





Project Location:

WAYNE STATE UNIVERSITY  
SHAPER HALL  
650 GILLENWAY  
DETROIT, MICHIGAN 48202  
CONTACT: Mark Gibbons

Design Solutions, LLC

**Design**

Scientific, Technical, & Collaborative Design  
400 Water Street, Suite 111  
Rochester, MI 48307  
734-640-7210  
www.designsolutionsinfo.com



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| DESIGNED BY: | GIBBONS  |
| DRAWN BY:    | GRUBBS   |
| CHECKED BY:  | GRUBBS   |
| DATE:        | 03/20/14 |

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| DESIGNED BY: |  |
| DRAWN BY:    |  |
| CHECKED BY:  |  |
| DATE:        |  |

PROJECT:  
Shaper Hall  
4th Floor  
Graduate Classroom

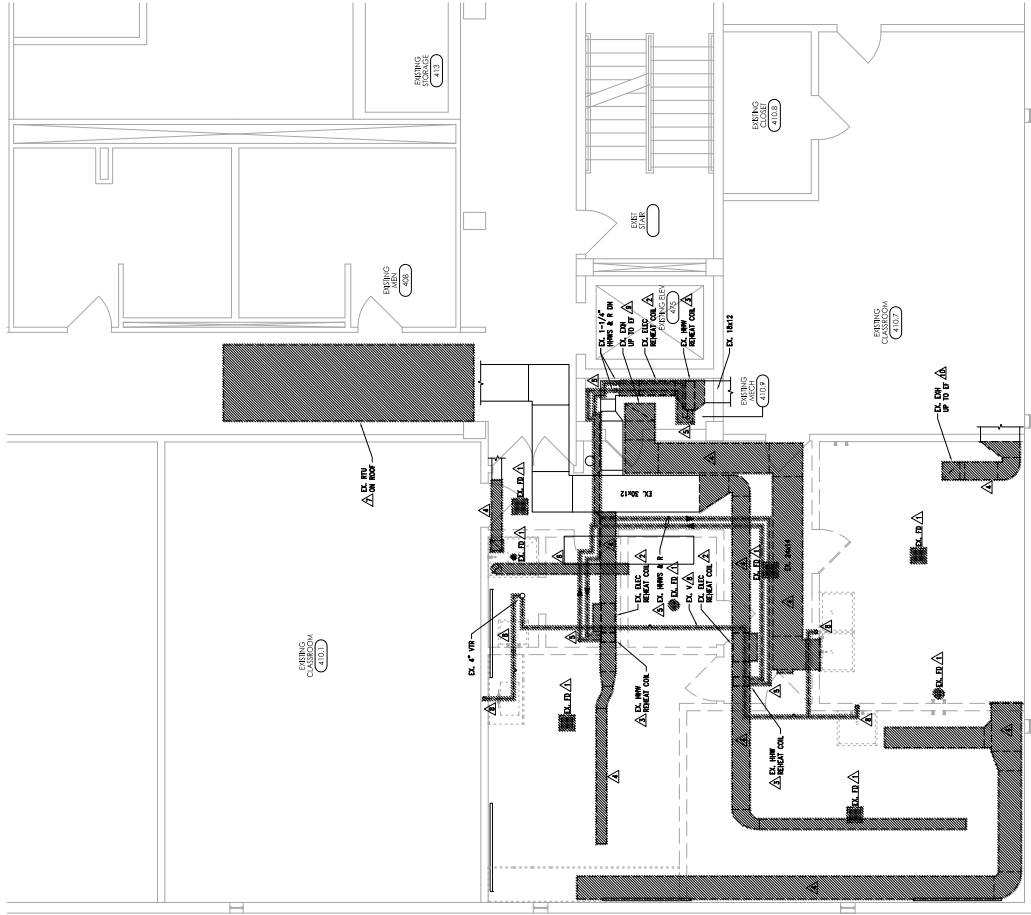
SHEET TITLE:

Partial 4th Floor  
Mechanical  
Demolition Plan

|                        |            |
|------------------------|------------|
| PROJECT NUMBER:        | 050-267559 |
| SHEET NUMBER:          | MD100      |
| DESIGN PROJECT NUMBER: | 1156-4     |

- DEMOLITION GENERAL NOTES:**
- GENERAL DEMOLITION NOTES AND EXIST DEMOLITION NOTES APPLY TO ALL MECHANICAL DEMOLITION PLANS INCLUDED WITHIN THIS DOCUMENT SET.
  - CONDUCT ALL DEMOLITION WITH APPROPRIATE AND ELECTRICAL DECONTAMINATION PROCEDURES. DEMOLITION OPERATIONS SHALL BE UNDER THE SUPERVISION OF THE PROJECT'S FACILITY MANAGER, AND WITH SAVANED STACK AND COMPONENTS TO BE DEMOLISHED TO BE DEMOLISHED WITHIN 12 HOURS OF COMPLETION.
  - DECONTAMINATION NOTES ARE TO BE USED AS A GENERAL GUIDE. ALL DEMOLITION WORKS EXCEPT FOR MECHANICAL AND ELECTRICAL DEMOLITION SHALL BE REFERRED TO APPROPRIATE MECHANICAL AND ELECTRICAL DEMOLITION NOTES.
  - ALL DEMOLITION WORK SHALL BE REFERRED TO MECHANICAL AND ELECTRICAL DEMOLITION NOTES (VOLUME).
  - CONDUCT ALL SERVICE SHUTDOWNS WITH OWNER.
  - REMOVE ALL PIPING, DUCTWORK, AND EQUIPMENT COMPLETELY INCLUDING ALL HANGERS AND ACCESSORIES.
  - REMOVE ALL STRUCTURAL MEMBERS OF ALL MEMBERS IN ALL WALLS. DO NOT LEAVE ANY UNBARRICADED OPEN AND STRUCTURE IN THE AREA OF WORK.

- DEMOLITION A/E NOTES:**
- △ REMOVE EXISTING FLOOR DRAIN CAP WITH CLEANOUT FLOOR FLUSH WITH FLOOR. CONNECTION TO EXIST FLOOR.
  - △ REMOVE EXISTING EXHAUST HANGERS, CAPS AND ACCESSORIES.
  - △ REMOVE EXISTING EXHAUST LINE AND ACCESSORIES.
  - △ ACCESSORIES CAP OR TRIMME DUCT FOR NEW CONSTRUCTION AS SHOWN ON NEW WORK PLAN.
  - △ REMOVE EXISTING EXHAUST STACK UP THROUGH ROOF TO 4" STAINLESS STEEL CAP SAUNTER ON ROOF.
  - △ REMOVE EXISTING EXHAUST STACK UP THROUGH ROOF TO 4" STAINLESS STEEL CAP SAUNTER ON ROOF.
  - △ REMOVE EXISTING EXHAUST STACK UP THROUGH ROOF TO 4" STAINLESS STEEL CAP SAUNTER ON ROOF.
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Partial 4th Floor  
Mechanical Demolition Plan  
SCALE: 1/4"=1'-0"



**Project Location:**

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 SHAPERO HALL  
 400 WATER STREET, SUITE 111  
 DETROIT MICHIGAN 48202  
 CONTACT: MARK GIBBONS

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| DRAWN BY:            |  |
| COORDINATOR/PROJECT: |  |
| CHECKED:             |  |
| APPROVED:            |  |
| PROJECT:             |  |

Shapero Hall  
 4th Floor  
 Graduate Classroom

sheet title:  
 Partial 4th Floor Roof  
 Mechanical  
 Demolition Plan

project number:  
 050-267559 MD101  
 (1156-4 ; iDesign project number)

**DEMOLITION - GENERAL NOTES:**

- GENERAL DEMOLITION NOTES AND EXIST DEMOLITION NOTES APPLY TO ALL MECHANICAL DEMOLITION PLANS INCLUDED WITHIN THIS DOCUMENT SET.
- COORDINATE ALL DEMOLITION WORK WITH ARCHITECTURAL AND ELECTRICAL CONTRACTORS. ALL DEMOLITION WORK SHALL BE COMPLETED PRIOR TO THE START OF THE MECHANICAL DEMOLITION WORK. MECHANICAL DEMOLITION WORK SHALL BE COMPLETED PRIOR TO THE START OF THE ELECTRICAL DEMOLITION WORK. ALL DEMOLITION WORK SHALL BE COMPLETED PRIOR TO THE START OF THE ARCHITECTURAL DEMOLITION WORK. ALL DEMOLITION WORK SHALL BE COMPLETED PRIOR TO THE START OF THE MECHANICAL DEMOLITION WORK. ALL DEMOLITION WORK SHALL BE COMPLETED PRIOR TO THE START OF THE ELECTRICAL DEMOLITION WORK.
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**DEMOLITION - DETAIL NOTES:**

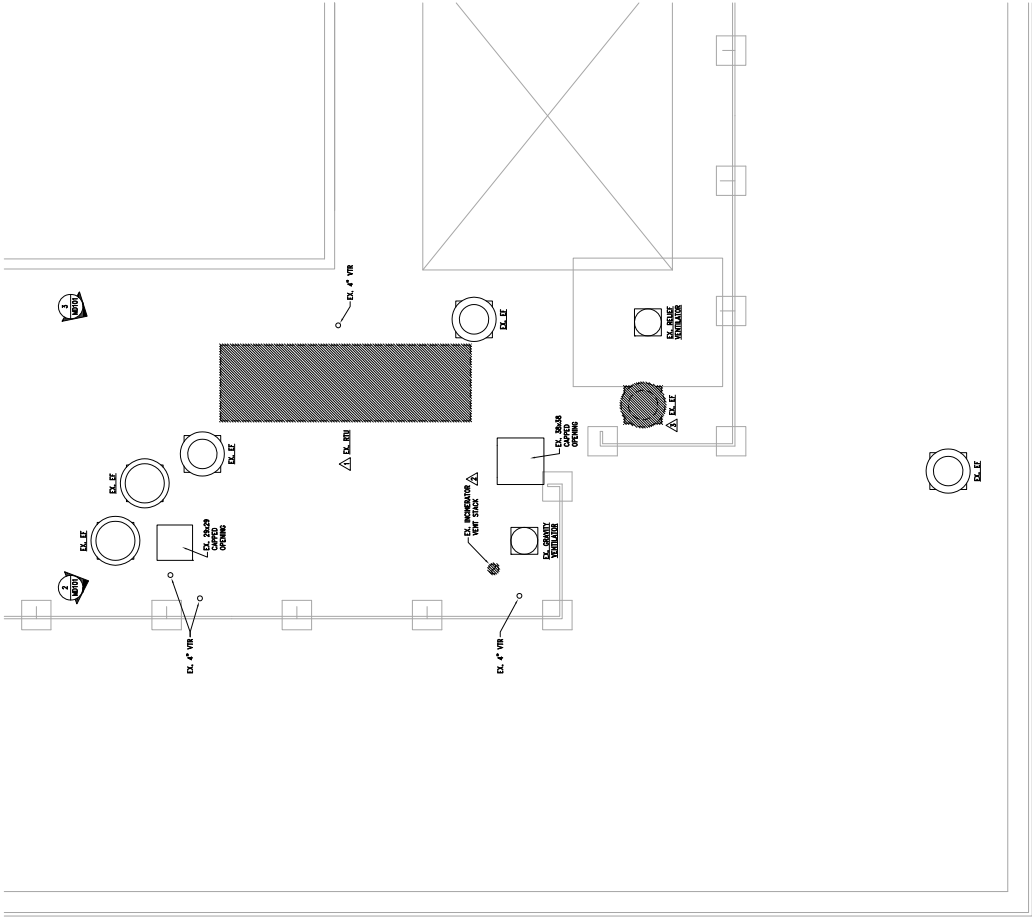
- REMOVE AND DISCARD EXISTING RIGID INSULATION WITH CHASING DETAILS.
- REMOVE AND DISCARD EXISTING INSULATOR VENT STACK, CAP ROOF OPENING.
- REMOVE AND DISCARD EXISTING EXHAUST FAN, CAP ROOF OPENING.



2 Roof Photo SCALE: NONE



3 Roof Photo SCALE: NONE



Partial 4th Floor Roof  
 Mechanical Demolition Plan  
 SCALE: 1/4"=1'-0"

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500 GILLENWATER  
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CONTACT: Mark Gibbons

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400 Water Street, Suite LL1  
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734-244-0723 | 24 hours info  
www.IDesign-Solutions.info



| ISSUE:                 | DATE:   |
|------------------------|---------|
| REVISIONS:             | 08/2014 |
| DESIGN:                | 08/2014 |
| MECHANICAL/ELECTRICAL: | 08/2014 |
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| drawn by:             |  |
| coordination checked: |  |
| checked:              |  |
| approved:             |  |

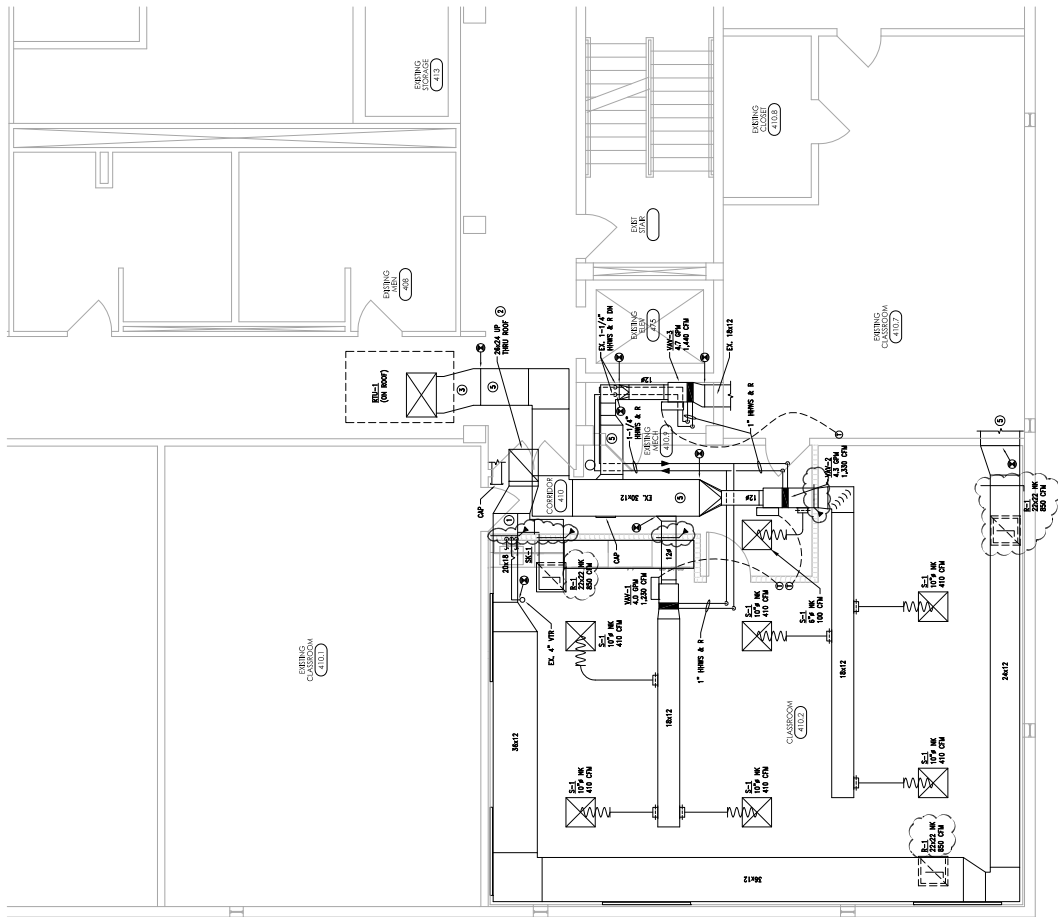
project:  
Shaper Hall  
4th Floor  
Graduate Classroom

sheet title:  
Partial 4th Floor  
Mechanical  
New Work Plan

sheet number:  
050-267559 M100  
(1156-4 ; iDesign project number)

**GENERAL NOTES:**  
A. COORDINATE WORK WITH ALL OTHER TRADES.

- KEY NOTES:**
1. DIM 1/2" DIA AND 10" W/TS TO NEW 2" SINK FROM NEAREST SOURCE. VERIFY FROM YOUR LOCAL SUPPLIER DIM 1/2" DIA TO DIMENSION 4" NEW STAINL. TUB FOOT.
  2. PROVIDE 1" ADDITIONAL LINING OR RETURN 1/2"-2" FROM MET.
  3. TRANSITION AS REQUIRED TO CONNECT TO EXISTING DUCTWORK. COORDINATE WITH EXISTING DUCTWORK PIPING AND EQUIPMENT IN CEILING SPACE.
  4. NOT VISIBLE.
  5. THROUGHOUT CLEAN EXISTING DUCTWORK THAT IS TO BE REUSED.



Partial 4th Floor  
Mechanical New Work Plan



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 SHAPERO HALL  
 650 GILLENWATER  
 DETROIT, MICHIGAN 48202  
 CONTACT: Mark Gibbons

**iDesign Solutions, LLC**

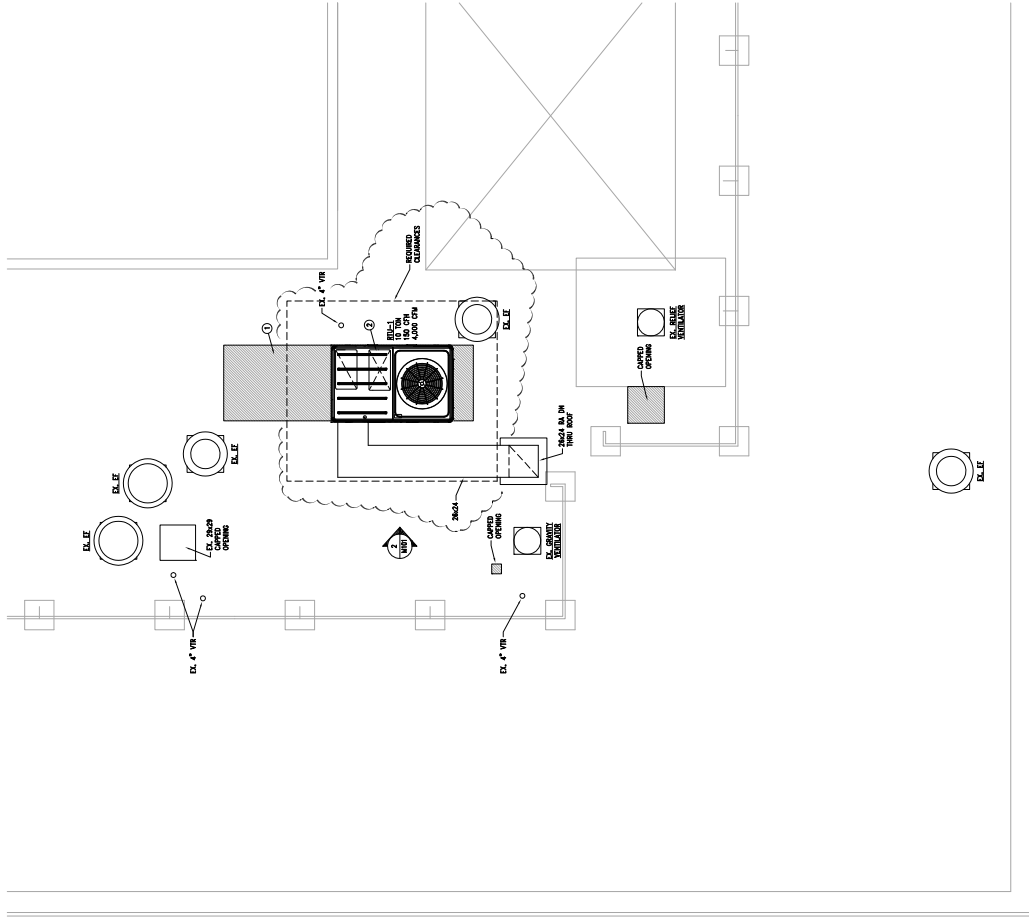
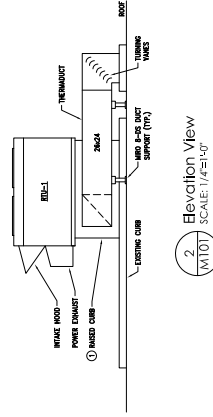
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|------------|---------|
| DESIGN:    | 08/2014 |
| REVISIONS: | 08/2014 |
| DATE:      | 08/2014 |
| BY:        | 08/2014 |
| FOR:       | 08/2014 |

**GENERAL NOTES:**  
 A. COORDINATE WORK WITH ALL OTHER TRADES.

- KEY NOTES:**
1. INSTALL NEW ROOFING OVER EXISTING CURB, PROVIDE CURB TO MATCH EXISTING CURB. PROVIDE 2" MINIMUM OVERLAP FOR RETURN AIR, AND PROVIDE TO ALLOW AIR FLOW. PROVIDE 2" MINIMUM OVERLAP FOR EXHAUST AIR. PROVIDE TO ALLOW AIR FLOW. PROVIDE TO MATCH EXISTING CURB. PROVIDE TO MATCH EXISTING CURB. PROVIDE TO MATCH EXISTING CURB.
  2. CONNECT SUPPLY DUCT FROM UNIT TO EXISTING SUPPLY DUCT IN CURB, PROVIDE TO MATCH EXISTING CURB.



**1**  
 (M10) SCALE: 1/4"=1'-0"  
 Partial 4th Floor Roof  
 Mechanical New Work Plan

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| DESIGNED BY:         |  |
| DRAWN BY:            |  |
| COORDINATOR/CHECKED: |  |
| CHECKED:             |  |
| APPROVED:            |  |

**Project:**  
 Shapero Hall  
 4th Floor  
 Graduate Classroom

**Sheet Title:**  
 Partial 4th Floor Roof  
 Mechanical  
 New Work Plan

**Sheet Number:**  
 050-267559 M101  
 (1156-4 : iDesign project number)



|              |       |
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| DESIGN:      |       |
| DESIGNED BY: | MS/MS |
| CHECKED BY:  | MS/MS |
| REVISIONS:   |       |
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| BY:          |       |

### VARIABLE AIR VOLUME BOX SCHEDULE

| TAG  | MANUFACTURER & MODEL NO. | CM    | MINIMUM COIL | DUCT NET SIZE (IN) | HEATING COIL             | NOTES/ACCESSORIES |
|------|--------------------------|-------|--------------|--------------------|--------------------------|-------------------|
| VM-1 | TRANE                    | 1,200 | 370          | 12                 | 4.0 60.0 2.15 0.18 B C D |                   |
| VM-2 | TRANE                    | 1,350 | 400          | 12                 | 4.5 65.0 2.24 0.18 B C D |                   |
| VM-3 | TRANE                    | 1,440 | 430          | 12                 | 4.7 68.0 2.06 0.21 B C D |                   |

NOTES AND ACCESSORIES DESIGNATION

|   |                            |
|---|----------------------------|
| A | NOT USED                   |
| B | 2-BOW COIL                 |
| C | CONTROLLED BY SERVO        |
| D | BASED ON 100% 80% 100% VAV |

### ROOFTOP UNIT SCHEDULE

| TAG   | SERVICE |              | COILS & RPT |       | SEATING |         | SUPPLY FAN |       | POWER ELEMENT FAN |     | ELECTRICAL |          | WEIGHT<br>L X W X H<br>P X Q X R (FT) | NOTES/ACCESSORIES |      |      |       |      |        |      |    |                               |       |                                 |
|-------|---------|--------------|-------------|-------|---------|---------|------------|-------|-------------------|-----|------------|----------|---------------------------------------|-------------------|------|------|-------|------|--------|------|----|-------------------------------|-------|---------------------------------|
|       | TYPE    | MANUFACTURER | UNIT        | UNIT  | NO.     | NO.     | NO.        | NO.   | NO.               | NO. | VOLTS      | AMP      |                                       |                   |      |      |       |      |        |      |    |                               |       |                                 |
| RTU-1 | SHAFT   | TRANE        | 184.74      | 84.84 | 1,200   | 800/870 | 842/73.8   | 194.0 | 105.0             | 0   | 70.0       | 70/70/61 | 4,000                                 | 1.7               | 1980 | 3.27 | 4,000 | 0.87 | 460/73 | 24.0 | 30 | 59'-1/4" x 7'-6 3/4" x 11'-7" | 1,700 | A, B, C, D, E, F, G, H, J, K, L |

NOTES AND ACCESSORIES DESIGNATION

|   |                                            |
|---|--------------------------------------------|
| F | DRYBACK COMPRESSOR                         |
| G | POWER ELEMENT CONTRACTOR MOUNTED AND WIRED |
| H | IMBED ACCESS FRAMES                        |
| I | 2-SHAKE GAS VALVE                          |
| J | COIL MOTOR FOR FAN SPEED                   |

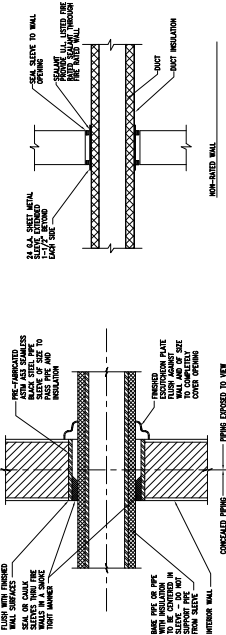
K: 2-3 SHAKE COMPRESSORS  
L: EXCHANGE AIR CONTROL/PRESSOR  
M: FAN SPEED PRESSURE CONTROL/SENSOR  
N: DYNAMIC TIME, TIME ADJUSTABLE  
O: MICROPROCESSOR CONTROL, SOCKET WIRETRAP TO SERVO

### GRILLE, REGISTER AND DIFFUSER SCHEDULE

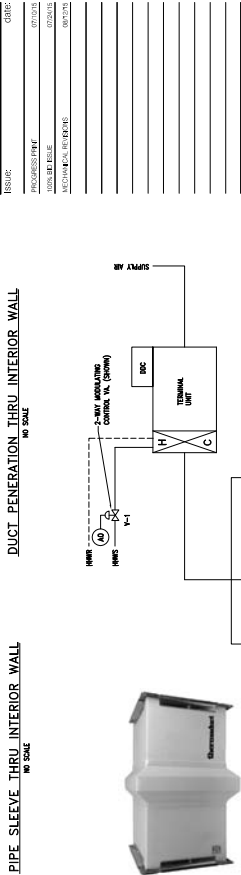
| TAG | MANUFACTURER & MODEL NO. | TYPE   | DIFFUSER | MOUNTING | NECS SIZE | OVERALL SIZE | NOTES/ACCESSORIES |
|-----|--------------------------|--------|----------|----------|-----------|--------------|-------------------|
| S-1 | TRANE                    | GRILLE | UP-M     | UP-M     | 24 x 24   | 24 x 24      | A                 |
| S-2 | TRANE                    | GRILLE | UP-M     | UP-M     | 24 x 24   | 24 x 24      | A                 |

NOTES AND ACCESSORIES DESIGNATION

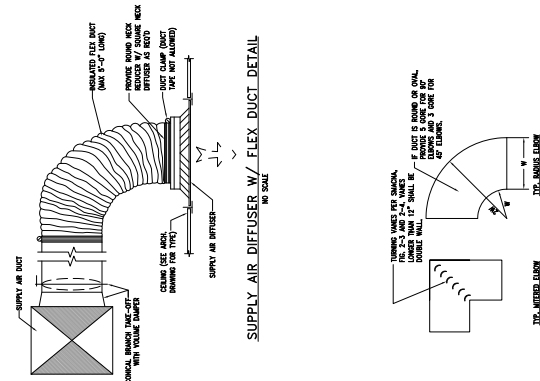
|   |                                              |
|---|----------------------------------------------|
| A | TRIMS AND COLORS TO BE SELECTED BY ARCHITECT |
| B | NOT USED                                     |
| C |                                              |



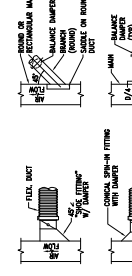
TYPICAL 2-WAY HOT WATER RE-HEAT COIL PIPING SCHEMATIC  
NO SCALE



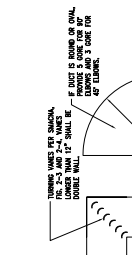
SUPPLY AIR DIFFUSER W/ FLEX DUCT DETAIL  
NO SCALE



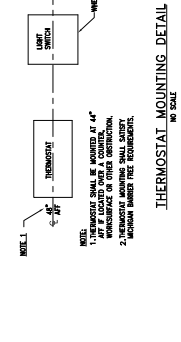
TYPICAL DUCT TAP DETAILS  
NO SCALE



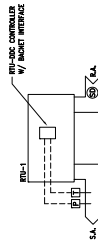
DUCT ELBOW DETAIL  
NO SCALE



THERMOSTAT MOUNTING DETAIL  
NO SCALE



OUTDOOR DUCT DETAIL  
NO SCALE



CONTROLS

- SEQUENCE OF OPERATION:
  - CONTROL VALVE SHALL BE CLOSED UNTIL THE TEMPERATURE SETPOINT IS REACHED. THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND MAXIMUM SETTINGS TO MAINTAIN ROOM TEMPERATURE.
  - SHALL USE ROOM SENSITIVE VALVES AS ITS CONTROL SETPOINT AND SHALL MAINTAIN MINIMUM TEMPERATURE CONTROL VALVE TO MAINTAIN THE ROOM TEMPERATURE SETPOINT. IF THE SETPOINT TEMPERATURE CONTROL VALVE IS IN A POSITION WITH THE VALVE OPEN THE AIRFLOW WILL BE INCREASED TO MEET SETPOINT TEMPERATURE.
  - THE SUPPLY AIR FLOW SETTINGS (MINIMUM AND MAXIMUM VOLUME AIRFLOW SETTINGS SHALL BE AS INDICATED ON THE SCHEDULE SHEET.
  - SPACE TEMPERATURE SETPOINTS (ADJUSTABLE) SHALL BE AS FOLLOWS:
    - HEATING OCCUPIED SETPOINT = 70°F
    - HEATING UNOCCUPIED SETPOINT = 65°F
    - COOLING OCCUPIED SETPOINT = 65°F
    - COOLING UNOCCUPIED SETPOINT = 60°F
  - THE VAV BOX MAY BE FULLY SCHEDULED TO FULLY CLOSE IN MINIMUM POSITION DURING UNOCCUPIED PERIODS
  - THE ROOM TEMPERATURE CONTROLLER SHALL RECALIBRATE THE AIRFLOW SETPOINT ONCE A WEEK. THE DUCT STATIC PRESSURE DOES NOT EXCEED 1.0".
  - POSITION FEEDBACK (CONTROL SIGNAL) FOR VAV BOX DAMPER AND TEMPERING COIL VALVE SHALL BE DISPLAYED WITH SYSTEM GRAPHICS.

RTU-1 CONTROL DIAGRAM  
NO SCALE

VARIABLE VOLUME W/ REHEAT CONTROLS  
NO SCALE

- SEQUENCE OF OPERATION:
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