

1 2 3 4 5 6

E  
D  
C  
B  
A

MECHANICAL SHEET INDEX	
SHEET NO	SHEET TITLE
G000	COVER SHEET
M001	MECHANICAL LEGENDS
M002	MECHANICAL NOTES
M003	MECHANICAL COMCHECK
M100	BASEMENT MECHANICAL PLAN
M101	MAIN FLOOR MECHANICAL PLAN
M401	ENLARGED MECHANICAL PLANS
M501	MECHANICAL DETAILS
M601	MECHANICAL SCHEDULES
P001	PLUMBING NOTES
P101	PLUMBING FLOOR PLAN



CONSULTANTS



# VARIOUS ENERGY IMPROVEMENTS WEBER VALLEY DETENTION CENTER

**DIVISION OF JUVENILE JUSTICE SERVICES**  
**5470 SOUTH 2700 WEST**  
**ROY, UTAH 84067**

**DFCM PROJECT NUMBER: 11023430**



**SPECTRUM**  
ENGINEERS

324 S. State St., Suite 400  
Salt Lake City, UT 84111  
800-678-7077  
801-328-5151  
fax: 801-328-5155  
www.spectrum-engineers.com

WEBER VALLEY  
YOUTH  
CENTER

5470 SOUTH 2700 WEST  
ROY, UTAH 84067

△		
△		
△		
△		
△		

MARK	DATE	DESCRIPTION
ISSUE: CONSTRUCTION DRAWINGS		
DATE:		2011-11-09

PROJECT NO:	20110156
DRAWN BY:	ARA
CHECKED BY:	RWM
DESIGNED BY:	RWM
RECORD DRAWING DATE:	

SIGNATURE:  
© 2011 Spectrum Engineers, Inc.

SHEET TITLE  
**COVER SHEET**

**G000**

1 2 3 4 5 6

File Name: P:\2011\20110156\Drawings\Weber Valley\3Sheet\56000.dwg Last Plotted: 2011/11/09 @ 9:50 AM By: ora

MISC. SYMBOL LEGEND

Table with 2 columns: SYMBOL, DESCRIPTION. Includes symbols for detail indicators, elevation indicators, room numbers, keynotes, and plumbing fixture indicators.

PLUMBING PIPING LEGEND

Table with 2 columns: SYMBOL, DESCRIPTION. Lists plumbing piping symbols for waste and vent lines, rainwater, hot water, and storm drains.

VALVE LEGEND

Table with 2 columns: SYMBOL, DESCRIPTION. Lists valve symbols for shut-off, gate, check, and various automatic valves.

DUCTWORK LEGEND

Table with 3 columns: SINGLE LINE, DOUBLE LINE, DESCRIPTION. Lists ductwork symbols for supply and return ducts, elbows, tees, and dampers.

Table with 2 columns: SYMBOL, DESCRIPTION. Lists electrical symbols for branch circuits, switches, starters, and panelboards.

ABBREVIATIONS

Table with 2 columns: ABBREVIATION, DESCRIPTION. Lists abbreviations for access doors, air conditioning, electrical, and plumbing terms.

SCOPE OF WORK

- ECM 1 - AIR HANDLING UNIT 1 & 2 AIR SIDE ECONOMIZER
ECM 2 - AIR HANDLING UNIT 3 AIR SIDE ECONOMIZER
ECM 3 - NEW HEATING & AIR CONDITIONING UNIT FOR CONTROL ROOM
ECM 4 - REVISED SEQUENCE OF OPERATION FOR HOT WATER & CHILLED WATER PUMPS
ECM 5 - UPGRADE LIGHTING - SEE ELECTRICAL DRAWINGS
ECM 6 - UPGRADE LIGHTING CONTROL - SEE ELECTRICAL DRAWINGS
ECM 7 - REVISED SEQUENCE OF CONTROL FOR EXHAUST FAN, EFM-5 (GYMNASIUM)
ECM 8 - REPLACE REFRIGERATOR AND FREEZER - FURNISHED BY OWNER
ECM 9 - REPLACE BOILER
ECM 10 - REPLACE CHILLER
ECM 11 - INSTALL LOW FLOW DEVICES ON PLUMBING FIXTURES



324 S. State St., Suite 400
Salt Lake City, UT 84111
801-678-7077
801-328-5151
www.spectrum-engineers.com

CONSULTANTS

- 1. REVISE SEQUENCE OF OPERATION FOR CHILLED WATER SYSTEM TO PERMIT CHILLED WATER TO FUNCTION AUTOMATICALLY DURING COOLING SEASON
2. REVISE SEQUENCE OF OPERATION FOR HOT WATER HEATING SYSTEM TO PERMIT HOT WATER HEATING SYSTEM TO FUNCTION AUTOMATICALLY DURING HEATING SEASON



- 1. REMOVE EXISTING CAST IRON BOILER AND ASSOCIATED PIPING
2. EXISTING HOT WATER HEATING PUMP TO REMAIN. REPLACE EXISTING MOTORS WITH PREMIUM EFFICIENT MOTORS.
3. INSTALL NEW WATER TUBE BOILER
4. INSTALL NEW BOILER CIRCULATING PUMP
5. PROVIDE NEW HOT WATER HEATING PIPING BETWEEN NEW BOILER AND EXISTING PIPING.

- 1. REMOVE EXISTING AIR COOLED CHILLER.
2. EXISTING CHILLED WATER PUMPS TO REMAIN. REPLACE EXISTING MOTORS WITH PREMIUM EFFICIENT MOTORS.
3. INSTALL NEW CHILLER.
4. INSTALL NEW CHILLED WATER BUFFER TANK.
5. PROVIDE NEW CHILLED WATER PIPING BETWEEN NEW CHILLER AND EXISTING PIPING.

WEBER VALLEY YOUTH CENTER

5470 SOUTH 2700 WEST
ROY, UTAH 84067

Table with 3 columns: MARK, DATE, DESCRIPTION. Includes revision marks for drawing updates.

ISSUE: CONSTRUCTION DRAWINGS
DATE: 2011-11-09

PROJECT NO: 20110156
DRAWN BY: ARA
CHECKED BY: RWM
DESIGNED BY: RWM

SIGNATURE:
© 2011 Spectrum Engineers, Inc.

MECHANICAL LEGENDS

M001

File Name: P:\2011\20110156\Drawings\Weber Valley\3Sheet\56M002.dwg Last Plotted: 2011/11/09 @ 9:51 AM By: ara

1 GENERAL EQUIPMENT NOTES

1. ALL CAPACITIES ARE AT JOB SITE CONDITIONS AND ARE MINIMUM CAPACITY.  
2. ALL AIR CONDITIONING EQUIPMENT SHALL BE A R.I. CERTIFIED AND THIRD PARTY LISTED.  
3. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED TO CONFORM WITH LOCAL SEISMIC REQUIREMENTS AND THE REQUIREMENTS OF THESE CONSTRUCTION DOCUMENTS.  
4. VERIFY ALL REQUIRED SERVICE CONNECTIONS, INCLUDING ELECTRICAL CHARACTERISTICS FOR ALL EQUIPMENT WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.  
5. ALL EQUIPMENT SHALL BE INDEPENDENTLY SUPPORTED FROM STRUCTURAL MEMBERS.  
6. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.  
7. ALL SIMILAR EQUIPMENT SHALL BE OF THE SAME MANUFACTURER.  
8. AIR INLETS AND OUTLETS SHALL BE OF THE SAME MANUFACTURER.  
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE HVAC EQUIPMENT CHECK-IN, SAFEKEEPING, AND DAMAGE.

2 SEQUENCE OF OPERATION

**CHILLED WATER SYSTEM**  
1. EXISTING SEQUENCE OF OPERATION SHALL REMAIN AND SHALL BE PROGRAMMED TO THE NEW CHILLER  
**HOT WATER HEATING SYSTEM**  
1. EXISTING SEQUENCE OF OPERATION FOR THE BOILER SHALL REMAIN AND SHALL BE PROGRAMMED TO THE NEW BOILER.  
2. THE NEW CIRCULATING PUMP (CP-5) SHALL START ON A CALL FOR HEATING.  
**AIR HANDLING UNITS**  
1. EXISTING SEQUENCE OF OPERATION FOR THE AIR HANDLING UNIT SHALL REMAIN.  
2. ADDITIONALLY, THE ECONOMIZER SHALL BE INITIATED.  
a. BUILDING MANAGEMENT SYSTEM (BMS) SHALL MODULATE THE OUTSIDE AIR, RETURN AIR AND EXHAUST AIR DAMPERS TO ACHIEVE MIXED AIR TEMPERATURE SETPOINT (55°F, ADJUSTABLE).  
b. WHEN THE OUTSIDE AIR TEMPERATURE IS GREATER THAN 73°F, THE OUTSIDE AIR DAMPER WILL RETURN TO ITS MINIMUM POSITION.  
c. WHEN THE MIXED AIR TEMPERATURE (MAT) FALLS BELOW SETPOINT (55°F) THE OUTSIDE DAMPER SHALL GO TO MINIMUM POSITION.  
3. THE COLD DECK OF THE MULTI-ZONE UNITS SHALL BE CONSTANTLY RESET TO ONLY BE AS COLD AS THE REQUIRED TO SATISFY THE TEMPERATURE IN THE WARMEST ROOM.  
4. THE ECONOMIZER SHALL BE RESET TO THE SAME VALUE AS THE COLD DECK OF THE MULTI-ZONE UNIT PLUS TWO-DEGREES (ADJUSTABLE).  
5. IF COOLING IS REQUIRED, BUT THE RETURN AIR TEMPERATURE IS LOWER THAN THE OA TEMPERATURE, THE OA DAMPERS WILL GO TO THEIR MINIMUM POSITION.  
6. MECHANICAL COOLING SHALL BE PROVIDED WHENEVER THE OUTSIDE AIR TEMPERATURE IS ABOVE 73°F (ADJUSTABLE).

3 SEISMIC DESIGN REQUIREMENTS

1. THE SEISMIC REQUIREMENTS FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH CHAPTER 17 OF THE 2009 INTERNATIONAL BUILDING CODE (IBC) AND CHAPTER 13 OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 7-05 'MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES'.  
2. SEISMIC DESIGN CATEGORY FOR THIS PROJECT IS 'D'. (ASCE 7-05 TABLE 11.6-1 AND TABLE 11.6-2)  
3. OCCUPANCY CATEGORIES: (ASCE 7-05, TABLE 11-1)  
a. ENTIRE BUILDING EXCEPT SALES AREA; OCCUPANCY CATEGORY = I  
b. SALES AREA (OCCUPANCY MORE THAN 300); OCCUPANCY CATEGORY = II  
4. BUILDING IMPORTANCE FACTOR (ASCE 7-05 TABLE 11.5-1)  
a. ENTIRE BUILDING EXCEPT SALES AREA; IMPORTANCE FACTOR, I = 1.00  
b. SALES AREA (OCCUPANCY MORE THAN 300); IMPORTANCE FACTOR, I = 1.25  
5. COMPONENT IMPORTANCE FACTOR (IP) SHALL EQUAL = 1.0 EXCEPT AS NOTED BELOW:  
a. COMPONENT IMPORTANCE FACTOR (IP) SHALL EQUAL = 1.5 IS ANY FO THE FOLLOWING CONDITIONS APPLY:  
i. COMPONENT IS REQUIRED FOR FUNCTION FOR LIFE-SAFETY PURPOSES (i.e. FIRE PROTECTION SPRINKLER SYSTEMS).  
ii. COMPONENT CONTAINS HAZARDOUS MATERIALS (i.e. OXYGEN PIPING SYSTEM, OR NATURAL GAS PIPING SYSTEM).  
iii. COMPONENT IS PART OF AN ESSENTIAL FACILITY THAT MUST FUNCTION AFTER A SEISMIC EVENT.  
6. SPECIAL INSPECTIONS ARE REQUIRED FOR MECHANICAL AND PLUMBING COMPONENTS IN ACCORDANCE WITH SECTION 1707.7 OF CHAPTER 17 OF THE 2009 INTERNATIONAL BUILDING CODE (IBC).  
a. PERIODIC SPECIAL INSPECTIONS ARE REQUIRED DURING INSTALLATION OF NATURAL GAS PIPING AND THEIR ASSOCIATED MECHANICAL UNITS. (NATURAL GAS IS CONSIDERED FLAMMABLE AND COMBUSTIBLE)  
b. PERIODIC SPECIAL INSPECTIONS ARE REQUIRED DURING THE INSTALLATION OF GREASE EXHAUST DUCTWORK.  
c. PERIODIC SPECIAL INSPECTION ARE REQUIRED DURING THE INSTALLATION FOR ALL MECHANICAL EQUIPMENT SUPPORTED BY VIBRATION ISOLATOR SYSTEMS WHERE THE CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT.  
7. PROVIDE MANUFACTURER'S SEISMIC CERTIFICATION OF COMPLIANCE FOR ALL MECHANICAL EQUIPMENT.  
a. FOR COMPONENT IMPORTANCE FACTOR GREATER THAN 1.00 THE SEISMIC CERTIFICATION OF COMPLIANCE SHALL BE BASED ON:  
i. AN ACTUAL TEST ON A SHAKE TABLE or  
ii. BY THREE-DIMENSIONAL SHOCK TESTS or  
iii. BY AN ANALYTICAL METHOD USING DYNAMIC CHARACTERISTICS AND FORCES or  
iv. BY THE USE OF EXPERIENCE DATA (I.E. HISTORICAL DATA DEMONSTRATING ACCEPTABLE SEISMIC PERFORMANCE) or  
v. BY MORE RIGOROUS ANALYSIS PROVIDING FOR EQUIVALENT SAFETY.  
b. FOR COMPONENT IMPORTANCE FACTOR EQUAL TO ONE (1) THE SEISMIC CERTIFICATION OF COMPLIANCE SHALL BE BASED ON ANALYSIS, TESTING OR EXPERIENCE DATA.  
c. EXCEPTION: THE FOLLOWING COMPONENTS ARE EXEMPT FROM THESE REQUIREMENTS:  
i. EQUIPMENT WITH FLEXIBLE CONNECTIONS PROVIDED BETWEEN COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND ELECTRICAL CONDUIT, AND  
ii. COMPONENTS WEIGHING LESS THAN 400 LBS. AND ARE MOUNTED NO MORE THAN 4 FEET ABOVE FLOOR LEVEL, AND  
iii. COMPONENTS WEIGHING LESS THAN 20 LBS. AND ARE ATTACHED TO CEILING, OR WALL, AND  
iv. COMPONENTS CONSISTING OF A DISTRIBUTION SYSTEM WEIGHING 5 LBS./FT. OR LESS.

4 MECHANICAL SUBMITTAL NOTES

1. MECHANICAL SUBMITTAL SHALL BE SUBMITTED AS A COMPLETE ELECTRONIC PACKAGE ASSEMBLED BY SPECIFICATION DIVISIONS.  
2. ASSEMBLE COMPLETE ELECTRONIC SUBMITTAL PACKAGE INTO A SINGLE INDEXED FILE INCORPORATING SUBMITTAL REQUIREMENTS OF A SINGLE SPECIFICATION SECTION AND TRANSMITTAL FORM WITH LINKS ENABLING NAVIGATION TO EACH ITEM:  
a. LITERATURE SHALL INCLUDE REFERENCE TO EQUIPMENT CALLOUT AND SPECIFICATION SECTION.  
b. FILE NAME SHALL USE PROJECT IDENTIFIER AND SPECIFICATION SECTION NUMBER FOLLOWED BY A DECIMAL POINT AND THEN A SEQUENTIAL NUMBER (E.G., LNHS-061000.01). RESUBMITTALS SHALL INCLUDE AN ALPHABETIC SUFFIX AFTER ANOTHER DECIMAL POINT (E.G., LNHS-061000.01.A).  
c. PROVIDE MANUFACTURER'S CATALOG DATA SHEETS FOR EACH MANUFACTURED ITEM LISTED ON THE DRAWINGS AND SPECIFICATIONS.  
d. INCLUDE MANUFACTURER'S CATALOG DATA OF EACH MANUFACTURED ITEM AND ENOUGH INFORMATION TO SHOW COMPLIANCE WITH CONTRACT DOCUMENT REQUIREMENTS.  
e. LITERATURE SHALL SHOW CAPACITIES AND SIZE OF EQUIPMENT USED AND BE MARKED INDICATING EACH SPECIFIC ITEM WITH APPLICABLE DATA UNDERLINED.  
f. INCLUDE NAME, ADDRESS, AND PHONE NUMBER OF EACH SUPPLIER.  
g. DEVIATIONS AND ADDITIONAL INFORMATION: ON AN ATTACHED SEPARATE SHEET, PREPARED ON CONTRACTOR'S LETTERHEAD, RECORD RELEVANT INFORMATION, REQUESTS FOR DATA, REVISIONS OTHER THAN THOSE REQUESTED BY ENGINEER CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS. INCLUDE SAME IDENTIFICATION INFORMATION AS RELATED SUBMITTAL.  
3. PRODUCT DATA:  
a. COLLECT INFORMATION INTO A SINGLE SUBMITTAL FOR EACH ELEMENT OF CONSTRUCTION AND TYPE OF PRODUCT OR EQUIPMENT.  
b. IF INFORMATION MUST BE SPECIALLY PREPARED FOR SUBMITTAL BECAUSE STANDARD PUBLISHED DATA ARE NOT SUITABLE FOR USE, SUBMIT AS SHOP DRAWINGS, NOT AS PRODUCT DATA.  
c. MARK EACH COPY OF EACH SUBMITTAL TO SHOW WHICH PRODUCTS AND OPTIONS ARE APPLICABLE.  
d. INCLUDE THE FOLLOWING INFORMATION, AS APPLICABLE:  
e. MANUFACTURER'S CATALOG CUTS.  
f. MANUFACTURER'S PRODUCT SPECIFICATIONS.  
g. STANDARD COLOR CHARTS.  
h. STATEMENT OF COMPLIANCE WITH SPECIFIED REFERENCED STANDARDS.  
i. TESTING BY RECOGNIZED TESTING AGENCY.  
j. APPLICATION OF TESTING AGENCY LABELS AND SEALS.  
k. NOTATION OF COORDINATION REQUIREMENTS.  
l. AVAILABILITY AND DELIVERY TIME INFORMATION.  
m. FOR EQUIPMENT, INCLUDE THE FOLLOWING IN ADDITION TO THE ABOVE, AS APPLICABLE:  
n. WIRING DIAGRAMS SHOWING FACTORY-INSTALLED WIRING.  
o. PRINTED PERFORMANCE CURVES.  
p. OPERATIONAL RANGE DIAGRAMS.  
q. CLEARANCES REQUIRED TO OTHER CONSTRUCTION, IF NOT INDICATED ON ACCOMPANYING SHOP DRAWINGS.  
4. SHOP DRAWINGS:  
a. PREPARE PROJECT-SPECIFIC INFORMATION, DRAWN ACCURATELY TO SCALE. DO NOT BASE SHOP DRAWINGS ON REPRODUCTIONS OF THE CONTRACT DOCUMENTS OR STANDARD PRINTED DATA.  
b. PREPARATION: FULLY ILLUSTRATE REQUIREMENTS IN THE CONTRACT DOCUMENTS. INCLUDE THE FOLLOWING INFORMATION, AS APPLICABLE:  
i. IDENTIFICATION OF PRODUCTS.  
ii. SCHEDULES.  
iii. COMPLIANCE WITH SPECIFIED STANDARDS.  
iv. NOTATION OF COORDINATION REQUIREMENTS.  
v. NOTATION OF DIMENSIONS ESTABLISHED BY FIELD MEASUREMENT.  
vi. RELATIONSHIP AND ATTACHMENT TO ADJOINING CONSTRUCTION CLEARLY INDICATED.  
vii. SEAL AND SIGNATURE OF PROFESSIONAL ENGINEER IF SPECIFIED.  
5. PROCESSING TIME: ALLOW TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS, AS FOLLOWS. TIME FOR REVIEW SHALL COMMENCE ON ENGINEER'S RECEIPT OF SUBMITTAL. NO EXTENSION OF THE CONTRACT TIME WILL BE AUTHORIZED BECAUSE OF FAILURE TO TRANSMIT SUBMITTALS ENOUGH IN ADVANCE OF THE WORK TO PERMIT PROCESSING, INCLUDING RESUBMITTALS.  
a. INITIAL REVIEW: ALLOW 15 DAYS FOR INITIAL REVIEW OF MECHANICAL SUBMITTAL.  
b. RESUBMITTAL REVIEW: ALLOW 15 DAYS FOR REVIEW OF EACH RESUBMITTAL.  
6. DEVIATIONS AND ADDITIONAL INFORMATION: ON AN ATTACHED SEPARATE SHEET, PREPARED ON CONTRACTOR'S LETTERHEAD, RECORD RELEVANT INFORMATION, REQUESTS FOR DATA, REVISIONS OTHER THAN THOSE REQUESTED BY DESIGN ENGINEER ON PREVIOUS SUBMITTALS, AND DEVIATIONS FROM REQUIREMENTS IN THE CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS. INCLUDE SAME IDENTIFICATION INFORMATION AS RELATED SUBMITTAL.

5 DUCT CONSTRUCTION NOTES

1. ALL RECTANGULAR AND ROUND DUCTWORK SHALL BE FABRICATED AND CONSTRUCTED TO COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"  
2. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL, EXCEPT WHERE INDICATED OTHERWISE.  
3. ALL RECTANGULAR AND ROUND DUCTWORK SHALL BE CONSTRUCTED TO THE FOLLOWING SHEET METAL DUCT STATIC PRESSURE CLASSIFICATION:  
SUPPLY AIR DUCT: 2" W.C.  
RETURN AIR DUCT: 2" W.C. (NEGATIVE)  
EXHAUST AIR DUCT: 2" W.C. (NEGATIVE)  
OUTSIDE AIR DUCT: 2" W.C.  
4. RECTANGULAR DUCTWORK:  
a. ALL TRANSVERSE JOINTS SHALL BE FABRICATED AND INSTALLED ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-1, "RECTANGULAR DUCT TRANSVERSE JOINTS."  
b. ALL LONGITUDINAL SEAMS SHALL BE FABRICATED AND INSTALLED ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-2, "RECTANGULAR DUCT LONGITUDINAL SEAMS."  
c. ALL ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER FITTINGS AND COMPONENTS SHALL BE FABRICATED AND INSTALLED ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 4, "FITTINGS AND OTHER CONSTRUCTION."  
d. CROSS-BREAK ALL DUCT SURFACES 19" THROUGH 60". USE ANGLE REINFORCING FOR DUCT SURFACES OVER 90".  
e. PROVIDE SINGLE VANE TURNING VANES IN ALL ELBOWS AND CHANGES IN DIRECTION.  
5. ROUND DUCTWORK:  
a. ALL TRANSVERSE JOINTS SHALL BE FABRICATED ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-1, "ROUND DUCT TRANSVERSE JOINTS" FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."  
b. ALL LONGITUDINAL SEAMS SHALL BE FABRICATED AND INSTALLED ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-2, "ROUND DUCT LONGITUDINAL SEAMS" FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."  
c. ALL ROUND TEES AND LATERALS SHALL BE FABRICATED AND INSTALLED ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-5, "90 DEGREE TEES AND LATERALS," AND FIGURE 3-6, "CONICAL TEES" FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."  
6. ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS ON ALL RECTANGULAR AND ROUND DUCTWORK SHALL BE SEAL TO SMACNA SEAL CLASS B.  
a. APPROVED METHODS OF SEALING DUCTWORK INCLUDES TAPES, MASTICS, GASKETING OR OTHER APPROVED CLOSURE SYSTEMS.  
b. TAPES AND MASTICS USED TO SEAL DUCTWORK MUST BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A AND SHALL BE MARKED "181A-P FOR PRESSURE-SENSITIVE TAPE, "181A-M" FOR MASTIC OR "181A-H FOR HEAT-SENSITIVE TAPE.  
c. TAPES AND MASTICS USED TO SEAL FLEXIBLE AIR DUCTS SHALL COMPLY WITH UL 181B AND SHALL BE MARKED "181B-FX" FOR PRESSURE SENSITIVE TAPE, OR 181B-M FOR MASTIC.  
d. MECHANICAL FASTENERS USED WITH FLEXIBLE NON-METALLIC AIR DUCTS SHALL COMPLY WITH UL 181 AND SHALL BE MARKED "181B".  
e. TAPE ALONE CANNOT BE SUBSTITUTED FOR MECHANICAL FASTENERS  
f. DO NOT USE GRAY DUCT TAPE, FOIL BACKED TAPE, OIL BASED CAULKING AND GLAZING COMPOUNDS TO SEAL METAL DUCTS.  
7. SUPPORT ALL METAL DUCTWORK FROM STRUCTURAL MEMBERS.  
a. ALL DUCT SUPPORTS SHALL BE GALVANIZED STEEL.  
b. DUCT SUPPORTS SHALL NOT BE ATTACHED TO ROOF DECK.  
c. DUCT SUPPORTS SHALL NOT BE ATTACHED TO STRUCTURAL CROSS BRACING.  
d. HANGER STRAPS AND HANGER ROD SIZES FOR RECTANGULAR DUCTWORK SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," TABLE 5-1 "RECTANGULAR DUCT HANGERS MINIMUM SIZE."  
e. HANGER STRAPS AND HANGER ROD SIZES FOR ROUND DUCTWORK SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," TABLE 5-2, "MINIMUM HANGER SIZES FOR ROUND DUCT."  
f. SUSPEND ALL METAL DUCTWORK NOT EXCEEDING 30" LONGEST SIDE AT EVERY JOINT. DO NOT EXCEED 10'-0" HANGER SPACING. USE 1" X 18 GAGE GALVANIZED STRAPS (MINIMUM) ATTACHED TO BOTTOM AND SIDES OF DUCT  
g. SUSPEND ALL METAL DUCTWORK EXCEEDING 30" LONGEST SIDE AT MAXIMUM 8'-0" SPACING USING ANGLES AND RODS.  
8. DUCT SIZES SHALL BE VERIFIED FOR CLEARANCES AT THE JOB SITE PRIOR TO FABRICATION. DIMENSIONS MAY BE CHANGED TO ACCOMMODATE CONSTRUCTION CLEARANCES. FREE AREA OF DUCT SHALL BE MAINTAINED.  
9. DUCT TRANSITIONS SHALL BE CONSTRUCTED WITH SLOPE OF 1/4".  
10. FLEXIBLE CONNECTORS SHALL NOT BE USED.

6 GENERAL MECHANICAL NOTES

1. THE MECHANICAL DRAWINGS SHOW THE GENERAL DESIGN, ARRANGEMENT AND EXTENT OF THE MECHANICAL SYSTEM. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THESE DRAWINGS DO NOT SHOW ALL OFFSETS, BENDS OR ELBOWS NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. CONTRACTOR SHALL MAKE SUCH MINOR ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT.  
2. MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL WILL REQUIRE PRIOR APPROVAL BY THE DESIGN ENGINEER.  
3. THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS IN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGHT SHOWN AND CALLOUT IN BOTH.  
4. THE ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODES, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, STATE, AND FEDERAL CODES AND REGULATIONS IN EFFECT.  
5. THE ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO ALL CODES, RULES, REGULATIONS AND SPECIAL REQUIREMENTS OF THE BUILDING OWNER.  
6. PRIOR TO FABRICATION AND INSTALLATION OF ANY MECHANICAL COMPONENT THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL MECHANICAL WORK WITH ALL OTHER BUILDING TRADES, INCLUDING BUILDING TRADES HIRED DIRECTLY BY THE OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.  
7. THE SPACE ABOVE ALL CEILINGS IS LIMITED. CAREFUL COORDINATION IS REQUIRED WITH ALL TRADES BEFORE ANY PIPE, DUCT, OR EQUIPMENT IS ORDERED AND OR INSTALLED. ANY CONFLICTS AND/OR CHANGES FOUND DURING INSTALLATION THAT RESULTS FROM THE LACK OF COORDINATION BY THE CONTRACTORS DURING THE SHOP DRAWING PROCESS ARE THE RESPONSIBILITY OF THE CONTRACTOR.  
8. ALL MECHANICAL INFORMATION IS NOT SHOWN ON THE MECHANICAL DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENT.  
9. THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW AND USE, WHERE APPROPRIATE, ALL THE MECHANICAL DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.  
10. THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE ALL MOUNTING REQUIREMENTS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.  
11. ANY PART OF THE MECHANICAL INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACES BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.  
12. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL CEILING DIFFUSERS AND GRILLES.  
13. CONTRACTOR SHALL OPERATE THE SYSTEM AND DEMONSTRATE ALL ASPECTS OF THE SYSTEM TO THE ENGINEER AND/OR OWNER TO PROVE ALL SYSTEMS ARE OPERATIONAL.  
14. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A SET OF AS-BUILT REFINED RECORD DRAWING AT THE PROJECT SITE. ALL CHANGES IN LAYOUT, ROUTING, EQUIPMENT, COMPONENTS, AND ACCESSORIES SHALL BE RECORDED. THESE REFINED DRAWINGS SHALL BE GIVEN TO THE ARCHITECT/ENGINEER AFTER THE FINAL INSPECTION IN ACCORDANCE WITH SPECIFICATIONS.



CONSULTANTS



WEBER VALLEY YOUTH CENTER

5470 SOUTH 2700 WEST ROY, UTAH 84067

Table with 3 columns: MARK, DATE, DESCRIPTION. Contains revision symbols (A, B, C, D).

ISSUE: CONSTRUCTION DRAWINGS DATE: 2011-11-09

PROJECT NO: 20110156 DRAWN BY: ARA CHECKED BY: RWM DESIGNED BY: RWM RECORD DRAWING DATE:

SIGNATURE: © 2011 Spectrum Engineers, Inc. SHEET TITLE

MECHANICAL NOTES M002



1 2 3 4 5 6

E  
D  
C  
B  
A

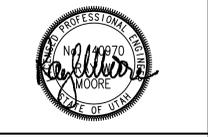
**SHEET KEYNOTES**

- EXISTING MULTIZONE AIR HANDLING UNIT (AHU-3).
- EXISTING RETURN AIR DAMPER.
- EXISTING OUTSIDE AIR DAMPER.
- EXISTING MIXED AIR PLENUM.
- EXISTING ELECTRICAL PANEL.



**SPECTRUM ENGINEERS**  
 324 S. State St., Suite 400  
 Salt Lake City, UT 84111  
 800-678-7077  
 801-328-5151  
 fax: 801-328-5155  
 www.spectrum-engineers.com

CONSULTANTS



**WEBER VALLEY YOUTH CENTER**

5470 SOUTH 2700 WEST  
ROY, UTAH 84067

△		
△		
△		
△		
△		

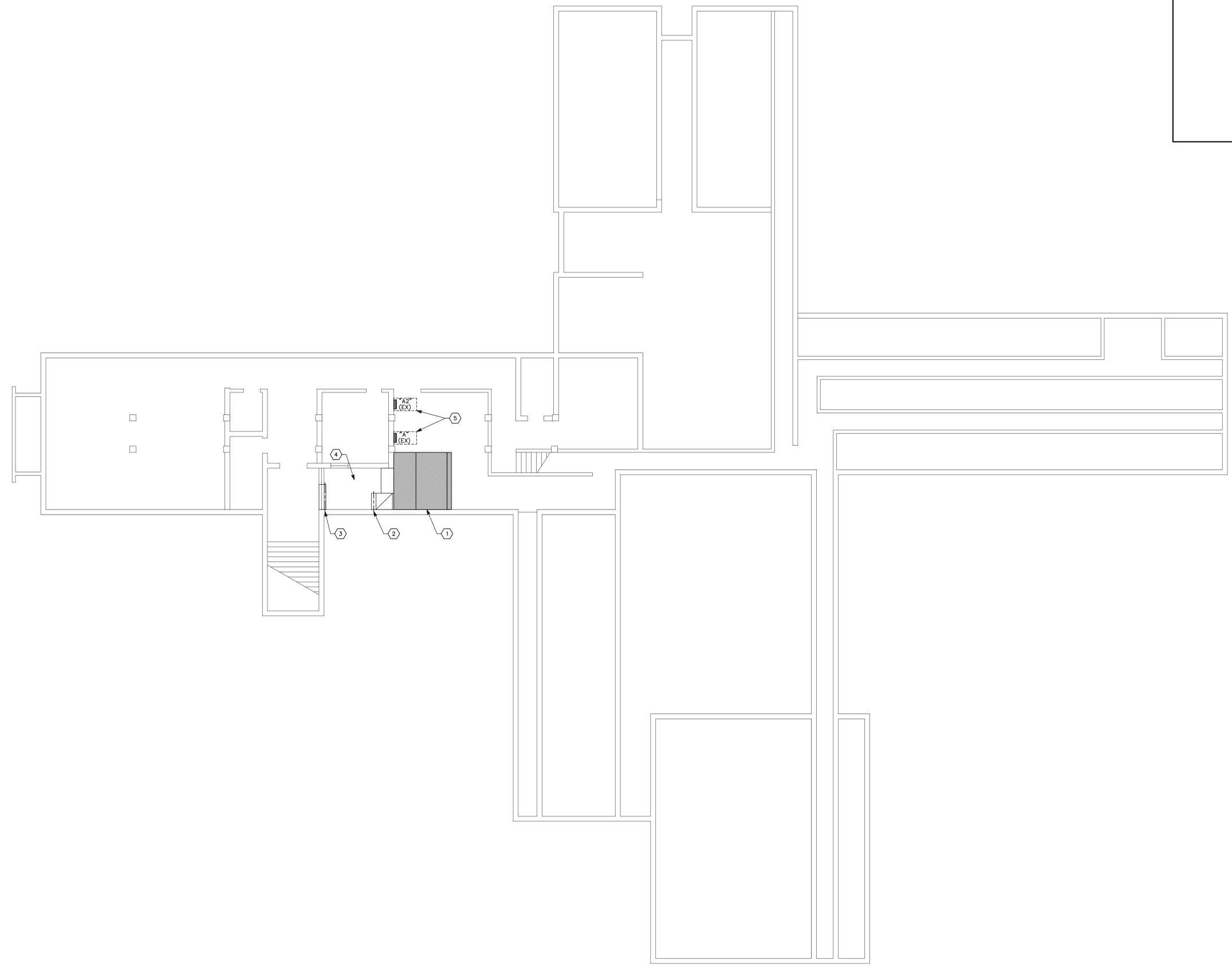
MARK	DATE	DESCRIPTION
ISSUE:	CONSTRUCTION DRAWINGS	
DATE:	2011-11-09	

PROJECT NO:	20110156
DRAWN BY:	ARA
CHECKED BY:	RWM
DESIGNED BY:	RWM
RECORD DRAWING DATE:	

SIGNATURE:  
© 2011 Spectrum Engineers, Inc.  
SHEET TITLE

**BASEMENT MECHANICAL PLAN**

**M100**



**A1 BASEMENT MECHANICAL PLAN**  
 SCALE: 1/8" = 1'-0" 

1 2 3 4 5 6

File Name: P:\2011\20110156\Drawings\Weber Valley\3Sheet\56M100.dwg Last Plotted: 2011/11/09 @ 9:51 AM By: ara

1 2 3 4 5 6

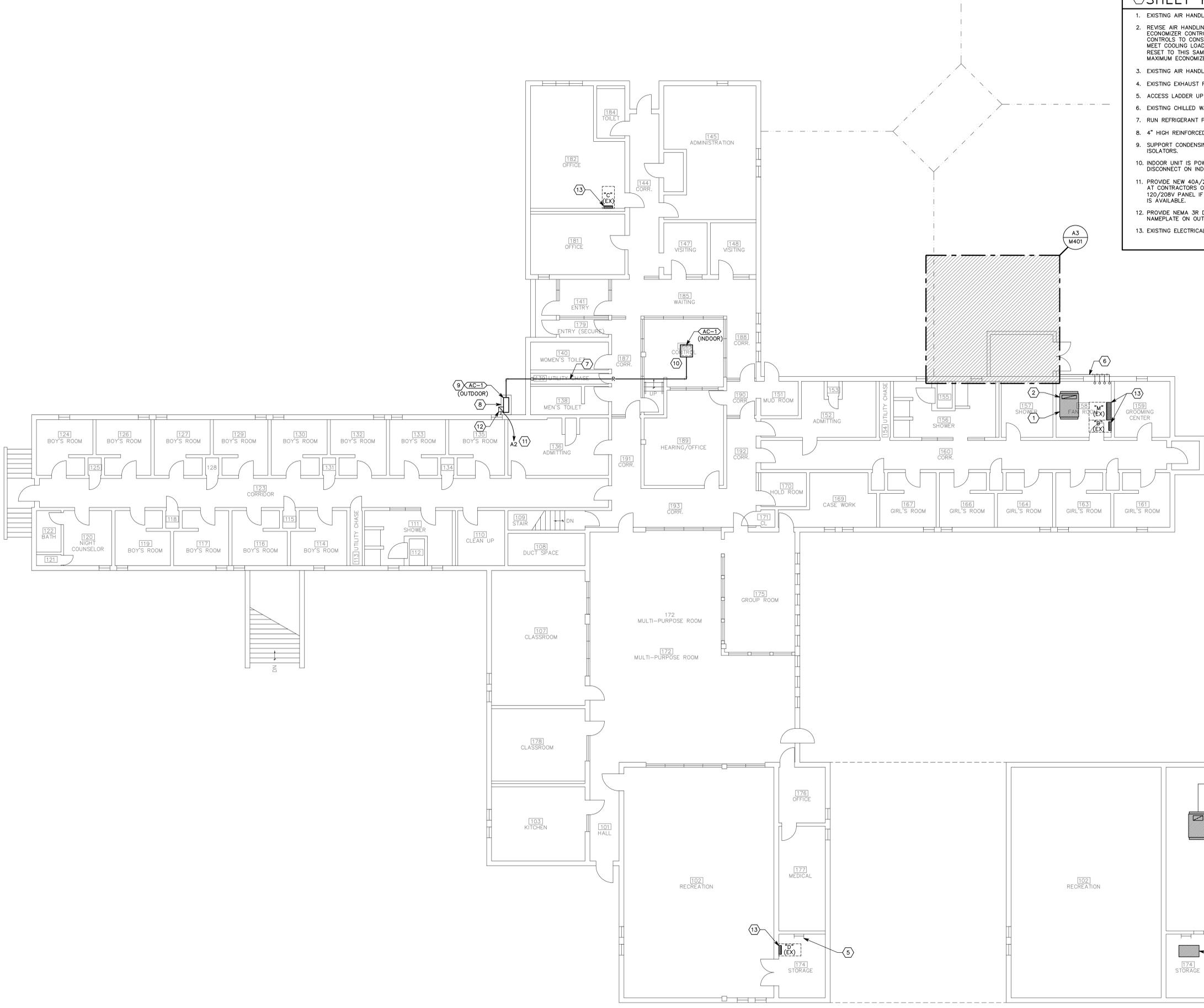
E  
D  
C  
B  
A

- ### SHEET KEYNOTES
- EXISTING AIR HANDLING UNIT (AHU-1).
  - REVISE AIR HANDLING UNIT SEQUENCE TO PROVIDE AIR SIDE ECONOMIZER CONTROL. REVISE AIR HANDLING UNIT SEQUENCE OF CONTROLS TO CONSTANTLY RESET COLD DECK AS NECESSARY TO MEET COOLING LOAD OF WARMEST ZONE. ECONOMIZER SHALL BE RESET TO THIS SAME VALUE PLUS FAN HEAT (APPROX. 2° F). MAXIMUM ECONOMIZER TEMPERATURE SHALL BE 73° F.
  - EXISTING AIR HANDLING UNIT (AHU-2).
  - EXISTING EXHAUST FAN (EF-5).
  - ACCESS LADDER UP TO MEZZANINE.
  - EXISTING CHILLED WATER AND HOT WATER HEATING TO REMAIN.
  - RUN REFRIGERANT PIPING ABOVE CEILING.
  - 4" HIGH REINFORCED CONCRETE PAD.
  - SUPPORT CONDENSING UNIT ON ENCLOSED SPRING VIBRATION ISOLATORS.
  - INDOOR UNIT IS POWERED FROM OUTDOOR UNIT. PROVIDE DISCONNECT ON INDOOR UNIT.
  - PROVIDE NEW 40A/2P CIRCUIT BREAKER IN PANEL A2 IN BASEMENT. AT CONTRACTORS OPTION, CIRCUIT MAY BE RUN TO ANY OTHER 120/208V PANEL IF LOAD CALCULATION SHOWS SUFFICIENT CAPACITY IS AVAILABLE.
  - PROVIDE NEMA 3R DISCONNECT SWITCH AND FUSES PER EQUIPMENT NAMEPLATE ON OUTDOOR UNIT.
  - EXISTING ELECTRICAL PANEL.



**SPECTRUM ENGINEERS**  
 324 S. State St., Suite 400  
 Salt Lake City, UT 84111  
 800-678-7077  
 801-328-5151  
 fax: 801-328-5155  
 www.spectrum-engineers.com

CONSULTANTS

**WEBER VALLEY YOUTH CENTER**

5470 SOUTH 2700 WEST  
 ROY, UTAH 84067

MARK	DATE	DESCRIPTION
△		
△		
△		
△		
△		

ISSUE: CONSTRUCTION DRAWINGS  
 DATE: 2011-11-09

PROJECT NO: 20110156  
 DRAWN BY: ARA  
 CHECKED BY: RWM  
 DESIGNED BY: RWM  
 RECORD DRAWING DATE:

SIGNATURE:  
 © 2011 Spectrum Engineers, Inc.  
 SHEET TITLE

**A2 MAIN FLOOR MECHANICAL PLAN**  
 SCALE: 1/8" = 1'-0"



**A5 MEZZANINE MECHANICAL PLAN**  
 SCALE: 1/8" = 1'-0"



**MAIN FLOOR MECHANICAL PLAN**

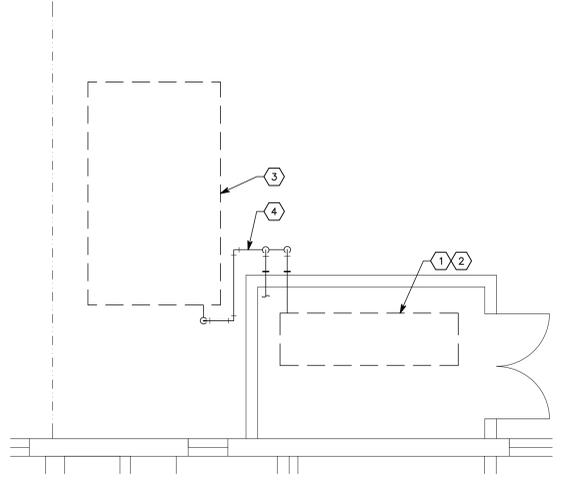
**M101**

1 2 3 4 5 6

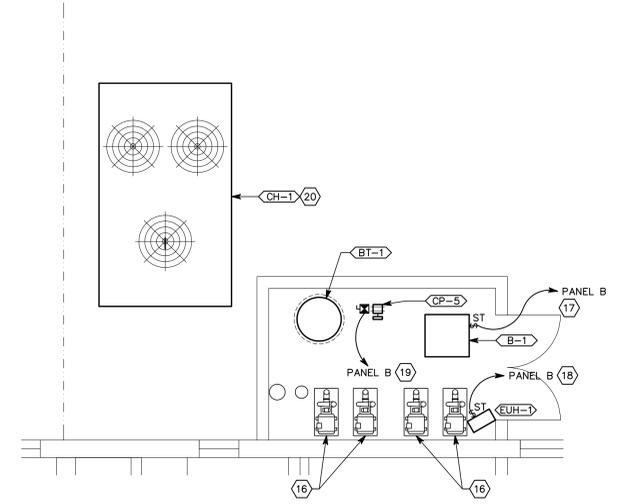
File Name: P:\2011\20110156\Drawings\Weber Valley\3Sheet\56M101.dwg Last Plotted: 2011/11/09 @ 9:51 AM By: ara

1 2 3 4 5 6

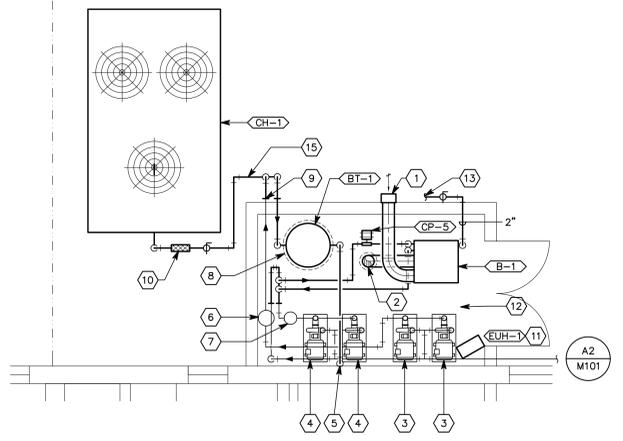
E  
D  
C  
B  
A



**D3 ENLARGED EQUIPMENT ROOM DEMOLITION PLAN**  
SCALE: 1/4" = 1'-0" NORTH



**A1 ENLARGED EQUIPMENT ROOM ELECTRICAL PLAN**  
SCALE: 1/4" = 1'-0" NORTH



**A3 ENLARGED EQUIPMENT ROOM MECHANICAL PLAN**  
SCALE: 1/4" = 1'-0" NORTH

**DEMOLITION KEYNOTES**

1. REMOVE EXISTING CAST-IRON BOILER AND ASSOCIATED FLUES.
2. REMOVE EXISTING HOT WATER HEATING PIPING AT BOILER.
3. REMOVE EXISTING AIR COOLED CHILLER.
4. REMOVE EXISTING CHILLED WATER ASSOCIATED WITH CHILLER.

**SHEET KEYNOTES**

1. BOILER AIR INTAKE. FURNISHED BY BOILER MANUFACTURER.
2. 8" DIA. STAINLESS STEEL (AL294C) FLUE PIPE THROUGH ROOF WITH UL LISTED FLUE CAP.
3. EXISTING CHILLED WATER PUMP TO REMAIN. REPLACE EXISTING 1 HP MOTOR WITH NEW PREMIUM EFFICIENT MOTOR.
4. EXISTING HOT WATER HEATING PUMP TO REMAIN. REPLACE EXISTING 3/4 HP MOTOR WITH NEW PREMIUM EFFICIENT MOTOR.
5. MAKE NEW CONNECTION TO EXISTING CHILLED WATER PIPING. FIELD VERIFY EXACT LOCATION ON JOB SITE.
6. EXISTING CHILLED WATER AIR SEPARATOR TO REMAIN.
7. EXISTING HOT WATER HEATING AIR SEPARATOR TO REMAIN.
8. INSULATE NEW CHILLED WATER BUFFER TANK.
9. MAKE NEW CONNECTION TO EXISTING CHILLED WATER RETURN PIPING. FIELD VERIFY EXACT LOCATION ON JOB SITE.
10. PIPE FLEXIBLE CONNECTION.
11. SUPPORT UNIT HIGHER FROM OVERHEAD STRUCTURE WITH HANGER ROD AND VIBRATION ISOLATOR.
12. REPAIR ALL DAMAGED PIPE INSULATION ON EXISTING PIPING.
13. MAKE NEW CONNECTION TO EXISTING NATURAL GAS PIPING. FIELD VERIFY EXACT LOCATION.
14. SUPPORT PIPING WITH UNISTRUT SUPPORTS SECURED TO CONCRETE PAD.
15. SUPPORT FROM GRADE.
16. DISCONNECT EXISTING PUMPS AND RE-CONNECT NEW PREMIUM EFFICIENCY MOTOR.
17. PROVIDE NEW 20A/1P CIRCUIT BREAKER IN PANEL INDICATED.
18. PROVIDE NEW 30A/2P CIRCUIT BREAKER IN PANEL INDICATED.
19. PROVIDE NEW 20A/3P CIRCUIT BREAKER IN PANEL INDICATED.
20. DISCONNECT EXISTING CHILLER AND RECONNECT NEW CHILLER. EXTEND EXISTING CIRCUITING TO NEW TERMINATION LOCATION AS REQUIRED.

**SPECTRUM ENGINEERS**  
324 S. State St., Suite 400  
Salt Lake City, UT 84111  
800-678-7077  
801-328-5151  
fax: 801-328-5155  
www.spectrum-engineers.com

CONSULTANTS



**WEBER VALLEY YOUTH CENTER**

5470 SOUTH 2700 WEST  
ROY, UTAH 84067

MARK	DATE	DESCRIPTION
△		
△		
△		
△		
△		

ISSUE: CONSTRUCTION DRAWINGS  
DATE: 2011-11-09

PROJECT NO: 20110156  
DRAWN BY: ARA  
CHECKED BY: RWM  
DESIGNED BY: RWM

RECORD DRAWING DATE:  
SIGNATURE:  
© 2011 Spectrum Engineers, Inc.  
SHEET TITLE

**ENLARGED MECHANICAL PLANS**

**M401**

1 2 3 4 5 6

File Name: P:\2011\20110156\Drawings\Weber Valley\3Sheet\56M401.dwg Last Plotted: 2011/11/09 @ 9:51 AM By: ora

1 2 3 4 5 6

E

D

C

B

A



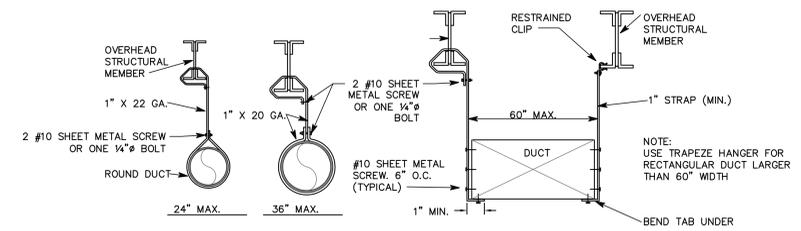
**SPECTRUM ENGINEERS**  
 324 S. State St., Suite 400  
 Salt Lake City, UT 84111  
 800-678-7077  
 801-328-5151  
 fax: 801-328-5155  
 www.spectrum-engineers.com

CONSULTANTS

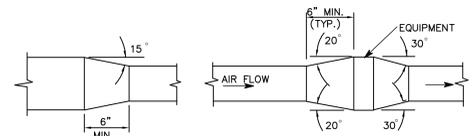


**WEBER VALLEY YOUTH CENTER**

5470 SOUTH 2700 WEST  
 ROY, UTAH 84067



**2 DUCT HANGER**  
 SCALE: NTS



**1 DUCT TRANSITION**  
 SCALE: NTS

NOTE: UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

MARK	DATE	DESCRIPTION

ISSUE:	CONSTRUCTION DRAWINGS
DATE:	2011-11-09
PROJECT NO:	20110156
DRAWN BY:	ARA
CHECKED BY:	RWM
DESIGNED BY:	RWM
RECORD DRAWING DATE:	
SIGNATURE:	
©	2011 Spectrum Engineers, Inc.
SHEET TITLE	

**MECHANICAL DETAILS**  
**M501**

1 2 3 4 5 6

File Name: P:\2011\20110156\Drawings\Weber Valley\3Sheet\M501.dwg Last Plotted: 2011/11/09 @ 9:51 AM By: ara

E

D

C

B

A

E

D

C

B

A



**SPECTRUM ENGINEERS**  
 324 S. State St., Suite 400  
 Salt Lake City, UT 84111  
 800-678-7077  
 801-328-5151  
 fax: 801-328-5155  
 www.spectrum-engineers.com

CONSULTANTS



**WEBER VALLEY YOUTH CENTER**

5470 SOUTH 2700 WEST  
 ROY, UTAH 84067

**SPLIT SYSTEM DUCTLESS AIR CONDITIONING UNIT**

**INDOOR UNIT**

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO.	HIGH SPEED AIRFLOW (CFM)	COOLING CAPACITY (1)		HEATING CAPACITY (2)		ELECTRICAL				SOUND LEVEL dBA	WEIGHT (LBS)	COMMENTS
					(BTU/H)	SEER	(BTU/H)	HSPF	MCA	VOLTS	PHASE	CYCLE			
AC-1	CEILING MOUNTED	mitsubishi	PCA-A30BA4	740	30,000	13.6	32,000	8.7	1	208/230	1	60	34	51	(3)(4)(5)(6)(7)

**OUTDOOR UNIT**

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO.	AIRFLOW (CFM)	COOLING CAPACITY (1)(2)		HEATING CAPACITY (2)		ELECTRICAL				SOUND LEVEL dBA	WEIGHT (LBS)	COMMENTS
					(BTU/H)	SEER	(BTU/H)	HSPF	MCA	VOLTS	PHASE	CYCLE			
AC-1	OUTDOOR - HORIZONTAL AIR FLOW	mitsubishi	PUZ-A30NH44	1,940	30,000	13.6	32,000	8.7	25.0	208/230	1	60	50	165	

ACCEPTABLE MANUFACTURERS:  
 MITSUBISHI  
 SANYO  
 CARRIER

NOTES:  
 (1) COOLING CAPACITY RATED AT 80 F DB 67 F WB ENTERING AIR, 95 F DB 75 F WB AMBIENT AIR TEMPERATURE  
 (2) HEATING CAPACITY RATED AT 60 F DB 60 F WB ENTERING AIR, 17 F DB AMBIENT AIR TEMPERATURE  
 (3) R-410A REFRIGERANT  
 (4) REFRIGERANT LINE SET BY MANUFACTURER (5/8" O.D. RS; 3/8" O.D. RL)  
 (5) WIRED REMOTE CONTROLLER  
 (6) THERMOSTATIC EXPANSION VALVE  
 (7) INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT THROUGH FIELD SUPPLIED INTERCONNECTED WIRING

**CHILLER SCHEDULE ( AIR COOLED)**

SYMBOL	MANUFACTURER	MODEL NO.	NOMINAL CAPACITY (TONS)	ACTUAL CAPACITY (TONS)	CHILLED WATER					FULL LOAD EFFICIENCY (EER)	IPLV (EER)	MAXIMUM SOUND POWER LEVELS (Dba)	ELECTRICAL			WEIGHT (LBS)	COMMENTS		
					FLUID TYPE	FLOW RATE (GPM)	ENT. WATER (F)	LVG. WATER (F)	WATER PRESSURE DROP (FEET)				MINIMUM CIRCUIT AMPACITY (AMPS)	MAXIMUM OVERCURRENT PROTECTION (AMPS)	VOLTS			HERTZ	PHASE
CH-1	TRANE	CGAM060	60	56.1	40% PG	134.2	45	55	17	10.2	15.5	91	268.8	300	208	60	3	4,675	

ACCEPTABLE MANUFACTURERS:  
 CARRIER  
 YORK  
 TRANE

NOTES:  
 (1) R-410A REFRIGERANT  
 (2) 95 F AMBIENT AIR TEMPERATURE  
 (3) TWO (2) REFRIGERATION CIRCUITS

**HOT WATER BOILER SCHEDULE**

SYMBOL	MANUFACTURER	MODEL	SERVICE	FUEL TYPE	INPUT CAPACITY (BTUH)	OUTPUT CAPACITY (BTUH)	MINIMUM EFFICIENCY (%)	FLUID			ELECTRICAL				STACK SIZE (INCHES)	OPERATING WEIGHT (LBS)	COMMENTS
								FLUID TYPE	INLET TEMP. (F)	OUTLET TEMP. (F)	AMPS	VOLTS	HERTZ	PHASE			
B-1	LOCHINVAR	PBN1501	H.W. HTG.	NAT. GAS	1,500,000	1,275,000	85	WATER	160	190	6.5	120	60	1	8	1,200	(1) (2)

ACCEPTABLE MANUFACTURERS:  
 LOCHINVAR  
 THERMAL SOLUTIONS

NOTES:  
 (1) CAPACITY AT JOB SITE ELEVATION (4500 FEET)  
 (2) STAINLESS STEEL (AL294C) BOILER STACK

**CIRCULATING PUMP SCHEDULE**

SYMBOL	MANUFACTURER	MODEL	TYPE	SYSTEM	CIRCULATING FLUID				PUMP EFFICIENCY (%)	NPSH	PUMP RPM	MOTOR (HP)	ELECTRICAL			COMMENTS
					FLUID	FLOW RATE (GPM)	PRESSURE (HEAD)	TEMP.					VOLT	PHASE	HERTZ	
CP-15	BELL & GOSSETT	SERIES "60" - 2 X 5-14	PIPE MOUNTED	HOT WATER HEATING	WATER	90.0	20	180	66	6.0	1750	1	208	3	60	(1)

NOTES:  
 (1) PREMIUM EFFICIENCY MOTOR

**ELECTRIC UNIT HEATER SCHEDULE**

SYMBOL	MANUFACTURER	MODEL	AIR FLOW DIRECTION	AIR FLOW (CFM)	HEATING CAPACITY		MOTOR		ELECTRICAL				OPERATING WEIGHT (LBS)	OPTIONS & ACCESSORIES
					BTUH	KW	H.P.	RPM	AMPS	VOLTS	HERTZ	PHASE		
EUH-1	QMARK	MUH05-81	HORIZONTAL	350	17,000	5.0	1/100	1600	24.0	208	60	1	27	(1)(2)(3)(4)

ACCEPTABLE MANUFACTURERS:  
 QMARK  
 MARLEY  
 BERKO

OPTIONS & ACCESSORIES:  
 (1) UNIVERSAL WALL & CEILING BRACKET  
 (2) 120 V CONTROL TRANSFORMER AND POWER CONTACTOR  
 (3) INTERNAL THERMOSTAT  
 (4) DISCONNECT SWITCH

**ELECTRICAL EQUIPMENT SCHEDULE**

MARK	QTY	ITEM DESCRIPTION	LOAD DATA						WIRE AND CONDUIT SIZE	OVERCURRENT PROTECTION			DISCONNECT			STARTER DATA				NOTES	MARK					
			HP	KW	MCA	FLA	VOLT	PH		Hz	FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION			SIZE	SELECTOR SWITCH	PILOT LAMP	NORMALLY OPEN CONTACTS	NORMALLY CLOSED CONTACTS
AC-1		AIR CONDITIONING UNIT (INDOOR)			1		208	1	60	E													NOTE 1	AC-1		
AC-1		AIR CONDITIONING UNIT (OUTDOOR)			25		208	1	60	2 #8, #10 GR 1" CND	E	40A/2P CB	PANEL A2	E	30A/2P FRN	ADJ. TO EQUIP.	Q								AC-1	
B-1		BOILER					120	1	60	2 #12, #12 GR 0.75" CND	E	20A/1P CB	PANEL B	E	THERMAL SWITCH	ADJ. TO EQUIP.	Q								B-1	
CP-5		CIRCULATING PUMP	1			4.6	208	3	60	3 #12, #12 GR 0.75" CND	E	15A/3P CB	PANEL B	E	30A/3P FRN-10	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0	HOA	R.G	2	2		CP-5
EUH-1		ELECTRIC UNIT HEATER			5		24	208	1	60	2 #10, #10 GR 0.75" CND	E	30A/2P CB	PANEL B	E	THERMAL SWITCH	ADJ. TO EQUIP.	Q							EUH-1	

NOTES: 1. INDOOR UNIT POWERED FROM OUTDOOR UNIT. PROVIDE CONDUIT AND CONDUCTORS BETWEEN INDOOR AND OUTDOOR UNITS PER MANUFACTURERS WRITTEN INSTRUCTIONS.

**EQUIPMENT SCHEDULE KEY**

E	DIVISION 16
Q	FURNISHED WITH THE EQUIPMENT
*	COORDINATE WITH THE DIVISION 15 TEMPERATURE CONTROL INSTALLER
**	AUTOMATIC CONTROL WIRING BY DIVISION 15

△		
△		
△		
△		
△		

MARK	DATE	DESCRIPTION
ISSUE:	CONSTRUCTION DRAWINGS	
DATE:	2011-11-09	
PROJECT NO.:	20110156	
DRAWN BY:	ARA	
CHECKED BY:	RWM	
DESIGNED BY:	RWM	
RECORD DRAWING DATE:		
SIGNATURE:		
© 2011 Spectrum Engineers, Inc.		
SHEET TITLE		

**MECHANICAL SCHEDULES**  
**M601**

E  
D  
C  
B  
A

**PLUMBING SYMBOL LEGEND**

SYMBOL	DESCRIPTION
	CATCH BASIN
	MANHOLE
	WALL HYDRANT
	HOSE BIBB
	CLEANOUT TO GRADE
	FLOOR CLEANOUT
	WALL CLEANOUT
	1/2 GRATE
	3/4 GRATE
	FULL GRATE
	FLOOR DRAIN
	ROOF DRAIN

**PLUMBING PIPING LEGEND**

SYMBOL	DESCRIPTION
<b>PLUMBING PIPING</b>	
	COMBINATION WASTE AND VENT
	SOIL WASTE - ABOVE GRADE
	SOIL WASTE - BELOW GRADE
	GREASE WASTE - ABOVE GRADE
	GREASE WASTE - BELOW GRADE
	VENT
	COLD WATER
	HOT WATER
	HOT WATER CIRCULATE
	180° HOT WATER
	180° HOT WATER RETURN
	160° HOT WATER
	160° HOT WATER RETURN
	RAINWATER - ABOVE GRADE
	RAINWATER - BELOW GRADE
	OVERFLOW RAINWATER ABOVE GRADE
	OVERFLOW RAINWATER BELOW GRADE
	STORM DRAIN
	VENT THRU ROOF
	NON POTABLE WATER
	IRRIGATION WATER
	SANITARY SEWER
	GAS
	PROPANE

**MISC. SYMBOL LEGEND**

SYMBOL	DESCRIPTION
<b>REFERENCE AND LINE SYMBOLS</b>	
	DETAIL INDICATOR: # INDICATES DETAIL NUMBER, SHEET INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
	ELEVATION OR SECTION INDICATOR, EXTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
	ELEVATION OR SECTION INDICATOR, INTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
[100] symbol"/>	ROOM OR SPACE NUMBER.
(1) symbol"/>	KEYNOTE INDICATOR.
△ symbol"/>	REVISION INDICATOR.
<CU-T> symbol"/>	EQUIPMENT INDICATOR.
(P-) symbol"/>	PLUMBING FIXTURE INDICATOR.
[TYPE CFM SIZE] symbol"/>	DIFFUSER/GRILLE INDICATOR.
[TYPE SIZE] symbol"/>	DIFFUSER/GRILLE INDICATOR.
Break symbol"/>	BREAK, STRAIGHT.
Break symbol"/>	BREAK, ROUND.
MATCH LINE symbol"/>	MATCH LINE INDICATOR.
Hidden Features Line symbol"/>	HIDDEN FEATURES LINE: HIDDEN, THIN LINE.
Contract Limit Line symbol"/>	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE.
New Connection Point symbol"/>	NEW CONNECTION POINT TO EXISTING.

**PLUMBING GENERAL NOTES**

- THE PLUMBING DRAWINGS SHOW THE GENERAL DESIGN, ARRANGEMENT AND EXTENT OF THE PLUMBING SYSTEM. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THESE DRAWINGS DO NOT SHOW ALL OFFSETS, BENDS OR ELBOWS NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. CONTRACTOR SHALL MAKE SUCH MINOR ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT.
- MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL REQUIRE PRIOR APPROVAL BY THE DESIGN ENGINEER.
- THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGHT SHOWN AND CALLOUT IN BOTH.
- THE ENTIRE PLUMBING INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODES, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, STATE, OR FEDERAL CODES AND REGULATIONS IN EFFECT.
- PRIOR TO FABRICATION AND INSTALLATION OF ANY PLUMBING COMPONENT THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL PLUMBING WORK WITH ALL OTHER BUILDING TRADES, INCLUDING BUILDING TRADES HIRED DIRECTLY BY THE OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
- ALL PLUMBING INFORMATION IS NOT SHOWN ON THE PLUMBING DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW AND USE THE PIPING SCHEMATICS INCLUDED WITH THE DRAWINGS FOR PIPING CONNECTIONS TO ALL PLUMBING EQUIPMENT. THE PIPING SCHEMATICS SHOW DETAILED CONNECTIONS INCLUDING ALL NECESSARY VALVES, FITTINGS, GAUGES, ETC. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE PLUMBING SYSTEM WITHOUT USING THE INCLUDED DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW AND USE THE PIPING SCHEMATICS INCLUDED WITH THE DRAWINGS FOR PIPING CONNECTIONS TO ALL PLUMBING EQUIPMENT. THE PIPING SCHEMATICS SHOW DETAILED CONNECTIONS INCLUDING ALL NECESSARY VALVES, FITTINGS, GAUGES, ETC. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE PLUMBING SYSTEM WITHOUT USING THE INCLUDED DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ANY PART OF THE PLUMBING INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACES BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.



324 S. State St., Suite 400  
Salt Lake City, UT 84111  
800-678-7077  
801-328-5151  
fax: 801-328-5155  
www.spectrum-engineers.com

CONSULTANTS



**WEBER VALLEY  
YOUTH  
CENTER**

5470 SOUTH 2700 WEST  
ROY, UTAH 84067


MARK	DATE	DESCRIPTION
ISSUE:	CONSTRUCTION DRAWINGS	
DATE:	2011-11-09	

PROJECT NO:	20110156
DRAWN BY:	ARA
CHECKED BY:	RWM
DESIGNED BY:	RWM
RECORD DRAWING DATE:	

SIGNATURE:  
© 2011 Spectrum Engineers, Inc.  
SHEET TITLE

PLUMBING  
LEGENDS & NOTES

**P001**

