

## Site Info – West 96<sup>th</sup> Street

West 96<sup>th</sup> Apartments  
750 Columbus Ave.  
New York, NY 10025

### Site Contact

Kevin May | Project Engineer  
Aegis Energy Services, Inc.  
Office: 413-536-1156 Ext: 218 | Mobile: 413-237-8347  
55 Jackson St, Holyoke, MA 01040  
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- CDH was on site October 14, 2015 to install a datalogger, terminate meter wiring, setup communications.
- Aegis installed Veris H8035-300 (WT) and Veris H8035-100 (WP) (CDH cost)
- IVFD just for dump confirmation
- Verification needs to be done. Check BTU meter temperatures.

### Summary

CDH provided the data logger. Aegis provided and installed the gas, power, and BTU meters. Aegis performed all of the necessary wire pulls and CDH terminated wiring to the data logger and sensors.

### Monitored Data Points

| Logger Channel | Data Point | Description                                     | Eng Units | Instrument / Transducer     | Output        |
|----------------|------------|---|-----------|-----------------------------|---------------|
| MB-003         | WT         | Gross Power Output                              | kWh       | Veris H8035-300             | Modbus RS-485 |
| MB-004         | WP         | Parasitic Loads                                 | kWh       | Veris H8035-100             | Modbus RS-485 |
| -              | WG         | Net Power Output                                | kWh       | -                           | Calculated    |
| 1              | FG         | Cogen Gas Consumption                           | cf        | Romet Rotary Meter w/ Pulse | Pulse         |
| MB-002         | FHW        | Recovered Heat loop Flow                        | gpm       | Badger Series 380           | Modbus RS-485 |
| MB-002         | THW1       | Recovered Heat Loop - Supply Temp.              | °F        | Badger Series 380           | Modbus RS-485 |
| MB-002         | THW2       | Recovered Heat Loop - Temp. After Useful HXs    | °F        | Badger Series 380           | Modbus RS-485 |
| 3              | THW3       | Recovered Heat Loop - Temp. After Dump Radiator | °F        | MAMAC 10k Type 2 Thermistor | Resistance    |
| 4              | IVFD       | Dump Radiator Current                           | Amps      | Veris H921                  | 4-20 mA       |
| MB-001         | WB         | Total Facility Power                            | kWh       | Veris E50                   | Modbus RS-485 |
| -              | QS         | Space Heating (sensor not installed)            |           |                             |               |
| -              | QDHW       | DHW (sensor not installed)                      |           |                             |               |
| -              | QR         | Rejected Heat Recovery                          | Mbtu/h    |                             | Calculated    |
| -              | QU         | Total Useful Heat Recovery                      | Mbtu/h    | -                           | Calculated    |

**IP Info**

|                        |                    |
|------------------------|--------------------|
| IP Address (External): | 100.37.118.26:4081 |
| IP Address:            | 10.0.13.141        |
| Subnet Mask:           | 255.255.255.0      |
| Gateway:               | 10.0.13.1          |
| Primary DNS:           | 68.237.161.12      |
| Secondary DNS:         | 71.250.0.12        |

**Procedure**

- Verification not yet performed
- QU compared to rating is 10% high

**Verification Data – Not Yet Performed**

Site Photos



One (1) Aegen Powerverter (PV-75) cogen unit located in cogen room in basement



Veris E50 power meter (WB) in Beckwith panel located in cogen room.



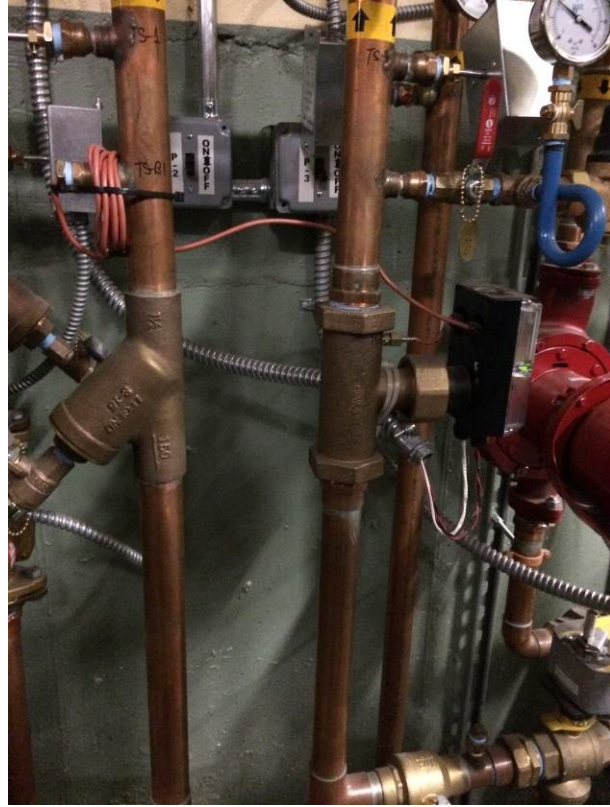
CDH panel containing Obvius data logger (right) and Aegis CCP1 and network equipment (left).

(photo to be taken on next trip)

Veris H8035-100 power meter (WP)



Heat recovery HXs (2)



Badger 380 Btu Meter (THW1, THW2, FHW, QU)



Dump Fan Current (IVFD)



Romet Gas Meter



| PUMP SCHEDULE |                       |        |       |        |       |                                 |
|---------------|-----------------------|--------|-------|--------|-------|---------------------------------|
| PUMP NO.      | SERVICE               | FLOW   | HEAD  | H.P.   | PHASE | MODEL                           |
| P-1           | COGEN MODULE          | 22 GPM | 70 FT | 3/4    | 3     | BELL & GOSSETT SERIES 1535 343T |
| P-2           | DHW LOOP              | 30 GPM | 15 FT | 1/6    | 1     | BELL & GOSSETT PL-45B           |
| P-3           | SPACE HEATING LOOP    | 30 GPM | 33 FT | 3/4    | 3     | BELL & GOSSETT SERIES 60 613T   |
| P-4           | HEAT DISSIPATION LOOP | 30 GPM | 33 FT | 3/4 HP | 3     | BELL & GOSSETT SERIES 60 613T   |

| CONTROL VALVE SCHEDULE |                      |              |        |         |                           |                       |
|------------------------|----------------------|--------------|--------|---------|---------------------------|-----------------------|
| VALVE NO.              | SERVICE              | FLOW TYPE    | SIZE   | VOLTAGE | VALVE MODEL               | ACTUATOR              |
| V-1                    | DHW HEATING LOOP     | PROPORTIONAL | 1 1/2" | 24 V    | SCHNEIDER VS2313-526-9-54 | MS40-7043M MODULATING |
| V-2                    | COGEN SELECTOR VALVE | ON/OFF       | 2"     | 24 V    | SCHNEIDER VS2313-526-9-63 | MA40-7043M ON/OFF     |
| V-3                    | SPACE HEATING        | PROPORTIONAL | 1 1/2" | 24 V    | SCHNEIDER VS2313-526-9-54 | MS40-7043M MODULATING |

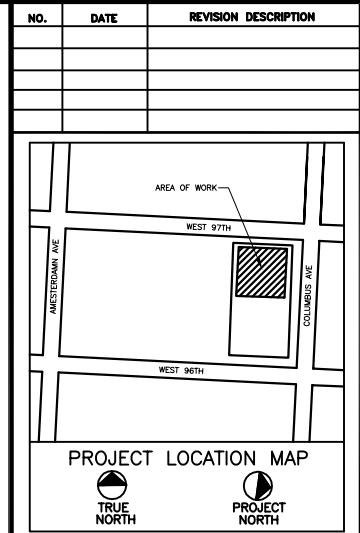
| HEAT EXCHANGERS HX-1,2 |                   |           |
|------------------------|-------------------|-----------|
| DESIGN MANUFACTURER    | API HEAT TRANSFER |           |
| MODEL                  | SBM7M-40          |           |
| TYPE                   | BRAZED PLATE      |           |
| MATERIAL               | COPPER            |           |
| SERVICE                | DHW               |           |
| SIDE                   | HOT               | COLD      |
| FLUID TYPE             | WATER             | WATER     |
| FLUID FLOW             | 22 GPM            | 30 GPM    |
| TEMPERATURE IN         | 225 DEG F         | 172 DEG F |
| TEMPERATURE OUT        | 176 DEG F         | 207 DEG F |
| PRESSURE DROP          | 0.91 PSI          | 1.55 PSI  |
| INLET SIZE             | 2" NPT            | 2" NPT    |

| HEAT EXCHANGER HX-3 |                   |           |
|---------------------|-------------------|-----------|
| DESIGN MANUFACTURER | API HEAT TRANSFER |           |
| MODEL               | SBM7M-40          |           |
| TYPE                | BRAZED PLATE      |           |
| MATERIAL            | COPPER            |           |
| SERVICE             | GLYCOL DUMP LOOP  |           |
| SIDE                | HOT               | COLD      |
| FLUID TYPE          | WATER             | 40% P.G.  |
| FLUID FLOW          | 22 GPM            | 30 GPM    |
| TEMPERATURE IN      | 225 DEG F         | 160 DEG F |
| TEMPERATURE OUT     | 176 DEG F         | 194 DEG F |
| PRESSURE DROP       | 0.77 PSI          | 1.73 PSI  |
| INLET SIZE          | 2" NPT            | 2" NPT    |

| COGENERATION SCHEDULE   |                      |
|-------------------------|----------------------|
| DESIGN MANUFACTURER     | AEGENCO              |
| FUEL                    | NATURAL GAS          |
| FUEL INPUT              | 930 SCFH             |
| THERMAL OUTPUT          | 523 MBTU/H           |
| ELECTRICAL OUTPUT       | 75 KW                |
| GENERATION TYPE         | INVERTER             |
| ACOUSTIC LEVEL          | 70 dBA @ 20 FT       |
| VIBRATION ISOLATION     | YES                  |
| CONTROLS                | MICROPROCESSOR BASED |
| UNIT WEIGHT             | 3050                 |
| MODEL                   | POWERVERTER          |
| AVG INLET TEMP          | 170 DEG F            |
| AVG OUTLET TEMP         | 220 DEG F            |
| MA GAS BOARD APPROVAL # | 01-04-06-12          |
| DIMENSIONS              | 51"W X 101"L X 51"H  |

| TEMPERATURE SENSOR SCHEDULE |                                  |                   |           |
|-----------------------------|----------------------------------|-------------------|-----------|
| TS NO.                      | SERVICE                          | MODEL             | WELL TYPE |
| TS-1                        | COGEN SUPPLY                     | MAMAC TE-703-C-5A | AT-225    |
| TS-2                        | COGEN LOOP LEAVING H.X.-1        | MAMAC TE-703-C-5A | AT-225    |
| TS-3                        | COGEN LOOP LEAVING H.X.-2        | MAMAC TE-703-C-5A | AT-225    |
| TS-4                        | COGEN RETURN                     | MAMAC TE-703-C-5A | AT-225    |
| TS-11                       | DHW ENTERING H.X.-1              | MAMAC TE-703-C-5A | AT-225    |
| TS-12                       | DHW LEAVING H.X.-1               | MAMAC TE-703-C-5A | AT-225    |
| TS-13                       | DHW ZONE 1 STORAGE TANK          | MAMAC TE-703-C-5A | AT-225    |
| TS-21                       | SPACE HEATING ENTERING H.X.-2    | MAMAC TE-703-C-5A | AT-225    |
| TS-22                       | SPACE HEAT LEAVING H.X.-2        | MAMAC TE-703-C-5A | AT-225    |
| TS-31                       | DUMP LOOP ENTERING DUMP RADIATOR | MAMAC TE-703-C-5A | AT-225    |
| TS-32                       | DUMP LOOP LEAVING DUMP RADIATOR  | MAMAC TE-703-C-5A | AT-225    |
| TS-10                       | OUTSIDE AIR                      | MAMAC TE-205-F-5  | AT-225    |
| TS-B1                       | COGEN SUPPLY BTU                 | BADGER 380        | AT-225    |
| TS-B2                       | COGEN USEFUL BTU                 | BADGER 380        | N/A       |
| TS-4N                       | CDH                              | VERIS TDB1D0      | AT-225    |

- NOTES:
- ALL PIPE TO BE COPPER "1" UNLESS OTHERWISE NOTED
  - COGEN HEAT DISSIPATION LOOP TO BE 40% PROP. GLYCOL. ALL FILLING OF GLYCOL LOOP BY AEGIS.
  - CONTRACTOR SHALL PROTECT FROM HARM AND MAINTAIN ALL EXISTING EQUIPMENT, PLANT, FACILITY, ETC. TO REMAIN.



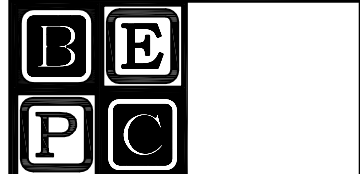
CLIENT:  
**AEGIS ENERGY SERVICES, INC.**  
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 HOLYOKE, MA 01040  
 TEL.: 413-536-1156  
 FAX: 413-536-1104  
 ATTN: KEVIN MAY

ALL DRAWINGS ARE TO BE READ NOT SCALED.

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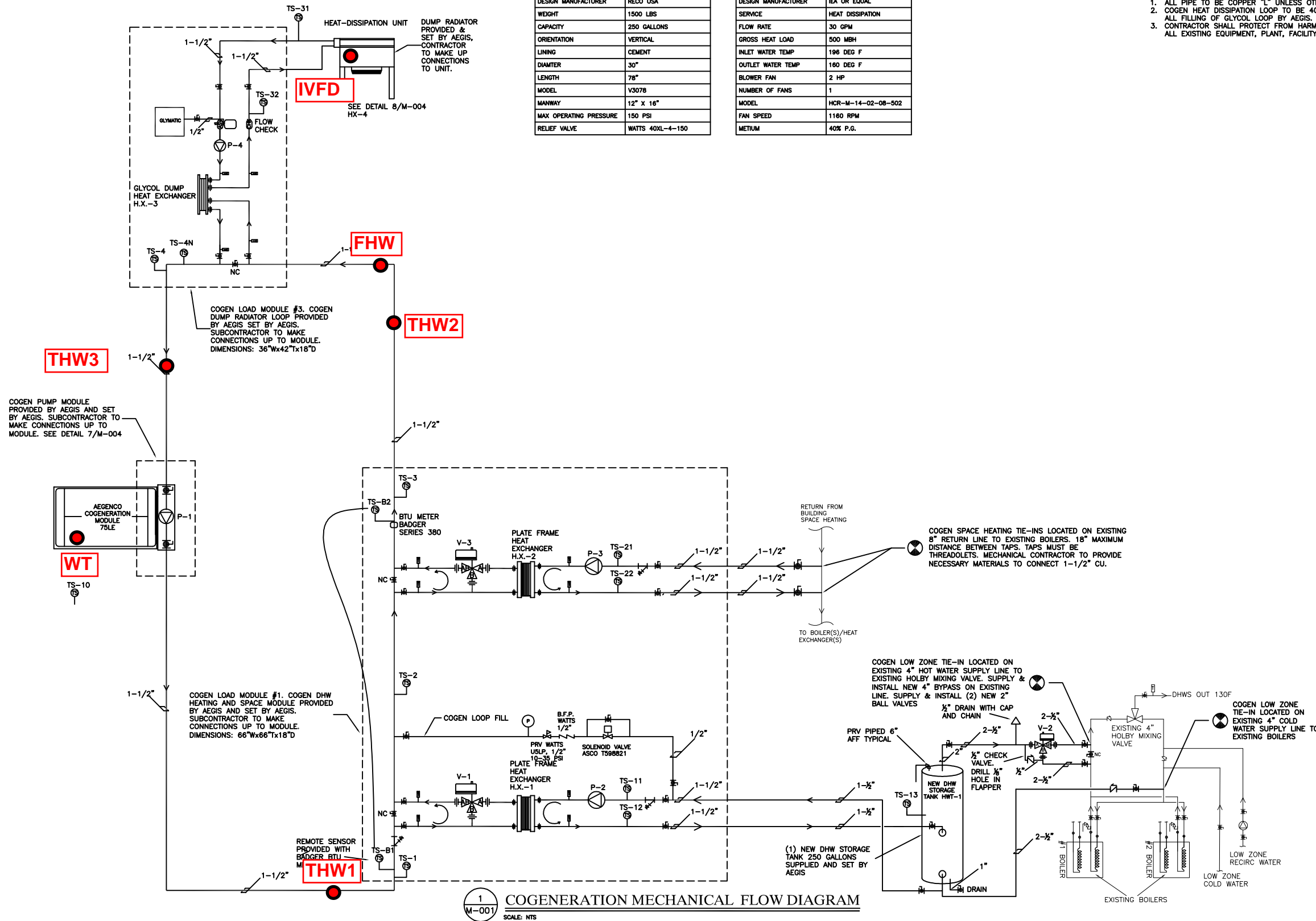
PROJECT  
**WEST 96TH  
 COGENERATION PROJECT  
 750 COLUMBUS AVE  
 NEW YORK, NY 10025**

DRAWING TITLE:  
**MECHANICAL FLOW DIAGRAM**

|               |              |       |          |
|---------------|--------------|-------|----------|
| DESIGN BY:    | KM           | DATE: | 9/29/14  |
| DRN BY:       | KM           | DATE: | 9/29/14  |
| CKD BY:       | JDJ          | DATE: | 10/22/14 |
| FINAL CKD BY: | JCB          | DATE: | 10/22/14 |
| SCALE:        | AS NOTED     | DATE: |          |
| DWG No.       | PAGE 3 OF 12 |       |          |

M-001.00  
 PROJECT NO.  
**60-145**

B-SCAN:



1  
 M-001  
 COGENERATION MECHANICAL FLOW DIAGRAM  
 SCALE: NTS