

IMAGE SOURCE: www.nunalogistics.com

GOVERNMENT OF NUNAVUT COMMUNITY & GOVERNMENT SERVICES SEWAGE TREATMENT PLANT UPGRADE WORKS - PHASE 2 RANKIN INLET, NUNAVUT ISSUED FOR CONSTRUCTION

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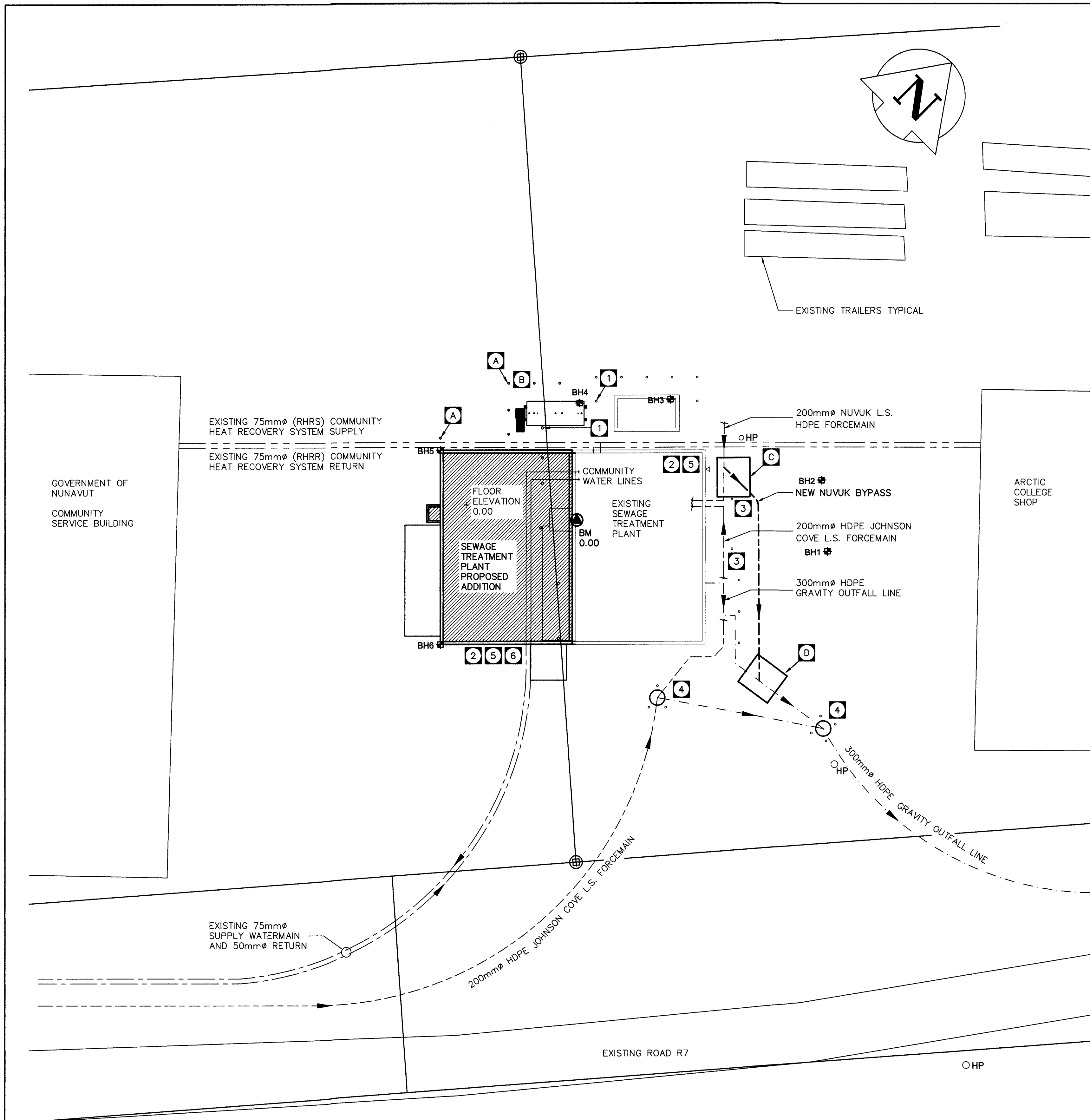
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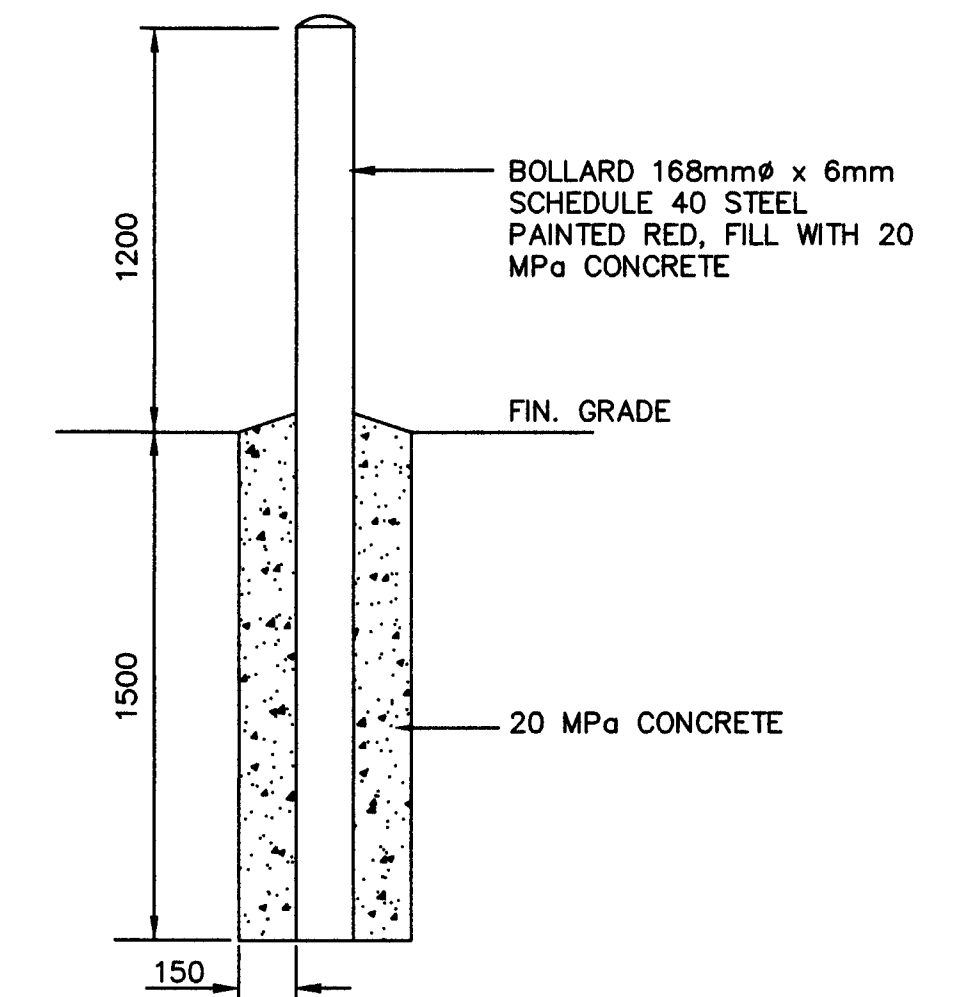
SITE PLAN
1:200

EXISTING SEWAGE PLANT SITE DECOMMISSIONING NOTES

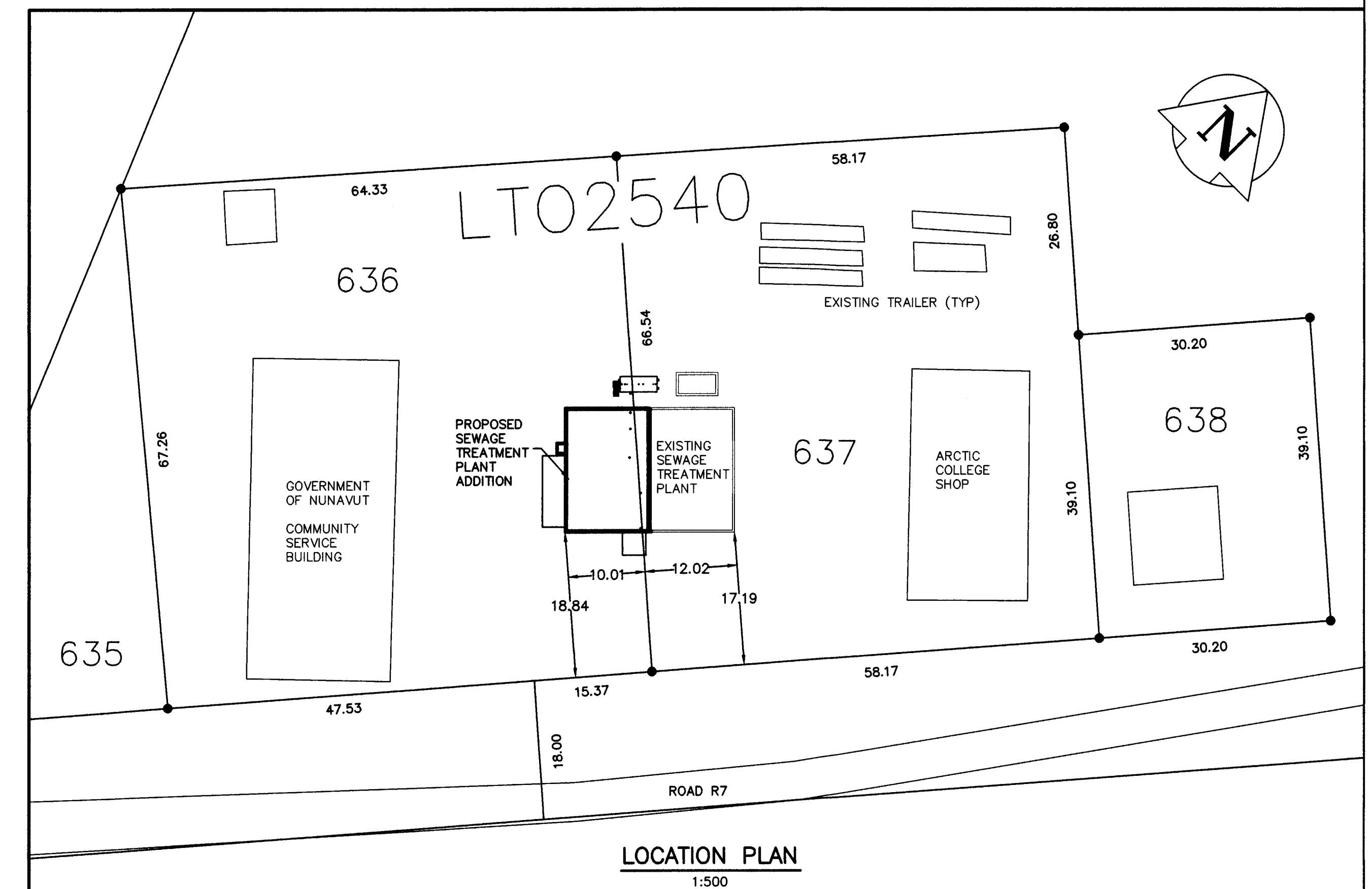
1. REMOVAL OF EXISTING BOLLARDS (TYPICAL OF ALL AT ADDITION), REFER TO DRAWING G-2 FOR DETAILS.
2. LOCATE, HAND EXCAVATE AND EXPOSE EXISTING WATER SUPPLY PIPES TO ACCOMMODATE TIE-IN AND RE-ROUTING OF SUPPLY. PATCH AND REPAIR FLOORS AS REQUIRED ONCE TIE-IN PIPING IS ABOVE FINISHED FLOOR.
3. REMOVE & SET ASIDE EXISTING BOLLARDS AT NUUVUK L.S. BYPASS AREA. CLEAN AND RE-PAINT EXISTING BOLLARDS FOR RE-INSTALLATION AFTER BYPASS BACKFILL.
4. EXISTING JOHNSON COVE BYPASS MANHOLE AND FORCEMAIN TIE-IN TO GRAVITY OUTFALL MANHOLE.
5. EXISTING WATER SERVICE TO BE DISCONNECTED AND PIPES UNDER NEW BUILDING ADDITION TO BE REMOVED. NEW WATER SERVICE WILL ENTER NEW BUILDING ADDITION ON SOUTH SIDE THROUGH FLOOR. REFER TO DRAWING SW2 FOR DETAILS.
6. CONTRACTOR RESPONSIBLE FOR PROVIDING TEMPORARY WATER SERVICE DURING CONSTRUCTION PERIOD. CONTRACTOR TO PROVIDE TEMPORARY WATER SERVICE PLAN TO ENGINEER PRIOR TO START OF CONSTRUCTION.

PROPOSED SEWAGE PLANT ADDITION SITE WORKS NOTES

- A. NEW BOLLARDS TO BE ADDED TO PROVIDE PROTECTION AND CLEARANCE AT FUEL TANK AND ADDITION BUILDING.
- B. NEW 15,000L EXTERIOR FUEL TANK. REFER TO MECHANICAL DRAWINGS FOR DETAILS.
- C. NUUVUK SEWAGE LIFT STATION EXTERIOR BYPASS MANHOLE. REFER TO DRAWING SW-1 FOR DETAILS.
- D. NUUVUK SEWAGE FORCEMAIN EXTERIOR BYPASS TIE TO GRAVITY OUTFALL MANHOLE. REFER TO DRAWING SW-1 FOR DETAILS.
- E. SEE APPENDIX 'A' FOR BOREHOLE REFERENCE INFORMATION.
- F. SEE DRAWING SW-2 FOR SITE GRADING DETAILS.



SECTION
TYPICAL BOLLARD DETAIL
NTS



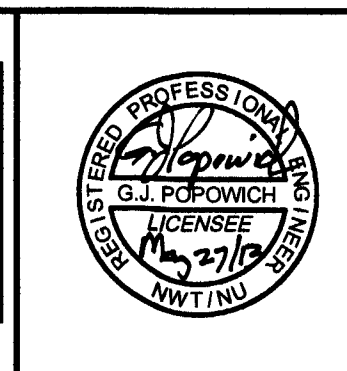
LOCATION PLAN
1:500

BENCH MARK: DATUM ELEV. 0.00
SEWAGE TREATMENT PLANT
TOP OF FLOOR

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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction. Exact location of underground services and utilities are approximate. contractor is responsible for coordinating locates with utilities and verifying by exposing prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
4. Do not scale the drawings.

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| 2. ISSUED FOR 66% SUBMISSION | NOVEMBER 2012 |
| 3. ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 4. ISSUED FOR TENDER | FEBRUARY 2013 |
| 5. REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: *11 May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

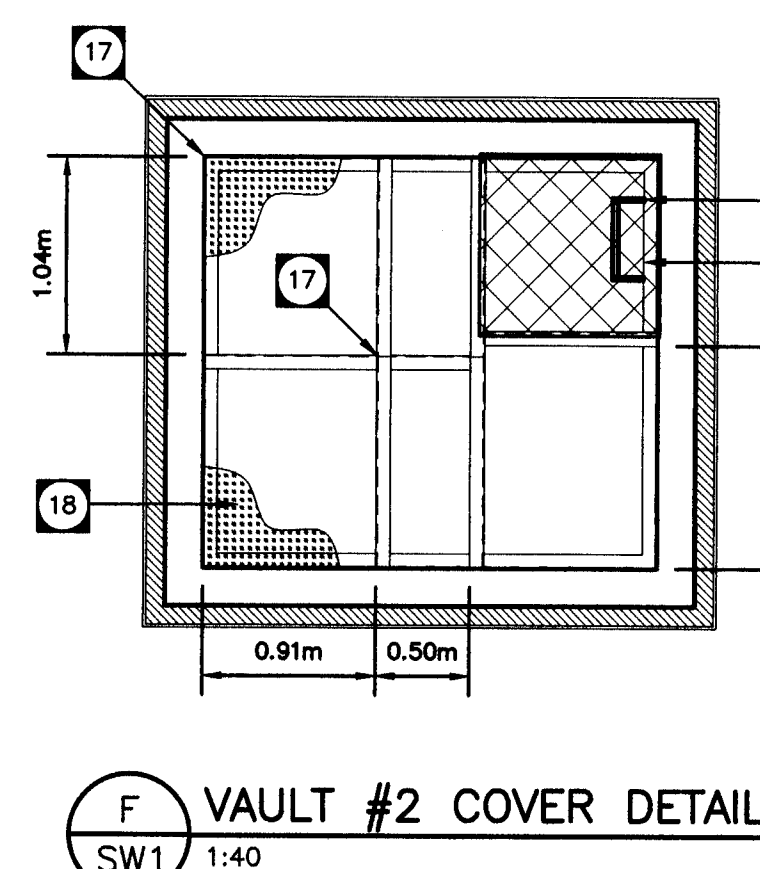
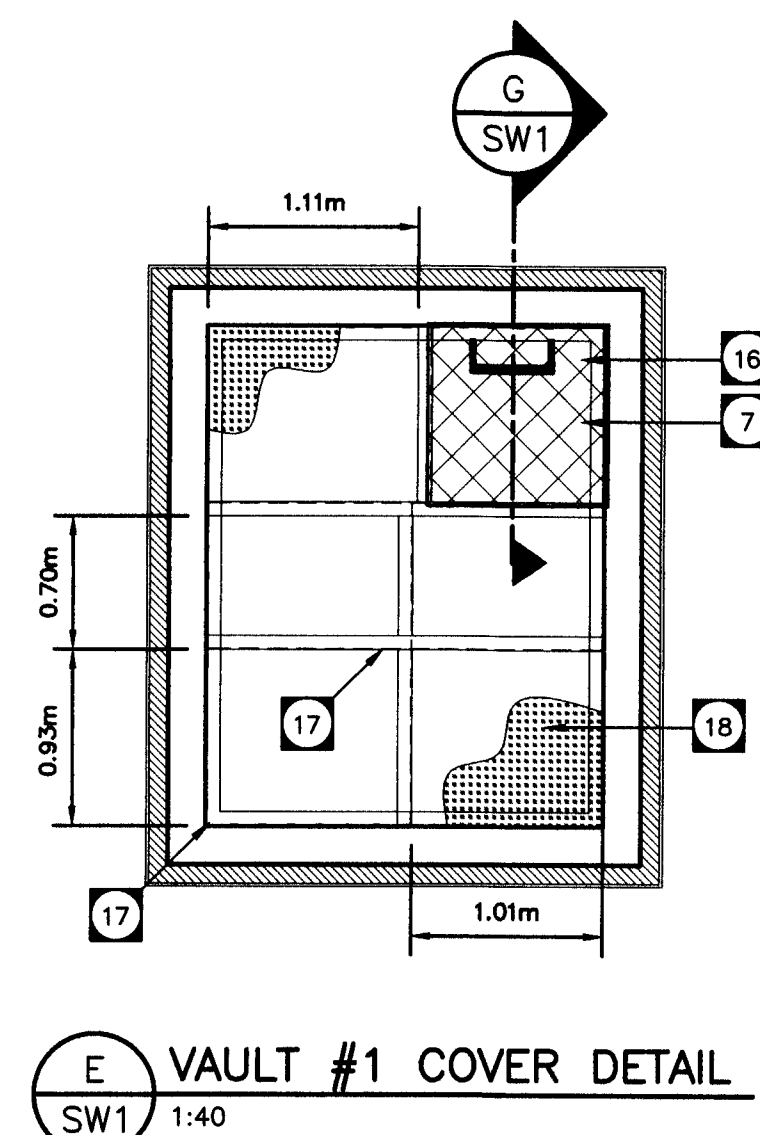
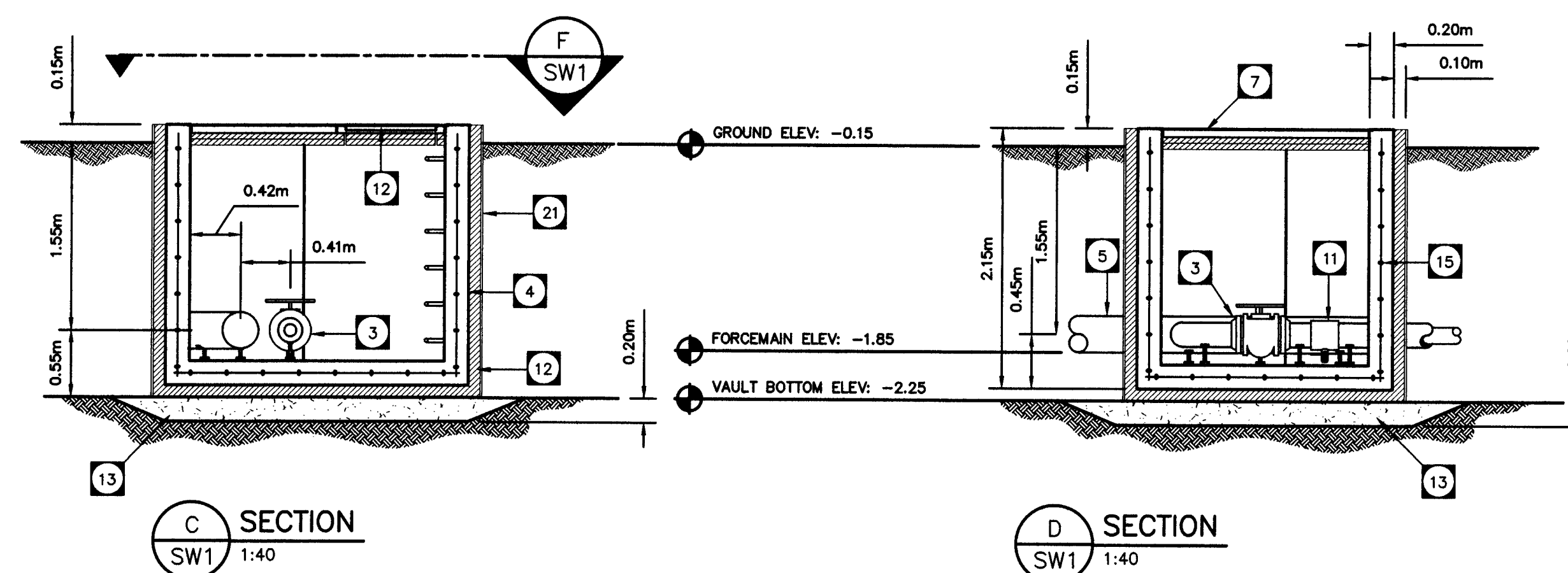
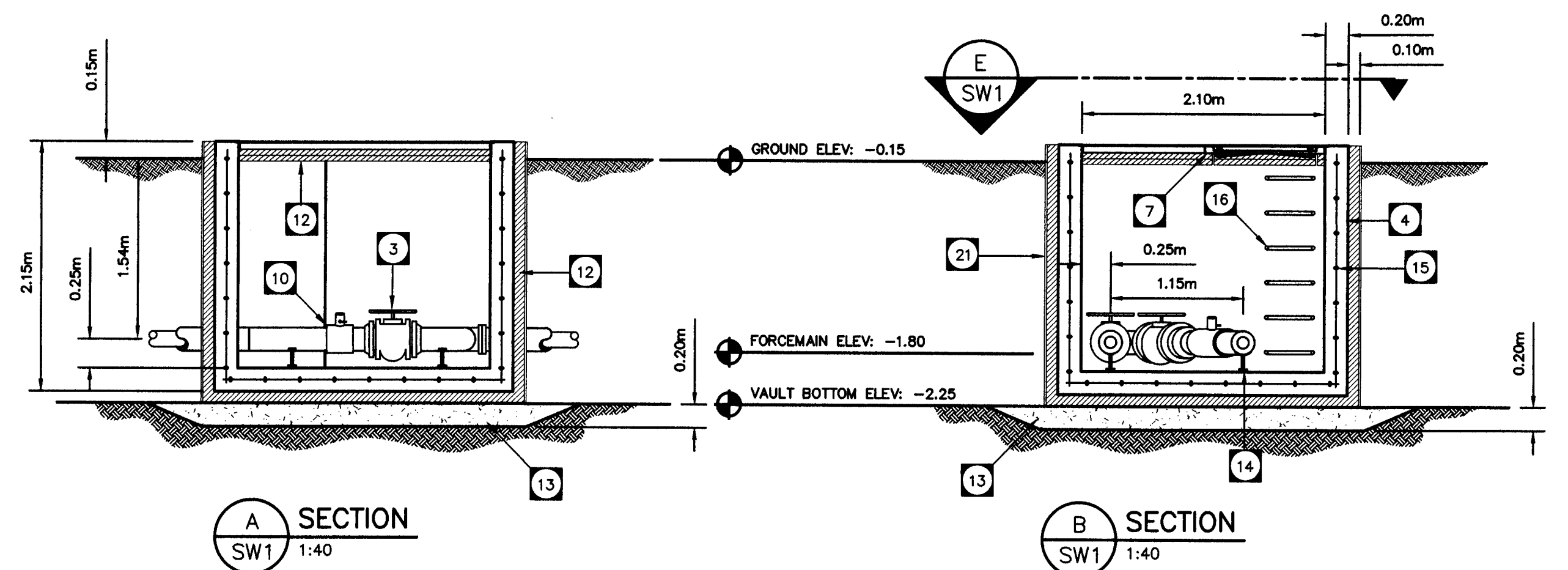
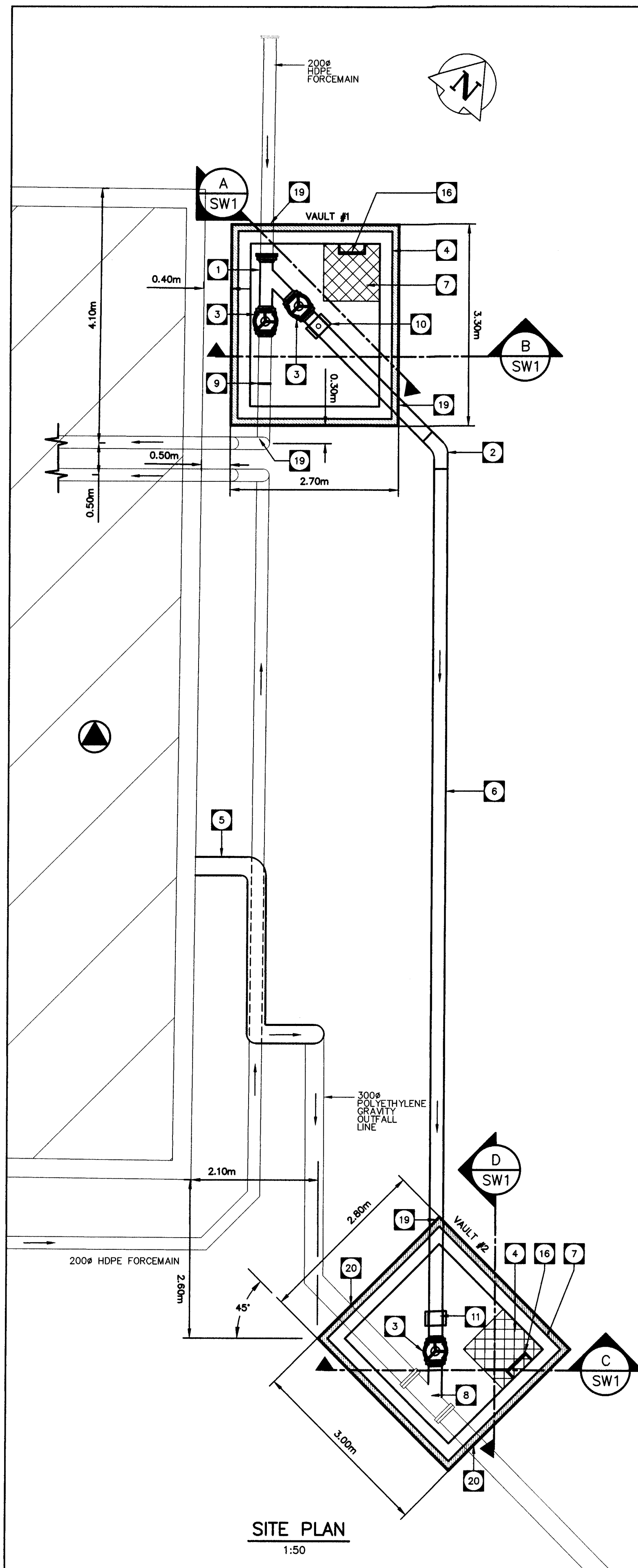


| SEWERMAIN | HYDRO |
|---------------------------|-----------------|
| HYDRANT VALVE | M.T.S. |
| FORCEMAIN | CONCRETE |
| WATERMAIN | ASPHALT |
| TEST HOLE | FENCE LINE |
| HEAT RECOVERY SYSTEM LINE | TH1 |
| ELEVATIONS | CURB STOP |
| FLOW DIRECTION | C.B. LEAD |
| BENCHMARK | SIDEWALK |
| CULVERT | PROPERTY CORNER |
| HYDRO POLE | BOLLARD |
| LEGEND - PLAN | LEGEND - PLAN |
| EXISTING | PROPOSED |

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Client: **GOVERNMENT OF NUNAVUT COMMUNITY & GOVERNMENT SERVICES**
RANKIN INLET SEWAGE TREATMENT PLANT

| Drawing Title | | Drawing No. |
|---|--------------------------------|------------------------------|
| SITE PLAN AND SITE DECOMMISSIONING | | G-1 |
| Drawn By: J. JUACALLA | Checked By: G. POPOWICH | Project No. 300031281 |
| Scale: AS NOTED | | |

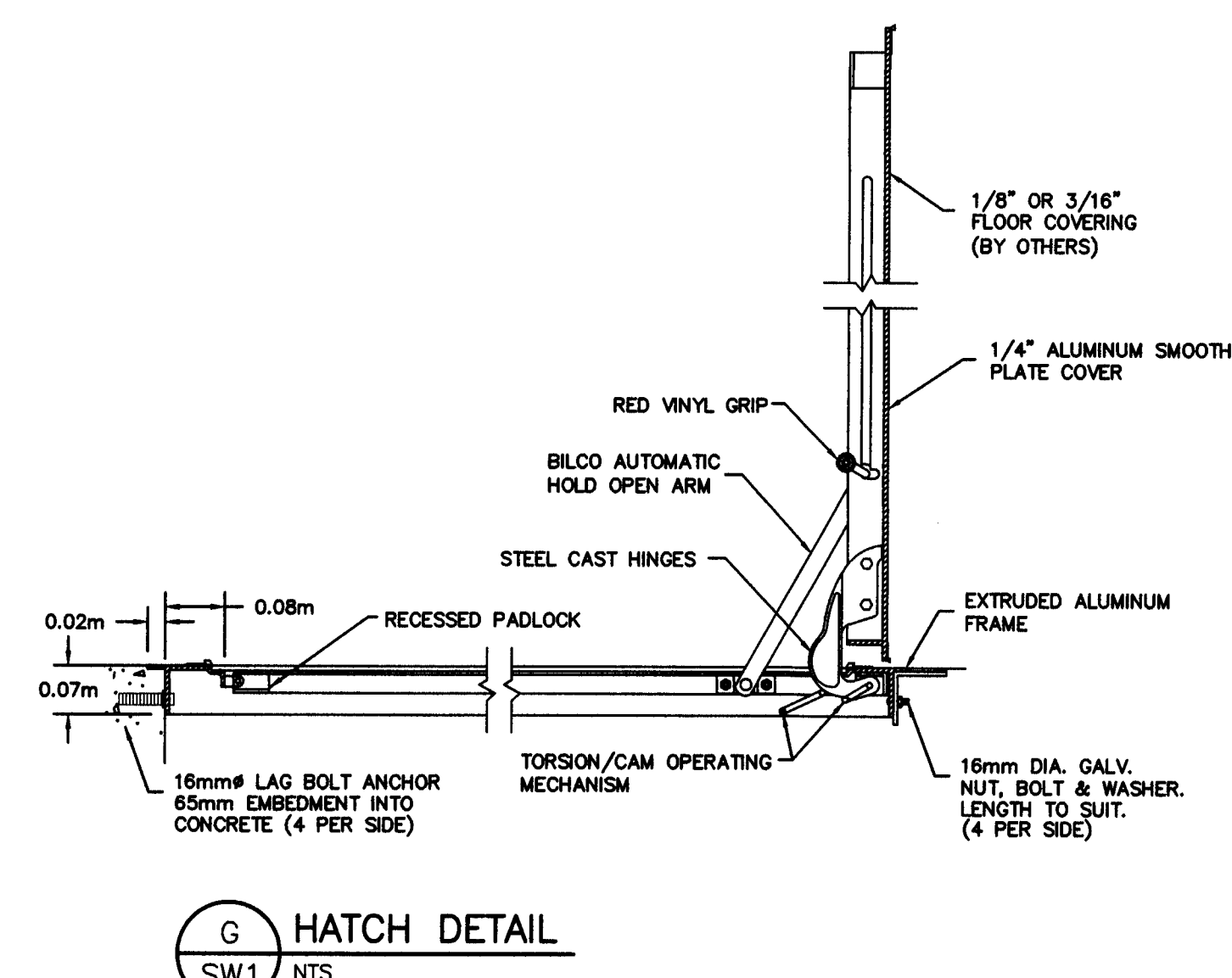


- DRAWING NOTES:**
- BREAK INTO EXISTING 2000 HDPE FORCEMAIN. INSTALL A 45° 200mm HDPE WYE FITTING c/w 50mm PRE-INSULATION.
 - INSTALL 45° HDPE BEND C/W 50mm PRE-INSULATION.
 - INSTALL 200mm BALLCENTRIC VALVE MOUNTED VERTICALLY WITH VALVE STEM EXTENSION. (TYP)
 - CONCRETE VAULTS C/W STEEL PLATE COVER. 200mm CONCRETE WALL. (TYP)
 - EXISTING ABOVE GROUND 300mm INSULATED GRAVITY OUTFALL.
 - INSTALL 2000 HDPE BYPASS LINE C/W 50mm PRE-INSULATION.
 - ACCESS HATCH TO BE BILCO TYPE K-4 & RECESSED PADLOCK (OR APPROVED EQUAL). SIZE 914mm x 914mm.
 - INSTALL 300mm x 300mm x 200mm DR17 HDPE WYE C/W 50mm PRE-INSULATION.
 - EXISTING 200mm PRE-INSULATED STEEL PIPE TRANSITION.
 - 200mm X 75mm STAINLESS STEEL SADDLE C/W 75mm BALL VALVE, SCREW ON CAP & INSULATION KIT.
 - 200mm X 50mm STAINLESS STEEL SADDLE. 50mm BALL VALVE, SCREW ON CAP & INSULATION KIT.
 - 2 LAYERS OF 50mm RIGID BOARD INSULATION. (TYP)
 - 200mm SAND BEDDING. (TYP)
 - GRINNEL PIPE SUPPORT. (TYP)
 - 15M REBAR BOTH WAYS @ 300mm O.C. WITH 50mm CONCRETE COVER MINIMUM.
 - 19mm ALUMINUM LADDER RUNGS 400mm WIDE @ 300 O.C. FIX TO CONCRETE VAULT
 - 75mm X 75mm X 6mm GALVANIZED ANGLE IRON FRAME.
 - 6mm THK. GALVANIZED STEEL PLATE VAULT COVER WELDED TO ANGLE IRON FRAME.
 - 200mm LINK-SEAL FOR A 200mm THK. CONCRETE WALL C/W STEEL SLEEVE TO SUIT. (TYP)
 - 300mm LINK-SEAL FOR A 200mm THK. CONCRETE WALL C/W STEEL SLEEVE TO SUIT. (TYP)
 - 6mm OF PRESSURE TREATED PLYWOOD SHEATHING. (TYP)

- REINFORCING STEEL:**
- REINFORCING STEEL TO BE NEW DEFORMED BILLET STEEL BAR CONFORMING TO CSA G30.18 (LATEST). GRADES TO BE 400 MPa FOR 15M BARS AND LARGER; 300 MPa FOR 10M BARS.
 - SUBMIT SHOP DRAWINGS WHICH CLEARLY INDICATE BAR SIZES, SPACING, LOCATIONS & QUANTITIES OF REINFORCING STEEL, BENDING & CUTTING SCHEDULES, SUPPORTING & SPACING DEVICES, ETC. FOR REVIEW PRIOR TO FABRICATION. DETAIL, FABRICATE AND PLACE REINFORCING IN ACCORDANCE CSA A23.1 (LATEST), CSA A23.3 (LATEST) AND ACI SP-86 (LATEST) EXCEPT AS NOTED. LAP STEEL 36 BAR DIAMETERS (MINIMUM) UNLESS NOTED OTHERWISE.
 - REINFORCING STEEL SHALL BE CLEAN, FREE OF RUST, DIRT, LOOSE SCALE, OIL, GREASE OR ANY OTHER MATERIAL WHICH WOULD REDUCE BOND WITH THE CONCRETE.
 - TIE, SUPPORT AND SPACE ALL REINFORCING STEEL WITH PROPER APPROVED DEVICES DESIGNED FOR USE IN REINFORCED CONCRETE. TO PREVENT DISPLACEMENT OF REINFORCING AND ENSURE SPECIFIED CONCRETE COVER.

- CONCRETE:**
- CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH CSA A23.1/A23.2 (LATEST). SEE BELOW FOR MIX REQUIREMENTS.
 - ADMIXTURES SHALL NOT BE USED UNLESS SPECIFIED HEREIN OR APPROVED BY THE DESIGN ENGINEER. CALCIUM CHLORIDE SHALL NOT BE USED.
 - DESIGN, FABRICATE AND ERECT FORMWORK/SHORING IN ACCORDANCE WITH CAN/CSA-S289.3 (LATEST). ALLOW SUFFICIENT CONCRETE CURING TIME PRIOR TO REMOVAL.
 - CONCRETE FINISHING SHALL MEET THE REQUIREMENTS OF CSA A23.1 (LATEST).
 - FORM RELEASE AGENT SHALL BE BIODEGRADABLE, NON-STAINING AND NON-VOLATILE.
 - PROVIDE ADEQUATE COLD/HOT WEATHER PROTECTION AS REQUIRED DURING CURING PERIOD.
 - CAST-IN-PLACE ANCHOR BOLTS SHALL MEET REQUIREMENTS OF ASTM A307 (LATEST).
 - CONCRETE MIX DESIGN SHALL BE PROPORTIONED TO MEET THE FOLLOWING PERFORMANCE REQUIREMENTS:

| SLABS | EXPOSURE CLASS | F-1 |
|-------|-----------------------|---------|
| | 28 DAY COMP. STRENGTH | 30 MPa |
| | CEMENT | TYPE GU |
| | W/C RATIO | 0.50 |
| | AGGREGATE SIZE (MAX.) | 20mm |
| | ENTRAINED AIR | 5%-8% |



BENCH MARK: DATUM ELEV. 0.00
SEWAGE TREATMENT PLANT
TOP OF FLOOR

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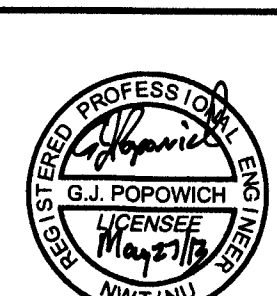
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Signature: *G. Popowich*
Date: *May 27/13*
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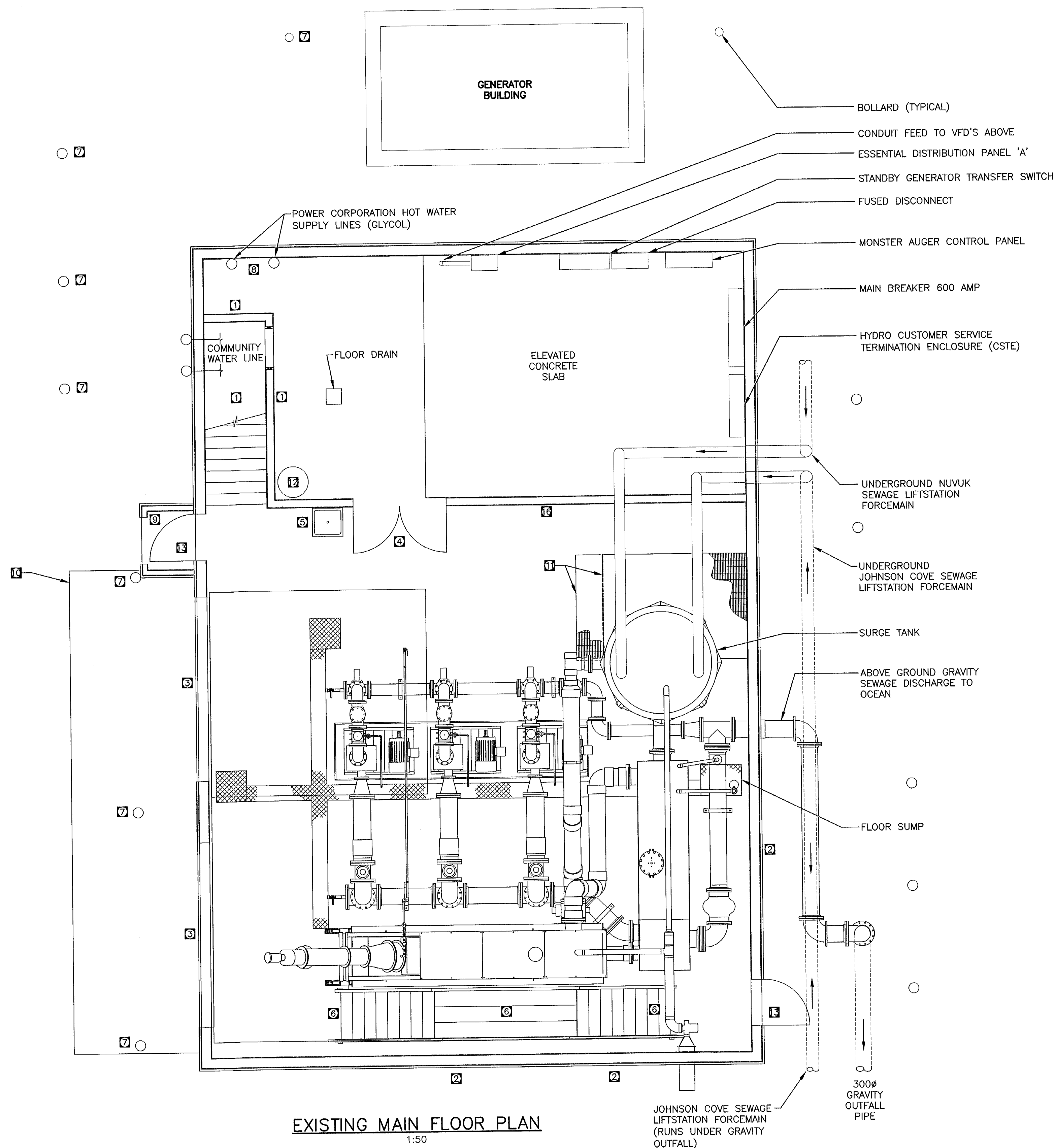


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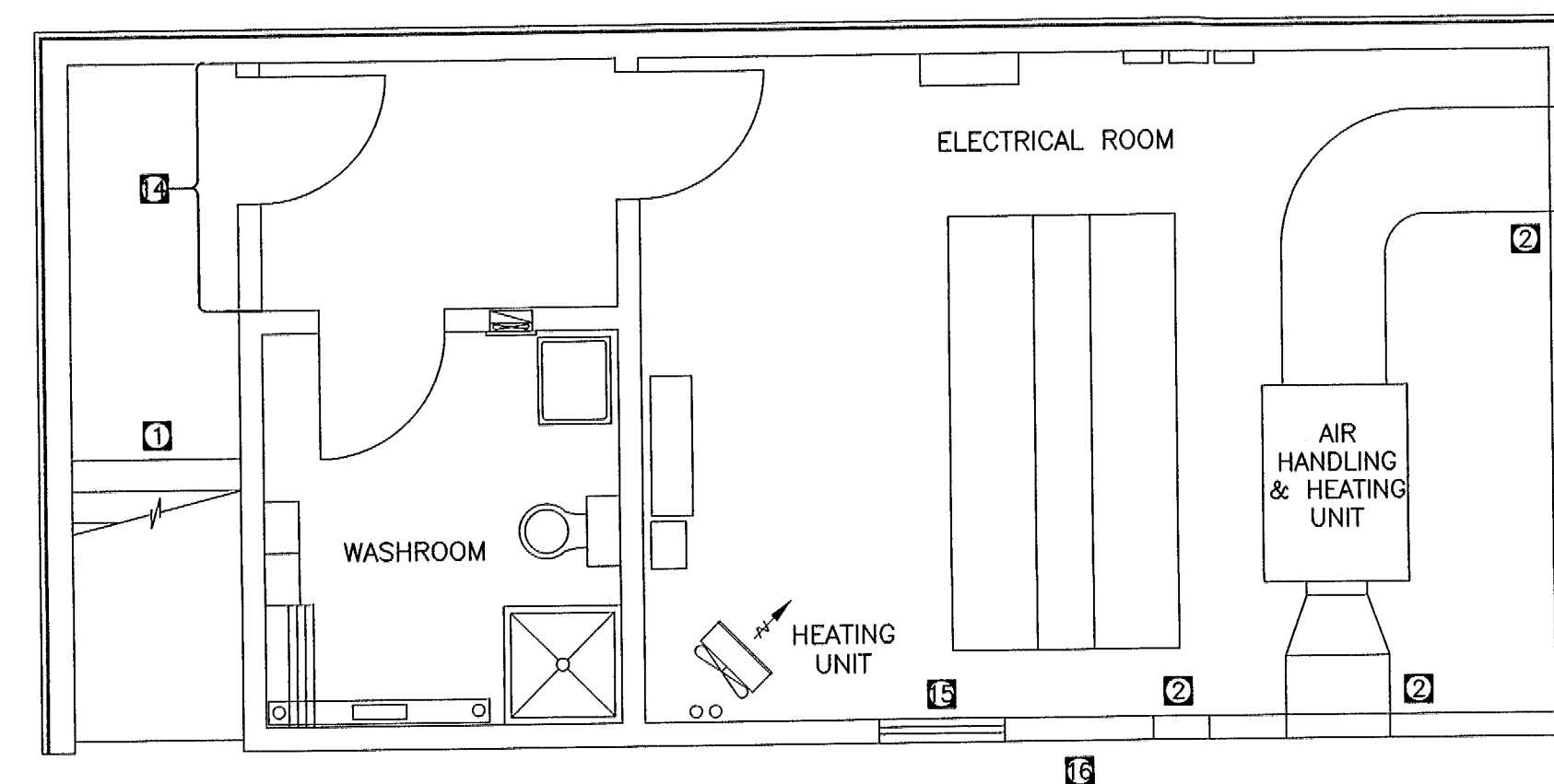
Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

Drawing Title
**NUVUK LIFT STATION EXTERIOR
BYPASS**

| | | |
|-------------------------|---------------------------|----------------------------|
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. SW-1 |
| Scale AS NOTED | Project No. 300031281 | |



EXISTING MAIN FLOOR PLAN
1:50



SECOND FLOOR PLAN
1:50

EXISTING SEWAGE PLANT DECOMMISSIONING NOTES

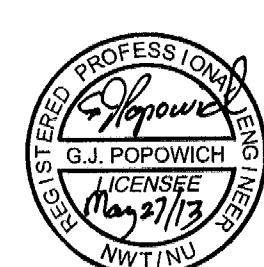
- 1 REMOVE & DISPOSE OF EXISTING STAIRWAY AND CONCRETE CURBS TO FLOOR LEVEL. REMOVE MAIN FLOOR MECHANICAL ROOM WEST WALL. PATCH AND REPAIR FLOORS AND WALLS AS REQUIRED FOR NEW CONSTRUCTION.
- 2 FRAME OUT AND FINISH OPENING IN EXTERIOR AND INTERIOR WALLS AS A RESULT OF THE REMOVAL OF EXISTING HVAC EQUIPMENT. COORDINATE WITH MECHANICAL.
- 3 REMOVE & DISPOSE OF EXISTING OVERHEAD DOORS, DOOR TRACKS, MOTORIZED OPENER AND ALL ASSOCIATED HARDWARE. FRAME AND FINISH ROUGH OPENINGS AS REQUIRED FOR NEW CONSTRUCTION.
- 4 REMOVE & DISPOSE OF EXISTING DOUBLE MAN DOORS, FRAME AND FINISH ROUGH OPENING AS REQUIRED FOR NEW CONSTRUCTION.
- 5 REMOVE AND RELOCATE EXISTING SERVICE SINK TO LOCATION SHOWN ON DRAWING B2.
- 6 REMOVE & DISPOSE OF EXISTING PROCESS WALKWAY AND STAIRS. PATCH AND REPAIR FLOORS AS REQUIRED FOR NEW CONSTRUCTION.
- 7 REMOVE & DISPOSE OF EXISTING BOLLARDS. BACKFILL HOLES AS REQUIRED FOR NEW CONSTRUCTION.
- 8 POWER CORPORATION HOT WATER LINES. REFER TO MECHANICAL FOR DETAILS.
- 9 REMOVE AND DISPOSE OF EXISTING EXTERIOR VESTIBULE. BACKFILL AS REQUIRED TO ACCOMMODATE NEW SLAB CONSTRUCTION.
- 10 REMOVE AND DISPOSE OF EXISTING APPROACH SLABS AT OVERHEAD DOORS BEING REMOVED. BACKFILL AS REQUIRED TO ACCOMMODATE NEW SLAB CONSTRUCTION.
- 11 CUT EXISTING SURGE TANK PLATFORM TO ACCOMMODATE NEW AUGER PLATFORM BEING INSTALLED. COORDINATE CUT LOCATION, EXISTING PLATFORM SUPPORT RELOCATION AND PREPARATION REQUIREMENTS WITH NEW PLATFORM MANUFACTURER PRIOR TO WORK.
- 12 EXISTING DOMESTIC HOT WATER TANK TO BE RELOCATED. REFER TO MECHANICAL FOR DETAILS.
- 13 EXISTING EXTERIOR DOORS TO BE REPLACED. REFER TO DRAWINGS B2 & B7.
- 14 EXISTING DOOR AND WALL ASSEMBLY TO BE REMOVED. PATCH AND REPAIR FLOORS AND WALLS AS REQUIRED FOR NEW CONSTRUCTION.
- 15 EXISTING WINDOW TO BE REPLACED. PREPARE ROUGH OPENING FOR NEW. REFER TO DRAWING B3.
- 16 REMOVE METAL LINER ON WALL BETWEEN SEWAGE TREATMENT ROOM AND MECHANICAL/ELECTRICAL ROOMS (BOTH FLOORS) TO ALLOW FOR ADDITION OF FIRE RATED MATERIALS. REFER TO DRAWINGS B2 & B7.
- 17 WHEREVER POSSIBLE, RECYCLE ALL DECOMMISSIONED STEEL. ALL SALVAGEABLE BUILDING MATERIALS AND EQUIPMENT SHALL BE CLEANED AND MOVED TO A DESIGNATED, SECURED SITE APPROVED BY THE OWNER. ALL OTHER NON-SALVAGEABLE MATERIALS ARE TO BE DISPOSED OF IN THE COMMUNITY LANDFILL AS COORDINATED WITH AND DIRECTED BY THE OWNER.
- 18 IN GENERAL, COORDINATE WALL PATCH AND REPAIR EFFORTS WITH ALL OTHER TRADES ONCE DECOMMISSIONING IS COMPLETE. THE INTENT IS TO SEAL THE EXISTING BUILDING FROM WATER AND AIR INGRESS PRIOR TO CONSTRUCTION OF BUILDING ADDITION. EXISTING BUILDING FINISH CONSTRUCTION AND RE-ROOFING.

0 1 3m
1:50

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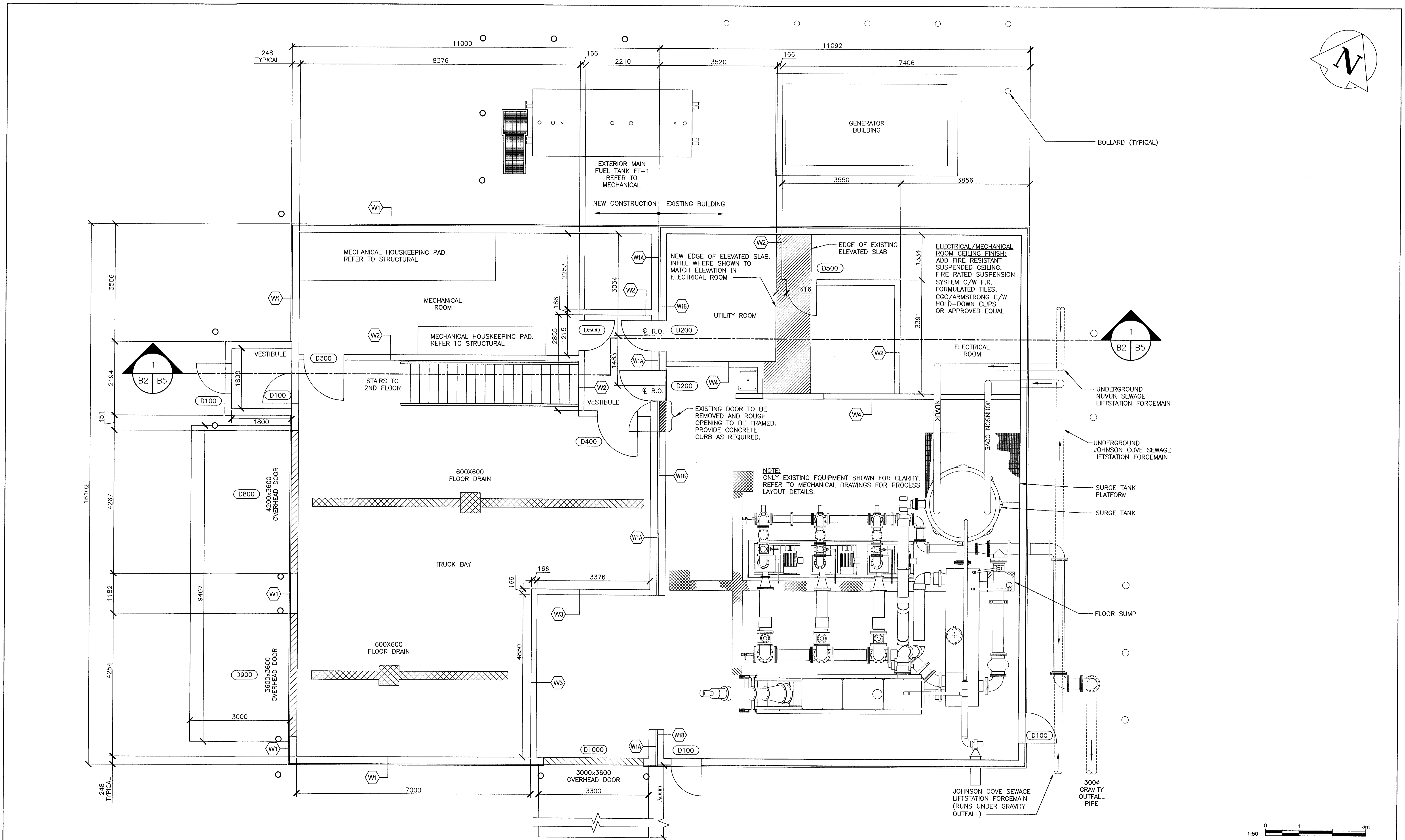


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Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

Drawing Title
**BUILDING
DECOMMISSIONING PLAN**

| | | |
|-------------------------|---------------------------|---------------------------|
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. B-1 |
| Scale AS NOTED | Project No. 300031281 | |



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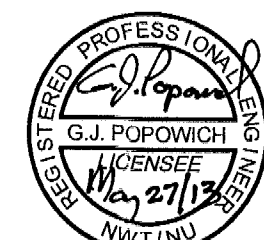
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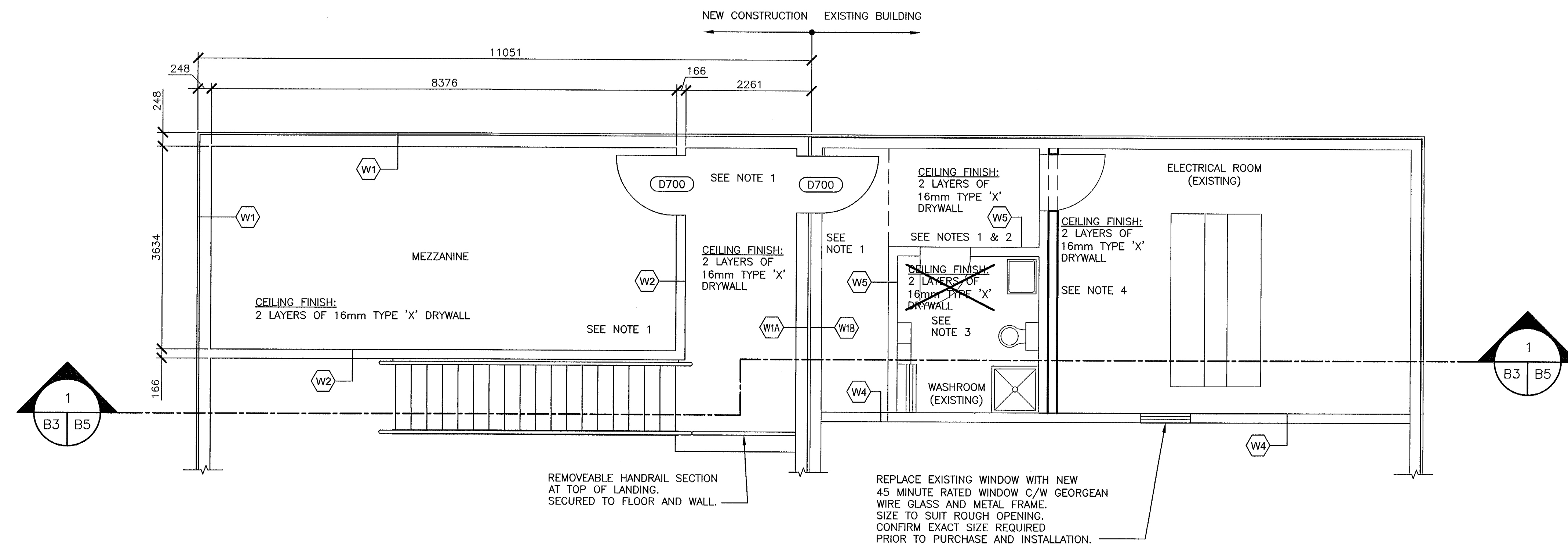
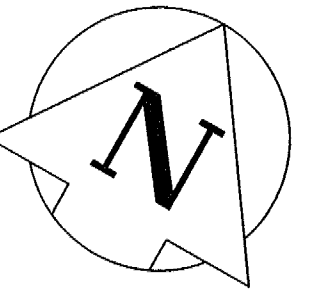


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Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

Drawing Title
**GENERAL LAYOUT - GROUND
FLOOR**

| | | |
|-------------------------|---------------------------|---------------------------|
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. B-2 |
| Scale 1:50 | Project No. 300031281 | |



NOTES:

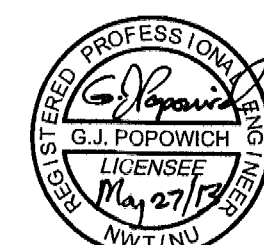
1. INSTALL NEW FLOORING: JOHNSONITE TARKETT IQ OPTIMA, COLOR TYPE SILVER BELL, C/W 8mm FIR PLYWOOD UNDERLAYMENT AND INSTALLED TO MANUFACTURER'S SPECIFICATIONS.
2. REMOVE EXISTING FLOORING
3. DELETE ADDITION OF 2 LAYERS OF 16mm TYPE DRYWALL ON CEILING
4. BUILD NEW 38X89 1 HR FIRE RATED WALL AGAINST BATHROOM WALL.
WALL TO BE CONSTRUCTED AS FOLLOWS:
 - 2 LAYERS OF 16mm TYPE X DRYWALL
 - 38X89 STUDS @ 400 O.C.
 - 2 LAYERS OF 16mm TYPE X DRYWALL
 - FIRE STOP JOINT AT CEILING

0 1 3m
1:50

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4. Do not scale the drawings.

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| 3 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 4 ISSUED FOR TENDER | FEBRUARY 2013 |
| 5 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Nuna Burnside Engineering & Environmental Ltd.
Signature *G. Popowich*
Date *May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU



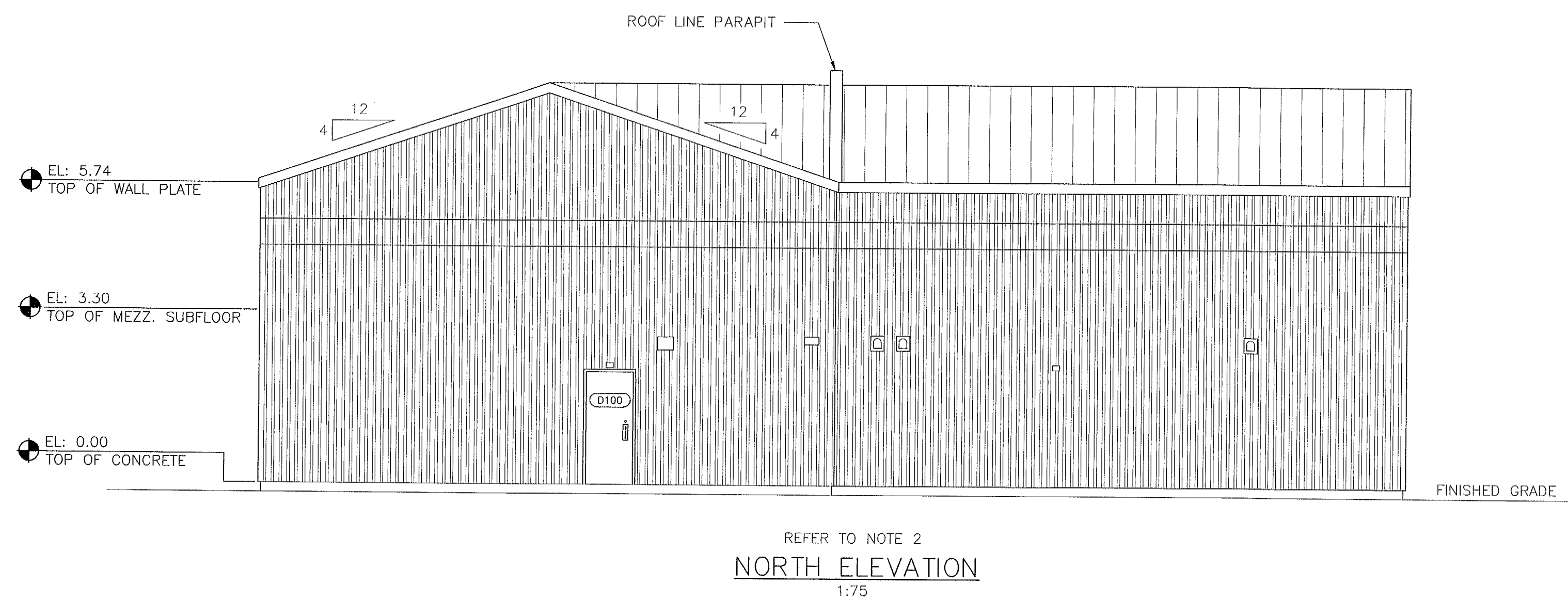
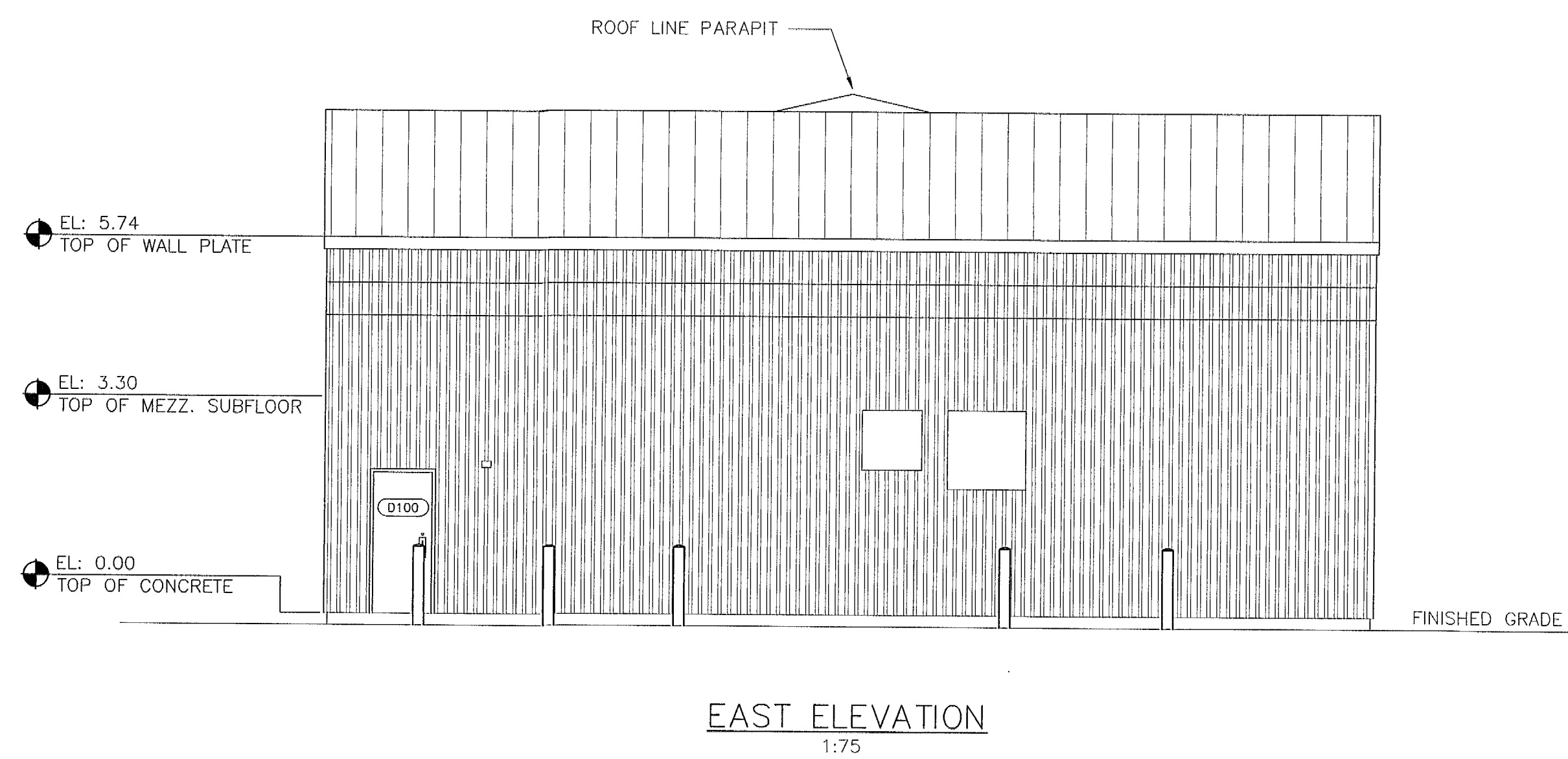
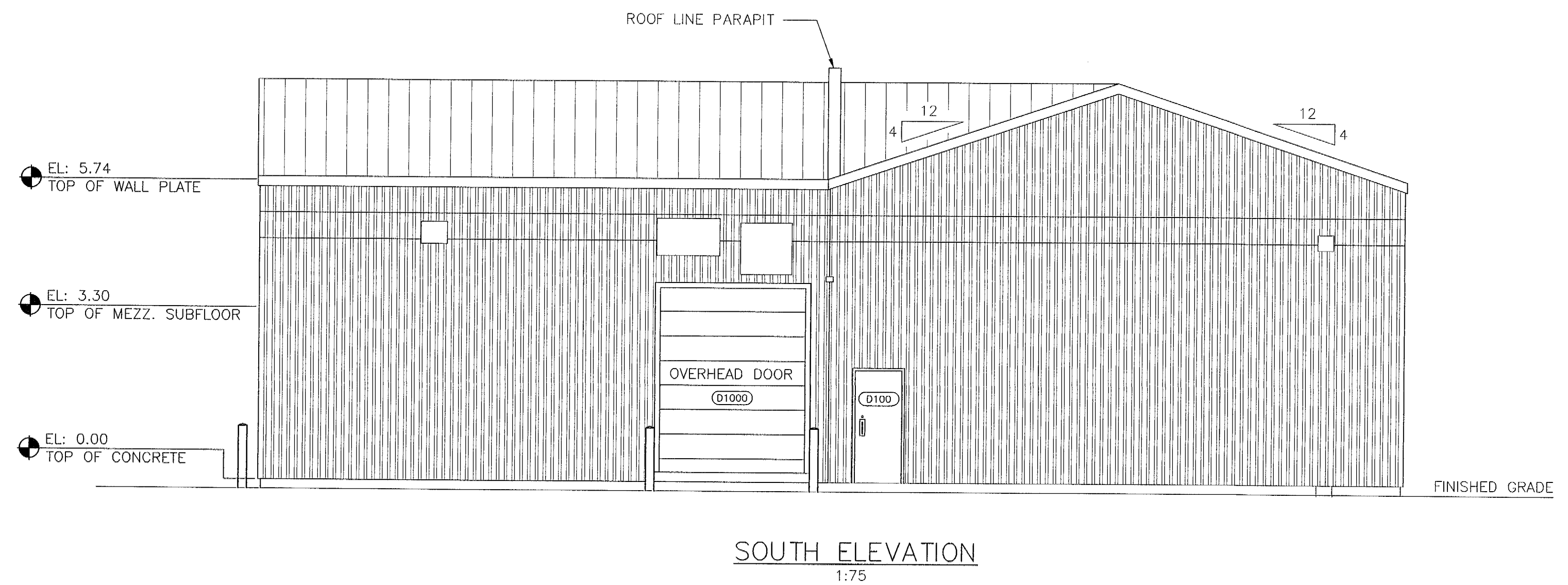
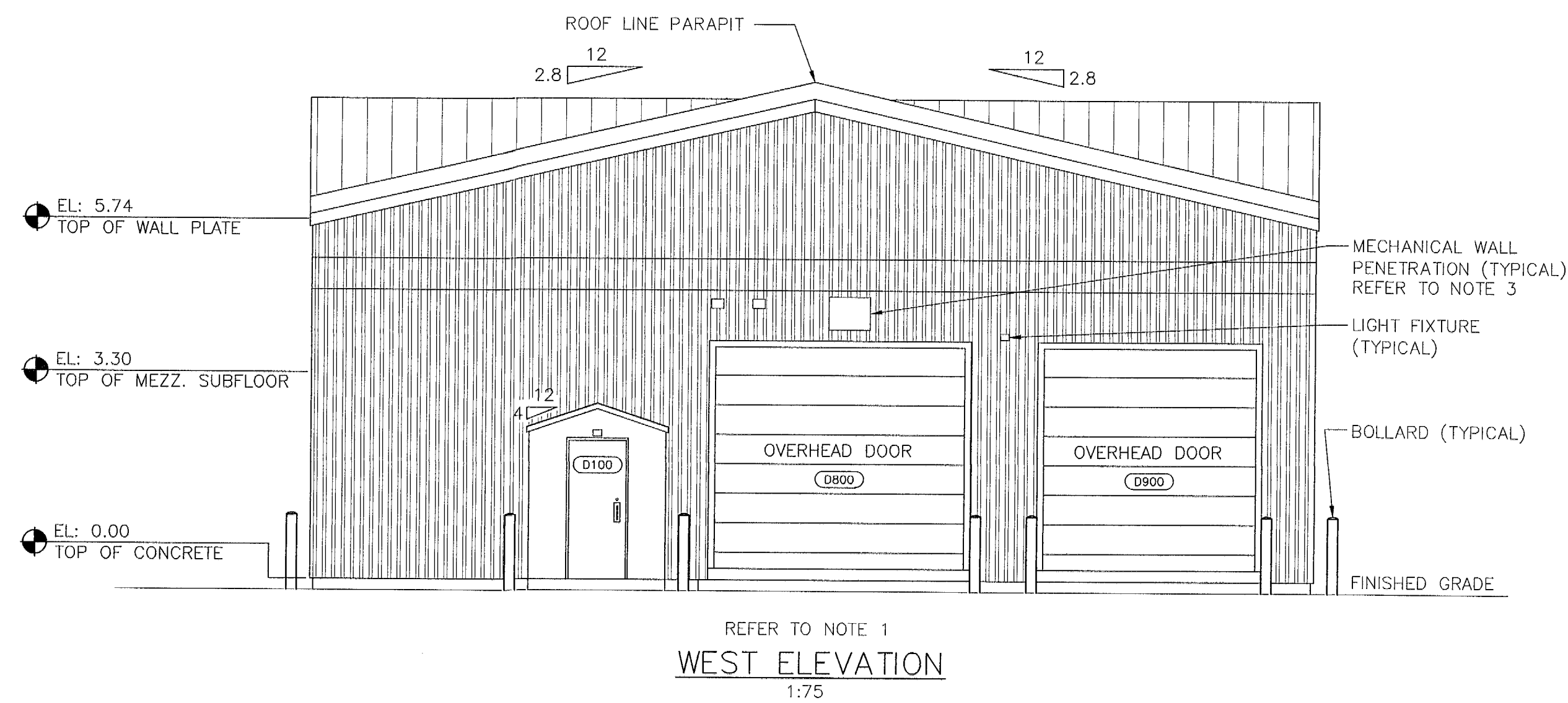
Nuna BURNSIDE

Nuna Burnside Engineering & Environmental LTD.
106B Scurfield Blvd., Winnipeg, Manitoba
telephone (204) 949-7110 fax (204) 949-7111
web www.neeganburnside.com

Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
GENERAL LAYOUT - 2ND FLOOR

| | | |
|-------------------------|---------------------------|--------------------|
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. B-3 |
| Scale 1:50 | Project No. 300031281 | |



NOTES:

1. RELOCATE EXISTING SEWAGE TREATMENT PLANT SIGN TO ADDITION WEST ELEVATION. COORDINATE EXACT LOCATION ON SITE WITH THE OWNER.
2. NORTH ELEVATION DOES NOT SHOW BOLLARDS, GENERATOR OR MAIN FUEL TANK FOR CLARITY.
3. COORDINATE EXACT LOCATIONS AND SIZES OF MECHANICAL WALL PENETRATION WITH OTHER TRADES. COORDINATE FINISH COLORS PRIOR TO INSTALLATION.

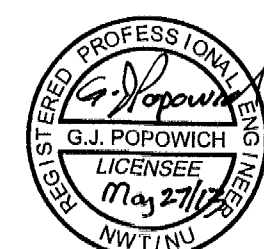
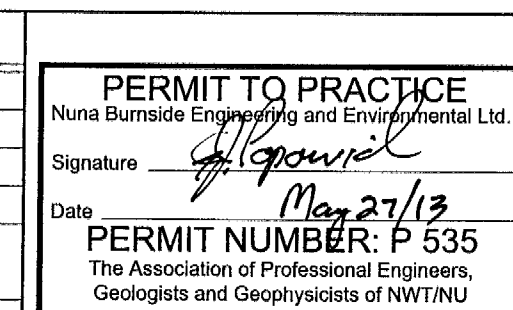
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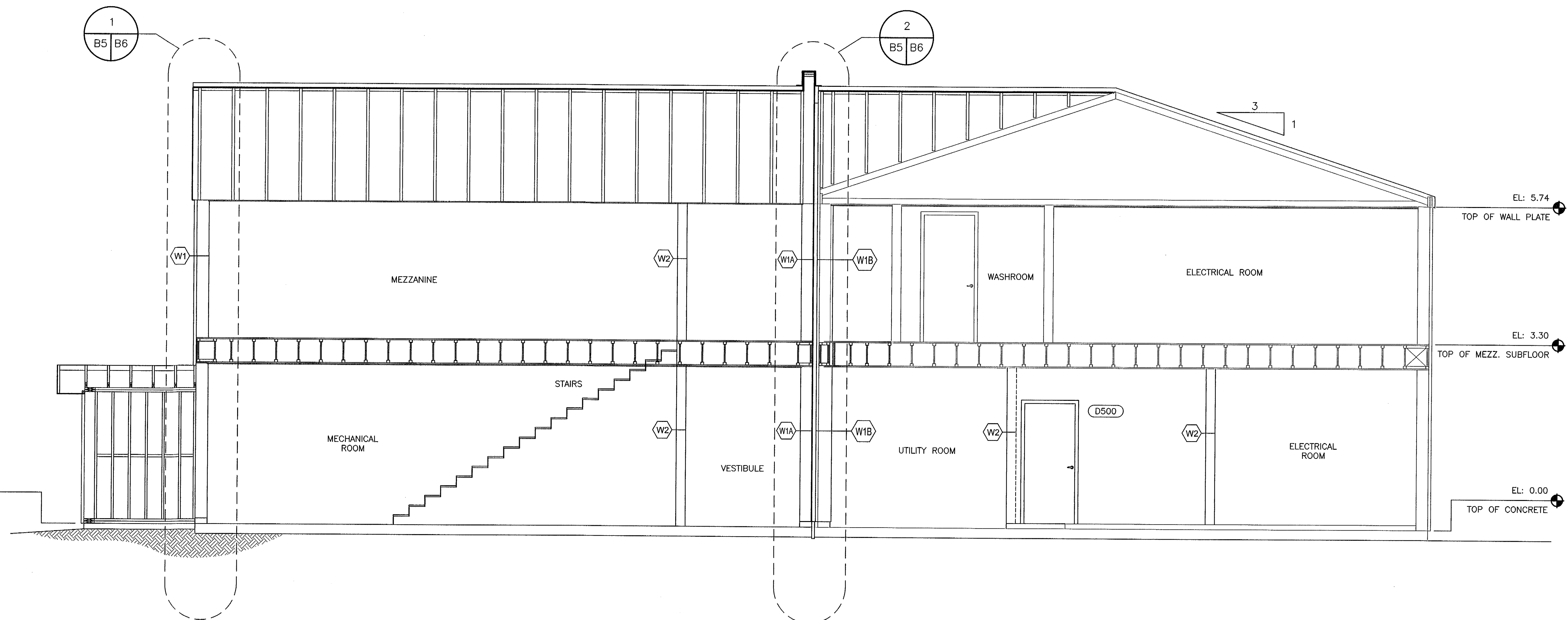
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SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

| Drawing Title | | |
|------------------------------|---------------------------|-------------|
| EXTERIOR BUILDING ELEVATIONS | | |
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. |
| Scale AS NOTED | Project No. 300031281 | B-4 |



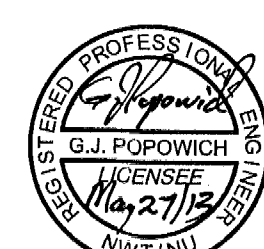
1 1 BUILDING CROSS SECTION
B2 B5 B3 B5 1:40

0 0.8 2.4m
1:40

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Signature: *[Signature]*
Date: May 27/13
PERMIT NUMBER: P 535
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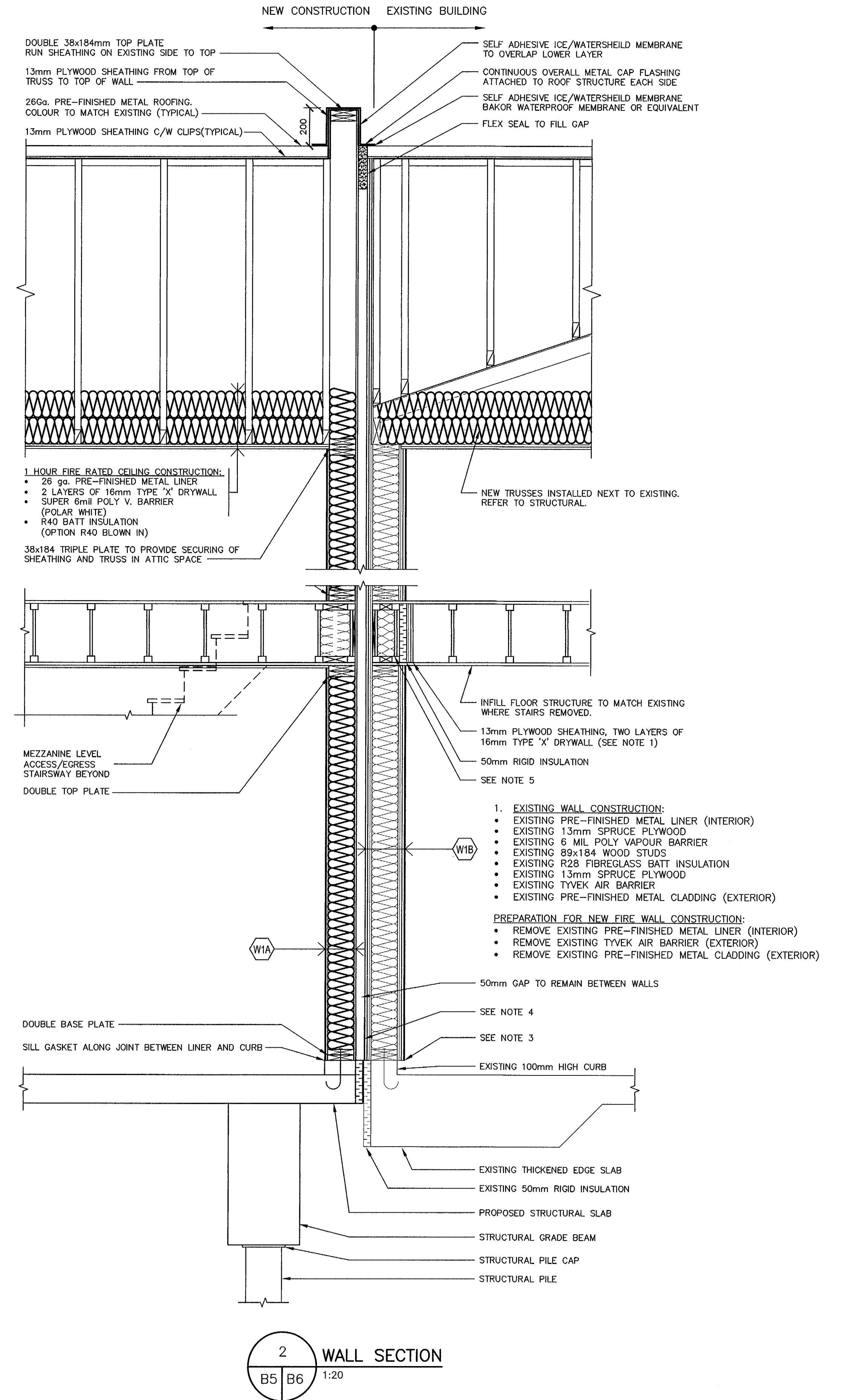
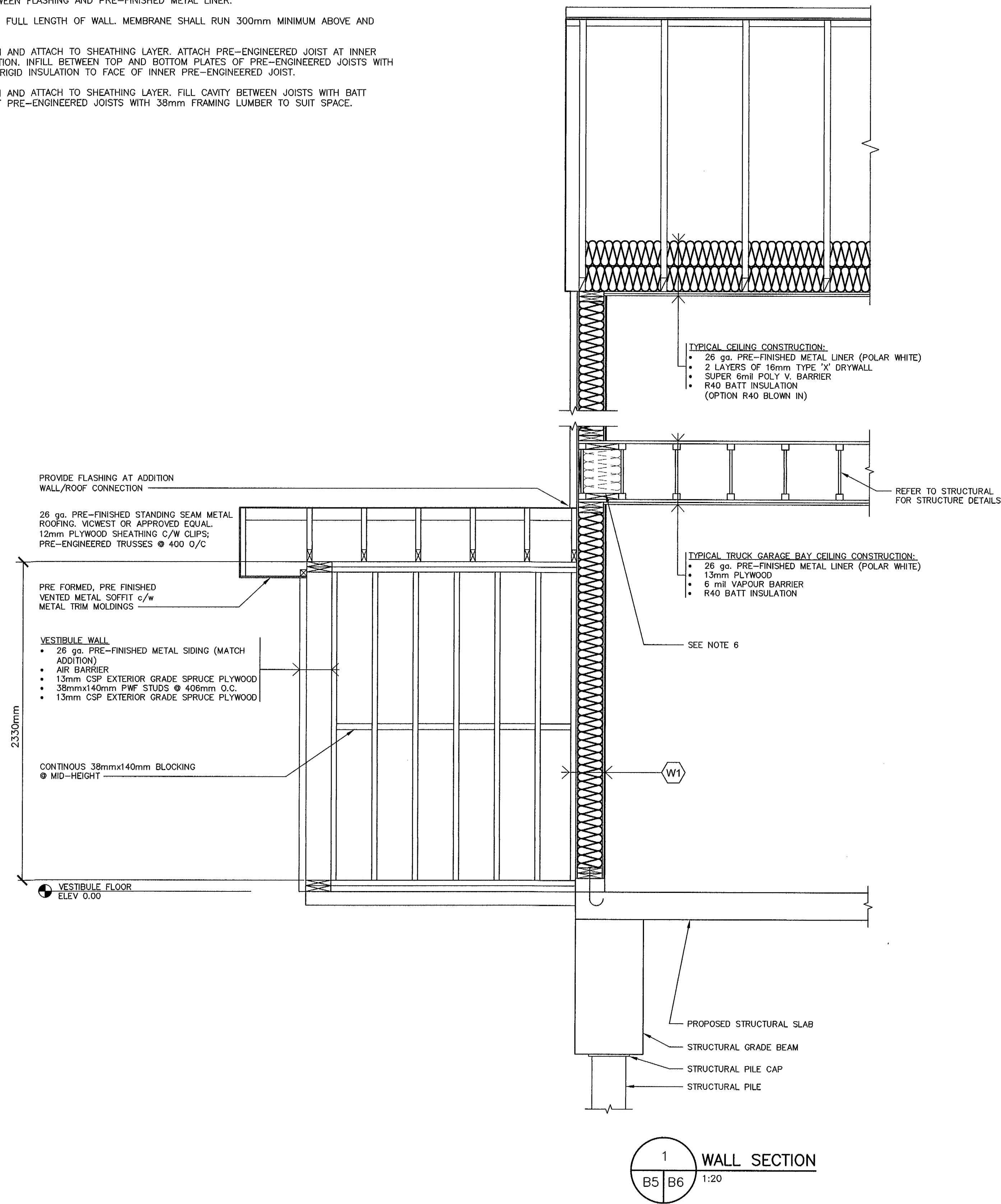
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SEWAGE TREATMENT PLANT

| | | |
|---|---------------------------|--------------------|
| Drawing Title BUILDING CROSS SECTION | | |
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. B-5 |
| Scale 1:40 | Project No. 300031281 | |

NOTES:

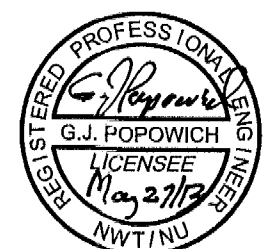
1. BASE LAYER OF 16mm TYPE 'X' DRYWALL ATTACHED WITH 48mm 6d CEMENT COATED NAILS AT 150mm O/C. FACE LAYER OF 16mm TYPE 'X' DRYWALL ATTACHED WITH 60mm 6d CEMENT COATED NAILS AT 200mm O/C. STAGGER JOINTS BETWEEN LAYERS AND TAPE EACH JOINT.
2. BASE LAYER OF 16mm DENSGLASS FIREGUARD SHEATHING ATTACHED WITH 48mm GALVANIZED ROOFING NAILS AND LOAD SPREADING WASHERS AT 400mm O/C. FACE LAYER OF 16mm DENSGLASS FIREGUARD SHEATHING ATTACHED WITH 60mm GALVANIZED ROOFING NAILS AND LOAD SPREADING WASHERS AT 200mm O/C. STAGGER JOINTS BETWEEN LAYERS. TAPE JOINTS AS PER MANUFACTURER'S RECOMMENDED METHODS.
3. PROTECT UNDERSIDE OF DRYWALL LAYERS WITH PRE-FINISHED METAL FLASHING, SCREWED UNDER PRE-FINISHED METAL LINER AND SILICONE SEALED ALONG CURB FACE. SILICONE SEAL BETWEEN FLASHING AND PRE-FINISHED METAL LINER.
4. INSTALL BAKOR BLUE SKIN MEMBRANE OVER JOINT ALONG FULL LENGTH OF WALL. MEMBRANE SHALL RUN 300mm MINIMUM ABOVE AND BELOW TO OF SLAB CURB.
5. PLYWOOD FILL WEB OF PRE-ENGINEERED JOIST TO MATCH AND ATTACH TO SHEATHING LAYER. ATTACH PRE-ENGINEERED JOIST AT INNER TOP-PLATE LINE AFTER FILLING CAVITY WITH BATT INSULATION. INFILL BETWEEN TOP AND BOTTOM PLATES OF PRE-ENGINEERED JOISTS WITH 38mm FRAMING LUMBER TO SUIT SPACE, ATTACH 50mm RIGID INSULATION TO FACE OF INNER PRE-ENGINEERED JOIST.
6. PLYWOOD FILL WEB OF PRE-ENGINEERED JOIST TO MATCH AND ATTACH TO SHEATHING LAYER. FILL CAVITY BETWEEN JOISTS WITH BATT INSULATION. INFILL BETWEEN TOP AND BOTTOM PLATES OF PRE-ENGINEERED JOISTS WITH 38mm FRAMING LUMBER TO SUIT SPACE.



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Signature: *G. Popowich*
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PERMIT NUMBER: P 535
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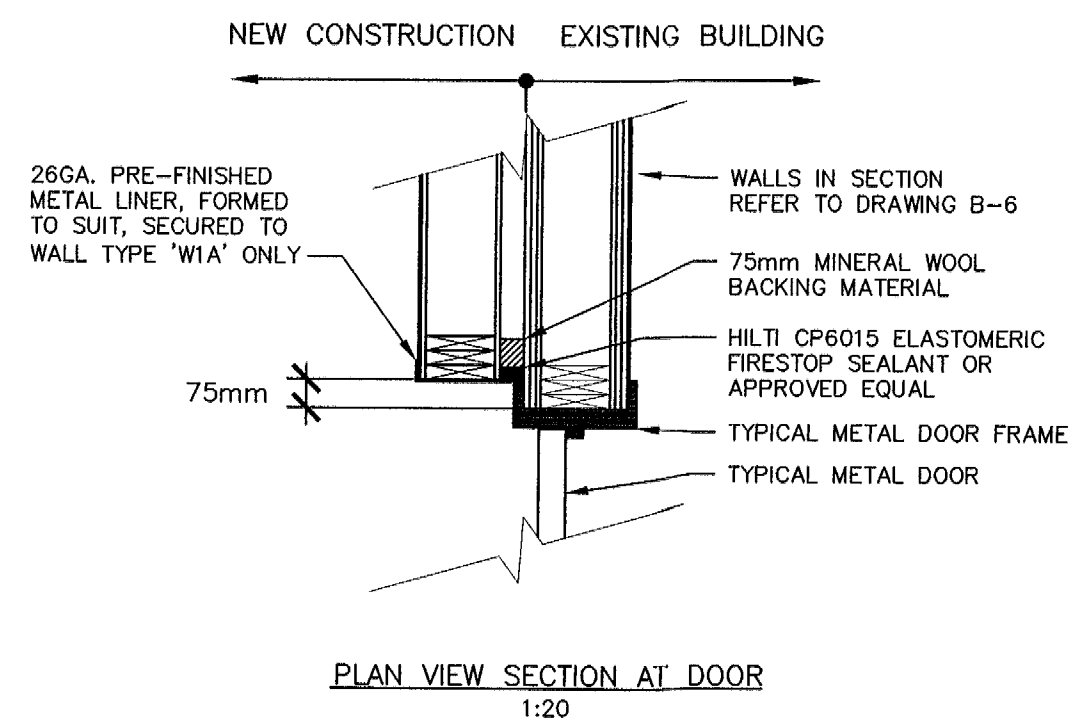
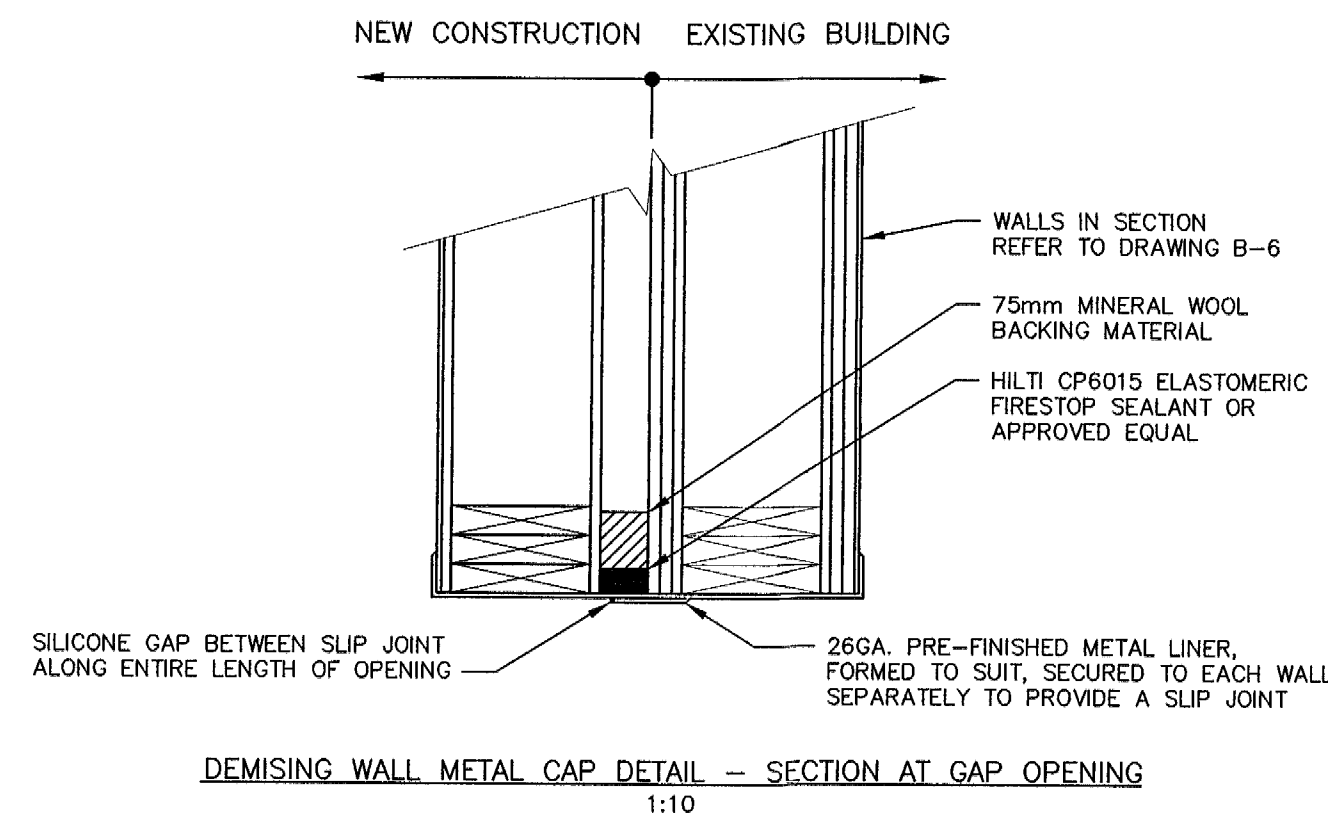
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SEWAGE TREATMENT PLANT

| Drawing Title BUILDING WALL SECTIONS | | |
|---|---------------------------|--------------------|
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. B-6 |
| Scale AS NOTED | Project No. 300031281 | |

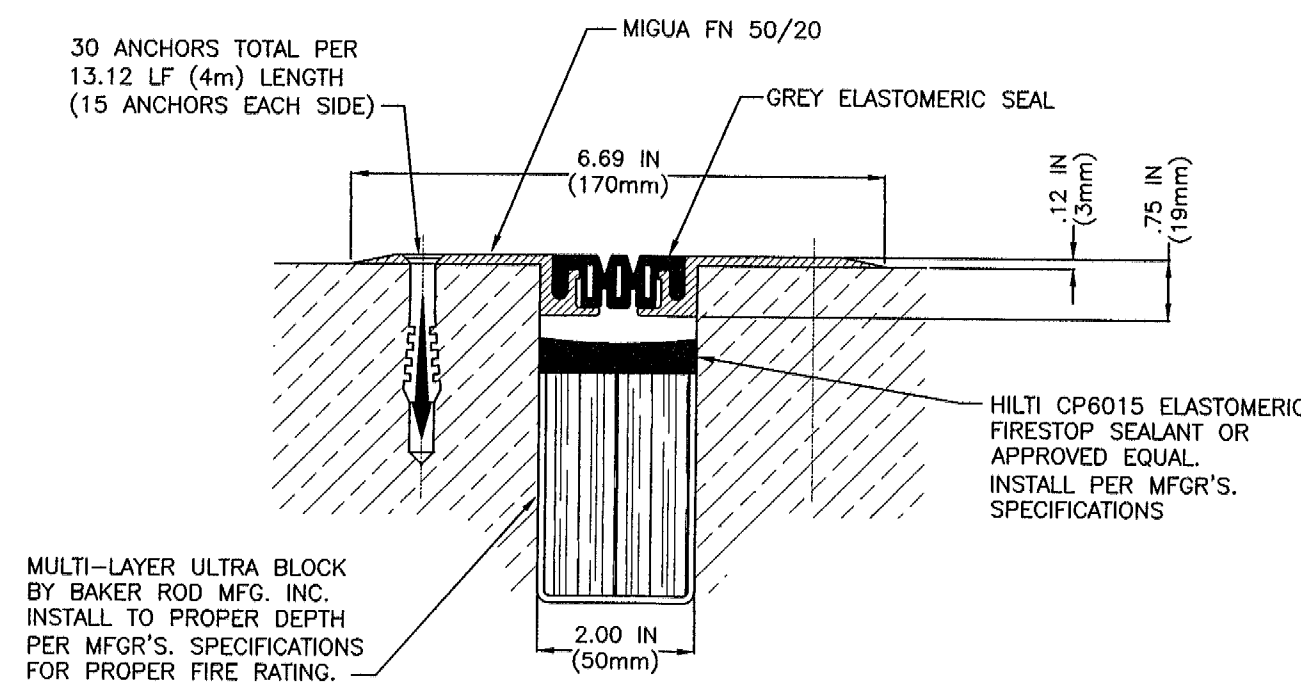
| DOOR SCHEDULE | | | | | | | |
|--|------------------|---|--------------------------------------|--|---|---|---------------------------------|
| TYPE | DOOR SIZE | MATERIAL | FINISH | RATING (HOURS) | REMARKS ***ALL DOOR SWINGS AS SHOWN ON FLOOR PLAN B-2*** | FRAME | HARDWARE CODES |
| D100 | 914 x 2130 x 45 | METAL, INSULATED | PAINTED | — | STEEL STIFFENED | INSULATED PRESSED STEEL | A, B, C, D, F, G, J, K, L, M, P |
| D200 | 914 x 2130 x 45 | METAL, INSULATED | PAINTED | 1.5 | STEEL STIFFENED, 1/4 LITE WIRED GLASS | INSULATED PRESSED STEEL | A, B, C, D, F, G, I, J, K, L, M |
| D300 | 1219 x 2130 x 45 | METAL | PAINTED | 45 MIN. | LEVER HANDLE LOCK SET | HOLLOW PRESSED STEEL | A, B, C, D, F, G, I, J |
| D400 | 914 x 2130 x 45 | METAL | PAINTED | — | 1/2 LITE WIRED GLASS | HOLLOW PRESSED STEEL | A, B, C, D, F, G, I, J |
| D500 | 914 x 2130 x 45 | METAL | PAINTED | 45 MIN. | LEVER HANDLE LOCK SET | HOLLOW PRESSED STEEL | A, B, C, E, J |
| D600 | 914 x 2130 x 45 | METAL, INSULATED | PAINTED | 1.5 | LEVER HANDLE LOCK SET | INSULATED PRESSED STEEL | A, B, C, E, I, J |
| D700 | 1067 x 2130 x 45 | METAL, INSULATED | PAINTED | 1.5 | STEEL STIFFENED | INSULATED PRESSED STEEL | A, B, C, D, F, G, J |
| D800 | 4200 x 3600 | INSULATED METAL | MANUFACTURERS APPLIED FINISH COATING | — | INSULATED OVERHEAD DOOR CHAIN HOIST REFER TO SPECIFICATIONS | HOLLOW PRESSED STEEL | K, M, REFER TO SPECIFICATIONS |
| D900 | 3600 x 3600 | INSULATED METAL | MANUFACTURERS APPLIED FINISH COATING | — | INSULATED OVERHEAD DOOR CHAIN HOIST REFER TO SPECIFICATIONS | HOLLOW PRESSED STEEL | K, M, REFER TO SPECIFICATIONS |
| D1000 | 3000 x 3600 | INSULATED METAL | MANUFACTURERS APPLIED FINISH COATING | — | INSULATED OVERHEAD DOOR CHAIN HOIST REFER TO SPECIFICATIONS | HOLLOW PRESSED STEEL | K, M, REFER TO SPECIFICATIONS |
| A. BUTT HINGES B. DOOR CLOSER C. SELF-LATCHING HARDWARE D. DEADBOLT E. PASSAGE SET | | F. PANIC SET G. PUSH/PULL H. BARRIER FREE HARDWARE I. KICK PLATE J. DOOR STOP | | K. WEATHER STRIPPING L. THRESHOLD M. SWEEP N. KEY ACCESS FROM EXIT O. WASHROOM SET (PRIVATE) | | P. WIND LIMITER (INTEGRAL WITH CLOSER) Q. UNIVERSAL BARRIER FREE SIGNAGE R. POWER DOOR OPERATOR | |

| WALL SCHEDULE | |
|---------------|---|
| W1 | EXTERIOR WALL (WEST) <ul style="list-style-type: none"> 26 ga. PRE-FINISHED METAL LINER (INTERIOR) 13mm PLYWOOD SHEATHING 6 MIL POLY VAPOUR BARRIER 38x184 WOOD STUDS AT 406mm o/c, C/W SOLID BLOCKING MID HEIGHT R28 FIBREGLASS BATT INSULATION 13mm CSP EXTERIOR GRADE SHEATHING TYVEK AIR BARRIER 26 ga. METAL SIDING TO MATCH EXISTING (EXTERIOR) |
| W1A | EXTERIOR WALL (EAST) <ul style="list-style-type: none"> 26 ga. PRE-FINISHED METAL LINER (INTERIOR) 13mm PLYWOOD SHEATHING 6 MIL POLY VAPOUR BARRIER 38x184 WOOD STUDS AT 406mm o/c, C/W SOLID BLOCKING MID HEIGHT R28 FIBREGLASS BATT INSULATION 13mm CSP EXTERIOR GRADE SHEATHING TYVEK AIR BARRIER |
| W1B | NEW FIRE RATED WALL (1.5 HOUR) CONSTRUCTION ON EXISTING BUILDING WALL. SEE NOTES ON DWG. B-6 FOR FURTHER INSTALLATION DETAILS <ul style="list-style-type: none"> ADD 26 ga. PRE-FINISHED METAL LINER (INTERIOR) TO MATCH EXISTING ADD TWO LAYERS OF 16mm TYPE 'X' DRYWALL EXISTING 13mm SPRUCE PLYWOOD EXISTING 6 MIL POLY VAPOUR BARRIER EXISTING 38x184 WOOD STUDS EXISTING R28 FIBREGLASS BATT INSULATION EXISTING 13mm SPRUCE PLYWOOD ADD TWO LAYERS OF 16mm DENSGLASS FIREGUARD SHEATHING |
| W2 | INTERIOR PARTITION WALL (1HR. FIRE RATING) <ul style="list-style-type: none"> 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) 16mm TYPE 'X' DRYWALL 38mm x 140mm WOOD STUDS @ 406mm o/c 16mm TYPE 'X' DRYWALL 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) |
| W3 | INTERIOR PARTITION WALL (1.5 HR. FIRE RATING) <ul style="list-style-type: none"> 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) 2 LAYERS OF 16mm TYPE 'X' DRYWALL 13mm PLYWOOD SHEATHING 38mm x 140mm WOOD STUDS @ 406mm o/c R20 FIBREGLASS BATT INSULATION 13mm PLYWOOD SHEATHING 2 LAYERS OF 16mm TYPE 'X' DRYWALL 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) |
| W4 | INTERIOR PARTITION WALL (1HR. FIRE RATING) EXISTING WALL TO BE UPGRADED <ul style="list-style-type: none"> 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) 16mm TYPE 'X' DRYWALL 38mm x 140mm WOOD STUDS @ 406mm o/c (EXISTING FRAMING) 16mm TYPE 'X' DRYWALL 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) |
| W5 | EXISTING INTERIOR PARTITION WALL (REINSTATE AS REQUIRED) <ul style="list-style-type: none"> 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) 16mm DRYWALL 38mm x 89mm WOOD STUDS @ 406mm o/c 16mm DRYWALL 26 ga. PRE-FINISHED LINER PANEL (COLOR: POLAR WHITE) |



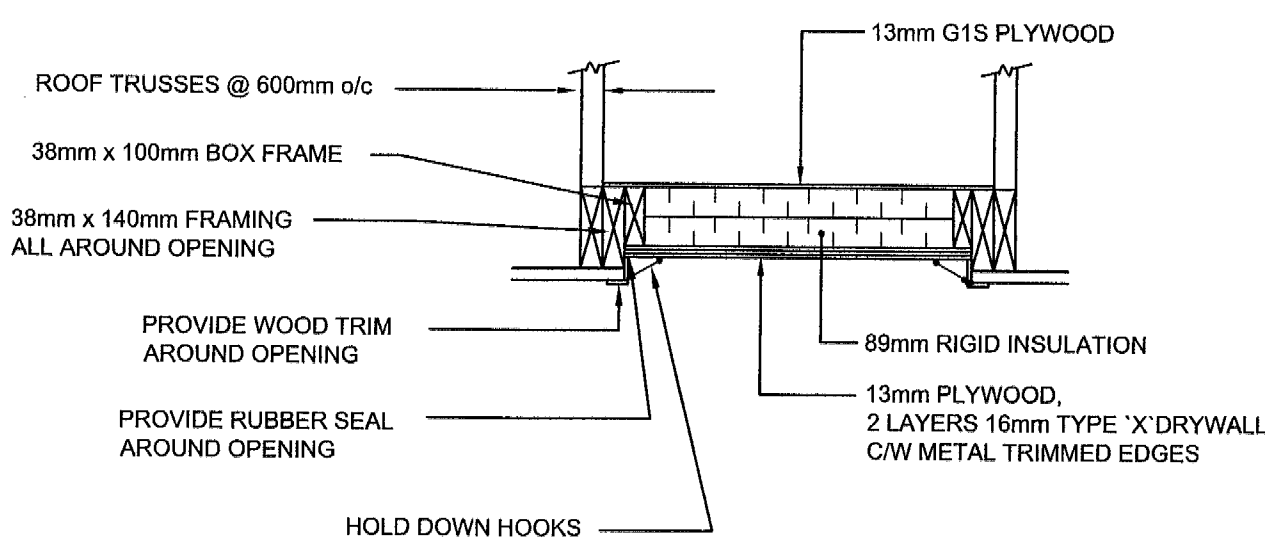
DETAIL — COMMON WALL AND DOOR OPENING DETAILS

SCALE AS NOTED



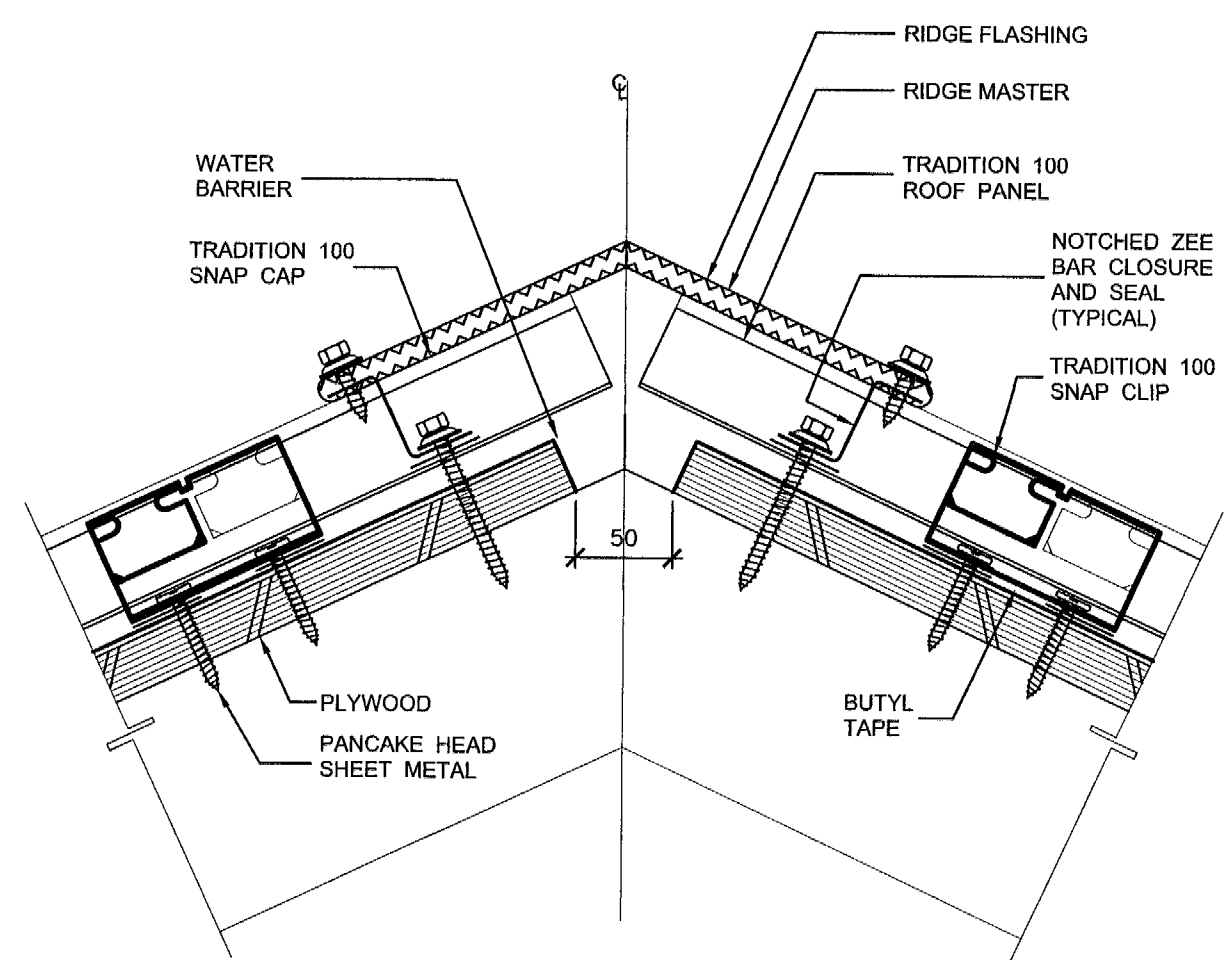
DETAIL — BUILDING GAP FILLER

NOT TO SCALE



DETAIL — ATTIC HATCH

NOT TO SCALE



NOTE:

SUPPLY AND INSTALL 3 GABLE ROOF VENT—PREFINISHED METAL GRILLS, 24 ga. C/W INSECT SCREEN

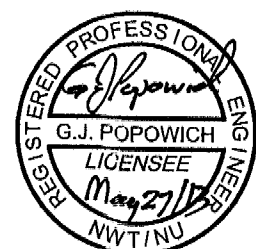
DETAIL — RIDGE VENT

NOT TO SCALE

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Signature: *G. J. Popowich*
Date: *Mar 27/13*
PERMIT NUMBER: P 535
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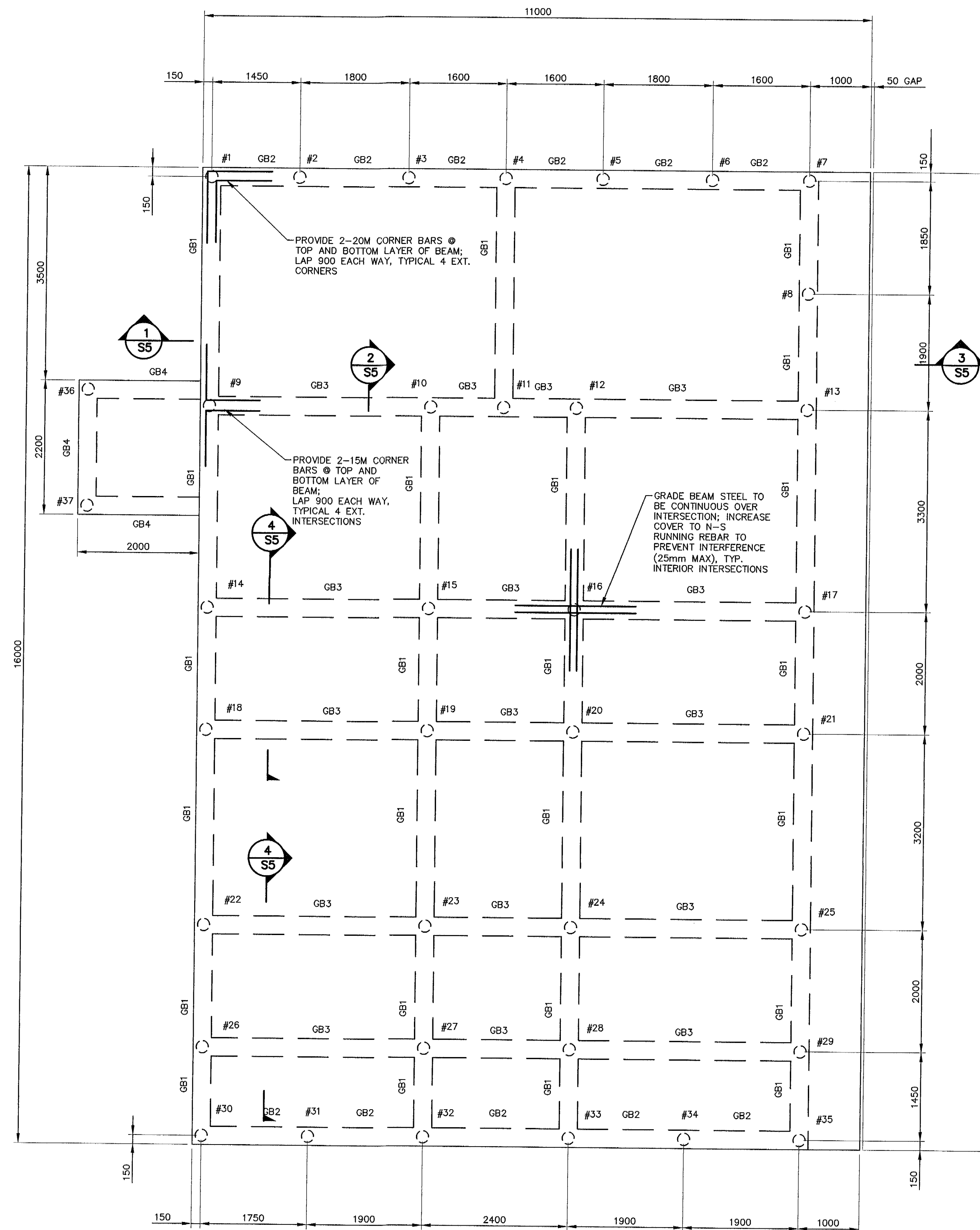
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Client
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COMMUNITY & GOVERNMENT
SERVICES

RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
DOOR SCHEDULE, WALL
SCHEDULE AND BUILDING
DETAILS

| | | |
|------------------------|---------------------------|--------------------|
| Drawn By J. JACALLA | Checked By G. POPOWICH | Drawing No. B-7 |
| Scale AS NOTED | Project No. 300031281 | |



FOUNDATION PLAN
SCALE 1:50

NOTE: DIMENSIONS SHOWN TO CENTRE LINE OF PILES

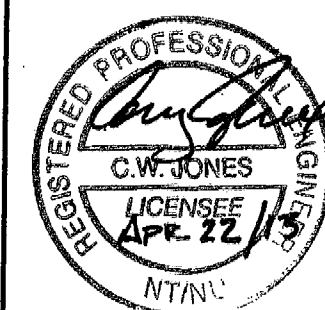
| GRADE BEAM SCHEDULE | | | | |
|---------------------|-------|-------|-------------|--------------------------------|
| MARK | WIDTH | DEPTH | REINFORCING | REMARKS |
| GB1 | 300 | 900 | 4-15M T&B | 10M STIRR. @ 300c/c + 2-15 HEF |
| GB2 | 300 | 900 | 4-20M T&B | 10M STIRR. @ 250c/c + 2-15 HEF |
| GB3 | 300 | 900 | 4-20M T&B | 10M STIRR. @ 250c/c + 2-15 HEF |
| GB4 | 300 | 900 | 3-15M T&B | 10M STIRR. @ 300c/c + 2-15 HEF |

| PILE SCHEDULE | | | | | |
|---------------|---------------|-----------|-----------|------------------------------|---------------|
| MARK | SIZE | LLuf (kN) | DLuf (kN) | MAX. FREESTANDING LENGTH (m) | REMARKS |
| #1 | HSS 141 x 6.4 | 41.3 | 56.2 | 6m | CLASS H, 350W |
| #2 | HSS 141 x 6.4 | 87.9 | 63.0 | 6m | CLASS H, 350W |
| #3 | HSS 141 x 6.4 | 87.9 | 63.0 | 6m | CLASS H, 350W |
| #4 | HSS 141 x 6.4 | 82.7 | 70.8 | 6m | CLASS H, 350W |
| #5 | HSS 141 x 6.4 | 87.9 | 63.0 | 6m | CLASS H, 350W |
| #6 | HSS 141 x 6.4 | 87.9 | 63.0 | 6m | CLASS H, 350W |
| #7 | HSS 141 x 6.4 | 93.0 | 87.5 | 6m | CLASS H, 350W |
| #8 | HSS 141 x 6.4 | 29.5 | 54.9 | 6m | CLASS H, 350W |
| #9 | HSS 141 x 6.4 | 64.4 | 125.0 | 6m | CLASS H, 350W |
| #10 | HSS 141 x 6.4 | 77.6 | 106.4 | 6m | CLASS H, 350W |
| #11 | HSS 141 x 6.4 | 32.3 | 53.2 | 6m | CLASS H, 350W |
| #12 | HSS 141 x 6.4 | 77.6 | 106.4 | 6m | CLASS H, 350W |
| #13 | HSS 141 x 6.4 | 53.0 | 102.9 | 6m | CLASS H, 350W |
| #14 | HSS 141 x 6.4 | 61.4 | 69.8 | 6m | CLASS H, 350W |
| #15 | HSS 141 x 6.4 | 96.7 | 71.5 | 6m | CLASS H, 350W |
| #16 | HSS 141 x 6.4 | 96.7 | 71.5 | 6m | CLASS H, 350W |
| #17 | HSS 141 x 6.4 | 92.6 | 82.3 | 6m | CLASS H, 350W |
| #18 | HSS 141 x 6.4 | 61.4 | 69.8 | 6m | CLASS H, 350W |
| #19 | HSS 141 x 6.4 | 96.7 | 71.5 | 6m | CLASS H, 350W |
| #20 | HSS 141 x 6.4 | 96.7 | 71.5 | 6m | CLASS H, 350W |
| #21 | HSS 141 x 6.4 | 92.6 | 82.3 | 6m | CLASS H, 350W |
| #22 | HSS 141 x 6.4 | 61.4 | 69.8 | 6m | CLASS H, 350W |
| #23 | HSS 141 x 6.4 | 96.7 | 71.5 | 6m | CLASS H, 350W |
| #24 | HSS 141 x 6.4 | 96.7 | 71.5 | 6m | CLASS H, 350W |
| #25 | HSS 141 x 6.4 | 92.6 | 82.3 | 6m | CLASS H, 350W |
| #26 | HSS 141 x 6.4 | 42.5 | 26.0 | 6m | CLASS H, 350W |
| #27 | HSS 141 x 6.4 | 67.0 | 55.0 | 6m | CLASS H, 350W |
| #28 | HSS 141 x 6.4 | 67.0 | 55.0 | 6m | CLASS H, 350W |
| #29 | HSS 141 x 6.4 | 64.1 | 60.3 | 6m | CLASS H, 350W |
| #30 | HSS 141 x 6.4 | 40.0 | 36.4 | 6m | CLASS H, 350W |
| #31 | HSS 141 x 6.4 | 24.4 | 34.4 | 6m | CLASS H, 350W |
| #32 | HSS 141 x 6.4 | 90.5 | 58.3 | 6m | CLASS H, 350W |
| #33 | HSS 141 x 6.4 | 90.5 | 58.3 | 6m | CLASS H, 350W |
| #34 | HSS 141 x 6.4 | 24.4 | 34.4 | 6m | CLASS H, 350W |
| #35 | HSS 141 x 6.4 | 82.1 | 63.5 | 6m | CLASS H, 350W |
| #36 | HSS 141 x 6.4 | 21.3 | 61.1 | 6m | CLASS H, 350W |
| #37 | HSS 141 x 6.4 | 21.3 | 61.1 | 6m | CLASS H, 350W |

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| Issue / Revision | Date |
|--|---------------|
| 1 ISSUED FOR 66% SUBMISSION | NOVEMBER 2012 |
| 2 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 3 ISSUED FOR TENDER | FEBRUARY 2013 |
| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

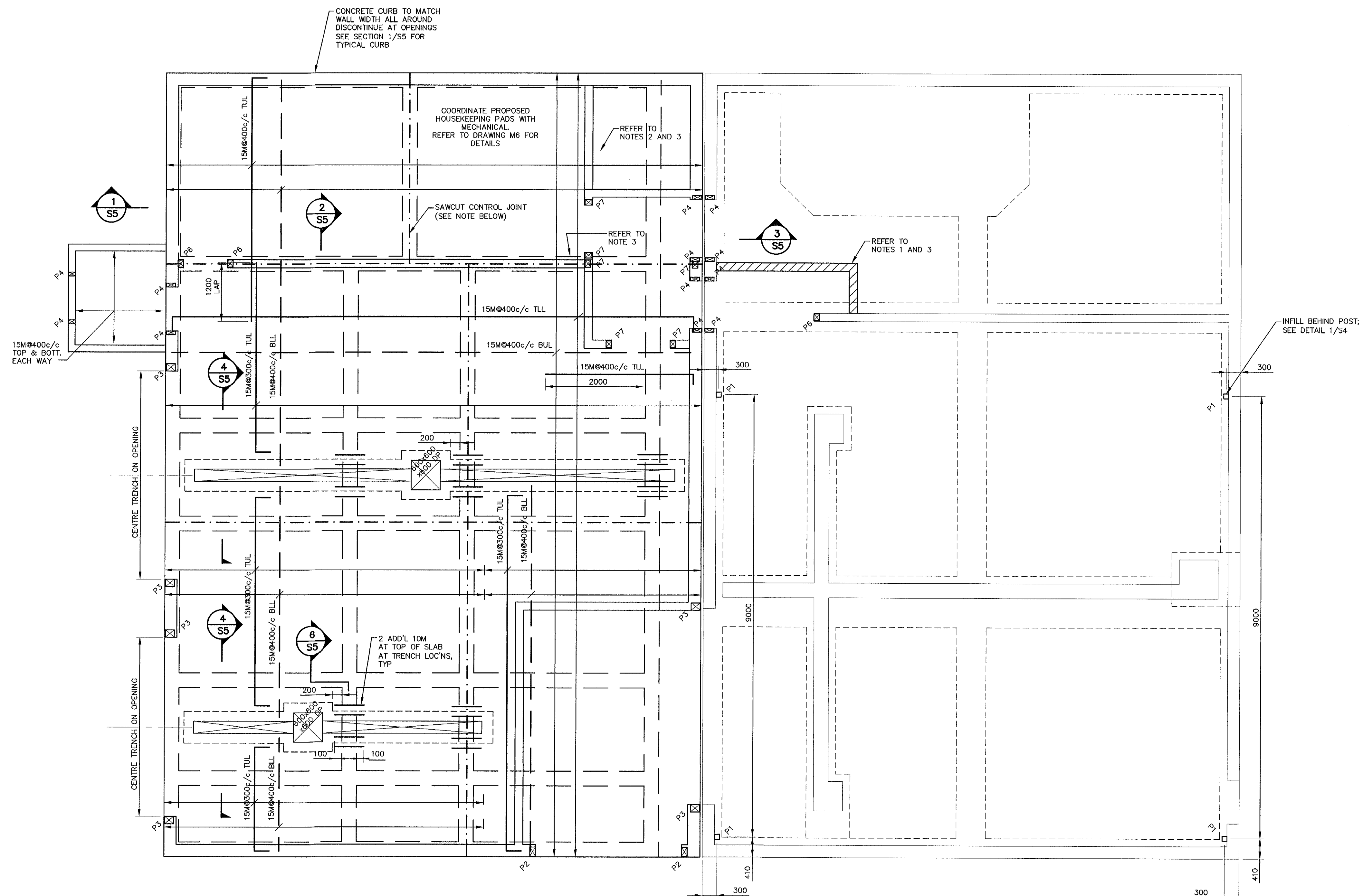
PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: May 27/13
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NNU



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Client:
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

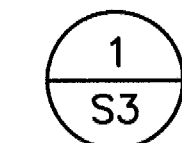
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|----------------------------------|--------------------------|-------------------|
| Drawing Title FOUNDATION PLAN | | |
| Drawn By W. WHITEDUCK | Checked By C. JONES | Drawing No. S1 |
| Scale 1:50 | Project No. 300031281 | |



S2



1. J1 - 406mm TJI 560 @ 400 c/c.
2. J2 - 406mm TJI 560 @ 400 c/c.
3. J3 - 406mm TJI 560 @ 400 c/c TO MATCH EXISTING.
4. L1 - 3 PLY 38 x 286.
5. L2 - 3 PLY 38 x 184.
6. L3 - 3 PLY 38 x 286.
7. L4 - 3 PLY 38 x 184.
8. L5 - 2 PLY 1-3/4" x 11 1/2" MICROLAM LVL.
9. L6 - 2 PLY 1-3/4" x 16" MICROLAM LVL.



SCALE 1:20

ADDITION OF NEW TRUSS COMPONENTS TO EXISTING BUILDING TRUSS SYSTEM NOTES:

THE CURRENT BUILDING HAS FIXTURES, PIPING AND OTHER MISCELLANEOUS ITEMS CURRENTLY INSTALLED ON THE CEILING STRUCTURE. WITH THE ALTERNATION TO THE ROOF LINE, THE EXISTING SYSTEM IS INSUFFICIENT FOR CURRENT DESIGN LOADS REQUIRED BY THE NATIONAL BUILDING CODE. THE FOLLOWING IS A SUGGESTED INSTALLATION PROCEDURE FOR ADDING NEW TRUSSES CAPABLE OF SUPPORTING ALL ROOF LOADS, AND MAINTAINING THE EXISTING CEILING STRUCTURE AND HANGING FIXTURES DURING CONSTRUCTION. CONTRACTOR TO SUBMIT PREFERRED CONSTRUCTION METHODOLOGY TO DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO UNDERTAKING WORK.

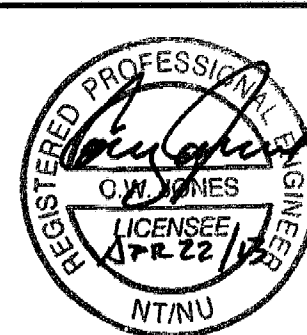
1. REMOVE ROOF SHEATHING AND FINISH OVER THE FIRST 2.4 M OF ROOF FROM THE NORTH EDGE, FULL WIDTH OF ROOF.
2. REMOVE INSULATION IN UNCOVERED AREA.
3. REMOVE ANY LATERAL BRACING FROM TRUSS COMPONENTS; PROVIDE TEMPORARY LATERAL BRACING TO TRUSSES AS NECESSARY TO PREVENT FALLING OUT OF PLANE.
4. PLACE A NEW TRUSS, DESIGNED TO SUPPORT ALL ROOF AND CEILING LOADS BASED ON 400 MM C/C SPACING BESIDE EACH EXISTING TRUSS. NEW TRUSSES MUST MATCH EXISTING TRUSS GEOMETRY (OUTSIDE DIMENSIONS AND SLOPES).
5. CONNECT TRUSSES TOGETHER WITH 2 - 90 MM LONG NAILS @ 300 MM C/C ALONG TRUSS BOTTOM CHORD ONLY; ON TOP CHORD, INSTALL 3 - 3 MM THICK BENT PLATES OVER TOP CHORDS. NAIL TO TRUSS ONLY. BENT PLAT TO MEASURE 100 x 80 x 100 x 150 LONG.
6. REPLACE BRACING ON EXISTING TRUSSES.
7. PLACE NECESSARY BRACING ON NEW TRUSSES AS PER PRE-ENGINEERED TRUSS DESIGN.
8. PLACE NEW ROOF SHEATHING IN ALTERNATING 1,200 AND 2,400 MM LENGTHS ON ROOF TO ENSURE STAGGERED PANEL JOINTS.
9. MOVE TO THE SOUTH AND REMOVE ANOTHER 2,400 MM WIDE STRIP OF SHEATHING AND REPEAT FROM STEP 1.
10. AT COMPLETION OF REMOVAL OF TRUSSES AND RE-SHEATHING, INSTALL INSULATION AS REQUIRED.



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PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature [Signature]
Date May 27/13
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU



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Client

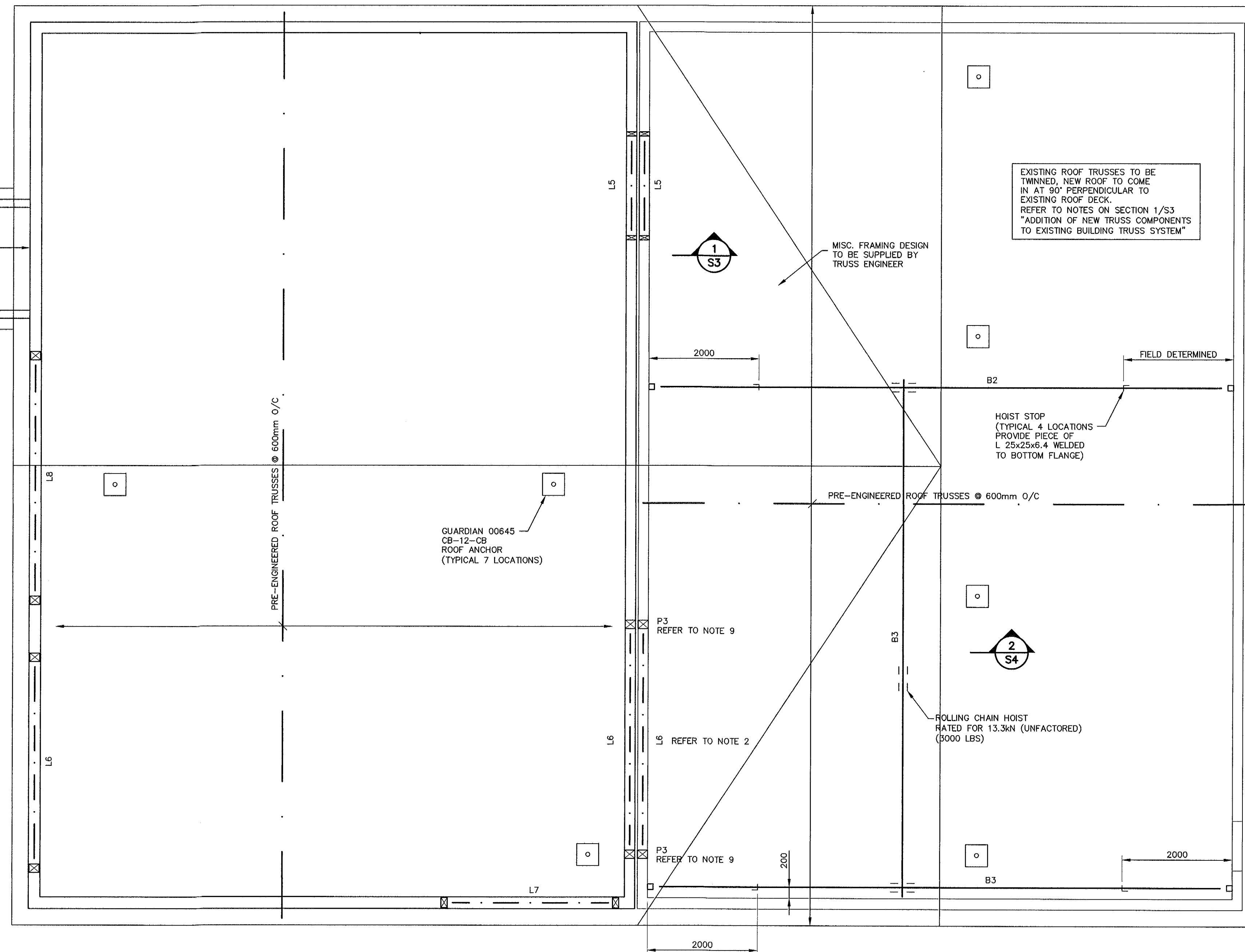
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SERVICES

RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
SECOND FLOOR FRAMING PLAN

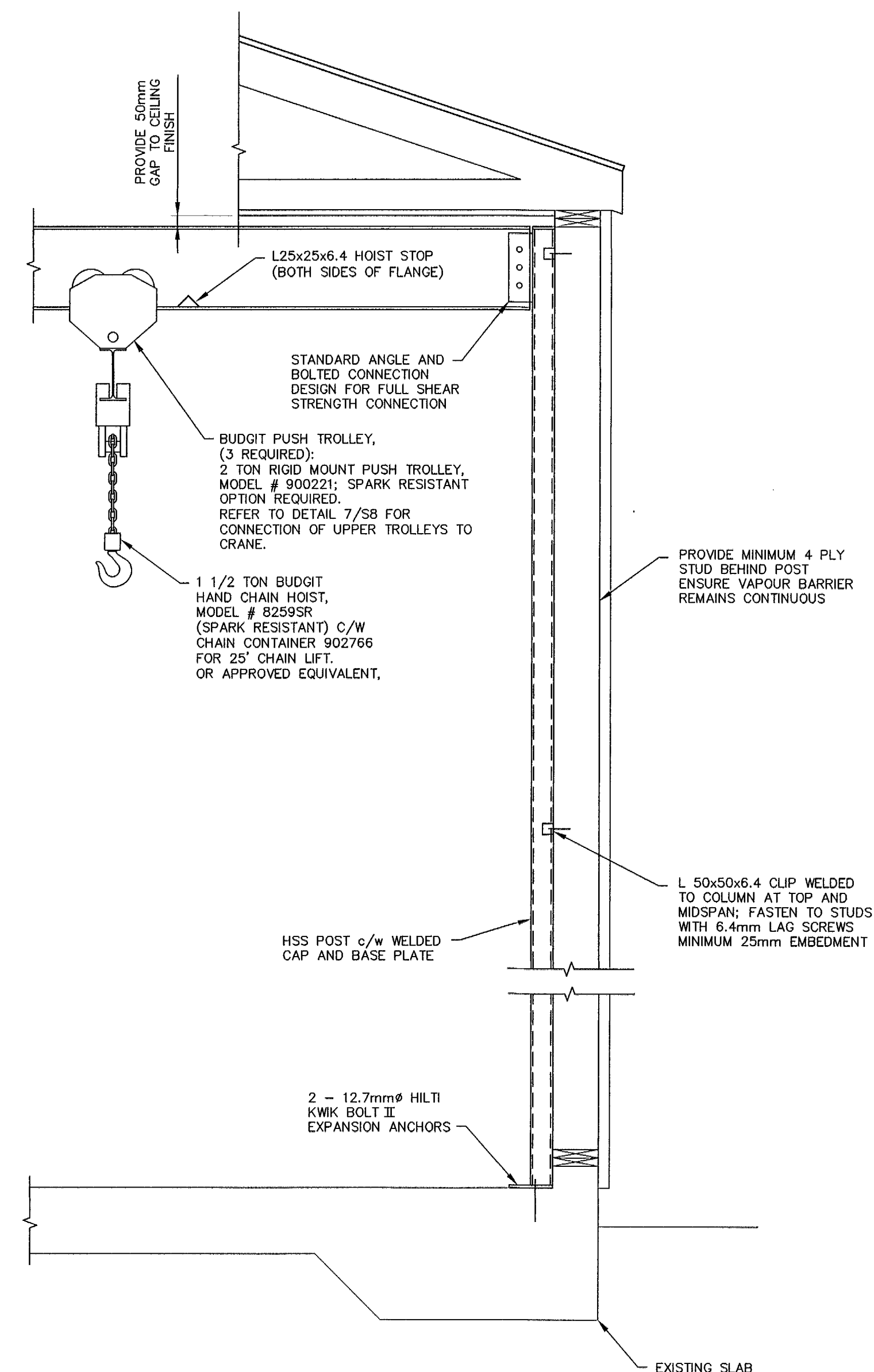
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| Drawn By W. WHITEDUCK | Checked By C. JONES | Drawing No. S3 |
| Scale AS NOTED | Project No. 300031281 | |

PRE-ENGINEERED
ROOF TRUSSES
@ 600mm O/C;
PROVIDE SIMPSON
TYPE H2.5A TIE
DOWN CLIPS
EACH END

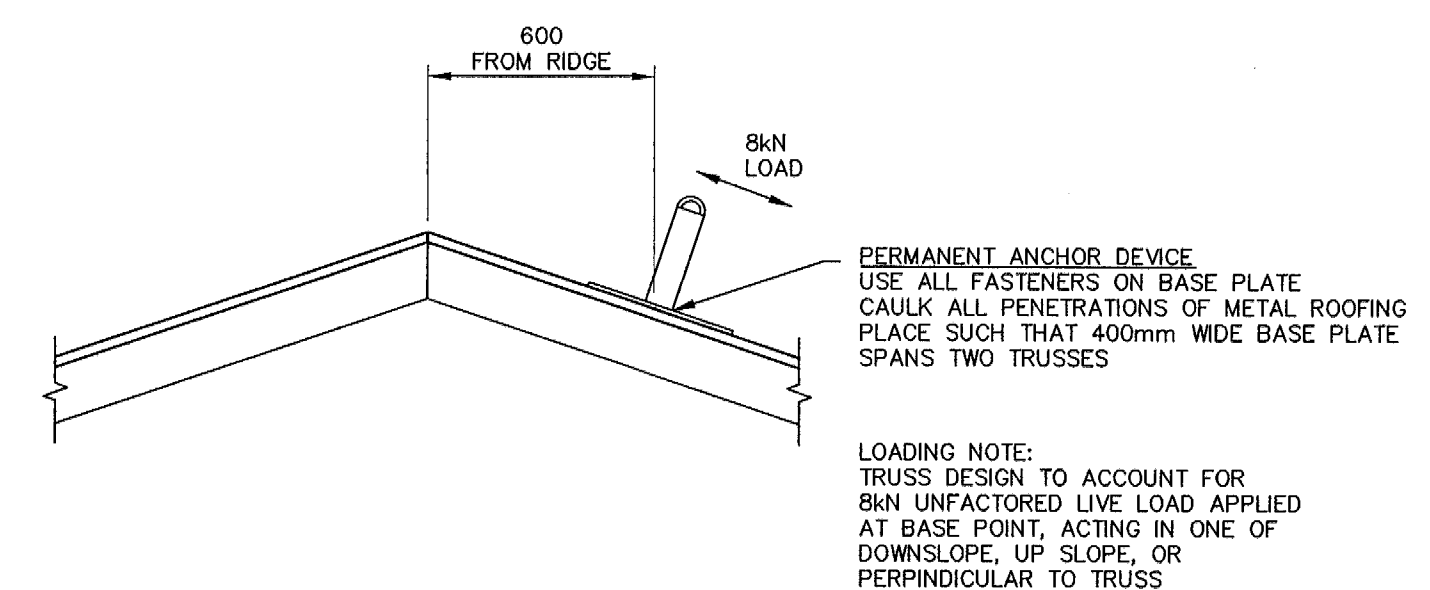


ROOF FRAMING PLAN
SCALE 1:50

- L5 - 3 PLY 1 3/4" x 9 3/4" 1.9E MICROLAM LVL.
- L6 - 3 PLY 1 3/4" x 14" 1.9E MICROLAM LVL. INSTALL TO SUIT FINAL ELEVATION OF HVAC UNIT HUNG FROM CEILING.
- L7 - 3 PLY 1 3/4" x 14" 1.9E MICROLAM LVL.
- L8 - 3 PLY 1 3/4" x 14" 1.9E MICROLAM LVL.
- B2 - FIXED S380x74 RAIL BEAM.
- B3 - MOVEABLE S250x52 RAIL c/w 1.5 TON RATED HOIST.
- P1 - 102x102x6.4 HSS c/w 200mmx150mmx12mm BASE PLATE.
- P2 - 3 PLY 38 x 184; 2 JACK STUDS, 1 KING STUD.
- P3 - 4 PLY 38 x 184; 2 JACK STUDS, 1 KING STUD. INSTALL TO SUIT FINAL ELEVATION OF HVAC UNIT HUNG FROM CEILING.



1
S4
SCALE 1:20



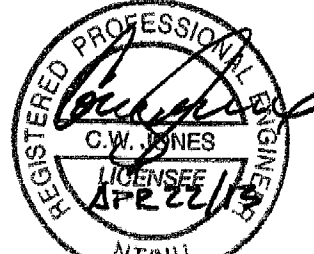
2
S4
SCALE 1:20

0 1 3m
1:50

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Client
GOVERNMENT OF NUNAVUT
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SEWAGE TREATMENT PLANT

| Roof Framing Plan | | Drawing No. |
|--------------------------|--------------------------|-------------|
| Drawn By W. WHITEDUCK | Checked By C. JONES | S4 |
| Scale 1:50 | Project No. 300031281 | |



| | | |
|--------------------------|--------------------------|----------------------|
| Drawn By W. WHITEDUCK | Checked By C. JONES | Drawing No. S |
| Scale AS NOTED | Project No. 300071081 | |

STRUCTURAL GENERAL REQUIREMENTS

1. GENERAL NOTES

- CHECK ALL DIMENSIONS ON STRUCTURAL DRAWINGS WITH ALL OTHER CONTRACT DRAWINGS. DIMENSIONS AND ELEVATIONS RELATING TO STRUCTURAL MEMBERS AS SHOWN ON THESE DRAWINGS GOVERN THE STRUCTURAL WORK. REPORT ANY INCONSISTENCIES BEFORE PROCEEDING WITH CONSTRUCTION. DO NOT SCALE THESE DRAWINGS. THE ATTACHED DRAWINGS AND SPECIFICATIONS RELATE ONLY TO THE SCOPE OF WORK AND CONTRACT FOR WHICH NUNA BURNSIDE HAS BEEN RETAINED. THESE DOCUMENTS MAY BE FOR COMPONENTS, OR LIMITED PORTIONS OF, THE TOTAL PROJECT BEING UNDERTAKEN BY THE OWNER AND CONTRACTOR. REVIEW THESE DOCUMENTS IN THE CONTEXT OF THE ENTIRE PROJECT AND ITEMS PRODUCED BY OTHER FIRMS OR DISCIPLINES.
- THE STRUCTURAL DESIGN IS BASED UPON THE INFORMATION PROVIDED IN THE FOLLOWING REPORTS: AMEC GEOTECHNICAL REPORT XY00756, DATED DECEMBER 2005, AMEC GEOTECHNICAL MEMO YX877, DATED SEPTEMBER 20, 2012.
- THESE DRAWINGS ARE THE PROPERTY OF NUNA BURNSIDE LTD., ARE PROTECTED BY COPYRIGHT AND ARE NOT TO BE REPRODUCED IN ANY MANNER WITHOUT WRITTEN APPROVAL.
- THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AS 'ISSUED FOR CONSTRUCTION' AND SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FROM NUNA BURNSIDE LTD.
- THESE DRAWINGS SHOW THE COMPLETED STRUCTURE FOR ITS INTENDED FINAL USE AND OCCUPANCY. AS STATED, THE CONTRACTOR IS RESPONSIBLE FOR SAFETY AND FOR DESIGN, INSTALLATION, AND TEMPORARY BRACING, SHORING AND CONSTRUCTION LOADS AND SUPPORTS DURING CONSTRUCTION. PROTECT WORK AND MATERIALS FROM HAZARDS AND ENVIRONMENTAL CONDITIONS THAT WOULD BE DETRIMENTAL TO THE FINISHED PRODUCT. CONDITIONS SUCH AS FLOODING, FROST, EXTREME WEATHER, UNEVEN SUPPORTS FOR STORAGE OF FRAGILE MATERIALS AND SO ON, THE CONTRACTOR IS RESPONSIBLE FOR ALL SITE CLEAN UP AND RECYCLING OF WASTE OR UNUSED MATERIALS.
- STANDARD OR TYPICAL DETAIL SHEETS ON THIS PROJECT SHOW STRUCTURAL INTENT RATHER THAN ACTUAL CONDITIONS FOR THIS PROJECT.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED. ELEVATIONS ARE IN METRES UNLESS NOTED.
- THE CONTRACTOR SHALL BE EXPERIENCED IN THE WORK REQUIRED. WORK SHALL BE COMPLETED IN ACCORDANCE WITH ACCEPTED STANDARD PRACTICE OF THE INDUSTRY.
- THE CONTRACTOR IS REQUIRED TO SCHEDULE ALL INDEPENDENT INSPECTION AND TESTING SERVICES. REPORTS ARE TO BE SUBMITTED TO THE OFFICE FOR REVIEW. THE CONTRACTOR IS TO KEEP THIS OFFICE UPDATED WITH RESPECT TO SITE PROGRESS ON A PERIODIC BASIS, TO ALLOW FOR PERIODIC FIELD REVIEWS BY THE ENGINEER. PROVIDE AT LEAST 5 BUSINESS DAYS MINIMUM NOTICE TO THE ENGINEER FOR ANY REQUIRED SITE VISITS.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL SITE CONDITIONS, UTILITY LOCATIONS, AND REPORT ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS IMPACTING THE DESIGN, IMMEDIATELY TO THE ENGINEER.
- SUBMIT ENGINEERED ERECTION DRAWINGS FOR ALL OFF SITE FABRICATED COMPONENTS AND ASSEMBLIES, FOR REVIEW AND COORDINATION OF DESIGN ELEMENTS ONLY BEFORE FABRICATION.
- CONNECTION DESIGN BETWEEN ALL SIMILAR MATERIALS, SUCH AS STEEL TO STEEL, OR WOOD TO WOOD ARE TO BE DESIGNED BY THE SUPPLIER'S ENGINEER UNLESS NOTED.
- ALL STRUCTURAL MEMBERS ARE LOADED CONCENTRICALLY AT MEMBER CENTERLINES UNLESS NOTED.

2. DESIGN CODES AND LOADING

- THE DESIGN HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2010 NATIONAL CONSTRUCTION AND TEMPORARY WORKS MUST ALSO BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS (LATEST EDITIONS), LOCAL REGULATIONS AND BYLAWS.
- DESIGN STANDARDS
 - CSA CAN/CSA-086-09 "ENGINEERING DESIGN IN WOOD"
 - CSA A371-04 "MASONRY CONSTRUCTION FOR BUILDINGS"
 - CSA S304, 1-04 "DESIGN OF MASONRY STRUCTURES"
 - CSA CAN/CSA-A23.1-09 "CONCRETE MATERIALS & METHODS OF CONCRETE CONSTRUCTION"
 - CSA CAN/CSA-A23.3-04 "DESIGN OF CONCRETE STRUCTURES"
 - CSA CAN/CSA-A23.4-09 "PRECAST CONCRETE - MATERIAL AND CONSTRUCTION"
 - CSA CAN/CSA-S136-01 "COLD FORMED STEEL STRUCTURAL MEMBERS"
 - CSA CAN/A-516-09 "LIMIT STATES DESIGN OF STEEL STRUCTURES"
 - CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION/2006

ALL LOADS SHOWN ON DRAWINGS ARE UNFACTORED SERVICE LOADS IN KN AND KPA UNLESS OTHERWISE NOTED. DESIGN LOADS: BASED ON 2010 N.B.C. AS NOTED BELOW OR SHOWN ON PLANS.

ALL DESIGN LOADS ARE NOT TO BE EXCEEDED DURING CONSTRUCTION.

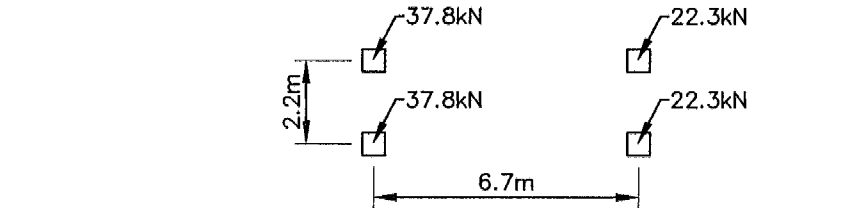
LOADS AND EFFECTS

- A) IMPORTANCE CATEGORY (DIV. B, TABLE 4.1.2.1.B) POST DISASTER (SEWAGE TREATMENT FACILITY)

| | |
|---|----------|
| B) DEAD LOADS: | 0.75 kPa |
| ALLOWANCE FOR MECHANICAL AND ELECTRICAL | 0.24 kPa |

| | |
|---|----------|
| MEZZANINE: | |
| SELF WEIGHT | 0.75 kPa |
| CONCRETE TOPPING 50 mm THICK AVERAGE | 1.14 kPa |
| MISC ELECTRICAL AND MECHANICAL ON UNDERSIDE | 0.25 kPa |
| TOTAL | 2.14 kPa |

- C) LIVE LOADS DUE TO USE AND OCCUPANCY (UNLESS CROSSED AND NOTED ON PLANS):
- | | |
|--|----------|
| GROUND FLOOR (EXCLUDING TRUCK AREA) | 4.8 kPa |
| EXIT STAIRS AND CORRIDORS | 4.8 kPa |
| MEZZANINE FLOOR | 4.8 kPa |
| TRUCK AREA: | |
| TABLE 4.5.3 (MINIMUM DISTRIBUTED LOAD) | 12.0 kPa |
| TABLE 4.5.10 (MINIMUM CONCENTRATED LOAD) | 64.0 kN |
- IN ADDITION CONSIDERATION HAS BEEN GIVEN FOR THE FOLLOWING VEHICLE:
- | | |
|--|--|
| VAC-CON 3.5 YARD V-230 COMBINATION MACHINE | |
| FRONT AXLE CAPACITY: 10,000 lb (44.5 kN) | |
| REAR AXLE CAPACITY: 17,000 lb (75.6 kN) | |



- C).LOADS DUE TO SNOW, ICE AND RAIN: (POST DISASTER)
- IMPORTANCE FACTOR (Is) (ULS) 1.25 (SLS) .90
- ROOF SPECIFIED SNOW LOAD:
- | | |
|----------------------------|----------|
| 1/50 GROUND SNOW LOAD (Ss) | 3.00 kPa |
| 1/50 GROUND RAIN LOAD (Sr) | .20 kPa |
- WIND EXPOSURE FACTOR (Cw) 1.0
- BASIC SNOW LOAD FACTOR (Cb) .8
- (CASE 1): 3.25 kPa
- (CASE 2) UNBALANCED LOADING, FIGURE G-1 NBCC COMMENTARY G): 3.95 kPa

IN ADDITION TO THE BASIC LOADS NOTED, DESIGN RELATED TO THE TRANSMISSION AND SUPPORT OF LOADS FROM THE ROOF SYSTEM MUST CONSIDER THE FOLLOWING:

TRUSS SYSTEMS: THE TRUSS SYSTEM FOR THE EXISTING BUILDING AND PROPOSED ADDITION MUST BE INDEPENDENT. ALLOW FOR FALL PROTECTION LOADS, AND MISC. FRAMING AS NECESSARY TO CREATE ROOF LINES.

- E.) HOIST LOADS:
- AS PROVIDED, THE HOIST SYSTEM IS EXPECTED TO EXPERIENCE ONLY ONE OF THE FOLLOWING LOADS @ ANY TIME (UNFACTORED)
- MONSTER AUGER: 1480# (6.6kN)
- GRINDER: 1250# (5.6kN)
- EFFLUENT PUMP MOTOR: 600# (2.7kN)

GENERAL NOTES CONT'D.

- F) LOADS DUE TO WIND: TABLE C-2, DIV. B, 2010 NBCC
- IMPORTANCE FACTOR (Iw) (ULS)1.25 (SLS) 0.75
- (q) 1/50 HOURLY WIND PRESSURE 0.60 kPa
- G) LOADS DUE TO EARTHQUAKES: TABLE C-2, DIV. B. NBCC 2010
- | | |
|------------|-------|
| So(0.2) = | 0.12 |
| So (0.5) = | 0.056 |
| So(1.0) = | 0.023 |
| So(2.0) = | 0.006 |
- PEAK GROUND ACCELERATION (PGA) 0.059
- SITE CLASS: B (ROCK)
- Fa = 0.80
- Fv = 0.60
- Ie = 1.0
- IeFaSa (0.2) =0.10

THE SUPERSTRUCTURE LATERAL STABILITY IS BASED UPON A WOOD FRAMED WITH WOOD BASE PANELING SHEAR WALL SYSTEM. LATERAL LOADS ARE TRANSFERRED TO THE CONCRETE FOUNDATION THROUGH SHEAR CAPACITY OF ANCHOR BOLTS, AND TRANSFERRED TO THE STEEL PILE SYSTEM THROUGH SHEAR ANCHORS. (DOWELS)

3. FOUNDATION SYSTEM (LIMIT STATES DESIGN) (NBC, DIV. B, 4.1.3., 4.2.)

THE FOUNDATIONS ARE DESIGNED AS ROCK SOCKETED PILES TO BE DRILLED INTO SOLID ROCK IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND MEMO NOTED IN THE GENERAL NOTES.

FACTORED BEARING RESISTANCE OF PILES MEETING THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER ARE DESIGNED TO ACHIEVE A BEARING RESISTANCE OF 17,500 kPa OVER THE BASE OF THE GROUTED PILE.

FACTORED UPLIFT RESISTANCE OF PILES MEETING THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER ARE DESIGNED TO ACHIEVE AN UPLIFT RESISTANCE OF 150kPa OVER THE AREA OF CONTACT WITH THE ROCK.

4. SHOP DRAWINGS

- SUBMIT WHITE PRINTS OF ERECTION PLANS AND SHOP DETAILS OF STRUCTURAL COMPONENTS, FOR REVIEW PRIOR TO FABRICATION. ELECTRONIC VERSIONS WILL BE ACCEPTED IN .PDF FILE FORMAT ONLY. REVIEW OF SHOP DRAWINGS IS A PRECAUTION AGAINST OVERSIGHT OR ERROR. IT IS NOT A DETAILED CHECK AND SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS. MAINTAIN A SET OF REVIEWED DRAWINGS ON SITE. DRAWINGS ARE TO BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE TERRITORY OF NUNAVUT, FOR THE FOLLOWING SUBMISSIONS: TRUSSES, STRUCTURAL LIGHT STEEL FRAMING, MISC. METALS AND TEMPORARY WORKS.

SUBMISSIONS ARE EXPECTED FOR THE FOLLOWING SPECIFICATION DIVISIONS WHICH DO NOT REQUIRE A SEAL BY A PROFESSIONAL ENGINEER: REINFORCING STEEL FOR CAST IN PLACE CONCRETE AND STRUCTURAL STEEL COMPONENTS .

5. INSPECTION AND TESTING

- THE ENGINEER AND THE OWNER WILL COORDINATE THE APPOINTMENT AND PAYMENT OF AN INDEPENDENT INSPECTION AND TESTING AGENCY, WHICH IS IN ADDITION TO PERIODIC GENERAL PROJECT REVIEW BY THE ENGINEER. THE COST OF THE INSPECTION SHALL BE PAID BY THE OWNER. WORK WILL BE INSPECTED TO ENSURE CONFORMANCE WITH THE CONTRACT DOCUMENTS. WORK OF THE FOLLOWING DISCIPLINES: CONCRETE, REINFORCING STEEL, STRUCTURAL STEEL, STEEL JOISTS, COLD FORMED STEEL INCLUDING STEEL DECK, LIGHT STEEL FRAMING JOISTS AND STUDS, PRECAST CONCRETE, AND MASONRY REQUIRE INDEPENDENT INSPECTION AND TESTING. WORK SHALL BE SCHEDULED WITH THE CONTRACTOR AND COPIES OF ALL REPORTS FORWARDED TO THE ENGINEER.

FOUNDATION AND STRUCTURAL SLAB

NOTES

- SEE GENERAL AND CONCRETE NOTES, RELATED DIVISIONS OF THE CONTRACT SPECIFICATIONS AND APPENDED GEOTECHNICAL INFORMATION IN SPECIFICATIONS.
- THE AREA WITHIN THE BUILDING SHALL BE STRIPPED TO A MINIMUM OF 600MM BELOW FINISHED FLOOR DEPTH. AREAS OF UNSUITABLE FILL OR FROZEN MATERIAL TO BE REMOVED AND REPLACED WITH SUITABLE GRANULAR MATERIAL COMPACTED TO 98% SPDD.
- AS NOTED ON THE DRAWINGS, ALL CONCRETE IN CONTACT WITH GROUND WILL RECEIVE 100MM OF RIGID INSULATION, FOUNDED ON A GRANULAR 'B' 1300MM WORKING BASE COMPACTED TO 98% SPDD AS A WORKING PAD.
- REMOVED MATERIAL FROM UNDER THE BUILDING AREA IS NOT TO BE USED WITHIN THE BUILDING AREA, FOR BACKFILLING TRENCHES, OR PITS OR RAISING GRADES OR FOR FILL AGAINST THE BUILDING, UNLESS SPECIFICALLY TESTED AND APPROVED FOR USE BY THE GEOTECHNICAL CONSULTANT.
- INSTALL HSS PILES AS PER GEOTECHNICAL RECOMMENDATIONS, PLUMB AND TRUE. HSS PILES TO BE EMBEDDED A MINIMUM 2M INTO FRESH ROCK WITH AN ANNULUS OF 50MM MORE THAN SPECIFIED PILE DIAMETER.
- ANTICIPATED TIMING FOR INSTALLATION IS BETWEEN JANUARY AND APRIL OF THE YEAR TO MAKE USE OF THE ACTIVE LAYER OF MATERIAL BEING FROZEN.
- INSTALLER TO PROVIDE CASING IN THE EVENT OF POTENTIAL SEEPAGE OR SLOUGHING WITHIN THE EXCAVATION. INSTALLER TO CONSIDER THE NEED FOR TREMIE TECHNIQUES FOR GROUT PLACEMENT IF WATER IS FOUND AT THE BASE OF THE EXCAVATION.
- PLACE NON-SHRINKABLE GROUT SUITABLE FOR THIS USE (SIKA GROUT ARCTIC 100) IN THE SOCKET PORTION OF THE BOREHOLE TO THE TOP OF THE FRESH ROCK ELEVATION IMMEDIATELY AFTER CLEANING THE HOLE.
- USE CENTRALIZERS DURING PLACEMENT OF THE PILE TO ENSURE CENTERING WITHIN THE BOREHOLE. FILL ANNULAR SPACE AROUND PILE WITH A SAND SLURRY AS PER THE SPECIFICATIONS, AND THE INTERIOR OF THE PILE WITH DRY DRILL CUTTINGS TO WITHIN 1M OF THE CUTOFF ELEVATION. VERTICAL AXIS OF PLACEMENT MUST BE WITHIN 20MM OF DESIGNED CENTRELINE LOCATION FOR EACH PILE.
- UPPER 2M OF THE PILES ARE TO BE COATED WITH ARCTIC HEAVY GREASE, THEN WRAPPED WITH TWO LAYERS POLYETHYLENE SHEETS ALSO COATED WITH ARCTIC HEAVY GREASE.
- PLACE 100MM RIGID INSULATION UNDER ALL PORTIONS OF THE FLOOR SYSTEM. GRADE BEAMS TO BE PLACED WITH MINIMUM 100MM GEOSPAN VOID FORM UNDER THE BEAMS TO PREVENT INFLUENCE FROM POTENTIAL SETTLEMENT OR EXPANSION OF SOILS UNDER THE BEAMS.
- FOUNDATION DIMENSION, IF SHOWN ON THE STRUCTURAL PLANS, ARE ACTUAL AND ARE TO THE FACE OF FOUNDATION WALLS OR TO THE GRID LINES UNLESS NOTED. REPORT ANY DIMENSIONAL DISCREPANCIES WITH THE ARCHITECTURAL PLANS PRIOR TO PROCEEDING.
- LOCATIONS OF LAP SPLICES IN GRADE BEAMS MUST BE AS PER PLAN TO ENSURE LOAD TRANSFERRANCE.
- STRUCTURAL SLAB ON GRADE TO BE REINFORCED AS PER PLANS; NOTE THAT THE DIRECTIONS AND PLACEMENT OF THE BARS AS MATS OF STEEL IS CRITICAL TO PROPER TRANSFERRANCE OF THE LOADS.

FOUNDATION AND SLAB-ON-GRADE CONT'D.

- CONCRETE BEAMS TO BE CURED MINIMUM 7 DAYS TO 70% OF CONCRETE STRENGTH PRIOR TO PLACEMENT OF THE SLAB CONCRETE.
- CONCRETE SLABS TO BE WET CURED FOR A MINIMUM OF 7 DAYS. PROVIDE FINISH AS PER CAST-IN-PLACE CONCRETE NOTES. REFER TO ARCHITECTURAL FOR SPECIAL FINISHES. ALSO REFER TO TYPICAL OR STANDARD DETAIL SHEETS. DO NOT EXCEED MINIMAL WORKMAN LOAD ON SLAB FOR MINIMUM OF 7 DAYS AFTER POUR. ON RECEIPT OF CYLINDER BREAKS SHOWING 70% OF STRENGTH, 50% OF DESIGN LOAD CAN BE APPLIED TO SLAB. ONCE 28 DAYS FROM POUR AND 100% STRENGTH IS ACHIEVED, FULL LOAD CAN BE APPLIED TO SLAB.
- PROTECT FOOTINGS, WALLS, SLABS-ON-GRADE AND ADJACENT SOIL AGAINST FREEZING AND FROST ACTION AT ALL TIMES DURING CONSTRUCTION.
- THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS FOR FOOTINGS OR TRENCHES OR ALONG STEPPED FOOTINGS SHALL NOT EXCEED A RISE OF 7 IN A RUN OF 10, MAXIMUM STEP APPROXIMATELY 600 mm. DO NOT EXCAVATE BELOW THE ELEVATION OF EXISTING FOOTINGS.
- DO NOT BACKFILL AGAINST WALLS RETAINING EARTH, UNTIL ELEMENTS PROVIDING LATERAL SUPPORT ARE COMPLETED. PLACE BACKFILL SIMULTANEOUSLY ON BOTH SIDES OF OTHER WALLS, OR GRADE BEAMS, BELOW GRADE, WITH A MAXIMUM DIFFERENTIAL OF 600 mm.
- LOWER INTERIOR WALL AND COLUMN FOOTINGS WHERE REQUIRED TO SUIT MECHANICAL STORM AND SANITARY LINES AND OTHER UNDERGROUND UTILITIES. THE MAXIMUM SLOPE FROM THE UNDERSIDE OF THE ADJACENT FOOTING TO THE BOTTOM OF THE UTILITY EXCAVATION IS 7 VERTICAL TO 10 HORIZONTAL.
- AN "SD" NOTATION ON THE DRAWING INDICATES THAT THE FOOTING IS TO BE STEPPED DOWN IN THE DIRECTION OF ANY ARROW. AN "SC" NOTATION INDICATES A SAW CUT OR TOOLED JOINT IN THE CONCRETE SLAB. A "CJA" REFERS TO A CONTROL JOINT IN THE MASONRY WALL ABOVE. ALL JOINTS ARE NOT SHOWN ON THE STRUCTURAL PLANS - COORDINATE REQUIREMENTS WITH THE ARCHITECTURAL DRAWINGS AND SPECS.
- FOR CONCRETE "HOUSEKEEPING" PADS OR LOCKER BASES, AND ANY OTHER NON-STRUCTURAL CONCRETE PADS, BOLLARDS OR CURBS, REFER TO THE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR COORDINATION.
- PRIOR TO THE START OF WORK ARRANGE FOR A PROJECT MEETING OF ALL PARTIES ASSOCIATED WITH THE PLACEMENT OF CONCRETE SLABS ON GRADE, PRESIDED BY THE ARCHITECT, WITH THE REPRESENTATIVES OF THE FOLLOWING: THE CONTRACTOR, THE OWNER, CONCRETE SUPPLIER, BACKFILLING AND CONSTRUCTION CONTRACTOR, STRUCTURAL ENGINEER, AND SOIL CONSULTANT. SPECIFICATIONS FOR THE WORK OF THIS SECTION SHALL BE REVIEWED TO ENSURE A COMPLETE UNDERSTANDING OF THE REQUIREMENTS AND RESPONSIBILITIES RELATIVE TO THE WORK, MATERIALS AND THEIR HANDLING AND STORAGE, WORK SEQUENCE, QUALITY CONTROL, STARTING, RESTRICTIONS ON AREAS OF POUR AND OTHER MATTERS AFFECTING THE CONSTRUCTION SO AS TO FACILITATE COMPLIANCE WITH THE INTENT OF THIS SECTION.

CAST IN PLACE CONCRETE

GENERAL

- CONFORM TO THE GENERAL REQUIREMENTS AND SPECIAL CONDITIONS CONTAINED IN DIVISION 1 OF THE CONTRACT DOCUMENTS.
- INCLUDE IN THE WORK OF THIS SECTION ALL CONCRETE INCORPORATED IN THE PROJECT. REFER ALSO TO PRECAST CONCRETE SPECIFICATION, PLAN NOTES, SLAB ON GRADE AND FOUNDATION NOTES, COLUMN, BEAM, WALL, AND SLAB SCHEDULES FOR ADDITIONAL CONCRETE REQUIREMENTS.
- CONFORM TO CSA - A23 SERIES OF STANDARDS, (ACI 318, AND ACI REPORT 350 WHERE APPLICABLE) AND THE RISC MANUAL OF STANDARD PRACTICE (LATEST EDITION) FOR DESIGN, MATERIALS, CONSTRUCTION, CURING, TESTING, TOLERANCES, AND FINISHING OF CONCRETE.
- INSTALL, OR SUPPLY AND INSTALL, ANCHORING, FASTENINGS AND BLOCKING AS REQUIRED, FOR WORK OF OTHER SECTIONS.
- MATERIALS SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION ARE TO ESTABLISH THE REQUIRED DEGREE OF QUALITY OR PERFORMANCE. SUBSTITUTION MAY BE PERMITTED UPON PROOF OF EQUIVALENCE. SUBMIT ALL PROPOSALS FOR SUBSTITUTION TO THE CONSULTANT IN WRITING IN ADVANCE OF SHOP DRAWINGS. EACH ITEM SHOULD BE CLEARLY IDENTIFIED. DO NOT PROCEED WITH PROPOSAL UNLESS IT IS ACCEPTED IN WRITING BY THE CONSULTANT.
- SUBMIT BAR LISTS AND PLACING DIAGRAMS TO THE CONSULTANT FOR REVIEW PRIOR TO FABRICATION OF REINFORCING STEEL. DRAW DIAGRAMS TO A SCALE OF NOT LESS THAN 1:50. SHOW ELEVATIONS OF ALL WALLS. ALL MARK NUMBERS ON THE BAR LISTS MUST BE SHOWN ON THE SCHEDULE PLACING DIAGRAMS. SEE THE GENERAL NOTES SECTION FOR SHOP DRAWING REQUIREMENTS.

PRODUCTS

1. MATERIALS:

- CEMENT GENERAL USE TYPE GU PORTLAND CEMENT TO CSA A3001.
- WATER, FINE AGGREGATES, COARSE AGGREGATES: TO CSA-A23.1, MAXIMUM COARSE AGGREGATE, 20 mm DIAMETER UNLESS NOTED FOR FORMED CONCRETE. MAXIMUM COARSE AGGREGATE, 40 mm DIAMETER FOR LARGE AUGURED PIERS OR MASS CONCRETE.
- AIR-ENTRAINING ADMIXTURE: TO ASTM C260.
- CHEMICAL ADMIXTURES: TO ASTM C494 OR ASTM C1017.
- CURING-SEALING COMPOUND: WHEN WATER CURING IS NOT PRACTICAL AS APPROVED BY THE ENGINEER, USE A CLEAR LIQUID PRODUCT TO ASTM C-309, TYPE 1. USE SEALTIGHT VOCOMP20 BY W.R. MEADOWS OF CANADA LIMITED.
- RIGID PVC TYPE WATERSTOP: SPECIFICATION GRADE, STYLE 951 OR 955 BY GREENSTREAK.
- HYDROPHILIC TYPE WATERSTOP: HYDROTITE CJK - BY MME MULTURETHANES.
- REINFORCING STEEL: NEW, DEFORMED, BILLET STEEL BARS TO CSA STANDARD G30.18, GRADE 400R. WHERE WELDING OF BARS IS REQUIRED USE GRADE 400W.
- WELDED WIRE FABRIC: NEW MATERIAL SUPPLIED IN FLAT SHEETS, NOT ROLLS, TO CSA G30.5. SIZE AS INDICATED ON PLANS.
- PLYWOOD FOR FORMWORK: COFI EXTERIOR GRADE, TO CSA STANDARD 0121. FOR EXPOSED CONCRETE USE NEW PLYWOOD.
- SAW-CUT JOINT FILLER: FOR AREAS SUBJECT TO HIGH WHEEL LOADS USE SEMI RIGID EPOXY, POURABLE CONSISTENCY, SUCH AS REZIMELD FLEX BY W.R. MEADOWS. FOR OTHER LOCATIONS USE SIKAFLEX 1C SL POLYURETHANE SEALANT.
- PREMOULDED JOINT FILLER: CERAMAR FLEXIBLE FOAM BY W.R. MEADOWS.
- NON-METALLIC FLOOR SURFACE HARDENER: USE A DRY SHAKE PRODUCT APPLIED IN TWO PASSES SUCH AS: TRAPROCK BY SIKA CANADA INC. TOTAL APPLICATION RATE OF 5-6 kg/ sq. m.
- LIQUID DENSIFYING SEALER USE LIQUID - HARD BY W.R. MEADOWS OF CANADA.
- ASPHALT IMPREGNATED ISOLATION JOINT MATERIAL MEETING ASTM D 994, FED. SPEC. HH-F-341 F, Type II, AASHTO M 33, AND FAA SPEC. ITEM P-610-2.7, BY W.R. MEADOWS OR EQUAL.
- VOID FORMS: GEOSPAN COMPRESSIBLE FILL 50 kPa MAX COMPRESSIVE STRENGTH POLYSTYRENE FOAM BY PLASTI-FAB.
- RIGID FOUNDATION INSULATION: CLOSED CELL POLYSTYRENE FOAM, STYROFOAM SM, DOW CHEMICAL COMPANY, MINIMUM 30psi COMPRESSIVE STRENGTH.

- SUPPLY CONCRETE AS PER CSA A23.1-09
- ALL CONCRETE MIXES CLEARLY IDENTIFY AND CONFIRM THE UNDERSTANDING OF THE CONCRETE REQUIREMENTS IN WRITING PRIOR TO PRODUCTION OF ALL MIXES. SUCH A SUBMISSION SHALL INCLUDE, AS A MINIMUM, THE LOCATION OF EACH MIX DESIGN TO BE USED IN THE STRUCTURE, THE CEMENT TYPE, ALL SUPPLEMENTARY MATERIALS, CLASS OF EXPOSURE, COMPRESSIVE STRENGTHS, AGGREGATE SIZE, AND CONCRETE DENSITY.

USE READY MIXED CONCRETE TO GIVE MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 25 MPa, (EXCEPT MINIMUMS AS NOTED BELOW). USE A WATER-REDUCING CHEMICAL ADMIXTURE FOR ALL CONCRETE. USE AN AIR ENTRAINING ADMIXTURE TO GIVE TOTAL AIR CONTENT CONFORMING TO TABLE 1 AND 2 AND 4 OF A23.1.09 TO MATCH REQUIRED CONCRETE CLASSIFICATIONS. WATER-CEMENT RATIO SHALL CONFORM TO TABLE 2 OF A23.1.09 UNLESS NOTED OTHERWISE. COORDINATE WITH THE GENERAL CONTRACTOR (AND STEEL FIBRE SUPPLIER AS APPLICABLE) WITH RESPECT TO WORKABILITY ISSUES, AND CONFIRM THE CRITERIA IN THE SUBMISSION (SLUMP, PUMP MIX, DESIGN CONCRETE TEMPERATURE, ETC.).

| EXPOSURE CLASS | USE | STRENGTH | W/C RATIO | AIR | MAX AGGREGATE SIZE (mm) | CEMENT CONTENT | (kg/m ³) SLUMP |
|----------------|--------------------------------|------------------|-----------|----------|-------------------------|----------------|----------------------------|
| - | LEAN MIX OR "UNSHRINKABLE FILL | = 0.4 TO 0.7 MPa | AS REQ'D | - | 19 | AS REQ'D | AS REQ'D |
| N | SKIM COATS | = 15 MPa | 0.7 | - | 19 | 255 | 80± 25mm |
| F-1 | GRADE BEAMS | = 25 MPa | 0.52 | 5% to 8% | 19 | 340 | 80± 25mm |
| N | STRUCTURAL SLABS | = 25 MPa | 0.52 | 5% to 8% | 19 | 340 | 80± 25mm |
| F-1 | SLABS-ON-GRADE - EXTERIOR | = 32 MPa | 0.40 | 5% to 8% | 19 | 355 | 80± 25mm |

CAST IN PLACE CONCRETE CONT'D.

EXECUTION

- NOTIFY THE ENGINEER 5 WORKING DAYS IN ADVANCE OF PLACING CONCRETE TO PERMIT VIEWING OF REINFORCEMENT AND PLACING CONCRETE. ALSO COORDINATE SCHEDULES WITH THE INDEPENDENT INSPECTION AND TESTING COMPANY. DO NOT CLOSE FORMS UNTIL THE REINFORCEMENT HAS BEEN REVIEWED.
- USE VIBRATORS FOR CONSOLIDATION OF CONCRETE. DO NOT PLACE CONCRETE FOR EXPOSED SLABS IN THE RAIN.
- USE PLASTIC OR CONCRETE BAR SUPPORTS IN EXPOSED LOCATIONS AND PARKING AREAS. USE CONCRETE BAR SUPPORTS FOR STEEL ABOVE SOFT VOID FORM FILLER MATERIAL. IN OTHER LOCATIONS PROVIDE STEEL CHAIRS OR CONCRETE SPACERS TO MAINTAIN SPECIFIED COVER TO REINFORCING STEEL, UNLESS OTHERWISE NOTED. INTERIOR AREAS 25 mm COVER, EXTERIOR AREAS 40 mm COVER, UNFORMED SURFACES EXPOSED TO SOIL, PROVIDE 75 mm COVER.
- EXPOSED CONCRETE SHALL BE FREE FROM HONEYCOMBING, VOIDS, LOSS OF FINES, VISIBLE FLOW LINES AND COLD JOINTS, CHIPS AND SPALLS. EXPOSED CONCRETE SHALL BE RUBBED SMOOTH USING WATER AND CARBORUNDUM BRICK. PATCH DEFECTS AND THE HOLES, REMOVE FINIS. ALSO REFER TO ARCHITECTURAL SPECIFICATIONS.
- PLACE 19 mm MINIMUM BEVELS OR CHAMFERS AT ALL EXPOSED CORNERS.
- MAXIMUM DISTANCE BETWEEN CONSTRUCTION JOINTS ARE:
 - WALLS AND FRAMED SLABS: 9m, OR 18m ALTERNATING WITH CONTROL JOINTS AT SAME SPACING.
 - SLABS-ON-GRADE: 6m, OR 18m WITH 5 mm WIDE X 1/4 OF SLAB DEPTH (SAW-CUT JOINTS) (TOOL JOINTS) AT 6m CENTRES. FOR SLABS LESS THAN OR EQUAL TO 125 mm THICK REDUCE CONTROL JOINT SPACING TO 4.5m ON CENTRE. ALSO SEE PLANS.
- LEAVE CHASES AND POCKETS IN WALLS FOR SEATING OF SLABS AND BEAMS.
- REINFORCE ALL SIDES OF OPENINGS IN CONCRETE WALLS. LENGTH OF BARS EQUAL TO OPENING DIMENSION PLUS 600 mm EACH SIDE. USE 2 - 15M FOR WALL THICKNESS UP TO 200 mm. 2 - 20M FOR WALLS OVER 200 UNLESS NOTED. REFER ALSO TO THE STANDARD OR TYPICAL DETAIL SHEETS.
- UNLESS OTHERWISE SPECIFIED ON THE PLANS, PROVIDE TEMPERATURE REINFORCING FOR FRAMED ONE-WAY SLABS IN ACCORDANCE WITH THE TYPICAL OR STANDARD DETAIL SHEETS.
- LAP ALL REINFORCING WITH CLASS 'B' SPLICES U/N. ALL STEEL MUST BE ADEQUATELY TIED AND ACCURATELY PLACED PRIOR TO THE COMMENCEMENT OF ANY CONCRETE POUR.
- PROVIDE CONTINUOUS GALVANIZED VERTICAL DOVETAIL ANCHOR SLOTS AT 600 IN ALL CONCRETE SURFACES WITH BRICK OR STONE VENEER FINISHES AND AT ABUTTING MASONRY WALLS.
- PROVIDE WATERSTOPS IN ALL CONSTRUCTION JOINTS BELOW GRADE (EXCEPT WHERE BACKFILLED BOTH SIDES) UNLESS NOTED OTHERWISE.
- COORDINATE HOUSE KEEPING PADS, SUMP PITS, LIGHT POLE FOUNDATIONS AND CONDUIT ENCASEMENT WITH THE MECHANICAL DRAWINGS. COORDINATE SLEEVES THROUGH OR UNDER WALLS WITH THE DRAWINGS WHICH SHOW THE APPLICABLE UTILITIES AND PIPING.
- ELECTRICAL CONDUIT AND PIPING TO BE CAST IN CONCRETE STRUCTURES ARE TO BE COORDINATED WITH THIS OFFICE. NO HORIZONTAL RUNNING CONDUIT IS ALLOWED WITHIN THE WALLS, UNLESS SPECIFIC LOCATIONS ARE APPROVED BY THE ENGINEER.
- SURFACE FINISHING - PROVIDE FINAL FINISH IN ACCORDANCE WITH PROPOSED USE.

REFER TO ARCHITECTURAL ROOM SCHEDULE:

- | | |
|---|---|
| SKIM COATS, PITS: | SCREEDED AND BULL FLOATED |
| BASE SLAB FOR TERRAZZO, TILE OR BONDED TOPPING: | SCREEDED, BULL FLOATED AND SCORED WITH WIRE BRUSH |
| FLOORS WHICH RECEIVE RESILIENT FLOOR OR CARPET, FUTURE FLOORS: | POWERED STEEL TROWEL |
| INTERIOR EXPOSED SLABS: | POWERED STEEL TROWEL WITH NON-SLIP SWIRLS |
| EXTERIOR EXPOSED SLABS: | WOOD FLOAT FINISH WITH BROOMING |
| STAIRS: PROVIDE A SLIP RESISTANT STEEL TROWEL FINISH TO EXPOSED CONCRETE STAIR TREADS AND LANDINGS. (INSTALL CARBORUNDUM STRIPS AT EDGES OF TREADS AND LANDINGS IF SHOWN ON THE DRAWINGS). | |
| 16. CONSTRUCT MEMBERS ACCURATELY AND IN ACCORDANCE WITH THE TOLERANCE LIMITS AS SPECIFIED IN CSA A23.1, AND OTHER THEREIN REFERRED TO. SECTIONS FOR TOLERANCES, TOLERANCES, REINFORCEMENT AND HARDWARE PLACEMENT. REFER TO ARCHITECTURAL PLANS FOR FINISHED DIMENSIONS. | |
| 17. COMPLETE FORMWORK IN ACCORDANCE WITH CSA A23.1. SUBMIT COPIES OF ENGINEERED FALSEWORK SHOP DRAWINGS AT LEAST 2 WEEKS IN ADVANCE OF SCHEDULED POUR DATES. ALL FORMWORK GEOMETRY AND ALIGNMENT IS TO BE CHECKED PRIOR TO THE COMMENCEMENT OF THE PLACEMENT OF REINFORCING STEEL. FINAL ADJUSTMENTS SHALL BE MADE AFTER ALL STEEL AND HARDWARE PLACEMENT IS COMPLETE. | |
| 18. COORDINATE PLACEMENT OF HARDWARE, PIPES AND CONDUIT WITH OTHER TRADES AND THE REINFORCING STEEL PLACEMENT, AND SET IN ACCORDANCE WITH APPROVED PLACING DRAWINGS. CONTACT THE CONSULTANT PRIOR TO THE SCHEDULED POUR DATE IF THERE ARE CONCERNS OR UNCERTAINTIES WITH RESPECT TO THE SIZES, TYPE OR LOCATION OF PLANNED CAST IN MATERIALS. | |
| 19. PROTECT FRESH CONCRETE FROM PREMATURE DRYING, SUNSHINE, EXCESSIVELY HOT OR COLD TEMPERATURES. MAINTAIN FRESH CONCRETE AT A RELATIVELY CONSTANT TEMPERATURE FOR AS LONG AS IS REQUIRED FOR HYDRATION OF THE CEMENT AND CURING OF THE CONCRETE. REFER TO CSA A23.1 FOR HOT AND COLD WEATHER CONCRETING PRACTICES. PROVIDE AN OUTLINE OF PROPOSED PROCEDURES AND EQUIPMENT TO THE CONSULTANT PRIOR TO FORMING CONCRETE. | |
| 20. PROTECT FRESH CONCRETE FROM COLD TEMPERATURES BELOW 5 DEGREES CELSIUS. PROVIDE TEMPORARY HEAT FOR A MINIMUM OF 3 DAYS TO MAINTAIN A TEMPERATURE OF GREATER THAN 15 DEGREES CELSIUS. | |
| 21. WET CURE SLABS FOR 7 DAYS WHEN TEMPERATURES ARE ABOVE FREEZING, OTHERWISE APPLY CURING SEALING COMPOUND. PROVIDE FLOOR SURFACE HARDENER WHERE SPECIFIED AS PER MANUFACTURER'S INSTRUCTIONS. | |
| 22. FOR STRUCTURAL SLABS AND BEAMS, MAINTAIN SHORING/RESHORING IN PLACE UNTIL THE CONCRETE HAS REACHED 75% OF THE SPECIFIED DESIGN STRENGTH, 7 DAYS MINIMUM UNLESS NOTED. | |
| 23. ALL FOUNDATION INSULATION TO BE PLACED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. FOR TOTAL THICKNESS GREATER THAN 50 mm, USE SHEETS WITH A MAXIMUM THICKNESS OF 50 mm AND INSTALL SUCH THAT ALL JOINTS ARE STAGGERED BY AT LEAST 300 mm. PLACE ON SMOOTH AND EVEN SURFACES AND PROTECT AGAINST DAMAGE. SEE ARCHITECTURAL SPECIFICATIONS FOR FINISHES AND COORDINATION WITH OTHER NON STRUCTURAL ELEMENTS. | |
| 24. INDEPENDENT INSPECTION AND TESTING: THE GENERAL CONTRACTOR AND OWNER WILL COORDINATE THE APPOINTMENT AND COST OF AN INDEPENDENT INSPECTION AND TESTING AGENCY TO UNDERTAKE CONCRETE TESTS. THE COST OF TESTING SHALL BE AS AGREED BY THE GENERAL CONTRACTOR AND OWNER. LABORATORY CURING AND TESTING OF SAMPLES, AND FREQUENCY OF TESTING, WILL BE CARRIED OUT IN ACCORDANCE WITH CSA STANDARDS A23.1AND A23.2 AND TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR IS TO COORDINATE SCHEDULES WITH THE TESTING COMPANY. | |

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|--|--|--|-------------------------------|------------------|------|--|--|--|---|--|--|--|--|-------------------|
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|--|--|--|-------------------------------|------------------|------|--|--|--|---|--|--|--|--|-------------------|

12. WHEN EVER ITEMS ARE TO BE HUNG FROM OWSJ OR TRUSSES, SECUREMENT SHALL BE FROM THE TOP CHORDS AT PANEL POINTS UNLESS OTHERWISE PERMITTED. ENSURE THAT HANGING LOADS HAVE BEEN ACCOUNTED FOR IN THE DESIGN ALLOWANCE. IF IN DOUBT, CONTACT THE ENGINEER FOR APPROVAL.

1. REFER TO DRAWINGS, FOUNDATION AND STRUCTURAL SLAB NOTES AND APPENDICES FOR GEOTECHNICAL REPORT FOR RECOMMENDATIONS ON PILE INSTALLATION.
2. MATERIAL FOR PILES TO BE NEW HSS SHAPES CONFORMING TO CAN/CSA - G400.21 GRADE 350 W (50ksi) MATERIAL.
3. PILE CAP STEEL PLATES TO BE IN ACCORDANCE WITH CAN/CSA - G40.21 GRADE 300 W (43ksi) MATERIAL.

SCALE N.T.S.

VARIES

SEE PLAN FOR DIMENSION

100

10M @ 300 O.C. E.W. TOP

EXIST. FIN. FLOOR

10M @ 300 O.C. E.W. DOWELS EMBEDDED 200mm DEEP

NOTE: HOUSE KEEPING PAD TO EXTEND MIN. 100mm BEYOND PERIMETER OF EQUIPMENT.

HOUSEKEEPING PAD DETAIL

SCALE N.T.S.

PLAN VIEW

TRUSS PLUMBNESS

TRUSS SWEEP

TRUSS HEIGHT

LESSER OF D/50 OR 50

TRUSS

TRUSS SPAN "L"

SUPPORT POSITION

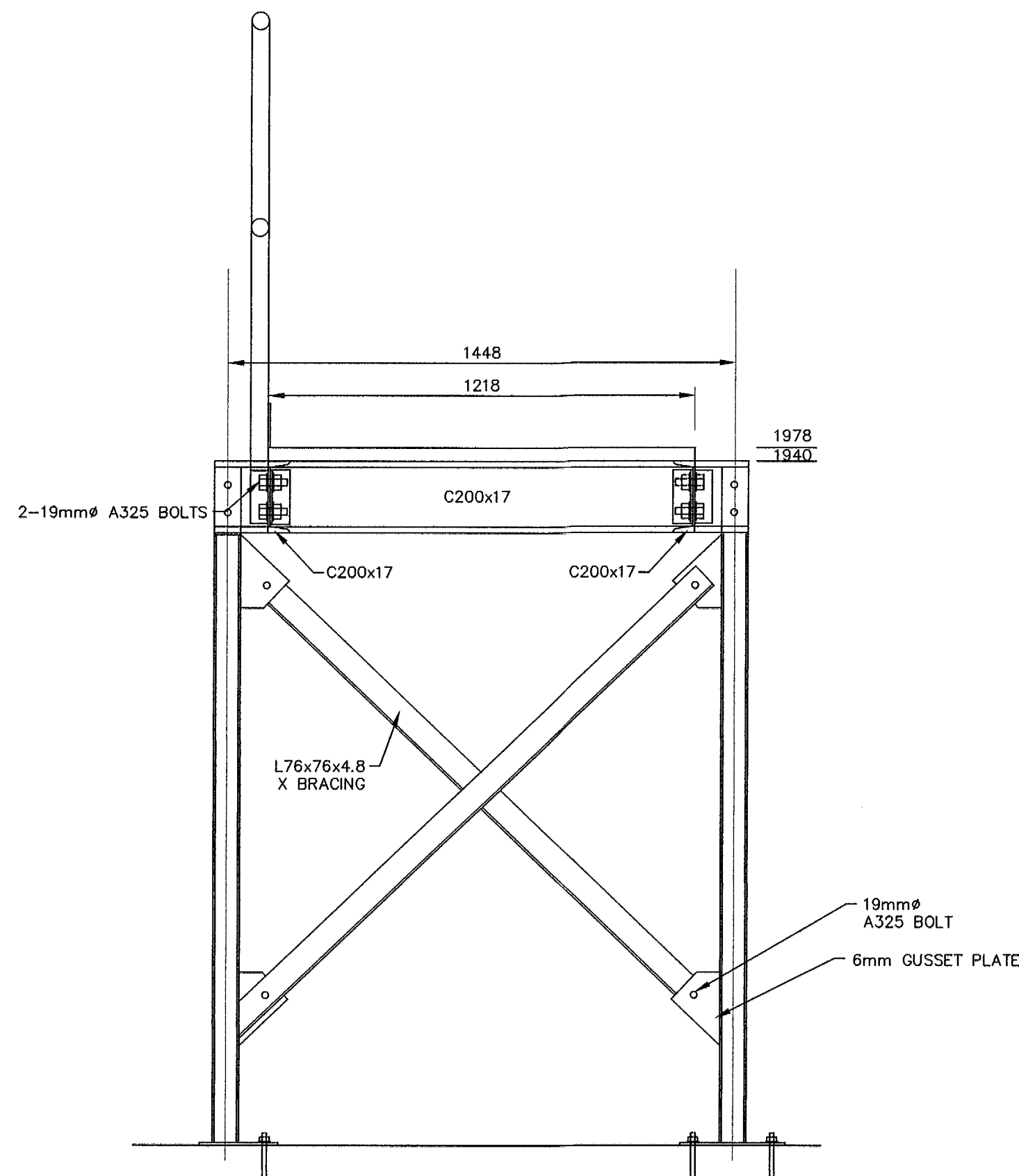
SWEEP "a"

L

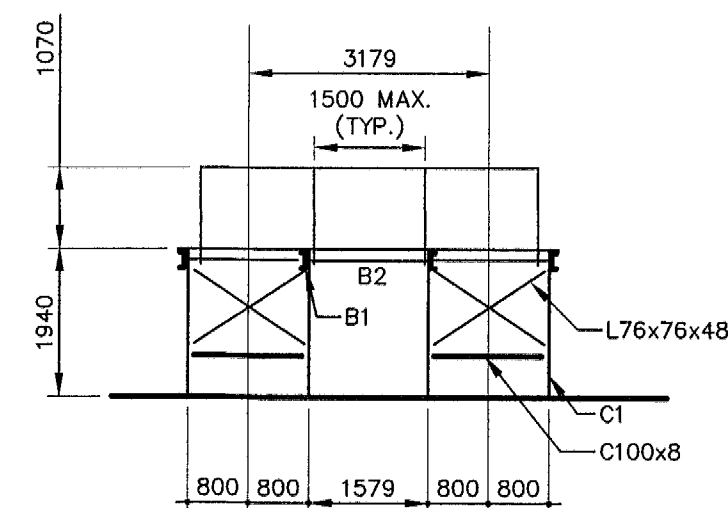
SUPPORT

L' = 4.9 TO 9.75m - 'a' = 25mm
 L' = 9.75m OR MORE - 'a' = 50mm

| | | |
|--------------------------|--------------------------|-----------------------|
| Drawn By W. WHITEDUCK | Checked By C. JONES | Drawing No. S7 |
| Scale NTS | Project No. 300031281 | |

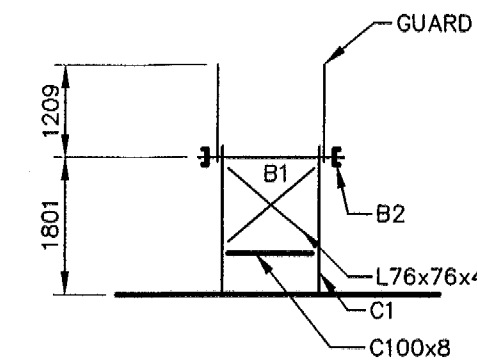


4
S8 SECTION AT TYP. CATWALK
SCALE 1:15

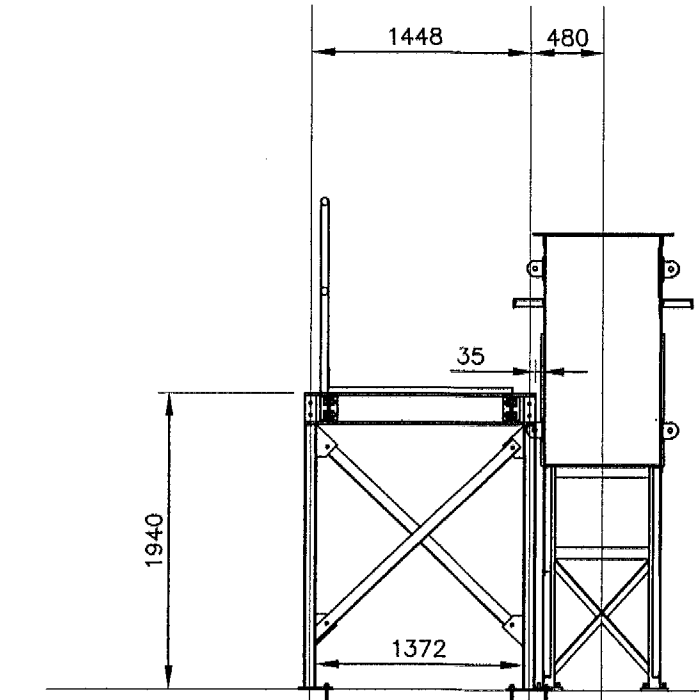


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S8 CATWALK FRAMING SECTION
SCALE 1:100

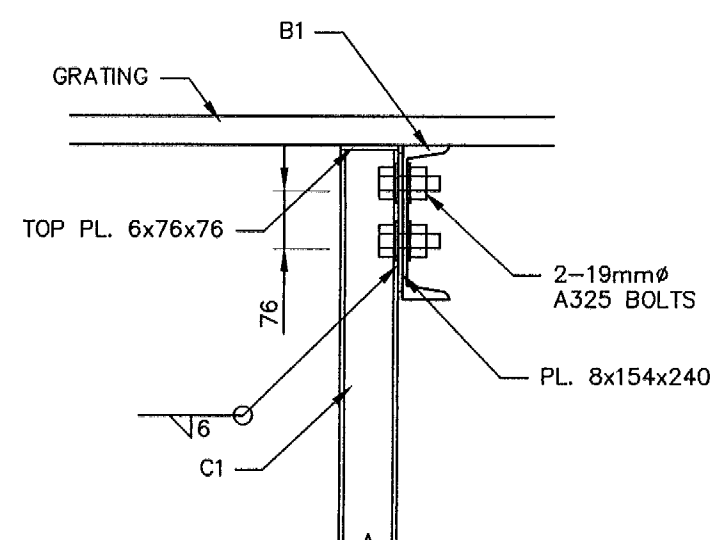
| | |
|----------------------|-------------------|
| CATWALK MEMBER SIZES | |
| B1 | C200 x 21 |
| B2 | C200 x 21 |
| C1 | 76 x 76 x 6.4 HSS |



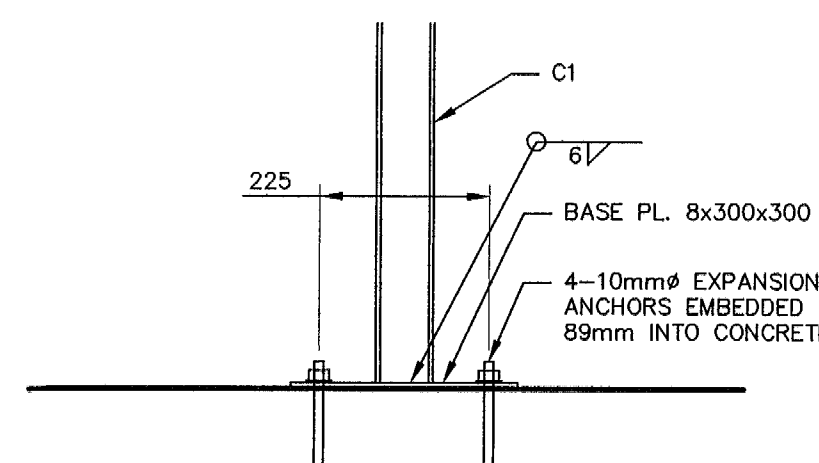
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S8 CATWALK FRAMING SECTION
SCALE 1:100



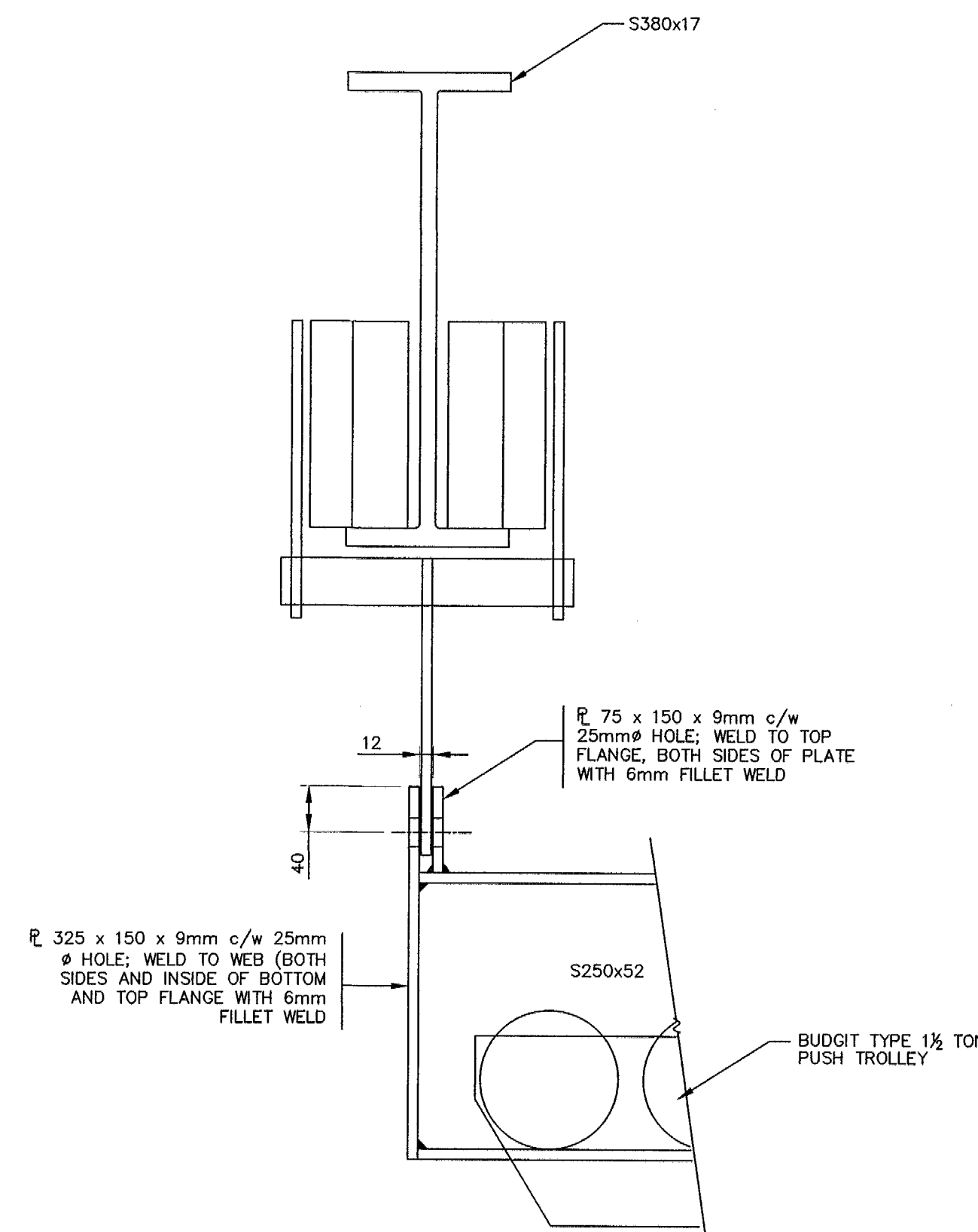
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S8 TYPICAL SECTION AT CHANNEL CATWALK
SCALE 1:50



5
S8 SECTION
SCALE 1:10



6
S8 TYP. COLUMN CONNECTION
SCALE 1:10



6
S8 HOIST RAIL CONNECTION
SCALE 1:5

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| Issue / Revision | Date |
|--|---------------|
| 1 ISSUED FOR 90% SUBMISSION | JANUARY 2013 |
| 2 ISSUED FOR TENDER | FEBRUARY 2013 |
| 3 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

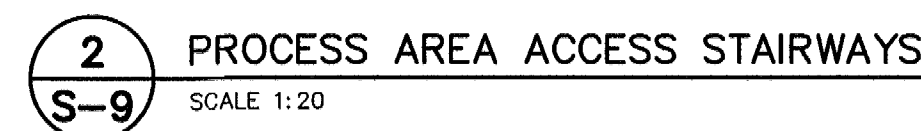
PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: *May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU

Burnside
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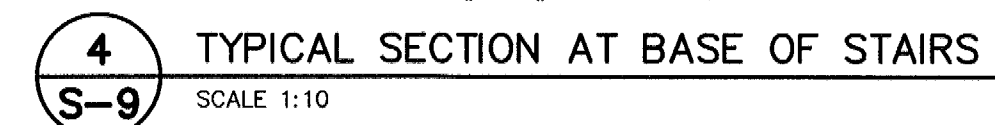
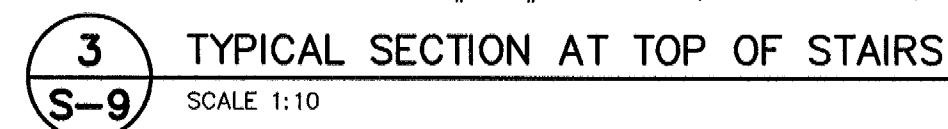
Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

Drawing Title
**CATWALK
LOCATION AND DETAILS**

| | | |
|--------------------------|--------------------------|--------------------------|
| Drawn By W. WHITEDUCK | Checked By C. JONES | Drawing No. S8 |
| Scale NTS | Project No. 300031281 | |

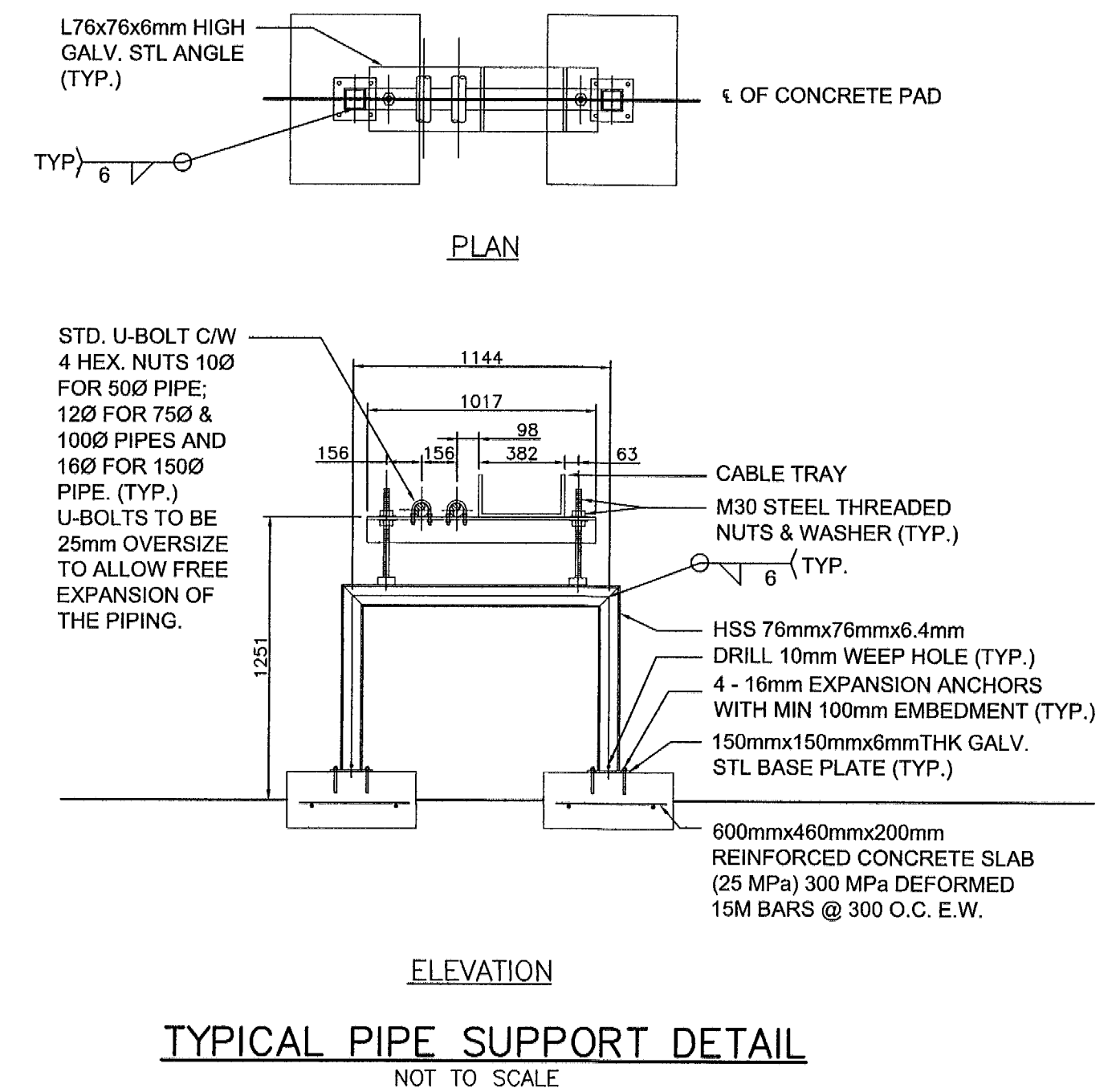
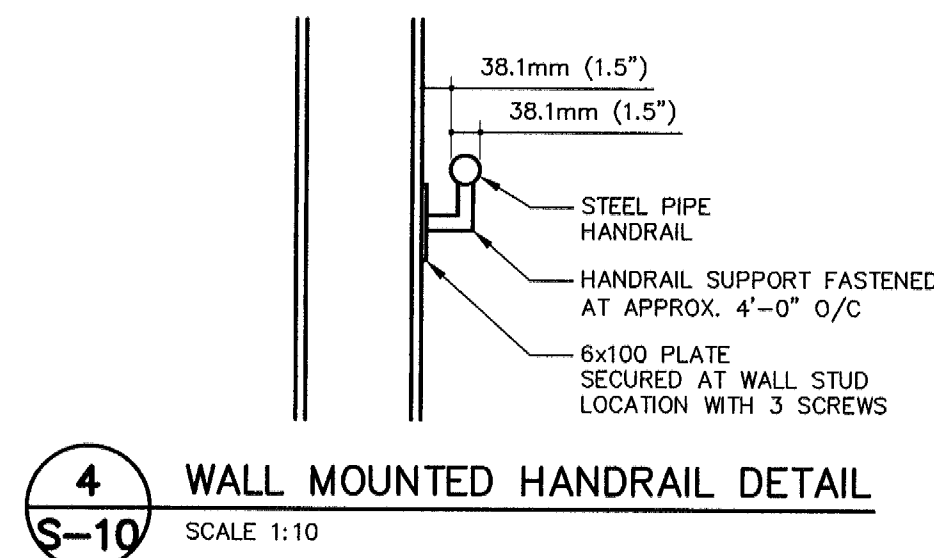
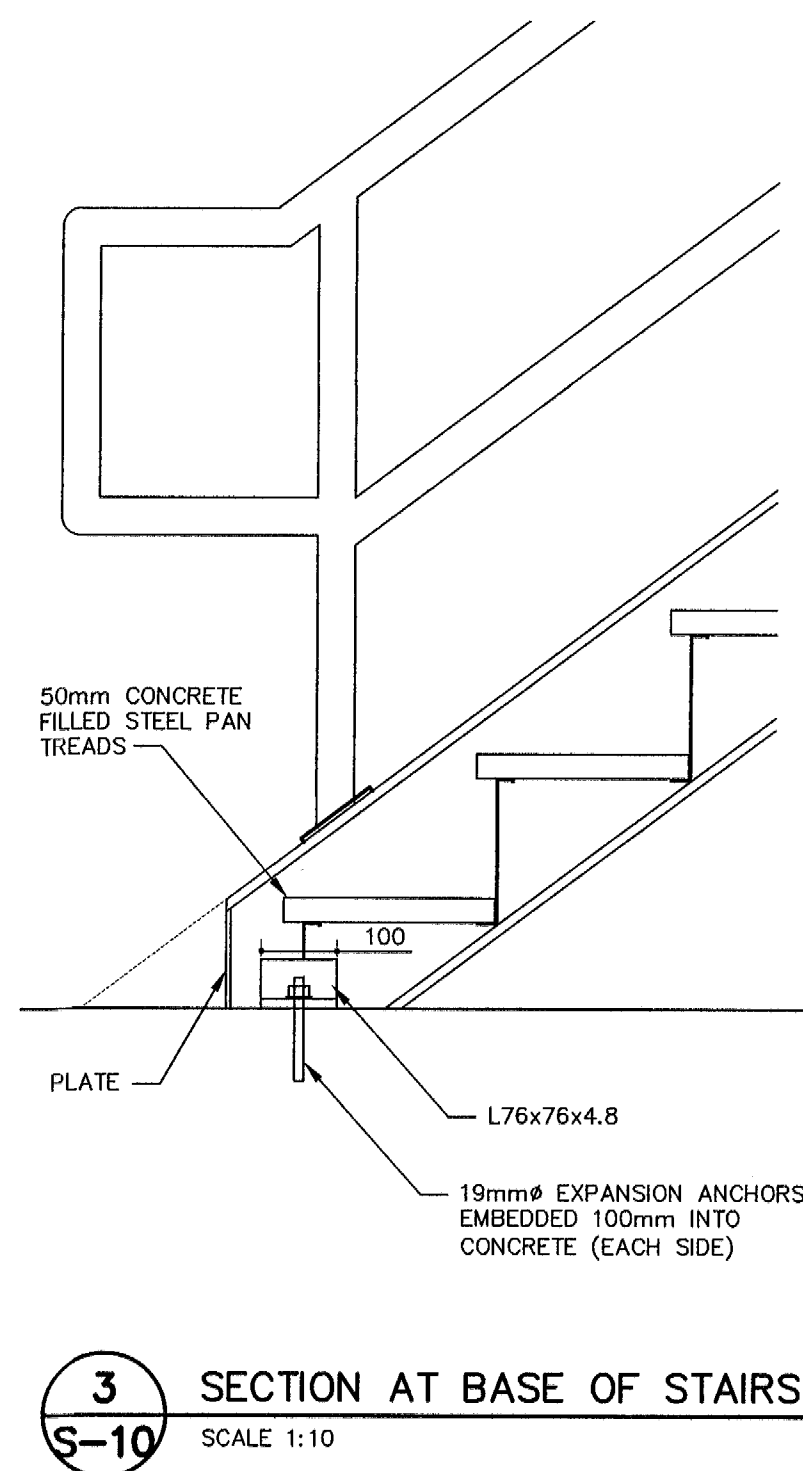
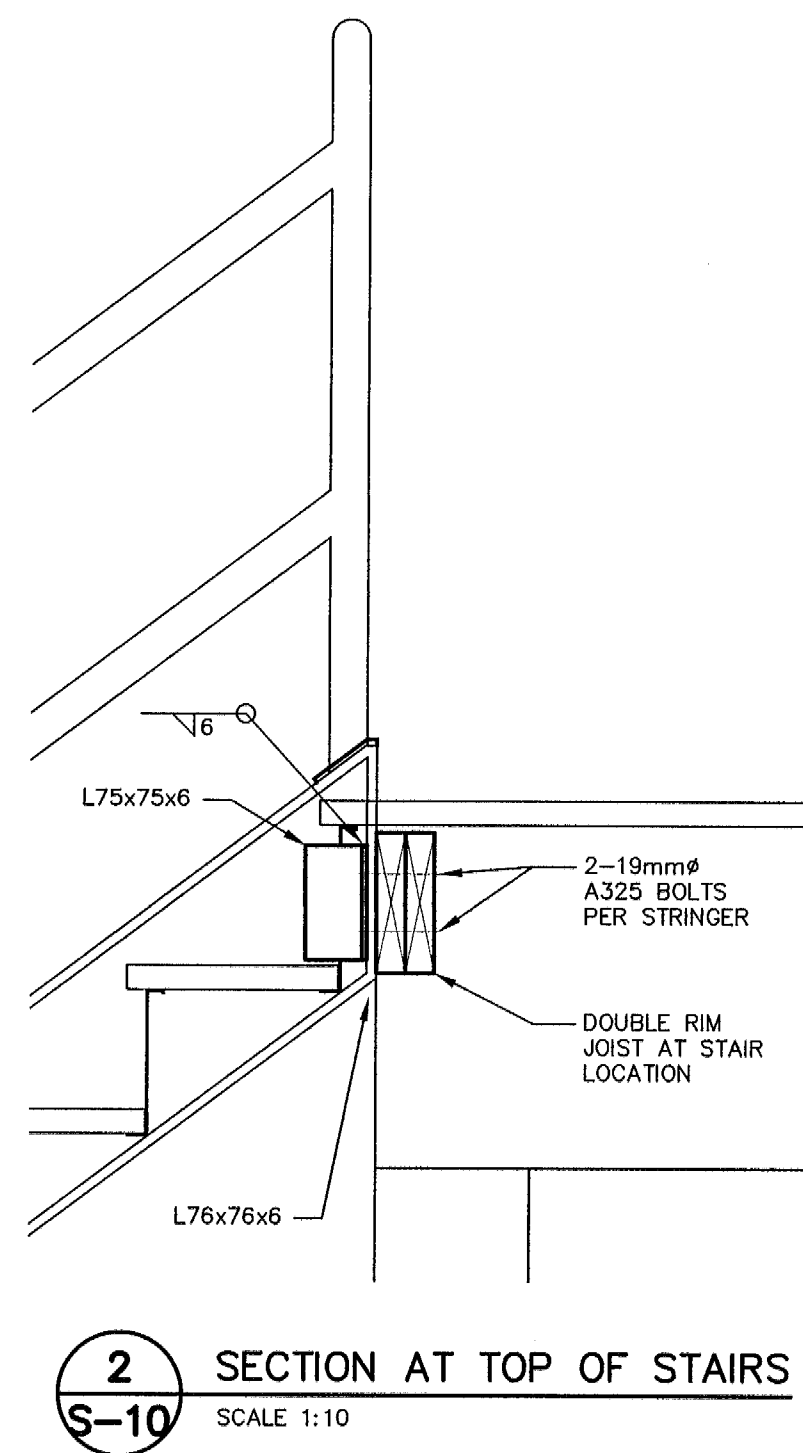
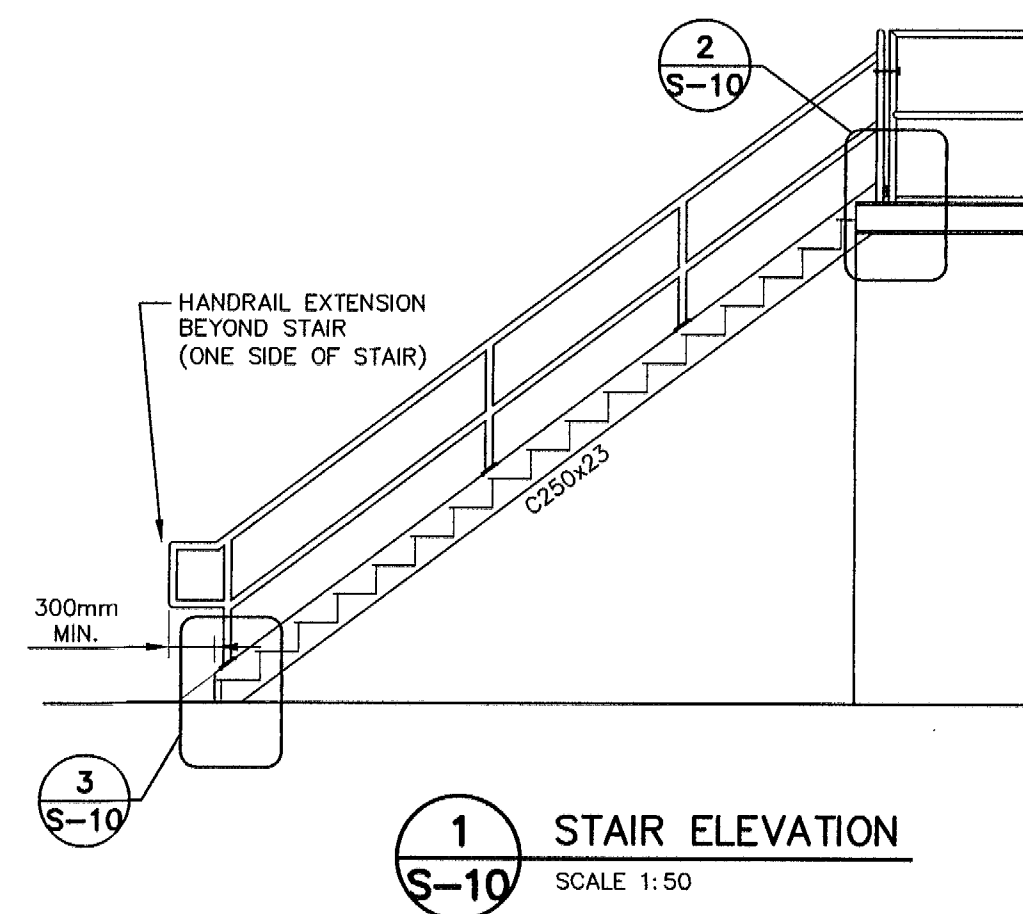


1. ALL DIMENSION TO BE FIELD VERIFIED PRIOR TO FABRICATION.
2. GRIND ALL RAW EDGES SMOOTH PRIOR TO INSTALLATION.
3. COVER AND REMOVABLE PLATE SHALL NOT IMPEDE THE OPERATION OR REMOVAL OF THE AUGER OF THE CHANNEL.
4. SUBMIT SCALED AND DIMENSIONED SHOP DRAWINGS FOR APPROVAL PRIOR TO EQUIPMENT PROCUREMENT AND INSTALLATION.
5. HINGED COVER HANDLE TO BE MOUNTED ON SIDE WHERE ACCESS PLATFORM IS (TYPICAL). HANDLE LOCATION SHOWN ABOVE IS APPROPRIATE FOR EXISTING AUGER CHANNEL COVER. COVER ASSEMBLY FOR NEW AUGER CHANNEL WILL BE LOCATED ON THE OTHER SIDE.
6. SLOTS MUST BE FIELD LOCATED AND CUT TO ACCOMMODATE ENTRY OF ULTRASONIC SENSOR CABLE AND SPRAY WASH ASSEMBLY INTO THE AUGER CHANNELS. SUBMIT DIMENSIONED SHOP DRAWING OF FIELD DETERMINED LOCATIONS TO ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.



| | Issue / Revision | Date |
|---|---|---------------|
| 1 | ISSUED FOR TENDER | FEBRUARY 2013 |
| 2 | REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |
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|--|------------------------------------|------------------------------------|
| <div>Drawing Title</div> <div>STRUCTURAL STAIR DETAILS AND AUGER CHANNEL COVER DETAILS</div> | | |
| <div>Drawn By</div> C. GERUS | <div>Checked By</div> M. STREIFLER | <div>Drawing No.</div> S-9 |
| <div>Scale</div> 1:60 NOTED | | <div>Project No.</div> 87-0106-001 |



NOTE:

- SEE SECTION 05-50-00-2.6 OF THE NATIONAL BUILDING CODE FOR FABRICATION OF STEEL STAIRS AND RAILINGS
- SEE SPECIFICATION SECTION 05-50-10 STEEL TANKS, ELEVATED PLATFORMS AND STAIRS CLAUS 1.6 AND 1.7 FIR DESIGN REQUIREMENTS

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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.

3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

4. Do not scale the drawings.

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| 1 ISSUED FOR TENDER | FEBRUARY 2013 |
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PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: May 27/13
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NNU

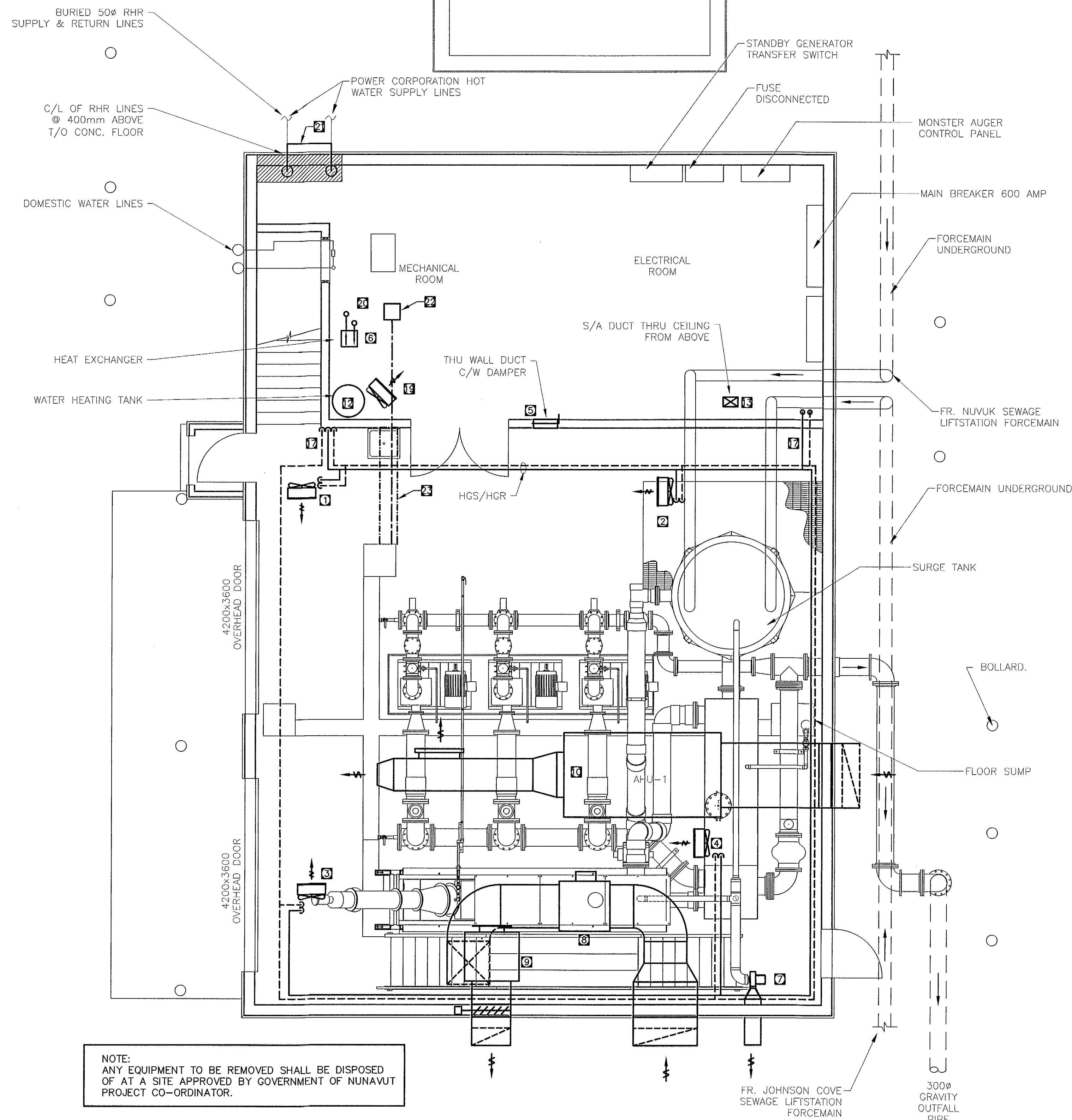
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web www.neeganburnside.com

Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
STRUCTURAL STAIR
AND HANDRAIL DETAILS

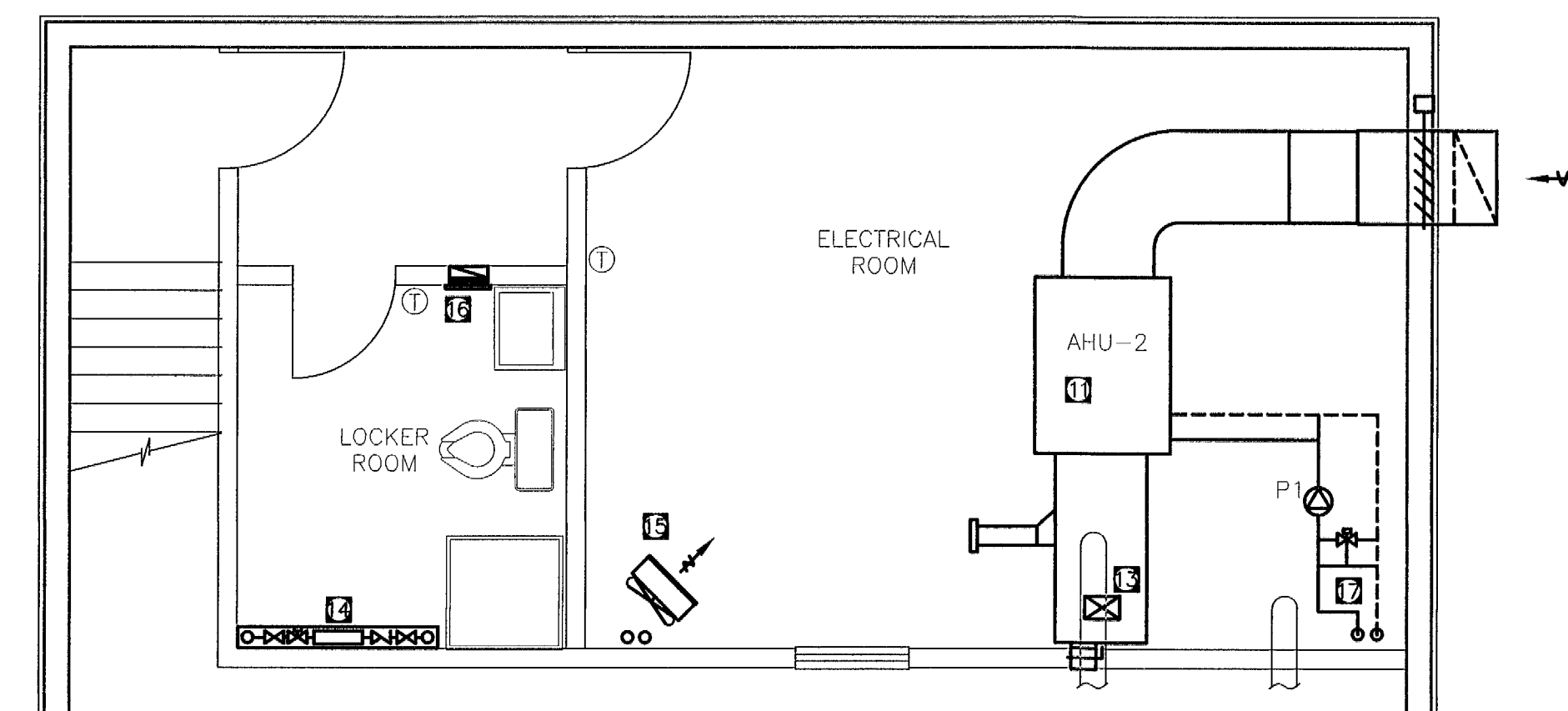
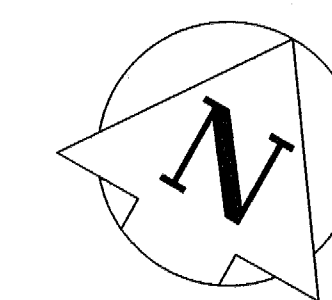
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|----------------------|----------------------------|---------------------|
| Drawn By C. GERUS | Checked By M. STREIFLER | Drawing No. S-10 |
| Scale AS NOTED | Project No. 300031281 | |

NOTE:
THE OPERATIONS OF THE SEWAGE TREATMENT FACILITY
MUST BE MAINTAINED WITHOUT INTERRUPTION
THROUGHOUT DURATION OF PLANT UPGRADES.



DEMO - EXISTING MAIN FLOOR PLAN
1:50

NOTE:
ANY EQUIPMENT TO BE REMOVED SHALL BE DISPOSED
OF AT A SITE APPROVED BY GOVERNMENT OF NUNAVUT
PROJECT CO-ORDINATOR.



DEMO - SECOND FLOOR LEVEL
1:50

EXIST. SEWAGE PLANT DECOMMISSIONING NOTES

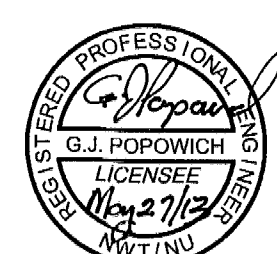
- 1 REMOVE & RELOCATE OF UNIT HEATER.
TO BE RE-USED IN NEW TRUCK BAY.
- 2 REMOVE & RELOCATE OF UNIT HEATER.
TO BE RE-USED IN NEW TRUCK BAY.
- 3 REMOVE & RELOCATE OF UNIT HEATER.
TO BE RE-USED IN NEW TRUCK BAY.
- 4 REMOVE & RELOCATE OF UNIT HEATER.
TO BE RE-USED IN NEW TRUCK BAY.
- 5 REMOVE THRU WALL DUCT AND SEAL OPENING TO MATCH EXISTING.
- 6 EXISTING PLATE HEAT EXCHANGER TO BE RELOCATED
- 7 REMOVE & DISPOSE OF EXHAUST FAN, REPLACE WITH EXPLOSION PROOF
MODEL.
- 8 REMOVE & DISPOSE OF EXHAUST FAN C/W ALL ASSOCIATED HARDWARE,
WALL PENETRATIONS TO BE PATCHED TO MATCH EXISTING.
- 9 REMOVE AND DISPOSE OF EXHAUST FAN, WALL PENETRATIONS TO BE
PATCHED TO MATCH EXISTING.
- 10 REMOVE AND DISPOSE OF AHU-1
- 11 REMOVE AND DISPOSE OF AHU-2
- 12 EXISTING HOT WATER STORAGE TANK TO BE RELOCATED
- 13 EXISTING DUCT WORK TO BE REMOVED, WALL/FLOOR PENETRATIONS TO
BE PATCHED TO MATCH EXISTING.
- 14 EXISTING FIN TUBE RADIANT HEATER TO REMAIN.
- 15 EXISTING RADIANT HEATER TO REMAIN.
- 16 EXISTING EXHAUST FAN TO REMAIN.
- 17 REMOVE AND DISPOSE OF ALL EXISTING HYDRONIC HEATING PIPE WORK
LOCATED IN PROCESS ROOM.
- 18 DELETED
- 19 EXISTING UNIT HEATER TO BE RELOCATED
- 20 REMOVE AND DISPOSE OF ALL EXISTING HYDRONIC HEATING PIPE WORK
LOCATED IN MECHANICAL ROOM.
- 21 CUT BACK AND LOOP PIPING, WITH FLANGED FITTINGS, AS CLOSE TO
GRADE AS REASONABLE, EXISTING HOT WATER LINES FROM POWER
CORPORATION.
(TYP. OF 2)
- 22 REMOVE EXISTING GRATED FLOOR DRAIN COVER. DRAIN TO BE PLUGGED
AND PATCHED WITH CONCRETE TO MATCH EXISTING FLOOR SURFACE.
FLOOR DRAIN PIPE TO BE ABANDONED.
- 23 SAW-CUT EXISTING CONCRETE FLOOR SECTION TO SUIT NEW PLUMBING
MODIFICATIONS REQUIRED FOR NEW FLOOR DRAIN, CLEANOUT &
RELOCATED SINK.
(FLOOR TO BE PATCHED TO MATCH EXISTING UPON COMPLETION)

1:50 0 1 3m

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| 1 ISSUED FOR 66% SUBMISSION | NOVEMBER 2012 |
| 2 ISSUED FOR 99% SUBMISSION | JANUARY 2012 |
| 3 ISSUED FOR TENDER | FEBRUARY 2013 |
| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: *May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NTU

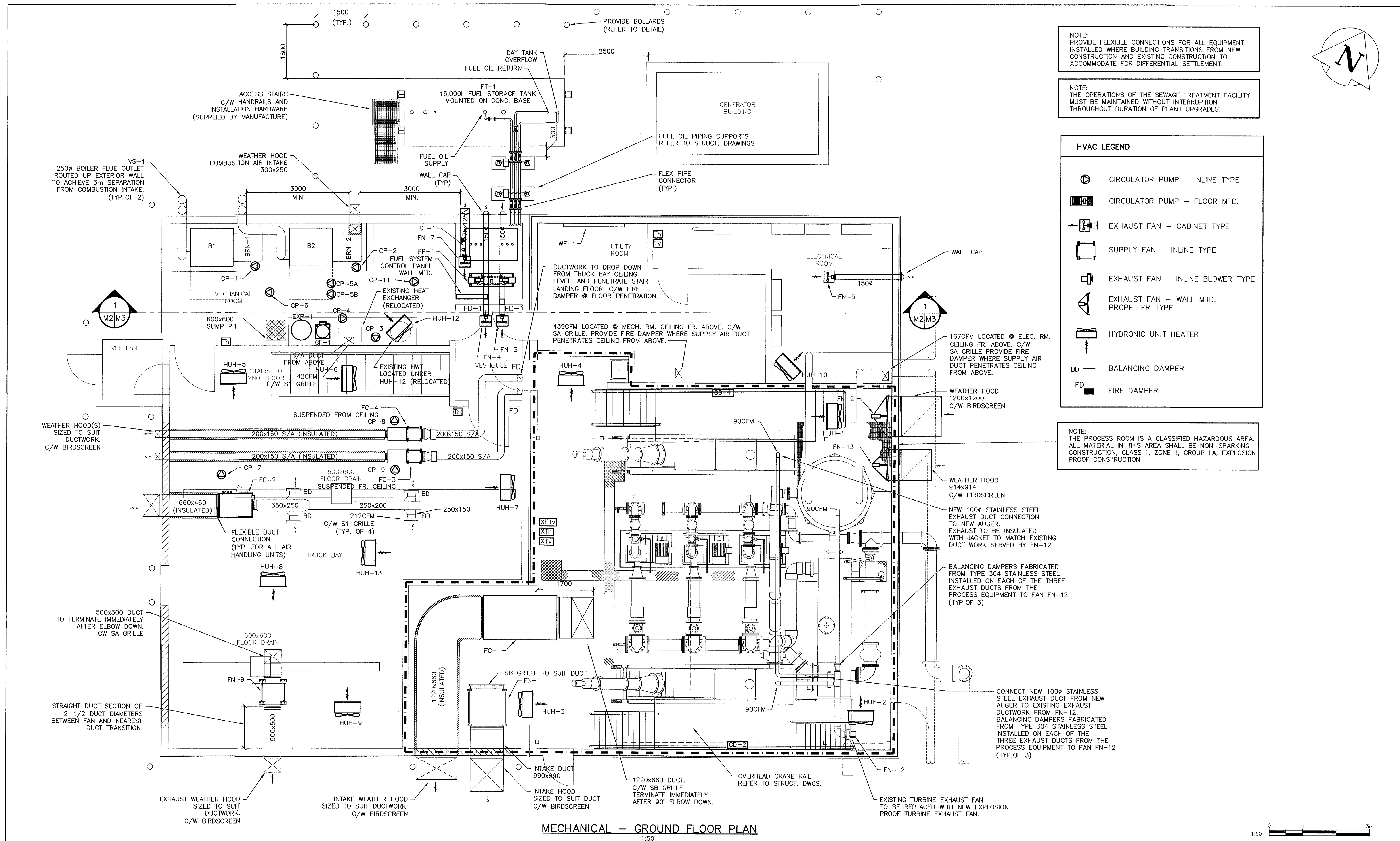


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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
DEMOLITION - EXISTING
MECHANICAL EQUIPMENT

| | | |
|------------------|--------------------------|--------------------|
| Drawn By A.H. | Checked By D.Mack. | Drawing No. M-1 |
| Scale 1:50 | Project No. 300031281 | |



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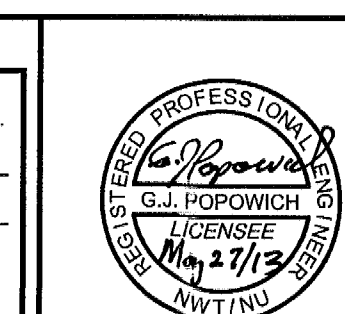
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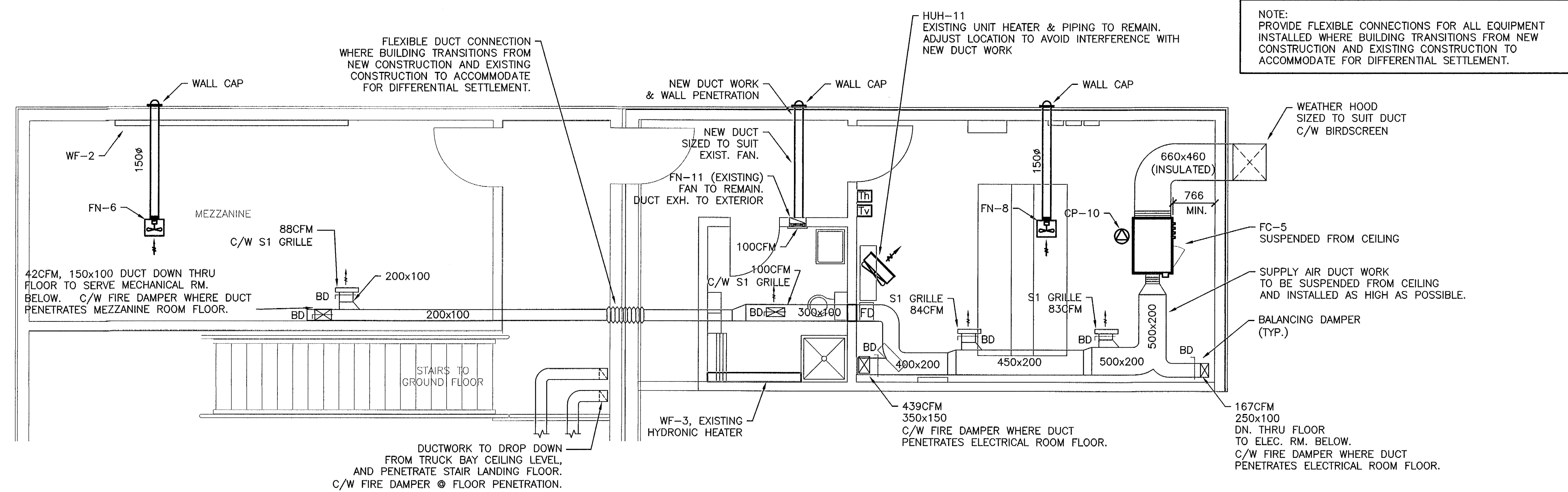
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Nuna Burnside Engineering and Environmental Ltd.
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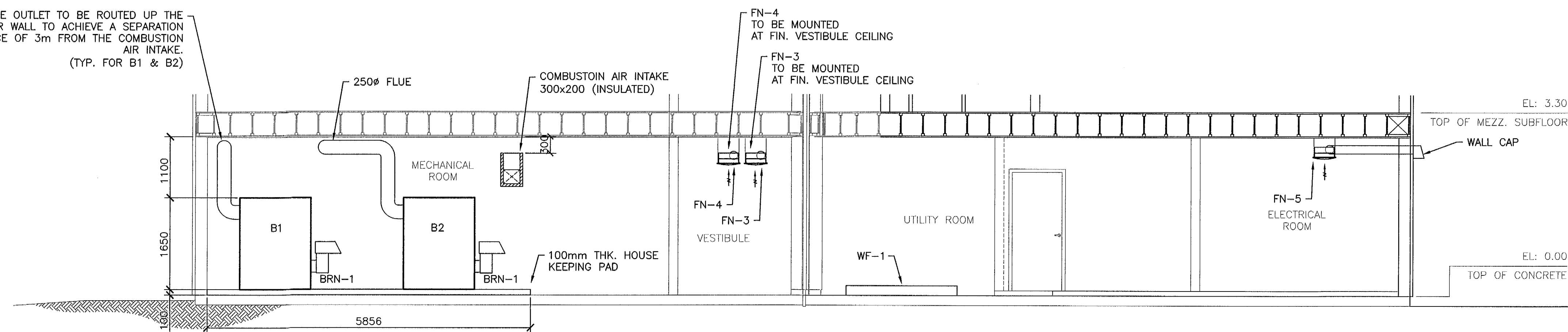
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Client
**GOVERNMENT OF NUNAVUT
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SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

| Drawing Title | | Drawing No. |
|--|-----------------------|--------------------------|
| GROUND FLOOR MECHANICAL HVAC LAYOUT | | M-2 |
| Drawn By A.H. | Checked By D.Mack. | Project No. 300031281 |
| Scale 1:50 | | |



250Ø FLUE OUTLET TO BE ROUTED UP THE
EXTERIOR WALL TO ACHIEVE A SEPARATION
DISTANCE OF 3m FROM THE COMBUSTION
AIR INTAKE.
(TYP. FOR B1 & B2)



| | Issue / Revision | Date |
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|--|-------------------------|-------------|
| Drawing Title | | |
| SECOND FLOOR MECHANICAL HVAC LAYOUT | | |
| Drawn By A.H. | Checked By D.Mack. | Drawing No. |
| Scale 1/8" = 1'-0" | Project No. 2002-002 | M-3 |

| HEATING & VENTILATING EQUIPMENT LIST | | |
|--------------------------------------|---|---|
| ITEM No. | DESCRIPTION | MF'R/MODEL |
| B-1, B-2 | OIL FIRED HOT WATER BOILERS, I=B=R NET RATING OF 1,229 MBH. C/W INSULATED STEEL JACKET, LOW WATER CUTOFF, ASME 30 PSI RELIEF VALVE, DUAL HIGH LIMIT AND OPERATING CONTROL, COMBINED TEMPERATURE/PRESSURE/ALTITUDE GAUGE, BUILT IN AIR ELIMINATOR, WELL FOR TEMPERATURE SENSOR AND AIR SEPARATOR. | WEIL-MCLAIN / 88 SERIES 2 MODEL 688 |
| BRN-1, BRN-2 | FORCED DRAFT OIL BURNERS FOR WEIL MCLAIN 88 SER. 2 MODEL 688 BOILERS. SET UP FOR ON - OFF OPERATION. C/W OIL PUMPS, BURNER CONTROLS AND ALARM PANEL THAT ACCEPTS CONTROL SIGNAL FROM BOILER CONTROL SYSTEM. ELECTRICS: 208 V / 3 PH / 60 HZ; 0.75 HP | RIELLO / RL 50/2 |
| VS-1, VS-2 | ENGINEERED MODULAR VENT STACK FOR BOILERS. ULC LISTED. C/W 0.64MM THICK ALUMINIZED STEEL OUTER SHELL, 0.95MM THICK TYPE 304 STAINLESS STEEL INNER LINER, AND ALL REQUIRED ACCESSORIES TO COMPLETE VENTING SYSTEM. | VAN PACKER / DW PLUS SYSTEM. |
| BC-1 | BOILER CONTROLLER CONTROLLER TO BE CAPABLE OF CONTROLLING 2 BOILERS, DHW SYSTEM CIRCULATOR AS WELL AS 2 MAIN CIRCULATORS. C/W THE FOLLOWING FEATURES: OUTDOOR TEMPERATURE RESET, OUTDOOR TEMPERATURE SENSOR, ON-OFF BOILER CONTROL, PRIMARY AND SECONDARY PUMP CONTROL, DHW PUMP OPERATION, ADJUSTABLE WARM WEATHER SHUTDOWN, PUMP EXERCISING ROUTINE, BOILER EQUAL RUN TIME ROTATION, EQUAL RUN TIME ROTATION FOR TWO REDUNDANT SECONDARY CIRCULATORS, FLOW OR COMBUSTION AIR PROOF. | TEKMAR / A 274 |
| BC-2 | HYDRONIC MIXING CONTROLLER. CONTROLLER TO ACCEPT TEMPERATURE INPUT FROM 10 K OHM THERMISTOR SENSOR. CONTROLLER TO OUTPUT VFD CONTROL OF CIRCULATORS UP TO 1/6 HP. | TEKMAR / A 361 |
| CP-1, CP-2 | MAIN INLINE CIRCULATING PUMP. FLOW: 10.9 L/S (172 USGPM) OF 60% PROPYLENE GLYCOL IN WATER. HEAD: 1.1m (3.6 FT) ELECTRICS: 208V/1PH / 60HZ; 1 HP | TACO / KV3007 SERIES |
| CP-3 EXISTING | EXISTING POTABLE HOT WATER CIRCULATOR | EXISTING B & C / SSF-22 SERIES |
| CP-4 EXISTING | EXISTING CIRCULATOR FOR 60% PROPYLENE GLYCOL SOLUTION TO HEAT EXCHANGER. | EXISTING |
| CP-5A CP-5B | HYDRONIC CIRCULATOR FOR ALL UNIT HEATERS FLOW: 7.6 L/S (120.4 USGPM) HEAD: 5.9m (19 FT) ELECTRICS: 208 V / 3 PH / 60 HZ; 1 HP | TACO / KV3007 SERIES |
| CP-6 | HYDRONIC CIRCULATOR FOR PROCESS ROOM FAN COIL UNIT, FC-1 FLOW: 1.14 L/S (18.1 USGPM) OF 60% PROPYLENE GLYCOL SOLUTION. HEAD: 5.1m (16.8 FT). ELECTRICS: 115 V / 1 PH / 60 HZ; 1/6 HP. MOTOR SUITABLE FOR VARIABLE SPEED USE WITH TEKMAR MODEL 361 CONTROLLER. | TACO / 0013 SERIES |
| CP-7 | HYDRONIC CIRCULATOR FOR TRUCK BAY FAN COIL UNIT, FC-2 FLOW: 0.34 L/S (5.4 USGPM) OF 60% PROPYLENE GLYCOL SOLUTION. HEAD: 4.4m (14.3 FT) ELECTRICS: 115 V / 1 PH / 60 HZ; 1/8 HP. MOTOR SUITABLE FOR VARIABLE SPEED USE WITH TEKMAR MODEL 361 CONTROLLER. | TACO / 0014 SERIES |
| CP-8, CP-9 | HYDRONIC CIRCULATOR FOR VESTIBULE FAN COIL UNITS, FC-3 & FC-4. FLOW: 0.18 L/S (2.8 USGPM) OF 60% PROPYLENE GLYCOL SOLUTION. HEAD: 1.49m (4.9 FT). ELECTRICS: 115 V / 1 PH / 60 HZ; 1/40 HP. MOTOR SUITABLE FOR VARIABLE SPEED USE WITH TEKMAR MODEL 361 CONTROLLER. | TACO / 006 SERIES |
| CP-10 | HYDRONIC CIRCULATOR FOR COMBINED FAN COIL UNIT, FC-5 FLOW: 0.72 L/S (11.4 USGPM) OF 60% PROPYLENE GLYCOL SOLUTION. HEAD: 6.9m (22.6 FT). ELECTRICS: 115 V / 1 PH / 60 HZ; 1/6 HP. MOTOR SUITABLE FOR VARIABLE SPEED USE WITH TEKMAR MODEL 361 CONTROLLER. | TACO / 0013 |
| CP-11 | HYDRONIC CIRCULATOR FOR FIN TUBE RADIATION FLOW: 0.38 L/S (6 USGPM) OF 60% PROPYLENE GLYCOL SOLUTION. HEAD: 2.0m (6.47 FT) H2O ELECTRICS: 115 V / 1 PH / 60 HZ; 1/35 HP. MOTOR SUITABLE FOR VARIABLE SPEED USE WITH TEKMAR MODEL 361 CONTROLLER. | TACO / 007 SERIES |
| HUH-1, 2, 3, 4 | EXPLOSION PROOF HYDRONIC UNIT HEATERS, HORIZONTAL TYPE, H5 SIZE. RATED CAPACITY: 57.3 MBH OUTPUT EWT: 180°F. AIRFLOW: 585 L/S (1240 CFM) PER UNIT. FLOW: 14.8 L/M (3.9 USGPM) OF 60% PROPYLENE GLYCOL SOLUTION. HEAD: 0.1 M (0.3 FT.) H2O ELECTRICS: 115V / 1PH / 60 HZ; AMPS = 3.0; 1/6 HP. C/W NON-SPARKING CONSTRUCTION, EXPLOSION PROOF MOTORS. | EXPLOSION PROOF ENG AIR / H5 SERIES |
| HUH-5, 6, 7, 8 | EXISTING HYDRONIC UNIT HEATERS, HORIZONTAL TYPE, H4 SIZE RELOCATED FROM PROCESS ROOM. RATED CAPACITY: 56.8 MBH OUTPUT AIRFLOW: 472 L/S (1000 CFM) EWT: 180°F. WATER FLOW: 32.6 L/M (8.6 USGPM) HEAD: 0.2M (0.7 FT) H2O ELECTRICS: 115V / 1PH / 60 HZ; AMPS = 3.0; 1/12 HP. | EXISTING UNITS, RELOCATED FROM PROCESS ROOM. |
| HUH-9 & 13 | HYDRONIC UNIT HEATERS, HORIZONTAL TYPE, H5 SIZE, STANDARD DIFFUSERS. RATED CAPACITY: 57.3 MBH OUTPUT AIRFLOW: 585 L/S (1240 CFM) EWT: 180°F. WATER FLOW: 14.8 L/M (3.9 USGPM) HEAD: 0.1M (0.3 FT.) H2O ELECTRICS: 115V / 1PH / 60 HZ; AMPS = 3.0; 1/6 HP. | ENG AIR / H5 SERIES |
| HUH-10, 11, 12 | EXISTING HYDRONIC UNIT HEATERS, HORIZONTAL TYPE, RELOCATED AS NOTED ON DRAWINGS. | EXISTING UNITS, RELOCATED AS NOTED ON DRAWINGS. |
| FN-1 (PROCESS RM) | EXPLOSION PROOF INLINE SUPPLY FAN CAPACITY: 6,041 L/s @ 12.7 mm ESP (12,800 CFM @ 0.5" ESP) ELECTRICS: 208 V / 3PH / 60 HZ; 5 HP C/W VIBRATION ISOLATION MOUNTING HDWE., NON-SPARKING CONSTRUCTION TYPE AMCA-A, SAFETY SCREEN, EXPLOSION PROOF MOTOR, EXTENDED LUB LINES, REINFORCED WHEEL. | EXPLOSION PROOF COOK / 2705QB SERIES |
| FN-2 (PROCESS RM) | EXPLOSION PROOF WALL MOUNTED EXHAUST FAN. CAPACITY: 6,135 L/s @ 38.1mm ESP (13,000 CFM @ 0.5" ESP) ELECTRICS: 208 V / 3 PH / 60 HZ; 3 HP. C/W VIBRATION ISOLATING MOUNTING HDWE., NON-SPARKING CONSTRUCTION TYPE AMCA-A, BIRD SCREEN, EXPLOSION PROOF MOTOR. | EXPLOSION PROOF COOK / 36EWB SERIES |
| FN-3 (VESTIBULE) | CEILING CABINET FAN CAPACITY: 80 L/s @ 6.3mm ESP. (170 CFM @ 0.25" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; 123 W, 1.3 A. C/W FACTORY WIRED SPEED CONTROL, BACKDRAFT DAMPER, VIBRATION ISOLATION MOUNTING HARDWARE. | COOK / GC-164 |
| FN-4 (VESTIBULE) | CEILING CABINET FAN CAPACITY: 80 L/s @ 6.3mm ESP (170 CFM @ 0.25" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; 123 W, 1.3 A. C/W FACTORY WIRED SPEED CONTROL, BACKDRAFT DAMPER, VIBRATION ISOLATION MOUNTING HARDWARE. | COOK / GC-164 |
| FN-5 (LOWER ELEC. RM.) | CEILING CABINET FAN CAPACITY: 79 L/s @ 6.3mm ESP (167 CFM @ 0.25" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; 123 W, 1.3 A. C/W FACTORY WIRED SPEED CONTROL, BACKDRAFT DAMPER, VIBRATION ISOLATION MOUNTING HARDWARE. | COOK / GC-164 |

| HEATING & VENTILATING EQUIPMENT LIST | | |
|--------------------------------------|--|---|
| ITEM No. | DESCRIPTION | MF'R/MODEL |
| FN-6 (MEZZ. RM.) | CEILING CABINET FAN CAPACITY: 49 L/s @ 6.3mm ESP (104 CFM @ 0.25" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; 66 W, 0.7 A. C/W FACTORY WIRED SPEED CONTROL, BACKDRAFT DAMPER, VIBRATION ISOLATION MOUNTING HARDWARE. | COOK / GC-144 |
| FN-7 MECHANICAL RM. | CEILING CABINET FAN CAPACITY: 207 L/s @ 6.3mm ESP (439 CFM @ 0.25" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; 290 W, 4.9 A. C/W FACTORY WIRED SPEED CONTROL, BACKDRAFT DAMPER, VIBRATION ISOLATION MOUNTING HARDWARE. | COOK / GC-640 |
| FN-8 (UPPER ELEC. RM.) | CEILING CABINET FAN CAPACITY: 79 L/s @ 6.3mm ESP (167 CFM @ 0.25" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; 123 W, 1.3 A. C/W FACTORY WIRED SPEED CONTROL, BACKDRAFT DAMPER, VIBRATION ISOLATION MOUNTING HARDWARE. | COOK / GC-164 |
| FN-9 (TRUCK BAY) | INLINE EXHAUST FAN. CAPACITY: 382 L/s @ 38.1mm ESP (810CFM @ 1.5" ESP) ELECTRICS: 120 V / 1 PH / 60 HZ; 1/2 HP. C/W VIBRATION ISOLATION MOUNTING HARDWARE, BIRDSCREEN INSTALLED IN DUCT AT FAN INLET. | COOK / 150 SQN SERIES |
| FN-10 DELETED | DELETED | DELETED |
| FN-11 EXISTING (WASHROOM) | EXISTING FAN IN WASHROOM AIRFLOW: 52 L/s @ 2.5mm ESP (110 CFM @ 0.1" ESP) ELECTRICS: 120 V / 1 PH / 60 HZ; 1.3 A. | EXISTING BROAN / 676 SERIES. |
| FN-12 (PROCESS TANK) | EXPLOSION PROOF HIGH PRESSURE EXHAUST FAN AIRFLOW: 140 L/s @ 25.4mm ESP (297 CFM @ 0.5" ESP). ELECTRICS: 120V / 1 PH / 60 HZ; 1/3 HP C/W NON SPARKING CONSTRUCTION TO AMCA A, EXPLOSION PROOF MOTOR, EISENHEISS OR SIMILAR ANTI-CORROSION FINISH ON INTERIOR AND EXTERIOR SURFACES OF FAN HOUSING AND WHEEL. ARRANGEMENT 9. | EXPLOSION PROOF REVERSEOMATIC / AF-8-4 |
| FN-13 (PROCESS RM) | EXPLOSION PROOF TWO SPEED, WALL MOUNTED EXHAUST FAN. CAPACITY, LOW SPEED: 755 L/s @ 13mm ESP (1,600 CFM @ 0.5" ESP) CAPACITY, HIGH SPEED: 1510 L/s @ 13mm ESP (3,200 CFM @ 0.5" ESP). ELECTRICS: 208 V / 3 PH / 60 HZ; 1 HP. C/W VFD TO PROVIDE 2 SPEED OPERATION INSTALLED OUTSIDE OF CLASSIFIED SPACE, VIBRATION ISOLATING MOUNTING HDWE., NON-SPARKING CONSTRUCTION TYPE AMCA-A, BIRD SCREEN, EXPLOSION PROOF MOTOR. | EXPLOSION PROOF COOK / 24A11 SERIES |
| FC-1 (PROCESS RM.) | EXPLOSION PROOF 2 SPEED FAN COIL UNIT. AIRFLOW: 708 L/S @ 1416 L/S @ 13MM ESP (1500 & 3000 CFM @ 0.5" ESP) ELECTRICS: 208V / 3 PH / 60 HZ; 3 HP. EAT: -42°C (-43.6°F) LAT: 13°C (55°F) EWT: 82°C (180°F) FLUID FLOW: 68.5 L/M (18.1 USGPM). HEAD: 0.9M (3.0 FT) H2O. C/W VFD TO PROVIDE 2 SPEED OPERATION INSTALLED OUTSIDE OF CLASSIFIED SPACE, VIBRATION ISOLATING MOUNTING HARDWARE, NON-SPARKING CONSTRUCTION TYPE AMCA-A, BIRD SCREEN, EXPLOSION PROOF MOTOR. | EXPLOSION PROOF MCQUAY VISION / CAH006GHGC |
| FC-2 (TRUCK BAY) | FAN COIL UNIT. AIRFLOW: 401 L/S @ 13MM ESP (850CFM @ 0.5" ESP) ELECTRICS: 208V / 3 PH / 60 HZ; HP 3/4. EAT: -42°C (-43.6°F) LAT: 13°C (55°F) EWT: 82°C (180°F) FLUID FLOW: 201 L/M (5.4 USGPM). HEAD: 1.1M (3.5 FT) H2O C/W VIBRATION ISOLATING MOUNTING HARDWARE, BIRD SCREEN. | MCQUAY DESTINY / LAH002A |
| FC-3, FC-4 (VESTIBULE) | REDUNDANT INLINE FAN UNITS WITH HYDRONIC HEATING COILS & FLOW PROVING SWITCHES FOR AIR AND WATER. AIRFLOW: 80 L/S @ 13MM ESP (170 CFM @ 0.5" ESP) ELECTRICS: 120V / 1 PH / 60 HZ; HP 1/6. C/W DUCT MOUNTED HYDRONIC COILS EAT: -42°C (-43.6°F) LAT: 13°C (55°F) EWT: 82°C (180°F) FLUID FLOW: 2.8 USGPM; HEAD: 2.5 FT. H2O C/W AIRFLOW AND WATERFLOW PROVING SWITCHES, VIBRATION ISOLATING MOUNTING HARDWARE, BIRD SCREEN. | LAUREN COOK / B50N-B WITH COIL MCQUAY / 5B51402 SERIES |
| FC-5 (2ND FLR. ELEC. RM.) | FAN COIL UNIT. AIRFLOW: 477 L/S @ 26MM ESP (1010 CFM @ 1" ESP) ELECTRICS: 208V / 3 PH / 60 HZ; HP 1.5. EAT: -42°C (-43.6°F) LAT: 22°C (72°F) EWT: 82°C (180°F) FLUID FLOW: 43.2 L/M (11.4 USGPM). HEAD: 4.4M (14.3 FT) H2O. C/W VIBRATION ISOLATING MOUNTING HARDWARE, BIRD SCREEN. | MCQUAY DESTINY / LAH002A |
| WF-1 (UTILITY RM.) | FIN TUBE BASEBOARD HEATER LENGTH: 6 FT. C/W 1" DIA CUAL TUBE, 3-1/4" SQUARE FINS SPACED AT 40 FINS PER FOOT, ONE TIER. | STERLING VERSALINE/ JVA-S11 ENCL. C/W C34 TYPE ELEMENT |
| WF-2 (MEZZ. RM.) | FIN TUBE BASEBOARD HEATER LENGTH: 13 FT. C/W 1" DIA CUAL TUBE, 3-1/4" SQUARE FINS SPACED AT 40 FINS PER FOOT, ONE TIER. | STERLING VERSALINE/ JVA-S11 ENCL. C/W C34 TYPE ELEMENT |
| WF-3 (WASH RM.) EXISTING | EXISTING - LOCATED IN WASHROOM | EXISTING |
| XTh | EXPLOSION PROOF HEATING THERMOSTAT | EXPLOSION PROOF BY DIV. 26. |
| XTv | EXPLOSION PROOF VENTILATION THERMOSTAT. | EXPLOSION PROOF BY DIV. 26. |
| XFTv | EXPLOSION PROOF VENTILATION FREEZE STAT. SET TO SHUT OFF HIGH RATE VENTILATION AT 5°C (41°F) | EXPLOSION PROOF BY DIV. 26. |
| Th | HEATING THERMOSTAT | BY DIV. 26. |
| Tv | VENTILATION THERMOSTAT. | BY DIV. 26. |
| MTh | MECHANICAL HEATING THERMOSTATS MECHANICAL THERMOSTATIC RADIATOR VALVES C/W STANDARD VALVE BODY, REMOTE THERMOSTATIC HEAD WITH USER ADJUSTMENT AND REGULUX LOCKSHIELD DRAIN/FILL FITTING. | HEIMEIER / STANDARD BODY C/W TYPE F REMOTE HEAD AND REGULUX LOCKSHIELD. |
| GD-1 GD-2 | FLAMMABLE & TOXIC GAS DETECTORS | EXPLOSION PROOF BY DIV. 26. |
| GF-1 | POLY PROPYLENE GLYCOL FEEDER SYSTEM. C/W 50 US GAL TANK IN STEEL FRAME, CONTROL SYSTEM, GEAR PUMP, INDICATOR LIGHTS & AUDIBLE LOW LEVEL ALARM AND SUCTION & DISCHARGE ASSEMBLIES. ELECTRICS: 120 V / 1 PH / 60 HZ; 1/3 HP | NEPTUNE / G-50-1A |
| EXP-1 | BLADDER TYPE EXPANSION TANK CARBON STEEL SHELL, HEAVY DUTY BUTYL/EPDM RUBBER DIAPHRAGM RED OXIDE PRIMER FINISH. C/W AIR VENTS. | AMTROL / EXTROL AX80(V) |

| HEATING & VENTILATING EQUIPMENT LIST | | |
|--------------------------------------|---|---|
| ITEM No. | DESCRIPTION | MF'R/MODEL |
| AFS-1, 2, 3 & 4 | AIRFLOW SWITCHES, SAIL TYPE. DETECTION THRESHOLD: 100 SCFM "ON"; 50 SCFM "OFF" SWITCH RATING: 208V AC / 5 AMPS. | METEX / AT14161 SERIES |
| WFS-1, 2. | WATER FLOW SWITCHES, PADDLE TYPE SENSITIVE TYPE SIZED TO SUIT PIPE SIZE. SWITCH RATING: 208 V AC / 1 HP (8.8 AMPS) | JOHNSON CONTROLS/ F61MD SERIES |
| SA GRILLES | ALUMINUM GRILLES SIZED TO SUIT SERVICE DUCT DIMENSIONS. C/W 3/4" SPACING, W/OPOSED BLADE DAMPER. | NAILOR 51DH-O |
| SB GRILLES | HIGH CAPACITY EXTRUDED ALUMINUM GRILLE SIZED TO SUIT DUCT DIMENSIONS. C/W EXTRUDED ALUMINUM AIRFOIL BLADES ON 3" CENTERS, HORIZONTAL FRONT & VERTICAL REAR BLADES WITH OPPOSED BLADE DAMPER. | NAILOR 813DH-O |
| HC-1 | ONE STAGE SETPOINT CONTROL. CONTROLLER TO ACCEPT TEMPERATURE INPUT FROM OUTDOOR SENSOR. CONTROLLER TO OUTPUT ON - OFF SIGNAL TO CONTROL WARM WEATHER SHUTDOWN ON EQUIPMENT INDICATED ON DRAWING. | TEKMAR / A |
| ODS-1 | OUTDOOR SENSOR FOR USE WITH TEKMAR 274 AND 150 CONTROLS | TEKMAR / OUTDOOR SENSOR 070 |
| BS-1 | BOILER SUPPLY SENSOR FOR USE WITH TEKMAR 274 CONTROL | TEKMAR / OUTDOOR SENSOR 082 |
| GS-1 | GENERAL USE SENSOR FOR USE WITH TEKMAR 274 AND 361 CONTROLS | TEKMAR / SENSOR 071 |
| Th-1 | HYDRONIC SYSTEM THERMOMETER. RANGE: -11 TO 115 DEG. C (30 TO 240 DEG. F) SCALE SIZE: 14 CM (5-1/2" LONG.) STRAIGHT OR RIGHT ANGLE TO SUIT APPLICATION C/W 13MM (1/2") BRASS THERMOWELL | TRERICE / HT30 SERIES AND HT31 SERIES TO SUIT APPLICATION |
| PG-1 | HYDRONIC SYSTEM PRESSURE GAUGE. INDUSTRIAL, LIQUID FILLED PRESSURE GAUGE WITH STAINLESS STEEL CASE, CRIMPED RING AND WETTED PARTS. DIAL SIZE: 100MM (4") RANGE: 0 TO 207 KPA (0 TO 30 PSI) STRAIGHT OR RIGHT ANGLE ARRANGMENT TO SUIT APPLICATION | TRERICE / 700 SERIES TO SUIT APPLICATION. |
| STR-1 | WYE PATTERN BRONZE STRAINERS SIZED TO SUIT PIPE SIZE. C/W STANDARD SCREEN AND SOLID RETAINER CAP WITH GASKET | WATTS / 777 SERIES |
| FD-1 | FIRE DAMPER, DYNAMIC RATED, CURTAIN TYPE, STANDARD FRAME. C/W FUSIBLE LINK ACTUATOR. SIZED TO SUIT OPENING. FOR INSTALLATION WHERE INDICATED ON DRAWING AND ANYWHERE THAT DUCTWORK PENETRATES A FIRE SEPARATION. | NAILOR / SERIES D0110 TYPE A |

HEATING & VENTILATION NOTES

- EQUIPMENT NOTED ON THIS DRAWING IS IDENTIFIED BY TRADE NAME TO INDICATE MINIMUM ACCEPTABLE QUALITY. REFER TO SPECIFICATIONS FOR INFORMATION REGARDING SUBSTITUTIONS.
- ALL EQUIPMENT NOTED ON THIS DRAWING TO BE NEW EQUIPMENT UNLESS OTHERWISE NOTED.
- INSULATE ALL DUCTWORK IN SUSPENDED CEILING SPACE WITH 25mm THICK FIBERGLASS DUCT WRAP, FINISHED WITH VAPOUR PROOF JACKET. SEAL ALL JACKET SEAMS.
- INSULATE ALL DUCTWORK IN ATTICS AND OTHER UNHEATED SPACES WITH 75mm THICK FIBREGLASS DUCT WRAP, FINISHED WITH VAPOUR PROOF JACKET. SEAL ALL JACKET SEAMS.
- ADJUST THE LOCATIONS OF EQUIPMENT, DUCTWORK, DIFFUSERS & GRILLES TO ACCOMMODATE OTHER TRADES.
- ALL DUCTWORK TO BE GALVANIZED STEEL UNLESS OTHERWISE NOTED, FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE SMACNA STANDARDS.
- SHORT (MAX. 750mm LONG) INSULATED FLEX DUCTS MAY BE USED TO CONNECT METAL DUCTS TO FLEXIBLE DUCT CONNECTORS (MIN. 150mm LONG) WHERE DUCTWORK CONNECTS TO DIFFUSERS & GRILLES.
- INSTALL FLEXIBLE DUCT CONNECTORS (MIN. 150mm LONG) WHERE DUCTWORK CONNECTS TO ANY MOTORIZED EQUIPMENT.
- MOUNT ALL FANS ON VIBRATION ISOLATORS.
- INSTALL ULC LISTED FIRE RATED FIRE DAMPERS WHERE SHOWN AND IN ALL DUCTS THAT PENETRATE FIRE SEPARATIONS (REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE SEPARATIONS).
- INSULATE ALL EXHAUST AND INTAKE DUCTWORK AS WELL AS COMBUSTION AIR INTAKE DUCT TO EXTERIOR WALL WITH 25mm THICK FIBREGLASS DUCT WRAP COVERED WITH VAPOUR IMPERMEABLE JACKET.
- PROVIDE ALL INSULATION MATERIAL IN ACCORDANCE WITH CAN/ULC S102 WITH MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50.
- CONTRACTOR TO ENSURE THAT EXISTING ELECTRICAL SERVICE IS SUITABLE FOR PROPOSED NEW MECHANICAL EQUIPMENT AS LISTED ABOVE.
- ALL STATIC PRESSURES, (ESP = EXTERNAL STATIC PRESSURE), NOTED ARE EXTERNAL TO ALL PACKAGED UNIT ACCESSORIES. ESP'S QUOTED DO NOT INCLUDE FILTER LOSSES.
- REFER TO SPECIFICATION FOR DETAILS ON ACOUSTIC AND THERMAL DUCT INSULATION REGARDING SUBSTITUTIONS.
- INSTALL BALANCING DAMPERS ON ALL SERVICE DUCTS TO EACH DIFFUSER.
- ALL EXPOSED DUCTWORK, DIFFUSERS, GRILLES AND REGISTERS SHALL BE FINISHED WITH WHITE POWDER COAT PAINT.

| FUEL EQUIPMENT LIST | | |
|---------------------|--|---|
| ITEM No. | DESCRIPTION | MF'R/MODEL |
| FT-1 | ABOVE GROUND DOUBLE WALL OUTDOOR FUEL STORAGE TANK FOR BOILERS. 15,000 L (3300 IMP. GAL.) CAPACITY C/W END SUPPORTS, VM-3 TANK MOUNTED VACUUM GAUGE WITH COVER, OVERFILL SPILL COLLECTOR, EMERGENCY VENT, NORMAL VENT, DIPSTICK AND GAUGE CHART, ACCESS STAIRS WITH HANDRAIL AND PLATFORM, BLAST FINISH WITH ONE COAT OF PRIMER AND ONE COAT OF WHITE ENAMEL COATINGS, REMOTE INTERSTITIAL VACUUM MONITORING AND HIGH / LOW LEVEL ALARM SWITCHES TO SUIT TANK. | CLEMMER / ITEM 1 PER QUOTE COA-17563-12.DOC WITH ADDITIONAL LEVEL SWITCHES. |
| DT-1 | ABOVEGROUND DOUBLE WALL INDOOR FUEL OIL DAY TANK FOR BOILERS. 1150 L CAPACITY (250 IMP. GAL.) BUILT AND LABELLED TO ULC S 602 BLAST FINISHED AND BLUE EPOXY COATED C/W SADDLES, INTERSTITIAL VENT CONNECTION, INTERSTITIAL VACUUM GAUGE WITH SWITCH, RPCA-2 REMOTE MONITOR AND 4 STATION LEVEL SWITCH TO SUIT TANK. | CLEMMER / ITEM 2 PER QUOTE COA-17563-12.DOC WITH ADDITIONAL LEVEL SWITCHES. |
| FP-1 | PACKAGED DUPLEX FUEL OIL PUMPING SYSTEM WITH CONTROLLER. C/W DUPLEX PUMPS, SUCTION STRAINER, RELIEF VALVES, ISOLATION VALVES, LIQUID FILLED PRESSURE GAUGES, ULC / CSA LISTED ALBANY DUCON SERIES DUPLEX FUEL MANAGEMENT CONTROL CENTER IN NEMA 12 ENCLOSURE AND ALL ASSOCIATED ACCESSORIES AND PIPING. SYSTEM CAPACITY: 7.6 L/M (2 USGPM) OF #2 HEATING OIL. ELECTRICAL: 208V / 3 PH / 60 HZ; 1/2 HP SYSTEM IS TO PROVIDE DRY CONTACT ALARM OUTPUTS SUITABLE FOR INTEGRATION INTO SCADA CONTROLLER FOR MAIN TANK LOW FUEL, DAY TANK HIGH AND LOW LEVEL ALARM. | ALBANY PUMP / FODUP/030C/BS |

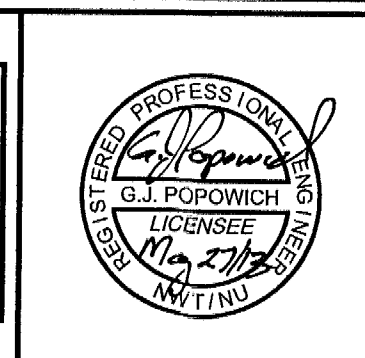
FUEL EQUIPMENT NOTES

- CONTRACTOR TO FIELD CONFIRM DIMENSIONS OF TANK PRIOR TO CONSTRUCTION.
- FUEL OIL STORAGE TANKS AND PIPING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL FIRE CODE OF CANADA AND COME ENVIRONMENTAL CODE OF PRACTICE FOR ABOVEGROUND AND UNDERGROUND STORAGE TANK SYSTEMS CONTAINING PETROLEUM AND ALLIED PETROLEUM PRODUCTS AND CSA B139-10.
- INSTALL EQUIPMENT TO APPLICABLE CODES, STANDARDS, DETAILS IN SPECIFICATIONS AND ON DRAWINGS, OR MANUFACTURERS RECOMMENDATIONS. IN THE EVENT OF A CONFLICT, CONSULT ENGINEER REGARDING DIRECTION.
- CONTRACTOR TO PROVIDE EQUIPMENT SHOP DRAWINGS OF ALL MECHANICAL & ELECTRICAL COMPONENTS FOR ENGINEER'S APPROVAL PRIOR TO SUPPLY & INSTALLATION.
- ABOVE GROUND PIPE TO BE WELDED.
- FUEL TRANSFER SUPPLY & RETURN PIPING TO BE AIR TESTED AT 1.5 TIMES MAXIMUM FUEL PUMP WORKING PRESSURE. CONTRACTOR TO PROVIDE PRESSURE TEST CERTIFICATE TO THE ENGINEER.
- MISCELLANEOUS STEEL TO BE PREPARED IN ACCORDANCE WITH STANDARD SSPC-SP2. CONTRACTOR TO INSTALL PIPE ANCHORS AND GUIDES AS REQUIRED TO SUPPORT ABOVE GROUND PIPING.
 - MAX. PIPE SUPPORT/HANGER SPACING:
 - 50mm PIPE = 3 METERS
 - 75mm PIPE = 3.6 METERS
- CONTRACTOR TO RECORD AS-BUILT LOCATIONS OF ALL INSTALLED EQUIPMENT & PIPING.
- CONTRACTOR TO SUPPLY & INSTALL LINE IDENTIFICATION ON ALL EXPOSED PIPING C/W FLOW ARROWS.
- CONTRACTOR TO SUPPLY & INSTALL IDENTIFICATION LABELS TO ALL TANKS SO TANKS ARE EASILY IDENTIFIABLE IN RELATION TO CONTROL PANELS. LETTERS ARE TO BE BLACK IN COLOUR, 75mm HIGH.
- CONTRACTOR TO PROVIDE IDENTIFICATION TAGS FOR ALL EQUIPMENT & VALVES. CONTRACTOR TO PROVIDE VALVE SCHEDULE IN O&M MANUAL ONCE PROJECT IS COMPLETE.
- TANK VENTS FOR MAIN TANKS TO BE 1.0m ABOVE TOP OF TANKS.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH HEATING AND HOARDING, IF REQUIRED. HEATING AND HOARDING MAYBE REQUIRED FOR CONCRETE CURING & BACKFILLING AT TANK SITE.
- CONTRACTOR TO POST FILL PROCEDURE AT MAIN TANK CONTROL PANEL LOCATION. FILL PROCEDURES TO BE INSCRIBED ON LAMOCOID PLATES (WHITE LETTERING ON BLACK BACKGROUND) PERMANENTLY INSTALLED AT EACH LOCATION. PROVIDE SHOP DRAWINGS FOR ENGINEER'S APPROVAL.
- SEE TENDER DOCUMENTS FOR MATERIAL SPECIFICATIONS.

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- Do not scale the drawings.

| Issue / Revision | Date |
|--|---------------|
| 1 ISSUED FOR 66% SUBMISSION | NOVEMBER 2012 |
| 2 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 3 ISSUED FOR TENDER | FEBRUARY 2013 |
| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

| | |
|---|--|
| PERMIT TO PRACTICE Nuna Burnside Engineering & Environmental Ltd. Signature: <i>[Signature]</i> Date: <i>May 27/13</i> PERMIT NUMBER: P 535 The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU | |
|---|--|



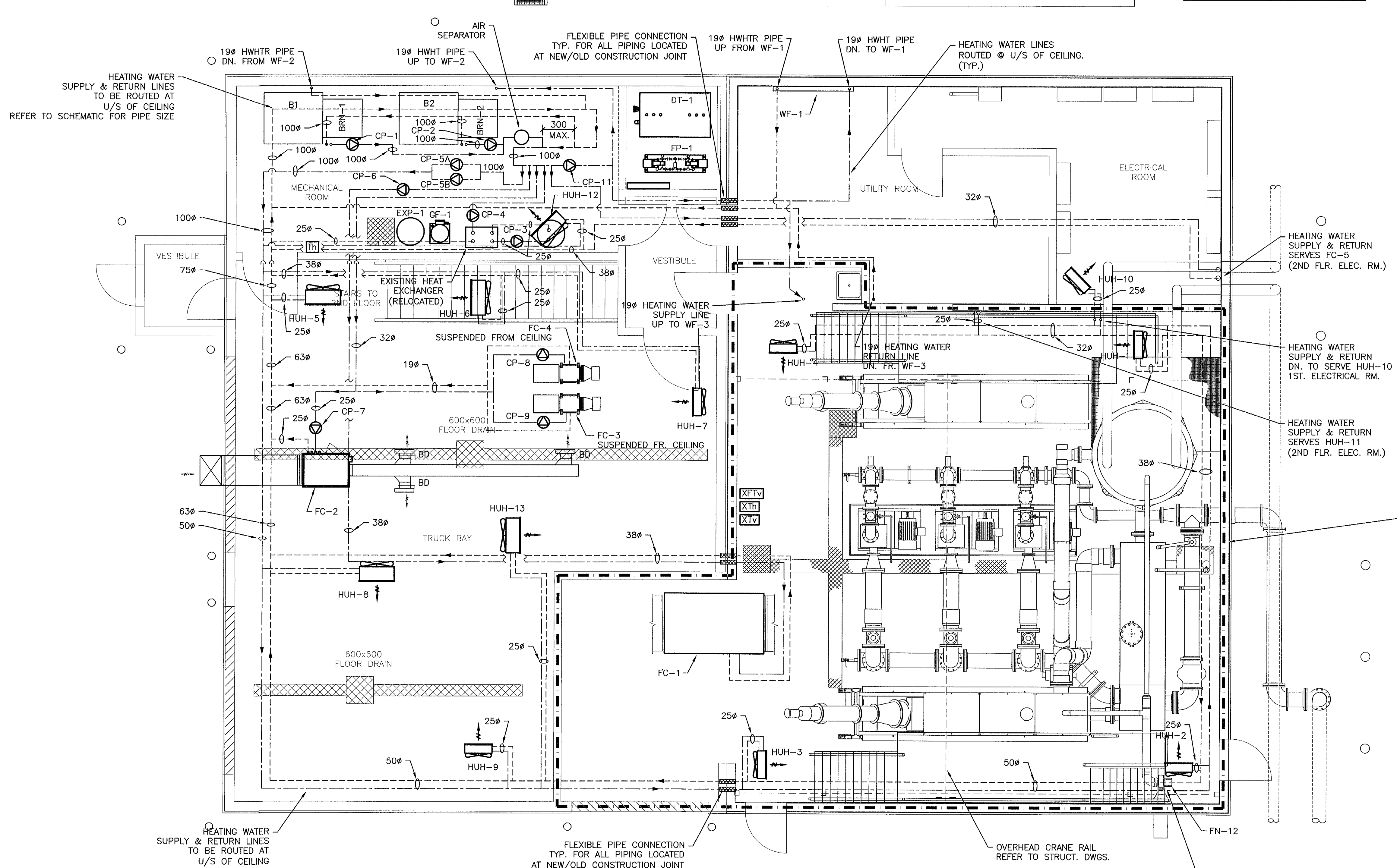
Nuna Burnside
Nuna Burnside Engineering & Environmental LTD.
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 Telephone (204) 949-7110 Fax (204) 949-7111
 web www.neeganburnside.com

Client
**GOVERNMENT OF NUNAVUT
 COMMUNITY & GOVERNMENT
 SERVICES**
**RANKIN INLET
 SEWAGE TREATMENT PLANT**

| | |
|---|------------------------------------|
| Drawing Title MECHANICAL EQUIPMENT SCHEDULE & NOTES | Drawing No. M-4 |
| Drawn By A.H. Scale NTS | Checked By D.Mack, 300031281 |

NOTE:
THE OPERATIONS OF THE SEWAGE TREATMENT FACILITY
MUST BE MAINTAINED WITHOUT INTERRUPTION
THROUGHOUT DURATION OF PLANT UPGRADES.

NOTE:
ONLY HYDRONIC HEATING
EQUIPMENT SHOWN FOR CLARITY.



| HYDRONIC PIPE LEGEND | |
|----------------------|----------------------|
| | HYDRONIC SUPPLY PIPE |
| | HYDRONIC RETURN PIPE |

NOTE:
PROVIDE FLEXIBLE CONNECTIONS FOR ALL EQUIPMENT
INSTALLED WHERE BUILDING TRANSITIONS FROM NEW
CONSTRUCTION AND EXISTING CONSTRUCTION TO
ACCOMMODATE FOR DIFFERENTIAL SETTLEMENT.

NOTE:
THE PROCESS ROOM IS A CLASSIFIED HAZARDOUS AREA.
ALL MATERIAL IN THIS AREA SHALL BE NON-SPARKING
CONSTRUCTION, CLASS 1, ZONE 1, GROUP IIA, EXPLOSION
PROOF CONSTRUCTION

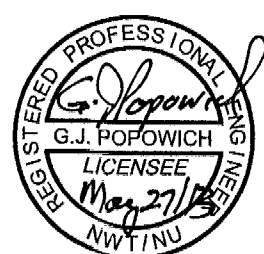
MECHANICAL HYDRONIC PIPING – GROUND FLOOR PLAN

1:50

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4. Do not scale the drawings.

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|--|---------------|
| 1 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 2 ISSUED FOR TENDER | FEBRUARY 2013 |
| 3 REVISED AS PER APPENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

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Signature:
Date: May 27/13
PERMIT NUMBER: P 535
The Association of Professional Engineers,
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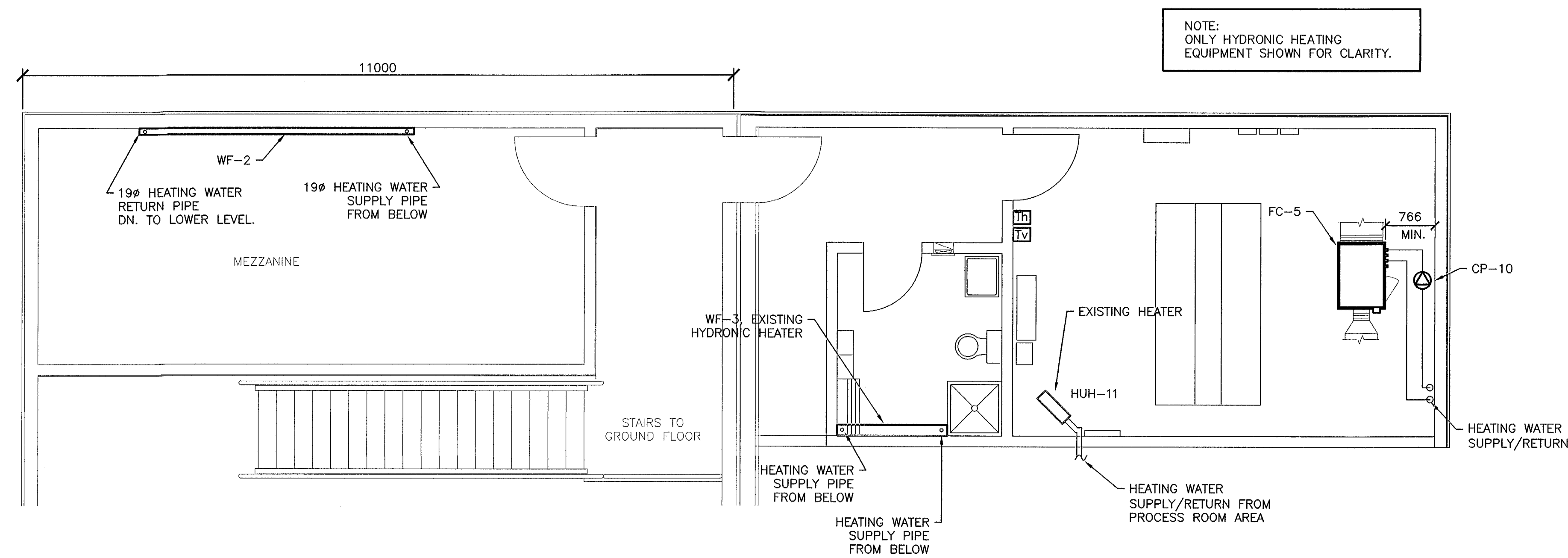


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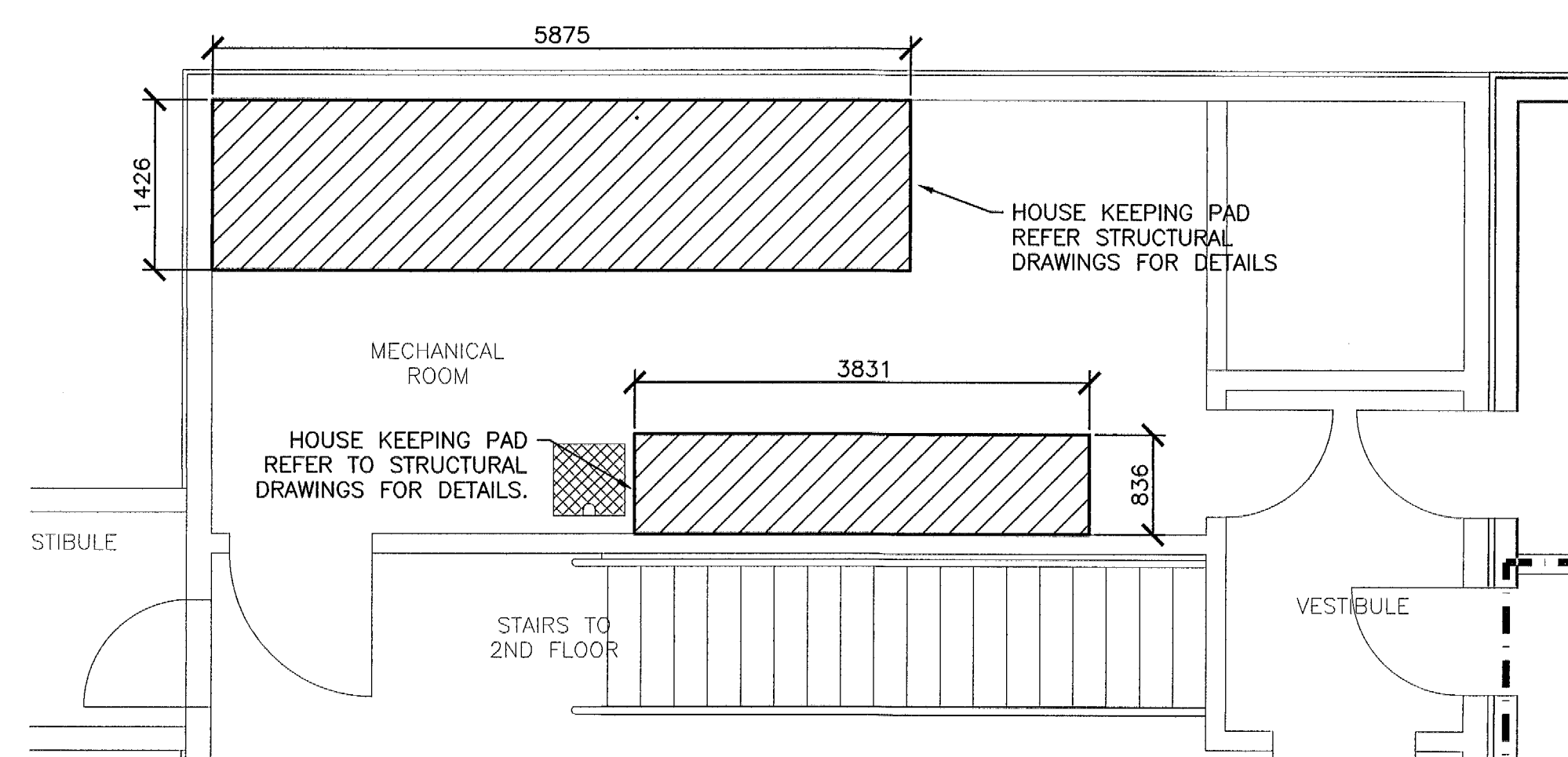
Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
GROUND FLOOR
MECHANICAL HYDRONIC
HEATING LAYOUT

| | | |
|-------------------|--------------------------|--------------------|
| Drawn By A.H. | Checked By D.Mack. | Drawing No. M-5 |
| Scale AS NOTED | Project No. 300031281 | |



MECHANICAL HYDRONIC PIPING - MEZZANINE FLOOR PLAN
1:50

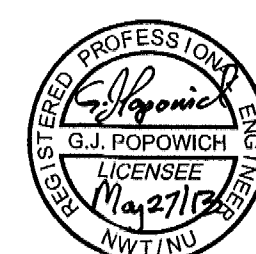


MECHANICAL ROOM HOUSE KEEPING PAD PLAN
1:50

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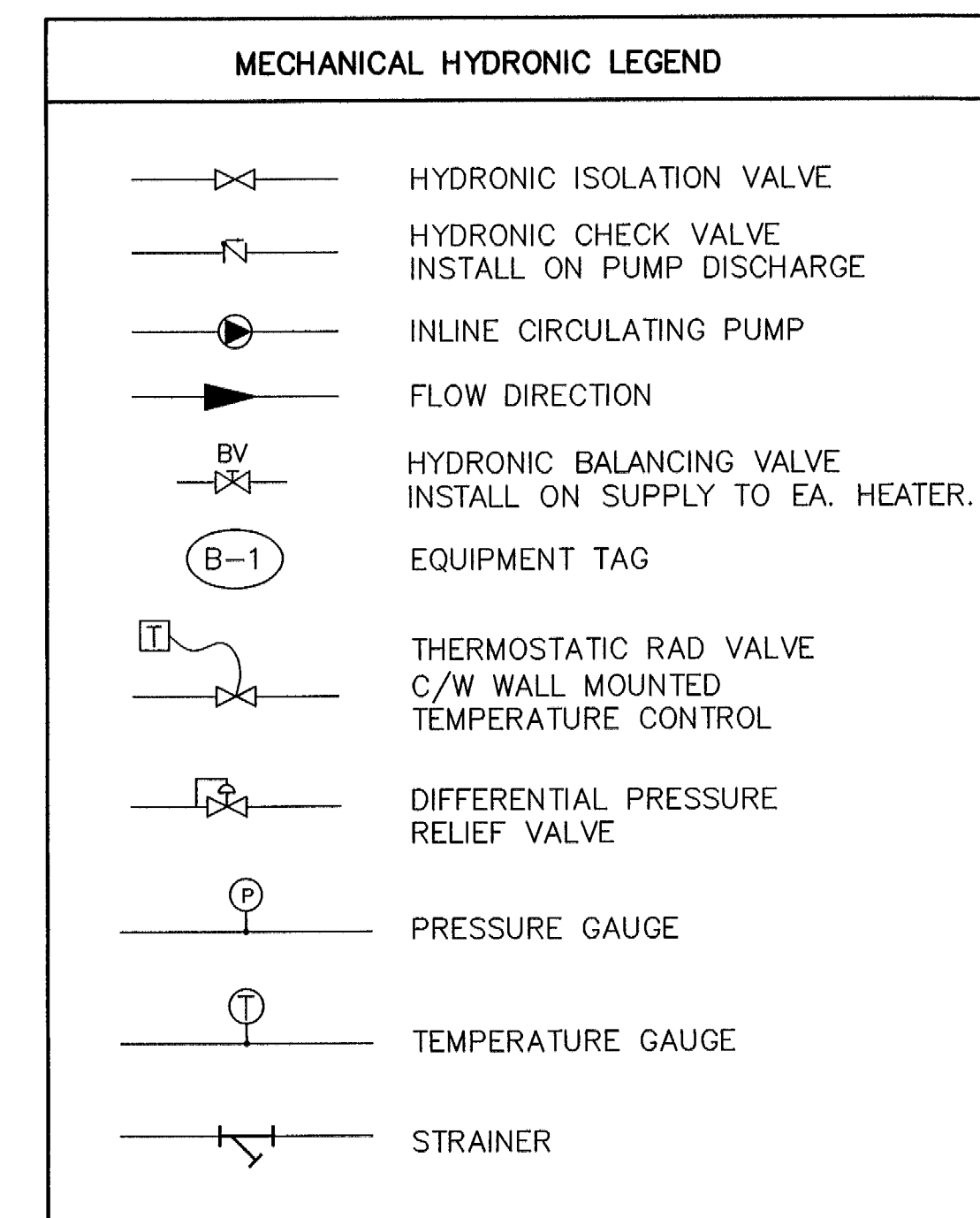
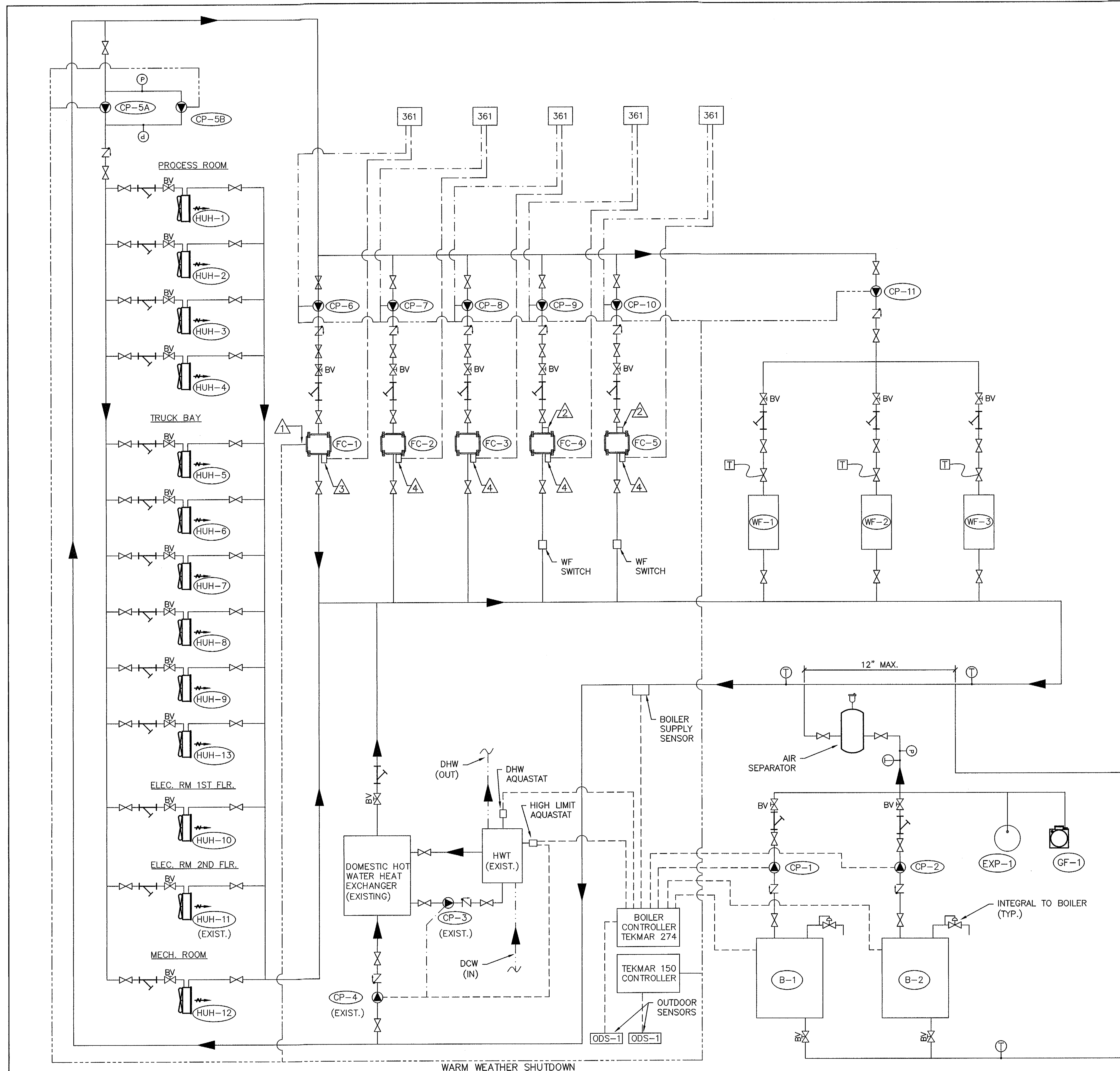


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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
SECOND FLOOR
MECHANICAL HYDRONIC
HEATING LAYOUT

| | | |
|-------------------|--------------------------|--------------------|
| Drawn By A.H. | Checked By D.Mack. | Drawing No. M-6 |
| Scale AS NOTED | Project No. 300031281 | |



NOTES

1. INSTALL AUTOMATIC AIR VENTS AT HIGH POINTS.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE PROCEEDING WITH ANY PART OF THE WORK.
3. THE PIPING CONTAINED ON THIS DRAWING IS DIAGRAMMATIC IN NATURE AND IS NOT INTENDED TO SHOW EXACT LOCATIONS OR DIMENSIONS UNLESS OTHERWISE INDICATED.

NOTE:
ALL MATERIAL IN THE PROCESS ROOM SHALL BE
NON-SPARKING CONSTRUCTION, CLASS 1, ZONE 1,
GROUP IIA, EXPLOSION PROOF CONSTRUCTION.

CONTROLS NOTES

- ⚠ WARM WEATHER SHUT DOWN TO CAUSE FC-1 TO SWITCH TO HI FAN SPEED IN SUMMER & LOW FAN SPEED IN WINTER.
- ⚠ IF NO AIRFLOW OR NO WATER FLOW ON RUNNING UNIT - THEN SWITCH ON OTHER UNIT. ONE UNIT IS CP-9 & FC-4 OTHER UNIT IS CP-10 & FC-5.
- ⚠ 10K OHM EXPLOSION PROOF TEMP. SENSOR TO BE INSTALLED IN AIR DUCT OF FAN COIL.
- ⚠ TEKMAR TEMP. SENSOR TO BE INSTALLED IN AIR DUCT OF FAN COIL.

NOTE:
PROVIDE FLEXIBLE CONNECTIONS FOR ALL EQUIPMENT
INSTALLED WHERE BUILDING TRANSITIONS FROM NEW
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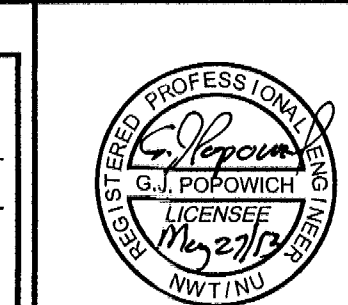
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Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: *27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers,
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MECHANICAL HYDRONIC SCHEMATIC

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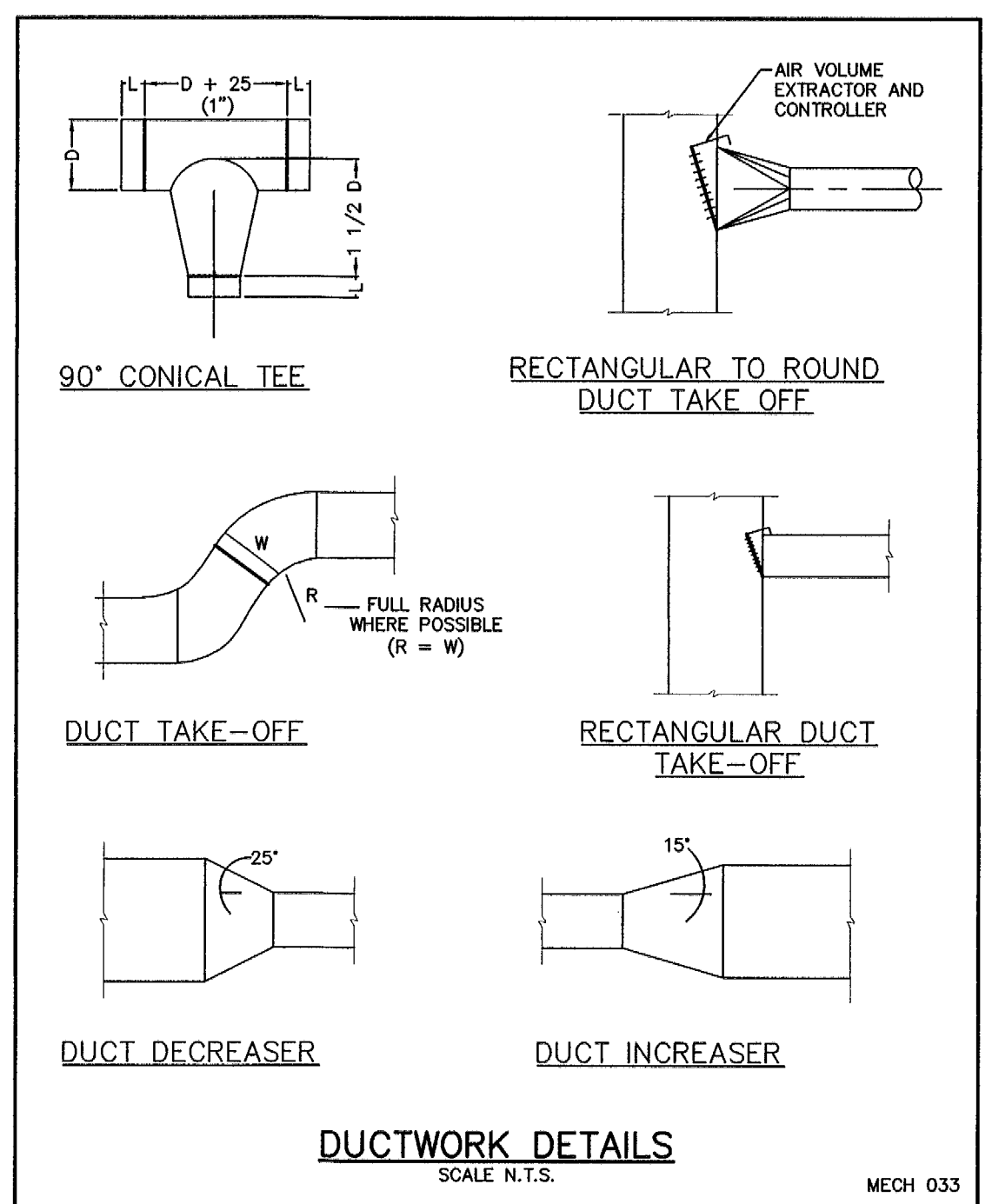
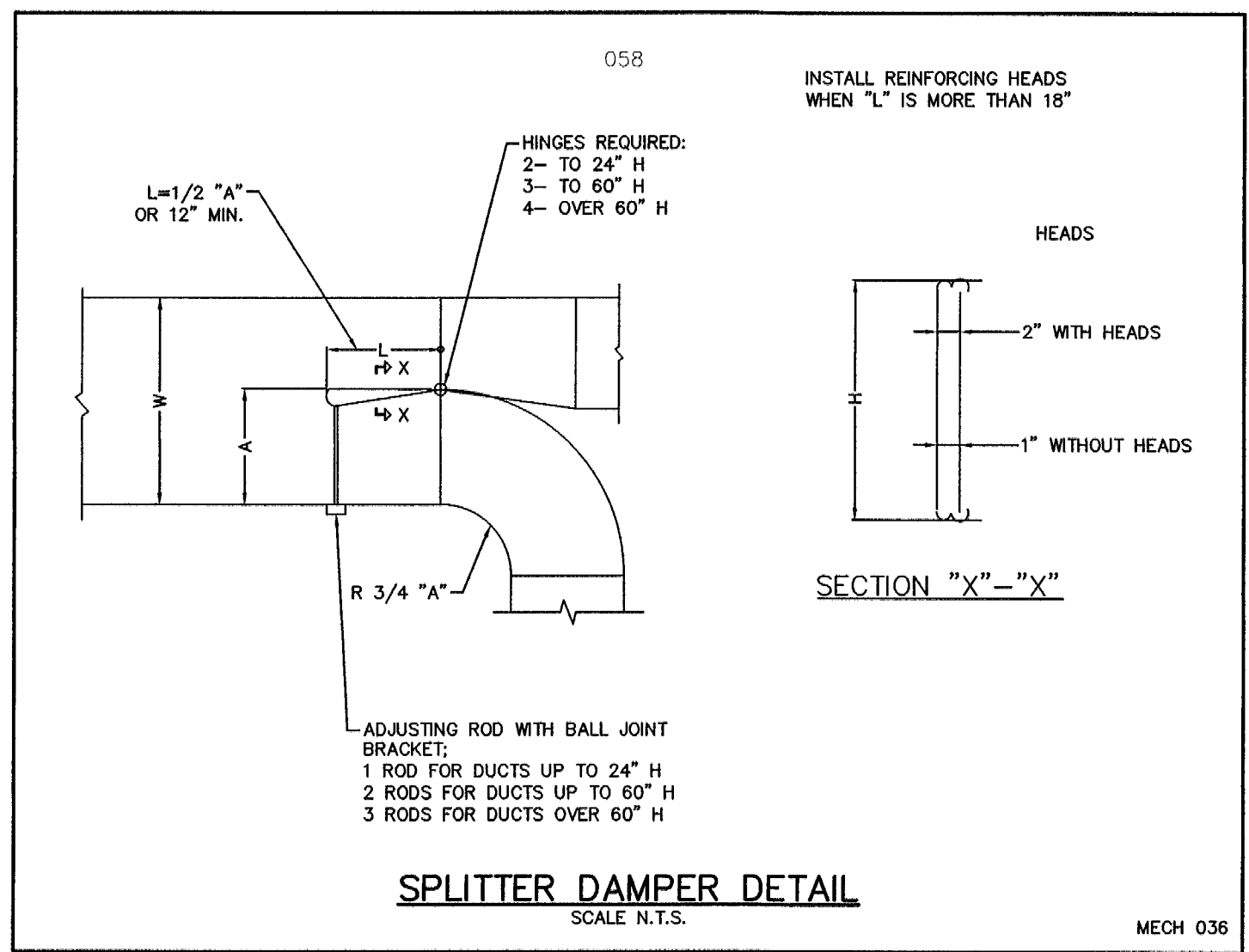
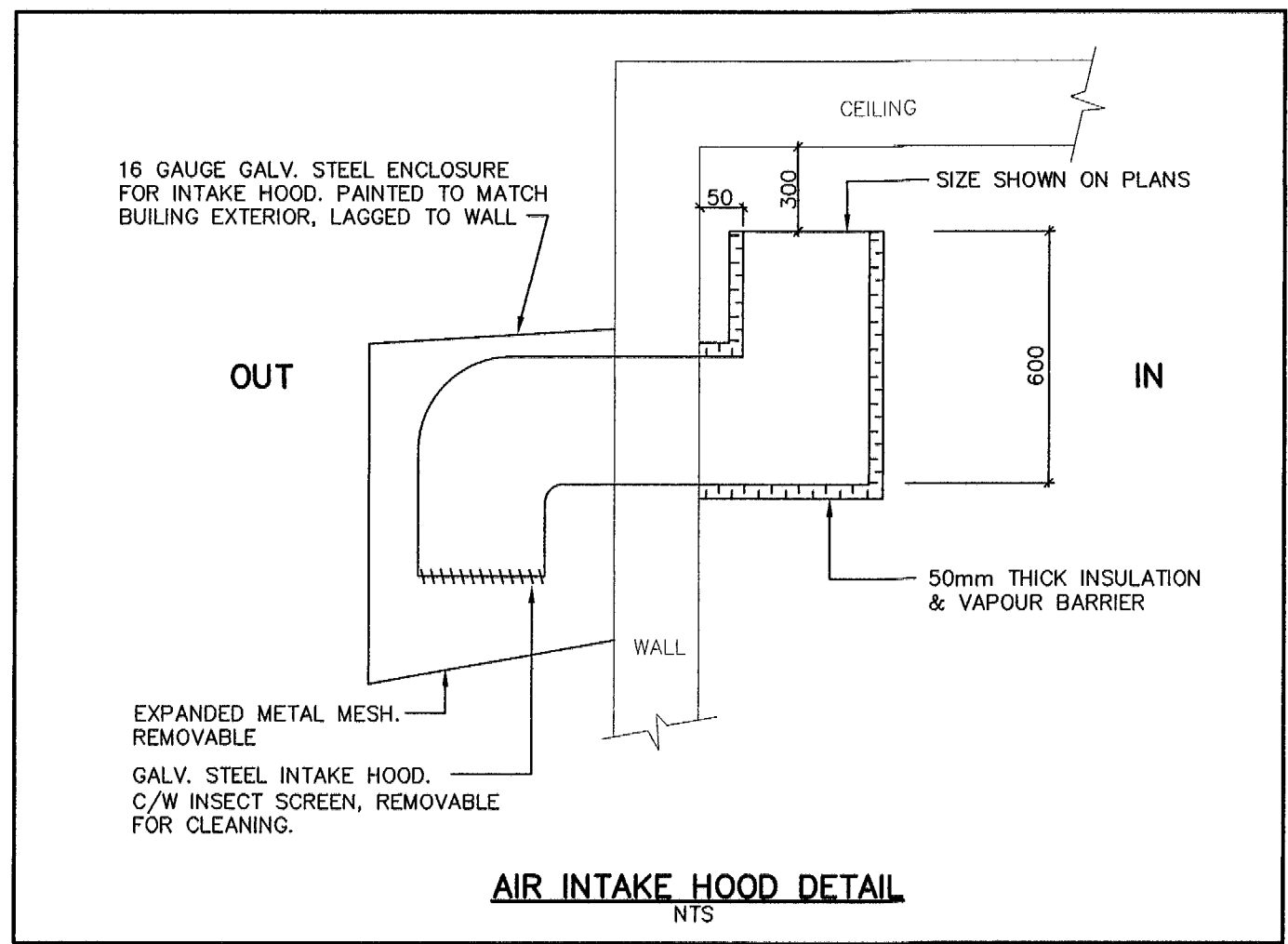
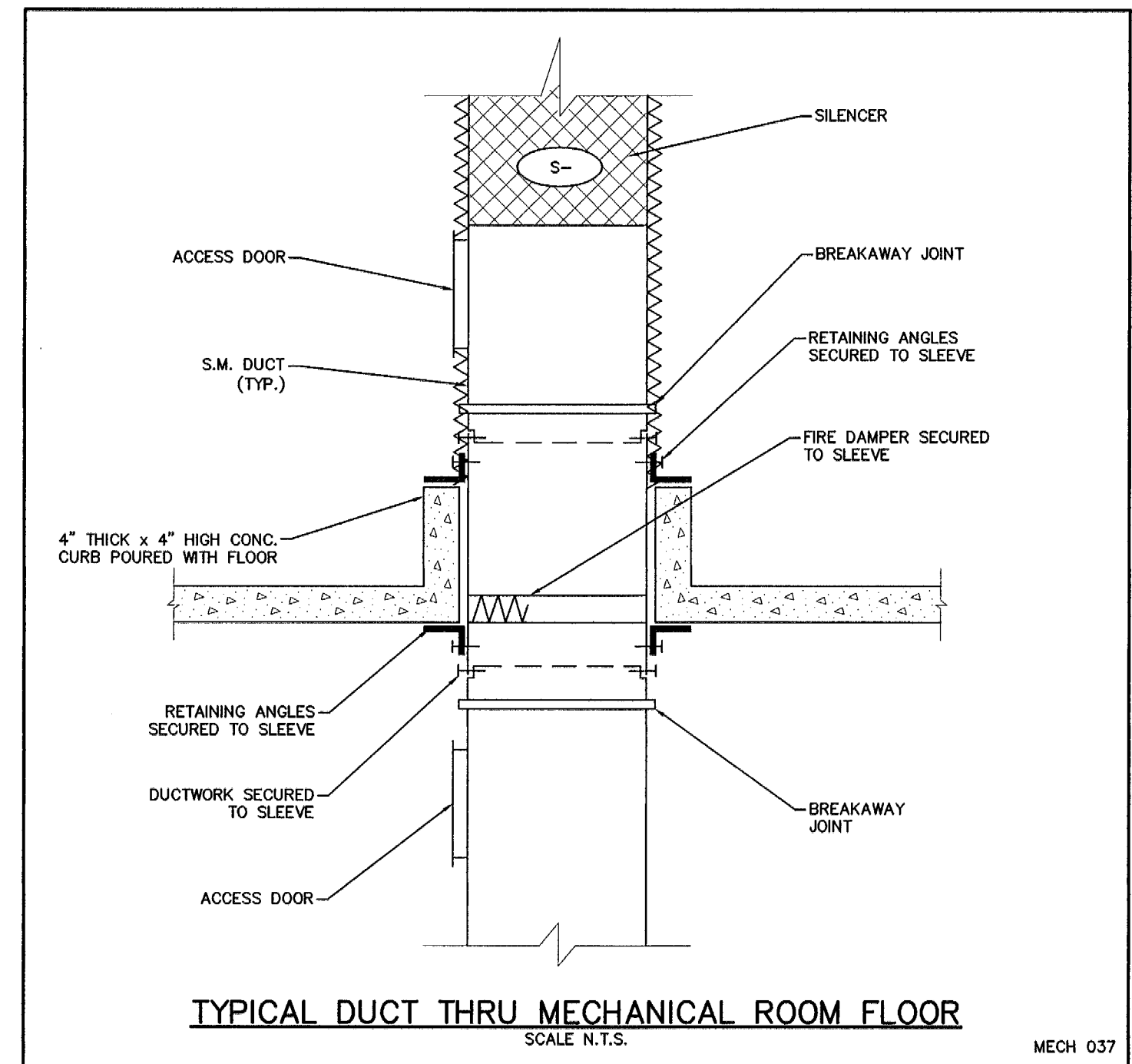
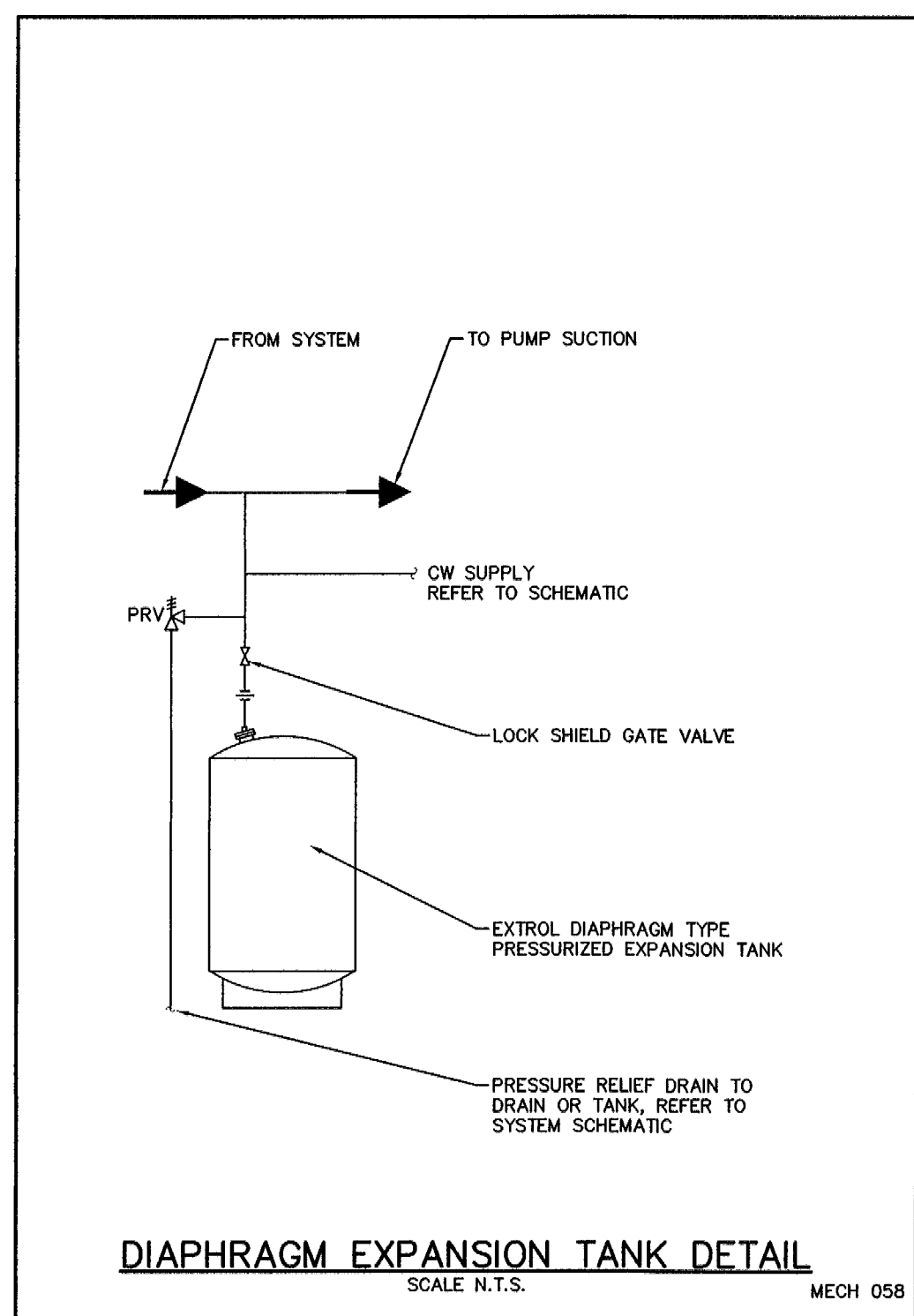
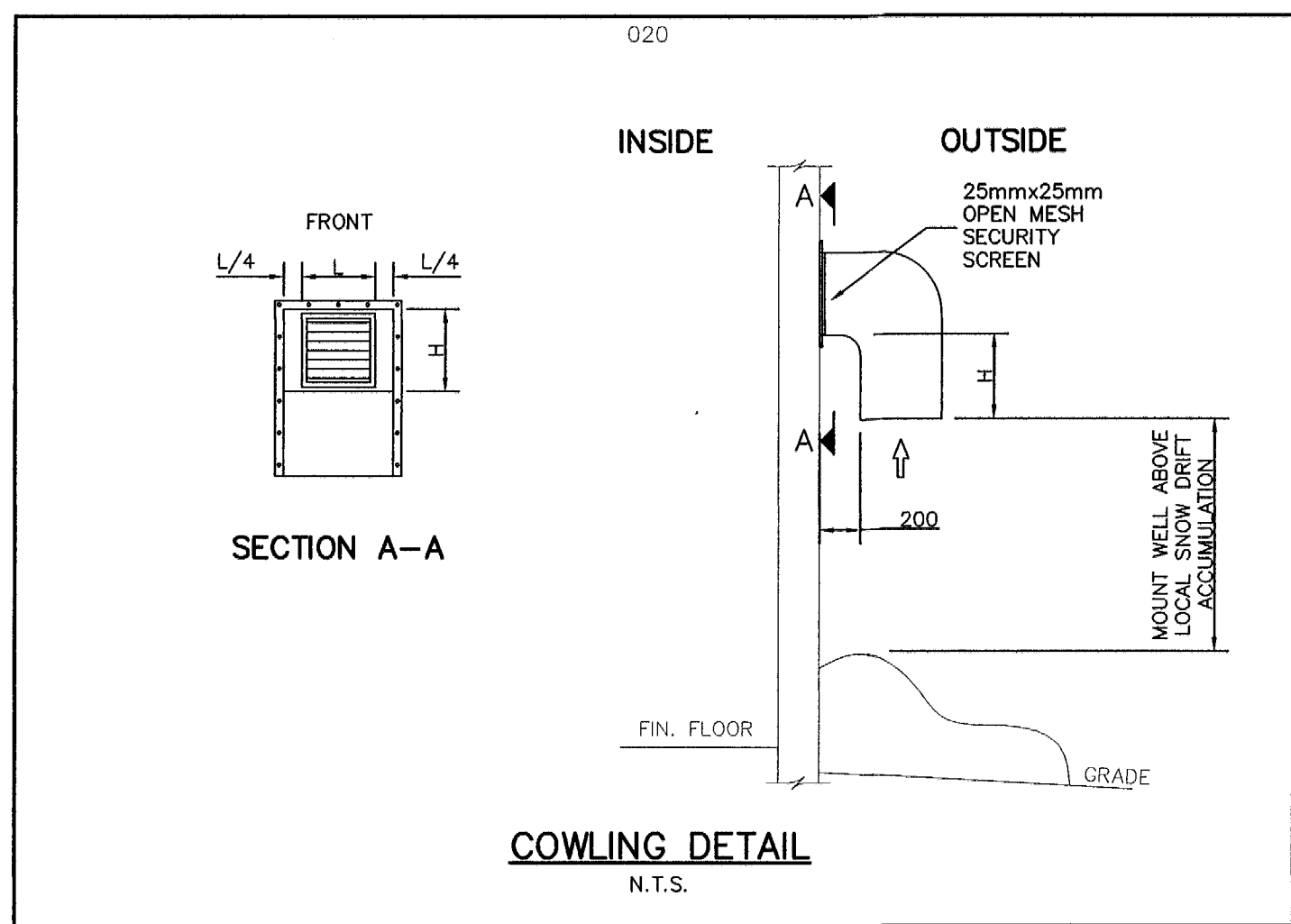
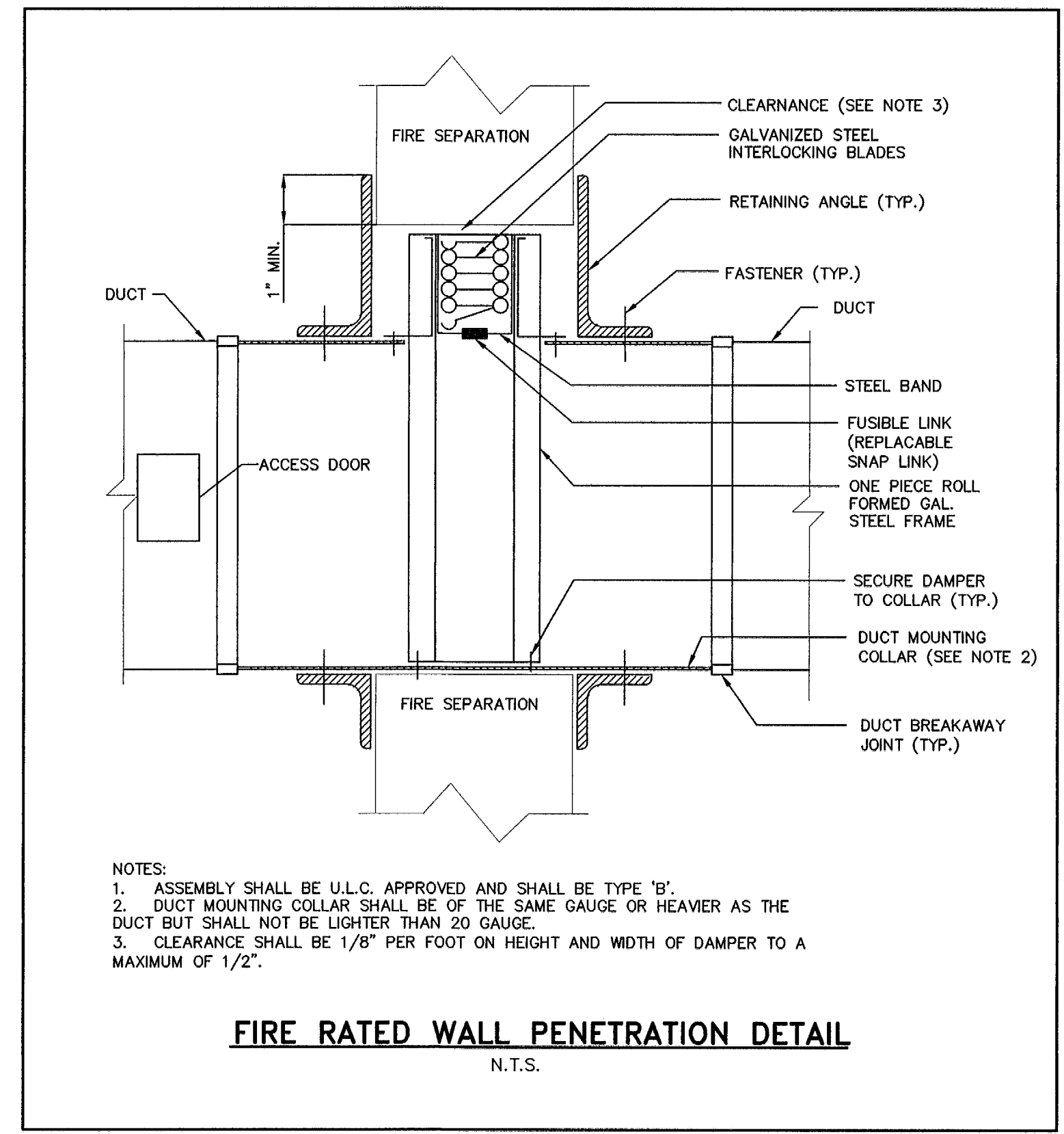
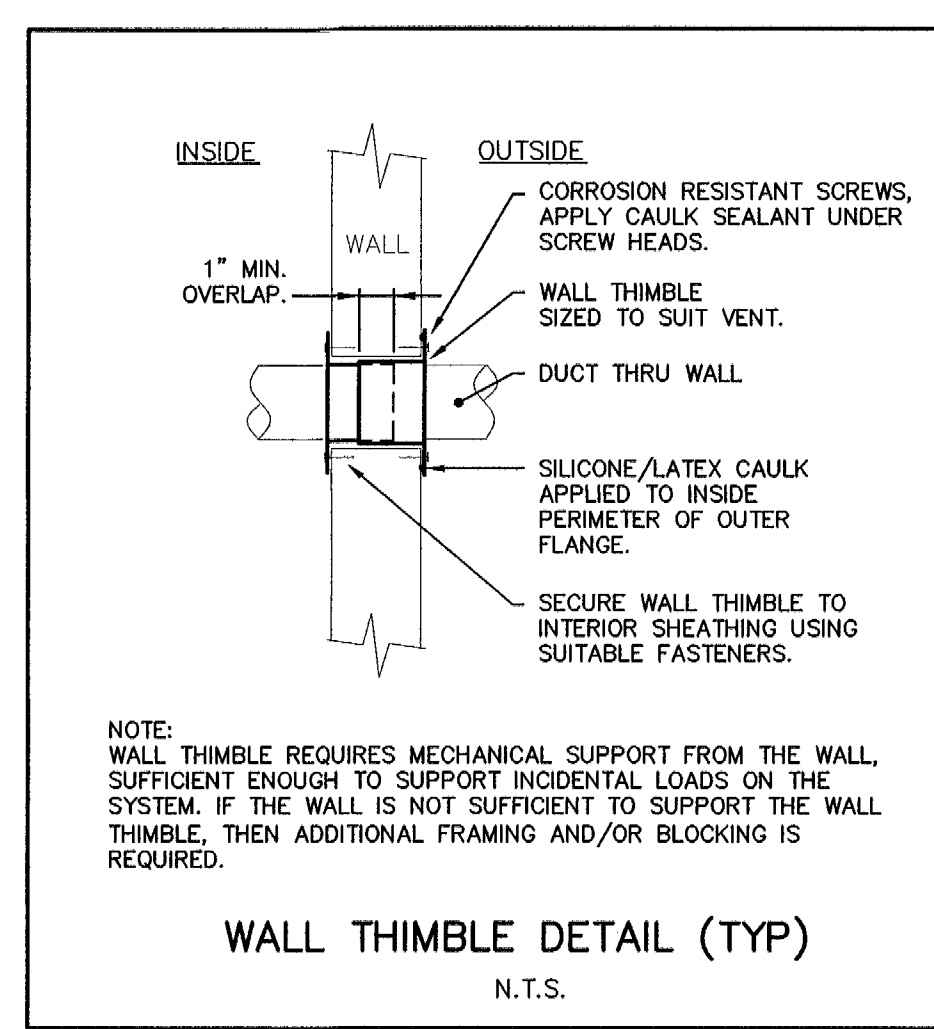
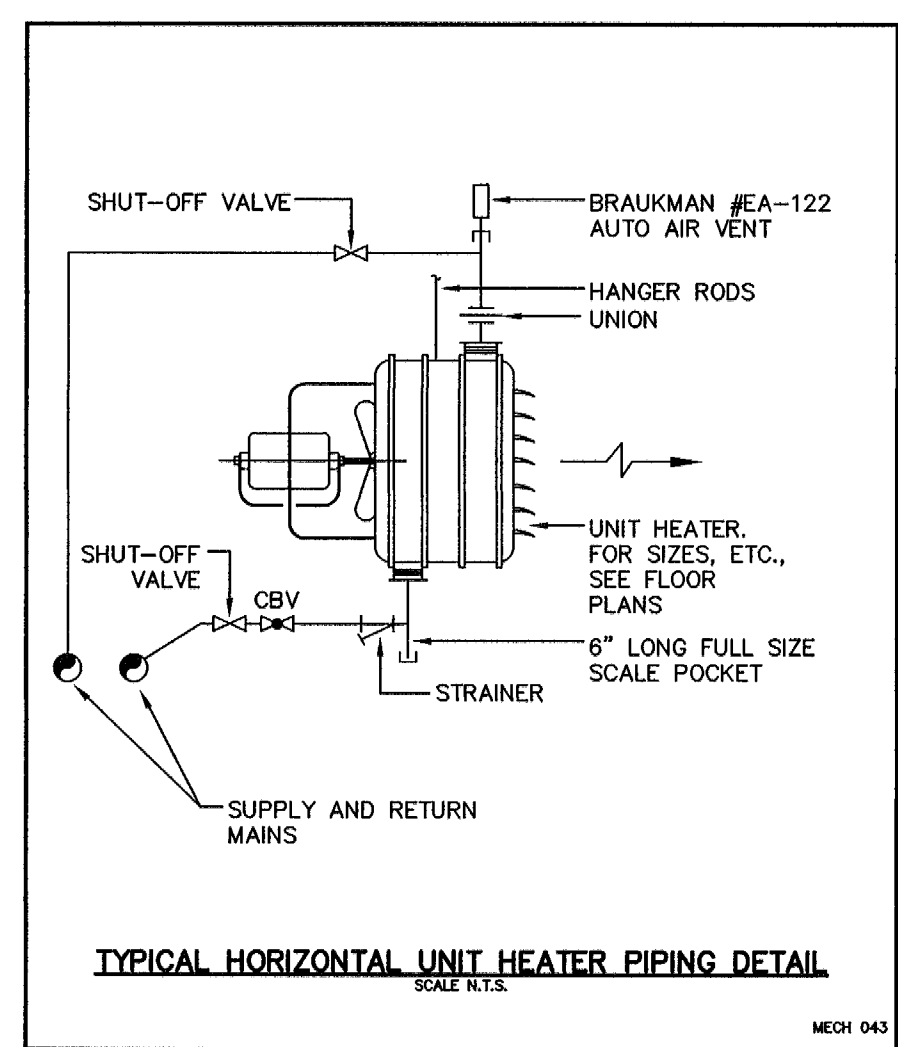
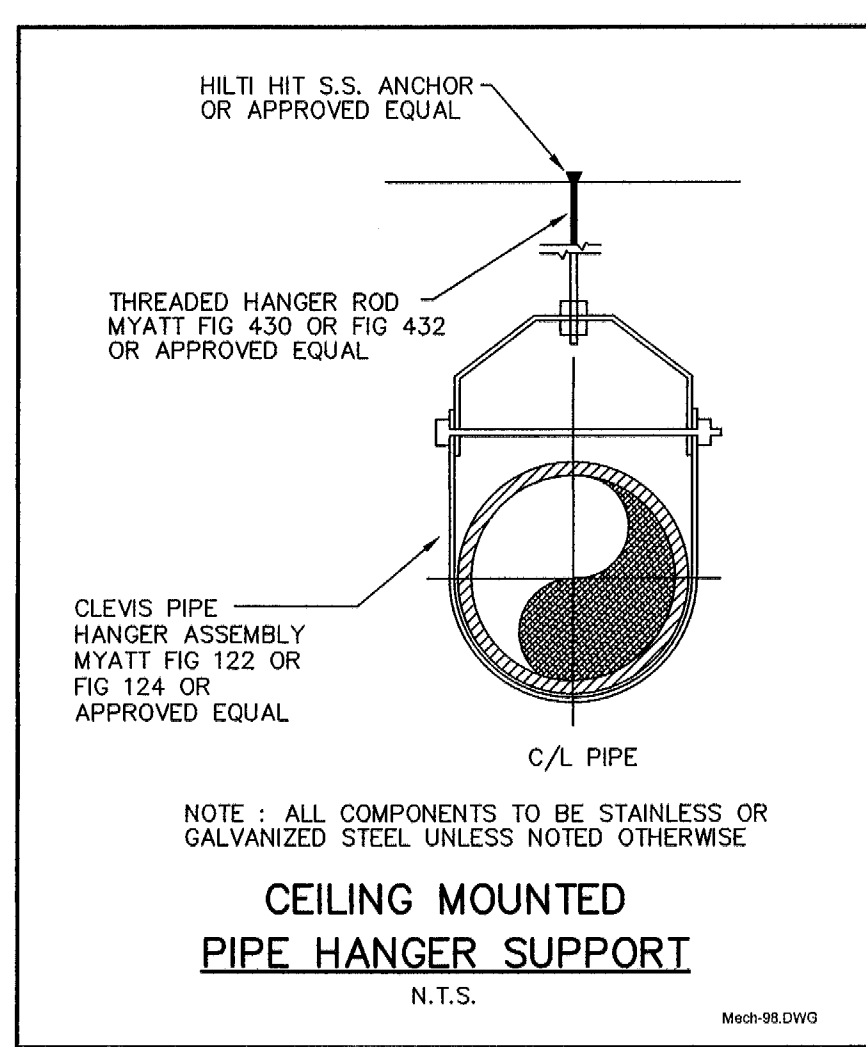
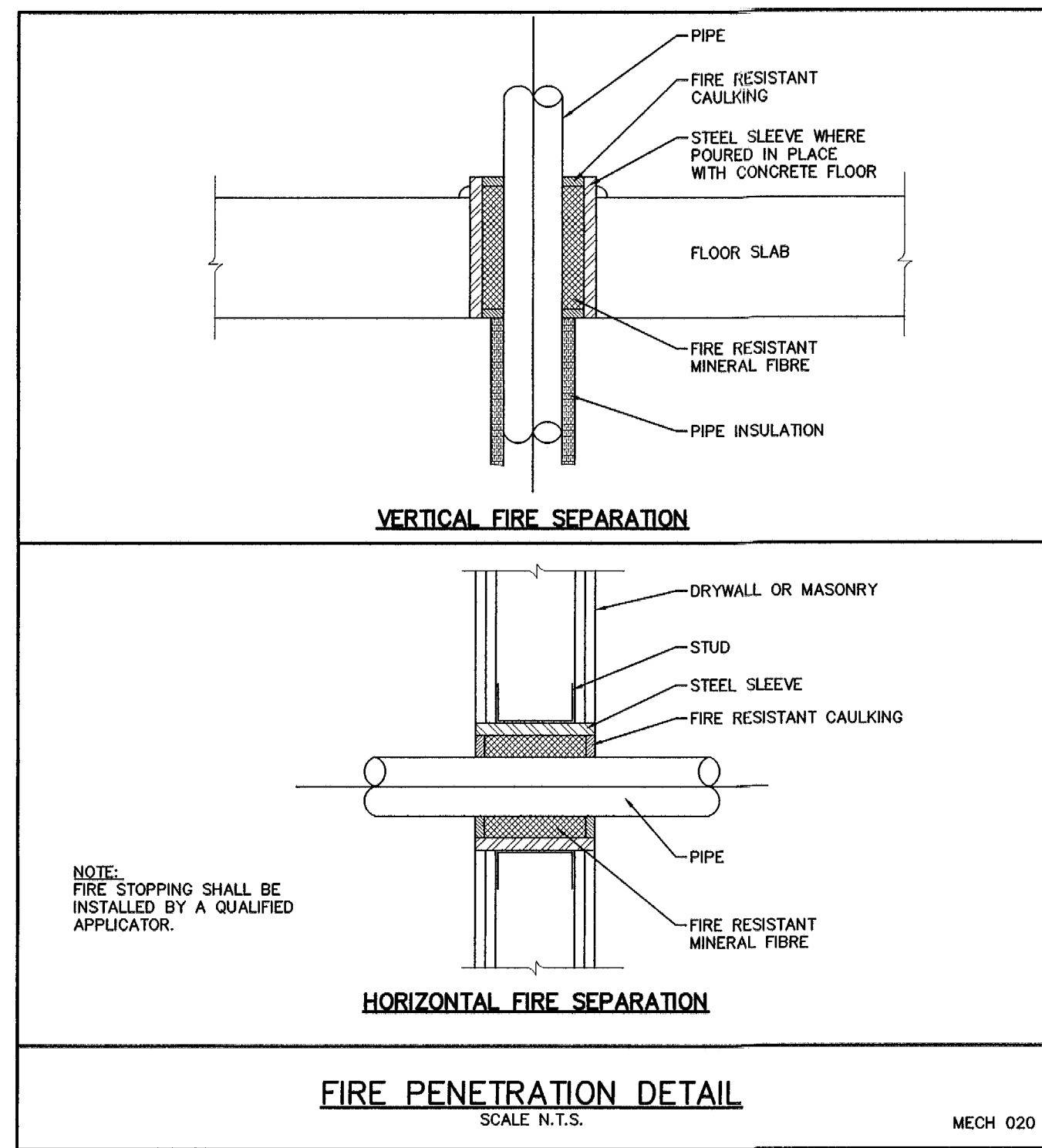
MECHANICAL HYDRONIC SCHEMATIC

106B Scurfield Blvd., Winnipeg, Manitoba
telephone (204) 949-7110 fax (204) 949-7111
web www.neeganburnside.com

Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**

**RANKIN INLET
SEWAGE TREATMENT PLANT**

| Drawing Title | | Drawing No. |
|--|--------------------------|-------------|
| MECHANICAL HYDRONIC HEATING SCHEMATIC | | M-7 |
| Drawn By A.H.I. | Checked By D.MackR. | |
| Scale NTS | Project No. 300031281 | |



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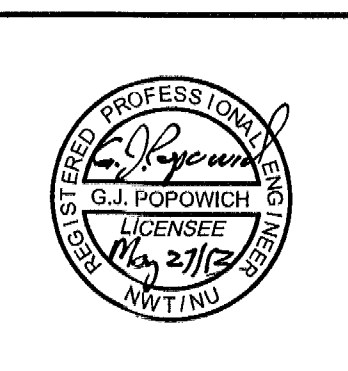
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4. Do not scale the drawings.

| Issue / Revision | Date |
|--|---------------|
| 1 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 2 ISSUED FOR TENDER | FEBRUARY 2013 |
| 3 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

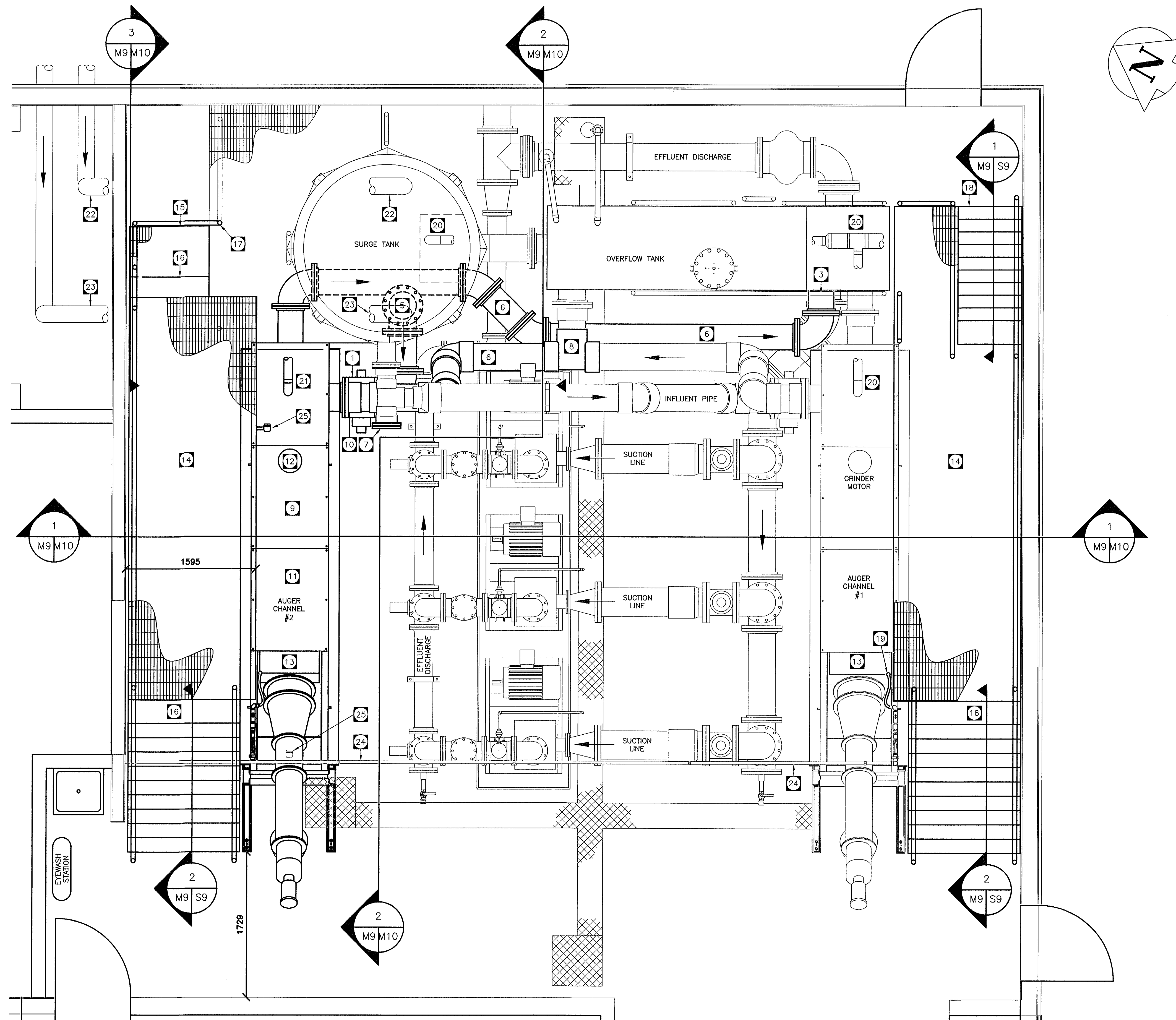
PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: May 27/13
PERMIT NUMBER: P 535
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU



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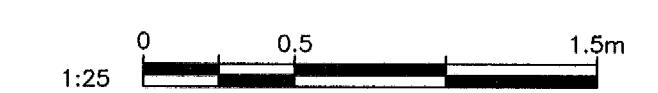
Client
**GOVERNMENT OF NUNAVUT
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SERVICES**
RANKIN INLET
SEWAGE TREATMENT PLANT

| Drawing Title | | Drawing No. |
|--|-----------------------|--------------------------|
| MECHANICAL STANDARD DETAILS 1 | | M-8 |
| Drawn By A.H. | Checked By D.Mack. | Project No. 300031281 |
| Scale N.T.S. | | |



CONSTRUCTION NOTES:

1. INSTALL NEW 300# PLUG VALVE ON AUGER CHANNEL INLET
2. INSTALL NEW FLANGE CONNECTION TO EXISTING BOTTOM OF SURGE TANK (NOT SHOWN ON DRAWING)
3. INSTALL NEW 300# DISCHARGE PIPE FLANGE CONNECTION TO EXISTING 300# FLANGE ON OVERFLOW TANK
4. INSTALL PIPE SUPPORTS AS REQUIRED TO FULLY SUPPORT PIPING (NOT SHOWN ON DRAWING)
5. PENETRATION AT BOTTOM OF SURGE TANK TO BE C/W 300mm STEEL STUB AND FLANGE. PIPING FROM STEEL FLANGE PENETRATION TO BE PVC SCHEDULE 80 TO AUGER CHANNEL.
6. INSTALL 300# PVC SCHEDULE 80 PIPING
7. REMOVE EXISTING PLUG VALVE AND INSTALL BLIND FLANGE
8. DISCONNECT EXISTING AUGER CHANNEL #1 OVERFLOW CONNECTION TO OVERFLOW TANK AND INSTALL NEW 300# PVC TEE. CONNECT TO EXISTING AND NEW AUGER CHANNEL OVERFLOW PIPING.
9. COVER SCREEN CHANNEL WITH REMOVABLE CHECKER PLATE PANELS. SEE APPENDIX 'B' IN SPECIFICATIONS FOR DETAILS
10. CONNECT NEW 300# PVC OVERFLOW PIPING TO AUGER CHANNEL FLANGED OUTLET
11. NEW AUGER CHANNEL REFER TO DRAWING M10 AND SPECIFICATIONS APPENDIX 'B' FOR DETAILS
12. NEW GRINDER MOTOR
13. INSTALL NEW AUGER TANK COVER (NOT SHOWN FOR CLARITY - SEE DWG S-9 FOR DETAILS)
14. NEW CATWALK C/W GUARDS & RAILINGS (SEE DWG S-8 FOR DETAILS)
15. EXTEND EXISTING PLATFORM
16. NEW CATWALK STAIRS (SEE DWG S-9 FOR DETAILS)
17. INSTALL NEW PLATFORM RAILING CUT AND CONNECT TO EXISTING RAILING
18. NEW CATWALK STAIRS (SEE DWG S-9 FOR DETAILS)
19. RELOCATE AUGER CHANNEL WATER SPRAY. REFER TO MECHANICAL
20. EXISTING PROCESS VENTILATION AT HIGH LEVEL (PARTIALLY SHOWN FOR CLARITY)
21. NEW PROCESS VENTILATION EXTENDED TO NEW AUGER CHANNEL (PARTIALLY SHOWN. REFER TO MECHANICAL)
22. JOHNSON COVE 200mm H.D.P.E. FORCEMAIN (PARTIALLY SHOWN FOR CLARITY)
23. NUVUK 200mm H.D.P.E. FORCEMAIN (PARTIALLY SHOWN FOR CLARITY)
24. DOMESTIC WATER SERVICE TO BE REMOVED. REFER TO MECHANICAL
25. ULTRA SONIC TRANSDUCER (SENSOR) - 2 REQUIRED. SENSOR SURFACE SHALL BE MOUNTED A MINIMUM OF 250mm ABOVE THE CHANNEL HIGH WATER LEVEL. REFER TO DWG M-10 FOR FURTHER DETAILS



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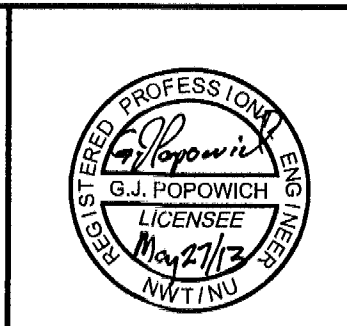
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4. Do not scale the drawings.

| Issue / Revision | Date |
|---|---------------|
| 1. ISSUED FOR CLIENT REVIEW | OCTOBER 2012 |
| 2. ISSUED FOR 66% SUBMISSION | NOVEMBER 2012 |
| 3. ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 4. ISSUED FOR TENDER | FEBRUARY 2013 |
| 5. REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: *May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU

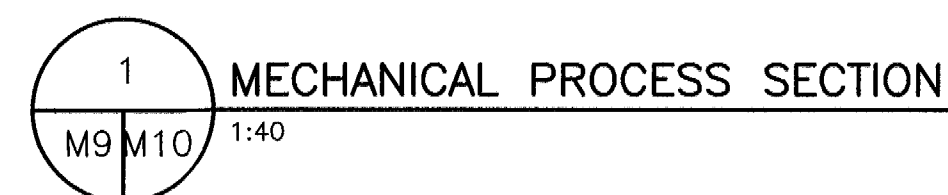


| OBJECT LINEWORK | EXISTING | LEGEND - PLAN | PROPOSED | EXISTING | LEGEND - PLAN | PROPOSED |
|------------------|----------|---------------|----------|----------|---------------|----------|
| FLOOR TRENCH | | | | | | |
| CATWALK/PLATFORM | | | | | | |
| FLOW DIRECTION | | | | | | |

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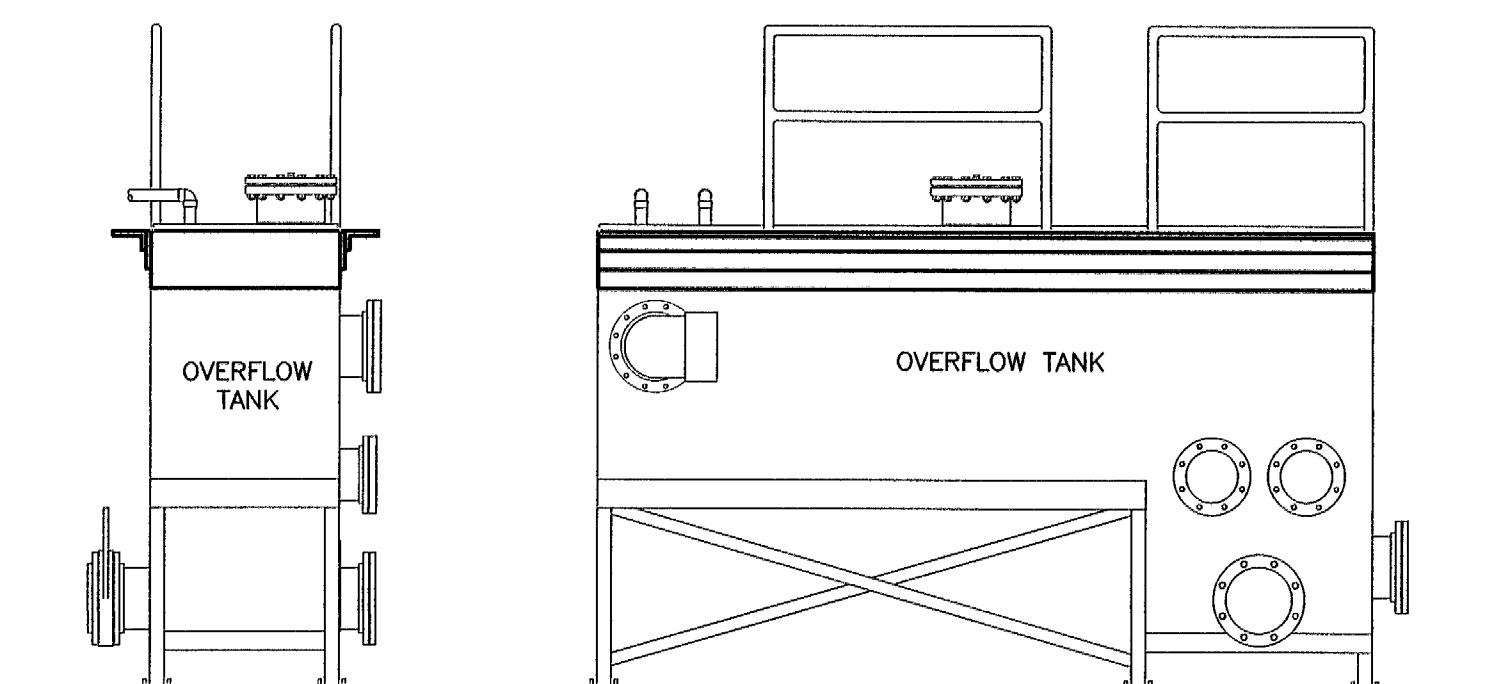
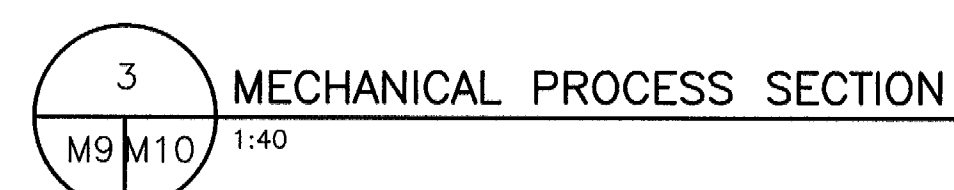
Client: **GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

| | | |
|---|---------------------------|---------------------------|
| Drawing Title SEWAGE PROCESS EQUIPMENT PLAN | | Drawing No. M-9 |
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Project No. 300031281 |
| Scale 1:25 | | |



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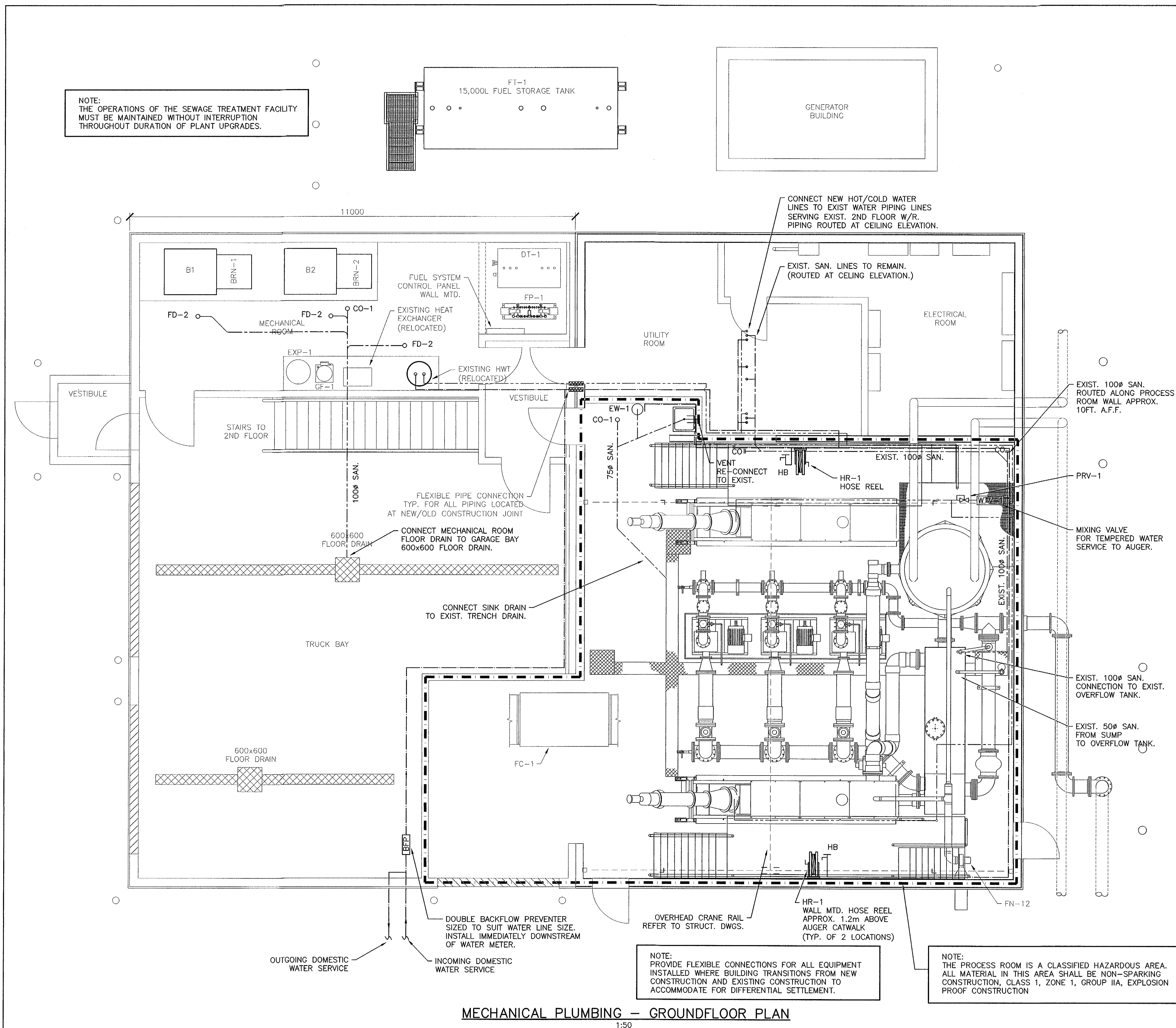
2 MECHANICAL PROCESS SECTION
M9 M10 1:40



1. OVERFLOW TANK WALLS TO BE RAISED 300mm VERTICALLY. STEEL PLATE TO BE 300W AND 0.25mm THICK. WORK TO BE AS PER SECTION 05-50-10 STEEL TANK, ELEVATED PLATFORM AND STAIR SPECIFICATION
2. ALL EXISTING RAILING TO BE RELOCATED AT NEW RAISED ELEVATION
3. ASSOCIATED WORKS SHALL INCLUDE MODIFICATION TO TANK, RELOCATION OF TANK GRATING COVER AND ULTRASONIC LEVEL SENSOR TO RAISED ELEVATION
4. RELOCATION OF ALL MECHANICAL PIPING TO SUIT SIDE WALL
5. TANK, RAILING AND SUPPORTS TO BE PAINTED AS PER SPECIFICATION



| | | |
|---|----------------------------------|---|
| Drawing Title <h1 style="text-align: center;">SEWAGE PROCESS EQUIPMENT CROSS SECTIONS</h1> | | |
| Drawn By J. JUACALLA | Checked By G. POPOWICH | Drawing No. <div style="font-size: 2em; font-weight: bold; text-align: center;">M-10</div> |
| Scale AS NOTED | Project No. 500131084 | |



| PLUMBING EQUIPMENT LIST | | |
|-------------------------|---|--|
| ITEM No. | DESCRIPTION | MF'R/MODEL |
| FD-1 | AREA FLOOR DRAIN EPOXY COATED WITH ANCHOR FLANGE. 325x325 C/W DUCTILE IRON HINGED GRATE, INTEGRAL TRAP WITH CLEANOUT PLUG AND SEDIMENT BUCKET. | WATTS / FD-430 |
| CO-1 | DRAIN CLEAN-OUT ADJUSTABLE, DURA COATED CAST IRON BODY SIZE TO SUIT DRAIN LINE. | ZURN / Z-1400 SERIES |
| TSP | AUTOMATIC TRAP SEAL PRIMER PROVIDE MULTIPLE TSP'S TO LIMIT LINE LENGTHS. EVERY FLOOR DRAIN TRAP SHALL BE CONNECTED TO A PRIMER. | ZURN / Z-1022 |
| HB-1 | BRASS HOSE BIB STANDARD THREAD SIZE AS PER DRAWING. | MUELLER / 103-054 |
| BFP | REDUCED PRESSURE BACKFLOW PREVENTER INSTALL ON DOMESTIC WATER SUPPLY TO BUILDING AND ALL OTHER POINTS OF POSSIBLE CROSS CONNECTION. SIZE: LINE SIZE | WATTS / 909 |
| CS-1 | VITREOUS CHINA SERVICE SINK C/W WALL BRACKET, DRAIN TAIL PIECE, STRAINER, S-TRAP TO FLOOR, TWO HANDLE LEVER STYLE MOEN FAUCET (MODEL 8230), AND CORROSION RESISTANT INSTALLATION HARDWARE. | CRANE / 7503S |
| HR-1 | WALL MOUNTED STAINLESS STEEL HOSE REEL C/W NON SPARK RATCHET ASSEMBLY, STANDARD 90DEG. STAINLESS STEEL BALL BEARING SWIVEL JOINT 1/2" FEMALE NPT THREAD, STANDARD OUTLET 1/2" FEMALE NPT THREAD, ADJUSTABLE FOG NOZZLE SPRAY GUN, 5FT LEADER HOSE, 60 FT OF HOSE TO SUIT & CORROSION RESISTANT WALL MOUNT INSTALLATION HARDWARE. | HANNAY / SSN700 SERIES NOZZLE SL100-12N |
| PRV-1 | PRESSURE REDUCING VALVE — LOW PRESSURE VERSION. INLET PRESSURE: 586 KPA, (85 PSI) OUTLET PRESSURE: 195 KPA, (28 PSI) FLOW: .95 L/s, (30 USGPM) C/W SUPPLY FLOW STRAINER | WATTS / 223-SLP |
| WTV-1 | WATER TEMPERING VALVE. SIZE: 32mm INLETS X 32mm OUTLET, (1-1/4" INLETS X 1-1/4" OUTLET.) HOT WATER INLET TEMP: 60 °C, (140 °F) COLD WATER INLET TEMP: 4 °C, (40 °F) OUTLET TEMP. RANGE: 32 TO 82 °C (90 TO 180 °F) FLOW: 2 L/S AT 34 KPA, (30 USGPM @ 5 PSI PRESSURE DROP.) C/W INTEGRAL FLOW CHECK STOPS AND STRAINERS ON BOTH SUPPLY LINES. | WATTS / N170 M3 CSUT |
| EW-1 | EMERGENCY EYE/FACE WASH STATION (WALL MTD.) C/W WALL BRACKET, S.S. 11" ROUND BOWL, POP OFF DUST CAP FOR EYE WASH HEAD, TAIL PIECE & TRAP. | HAWS / 7360BT |
| A-1 | THERMOSTAT FOR HOT WATER STORAGE TANK AQUASTAT FOR HOT WATER TANK TO SUIT EXISTING JOHN WOOD MODEL CST-80, CAT. S-4080 SER. R1010F706103 HOT WATER STORAGE TANK. TEMPERATURE RANGE: 49 TO 71 °C (120 TO 160 °F) | JOHN WOOD / THERMOSTAT TO SUIT CST-80 STORAGE TANK. |
| A-2 | HIGH LIMIT THERMOSTAT FOR HOT WATER STORAGE TANK. HIGH LIMIT AQUASTAT FOR HOT WATER TANK TO SUIT EXISTING JOHN WOOD MODEL CST-80, CAT. S-4080, SER. R1010F706103 HOT WATER STORAGE TANK. HIGH LIMIT TEMPERATURE: 82 °C (180 °F) | JOHN WOOD / HIGH LIMIT THERMOSTAT TO SUIT CST-80 STORAGE TANK. |
| FD-2 | FLOOR DRAIN C/W TRAP PRIMER CONNECTION, NICKLE BRONZE GRATE & VANDAL PROOF SECURED TOP. 75# CONNECTION | ZURN / ZN415-BP |

PLUMBING & DRAINAGE NOTES

- INSTALL ALL PLUMBING AND DRAINAGE SYSTEMS IN STRICT ACCORDANCE WITH THE NATIONAL PLUMBING CODE, AND TO THE REQUIREMENTS OF LOCAL AUTHORITIES.
- SLOPE NOMINALLY HORIZONTAL DRAIN LINES AT A MINIMUM 1:100 UNLESS NOTED OTHERWISE.
- YOKE SANITARY VENTS IN WALLS OR CEILING SPACES TO MINIMIZE BUILDING ENVELOPE PENETRATIONS. MINIMUM ROOF PENETRATION SIZE FOR VENTS IS 75#.
- ALL FLOOR DRAINS TO HAVE TRAP SEAL PRIMERS. LOCATION OF TRAP SEAL DIST. HEADERS TO BE DETERMINED IN THE FIELD. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR FLOOR DRAIN / PRIMER LINES FOR REVIEW PRIOR TO ANY INSTALLATION WORKS PROCEEDING.
- HOT AND COLD WATER SUPPLY PIPING TO BE COPPER.
- INSULATE ALL HOT AND COLD WATER LINES WITH 25mm THICK PRE-FORMED PIPE INSULATION COVERED WITH ASJ, (VAPOUR PROOF JACKET).

PIPE SCHEDULE

PIPING BURIED OR CAST IN CONCRETE

| | |
|------------------|-----------------------------------|
| POTABLE WATER | — 75mm AND OVER — DUCTILE IRON |
| (HOT & COLD) | — 62mm AND UNDER — SCHED. 80 CPVC |
| SANITARY WASTE | — PVC SEWER PIPE |
| TRAP PRIMER LINE | — 12mm SCHED. 80 PVC |

PIPING — INSIDE BUILDING

| | |
|--------------------|-----------------------------------|
| POTABLE WATER | — 62mm AND OVER — SCHED. 80 PVC |
| (BELOW FLOOR SLAB) | — 50mm AND UNDER — SCHED. 80 PVC |
| POTABLE WATER | — 75mm AND OVER — DUCTILE IRON |
| (ABOVE FLOOR SLAB) | — 62mm AND UNDER — SCHED. 80 CPVC |
| SANITARY WASTE | — ABS DWV (ABOVE FLOOR SLAB) |
| AND VENT | — PVC SDR35 (BELOW FLOOR SLAB) |
| FUEL OIL | — MILL STEEL PIPE SCHED 40 |

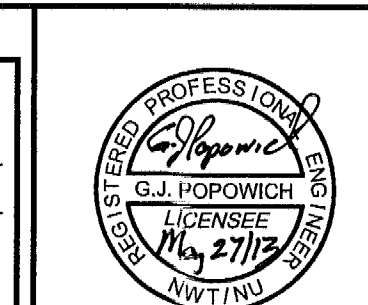
MINIMUM FIXTURE CONNECTIONS

| ITEM | DESCRIPTION | PLUMBING CONNECTIONS | | | |
|------|--------------------|----------------------|------------|-----------|------|
| | | SANITARY | COLD WATER | HOT WATER | VENT |
| LAV | LAVATORY (ALL) | 36mm | 12mm | 12mm | 36mm |
| WC | WATER CLOSET (ALL) | 75mm | 25mm | — | 36mm |
| TSP | TRAP SEAL PRIMER | — | 12mm | — | — |
| FD | FLOOR DRAIN (ALL) | 75mm | — | — | — |

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| Issue / Revision | Date |
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| 1 ISSUED FOR TENDER | FEBRUARY 2013 |
| 2 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

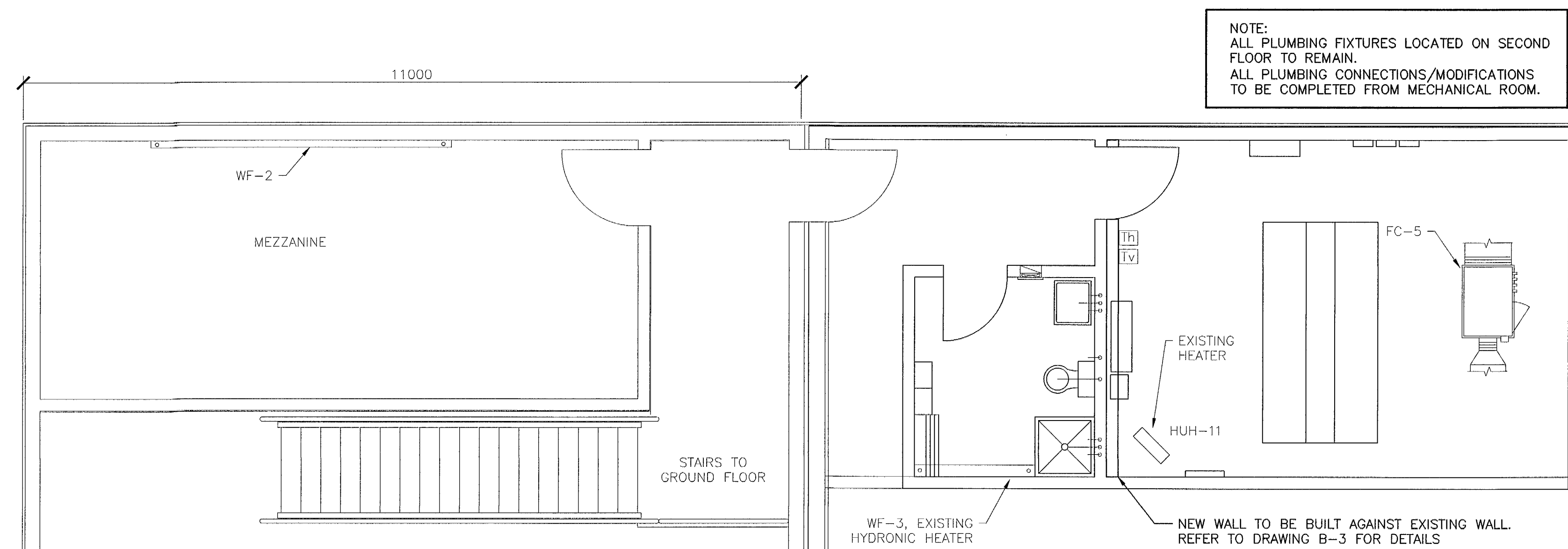
| |
|---|
| PERMIT TO PRACTICE Nuna Burnside Engineering and Environmental Ltd. Signature: <i>[Signature]</i> Date: <i>May 27/13</i> PERMIT NUMBER: P 535 The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU |
|---|



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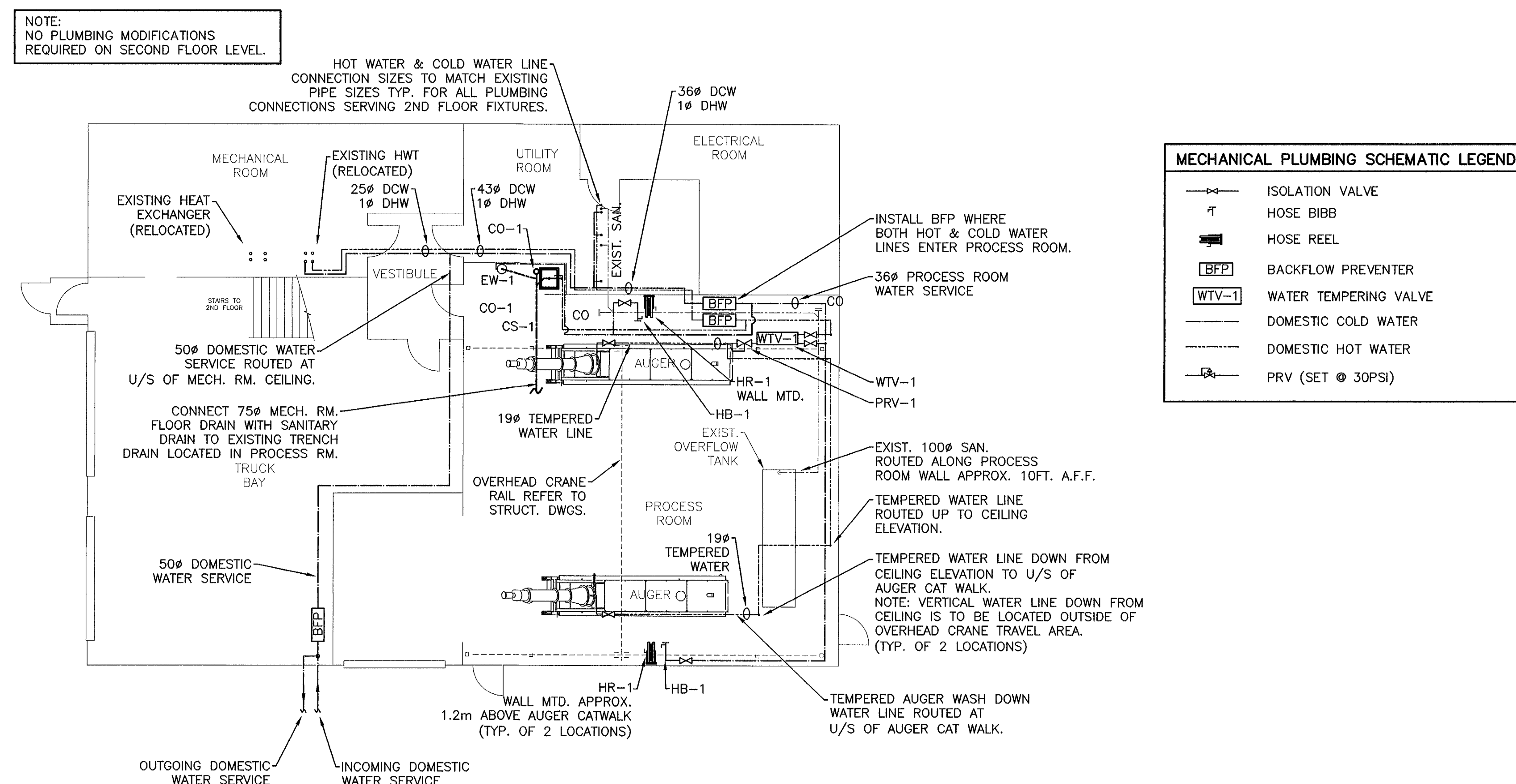
Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES**
**RANKIN INLET
SEWAGE TREATMENT PLANT**

| | |
|---|----------------------------|
| Drawing Title GROUND FLOOR MECHANICAL PLUMBING LAYOUT | Drawing No. M-11 |
| Drawn By A.H. | Checked By D.Mack. |
| Scales AS NOTED | Project No. 300031281 |



MECHANICAL PLUMBING - MEZZANINE FLOOR PLAN

1:50



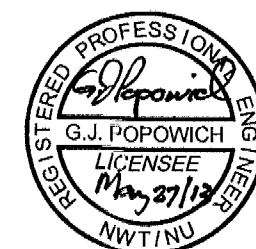
PLUMBING SCHEMATIC

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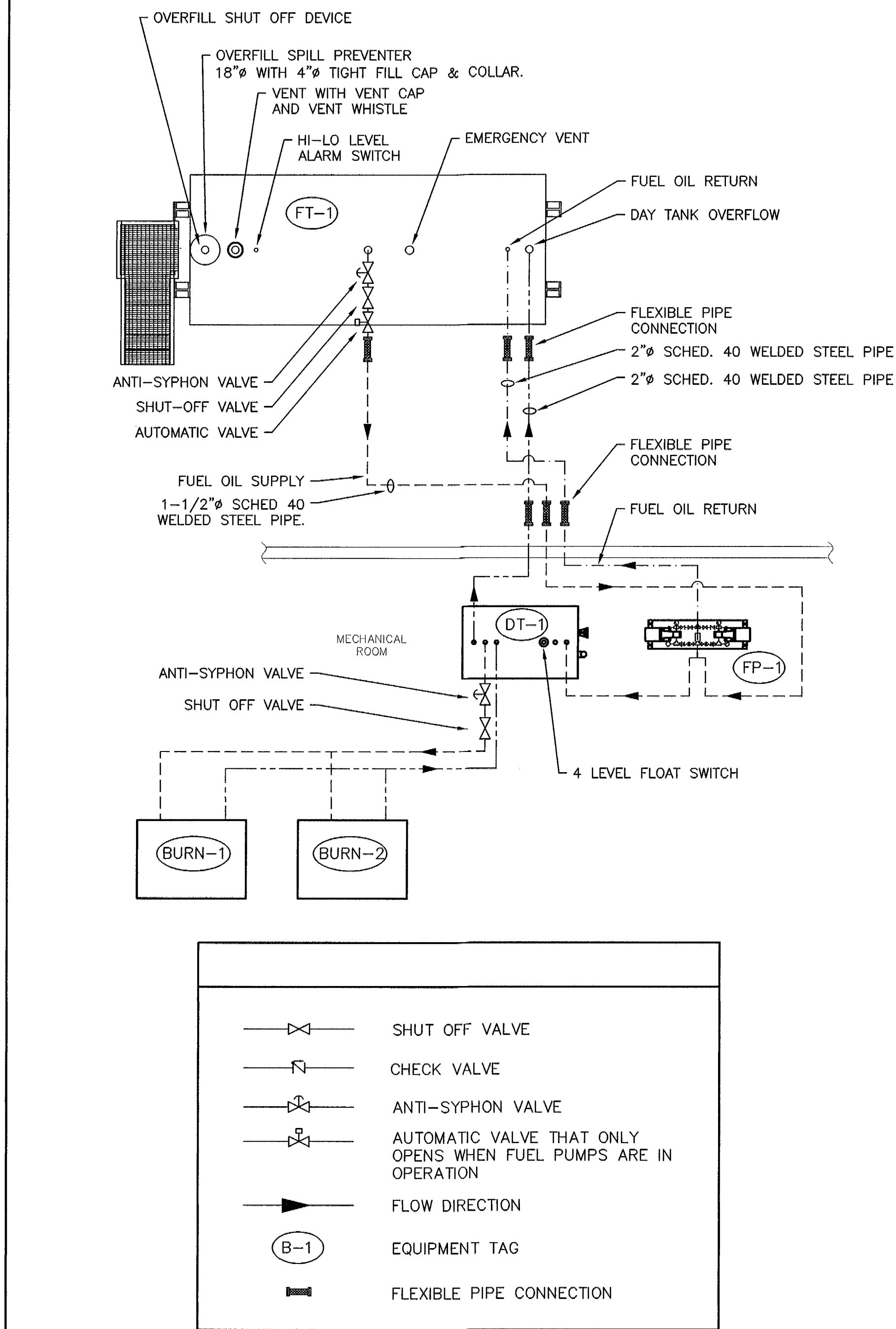
PERMIT TO PRACTICE
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| Drawing Title | | |
|---|--------------------------|-------------|
| SECOND FLOOR MECHANICAL PLUMBING LAYOUT AND PLUMBING SCHEMATIC | | |
| Drawn By A.H. | Checked By D.Mack. | Drawing No. |
| Scale AS NOTED | Project No. 300031281 | M-12 |



FUEL OIL PIPING SCHEMATIC
N.T.S.

CONTROLS SCHEDULE

| TAG | DESCRIPTION | CONTROL DESCRIPTION | WWSO |
|------------|--|---|------|
| B-1, BRN-1 | HYDRONIC BURNER-BOILER #1 | CONTROLLED BY INTEGRAL BOILER / BURNER CONTROLS IN SERIES WITH TEKMAR 274 CONTROL. TEKMAR CONTROL TO PROVIDE LEAD - LAG ALTERNATING OPERATION OF BOILERS, BURNERS AND CIRC. PUMPS CP-1 & CP-2. TEKMAR 274 CONTROL TO PROVIDE WWSO FUNCTION AND BOILER CONTROL FOR DHW HEATING AND CIRC. PUMPS CP-4. BOILER TO BE OPERATED IN "ON - OFF" MODE. | NO |
| B-2, BRN-2 | HYDRONIC BURNER-BOILER #2 | CONTROLLED BY INTEGRAL BOILER / BURNER CONTROLS IN SERIES WITH TEKMAR 274 CONTROL. TEKMAR CONTROL TO PROVIDE LEAD - LAG ALTERNATING OPERATION OF BOILERS, BURNERS AND CIRC. PUMPS CP-1 & CP-2. TEKMAR 274 CONTROL TO PROVIDE WWSO FUNCTION AND BOILER CONTROL FOR DHW HEATING AND CIRC. PUMPS CP-4. BOILER TO BE OPERATED IN "ON - OFF" MODE. | NO |
| GF-1 | GLYCOL FEEDER #1 | UNIT HAS INTEGRAL CONTROL WHICH SENSES PRESSURE IN HYDRONIC PIPING AND WHEN PRESSURE DROPS BELOW SET POINT STARTS PUMP TO PUMP GLYCOL INTO HYDRONIC PIPING UNTIL PRESSURE IN SYSTEM REACHES SHUT OFF PRESSURE AT WHICH POINT PUMP SHUTS DOWN. | YES |
| CP-1, CP-2 | MAIN BOILER CIRCULATING PUMPS #1 & #2 | CONTROLLED BY INTEGRAL BOILER CONTROLS IN SERIES WITH TEKMAR 274 CONTROL. TEKMAR CONTROL TO PROVIDE LEAD - LAG ALTERNATING OPERATION OF BOILERS, BURNERS AND CIRC. PUMPS CP-1 & CP-2. TEKMAR 274 CONTROL TO PROVIDE WWSO FUNCTION AND BOILER CONTROL FOR DHW HEATING. | NO |
| CP-3 | CIRC. PUMP #3 EXISTING DHW THRU HX TO TANK. | AQUASTAT IN TANK PROVIDES SIGNAL TO TEKMAR 274 BOILER CONTROL. TEKMAR 274 CONTROLS CIRCULATOR CP-3 THROUGH THE HIGH LIMIT AQUASTAT SO IF THE HIGH LIMIT IS TRIPPED, PUMP CP-3 DOES NOT START. WWSO FUNCTION PROVIDED BY TEKMAR 274 CONTROL. | NO |
| CP-4 | CIRC. PUMP #4 EXISTING GLYCOL THRU HX FROM BOILERS | AQUASTAT IN TANK PROVIDES SIGNAL TO TEKMAR 274 BOILER CONTROL. TEKMAR 274 CONTROLS CIRCULATOR CP-4 THROUGH THE HIGH LIMIT AQUASTAT SO IF THE HIGH LIMIT IS TRIPPED, PUMP CP-4 DOES NOT START. WWSO FUNCTION PROVIDED BY TEKMAR 274 CONTROL. | NO |
| CP-5 | CIRC. PUMP #5 GLYCOL TO ALL UNIT HEATERS | WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL, OTHERWISE RUNS CONTINUOUSLY. | YES |
| CP-6 | CIRC. PUMP #6 GLYCOL TO FC-1 | WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED BY SENSOR MOUNTED TO EXIT DUCTWORK OF FC-1. TEKMAR 361 CONTROL TO ACCEPT SENSOR INPUT AND PROVIDE VARIABLE SPEED OPERATION OF CIRCULATION PUMP. | YES |
| CP-7 | CIRC. PUMP #7 GLYCOL TO FC-2 | WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED BY SENSOR MOUNTED TO EXIT DUCTWORK OF FC-2. TEKMAR 361 CONTROL TO ACCEPT SENSOR INPUT AND PROVIDE VARIABLE SPEED OPERATION OF CIRCULATION PUMP. | YES |
| CP-8, CP-9 | CIRC. PUMP #8 & #9 GLYCOL TO FC-3 & FC-4 RESPECTIVELY | CP-8 & CP-9 ARE REDUNDANT CIRCULATORS PROVIDING MAKE UP AIR TO VESTIBULE. UNITS NEED TO BE PROVIDED WITH AIR FLOW AND WATER FLOW SWITCHES AND CONTROLLED SO THAT A FAILURE OF EITHER AIR FLOW OR WATER FLOW OR BOTH IN THE LEAD FAN OR CIRCULATOR CAUSES THE LAG CIRCULATOR AND FAN TO BE ENERGISED. WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED THERMOSTAT MOUNTED IN ROOM. TSTAT SIGNAL TO TEKMAR 361 WHICH PROVIDES VARIABLE SPEED OPERATION OF CIRCULATOR PUMP. | YES |
| CP-10 | CIRC. PUMP #10 GLYCOL TO FC-5 | WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED BY SENSOR MOUNTED TO EXIT DUCTWORK OF FC-5. TEKMAR 361 CONTROL TO ACCEPT SENSOR INPUT AND TO PROVIDE VARIABLE SPEED OPERATION OF CIRCULATION PUMP. | YES |
| CP-11 | CIRC. PUMP #11 GLYCOL TO ALL BASEBOARD FIN TUBE HEATERS. | WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL, OTHERWISE RUNS CONTINUOUSLY. EXIT AIR TEMPERATURE CONTROLLED BY MECHANICAL THERMOSTATS ON EACH BASEBOARD UNIT. | YES |
| FC-1 | FAN COIL #1 FOR PROCESS ROOM EXPLOSION PROOF | TWO SPEED OPERATION PROVIDED BY VFD INSTALLED OUTSIDE CLASSIFIED SPACE. WWSO SIGNAL PROVIDED BY TEKMAR 150 CONTROL AND USED TO CONTROL UNIT SO THAT WHEN WWSO ACTIVE (SUMMERTIME) FAN OPERATES AT HIGH SPEED. WHEN WWSO INACTIVE (WINTERTIME), FAN OPERATES AT LOW SPEED. VFD TO BE ONE OF THE UNITS SUBMITTED BY HTS | YES |
| FC-2 | FAN COIL #2 FOR TRUCK BAY | FAN OPERATES CONTINUOUSLY EXCEPT WHEN BEING SERVICED. | NO |
| FC-3 | FAN COIL #3 FOR VESTIBULE (REDUNDANT WITH FC #4). CONSISTS OF FAN FN-3 AND IN DUCT HYDRONIC HEATING COIL. SEE FAN FN-3 FOR CONTROL DESCRIPTION | SEE FN-3 FOR CONTROL DETAILS. | NO |
| FC-4 | FAN COIL #4 FOR VESTIBULE (REDUNDANT WITH FC #3). CONSISTS OF FAN FN-4 AND IN DUCT HYDRONIC HEATING COIL. SEE FAN FN-4 FOR CONTROL DESCRIPTION | SEE FN-4 FOR CONTROL DETAILS. | NO |
| FC-5 | FAN COIL #5 FOR MAKE UP AIR FOR VARIOUS SPACES. | FAN OPERATES CONTINUOUSLY EXCEPT WHEN BEING SERVICED. | NO |
| HUH-1 | PROCESS ROOM HYDRONIC UNIT HEATER #1 EXPLOSION PROOF. | FAN CONTROLLED ALONG WITH FANS OF HUH-2, -3, -4 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM. | NO |
| HUH-2 | PROCESS ROOM HYDRONIC UNIT HEATER #2 EXPLOSION PROOF. | FAN CONTROLLED ALONG WITH FANS OF HUH-1, -3, -4 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM. | NO |
| HUH-3 | PROCESS ROOM HYDRONIC UNIT HEATER #3 EXPLOSION PROOF. | FAN CONTROLLED ALONG WITH FANS OF HUH-1, -2, -4 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM. | NO |
| HUH-4 | PROCESS ROOM HYDRONIC UNIT HEATER #4 EXPLOSION PROOF. | FAN CONTROLLED ALONG WITH FANS OF HUH-1, -2, -3 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM. | NO |
| HUH-5 | TRUCK BAY HYDRONIC UNIT HEATER #5. | FAN CONTROLLED ALONG WITH FANS OF HUH-6, -7, -8, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY. | NO |
| HUH-6 | TRUCK BAY HYDRONIC UNIT HEATER #6. | FAN CONTROLLED ALONG WITH FANS OF HUH-5, -7, -8, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY. | NO |
| HUH-7 | TRUCK BAY HYDRONIC UNIT HEATER #7. | FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -8, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY. | NO |
| HUH-8 | TRUCK BAY HYDRONIC UNIT HEATER #8. | FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -7, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY. | NO |
| HUH-9 | TRUCK BAY HYDRONIC UNIT HEATER #9. | FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -7, -8 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY. | NO |

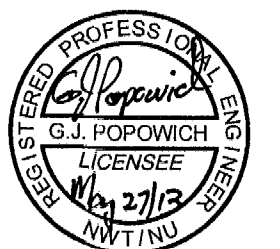
CONTROLS SCHEDULE

| TAG | DESCRIPTION | CONTROL DESCRIPTION | WWSO |
|--------|--|--|------|
| HUH-10 | 1ST FLOOR ELECT. ROOM HYDRONIC UNIT HEATER #10. EXISTING. | NEED INFORMATION ON EXISTING CONTROLS. OTHERWISE FAN CONTROLLED BY THERMOSTAT INSTALLED IN ROOM. | NO |
| HUH-11 | 2ND FLOOR ELECT. ROOM HYDRONIC UNIT HEATER #11. EXISTING. | NEED INFORMATION ON EXISTING CONTROLS. OTHERWISE FAN CONTROLLED BY THERMOSTAT INSTALLED IN ROOM. | NO |
| HUH-12 | 1ST FLOOR MECH. ROOM HYDRONIC UNIT HEATER #12. EXISTING. | NEED INFORMATION ON EXISTING CONTROLS. OTHERWISE FAN CONTROLLED BY THERMOSTAT INSTALLED IN ROOM. | NO |
| HUH-13 | TRUCK BAY HYDRONIC UNIT HEATER #9. | FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -7, -8 & -9 BY THERMOSTAT INSTALLED IN TRUCK BAY. | NO |
| FN-1 | HIGH RATE SUPPLY FAN - EXPLOSION PROOF - PROCESS ROOM. | FAN ENERGISED ON DETECTION OF FLAMMABLE / NOXIOUS GASSES BY GAS DETECTORS OR BY SWITCH AT ENTRANCE DOOR TO PROCESS ROOM. IF SPACE TEMPERATURE DROPS BELOW 40°F, FAN SHUT OFF BY EXPLOSION PROOF FREEZESTAT UNTIL SPACE TEMPERATURE IS ABOVE 60°F. IF FLAMMABLE / NOXIOUS GAS STILL DETECTED OR SWITCH AT DOOR STILL "ON", FAN SHOULD RE-ENERGIZE WHEN SPACE TEMPERATURE REACHES 60°F. CYCLE ABOVE TO REPEAT UNTIL FLAMMABLE / NOXIOUS GAS NO LONGER DETECTED, AND SWITCH AT DOOR IS "OFF" WHEN FAN SHOULD BE SWITCHED OFF. | NO |
| FN-2 | WALL MOUNTED EXHAUST FAN - EXPLOSION PROOF. PROCESS ROOM. | FAN IS TO BE INTERLOCKED TO FAN FN-1 SO WHEN FAN FN-1 IS ENERGISED, FAN FN-2 IS ALSO ENERGISED. | NO |
| FN-3 | CABINET CEILING FAN - VESTIBULE ROOM EXHAUST. REDUNDANT WITH FN-4. | FN-3 & FN-4 ARE REDUNDANT FANS EXHAUSTING MAKE UP AIR FROM THE VESTIBULE. UNITS NEED TO BE PROVIDED WITH AIR FLOW AND WATER FLOW SWITCHES AND CONTROLLED SO THAT A FAILURE OF EITHER AIR FLOW OR WATER FLOW OR BOTH IN THE LEAD FAN OR CIRCULATOR CAUSES THE LAG CIRCULATOR AND FAN TO BE ENERGISED AND VICE VERSA. SEE ALSO CP-8 & CP-9. | NO |
| FN-4 | CABINET CEILING FAN - VESTIBULE ROOM EXHAUST. REDUNDANT WITH FN-3. | FN-3 & FN-4 ARE REDUNDANT FANS EXHAUSTING MAKE UP AIR FROM THE VESTIBULE. UNITS NEED TO BE PROVIDED WITH AIR FLOW AND WATER FLOW SWITCHES AND CONTROLLED SO THAT A FAILURE OF EITHER AIR FLOW OR WATER FLOW OR BOTH IN THE LEAD FAN OR CIRCULATOR CAUSES THE LAG CIRCULATOR AND FAN TO BE ENERGISED AND VICE VERSA. SEE ALSO CP-8 & CP-9. | NO |
| FN-5 | CABINET CEILING FAN - 1ST. FLOOR ELECT. ROOM EXHAUST. | FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-5 TO BE ENERGISED. | NO |
| FN-6 | CABINET CEILING FAN - MEZZANINE ROOM EXHAUST. | FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-6 TO BE ENERGISED. | NO |
| FN-7 | CABINET CEILING FAN - MECH. ROOM EXHAUST. | FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-7 TO BE ENERGISED. | NO |
| FN-8 | CABINET CEILING FAN - 2ND. FLOOR ELECT. ROOM EXHAUST. | FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-8 TO BE ENERGISED. | NO |
| FN-9 | WALL MOUNTED EXHAUST FAN - TRUCK BAY. | FAN TO BE INTERLOCKED TO FAN IN FC-2. WHEN FC-2 FAN IS ENERGISED, FN-9 TO BE ENERGISED. | NO |
| FN-10 | DELETED | DELETED | |
| FN-11 | CABINET CEILING FAN - WASHROOM EXHAUST. | FAN TO BE OPERATED BY WALL / LIGHT SWITCH | NO |
| FN-12 | PROCESS EXHAUST FAN, HIGH PRESSURE - EXPLOSION PROOF - PROCESS ROOM. | FAN TO BE OPERATED BY WALL / LIGHT SWITCH | NO |
| FN-13 | TWO SPEED WALL FAN, VFD CONTROLLED - EXPLOSION PROOF - PROCESS ROOM. | TWO SPEED OPERATION PROVIDED BY VFD INSTALLED OUTSIDE CLASSIFIED SPACE. WWSO SIGNAL PROVIDED BY TEKMAR 150 CONTROL AND USED TO CONTROL UNIT SO THAT WHEN WWSO ACTIVE (SUMMERTIME) FAN OPERATES AT HIGH SPEED. WHEN WWSO INACTIVE (WINTERTIME), FAN OPERATES AT LOW SPEED. INTERLOCK TO FAN IN FC-1. WHEN FAN IN FC-1 IS AT LOW SPEED, FAN FN-13 SHOULD BE AT LOW SPEED AND WHEN FAN IN FC-1 IS AT HIGH SPEED, FN-13 SHOULD BE AT HIGH SPEED | YES |
| FP-1 | DUPLEX HEATING OIL PUMPING SYSTEM #1. | DUPLEX OIL PUMPING SYSTEM IS PROVIDED WITH INTEGRAL CONTROL SYSTEM. SYSTEM STARTS AND STOPS PUMPING OF OIL BASED ON LEVEL SENSORS INSTALLED IN THE DAY TANK AND THE OUTDOOR STORAGE TANK. A CALL FOR OIL IS INITIATED BY THE PUMP ON LEVEL SENSOR IN THE DAY TANK. THE CONTROL CHECKS TO ENSURE THAT THE LOW OIL ALARM IS NOT ON IN THE STORAGE TANK AND IF IT IS OFF STARTS THE OIL PUMP USING A LEAD-LAG ROTATION TO DETERMINE WHICH PUMP IS USED. IF THE LOW OIL LEVEL ALARM IS SET, THE PUMP IS LOCKED OUT. IF THE PUMP RUNS, THE DAY TANK IS FILLED UNTIL THE PUMP STOP LEVEL SWITCH CLOSURES WHICH STOPS THE PUMP. THE DAY TANK IS ALSO EQUIPPED WITH A LOW LEVEL ALARM AND A HIGH LEVEL ALARM WHICH PROVIDE DRY CONTACT CLOSURES FOR THE SCADA SYSTEM. THE OUTDOOR OIL STORAGE TANK IS ALSO PROVIDED WITH LOW OIL LEVEL AND HIGH OIL LEVEL SENSORS WHICH PROVIDE ALARM OUTPUTS TO THE CONTROL SYSTEM AND TO THE SCADA SYSTEM. | NO |

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- The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
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- Do not scale the drawings.

| Issue / Revision | Date |
|--|---------------|
| 1 ISSUED FOR TENDER | FEBRUARY 2013 |
| 2 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |
| | |
| | |
| | |
| | |
| | |

PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature: *[Signature]*
Date: *May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NUNU



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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

| Drawing Title | | Drawing No. |
|---|--------------------------|-------------|
| MECHANICAL FUEL OIL SCHEMATIC & CONTROLS SCHEDULE | | |
| Drawn By A.H. | Checked By D.Mack. | M-13 |
| Scale AS NOTED | Project No. 300031281 | |

| SYMBOL | DESCRIPTION |
|--------|---|
| | CIRCUIT BREAKER, MOULDED CASE WITH THERMAL & MAGNETIC TRIPS |
| | MOTOR CIRCUIT PROTECTOR (MCP) STYLE BREAKER, WITH MAGNETIC TRIPS ONLY |
| | NEMA SIZE 1 STARTER WITH THERMAL OVERLOAD TRIP |
| | VARIABLE FREQUENCY DRIVE, C/W BYPASS MOTOR STARTER/CONTACTOR AND CONTROL TRANSFORMER |
| | SOLID STATE REDUCE VOLTAGE SOFT STARTER, C/W BYPASS CONTACTOR AND CONTROL TRANSFORMER |
| | REDUCE VOLTAGE AUTOTRANSFORMER STARTER |
| | CURRENT TRANSFORMER |
| | CAPACITOR |
| | CONTROL POWER TRANSFORMER (CPT) |
| | FUSE |
| | FUSIBLE DISCONNECT SWITCH |
| | NON-FUSIBLE DISCONNECT SWITCH |
| | DRY-TYPE POWER TRANSFORMER (INDOOR) |
| | OIL-FILLED POWER TRANSFORMER (OUTDOOR) |
| | SEAL (EYS) FITTING C/W CHICO POWDER |
| | MOTOR STARTER (MS) COIL, WITH COIL SUPPRESSOR |
| | PILOT LIGHT, WHERE "X" INDICATES LENS COLOR: R=RED, W=WHITE, G=GREEN |
| | PUSH TO TEST STYLE PILOT LIGHT |
| | ELAPSE TIME METER, IN HOURS |
| | CONTROL RELAY (# DENOTES RELAY NUMBER) |
| | TERMINAL BLOCK |
| | SOLENOID VALVE |
| | CONTACT, N.O. AND N.C. |
| | TEMPERATURE SWITCH, N.O AND N.C. |
| | LIMIT OR POSITION SWITCH, N.O AND N.C. |
| | PRESSURE SWITCH, N.O AND N.C. |
| | LEVEL OR FLOAT SWITCH, N.O AND N.C. |
| | TORQUE SWITCH, N.O AND N.C. |
| | PUSHBUTTON DEVICE, N.O AND N.C. |
| | SELECTOR SWITCH, 2-POSITION & 3-POSITION |

| SYMBOL | DESCRIPTION |
|------------------|--|
| | 1'x4' FLUORESCENT LUMINAIRE. "X" DENOTES LUMINAIRE TYPE (REFER TO LUMINAIRE SCHEDULE). |
| | DENOTES SWITCH LEG |
| | DENOTES BRANCH CIRCUIT NUMBER |
| | DENOTES PANEL DESIGNATION |
| | 2'x4' FLUORESCENT LUMINAIRE. "X" DENOTES LUMINAIRE TYPE (REFER TO LUMINAIRE SCHEDULE) |
| | CEILING MOUNTED LUMINAIRE - "X" DENOTES TYPE |
| | WALL MOUNTED LUMINAIRE - "X" DENOTES TYPE |
| | EXIT LIGHT - "X" DENOTES TYPE |
| | LIGHT SWITCH C/W BACK BOX: - "S" INDICATES 2-WIRE SWITCH - "S3" INDICATES 3-WIRE SWITCH - "S4" INDICATES 4-WIRE SWITCH - "D" INDICATES DIMMER (SIZE TO SUIT) - "T" INDICATES MANUAL TIMER |
| | EMERGENCY REMOTE HEADS |
| | EMERGENCY BATTERY UNIT WITH REMOTE HEADS AND CHARGER (BU#) |
| | ELECTRICAL PANEL/ENCLOSURE |
| | DUPLEX RECEPTACLE |
| | SINGLE RECEPTACLE |
| | GFI TYPE DUPLEX RECEPTACLE |
| | SPLIT DUPLEX RECEPTACLE |
| | DRYER RECEPTACLE |
| | WELDING RECEPTACLE |
| | SINGLE PHASE MOTOR |
| | THREE PHASE MOTOR |
| | SINGLE PHASE MANUAL STARTER SWITCH WITH LOCK-OFF AND PILOT LIGHT |
| | MANUAL STARTER SWITCH C/W PILOT LIGHT AND HAND/OFF/AUTO SELECTOR SWITCH |
| | SINGLE PHASE MANUAL STARTER SWITCH WITH LOCK-OFF |
| | DISCONNECT SWITCH, UN-FUSED, # DENOTES NUMBER OF POLES |
| | UNAUTHORIZED ENTRY KEYPAD UNIT |
| | MAGNETIC REED DOOR SWITCH |
| | MOTION SENSOR |
| | SMOKE DETECTOR |
| | TELEPHONE OUTLET |
| | JUNCTION BOX |
| | THERMOSTAT (VENTILATION) |
| | THERMOSTAT |
| GENERAL SYMBOLS | |
| | DETAIL SYMBOL: X = DETAIL NUMBER YZ = DRAWING NUMBER |
| | EQUIPMENT SUPPLIED BY ANOTHER DIVISION, INSTALLATION, WIRING AND CONDUIT BY DIVISION 16 |
| | EXISTING OR RELOCATED EQUIPMENT, NEW WIRING AND CONDUIT BY DIVISION 16 |
| | SYMBOL INDICATES A DEVICE LOCATION, SEE BELOW (# DENOTES LOCATION NUMBER) |
| | SYMBOL INDICATES MODIFICATION OR NEW WORK NOTE (# DENOTES NOTE NUMBER) |
| | MECHANICAL EQUIPMENT TAG |
| DEVICE LOCATIONS | |
| | DEVICE LOCATED IN MAIN PLC PANEL IN 2nd FLOOR ELECTRICAL ROOM |
| | DEVICE LOCATED IN THE FIELD |
| | DEVICE LOCATED IN MECHANICAL ROOM |
| | DEVICE LOCATED IN ELECTRICAL ROOM MAIN FLOOR |
| | DEVICE LOCATED IN ELECTRICAL ROOM 2nd FLOOR |

| ABBREVIATION | DESCRIPTION |
|--------------|---|
| A | AMPERES (CONTINUOUS) |
| AC | ALTERNATING CURRENT |
| ASYM | ASYMMETRICAL |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AUTO | AUTOMATIC |
| AWG | AMERICAN WIRE GAUGE |
| BU | BATTERY UNIT (EMERGENCY) |
| °C | DEGREE CELSIUS |
| C | CONDUCTOR |
| CCT | CIRCUIT |
| CH | COUNTER TOP HEIGHT |
| CH4 | METHANE |
| CL2 | CHLORINE RESIDUAL |
| CL | CENTERLINE |
| C/W | COMPLETE WITH |
| CO2 | CARBON DIOXIDE |
| CPT | CONTROL POWER TRANSFORMER |
| CSA | CANADIAN STANDARDS ASSOCIATION |
| CT | CURRENT TRANSFORMER |
| Cu | COPPER |
| DC | DIRECT CURRENT |
| DISC | DISCONNECT |
| DOx | DISSOLVED OXYGEN |
| DPDT | DOUBLE POLE DOUBLE THROW |
| DPST | DOUBLE POLE SINGLE THROW |
| EEMAC | ELECTRICAL AND ELECTRONIC MANUFACTURERS ASSOCIATION OF CANADA |
| EP | EXPLOSION PROOF (SUITABLE FOR CLASS I, ZONE 1) |
| ETM | ELAPSED TIME METER |
| ESA | ELECTRICAL SAFETY AUTHORITY |
| GFI | GROUND FAULT INTERRUPTER |
| GND | GROUND |
| HOA | HAND-OFF-AUTOMATIC |
| HP | HORSEPOWER |
| Hz | HERTZ |
| IEEE | INSTITUTE OF ELECTRICAL & ELECTRONIC ENGINEERS |
| INST | INSTANTANEOUS |
| I/O | INPUT/OUTPUT |
| ISB | INTRINSIC SAFETY BARRIER |
| JB | JUNCTION BOX |
| KAIC | KILO-AMP INTERRUPTING CAPACITY |
| kVA | KILOVOLT-AMPERE |
| kW | KILOWATT |
| kWh | KILOWATT HOUR |
| LA | LIGHTNING ARRESTOR |
| LEL | LOWER EXPLOSIVE LIMIT |
| LOR | LOCAL-OFF-REMOTE |
| LUC | LOCAL UTILITY COMPANY |
| MAN | MANUAL |
| MCC | MOTOR CONTROL CENTRE |
| MH | MANHOLE |
| mm | MILLIMETER |
| MLSS | MIXED LIQUOR SUSPENDED SOLIDS |
| MOT | MOTOR |
| N | NEUTRAL |
| NEMA | NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION |
| N/A | NON AUTOMATIC |
| N.O. | NORMALLY OPEN |
| N.C. | NORMALLY CLOSED |
| NP | NAMEPLATE |
| NTS | NOT TO SCALE |
| O2 | OXYGEN (PURITY) |
| OESC | ONTARIO ELECTRICAL SAFETY CODE |
| O/H | OVERHEAD |
| O/L | OVERLOAD |
| OO | ON-OFF |
| PB | PUSHBUTTON |
| PDC | POWER DISTRIBUTION CENTRE |
| pH | pH CELL |
| PH. OR Ø | PHASE OR DIAMETER |
| PLC | PROGRAMMABLE LOGIC CONTROLLER |
| REM | REMOTE |
| RGS | RIGID GALVANIZED STEEL |
| SV | SOLENOID VALVE |
| SN | SOLID NEUTRAL |
| SPDT | SINGLE POLE DOUBLE THROW |
| SPMD | STANDARD PROCTOR MAXIMUM DRY DENSITY |
| SPST | SINGLE POLE SINGLE THROW |
| SW | SWITCH |
| SYM | SYMMETRICAL |
| TC | THERMOCOUPLE |
| TDC | TIME DELAY ON CLOSING |
| TDDO | TIME DELAY ON DROP-OUT |
| TDO | TIME DELAY ON OPENING |
| TDPU | TIME DELAY ON PICK-UP |
| TURB | TURBIDITY |
| TYP. | TYPICAL |
| U/G | UNDERGROUND |
| VA | VOLT-AMPERE |
| VFD | VARIABLE FREQUENCY DRIVE |
| VT | VOLTAGE TRANSFORMER (FORMER PT) |
| WP | WEATHERPROOF |

| INSTRUMENTATION IDENTIFICATION LETTERS (ISA) | | | |
|--|-------------------|--------------|-------------------------|
| FIRST LETTER | MEASURED VARIABLE | MODIFIER | SUCCESSING LETTERS |
| A | ANALYSIS | - | ALARM |
| B | BURNER | - | - |
| C | CONDUCTIVITY | - | CONTROLLER |
| D | DENSITY | DIFFERENTIAL | DIFFERENTIAL |
| E | VOLTAGE - EMF | - | PRIMARY ELEMENT |
| F | FLOW RATE | RATIO | RATIO |
| G | STATUS | - | CLASS |
| H | HAND - MANUAL | HAND | HIGH |
| I | CURRENT | I | INDICATE |
| J | POWER | SCAN | - |
| K | TIME OR TIME SCH. | - | CONTROL SIN |
| L | LEVEL | - | LOW |
| M | MOISTURE | MOMENTARY | MIDDLE OR INTERNAL |
| N | - | ANNUNCIATION | ANNUNCIATION |
| O | - | - | OFFICE |
| P | PRESSURE OR VAC. | - | POINT - TEST CONNECTION |
| Q | QUANTITY | INTEGRATE | INTEGRATE OR TOTALIZE |
| R | RADIATION | - | RECORD OR PRINT |
| S | SPEED OR FREQ. | SAFETY | SWITCH |
| T | TEMPERATURE | - | TRANSMIT |
| U | MULTIFUNCTION | - | MULTIFUNCTION |
| V | VEHICLE | - | VALVE, DAMPER |
| W | WEIGHT OR FORCE | - | WELL |
| X | STATUS | - | - |
| Y | EVENT, STATE | - | RELAY, COMPUTE |
| Z | POSITION | - | DRIVE, ACTUATOR |

| DRAWING LIST - ELECTRICAL | |
|---------------------------|---|
| E1 | ELECTRICAL LEGEND AND DRAWING LIST |
| E2 | PANEL AND LUMINAIRE SCHEDULES |
| E3 | ELECTRICAL SINGLE LINE DIAGRAM |
| E4 | ELEMENTARY CONTROL WIRING DIAGRAMS - SHEET 1 |
| E5 | ELEMENTARY CONTROL WIRING DIAGRAMS - SHEET 2 |
| E6 | INSTRUMENTATION LOOP WIRING DIAGRAM & ELEMENTARY CONTROL WIRING DIAGRAMS |
| E7 | PLC CONFIGURATION & PANEL LAYOUTS |
| E8 | BUILDING ELECTRICAL EQUIPMENT LAYOUT - REMOVAL |
| E9 | BUILDING ELECTRICAL EQUIPMENT LAYOUT - PROPOSED LIGHTING AND HVAC |
| E10 | BUILDING ELECTRICAL EQUIPMENT LAYOUT - PROPOSED POWER |
| E11 | BUILDING ELECTRICAL EQUIPMENT LAYOUT - PROPOSED INSTRUMENTATION |
| E12 | BUILDING ELECTRICAL EQUIPMENT LAYOUT - PROPOSED MECHANICAL ROOM HVAC LAYOUT |

MASTER ELECTRICAL LEGEND
ALL SYMBOLS/DEVICES/ABBREVIATIONS LISTED MAY NOT APPLY

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4. Drawing revision must be noted "Issued For Construction" before any work commences

| Issue / Revision | Date dd/mm/yyyy |
|---|-----------------|
| 1. ISSUED FOR 66% SUBMISSION | 06/09/2012 |
| 2. ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 3. ISSUED FOR TENDER | FEBRUARY 2013 |
| 4. REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Runge & Associates Inc.
Signature:
Date: APRIL 22, 2013
PERMIT NUMBER: P617
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NL



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Client: **GOVERNMENT OF NUNAVUT COMMUNITY & GOVERNMENT SERVICES**
RANKIN INLET
SEWAGE TREATMENT PLANT

| Drawing Title | | |
|---|--------------------------|-------------------|
| ELECTRICAL LEGEND AND DRAWING LIST | | |
| Drawn By T.T. | Checked By S.R.T. | Drawing No. E1 |
| Scale AS SHOWN | Project No. 300031281 | |

| | | | | | |
|-------------------------------|----------------------------------|--------------------|------------|---|--------------------------------|
| PANEL TAG NAME: E1 (EXISTING) | | 208/120V, 3PH., 4W | | MOUNTING: SURFACE/RECESSED LOCATION: ELECTRICAL ROOM | |
| LOAD-W | CIRCUIT DESCRIPTION | PROT. | CIRCUITS | PROT. | CIRCUIT DESCRIPTION |
| | | 60A | 1 A 2 100A | 60A | |
| | EXISTING GENERATOR ROOM PANEL | 3P | 3 B 4 | 3P | FEEDER FOR PANEL PP-E2 |
| | OVER HEAD UNIT HEATER HUH-10 | 15A | 7 A 8 | 60A | |
| | OVER HEAD UNIT HEATER HUH-12 | 15A | 9 B 10 | | EXISTING AUGER PANEL |
| | FUEL OIL PUMP FP-1 | 15A | 11 C 12 | 3P | |
| | GLYCOL FEEDER GF-1 | 3P | 13 A 14 | 15A | EXISTING PANEL PLUG |
| | | | 15 B 16 | 15A | EXISTING GENERATOR ALARM PANEL |
| | AUGER CONTROL PANEL 2 | 60A | 17 C 18 | 15A | |
| | | | 19 A 20 | | CIRCULATION PUMP CP-1 |
| | | 3P | 21 B 22 | 3P | |
| | | | 23 C 24 | 15A | |
| | FEEDER FOR PANEL E3 | 200A | 25 A 26 | | CIRCULATION PUMP CP-2 |
| | | 3P | 27 B 28 | 3P | |
| | | | 29 C 30 | 15A | SPARE |
| | SPD | 30A | 31 A 32 | 15A | |
| | | | 33 B 34 | | HOT WATER BURNER BRN-1 |
| | | 3P | 35 C 36 | 3P | |
| | | | 37 A 38 | 15A | |
| | CIRCULATION PUMP CP-5a AND CP-5b | 15A | 39 B 40 | | HOT WATER BURNER BRN-2 |
| | | 3P | 41 C 42 | 3P | |

PANEL PP-E1 SCHEDULE

-NTS
-BREAKER SIZES LISTED ABOVE ARE PROVIDED AS A GENERAL GUIDE. PRIOR TO INSTALLATION, CONTRACTOR TO CONFIRM ALL BREAKER SIZES WITH FINAL EQUIPMENT LOADS. CONTRACTOR TO SIZE ALL FEEDER WIRING AND CONDUIT BASED ON CANADIAN ELECTRICAL SAFETY CODE - LATEST EDITION. INCLUDE INSULATED GROUND CONDUCTOR IN ALL CONDUIT RACEWAYS.
- CONTRACTOR TO PROVIDE A TYPE WRITTEN UPDATED DIRECTORY OF CIRCUITS

| | | | | | |
|-------------------------------|---|--------------------|----------|---|---|
| PANEL TAG NAME: E3 (EXISTING) | | 208/120V, 3PH., 4W | | MOUNTING: SURFACE/RECESSED LOCATION: ELECTRICAL ROOM - 2nd FLOOR | |
| LOAD-W | CIRCUIT DESCRIPTION | PROT. | CIRCUITS | PROT. | CIRCUIT DESCRIPTION |
| | | 15A | 1 A 31 | 30A | |
| | PROCESS ROOM LIGHTING | 15A | 2 B 32 | | FAN COIL HEATER FC-1 (VFD) |
| | SECOND FLOOR LIGHTING | 15A | 3 C 33 | 3P | |
| | FIRST FLOOR AND TRUCK BAY LIGHTING | 15A | 4 A 34 | 15A | |
| | OUTDOOR LIGHTING | 15A | 5 B 35 | | FAN COIL HEATER FC-2 |
| | SPARE | 15A | 6 C 36 | 3P | |
| | SPARE | 15A | 7 A 37 | 20A | |
| | CP-7 TEKMAR 361 CONTROLLER | 15A | 8 B 38 | | FAN COIL HEATER FC-5 |
| | OVER HEAD UNIT HEATER CONTROL PANEL HCP-1 | 15A | 9 C 39 | 3P | |
| | OVER HEAD UNIT HEATER CONTROL PANEL HCP-2 | 15A | 10 A 40 | 50A | |
| | OVER HEAD UNIT HEATER HUH-11 | 15A | 11 B 41 | | CABINET CEILING FAN FN-1 |
| | SUMP PUMP CONTROL PANEL | 15A | 12 C 42 | 3P | |
| | INCOMING DOMESTIC WATER CIRCULATION PUMP | 15A | 13 A 43 | 30A | |
| | TEKMAR 274 CONTROLLER | 15A | 14 B 44 | | CABINET CEILING FAN FN-2 |
| | TEKMAR 150 CONTROLLER | 15A | 15 C 45 | 3P | |
| | CP-10 TEKMAR 361 CONTROLLER | 15A | 16 A 46 | 15A | UPSTAIRS MEZZANINE/HALLWAY GENERAL PURPOSE REC.(X5) |
| | TRUCK BAY REC.(X3) | 15A | 17 B 47 | 15A | UPSTAIRS WASHROOM REC.(X1) |
| | TRUCK BAY REC.(X3) | 15A | 18 C 48 | 15A | UPSTAIRS ELECTRICAL ROOM REC.(X3) |
| | TRUCK BAY REC.(X3) | 15A | 19 A 49 | 15A | CP-6 TEKMAR 361 CONTROLLER |
| | TRUCK BAY REC.(X3) | 15A | 20 B 50 | 15A | SPARE |
| | VESTIBULE EXPLOSION PROOF REC.(X1) | 15A | 21 C 51 | 15A | SPARE |
| | PROCESSING ROOM EXPLOSION PROOF REC.(X3) | 15A | 22 A 52 | 15A | CABINET CEILING FAN FN-6 |
| | PROCESSING ROOM EXPLOSION PROOF REC.(X3) | 15A | 23 B 53 | 15A | CABINET CEILING FAN FN-8 |
| | PROCESSING ROOM EXPLOSION PROOF REC.(X3) | 15A | 24 C 54 | 15A | CABINET CEILING FAN FN-9 |
| | | 15A | 25 A 55 | 15A | CABINET CEILING FAN FN-11 |
| 560 | CABINET CEILING FAN FN-13 (VFD) | 3P | 26 B 56 | 15A | CABINET CEILING FAN FN-12 |
| | | | 27 C 57 | 15A | SPARE |
| | SPD | 30A | 28 A 58 | 15A | |
| | | 3P | 29 B 59 | | SPARE |
| | | | 30 C 60 | 3P | |

PANEL PP-E3 SCHEDULE

-NTS
-BREAKER SIZES LISTED ABOVE ARE PROVIDED AS A GENERAL GUIDE. PRIOR TO INSTALLATION, CONTRACTOR TO CONFIRM ALL BREAKER SIZES WITH FINAL EQUIPMENT LOADS AND AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SIZE ALL FEEDER WIRING AND CONDUIT BASED ON CANADIAN ELECTRICAL SAFETY CODE LATEST EDITION. INCLUDE INSULATED GROUND CONDUCTOR IN ALL CONDUIT RACEWAYS.
- CONTRACTOR TO PROVIDE A TYPE WRITTEN UPDATED DIRECTORY OF CIRCUITS

| | | | | | |
|--------------------------|---|--------------------|----------|---|------------------------------------|
| PANEL TAG NAME: E2 (NEW) | | 208/120V, 3PH., 4W | | MOUNTING: SURFACE/RECESSED LOCATION: ELECTRICAL ROOM | |
| LOAD-W | CIRCUIT DESCRIPTION | PROT. | CIRCUITS | PROT. | CIRCUIT DESCRIPTION |
| | | 15A | 1 A 2 | 15A | |
| | FC-3/4 CONTROL PANEL POWER SUPPLY | 15A | 3 B 4 | 15A | CIRCULATION PUMP CP-3 |
| | FC-3, FN-3 AND CP-8 TEKMAR 361 CONTROLLER | 15A | 5 C 6 | 15A | SPARE |
| | FC-4, FN-4 AND CP-9 TEKMAR 361 CONTROLLER | 15A | 7 A 8 | 15A | SPARE |
| | SPARE | 15A | 9 B 10 | 15A | SPARE |
| | CABINET CEILING FAN FN-5 | 15A | 11 C 12 | 15A | CIRCULATION PUMP CP-11 |
| | CABINET CEILING FAN FN-7 | 15A | 13 A 14 | 15A | HOT WATER BOILER B-1 CONTROL POWER |
| | SPARE | 15A | 15 B 16 | 15A | HOT WATER BOILER B-2 CONTROL POWER |
| | ELECTRICAL ROOM REC.(X2) | 15A | 17 C 18 | 15A | UTILITY ROOM REC.(X2) |
| | ELECTRICAL ROOM REC.(X1) | 15A | 19 A 20 | 15A | MECHANICAL ROOM REC.(X2) |
| | OUTDOOR RECEPTACLE (X3) | 15A | 21 B 22 | 15A | SPARE |
| | TEKMAR 150 CONTROLLER | 15A | 23 C 24 | 15A | SPARE |
| | SPARE | 15A | 25 A 26 | 15A | SPARE |
| | SPARE | 15A | 27 B 28 | 15A | SPARE |
| | SPARE | 15A | 29 C 30 | 15A | SPARE |
| | SPD | 30A | 31 A 32 | 15A | SPARE |
| | | | 33 B 34 | | SPACE |
| | | 3P | 35 C 36 | | SPACE |
| | SPACE | | 37 A 38 | | SPACE |
| | SPACE | | 39 B 40 | | SPACE |
| | SPACE | | 41 C 42 | | SPACE |

PANEL PP-E2 SCHEDULE

-NTS
-BREAKER SIZES LISTED ABOVE ARE PROVIDED AS A GENERAL GUIDE. PRIOR TO INSTALLATION, CONTRACTOR TO CONFIRM ALL BREAKER SIZES WITH FINAL EQUIPMENT LOADS AND AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SIZE ALL FEEDER WIRING AND CONDUIT BASED ON CANADIAN ELECTRICAL SAFETY CODE LATEST EDITION. INCLUDE INSULATED GROUND CONDUCTOR IN ALL CONDUIT RACEWAYS.
- CONTRACTOR TO PROVIDE A TYPE WRITTEN UPDATED DIRECTORY OF CIRCUITS

LUMINAIRE SCHEDULE

| | FIXTURE DESCRIPTION | CEILING MOUNTED | | | WALL MOUNTED | | LAMP DATA | | | | | VOLTAGE | | BASIC OPTIONS | | | ACCEPTABLE MANUFACTURER WITH CAT. SERIES AND OPTIONS | | | | |
|--|------------------------------|-----------------|----------|-----------|--------------|----------|-----------|---------|-----------|---------------------|-------------------|-------------------------|-------------|---------------|--------|--------|--|-----------|----------------|-------------|--|
| | | SURFACE | RECESSED | SUSPENDED | SURFACE | RECESSED | NUMBER | WATTAGE | LAMP TYPE | DRIVER CURRENT (mA) | DISTRIBUTION TYPE | COLOR TEMP. DEG. KELVIN | MINIMUM CRI | 24VDC | 120VAC | 120VAC | | PHOTOCELL | WET/DAMP LOC'N | BALLAST (B) | COLOR (C) |
| | RIG-A-LITE SXPJ LED SERIES | ● | | | | | 8 | 98 | LED | | | | | ● | | | | | | | SXPJ-10-L-U-GG-C-SC CEILING MOUNT, GLOBE & GUARD, CLASS 1 ZONE 1 GROUPS IIa & IIb |
| | CREE X-SE SERIES | | | ● | | | 6 | 37 | LED | 525 | IV | 4000 | 75 | | ● | | | | | | XS-SE-0-4-02-B-U-B-C-7-P-CL c/w WALL BRACKET, PHOTOCELL & MULTI-LEVEL SENSOR |
| | RIG-A-LITE MHDS LED SERIES | | | | ● | | 23 | 80 | LED | | | | | | ● | | | | | | MHDS-10-L-4-U-P CEILING MOUNT, GLOBE & GUARD, CLASS 1 ZONE 2 GROUPS IIa & IIb |
| | R1 – LUMACELL RS10-XP SERIES | | | | ● | | 5 | 20 | QH | | | | | ● | | | | | | | RS10XP-24V-20W-W WALL MOUNT, CLASS 1 ZONE 1 GROUPS IIa & IIb |
| | R2 – LUMACELL MQM-NX SERIES | | | | ● | | 9 | 5 | LED | | | | | ● | | | ● | | | | MQM2NX-LD13-BK WALL MOUNT, NEMA4X CERTIFIED |
| | X1 – LUMACELL LX SERIES | | | | ● | | 2 | 4 | LED | | | | | ● | | | | | | | EXIT SIGN LX152W24 TRANSFER PANEL RSTP120-24-25XP WALL MOUNT, CLASS 1 ZONE 1 GROUPS IIa |
| | X2 – LUMACELL LN SERIES | | | | ● | | 5 | <1.5 | LED | | | | | ● | | | ● | | | | EXIT SIGN LN1WU WALL MOUNT, NEMA 4X CERTIFIED |
| | BU – RGS-DT SERIES | | | | ● | | | | | | | | | ● | | ● | ● | | | | BU#1 – RGS24S-288-DTFC-A-AT BU#2 – RGS24S-288-DTFC-A-AT BU#3 – RGS24S-288-DTFC-A-AT WALL MOUNT, NEMA 4X CERTIFIED |

NOTES:

A. LAMP TYPE LEGEND: TB=TB FLUORESCENT, HPS=HIGH PRESSURE SODIUM, MH=METAL HALIDE, CF=COMPACT FLUORESCENT, INC=INCANDESCENT QH=QUARTZ HALOGEN LED=LED TECHNOLOGY

B. BALLAST LEGEND: HPF=RAPID START, THERMALLY PROTECTED, HIGH POWER FACTOR BALLAST

C. LENS LEGEND: ST=STANDARD, VA=0.125" PRISMATIC LENS, CTG=CLEAR TEMPERED GLASS,

D. COLOR LEGEND: ST=STANDARD, W=WHITE, B=BLACK, G=GRAY, R=RED

E. WHEN MOUNTING IS INDICATED AS "RECESSED", DIVISION 16 CONTRACTOR IS TO DETERMINE CEILING TYPE FROM THE LATEST ARCHITECTURAL REFLECTED CEILING PLAN DRAWINGS AND PROVIDE THE APPROPRIATE CEILING INSTALLATION KIT.

F. EMERGENCY BATTERY UNITS: PROVIDE SEALED LONG LIFE BATTERIES, MINIMUM 10 YEAR DESIGN LIFE:

G. ALTERNATE MANUFACTURERS WILL BE ACCEPTED ONLY WITH PRIOR APPROVAL BY THE ENGINEER. PRODUCT MUST MEET ALL QUALITY, EFFICIENCY AND DESIGN ASPECTS OF BASE BID MANUFACTURER, CONTRACTOR MUST SUBMIT RECALCULATED PHOTOMETRIC DRAWINGS OF EXTERIOR AND INTERIOR ROOMS WITH SHOP DRAWING SUBMITTAL.

LIGHTING LUMINAIRE SCHEDULE

NOTES

- CONTRACTOR TO RE-ARRANGE AND WHERE POSSIBLE, REUSE EXISTING BREAKERS AS INDICATED. CONTRACTOR TO PROVIDE NEW BREAKERS OF SIMILAR TYPE, SIZED AS INDICATED.
- CONTRACTOR TO PROVIDE NEW POWER PANELS INDICATED.
- PERFORM COMPLETE INSTALLATION OF EQUIPMENT IN STRICT ACCORDANCE WITH THE MOST STRINGENT REQUIREMENTS OF:
A) CSA C22.1-12 - 22ND EDITION OF THE CANADIAN ELECTRICAL CODE 2012
OR
B) GN/CGS- PROTECTION SERVICES DIVISION-ELECTRICAL / MECHANICAL SAFETY SECTION -ELECTRICAL BULLETINS

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3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
4. Drawing revision must be note "Issued For Construction" before any work commences

| Issue / Revision | Date dd/mm/yyyy |
|--|-----------------|
| 1 ISSUED FOR 66% SUBMISSION | 06/09/2012 |
| 2 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 3 ISSUED FOR TENDER | FEBRUARY 2013 |
| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Runge & Associates Inc.
Signature: *Runge*
Date: APRIL 22, 2013
PERMIT NUMBER: P617
The Association of Professional Engineers, Geologists and Geophysicists of NWTNU



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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
PANEL AND LUMINAIRE
SCHEDULES

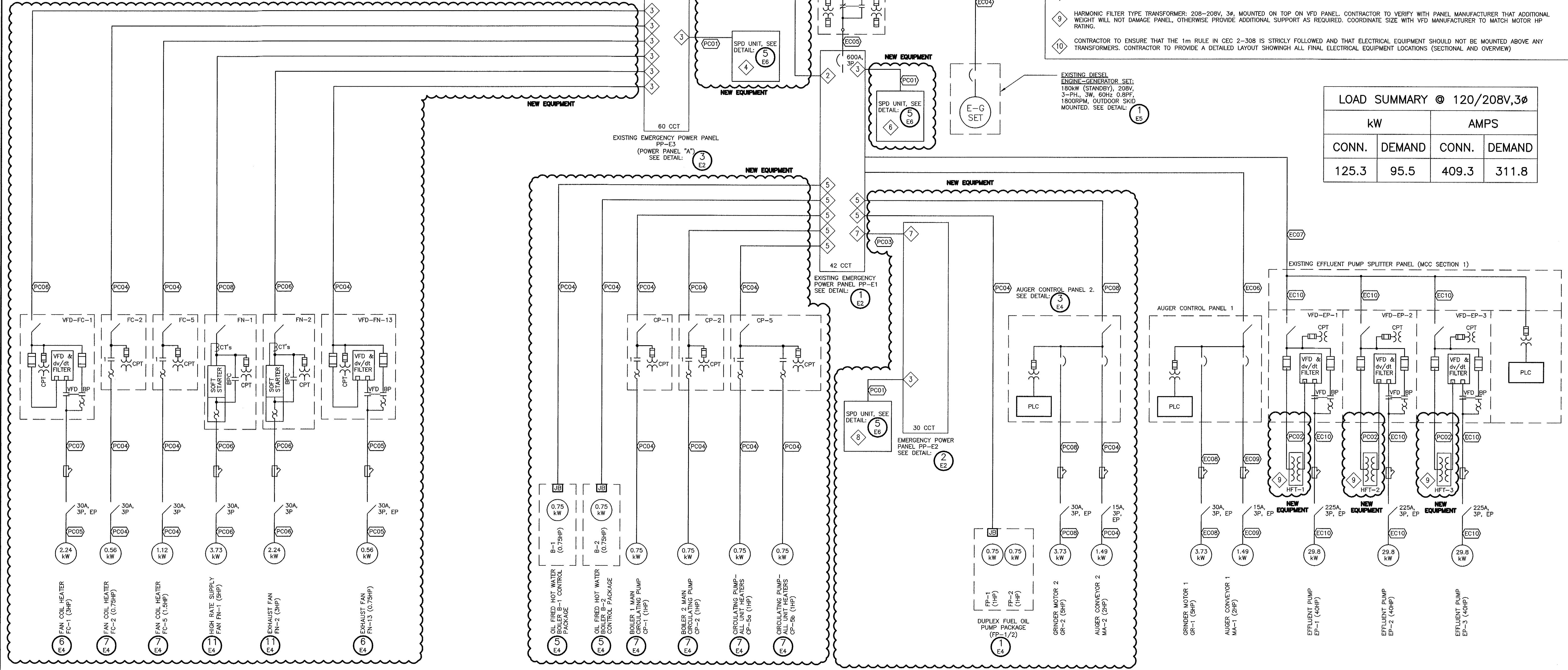
| | | |
|-------------------|--------------------------|-------------------|
| Drawn By T.T. | Checked By S.R.T. | Drawing No. E2 |
| Scale AS SHOWN | Project No. 300031281 | |

| NEW POWER CABLE SCHEDULE | |
|--------------------------|---|
| PC01 | 3C#10AWG Cu PLUS #10AWG Cu GROUND, TYPE RW90 IN 27mm ² CONDUIT. |
| PC02 | 3C#3/0AWG Cu PLUS #2AWG Cu GROUND, TYPE RW90 IN 53mm ² CONDUIT. |
| PC03 | 3C#2AWG Cu PLUS #8AWG Cu GROUND, TYPE RW90 IN 53mm ² CONDUIT. |
| PC04 | 3C#12AWG Cu PLUS #12AWG Cu GROUND, TYPE RW90 IN 27mm ² CONDUIT. |
| PC05 | 3C#12AWG SHIELDED "VFD" RATED CABLE C/W 3-SYMMETRICALLY CONSTRUCTED GROUND CONDUCTORS IN 27mm ² CONDUIT. |
| PC06 | 3C#10AWG Cu PLUS #10AWG Cu GROUND, TYPE RW90 IN 27mm ² CONDUIT. |
| PC07 | 3C#10AWG SHIELDED "VFD" RATED CABLE C/W 3-SYMMETRICALLY CONSTRUCTED GROUND CONDUCTORS IN 27mm ² CONDUIT. |
| PC08 | 3C#8AWG Cu PLUS #10AWG Cu GROUND, TYPE RW90 IN 53mm ² CONDUIT. |

| EXISTING POWER CABLE SCHEDULE | |
|-------------------------------|---|
| EC01 | 3C#750MCM Cu PLUS #1/0AWG Cu GROUND, TYPE RW90 IN 103mm ² CONDUIT. |
| EC02 | 3C#3AWG Cu PLUS #8AWG Cu GROUND, TYPE RW90 IN 53mm ² CONDUIT. |
| EC03 | 3C#750MCM Cu PLUS #1/0AWG Cu GROUND, TYPE RW90 IN 103mm ² CONDUIT. |
| EC04 | 3C#750MCM Cu PLUS #1/0AWG Cu GROUND, TYPE RW90 IN 103mm ² CONDUIT. |
| EC05 | 3C#750MCM Cu PLUS #1/0AWG Cu GROUND, TYPE RW90 IN 103mm ² CONDUIT. |
| EC06 | 3C#8AWG Cu PLUS #10AWG Cu GROUND, TYPE RW90 IN 27mm ² CONDUIT. |
| EC07 | 3C#600MCM Cu PLUS #1AWG Cu GROUND, TYPE RW90 IN 103mm ² CONDUIT. |
| EC08 | 3C#10AWG Cu PLUS #10AWG Cu GROUND, TYPE RW90 IN 27mm ² CONDUIT. |
| EC09 | 3C#12AWG Cu PLUS #12AWG Cu GROUND, TYPE RW90 IN 27mm ² CONDUIT. |
| EC10 | 3C#1/0AWG Cu PLUS #6AWG Cu GROUND, TYPE RW90 IN 53mm ² CONDUIT. |
| EC11 | 3C#8AWG Cu PLUS #10AWG Cu GROUND, TYPE RW90 IN 53mm ² CONDUIT. |

REMOVALS:
 1 CONTRACTOR TO REMOVE ALL WIRING, CONDUIT FASTENERS AND DISCONNECT SWITCH AS INDICATED FROM SPLITTER SP-1 TO PANEL "A". CONTRACTOR TO PATCH AND REPAIR ALL INTERIOR SURFACES. FINAL SURFACE FINISHES TO MATCH EXISTING. CONTRACTOR TO PATCH, REPAIR AND WATER PROOF ALL EXTERIOR SURFACES. FINAL SURFACE FINISHES TO MATCH EXISTING.

NOTES
 1 N/A
 2 CONTRACTOR TO PROVIDE A 3 POLE, 200AMP BREAKER SIMILAR TO EXISTING IN POWER PANEL PP-E1. REFER TO PANEL SCHEDULE ON E2, DETAIL 1 FOR BREAKER LOCATION. CONTRACTOR TO PROVIDE THE MANUFACTURER'S RECOMMENDED LUG CONNECTORS FOR PANEL "A" AND CONNECT THE NEW POWER FEED FROM POWER PANEL PP-E1. CONTRACTOR TO RENAME PANEL "A" AS EMERGENCY POWER PANEL PP-E2. CONTRACTOR TO MARK THE FORMER 100AMP MAIN BREAKER AS SPARE.
 3 REFER TO PANEL SCHEDULE ON E2, DETAIL 3 FOR BREAKER SIZING AND LOCATIONS.
 4 CONTRACTOR TO CONNECT POWER LEADS "AS SHORT AS POSSIBLE" BETWEEN POWER PANEL PP-E3 AND SPD PANEL SPD TO BE WALL MOUNTED.
 5 REFER TO PANEL SCHEDULE ON E2, DETAIL 1 FOR BREAKER SIZING AND LOCATIONS.
 6 CONTRACTOR TO CONNECT POWER LEADS "AS SHORT AS POSSIBLE" BETWEEN POWER PANEL PP-E1 AND SPD PANEL SPD TO BE WALL MOUNTED. REFER TO PANEL SCHEDULE ON E2, DETAIL 1 FOR BREAKER SIZING AND LOCATION.
 7 CONTRACTOR TO PROVIDE A 3 POLE, 100AMP BREAKER SIMILAR TO EXISTING IN POWER PANEL PP-E1. REFER TO PANEL SCHEDULE ON E2, DETAIL 1 FOR BREAKER LOCATION. CONTRACTOR TO PROVIDE A NEW 100AMP 30 CIRCUIT, 120/208V, 3 ϕ , 4 WIRE POWER PANEL C/W MAIN LUGS TO BE MOUNTED ON THE WALL NEXT TO POWER PANEL PP-E1. CONTRACTOR TO NAME NEW POWER PANEL AS "EMERGENCY POWER PANEL PP-E2". CONTRACTOR TO REFER TO E2, DETAIL 2 FOR BREAKER SIZING AND LOCATIONS.
 8 CONTRACTOR TO CONNECT POWER LEADS "AS SHORT AS POSSIBLE" BETWEEN POWER PANEL PP-E2 AND SPD PANEL SPD TO BE WALL MOUNTED.
 9 HARMONIC FILTER TYPE TRANSFORMER: 208-208V, 3 ϕ , MOUNTED ON TOP ON VFD PANEL. CONTRACTOR TO VERIFY WITH PANEL MANUFACTURER THAT ADDITIONAL WEIGHT WILL NOT DAMAGE PANEL, OTHERWISE PROVIDE ADDITIONAL SUPPORT AS REQUIRED. COORDINATE SIZE WITH VFD MANUFACTURER TO MATCH MOTOR HP RATING.
 10 CONTRACTOR TO ENSURE THAT THE 1m RULE IN CEC 2-308 IS STRICTLY FOLLOWED AND THAT ELECTRICAL EQUIPMENT SHOULD NOT BE MOUNTED ABOVE ANY TRANSFORMERS. CONTRACTOR TO PROVIDE A DETAILED LAYOUT SHOWING ALL FINAL ELECTRICAL EQUIPMENT LOCATIONS (SECTIONAL AND OVERVIEW)



| LOAD SUMMARY @ 120/208V, 3 ϕ | | | |
|-----------------------------------|--------|-------|--------|
| kW | | AMPS | |
| CONN. | DEMAND | CONN. | DEMAND |
| 125.3 | 95.5 | 409.3 | 311.8 |

1 ELECTRICAL SINGLE LINE DIAGRAM
E3 NTS

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 2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
 3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
 4. Drawing revision must be noted "Issued For Construction" before any work commences

| Issue / Revision | Date dd/mm/yyyy |
|--|-----------------|
| 1 ISSUED FOR 60% SUBMISSION | 06/09/2012 |
| 2 ISSUED FOR 90% SUBMISSION | JANUARY 2013 |
| 3 ISSUED FOR TENDER | FEBRUARY 2013 |
| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
 Runge & Associates Inc.
 Signature: *[Signature]*
 Date: APRIL 22, 2013
PERMIT NUMBER: P617
 The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

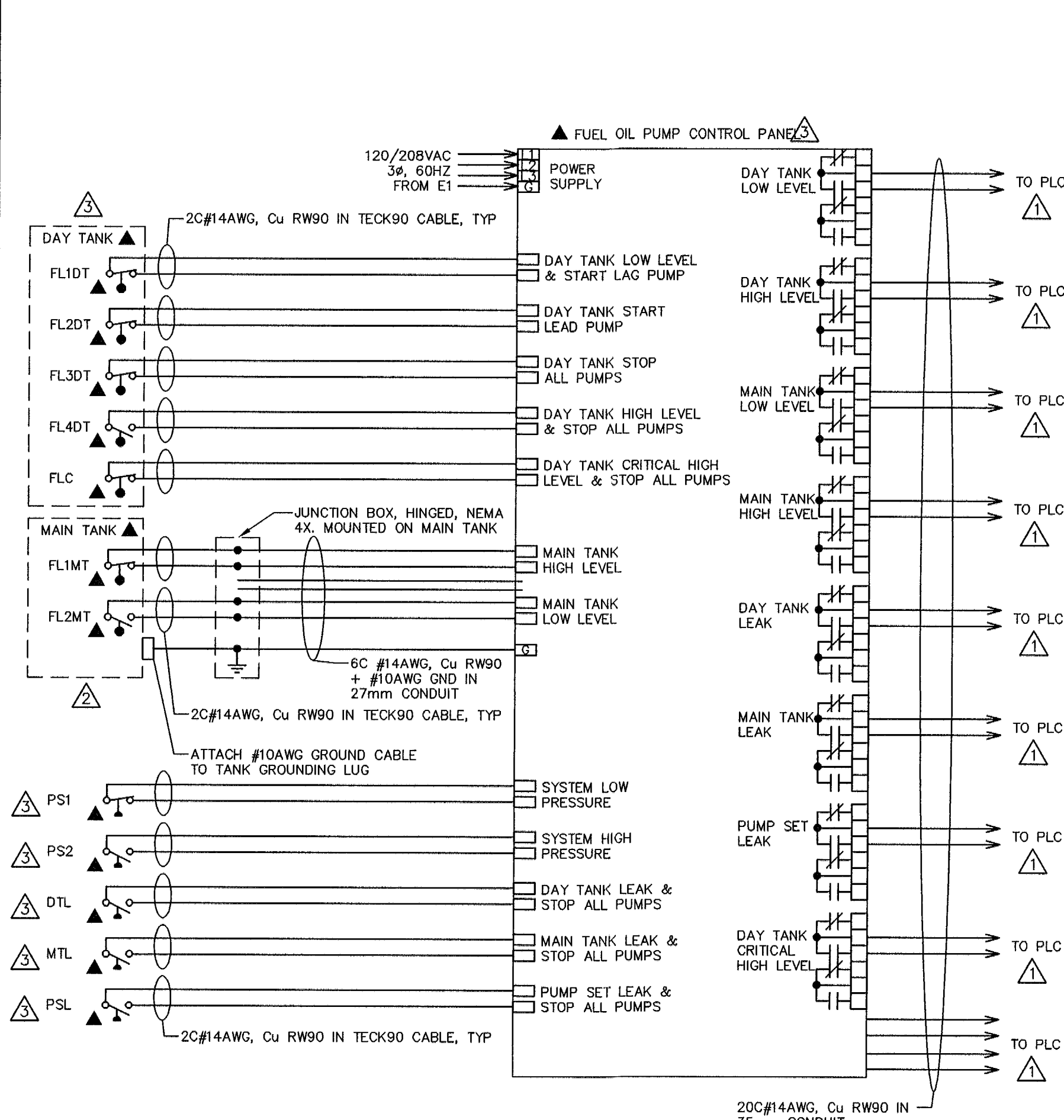


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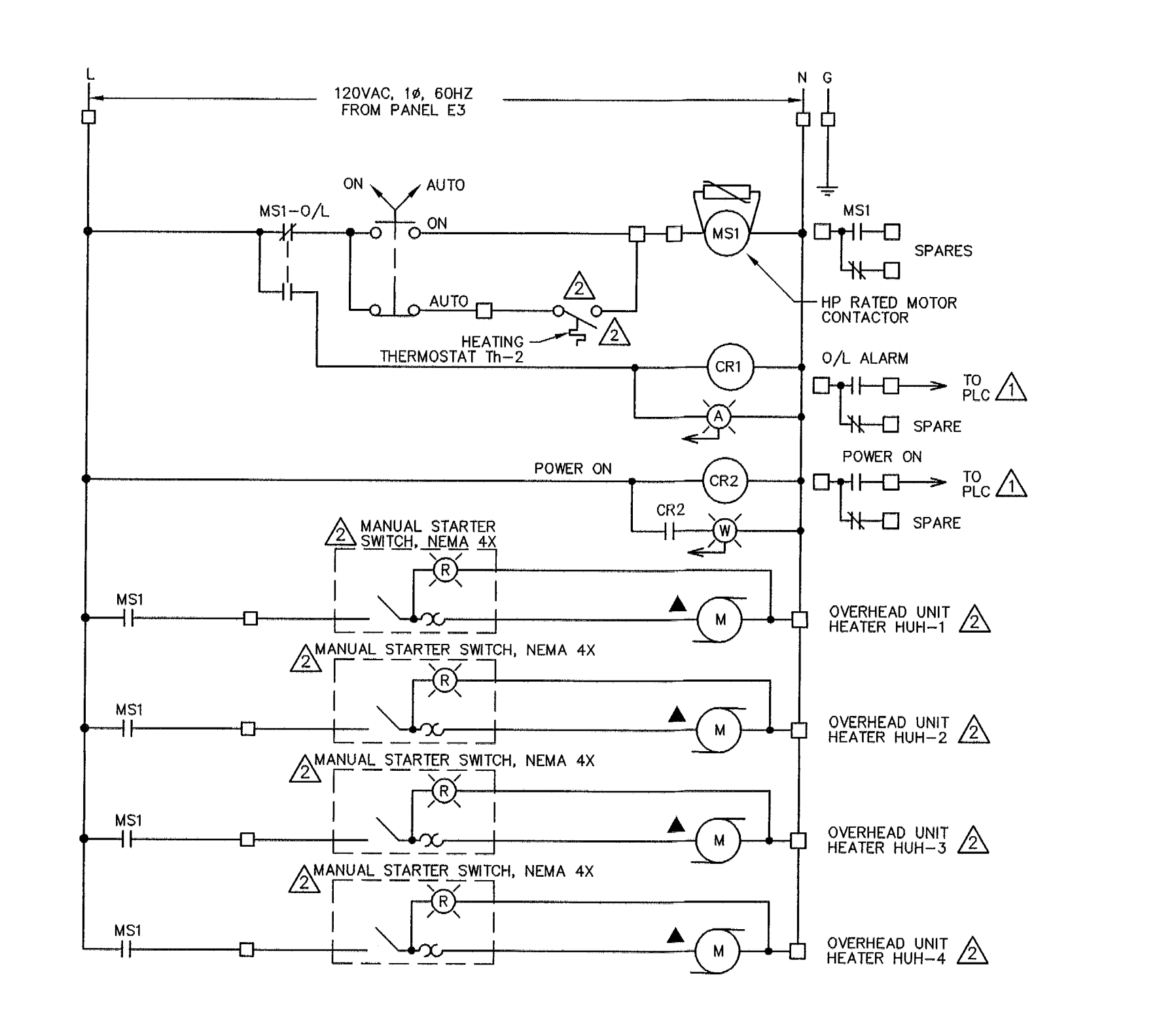
BURNSIDE
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RANKIN INLET
SEWAGE TREATMENT PLANT

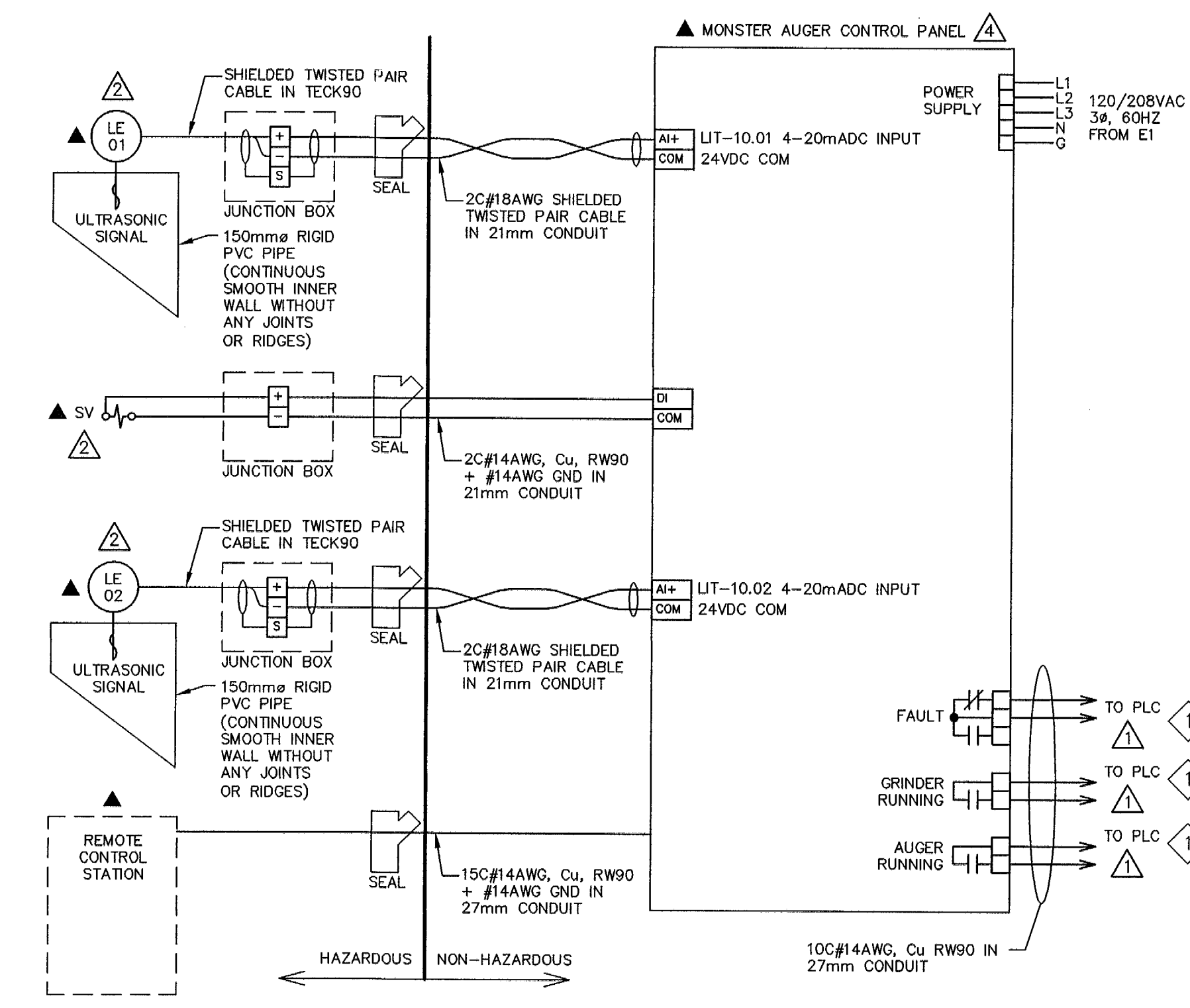
| Drawing Title | | |
|--------------------------------|-----------------------|----------------|
| ELECTRICAL SINGLE LINE DIAGRAM | | |
| Drawn By: T.I. | Checked By: S.R.T. | Drawing No. E3 |
| Scale: AS SHOWN | Project No. 300031281 | |



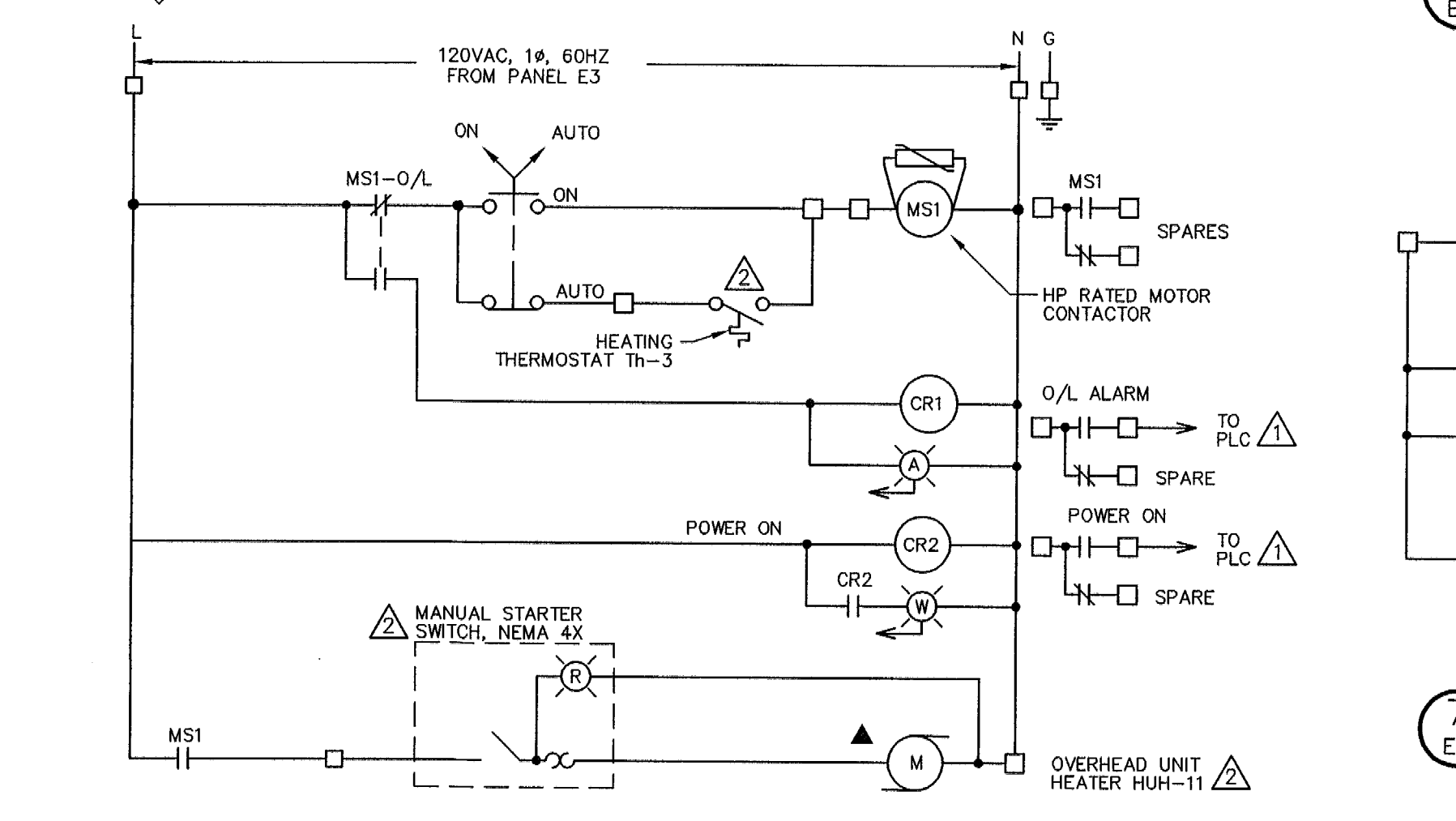
1 DUPLEX FUEL OIL PUMP CONTROL PANEL WIRING DIAGRAM
 E4 - NTS
 - CONCEPT DRAWING ONLY. CONTRACTOR TO REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT REQUIREMENTS.



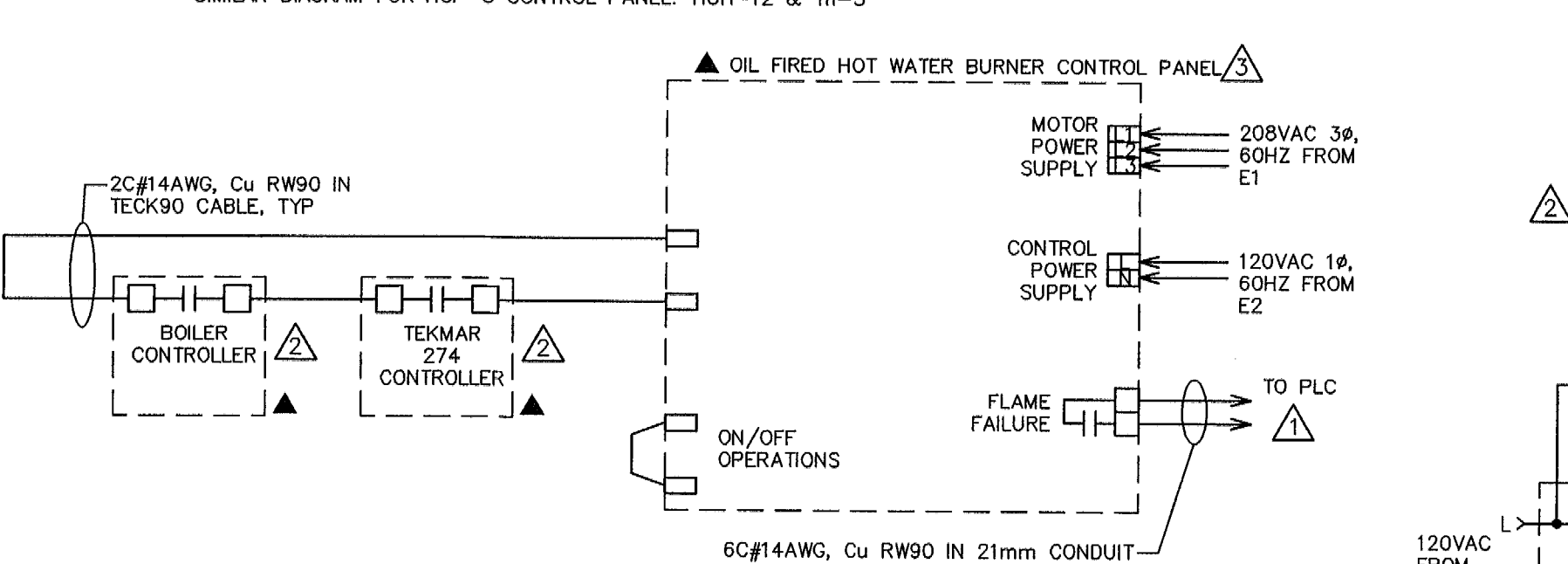
2 HEATING CONTROL PANEL HCP-2 WIRING DIAGRAM
 E4 - ALL UNMARKED DEVICES IN HCP-2 CONTROL PANEL: HUH-1, HUH-2, HUH-3, HUH-4 & Th-2
 - SIMILAR DIAGRAM FOR HCP-1 CONTROL PANEL: HUH-5, HUH-6, HUH-7, HUH-8, HUH-9, HUH-13 & Th-1
 - NO EXPLOSION PROOF REQUIREMENTS FOR HCP-1.



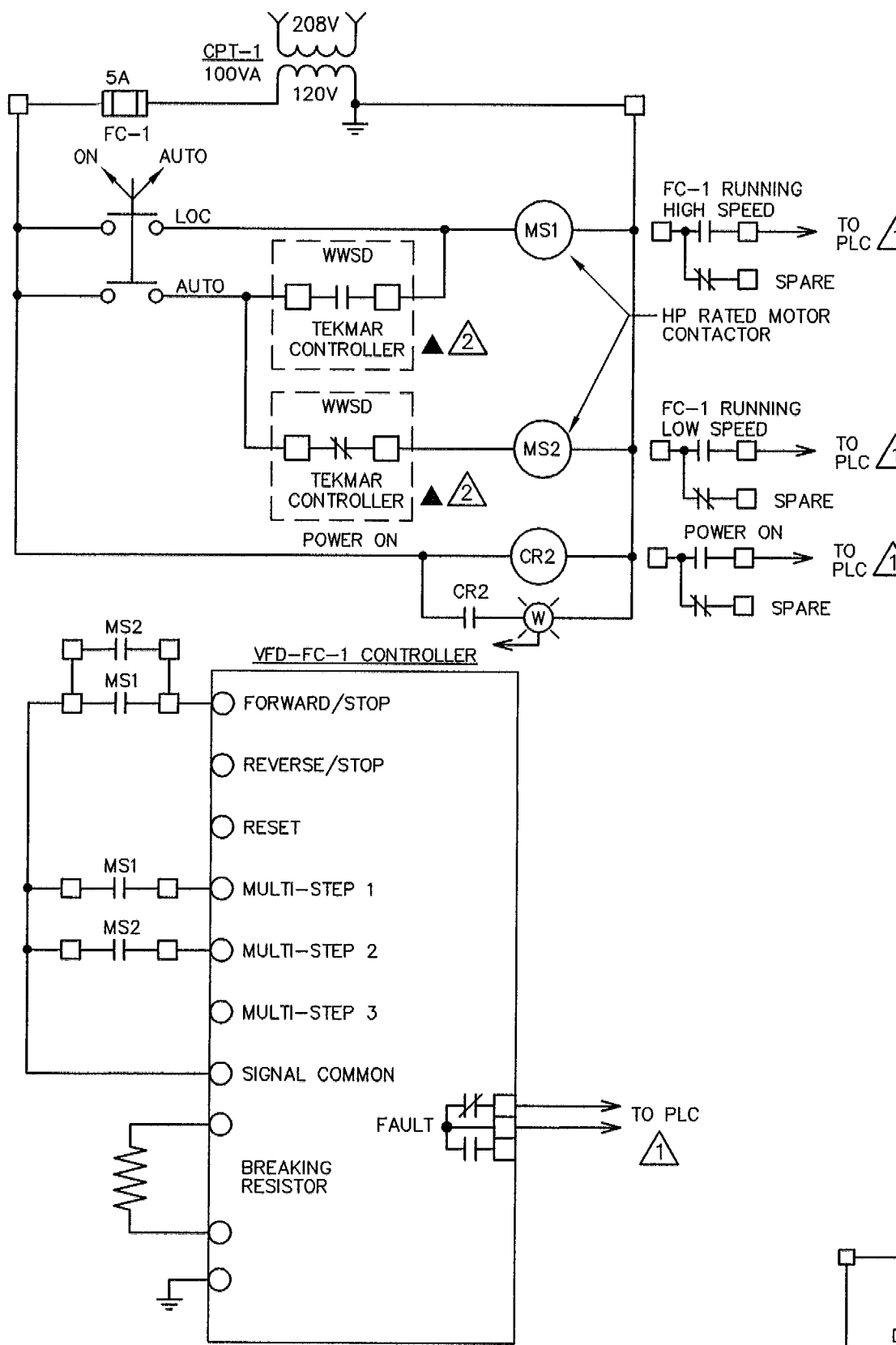
3 MONSTER AUGER CONTROL PANEL WIRING DIAGRAM
 E4 - NTS
 - CONCEPT DRAWING ONLY. CONTRACTOR TO REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT REQUIREMENTS.
 - TYPICAL WIRING DIAGRAM FOR MONSTER AUGER CONTROL PANEL 2
 - LOCATION OF ALL FIELD COMPONENTS TO BE CONFIRMED WITH MANUFACTURER.
 - CONTRACTOR TO PROVIDE ADDITIONAL CONNECTIONS, WIRING AND CONDUIT FOR EXISTING MONSTER AUGER CONTROL PANEL 1



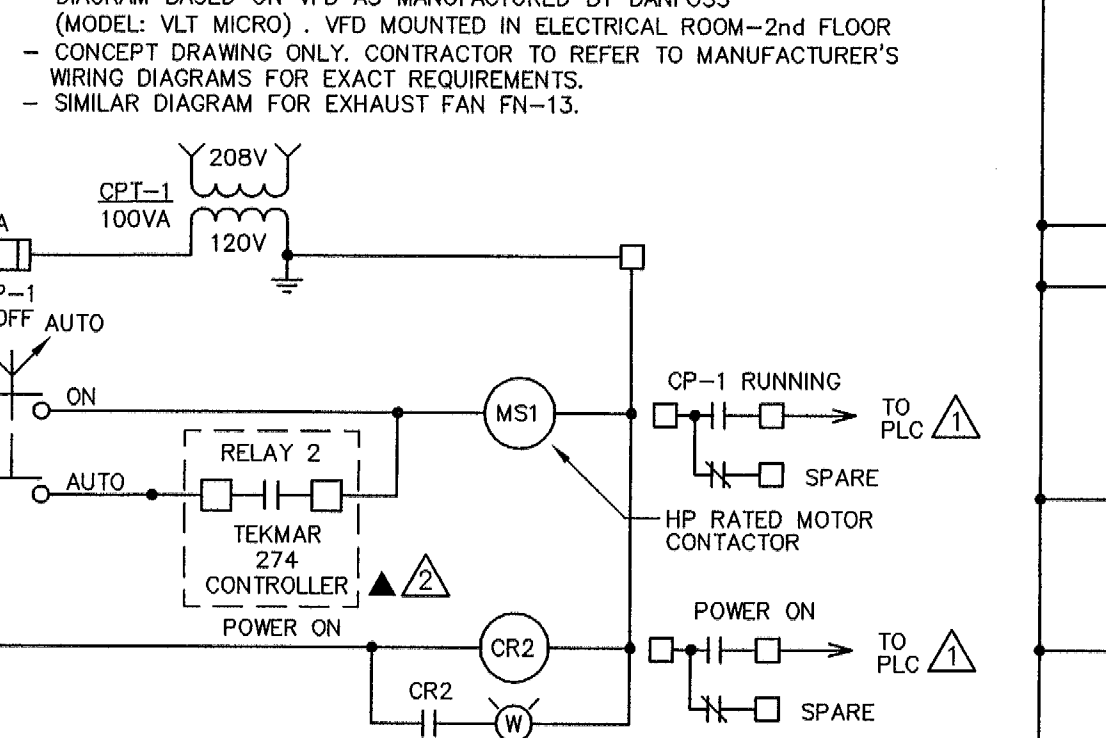
4 HEATING CONTROL PANEL HCP-3 WIRING DIAGRAM
 E4 - ALL UNMARKED DEVICES IN HCP-3 CONTROL PANEL: HUH-10 & Th-3
 - SIMILAR DIAGRAM FOR HCP-4 CONTROL PANEL: HUH-11 & Th-4
 - SIMILAR DIAGRAM FOR HCP-5 CONTROL PANEL: HUH-12 & Th-5



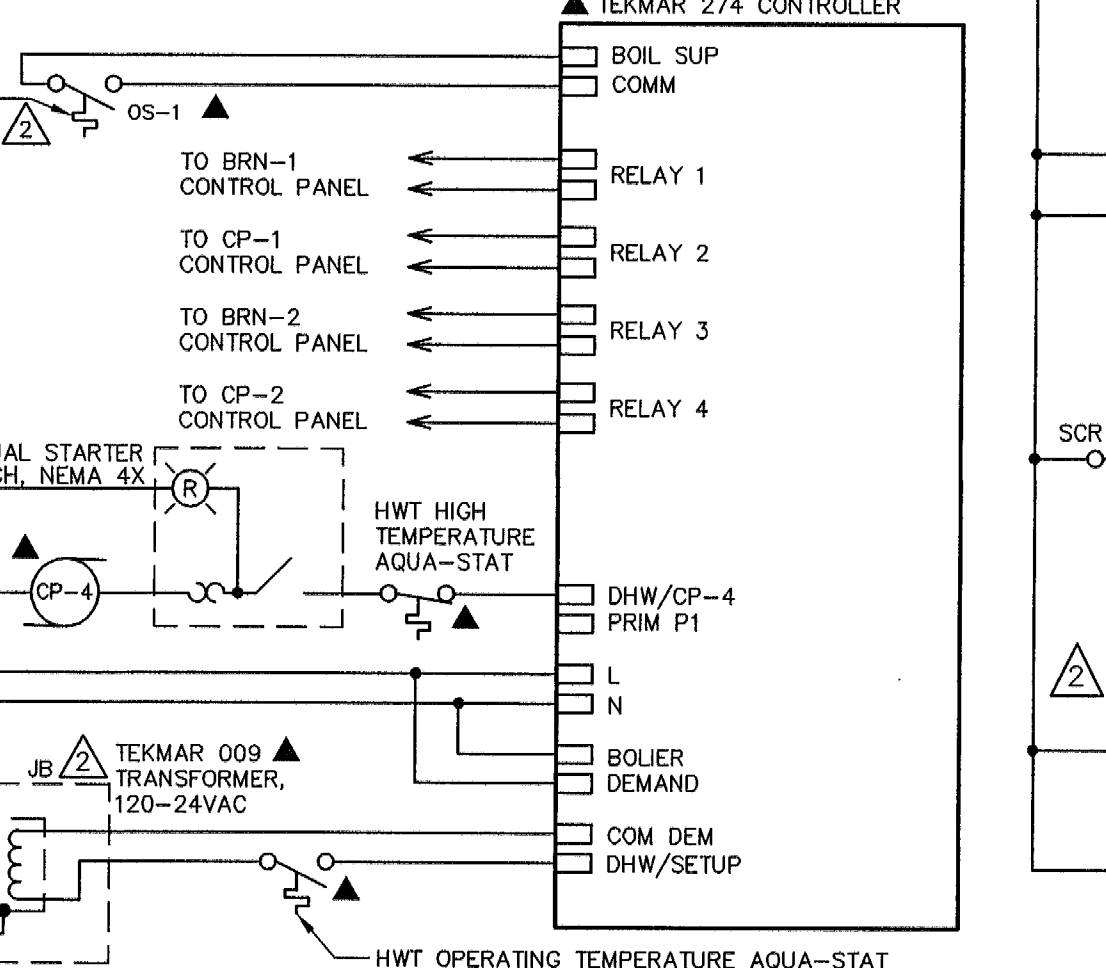
5 OIL FIRED HOT WATER BURNER CONTROL PANEL BRN-1 WIRING DIAGRAM
 E4 - SIMILAR WIRING DIAGRAM OIL FIRED HOT EATER BOILER CONTROL PANEL BRN-2



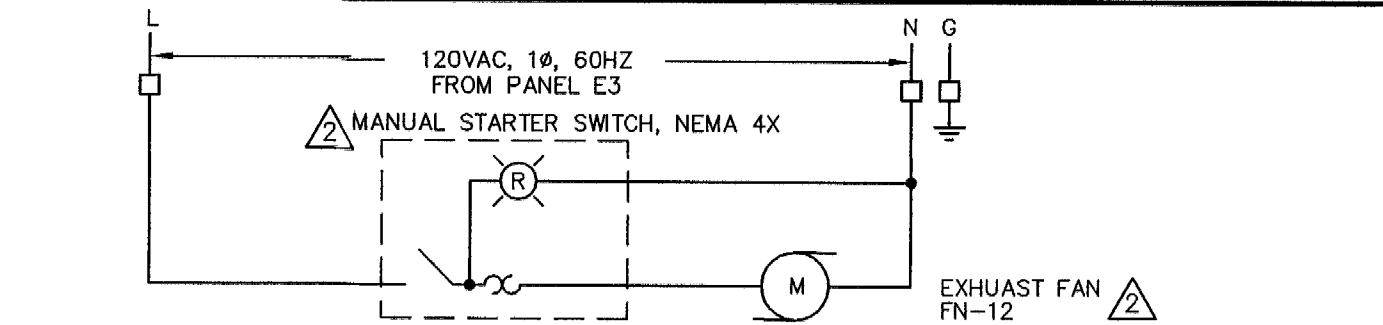
6 FAN HEATING COIL FC-1 VFD CONTROL WIRING DIAGRAM
 E4 - ALL UNMARKED DEVICES IN EXPLOSION PROOF ENCLOSURE
 - DIAGRAM BASED ON VFD AS MANUFACTURED BY DANFOSS (MODEL: VLT MICRO) - VFD MOUNTED IN ELECTRICAL ROOM-2nd FLOOR
 - CONCEPT DRAWING ONLY. CONTRACTOR TO REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT REQUIREMENTS.
 - SIMILAR DIAGRAM FOR EXHAUST FAN FN-13.



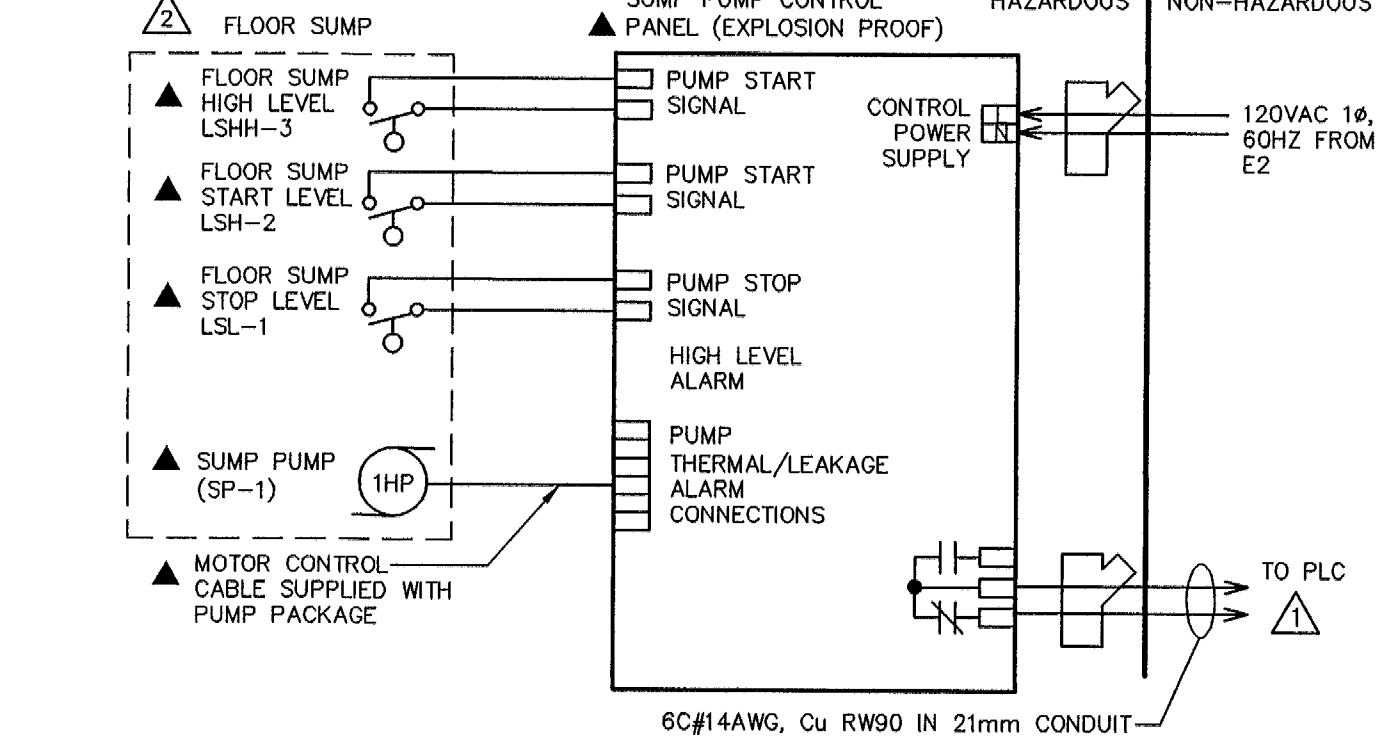
7 CIRCULATING PUMP CP-1 CONTROL WIRING DIAGRAM
 E4 - UNMARKED DEVICES IN CONTROL PANEL FOR CP-1
 - SIMILAR DIAGRAM FOR CP-2



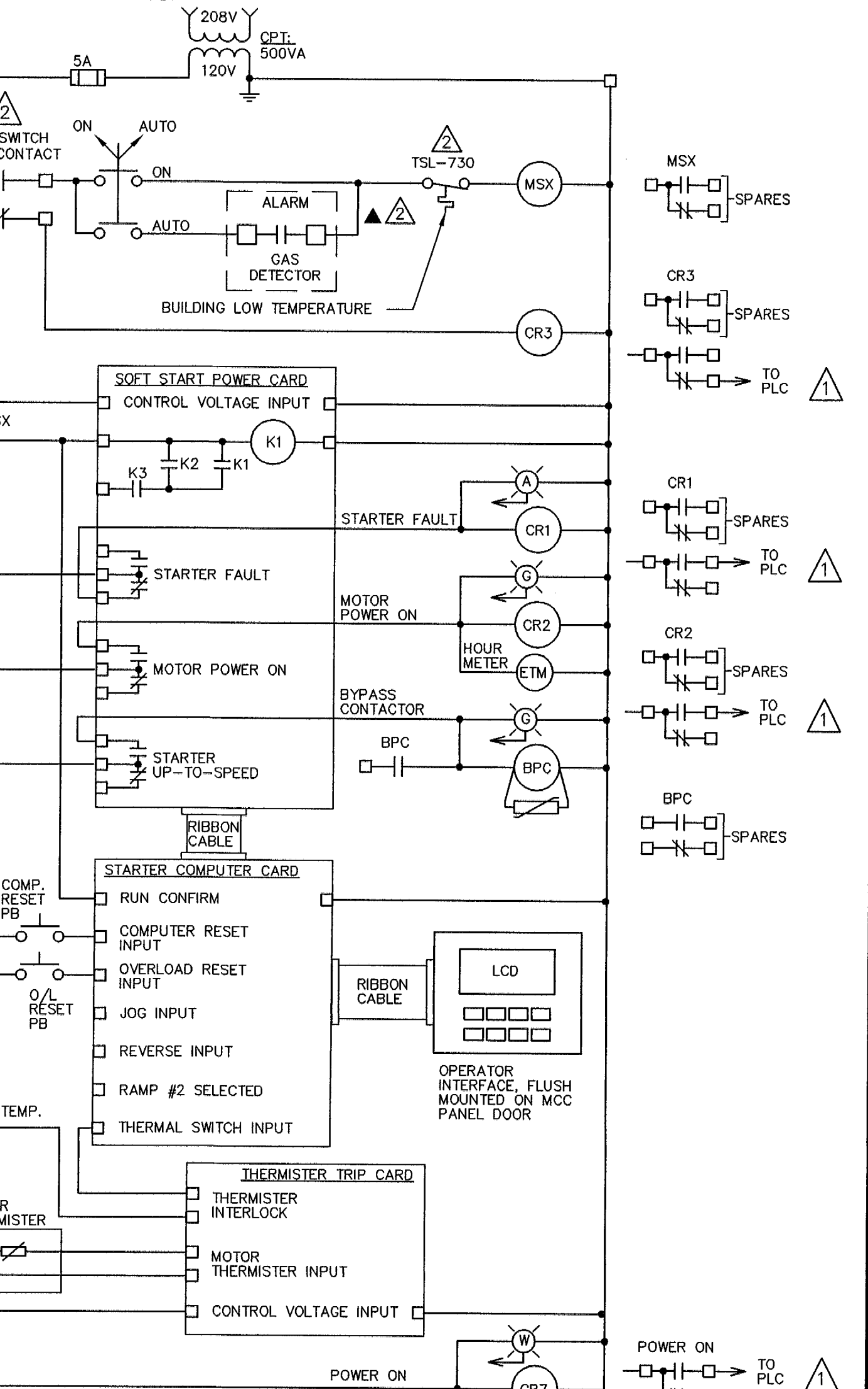
8 TEKMAR 274 CONTROLLER WIRING DIAGRAM
 E4 - UNMARKED DEVICES IN CONTROL PANEL FOR CP-4
 - CONCEPT DRAWING. REFER TO MANUFACTURER REQUIREMENTS FOR EXACT REQUIREMENTS



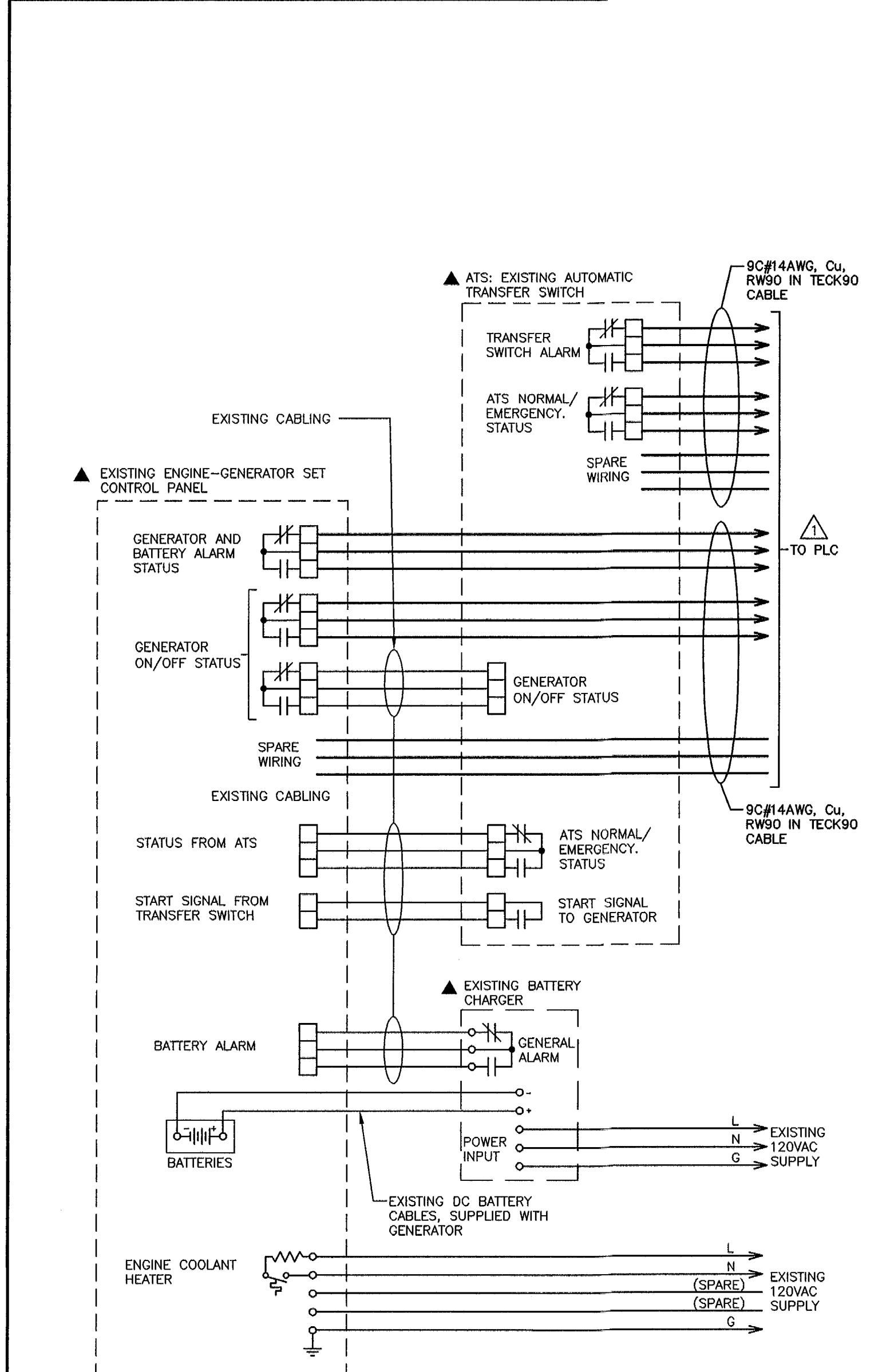
9 EXHAUST FAN FN-12 CONTROL WIRING DIAGRAM
 E4 - DIAGRAM FOR EXPLOSION PROOF EXHAUST FAN FN-12 AND CIRCULATING PUMP CP-3



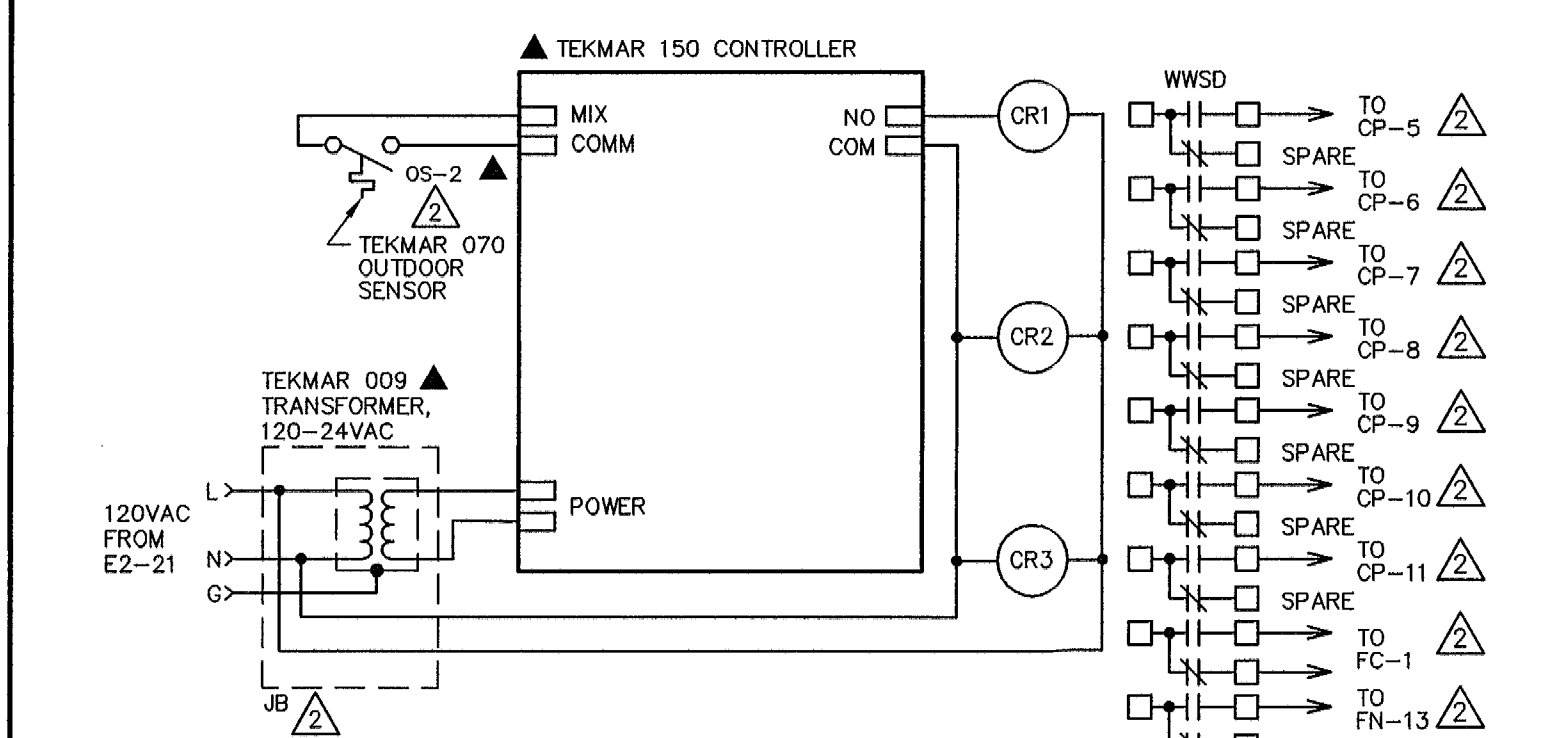
10 FLOOR SUMP SP-1 CONTROL WIRING DIAGRAM
 E4 - DIAGRAM BASED ON F.E. MYERS SIMPLEX CONTROL SYSTEM
 - CONTRACTOR TO INSTALL PUMP CONTROL PANEL AND WIRE ALL EXTERNAL FIELD DEVICES AS SHOWN
 - CONTRACTOR TO PROVIDE INTRINSIC SAFETY BARRIER FOR SIGNALS TO PLC



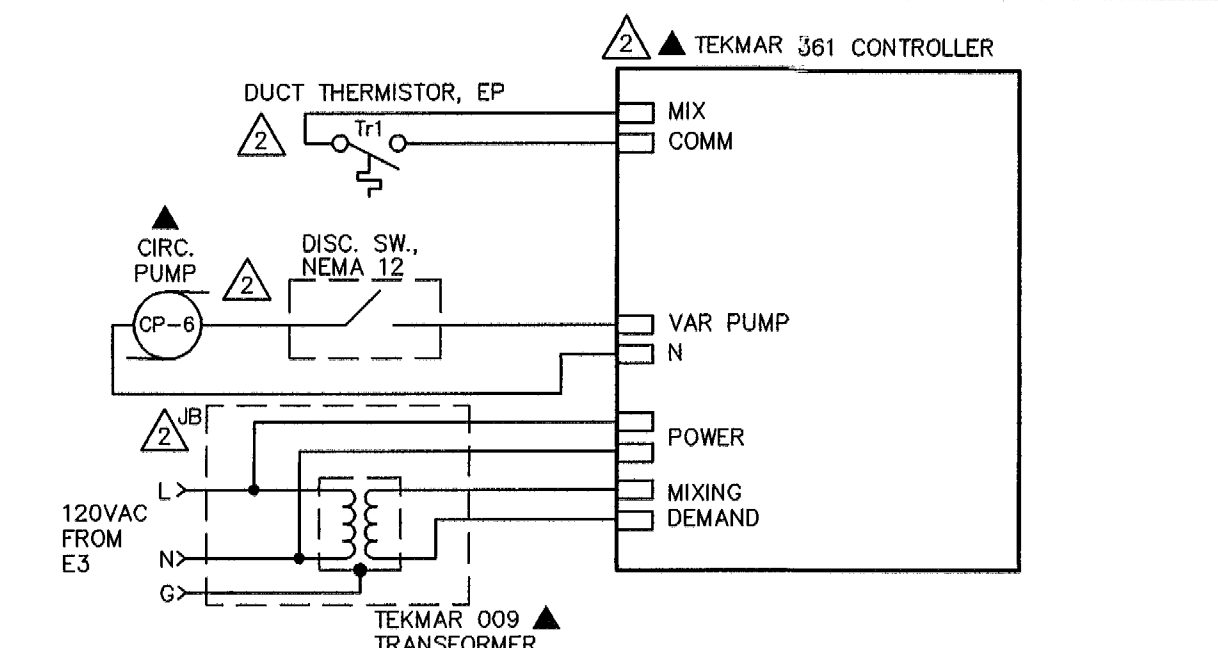
11 SUPPLY FAN FN-1 & FN-2 "SOFT-STARTER" CONTROL WIRING DIAGRAM
 E4 - FLUSH MOUNT PUSHBUTTON DEVICES AND OPERATOR INTERFACE ON CONTROL PANEL DOOR
 - DIAGRAM BASED ON SOFT STARTER MANUFACTURED BY BENSCHAW
 - UNMARKED DEVICES LOCATED IN CONTROL PANEL WHICH CONTAINS SOFT STARTER FOR FN-1 AND FN-2
 - CONTROL WIRING AS SHOWN FOR FN-1 SOFT STARTER IS TO BE DUPLICATED FOR FN-2 SOFT STARTER



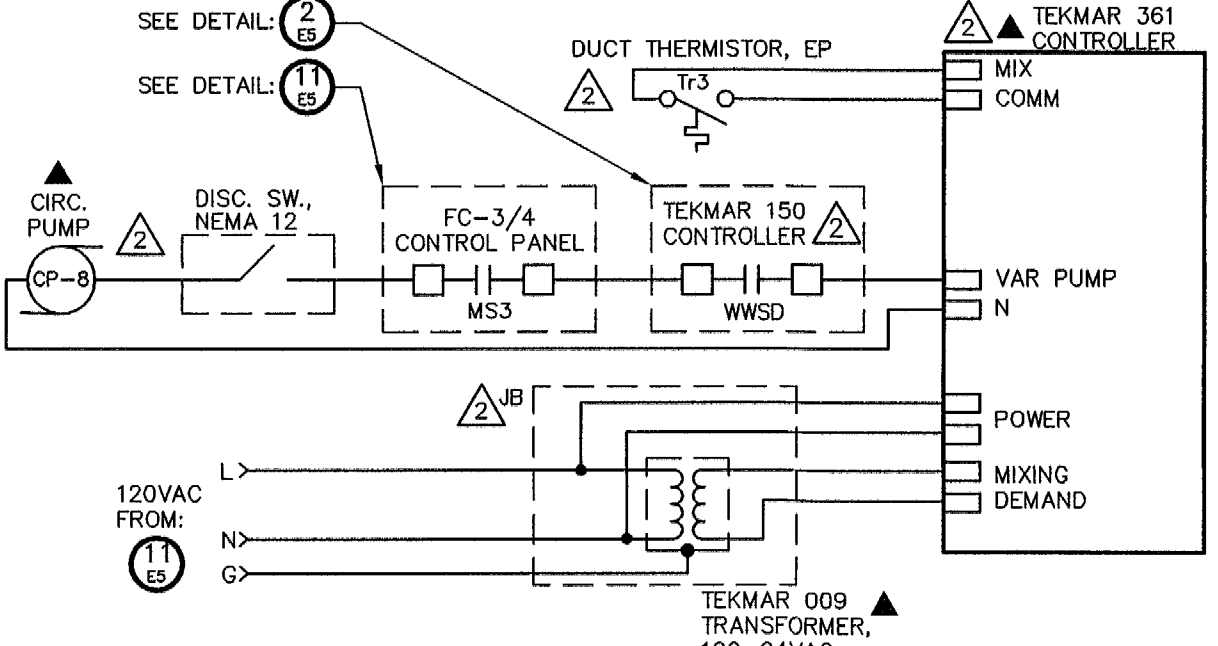
1 ENGINE-GENERATOR & ATS: CONTROL WIRING DIAGRAM
 E5 - NTS
 - CONCEPT DRAWING ONLY. CONTRACTOR TO REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT REQUIREMENTS.
 - LOCATION OF ALL FIELD COMPONENTS TO BE CONFIRMED AT THE TIME OF CONSTRUCTION
 - WHERE POSSIBLE USE EXISTING CONDUIT SYSTEM



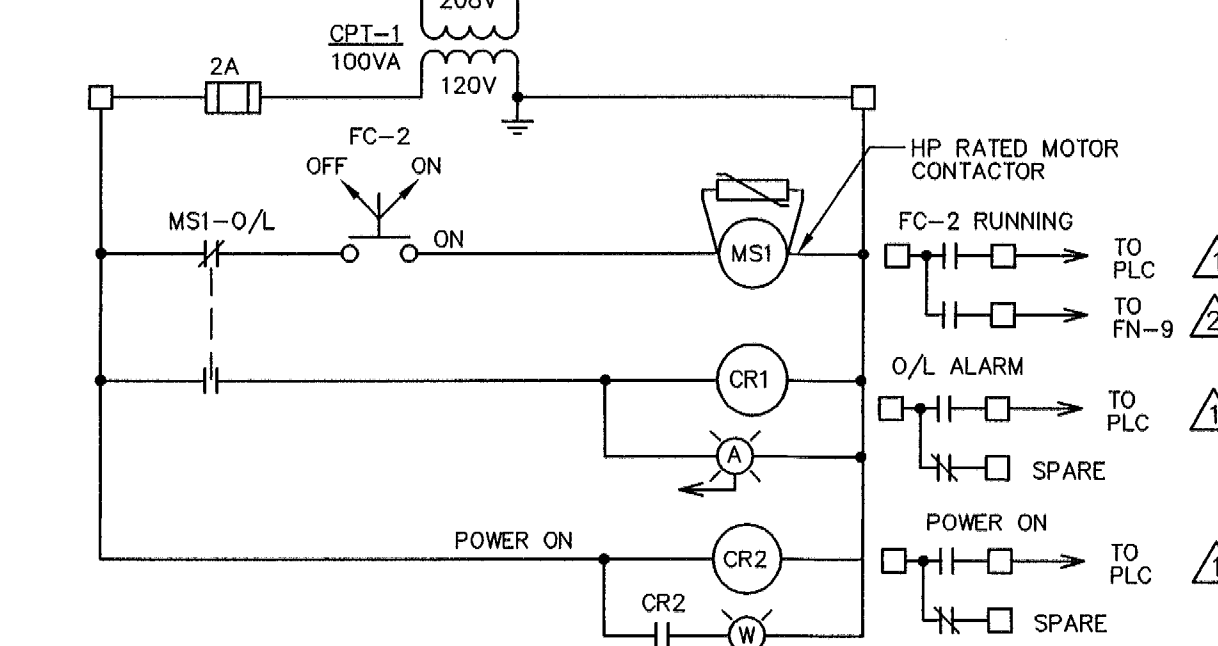
2 TEKMAR 150 CONTROLLER WIRING DIAGRAM
 E5 - CONCEPT DRAWING. CONTRACTOR TO REFER TO MANUFACTURER REQUIREMENTS FOR EXACT CONFIGURATION
 - EXACT CONFIGURATION
 - ALL UNMARKED DEVICES ARE IN TEKMAR 150 CONTROL PANEL



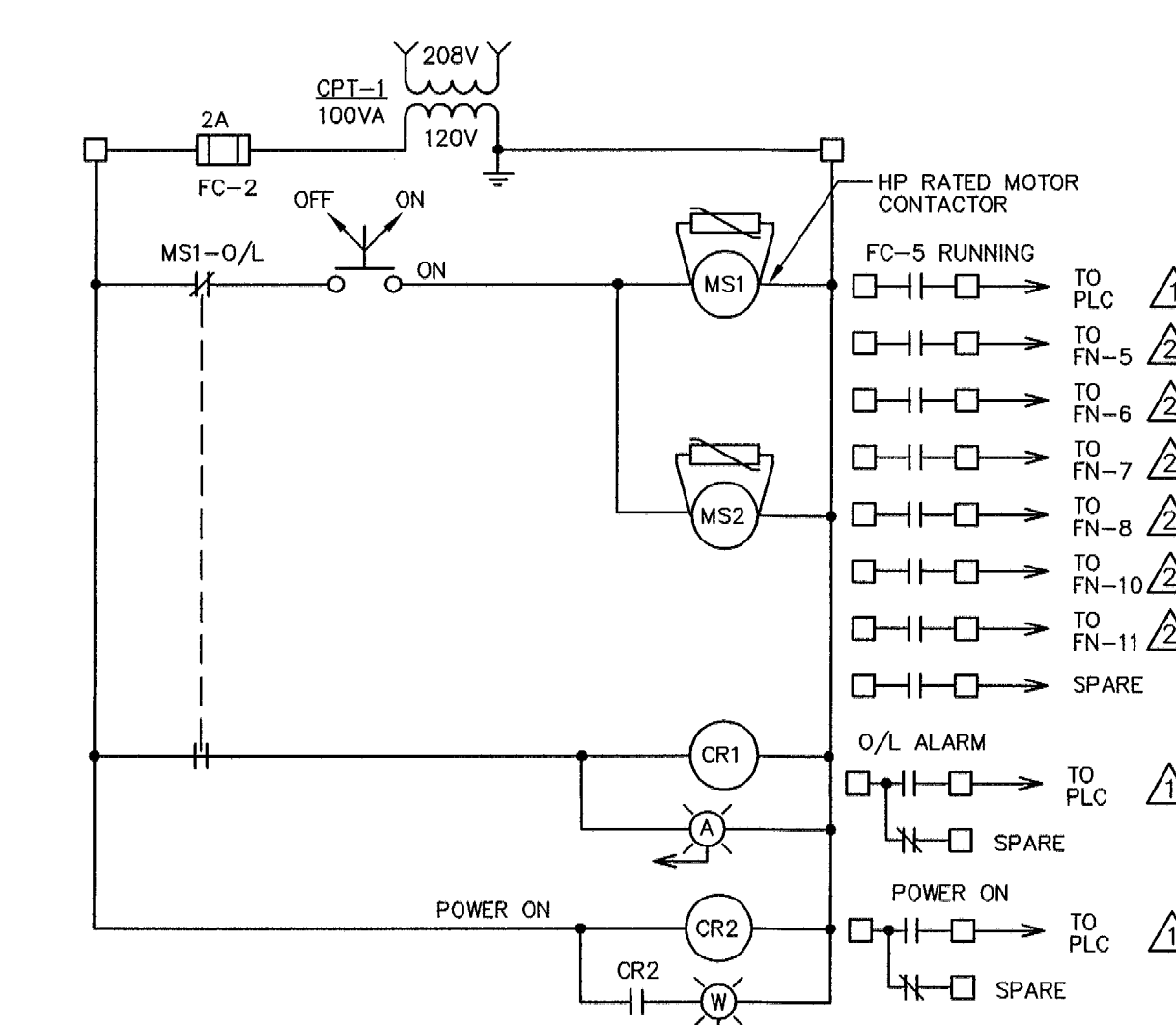
3 TEKMAR 361 CONTROLLER WIRING DIAGRAM
 E5 - CONCEPT DRAWING SHOWN.
 - REFER TO MANUFACTURER REQUIREMENTS FOR EXACT CONFIGURATION
 - DIAGRAM FOR CP-5. THERMISTOR Tr1 IS LOCATED IN FC-1 DUCT WORK
 - SIMILAR DIAGRAM FOR CP-7. THERMISTOR Tr2 IS LOCATED IN FC-2 DUCT WORK
 - SIMILAR DIAGRAM FOR CP-10. THERMISTOR Tr5 IS LOCATED IN FC-5 DUCT WORK



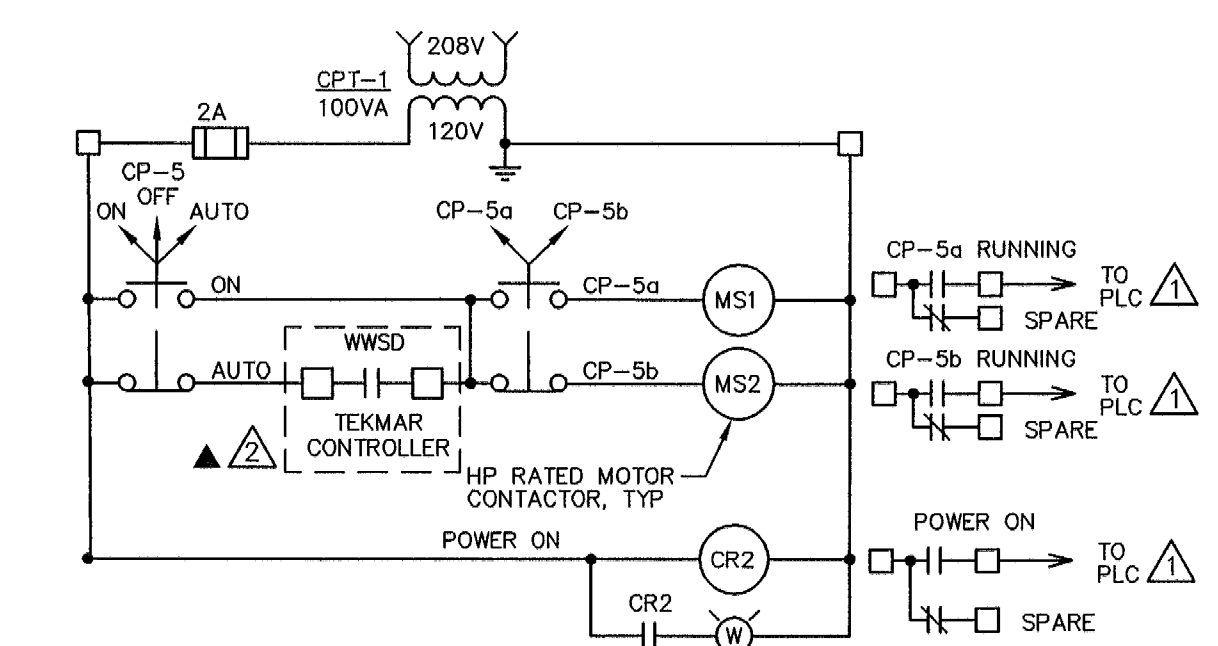
4 TEKMAR 361 CONTROLLER WIRING DIAGRAM
 E5 - CONCEPT DRAWING SHOWN.
 - REFER TO MANUFACTURER REQUIREMENTS FOR EXACT CONFIGURATION
 - DIAGRAM FOR CP-6. THERMISTOR Tr3 IS LOCATED IN FC-3 DUCT WORK
 - SIMILAR DIAGRAM FOR CP-9 (MS4). THERMISTOR Tr4 IS LOCATED IN FC-4 DUCT WORK



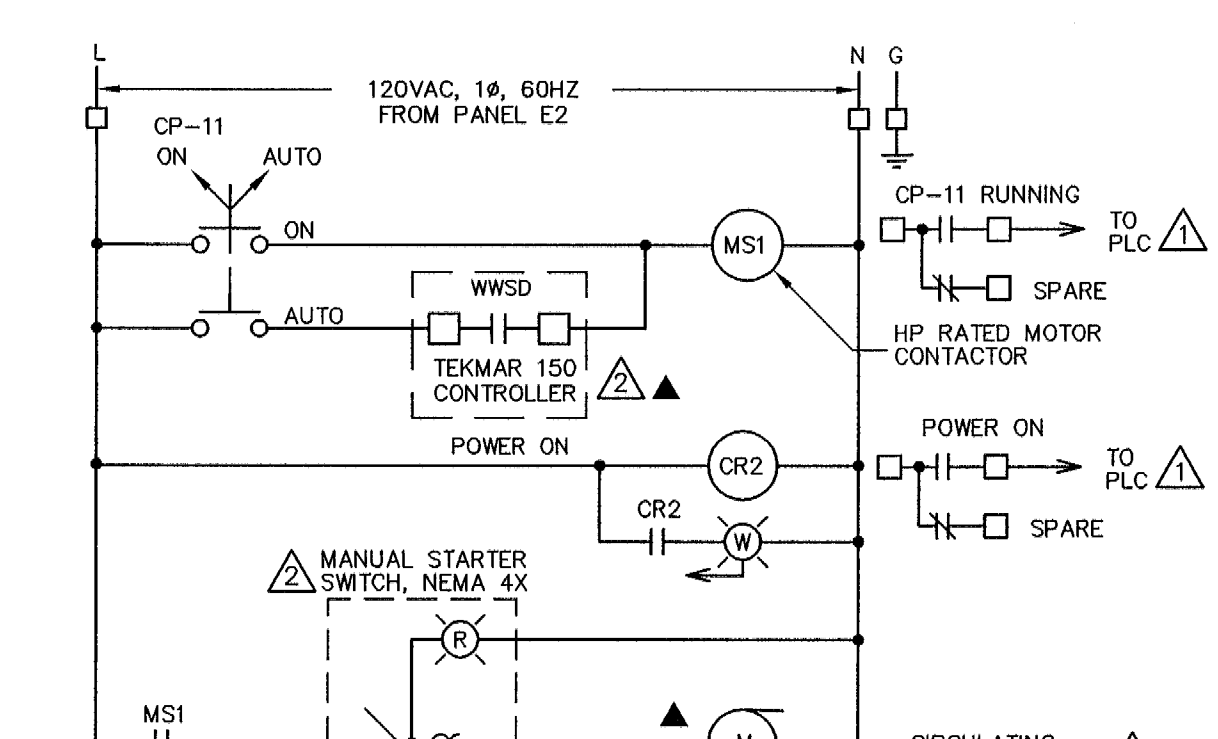
5 HEATING COIL FC-2 CONTROL WIRING DIAGRAM
 E5 - UNMARKED DEVICES IN CONTROL PANEL FOR FC-2



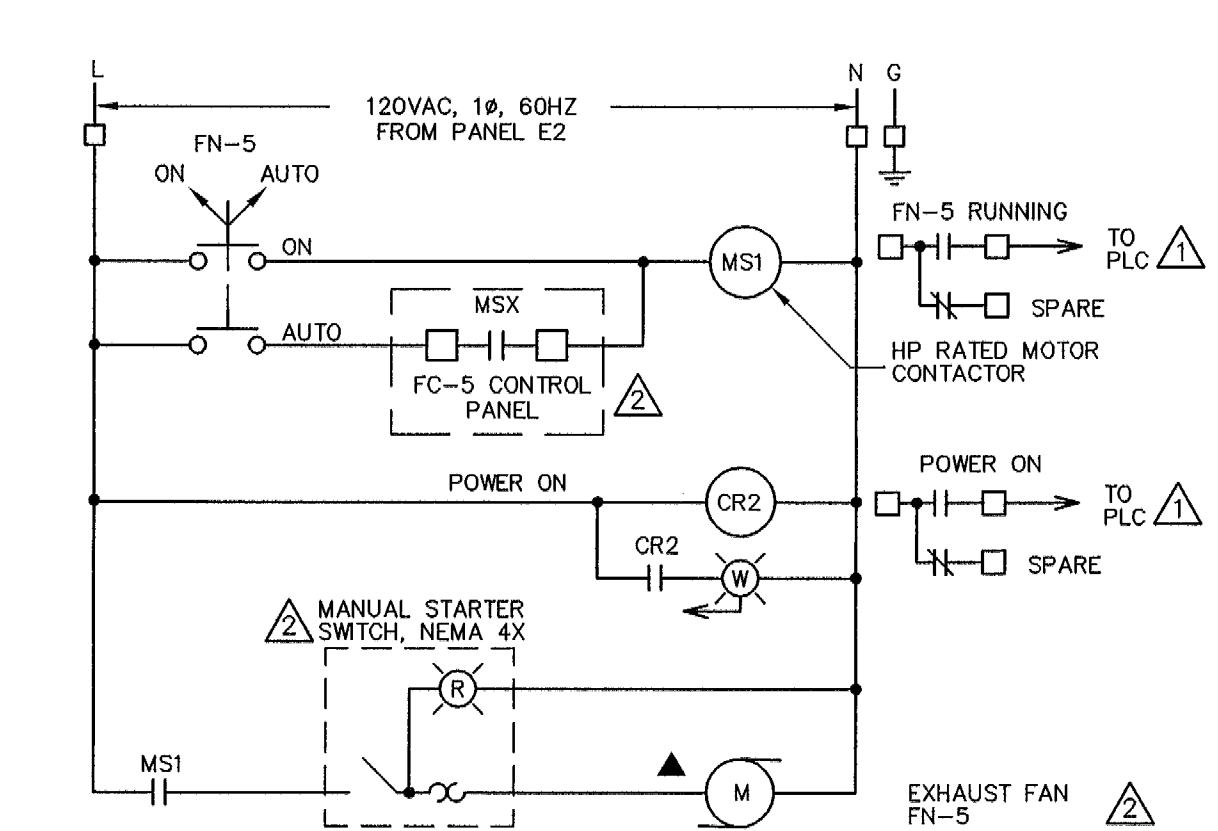
6 HEATING COIL FC-5 CONTROL WIRING DIAGRAM
 E5 - UNMARKED DEVICES IN CONTROL PANEL FOR FC-5



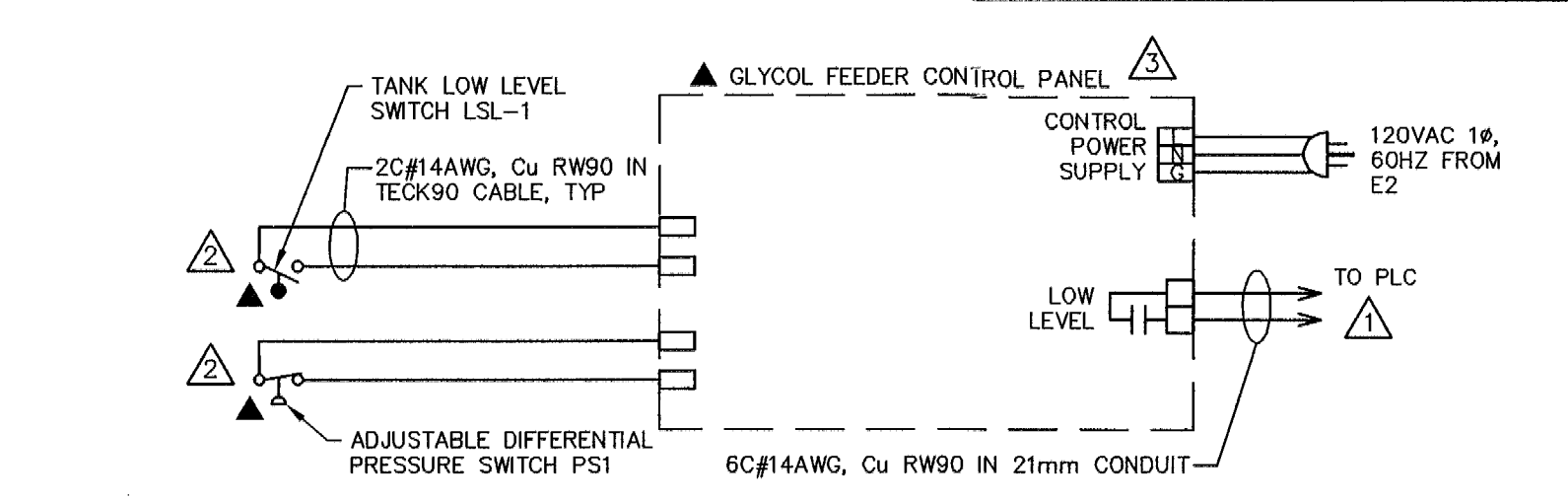
7 CIRCULATING PUMP CP-5 CONTROL WIRING DIAGRAM
 E5 - UNMARKED DEVICES IN CONTROL PANEL FOR CP-5
 - MANUAL STARTERS TO BE MOUNTED ON THE DOOR OF THE CONTROL PANEL



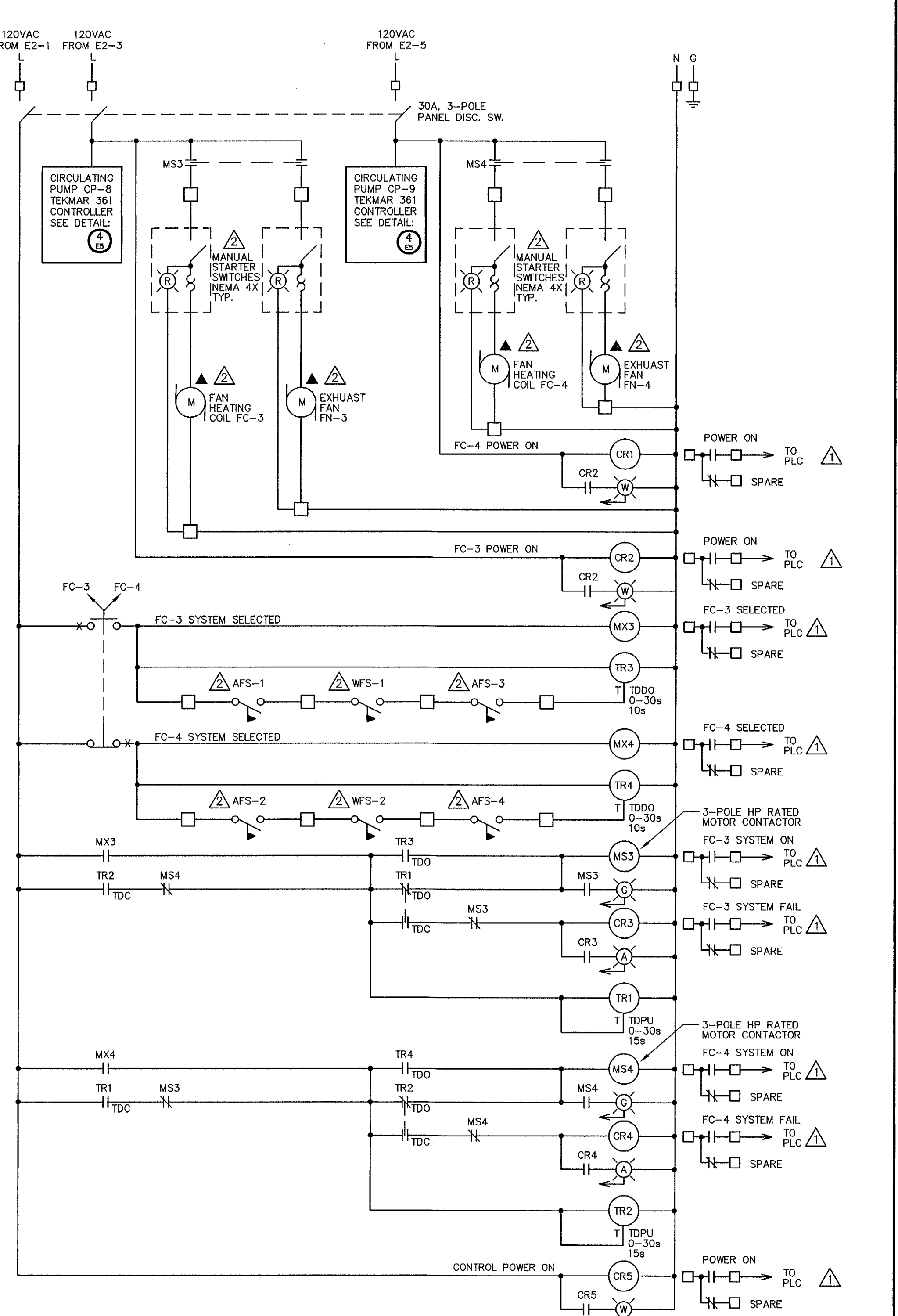
8 CIRCULATING PUMP CP-11 CONTROL WIRING DIAGRAM
 E5 - UNMARKED DEVICES IN CONTROL PANEL FOR CP-11



9 EXHAUST FAN FN-5 CONTROL WIRING DIAGRAM
 E5 - UNMARKED DEVICES IN CONTROL PANEL FOR FN-5
 - SIMILAR DIAGRAM FOR FN-6, FN-7, FN-8, FN-10, FN-11
 - SIMILAR DIAGRAM FOR FN-9 WITH MSX CONTROL FROM FC-2 CONTROL PANEL



10 GLYCOL FEEDER SYSTEM CONTROL WIRING DIAGRAM
 E5 - CONCEPT DRAWING SHOWN
 - REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT REQUIREMENTS.
 - LOCATION OF ALL FIELD COMPONENTS TO BE CONFIRMED AT THE TIME OF CONSTRUCTION



11 FC-3 SYSTEM & FC-4 SYSTEM CONTROL WIRING DIAGRAM
 E5 - ALL UNMARKED DEVICES IN FC-3/4 CONTROL PANEL

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| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

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 Date: APRIL 22, 2013
 PERMIT NUMBER: P817
 The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

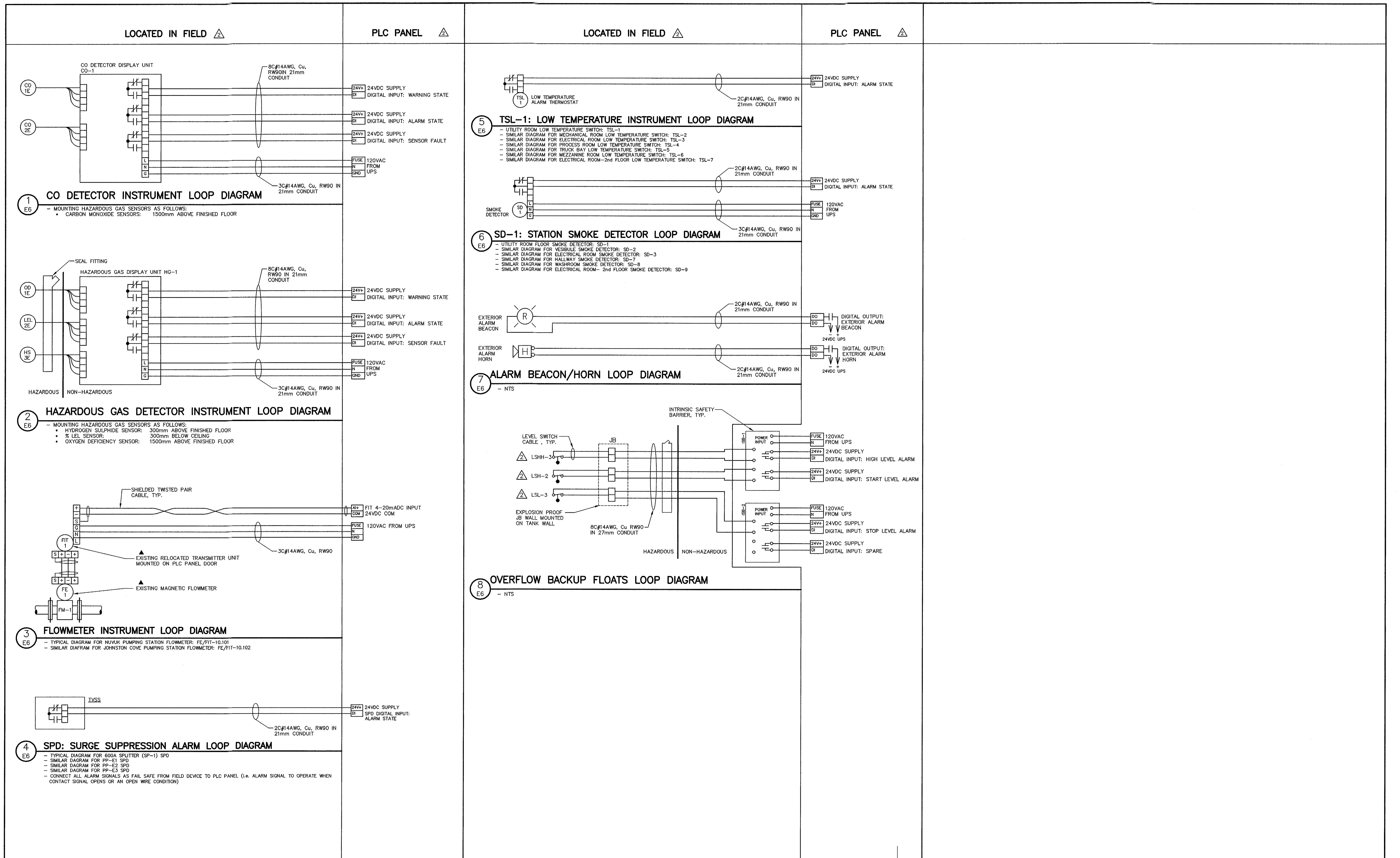


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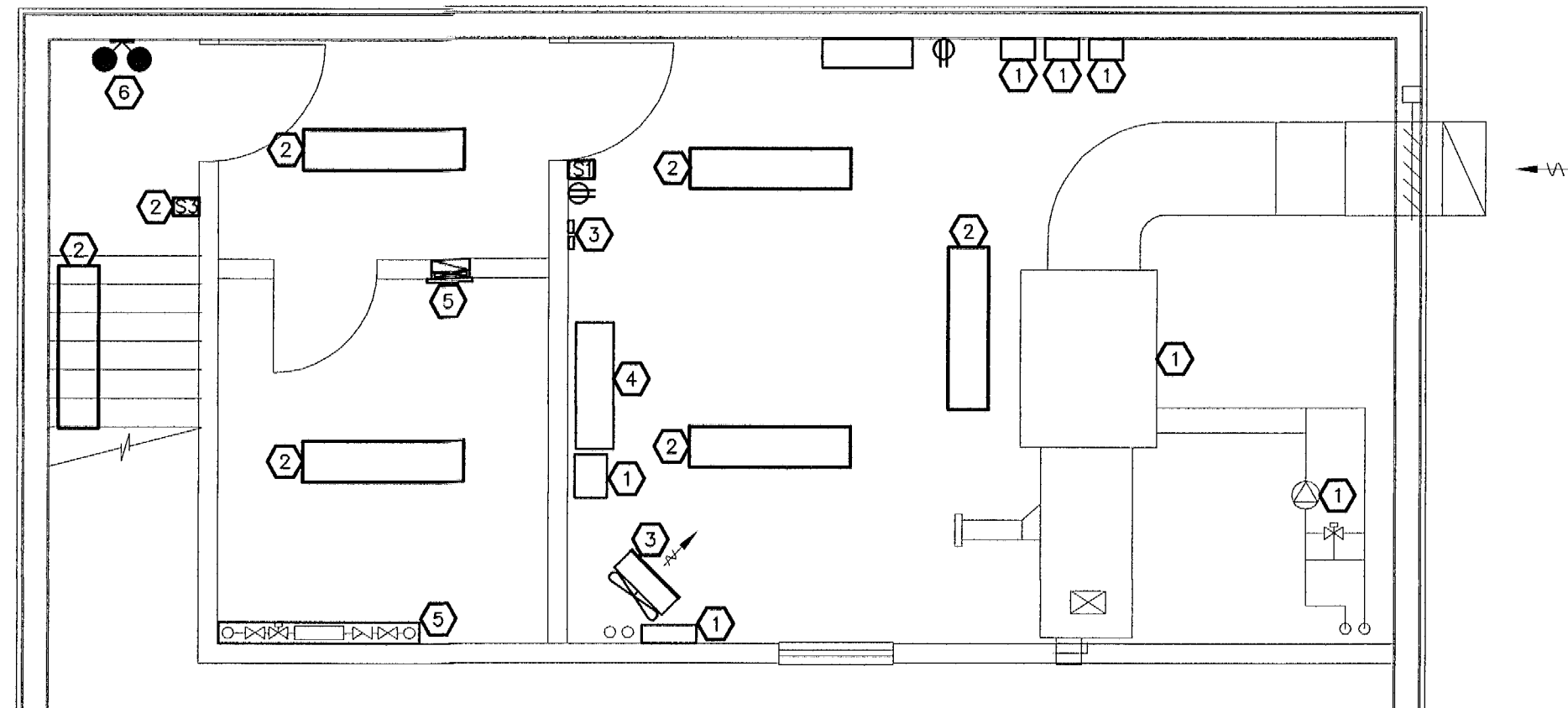
Client
 GOVERNMENT OF NUNAVUT
 COMMUNITY & GOVERNMENT
 SERVICES
 RANKIN INLET
 SEWAGE TREATMENT PLANT

| Drawing Title | Drawn By | Checked By | Drawing No. |
|--|-------------|------------|-------------|
| ELEMENTARY CONTROL WIRING DIAGRAMS SHEET 1 | T.T. | S.R.T. | E5 |
| | Scale | AS SHOWN | |
| | Project No. | 300031281 | |

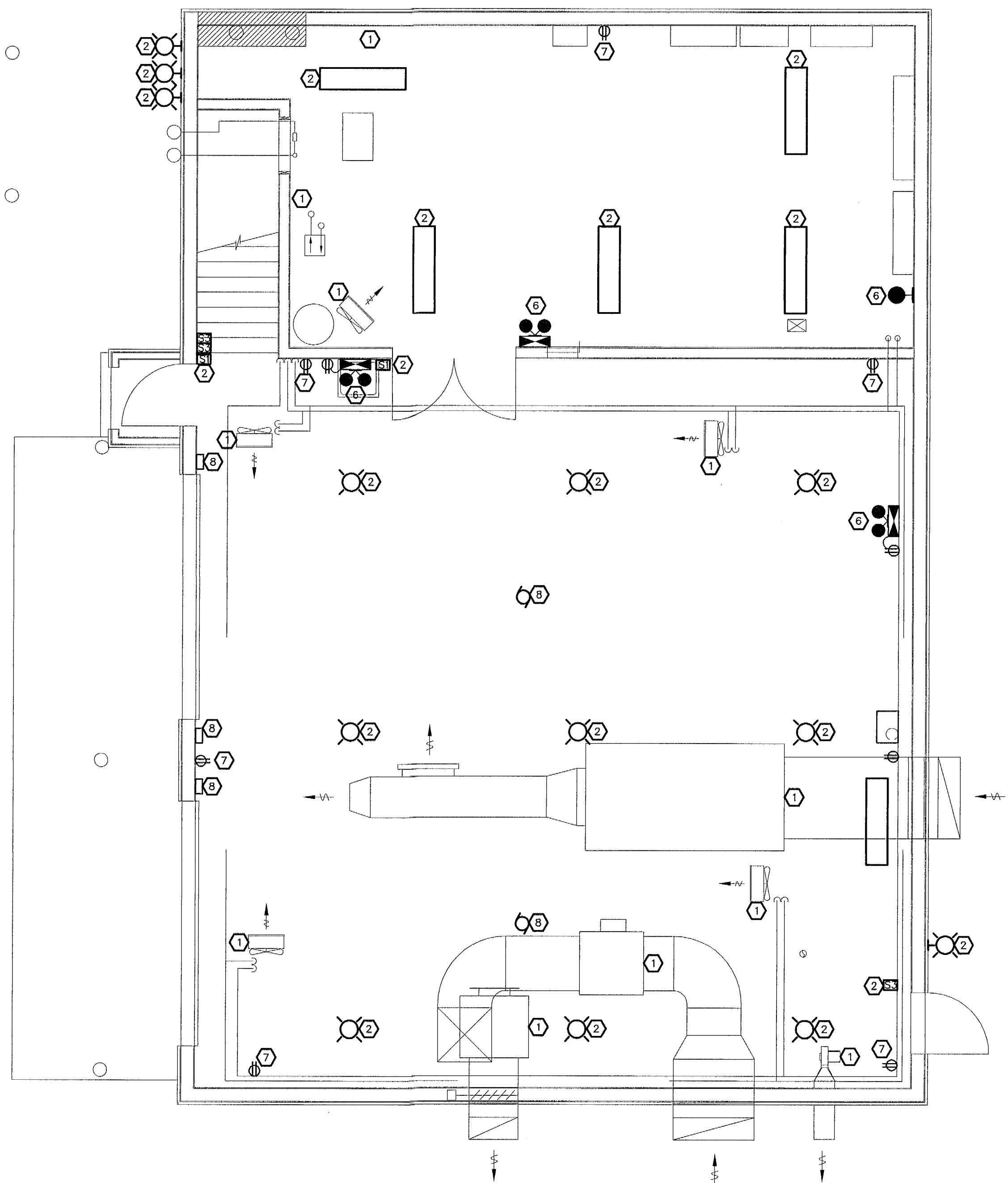


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| Drawn By T.T. | Checked By S.R.T. | Drawing No. E7 |
| Scale AS SHOWN | Project No. 300031281 | |



1 ELECTRICAL BUILDING LAYOUT – UPPER LEVEL POWER, LIGHTING AND HVAC REMOVALS
E8 SCALE 1:



3 ELECTRICAL BUILDING LAYOUT – LOWER LEVEL POWER, LIGHTING AND HVAC REMOVALS
E8 SCALE 1:

REMOVAL NOTES:

GENERAL NOTES FOR ALL REMOVAL WORKS:

- UNLESS OTHERWISE NOTED, "REMOVE" OR "REMOVED" INDICATES CONTRACTOR TO DISCONNECT, REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT INCLUDING ALL ASSOCIATED CONDUIT, FASTENERS, JUNCTION BOXES, SUPPORTS AND WIRING BACK TO POWER SUPPLY PANEL.
- BURIED CONDUIT AND CABLES SHOULD BE CUT OFF AT THE FINISHED FLOOR LEVEL AND SEALED.
- MAINTAIN OPERATION TO ALL AREAS OF THE PLANT, AS THE PLANT IS TO OPERATE AT ALL TIMES WITH MINIMAL INTERRUPTIONS.
- CONTRACTOR TO PREPARE AN ELECTRICAL REMOVAL SCHEDULE FOR REVIEW WITH ENGINEER AND OWNER PRIOR TO BEGINNING ANY SHUT DOWN WORK.
- ALL REMOVAL WORK SCHEDULES REQUIRED BY THE CONTRACTOR ARE TO BE APPROVED BY ENGINEER AND OWNER TEN (10) WORKING DAYS PRIOR TO ANY POWER SHUTDOWN.
- REMOVAL WORK IS TO OCCUR WHILE PLANT IS OPERATING AT "LOW FLOW" CONDITIONS, WITH MINIMAL EQUIPMENT OPERATING. CONTRACTOR IS TO INCLUDE ALL NECESSARY PREMIUM LABOUR TIME TO PERFORM REMOVAL WORK ON WEEKENDS, NIGHTS OR OTHER "NON-REGULAR" TIMES AS DIRECTED BY THE OWNER/OPERATOR.
- CONTRACTOR TO PROVIDE STANDBY POWER IN THE EVENT NORMAL POWER OR EXISTING STANDBY POWER IS UNAVAILABLE DUE TO CONSTRUCTION ACTIVITY OR WORK.

- EXISTING MECHANICAL DEVICE TO BE REMOVED BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO REMOVE ALL ASSOCIATED ELECTRICAL COMPONENTS.
- CONTRACTOR TO REMOVE EXISTING LUMINAIRE AND ASSOCIATED SWITCHES . MARK POWER SUPPLY PANEL BREAKER AS SPARE.
- HUH-11 TO REMAIN. CONTRACTOR REMOVE EXISTING MOTOR STARTER AND START/STOP STATION. MARK POWER SUPPLY PANEL BREAKER AS SPARE.
- CONTRACTOR TO RELOCATE NUUVUK PS FLOWMETER AND JOHNSTON COVE PS FLOWMETER TO EXISTING FACILITY PLC. CONTRACTOR TO VERIFY ALL REMAINING EQUIPMENT HAS BEEN MADE REDUNDANT. ONCE VERIFIED, CONTRACTOR REMOVE EXISTING CONTROL CABINET. MARK POWER SUPPLY PANEL BREAKER AS SPARE.
- FN-11 AND WF-2 TO REMAIN. CONTRACTOR TO REMOVE ALL ASSOCIATED ELECTRICAL COMPONENTS. MARK POWER SUPPLY PANEL BREAKER AS SPARE.
- CONTRACTOR TO REMOVE THE EMERGENCY BATTERY BACKUP LIGHTS AND ASSOCIATED RECEPTACLE. MARK POWER SUPPLY PANEL BREAKER AS SPARE.
- CONTRACTOR TO REMOVE RECEPTACLE. MARK POWER SUPPLY PANEL BREAKER AS SPARE.
- CONTRACTOR TO REMOVE DOOR OPNER, OPEN/CLOSE STATION AND MOTORS. MARK POWER SUPPLY PANEL BREAKER AS SPARE.

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Client
**GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT**

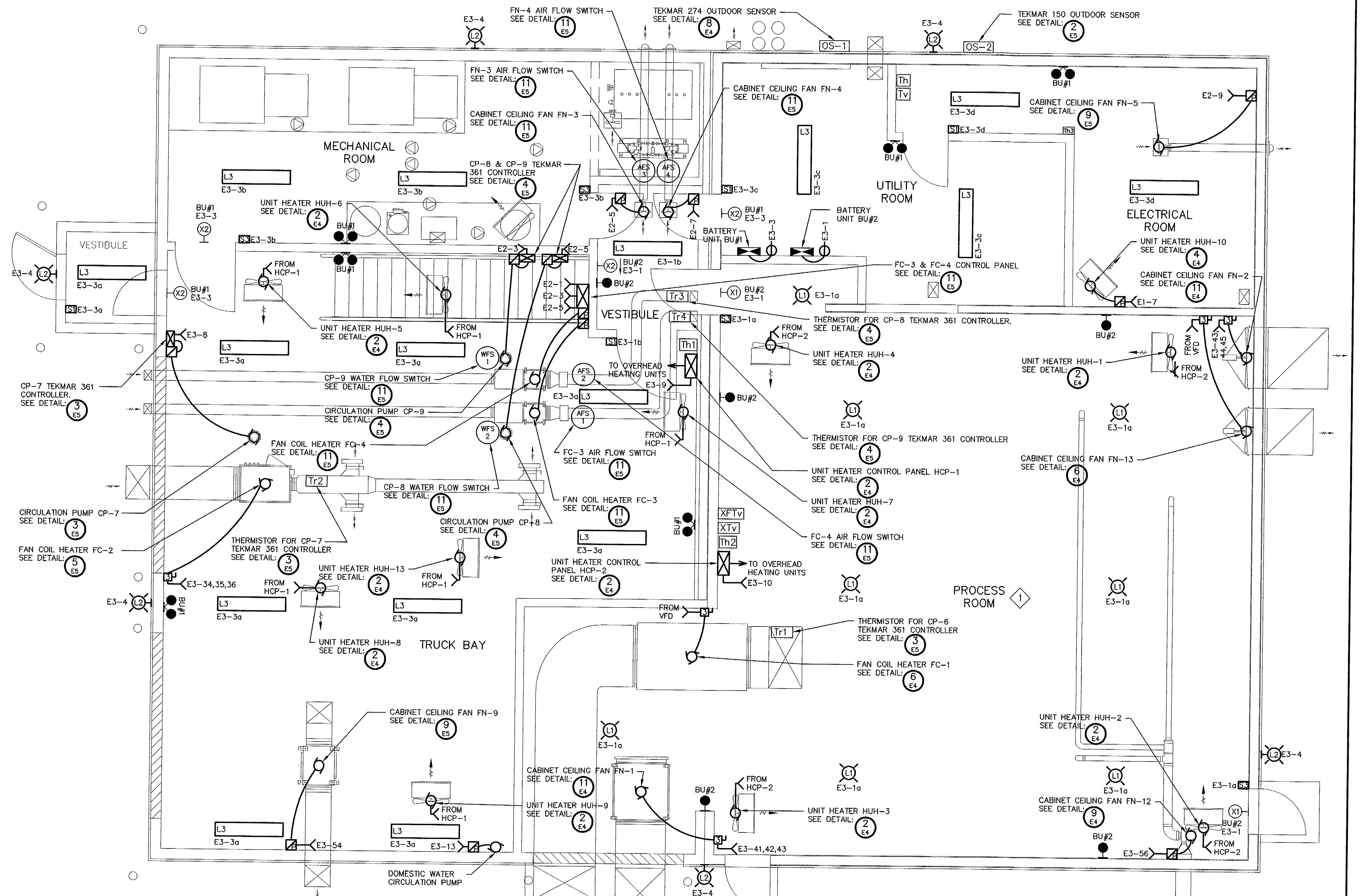
| | | |
|--|--------------------------|--------------------------|
| Drawing Title BUILDING ELECTRICAL EQUIPMENT LAYOUT – REMOVAL | | |
| Drawn By T.T. | Checked By S.R.T. | Drawing No. E8 |
| Scale AS SHOWN | Project No. 300031281 | |

NOTES

- ALL COMPONENTS IN THIS AREA HAVE TO BE EXPLOSION-PROOF RATED. A CONSCIOUS EFFORT MUST BE MADE TO MINIMIZE THE COST IMPACT.

ELECTRICAL BUILDING LAYOUT – PROPOSED UPPER LEVEL LIGHTING AND HVAC

SCALE 1:50



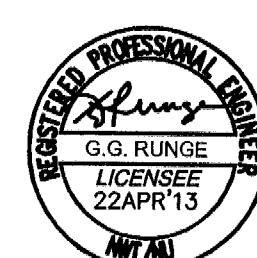
ELECTRICAL BUILDING LAYOUT – PROPOSED LOWER LEVEL LIGHTING AND HVAC

SCALE 1:50

REFER TO DRAWING E12 FOR REVISED "ELECTRICAL BUILDING LAYOUT – PROPOSED MECHANICAL ROOM LAYOUT" AS PER ADDENDUM.

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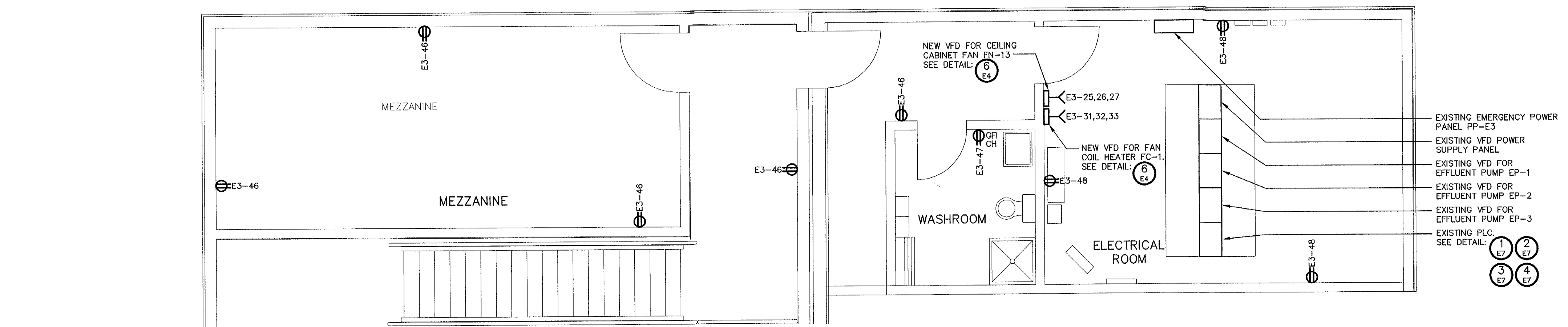
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| Drawing Title | |
|---|--------------------------|
| BUILDING ELECTRICAL EQUIPMENT LAYOUT – LIGHTING AND HVAC | |
| Drawn By T.T. | Checked By S.R.T. |
| Scale AS SHOWN | Project No. 300031281 |
| Drawing No. E9 | |

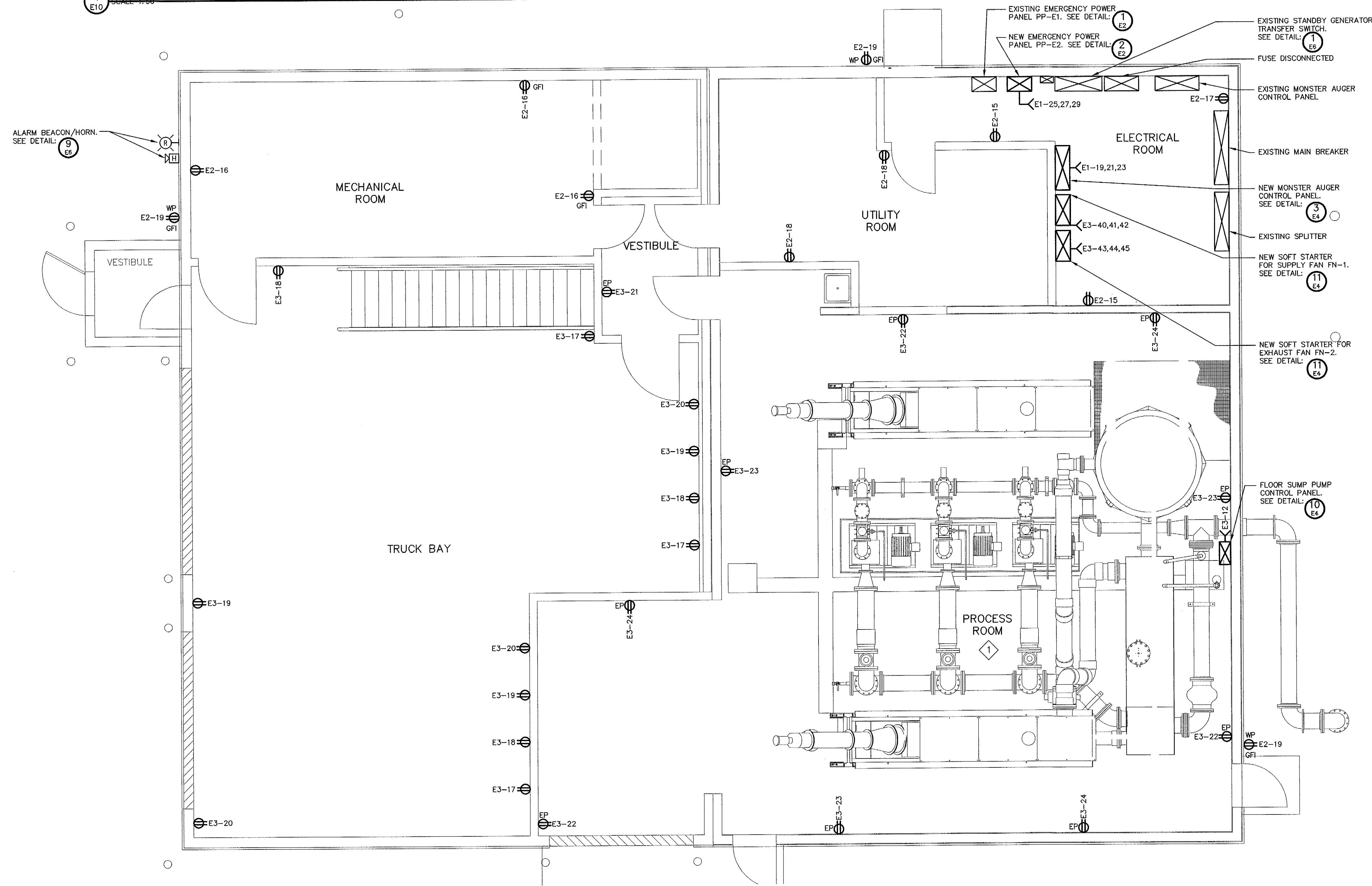
NOTES

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1 ELECTRICAL BUILDING LAYOUT – PROPOSED UPPER LEVEL POWER



2 ELECTRICAL BUILDING LAYOUT – PROPOSED LOWER LEVEL POWER



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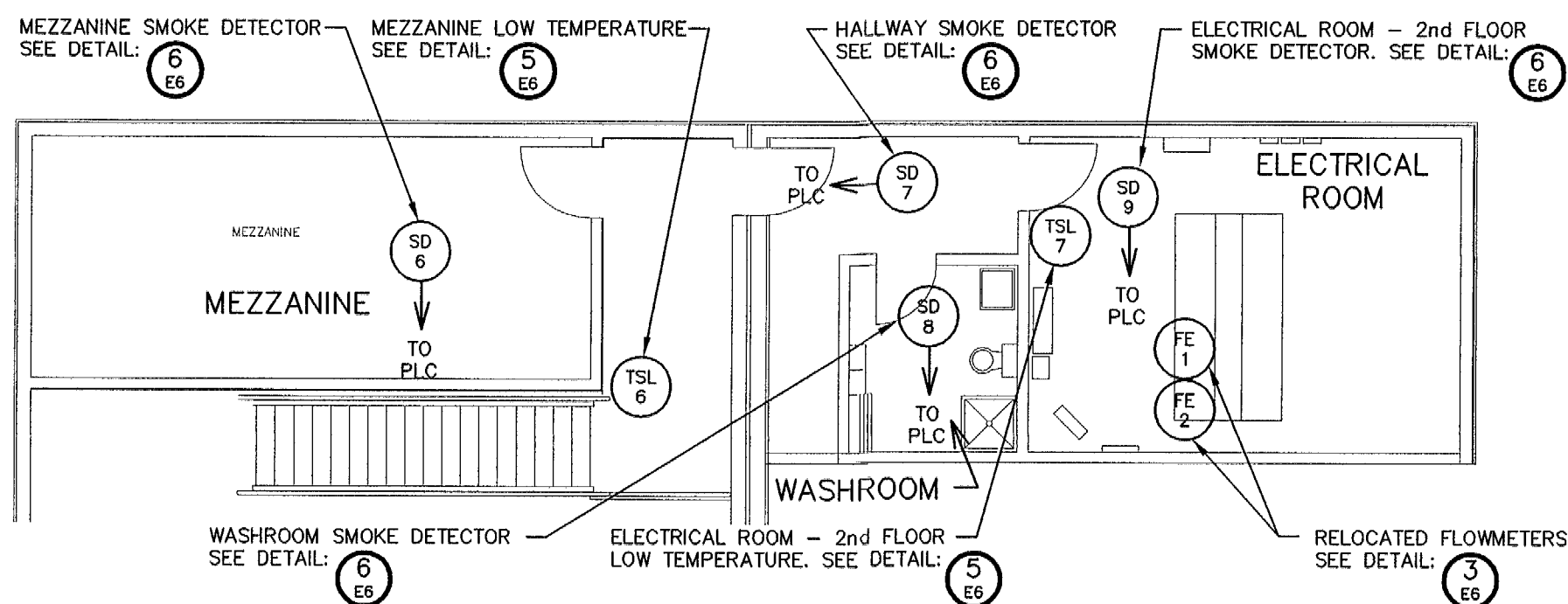
Drawing Title
BUILDING ELECTRICAL EQUIPMENT
LAYOUT – POWER
Drawn By
T.T.
Scale
AS SHOWN
Checked By
S.R.T.
Project No.
300031281
Drawing No.
E10

NOTES

- CONTRACTOR TO PROVIDE CABLE TRAY SYSTEM SUPPORTS AND ATTACH IN THE SAME MANNER AS EXISTING. CONTRACTOR TO ENSURE WEATHER PROOF SEAL FOR ALL CABLE PENETRATIONS
- ALL COMPONENTS IN THIS AREA HAVE TO BE EXPLOSION-PROOF RATED. A CONSCIOUS EFFORT MUST BE MADE TO MINIMIZE THE COST IMPACT.
- OVERFLOW BACKUP FLOAT SWITCHES TO BE LOCATED NEXT TO EXISTING ULTRASONIC LEVEL TRANSMITTER ON THE SUMP SIDE. EXACT FINAL LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

OVERFLOW BACKUP FLOAT SWITCH HANGER INSTALLATION DETAIL

- NTS (DIMENSIONS SHOWN IN MILLIMETERS)
- CONTRACTOR TO ENSURE FLOAT SWITCH HANGER AND CABLE RINGS ARE SECURELY FASTENED TO TANK WALL AND ALL PENETRATIONS ARE WATER PROOF
- CONTRACTOR TO PROVIDE FLYGT ENM-10 FLOAT SWITCHES
- PROVIDE MINIMUM 2 METER CABLE LOOP FOR EACH FLOAT SWITCH
- FINAL ELEVATION OF FLOATS TO BE DETERMINED IN THE FIELD BY ENGINEER



ELECTRICAL BUILDING LAYOUT – PROPOSED UPPER LEVEL INSTRUMENTATION

SCALE 1:100

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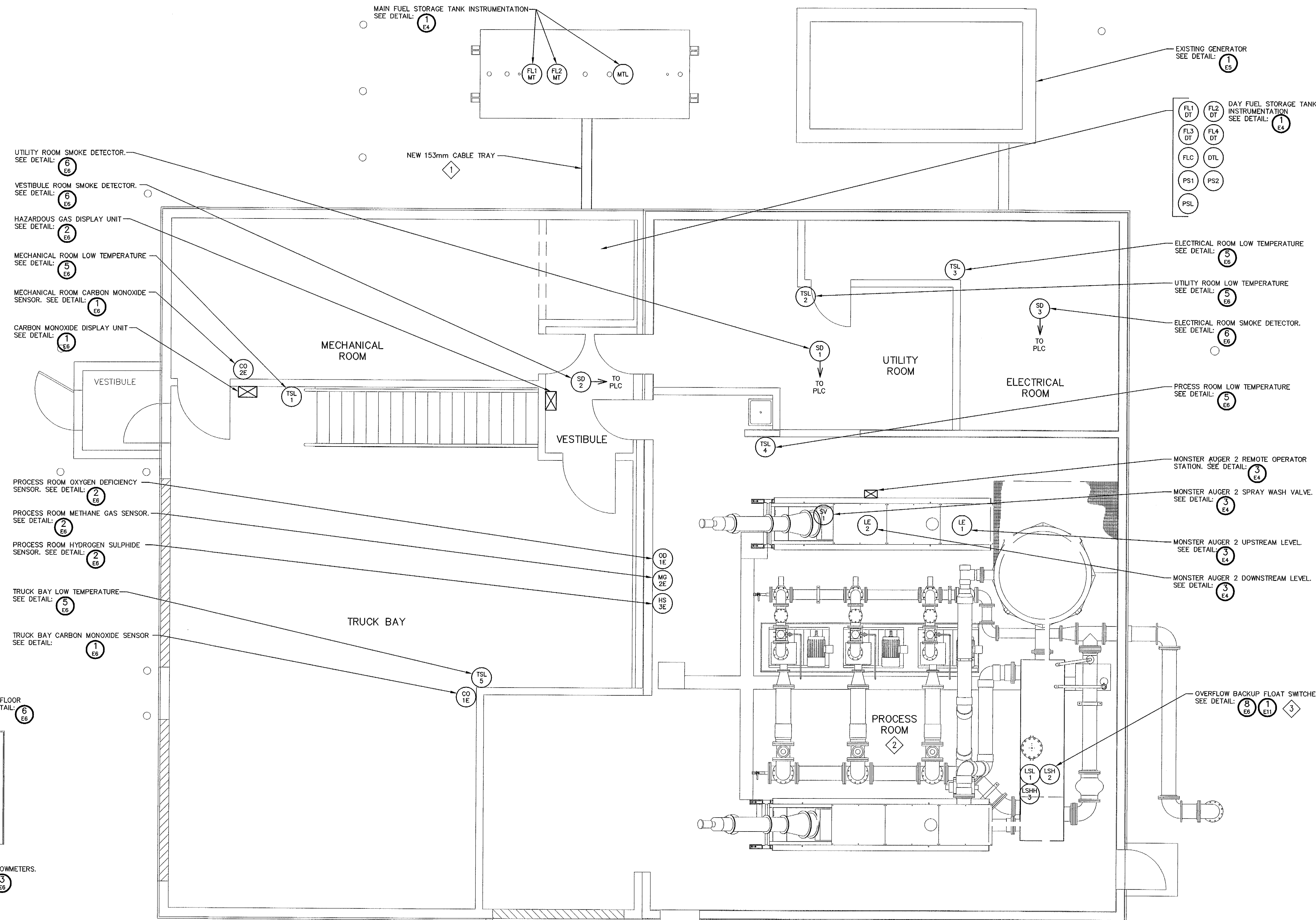
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ELECTRICAL BUILDING LAYOUT – PROPOSED LOWER LEVEL INSTRUMENTATION

SCALE 1:50



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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.

3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

4. Drawing revision must be noted "Issued For Construction" before any work commences

PERMIT TO PRACTICE
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Signature: *[Signature]*
Date: APRIL 22, 2013
PERMIT NUMBER: P617
The Association of Professional Engineers,
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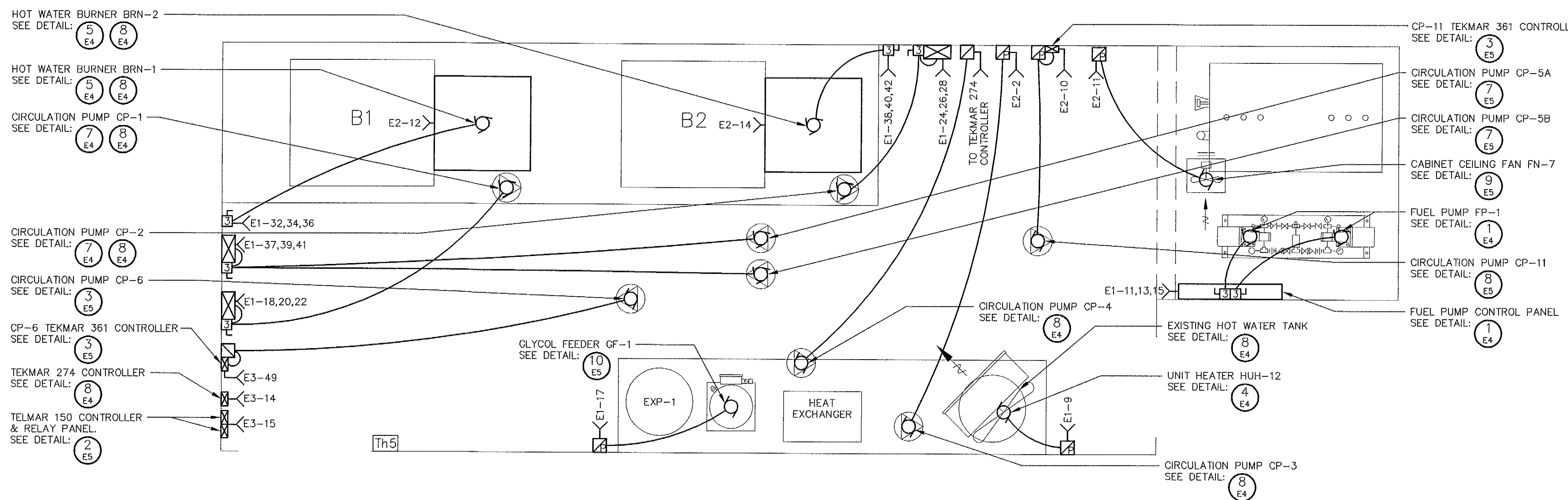
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GENERAL NOTE:

COORDINATE WITH ALL OTHER ASSOCIATED TRADES TO DETERMINE BEST LOCATIONS TO MOUNT RELATED ELECTRICAL EQUIPMENT IN THE MECHANICAL ROOM. SUBMIT AGREED UPON PLAN VIEW PHYSICAL LAYOUT DRAWING IN THE FORM OF A SHOP DRAWING FOR APPROVAL, INCLUDING EQUIPMENT ELEVATIONS AS REQUIRED TO FULLY ILLUSTRATE PHYSICAL SIZE OF EQUIPMENT AND CLEARANCES REQUIRED BY THE CURRENT CANADIAN ELECTRICAL CODE, RULING AUTHORITIES AND ALL OTHER APPLICABLE CODES.

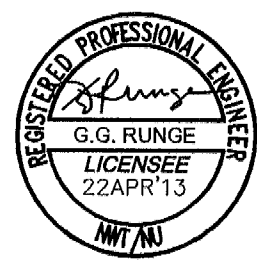


1 ELECTRICAL BUILDING LAYOUT – PROPOSED MECHANICAL ROOM HVAC LAYOUT
E12 SCALE 1:30

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4. Drawing revision must be noted "Issued For Construction" before any work commences.

| Issue / Revision | Date dd/mm/yyyy |
|--|-----------------|
| 1 ISSUED FOR 66% SUBMISSION | 06/09/2012 |
| 2 ISSUED FOR 99% SUBMISSION | JANUARY 2013 |
| 3 ISSUED FOR TENDER | FEBRUARY 2013 |
| 4 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION | APRIL 2013 |

PERMIT TO PRACTICE
Runge & Associates Inc.
Signature *[Signature]*
Date APRIL 22, 2013
PERMIT NUMBER: P617
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NL



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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

| Drawing Title | | |
|--|--------------------------|-------------|
| BUILDING ELECTRICAL EQUIPMENT LAYOUT – MECHANICAL ROOM HVAC LAYOUT | | |
| Drawn By T.T. | Checked By S.R.T. | Drawing No. |
| Scale AS SHOWN | Project No. 300031281 | E12 |