

Addendum

PROJECT: Tirey Hall Art Storage

ADDENDUM # 2

DATE: 10/16/2013

TO: ALL INTERESTED BIDDERS OF RECORD

BID NUMBER: B0022544

This Addendum # 2 forms part of the Contract Documents and modifies the original Bidding Documents. Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to acknowledge this addendum may subject Bidder to disqualification.

GENERAL INFO

1. **Reminder:** The Bid Due date has been extended until October 22, 2013 at 2:00pm. The substantial completion date of January 15, 2014 remains the same.
2. Also see R.E. Dimond Addendum # 2 included in this Addendum

SPECIFICATION REVISIONS

1. See Questions and Answers
2. Section 230593 Testing and Balancing added as part of R.E. Dimond Addendum # 2

DRAWING REVISIONS

1. See Questions and Answers.
2. Clarification Drawings added as part of R.E. Dimond Addendum # 2

QUESTION AND ANSWERS

The follow questions were received from Michael Wanninger and are answered by Scott Tillman

- Q On A102, Section 2/a201 at West Entry; should this be Detail 4?
A Yes, The West Entry Canopy Section should be referenced as #4 on Sheet A201.
- Q On A102, Plan Notes 4 and 6 do not show on the prints? Do these apply and if so where?
A Note #4 does not apply to this plan sheet and can be omitted. Note #6 should be referencing the area around the two stairs on the south side of the corridor as a transition for the new lay-in ceiling grid.
- Q How does Alternates #1 & #2 apply to A102? From my interpretation, there are no new ceilings in base bid. Are Alt. 1 and 2 the same for ceiling work? Or do the alternates apply per the following.
Alternate No. 1: According to A101 – Where Plan Notes #5 & #12 is located (essentially all 2x2 grid) is Alt #1.
Alternate No. 2: According to A101 – Where Plan Note #11 is located (essentially the East and (2) North corridors) is Alt #2.
- A Alternate #1 shall include all work pertaining to the corridors; such as flooring, ceiling, lighting, painting, trim, bulkheads, etc. Alternate #2 shall be bid as the Terrazzo product

specified, as a substitute for the sheet flooring material in the corridor as part of Alternate #1. This will be bid as an additional cost up-charge from the sheet flooring.

- Q Is this correct; the existing ceilings are to remain as is for the work rooms, offices, PAC, and Archive areas? Especially according to D101 Demolition Notes #6.
- A Yes, The existing ceilings will remain except for the removed plaster bulkhead areas as noted on D101 note #6. This removed bulkhead area will be addressed in the construction as to needing any additional work as a change order cost.
- Q On S-1, are the Stairs on the South end similar to the Detail 2/S-3? Only difference being substituting a metal hand rail for the knee wall? How do you want the trusses covered up as one goes up the stairs?
- A These stairs and ramp are built over top of the new finished decking. These stairs should be framed with wood stringers; treads and risers.

The following Questions came from John Rigby from Santa Rossa

- Q The terrazzo spec. mentions precast terrazzo straight base, treads and risers. Alternate 2 only mentions terrazzo flooring. Will terrazzo base and stair treads be included in the alternate?
- A Only terrazzo flooring is proposed in the project.
- Q The terrazzo spec mentions an anti-fracture membrane without saying whether it should be only at cracks or 100% coverage wherever the terrazzo goes. Please advise us how we should price for the alternate?
- A 100% coverage of anti-fracture membrane shall be Bid.

OWNER COMMENT

1. Last day for questions is end of day on Thursday October 17, 2013

End of Addendum # 2

attachments



R.E. Dimond
& Associates, Inc.
Consulting Engineers

ADDENDUM NO. 02

TIREY HALL ART STORAGE
INDIANA STATE UNIVERSITY
TERRE HAUTE, IN 47809

D&A # 11077

October 16, 2013



Daniel E. Dimond, P.E.

This Addendum issued prior to bidding, alters, amends, corrects or clarifies the Proposal Documents to the extent stated herein and does hereby become a part of the Proposal Documents, and will become a part of the Contract Documents of the successful bidder.

SPECIFICATIONS

1. Section 23 82 16 – Air Coils
 - a. Page 23 82 16-2, 2.1.B, Manufacturers; add the following:
 - “8. Coil Company
 9. Greenheck”

2. Section 23 21 13 – Hydronic Piping Systems
 - a. Page 23 21 13-3; Add the following Manufacturers for both Strainer and Balance Valve:
 - “Pro Hydronics”

3. Section 23 05 93 – Testing and Balancing
 - a. Add attached Section 23 05 93 Testing and Balancing in its entirety.

DRAWINGS

1. M301 – Enlarged Lower Level – Mechanical
 - a. General Notes
 - i. Add the following General Note:

“3. Install thermometer on common glycol supply to WSHP’s and one thermometer on each of the WSHP returns. Also install pete’s plugs across heat pumps. See Hydronic Schematic on drawing M-701 for additional piping trim to be installed on heat pumps.”
2. M601 – Schedules and Details – Mechanical
 - a. Detail C – Filter Housing Detail – Clarification:
 - i. Filter housing may be a high quality pre-manufactured unit of size shown. Filters to be 4” thick MERV 8. Provide 3 total sets of filters.
 - b. Miscellaneous Equipment Schedule
 - i. Mark No. H-1 Art Storage Humidifier Equipment Manufacturer: Armstrong Humidipack is an approved equal for manufacturer.
3. E202 – Partial First Floor – Power/Systems
 - a. Under Alternate #4 work associated with the pre-action sprinkler system shall be revised as follows:
 - i. A NAC panel is not required.
 - ii. A suppression release peripheral device (SRPD) is not required.
 - iii. Contractor will need to provide a 4-conductor cable (one circuit) from the existing FACP to the space for new devices.
 - iv. The pre-action valve will be controlled by new components installed per Addendum #1.
 - v. To clarify, all fire alarm work is base bid, except the specific work associated with the sprinkler system, which is part of Alternate #4, or those devices indicated under Alternate #1 work.
 - vi. Coordinate all work with Simplex.
4. FP100 – Site Plan – Fire Protection
 - a. Refer to drawing ADD2-FP1 issued in this addendum for clarification of work in tunnel.
5. FP201 – Partial Floor Plans – Fire Protection
 - a. Refer to drawing ADD2-FP2 issued in this addendum for clarification regarding location of backflow preventer and preaction system.
 - b. It is the intent that all fire protection piping will be installed exposed below the existing ceiling in the First Floor project area. The piping shall be supported from the existing structure above, not from the suspended ceiling. Contractor shall provide holes in the existing ceiling as required in order to install the necessary pipe supports. All such holes shall be patched with like material in order to maintain the existing ceiling barrier. Install piping as high as possible and coordinate with lighting layout.
6. FP601 – Schedules and Details – Fire Protection
 - a. Refer to drawing ADD2-FP3 issued in this addendum for Detail ‘C’ – Typical Tunnel Section.

END OF ADDENDUM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. For this project, the Test & Balance Contractor will be bid as;
 - 1. A subcontract under the mechanical contractor.

1.2 SUMMARY

- A. This Section includes testing, adjusting and balancing of HVAC Systems to produce design objectives, including the following:
 - 1. Air Systems:
 - a. Constant-volume air systems.
 - 2. Adjusting blowers, fans and ducts to deliver or exhaust design air flow.
 - 3. Adjusting terminal units, diffusers, registers and grilles to supply, return or exhaust design air flow.
 - 4. Adjusting diffusers, registers and grilles to minimize drafts.
 - 5. Adjusting all zones for design supply and return air flow.
 - 6. Balancing of condenser water systems to achieve design flow characteristics.
 - 7. Hydronic Piping Systems:
 - a. Constant-flow systems.
 - 8. Verifying that automatic control devices are functioning properly.

1.3 SUBMITTALS

- A. Bidding Documents
 - 1. Submit name of the Test and Balance Agency to Architect/Engineer as a subcontractor on the Materials and Subcontractors Listing.
 - 2. If the Contractor fails to submit name of selected Test and Balance Agency, the Architect/Engineer will select the agency of his choice and Contractor must then issue purchase order for this work as directed.

- B. Certificate: Selected and approved agency shall submit certificate immediately upon receipt of test and balance contract.
- C. Data Sheets
 - 1. Submit type written data sheets on each item of testing equipment to be used.
 - 2. Include name of device, manufacturer's name, model number, latest date of calibration and correction factors.
- D. Report Forms
 - 1. Submit specimen copies of the balance report set-up including addendums and alternates before starting work on site.
 - 2. Forms shall be 8-1/2" x 11" paper for looseleaf binding, with blanks for listing of the required test ratings and for certification of report.
 - 3. Submit 50%, 75%, and 100% site visit reports on installation of HVAC systems.
 - 4. Submit preliminary pencil copies of reports to A/E as soon as possible.
- E. Progress and Deficiency Reports
 - 1. Upon completion of each system, or periodically throughout the project provide written Status Reports of progress. Include any deficiencies noted to date.
- F. Final Report
 - 1. Upon completion, all information shall be neatly typed and five copies submitted to the Architect/Engineer with accompanying schematic diagrams of systems tested.
 - 2. All test reports shall be assembled, indexed and submitted in vinyl covered loose-leaf notebooks with project name and Balancing Contractor's name permanently printed thereon.
 - 3. Final test and balance report include static pressure profiles of all balanced air handling systems, including static pressure measurements across fans, filters, main heating and cooling coils. Include diagrams and/or drawings to document system static pressures.

1.4 QUALITY ASSURANCE

- A. Test and Balance Agency
 - 1. Obtain the services of an independent Test and Balance Agency that specializes in, and whose business is limited to, the testing and balancing of air conditioning systems. Agency shall not be a division of the Mechanical Contractor or Sheet Metal Contractor.
 - 2. The agency selected shall be fully certified by the Associated Air Balance Council – AABC, or the National Environmental Balancing Bureau – NEBB, and shall have at least one member of the agency qualified as a certified test and balance Engineer who has been issued this certification by the National Examining Board.
 - 3. All work shall be done under the direct supervision of a full time member of the organization.

4. All final reports shall be signed and sealed by the certified test and balance Engineer.
5. Approved Test and Balance Contractors:
 - a. Bledsoe Environmental Systems Testing, Inc.
 - b. Flo-Tech, Inc.
 - c. Fulton Air Balance, Inc., Indianapolis, IN - (317)328-4614 – NEBB Certified
 - d. Gibson Services Company, Terre Haute, IN - (812)466-6969 – NEBB Certified
6. Agency Contract: Award the contract to the approved Balance Contractor in sufficient time to allow the Test and Balance Contractor to schedule this work in cooperation with other trades involved and comply with the completion date.

B. Instruments

1. The minimum instrumentation for testing, adjusting and balancing shall be the "NEBB Approved Minimum Field Instrumentation."
2. Instruments used for testing and balancing must have been calibrated within a period of six months and checked for accuracy prior to start of work.
3. Instruments must be maintained and carried in such manner to protect them from excessive vibration and moisture conditions.
4. Approval: all products and instrumentation used shall be subject to approval of the Engineer.

C. Procedure - Methodology: testing and balancing shall be performed in complete accordance with NEBB National Standards for Field Measurements and Instrumentation.

D. Conditions: System Operation - heating, ventilating, and air conditioning equipment including filters, shall be completely installed and in continuous operation as required to accomplish the adjusting and balance work specified. Test and Balance Agency shall give a Check List to the Mechanical and/or Sheet Metal Contractors which, when completed, and returned, will assure the systems are ready to be balanced. Engineer shall receive a copy of checklists when completed.

1.5 COORDINATION

- A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, Commissioning Agent and other mechanics to operate HVAC systems and equipment to support and assist testing, adjusting, and balancing activities.
- B. Notice: Provide seven (7) days advance notice for each test. Include scheduled test date and times.
- C. Perform testing, adjusting, and balancing after leakage and pressure tests on air and water distribution systems have been satisfactorily completed. Mechanical and/or Sheet Metal Contractor shall coordinate with TAB agency.

D. Measurements – Readjustments

1. Should corrective measures caused by faulty installation require retesting, adjusting and balancing, such work shall be at no additional expense to the Owner.
2. Corrective measures other than the above shall be made only as directed by the Architect/Engineer. Such work shall be at no additional expense to the Owner.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PREPARATION

A. Air Systems - prior to system testing and balancing

1. Verify that the appropriate contractor has:
 - a. Checked all systems and placed them into a fully operational status.
 - b. Cleaned all air filters or installed new ones as required.
 - c. Checked temperature and system controls for proper operation.
 - d. Checked fan rotation for proper operation.

B. Water Systems - prior to system testing and balancing

1. Open all valves to full open position.
2. Set all temperature controls so all coils are calling for full cooling or full heating as required.
3. Verify that the Mechanical Contractor has:
 - a. Removed and cleaned all strainers.
 - b. Treated and cleaned water in system.
 - c. Checked pump rotation.
 - d. Set automatic fill valves for required system pressure.
 - e. Bled the system, checked the expansion tanks, etc., so that it is completely full of water and is not air bound.
 - f. Check air vents at high points of the system for proper operation.

3.2 SYSTEM BALANCE

A. Air Systems - Perform at a minimum, as applicable, the following tests and balance.

1. Test and adjust supply, return and exhaust fans to $\pm 10\%$ design requirements. Change sheaves and belts as required to obtain design air quantities. Sheaves and belts to be furnished by others.
2. Test and record motor electrical characteristics, RPM, service factor, measured voltage, full load amperes and connected load amperage. Check and record starter heaters, sizes and ratings, replacing belts sizes, etc.

TESTING AND BALANCING

3. Make pitot tube traverse (minimum of 16 points) of main supply ducts and obtain design CFM at fans. Seal all test holes with suitable hole plugs.
 4. Test and record system static pressure, suction and discharge at all fans. Pressure readings shall be accurate to within 0.01-inch w.g.
 5. Test and adjust system for design CFM recirculated air.
 6. Test and adjust system for design CFM outside air.
 7. Adjust all main supply and return air ducts to proper design CFM. Report any areas where volume dampers are required for proper balance.
 8. Adjust all zones to proper design CFM, supply and return.
 9. Test and adjust each diffuser, grille and register to within $\pm 10\%$ of design requirements.
 10. Each grille, diffuser and register shall be identified as to location and area. Size, type, flow factor and manufacturer of diffusers, grilles, registers and all tested equipment shall be identified and listed.
 11. Readings and tests of diffusers, grilles and registers shall include required FPM velocity and test resultant velocity, required CFM and test resultant CFM after adjustments.
 12. Test and Balance Agency shall make special note wherever abnormal installed conditions (such as crimped flexible ducts, tight offsets, and unusual tap-ins or fittings) do not permit a proper air balance without increasing main duct static pressure or fan speed. Abnormal conditions shall be reported as early as possible, preferably during preliminary observations, and submitted with static pressure and airflow measurements that will permit analysis and identification of necessary corrective actions.
 13. The intent is to obtain design CFM at all outlets and inlets with minimum possible fan speed, system static pressure, and with acceptable noise levels in occupied areas. For each system, at least one main zone volume damper and one branch volume damper in each zone shall be fully open at the end of balancing.
 14. In cooperation with the Temperature Control Contractor's representative, setting adjustments of automatically operated dampers to operate as specified, indicated and/or noted. The Balance Contractor shall check all controls for proper calibrations and list all controls requiring adjustment by Temperature Control Contractor.
 15. All diffusers, grilles and registers shall be adjusted to minimize drafts in all areas.
- B. Water Systems - Perform at a minimum, as applicable, the following water system test and balance.
1. Set water pumps to proper gallons per minute delivery $\pm 10\%$.
 2. Adjust water flow through equipment.
 3. Upon completion of flow readings and adjustments at coils, mark all settings and record data.
 4. Install pressure gauges in gauge fittings provided on coil, read pressure drop through coil at set flow rate for full cooling and on full heating. Set pressure drop across bypass valve to match coil full flow pressure drop. Pressure readings shall be accurate to within 0.5 psig.

C. Record Data

1. Air Systems - record the following minimum data:

a. CFM delivery and RPM of blowers and fans

- 1) Static pressure at inlet and outlet of blowers and fans
- 2) All equipment nameplate data
- 3) Actual running current and voltage of fan motors and settings for solid state overload relays or heater sizes.

b. CFM delivered or exhausted at each diffuser, register, or grille – if quantities are not indicated on Drawings, contact Engineer. Each room where supply value is indicated then the return shall be balanced to that CFM, as well, unless noted otherwise.

2. Water Systems - record the following minimum data at each heating and cooling element.

- a. Inlet water temperature
- b. Leaving water temperature
- c. Pressure drop across each coil
- d. Pressure drop across bypass valve
- e. Pump operating suction and discharge pressures and final TDH
- f. Pump nameplate data
- g. List all mechanical specifications of pumps. Check and record starter size, heater sizes, etc.
- h. Rated and actual running amperage of pump motor.
- i. Water balance device readings and/or settings.

3. Current weather temperature and conditions and time of test for each system listed shall be included in the final report for reference.

D. Owner's Instructions: Balancing Contractor shall arrange with the Owner at a time for the instruction of the Owner's personnel as to the proper operation and maintenance of the equipment.

3.3 OWNER ORIENTATION

A. Reference Division 1.

3.4 ADDITIONAL TEST

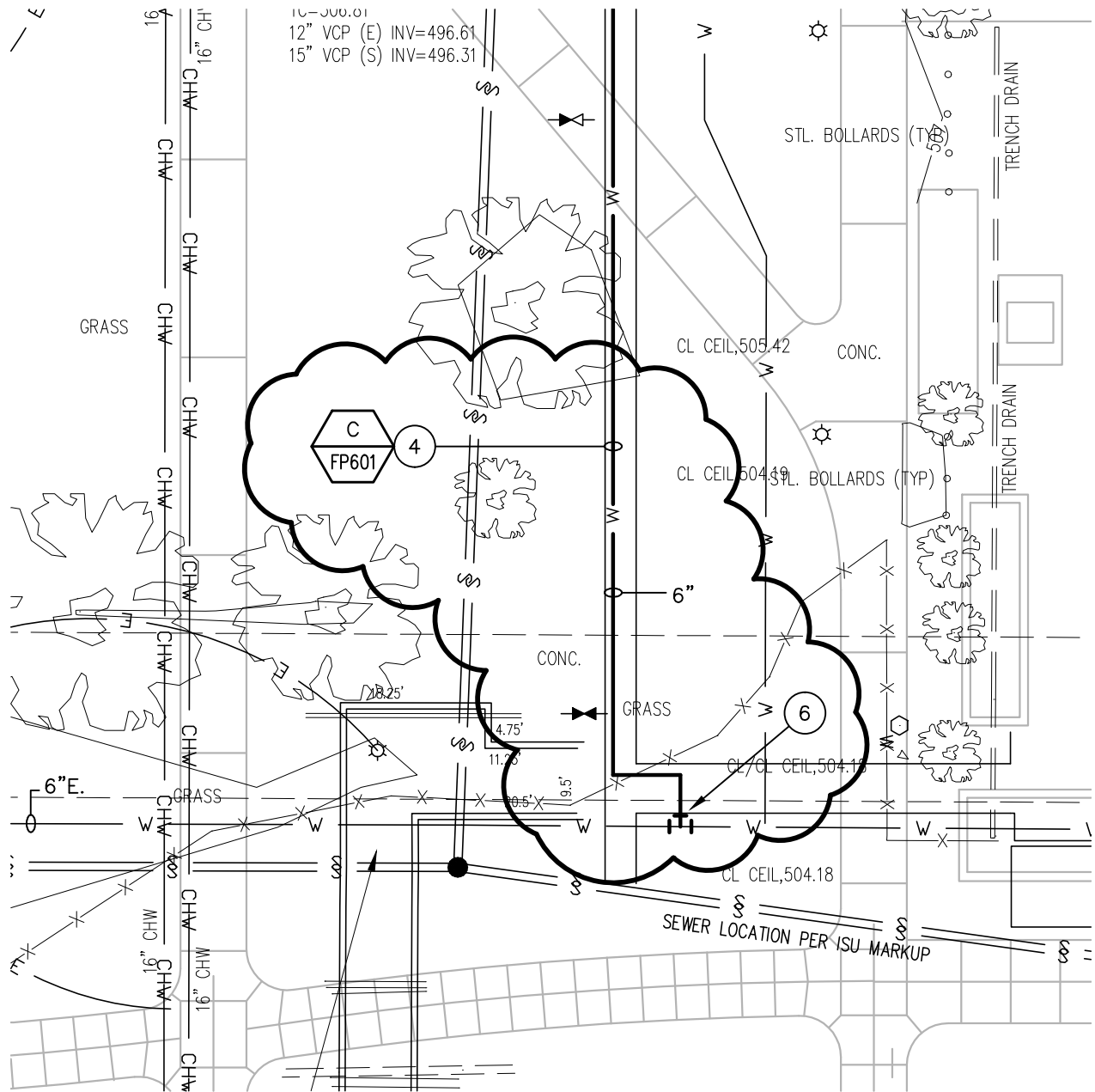
A. Within 90 days of completing testing, adjusting, and balancing, perform additional testing and balancing to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

B. Seasonal Periods

TESTING AND BALANCING

1. If initial testing, adjusting, and balancing procedures were not performed during near-peak summer and winter conditions, perform additional inspections, testing, and adjusting during near-peak summer and winter conditions, if so requested by Owner/Engineer.

END OF SECTION 23 05 93



SITE PLAN - FIRE PROTECTION

SCALE: 1" = 20'-0"



R.E. Dimond
and Associates, Inc.
Consulting Engineers
 732 North Capitol Avenue
 Indianapolis, IN 46204

PHONE: (317) 634-4672 FAX: (317) 638-8725

PROJECT:

INDIANA STATE UNIVERSITY
 TIREY HALL ART STORAGE
 RENOVATIONS AND IMPROVEMENTS

JOB NUMBER: 11077

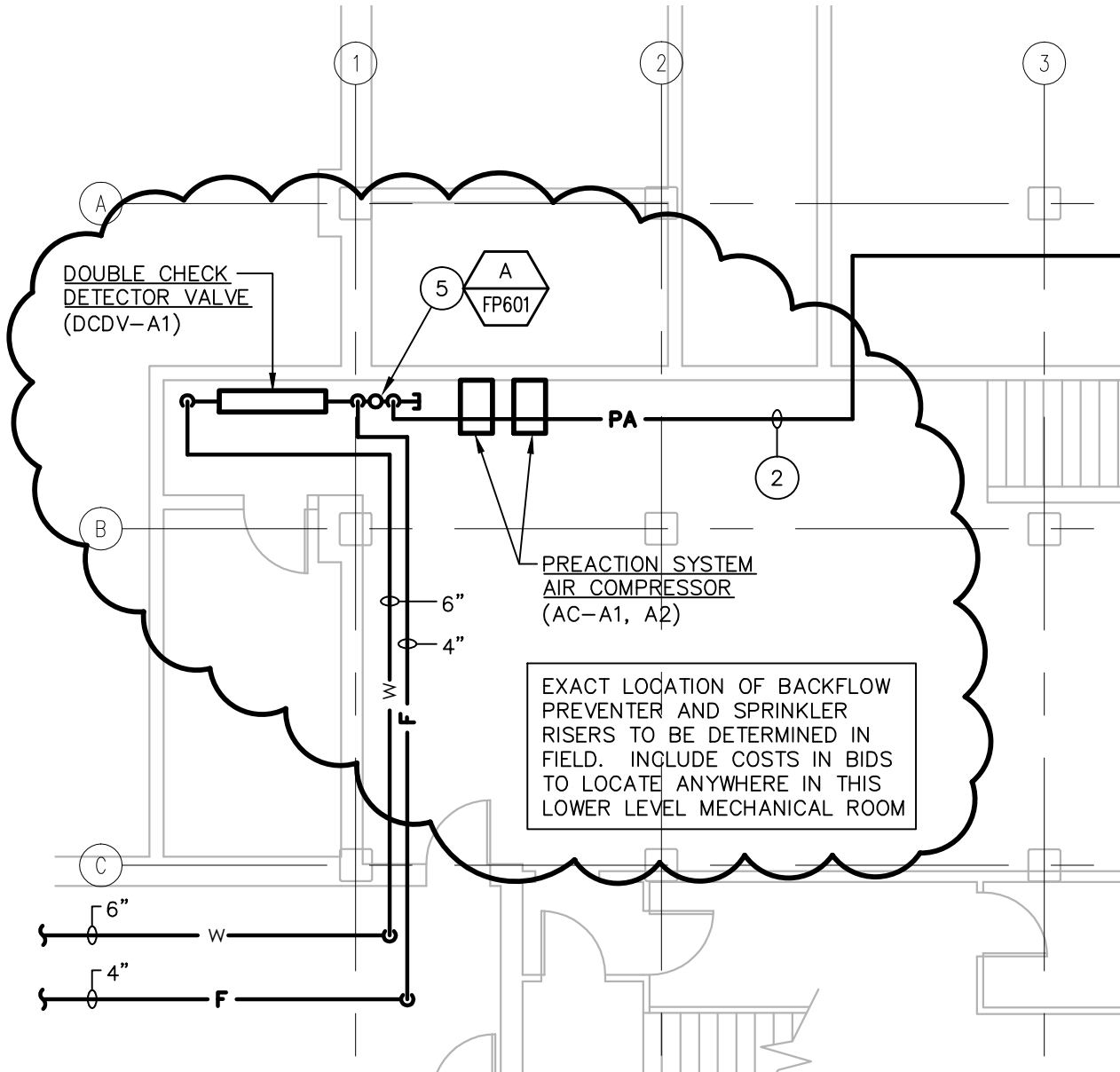
DATE: 10/16/2013

REF. DWG. NO.: FP100

DRAWN BY: WAE

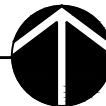
ADDENDUM #2

DRAWING NO.: ADD2-FP1



PARTIAL LOWER LEVEL - FIRE PROTECTION

SCALE: 1/8" = 1'-0"



NORTH



R.E. Dimond
and Associates, Inc.
Consulting Engineers
732 North Capitol Avenue
Indianapolis, IN 46204

PHONE: (317) 634-4672 FAX: (317) 638-8725

PROJECT:

INDIANA STATE UNIVERSITY
TIREY HALL ART STORAGE
RENOVATIONS AND IMPROVEMENTS

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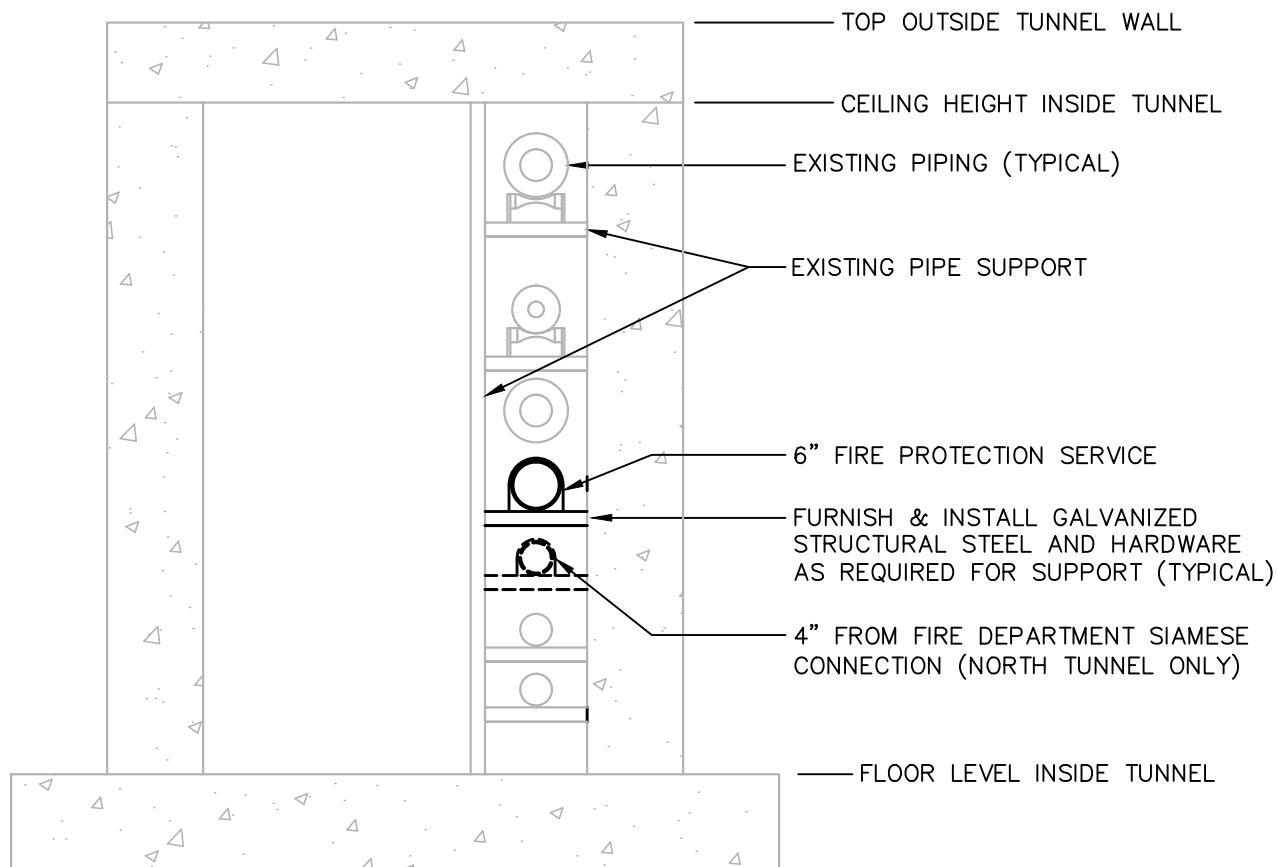
DATE: 10/16/2013

REF. DWG. NO.: FP201

DRAWN BY: WAE

ADDENDUM #2

DRAWING NO.: ADD2-FP2



DETAIL 'C'
TYPICAL TUNNEL SECTION
 NO SCALE



R.E. Dimond
 and Associates, Inc.
 Consulting Engineers
 732 North Capitol Avenue
 Indianapolis, IN 46204

PHONE: (317) 634-4672 FAX: (317) 638-8725

PROJECT: INDIANA STATE UNIVERSITY
 TIREY HALL ART STORAGE
 RENOVATIONS AND IMPROVEMENTS

JOB NUMBER: _____ 11077 DATE: _____ 10/16/2013
 REF. DWG. NO.: _____ FP601 DRAWN BY: _____ WAE

ADDENDUM #2

DRAWING NO.: ADD2-FP3