

ADDENDUM NO. 1

**PROJECT: City of Traverse City Regional WWTP Design-Build Solar  
Photovoltaic/Battery Energy Storage System (PV/BESS)**

**BIDS DUE: Friday November 8, 2024 at 1:00 pm.**

This Addendum is issued prior to receipt of bids to provide for certain changes and clarifications to the Specifications and/or the Drawings, as herein specified, and is hereby made a part of the Contract Documents and shall be taken into consideration in preparing the Proposal. All other conditions remain the same.

Receipt of this addendum must be noted in the place provided on the Bid Form and dated **November 4, 2024.**

**Pre-Bid Meeting and Site-Walk Notes:**

The pre-bid meeting was held at 12:00pm on October 29 at the Traverse City WWTP Administration Building. Art Krueger, Director of Municipal Utilities for the City of Traverse City provided a detailed overview of the contractual requirements of this RFP, reiterating the bid due date and other conditions as spelled out in the RFP. This was followed by Tony Kingman, Solar Project Manager for Jacobs Engineering, who provided a detailed overview of the solar and BESS scope of work. This was followed by a site tour to walk each solar PV roof location and electrical room as well as the BESS location and interconnection point. There was a sign-in sheet for the Pre-Bid meeting see **Attachment A**.

Questions were asked by the bidders during this meeting. Some questions and answers may have been missed and bidders were requested to submit all their questions in writing. Below, are the questions and answers that were captured in our notes during the meeting as well as all the questions submitted by bidders.

**Clarification 1:** The TCRWWTP membrane filtration process cannot be without power for any duration of time. Therefore, any solar power connections related to the Membrane Building or Boardman Boathouse building will need to be thoroughly vetted to ensure power remains at the membrane process. There is a separate MCC panel located on the North wall in the electrical room of the membrane building that may meet the needs of the solar connections and won't interfere with the operation of the membrane, if capacity is confirmed. See **Attachment B** for Membrane Building electrical drawing.

**Clarification #2:** Drawing SO-105 should be titled "Boiler Building", not "Digester #5".

**Clarification #3:** The BESS is 1.75MW. There are numerous places in the RFP where it states 1.75kW. This is incorrect.

**Clarification #4:** Lump Sum pricing per location is required on bid form. Unit pricing as described in MDOT Spec. Section 818.04 Electrical is NOT required

- Question 1:** Can we please get the electrical interval data from TCLP?  
**Answer 1:** The electrical interval data is attached to this addendum is located [HERE](#)
- Question 2:** Is this project tax exempt?  
**Answer 2:** No
- Question 3:** Who holds the roof warranty for Maintenance Building #2?  
**Answer 3:** Certain Teed, Warranty Registration Number WR-920069; Roof installed 10/26/22. See attached Roof Warranty document see **Attachment C**.
- Question 4:** The BESS is not used for backup power?  
**Answer 4:** Confirmed; however, the BESS is to be “upgrade capable” to provide backup power at a later date (not part of this contract).
- Question 5:** Is the solar/BESS connected to the plants Building Management System (BMS)?  
**Answer 5:** Yes, to monitor power generated only; not for controls.
- Question 6:** Can PV modules/equipment vary from documents in RFP?  
**Answer 6:** Yes, but must meet “or equal” requirement.
- Question 7:** Is there a “domestic content” requirement? (Made in America)  
**Answer 7:** No
- Question 8:** Can the solar/BESS connect to the on-site Wi-Fi?  
**Answer 8:** No. Separate Wi-Fi will be required and provided by PV provider for all required communications.
- Question 9:** As printed, the time for completion doesn’t align 204 days from NTP to July 1<sup>st</sup> means NTP would need to be issued Nov 3<sup>rd</sup>, before bid due date. Please advise, if possible should we simply adhere to July 1<sup>st</sup> ? Due to long lead items (BESS), can the July 1, 2025 deadline be extended?  
**Answer 9:** This Grant Funding deadline may be extended for due cause.
- Question 10:** What is the match split between the grant and the City?  
**Answer 10:** There is a 10% city matching funds.
- Question 11:** Is the BESS located outdoors?  
**Answer 11:** Yes
- Question 12:** Are there any combustion generators on-site?  
**Answer 12:** No
- Question 13:** Plan set calls out the 120% rule, does this mean that only load-side backfed breaker interconnections will be accepted? Some of these panelboards are not suitable for this type of connection and a different section of 705.12 would be more applicable.

**Answer 13:** The 120% rule applies where applicable. Section 705.12 is acceptable.

**Question 14:** Relatedly, for 2.3 and similar is it acceptable to interconnect to the existing service ahead of the existing panel?

**Answer 14:** It is acceptable on a case by case basis.

**Question 15:** Pebble ballast will need to be removed for the roofs that feature them in the location where the PV will be located unless they're adhered. Are the pebble roofs sealed or loose? Should our bid include gravel removal in scope?

**Answer 15:** Pebble ballast is loose and bids should include any removal required. It is anticipated that the ballast will be replaced on the roof once the PV array is installed.

**Question 16:** The existing generator connection occurs at a central location? Does the generator only feed very specific loads? Has there been a determination on how to interconnect the solar PV so that it doesn't get placed in parallel with the generator?

**Answer 16:** The generator only feeds specific loads and therefore should not result in being in parallel with the solar PV.

**Question 17:** Associated costs with structural reinforcement if necessary are difficult to determine without additional information. Our typical scope of work would exclude this reinforcement until such time as the roof can be evaluated by a structural engineer. Is it acceptable to exclude this from our system cost upfront, and we can revisit once a structural analysis for each site is conducted?

**Answer 17:** For the purpose of bidding, assume all roofs are structurally adequate to support the solar PV. The Maintenance Building #2 will likely require structural upgrades to support solar PV. As the structural upgrade costs cannot be determined at this time, do not include structural upgrades in your bids.

**Question 18:** Similarly, utility required upgrades cannot be known without an existing net metering agreement. Is it permissible to exclude utility-driven costs for interconnection if necessary from our bid until such time as we can determine these specifically?

**Answer 18:** Yes, Interconnection upgrades required by the utility (if any) may be excluded from bids.

**Question 19:** ASCE 7-22 is beyond the documentation of several leading PV racking manufacturer's current design documents. If the racking to be installed does not have this certification currently, is it acceptable to use a current stamp with a prior version of ASCE?

**Answer 19:** Prior version of ASCE is acceptable with AHJ approval.

**Question 20:** Lightning protection is included as a requirement for each building. Are there existing lightning protection systems installed? And if this is required, would you

like this as an all inclusive price or a separate price for the cost of contracting a licensed LPS contractor?

**Answer 20:** Bid the project assuming lightning protection is required and include in bid price.

**Question 21:** SMA + 585 not compatible as drawn due to input current criteria. Any issues bidding a close alternative?

**Answer: 21:** See response to Question 6.

**Question 22:** As printed, the time for completion doesn't align 204 days from NTP to July 1st means NTP would need to be issued Nov 3rd, before bid due date. Please advise, if possible should we simply adhere to July 1st?

**Answer 22:** Adhere to July 1<sup>st</sup> 2025 deadline or check the box for Substantial Completion Date and provide the date on bid form.

**Question 23:** In the RFP section 7 detailing the performance expectations of the battery it describes island mode, microgrid, and load shedding. When I asked about these requirements at the meeting I was told that these requirements were eliminated, please confirm. Are there any requirements of the battery other than the minimum 1.75 MWH and its connection shown in the one line?

**Answer 23:** The BESS is used for Peak Load Shaving. Also see the response to Question 4.

All other conditions of this bid proposal remains the same.

Bidders must acknowledge receipt of this amendment. Acknowledgement must be shown in the spaces provided herein, and must be received with the proposal submitted to [tcmanage@traversecitymi.gov](mailto:tcmanage@traversecitymi.gov) no later than, **November 8, 2024 @ 1:00 pm EST (local time)**.

**FAILURE TO ACKNOWLEDGE RECEIPT OF THIS ADDENDUM WILL CAUSE REJECTION OF PROPOSAL.**

Dated: \_\_\_\_\_

**ACKNOWLEDGED:**

Bidder: \_\_\_\_\_  
By: \_\_\_\_\_  
Title: \_\_\_\_\_

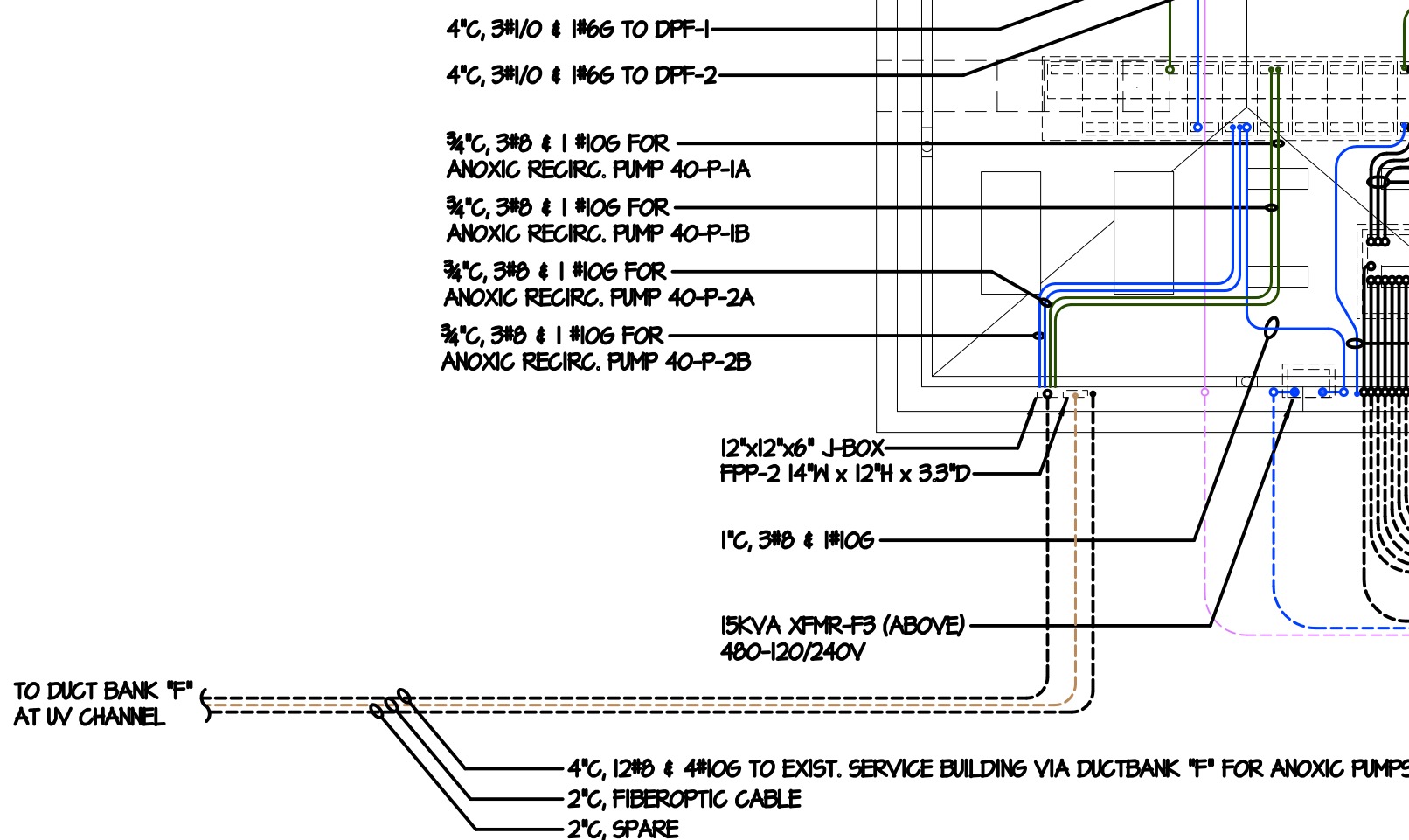
# **ATTACHMENT A**









Meeting Sign-In Sheet	Date:October 29, 2024	Facilitator: City of Traverse City DMU and Jacobs	Project: City of Traverse City Regional WWTOP Design-Build Solar Photovoltaic/Battery Energy Storage System (PV/BESS)	Location of meeting: 606 Hannah Ave. Traverse City, MI 49686
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Name	Title	Company	Phone	Email
Matt Glaz	Director	Commerical Contracting Corporation	586-557-6346	<a href="mailto:matt.glaz@cccnetwork.com">matt.glaz@cccnetwork.com</a>
Mike Terranova	Member	Nova Terra Energy	517-896-8802	<a href="mailto:mike@novaterraenergy.com">mike@novaterraenergy.com</a>
Sachit Verma	Program Manager	Nova Terra Energy	248-347-3512 / 248-730-5697(Cell)	<a href="mailto:sachit.verma@novaconsultants.com">sachit.verma@novaconsultants.com</a>
Rob Heelee	Regional Rep	Solscient Energy	231-944-5846	<a href="mailto:rheelee@solscient.com">rheelee@solscient.com</a>
Alex Brown	Program Manager	Harvest Solar	517-740-6237	<a href="mailto:alex.b@harvestsolar.com">alex.b@harvestsolar.com</a>
Tim Pulliam	Tech Sales	Keen Technical	231-631-4990	<a href="mailto:tpulliam@keen-minds.com">tpulliam@keen-minds.com</a>
Bob Waggener	Elect. Cont.	Waggener/Shaw Electric	231-218-9322	<a href="mailto:kbielski@shawelectric.com">kbielski@shawelectric.com</a>
Michael Powers	Project Manager	Keen Technical	231-394-1581	<a href="mailto:mpowers@keen-minds.com">mpowers@keen-minds.com</a>
TJ Brown	VP Operations	Keen Technical	906-235-2810	<a href="mailto:tbrown@keen-minds.com">tbrown@keen-minds.com</a>
Chad Becker	Branch Manager	Tiger Solar	616-803-9247	<a href="mailto:beckerc@tigersolar.com">beckerc@tigersolar.com</a>
Jeremy Ziente	Director	METCO	708-990-1419	<a href="mailto:jeremy@metcoengineering.com">jeremy@metcoengineering.com</a>

# **ATTACHMENT B**





SOURCE	SYSTEMS	GAD FEEL #	GAD DRAWING COLORS
MCG-F1	480V POWER	76	
MCG-F2	480V POWER	160	
DFF-1	480V POWER	1	
DFF-2	480V POWER	201	
LFP-1	120/240V POWER	80	
LFP-2	120/240V POWER	120	
ACP-3	INSTRUMENTATION & CONTROLS	104	
ZENON PANELS	INSTRUMENTATION & CONTROLS	6	
FPP-2	FIBER OPTIC	35	
OTHER	OTHER CONDUITS	7	



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Treatment  
Plant

JOB NO:  1940	SHEET NO:  50E131A
SCALE:  $\frac{1}{8}" = 1' - 0"$	



REV	DATE	ISSUED FOR
4	4-11-03	ADD PRIMARY SWITCH HEATER CIRCUIT
3	4-7-03	RE-DESIGN DUCT BANK RAMP
2	4-7-03	RE-DESIGN DUCT BANK RAMP
1	1-14-03	SHAW/WAGGENER INSTALLATION DRAWING



ELECTRICAL CONTRACTORS  
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FAX: 734-425-8824

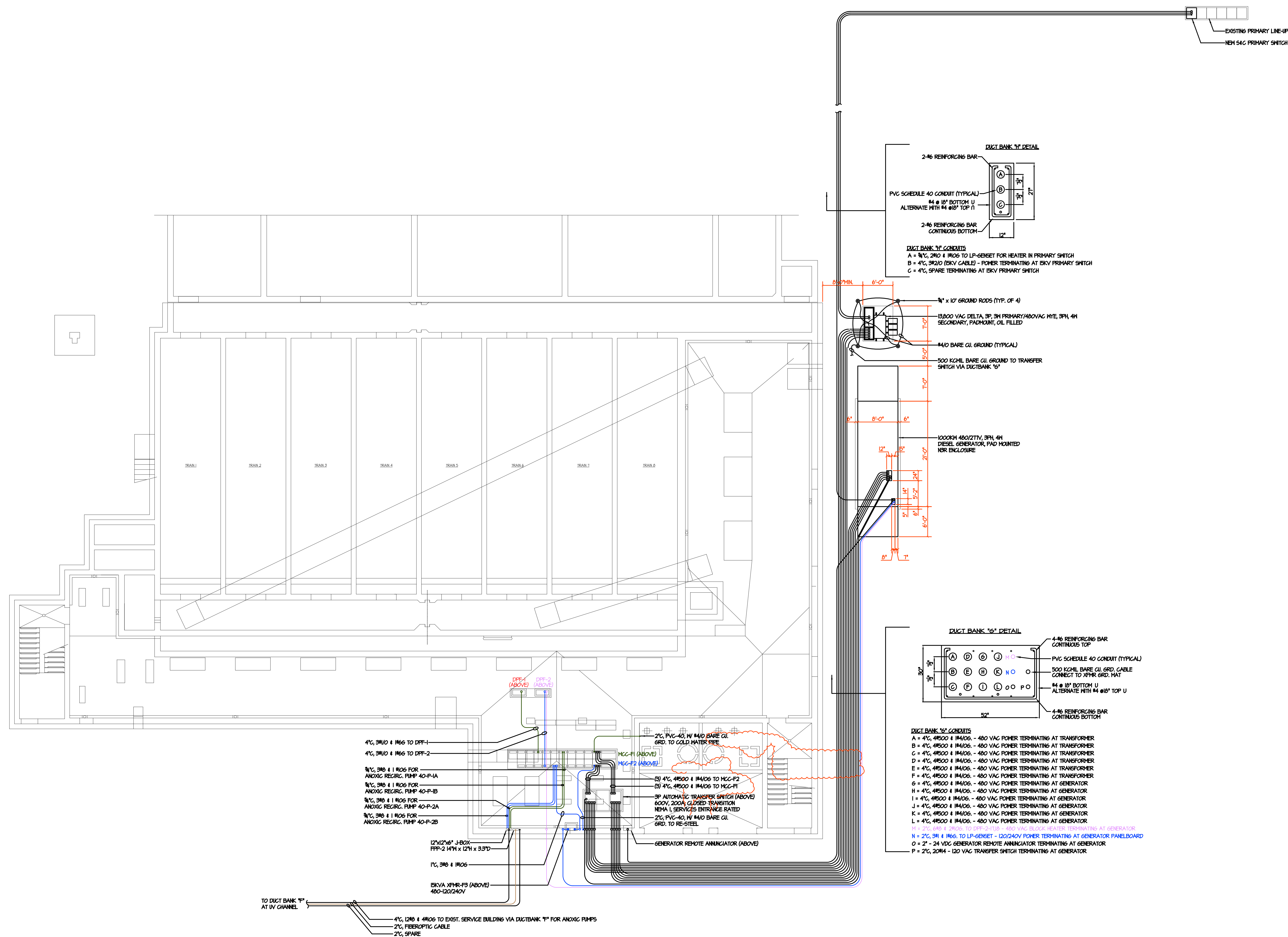


TRAVERSE CITY REGIONAL  
WASTEWATER TREATMENT PLAN

JOB NAME:

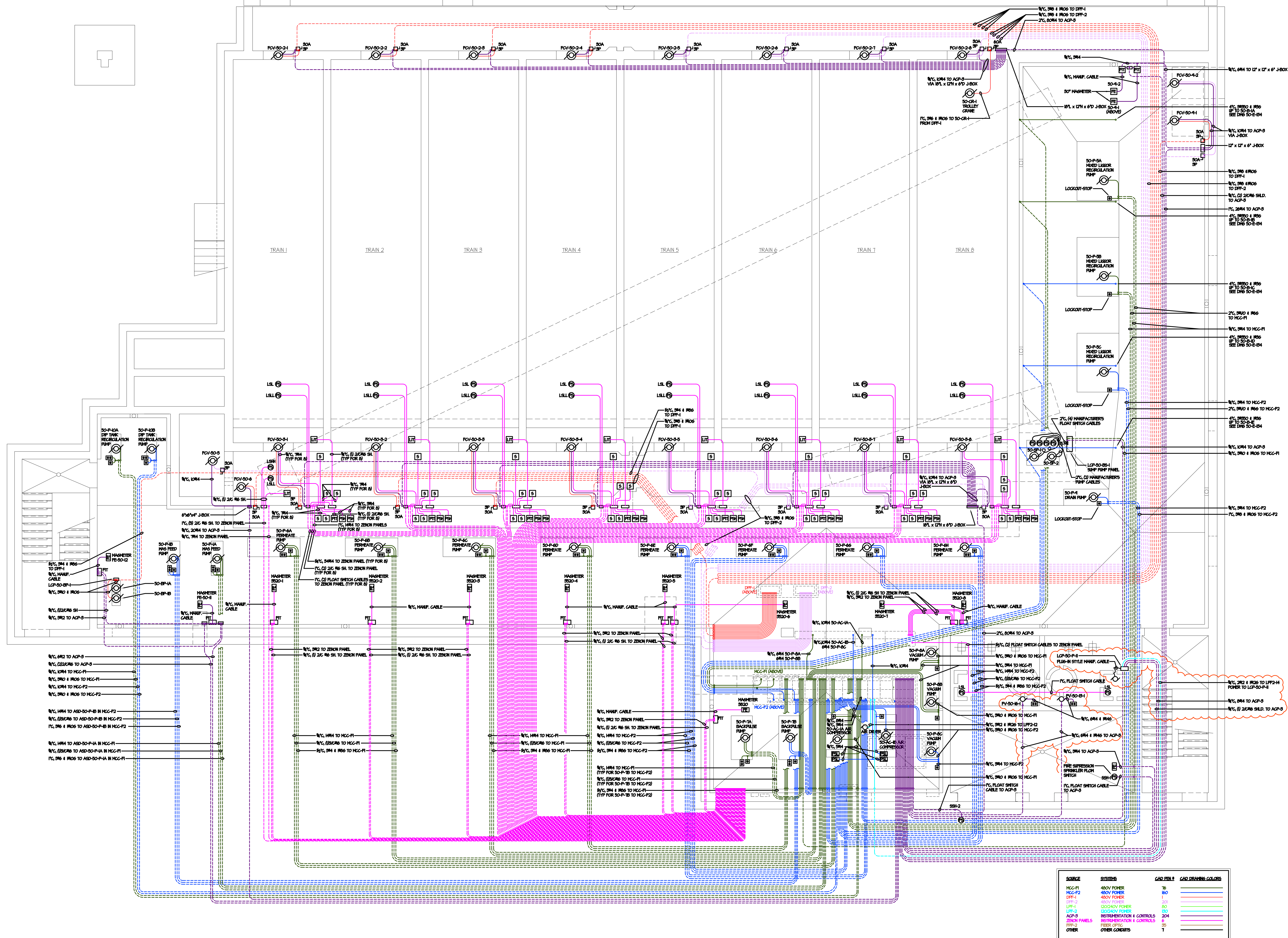
MEMBRANE BUILDING  
DUCT BANK ROUTING  
PLAN AT EL. 115.00

SHEET TITLE:

JOB NO.  
1940SCALE  
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50E131A

SOURCE	SYSTEMS	CAD FILE #	CAD DRAWING COLORS
MCC-F1	480V POWER	76	
MCC-F2	480V POWER	160	
DPF-1	480V POWER	201	
DPF-2	120/240V POWER	180	
ACP-3	120/240V POWER	180	
GEN PANELS	INSTRUMENTATION & CONTROLS	204	
PPF-2	INSTRUMENTATION & CONTROLS	204	
OTHER	OTHER CONDUITS	1	





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Traverse City, Michigan  
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REVISIONS		
REV	DATE	DESCRIPTION
1	4-16-03	SHAW/WAGGENER INSTALLATION DRAWING
2	5-9-03	FIELD CONDUIT LOCATION CHANGES
3	9-22-03	RFI-SEC-009 ADD SOLENOID VALVES AT SOUTH END OF TRAINS
4	6-3-03	RFI-SEC-011 POWER & CONTROL FOR SO-P-11 PUMP, CONTROL FOR FV-50-16-1, FV-50-13-1

JOB NAME:  
**TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT**

SHEET TITLE:  
**MEMBRANE BUILDING  
480V POWER &  
INSTRUMENTATION  
PLAN  
AT ELEV. 115.00**

JOB NO.:  
1940  
SHEET NO.:  
50E131B  
SCALE:  
1/8" = 1' - 0"



REV	DATE	ISSUED FOR
1	4-16-09	SHAW WAGENER INSTALLATION DRAWING



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**SHAW**  
ELECTRIC CO.

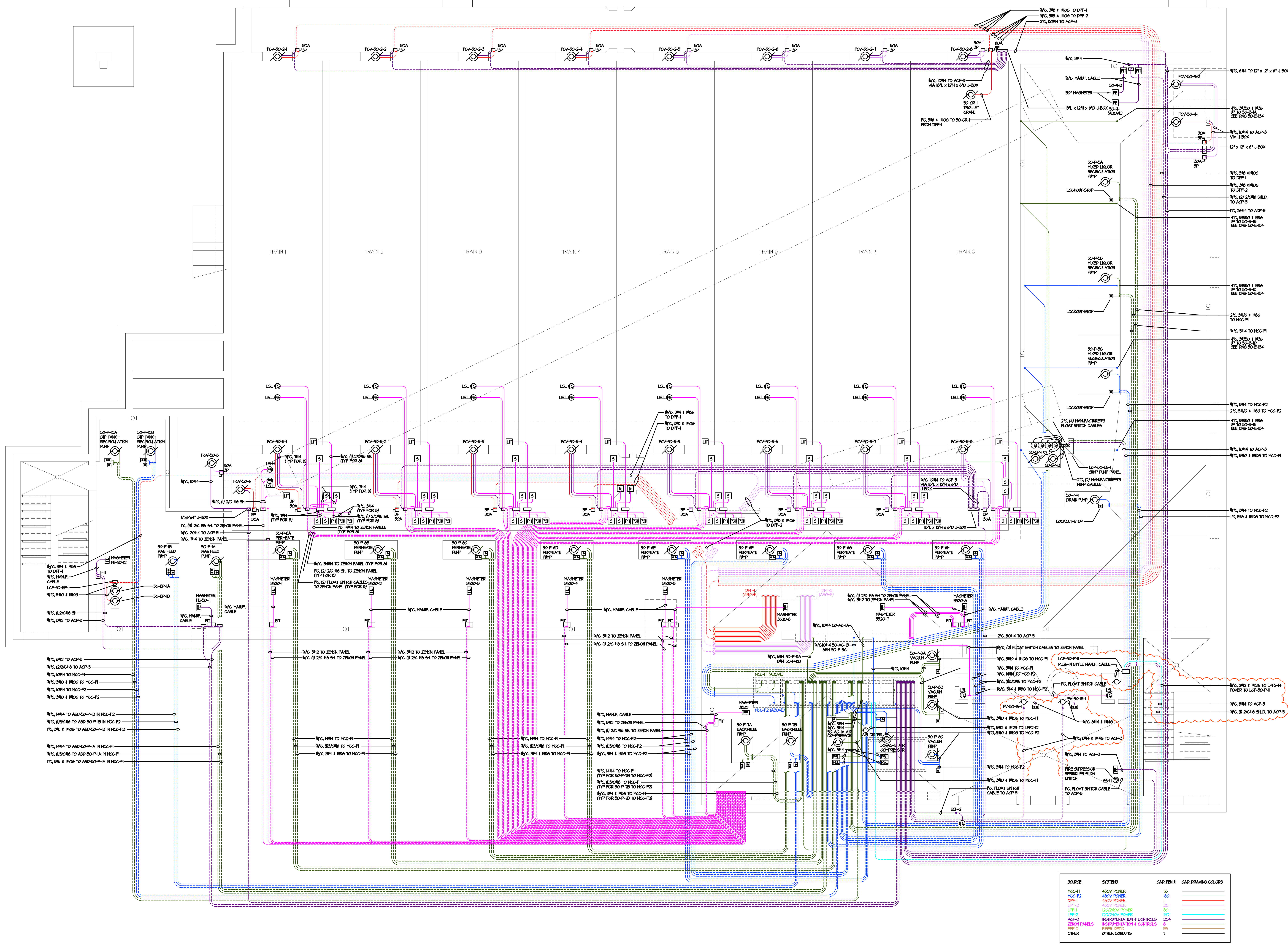
TRAVERSE CITY REGIONAL  
WASTEWATER TREATMENT PLAN

MEMBRANE BUILDING  
480V POWER & INSTR.  
AT EL. 115.00

JOB NO.  
1940

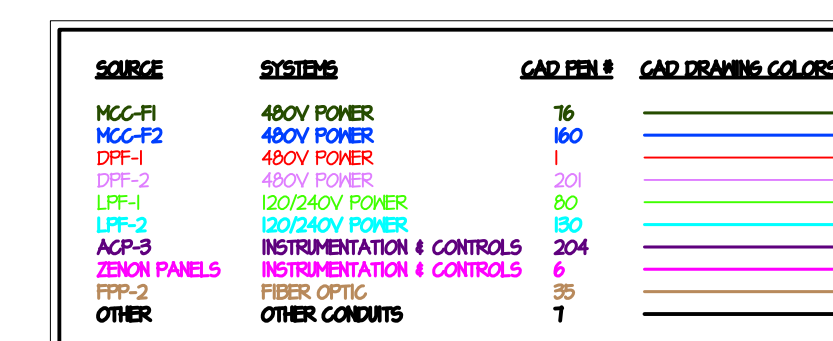
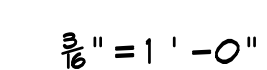
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DRAWING  
50E131B



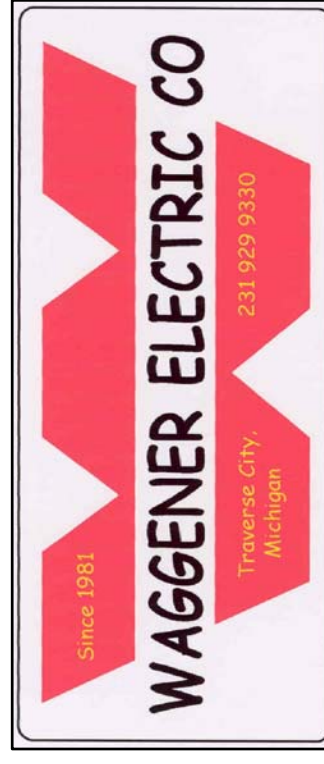
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MCC-F1	480V POWER	1B	
MCC-F2	480V POWER	1B	
DFP-1	480V POWER	1B	
LFT-1	120/240V POWER	20	
LFT-2	120/240V POWER	20	
ACP-3	INSTRUMENTATION & CONTROLS	204	
ZENON PANELS	INSTRUMENTATION & CONTROLS	6	
FIELD STTS	INSTRUMENTATION & CONTROLS	204	
OTHER	OTHER CONDUITS	1	







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**SHAW**  
ELECTRIC CO.

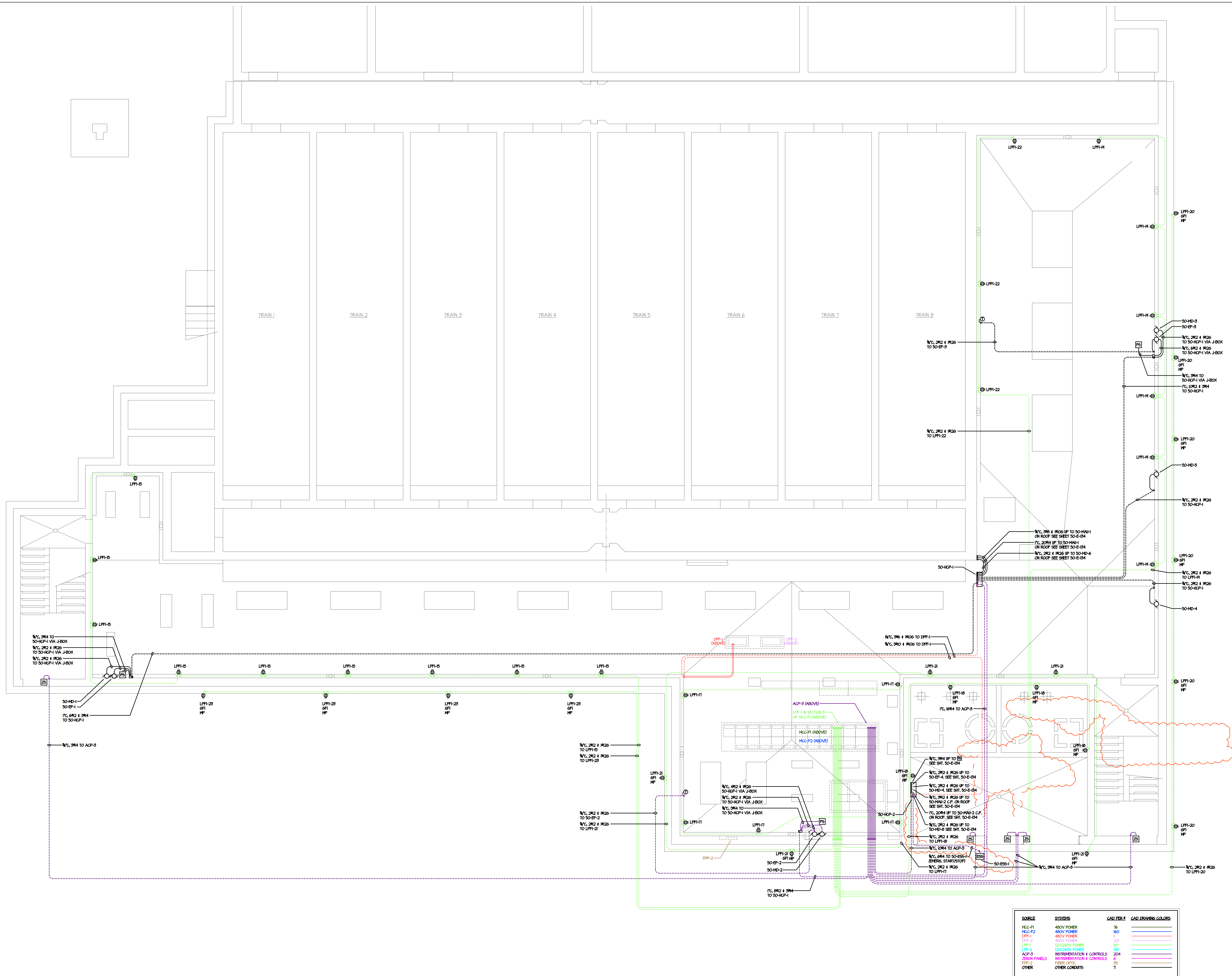
TRaverse CITY REGIONAL  
WASTEWATER TREATMENT PLAN  
AT EL. 115.00

MEMBRANE BUILDING  
BRANCH POWER PLAN  
AT EL. 115.00

JOB NO.  
1940

SCALE  
1/4" = 1' - 0"

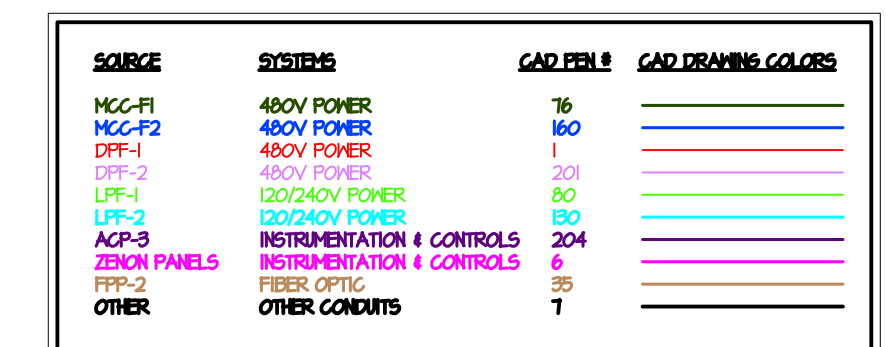
DRAWING  
50E131C



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MCC-F1	480V POWER	16	
MCC-F2	480V POWER	16	
DPF-1	480V POWER	1	
DPF-2	480V POWER	1	
LPH-1	120/240V POWER	00	
LPH-2	120/240V POWER	00	
ACP-3	INSTRUMENTATION & CONTROLS	204	
ZENON PANELS	INSTRUMENTATION & CONTROLS	6	
FIBER OPTIC	FIBER OPTIC	15	
OTHER	OTHER CONDUITS	1	



Technical drawing of a building facade section. The drawing shows a long wall with multiple windows and a door on the right. The windows are represented by dashed lines indicating their internal structure and frames. The door is shown with a solid frame and a handle. The drawing includes dimension lines and a scale bar at the bottom.



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Wastewater  
Treatment  
Plant

JOB NO.:  1940	SHEET NO.:  50E134
SCALE:  $\frac{3}{8}'' = 1' - 0''$	



REV	DATE	ISSUED FOR
1	4-22-09	SHAW WAGENER INSTALLATION DRAWING
2	4-22-09	SHAW WAGENER INSTALLATION DRAWING
3	4-22-09	SHAW WAGENER INSTALLATION DRAWING
4	4-22-09	SHAW WAGENER INSTALLATION DRAWING
5	4-22-09	SHAW WAGENER INSTALLATION DRAWING



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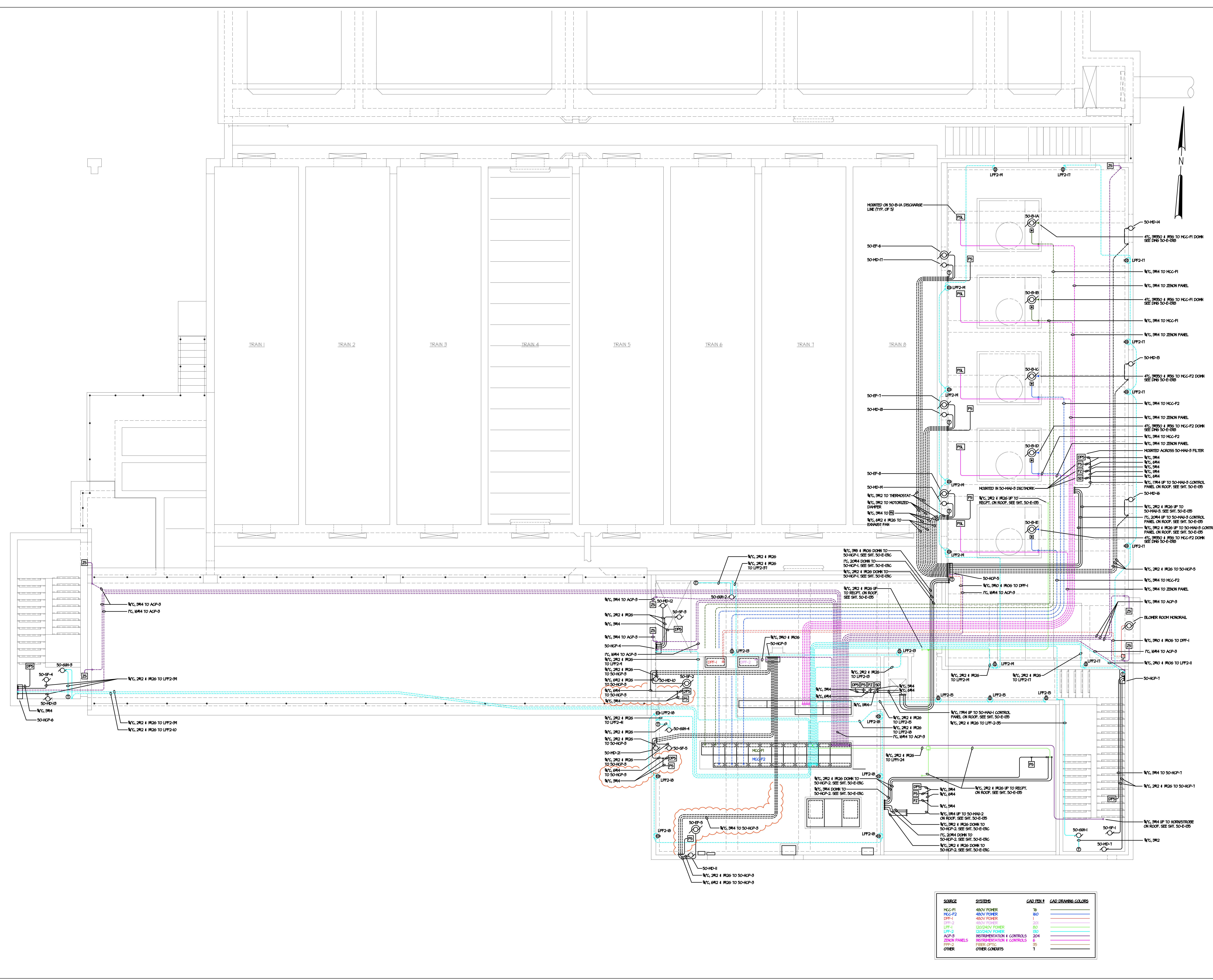
TRAVERSE CITY REGIONAL  
WASTEWATER TREATMENT PLAN

SHEET TITLE:  
MEMBRANE BUILDING  
480V & 120/240V  
POWER PLANS  
AT EL. 127.00

JOB NO.  
1940

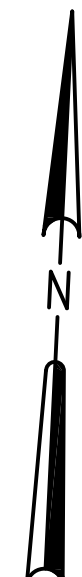
SCALE  
1/4" = 1' - 0"

DRAWING  
50E134



SOURCE	SYSTEMS	CAD PER #	CAD DRAWING COLORS
MCC-F1	480V POWER	16	
MCC-F2	480V POWER	16	
DFF-1	480V POWER	16	
LFP-1	120/240V POWER	80	
LFP-2	120/240V POWER	80	
ACP-3	INSTRUMENTATION & CONTROLS	204	
ZENON PANELS	INSTRUMENTATION & CONTROLS	8	
OTHER	OTHER CONDITIONS	1	





REV	DATE	ISSUED FOR
1	4-17-03	SHAW/WAGGENER INSTALLATION DRAWING



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FAX: 734-425-6824

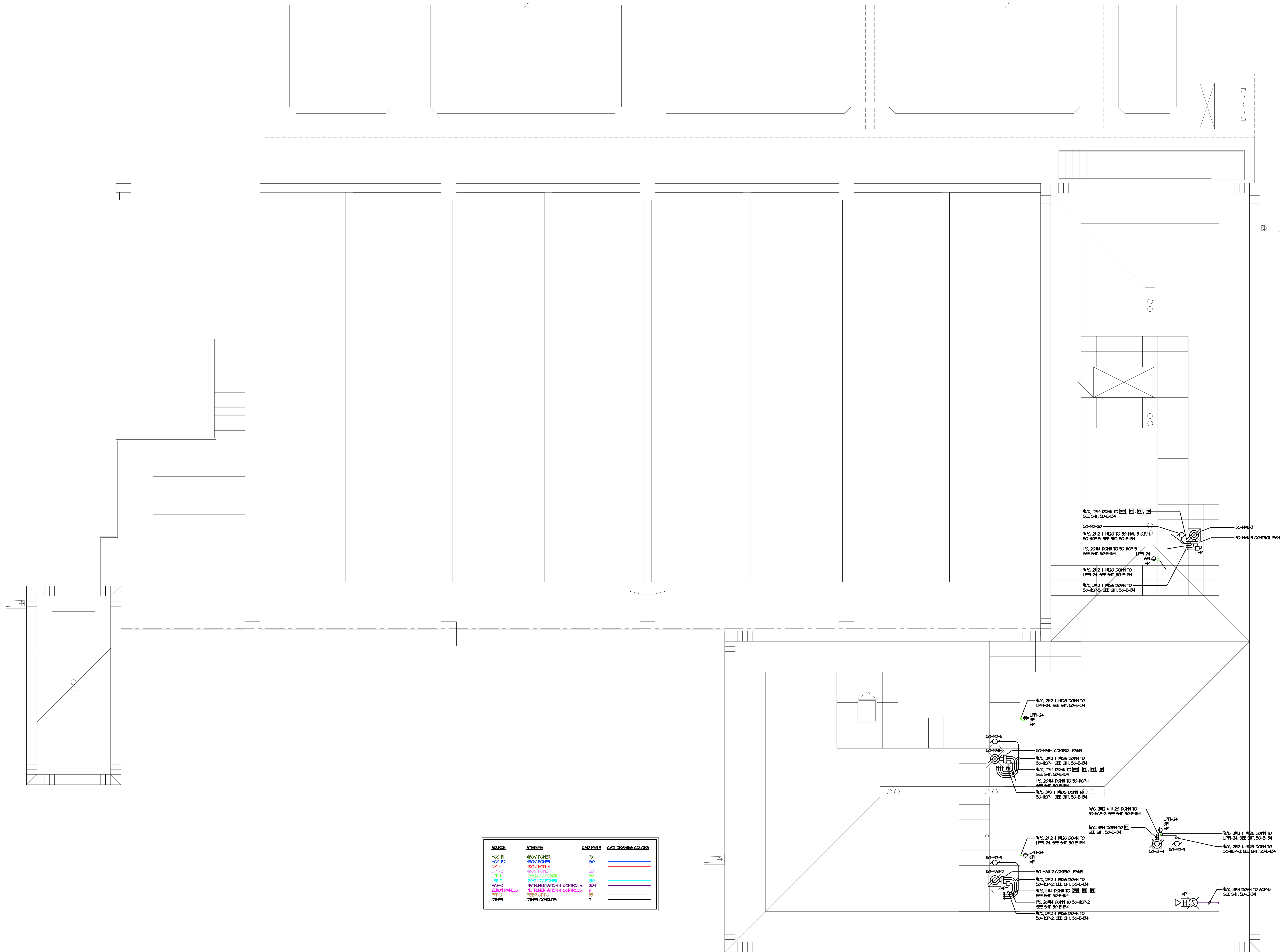
TRaverse CITY REGIONAL  
WASTEWATER TREATMENT PLAN

MEMBRANE BUILDING  
POWER PLAN  
AT ROOF ELEV.

JOB NO.  
1940

SCALE  
1/4" = 1' - 0"

DRAWING  
50E135



SOURCE	SYSTEMS	CAD FILES	CAD DRAWING COLORS
MCC-F1	480V POWER	T6	
MCC-F2	480V POWER	W6	
LPT-1	480V POWER	1	
LPT-2	120/240V POWER	80	
ACP-3	120/240V POWER	150	
ZENON PANELS	INSTRUMENTATION & CONTROLS	204	
TRF-2	POWER TRANSFORMER	35	
OTHER	OTHER CONDUITS	7	



**ELECTRIC CO.**

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## REVISION

[illegible]

JOB NAME

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET T

MEMBRANE BUILDING  
ELECTRICAL ROOM  
LAYOUT AT EL. 127.00

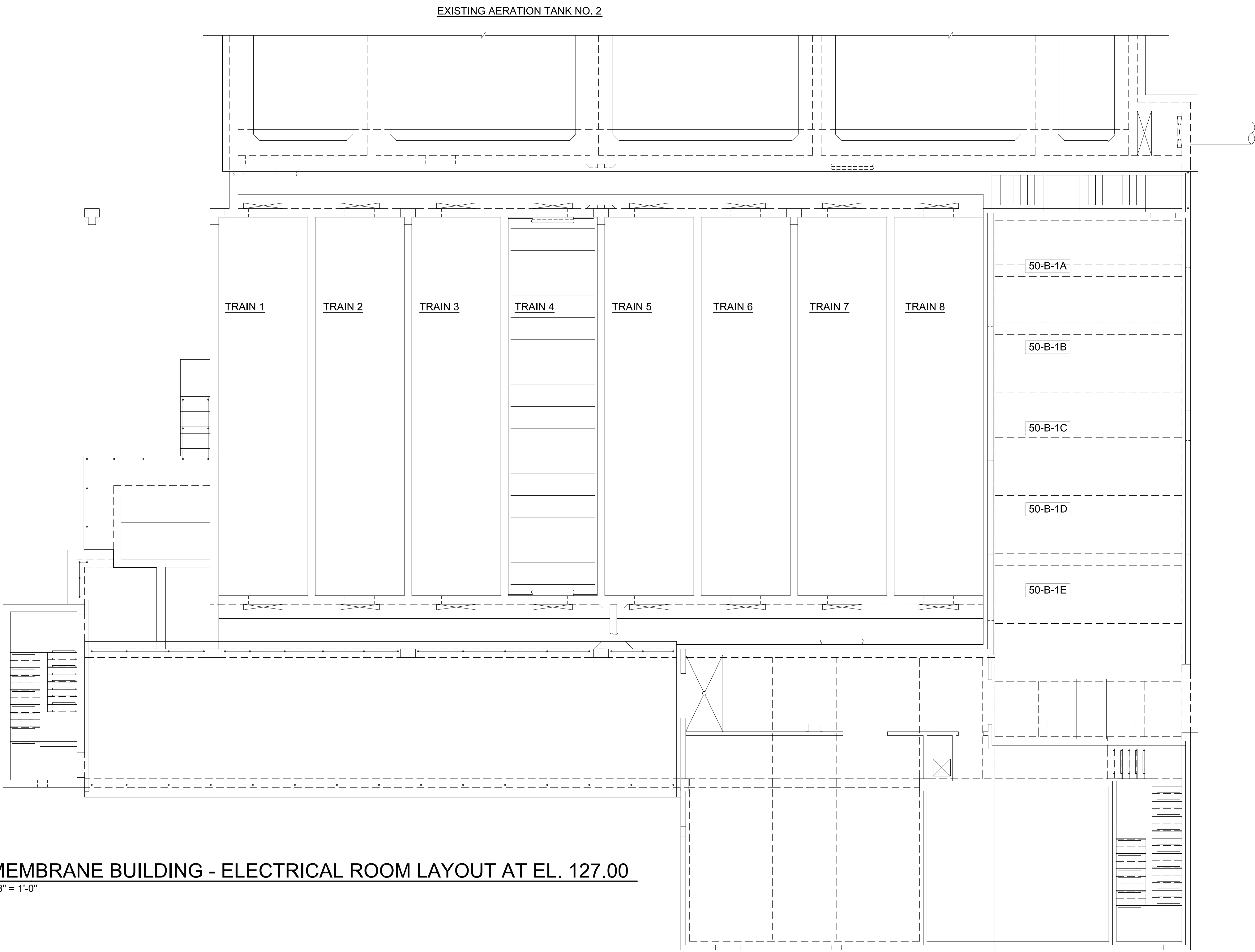
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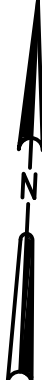
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50E136

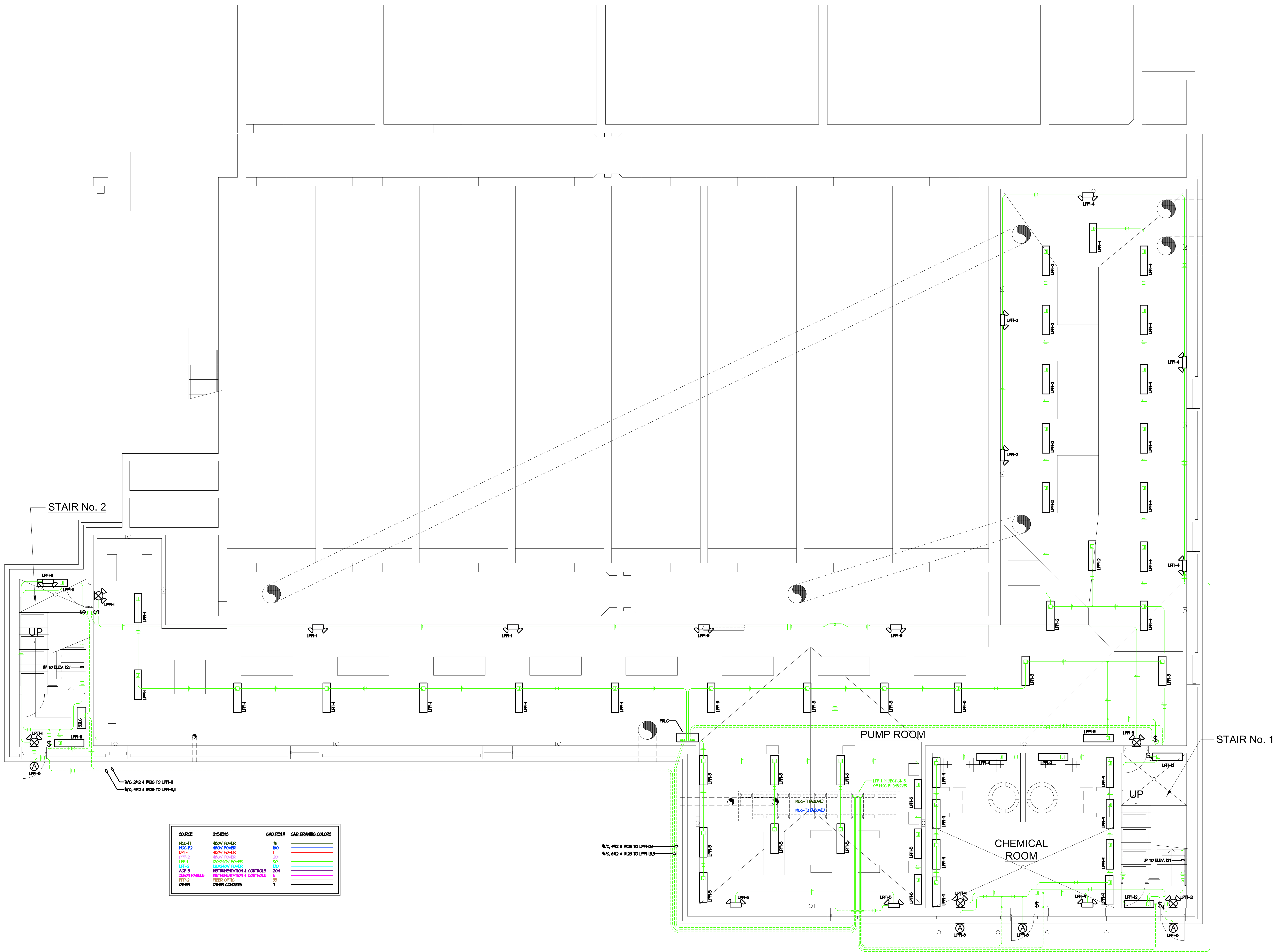
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$$\frac{1}{8}'' = 1' - 0''$$


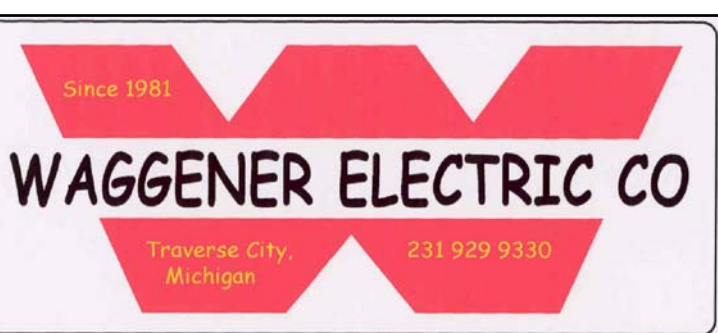
MEMBRANE BUILDING - ELECTRICAL ROOM LAYOUT AT EL. 127.00

$$1/8'' = 1'-0''$$






**SHAW**  
**ELECTRIC CO.**  
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**SINCE 1930**

[illegible]

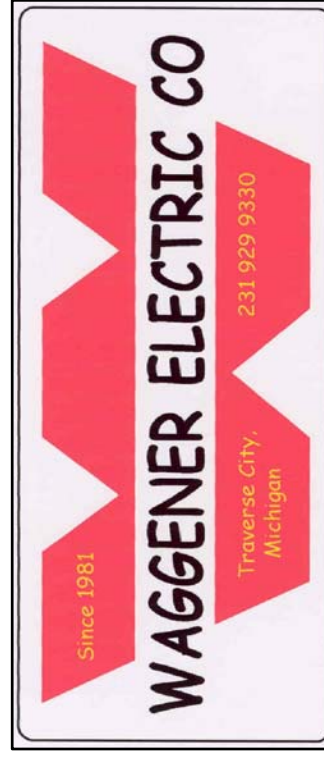
JOB NAME:

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

MEMBRANE BUILDING  
LIGHTING  
PLAN  
AT ELEV. 115.00

JOB NO:  1940	SHEET NO:  50E137
SCALE:  $\frac{3}{16}" = 1' - 0"$	

DATE PLOTTED: 4-10-03
REV
1
4-10-03 SHAW/WAGGENER INSTALLATION DRAWING
ISSUED FOR



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 FAX: 734-425-6824

TRVERSE CITY REGIONAL  
 WASTEWATER TREATMENT PLAN  
 AT EL.115.00

JOB NAME

SHEET TITLE:  
 MEMBRANE BUILDING  
 LIGHTING PLAN  
 AT EL.115.00

JOB NO.

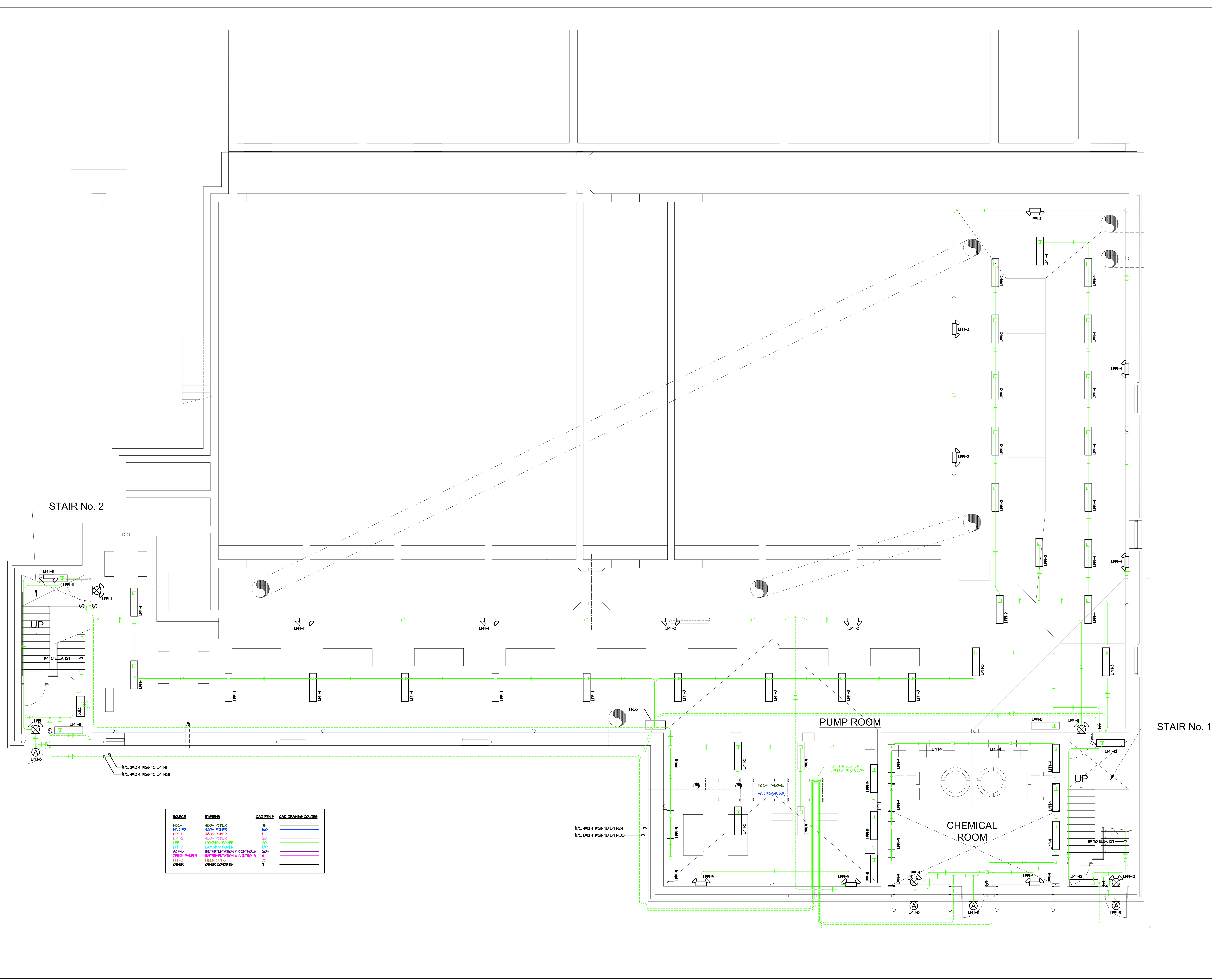
1940

SCALE

1/4" = 1' - 0"

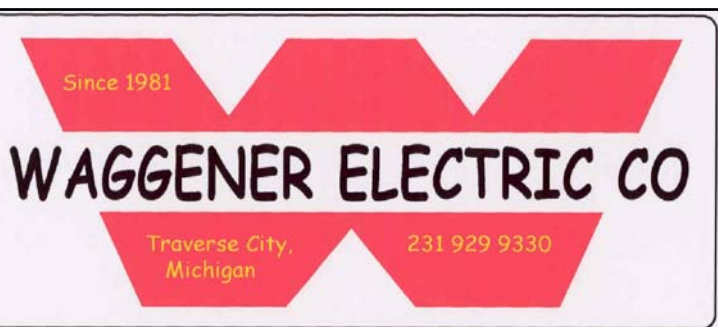
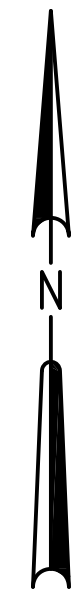
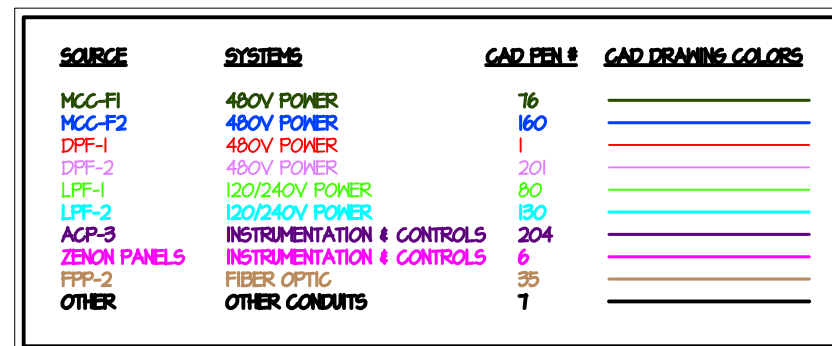
DRAWING

50E137



SOURCE	SYSTEMS	CAD FILE #	CAD DRAWING COLORS
MCC-F1	480V POWER	76	
MCC-F2	480V POWER	80	
DPP-1	480V POWER	1	
LPH-1	120/240V POWER	80	
LPH-2	120/240V POWER	80	
ACP-3	INSTRUMENTATION & CONTROLS	204	
24VDC PANELS	INSTRUMENTATION & CONTROLS	6	
TRK-2	TRK-2	35	
OTHER	OTHER CONDUITS	7	



[illegible]

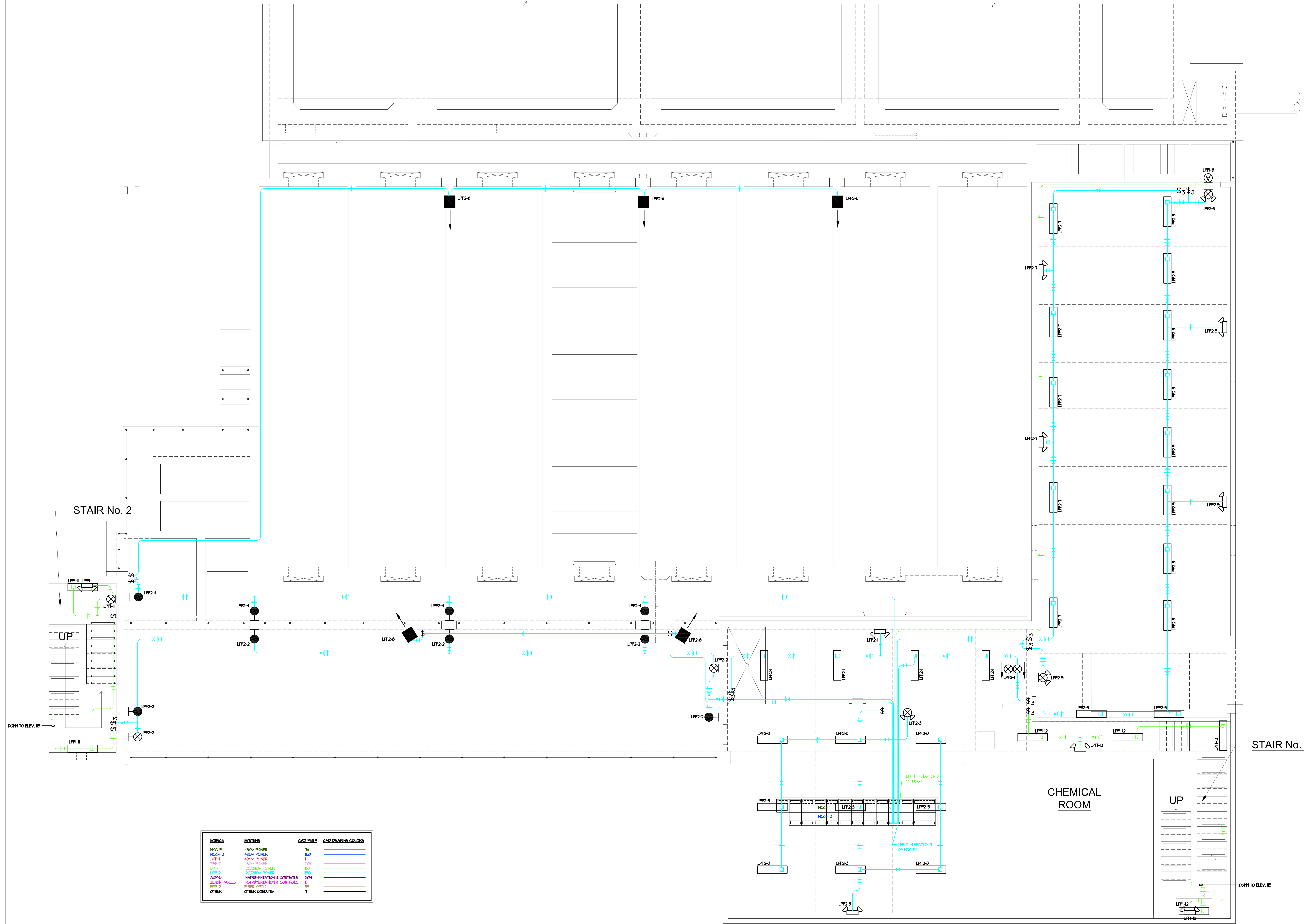
JOB NAME:

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

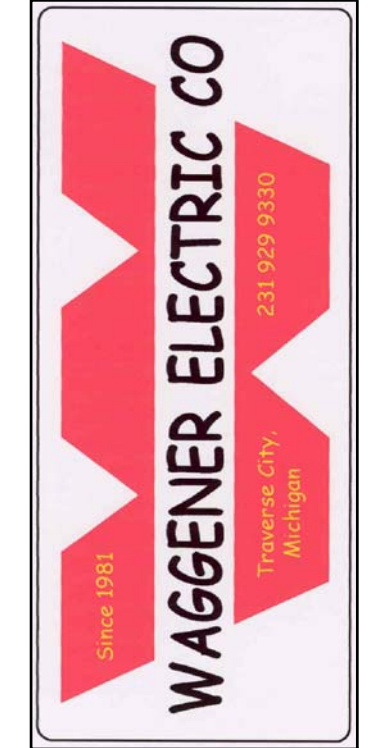
MEMBRANE BUILDING  
LIGHTING  
PLAN  
AT ELEV. 127.00

JOB NO:  1940	SHEET NO:  50E138
SCALE:  $\frac{3}{8}" = 1' - 0"$	



SYMBOL	SYSTEMS	CAD FILE #	CAD DRAWING COLORS
MCC-F1	480V POWER	16	
MCC-F2	480V POWER	160	
DPT-F1	480V POWER	1	
LFP-1	120/240V POWER	201	
LFP-2	120/240V POWER	60	
ACP-3	INSTRUMENTATION & CONTROLS	204	
FIB-2	INSTRUMENTATION & CONTROLS	6	
OTHER	OTHER CONDUITS	7	

REV	DATE	ISSUED FOR
1	4-10-09	SHAW WAGGENER INSTALLATION DRAWING



ELECTRICAL CONTRACTORS  
SINCE 1930  
33200 SCHOOLCRAFT LIVONA  
PHONE: 734-425-8800  
FAX: 734-425-8824

**SHAW**  
WAGGENER  
ELECTRIC CO.

TRaverse CITY REGIONAL  
WASTEWATER TREATMENT PLAN  
AT EL. 127.00

MEMBRANE BUILDING  
LIGHTING PLAN  
AT EL. 127.00

JOB NO.  
1940

SCALE  
1/4" = 1' - 0"

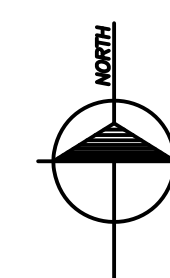
DRAWING  
50E138



50E139

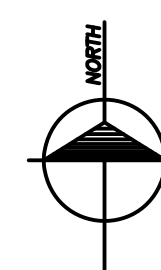
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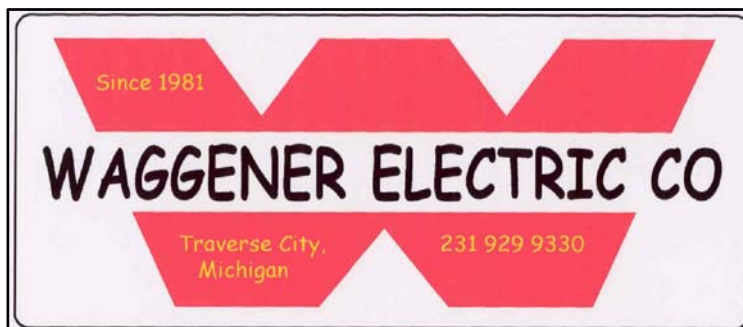
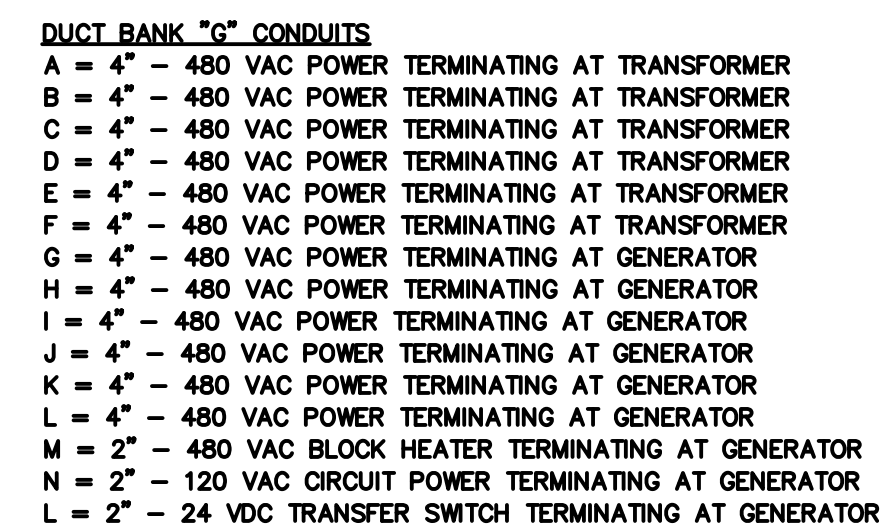
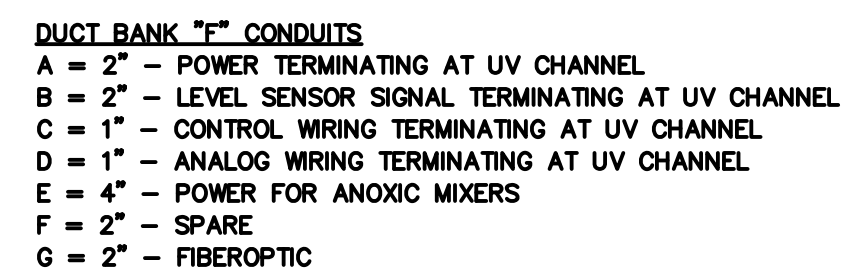
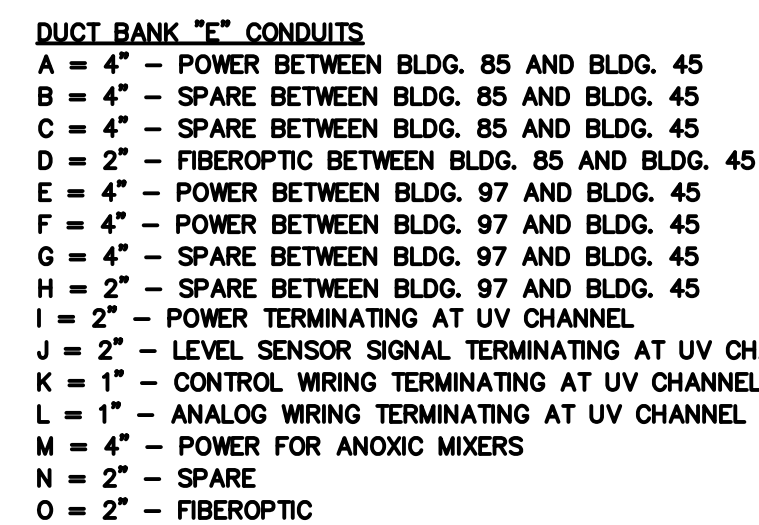






NONE





(JOB NAME

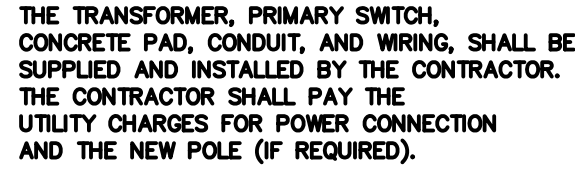
TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

(SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
DUCT BANK DETAIL  
SECTION VIEW

JOB NO:  1940	SHEET NO:  50E403
SCALE:  NONE	

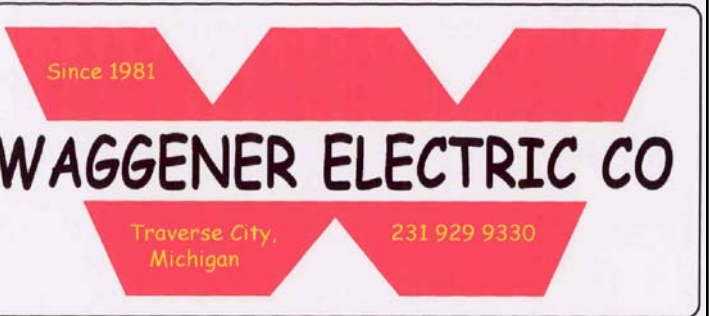




JOB NAME:

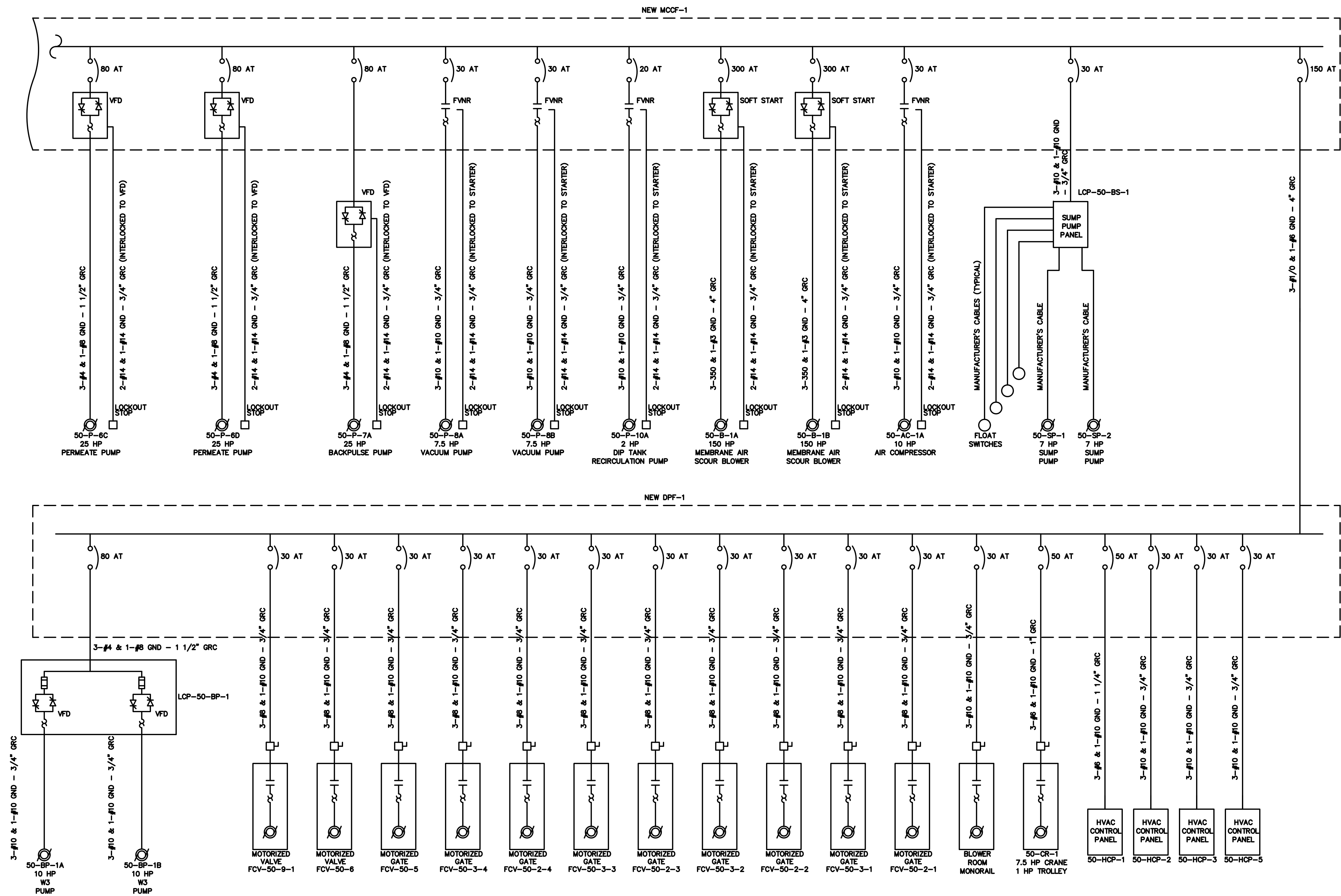
TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

JOB NO: 1940	SHEET NO: 50E501
SCALE: NONE	

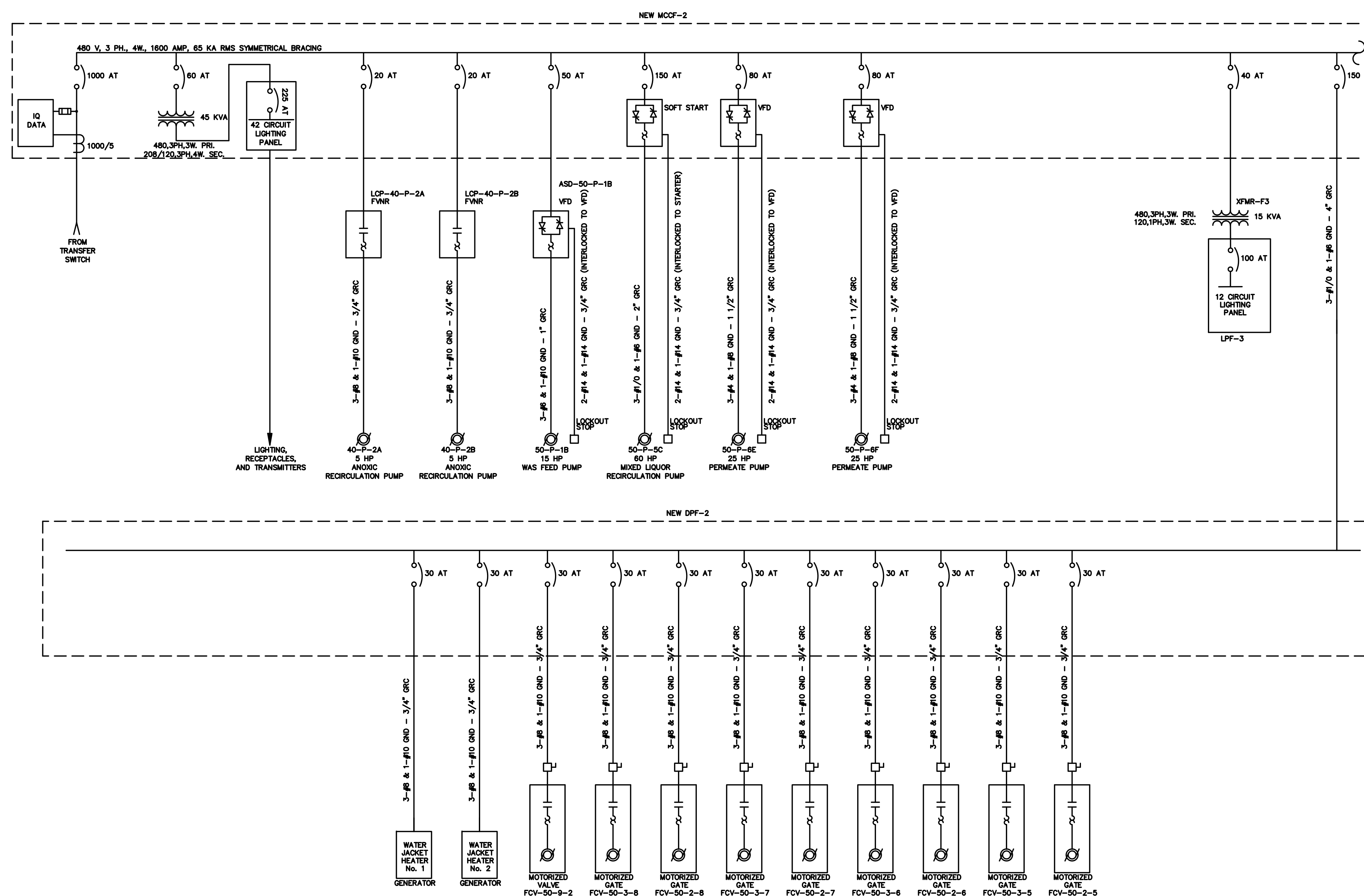


TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

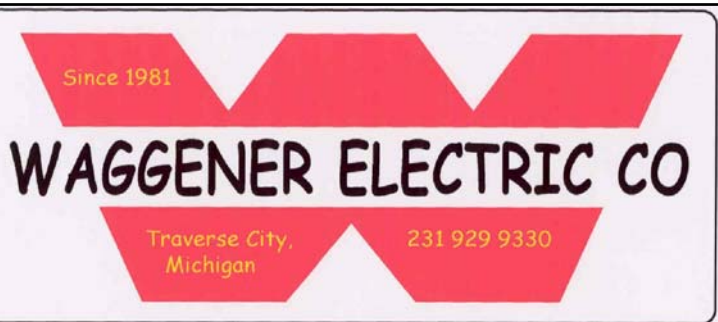
JOB NO:  1440	SHEET NO:  50E502
SCALE:  NONE	



50E503







## REVISIONS

[illegible]

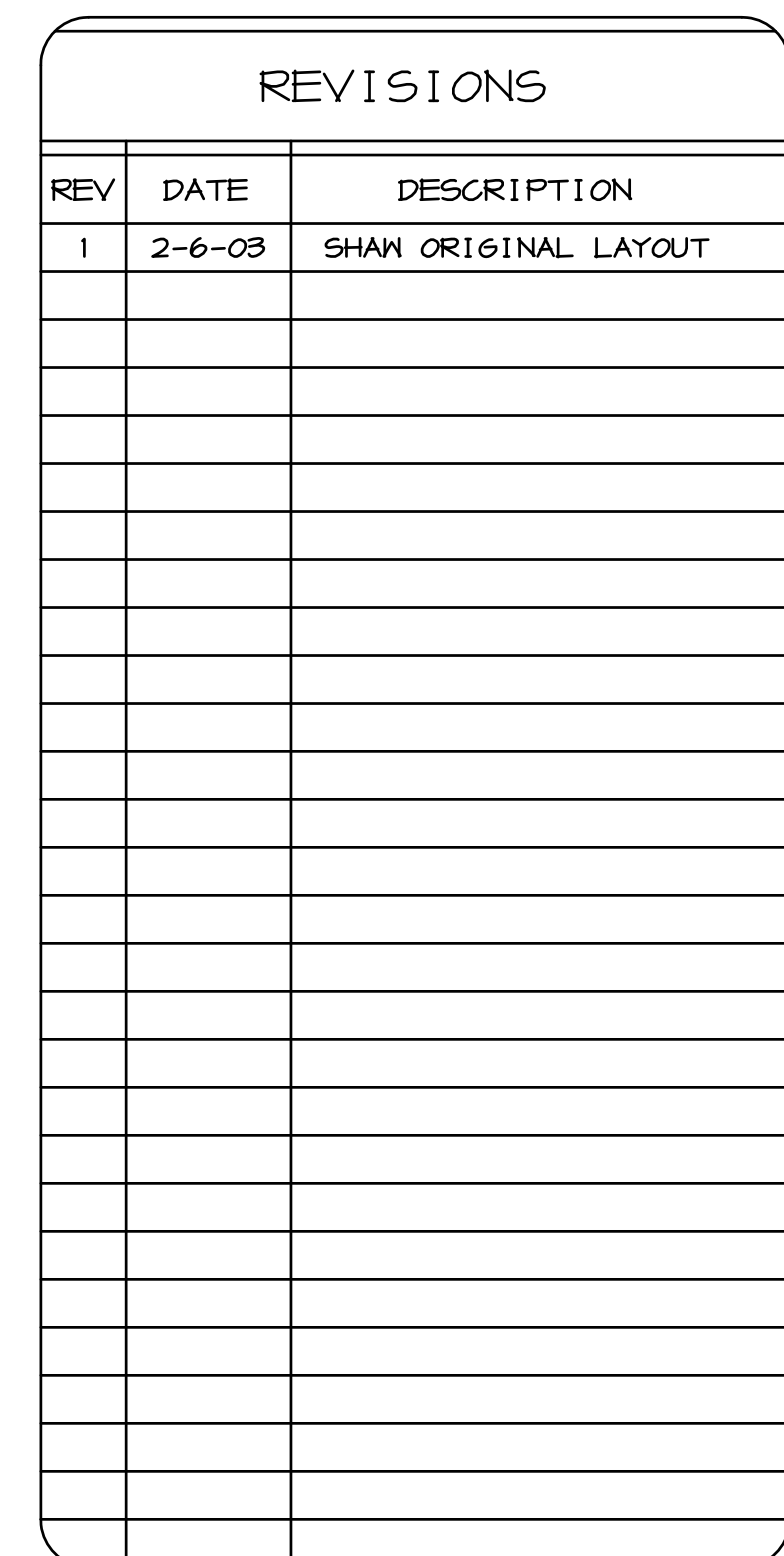
JOB NAME:

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
MCCF-2 ONE LINE  
DIAGRAM NO.2

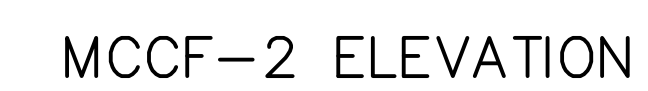
JOB NO: 1940	SHEET NO: 50E504
SCALE: NONE	



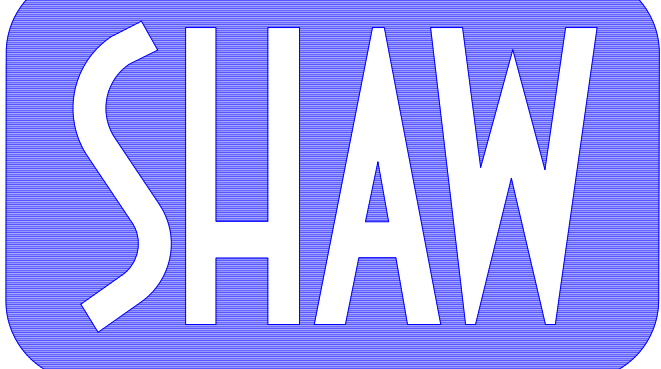
SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
MCCF-1 & MCCF-2  
FRONT ELEVATIONS

JOB NO:  1940	SHEET NO:  50E505
SCALE:  NONE	







# ELECTRIC CO.

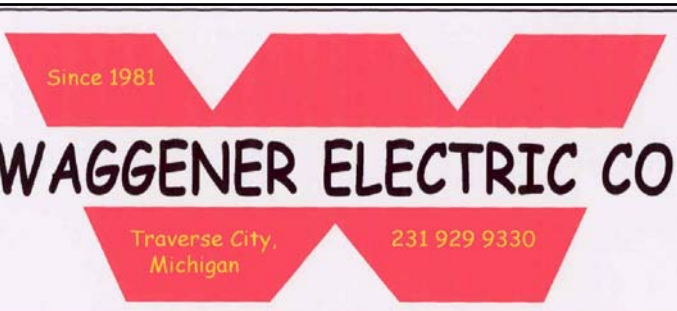
## 33200 SCHOOLCRAFT LIVONIA

**PHONE. (734)-425-6800**

**FAX: (734)-425-6824**

## ELECTRICAL CONTRACTORS

## SINCE 1930



## REVISIONS

[illegible]

JOB NAME

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
 & PROCESS BUILDING  
 PRLC PANEL  
 LIGHTING CONTROL  
 SCHEMATIC

JOB NO.

1940

SHEET NO:

50E506

SCALE:

NONE

DISTRIBUTION PANEL LPF-1			AMPS 225	VOLTS 120/208	PHASE 3	WIRES 4	BKR 225
MOUNTING: MCC							W.L.O.
GR. NO.	BKR	LOAD	VA	VA	LOAD	BKR	GR. NO.
1	20A	SOUTHWEST PUMP ROOM LIGHTS	1410	A	1350	NORTHEAST PUMP RM LIGHTS, WEST ROW	20A
3	20A	SOUTHEAST PUMP ROOM LIGHTS	1360	B	1590	NORTHEAST PUMP RM LIGHTS, EAST ROW	20A
5	20A	SOUTH PUMP ROOM LIGHTS	1900	C	-	-	8
7	-	-	-	-	900	OUTDOOR BUILDING LIGHTS	20A
9	20A	CHEMICAL ROOM LIGHTS	1700	A	-	-	10
11	20A	STAIR No. 2 LIGHTS	1020	C	1290	STAIR No. 1 LIGHTS	20A
13	-	-	-	A	-	-	14
15	20A	SOUTHWEST PUMP ROOM RECEPTACLES	1650	B	-	-	16
17	20A	SOUTH PUMP ROOM RECEPTACLES	800	C	720	CHEMICAL ROOM RECEPTACLES	20A
19	20A	NORTHEAST PUMP ROOM RECP, EAST ROW	1080	A	1080	EAST OUTDOOR BUILDING RECEPTACLES	20A
21	20A	SOUTH OUTDOOR BLDG. RECEPTACLES	540	B	540	NORTHEAST PUMP RM RECP, WEST ROW	20A
23	20A	SOUTHWEST OUTDOOR BLDG. RECEPTACLES	720	C	720	ROOF RECEPTACLES	20A
25	20A	ZENON COMMON EQUIP. PLC PANEL No.1	2000	A	2000	ACP-3 PLC PANEL	20A
27	20A	ZENON PROCESS TRAINS 1&2 PLC PANEL	2000	C	-	-	28
29	20A	ZENON PROCESS TRAINS 3&4 PLC PANEL	2000	C	-	-	30
31	-	-	-	A	-	-	32
33	-	-	-	B	-	-	34
35	-	-	-	C	-	-	36
37	-	-	-	A	-	-	38
39	-	-	-	B	-	-	40
41	-	-	-	C	-	-	42
TOTAL:			18350	10200			
A = 9930			B = 9350		C = 9270		
TOTAL CONNECTED LOAD:			27510				

DISTRIBUTION PANEL LPF-2			AMPS 225	VOLTS 120/208	PHASE 3	WIRES 4	BKR 225
			MOUNTING: MCC				W.L.O.
CHR. No.	BKR	LOAD	VA	VA	LOAD		BKR
							CHR. No.
1	20A	CORRIDOR LIGHTS	800	A	750	OUTDOOR EL. 127.00 WALKWAY LIGHTS	20A
3	20A	MCC ROOM LIGHTS	1540	B	500	OUTDOOR EL. 119.50 WALKWAY LIGHTS	20A
5	20A	BLOWER ROOM LIGHTS, EAST ROW	1800	C	1500	NORTH MEMBRANE TANK FLOOD LTS.	20A
6	20A	BLOWER ROOM LIGHTS, WEST ROW	900	A	1000	SOUTH MEMBRANE TANK FLOOD LTS.	20A
9	30A	50-HCP-4	2500	D	500	50-HCP-8	30A
11	-	-	-	C	1200	COMPRESSED AIR DRYER	-
13	20A	CORRIDOR RECEPTACLES	360	A	120	CITRIC ACID TANK MIXER	-
15	20A	STAR No.1 RECEPTACLES	540	B	80	-	-
17	20A	BLOWER ROOM RECEPTACLES, EAST ROW	1080	A	300	MCC ROOM RECEPTACLES	20A
19	20A	BLOWER ROOM RECEPTACLES, WEST ROW	1080	A	300	-	-
21	-	-	-	B	1125	-	20
23	20A	-	-	C	-	-	-
25	20A	ZENON COMMON EQUIP. PLC PANEL No.2	2000	A	2000	ACP-4 PLC PANEL	20A
27	20A	ZENON PROCESS TRAINS 5/86 PLC PANEL	2000	C	-	-	28
29	20A	ZENON PROCESS TRAINS 7/89 PLC PANEL	2000	C	-	-	30
31	-	-	-	A	-	-	-
33	-	-	-	B	-	-	-
35	20A	50-GU#1-1	250	C	-	-	36
37	20A	50-GU#2-2	250	A	-	-	38
39	20A	50-GU#3-3	250	B	-	-	40
41	20A	50-GU#4-4	250	C	-	-	42
TOTAL:			17660	10050			
A = 8320			B = 28310		C = 9160		
TOTAL CONNECTED LOAD:			29735				

DISTRIBUTION PANEL LPF-3		AMPS 100	VOLTS 120/240		PHASE 1	WIRES 3	BKR 100
		MOUNTING SURFACE					M.I.O.
CHR. NO.	BKR	LOAD	VA	PA	LOAD	BKR	CHR. NO.
1	20A	GENERATOR WINDING SPACE HEATER	1125	-	-	-	2
3	20A	-	-	-	-	-	4
5	20A	GENERATOR BATTERY CHARGER	300	-	-	-	6
7	20A	GENERATOR RECEPTACLE	180	-	-	-	8
9	-	-	-	-	-	-	10
11	-	-	-	-	-	-	12
TOTAL:			1605	0			
TOTAL CONNECTED LOAD:			1605				

42KA SYM. S.C. RATING									
DISTRIBUTION PANEL DPF-1			AMPS 225	VOLTS 480	PHASE 3	WIRES 4	BWR 150	W.G.R.	
CR. No.	BKR	LOAD	VA	#	VA	LOAD	BKR	CR. No.	
	50A	HVAC PANEL 50-HCP-1	7000	A	1000	HVAC PANEL 50-HCP-2	30A		2
	50A		7000	B	1000		30A		
	50A		7000	C	1000		30A		
	30A		1000	3000	30A				
3	30A	HVAC PANEL 50-HCP-3	1000	A	3000	HVAC PANEL 50-HCP-5	30A		4
	30A		1000	B	3000		30A		
	30A		1000	C	3000		30A		
	30A		1000	3000	30A				
5	50A	BRIDGE CRANE 50-CR-1	2333	A	1290	BLOWER ROOM MONORAIL	30A		6
	50A		2333	B	1290		30A		
	50A		2333	C	1290		30A		
	30A		1290	1290	30A				
7	30A	MIXED LIQUOR RECYCLE MOTORIZED VALVE FCV-50-B-1	2700	A	5500	W3 WATER PUMP PANEL LCP-50-BP-1	80A		8
	30A		2700	B	5500		80A		
	30A		2700	C	5500		80A		
	30A		2700	5500	80A				
9	30A	FOAM BOX MOTORIZED GATE FCV-50-5	1250	A	1250	FOAM BOX MOTORIZED VALVE FCV-50-6	30A		10
	30A		1250	B	1250		30A		
	30A		1250	C	1250		30A		
	30A		1250	1250	30A				
11	30A	TRAIN 1 MOTORIZED GATE FCV-50-2-1	1250	A	1250	TRAIN 1 MOTORIZED GATE FCV-50-3-1	30A		12
	30A		1250	B	1250		30A		
	30A		1250	C	1250		30A		
	30A		1250	1250	30A				
13	30A	TRAIN 2 MOTORIZED GATE FCV-50-2-2	1250	A	1250	TRAIN 2 MOTORIZED GATE FCV-50-3-2	30A		14
	30A		1250	B	1250		30A		
	30A		1250	C	1250		30A		
	30A		1250	1250	30A				
15	30A	TRAIN 3 MOTORIZED GATE FCV-50-2-3	1250	A	1250	TRAIN 3 MOTORIZED GATE FCV-50-3-3	30A		16
	30A		1250	B	1250		30A		
	30A		1250	C	1250		30A		
	30A		1250	1250	30A				
17	30A	TRAIN 4 MOTORIZED GATE FCV-50-3-4	1250	A	1250	TRAIN 4 MOTORIZED GATE FCV-50-3-4	30A		18
	30A		1250	B	1250		30A		
	30A		1250	C	1250		30A		
	30A		1250	1250	30A				
TOTAL:			53499		51120				
TOTAL CONNECTED LOAD: 104619									

42KA SYM. S.C. RATING												
DISTRIBUTION PANEL DPF-2			AMPS 225		VOLTS 480		PHASE 3		WIRES 4		BKR 150	
CHR. No.	BKR	LOAD	VA	VA	LOAD	BKR	CHR. No.					
	30A	TRAIN 5	1250	A 1250	TRAIN 5	30A	2					
	30A	MOTORIZED GATE	1250	B 1250	MOTORIZED GATE	30A						
	30A	FCV-50-2-5	1250	C 1250	FCV-50-3-5	30A						
3	30A	TRAIN 6	1250	A 1250	TRAIN 6	30A	4					
	30A	MOTORIZED GATE	1250	B 1250	MOTORIZED GATE	30A						
	30A	FCV-50-2-6	1250	C 1250	FCV-50-3-6	30A						
5	30A	TRAIN 7	1250	A 1250	TRAIN 7	30A	6					
	30A	MOTORIZED GATE	1250	B 1250	MOTORIZED GATE	30A						
	30A	FCV-50-2-7	1250	C 1250	FCV-50-3-7	30A						
7	30A	TRAIN 8	1250	A 1250	TRAIN 8	30A	8					
	30A	MOTORIZED GATE	1250	B 1250	MOTORIZED GATE	30A						
	30A	FCV-50-2-8	1250	C 1250	FCV-50-3-8	30A						
9	-	-	-	A B C	-	-	10					
11	-	-	-	A B C	-	-	12					
13	-	-	-	A B C	-	-	14					
15	-	-	-	A B C	-	-	16					
17	30A	GENERATOR WATER JACKET HEATER No. 1	3750	A 3750	GENERATOR WATER JACKET HEATER No. 2	30A	18					
	3750		B 3750	30A								
	N/A		C N/A	N/A								
TOTAL:			22500	22500								
TOTAL CONNECTED LOAD:								45000				

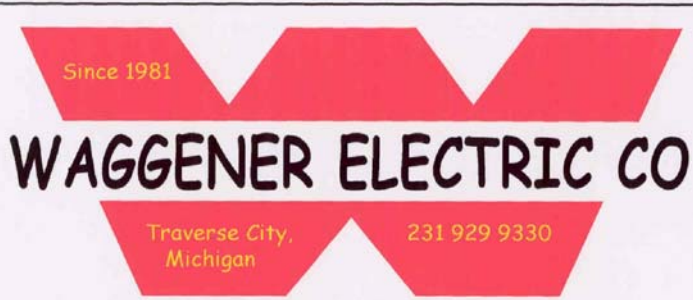


CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 1

AREA	CONDUIT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
PUMP ROOM				
50-P-10A	3/4" GRC	8-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOOP-1 (50-P-10A) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOOP-1 (50-P-10A) BUCKET
SEE ONE-LINE		SEE ONE-LINE	50-P-10A MOTOR	MOOP-1 (50-P-10A) BUCKET
50-P-10B	3/4" GRC	8-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOOP-2 (50-P-10B) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOOP-2 (50-P-10B) BUCKET
SEE ONE-LINE		SEE ONE-LINE	50-P-10B MOTOR	MOOP-2 (50-P-10B) BUCKET
50-SP-1	3/4" GRC	3-#10 + 1-#14 GND	PUMP No.1 MOTOR	LOP-50P-SP-1
	3/4" GRC	3-#10 + 1-#10 GND	PUMP No.2 MOTOR	LOP-50P-SP-1
SEE ONE-LINE		SEE ONE-LINE	LUP-50P-SP-1	DPF-1 DISTRIBUTION PANEL
6" W/6 METER (50-11)	3/4" GRC	2-#12 + 1-#12 GND	FTT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	FTT (MOUNTED ON WALL)	FTT (MOUNTED ON WALL)
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 6" WS PERIMETER)
3" W/6 METER (50-12)	3/4" GRC	2-#12 + 1-#12 GND	FTT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	FTT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 3" WS PERIMETER)
50-P-1A	3/4" GRC	10-#14 + 1-#14 GND	ASB-50-P-1A	ACP-3 P/LC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	ASB-50-P-1A	LOCAL STOP STATION
	3/4" GRC	3-CONDUCTOR #16 SHIELDED CABLE	ASB-50-P-1A	LOCAL OPERATOR STATION
	3/4" GRC	10-#14 + 1-#14 GND	ASB-50-P-1A	LOCAL OPERATOR STATION
SEE ONE-LINE		SEE ONE-LINE	ASB-50-P-1A	MOOP-1 (50-P-1A) BUCKET
SEE ONE-LINE		SEE ONE-LINE	ASB-50-P-1A	50-P-1A MOTOR
50-P-1B	3/4" GRC	10-#14 + 1-#14 GND	ASB-50-P-1B	ACP-3 P/LC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	ASB-50-P-1B	LOCAL STOP STATION
	3/4" GRC	3-CONDUCTOR #16 SHIELDED CABLE	ASB-50-P-1B	LOCAL OPERATOR STATION
	3/4" GRC	10-#14 + 1-#14 GND	ASB-50-P-1B	LOCAL OPERATOR STATION
SEE ONE-LINE		SEE ONE-LINE	ASB-50-P-1B	MOOP-2 (50-P-1B) BUCKET
SEE ONE-LINE		SEE ONE-LINE	ASB-50-P-1B	50-P-1B MOTOR
50-P-6A	3/4" GRC	10-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOOP-1 (50-P-6A) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOOP-1 (50-P-6A) BUCKET
	3/4" GRC	3-CONDUCTOR #16 SHIELDED CABLE	LOCAL OPERATOR STATION	MOOP-1 (50-P-6A) BUCKET
	3/4" GRC	10-#14 + 1-#14 GND	MOOP-1 (50-P-6A) BUCKET	ZENDON P/LC PANEL
	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	MOOP-1 (50-P-6A) BUCKET	ZENDON P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	50-P-6A MOTOR	MOOP-1 (50-P-6A) BUCKET
	3/4" GRC	10-#14	MOTORIZED GATE (FOY-50-6)	ACP-3 P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	MOTORIZED GATE (FOY-50-6)	DPF-1 DISTRIBUTION PANEL
	3/4" GRC	10-#14	MOTORIZED VALVE (FOY-50-6)	ACP-3 P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	MOTORIZED VALVE (FOY-50-6)	DPF-1 DISTRIBUTION PANEL
10" W/6 METER (50-30-1)	3/4" GRC	2-#12 + 1-#12 GND	FTT (MOUNTED ON WALL)	ZENDON P/LC PANEL
	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	FTT (MOUNTED ON WALL)	ZENDON P/LC PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 10" PERIMETER PPVC)
FTT (50-33-1)	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	FTT (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
PMB (50-70A-1)	3/4" GRC	2-#14 + 1-#14 GND	PMB (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
PMB (50-70B-1)	3/4" GRC	2-#14 + 1-#14 GND	PMB (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
IV (50-61-1)	3/4" GRC	6-#14 + 1-#14 GND	IV (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
IV (54-75-1)	3/4" GRC	6-#14 + 1-#14 GND	IV (MOUNTED ON BLOWER PPVC)	ZENDON P/LC PANEL
FOY-50-2-1	3/4" GRC	10-#14	MOTORIZED GATE (FOY-50-2-1)	ACP-3 P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	MOTORIZED GATE (FOY-50-2-1)	DPF-1 DISTRIBUTION PANEL
FOY-50-3-1	3/4" GRC	10-#14	MOTORIZED GATE (FOY-50-3-1)	ACP-3 P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	MOTORIZED GATE (FOY-50-3-1)	DPF-1 DISTRIBUTION PANEL
50-P-8B	3/4" GRC	10-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOOP-1 (50-P-8B) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOOP-1 (50-P-8B) BUCKET
	3/4" GRC	3-CONDUCTOR #16 SHIELDED CABLE	LOCAL OPERATOR STATION	MOOP-1 (50-P-8B) BUCKET
	3/4" GRC	2-#14	MOOP-1 (50-P-8B) BUCKET	ZENDON P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	50-P-8B MOTOR	MOOP-1 (50-P-8B) BUCKET
10" W/6 METER (50-30-2)	3/4" GRC	2-#12 + 1-#12 GND	FTT (MOUNTED ON WALL)	ZENDON P/LC PANEL
	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	FTT (MOUNTED ON WALL)	ZENDON P/LC PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 10" PERIMETER PPVC)
FTT (50-33-2)	3/4" GRC	#16 THREADED SHIELDED PWR CABLE	FTT (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
PMB (50-70A-2)	3/4" GRC	2-#14 + 1-#14 GND	PMB (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
PMB (50-70B-2)	3/4" GRC	2-#14 + 1-#14 GND	PMB (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
IV (50-61-2)	3/4" GRC	6-#14 + 1-#14 GND	IV (MOUNTED ON PERIMETER PPVC)	ZENDON P/LC PANEL
IV (54-75-2)	3/4" GRC	6-#14 + 1-#14 GND	IV (MOUNTED ON BLOWER PPVC)	ZENDON P/LC PANEL
FOY-50-2-2	3/4" GRC	10-#14	MOTORIZED GATE (FOY-50-2-2)	ACP-3 P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	MOTORIZED GATE (FOY-50-2-2)	DPF-1 DISTRIBUTION PANEL
FOY-50-3-2	3/4" GRC	10-#14	MOTORIZED GATE (FOY-50-3-2)	ACP-3 P/LC PANEL
SEE ONE-LINE		SEE ONE-LINE	MOTORIZED GATE (FOY-50-3-2)	DPF-1 DISTRIBUTION PANEL

CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 1

AREA	CONDUIT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
50-0-6C	3/4" GRC	10-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOCF-1 (50-0-6C) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-0-6C) BUCKET
	3/4" GRC	3-CONDUCTOR #14 SHIELDED CABLE	LOCAL OPERATOR STATION	MOCF-3 (50-0-6C) BUCKET
	3/4" GRC	6-#14	MOCF-1 (50-0-6C) BUCKET	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	MOCF-2 (50-0-6C) BUCKET	ZENION P/L PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-0-6C MOTOR	MOCF-1 (50-0-6C) BUCKET
10" MAG METER (2033-0)	3/4" GRC	2-#14 + 1-#14 GND	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 10" PERMATEG PPG)
PT (2033-0)	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070-0-3)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070B-3)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2061-3)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2475-3)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON BLOWER PPG)	ZENION P/L PANEL
FOV-50-2-3	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-2-3)	ACP-3 P/L PANEL
FOV-50-3-3	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-2-3)	DPY-1 DISTRIBUTION PANEL
FOV-50-3-3	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-3-3)	ACP-3 P/L PANEL
FOV-50-3-4	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-3-3)	DPY-1 DISTRIBUTION PANEL
50-0-6D	3/4" GRC	10-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOCF-5 (50-0-6D) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-0-6D) BUCKET
	3/4" GRC	3-CONDUCTOR #14 SHIELDED CABLE	LOCAL OPERATOR STATION	MOCF-5 (50-0-6D) BUCKET
	3/4" GRC	6-#14	MOCF-2 (50-0-6D) BUCKET	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	MOCF-2 (50-0-6D) BUCKET	ZENION P/L PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-0-6D MOTOR	MOCF-5 (50-0-6D) BUCKET
10" MAG METER (2030-4)	3/4" GRC	2-#14 + 1-#14 GND	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 10" PERMATEG PPG)
PT (2033-0)	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070-0-0)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070B-0)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2061-0)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2475-0)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON BLOWER PPG)	ZENION P/L PANEL
FOV-50-2-4	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-2-4)	ACP-3 P/L PANEL
FOV-50-3-4	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-2-4)	DPY-1 DISTRIBUTION PANEL
FOV-50-3-4	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-3-4)	ACP-3 P/L PANEL
FOV-50-3-4	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-3-4)	DPY-1 DISTRIBUTION PANEL
50-0-6E	3/4" GRC	10-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOCF-5 (50-0-6E) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-0-6E) BUCKET
	3/4" GRC	3-CONDUCTOR #14 SHIELDED CABLE	LOCAL OPERATOR STATION	MOCF-5 (50-0-6E) BUCKET
	3/4" GRC	6-#14	MOCF-3 (50-0-6E) BUCKET	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	MOCF-2 (50-0-6E) BUCKET	ZENION P/L PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-0-6E MOTOR	MOCF-5 (50-0-6E) BUCKET
10" MAG METER (2030-0)	3/4" GRC	2-#14 + 1-#14 GND	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 10" PERMATEG PPG)
PT (2033-0)	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070-0-0)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070B-0)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2061-0)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2475-0)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON BLOWER PPG)	ZENION P/L PANEL
FOV-50-2-5	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-2-5)	ACP-3 P/L PANEL
FOV-50-3-5	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-2-5)	DPY-2 DISTRIBUTION PANEL
FOV-50-3-5	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-3-5)	ACP-3 P/L PANEL
FOV-50-3-5	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-3-5)	DPY-2 DISTRIBUTION PANEL
50-0-6F	3/4" GRC	10-#14 + 1-#14 GND	LOCAL OPERATOR STATION	MOCF-5 (50-0-6F) BUCKET
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-0-6F) BUCKET
	3/4" GRC	3-CONDUCTOR #14 SHIELDED CABLE	LOCAL OPERATOR STATION	MOCF-5 (50-0-6F) BUCKET
	3/4" GRC	6-#14	MOCF-3 (50-0-6F) BUCKET	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	MOCF-2 (50-0-6F) BUCKET	ZENION P/L PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-0-6F MOTOR	MOCF-5 (50-0-6F) BUCKET
10" MAG METER (2030-0)	3/4" GRC	2-#14 + 1-#14 GND	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON WALL)	ZENION P/L PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FTT (MOUNTED ON WALL)	FE (MOUNTED IN 10" PERMATEG PPG)
PT (2033-0)	3/4" GRC	#16 THREADED SHIELDED PAIR CABLE	FTT (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070-0-0)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
PSH (2070B-0)	3/4" GRC	2-#14 + 1-#14 GND	PSH (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2061-0)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON PERMATEG PPG)	ZENION P/L PANEL
IV (2475-0)	3/4" GRC	0-#14 + 1-#14 GND	IV (MOUNTED ON BLOWER PPG)	ZENION P/L PANEL
FOV-50-2-6	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-2-6)	ACP-3 P/L PANEL
FOV-50-3-6	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-2-6)	DPY-2 DISTRIBUTION PANEL
FOV-50-3-6	3/4" GRC	10-#14	MOTORIZED GATE (FOV-50-3-6)	ACP-3 P/L PANEL
FOV-50-3-6	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (FOV-50-3-6)	DPY-2 DISTRIBUTION PANEL
FOV-50-0-1	3/4" GRC	10-#14	MOTORIZED VALVE (FOV-50-0-1)	ACP-3 P/L PANEL
	3/4" GRC	10-#14	MOTORIZED VALVE (FOV-50-0-1)	ACP-3 P/L PANEL
	3/4" GRC	10-#14	MOTORIZED VALVE (FOV-50-0-1)	DPY-1 DISTRIBUTION PANEL



## REVISIONS

[illegible]

JOB NAME

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
POWER PLAN NO. 1  
CONDUIT & WIRE  
SCHEDULE NO. 1

JOB NO:

194

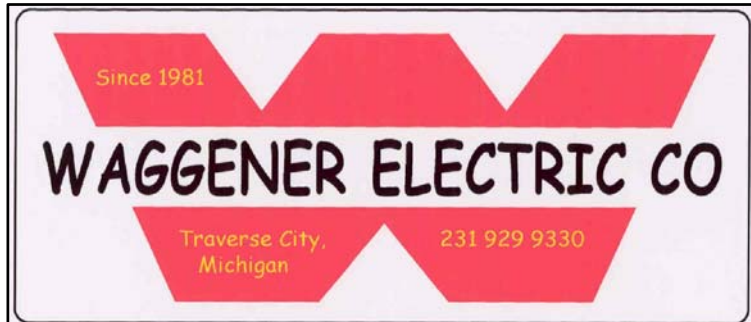
SHEET NO.

SCALE:

NON

50E50





JOB NAME:

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

JOB NO: 1940	SHEET NO: 50E508
SCALE: NONE	

CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 1

AREA	COUNT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
PUMP ROOM				
PV (D475-7)	3/4" GRC	6-#14 + 1-#14 GND	FV (MOUNTED ON BLOWER PUMP)	ZENON P/LC PANEL
PV-50-5-7	5/8" GRC	10-#14	MOTORIZED GATE (PV-50-5-7)	ACP-3 P/LC PANEL
PV-50-6-7	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (PV-50-6-7)	OFF-2 DISTRIBUTION PANEL
PV-50-3-7	3/4" GRC	10-#14	MOTORIZED GATE (PV-50-3-7)	ACP-3 P/LC PANEL
PV-50-3-7	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (PV-50-3-7)	OFF-2 DISTRIBUTION PANEL
PV (D475-8)	3/4" GRC	6-#14 + 1-#14 GND	FV (MOUNTED ON BLOWER PUMP)	ZENON P/LC PANEL
PV-50-5-8	5/8" GRC	10-#14	MOTORIZED GATE (PV-50-5-8)	ACP-3 P/LC PANEL
PV-50-6-8	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (PV-50-6-8)	OFF-2 DISTRIBUTION PANEL
PV-50-3-8	3/4" GRC	10-#14	MOTORIZED GATE (PV-50-3-8)	ACP-3 P/LC PANEL
PV-50-3-8	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED GATE (PV-50-3-8)	OFF-2 DISTRIBUTION PANEL
PV-50-8-2	3/4" GRC	10-#14	MOTORIZED VALVE (PV-50-8-2)	ACP-3 P/LC PANEL
PV-50-8-2	SEE ONE-LINE	SEE ONE-LINE	MOTORIZED VALVE (PV-50-8-2)	OFF-2 DISTRIBUTION PANEL
30" WG METER (50-8-1)	3/4" GRC	2-#12 + 1-#12 GND	FT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	#14 TIEDTIED SHIELDED PAIR CABLE	FT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FT (MOUNTED ON WALL)	FE (MOUNTED IN 30" WG APPROPRIATE)
30" WG METER (50-8-2)	3/4" GRC	2-#12 + 1-#12 GND	FT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	#14 TIEDTIED SHIELDED PAIR CABLE	FT (MOUNTED ON WALL)	ACP-3 P/LC PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FT (MOUNTED ON WALL)	FE (MOUNTED IN 30" WG APPROPRIATE)
50-P-5A	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-1 (50-P-5A) BUCKET
	MCC WIRING	6-#14	MOCF-1 (50-P-5A) BUCKET	ACP-3 P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-5A MOTOR	MOCF-1 (50-P-5A) BUCKET
50-P-5B	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-1 (50-P-5B) BUCKET
	MCC WIRING	6-#14	MOCF-1 (50-P-5B) BUCKET	ACP-3 P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-5B MOTOR	MOCF-1 (50-P-5B) BUCKET
50-P-5C	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-P-5C) BUCKET
	MCC WIRING	6-#14	MOCF-2 (50-P-5C) BUCKET	ACP-3 P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-5C MOTOR	MOCF-2 (50-P-5C) BUCKET
50-P-9	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-P-9) BUCKET
	MCC WIRING	6-#14	MOCF-2 (50-P-9) BUCKET	ACP-3 P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-9 MOTOR	MOCF-2 (50-P-9) BUCKET
50-5S-1	3/4" GRC	10-#14	LCP-50-5S-1 SLUMP PUMP PANEL	ACP-3 P/LC PANEL
	2" PVC	4 SLUMP SWITCH CABLES	FLAME SWITCHES LOCATED IN SLUMP	LCP-50-5S-1 SLUMP PUMP PANEL
	2" PVC	2 SLUMP PUMP CABLES	SLUMP PUMPS LOCATED IN SLUMP	LCP-50-5S-1 SLUMP PUMP PANEL
	SEE ONE-LINE	SEE ONE-LINE	LCP-50-5S-1 SLUMP PUMP PANEL	MOCF-1 (LCP-50-5S-1) BUCKET
10" WG METER (50S)	3/4" GRC	2-#12 + 1-#12 GND	FT (MOUNTED ON WALL)	ZENON P/LC PANEL
	3/4" GRC	#14 TIEDTIED SHIELDED PAIR CABLE	FT (MOUNTED ON WALL)	ZENON P/LC PANEL
	3/4" GRC	MANUFACTURER'S CABLE	FT (MOUNTED ON WALL)	FE (MOUNTED IN 10" BANGLOUSE PIPING)
50-P-7A	3/4" GRC	10-#14 + 1-#14 GND	ASD-50-P-7A	ZENON P/LC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	ASD-50-P-7A	LOCAL STOP STATION
	3/4" GRC	10-#14 + 1-#14 GND	ASD-50-P-7A	LOCAL OPERATOR STATION
	3/4" GRC	3-CONDUCTOR FIBER OPTICED CABLE	ASD-50-P-7A	LOCAL OPERATOR STATION
	SEE ONE-LINE	SEE ONE-LINE	ASD-50-P-7A	MOCF-1 (50-P-7A) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	ASD-50-P-7A	50-P-7A MOTOR
50-P-7B	3/4" GRC	10-#14 + 1-#14 GND	ASD-50-P-7B	ZENON P/LC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	ASD-50-P-7B	LOCAL STOP STATION
	3/4" GRC	10-#14 + 1-#14 GND	ASD-50-P-7B	LOCAL OPERATOR STATION
	3/4" GRC	3-CONDUCTOR FIBER OPTICED CABLE	ASD-50-P-7B	LOCAL OPERATOR STATION
	SEE ONE-LINE	SEE ONE-LINE	ASD-50-P-7B	MOCF-2 (50-P-7B) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	ASD-50-P-7B	50-P-7B MOTOR
50-P-8A	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-1 (50-P-8A) BUCKET
	3/4" GRC	6-#14	MOCF-1 (50-P-8A) BUCKET	ZENON P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-8A MOTOR	MOCF-1 (50-P-8A) BUCKET
50-P-8B	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-1 (50-P-8B) BUCKET
	3/4" GRC	6-#14	MOCF-1 (50-P-8B) BUCKET	ZENON P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-8B MOTOR	MOCF-1 (50-P-8B) BUCKET
50-P-9C	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOCF-2 (50-P-9C) BUCKET
	3/4" GRC	6-#14	MOCF-2 (50-P-9C) BUCKET	ZENON P/LC PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-P-9C MOTOR	MOCF-2 (50-P-9C) BUCKET

CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 1

AREA	COUNT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
50-4C-1A	3/4" GRC 3/4" GRC 3/4" GRC SEE ONE-LINE	2-#14 + 1-#14 GND 10-#14 6-#14 + 1-#14 GND SEE ONE-LINE	LOCAL STOP STATION MOFF-1 (50-4C-1A) BUCKET PSL (MOUNTED ON AIR LINE) 50-4C-1A MOTOR	MOFF-1 (50-4C-1A) BUCKET ZEHON P/LC PANEL MOFF-1 (50-4C-1A) BUCKET MOFF-1 (50-4C-1A) BUCKET
50-4C-1A	3/4" GRC 3/4" GRC 3/4" GRC SEE ONE-LINE	2-#14 + 1-#14 GND 10-#14 6-#14 + 1-#14 GND SEE ONE-LINE	LOCAL STOP STATION MOFF-2 (50-4C-1B) BUCKET PSL (MOUNTED ON AIR LINE) 50-4C-1B MOTOR	MOFF-2 (50-4C-1B) BUCKET ZEHON P/LC PANEL MOFF-2 (50-4C-1B) BUCKET MOFF-2 (50-4C-1B) BUCKET
COMPRESSED AIR DRYER	3/4" GRC SEE ONE-LINE	2-#14 + 1-#14 GND SEE ONE-LINE	COMPRESSED AIR DRYER CO-DR-1	UFF-2 LIGHTING PANEL OFF-1 DISTRIBUTION PANEL
MODED LIQUOR SLIDE GATE	SEE ONE-LINE	SEE ONE-LINE	MODED LIQUOR SLIDE GATE	OPP-1 DISTRIBUTION PANEL
TRAIN 1	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-1	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 2	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-2	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 3	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-3	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 4	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-4	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 5	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-5	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 6	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-6	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 7	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-7	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
TRAIN 8	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT FOY-50-3-8	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
MODED LIQUOR REDUC. CHNL.	1" GRC 3/4" GRC 3/4" GRC	2 FLOAT SWITCH CABLES #10 TWISTED SHIELDED PAIR CABLE 6-#14 + 1-#14 GND	FLAT SWITCHES LIT (50-7) FOY-50-8	ZEHON P/LC PANEL ZEHON P/LC PANEL ZEHON P/LC PANEL
CHEMICAL ROOM				
SODIUM HYPOCHLORITE TANK	1" GRC	FLAT SWITCH CABLE	FLAT SWITCH	ZEHON P/LC PANEL
CITRIC ACID TANK	1" GRC 3/4" GRC	FLAT SWITCH CABLE MISER CABLE	FLAT SWITCH MISER	ZEHON P/LC PANEL RECEIPIQUE
FIRE SUPPRESSION SPRINKLER	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED ON SPRINKLER LINE)	ACF-3 P/LC PANEL

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TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

50-MEMBRANE TANKS  
PROCESS BUILDING  
POWER PLAN NO.2  
CONDUIT & WIRE  
SCHEDULE

NONE

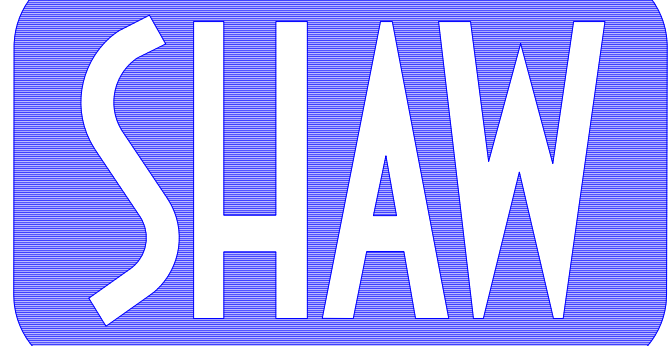
CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 2

AREA	CONDUIT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
BLOWER ROOM				
50-B-1A	3/4" GRC	2-#14 + 1-#14 GND	FIL (WTO. ON 50-B-1A DISCHARGE LINE	ZENDIX PLC
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOPF-1 (50-B-1A) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	50-B-1A MOTOR	MOPF-1 (50-B-1A) BUCKET
50-B-1B	3/4" GRC	2-#14 + 1-#14 GND	FIL (WTO. ON 50-B-1B DISCHARGE LINE	ZENDIX PLC
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOPF-1 (50-B-1B) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	50-B-1B MOTOR	MOPF-1 (50-B-1B) BUCKET
50-B-1C	3/4" GRC	2-#14 + 1-#14 GND	FIL (WTO. ON 50-B-1C DISCHARGE LINE	ZENDIX PLC
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOPF-2 (50-B-1C) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	50-B-1C MOTOR	MOPF-2 (50-B-1C) BUCKET
50-B-1D	3/4" GRC	2-#14 + 1-#14 GND	FIL (WTO. ON 50-B-1D DISCHARGE LINE	ZENDIX PLC
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOPF-2 (50-B-1D) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	50-B-1D MOTOR	MOPF-2 (50-B-1D) BUCKET
50-B-1E	3/4" GRC	2-#14 + 1-#14 GND	FIL (WTO. ON 50-B-1E DISCHARGE LINE	ZENDIX PLC
	3/4" GRC	2-#14 + 1-#14 GND	LOCAL STOP STATION	MOPF-2 (50-B-1E) BUCKET
	SEE ONE-LINE	SEE ONE-LINE	50-B-1E MOTOR	MOPF-2 (50-B-1E) BUCKET
MONORAIL	SEE ONE-LINE	SEE ONE-LINE	MONORAIL MOTOR DISCONNECT	OFF-1 DISTRIBUTION PANEL



CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 3

AREA	CONDUIT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
STAR NO. 2	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL
PUMP ROOM	3/4" GRC	2-#12 x 1-#12 GND	50-EP-1 EXHAUST FAN	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-EP-1 EXHAUSTOR)	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 x 1-#12 GND	50-MD-1 MOTORIZED DAMPER	50-HCP-1 CONTROL PANEL
	3/4" GRC	4-#12 + 1-#12 GND	50-EP-2 EXHAUST FAN	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-EP-2 EXHAUSTOR)	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 x 1-#12 GND	50-MD-2 MOTORIZED DAMPER	50-HCP-1 CONTROL PANEL
CHEMICAL ROOM	3/4" GRC	2-#12 x 1-#12 GND	50-EP-2 EXHAUST FAN	50-HCP-2 EXHAUST FAN
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-EP-3 EXHAUSTOR)	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-MD-3 MOTORIZED DAMPER	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-EP-3 EXHAUST FAN	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-MD-4 MOTORIZED DAMPER	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-MD-5 MOTORIZED DAMPER	50-HCP-1 CONTROL PANEL
1" GRC	10-#14	50-HCP-1 CONTROL PANEL	ACP-3	
SEE ONE-LINE	SEE ONE-LINE	50-HCP-1 CONTROL PANEL	DPF-1 DISTRIBUTION PANEL	
CHEMICAL ROOM	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL
CHEMICAL ROOM	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL
	3/4" GRC	10-#14	50-HCP-2 CONTROL PANEL	ACP-3
	SEE ONE-LINE	SEE ONE-LINE	50-HCP-2 CONTROL PANEL	DPF-1 DISTRIBUTION PANEL
STAR NO. 1	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (ZS)	ACP-3 PLC PANEL

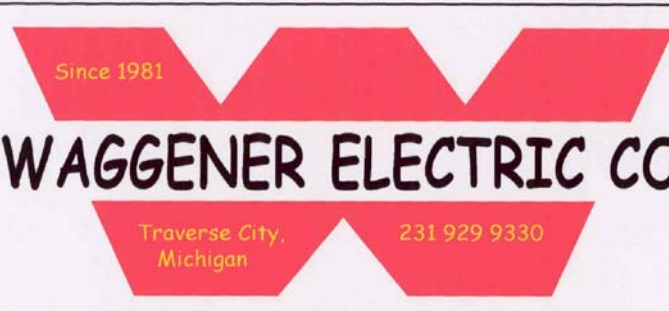


**ELECTRIC CO.**

33200 SCHOOLCRAFT LIVONIA

**PHONE: (734)-425-6800****FAX: (734)-425-6824**

## ELECTRICAL CONTRACTOR

**SINCE 1930**

## REVISIONS

[illegible]

JOB NAME

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET T

50-MEMBRANE TANKS  
PROCESS BUILDING  
POWER PLAN NO.3  
CONDUIT & WIRE  
SCHEDULE

JOB NO:

194

SHEET No.

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SCALE:

NON

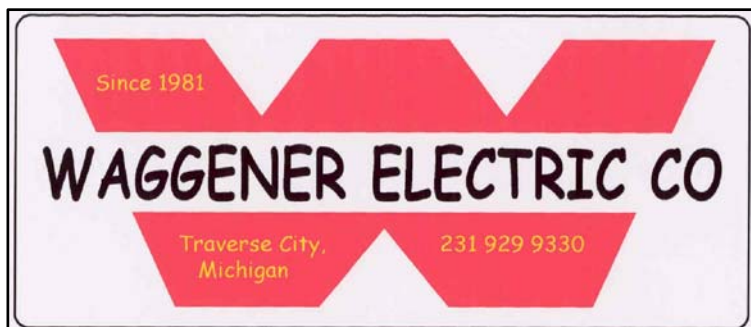


CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. 4

AREA	CONDUIT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
STAR NO. 2	3/4" GRC	2-#12 + 1-#12 GND	50-SF-4 SUPPLY FAN	50-HCP-4 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DPS (MOUNTED ACROSS 50-SF-4 FILTER)	50-HCP-4 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-13 MOTORIZED DAMPER	50-HCP-4 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-QUH-3 UNIT HEATER
	3/4" GRC	2-#12 + 1-#12 GND	50-QUH-3 UNIT HEATER	UPF-2 LIGHTING PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (25)	ACP-3 P.L.C. PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (25)	ACP-3 P.L.C. PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-HCP-4 CONTROL PANEL	UPF-2 LIGHTING PANEL
	1" GRC	18-#14	50-HCP-4 CONTROL PANEL	ACP-3 P.L.C. PANEL
	1" GRC	18-#14	50-HCP-4 CONTROL PANEL	ACP-3 P.L.C. PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-SF-3 SUPPLY FAN	50-HCP-4 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DPS (MOUNTED ACROSS 50-SF-3 FILTER)	50-HCP-4 CONTROL PANEL
CORRIDOR	3/4" GRC	2-#12 + 1-#12 GND	50-ME-13 MOTORIZED DAMPER	50-HCP-4 CONTROL PANEL
	3/4" GRC	2-#10 + 1-#10 GND	50-HCP-4 CONTROL PANEL	UPF-2 LIGHTING PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-QUH-2 UNIT HEATER
	3/4" GRC	2-#12 + 1-#12 GND	50-QUH-2 UNIT HEATER	UPF-2 LIGHTING PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (25)	ACP-3 P.L.C. PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (25)	ACP-3 P.L.C. PANEL
	3/4" GRC	6-#12 + 1-#12 GND	50-SF-2 SUPPLY FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DPS (MOUNTED ACROSS 50-SF-2 FILTER)	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-10 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-SF-8 SUPPLY FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DPS (MOUNTED ACROSS 50-SF-8 FILTER)	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-21 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
MCC ROOM	3/4" GRC	6-#12 + 1-#12 GND	50-SF-8 EXHAUST FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-11 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-QUH-4 UNIT HEATER
	3/4" GRC	2-#12 + 1-#12 GND	50-QUH-4 UNIT HEATER	UPF-2 LIGHTING PANEL
	SEE ONE-LINE	SEE ONE-LINE	50-HCP-3	DW-1 DISTRIBUTION PANEL
	18-#14	18-#14	50-HCP-3	ACP-3 P.L.C. PANEL
	3/4" GRC	6-#12 + 1-#12 GND	50-SF-8 EXHAUST FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-SF-8 DUCTWORK)	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-17 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-HCP-3 CONTROL PANEL
	3/4" GRC	6-#12 + 1-#12 GND	50-SF-7 EXHAUST FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-SF-7 DUCTWORK)	50-HCP-3 CONTROL PANEL
BLOWER ROOM	3/4" GRC	2-#12 + 1-#12 GND	50-ME-18 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-HCP-3 CONTROL PANEL
	3/4" GRC	6-#12 + 1-#12 GND	50-SF-8 EXHAUST FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-SF-8 DUCTWORK)	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-18 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-HCP-3 CONTROL PANEL
	3/4" GRC	6-#12 + 1-#12 GND	50-SF-8 EXHAUST FAN	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (MOUNTED IN 50-SF-8 DUCTWORK)	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-18 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	THERMISTAT	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-14 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-15 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-16 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (25)	ACP-3 P.L.C. PANEL
	3/4" GRC	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (25)	ACP-3 P.L.C. PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-ME-16 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL

CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No. \_\_\_\_\_

AREA	CONDUIT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
STAR NO. 1				
	3/4" GND	2-#12 + 1-#12 GND	50-SF-1 SUPPLY FAN	50-HQ-6 CONTROL PANEL
	3/4" GND	2-#14 + 1-#12 GND	50S (HEATED WHEEL HEATER) (50-SF-2, 1720R)	50-HQ-5 CONTROL PANEL
	3/4" GND	2-#14 + 1-#12 GND	50-MD-7 MOTORIZED DAMPER	50-HQ-6 CONTROL PANEL
	3/4" GND	2-#12 + 1-#12 GND	THERMISTAT	50-DUM-1 UNIT HEATER
	3/4" GND	2-#14 + 1-#12 GND	50-DUM-1 UNIT HEATER	LYT-1 LIGHTING PANEL
	3/4" GND	2-#14 + 1-#14 GND	DOOR POSITION SWITCH (2S)	ACP-3 PLC PANEL
SEE ONE-LINE		SEE ONE-LINE	50-HQ-5	DPM-1 DISTRIBUTION PANEL
	3/4" GND	1-#6 GND	50-HQ-5	ACP-3 PLC PANEL



## REVISIONS

[illegible]

JOB NAME:

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

(SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
POWER PLAN NO.4  
CONTROL & WIRE  
SCHEDULE

JOB NO:

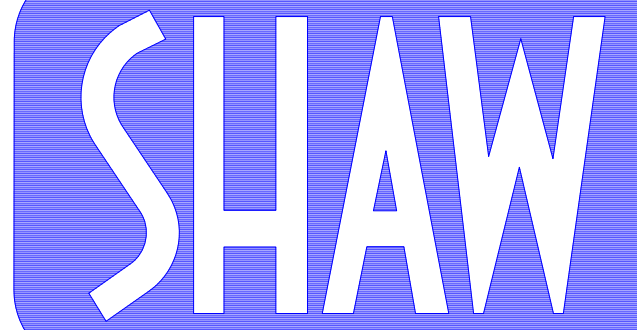
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SCALE:

NONE

SHEET NO:

50E5 1 1



**ELECTRIC CO.**

## 33200 SCHOOLCRAFT LIVON

**PHONE. (734)-425-6800****FAX: [734]-425-6822**

## ELECTRICAL CONTRACTOR

**SINCE 193**

ROOF PLAN

CONDUIT AND WIRE SCHEDULE FOR POWER PLAN No.

AREA	COUNT	WIRE	FROM EQUIPMENT	TO EQUIPMENT
ROOF	3/4" GRC	2-#10 + 1-#12 GND	50-MAU-1 MAKE-UP AIR UNIT (POWER)	50-HCP-1 CONTROL PANEL
	3/4" GRC	50-MAU-1 MAKE-UP AIR UNIT (CONTROLS)		50-HCP-1 CONTROL PANEL
	1" GRC	2-#14 + 1-#14 GND	SPS (ROUTED ACROSS 50-MAU-1 FILTER)	50-MAU-1 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (ROUTED IN 50-MAU-1 DUCTWORK)	50-MAU-1 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FZ (ROUTED IN 50-MAU-1 DUCTWORK)	50-MAU-1 CONTROL PANEL
	3/4" GRC	50-MAU-1 MAKE-UP AIR UNIT (POWER)		50-MAU-1 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-MD-4 MOTORIZED DAMPER	50-HCP-1 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND		
	3/4" GRC	2-#12 + 1-#12 GND		
	1" GRC	20-#14		
	3/4" GRC	2-#14 + 1-#14 GND	SPS (ROUTED ACROSS 50-MAU-2 FILTER)	50-MAU-2 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (ROUTED IN 50-MAU-2 DUCTWORK)	50-MAU-2 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FZ (ROUTED IN 50-MAU-2 DUCTWORK)	50-MAU-2 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND	50-MD-4 MOTORIZED DAMPER	50-HCP-2 CONTROL PANEL
	3/4" GRC	2-#12 + 1-#12 GND		
	3/4" GRC	2-#12 + 1-#12 GND		
	1" GRC	20-#14		
	3/4" GRC	2-#14 + 1-#14 GND	SPS (ROUTED ACROSS 50-MAU-3 FILTER)	50-MAU-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FS (ROUTED IN 50-MAU-3 DUCTWORK)	50-MAU-3 CONTROL PANEL
	3/4" GRC	2-#14 + 1-#14 GND	FZ (ROUTED IN 50-MAU-3 DUCTWORK)	50-MAU-3 CONTROL PANEL
3/4" GRC	50-MAU-3 MAKE-UP AIR UNIT (POWER)		50-MAU-3 CONTROL PANEL	
3/4" GRC	2-#12 + 1-#12 GND	50-MD-20 MOTORIZED DAMPER	50-HCP-3 CONTROL PANEL	
3/4" GRC	2-#12 + 1-#12 GND			
3/4" GRC	2-#12 + 1-#12 GND			
3/4" GRC	2-#14 + 1-#14 GND	FS (ROUTED IN 50-MAU-4 DUCTWORK)	50-MAU-4 CONTROL PANEL	
3/4" GRC	2-#12 + 1-#12 GND	50-MD-4 MOTORIZED DAMPER	50-HCP-4 CONTROL PANEL	

## REVISION

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TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET -

50-MEMBRANE TANKS  
 & PROCESS BUILDING  
 POWER PLAN NO.5  
 CONDUIT & WIRE  
 SCHEDULE

1999

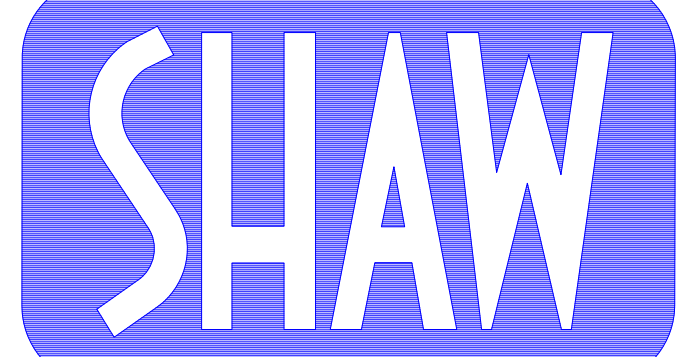
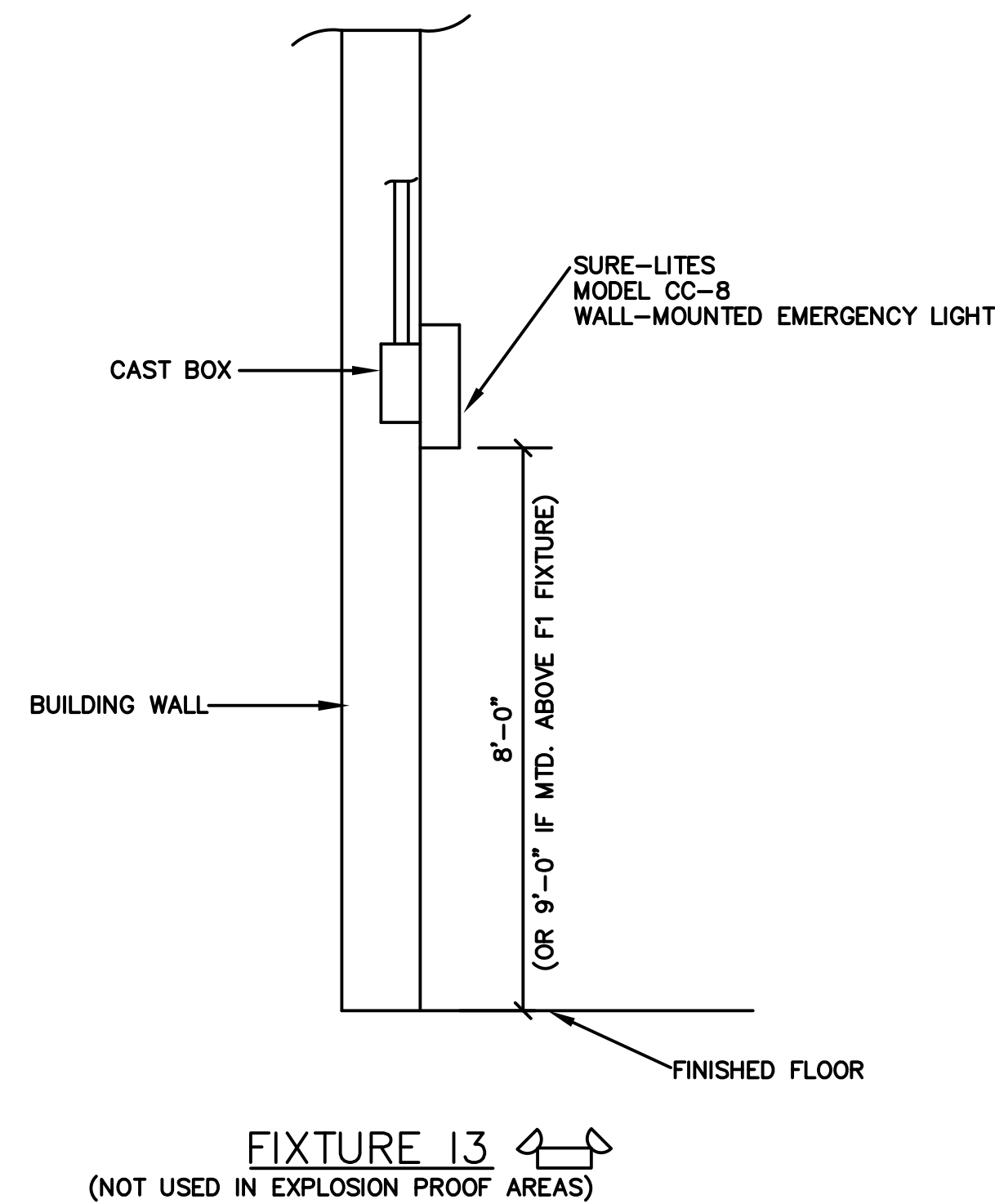
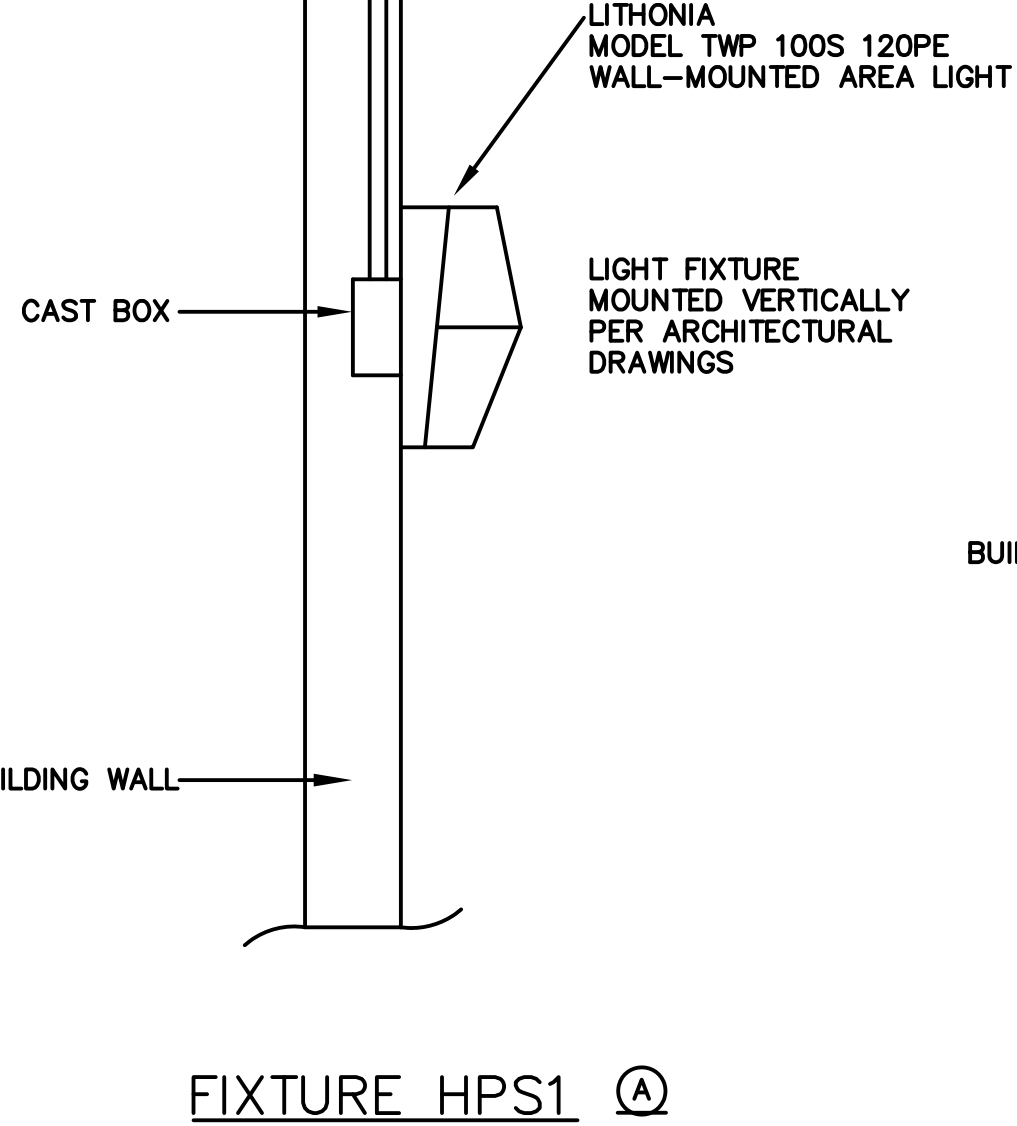
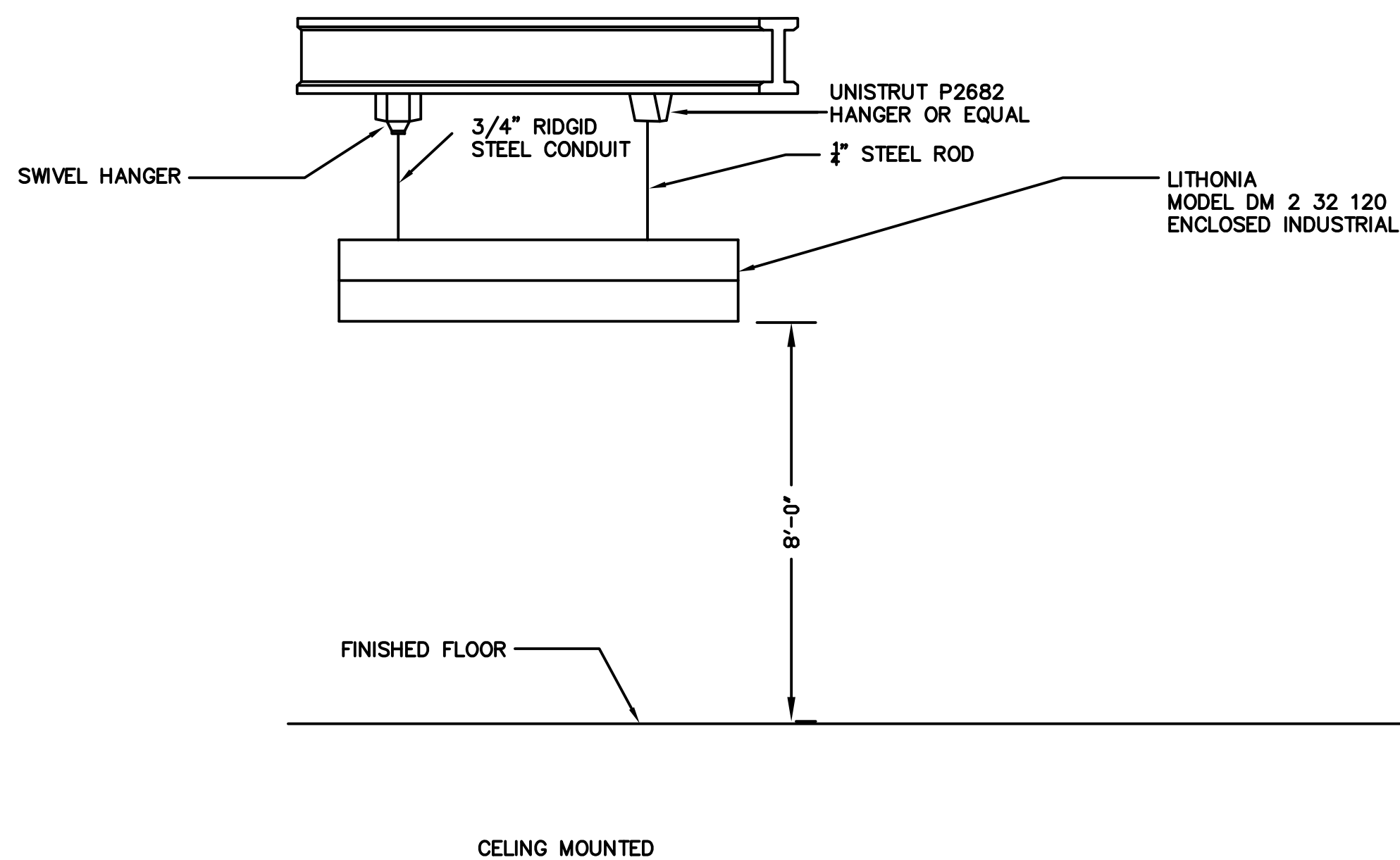
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## 2.1. INTRODUCTION

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ELECTRIC CO.

## 33200 SCHOOLCRAFT LIVONIA

**PHONE: (734)-425-6800****FAX: (734)-425-6824**

## ELECTRICAL CONTRACTORS SINCE 1930



## REVISIONS

[illegible]

(JOB NAME

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

(SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
LIGHTING  
DETAILS NO.1

(JOB NO

1940

SHEET NO:

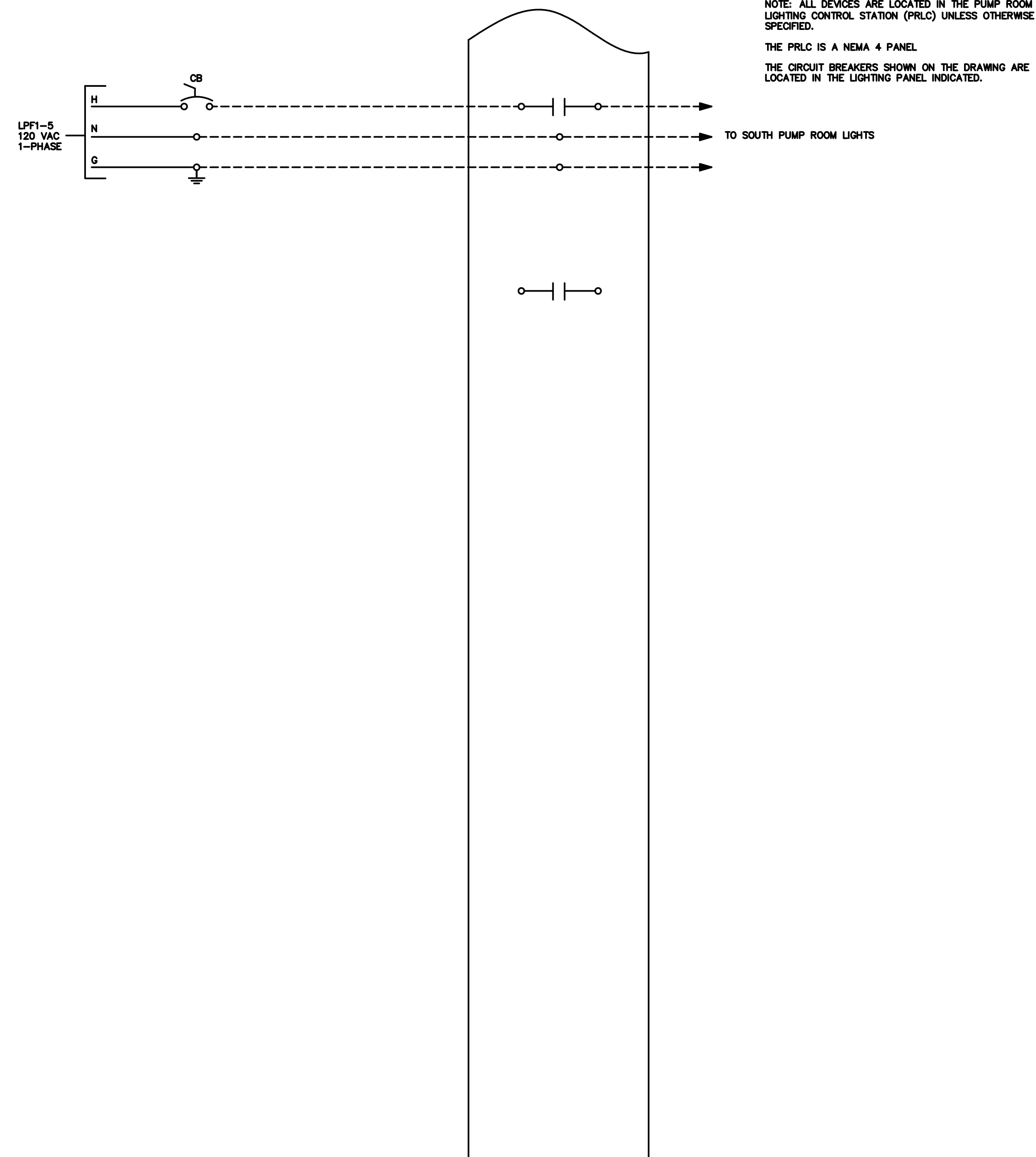
50E5 1 3

SCALE:

NONE



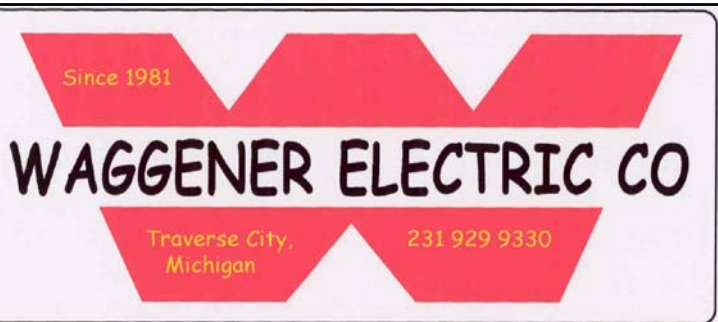




NOTE: ALL DEVICES ARE LOCATED IN THE PUMP ROOM LIGHTING CONTROL STATION (PRLC) UNLESS OTHERWISE SPECIFIED.

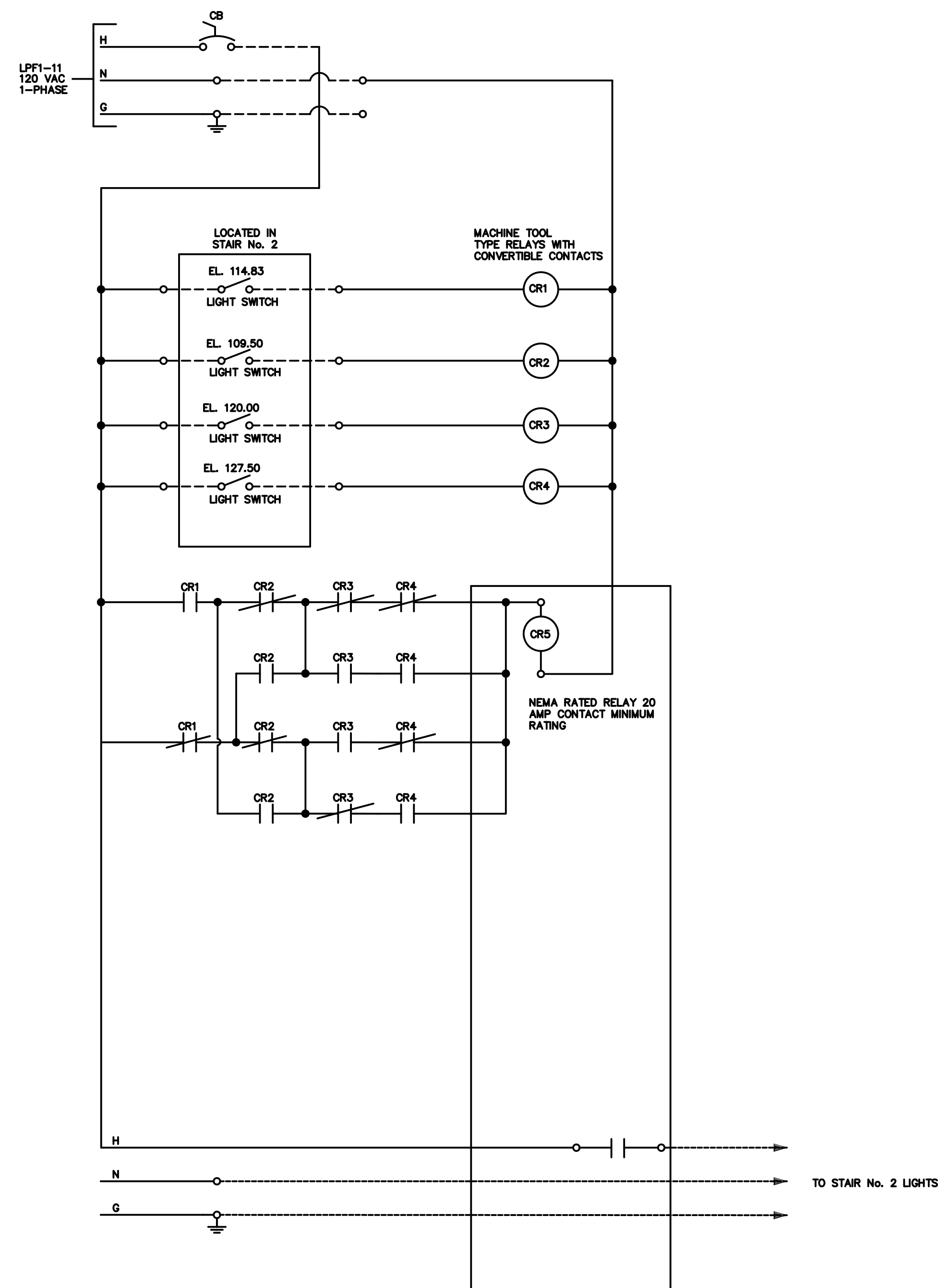
THE PRLC IS A NEMA 4 PANEL

THE CIRCUIT BREAKERS SHOWN ON THE DRAWING ARE LOCATED IN THE LIGHTING PANEL INDICATED.



TRaverse City  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

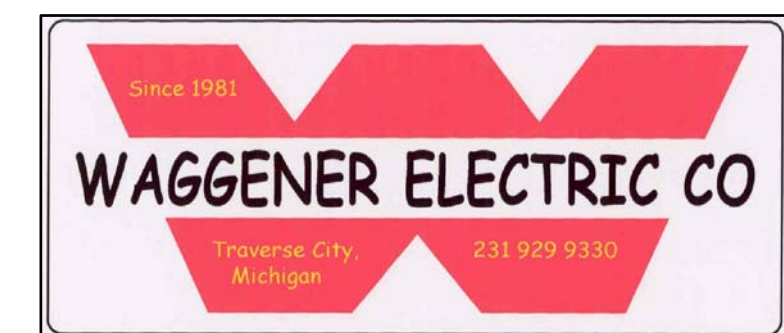
JOB NO: 1940	SHEET NO: 50E515
SCALE: NONE	



NOTE: ALL DEVICES ARE LOCATED IN THE STAIR No. 2 LIGHTING CONTROL STATION (S2CS) UNLESS OTHERWISE SPECIFIED.

THE S2CS IS A NEMA 4 PANEL.

THE CIRCUIT BREAKER SHOWN ON THE DRAWING IS LOCATED IN THE LIGHTING PANEL INDICATED.

[illegible]

JOB NAME:

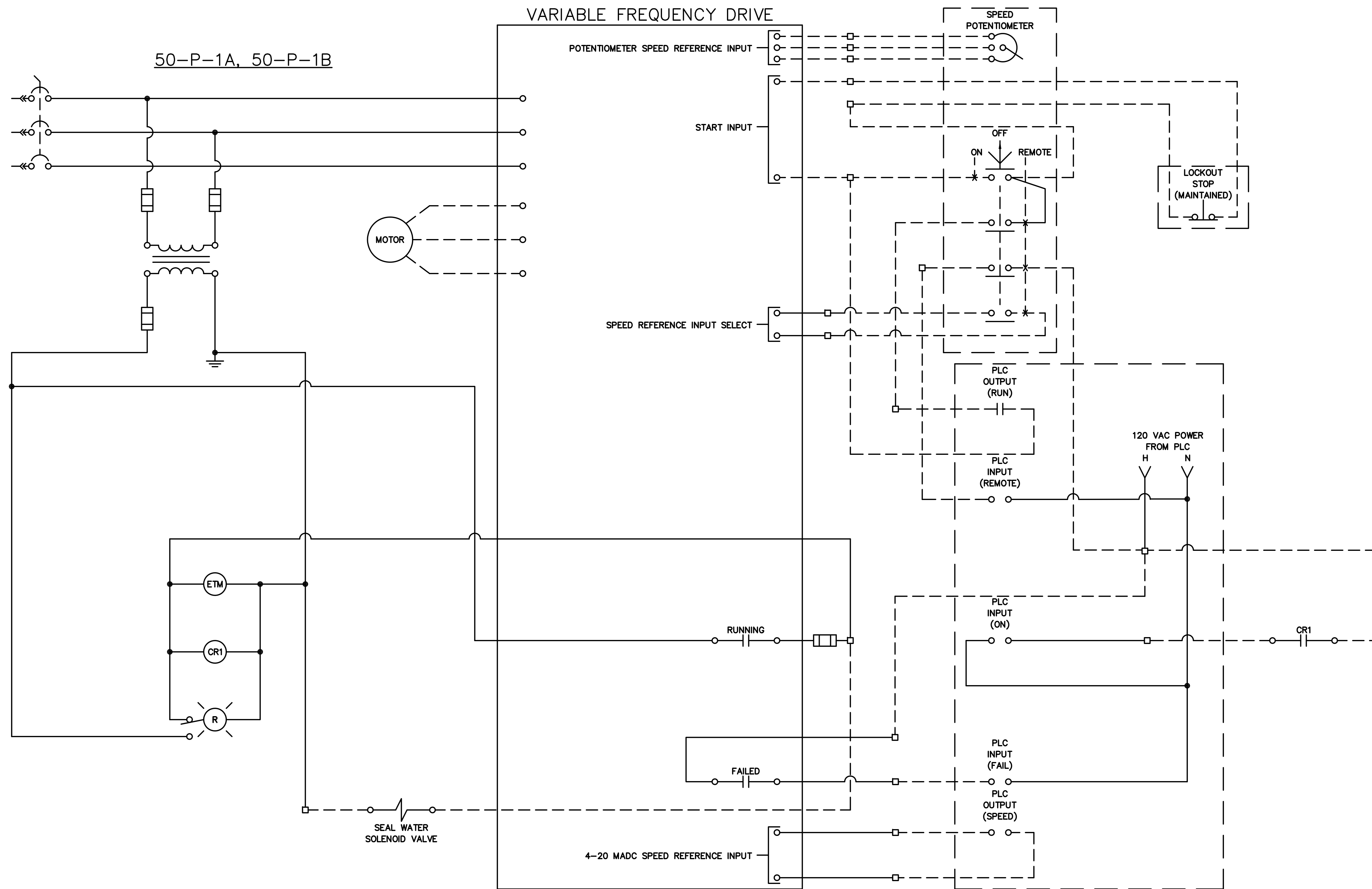
TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
S2LC PANEL  
LIGHTING CONTROL  
SCHEMATIC

JOB NO:  1940	SHEET NO:  50E516
SCALE:  NONE	



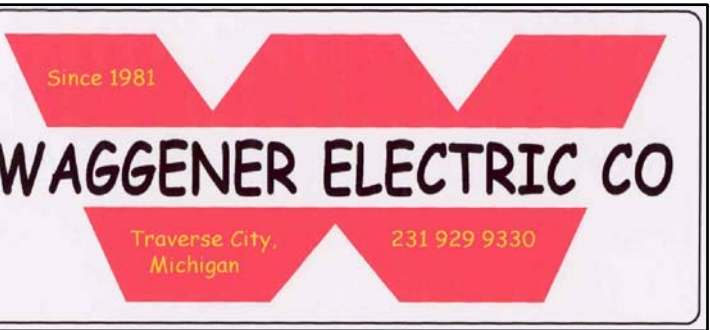
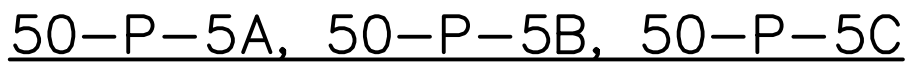
[illegible]

JOB NAME: TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
& PROCESS BUILDING  
WAS FEED PUMP  
SCHEMATIC

JOB NO:  1940	SHEET NO:  50E517
SCALE:  NONE	

[illegible]

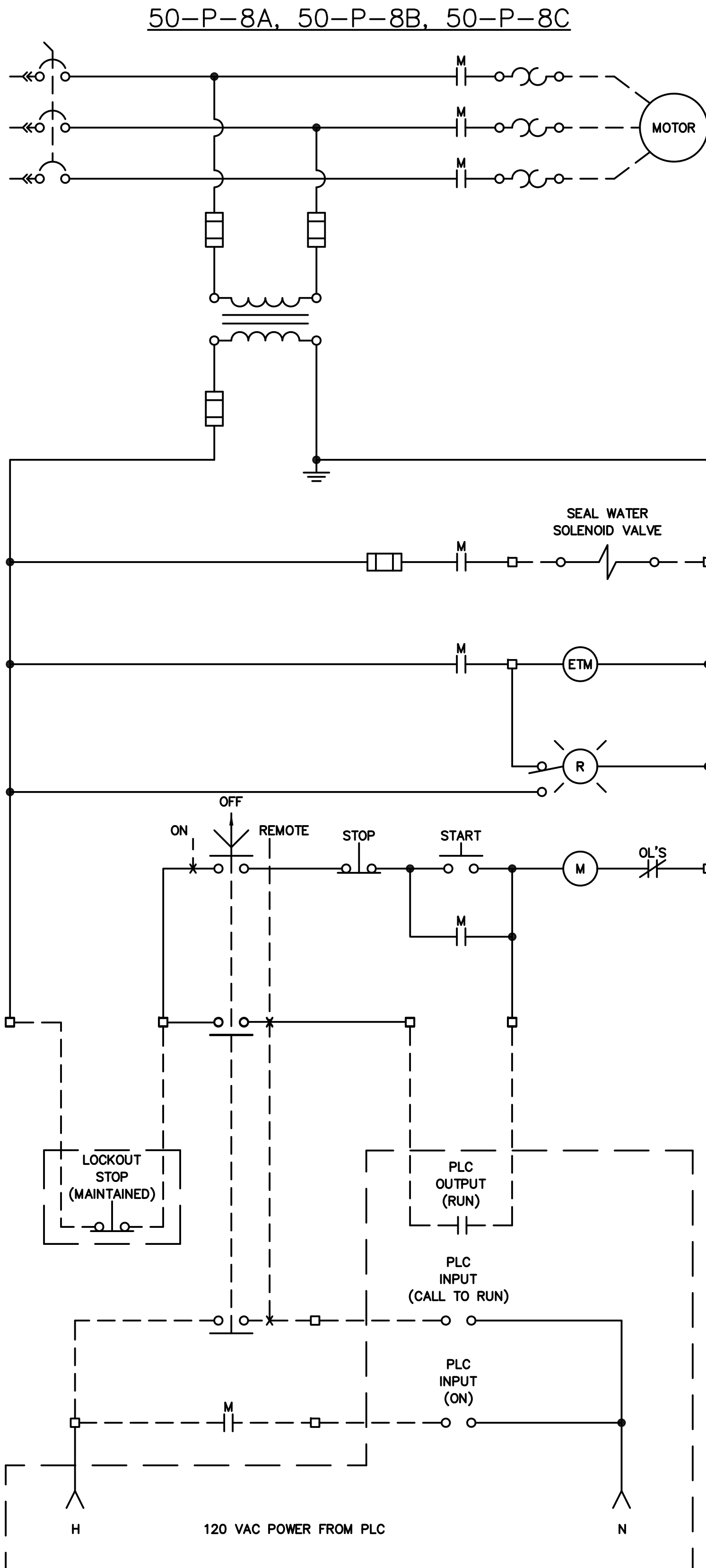
TRaverse City  
Regional  
Wastewater  
Treatment  
Plant

50-MEMBRANE TANKS  
PROCESS BUILDING  
MIXED LIQUOR  
CIRCULATION PUMP  
SCHEMATIC

JOB NO: 1940	SHEET NO: 50E518
SCALE: NONE	





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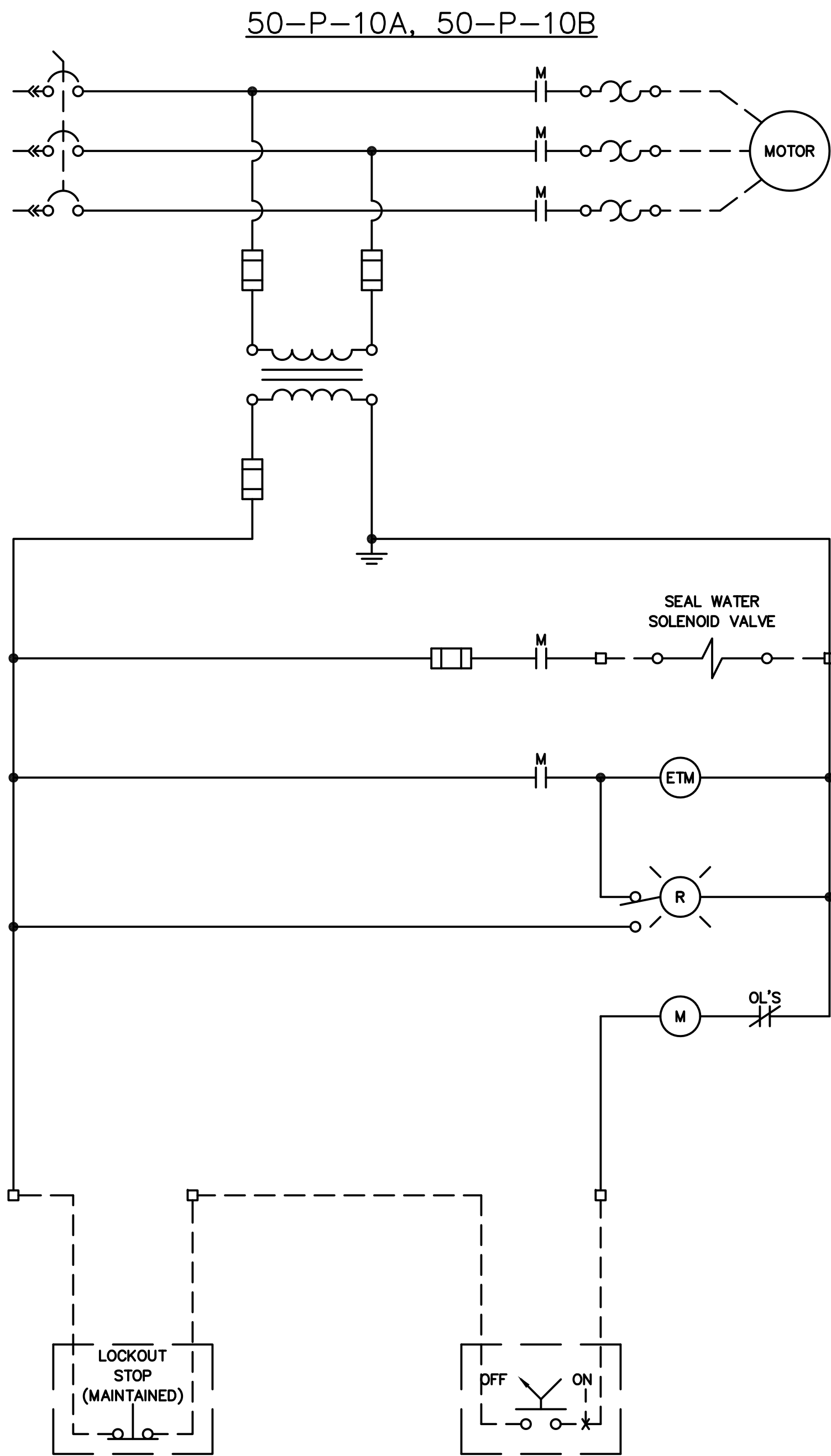
TRaverse City  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
PROCESS BUILDING  
VACUUM PUMP  
SCHEMATIC

JOB NO: 1940	SHEET NO: 50E520
SCALE: NONE	

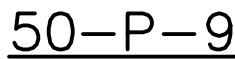


[illegible]

TRaverse City  
Regional  
Wastewater  
Treatment  
Plant

50-MEMBRANE TANKS  
PROCESS BUILDING  
DIP TANK  
RECIRCULATION PUMP  
SCHEMATIC

JOB NO: 1940	SHEET NO: 50E521
SCALE: NONE	

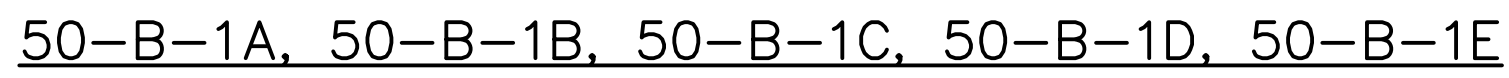
[illegible]

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

# 50-MEMBRANE TANKS \$ PROCESS BUILDING DRAIN PUMP SCHEMATIC

NONE



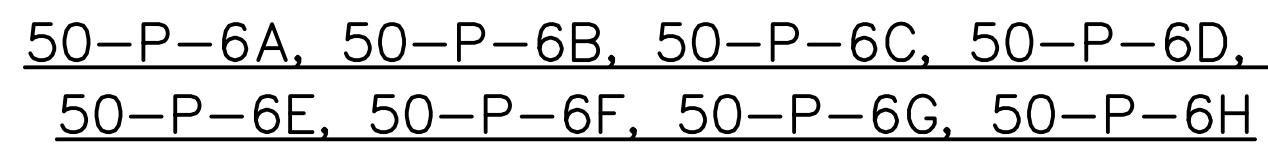
[illegible]

TRaverse City  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

SHEET TITLE:

50-MEMBRANE TANKS  
PROCESS BUILDING  
MEMBRANE AIR SCOUR  
BLOWER SCHEMATIC

JOB NO: 1940	SHEET NO: 50E523
SCALE: NONE	



**SINCE 1930**

Traverse City, 231 929 9338

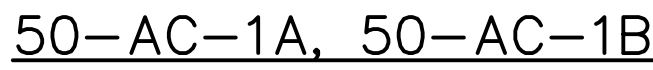
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TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

50-MEMBRANE TANKS  
& PROCESS BUILDING  
PERMEATE PUMP  
SCHEMATIC

NONE





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**FAX: (734)-425-6824**

**ELECTRICAL CONTRACTORS  
SINCE 1930**



Traverse City. 231 929 9330

[illegible]

TRAVERSE CITY  
REGIONAL  
WASTEWATER  
TREATMENT  
PLANT

# 50-MEMBRANE TANKS & PROCESS BUILDING AIR COMPRESSOR SCHEMATIC

1940

SCALE:

NONE

50E525

# **ATTACHMENT C**



## Jon Lahuis

**From:** noreply@salesforce.com on behalf of CertainTeed Roofing Technical Services  
<rpg.t.services@saint-gobain.com>  
**Sent:** Thursday, January 26, 2023 1:01 PM  
**To:** Jon Lahuis  
**Subject:** [EXTERNAL]: CertainTeed Warranty Registration #WR-920069

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.



Thank you for selecting a CertainTeed product for your roof. Your Warranty Registration Number is **WR-920069**.

*Please keep this email, a copy of the Limited Warranty and your paid roofer's invoice for future reference.*

If you need a copy of the warranty for the year the shingles were installed, please visit [www.ctroof.com](http://www.ctroof.com)

### Mailing Address

City of Traverse City City of Traverse city waste Water Barn	
606 Franklin St, Traverse City, Michigan (MI) 49686 United States	231-946-1615 jlahuis@arrowroofing.com

### Building Location

City of Traverse City City Of Traverse City	
606 Franklin St, Traverse City, Michigan (MI) 49686 United States	

### Product Information

**Date Installed:** 10/26/2022

**Product Group:** Commercial Roofing

**Quantity:** 45

**Product Details:** Certainteed LandMark Pro Shingles. Certainteed WinterGuard.  
Certainteed Roofrunner.





**HOME**

## **MAILING ADDRESS**

**City of Traverse city waste Water Barn**

606 Franklin St  
Traverse City Michigan (MI) 49686  
United States

231-946-1615  
jlahuis@arrowroofing.com

## **BUILDING LOCATION**

**City of Traverse City**  
**City Of Traverse City**

606 Franklin St  
Traverse City Michigan (MI) 49686  
United States

## **PRODUCT INFORMATION**

**Date Installed:** 10/26/2022

**Product Group:** Commercial Roofing

**Quantity:** 45

**Product Details:** Certainteed LandMark Pro Shingles.  
Certainteed WinterGuard. Certainteed  
Roofrunner.

**Installation  
Location:** Barn

## ASPHALT SHINGLE & LOW-SLOPE RESIDENTIAL PRODUCTS

2022 Limited Warranty





Congratulations... and thank you for your recent purchase of one of the fine products from CertainTeed Roofing. Since 1904, CertainTeed has been producing quality roofing products that provide long-lasting beauty and protection for homes of every size, style and age. For over 100 years, the basis for our name, "Quality made certain, satisfaction guaranteed," has been our ongoing philosophy.

Your CertainTeed roofing warranty fully explains how CertainTeed supports its products with the strongest warranty protection available. It is important that you read the warranty section of this brochure. The warranty lists the specific CertainTeed asphalt shingle products that are covered and the period of time for which they are covered. Take the time to understand how CertainTeed protects your purchase by standing behind our products.

## **Limited, Prorated and Transferable Warranty**

This warranty covers asphalt shingle products listed in Table 1, sold only in the United States of America, its territories and Canada.

### **What and Who Are Covered and for How Long**

From the date of installation, CertainTeed warrants to the original property owner/consumer that, when subject to normal and proper use, its shingles will be free from manufacturing defects for the warranty period specified in Table 1. CertainTeed will pay to repair, replace or clean, at its option, any shingles CertainTeed determines are defective under the terms of this Limited Warranty. In the event of repair, replacement or cleaning pursuant to the terms of this Limited Warranty, the warranty applicable to the original shingles shall apply to the repaired, replaced or cleaned shingles and will extend for the balance of the original warranty period.

Lifetime means for as long as the original individual property owner owns the property where the shingles are installed.

The Lifetime warranty period offered for certain shingles in Table 1 is only available to individual property owners. The warranty period for shingles installed on premises not used by individual property owners as their residence is limited as specified in Table 1. All property owners, who are not individual property owners, and all structures not used by individual property owners as their residence (e.g. corporations, governmental agencies, partnerships, religious organizations, schools, condominiums, property owner associations or cooperative housing arrangements, apartment buildings, and any other type of building or premises not owned by individual property owners) called "Other Ownership" are limited to either a 50-year or 40-year warranty period described in Table 1. In addition, for Other Ownership after the SureStart™ Protection period ends, this Limited Warranty covers only manufacturing defects that caused water penetration.

### **SureStart™ Protection**

Because CertainTeed roofing products are manufactured to the highest quality standards, we confidently include the additional assurance of SureStart™ protection. SureStart provides the strongest non-prorated protection you can get in the vital early years of your new roof.

All of CertainTeed's shingle products are covered by SureStart protection. Under this warranty feature, CertainTeed, at no charge, will pay to repair or replace, at its option, any shingles CertainTeed determines are defective during the SureStart period. Note: Wind warranty and algae warranty are covered separately as described on page 5. The SureStart period begins on the date of application and terminates following the warranty period specified in Table 1. CertainTeed's maximum liability under SureStart is equal to the reasonable cost of comparable replacement shingles and labor as determined by CertainTeed to replace or repair the defective shingles. Roof tear-off, metal work, flashing and disposal expenses, and other costs or expenses incurred during such repair or replacement are not covered or reimbursed by this Limited Warranty, except for certain products with Lifetime warranty periods specified in Table 1, for which CertainTeed's maximum liability also includes the cost of roof tear-off, metal work, flashing and disposal.

In instances in which CertainTeed, under the terms of this warranty, has agreed to pay the reasonable cost of labor required to repair or replace defective shingles, CertainTeed will determine labor costs by Bluebook® or RS Means® data. CertainTeed will provide reimbursement for labor only upon receipt of a copy of the contractor's invoice or other written evidence of the completion of such work which CertainTeed, in its sole discretion, deems acceptable.

Costs associated with removal or replacement of overburden (items installed over the shingles, including but not limited to, solar panels, satellite dishes and gardens) are the sole responsibility of the property owner.

SureStart protection does not extend to any shingles applied to non-ventilated or inadequately ventilated roof deck systems as determined by CertainTeed, except as stated on page 4. CertainTeed's maximum contribution toward the cost of repairing or replacing defective shingles applied to a non-ventilated or inadequately ventilated roof deck system is calculated using the reasonable cost of comparable replacement shingles as determined by CertainTeed less 1/120th of that amount multiplied by the number of months from the start of the warranty period to the date when CertainTeed determines the shingles are defective. Labor costs, roof tear-off, metal work, flashing and disposal expenses, and other costs or expenses incurred during such repair or replacement are not covered or reimbursed by this Limited Warranty.

## Beyond SureStart™ Protection

After the SureStart Protection period, if CertainTeed determines its shingles have a manufacturing defect, or for Other Ownership, if CertainTeed determines its shingles have a manufacturing defect that caused water penetration, CertainTeed's maximum contribution toward the cost of repairing or replacing defective shingles will be calculated using the reasonable cost of comparable replacement shingles as determined by CertainTeed less the Reduction Figure Per Month, specified in Table 1, for the number of months from the start of the warranty period to the date when CertainTeed determines the shingles are defective. Labor costs, roof tear-off, metal work, flashing and disposal expenses, and other costs or expenses incurred during such repair or replacement are not covered or reimbursed by this Limited Warranty.

TABLE 1

<u>Lifetime Products<sup>A</sup></u>	<u>Warranty Period</u>	<u>SureStart Period</u>	<u>Wind Warranty Miles Per Hour</u>	<u>Algae Resistant Warranty Period<sup>1</sup></u>	<u>Reduction Figure Per Month</u>
Grand Manor® Presidential Shake® TL** Landmark® TL** Presidential Shake® (& IR) <sup>2**</sup> Carriage House® Belmont® (& IR) <sup>2</sup> Landmark® Premium Landmark® PRO NorthGate® ClimateFlex® <sup>2</sup> Highland Slate®	Lifetime <sup>A</sup>	10 Years	110**	15	1/600*
<u>Lifetime Products<sup>B</sup></u>	<u>Warranty Period</u>	<u>SureStart Period</u>	<u>Wind Warranty Miles Per Hour</u>	<u>Algae Resistant Warranty Period<sup>1</sup></u>	<u>Reduction Figure Per Month</u>
Landmark® ClimateFlex® <sup>2</sup>	Lifetime <sup>B</sup>	10 Years	110**	10	1/600*
Landmark®***	Lifetime <sup>B</sup>	10 Years	110**	10	1/600*
<u>25 Year Product</u>	<u>Warranty Period</u>	<u>SureStart Period</u>	<u>Wind Warranty Miles Per Hour</u>	<u>Algae Resistant Warranty Period<sup>1</sup></u>	<u>Reduction Figure Per Month</u>
XT™ <sup>253</sup>	25 Years	5 Years	60	10	1/300
Any shingles applied to any inadequately ventilated roof deck	10 years <sup>†</sup>	N/A	N/A	N/A	1/120

\*\* Including Solaris colors.  
(see footnotes to Table 1)

### FOOTNOTES TO TABLE 1.

A. The Lifetime Warranty period is only available to individual property owners on premises used as their residence. The warranty period for Other Ownership for these shingles is limited to 50 years and the SureStart period is 10 years following the installation of the shingles. **Roof tear-off, metal work, flashing and disposal expense, incurred during repair or replacement are covered or reimbursed by this Limited Warranty.** Limited Warranty transferees during the SureStart™ period are limited to a 50-year warranty period (see section titled "Transfers During the SureStart Period" for details).

B. The Lifetime Warranty period is only available to individual property owners on premises used as their residence. The warranty period for Other Ownership for these shingles is limited to 40 years and the SureStart period is 5 years following the installation of the shingles. Limited Warranty transferees during the SureStart period are limited to a 40-year warranty period (see section titled "Transfers During the SureStart Period" for details).

\* For Lifetime products, at the completion of the 40th year the reduction figure will remain at 480/600, or 20% of the total maximum liability.

† For details of warranty coverage for shingles installed on inadequately ventilated roof decks on both residential and commercial buildings, see provisions under "Inadequately Ventilated and Non-Ventilated Decks."

†† Wind warranty upgrade – These products are warranted to resist blow-off due to wind velocities, including gusts, up to a maximum of 130 miles per hour during the first fifteen (15) years, provided all of the following conditions are met:

1. The CertainTeed shingles are not applied over existing roof shingles (roof-overs are not permitted).
2. The CertainTeed specified corresponding hip and ridge accessory products are installed as cap shingles [Shadow Ridge®, Cedar Crest®, Shingle Ridge®, Mountain Ridge® and Landmark Solaris® (& IR)].
3. The CertainTeed specified corresponding starter shingles are installed along the roof eaves and rakes (Swiftstart®, High-Performance Starter and Presidential® Starter).

(Note: In Florida, CertainTeed will waive the requirement of applying starter shingles along the roof rake if all of the following conditions are met: The applicable building code requires that asphalt roof shingles be embedded in an 8-inch-wide bed of asphalt roofing cement applied along the roof rake edges. And, the shingles are installed and embedded in an 8-inch-wide bed of asphalt roofing cement along the roof rake edges in accordance with the code.)

<sup>1</sup>Algae Resistant Warranty period applies only to the Algae Resistant (AR) version of the pertinent shingle.

<sup>2</sup>CertainTeed's Impact Resistant Landmark®, ClimateFlex®, NorthGate®, ClimateFlex®, Presidential Shake® IR, and Belmont® IR shingles comply with UL 2218 Impact Resistance of Prepared Roof Covering Materials test criteria at time of manufacture.

<sup>3</sup>The wind warranty for XT™25 shingles installed in Alaska is 90 mph.

## Transferability

This Limited Warranty is transferable, but only by the original property owner/consumer to the first subsequent property owner. After the Limited Warranty has been transferred once, it is no longer transferable. A bank foreclosure or a change of ownership on a deed is deemed a transfer under this Limited Warranty.

## Transfers During the SureStart™ Period

If this Limited Warranty is transferred during the product's SureStart period, the warranty for the new owner is the same as it would have been for the original owner, except for certain products with Lifetime warranty periods where the duration of the transferred warranty will be 50 years or 40 years as specified in Table 1, measured from the beginning of the SureStart period (i.e. the date of installation), and the remaining period of SureStart protection will be available to the subsequent property owner.

## Transfers After the SureStart Period

If this Limited Warranty is transferred by the original property owner/consumer after the SureStart period, the warranty following the transfer will be limited to two (2) years from the date of the transfer. The warranty obligation will be calculated as explained in the section titled "Beyond SureStart Protection."

## Limitations

This Limited Warranty does not provide protection against, and CertainTeed will have no liability for, any failure, defect or damage as a result of, including but not limited to:

- Winds, including gusts, greater than the Wind Warranty MPH in Table 1
- Damage caused by lightning, hailstorm, earthquake, fire, explosion, flood or falling objects.
- Damage caused by tornado, or hurricanes (other than as warranted under Wind Warranty MPH in Table 1).
- Distortion, cracking or other failure or movement of: the base material over which the shingles are applied, the roof deck, or the walls or foundation of the building itself.
- Damage caused by structural changes, alterations or additions, or by the installation of equipment (such as, but not limited to, arials, signs or air-conditioning equipment) to the building after the original shingles have been applied.
- Shading, stains or discoloration to the shingles arising from outside sources such as, but not limited to, algae (unless blue-green algae as described in the section titled "Limited Algae Resistant Warranty"), fungus, moss, lichens or other vegetation, mold or mildew growth, or paints, chemicals or other similar materials.
- Misuse, abuse, neglect, or improper transportation, handling or storage of the shingles.
- Installation of the shingles over non-approved roof decks as more fully explained in CertainTeed's installation instructions published at the time of original installation.



- Damage caused by improper installation or installation not in accordance with CertainTeed's installation instructions published at the time of original installation.
- Damage to the shingles, the roof deck or the structure caused by ice backup or ice damming.
- Damage caused by impact, including such things as tools, equipment or foot traffic.
- Vandalism or acts of war.
- Animals, animal feces or insects.
- Any other cause not a result of a manufacturing defect in the shingles.

Mold and mildew are functions of environmental conditions and are not manufacturing defects. As such, mold and mildew are not covered by this Limited Warranty or any implied warranty.

CertainTeed reserves the right to discontinue or modify any of its products, including the color of its shingles, and shall not be liable as a result of such discontinuance or modification, nor shall CertainTeed be liable in the event replacement material varies in color in comparison to the original product as a result of normal weathering. If CertainTeed replaces any material under this warranty, it may substitute products designated by CertainTeed to be of comparable quality or price range in the event the product initially installed has been discontinued or modified.

### **Inadequately Ventilated and Non-Ventilated Decks**

Any shingles applied to inadequately ventilated or non-ventilated decks, other than the shingles and deck systems described in the section titled "Insulated Decks and Radiant Barriers," are subject to a reduced limited warranty period of ten (10) years and do not qualify for SureStart Protection. SureStart™ Protection and the Warranty Period applicable to the shingle are available if CertainTeed determines that the shingle damage was caused exclusively by a manufacturing defect that is unrelated to the inadequate roof system ventilation.

### **Insulated Decks and Radiant Barriers**

CertainTeed's Limited Warranty, including SureStart Protection, will remain in force when its fiberglass shingles are applied to roof deck assemblies where foam insulation is prefabricated into the roof deck system (often called "nailboard insulation"), where insulation is installed beneath an acceptable roof deck system, or where radiant barriers are installed, with or without ventilation, directly below the deck. Acceptable roof deck surfaces must consist of at least 3/8" thick plywood or 7/16" thick Oriented Strand Board (OSB) and slopes must be 2:12 or greater. If a different deck surface material will be utilized, please contact CertainTeed's Technical Services Department for assistance. (See the following important restrictions.)

The design professional is responsible for ensuring: 1) the proper quality and application of the insulation and/or radiant barrier; 2) the provision of adequate structural ventilation and/or vapor retarders as determined to be necessary, and 3) that all local codes are met (particularly taking into account local climate conditions). Special attention must be taken if cellular foam, fiberglass, cellulose insulation or other highly permeable insulation will be used in an unventilated system, or if the insulation/rafter or insulation/joist planes may create an air leak that could lead to moisture transmission and condensation problems. All these important factors and decisions, while not the responsibility of CertainTeed, are critical to assure proper deck system performance.

### **Ventilated Nail-Base Roof Insulation**

Ventilated Nail-Base Roof Insulation products (e.g. FlintBoard® CV) are made of rigid insulation (typically foam board) and another layer of material that provides air space above the insulation and below the nailable deck (which is typically at least 7/16" thick OSB or 3/8" thick plywood). These products can provide soffit-to-ridge ventilation, and if installed in accordance with the deck manufacturer's instructions to achieve sufficient ventilation, will not reduce the scope or length of CertainTeed's Limited Warranty coverage.

### **Limited Algae-Resistant Warranty**

Blue-green algae or *gloeocapsa magma*, (which has a black/brown appearance and is commonly but incorrectly called "fungus"), can create unsightly streaking on shingles. CertainTeed warrants that the Algae-Resistant (AR) versions of the products in Table 1 will remain free from blue-green algae growth (but not mold or mildew growth) which adversely affects the overall appearance of said shingles for a period of ten (10) or fifteen (15) years, as noted in Table 1.

If during the Algae-Resistant Warranty Period specified in Table 1, the overall appearance of the Algae-Resistant shingles is adversely affected by blue-green algae, CertainTeed will pay the reasonable cost to replace or clean at its option, any affected shingles. In the event of replacement or cleaning, for

the remainder of the Algae-Resistant Warranty Period, CertainTeed's maximum contribution towards subsequent replacement or cleaning will be calculated using the Algae-Resistant Warranty Period specified in Table 1, less a prorated adjustment that reflects the number of months that have elapsed from the start of the Algae-Resistant Warranty Period to the date of reoccurrence.

**WARNING: FOR LOW-VOLUME RAIN AND SALT FOG AREAS**

In areas of low-volume rain (e.g. areas that receive insignificant rainfall during a 90-day period) and/or "salt fog" (e.g. parts of the Southern California coastline), copper released by algae-resistant (AR) granules or shingles can react with aluminum in gutters and cause severe corrosion of the gutters. In such regions, CertainTeed strongly recommends that vinyl or copper gutters, not aluminum gutters, be used with algae-resistant shingles. CertainTeed disclaims all liability and responsibility for any damages that may result from the use of its algae-resistant shingle products with copper granules where gutters containing aluminum are used.

## Limited Wind Warranty

CertainTeed warrants its shingles will resist blow-off damage due to wind velocities, including gusts, up to the maximum wind velocity per the Wind Warranty MPH specified in Table 1 during the first fifteen (15) years of the warranty for Lifetime products and during the first five (5) years for all other products listed in Table 1.

CertainTeed's obligations and liability for shingle blow-off damage during the wind warranty periods as specified above are limited as follows:

- If shingles or hip/ridge accessories blow off because the self-sealing asphalt strips did not activate, CertainTeed will furnish replacement shingles without charge, but only for damaged or blown off shingles.
- If shingles or hip/ridge accessories blow off before the self-sealing asphalt strips could have reasonably activated due to installation in cold weather, CertainTeed will furnish replacement shingles without charge, but only for damaged or blown off shingles. CertainTeed will not be responsible for or reimburse labor costs, roof tear-off, metal work, flashing and disposal expenses, or any other costs pertaining to removal or replacement of damaged shingles. Any costs in excess of CertainTeed's material contribution are the property owner's responsibility (and may be covered by owner's insurance).
- CertainTeed shall have no liability for any shingles not fastened in accordance with CertainTeed installation instructions published at the time of original installation.
- CertainTeed shall have no liability for any damage to persons or property caused by blown off shingles.
- CertainTeed's maximum liability during the Limited Wind Warranty period is the reasonable cost of hand sealing all of the shingles on the roof.

## Residential Low-Slope Roofing

For residential low-slope roofing projects less than 2,000 square feet (20 squares), CertainTeed offers limited warranty coverage on our Flintlastic® SA self-adhered roof system provided the products are applied in accordance with CertainTeed's current installation instructions published at the time of installation as follows:

- A 10-year warranty duration on a single ply of Flintlastic SA Cap sheet over a primed plywood roof deck.
- A 12-year warranty duration for a two-ply system consisting of a Flintlastic SA NailBase and a Flintlastic SA Cap sheet.
- A 15-year warranty duration for a three-ply system consisting of a Flintlastic SA NailBase and a Flintlastic SA PlyBase and a Flintlastic SA Cap sheet\*.
- A 20-year warranty duration for a three-ply system consisting of a Flintlastic SA NailBase and a Flintlastic SA MidPly and a Flintlastic SA Cap sheet\*.

CertainTeed warrants the roof membrane, subject to the following terms, conditions, limitations, and exclusions, for the duration specified above from the date of completion of the roof membrane installation. If during the duration of this Limited Warranty, a manufacturing defect in the roof membrane causes a leak, CertainTeed or its designated roofing contractor will, at CertainTeed's sole discretion, repair or replace the roof membrane materials only as necessary to restore it to a watertight condition.

*\*Two-ply, direct adhesion to a primed wood deck, without the inclusion of the Flintlastic SA NailBase is permitted; direct adhesion to wood is not permitted by code in Miami-Dade County (check your local building code); direct adhesion to wood plank decks constructed of resinous woods, such as pine, is prohibited; at the end of the roofing membrane's life, roofing membranes self-adhered over wood decks will require replacement of the deck.*

Only manufacturing defects in the roof membrane that cause leaks are covered by this Limited Warranty. CertainTeed's MAXIMUM LIABILITY during the first year of this warranty is the original cost of the CertainTeed membrane materials only. After the first year, CertainTeed's maximum liability is the original cost of the CertainTeed membrane materials used on the roof reduced by 8.3% for 12-year warranty, 10% for 10-year warranty, 6.6% for 15-year warranty and 5% for 20-year warranty during each subsequent year, less any costs previously incurred by CertainTeed for repair or replacements.

Roof components which are not part of the roof membrane and hence not covered by this Limited Warranty include, but are not limited to, the following: underlying roof deck, insulation, vapor retarders, fasteners, metal work, drains, pitch pans, expansion joints, skylights, vents, plastic accessories, any flashing, decorative or reflective coating, surfacing and/or any aggregates. In no event, however, will CertainTeed be responsible for any costs related to the removal or abatement of any asbestos present in any existing roof system to which the CertainTeed roof membrane is applied.

## What the Customer Must Do

If you believe your shingles have a manufacturing defect, you must notify CertainTeed within 30 days of discovery and provide proof of property ownership and the date of shingle purchase and application. Without original or sufficient proof of purchase CertainTeed reserves the right to use the shingle manufacturing date for claim calculation. In order to properly evaluate and process a warranty claim, CertainTeed may require the property owner to submit a shingle sample to CertainTeed for analysis and/or permit a CertainTeed representative to make repairs to, take photographs of, and/or take samples from the roof, if required. CertainTeed will evaluate each properly reported claim and will repair, replace, clean or reimburse the property owner for the shingles it determines are defective, in accordance with the terms of this Limited Warranty within a reasonable amount of time. For more details about submitting a warranty claim, visit [ctroof.com](http://ctroof.com) or call (800) 345-1145.

**Please send all notifications and correspondence to:**

**CertainTeed LLC, 200 Commerce Drive P.O. Box 1000 Montgomeryville, PA 18936.**

**Attn: CertainTeed Roofing Technical Services Department. Telephone number: 800-345-1145.**

**Email: [rpg.t.services@saint-gobain.com](mailto:rpg.t.services@saint-gobain.com)**

## Warranty Registration (not required)

You may register your product warranty on CertainTeed's website: [certainteed.com/warrantyreg](http://certainteed.com/warrantyreg). Each registrant receives a registration confirmation number by return e-mail that can be printed and kept with this Limited Warranty and your proof of purchase. If you do not have internet access, you can register your shingles by sending: (1) your name, address, and telephone number; (2) the name and contact information of the contractor who installed your shingles and the original date of installation; and, (3) the type, color and number of squares of your shingles to: **CertainTeed LLC, 20 Moores Road, Malvern, PA 19355, Attn: CertainTeed Roofing Technical Services Department.**

CertainTeed will register your information and mail you a confirmation number. Failure to register this warranty does NOT void the warranty or any of its terms.

## For Your Records

Product Purchased: \_\_\_\_\_ Date of Installation: \_\_\_\_\_

Roofing Contractor: \_\_\_\_\_ Contractor's Telephone No. \_\_\_\_\_

This warranty applies to shingles installed during the calendar year of 2022.

(The warranty in effect at the time the material is originally installed is the applicable warranty.)

## Exclusive Warranty and Limitation of Remedies

THIS DOCUMENT CONSTITUTES THE EXCLUSIVE WARRANTIES AND REMEDIES PROVIDED BY CERTAINTEED. THE WARRANTIES AND REMEDIES CONTAINED IN THIS DOCUMENT ARE EXPRESSLY IN LIEU OF ANY AND ALL OTHER OBLIGATIONS, GUARANTEES, WARRANTIES AND REPRESENTATIONS, WHETHER WRITTEN, ORAL OR IMPLIED BY STATUTE, AT LAW OR IN EQUITY, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES OR PROVINCES MAY NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR MAY DETERMINE THE PERIOD OF TIME FOLLOWING THE SALE THAT A PURCHASER MAY SEEK A REMEDY UNDER IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.



CERTAINTEED'S OBLIGATIONS, RESPONSIBILITIES, AND LIABILITY SHALL BE LIMITED TO REPAIRING OR REPLACING THE DEFECTIVE PRODUCT OR CLEANING ALGAE-RESISTANT SHINGLES IN THE CASE OF ALGAE GROWTH AS SET FORTH IN THIS LIMITED WARRANTY. IN NO EVENT SHALL CERTAINTEED BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING ANY DAMAGE TO THE PROPERTY, THE BUILDING OR ITS CONTENTS, OR FOR INJURY TO ANY PERSONS, THAT MAY OCCUR AS A RESULT OF THE USE OF CERTAINTEED'S PRODUCTS OR AS A RESULT OF THE BREACH OF THIS WARRANTY. IF YOUR STATE OR PROVINCE DOES NOT ALLOW EXCLUSIONS OR LIMITATIONS OF SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. IN NO EVENT SHALL CERTAINTEED'S TOTAL LIABILITY ARISING OUT OF OR RELATED TO THE PRODUCT(S) OR THIS LIMITED WARRANTY EXCEED THE REASONABLE COST OF SHINGLES AND LABOR TO REPLACE OR REPAIR THE DEFECTIVE SHINGLES.

This Limited Warranty may not be modified, altered or expanded by anyone, including product distributors, dealers, sellers and/or CertainTeed field representatives.

This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from State to State, or Province to Province.

### **Roofing Plants and Regional Sales Office**

CertainTeed roofing products are sold by CertainTeed Roofing in nine sales regions. They are manufactured in ten residential roofing plants and one commercial roofing plant. Since the early 1900s, CertainTeed has been an innovator in the building materials industry and today is a leading manufacturer of building materials including residential and commercial roofing, vinyl siding, composite decking and railing, fiber glass insulation and vinyl fence products. The company is headquartered in Malvern, Pennsylvania, and employs more than 7,000 employees at approximately 60 manufacturing facilities throughout North America. Continuing the 100-year commitment of "Quality made certain, Satisfaction guaranteed™," CertainTeed remains one of the most trusted names in the industry. More information is available at **[certainteed.com](http://certainteed.com)**.

This document is also available in Spanish and French.

Call 1-800-782-8777 or go to [www.certainteed.com](http://www.certainteed.com).

Se puede obtener este documento en español. Favor de llamar 1-800-782-8777.

Ce document est disponible en anglais et en espagnol. Composez le 1-800-782-8777.



#### **CertainTeed**

**CEILINGS • DECKING • FENCE • GYPSUM**

**INSULATION • RAILING • ROOFING • SIDING • TRIM**

20 Moores Road, Malvern, PA 19355

Professional: 800-233-8990 Consumer: 800-782-8777

[certainteed.com](http://certainteed.com)

## Landmark®, Landmark® Premium, Landmark® Pro Shingles, Landmark® Pro/Architect 80 (NW Region Only) Shingles

### PRODUCT INFORMATION

Landmark shingles reflect the same high manufacturing standards and superior warranty protection as the rest of CertainTeed's line of roofing products. Landmark Premium (and Algae Resistant-AR), Landmark PRO (and AR) and Landmark (and AR) are built with the industry's toughest fiber glass mat base, and their strict dimensional tolerance assures consistency. Complex granule color blends and subtle shadow lines produce a distinctive color selection. Landmark is produced with the unique NailTrak® nailing feature. ***Please see the installation instruction section below for important information regarding NailTrak.***



In the Northwest Region Landmark PRO (AR) is double-branded as Landmark PRO/Architect 80 (AR).

Landmark algae-resistant (AR) shingles are algae-resistant and help protect against dark or black discoloration, sometimes called staining or streaking, caused by blue-green algae. AR shingles are not available in all regions.

**Colors:** Please refer to the product brochure or CertainTeed website for the colors available in your region.

**Limitations:** Use on roofs with slopes greater than 2" per foot. Low-slope applications (2:12 to < 4:12) require additional underlayment. In areas where icing along eaves can cause the back-up of water, apply CertainTeed WinterGuard® Waterproofing Shingle Underlayment, or its equivalent, according to application instructions provided with the product and on the shingle package.

**Product Composition:** Landmark Series shingles are composed of a fiber glass mat base. Ceramic-coated mineral granules are tightly embedded in carefully refined, water-resistant asphalt. Two pieces of the shingle are firmly laminated together in a special, tough asphaltic cement. All Landmark shingles have self-sealing adhesive strips.

### Applicable Standards

ASTM D3018 Type I

ASTM D3462

ASTM E108 Class A Fire Resistance

ASTM D3161 Class F Wind Resistance

ASTM D7158 Class H Wind Resistance

UL 790 Class A Fire Resistance

ICC-ES ESR-1389 and ESR-3537

CSA Standard A123.5 (Regional)

Miami-Dade Product Control Approved (Regional)

Florida Product Approval # FL5444

Meets TDI Windstorm Requirements

### Technical Data:

	<b>Landmark (and AR)</b>	<b>Landmark PRO* (and AR)</b>	<b>Landmark Premium (and AR)</b>
Weight/Square (approx.)	217 to 229 lb **	234 to 250 lb **	300 lb
Dimensions (overall)	13 1/4" x 38 3/4"	13 1/4" x 38 3/4"	13 1/4" x 38 3/4"
Shingles/Square (approx.)	66	66	66
Weather Exposure	5 5/8"	5 5/8"	5 5/8"

\*Includes Landmark PRO AR/Architect 80

\*\*Dependent on manufacturing location

## INSTALLATION

Detailed installation instructions are supplied on each bundle of Landmark shingles and must be followed. Separate application sheets may also be obtained from CertainTeed.

**Hips and Ridges:** For capping hip and ridge apply CertainTeed Shadow Ridge®, Cedar Crest® or Mountain Ridge® shingles of a like color.

## MAINTENANCE

These shingles do not require maintenance when installed according to manufacturer's application instructions. However, to protect the investment, any roof should be routinely inspected at least once a year. Older roofs should be looked at more frequently.

## WARRANTY

Landmark Premium (and AR), Landmark PRO/Architect 80 AR, Landmark PRO (and AR), and Landmark (and AR) shingles carry a lifetime limited, transferable warranty to the consumer against manufacturing defects when applied to stated CertainTeed application instructions for this product. In addition, Landmark Premium (and AR), Landmark PRO (and AR), Landmark PRO/Architect 80 AR, and Landmark (and AR) carry up to 10-years of SureStart™ Protection. Landmark AR shingles carry a 10-year algae resistance warranty. Landmark Premium AR, Landmark PRO AR, and Landmark PRO/Architect 80 AR shingles carry a 15-year algae resistance warranty. For specific warranty details and limitations, refer to the warranty itself (available from the local supplier, roofing contractor or on-line at [www.certainteed.com](http://www.certainteed.com)).

## TECHNICAL SUPPORT

Technical Service Department: 800-345-1145  
e-mail: [RPG.T.Services@saint-gobain.com](mailto:RPG.T.Services@saint-gobain.com)

## FOR MORE INFORMATION

Customer Experience Team: 800-233-8990  
e-mail: [gethelp@saint-gobain.com](mailto:gethelp@saint-gobain.com)  
Web site: [www.certainteed.com](http://www.certainteed.com)

**CertainTeed**  
20 Moores Road  
Malvern, PA 19355

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