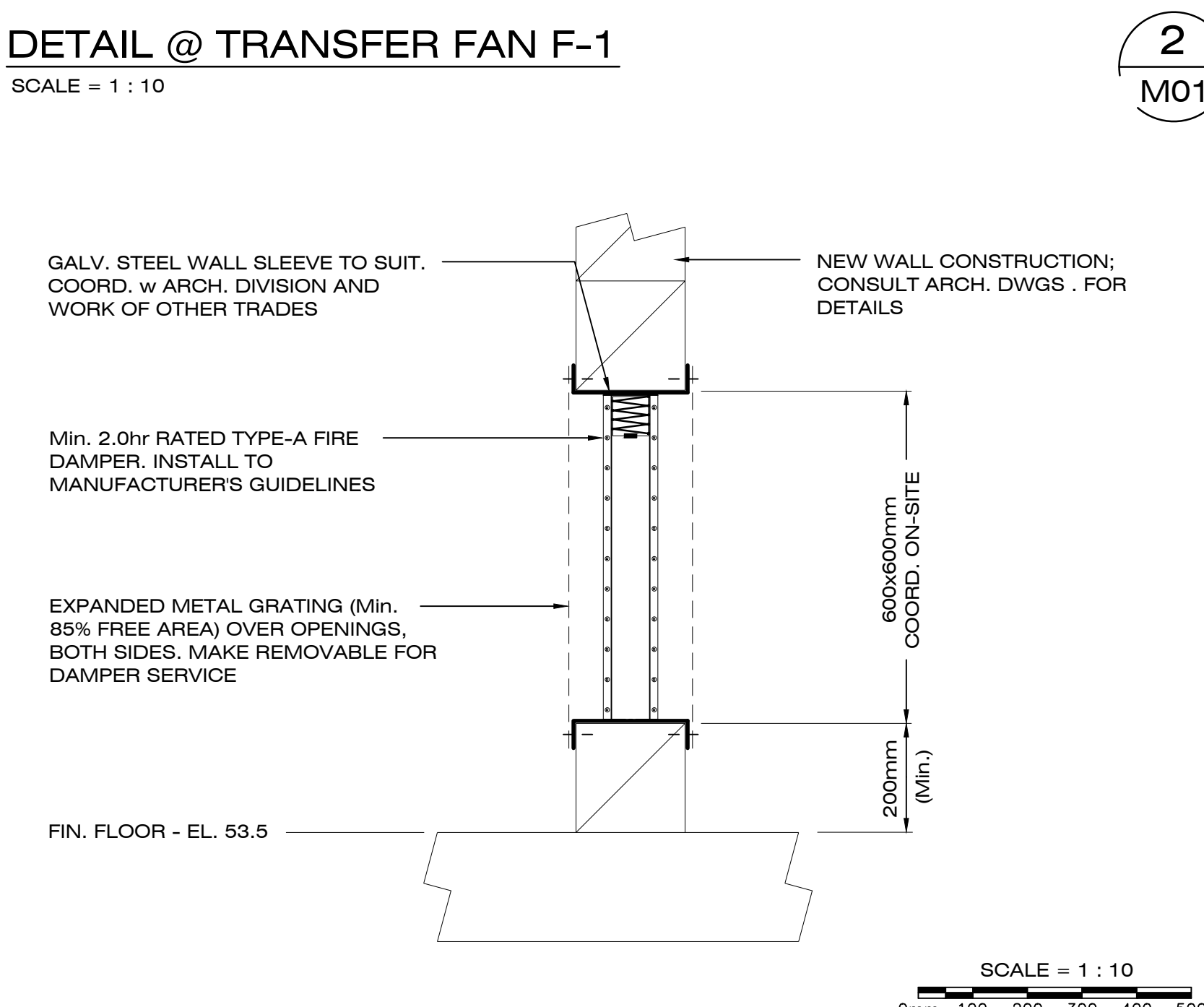
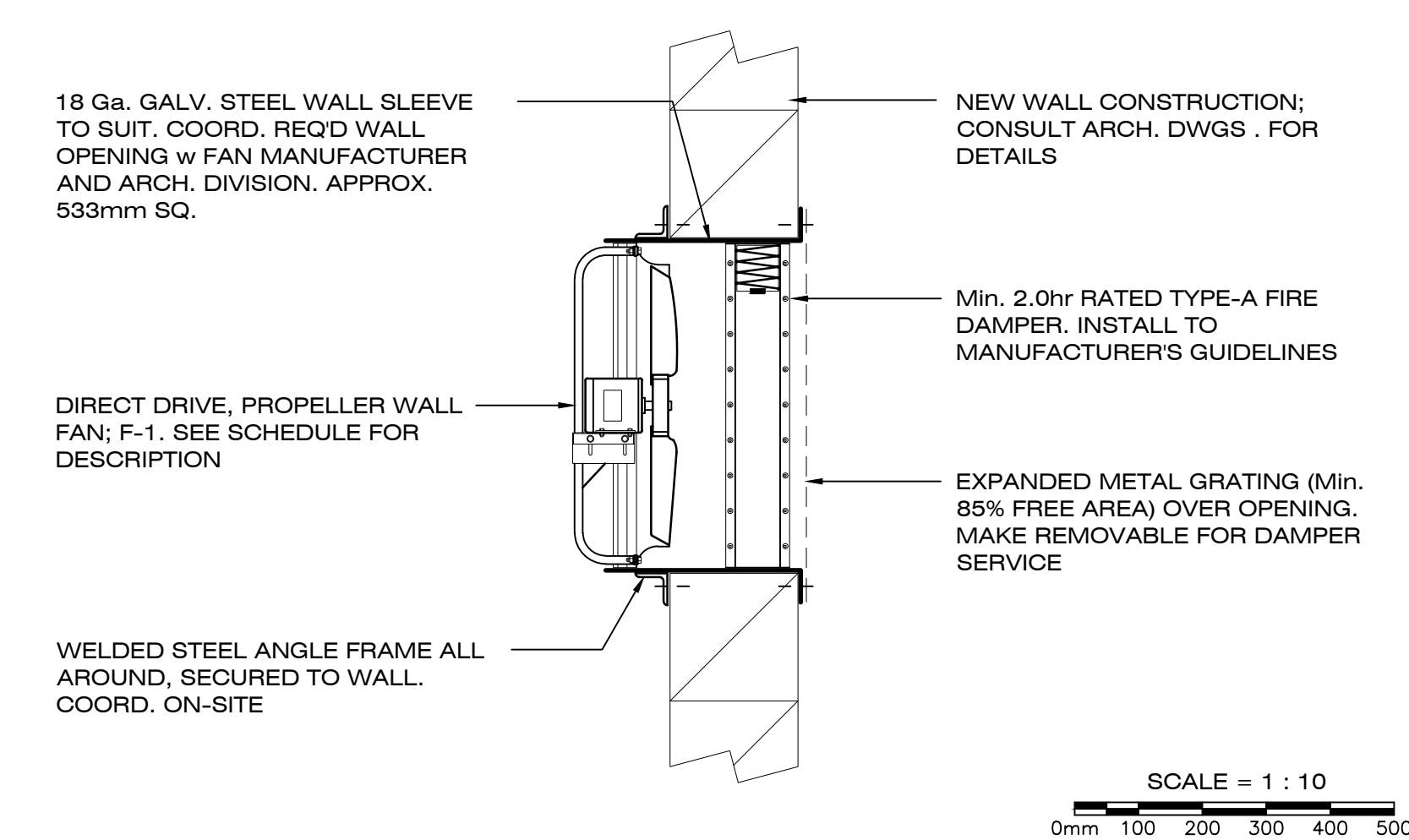
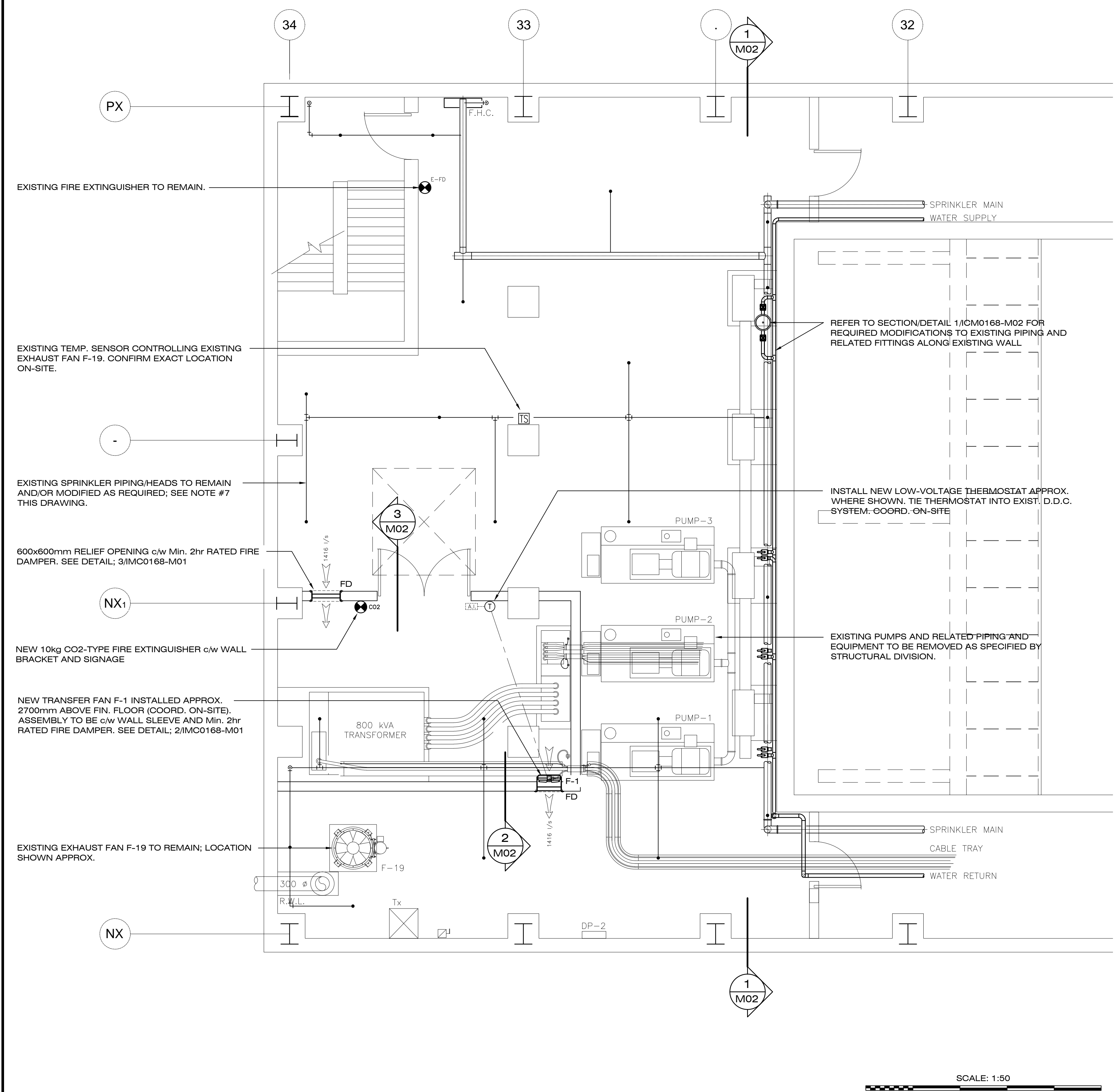


- NOTES:
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 - DO NOT SCALE FROM THE DRAWINGS.
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 - USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.
 - ALL LOW VOLTAGE CONTROLS WIRING, INSTALLATION OF CONTROLS DEVICES AND MODIFICATION OF GRAPHICS/SOFTWARE SHALL BE COMPLETED BY HONEYWELL. ANY/ALL REQUIRED NEW DEVICES SHALL MATCH EXISTING TYPE/VINTAGE AND INTEGRATE INTO EXISTING CONTROLS INFRASTRUCTURE. SEE ALSO NOTE #6.
 - SEE SPECIFICATIONS FOR HONEYWELL CONTRACT INFORMATION. ALL WORK COMPLETED BY HONEYWELL SHALL BE PART OF THIS CONTRACT. HONEYWELL TO PROVIDE WIRING AND CONDUIT FOR ALL NEW REQUIRED DEVICES.
 - CONTRACTOR TO PERFORM SITE SURVEY TO DETERMINE EXTENT OF REQUIRED MODIFICATIONS TO THE SPRINKLER/FIRE PROTECTION SYSTEM IN ORDER TO PROVIDE ADEQUATE COVERAGE FOR THE NEW ELECTRICAL ROOM AND EXISTING ADJACENT SPACE(S) PER NBCC 2015 AND LATEST EDITION OF NFPA 13. CONTRACTOR SHALL MODIFY PIPING AND ADD/RELOCATE/REPLACE SPRINKLER HEADS AS REQ'D. SHOP DWGS APPROVED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED TO THE NRC DEPARTMENTAL REPRESENTATIVE FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY WORK. SPRINKLER/PIPING LAYOUT SHOWN ON DRAWING IS DIAGRAMATIC ONLY; TO BE VERIFIED ON-SITE.



NO.	DESCRIPTION	DATE	BY
0	ISSUED FOR TENDER	25/07/17	PK
B	ISSUED FOR 99% REVIEW	30/06/17	PK
A	ISSUED FOR REVIEW	02/06/17	PK

REVISIONS

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 To practice Professional Engineering in Newfoundland and Labrador.
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 which is valid for the year 2012 03820
 by Permit Holder (MIRC No.)

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PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

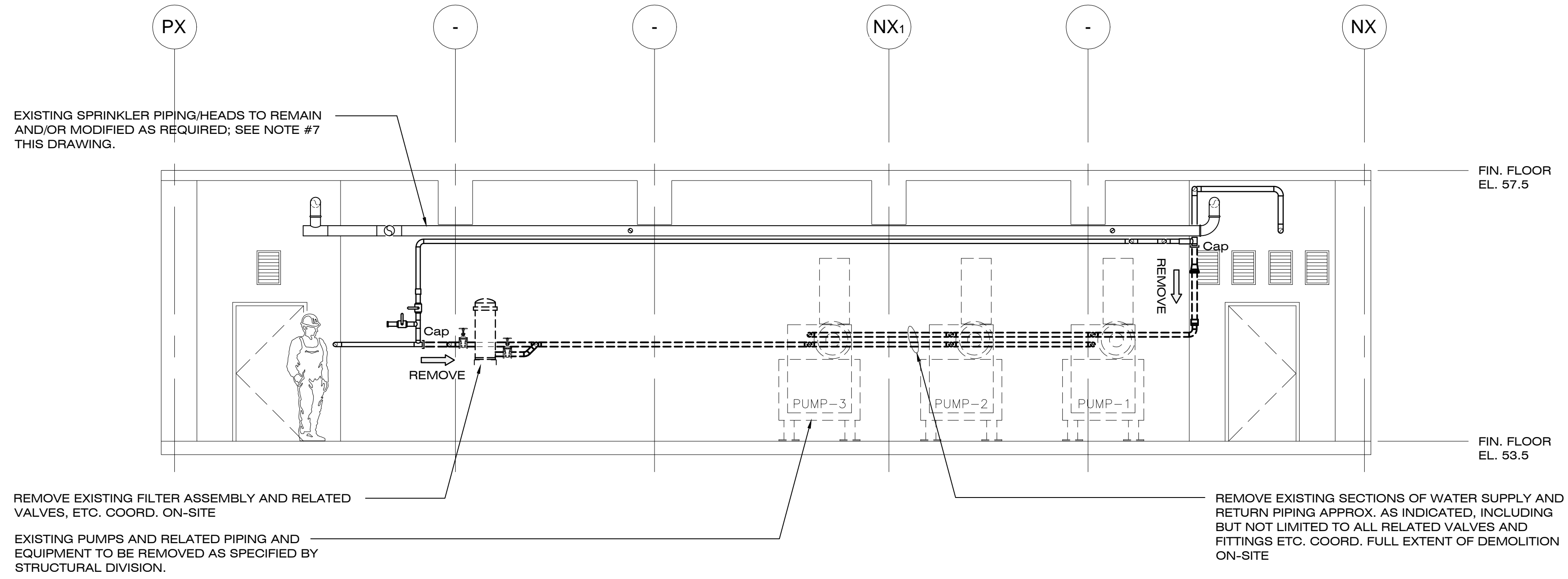
DRAWING
MECHANICAL FIT-UP SEGMENTED WAVE GENERATOR MCC ROOM

DATE	SCALE	DWG. FILE NO.	FILE NO.	DRAWING NO.	REV.
MAY 2017	AS SHOWN			IMC0168-M01	0

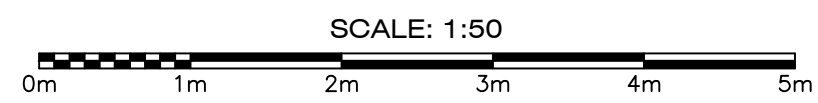
PART. BASEMENT PLAN - NEW SEGMENTED WAVE GENERATOR MCC ROOM - MECHANICAL RENOVATIONS
 SCALE = 1 : 50

1 M01
 DETAIL @ RELIEF OPENING
 SCALE = 1 : 10

3 M01
 DETAIL @ TRANSFER FAN F-1
 SCALE = 1 : 10

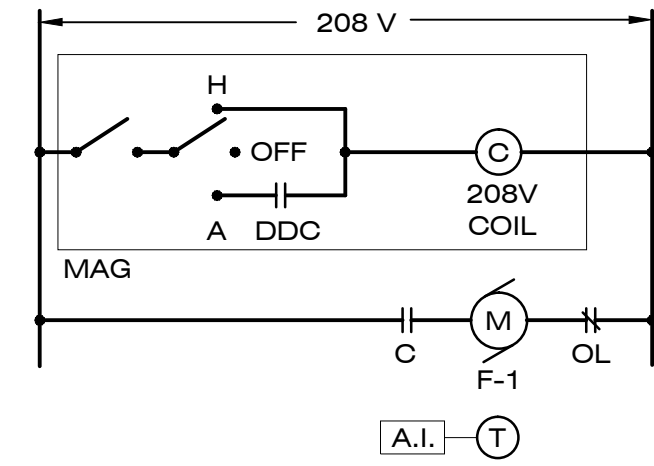


SECTION @ CLEARWATER TANK WEST MECHANICAL ROOM - MECHANICAL DEMOLITION
SCALE = 1 : 50



1
M02

FAN SCHEDULE										NRC012	
DWG TAG	LOCATION	APPLICATION	MANUFACTURER	MODEL	TYPE						
F-1	NEW BASEMENT ELECTRICAL ROOM	HEAT RELIEF TRANSFER	TWIN CITY FANS	WPD-E-16-E4-32	PROPELLER WALL FAN						
DRIVE	CAPACITY		PRESSURE LOSS		R.P.M.	MOTOR H.P., kW	SONES	Min. WALL OPENING	ELECTRICAL		
	l/s	CFM	Pa	in. wg					V/Ph/Hz		
DIRECT	1416	3000	64	0.25	1750	0.5 / 0.38	N/A	533mm SQ.	208/1/60		
REMARKS											
DIRECT DRIVE, WALL MTD. PROPELLER FAN c/w WALL SLEEVE AND COMBINATION MAGNETIC STARTER. COORD. INSTALLATION (MTG. HEIGHT AND LOCATION) ON-SITE AND w WORK OF OTHER TRADES											



CONTROL SCHEMATIC - TRANSFER FAN F-1
SCALE = N.T.S.

- NOTES:**
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NEWFOUNDLAND AND LABRADOR
JASON L. CRAWLEY
25/07/17
NEWFOUNDLAND & LABRADOR

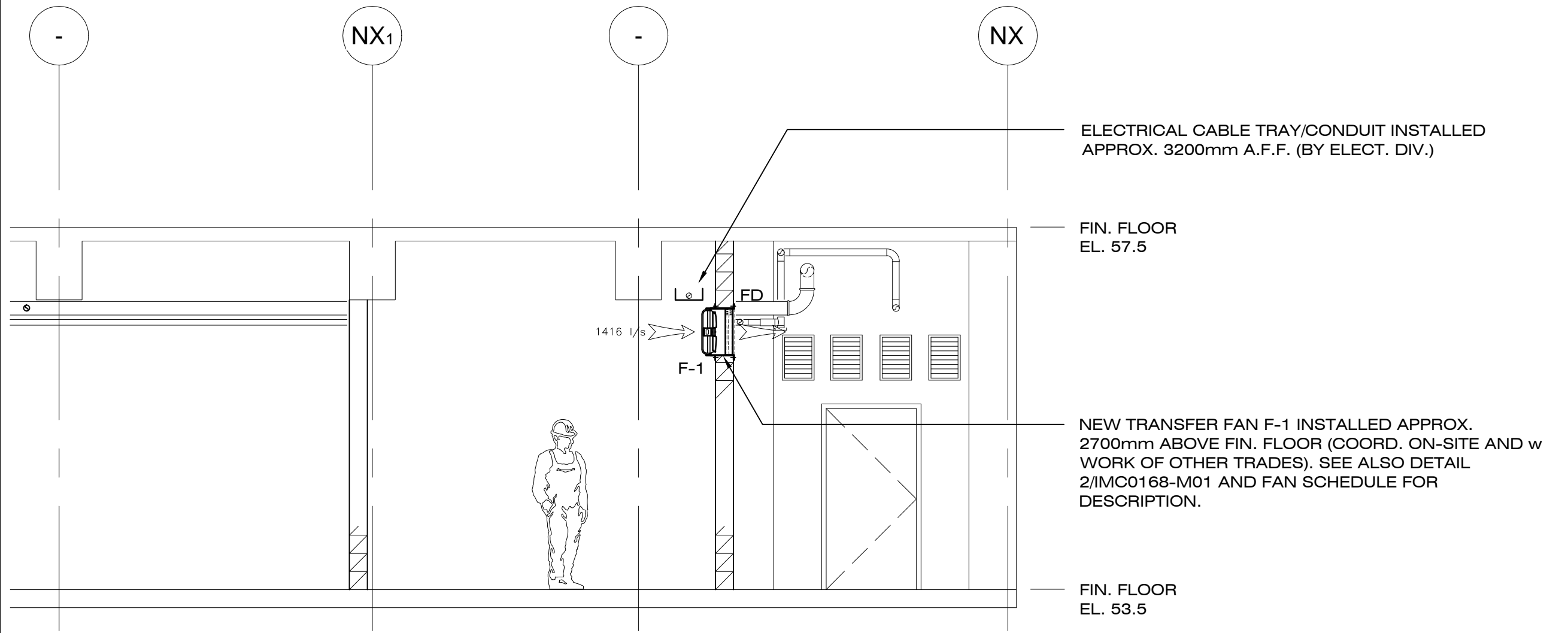
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NRC-CRC

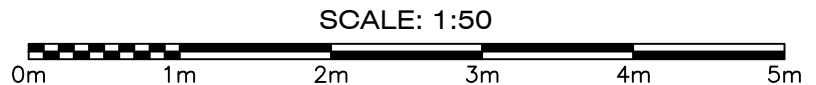
PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING
MECH. SECTIONS @ SEGMENTED WAVE GENERATOR MCC ROOM

DRAWN BY	CHECKED BY	APPROVED BY	
PK	J.C.	J.C.	
PROJECT NO.	DWG. FILE NO.	FILE NO.	
NRC012			
DATE	SCALE	DRAWING NO.	REV.
MAY 2017	AS SHOWN	IMC0168-M02	0

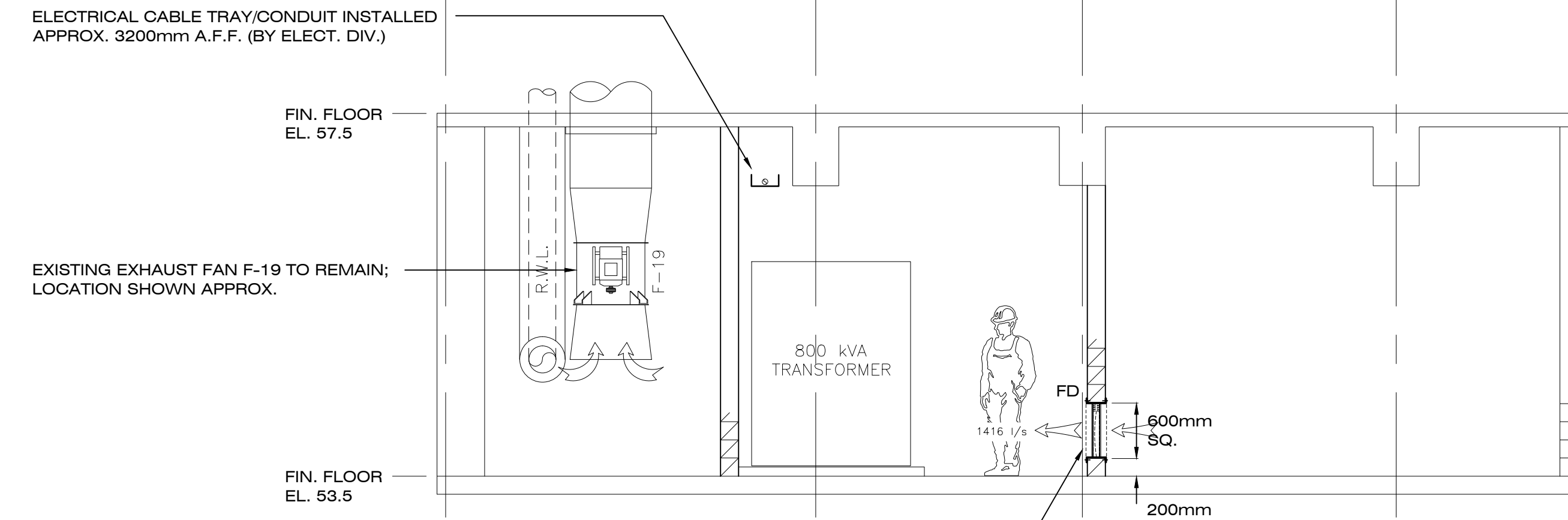


SECTION @ NEW ELECTRICAL ROOM
SCALE = 1 : 50



2
M02

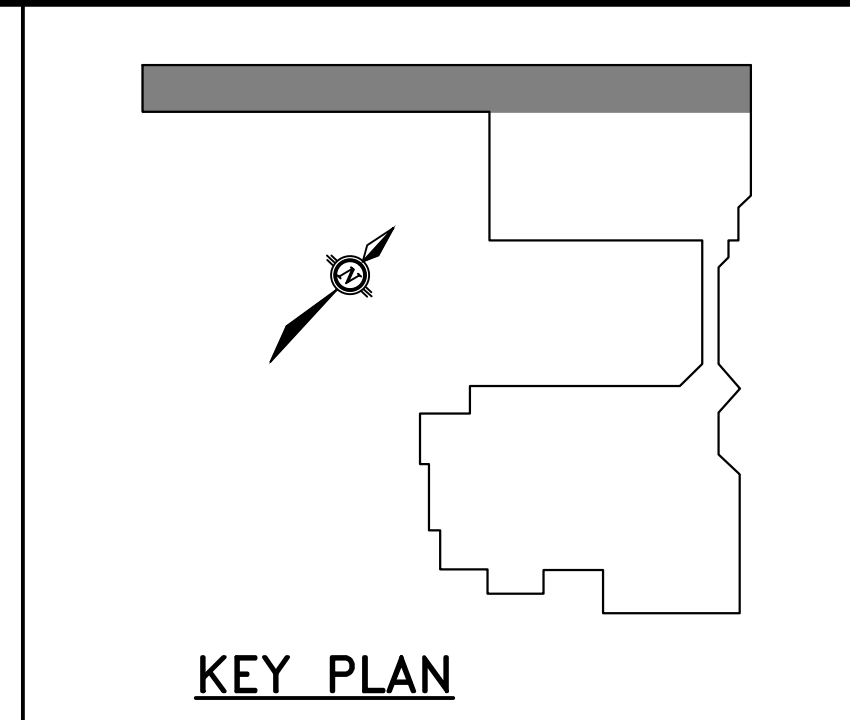
SECTION @ NEW ELECTRICAL ROOM
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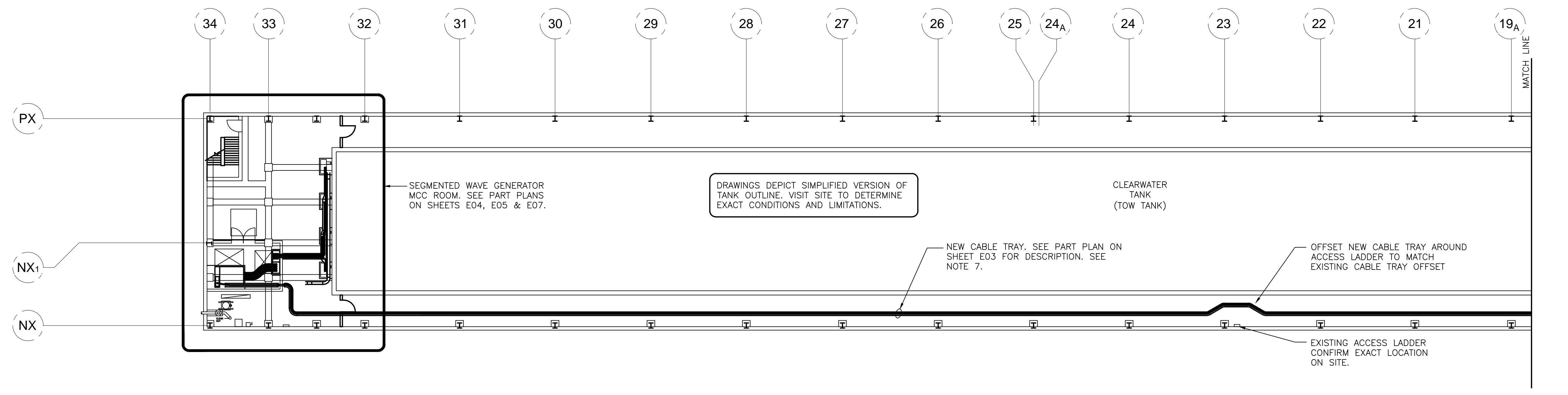
3
M02

NOTES CONTINUED:

- PROVIDE WARNING SIGN SECURELY ATTACHED TO SIDES OF HIGH VOLTAGE CABLE TRAY READING: "DANGER HIGH VOLTAGE" 127mm WIDE X 89mm HIGH, 3.5 MIL ADHESIVE-BACKED VINYL. "SAFETY SIGN" #E3301 OR EQUAL. PROVIDE ONE SIGN FOR EVERY 5m OF TRAY WITH A MINIMUM OF ONE SIGN PER CABLE TRAY RUN.



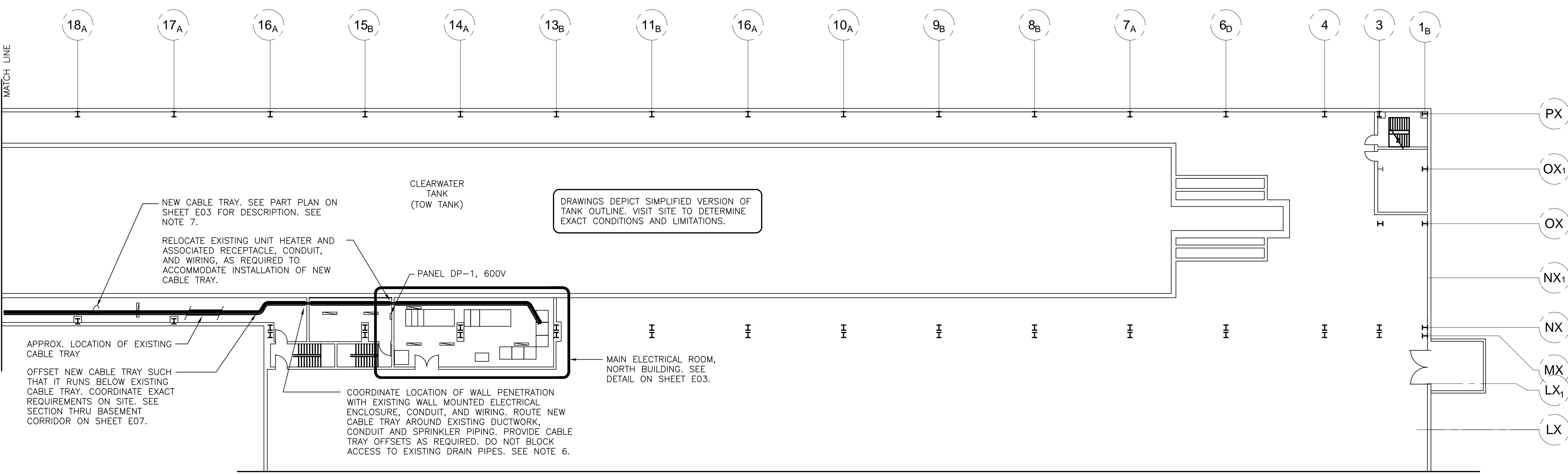
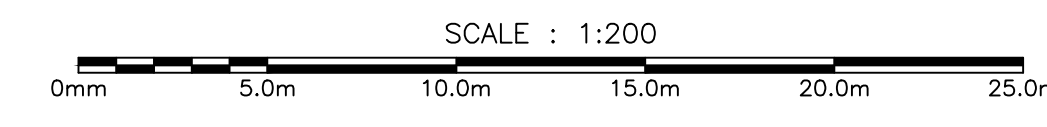
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 - USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.
 - COORDINATE ALL WORK WITH N.R.C. FACILITY MANAGER INCLUDING REQUIRED INTERRUPTION OF EXISTING SERVICES. PROCEED WITH WORK ONLY AFTER CLEARANCE TO DO SO HAS BEEN OBTAINED. KEEP ALL INTERRUPTIONS OF EXISTING SERVICES TO AN ABSOLUTE MINIMUM.
 - VISIT SITE TO DETERMINE EXACT CONDITIONS AND LIMITATIONS BEFORE SUBMITTING BID. INCLUDE ALL OFFSETS AND FITTINGS REQUIRED TO RUN CABLE TRAY FROM EXISTING MAIN ELECTRICAL ROOM TO NEW UNIT SUBSTATION. LEAVE NEW CABLE TRAY COMPLETE AND FULLY SUPPORTED FOR THE ENTIRE LENGTH.



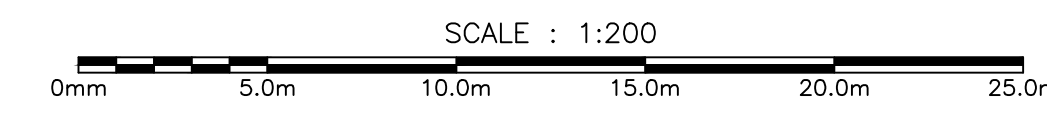
CLEARWATER TANK – BASEMENT

PROVIDE ALL SECTIONS AND FITTINGS REQUIRED TO COMPLETE CABLE TRAYS INDICATED.

ALL NEW ELECTRICAL EQUIPMENT, CONDUIT, FITTINGS AND WIRING TO BE RATED FOR INSTALLATION IN SPRINKLERED AREAS.



CLEARWATER TANK – BASEMENT



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Newfoundland and Labrador
Renshaw / Froude
25/07/17
NEWFOUNDLAND & LABRADOR

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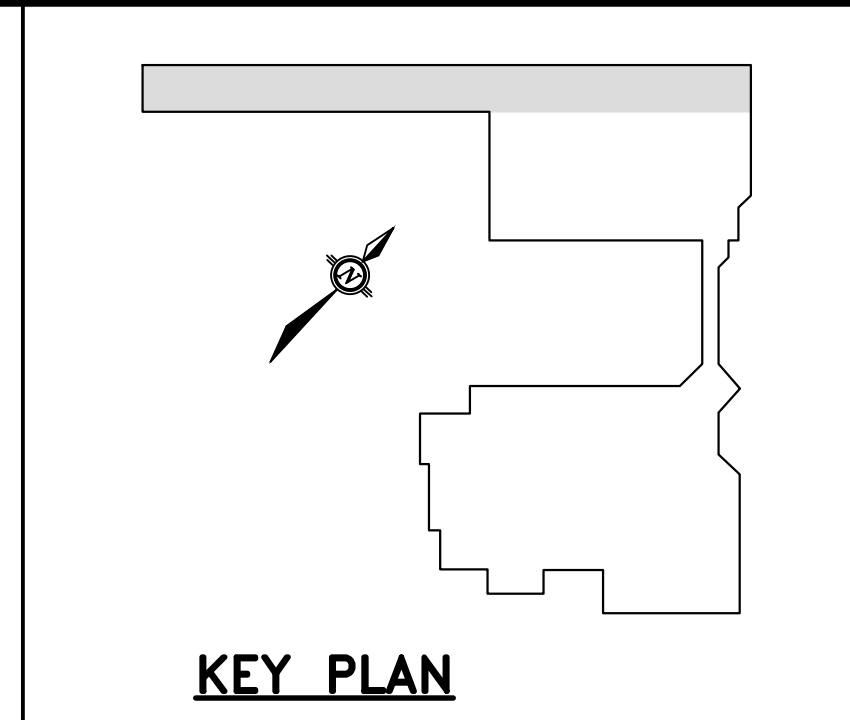
PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING
CLEARWATER TANK BASEMENT

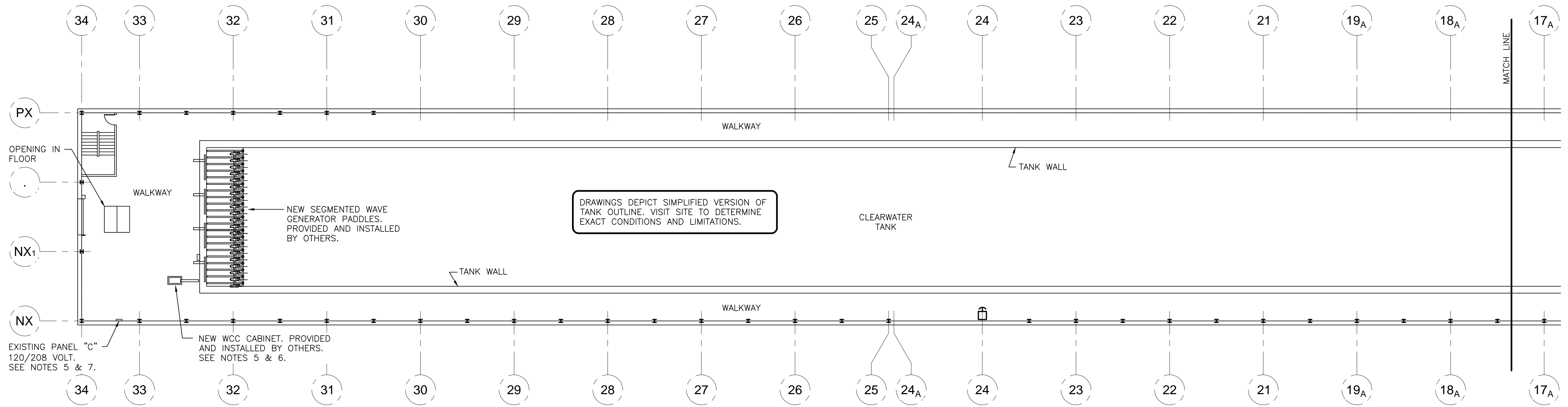
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PROJECT NO. NRC012	DWG. FILE NO. IMC0168-E01	FILE NO.
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NOTES CONTINUED:

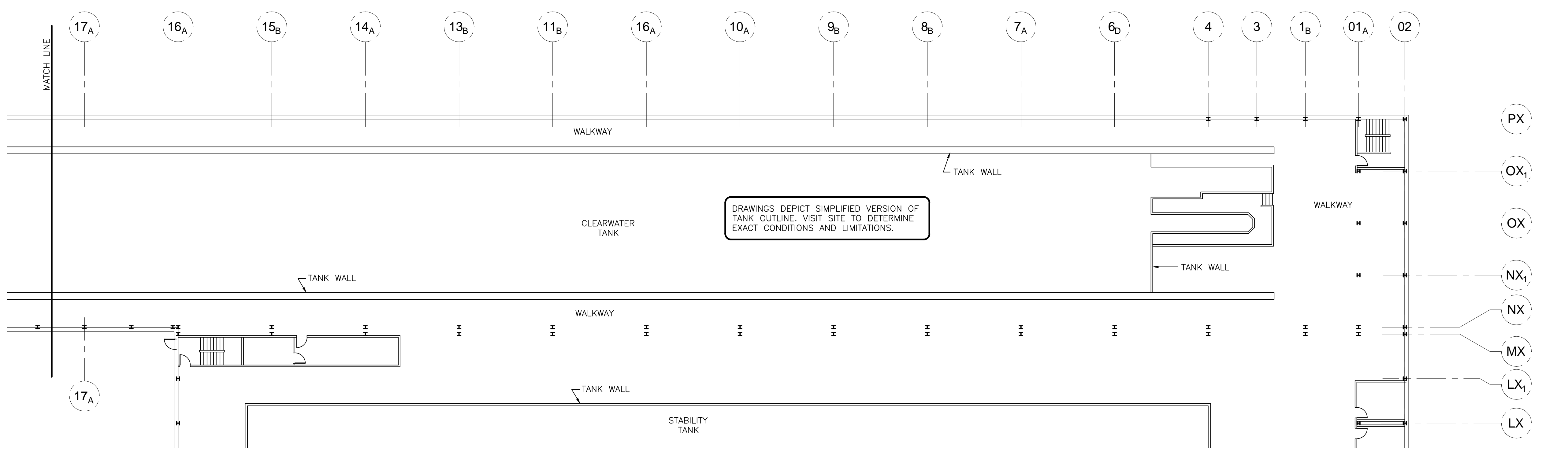
- ALL NEW BREAKERS SPECIFIED FOR THIS PANEL TO BE COMPATIBLE WITH PANEL AND MATCH THE TYPE AND IC RATING OF THE EXISTING BREAKERS. PROVIDE NEW TYPE WRITTEN DIRECTORY REFLECTING THE CHANGES AND ADDITIONS.



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 - PROVIDE NEW 15 AMP, 120 VOLT BREAKER IN EXISTING PANEL "C" AND MAKE CONNECTION TO NEW WCC CABINET USING 2-#12 RW90 & 1-#12 TW BOND IN 21mm EMT. RUN CIRCUIT DOWN THRU EXISTING CONCRETE FLOOR, ACROSS CEILING BELOW, UP THRU FLOOR AND WCC CONCRETE BASE INTO CABINET. COORDINATE EXACT CONNECTION DETAILS WITH WCC SUPPLIER. CORE DRILL FLOOR AS REQUIRED AND SEAL PENETRATIONS WITH FIRE RATED SEALANT. SEE DETAIL ON NEW FLOOR PENETRATIONS ON DRAWING E06 FOR MORE INFORMATION.
 - SEE STRUCTURAL DRAWINGS FOR CONCRETE BASE DETAILS.



ALL NEW ELECTRICAL EQUIPMENT, CONDUIT, FITTINGS AND WIRING TO BE RATED FOR INSTALLATION IN SPRINKLERED AREAS.



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Registration No. 2507/17
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PROJECT

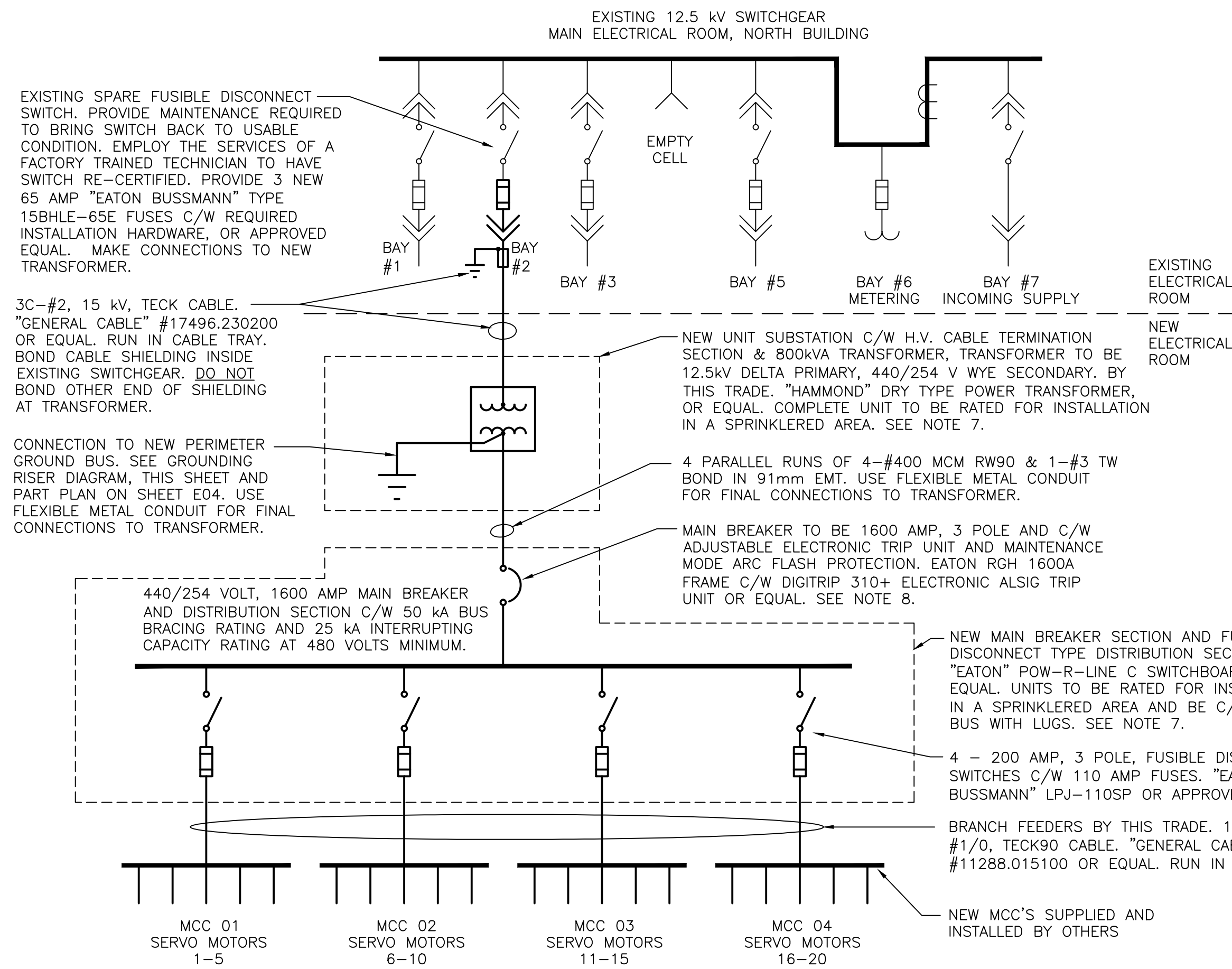
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK

NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING

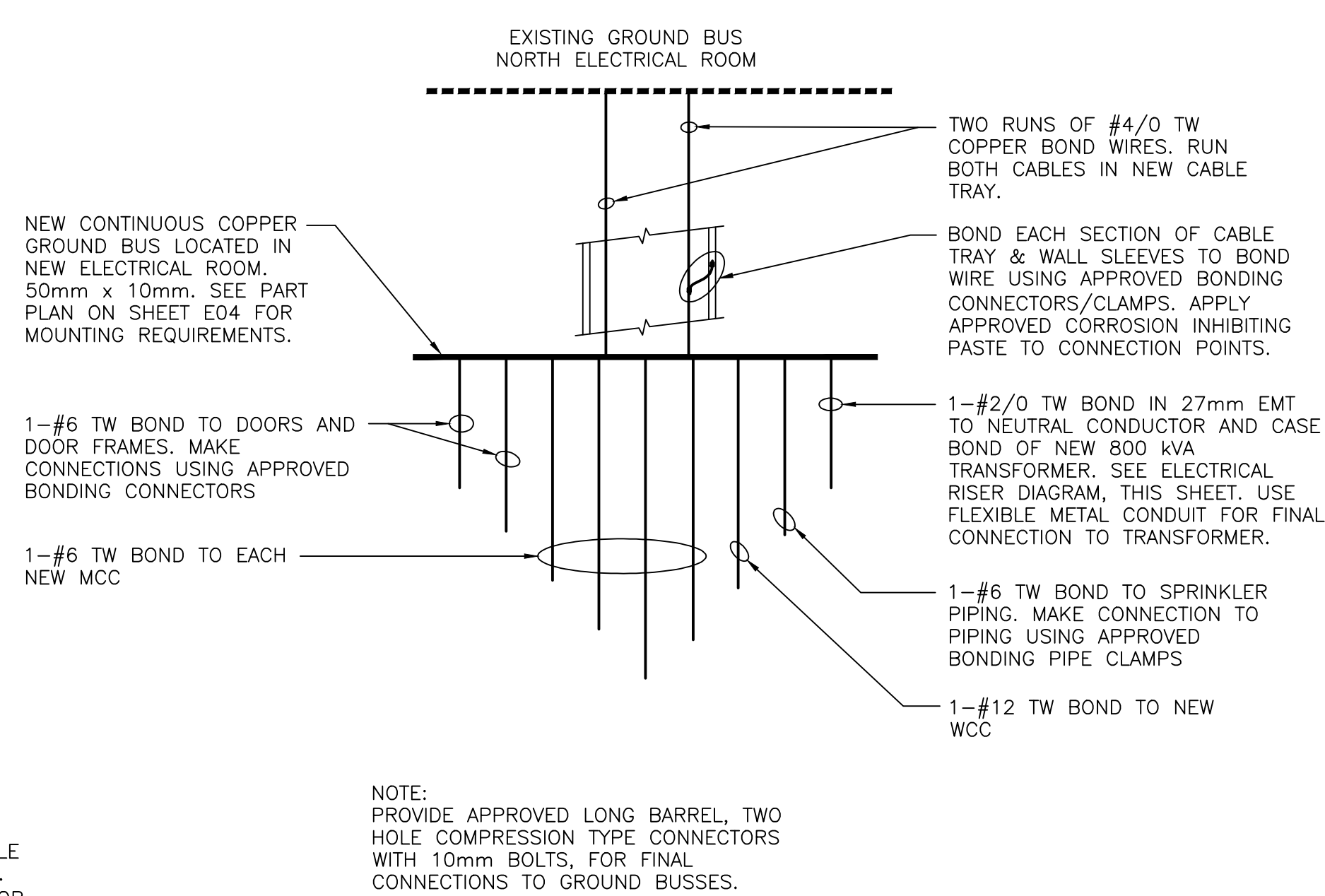
CLEARWATER TANK MAIN LEVEL

DRAWN BY KC	CHECKED BY RF	APPROVED BY RF
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-E02
		REV. 0



PARTIAL ELECTRICAL SINGLE LINE DIAGRAM SHOWING ADDITIONS REQUIRED TO ACCOMMODATE NEW SEGMENTED WAVE GENERATOR EQUIPMENT

SEE NOTE 10.



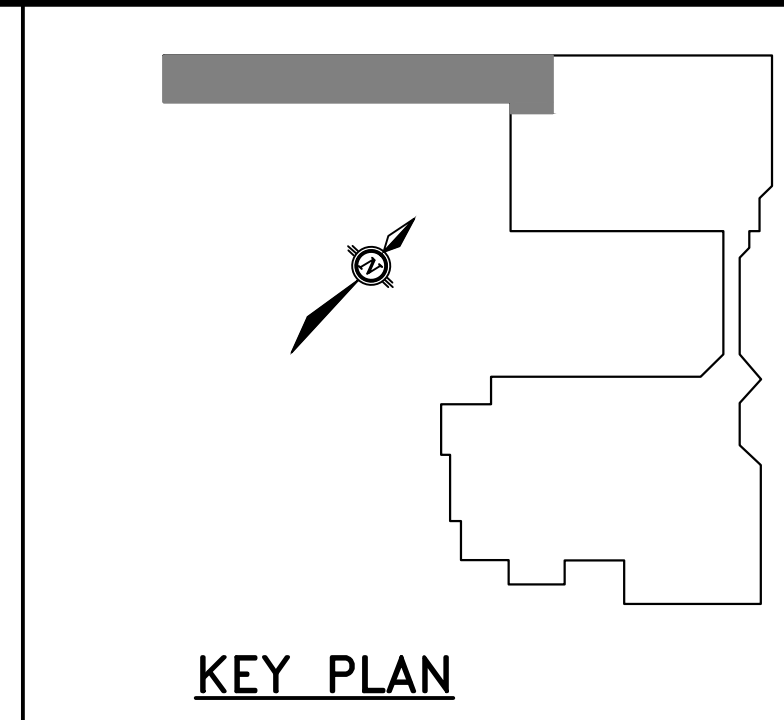
GROUNDING RISER FOR NEW ELECTRICAL ROOM

NOTES CONTINUED:

10. COPY PARTIAL ELECTRICAL SINGLE LINE DIAGRAM AND HANG IN NEW ELECTRICAL ROOM. SEE PART PLAN ON SHEET E7 FOR LOCATION AND ADDITIONAL REQUIREMENTS.

NOTES CONTINUED:

- LAYOUT OF NEW ELECTRICAL ROOM IS BASED UPON THE DIMENSIONS OF EQUIPMENT INDICATED. IF ALTERNATE EQUIPMENT IS PROPOSED, THIS CONTRACTOR IS RESPONSIBLE FOR ENSURING THE LAYOUT MEETS CODE REQUIREMENTS, INCLUDING THE REQUIREMENTS FOR APPLICABLE CLEARANCES, THAT EQUIPMENT FITS THROUGH EXISTING FLOOR HATCH AND THE COORDINATION WITH OTHER TRADES.
- PROVIDE CONTROL/STATUS PANEL FOR MAINTENANCE MODE FEATURE ON NEW 1600 AMP MAIN BREAKER. PANEL TO BE C/W 120 VAC CONTROLS, OFF/ON SELECTOR SWITCH, GREEN LED "ON" STATUS LIGHT, RED "CONTROL POWER ON" STATUS LIGHT AND LAMP TEST BUTTON MOUNTED IN A CSA TYPE 12 ENCLOSURE. WALL MOUNT 1.5m A.F.F.. PROVIDE LAMICOID NAMEPLATES INDICATING "MAINTENANCE MODE CONTROLLER FOR 440 VOLT, 1600 AMP MAIN BREAKER", "ON/OFF SWITCH" "MAINTENANCE MODE ENGAGED", "CONTROL POWER ON" & "LAMP TEST PUSHBUTTON". COORDINATE CONTROL REQUIREMENTS WITH BREAKER MANUFACTURE TO ENSURE PROPER OPERATION.
- PROVIDE WARNING SIGN SECURELY ATTACHED TO SIDES OF HIGH VOLTAGE CABLE TRAY READING: "DANGER HIGH VOLTAGE" 127mm WIDE X 89mm HIGH, 3.5 MIL ADHESIVE-BACKED VINYL. "SAFETY SIGN" #E3301 OR EQUAL. PROVIDE ONE SIGN FOR EVERY 5m OF TRAY WITH A MINIMUM OF ONE SIGN PER CABLE TRAY RUN.



- NOTES:
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 - PARGE AROUND RGS SLEEVE AS REQUIRED TO MAINTAIN FIRE RATING OF WALL. RUN HIGH VOLTAGE CABLE AND BOND WIRE THRU RGS SLEEVE AND FILL SLEEVE WITH "3M" CP-25WB+ FIRE BARRIER SEALANT, OR EQUAL.
 - PROVIDE HORIZONTAL & VERTICAL BENDS AND FITTINGS AS REQUIRED TO FORM A COMPLETE CABLE TRAY SYSTEM. PROVIDE UNISTRUT SUPPORTS FOR CABLE TRAY SUSPENDED FROM CONCRETE DECK ABOVE USING THREADED RODS AND APPROVED CONCRETE ANCHORS. SUPPORTS TO BE 3.0m O.C. MAXIMUM. TYPICAL FOR ALL CABLE TRAY.

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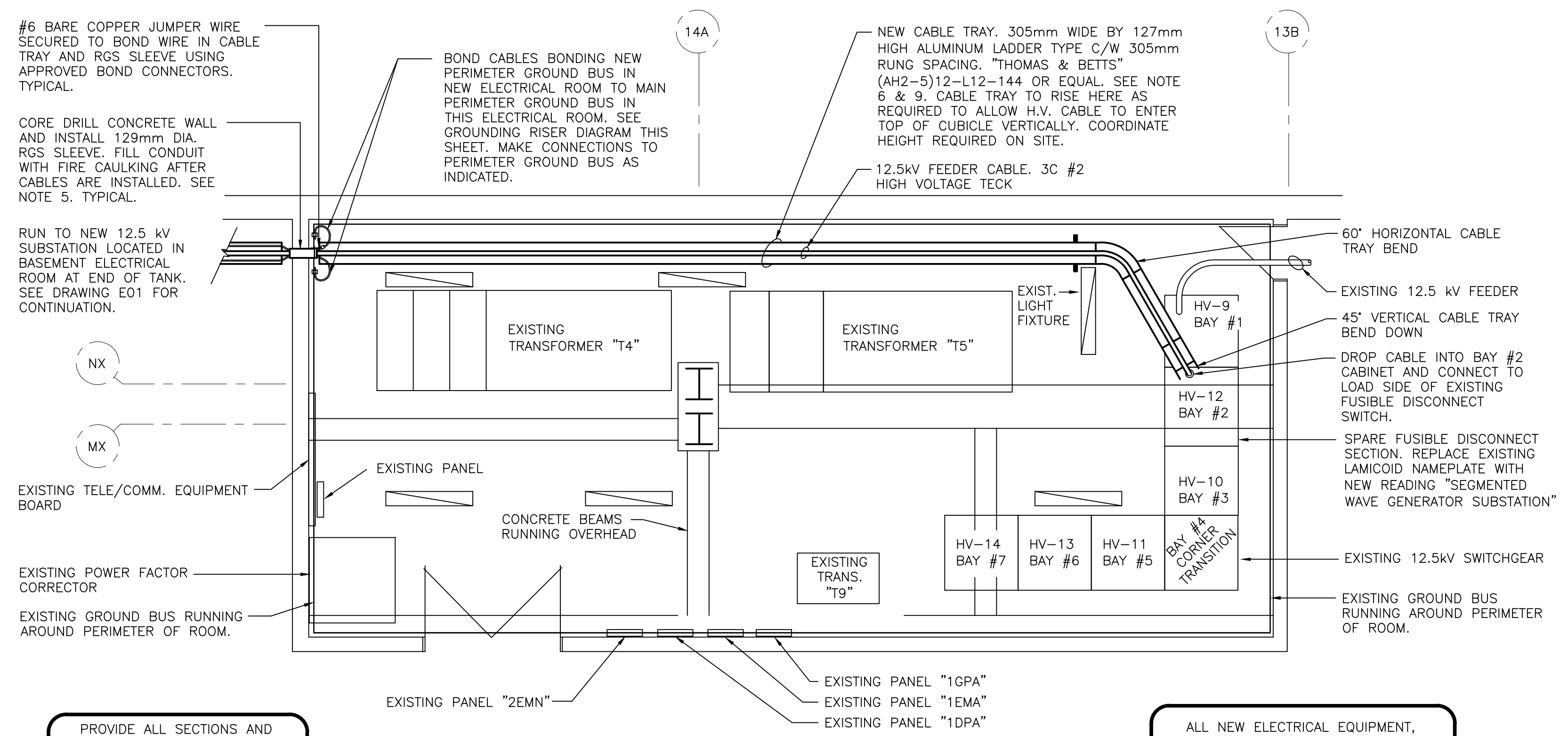
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK

NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING

ELECTRICAL SINGLE LINE DIAGRAM AND DETAILS

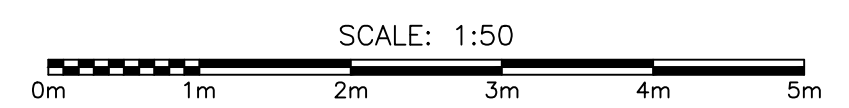
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KC	RF	RF	
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NRC012			
DATE	SCALE	DRAWING NO.	REV.
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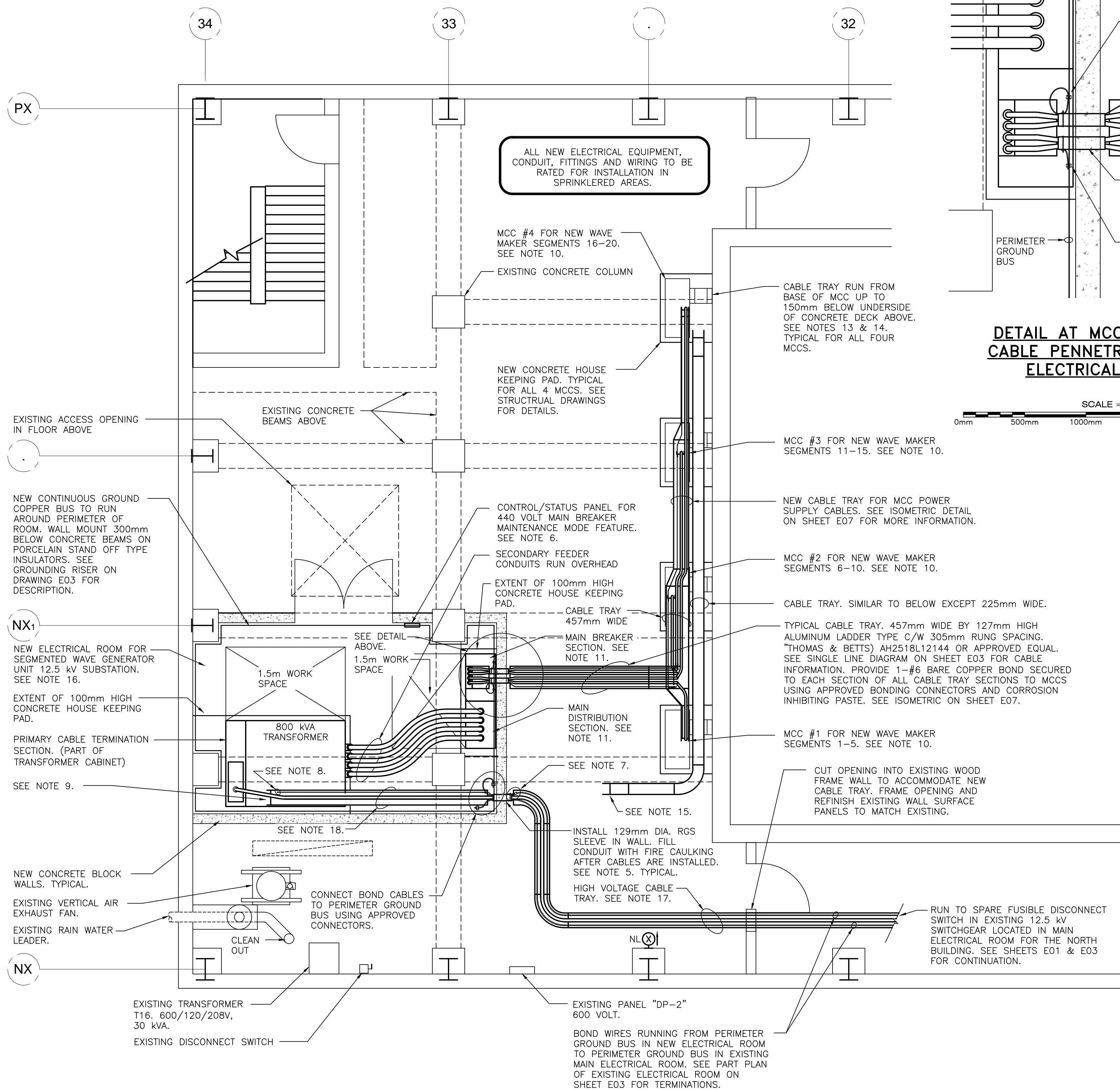


PROVIDE ALL SECTIONS AND FITTINGS REQUIRED TO COMPLETE CABLE TRAYS INDICATED.

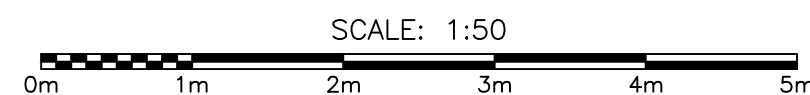
ALL NEW ELECTRICAL EQUIPMENT, CONDUIT, FITTINGS AND WIRING TO BE RATED FOR INSTALLATION IN SPRINKLERED AREAS.

MAIN ELECTRICAL ROOM - NORTH BUILDING

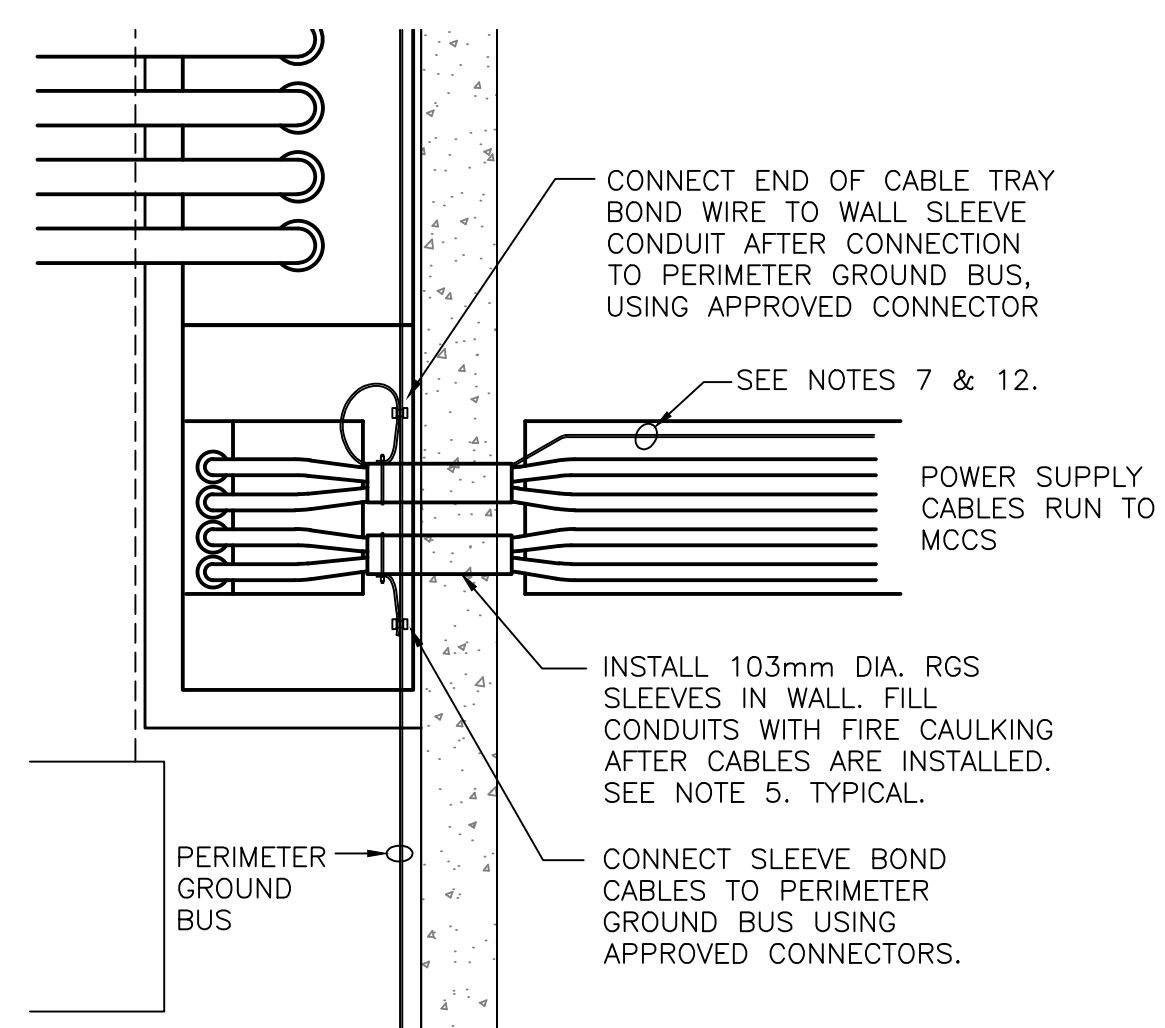




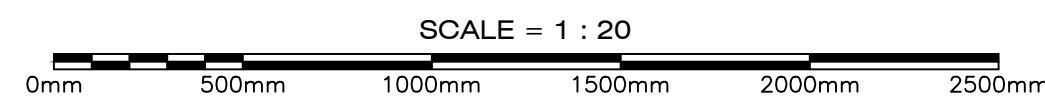
PART PLAN - NEW SEGMENTED WAVE GENERATOR MCC ROOM



PROVIDE ALL SECTIONS AND FITTINGS REQUIRED TO COMPLETE CABLE TRAYS INDICATED.



DETAIL AT MCC POWER SUPPLY CABLE PENETRATION THRU NEW ELECTRICAL ROOM WALL

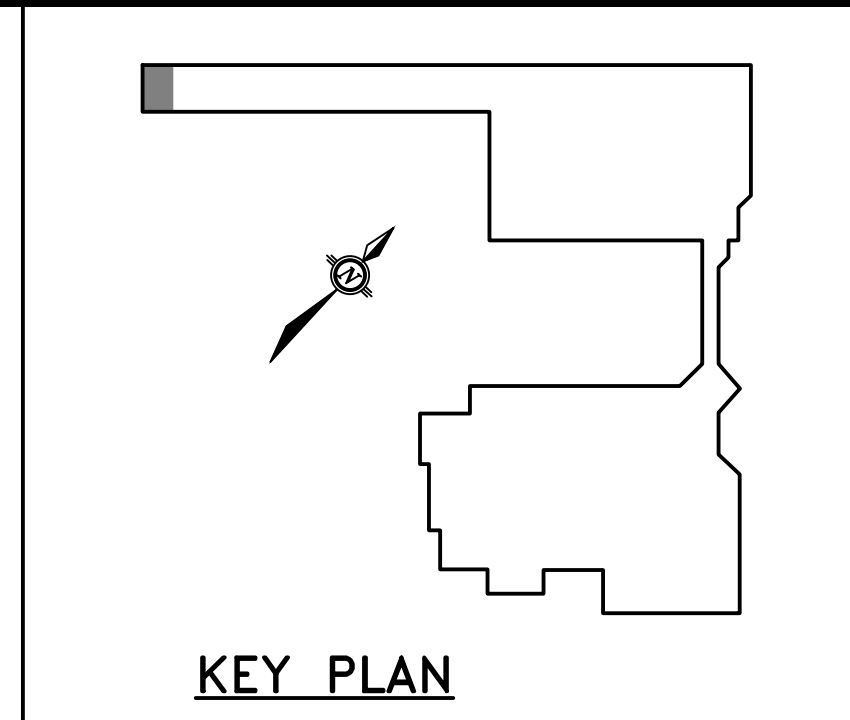


LEGEND

- A LIGHT FIXTURE TYPE "A" LITHONIA No. TLZ1N-L92 - 6000LM-FST-120-35K OR EQUAL. 120 VOLT, 60 WATT, C/W ZACVH HANGAR & WIRE GUARD. MOUNT FIXTURE 2.7m A.F.F.
- TOGGLE SWITCH "HUBBELL" No. HBL12011, 15 AMP, 120 VOLT, SINGLE POLE C/W STAINLESS STEEL COVERPLATE. RECESS IN WALL 1AT HEIGHT TO MATCH EXISTING SWITCHES IN BASEMENT AREA.
- DUPLX, U-GROUND RECEPTACLE. 20 AMP, 120 VOLT, & C/W STAINLESS STEEL COVERPLATE. "HUBBELL" No. HBL53621 OR EQUAL. RECESS IN WALL (FOR NEW CONSTRUCTION ONLY) AT HEIGHT TO MATCH EXISTING RECEPTACLES. SURFACE MOUNT IN CAST FS BOX WHERE LOCATED ON EXISTING WALLS OR COLUMNS.
- EXISTING EXIT SIGN. WHERE INDICATED, ARROW SHOWS DIRECTION OF TRAVEL.
- COMBINATION EXIT/EMERGENCY LIGHTING UNIT. "LUMACELL" LSC44W2LD9-AT. 120/347 VAC OR EQUAL. WALL MOUNT ABOVE DOOR.
- FIRE ALARM BELL
- FIRE ALARM STROBE
- FIRE ALARM SYSTEM END-OF-LINE RESISTOR
- EMERGENCY STOP PUSH BUTTON.
- COMBINATION TYPE MAGNETIC MOTOR STARTER.
- ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT.

SUBSCRIPTS

- E - EXISTING EQUIPMENT
- RL - EXISTING EQUIPMENT TO BE RELOCATED
- NL - NEW LOCATION FOR EXISTING EQUIPMENT
- EF - EXHAUST FAN



NOTES CONTINUED:

8. #6 TW COPPER BOND WIRE CONNECTED TO EACH CABLE TRAY SECTION AND ONE OF THE MAIN BOND WIRES IN CABLE TRAY USING APPROVED BOND CONNECTORS AND CORROSION INHIBITING PASTE. TYPICAL.
9. TERMINATE CABLE TRAY ABOVE CABLE ENTRY POINT IN CABLE TERMINATION SECTION, USING 45° VERTICAL CABLE TRAY BEND FITTING. TERMINATE CABLE TO BUSSES INSIDE CABINET USING APPROVED COLD SHRINK 15kV TERMINATION KITS.
10. NEW MCCS TO BE PROVIDED AND INSTALLED BY OTHERS. CONCRETE BASES BY STRUCTURAL TRADE.
11. NEW 440 VOLT, 3φ MAIN BREAKER AND DISTRIBUTION SECTION. SEE ELECTRICAL SINGLE LINE DIAGRAM ON SHEET E03 FOR MORE INFORMATION.
12. CABLE TRAY BONDING WIRE TO EXTEND FROM DESIGNATED GROUND BUS AND CONNECT TO EACH SECTION OF CABLE TRAY. CONNECT BONDING WIRE TO DESIGNATED GROUND BUS ONLY. OTHER END OF BONDING WIRE TO TERMINATE AT CONNECTION TO LAST SECTION OF CABLE TRAY. IT IS INTENDED THAT CABLE TRAY BONDING WIRES ONLY CONNECT TO ONE GROUND BUS. TYPICAL FOR ALL CABLE TRAY BONDING WIRES UNLESS OTHERWISE NOTED.
13. CABLE TRAY RUNNING UP TANK WALL FROM MCCS TO BE "THOMAS AND BETTS" No. (AHT-6)12-112-144 OR EQUAL. PROVIDE HOLD DOWN CLAMPS AND CONCRETE ANCHORS REQUIRED TO SECURE TRAY TO TANK WALL.
14. PROVIDE 3-78mm DIA. RGS CONDUIT SLEEVES UP THRU FLOOR ABOVE TOP OF CABLE TRAY. INSTALL END CAPS TEMPORARILY UNTIL NEW CABLES FOR WAVE GENERATOR ARE INSTALLED. TYPICAL FOR ALL FOUR MCCS.
15. PROVIDE 1-78mm DIA. RGS CONDUIT SLEEVE UP THRU FLOOR & CONCRETE BASE ABOVE. INSTALL END CAPS TEMPORARILY UNTIL NEW CABLES FOR WCC CABINET ARE INSTALLED.
16. PROVIDE WARNING SIGN SECURELY ATTACHED TO DOOR LEADING INTO NEW ELECTRICAL ROOM READING: "DANGER HIGH VOLTAGE - AUTHORIZED PERSONNEL ONLY" 356mm WIDE X 254mm HIGH, 14mm THICK POLYETHYLENE PLASTIC. "SAFETY SIGN" #E3302 OR EQUAL.
17. PROVIDE WARNING SIGN SECURELY ATTACHED TO SIDES OF HIGH VOLTAGE CABLE TRAY READING: "DANGER HIGH VOLTAGE" 127mm WIDE X 89mm HIGH, 3.5 MIL ADHESIVE-BACKED VINYL. "SAFETY SIGN" #E3301 OR EQUAL. PROVIDE ONE SIGN FOR EVERY 5m OF TRAY WITH A MINIMUM OF ONE SIGN PER CABLE TRAY RUN.
18. CABLE TRAY TO RISE HERE TO ALLOW H.V. CABLE TO DROP INTO TOP OF CABLE TERMINATION SECTION VERTICALLY. CABLE TRAY HEIGHT TO BE 3.2m FROM BOTTOM OF TRAY TO FLOOR MINIMUM.

- NOTES:**
1. CONTRACTOR TO VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS ON-SITE. ANY DISCREPANCIES AND/OR UNSATISFACTORY CONDITIONS SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
 2. DO NOT SCALE FROM THE DRAWINGS.
 3. COORDINATE FULL EXTENT OF DEMOLITION ON-SITE AND WITH WORK OF OTHER TRADES.
 4. USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.
 5. PARCE AROUND RGS SLEEVES AS REQUIRED TO MAINTAIN FIRE RATING OF WALL. RUN CABLES AND BOND WIRES THRU RGS SLEEVE AND FILL SLEEVE WITH "3M" CP-25WB+ FIRE BARRIER SEALANT, OR EQUAL. TYPICAL FOR ALL SLEEVES.
 6. PROVIDE NEW 15 AMP, 120 VAC BREAKER AND CIRCUIT FROM EXISTING PANEL "C" LOCATED ON MAIN LEVEL ABOVE. MAKE CONNECTION TO NEW MAINTENANCE MODE CONTROLLER USING 2- #12 RW90 & 1- #12 TW BOND IN 21mm EMT. NEW M.M. CONTROLLER TO BE RATED FOR INSTALLATION IN A SPRINKLERED AREA.
 7. #6 BARE COPPER JUMPER WIRE SECURED TO GROUND BUS BOND WIRE IN CABLE TRAY AND RGS SLEEVE USING APPROVED BOND CLAMPS AND CORROSION INHIBITING PASTE. TYPICAL.

NO.	DESCRIPTION	DATE	BY
0	ISSUED FOR TENDER	25/07/17	KC
B	ISSUED FOR 99% REVIEW	30/06/17	CN
A	ISSUED FOR REVIEW	02/06/17	CN

REVISIONS

NO.	DESCRIPTION	DATE	BY
A	DETAIL NO.		
B	SHEET SIZE		
C	REFERENCE SHEET		

PROVINCE OF NEWFOUNDLAND AND LABRADOR
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 THIS PERMIT ALLOWS
MADERRA ENGINEERING
 To practice Professional Engineering in Newfoundland and Labrador.
 Permit No. as issued by PEG 10253
 which is valid for the year 2017
 by Permit Holder (MIRC No.) 02824

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PEG
 PROFESSIONAL ENGINEER
 Registered
 25/07/17
 NEWFOUNDLAND & LABRADOR

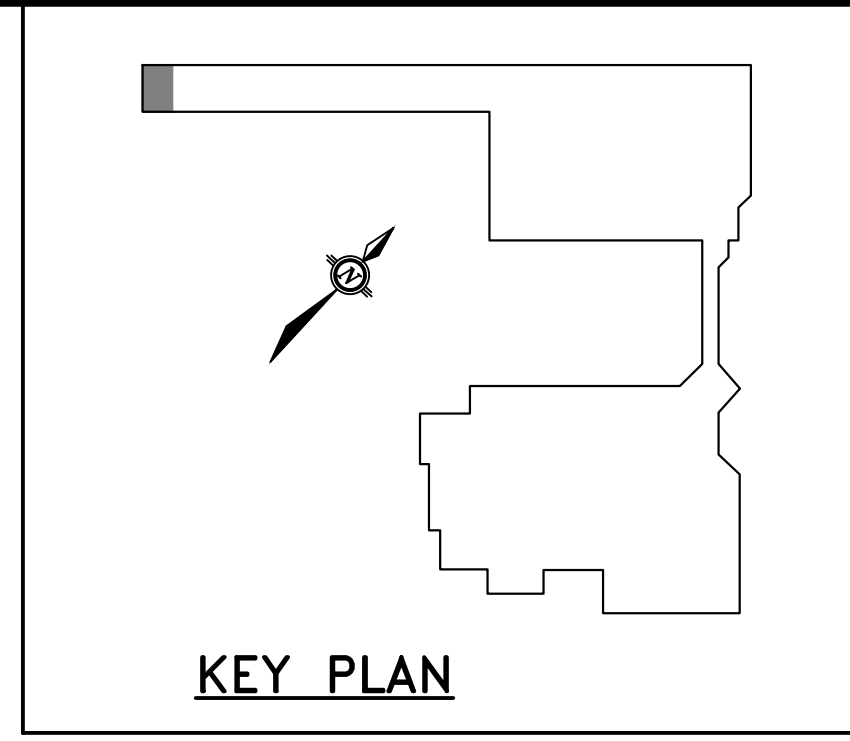
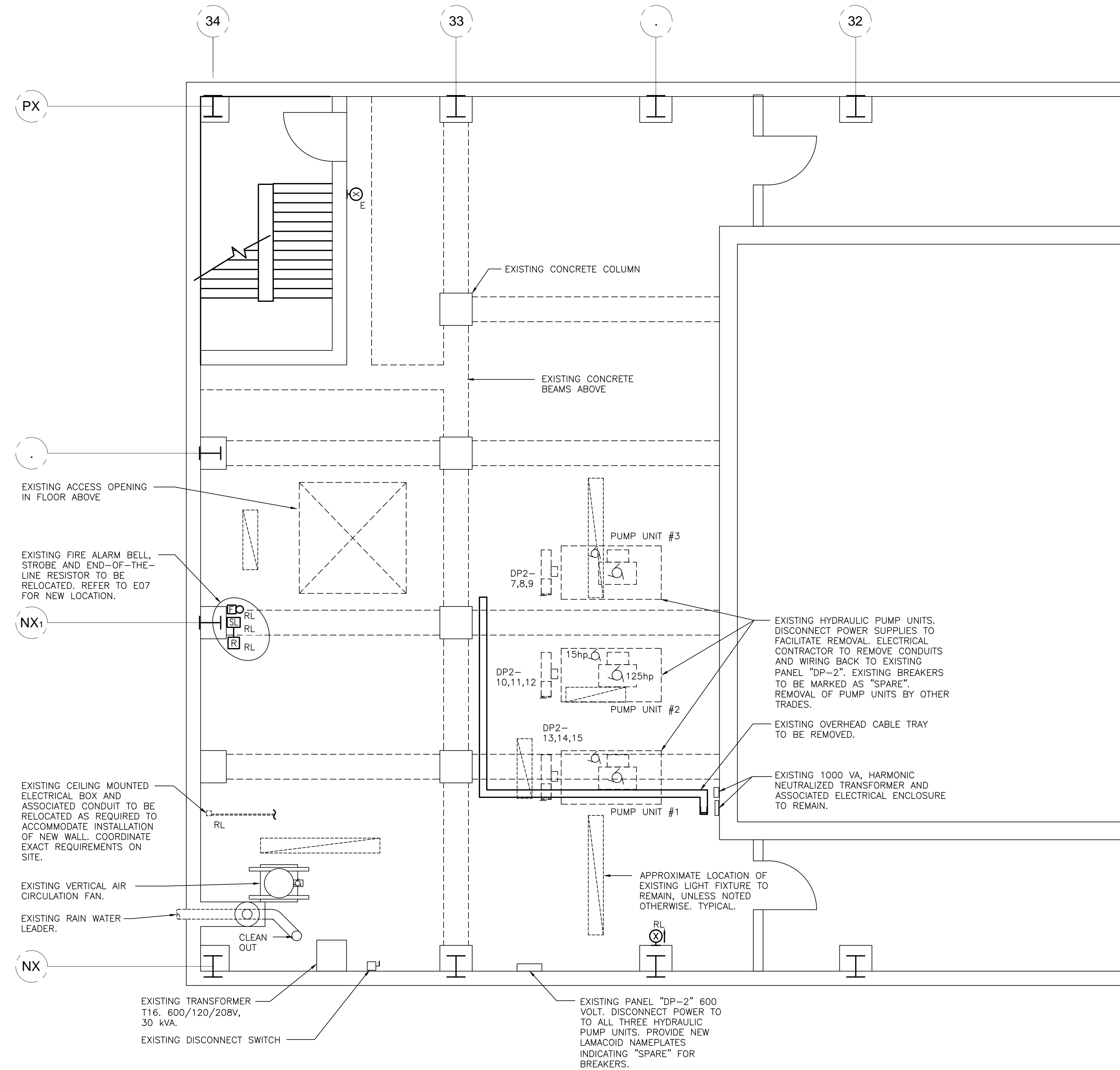
PRIME CONSULTANT
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 ST. JOHN'S, NL | A1A 0P9 |
 T: 709.739.5002 | F: 709.739.7741 |

OWNER
AFC-CARC

PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING
PART PLAN SEGMENTED WAVE GENERATOR MCC ROOM

DRAWN BY	CHECKED BY	APPROVED BY	
KC	RF	RF	
PROJECT NO.	DWG. FILE NO.	FILE NO.	
NRC012			
DATE	SCALE	DRAWING NO.	REV.
JULY 2017	AS SHOWN	IMC0168-E04	0



- NOTES:
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 - DO NOT SCALE FROM THE DRAWINGS.
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 - USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.
 - OWNERS SHALL HAVE FIRST RIGHT OF REFUSAL FOR ALL OBSOLETE EQUIPMENT INDICATED TO BE REMOVED. OTHERWISE, OBSOLETE EQUIPMENT BECOMES PROPERTY OF CONTRACTOR AND MUST BE PROMPTLY REMOVED FROM SITE.

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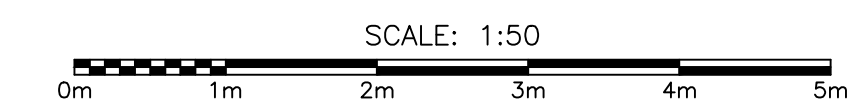
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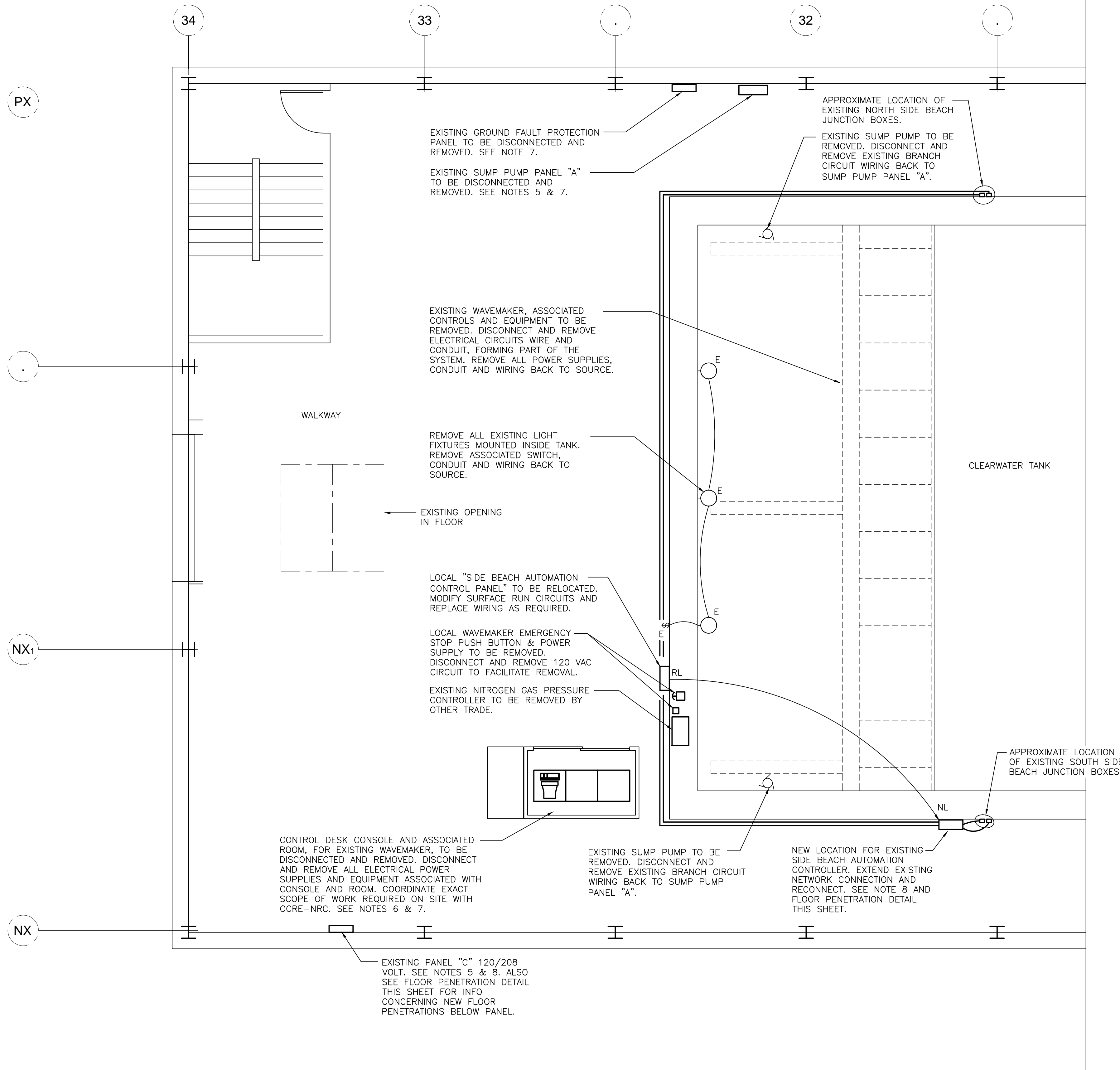
PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING
BUILDING SERVICES DEMOLITION FORMER PUMP ROOM

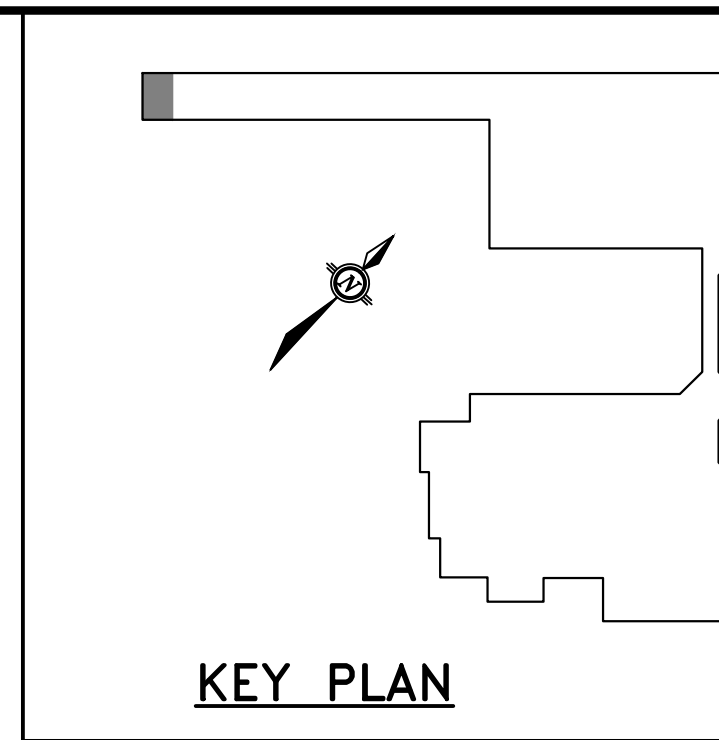
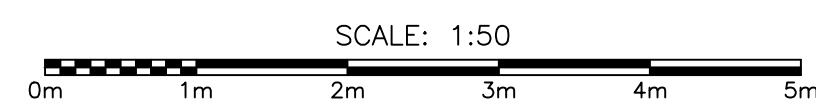
DRAWN BY KC	CHECKED BY RF	APPROVED BY RF
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-E05 REV. 0

PART PLAN - BUILDING SERVICES DEMOLITION FORMER PUMP ROOM





PART PLAN - WEST END OF CLEARWATER TANK - MAIN LEVEL



NOTES CONTINUED:

- PROVIDE NEW 15 AMP, 120 VOLT, GFCI TYPE BREAKER FOR EXISTING PANEL "C" AND MAKE CONNECTION TO RELOCATED SIDE BEACH CONTROLLER USING 2-#12 RW90 & 1-#12 TW BOND IN 21mm CONDUIT. RUN CONDUIT DOWN FROM PANEL "C" THRU FLOOR BELOW NEW LOCATION OF CONTROLLER. SEE FLOOR PENETRATION DETAIL THIS SHEET.

- NOTES:
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 - DISCONNECT AND REMOVE EXISTING FEEDER FOR OBSOLETE SUMP PUMP PANEL "A". LOCK OFF EXISTING BREAKER/FUSIBLE DISCONNECT SWITCH. PROVIDE NEW LAMICOID LABEL IDENTIFYING IT AS A SPARE.
 - PATCH ALL OPENINGS LEFT IN FLOOR AFTER EXISTING SERVICES TO CONSOLE ROOM HAVE BEEN REMOVED. ALL PATCHES TO BE FIRE RATED TO MATCH FIRE RATING OF FLOOR.
 - OWNERS SHALL HAVE FIRST RIGHT OF REFUSAL FOR ALL OBSOLETE EQUIPMENT INDICATED TO BE REMOVED. OTHERWISE, OBSOLETE EQUIPMENT BECOMES PROPERTY OF CONTRACTOR AND MUST BE PROMPTLY REMOVED FROM SITE.

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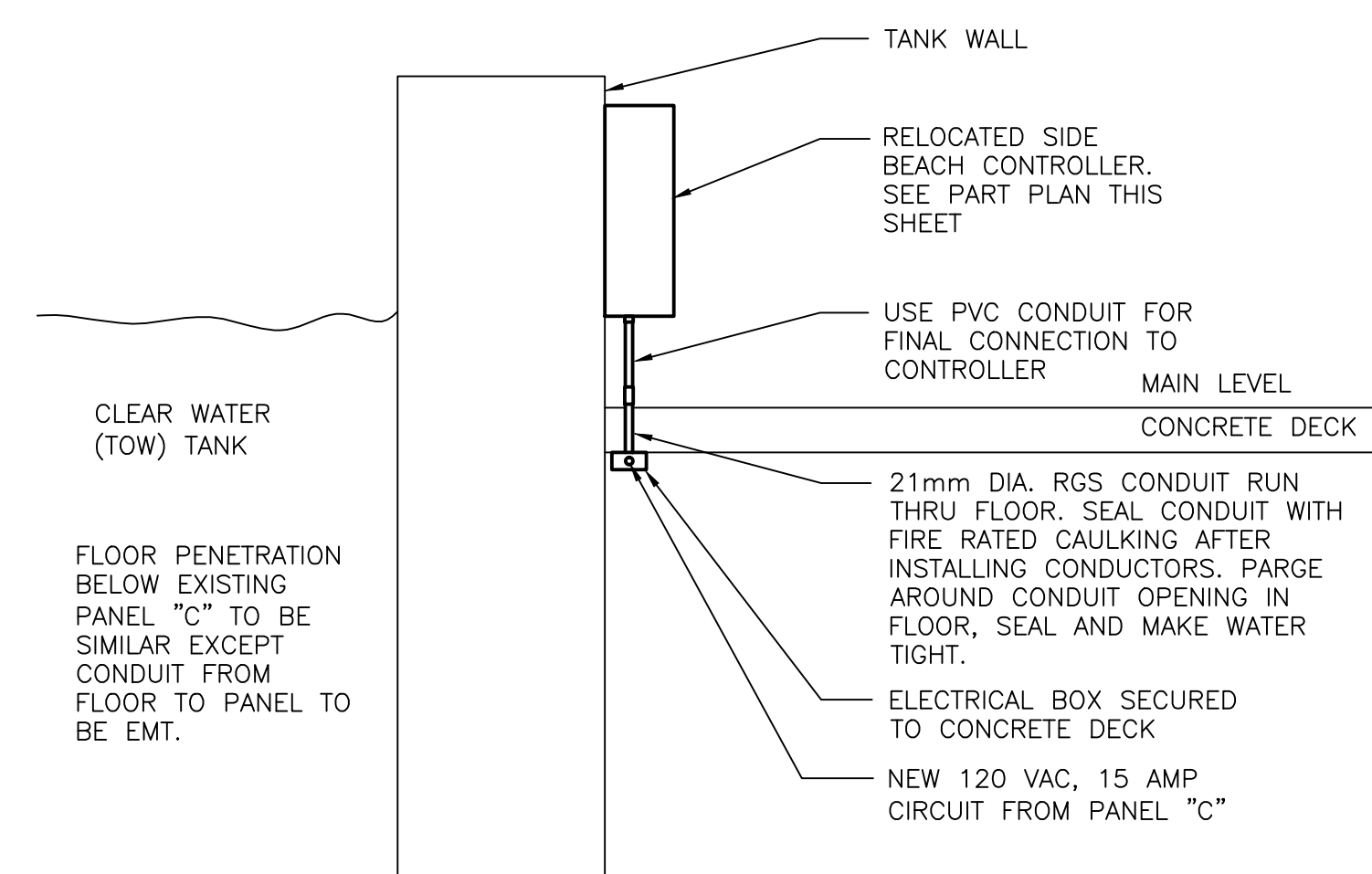
PROJECT

NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

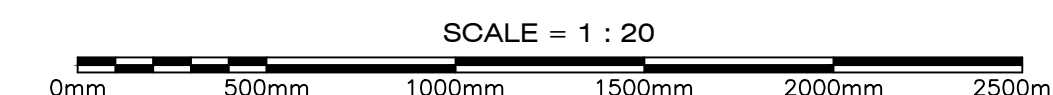
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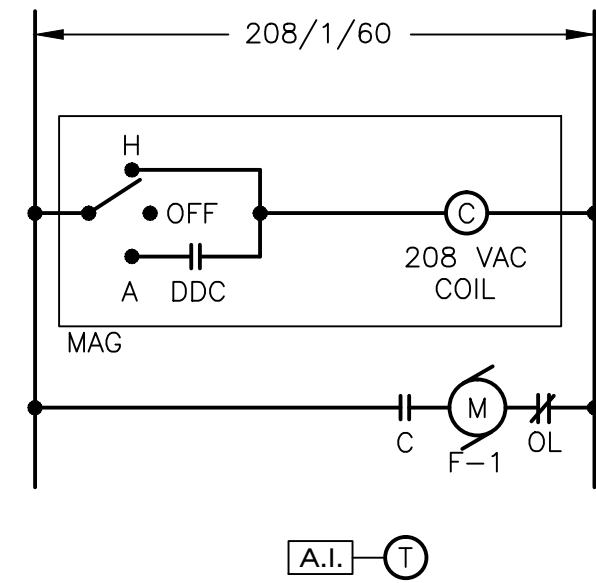
ELECTRICAL DEMOLITION MAIN LEVEL

DRAWN BY KC	CHECKED BY RF	APPROVED BY RF
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMCO168-E06
		REV. 0



FLOOR PENETRATION DETAIL AT RELOCATED SIDE BEACH CONTROLLER

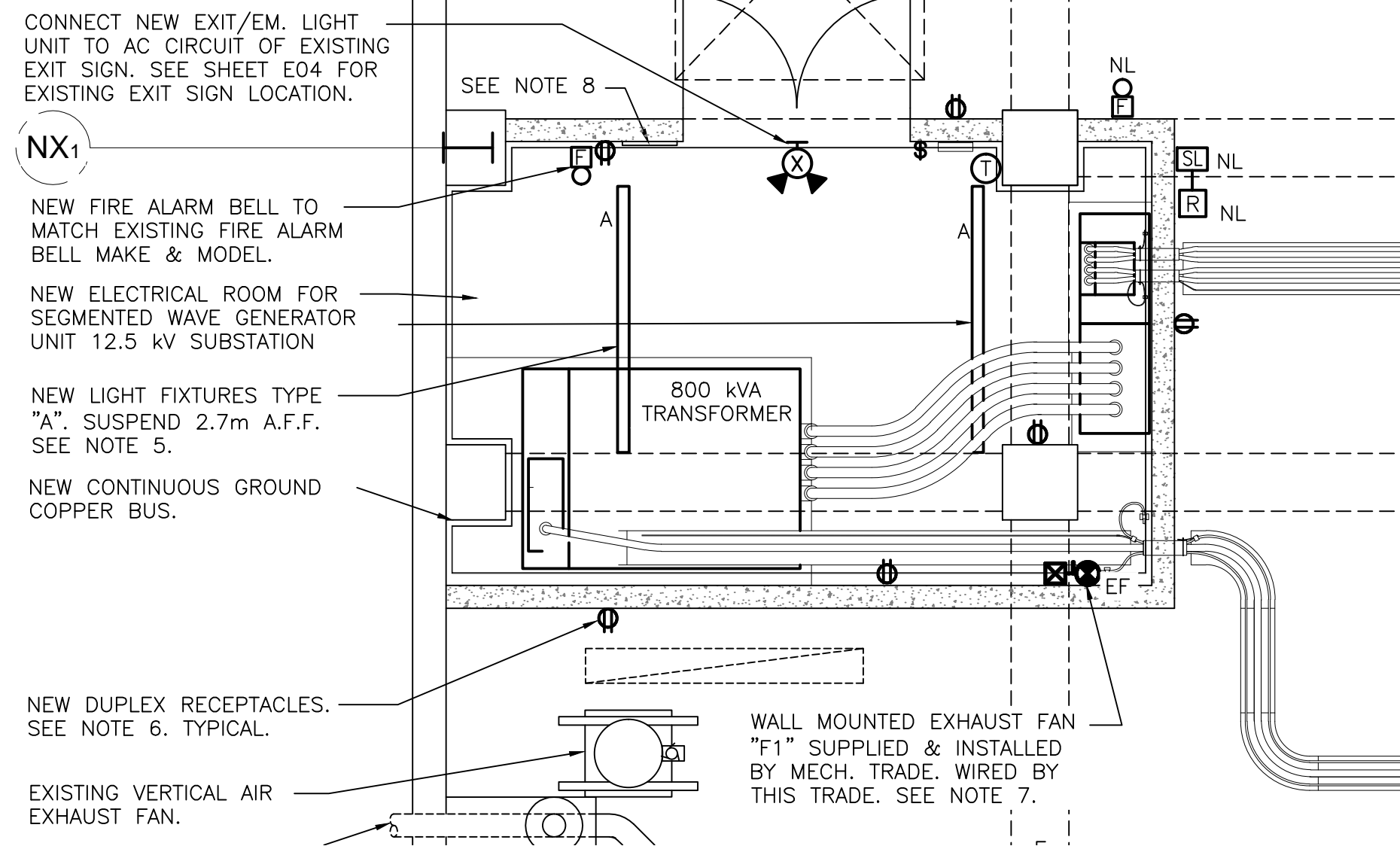




LEGEND:

- M = FAN MOTOR
- T = LOW VOLTAGE THERMOSTAT. SUPPLIED, INSTALLED AND WIRED BY MECHANICAL TRADE.
- A = COMBINATION MAGNETIC STARTER, SUPPLIED BY MECHANICAL TRADE, INSTALLED AND WIRED BY THIS TRADE.
- A.I. = ANALOG INPUT FOR DDC SYSTEM

CONTROL SCHEMATIC – FAN F-1



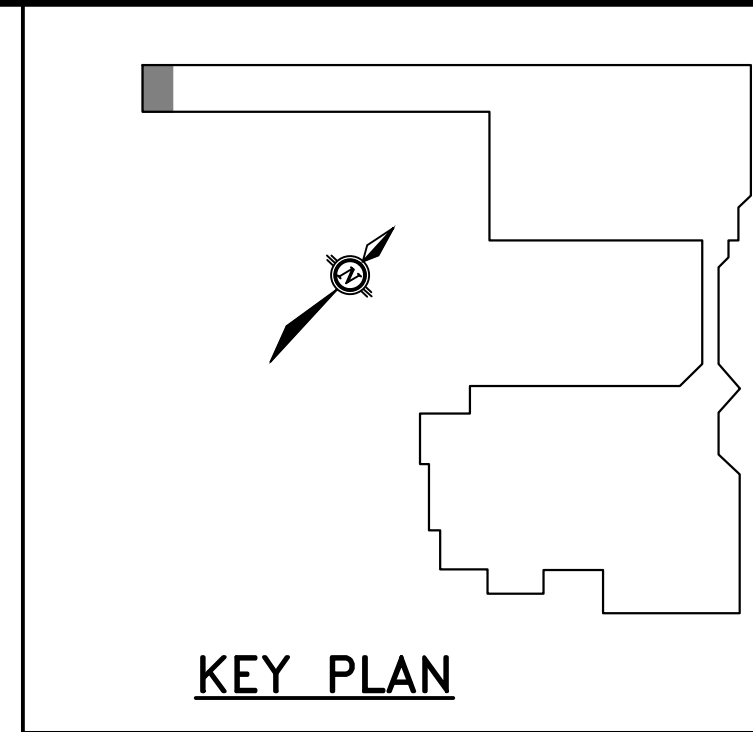
PART PLAN – NEW ELECTRICAL ROOM



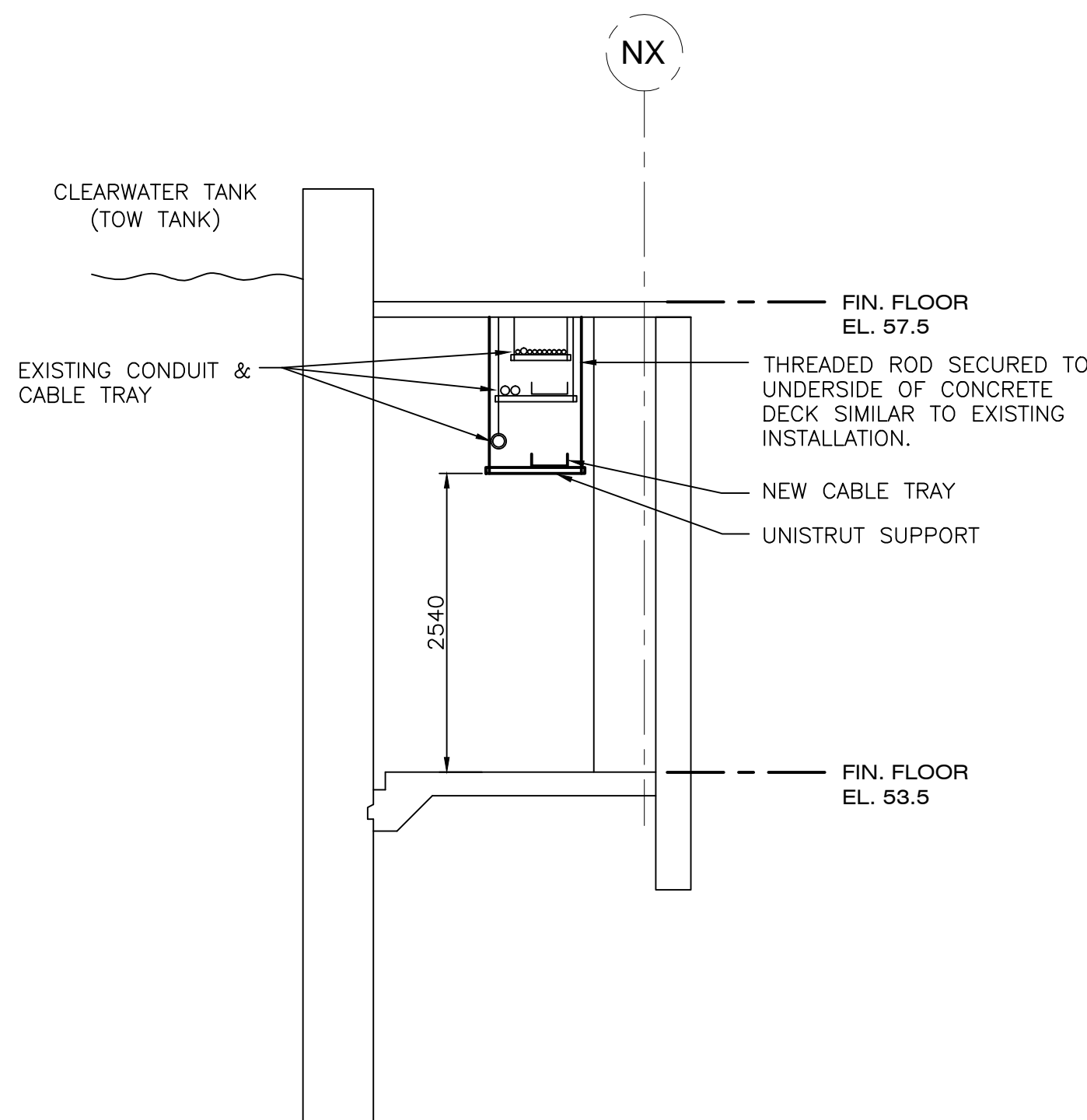
ALL NEW ELECTRICAL EQUIPMENT, CONDUIT, FITTINGS AND WIRING TO BE RATED FOR INSTALLATION IN SPRINKLERED AREAS.

NOTES CONTINUED:

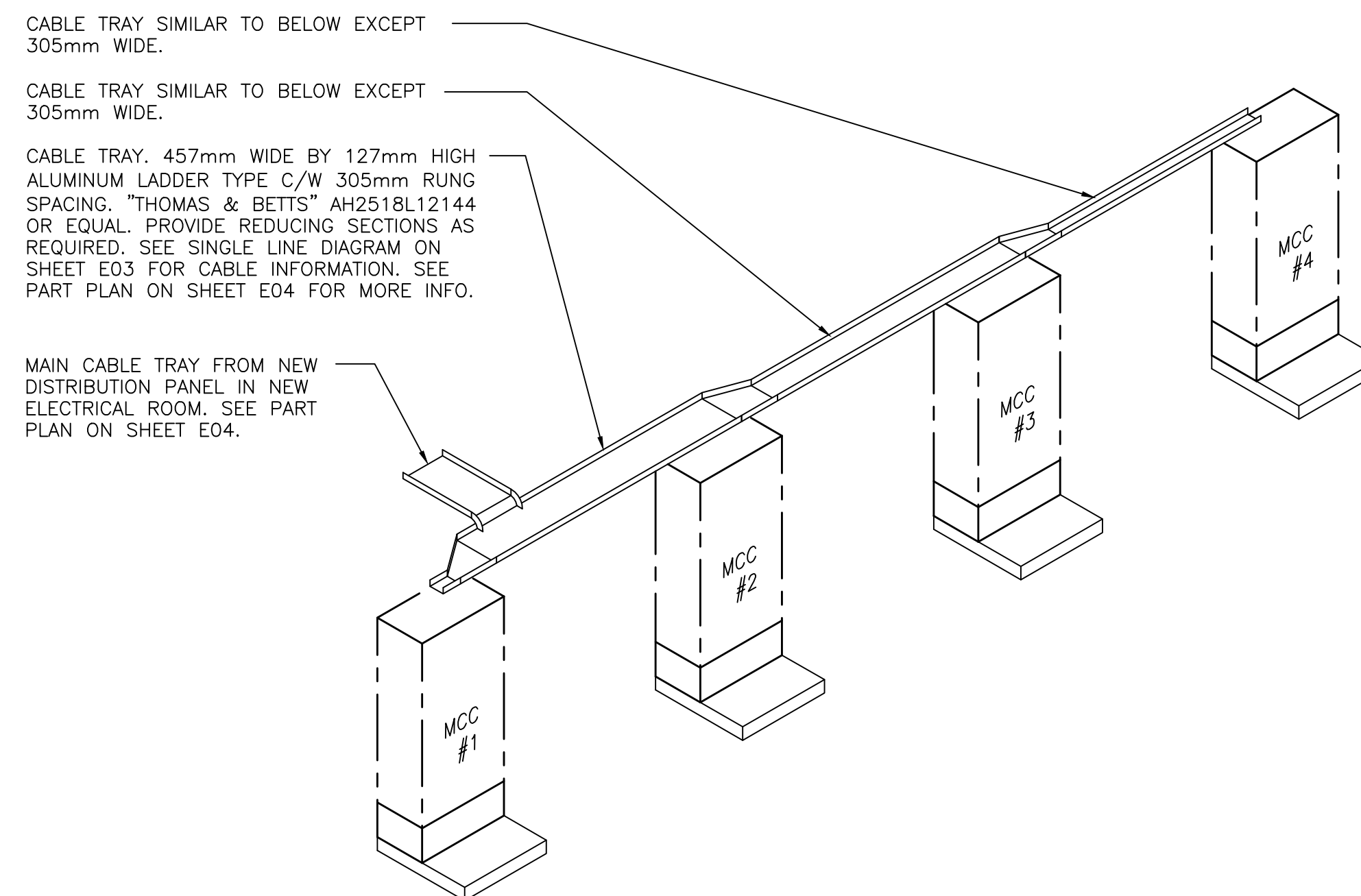
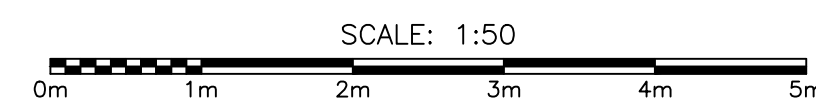
7. PROVIDE AND INSTALL NEW 15 AMP, 2 POLE, 208 VOLT BREAKER AND CIRCUIT FROM EXISTING PANEL "C" LOCATED ON THE MAIN LEVEL ABOVE AND MAKE CONNECTION TO NEW EXHAUST FAN "F1" AND STARTER USING 2-#12 RW90 & 1-#12 TW BOND IN 21mm EMT. USE FLEXIBLE METAL CONDUIT FOR FINAL CONNECTION TO FAN.
8. COPY OF PARTIAL ELECTRICAL SINGLE LINE DIAGRAM AS INDICATED ON SHEET E03. WALL MOUNT DIAGRAM, FRAMED UNDER GLASS, 1.5m A.F.F.. FRAMED DRAWING TO MEASURE 450 WIDE BY 400 HIGH MINIMUM.



- NOTES:
1. CONTRACTOR TO VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS ON-SITE. ANY DISCREPANCIES AND/OR UNSATISFACTORY CONDITIONS SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
 2. DO NOT SCALE FROM THE DRAWINGS.
 3. COORDINATE FULL EXTENT OF DEMOLITION ON-SITE AND WITH WORK OF OTHER TRADES.
 4. USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.
 5. PROVIDE NEW 15 AMP, 120 VAC BREAKER AND CIRCUIT FROM EXISTING PANEL "C" LOCATED ON MAIN LEVEL ABOVE. MAKE CONNECTION TO NEW LIGHT FIXTURES USING 2- #12 RW90 & 1-#12 TW BOND IN 21mm EMT.
 6. PROVIDE 2 NEW 20 AMP, 120 VAC BREAKERS AND CIRCUITS FROM EXISTING PANEL "C" LOCATED ON MAIN LEVEL ABOVE. MAKE CONNECTION TO NEW NEW RECEPTACLES USING 2- #12 RW90 & 1-#12 TW BOND IN 21mm EMT. CONNECT THE FIRST CIRCUIT TO THE NEW RECEPTACLES LOCATED INSIDE THE NEW ELECTRICAL ROOM AND THE SECOND TO THE NEW RECEPTACLES LOCATED OUTSIDE THE NEW ELECTRICAL ROOM.



SECTION THRU BASEMENT CORRIDOR



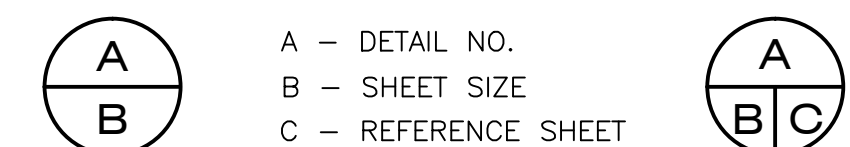
**ISOMETRIC OF NEW CABLE TRAY AT MCCS
VIEW TAKEN FROM REAR OF MCCS**

N.T.S.

PROVIDE ALL SECTIONS AND FITTINGS REQUIRED TO COMPLETE CABLE TRAYS INDICATED.

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REVISIONS



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MADERRA ENGINEERING
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STAMP
PROFESSIONAL ENGINEER
PEG
 Newfoundland and Labrador
 Registration No. 25/07/17
 NEWFOUNDLAND & LABRADOR

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OWNER

PROJECT
**NEW SEGMENTED WAVE
 GENERATOR
 CLEARWATER TANK**
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING
**PART PLAN
 NEW ELECT. ROOM
 AND DETAILS**

DRAWN BY KC	CHECKED BY RF	APPROVED BY RF
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-E07
		REV. 0

SCOPE OF WORK

- THE PRIMARY OBJECTIVE OF THE WORK SHOWN ON THESE DRAWINGS IS TO REMOVE THE EXISTING TOW TANK WAVE MAKER AND ALL OF IT'S OPERATING COMPONENTS ACCESSORIES.
- REPAIR ANY CONCRETE DAMAGE TO THE TOW TANK.
- PREPARE THE SITE FOR THE NEW WAVE MAKER INSTALLATION. NEW WAVE MAKER INSTALLATION WILL BE DONE BY OTHERS.

STRUCTURAL DEMOLITION NOTES

- THE CONTRACTOR IS FULLY RESPONSIBLE FOR SITE SAFETY AND ALL DEMOLITION WORK.
- ALL CONSTRUCTION WORK AND ACTIVITIES TO FOLLOW ISSUED PROJECT SPECIFICATION.
- PROVIDE HOARDINGS AROUND THE JOB AREAS TO CONTAIN DEBRIS FROM WORK.
- DISPOSE OF DEBRIS FROM WORK ACCORDING TO THE REQUIREMENTS OF ISSUED PROJECT SPECIFICATION.
- THE CONTRACTOR IS TO ENGAGE A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF NEWFOUNDLAND TO TAKE RESPONSIBILITY AND TO DIRECT ALL ASPECTS OF THE SHORING, TEMPORARY SUPPORTS AND DEMOLITION WORK FOR THE PROJECT.
- EXISTING WAVE MAKER STRUCTURE WILL NEED TO BE FULLY BRACED BEFORE STARTING CUTTING STEEL PLATE AND REMOVAL.
- ALL CUT PARTS OF EXISTING STEEL WAVE MAKER STRUCTURE FOR TANK NOT TO EXCEED 2000kg IN WEIGHT.
- THE CONTRACTOR IS TO SUBMIT A SHORING AND DEMOLITION DRAWING, SEALED BY THE SHORING/DEMOLITION ENGINEER, TO DEMONSTRATE CONFORMANCE WITH THIS SPECIFICATION PRIOR TO STARTING WORK.
- DEMOLITION IS TO BE UNDERTAKEN ONLY AFTER THE SHORING/DEMOLITION ENGINEER HAS INSPECTED AND SIGNED OFF ON THE SHORING WORK. PROVIDE CONFIRMING DOCUMENTATION TO THE ENGINEER OF RECORD.
- SHOULD UNEXPECTED CONDITIONS BE ENCOUNTERED DURING DEMOLITION, STOP WORK IN THE AREA IMMEDIATELY AND CONSULT WITH THE ENGINEER OF RECORD AND THE SHORING/DEMOLITION ENGINEER. FOLLOW ALL INSTRUCTIONS OF THE SHORING/DEMOLITION ENGINEER.
- DEMOLITION IS TO BE UNDERTAKEN WITH CARE TO PROTECT THE EXISTING STRUCTURE FROM DAMAGE. (i.e REMOVING HYDRAULIC FLUID AND NITROGEN).
- ONCE WORK IS COMPLETED, REMOVE ALL TEMPORARY SHORING WORKS AND RESTORE THE WORK SITE IN AND AROUND THE DEMOLITION AREA TO ITS ORIGINAL STATE OR BETTER.
- THE EXISTING GANTRY CRANE CAPACITY IS 2000kg (SAFE WORKING LOAD).
- IF CONTRACTOR IS PLANNING TO UTILIZE EXISTING GANTRY CRANE, THE CRANE WILL NEED TO HAVE UP TO DATE CERTIFICATION PROVIDED BY NRC.
- ALL LIFTING PROCEDURES, LUGS AND ACCESSORIES USED FOR REMOVAL OF WAVE MAKER STRUCTURE IS THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR.
- ALL HYDRAULIC FLUID TO BE REMOVED, CONTAINED, AND DISPOSED OF AS PER SPECIFICATION PRIOR TO REMOVING HYDRAULIC SYSTEM.
- ALL HYDRAULIC SYSTEMS AND PUMPS INCLUDING SUMP PUMPS AND OTHER ACCESSORIES IN THE WAVE TANK SYSTEM AND PUMP ROOM TO BE REMOVED AS PER ISSUED PROJECT SPECIFICATIONS.
- PATCH ALL PENETRATIONS FOR HYDRAULICS AND ELECTRICAL WITH APPROVED NON SHRINK GROUT SIKA 35 HI-MOD LV OR APPROVED EQUAL.
- ALL EXISTING ANCHOR SYSTEMS OF WAVE MAKER TO BE REMOVED. CONCRETE UNDERSIDE WILL NEED TO BE REPAIRED USING APPROVED NON SHRINK GROUT SIKA 35 HI-MOD LV OR APPROVED EQUAL.
- ALL REMOVED EQUIPMENT CONCRETE FOUNDATIONS IN THE PUMP ROOM TO BE SAW CUT AND REMOVED AS PER SPECIFICATION.
- ALL DAMAGED CONCRETE SURFACES WILL NEED TO BE RESURFACED AFTER REMOVAL OF EQUIPMENT.
- REFER TO SPALLED AND DELAMINATED CONCRETE REPAIR NOTES.
- EXISTING ON THE FLOOR HATCH CAPACITY IS UNKNOWN, CONTRACTOR TO TAKE MEASURES TO PREVENT PLACING LOADS ON THE HATCH COVER AT ALL TIMES DURING CONSTRUCTION WORK.
- ONCE SUMP PUMPS ARE REMOVED, TRENCHES TO BE FILLED WITH CONCRETE TO MATCH ADJACENT GRADE AND SURFACE CONDITION OF THE TOW TANK.
- SUMP PUMP CONCRETE POURS TO BE DONE IN LIFTS THAT DO NOT EXCEED 300mm DEPTH. THE LAST TOP 300mm DEPTH CONCRETE POUR TO BE REINFORCED 15M@300 O/C BOTH WAYS AND EPOXY DOWELED IN EXISTING CONCRETE WITH 360mm EMBEDMENT.
- CONTRACTOR TO REFER TO NRC TOWING TANK WAVE MAKER REPLACEMENT-SAFETY NOTES FOR CONFINED SPACE ENTRY PROCEDURES, FALL PROTECTION, OVERHEAD CRANE/RIGGING, SCAFFOLD/STAGES/PLATFORMS, WORKING OVER WATER AND HAZARD PREVENTION.

CONCRETE REPAIR NOTES

SPALLED AND DELAMINATED CONCRETE/PATCH REPAIR: GENERAL

- PATCHING OF SPALLED CONCRETE, POT HOLES OR RUTS SHALL BE DONE WITH AN APPROVED PATCHING COMPOUND IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS FOR SURFACE PREPARATION, MIXING, APPLICATION, CURING AND OTHER STEPS AS RECOMMENDED BY THE MANUFACTURER.
- PATCH REPAIR SHALL INCORPORATE EMBEDDED GALVANIC ANODES TO MITIGATE INCIPENT ANODE FORMATION (HALO EFFECT) IN PATCH REPAIR WHERE REBAR IS EXPOSED FOR REPAIR.

PROCEDURE

- REMOVE LOOSE AND CRACKED CONCRETE AND CHIP LIGHTLY TO EXPOSE COMPETENT AND SOUND CONCRETE SURFACE.
- SAW CUTTING THE PERIMETER OF THE REPAIR LOCATIONS TO AVOID FEATHER EDGING OF PRODUCT.
- WHERE REINFORCING BARS ARE EXPOSED DUE TO DELAMINATION OF CONCRETE, CHIP AWAY 25mm OF CONCRETE LOCALLY ALL AROUND TO EXPOSE BARS IN ACCORDANCE WITH GOOD CONCRETE REPAIR PRACTICES SUCH AS ICRI GUIDELINE R310. 1R.
- REMOVE LOOSE SCALES AND GRIND TO EXPOSE CLEAN SURFACES OF BARS.
- REMOVE DUST PARTICLES WITH COMPRESSED AIR.
- CONTRACTOR TO INCLUDE COSTS IN BID SUCH THAT SIKa OR APPROVED EQUAL TECHNICAL SERVICE REPRESENTATIVE IS ON SITE TO OVERSEE THE ENTIRE APPLICATION. REPAIR PROCEDURE STEPS TO BE DISCUSSED WITH TECHNICAL SERVICE REPRESENTATIVE AND CONFIRMED PRIOR TO STARTING REPAIR WORK.
- ANODES AND REPAIR MATERIAL SHOULD BE INSTALLED IMMEDIATELY FOLLOWING PREPARATION AND CLEANING OF THE STEEL REINFORCEMENT.
- WHERE REBAR IS EXPOSED FOR REPAIR PLACE SIKa GALVASHIELD XP ANODES AT PERIMETER OF REPAIR AREA AT SPACING OF 400mm AND FASTEN TO REINFORCEMENT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS OR APPROVED EQUAL.
- PRE-WET THE CHIPPED CONCRETE SURFACES AND ANODES WHERE APPLICABLE WITH CLEAN WATER TO ACHIEVE A SATURATED SURFACE DRY CONDITION. DO NOT SOAK ANODES FOR MORE THAN 20 MINUTES.
- APPLY SIKa TOP ARMATEC 110 EPOCEM BONDING AGENT AND ANTI-CORROSION COATING TO THE CHIPPED CONCRETE SURFACES.
- FOLLOWING THAT, AND BEFORE THE BONDING AGENT DRIES, APPLY SIKa TOP 122 PLUS POLYMER MODIFIED, TROWEL GRADE MORTAR AND FINISH TO MATCH THE SURROUNDING CONCRETE. CLEAN UP AS RECOMMENDED BY THE MANUFACTURER.

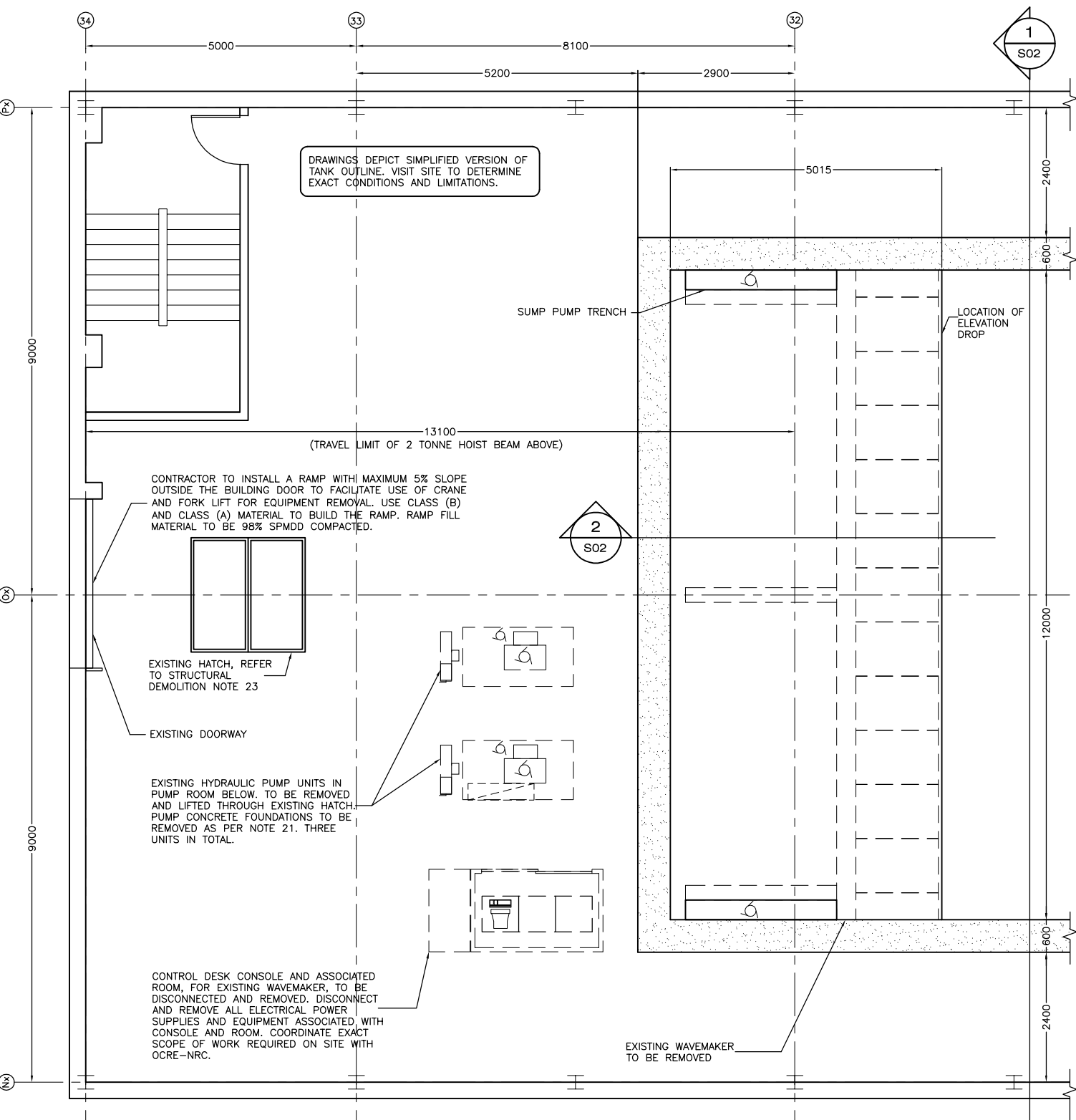
CONCRETE NOTES

- CONCRETE MATERIALS, METHODS OF CONCRETE CONSTRUCTION, INCLUDING FALSEWORK TO MEET LATEST EDITIONS OF CSA STANDARDS.
- CONCRETE TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA STANDARD CAN3-A23.2 "METHODS OF TEST FOR CONCRETE" BY AN INDEPENDENT MATERIALS CONSULTANT, WITH REPORTS SUBMITTED TO THE OWNER'S REPRESENTATIVE.
- UNLESS NOTED OTHERWISE, CONTRACTOR TO TEST CONCRETE FOR EACH DAY'S CONCRETING AND/OR EVERY 40 CUBIC METERS EACH DAY CONCRETING. FORWARD TEST RESULTS TO THE OWNER'S REPRESENTATIVE FOR REVIEW.
- TESTING IS COMPRISED OF A SLUMP TEST, AN AIR ENTRAINMENT TEST, AND 4 TEST CYLINDERS -ONE SITE CURED UNDER THE SAME CONDITIONS AS THE IN-SITU CONCRETE.
- CEMENT SHALL CONFORM TO CSA STANDARD CAN3-A3000 ALL CEMENT SHALL BE TYPE 10 NORMAL PORTLAND CEMENT U.N.O.. CONCRETE SHALL BE MIXED IN ACCORDANCE WITH THE DURABILITY REQUIREMENTS OF CSA STANDARD CAN/CSA-A23.1 CLAUSE 15.
- UNLESS NOTED OTHERWISE ALL CONCRETE SHALL BE MIXED USING NORMAL WEIGHT STONE AGGREGATE WITH A UNIT WEIGHT OF 23.6 kN/m³ (150 PCF) CONFORMING TO THE FOLLOWING TABLE:

LOCATION	CONCRETE STRENGTH (MPa) UNO	MAX. COARSE AGG. SIZE (mm)	SLUMP (mm)	EXPOSURE CLASSIFICATION
CONCRETE SLABS	28 DAY 30	20	75+/-10	C1

- NOTES:**
- WATER/CEMENT RATIOS FOR EXPOSURE CLASSIFICATIONS IN ACCORDANCE WITH CSA CAN3-A23.1 TABLES 11, 12 AND 14.
 - AIR CONTENTS FOR EXPOSURE CLASSIFICATIONS AND MAXIMUM SIZES OF COARSE AGGREGATE IN ACCORDANCE WITH CSA CAN3-A23.1 TABLE 10.
 - CLASSIFICATIONS FOR ALL CONCRETE NOT SPECIFIED IN THIS CHART FOLLOW CSA CAN 3-A23 TABLE 11, 12, AND 14 TO SUIT THE APPLICATION.

- CONCRETE COVER TO REINFORCING TO BE 20mm UNLESS NOTED OTHERWISE ON DRAWINGS.
- NO CALCIUM CHLORIDE IN ANY FORM IS PERMITTED IN ANY CONCRETE MIX. DO NOT USE ADMIXTURES OTHER THAN AIR-ENTRAINMENT, WATER-REDUCER OR SUPERPLASTICIZERS WITHOUT THE PRIOR WRITTEN PERMISSION OF THE OWNER'S REPRESENTATIVE.
- CONCRETE SUPPLIER TO SUBMIT PROPOSED MIX DESIGN FOR EACH CLASS OF CONCRETE TO THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO SUPPLYING CONCRETE TO THE JOBSITE.
- THE MATERIAL TESTING CONSULTANT SHALL HAVE THE AUTHORITY AND RESPONSIBILITY TO REJECT ANY CONCRETE DELIVERED TO THE JOBSITE WHICH DOES NOT CONFORM WITH THE DRAWINGS AND SPECIFICATIONS.
- PLACE CONCRETE AS A CONTINUOUS OPERATION STOPPING ONLY AT CONSTRUCTION JOINTS.
- REINFORCING STEEL MUST BE REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO PLACING CONCRETE.
- CLEAN FORMS FROM DEBRIS, HARDENED CONCRETE AND OTHER FOREIGN MATERIALS PRIOR TO POURING CONCRETE.
- USE MECHANICAL VIBRATORS TO COMPACT CONCRETE THROUGHOUT.
- FINS ON CONCRETE SURFACES SHALL BE REMOVED. HONEYCOMBED OR OTHERWISE DEFECTED CONCRETE SHALL BE REMOVED SUFFICIENTLY TO EXPOSE SOUND CONCRETE AND SHALL BE REPAIRED AS DIRECTED BY THE STRUCTURAL CONSULTANT.
- TIMING FOR REMOVAL OF FORMWORK TO BE BASED ON STRENGTH OF CONCRETE, AS DETERMINED BY THE TESTING OF FIELD CURED CONCRETE CYLINDERS. DO NOT REMOVE FORMWORK BEFORE CONCRETE HAS REACHED 50% OF ITS DESIGN STRENGTH.
- PLACING CURING AND PROTECTION OF CONCRETE TO BE CARRIED OUT IN ACCORDANCE WITH CAN/CSA-A23.1.
- NEW CONCRETE IS NOT TO BE SUBJECT TO LOADING UNTIL THEY REACH THEIR SPECIFIED COMPRESSIVE DESIGN STRENGTH OR AFTER 28 DAYS.



REINFORCING NOTES

- PROVIDE CLASS B TENSION LAP SPLICES AS PER CSA A23.3 LATEST EDITION FOR ALL REINFORCING STEEL U.N.O.
- LAP HORIZONTAL BARS 36 BAR DIAMETERS AND PROVIDE CORNER BARS AND VERTICAL DOWELS TO MATCH HORIZONTAL AND VERTICAL STEEL, UNLESS NOTED OTHERWISE.
- ALL REINFORCING MATERIALS SHALL BE NEW AND FREE FROM DIRT, OIL, MILL SCALE OR EXCESSIVE RUST.
- USE BILLET-STEEL REINFORCING BARS CONFORMING TO CAN/CSA-G30.18, GRADE 500W. ALL REINFORCING BARS SHALL BEAR THE ROLLED-IN GRADE IDENTIFICATION MARKS.
- PROVIDE CHAIRS, BOLSTERS, BAR SUPPORTS AND SPACERS WITH SUFFICIENT STRENGTH TO SUPPORT THE REINFORCING STEEL AND WELDED WIRE FABRIC UNDER NORMAL CONSTRUCTION CONDITIONS.
- SPACING AND CONCRETE COVER TO REINFORCEMENT, IF NOT SHOWN ON ENGINEERING DRAWINGS, SHALL CONFORM TO CSA A23.1, CSA A23.3.
- DO NOT USE THE PRACTICE OF 'HOOKING UP' REINFORCING BARS OR WIRE MESH TO OBTAIN THE SPECIFIED COVER.
- FIELD BENDING OF REINFORCING BARS IS NOT PERMITTED, UNLESS AUTHORIZED BY CONTRACTOR.
- ALL REINFORCING STEEL SHALL BE DETAILED, FABRICATED AND SUPPORTED IN ACCORDANCE WITH CSA A23.1 LATEST EDITION.
- TACK WELDING OF REINFORCING BARS TO INCREASE THEIR STIFFNESS DURING PLACING OR TRANSPORT IS NOT ALLOWED. WELDING OF SPLICES TO REDUCE BOND LENGTH OF LAPPED BARS IS NOT ALLOWED. WHERE WELDING OF REINFORCEMENT IS REQUIRED AND PRE-APPROVED BY ENGINEER, IT SHALL BE DONE IN STRICT ACCORDANCE WITH CSA W186.

**EXISTING CLEARWATER TANK
PART PLAN - MAIN LEVEL**
SCALE: NTS

- NOTES:**
- CONTRACTOR TO VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS ON-SITE. ANY DISCREPANCIES AND/OR UNSATISFACTORY CONDITIONS SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
 - DO NOT SCALE FROM THE DRAWINGS.
 - COORDINATE FULL EXTENT OF DEMOLITION ON-SITE AND WITH WORK OF OTHER TRADES.
 - USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.

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B	ISSUED FOR 99% REVIEW	30/06/17	SB
A	ISSUED FOR REVIEW	02/06/17	SB

REVISIONS

NO.	DESCRIPTION	DATE	BY
A	DETAIL NO.		
B	SHEET SIZE		
C	REFERENCE SHEET		

STAMP

PROVINCE OF NEWFOUNDLAND AND LABRADOR
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 MADERRA ENGINEERING
 To practice Professional Engineering in Newfoundland and Labrador.
 Permit No. as issued by PEG 2023
 which is valid for the year 2017
 by Permit Holder (MRC No.) 03064

MOHAMED A.A. HOSSIN
 SIGNATURE
 25-JULY-2017
 DATE
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OWNER

NRC-CMTC

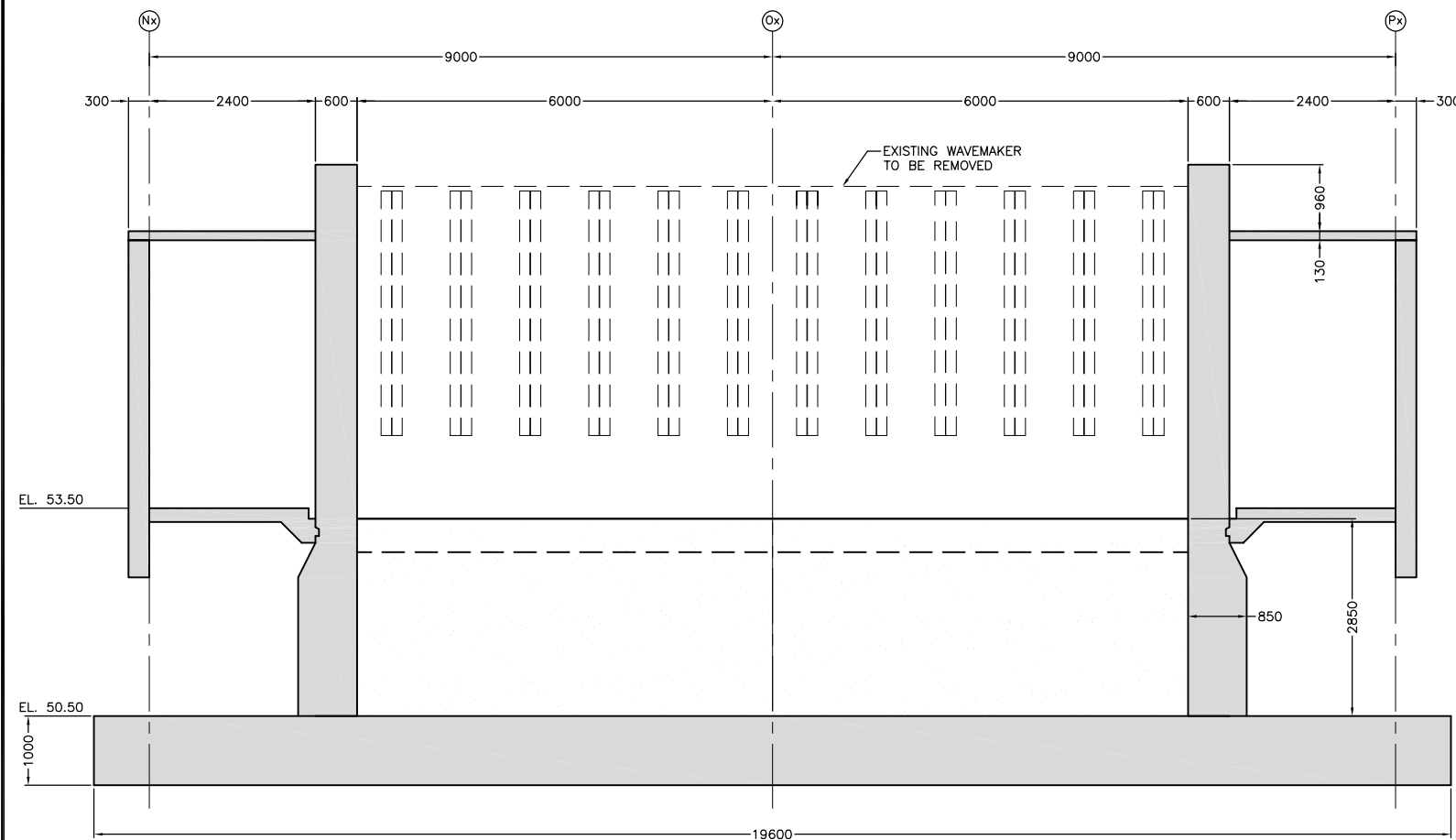
PROJECT

**NEW SEGMENTED WAVE
GENERATOR
CLEARWATER TANK**
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING

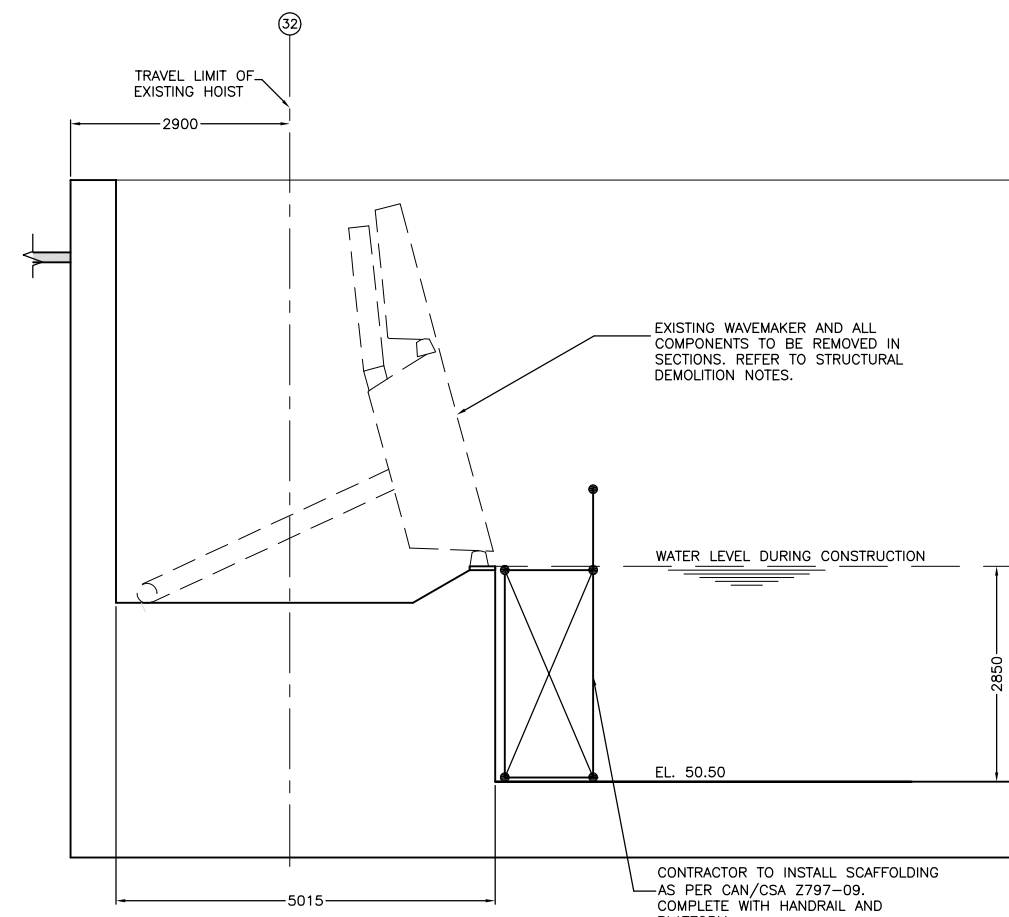
**CLEARWATER TANK
MAIN LEVEL
(DEMOLITION)**

DRAWN BY	CHECKED BY	APPROVED BY	
SB	MH	MH	
PROJECT NO.	DWG. FILE NO.	FILE NO.	
NRC012			
DATE	SCALE	DRAWING NO.	REV.
JULY 2017	AS SHOWN	IMC0168-S01	0



SECTION 1
SCALE: NTS

1
S02



SECTION 2
SCALE: NTS

2
S02

- NOTES:
1. THE TANK WILL BE DRAINED TO ALLOW FOR THE SCAFFOLD INSTALLATION AND CERTIFICATION.
 2. SCAFFOLD TO BE ANCHORED AND SECURED TO ALLOW FOR THE FILL UP OF THE TANK WITH WATER TO 2.85m.
 3. SCAFFOLD STRUCTURE TO COVER THE FULL INTERIOR WIDTH OF THE TANK (12.0m).

- NOTES:
1. CONTRACTOR TO VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS ON-SITE. ANY DISCREPANCIES AND/OR UNSATISFACTORY CONDITIONS SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
 2. DO NOT SCALE FROM THE DRAWINGS.
 3. COORDINATE FULL EXTENT OF DEMOLITION ON-SITE AND WITH WORK OF OTHER TRADES.
 4. USE EXTREME CAUTION WHEN WORKING INSIDE FACILITY TO PREVENT DAMAGE. ANY AND ALL DAMAGE RESULTING FROM THIS WORK SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND BE REPAIRED AS SOON AS POSSIBLE.

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C	C - REFERENCE SHEET	

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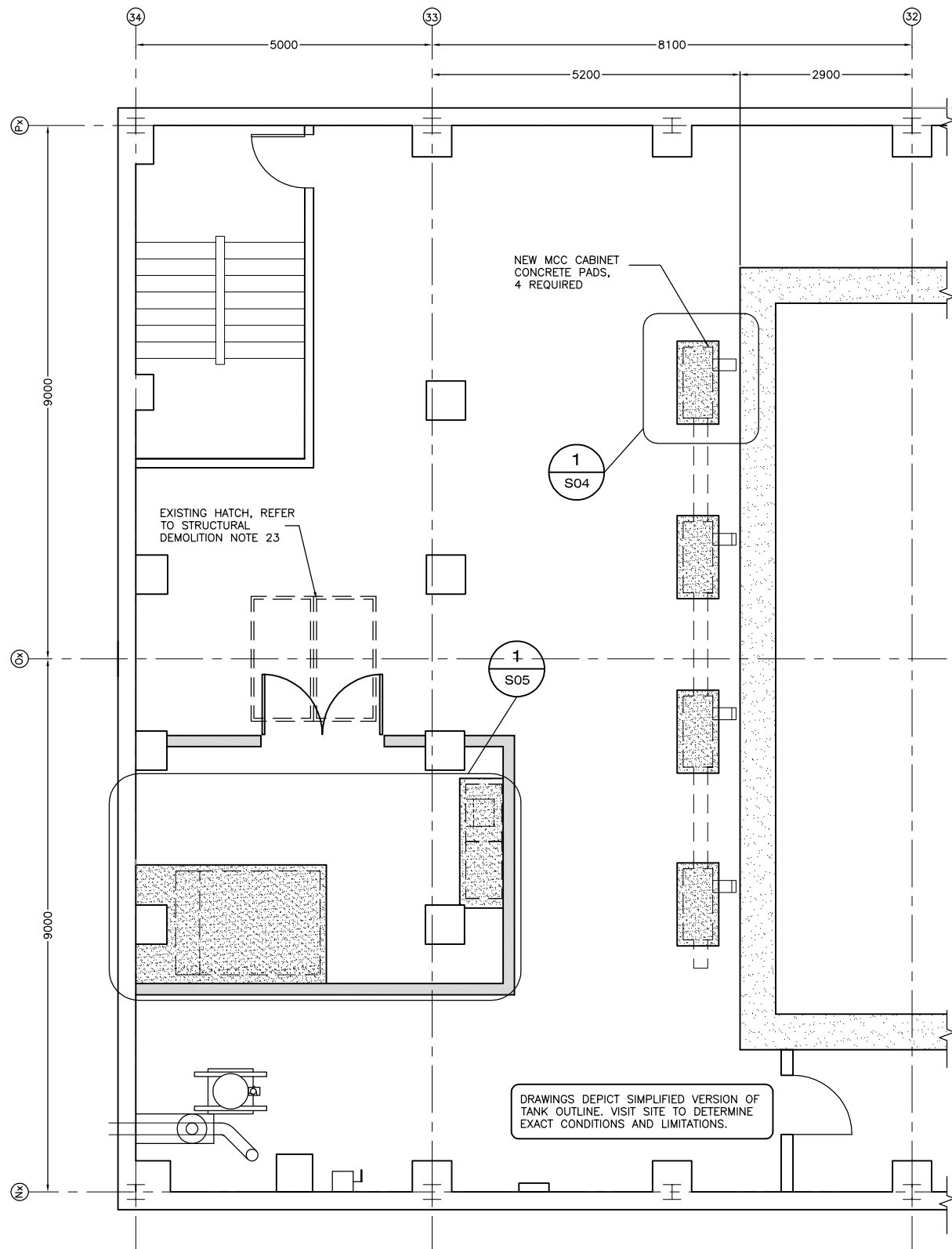
PROJECT

NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

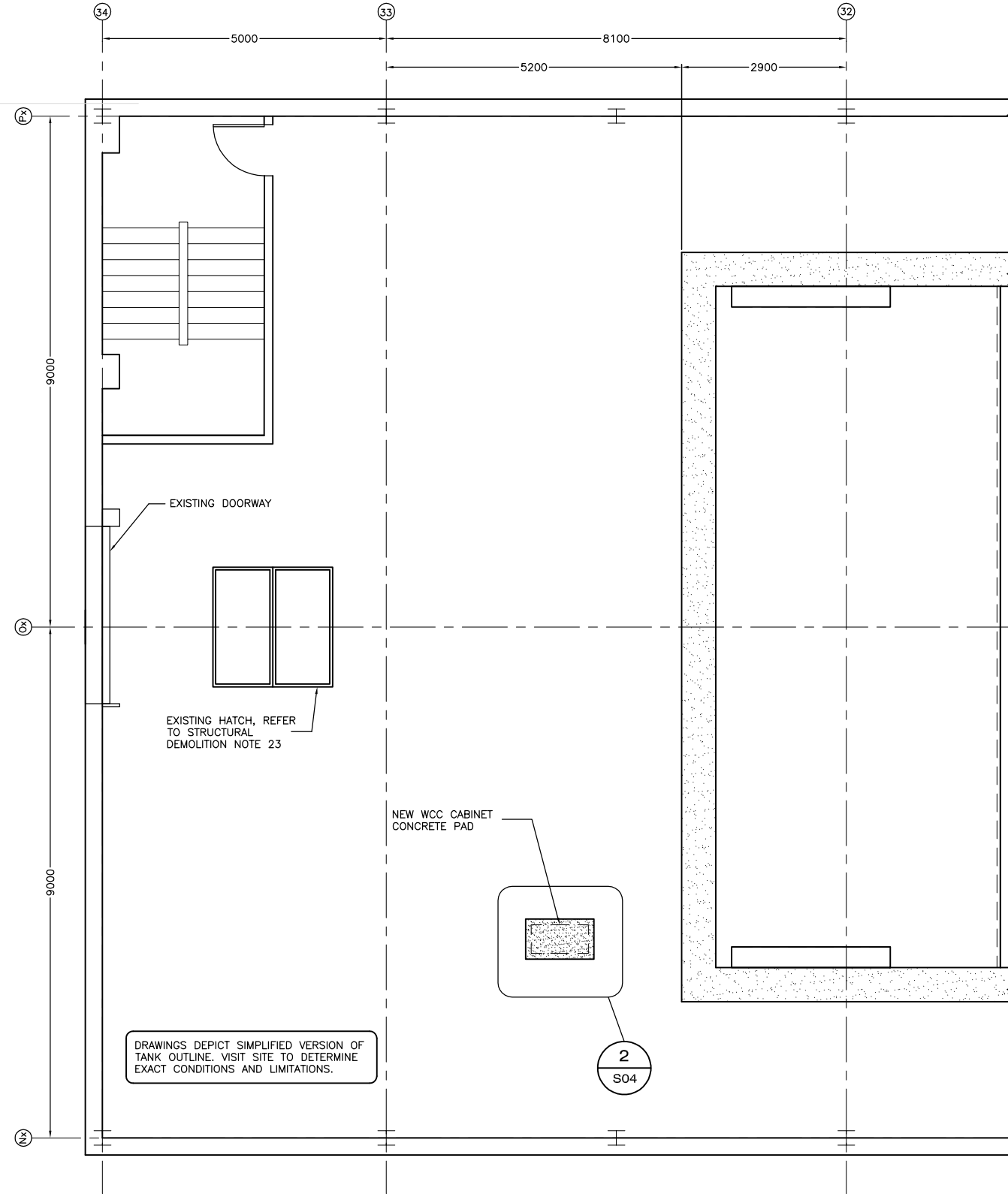
DRAWING

CLEARWATER TANK MAIN LEVEL (DEMOLITION) SECTIONS

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PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-S02
		REV. 0



NEW CLEARWATER TANK PART PLAN – BASEMENT
SCALE: NTS



NEW CLEARWATER TANK PART PLAN – MAIN LEVEL
SCALE: NTS

- NOTES:
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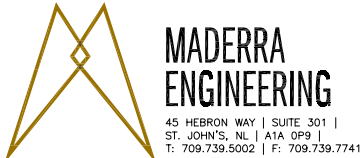
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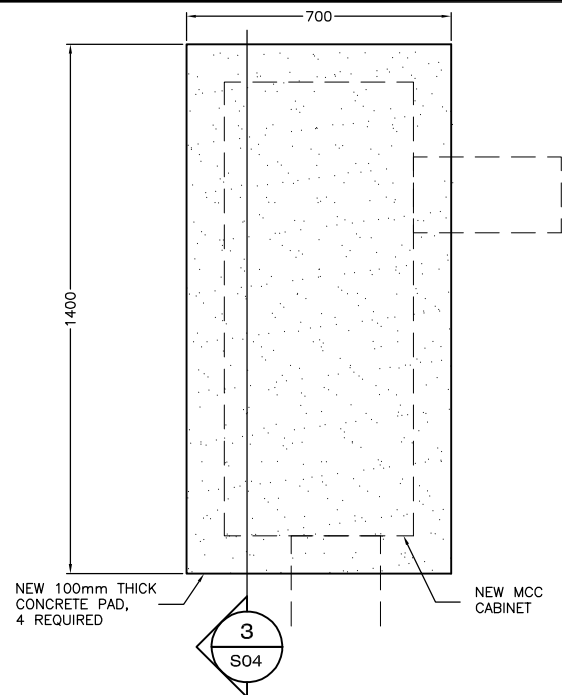
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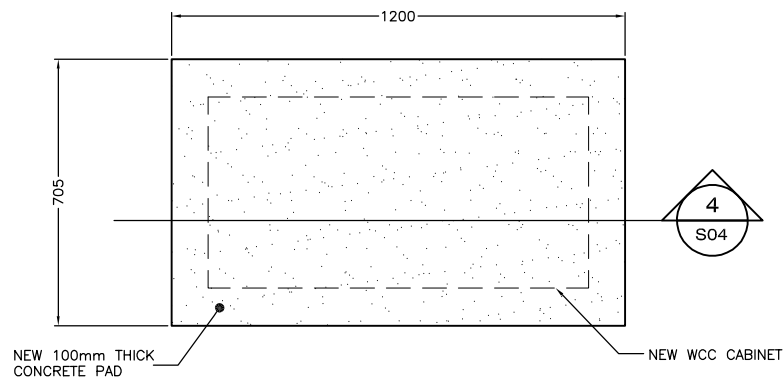
PROJECT
**NEW SEGMENTED WAVE
GENERATOR
CLEARWATER TANK**
NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING
**CLEARWATER TANK
BASEMENT LEVEL
(NEW CONDITIONS)**

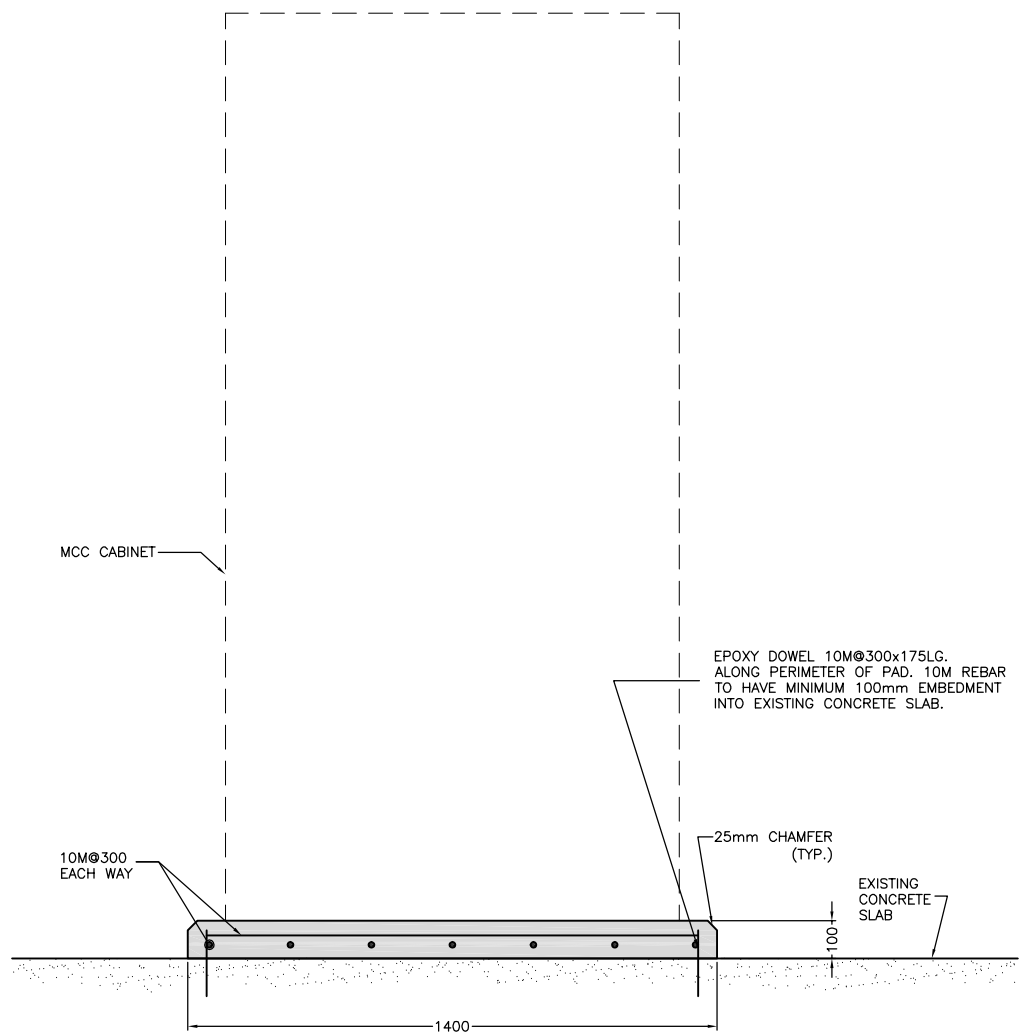
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DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-S03
		REV. 0



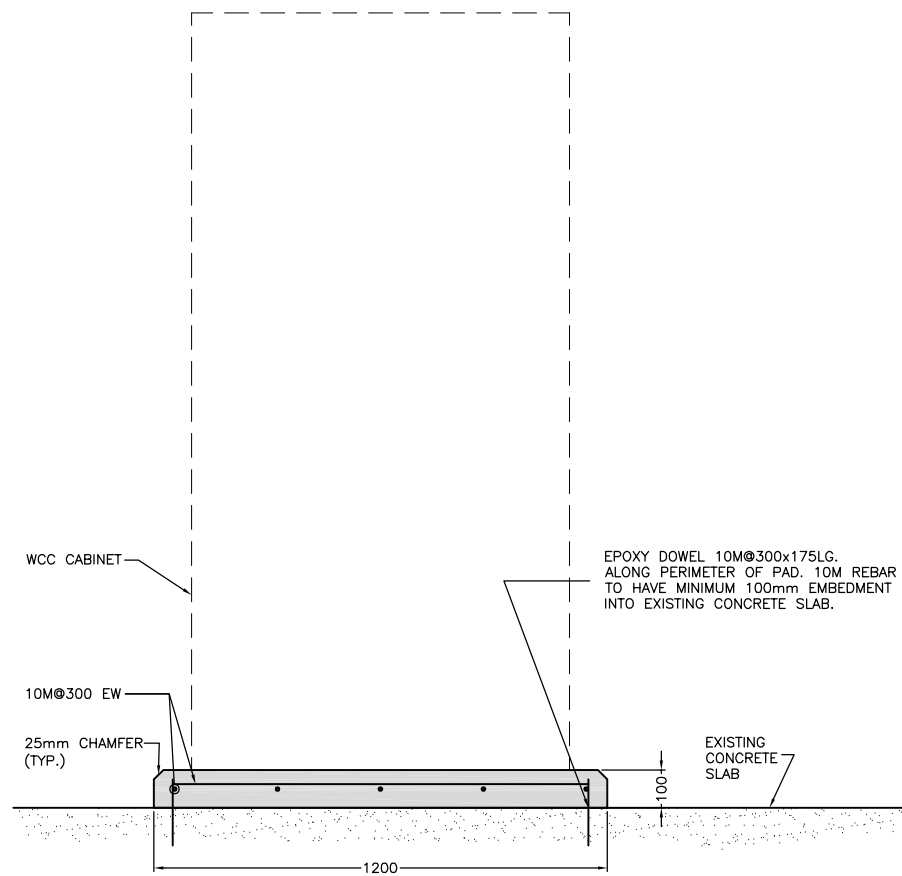
MCC CABINET CONCRETE PAD PLAN
SCALE: NTS



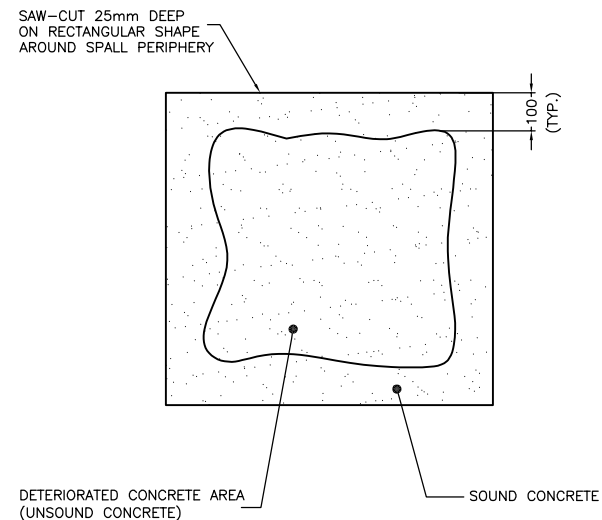
WCC CABINET CONCRETE PAD PLAN
SCALE: NTS



SECTION
SCALE: NTS
NOTE:
1. USE SIKA 35 HI-MOD LV FOR EPOXY DOWELLING 10M STEEL REBAR INTO EXISTING CONCRETE.



SECTION
SCALE: NTS
NOTE:
1. USE SIKA 35 HI-MOD LV FOR EPOXY DOWELLING 10M STEEL REBAR INTO EXISTING CONCRETE.



TYPICAL CONCRETE REPAIR DETAIL
SCALE: NTS

- NOTES:
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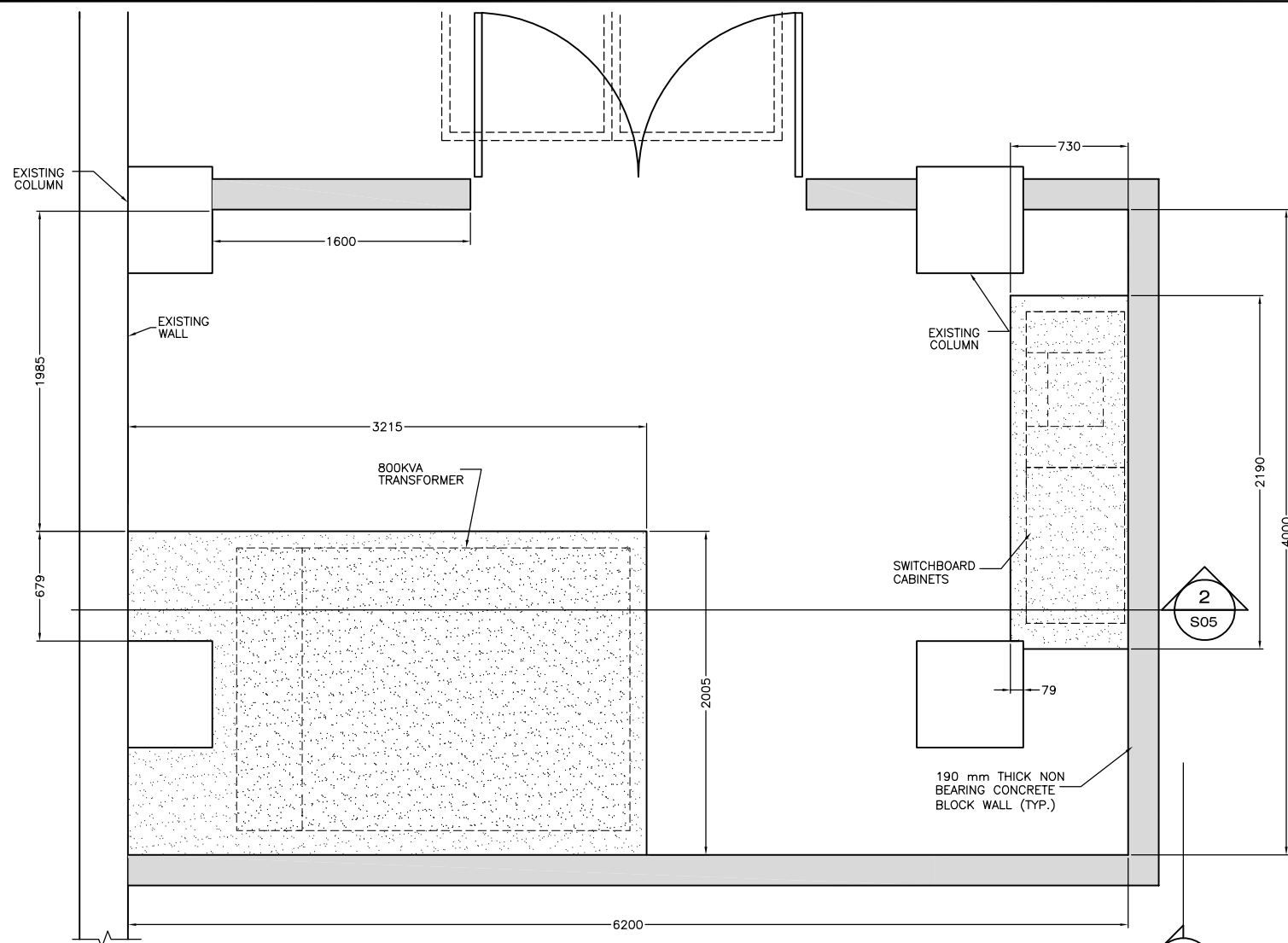
OWNER

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PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

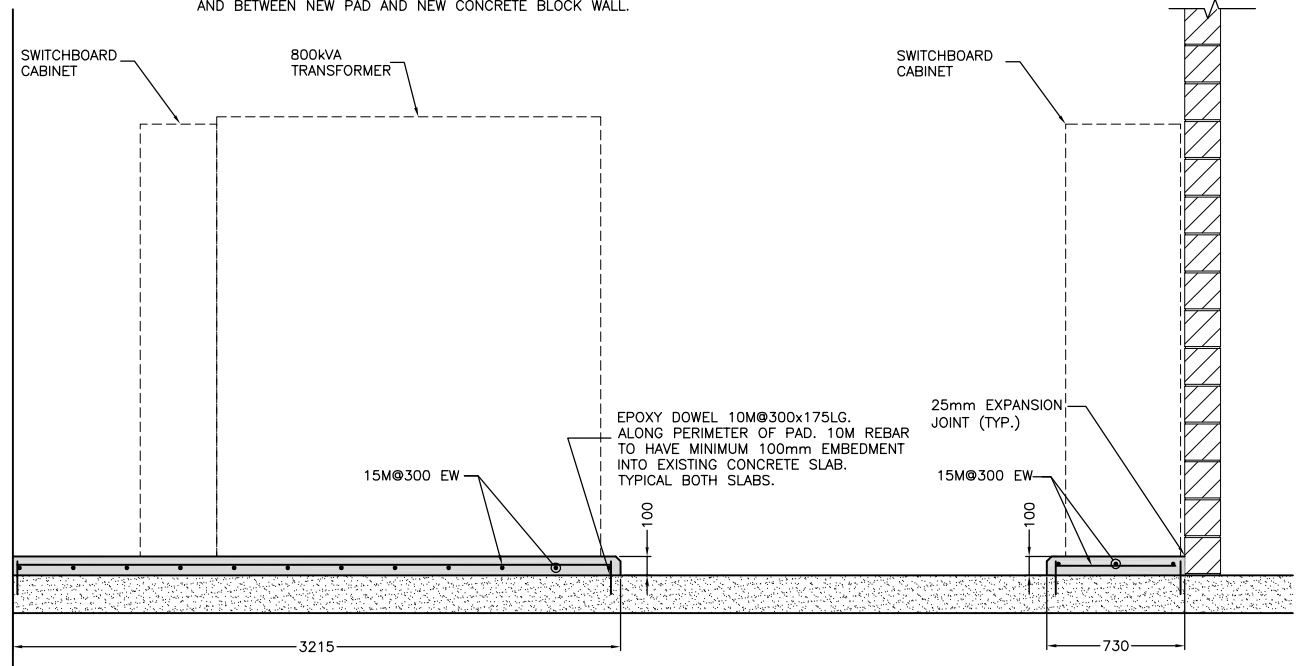
DRAWING
CLEARWATER TANK BASEMENT LEVEL (NEW CONDITIONS) DETAILS

DRAWN BY SB	CHECKED BY MH	APPROVED BY MH
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-S04 REV. 0



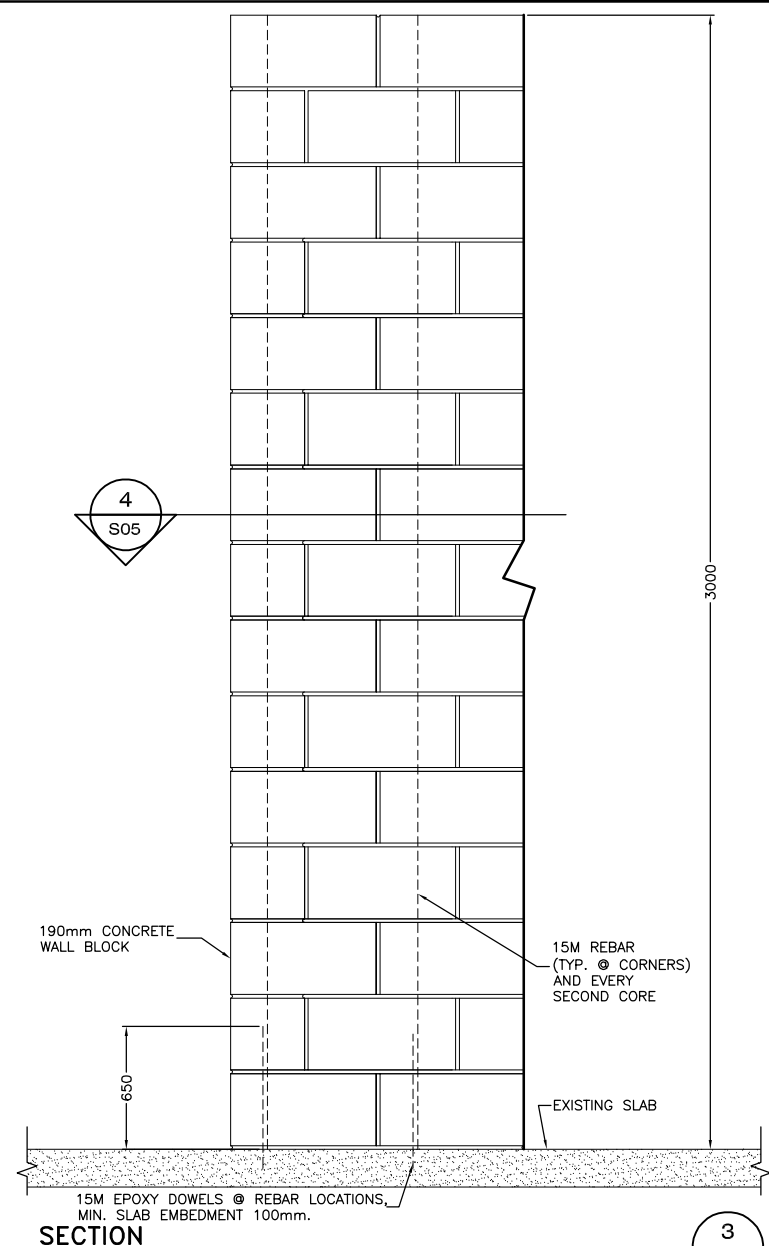
800kVA TRANSFORMER/SWITCHBOARDS CONCRETE PAD PLAN 1 S05

SCALE: NTS
 NOTES: 1. REFER TO ARCHITECTURAL SPECIFICATION FOR DOORS AND FINISHES DETAIL.
 2. CONTRACTOR TO INSTALL EXPANSION JOINT BETWEEN NEW PADS AND EXISTING STRUCTURE AND BETWEEN NEW PAD AND NEW CONCRETE BLOCK WALL.



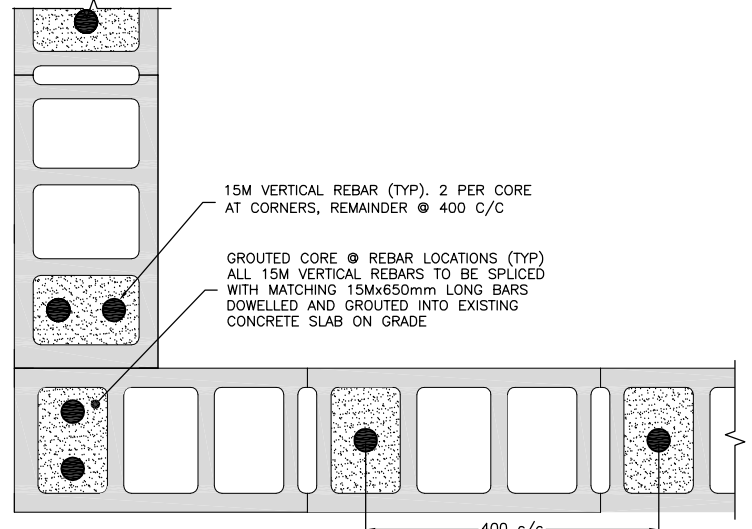
SECTION 2 S05

SCALE: NTS
 NOTE: 1. USE SIKA 35 HI-MOD LV FOR EPOXY DOWELLING 15M STEEL REBAR INTO EXISTING CONCRETE.



SECTION 3 S05

SCALE: NTS
 NOTES: 1. OVER THE DOOR USE 3 COURSE 600 HIGH LINTEL, 2-20M TOP & BOTTOM. 1 LEG 15M STIRRUP @ 200 O/C. EXTEND REINFORCING CAGE AT LEAST 400 (TWO VOIDS) PAST OPENINGS.
 2. ALL MASONRY WORK SHALL COMPLY WITH S304.



SECTION 4 S05

SCALE: NTS
 NOTE: 1. USE SIKA 35 HI-MOD LV FOR EPOXY DOWELLING 15M STEEL REBAR INTO EXISTING CONCRETE.

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STAMP
 PROFESSIONAL ENGINEER
MOHAMED A.A. HOSSAIN
 25-JULY-2017
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NRC-CARC

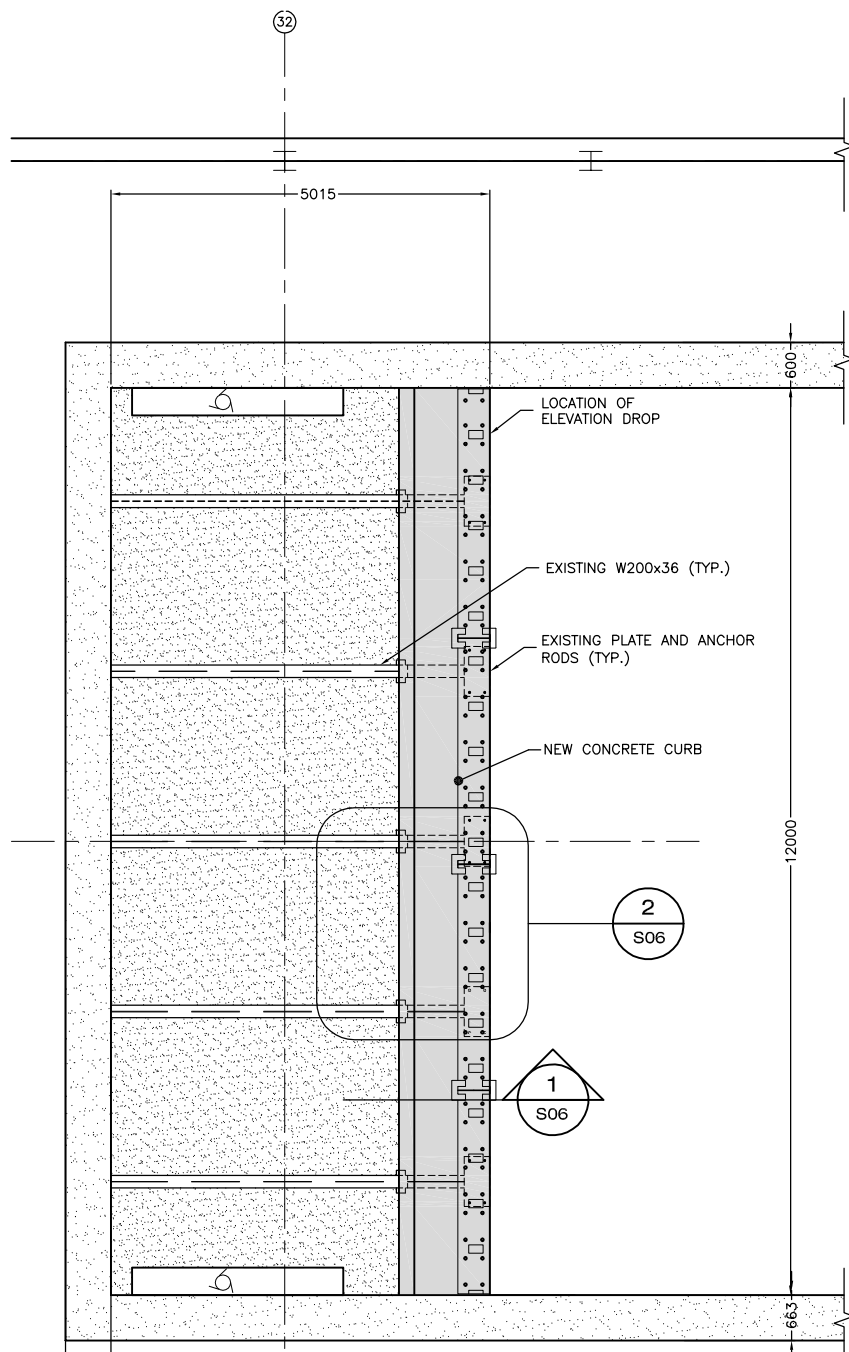
PROJECT

NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
 NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

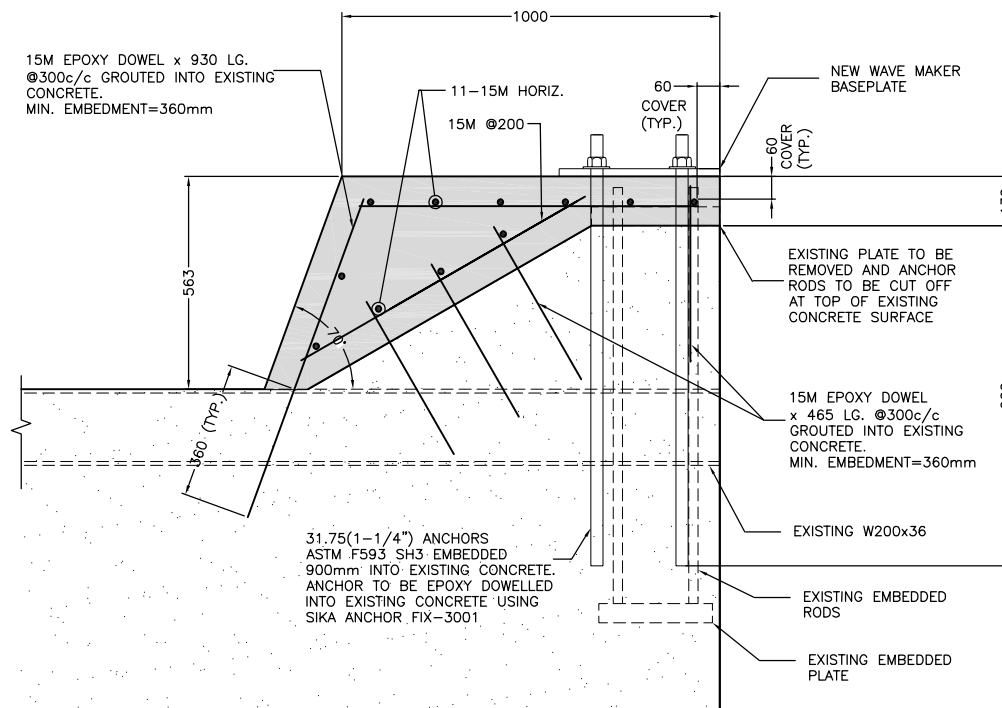
DRAWING

CLEARWATER TANK BASEMENT LEVEL (NEW CONDITIONS) DETAILS

DRAWN BY SB	CHECKED BY MH	APPROVED BY MH
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-S05
		REV. 0

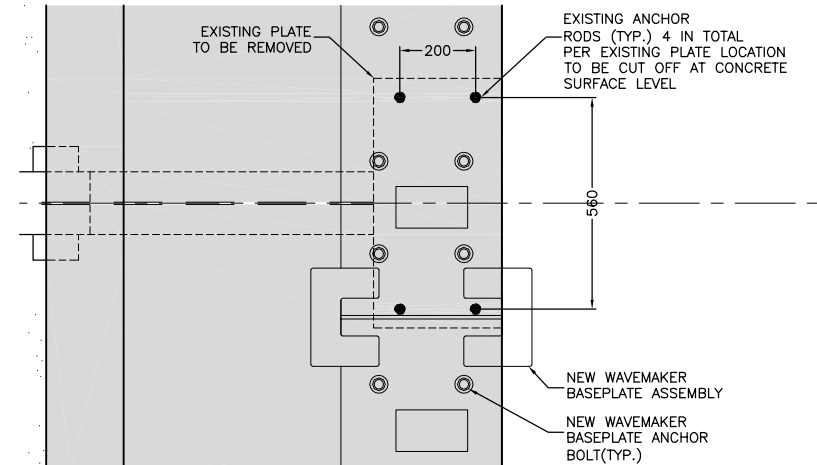


NEW CONCRETE CURB LAYOUT
SCALE: NTS



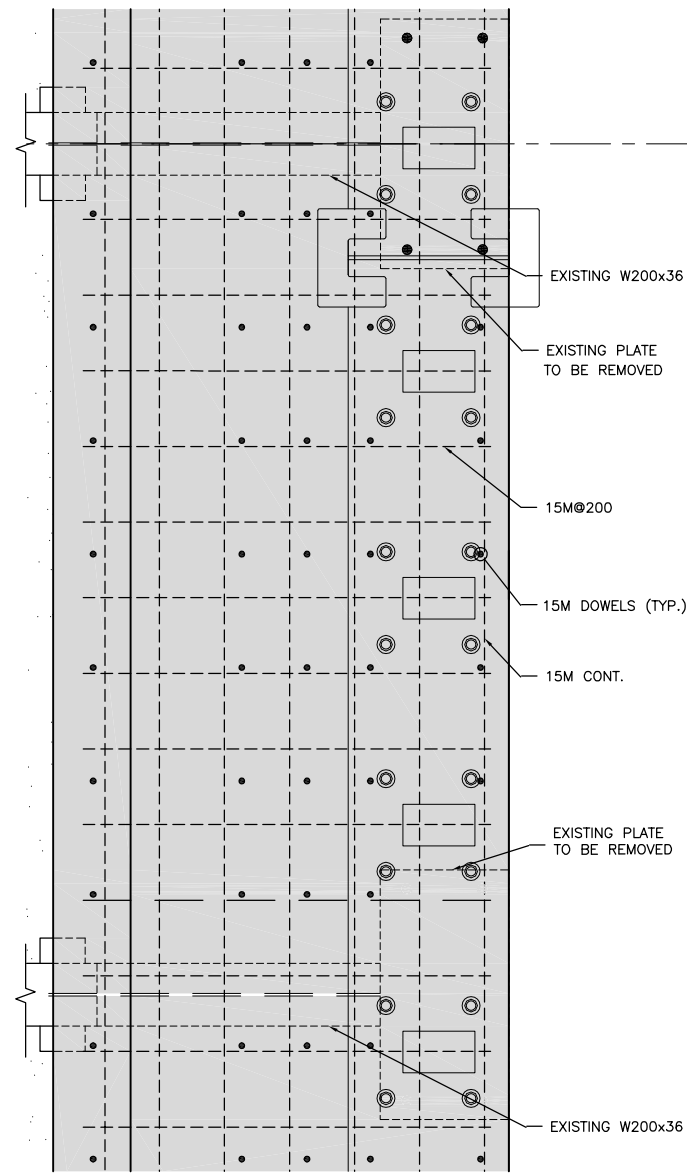
NEW CONCRETE CURB SECTION

- SCALE: NTS
NOTE: 1. CONTRACTOR TO REFER TO SIKA ANCHOR FIX-3001 GUIDE FOR INSTALLATION PROCEDURE.
2. CONTRACTOR TO USE SIKA ANCHOR FIX-3001 FOR EPOXY DOWELLING THE NEW WAVE MAKER 31.75mm DIAMETER BASE PLATE ANCHORS.
3. CONTRACTOR TO USE SIKA 35 HI-MOD LV FOR ALL NEW STEEL REBAR (15M) EPOXY DOWELLING INTO EXISTING CONCRETE. REFER TO PRODUCT MANUAL FOR INSTALLATION INSTRUCTIONS



TYPICAL ANCHOR BOLT LAYOUT DETAIL

- SCALE: NTS
NOTE: 1. REBAR OMITTED FOR CLARITY.
2. NEW WAVEMAKER BASEPLATE DIMENSIONS AND ANCHOR LOCATIONS ARE APPROXIMATE. CONSTRUCTION CONTRACTOR TO COORDINATE AND CONFIRM WITH NRC PRIOR TO INSTALLATION OF THE ANCHOR BOLTS. ANCHOR BOLT INSTALLATION SHOULD BE BASED ON LATEST DRAWING REVISION ISSUED FOR FABRICATION.



TYPICAL REBAR LAYOUT DETAIL

- NOTES:
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NO.	DESCRIPTION	DATE	BY
0	ISSUED FOR TENDER	25/07/17	SB
A	ISSUED FOR 99% REVIEW	30/06/17	SB

REVISIONS

A	A - DETAIL NO.	A
B	B - SHEET SIZE	B/C
C	C - REFERENCE SHEET	

PROVINCE OF NEWFOUNDLAND AND LABRADOR
PERMIT HOLDER
THIS PERMIT ALLOWS
MADERRA ENGINEERING
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by PEG 20233
which is valid for the year 2017
by Permit Holder (MIRC No.) 20254

STAMP
PROFESSIONAL ENGINEER
MOHAMED A.A. HOSSAIN
25-JULY-2017
NEWFOUNDLAND & LABRADOR

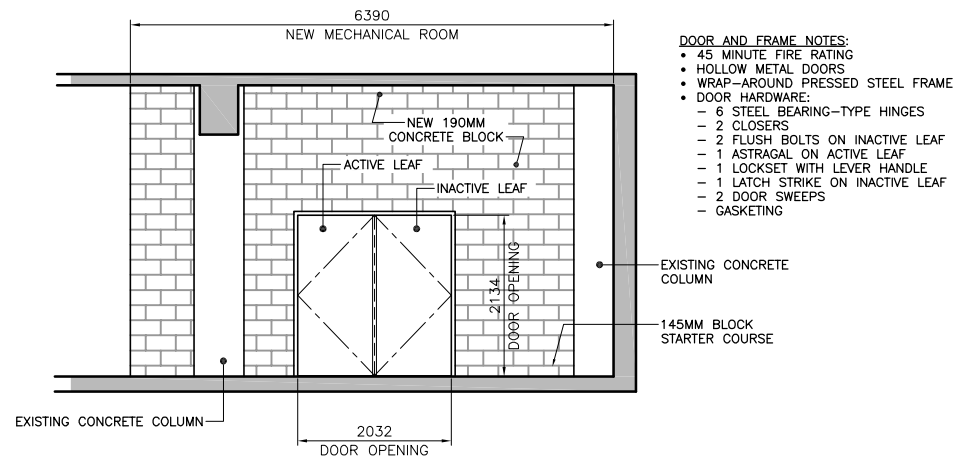
PRIME CONSULTANT
MADERRA ENGINEERING
45 HEBRON WAY | SUITE 301 |
ST. JOHN'S, NL | A1A 0P9 |
T: 709.739.5002 | F: 709.739.7741 |

OWNER
NRC-CRC

PROJECT
NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

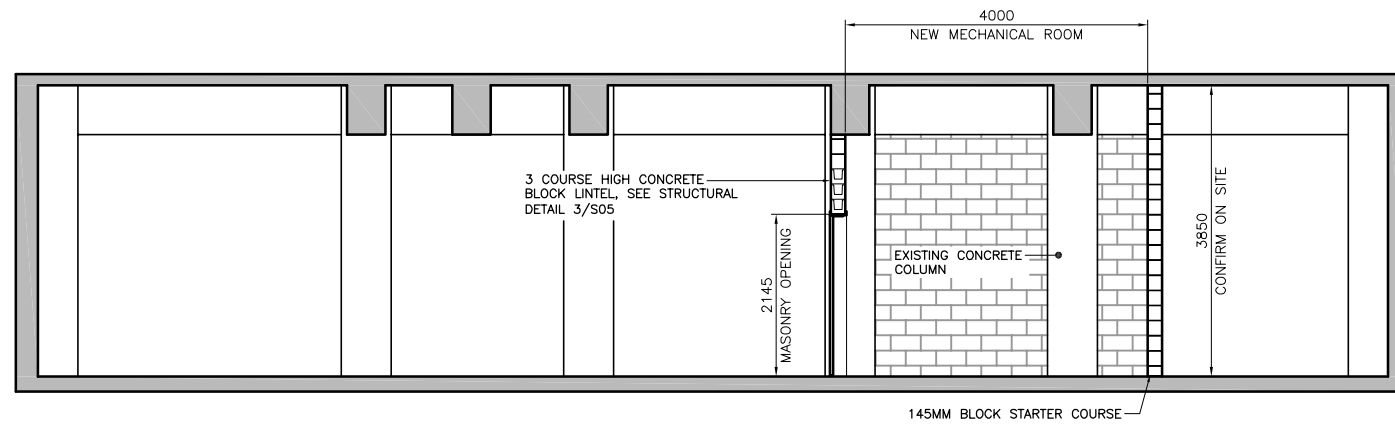
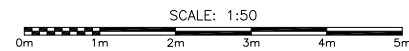
DRAWING
CLEARWATER TANK MAIN LEVEL NEW CONCRETE CURB DETAILS

DRAWN BY SB	CHECKED BY MH	APPROVED BY MH
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-S06
		REV. 0

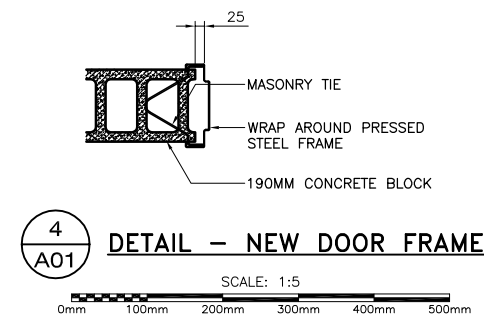
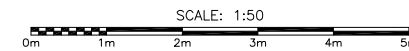


- DOOR AND FRAME NOTES:**
- 45 MINUTE FIRE RATING
 - HOLLOW METAL DOORS
 - WRAP-AROUND PRESSED STEEL FRAME
 - DOOR HARDWARE:
 - 6 STEEL BEARING-TYPE HINGES
 - 2 CLOSERS
 - 2 FLUSH BOLTS ON INACTIVE LEAF
 - 1 ASTRAGAL ON ACTIVE LEAF
 - 1 LOCKSET WITH LEVER HANDLE
 - 1 LATCH STRIKE ON INACTIVE LEAF
 - 2 DOOR SWEEPS
 - GASKETING

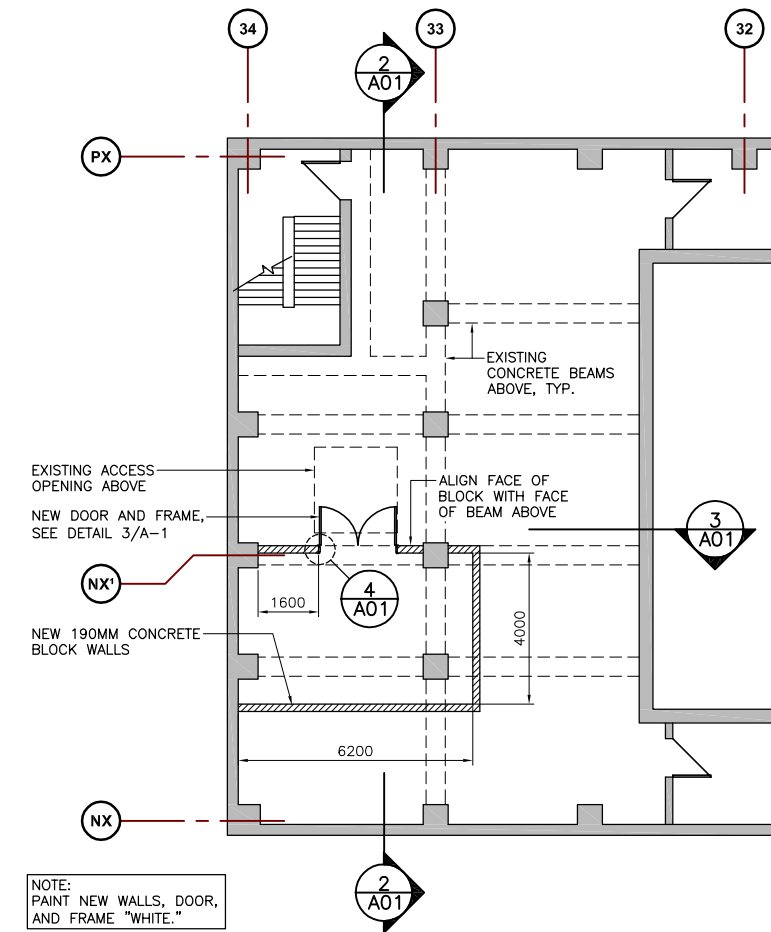
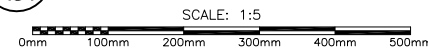
3
A01 SECTION - NEW SEGMENTED WAVE GENERATOR MCC ROOM



2
A01 SECTION - NEW SEGMENTED WAVE GENERATOR MCC ROOM

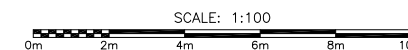


4
A01 DETAIL - NEW DOOR FRAME



NOTE:
PAINT NEW WALLS, DOOR,
AND FRAME "WHITE."

1
A01 PART PLAN - NEW SEGMENTED WAVE GENERATOR MCC ROOM

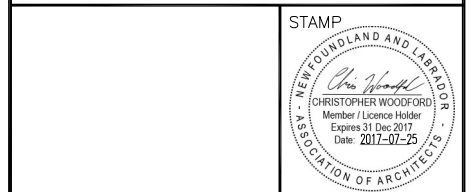


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O	ISSUED FOR TENDER	25/07/17	CW
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A	ISSUED FOR REVIEW	02/06/17	CW

REVISIONS

NO.	DESCRIPTION	DATE	BY
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709 753 7917
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OWNER

PROJECT

NEW SEGMENTED WAVE GENERATOR CLEARWATER TANK
NATIONAL RESEARCH COUNCIL, ST. JOHN'S, NL

DRAWING

PART PLAN SEGMENTED WAVE GENERATOR MCC ROOM

DRAWN BY	CHECKED BY	APPROVED BY
CGP	CW	CW
PROJECT NO. NRC012	DWG. FILE NO.	FILE NO.
DATE JULY 2017	SCALE AS SHOWN	DRAWING NO. IMC0168-A01
		REV. 0