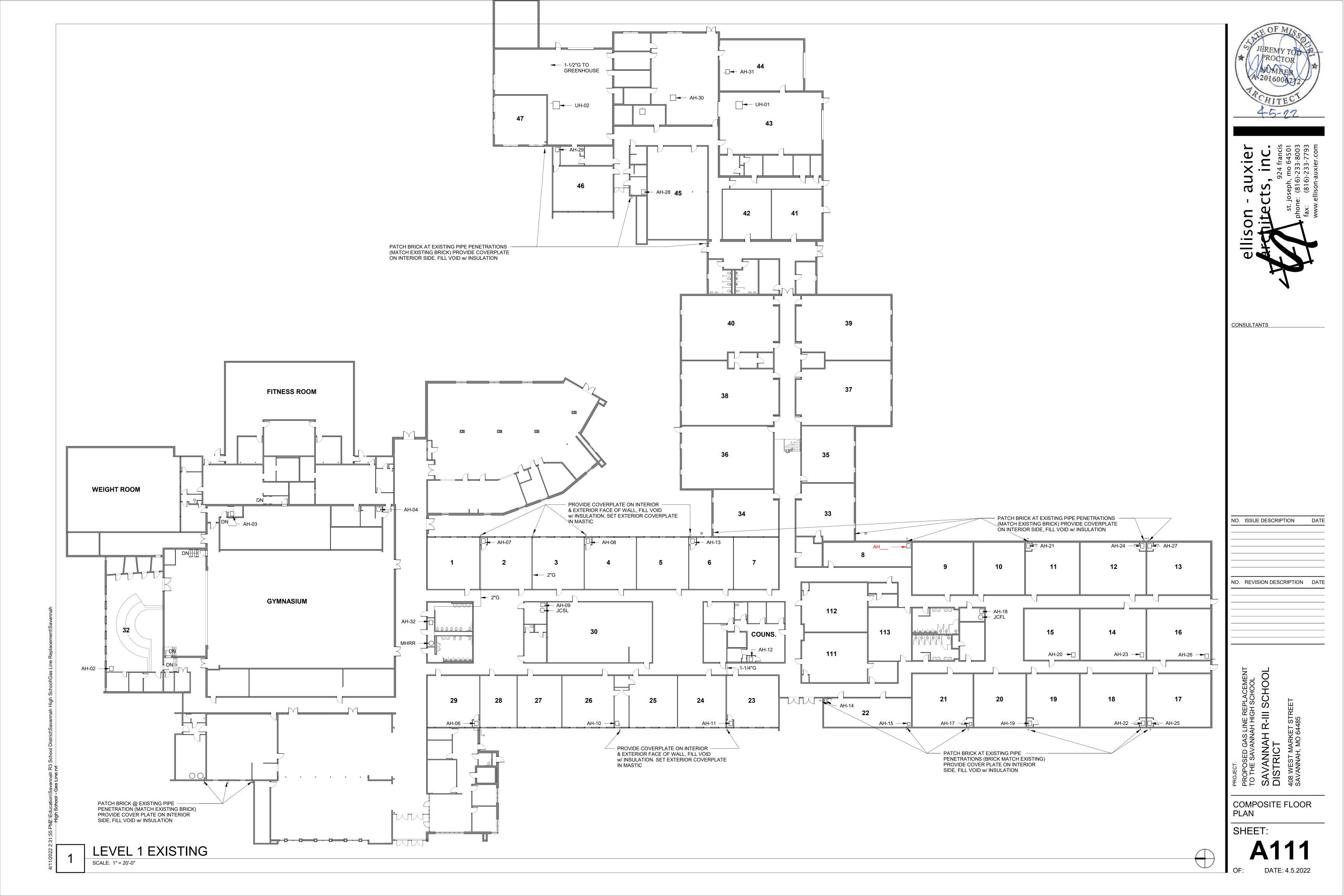
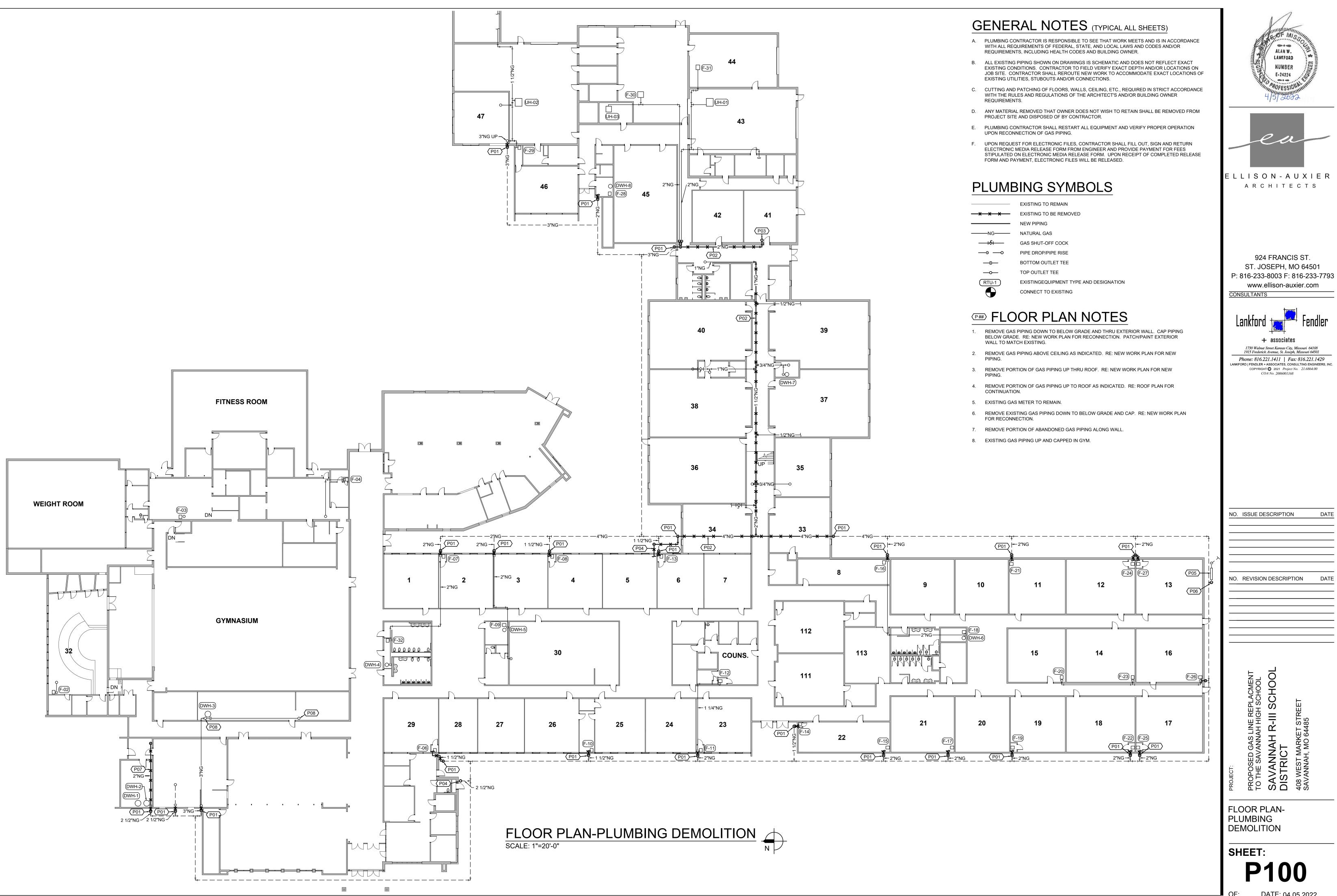
# SAVANNAH R-111 SCHOOL DISTRICT

PROPOSED GAS LINE REPLACEMENT TO THE SAVANNAH HIGH SCHOOL

4.5.2022

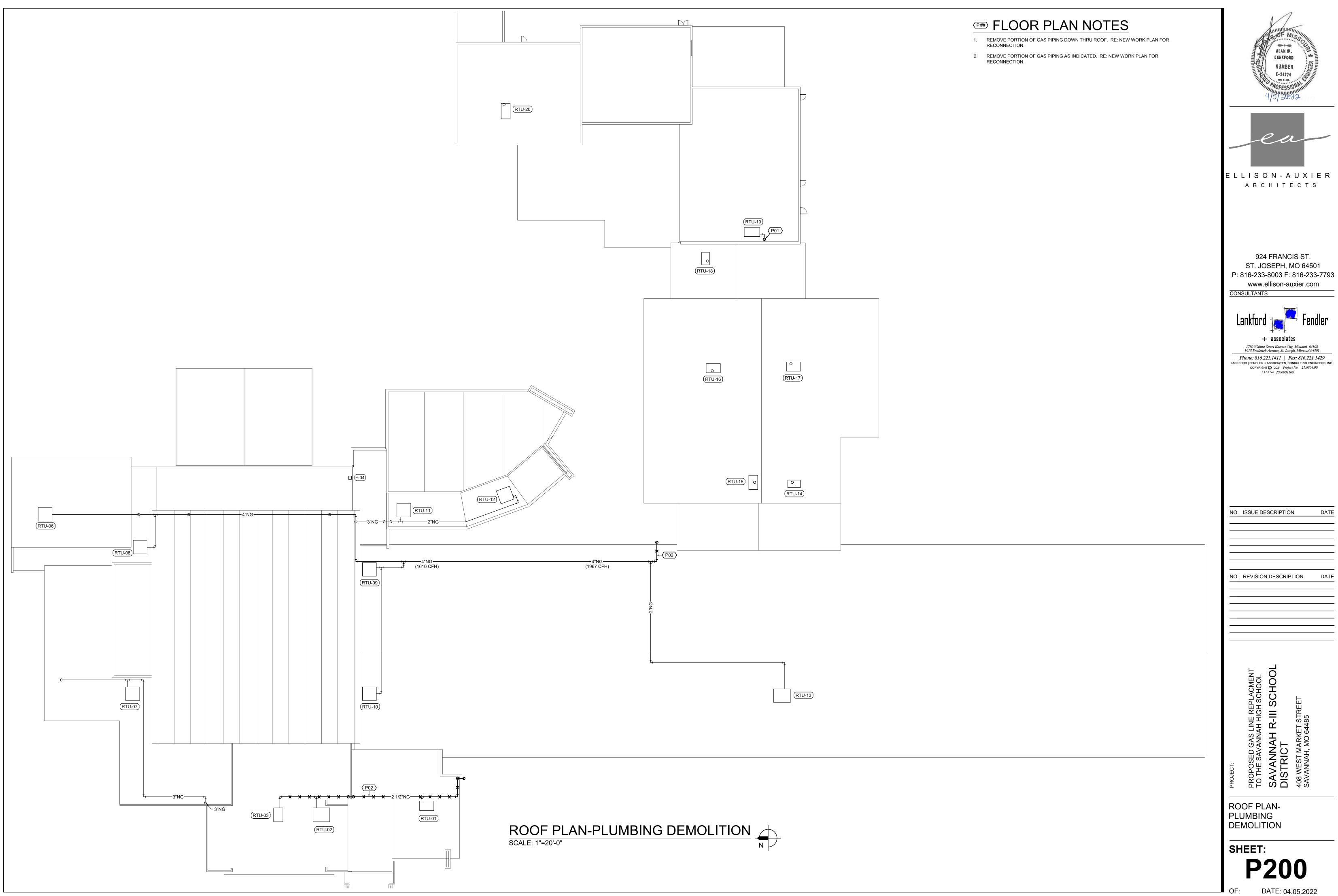
LIST OF DRAWING	
SHEET NUMBER	SHEET NAME
01 GENERAL	
G000	COVER SHEET
03 ARCHITECTURAL	
A111	COMPOSITE FLOOR PLAN
07 PLUMBING	
P100	FLOOR PLAN - PLMBING DEMOLTION
P200	ROOF PLAN - PLUMBING DEMOLITION
P300	FLOOR PLAN - PLUMBING NEW WORK
P400	ROOF PLAN - PLUMBING NEW WORK
P500	SPECIFICATIONS AND DETAILS





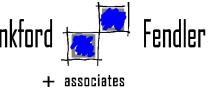




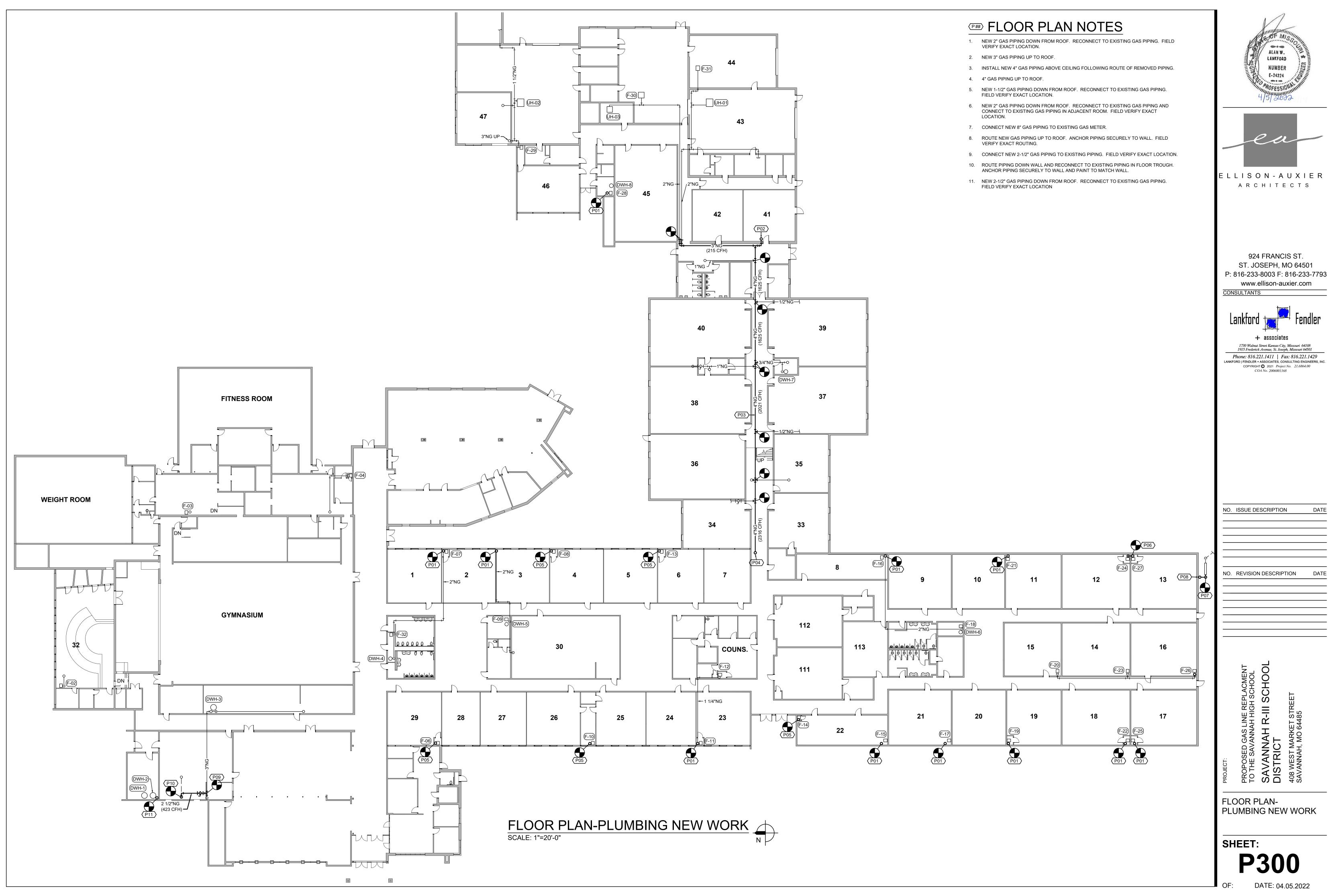




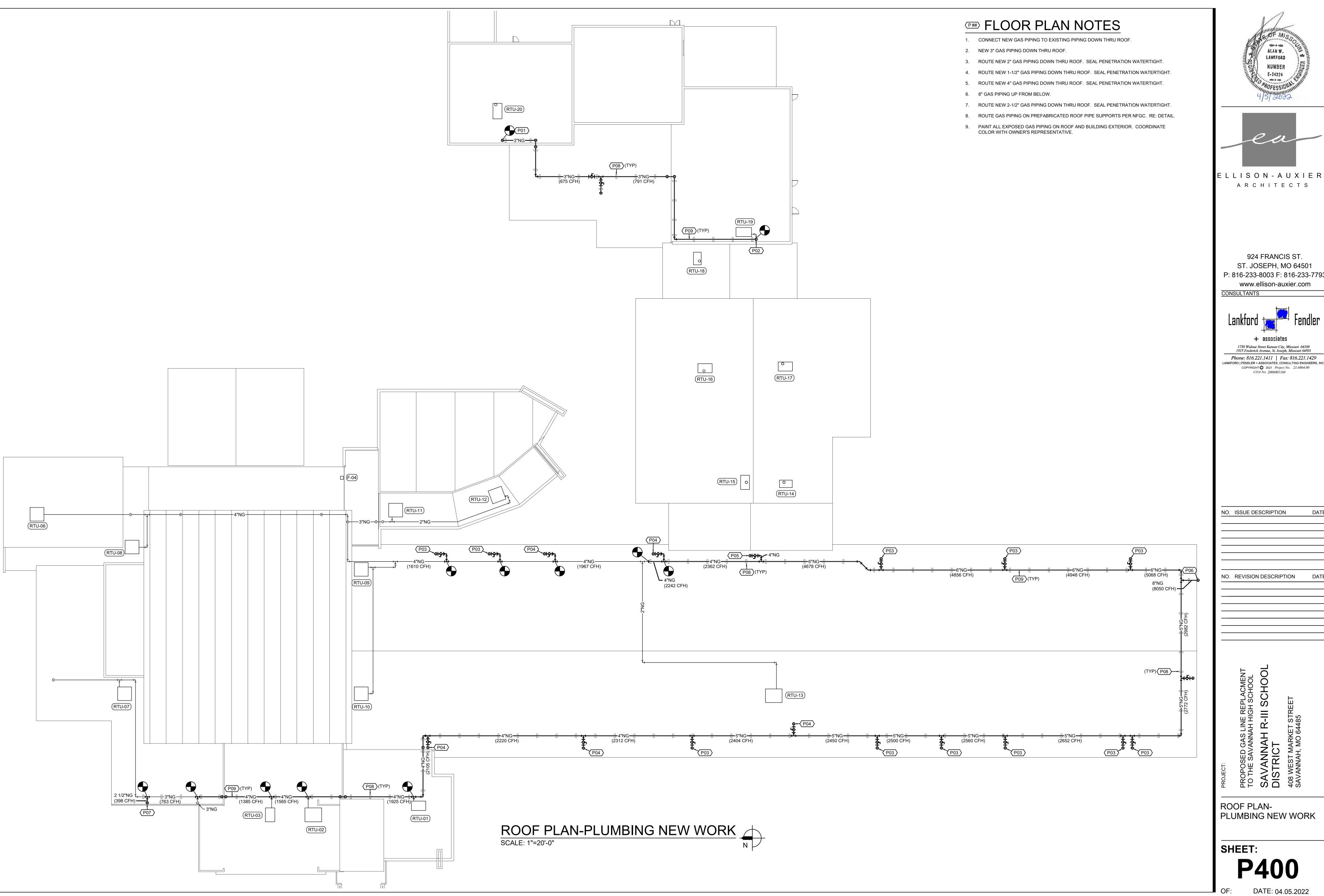
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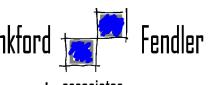
P: 816-233-8003 F: 816-233-7793





ARCHITECTS

924 FRANCIS ST. ST. JOSEPH, MO 64501 P: 816-233-8003 F: 816-233-7793 www.ellison-auxier.com



1730 Walnut Street Kansas City, Missouri 64108 1915 Frederick Avenue, St. Joseph, Missouri 64501 Phone: 816.221.1411 | Fax: 816.221.1429 LANKFORD | FENDLER + ASSOCIATES, CONSULTING ENGINEERS, INC. COPYRIGHT (2021 Project No. 21.6864.00

NO. REVISION DESCRIPTION

ROOF PLAN-PLUMBING NEW WORK

#### PLUMBING GENERAL PROVISIONS

- 1.0 DESCRIPTION:
- A. Divisions shall be governed by all applicable provisions of the Contract Document.
- B. The Plumbing Contractor shall furnish, install and connect all materials, equipment, apparatuses, and incidentals required for a complete and working installation. For all systems shown and required, the Plumbing Contractor shall supply all necessary labor, equipment, tools, insurance, and tax services, and shall assume full responsibility for all obligations associated with completion of work as provided by the Contract Documents.
- 2.0 STANDARDS, REGULATIONS AND CODES:
- A Work shall comply with the edition of the applicable standards, regulations and codes currently in force of all Federal, State and local authorities having jurisdiction. Where quantities, sizes, or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications and/or drawings shall govern. In the absence of other applicable local codes, acceptable to the Architect/Engineer, the International Set of Codes shall apply to this work.
- B. The Plumbing Contractor shall comply with rules and regulations of public utilities and municipal departments affected by connections of services. The Plumbing Contractor shall pay all fees associated there with.
- C. The Plumbing Contractor shall be licensed to perform associated work in the municipality in which the project
- D. All products and types of construction shall meet or exceed the latest edition of applicable standards of
- manufacturer, testing, performance and installation
- E. Where indicated or required, comply with all provisions of the ADA and/or the ABA Accessibility Guidelines.

F. Where indicated or required, comply with all applicable provisions of energy and ventilation codes in force at

- the local jurisdiction.
- 3.0 GRAPHIC REPRESENTATION AND JOB CONDITIONS:
- A. The Contract Documents shall serve as working drawings for the general layout of the various items of equipment; are diagrammatic unless specifically dimensioned, and do not necessarily indicate every required item. The Plumbing Contractor shall include all necessary components and accessories as required for a complete working system whether so specifically indicated or not.
- B. Arrange work in a neat, well organized manner. Coordinate work with other trades involved, prior to commencing work. Sub-contractors shall work together to resolve any conflicts of space or routing. 4.0 GUARANTEES/WARRANTY:
- A. The Plumbing Contractor shall guarantee/warranty all work performed, including labor, materials and equipment furnished under this contract, against defects in materials and workmanship for a minimum period of one year from the date of the Owner's Representative Final Acceptance of the work. Provide extended warranties as noted in each section or specified for specific products.

#### 5.0 WORKMANSHIP:

- A. All work performed under this Contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Owner's Representative. The complete installation shall function as designed and intended with respect to efficiency, capacity, and noise level, etc.
- 6.0 LOCAL CONDITIONS:
- A. The Plumbing Contractor shall carefully examine and become thoroughly familiar with local conditions, existing installations and all other conditions which may affect associated work. The Plumbing Contractor shall locate all existing utilities and protect them during the execution of the work
- B. The Plumbing Contractor shall carefully examine all contract documents including project drawings and specifications to become familiar with the type of construction, materials, and equipment to be used for all work and how it will affect the installation of this contract.
- C. By the act of submitting a bid, the Plumbing Contractor will be deemed to have made such examination, to have accepted such conditions, to have made allowance therefore, and included all costs in his proposal. Failure to determine existing conditions will not be considered a basis for the granting of additional

## 7.0 OPERATION DURING CONSTRUCTION:

- A. The Plumbing Contractor is responsible for the installation and operation, service and maintenance of all new equipment during construction and prior to acceptance by the Owner of the completed project. Warranty periods shall not commence until final acceptance by the Owner or Owner Representative.
- B. The Plumbing Contractor shall provide, at his own expense, all temporary utilities required to provide for and protect the work and as necessary to maintain an adequate work force unless use of existing facilities is specifically permitted.
- 8.0 SAFETY REGULATIONS:
- A. All work shall be performed in compliance with all applicable governing safety regulations, including OSHA regulations. Provide safety lights, guards and signs required.

- 9.0 HOUSEKEEPING: A. The Plumbing Contractor shall be responsible for keeping stocks of material and equipment stored on the premises in a neat and orderly manner.
- B. The Plumbing Contractor shall clean and maintain their specific portions of the work on a daily basis or as specified in the General Conditions.
- C. The Plumbing Contractor shall remove from the premises all waste material present as a result of his work.
- 10.0 CONNECTION AND ALTERATION TO EXISTING SYSTEMS:
- A. Connection to the existing building systems must be accomplished under this contract. System "downtime" due to connection shall be kept to an absolute minimum. The Owner's Representative shall judge if at what time,
- and for what length of time a shut-down can be tolerated. B. Demolition, cutting and patching to restore surfaces to original condition as necessitated for access to work performed by the Plumbing Contractor or his subcontractors shall be the responsibility of the Plumbing

# 11.0 SUBSTITUTIONS:

- A. Materials, products and equipment described in the Bidding Documents established a standard of quality to be met by any proposed substitution.
- B. Plumbing Contractor's bids shall be based on the material identified or specified in the contract documents. Any proposals for substitution shall be made in writing to the Architect/Engineer with all supporting documentation, allowing adequate time for appropriate action. The products of other manufacturers may be accepted, if in the opinion of the Architect/Engineer, the substitute material is of quality as good or better than the material specified, and will serve with equal efficiency and dependability the purpose for which the items specified were intended. The burden of proof of equality is entirely upon the proposer.
- C. Refer to Division 1 requirements for additional substitution procedures.
- D. Wherever substitutions alter the design or space requirements, the Plumbing Contractor shall be responsible for confirming all substituted equipment and materials fit within the allocated space while maintaining code required access and clearance. He shall include all associated cost items of the revised design and of construction work required by his or other trades affected by the proposed substitution.

# 12.0 SHOP DRAWINGS AND PRODUCT DATA:

- A. The checking of shop drawings is a gratuitous assistance and in no way relieves the Plumbing Contractor of responsibility for deviations from the Contract Documents. The Contractor shall submit project shop drawings electronically in PDF format, unless indicated otherwise.
- B. Shop drawings and catalog data on all major items of equipment and apparatus, and such other illustrative materials as may be considered necessary by the Owner's Representative shall be submitted by the Plumbing Contractor in adequate time to prevent delay and changes during construction.
- C. Refer to Architectural Documents for additional shop drawing submission procedures.
- 13.0 PROJECT CLOSEOUT DOCUMENTATION
- A. Operating and Maintenance Brochure:
- 1. On completion of the project, the Plumbing Contractor shall provide project manuals electronically (PDF format unless otherwise instructed) containing complete product information for all installed or provided equipment and components including cut sheets, parts lists, wiring and installation diagrams, operating, service and lubrication instructions. Provide manufacturer guarantee and warranty certificates.
- B. Record Drawings:
- 1. On completion of the project, the Plumbing Contractor shall provide record drawings with all field changes clearly and neatly noted. The original routing and layout shall be clearly marked out. References to other documents, drawings, addenda, RFI's or otherwise for additional information shall not be accepted.
- 2. The Plumbing Contractor shall submit record drawings electronically in PDF format (unless otherwise

# 14.0 SITE WORK AND CONDITIONS:

- A. The Plumbing Contractor shall do all necessary excavating and backfilling for the installation of associated work. After the piping has been installed, tested and approved, the trenches shall be backfilled to grade with compacted sand, gravel or AB-3 material or other material as required by local authorities. Compact to 85% density for unpaved areas, 95% density for paved area or under slabs.
- B. Roads, alleys, street, sidewalks and utilities damaged during this work shall be restored to the satisfaction of Owner's Representative and authorities having jurisdiction.
- C. Where subsidence is measurable or observable at excavation during general project warranty period, remove surface, add backfill material, compact, and replace surface treatment. Restore appearance of surface to match adjacent work.

## 15.0 HANGERS AND SUPPORTS:

- A. All hangers, brackets, clamps, etc., shall be of standard weight steel. Perforated strap hangers shall not be used in any work. When two (2) or more pipes are run parallel, or where ducts interfere with the proper location of hangers, they may be supported on trapeze hangers. Other hangers shall be hinged ring malleable iron, by Grinnell or Fee and Mason or approved equal with rods and hanger adjusters for adequate size to carry the loads imposed. All piping systems shall each be independently supported from other systems and from equipment so that no weight is born by equipment.
- B. The Plumbing Contractor shall take all precautions against excessive noise or vibration by isolating the various items of equipment from the building structure. Provide flexible connectors where indicated and at all rotating equipment and for equipment mounted on vibration isolators.

#### 16.0 CUTTING AND PATCHING:

A. All necessary cutting, drilling and patching shall be provided by this Plumbing Contractor. Structural members shall not be disturbed without prior approval of the Structural Engineer and/or the Owner's Representative. All areas and surfaces disturbed by work performed under this Contract shall be neatly repaired and refinished to the condition of adjoining surfaces in a manner suitable to the Owner's Representative.

## 17.0 SLEEVES AND ESCUTCHEONS:

- A. Where not otherwise shown, penetrations shall conform to the following:
- 1. Where pipes or conduits pass through interior partitions, galvanized steel pipe sleeves or galvanized steel sheet sleeves shall be used
- 2. Where pipes or conduits pass thru concrete floors and walls, or exterior walls and slabs on grade, cast iron or steel pipe sleeves shall be used.
- B. Sleeves through interior non-rated walls, including walls indicated as sound partitions, shall be packed with fiberglass or mineral wool and caulked
- C. Penetrations of fire rated construction shall be made with a UL listed fire penetration assembly suitable for the rating at each location. Where required, sleeves through fire rated structure shall be fire barrier caulked with putty strip or sheet by 3M, Hilti or acceptable equivalent.
- D. Provide steel (dry locations) or brass (damp locations) escutcheons to completely cover pipe penetration holes in floors, walls, or ceilings. Provide pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas, brass for exterior.

#### **END OF SECTION**

#### PLUMBING

A. The work included under this contract consists of providing all labor, materials, tools, transportation, services, etc., necessary to complete the installation and to provide complete working systems of the Plumbing Systems, including hot and cold water, waste and vent, storm drainage, fixtures, equipment and other items described in these specifications, as illustrated in the accompanying drawings or as directed by the Architect/Engineer.

## A. Natural Gas --

- Pipe above ground:
- a. 2" and smaller Schedule 40 black steel piping with threaded fittings.
- b. 2-1/2" and larger Schedule 40 black steel piping with welded fittings.
- 2. Valves & Connectors:
- a. Shutoff Service -
- 1) 1/2" thru 1" Nibco GB-1A, brass body, chrome plated brass ball, PTFE seats, screwed ends, 5 PSIG per CGA, lever handle.
- 2) 1/2" thru 2" Nordstrom 142, iron lubricated tapered plug valve, 200 PSIG, threaded ends.
- 3) 2" thru 5" Nordstrum 143, iron lubricated tapered plug valve, 200 PSIG, flanged ends.
- b. Connections to each piece of equipment or appliances shall be made with gas cock, dirt leg and
- union. Appliance connections may be made with UL listed appliance connectors with union ends. c. Flex Connectors, Metraflex GASCT 300 series stainless steel braided hose with carbon steel
- 3. Natural gas piping in return air plenum, where permitted shall be either installed in vented fabricated
- enclosure; sleeved and vented; or welded or one piece. 4. Paint exterior natural gas piping with corrosion inhibiting paint, color to be selected.
- 2.0 SLEEVES AND SEALS, FLASHINGS, ROOF PIPE SUPPORTS AND UV PROTECTION:
- A. Flash all pipes extending through roof. Flashing details shall be in accordance with roof manufacturer's
- B. Continuous roof piping penetrations shall be made weather tight, conform to roof manufacturer warranty
- C. Roof pipe supports shall be prefabricated with UV resistant rubber base, unistrut channel and pipe clamp, length and height for consistent pipe elevation to suit application. Mi-Fab C6 series or acceptable equal.
- D. Provide sleeves where piping penetrations are required thru partitions, concrete floors, concrete slabs on grade or foundation walls. Where penetrations are through fire rated assemblies, sleeves shall be fire stopped in accordance with UL listing requirements. Sleeves shall be galvanized steel pipe, sheet steel or cast iron. Sleeves are not required for core drilled penetrations of existing concrete slabs above grade. Penetrations of below grade structures and slabs on grade shall be water proofed with mechanical link seal system, Thunder
- E. Plastic piping without UV inhibiters which is exposed to UV radiation from sunlight shall be protected by
- coating with a UV resistant paint. 3.0 PIPE SUPPORTS AND ROUTING:

# A. Hangers and Supports.

- 1. Piping shall be supported in accordance with industry standards including support methods, sizes and spacing. All supports and installation shall conform to MSS SP58 and 69 and Fed Spec WW-H-171E and A-A-1192A.
- 2. Deflection: Maximum pipe deflections and stresses as allowed by ANSI B31 are not exceeded.

attachments at required locations for proper piping support.

screws or rivets suitable for application

- 3. Each piping system shall be independently supported with no piping bearing on another and installed such that no weight of piping is borne by the equipment.
- 4. Space hangers and supports within maximum piping span length indicated in MSS SP-58. Install building
- 5. Provide adjustable hangers, inserts, brackets, rolls, clamps, channels, rods, guides, anchors, flexible connectors, supplementary steel, etc., as required for proper support of all pipe lines. Trapeze may be used for support of multiple pipes. Provide accompanying attachments including bolts and nuts, sheetmetal
- 6. Provide copper plated, plastic coated or felt lined hangers where required to prevent electrolysis or abrasion on copper or plastic piping systems.
- 7. Upper attachments shall be manufactured items specific to the applicable structure. Include concrete inserts, wedge type drilled in inserts, steel beam and joist clamps, plates, rods, clips, straps and brackets
- 8. Hangers shall be designed to allow for expansion and contraction of pipe lines and shall be of adequate size to permit covering when required. Provide protective saddles and blocking where supporting insulated piping to prevent crushing insulation.
- 9. All hanger and support parts shall be galvanized steel for non-corrosive environments or stainless steel for corrosive or damp environments

1. Piping shall be routed as shown on drawings, parallel to building lines unless otherwise shown, coordinated with building structure and other trades. Adjust pipe routing and drop locations with necessary pipe offsets or changes in elevation to accommodate beams and other obstructions.

exterior or moist areas shall be brass.

A. Pipe labels for gas piping shall be preprinted, color-coded, with 1-1/2" lettering indicating service, and showing flow direction, locate pipe labels where piping is exposed or above accessible ceilings in finished spaces.

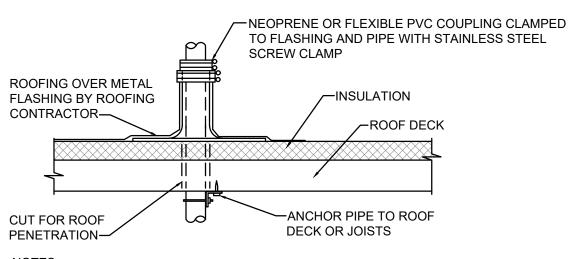
brass in occupied areas, prime paint finish for unoccupied areas unless otherwise noted. Escutcheons for

A. Provide escutcheons at all penetrations of exposed walls and ceilings. Escutcheons shall be chrome plated

# 6.0 PROTECTION OF WORK

- A. Protection
- 1. Protect and cover piping and fixture waste and water openings to prevent entry of dirt and debris.
- 2. Cover and protect fixtures and plumbing equipment to prevent damage
- 7.0 TEST, ADJUSTMENTS AND CLEANING:
- 1. Natural gas lines shall be inspected and blown out with dry compressed air or nitrogen to purge of debris and tested at 1-1/2 times the operating pressure or a minimum of 25 PSIG pressure with no measurable pressure drop. All test procedures including duration of test shall be in accordance with NFPA 54 and the International Fuel Gas Code.
- 2. For renovation projects, isolate and protect equipment from over pressurization during testing.
- B. Contractor to submit all test data and other documentation for record.

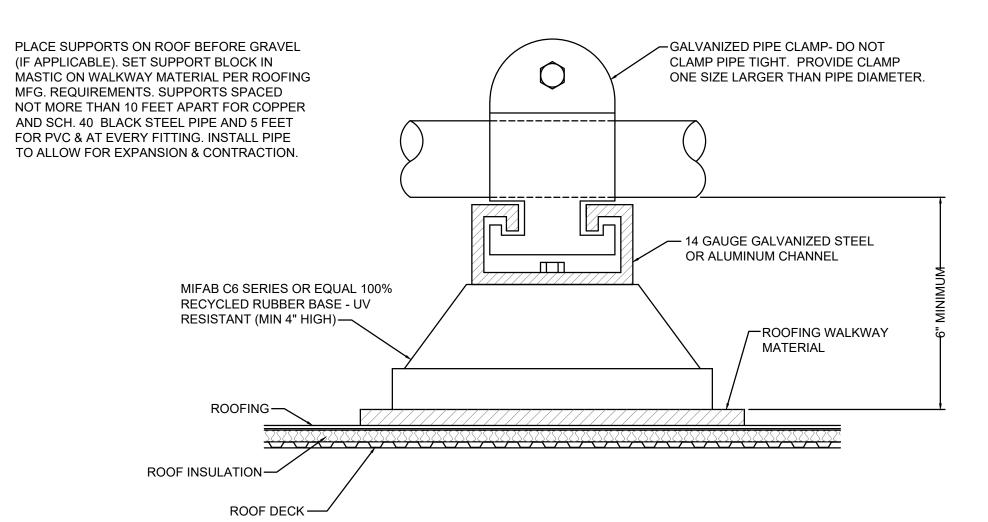
### END OF SECTION



REFER TO PLANS FOR PIPE SIZE(S) AND LOCATION(S). LOCATE PENETRATION MINIMUM 18" FROM ADJACENT WALLS OR ANY EQUIPMENT CURBS, PARAPETS, EXPANSION JOINTS, ETC

- 2. VERIFY FLASHING AND COUNTERFLASHING WITH ROOF MFG. COMPLY WITH ROOF WARRANTY REQUIREMENTS.
- 3. FLASHING AND COUNTER FLASHING IS BY ROOFING CONTRACTOR. PLUMBING CONTRACTOR SHALL COORDINATE INSTALLATION.

# SINGLE PIPE ROOF PENETRATION DETAIL NO SCALE



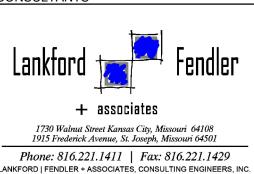
PREFAB ROOF PIPE SUPPORT DETAIL





ARCHITECTS

924 FRANCIS ST. ST. JOSEPH, MO 64501 P: 816-233-8003 F: 816-233-7793 www.ellison-auxier.com CONSULTANTS



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COA No. 2006001168

NO. ISSUE DESCRIPTION

NO. REVISION DESCRIPTION

NNAH

**ROOF PLAN-**PLUMBING NEW WORK

SHEET: