**SITE DEMOLITION PLAN**

**SITE DEMOLITION KEY NOTES**

1. REMOVE TREE
2. HAND-EXCAVATE TO LOCATE EXISTING NATURAL GAS LINE & OTHER UTILITIES. PROVIDE TEMPORARY SHORING/SUPPORT OF GAS LINE DURING INSTALLATION OF NEW DUCT BANK. PROVIDE GROUND PENETRATING RADAR TO SURVEY EXISTING SUB-GRADE UTILITIES IN ENTIRE AREA.
3. REMOVE EXISTING BAR GRATING AND STEEL BEAMS AT TOP OF EXISTING NITROGEN TANK PIT. REMOVE CONCRETE SLAB FOR NEW GENERATOR PAD.
4. REMOVE CHAIN LINK FENCE & GATE THE WIDTH OF EXIST. PIT (15'-0').
5. REMOVE EXISTING PAVING & TRENCH DRAIN COORDINATE PAVING & INTERUPTION TO DOCK WORKERS.
6. REMOVE EXISTING LANDSCAPING & EXCAVATE FOR NEW UTILITY & FOUNDATION.
7. PROTECT EAST 6" STORM LINE FOR RECONNECTION IN NEW CONCRETE.

**PLAN NOTES**

1. SITE SURVEY PROVIDED BY NOWAK & FRAUS DATED 6-25-2014 IS USED AS A BASE FOR SITE DEMOLITION, DESIGN & RESTORATION.

**NOTE:** ALL WORK ASSOCIATED WITH REMOVING THE EXISTING NITROGEN TANK AND ASSOCIATED LINES SHALL BE INCLUDED IN ALTERNATE NO. 1.
1. NEW TRANSFORMER SUPPORT SLAB, SEE STRUCTURAL
2. NEW ATS-1 SUPPORT SLAB, SEE STRUCTURAL
3. REINSTALL NEW CONCRETE SIDEWALK TO THE NEAREST JOINT
4. REPLACE LANDSCAPING TO MATCH EXISTING GRASS.
5. RESTORE CONCRETE PAVING
6. EXTEND EXISTING IPS TO ESTABLISH NEW DRAINS AT TOP OF GENERATOR SLAB & IN DRAINAGE TRENCH. SLOPE CONCRETE 1/8"/FOOT TO NEW DRAINS.

SITE RESTORATION KEY NOTES

NEW TRANSFORMER SUPPORT SLAB, SEE STRUCTURAL
NEW ATS-1 SUPPORT SLAB, SEE STRUCTURAL
REINSTALL NEW CONCRETE SIDEWALK TO THE NEAREST JOINT
REPLACE LANDSCAPING TO MATCH EXISTING GRASS.
RESTORE CONCRETE PAVING
EXTEND EXISTING IPS TO ESTABLISH NEW DRAINS AT TOP OF GENERATOR SLAB & IN DRAINAGE TRENCH. SLOPE CONCRETE 1/8'/FOOT TO NEW DRAINS.

PLAN NOTES

1. SITE SURVEY PROVIDED BY NOWAK & TURNS, DATED 9-1-2014 IS USED AS A BASIS FOR SITE OBSURATION, DESIGN & RESTORATION. NO TOPOGRAPHY OR BENCHMARK AVAILABLE
2. UNCHARTED UTILITIES MAY EXIT & THE UTILITIES NOTED ON PLANS MAY VARY FROM LOCATIONS SHOWN ON THE SURVEY. ELEVATION DATA IS UNAVAILABLE FOR INVERTS & UTILITY DEPTHS. HAND DIG AS NECESSARY TO AVOID DAMAGE TO EXISTING UTILITIES.

CONTRACTOR TO REMOVE EXISTING GRILL & FOUNDATION TO BUILDING CORNER TO PROVIDE CLEARANCE TO GRILL.
CONTRACTOR TO PROVIDE CONCRETE FOR MOUNTING NEW TRANSFORMER.
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SEE DWG. ES-1 FOR CONDUIT ROUTING

EXISTING PIT WALL

CONDUIT TO BE CENTERED IN SLEEVE - DO NOT SUPPORT CONDUIT FROM SLEEVE - FINISHED WALL SURFACE

CONDUIT THROUGH EXISTING EXTERIOR WALL

SCALE: NTS

CONDUIT PENETRATION THRU EXISTING FLOOR

SCALE: NTS

CONDUIT PENETRATION THRU INTERIOR WALL

SCALE: NTS

SEE DWG. ES-1 FOR CONDUIT ROUTING

NEW PAVEMENT

CONDUIT PENETRATION THRU INTERIOR WALL

SCALE: 1/2" = 1'-0"

CONDUIT THROUGH EXISTING EXTERIOR WALL

SCALE: NTS

CONDUIT PENETRATION THRU INTERIOR WALL

SCALE: NTS
EXISTING U.G.
S-2
BREAKER

EXISTING SIDEWALK

EXISTING RAMP
DOWN

1'-0".

PHYSICS BOILER

3'-7"

BUILDING

EXISTING

"DO NOT DISTURB"

EXISTING PIT AND COORDINATE
FIELD VERIFY DIMENSIONS OF
WITH GENSET EQUIP.

COORDINATE WITH CERTIFIED
SHOP DRAWINGS

NEW

DUCT BANK

2'-0"* 

ELECTRICAL

NEW 2'-0"X1'-6'

FEED TO ATS-1
COORDINATE WITH CERTIFIED
SHOP DRAWINGS

108
111
111
117

5'-8"

480V 208V/120V

DO NOT DISTURB
U.G. PLC CONDUIT

480V-208V/120V

500KVA XFMR

ATS-2 208V

ATS-2 FEED TO MCB-2
400A

ATS-2 FEED TO GEN
3-5" PVC CDT 108-110

3-5" RGS CDT 111-113

3-5" RGS CDT 101-103

ATS-2 FEED TO MCB-1
200A

ATS-1 480V

ATS-1 FEED TO MCB-1
200A

ATS-1 FEED TO GEN
400A UTILITY FEED TO ATS-1

3" PVC CDT 114-116

ATS-1 FEED TO MCB-1
3-5" PVC CDT 114-116

3-5" RGS CDT 114-116

230V UTILITY FEED TO ATS-2
3-5" PVC CDT 101-103

NEW 2'-8"X1'-6"
ELECTRICAL DUCT BANK

DESCRIPTION, PLANT & ASSOCIATED
EQUIPMENT MUST FIT IN THE PHYSICAL
DIMENSIONS AVAILABLE IN THE VACATED
NITROGEN STORAGE WELL
CONTRACTOR & EQUIPMENT SUPPLIER MUST PROVIDE
FULLY OPERATIONAL SYSTEMS MEETING ALL
REQUIREMENTS TO FIT WITHIN AVAILABLE SPACE.

EXISTING BUILDING GROUNDING GRID

EXISTING FOUNDATION WALL
BELOW GRADE

EXISTING ELECTRICAL ROOM IN
BASEMENT BELOW

EXISTING GAS LINE (BELOW)
"DO NOT DISTURB"

EXISTING GROUNDING GRID

PROFILE & INVERT DATA IS UNAVAILABLE
FOR EXISTING UNDERGROUND UTILITIES
& UNCHARTED UTILITIES MAY EXIST
HAND DIG AS REQUIRED TO EXPOSE
ALL SUBGRADE SURFACES & UTILITIES
CONNECTIONS

SEE DWG. E-101
FOR CONDUIT / CABLE / EQUIPMENT
CONNECTIONS

NEW 2'-8"X1'-6"
ELECTRICAL DUCT BANK

GROUND CABLE
"DO NOT DISTURB"

EXISTING GLOSS LINE (BELOW)
"DO NOT DISTURB"

EXISTING GAS LINE (BELOW)
"DO NOT DISTURB"

NEW 2'-F" X 5" ELECTRICAL DUCT BANK

EXISTING UTILITY LINES TO REMAIN

NOTE:
EXHUMATIONS MARKED "DO NOT DISTURB"
MUST BE COORDINATED BY THE CONTRACTOR
WITH APPROVED CERTIFIED SHOP DRAWINGS
OF THE EQUIPMENT PRIOR TO FABRICATION &
CONSTRUCTION.

ENGINEERS SEAL

JAS
APPROVED BY
DESIGNED BY
DRAWN BY

ENGINEERS SEAL

JAS
APPROVED BY
DESIGNED BY
DRAWN BY

ENGINEERS SEAL

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NOTES:
1. CONDUITS ARE SHOWN DIAGRAMMATIC. EXACT ROUTING AND PENETRATIONS THROUGH WALLS AND CEILINGS ARE TO BE COORDINATED WITH THE OWNERS REPRESENTATIVE.
2. COORDINATE WITH OWNERS REPRESENTATIVE FOR EXACT LOCATION TO MOUNT DEVICE FOR CONNECTING TO OWNERS EQUIPMENT. PROVIDE ALLOWANCE FOR CABLE CONDUIT OF 20’-0” FOR EACH CIRCUIT.
3. SHADED ROOMS / AREAS INDICATE NEW UPS CIRCUIT LOCATIONS TO SERVE EQUIPMENT LOADS.
4. REFER TO E-101 FOR CIRCUIT AND PANEL SCHEDULES.
5. NEW UPS SYSTEM LOCATED IN ROOM 301, THIRD FLOOR.
6. NEW CIRCUITS EXTEND FROM UPS PANEL UPS-RP TO NEW UPS EQUIPMENT LOAD LOCATION.
7. INSTALL APPROPRIATE RECEPTACLE OR HARD WIRE CONNECTION AT EACH LOCATION WITH CLEARLY IDENTIFIABLE LABELS INDICATING SOURCE.
8. REFER TO E-103 CONDUIT/CONDUIT SIZES
NOTES:
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2. COORDINATE WITH OWNERS REPRESENTATIVE FOR EXACT LOCATION TO MOUNT DEVICE FOR CONNECTING TO OWNERS EQUIPMENT. PROVIDE ALLOWANCE FOR CABLE/CONDUIT OF 20'-0" FOR EACH CIRCUIT.
3. SHADED ROOMS / AREAS INDICATE NEW UPS CIRCUIT LOCATIONS TO SERVE EQUIPMENT LOADS.
4. REFER TO E101 FOR CIRCUIT AND PANEL SCHEDULES.
5. NEW UPS SYSTEM LOCATED IN ROOM 301, THIRD FLOOR.
6. NEW CIRCUITS EXTEND FROM UPS PANEL UPS-RP-208 TO NEW UPS EQUIPMENT LOAD LOCATION.
7. INSTALL APPROPRIATE RECEPTACLE OR HARD WIRED CONNECTION AT EACH LOCATION WITH CLEARLY IDENTIFIABLE LABELS INDICATING SOURCE.
8. REFER TO E-103 CONDUIT/CABLE SIZES.

LEGEND

UPS LOADS
1. CIRCUITS DP-A & DP-C TO BE CONSIDERED FOR FUTURE LOAD SHEDDING VIA SHUNT TRIP BREAKERS.
1. ALL WORK SHALL BE IN ACCORDANCE WITH NEC CODES, ESPECIALLY GROUNDING SECTIONS 250.64, 340, AND 312.
2. THE EXISTING 4-208 & 4-480V PLD GROUNDS TO NEW GENERATOR, ATS'S, AND ALL OTHER EQUIPMENT.
3. RUN GROUNDS IN BURIED PVC CONDUIT AS WELL AS IN DUCT BANK CONCRETE AS SHOWN.
4. REPLACE EXISTING BREAKER WITH 225A FR/100A TR.

GROUNDING NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH NEC CODES, ESPECIALLY GROUNDING SECTIONS 250.64, 340, AND 312.
2. THE EXISTING 4-208 & 4-480V PLD GROUNDS TO NEW GENERATOR, ATS'S, AND ALL OTHER EQUIPMENT.
3. RUN GROUNDS IN BURIED PVC CONDUIT AS WELL AS IN DUCT BANK CONCRETE AS SHOWN.
4. REPLACE EXISTING BREAKER WITH 225A FR/100A TR.
### PANEL LPS-R1 & LPS-R2 SCHEDULES

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<tr>
<th>No.</th>
<th>Equipment</th>
<th>Brief Description</th>
<th>Time</th>
<th>&quot;T&quot;</th>
<th>Remarks</th>
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<td>1</td>
<td>LPS-1</td>
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<td>2</td>
<td>LPS-2</td>
<td>Right Panel</td>
<td>11/20</td>
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</table>

### PANELS & CABLE CONDUIT SCHEDULES

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<tr>
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### 03-PHYSICS BUILDING MIXED EQUIPMENT

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<tr>
<th>Equip</th>
<th>Purpose</th>
<th>Location</th>
<th>Rating</th>
<th>AMP</th>
<th>VOLT</th>
<th>F.A.</th>
<th>SF.</th>
<th>TYP</th>
<th>MANUFACTURER</th>
<th>MODEL</th>
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<tr>
<td>LPS-1</td>
<td>Power</td>
<td>03-PHYSICS BUILDING</td>
<td>3000A</td>
<td>600V</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>600</td>
<td>ALC</td>
<td>6000A</td>
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<td>LPS-2</td>
<td>Power</td>
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**Notes:**
- This document is a schedule for the 03-PHYSICS BUILDING mixed equipment.
- It includes specific equipment details such as equipment description, location, rating, and manufacturer information.
- Ensure to check the most current and accurate information before proceeding with any tasks or projects.
MOUNTING CHANNEL

NOTE 2 (TYP.)

#4 AWG OVERSIZED WIRE FOR VOLTAGE DROP

J-BOX WITH COVER PLATE (SIZE FOR APPLICATION)

POWER BLOCK WITH WIRE RANGE OF #2 - #4 AWG FOR LINE AND LOAD

#10 AWG FOR 20A & 30A BREAKER & LOADS

#8 AWG FOR 50A BREAKERS & LOADS

TYPICAL DETAIL (IF REQ'D)

NOTE:

1. RISER DIAGRAM IS DIAGRAMATIC REPRESENTATION ONLY. SEE PLAN DRAWINGS E-0, E-1, E-2 AND E-3 FOR GENERAL CONDUIT ROUTING. EXACT INSTALLATION TO BE DETERMINED BY CONTRACTOR AND OWNERS REPRESENTATIVE.

2. MOUNTING CHANNEL AND FITTINGS LOCATED AND SIZED AS REQUIRED FOR COMPLETE CONDUIT INSTALLATION SUPPORT FOR CONDUIT HEAT TO EXCEED 11'-0" BETWEEN SUPPORTS AND NOT TO EXCEED MORE THAN 3'-0" FROM CONDUIT TERMINATION POINTS SUCH AS DEVICE BOXES, J-BOXES, ETC. (TYPICAL)

3. CONDUIT RUN HORIZONTAL TO BE SUPPORTED NO GREATER THAN 10'-0" BETWEEN SUPPORTS.

NOTES:

- PROVIDE AND INSTALL NEAR DEVICE REQUIRING SPLICED TERMINATIONS AND CONNECT AS REQUIRED. COMPLY WITH ALL APPLICABLE CODE REQUIREMENTS.
# Anixter Building Automation Cables

## Non-Plenum

<table>
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<tr>
<th>SBT Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>H-FP20-CRM</td>
<td>25 AWG, STR, CP, CM, BLUE JACKET</td>
<td>NORTHFLEX H-1FP20-CM &quot;DI, DI, DI, AO, AO&quot; (8G6) 20 AWG 1P 150°C CM (UL) (UL)</td>
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<tr>
<td>H-J220-CRM</td>
<td>25 AWG, STR, CP, CM, BLUE JACKET</td>
<td>NORTHFLEX H-2J20-CM &quot;TEC 2/4&quot; (M66) 20 AWG 2C 15°C CM (UL) (UL)</td>
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<td>CABLE ASSEMBLY TBC TO SBD 3 POS 10 FT</td>
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**Revision History**

**Siemens**

45470 Commerce Cir. Dr.
Plymouth Twp., MI 48370
USA
PHONE 734-469-3800
FAX 866.810.0740

**WSU Physics Generator**

Detroit, MI

08/07/14
09/09/14

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900 – ELECTRICAL INSTALLATION AND WIRING FOR HVAC TEMPERATURE AND LAB CONTROLS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Division 23, Common Work Results for mechanical requirements apply to this section and will require the contractor participation on the Above Ceiling Coordination Program.

1.2 GENERAL INFORMATION

A. This specification section shall include all electrical responsibilities required for the installation & wiring of all temperature controls, as outlined on job plans, specification and temperature control drawings. Specifically, this contractor shall provide pricing direct to those general or mechanical contractors (bid to prime on project) contractors bidding (this) work, and will be responsible for installation & wiring of all automatic temperature control devices furnished by Siemens Building Technologies as outlined below and as may be required per the project plans & specifications.

B. Siemens Building Technologies, Inc. will provide the following equipment for the building automation system as shown in the temperature control drawings Bill of Materials to include but not limited to:

1. Terminal Equipment Controllers (TEC’s)
2. Auxiliary TEC power panels
3. Room Temperature Sensors
4. Damper actuators
5. Relays
6. Low Voltage Transformers

The Electrical Installation & Wiring Contractor (EWC) shall be responsible for installation of all preceding devices as applicable to this project. This list shall not be considered complete and all bidders should refer to temperature control drawings for specific equipment quantities and locations.

C. During the bidding process, the EWC shall address all questions relative to the Siemens temperature control drawings in writing (RFP) through the tier of bidding contractors. Siemens shall respond in writing through the tier of bidding contractors.

D. EWC shall install all control equipment provided by Siemens. The EWC shall furnish, install, and terminate all necessary wiring, conduit, busses, etc., to provide a complete control system installation. All controls to be installed and adjusted by a Siemens qualified technician in the full-time employ of the EWC.

E. The EWC must have full-time project superintendent who shall attend all construction meetings after notification that their services are required onsite.

F. Upon completion of all installation and wiring by the EWC, Siemens Building Technologies will conduct verification of point to point wiring and any pneumatic tubing. The EWC will ensure that all necessary wiring connections are correct at the completion of the point to point verification. Approval shall be made by the Owners Construction Inspection Department and Siemens Building Technologies, Inc.

G. Upon approval by the Owners Construction Inspection Department, Siemens shall program all DDC panels, create necessary graphics and provide any interface between the building automation system and the campus environmental control system.

H. Upon completion of the aforementioned, a performance test shall be conducted as specified in the commissioning section of the specifications.

I. Upon successful completion of the final checkout, performance test and the Owners acceptance, the EWC’s responsibility reverts to a standard warranty (12 months) for labor and material installed by the EWC, and labor only for equipment supplied by others.

J. Siemens assumes the manufacturers warranty for all equipment supplied to the EWC for installation on this project.

K. Siemens services to include the following: Design engineering labor required to interface with WSU and the consulting engineer to design the temperature control system. Supervision of the EWC installation and final checkout and approval.

L. Equipment provided by others may require specific cable type and terminations. It is up to EWC to provide cable and terminations needed for a complete working system.

1.3 DEFINITIONS

A. DDC: Direct digital control.
B. I/O: Input/output.
C. BACnet: A control network technology platform for designing and implementing interoperable control devices and networks.
D. MIS/TP: Master/slave/token passing.
E. PC: Personal computer.
F. PD: Proportional plus integral plus derivative.
G. RTD: Resistance temperature detector.

ELECTRICAL INSTALLATION AND WIRING FOR HVAC TEMPERATURE AND LAB CONTROLS
1.4 PRODUCTS & SERVICES PROVIDED OTHERS
   A. Mechanical Contractor: Installation of flow switches, temperature or thermometer sensor wells, gage taps, pressure sensor pipe taps, manual valves & take off pipe pressure taps and variable frequency drives.
   B. Electrical Contractor: Provide 120/208 VAC power to all DDC panels, wire power to all VFD's. Furnish & install 4" x 4" trunk above all control panels. Furnish & install conduit up maximum ten feet from all 4" x 4" troughs. Installation all required nipples between electrical panels and through.
   C. Sheetmetal Contractor: Installing all terminal units, airflow stations and dampers.

1.5 PRODUCTS INSTALLED BY THE EWC BUT NOT FURNISHED UNDER THIS SECTION
   A. Connect control components, as shown on the plans, factory supplied as part of equipment controlled.

1.6 RELATED SECTIONS
   A. Division 23 – General Mechanical Requirements.
   B. Division 23 – Instrumentation and controls for HVAC.
   C. Division 23 – Indoor Air Handling Units.
   D. Division 23 – Air Terminal Units.
   E. Division 23 – Testing and Balancing for HVAC.
   F. Division 23 – Commissioning of HVAC.
   G. Division 28 – Electrical Work.
   H. Standard Specifications and Codes: In addition to the requirements shown or specified, comply with the following applicable standard specifications, codes or ordinances:
      2. UL – Underwriter’s Laboratories.

1.7 QUALIFICATIONS FOR THE EWC
   A. Controls Installation Contractor: The EWC’s will be pre approved by WSU prior to bidding this project.

1.8 QUALITY ASSURANCE
   A. Instalar Qualifications: EWC Contractor must be able to provide references, upon request, for similar projects (in size & scope) that were completed satisfactorily in Michigan. Project names, owner contacts and companies who awarded this work to the contractor shall all be provided upon request to WSU and/or the AEC of record. EWC Contractor must be prepared to submit a minimum of three (3) satisfactorily completed projects, annually, for the past five (5) years.
   B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   C. Comply with ASHRAE 135 for DDC system components.

1.9 SEQUENCING AND SCHEDULING
   A. Sequence work to ensure installation of components is complimentary to installation of similar components in other systems.
   B. Coordinate work with other Contractors and subcontractors to ensure system is completed and commissioned by the Date of Substantial Completion.
   C. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

1.10 WARRANTY
   A. Provide as pre project general conditions.

1.11 CONTROL WIRING
   A. The EWC is required to use the cable below. Refer to temperature control drawing ABAC Building Automation Cable Specification Catalog. If a wire type is required that is not referenced on the ABAC sheet then it is up to the EWC to provide the appropriate wire for the application.
   B. The EWC is required to tag all wiring. Wiring that is used for DDC control points should be tagged with abbreviated DDC point name from control submittal. If wire is to be demod make sure the wire is labeled "spare" or "not in use".

1.12 INSTALLATION
   A. Refer to project plans and DDC temperature control drawings for control wiring required and equipment locations.
   B. Install control devices per installation requirements of control device. Before installing, always refer to local codes.
ELECTRICAL WIRING INSTALLATION BY THE EWC (Project Plans and Specifications Prevail)

A. Furnish and install ALL wiring and interlock wiring as specified and as shown on the project plans ODC temperature control drawings. Connect controls in accordance with ODC temperature control drawings.

B. Installation minimum requirements:
   1. Mechanical Rooms & Parking Areas: EMT up ten feet, then exposed plenum I/O point wiring
   2. TEC Space Sensors: All cables furnished by Siemens, installed within wall construction without EMT.
   3. Other Space Sensors: I/O point wire in EMT for all non-accessible walls, approved plenum open wire in accessible walls.
   5. Ceiling Returns (non-accessible) and all other inaccessible areas: All wiring in EMT.
   6. Power and low voltage wiring shall not be run in the same conduit.

ON-SITE TESTING

A. Provide Owner—approved operation and acceptance testing of the complete system. The following shall witness the performance test:
   1. The EWC - Electrical (controls) installation & wiring contractor
   2. The equipment manufacturers representative
   3. The Owner's agent
   4. The Owner
   5. Architect/Engineer

B. Field Test: When installation of the system is complete, all systems shall be tested to their sequence of operation including all safety circuits.

END OF SECTION 26 0900

ELECTRICAL INSTALLATION AND WIRING FOR HVAC TEMPERATURE AND LAB CONTROLS

SIEMENS
45470 Commerce Ctr. Dr.
Plymouth Twp, MI 48170
USA
PHONE 734.469.3000
FAX 866.810.0740

WSU Physics Generator
Detroit, MI

SPEC3
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SEQUENCE OF OPERATIONS FOR TESTING GENERATOR CONDITIONS MONITORED VIA THE SIEMENS APPOESE SYSTEM.

TESTING WILL PROVIDE GENERATOR "RUN" ALARM, "FAULT" ALARM, FUEL "RUN" ALARM, FUEL "STOP" ALARM. EACH ALARM ONCE TRIGGERED WILL PROVIDE A SIEMENS RENO PAGING ALARM AND GRAPHICAL COMMAND CENTER ALARM.

ADDITIONALLY, THE FUEL DIALER SYSTEM AND PHONE LINE WILL ALSO BE TESTED AND VERIFIED FOR PROPER OPERATION.

TEST #1: NORMAL RUNNING ALARM
START AND RUN GENERATOR FOR NORMAL MONTHLY TESTING. ONCE GENERATOR STARTED, GENERATOR INTERLOCK RELAY PROVIDES SIEMENS RENO PAGING AND GRAPHIC ALARMS AS SHOWN. "GENERATOR RUN STATUS = ON" AND "GENERATOR RUN STATUS = OFF".

TEST #2: ALARM FAULT TEST
GENERATOR OFF AND PANEL SELECTOR SWITCH IN "AUTO", MOVE SELECTOR SWITCH TO "MANUAL RUN", (DELAY OCCURS THEN) GENERATOR STARTS. NOW PUSH IN RED STOP BUTTON. THIS WILL FORCE GENERATOR INTO AN ALARM CONDITION. GENERATOR INTERLOCK RELAY PROVIDES SIEMENS RENO PAGING AND GRAPHIC ALARMS AS SHOWN. TO RESET ALARM, PULL OUT RED STOP BUTTON, SWITCH SELECTOR SWITCH TO "AUTO." NOTE THAT GENERATOR SELECTOR SWITCH SHOULD ALWAYS BE IN THE "AUTO" POSITION.

"GENERATOR ALARM = ALARM" AND "GENERATOR ALARM = NORMAL".

TEST #3: TANK RAPTURE ALARM
PRESS AND HOLD THE MOMENTARY WALL MOUNTED "RAPTURE" PUSH BUTTON (PB). GENERATOR INTERLOCK RELAY PROVIDES SIEMENS RENO PAGING AND GRAPHIC ALARMS AS SHOWN. NOTE THAT THE RENO ALARM SHOULD BE BROADCASTED WITHIN 1 MINUTE. RELEASE PB ONCE COMPLETED.

"FUEL TANK RAPTURE = ON" AND "FUEL TANK RAPTURE = OFF".

TEST #4: 50% FUEL LEVEL ALARM
FUEL LEVEL BOX TEST ACTIVATES BOTH THE LOCAL PHONE DIALER AND SIEMENS SYSTEM.

CONTACT FUEL SUPPLY COMPANY REPRESENTATIVE (SEE ANALOG PHONE DIALER INFORMATION). INFORM FUEL SUPPLY COMPANY REPRESENTATIVE THAT THEY WILL RECEIVE A 50% FUEL CALL OUT FROM THE RESPECTIVE BUILDING. FUEL SUPPLY COMPANY REPRESENTATIVE WILL BE STANDING BY AND WILL NEED TO CALL BACK THE WSU ONSITE PERSON ONCE EACH ALARM HAS BEEN RECEIVED.

TEST PROCEDURE AS FOLLOWS: PRESS AND HOLD THE MOMENTARY WALL MOUNTED "50% TEST" PUSH BUTTON (PB). GENERATOR INTERLOCK RELAY PROVIDES PHONE DIALER, SIEMENS RENO PAGING AND GRAPHIC ALARMS AS SHOWN. NOTE THAT ALARM SHOULD BE BROADCASTED WITHIN 1 MINUTE, CONTINUE TO HOLD PB UNTIL FUEL SUPPLY COMPANY REPRESENTATIVE RECEIVES CALL BACK. ONCE CALL BACK RECEIVED, PHONE MESSAGE READS...WSU RESPECTIVE BUILDING GENERATOR STARTED, DELIVER FUEL WITHIN 4 HOURS.

"50% FUEL LEVEL = ALARM" AND "50% FUEL LEVEL = NORMAL".
NOTE: 2 MINUTE DELAY BEFORE RETURN TO NORMAL ON RENO ALARM.

TEST #5: 0% FUEL LEVEL ALARM
FUEL LEVEL BOX TEST ACTIVATES BOTH THE LOCAL PHONE DIALER AND SIEMENS SYSTEM.

CONTACT FUEL SUPPLY COMPANY REPRESENTATIVE (SEE ANALOG PHONE DIALER INFORMATION). INFORM FUEL SUPPLY COMPANY REPRESENTATIVE THAT THEY WILL RECEIVE A 0% FUEL CALL OUT FROM THE RESPECTIVE BUILDING. FUEL SUPPLY COMPANY REPRESENTATIVE WILL BE STANDING BY AND WILL NEED TO CALL BACK THE WSU ONSITE PERSON ONCE EACH ALARM HAS BEEN RECEIVED.

TEST PROCEDURE AS FOLLOWS: PRESS AND HOLD THE MOMENTARY WALL MOUNTED "0% TEST" PUSH BUTTON (PB). GENERATOR INTERLOCK RELAY PROVIDES PHONE DIALER, SIEMENS RENO PAGING AND GRAPHIC ALARMS AS SHOWN. NOTE THAT ALARM SHOULD BE BROADCASTED WITHIN 1 MINUTE, CONTINUE TO HOLD PB UNTIL FUEL SUPPLY COMPANY REPRESENTATIVE RECEIVES CALL BACK. ONCE CALL BACK RECEIVED, PHONE MESSAGE READS...WSU RESPECTIVE BUILDING GENERATOR FUEL LEVEL LOW, DELIVER FUEL IMMEDIATELY.

"0% FUEL LEVEL = ALARM" AND "0% FUEL LEVEL = NORMAL".
NOTE: 2 MINUTE DELAY BEFORE RETURN TO NORMAL ON RENO ALARM.

DOC MONITORING POINTS PER GENERATOR:

- GENERATOR RUN: DIGITAL INPUT VIA DRY CONTACT
- GENERATOR FAULT: DIGITAL INPUT VIA DRY CONTACT

**REVISON HISTORY**

SIEMENS
45470 Commerce Ctr, Dr, Plymouth, MI 48170 USA
PHONE 734.458.3800 FAX 734.458.3900

WSU Physics Generator
Detroit, MI

SFM 08/07/94
TAJ 09/09/94

001

G1709/07/14 001
BATTERY CHARGER FAULT    DIGITAL INPUT VIA DRY CONTACT

MONITORING POINTS FOR FUEL STORAGE TANK:

FUEL LEVEL 80%    DIGITAL INPUT VIA DRY CONTACT
FUEL LEVEL 50%    DIGITAL INPUT VIA DRY CONTACT
TANK Rupture ALARM    DIGITAL INPUT VIA DRY CONTACT
LOW DETECTION ALARM    DIGITAL INPUT VIA DRY CONTACT
TANK LEVEL    ANALOG INPUT VIA 4-20MA SIGNAL

RENO - REMOTE ENUNCIATION THRU APOGEE

SET UP RENO GROUP FOR GENERATORS, "RESPECTIVE BUILDING) GENERATOR"
1. SUPERVISOR PAGE (COMMAND CENTRAL)
2. OWNER DEFINED
3. OWNER DEFINED
4. OWNER DEFINED

DEFINE THE FOLLOWING POINTS FOR RENO

GENERATOR RUN - "GEN # IS RUNNING" (USE RUNNING AND OFF AS CHANGE OF STATES)
RETURN TO NORMAL - "GEN # IS OFF"

GENERATOR ALARM - "GEN # FAILED TO START"

LOW FUEL LEVEL (DAY TANK) - "GEN # (ARE DAY TANKS NUMBERED)
50% FUEL LEVEL - "FUEL TANK 50% ALARM"
80% FUEL LEVEL - "FUEL TANK 80% ALARM"

NO ATS POINTS DEFINED FOR RENO

ANALOG PHONE DIALER INFORMATION

THE FOLLOWING FOUR NUMBERS TO BE PROGRAMMED INTO THE "DIALER" PANEL
1. ATLAS OIL COMPANY (FUEL DELIVERY) 800-876-2000
2. KATIE MILLMAN (ACCOUNT REPRESENTATIVE) (OFFICE) 313-662-3621
   (CELL) 313-932-6893
3. WSU SUPERVISOR (COMMAND CENTER) 313-577-4844
4. WSU PUBLIC SAFETY (NON-EMERGENCY) 313-577-2224
Reference Only

This drawing is for reference only. This drawing must be used only to add additional detail to what is being provided by the engineer of record. Not all terminations, wire paths or interlocks are shown in these diagrams as this will be dependent on the equipment purchased by others. Once equipment submittals are secured, the final drawings will reflect all work necessary to provide a full and functioning control system as outlined in the plans and specs. It is the bidder's responsibility to review all contract documents provided by engineer of record to ensure that a complete scope is bid. Quantity of items and location of devices/paces that are not clearly spelled out in the drawings must be field verified to ensure that the project is properly bid. It is assumed that the bidder of the temperature controls electrical installation is knowledgeable in such work and requires minimal guidance. Siemens assumes no responsibility or risk for bidders not fully understanding the scope or extend of the work required.
Reference Only
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Installation Notes:
1. 120VAC power circuit number to be verified
2. Product designed for use in an outdoor environment
3. All wiring to meet requirements of National Electrical Code (NEC)
4. Fuel oil delivery test system