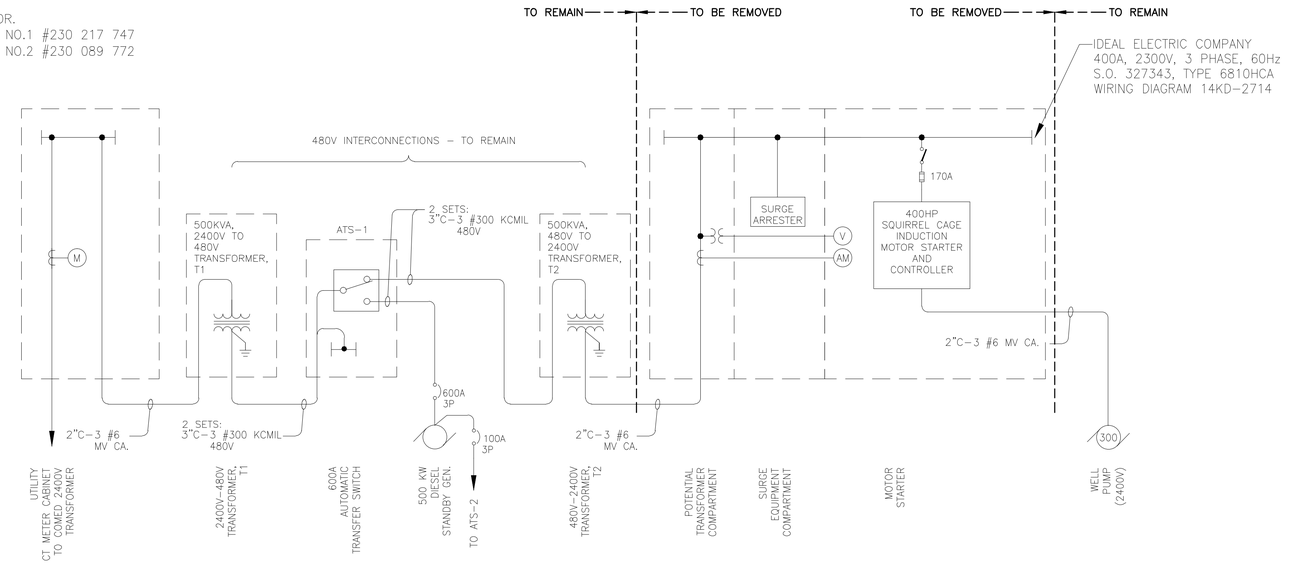
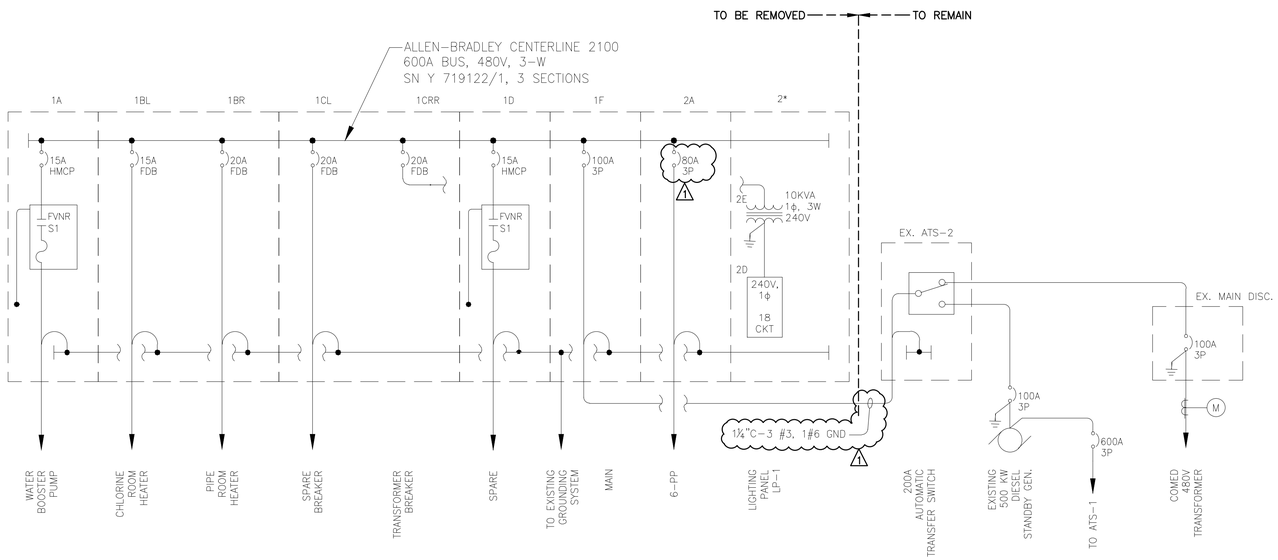
WELL NO. 6
245 LENNOX DR.
COMED METER NO.1 #230 217 747
COMED METER NO.2 #230 089 772



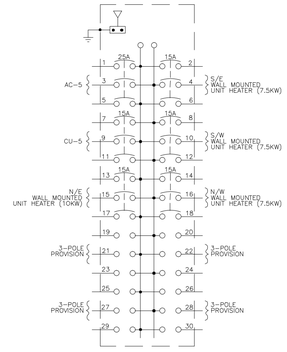
EXISTING WELL NO.6 MEDIUM VOLTAGE ONE LINE DIAGRAM

NO SCALE



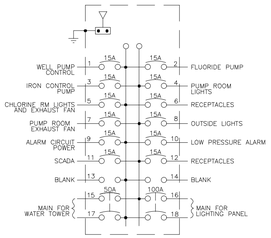
EXISTING WELL NO.6 MCC ONE LINE DIAGRAM

NO SCALE



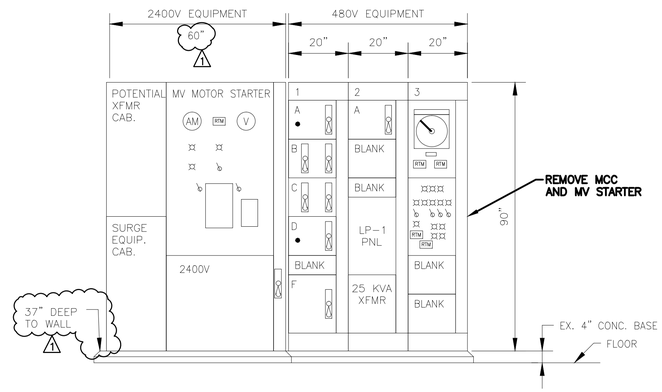
EXISTING DISTRIBUTION PANEL, PP-8

100 AMP BUS W/MAIN CIRCUIT BREAKER
480 VOLT, 3ϕ, 3-WIRE
(LOCATED IN WRT ROOM)



EXISTING LIGHTING PANEL

100 AMP BUS MLO
120/240 VOLT, 1ϕ, 3-WIRE
(LOCATED IN MCC)



EXISTING WELL NO. 6 MCC LINE-UP

NO SCALE
(TO BE REMOVED)

EXISTING MCC UNIT &/OR SECTION IDENTIFICATION

1A. "WATER BOOSTER PUMP" MOTOR STARTER DISC BREAKER.
1BL. "CHLORINE ROOM HEATER" FEEDER DISC BREAKER.
1BR. "PUMP ROOM HEATER" FEEDER DISC BREAKER.
1CL. "SPARE BREAKER" DISC BREAKER.
1CR. "TRANSFORMER BREAKER" FEEDER DISC BREAKER.
1D. "SPARE" MOTOR STARTER DISC BREAKER.

2A. "6-PP" FEEDER DISC BREAKER.
2B. BLANK
2C. BLANK
2D. "LIGHTING PANEL"
2E. BLANK COVER FOR LIGHTING TRANSFORMER

3A. "WELL FLOW" & "WELL PRESSURE" INSTRUMENTATION
3B. WELL CONTROL PANEL
3C. BLANK
3D. BLANK

NOTES:

1. **EXISTING MOTOR CONTROL CENTER ONE-LINE WAS DOCUMENT AS-IS ON JULY 30, 2019. CONTRACTOR TO TAG ALL WIRING FOR RECONNECTION TO NEW MCC UNLESS NOTED OTHERWISE.**
2. **REMOVE EXISTING 2400V PT CABINET, SURGE EQUIPMENT DEVICE, AND MEDIUM VOLTAGE MOTOR STARTER CABINET. RETAIN EXISTING 2400V FEEDERS FOR NEW MEDIUM VOLTAGE SOFT STARTER REPLACEMENT.**
3. **REMOVE EXISTING 480V MCC AND PUMP CONTROLS. RETAIN EXISTING LOW VOLTAGE POWER UP TO 480V AND CONTROLS CONDUITS AND CABLES FOR RECONNECTION TO NEW MCC.**

BAXTER & WOODMAN
Consulting Engineers

CONSULTANTS

MILESTONE

FOR BIDDING

REVISIONS

NO.	DATE	DESCRIPTION
1	01/15/2020	ADDENDUM NO.1

* - REFER TO EQUIPMENT MANUFACTURER'S SHOP DRAWING

1" .5" 0 1" 2" 3"

PLAN SHEET DESIGNATION

COVER
G - GENERAL
H - HAZARDOUS MATERIALS
C - CIVIL
L - LANDSCAPE
S - STRUCTURAL
A - ARCHITECTURAL
I - INSTRUMENTATION
Q - EQUIPMENT
F - FIRE PROTECTION
P - PLUMBING
M - MECHANICAL
E - ELECTRICAL
T - TELECOMMUNICATIONS
R - RESOURCE

PROJECT NO: 181040

SCALE: AS NOTED
DATE: 01-15-20
DESIGNED BY: PVT
DRAWN BY: PVT
CHECKED BY: HDH

CLIENT

VILLAGE OF OSWEGO, ILLINOIS

WATER SYSTEM IMPROVEMENTS WELLS NOS. 6 AND 8 ELECTRICAL REMODELING

SHEET TITLE

WELL NO 6 DEMOLITION ONE-LINE DIAGRAM AND ELECTRICAL DETAILS

E-2

\\CORP.BAXWOOD.COM\PROJECTS\CRYSTAL LAKE\OSWEGO\181040-WELL NOS. 6 AND 8 EL\CADD\DWGS\CURRENT\WELL NO 6 ONE LINES.DWG E-2 WELL NO 6 DEMOLITION
Plotted: 01/15/20 By: 768PVT
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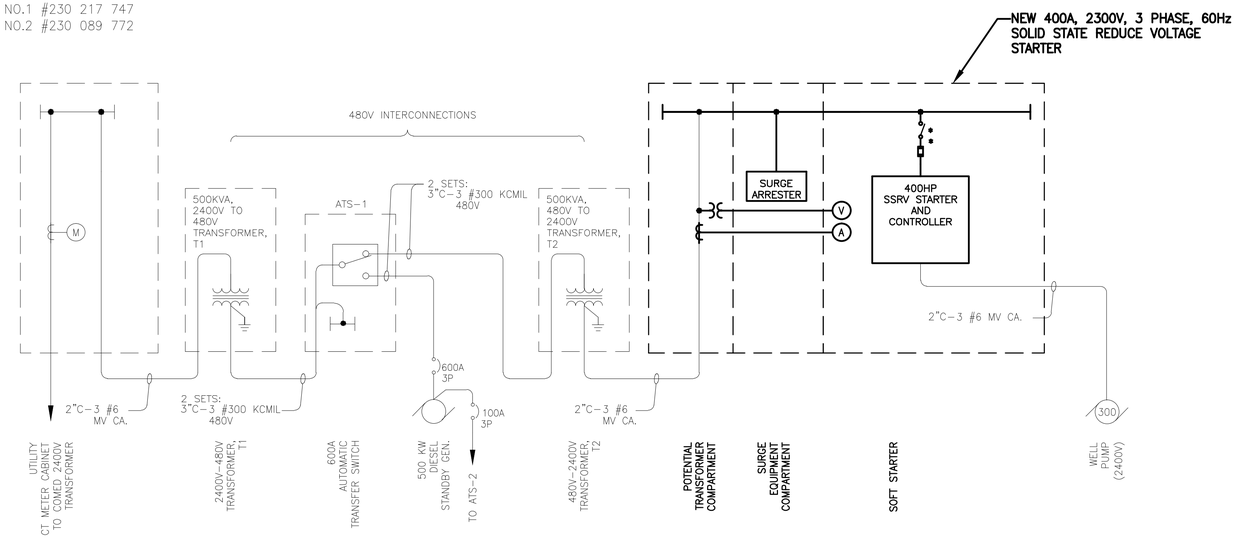
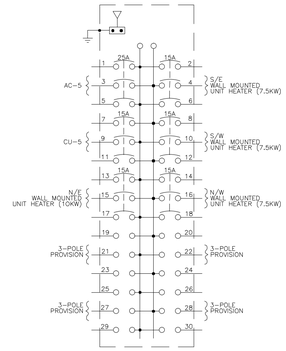
WELL NO. 6
245 LENNOX DR.
COMED METER NO.1 #230 217 747
COMED METER NO.2 #230 089 772



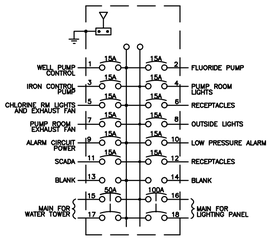
PROPOSED WELL NO.6 MEDIUM VOLTAGE ONE LINE DIAGRAM

NO SCALE



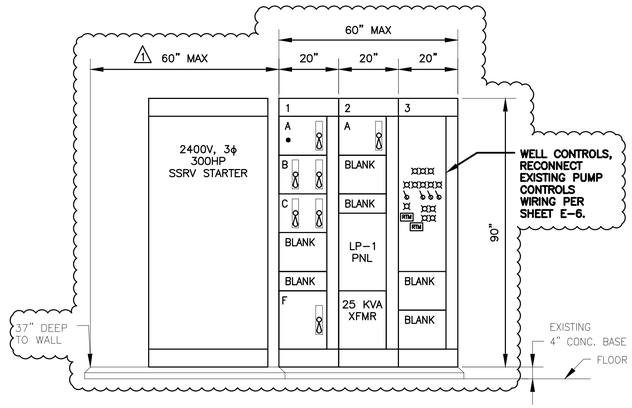
EXISTING DISTRIBUTION PANEL, PP-8

100 AMP BUS W/MAIN CIRCUIT BREAKER
480 VOLT, 3ϕ, 3-WIRE
(LOCATED IN WRT ROOM)



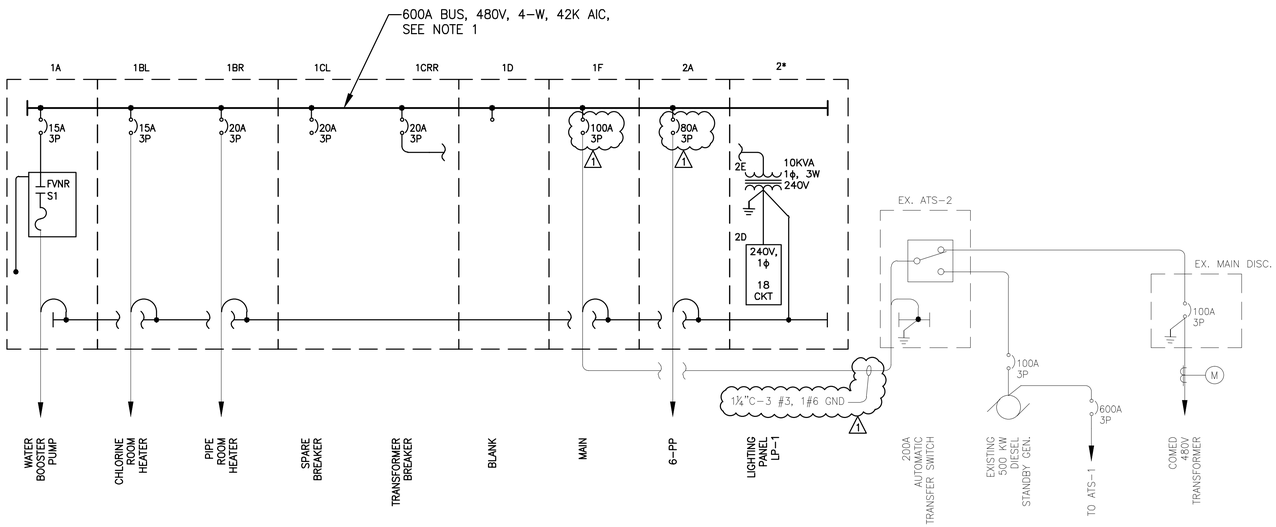
LIGHTING PANEL

100 AMP BUS MLO
120/240 VOLT, 1ϕ, 3-WIRE
(LOCATED IN MCC)



PROPOSED WELL NO. 6 MCC LINE-UP

NO SCALE



PROPOSED WELL NO.6 MCC ONE LINE DIAGRAM

NO SCALE

MCC UNIT &/OR SECTION IDENTIFICATION

1A. "WATER BOOSTER PUMP" MOTOR STARTER DISC BREAKER.
1BL. "CHLORINE ROOM HEATER" FEEDER DISC BREAKER.
1BR. "PUMP ROOM HEATER" FEEDER DISC BREAKER.
1CL. "SPARE BREAKER" DISC BREAKER.
1CR. "TRANSFORMER BREAKER" FEEDER DISC BREAKER.
1D. BLANK.

2A. "6-PP" FEEDER DISC BREAKER.
2B. BLANK
2C. BLANK
2D. "LIGHTING PANEL."
2E. BLANK COVER FOR LIGHTING TRANSFORMER

3A. "WELL CONTROL PANEL" – SEE NOTE 2

NOTES:

1. PROVIDE 200A MAIN BREAKER, 480V, 3-PHASE, 4-WIRE MCC TO REPLACE EXISTING MCC LAYOUT. NEW MCC MUST NOT EXCEED EXISTING DIMENSIONS.
2. CONTRACTOR TO RECONNECT EXISTING POWER AND CONTROLS FROM EXISTING EQUIPMENT UNLESS NOTED OTHERWISE.
   A. COORDINATE WITH VILLAGE INTEGRATOR TO UPGRADE EXISTING SCADA PANEL OIT TO MINIMUM 9" WIDE OIT.
3. PROVIDE NEW 2400V SOFT STARTER WITH SURGE PROTECTION, CT/PT, H-O-A, AND MOTOR PROTECTION TO REPLACE EXISTING MV MOTOR STARTER.
4. PROVIDE 3/4"C-(1) E-NET CA. FROM NEW SOFT STARTER TO EXISTING SCADA PANEL.

BAXTER & WOODMAN
Consulting Engineers

CONSULTANTS

MILESTONE

FOR BIDDING

REVISIONS

NO.	DATE	DESCRIPTION
1	1/15/20	ADDENDUM NO.1

* - REFER TO EQUIPMENT MANUFACTURER'S SHOP DRAWING

1" .5" 0 1" 2" 3"

PLAN SHEET DESIGNATION

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Q - EQUIPMENT
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M - MECHANICAL
E - ELECTRICAL
T - TELECOMMUNICATIONS
R - RESOURCE

PROJECT NO:	181040
SCALE:	AS NOTED
DATE:	01-15-20
DESIGNED BY:	PVT
DRAWN BY:	PVT
CHECKED BY:	HDH

CLIENT

VILLAGE OF OSWEGO, ILLINOIS

WATER SYSTEM IMPROVEMENTS WELLS NOS. 6 AND 8 ELECTRICAL REMODELING

SHEET TITLE

WELL NO 6 PROPOSED ONE-LINE DIAGRAM AND ELECTRICAL DETAILS

E-3

\\CORP.BAXWOOD.COM\PROJECTS\CRYSTAL LAKE\OSWEG\181040-WELL NOS. 6 AND 8 EL\CADD\DWGS\CURRENT\WELL NO 6 ONE LINE NEW.DWG E-3 WELL NO 6 PROPOSED
Plotted: 01/15/20 By: 768PVT
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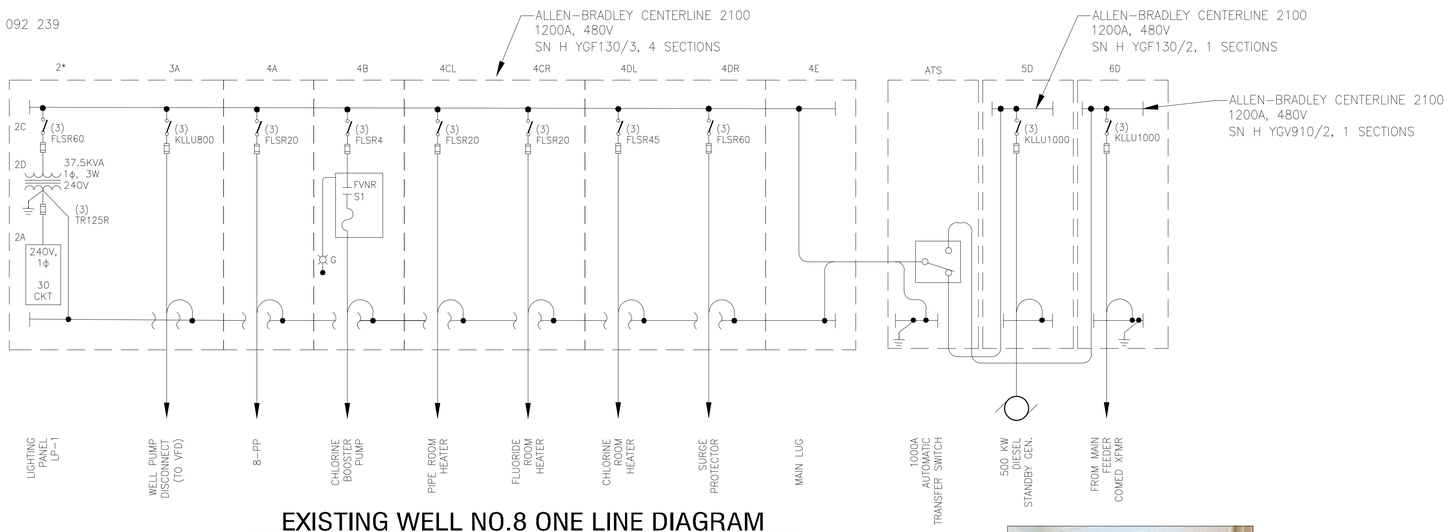
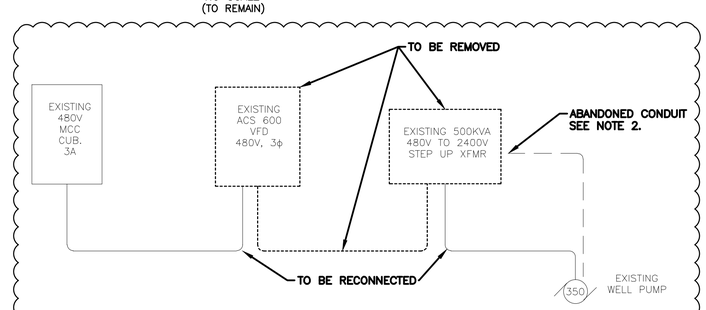
WELL NO. 8
3700 GROVE RD
COMED METER #230 092 239



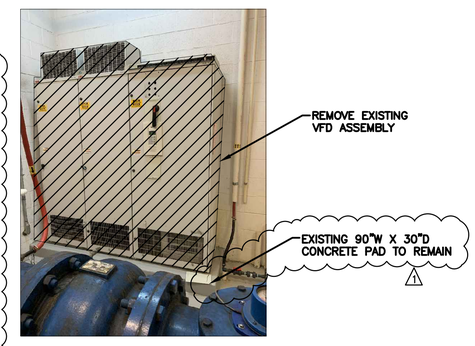
EXISTING WELL NO.8 ONE LINE DIAGRAM

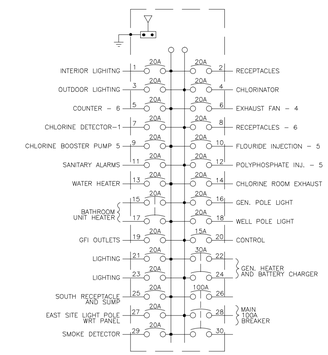
NO SCALE
(TO REMAIN)



EXISTING WELL NO.8 CONNECTION DIAGRAM

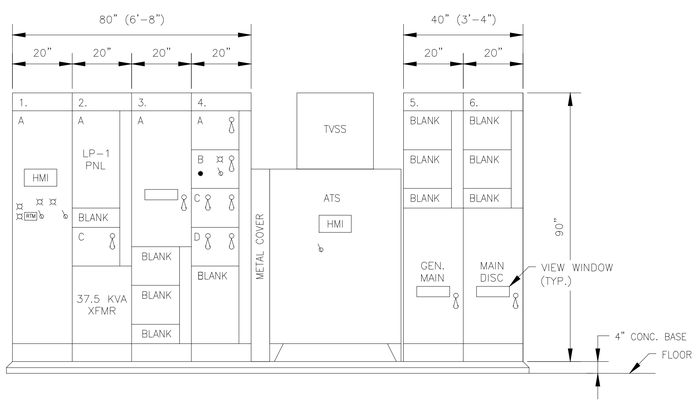
NO SCALE





EXISTING LIGHTING PANEL

100 AMP BUS W/MAIN CIRCUIT BREAKER
120/240 VOLT, 1ϕ, 3-WIRE
(LOCATED IN MCC)



EXISTING WELL NO. 8 MCC LINE-UP

NO SCALE
(TO REMAIN)

EXISTING MCC UNIT &/OR SECTION IDENTIFICATION

1A. "CONTROL AND INSTRUMENTATION"

2A. "LIGHTING PANEL"
2B. BLANK
2C. "CONTROL AND LIGHTING TRANSFORMER" FUSE DISC.
2D. BLANK COVER FOR LIGHTING TRANSFORMER

3A. "WELL PUMP DISCONNECT" FUSED DISC.
3B. BLANK
3C. BLANK
3D. BLANK

4A. "8-PP" FUSED DISC.
4B. "CHLORINE BOOSTER PUMP" FUSED DISC. WITH MOTOR STARTER.
4CL. "PIPE ROOM HEATER" FUSE DISC.
4CR. "FLUORIDE ROOM HEATER" FUSE DISC.
4DL. "CHLORINE ROOM HEATER" FUSE DISC.
4DR. "SURGE PROTECTION" FUSE DISC.
4E. BLANK COVER FOR INCOMING FEEDERS.

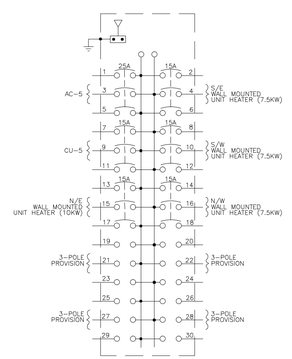
5A. BLANK COVER
5B. BLANK COVER
5C. BLANK COVER
5D. "GENERATOR MAIN DISCONNECT" FUSED DISC.

6A. BLANK COVER
6B. BLANK COVER
6C. BLANK COVER.
6D. "MAIN DISCONNECT" FUSE DISC.

NOTES:

1. EXISTING MOTOR CONTROL CENTER ONE-LINE WAS DOCUMENT AS-IS ON JULY 30, 2019.
2. REMOVE AND REPLACE EXISTING 480V VFD ASSEMBLY AND STEP-UP TRANSFORMER.
   A. PROTECT EXISTING FEEDERS AND CONTROLS WIRING FOR RECONNECTION TO NEW VFD ASSEMBLY AND NEW STEP-UP TRANSFORMER.
   B. FLUSH CUT AND CAP ABANDONED CONDUIT AND WIRING BY STEP-UP TRANSFORMER.
3. REMOVED.

1



EXISTING DISTRIBUTION PANEL, PP-8

100 AMP BUS W/MAIN CIRCUIT BREAKER
480 VOLT, 3ϕ, 3-WIRE
(LOCATED IN WRT ROOM)

BAXTER & WOODMAN Consulting Engineers

CONSULTANTS

MILESTONE

FOR BIDDING

REVISIONS

NO.	DATE	DESCRIPTION
1	01/15/20	ADDENDUM NO. 1

* - REFER TO EQUIPMENT MANUFACTURER'S SHOP DRAWING
** -

1" .5" 0 1" 2" 3"

PLAN SHEET DESIGNATION

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E - ELECTRICAL
T - TELECOMMUNICATIONS
R - RESOURCE

PROJECT NO:	181040
SCALE:	AS NOTED
DATE:	01-15-20
DESIGNED BY:	PVT
DRAWN BY:	PVT
CHECKED BY:	HDH

CLIENT

VILLAGE OF OSWEGO, ILLINOIS

WATER SYSTEM IMPROVEMENTS WELLS NOS. 6 AND 8 ELECTRICAL REMODELING

SHEET TITLE

WELL NO 8 DEMOLITION ONE-LINE DIAGRAM AND ELECTRICAL DETAILS

E-4

\\CORP.BAXWOOD.COM\PROJECTS\CRYSTAL LAKE\OSWEGO\181040-WELL NOS. 6 AND 8 EL\CADD\DWGS\CURRENT\WELL NO 8 ONE LINES.DWG E-4 WELL NO 8 DEMOLITION
Plotted: 01/15/20 By: 768PVT
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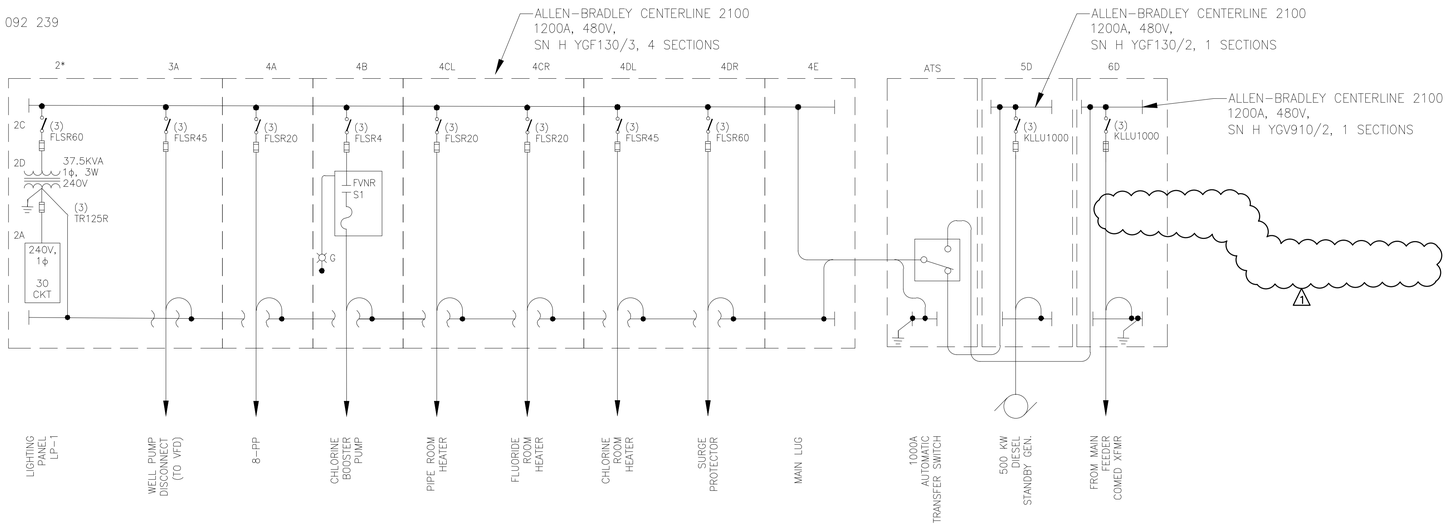
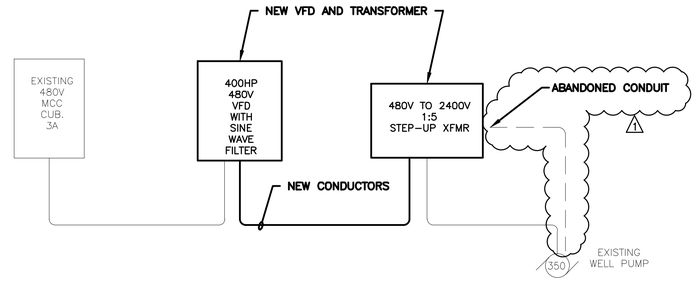
WELL NO. 8
3700 GROVE RD
COMED METER #230 092 239



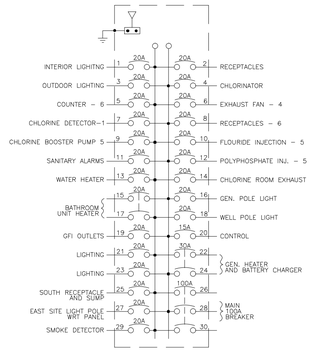
PROPOSED WELL NO.8 ONE LINE DIAGRAM

NO SCALE



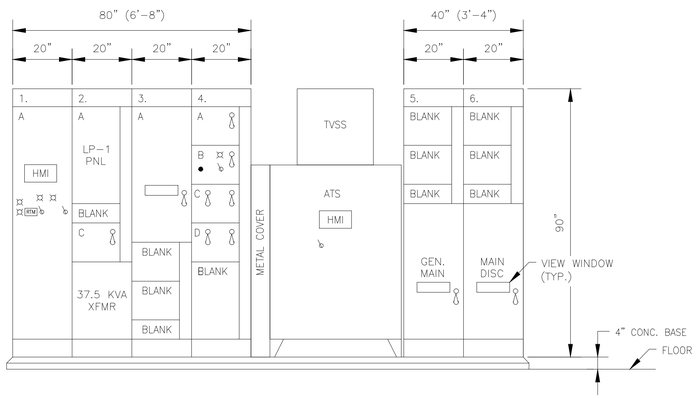
EXISTING WELL NO.8 CONNECTION DIAGRAM

NO SCALE



EXISTING LIGHTING PANEL

100 AMP BUS W/MAIN CIRCUIT BREAKER
120/240 VOLT, 1ϕ, 3-WIRE
(LOCATED IN MCC)



PROPOSED WELL NO. 8 MCC LINE-UP

NO SCALE

EXISTING MCC UNIT &/OR SECTION IDENTIFICATION

1A. "CONTROL AND INSTRUMENTATION"

2A. "LIGHTING PANEL"
2B. BLANK
2C. "CONTROL AND LIGHTING TRANSFORMER" FUSE DISC.
2D. BLANK COVER FOR LIGHTING TRANSFORMER

3A. "WELL PUMP DISCONNECT" FUSED DISC.
3B. BLANK
3C. BLANK
3D. BLANK

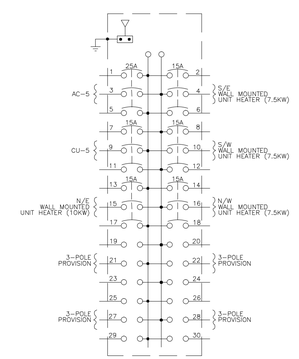
4A. "8-PP" FUSED DISC.
4B. "CHLORINE BOOSTER PUMP" FUSED DISC. WITH MOTOR STARTER.
4CL. "PIPE ROOM HEATER" FUSE DISC.
4CR. "FLUORIDE ROOM HEATER" FUSE DISC.
4DL. "CHLORINE ROOM HEATER" FUSE DISC.
4DR. "SURGE PROTECTION" FUSE DISC.
4E. BLANK COVER FOR INCOMING FEEDERS.

5A. BLANK COVER
5B. BLANK COVER
5C. BLANK COVER
5D. "GENERATOR MAIN DISCONNECT" FUSED DISC.

6A. BLANK COVER
6B. BLANK COVER
6C. BLANK COVER.
6D. "MAIN DISCONNECT" FUSE DISC.

NOTES:

1. EXISTING MOTOR CONTROL CENTER ONE-LINE WAS DOCUMENT AS-IS ON JULY 30, 2019.
2. PROVIDE VFD ASSEMBLY TO REPLACE EXISTING VFD ASSEMBLY FOR 350HP DEEP WELL PUMP. NEW ASSEMBLY MUST NOT EXCEED ORIGINAL WIDTH OF 90"W X 30"D WITHOUT APPROVAL OF ENGINEER AND OWNER.
   A. VFD WITH FILTER, LINE REACTOR, AS NEEDED TO LOWER HARMONICS.
   B. SINE WAVE FILTER OUTPUT TO BE SIZE WITH STEP-UP TRANSFORMER.
3. PROVIDE A 500KVA, 480V TO 2400V, OIL-FILL, 3-PHASE DRIVE ISOLATION STEP-UP SOLOMAN TRANSFORMER OR EQUAL TO FEED EXISTING 350 HP DEEP WELL PUMP. MODIFY OR REPLACE EXISTING EQUIPMENT PAD AS REQUIRED.
4. REMOVED. 1



EXISTING DISTRIBUTION PANEL, PP-8

100 AMP BUS W/MAIN CIRCUIT BREAKER
480 VOLT, 3ϕ, 3-WIRE
(LOCATED IN WRT ROOM)

BAXTER & WOODMAN
Consulting Engineers

CONSULTANTS

MILESTONE

FOR BIDDING

REVISIONS

NO.	DATE	DESCRIPTION
1	01/15/20	ADDENDUM NO. 1

* - REFER TO EQUIPMENT MANUFACTURER'S SHOP DRAWING
* * -

1" .5" 0 1" 2" 3"

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PROJECT NO: 181040

SCALE: AS NOTED
DATE: 01-15-20
DESIGNED BY: PVT
DRAWN BY: PVT
CHECKED BY: HDH

CLIENT

VILLAGE OF OSWEGO, ILLINOIS

WATER SYSTEM IMPROVEMENTS WELLS NOS. 6 AND 8 ELECTRICAL REMODELING

SHEET TITLE

WELL NO 8 PROPOSED ONE-LINE DIAGRAM AND ELECTRICAL DETAILS

E-5

\\CORP.BAXWOOD.COM\PROJECTS\CRYSTAL LAKE\OSWEGO\181040-WELL NOS. 6 AND 8 EL\CADD\DWGS\CURRENT\WELL NO 8 ONE LINES.DWG E-5 WELL NO 8 PROPOSED
Plotted: 01/15/20 By: 768PVT
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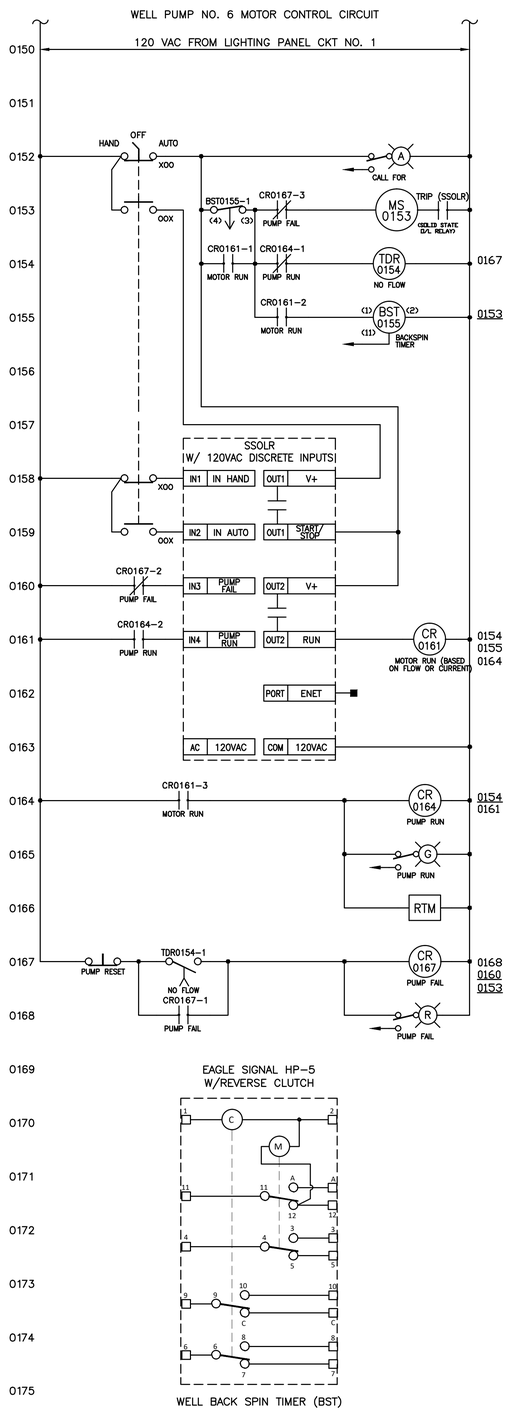

NOTES:

1. CONTRACTOR TO COORDINATE WITH VILLAGE INTEGRATOR FOR THE FOLLOWING CHANGES TO THE WELL PUMP CONTROLS FOR THE NEW 480V MCC.

   A. ELIMINATE THE FLOW CHART, WELL PRESSURE INDICATOR AND WELL PUMP START AND STOP COUNTERS IN THE MCC. PROVIDE ALL SWITCHES, PUSHBUTTONS AND INDICATORS TO MATCH EXISTING UNLESS NOTED OTHERWISE BELOW.

   B. WELL "FAIL TO RUN" TO BE IMPLEMENTED IN THE PLC.
      i. RETAIN THE "SYSTEM FAIL" AND "PRESSURE ALARM" INDICATORS ON THE MCC.
      ii. STOPS THE CALL FOR THE PUMP IN SCADA
      iii. ALARM TO BE ADDED TO SCADA.

   C. WELL PUMP HOA HAND RUNS THE WELL NO MATTER WHAT, EXCEPT OVERLOAD.

   D. SHORT CYCLE (BACKSPIN) STAYS IN THE MCC WE
      i. CHANGE NAME TO "BACKSPIN"

   E. PROVIDE "WELL PUMP OVERLOAD" DRY CONTACTS

   F. THE BYPASS (PURGE) VALVE LOGIC STAYS IN THE MCC
      i. VALVE TO CLOSE DELAY (PRESERVE EXISTING)
      ii. PUMP STOP DELAY ON VALVE OPEN (PRESERVE EXISTING)

   G. BYPASS (PURGE) VALVE POSITION INDICATION, FAULT LOGIC AND FAULT INDICATION GOES TO THE OIT.
      i. ALARMS TO BE ADDED TO SCADA
      ii. VALVE OPEN FAIL ALARM TO THE PLC STOPS THE WELL PUMP CALL (PUMP MAY CONTINUE TO RUN ON SWITCH FAIL AS BEFORE).
      iii. VALVE CLOSE FAIL ALARM IN THE PLC STOPS THE WELL PUMP CALL.
      iv. PROVIDE DRY CONTACTS FOR "OPEN" AND "CLOSED" STATUS.
      v. ELIMINATE THE 4 BYPASS VALVE INDICATORS ON THE MCC.

   H. THE WELL SHOULD NOT START IF THE BYPASS (PURGE) VALVE "CLOSED" LIMIT SWITCH CHANGES STATE UNEXPECTEDLY OR FAILS.

   I. CHEMICAL PUMPS RUN BY MINIMUM FLOW DETECED IN THE PLC, IN ADDITION TO RELAY CONTACTS TIED TO THE "RUN" SIGNAL FROM THE WELL PUMP STARTER.

   J. RENAME "IRON CONTROL PUMP" LABEL TO "PHOSPHATE CONTROL PUMP" AT MCC.

2. INTEGRATOR TO PROVIDE ADDITIONAL CONTROL WIRES BETWEEN THE PANELS TO PICK UP ADDITIONAL PURGE VALVE STATE AND WELL PUMP OVERLOAD.

NOTES:

1. VFD/SSOLR WIRING SCHEMATIC IS ONLY GENERAL, TO SHOW REQUIRED FUNCTIONS. ACTUAL VFD/SSOLR WIRING MAY VARY DEPENDING ON MANUFACTURER SUPPLIED. VFD/SSOLR TO BE WIRED PER MANUFACTURER'S SPECIFICATIONS.
2. MONITOR THE "START" AND "SPEED SELECT 1" VFD INPUTS VIA ETHERNET TO DETERMINE IF THE H/O/A SWITCH IS IN THE "HAND" OR "AUTO" POSITION. "HAND" & "AUTO" POSITIONS CAN BE DIRECT INPUTS TO ENET I/O MODULE (NOT SHOWN), IF REQUIRED.
3. MONITOR RUN BIT IN SSOLR OR VFD TO INDICATE MOTOR RUN STATUS. MONITOR FAIL INPUT/FAULT BIT TO/IN SSOLR OR VFD TO DETERMINE MOTOR FAIL STATUS.
4. PROVIDE SSOLR WITH REMOTE OR MECHANICAL PUSH BUTTON RESET MOUNTED ON MCC.
5. MONITOR THE AUXILLIARY FAULT VFD INPUT TO INDICATE OVERTEMP ALARM THROUGH VFD OR ENET I/O MODULE.
6. SSOLR – SOLID STATE OVERLOAD RELAY

WIRE TERMINATION SYMBOL:

- ■ MOTOR CONTROL CENTER
- ▲ WTP CONTROL PANEL (SCP-1)
- ♦ MISCELLANEOUS PANELS/ENCLOSURES/MOTOR TERMINATION BOX

BAXTER & WOODMAN Consulting Engineers

CONSULTANTS

MILESTONE

FOR BIDDING

REVISIONS

NO.	DATE	DESCRIPTION
1	01/15/20	ADDENDUM NO. 1

* - REFER TO EQUIPMENT MANUFACTURER'S SHOP DRAWING

PLAN SHEET DESIGNATION

COVER
G - GENERAL
H - HAZARDOUS MATERIALS
C - CIVIL
L - LANDSCAPE
S - STRUCTURAL
A - ARCHITECTURAL
I - INSTRUMENTATION
Q - EQUIPMENT
F - FIRE PROTECTION
P - PLUMBING
M - MECHANICAL
E - ELECTRICAL
T - TELECOMMUNICATIONS
R - RESOURCE

PROJECT NO:	181040
SCALE:	AS NOTED
DATE:	01-15-20
DESIGNED BY:	PVT
DRAWN BY:	PVT
CHECKED BY:	HDH

CLIENT

VILLAGE OF OSWEGO, ILLINOIS

WATER SYSTEM IMPROVEMENTS WELLS NOS. 6 AND 8 ELECTRICAL REMODELING

SHEET TITLE

MOTOR CONTROL CIRCUIT SCHEMATIC DIAGRAMS

E-6

\\CORP.BAXWOOD.COM\PROJECTS\CRYSTAL LAKE\OSWEGO\181040-WELL NOS. 6 AND 8 EL\CADD\DWGS\CURRENT\WELL NO 6 MCC WIRING SCHEMATIC DIAGRAM
Plotted: 01/15/20 By: 768PVT
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WIRING DIAGRAM.DWG E-6 MCC WIRING SCHEMATIC DIAGRAM