



ADDENDUM NO. 4

for

INDIANA STATE FAIR COMMISSION RENOVATION TO DISCOVERY HALL PHASE III

**1202 East 38th Street
Indianapolis, Indiana 46205**

Prepared
for

**Indiana State Fair Commission
1202 East 38th Street
Indianapolis, Indiana 46205**

October 28, 2010



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ADDENDUM NO. 4

TO ALL BIDDERS OF RECORD AND TO WHOM IT MAY CONCERN:

This Addendum is being issued prior to the date for receiving bids.

This Addendum forms a part of the Contract Documents and modifies the original Drawings and Specifications as noted below and shall be incorporated into the Contract Drawings. All other provisions of the Drawings and Specifications shall remain unchanged.

This Addendum is issued in accordance with the provisions of the Notice to Bidders section of the Project Manual. All Bids shall be based upon work as modified by this Addendum.

Acknowledge receipt of this Addendum on the Bid Form. Failure to do so may result in disqualification of the Bidder. This Addendum DOES NOT change the Bid Date.

GENERAL COMMENTS:

1. See attached OMS Addendum No. 4 with attachments.
2. This "Renovations to Discovery Hall Phase III" project was formerly known as "Girls Dormitory Phase II". This is the same building and a continuation of work started under the "Girls Dormitory Phase II" project. Only the name of the building has changed.
3. The revised door schedule issued in Addendum No. 2 as SK-4 includes some doors not intended to be installed in this phase III. From Addendum No. 2, SK-4, Omit the following doors: 09, 10, 11, 12, 108, 109, and 111. All other doors indicated are included in this Phase III.
4. All of the site infrastructure improvements indicated on Drawings C201 and C202 were installed in previous phases of work EXCEPT the new downspout tie-ins for the relocated roof drains required in this Phase III.
5. New walls indicated in Addendum No. 2 on sketches SK-1 through SK-3 in lieu of folding partitions are to be wall type "BSF". This is wall type "B" with sound batt insulation, full height. All other wall types are as indicated on drawings.
6. All duct penetrations through metal stud walls not framed in Phase II are to be included in Phase III and coordinated with Mechanical duct work.
7. New masonry openings and roof top penetrations are the responsibility of trade requiring opening. Comply with cutting and patching requirements and provide steel lintel support at spans. Do not cut roof deck until reviewed with Architect.
8. All Mechanical equipment curbs and/or supports are to be flashed into the existing roofing. Provide metal drip edge flashing at the top of all equipment curbs.

CHANGES TO SPECIFICATIONS:

- Item No. 1 Specification Section 083323 "Overhead Coiling Doors"
1. Include section attached to this addendum No. 4.
- Item No. 2 Specification Section 08461 "Sliding Automatic Entrance Doors"

Indiana State Fair Commission
Renovations to Discovery Hall Phase III
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1. Add Paragraph 2.1, B., 2. to read: "Horton Automatics acceptable manufacturer of system matching specified Basis-of-Design."
- Item No. 3 Specification Section 12300 "Casework"
1. Add Paragraph 2.6, G., 3. to read: "Provide Best Locks 1E7E4 Stabbed Cabinet Mortised Cylinder for all cabinet locks."
- Item No. 4 Specification Section 14240 "Hydraulic Elevators"
1. Paragraph 2.2, G: Omit paragraph
 2. Paragraph 2.3, B, 1: Add to end of paragraph: "Elevator manufacturer to provide batter back up for Standby Powered Lowering."
 3. Paragraph 2.3, C: Omit paragraph
 4. Paragraph 2.4, B: Clarification: Provide a single set of car controls at the front (north) wall of car.
 5. Paragraph 2.4, D: Omit paragraph
 6. Paragraph 2.7, B: Clarification: There are not door transoms. Sills are to be nickel silver.
 7. Paragraph 2.8, A, 1: Revise to read: "Type: Under-car, piston hydraulic, four stop, dual access.
 8. Paragraph 2.8, A, 6, d and f: Provide brushed stainless steel car walls.
 9. Paragraph 2.8, A, 6, k: Also provide bumper rails at base of car side wall.
 10. Paragraph 2.8, A, 7, c: Revise to read: "Type: Two-speed center opening".
 11. Paragraph 2.8, A, 9, b: Clarification: There is only one car. Provide one set of blankets.

CHANGES TO DRAWINGS:

- Item No. 5 Drawing Sheet A201-A203:
1. Revise REFLECTED CEILING LEGEND, ceiling type "B", to be: "2x2 LAY-IN ACOUSTIC CEILING TILE AND GRID". .
- Item No. 6 Drawing Sheet S101 "Foundation Plan":
1. At "FOUNDATION PLAN" revise exterior foundation to be CW16 up to height indicated on 2/A611 and 1/A612. Lower portion of exterior wall is to be exposed cast-in-place concrete to match the existing construction.

END OF ADDENDUM NO. 4

SECTION 08 3323

OVERHEAD COILING DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Overhead coiling doors, operating hardware, non-fire-rated, manual operation.

1.02 REFERENCE STANDARDS

- A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2009a.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide general construction, component connections and details, _____.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.
- D. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Overhead Coiling Doors:
 - 1. The Cookson Company: www.cooksondoor.com.
 - 2. Wayne-Dalton Corporation: www.wayne-dalton.com.

2.02 COILING DOORS

- A. Non-Fire-Rated Interior Coiling Doors: Steel slat curtain.
 - 1. Single thickness slats.
 - 2. Nominal Slat Size: 2 inches (50 mm) wide x required length.
 - 3. Finish: Factory painted, as selected from manufacturer standard color.
 - 4. Guides: Angles; primed steel.
 - 5. Hood Enclosure: Manufacturer's standard; primed steel.
 - 6. Manual push up operation.
 - 7. Mounting: Surface mounted.
 - 8. Interior latch only.

2.03 MATERIALS

- A. Curtain Construction: Interlocking slats.
 - 1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
 - 2. Curtain Bottom: Fitted with angles to provide reinforcement and positive contact in closed position.
- B. Steel Slats: Minimum 12 gage (_____ mm) ASTM A 653/A 653M galvanized steel sheet.
- C. Guide Construction: Continuous, of profile to retain door in place, mounting brackets of same metal.
- D. Steel Guides: Formed from galvanized steel sheet, ; 3/8" wide; complying with ASTM A 653/A 653M.
 - 1. Prime paint.

- E. Hood Enclosure: Internally reinforced to maintain rigidity and shape.
 - 1. Prime paint.
- F. Hardware:
 - 1. Latch Handle: Interior handle.
- G. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb (10 kg) nominal force to operate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that opening sizes, tolerances and conditions are acceptable.

3.02 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Install perimeter trim and closures.

3.03 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch (1.5 mm).
- C. Maximum Variation From Level: 1/16 inch (1.5 mm).
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft (3 mm per 3 m) straight edge.

3.04 ADJUSTING

- A. Adjust operating assemblies for smooth and noiseless operation.

3.05 CLEANING

- A. Clean installed components.
- B. Remove labels and visible markings.

END OF SECTION

ADDENDUM NO. 4

**INDIANA STATE FAIR COMMISSION
RENOVATIONS TO GIRLS DORMITORY PHASE II
DISCOVERY HALL RENOVATION PHASE III**

PROJECT NO. 04057

OCTOBER 28, 2010

ODLE McGUIRE SHOOK
429 NORTH PENNSYLVANIA STREET, SUITE 403
INDIANAPOLIS, INDIANA 46204

TO: BIDDERS OF RECORD

This Addendum consists of: Page ADD.4-1 through ADD.4-4, Specification Sections ADD.4-16731 Sound Communications System; and Drawings ADD.4-M1, ADD.4-E1, ADD.4-E2. And ADD.E3.

CHANGES TO PRIOR ADDENDA:

1. Section 16722 – Fire Alarm and Detection System
 - A. Paragraph 2.1A: Delete reference to “Alternate”; install fire alarm system in Girls Dormitory complete throughout the entire building.
2. Section 16731 – Sound Communications System
 - A. Replace this Section in its entirety with the attached Section ADD.4-16731.
3. Section 16745 – Computer Data / Telephone Wiring System
 - A. Add Paragraph 2.1.B to read as follows: “All fiber optic cable terminations are to match that of the existing fiber optic terminations (SC) at the IDF / MDF locations located in the Boy’s Dormitory and Exhibit Hall. The voice / data copper and fiber optic connectivity manufacturer (Hubbell) is to match that of the existing voice / data copper connectivity located in the Boy’s Dormitory and Exhibit Hall. The voice / data copper and fiber optic cable manufacturer (Belden) is to match that of the existing voice / data copper connectivity located in the Boy’s Dormitory and Exhibit Hall.
4. Section 16781 – Video Distribution System
 - A. Delete this Section in its entirety; video distribution systems are not required.

CHANGES TO DRAWINGS:

1. Drawing M201 – Lower Level HVAC Plan
 - A. Clarification, piping shown in chase at new elevator tower was installed 11 feet due east of location shown in chase within the existing building. New piping in chase is not required.
2. Drawing M202 – Main Level HVAC Plan
 - A. Clarification, piping shown in chase at new elevator tower was installed 11 feet due east of location shown in chase within the existing building. New piping in chase is not required.
 - B. Exhibit 115 (northwest corner of room): Clarification, flues/combustion air intakes shall be installed at lower level; note that flue and combustion air intake for Boiler B1 was installed in Phase 2. Change Plan Note 15 at domestic water heater flue to Plan Note 19.
 - C. At new elevator tower, change Plan Note 15 at EUH-8 and EF-7 to Plan Note 19. Add Plan Note 19.
 - D. Add Plan Note 19 to read: “19. Equipment, controls, etc. shall be included as a part of Phase III.”
3. Drawing M203 – Upper Level Ductwork Plan
 - A. For RV-1, RV-2, RV-3, and RV-4, provide roof vents sized for required CFM at 500 fpm.
4. Drawing M204 – Upper Level Piping Plan
 - A. Clarification, piping shown in chase at new elevator tower was installed 11 feet due east of location shown in chase within the existing building. New piping in chase is not required.
5. Drawing M301 – Enlarged Mechanical Room Plan
 - A. Detail 1: Revise Mechanical Room Plan per attached Drawing ASI-1-M1; note that Boiler B1 (including combustion air intake and boiler flue), boiler control panel, Air Separator AS-1, Expansion Tank ET-1, Heating Water Pump HWP-1, Electric Unit Heater EUH-1, and Louver L-1 (including plenum) were installed in Phase II. Remaining equipment shall be installed as part of this Work (Phase III).
 - B. Add Chiller Schedule per attached Drawing ADD.4-M1.
 - C. Electric Unit & Wall Heater Schedule: Clarification, EUH-8 shall be installed as part of Phase III.
6. Drawing P200 – Existing Exhibit Hall Plumbing Plan
 - A. Clarification, all of the work shown was installed in Phase II.

7. Drawing P201 – Foundation Plumbing Plan
 - A. General Phasing of Work Notes: Clarification, for Phase II Plumbing Work, delete Note 1; DWH-1, ET-1, TMV-1 and HWCP-1 shall be installed in Phase III.
8. Drawing P202 – Lower Level Plumbing Plan
 - A. Clarification, enlarged plumbing plan for northwest corner of room shall be referenced to Detail 1 on Drawing P401.
9. Drawing P401 – Plumbing Schedules and Details
 - A. Detail 1: Reference ASI-1 (attached to this Addendum) for revised mechanical room layout; coordinate location of plumbing items with the revised layout.
10. Drawing E201 – Lower Level Lighting Plan
 - A. Boiler 009: Delete Plan Note 7 shown at BP1; provide in Phase III.
 - B. Women 005, Men 006, and Vestibule 007: Delete all Plan Notes 7; provide fixtures in Phase III.
 - C. Clarification: All exterior lighting fixtures shall be installed complete as a part of Phase III.
11. Drawing E202 – Main Level Lighting Plan
 - A. Men 110, Corridor 112, Women 114, Elevator Equipment 116, Vestibule 117: Delete all Plan Notes 7; provide fixtures in Phase III.
 - B. Exhibit 115: At new elevator tower, delete Plan Note 7 shown at fixture X1; provide fixture in Phase III.
 - C. Clarification: All exterior lighting fixtures shall be install complete as a part of Phase III.
12. Drawing E203 – Upper Level Lighting Plan
 - A. Exhibit 201: Delete Plan Note 7 at fixtures X and BP1 at east, west and south walls; provide fixtures in Phase III.
 - B. Meeting 202, 203, 204, 213, 214, 215, 226, 227, 237, 238, and 239: Delete Plan Note 7 at fixtures X and BP1; provide fixtures in Phase III.
 - C. Showers 205 and 210, 236: Delete Plan Note 7 at fixtures FF4 and BP2; provide fixtures in Phase III.
 - D. Sinks 206, Toilet 207, Toilet 208, Sinks 209, Corridor 211, Corridor 212, Apartment 223and Showers 228: Delete Plan Note 7 at fixtures BP1; provide fixtures in Phase III.
 - E. Restroom 218: Delete Plan Note 7 at fixture FD1; provide fixture in Phase III.
 - F. Restroom 219: Delete Plan Note 7 at fixtures FD1 and FS2: provide fixtures in Phase III.
 - G. Hallway 232 and 241: Delete Plan Note 7 at fixture X (west end of Hallway) and all fixtures BP1 and NL; provide fixtures in Phase III.
 - H. Clarification, Provide all work shown on this floor as part of Phase III.

13. Drawing E301 – Lower Level Power Plan
 - A. Install fire alarm system complete on this floor.
14. Drawing E302 – Main Level Power Plan
 - A. Install fire alarm system complete on this floor.
 - B. Elevator Equipment 116: Provide one (1) voice drop to emergency telephone connection in elevator controller from the DEMARC location for connection to analog phone line. Coordinate all work with elevator contractor and telephone service provider complete prior to installation.
15. Drawing E303 – Upper Level Power Plan
 - A. Install fire alarm system complete on this floor.
16. Drawing E304 – Exhibit Hall Basement Floor
 - A. Clarification, connect fire alarm interface modules from FACP in Boiler 009 of Girls Dormitory to main head-end fire alarm equipment in Exhibit Hall where shown on Drawing E304. Provide new graphic maps for fire alarm system showing full system for Girls Dormitory, Exhibit Hall and Boys Dormitory.
17. Drawing E305 – Boys Dormitory – First Floor
 - A. Clarification, provide sound system interconnection in Office 210 as indicated on attached Drawing ADD.4-E3 to interconnect systems.
18. Drawing E501 – Electrical Details
 - A. Detail 2: Clarification, DEMARC is located in Staging 011; DEMARC and TTB East in Staging 011 are one and the same termination point. Provide 100 pair Category 3 between TTB East and TTB West; provide 100 pair Category 3 between DEMARC and IDF-3 as indicated.
 - B. Detail 3: Revise per attached Drawing ADD.4-E1.
 - C. Detail 4: Revise per attached Drawing ADD.4-E2.
19. Drawing E502 – Electrical Details
 - A. Detail 6: Replace this detail with the attached Drawing ADD.4-E3.
20. Drawing E601 – Power Distribution Riser Diagram
 - A. Power Distribution Riser Diagram: Revise riser for elevator to indicate a 60A/3P breaker; feeder shall be 3#6,1#10G,1”C between 20hp motor, fused disconnect and BGDEP1. Verify exact power requirements and fused disconnect with elevator supplier and modify accordingly.

END OF ADDENDUM NO. 4

SECTION ADD.4-16731 – SOUND COMMUNICATIONS SYSTEM

PART 1 GENERAL

1.1 DESCRIPTION

- A. The requirements of the Contract Documents, including the General and Supplementary General Condition and Division 1 - General Requirements shall apply to the work of this section.
- B. At the time of bid, all exceptions taken to these Specifications, all variances from these Specifications and all substitutions of operating capabilities or equipment called for in these Specifications shall be listed in writing and forwarded to the Architect / Engineer. Any such exception, variances or substitutions which were not listed at the time of bid and are identified in the submittal, shall be grounds for immediate disapproval without comment.

1.2 SCOPE OF WORK

- A. The work covered by this Section of the Specification shall include all labor, equipment, materials and services to furnish and install a complete and operating sound communications system as described herein and shown on the drawings. It shall be complete with all necessary materials, labor, hardware, software, firmware and programming specifically tailored for this installation. It shall be possible to permanently modify the software on site by using a plug-in programmer.
- B. Any and all miscellaneous materials, labor, hardware, software, firmware and programming that is not listed in this specification that is required to provide a complete operating system shall be provided as part of the scope of work for this sound communications system installation.
- C. The work covered by this section of the specifications shall be coordinated with any and all trades that are affected by the installation of the sound communications system. All work is to be complete and as required and specified elsewhere under these project specifications.
- D. All of the actual required system components and cabling are not shown or specified as this varies between acceptable manufacturers and suppliers. It shall be the responsibility of the contractor to obtain this information from the acceptable supplier and or manufacturer and include cost of same in his bid.

1.3 APPLICABLE CODES AND STANDARDS

- A. All devices of the sound communications system shall be listed by Underwriters Laboratory, Inc for sound communications system use. All components of the system shall bear the UL label.
- B. The system shall be installed in accordance with all the requirements of the National Electric Code with particular attention to Article 760.

- C. The system when equipped with appropriate standard options shall be approved for direct interconnection to the utility services under part 68 of the FCC rules and regulations.
- D. The system shall be installed in accordance with the requirements of the all other federal, state and local codes.
- E. The system shall be installed in accordance with the requirements of ANSI.
- F. The system shall be installed in accordance with the requirements of the Americans with Disabilities Act (ADA).
- G. The system shall be installed in accordance with the requirements of the local authority having jurisdiction.
- H. All sound communications system equipment shall have transient protection to comply with UL864 requirements.
- I. The system controls shall be UL listed for non-power limited applications and all circuits must be marked in accordance with NEC article 760-23.
- J. The system shall be installed in accordance with the requirements of the FM Approval Guide and FM Global Data Sheets.

1.4 RELATED DOCUMENTS

- A. Secure any and all required permits and approvals prior to installation.
- B. Submit letter of approval to the Owner, Architect / Engineer and the local authority having jurisdiction before requesting acceptance of the system.
- C. Prior to commencement, during installation and after installation notify the authority having jurisdiction the status of the system and the progress of the installation.

1.5 RELATED WORK

- A. The Contractor shall coordinate work in this Section with all related trades that the sound communications system affects or integrates with. Work and / or equipment provided in other Sections and related to the sound communications system shall include, but not be limited to the following:
 - 1. Conduit, Cable Tray and Surface Raceway Systems.

1.6 SUBMITTALS

- A. Furnish to the Architect / Engineer complete equipment submittal technical specification sheets and shop drawings in AutoCAD Release 2011 or higher for this system including but not limited to the following:

1. A material list with the quantities of each piece of equipment, names of manufacturers, model numbers and the technical information on all equipment the contractor proposes to install. This material list is to be broken out and listed by specification section per piece of equipment. If a piece of equipment is needed but not listed in this specification it shall be listed in the area of the submittal it pertains to. The technical information is to be a piece of manufacturers printed literature that is produced by the equipment manufacturer. Internet web page listings will not be accepted. Provide a description of any special installation procedures that will differ from what is specified or shown on drawings.
2. Complete system circuit diagrams of the entire system, point to point on scaled floor plans generated in AutoCAD Release 2011 or higher. The shop drawings are required to clearly illustrate how all components relate to each other and how they interconnect. A complete point to point wiring diagram of any and all panels and how they interconnect with all the components and or devices that are part of the system and any ancillary devices that are being provided by other trades. A custom detailed wiring diagram of each piece of equipment being provided and it's interconnect to its appropriate panel or ancillary device. All cable tags shown on drawings shall correspond with cable tags that are located inside equipment enclosures. Drawings shall include scaled drawings of all racks, consoles and special assemblies. Drawings shall include all circuit numbers for all cables and terminal connections as well as how they are labeled. Each drawing shall have a descriptive title and all subparts of each drawing shall be completely described. All drawings shall have the name of the project, Architect / Engineer, electrical contractor and installation contractor in the title block. The floor plans, room names and numbers for the submittal drawings are to match that of the bid drawings. The symbols used on the submittal drawings are to match that of the bid drawings. The only information shown on the submittal drawings is to pertain to the system being submitted on.
3. Provide a custom detailed description of the operation of the submitted system for this particular installation and a statement listing every technical and operational parameter wherein the submitted equipment varies from what was originally specified. If the submitter fails to list a particular variance and his submittal is accepted; but subsequently, deemed to be unsatisfactory because of the unlisted variance, the submitter must replace or modify such equipment at once without cost to the Owner. A letter or certificate from the manufacturer stating that the system contractor is an authorized distributor and installer of the submitted equipment shall be supplied.
4. The contractor shall be responsible for providing to the Architect / Engineer any and all additional information as deemed necessary by the Architect / Engineer for submittal review.

1.7 QUALITY ASSURANCE

- A. This section of the specification shall be a one manufacturer responsibility or as specified herein with no exceptions. Any variances to this specification item shall be submitted to the Architect / Engineer ten (10) working days prior to bid for review by the Architect / Engineer. This shall not be construed as an avenue to submit for approval to the Architect / Engineer other types of systems or other manufacturers.
- B. The installation contractor's installation technician must be a minimum of CTS-I certified. The field installation technician must be the person responsible for the

installation of the system and not office personnel, a consultant or part time employee. The installation contractor's project manager and project engineer for the sound communications system must be a minimum of CTS-D certified. The project manager and project engineer must be the person responsible for engineering and managing the installation of the system and not a consultant or part time employee. These credentials must be submitted to the Architect / Engineer with the contractor's subcontractor and material list at the time of the bid as well as with the shop drawing submittal.

- C. The sound communications system installation contractor must be located within fifty (50) miles of the project job site. The installation contractor must have been in business for a minimum of ten (10) years performing these types of installations. The installation contractor must have performed installation of the same system type and manufacturer type on a minimum of ten (10) projects similar to this project in size and scope. These credentials must be submitted to the Architect / Engineer as part of the contractor's subcontractor and material list at the time of the bid as well as with the shop drawing submittal.
- D. The sound communications system installation contractor must be the factory authorized and certified distributor, installer and partner of all of the equipment (AMX, Biamp, Cisco, etc...) specified to be provided for this specification section. The installation contractor's factory certification is to be submitted to the Architect / Engineer as part of the contractor's subcontractor and material list at the time of the bid as well as with the shop drawing submittal. The specified system is to be completely installed, programmed and tested by the same contractor and not by multiple contractors providing separate components of the system.
- E. Prior to starting the installation of the sound communications system the contractor will meet with the Owner as well as the Architect / Engineer to review all contract documents. A site survey / tour will be conducted at the same time to review the project installation prior to performing any work. The sound communications system test procedures and schedules will also be reviewed at this time.
- F. The sound communications system contractor will be required to schedule and attend all regularly scheduled progress meetings by the Construction Manager / General Contractor as well as any required additional progress meetings to review progress with the Owner as well as the Architect / Engineer. The contractor's installation technician and project manager will be required to attend all project progress meetings.

1.8 CIRCUITING GUIDELINES

- A. Speakers, volume controls, microphone input plates and head-end equipment are to be circuited as shown in Sound Communications System Riser Diagram.

1.9 SEQUENCE OF OPERATIONS

- A. The system shall provide distributed paging through the speaker system that is generated at the main head-end equipment rack locations.
- B. The system shall use industry standard 70-volt technology.

- C. The system shall be controlled via the touch panels located at the main head-end equipment rack location.
- D. The system shall be programmed to operate per the requirements defined by the A/E. and Owner. Contractor to schedule programming with the A/E and Owner prior to installation to define all programming, feature and functionality requirements.

1.10 WARRANTY

- A. The manufacturer and installation contractor shall guarantee the system equipment and all its components for a minimum of one (1) year from date of final acceptance of the system. If the manufacturer's warranty is longer than one (1) year, the contractor is to provide the full length manufacturer's warranty on all components of the system. This guarantee shall cover the replacement of all parts and labor to replace the same made necessary by normal usage and wear. This guarantee shall also cover any programming changes as required by the Owner and or Architect / Engineer to ensure that the system has the correct operating functions and device / area labels as required to accommodate the Owners needs. This guarantee is to include one (1) complete system test per year for the one (1) year period of the warranty. The contractor shall be responsible to provide service within eight (8) hours after notification by the Owners representative. The contractor will be responsible for repairing any deficiencies and or programming errors that are discovered during the final test of the system as directed by the Owner and Architect / Engineer during the entire warranty period.
- B. Upon completion of the installation of sound communications system equipment, the electrical contractor shall provide to the Architect / Engineer and Owner a signed written statement, on company letterhead, substantially in form as follows: "The undersigned, having engaged as the Sound Communications System contractor on the Additions and Renovations to the Indiana State Fairgrounds Girls Dormitory building project confirms that the sound communications system equipment was installed in accordance with the wiring diagrams, instructions and directions provided to us by the installation contractor and manufacturer."
- C. Contractor shall repair, adjust, and/or replace, whichever the Owner determines to be in its best interests, any defective equipment, materials, or workmanship, as well as such parts of the work damaged or destroyed by such defect, during warranty period, at the Contractor's sole cost and expense.
- D. In the event that any of the equipment specified, supplied, and/or installed as part of the work should fail to produce capacities or meet design Specification as published or warranted by the manufacturer of the equipment involved or as specified in this document, the Contractor shall, in conjunction with the equipment manufacturer, remove and replace such equipment with equipment that will meet requirements without additional cost to the Owner.
- E. In the event that the Contractor does not affect repair within eight (8) hours from the date of notification of such defect, the Owner may secure repair services from other sources and charge the Contractor for such costs without voiding the warranty.

1.11 SUPPORT FOR INSTALLER AND OWNER MAINTENANCE

- A. A training program including a total of sixteen (16) hours on the use of the system will be provided to the Owner to use at their discretion. A full and complete overview of the system will be included in this training as well as any literature required by the Owner to allow complete and total use of the system by the Owners designated staff. System maintenance requirements for the equipment will also be documented and turned over to the Owner. This training will be recorded and archived in DVD format and turned over to the Owner. The contractor will provide any required materials and staff to record and archive the training sessions.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. The following manufacturers are approved for this project for the specific items as listed in the following specifications:

1. Middle Atlantic
2. AMX
3. Biamp
4. TOA
5. Audiovox
6. Tascam
7. ProCo
8. Neutrik
9. Cisco
10. Hubbell
11. Lowell
12. West Penn

2.2 EQUIPMENT

- A. Central Equipment
 1. Middle Atlantic MRK-4431-AV Equipment Rack Kit
 2. Middle Atlantic USC-6R Power Sequencer Controller
 3. Middle Atlantic PCR-2X320 Power Strip
 4. Middle Atlantic TD8-FLK Drawer
 5. Middle Atlantic EB1 Blank Panel
 6. Middle Atlantic VTF1 Vented Blank Panel
 7. AMX FG2105-04 Controller with AMX FG423-45 Power Supply
 8. AMX FG2258-01K Touch Panel with AMX FG423-45 Power Supply
 9. Biamp 911.0236.900 Microphone / Line Automatic Mixer
 10. Biamp 911.0178.900 DSP (Digital Signal Processor)
 11. Biamp 911.0176.900 DSP Input Card
 12. Biamp 911.0206.900 DSP Output Card

13. TOA DT-930 AM / FM Tuner with TOA MB-15B Rack Kit and Audiovox AF1 AM / FM Amplified Stereo Antenna
14. Tascam CD-200i CD / iPOD Player
15. ProCo Custom 2RU Panel with Four (4) Neutrik Microphone and Four Neutrik (4) 1/4" Auxiliary Inputs
16. Cisco SLM2008 Eight (8) Port Data Switch with Hubbell PCX6BK20 Category 6 Patch Cables

2.3 COMPONENTS

A. Ceiling Speaker:

1. Lowell R1810-72-K

B. Ceiling Speaker Enclosure:

1. Lowell 8XD4-S

C. Ceiling Speaker Enclosure Tile Support:

1. Lowell SS-24

D. Wall Speaker (Surface):

1. Lowell 810-T72

E. Wall Speaker Enclosure (Surface):

1. Lowell CEK-8M

F. Wall Speaker Volume Control (Surface):

1. Lowell 25LVC-RM
2. Volume control is to be mounted inside the wall mount enclosure on the side at the top.

G. Microphone Input Plates:

1. ProCo WP1004
2. TOA PM-20EV
3. ProCo MFRC-50

H. Sound Communications System Cable: (Provide sound communications system cable as listed below or per manufacturer's specifications in regards to conductor size and shielding requirements. All cable to be plenum rated.)

1. Speaker Circuit Cable: West Penn 25226B
2. Antenna Circuit Cable: West Penn Coaxial

PART 3 EXECUTION

3.1 INSTALLATION

- A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturers wiring diagram. The contractor shall furnish all conduit, cable tray, surface raceway, wiring, outlet boxes, junction boxes, cabinets and miscellaneous materials and labor necessary for the complete installation of the system. All wiring shall be of the type recommended by the manufacturer or listed in these specifications. Wiring may be opened wired in cable tray or "J" hooks above drop ceilings. All exposed wiring above 8' from the floor shall be installed in EMT conduit. All exposed wiring below 8' from floor shall be installed in rigid metal conduit. All concealed wiring inside walls is to be installed in EMT conduit. Wiring to be installed in surface raceway where designated on drawings or where the mounting requirements require the device to be surface mount. If the above listed forms of cable routing and support is not available, the contractor is to supply any "J" hooks structural mounted every 5' to support all cable that is part of this system. Cable shall not lie on drop ceiling tiles.
- B. All sound communications system devices are to be installed at a location that is accessible from either the floor or a ladder for service purposes. If any device is installed in a location that is deemed inaccessible by the Architect / Engineer, it will be moved to an accessible location by the contractor at no additional cost to the Owner.
- C. All penetration of floor slabs and firewalls shall be fire stopped in accordance with all federal, state and local fire codes.
- D. All wiring shall be color-coded throughout to National Electrical Code standards.
- E. All conduit ends are to have plastic grommets to protect cable from damage due to sharp edges on the conduit.
- F. All system panels shall be arranged to receive power from one (1) three wire dedicated 120 Vac, 20-amp supply circuit.
- G. Mounting heights and requirements are to be as follows and as defined and required by all applicable codes, standards and manufacturers requirements: (No device shall be inaccessible after construction is complete. The contractor shall supply access panels if this issue arises during construction. Notify the Architect / Engineer if this issue does arise during construction.)
 1. Fixed Equipment Enclosure: Floor mount
 2. AM / FM Antenna: Mount on roof. See antenna mounting detail
 3. Speakers: Mount at height and location as determined by existing rough-in locations.

4. See equipment enclosure elevations on detail sheet for more information on mounting requirements of equipment not listed in this section of the specifications.
- H. All sound communications system equipment shall be mounted with sufficient clearance for observation, servicing and testing. All sound communications system junction boxes must be clearly marked for easy identification by being painted red and labeled with peel and stick labels "SOUND". Flexible connectors shall be used for all devices mounted in suspended lay-in ceiling panels. All conduits, mounting boxes, junction boxes and panels shall be securely hung and fastened with appropriate fittings and connectors to insure positive grounding throughout the entire system.
 - I. No wiring except that of the sound communications system cable is to be installed in the sound communications system conduit. Wiring splices are to be made only in designated sound communications system junction boxes and tagged on both sides of the junction and the junction is to be made on insulated terminal strip. Transposing or changing the color-coding of the sound communications system cable is not permitted. Wire nut connectors are not acceptable. All conductors of the sound communications system cable are to be labeled on each end with Brady or equivalent labels. Hand written labels will not be accepted. Low voltage sound communications system cable and the 120vac power cable for the sound communications system are to be in separate conduits.
 - J. It shall be the responsibility of the Division 16 contractor to wire and connect ancillary devices as listed in the specification to the sound communications system.
 - K. Any sound communications system circuits leaving the building to the outside will be protected by the appropriate transient protection devices as required per the manufacturer to avoid damage to the system if transient surges are inducted on to these circuits (i.e., lighting strikes).
 - L. Sound communications system boxes shall be as recommended by the sound communications equipment manufacturer.
 - M. Contractor to provide in-wall bracing support for all devices that are to be wall mounted to walls that are not masonry block walls. Coordinate with the general contractor.
 - N. All sound communications system devices are to be protected throughout the entire project. All devices are to be kept free of construction dirt and dust during the entire project. The electrical contractor will be responsible for replacing at no additional cost to the Owner any sound communications system devices that are deemed dirty or unsuitable for use by the Owner / Architect / Engineer throughout the entire project including duct mounted smoke detectors.
 - O. Provide any and all required materials and labor to install the sound communications system conduit system in the building complete. Provide the required conduit and back box systems as specified and shown on drawings. A nylon pull string shall be installed in each conduit run. The ends of all conduit and surface raceway system components shall have bushings to prevent damaging wire insulation.

- P. Furnish and install all standard, surface and special back boxes as required.
- Q. Plates shall be per the sound communications system manufacturer's requirements (unless otherwise noted) and the color is to match the color of the interior finishes. Verify color with Architect before installation. Provide blank cover plates as required to cover all unused or abandoned rough-in locations.
- R. All sound communications system conduits and back boxes are to be installed per the requirements of the electrical specifications for compliance with the requirements of the room conditions.
- S. Any locations where flexible metal conduit has to be used it is to terminate to a junction box on both ends and be securely anchored for proper support.

Conduit indications on the plan drawings are a minimum standard. Contractor to provide any and all materials and labor to provide a complete conduit system for the sound communications system.
- T. Speaker circuits are to be run in separate conduits than the other sound communications system cabling.
- U. The contractor is to furnish and install all standard back boxes.
- V. The contractor is to furnish and install all special back boxes.
- W. The contractor is to furnish and install all speaker supports.
- X. The contractor is to furnish and install the required cabling raceway system.
- Y. The contractor is to furnish and install all cable.
- Z. The contractor is to furnish and install all 120Vac circuit as required.
- AA. The contractor is to furnish and install all required grounding as needed per Section 16450.
- BB. The contractor is to furnish and install all required basic materials and methods as needed per Section 16050.
- CC. Provide a 16" x 16" x 4" electrical box with cover panel and plastic grommeted holes behind the equipment enclosure to allow for cable entry into the equipment enclosure. Provide the required quantity of 2" conduits from the back box up through the wall and out to the cable tray for routing of sound communications cable in to the equipment enclosure.

3.2 FIELD QUALITY CONTROL

- A. The system shall be installed and fully tested as listed in these specifications. The system shall be demonstrated to perform all features and functions as listed in these specifications.

3.3 TESTING

- A. Reports of any field-testing during the system installation shall be forwarded to the Architect / Engineer. Provide a complete system test after the system is installed and operating.
- B. Each individual system operation on a circuit-by-circuit basis shall be tested for its complete operation. Any existing devices that are connected to the system will be tested as well with locations and address / circuit numbers being documented on the as-built drawings as well as the wiring configuration of the existing device circuits. Existing device locations will be field verified by the installation contractor and is to include any costs in his bid that is relating to the existing devices being connected to the system. The procedure for testing the entire system shall be set forth in these specifications and with the consent and approval of the Architect / Engineer, Owner and equipment manufacturer.
- C. Perform the tests and adjustments necessary to assure the satisfactory quality and level of performance of the system under normal operating conditions.
- D. Establish the normal settings for all controls and devices for all system operational and functional features and record the same for future reference. All levels shall be set and recorded in as-built documentation for optimum system performance.
- E. The installation technician from the installer / manufacturer shall perform all system tests as specified. Perform all tests in the presence of the Owner, Architect / Engineer and any designated personnel as deemed necessary by the Owner or Architect / Engineer. This test must be performed with the devices at their operational location and under normal operational conditions in the area the device is to be located. Bench or default settings for devices are not acceptable. All test and report costs are to be included in bid. A checkout report will be generated by the installation technician and submitted in triplicate with one copy going to the equipment manufacturer. The report shall include but not be limited to the following:
 - 1. A complete list of all equipment installed with their corresponding serial numbers.
 - 2. Indication that all equipment is properly installed and functions and conforms to these specifications.
 - 3. Serial numbers, locations by device and model number for each installed device.
 - 4. Technicians name, specified certification credentials and date of system test.
- F. A substantial completion test will be performed before the final test and acceptance of the system by the Owner and Architect / Engineer. At the time of the substantial completion system test provide to the Owner or his representative an oral explanation of the operation and maintenance of the system. Before starting the tests

and adjustments listed above, the contractor shall submit the following to the Owner and the Architect / Engineer for review during the substantial completion test:

1. Preliminary as-built wiring diagrams of the original submittal drawings showing all panel interconnect with the wire labeling scheme as the cables were labeled during the installation.
 2. Preliminary copy of the operation and maintenance manuals.
 3. Preliminary copy of the system test report form.
- G. If there are no problems that arise during the substantial completion test that need to be repaired by the installation contractor, this can be approved as the final system test by the Owner and or Architect / Engineer. If there is problems that arise that do need to be repaired, another complete and comprehensive test will be scheduled and performed to show that the necessary repairs have been properly made. These tests will be performed at no cost to the Owner until a time that the system is shown to be in complete operating condition.

3.4 DOCUMENTATION AND TRAINING

- A. After the final system test and the Owner and Architect / Engineer has accepted the system to be in the proper operating condition, the contractor shall compile and provide to the Owner three (3) complete operation and maintenance manuals on the completed system to include the but not be limited to the following:
1. Operating and maintenance instruction sheets showing the proper operation and maintenance of the system as well as each component or device of the system.
 2. Individual factory issued operation and maintenance catalog brochures of all equipment and components that were installed as part of the system. Advertising brochures, submittal data sheets and operational materials are to also be included but shall not be used in lieu of the required technical manuals.
 3. Complete as-built wiring diagrams and floor plan drawings of the complete system installation showing how the system was installed. These drawings are to include any existing devices that are connected to the system with their address / circuit number documented as well. These as built will be an updated and revised copy of the submittal drawings showing all modifications made during the installation process. A copy of the as-built drawings in electronic format on CD-rom generated in AutoCAD Release 2011 or higher will be forwarded on to the Owner and Architect / Engineer for archiving in the operation and maintenance manuals.
 4. A statement of guarantee including the date of the termination of the warranty as well as the phone number of the person to be called in the event of equipment failure.
 5. A cover letter, for the above mentioned tests, certifying the entire system and its components, application and installation meets or exceeds the recommendations of the manufacturer, all applicable code requirements and test specifications.
- B. The final and installed version of the system software will be provided to the Owner on a CD-rom for storage in the operation and maintenance manuals. These manuals shall be used for final checking of the system.

END OF SECTION 16731

AIR COOLED CHILLER SCHEDULE

NO.	TONS	AMBIENT AIR TEMP (°F)	EVAPORATOR				COMPRESSOR DATA					STARTERS		NOTES	MANUFACTURER & MODEL NO.	
			E.W.T.	L.W.T.	GPM	WPD	NO.	MCA	RLA	MOC	VOLTS	φ	PROVIDED BY			MOUNTED AT
CH-1	70	95	54	44	282	12.6'	2	523	493	600	208	3	MFG.	UNIT	1,2	CLIMACOO UCR070A-H ASACM05
CH-2	70	95	54	44	282	12.6'	2	523	493	600	208	3	MFG.	UNIT	1,2	CLIMACOO UCR070A-H ASACM05

NOTES:

1. UNIT MOUNTED CONTROL PANEL BY MANUFACTURER.
2. DISCONNECTS PROVIDED BY MANUFACTURER.

PROJECT: **RENOVATIONS TO THE GIRLS DORMITORY
PHASE III**

PROJECT NO: **04057**

DATE: **10-28-2010**

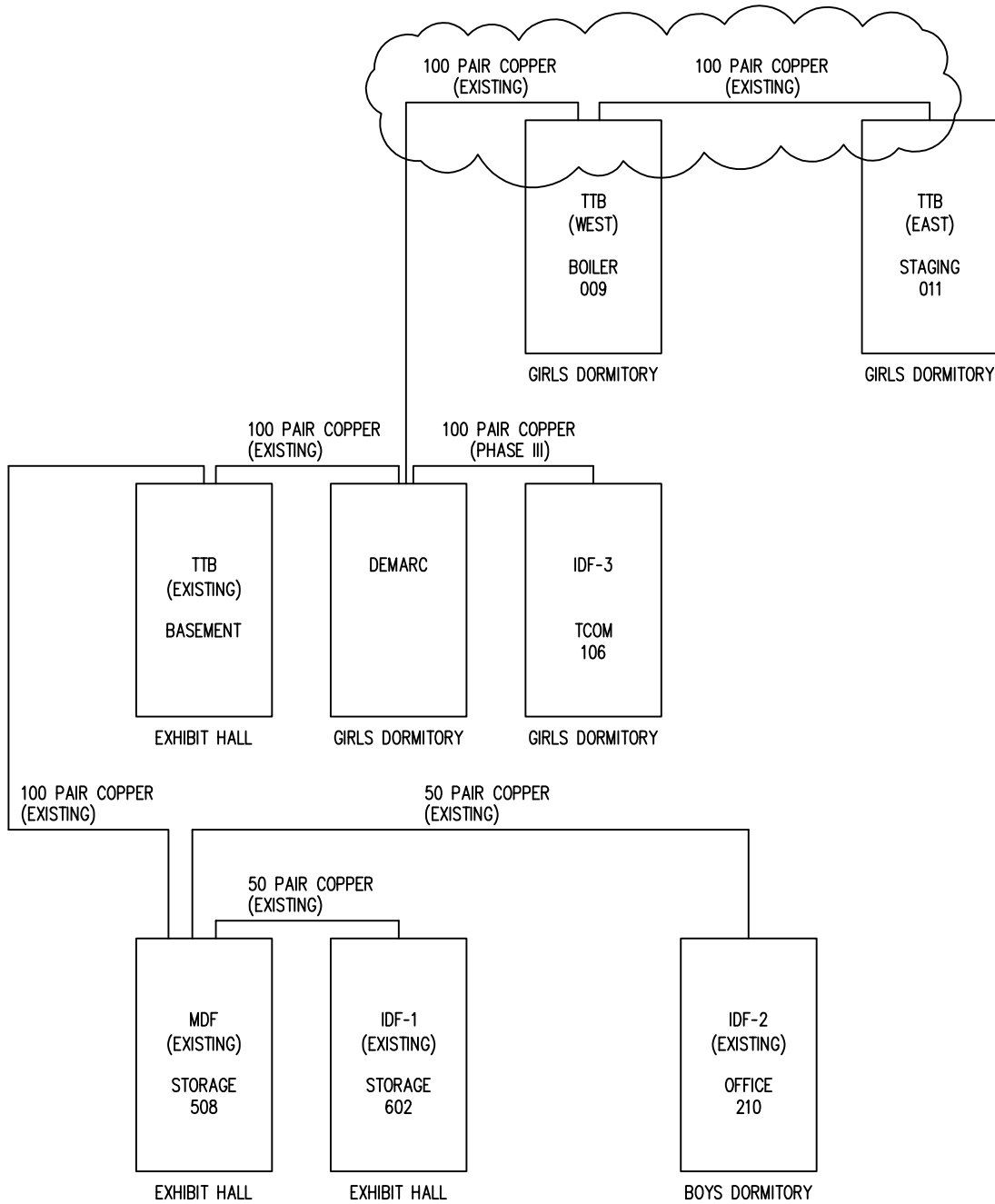
DRAWING NO: **ADD.4-M1**

REFER TO DWG: **M301**

DRAWN BY: **GJS**

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VOICE CABLE BACKBONE RISER DIAGRAM DETAIL

3

SCALE: N.T.S.

PROJECT: **RENOVATIONS TO THE GIRLS DORMITORY
PHASE III**

PROJECT NO: **04057**

DATE: **10-28-2010**

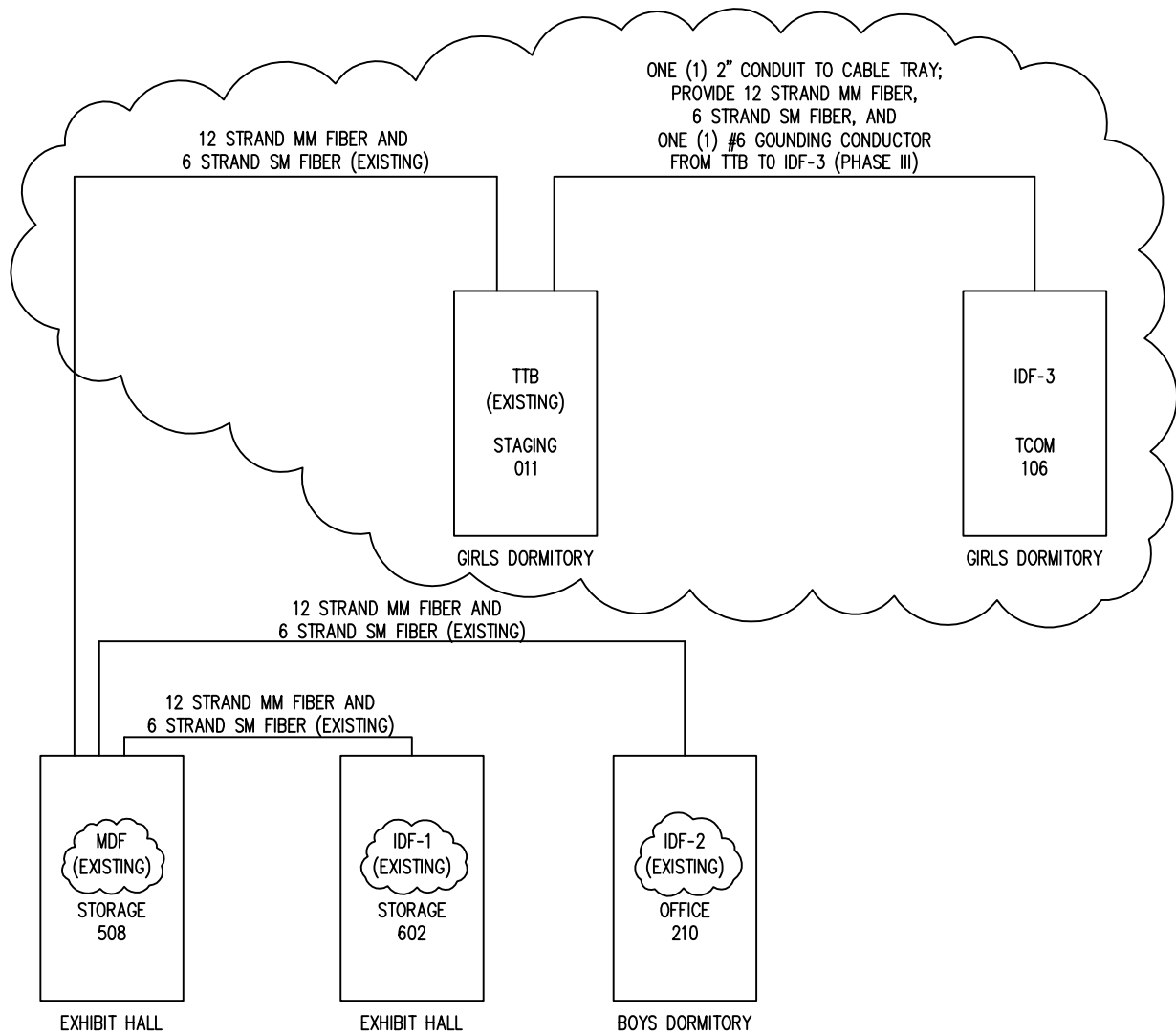
DRAWING NO: **ADD.4-E1**

REFER TO DWG: **E501**

DRAWN BY: **GJS**

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FIBER OPTIC CABLE BACKBONE RISER DIAGRAM DETAIL

SCALE: N.T.S.

4

PROJECT: **RENOVATIONS TO THE GIRLS DORMITORY
PHASE III**

PROJECT NO: **04057**
DATE: **10-28-2010**
DRAWING NO: **ADD.4-E2**
REFER TO DWG: **E501**
DRAWN BY: **GJS**

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