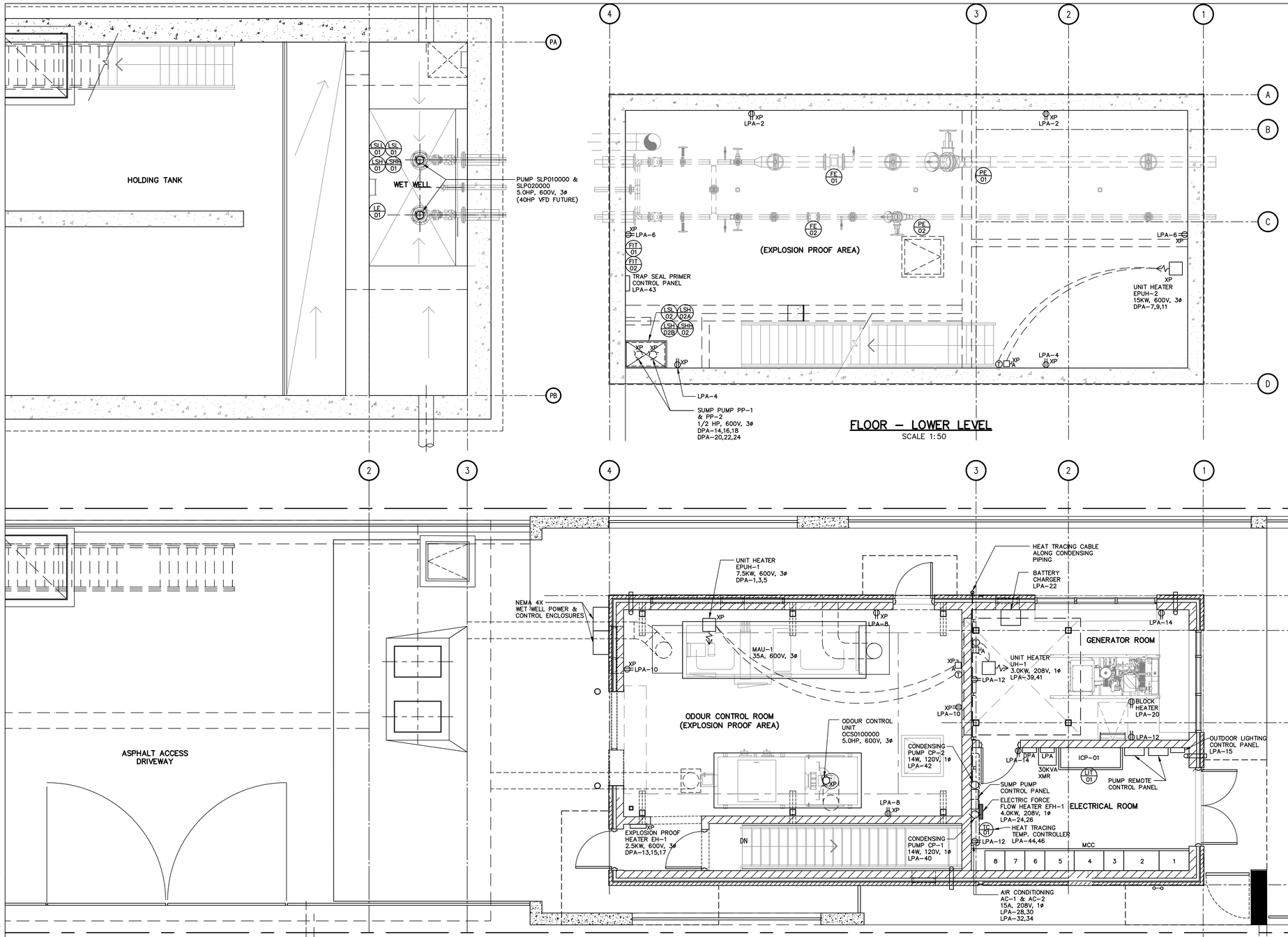
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
LIGHTING LAYOUT 3

DATE : APRIL, 2017
SCALE: AS SHOWN
FILE No.: XX
CONTRACT No.: C13-06-16
DRAWING No.: E-108



FLOOR – LOWER LEVEL
SCALE 1:50

FLOOR – MAIN
SCALE 1:50

Z:\Public\A-DWG\2016\1607-Pier 8 SPS\1607-E109.dwg
PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)

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TRUE NORTH

PROJECT NORTH

No.	REVISIONS	DATE	INTLS
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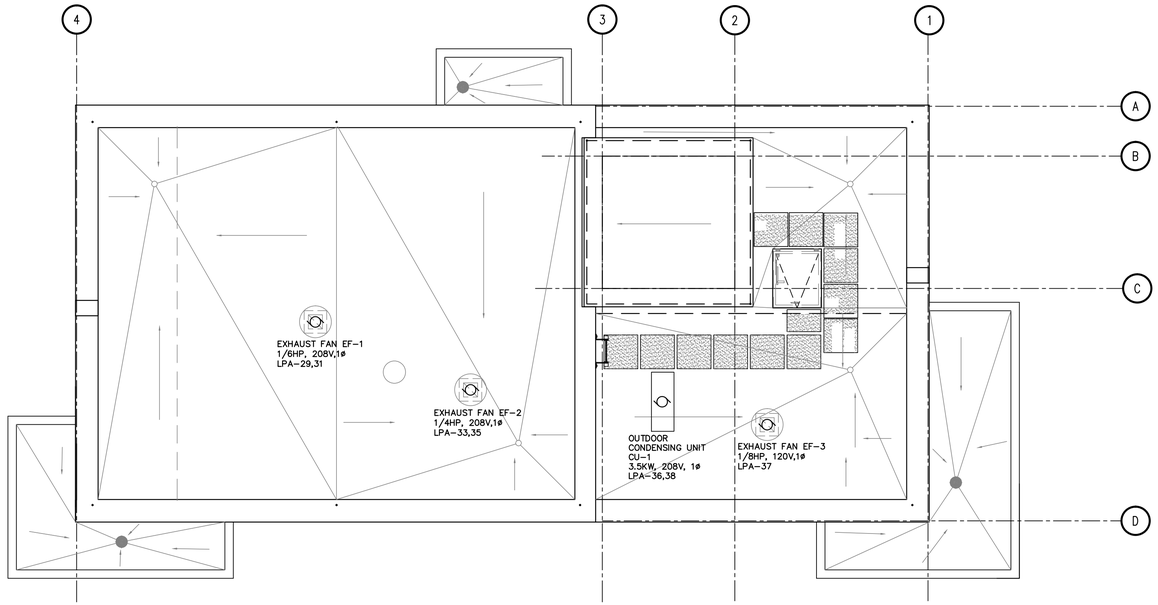
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
POWER LAYOUT 1

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-109



FLOOR – ROOF
SCALE 1:50

NOTES:

1. ALL EQUIPMENT AND/OR FIELD DEVICES TO HAVE LOCAL DISCONNECTS UNLESS OTHERWISE INDICATED. GROUP DISCONNECTS WHERE POSSIBLE.
2. LOCATE DISCONNECTS 1400mm AFFL IN AREA WITH CLEAR ACCESS AND NO OBSTRUCTION.
3. PROVIDE ALL REQUIRED FITTINGS, STRAIN RELIEF CONNECTORS & SUPPORT CLIPS TO INSTALL REQUIRED ELECTRICAL DISTRIBUTION. PROVIDE KELLUM STAINLESS STEEL LOOP RESTRAINTS AS REQUIRED.
4. SHOP DRAWINGS FOR ALL MATERIAL & EQUIPMENT MUST BE SUBMITTED FOR REVIEW PRIOR TO PROCEEDING WITH WORK.
5. DRAWINGS DO NOT SHOW ALL CONDUITS IN FLOOR SLAB. CONTRACTOR TO SUBMIT A CONDUIT LAYOUT FOR REVIEW PRIOR TO POURING OF CONCRETE FLOOR SLAB.
6. ALL FIELD DEVICES, SWITCHES, ETC TO BE SUPPORTED WITH STAINLESS STEEL ANGLE/CHANNEL/PLATE AS REQUIRED. ALL FABRICATION TO BE WELDED.
7. A PLYWOOD BACKBOARD 1.2m x 1.2m (4'x 4'), MINIMUM THICKNESS OF 19mm (3/4") SHALL BE PROVIDED FOR THE TELEPHONE EQUIPMENT PANEL.
8. A GROUND (MIN. #6 AWG) CONNECTED TO THE MAIN BUILDING GROUND SHALL BE PROVIDED ADJACENT TO THE PLYWOOD BACKBOARD.
9. ALL CIRCUITING TO BE RESPONSIBILITY OF THIS CONTRACTOR.
10. DO NOT MIX VOLTAGES IN SAME CONDUIT OR DUCT.
11. THE CONTRACTOR TO COORDINATE WIRING OF FANS, DAMPER MOTORS, THERMOSTATS, ETC. AS SHOWN ON THE VENTILATION DRAWINGS.
12. INSTALL DISCONNECTS ADJACENT EQUIPMENT ON WALL OR ON FREE STANDING STAINLESS STEEL FLOOR STANDS.
13. ALL WIRING AND MOTOR CIRCUIT PROTECTION MUST COMPLY WITH REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE – LATEST REVISION.
14. ALL CONDUITS IN CONCRETE FLOOR SLAB TO BE LOCATED IN MIDDLE THIRD OF THE SLAB.
15. ALL CONDUITS IN CONCRETE FLOOR SLAB TO BE PVC METAL ENCAPSULATED – PLASTIBOND.
16. PROVIDE FIRE TRANSITS FOR ALL DUCTS/CONDUITS TRANSITIONING THRU INTERIOR BUILDING WALLS.
17. PROVIDE EYS SEALS FOR ALL DUCTS/CONDUITS SERVING CLASS 1, DIV 1 AREAS.
18. THE DRAWINGS ARE INTENDED FOR GENERAL LAYOUT ONLY.
19. THE CONTRACTOR TO CONFIRM AND COORDINATE LOCATIONS OF ALL FIELD INSTRUMENTATION WITH MECHANICAL DRAWINGS, PACKAGE EQUIPMENT LAYOUT & SCHEMATICS AND EQUIPMENT SHOP DRAWINGS.
20. BLOCK HEATER CIRCUIT TO BE COORDINATED WITH GENSET SHOP DRAWING SUBMITTAL. THE CONTRACTOR SHALL PROVIDE PANEL BREAKER & WIRING TO SUIT CODE REQUIREMENTS. THE BLOCK HEATER WATTAGE & VOLTAGE MAY VARY WITH GENSET MODEL.
21. ALL CONDUIT UTILIZED IN THE CLASSIFIED HAZARDOUS AREAS TO BE PVC ENCAPSULATED RIGID METAL CONDUIT PLASTIBOND TYPE.
22. ALL LIGHTING CONTROL SWITCHES SHALL HAVE ON/OFF IDENTIFICATION.
23. ALL FIELD WIRING TO BE LABELED AND DEVICE IDENTIFIED WITH LAMICOID & LPXX CIRCUIT DESIGNATION.

B.J. TWORZYANSKI LTD.
CONSULTING ENGINEERS
MARKHAM, ONTARIO 905.946.8686

TRUE NORTH

PROJECT NORTH

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LICENSED PROFESSIONAL ENGINEER
P.J. TWORZYANSKI
AUG16, 2018
PROVINCE OF ONTARIO

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
POWER LAYOUT 2

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-110

Z:\Public\A-DWG\2016\1607-Pier 8 SPS\1607-E110.dwg
PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)

VOLTS: 120/208
PHASE: 3
WIRE: 4

PANEL 'LPA'

LOCATION: ELECTRICAL ROOM
FEEDER: 15KVA XMR.

A. BUSSING: 100A
MAIN BKR:
MOUNTING:
NO. CIR: 60
IR: 25KA

LOCATION	WATTAGE A	WATTAGE B	WATTAGE C	LTG	REC	CIR	BKR	A	B	C	BKR	CIR	REC	LTG	WATTAGE A	WATTAGE B	WATTAGE C	LOCATION
LIGHTING- SERVICE LEVEL	756			12		1	15				15	2	2		500			DUPLEX RECEPTACLE
LIGHTING- STAIR		63		1		3	15				15	4	2			500		DUPLEX RECEPTACLE
LIGHTING- ODOUR CONTROL RM			378	6		5	15				15	6	2				500	DUPLEX RECEPTACLE
LIGHTING- ELECTRICAL RM	240			4		7	15				15	8	2		500			DUPLEX RECEPTACLE
LIGHTING- GENERATOR RM		240		4		9	15				15	10	2			500		DUPLEX RECEPTACLE
EXIT LIGHTS			36	4		11	15				15	12	3				750	DUPLEX RECEPTACLE
EMERGENCY LIGHT EM-1	500				1	13	15				15	14	2		500			DUPLEX RECEPTACLE
LIGHTING- OUTDOOR		500		5		15	15				15	16						
LIGHTING- TOWER			300	3		17	15				15	18						
LIGHTING- HOLDING TANK	100			1		19	20				15	20			1000			BLOCK HEATER
						21	15				15	22				1000		BATTERY CHARGER
						23	15				40	24					2000	EFH-1
ICP-01	1000					25	15					26			2000			
ICP-01		1000				27	15				15	28				100		AC-1
EF-1			65			29	15					30					100	
	65					31					15	32			100			AC-2
EF-2		100				33	15					34				100		
			100			35					40	36					1750	CU-1
EF-3	100					37	15					38			1750			
UH-1		1500				39	20				15	40				14		CP-1
			1500			41					15	42					14	CP-2
TRAP SEAL PRIMER CP	500					43	15				30	44			900			HEAT TRACING TEMP. CONTROLLER TC-01
VENTILATION CONTROL PANEL		500				45	15					46				900		
						47	15				15	48						
						49	15				15	50						
						51	15				15	52						
						53	15				15	54						
						55	15				15	56						
						57	15				15	58						
						59	15				15	60						
TOTALS	3261	3903	2379												7250	3114	5114	

A TOTAL	10511
B TOTAL	7017
C TOTAL	7493
PANEL TOTAL	25021

NOTE: HEAT TRACE BREAKER TO BE GROUND FAULT (GFI).

VOLTS: 600
PHASE: 3
WIRE: 3

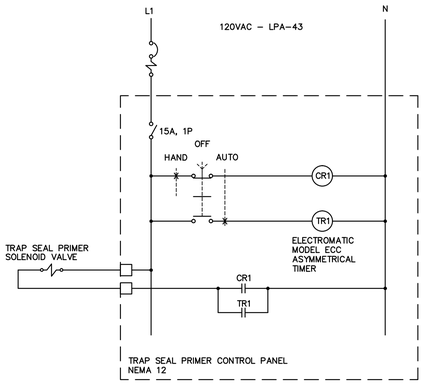
PANEL 'DPA'

LOCATION: CONTROL ROOM
FEEDER: MCC

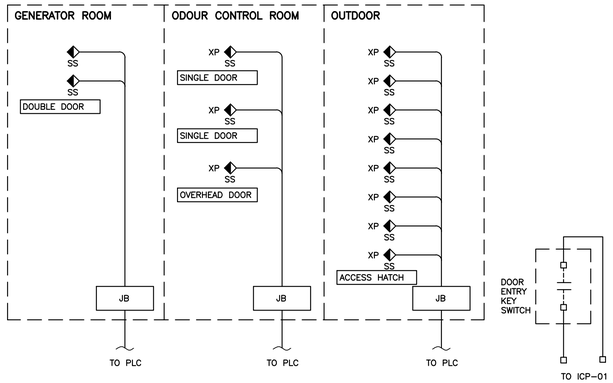
A. BUSSING: 200A
MAIN BKR: N/A
MOUNTING: WALL
NO. CIR: 60
IR: 42KA

LOCATION	WATTAGE A	WATTAGE B	WATTAGE C	LTG	REC	CIR	BKR	A	B	C	BKR	CIR	REC	LTG	WATTAGE A	WATTAGE B	WATTAGE C	LOCATION
EPUH-1	2500					1						2			2500			CRANE
		2500				3	15				15	4				2500		
			2500			5						6					2500	
EPUH-2	5000					7						8			500			OVERHEAD DOOR
		5000				9	15				15	10				500		
			5000			11						12					500	
EH-1	850					13	15					14			125			SUMP PUMP PP-1
		850				15					15	16				125		
			800			17						18					125	
						19						20			125			SUMP PUMP PP-2
						21	15				15	22				125		
						23						24					125	
						25					15	26						
						27	15					28						
						29						30						
						31						32						
						33	15				15	34						
						35						36						
						37						38						
						39	15				15	40						
						41						42						
						43						44						
						45	15				15	46						
						47						48						
						49						50						
						51	15				15	52						
						53						54						
						55						56						
						57	15				15	58						
						59						60						
TOTALS	8350	8350	8300												3250	3250	3250	

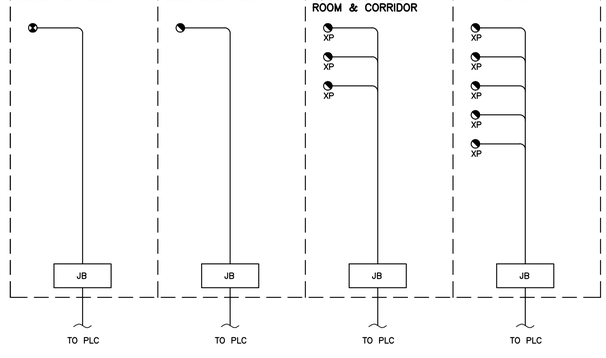
A TOTAL	11600
B TOTAL	11600
C TOTAL	11550
PANEL TOTAL	34750



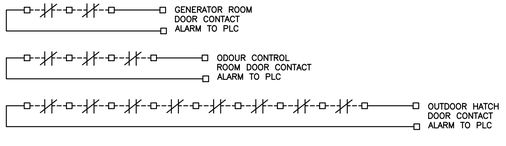
TRAP SEAL PRIMER SCHEMATIC
N.T.S.



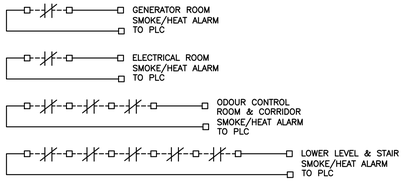
SECURITY SYSTEM SCHEMATIC
N.T.S.



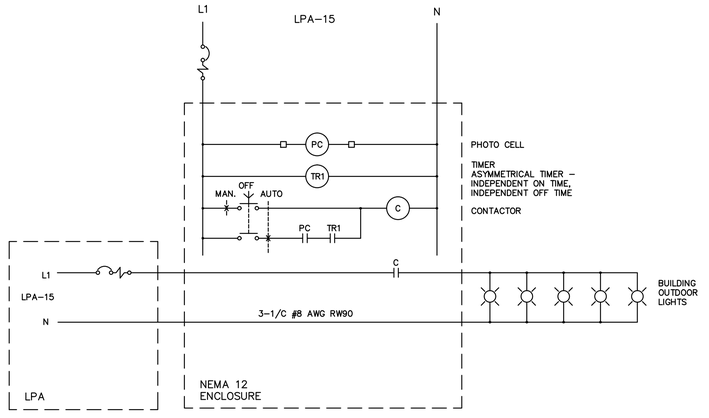
SMOKE/HEAT DETECTOR SCHEMATIC
N.T.S.



DOOR CONTACT WIRING SCHEMATIC
N.T.S.



SMOKE/HEAT DETECTOR WIRING SCHEMATIC
N.T.S.



OUTDOOR LIGHTING CONTROL
N.T.S.

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CONSULTING ENGINEERS
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DRAWN BY J.Z.
CHECKED BY A.T.
APPROVED BY A.T.

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STAMP

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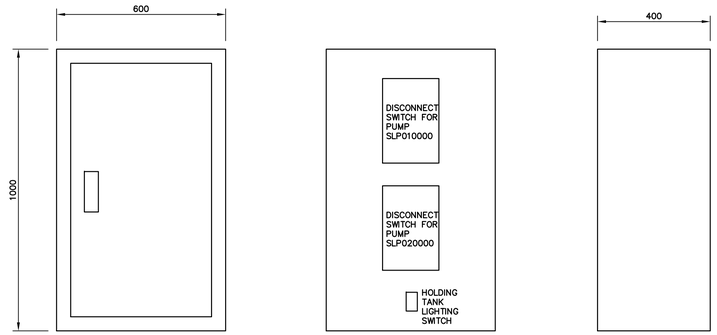
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
ELECTRICAL DETAILS 1

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-111

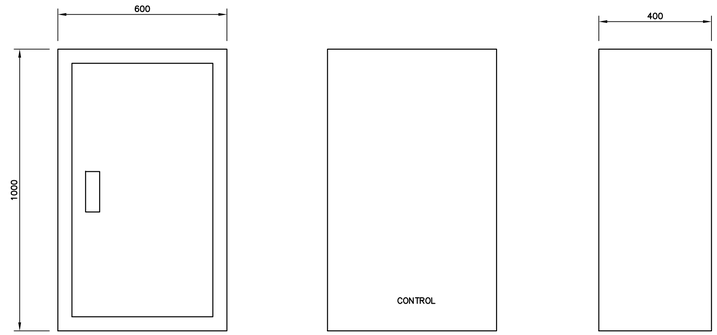
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PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)



FRONT VIEW INTERIOR VIEW SIDE VIEW

NEMA 4X POWER ENCLOSURE DETAILS

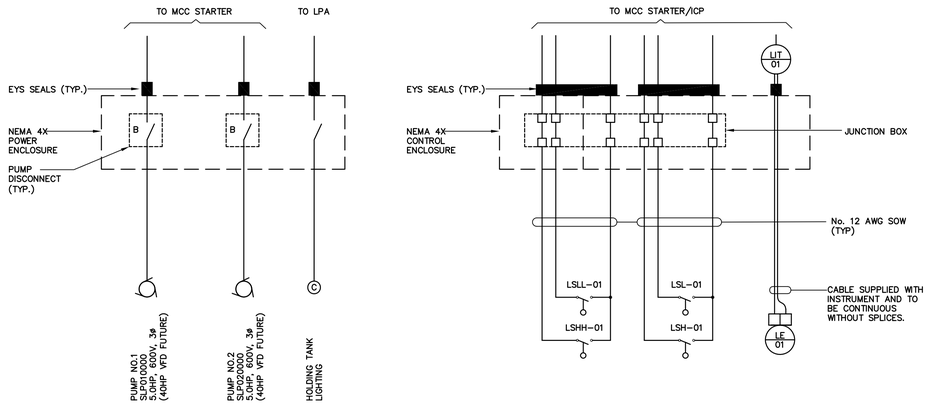
N.T.S.



FRONT VIEW INTERIOR VIEW SIDE VIEW

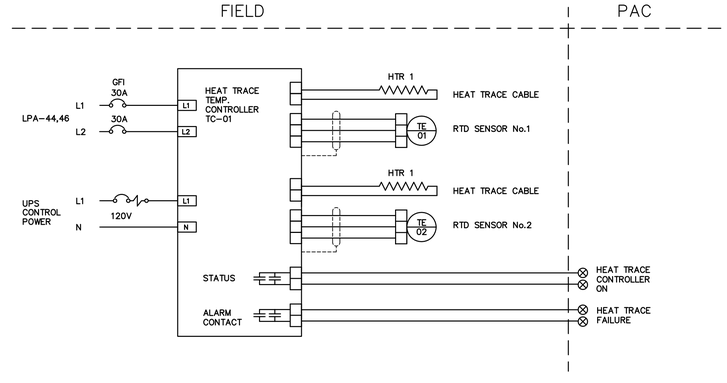
NEMA 4X CONTROL ENCLOSURE DETAILS

N.T.S.



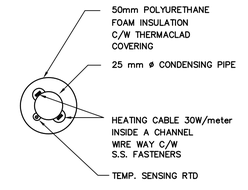
WET WELL & HOLDING TANK – WIRING SCHEMATIC

N.T.S.



HEAT TRACING TEMP. CONTROLLER WIRING SCHEMATIC

N.T.S.



PIPE HEAT TRACE DETAIL

N.T.S.

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1	DRAFT PRELIMINARY DESIGN	APRIL 2017	A.T.

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CONSULTING ENGINEERS
MARKHAM, ONTARIO 905.946.8686

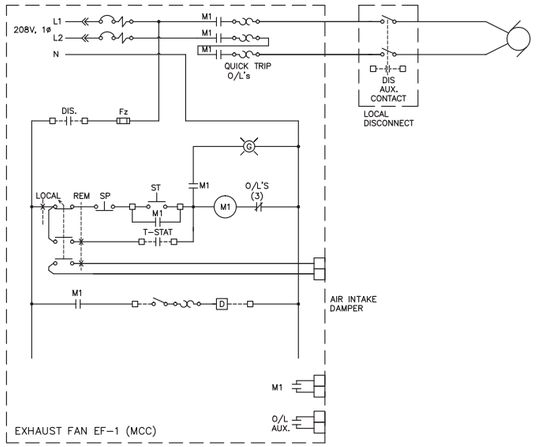
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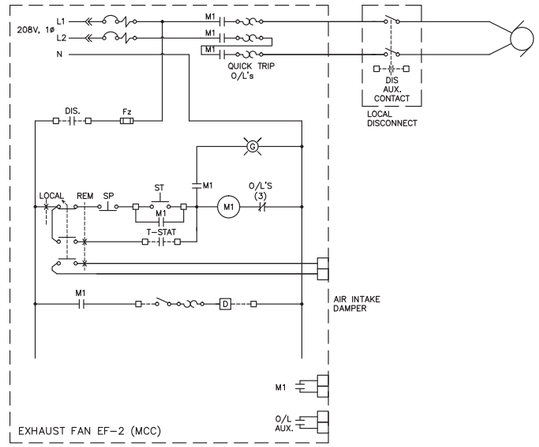
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

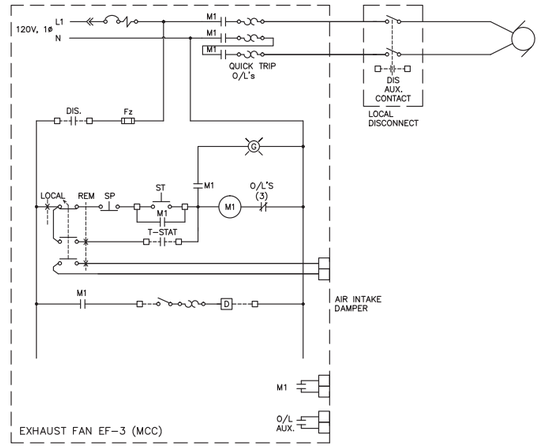
ELECTRICAL
ELECTRICAL DETAILS 2

DATE : APRIL, 2017
SCALE: AS SHOWN
FILE No.: XX
CONTRACT No.: C13-06-16
DRAWING No.: E-112

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PLOT DATE: Aug 16, 2018-2:39pm BY:(BJ-TWORZYANSKI)







LEGEND

TE 01	HONEYWELL AMBIENT AIR TEMPERATURE SENSOR T775-SENS-WR
TIC 01	HONEYWELL T775 SERIES 2000 STAND ALONE ELECTRONIC TEMPERATURE CONTROLLER
MD1	MODULATING DAMPER BELIMO AFX24-MFT-S+A01 24VAC
D1	DAMPER - OPEN/CLOSE BELIMO LF120-S-US 120VAC

SCOPE OF OPERATION:

1. UNIT HEATER
   THE UNIT HEATER SHALL BE CONTROLLED BY THE TIC-01
   CONTROLLER RELAY R1
   SET POINT: 15°C
   DEADBAND: 2°C

2. COMBUSTION AIR INTAKE DAMPER - D2
   COMBUSTION AIR INTAKE DAMPER D2 TO OPEN 100% WHEN THE GENERATOR RUNS AND/OR WHEN EF-1 IS OPERATING.
   LIMIT END SWITCHES TO BE WIRED TO THE PAC FOR STATUS MONITORING AND ALARMING.

3. GENERATOR VENTILATION:
   THE AIR INTAKE (MD1), EXHAUST AIR (MD2) AND RECIRC. AIR (MD3) SHALL MODULATE TO MAINTAIN A ROOM TEMPERATURE SET POINT: 25°C.
   THE THROTTLING RANGE SHALL BE 2°C.

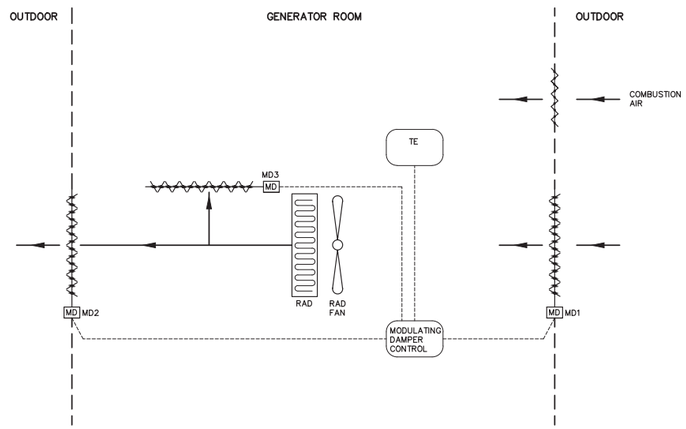
   AIR INTAKE AND EXHAUST AIR DAMPER TO MODULATE FROM 1% TO 100% OPEN
   RECIRC. DAMPER TO MODULATE FROM 100% TO 0% OPEN.

4. IN THE EVENT OF A POWER FAILURE THE COMBUSTION AIR DAMPER TO FAIL OPEN.

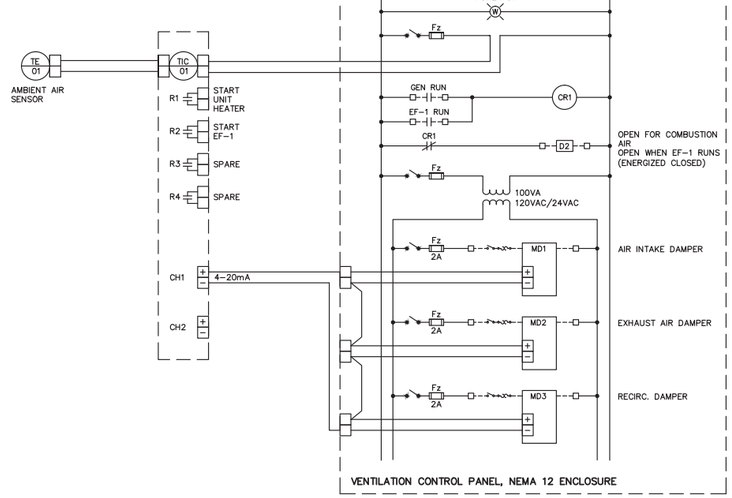
5. EF-1:
   EF-1 START/STOP SHALL BE CONTROLLED BY TIC-01-R2
   SET POINT: 25°C
   DIFF: 2°C

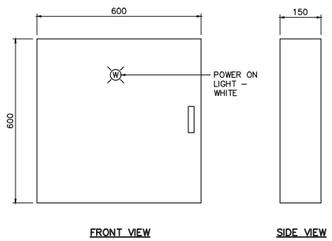
   WHEN TEMPERATURE IS ABOVE 27°C, THE SPLIT SYSTEM AIR CONDITIONING UNIT TO RUN. WHEN THE AIR CONDITION RUNS, EF-1 SHALL NOT RUN.

6. MODES OF OPERATION:
   THE VENTILATION SYSTEM WILL BE CONTINUOUSLY ENABLED.



VENTILATION CONTROL SCHEMATIC - GENERATOR ROOM
N.T.S.





VENTILATION CONTROL PANEL
N.T.S.

NOTES:

1. PROVIDE RESISTORS AS REQUIRED FOR 4-20mA MODULATION VS. PROPORTIONAL VOLTAGE.
   PROVIDE PHOENIX CONTACTS SIGNAL CONVERTERS AS REQUIRED TO CONVERT FROM 4-20mA TO 0-10 VOLTS.
2. PANELS SHALL BE CSA.

No.	REVISIONS	DATE	INTLS
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CHECKED BY A.T.
APPROVED BY A.T.

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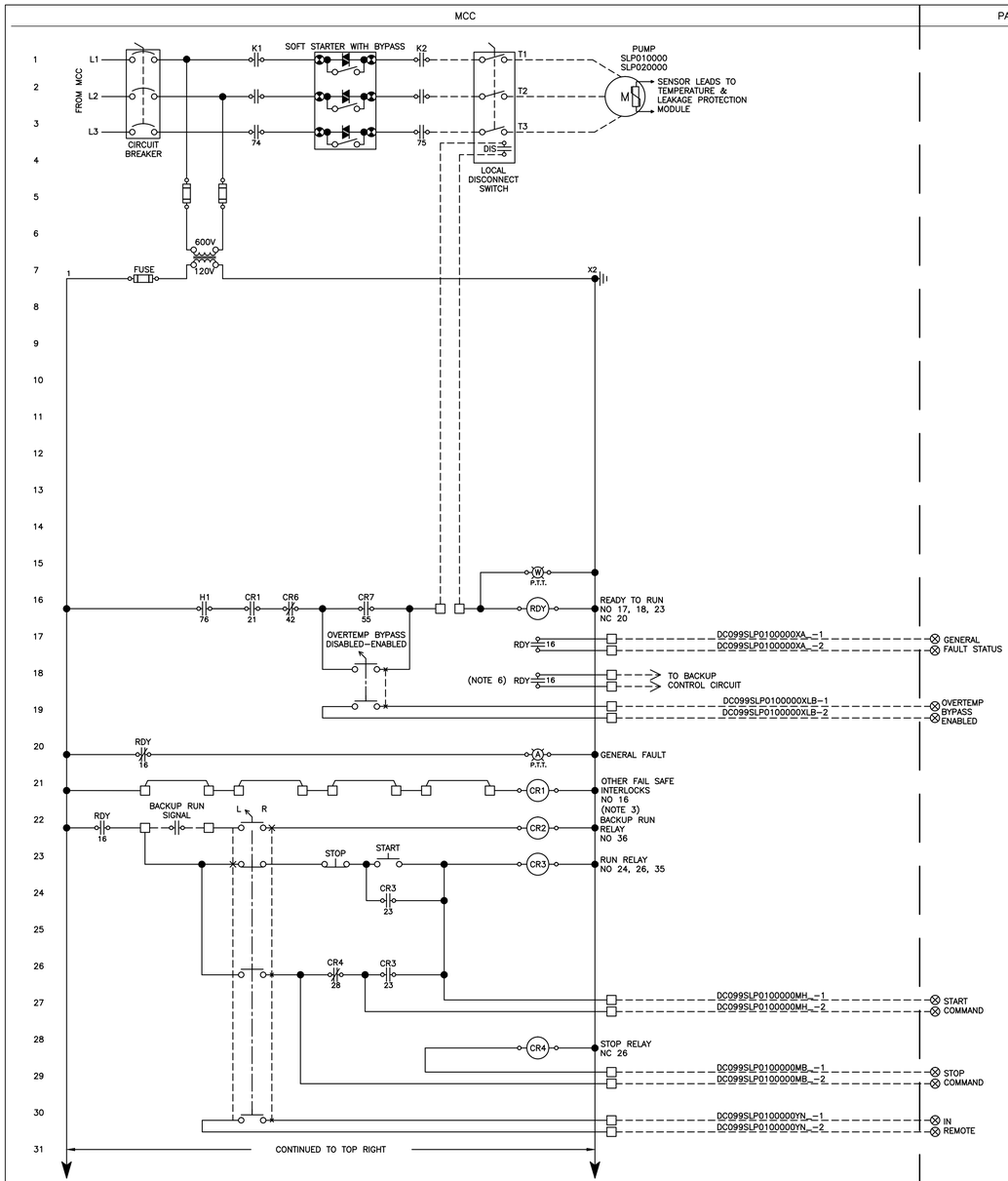
Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
EXHAUST FAN STARTER SCHEMATIC

DATE : APRIL, 2017
SCALE: AS SHOWN
FILE No.: XX
CONTRACT No.: C13-06-16
DRAWING No.: E-113

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PLOT DATE: Aug 16, 2018-2:20pm BY:(BJ-TWORZYANSKI)



NOTES:

1. CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL ELEMENTS NECESSARY TO PROVIDE FULL FUNCTIONALITY AS DESCRIBED IN THE CONTRACT DOCUMENTS.
2. CERTAIN CONTROL REQUIREMENTS ARE BASED ON SPECIFIC MAKE AND MODEL OF SOFT STARTER. SOFT STARTER KEYPADS ARE TO BE MOUNTED IN SUCH A WAY AS TO BE ACCESSIBLE TO THE OPERATOR.
3. OTHER FAILSAFE INTERLOCKS MAY INCLUDE HIGH OR LOW PRESSURE, HIGH OR LOW FLOW, LIMIT SWITCHES, ETC.
4. CONTRACTOR TO SUPPLY SOFT STARTER WITH ETHERNET CONNECTIVITY.
5. SOFT STARTER FAULTS ARE RESET USING THE KEYPAD.
6. THIS CONTACT IS USED IN THE BACKUP CONTROL CIRCUIT LOCATED IN THE PAC PANEL. THE CONTACT MUST OPEN ON A FAULT OR POWER FAILURE.

No.	REVISIONS	DATE	INTLS
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1	DRAFT PRELIMINARY DESIGN	APRIL 2017	A.T.

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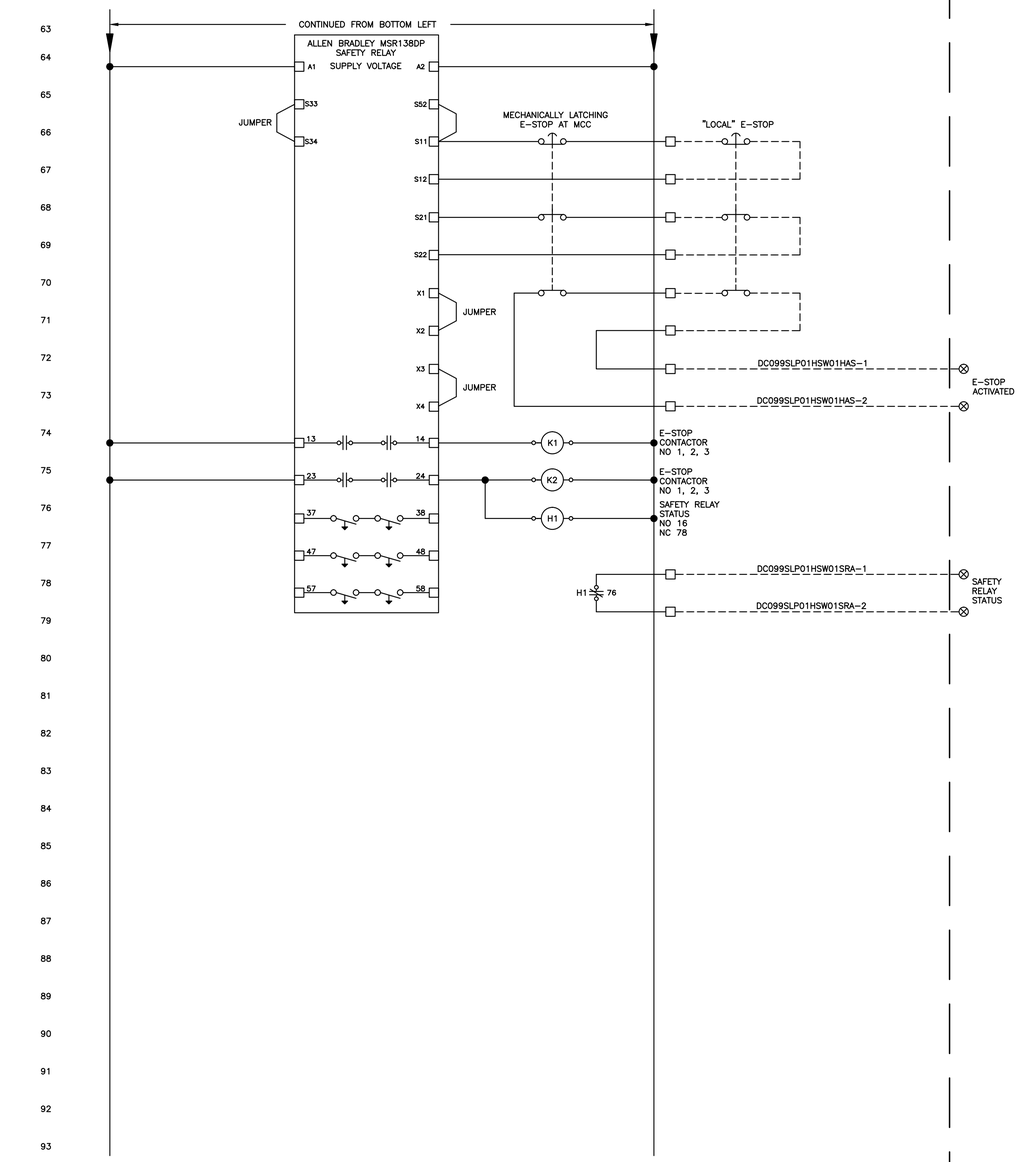
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
PUMP STARTER SCHEMATIC 1

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13–06–16
DRAWING No.:	E–114

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PLOT DATE: Aug 16, 2018–2:20pm BY:(BJ–TWORZYANSKI)

MCC | PAC | MCC | PAC



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NOTES:

1. CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL ELEMENTS NECESSARY TO PROVIDE FULL FUNCTIONALITY AS DESCRIBED IN THE CONTRACT DOCUMENTS.
2. CONTRACTOR TO SUPPLY AND INSTALL MECHANICALLY LATCHING E-STOPS.

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PLOT DATE: Aug 16, 2018-2:21pm BY:(BJ-TWORZYANSKI)

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No.	REVISIONS	DATE	INTLS
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LICENSED PROFESSIONAL ENGINEER
P.J. TWORZYANSKI
AUG16, 2018
PROVINCE OF ONTARIO

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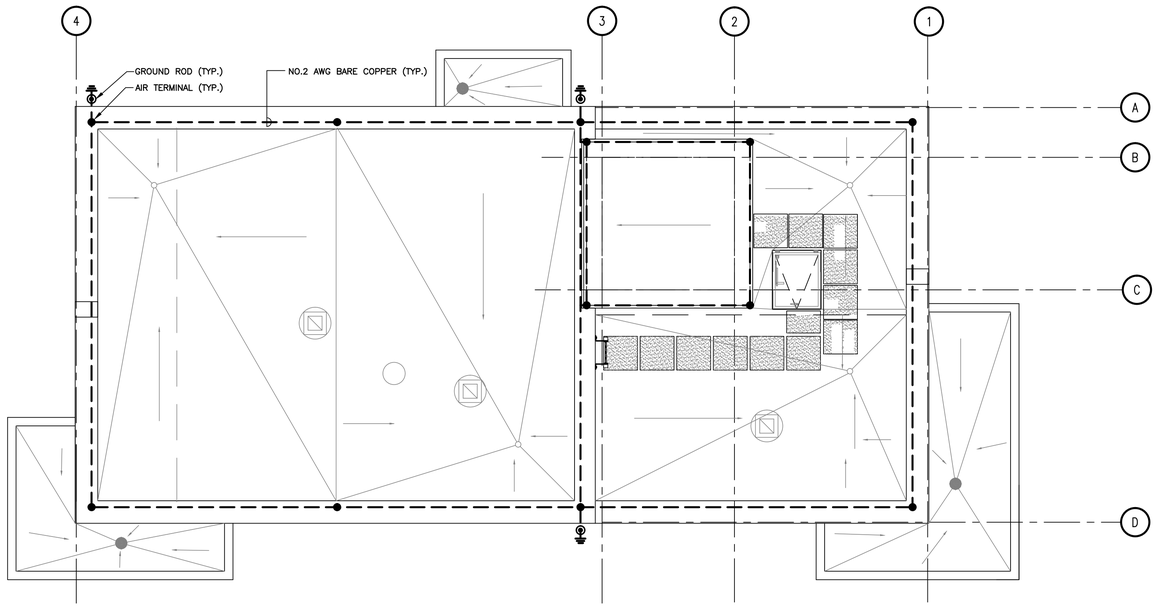
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
PUMP STARTER SCHEMATIC 2

DATE : APRIL, 2017
SCALE: AS SHOWN
FILE No.: XX
CONTRACT No.: C13-06-16
DRAWING No.: E-115



FLOOR – ROOF
SCALE 1:50

LEGEND

NO.2 AWG BARE COPPER

GROUND ROD COPPER CLAD
20mmø x 3000mm

9.5mmø x 300mm SOLID COPPER
AIR TERMINAL

NOTES:

1. LIGHTING PROTECTION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH CAN/CSA-B72-M87 (LATEST EDITION).

2. MATERIALS TO CONFORM TO CLASS 1 INSTALLATIONS.

No.	REVISIONS	DATE	INTLS
3	ISSUED FOR TENDER	08-16-18	P.T.
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P.J. TWORZYANSKI
AUG16, 2018
PROVINCE OF ONTARIO

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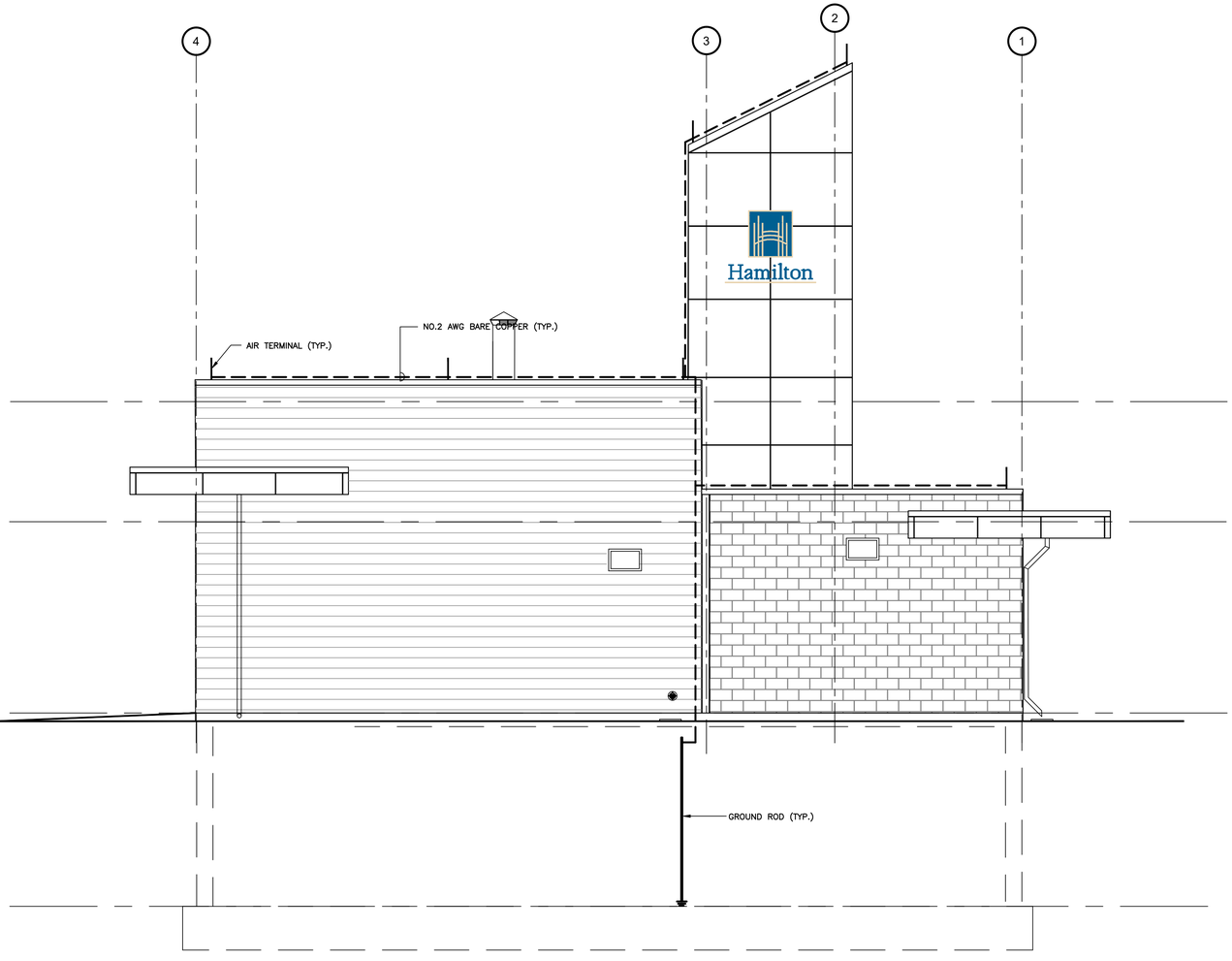
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

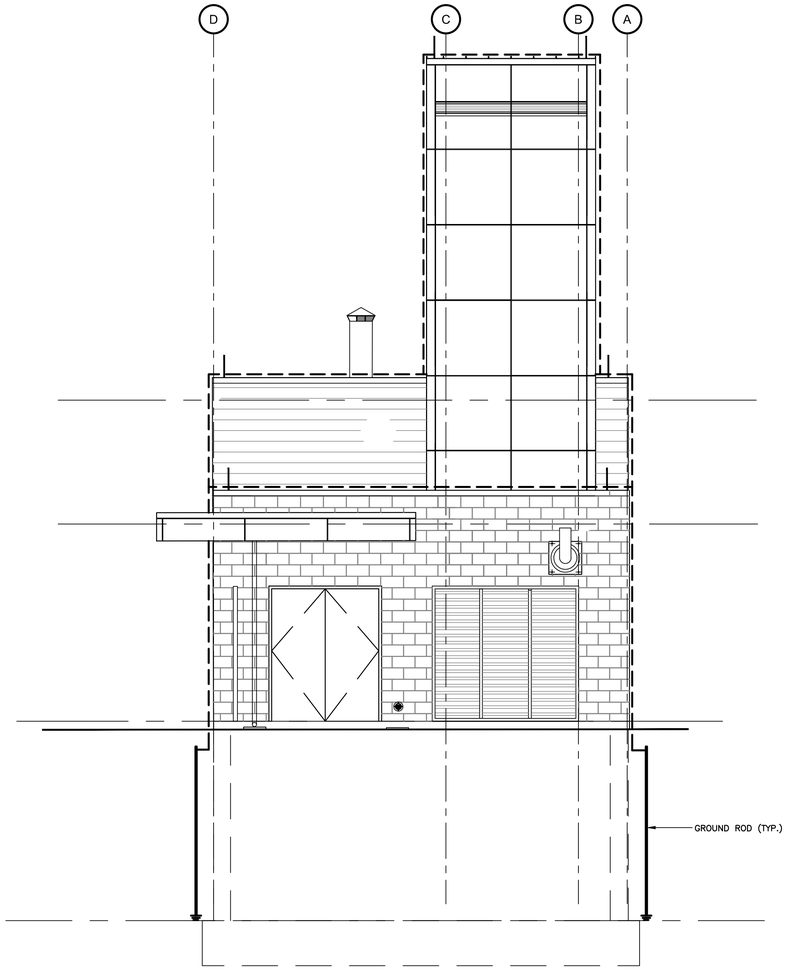
ELECTRICAL
LIGHTNING PROTECTION DETAILS 1

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-116

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SOUTH ELEVATION
SCALE 1:50



EAST ELEVATION
SCALE 1:50

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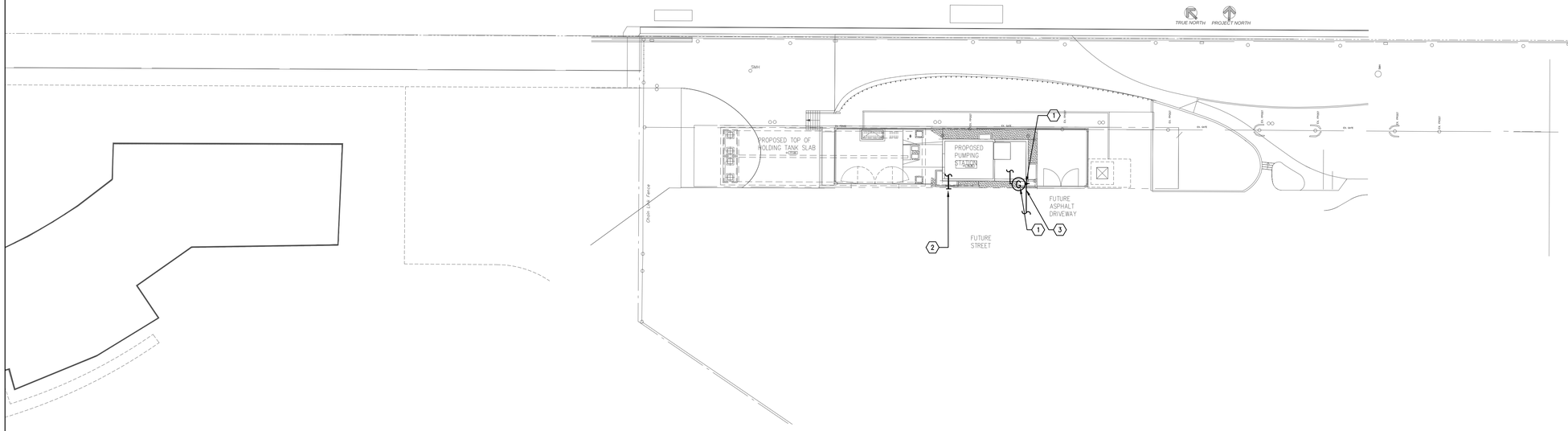
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
LIGHTNING PROTECTION DETAILS 2

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	E-117



MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	SUPPLY AIR DUCT UP
	SUPPLY AIR DUCT DOWN
	RETURN/EXHAUST AIR DUCT UP
	RETURN/EXHAUST AIR DUCT DOWN.
	NEW SUPPLY AIR DUCTWORK
	ACOUSTICALLY LINED DUCTWORK
CU-2	EQUIPMENT DESIGNATION
	BALANCING DAMPER
F/D	FIRE DAMPER
T	THERMOSTAT
CW	DOMESTIC COLD WATER
SAN	SANITARY PIPE BELOW GRADE, BURIED
PSAN	PUMPED SANITARY DRAINAGE PIPE
ST	STORM ABOVE GRADE
V	SANITARY VENT
■	FAN STARTER
2	DRAWING NOTES
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
RD	ROOF DRAIN
V.T.R.	VENT THROUGH ROOF
	PIPE UP, PIPE DOWN
P / CO / CO	TRAP / CLEANOUT
F.E.	FIRE EXTINGUISHER
1 100Ø / 50	NECK SIZE / CFM / DIFFUSER TYPE

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL SERVICES AND DEVICES INDICATED ON THESE PLANS. PROVIDE AND PAY FOR ALL LOCATE SERVICES TO DETERMINED POSITION AND DEPTHS OF BURY FOR GAS, WATER, SANITARY DRAIN, STORM WATER, ETC.

DRAWING NOTES:

1. NEW INCOMING NATURAL GAS LINE AND METER/ PRESSURE REGULATING STATION INSTALLED BY GAS COMPANY. GAS LOAD: 1511 CFH, PRESSURE DOWNSTREAM OF PRV: 7" W.C.
2. CONNECT TO 100ø DOMESTIC WATER SERVICE AT 1.5 METER FROM BUILDING FACE. COORDINATE EXACT LOCATION WITH CIVIL ENGINEER/ SITE SERVICING CONTRACTOR.
3. BURIED GAS LINE BY GAS COMPANY.

DRAWING LIST

DRAWING NO.	DRAWING TITLE	SCALE
M101	MECHANICAL SITE PLAN, DRAWING LIST & LEGEND	1:200
M102	MECHANICAL SERVICE FLOOR PLUMBING PLAN	1:50
M103	MECHANICAL GROUND FLOOR PLUMBING PLAN	1:50
M104	MECHANICAL SERVICE FLOOR HVAC PLAN	1:50
M105	MECHANICAL GROUND FLOOR HVAC PLAN	1:50
M106	MECHANICAL ROOF PLAN	1:50
M107	MECHANICAL DETAILS 1	N.T.S.
M108	MECHANICAL DETAILS 2	N.T.S.
M109	MECHANICAL SCHEDULES	N.T.S.

GPY + Associates Engineering Inc.
90C Centurian Drive
Unit 6
Markham, Ontario
L3R 8C5
Tel: 905 475 3138
Fax: 866 853 3732
email: engineering@gpyengineering.com

No.	REVISIONS	DATE	INTLS
4	ISSUED FOR 100% REVIEW	AUG 09 2018	J.X.
4	ISSUED FOR 100% REVIEW	JULY 30 2018	J.X.
3	ISSUED FOR 100% REVIEW	JUNE 07 2018	J.X.
2	ISSUED FOR REVIEW	JAN 2018	J.X.
1	ISSUED FOR PERMIT	JULY 2017	J.X.

DESIGNED BY J.X.
DRAWN BY J.Z./J.X.
CHECKED BY GPY
APPROVED BY GPY

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G.P. YOUDELIS
JULY.2017
PROVINCE OF ONTARIO

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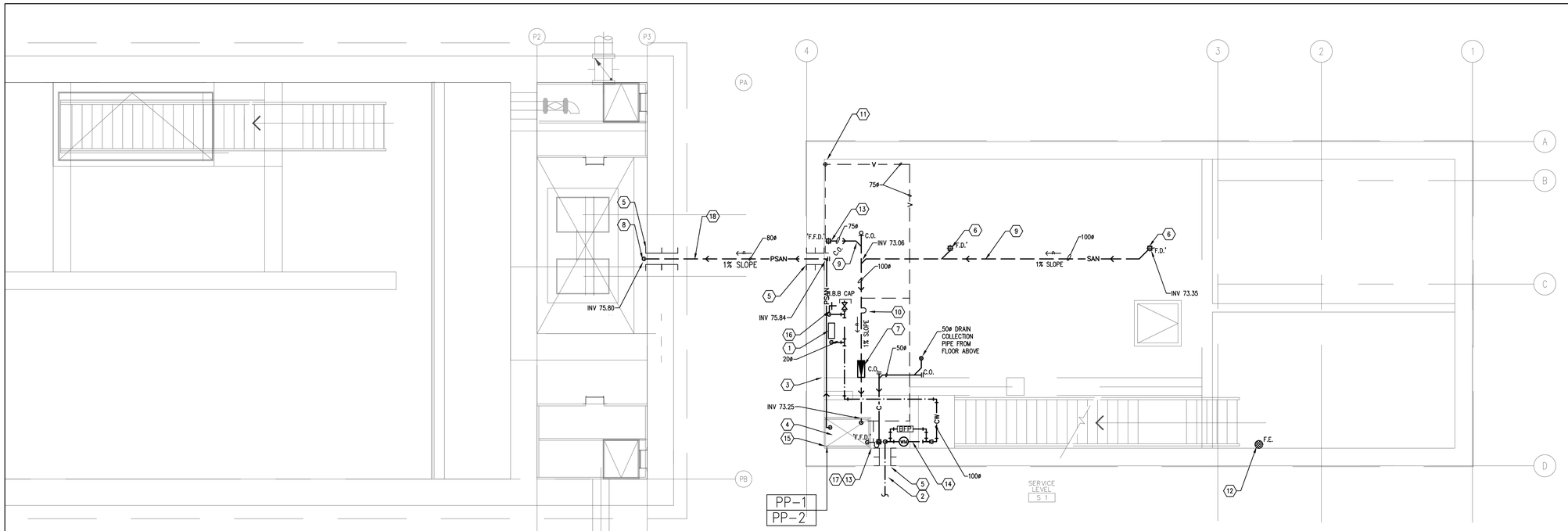
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL SITE PLAN, DRAWING LIST & LEGEND

DATE : MAY. 2017
SCALE: N.T.S.
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: M101



GENERAL NOTES

1. CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE EXTENT OF THE ALL EXISTING CONDITIONS PRIOR TO SUBMITTING ANY QUOTATION.
2. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS ARE TO BE REFERRED TO CONSULTANT FOR INSTRUCTIONS BEFORE ANY WORK IS BEGUN.
3. CONTRACTOR TO COORDINATE WORK ON SITE WITH ELECTRICAL SERVICES.
4. ALL PUMPED SANITARY DRAINAGE PIPE SHALL BE STAINLESS STEEL 316L SCH10S
5. ALL VENT PIPING SHALL BE AS PER OBC PART 7.

DRAWING NOTES

1. ELECTRONIC TRAP SEAL PRIMER TO SERVE FLOOR/AREA DRAIN PRIMING LINE, MOUNT CABINET ON WALL AS SHOWN.
2. NEW 100ø INCOMING DOMESTIC COLD WATER SERVICE, CONNECT TO SITE SERVICES PROVISION AT 1.5 M FROM BUILDING. PROVIDE ALL THE WATER LINE EXTENSION, FITTING AND VALVES AS REQUIRED. COORDINATE EXACT LOCATION ON SITE WITH SITE SERVICES ENGINEER. BUILDING CONTRACTOR TO CONNECT TO NEW SITE SERVICES.
3. 100ø DOMESTIC COLD WATER SERVICE BACKWATER PREVENTER ASSEMBLY MOUNTED ON VERTICAL ARRANGEMENT. REFER TO DETAIL.
4. 100ø DOMESTIC COLD WATER LINE AT HIGH LEVEL. PROVIDE VAPOUR BARRIER AND THERMAL INSULATION. (TYP)
5. PROVIDE LINK-SEAL AT WALL PENETRATION. REFER TO DETAIL.
6. 75ø FLOOR DRAIN AT THIS APPROXIMATE LOCATION AS SHOWN. PROVIDE PRIMER LINE AS REQUIRED. (TYPICAL)
7. BACK WATER VALVE. CONTRACTOR TO COORDINATE ON SITE
8. TERMINATE SANITARY DRAIN IN WET WELL
9. BURIED SANITARY DRAIN.
10. P-TRAP. PROVIDE VENTING AND WATER SEAL PRIMER LINE.

DRAWING NOTES

11. 75ø VENT UP TO ROOF.
12. WALL MOUNTED FIRE EXTINGUISHER. PROVIDE BRACKET.
13. FUNNEL FLOOR DRAIN. PROVIDE PRIMER LINE AND VENT PIPE.
14. 100ø MAGNETIC WATER METER ASSEMBLY. WATER METER TO BE SUPPLIED BY DIV.16 AND INSTALLED BY DIV15. PROVIDE ALL NECESSARY PIPES, VALVES, BY-PASS AS REQUIRED REFER TO DETAIL M08-3.
15. BUILDING SANITARY SUMP PIT AND PUMP '9'-1&2'. PUMP DISCHARGE FROM PIT, AND TERMINATE THRU EXTERIOR WALL ABOVE TANK OVERFLOW LEVEL. DISCHARGE PIPE AND CONTROLS WIRING CONNECTIONS SHALL BE THRU SIDE OF PIT, NO CONNECTIONS THRU PIT COVER. SUMP PUMP CONTROL PANEL TO BE LOCATED IN THE FLOOR ABOVE ELECTRICAL ROOM. PROVIDE FLUSH MOUNTED COVER AND FASTENERS. REFER TO DETAILS M08-07.
16. HOSE BIBB C/W ISOLATION VALVE . REFER TO DETAIL.
17. TERMINATE CONDENSATE DRAIN ABOVE FUNNEL FLOOR DRAIN.
18. 80ø SS 316L SCH10S PIPE TO BE INSTALLED INSIDE 200ø PVC PIPE SLEEVE. MECHANICAL CONTRACTOR TO SUPPLY AND INSTALL PIPE AND SLEEVE. INSTALLATION DETAIL REFER TO PROGRESS DRAWINGS DETAIL P-126

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PROJECT NORTH

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4	ISSUED FOR 100% REVIEW	AUG 09 2018	J.X.
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1	ISSUED FOR PERMIT	JULY 2017	J.X.

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G.P. YOUDELIS
JULY.2017
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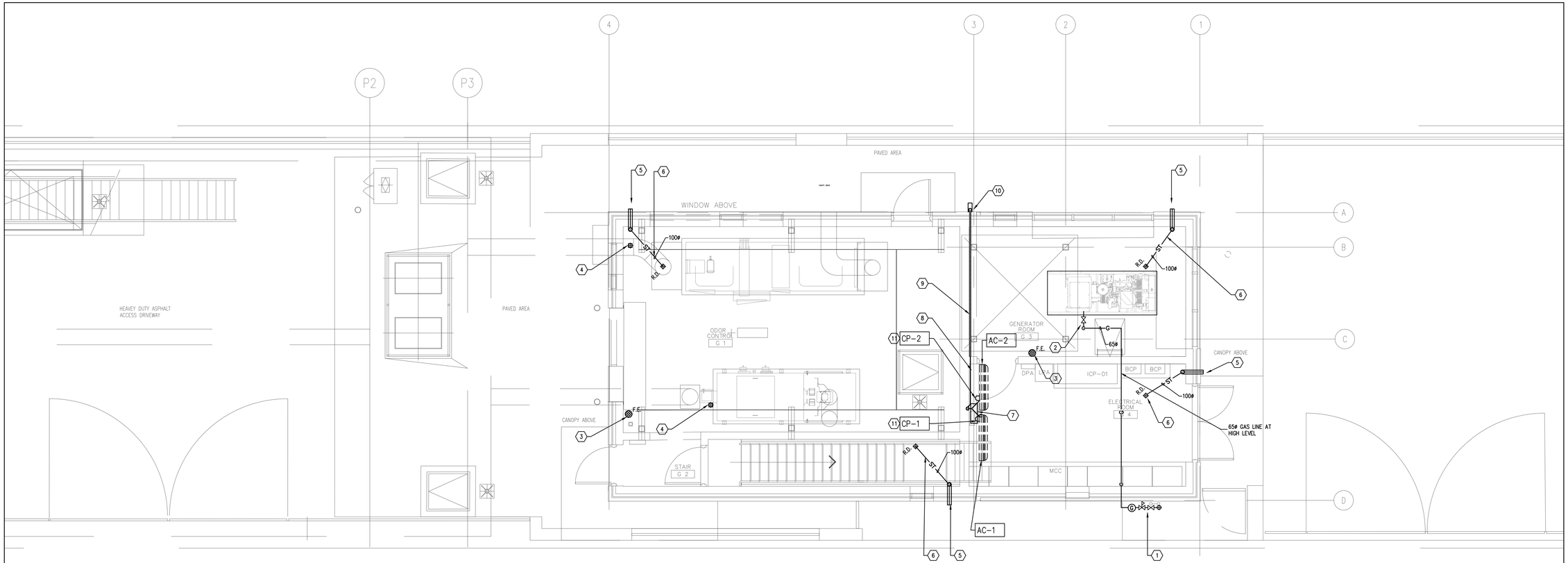
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL SERVICE FLOOR PLUMBING PLAN

DATE : MAY, 2017
SCALE: 1:50
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: M102



GENERAL NOTES

1. CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE EXTENT OF THE ALL EXISTING CONDITIONS PRIOR TO SUBMITTING ANY QUOTATION.
2. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS ARE TO BE REFERRED TO CONSULTANT FOR INSTRUCTIONS BEFORE ANY WORK IS BEGUN.
3. CONTRACTOR TO COORDINATE WORK ON SITE WITH ELECTRICAL SERVICES.
4. ALL VENT PIPING SHALL BE AS PER OBC PART 7.

DRAWING NOTES

(1) NATURAL GAS PRV AND METERS INSTALLED BY THE LOCAL GAS COMPANY. THE MECHANICAL CONTRACTOR SHALL CARRY IN HIS FEE ANY APPLICABLE CHARGES INCLUDING TAXES FOR THIS INSTALLATION.

(2) GAS LINE TO CONNECT TO GAS FIRED GENERATOR C/W SHUT-OFF VALVE.(1,511 CFH)

(3) WALL MOUNTED FIRE EXTINGUISHER. PROVIDE BRACKET.

(4) 50ø DRAIN COLLECTION PIPE C/W HUB. TERMINATE DRAIN COLLECTION PIPE ABOVE FUNNEL FLOOR DRAIN IN THE FLOOR BELOW.

(5) 100ø RAIN WATER LEADER DROP DOWN ALONG WALL/COLUMN. PROVIDE CONCRETE SPLASH PAD AS REQUIRED. PROVIDE INSULATION ON ALL HORIZONTAL RAIN WATER LEADERS. REFER TO ARCHITECTURAL DETAILS ON A06-5 FOR PIPE PENETRATION THRU ROOF. PROVIDE JAY R SMITH 1775 DOWNSPOUT COVER. (TYPICAL.)

(6) 100ø STORM DRAIN AT HIGH LEVEL C/W INSULATION AND PVC JACKET. (TYP)

(7) WALL MOUNTED SUMP PUMP CONTROL PANEL.

(8) 25ø CONDENSATE DRAIN AT HIGH LEVEL. PROVIDE VAPOUR BARRIER, THERMAL INSULATION AND PVC JACKETING ON THE CONDENSATE DRAIN. PROVIDE P-TRAP TO CONNECT CONDENSATE DRAIN TO A/C INDOOR UNIT.

(9) 25ø CONDENSATE DRAIN IN GENERATOR ROOM AT HIGH LEVEL. PROVIDE ELECTRIC PIPE TRACING ON PIPES IN THE GENERATOR ROOM. PROVIDE VAPOUR BARRIER, THERMAL INSULATION AND PVC JACKETING ON THE CONDENSATE DRAIN. COORDINATE WORK WITH ELECTRICIAN. (TYP)

(10) 25ø CONDENSATE DRAIN DN ALONE PERIMETER WALL AT OUTSIDE TERMINATE CONDENSATE DRAIN ABOVE CONCRETE PAD. PROVIDE ELECTRIC PIPE TRACING ON ALL EXPOSED OUTSIDE PIPES. PROVIDE VAPOUR BARRIER, THERMAL INSULATION AND VENTURE CLAD ON THE CONDENSATE DRAIN. COORDINATE WORK WITH ELECTRICIAN(TYP).

(11) CONDENSATE PUMP AT HIGH LEVEL..

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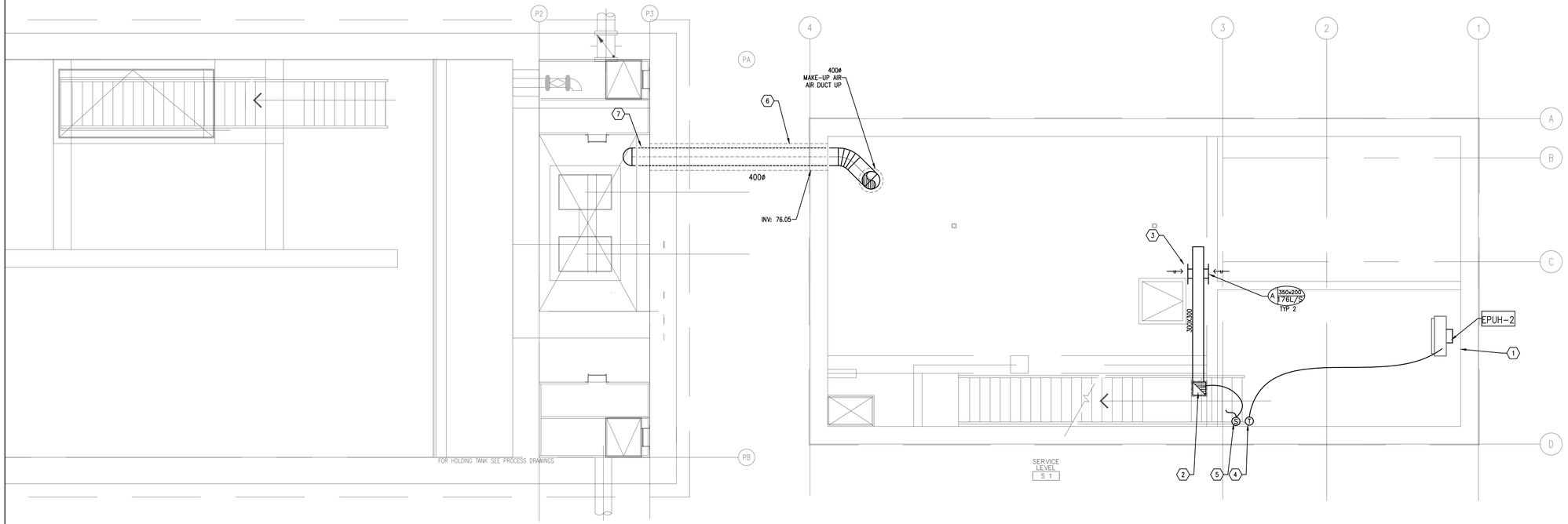
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL GROUND FLOOR PLUMBING PLAN

DATE : MAY, 2017
SCALE: N.T.S.
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
DWG M103



GENERAL NOTES

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2. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS ARE TO BE REFERRED TO CONSULTANT FOR INSTRUCTIONS BEFORE ANY WORK IS BEGUN.
3. CONTRACTOR TO COORDINATE WORK ON SITE WITH ELECTRICAL SERVICES.
4. BALANCE ALL SUPPLY AIR DIFFUSERS AND GRILLES TO AIR QUANTITIES INDICATED.
5. ALL DUCTWORK IN ODOR CONTROL ROOM SHALL BE ALUMINUM C/W SPARK RESISTANT TDF JOINTS.
6. PROVIDE 25MM THERMAL INSULATION ON THE LAST 3000MM OF EXHAUST DUCTWORK AT EXTERIOR WALL & AT ALL INTAKE DUCT WORK UP TO THE EQUIPMENT CONNECTED.
7. ALL DUCT CONNECTED TO MAKE-UP AIR UNIT AND ODOUR CONTROL UNIT SHALL BE FIBERGLASS REINFORCED PLASTIC DUCTWORK.

DRAWING NOTES

1. ELECTRICAL UNIT HEATER SUSPENDED FROM ROOF SLAB C/W MOUNTING BRACKET.
2. 300X300 EXHAUST AIR DUCT UP TO ROOF. PROVIDE FIRE DAMPER ON THE DUCT PENETRATING FIRE RATED FLOOR.
3. DUCT MOUNTED TYPE 'A' EXHAUST AIR GRILLE C/W BALANCE DAMPER.
4. LINE VOLTAGE THERMOSTAT SUPPLIED/INSTALLED BY MECHANICAL CONTRACTOR. WIRING BY ELECTRICAL CONTRACTOR.
5. WALL MOUNTED FAN STARTER TO CONNECT TO EXHAUST FAN. PROVIDE LAMACOID NAMEPLATE BELOW STARTER LABELLED 'EXHAUST FAN'. FAN SHALL BE INTERLOCKED WITH AIR INTAKE MOTORIZED DAMPER.
6. 400ø FRP MAKE-UP AIR UNIT SUPPLY AIR DUCT IN 525ø PVC SLEEVE. MECHANICAL CONTRACTOR TO SUPPLY AND INSTALL DUCT AND SLEEVE. INSTALLATION DETAIL REFER TO PROGRESS DRAWINGS DETAIL P-126
7. MAKE-UP AIR SUPPLY AIR DUCT DN. TERMINATE SUPPLY AIR DUCT ABOVE WATER LEVEL. COORDINATE EXACT DUCT ELEVATION WITH PROGRESS ENGINEER.

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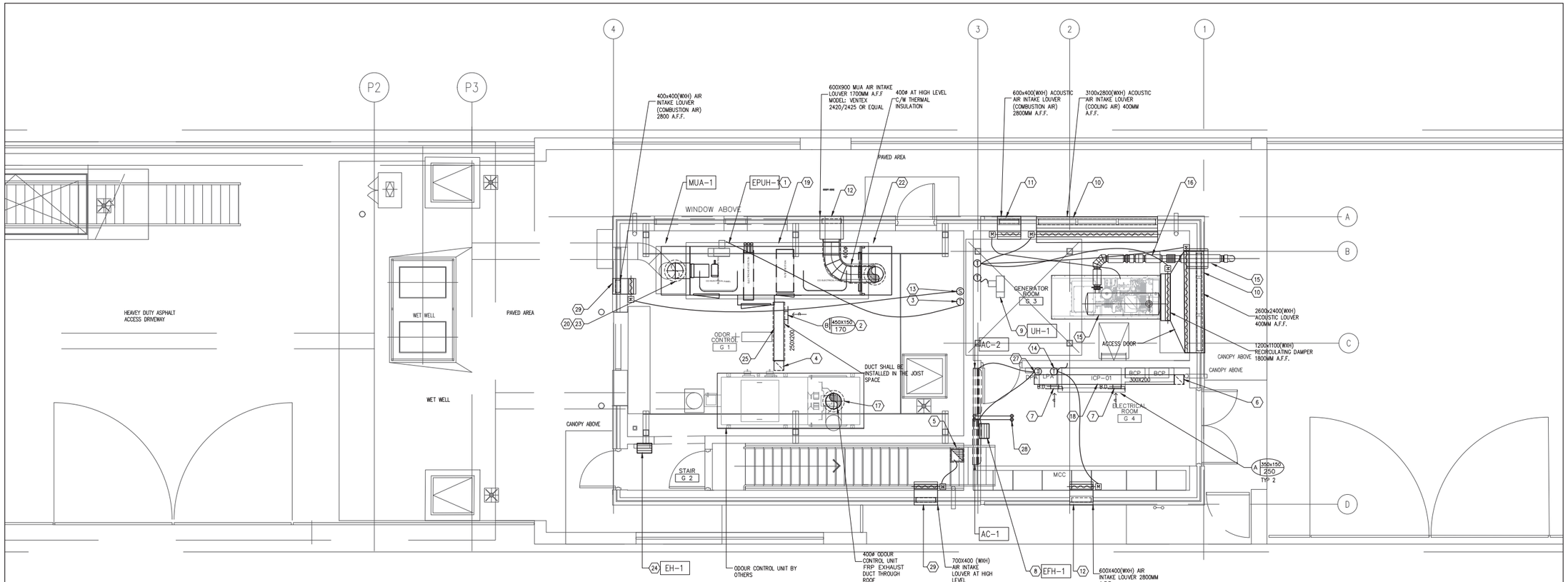
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL SERVICE FLOOR HVAC PLAN

DATE : MAY, 2017
SCALE: 1:50
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: M104



GENERAL NOTES

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3. CONTRACTOR TO COORDINATE WORK ON SITE WITH ELECTRICAL SERVICES.
4. BALANCE ALL SUPPLY AIR DIFFUSERS AND GRILLES TO AIR QUANTITIES INDICATED.
5. ALL DUCTWORK IN ODOR CONTROL ROOM SHALL BE ALUMINUM C/W SPARK RESISTANT TDF JOINTS.
6. PROVIDE 25MM THERMAL INSULATION ON THE LAST 3000MM OF EXHAUST DUCTWORK AT EXTERIOR WALL & AT ALL INTAKE DUCT WORK UP TO THE EQUIPMENT CONNECTED.
7. ALL DUCT IN/CONNECTED TO THE ODOUR CONTROL ROOM SHALL BE FIBERGLASS REINFORCED PLASTIC DUCTWORK. REFER TO MECHANICAL SPECIFICATION

DRAWING NOTES

1. EXPLOSION PROOF ELECTRICAL UNIT HEATER SUSPENDED FROM STEEL BEAM. INSTALL UNIT HEATER TO BE 3100MM A.F.F. PROVIDE MOUNTING KIT.
2. TYPE 'B' EXHAUST AIR GRILLE
3. EXPLOSION PROOF LINE VOLTAGE THERMOSTAT. SUPPLIED/INSTALLED BY MECHANICAL CONTRACTOR, WIRING BY ELECTRICAL CONTRACTOR.
4. 250X200 EXHAUST DUCT UP TO CONNECT TO ROOF MOUNTED EXHAUST FAN.
5. 300X300 EXHAUST AIR DUCT UP/DN C/W THERMAL INSULATION.
6. 250X250 EXHAUST DUCT UP TO CONNECT TO ROOF MOUNTED EXHAUST FAN.
7. DUCT MOUNTED TYPE 'A' AIR EXHAUST LOUVER C/W BALANCE DAMPER.
8. WALL MOUNTED ELECTRIC FORCE FLOW HEATER C/W BUILT-IN THERMOSTAT.
9. ELECTRIC UNIT HEATER SUSPENDED FROM ROOF SLAB C/W MOUNTING BRACKET.
10. GENERATOR ROOM COOLING ACOUSTIC AIR INTAKE/ EXHAUST LOUVER C/W BIRDSCREEN AND THERMALLY INSULATED MOTORIZED DAMPER. MODEL VENTEX ACL600/605 OR EQUAL. TO BE CONTROLLED BY THERMOSTAT.
11. GENERATOR ROOM COMBUSTION ACOUSTIC AIR INTAKE LOUVER C/W BIRDSCREEN. MODEL VENTEX ACL600/605 OR EQUAL AND EXPLOSION PROOF MOTORIZED DAMPER.
12. NEW INTAKE LOUVRE C/W BIRDSCREEN AND THERMALLY INSULATED MOTORIZED DAMPER. MODEL VENTEX 2420/2425 OR EQUAL. INTERLOCK EXHAUST FAN AND MOTORIZED DAMPER TO OPERATE THROUGH EXHAUST FAN STARTER/REVERSE ACTING THERMOSTAT – DAMPER TOO OPEN WHEN EXHAUST FAN IS ENERGIZED.
13. WALL MOUNTED EXPLOSION PROOF FAN STARTER TO CONNECT TO EXHAUST FAN. PROVIDE LAMACOID NAMEPLATE BELOW STARTER LABELLED 'EXHAUST FAN'. FAN SHALL BE INTERLOCKED WITH AIR INTAKE MOTORIZED DAMPER.
14. REVERSE ACTING THERMOSTAT. PROVIDE CONTROL WIRING. FAN TO BE ENGAGED UPON ROOM TEMPERATURE HIGHER THAN 27°C. PROVIDE LAMACOID NAMEPLATE BELOW STARTER LABELLED 'EXHAUST FAN'. FAN SHALL BE INTERLOCKED WITH AIR INTAKE MOTORIZED DAMPER

DRAWING NOTES

15. MUFFLER SUPPLIED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR.
16. GENERATOR EXHAUST PIPE C/W INSULATION. PIPE SIZE REFER TO MANUFACTURE RECOMMENDATION. PROVIDE HANGER.
17. ODOUR CONTROL UNIT EXHAUST AIR DUCT UP TO ROOF C/W VAPOUR BARRIER 3.0 METER UPSTREAM OF PENETRATION. PROVIDE CANVAS JACKET.
18. EXHAUST AIR DUCT AT HIGH LEVELC/W VAPOUR BARRIER 3.0 METER UPSTREAM OF PENETRATION. PROVIDE CANVAS JACKET.
19. PROVIDE MAKE-UP AIR UNIT AT THIS APPROXIMATE LOCATION AS INDICATED, AND INSTALL UNIT ON CONCRETE HOUSEKEEPING PAD.
20. MAKE-UP AIR SUPPLY AIR DUCT DN TO FLOOR BELOW.
21. ODOUR CONTROL UNIT EXHAUST AIR DUCT.PROVIDE FLEXIBLE CONNECTION AND PLENUM AS REQUIRED.
22. MAKE-UP AIR UNIT AIR INTAKE DUCT. PROVIDE ACOUSTIC PLENUM AND FLEXIBLE CONNECTION AS REQUIRED.
23. MAKE-UP AIR UNIT SUPPLY AIR DUCT. PROVIDE ACOUSTIC PLENUM AND FLEXIBLE CONNECTION AS REQUIRED.
24. NEW ELECTRIC EXPLOSION PROOF HEATER. UNIT SHALL BE FLOOR MOUNTED AND COMPLETE WITH BUILT-IN THERMOSTAT.
25. EXHAUST AIR DUCT. DUCT SHALL BE INSTALLED IN THE JOIST SPACE AND TIED TO ROOF SLAB AS HIGH AS POSSIBLE. PROVIDE VAPOR BARRIER AND THERMAL INSULATION ON THE DUCT CANVAS JACKET.
26. NEW WALL MOUNTED A/C INDOOR UNIT AT HIGH LEVEL. PROVIDE ALL NECESSARY SUPPORTS, REFRIGERANT PIPES AS REQUIRED.
27. THERMOSTAT CONTROLLING A/C UNIT. PROVIDE CONTROL WIRING.
28. REFRIGERANT PIPES UP TO ROOF.

DRAWING NOTES

29. NEW INTAKE LOUVRE C/W BIRDSCREEN AND EXPLOSION PROOF MOTORIZED DAMPER. MODEL VENTEX 2420/2425 OR EQUAL. INTERLOCK EXHAUST FAN AND MOTORIZED DAMPER TO OPERATE THROUGH EXHAUST FAN STARTER/REVERSE ACTING THERMOSTAT – DAMPER TOO OPEN WHEN EXHAUST FAN IS ENERGIZED.

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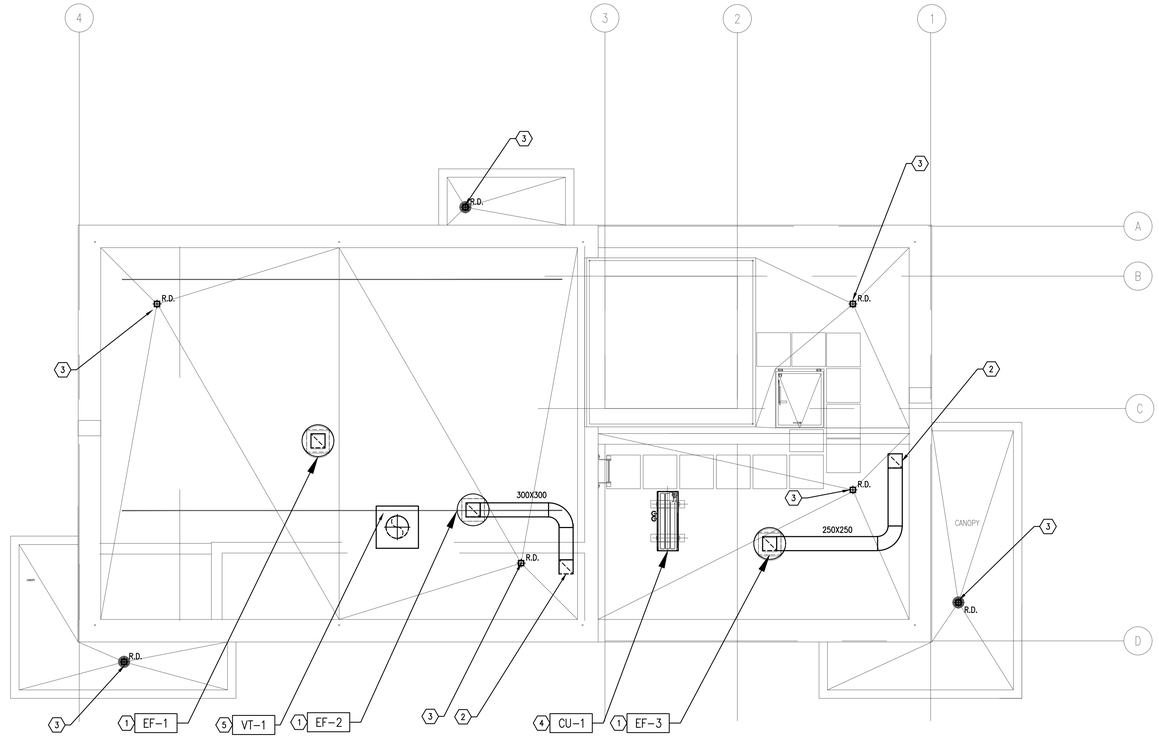
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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL GROUND FLOOR HVAC PLAN

DATE : MAY, 2017
SCALE: N.T.S.
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
DWG M105



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3. CONTRACTOR TO COORDINATE WORK ON SITE WITH ELECTRICAL SERVICES.
4. BALANCE ALL SUPPLY AIR DIFFUSERS AND GRILLES TO AIR QUANTITIES INDICATED.
5. ALL DUCTWORK IN ODOR CONTROL ROOM SHALL BE ALUMINUM C/W SPARK RESISTANT TDF JOINTS.
6. PROVIDE 25MM THERMAL INSULATION ON THE LAST 3000MM OF EXHAUST DUCTWORK AT EXTERIOR WALL & AT ALL INTAKE DUCT WORK UP TO THE EQUIPMENT CONNECTED.
7. ALL VENT PIPING SHALL BE AS PER OBC PART 7.

DRAWING NOTES

1. NEW ROOF MOUNTED EXHAUST FAN. FAN TO BE INTERLOCKED WITH AIR INTAKE MOTORIZED DAMPER.
2. EXHAUST AIR DUCT DN.
3. 100ø ROOF DRAIN. (TYP)
4. CONDENSING UNIT MOUNTED ON ROOF. PROVIDE 100MM HIGH CONCRETE PAD.
5. NEW ROOF MOUNTED GRAVITY VENTILATOR VT-1 C/W ROOF CURB AND BACK DRAFT DAMPER.

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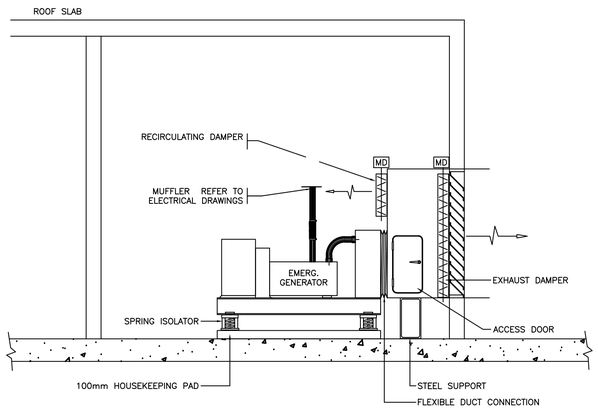
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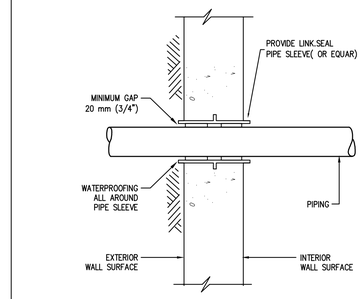
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BUILDING MECHANICAL
MECHANICAL ROOF PLAN

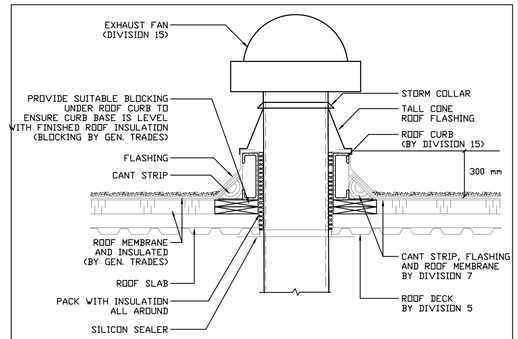
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DRAWING No.: M106



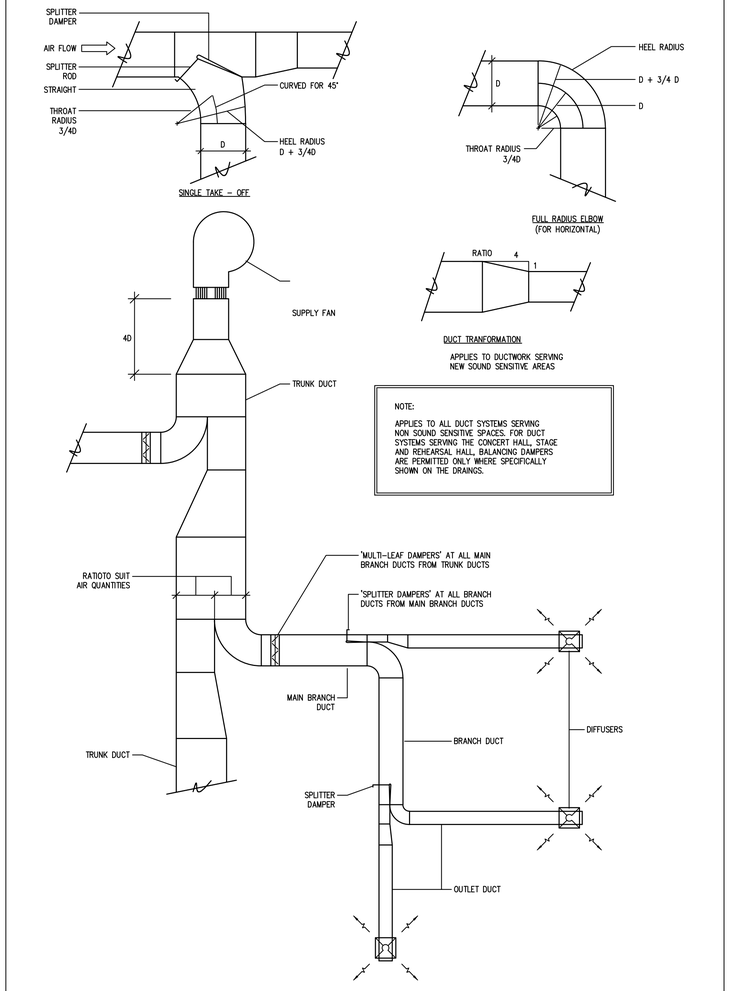
5 M-07 DETAIL OF GAS FIRED GENERATOR
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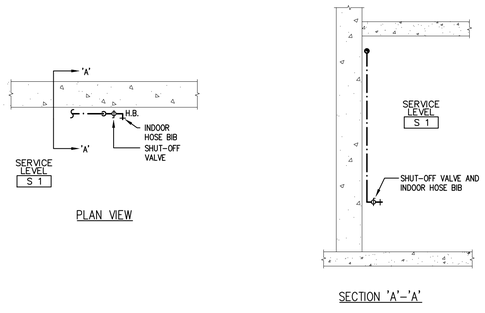
2 M-07 DETAIL OF WATERPROOF PIPE SLEEVE(DOMESTIC COLD WATER LINE)
SCALE:: N.T.S.



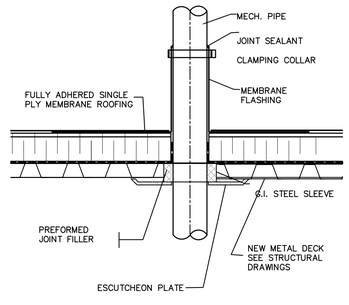
3 M-07 DETAIL OF WATERPROOF PIPE SLEEVE
SCALE:: N.T.S.



1 M-07 DUCTWORK FITTINGS AND BALANCING DAMPER DETAILS
SCALE:: N.T.S.



6 M-07 DETAIL OF INDOOR HOSE BIBB
SCALE:: N.T.S.



4 M-07 DETAIL OF PIPE PENETRATION THRU ROOF PIPE 100mm DIA. AND SMALLER
SCALE:: N.T.S.

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4	ISSUED FOR 100% REVIEW	JULY 30 2018	J.X.
3	ISSUED FOR 100% REVIEW	JUNE 07 2018	J.X.
2	ISSUED FOR REVIEW	JAN 2018	J.X.
1	ISSUED FOR PERMIT	JULY 2017	J.X.

DESIGNED BY J.X.
DRAWN BY J.Z./J.X.
CHECKED BY GPY
APPROVED BY GPY

STAMP: LICENSED PROFESSIONAL ENGINEER G.P. YOUDELIS JULY.2017 PROVINCE OF ONTARIO

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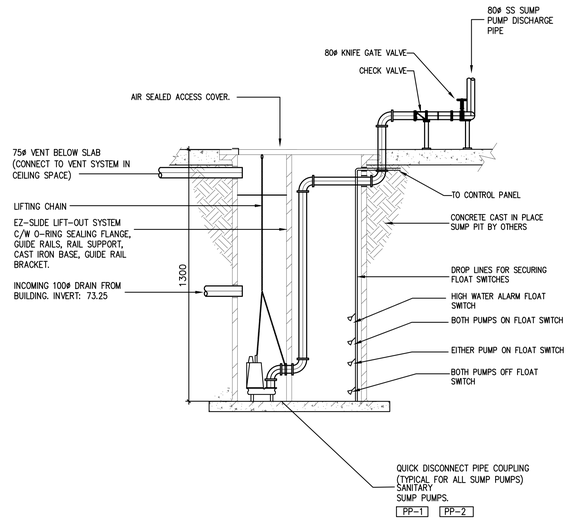
Hamilton
PARSONS

NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

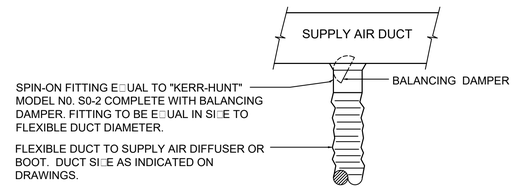
BUILDING MECHANICAL
MECHANICAL DETAILS 1

DATE : MAY, 2017
SCALE: N.T.S.
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: M107

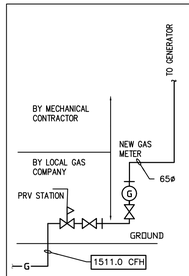
NOTE:
1. NO PENETRATIONS THRU PIT ACCESS COVERS. ALL PIPING AND ELECTRICAL CONNECTIONS SHALL BE THRU SIDE OF PIT(S). COORDINATE ALL PIPE AND CONDUIT ROUTING ON SITE.



6 M-08 DETAIL OF SUMP PIT
SCALE: N.T.S.



4 M-08 TYPICAL SPIN-ON FITTING DETAIL
SCALE: N.T.S.

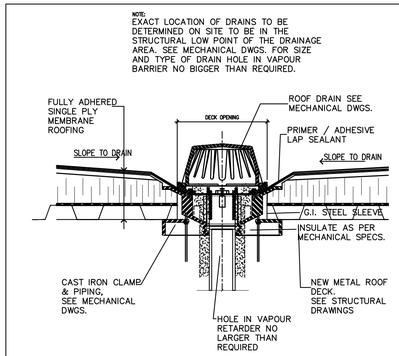


GAS LOAD SUMMARY

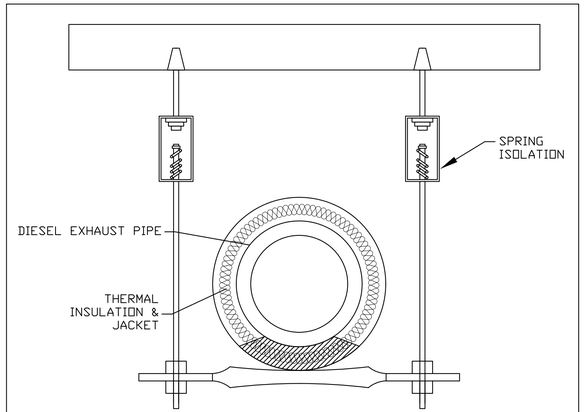
UNITS	LOAD
EMERGENCY GENERATOR	1511 CFH
TOTAL	1511 CFH

TOTAL DEVELOPMENT LENGTH 20M (70FT).
7" WC GAS REQUIRED DOWNSTREAM OF METER

1 M-08 NATURAL GAS SYSTEM - SCHEMATIC
SCALE: N.T.S.

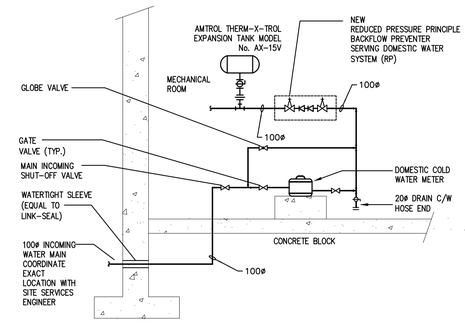


5 M-08 NEW ROOF DRAIN DETAIL
SCALE: N.T.S.



2 M-08 DETAIL SHOWING SUPPORT FOR GENERATOR EXHAUST PIPE
SCALE: N.T.S.

NOTE:
1. NEW PREMISE ISOLATION VALVE SHALL BE DOUBLE CHECK BACKFLOW PREVENTER (DCVA) CONFORMING TO CAN CSA B64.
2. NEW PREMISE ISOLATION VALVE SHALL BE SUITABLE FOR INSTALLATION IN THE ORIENTATION INDICATED OR DETERMINED FROM SITE CONDITIONS.
3. PROVIDE ALL NECESSARY ACCESS REQUIRED TO SERVICE BACKFLOW PREVENTOR ADEQUATELY AND TO CONFORM TO CAN CSA B64
4. PROVIDE NEW EXPANSION TANK PRESSURIZED AND SIZED TO SUIT DOMESTIC COLD WATER SYSTEM VOLUME.



3 M-08 DOMESTIC WATER BACKFLOW PREVENTER DETAIL
SCALE: N.T.S.

GPY + Associates Engineering Inc.
90C Centurian Drive
Unit 6
Markham, Ontario
L3R 8C5
Tel: 905 475 3138
Fax: 866 853 3732
email: engineering @gpyengineering.com

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DESIGNED BY J.X.
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LICENSED PROFESSIONAL ENGINEER
Q.P. YOUDELIS
JULY.2017
PROVINCE OF ONTARIO

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL DETAILS 2

DATE : MAY, 2017
SCALE: N.T.S.
FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.:
M108

MAKE-UP AIR UNIT MUA-1 SCHEDULE

BASIS OF DESIGN: ENGINEERED AIR

	SERVICE	TYPE	FILTERS	AIRFLOW (L/S)	E.S.P. (IN)	HEATING INPUT/OUTPUT (MBH)	FAN BHP/HP	UNIT ELECTRICAL					UNIT MODEL	WEIGHT (LBS)
								POWER SUPPLY	M.C.A.	TERMINAL BLOCK TO ACCEPT	MAXIMUM FUSE (DUAL ELEMENT)	MAXIMUM BREAKER		
MUA-1	WET WELL	ELECTRICAL HEATED	PLEASED 2"	776	0.5	-	-	575/3/60	33.8 AMPS	8AWG	35AMPS	35AMPS	LM2K/D	6,400

NOTES FOR MAKE-UP AIR UNIT MUA-1:

1. ALL IN-AIR-STREAM MOTORS, SUPPLY FAN VFD, STARTERS, DISCONNECT SWITCH, SERVICE SWITCH, HEATING SWITCH AND CONTROLS SHALL BE EXPLOSION PROOF (CLASS 1, DIVISION 1 GROUP D) AND FACTORY WIRED AND TESTED (BY UNIT MANUFACTURER).
2. PREFABRICATED 600MM HIGH ROOF CURB (BY UNIT MANUFACTURER). INSULATE SUPPLY CHAMBRE.
3. FACTORY ASSEMBLED, PACKAGED, PIPED AND WIRED EQUIPMENT. FIELD ASSEMBLED, PIPED AND WIRED EQUIPMENT IS NOT ACCEPTABLE.
4. WINTER ENTERING AIR TEMPERATURE = -20°C (-4°F), LEAVING AIR TEMPERATURE = 2°C (36°F).
5. MINIMUM OUTDOOR AIR = 100%
6. PROVIDE AUXILIARY CONTACTS FOR INTERLOCK OF EXPLOSION PROOF MOTORIZED DAMPER.
7. SEQUENCE OF OPERATION
8. WET WELL:

   THE SUPPLY FAN (MUA-1) AND EXHAUST FAN (FROM ODOUR CONTROL SUCTION SYSTEM) SHALL RUN CONSTANTLY TO PROVIDE 3 AIR CHANGES OF CONTINUOUS VENTILATION FOR THE WET WELL. REMOTE TEMPERATURE SENSOR/THERMOSTAT IN MECHANICAL SCREEN SHALL BE EXPLOSION PROOF RATED FOR CLASS 1, DIVISION 1 GROUP D AS PER NFPA 820.

   SYSTEM SHUT DOWN:

   ON SYSTEM SHUT DOWN OF (EXHAUST FAN FROM ODOUR CONTROL SUCTION SYSTEM), MAU-1 WILL STOP, ALL MOTORIZED DAMPERS SHALL RETURN TO THEIR NORMALLY CLOSED POSITIONS.

DIFFUSER SCHEDULE

BASIS OF DESIGN: E.H. PRICE
EQUAL IN: CARNES, NAILOR, TITUS

REF.	MODEL No.	DESCRIPTION	REMARKS
A	630	ALUMINUM 45° DUBLE DEFLECTION GRILLE c/w O.B.D.	B12 WHITE POWDER COAT FINISH
B	630	ALUMINUM 45° DUBLE DEFLECTION GRILLE c/w O.B.D.	B12 WHITE POWDER COAT FINISH

EXTRUDED TIERED GRAVITY VENTILATOR VT-1

BASIS OF DESIGN: COOK
EQUAL IN: PRICE

REF.	MODEL No.	DESCRIPTION	REMARKS
	TRE	450MMX450MM THROAT SIZE LAUREN COOK TRE EXTRUDED ALUMINUM ROOF MOUNTED GRAVITY VENTILATOR. 0.081 GAUGE EXTRUDED ALUMINUM TIERS UNIT SHALL BE AN EXTRUDED ALUMINUM, ROOF MOUNTED GRAVITY VENTILATOR. THE UNIT SHALL BE MANUFACTURED OF 0.081 GAUGE EXTRUDED ALUMINUM TIERS WELED TO A MINIMUM 8 GAUGE ALUMINUM SUPPORTS STRUCTURE. THE ALUMINUM HOOD SHALL BE CONSTRUCTED ON MINIMUM 0.063 ALUMINUM AND PROVIDED A LAYER OF ANTI-CONDENSATE COATING	1. PROVIDE COOK 275MM HIGH 080 ALUMINUM RCA ROOF CURB C/W DAMPER TRAY.ALUMINUM BIRD SCREEN, ANTI CONDENSATE COATING. 2. PROVIDE EXTRUDED ALUMINUM GRAVITY BACK DRAFT DAMPER

NUMBER	NAME	MANUFACTURE	FLOW GPM	HEAD (FT)	POWER	VOLT	MODEL	NOTE:
PP-1	SUMP PUMP	SCARBORO PUMP SUBMERSIBLE	50	20	1/2 HP	575/3P	SX50H CLASS1, DIVISION 1, GROUP D	2 - MYERS MODEL SX50H SUBMERSIBLE PUMPS, 1/2 HP, 575 VOLT, 3 PHASE, 60 CYCLE, 1750 RPM MOTORS, C/W 20 FT. CORDS, 1-1/2" N.P.T. DISCHARGE, PUMPS HANDLE 1-1/2" DIA. SOLIDS AND DELIVER 50 U.S.G.P.M. AT 20 FT. HEAD. 1 - DP ELECTRICAL DUPLEX ALTERNATOR STARTER AND CONTROL PANEL, 575 VOLT, 3 PHASE, 60 CYCLEC/W H-O-A. SELECTOR SWITCHES, RUN LIGHTS, FUSED DISCONNECTS, OVERLOAD HEATERS TO SUIT PUMP MOTORS, INTRINSICALLY SAFE RELAYS, HIGH WATER ALARM WITH EXTRA RELAY FOR REMOTE MONITORING, IN CEMA 1 ENCLOSURE. 4 - SCA-01-ME10W-20 LEVEL SENSOR FLOAT SWITCHES, C/W 20 FT. CORDS, 1 FOR LEAD PUMP TURN ON, ON FOR PUMP TURN OFF, ONE FOR TWO PUMPS TURN ON, AND FOURTH SWITCH SHALL BE PROVIDED FOR HIGH WATER ALARM. 1 - SCA-01-3962-4C FLOAT SWITCH HANGER BRACKET, STEEL, C/W 4 - 3228 CORD CONNECTORS. CONTROL PANEL SHALL MEET UL698A SPECIFICATION.
PP-2	SUMP PUMP	SCARBORO PUMP SUBMERSIBLE	50	20	1/2 HP	575/3P	SX50H CLASS1, DIVISION 1, GROUP D	

SPLIT AIR CONDITIONING SYSTEMS SCHEDULE

BASIS OF DESIGN: MITSUBISHI EQUAL IN: SANYO, LG

INDOOR UNIT							CONDENSER						REMARK
NO.	TYPE	LOCATION	TOTAL COOLING (BTU)	TOTAL HEATING (BTU)	ELEC. DATA	MODEL NUMBER	NO.	TOTAL COOLING (BTU)	TOTAL HEATING (BTU)	ELEC. DATA	ULTRA LOW AMBIENT CONTROL	MODEL NUMBER	NOTE:
AC-1	WALL MOUNTED HEAT PUMP	SERVER ROOM	24,000	-	208V/1P/60 MCA 0.63A MOCP 15A	PKFY-P24NKMU-E2	CU-1	48,000	-	208V/1P/60 MCA:31 AMP MOCP: 44AMP	YES	PUMY-P48NKMU1(-BS)	1,2,3,4,
AC-2	WALL MOUNTED HEAT PUMP	SERVER ROOM	24,000	-	208V/1P/60 MCA 0.63A MOCP 15A	PKFY-P24NKMU-E2							

NOTES:
1. COOLING CAPACITIES ARE BASED ON 80F DB, 67F WB E.A.T., 95F O.A.T.
2. PROVIDE AIR OUTLET GUIDE, DRAIN SOCKET
3. C/W HARD WIRED REMOTE CONTROLLER MODEL PAR-31MAA
4. ULTRA LOW AMBIENT CONTROL TO -40°F & WIND SCREEN.

BASEBOARD HEATER SCHEDULE

EQUAL MANUFACTURERS: WESTCAN, CHROMALOX.

No.	SERVICE	LOCATION	DIMENTION HEIGHT(mm)	DIMENTION LENGTH(mm)	DIMENTION DEEP(mm)	ELEC	BASIS OF DESIGN	BASIS OF DESIGN	REMARKS
BBH-1	ELECTRICAL ROOM G4	GROUND FLOOR	148	2585	62	1.875 KW 208V/1PH	DFM2508	DUELLET	WALL MOUNTED C/W BUILT IN THERMOSTAT.

EXPLOSION PROOF ELECTRIC UNIT HEATER

EQUAL MANUFACTURERS: WESTCAN, CHROMALOX.

No.	SERVICE	LOCATION	DIMENTION HEIGHT(mm)	DIMENTION WILDTH(mm)	DIMENTION DEEP(mm)	ELEC	BASIS OF DESIGN	BASIS OF DESIGN	REMARKS	
EPUH-1	ODOR CONTROL ROOM G1	GROUND FLOOR	492.125	408	552.45	7.5 KW 600V/3PH	233-FA-0086Z	DUELLET	CLASS 1 DIVISION 2 GROUP D EXPLOSION-PROOF UNIT HEATER	1. STAINLESS STEEL CORROSION RESISTANT CONSTRUCTION 2. EXPLOSION-PROOF WALL THERMOSTAT 3. CEILING MOUNTED KIT 4. FACTORY INSTALLED DISCONNECT SWITCH. 5. HIGH LIMIT TEMPERATURE CUT-OUT
EPUH-2	SERVICES LEVEL S1	BASEMENT	492.125	408	552.45	10.0 KW 600V/3PH	233-FA-0106Z	DUELLET		

ELECTRIC UNIT HEATER

EQUAL MANUFACTURERS: WESTCAN, CHROMALOX.

No.	SERVICE	LOCATION	DIMENTION HEIGHT(mm)	DIMENTION WILDTH(mm)	DIMENTION DEEP(mm)	ELEC	BASIS OF DESIGN	BASIS OF DESIGN	REMARKS
UH-1	GENERATOR ROOM	GROUND FLOOR	305	419	432	3.0 KW 208V/1PH	DAS03038	DUELLET	1. HANGING MOUNTING BRACKET 2. FACTORY INSTALLED DISCONNECT SWITCH. 3. HIGH LIMIT TEMPERATURE CUT-OUT

FAN SCHEDULE

BASIS OF DESIGN: CARNES
EQUAL MANUFACTURERS: COOK

No.	SERVICE	LOCATION	TYPE	AIRFLOW (L/SEC.)	EXT. S.P. (Pa)	FAN SIZE(IN)	MOTOR (KW)	ELEC. DATA	BASIS OF DESIGN	REMARKS
EF-1	ODOR CONTROL G1	GROUND FLOOR	UPBLAST ROOF MTD	170	124	-	1/6HP	208/1/60	CARNES VUBK08K3B6CB93A_C9	FLOOR MOUNTED, BELT DRIVEN, AIRFOIL, CENTRIFUGAL EXHAUST FAN, ALUMINUM SPARK RESISTANT CONSTRUCTION, ULC LISTED, AMCA CERTIFIED & ACID RESISTANT EPOXY POWDER COATING c/w EXPLOSION PROOF MOTOR & DISCONNECT SWITCH, SPRING ISOLATION RAIL.
EF-2	SERVICES LEVEL	BASEMENT	UPBLAST ROOF MTD	227	124	-	1/6HP	208/1/60	CARNES VUBK08K4B6CB93A_C9	
EF-3	ELECTRICAL ROOM G4	ROOF	UPBLAST ROOF MTD	236	62	-	1/8HP	120/1/60	CARNES VEDKJ2	UNIT MOUNTED SPEED CONTROLLER, ROOF CURB, UNIT MOUNTED DISCONNECT SWITCH BACKDRAFT DAMPER, INTEGRAL GRILLE

WALL MOUNTED EXPLOSION PROOF VARIABLE SPEED STARTER TO BE SUPPLIED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICIAN

EXPLOSION-PROOF SLOPED TOP HEATER SCHEDULE

EQUAL MANUFACTURERS: WESTCAN, CHROMALOX.

No.	SERVICE	LOCATION	DIMENTION HEIGHT(mm)	DIMENTION WILDTH(mm)	DIMENTION DEEP(mm)	ELEC	BASIS OF DESIGN	BASIS OF DESIGN	REMARKS
EH	STAIR G2	GROUND FLOOR	-	-	-	2.5 KW 600V/1PH	DPX2A2536	DUELLET	CLASS 1 DIVISION 2 GROUP D EXPLOSION-PROOF ELECTRIC HEATER FLOOR MOUNTED C/W BUILT IN THERMOSTAT.

PLUMBING SPECIALTIES SCHEDULE

BACKFLOW PREVENTER - LEAD FREE - REDUCED PRESSURE ZONE ASSEMBLY

WATTS LF909-S-FDA-909-AGK-NRS LEAD FREE - REDUCED PRESSURE ZONE ASSEMBLY - TWO POSITIVE SEATING CHECK MODULES, FDA EPOXY COATED CAST IRON, CAPTURED SPRING ASSEMBLIES, REPLACEABLE BRONZE SEATS, AIR-IN/WATER-OUT PRINCIPLE, PRESSURE DIFFERENTIAL RELIEF VALVE LOCATED IN A ZONE BETWEEN CHECK VALVES, TWO TIGHT CLOSING RESILIENT SEATED SHUT-OFF VALVE NON-RISING STEM GATE VALVES, 4"Ø (102 MM) PIPE CONNECTION, LEAD FREE TEST COCKS, FDA EPOXY COATED STRAINER, INDUSTRIAL STRENGTH SENSING HOSE, 909-AGK AIR GAP.

TRAP SEAL PRIMER (ELECTRICAL)

P.P.P. #PT-4 TRAP SEAL PRIMER ACTIVATED BY A 3/4" (19 MM) NORMALLY CLOSED SOLENOID VALVE, DESIGNED TO INTERFACE WITH LOW VOLTAGE ENERGY MANAGEMENT SYSTEMS CONTROL, 3/4" (19 MM) DIAMETER CONNECTION ANTI-SIPHON ATMOSPHERIC VACUUM BREAKER.

FLOOR DRAIN - FLOOR DRAIN WITH HEAVY DUTY GRATE
WATTS #FD-324-4-6-7 FLOOR DRAIN - EPOXY COATED CAST IRON BODY, BODY COLLAR WITH WEEPHOLES AND MEMBRANE CLAMP, VANDAL PROOF, ANCHOR FLANGE, 4"Ø (102 MM) NO HUB OUTLET WATTS -4 7-7/8" (200 MM) DIAMETER EPOXY COATED DUCTILE IRON, HEEL-PROOF ROUND GRATE.

FLOOR DRAIN - FINISHED AREA
WATTS #FD-104-C-EG-50-6-7 FLOOR DRAIN - EPOXY COATED CAST IRON BODY, REVERSIBLE FLASHING CLAMP WITH PRIMARY AND SECONDARY WEEPHOLES, 5" (127 MM) DIAMETER NICKEL BRONZE, ADJUSTABLE ROUND STRAINER, 4" X 9" (102 MM X 229 MM) OVAL CAST IRON FUNNEL VANDAL PROOF, 4"Ø (102 MM) NO HUB OUTLET

CLEANOUT - STACK CLEANOUT WITH BRASS PLUG WITH STAINLESS STEEL COVER
WATTS #CO-464-RD CLEANOUT, CAST IRON BODY, REMOVABLE, GASKETED, BRASS PLUG, ROUND COVER, ACCESS COVER, STAINLESS STEEL COVER, 4"Ø (102 MM), NO HUB OUTLET

BACKWATER VALVE - INLINE
WATTS #BV-204 BACKWATER VALVE CAST IRON BODY, GASKETED COVER, REMOVABLE BRONZE SEAT AND FLAPPER, 4" (102 MM) PIPE SIZE, NO HUB OUTLET.

INDOOR HOSE BIBB - CAST BRASS HOSE BIBB
WATTS #SC8-1 HYDRANT - CAST BRASS, WALL MOUNT, WATTS MODEL 8B TAMPER-PROOF VACUUM BREAKER WITH BREAK-AWAY SCREW, ADJUSTABLE PACKING NUT CARTRIDGE, NO KINK FAUCET, 1/2" (13 MM) MALE NPT OF COPPER SWEAT CONNECTION WITH TEE HANDLE.

ROOF DRAIN - LARGE CONVENTIONAL INSULATED ROOF
WATTS #RD-104-8-D-E-K ROOF DRAIN - EPOXY COATED, 14-1/8" (359 MM) DIAMETER, CAST IRON BODY, FLASHING CLAMP AND INTEGRAL GRAVEL STOP, WITH SELF LOCKING 12-3/8" (314 MM) DIAMETER DUCTILE IRON DOME SUMP RECEIVER 4"Ø (102 MM) NO HUB OUTLET

GPY + Associates Engineering Inc.
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email: engineering@gpyengineering.com

TRUE NORTH

PROJECT NORTH

No.	REVISIONS	DATE	INTLS
1	ISSUED FOR REVIEW	JAN 2018	J.X.
1	ISSUED FOR PERMIT	JULY 2017	J.X.

DESIGNED BY J.X.
DRAWN BY J.Z./J.X.
CHECKED BY GPY
APPROVED BY GPY

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LICENSED PROFESSIONAL ENGINEER
Q.F. YOUDELIS
JUNE 04,2018
PROVINCE OF ONTARIO

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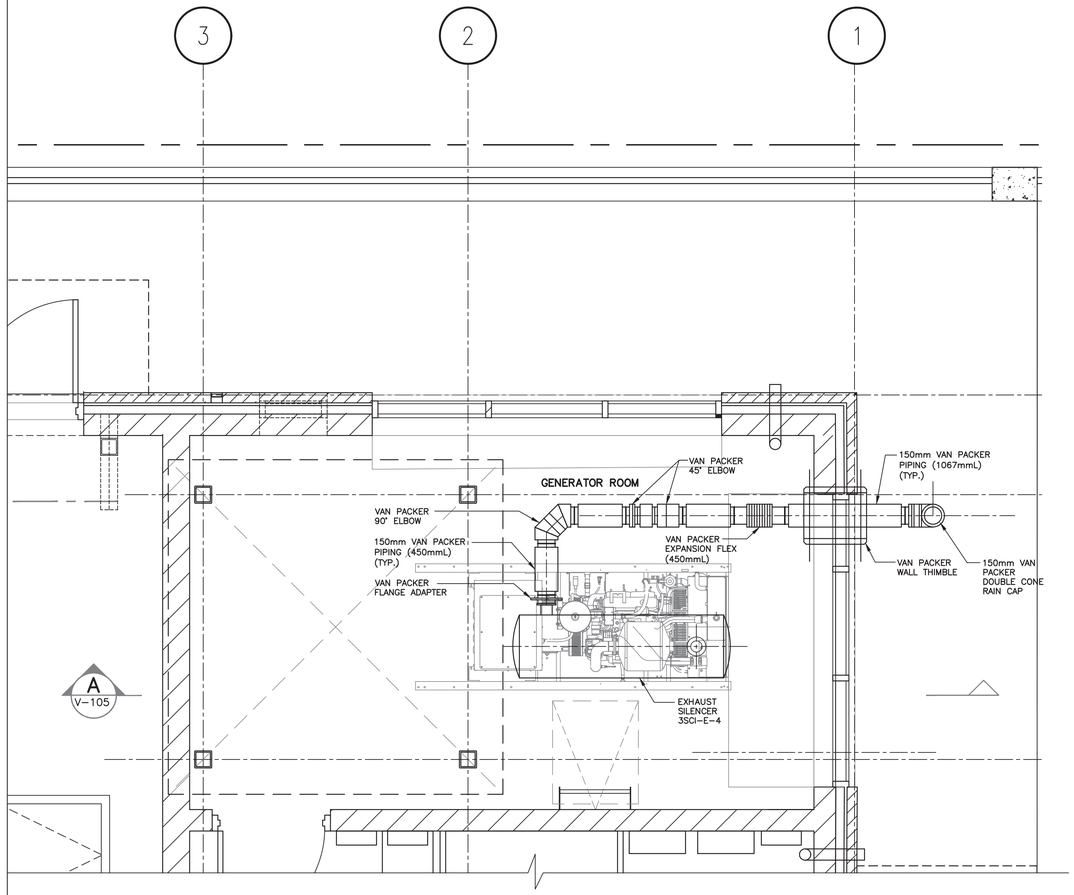
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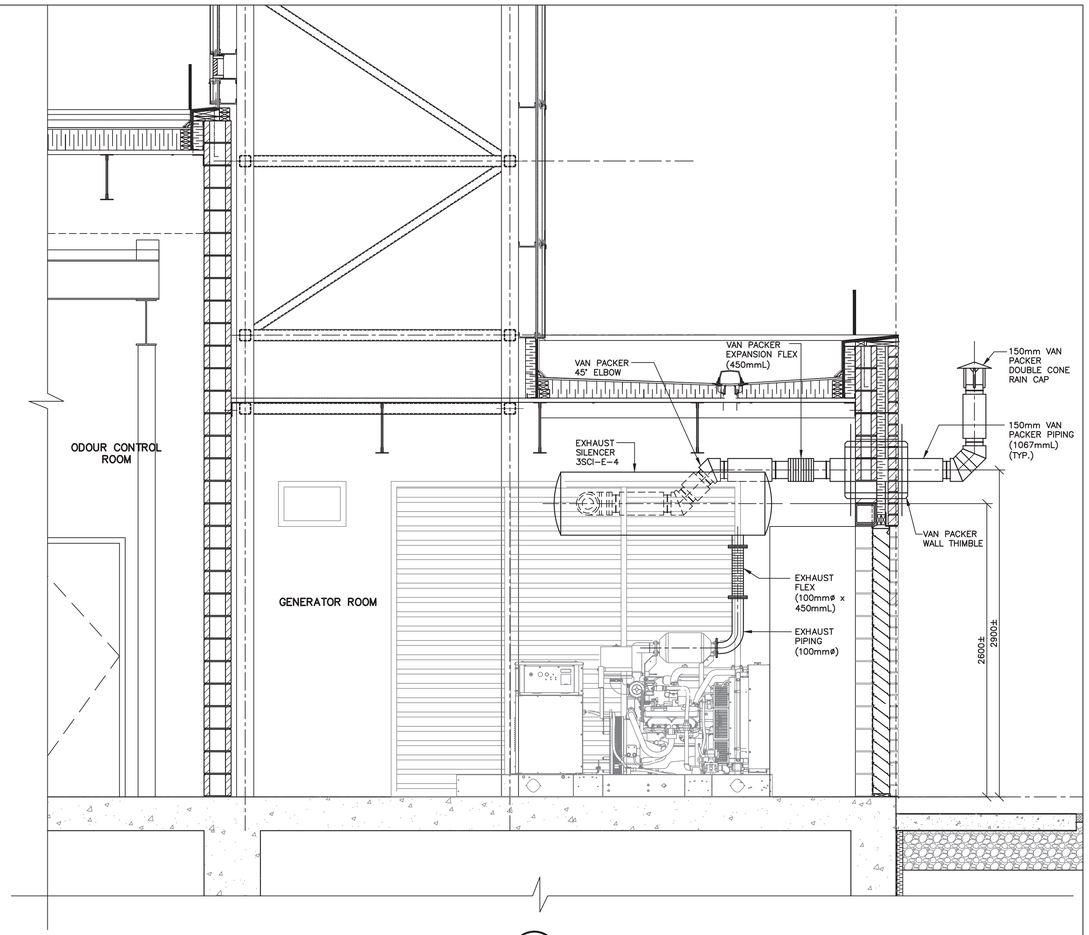
NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

BUILDING MECHANICAL
MECHANICAL SCHEDULE

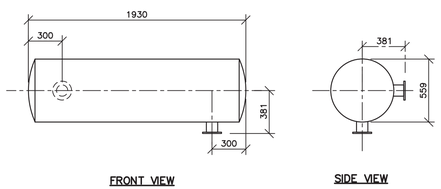
DATE : MAY, 2017
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FILE No.:
CONTRACT No.: C13-06-16
DRAWING No.: M109



FLOOR – MAIN
SCALE 1:25



SECTION A
SCALE 1:25 — V-105



FRONT VIEW SIDE VIEW

SILEX EXHAUST SILENCER 3SCI-E-4 ('SUPER HOSPITAL PLUS GRADE')
SCALE 1:25

COMBUSTION EXHAUST & VIBRATION ISOLATORS SCHEDULE

ITEM	DESCRIPTION	SPECIFICATION	QTY.	INSULATION/COMMENTS
1	SUPER HOSPITAL PLUS GRADE SILENCER	SILEX 3SCI-E-4, TYPE 304L SS 150 lb FLANGES ATTENUATION : 40-55 dB	1	50 mm CALCIUM SILICATE ALUMINUM OUTER JACKET
2	EXPANSION JOINTS	VAN PACKER EXPANSION JOINT 150mmø x 450mm(L)	1	FIRWIN BLANKET TO SUIT
3	EXHAUST FLEX	SILEX EJ-4-030-10.75 (LENGTH) STAINLESS STEEL	1	
4	EXHAUST PIPING	VAN PACKER MODEL DW PLUS COMBUSTION EXHAUST SYSTEM COMPLETE SYSTEM		INSULATION INTEGRAL TO CHIMNEY SYSTEMS

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PLOT DATE: Aug 16, 2018-2:21pm By:(BJ-TWORZYANSKI)

B.J. TWORZYANSKI LTD.
CONSULTING ENGINEERS
MARKHAM, ONTARIO 905.946.8686

TRUE NORTH PROJECT NORTH

No.	REVISIONS	DATE	INTLS
3	ISSUED FOR TENDER	08-16-18	P.T.
2	90% DRAWINGS	09-18-17	A.T.
1	DRAFT PRELIMINARY DESIGN	APRIL 2017	A.T.

DESIGNED BY P.T.
DRAWN BY J.Z.
CHECKED BY A.T.
APPROVED BY A.T.

STAMP — LICENSED PROFESSIONAL ENGINEER P.J. TWORZYANSKI AUG16, 2018 PROVINCE OF ONTARIO

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NEW MUNICIPAL WASTEWATER PUMPING STATION ON PIER 8 IN THE CITY OF HAMILTON

ELECTRICAL
GENSET COMBUSTION EXHAUST SYSTEM LAYOUT

DATE :	APRIL, 2017
SCALE:	AS SHOWN
FILE No.:	XX
CONTRACT No.:	C13-06-16
DRAWING No.:	M-201