BURRIS/WAGNON ARCHITECTS, P.A.
500L EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374

1 March 2021

ADDENDUM NO. 3

Re: **GS# 332-046**
Firing Range Improvements (Multipurpose Building)
Law Enforcement Officers Training Academy
(Department of Public Safety)
Pearl, Mississippi

Bid Date: Thursday, March 4, 2021 (2:00 P.M.)

NOTICE TO ALL DOCUMENT HOLDERS:

The following additions, changes, and clarifications to the Specifications for the subject project are to be included as part of the Contract Documents, and thus amend the Scope of Work:

GENERAL

Item No. 1: A PRE-BID CONFERENCE was held on WEDNESDAY, February 24, 2021, 2:00 P.M., at the Mississippi Law Enforcement Officers Training Academy, Pearl, Mississippi. See attached Memorandum (Exhibit "A"), Attendance List, (Exhibit "B"), and other items discussed and clarified below.

A. The Architect discussed bid date, time, and location. If sending Bid by FedEx, bid must be received by the advertised Bid Time of 2:00 PM. The Architect noted that in Section 00 2100 Instructions to Bidders, and noted that Contractors shall thoroughly review the entire Section 00 2100, including Bidder's Checklist and all other bidding requirements at Section 00 2100 Instructions to Bidders, (including, but not limited to the following):

1. The Bureau of Building is the Owner for this Project. The Contract will be between the Bureau and the Contractor.
2. Any modifications to Bid must be made prior to the scheduled Bid time by writing on the outside of the sealed envelope containing the Bid (see Section 00 2100/3.02).
3. Bid Bonds must also have Power of Attorney attached. Bond is not required if a certified check is used instead. Bid Security is 5%. See Section 00 2100/2.08.
4. Written words supersede numbers written on Proposal Form.
5. Bidder must acknowledge all addenda on the Proposal Form. Bidder must sign proposal form.
6. Out-of-State Contractors shall include their state's reciprocating law in bid envelope, OR a letter stating the Contractor's state has no resident Contractor preference law (**see Section 00 2100/1.03**).
7. Bidders have 24 hours to review bids and report any problems or irregularities, and also to protest bids (see Section 00 2100/4.03, 4.04).
8. There are no Davis-Bacon requirements on this Project.
9. Bids may be submitted electronically -- Memorandum regarding electronic bidding is attached hereto as Exhibit "A". (Bidder must pre-register in Magic). It was suggested that, if electronic bids are to be submitted, they be submitted in time to assure that technical problems are resolved. The Bidder should be sure to

correctly save and submit his bid.

B. All questions shall be sent directly to the Professional. It was noted that all Addenda shall be a part of the Contract, and there shall be no addenda issued within 48 hours of the Bid: last addendum **must be released by 5:00 PM, CST, Monday, March 1, 2020**: please send all questions for clarification to Professional before this date/time. Any Bid protests shall be sent directly to the Bureau of Building, Grounds, and Real Property Management within 24 hours of the Bid. Contractor: please note on the last page of the Proposal Form, page 8, in the Mechanical/Electrical Contractors section, that the blanks MUST BE FILLED IN, even if with a "N/A".

C. Architect discussed Contract Time and the Proposal Form, including the fact that all relevant subcontractor blanks must be filled in. It was noted that Unit Prices described at Drawings, Sht. TS, must be filled in on proposal form.

D. Architect pointed out the Base Bid Assumptions (Sht. TS) that *shall be included in the Base Bid.* It was discussed that these Assumptions are in addition to the quantities already shown, or specified, by the Drawings.

E. Architect discussed the overall planning and specification concepts of the Project, with key issues to be explored further in the Documents by the Contractor.

F. Bidder will be able to attend the opening, or as an option, via conference call-in phone number. Phone number and access code will be given closer to bid time.

G. Certified bid Tabulations will be posted on the Department of Finance and Administration's Bureau of Building, Grounds, and Real Property Management Website as soon as available following the bid opening.

H. Mailed bids and those delivered prior to bid date will be received at 501 North West Street, Suite 1401B (Woolfolk Building) Jackson, MS 39201 as usual.

Item No. 2: All communications conduit must be a minimum of 1" in diameter.

SPECIFICATIONS

Item No. 1: **Refer to Section 08 71 00** and add new hardware set "13.0" (for new door "18" as described below) as follows:

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lock	ML2057 DSA	626	RU
1 Cylinder	OFCI* - Key to existing	626	RU
1 Surface Closer/Stop	DC3200 / 3210 as required	689	RU
1 Mop Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
1 Gasket S88D			PE

DRAWINGS

Item No. 1: **Refer to Sheet 2.0**, "Floor Plan", and clarify wall types as shown at attached Exhibit "C".

Item No. 2: **Refer to Sheet 2.0**, "Floor Plan" and add new "Fire Pump 111" room as shown at attached Exhibit "E". New room shall include the following:

A. 1-hour rated gypsum board partition with 1-hour rated horizontal shaft wall ceiling assembly (per AER-258) with 6" C-H studs at 24" o.c. max.

B. 60-minute rated hollow metal frame and flush solid core paintgrade wood door.

C. Hardware set "13.0" as described above.

D. Paint walls, ceiling, door, and frame. Floor: sealed concrete.

Item No. 3: **Refer to Sheet 3.0**, "Wall Types" and clarify/modify as shown at attached Exhibit "D".

Item No. 4: **Refer to Sheet 2.1**, Floor Plans, and clarify/modify column line tags thus:

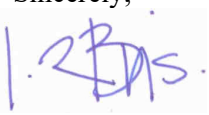
A. At 1 /2.1: Delete Elevation Keys "2.5/7.0 – ALT. #1" between Column Lines "G" and "H".

B. At 2 /2.1: Change Column Line "F" to "G", Column Line "G" to "H" and Column Line "H" to "I".

MECHANICAL AND ELECTRICAL ITEMS: See attached.

No other items in this addendum.

Sincerely,



Bill Burris, AIA
BURRIS/WAGNON ARCHITECTS, P.A.

End of Addendum No. 3

"Exhibit A"

STATE OF MISSISSIPPI
GOVERNOR PHIL BRYANT

DEPARTMENT OF FINANCE AND ADMINISTRATION

Laura D. Jackson
EXECUTIVE DIRECTOR

M E M O R A N D U M

TO: Contractors, through the AGC, ABC, and MBOC

FROM: Calvin R. Sibley, Director
Bureau of Building, Grounds and Real Property Management

DATE: February 27, 2018

SUBJECT: Electronic Construction Bidding per Law effective 1/1/2018

Beginning January of 2018, the Mississippi Department of Finance and Administration / Bureau of Building Grounds and Real Property Management started receiving construction bids electronically as required by House Bill 1106, Laws of 2017. Electronic bids are at the discretion of the Bidder/Supplier. Paper bids WILL STILL BE received as stipulated in the Advertisement / Request for Bids The instrument being used to carry out this is a program called MAGIC which is available to all State of Mississippi departments, agencies, and Bidders/Suppliers. (MAGIC is the State's Accounting System.)

TO BID USING MAGIC: Potential Bidder/Supplier must first register. When the Bidder/Supplier registers themselves, they will automatically receive their Magic sign-in information. (The Bureau of Building, et al, can assist with this, and, if so, will notify the Bidder/Supplier by email of doing so, so they can contact Magic to get their sign-in information for bidding electronically) Construction Bidders/Suppliers who have received awards in recent years through the Bureau of Building, et al, should already have their company information properly entered. Those companies should still verify that their system "Product Code" is set to "90922" [for construction] in order to receive "system generated Bid Notices" for construction projects. (Bid Opportunities will continue to be in the newspaper, on the Magic Portal, and on the Bureau of Building, et al, web.) When registering, a company should enter their company information EXACTLY as shown per the Mississippi Secretary of State's listing and per their W9. Contact Magic at:
http://uperform.magic.ms.gov/gm/folder-1.11.7512?originalContext=1.11.8507 (MS SoS, MBOC, and W9 should all agree.)

TO ADD THE PRODUCT CODE 90922 once in your MAGIC Address Table click the steps below:
1. Click on Suppliers Self Service Tab.
2. Click Company Data.
3. Click the Process Button.
4. Click Add Categories in the Product Categories section
5. Add the product Categories from here.

TO VIEW ADVERTISED PROJECT INFORMATION on line go to DFA Web site and select "Are You Interested in Doing Business with Mississippi" at the top of the page. This takes one to the Procurement Portal. Click on:
1. I sell to Mississippi
2. (RFx) Procurement Opportunities and Public Notifications
3. Advanced Search Options
4. Major Procurement Category: Select Construction
5. Dept/Agency: Select MS DEPT FINANCE AND ADMINISTRATION
6. SEARCH

Another option from the DFA web site is to:
1. Select DFA Offices
2. Select Bureau of Building Grounds and Real Property Management.
3. Just Below "About the Bureau of Building" select BOB Bid Solicitations.
4. Locate the GS# at left of the list and the RFx number at the right.

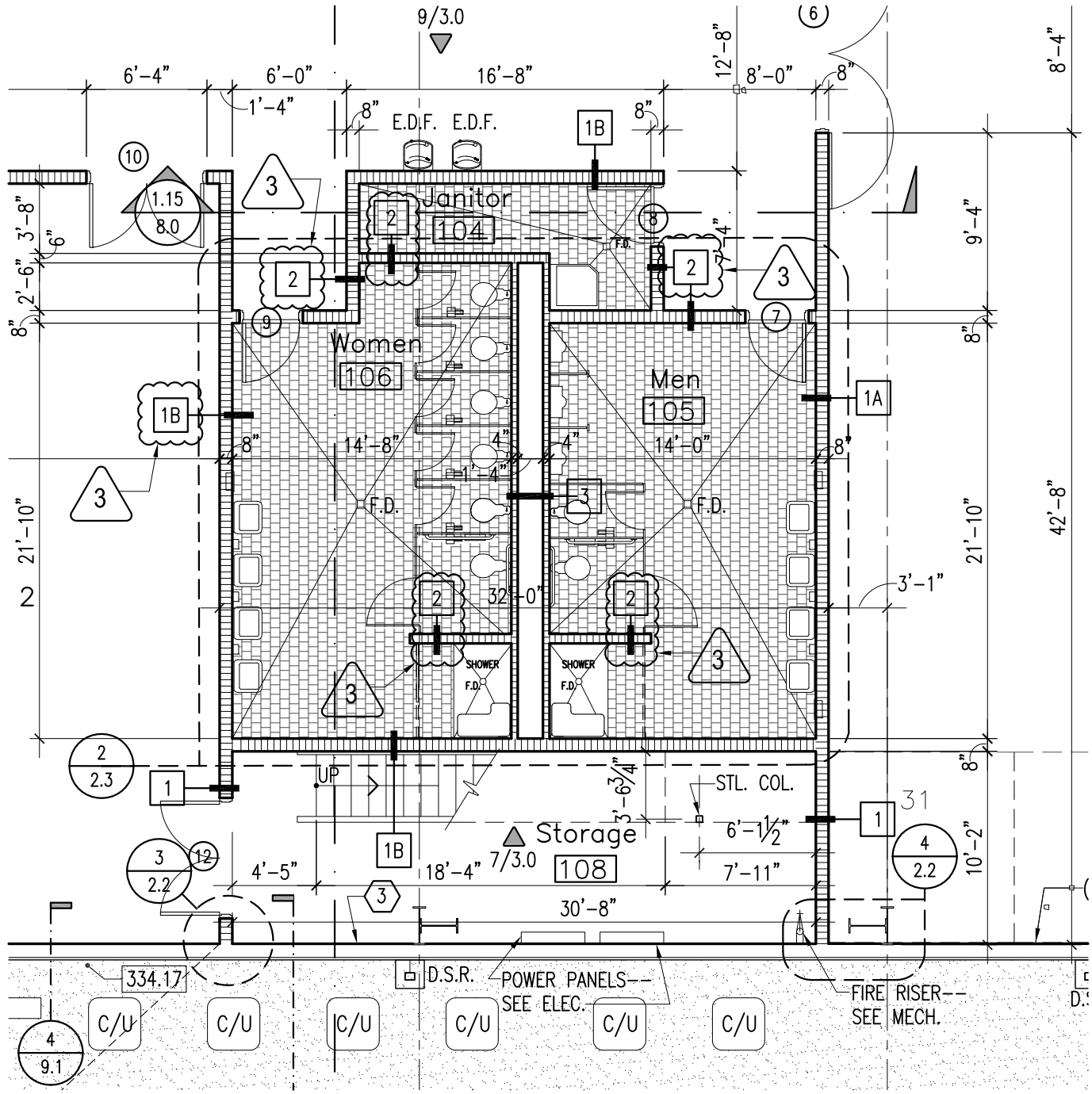
On both list the RFx number for each project is listed which is required in MAGIC when preparing bids.

For additional information regarding registration in MAGIC, contact MMRS at (601) 359-1343 or by email at mash@dfa.ms.gov .

CRS/pgw

EXHIBIT "B"

NAME	COMPANY	EMAIL
JONATHAN MCREE	LARRY J SUMRALL CONT	jonathan@ljsumrall.com
SEAN SUMRALL	"	Sean@ljsumrall.com
Josh Sisson 601-604-3316	Construction Serv. Inc	jsisson@csiusa.com
David Beardew	Adco	dbeardew@adcoelec.com
Robert Gaines	Alliant Construction	rgaines@alliantconstruction.com
Tony Head	Mid State	thead@msconst.com
Brooks Edwards	REL construction	Brooks@relconstruction.net
Jason Thomas	BHB Electric	jthomas@bbecan.com
Richard Womack	RWC, LLC	richard@rwcms
BARRY STORY	COPELAND JOHNS	bstory@copelandandjohns.com
Joe Smith	MLEOTA	601-842-4889
Mary Davis	DPS	—
[signature]	MLEOTA	601-927-2101



Partial First Floor Plan (Base Bid) 1

1/8"

1 March 2021 - Addendum #3

1 October 2020

firing range improvements
(multipurpose building)
law enforcement officers training academy
department of public safety
(pearl, mississippi)

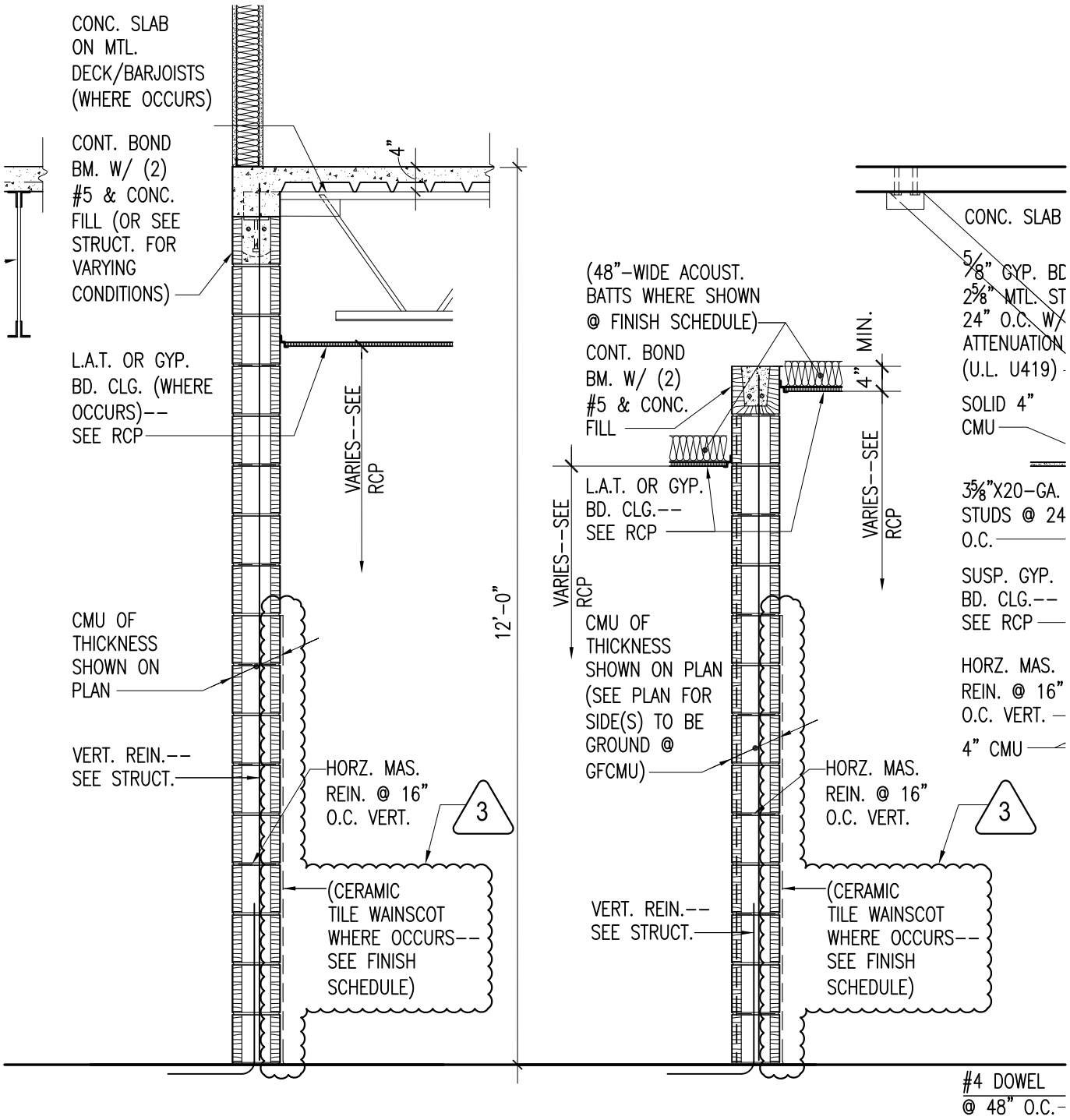
GS# 332-046 (PP002)

BURRIS/WAGNON ARCHITECTS, P.A.
500L EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374

REGISTERED ARCHITECT
William Burris, Jr.
2752
STATE OF MISSISSIPPI
3.1.2

EXHIBIT "C"

SHEET 1 OF 1
(FROM DRAWINGS, SHT. 2.0)



WALL TYPE 1B

WALL TYPE 2

Partial Wall Types

1

1/2"

1 March 2021 - Addendum #3

1 October 2020

firing range improvements
(multipurpose building)
law enforcement officers training academy
department of public safety
(pearl, mississippi)

GS# 332-046 (PP002)

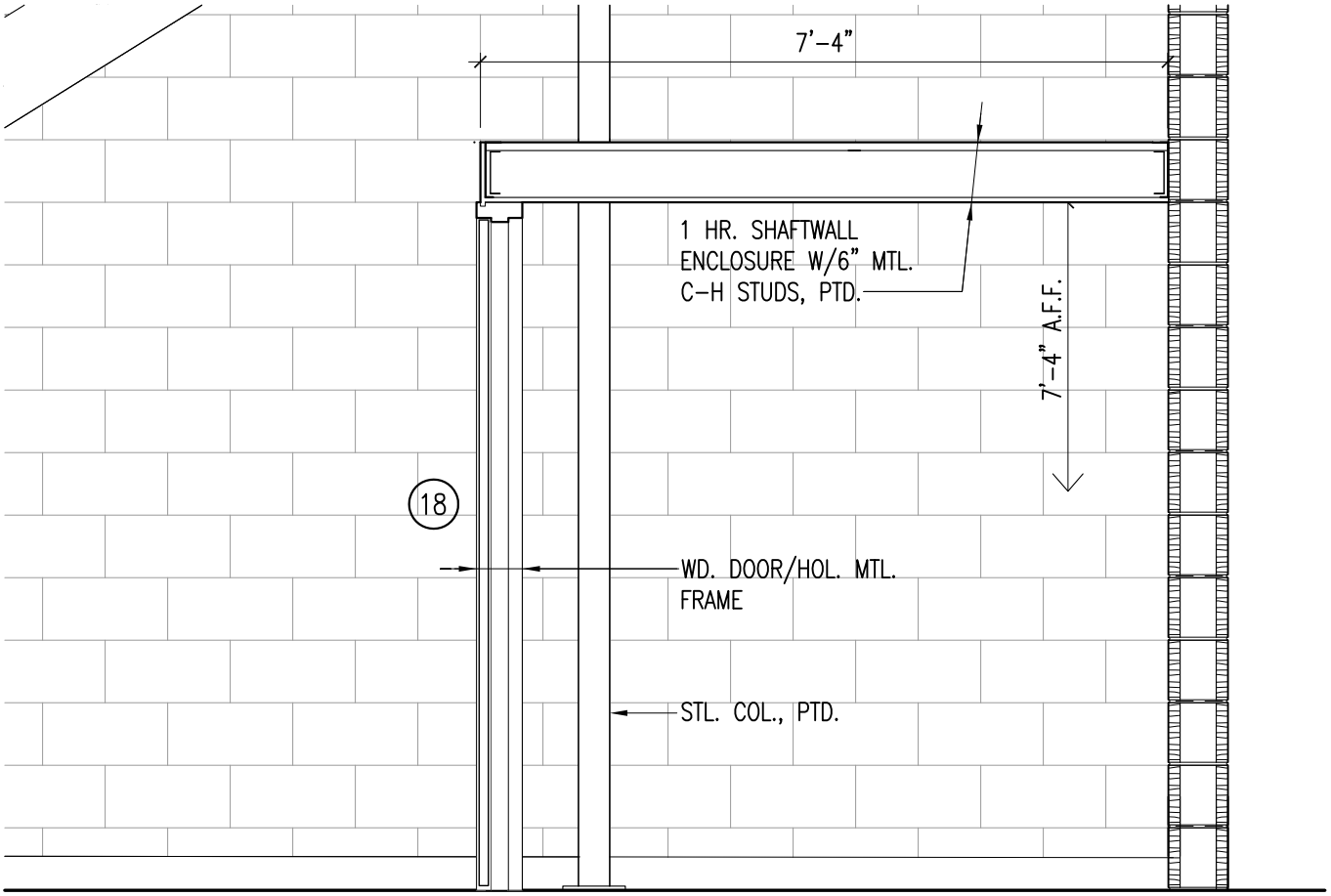
REGISTERED ARCHITECT William Burris, Jr. 2752 STATE OF MISSISSIPPI 3-1-21

EXHIBIT "D"

SHEET 1 OF 1

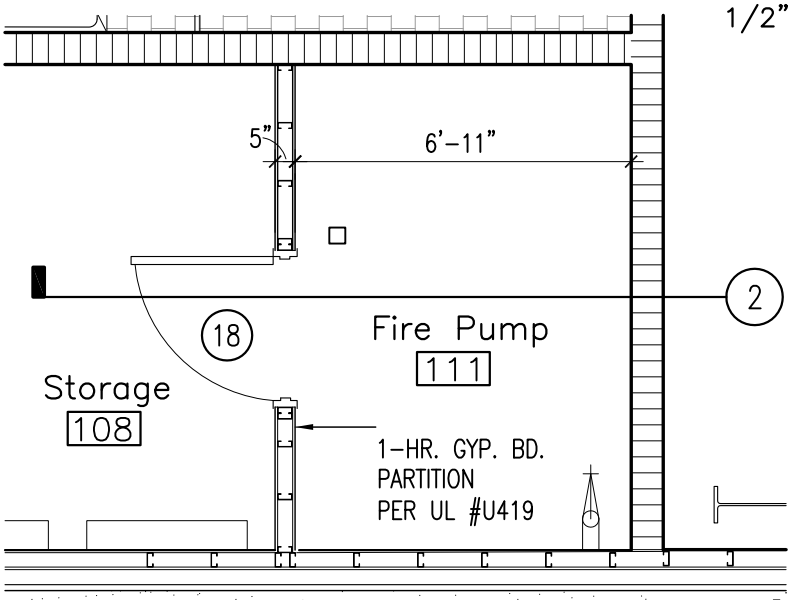
(FROM DRAWINGS, SHT. 3.0)

BURRIS/WAGNON ARCHITECTS, P.A.
500L EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374



Building Section (Fire Pump Room @ Storage 108) 2

1/2"



Enlarged Floor Plan 1

(Fire Pump Room @ Storage 108) 1/4"

REGISTERED ARCHITECT
Stan Wagnon
2031
STATE OF MISSISSIPPI
2021

1 March 2021 - Addendum #3

1 October 2020

firing range improvements
(multipurpose building)
law enforcement officers training academy
department of public safety
(pearl, mississippi)

GS# 332-046 (PP002)

EXHIBIT "E"

SHEET 1 OF 1

BURRIS/WAGNON ARCHITECTS, P.A.
500L EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374

ENGINEERING RESOURCE GROUP

FEBRUARY 24, 2021

ADDENDUM NO. THREE (3)

GS# 322-046
MLEOTA FIRING RANGE
PEARL, MS
ERG P.N. 20.003

I. Bidder acknowledges that it is Bidder's responsibility to ascertain whether any Addenda have been issued and if so, to obtain copies of such Addenda. Bidder therefore agrees to be bound by all Addenda that have been issued for this Bid.

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents and consists of 1 page (plus attachments). The following clarifications, changes, additions, or deletions shall be made to the following documents as indicated, and all other conditions shall remain the same.

II. PERTAINING TO THE DRAWINGS

A. Replace drawings P1.1, FP0.1, FP1.1, FP1.2, and FP5.1. (Attached)

B. A fire pump and assembly will be required as a part of the new wet pipe sprinkler system.

III. PERTAINING TO THE SPECIFICATIONS

A. REPLACE: Section 211300 – Fire Suppression Systems. (Attached)

B. ADD: New Section 213113 – Electric-Drive, Centrifugal Fire Pumps. (Attached)

If there are any questions, please contact Engineering Resource Group, Inc.

Phone: (601) 362-3552
Fax: (601) 366-6418
e-mail: bsaxton@ergms.com

END OF ADDENDUM NO. 3

SECTION 211300 - FIRE SUPPRESSION SYSTEMS

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.

1.2 WORK INCLUDED

A. This section is a performance specification section only. The design build fire protection contractor shall be fully responsible for the design and to provide necessary equipment and hardware per the AHJ's and Owner's Insurance Underwriter's requirements.

B. Furnish all labor, materials, tools, and equipment to complete the automatic fire sprinkler system as hereinafter described, ready for service to the entire satisfaction of the Owner, Architect, Authority Having Jurisdiction (AHJ) and Owner's Insurance Underwriter. Provide hydraulically calculated systems as defined in the adopted edition of NFPA 13 and NFPA 14 and in accordance with the AHJ and Owner's insurance requirements.

C. The fire sprinkler system shall fully comply with the Mississippi Conveyance Safety Act (MCSA). Specifically, the sprinkler system shall comply with (but not limited to) the MCSA regarding sprinklers in the elevator shafts, elevator pits, and elevator equipment (machine) rooms.

D. Fire Sprinkler System Notes:

1. The automatic sprinkler system shall conform to the requirements of the adopted edition of NFPA Standard 13.
2. Provide a complete automatic fire sprinkler system for all new and/or existing interior and exterior covered spaces, interstitial spaces, attics, overhangs, canopies, etc. as required for a comprehensive fire sprinkler system.
3. Installation of the sprinkler system shall not be started until complete plans and specifications including water supply design information and type of existing sprinkler system, if any have been submitted and approved by the State Fire Marshal, Fire/Life Safety Section. At various stages and upon completion, the system must be tested in the presence of the Inspector of Record (IOR) and/or AHJ.
4. Underground firewater and sprinkler system work shall conform to the requirements of NFPA 24 and NFPA 13n. Prior to installation of the underground fire water supply system, submit shop drawings and specifications of system, including water flow test data to the State Fire Marshal, Fire/Life Safety Section for approval.

Submittal shall include thrust block location and size, type of piping and catalog cut sheets on all valves and fittings. An inspection of the underground installation, back flush and hydrostatic test shall be conducted and witnessed by the Architect, IOR and/or AHJ prior to backfill.

E. Verify electrical requirements of alarm valves, flow switches, valve supervision switches, alarm bells and pumps with electrical contractor.

1.3 RELATED WORK AND REQUIREMENTS

A. All Division 11, 22 and 23 sections.

B. Section 230010 – Mechanical General Provisions.

C. Division 26, Fire Alarm System Sections.

D. Section 233113 – Electric-Drive, Centrifugal Fire Pumps.

1.4 REFERENCE STANDARDS

A. American National Standards Institute (ANSI).

1. B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.
2. B16.3 Malleable-Iron Castings.
3. B16.4 Cast-Iron Threaded Fittings Class 125 and 300.
4. B16.5 Pipe Flanges and Flanged Fittings.
5. B16.9 Factory-Made wrought Steel Butt welding Fittings.
6. B16.11 Forged Fittings, Socket-Welding and Threaded.
7. B16.22 Wrought Copper and Bronze Solder Joint Pressure Fittings.
8. B16.25 Butt welding Ends.

B. American Society for Testing and Materials (ASTM).

1. A36 Structural Steel.
2. A47 Ferritic, Malleable Iron Castings.
3. A53 Pipe, Steel, Black and Hot-Dipped, Zinc Coated.
4. A135 Specification for Electric-Resistance-Welded Steel Pipe.
5. A194 Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High-Temperature Service.
6. A320 Specification for Alloy Steel Bolting Materials for Low-Temperature Service.
7. A795 Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.
8. B88 Seamless Copper Water Tube.

C. American Water Works Association (AWWA).

1. DDC104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

2. C110 Gray Iron and Ductile Iron Fittings.
3. C111 Rubber Gasket Joints for Ductile-Iron and Grey-Iron Pressure: Pipe and Fittings.
4. C151 Thickness of Ductile-Iron Pipe – Centrifugally Cast.
5. C200 Steel Water Pipe 6” and larger.
6. C503 Wet-Barrel Fire Hydrants.

D. International Association of Plumbing and Mechanical Officials (IAPMO).

1. PS 31 Backflow Prevention Devices.

E. National Fire Protection Association (NFPA).

1. 13 – Standard for the Installation of Sprinkler Systems.
2. 14 – Standard for the Installation of Standpipe and Hose Systems.
3. 20 – Stationary Pumps for Fire Protection.

F. Underwriter’s Laboratory (UL).

1. 262 Gate Valves for Fire Protection Service.
2. Indicator Post for Fire-Protection Service.

1.5 DESIGN CRITERIA

A. Design sprinkler systems and obtain approval from AHJ.

B. Determine the static and residual pressure for the site as required for accurate determination of system requirements. Base system calculations on the lowest expected static and residual pressure for the area.

1. Test data for static and residual pressure shall be measured by the Contractor. Test shall be made within the presence of the Architect and at a time approved by the Architect and Owner.

C. It is the intent of these Specifications and Drawings to provide for a complete and operating automatic fire protection sprinkler system in full compliance with the standards of the National Fire Protection Association as set forth in NFPA 13 and NFPA 24, currently adopted editions.

D. Review Architectural and Structural Drawings to determine the extent of construction and resultant fire protection coverage to comply with NFPA. Interstitial spaces, if utilized, will require sprinkler protection.

E. Provide fire sprinklers to protect all building overhangs greater than 4 feet wide, or as required by local authority.

F. Provide additional fire sprinklers where required to meet the requirements of NFPA13 and/or AHJ(s). Coordinate with the work of other trades especially when it may create interferences and or

obstructions requiring special protection, additional piping and heads and drains.

G. Use of piping lighter than Schedule 10 is not allowed.

H. The initial building shall contain basic sprinkler coverage which can be modified and extended for the future build-out of unimproved spaces.

I. Design shall comply with the Owner's Insurance Underwriters' requirements.

1.6 COORDINATION/SPECIAL CONSIDERATIONS

A. Coordinate with other trades all equipment locations, pipe, duct and conduit runs, electrical outlets and fixtures, air inlets and outlets, and structural and architectural features. Provide information on location of piping and bracing to all other trades as required for a completely coordinated project.

B. Contract Drawings: All piping and sprinkler heads required for the sprinkler and standpipe systems are not shown.

C. Where heads are located at suspended ceiling, spacing shall be as required by NFPA 13, except as follows: In all locations, sprinkler heads shall be equidistant between lights, between wall and lights, between lights and air diffusers, and between wall, lights, and air diffusers. Provide uniform and repetitive pattern for each room. Locate by reflected ceiling plan where shown.

D. Install sprinkler all sprinkler heads in center of ceiling tiles.

E. Provide approved dry pendant sprinkler heads in spaces subject to freezing.

F. Provide high temperature sprinkler heads in all electrical rooms or other areas with elevated temperatures such as mechanical rooms.

G. Coordinate Work among the trades in accordance with Division 01 avoid any interference with the effectiveness of the fire protection system. Shop drawings shall include elevations of equipment and piping to assure coordination. The fire protection system shall be coordinated with other trades to assure that conflicts will not arise with structural, mechanical, electrical or architectural features of the building.

H. Coordinate with the fire alarm contractor to ensure full awareness of the location of control valves, flow switches, tamper switches, and alarm and signal switches.

1.7 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in manufacture of fire protection products, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least five years of successful installation experience on projects with fire sprinkler piping similar to that required for this project.

C. Requirements of Regulatory Agencies:

1. Install fire protection systems in accordance with IBC – 2012 Edition, Chapter 9 “Fire Protection Systems”.
2. NFPA Compliance: Install fire protection systems in accordance with NFPA 13 "Standard for the Installation of Sprinkler Systems", and other applicable NFPA requirements.
3. FM Compliance: Comply with Factory Mutual "Approval Guide".
4. UL Labels: Provide fire sprinkler piping products which have been approved and labeled by Underwriters' Laboratories.
5. Fire Marshal Compliance: Install fire protection systems in accordance with Fire Marshal or other AHJ.
6. Owner’s Insurance Underwriter’s Compliance: Install fire protection systems in accordance with Owner’s Insurance Underwriter’s requirements.
7. Screw Thread Connections: Comply with local fire department/marshal regulations for sizes, threading, and arrangement of connections for fire department equipment to systems.

D. Fire stop penetrations with an approved material as prescribed in the International Building Code (IBC).

E. Installation of the sprinkler system shall not be started until complete plans and specifications (including water supply information and type of existing sprinkler system, if any) have been reviewed and approved by the AHJ and the Owner’s Insurance Underwriter.

F. At various stages and upon completion, the system must be tested in the presence of the enforcing agency.

G. The fire extinguishing system shall be installed by a licensed fire systems contractor.

H. The fire sprinkler contractor shall furnish evidence of a full-time employee who poses a NICET Level 3 or higher certification in Automatic Sprinkler System Layout. A signed and notarized written statement from the fire sprinkler contractor stating the name and NICET certification of the full time employee who oversees the shop drawings and installation must accompany the shop drawing submittal.

1.8 SUBMITTALS

A. See Section 230010 Mechanical General Provisions.

B. Submit product data, O&M data, and samples and show item on shop and coordination drawings according to the following table.

1. "R" means required.
2. "R2" means required only for products and equipment differing for the specified manufacturer and model and for "or equals" where specified.

Item	Product Data	O&M Manual	Samples	Shop Drawing
Pipe, fittings, valves	R			
Sprinkler heads	R			R
Gauges	R			R
Sleeves and Escutcheons	R			
Flow and tamper switches	R			R
Alarm bells	R			R
Pipe hangers and supports/vibration isolation	R			R
Identification signs	R			
Sprinkler head cabinets	R			R
Hose Valve cabinets	R			R
Coordination drawings				R
AHJ approval letter				R
Insurance Underwriter's approval letter				R
Hydraulic calculations				R
Static and residual flow tests results				R
Written Statement with NICET Level 3 Employee	R			

C. Submit shop drawings as follows:

1. Prepare and submit preliminary drawing to the Owner showing the proposed location of the fire sprinkler heads coordinated with and in relation to the ceiling tile pattern, light fixture and duct inlets/outlets. Review of this drawing and the AHJ's review stamp thereon shall be a prerequisite for the preparation of further working plans.
2. Detailed working drawings and hydraulic calculations shall be prepared and submitted for approval before fabrication of the project. Working drawings shall be submitted in complete sets (partial submission will not be acceptable) and shall bear the Contractor's license stamp, identity of the system designer and computer program used in the calculation of hydraulic information.
3. AHJ approval of submittals is for permission to proceed and does not authorize design, products or installation not conforming to referenced codes and standards and this specification.

Substitutions or alternates require specific approval by the Owner.

4. Upon completion of the Work, the Contractor shall provide AutoCAD Record Drawings to the Architect. Refer also to Division 01. Final approvals are subject to receipt of acceptable Record Drawings.

D. Submittals having any content that is incomplete or unclear will be returned without review or approval.

E. Deferred Approval Documents: Do not proceed with fabrication or installation of fire sprinkler system until deferred approval documents have been approved by AHJ and Architect.

1. General: Provide detailed drawings, specifications, hydraulic calculations, and any other documentation as required by the AHJ and Owner's insurance underwriter.
2. Make additions, changes and corrections as directed by Architect and resubmit.
3. Agency Review: Submit documents to Owner and/or AHJ. Make additions, changes and corrections required by Owner / AHJ at no cost to Owner and resubmit to Architect.

F. Provide all necessary information to ceiling suspension work of Division 09, Finishes, to provide coordinated submittals.

G. Discharge patterns and application data shall be included in submittals for sidewall, water curtain, and similar special purpose sprinklers.

H. Operating Instructions: Provide instruction charts describing operation and proper maintenance of system equipment per Division 01 and Section 230010 Mechanical General Provisions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure rating, temperature ratings, and capacities as required. Provide sizes and types matching piping and equipment connections; provide fittings of materials that match pipe materials used in fire protection systems.

B. Equipment to be furnished under this specification shall be essentially standard product of manufacturer. Where two or more units of same class of equipment are required, these units shall be products of a single manufacturer. However, component parts of system need not be products of same manufacturer.

C. Manufacturers: Subject to compliance with requirements, manufacturer offering automatic sprinklers which may be incorporated in the work include the following:

1. Specialty Valves and Devices:

    a. Badger Fire Protection Inc.
    b. Grinnell Corp.
    c. Viking Corp.
    d. Or equal.

2. Water-Flow Indicators and Supervisory Switches:

    a. Grinnell Corp.
    b. Potter Electric Signal Co.
    c. Viking Corp.
    d. Or equal.

3. Sprinkler, Drain and Alarm Test Fittings:

    a. Central Sprinkler Corp.
    b. Grinnell Corp.
    c. Victaulic Co.
    d. Or equal.

4. Sprinkler, Branch-Line Test Fittings:

    a. Elkhart Brass Mfg. Co. Inc.
    b. Smith Industries, Inc.; Potter-Roemer Div.
    c. Or equal.

5. Sprinkler, Inspector's Test Fittings:

    a. G/J Innovations Inc.
    b. Triple R Specialty of Ajax Inc.

6. Fire Department Connections:

    a. Badger Fire Protection, Inc.
    b. Elkhart Brass Mfg. Co. Inc.
    c. Grinnell Corp.
    d. Or equal.

7. Sprinklers:

    a. Badger Fire Protection Inc.
    b. Grinnell Corp.
    c. Viking Corp.
    d. Or equal.

8. Indicator Posts and Indicator-Post, Gate Valves:

    a. Grinnell Corp.
    b. McWane Inc.; Kennedy Valve Div.
    c. Nibco Inc.
    d. Or equal.

9. Indicator Valves:

a. Grinnell Corp.
b. McWane Inc.; Kennedy Valve Div.
c. Nibco Inc.
d. Or equal.

10. Fire-Protection-Service Valves:

a. Grinnell Corp.
b. McWane Inc.; Kennedy Valve Div.
c. Nibco Inc.
d. Or equal.

11. Grooved-End Fittings for Steel Piping:

a. Victaulic Co.
b. Or equal.

2.2 VALVE AND ALARM SYSTEM IDENTIFICATION

A. Provide identification complying with Section 230553 Mechanical Identification section in accordance with the following listing:

1. Fire Protection Valves: Brass valve tags.
2. Fire Protection Signs: Provide the following signs:

a. At each sprinkler valve, including roof manifold, sign indicating what portion of system valve controls.
b. At each outside alarm device, sign indicating what authority to call if device is activated.

2.3 BASIC PIPES AND TUBES

A. Piping shall be new, designed for 300 psi working pressure, conforming to ASTM specifications and have the manufacturer’s name or brand along with the pipe applicable ASTM standard marked on each length of pipe.

B. All piping shall be UL listed and FM approved.

C. Piping installed underground: PVC Pipe: AWWA C900, Class 200, with bell end with gasket, and with spigot end.

D. Piping installed above ground 2 inch and smaller shall be Schedule 40 black steel pipe. Pipe shall be manufactured in accordance with specifications ASTM A-135 and A-53.

E. Piping installed above ground 2-1/2 inch and larger shall be Schedule 10 black steel pipe. Pipe shall be manufactured in accordance with specification ASTM A 135.

F. All fire protection piping shall be provided with factory-applied antimicrobial coatings to inhibit Microbiologically-Influenced Corrosion (MIC). Allied Tube and Conduit “ABF II”, Wheatland Tube Company “MIC Shield” or equal.

G. Sprinkler piping and fittings exposed to weather, used in a corrosive atmosphere or as noted on drawings shall be galvanized.

H. In-Building Risers shall be installed as indicated on the plans. Risers shall be composed of a single extended 90 degree fitting of fabricated 304 stainless steel tubing, maximum working pressure 300 psi. The fitting shall have a grooved-end connection on the outlet (building) side and a CIPS coupler on the inlet (underground) side. The In-Building Riser shall be an Ames Fire & Waterworks Series IBR (or equal).

2.4 PIPE AND TUBE FITTINGS

A. Cast-Iron Threaded Flanges: ASME B16.1.

B. Cast-Iron Threaded Fittings: ASME B16.4.

C. PVC Fittings: AWWA C900, Class 200, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.

D. Malleable-Iron Threaded Fittings: ASME B16.3.

E. Steel, Threaded Couplings: ASTM A 865.

F. Steel Welding Fittings: ASTM A 234/A 234M, ASME B16.9, or ASME B16.11.

G. Steel Flanges and Flanged Fittings: ASME B16.5.

2.5 PIPING SPECIALTIES

A. Provide piping specialties in accordance with the following listing:

1. Pipe escutcheons.
2. Dielectric unions.
3. Pipe sleeves.
4. Sleeve seals.

2.6 JOINING MATERIALS

A. Grooved-End Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel pipe OD. Include ductile-iron housing with keys matching steel pipe fitting grooves, prelubricated rubber gasket listed for use with housing and steel bolts and nuts. Include listing for dry-pipe service for couplings for dry piping.

B. Steel, Grooved-End Fittings: UL-listed and FM approved, ASTM A47, malleable iron or ASTM A 536, ductile iron, with dimensions matching steel pipe and ends factory grooved according to AWWA C606.

C. Transition Couplings: AWWA C219, sleeve type, or other manufactured fitting the same size as, with pressure rating at least equal to, and with ends compatible with piping to be joined.

2.7 POLYETHYLENE ENCASEMENT

A. Polyethylene Encasement for Ductile-Iron Piping: ASTM A674 or AWWA C105 film, 0.008-inch minimum thickness, tube or sheet.

2.8 SUPPORTS AND ANCHORS

A. Spacing and details of the support and bracing of fire sprinkler piping shall comply with the currently adopted edition of NFPA 13. U-hook hangers used as sway bracing must have legs bent out 10 degrees and must have a slenderness ratio not exceeding 200.

B. Concrete Inserts: Uni-Strut P-3200 continuous insert or M24 spot insert Kin-line or equal. Do not use powder actuated fasteners for support of overhead piping unless approved by Architect.

2.9 VALVES

A. Provide valves, UL listed, and FM approved, in accordance with the following listing. Provide sizes and types which mate and match piping and equipment connections.

1. Gate Valves: Provide iron gate control valve, outside screw and yoke (OS&Y), 175-lb rated working pressure, of sizes indicated, to close by turning to the right and to be sealed with approved metal seals. Valves shall be iron body, bronze fitted. Valves 2 inches and smaller shall be screwed and valves over 2 inches shall be flanged. For reference purposes, Mueller A-2073-6. Grinnell, Kennedy, Stockham or equal.
2. Butterfly Valve: Provide UL listed FM approved butterfly valves (slow-close) with position indicators. Electric motor operated valves shall be normally open and shall fail in the open position. For reference purposes, Mueller B-3211. Grinnell, Kennedy, Stockham or equal.
3. Swing Check Valves: Provide UL listed flanged, swing type, iron body, bronze seat ring and disc ring, and 175 psi pressure rating. For reference purposes, Mueller A-2120-6, Grinnell, Kennedy, Stockham or equal.
4. Riser Drain Valves: Main Riser Drain valves shall be angle or globe type, bronze body, screwed, 200 psi pressure rating, 2 inches size, with renewable composition soft disc. For reference purposes, Grinnell 3210, Stockham, NIBCO, Fairbanks or equal.
5. Auxiliary Drain Valve: Valves for auxiliary drains and Owner’s Test connections shall be globe type, bronze body, screwed, 200 psi pressure rating, 1 inch size, with a renewable composition soft disc, For reference purposes, Grinnell 3210, Stockham, NIBCO, Fairbanks or equal.

6. Indicating Valves, 2-1/2 inches and Smaller: UL 1091; butterfly or ball-type, bronze body with threaded ends; and integral indicating device.
7. Indicator Posts: UL 789, vertical type, cast iron body, with windows for target plates that indicate valve position, extension rod and coupling, locking device, and red enamel finish.
8. Swing Check Valves, 2 inches and Smaller: UL 312 or MSS SP-80, Class 150; bronze body with bronze disc and threaded ends.
9. Swing Check Valves, 2-1/2 inches and Larger: UL 312, cast-iron body and bolted cap, with bronze disc or cast-iron disc with bronze-disc ring and flanged ends.
10. Split-Clapper Check Valves, 4 inches and Larger: UL 312, cast-iron body with rubber seal, bronze-alloy discs, and stainless-steel spring and hinge pin.
11. For other valves not required to be UL listed and FM approved refer to Section 230523 Valves.

2.10 METERS AND GAUGES

A. Provide meters and gauges complying with Section 230519 Meters and Gauges, in accordance with the following listing:

1. Pressure gauges: UL 393, 3-1/2- to 4-1/2-inch- diameter dial with dial range of 0 to 300 psig.

2.11 SPECIALTY VALVES

A. Sprinkler System Control Valves: UL listed or FMG approved cast or ductile-iron body with flanged or grooved ends, and 175-psig minimum pressure rating.

1. Available Manufacturers:

a. Grinnell Corp.
b. Victaulic Co.
c. Viking Corp.
d. Or equal.

2. Alarm Check Valves: UL 193, designed for horizontal or vertical installation, with bronze grooved seat with O-ring seals, single-hinge pin, and latch design. Include trim sets for bypass, drain, electrical sprinkler alarm switch, pressure gages, retarding chamber, and fill-line attachment with strainer.

a. Drip Cup Assembly: Pipe drain without valves and separate from main drain piping.

3. Ball Drip Valves: UL 1726, automatic drain valve, NPS 3/4, ball check device with threaded ends.

2.12 FIRE PROTECTION SPECIALTIES

A. Provide fire protection specialties, UL listed, in accordance with the following listing. Provide sizes and types that match piping and equipment connections.

1. Install drains on main risers and auxiliary drains at all low points in the system.
2. One Owner's test drain shall be installed for each sprinkler system.
3. Drains and Owner's tests shall be at locations approved by the Architect.
4. Drains and Owner's tests shall be installed at locations as shown on the Drawings.
5. Provide drain line to floor sink or to outside, as required, to suit Project conditions.
6. Five or fewer trapped heads will not require a drain valve but may be drained through a plugged fitting.
7. Drain valve shall be of the angle type. Install in accordance with the requirements of NFPA Pamphlet No. 13.
8. Pipe drain valves to a floor sink or to the outside of the building. Discharge shall be visible from sight drain fitting or open end drain pipe. Provide flushing connections at ends of all cross mains.
9. Flow Alarm: Furnish and install a flow alarm system for each main sprinkler riser as shown on the Drawings. The systems shall be complete with Grinnell F-620, Viking or equal, flow switch. As part of Division 26, wire flow alarm to the fire alarm control panel. Provide 3/4-inch conduit and two #14 wires from the tamper switch to the fire department control panel.
10. Provide wiring between switch, bell, and junction box. Provide junction box under Division 26. Wiring shall meet the requirements of Division 26. All controls shall be identified by permanent metal tags or other approved means. Alarm switch shall be UL or FM approved and shall have adjustable retard mechanism and two sets of contacts. Wiring between electrical distribution panel and junction box will be provided under Division 26.
11. Water-Flow Indicators: UL 346; electrical-supervision, vane-type water-flow detector; with 250-psig pressure rating; and designed for horizontal or vertical installation. Include two single-pole, double-throw, circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
12. Pressure Switches: UL 753; electrical-supervision-type, water-flow switch with retard feature. Include single-pole, double-throw, normally closed contacts and design that operates on rising pressure and signals water flow.
13. Valve Supervisory Switches: UL 753; electrical; single-pole, double throw; with normally closed contacts. Include design that signals controlled valve is in other than fully open position, Grinnell Model F640, Viking or equal, with single pole double throw switch actuator installed to change switch position when OS&Y valve is being closed.
14. Indicator-Post Supervisory Switches: UL 753; electrical; single-pole, double throw, with normally closed contacts. Include design

that signals controlled indicator-post valve is in other than fully open position.

15. As part of Division 26, wire supervisory switch to the fire alarm control panel. Provide 3/4-inch conduit and two #14 wires from the tamper switch to the fire department control panel.

2.13 AUTOMATIC SPRINKLERS

A. Provide automatic sprinklers in accordance with the following listing. Provide fusible links or glass bulbs for 165 degrees F. unless otherwise noted; UL or FM approved.

B. Automatic Sprinklers: With heat-responsive element complying with the following:

1. UL 199, for applications except residential.
2. UL 1767, for early suppression, fast-response applications.

C. Type: Spray pattern type, automatic closed-type heads of ordinary degree temperature rating, except that sprinklers to be installed in vicinity of heating equipment shall be of temperature ratings required for such locations by the currently adopted edition of NFPA 13.

1. Flush ceiling sprinklers, including escutcheon.
2. Pendent, dry-type sprinklers.
3. Quick-response sprinklers.
4. Sidewall, dry-type sprinklers.
5. Upright sprinklers.
6. Concealed ceiling sprinklers, including cover plate.

D. Sprinkler heads shall be UL or FM listed.

1. Exposed Locations: Provide upright type heads at all areas with no finished ceilings.
2. Where heads are located at height of less than 8 feet above finished floor, or where heads are located in mechanical equipment areas, provide wire guards to protect heads from damage.
3. Concealed Locations: Provide upright-type heads or pendent-type heads.
4. Sidewall Locations: Where required and where approved by the Architect.
5. Finished Ceilings: Locate at all ceilings with lay-in acoustical tile ceiling and at plaster or gypsum board type ceilings. Provide satin chrome finish and adjustable chrome finish metal ceiling escutcheons. Provide fully recessed pendant type and white enamel metallic cover in ceilings of finished spaces.
6. Where fire sprinkler heads are located in rooms with surface mounted lights, provide multiple fully recessed pendant type with white enamel metallic cover in ceilings of finished spaces.
7. Where fire sprinkler heads are located in rooms (utility rooms, mechanical rooms, etc.) with surface mounted lights, provide 2-piece adjustable sprinkler escutcheon, with adjustment from 1-

7/8" to 3-1/8" below finished ceiling. Fire sprinkler drop nipple should be mounted 2-1/4" below the finished ceiling surface.

8. Sprinkler heads in light hazard area shall be quick response type.

E. Sprinkler Finishes: Chrome-plated, bronze, and painted.

F. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: Chrome-plated steel, one piece, flat.
2. Sidewall Mounting: Chrome-plated steel, one piece, flat.

G. Sprinkler Guards: Wire-cage type, including fastening device for attaching to sprinkler.

H. Sprinkler Cabinet and Wrench: Furnish steel, baked red enameled, sprinkler box with capacity to store sprinklers and wrench sized to sprinklers. Spare sprinklers and wrenches called for under "Extra Stock."

2.14 SPECIALTY SPRINKLER FITTINGS

A. Specialty Fittings: UL listed, and FM approved; made of steel, ductile iron or other materials compatible with piping.

B. Drop-Nipple Fittings: UL 1474, with threaded inlet, threaded outlet, and seals; adjustable.

C. Sprinkler, Drain and Alarm Test Fittings: UL-listed, cast- or ductile-iron body; with threaded inlet and outlet, test valve, and orifice and sight glass.

D. Sprinkler, Branch-Line Test Fittings: UL-listed, brass body; with threaded inlet and capped drain outlet and threaded outlet for sprinkler.

E. Sprinkler, Inspector's Test Fittings: UL-listed, cast- or ductile-iron housing; with threaded inlet and drain outlet and sight glass.

F. Flexible Hose Assemblies: FlexHead Industries flexible stainless steel hose assembly consisting of a mounting bracket and a one-piece, leak tested sprinkler drop. The mounting bracket shall be compatible with any suspended or gypsum board ceiling system and FM/UL approved sprinklers. Assembly shall be FM approved and UL listed for use intended. Lengths of assemblies shall be selected with minimum length required to connect sprinkler without loops, traps, etc.

2.15 FIRE DEPARTMENT CONNECTIONS

A. Exposed Inlet type, Fire Department Connections: UL 405, 175-psig minimum pressure rating; with corrosion-resistant-metal body with

brass inlets, brass wall escutcheon plate, brass lugged caps with gaskets and brass chains, and brass lugged swivel connections. Include inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, outlet with pipe threads, check devices or clappers for inlets, and escutcheon plate with marking similar to "AUTO SPKR."

1. Finish: Polished Chrome-Pated.

B. Exposed, Free-Standing type, Fire Department Connections: UL 405, 175-psig minimum pressure rating; with corrosion-resistant-metal body with brass inlets, brass wall escutcheon plate, brass lugged caps with gaskets and brass chains, and brass lugged swivel connections. Include inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, outlet with pipe threads, check devices or clappers for inlets, and escutcheon plate with marking similar to "AUTO SPKR."

1. Finish: Polished Chrome-Plated.

PART 3 - EXECUTION

3.1 PRODUCT HANDLING AND PROTECTION

A. Deliver packaged materials in their original, unopened wrapping with labels intact. Protect materials from water, the elements and other damage during delivery, storage and handling.

3.2 PREPARATORY PROVISIONS

A. The Contractor shall be responsible for the examination and acceptance of all conditions affecting the proper construction and/or installation of the Work of this Section and shall not proceed until all unsatisfactory conditions have been corrected. Commencing work shall be construed as acceptance of all conditions by the Contractor as satisfactory for the construction and/or installation of the Work

B. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations.

C. Report test results promptly and in writing

3.3 EARTHWORK

A. Refer to Section 312001 Earth Moving for excavating, trenching, and backfilling.

3.4 PIPING APPLICATIONS

A. Do not use welded joints with galvanized steel pipe.

B. Flanges, unions, and transition and special fittings with pressure ratings the same as or higher than system's pressure rating may be used in aboveground applications, unless otherwise indicated.

C. Piping between Fire Department Connections and Check Valves: Use galvanized, standard-weight steel pipe with threaded ends; cast- or malleable-iron threaded fittings; and threaded joints.

D. Underground Water Supply and Service-Entrance Piping: Use ductile-iron, mechanical-joint pipe and fittings and restrained joints. Include corrosion protective encasement. Use In-Building Riser for service-entrance piping

3.5 VALVE APPLICATIONS

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Fire-Protection-Service Valves: UL listed, and FM approved for applications where required by NFPA 13.

   a. Shutoff Duty: Use gate valves.

2. General-Duty Valves: For applications where UL-listed and FM-approved valves are not required by NFPA 13.

   a. Shutoff Duty: Use gate, ball, or butterfly valves.
   b. Throttling Duty: Use globe, ball, or butterfly valves.

3.6 JOINT CONSTRUCTION

A. Threaded Joints: Comply with NFPA 13 for pipe thickness and threads. Do not thread pipe smaller than NPS 8 with wall thickness less than Schedule 40 unless approved by authorities having jurisdiction and threads are checked by a ring gage and comply with ASME B1.20.1.

B. Steel-Piping, Grooved Joints: Use Schedule 30 or Schedule 10 steel pipe with roll-grooved ends; steel, grooved-end fittings; and steel, keyed couplings. Assemble joints with couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions. Use gaskets listed for dry-pipe service for dry piping.

C. Dissimilar-Metal Piping Joints: Construct joints using dielectric fittings compatible with both piping materials.

1. 2 inch and Smaller: Use dielectric couplings or nipples.
2. 2-1/2 to 4 inches: Use dielectric flanges.
3. 5 inch and Larger: Use dielectric flange insulation kits.

D. Dissimilar-Piping-Material Joints: Construct joints using adapters or couplings compatible with both piping materials. Use dielectric fittings if both piping materials are metal. Refer to Section 230500 Basic Mechanical Materials and Methods for dielectric fittings.

3.7 WATER SUPPLY AND SERVICE-ENTRANCE PIPING AND PIPING TO FIRE DEPARTMENT CONNECTION

A. Connect water supply piping to fire main; connect sprinkler piping to fire-service piping of size and in location indicated for service entrance to building.

B. Install shut-off valve, backflow preventer, pressure gage, and other accessories indicated at connection to water supply piping.

3.8 INSTALLATION OF FIRE SPRINKLER PIPING

A. General: Comply with the requirements of the Division 21 sections and referenced NFPA standards for installation of fire sprinkler piping material. Install fire sprinkler piping products where shown, in accordance with the manufacturer's written instructions, and in accordance with recognized industry practices to ensure that fire sprinkler piping complies with requirements and serves its intended purpose.

B. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

C. Coordination: Coordinate all piping, heads, and sprinkler work to Architectural, Structural, Mechanical, and Electrical Work. Conceal piping, except where so indicated otherwise or where absolutely necessary. Place exposed piping where required by the Architect. Provide any offsets or additional piping required to coordinate this system with all other Work.

1. If piping is installed such that it is exposed to view in any location normally available to the users of the building or the public, it shall be relocated and concealed to the Architect’s satisfaction, and at no additional cost to the Owner.

D. Any differences or disputes concerning coordination, interference, head and pipe locations or extent of work shall be decided by Architect and his decision shall be final.

E. Supply System: Provide supply connections as required to service the sprinkler system.

1. Installation shall conform to the applicable requirements of NFPA 13 and IBC.
2. Make joints as specified herein and in a manner approved by Architect. Leave joints exposed until final inspection and tests have been made.

3. Brace or clamp bends in accordance with the requirements. The clamp rods at the flange and spigot piece shall be long enough to pass through the flange.
4. Before connection of sprinkler system to underground supply, flush supply connections out thoroughly in accordance with NFPA.

F. Supply System: Provide supply connections as required to service the sprinkler system.

1. Install pipe, fittings, and hangers in accordance with requirements of IBC current adopted edition, "Fire Protection Systems".
2. Cutting structural members for passage of sprinkler piping or for pipe hanger fastening will not be permitted except on review of Architect for each specific case.
3. Holes through walls, floors, and ceilings shall be large enough to accommodate pipe expansion. Provide suitable plates at each hole to ensure the effectiveness of floor or wall as a fire stop. Foundation penetration shall have a 2-inch annular space around pipe sealed watertight.
4. Provide long runs of pipe with suitable means to permit free movement due to expansion and contraction.
5. Make reduction in pipe sizes with one-piece concentric tapered reducing fittings. Bushings will not be acceptable.
6. Couplings shall not be used except where the length of pipe between fittings exceeds 20 feet 0 inches.
7. Use flanged fittings in control valves and drain assembly and at the base of risers.
8. Use malleable iron unions of the ground joint type in looped sprinkler systems where pipe is 2 inches in diameter or smaller. Where loops larger than 2 inches are used, companion flanges shall be installed.
9. Special couplings approved for use in sprinkler systems may be used in place of unions and flanged connections where applicable.
10. Install sectional valves in inlet piping, at bottom of each riser, and in all loops as required.
11. Mount supervisory switches on each sectional valve.
12. Install pressure gages at top of each standpipe.
13. Install valved hose connections 3/4-inch size on sprinkler at ends of branch lines and cross mains.
14. Install Owner's test connection at most remote point from riser.

G. Install ductile iron underground water supply and service-entrance piping according to NFPA 24 and with restrained joints. Encase piping in corrosion-protective encasement.

H. Install unions adjacent to each valve in pipes 2 inches and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.

I. Install flanges or flange adapters on valves, apparatus, and equipment having 2-1/2 inches and larger connections.

J. Install "Inspector's Test Connections" in sprinkler piping, complete with shutoff valve, sized and located according to NFPA 13.

K. Install sprinkler zone control valves, test assemblies, and drain risers adjacent to sprinkler risers when sprinkler branch piping is connected to sprinkler risers.

L. Install ball drip valves to drain piping between fire department connections and check valves. Drain to floor drain or outside building.

M. Install sectional valves in piping.

N. Mount supervisory switches on each sectional valve.

O. Install valved hose connections of the sizes indicated, or 3/4 inch size, if not otherwise indicated, on sprinklers at ends of branch lines and cross mains at locations where indicated.

P. Install drain piping at low points of fire sprinkler piping.

Q. Identification: Apply signs to control, drain, test and alarm valves to identify their purpose and function. Provide lettering size and style selected by Authority Having Jurisdiction.

R. Hangers and Supports: Comply with NFPA 13 for hanger materials and installation.

S. Install piping with grooved joints according to manufacturer's written instructions. Construct rigid piping joints, unless otherwise indicated.

T. Install new pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft metal seated globe, valve, arranged for draining pipe between gage and valve. Install gages to permit removal and install where they will not be subject to freezing.

U. Fill wet-pipe sprinkler and standpipe system piping with water.

3.9 SPECIALTY SPRINKLER FITTING INSTALLATION

A. Install specialty sprinkler fittings according to manufacturer's written instructions.

3.10 VALVE INSTALLATION

A. Refer to Section 230523 Valves for installing general-duty valves. Install fire-protection specialty valves, trim, fittings, controls, and specialties according to NFPA 13, manufacturer's written instructions, and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire department

connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Specialty Valves:

1. Alarm Check Valves: Install in vertical position for proper flow, including bypass check valve and retarding chamber and drain-line connections.

3.11 FIRE DEPARTMENT CONNECTION INSTALLATION

A. Install Exposed-Inlet wall or free-standing type (See Drawings), fire department connections.

B. Install ball drip valve at each valve for fire department connection.

3.12 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Connect water-supply piping to fire-suppression piping. Include backflow preventer between potable-water piping and fire-suppression piping. Refer to Section 221119 Domestic Water Piping Specialties for backflow preventers.

D. Install ball drip valves at each check valve for fire department connection. Drain to floor drain or outside building.

E. Connect piping to specialty valves, hose valves, specialties, fire department connections, and accessories.

F. Connection of alarm devices to fire alarm system by Division 26 Contractor.

G. Ground equipment according to Division 26.

H. Connect wiring according to Division 26.

I. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.13 SLEEVES AND FLASHINGS

A. All sleeves shall be properly anchored in place during pouring of slabs. All pipe sleeves through water resistant floors shall extend at least 1-1/2 inches above the finished floor and shall be watertight with the pipes passing through the sleeves. Sleeves passing through

all other floors shall be of sufficient length to be flush with bottom of slab and extend one inch above the finished floor and shall be securely anchored to the slab.

B. All piping passing through membrane water resistant walls and floors shall be provided with a water-resistant type pipe sleeve, with Schedule 40 pipe extension or equal. Pack water resistant sleeves with white oakum and mastic.

C. Wherever pipes are exposed and pass through walls, floors, partitions or ceilings, they shall be fitted with chromium plated cast steel escutcheons held in place with setscrews. Care shall be taken to protect the escutcheons during the course of construction.

D. Sleeves in masonry or other walls shall be put in place as the construction progresses, avoiding the cutting of completed work.

E. All piping passing through fire-rated assemblies shall be installed within fire-rated pipe sleeves.

3.14 INSPECTION

A. Examine areas and conditions under which fire protection materials and products are to be installed.

B. After completion of the fire protection installation and at the start of the guarantee period, execute the National Automatic Sprinkler and Fire Control Association, Inc. standard form of "Inspection Agreement", at no increase in Contract Sum, calling for four inspections of the sprinkler system during the guarantee year, plus the following maintenance to be performed during the course of the fourth inspection.

1. Operating of all control valves.
2. Lubrication of operating stems of all control valves.
3. Operating of electrical alarms.
4. Cleaning of alarm valves.
5. Lubrication of Fire Department hose connection inlets.

C. Fill out "Inspection Agreement" in triplicate after each inspection and send copies to the Owner, Insurance Carrier and Fire Department.

D. Welding inspection of the sprinkler system is to be done by the Architect.

3.15 INSTALLATION OF BASIC IDENTIFICATION

A. Install mechanical identification in accordance with Section 230553.

B. Install fire protection signs on piping in accordance with NFPA requirements.

C. Paint all exposed piping and including fire protection riser, color shall be selected by the Architect. See Division 09 Painting.

3.16 FIELD QUALITY CONTROL

A. Sprinkler Piping Flushing: Prior to connecting sprinkler risers for flushing, flush water feed mains, lead-in connections, and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system as required to remove foreign substances under pressure as specified in NFPA 13. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinklers.

B. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically for period of 2 hours at not less than 200 psi or at 50 psi greater than system pressure where pressure is anticipated to be in excess of 150 psi. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.

C. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in condition satisfactory to Architect. At completion, carefully clean and adjust equipment and trim that are installed as part of this work. Leave systems and equipment in satisfactory operating condition. Repair or replace piping system as required to eliminate leakage in accordance with NFPA standards for "little or no leakage," and retest as specified to demonstrate compliance.

3.17 EXTRA STOCK

A. Heads: For each style and temperature range required, furnish additional sprinkler heads, amounting to one unit for every 100 installed units but not less than 10 heads, in proportion to the total number of each style of head.

B. Wrenches: Furnish two sprinkler wrenches for each type and size of sprinkler connection.

C. Obtain receipt from Owner that extra stock has been received.

3.18 CLEANING AND PROTECTION

A. Clean dirt and debris from sprinklers and other equipment.

B. Remove and replace sprinklers having paint other than factory finish.

C. Protect sprinklers from damage until Substantial Completion.

3.19 COMMISSIONING

A. Verify that specialty valves, trim, fittings, controls, and accessories are installed and operate correctly.

B. Verify that specified tests of piping are complete.

C. Verify that potable-water supplies have correct types of backflow preventers.

D. Verify that hose connections and fire department connections have threads compatible with local fire department equipment.

E. Fill wet-pipe standpipe piping with water.

F. Verify that hose connections are correct type and size.

G. Energize circuits to electrical equipment and devices.

H. Adjust operating controls and pressure settings.

I. Coordinate with fire alarm tests. Operate as required.

END OF SECTION

SECTION 213113 - ELECTRIC-DRIVE, CENTRIFUGAL FIRE PUMPS

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.

1.2 SUMMARY

A. Work included in this section: materials, equipment, fabrication, installation, and tests in conformity with applicable codes and authorities having jurisdiction for all electric-drive, centrifugal fire pumps and the following:

1. Full-service fire-pump controller with automatic transfer switches.
2. Fire-pump accessories and specialties.
3. Pressure-maintenance pump, controller, accessories, and specialties.
4. Alarm panels.
5. Flowmeter system.
6. Remote alarm panel.

B. Related Sections:

1. Section 211300 – Fire Suppression Systems.
2. Section 230010 – Mechanical General Provisions.
3. Section 230020 – Basic Mechanical Materials and Methods.

1.3 SUBMITTALS

A. See Section 230010 Mechanical General Provisions.

B. Submit product data, O&M data, and samples and show item on shop and coordination drawings according to the following table.

1. "R" means required.
2. "R2" means required only for products and equipment differing for the specified manufacturer and model and for "or equals" where specified.

Item	Product Data	O&M Manual	Samples	Shop Drawing
Fire Pump	R	R		R
Fire pump controller with automatic transfer switch	R	R		R

Fire pump accessories and specialties	R	R		R
Jockey pump	R	R		R
Jockey pump controller, accessories, and specialties	R	R		R
Fire pump alarm panel and remote alarm panel	R	R		R
Flowmeter system	R	R		R

C. Submit shop drawings as follows:

1. Prepare and submit preliminary drawing to the Owner showing the proposed location of the fire sprinkler heads coordinated with and in relation to the ceiling tile pattern, light fixture, and duct inlets/outlets. Review of this drawing and the AHJ's review stamp thereon shall be a prerequisite for the preparation of further working plans.
2. Detailed working drawings and hydraulic calculations shall be prepared and submitted for approval before fabrication of the project. Working drawings shall be submitted in complete sets (partial submission will not be acceptable) and shall bear the Contractor's license stamp, identity of the system designer and computer program used in the calculation of hydraulic information.
3. AHJ approval of submittals is for permission to proceed and does not authorize design, products or installation not conforming to referenced codes and standards and this specification. Substitutions or alternates require specific approval by the Owner.
4. Upon completion of the Work, the Contractor shall provide AutoCAD Record Drawings to the Architect. Refer also to Division 01. Final approvals are subject to receipt of acceptable Record Drawings.

D. Shop Drawings: For fire pumps, motor drivers, and fire-pump accessories and specialties.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain fire pumps, pressure-maintenance pumps, and controllers through one source from a single manufacturer for each type of equipment.

B. Product Options: Drawings indicate size, profiles, and dimensional requirements of fire pumps, pressure-maintenance pumps, and controllers and are based on specific systems indicated. Contractor shall be responsible for determining that the submitted pumps,

controllers, accessories, etc. will fit in the space allotted with the manufacturer's required clearances.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with standards of authorities having jurisdiction pertaining to materials, hose threads, and installation.

E. Comply with NFPA 20, "Stationary Pumps for Fire Protection," for fire pumps, drivers, controllers, transfer switches, accessories, and their installation.

1.5 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete reinforcement and formwork requirements shall comply with Division 03.

B. Coordinate clearances around all pumps, controllers, accessories, etc. with all trades.

C. Coordinate pump pipe sizes (suction and discharge pipe sizes) with NFPA20. Pump suction and discharge piping shall comply with NFPA 20.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Comply with NFPA 20.

B. Pump Equipment, Accessory, and Specialty Pressure Rating: 175 psig minimum unless higher pressure rating is indicated.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 GENERAL REQUIREMENTS FOR CENTRIFUGAL FIRE PUMPS

A. Description: UL 448, factory-assembled and -tested, electric-drive, centrifugal fire pumps capable of furnishing not less than 150 percent of rated capacity at not less than 65 percent of total rated head and with shutoff head limited to 140 percent of total rated head.

B. Base: Fabricated and attached to fire-pump and driver unit, with reinforcement to resist movement of pump during seismic events when base is anchored to building substrate.

C. Finish: Red paint applied to factory-assembled and -tested unit before shipping.

D. Nameplate: Complete with capacities, characteristics, and other pertinent data.

2.3 IN-LINE FIRE PUMPS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Patterson Pump Company; a Gorman-Rupp company.
2. Peerless Pump Company.
3. S.A. Armstrong Limited.
4. Aurora
5. Or equal.

B. Pump:

1. Standard: UL 448, for in-line pumps for fire service.
2. Casing: Radially split case, cast iron, with ASME B16.1 pipe-flange connections.
3. Impeller: Cast bronze, statically and dynamically balanced, and keyed to shaft.
4. Wear Rings: Replaceable bronze.
5. Shaft and Sleeve: Steel shaft with bronze sleeve.

    a. Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

6. Mounting: Pump and driver shaft is vertical, with motor above pump and pump on base. Motor and pump rotating assembly shall be removable from top without removing the pump casing from the piping.

C. Coupling: None or rigid.

D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

E. Capacities and Characteristics:

1. Rated Capacity: 400
2. Total Rated Head: 50 psi
3. Inlet Flange: Class 125
4. Outlet Flange: Class 125
5. Suction Head Available at Pump: 35 psi
6. Motor Horsepower: 20 hp.
7. Motor Speed: 3600 rpm.
8. Electrical Characteristics:

a. Volts: 208V
b. Phase: Three
c. Hertz: 60

9. Pump-Start, Pressure-Switch Setting: Per pump manufacturer recommendation.
10. Pump-Stop, Pressure-Switch Setting: Per pump manufacturer recommendation.
11. Soft start starter with controller equal to TOMATECH GPS+GPU in NEMA 2 enclosure.

2.4 FIRE-PUMP ACCESSORIES AND SPECIALTIES

A. Automatic Air-Release Valves: Comply with NFPA 20 for installation in fire-pump casing.

B. Circulation Relief Valves: UL 1478, brass, spring loaded; for installation in pump discharge piping.

C. Relief Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. CLA-VAL Automatic Control Valves.
b. Watts; a Watts Water Technologies company.
c. Zurn Industries, LLC.

2. Description: UL 1478, bronze or cast iron, spring loaded; for installation in fire-suppression water-supply piping.

D. Inlet Fitting: Eccentric tapered reducer at pump suction inlet.

E. Outlet Fitting: Concentric tapered reducer at pump discharge outlet.

F. Discharge Cone: Closed or open type, as needed for application.

G. Hose Valve Manifold Assembly:

1. Standard: Comply with requirements in NFPA 20.
2. Header Pipe: ASTM A 53/A 53M, Schedule 40, galvanized steel, with ends threaded according to ASME B1.20.1.
3. Header Pipe Fittings: ASME B16.4, galvanized cast-iron threaded fittings.
4. Automatic Drain Valve: UL 1726.
5. Manifold:

a. Test Connections: Comply with UL 405; however, provide outlets without clappers instead of inlets.
b. Body: Flush type, brass, or ductile iron, with number of outlets required by NFPA 20.
c. Nipples: ASTM A 53/A 53M, Schedule 40, galvanized-steel pipe, with ends threaded according to ASME B1.20.1.

d. Adapters and Caps with Chain: Brass or bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads.
e. Escutcheon Plate: Brass or bronze; rectangular.
f. Hose Valves: UL 668, bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads.
g. Exterior Exposed Parts Finish: Rough brass.
h. Escutcheon Plate Marking: Equivalent to "FIRE PUMP TEST."

2.5 FLOWMETER SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hydro Flow Products, Inc.
2. Meriam Process Technologies.
3. Victaulic Company.

B. Description: UL-listed or FM-Approved, fire-pump flowmeter system able to indicate flow to not less than 175 percent of fire-pump rated capacity.

C. Pressure Rating: 250 psig

D. Sensor: Annubar probe, orifice plate, or venturi unless otherwise indicated. Sensor size shall match pipe, tubing, flowmeter, and fittings.

E. Permanently Mounted Flowmeter: Compatible with flow sensor; with dial not less than 4-1/2 inches in diameter. Include bracket or device for wall mounting.

1. Tubing Package: NPS 1/8 or NPS 1/4 soft copper tubing with copper or brass fittings and valves.

2.6 GROUT AND PUMP CONCRETE BASE

A. Standard: ASTM C 1107, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Non-shrink and recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.7 SOURCE QUALITY CONTROL

A. Testing: Test and inspect fire pumps according to UL 448 requirements for "Operation Test" and "Manufacturing and Production Tests."

1. Verification of Performance: Rate fire pumps according to UL 448.

B. Fire pumps will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine equipment bases and anchorage provisions, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of fire pumps.

B. Examine roughing-in for fire-suppression piping systems to verify actual locations of piping connections before fire-pump installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Fire-Pump Installation Standard: Comply with NFPA 20 for installation of fire pumps, relief valves, and related components.

B. Equipment Mounting:

1. Install fire pumps on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Division 03 sections.
2. Provide vibration isolation devices between pumps and connecting wiring and piping.

C. Install fire-pump suction and discharge piping equal to or larger than sizes required by NFPA 20.

D. Support piping and pumps separately, so weight of piping does not rest on pumps. Provide spring vibration on hangers suspended to building structure within 20' of fire pump installation.

E. Install valves that are same size as connecting piping. Comply with requirements for fire-protection valves specified in Section 211300 "Fire Suppression Systems.

F. Install pressure gauges on fire-pump suction and discharge flange pressure-gauge tapping’s. Comply with requirements for pressure gauges specified in Section 211300 "Fire Suppression Systems.

G. Install piping hangers and supports, anchors, valves, gauges, and equipment supports’ according to NFPA 20 and Section 230529.

H. Install flowmeters and sensors. Install flowmeter-system components and make connections according to NFPA 20 and manufacturer's written instructions.

I. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not factory mounted. Furnish copies of manufacturers' wiring diagram submittals to electrical Installer.

J. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

3.3 ALIGNMENT

A. Align pump and driver shafts after complete unit has been leveled on concrete base, grout has set, and anchor bolts have been tightened.

B. After alignment is correct, tighten anchor bolts evenly. Fill baseplate completely with grout, with metal blocks and shims or wedges in place. Tighten anchor bolts after grout has hardened. Check alignment and make required corrections.

C. Align piping connections.

D. Align pump and driver shafts for angular and parallel alignment according to HI 1.4 and to tolerances specified by manufacturer.

3.4 CONNECTIONS

A. Comply with requirements for piping and valves specified in Section 211300 "Fire Suppression Systems." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to pumps and equipment to allow service and maintenance.

C. Connect relief-valve discharge to drainage piping or point of discharge.

D. Connect flowmeter-system meters, sensors, and valves to tubing.

E. Connect fire pumps to their controllers.

F. Provide and install an automatic transfer switch and control panel for fire pump, jockey pump, including all sensor, controllers, and accessories.

G. Coordinate fire alarm connections and provide flow switches and valve monitors per applicable code.

3.5 IDENTIFICATION

A. Identify system components. Comply with requirements for fire-pump marking according to NFPA 20.

B. Identify panel, inspector’s test, test nozzles, FDC, etc. per Sections 211300 and 230553.

3.6 FIELD QUALITY CONTROL

A. Test each fire pump with its controller as a unit. Comply with requirements for electric-motor-driver fire-pump controllers specified in Division 26.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. After installing components, assemblies, and equipment, including controller, test for compliance with requirements.
2. Test according to NFPA 20 for acceptance and performance testing.
3. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
4. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Components, assemblies, and equipment will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

F. Furnish fire hoses in number, size, and length required to reach storm drain or other acceptable location to dispose of fire-pump test water. Hoses are for tests only and do not convey to Owner.

3.7 STARTUP SERVICE

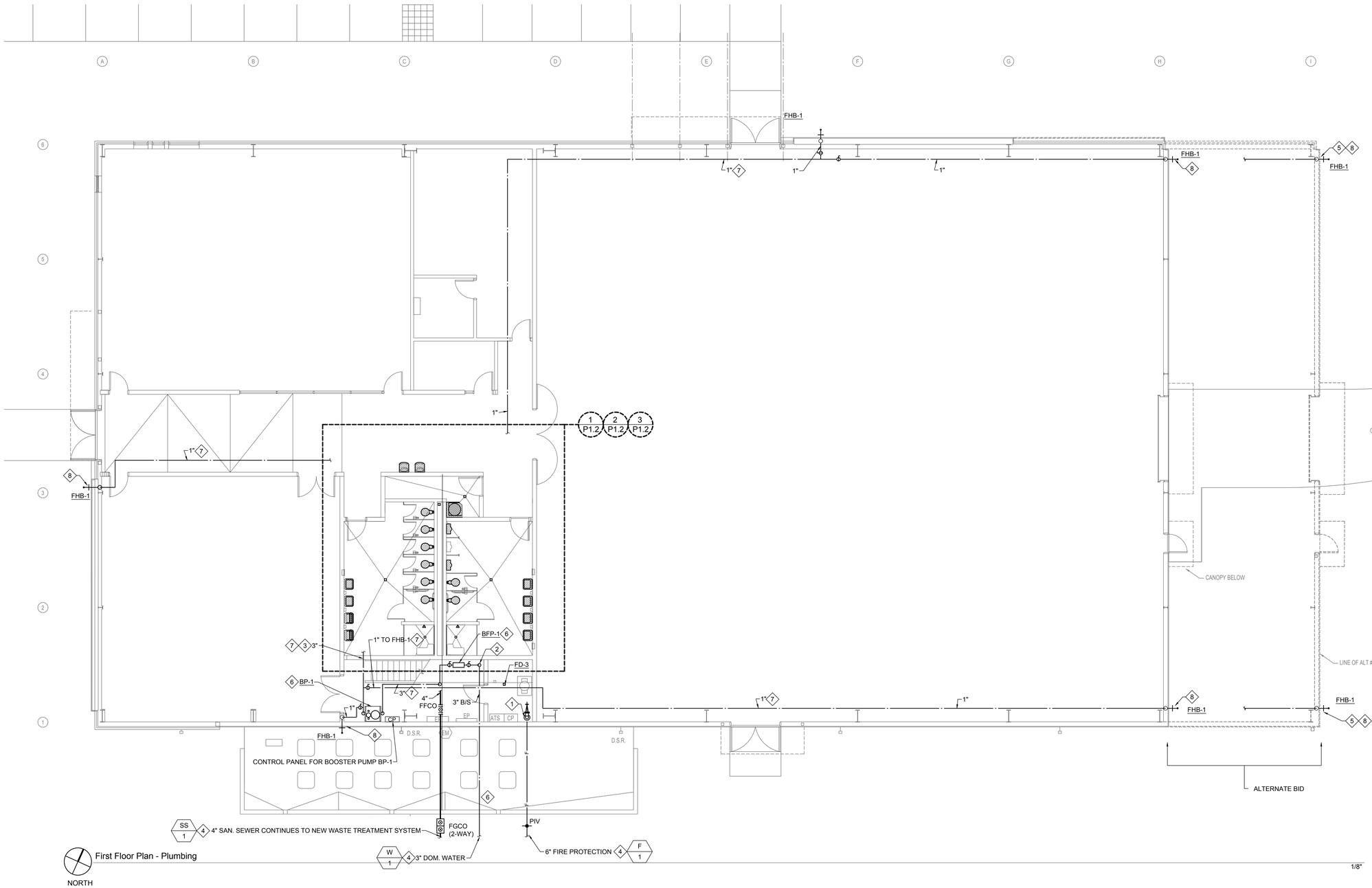
A. [Engage a factory-authorized service representative to perform startup service and commissioning assistance.

1. Complete installation and startup check’s according to manufacturer's written instructions and applicable code.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire pumps and accessories. See Section 230030.

END OF SECTION



GENERAL NOTES:

A. SITE UTILITIES SHALL BE INSTALLED WITH MINIMUM 36" GROUND COVER AND INCLUDE TRACER WIRE AND BELOW GRADE METALIZED IDENTIFICATION TAPE.

B. ALL EXPOSED TO VIEW INSULATED PIPING SHALL INCLUDE COLOR CODED COMPREHENSIVE PVC JACKET.

C. ALL EXPOSED TO VIEW NON-INSULATED PIPING SHALL BE CLEANED / PRIMED / PAINTED BY GENERAL CONTRACTOR.

PLAN NOTES: (X)

1. FIRE PROTECTION RISER. SEE FIRE PROTECTION DRAWINGS AND RISER DETAIL.
2. 2" DOMESTIC WATER RISER WITH BACKFLOW PREVENTER. BACKFLOW PREVENTOR LOCATED BELOW STAIR. SEE BACKFLOW PREVENTOR DETAIL.
3. ROUTE WATER PIPING BELOW MEZZANINE FLOOR / ABOVE CEILING. SEE P1.2 FOR CONTINUATION.
4. SEE PLUMBING SITE PLAN PS1.1 FOR CONTINUATION AND MORE INFORMATION.
5. MOVE LOCATION OF HOSE BIBB INSTALLATION TO THIS LOCATION IF ALTERNATE IS ACCEPTED AND EXTEND 1" DOMESTIC WATER.
6. DOMESTIC WATER PRESSURE BOOSTER PUMP / CONTROLS / COMPRESSION TANK SKID. SEE DETAIL. RUN DRAIN TO OUTDOORS.
7. INSULATED AND PVC JACKETED PIPING TO BE SUSPENDED SNUG TO BOTTOM OF STRUCTURE.
8. SEE ARCHITECTURAL ELEVATIONS FOR EXACT HOSEBIBB LOCATIONS.

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20102
02/24/2021
STATE OF MISSISSIPPI

ADDENDUM #3 REVISED SHEET 02/24/2021

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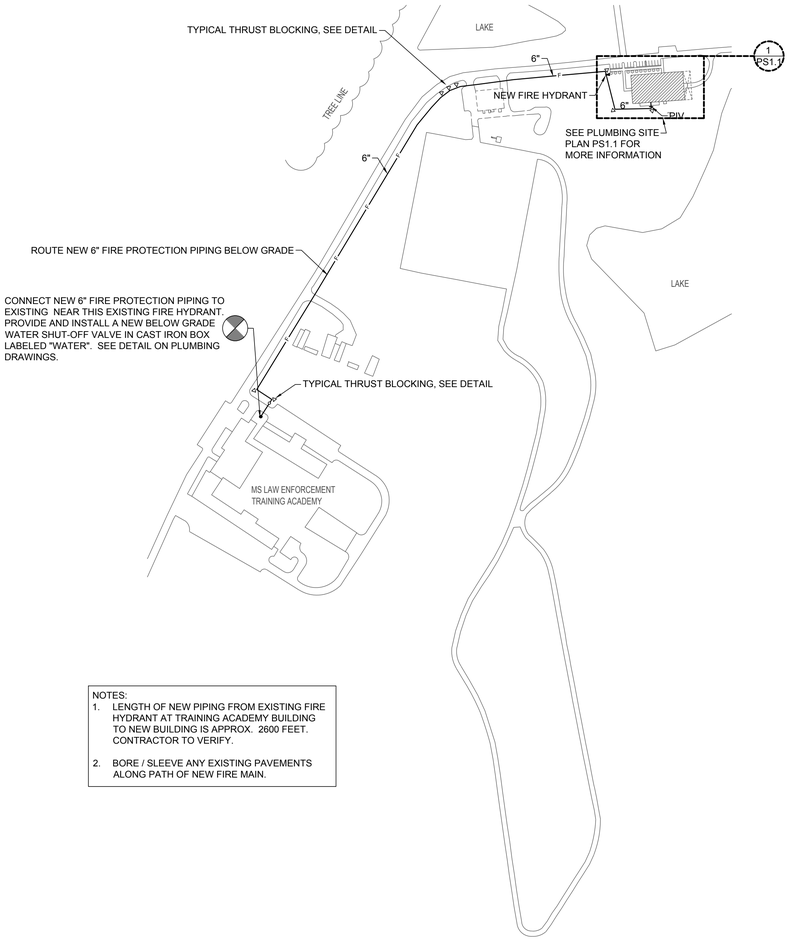
1 October 2020

firing range improvements
ms law enforcement officers training academy
ms department of public safety
(pearl, mississippi)

GS# 332-046 (PP002)

BURRIS/WAGNON ARCHITECTS, P.A.
500 EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374

P1.1



NOTES:
1. LENGTH OF NEW PIPING FROM EXISTING FIRE HYDRANT AT TRAINING ACADEMY BUILDING TO NEW BUILDING IS APPROX. 2600 FEET. CONTRACTOR TO VERIFY.
2. BORE / SLEEVE ANY EXISTING PAVEMENTS ALONG PATH OF NEW FIRE MAIN.

1 NEW FIRE MAIN PIPING ROUTING PLAN — NO SCALE

FIRE PROTECTION LEGEND

—— F ——	NEW FIRE PROTECTION PIPING
	NON-HATCHED AREA SERVED BY WET PIPE SPRINKLER SYSTEM (LIGHT HAZARD)
	HATCHED AREA SERVED BY WET PIPE SPRINKLER SYSTEM (ORDINARY HAZARD GROUP 1)
	HATCHED AREA SERVED BY WET PIPE SPRINKLER SYSTEM (ORDINARY HAZARD GROUP 2)
FDC	NEW FIRE DEPARTMENT CONNECTION
EAB	NEW ELECTRIC ALARM BELL
△	THRUST BLOCKING
BFP	BACKFLOW PREVENTER
	NEW CONNECTION TO EXISTING
A/C	ABOVE CEILING
B/S	BELOW SLAB
B/F	BELOW FLOOR
A/G	ABOVE FINISHED GRADE
B/G	BELOW FINISH GRADE
I/W	IN WALL
DN	DOWN
AFF	ABOVE FINISHED FLOOR
PIV	POST INDICATOR VALVE

FLOW DATA:

45 P.S.I. - STATIC

30 P.S.I. - RESIDUAL

650 - GPM FLOW

FLOW DATA PROVIDED BY UNITED PIPING, INC., PERFORMED ON 11/23/20 AT 10:30 AM.

CONTRACTOR'S HYDRAULIC CALCULATIONS SHALL PROVIDE FOR A MINIMUM OF 10 PSI SAFETY MARGIN.

FIRE PROTECTION GENERAL NOTES

1. INCLUDE ALL LABOR, MATERIAL, EQUIPMENT AND SERVICE NECESSARY FOR AND REASONABLY INCIDENTAL TO THE DESIGN, FABRICATION AND INSTALLATION OF THE COMPLETE AUTOMATIC FIRE PROTECTION SYSTEMS AS INDICATED ON THE CONTRACT DRAWINGS AND AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.
2. THE FIRE SPRINKLER SYSTEM DESCRIBED ON THE DRAWINGS AND IN THE SPECIFICATIONS SHALL BE FULLY DESIGNED BY THE FIRE PROTECTION CONTRACTOR(S). THE FIRE SUPPRESSION SYSTEM SPECIFICATIONS ARE PERFORMANCE BASED ONLY. THE CONTRACTOR(S) SHALL BE FULLY RESPONSIBLE FOR THE DESIGN AND TO PROVIDE ALL NECESSARY EQUIPMENT, HARDWARE, CONTROLS, SENSOR, ETC. PER LOCAL FIRE PROTECTION CODES.
3. IN GENERAL, WORK SHALL INCLUDE, BUT NOT BE LIMITED TO:
   A. COMPLETE OVERHEAD AUTOMATIC SPRINKLER SYSTEMS AS INDICATED ON THE CONTRACT DRAWINGS AND CONTRACT SPECIFICATIONS.
   B. CONNECTION TO UNDERGROUND FIRE SERVICE.
   C. SYSTEMS AND DEVICE TESTING.
   D. ALL NECESSARY PERMITS.
4. THE FIRE SPRINKLER SYSTEMS FOR PROTECTION OF THE BUILDING SHALL BE HYDRAULICALLY DESIGNED WET PIPE SPRINKLER SYSTEMS AS SPECIFIED IN THE FOLLOWING AND PER NFPA 13:
   A. OFFICES, INCLUDING CORRIDORS, LOUNGES, AND SIMILAR SPACES SHALL BE DESIGNED FOR A LIGHT HAZARD OCCUPANCY TO PROVIDE A MINIMUM DESIGN DISCHARGE DENSITY OF 0.10 GPM PER SQ FT OVER THE HYDRAULIC CALCULATION AREA OR ROOM.
   B. MECHANICAL, MINOR STORAGE, AND SIMILAR AREAS OF THE BUILDING SHALL BE DESIGNED FOR AN ORDINARY HAZARD GROUP 1 OCCUPANCY. A MINIMUM DESIGN DISCHARGE DENSITY OF 0.15 GPM PER SQ FT OVER THE HYDRAULIC CALCULATION AREA OR ROOM.
   C. BULK STORGE AND SIMILIAR AREAS AREAS OF THE BUILDING SHALL BE DESIGNED FOR AN ORDINARY HAZARD GROUP 2 OCCUPANCY. A MINIMUM DESIGN DISCHARGE DENSITY OF 0.20 GPM PER SQ FT OVER THE HYDRAULIC CALCULATION AREA OR ROOM.
   D. ALL SPRINKLERS WITHIN THE PROJECT AREA SHALL BE NEW, QUICK RESPONSE, ORDINARY TEMPERATURE RATING (EXCEPT AS REQUIRED BY NFPA 13).
5. PROVIDE A COMPLETE AUTOMATIC FIRE SUPPRESSION SYSTEM FOR ALL NEW AND/OR EXISTING INTERIOR AND EXTERIOR COVERED SPACES, INTERSTITIAL SPACES, ATTICS, OVERHANGS, CANOPIES, ETC. AS REQUIRED FOR A COMPREHENSIVE FIRE SPRINKLER SYSTEM.
6. PIPE SIZES INDICATED ON THE CONTRACT DRAWINGS SHALL NOT BE REDUCED. THEY SHALL HOWEVER BE INCREASED IF REQUIRED BY HYDRAULIC CALCULATIONS.
7. ALL EQUIPMENT SHALL BE LISTED BY UNDERWRITER'S LABORATORIES AND/OR FACTORY MUTUAL APPROVED.
8. SYSTEM, EQUIPMENT, INSTALLATION AND MATERIALS AND METHODS USED SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE FOLLOWING:
   A. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 1 FIRE CODE.
   B. NFPA 13 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.
   C. NFPA 14 STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.
   D. NFPA 24 STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES.
   E. INTERNATIONAL BUILDING CODE.
   F. INTERNATIONAL FIRE CODE.
10. ALL MATERIALS AND EQUIPMENT FURNISHED BY THE CONTRACTOR SHALL BE NEW, FIRST GRADE STANDARD, CURRENT PRODUCTS OF A MANUFACTURER REGULARLY ENGAGED IN THE PRODUCTION OF SUCH MATERIALS AND EQUIPMENT. WHERE TWO OR MORE PIECES OF EQUIPMENT PERFORMING THE SAME FUNCTION ARE REQUIRED, THEY SHALL BE THE PRODUCT OF ONE MANUFACTURER AND EXACT DUPLICATES.
11. BOLT ON OR STRAP ON BRANCH AND OUTLET FITTINGS WILL NOT BE PERMITTED. SIMILARLY, HOLE CUT PIPING SYSTEM OR STRAPLESS OUTLETS WILL NOT BE PERMITTED.
12. GROOVED COUPLINGS SHALL BE UL LISTED AND/OR FM APPROVED FOR FIRE PROTECTION SERVICE. PLAIN-END TYPE PIPE FITTINGS AND COUPLINGS SHALL NOT BE USED.
13. ALL PENDENT AND SIDEWALL SPRINKLERS LOCATED WITHIN 7 FT OF THE FLOOR OR SUBJECT TO MECHANICAL DAMAGE SHALL BE PROVIDED WITH LISTED SPRINKLER GUARDS COMPATIBLE WITH THE SPRINKLER MODELS AND TYPES ON WHICH THEY ARE INSTALLED.
14. EXTRA SPRINKLERS IN THE QUANTITIES REQUIRED BY NFPA 13, CABINETS, AND WRENCHES SHALL BE SUPPLIED AND DELIVERED TO THE PROFESSIONAL.
15. INSTALL HANGERS, FLEXIBLE CONNECTIONS, SWING JOINTS AND BRACING IN ACCORDANCE WITH NFPA 13.
16. SYSTEM PIPING SHALL BE INSTALLED SUCH THAT NO JOINTS, FITTINGS OR DEVICES OCCUR DIRECTLY OVER ELECTRICAL EQUIPMENT OR WITHIN THE CLEARANCE SPACE AS REQUIRED BY THE NATIONAL ELECTRIC CODE (NEC).
17. THE CONTACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS AND PENETRATIONS REQUIRED FOR THE FIRE PROTECTION PIPING.
18. CUTTING STRUCTURAL MEMBERS FOR THE PASSING OF FIRE PROTECTION PIPING OR PIPE HANGER FASTENING WILL NOT BE PERMITTED EXCEPT WITH APPROVAL OF THE PROFESSIONAL.
19. SUITABLE MEANS SHALL BE PROVIDED AT EACH HOLE OR PENETRATION TO MAINTAIN THE DESIGNED FIRE RESISTANCE RATING OF THE WALL, CEILING, OR FLOOR ASSEMBLY.
20. INSTALL SPLIT WALL PLATES OR ESCUTCHEONS WHERE EXPOSED PIPING PASSES THROUGH A FINISHED FLOOR, WALL OR CEILING. THEY SHALL FIT SNUGLY AROUND PIPING. THE FINISH OF ESCUTCHEONS OR WALL PLATES SHALL MATCH THE COLOR OF ADJACENT WALLS, CEILINGS, OR FLOORS.
21. UPON COMPLETION OF INSTALLATION AND WHILE PIPING IS STILL EXPOSED, HYDROSTATICALLY TEST THE SYSTEMS AT 200 PSI (OR 50 PSI IN EXCESS OF THE SYSTEM WORKING PRESSURE, WHICHEVER IS GREATER) FOR A PERIOD OF 2 HOURS. PORTIONS OF THE SYSTEM MAY BE TESTED AS THEY ARE COMPLETED. SEVENTY-TWO HOUR NOTICE SHALL BE GIVEN TO THE PROFESSIONAL AND THE AUTHORITY HAVING JURISDICTION PRIOR TO ANY TEST. A PRE-INSTALLATION INSPECTION OF PIPE, FITTINGS, AND DEVICES IS REQUIRED.
22. SPRINKLER SYSTEM DRAIN LINES SHALL BE FULLY COORDINATED WITH ALL TRADES.
23. SPRINKLER HEADS INSTALLED IN TILE CEILINGS SHALL BE INSTALLED IN THE CENTER OF THE TILES.
24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LEAKS.
25. ALL PIPING EXPOSED TO VIEW IN FINISHED AREAS, STORAGE AND EQUIPMENT ROOMS, AND AT MEZZANINE AREAS, SHALL BE PRIMED, PAINTED, AND NEATLY IDENTIFIED.
26. ALL HEADS AT MEZZAINE LEVEL AND AND IN NON-CEILING INTERIOR SPACES SHALL INCLUDE PROTECTIVE CAGES (RED COLOR FINISHED).
27. NEW WET PIPE SPRINKLER SYSTEM TO INCLUDE A FIRE PUMP ARRANGEMENT.

FIRE PROTECTION SHEET INDEX

GENERAL SITE NOTES

A. CONTRACTOR SHALL PROVIDE AND INSTALL ALL WATER SITE UTILITIES AS INDICATED AND SPECIFIED. COORDINATE WITH SERVING UTILITIES TO PROVIDE ALL TAPS AND CONNECTIONS AND PAY ALL FEES, PERMIT, ETC. THIS CONTRACTOR SHALL COORDINATE WITH SERVING UTILITY AUTHORITIES SUCH THAT THE CAPACITY REQUIRED OF THE NEW ADDITIONS OR MODIFICATIONS TO EXISTING CAN BE SUITABLY PROVIDED.

B. COORDINATE INSTALLATION OF ALL UTILITIES WITH ENGINEER SUCH THAT BEDDING OF ALL PIPING CAN BE VERIFIED AND ALL PIPING TESTS CAN BE WITNESSED PRIOR TO BACKFILLING. PROVIDE PRIOR ADVANCE NOTICE AS PER SPECIFICATIONS.

C. ALL NEW WATER PIPING SHALL HAVE A MINIMUM OF THREE (3) FEET GROUND COVER.

D. SEE SPECIFICATIONS FOR PIPE BEDDING, IDENTIFICATION, AND BACKFILLING REQUIREMENTS.

E. CONTRACTOR SHALL PROVIDE AND INSTALL SCHEDULE 40 PVC SLEEVE WHERE SERVICE PIPING IS INSTALLED UNDER PAVING, INCLUDING SIDEWALKS. SLEEVE SHALL EXTEND MIN. 36" BEYOND EDGE OF PAVEMENT ON EACH SIDE AND BE OF SIZE TO MATCH APPLICATION.

F. THE ROUTING OF ALL UNDERGROUND PIPING SHALL BE OPTIMIZED TO MINIMIZE INTERACTION WITH LOCATION OF SHRUBBERY AND TREES, ETC. HOWEVER, THIS CONTRACTOR SHALL BE REQUIRED, IN SOME INSTANCES, TO TEMPORARILY REMOVE AND THEN REINSTALL SHRUBBERY AND VERY SMALL TREES TO AVOID DAMAGE. THE ROUTING OF THE NEW PIPING SHALL BE OPTIMIZED, WHERE POSSIBLE, TO AVOID ROUTING WITHIN THE DRIP LINE OF THE TREES SHOWN TO REMAIN.

G. NEW FIRE HYDRANTS SHALL BE A MINIMUM SIX (6) FEET AWAY FROM DRIVES, ROADWAYS, PARKING LOTS, ETC.

H. DISINFECT ALL NEW POTABLE WATER PIPING SYSTEMS WITH DOCUMENTATION PER SPECIFICATIONS AND PRIOR TO SWAP OVER OF NEW POTABLE WATER SERVICES.

I. ALL SITE DITCHES FOR NEW PIPING SHALL BE PROPERLY BACKFILLED AND COMPACTED TO 90% AND TO MATCH EXISTING FINISHED GRADE THEREAFTER NEATLY RESODDED TO MATCH EXISTING. COMPACTION AT DRIVES AND PARKING AREAS SHALL BE MINIMUM 95% PROCTOR.

J. PRIOR TO SUBMITTING HIS BID THE CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION & THOROUGHLY ACQUAINT HIMSELF WITH EXISTING CONDITIONS TO BE ENCOUNTERED ETC. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR CONDITIONS INCREASING THE CONTRACTOR'S COST WHICH WERE NOT KNOWN OR APPRECIATED BY HIM WHEN SUBMITTING HIS PROPOSAL IF THE CONDITION WAS OBVIOUS AND COULD HAVE BEEN DISCOVERED BY HIM. THE INTENT IS FOR ALL UTILITIES, WHETHER ACTIVE OR ABANDONED, ROUTED BELOW GRADE IN THE AREA ENCOMPASSED BY THE NEW CONSTRUCTION, TO BE DISCONNECTED, REMOVED & RELOCATED (IF ACTIVE) TO PRESERVE EXISTING LOAD OR CAPACITY. THE CONTRACTOR SHALL INCLUDE IN HIS BID PROVISIONS TO ACCOMMODATE SAME. THE LOCATION OF ALL UTILITIES, NEW OR EXISTING, SHALL BE DULY IDENTIFIED AS TO SIZE, MATERIAL, AND FUNCTION OF PIPE, ETC. ON AS-BUILT DRAWINGS.

K. ALL NEW NONMETALLIC PIPING SHALL BE TRACED WITH #12 AWGS BARE COPPER WIRE INSTALLED ON THE TOP OF ALL NEW PIPING AND ATTACHED WITH TIE-WRAPS EVERY FOUR (4) FEET ON CENTER. ALL NEW BURIED NONMETALLIC PIPING SHALL BE ADDITIONALLY TRACED WITH IDENTIFICATION METALLIC BASED TRACER TAPE, COLOR CODED AND LABELED PER FUNCTION AND ANSI STANDARDS AND INSTALLED AT +/- 12" BELOW FINISHED GRADE.

L. PERMANENT 6" X 18" DEEP CONCRETE MARKERS WITH 4" X 4" BRASS OR STAINLESS STEEL IDENTIFICATION PLATE LABELS SHALL BE INSTALLED FLUSH WITH FINISH GRADE, TO IDENTIFY ROUTING AND LOCATION OF NEW PIPING IN THE FOLLOWING LOCATIONS:
   (A) ALONG STRAIGHT LENGTHS OF PIPING MAINS 100'-0" O.C.
   (B) AT EVERY PIPING MAIN TURN IN DIRECTION THE CONTRACTOR SHALL UPDATE THE CONSTRUCTION DRAWINGS KEPT AT THE JOB SITE TO REFLECT THE ACTUAL CONDITIONS OF THIS INSTALLATION, I.E., LOCATIONS, ROUTING, ETC. PROVIDE AS-BUILT DRAWINGS AT COMPLETION OF PROJECT. ENGINEER TO IDENTIFY SIZE OF PIPE AND FUNCTION.

M. ALL NEW PIPE CROSSINGS OF ALL WALKS, DRIVES, ROADWAYS, PARKING AREAS, ETC., SHALL BE COORDINATED WITH AND APPROVED BY ARCHITECT REPRESENTATIVE. SAW CUT CONCRETE AND ASPHALT NEATLY A MINIMUM WIDTH TO INSTALL NEW PIPING. BACKFILL ALL TRENCHES PER SPECIFICATIONS, INCLUDING COMPACTION REQUIREMENTS. PROVIDE MINIMUM 8" THICK 3500# CONCRETE WITH #4 BARS 10" O.C. TO REPAIR ALL CONCRETE DRIVES AND PARKING AREAS. REPAIRS OF PEDESTRIAN CONCRETE WALKS AND ASPHALT PAVING SHALL INCLUDE SIMILAR PREPARATION/SOIL COMPACTION AND MINIMUM 4" SIMILAR (TO EXISTING) REPLACEMENT MATERIAL. THE REPAIRS SHALL BE NEATLY PROVIDED BY THE CONTRACTOR TO MATCH THE ADJACENT CONSTRUCTION. ALL INTERACTIONS OF DRIVES, WALKS, PARKING LOTS, ETC., SHALL BE MINIMIZED TO ONE (1) DAY TO LIMIT DISRUPTION OF FACILITY ACTIVITIES.

N. DOMESTIC WATER SERVICE AND FIRE PROTECTION FOR ADJACENT FACILITIES SHALL BE MAINTAINED AT ALL TIMES. FIRE MAIN (FIRE PROTECTION) DOWN TIME SHALL BE SCHEDULED AND APPROVED IN ADVANCE WITH THE OWNER'S REPRESENTATIVE AND SHALL BE MINIMIZED TO A MAXIMUM OF THREE (3) HOURS. IT IS SUGGESTED THAT NEW AND EXISTING FIRE MAINS SHALL BE COINCIDENTALLY OPERATIONAL UNTIL THE COMPLETION OF THE NEW SYSTEM TO MEET THIS GOAL.

O. PRIOR TO BEGINNING ANY WORK AT THIS SITE, THE CONTRACTOR SHALL SCHEDULE A MEETING WITH THE PROJECT ENGINEER AND USING AGENCY REPRESENTATIVE TO LAY OUT THE ROUTING OF ALL NEW PIPING AND LOCATION OF ALL NEW AND RELOCATED EXISTING FIRE HYDRANTS. THIS ROUTING, WHEN APPROVED, SHALL BE SUBSTANTIALLY STAKED OUT FOR CONSTRUCTION AND VERIFICATION PURPOSES.

P. CONTRACTOR SHALL HIRE HIS OWN INDEPENDENT UTILITY LOCATER TO VERIFY EXISTING SITE UTILITY LOCATIONS.

ADDENDUM #3 REVISED SHEET 02/24/2021

RICHARD C. MOORE — REGISTERED PROFESSIONAL ENGINEER — 20102 — STATE OF MISSISSIPPI
02/24/2021

ERG JOB NO. 20.003
ENGINEERING RESOURCE GROUP Inc.
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2030 PASS RD., SUITE A BILOXI, MS 39531 PHONE: (228) 388-8740 FAX: (228) 388-3270

1 October 2020
firing range improvements
ms law enforcement officers training academy
ms department of public safety
(pearl, mississippi)
GS# 332-046 (PP002)

BURRIS/WAGNON ARCHITECTS, P.A.
500 EAST WOODROW WILSON AVENUE JACKSON MS 39216 PH 6019697543 FAX 6019699374

FP0.1

GENERAL NOTES:

A. FIRE PROTECTION PIPING. SIZE AND ROUTING CONTINUATION PROVIDED IN CONJUNCTION WITH FIRE PROTECTION CONTRACTOR PROVIDED HYDRAULIC CALCULATIONS.

B. ENTIRE BUILDING TO BE PROTECTED WITH NEW WET PIPE FIRE PROTECTION SYSTEM.

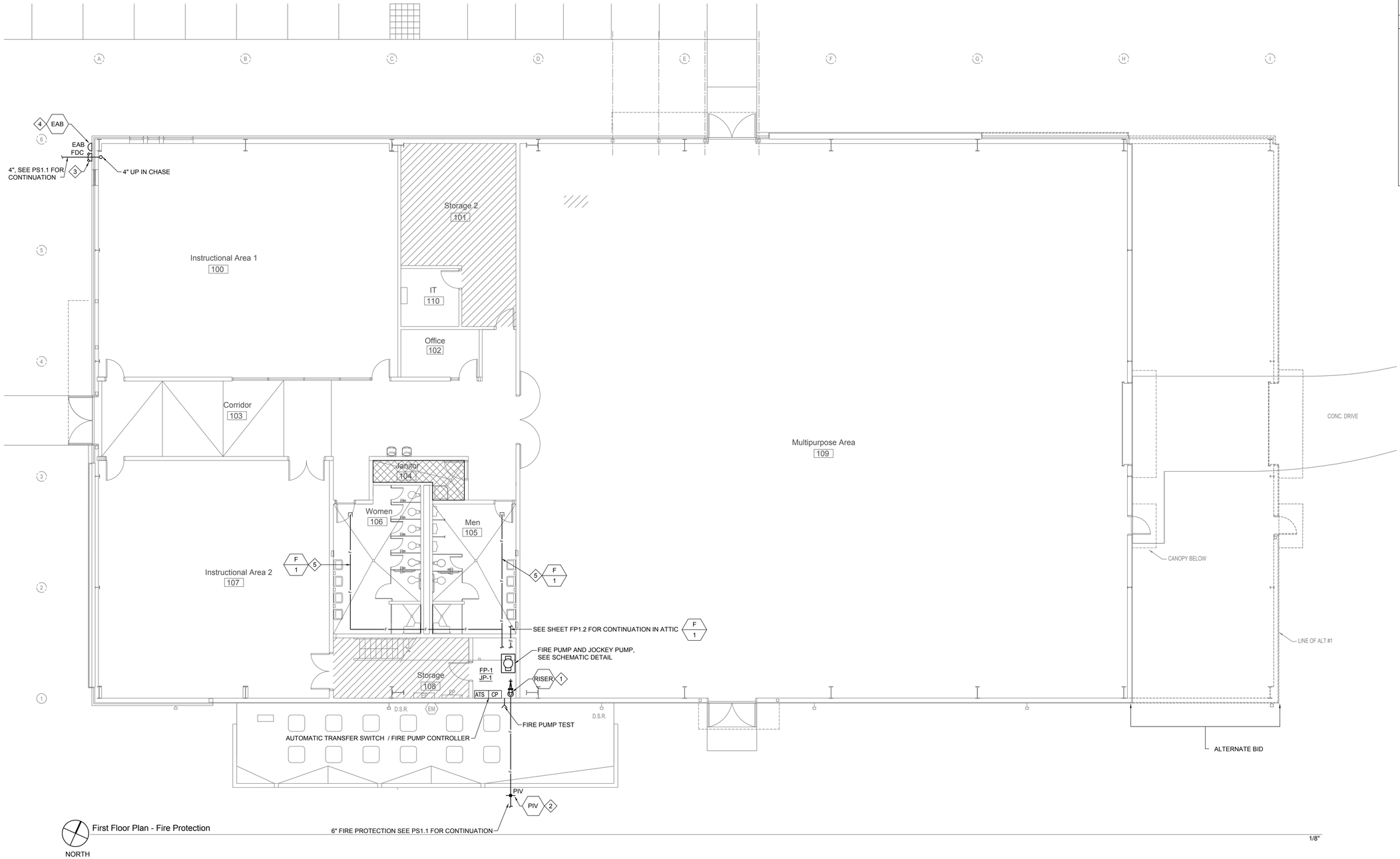
C. HATCHED AREA SERVED BY ORDINARY HAZARD GROUP 1 OR GROUP 2 WET PIPE SPRINKLER SYSTEM, PER LEGEND ON SHEET FP0.1

D. NON-HATCHED AREA SERVED BY LIGHT HAZARD SPRINKLER SYSTEM.

E. SEE NOTES ON FP0.1.

PLAN NOTES: (X)

1. FIRE PROTECTION RISES EXPOSED IN MECHANICAL ROOM. SEE FIRE PUMP SCHEMATIC DETAIL FOR MORE INFORMATION.
2. APPROXIMATE LOCATION OF POST INDICATOR VALVE (P.I.V). 120v.,1Ø REQUIRED.
3. APPROXIMATE LOCATION OF FIRE DEPARTMENT CONNECTION (F.D.C.). VERIFY LOCATION WITHIN 100'-0" OF NEW NEARBY FIRE HYDRANT.
4. APPROXIMATE LOCATION OF ELECTRIC FIRE ALARM BELL (E.B.). 120v.,1Ø REQUIRED.
5. FIRE PROTECTION MAIN PIPING SERVING RESTROOMS GENERAL ROUTING ABOVE CEILING / BELOW MEZZANINE.
6. FIRE PROTECTION MAIN PIPING SERVING MECHANICAL ROOM GENERAL ROUTING EXPOSED TO VIEW.



First Floor Plan - Fire Protection

1/8"

NORTH

ADDENDUM #3 REVISED SHEET 02/24/2021

RICHARD C. MOORE
ENGINEER
20102
STATE OF MISSISSIPPI

02/24/2021

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FP1.1

GENERAL NOTES:

A. FIRE PROTECTION PIPING. SIZE AND ROUTING CONTINUATION PROVIDED IN CONJUNCTION WITH FIRE PROTECTION CONTRACTOR PROVIDED HYDRAULIC CALCULATIONS.

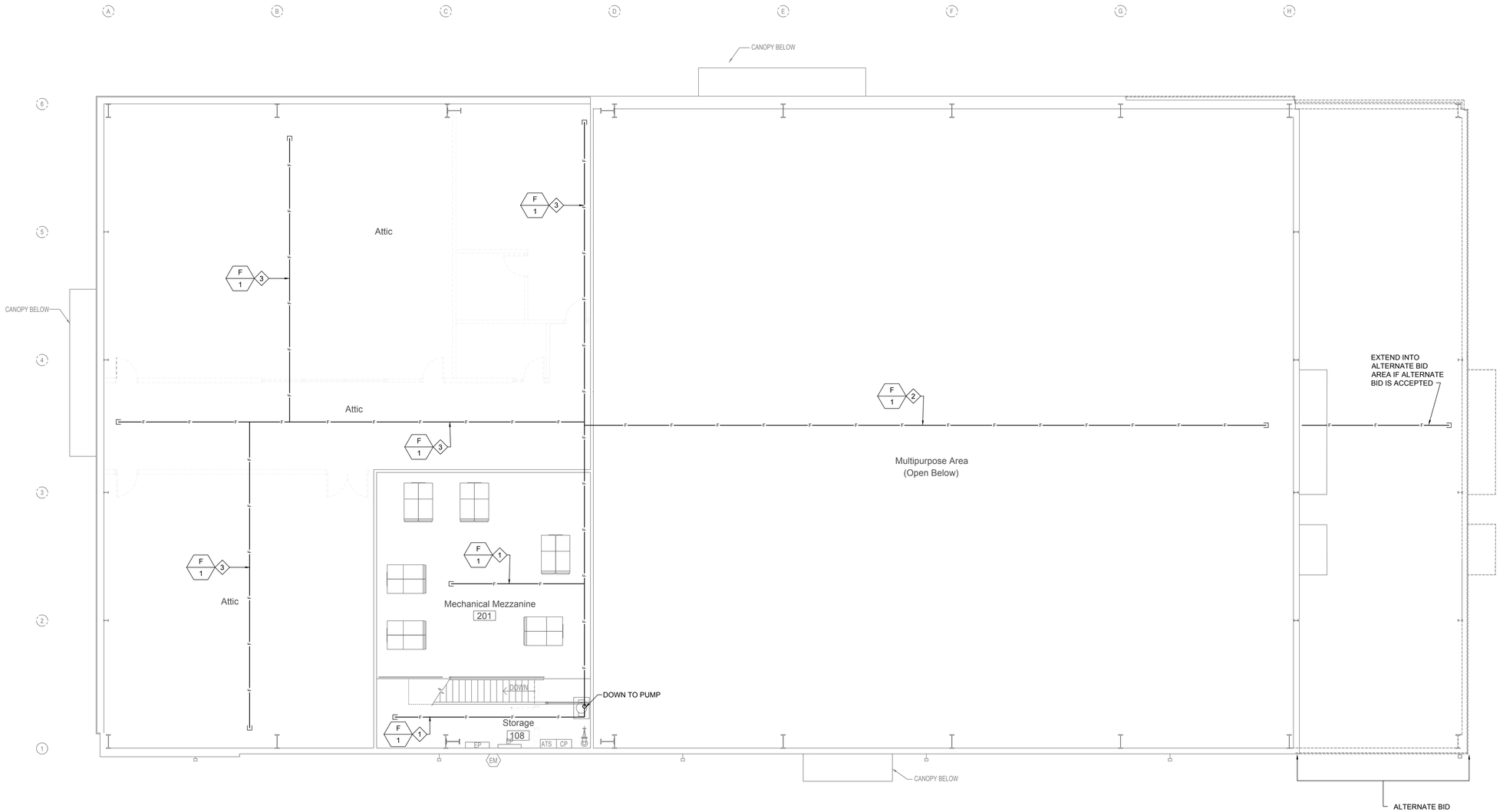
B. ENTIRE BUILDING TO BE PROTECTED WITH NEW WET PIPE FIRE PROTECTION SYSTEM.

C. NON-HATCHED AREA SERVED BY LIGHT HAZARD SPRINKLER SYSTEM.

D. SEE NOTES ON FP0.1.

PLAN NOTES:

1. GENERAL ROUTING OF FIRE PROTECTION MAIN PIPING SERVING STORAGE ROOM AND MEZZANINE LEVEL EXPOSED TO VIEW.
2. GENERAL ROUTING OF FIRE PROTECTION MAIN PIPING SERVING MULTIPURPOSE AREA EXPOSED TO VIEW.
3. GENERAL ROUTING OF FIRE PROTECTION MAIN PIPING ABOVE CEILING IN ATTIC.



Upper Level Plan - Fire Protection

1/8"

NORTH

ADDENDUM #3 REVISED SHEET 02/24/2021

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20102
STATE OF MISSISSIPPI

02/24/2021

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1 October 2020

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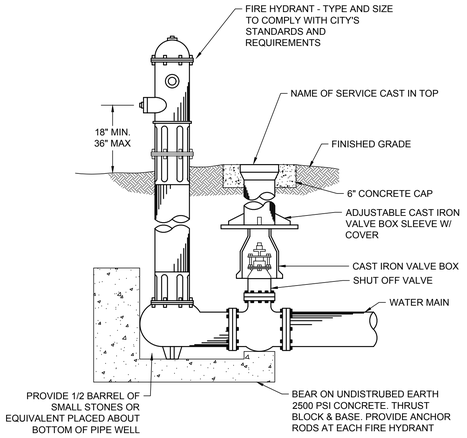
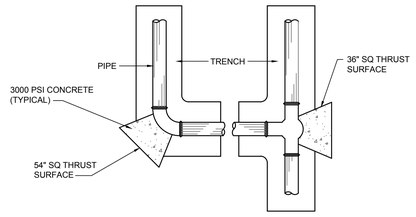
FP1.2



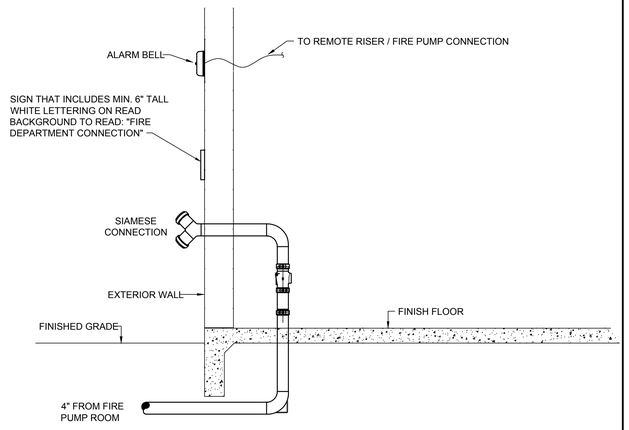
1 FIRE HYDRANT DETAIL

NOTE: BELOW GRADE WATER VALVE SIMILAR IN OTHER LOCATIONS. NO SCALE



NOTES:
1. PROVIDE THRUST BLOCKS AT ALL ELBOWS. BOTH VERTICAL AND HORIZONTAL.
2. THRUST SURFACE SHALL BARE ON UNDISTURBED EARTH.

2 THRUST BLOCKING DETAIL NO SCALE



NOTE: SEE PLUMBING SITE DRAWING FOR POST INDICATOR VALVE (PIV) OUTSIDE BUILDING

NOTES:
1. FIRE PROTECTION CONTRACTOR SHALL DETERMINE ACTUAL REQUIRED PIPE SIZES
2. UNDERGROUND METALLIC PIPING SHALL BE PROTECTED BY POLYETHYLENE SLEEVES
3. ALL EXPOSED FIRE SUPPRESSION PIPING SHALL BE PAINTED (RED)

3 FIRE DEPT. CONNECTION DETAIL NO SCALE

VIBRATION ISOLATION/SEISMIC RESTRAINTS

EQUIPMENT TYPE	MANUFACTURER	SEISMIC DESIGN CATEGORY "SDC"	SEISMIC COMPONENT IMPORTANCE FACTOR	NOTES
MECHANICAL EQUIPMENT	VIBRO ACOUSTICS	B	1.5	1, 2
DUCTWORK	VIBRO ACOUSTICS	B	1.5	1, 2
PIPING	VIBRO ACOUSTICS	B	1.5	1, 2
		NOTES: 1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. 2. SEISMICALLY RATED FOR PROJECT CONDITIONS. 3. ALL SEISMIC SHALL MEET ASCE 7-10.		

MISCELLANEOUS FIRE PROTECTION POWER, CONTROL AND INTERLOCK WIRING CONNECTIONS

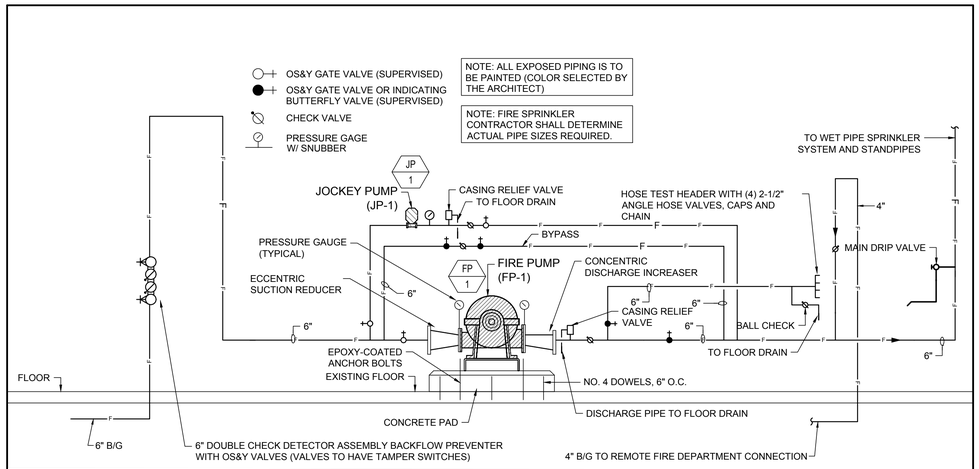
TAG	DESCRIPTION	POWER WIRING	CONTROL & INTERLOCK WIRING	ELECTRICAL V/Ø	REMARKS
RISER	FIRE PROTECTION RISER VALVES	--	DIV 26 FIRE ALARM	---	TAMPERPROOF SUPERVISORY SWITCHES TO MONITOR ALL VALVE POSITION STATUS. VERIFY/COORDINATE FIRE ALARM REQUIREMENTS.
EAB	ELECTRIC ALARM BELL	DIV 26 ELECTRICAL	DIV 26 FIRE ALARM	120/1	LOCATED ON EXTERIOR WALL ABOVE FIRE DEPARTMENT CONNECITON
PIV	POST INDICATOR VALVE	--	DIV 26 FIRE ALARM	---	FLOW SWITCH TO MONITOR SYSTEM VALVE POSITION STATUS. VERIFY/COORDINATE FIRE ALARM REQUIREMENTS.

SITE UTILITIES CONNECTION SCHEDULE

TAG	DESCRIPTION	SHEET	SIZE	INVERT	REMARKS
F 1	FIRE PROTECTION	FP101	SEE PLANS	-	SEE FP0.1 AND PS1.1 FOR CONTINUATION AND ROUTING

FIRE PUMP

MARK	MAKE AND MODEL	DUTY	TYPE	LOCATION	GPM EACH	PSI	PUMP HEAD	VOLTAGE/ PHASE	MOTOR HP	RPM	EMERGENCY POWER	REMARKS
JP-1	GRUNDFOS CR 1s-12	FIRE PROTECTION	JOCKEY PUMP	FIRE RISER RM.	5	90	--	208/3Ø	3/4	--	YES	JOCKEY PUMP WITH CONTROLS
FP-1	PEERLESS 5PVF7	FIRE PROTECTION	FIRE PUMP	FIRE RISER RM.	400	50	--	230/3Ø	20	3600	YES	MAIN FIRE PUMP WITH SLOW START STARTER, AUTOMATIC TRANSFER SWITCH, AND CONTROL PANEL



4 FIRE PUMP SCHEDULE AND PIPING SCHEMATIC DETAIL NO SCALE

ADDENDUM #3 REVISED SHEET 02/24/2021

CHAD E. MORGAN LICENSED PROFESSIONAL ENGINEER 20102 STATE OF MISSISSIPPI

02/24/2021

ERG JOB NO. 20.003

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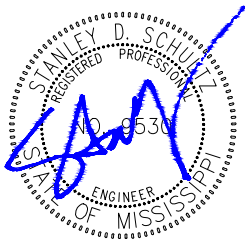
FP5.1

Firing Range Improvements
Pearl, Mississippi

2-26-2021
S/W #220019

Please incorporate the following electrical addendum items into the above subject project.



2-26-2021

To the Specifications:

A) Add the attached Specification Section "260230 – Stand-by/Emergency Power System (Diesel)" to the Table of Contents and to the specifications.

B) Specification Section 260010-6.1 Add Emergency Engine Generator & Control System to the list

C) Specification Section 260030-2.7. Add Engine Generator to the list.

To the Plans:

A) Sheet E-2, First Floor Plan – Base Bid – Lighting
   1) Storage 108, see attached sheet, ADE-2, for revised lighting layout.
   2) New Fire Pump room, add symbol "F" fixture and switch. See attached sheet ADE-2.

B) Sheet E-3, First Floor Plan – Base Bid – Power
   1) Storage 108, see attached sheet, ADE-3, for revised panel layout and relocation of booster pump.
   2) New Fire Pump room, add connections to jocky and fire pump. See attached sheet ADE-3.

C) Sheet E-4, First Floor Plan – Base Bid – Communications
   1) Storage 108, see attached sheet, ADE-4 for revised smoke detector layout.
   2) New Fire Pump room, add fire alarm smoke detector. See attached sheet ADE-4.

D) Sheet E-6, Mezzanine Floor Plan - Power
   1) Mechanical Mezzanine, relocate Panel "DPB" to new position shown. See attached sheet ADE-6.

E) Sheet E-10, Power Riser Diagram
   1) See attached sheet ADE-10A for new Power Riser Diagram.

F) Sheet E-10, Power Connection Schedule
   1) Add power connection marks #37 and #38. See attached sheet ADE-10B.

G) Sheet E-10, Panel "DPA" Circuit Schedule
   1) Add circuit DPA-13 for jocky pump. See attached sheet ADE-10B.

260230 STAND-BY/EMERGENCY ELECTRIC POWER SYSTEM (DIESEL)

1. GENERAL

1.1 Provide and connect a complete stand-by/emergency electric power system consisting of new and current equipment to automatically provide emergency power via an engine generator set(s) and transfer switch(es) to selected loads in the event of normal power interruption.

1.2 Installation shall be in strict compliance with applicable codes including, but not limited to, NFPA 110 and NEC Articles 700, 701 and 702. System shall be installed and connected by personnel qualified in systems of this type.

1.3 All material, equipment and/or accessories necessary for proper operation of the system not specified or described herein shall be provided at no additional contract cost to accomplish the intended function of the system.

1.4 System shall be installed, connected and operate as a Level 1 System as defined by NFPA 110.

1.5 The Contractor shall be responsible for providing adequate technical supervision by factory trained representative(s) of the system manufacturer to assure proper installation and connection of the system. These personnel shall perform initial start-up, operational testing and Owner instructional training.

1.6 The complete stand-by/emergency power system (engine generator set, ATS, controls, etc.) shall be warrantied by the same manufacturer for one year from the date of final acceptance by the Owner and/or Professional.

1.7 Three (3) copies of complete operation and maintenance manuals in hardback binder(s) of the installed engine generator set, automatic transfer switch and all accessories shall be provided to the Professional with the Close-Out Documents.

2. ENGINE GENERATOR SET

2.1 The engine generator set shall have minimum continuous stand-by rating of 30/38 KW/KVA at .8 power factor, 3 phase, 4 wire, 60 Hz.

2.2 Engine generator set shall have a minimum starting KVA of 71 at the system voltage with a maximum 20% voltage dip and shall recover to +/- 0.5% of rated voltage within four seconds.

2.3 Exposed moving parts, parts that produce high operating temperature which are accessible to the public from the finished grade, parts that may be electrically energized and parts that may be hazardous to the public during normal operation shall be insulated, fully enclosed, guarded or fitted with other types of safety devices. The safety devices shall be installed so that proper operation of the equipment is not impaired.

2.4 The engine generator set(s) and its/their installation shall be UL 2200 listed.

3. ENGINE

3.1 The generator set engine shall be four cycle and shall be Diesel fueled with electric fuel shut-off.

3.2 The engine shall have an isochronous governed speed of 1800 rpm.

3.3 The engine shall be liquid cooled, closed loop with factory mounted radiator, fan and water pump. A block heater of proper wattage and voltage, thermostatically controlled to maintain engine coolant at 90 degrees Fahrenheit shall be provided and connected.

3.4 Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have air cleaner and fuel and oil filters with replaceable elements.

3.5 Provide and connect ten (10) ampere automatic float and equalize battery charger with alarms when remote annunciator is supplied. Engine shall have minimum 35 ampere automatic battery charging alternator with solid-state voltage regulation.

3.6 Starting shall be by positive engagement solenoid shift-starting motors. Provide heavy-duty battery(ies) with corrosion proof battery rack and battery cables. Battery(ies) shall be capable of delivering the minimum cold-cranking amps required at zero degrees Fahrenheit per SAE standard J-537.

4. GENERATOR

4.1 The engine generator set alternator shall be salient-pole, reconnectable self-ventilated of drip-proof construction with amortisseur rotor windings skewed for smooth voltage waveform. Unit shall be connected to provide proper system voltage. The generator shall be directly connected to the flywheel housing with a semi-flexible coupling between flywheel and rotor with maintenance free bearing.

4.2 Insulation material shall meet NEMA standards for Class H and be vacuum impregnated with epoxy varnish to be fungus resistant. Temperature rise of the rotor and stator shall be limited to 150 degrees Celsius.

4.3 The excitation system shall be of brushless construction controlled by a solid-state voltage regulator with adjustable volts-per-hertz operation capable of maintaining voltage within +/- 2% at any constant load from 0 to 100% of rating. The regulator must be sealed from the environment and isolated from the load to prevent tracking when connected to SCR loads. Frequency regulation shall be isochronous and +/- 0.25% steady state.

4.4 The generator shall be capable of sustaining at least 300% of rated current for at least 10 seconds under a three phase symmetrical short circuit by inherent design or by the addition of a current boost system.

5. CONTROLS/ANNUNCIATION

5.1 The generating set shall have complete set-mounted, vibration isolated microprocessor-based controller rated for operation in the environment installed. Controller shall include:

a. Complete start/stop control which shall operate on closure of remote contact(s).

b. Speed sensing and a second independent starter motor disengagement system shall protect against the starter engaging with a moving flywheel. Starting system shall be designed for restarting in the event of a false engine start.

c. Overcrank protection designed to open the cranking circuit after 75 seconds if the engine fails to start.

d. Circuitry to shut down the engine when signal(s) for high coolant temperature, low oil pressure, or overspeed is received.

e. Engine cool down timer factory set to permit unloaded running of the generator set after transfer of the load to normal.

f. Three-position (Auto - Off - Test) selector switch. In the “test” position, engine shall start and run regardless of the position of the remote starting contacts. In the “automatic” position, engine shall start upon closure of remote starting contacts. In the “off” position, the engine shall not start under any condition. The “off” position shall also provide immediate emergency shutdown of the generator set.

g. Indicating lights to signal the following: Not-in-auto, overcrank, emergency stop, high engine temperature/low coolant level, overspeed, low oil pressure, battery charger malfunction, low battery voltage, low fuel, system ready, pre-alarm high engine temp., pre-alarm low oil pressure, low coolant temperature, auxiliary fault, auxiliary fault pre-alarm. A test button shall be provided for testing all indicating lights.

h. Alarm horn with silencer

5.2 A generator set instrument panel shall be set-mounted, vibration isolated, connected and tested by the generator set manufacturer. The instrument panel shall contain dual range volt meter, dual range ammeter, voltmeter-ammeter phase selector switch, lights to indicate high or low meter scale, frequency meter, panel illuminating lights, battery charger meter, coolant temperature gauge, oil pressure gauge, running time meter, voltage adjustment rheostat.

5.3 A remote alarm annunciator with audible and visual signals meeting NFPA-110 shall be provided and connected where indicated on the drawings, or if location not shown, at a location complying with NFPA-110 as approved by the Professional.

6. INSTALLATION - OUTDOOR

6.1 The engine generator set(s) shall be properly mounted and secured on a concrete pad where shown on the drawings and as directed by the Professional. Unless indicated otherwise on the drawings, the concrete pad shall be 10" thick with 6" below finished grade, 4" above finished grade and a 1" chamfer on all exposed edges. The concrete equipment pad shall extend 36" beyond the equipment/housing perimeter on all sides to provide a service walkway. Concrete shall be 3000 PSI with #6 rebar, 12" on-center, top and bottom. Vibration isolators as recommended by the set manufacturer shall be provided between the engine generator and the heavy duty steel base or between the base and the slab.

6.2 Engine generator set location, orientation, etc. shall be fully coordinated with the Professional and the equipment manufacturer considering the surrounding environment and building elements to insure proper clearances for maintenance, air distribution, exhaust, etc.

6.3 The engine generator set shall be provided with a properly sized corrosion resistant weather-proof housing complete with lockable/removable doors properly located to allow required access to controls and components requiring maintenance or adjustment. The enclosure shall contain all set components and shall provide proper ventilation to permit operation at rated load under secured conditions.

6.4 Where the engine generator set is connected as a separately derived system as defined by the NEC, the engine generator set shall be grounded as a separately derived system as specified in Section 260250 and per the NEC. Where the engine generator set is not connected as a separately derived system, the power distribution system feeder ground conductor shall be bonded to the equipment.

7. EXHAUST

7.1 Outdoor engine generator set(s) shall be provided with proper exhaust silencer and tail pipe coated to be temperature and rust resistant and rated for critical applications. The exhaust silencer shall be vibra-mounted to the roof of the unit’s weather housing. Exhaust silencer(s) and piping shall meet the requirements of the engine generator set manufacturer.

8. FUEL SUPPLY/STORAGE

8.1 U.L. listed sub-base fuel tank of double walled construction with normal and emergency venting. Fuel capacity shall be for a minimum of 24 hours of generator operation at 100% of rated load. Fuel tank shall be completely filled at final acceptance with proper fuel as recommended by the engine manufacturer. Contractor to fill the tank with 100% unblended Diesel Fuel. BIO blends are not acceptable.

8.2 Flexible fuel lines rated 300 degrees Fahrenheit and 100 PSI ending in pipe thread.

9. AUTOMATIC TRANSFER SWITCH(ES)

9.1 The automatic transfer switch (ATS) is part of the Fire Pump Controller and provided by Division 23.

9.9 All wiring and associated conduit(s) required for interface between the ATS and engine generator set(s) shall be provided. This shall include remote start/ stop functions.

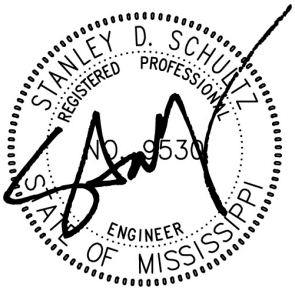
10. MANUFACTURERS

10.1 The engine generator shall be as manufactured by Cummins model number C30D6 or equal in Onan, Detroit Diesel or Caterpillar.

11. TESTING

11.1 On-site testing shall conform to NFPA-110 including a full 4 hour load bank test. Written verification and documentation of the requirements shall be submitted to the Professional for approval prior to final acceptance.

END OF SECTION 260230



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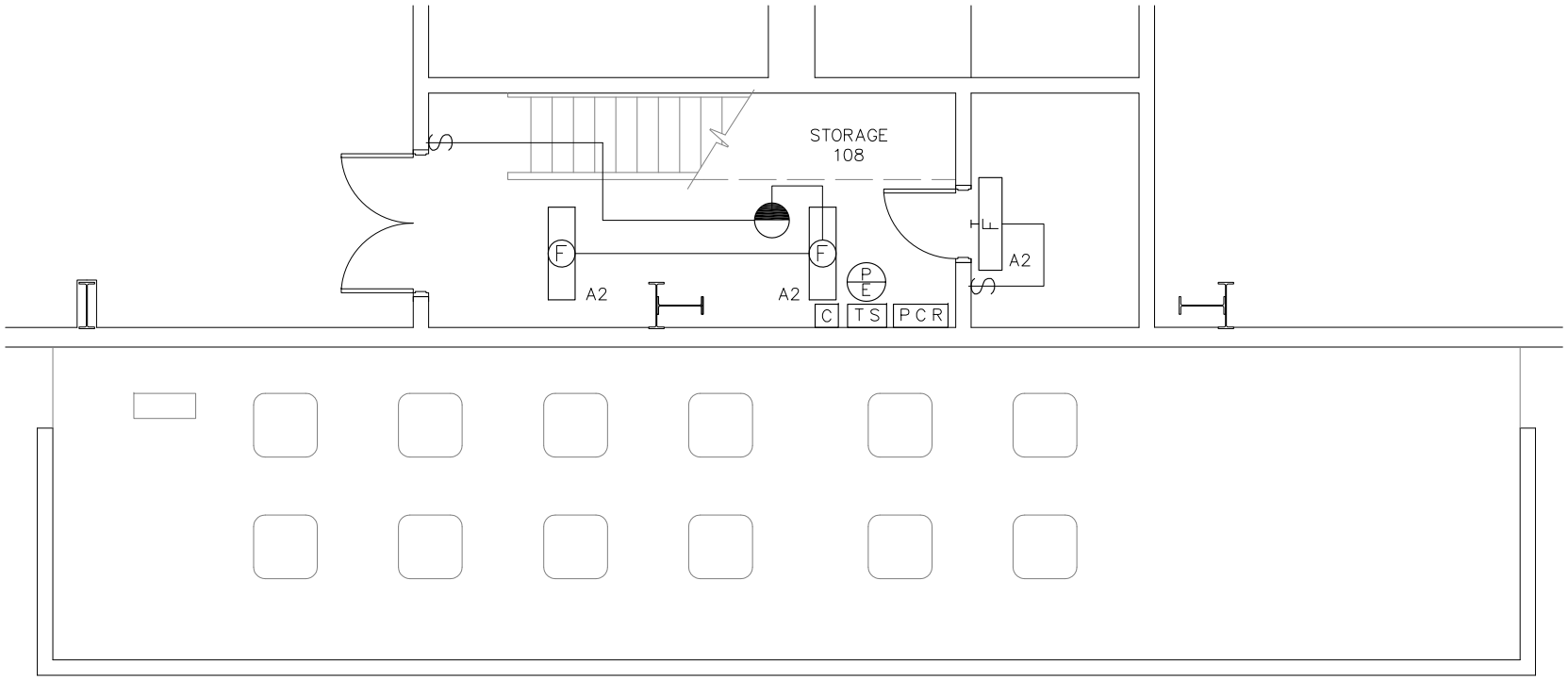

LIGHTING

PARTIAL FIRST FLOOR PLAN - BASE BID

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

N

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REGISTERED PROFESSIONAL
ENGINEER OF MISSISSIPPI

26 FEBRUARY 2021
W/O JOB NO. 22009
firing range improvements
ms law enforcement offices training academy
ms department of public safety
(pearl, mississippi)
GS# 332-046 (PP002)

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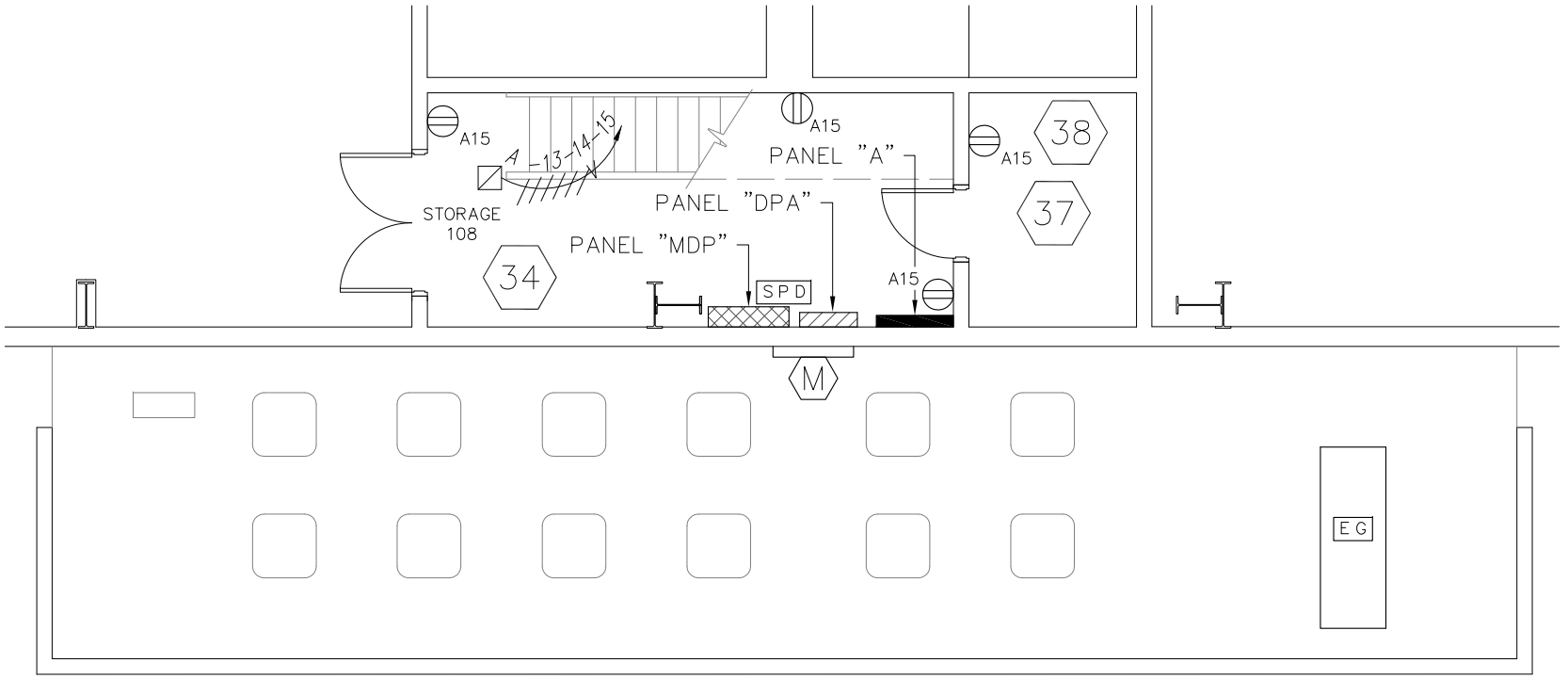
ADE-2



POWER

PARTIAL FIRST FLOOR PLAN - BASE BID

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

N

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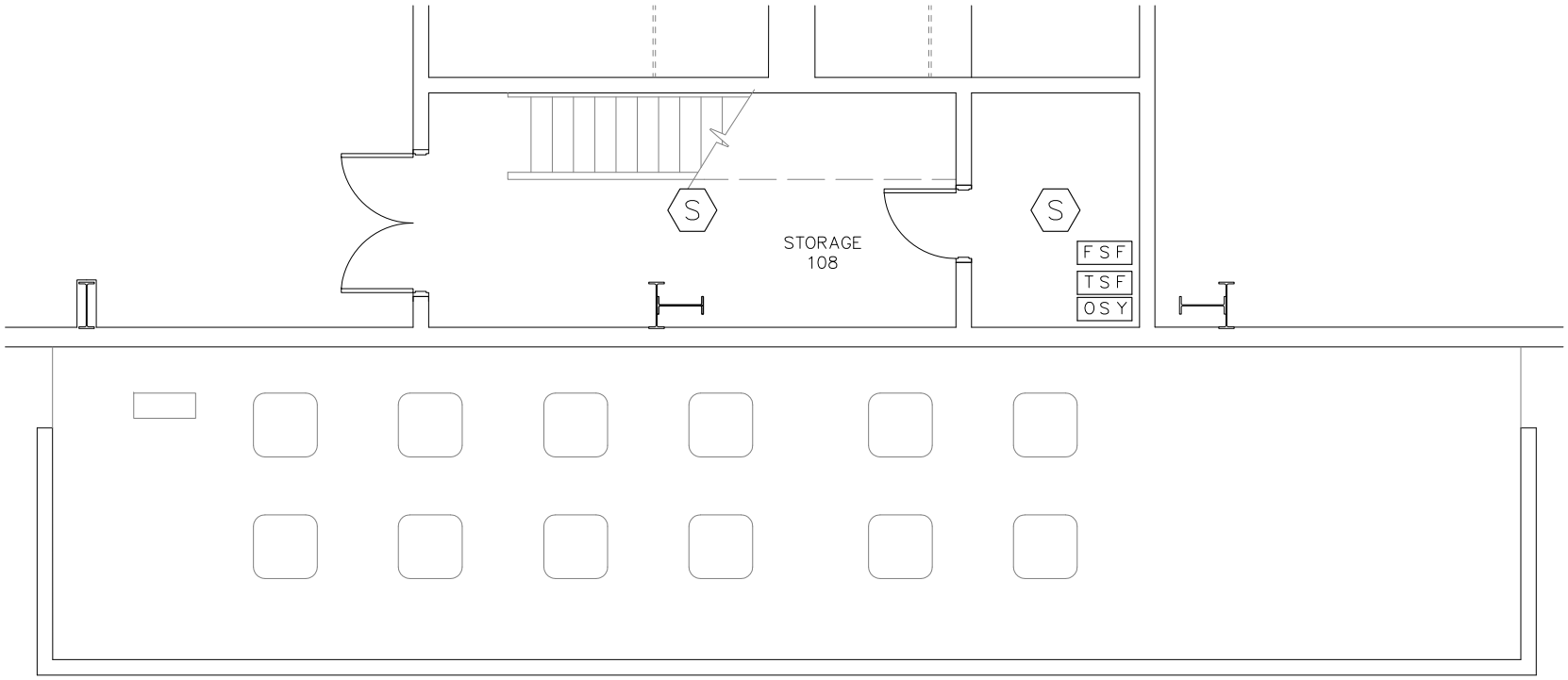
ADE-3



COMMUNICATIONS

PARTIAL FIRST FLOOR PLAN - BASE BID

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

N

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POWER

MEZZANINE FLOOR PLAN

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

N

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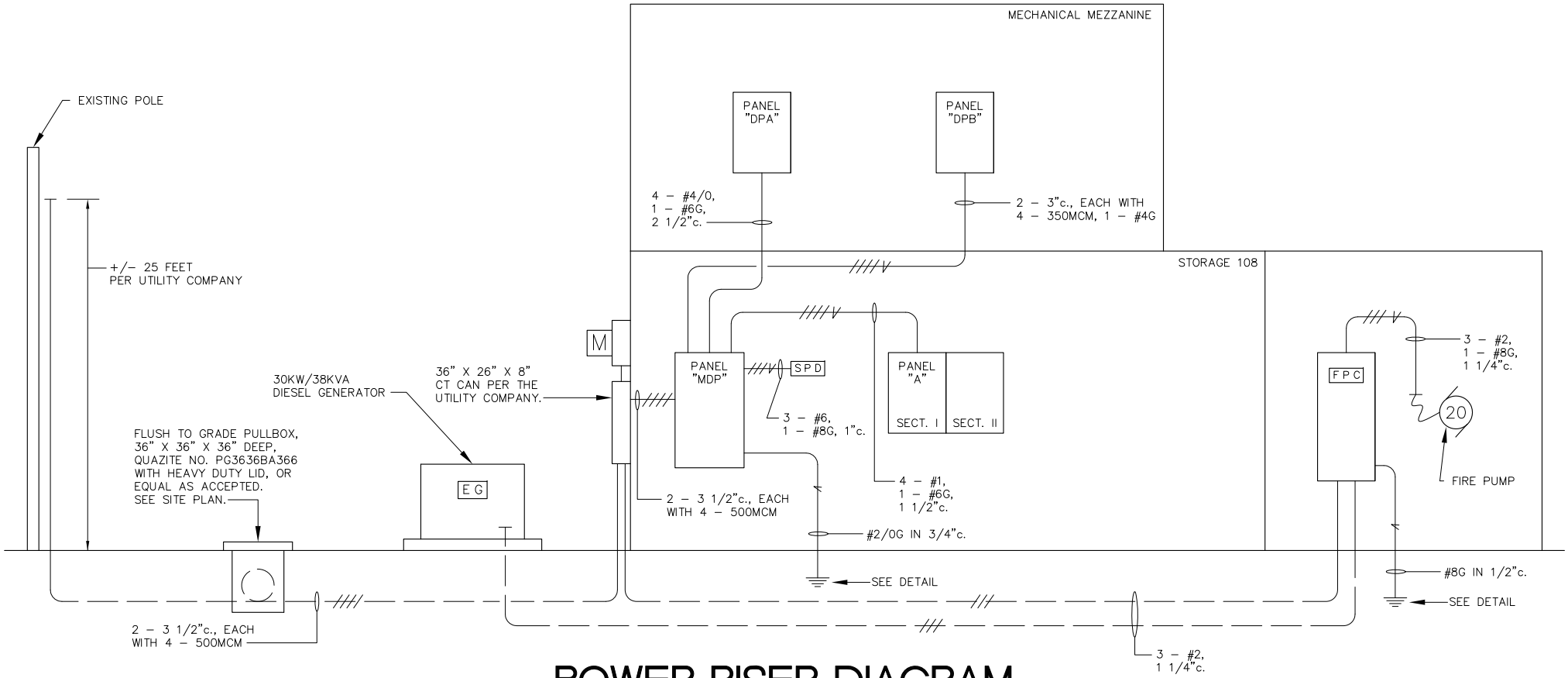

POWER RISER DIAGRAM

NO SCALE

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POWER CONNECTION SCHEDULE

MARK (*)	EQUIPMENT	VOLTAGE /PHASE	FLA	KW	HP	PANEL CKT. NO.	BRANCH CIRCUIT (1)	DISC. SW./ FUSE (2)	REMARKS
37	FIRE PUMP	208/3	62.1	–	20	–	3 – #2, 1 – #8G, 1 1/4"c.	–	–
38	JOCKY PUMP	208/3	3.7	–	3/4	DPA–13	3 – #12, 1 – #12G, 3/4"c.	30A3P	3,5

POWER CONNECTION REMARKS:

1. CIRCUIT TO INCLUDE ONE (1) GREEN GROUNDING CONDUCTOR (G) SIZED PER BRANCH CIRCUIT SIZE UNLESS SHOWN TO BE SIZED DIFFERENTLY. MINIMUM CONDUCTOR REQUIREMENT 2–#12, 1–#12G, 1/2"C.
2. DUAL ELEMENT TYPE FUSE AND SWITCH OF PROPER VOLTAGE. IF FUSE SIZE NOT SHOWN, UNIT TO BE UNFUSED.
3. FINAL CONNECTION USING LIQUID TIGHT FLEXIBLE CONDUIT.
5. WALL MOUNTED DISCONNECT SWITCH.

CIRCUIT SCHEDULE

PANEL	CIRCUIT	POLES	AMPS	REMARKS
DPA	1–12	3	30	VOLTAGE: 208Y/120 W/GND: 3PH. 4W. M.L.O.: 200A MOUNTING: SURFACE K.A.I.C.: 22K
	13	3	15	
SPARES	–	–	–	
SPACES	1	3	–	
TOTAL	14	42	–	

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