Purchasing Department **Bid Number:JB1591-RTU**

SALT LAKE CITY SCHOOL DISTRICT
Your Best Choice

INVITATION FOR BIDS *Addendum #1*

Please print your information below:	**Due Date: March 24, 2015 2:00 p.m.**
COMPANY Name: _____ FED ID #: _____ Contact Person: _____ Ordering Address: _____ _____ Telephone: ( ) _____ Fax: ( ) _____ Remit Address: _____ _____ E-mail: _____ ========== **Work may begin any time after execution of contract and MUST be completed on or before June 15, 2015. Liquidated damages of $500 per day will apply for any and all work after stated completion date. Punch list items must be completed within 10-days of final walkthrough.** **BASE BID: $_____** **ALTERNATE #1 $_____** **TOTAL BID (BASE + ALT #1) $_____**	✓ Review attached Instructions & General Provisions sheet and Terms and Conditions. ✓ **MANDATORY Pre-bid Meeting** ✓ Bid **MUST** be received by the above due date. ✓ Bid must be in a sealed envelope marked with the Bid Number. ✓ Bid **MUST** be signed to be accepted. ✓ Engineer: Colvin Engineering Dave Thompsen dthompsen@cea-utah.com ✓ This Invitation for Bids implies no obligation on the part of the Salt Lake School District. MAIL or BRING SEALED BID TO: Salt Lake City School District Auxiliary Service Department 995 W. Beardsley Pl. Salt Lake City, Utah, 84119 **Identify as: West HS Chorale & Band Room RTU Replacement JB1591-RTU** All Questions concerning this Bid shall be posted @ www.bidsync.com under project # JB1591-RTU Question due date: 3/18/15 10:00 a.m.

The Salt Lake City School District's Auxiliary Services Department is seeking an S-350 licensed (minimum) contractor to perform the following service: Remove existing RTU'S and replace with new RTU's in the Chorale and Band Room at West High School. Please reference minimum plans and specifications. Bonding range $30,000 - $38,000

Bidders that intend to bid on this project should plan to **attend a MANDATORY Pre-bid Meeting on March 12, 2015 @ 9:00 a.m. at West High School, 241 North 300 West, SLC.** meet on the Westside of the School at the Boiler Room Entrance. Walkthrough is Mandatory and ONLY those contractors that attend the pre-bid meeting shall be allowed to bid this project. You must be on-time! Late arrivals will not be allowed to bid this project.

Bidders shall submit their Bid Bond, W-9 form, and proof of liability & workers compensation insurance with bid submittal. Upon award and prior to starting work, the winning contractor shall submit their schedule of values, performance and payment bonds, revised insurance certificates, and resulting agreement to the District. Invitation to bid forms, drawings, minimum specifications, addenda may be downloaded at www.bidsync.com or from the District Website www.slcschools.org

Winning contractor will provide all labor, materials, equipment, supervision and service necessary to complete the project as bid. In addition, the contractor will remove all related debris and return the site to a clean state.

We agree to furnish the services and products as indicated above to the Salt Lake City School District per their instructions and specifications.

Authorized Signature: _____ Title (print): _____ Date: _____

The Salt Lake City School District prohibits discrimination based on age, color, disability, gender, gender identity, national origin, pregnancy, race, religion, or sexual orientation.

1. **BID PREPARATION:** (a) All prices and notations must be in ink or typewritten. (b) Price each item separately. Unit price shall be shown and a total price entered for each item bid. (c) Unit price will govern if there is an error in the extension. (d) Delivery time is critical and must be adhered to as bid. (e) Wherever in this document an item is defined by using a trade name of a manufacturer and/or model number, it is intended that the words "or approved equal" apply. "Or approved equal" means any other brand that is equal in use, quality, economy and performance to the brand listed. The District reserves the right to determine if an item will be considered an equal. If the bidder lists a different trade name and/or catalog number in the bid, they must clearly state that it is an alternate, and describes specifically how it meets the specifications or how it differs. MULTIPLE BIDS WILL NOT BE ACCEPTED UNLESS SO STATED IN THE SPECIFICATIONS. (f) By signing the bid, the bidder certifies that all of the information provided is accurate, and that the prices bid are correct. (g) This bid may not be withdrawn for a period of 60 days from bid due date.
2. **SUBMITTING THE BID:** (a) The bid must be signed in ink, sealed in a properly addressed envelope and either mailed or delivered to the Salt Lake City School District location as stated on the cover sheet. **The "Bid Number" and "Due Date" must appear on the outside of the envelope.** (b) Bids, modifications, or corrections received after the closing time on the "Due Date" will be considered late and handled in accordance with the R33 Utah Procurement Rules. (c) Your bid will be considered only if it is submitted on the forms provided by the Department. Facsimile transmission of bids to the Department will not be considered except for in the case of an RFQ. (d) All prices quoted must be both F.O.B. Origin per paragraph 1(c) and F.O.B. Destination. Additional charges including but not limited to delivery, drayage, express, parcel post, packing, cartage, insurance, license fees, permits, cost of bonds, or for any other purpose must be included in the bid for consideration and approval by the Department. Upon award of the contract, the shipping terms will be F.O.B. Destination, Freight Prepaid with freight charges to be added to the invoice unless otherwise specified by the Department. (e) All purchases are subject to the Utah Procurement Code, Title 63G, Chapter 6a Utah Code Annotated, as amended, and the Procurement Rules as adopted by the Utah State Procurement Policy Board (UT Admin Code Section R33), & The SLC School Bd, Policy F-2.
3. **BONDS**: The SLCSD has the right to require a 5% bid bond and/or a 100% payment/performance bond from the bidder.
4. **SAMPLES**: Samples of item(s) specified in this bid, when required by the Department, must be furnished free of charge to the Department. Any item not destroyed by tests may, upon request made at the time the sample is furnished, be returned at the bidder's expense.
5. **WARRANTY**: The contractor/supplier agrees to warrant and assume responsibility for all products (including hardware, firmware, and/or software products) that it licenses, contracts, or sells to the School District under this contract for the period of one year, unless otherwise specified and mutually agreed upon elsewhere in this contract. The contractor (seller) acknowledges that all warranties granted to the buyer by the Uniform Commercial Code of the State of Utah applies to this contract. Product liability disclaimers and/or warranty disclaimers from the seller are not applicable to this contract unless otherwise specified and mutually agreed upon elsewhere in this contract. In general, the contractor/supplier warrants that: (1) the product will do what the salesperson said it would do, (2) the product will live up to all specific claims that the manufacturer makes in their advertisements, (3) the product will be suitable for the ordinary purposes for which such product is used, (4) the product will be suitable for any special purposes that the School District has relied on the contractor's skill or judgment to consider when it advised the School District about the product, (5) the product has been properly designed and manufactured, and (6) the product is free of significant defects or unusual problems about which the School District has not been warned. Remedies available to the School District include the following: The contractor/seller will repair or replace (at no charge to the School District) the product whose nonconformance is discovered and made known to the contractor/seller in writing. If the repaired and/or replaced product proves to be inadequate, or fails of its essential purpose, the contractor/seller will refund the full amount of any payments that have been made. Nothing in this warranty will be construed to limit any rights or remedies the School District may otherwise have under this contract.
6. **DISTRICT APPROVAL**: Purchase orders placed or contracts written by the School District, as a result of this bid, will not be legally binding until properly executed by those authorized to sign in behalf of the School District.
7. **AMENDMENTS**: It may be necessary to issue amendments to the original specifications or bid documents. Bidders are responsible to verify whether or not they have received the latest amendments. Also, the terms of the contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever without the prior written approval of the Director of Purchasing.
8. **AWARD OF CONTRACT**: (a) The contract will be awarded with reasonable promptness, by written notice, to the responsible low bidder that meets the specifications. Consideration will be given to the quality of the product(s) to be supplied, conformity to the specifications, the purpose for which required, delivery time required, discount terms and other criteria set forth in this bid/proposal (b) The School District may accept any item or group of items, or has the right to cancel this bid/proposal at any time prior to the award of contract. (c) The School District can reject any and all bids/proposals, if the School District believes it would serve the best interest of the District. (d) Before or after the award of a contract, the School District has the right to inspect the bidder's premises and all business records to determine the holder's ability to meet contract requirements. (e) The School District does not guarantee to make any purchase under the awarded contract(s). Estimated quantities are for bidding purposes only, and not to be interpreted as a guarantee to purchase any amount.
9. **PROTEST PROCEDURES**: A protest of a solicitation must be filed in writing with the Purchasing Department before the solicitation due date and time. A protest of the award shall be submitted in writing to the Purchasing Department within five working days after the aggrieved person knows or should have known of the facts giving rise thereto. The protest shall include: 1) Name, address, and phone number of the protestor; 2) The original signature of the protestor or its representative; 3) A detailed statement of the legal and factual grounds of protest including copies of any relevant documents; 4) The form of relief request.

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Add Alternate # 1
3/10/2015

SECTION 233300 - DUCTWORK AND ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Low pressure ductwork.

B. Medium and high pressure ductwork.

C. Manufactured duct joints.

D. Damper operator hardware.

E. Volume control dampers.

F. Gravity backdraft dampers.

G. Flexible duct fan connections.

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED IN THIS SECTION

A. None

1.3 RELATED REQUIREMENTS

A. The General Conditions, Supplementary Conditions and Division 1, General Requirements apply to this Section, and Contractor shall review and adhere to all requirements of these documents.

B. Section 230500 - Basic Mechanical Requirements.

1.4 RELATED SECTIONS

A. Section 230529 - Basic Mechanical Material and Methods.

B. Section 230540 - Mechanical, Sound and Vibration Control.

C. Section 230548 – Mechanical Seismic Control.

D. Section 230593 - Testing, Adjusting and Balancing.

E. Section 230700 - Mechanical Insulation.

F. Section 230900 - Electronic Controls.

1.5 REFERENCES AND CODE REQUIREMENTS

A. ASHRAE - Handbook 2009 Fundamentals; Chapter 21 - Duct Design.

B. ASHRAE - Handbook 2008 HVAC Systems and Equipment; Chapter 18 - Duct Construction.

C. ASTM A90 - Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.

D. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

E. ASTM A525 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

F. ASTM A527 - Steel Sheet, Zinc-Coated (Galvanized) by Hot-Dip Process, Lock Forming Quality.

G. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.

H. ASTM C14 - Concrete Sewer, Storm Drain, and Culvert Pipe.

I. ASTM C443 - Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

J. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

K. NFPA 90B - Installation of Warm Air Heating and Air Conditioning Systems.
NFPA 92A - Smoke Control Systems.
NFPA 92B - Smoke Management Systems.

L. NFPA 96 - Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment.

M. SMACNA - HVAC Duct Construction Standards.

N. SMACNA - HVAC Air Duct Leakage Test Manual

O. SMACNA - Fibrous Glass Duct Construction Standards.

P. UL 33 - Heat Responsive Links for Fire-Protection Service.

Q. UL 181 - Factory-Made Air Ducts and Connectors.

R. UL 555 - Fire Dampers and Ceiling Dampers.
UL 555S - Leakage Rated Dampers for Smoke Control Systems.

1.6 DEFINITIONS

A. Duct Sizes: Inside clear dimensions. For lined ducts, maintain sizes inside lining.

B. Low Pressure: Design and Construct to SMACNA 2 in. w.g. pressure class. Low pressure duct shall include: Supply duct downstream of RTU's, return duct, fresh air duct, relief duct, unless otherwise indicated on drawings.

1.7 REGULATORY REQUIREMENTS

A. Construct ductwork to NFPA 90A and NFPA 90B and NFPA 96 standards.

1.8 SUBMITTALS

A. Submit Shop Drawings for the following items under provision of The General Conditions of the Contract:

1. Shop fabricated assemblies including duct or plenum access doors.

2. Duct fittings, particulars such as gauges, sizes, weld, and configuration prior to start of work for low pressure systems.

B. Submit Product Data for the following items under provision of The General Conditions of the Contract:

1. Backdraft dampers.

C. Submit printed Operating Instructions and Maintenance Data for the following items under provisions of Operating and Maintenance Data paragraph in Section 230500:

1. None.

1.9 PROJECT CONDITIONS

A. Contractor shall not fabricate or install any ductwork until he has assured himself that the ductwork can be run as contemplated in cooperation with Contractors of other Divisions of the Work and the physical constraints of the Structural and Architectural Work.

B. Contractor shall prepare 1/4" = 1'-0" scale shop drawings of all ductwork and plenums for engineer's review proving the contractor has performed coordination with other trades and the Architectural and structural work.

C. Provide any and all off-sets and fittings required to coordinate with field conditions. The lack of coordination will not constitute a change in contract price. The contract drawings are of a schematic nature only, exact duct routing and field coordination is the responsibility of the Division 233300 Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Nonmetallic air ducts and connectors shall conform to UL 181 Class 0 or Class 1.

B. Steel Ducts: ASTM A525 and ASTM A527 galvanized steel sheet, lock-forming quality, having G90 zinc coating each side in conformance with ASTM A90.

C. Fasteners: Rivets, bolts, or sheet metal screws.

D. Sealant: Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.

E. Hanger Rod: Steel, galvanized; threaded both ends, threaded one end, or all thread.

2.2 LOW PRESSURE DUCTWORK

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards and ASHRAE handbooks, except as indicated. Provide duct material, gauges, reinforcing, and sealing for operating pressures specified or as indicated on drawings.

B. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows are used, provide turning vanes. Where acoustical lining is indicated, provide turning vanes of perforated metal with glass fiber insulation.

C. Construct fittings with 45 degree wye or 90 degree wye with 45 degree entry.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible. Divergence upstream of equipment shall not exceed 30 degrees; convergence downstream shall not exceed 45 degrees.

E. Provide easements where low pressure ductwork conflicts with piping and structure. Where easements exceed 10 percent duct area, split into two ducts maintaining original duct area.

F. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of airflow.

2.3 MEDIUM PRESSURE DUCTWORK

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards and ASHRAE handbooks. Provide duct material, gauges, reinforcing, and sealing for operating pressures specified or as indicated on drawings.

B. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline.

C. Provide conical fittings constructed to conform to details of the Sheet Metal and Air Conditioning Contractors National Association Manual (SMACNA) in branch ducts of medium pressure take-offs to VAV boxes.

D. Transform duct sizes gradually, not exceeding 15 degrees divergence and 30 degrees convergence

E. Double-Wall Duct: Construct inner wall of 22 gauge galvanized steel, perforated with 3/32 inch diameter holes on 3/16 inch staggered centers, minimum 23% open area. Interstitial insulation shall be 2 inch thick, 6.0 lb/sf mineral wool that complies with NFPA 90A. Provide sheet metal edges/end caps at ends of ductwork sections and fittings to totally contain edges of insulation. Construct outer wall in accordance with the SMACNA HVAC Duct Construction Standards.

2.4 MANUFACTURED DUCT JOINTS

A. Manufacturer: Ductmate Industries, Inc., TDF, MEZ Industries, Hercules.

B. Transverse duct joints of medium pressure ductwork shall be made with the Ductmate System components of standard catalog manufacture.

2.5 CASINGS

A. Fabricate casings in accordance with SMACNA HVAC Duct Construction Standards for 2-inwg pressure class of not less than 18 gauge panels, unless otherwise indicated on drawings.

2.6 DAMPER OPERATOR HARDWARE

A. Manufacturers: Ventfabrics Ventlok Regulators, Metropolitan Air.

B. Other acceptable manufacturers offering equivalent product: Duro Dyne, Daniel.

C. Regulators and End Bearings.

Damper shaft length:
12" or less - Ventlok #620 Regulator.
12" to 20" - Ventlok #635 Regulator and #607 Bearings.
Larger dampers - Ventlok #640 or #641 Regulator and #607 Bearings.

D. Provide equivalent model elevated bases for insulated ducts.

E. Provide remote damper control where any damper does not have permanent access. System to include a locking worm drive gear, ¼" flexible steel shaft and a concealed ceiling cap of 1". Manufacturers: Young Regulator, Price, or approved equal.

2.7 VOLUME CONTROL DAMPERS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards, and as indicated.

B. Fabricate single blade dampers for duct sizes to 9-1/2 x 30 inch.

C. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 6 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

D. Except in round ductwork 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon or sintered bronze bearings.

E. Provide locking, indicating quadrant regulators on single and multi-blade dampers.

F. On insulated ducts, mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

2.8 GRAVITY BACKDRAFT DAMPERS (LOW VELOCITY COUNTERBALANCE TYPE) (< 2.0" w.c.)

A. Acceptable Manufacturers: Air Balance, American Warming, Arrow United (Type 655), Louvers and Dampers Inc., Prefco, Ruskin (CBD4 or CBD6), C.E. Sparrow, Airstream, Greenheck, Pottorff.

B. Gravity backdraft dampers furnished with air moving equipment, may be air moving equipment manufacturers standard construction.

C. Fabricate multi-blade, parallel action gravity balanced backdraft dampers of 16 gauge galvanized steel or extruded aluminum, with blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.9 FLEXIBLE DUCT FAN CONNECTIONS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards, and as indicated.

B. Indoor: UL listed fire-resistant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz. per sq. yd., minimum 4-inch wide, crimped into metal edging strip.

C. Outdoor: UL listed hypalon coated woven glass fabric to NFPA 90A, minimum density 24 oz. per sq. yd., minimum 4-inch wide, crimped into metal edging strip.

D. Leaded vinyl sheet, minimum 0.55 inch thick, 0.87 lbs, per sq. ft., 10 dB attenuation in 10 to 10,000 Hz range.

2.10 ACCESS DOOR HARDWARE

A. Manufacturer: Ventfabrics Ventlok Series

B. Other acceptable manufacturers offering equivalent product: Duro Dyne.

C. Latches, hinges and gasketing:

Doors less than 4 square feet - Series 100.
Doors 4 to 8 square feet - Series 200.
Larger doors and in medium pressure systems - Series 300.

2.11 DUCT ACCESS DOORS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards as indicated.

B. Review locations prior to fabrication.

C. Fabricate rigid and close-fitting doors of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ductwork, install minimum one inch thick insulation with sheet metal cover.

D. Access doors smaller than 12 inches square may be secured with sash locks.

E. Provide two hinges and two sash locks for sizes up to 18 inches square, three hinges and two compression latches with outside and inside handles for sizes up to 24 x 48 inches. Provide an additional hinge for larger sizes.

F. Access doors with sheet metal screw fasteners are not acceptable.

PART 3 - EXECUTION

3.1 GENERAL SHEET METAL INSTALLATION

A. Duct sizes fall within the limiting dimensions indicated on the Drawings. Provide sheet metal duct systems, connections, dampers, duct turns, housings, hinged sheet metal doors and necessary removable access doors for the complete supply, return, and exhaust systems. Install accessories in accordance with manufacturer's instructions.

B. Seal low and medium pressure ductwork per IECC and SMACNA HVAC Duct Construction Standards to Seal Class A. This includes all joints, seams and wall penetrations.

C. Wherever exposed ducts pass through walls, floors, or ceilings, a 2-inch flanged sheet-metal collar fitting close around ducts to be slipped along duct until flange is tight against finished surface covering edges of openings and presenting a neat appearance. Lock collar to duct.

D. Wherever ducts penetrate floors or fire walls, install safing insulation to maintain fire wall integrity.

E. Cut or drill temporary test holes in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps. Permanent test holes shall be factory fabricated, airtight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

F. Provide openings in ductwork where required to accommodate thermometers and controllers.

G. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

H. Where Bellmouth fittings are specifically called for on Drawings, provide standard Bellmouth fittings per SMACNA Standards.

I. Wherever dampers are concealed under insulation, provide marker ribbon for identification. Hang ribbon below adjacent ductwork to allow view from any angle.

J. Requirements for duct liner are located in Specification Section 230540 – Mechanical Sound and Vibration Control.

3.2 MEDIUM AND HIGH PRESSURE DUCTWORK (2” w.c. or greater)

A. Do not use air turns on medium or high pressure ductwork except when duct width exceeds 18”, install full length vanes per SMACNA spacing recommendations and where specifically called out on Drawings. Use radius elbows with centerline radius of 1.5D (or 1.5W for rectangular) for all turns in medium pressure ductwork. Obtain Engineer’s approval for reducing the centerline radius at specific locations where a centerline radius of 1.5 cannot be provided because of conflict with building structure or other utilities. Note approval may not be given if other solutions are possible.

3.3 SEALING OF DUCTWORK

A. Seal all ductwork to Seal Class A per SMACNA HVAC Duct Construction Standards and as required by the International Energy Conservation Code. Additional sealing of these runouts will be required if audible air leaks are observed. Where joints are not accessible for proper sealing, cut hand holes in duct and seal the joints from the inside.

3.4 DUCT LEAKAGE TESTING

A. Conduct a complete duct leakage test of all medium pressure supply air mains and vertical risers as outlined in the most current edition of the SMACNA Air Duct Leakage Test Manual.

B. Total leakage of each duct system not to exceed recommendations in SMACNA Air Duct Leakage Test Manual per Leakage Classifications defined above. If leakage rate exceeds maximum allowed, reseal ductwork until measured system leakage rate is less than the maximum allowable leakage rate.

3.5 MANUFACTURED DUCT JOINTS

A. The installation of the manufactured duct joints shall be in accordance with the manufacturer's printed instruction and installation manuals. Apply multiple thicknesses of folded butyl gasket material at each corner of rectangular duct joints to assure air tightness.

3.6 DUCTWORK APPLICATION SCHEDULE

A.

AIR SYSTEM	MATERIAL
Low Pressure Supply (Heating Systems)	Galvanized Steel
Low Pressure Supply (System with cooling coils)	Galvanized Steel
Return and Relief	Galvanized Steel
Outside Air Intake	Galvanized Steel

3.7 DAMPER OPERATOR HARDWARE

A. Install per manufacturer’s instructions and recommendations. Coordinate any ceiling control locations prior to installation.

B. Coordinate length of flexible shaft on site.

3.8 VOLUME CONTROL DAMPERS

A. Provide balancing dampers at points on low pressure supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing.

3.9 GRAVITY BACKDRAFT DAMPERS (LOW PRESSURE SYSTEMS)

A. Provide backdraft dampers where indicated.

3.10 FLEXIBLE DUCT FAN CONNECTIONS

A. Provide flexible connections immediately adjacent to equipment in ducts associated with fans and motorized equipment. Cover connections to medium and high pressure fans with high-density vinyl sheet, held in place with metal straps.

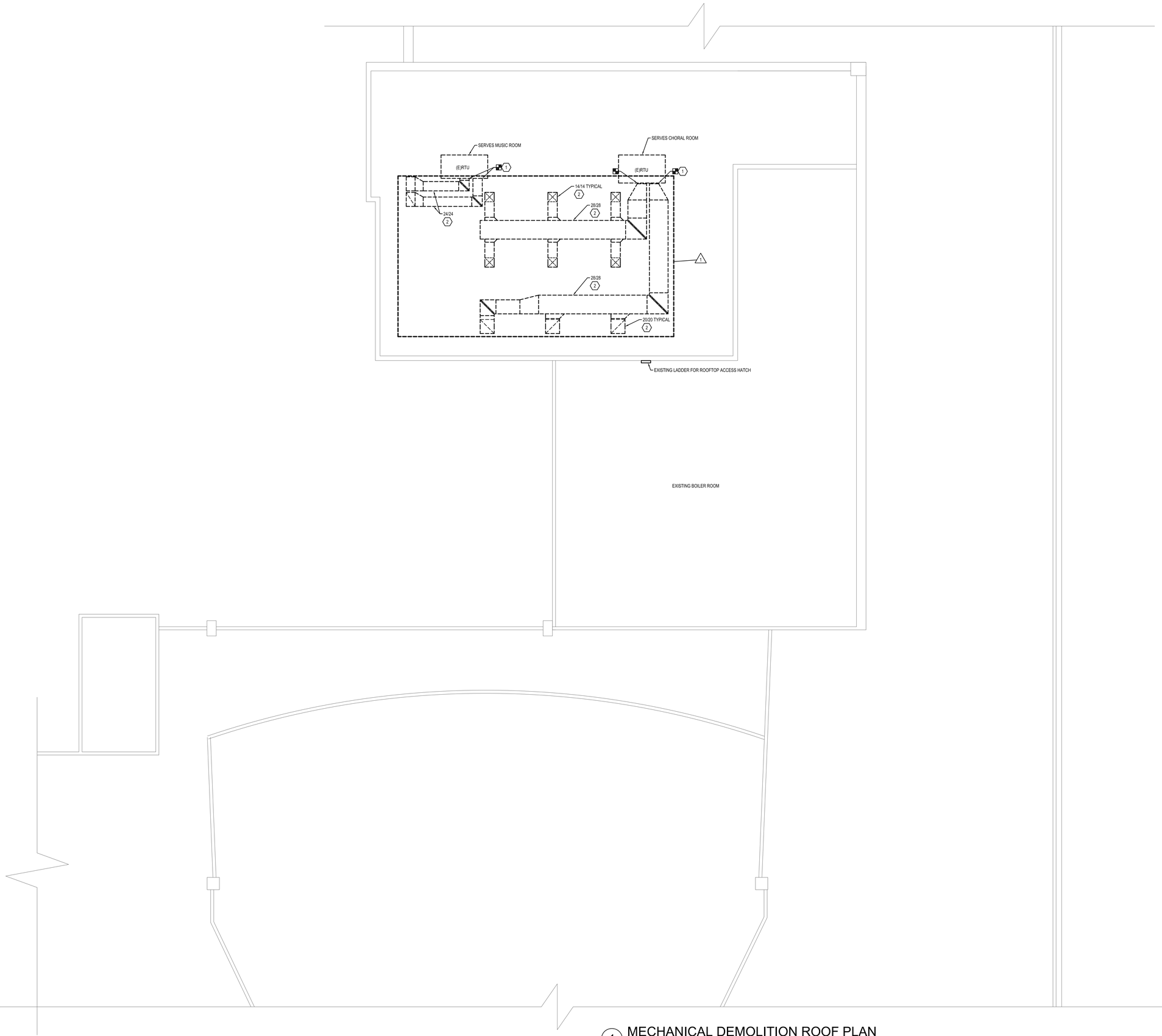
B. At least 1-inch slack shall be allowed in these connections to insure that no vibration is transmitted from fan to duct work. The fabric shall either be folded in with the metal or attached with metal collar frames at each end to prevent air leakage.

3.11 DUCT ACCESS DOORS

A. Provide duct access doors for inspection of duct turning vanes and before and after all booster coils.

B. Provide minimum 8 x 8 inch size for hand access, 24 x 24 inch size for shoulder access, unless indicated otherwise on drawings.

END OF SECTION 233300



1 MECHANICAL DEMOLITION ROOF PLAN
SCALE: 1/8" = 1'-0"

6' 0 4' 8' 12' 16'

KEYED NOTES

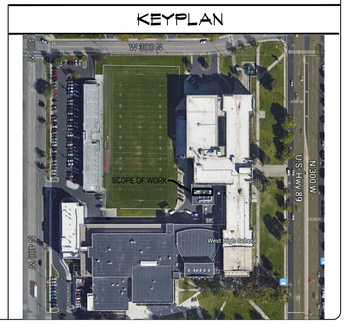
1. REMOVE EXISTING ROOF TOP UNIT.
2. EXISTING DUCT SIZES ARE APPROXIMATE, FIELD VERIFY ACTUAL DUCT DIMENSIONS.

GENERAL NOTES

A. ALL SHOWN DARK AND DASHED TO BE DEMOLISHED AND REMOVE. ALL SHOWN LIGHT AND SOLID IS EXISTING AND TO REMAIN.

1 ADD ALTERNATE #1:
REMOVE ALL ABOVE THE ROOF DUCT WORK AND RUN NEW RECTANGULAR LINED DUCT WORK IN THE CEILING SPACE OF THE CHORAL ROOM IN THE SAME BASIC CONFIGURATION. RESELECT THE NEW ROOF TOP UNITS TO BE BOTTOM OPENING UNITS SO THAT ALL ROOF PENETRATIONS NOW OCCUR UNDER THE ROOF TOP UNIT CURBS. COORDINATE THIS WORK WITH SLCSD'S CURRENT RE-ROOFING PROJECT IN THAT AREA TO REPAIR THE ABANDONED DUCT PENETRATIONS IN THE DECK AND ACCOMMODATE A NEW ROOFING MEMBRANE. PROVIDE SHOP DRAWINGS FOR ENGINEER'S AND SLCSD'S REVIEW OF THE NEW PROPOSED DUCTWORK INCLUDING OBSTACLES IN THE EXISTING CEILING SPACE, DUCT SIZES, ETC. REUSE EXISTING DIFFUSERS AND RETURN GRILLES AND SUPPORT DUCTWORK FROM OVERHEAD ROOF STRUCTURE. SUBMIT ON SEISMIC BRACING FOR DUCTWORK.

KEYPLAN



REVISIONS:

NO.	DATE	DESC
1	3/10/2015	ADD ALTERNATE #1

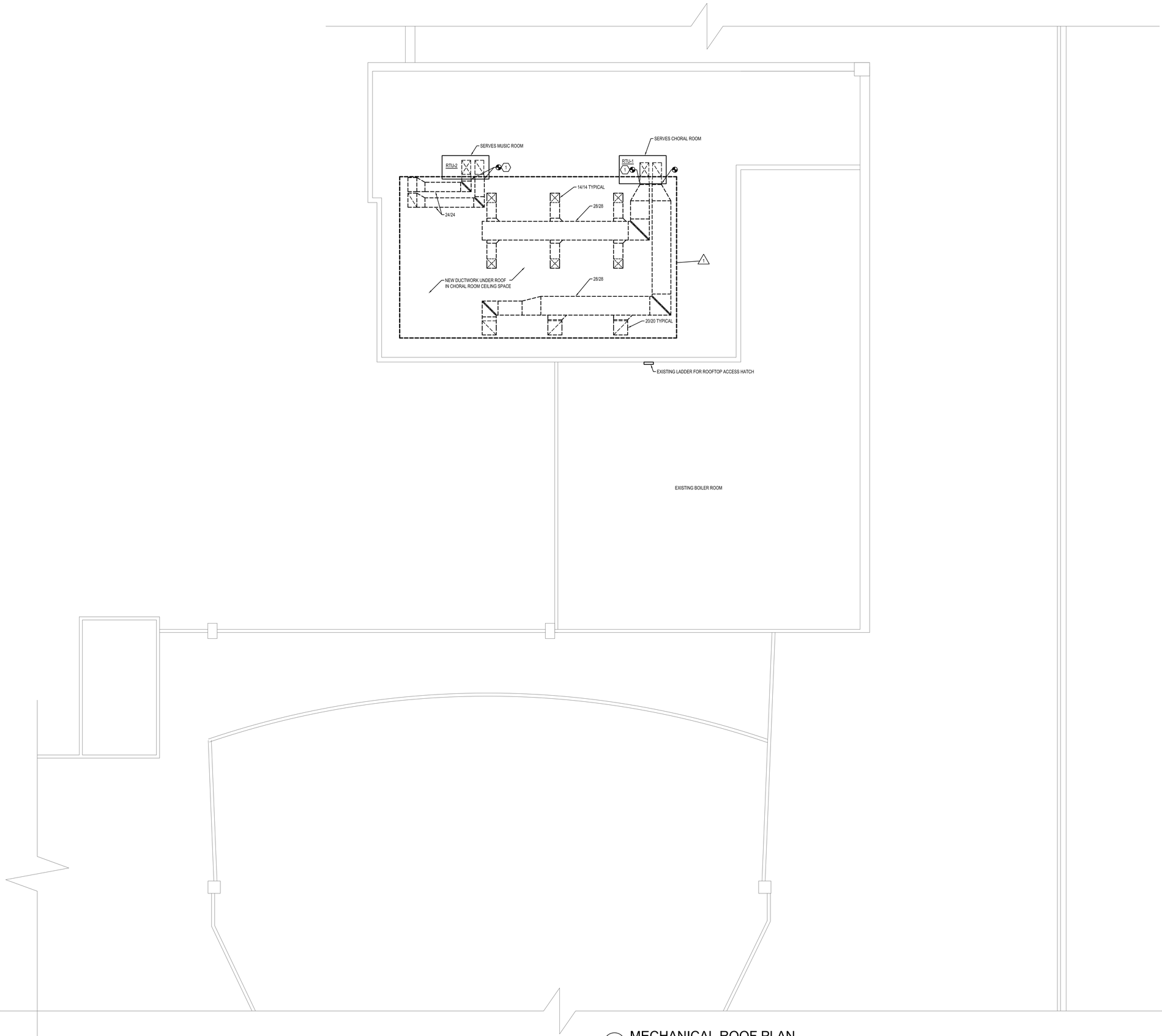
COLVIN ENGINEERING ASSOCIATES
244 West 300 North, Suite 200 / Salt Lake City, Utah 84103
Phone 801.322.2400 / colvinengineering.com

WEST HIGH SCHOOL
ROOF TOP UNIT REPLACEMENT
241 N. 300 W.
SALT LAKE CITY, UT 84103

DATE..... 2015-02-13
SCALE..... AS SHOWN
DRAWN..... ADW
CHECKED..... DLT
JOB NO..... 2015-0.17.00
FILE NAME.... M-101D.DWG

SHEET TITLE
MECHANICAL DEMOLITION ROOF PLAN

SHEET NO.
M-101D



1 MECHANICAL ROOF PLAN
SCALE: 1/8" = 1'-0"

6" 0 4' 8' 12' 16'

KEYED NOTES

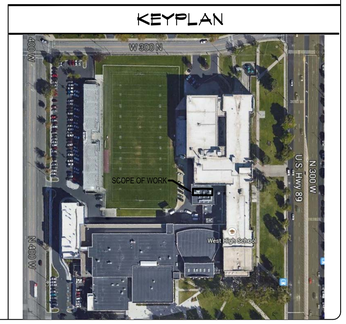
1. CONNECT UNIT TO EXISTING DUCTWORK, GAS PIPING, CURB, AND WIRING AND VERIFY OPERATION.

GENERAL NOTES

A. ALL SHOWN DARK AND SOLID IS NEW, ALL SHOWN LIGHT AND SOLID IS EXISTING.

1 ADD ALTERNATE #1:
REMOVE ALL ABOVE THE ROOF DUCT WORK AND RUN NEW RECTANGULAR LINED DUCT WORK IN THE CEILING SPACE OF THE CHORAL ROOM IN THE SAME BASIC CONFIGURATION. RESELECT THE NEW ROOF TOP UNITS TO BE BOTTOM OPENING UNITS SO THAT ALL ROOF PENETRATIONS NOW OCCUR UNDER THE ROOF TOP UNIT CURBS. COORDINATE THIS WORK WITH SLCSD'S CURRENT RE-ROOFING PROJECT IN THAT AREA TO REPAIR THE ABANDONED DUCT PENETRATIONS IN THE DECK AND ACCOMMODATE A NEW ROOFING MEMBRANE. PROVIDE SHOP DRAWINGS FOR ENGINEER'S AND SLCSD'S REVIEW OF THE NEW PROPOSED DUCTWORK INCLUDING OBSTACLES IN THE EXISTING CEILING SPACE, DUCT SIZES, ETC. REUSE EXISTING DIFFUSERS AND RETURN GRILLES AND SUPPORT DUCTWORK FROM OVERHEAD ROOF STRUCTURE. SUBMIT ON SEISMIC BRACING FOR DUCTWORK.

KEYPLAN



REVISIONS:

NO.	DATE	DESC
1	3/10/2015	ADD ALTERNATE #1

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WEST HIGH SCHOOL
ROOF TOP UNIT REPLACEMENT
241 N. 300 W.
SALT LAKE CITY, UT 84103

DATE..... 2015-02-13
SCALE..... AS SHOWN
DRAWN..... ADW
CHECKED..... DLT
JOB NO..... 2015-0.17.00
FILE NAME.... M-101.DWG

SHEET TITLE
MECHANICAL ROOF PLAN

SHEET NO.
M-101