BIDDING INSTRUCTIONS
&
FORMS

Moore West Junior High Locker Room Addition
9400 S. Pennsylvania
Oklahoma City, Ok 73159

OMNI CONSTRUCTION
1909 S Eastern Ave Moore, OK 73160

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Moore West Junior High Locker Room Addition

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9400 S. Pennsylvania
Oklahoma City, Ok 73159

Division 0
Bidding Instructions
&
Forms

ARCHITECT OF RECORD:

AGP – the Abla Griffin Partnership, LLC
201 N. Broadway, Suite 210
Moore, OK 73160 405-735-3477

CONSTRUCTION MANAGER:

OMNI Construction, LLC
1909 S. Eastern Ave.
Moore, OK 73160 405- 735-3992

DOCUMENT 100

SOLICITAITON FOR BIDS
(BID NOTICE)

Sealed proposals will be received by the Board of Education, Independent School District No. I-002, Moore, Cleveland County, Oklahoma, at the Moore Public Schools Administration Service Center, 1500 SE 4th Street, Moore, Oklahoma, until 2:00 P.M., Central Standard Time, on the 3rd day of January 2024, at which time said bids will be opened for furnishing all labor and materials for the construction of the Moore West Junior High Locker Room Addition including the following Bid Packages:

Bid Package 1 – Demo/Sitework
Bid Package 2 – Concrete
Bid Package 3 – Masonry
Bid Package 4 – Metal (Material Only) (Not Used)
Bid Package 5 – Wood & Plastic (Not Used)
Bid Package 6 – Thermal & Moisture Protection (Not Used)
Bid Package 7 – Doors & Hardware (Not Used)
Bid Package 8 – Finishes (Ceiling Systems)
Bid Package 9 – Specialties (Accessories) (Not Used)
Bid Package 10 – Flooring (Not Used)
Bid Package 11 – Painting
Bid Package 12 – Fire Suppression (Not Used)
Bid Package 13 – Mechanical
Bid Package 14 – Plumbing
Bid Package 15 – Electrical/Cabling/IT
Bid Package 16 – Metal (Erection Only)
Bid Package 17 – Metal Building Systems

Bids received more than ninety-six (96) hours, excluding Saturdays, Sundays, and holidays, before the time set for opening bids, as well as bids received after the time set for opening bids, will not be considered, and will be returned unopened.

Bids will be publicly opened and read aloud at the above-mentioned office immediately following the closing time stated above.

Complete sets of General Conditions, Plans, and Specifications, and other bidding documents may be obtained through OMNI Construction, LLC, and the RPG Plan Room.

OMNI Construction
1909 S. Eastern Ave.
Moore, OK 73160
405-735-3992
www.omnioklahoma.com

RPG Plan Room
www.rpgplanroom.com

A cashier's check, a certified check, or a surety bond in the amount of five percent (5%) of the bid shall accompany the sealed proposal of each bidder if the proposal is $50,000.00 or larger. Bid Guarantees will be returned to the unsuccessful bidders. The Board of Education reserves the right to accept or reject any and all bids.

The time period within which a contract will be executed following award to the successful bidder will not exceed thirty (30) days.

DOCUMENT 200

INSTRUCTIONS TO BIDDERS

To be considered, bids must be made in accordance with these instructions to bidders.

Section 1 Solicitation

1) Bid Submission
2) Intent
3) Work Identified in the Contract Documents
4) Contract Time

Section 2 Bid Documents and Contract Documents

1) Definitions
2) Contract Documents Identification
3) Availability
4) Examination
5) Queries/Addenda
6) Product Substitution

Section 3 Site Assessment

1) Site Examination

Section 4 Qualifications

1) Evidence of Qualifications
2) Subcontractors/Suppliers/Others

Section 5 Bid Submission

1) Submission Procedure
2) Bid Ineligibility

Section 6 Bid Enclosure/Requirements

1) Security Deposit
2) Performance Assurance
3) Bid Form Requirements
4) Bid Form Signature

Section 7 Offer Acceptance/Rejection

1) Duration of Offer
2) Acceptance of Offer

Section 1-
SOLICITATION

1.1) BID SUBMISSION

A. Sealed proposals will be received by the Board of Education, Independent School District No. I-002, Moore, Cleveland County, Oklahoma, at the Moore Public Schools Administration Service Center, 1500 SE 4th Street, Moore, Oklahoma, until 2:00 P.M. Central Standard Time, on Wednesday, the 3rd day of January 2024, at which time said bids will be opened for furnishing all labor and materials for the complete construction of the Moore West Junior High Locker Room Addition.

Bid Packages:
Bid Package 1 – Demo/Sitework
Bid Package 2 – Concrete
Bid Package 3 – Masonry
Bid Package 4 – Metal (Not Used)
Bid Package 5 – Wood & Plastic (Not Used)
Bid Package 6 – Thermal & Moisture Protection (Not Used)
Bid Package 7 – Doors & Hardware (Not Used)
Bid Package 8 – Finishes (Ceiling Systems
Bid Package 9 – Specialties (Accessories) (Not Used)
Bid Package 10 – Flooring (Not Used)
Bid Package 11 – Painting
Bid Package 12 – Fire Suppression (Not Used)
Bid Package 13 – Mechanical
Bid Package 14– Plumbing
Bid Package 15 – Electrical/Cabling/IT
Bid Package 16 – Metal (Erection Only)
Bid Package 17 – Metal Building Systems

B. Bids received more than ninety-six (96) hours, excluding Saturdays, Sundays, and holidays, before the time set for opening bids, as well as bids received after the above time set for opening bids, will not be considered, and will be returned unopened.
C. All forms identified in Section 300 shall be properly filled out and notarized.
D. Bids will be publicly opened and read aloud at the above-mentioned office immediately following the closing time stated above.
E. Amendments to submitted Bids will be permitted when received in writing prior to bid deadline and when endorsed by the same party or parties who signed and sealed the Bid.
F. Bidders may withdraw their Bid by written request at any time before bid deadline.

1.2) INTENT

A. The intent of this bid request is to obtain an offer to perform work to complete the construction of the Moore West Junior High Locker Room Addition, 9400 S. Pennsylvania, Oklahoma City, Oklahoma, for a Stipulated Price contract, in accordance with the Contract Documents.
B. The Owner has contracted with OMNI Construction to act as Construction Manager for the total Project. Selected parts of the work of the Project may be completed by the Construction Manager and other parts may be contracted by acceptance of public bids.

1.3) WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises of bid package 1 thru 17 as noted in the Bid Manual
B. The Scope of the work consists of furnishing all labor and materials for the complete construction, in accordance with the Contract Documents,
C. The Base Proposal shall include all work as described in the Drawings, Project Manual and bid day instructions and forms. Each trade shall be responsible to review all sheets identified in the plan set and work that may pertain to their respected bid package.

1.4) CONTRACT TIME

A. Construction Start Date = 1-15-2024
B. Construction Completion Date = 9-11-2024

Section 2
BID DOCUMENTS AND CONTRACT DOCUMENTS

2.1) DEFINITIONS

A. Bid Documents: Project Plans, Project Manual, Bidding Instructions and Forms.
B. Bid: Executed Bid Form and required attachments submitted in accordance with these Instructions to Bidders.
C. Bid Price: Monetary lump sum identified by the Bidder in the Bid Form.

2.2) CONTRACT DOCUMENTS IDENTIFICATION

A. The Contract Documents (Drawings and Project Manual) are identified as prepared by the Architect, AGP – the Abla Griffin Partnership, LLC, and identified in their respective Table of Contents.

2.3) AVAILABILITY

A. Refer to section 2.4- for availability of drawings.

2.4) EXAMINATION

A. Bid Documents are on display at the offices of the following construction association plan room facilities:
[1] OMNI Construction, LLC
1909 S. Eastern Ave.
Moore, OK 73160 405-
735-3992
www.omnioklahoma.com

[2] RPG Plan Room
www.rpgplanroom.com

B. Upon receipt of Bid Documents verify that documents are complete. Notify the Architect or Construction Manager, OMNI Construction, LLC, should the documents be incomplete.

C. Immediately notify the Architect or Construction Manager upon finding discrepancies or omissions in the Bid Documents.

2.5) QUERIES/ADDENDA

A. Direct questions to AGP – the Abla Griffin Partnership L.L.C., 201 N Broadway, Suite 210, Moore, Oklahoma 73160, 405-735-3477 or AGP@theAGP.net. OMNI Construction, LLC, PO Box 892245 Oklahoma City, OK 73189, 405-735-3992 or omniconstructionllc@coxinet.net.
B. Verbal answers are not binding on any party.
C. Submit questions not less than 3 days before date set for receipt of Bids. Replies will be made by Addenda.
D. Addenda may be issued during the Bidding period. Addenda becomes part of the Contract Documents. Include resultant costs in the Bid Price.
E. List any addenda received on the Bid Form. Failure to receive any addenda shall not release the bidder from any obligations under his bid.

2.6) PRODUCT SUBSTITUTION

A. Where the Bid Documents stipulate a particular Product, substitutions will be considered by the Architect up to seven (7) days before receipt of Bids.
B. With each substitution request, provide sufficient information for Architect to determine acceptability of proposed products.
C. When a request to substitute a Product is made, Architect may approve the substitution. Approved substitutions will be identified by Addenda.
D. In submission of substitutions to products specified, Bidders shall include in their Bid, any changes required in the Work to accommodate such substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Sum/Price because of changes in Work necessitated by use of substitutions shall not be considered.

Section 3
SITE ASSESSMENT

3.1) SITE EXAMINATION

A. Examine the project site before submitting a Bid.
B. Each bidder shall carefully examine the project site, compared it to the Drawings and Project Manual, including all Addenda, and satisfied themself as to the existing conditions under which their trade will be required to work, or that will affect the work under this contract.
C. No allowances will be made on behalf of the Contractor for any error or negligence in determining these existing conditions. By submission of a bid on this project, the bidders agree to accept the existing project site in its present condition.
D. Any and all site visits shall be scheduled though the Project Manager of record, OMNI Construction, LLC 405-735-3992.

Section 4
QUALIFICATIONS

4.1) EVIDENCE OF QUALIFICATIONS

A. To demonstrate qualifications for performing the Work of this Contract, Bidders may be required to submit in writing evidence of financial position, previous experience, and current commitments. The financial statement shall reflect the true financial condition of the bidder within three months prior to the date of the bid opening. To be eligible for the Contract a bidder, must be able to show his financial ability to carry on work until such time as he receives the first payment on the Contract agreement, and to finance the work between payments until the project is complete and accepted by the Owner.

4.2) SUBCONTRACTORS/SUPPLIERS/OTHERS

A. The Owner reserves the right to reject a proposed Subcontractor for reasonable cause.
B. Refer to OMNI Construction's Master Service Agreement when OMNI is Construction Manager.

Section 5
BID SUBMISSION

5.1) SUBMISSION PROCEDURE

A. Bidders shall be solely responsible for the delivery of their Bids in the manner and time prescribed.
B. **Submit one copy of the executed offer on the Bid Forms provided, signed, and sealed with the required security in a closed opaque envelope, clearly identified with Bidder's name, project name, Owner's name, Bid Manual 1, Bid Package Number and Description, and Bid Date on the outside of the envelope.**
C. Contents of the Proposal Packet:
   1. Complete Bid Forms (Document 300).
   2. Non-collusion Affidavit signed and notarized.
   3. Non-Kickback Affidavit signed and notarized.
   4. Affidavit of Asbestos Free Materials and Construction signed and notarized.
   5. Non-Sex Offender Affidavit signed and notarized.
   6. Business Relationship Affidavit signed and notarized.
   7. A cashier's check, a certified check, or surety bond.
D. An abstract summary of submitted Bids will be made available to all Bidders following Bid opening.

5.2) BID INELIGIBILITY

A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at Owner's discretion.
B. Bid Forms, Appendices, and enclosures which are improperly prepared, may at the discretion of the Owner, be declared unacceptable.
C. Failure to provide security deposit, bonding or insurance requirements will at the discretion of the Owner, invalidate the Bid.

Section 6
BID ENCLOSURES/REQUIREMENTS

6.1) SECURITY DEPOSIT

A. Bids shall be accompanied by a security deposit if more than $50,000.00 for a sum not less than five percent (5%) of the Bid Price/Sum submitted, as a guarantee that the successful bidder will properly execute a Contract and file performance assurance bonds within seven (7) days of the date of notification of award, as follows:
   1. Bid Bond or
   2. Certified or cashier's check.

B. Should the successful bidder fail to enter into a Contract Agreement or to comply with the specified requirements, the bidder's check or bond will become the property of the Owner as liquidated damages, but not as penalty.

C. Endorse the Bid Bond in the name of the Owner as obliged, signed, and sealed by the Contractor as principal and the Surety. Surety Bonds shall be issued by a surety licensed to conduct business in the State of Oklahoma and shall be accompanied by the bond agent's power-of-attorney.

D. Endorse the certified or cashier's check in the name of the Owner.

E. The security deposit will be returned after delivery to the Owner of the required Performance and Statutory Payment Bonds by the accepted Bidder.

F. The security deposit will be returned after delivery to the Owner of the required Performance and Labor and Material Payment Bond(s) by the accepted Bidder.

G. Include the cost of Bid Security in the Bid Price.

H. After a bid has been accepted, all securities will be returned to the respective Bidders and other requested enclosures.

I. If no contract is awarded, all security deposits will be returned.

6.2) PERFORMANCE ASSURANCE

A. Accepted Bidder: Provide Performance and Statutory Bonds in one hundred percent (100%) of the contract amount covering faithful performance of the contract, and payment of all obligations arising there-under, will be required by the Owner.

B. Provide a Defect Bond in the amount of one hundred percent (100%) of the contract amount covering defective workmanship and materials for a period of one year after the acceptance of the project.

C. Include the cost of performance assurance bonds in the Bid Price.

D. Oklahoma law allows substitution of an Irrevocable Letter of Credit is included herewith. One such letter shall be required for each of the bonds noted above.

E. Construction Manager reserves the right to enforce or waive the surety bond requirements.

6.3) BID FORM REQUIREMENTS

A. Complete all requested information in Section 300 of the Bidding Instructions and Forms.

6.4) BID FORM SIGNATURE

A. The Bid Form shall be signed by the Bidder, as follows:
   1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.
   2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature.

3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the Bid is signed by officials other than the President and Secretary of the company, or the President/Secretary/Treasurer of the company, a copy of the by-law resolution of the Board of Directors authorizing them to do so, must also be submitted with the Bid Form in the Bid Envelope.
4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

Section 7
OFFER ACCEPTANCE/REJECTION

7.1) DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after the Bid closing date.

7.2) ACCEPTANCE OF OFFER

A. The Owner reserves the right to accept or reject any or all bids, or to accept any bid he considers advantageous and to waive formalities and irregularities.
B. The Owner reserves the right to disqualify bids, before and after opening, upon evidence of collusion with intent to defraud or other illegal practices upon the part of the bidder.
C. The Contract will be awarded based on the lowest responsible bid.
D. In case of a difference in written words and figures on the Bid Form, the amount stated in written words shall govern.
E. After acceptance by the Owner, the Architect, on behalf of the Owner, will issue to the successful Bidder, a written Notice to Proceed.
F. The time Period within which a contract will be executed following award to the successful bidder will not exceed thirty (30) days.
G. In the event of a tie bid the coin toss method will be administered by the Construction Manager to determine the successful bidder.

DOCUMENT 300

BID FORMS

PROJECT NAME: Moore West Junior High Locker Room Addition

DATE OF BID OPENING: _____

COMPANY NAME: _____
COMPANY ADDRESS: _____
CONTACT NAME: _____
TELEPHONE NUMBER: _____
FAX NUMBER: _____
EMAIL ADDRESS: _____

PACKAGE NO. / DESCRIPTION	COMPLETE DESCRIPTION AS TO SCOPE OF WORK	AMOUNT

****Any proposal containing clarifications or exclusions shall not be considered.**

Base Bid: _____(Written Words)

$_____(Numeric Form)

IT IS UNDERSTOOD THE BASE BID DOES NOT INCLUDE THE COST OF THE PERFORMANCE BOND COVERING 100% OF THE COTRACT AMOUNT. PRIOR TO AWARD, THE OWNER AND CONTRACTOR RESERVE THE RIGHT TO ADD A PERFORMANCE BOND FROM THE TRADE CONTRCT AGREEMENT. PLEASE INDICATE THE FOLLOWING INFORMATION WITH REGARDS TO YOUR PERFORMANCE BOND:

PERFORMANCE BOND RATE (%): _____

COST OF PERFORMANCE BOND ($):_____(Dollars)

Alternates:

Description of Alternate: _____

Add or Deduct: _____

**Please note that any and all items of the given package which are not specifically excluded in the bid document will be considered to be a part of the bid package.

SIGNATURE OF BIDDING PARTY DATE

By initialing the line next to each item below you are acknowledging that you have included the following items:

_____ A cashier's check, a certified check, or a surety bond if bid is $50,000 or greater.

_____ Non-Collusion Affidavit (Signed and Notarized)

_____ Non-Kickback Affidavit (Signed and Notarized)

_____ Affidavit of Asbestos Free Materials and Construction (Signed and Notarized)

_____ Non-Sex Offender Affidavit (Signed and Notarized)

_____ Business Relations Affidavit (Signed and Notarized)

_____ Acknowledge receipt of Addenda Numbers _ through __ issued for bidding.

SUBMITTED BY:

COMPANY NAME: _____

FULL PRINTED NAME: _____

SIGNATURE: _____

DATE: _____

NON-COLLUSION AFFIDAVIT

STATE OF_____)

)ss.

COUNTY OF _____)

_____, of lawful age, being first duly sworn on oath says that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any state official or employee as to quantity, quality or price in the prospective contract, or any other terms of said prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other things of value for special consideration in the letting of contract.

Subscribed and sworn to me before this _____ day of _____, 20____

_____
Notary Public

My Commission Expires:

_____

300-2

NON-KICKBACK AFFIDAVIT

COMPANY NAME: _____

As required by Oklahoma State Statutes, Title 62, § 310.9, any contract for $25,000.00 or more for the purchase of materials, goods, or services, must be accompanied by the signed statement described below. Please sign this statement as indicated below and return to Moore Public Schools at the address shown below.

MOORE PUBLIC SCHOOLS
Attn: Purchasing Department
1500 S.E. 4th Street
Moore, OK 73160-8232

The undersigned (architect, contractor, supplier, or engineer), of lawful age, being first duly sworn on oath says that this contract is true and correct. Affiant further states that the (work, services, or materials) will be (completed or supplied) in accordance with the plans, specifications, orders, or requests furnished the affiant. Affiant further states that (s)he has made no payment directly or indirectly to any elected official, officer, or employee of the State of Oklahoma, any county or local subdivision of the state, of money or any other thing of value to obtain or procure the contract or purchase order.

_____
(Signature of contractor, supplier, engineer, or architect)

Subscribed and sworn to me before this _____ day of _____, 20___

_____
Notary Public

My Commission Expires: _____

300-3

NON-ASBESTOS AFFIDAVIT

STATE OF OKLAHOMA _____)

SS)

COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by bidder to submit the attached bid. Affiant further states that the bidder has not included as a part of the bid and will not include in the finished construction, nor will said bidder allow any subcontractor or workman to include in the finished construction, any material which contains asbestos in any form in the amount equal to or in excess of the one percent (1%) by weight or volume.

Subscribed and sworn to me before this _____ day of _____, 20_____

_____

Notary Public

My commission Expires:

_____

NON-SEX OFFENDER AFFIDAVIT

The undersigned, _____ represents that he/she is the owner or an officer of _____, who has the authority to make this declaration to Moore Public Schools, as required by Section 6-101.48 of Title 70 of the Oklahoma Statutes.
I declare that no employee on school premises during normal working hours under the authority of the above-named company or business has been convicted in the State, the United States, or another state of any se offense subject to the sex Offenders Registration Act or is subject to other states or the federal sex offender registration provisions.

I further declare that no employee working on school premises during normal working hours under the authority f the above-named company or business has been convicted of a felony offense within the past ten (10) years in this State the United States, or another state.

I further understand that Title 57, Oklahoma Statutes, Section 589 provides as follows, to wit:
It is unlawful for any person registered pursuant to the Sex Offenders Registration Act to work with or provide services to children or to work on school premises, or for any person or business who offers or provides services to children or contracts for work to be performed on school premises to knowingly and willfully allow any employee to work with children or to work on school premises who is registered pursuant to the Sex Offenders Registration Act. Upon conviction for any violation of the provisions of the subsection, the violator shall be guilty of a misdemeanor punishable by a fine not to exceed One Thousand Dollars ($1,000.00). In addition, the violator may be liable for civil damages.

Dated this_____ day of_____, 20___

Vendor / Contractor's Name and Address

_____
_____
_____

_____

Authorized Signer

Subscribed and sworn to me before this _____ day of _____, 20____

_____
Notary Public

My Commission Expires:

_____

300-5

Business Relations Affidavit

State of _____

)ss.

County of _____

_____, of lawful age, being first duly sworn on oath that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect of which existed within one (1) year prior to the date of this statement which the architect, engineer, or other part of the project is as follows:

_____

_____

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any official or director of the architectural or engineering firm or any other party to the project is as follows:

_____

_____

Affiant further states that the names of all persons who have any such business relationship and the positions they hold with their respective companies or firms are as follows:

_____

_____

(If none of the business relationships hereinabove mentioned exists, affiant should so state)

Name:_____

Title:_____

Subscribed and sworn before me this_____day of_____, 20___

_____

Notary Public

My Commission Expires:_____

300-6

DOCUMENT 400
GENERAL BID PACKAGE ITEMS

Each Bid Package shall include, but is not necessarily limited to the following General Bid Package Items:

Section 1-
General

A. Subcontractor acknowledges that they have performed an onsite investigation, if desired, of the site conditions and acknowledges that all activities must be performed in close coordination with other Subcontractors. The Subcontractor shall be responsible for all means and methods for performing the work according to the contract documents, site conditions, and all applicable codes.

B. Subcontractor shall comply with all provisions of the OMNI Construction contract, insurance, safety, and EEOC requirements.

C. In addition to the Conditions of Specification, drawings, submittals, and Closeout Submittals the Subcontractor shall provide the following:
- Each Submittal shall be submitted under separate coversheet indicating the specific Specification Section to which it pertains.
- Subcontractor shall submit three (3) hard copies and one (1) digital copy of each submittal.
- Subcontractor shall submit two (2) hard copies and one (1) digital copy of Close-out Documents.

a. Subcontractor shall be responsible for timely submission of all submittals, including but not limited to: shop drawings, samples, product data sheets MSDS information, and all other submittals required by the contract documents.

b. Miscellaneous – This contract will be provided by OMNI Construction. All warranties and guarantees are to be transferred to Owner at the completion of this project.

c. Subcontractor shall sequence work as directed by OMNI without exception.

d. All correspondence for this project shall be directed to the designated Project Manager – OMNI Construction.

e. Coordination – Subcontractor shall have a designated Project Superintendent who will regularly attend construction meetings as required involving this project. The Superintendent/representative attending the meeting shall have the authority and ability to make binding commitments regarding the timing of the performance of Subcontractor's work. Subcontractor, Field Project Manager or Superintendent may not be changed without mutual agreement with OMNI Construction. Subcontractor shall attend all schedule related meetings to coordinate access to work areas with the other Subcontractors, OMNI Construction and Owner work forces that are on site.

f. Subcontractor shall engage a qualified surveyor to establish exact points to act as working points as needed. Subcontractor shall include the cost to resurvey as needed to establish final dimensions and protect and maintain working points and survey control points from disturbance caused during construction. Construction Manager will provide two (2) Benchmarks to establish the layout.

g. Subcontractor shall include all layout and field dimensions associated with this work.

h. Subcontractor shall coordinate delivery of materials. Subcontractor shall provide equipment and personnel necessary to unload, stack, and store onsite. Subcontractor shall inventory all delivered items and inspect for damage or missing items. Any damaged or missing items shall be noted on the Bill of Lading. Subcontractor shall notify suppliers and arrange for replacement items to be shipped. Subcontractor shall file all damage claims with insurance carriers. Placement of staged items shall be coordinated with OMNI Construction.

i. Subcontractor shall be responsible for any damage caused by the Subcontractor to any adjoining areas that remain.

j. Subcontractor shall pay for all repairs to other Subcontractor's work damaged by contractor's personnel, suppliers, or subcontractors during construction.

k. Subcontractor shall be responsible for daily clean-up to include but not limited to: Removal and/or proper storage of tools, equipment, and materials as required by the Construction Manager, disposal of scrap and waste material, and the sweeping of any dust and dirt generated by construction activities, including general foot traffic of the subcontractor. All debris will be removed from the working area and deposited in the dumpster or proper location by the subcontractor, as directed by the Construction Manager.

l. Subcontractor is responsible for the proper back fill and testing of work put in place by the subcontractor in accordance with specification section 02200 Earthwork.

m. Subcontractor is responsible for fire caulking and sealing of all penetrations, with an equal fire rating to that of the wall being penetrated by the subcontractor's work.

Section 2-
Project Schedule

Project Sequence: Bidders will be required to adhere to the project schedule, which will be provided by OMNI Construction. Work will be performed as required to meet the overall completion date.

A. The Subcontractor agrees that it will provide adequate manpower to complete the Subcontractor's Work in accordance with the time established by the Schedule during regular working hours. The Schedule is based on a 40-hour work week. The Work Week is Monday – Friday, from 7:00 a.m. – 4:00 p.m. It shall be the Subcontractor's responsibility to meet the Schedule. Any cost associated with additional manpower and or overtime hours required to meet the schedule are the responsibility of the Subcontractor. In addition, the Subcontractor will be liable to the Construction Manager in connection with any overtime required to meet the schedule due to Subcontractor's inability to meet the schedule during regular hours, including but not limited to, additional supervision and a reasonable markup for overhead and profit.

B. Off hour and or Overtime may be required to complete select activities as may be directed by the Construction Manager and or Owner to meet the need of the school. These activities will be scheduled in advance.

C. It shall be the responsibility of Subcontractor to provide in writing the following information on a weekly basis, in order to update the Master Project Schedule:
    - Detailed Schedule including activities, anticipate durations and man loading
    - Subcontractor's daily report shall be submitted to OMNI Project Superintendent
    - Planned crew size and man-hours by week
    - Actual crew size and man-hours expended by week
    - Planned units by week
    - Actual units installed by week

D. Subcontractor shall provide an estimated man-loading curve for the duration of the project. This curve will be used as a guide for man loading throughout project. Subcontractor shall coordinate with OMNI Construction to refine the schedule for manpower loading and timely completion of the project. This responsibility will be ongoing as updates are required.

Section 3- Safety

3.1 Subcontractor shall implement a safety program meeting or exceed the requirements set forth by OSHA.

3.2 High visibility clothing and proper PPE will be required 100% of the time for the duration of this project.

DOCUMENT 500
BID PACKAGE 1-17

BID PACKAGE 1: DEMO/SITEWORK

Project: **Moore West Junior High Locker Room Addition**
Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 02050	Demolition	As applicable to Site Prep and Concrete
Section 02100	Site Preparation	Complete
Section 02200	Earthwork	As applicable to concrete
Section 02910	Temporary Erosion Control	Complete
Section 02920	Landscape Grading	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the DEMO/SITEWORK BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish labor, materials, and equipment necessary to complete demo/sitework.
2. Testing to be paid for by others, but to be coordinated by contractor.
3. Include all dewatering required to perform this scope of work.
4. Provide construction entrance as set forth in specifications.
5. All miscellaneous equipment and material required for the proper completion of this scope of work.
6. Subcontractor is to ensure that all elevated work areas are made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 2: CONCRETE

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 02280	Soil treatment	Complete
Section 02500	Paving & Surfacing	As Applicable to concrete
Section 03300	Cast-In-Place Concrete	Complete
Section 06100	Rough Carpentry	As applicable to concrete
Section 07200	Insulation	As applicable to concrete
Section 07260	Vapor Barrier	As applicable to concrete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the CONCRETE BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish and install all concrete completely.

2. Furnish and install all rebar, dowels, and accessories associated with concrete. Furnish and maintain all rebar caps on dowels until next trade begins tie in. **(Rebar associated with Masonry will be provided and installed in Masonry Bid package.)**

3. Furnish and install all required formwork.

4. Excavate and fill as required for all concrete work.

5. Furnish all sand & gravel base required for concrete work.

6. Include all necessary layout and surveying from a provided benchmark for concrete work.

7. Include all termite treatments.

8. Testing to be paid for by others but coordinated by contractor.

9. Include all concrete related weather and temperature protection.

10. Include all dewatering required to perform this scope of work.

11. Include concrete repairs including but not limited to patching, rubbing, grinding, fill, sandblast, and caulk as indicated on the drawings and specifications.

12. Furnish and install board insulation under slab and at foundation perimeter per plans and specifications.

13. All miscellaneous equipment and material required for the proper completion of this scope of work.

14. Subcontractor is to ensure that all elevated pours are made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

15. Furnish and install sidewalks/paving as detailed.

BID PACKAGE 3: MASONRY

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 04810	Unit Masonry Assemblies	Complete
Section 05500	Metal Fabrications	As Applicable to Masonry

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the MASONRY BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the follow items:

1. Furnish and install all necessary materials to complete masonry work, inclusive of rebar related to masonry scope of work.

2. Provide all necessary equipment and materials required for completion of this scope of work.

3. Subcontractor to ensure that all elevated work areas are made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

4. Install all loose steel lintels over openings.

5. Debris Disposal – waste disposal related to masonry shall be the responsibility of the contractor.

BID PACKAGE 4: METALS (MATERIAL ONLY) (NOT USED)

Project: **Moore West Junior High Locker Room Addition**
Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section	Metal Fabrications	As per plans and applicable

This bid package shall include all material, equipment, services, insurances, and incidentals for the METAL (MATERIAL ONLY) BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Supply all structural steel framing, joist, and steel decking.
2. Supply all anchors for embedding into concrete.
3. Supply all anchors for embedding into masonry.
4. Supply all bridging and seats.
5. Supply all bearings and angles.
6. Supply all lintels.
7. Supply all required fasteners to include but not limited to bolts, nuts, lag bolts, machine screws, plain washers, drilled-in expansion bolts, toggle bolts, epoxy, anchors, screens, and concrete inserts as indicated in the documents.
8. Include delivery of all material associated with this bid package. Delivery must be coordinated with the Construction Manager and steel erector.
9. Supply all seismic bracing steel.

BID PACKAGE 5: WOOD & PLASTIC (NOT USED)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 06100	Finish Carpentry	As applicable to custom casework/millwork
Section 06300	Wood Treatment	As applicable to custom casework/millwork
Section 06420	Custom Laminate Casework	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the WOODS & PLASTICS BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish and install all necessary materials to complete carpentry work.

2. Provide all necessary equipment and materials required for the proper completion of this scope of work.

3. Subcontractor to ensure that all elevated work areas are made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 6: THERMAL & MOISTURE PROTECTION (NOT USED)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 07100	Waterproofing	Complete
Section 07200	Insulation	Complete except as to concrete, roofing and interior finish
Section 07840	Firestopping	Complete
Section 07900	Sealants	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the THERMAL & MOISTURE PROTECTION BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish and install all necessary materials to complete the waterproofing/insulation/firestopping work.

2. Provide all necessary equipment and materials required for completion of this scope of work.

3. Subcontractor to ensure that all elevated work areas are made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 7: DOORS/HARDWARE (MATERIAL ONLY) (NOT USED)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 06100	Rough Carpentry	As applicable to this bid package
Section 06200	Finish Carpentry	As applicable to this bid package
Section 06300	Wood Treatment	As applicable to this bid package
Section 08100	Metal Doors and Frames	As applicable to this bid package
Section 08200	Wood Doors	As applicable to this bid package
Section 08700	Finish Hardware	As applicable to this bid package

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the DOORS/HARDWARE BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish all wood and metal doors, frames and hardware per plans and specifications installation by others.

BID PACKAGE 8: FINISHES (CEILING SYSTEM)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 05400	Cold Formed Metal Framing	Complete
Section 06100	Rough Carpentry	As applicable to this bid package
Section 06200	Finish Carpentry	As applicable to this bid package
Section 06300	Wood Treatment	As applicable to this bid package
Section 07200	Insulation	As applicable to this bid package
Section 09120	Ceiling Suspension Systems	Complete
Section 09250	Gypsum Wallboard	Complete
Section 09500	Acoustical Treatment	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the FINISHES (CEILING SYSTEM) BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish labor, materials, and equipment necessary to complete the ceiling system/finish framing/sheetrock.

2. All miscellaneous equipment and material required for the proper completion of this scope of work.

3. Subcontractor is to ensure that all elevated work is made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 9: SPECIALTIES (ACCESSORIES) (NOT USED)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 10100	Chalkboards and Tackboards	Complete
Section 10150	Compartments and Cubicles	Complete
Section 10520	Fire Protection Specialties	Complete
Section 10800	Toilet and Bath Accessories	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the SPECIALTIES (ACCESSORIES) BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish all materials necessary for installation of accessories per the plans and specifications, installation to be provided by others.

BID PACKAGE 10: FLOORING (NOT USED)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 09300	Tile	Complete
Section 09650	Resilient Tile Flooring	Complete
Section 09681	Carpet Tile	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the FLOORING BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish labor, materials, and equipment necessary to complete flooring.

2. All miscellaneous equipment and material required for the proper completion of this scope of work.

BID PACKAGE 11: PAINTING

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 09900	Painting	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the PAINTING BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish labor, materials, and equipment necessary to complete painting.

2. Provide all miscellaneous equipment and material required for the proper completion of this scope of work.

3. Subcontractor is to ensure that all elevated work is made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 12: FIRE SUPRESSION (NOT USED)

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section	Common Work Results for Fire Suppression	Complete
Section	Identification for Fire Suppression Piping and Equipment	Complete
Section	Fire Suppression Sprinklers	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the FIRE SUPPRESION BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish labor, materials, and equipment necessary to complete fire suppression.

2. All miscellaneous equipment and material required for the proper completion of this scope of work.

3. Subcontractor is to ensure that all elevated work is made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 13: MECHANICAL

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Plan Sheets M000-M701	Common Work Results for HVAC	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the MECHANICAL BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Furnish labor, materials, and equipment necessary to complete mechanical.
2. Testing to be coordinated by mechanical contractor.
3. All miscellaneous equipment and material required for the proper completion of this scope of work.
4. Coring, patching, and caulking of penetrations required for this scope of work.
5. Subcontractor is to ensure that all elevated work is made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

BID PACKAGE 14: PLUMBING

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Plan Sheets P000-P602	Common Work Results for Plumbing	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the PLUMBING BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the follow items:

1. Provide all material labor, and equipment required for proper installation of complete plumbing system.
2. All piping, fittings, valves, cleanouts, fixtures, and accessories as required for complete and proper installation of plumbing.
3. Any sleeves and penetrations required in walls, floors, roof, etc. for this work including fire/smoke sealing inside and outside of sleeves and patching/fire caulking of the penetrations.
4. All supports, hangers and in-wall blocking required for this work.
5. All identification as called for and/or required per code.
6. Coring, patching and caulking of penetrations required for this scope of work.
7. Caulking of all fixtures.
8. Furnishing and installing all plumbing equipment.
9. Provide all necessary sleeving and or block-outs at CMU required for the proper installation of all plumbing systems included in this contract agreement. Contractor will provide adequate layout and coordination with the Masonry Contractor to ensure proper installation of the work.
10. All permits, fees, and inspections as required.

11. All cutting and patching as required for the work of this proposal.

12. Subcontractor is responsible for backfilling and compactions per section 00202.

13. All testing to be paid for by others and coordinated by subcontractor associated with backfilling and compaction.

14. Subcontractor is responsible for removal of excess spoils from site.

15. Subcontractor to coordinate with utilities subcontractor to tie into utilities.

16. Subcontractor shall furnish and install steel, lockable, and primed access panels in any location required to allow for proper access to the plumbing system. Access panels shall be large enough to accommodate easy access for repairs, maintenance, and inspection.

17. All penetrations through CMU walls must have block-outs. Core drilling will not be allowed.

BID PACKAGE 15: ELECTRICAL/CABLING/IT

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Plan Sheets E000-E601	Common Work Results for Electrical	Complete
Plan Sheets T000-T504	Common Work Results for Technology	Complete

This bid package shall include all labor, material, equipment, services, insurances, and incidentals for the ELECRICAL/CABLING/IT BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the Bid Manual and shall also include, but not be limited to the following items:

1. Furnish and install the complete building and site electrical systems as specified.
2. Furnish, install, and coordinate all permanent fire alarm and communication systems.
3. Provide, coordinate, and maintain all temporary building/jobsite trailer and site electrical power and lighting services, including temporary construction facilities.
4. Subcontractor is responsible for coordinating all systems with the Fire Sprinkler, Mechanical, and Plumbing Contractors.
5. All associated inspections, permits, and required fees.
6. Subcontractor is responsible for all layout associated with this bid package.
7. Subcontractor is responsible for bid package 14 associated earthwork, including hauling off excess spoils.
8. Furnish and install all sleeves for associated electrical work.
9. Subcontractor is responsible for any and all wiring to others equipment.
10. Subcontractor is responsible for all fire-stopping where this scope of work creates penetrations.
11. Furnish and install all conduit and boxes for specification divisions 26000 through 28000.

12. Furnish and install all conduit and boxes for all mechanical controls systems.

13. Subcontractor shall furnish and install steel, lockable, and primed access panels in any location required to allow for proper access to the electrical system. Access panels shall be large enough to accommodate easy access for repairs, maintenance, and inspection.

14. All penetrations through CMU walls must have block-outs. Core drilling will not be allowed.

BID PACKAGE 16: METALS (ERECTION ONLY)

Project: **Fairview Elementary Office Addition**

Location: **2431 SW 89th Street, Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 13122	Metal Building Systems	as Applicable to Erection

This bid package shall include all equipment, services, insurances, and incidentals for the METAL (ERECTION ONLY) BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to the following items:

1. Supply all labor, tools, and equipment needed to erect the structural steel framing, joist, and steel decking.

2. Work with job superintendent and (metal) material provider regarding the delivery of materials.

3. See Alternate #1 (as applicable to erect package) – Remove existing prefinished metal roof panel system & existing prefinished metal wall panel system and all associated trim, gutter & downspouts, flashing, etc. and provide all new materials for a complete installation.

BID PACKAGE 17: METAL BUILDING SYSTEMS

Project: **Moore West Junior High Locker Room Addition**

Location: **9400 S. Pennsylvania Oklahoma City, Ok 73159**

Specification Section	Description	
Division 0	Bidding & Contract Documents	Complete
Division 1	General Requirements	Complete
Section 13122	Metal Building Systems	Complete

This bid package shall include all labor, materials, equipment, services, insurances, and incidentals for the PAINTING BID PACKAGE, including work from referenced specifications and other work normally associated with this trade.

The scope of work shall include all General Bid Package Items as listed in section 400 of Division 0 of the bid manual and shall also include, but not be limited to, the following items.

1. Provide all labor, miscellaneous equipment and material required for the proper completion of this scope of work.

2. Subcontractor is to ensure that all elevated work is made ready to protect all areas below and have OSHA approved fall protection for work to proceed.

3. See Alternate #1 (as applicable to erect package) - Remove existing prefinished metal roof panel system & existing prefinished metal wall panel system and all associated trim, gutter & downspouts, flashing, etc. and provide all new materials for a complete installation.

END

MOORE PUBLIC SCHOOLS
MOORE WEST JUNIOR HIGH SCHOOL
LOCKER ROOM ADDITION

INDEPENDENT DISTRICT NO. 2
CLEVELAND COUNTY, MOORE, OKLAHOMA

9400 SOUTH PENNSYLVANIA
OKLAHOMA CITY, OKLAHOMA 73170

PROJECT MANUAL

MAY 2023

AGP | the Abla Griffin Partnership

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MOORE WEST JUNIOR HIGH SCHOOL
LOCKER ROOM ADDITION

INDEPENDENT DISTRICT NO. 2
CLEVELAND COUNTY, MOORE, OKLAHOMA

9400 SOUTH PENNSYLVANIA
OKLAHOMA CITY, OKLAHOMA 73170

ARCHITECT:

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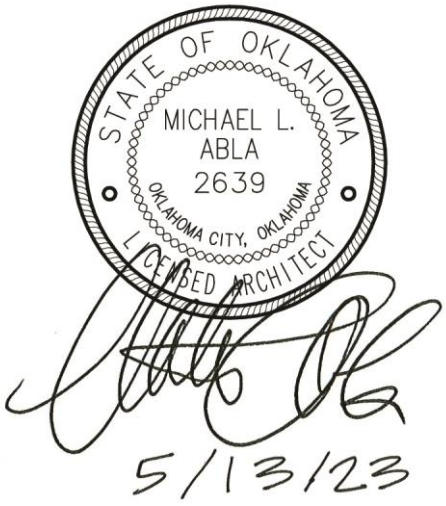

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SPECIAL CONDITIONS

TIME FOR COMPLETION AND LIQUIDATED DAMAGES:

A. Upon execution of the contract agreement between the Owner and the Contractor, it shall become an obligation of the contractor to complete all work to be performed under this agreement for the Construction of the **Locker Room Addition at Moore West Junior High School** - to be located at 9400 South Pennsylvania, Oklahoma City, OK - **within 240 Calendar Days.**

B. Penalty for noncompliance by the above date shall be cessation of all further periodical payments until the work is completed, and can be fully used for the purpose intended.

PAYMENTS:

A. The Owner's payment schedule indicating the payment dates established by Moore Public Schools shall be provided to the contractor to establish a monthly payment schedule.

B. **Certificates of payment shall be submitted to the Architect on or before 7 days prior to Owner's cut-off date.**

C. Until the Work is 50 percent complete, the Owner will pay 95 percent of the amount due the Contractor on account of progress payments. At the time the Work is 50 percent complete, any **remaining** partial payments shall be paid at 97.5 percent of amount due. The retainage shall be retained until the project is completed.

INSURANCE AND BONDS:

A. Insurance provided shall be with a company or companies licensed to do business in the state of Oklahoma.

B. Policies shall be provided in the following types and amounts:

1. a. Workmen's Compensation-Statutory
   b. Employer's Liability-$500,000 each accident.

2. Comprehensive General Liability:
   a. Bodily Injury - $1,000,000 each occurrence.
   b. Personal Injury - $1,000,000
   c. Property Damage - $1,000,000 each occurrence

3. Automobile Liability:
   a. Bodily Injury - $500,000 each person/$1,000.000 each occurrence
   b. Such Comprehensive Automobile Liability Insurance shall include all owned and non-owned hired motor vehicles.

4. Owners Protective Liability - Same limits as above.

5. Products and Completed Operations - Same limits as above.

6. Contractual Liability - Same limits as above.

C. Furnish one copy of Certificates herein required for each copy of the Agreement; specifically set forth evidence of all coverage required by Subparagraphs B.1 and B.2. Furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.

D. T**he Contractor shall provide property insurance in the amount of the initial contract sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. This insurance coverage shall be the All-Risk form for completed value.**

TEMPORARY SERVICES:

A. Sanitary Facilities: The Contractor shall provide and maintain necessary sanitary conveniences for the use of those employed on/or about the work. The sanitary facilities shall be properly secluded from public observation and shall be such locations as shall be approved by the Owner, and their use shall be strictly enforced.

SHOP DRAWINGS and SUBMITTALS:

A. Unless otherwise specified, the shop drawings and product data shall be submitted **electronically.** Physical samples of materials shall be submitted to the Architect as required.

B. Contractor is responsible for obtaining and distributing required prints of shop drawings to his subcontractors and material suppliers after as well as before final approval.

C. Shop drawings and samples shall be dated and marked to show the names of the Project, Architect, Contractor, originating Sub-Contractor, manufacturer or supplier, and separate detailer if pertinent. Shop drawings shall completely identify Specifications section and locations at which materials or equipment are to be installed. Reproduction of Contract Drawings are acceptable as Shop Drawings only when specifically authorized in writing by the Architect.

D. If materials or specified items other than those specified in these Contract Documents are supplied - and approved by the Architect - it shall be the Contractor's responsibility to provide ALL additional materials, accessories, substrates, utility connection, etc. for a complete and operational installation at NO additional cost to the Owner.

CHANGES IN THE WORK:

A. Cost shall be limited to the following: cost of materials, including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits under collective bargaining agreements; workmen's compensation insurance; bond premiums; and rental value of power tools and equipment. Overhead shall include the following; supervision, superintendence, wages of time keepers, watchmen and clerks, hand tools, incidentals, general office expense, and all other expenses not included in "cost".

B. Subcontractor Change Order markups shall be limited to 10% overhead and 10% profit. No other markups shall be allowed.

AS BUILT DRAWINGS:

A. Provide and maintain in proper order and in good, clean condition in the field office at the project site, one complete full-size set of all working drawings. On this set of drawing prints, in red ink, neatly and accurately inscribe any and all changes in the work.

B. Upon completion of work, the Contractor shall furnish one set of **As Built** drawings. These drawings shall be contract drawings corrected in **red ink** to show any differences between contract drawings and actual construction. All changes made during construction shall be noted. Each drawing showing changes in dimensions, details, or containing supplemental information shall be plainly marked **As Built** and shall contain the signature of both the Architect and the Contractor.

CLOSEOUT SUBMITTALS:

Prepare project data in the form of an instructional manual supplied electronically on media as requested by Owner (CD, DVD, flash drive, memory stick, etc.). The following information shall be included and arranged under a Table of Contents:

1. Directory listing names, addresses, and telephone numbers of the Architect/Engineer(s), General Contractor, Subcontractors, and major material/equipment suppliers.
2. Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and Suppliers. Include equipment, parts list for each, operating instructions, maintenance instructions for equipment, special finishes, etc.
3. Project documents and certificates, including shop drawings and product data, air and water balance reports, photocopies of warranties.
4. Record As-Built Drawings as described above.
5. Completed Non-Asbestos Affidavit.

DEBRIS DISPOSAL:

Waste disposal shall be the responsibility of the Contractor. The Contractor shall make arrangements with the local authorities having jurisdiction for accommodation of all waste disposal. If local facilities are not available the contractor shall be responsible for all other arrangements for waste disposal.

SUPPLEMENTARY CONDITIONS AND SPECIAL CONDITIONS:

In the following sections where the term "General Conditions" is used, it shall include the "Supplementary Conditions" and/or "Special Conditions bound in this project manual.

MISCELLANEOUS PROVISIONS:

A. TESTS AND INSPECTIONS

Add the following clarification: **Regardless of how it is described elsewhere in the drawings and specifications, the contractor shall engage all testing laboratories / subcontractors as approved by the Architect; and, pay for ALL testing as required by the drawings and specifications.** The Contractor shall pay for any additional testing due to defective work. The Owner shall pay for any additional testing requested and found to be non-defective.

B. EQUAL OPPORTUNITY

The Contractor shall maintain policies of employment as follows:

The Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated fairly during employment without regard to their race, religion, color, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay or any other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

C. COOPERATION WITH BUILDING OFFICIALS

Cooperate with applicable Federal, State, City or other governmental officials and inspectors at all times. If such officials or inspectors deems special inspection necessary, provide assistance and facilities that will expedite his inspection.

Contractor shall be responsible for obtaining and paying for ALL building permits required for this project. This cost shall be included in the Contractor's General Conditions.

D. MEASUREMENTS

Before doing any work or ordering any materials, the Contractor shall verify all measurements of existing and new work, and shall be responsible for their correctness.

Any differences which may be found shall be submitted to the Architect for consideration before proceeding with the work. No extra compensation will be allowed because of differences between actual dimensions and measurements indicated on the working drawings.

E. CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS

Conflicts between the drawings and specifications shall be brought to the immediate attention of the Architect. Failure to bid item(s) noted on the drawings and omitted from the specifications **does not** remove responsibility from the Construction Manager and applicable Subcontractor(s) to provide and install such with no additional cost to the Owner.

These Contract Documents - including but not limited to the Drawings,

Project Manual, and any subsequent Addenda - are issued as a "whole" and shall be bid as such. Each discipline / subcontractor shall review the entire set of Contract Documents and include applicable work in their bid **regardless of location within the Contract Documents.** Reviewing only a portion of the Contract Documents shall not absolve the construction manager or subcontractor of the requirement to perform the work of their respective desiplines and/or trade.

F. MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS

Install all manufactured items of materials or equipment in strict accordance with manufacturer's recommended specifications, except that the specifications herein, where more stringent, shall be complied with.

At the completion of the project and prior to final acceptance by the Owner, provide the Owner with three complete sets of operating and maintenance instructions, and demonstrate to him the procedures for proper operation and maintenance of all equipment.

G. JOB MAINTENANCE

During the course of their work, all crafts and trades shall protect all work which preceded theirs from damage, and they shall make repairs or replacements to any damage caused either directly or indirectly by them.

H. COMPLIANCE WITH STATE AND FEDERAL LAWS

Contractor assumes full responsibility for the payment of all contributions and payroll taxes (state and federal) as to all subcontractors and employees engaged in the performance of work pursuant hereto and further agrees to check and meet all requirements that might be specified under regulations of the administrative officials or board charged with the enforcement of any state or federal act on the subject referred to. Contractor agrees to furnish Owner, upon request, a certificate or other evidence of compliance therewith.

I. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (OSHA)

The Contractor shall comply with the latest edition and revision of The Federal Occupational Safety and Health Act of 1970 for construction.

J. GUARANTY BONDS

1. Prior to the Owner signing the contract agreement, he will require the Contractor to furnish performance and payment bonds covering the faithful performance of the entire

construction contract agreement. The performance bond and the payment bond shall each be made out in one hundred percent (100%) of the contract sum and shall be in a company or companies against which the Owner has no reasonable objection.

2. Bonds shall be signed by an official of the bonding company, and shall be accompanied by the bonding agent's written power-of-attorney in order that one copy may be attached to each copy of the contract agreement.

3. The Contractor shall include in his proposal amount the total premiums for all required bonds.

4. Unless noted otherwise, the Contractor does hereby warrant and/or guarantee against defects in all workmanship and materials performed or furnished by him directly or by his subcontractors for a period of one (1) year from the date of completion, as evidenced by the date of the Final Certificate or final acceptance of the project. Said warranty and/or guarantee shall be in the form of a good and sufficient bond in a sum equal to one hundred percent (100%) of the contract price.

End of Special Conditions

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010-SUMMARY OF THE WORK

Part 1 - General

1.01 Work Included:

A. The General Conditions, Bidding Requirements, and Division I are hereby made a part of each of the technical sections that follow and shall be understood to apply and shall apply in full to all individuals or corporations who contract or subcontract to perform any part or all of the project work.

B. Indications on the working drawings or in any section of the specifications of an article or material, operation, or method, requires that the Contractor shall provide each item or service or quality or is subject to qualifications noted; and, the Contractor shall perform each operation prescribed according to the conditions stated providing, therefore, all necessary labor, equipment and incidentals to complete the project work.

C. The project:

1. Name: Moore West Junior High School Locker Room Addition - Moore Public Schools.
2. Location: 9400 South Pennsylvania, Oklahoma City, Oklahoma 73170.

1.02 Summary of Work:

A. **Base Bid:** Provide and pay for all materials, labor, services, equipment, licenses, taxes, permits, and other items necessary for the complete construction of a new locker room addition including new sidewalks and site utilities. Contractor shall maintain all barriers, guards and other environmental items required at the site during construction.

B. Owner: Moore Public Schools

1. Owner's Representative:
   Jeff Horn, Bond Issue Coordinator
   Moore Public Schools
   1500 SE 4th Street
   Moore, OK 73160
   405-735-4221

C. Design Team:

1. Architect:
   AGP
   201 N. Broadway, Suite 210
   Moore, OK 73160
   405-735-3477
2. Structural Engineer:
   WDB Engineering, PLLC
   6330 SE 74th Street
   Oklahoma City, OK 73135
   405-741-7090

D. Construction Management Team:
   1. Construction Manager's Representative:
      Joe Sherga, Project Manager
      Omni Construction, LLC
      1909 South Eastern Avenue
      Moore, OK 73160
      405-735-3992

1.04 Work to be Provided and Installed By Others:
   A. Provision and installation of furniture.

1.05 Use of the Site:
   A. Confine operations at the site to the areas permitted under the contract. Portions of the site beyond areas on which work is indicated are not to be disturbed.
   B. Keep facility free from accumulation of waste material, rubbish or construction debris.

1.06 Safety of Persons and property:
   A. Contractor shall at all times protect the building from damage from rainwater.
   B. Contractor shall provide barricades and clearly mark work zone areas.
   C. Refer to Special Conditions "Temporary Services" for additional information.
   D. During the period of construction, the OSHA Standards shall be followed as applicable by law.
   E. The Contractor shall post emergency telephone numbers.

1.07 Preconstruction Conference:
   A. A preconstruction meeting will be held at a time and place designated by the Architect or Owner's Representative, for the purpose of identifying responsibilities of the Owner's and the Architect's personnel and explanation of administrative procedures.
   B. The Contractor shall use this meeting for the following minimum agenda:
      1. Construction Schedule/Project Phasing.
      2. Use of areas of the site.
      3. Delivery and storage.
      4. Safety.
      5. Security.
      6. Cleaning up.
      7. Subcontractor procedures relating to:
         a. Submittals.
         b. Change orders.
         c. Applications for payment.
         d. Record documents.
   C. The attendees shall include:
      1. The Owner's Representatives.
      2. The Architect.
      3. The Contractor and its superintendent.

1.08 Project Scheduling:
   A. The Contractor is responsible for the scheduling of construction and must prepare a schedule and charting system

described below. This schedule is to ensure adequate planning and execution of the work by the contractor and to assist the Architect in appraising the schedule and evaluating the progress of the work.

B. The project schedule shall be presented within ten (10) days after receipt of the Notice to Proceed. Three (3) copies of the schedule shall be submitted to the Architect for review and approval.

C. The schedule logic must be in the form of a "fenced" bar chart or Critical Path Method network indicating the planned start and completion dates of the activity, logical constraints between activities, and total float of each activity.

D. An updated project schedule shall be provided when requested by the Architect.

1.09 Environmental Controls:

A. Water Resources:

1. Oily substances: prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water.
2. Mosquito abatement: prevent ponding of stagnant water conducive to mosquito breeding habitat.

B. Land Resources:

1. Erodible soils: plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use the areas developed. Immediately protect side slopes and back slopes upon completion of rough grading.

C. Air resources:

1. Prevent creation of dust, air pollution, and odors.
2. Use water sprinkling, temporary enclosures, and other appropriate methods to limit dust and dirt rising and scattering in air to locate practical level.
3. Store volatile liquids, including fuels and solvents, in closed containers.
4. Properly maintain equipment to reduce gaseous pollutant emissions.

D. Comply with all applicable environmental control guidelines as required by the City of Oklahoma City.

1.10 Temporary Utilities:

A. The Contractor shall provide and pay for all temporary utilities required for the complete construction of the project including, but not limited to, electricity, lighting, heating, cooling, ventilating, telephone, water, sanitary facilities, exterior and interior enclosures, access roads and parking areas, cleaning and waste removal, project identification and signs, etc.

1.11 Cleaning:

A. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

B. Employ experienced workers or professional cleaners for final

cleaning. Clean each surface or unit of work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.

C. Complete cleaning operations prior to requesting a Final / Substantial Completion Inspection.

1.12 Project Sign: Not applicable.

End of Section

DIVISION 2 - SITE WORK

SECTION 02050 - DEMOLITION

Part 1 - General

1.01 Work Included:

A. The General Conditions and applicable sections of Division 1 shall apply to this entire section.

B. All materials, labor, services and incidentals necessary for the completion of this section of the work.

C. Complete demolition of the existing paving and curbs; complete demolition of the existing curbs as necessary to construct new entry driveways; removal of existing trees; and all site materials as shown on the Drawings.

D. Removal of all materials, debris and rubbish from site. Refer to Part 3 for ownership of materials.

1.02 Submittals:

A. Scheduling of Alteration and Demolition Work:

1. Before commencing any alteration removal or demolition work the contractor shall prepare and submit for approval by the Architect, a schedule showing the commencement, the order, and the completion dates of the various parts of this work.

2. Before starting any work relating to existing utilities (electrical, heat, gas, etc.) that will temporarily discontinue or disrupt services to any existing building, the Contractor shall be required to give notice to the Architect and obtain his approval in writing before proceeding with this phase of work.

Part 2 - Materials (not applicable)

Part 3 - Execution

3.01 General Requirements:

A. Permits, Licenses, Ordinances and Regulations:
All work shall comply with local and other governing ordinance, codes and regulations, but this requirement does not relieve the Contractor of responsibility of complying with these specifications. Complying with requirements of state, county or local laws, ordinances and regulations regarding demolition work is the responsibility of the Contractor, who shall pay any and all fees, and give any notices necessary in connection therewith.

3.02 Demolition of Work To Be Modified:

A. Alterations and demolition shall be as indicated on the Drawings and in accordance with applicable technical sections of the specifications. The Contractor shall do all necessary demolition or removal of existing work as required in connection with this project, including shoring, bracing, etc. and removal of unwanted material and debris from the site. Demolish existing items only as necessary to tie on new construction as detailed. This work shall be done in a most careful manner, as the Contractor will be held responsible for any damage which

may be caused thereby to any part or parts of existing streets, neighboring buildings, and grounds.

B. When alterations occur, or new and old work join, the immediate adjacent surfaces or so much thereof as required by the involved conditions, shall be cut, removed, patched, repaired or refinished and left in as good a condition as existed prior to the commencing of the work, and matching the remainder of the existing paving, etc.

C. Conduit and piping found underground on the site, or other areas involved in demolition or alteration shall be removed, re-rerouted or protected as required by the Drawings. Where these items are found; but not covered in the drawings, the Contractor shall notify the Architect for disposition instructions.

D. Maintain existing utility services to remain and protect from damage during demolition operations.

E. The Contractor shall furnish and install adequate guards, barricades and other temporary protection to prevent injury to persons.

F. The Contractor shall make every effort to control the amount of dust and the noise level generated by demolition operations.

3.03 Ownership and Disposition of Materials:

A. Classification of removed materials (re: Drawings for applicable items):

1. **Reinstalled:** Items are those items which, after removal, are to be used, reinserted, remounted or otherwise built back into the work under this contract.
2. **Salvaged:** Items are those items which, after removal, are to be retained by the Owner and delivered for storage on the Owner=s premises.
3. **Scrapped:** Items are all other removed materials or equipment. This includes all items which are not noted or specified for reinstallation or salvage.

B. Disposition by Classification:

1. **Reinstalled:** Items of material or equipment shown on the work shall be jointly inspected by the Contractor and the Architect prior to dismantling or removal. An agreement shall be reached briefly setting forth the apparent condition of the material or equipment and approved by the Architect. Simple operating test of operative equipment will be included with this joint inspection if feasible. Such items shall be reinstalled as specified in the applicable sections of the specifications covering new items of similar categories.
2. **Salvaged:** Materials and equipment noted on the Drawings or listed to be salvaged shall be carefully handled and protected and shall be delivered to storage areas, as designated by the Architect, on the Owner=s premises.
3. **Scrapped:** All removed materials and equipment not noted on the drawings specified to be reinstalled, shall be considered as scrap and shall be disposed of by the

Contractor off the Owner=s premises and credit for the value thereof, if any, shall have been reflected in the Contractor's bid price.

3.04 Clean-Up:

A. Disposition of all material, debris and rubbish shall be the responsibility of the Contractor. Leave site clean. Completely remove all materials, debris, and rubbish from site. Absolutely no burning of debris on the site will be allowed.

B. **The Contractor shall submit proposed refuse dumping sites to the Architect and shall receive written approval from the Architect concerning acceptable dumping sites prior to the disposition of any material, debris or rubbish generated by this project.**

End of Section

DIVISION 2 - SITE WORK

SECTION 02100 - SITE PREPARATION

Part 1 - General

1.01 Work Included:

A. All materials, labor, services, and incidentals necessary for the completion of this section of the work.

B. Erection and maintenance of a temporary construction fence, as noted on the Drawings, shall be provided by the Contractor.

1.02 Protection of Trees and Shrubs:

A. All existing trees and shrubs in or near the construction area that are not indicated to be removed shall be protected. Should damage occur, the Contractor shall replace the tree or shrub with a similar size and species.

B. Periodically water as required to limit dust and dirt during construction.

C. Protect any adjacent property and improvements from damage, and replace any portions damaged through this operation.

Part 2 - Products

2.01 Materials:

A. Temporary Fencing: **Refer to Section 02110.**

Part 3 - Execution

3.01 Clearing and Grubbing:

A. Limits of clearing shall be all areas within contract limit lines.

B. Remove all organic or undesirable materials from areas where concrete is to be placed.

C. Within building lines and exterior concrete slabs remove roots, debris, rubbish, etc., and cut roots of adjacent trees and shrubs to remain, not less than 12" from concrete work.

D. From building lines and exterior concrete walks and slabs out to the limits of earth cut and fill, remove all exposed stumps and roots, brush, rubbish, etc.

E. Remove completely all existing trees designated on Drawings.

F. Remove topsoil to depth of organic matter and stockpile on site for use in grading.

3.02 Removal of Improvements:

A. Remove all above-grade and below-grade improvements indicated on the Drawings or as necessary for the installation of new work.

3.03 Disposal of Debris:

A. Burning of combustible materials on the site will not be permitted. Completely remove from site and legally dispose of all materials and debris.

End of Section

DIVISION 2 - SITE WORK

SECTION 02110 - TEMPORARY CONSTRUCTION FENCING

Part 1 - General

1.01 Summary

A. Section includes: Erection, maintenance and dismantling of temporary fencing around construction site and materials storage areas. This section does not apply where security fencing is required.

B. Refer to Drawings for temporary fencing layout and location of gates.

1.02 Submittals

A. Submit the following:

1. Shop drawing indicating layout of temporary fencing, location and size of gates, existing pavement and roads, access to fire hydrants and hose connections, and other site specific conditions. Prepare drawing after site observation and verification of existing conditions.

Part 2 - Products

2.01 Temporary Chain Link fencing:

A. Unless otherwise indicated, type of temporary chain link fencing shall be Contractor's option. Following types are acceptable:

1. New materials or previously used salvaged chain link fencing in good condition.
2. Posts: Galvanized steel pipe of diameter to provide rigidity. Post shall be suitable for setting in concrete footings, driving into ground, anchoring with base plates, or inserting in precast concrete blocks.
3. Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.
4. Height: Minimum Height shall be 8'-0".

B. Gates: Provide personnel and vehicle gates of the quantity and size indicated on the Drawings or required for functional access to site.

1. Fabricate of same material as used for fencing.
2. Vehicle gates:
   a. Minimum width: 20 feet to allow access for emergency vehicles.
   b. Capable of manual operation by one person.

Part 3 - Execution:

3.01 Layout:

A. Installation of temporary fencing shall not deter or hinder

access to existing and new hose connections and fire hydrants.
1. Maintain 3 feet diameter clear space around fire hydrants.
2. Where fire hydrant or hose connection is blocked by fencing, provide access gate.

B. Access: Provide gates for personnel, delivery of materials, and access by emergency vehicles.

3.02 Installation:

A. Chain link posts:
1. Space at 10'-0" maximum.
2. Drive posts, set in holes and backfill, or anchor in precast concrete blocks.
3. For soft and unstable ground conditions, cast concrete plug around post.
4. Posts over pavement: Use steel post plates or precast concrete blocks.
5. Gate posts: Use bracing or concrete footings to provide rigidity for accommodating size of gate.

B. Fabric: Securely attach to posts.

C. Gates: Install with required hardware.

D. Plastic mesh fencing: Space steel support posts to ensure mesh remains vertical and at proper height. Securely tie mesh to posts.

3.03 Maintenance and Removal:

A. Maintain fencing in good condition. If damaged, immediately repair.

B. Remove temporary fencing upon completion of Work or when no longer required for security or control. Backfill holes and compact. Holes in pavement shall be surfaced to match existing paving. Repair damage caused by installation of temporary fencing.

End of Section

DIVISION 2 - SITE WORK

SECTION 02200 - EARTHWORK

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Related Work Specified Elsewhere:
- A. Site Preparation - Section 02100
- B. Paving and Surfacing - Section 02500
- C. Cast-In-Place Concrete - Section 03300

1.03 Quality Assurance:
- A. Standards:
  1. American Society for Testing and Materials
     a. ASTM D-1556, Density of soil in place
- B. **Testing: All required tests, and their fees, shall be the responsibility of the Contractor. The Contractor shall engage and pay for the services of an independent testing laboratory approved by the Architect.**
  1. Qualified according to ASTM E-329 and ASTM D-3740 for testing.
- C. Comply with 29 CFR 1926, Subpart P - Excavations (OSHA Regulations).

1.04 Submittals:
- A. Product data for each type of manufactured products required.
- B. Qualification data for testing agency.
- C. Material Test Reports for each borrow soil material proposed for engineered fill and backfill as follows:
  1. Classification according to ASTM D-2487.
  2. Laboratory compaction curve according to ASTM D-698.

1.05 Project Conditions:
- A. Traffic: minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
  1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and Authority Having Jurisdiction. Provide alternate routes around obstructions as required by authorities.

Part 2 - Products

2.01 Materials:
- A. Backfill Material: Approved low volume change material. If additional material required, it shall be low plasticity cohesive material (plasticity index between 5 and 18 and a maximum liquid limit of 35 percent). The moisture content of the low volume change soil should be adjusted to its optimum value, or above, before compaction. The suitability of materials, including off-site soils, shall be approved by the Geotechnical Engineer hired by the Contractor. Frozen material shall not be acceptable for

backfilling.

B. Top Soil: Material shall be native, fertile, neutral top soil of loamy character, free from heavy clay, coarse sand, stones, lumps, plants, roots, or other foreign matter.

C. Gravel: Course gravel - 100% passing a 2" screen, 90% retained on a 1/4" screen.

D. Aggregate Base Course: Aggregate base - meet ASTM D448 size 57, 100 percent passing the 1**2**" sieve, less than 5 percent passing the #8 sieve, plasticity index less than or equal to 6.

E. Hydrated Lime: meet requirements of ASTM C977.

Part 3 - Execution

3.01 Excavations:

A. General:

1. Excavations shall be made to the elevations and dimensions shown on Drawings.
2. If excavations are made deeper than called for on plans, no backfilling is permitted. Any additional depth or size shall be made up by additional concrete at no increase in contract price.
3. Foundations shall be plumb, bottoms level and of type indicated on Drawings with allowance for erection of any required forms or shoring, and inspection of footings, etc.
4. Shore and brace excavations where necessary to prevent cave-ins, and in accordance with all safety laws and codes, including all OSHA requirements.
5. If an excavation must remain empty through a shutdown period, cover hole with suitable protection materials and clean out immediately prior to placing concrete.
6. Keep excavations free of water by use of pumps.
7. Keep area around excavations and concrete work clean for a distance of 3 feet in all directions until concrete is placed and has set.

B. Footings:

1. Footing bottoms shall be level, clean, clear of loose and objectionable material, and true to size.
2. Concrete for footings shall be poured as soon as possible after excavation has been completed. Excavations shall be protected until concrete has been poured.

C. Exterior and Pavement Sections:

1. Excavate to underside of walks, curb, gutter, and miscellaneous items.
2. Excavation shall be away from sides of grade beams and retaining walls below grade to a sufficient distance for erecting and removing forms with assured safety for workmen.
3. Bottoms of excavated areas shall be level and kept

clean of loose and objectionable materials at all times.

D. All excavations for concrete footings, foundations, or slabs shall be kept dry at all times, and shall be completely dry at the time of any concrete pour. The Geotechnical Engineer, **hired by the Contractor**, shall make final approval of all excavations prior to the start of any concrete placement.

3.02 Classification of Excavation:

A. All excavation shall be unclassified and the term "unclassified excavation" shall be understood to mean all and any materials encountered during excavation - including old floors, pavement, foundations, rock, earth, piping and debris. No adjustment in the contract price will be made on account of the presence or absence of rock, hard or soft sandstone, shale, masonry, or other materials.

3.03 Unknown Utilities:

A. Unknown Utilities:

1. If any unknown and uncharted utilities are encountered during excavation, promptly notify the Architect and wait for his instructions before proceeding.
2. If it is ascertained by the Architect that such utility line has been abandoned, the Contractor shall properly cap the line at depth of 12" or more below finish grade.
3. If such unknown utilities are encountered and work is continued without contacting the Architect for instruction, and damage is caused to said utilities, the Contractor shall repair, at his own expense, such damage to the satisfaction of the utility company concerned.

B. Unknown Obstacles:

1. If any unknown obstacles such as house or small building foundations or such as residential size basements, cisterns, etc., are encountered, the Contractor at his own expense shall remove the foundations, fill basements or cisterns or perform any work necessary to complete the work of this contract.
2. Should the Contractor encounter any unforeseen major obstacle in excavation, such as an abandoned water-well, subsurface streams, or "cave-ins" etc., which prove to be unduly expensive to overcome, it is the intention to cause a survey to be made to determine a course of action that will relieve the Contractor of undue expense.

3.04 Fill and Backfill:

A. Preparation for Concrete slab item on Fill:

1. Site preparation shall include removing existing vegetation, and any other unsuitable materials encountered. **Refer Structural Drawings concerning additional preparation procedures.** The proposed

subgrade area shall extend beyond the building footprint a minimum of five feet laterally (5'-0"). After performing the required stripping and excavating, proofroll proposed area with a loaded, tandem-axle dump truck weighing at least 25 tons. Proofrolling shall involve overlapping passes in mutually perpendicular directions. After proofrolling, unstable soil should be overexcavated and replaced with a low volume change soil as per Structural instructions. Scarify existing soil at base of fill to a minimum depth of 8"; moisture content of scarified soil shall be adjusted to a minimum of 2% above the material=s optimum content, as determined by the standard Proctor method ASTM D-698, and be compacted to at least 95 percent of its maximum dry density.

2. Provide fill material to bring site to required grade. Refer to 2.01A.
3. Compaction: Compact fill in lifts not exceeding 8" in loose thickness. Compact soil according to table below. Tests shall be required and paid for by the Contractor. Any additional moisture required to achieve compaction in a layer should be added and the entire lift mixed to obtain the uniform moisture content.
4. Compaction shall not be attempted using water settling.
5. **Care shall be taken to maintain the minimum recommended moisture content in the subgrade until floor slabs are constructed. Positive drainage shall also be developed away from building to prevent water from ponding along the perimeter and affecting future floor slab performance.**

B. Preparation for Paving items on fill:
1. Before compaction, the top 8" of the stabilized soil zone shall be modified with a minimum of 7% hydrated lime. The lime shall be thoroughly blended into the subgrade and allowed to cure for 48 to 72 hours before being remixed and compacted. Before compaction, the treated soil zone shall be adjusted to within 2 percentage points of optimum moisture as determined by the standard Proctor method (ASTM D-698); then compacted to at least 98 percent of the material’s maximum standard Proctor dry density.

C. Backfill at Walls (including footing and foundation walls):
1. Fill material shall be approved backfill material except as noted on Drawings.
2. Backfill around footing and foundation walls must be compacted.

3.05 Exterior Fill and Grading:

A. Fill:
   1. Subgrade fill as shown on plot plan, placed in 4" to 8" layers, to within 6" of finish. Compact according to table below.
   2. Top 6" of graded surface shall be approved topsoil.

B. Lines and Grades:
   1. Work shall conform to lines and grades shown on the Drawings. Ruts holes and depressions shall be filled with approved material.
   2. The slopes between contours or between spot elevations shall be smooth, uniform slopes and the surface shall be finished to a tolerance of 2" in 10' under a straight edge.

3.06 Compaction (fills less than 8'-0" thick):

Soil Compaction Criteria

Minimum Compaction (%) per ASTM D698

Use	Exposed in-situ subgrade soil	Fill	Base Course
Beneath foundation components	95	95	95
Beneath pavements, curbs, and sidewalks (Stabilized on-site soil)	98	98	95
Aggregate base (at slab) Aggregate base (at pavements)			98
Beneath exterior slabs and utility trench backfill (stabilized on-site soil)	95	95	95
Miscellaneous backfill		90	

3.07 Testing:

A. Make at least one density test of subgrade for every 2500 square feet of paved area or building slab, but in no case less than 2 tests.

B. In each compacted fill layer, make one density test for every 2500 square feet of overlaying building slab or paved area, but in no case less than 2 tests per layer.

3.08 Trenching and Backfilling of Utilities:

A. The Contractor shall do all excavation and backfilling necessary for the installation of all utilities, including shoring, bailing, and pumping required to maintain the excavations in a safe and dry condition.

B. All excavations shall be backfilled in 4" to 8" layers and thoroughly compacted one layer at a time with a mechanical tamper. Backfill material under areas where walks, drives, slab, parking areas, etc., are to be constructed shall be fill sand (free of all dirt). Backfill material in other areas shall be excavated material. Where excavation is not to be built over, replace the top 12" with existing topsoil. Remove superfluous materials from job site.

End of Section

DIVISION 2 - SITE WORK

SECTION 02202 - EARTHWORK FOR UTILITIES

Part 1 - General

1.01 Applicable Publications: The publications of the organizations listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American Society for Testing and Materials (ASTM) Publications:
   1. Sieve or Screen Analysis of Fine and Coarse Aggregates.
   2. Liquid Limit of Soils.
   3. Plastic Limit and Plasticity Index of Soils.
   4. Moisture Density Relations of Soils and Soils Aggregate Mixtures Using 5.5 lb. (2.49 KG.) Rammer and 12 in. (305.mm) Drop.
   5. Amount of Material in Soils Finer than the No. 200 (75 micrometer) Sieve.
   6. Density of Soil in Place by the Sand Cone Method.
   7. Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb. (4.54KG) Rammer and 18 in. (457 mm) Drop.
   8. Breaking Load and Elongation of Textile Fabrics.
   9. Underground Installation of Flexible Thermoplastic Sewer Pipe.
   10. Classification of Soils for Engineering Purposes.
   11. Underground Installation of Thermoplastic Pressure Piping.
   12. Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth).

B. American Water Works Association (AWWA) Publications:
   1. The Selection of Asbestos Cement Distribution Pipe, 4 in. Through 16 in., for Water and Other Liquids.
   2. Installation of Gray and Ductile Cast Iron Water Mains and Appurtenances.
   3. Installation of Asbestos Cement Pressure Pipe.
   4. Steel Pipe Design and Installation, 1964 Edition.

1.02 Description: This section covers all earthwork requirements for piping systems specified in Section 02550 - Sanitary Sewer Gravity and Section 02551 - Water Lines. This section covers requirements for excavation and for compaction of succeeding layers after backfill has been placed around pipe as specified in the respective sections for these systems.

1.03 Quality Assurance:

A. Standards:
   1. American Society for Testing and Materials
      a. ASTM D-1556, Density of soil in place

B. Comply with 29 CFR 1926, Subpart P - Excavations (OSHA Regulations).

C. **Testing: All required tests, and their fees, shall be the**

responsibility of the Contractor. The Contractor shall engage and pay for the services of an independent testing laboratory approved by the Architect.

1.04 Submittals:

A. Certified Test Reports: Submit certified test reports for the following:
   1. Sand tested in accordance with ASTM C136 and ASTM D2487.
   2. Porous fill tested in accordance with ASTM C136.

B. Shoring and Sheeting Plan: Before starting work submit a shoring and sheeting plan as required to meet O.S.H.A. regulations.

C. Manufacturer's Data: Submit manufacturer's descriptive literature, detailed specifications, available performance test data, instructions, and recommendations for buried warning and identification tape.

1.05 Delivery and Storage: Deliver and store materials in a manner to prevent deterioration, contamination or segregation.

1.06 Criteria For Bidding: Base bids on the criteria listed below. Hard material is defined as solid rock, firmly cemented un-stratified masses, or conglomerate deposits possessing the characteristics of solid rock which can not ordinarily be removed without systematic drilling and blasting, and any boulder, masonry, or concrete except pavement, exceeding 2 cubic yard in volume.

A. That the surface elevations are as indicated.

B. That no pipes or other artificial obstruction, except those indicated will be encountered.

C. That the character of the material to be removed is as indicated.

1.07 Protection:

A. Shoring and Sheeting: Provide shoring and bracing where required for compliance with O.S.H.A. regulations.

B. In addition to any other requirements set forth in this Contract, meet the following requirements:
   1. Prevent undermining of pavements and slabs.
   2. Banks may be sloped where space permits and as directed.
   3. Where shoring and sheeting materials must be left in place in the completed work to prevent settlements or damage to adjacent structures or as directed, backfill the excavation to 3 feet below the finished grade and remove the remaining exposed portion of the shoring before completing the backfill.

C. Shoring and Sheeting Plan: Shall include detailed drawings and the following:
   1. Design calculations by a Registered Professional Engineer.
   2. The sequence and methods of installation and removal.
   3. The materials, sizes, and arrangement of members proposed

for use as shoring and bracing.

1.08 **Minimum Burial Depths:**

A. Water Lines: refer to Drawings.

B. Sewer Lines: refer to Drawings.

Part 2 - Products

2.01 Soil Materials: In general, shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, frozen, deleterious, or objectionable materials.

A. Backfill: Shall conform to the general requirements for soil materials above and shall be material excavated on the site of this project. This material is unclassified and no testing will be required before use as backfill.

B. Sand: Shall conform to the general requirements for soil materials above and shall be clean, coarse grained material classified as SW by ASTM D2487 of which no more than 10 percent by weight shall be finer than the No. 200 sieve.

C. Gravel: Shall conform to the general requirements for soil materials above and shall be clean, coarse grained material classified as GP by ASTM D2487 of which no more than 10 percent by weight shall be finer than the No. 200 sieve.

D. Crushed Stone: Shall conform to the general requirements for gravel above and a minimum of 10 percent of the particles shall have at least one fractured face and the maximum particle size shall be 3/4 inches.

E. Porous Fill: Shall conform to the general requirements for gravel above and shall pass a 2 inch sieve and be retained on a 1/2 inch sieve.

F. Bedding:

a. Shall Be SW sand for water lines.

b. Bedding shall be ASTM type 57 crushed stone for sanitary sewer lines.

G. Materials For Use in Pipe Installations: Bedding and backfill materials shall conform to requirements specified herein, except as modified herein by the respective specifications and requirements listed following:

PIPE MATERIALS	MATERIAL REFERENCE
1. Ductile Iron Soil Pipe	AWWA C600, except refill of overcut shall be crushed stone. Bedding shall be GW.
2. Metallic Water Service Line Pipe (Steel, Copper Tube).	AWWA C600

3. Polyethylene (PE) Pressure	ASTM D2774, except bedding pipe, shall be SW and all material surrounding the pipe shall have maximum particle size of 1/2 inch.
4. Polyvinyl Chloride (PVC)	ASTM D2321, except bedding shall be SW and all material surrounding the pipe shall have maximum particle size of 1/2 inch.
5. Polyvinyl Chloride (PVC) Pressure Pipe.	ASTM D2774, except bedding shall be SW and all material surrounding pipe shall have maximum particle size of 1/2 inch.

H. Topsoil: Shall be material free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material or substance detrimental to plant growth. Topsoil shall be a natural, friable soil representative of productive soils in the vicinity.

I. Borrow: Shall be materials conforming to the requirements for backfill.

J. Embankment: Embankment material shall be in accordance with Borrow material and shall be approved by the Architect.

2.02 Buried Warning And Identification Tape: Shall be polyethylene plastic tape manufactured specifically for warning and identification of buried utility lines. Tape shall be provided in rolls, 6 inches minimum width, color coded for intended service with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be "CAUTION BURIED (Intended Service) LINE BELOW" or similar wording. Code and letter coloring shall be permanent, unaffected by moisture and other substances contained in trench backfill material.

Part 3 - Execution

3.01 Surface Preparation:

A. Stockpiling Topsoil: Strip suitable soil from the site where excavation or grading is indicated and stockpile separate from other excavated material. Material unsuitable for use as topsoil shall be stockpiled and used for backfilling. Locate

topsoil such that the material can be used readily for the finished grading. Where sufficient existing topsoil conforming to the material requirements is not available on site, provide borrow materials suitable for use as topsoil. Protect topsoil and maintain in segregated piles until needed.

B. Cutting Pavement, Curbs, and Gutters: Make cuts with neat, parallel, straight lines one foot wider than trench width on each side of trenches and one foot beyond each edge of pits.

3.02 General Excavation: Shall be to the elevations and dimensions indicated or otherwise specified. Keep excavations free from water while construction is in progress. Notify the Architect immediately in writing if it becomes necessary to remove hard, soft, weak, or wet material to a depth greater than indicated. Make trench sides as nearly vertical as practicable except where sloping of sides is allowed. Sides of trenches shall not be sloped from the bottom of the trench up to the elevation of top of the pipe. Excavate ledge rock, boulders, or hard material to an overdepth at least 4 inches below the bottom of the pipe unless otherwise indicated or specified. Blasting will not be permitted. Stabilize soft, weak, or wet excavations as indicated. Use bedding material to refill overdepth to the proper grade and place in 6 inch maximum layers. At the option of the Contractor, the excavations may be cut to an overdepth of not less than 4 inches and refilled to required grade as specified. Grade bottom of trenches accurately to provide uniform bearing and support for each section of pipe on undisturbed soil, or bedding material as indicated or specified at every point along its entire length except for portions where it is necessary to excavate for bell holes and for making proper joints. Dig bell holes and depressions for joints after trench has been graded and dimension to ensure that the bell does not bear on the bottom of the excavation.

3.03 General Bedding: For utility lines and utility line structures shall be one of the materials and depths indicated. Place bedding in 6 inch maximum loose lifts. Provide uniform and continuous support for each section of structure except at bell holes or depressions necessary for making proper joints.

A. Refill: Is defined as material placed in excavation to correct overcut in depth.

B. Concrete Cradles: Specified in lieu of other types of bedding for a particular type of pipe material, shall be as indicated.

3.04 General Backfilling: Surround pipes with backfill as indicated. Ensure that backfill is placed completely under pipe haunches. Place in 6 inch maximum loose lifts to one foot above pipe unless otherwise specified. Bring up evenly on each side, and for the full length, of the structure. Ensure that no damage is done to structures or protective coatings thereon. Place the remainder of the backfill in 12 inch maximum loose lifts unless otherwise

specified. Compact each loose lift as specified in Paragraph "General Compaction" before placing the next lift. Do not backfill in freezing weather, where the material in the trench is already frozen or is muddy, except as authorized. Provide a minimum cover from final grade of 4 feet for water mains. Where unacceptable settlements occur in trenches and pit due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation. Coordinate backfilling with testing of utilities. Provide buried warning and identification tape.

3.05 General Compaction: Use hand operated plate type vibratory or other suitable hand tampers in areas not accessible to larger rollers or compactors. Be careful to avoid damaging pipes and protective pipe coatings. Compaction shall be in accordance with the following unless otherwise specified.

A. Compaction shall conform to Soil Compaction Criteria listed in Section 02200 - Earthwork for Buildings.

3.06 All trenches created for utility access under the building shall be effectively sealed to restrict water intrusion and flow along the trenches. Use a clay soil to construct an effective trench plug that extends at least 5 feet out from the face of the building. The clay should have a minimum plasticity index of 15 and be placed in controlled lifts not exceeding 9 inches in loose thickness so as to surround the utility line and fill the trench. Each lift of clay backfill should be compacted to at least 95 percent of the material=s maximum dry density as determined by the standard Proctor test method (ASTM D-698). The moisture content of the clay backfill should be adjusted to its optimum value or above before compaction.

3.07 Finish Operations:

A. Grading: Shall be to finished grades indicated within one tenth of a foot. Provide sod or topsoil in areas to be seeded as indicated. Grade areas to drain water away from structures. Existing grades which are to remain but are disturbed by the Contractor's operations shall be graded as directed.

B. Spreading Topsoil: Areas indicated to receive topsoil for the finished surface shall be free of materials that would interfere with planting and maintenance operations. Spread topsoil uniformly grade and compact to the thicknesses, elevations, and slopes indicated. Do not place topsoil when the subgrade is frozen, extremely wet or dry, or in other conditions detrimental to seeding, planting, or grading.

C. Borrow Areas: Shall be graded to drain properly.

D. Disposition of Surplus Material: Surplus or other soil material not required or suitable for filling, backfilling or grading shall be disposed of as directed by the Architect.

E. Protection of Surfaces: Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or re-establish damaged grades, elevations, or slopes.

F. Pavement Repair: Repair pavement, curbs, and gutters as indicated. Do not repair pavement until trench or pit has been backfilled and compacted as herein specified. Provide a temporary road surface of crushed stone over the backfilled portion until permanent pavement is repaired. Remove and dispose of temporary road surface material when permanent pavement is placed. As a minimum one way traffic shall be maintained at all times on roads and streets crossed by trenches; roads and streets shall be fully opened to traffic as quickly as possible.

3.08 Field Sampling and Testing: Test sand, gravel, bedding, and backfill for conformance to gradation limits in accordance with ASTM C136. Test sand, gravel, backfill and material used as subgrade under roads and other paved areas for material finer than the No. 20 sieve in accordance with ASTM D1140. Test backfill material used as subgrade under roads and other paved areas for liquid limit in accordance with ASTM D423 and for plasticity index in accordance with ASTM D424. Test bedding and backfill materials for moisture density relations in accordance with ASTM D698 & D1557. Perform at least one of each of the required tests for each material used. Provide additional tests as specified above for each source change. Perform density tests in randomly selected locations and in accordance with ASTM D1556 or ASTM D2922 and ASTM D3017 as follows: one test per 100 lineal feet in each lift.

End of Section

DIVISION 2 - SITE WORK

SECTION 02280 - SOIL TREATMENT

Part 1 - General

1.01 Work included:
- A. The General Conditions and applicable sections of Division 1 shall apply to this entire section.
- B. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
- A. Soil shall be treated by an established, licensed pest control firm thoroughly familiar with local soils and chemicals.
- B. Contractor shall submit documentation for type of treatment to be used to the Architect for approval prior to commencing the work covered by this section.

1.03 Product Delivery, Storage and Handling:
- A. Precaution: Soil Termite Control is a toxic by ingestion, absorption through the skin, or inhalation and absorption through the respiratory tract. Strict adherence to the instructions printed by the manufacturer on the labeled containers shall be maintained while handling, mixing, and applying this material. Refer to label on containers for antidote and first aid. Erect and maintain suitable warning signs or barriers while application is underway and until treated surfaces are covered by new construction or soil fill.

Part 2 - Products

2.01 Materials:
- A. Soil Termite Control:
  1. Use working solutions containing any one of the following emulsion soil chemicals at the listed minimum concentrations:
     a. Premise 75, Bayer 0.1% concentrate

Part 3 - Execution

3.01 General:
- A. All stumps, roots, fallen timber and other wood or wood products shall be removed from foundation area before treatment.
- B. To avoid surface flow of the chemical from the treated area, treatments shall not be made when the soil or fill is excessively wet or immediately after heavy rains.
- C. When treating under slabs, care shall be taken not to disturb perimeter excavations.

3.02 Installation - based on 0.1% dilution:
- A. Under Concrete Slab: Apply solution at the rate of one gallon per 10 sq. ft. of fill. Apply two gallon per 5 lin. ft. under

foundation beams and at all plumbing risers.

B. Adjacent to concrete slabs: Provide a maximum 8" deep trench continuous at perimeter of slab and apply solution at the rate of one gallon per 5 lin. ft. of trench. Fill trench with soil and repeat application of solution at the rate of one gallon per 5 lin. ft. Cover final application with top soil.

End of Section

DIVISION 2 - SITE WORK

SECTION 02500 - PAVING AND SURFACING

Part 1 - General

1.01 Work Included:
A. All materials, labor, services, and incidentals necessary to complete all Paving Work as shown on the Drawings and specified herein.

1.02 Related Work Specified Elsewhere:
A. Site Preparation - Section 02100
B. Earthwork for Buildings - Section 02200
C. Cast-In-Place Concrete - Section 03300

1.03 Quality Assurance:
A. Standards:
1. American Society for Testing and Materials (ASTM).
2. American Association of State Highway and Transportation Officials (AASHTO).
3. Oklahoma Department of Transportation (ODOT) Standard Specifications for Highway Construction.
B. **Testing: All required tests, and their fees, shall be the responsibility of the Contractor. The Contractor shall engage and pay for the services of an independent testing laboratory approved by the Architect.**

1.04 Paving Quality Requirements:
A. General: In addition to other specified conditions, comply with the following minimum requirements:
1. Test concrete as required under Section 03300 - Cast-In-Place Concrete.
2. Test subgrade preparation as required under Section 02200 - Earthwork for Buildings.
B. Provide final surfaces of uniform texture, conforming to required grades and cross-sections. Finished surface tolerance - 1/2" in 10'-0" under a straightedge.
C. Thickness: In-place compacted thickness shall not be acceptable if not meeting the minimum thickness indicated on the Drawings.

1.05 Coordination:
A. Coordinate work and cooperate with any other trades whose work relates to paving in any way.

1.06 Personnel:
A. All work shall be directed by trained and experienced applicators, thoroughly adept at the procedures and equipment required by this section.

1.07 Weather Limitations:
A. Do not install paving when the subgrade is frozen or show any evidence of excessive moisture.
B. Do not install paving when the air temperature is less than 40 degrees Farenheit nor when temperature of the surface on

which mixture is to be placed is below 40 degrees Farenheit unless directed otherwise by Architect.

Part 2 - Products

2.01 Material Applications:

A. Subgrade Preparation:

1. Description: Refer to Section 02200 - Earthwork, Part 3, 3.01 and 3.04.

B. Concrete Walks:

1. Description: A 4,000 p.s.i. reinforced concrete slab on a sand base. Provide expansion and saw cuts as shown on the Drawings.

2.02 Expansion Control:

A. Construction Joint Form: Tongue and groove keyway, premolded asphaltic or wood form, designed to provide 1 1/2" keyway.

B. Joint Filler: Resilient, non-extruding bituminous-impregnated fiberboard expansion joint material by thickness shown on the Drawings, ASTM D-1751.

C. Joint Sealers: Hot applied, non-tracking asphalt-rubber compound, ASTM D-1190.

D. Anchorage Inserts: Malleable cast iron adjustable wedge, or threaded, type with 3/4" bolt size unless indicated otherwise on the Drawings.

E. Embedded Items: Provide materials as sized and/or indicated on the Drawings, or as required.

Part 3 - Execution

3.01 General:

A. Make careful inspection of excavated surface on which paving is to be placed, and check on bottom and top grades of paving throughout the area to be paved, prior to starting work under this section. Notify the Contractor of any unsatisfactory conditions. Do not begin paving work until such conditions have been corrected and area is ready to receive paving.

3.02 Workmanship:

A. Backfill shall be placed behind the sidewalks in a manner that will not cause displacement of the section nor damage to the exposed edges. All damaged sidewalks shall be replaced at the direction of the Architect at the Contractor=s expense.

B. Adjoining Paving: where new work adjoins existing, warp carefully to flush surface, with seal over joint.

C. Construction Joints: As noted on the Drawings or as directed by the Architect:

1. At joints, thoroughly clean surfaces and remove all

laitance.

2. In addition, vertical surfaces shall be thoroughly wetted and coated with cement grout before placing new concrete.

D. Expansion Joints: As noted on the Drawings, or as directed by the Architect:
   1. Provide 1/2" expansion joints where sidewalks join structural concrete.
   2. Hold filler material down 1/2", fill top with sealant.

E. Control Joints: Provide scored lines and weak plane joints on exterior and interior concrete slabs as indicated on the Drawings, and as approved by the Architect. Fill with sealant.

F. Finishes:
   1. Concrete Walks:
      a. Provide trowel and medium broom finish. Refer to drawings.
      b. Broom after concrete is hard enough to retain scoring, using a stiff fiber, or wire, broom. Broom perpendicular to direction of traffic.

G. Repair any damage to finished pavement surfaces that may result from subsequent construction to a smooth, true, and uniform surface.

H. Clean-up: After completion of paving operations, remove all excess materials, equipment and debris (dispose of away from the site). Leave all work in clean condition.

I. Protection:
   1. Provide barricades and warning devices as required to protect pavement and the general public.
   2. Cover any openings of structures in area of paving until permanent coverings are installed.
   3. Prohibit all traffic on paving until it has reached atmospheric temperature.

End of Section

DIVISION 2 - SITE WORK

SECTION 02900 - TURF ESTABLISHMENT

Part 1 - GENERAL

1.01 Summary:

A. This section generally describes the work, equipment, and materials required to furnish and landscape the site. The Contractor shall provide all necessary labor, equipment and materials to construct and complete site work landscaping. All work shall be completed in conformance with the recommendations of plant material suppliers.

B. As a minimum, the Contractor must be able to provide the following materials and services:

1. Supply and grade of fill material
2. Environmentally approved control/elimination of weeds/grasses.

1.02 References:

A. Drawings and general provisions of the Project Manual and Contract, including General and Supplementary Conditions and Division I Specification sections, apply to Work of this Section.

1.03 Submittals:

A. Architect approval is required. The following shall be provided:

1. Pesticide and Herbicide Treatment Plan, giving proposed sequence of pesticide and herbicide treatment work, before work is started. The pesticide and herbicide trade name, chemical composition, formulation, concentration, application rate of active ingredients and methods of application for all materials furnished, and the name and state license number of the state certified applicator shall be included.
2. Certificates of compliance certifying that materials meet the requirements specified, prior to the delivery of materials. Reports for the following materials shall be included:
   a. Fertilizer: For chemical analysis and composition percent.
   b. Pesticide and Herbicide Material: For EPA registration number and registered uses.

1.04 Quality Assurance:

A. All plant materials shall be guaranteed for one (1) year, following Architect=s acceptance of the project.

B. The Contractor shall maintain the project by weeding, watering, and other tasks as required, through final acceptance of the project by the Owner. Weeds, trimmings, etc. shall be removed from the site on the day work is performed and the area cleaned. Contractor shall immediately replace any and all defective

components or dead or dying plant materials.

C. The Architect shall inspect all planting materials upon delivery to the site and reserves the right to reject any or all materials which do not conform to the intent of this specification.

1.05 Delivery, Storage and Handling:

A. Pesticide and herbicide materials shall be delivered to the site in the original unopened containers bearing legible labels indicating the Environmental Protection Agency (EPA) registration numbers and the registered uses.

B. Sod not installed on the day of arrival at the site shall be stored and protected in areas designated by the Architect. Sod shall be protected from exposure to wind and shall be shaded from the sun. Covering that will allow air to circulate and prevent internal heat from building up shall be provided. All sod shall be kept in a moist condition by watering with a fine mist spray until planted.

C. Soil amendments shall be stored in dry locations away from contaminants. Pesticide and herbicide materials shall not be stored with other landscape materials. Storage of materials shall be in areas designated or as approved by the Architect.

D. Care shall be taken to avoid injury to sod. Materials shall not be dropped from vehicles.

Part 2 - Products

2.01 Materials:

A. Plants:

1. Turf grass shall be Bermuda sod. Sod shall be freshly cut (no more than 5 days). Water all areas to receive sod 1/4" less than 24 hours prior to installation of new sod. Sod all disturbed and exposed soil within the project limits as indicated on the Drawings.
2. Substitutions will not be permitted without written request from the Contractor for approval by the Architect.
3. Sod shall be grown under climatic conditions similar to those in the locality of the project.

2.02 Topsoil:

A. Acceptable topsoil includes selectively excavated material that is representative of soils in the vicinity that produces growth of grass typical of the project area. Topsoil should be reasonably free from underlying subsoil, clay lumps, objectionable weeds, litter, brush, matted roots, toxic substances or any material that might be harmful to plant growth or be a hindrance to grading, planting, or maintenance operations. Topsoil shall not contain more than five percent

by volume of stones, stumps or other objects larger than 3/4 inch in any dimension.

2.03 Fertilizer:

A. The commercial grade of fertilizer shall be suitable for the locations and season approved by the Architect. The P-N-K content shall be determined on the basis of soil conditions and the plants involved.

B. Prepackaged fertilizer delivered to the site shall be packaged in new, sealed, clean containers which bear a label fully describing the contents, the chemical analysis of each nutrient, the fertilizer grade, the net bulk, and the brand name and address of the manufacturer. Bulk fertilizer delivered to the site shall be accompanied with certification describing the contents, the chemical analysis of each nutrient, the fertilizer grade, the net bulk, and the brand name and address of the manufacturer. No fertilizer which becomes caked or otherwise damaged will be accepted.

2.04 Water:

A. Water shall not contain elements toxic to plant life.

B. The Contractor is responsible for ensuring that new lawns are adequately watered at all times.

C. During prolonged periods of drought, watering guidelines established by local water district shall apply.

Part 3 - Execution

3.01 Examination:

A. The Architect shall verify the finished grades are as indicated on drawings, and the placing of topsoil and smooth grading has been completed.

B. The location of underground utilities and facilities shall be verified. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

3.02 Site Preparation:

A. Prior to placing topsoil, the ground surface shall be cleared of all brush, snags, and rubbish.

B. Previously constructed grades shall be repaired if necessary so that areas to be topsoiled conform to the final grades upon completion of topsoil placement.

C. The topsoil shall be uniformly distributed on the designated areas and evenly spread to a minimum thickness of 6 inches. The spreading shall be performed in such a manner that planting can proceed with little additional soil preparation or tillage. The surface resulting from topsoiling shall meet the finish surface requirements as specified. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry,

or in a condition otherwise detrimental to proper grading or the proposed planting.

D. All topsoiled areas covered by the project shall be uniformly smooth graded. The finished surface shall be reasonably smooth and free from irregular surface changes. The degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations. The finished surface shall be free of depressed areas where water would pond.

3.03 Application of Pesticide Material:

A. When pesticide becomes necessary to remove a disease or pest, a state-certified applicator shall apply required pesticide in accordance with State EPA label restrictions and recommendations. Hydraulic equipment shall be provided for the liquid application of pesticides with a leak-proof tank, positive agitation methods, controlled application pressure and metering gauges. A pesticide treatment plan shall be provided to the Architect as specified in paragraph SUBMITTALS.

3.04 Restoration and Clean Up:

A. Planting areas, pavements and facilities that have been damaged from the planting operation shall be restored to original condition at the Contractor's expense.

B. Excess and waste material from the planting operation shall be removed and disposed of off the site. Adjacent paved areas shall be cleared.

End of Section

DIVISION 2 – SITE WORK

SECTION 02910 – TEMPORARY EROSION CONTROL

Part 1 – General

1.01 Work Included: The work under this section of the Specifications shall include all temporary erosion control measures including, but not necessarily limited to, rapid stabilization, rock entrance, silt fence, bale checks, bio rolls, and interim mulch as may be necessary to control soil erosion and sedimentation. The work shall include furnishing all materials, labor and equipment required for the construction and maintenance of erosion and sediment control devices as shown on the Drawings or as directed by the Architect. The work shall also include all inspections and reports as required by the storm water discharge permit for construction activities.

1.02 Reference Specifications:

A. The erosion prevention requirements of the City of Moore shall be considered as a part of this Specification.

B. All testing required by the Jurisdiction Having Authority shall be performed by the independent testing laboratory retained by the Contractor. The costs of said testing shall be borne by the Contractor.

1.03 Stormwater Pollution Prevention – General Permit: if a Permit is required by the local Jurisdiction Having Authority, it shall be obtained from said authority and all fees and/or costs shall be paid by the Contractor.

A. The Contractor will furnish a copy of the completed application package and General Permit to the Architect.

B. The back and side lot ditches shall be sodded immediately after they have been graded and top soil spread.

Part 2 – Products

2.01 Erosion Control Blankets: Erosion control blankets shall conform to applicable requirements.

2.02 Silt Fence: refer to the Drawings.

A. The geotextile fabric shall be free of flaws such as tears or other defects. Any geotextile fabric which becomes damaged shall be replaced. The geotextile fabric shall meet or exceed the following requirements:

1.	Grab Strength (ASTM D 4632)	100 lbs.
2.	Apparent Opening Size (ASTM D 4751)	20 - 70 sieve range
3.	Width	36 inches

Part 3 - Execution

3.01 General:

A. Temporary erosion control measures such as erosion control blankets, bio rolls, rock entrance, and silt fences shall be coordinated with the site work and turf establishment. No site work will be permitted until ALL necessary temporary erosion control measures are completed and in place in order to prevent excessive soil erosion and subsequent siltation from entering wetlands, streams or storm sewers. The construction of erosion control measures shall not relieve the Contractor of the responsibility for preventing or minimizing the potential for erosion or siltation. The Contractor shall be responsible for all damages and clean up and the costs therefore, resulting from erosion of the soils and any siltation which may occur, regardless of the temporary erosion control measures taken.

B. The alignment and location of erosion control measures shall be as show on the Drawings or as directed by the Architect. Minimum measures are shown on the Drawings. The Contractor shall incorporate further measures into the work as the Contractor's progress may dictate. Inspections of the temporary erosion control measures and reports thereof, shall be made by the Contractor in accordance with the storm water discharge permit for construction activities.

C. Structural practices:

1. Perimeter Ditches – Perimeter ditches will be installed to collect runoff from the disturbed area and direct runoff to the sedimentation basin.

D. Rapid stabilization shall be used in the following areas as well as the areas shown on the Plans.

1. Disturbed areas around culvert inlets and streams.
2. Ditches draining from the construction sites.
3. Disturbed slopes near storm drain inlets.

3.02 Timing of Controls/Measures: Any ditches and stabilized construction entrances shall be constructed prior to grading of any other portions of the site. Areas where construction

activity temporarily ceases for more than 21 days will be stabilized with a temporary seed and mulch within 14 days of the last disturbance. Once construction activity ceases permanently in an area, that area will be stabilized with permanent sod turf.

3.03 Removal of Temporary Erosion Control: Temporary erosion control devices shall remain in place until the permanent measures (turf establishment) have become established as determined by the Architect. All areas disturbed by the removal of temporary erosion control measures shall receive the same turf establishment as the areas adjacent thereto.

3.04 Installation Requirements:

A. Bio Rolls shall be installed as required to reduce erosion.

B. Silt Fence shall be constructed on 2 x 2 wood posts that are spaced no more than 6 feet and embedded no less than 2.0 feet. The geotextile fabric shall be secured to the upstream face of the posts. The geotextile fabric shall be embedded in an anchor trench along the upstream side of the silt fence. The anchor trench shall be 12 inches deep by 12 inches wide and shall extend the full length of the silt fence. The geotextile fabric shall line both sides and the bottom of the anchor trench. The anchor trench shall be backfilled with the excavated material, which shall be firmly compacted into place.

C. Rate of slurry application shall be variable depending on surface roughness, slope configuration and degree of undulation but it is expected that 6 M gallons per acre. This rate is equivalent to applying Type 6 Hydraulic Soil Stabilizer at 2100 pounds per acre. Amount of material applied shall be such to obtain 100% soil surface coverage. In inaccessible areas, the mix may be pumped through a hose. To obtain coverage, two (2) passes may be necessary. In inaccessible areas, the mix may be pumped through a hose.

3.05 Maintenance:

A. It shall be the Contractor’s responsibility to maintain all erosion control measures and to inspect same after each rainfall event. All displaced bio rolls shall be replaced and silt fences shall be repaired where sagging or otherwise damaged. The Contractor shall review the temporary erosion control measures and make revisions as necessary in order to minimize damage due to future rainfalls. All costs of temporary erosion control shall be considered incidental and the responsibility of the Contractor.

B.The rock entrances may need occasional maintenance to prevent the tracking of mud onto paved roads. This may

require periodic top-dressing with additional rock or removal and reinstallation of the entrances. The cost of maintenance of rock entrances shall be the responsibility of the Contractor.

3.06 Waste Disposal:

A. Waste Materials: All waste materials will be disposed of as described in the "Construction Storm Water Pollution Prevention Plan".

3.07 Offset Vehicle Tracking: One (1) stabilized construction entrances shall be constructed to help reduce vehicle tracking of sediments. The paved parking lot adjacent to the site entrance shall be swept as needed to remove any excess mud, dirt or rock tracked from the site. Dump trucks hauling material from the construction site shall be covered with a tarp.

3.08 Maintenance/Inspection Procedures:

A. Erosion and Sediment Control Inspection and Maintenance Practices:

1. All control measures will be inspected at least once each week and following any storm event of 0.5 inches or greater.
2. All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of report.
3. Build up sediment will be removed from silt fence when it has reached one-third the height of the fence.
4. Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
5. Ditches will be inspected and any erosion promptly repaired.

B. Non-Storm Water Discharges: All non-storm water discharges will be directed to a location selected by the Contractor and approved by the Architect. It is expected that the following non-storm water discharges will occur from the site during the construction period:

1. Water from water line flushing.
2. Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
3. Uncontaminated groundwater (from dewatering excavation).

3.09 Spill Prevention:

A. Material Management Practices.

The following good housekeeping practices shall be followed onsite during the construction project.

1. Good Housekeeping:
   The following good housekeeping practices shall be followed onsite during the construction project:
   a. An effort shall be made to store only enough product required to do the job.
   b. All materials stored onsite shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
   c. Products shall be kept in their original containers with the original manufacture's label.
   d. Substances shall not be mixed with one another unless recommended by the manufacturer.
   e. Whenever possible, all of a product shall be used up before disposing of the container.
   f. Manufacturers' recommendations for proper use and disposal shall be followed.
   g. The site superintendent shall inspect daily to ensure proper use and disposal of materials onsite.
2. Hazardous Products: These practices are used to reduce the risks associated with hazardous materials.
   a. Products shall be kept in original containers unless they are not re-sealable.
   b. Original labels and material safety data shall be retained; they contain important product information.
   c. If surplus product must be disposed of, manufacturer's, or Local and State recommended methods for proper disposal shall be followed.

B. Product Specific Practices: The following project specific practices shall be followed onsite:
1. Petroleum Products:
   All onsite vehicles shall be monitored for leaks and receive regular preventative maintenance to reduce the change of leakage. Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used onsite shall be applied according to the manufacturer's recommendations.
2. Fertilizers:
   Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to storm water. Storage shall be in

a covered shed. The contents of any partially used bags of fertilizer shall be transferred to a sealable plastic bin to avoid spills.

3. Paints:
   All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the storm sewer system but shall be properly disposed of according to manufactures' instructions or State and Local regulations.
4. Concrete Trucks:
   Concrete trucks shall not be allowed to wash out or discharge surplus concrete or drum wash water on the site.

C. Spill Control Practices:
In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices shall be followed for spill prevention and cleanup:

1. Manufacturer's recommended methods for spill cleanup shall be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
2. Materials and equipment necessary for spill cleanup shall be kept in the material storage area onsite. Equipment and materials shall include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
3. All spills shall be cleaned up immediately after discovery.
4. The spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
5. Spills of toxic or hazardous material shall be reported to the appropriate State or Local government agency, regardless of the size.
6. The spill prevention plan shall be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures shall also be included.

End of Section

DIVISION 2 - SITE WORK

SECTION 02920 - LANDSCAPE GRADING

Part 1 -General

1.01 Summary:

A. This section describes the labor, materials and installation requirements necessary to complete the fine grading, incidental grading, and related items as indicated or specified.

1.02 Site Conditions:

A. Protect landscaping and other features remaining as final work.

B. Protect any existing structures, roads, sidewalks, paving and curbs, or other features pertinent to the site in this project.

Part 2 - Products NOT USED

Part 3 - Execution

3.01 Examination:

A. The areas to be graded will be free of waste or debris developed by other trades.

B. Contractor shall field verify all dimensions and/or layout prior to starting work.

3.02 Preparation:

A. Prepare site by applying Round Up, or approved equal, as per label directions to weed growth on site.

1. Scarify planting areas to a minimum depth of six (6) inches and thoroughly water to settle all soil.

3.03 Grading:

A. Contractor shall grade all planting areas, swales or other areas as noted on drawings.

1. Contractor shall provide incidental grading of all areas adjacent to curbs and sidewalks. Provide a finish grade one (1") inch below curbs or sidewalks.
2. Contractor shall fine grade turf areas, eliminating rough or low areas to ensure positive drainage.
3. Any other areas not covered specifically above shall be graded to leave a generally smooth appearance conforming to standard landscape practices defined as: The final surface shall be raked; all objectionable materials, trash, brush, weeds, and stones larger than one inch shall be removed from the site and disposed of properly off base.
4. When sod is being installed, the appropriate sub-grade shall be graded prior to the installation of such materials. See applicable specifications, in any, for additional requirements.

End of Section

DIVISION 3 – CONCRETE

SECTION 03300 – CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 Section Includes
- A. Concrete formwork.
- B. Slabs on grade.
- C. Concrete foundation walls and retaining walls.
- D. Concrete reinforcement.
- E. Joint devices associated with concrete work.
- F. Miscellaneous concrete elements, including equipment pads and equipment pits.
- G. Concrete curing.

1.02 Related Requirements
- A. Section 07900 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints, construction joints and isolation joints in slabs.

1.03 Reference Standards
- A. For all reference standards listed below, comply with the version year in the governing building code adopted by the Authority Having Jurisdiction. For those reference standards that are not directly referenced by the building code, use the latest edition unless noted otherwise.
- B. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials.
- C. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- D. ACI 301 - Specifications for Structural Concrete.
- E. ACI 302.1R - Guide to Concrete Floor and Slab Construction.
- F. ACI 302.2R - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
- G. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- H. ACI 305R - Guide to Hot Weather Concreting.
- I. ACI 305.1 - Specification for Hot Weather Concreting.
- J. ACI 306R - Guide to Cold Weather Concreting.
- K. ACI 308R - Guide to External Curing of Concrete.
- L. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
- M. ACI 347R - Guide to Formwork for Concrete.
- N. ACI SP-66 - ACI Detailing Manual.
- O. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- P. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
- Q. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

R. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
S. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
T. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
U. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
V. ASTM C150/C150M - Standard Specification for Portland Cement.
W. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.
X. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
Y. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete.
Z. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
AA. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
AB. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
AC. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
AD. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
AE. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
AF. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting.
AG. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
AH. CRSI (DA4) - Manual of Standard Practice.
AI. ICC (IBC)-2015 - International Building Code.

1.04 Definitions

A. Cold Weather: A period when for more than three successive days the average daily outdoor temperature drops below 40 F. The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50 F occur during more than half of any 24 hr duration, the period shall no longer be regarded as cold weather.
B. Hot Weather: Hot weather is any combination of the following conditions that tends to impair the quality of

freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration, or otherwise causing detrimental results:

1. High ambient temperature
2. High concrete temperature
3. Low relative humidity
4. Wind speed
5. Solar radiation

1.05 Submittals

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

C. Mix Design: Submit proposed concrete mix design.

1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 26 - Concrete Documents and Inspection.

D. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

E. Test Reports: Submit report for each test or series of tests specified.

F. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

G. Formwork Design Submittal: As required by authorities having jurisdiction.

H. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 Quality Assurance

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

D. For slabs required to include moisture vapor reducing admixture (MVRA), do not proceed with placement unless

manufacturer's representative is present for placement as required by the manufacturer's warranty.

1.07 Warranty

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

C. Slabs with Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover cost of flooring failures due to moisture migration from slabs for life of the concrete.

1. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.
2. Provide warranty by manufacturer of MVRA matching terms of flooring adhesive or primer manufacturer's material defect warranty.

PART 2 PRODUCTS

2.01 Formwork

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain free final appearance.
2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces of trenched footings unless expressly allowed in the General Notes in the structural drawings. Natural rock formations that maintain a stable vertical edge may be used as side forms for below-grade concrete.
3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
4. Form Ties: Cone snap type that will leave no metal within the clear cover zone of the concrete surface as specified in the Minimum Concrete Cover for Cast-in-Place Non-Prestressed Members table included in the General Notes of the structural drawings.

2.02 Reinforcement Materials

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).

1. Type: Deformed billet-steel bars.
2. Finish: Unfinished, unless otherwise indicated.

B. Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars, weldable.
   1. Unfinished.

C. Reinforcement Accessories:
   1. Joint Dowel Bars: ASTM A615/A615M, Grade 60 (60,000 psi) plain-steel bars, cut true to length with ends square and free of burrs.
   2. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
   3. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
      a. Continuous slab bolsters shall be used to support the bottom reinforcing bars of all reinforced slabs-on-grade.
   4. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement of reinforcing steel within 1-1/2 inches of weathering surfaces and for concrete surfaces that will be exposed to view.

D. Fabrication of Reinforcing:
   1. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
   2. Welding of reinforcement is permitted only with the specific approval of Architect/Engineer. Perform welding in accordance with AWS D1.4/D1.4M.
   3. Locate reinforcing splices not indicated on drawings at point of minimum stress.

2.03 Concrete Materials

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
   1. Acquire cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33/C33M.
   1. Acquire aggregates for entire project from same source.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 Admixtures

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.

C. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.

D. Water Reducing Admixture: ASTM C494/C494M Type A.

E. Moisture Vapor Reducing Admixture (MVRA): Liquid, inorganic admixture free of volatile organic compounds (VOCs) and formulated to close capillary systems formed

during curing to reduce moisture vapor emission and transmission with no adverse effect on concrete properties or finish flooring.

1. Provide admixture in slabs to receive adhesively applied flooring.
2. Manufacturers:
    a. Barrier One, Inc; Barrier One Moisture Vapor Reduction Admixture: www.barrierone.com/#sle.
    b. Substitutions: Substitutions shall comply with the use of concrete staining/dye products.

2.05 Accessory Materials

A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
    1. Grout: Comply with ASTM C1107/C1107M.

2.06 Bonding And Jointing Products

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
B. Epoxy Bonding System:
    1. Complying with ASTM C881/C881M and of Type required for specific application.
C. Waterstops: Bentonite and butyl rubber, complying with NSF 61 and NSF 372.
D. Slab Isolation Joint Filler: 1/2 inch (13 mm) thick, height equal to slab thickness.
    1. Material: ASTM D1751, cellulose fiber.

2.07 Evaporation Retarders

A. Evaporation Retarder: Liquid thin film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement. These products provide a protective film shield over plastic concrete, dissipate as soon as the concrete is no longer plastic, and are not curing products.
    1. Manufacturers:
        a. Euclid Chemical Company ; EUCOBAR: www.euclidchemical.com/#sle.
        b. SpecChem, LLC; SpecFilm Concentrate or SpecFilm: www.specchemllc.com/#sle.
        c. W. R. Meadows, Inc ; Evapre or Evapre-RTU: www.wrmeadows.com/#sle.
        d. Substitutions: as approved by Architect.

2.08 Curing Materials

A. Moisture-Retaining Sheet: ASTM C171.
    1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.

2. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.

B. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch thick, clear.

C. Water: Potable, not detrimental to concrete.

2.09 Concrete Mix Design

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.

1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete: Refer Structural General Notes for mix requirements for various classes of concrete.

2.10 Mixing

A. Transit Mixers: Comply with ASTM C94/C94M.

B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 Examination

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 Preparation

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent according to bonding agent manufacturer's instructions.

1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.

2. Use latex bonding agent only for non-load-bearing applications.

E. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.

F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, clean out drilled holes, inject the adhesive indicated on drawings and/or General Notes, and insert steel dowels, all in accordance with adhesive manufacturer's installation instructions.

G. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade in accordance with manufacturer's instructions, ASTM E1643, ASTM F710 and ACI 302.2R.

1. Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.
2. Lap vapor retarder sheet over footings and seal to previously placed concrete foundations.
3. Lap joints minimum 6 inches (150 mm).
4. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.
5. No penetration of vapor retarder is allowed except for reinforcing steel and permanent utilities.
6. Repair damaged vapor retarder before covering with other materials.
7. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03 Installing Reinforcement And Other Embedded Items

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

C. Verify that anchors, seats, plates, reinforcement, waterstops and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 Placing Concrete

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Notify Architect not less than 48 hours prior to commencement of placement operations.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

G. Finish slab-on-grade and shored elevated floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 Slab Jointing

A. Locate and install joints as indicated on drawings and Slab-On-Grade Schedule or as submitted by Contractor and approved by structural engineer.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler, total height equal to thickness of slab, set flush with top of slab.

1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

D. Load Transfer Construction and Contraction Joints: Install load transfer devices as indicated; saw cut joint at surface as indicated for contraction joints.

E. Saw Cut Contraction Joints: Saw cut joints shall be installed with early-entry dry-cut saw before concrete begins to cool, within 1 to 4 hours after completing the slab finishing operations; commence in approximately 1 hours in hot weather or approximately 4 hours in cold weather. Use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab. Refer to Slab-On-Grade Schedule in drawings for additional requirements.

3.06 Floor Flatness And Levelness Tolerances

A. An independent testing agency, as specified in Section 01

4000, will inspect finished slabs for compliance with specified tolerances.

B. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch in 10 feet.
   2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
   3. Under Carpeting: 1/4 inch in 10 feet.

C. Correct the slab surface if surface variations exceed specified tolerances.

D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 Concrete Finishing

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
   1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.
   2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
   3. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; take measures necessary to avoid blackburnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to receive dry-shake hardeners, surfaces to be polished, and all other exposed slab surfaces.
   4. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

E. In areas with floor drains, maintain floor elevation at

walls; pitch surfaces uniformly to drains at 1:100 nominal (approximately 1/8 inch per foot).

3.08 Curing And Protection

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Uniformly apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss due to evaporation approaching 0.2 lb/sq.ft./h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing. A methodology for calculating the moisture loss due to evaporation is provided in ACI 305.1.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

1. Normal concrete: Not less than seven (7) days.

D. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

E. Surfaces Not in Contact with Forms:

1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than seven (7) days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for seven (7) days.
   b. Spraying: Spray water over floor slab areas and maintain wet.
   c. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
2. Final Curing: The surface shall be protected against rapid moisture loss upon the termination of initial curing by replacing wet burlap or similar coverings with plastic sheets until the surface has dried under the sheets.
   a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.

3.09 Field Quality Control

A. An independent testing agency will perform Special Inspections and field quality control tests as required by

Chapter 17 of ICC (IBC)-2015. The testing outlined below includes some, but not all, of the testing and observations required to meet the Special Inspection provisions of the building code. Refer to the following parts of the structural drawings for additional Special Inspection requirements:

1. Statement of Special Inspection Notes
2. Table 1705.3 titled "Required Special Inspections and Tests of Concrete Construction"

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit approved mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure four concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed each day.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

H. Air Content: ASTM C173/C173M, one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

I. Concrete Temperature: ASTM C1064/C1064M, one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.

J. Slab Testing: Cooperate with manufacturer of specified moisture vapor reducing admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

3.10 Defective Concrete

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective

concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.11 Protection

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

DIVISION 4 – MASONRY

SECTION 04810 – UNIT MASONRY ASSEMBLIES

PART 1 - GENERAL

1.01 Related Documents:
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.02 Summary
- A. Section Includes:
  1. Concrete block.
  2. Mortar and grout.
  3. Reinforcement and anchorage.
  4. Lintels.
  5. Accessories.

1.03 Related Sections:
- A. Section 05500 - Metal Fabrications: Loose steel lintels and fabricated steel items.
- B. Section 07900 - Joint Sealers: Backing rod and sealant at control and expansion joints.

1.04 References:
- A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; 2008.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2008.
- C. ASTM A 82/A 82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2005a.
- D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- E. ASTM C 129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2006.
- F. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar; 2004.
- G. ASTM C 150 - Standard Specification for Portland Cement; 2005.
- H. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006.
- I. ASTM C 270 - Standard Specification for Mortar for Unit Masonry; 2007.
- J. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout; 2006.
- K. ASTM C 476 - Standard Specification for Grout for Masonry; 2002.

1.05 Submittals:
- A. Product Data: Provide data for masonry units, mortar, and

masonry accessories.

B. Samples: Submit 10 samples of facing brick units to illustrate color, texture, and extremes of color range.

1.06 Quality Assurance:

A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents

1.07 Pre-Installation Meeting:

A. Convene one week before starting work of this section.

1.08 Delivery, Storage, and Handling:

A. Deliver, handle, and store masonry materials by means that will prevent mechanical damage and contamination by other materials.

1.09 Project Conditions:

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.01 Concrete Masonry Units:

A. Type: Lightweight (Standard Modular Sizes).

B. Quality: ASTM C-90, Type 1, Grade N, steam cured for a minimum of 8 hours at 350 degrees Fahrenheit under 150 psi. CMU shall be made by the Johnson CO 2 or Autoclave method. Other methods shall have approval by the Architect.

C. Face Dimension: As indicated on the drawings.

D. Thickness: As indicated on the drawings.

E. Shapes: Provide all shapes as shown on the drawings or others as required.

F. Units shall be uniform in all dimensions and texture,

straight and free from cracks, spalls and other defects.

2.02 Mortar and Grout Materials:

A. Portland Cement: ASTM C 150, Type I.
   1. Hydrated Lime: ASTM C 207, Type S.
   2. Mortar Aggregate: ASTM C 144.
   3. Grout Aggregate: ASTM C 404.

B. Water: Clean and potable.

2.03 Reinforcement and Anchorage:

A. Manufacturers of Joint Reinforcement and Anchors:
   1. Dur-O-Wal: www.dur-o-wal.com.
   2. Hohmann & Barnard, Inc: www.h-b.com.
   3. Masonry Reinforcing Corporation of America: www.wirebond.com.
   4. Substitutions: as approved by Architect / Engineer.

B. Reinforcing Steel: ASTM A 615/A 615M Grade 40 (280) deformed billet bars; galvanized.

C. Single Wythe Joint Reinforcement: Truss type; ASTM A 82/A 82M steel wire, mill galvanized to ASTM A 641/A 641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

D. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.

E. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Triangular shape, 0.1875 inch thick.
   3. Vertical adjustment: Not less than 3-1/2 inches.

2.04 Flashings:

A. Metal Flashing Materials: Galvanized Steel if applicable.

2.05 Accessories:

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

B. Compressible Filler: Pre-molded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35%; formulated from neoprene, urethane or PVC.

C. Bond Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type 1 (No. 15 asphalt

felt).

D. Weeps: Free-draining mesh made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe.
   1. Manufacturers:
      a. Mortar Net USA, Ltd; Product – Mortar Net Weep Vents: www.martarnet.com
      b. Substitutions: as approved by Architect / Engineer.

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 Mortar and Grout Mixes:

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds or other admixtures, unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Limit cementitious materials in mortar to portland cement and lime.

B. Mortar for Unit Masonry: ASTM C 270, using the Proportion Specification.
   1. All masonry: Type S.
      a. Portland Cement Mixture: One part Grey Portland Cement; 1/4 to 1/2 part lime; sand, not less than 2-1/4 and not more than three times the sum of the volumes of cement and lime used, measured in damp, loose conditions.
      b. Mortar color at exterior face brick to be selected by Architect to match 2018 Field House building on campus.

C. Grout for Unit Masonry: Comply with ASTM C 476.
   1. Use grout of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
   2. Provide grout with a slump of 8 to 11 inches as measure according to ASTM C 143/C 143M.

D. Mortar Mixing
   1. All mortars shall be machine mixed in equipment that is free of dirt, oil or grease and which is thoroughly cleaned and rinsed after each day’s use. Mix no more mortar than can be used before setting takes place.
   2. Mortars shall be mixed placing all dry ingredients in the mixer first and mixing until uniform in color. Then mixed for 3 to 5 minutes with the maximum amount of water to provide workable consistency.

3. No add-mixtures shall be used at any time in the mortar on this project, unless approved in writing by the Engineer.
4. Construct one or two wooden boxes 12”x12”x6” deep and use them to measure the sand required in a batch. Add the cement or lime by the bag. Then add water, measuring by pail. When the desired consistency of mix is determined, mark the level of the mortar in the mixing drum. Use that as the mark for later batches when sand will be added by the shovel full. Repeat the measuring process halfway through the day or whenever the inspector requests it.
5. Testing: General Contractor will observe a minimum of three (3) observed mixing sessions to verify that the quantities are being mixed as described in the proportions paragraph for Type “S” mortar.

PART 3 - EXECUTION

3.01 Examination:

A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that related items provided under other sections are properly sized and located.
C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 Erection:

A. Construction Requirements (Masonry Being Worked On)
   1. Air Temperature 40 F to 32 F: Heat sand or mixing water to minimum of 70 F and maximum of 160 F.
   2. Air Temperature 32 F to 25 F: Heat sand and mixing water to minimum of 70 F and maximum of 160 F.
   3. Air Temperature 25 F to 20 F: Heat sand and mixing water to minimum of 70 F and maximum of 160 F. Use salamanders or other sources of heat on both sides of walls under construction. Employ windbreaks when wind is in excess of 15 mph.
   4. Air Temperature 20 F and Below: Heat sand and mixing water to minimum of 70 F and maximum of 160 F. Provide enclosure and auxiliary heat to maintain air temperature above 32 F. Temperature of units when laid shall be not less than 20 F.
B. Protection Requirements (Completed Masonry or Sections Not Being Worked On)
   1. Mean Daily Air Temperature 40 F to 32 F: Protect

masonry from rain or snow for 24 hrs.

2. Mean Daily Air Temperature 32 F to 25 F: Completely cover masonry for 24 hrs.
3. Mean Daily Air Temperature 25 F to 20 F: Completely cover masonry with insulating blankets for 24 hrs.
4. Mean Daily Air Temperature 20 F and Below: Maintain masonry temperature above 32 F for 24 hrs. by enclosure and supplementary heat, by electric heating blankets, infrared heat lamps or other approved method.

C. No masonry shall be laid when the ambient temperature is below 40 degrees F. All masonry shall be laid plumb, true to line and level, with accurately spaced courses, with each course breaking joints with the course below, unless noted otherwise on the drawings. A story pole and template shall be used, and work checked with a surveying instrument to maintain level coursing.

D. Work required to be built into masonry, including anchors, frames, bolts, sleeves, inserts, compressible fillers, expansion joints and flashing shall be built in as erection progresses. Concrete block into which anchor bolts will be installed shall be filled solid with mortar.

E. Laying Out Block Work: All concrete block work shall be laid out with uniform joints approximately 3/8” thick and shall be bonded at corners where possible and as consistent with good appearance. Where cutting is required, the cuts shall be made symmetrical above openings and as a general rule with no cuts less than 4” with power equipment designed for purpose.

F. Corners shall be made using half blocks in order to maintain head joints centered over block in adjoining courses above and below. Where intersecting masonry partitions occur, galvanized Durowall Joint Reinforcing shall be used at every 2nd course.

1. Concrete blocks shall be laid dry in a full bed of mortar and ends buttered on both edges. Care shall be used to prevent smearing mortar on exposed faces of the blocks and such accumulations that occur shall be removed immediately. The exposed face of blocks shall be wiped clean with burlap as the work proceeds. Those surfaces exposed to sight in their final position shall be further cleaned to provide for the application of finishes as required.
2. Joints in block work shall be tooled concave in such a manner as to squeeze the mortar back into the joints

and to ensure complete contact is made along the edges of the units, compressing and sealing the surface of the joints.

3. Control joints shall be provided in concrete block partitions at door heads where masonry extends above the door frames, where partitions abut exterior walls and elsewhere as noted on the drawings. Joints shall be raked out 3/8" deep and caulked as specified in Division 7. Bond beams shall be installed as indicated and shall be filled with concrete and reinforced with two (2) No. 4 bars unless noted otherwise.

G. Lintels shall be provided where shown and for all openings in masonry work where other types of lintels have not been provided. Concrete block lintels shall bear not less than six inches (6") on each jamb. Lintel blocks shall be solid bottom trough block filled with concrete and reinforced as detailed on drawings.

H. Masonry Reinforcement: Joint reinforcement shall be installed in all concrete block partitions in the joints of every second block course for the full height of the wall.

I. The Subcontractor shall be responsible for furnishing all required labor, tools, and equipment as required to complete all areas of masonry work on the project. This shall be inclusive of all scaffolding, walk-boards and bracing as required to support the work until fully incorporated into the structure.

J. Subcontractor shall also furnish all materials including concrete block, mortar, reinforcing, ties and other accessories necessary for the execution of the masonry work.

3.03 Preparation:

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.04 Coursing:

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:

1. Bond: Running.
2. Coursing: One unit and one mortar joint to equal 8

inches.

3. Mortar Joints: Concave.

3.05 Placing and Bonding:

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Masonry work shall be laid true to dimensions, plumb, square and in bond and properly anchored with vertical joints in line, plumb and true.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Interlock intersections and external corners.

F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

H. Provide a 3/8” joint around hollow metal door jambs and window frames to allow for sealant and expansion.

3.06 Weeps/Cavity Vents:

A. Install weeps in veneer walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.07 Reinforcement and Anchorage – General:

A. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

B. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches around perimeter.

C. Locate anchor sections to allow maximum vertical differential movement of ties up and down.

3.08 Reinforcement And Anchorage - Concrete Masonry Units:

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 8 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Reinforce joint corners and intersections with strap

anchors 16 inches on center.

3.09 Masonry Flashings:

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 4 inches into adjacent masonry or turn up at least 4 inches to form watertight pan at non-masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.

C. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.

3.10 Lintels:

A. Install loose steel lintels over openings.

3.11 Control Joints:

A. Do not continue horizontal joint reinforcement through control joints.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

C. Size control joint in accordance with Section 07900 for sealant performance.

3.12 Built-In Work:

A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.13 Tolerances:

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation from Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft

and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.14 Cutting And Fitting:

A. Cut and fit for pipes and conduit. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.15 Cleaning:

A. Remove excess mortar and mortar droppings.

B. Clean soiled surfaces with cleaning solution.

3.16 Protection Of Finished Work:

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

End of Section

DIVISION 5 – METALS

SECTION 05400 – COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 Related Documents
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.02 Summary
- A. This Section includes the following:
  1. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
  2. Division 9 Section "Gypsum Board Assemblies" for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.

1.03 Performance Requirements
- A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
  1. Design Loads: Design loads shall be calculated components and cladding load per ASCE/SEI 7 edition indicated on the drawings.
  2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
     a. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/600 of wall height at areas backing up brick veneer, and 1/240 of wall height at areas backing up other materials.
     b. Soffit Joist Framing: Vertical deflection of 1/240 of the span.
  3. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
     a. Upward and downward movement of 1 inch.
- B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
  1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
  2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

1.04 Submittals
- A. Product Data: For each type of cold-formed metal framing product and accessory indicated.

B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
   1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Welding certificates.

D. Research/Evaluation Reports: For cold-formed metal framing.

1.05 Quality Assurance

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

D. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
   1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
   2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

1.06 Delivery, Storage, And Handling

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 Manufacturers

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:

1. Allied Studco.
2. AllSteel Products, Inc.
3. California Expanded Metal Products Company.
4. Clark Steel Framing.
5. Consolidated Fabricators Corp.; Building Products Division.
6. Craco Metals Manufacturing, LLC.
7. Custom Stud, Inc.
8. Dale/Incor.
9. Design Shapes in Steel.
10. Dietrich Metal Framing; a Worthington Industries Company.
11. Formetal Co. Inc. (The).
12. Innovative Steel Systems.
13. MarinoWare; a division of Ware Industries.
14. Quail Run Building Materials, Inc.
15. SCAFCO Corporation.
16. Southeastern Stud & Components, Inc.
17. Steel Construction Systems.
18. Steeler, Inc.
19. Super Stud Building Products, Inc.
20. United Metal Products, Inc.

2.02 Materials

A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: ST33H (ST230H).
2. Coating: G60 (Z180).

B. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: 50 (340), Class 1 or 2.
2. Coating: G90 (Z275).

2.03 Non-Load-Bearing Wall Framing

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inches (1.09 mm).
2. Flange Width: 1-5/8 inches (41 mm).

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 0.0538 inches (1.37 mm)
   2. Flange Width: 1-1/2 inches.

C. Vertical Deflection Clip Option: Manufacturer's standard head clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Dietrich Metal Framing; a Worthington Industries Company.
      b. MarinoWare, a division of Ware Industries.
      c. SCAFCO Corporation
      d. The Steel Network, Inc.

D. Single Deflection Track Option: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
   1. Minimum Base-Metal Thickness: 0.0538 inch (1.37 mm).
   2. Flange Width: 1 inch (25 mm) plus the design gap for 1-story structures and 1 inch (25 mm) plus twice the design gap for other applications.

E. Double Deflection Track Option: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.
   1. Outer Track: Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
      a. Minimum Base-Metal Thickness: 0.0538 inch (1.37 mm).
      b. Flange Width: 1 inch (25 mm) plus the design gap for 1-story structures and 1 inch (25 mm) plus twice the design gap for other applications.
   2. Inner Track: Of web depth indicated, and as follows:
      a. Minimum Base-Metal Thickness: 0.0428 inch (1.09 mm).
      b. Flange Width: Equal to sum of outer deflection track flange width plus 1 inch.

2.04 Soffit Joist Framing

A. Steel Ceiling Joists: Manufacturer's standard C-shaped steel sections, of web depth indicated, unpunched, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: As indicated on drawings.
   2. Flange Width: 1-5/8 inches (41 mm) minimum.

2.05 Framing Accessories

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
   1. Supplementary framing.
   2. Bracing, bridging, and solid blocking.
   3. Web stiffeners.
   4. Anchor clips.
   5. End clips.
   6. Foundation clips.
   7. Gusset plates.
   8. Stud kickers, knee braces, and girts.
   9. Joist hangers and end closures.
   10. Hole reinforcing plates.
   11. Backer plates.

2.06 Anchors, Clips, And Fasteners

A. Anchor Bolts: ASTM F 1554, Grade 55, threaded carbon-steel headless bolts, with encased end threaded, and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C or mechanically deposition according to ASTM B 695, Class 50.

B. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

C. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

D. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

E. Welding Electrodes: Comply with AWS standards.

2.07 Miscellaneous Materials

A. Galvanizing Repair Paint: ASTM A 780.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.

C. Shims: Load bearing, high-density multimonomer plastic, nonleaching.

D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.08 Fabrication

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
   a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
   b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening

requirements of sheathing or other finishing materials.

2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 - EXECUTION

3.01 Examination

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

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

3.02 Installation, General

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.

2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for

which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

H. Install insulation, specified in Division 7 Section "Building Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.03 Joist Installation

A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.

1. Unless shown otherwise in drawings, install joists over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm).
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on drawings.

C. Space joists not more than 2 inches (51 mm) from abutting walls, and as follows:

1. Joist Spacing: As indicated.

D. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.

E. Install bridging at intervals indicated. Fasten bridging at each joist intersection as follows:

1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.

F. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.04 Field Quality Control

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.05 Repairs And Protection

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer that ensures the cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

DIVISION 5 - METALS

SECTION 05500 – METAL FABRICATIONS

Part 1 - General

1.01 Summary: Metal fabrications as specified and as shown on the drawings. The extent of metal fabrications work is shown on drawings and includes items fabricated from steel shapes, plates, tubes, and pipes which are not a part of structural steel or other metal systems in other sections of these specifications.

1.02 References: Comply with the current edition of the following codes and standards, except as otherwise shown or specified:

AISC	"Load and Resistance Factor Design, LRFD Specification for Structural Steel Buildings", including "Commentary" and "Supplements"
AISI	"Specification for the Design of Cold-Formed Steel Structural Members"
ANSI/AWS	"D1.1 – Structural Welding Code, Steel"
ANSI/AWS	"D1.3 – Structural Welding Code, Sheet Steel"
NAAMM	"Metal Finishes Manual"
SSPC	Systems and Specifications as referenced

1.03 Submittals:

A. General: Submit copies as required by Supplementary Conditions. Contract drawings shall not be copied for use as shop or erection drawings.

B. Product Data: Submit manufacturer's product information and installation instructions for manufactured items, including prime paint.

C. Shop Drawings: Submit shop drawings for fabrications and erection of miscellaneous metal fabrications. Include plans, elevations, and details of sections and connections. Show anchorage and accessory items.

1.04 Quality Assurance:

A. Erector Qualifications: Firms regularly engaged in the erection of metal fabrications for similar type and size projects. The metal fabrications erector shall be responsible to the structural steel fabricator.

B. Qualification of Welding Work: Qualify the welding procedures and welding operators in accordance with ANSI/AWS "D1.1 Structural Welding Code – Steel".

1.05 Project/Site Conditions:

A. Field Measurements: Check actual locations of walls and structure to which metal fabrications must fit. Record accurate field measurements before fabrication; show recorded measurements on final shop drawings.

Part 2 - Materials and Components:

2.01 General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

A. Steel Plates, Shapes and Bars: ASTM A 36, unless noted otherwise.

B. Steel Plates to be Bent or Cold Formed: ASTM A 36, unless noted otherwise.

C. Steel Tubing: ASTM A 500, Grade B

D. Steel Bars and Bar-Size Shapes: ASTM A 36.

E. Cold-Finished Steel Bars: ASTM A 108, grade as selected by fabricator.

F. Cold-Rolled Carbon Steel Sheets: ASTM A 366.

G. Galvanized Carbon Steel Sheets: ASTM A653, with G60 zinc coating.

2.02 Non-Metallic, Non-Shrink Grout: Refer To Section 03300.

2.03 Fasteners:

A. General: Provide zinc coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.

B. Unfinished Threaded Fasteners: Regular hexagon head type, ASTM A 307, Grade A

C. High Strength Threaded Fasteners: ASTM A 325 heavy hexagon, structural bolts with nuts and hardened washers.

D. Lag Bolts: Square head type, FS FF-B561.

E. Machine Screws: Cadmium plated steel, FS FF-S-92.

F. Wood Screws: Flat head or oval head carbon steel, FS FF-S-111.

G. Plain Washers: Round, carbon steel, FS FF-W-92.

H. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class and style as required.

I. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

J. Stainless Steel Bolts and Screws: ASTM F 593 or AISI 304.

K. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A 153.

2.04 Paint:

A. Steel Primer Paint:

1. Interior:

a. The Society for Protective Coatings Specification 15-68T, Type 1 (gray oxide) or a shop primer paint which meets the same minimum performance requirements.

B. Bituminous Paint: Cold applied asphalt mastic conforming to SSPC-Paint 12 except containing no asbestos fibers.

C. Galvanizing Repair Paint: Tnemec 90-97, “Tneme-Zinc”, zinc-rich urethane primer.

SECTION 05500 – METAL FABRICATIONS

2.05 Fabrication, General:

A. Workmanship: Use materials of size and required thickness to produce strength and durability in finished product. Work to dimensions shown using proven details of fabrication and support.

1. Form exposed work true to line and level with accurate angles and surfaces and straight, sharp edges. Ease exposed edges to a radius of approximately 1/32” unless otherwise shown. Refer to AISC “Manual of Steel Construction: for Minimum Radius for Cold Bending Bent Plates.

2. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts.

4. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use. Cut, reinforce, drill and tap miscellaneous metal work as required to receive finish hardware and similar items.

B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural integrity of joined pieces. Clearly mark units for assembly and coordinated installation.

C. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

2.06 Finishing:

A. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes. Finish metal fabrications after assembly.

B. Galvanizing: Provide a zinc coating for those items shown or specified to be galvanized as follows:

1. ASTM A 153 for galvanizing iron and steel hardware.

2. ASTM A 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8" thick and heavier.

3. ASTM A 53 for galvanizing steel pipe.

C. Surface Preparation: After inspection and before shipping, clean steel work to be painted. Remove loose rust, loose mill scale, and spatter, slag or flux deposits. Remove grease and oil in accordance with The Society for Protective Coatings Specification, SSPC SP-1, "Solvent Cleaning".

1. Interior Steel:

a. Final clean all steel with SSPC SP-3, "Power Tool Cleaning".

2. Exterior Steel: Final clean steel exposed to the exterior atmosphere with SSPC SP-6, "Commercial Blast Cleaning".

D. Shop Painting:

1. Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded or high-strength bolted with slip-critical connections and galvanized surfaces, unless otherwise specified.

2. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's

standards, and at a rate to provide minimum uniform dry film exposed surfaces. Apply one shop coat to fabricated metal items, except apply two coats of paint to surfaces inaccessible after assembly or erection.

3. Dissimilar Materials: Paint dissimilar metals on contact surfaces and aluminum where in contact with concrete, mortar, fire or preservative treated wood or absorptive materials subject to wetting. Protect with one coat of bituminous paint.

2.07 Miscellaneous Framing, Supports, Trim And Rough Hardware:

A. General: Provide steel framing, supports and trim for applications indicated or which are not a part of structural steel framework, as required to complete work.

B. Fabricate to sizes, shapes, and profiles indicated and required to receive item retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers and similar items.

C. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required. Manufacture or fabricate, items of sizes, shapes and dimensions required. Furnish steel washers in all locations.

D. Finish: Prime paint, refer to Paragraph 2.04 for type.

2.08 Loose Bearing And Leveling Plates:

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required.

B. Finish: Galvanize after fabrication, refer to Paragraph 2.07 for type.

Part 3 - Execution

3.01 Preparation: Furnish setting drawings, diagrams, instruction, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete construction. Coordinate delivery of such items to project site.

3.02 Installation, General:

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, free of rack and measured from established lines and levels.

C. Provide temporary bracing or anchors for items that are to be built into concrete, masonry or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.

E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work and the following:

1. Use material and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

5. Use weld curtains to protect surroundings if necessary.

3.03 Installation Of Metal Fabrications Items:

A. General: Install as specified and in accordance with final shop drawings and manufacturer's instructions, where applicable.

3.04 Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas with the same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness equal to specified prime coat. Touch up galvanized areas with galvanizing repair paint specified.

End of Section

SECTION 06100 - ROUGH CARPENTRY

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Related Work Specified Elsewhere:
- A. Wood Treatment - Section 06300

1.03 Quality Assurance:
- A. Grades specified shall conform to the most recent grading rules as established by the following bureaus and associations.
  1. PS 20 - American Softwood Lumber Standard.
  2. Western Wood Products Association
  3. Southern Pine Inspection Bureau
- B. Grade and trademark each piece of lumber or bundle on bundled stock. Use only the recognized official marks of association under whose rules it is graded. Grade and trademarks will not be required if each shipment is accompanied by certificate of inspection issued by grading association.

1.04 Submittals:
- A. Product Data: for each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  1. Include data for wood preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer’s written instructions for handling, storing, installing and finishing treated material.
  2. As requested by authorities having jurisdiction include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply wit requirements. Include physical properties of treated materials both before and after exposure to elevated temperatures when tested according to ASTM D5516 and ASTM D 5664.
  3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

4. Research / evaluation reports – for the following, showing compliance with building code in effect for Project:
   a. Fire-retardant treated wood.
   b. Power-driven fasteners.
   c. Power-actuated fasteners.
   d. Expansion anchors.
   e. Metal framing anchors.

1.05 Delivery, Storage and Handling:

A. Stack lumber, plywood, sheathing, and other materials: provide spacers between each bundle to provide air circulation around bundled material. Provide proper air circulation between stacks and under coverings.

Part 2 - Products

2.01 General:

A. Provide best quality of respective grades and kinds. Lumber and plywood shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship". Factory mark each piece of lumber with grade stamp of grading agency.

B. Maximum moisture content of lumber 19%.

C. Provide dressed lumber (S4S) unless otherwise indicated.

D. Where nominal sizes are indicated, provide actual sized required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

2.02 Grades and Applications of Lumber:

A. Framing lumber for the following shall be "Standard" grade Douglas Fir (WCLIB or WWPA).
   1. Concealed blocking/nailers, cants, grounds, and miscellaneous wood items used in conjunction with the roofing work and as indicated on the Drawings.
   2. Provide dimension lumber of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the Grading Agency indicated.

2.03 Fire-retardant Treated Materials:

A. General – where fire-retardant treated materials are required by authorities having jurisdiction, provide materials that comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood). Identify fire-retardant treated wood with appropriate classification

marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

2.04 Panel Products:

A. Miscellaneous Concealed Plywood: shear wall sheathing, span rating to suit framing in each location, and thickness indicated. Refer to Structural Drawings.

B. Exposed Plywood: wall sheathing at interior side of batting area exterior partitions shall be fire-retardant material. Refer to drawings for locations.

C. Telephone and Electrical Equipment Backing Panels: DOC PS 1, C-D Plugged, fire-retardant treated, in thickness indicated, or if not indicated, not less than ½ inch thick.

2.05 Fasteners:

A. All nails, spikes, bolts, connectors and other fasteners used in connections with this work shall be galvanized.

1. Nails, wire, brads and staples – FS-FF-N-105.
2. Power-driven Fasteners – CABO NER-272.
3. Wood screws – ASME B18.6.1.
4. Screws for fastening to cold formed metal framing: ASTM C954 length as recommended by screw manufacturer for material to be fastened.
5. Lag bolts – ASME B18.2.1.
6. Bolts – steel bolts complying with ASTM A 307, Grade A with ASTM C563 hex nuts and, where indicated, flat washers.
7. Expansion anchors – anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
   a. Material for interior applications: carbon steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
   b. Material for exterior applications: stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, alloy group 1 or 2.

2.06 Metal Framing Anchors:

A. General: provide galvanized steel framing anchors of structural capacity, type, and size indicated and acceptable to authorities having jurisdiction.

B. Galvanized Steel Sheet: hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

Part 3 - Execution

3.01 Sizes and Applications (General Framing):

A. Members shall be accurately cut and fitted, true to line and level, avoiding shims and wedges as much as possible. Discard material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Where applicable, apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

C. At wood ground, blocking and nailer installation: install where indicated and required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

D. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless noted otherwise.

3.02 Rough Hardware:

A. Provide all sufficient nails, screws, etc. to insure rigidity and structural soundness. Provide hot-dipped galvanized fasteners at all weather exposed locations.

B. Spiking and nailing shall be done using largest size spikes and nails practicable and as indicated on the drawings. Securely attach carpentry according to applicable codes and recognized standards.

C. Bolt nailers and blocking to steel or concrete members with bolts of proportionate strength of members attached, length required, spaced 4'-0" o.c. maximum and 4" from each end, except as otherwise indicated. Countersink fastener heads on exposed carpentry work and fill holes with wood fiber.

D. Predrill members when necessary to avoid splitting of wood.

3.03 Panel Product Installation:

A. Wood structural panels: comply with applicable recommendations contained in APA Form No. E30K, “APA Design/Construction Guide: Residential and Commercial”, for types of structural-use panels and applications indicated. Comply with “Code Plus” provisions in above referenced guide.

End of Section

SECTION 06300 - WOOD TREATMENT

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
- A. Standards:
  1. American Wood Preservers Association:
     a. AWPA Standard P-5 (Preservative)
     b. AWPA Standard Commodity Standards (Treating Process).
  2. Federal Specifications:
     a. TT-W-550 (Preservative).
     b. TT-W-571 (Treating Process).
- B. All lumber and plywood receiving wood treatment shall bear the trademark of the process used.
- C. Submit certificate and guarantee of the lumber treated.

Part 2 - Products

2.01 Materials:
- A. Description: Waterborne chemical salts intended for pressure impregnation as a wood preservative. Preservatives with a petroleum vehicle are not permitted.

Part 3 - Execution

3.01 Installation:
- A. Location of treated lumber:
  1. All blocking, plates, nailers and curbs used in conjunction with gravel guards, roof edges and all other wood components used in the roofing project.
- B. Materials shall be pressure treated in accordance with the standards of the American Wood Preservers Institute and the chemical manufacturer's specifications.
- C. Treated material shall conform to AWPB LD-2 and treated to a maximum retention of 0.23 pound of oxide per cubic foot.
- D. Moisture content of finish products shall not exceed 19%.

End of Section

SECTION 06420 - CUSTOM LAMINATE CASEWORK (CONTRACTOR OPTION)

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Fixed modular laminate clad casework and components.
B. Flexible rail mounted laminate clad casework and components.
C. Solid Surface countertops and backsplash.

1.02 RELATED SECTIONS

A. Blocking within walls where indicated: Section 06100 Rough Carpentry.
B. Millwork, trim, etc.: Section 06200 Finish Carpentry.
C. Hardware: Section 06410 Custom Casework.
D. Glass: not applicable.
E. Base molding: Division 9.
F. Appliances: Division 11 and drawings.
G. Sinks and service fixtures, service waste lines, connections, and vents: Division 15.
H. Electrical service fixtures: Division 16.

1.03 DEFINITIONS

A. Identification of casework components and related products by surface visibility.
    1. Open Interiors: Any open storage unit without solid door or drawer fronts, units with full glass insert doors and/or acrylic doors, and units with sliding solid doors.
    2. Closed Interiors: Any closed storage unit behind solid door or drawer fronts.
    3. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
    4. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
    5. Semi-Exposed Surfaces: Interior surfaces which are exposed to view when doors or drawers are opened, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
    6. Concealed Surfaces: Any surface not visible after installation.

1.04 QUALITY ASSURANCE

A. Manufacturer: Minimum of 5 years experience in providing manufactured casework systems for similar types of projects, produce evidence of financial

stability (if requested), bonding capacity, and adequate facilities and personnel required to perform on this project.

B. Manufacturer: Provide products certified as meeting or exceeding ANSI-A 161.1-2000 testing standards.

C. Single Source Manufacturer: Casework, countertops and architectural millwork products must all be engineered and built by a single source manufacturer in order to ensure consistency and quality for these related products. Splitting casework, countertops and/or architectural millwork between multiple manufacturers will not be permitted.

D. Quality Standard: Unless otherwise indicated, comply with AWI's Architectural Woodwork Quality Standards for grades of interior architectural woodwork, construction, finishes and other requirements.

1.05 SUBMITTALS

A. Comply with Special Conditions, unless otherwise indicated.

B. Product Data: Manufacturer's catalog with specifications and construction details.

C. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements.

1. Include section drawings of typical and special casework, work surfaces and accessories.
2. Indicate locations of plumbing and electrical service field connection by others.
3. Provide one set of shop drawings which includes all products within this section, engineered and built by a single source manufacturer, with seamless coordination amongst all products.

D. Casework Samples (To be available upon request):

1. Base cabinet: Cabinet conforming to specifications, with drawer and door.
2. Wall cabinet: Cabinet conforming to specifications, with door.
3. Cabinet samples shall be complete with specified hardware for doors, drawers and shelves.
4. Component samples: Two sets of samples for each of the following:

a. Decorative laminate color charts / PVC and ABS edgings.

1.06 PRODUCT HANDLING

A. Deliver completed laminate clad casework, countertops, and related products only after wet operations in building are completed, store in ventilated place, protected from the weather, with relative humidity range of 25 percent to 55 percent.

B. Protect finished surfaces from soiling and damage during handling and installation with a protective covering.

1.07 JOB CONDITIONS

A. Environmental Requirements: Do not install casework until permanent HVAC systems are operating and temperature and humidity have been stabilized for at least 1 week.

1. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for architectural casework installation areas.
2. After installation, control temperature and humidity to maintain relative humidity between 25 percent and 55 percent.

B. Conditions: Do not install casework until interior concrete work, masonry, plastering and other wet operations are complete.

1.08 WARRANTY

A. All materials and workmanship covered by this section will carry a five (5) year warranty from date of acceptance.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Manufacturer – Basis for Design:

1. TMI Systems Corporation.
   a. Specifications are based on manufacturer’s literature from TMI SYSTEMS CORPORATION, 50 South Third Avenue West, Dickinson, North Dakota, 58601, Phone: 800-456-6716, fixed modular, flexible rail mounted, and mobile casework and accessories.

b. Other manufacturers shall comply with the minimum levels of material and detailing indicated on the drawings or as specified.

2.02 MATERIALS

A. Core Materials:
   1. Particleboard up to 7/8 inch thick: Industrial Grade average 45-pound density particleboard, ANSI A 208.1-2009, M-2 requirements.
   2. Particleboard 1 inch thick and thicker: Industrial Grade average 45-pound density particle-board, ANSI A 208.1-2009, M-2 requirements.
   3. Medium Density Fiberboard 1/4 inch thick: Minimum average density 45-50 lbs., ANSI A208.2-2009 requirements.
   4. MR Moisture Resistant Particleboard: Average 45-pound density particleboard, ANSI A208.1 1-2009, M-2 requirements.
   5. Toe Base Plywood: 3/4 inch thickness, CC/CD/CDC grades, of western softwood veneers, with NAUF exterior fully water resistant phenolic glues.

B. Decorative Laminates: GREENGUARD Indoor Air Quality Certified
   1. High-pressure decorative laminate VGS (.028), NEMA Test LD 3-2005.
   2. High-pressure decorative laminate HGS (.048), NEMA Test LD 3-2005.
   3. High-pressure decorative laminate HGP (.039), NEMA Test LD 3-2005.
   4. High-pressure cabinet liner CLS (.020), NEMA Test LD 3-2005.
   5. High-pressure backer BKH (.048), (.039), (.028), NEMA Test LD3-2005.
   6. Thermally fused melamine TFM laminate, NEMA Test LD 3-2005. (TFM allowed on casework interiors only, as specified below. Utilization of TFM on any exterior casework surfaces, including door and drawer faces and finished ends, will not be permitted.)

C. Laminate Color Selection: Maximum 1 color per unit face and 5 colors per project. (See Color Selection in section 3.05).

D. Edging Materials:
   1. 1mm PVC banding, machine applied.

2. 3mm PVC banding, machine applied and machine profiled to 1/8 inch radius.

E. Glass:
Not applicable.

2.03 SPECIALTY ITEMS

A. Support Members:
1. Countertop support brackets: Epoxy powder coated, 11 gauge steel with integral cleat mount opening and wire management opening.
2. Undercounter support frames: Epoxy powder coated.
3. Legs: Epoxy powder coated.

2.04 CABINET HARDWARE

F. Refer to Section 06410 Custom Casework for cabinet hardware.

2.05 FABRICATION:

A. Fabricate casework, countertops and related products to dimensions, profiles, and details shown.

B. All casework panel components must go through a supplemental sizing process after cutting, producing a panel precisely finished in size and square to within 0.010 inches, ensuring strict dimensional quality and structural integrity in the final fabricated product.

C. Cabinet Body Construction:
1. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and verticals. Minimum 6 dowels each joint for 24 inch deep cabinets and a minimum of 4 dowels each joint for 12 inch deep cabinets. (Mechanical or metal hardware fasteners joining cabinet top and bottom panels to the sides will not be accepted.)
a. Tops, bottoms and sides of all cabinets are particleboard core.
2. Cabinet backs: 1/4 inch thick medium density fiberboard panel fully captured by the cabinet top, bottom and side panels. Finish to match cabinet interior. 3/4 inch x 4 inch particleboard rails will be placed behind the back panel at the top and bottom, and doweled to the sides utilizing 10mm hardwood fluted dowels. A third intermediate rail will be included on all cabinets taller than 56 inches. Utilize hot melt

glue to further secure back and increase overall strength.

a. Exposed back on fixed or movable cabinets: 3/4 inch thick particleboard with the exterior surface finished in VGS laminate as selected.

3. Fixed base and tall units have an individual factory-applied base, constructed of 3/4 inch thick plywood. Base is 102mm (nominal 4 inch) high unless otherwise indicated on the drawings.
4. Base units, except sink base units: Full sub-top glued and doweled to cabinet sides. (Mechanical or metal hardware fasteners joining cabinet sub-top panel to the sides will not be accepted.)
   a. Sink base units are provided with open top and a stretcher at the front, attached to the sides. Back to be split removable access panel.
5. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in the line boring for consistent alignment.
6. Exposed and semi exposed edges.
   a. Edging: 1mm PVC machine applied.
7. Adjustable Shelves in Cabinets
   a. Core: Particleboard.
   b. Core Thickness: 3/4 inch up to 30 inches wide, 1 inch over 30 inches wide.
   c. Edge: 1mm PVC on Front Edge Only.
8. Interior finish, units with open Interiors:
   a. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with TFM Thermally Fused Melamine laminate.
9. Interior finish, units with closed Interiors:
   a. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with TFM Thermally Fused Melamine laminate.
10. Exposed ends:
    a. Faced with high-pressure decorative VGS laminate. Use of TFM on exposed ends will not be permitted.
11. Wall unit bottom:

a. Faced with thermally fused melamine laminate.

12. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), are not permitted.

D. Drawers:
1. Sides, back and sub front: Minimum 1/2 inch thick particleboard, laminated with TFM Thermally Fused Melamine doweled and glued into sides. Top edge banded with 1mm PVC.
2. Drawer bottom: Minimum 1/2 inch thick particleboard laminated with TFM Thermally Fused Melamine, screwed directly to the bottom edges of drawer box.
3. Paper storage drawers: Minimum 3/4 inch thick particleboard sides, back, and sub front laminated with TFM Thermally Fused Melamine. Minimum 1/2 inch thick particleboard drawer bottoms screwed directly to the bottom edges of the drawer box. Provide PVC angle retaining bar at the rear of the drawer.

E. Door/Drawer Fronts:
1. Core: 3/4 inch thick particleboard.
2. High-pressure decorative VGS laminate exterior, balanced with high-pressure cabinet liner CLS. Use of TFM on exterior or interior surfaces of door/drawer fronts will not be permitted.
3. Edges: 3mm PVC, machine applied, external edges and outside corners machine profiled to 1/8 inch radius.
4. Provide double doors in opening in excess of 24 inches wide.

F. Door Fronts with Glass Insert captured by Retainer Clips (CUSTOM GRADE):
1. Core: 3/4 inch thick particleboard.
2. High-pressure decorative VGS laminate exterior, balanced with high-pressure VGS laminate. Use of TFM on exterior or interior surfaces of door fronts will not be permitted.
3. Edges: 3mm PVC, machine applied, external edges and outside corners machine profiled to 1/8 inch radius.

4. Provide cutout in door panel resulting in 3-3/8 inch frame. Exposed cutout edge to be finished with 1mm PVC edgebanding.
5. Notch cutout 3/8 inch x 1/4 inch for glass panel to set into, mounting flush with the back side (interior side) of the door panel. Interior cutout edge to be painted a compatible color to the interior surface.
6. Glass panel to be captured and held in place utilizing glass retainer clips, screwed in place. Minimum eight clips per glass panel located in the four corners of the cutout.

G. Miscellaneous Shelving (not in Cabinets):
1. Core material: 1 inch thick particleboard.
2. High-pressure decorative VGS laminate on both faces.
3. Edges: 3mm PVC, external edges and outside corners machine profiled to 1/8 inch radius.

2.06 ARCHITECTURAL CABINET SOLID SURFACE TOPS (Countertops):

A. Design Load: deflection limited to 1/360.

B. Type of Top: homogeneous solid sheets of filled plastic resin complying with the following:

1. Colors and Patterns: as selected by Architect from manufacturer’s full range.

2. Special Features: eased edge treatment.

3. Accessories:

a. Adhesives: for seams and drop edges, Formica Solid Surfacing Seaming Cartridges, 9 ounce, color to blend with sheet material.

4. Fabrication: assemble work at shop and deliver to job ready for installation. Manufacture in largest practical pieces for handling and shipping without seams.

a. Fabricate work square and to required lines.

b. Recess and conceal fasteners connections and reinforcing.

c. Design, construction, and installation: details to allow for expansion and contraction of materials. Properly install material with hairline joints held rigidly in place.

d. Fabricate countertops and vanities with back splash and side splash pieces to profiles and sizes indicated.

e. Fabricate items to profiles shown with connections and supports as indicated or as required for complete installation in accordance with manufacturer's written instruction sand approved submittals.

f. Provide cut-outs for plumbing fixtures and trim, washroom accessories, appliances, and related items: confirm layout with manufacturer's cut-out templates before beginning work. Round corners of cut-outs and sand edges smooth.

g. Do not exceed manufacturer's recommended unsupported overhang distances.

h. Finish exposed surfaces smooth and polish to low sheen.

i. Radius corners and edges.

j. Tolerances: variations in size or openings shall not exceed +/-1/4".

5. Acceptable manufacturer: Formica Solid Surfacing as manufactured by Formica Group / Fabrications, Cincinnati, Ohio **or approved equal**.

PART 3- EXECUTION

3.01 INSPECTION:

A. The casework contractor must examine the job site and the conditions under which the work under this section is to be performed and notify the building owner in writing of unsatisfactory conditions. Do not proceed with work under this Section until satisfactory conditions have been corrected in a manner acceptable to the installer.

3.02 PREPARATION:

A. Condition casework to average prevailing humidity conditions in installation areas prior to installing.

3.03 INSTALLATION:

A. Erect casework, plumb, level, true and straight with no distortions. Shim as required. Where laminate clad casework abuts other finished work, scribe and cut to accurate fit.

B. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind.

C. Repair minor damage per plastic laminate manufacturer's recommendations.

3.04 CLEANING:

A. Remove and dispose of all packing materials and related construction debris.

B. Clean cabinets inside and out. Wipe off fingerprints, pencil marks, and surface soil etc., in preparation for final cleaning by the building owner.

3.05 COLOR SELECTION:

A. Laminate Color Selection:

1. Select from the full range of standard Wilsonart® and Formica® stock color charts.
2. Thermally fused melamine laminate matched to White color.

B. Hardware Color Selection:

1. Hinge: Select from your choice of epoxy powder coating stock colors matched to White, Beige, Gray, Black and Chrome.
2. Pulls: Select from design specific finish options available in the TMI Vendor Stock Pull Program.
3. Miscellaneous Hardware (support brackets, metal components, etc.): Select from your choice of epoxy powder coating stock colors matched to White, Beige, Gray, Black and Chrome.

C. PVC Edge Banding Color Selection:

1. 3mm PVC: Select from the TMI Vendor Stock PVC Program, including over 200 pattern, woodgrain and solid colors matched to Wilsonart® and Formica® laminates.
2. 1mm PVC: Select from the TMI Vendor Stock PVC Program, including over 200 pattern, woodgrain

and solid colors matched to Wilsonart® and Formica® laminates.

End of Section

DIVISION 7 -THERMAL & MOISTURE PROTECTION

SECTION 07100 - WATERPROOFING

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
- A. Standards:
  - 1. Federal Specifications:
    - a. SS-C-153B, Cement, Bituminous, Plastic.
    - b. SS-A-701B, Asphalt, Weatherproofing.
    - c. LLL-1-535A, Insulation Board, Thermal.

1.03 Submittals:
- A. Provide submittals in the form of samples, and documentation, to the Architect for review.

Part 2 - Products

2.01 Materials:
- A. Solvent Based Asphalt Water Barrier: FS-SS-A-701B.
- B. Flashing Membrane: 20 mil elastomeric modified sheet vinyl.
- C. Asphalt Plastic Cement: SS-C-153B, Type 1.
- D. Accessories: As recommended by manufacturer.
- E. Protection Board: Insulation Board, FS-LLL-1-535A, Class A.
- F. Vapor Barrier under floor slab: refer to Section 07260 - Vapor Barrier.

Part 3 - Execution

3.01 Installation - Wall Waterproofing:
- A. Location: Apply to all exterior concrete surfaces below grade.
- B. General:
  - 1. Repoint all holes cracks and joints and allow to dry before waterproofing.
  - 2. Do not apply until all surfaces are completely dry and clean. Apply only during favorable weather conditions.
- C. Joint Membrane:
  - 1. Location: Apply to all joints in exterior concrete walls below grade.
  - 2. Embed a strip of flashing membrane in plastic cement. Membrane shall be a minimum of 12" wide.
- D. Water Barrier:
  - 1. Hold 4" down from finish grade line so that at no time is the mastic or membrane exposed to view.
  - 2. Apply two (2) coats to form a membrane water barrier, allowing the first coat to dry before applying the second coat. Apply in strict accordance with manufacturer's

instructions. Do not apply until surfaces are completely dry.

3. Apply in a continuous unbroken film free from pin holes or other surface breaks. Take care to seal around all ties, inserts, anchor slots, conduit, pipes, electrical boxes, etc.

E. Protection:

1. Install protection board over all waterproofing prior to backfilling.
2. All back filling shall be carefully done to protect waterproofing. Repair all damaged areas.

3.02 Under Slab Vapor barrier:

A. Refer to Section 07260 – Vapor Barrier.

End of Section

DIVISION 7 - THERMAL & MOISTURE PROTECTION

SECTION 07200 – INSULATION

Part 1 - General

1.01 Work Included:
- A. All materials, labor and services and incidentals necessary for the completion of this section of work.

1.02 Quality Assurance:
- A. Standards:
  - 1. Federal Specifications:
    - a. HH-I-524C, Type IV, Class C, Rigid Insulation.
    - b. ASTM C 665-84, Type 1, Insulation Blankets.
    - c. ASTM D1621, Compressive Strength.
    - d. ASTM E84, Flame Spread and Smoke Developed.
- B. Submittals:
  - 1. Provide submittals in the form of samples, and documentation, to the Architect for review.

1.03 Product Delivery, Storage and Handling:
- A. Rigid insulation board is combustible. During storage and insulation, observe good fire safety practice, including job site housekeeping.

1.04 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Materials:
- A. Rigid Insulation: FS-HH-I-1972/1, Class 2 Rigid Insulation.
  - 1. Type: expanded polystyrene insulation.
    - a. Application: 2" thick with a thermal resistance of R-10.4, **for foundation wall perimeter below grade installation only.**
  - 3. Adhesive: as recommended by manufacturer of rigid insulation board.
- B. Fibrous Insulation: ASTM C 665-84, Type 1
  - 1. Type:
    - a. refer to Section 13122 - Metal Building Systems.

Part 3 - Execution

3.01 Installation - Rigid Insulation:
- A. Install rigid insulation horizontally against back-up wall as shown on the Drawings.
- B. Cut insulation by means of a saw, knife, or other sharp tool to fit around obstructions across the wall, such as vents,

louvers, pipes and conduit.

C. If mastic adhesive is used to supplement holding the insulation in place, observe label directions.

End of Section

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 07260 – VAPOR BARRIER

PART 1 - GENERAL

1.01 Work Included

A. Furnish all labor, materials, services and equipment required in conjunction with or properly incidental to the installation of under-slab vapor barriers described herein and/or as shown on the drawings.

1.02 Related Work

A. Section 03300: Cast-In-Place Concrete.

1.03 Job Conditions

A. Subbase: Smooth and level, free from damaging protrusions that would puncture vapor barrier.

1.04 References

A. ASTM E 1643 - Standard Practice for Installation of Water Vapor Barriers Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. ASTM E 1745 - Standard Specification for Plastic Water Vapor Barriers Used in Contact with Soil or Granular Fill under Concrete Slabs: Exceeds Class B

C. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

D. ASTM E 154 – Standard Test Methods for Water Vapor Barriers Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

E. ASTM D 1709 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.

F. ASTM F 1249 – Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor

G. ACI 302.1R – Vapor barrier component (plastic membrane) not less than 10 inches thick.

1.05 Submittals

A. Submit in accordance with Division 1 requirements.

B. Product Data: Provide manufacturers printed product literature and description, including tests and standards that have been performed on the vapor barrier material.

C. Samples: Submit two, 8 1/2 x 11 inch in size, illustrating the vapor barrier and two (2) 8-1/2-in long sample strips of the joint tape.

D. One each of all accessories that will be used in the installation.

E. Verification by Independent testing labs indicating that materials comply with specified requirements.

F. Certificates: Certify that products of this section meet or exceed specified requirements.

G. Manufacturer's Instructions: Indicate complete installation instructions.

PART 2 - PRODUCTS

2.01 Available Products
- A. Stego Wrap 15 mil Vapor Barrier by Stego Industries, L.L.C.
- B. Perminator™ 15 mil by W.R. Meadows .
- C. Vapor Block 15 (mil) by Raven Industries, Inc.
- D. Moistop Ultra 15 (mil) by Fortifiber Building Systems Group
- E. Viper Vaporcheck II 15 mil by Insulation Solutions, Inc.

2.02 Source Quality Control And Testing
- A. Vapor barrier membrane shall have following properties:
  1. Water Vapor Barrier: Meets or exceeds Class A according to ASTM E 1745.
  2. Water Vapor Transmission Rate: 0.012 grains/ft2/hour or lower according to ASTM E 96.
  3. Water Vapor Permeance: 0.01 perms or lower according to ASTM E 154 Sec. 7 or F 1249 (max.).
  4. Tensile Strength: 45.0 lbf/in according to ASTM E 154 Sec. 9. .
  5. Puncture Resistance: 2200 g according to ASTM D 1709, Method B

2.03 Accessories
- A. Tape:
  1. High Density Polyethylene Tape with pressure sensitive adhesive. Minimum width 4".
- B. Pipe Boot:
  1. Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions.

PART 3 - EXECUTION

3.01 Examination
- A. Verify that conditions are acceptable for the placement of the vapor barrier.

3.02 Preparation
- A. Ensure that subsoil is approved by Geotechnical Engineer.
  1. Vapor Barrier shall be installed on top of the aggregate, sand or tamped earth base or carton forms. At carton forms provide a vertical leg down to grade and adhered the vapor barrier to the grade beam at or just below the dirt line. Vapor barrier may be placed either above or beneath any carton form slip sheet.

3.03 Installation

A. Install vapor barrier per manufacturer's instructions, illustrations and ASTM E 1643 Standard Practice for Installation of Water Vapor Barriers Used in Contact with Earth or Granular Fill Under Concrete Slabs.

1. Level and tamp or roll granular base.
2. Place Vapor Barrier with the longest dimension parallel with the direction of the pour.
3. Lap Vapor Barrier over footings and seal to foundation walls. Seal all penetrations.
4. Lap joints 6 inches and seal with the recommended pressure sensitive tape.
5. Seal pipe penetrations with pipe boot made from vapor barrier and tape.
6. Protect vapor barrier from damage during installation of reinforcing steel and utilities.
7. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with pressure sensitive tape.

3.04 Interface With Other Work

A. Coordinate work of all other trades related to the slab base and utility services.

END OF SECTION

DIVISION 7 - THERMAL & MOISTURE PROTECTION

SECTION 07840 - FIRESTOPPING

Part 1 - General

1.01 Related Documents:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Section, apply to work specified in this section.

1.02 Definitions:

A. Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in, or construction joints between, fire rated wall and floor assemblies.

1.03 General Description of the Work:

A. Only tested firestop systems shall be used in specific locations as follows:

1. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
2. Safing slot gaps between edge of floor slabs and curtain walls.
3. Openings between structurally separate sections of wall or floors.
4. Gaps between the top of walls and ceilings or roof assemblies.
5. Expansion joints in walls and floors.
6. Openings and penetrations in fire-rated partitions or walls containing fire doors.
7. Openings around structural members which penetrate floors or walls.

1.04 Related Work Specified Elsewhere:

A. Coordinate work of this section with work of other sections as required to properly execute the work and as necessary to maintain satisfactory progress of the work of other sections, including:

1. Section 03300 - Cast-In-Place Concrete
2. Section 04810 - Masonry
3. Section 07900 - Sealants
4. Section 09250 - Gypsum Wallboard
5. Section ***** - Fire Suppression Piping
6. Section ***** - Common Work Results for Plumbing
7. Section ***** – Common Work Results for HVAC
8. Section ***** - HVAC Insulation
9. Section ***** - Basic Electrical Materials and Methods

SECTION 07840 - FIRESTOPPING

1.05 References:

A. Test Requirements: ASTM E 814, "Standard Method of Fire Tests of Through Penetration Fire Stops".

B. Test Requirements: UL 1479, "Fire Tests of Through-Penetration Firestops".

C. Test Requirements: UL 2079, "Tests for Fire Resistance of Building Joint Systems".

D. Underwriters Laboratories (UL) of Northbrook, IL publishes tested systems in their "FIRE RESISTANCE DIRECTORY" that is updated annually.

1. UL Fire Resistance Directory:
   a. Firestop Devices (XHJI)
   b. Fire Resistance Ratings (BXRH)
   c. Through-Penetration Firestop Systems (XHEZ)
   d. Fill, Voids, or Cavity Material (XHHW)
   e. Forming Materials (XHKU)
   f. Joint Systems (XHBN)
   g. Perimeter Fire Containment Systems (XHDG)
2. Alternate Systems: "Omega Point Laboratories Directory" (updated annually).

E. Test Requirements: ASTM E 1966, "Standard Test Method for Fire Resistive Joint Systems".

F. Inspection Requirements: ASTM E 2174, "Standard Practice for On-site Inspection of Installed Fire Stops".

H. ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials".

I. International Firestop Council Guidelines for Evaluating Firestop Systems Engineering Judgments.

J. All major building codes: ICBO, SBCCI, BOCA, IBC

K. NFPA 101 - Life Safety Code

L. NFPA 70 - National Electric Code

THROUGH-PENETRATION UL CLASSIFICATION SYSTEM

	Fire Stopping Systems	Construction Penetrated	Type Of Construction	UL Classification System Identification
1	No Penetrating Items:	F, W, C	A, B, J, K, L	0001-0999
2	Metallic Pipes, Conduit or Tubing:	F, W, C	A, B, J, K, L	1001-1999
3	Nonmetallic Pipe, Conduit or Tubing:	F, W, C	A, B, J, K, L	2001-2999
4	Electric Cables:	F, W, C	A, B, J, K, L	3001-3999
5	Cable, Trays with Electric Cables:	F, W, C	A, B, J, K, L	4001-4999
6	Insulated Pipes:	F, W, C	A, B, J, K, L	5001-5999

7	Electrical Bussduct Penetrations:	F, W, C	A, B, J, K, L	6001-6999
8	Mechanical Ductwork Penetrations:	F, W, C	A, B, J, K, L	7001-7999
9	Multiple Penetrations Through Common Openings:	F, W, C	A, B, J, K, L	8000-8999

Construction Penetration

F	Floor penetration
W	Wall penetration
C	Either floor or wall penetration

Type of Construction

A-	Concrete floors equal to of less than 5-inches thick
B-	Concrete floors greater than 5-inches thick
J-	Concrete or masonry walls equal to or less than 8-inches thick
K-	Concrete of masonry walls greater than 8-inches thick
L-	Framed walls

JOINT UL CLASSIFICATION SYSTEM

Fire-Resistant Joint Systems		UL Classification System		
		Joint System	Movement Capability	Joint Width
1	Floor-to-Floor	FF	D	0000-0999
2	Wall-to-Wall	WW	D	0000-0999
3	Floor-to-Wall:	FW	D	0000-0999
4	Head of Wall:	HW	D	0000-0999

Movement Capability

D-	Has movement capability

Joint Width

0000-0999	Less than or equal to 2-inches

1.06 Quality Assurance

A. Installer Responsibilities: A firm experienced installing through-penetration firestop systems similar in material, design and extent to that indicated for this Project, whose

work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements.

B. Firestop System installation must meet requirements of ASTM E 814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

C. Proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction.

D. Installation Responsibility: Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.

E. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.

1.07 Submittals:

A. Submit Product Data: Manufacturer's specifications and technical data for each material including the composition and limitations, documentation of qualified tested firestop systems to be used and manufacturer's installation instructions.

B. Submit Manufacturer's engineering judgment identification number and drawing details when no qualified tested system is available for an application. Engineering judgment must include both project name and contractor's name who will install firestop system as described in document.

C. Submit material safety data sheets provided with product delivered to job-site.

1.08 Installer Qualifications:

A. Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install manufacturer's products per specified requirements.

B. The work is to be installed by a contractor with at least one of the following qualifications:

1. FM 4991 Approved Contractor
2. UL Approved Contractor
3. Hilti Accredited Fire Stop Specialty Contractor

C. Installer shall have not less than 3 years of experience with fire stop installation.

1.09 Delivery, Storage and Handling:

A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.

B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at jobsite.

C. Store materials under cover and protect from weather and

damage in compliance with manufacturer's requirements, including temperature restrictions.

D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

E. Do not use damaged or expired materials.

1.10 Project Conditions:

A. Do not use materials that contain flammable solvents.

B. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.

C. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

D. Weather conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.

E. During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

1.11 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers, providing they meet or exceed that specified.**

Part 2 – Products

2.01 Firestopping, General:

A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

C. Firestopping Materials are either “cast-in-place” (integral with concrete placement) or “post installed.” Provide cast-in-place firestop devices prior to concrete placement.

2.02 Acceptable Manufacturers:

A. Subject to compliance with through penetration firestop systems (XHEZ), joint systems (XHBN), and perimeter firestop systems (XHDG) listed in Volume 2 of the UL Fire Resistance Directory; provide products of the following manufacturers

as identified below:

1. Hilti, Inc., Tulsa, Oklahoma
   800-879-8000 / www.us.hilti.com

2.03 Materials:

A. Use only firestop products that have been UL 1479, ASTM E 814 or UL 2079 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

B. Pre-installed firestop devices for use with noncombustible and combustible pipes (closed and open systems), conduit, and/or cable bundles penetrating concrete floors and/or gypsum walls, the following products are acceptable:
   1. Hilti CP 680-P Cast-In Place Firestop Device
      a. Add Aerator adaptor when used in conjunction with aerator ("solvent") system.
   2. Hilti CP 681 Tub Box Kit for use with tub installations.
   3. Hilti CP 680-M Cast-In Place Firestop Device for use with noncombustible penetrants.
   4. Hilti CP 653 Speed Sleeve for use with cable penetrations.

C. Sealants, caulking materials, or foams for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following products are acceptable:
   1. Hilti FS-ONE Intumescent Firestop Sealant
   2. Hilti CP 604 Self-leveling Firestop Sealant
   3. Hilti CP 620 Fire Foam
   4. Hilti CP 606 Flexible Firestop Sealant
   5. Hilti CP 601s Elastomeric Firestop Sealant

D. Sealants or caulking materials for use with sheet metal ducts, the following products are acceptable:
   1. Hilti CP 601s Elastomeric Firestop Sealant
   2. Hilti CP 606 Flexible Firestop Sealant
   3. Hilti FS-ONE Intumescent Firestop Sealant

E. Sealants, caulking or spray materials for use with fire-rated construction joints and other gaps, the following products are acceptable:
   1. Hilti CP 672 Speed Spray
   2. Hilti CP 601s Elastomeric Firestop Sealant
   3. Hilti CP 606 Flexible Firestop Sealant
   4. Hilti CP 604 Self-leveling Firestop Sealant

F. Pre-formed mineral wool designed to fit flutes of metal profile deck and gap between top of wall and metal profile deck; as a backer for spray material.
   1. Hilti CP 777 Speed Plugs
   2. Hilti CP 767 Speed Strips

G. Intumescent sealants, caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe, the following products are acceptable:
   1. Hilti FS-ONE Intumescent Firestop Sealant

H. Foams, intumescent sealants, or caulking materials for use with flexible cable or cable bundles, the following products are acceptable:
   1. Hilti FS-ONE Intumescent Firestop Sealant
   2. Hilti CP 620 Fire Foam
   3. Hilti CP 601s Elastomeric Firestop Sealant
   4. Hilti CP 606 Flexible Firestop Sealant

I. Non-curing, re-penetrable intumescent putty or foam materials for use with flexible cable or cable bundles, the following products are acceptable:
   1. Hilti CP 618 Firestop Putty Stick
   2. Hilti CP 658T Firestop Plug

J. Wall opening protective materials for use with U.L. listed metallic and specified nonmetallic outlet boxes, the following products are acceptable:
   1. Hilti CP 617 Firestop Putty Pad
   2. Hilti Firestop Box Insert

K. Firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping systems), the following products are acceptable:
   1. Hilti CP 643N Firestop Collar
   2. Hilti CP 644 Firestop Collar
   3. Hilti CP 648E/CP648S Wrap Strips

L. Materials used for large openings and complex penetrations made to accommodate cable trays and bundles, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:
   1. Hilti CP 637 Firestop Mortar
   3. Hilti FS 657 FIRE BLOCK
   4. Hilti CP 620 Fire Foam
   5. Hilti CP 675T Firestop Board

M. Non curing, re-penetrable materials used for large size/complex penetrations made to accommodate cable trays and bundles, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:
   1. Hilti FS 657 FIRE BLOCK
   2. Hilti CP 675T Firestop Board

N. Sealants or caulking materials used for openings between structurally separate sections of wall and floors, the following products are acceptable:
   1. Hilti CP 672 Speed Spray
   2. Hilti CP 601s Elastomeric Firestop Sealant

3. Hilti CP 606 Flexible Firestop Sealant
4. Hilti CP 604 Self-Leveling Firestop Sealant

O. For blank openings made in fire-rated wall or floor assemblies, where future penetration of pipes, conduits, or cables is expected, the following products are acceptable:
1. Hilti FS 657 FIRE BLOCK
2. Hilti CP 658T Firestop Plug

P. Provide a firestop system with a "F" Rating as determined by UL 1479 or ASTM E814 which is equal to the time rating of construction being penetrated.

Q. Provide a firestop system with an Assembly Rating as determined by UL 2079 which is equal to the time rating of construction joint assembly.

Part 3 - Execution

3.01 Preparation:

A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
1. Verify penetrations are properly sized and in suitable condition for application of materials.
2. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.
3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
4. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
5. Do not proceed until unsatisfactory conditions have been corrected.

3.02 Coordination:

A. Coordinate location and proper selection of cast-in-place Firestop Devices with trade responsible for the work. Ensure device is installed before placement of concrete.

B. Responsible trades to provide adequate spacing of field run pipes to allow for installation of cast-in-place firestop devices without interferences.

3.03 Installation:

A. Regulatory Requirements: Install firestop materials in accordance with UL Fire Resistance Directory or Omega Point Laboratories Directory.

B. Manufacturer's Instructions: Comply with manufacturer's instructions for installation of through-penetration and construction joint materials.
1. Seal all holes or voids made by penetrations to ensure

an air and water resistant seal.

2. Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
3. Protect materials from damage on surfaces subjected to traffic.

3.04 Field Quality Control:

A. Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.
B. Keep areas of work accessible until inspection by applicable code authorities.
C. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, “Standard Practice for On-Site Inspection of Installed Fire Stops” or other recognized standard.
D. Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades.

3.05 Identification:

A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:
   1. The words: "Warning -Through Penetration Firestop System-Do Not Disturb. Notify Building Management of Any Damage."
   2. Contractor's Name, address, and phone number.
   3. Through-Penetration firestop system designation of applicable testing and inspecting agency.
   4. Date of Installation.
   5. Through-Penetration firestop system manufacturer's name.
   6. Installer's Name.

3.06 Adjusting and Cleaning:

A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.
B. Clean all surfaces adjacent to sealed holes and joints to be free of excess firestop materials and soiling as work progresses.

End of Section

DIVISION 7 - THERMAL & MOISTURE PROTECTION

SECTION 07900 - SEALANTS

Part 1 - General

1.01 Work Included:
A. All materials, labor services, and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
A. Standards:
1. TT-S-00230C, Sealing Compound, One Component.
2. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.03 Submittals:
A. Submit manufacturer's specifications and color chart for each type of sealant.
B. Samples: For each kind and color of joint sealant required.
C. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.
D. Product test reports.
E. Preconstruction compatibility and adhesion test reports.
F. Preconstruction field-adhesion test reports.
G. Field-adhesion test reports.

1.04 Warranty:
A. All work done under this section of the work shall be guaranteed for a period of two years from date of final acceptance of the building. Guarantee shall include materials and workmanship required to repair any leaks or the repairs thereof.
B. Special Warranty: Manufacturer’s standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section for a period of 10 years from date of final acceptance.

1.05 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Materials:
A. Building Sealant: One part high performance polyurethane waterproofing sealant, FS-TT-S-00230C.
1. Acceptable Manufacturer: Sonneborn NP1 Building Sealant.
2. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall

comply with the following limits for VOC content when calculated according to 40 CPR 59, Subpart D (EPA Method 24):

a Architectural Sealants: 250 gIL.

b. Sealant Primers for Nonporous Substrates: 250 gIL.

c. Sealant Primers for Porous Substrates: 775 gIL.

3. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

a. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

4. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

5. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CPR 177.2600.

B. Silicone Joint Sealants:

1. Mildew-Resistant Neutral-Curing Silicone Joint Sealant: ASTM C 920.

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. BASF Building Systems.

2. Dow Corning Corporation.

3. GE Advanced Materials - Silicones.

4. Pecora Corporation.

5. Sika Corporation; Construction Products Division.

6. Tremco Incorporated.

C. Urethane Joint Sealants: Urethane Joint Sealant: ASTM C 920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work

include, but are not limited to, the following:
a. BASF Building Systems.
b. Bostik, Inc.
c. Lymtal, International, Inc.
d. Pecora Corporation.
e. Sika Corporation; Construction Products Division.
f. Tremco Incorporated.

D. Latex Joint Sealants: Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, GradeNF.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. BASF Building Systems.
b. Bostik, Inc.
c. Pecora Corporation.
d. Tremco Incorporated.

E. Preformed Joint Sealants: Preformed Foam Joint Sealant: Manufacturer's standard preformed, precompressed, open-cell foam sealant manufactured from urethane foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Dayton Superior Specialty Chemicals.
b. EM SEAL Joint Systems, Ltd.
c. Sandell Manufacturing Co.
d. Schul International, Inc.
e. Willseal USA, LLC.

F. Acoustical Joint Sealants: Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Pecora Corporation.
b. USG Corporation.

G. Joint Sealant Backing: cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) Type 0 (open-cell material) or any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
   1. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

H. Miscellaneous Materials: as recommended by sealant manufacturer.
   1. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
   2. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
   3. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
   4. Joint Cleaner
   5. Joint Primer/Sealer
   6. Bond Breaker Tape
   7. Joint Backer-Rod: Closed-cell compressible rod stock, size and shape as required by application.

I. Caulking compound: Watertight, gun consistency, conforming to FS-TT-C-598, Type 1.

J. Accessories: As recommended by sealant manufacturer.

K. Color: to be selected from manufacturer’s standard colors.

Part 3 - Execution

3.01 Preparation:

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
   1. Remove laitance and form-release agents from concrete.
   2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to

areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.02 Installation: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

A. Do not leave gaps between ends of sealant backings.

B. Do not stretch, twist, puncture, or tear sealant backings.

C. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

G. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.

H. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning

materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.03 Joint Sealant Schedule:

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non traffic surfaces.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.

F. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal non traffic surfaces.

3.04 Additional Information:

A. Application: All sight exposed caulking, and all exterior applications.

B. Comply with sealant manufacturer's printed instructions.

C. Any surfaces requiring priming, shall be prepared according to manufacturer's recommendations.

D. Install sealants to depths as shown or as recommended by sealant manufacturer. Smooth uneven surfaces.

F. Do not disturb compound by touching, washing, or otherwise until it has cured tack free.

G. Excess compound shall be removed from surfaces after curing.

H. Follow manufacturer's recommendations for painting over sealant.

End of Section

SECTION 08100 - METAL DOORS AND FRAMES

Part 1 - General

1.01 Work Included:
- A. All material labor, services and incidentals necessary for the completion of this section of the work.

1.02 Related Work Specified Elsewhere:
- A. Hardware and Specialties - Section 08700

1.03 Quality Assurance:
- A. Standards:
  1. American Society for Testing and Materials
     - a. ASTM A-366, Steel Sheets, Carbon, Cold-Rolled, Commercial Quality.
     - b. ASTM A-569, Steel, Carbon, Hot-rolled Sheet and strip, commercial quality.
  2. Underwriters' Laboratories, Inc.
  3. Steel Door Institute (SDI): Recommended specifications for Steel Doors and Frames.
- B. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- C. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.
- D. Fire-Rated Door Frame Assemblies: Assemblies complying with IBC 2009 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire protection ratings indicated.
  1. Test Pressure: Test according to NFPA 252. After 5 minutes into the test, the neutral pressure level in furnace shall be established at 40 inches (1000 mm) or less above the sill.
  2. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg F (250 deg C) maximum in 30 minutes of fire exposure.
  3. Smoke-Control Door Assemblies: Comply with NFPA 105.

1.04 Submittals:
- A. Shop Drawings: Product Data: Include construction details, material descriptions, core descriptions, label compliance, and finishes for each type of steel door and frame specified.
  1. Submit shop Drawings showing details for each frame and door type, elevations and details of construction. Provide a schedule of doors and frames referenced to detail and openings as shown on the Drawings.
     - a. Elevations of each door design.
     - b. Details of doors, including vertical and horizontal edge details.
     - c. Frame details for each frame type, including dimensioned profiles.
     - d. Details and locations of reinforcement and

preparations for hardware.
e. Details of each different wall opening condition.
f. Details of anchorages, accessories, joints, and connections.
g. Details of glazing frames and stops showing glazing.
h. Details of conduit and preparations for electrified door hardware and controls.

2. It is the manufacturer's responsibility to obtain templates of finish hardware. The shop Drawings must indicate all hardware applications to the doors and frames.
3. Begin fabrication only after receiving approved shop Drawings.
4. Qualification Data: For Installer.

1.05 Product Delivery, Storage and Handling:

A. All materials shall be protected for shipping so that they may arrive at the job site without undue damage or damage from storage at the job.
B. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
C. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
D. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber.
1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 114-inch space between each stacked door to permit air circulation.

1.06 Project Conditions:

A. Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating standard steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

1.07 Coordination:

A. Coordinate installation of anchorages for standard steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves,

concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in masonry. Deliver such items to Project site in time for installation.

1.08 Warranty: Provide manufacturer's standard warranty.

Part 2 - Products

2.01 Acceptable Manufacturers:

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

1. CURRIES Company; an ASSA ABLOY Group Company.
2. Steelkraft; and Ingersoll-Rand Company.
3. Or Approved Equal.

2.02 Materials:

A. Cold-Rolled Steel Sheet: ASTM A 100S/A 100SM, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 10111A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 zinc-iron-alloy (galvannealed) coating designation.

D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 5911A 59 1M, Commercial Steel (CS), Class B coating; mill phosphatized.

E. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.

F. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M.

G. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-developed indexes of 25 and 50 respectively; passing ASTM E 136 for combustion characteristics.

H. Glazing: Comply with requirements in Division S Section "Glazing."

I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for I5-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

J. Grout: In masonry construction use grout for masonry as specified in Division 4. In stud walls use cementitious sprayed fire-resistive material manufactured by the following:

1. Monokote Type MK-6; W.R. Grace Construction Products.
2. Cafco 300; Isolatek International Corp.

2.03 Requirements: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.

A. Doors – Flush Panel: (SDI Door Type III, Style 2, Seamless):
   1. Door, as indicated on the Drawings shall be constructed of 16 gauge cold-rolled, stretcher leveled sheet steel. Doors shall be insulated with foamed urethane, full length and width of doors. Construct doors with smooth, flush surfaces without visible joints or seams on exposed face or vertical edges. Doors shall be 1-3/4” thick unless noted otherwise.
   2. Close top and bottom edges with a recessed channel end closure or a flush end closure treatment.
   3. Vertical Edges for Single-Acting Doors: Square edge unless beveled edge is indicated.
      a. Beveled Edge: 1/8 inch in 2 inches.
   4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
   5. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
   6. Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

B. Frames:
   1. Hollow metal frames shall be of 16 gauge cold-rolled, pickled steel, except that all frames for single doors over 3'-0" wide, frames for pairs of doors over 4'-0" wide and frames for doors over 9'-0" high shall be of 14 gauge steel. Frames shall be neatly mitered and continuously welded and ground smooth for invisible joints.
   2. Furnish anchors as shown on Drawings or as recommended by manufacturer, to secure frames to adjacent construction, formed of not less than 18 gauge galvanized steel. Install anchors at a maximum of 24' centers of jamb height.
   3. Frames against masonry or concrete are to be slush filled.
   4. Knock-down frames are not permitted.
   5. Frames against masonry or concrete are to be slush filled.
   6. Jamb Anchors:
      a. Masonry Type: Adjustable strap-and-stirrup or T - shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated

straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

b. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

c. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

d. Ceiling Struts: Minimum 3/8-inch-thick by 2-inch-wide steel.

e. Plaster Guards: Formed from same material as frames, not less than 0.016-inch thick.

7. Sidelight Frames: Provide closed tubular members with no visible face seams or joints; fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

C. Hardware Reinforcement:

1. Reinforcements for locks shall be 3/16" for fronts, with 14 gauge for roses and escutcheons. Hinge reinforcements shall be at least 10 gauge x 1 2" x 9". Provide steel strike and hinge reinforcement cover for frames.

D. Jamb Anchors: Provide number and spacing of anchors as follows:

1. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

a. Two anchors per jamb up to 60 inches in height.

b. Three anchors per jamb from 60 to 90 inches in height.

c. Four anchors per jamb from 90 to 120 inches in height.

d. Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof more than 120 inches in height.

2. Stud-Wall Type: Locate anchors not more than 18 inches

from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

a. Three anchors per jamb up to 60 inches in height.
b. Four anchors per jamb from 60 to 90 inches in height.
c. Five anchors per jamb from 90 to 96 inches in height.
d. Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof more than 96 inches in height.
e. Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.

E. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.
1. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
2. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

F. Stops and Moldings:
1. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.
2. Fixed Frame Moldings: Formed integral with standard steel frames, minimum 5/8 inch high, unless otherwise indicated.
3. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

G. Labeled Doors and Frames:
1. Where doors and frames are called for on Drawings as labeled, their construction shall conform to all requirements and bear the appropriate U.L. label.

H. Steel Finishes
1. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
a. Finish standard steel door and frames after assembly.
2. Metallic-Coated Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

a. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

3. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP *6/NACE* No.3, "Commercial Blast Cleaning."

4. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.

a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

Part 3 - Execution

3.01 Fabrication:

A. All doors, and frames shall be cleaned of rust, grease and other impurities, and all welds ground and filled smooth, Metallic filler to conceal defects is not acceptable.

B. Doors and frames shall be mortised, reinforced, drilled, and tapped for all mortise hardware in accordance with Hardware schedule and templates furnished by the hardware supplier, except that drilling and tapping for surface door closers, door closer brackets, surface panic devices and/or other surface applied hardware shall be done in the field. Frames shall be accurate and done in a neat, workmanlike manner.

3.02 Installation:

A. Standard Steel Frames: Install standard steel frames for doors sidelights borrowed lights and other openings, of size and profile indicated. Comply with SDI 105.

1. Bituminous coating and grout: Any material lost, removed or damaged during transportation or installation shall be replaced.

2. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary

braces, leaving surfaces smooth and undamaged.

a. At fire-protection-rated openings, install frames according to NFP A 80.
b. Install frames with removable glazing stops located on secure side of opening.
c. Install door silencers in frames before grouting.
d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
e. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

3. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with post-installed expansion anchors.
   a. Floor anchors may be set with powder-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
4. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar as specified in Division 4 Section "Unit Masonry Assemblies."
6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.
7. Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

B. Standard Steel Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
   1. Non-Fire-Rated Standard Steel Doors:
      a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
      b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
      c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
      d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum ¾ inch.
   2. Fire-Rated Doors: Install doors with clearances according to NFP A 80.
   3. Smoke-Control Doors: Install doors according to NFPA 105.

C. Glazing: Comply with installation requirements in Division 8 Section "Glazing" and with standard steel door and frame manufacturer's written instructions.

3.03 Adjusting and Cleaning:

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.

B. Clean grout and other bonding material off standard steel doors and frames immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

D. Galvannealed Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions. Do not use abrasive, caustic or acid cleaning agents.

E. Protect doors and frames from damage until final acceptance by Architect. Replace/repair any damaged items as directed above.

End of Section

DIVISION 8 - DOORS & WINDOWS

SECTION 08700 - FINISH HARDWARE

Part 1 - General

1.01 Work Included:
- A. All materials, labor services and incidentals necessary for the completion of this section of the work.

1.02 Related Work Specified Elsewhere:
- A. Finish Carpentry - Section 06200
- B. Custom Casework - Section 06420
- C. Metal Doors and Frames - Section 08100

1.03 Quality Assurance:
- A. This material shall be procured from a source of supply approved by the Architect as having a member of their firm registered by the American Society of Contracting Architectural Hardware Consultants, and with a proven record of several years of satisfactory experience in contract builder's hardware, both in furnishing material and properly servicing jobs. The supplier also must be an established contract builder's hardware firm who meets all the above requirements, and who maintains

1.04 Submittals:
- A. Prepare a complete schedule including all items processed for each opening and other miscellaneous items and submit four copies to the Architect for approval within 30 days submitted within that time, the supplier shall furnish the hardware specified by catalog number.
- B. Indicate on schedule name of manufacturer after each item.
- C. Upon receiving the approved schedule, the hardware supplier shall immediately forward a copy to the metal frame suppliers, when applicable; and as soon as they receive approved shop drawings, they will immediately forward a complete set to the hardware supplier who can then check the applications and make any necessary minor revisions. If revisions are necessary, notify Architect immediately.
- D. Mark each item of hardware for opening on which it is to be used and deliver a complete schedule to the contractor when hardware is delivered.

1.05 Schedule:
- A. This specification describes the quality, character and function that is required of items of hardware; however, it is not intended to mention each particular item or part required to provide a complete and functional installation.
- B. It is the responsibility of the supplier to thoroughly detail the entire project to assure that the items specified will properly function in the indicated locations.
- C. Quantities shall be determined by the bidder. Part 2, following, indicates the type and function of material applicable to the typical opening. Should an unlisted opening require different type of function of hardware than that specified, for similar opening, notify the Architect, and provide hardware for unlisted openings within the bid.

Part 2 - Products

2.01 Finish Hardware:

A. Standards of Quality:

1. Codes, specifications and published recommendations, latest editions of the following are hereby made part of this section of the specifications in so far as they apply to the material or work called for.
   a. National Builders Hardware Association (NBHA)
   b. American Society for Testing Materials (ASTM)
   c. Underwriters Laboratories (UL)
   d. National Fire Protection Association (NFPA)
   e. Code of Ethics of ASAHC & NBHA
   f. Federal Emergency Management Agency (FEMA)
2. Federal Specification, (ANSI Specifications):
   a. Hinges: FF-H-116C (ANSI A156.1)
   b. Locks and Door Trim: FF-H-106A (ANSI A 156.2)
   c. Auxiliary Locks: FF-H-106A (ANSI A 156.5)
   d. Exit Devices: FF-H-106A, FF-H-111B, FF-L486 (ANSI A156.3).
   e. Door Closers: FF-H-121C (ANSI A 156.4)
   f. Shelf and Miscellaneous Hardware: FF-H-00116 (ANSI A156.6).
   g. All Door hardware: Comply with ADAAG where applicable.

B. General:

1. All hardware relating to hollow metal doors and frames shall be to standard templates of each respective hardware manufacturer for items furnished.
   a. The related suppliers such as hollow metal doors and frames and such others as may be required will furnish the hardware supplier one copy of each of their approved shop drawings for proper coordination of their work and the finish hardware.

C. Manufacturers and Requirements:

1. Hardware manufacturers and brand names are for a guide as to type and standard required and all such hardware furnished must meet these standards as far as quality, weight, finish and design.

D. Keying:

1. All locks and cylinders to be masterkeyed as directed by the Architect/Owner.
2. Keys: Furnish the following keys:
   a. 2 change keys each lock or cylinder
   b. 6 masterkeys
   c. all EXTERIOR locks and cylinders shall be Primus Schlage Key System and keyed to Owner's Primus Master Key system. All remaining interior locks and cylinders shall be Classic Schlage and keyed to the Owner's Primus Master Key System.

2.02 Hardware Sets:

Hardware Group No. 001: Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	L9050T 03N	626	SCH
1	EA	CLASSIC CORE	30-001	626	SCH
1	EA	STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 002: Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9456T 03N	626	SCH
1	EA	CLASSIC CORE	30-001	626	SCH
1	EA	SURFACE CLOSER	4040XP OR P4041 MTG BRKTS, SPCRS & PLATES AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE
1	SET	SEALS	5050BR H & J (USE SILENCERS @ NON-RATED DOORS)	CLR	NGP

Hardware Group No. 003: Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
1	EA	CONTINUOUS HINGE	224HD HEIGHT AS REQ	628	IVE
1	EA	PANIC HARDWARE	CD9975L-03 LENGTH AS REQUIRED	626	VON
2	EA	PRIMUS CORE ONLY	20-740	626	SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH MTG BKTS, SPCRS & PLATES AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	700SA H & J (INSTALL PRIOR TO OTHER HARDWARE)	AL	NGP
1	EA	DOOR SWEEP	101VA LENGTH AS REQ	AL	NGP
1	EA	OVERHEAD RAIN DRIP	16A DW + 4"	AL	NGP
1	EA	THRESHOLD	892V LENGTH AS REQ	AL	NGP
1	EA	DOOR STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE

PROVIDE ELECTRICAL FOR DOOR CONTACT, ETC. AS REQ'D BY OWNER.

Hardware Group No. 004: Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY SET	L9444 03N	626	SCH
1	EA	WALL STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE
3	EA	SILENCER	SR64	GRY	IVE

SECTION 08700 - FINISH HARDWARE

The following list of products and manufactures are acceptable for this project.

Product	Manufacture and Approved Equals
1. Hinges	A. Ives B. Hager C. Bommer
2. Continuous Hinges	A. Pemko B. Roton C. Select
3. Key System	A. **Schlage (No substitutions)**
4. Lock/Latch	A. **Schlage (No substitutions)**
5. Closers	A. **LCN (No substitutions)**
6. Exit Devices	A. **Von Duprin (No substitutions)**
7. Push/Pull/Plates	A. Ives B. Rockwood C. Trimco
8. Misc. Stop, Bolts, etc.	A. Ives B. Glynn-Johnson C. Rockwood
9. Door Seal/Thresholds	A. National Guard B. Pemko C. Reese

Each Product, by category, shall be the product of one manufacture. Complete lockset, including keyed lock cylinder, shall be the product of one manufacturer unless noted otherwise.

Part 3 - Execution

3.01 Installation:

A. Install all finish hardware in strict accordance with the manufacturer's recommendations and printed instructions. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, install each item completely and then remove and store in a secure place during the finish application. After completion of the finishes, reinstall each item. Do not install surface mounted items until finishes have been completed on the substrate.

B. All hardware relating to hollow metal and aluminum doors and frames shall be to standard templates of each respective hardware manufacturer for items furnished.

C. Mounting Heights: Mount Hardware units at heights recommended by the National Builders Hardware Association, except as specifically indicated or required to comply with governing regulations, or as may be otherwise directed by the Architect.

3.02 Prior to the Final Inspection:

A. The supplier shall check all closers for proper operation after they have been installed and adjusted by the Contractor. He shall verify the keying to ensure proper location of locksets and shall assist the Contractor in correcting faulty operation of any locks.

B. Within 30 days after the acceptance of the entire project, the Contractor shall be responsible for this supplier meeting with the maintenance custodian at the job site for the purpose of instructing him thoroughly in the proper repair and adjustment of all finish hardware items, and items, and shall present to the custodian a full complement of tools to be used.

End of Section

DIVISION 8 - DOORS AND WINDOWS

SECTION 08800 - GLAZING

Part 1 - General

1.01 Work Included:
- A. The General Conditions and applicable sections of Division 1 shall apply to this entire section.
- B. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
- A. Standards:
  1. Federal Specifications
     a. DD-G-451d, Glass, Plate, Sheet (for glazing and other uses).
  2. Flat Glass Jobber Association: Glazing Manual.
- B. Comply with UBC 2406, and ANSI 97.1 with testing requirements of 16 CFR 1201, Cat II.

1.03 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Materials:
- A. Glass Types and Examples:
  1. 1/4" Tempered Glass:
     a. Type example: 1/4" Clear Herculite - PPG.
  2. 1" Nominal Thickness Insulating Tempered Glass - 1/4" tinted glass @ exterior side and 1/4" 100 Low E glass @ interior side of 2" air space - **both sides tempered.** Low Emissivity coating on 3rd glass surface from building exterior.
     a. Type Example: Versalux Green 2000 Insulated with Low-E, Visteon (Ford). **Note: Color will be a factor in approval.**
- B. Glazing Compounds and Preformed Glaze Sealants: Suitable type as approved for the installation, in accordance with Glazing Materials section of the FGJA Glazing Manual.
- C. Glazing Accessories: Provide miscellaneous materials such as cleaners, primers, setting blocks, spacers, filler rods, beads, etc., as required for complete installation.

SECTION 08800 - GLAZING

Part 3 - Execution

3.01 Installation:

A. Glazing-General:

1. Items to be glazed may be field-or shop-glazed, using glass of the quality and thickness specified or indicated. Preparation of surrounds and glazing, unless otherwise specified, shall be in conformance with the details and general conditions governing glazing in the FGMA Glazing Manual, beads or stops which are furnished with the items to be glazed shall be used to secure the glass in place.
2. All glass shall be set with the waves parallel to the sill. Glass that has been misordered, i.e. with the width and height dimensions not properly correlated with the Drawing process in manufacturing, resulting in pronounced waviness at right angles to the sill, will be rejected.
3. Install plastic glass edging strips where indicated. Joints shall be as tight and imperceptible as possible.

B. Breakage: Replace all glass broken during or after setting. Breakage due to accident or carelessness or other will be charged to trade at fault.

C. Inspection: Prior to final acceptance of project, inspect all work done under this section and make all necessary adjustments, repairs, or replacements of defective work, and clean all glass surfaces.

C. Clean-up: Remove all glass cuttings, scraps, packaging, and rubbish upon completion of the work.

End of Section

DIVISION 9 - FINISHES

SECTION 09120 - CEILING SUSPENSION SYSTEMS

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Related Work Specified Elsewhere:
- A. Gypsum Wallboard - Section 09250
- B. Acoustical Treatment - Section 09500

1.03 Quality Assurance:
- A. Standards:
  1. American Society for Testing and Materials
     - a. ASTM C-635, Metal Suspension Systems for Acoustical Tile and Lay-In-Panel Ceilings.
     - b. ASTM C-636, Recommended Practice of Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In-Panels.
  2. All materials to comply with NFPA 101, 16-3.3.2, where applicable.
- B. Submittals:
  1. Provide submittals in the form of samples, and documentation, to the Architect for review.

1.04 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Materials:
- A. Suspended Acoustical Ceiling - Exposed Grid: ASTM C-635, intermediate structural classification.
  1. Main Beams, Cross Tees and Concealed Members: .015 cold rolled zinc coated steel.
  2. Wall Angle: .020 cold rolled zinc coated steel.
  3. Special Members: Provide special shaped members as shown on the Drawings.
  4. Member Finish: Exposed surfaces shall be flat white low-gloss grid.
  5. Hanger Wire: No. 12 gauge cold drawn, annealed, galvanized.
  6. Accessories: Provide wall clips, hold-down clips (shall be removable without damage to boards; two each panels opposite sides), beam clamps leveling splines, hanger clips, splice plates), (keep to a minimum), for a complete installation.

7. Acceptable Manufacturer: 200 Snap-Grid System, Chicago Metallic Corporation

B. Suspended Gypsum Board Ceilings:
   1. Structural Channels: Cold-rolled, 16 gauge, galvanized steel.
   2. Furring Channels: Roll-formed, hat sections, 20 gauge.

Part 3 - Execution

3.01 General:
   A. Coordinate with electrical and mechanical contractors in placement of light fixtures, grilles, etc. to conform with ceiling pattern.
   B. Construct necessary scaffolding, adequate and safe, in accordance with applicable laws and ordinances. Maintain during this work and remove after completion.
   C. Provide thorough and competent foreman and skilled mechanics.

3.02 Installation:
   A. Suspended Acoustical Ceiling:
      1. Deflection of any component shall not exceed 1/360 of the span.
      2. Main tees shall be suspended on 48" centers by 12 gauge wire spaced not more than 48" o.c. along main tee.
      3. Cross tees shall be placed at 24" o.c. or as required by the Drawings.
      4. Install wall angles at intersection of suspended ceiling and all vertical surfaces. Miter corners where wall molding intersects.
      5. Install grid system and ceiling panels with faces in a plane.
      6. Provide intersection clips at intersection of all tees.
      7. Provide additional hangar wire at four corners of light fixtures.
      8. Provide additional hangar wires to insure proper placement and alignment of grid system.
      9. Prior to the final acceptance of the building, examine and adjust water level to be certain that all planes and lines are plumb, square and smooth. Replace all marked, marred or otherwise damaged materials.
   B. Suspended Gypsum Board Ceilings:
      1. Coordinate location of hangars with other work.
      2. Install ceiling framing independent of walls, columns and above ceiling work.
      3. Install ceiling framing system in accordance with manufacturer's recommendations.
      4. Reinforce openings in ceilings in accordance with

manufacturer's recommendations.

5. Laterally brace entire suspension system where required.

3.03 Clean-Up:

A. Completely remove from the job site, at the completion of the work, all cartons, packaging, etc., and all other scraps and waste caused by this trade.

End of Section

DIVISION 9 - FINISHES

SECTION 09250 - GYPSUM WALLBOARD

Part 1 - General

1.01 Work Included:
A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
A. Standards:
1. American Society for Testing and Materials:
a. ASTM C-36, Gypsum Wallboard
b. ASTM C-475, Joint Treatment for Gypsum Wallboard Construction.
B. Federal Specifications:
1. FS-SS-L-30D, Type III, Grade X, Class 1, Gypsum Wallboard.

1.03 Submittals:
A. Provide submittals in the form of samples, and documentation, to the Architect for review.

1.04 Product Delivery, Storage and Handling:
A. All materials shall be delivered to the job site with manufacturer's labels intact and stored in an enclosed shelter providing protection from damage and exposure to the elements.

Part 2 - Products

2.01 Gypsum Wallboard:
A. Type: Fire-rated, ASTM C-36.
B. Size: 5/8" thick x 48" wide x 96" or as required.
C. Edges: Tapered.
D. Location: All gypsum board.

2.02 Fasteners:
A. Screws: Self-drilling, self-tapping, bugle head, Type S.
B. Nails: Annular ring: GWB-54.

2.03 Joint Treatment Materials:
A. Joint Tape: Perforated Tape, ASTM C-475.
B. Joint Compound: ASTM C-475.

2.04 Accessories:
A. Metal Edge: Similar to United States Gypsum Trim No. 402.

Part 3 - Execution

3.01 Installation:
A. Apply gypsum board to horizontal surfaces first, then to vertical.
B. Install gypsum board parallel to studs at vertical surfaces.
C. To minimize joints, use panels of maximum practical lengths.
D. Position all ends and edges of gypsum board over nailing or fastening members. Fit ends and edges closely; do not force

together. Stagger end joints.

E. Cut ends, edges, scribe or make cutouts within field of panel in a workmanlike manner.

F. Install trim at all intersections of gypsum board and other surfaces. Provide corner bead at all vertical or horizontal corners.

G. Fasteners:

1. Drive fasteners in field of panel first, work toward ends and edges.
2. Perimeter fasteners shall be a least 3/8" from ends and edges.
3. Attach panels to wood framing members with specified nails spaced out 8" for ceiling, and 8" o.c. at ends and 12" o.c. at each support.
4. Drive nail head slightly below surface of panel in a uniform dimple without breaking face paper.
5. Screw fasteners shall be spaced 12" o.c. at each support in the field of the board and 8" o.c. at all edges and ends.
6. Screws shall be power-driven with an electric screwdriver and screw heads shall provide a slight depression below surface of panel without breaking face paper.

3.02 Joint Treatment:

A. Treat all exposed joints and trim with a three-coat approved system applied in strict accordance with manufacturer's recommendations.

3.03 Clean-Up:

A. Use all necessary care during execution of the Work of this Section to prevent undue scattering of drywall scraps and dust and to prevent tracking of joint and finishing compounds onto floor surfaces. On completion of each installation segment in a room or space, promptly pick up and remove from the working area all scraps, debris and surplus material.

End of Section

DIVISION 9 - FINISHES

SECTION 09300 - TILE

Part 1 - General

1.01 Work Included:
A. All materials, labor services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
A. Standards:
1. Tile Council of America:
a. Handbook for Ceramic Tile Installation.
2. American National Standards Institute:
a. ANSI A108.6, Ceramic Tile installed with Epoxy Mortar.
b. ANSI A108.4, Ceramic Tile installed water-resistant organic adhesive.
c. ANSI A108.5, Ceramic Tile installed with latex Portland Cement.
d. ANSI A118.4, Latex Portland Cement Mortar.
e. ANSI A118.3, Epoxy Mortar and Grout.
f. ANSI A136.1, Type 1 Organic Adhesive.
g. ANSI A137.1, Ceramic Tile.
h. ANSI A137.3, Porcelain Tiles and Porcelain Tile Panels/Slabs
3. American Society for Testing and Materials:
a. ASTM C-144, Aggregate.
b. ASTM C-150, Portland Cement, Type 1.
c. ASTM C-206, Special Finish Hydrated Lime.
B. All materials shall meet IBC 2009, where applicable.
C. Floor surfaces and elevation changes shall comply with ADAABAAG 302 and 303.
D. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
1. Level Surfaces: Minimum.
2. Step Treads: Minimum.
3. Ramp Surfaces: Minimum.
E. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
F. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
G. Source Limitations for Other Products: Obtain each of the

following products specified in this Section from a single manufacturer for each product:
1. Stone thresholds.
2. Joint sealants.
3. Cementitious backer units.
4. Metal edge strips.

1.03 Submittals:

A. Submit samples of all tile and grout specified under this section for approval and color selection prior to installation.

B. Submit a "Master Grade Certificate" bearing signatures of both manufacturer and contractor.

C. Submit tile manufacturer's maintenance guides for owner's use in maintaining all tile work specified in this section.

D. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

F. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

G. Samples for Verification:
1. Full-size units of each type and composition of tile and for each color and finish required.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 24 inches square, but not fewer than 4 tiles. Use grout of type and in color or colors approved for completed Work.
3. Full-size units of each type of trim and accessory for each color and finish required.
4. Stone thresholds in 6-inch lengths.
5. Metal edge strips in 6-inch lengths.

H. Qualification Data: For qualified Installer.

I. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

J. Product Certificates: For each type of product, signed by product manufacturer.
1. Material Test Reports: For each tile-setting and - grouting product and special purpose tile.

1.04 Product Delivery, Storage and Handling:

A. Deliver all materials to job site in manufacturer's unopened containers with grade seal unbroken and labels intact. Keep containers dry. Comply with requirements in

ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.05 Project Conditions:

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.05 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 General:

A. All tile shall be standard grades conforming to ANSI 137.1 unless noted otherwise.

B. Both glazed and unglazed ceramic tile shall be manufactured by the same manufacturer.

C. Refer to Color Schedule for tile color. Colors will a determining factor in tile approval.

D. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI AlOS.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.

E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do

not coat unexposed tile surfaces.

G. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Daltile; Division of Dal-Tile International Inc.
   2. American Olean; Division of Dal-Tile International Inc.
   3. Crossville, Inc.

2.02 Ceramic Tile:

A. Wall Tile and Floor Tile:
   1. Type: Polished porcelain @ walls / unpolished porcelain @ bases and floors.
   2. Nominal Face Size: 12” x 24” – orient as per Drawings.
   3. Edge: All-purpose cushion.
   4. Acceptable Manufacturer: as noted above.

B. Trim Shapes and Bases:
   1. Type: Same as floor tile.
   2. Includes bases, caps, stops, returns, trimmers and other shapes to finish installation.
      a. Base for Thin-Set Mortar Installations: Straight, module size 6 by 12 inches.
      b. External Corners for Portland Cement Mortar Installations: provide metal corner trim as manufactured by Schluter Systems LP unless otherwise indicated.
      c. External Corners for Thin-Set Mortar Installations: same as above.
      d. Internal Corners: Field-butted square corners. For base and cap use angle pieces designed to fit with stretcher shapes.

C. Setting Materials:
   1. Epoxy Mortar: ANSI A118.3
   2. Organic Adhesive: ANSI A136.1
   3. Latex Portland Cement Mortar: ANSI A118.4
   4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Boiardi Products; a QEP company.
      b. Bonsai American; an Oldcastle company.
      c. Bostik, Inc.
      d. C-Cure.
      e. Custom Building Products.
      f. Jamo Inc.
      g. Laticrete International, Inc.
      h. MAPEl Corporation.

i. Southern Grouts & Mortars, Inc.
j. Summitville Tiles, Inc.
k. TEC; a subsidiary of H. B. Fuller Company.

D. Grouting Materials:
1. Floor Tile: Epoxy Grout.
2. Wall Tile: Portland Cement Type.
3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Boiardi Products; a QEP company.
b. BonsaI American; an Oldcastle company.
c. Bostik, Inc.
d. C-Cure.
e. Custom Building Products.
f. Jamo Inc.
g. Laticrete International, Inc.
h. MAPEl Corporation.
i. Southern Grouts & Mortars, Inc.
j. Summitville Tiles, Inc.
k. TEC; a subsidiary of H. B. Fuller Company.

E. Granite Thresholds:
1. Type: Polished granite.
2. Size: 1 1/4" wide x 1/2" high, double-beveled.
3. Location: Provide marble threshold at centerline of doors at transition between ceramic tile flooring and exposed concrete.

F. Accessories: Provide vitreous china accessories of type and size indicated, suitable for installing by same method as adjoining wall tile.
1. Color and Finish: Match adjoining glazed wall tile.

G. Elastomeric Sealants:
1. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."
a. Use sealants that have a VOC content of 250 gIL or less when calculated according to 40 CPR 59, Subpart D (EPA Method 24).
b. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.
2. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.
3. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25;

Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, 0; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   1. DAP Inc.; 100 percent Silicone Kitchen and Bath Sealant.
   2. Dow Corning Corporation; Dow Corning 786.
   3. GE Silicones; a division of GE Specialty Materials; Sanitary 1700.
   4. Laticrete International, Inc.; Latasil Tile & Stone Sealant.
   5. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
   6. Tremco Incorporated; Tremsil 600 White.

H. Miscellaneous Materials:
   1. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
   2. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic base, designed specifically for required applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
      a. Equal to products manufactured by Schluter Systems LP.
      b. Provide in minimum lengths of 10’ where possible and practical.
      c. Provide at ALL exposed edges of ceramic wall tile – i.e. top, exterior corners, expansion joints, etc.
   3. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
      a. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM

D 87.

b. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

4. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

5. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. BonsaI American; an Oldcastle company; Grout Sealer.
2. Bostik, Inc.; CeramaSeal Grout & Tile Sealer.
3. C-Cure; Penetrating Sealer 978.
4. Custom Building Products; Grout Sealer.
5. Jamo Inc.; Penetrating Sealer.
6. MAPEl Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout and 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.
7. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
8. Summitville Tiles, Inc.; SL-15, Invisible Seal Penetrating Grout and Tile Sealer.
9. TEC; a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone Grout Sealer.

Part 3 - Execution

3.01 Examination:

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, and free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or

silicone; and comply with flatness tolerances required by ANSI Al08.0 for installations indicated.

2. Verify that concrete substrates for tile floors installed with adhesives or thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
   a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
   b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

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

3.02 Preparation:

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tilesetting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI AlOS.IA and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.02 Installation:

A. All workmanship and materials shall conform in all respects to specifications and requirements and in accordance with the standard practice of the Tile Council of America.

B. All ceramic floor tile shall be installed using the following Tile Council of America specifications.

1. Floor Tile, TCA F131-2K (Concrete).

C. Provide all required trim shapes required to module with field tile, unless otherwise noted on Drawings. All exterior corners shall have metal corner trim as manufactured by Schluter Systems LP.

D. Layout all tile work as to minimize cuts less than one-half tile in size. Align all joints to give straight uniform grout lines, plumb and level or parallel with walls. Strike all joints with a rounded, non-staining tool.

1. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
2. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
3. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Layout tile work and center tile fields in both directions in each space or on each wall area. Layout tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
   a. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
   b. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
4. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
   a. Wall Tile: 1/16 inch.
5. Layout tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
6. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated or required by tile manufacturer. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

a. Where joints occur in substrates, locate joints in tile surfaces directly above them.
b. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
c. At Porcelain Wall Tile Panels: provide movement joint every 20’ to allow for needed movement of tile layer.

7. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
   a. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
   b. Do not extend cleavage membrane waterproofing or crack isolation membrane under thresholds set in dry-set portland cement mortar. Fill joints between such thresholds and adjoining tile set on crack isolation membrane with elastomeric sealant.
      1. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
8. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

E. Slope entire room or area to floor drains.

3.03 Tile Backing Panel Installation:

A. Install cementitious backer units and treat joints according to ANSI AlOS.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.04 Waterproofing Installation:

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine

that it is watertight.

3.05 Cleaning and Protecting:

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove epoxy and latex-portland cement grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
   3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

E. Immediately prior to final inspection, replace all damaged tile.

F. Contractor will supply 2% of the total quantity of each tile used. Contractor will supply 3% of the total quantity of each grout used. Place materials in clean marked containers for future use at building.

End of Section

DIVISION 9 - FINISHES

SECTION 09500 - ACOUSTICAL TREATMENT

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Related Work Specified Elsewhere:
- A. Ceiling Suspension Systems - Section 09120

1.03 Quality Assurance:
- A. Standards:
  - 1. American Society for Testing and Materials:
    - a. ASTM C-636 Recommended Practice of Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
    - b. ASTM E-84 Surface Burning Characteristics of Building Materials.
  - 2. Federal Specifications:
    - a. SS-S-118B, Sound Controlling Blocks and Boards. Underwriter's Laboratories, Inc.
- B. Submittals:
  - 1. Provide submittals in the form of samples, and documentation, to the Architect for review.

1.04 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers**

Part 2 - Products

2.01 Acoustical Ceiling Panels:
- A. 2x2 Tile - Square Edge:
  - 1. Type: FS-SS-S-118B, Class 25
  - 2. Size: 24" x 24" x 5/8". Provide special sizes as indicated on Drawings or as required by others.
  - 3. Finish: Board finish shall be a factory-applied white latex paint, medium textured non-direction fissured surface with a minimum light reflection of 80%.
  - 4. Noncombustibility: Board shall meet class 25-Federal Specification SS-S-118B, ASTM E-84; and, classified by Underwriter's Laboratories for Flame Spread Index 0-25.
  - 5. Type Example and Manufacturer:
    - a. Armstrong Fine Fissured No. 1728, square (2x2)

SECTION 09500 - ACOUSTICAL TREATMENT

Part 3 - Execution

3.01 Installation:

A. Install in specified grid system per ASTM C-636 and manufacturer's recommendations, as shown on the Drawings.

B. Provide ten (10) pieces of ceiling panels in cartons for future use. Panels shall be in perfect condition.

End of Section

DIVISION 9 - FINISHES

SECTION 09650 – RESILIENT FLOORING

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services, and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
- A. Installation Qualification: contractors for wall base installation shall be experienced in managing commercial flooring projects and provide professional installers, qualified to install the various flooring materials specified with a minimum of three years of documented experience. Installer shall be trained by flooring manufacturer and – if applicable – certified to install the specified base by the manufacturer.
- B. Manufacturer Qualifications: company specializing in manufacturing the specified wall base with minimum three years documented experience.

1.03 Submittals:
- A. Submit product data for each type of product indicated.
- B. Submit samples for color selection / verification.
- C. Maintenance Data and Instructions Furnish manufacturer's recommended maintenance methods and procedures.

1.04 Delivery, Storage, and Handling:
- A. Store products and installation materials in dry spaces protected from the weather, at temperatures required by the product manufacturer. Store wall base on flat surfaces.

Part 2 - Products

2.01 General:
- A. Refer to color schedule – available tile colors WILL be a factor in product acceptance.

2.02 Materials:
- A. Rubber Cove Base: ASTM F 1861, Type TP-Rubber as manufactured by Armstrong Cork Company or approved equal.
  1. Size: 4" high x .018 gauge.
  2. Provide preformed inside and outside corners.
- B. Primer and Adhesive: As recommended by manufacturer of resilient floor tile for this particular project. All wall base and reducer strips shall be applied with epoxy adhesive.
- C. Cleaner or other finishing material: As recommended by flooring manufacturer for the particular type of floor material.

Part 3 - Execution

3.01 Installation:

A. Comply with manufacturer’s written instructions for installing specified wall base.

B. The Contractor shall be responsible for the manufacturer's representative making mat moisture and PH tests and reporting condition of concrete slab/masonry walls to the Architect in writing prior to placing floor materials.

C. Carefully examine the surfaces on which the above materials are to be applied, report to Architect in writing any unsatisfactory surface and do not begin work until all defective surfaces have been corrected. Otherwise, the Contractor shall assume responsibility for all failures and defects resulting from such defective surfaces.

D. Installation shall not begin until the work of all other trades, including painting, has been completed. The Contractor shall maintain all rooms and sub-floors at a minimum of 70 degrees F. for several days before and after application of base.

E. The floor shall be thoroughly cleaned and any pockets or cracks shall be filled in accordance with manufacturer's instructions flush with floor surface.

F. The material shall be applied in a first class, workmanlike manner by skilled mechanics experienced in this type of work.

G. Primer and adhesive shall be as recommended by the manufacturer of the flooring for this particular project. The adhesive for applying all materials shall be waterproof and shall be furnished and guaranteed by the flooring manufacturer.

H. Fit base material neatly and tightly into breaks and recesses, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.

3.02 Cleaning:

A. When, in the opinion of the Contractor, the wall base has sufficiently sealed itself to permit cleaning, the wall base shall be thoroughly cleaned with a neutral cleaner as recommended by the manufacturer of the wall base used. After the wall base has been cleaned, the Contractor shall protect them either with building paper or by keeping traffic off the floors until the building is ready for occupancy.

3.03 Replacement Base:

A. Provide 20 linear feet of spare rubber wall base. Wall base shall be in perfect condition.

End of Section

DIVISION 9 - FINISHES

SECTION 09681 – CARPET TILE

Part 1 - General

1.01 Work Included:

A. Work includes but is not limited to providing carpet tile and installation.

1.02 Quality Assurance:

A. Standards:

1. The carpet manufacturer shall have no less than fifteen years of production experience with modular carpet similar to type specified. Published product literature of carpet manufacturer must clearly indicate compliance of products with requirements of this section.

B. Installer Qualifications:

1. The installation provider must be directly responsible for the quality of the completed floor covering installation, including both the quality of the materials and labor used in the installation. The installation provider must directly warrant to owner that all products, materials and services related to the floor covering installation (including any floor covering(s),adhesive(s) and/or other products or materials used in the installation) will meet specifications set forth herein. The product warranty required herein must be provided directly by the carpet manufacturer.
2. The installation provider must have successful carpet installation experience similar to the work of this Section and be recommended, trained and approved by the carpet manufacturer.

1.03 Submittals:

A. Manufacturer’s Data - copies, as required, of carpet manufacturer’s specifications and installation instructions for carpet and related items specified.

B. Fiber Verification – Certification from the fiber producer verifying use of the premium branded, Post-Consumer Content Type 6 fiber in the submitted carpet product.

C. All applicable product warranties provided by manufacturer.

1.04 Delivery and Storage:

A. Deliver all materials to the installation site in the manufacturer’s original packaging. Packaging to contain

manufacturers name, identification number and related information.

B. Product to be delivered as required by manufacturer. Store in pallet form as supplied by manufacturer. Do not stack pallets.

C. Store materials in area of installation for a minimum period of 48 hours prior to installation.

1.05 Installation Quality Assurance:

A. Flooring contractor to be specialty contractor normally engaged in this type of work and shall have three (3) years minimum documented experience in the installation of these materials.

B. Flooring contractor and sub-contractors must be approved by the architect and/or the carpet manufacturer.

C. Flooring contractor will be responsible for the proper product installation, including floor preparation in all the areas indicated in the drawings to receive carpet. The carpet installation standard will be as listed in The Carpet and Rug Institute's **Standard for Installation of Commercial Carpet CRI-104.**

D. Flooring contractor to provide owner a written warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of no less than one (1) year after job completion.

F. Qualifications of Installers: All work shall be done by installation firms specializing in commercial carpet installation. It is required, that the firm shall be a member of the Floor Covering Installation Contractors Association (FCICA) and/or certified by the Floor Covering Installation Board (FCIB).

G. Floor temperatures must be a minimum of 65^0 for 24 hours prior to installation. Floor temperature can usually vary $5\text{-}10^0$ lower than room temperature. Modules must be conditioned to room temperature for 24 hours prior to installation. Relative humidity must be between 10%-65% maximum for 24 hours prior to installation. These conditions must also be maintained for 48 hours after completion of installation.

H. All carpet modules must be installed in the order they were manufactured. Select pallets in sequential order and follow the numbers located on each carton of tiles. Typically, an installation will begin with the lowest

carton numbers and progress through the highest numbers until project is complete.

I. Full Spread Adhesive System: Requires a full spread adhesive system for the most trouble free installation. Fully spread adhesive using a 1/32 x 1/16 x 1/16 "U" or "V" notch trowel. Allow to completely dry so adhesive does not transfer when touched. The proper amount of adhesive is mandatory to prevent the modules from shifting or moving.

1.06 Job Conditions:

A. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document.

B. Carpet installation shall not commence until painting and finishing work is complete and ceiling and overhead work is tested, approved, and completed.

C. Site conditions shall include those specified in the carpet manufacturer's installation manual and shall also include sufficient heat, light, and power required for effective and efficient working conditions.

1.07 Extra Materials:

A. Provide five percent (5%) extra material for shelf stock of carpet for each color and type specified.

1.08 Warranty - Carpet:

A. Warranties must be the standard, printed warranties on the carpet manufacturer's letterhead. All warranty items to be full term, not pro-rated for the indicated period. All warranties must be issued by the manufacturer as standard published warranties on all types of carpet within this document. If the product fails to perform as warranted when properly installed and maintained according to procedures, the affected area will be repaired or replaced at the expense of the manufacturer. The carpet manufacturer, will provide standard published written performance warranties for the following:

1. **Lifetime against excessive surface wear.** Excessive wear means no more than 10% loss of pile fiber weight measured before and after use as tested under ASTM D-3936.
2. **Lifetime static protection,** meaning built-in protection below 3.0 kv as tested under AATCC-134.

B. Carpet manufacturer shall warrant carpet manufactured with secondary backing for the useful life of the original installation against product failure from:

1. Tuft Bind (edge ravel, yarn pulls, zippering)
2. Delamination
3. Moisture Penetration
4. Dimensional Stability

C. All warranties to be sole source responsibility of the carpet manufacturer. Second source warranties that involve parties other than the carpet manufacturer are unacceptable.

D. Warranties shall not be written only for this purchase or purchaser. All warranties shall be standard issue nationally
of official documents.

1.09 Performance Insurance General:

A. Flammability Requirements:
1. Pill Test / DOC-FF-1-70 (ASTM D-2589)
Requirement: Pass
2. Flooring Radiant Panel / ASTM E-648
Requirement: Class 1 (Above .45 w/cm)
3. Optical Smoke Density Test / NFPA-258 NBS Smoke Chamber (ASTM E-662)
Requirement: Less than 450, Flaming Mode
4. Comply with the Carpet and Rug Institute (CRI) VOC Chamber Test/Indoor Air Quality test (CRI-IAQ) Green Label Test

B. Face Fiber Characteristics for **all** Carpets
1. Bulked Continuous Filament (BCF),
2. Acceptable Fiber Systems: as manufactured by Aquafil.

C. Sustainable Carpet Assessment Standard:
1. NSF - 140 Gold.
2. Carpet manufacturer and/or fiber producer must be a signatory of the National Carpet Recycling Agreement memorandum of understanding.

1.10 Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.

DIVISION 9 - FINISHES

SECTION 09681 – CARPET TILE

Part 2 - Products

2.01 General:

A. Certified test reports shall be submitted by the carpet manufacturer, for all performance assurance specifications listed below.

B. Requirements listed below must be met by all products being submitted for approval.

C. All submitted test numbers should represent average for standard production goods.

2.02 Product Specification - Modular carpet tile shall meet the following specifications:

A. Style: InterfaceFLOR – Aerial Flying Colors

B. Yarn: 100% Nylon (with 4% post-consumer content and +/- 60% total recycled content)

C. Dye Method: 100% Solution / Yarn Dyed

D. Surface Texture: Tufted Texture Loop

E. Gauge: 1/12

F. Yarn Weight: 18 oz./SY

G. Finished Pile Thickness: .116 inch (ASTM D-418)

H. Density: 5,586

I. Stitches Per Inch: 8.33

J. Secondary Backings: GlasBac Tile

K. Modular Size: 19.69” x 19.69"

L. Color: refer to Room Finish Schedule.

M. Special Treatments: ProTex® Fluorochemical

2.03 Minimum Construction Standards:

A. Nylon Specification - All nylon fiber shall be branded (premium) type 6 nylon from Aquafil with performance certification from the fiber manufacturer.

B. Antimicrobial, registered by the EPA for use in carpeting with broad spectrum efficacy against the growth of bacteria and fungi for a minimum of 15 years, assuming proper maintenance. The antimicrobial ingredient shall meet standards set by the U.S. General Services Administration (GSA) for Antimicrobial Carpet as supported by independent lab testing less than six months old.

1. Intersept (AATCC 138 Washed).
2. The preservative should be incorporated into the primary latex coating of the product during the

manufacturing process, not topically applied to the carpet fibers.

3. The antimicrobial treated carpet when new must pass GSA parameters for treated carpets via AATCC method 174 parts II and III. Initial performance must be 90% reduction of the microorganisms (Staphylococcus aureus 6538 and Klebsiella pneumoniae 4352) and no fungal growth on either the primary backing or fibers both on washed (AATCC method 174) and non-washed samples.
4. The antimicrobial treated carpet must maintain, for the warranted life of the carpet, a minimum of 90% reduction of the microorganisms (Staphylococcus aureus 6538 and Klebsiella pneumoniae 4352) listed in AATCC method 171 part II, provided the carpet is maintained as specified. Additionally, the antimicrobial treated carpet must maintain a "no macroscopic growth" rating against Aspergillus niger 6275 at the primary backing in accordance with AATCC 171 part III.
5. The preservative must be environmentally responsible i.e. (biodegradable and not toxic to non-target species).
6. Efficacy of the preservative should be documented in professional peer reviewed scientific publications.

2.04 Related Carpet Materials:

A. Leveling compound - Latex type as recommended by carpet manufacturer. Must be compatible with carpet adhesive and curing/sealing compound on concrete.

B. Releasable pressure sensitive type adhesive – Adhesive must be water-based and allow for removal of carpet tile at any time without damage to carpet or substrate. Adhesive must contain antimicrobial preservative and have “zero” calculated VOC’s.

C. Carpet edge guard, non-metallic - Extruded or molded heavy duty vinyl or rubber carpet edge guard of size and profile indicated, and with minimum two inch wide anchorage flange; colors selected by architect/designer from among standard colors available within the industry.

D. Miscellaneous materials - As recommended by manufacturer of carpet. Other carpeting products to be selected by installation provider to meet project requirements.

E. Electrostatic (Dissipation low-generation):
   1. < 3.0 KV (AATCC 16-E).

F. Lightfastness:
   1. ≥ 4.0 @ 60 AFU’s.

SECTION 09681 – CARPET TILE

Part 3 - Execution

3.01 Installation:

A. General

1. Comply with manufacturer's instructions and recommendations for uniformity of direction.
2. Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.
3. Provide cut outs where required. Conceal cut edges with protective edge guards or overlapping flanges.
4. Run carpet under open bottom items such as heating convectors and install tight against walls, columns and cabinets so that the entire floor area is covered with carpet. Cover over all floor type door closures.
5. Install edging guard at all openings and doors wherever carpet terminates, unless indicated otherwise.
6. Cutting shall be done in accordance with the manufacturer's recommendation, using the tools designed for the carpet being installed.
7. Use leveling compound where necessary. Any floor filling or leveling shall have a minimum of 4'0" of feather.
8. Expansion joints - Do not bridge building expansion joints with continuous carpeting.

B. Installation

1. Install carpet according to carpet manufacturer's printed instructions and in accordance with the Carpet and Rug Institute's Installation Standard.

3.03 Cleaning and Protection:

A. On completion of the installation in each area, all dirt, carpet scraps, etc. must be removed from the surface of the carpet.

B. Remove debris, and sort pieces to be saved from scraps to be redirected and recycled.

C. Construction manager shall protect carpeting against damage during construction.

3.04 Inspection:

A. Upon completion of the installation, verify that work is complete, properly installed and acceptable.

End of Section

DIVISION 9 - FINISHES

SECTION 09900 - PAINTING

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this entire section of the work.
- B. Consult Drawings, finish schedules, details and specification section.

1.02 Quality Assurance:
- A. All painted surfaces shall be uniform in color, texture and finish to the satisfaction of the Architect.

1.03 Submittals:
- A. Submit manufacturer's specifications, including paint label analysis and application instructions for each material specified.
- B. Submit color samples for review of color and texture.
- C. Provide samples of all natural and stained wood finishes.
- D. Final samples: Prepare samples of finishes on the job to the satisfaction of the Architect. If required, a 4' x 8' portion of wall surface finished as final sample.

1.04 Product Deliver, Storage and Handling:
- A. Materials shall be delivered to the project site in strong, undamaged, waterproof containers with manufacturer's label intact. Materials in previously opened or unsealed containers, are not acceptable.
- B. Include on label of container: Manufacturer's name, type of paint, number and application instructions.
- C. Immediately upon delivery to the project site, all painter materials shall be stored and locked in a watertight shed with floor well off the ground. The shed shall remain locked at all times except for adding or removing materials.
- D. No materials of any manufacturer will be allowed on the project site any time during construction except those of the manufacturers specified or approved by the Architect.

1.05 Job Conditions:
- A. Comply with manufacturer's recommendations as to environmental conditions under which coating and coating systems can be applied.
- B. Do not apply finishes in areas where dust is being generated or where work in progress may affect finish quality.
- C. Protect finished work of other trades, and all surfaces not being painted concurrently, or not to be painted.

Part 2 - Products

2.01 General:
- A. The following specifications for Finishes is not intended to mention every particular item which will receive painter finish, but is intended to establish type and quality of finish which shall be required on various materials.
- B. **Products of Sherwin-Williams are specified herein to simplify descriptions of types and qualities of finishes required only.**

SECTION 09900 - PAINTING

Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.

C. Wherever the abbreviation "SW" appears in the following detailed specification, it shall be understood to mean Sherwin-Williams.

D. Primers shall be as specified by manufacturers of finish paint used and as approved by the Architect.

2.02 Acceptable Manufacturers:

A. Sherwin-Williams.

B. PPG Industries.

C. Cook Paint and Varnish Co.

D. Pratt and Lambert.

E Kelly-Moore.

2.02 Exterior Finishes:

A. Enamel on Ferrous Metals:

1. One coat SW Kem Kromik Primer, (Alkyd primer).
2. Two coats SW Industrial Enamel, (Alkyd gloss enamel).

B. Enamel on Exterior Door Frames and Doors:

1. Shop coat by others-touch up as required.
2. Two coats SW Industrial Enamel, (Alkyd gloss enamel).

C. Enamel on Galvanized Metal:

1. One Coat SW Galvite primer.
2. 2 Coats SW Industrial Enamel, (Alkyd gloss enamel).

2.03 Interior Finishes:

A. Enamel on Metal: All miscellaneous and ornamental metal items which are left exposed, hollow metal doors and frames.

1. Shop coat by others - touch up as required.
2. Two coats SW Promar 200 Semi-Gloss. Enamel, (Alkyd semi-gloss enamel).

B. Enamel on Concrete Block:

1. One coat SW Promar 200 Block Filler (vinyl acrylic latex).
2. Two coats SW Promar 200 Semi-Gloss Enamel.

C. Enamel on Gypsum Board Ceilings/Facias/Walls

1. One coat SW Promar 200 Wall Primer with Medium Texture. (Vinyl Acrylic Latex Wall Primer.)
2. Two coats SW Promar 200 Semi-Gloss Latex Enamel.

D. Tape and Float: Joints on Gypsum Board.

1. As per manufacturer's instructions.
2. All joints shall be sanded ready for primer's finish.

E. Enamel on Wood Trim:

1. One coat SW Promar 200 Alkyd Enamel Primer/Undercoat.
2. Two coats SW Promar 200 Semi-Gloss Latex Enamel.

F. Back-Painting, Interior Work:

1. Two coats SW Promar 200 Alkyd Enamel Primer/Undercoat.

G. Enamel on Exposed Metal Piping:

1. One coat SW Galvite primer.
2. Two coats SW Promar 200 Semi-Gloss Latex Enamel.

SECTION 09900 - PAINTING

Part 3 - Execution

3.01 Inspection:

A. Notify Contractor of any surface not in proper condition to be finished before proceeding with the work. Starting work will constitute the painter's acceptance of preceding work, and conditions under which finish will be applied and his assumption of responsibility for results to be obtained.

3.02 Preparation of Surfaces:

A. Wood:
   1. Sand to a smooth even surface, then dust off.
   2. Touch-up knots, resinous spots, etc., on all surfaces with shellac 18 hours before applying prime coat.
   3. Fill nail holes, cracks and blemishes flush after priming coat has dried.

B. Concrete Block and Concrete:
   1. Repair cracks and irregularities to provide uniform surface texture.

C. Ferrous Metal Surfaces:
   1. Remove rust and scale, clean grease or oil surfaces with turpentine or benzine before painting.

3.03 Application:

A. Number of coats and quality of finish shall be in accordance with these specifications, which requires the use of material which will product first quality finish if properly applied.

B. Apply coats of material in strict accordance with manufacturer's currently published specifications, except where requirements of these specifications are in excess or manufacturer's requirements.

C. Except as otherwise approved by the Architect, the first two coats of painter's finish shall be applied by roller or brush application. Finish coats may be applied by spray application.

D. Comply with recommendation of product manufacturer for drying time between succeeding coats allow additional as required until finish is dry.

E. All work where a coat of material has been applied must be inspected and approved before application of succeeding coat, otherwise, no credit for the coat well be given. Notify Architect when a particular coat has been completed for inspection and approval.

F. Shellacs, oils, turpentine, etc., shall be of the highest quality and subject to approval of Architect. Materials shall be mixed in and applied directly from containers which they are purchased except when use of other containers is approved.

G. First Coat of all finishes, except of varnish and stains, shall be white.

H. Sand lightly between coats where shellac, varnish or enamel is used.

I. Remove all hardware, accessories, machined surfaces, and similar items in place and not to be finish-painted or provide surface-applied protection prior to surface preparation and

painting operations.

3.04 Clean-up:

A. Clean and paint spots from work and touch-up or otherwise repair any defective or damaged work.

B. Remove all surplus materials and equipment after work is completed.

C. Leave entire job clean and acceptable to the Architect.

End of Section

DIVISION 10 - SPECIALTIES

SECTION 10100 - CHALKBOARDS AND TACKBOARDS

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this section of the work.

1.02 Quality Assurance:
- A. Standards:
  - 1. American Society for Testing and Materials:
    - a. ASTM A-424, Steel Sheets for Porcelain Enameling.
  - 2. Federal Specifications:
    - a. LL-B-810B, Hardboard.
  - 3. Military Specifications:
    - a. MIL-C-15116C, Cork Sheet.

1.03 Submittals:
- A. Shop Drawings: Submit dimensioned ship Drawings indicating location, type, size, arrangement, adhesive, backing, anchor or mounting details, trim, and accessories.
- B. Submit samples showing the full range of colors available for each unit.

Part 2 - Products

2.01 Materials:
- A. Porcelain Enamel Steel Markerboards:
  - 1. Type: Factory-built aluminum framed unit.
  - 2. Construction: Factory LCS face on 24 gauge steel laminated to 3/8" hardboard with .015 aluminum back-up.
  - 3. Color: LCS faces shall be white.
  - 4. Trim: Provide "H" bar joint cover at adjacent panels, color to match narrow leg showing, map rail with cork inserts and chalk trough.
  - 5. Accessories: Provide two map hooks with paper clips at each chalkboard unit.
  - 6. Mounting System: Concealed metal spline system. **At exterior walls provide "stand-off" mounting brackets to prevent condensation behind boards.**
- B. Tackboard:
  - 1. Type: Factory-built aluminum framed unit.
  - 2. Construction: Vinyl covered surface bonded to a 2" thick insulation board core, with a 7/8" x 5/8" aluminum frame. Refer to Color Schedule.
  - 3. Mount System: Manufacturer's standard.
  - 4. Acceptable manufacturer: Best-Rite Vin-Tak tackboards.

SECTION 10100 - CHALKBOARDS AND TACKBOARDS

Part 3 - Execution

3.01 Installation:

A. Install units straight, plumb, and level with metal splice system. Refer to Drawings.

End of Section

DIVISION 10 - SPECIALTIES

SECTION 10150 - COMPARTMENTS AND CUBICLES

Part 1 - General

1.01 Description:
- A. Stainless steel compartment work includes the following:
  1. Floor-supported, overhead-braced partitions.
- B. Furnish all labor and materials necessary for the completion of work in this section as shown on the contract drawings and specified herein.
- C. Work in this section shall include, but is not limited to:
  1. Toilet compartments.
  2. Hardware for toilet compartments and stainless steel partitions.
  3. Shop drawings and working drawings.
  4. Manufacturer's guarantee.
- D. Related work specified elsewhere shall include accessories and anchorage/blocking for attachment of compartments.

1.02 Products:
- A. Stainless steel finish shall be selected from the manufacturer's full range.
- B. Hardware samples shall be submitted for approval to the Architect upon request.

1.03 Warranty:
- A. Provide manufacturer's standard 15 year warranty.

1.04 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Manufacturer:
- A. Toilet compartments, and urinal screens shall be by MILLS BRADLEY Corp., Deer Park, New York, or approved equal.

2.02 Materials:
- A. Doors, panels, and pilasters to be 1" thick type 304 stainless steel which are waterproof and non-absorbent.

2.03 Construction:
- A. Doors, panels, and pilasters shall be 1" thick with uniformly machined edges.
- B. Doors and panels shall be 55" high and mounted at 14" above the finished floor. Door shall be mounted to the pilasters with an integral hinge or a "bank-vault" type die-cast aluminum alloy wraparound hinge.
- C. Pilasters shall be 81-1/2" high and anchored to the panels and walls with three 2" long heavy-duty aluminum stirrup brackets.

Pilasters shall include a mounting system comprised of at least one 3/8" x 1" steel mounting bar attached to the pilaster, having 3/8" steel-plated bolts secured to 1/8" semicylindrical plug loc imbedded within a contoured aperture transversely piercing the core. Each mounting bar shall be secured to the building structure with 3/8" steel-plated studs. A 4-piece shoe shall conceal each floor mounting, having an internal cross section conforming to the pilaster and fabricated from type 304 stainless steel having a #4 finish.

D. Pilasters are overhead braced with an extruded anti-grip aluminum headrail.

E. Urinal Partitions: Shall have full height aluminum wall brackets and shall be overhead-braced.

2.04 Hardware:

E. Door hardware shall be as noted:

1. Integral hinges shall be fabricated into the door and the pilaster with no exposed metal parts. The hinge mechanism is integrated into the door and pilaster with a 1/2" diameter nylon gravity/cam unit with a 3/16" stainless steel center pin (at bottom) and a 1/2" nylon rod (at top). Integral hinges are not factory set and are installed at the job site. Pilaster shall be a minimum of 5" wide.
2. Heavy-duty "Bank Vault" hinge shall have gravity-acting cams and are fabricated from a die cast aluminum alloy with a brushed polish chrome-plated finish and wraparound flanges. The cam is constructed from a 3/4" diameter nylon rod and a 3/8" stainless steel pin. Hinges are through-bolted onto doors and pilasters using stainless steel, tamper-resistant through bolts. Hinges are easily adjusted at the job site to a full close or partially open position, as required.
3. Aluminum stirrup brackets shall be 2" long made of heavy-duty anodized extruded aluminum (6063-T5 alloy). Stirrup brackets shall be 1/8" thick and mounted with stainless steel, tamper-resistant screws. Panels shall be attached with stainless steel, tamper-resistant through bolts. The attachment of brackets to the adjacent wall construction shall be accomplished with #14 x 2-1/2" stainless steel, tamper-resistant screws and plastic anchors.

B. Stainless steel pilaster shoes shall be 5-1/2" high, constructed from 22-gauge stainless steel. Pilaster shoes are anchored to the pilaster with #14 stainless steel, tamper-resistant screws.

C. Slide latches shall be fabricated from a die cast aluminum alloy with a brushed polish chrome-plated finish and mounted to the

door with stainless steel, tamper-resistant through bolts.

D. Strike and keepers shall be fabricated from a die cast aluminum alloy with a brushed polish chrome-plated finish. Keepers provide for emergency access into the stall by lifting up on the bottom of the door. Strikes and keepers shall be attached to the doors and pilasters with stainless steel through bolts.

E. Headrail shall be made of heavy-duty anodized extruded aluminum (6063-T5 alloy). Headrail is anti-grip and attaches to the top of the pilaster with stainless steel, tamper-resistant screws. Headrail is attached to the adjacent wall construction with a die cast headrail bracket.

F. Headrail brackets shall be made from a die cast aluminum alloy and shall be attached to the adjacent wall construction with #14 x 2-1/2" stainless steel, tamper-resistant screws and plastic anchors.

Part 3 - Execution

3.01 Preparation:

A. Examine areas to receive toilet compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that may affect installation of compartments. Report any discrepancies to the architect.

B. Take complete and accurate measurements of complete toilet compartment locations.

C. Start of work constitutes acceptance of job.

3.02 Installation:

A. Install compartments in a rigid, straight, plumb and level manner, with steel laid out as shown on the shop drawings and manufacturer’s installation instructions.

B. All doors and panels to be mounted at 14" above the finished floor.

C. Clearance at vertical edges of door shall be uniform top to bottom.

D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.

E. Finished surfaces shall be cleaned after installation and be left free of all imperfections.

End of Section

SECTION 10400 - INTERIOR SIGNAGE

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this entire section of the work.

1.02 Quality Assurance:
- A. Standards:
  1. UFAS Fed. Std. 795-Requirements for the physically handicapped.
  2. MIL Spec. L-P-387a, type NDP, rated self-extinguishing, for sign materials.

1.03 Submittals:
- A. Provide manufacturer's catalog cut and data sheets, complete parts list and installation requirements for each item specified.
- B. Schedules: Indicate location and placement for all graphic items.

1.04 Product Delivery, Storage and Handling:
- A. Handle and store all items with care to prevent damage and injury to finish surfaces.

Part 2 - Products

2.01 Products of the manufacturers listed below have been specified herein to simplify descriptions of design, construction, and materials only. All items have been selected for visual and performance design quality which shall serve as a basis for acceptance of equivalent products by other manufacturers.

2.02 Signage System:
- A. Material: 1/8 inch thick, type ES melamine plastic.
- B. Size: 8" x 8" x 1/8", with 1/2" radius corners. Custom design - refer to 2.04 for text and symbols.
- C. Mounting: All graphics shall be permanently mounted to wall or door surface with tamper resistant screws.
- D. Color: refer to Color Schedule, submit color samples with submittals, prior to approval. **Colors will be a factor in product acceptance.**
- E. Letter Style: Helvetica Medium.
- F. Standard Grade 2 braille shall be below all copy, all signs.
- G. All graphic material shall meet the requirements of UFAS Fed. Std. 795, and MIL spec L-P-387a.
- H. Acceptable Manufacturer: Series 200A, Type D format, Mohawk Sign systems.

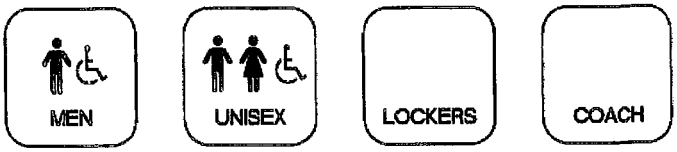
2.03 Plaque Groupings Required (letter designation refers to 2.04):

Quantity Plaque Mounting Location

**Coordinate location with Architect

Plaque	Quantity	Location
A	1	1 each @ room no. 7
B	1	1 each @ door no. 4
C	1	1 each @ door no. 3
D	1	1 each @ door no. 5

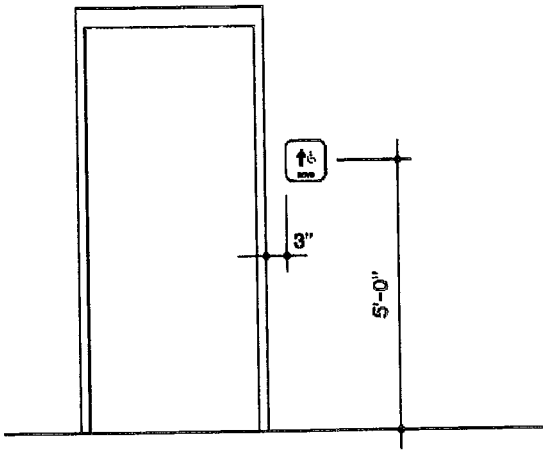
2.04 Signage Plaques Required:



A B C D

Note: all signage plaques shall have grade 2 braille translations under text.

2.05 Typical Mounting:



Mounting Height

Typical Wall Location

Verify location with architect.

SECTION 10400 - INTERIOR SIGNAGE

Part 3 - Execution

3.01 Installation:

A. Comply with manufacturer's installation instructions and details on the Drawings. Set all units plumb and level in location indicated on the Drawings or as directed.

B. Provide all necessary accessories: Items to support or attach Identifying Devices to result in a complete installation.

C. Protect all signage plaques to prevent damage after installation.

End of Section

DIVISION 10 - SPECIALTIES

SECTION 10500 - LOCKERS

Part 1 General

1.01 Work Included:
A. All materials, labor, services, and incidentals necessary for the completion of this entire section of the work.

1.02 Submittals:
A. Shop Drawings: Indicate details and dimensions of fabrication and installation including layouts and assemblies. Begin fabrication only after receiving approved shop Drawings.
B. Manufacturer's Literature: Descriptive literature and installation instructions.

1.03 Product Delivery, Storage, and Handling:
A. Handle and store all items with care to prevent damage and injury to finish surfaces.
B. Protect adjacent existing surfaces from damage.

1.04 Quality Assurance:
A. Standards:
1. Federal Specification: AA-L-486.

1.05 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Materials:
A. **Lockers Type 1** - Double Tier All Welded Ventilated Lockers - at Locker Room:
1. Construction: Each unit shall have individual door and frame of cold rolled steel.
a. Body: shall be 16 gauge steel, flanged to give double thickness of metal at back vertical corners; 18 gauge backs.
b. Door Frame: shall be 16 gauge steel formed channels with vertical members having an additional flange to form continuous door strike. Corners shall be lapped and welded into a rigid assembly; in addition, bottom cross members shall have tang at each end that fits through slot in rear slot of upright frame member to prevent twisting out of alignment. Top and bottom cross members shall provide support for front edge of locker top and locker bottom.

c. Door: shall be 14 gauge steel, one piece, with both vertical edges formed into a channel shape and top and bottom flanged at 90 degree angle.
d. Coat Hooks: provide three single prong coat hooks made of cadmium-plated or zinc-plated steel.
e. Ventilation: large diamond perforations in door.

2. Quantity: Refer to Drawings.
3. Size: 24"w x 24"d x 36"h per tier for a total locker height of 72".
4. Base: None - mount to top of continuous concrete base.
5. Hardware:
   a. Hinge to be full loop, 2" 5-knuckle hinges nested in door slot, welded to frame and double-riveted to door.
   b. Handle to be stainless steel recessed handle with plastic-protected lifting trigger. Must be able to accept padlock and meet ADA requirements for accessibility.
   c. Latching to be quiet, multi-point latching on heavy gauge frame hooks with rubber silencers. Concealed quiet lock bar locked in place and isolated from metal to metal contact by polyethylene glides.
6. Provide aluminum number plates.
7. Provide end finishing panels to closeout to adjacent / perpendicular walls and at corners.
8. Color: refer to Color Schedule.

B. **Lockers Type 2** - Single Tier All Welded Ventilated Lockers - at the Coach's Locker Room:

1. Construction: Each unit shall have individual door and frame of cold rolled steel.
   a. Body: shall be 16 gauge steel, flanged to give double thickness of metal at back vertical corners; 18 gauge backs.
   b. Door Frame: shall be 16 gauge steel formed channels with vertical members having an additional flange to form continuous door strike. Corners shall be lapped and welded into a rigid assembly; in addition, bottom cross members shall have tang at each end that fits through slot in rear slot of upright frame member to prevent twisting out of alignment. Top and bottom cross members shall provide support for front edge of locker top and locker bottom.

c. Door: shall be 14 gauge steel, one piece, with both vertical edges formed into a channel shape and top and bottom flanged at 90 degree angle.
d. Coat Hooks: provide three single prong coat hooks made of cadmium-plated or zinc-plated steel.
e. Ventilation: large diamond perforations in door.

2. Quantity: Refer to Drawings.
3. Size: 24"w x 18"d x 60"h.
4. Base: None - mount to top of continuous concrete masonry base.
5. Hardware:
   a. Hinge to be full loop, 2" 5-knuckle hinges nested in door slot, welded to frame and double-riveted to door.
   b. Handle to be stainless steel recessed handle with plastic-protected lifting trigger. Must be able to accept padlock and meet ADA requirements for accessibility.
   c. Latching to be quiet, multi-point latching on heavy gauge frame hooks with rubber silencers. Concealed quiet lock bar locked in place and isolated from metal to metal contact by polyethylene glides.
6. Provide aluminum number plates.
7. Provide end finishing panels to closeout to adjacent / perpendicular walls and at corners.
8. Color: refer to Color Schedule.

C. Benches and Pedestals:
1. Locker benches shall be laminated maple, 1-1/4” full finish thickness. All corners shall be rounded and sanded. Top / exposed edges shall receive two coats of a clear finish and one coat on the bottom of the bench. Bench tops shall be 9-1/2” wide and furnished in 4‘-0” lengths.
2. ADA compliant benches are to be 48” wide x 24” deep, laminated maple, 1-1/4” full finish thickness. All corners shall be rounded and sanded. Top / exposed edges shall receive two coats of a clear finish and one coat on the bottom of the bench. Four pedestals required. Bench shall have an overall height of 17-1/2”.
3. Pedestals: benches shall be mounted on moveable pedestals consisting of trapezoidal shaped aluminum pieces made from 3” wide by ¼” thick bar stock,

anodized black color. Provide non-skid pads for each pedestal. Overall height to be 17-1/2”.

D. Acceptable Manufacturer: Republic Storage Systems.

Part 3 - Execution

3.01 Installation:

A. Field verify prepared bases are in correct position and configuration.

B. Install equipment as located on the Drawings and comply with manufacturer's written instructions for equipment provided.
Secure lockers with anchor devices with a minimum pull-out force of 100 lbs.

C. Provide any additional items necessary for support or to complete installation.

D. Clean work after installation including locker interior and exterior surfaces.

End of Section

DIVISION 10 - SPECIALTIES

SECTION 10520 - FIRE PROTECTION SPECIALTIES

Part 1 General

1.01 Work Included:
- A. All materials, labor, services and incidentals necessary for the completion of this entire section of the work.

1.02 Submittals:
- A. Submit Manufacturer's Literature: Descriptive literature, product data and installation instructions.

1.03 Product Delivery, Storage and Handling:
- A. Handle and store all items with care to prevent damage to equipment. Damaged equipment shall be rejected.

1.04 Quality Assurance:
- A. Standards:
  1. Conform to NFPA 10 requirements for portable fire extinguishers.
- B. Provide fire extinguishers, cabinets and accessories by a single manufacturer.

1.05 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 Materials:
- A. Fire Extinguishers:
  1. Model No. 10E - Cosmic multi-purpose dry chemical fire extinguisher. UL, 4A-60-BC.
- B. Fire Extinguisher Cabinets:
  1. Model No.: Academy 1026V10 with return trim as required with rolled edge.
  2. Door Style: Contemporary V, with flat trim.
  3. Glazing: 1/4" clear acrylic.
  4. Finish: Aluminum, mill finish, clear anodized.
  5. Fire Rated Enclosure: provide fire stopping material to protect integrity of fire rated partition as required by applicable codes and standards.

Part 3 - Execution

3.01 Installation:
- A. Install equipment as located on the Drawings and comply with manufacturer's written instructions for equipment provided.
- B. Prepare recesses in walls for fire extinguisher cabinets as required for type and size of cabinet and style of trim, and

to comply with manufacturer's instructions.

C. Securely fasten mounting brackets and fire extinguisher cabinets to the structure, square and plumb, to comply with manufacturer's instructions.

D. Check extinguishers for proper charge operation.

E. Remove and replace damaged, defective or under charged units.

End of Section

DIVISION 10 - SPECIALTIES

SECTION 10800 - TOILET AND BATH ACCESSORIES

Part 1 - General

1.01 Work Included:
- A. All materials, labor, services, and incidentals necessary for the completion of this section of the work.

1.02 Submittals:
- A. Provide manufacturer's catalog cut and data sheets, complete parts list and installation requirements for each accessory item specified.
- B. Where applicable, submit maintenance data, operating instructions and keys required for each type of equipment and lock.

1.03 **Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Proprietary names are not intended to imply that products of named manufacturer are required to the exclusion of equivalent products of other manufacturers.**

Part 2 - Products

2.01 The following model numbers refer to products of Bradley Corporation (except where noted otherwise).

2.02 Accessories:
- A. Grab Bars:
  1. Model No. 8120-001360-36".
  2. Quantity: 1 @ rooms 6 & 7
- B. Grab Bars:
  1. Model No. 8120-001420-42".
  2. Quantity: 1 @ rooms 6 & 7
- C. Grab Bars:
  1. Model No. 8120-001420-12".
  2. Quantity: 1 @ rooms 6 & 7
- D. Tilted Stainless Steel Mirror (Frame and Surface):
  1. Model No. 740-1830.
  2. Quantity: 1 @ rooms 6 & 7 (above lavatories)
- E. Stainless Steel Mirror (Frame and Surface):
  1. Model No. 781-1830
  2. Quantity: 1 @ room 7 (above lavatories)
- F. Shower Curtain and Rod:
  1. Model No. 9531 (by length required) w/ vinyl shower curtain 9537 and # of s.s. hooks required.

  Quantity: 1 @ room 5
- G. Handicap Shower Bench:
  1. Model No. 956 / 9561 as required
  1. Quantity: 1 @ rooms 5
- H. Shower Grab Bar:
  1. Model No. 036 / 037 as required

2. Quantity: 1 @ room 5

I. Toilet Paper Dispenser to be provided by Owner and installed by Contractor. 1 @ rooms 6 & 7

J. Paper Towel Dispenser to be provided by Owner and installed by Contractor. 1 @ room 1 @ room 6 / 2 @ room 7

K. Soap Dispenser to be provided by Owner and installed by Contractor. 1 @ room 6 / 2 @ room 7

Part 3 - Execution

3.01 General:

A. Install where noted on the Drawings and mount as indicated or per manufacturer's recommendations.

B. Use concealed or tamper-proof fasteners of same material and finish as unit. Provide anchors, bolts, and other mounting devices and attach units securely.

End of Section

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13122 - METAL BUILDING SYSTEMS

Part 1 - General

1.01 WORK INCLUDED:

A. Pre-engineered metal building addition, complete with structural framing (**straight columns**, rafters, struts, purlins, girts); prefinished roofing and siding to match existing; roof and wall insulation with vapor barrier; metal flashings; trim; gutters and downspouts; diagonal bracing; fasteners; and roof and wall accessories and other components and material required for a complete and watertight installation.

1.02 DESCRIPTIONS:

A. Building Type: Single span Straight Column Rigid Frame (SCRF) with straight steel columns and tapered rafter sections of shop welded steel plates.

B. Roof Slope: match existing.

C. Column Spacing at Exterior Walls: As shown on drawings compatible with placement of openings and other requirements.

D. Eave Heights:

1. New Locker Room Addition – match existing (approximately 11’-0”) as indicated on drawings.
2. Continuous Parapet: not applicable.

E. **Additional Requirements: metal building manufacturer shall be responsible for investigating and field verifying all requirements, etc. necessary for a “seamless” addition and watertight connection to the existing building as indicated on the drawings. Any adjustments to the existing building necessary to meet the above requirements (including additional structural framing) shall be included in the subcontractor’s bid and noted on all shop drawings, etc.**

1.03 QUALITY ASSURANCE:

A. Codes and Standards:

1. Use following where applicable in building design:
   a. AWS D1.1 "Structural Welding Code-Steel"
   b. MBMA "Low-Rise Building Systems Manual, latest Edition.
   c. AISI "Specifications for the Design of Cold Formed Steel Structural Members’, latest Edition.
      AISC "Steel Construction Manual" and "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings."
   d. AISC "Specification for Structural Joints Using ASTM A325 or A307 bolts."
   e. SDI "Steel Roof Deck Design Manual."
2. Use the following where applicable in other phases of design:

a. Building Code and regulations of other governing authorities having jurisdiction at project site.
b. Federal (Fed. Spec.), Military (MIL) and Commercial (CS) Standards and Specifications, as referenced herein.
c. American Society for Testing and Materials (ASTM), Standards as referenced herein.

B. Design Criteria:
1. Codes:
a. The building shall be designed and fabricated according to the latest codes as required by the City of Oklahoma City, Oklahoma.
2. The metal building manufacturer shall be responsible for both design and erection of the building. Approval of shop drawings, erection drawings, or other submittals shall not relieve the metal building manufacturer of total design responsibility.
3. Temperature Load: design temperature change shall be -30/+60 degrees fahrenheit. Combinations including snow loads need only consider -30 degrees fahrenheit.
4. Wind Load: wind load pressures shall be based on enclosed buildings.
5. Serviceability Criteria:
a. Rafter supporting gravity snow or live loads = span/120.
b. Purlins supporting snow live or 10 yr. wind loads = span/120.
c. Girts resisting 10 yr. wind loads = span/120.
d. Frame drift under 10 yr. wind = eave height/120.
6. Horizontal roof bracing, rigid frames, braced bays and/or portal frames shall be used to transmit lateral loads to the foundation. Diaphragm action in the roof and wall panels shall not be used to resist lateral loads.

1.04 SUBMITTALS:

C. Shop Drawings and Calculations:
1. Design Calculations and Erection Drawings: Prepared by, or under direct supervision of, Registered Professional Engineer, licensed to practice in State of Oklahoma with all drawings and calculations bearing engineer's seal.
2. A complete three dimensional analysis or justifiable two dimensional analysis showing all calculations for frames and horizontal bracing is required. In addition, a complete design analysis showing all calculations for wall panels, roof decking, girts,

purlins, connections, base plates, and anchor bolts is required. Calculations shall consider effects for dead, live, wind, seismic, temperature, and snow. Calculations and layout of the anchor bolts and the embedded items shall be submitted for approval with the shop drawings. Anchor bolt calculations shall consider embedment into concrete as part of the design. Shop drawings shall include details of all main frame members, connections (showing bolt holes and welds), and erection drawings. All rigid frames and portal frames shall be designed using pinned bases.

3. Show each type as applicable: Structural building frame required and their locations within structure; details of anchor bolt settings; sidewall, endwall, and roof framing; diagonal bracing and location within structure; roof insulation and types; longitudinal and transverse cross sections; details of curbs, roof jacks, and items penetrating roof; canopy support framing and details; trim, gutters, downspouts, wall and roof coverings, and all accessory items; materials; finishes; construction and installation details; and other pertinent information required for proper and complete fabrication, assembly and erection of watertight metal building system.

B. Material and Color Samples:
   A. For each specific material sample requested by Architect, submit in size, form, and number directed.
   B. Submit duplicate color sample sets showing full color range available, for selection purposes.

C. Product Data: Electronic copies of manufacturer's specifications and descriptive literature.

D. Certification: Two (2) copies of written certification, prepared and signed by Registered Professional Engineer licensed to practice in State of Oklahoma, attesting that building design meets specified loading requirements, requirements of codes and authorities having jurisdiction at project site, and other requirements specified.

E. Metal building manufacturer shall submit certification of design to the Contractor to be an approved manufacturer and that the roof system shall qualify for UL Class 90 and state construction number. Metal building manufacturer shall furnish to the Contractor certification that he is a member of the Metal Building Manufacturers' Association.

1.05 PRODUCT HANDLING, DELIVERY, AND STORAGE:

A. Deliver and store prefabricated components, sheets, panels, and other manufactured items so they will not be damaged or

deformed.

B. Stack materials on platforms or pallets above grade or on concrete slab, covered with opaque tarpaulins or other approved weather-resistant ventilated covering.

C. Store metal sheets and panels if subjected to water accumulation in such a manner so they will drain freely. Do not store sheets and panels in contact with other materials which might cause staining.

D. Damaged material must be reported to determine if replacement is required.

E. Inspect panels to prevent moisture between panels, and secure as required.

1.06 WARRANTIES:

A. All Components: Manufacturer's standard one (1) year workmanship warranty.

B. Roof Panels Including Any Canopy Roof Panels: Manufacturer's standard paint finish warranty.

C. Wall Panels: Manufacturer's standard paint finish warranty.

Part 2 - Products and Fabrication

2.01 STRUCTURAL STEEL:

A. Materials:

1. Structural Plate or Bar Stock: Minimum yield strength (Fy) of 36,000 PSI conforming to requirements of ASTM-A36.
2. Cold Formed Structural Steel: Minimum yield strength (Fy) of 55,000 PSI conforming to requirements of ASTM-A570.
3. Primary Structural Bolts and Nuts: ASTM A325; size and quantity required by metal building system manufacturer.
4. Prime Coat Paint: Primary structural shall be Alkyd red oxide metal rust inhibitive primer equal to Federal Standard #30111. Dry film thickness to be 1.0 mil. Secondary framing shall be red oxide rust inhibitive primer applied by vacuum coated process to 0.7-0.9 mil dry film thickness equal to Federal Standard #30111.

B. Prime Coat Paint: Manufacturer's standard.

1. Primary Framing: Rigid frames of shop-welded steel plate columns and rafters, uniform depth sections as required by drawings, complete with all necessary stiffeners, connection plates and holes for field-bolted assembly.

a. Straight Columns and Rafters: Fabricated with

holes in web and/or flanges for attachment of secondary members.

b. Splice Plates: Factory fabricated for precision for all rafter-to-rafter and/or column-to-rafter connections, complete with connection bolt holes.

c. Base Plates, Cap Plates, Splice Plates and Stiffeners: Fabricate to sizes required, complete with all holes for connection of primary and secondary structural members. Factory weld into place.

d. Join flanges and webs of structural members fabricated of plate or bar stock together by continuous automatic submerged arc welding process with all welding performed under the supervision of certified welders in accordance with standard practices of AWS D1.1.

e. Make all primary rigid frame field-bolted connections with A325 high-strength bolts of size required by building system manufacturer.

f. Clean all components of oil, dirt, loose scale, and foreign matters. Factory paint with one (1) coat of manufacturer's standard primer.

2. Endwall Framing: Precision cold-formed and/or shop-welded steel plate members consisting of rafters and columns fabricated for field-bolted assembly.

a. Straight Columns, Rafters, Splice Plates, Clips, Angles and Channels: Factory fabricate to size required.

b. Plate Stock Endwall Framing Members: Join flanges and webs by continuous automatic submerged arc welding process, under the supervision of welders certified in accordance with standard practices of AWS D1.1.

c. Clean components of oil, dirt, loose scale and foreign matter and apply one (1) coat of manufacturer's standard primer.

3. Secondary Framing, (Purlins, Girts, Struts, Flange Braces, Base Angles, as required – refer Drawings):

a. Purlins: Manufacturer's standard 8" Z sections, roll formed from minimum (Fy) 55,000 PSI steel, punched for attachment.

b. Girts: minimum 8" Z or channel sections of roll formed Fy 55,000 PSI steel, punched for attachment with 1/2" diameter bolts.

c. Eave Struts: minimum 8" tall sections of cold formed minimum Fy 55,000 PSI steel, with vertical web to receive sidewall panels and four (4) A325

1/2" diameter bolt attachments to rigid frame in factory-punched holes in column or bracket.

d. Roof Struts: Provide as required, detailed and shown on final shop drawings, as required by design analysis, with attachment to top flange or rigid frame rafters by two (2) 2" minimum size diameter bolts at each end of strut.

e. Flange Braces: Steel angles attached to purlin or girt, to stiffen rigid frame flanges as dictated by design and noted on final shop drawings.

f. Base Angle for Wall Panels: continuous 3" x 4" x 0.071" angle of commercial grade steel, for field attachment to foundation with approved type drive anchors.

g. Clean secondary framing components to be free from oil, dirt, loose scale and foreign matter and apply one (1) coat of manufacturer's standard primer.

2.02 ROOFING & SIDING:

A. Roofing Panels:

1. Roof Panels:

a. Description: Shall be Standing Seam roof panels, roll-formed 24-gauge steel panels UL-90 rated with manufacturer’s standard polyester finish, mechanically seamed together by 3-3/8” fixed lips to allow for insulation. The panels shall be produced from steel having a mininum yield strength of 50 ksi (345 N/sq.mm.).

b. Roof panel shall match existing.

2. Wall Panels: match existing.

3. Panel Colors:

a. Roof and Wall Panels: to be selected by Architect from manufacturer’s standard colors to match existing – refer to Drawings.

2.03 WIND BRACING:

A. Commercial grade steel rod bracing or portal frames located as determined by manufacturer on the final shop drawings. Clean components free of oil, dirt, loose scale and foreign matter.

2.04 WALL AND ROOF INSULATION:

A. Exterior Wall and Roof Fiber Glass Insulation: with flexible white vinyl vapor barrier providing no more than 1.0 PERMS moisture vapor transmission.

B. Insulation Thickness: 6" thick at roof and walls.

2.05 ACCESSORIES:

A. Gutters and Downspouts

1. Gutters for standing seam roof shall be suspended box sections of 24-gauge galvanized steel formed to match the configuration of the gable trim. Gutters shall be independent of the roof seal and shall be attached to the eave strut adapter by means of a gutter hanger. Gutter hangers shall be spaced at 4'-0" centers and attached to inside face of gutter and eave adapter by #12 self-drilling screws and to outer face of gutter by trim fasteners. Gutter sections shall be lapped 2" and sealed with sealant and then fastened with fasteners as specified on manufacturer's drawings. Gutter end closures shall be sealed with sealant and fastened with pop rivets as specified on manufacturer's drawings.
2. Downspouts shall be 24-gauge galvanized factory-colored steel with a minimum cross section of 12 or 20 square inches. Downspouts shall be located according to design requirements as specified. Downspouts shall be field attached to the gutter. Downspouts shall be attached to the wall panel using 26-gauge galvanized factory-colored steel straps on 10'-0" centers. A 75-degree elbow shall be provided at the base of all downspouts to direct the water flow away from the building.
3. Finish: refer drawings.

B. Walk Doors, Leafs, Frames, and Hardware, and Windows:

1. To be supplied by manufacturer other than Metal Building manufacturer / supplier. Refer to Drawings and Sections 08100 and 08500.

C. Roof Jacks and Pipe Flashing:

1. Roof jack shall be a 26-gauge, Shell White steel cone factory installed and sealed to roof panel. Cone shall be made of same material.
   a. Stack or pipe penetration shall be at the centerline of a major corrugation of the roof panel.
2. Pipe flashing shall consist of a molded rubber cone with an aluminum ring bonded to the base. Pipe flashing shall accommodate pipe diameter as specified and be capable of flashing penetration at any location of the roof panel. Flashing shall be sealed and fastened in accordance with manufacturer's drawings.

Part 3 - Execution

3.01 ERECTION:

A. General:

1. Erection shall be accomplished by a trained, competent erector having experience in erecting metal buildings.
2. Install all metal building system components in strict compliance with manufacturer's instructions shown on final shop drawings.
3. Handle and store all materials to avoid damage and replace any damaged materials.
4. Erector shall observe and follow recommendations of the Metal Building Manufacturers Association (MBMA), the American Institute of Steel Construction (AISC), and the Occupational Safety and Health Administration (OSHA) practices, procedures and safety standards where applicable.
5. Do not field cut or alter structural members without approval from manufacturer.

B. Structural Frames:

1. Erect true to line, level and plumb, brace and secure with temporary bracing in all directions as required.
2. Level base plates and secure to anchor bolts to level plane with full bearing to foundation supporting structures.

C. Bracing:

1. Install all permanent diagonal rod or angle bracing in roof and sidewalls as approved by manufacturer.
2. Properly tighten rods to avoid excessive sag.

D. Framed Openings:

1. Securely attach to building structural framing members, square and plumb.

E. Roofing Panels:

1. General:
   a. Install roof panels in such a manner to permit drainage to eaves of building, with panel ends square to eave.
   b. Install wall panels with vertical edges plumb.
   c. Arrange and nest sidelap joints away from prevailing winds when possible.
   d. Apply panels and associated items for neat and weathertight enclosure.
   e. Avoid "panel creep" or application not true to grid lines.
   f. Protect factory finishes from mechanical damage or abrasions.
   g. Install approved type closures to exclude

weather.

1. Install weather seal under ridge cap. Flash and seal roof panels at eave, gable and perimeter of all openings through roof and elsewhere as required or shown on drawings.
2. Flash and/or seal wall and liner panels at perimeter of all openings, under eaves and gable trims, along lower panel edges, and elsewhere as required or shown on drawings, as applicable.

h. Remove all fastener or cutting shavings from roof and wall as erection is completed.

F. Accessories: Install gutters, downspouts, flashings, trim, ridge covers, roof curbs, pipe flashings, closure strips, roof jacks, and other accessories and sheet metal items in accordance with manufacturer's recommendations for positive attachment to building and provide a weathertight mounting.

G. Swing Doors and Frames **(by other subcontractor / suppliers)**: Install doors and frames straight, plumb, and level. Securely anchor frames to building structure. Set units with 1/8" maximum clearance between door and frame at jambs and head, and 3/4" maximum between door leaf and floor. Adjust for proper operation.

H. Louvers:

1. Install plumb and level, in compliance with requirements of final shop drawings. Anchor securely in final location with perimeter sealed with approved sealant used for trim and flash or roof panels. Adjust louver blades to operate smoothly and easily, without binding, and to be weathertight when in closed position.

I. Thermal Insulation:

1. Install in accordance with manufacturer's recommended procedure, performed concurrently with installation of wall, roof panels, and protective poultry fencing.
2. Roof Insulation: Install blankets straight and true. Fasten tabs together or lap and glue to provide complete vapor barrier. Place insulation with facing exposed to interior of building unless recommended otherwise.

3.02 PAINTING:

A. Touch-up all abrasions, scratches, field welds or other damages in shop-primed or factory-finished painted surfaces consistent with shop primer or factory-finished painting.

B. Apply finish paint coats to factory-primed items.

1. Provide finish coats which are compatible with metal building manufacturer's prime coat paints.

2. Provide approved type barrier coats over incompatible primers where required.
3. Notify Construction Manager in writing of anticipated problems using specified coatings with substrates primed by others.
4. All finish coats by others should be solvent base or approved by manufacturer.
5. Protect hardware and accessories and similar items in place and not to be finish-painted.

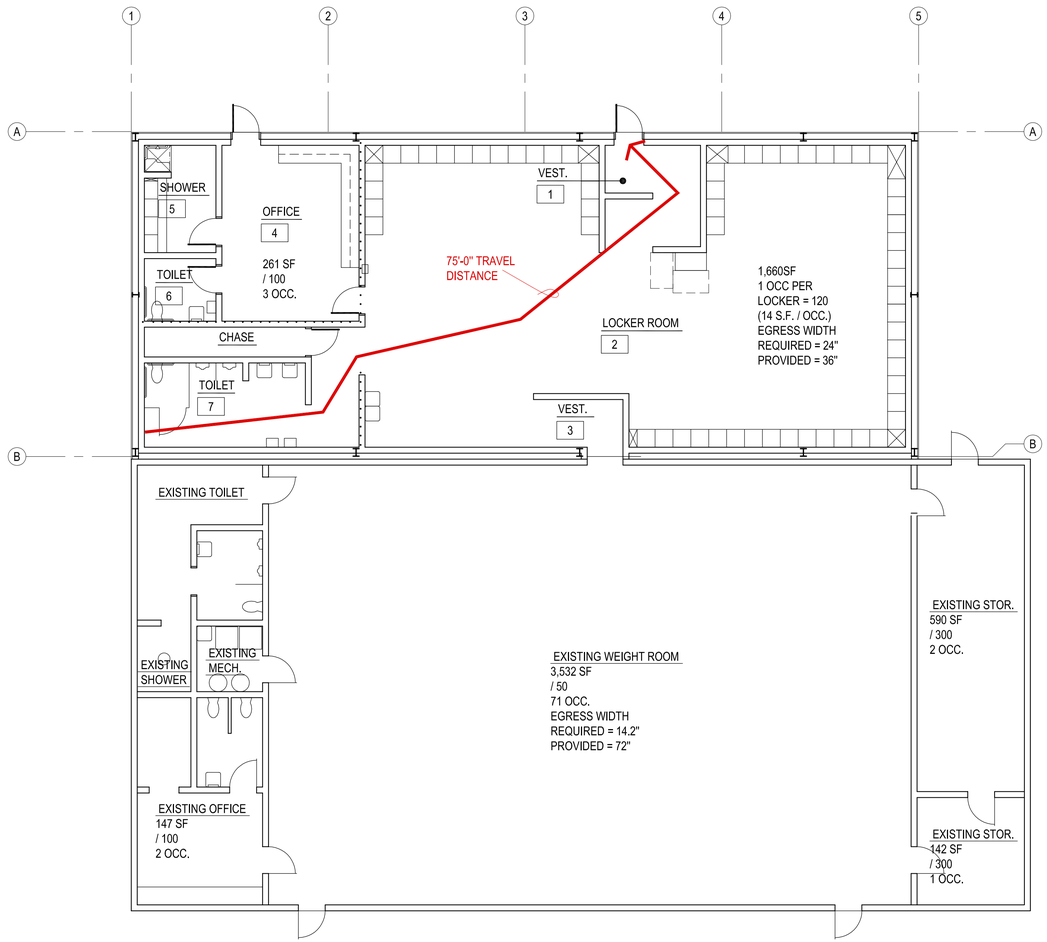
C. All visible steel exposed to exterior weather or an uncontrolled environment shall be blast cleaned, primed with a zinc-rich primer, and field painted with a high-performance paint.

Non-visible steel exposed to exterior weather or an uncontrolled environment shall be blast cleaned and primed with a zinc-rich primer. Interior steel shall be shop primed and field painted.

3.03 TOLERANCES:

A. All framing members shall be erected plumb, level or aligned not to exceed a deviation 1:300.

End of Section



NORTH

1 FIRE CODE FLOOR PLAN

1/8" = 1'-0"

CONSTRUCTION DATA (TABLE 503):

OCCUPANCY -	E
CONSTRUCTION TYPE -	TYPE II - B
BASIC ALLOWABLE AREA -	58,000 S.F. PER FLOOR
ALLOWABLE STORIES -	3
ACTUAL STORIES -	1
ACTUAL HEIGHT -	15'-1"

BUILDING SIZES:

EXISTING BUILDING:	(1 STORY) @ 5,075 S.F.
NEW ADDITION :	(1 STORY) @ 3,197 S.F.
	TOTAL 8,272 S.F.

STRUCTURAL FIRE PROTECTION (TABLE 601):

EXTERIOR BEARING WALLS	0 HOUR
INTERIOR BEARING WALLS	NONCOMBUSTIBLE
EXTERIOR NONBEARING WALLS	NONCOMBUSTIBLE
COLUMNS	0 HOUR
BEAMS	0 HOUR
PERMANENT PARTITIONS	NONCOMBUSTIBLE
FLOOR ASSEMBLIES	0 HOUR
ROOF ASSEMBLIES	0 HOUR
EXTERIOR OPENINGS	N/A

PASSIVE FIRE SAFETY SYSTEM:
PORTABLE FIRE EXTINGUISHERS (RE: SHEET A102)
TRAVEL DISTANCE = 200'-0" MAX.
DEADEND - 25'-0" MAX.
ACTUAL DEADEND - NONE

ACTIVE FIRE SAFETY SYSTEMS:
FIRE ALARM SYSTEM
SMOKE DETECTION
AUTOMATIC AIR HANDLING EQUIP. SHUTDOWN
EXIT LIGHTS/EMERGENCY LIGHTS BATTERY

CODES/REGULATIONS USED (CITY OF OKLAHOMA CITY):
2015 IBC - INTERNATIONAL BUILDING CODE
AMERICAN WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
2017 NATIONAL ELECTRICAL CODE
2017 INTERNATIONAL PLUMBING CODE
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL FIRE CODE
2009 ENERGY CONSERVATION CODE
ASSOCIATED SUPPLEMENTS TO EACH CODE

OCCUPANT LOAD (TABLE 1004.1.1):

EXISTING BUILDING = 75 OCCUPANTS
NEW ADDITON - 123 OCCUPANTS
TOTAL OCCUPANTS = 198 OCC.

EXISTING EGRESS WIDTH:

EXISTING BUILDING & ADDITION REQUIRED 40"
EXISTING BUILDING & ADDITON: PROVIDED 180"

PLUMBING FIXTURES (TABLE 2902.1):

EXISTING TOTAL OCCUPANT LOAD
(EDUCATION) = 75
NEW ADDTION = 123
TOTAL OCCUPANTS = 198 OCC.

TOTAL REQUIRED:	TOTAL PROVIDED :
WATER CLOSETS / URINALS = 4	WATER CLOSETS + URINALS = 9
LAVATORIES = 4	LAVATORIES = 5
DRINKING FOUNTAIN = 2	DRINKING FOUNTAINS = 2
SERVICE SINKS = 1	EXISTING SERVICE SINKS = 1

DENOTES 1 HR. RATED PARTITIONS CLOSE-OUT TO BOTTOM OF DECKING - CLOSE-OUT PARTITIONS TO BE CONSTRUCTED OF CMU & 1 LAYER OF 5/8" FIRE RATED ON 6" METAL STUDS @ 16" O.C. STAGGER ALL JOINTS & PROVIDE FIRE TAPE, SEAL ALL PENETRATIONS W/ CONTINUOUS FIRE STOPPING INSULATION &/OR SEALANT.

NOTE:
THIS PLAN INDICATES WALL TO CLOSE OUT TO STRUCTURE DUE TO FIRE CODE REQUIREMENTS, FOR THE NEW ADDITON ONLY. IT IS NOT A REPRESENTATION OF ALL WALLS REQ'D TO CLOSE OUT THROUGHOUT EXISTING BUILDING

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OKLAHOMA CITY, OKLAHOMA
REGISTERED ARCHITECT
5/13/23

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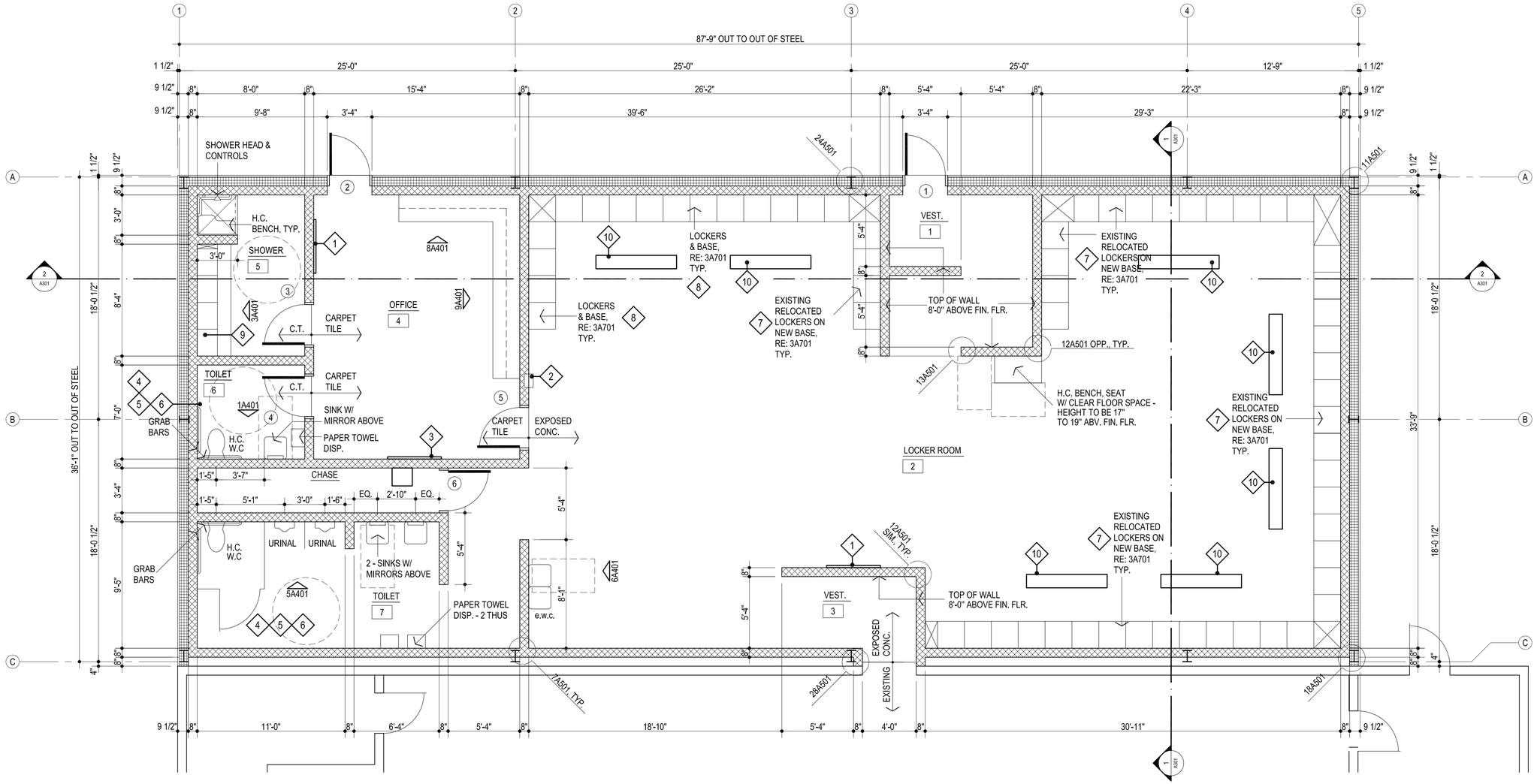
MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

A101

FIRE CODE FLOOR PLAN



1 FLOOR PLAN

1/4" = 1'-0" 3,197 s.f.

NORTH

NOTE: CONTRACTOR TO VERIFY THAT THE MOUNTING HEIGHTS OF ALL WALL MOUNTED FIXTURES (I.E. PLUMBING FIXTURES, GRAB BARS, MIRRORS, ETC.) MEET ALL APPLICABLE CODES & STANDARDS PRIOR TO INSTALLATION.

DENOTES ROOM NAME
DORM ROOM
102
DENOTES ROOM NUMBER

102
DENOTES DOOR NUMBER

MISCELLANEOUS NOTES:

1. F.E.C. - FIRE EXTINGUISHER AND CABINET

ITEM NO.	CFI	OF / CI	OF / OI	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER MODEL NO.	REMARKS
1	●			MARKERBOARD - 4'-0"	BEST-RITE CHALKBOARD CO.	RE: SPECS	W/ CHALK RAIL
2	●			FIRE EXTINGUISHER & CABINET	JL INDUSTRIES	RE: SPECS	
3	●			TACKBOARD - 4'-0"	BEST-RITE CHALKBOARD CO.	RE: SPECS	
4		●		TOILET PAPER HOLDER		RE: SPECS	
5		●		PAPER TOWEL DISPENSER		----	
6		●		SOAP DISPENSER		----	
7	●			EXISTING LOCKERS		----	45 EXISTING LOCKERS TO BE RELOCATED
8	●			LOCKERS - DOUBLE TIER	REPUBLIC LOCKERS	RE: SPECS	15 NEW LOCKERS
9	●			LOCKERS - COACHES	REPUBLIC LOCKERS	RE: SPECS	4 NEW LOCKERS
10	●			MOVEABLE BENCH	REPUBLIC LOCKERS	RE: SPECS	

2 EQUIPMENT SCHEDULE

NOTE:

ALL CHALKBOARDS & TACKBOARDS MOUNTED @ EXTERIOR WALLS SHALL HAVE "STAND-OFF" MOUNTING BRACKETS TO PREVENT CONDENSATION BEHIND BOARDS.

LEGEND :

4 · CONTRACTOR FURNISHED AND INSTALLED (CFI)

4 · OWNER FURNISHED AND CONSTRACTOR INSTALLED (OF / CI)

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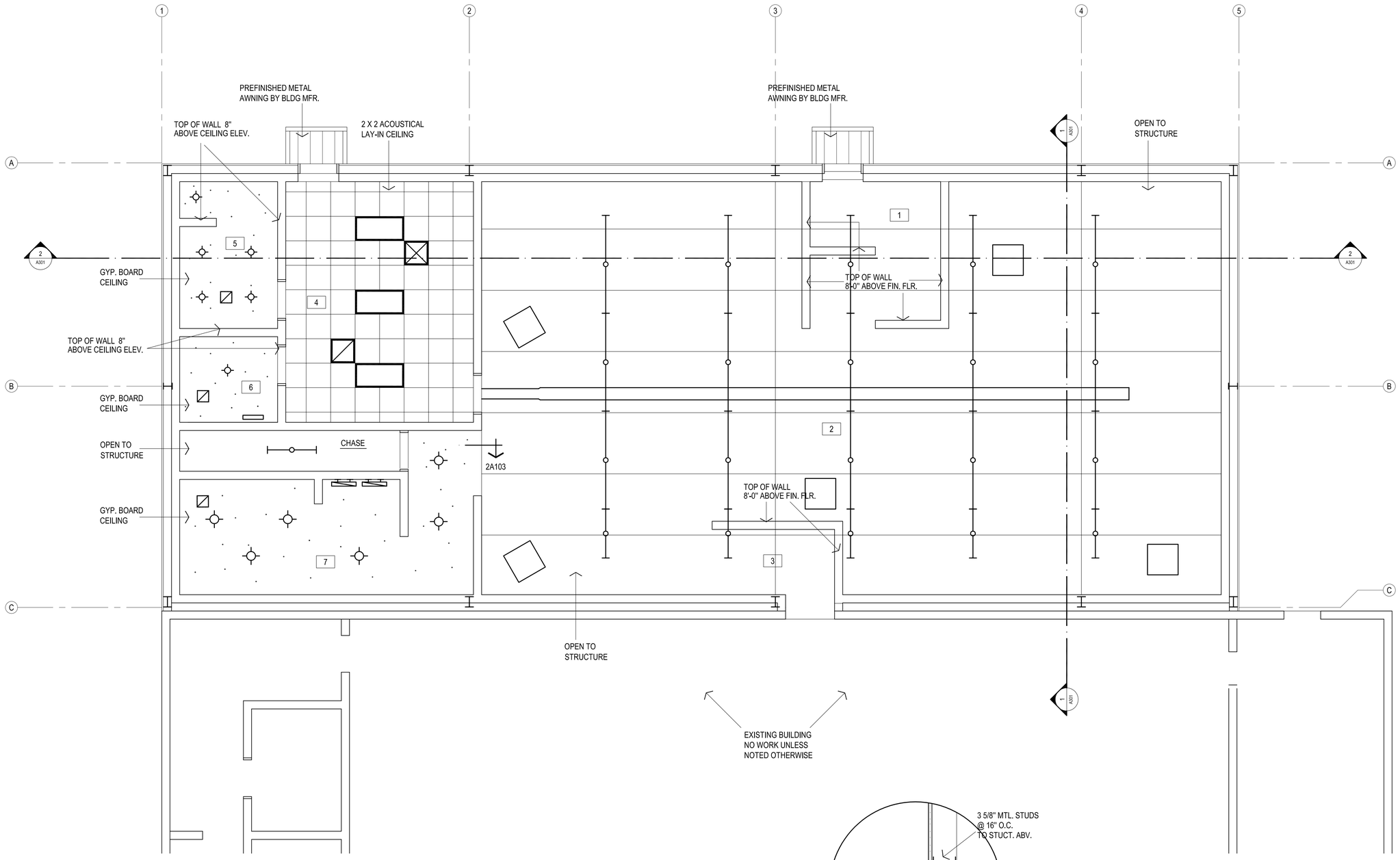
A102

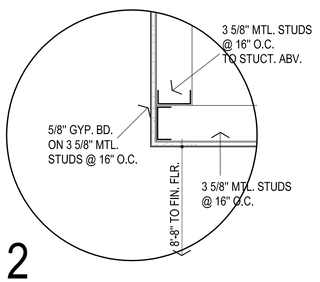
FLOOR PLAN



NORTH

1 REFLECTED CEILING PLAN

1/4" = 1'-0"



2

LEGEND:

- MECHANICAL OPENINGS
- ELECTRICAL FIXTURES
- CEILING MOUNTED SMOKE DETECTOR, RE: ELEC

NOTES:

1. REFER MECHANICAL & ELECTRICAL FOR ANY ADDITIONAL CEILING MOUNTED FIXTURES
2. REFER TO SHEET A100 FOR LOCATIONS OF FIRE-RATED WALLS
3. T.O.W. - TOP OF WALL: ALL OTHER WALL TO CLOSEOUT TO STRUCTURE / DECK ABOVE

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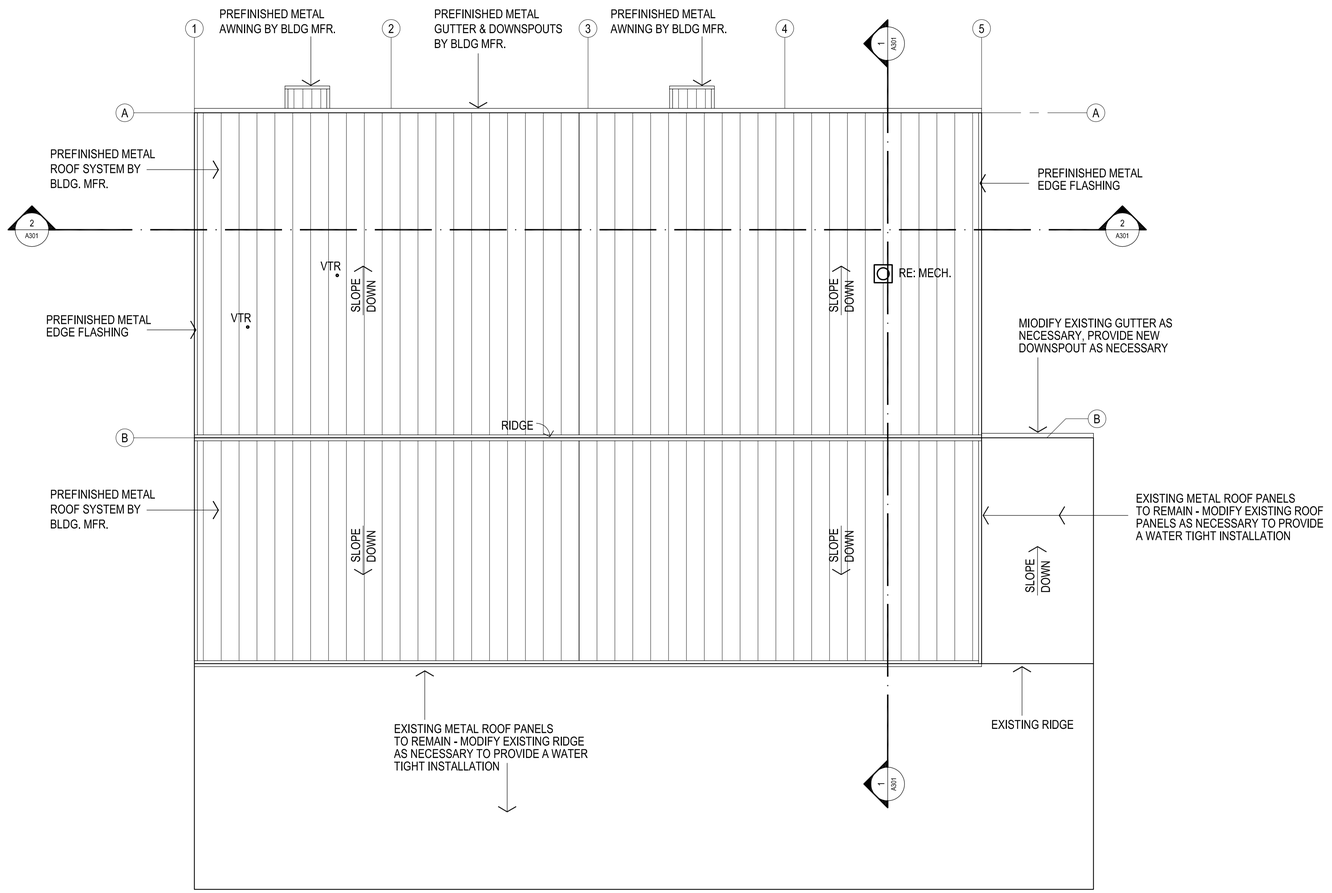
LOCKER ROOM ADDITION
MOORE WEST JUNIOR HIGH SCHOOL

sheet no:

A103

REFLECTED CEILING PLAN



NORTH

1 ROOF PLAN

1/8" = 1'-0"

NOTES:

1. RE: MECH & ELEC. FOR ADDITIONAL ROOF MOUNTED ITEMS. CONTRACTOR TO COORDINATE ALL ROOF MOUNTED ITEMS & PENETRATIONS W/ APPLICABLE TRADES. PROVIDE "CRICKETS" AT HIGH SIDE OF ALL CURBS.
2. CONTRACTOR TO COORDINATE ROOF VENT PENETRATIONS W/ ARCHITECT.
3. CONTRACTOR TO COORDINATE ALL NEW PRE-ENGINEERED BUILDING COMPONENTS & TIE-INS TO EXISTING STRUCTURE, FIELD VERIFY ALL DIMENSIONS, AND NOTIFY / CONSULT W/ ARCHITECT IF ANY DISCREPANCIES ARE FOUND. NEW STRUCTURE CONNECTIONS TO EXISTING SHALL MEET ALL APPLICABLE CODES & STANDARDS & DESIGNED / ENGINEERED BY PEMB MANUFACTURER.

ALTERNATE #1

REMOVE EXISTING PREFINISHED METAL ROOF PANEL SYSTEM & EXISTING PREFINISHED METAL WALL PANEL SYSTEM AND ALL ASSOCIATED TRIM, GUTTER & DONWSPOUTS, FLASHING, ETC AND PROVIDE ALL NEW MATERIALS FOR A COMPLETE INSTALLATION RE: SHEET A201 FOR ADDITIONAL INFORMATION

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ADDITION
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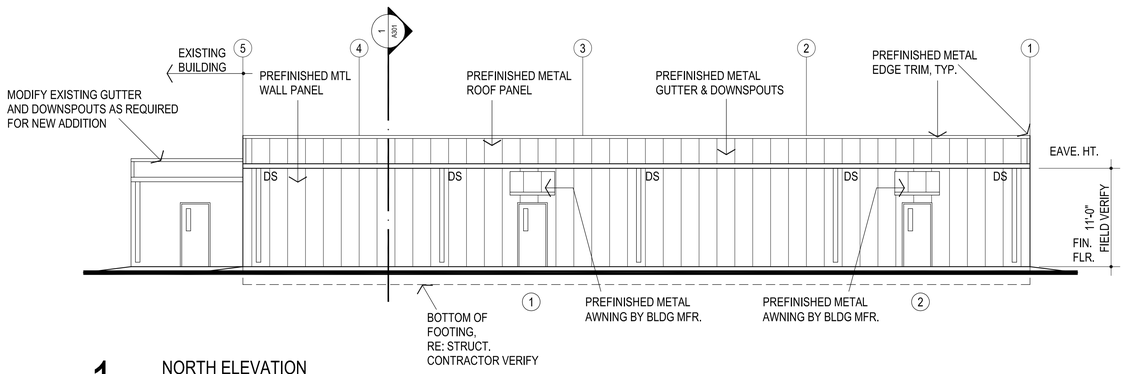
JUNIOR HIGH SCHOOL

sheet no:

A104

ROOF PLAN



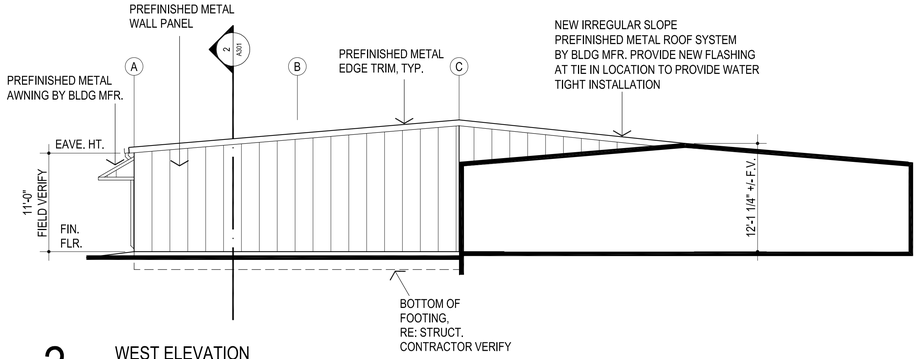
1 NORTH ELEVATION

1/8" = 1'-0"

REFER STRUCTURAL DRAWINGS FOR TOP OF FOOTING ELEVATIONS - PROVIDE ALL MATERIALS REQUIRED FOR WALL SYSTEM TO EXTEND TO TOP OF FOOTING

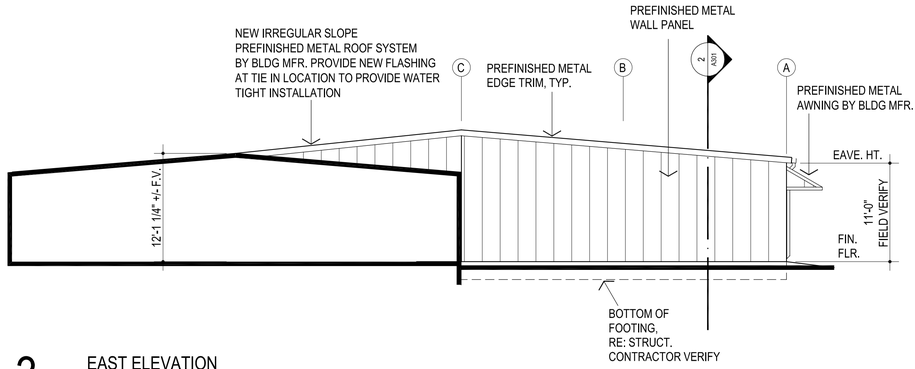
ALTERNATE #1

REMOVE EXISTING PREFINISHED METAL ROOF PANEL SYSTEM & EXISTING PREFINISHED METAL WALL PANEL SYSTEM AND ALL ASSOCIATED TRIM, GUTTER & DONWSPOUTS, FLASHING, ETC AND PROVIDE ALL NEW MATERIALS FOR A COMPLETE INSTALLATION RE: SHEET A104 FOR ADDITIONAL INFORMATION



2 WEST ELEVATION

1/8" = 1'-0"



3 EAST ELEVATION

1/8" = 1'-0"

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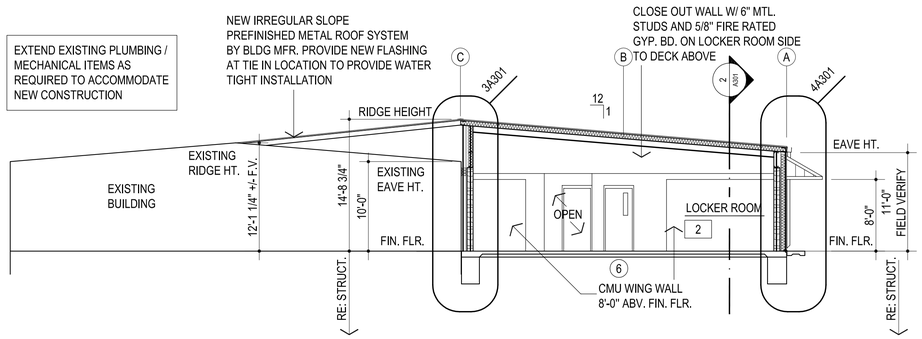
MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

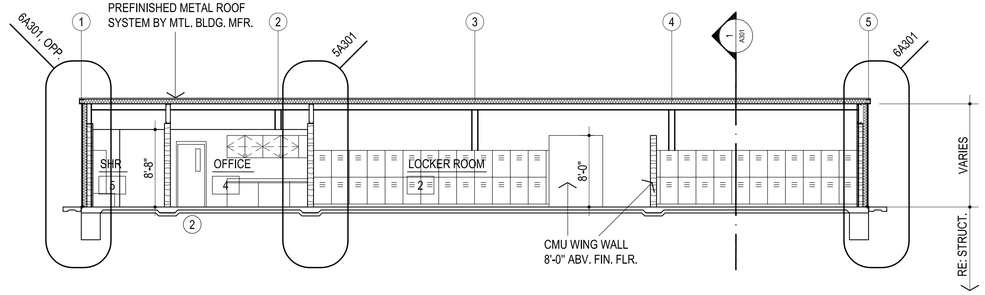
A201

BUILDING ELEVATIONS



1 BUILDING SECTION

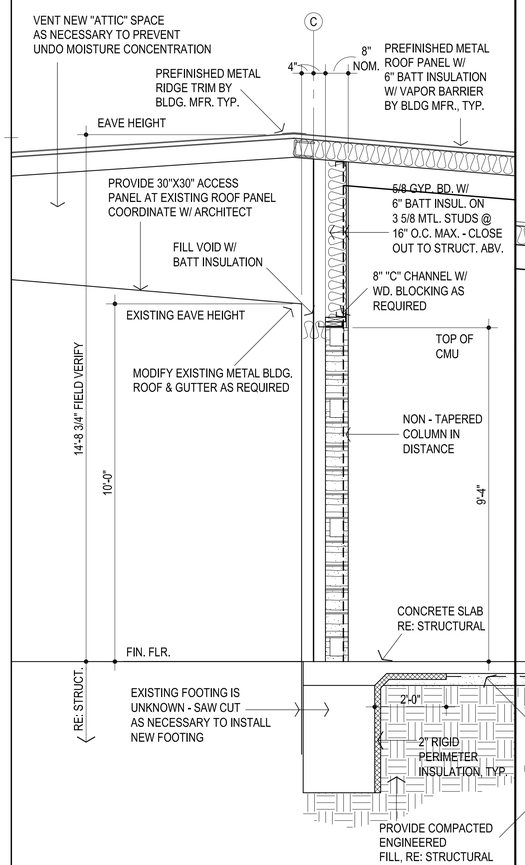
1/8" = 1'-0"



2 BUILDING SECTION

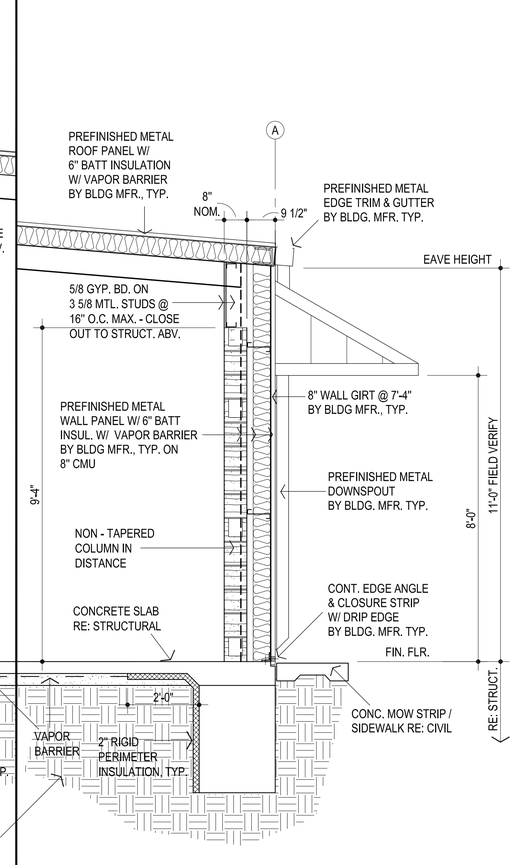
1/8" = 1'-0"

REFER STRUCTURAL DRAWINGS FOR TOP OF FOOTING ELEVATIONS - PROVIDE ALL MATERIALS REQUIRED FOR WALL SYSTEM TO EXTEND TO TOP OF FOOTING



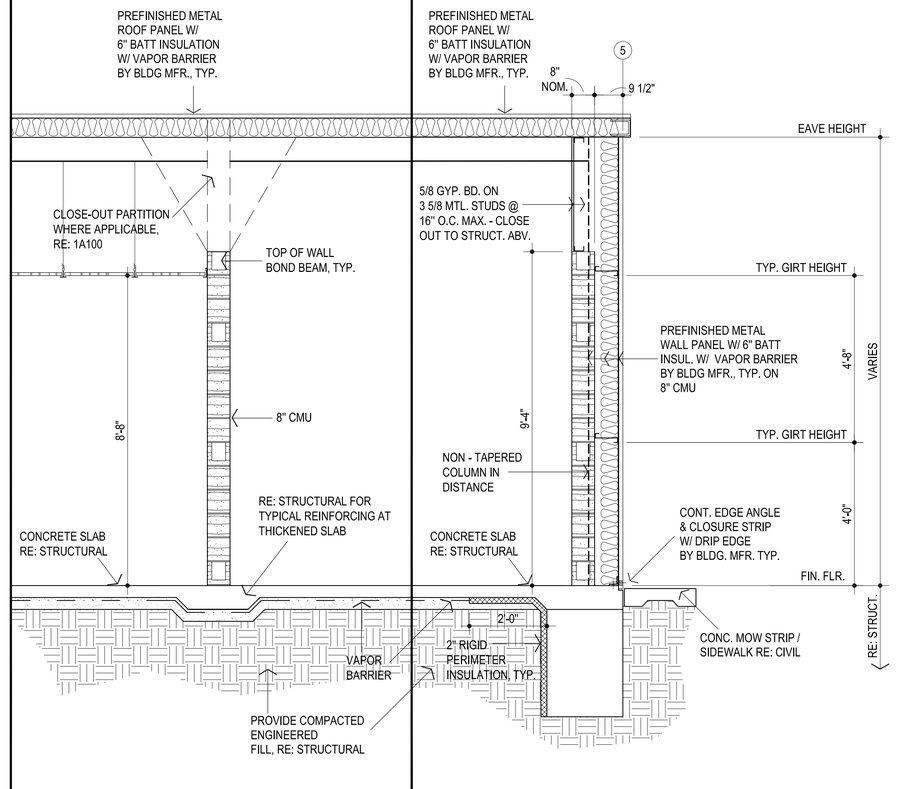
3 WALL SECTION

1/2" = 1'-0"



4 WALL SECTION

1/2" = 1'-0"



5 WALL SECTION

1/2" = 1'-0"

6 WALL SECTION

1/2" = 1'-0"

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2639
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REGISTERED PROFESSIONAL ENGINEER
5/13/23

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MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

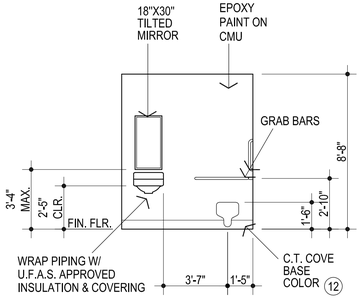
MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM ADDITION
MOORE WEST JUNIOR HIGH SCHOOL

sheet no:

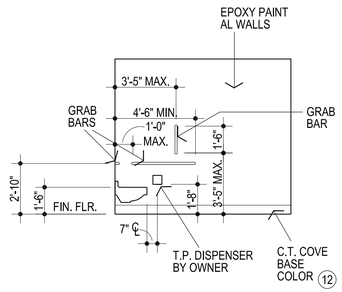
A301

BUILDING / WALL SECTION



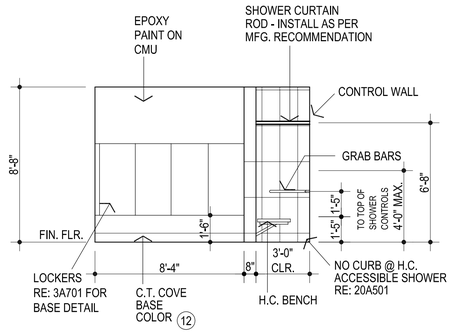
1 TYPICAL TOILET

1/4" = 1'-0"



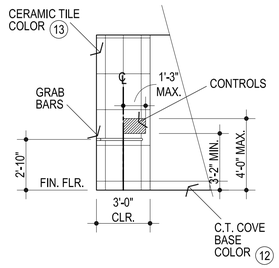
2 HANDICAP ACCESSIBLE W.C.

1/4" = 1'-0"



3 TYP. SHOWER ROOM

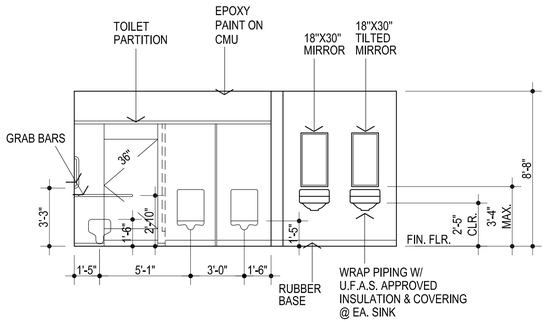
1/4" = 1'-0"



4 TYPICAL H.C. SHOWER CONTROL WALL

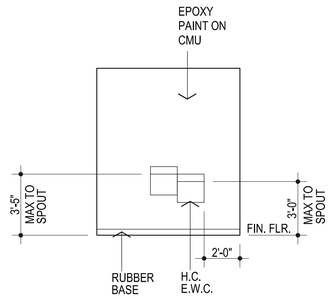
1/4" = 1'-0"

NOTE: CONTRACTOR TO VERIFY THAT THE MOUNTING HEIGHTS OF ALL WALL MOUNTED FIXTURES (I.E. PLUMBING FIXTURES, GRAB BARS, MIRRORS, ETC.) MEET ALL APPLICABLE CODES & STANDARDS PRIOR TO INSTALLATION.



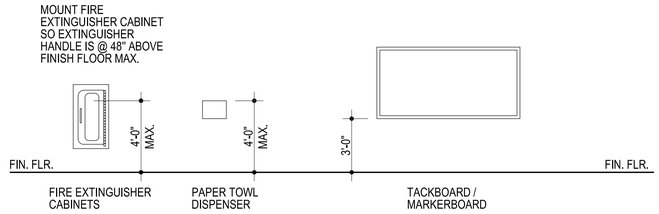
5 N. WALL ROOM #7

1/4" = 1'-0"



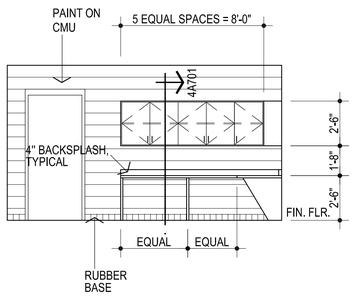
6 W. WALL ROOM #2

1/4" = 1'-0"



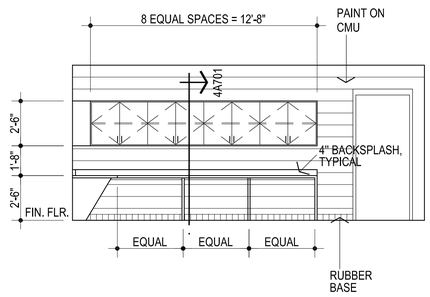
7 TYPICAL MOUNTING HEIGHTS

1/4" = 1'-0"



8 N. WALL ROOM #4

1/4" = 1'-0"



9 N. WALL ROOM #4

1/4" = 1'-0"

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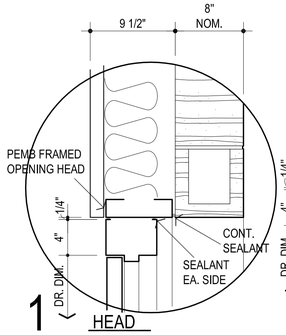
LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

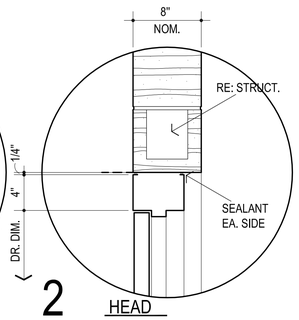
sheet no:

A401

INTERIOR ELEVATIONS



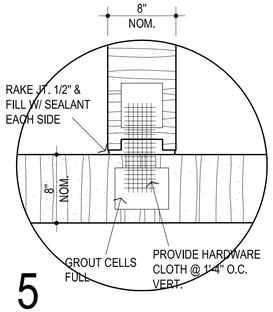
1 HEAD



2 HEAD

3 NOT USED

4 NOT USED



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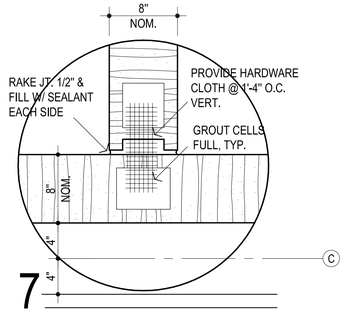
6 NOT USED



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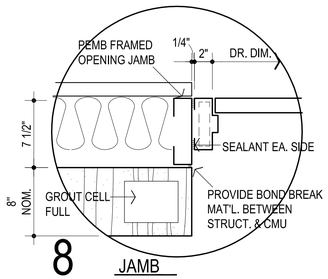
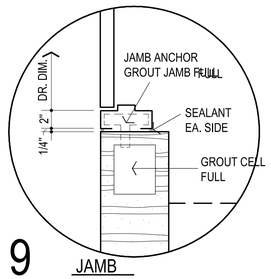
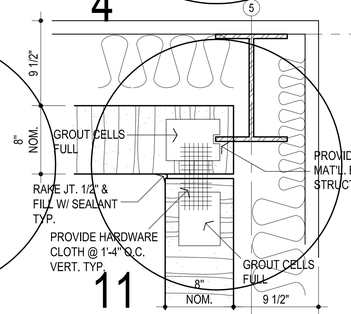


8 JAMB



9 JAMB

10 NOT USED



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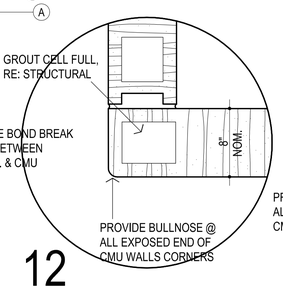

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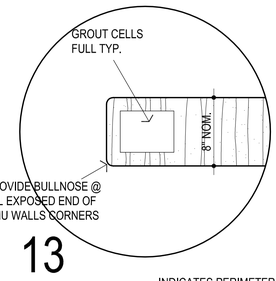

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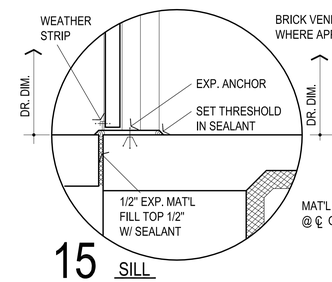
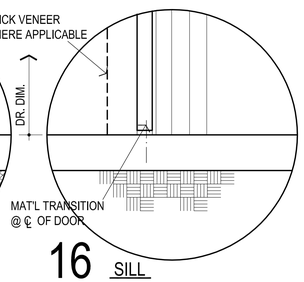
14 NOT USED

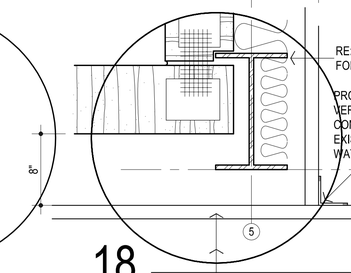


15 SILL



16 SILL

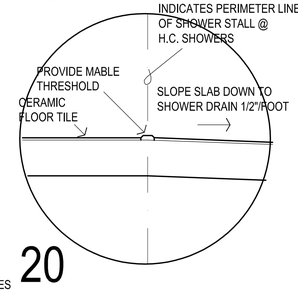
17 NOT USED



18

EXISTING WALL SYSTEM TO REMAIN

19 NOT USED

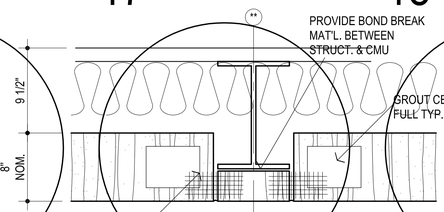


20

21 NOT USED

22 NOT USED

23 NOT USED



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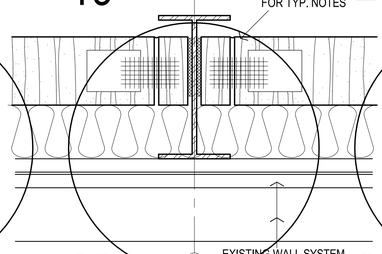
25 NOT USED



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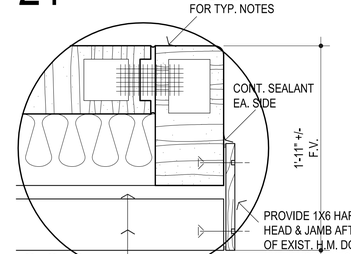
27 NOT USED



28

29 NOT USED

30 NOT USED

31 NOT USED

32 NOT USED

33 NOT USED

34 NOT USED

NOTES:

1. ALL DETAILS 1 1/2" = 1'-0" UNLESS NOTED OTHERWISE
2. GROUT FULL ALL H.M. JAMBS AT MASONRY WALLS UNLESS OTHERWISE NOTED
3. RE: ROOM FINISH SCHEDULE FOR FINISHES, FLOOR / WALL MATERIALS, ETC.

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MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

A501

DESCRIPTION	RM. NO.	FLOOR: CARPET TILE	FLOOR: EXPOSED CONC. W/ HARDENER	FLOOR: CERAMIC TILE	BASE: RUBBER	BASE: CERAMIC TILE	CEILING: 2'X2' ACOUST. LAY-IN (SQ.)	CEILING: GYP. BD.	CEILING: NONE	CLG. HT.	REMARKS	RM. NO.	WALLS: CONCRETE MASONRY UNIT	WALLS: C.I.T. @ SHOWER	PAINT / COLOR SCHEDULE: CLG.	WALLS: N	WALLS: E	WALLS: S	WALLS: W	REMARKS
VESTIBULE	1		○		○				●	---		1	●		(1)	(2)	(2)	(2)	(2)	(7)
LOCKER ROOM	2		○		○				●	---	EPOXY PAINT	2	●		(1)	(2)	(2)	(2)	(2)	(7)(16)(13) EPOXY PAINT
VESTIBULE	3		○		○				●	---		3	●		(1)	(2)	(2)	(2)	(2)	(7)
OFFICE	4	○			○		○			8'-8"		4	●		(14)	(2)	(2)	(2)	(2)	(6)(7)(8)(9)(16)(17)
SHOWER	5			○		○		●		8'-8"	EPOXY PAINT	5	●	⊠	(1)	(2)	(2)	(2)	(2)	(12)(12a)(13) EPOXY PAINT
TOILET	6			○		○		●		8'-8"	EPOXY PAINT	6	●		(1)	(2)	(2)	(2)	(2)	(12) EPOXY PAINT
TOILET	7		○		○			●		8'-8"	EPOXY PAINT	7	●		(1)	(2)	(2)	(2)	(2)	(7) EPOXY PAINT

1 ROOM FINISH SCHEDULE

⊠ SCHEDULE ORIENTED SAME AS PLAN

○ INDICATES MATERIAL IN A GIVEN AREA

⊠ MATERIAL ON ALL SURFACES

⊠ MATERIAL ON EACH INDIVIDUAL SURFACE

● IF CIRCLE IS BLACKENED - SURFACE TO RECEIVE PAINTER'S FINISH

○ IF CIRCLE IS BLANK - SURFACE OR MATERIAL IS PREFINISHED OR NOT PAINTED

PAINT:

(1) GYP. BOARD CEILINGS: SHERWIN-WILLIAMS - SW7006 - EXTRA WHITE
(2) WALLS - FIELD: SHERWIN-WILLIAMS - SW7008 - ALABASTER
(3) H.M. DOORS & FRAMES : SHERWIN-WILLIAMS - SW6992 - INKWELL
(4) MISCELLANEOUS METALS: SHERWIN-WILLIAMS - SW6992 -INKWELL
(5) NUMBER NOT USED

PREFINISHED COLORS:

(6) CARPET TILES: INTERFACE AE315 / 105813 IRON / BERRY
(7) RUBBER WALL BASE: ROPPE - BLACK
(8) SOLID SURFACE (COUNTERTOPS) : CORIAN - DEEP CAVIAR
(9) PLASTIC LAMINATE (FACING AND EDGING) : WILSONART - D315 - PLATINUM
(10) VINYL "T" EDGING: - TO BE SELECTED FROM MFR'S STANDARD COLORS
(11) MELAMINE: TO BE SELECTED FROM MFR'S STANDARD COLORS
(12) CERAMIC TILE FLOORS & BASE: DAL TILE - SYNCHRONIC - GREY SY33 MATTE
(12a) SHOWER CERAMIC TILE WALL: DAL-TILE - UNITY AVORIO P400 POLISHED
(13) METAL LOCKER: REPUBLIC - BLACK - TO BE SELECTED FROM MFR'S STANDARD COLORS
(14) 2 X 2 ACOUSTICAL LAY - IN TILES - SQUARE EDGE : REFER SPECIFICATIONS
(15) INTERIOR SIGNAGE: MOHAWK SIGN SYSTEMS - TO BE SELECTED BY ARCHITECT
(16) MARKERBOARD: BEST-RITE- WHITE
(17) TACKBOARD: BEST-RITE CHALKBOARD CO. -BR-015 - ANTIQUE WHITE

EXTERIOR COLORS:

(18) PREFINISHED METAL ROOF PANELS: COLOR TO BE SELECTED FROM MFR. STANDARD COLORS
(19) PREFINISHED METAL WALL PANELS / TRIM: COLOR TO BE SELECTED FROM MFR. STANDARD COLORS

2 COLOR SCHEDULE

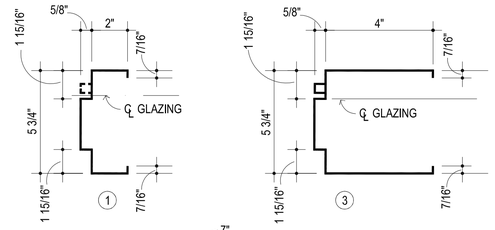
DOOR NO.	LOCATION: FROM	LOCATION: TO	DOOR ELEV.	DOOR MATL	DOOR SIZE: WIDTH	DOOR SIZE: HEIGHT	DOOR SIZE: TH'K	FRAME ELEV.	DOOR DETAILS: HEAD	DOOR DETAILS: SILL	DOOR DETAILS: JAMB	DOOR DETAILS: JAMB	REMARKS	HDWR. SET NO.
1	1	EXT.	A	H.M.	3'-0"	7'-0"	1 3/4"	A	1A501	15A501	8A501	8A501		3
2	4	EXT.	A	H.M.					1A501	15A501	8A501	8A501		3
3	4	5	B	H.M.					2A501	16A501	9A501	9A501		4
4	4	6	B	H.M.					2A501	16A501	9A501	9A501		4
5	2	4	A	H.M.					2A501	16A501	9A501	9A501	20 MIN DOOR & FRAME	1
6	CHS	2	B	H.M.	3'-0"	7'-0"	1 3/4"	A	2A501	16A501	9A501	9A501	20 MIN DOOR & FRAME	2

3 DOOR SCHEDULE

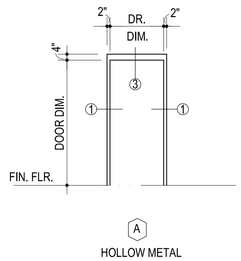
G1 7/8" NOM. TEMPERED INSULATING GLASS

G2 1/4" CLEAR TEMPERED GLASS

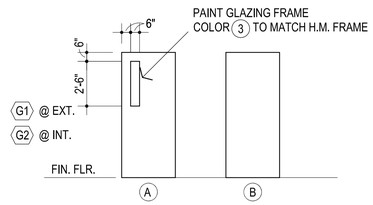
4 GLAZING SCHEDULE



5 FRAME PROFILES



6 FRAME ELEVATIONS



7 DOOR ELEVATIONS

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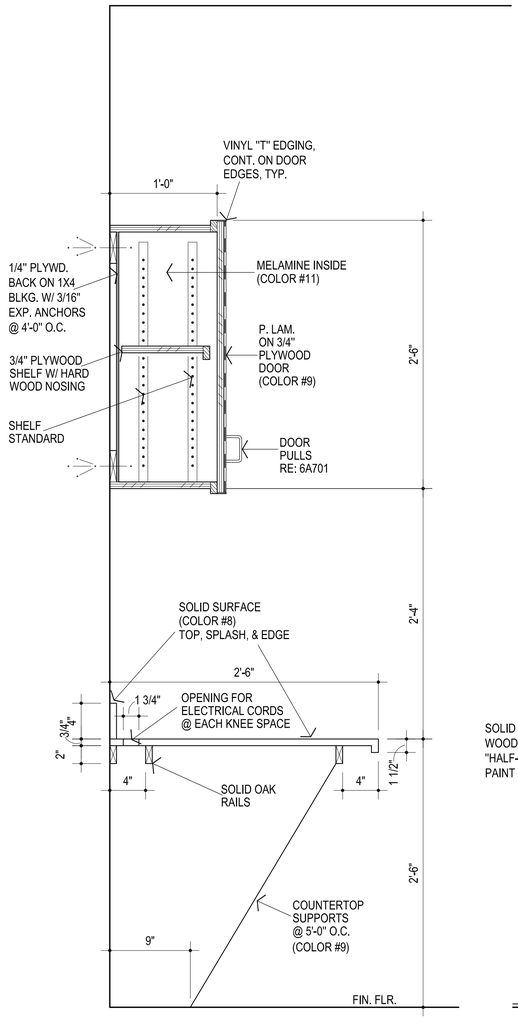
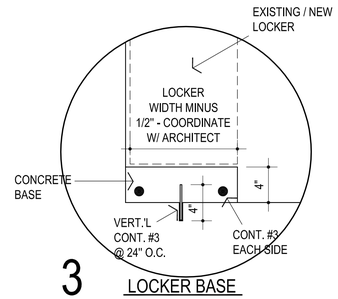


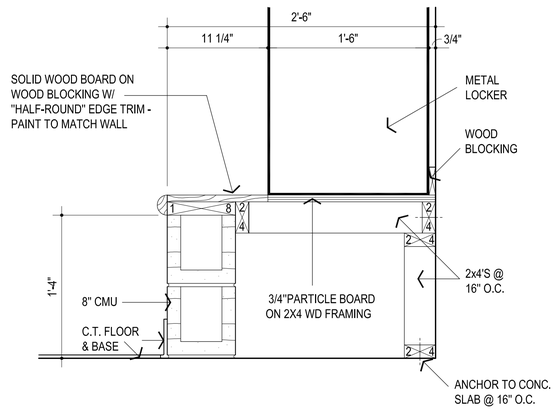
1 COUNTER W/ WALL CABINET

1 1/2" = 1'-0"



3 LOCKER BASE

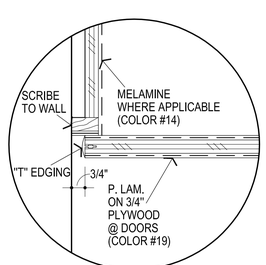
PROVIDE @ ALL LOCATIONS TO RECEIVE LOCKERS



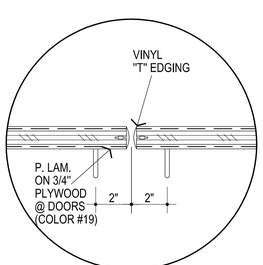
2 LOCKER SUPPORT / SEAT

1 1/2" = 1'-0"

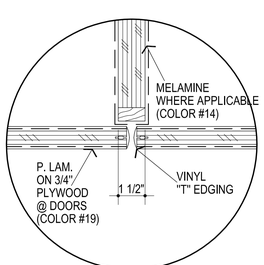
4 NUMBER NOT USED



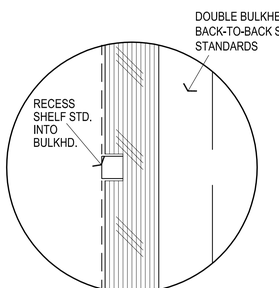
5 DOOR @ WALL



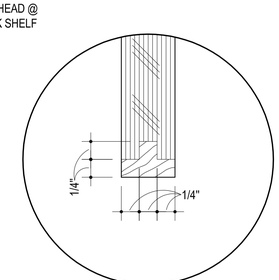
6 PULLS



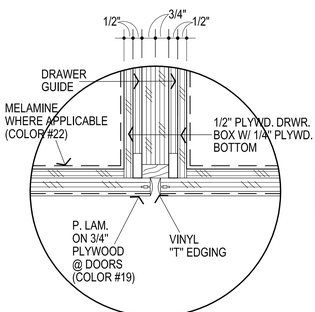
7 DOORS @ STILE



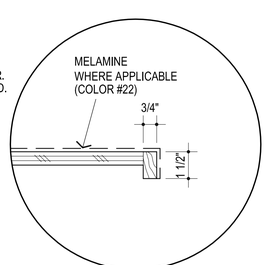
8 RECESSED STANDARDS



9 HARDWOOD EDGE



10 DRWR. TO DRWR.



11 SHELF EDGE

NOTES:

1. ALL DETAILS 3" = 1'-0" UNLESS NOTED OTHERWISE.
2. RE: ROOM FINISH SCHEDULE FOR FINISHES, FLOOR / WALL MATERIALS, ETC.

FRAMELESS CABINET / EUROPEAN CONSTRUCTION IS ACCEPTABLE

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REGISTERED ARCHITECT
5/13/23

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MOORE PUBLIC SCHOOLS
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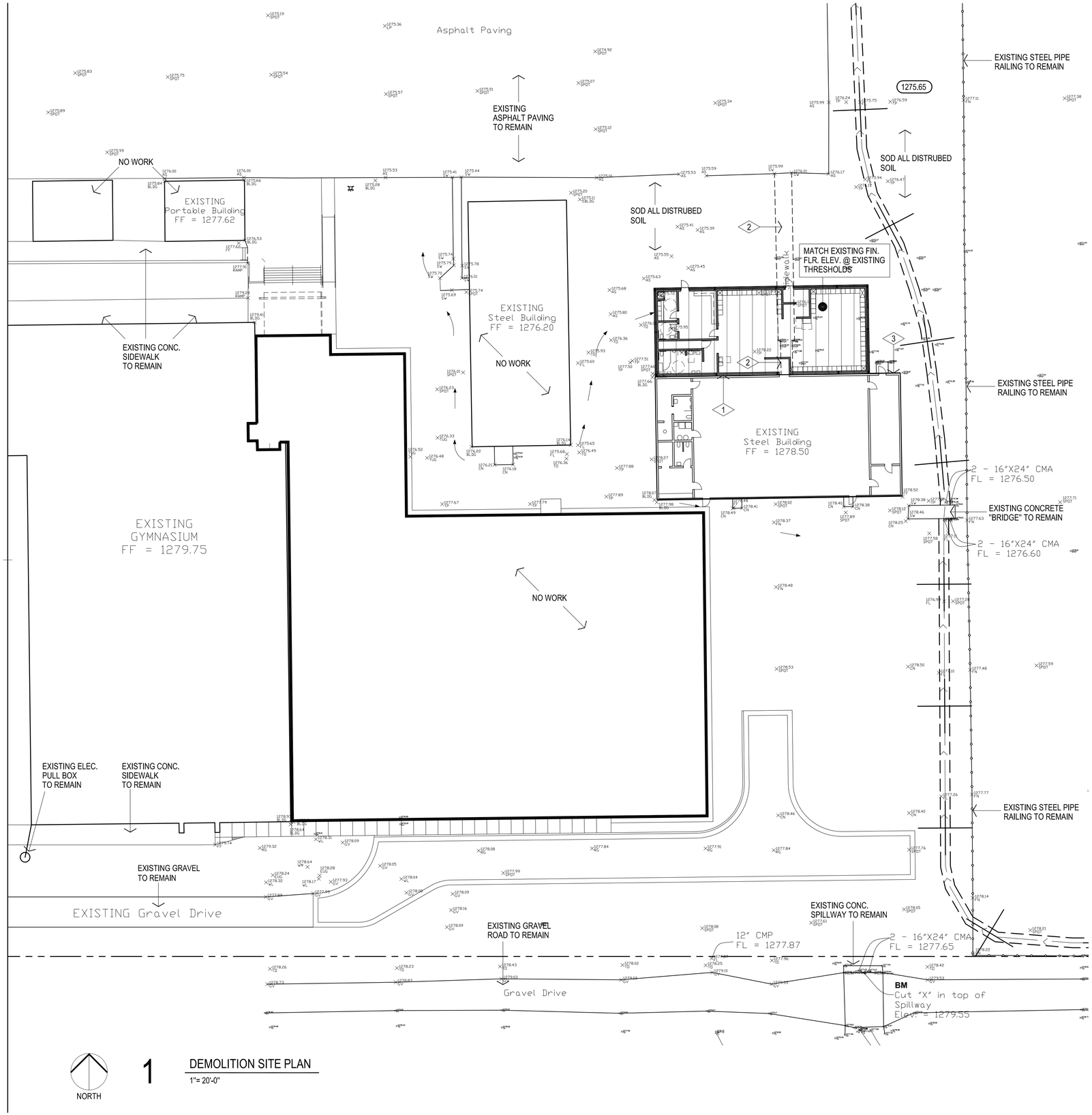
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

A701



1 DEMOLITION SITE PLAN

1"= 20'-0"

GENERAL NOTES:

1. FILL, GRADE, & PREPARE ALL EXCAVATED AREAS TO RECEIVE NEW SITE FEATURES.
2. CONTRACTOR TO VISIT SITE PRIOR TO PREPARING BID, & VERIFY ALL ITEMS TO BE DEMOLISHED. ANY ADDITIONAL ITEMS REQUIRING DEMOLITION THAT ARE NOT INCLUDED IN THESE DOCUMENTS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT AND INCLUDED IN THE BASE BID.
3. EXISTING UNDERGROUND UTILITY LOCATIONS & CONTOUR INFORMATION HAVE BEEN OBTAINED FROM THE BEST AVAILABLE SOURCES. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK & COORDINATE W/ ARCHITECT.
4. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ELEVATIONS PRIOR TO STARTING EARTHWORK - AND ADJUST ACCORDINGLY AS DIRECTED BY THE ARCHITECT.
5. DURING ALL EXISTING UTILITY REVISIONS - TEMPORARY SERVICE IS TO BE PROVIDED @ ALL EFFECTED BUILDINGS.
6. ALL SALVAGEABLE ITEMS TO REMAIN OWNER'S PROPERTY & SHALL BE STORED OR DISPOSED OF AS PER OWNER'S INSTRUCTIONS.
7. CONSTRUCTION SHALL MEET ALL APPLICABLE CODES, ORDINANCES, REGULATIONS & STANDARDS REQUIRED BY THE CITY OF OKLAHOMA CITY, OKLAHOMA.
8. CONSTRUCTION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE AMERICANS W/ DISABILITIES ACT INCLUDING ANY SUPPLEMENTAL REQUIREMENTS BY THE CITY OF OKLAHOMA CITY, OKLAHOMA.
9. CONTRACTOR SHALL COORDINATE ACCESS TO SITE W/ OWNER PRIOR TO STARTING WORK. OBTAIN APPROVAL FROM OWNER FOR ON-SITE MATERIAL STORAGE, ETC. CONTRACTOR SHALL PROVIDE PROPER SEPARATION BTWN. WORK & STUDENTS.

DEMOLITION NOTES:

1. REMOVE ALL EXISTING WALL MOUNTED ITEMS TO BE SALVAGED. COORDINATE W/ ARCHITECT & OWNER.
2. DEMOLISH EXISTING CONCRETE SIDEWALKS & STEPS TO LIMITS INDICATED. FILL & COMPACT VOIDS & PREPARE FOR ADDITION. WHERE APPLICABLE, PROTECT EXISTING CONCRETE SIDEWALKS TO REMAIN. REPAIR / REPLACE ANY SIDEWALKS DAMAGED DURING CONSTRUCTION W/ NEW TO MATCH EXISTING.
3. REMOVE EXISTING DOWNSPOUTS. MODIFY / REPLACE EXISTING GUTTER AS REQUIRED FOR POSTIVE DRAINAGE TO NEW DOWNSPOUT LOCATION MATCH EXISTING SIZE, MATERIAL, ETC, RE: A201

REFER CIVIL DRAWINGS BY WDB ENGINEERING PLLC FOR ADDITIONAL INFORMATION

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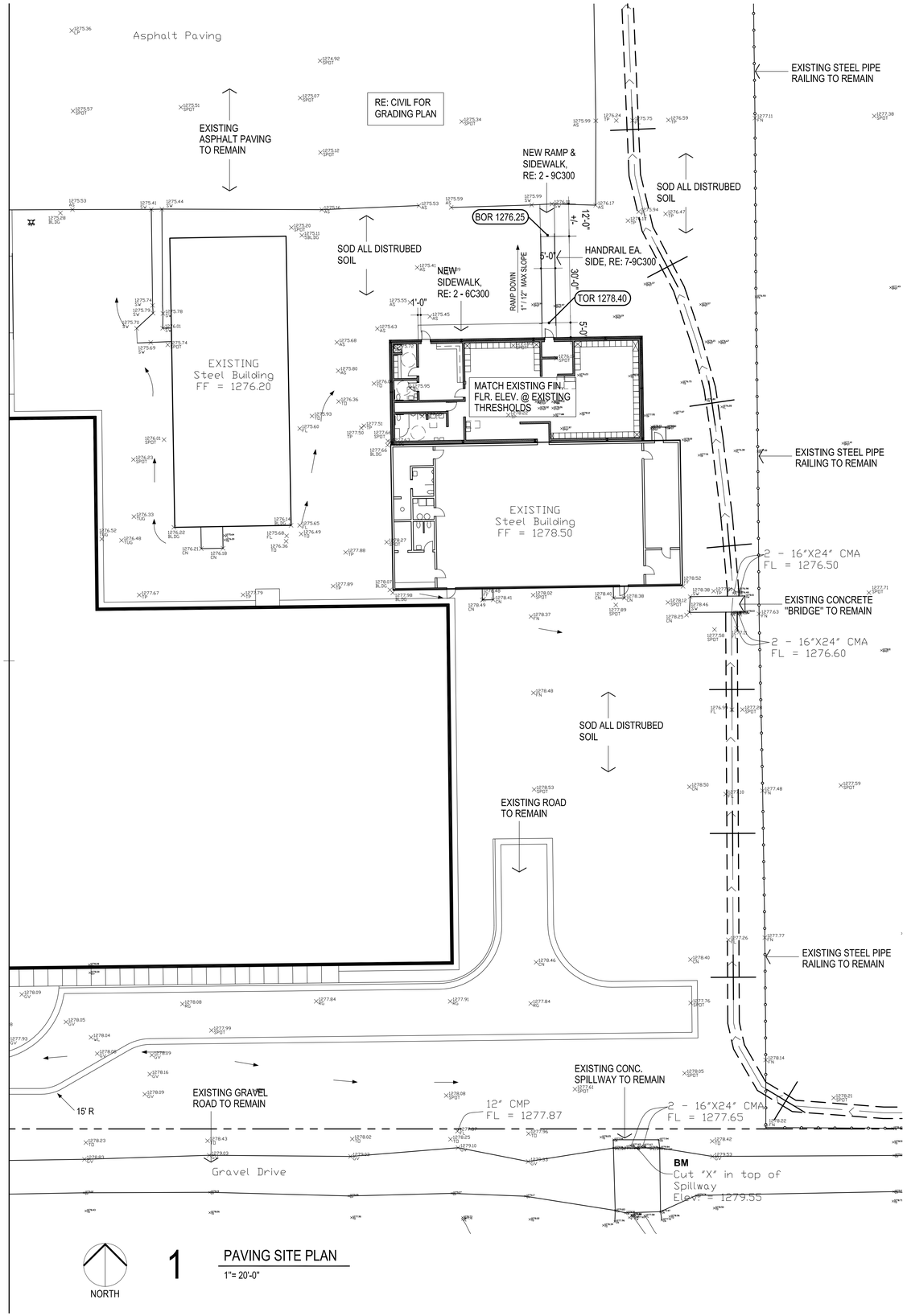
MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM ADDITION
MOORE WEST JUNIOR HIGH SCHOOL

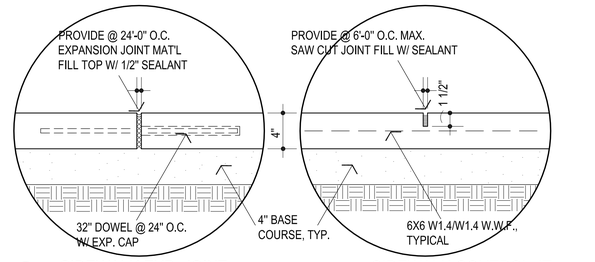
sheet no:

C100



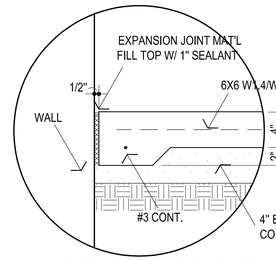
1 PAVING SITE PLAN

1"= 20'-0"

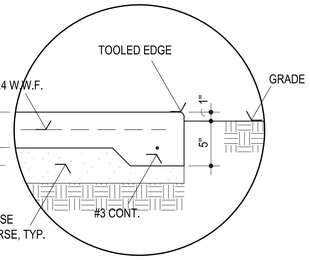


2 SIDEWALK EXP. JOINT

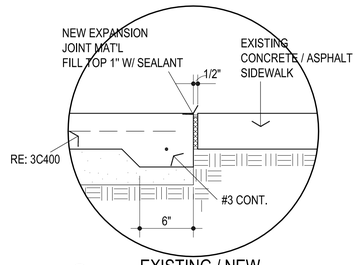
3 SIDEWALK CONTROL JT.



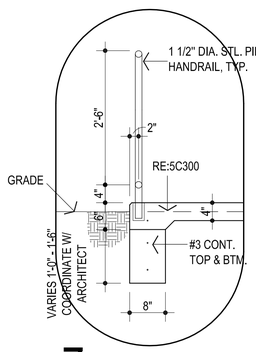
4 SIDEWALK @ VERT. SURF.



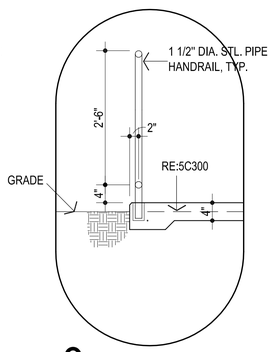
5 SIDEWALK EDGE



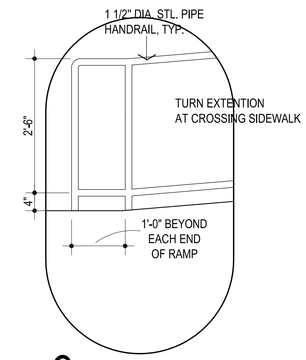
6 EXISTING / NEW CONCRETE SIDEWALK



7 RAMP EDGE



8 HANDRAIL



9 HANDRAIL EXTENTION

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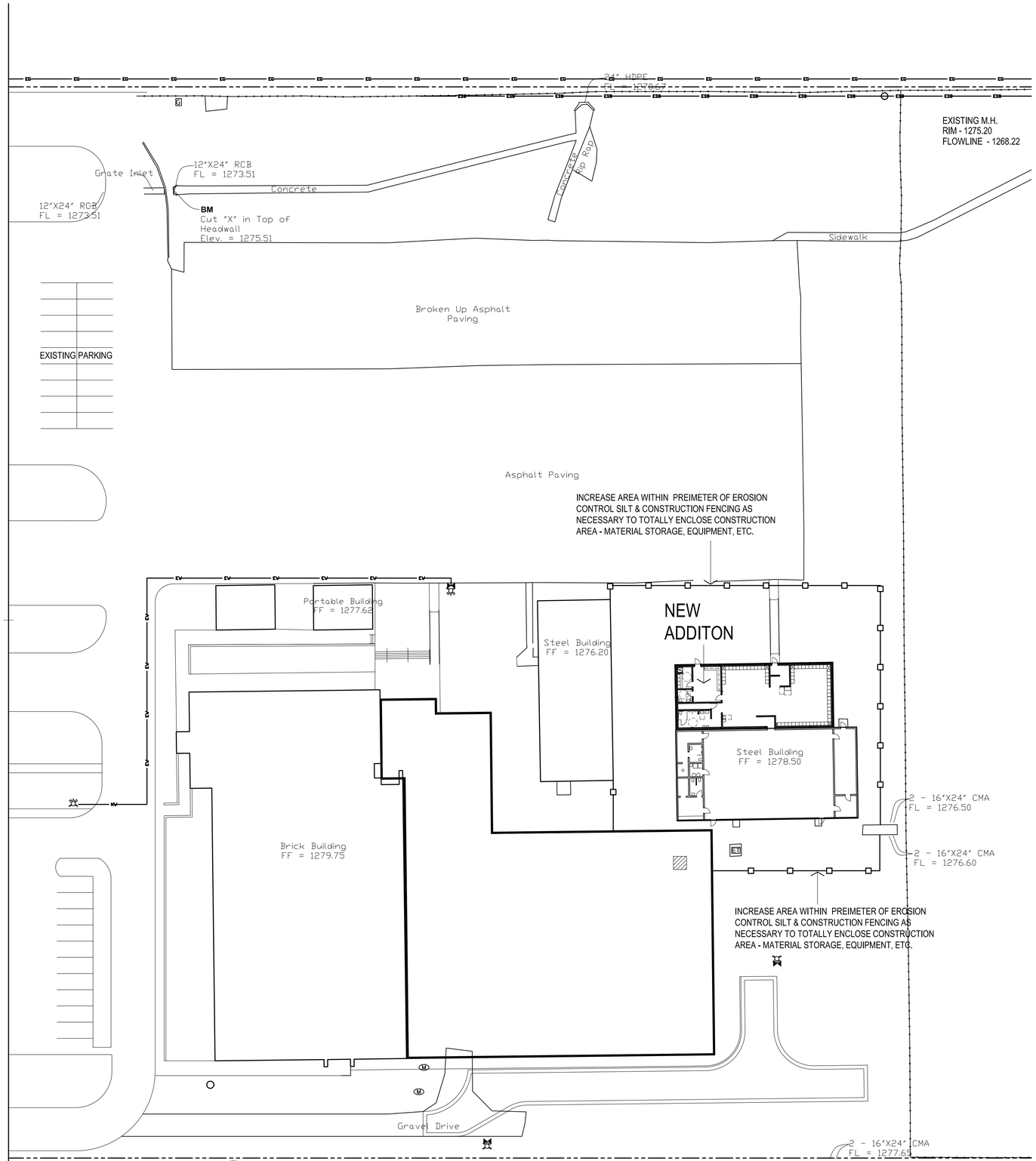
MOORE WEST JUNIOR HIGH SCHOOL

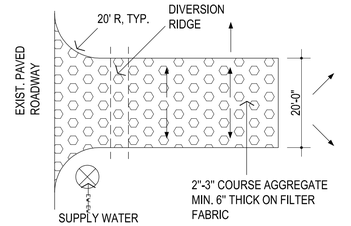
sheet no:

C300



1 EROSION CONTROL PLAN

1"= 30'-0"



NOTE:
COORDINATE ACCESS DRIVE LOCATION W/ OWNER AND ARCHITECT

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY , WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZE WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. USE SANDBAGS, STRAW BALES OR OTHER APPROVED METHODS TO CHANNELIZE RUNOFF TO BASIN AS REQ.'D
5. DIVERSION RIDGE REQUIRED WHERE GRADE EXCEEDS 2%

LEGEND

- SILT FENCE & CONSTRUCTION FENCE
- DRAINAGE DIRECTIONAL FLOW

EROSION CONTROL GENERAL NOTES

1. INSTALL PERIMETER EROSION CONTROL DEVICES PRIOR TO REMOVING TOP SOIL OR BEGINNING GRADING ACTIVITIES.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE IN AN AREA DRAINING INTO THE POLLUTION CONTROL SYSTEM
3. AFTER ALL PRECIPITATION OF 0.5 INCHES OR GREATER, EROSION CONTROL FACILITIES SHALL BE INSPECTED AND MAINTAINED AS NECESSARY. COMPLETED INSPECTION FORMS SHALL BE KEPT ON SITE AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST.
4. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES AT LEAST ONCE EVERY 7 DAYS. COMPLETED INSPECTION FORMS SHALL BE KEPT ON SITE AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
6. A COPY OF THE EROSION CONTROL SITE PLAN MUST BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST.
7. MAINTAIN ALL FACILTIES UNTIL ALL PAVEMENT AND/OR GROUND COVER IS ESTABLISHED. ANY DISTURBED AREA WHICH WILL NOT SEE CONSTRUCTION ACTIVITY FOR 21 DAYS OR MORE SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 14 DAYS OF THE LAST DISTURBANCE.
8. A PERSON IN RESPONSIBLE CHARGE SHALL BE AVAILABLE DURING CONSTRUCTION HOURS TO SUPERVISE IMPLEMENTATION AND MAINTENANCE OF THE POLLUTION PREVENTION PLAN AND TO ASSIST WITH INSPECTIONS BY ANY REGULATORY AGENCY.
9. AFTER COMPLETION OF CONSTRUCTION, REMOVE ALL CONTROL DEVICES & MATERIALS. FILL, COMPACT, & GRADE ALL DISTURBED SOIL & RE-SOD.

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MOORE Public Schools
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LOCKER ROOM ADDITION MOORE WEST JUNIOR HIGH SCHOOL

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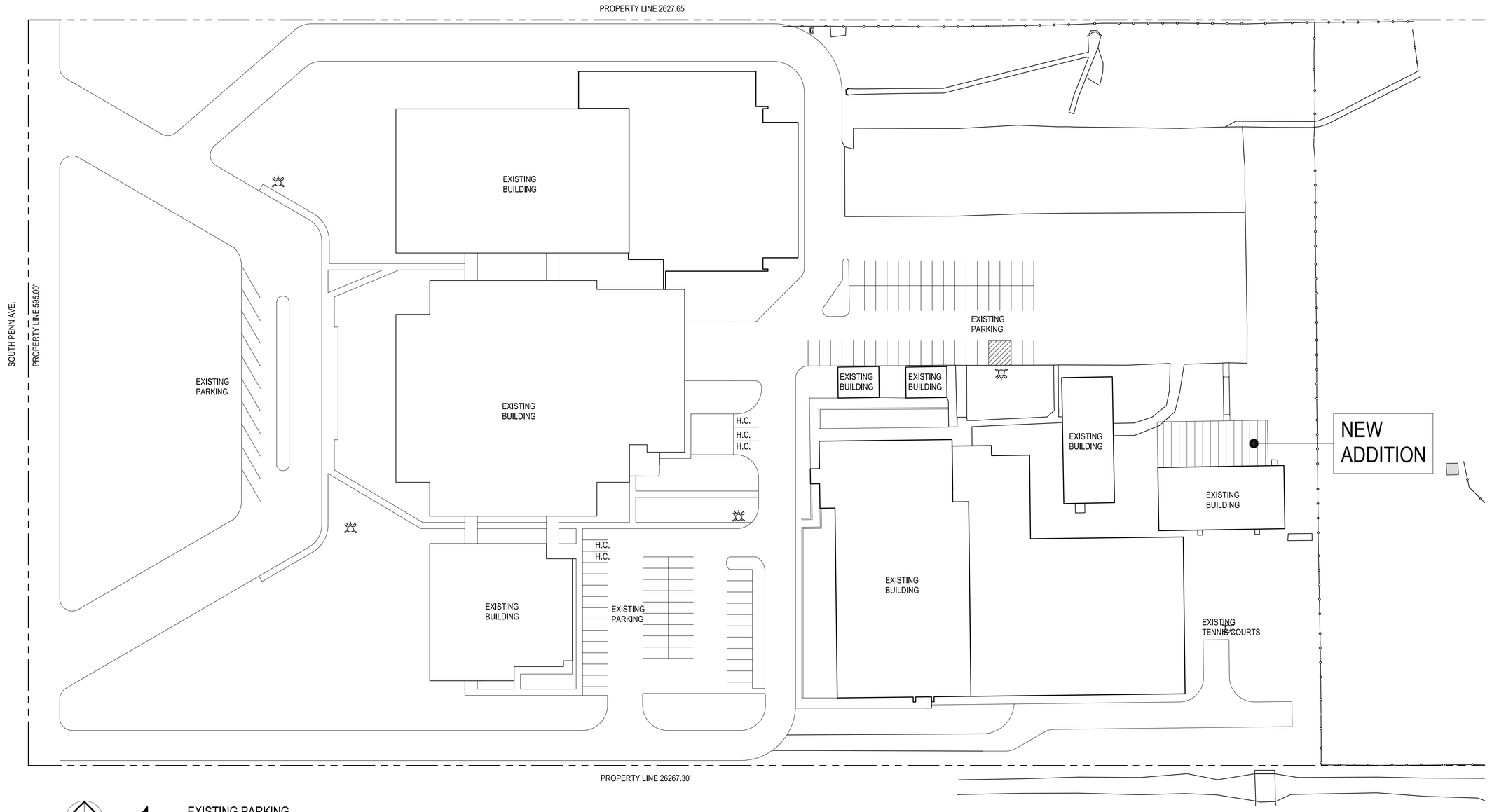
C601



NORTH

1 EXISTING PARKING

1" = 40'-0"

PARKING CALCULATIONS :

EXISTING PARKING SPACES 110 INCL. 5 H.C.
TOTAL BUILDING (NEW + EXIST.)
772 CLASSROOM SEATS + ADMINISTRATION / 10 = 78 TOTAL SPACES INCL. 5 H.C. REQUIRED

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LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

C700

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CLEVELAND COUNTY MOORE, OKLAHOMA

LOCKER ROOM ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

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REGISTERED ARCHITECT
5/13/23

CONSTRUCTION MANAGER

OMNI CONSTRUCTION

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INDEX TO DRAWINGS

LOCKER ROOM ADDITION
MOORE WEST JUNIOR HIGH SCHOOL
SET NO.

MECHANICAL/ELECTRICAL/PLUMBING

SALAS O'BRIEN

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WDB ENGINEERING PLLC

6330 SE 74th St,
OKLAHOMA CITY, OK 73135

revisions:

sheet no: C

date: MAY 2023

LIGHT FIXTURE SCHEDULE				
TYPE	SYMBOL	DESCRIPTION	MANUFACTURER	REFERENCE CATALOG #
A		2X4 LED RECESSED TROFFER. 36.8W, 4679 LUMENS, 3500K CCT, 80 CRI. 0-10V DIMMING.	LITHONIA	CPX 2X4 ALO8 80CRI SWW7 SWL MVOLT
AE		2X4 LED RECESSED TROFFER. 36.8W, 4679 LUMENS, 3500K CCT, 80 CRI. 0-10V DIMMING. 90 MIN BATTERY BACK-UP.	LITHONIA	CPX 2X4 ALO8 80CRI SWW7 SWL MVOLT E10WLCP
C1		6" RECESSED LED DOWNLIGHT. 13W, 1378 LUMENS, 3500K CCT, 80 CRI. IC RATED, 0-10V DIMMING.	LITHONIA	LBR6 NCH ALO2 SWW1 AR LSS WD MVOLT UGZ WL
C1E		6" RECESSED LED DOWNLIGHT. 13W, 1378 LUMENS, 3500K CCT, 80 CRI. IC RATED, 0-10V DIMMING. 90 MIN BATTERY BACK-UP	LITHONIA	LBR6 NCH ALO2 SWW1 AR LSS WD MVOLT UGZ E10WCPR WL
EX		LED EXIT SIGN, BRUSHED ALUMINUM SINGLE FACE WITH RED LETTERS. UNIVERSAL FACE AND MOUNTING. 90 MIN BATTERY BACK-UP.	LITHONIA	LV S W 1 R 120/277 EL N SD
EX1		LED EXIT SIGN, BRUSHED ALUMINUM DOUBLE FACE WITH RED LETTERS. UNIVERSAL FACE AND MOUNTING. 90 MIN BATTERY BACK-UP.	LITHONIA	LV S W 2 R 120/277 EL N SD
J		2' LED VANITY FIXTURE. 5W, 600 LUMENS, 3500K CCT, 80 CRI. WALL MOUNTED, 0-10V DIMMING.	MARK LTG	S2WD LLP 2FT MSL2 80CRI 35K 300LMF SCT MIN10 FLL MVOLT WHTT ZT
S1		4' LED LENSED STRIP FIXTURE. 42.24W, 3899 LUMENS, 3500K CCT, 80 CRI. MULTIPLE MOUNTING TYPES, 0-10V DIMMING.	PACO	PUCSA 4F 40 35K MV AC4FT D MOD-ROW MOUNT
S2		4' LED LENSED STRIP FIXTURE. WITH SINGLE 250W LOAD SHEDDING INVERTER FOR EMERGENCY. 63.7W, 6037 LUMENS, 3500K CCT, 80 CRI. MULTIPLE MOUNTING TYPES, 0-10V DIMMING.	PACO LVS	PUCSA 4F 40 35K MV AC4FT H5 D MOD-ROW MOUNT CEPS 250 W RT
W1		EXTERIOR LED WALL PACK. 47W, 5896 LUMENS, 4000K CCT, 80 CRI. WET LOCATION.	LITHONIA	WPX1 LED P2 40K MVOLT DBLXD
W2		EXTERIOR LED WALL PACK. 47W, 5896 LUMENS, 4000K CCT, 80 CRI. WET LOCATION, 90 MIN BATTERY BACK-UP.	LITHONIA	WPX1 LED P2 40K MVOLT E14WC DBLXD

GENERAL NOTES:
EQUIVALENT ALTERNATE LIGHT FIXTURES MAY BE PROVIDED FOR BIDDING PURPOSES. THE ENGINEER DOES NOT TAKE RESPONSIBILITY FOR ENSURING ALTERNATE LIGHT FIXTURES USED FOR BIDDING ARE EQUAL; THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALTERNATE FIXTURES ARE EQUIVALENT TO THOSE SPECIFIED PRIOR TO BID. THE WINNING BID PACKAGE SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW IN ACCORDANCE WITH THE SPECIFICATIONS.

ELECTRICAL ABBREVIATIONS

AC	ABOVE COUNTERTOP	MC	MECHANICAL CONTRACTOR
AFF	ABOVE FINISH FLOOR	MCA	MINIMUM CIRCUIT AMPS
AFG	ABOVE FINISH GRADE	MDP	MAIN DISTRIBUTION PANEL
ANNC	ANNUNCIATOR	MTD	MOUNTED
CC	CONTROLS CONTRACTOR	NIC	NOT IN CONTRACT
DF	DRINKING FOUNTAIN	OCC	OCCUPANCY
EC	ELECTRICAL CONTRACTOR	PC	PLUMBING CONTRACTOR
EF	EXHAUST FAN	PNL	PANEL
EX	EXISTING	SPST	SINGLE POLE SINGLE THROW
EXR	EXISTING RELOCATED	TTB	TELEPHONE TERMINAL BOARD
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GFI	GROUND FAULT INTERRUPT	WG	WIRE GUARD
HP	HORSEPOWER	WP	WEATHER PROOF
IBC	INTERNATIONAL BUILDING CODE	20A	20 AMP
IG	ISOLATED GROUND	ø	PHASE
LV	LOW VOLTAGE	3W	3 WIRE
LVRP	LV RELAY PANEL	1P20A	SINGLE POLE 20 AMP

SWITCH LEGEND	
SYMBOL	DESCRIPTION
$	20A, 120/277V SPST SWITCH
$a	20A, 120/277V LETTER INDICATES GROUP
$3	20A, 120/277V 3-WAY
$4	20A, 120/277V 4-WAY
$D	DIMMER SWITCH
$K	KEY OPERATED SWITCH
$OC	OCCUPANCY SENSOR SWITCH

GENERAL NOTE:
SEE SPECIFICATIONS FOR MANUFACTURERS

OCC SENSOR SCHEDULE	
SYMBOL	DESCRIPTION
OS	MULTI-TECHNOLOGY, CEILING MOUNTED OCCUPANCY SENSOR CAPABLE OF DISABLING AUTO ADAPTING FEATURE. PROVIDE WITH RELAY/POWER PACKS AS REQUIRED PER PLAN. (LOW VOLTAGE)

GENERAL NOTES:

1. E.C. SHALL CONTACT ARCHITECT FOR COLOR SELECTION PRIOR TO ORDER OF ANY SENSOR.

2. FOR CEILING SPACES 14 FT. A.F.F. PIR TYPE CEILING MOUNTED SENSORS SHALL BE USED.

3. WALL MOUNTED DEVICES TO MATCH MANUAL LIGHTING CONTROL.

RECEPTACLE SCHEDULE	
SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE
	20A, 120V, 2P, 3W GROUNDING DUPLEX RECEPTACLE RECEPTACLE MTD. 6" ABOVE COUNTER OR HGT SHOWN
	GFCI RECEPTACLE
	20A, 120V, 2P, 3W GROUNDING DUPLEX GFCI RECEPTACLE - WEATHER PROOF (IN USE COVER)
J	JUNCTION BOX, AS NOTED

GENERAL NOTE:
SEE SPECIFICATIONS FOR MANUFACTURERS

GENERAL ELECTRICAL NOTES

1. CONTRACTOR TO VERIFY EXISTING ELECTRICAL CONDITIONS AND NOTIFY ARCHITECT/ENGINEER OF ANY ELECTRICAL OR CODE ISSUES PRIOR TO BID. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A COMPLETE AND OPERATIONAL CODE COMPLIANT SYSTEM.
2. ALL WORK SHALL BE IN CONFORMANCE WITH NATIONAL, STATE, AND LOCAL CODES AND/OR ORDINANCES.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE WORK WITH ALL OTHER CONTRACTORS & LOCAL UTILITY. E.C. SHALL CONTACT LOCAL UTILITY FOR EXACT SERVICE REQUIREMENTS TO INCLUDE BUT NOT LIMITED TO TRANSFORMER, METERING AND CABLING. LOCAL UTILITY REQUIREMENTS SUPERSEDE DRAWINGS AND SPECIFICATIONS.
4. SEE ARCHITECTURAL, PLUMBING AND MECHANICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.
5. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. THEY ARE INTENDED TO GIVE APPROXIMATE LOCATIONS AND OVERALL DESIGN INTENT. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PRODUCTS, MATERIALS, AND ELECTRICAL METHODS WHICH HAVE NOT BEEN SHOWN OR INDICATED BUT ARE REQUIRED FOR A COMPLETE SYSTEM TO THE STANDARDS OF THE INDUSTRY.
6. INSTALL LIGHTING FIXTURES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE SUPPORTING DEVICES FOR ADEQUATE SUPPORT OF FIXTURES FROM STRUCTURE.
7. UPON COMPLETION OF THE ELECTRICAL WORK, THE INSTALLATION SHALL BE TESTED FOR CONTINUITY, GROUNDS, AND SHORT CIRCUITS. THE ELECTRICAL CONTRACTOR SHALL DEMONSTRATE PROPER PERFORMANCE OF ALL SYSTEMS. ALL DEFECTIVE WORK OR MATERIALS SHALL BE REPLACED OR REPAIRED AS NECESSARY AND RETESTED.
8. ELECTRICAL RACEWAYS THAT PENETRATE FIRE RATED ASSEMBLIES SHALL BE SLEEVED AND SEALED AS PER THE LOCAL BUILDING CODE.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	PANEL BOARD
	DISTRIBUTION PANEL BOARD
T	TRANSFORMER
	UTILITY METER
CB	SEPARATE CIRCUIT BREAKER
	DISCONNECT
	FUSED DISCONNECT SWITCH
	EMERGENCY FUSED DISCONNECT SWITCH
	MOTOR STARTER/CONTRACTOR
	COMBINATION MOTOR STARTER
	PUSH BUTTON STATION AS NOTED
P	PULL BOX, SIZE AS REQUIRED BY CODE
	ELECTRICAL CONNECTION
	MOTOR CONNECTION
	HOME RUN TO PANEL BOARD

ELECTRICAL SHEET INDEX

E000	ELECTRICAL TITLE SHEET
E101	ELECTRICAL LIGHTING PLAN
E201	ELECTRICAL POWER PLAN
E202	ELECTRICAL POWER PLAN - ROOF
E401	ELECTRICAL ONE-LINE DIAGRAM AND SCHEDULES
E501	ELECTRICAL DETAILS SHEET
E601	ELECTRICAL SPECS SHEET

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CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

LICENSED PROFESSIONAL ENGINEER
TIMOTHY VAN OSTRAN
32650
10/20/23
OKLAHOMA

GT
drawn by

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MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM ADDITION
MOORE WEST JUNIOR HIGH SCHOOL

sheet no:

E000

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
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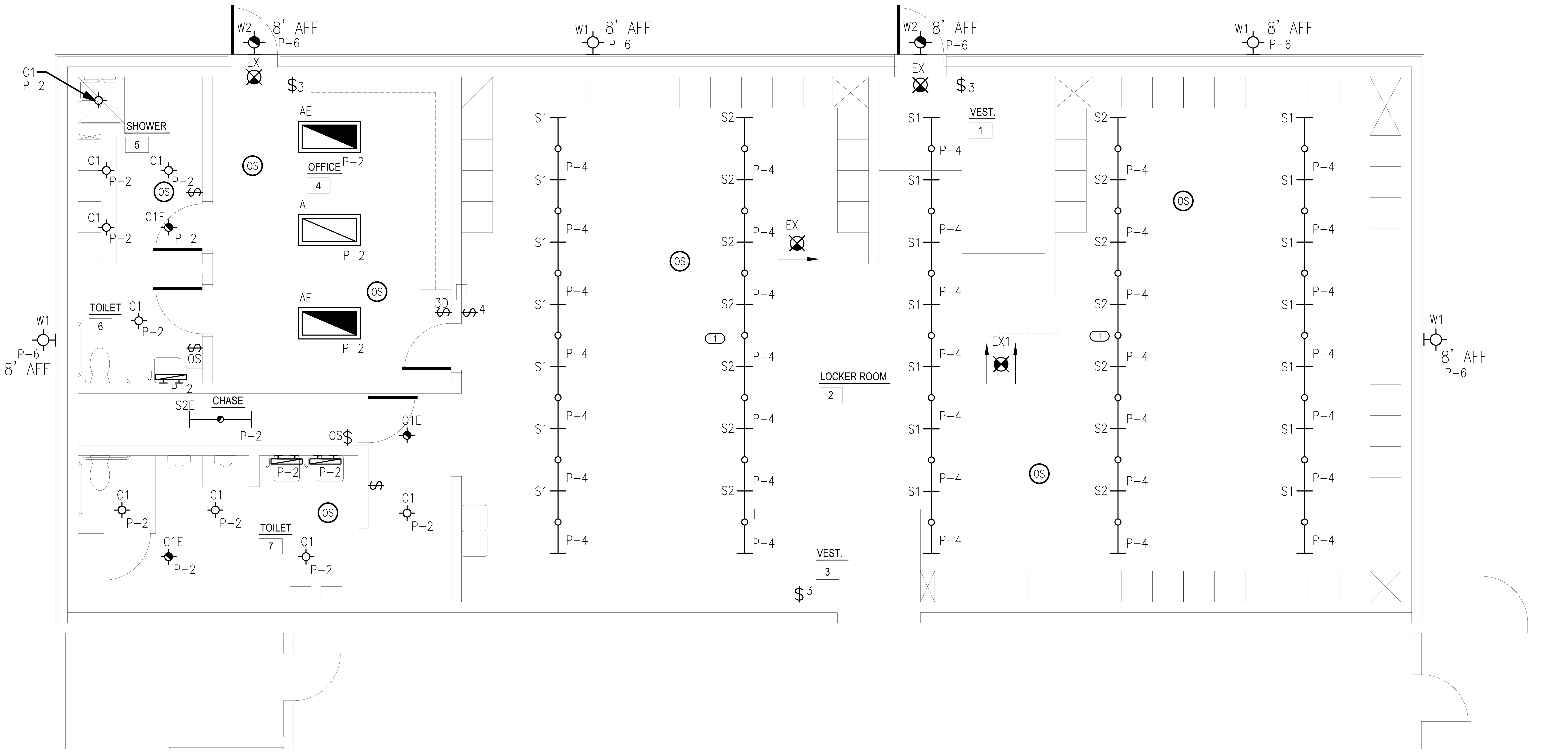
Salas O'Brien Project Number: 2023-04636-00

LIGHTING GENERAL NOTES

1. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS OF LIGHT FIXTURES WITH HVAC EQUIPMENT AND OTHER DEVICES/EQUIPMENT.
2. OCCUPANCY SENSOR LOCATIONS SHOWN ARE FOR DESIGN INTENT ONLY. LOCATE OCCUPANCY SENSORS PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
3. COORDINATE LIGHT SWITCHES WITH THERMOSTATS AND OTHER WALL MOUNTED DEVICES.
4. COORDINATE EXTERIOR FIXTURE MOUNTING HEIGHT WITH ARCHITECT AND OWNER PRIOR TO ROUGH IN.

KEYED NOTES

(1) TYPE S2 FIXTURES EMERGENCY ARE CONNECTED TO A SINGLE 250W LOAD SHEDDING INVERTER. COORDINATE WITH MANUFACTURER/EC AND ARCHITECT FOR MORE DETAILS PRIOR TO BEGIN WORK.



1 ELECTRICAL LIGHTING PLAN
SCALE: 1/4" = 1'-0"

NORTH

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POWER GENERAL NOTES

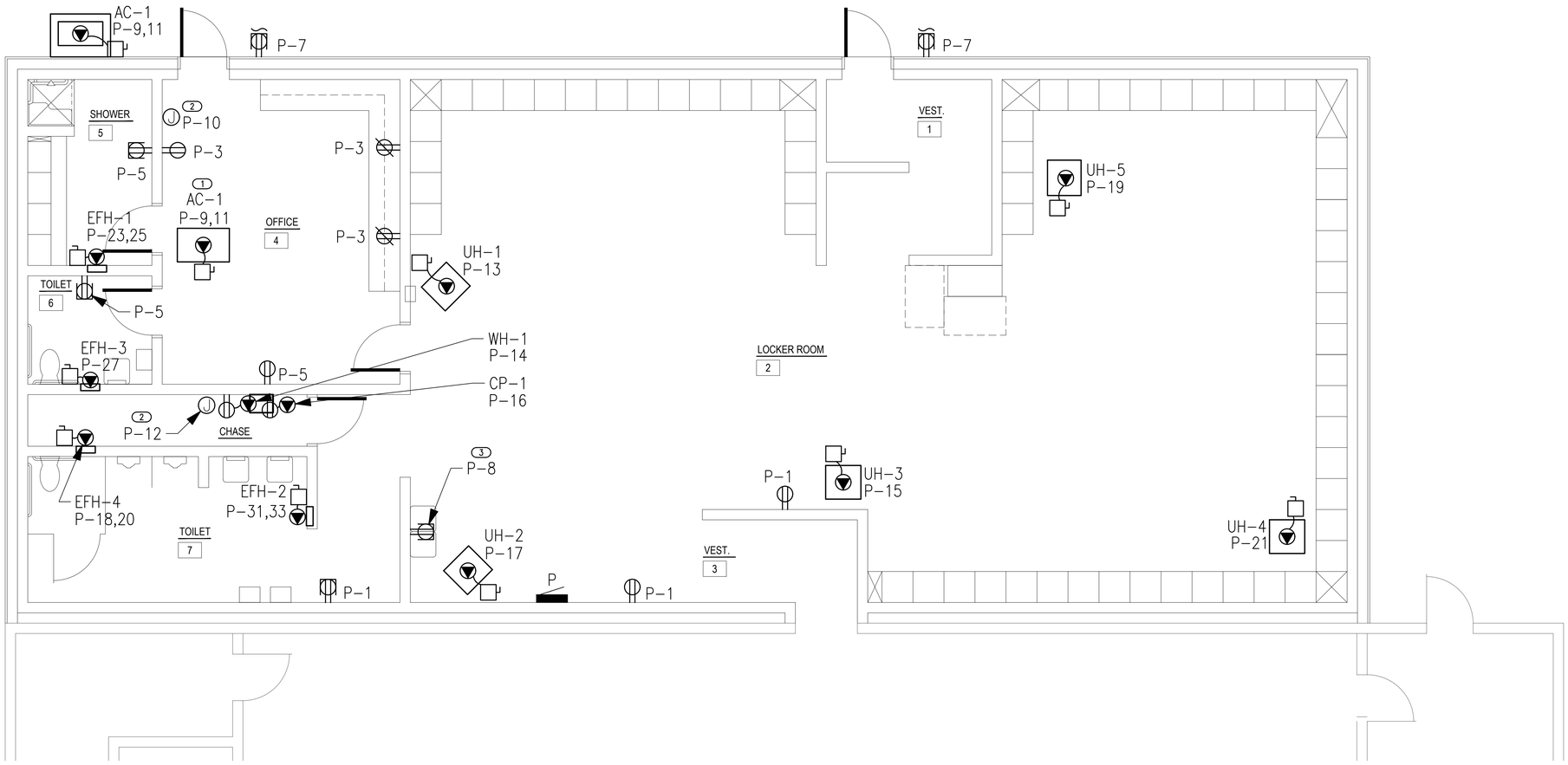
1. COORDINATE EXACT LOCATIONS OF DEVICES SHOWN WITH OTHER EQUIPMENT. COORDINATE EXACT LOCATION OF CEILING MOUNTED DEVICES WITH LIGHTS, HVAC EQUIPMENT, AND OTHER DEVICES.
2. COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE ALL RELAYS, CONNECTIONS, AND ALL DEVICES NECESSARY TO INTERLOCK EXHAUST FANS, DAMPERS, ETC WITH PROPER CONTROL DEVICES.
3. COORDINATE EXACT LOCATION OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
4. COORDINATE EXACT LOCATION OF PLUMBING EQUIPMENT WITH PLUMBING CONTRACTOR.

KEYED NOTES

(1) INDOOR MINI SPLIT UNIT IS POWERED FROM OUTDOOR UNIT. COORDINATE WITH MC FOR FINAL LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN.

(2) PROVIDE 120V TRAP PRIMER CONNECTION. COORDINATE WITH THE PLUMBING CONTRACTOR AND MANUFACTURER FOR THE EXACT LOCATION AND CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN.

(3) PROVIDE 120V ELECTRIC WATER COOLER CONNECTION. COORDINATE WITH THE ARCHITECT, PLUMBING CONTRACTOR, AND MANUFACTURER FOR THE EXACT LOCATION AND CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN.



1 ELECTRICAL POWER PLAN
SCALE: 1/4" = 1'-0"

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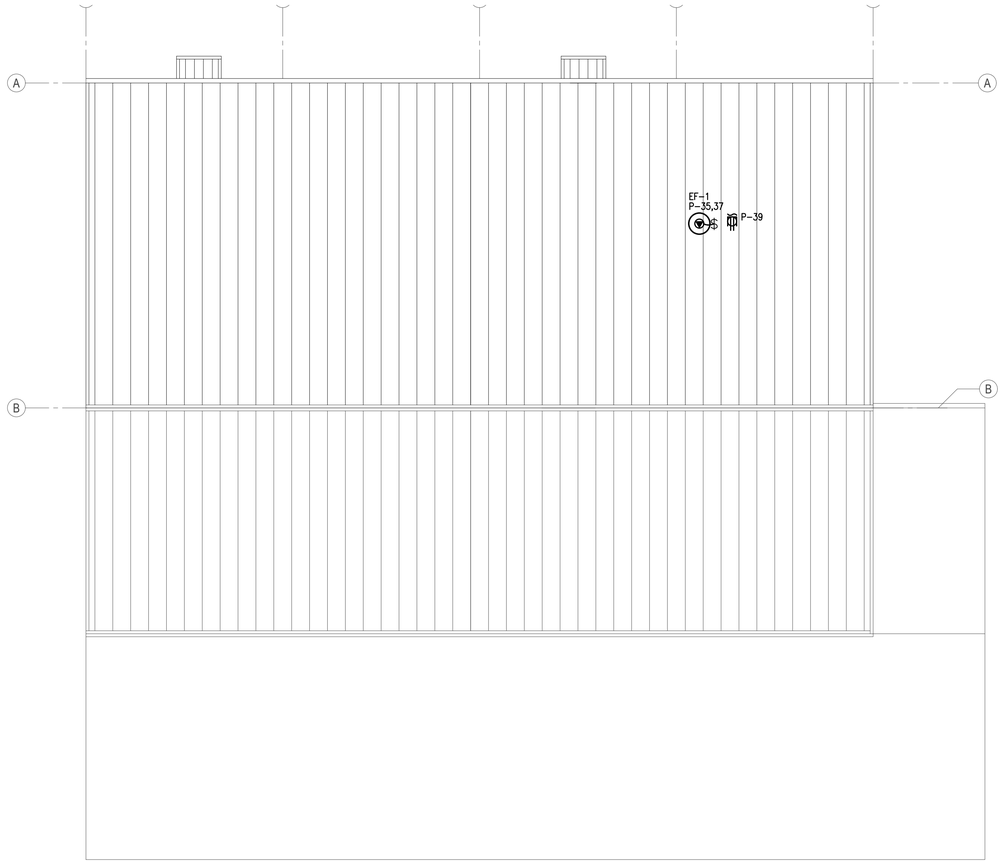

1 ELECTRICAL POWER PLAN - ROOF

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

NORTH

ROOF POWER GENERAL NOTES

1. COORDINATE EXACT LOCATIONS OF DEVICES SHOWN WITH OTHER EQUIPMENT.
2. COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE ALL RELAYS, CONNECTIONS, AND ALL DEVICES NECESSARY TO INTERLOCK EXHAUST FANS, DAMPERS, ETC WITH PROPER DEVICES.
3. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
4. FIRMLY MOUNT WEATHERPROOF 120V CONVENIENCE OUTLET ON UNISTRUT/KINDORF. COORDINATE WITH OTHER TRADES PRIOR TO ROUGH-IN.

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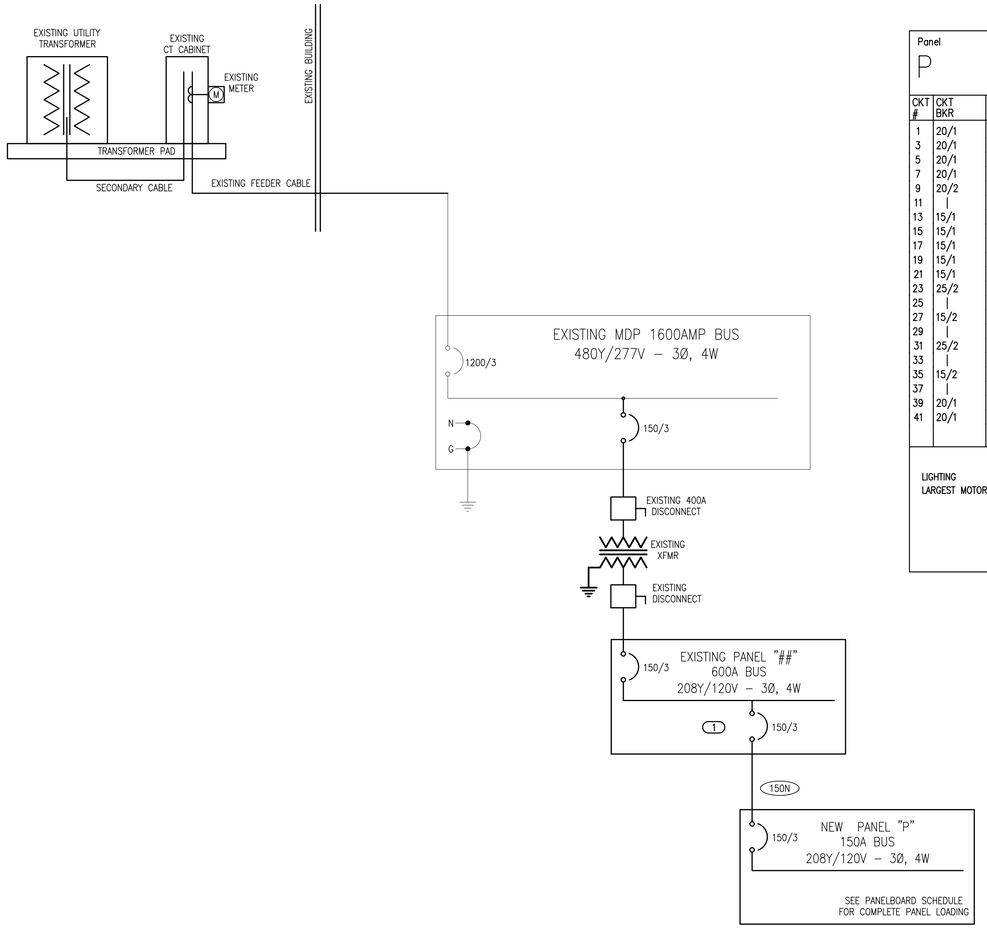

1 ELECTRICAL ONE - LINE DIAGRAM
NO SCALE

MECHANICAL EQUIPMENT SCHEDULE

CALLOUT	DESCRIPTION	VOLTS	HP	KVA	MCA	MOCP	CIRCUIT	WIRE CALLOUT	DISCONNECT	DISC PROV BY	DISC INST BY
AC-1	(OUTDOOR) MINI SPLIT HEAT PUMP	208V 2P 2W		2.33	14	24	P-9,11	3/4"C,2#12,#12N,#12G	NON-FUSED	MC	EC
CP-1	CIRCULATION PUMP	120V 1P 2W	F HP	0.1			P-16	3/4"C,1#12,#12N,#12G	DUPLEX RECEPTACLE	EC	EC
EF-1	EXHAUST FAN	208V 2P 2W	1/4 HP	0.7	4.18	15	P-35,37	3/4"C,2#10,#10G	TOGGLE SWITCH	MC	EC
EFH-1	ELECTRIC FAN HEATER	208V 2P 2W		3.99	24	25	P-23,25	3/4"C,2#10,#10G	NON-FUSED	MC	EC
EFH-2	ELECTRIC FAN HEATER	208V 2P 2W		2.3	24	25	P-31,33	3/4"C,2#10,#10G	NON-FUSED	MC	EC
EFH-3	ELECTRIC FAN HEATER	120V 1P 2W		1.15	12	15	P-27,29	3/4"C,2#12,#12N,#12G	NON-FUSED	MC	EC
EFH-4	ELECTRIC FAN HEATER	208V 2P 2W		2.3	24	30	P-18,20	3/4"C,2#10,#10G	NON-FUSED	MC	EC
UH-1	GAS UNIT HEATER	120V 1P 2W	F HP	0.1	1.04	15	P-13	3/4"C,1#12,#12N,#12G	NON-FUSED	MC	EC
UH-2	GAS UNIT HEATER	120V 1P 2W	F HP	0.1	1.04	15	P-17	3/4"C,1#12,#12N,#12G	NON-FUSED	MC	EC
UH-3	GAS UNIT HEATER	120V 1P 2W	F HP	0.1	1.04	15	P-15	3/4"C,1#12,#12N,#12G	NON-FUSED	MC	EC
UH-4	GAS UNIT HEATER	120V 1P 2W	F HP	0.1	1.04	15	P-21	3/4"C,1#12,#12N,#12G	NON-FUSED	MC	EC
UH-5	GAS UNIT HEATER	120V 1P 2W	F HP	0.1	1.04	15	P-19	3/4"C,1#12,#12N,#12G	NON-FUSED	MC	EC
WH-1	GAS WATER HEATER	120V 1P 2W		0.24	2.5	15	P-14	3/4"C,1#12,#12N,#12G	DUPLEX RECEPTACLE	EC	EC

Panel P

ROOM WEST 3 | VOLTS 208Y/120V 3P 4W | AIC 65,000
MOUNTING SURFACE | BUS AMPS 150 | MAIN BKR 150
FED FROM EXISTING PANEL | NEUTRAL 100% | LUGS STANDARD
NOTE NEW

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	20/1	0.54	ROOM 2 RCPT	a	2	20/1	0.319	LIGHTING
3	20/1	0.54	ROOM 4 RCPT	b	4	20/1	1.78	LIGHTING
5	20/1	0.54	ROOM 4,5,6 RCPT	c	6	20/1	0.282	LIGHTING
7	20/1	0.36	EXTERIOR RCPT	a	8	20/1	0.18	ELECTRIC WATER COOLER RCPT
9	20/2	2.43	AC-1	b	10	20/1	0.18	TRAP PRIMER
11	|			c	12	20/1	0.18	TRAP PRIMER
13	15/1	0.1	UH-1	a	14	15/1	0.24	WH-1
15	15/1	0.1	UH-3	b	16	20/1	0.1	CP-1
17	15/1	0.1	UH-2	c	18	30/2	2.3	EFH-4
19	15/1	0.1	UH-5	a	20	|		
21	15/1	0.1	UH-4	b	22	20/1	0	SPACE
23	25/2	3.99	EFH-1	c	24	20/1	0	SPACE
25	|			a	26	20/1	0	SPACE
27	15/2	1.15	EFH-3	b	28	20/1	0	SPACE
29	|			c	30	20/1	0	SPACE
31	25/2	2.3	EFH-2	a	32	20/1	0	SPACE
33	|			b	34	20/1	0	SPACE
35	15/2	0.696	EF-1	c	36	20/1	0	SPACE
37	|			a	38	20/1	0	SPACE
39	20/1	0.18	ROOF RCPT	b	40	20/1	0	SPACE
41	20/1	0	SPACE	c	42	20/1	0	SPACE

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	2.38	2.98	(125%)	MOTORS	13.7	13.7	(100%)
LARGEST MOTOR	3.99	0.998	(25%)	RECEPTACLES	2.7	2.7	(50%>10)
				TOTAL LOAD		20.4	
				BALANCED 3-PHASE LOAD		56.6 A	
				PHASE A		104%	
				PHASE B		102%	
				PHASE C		93.7%	

FEEDER SCHEDULE

AMPS	CONDUIT SIZE 4W	CONDUIT SIZE 3W	PHASE CONDUCTORS	EQUIPMENT GROUND CONDUCTOR
20	3/4"	3/4"	#12	#12
25	3/4"	3/4"	#10	#10
30	3/4"	3/4"	#10	#10
35	1"	3/4"	#8	#10
40	1"	3/4"	#8	#10
45	1"	1"	#6	#10
50	1"	1"	#6	#10
60	1 1/4"	1 1/4"	#4	#10
70	1 1/4"	1 1/4"	#4	#8
80	1 1/4"	1 1/4"	#3	#8
90	1 1/2"	1 1/4"	#2	#8
100	1 1/2"	1 1/4"	#2	#8
110	2"	1 1/2"	#1	#6
125	2"	1 1/2"	#1	#6
150	2"	1 1/2"	#1/0	#6
175	2"	2"	#2/0	#6
200	2"	2"	#3/0	#6
225	2 1/2"	2"	#4/0	#4
250	3"	2 1/2"	250 kcmil	#4
300	3"	3"	350 kcmil	#4
350	3 1/2"	3"	500 kcmil	#3
400	(2) 2"	(2) 2"	2 SETS OF #3/0	#3
450	(2) 2 1/2"	(2) 2"	2 SETS OF #4/0	#2
500	(2) 2 1/2"	(2) 2 1/2"	2 SETS OF 250 kcmil	#2
600	(2) 3"	(2) 3"	2 SETS OF 350 kcmil	#1
700	(2) 3 1/2"	(2) 3"	2 SETS OF 500 kcmil	#1/0
800	(3) 3"	(3) 2 1/2"	3 SETS OF 300 kcmil	#1/0
900	(3) 3 1/2"	(3) 3"	3 SETS OF 400 kcmil	#2/0
1000	(3) 3 1/2"	(3) 3"	3 SETS OF 500 kcmil	#2/0
1200	(4) 3"	(4) 3"	4 SETS OF 350 kcmil	#3/0
1600	(5) 3 1/2"	(5) 3"	5 SETS OF 500 kcmil	#4/0
1800	(6) 3 1/2"	(6) 3"	6 SETS OF 400 kcmil	250 kcmil
2000	(6) 3 1/2"	(6) 3"	6 SETS OF 500 kcmil	250 kcmil
2500	(7) 3 1/2"	(7) 3"	7 SETS OF 500 kcmil	350 kcmil

NOTES:
1. FEEDER SIZES ARE ON THE PLAN WHERE 60 REFERS TO A 60A FEEDER WITHOUT NEUTRAL AND 60N REFERS TO A 60A FEEDER WITH NEUTRAL.
2. SOME FEEDER SIZES DO NOT MATCH BREAKER SIZE DUE TO UP-SIZING OF THE FEEDER FOR VOLTAGE DROP.
3. CONDUITS ARE SIZED PER NEC TABLES FOR THHN/THWN AND MAY BE UPSIZED FOR EASE OF PULLING OR DOWNSIZED AS ALLOWED PER NEC FOR CONDUIT TYPE(S) BEING INSTALLED.
4. ALL CONDUCTORS 100A AND LESS ARE SIZED PER 60 DEGREE LUGS, EC MAY SIZE CONDUCTORS FOR ACTUAL RATING OF LUGS PER NEC.

GENERAL NOTES

2. AIC RATINGS ARE ESTIMATED BASED ON AVAILABLE DATA DURING DESIGN. CONTRACTOR TO VERIFY AVAILABLE FAULT CURRENT WITH UTILITY.
2. FAULT CURRENT, ARC FLASH, AND COORDINATION STUDY SHALL BE PERFORMED BY A THIRD PARTY ONCE EXACT PANEL PLACEMENT AND DISTANCES ARE DETERMINED. REFER TO SPECIFICATIONS SECTION 26 0573 FOR MORE INFORMATION.
3. PROVIDE A MINIMUM OF 10 SPARE 1P20A BREAKERS FOR EACH 120V SUB-PANEL.
4. THE EXISTING LOAD FOR PANEL ## WAS UNABLE TO BE VERIFIED DURING DESIGN, EC SHALL PERFORM A 30 DAY LOAD STUDY ON THE PANEL PRIOR TO PERFORMING ANY WORK IN ORDER TO DETERMINE THE EXISTING PEAK LOAD IN ACCORDANCE WITH NEC 220.87(1). FINAL RESULTS SHALL BE REPORTED TO THE ENGINEER PRIOR TO BEGINNING WORK.

KEYED NOTES

(1) 1. EC SHALL PROVIDE NEW 150A/3P BREAKER WITHIN EXISTING PANEL ## IN ORDER TO FEED NEW PANEL P.

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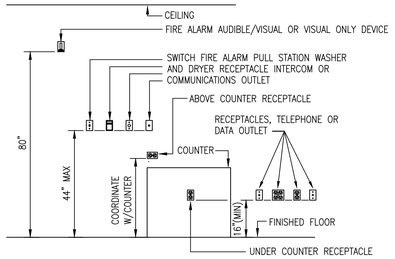
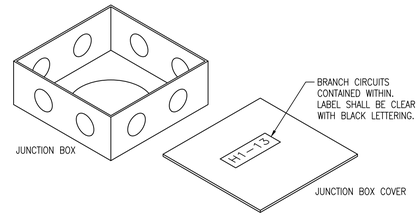
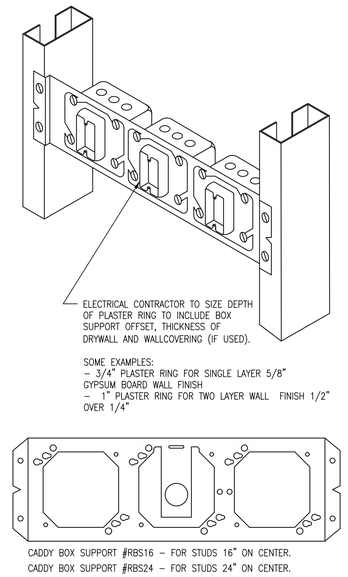


4 TYP OUTLET MOUNTING DETAIL
NO SCALE



3 JUNCTION BOX LABELING DETAIL
NO SCALE



2 MULTIPLE BOX SUPPORT DETAIL
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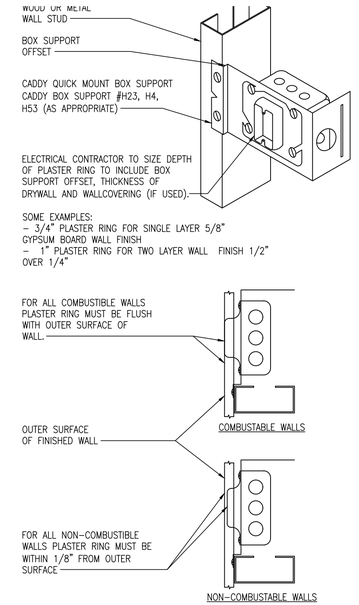
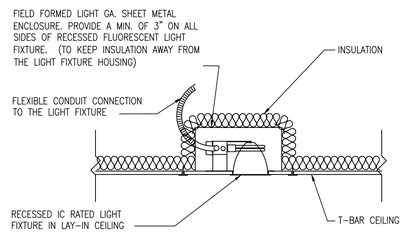
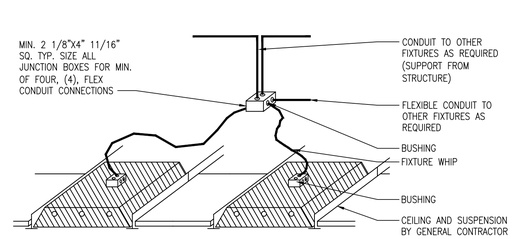


1 BOX SUPPORT DETAIL
NO SCALE



6 IC LIGHT FIXTURE DETAIL
NO SCALE



5 TYP.TROFFER POWER DETAIL
NO SCALE

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GENERAL ELECTRICAL SPECIFICATIONS

GENERAL NOTES AND ELECTRICAL SPECIFICATIONS

CODE INFORMATION

APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO: NATIONAL ELECTRICAL CODE (NFPA 70), INTERNATIONAL BLDG CODE, LIFE SAFETY CODE (NFPA 101), AMERICANS WITH DISABILITIES ACT, AND ALL LOCAL CODES AND AMENDMENTS.

BASIC ELECTRICAL REQUIREMENTS

PERMITS AND CODES: OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND REQUIRED INSPECTIONS. COMPLY WITH ALL NATIONAL, STATE AND MUNICIPAL LAWS, CODES AND ORDINANCES RELATING TO BUILDING AND PUBLIC SAFETY. PROVIDE ANY REQUIRED TEMPORARY POWER AND UTILITIES FOR ALL TRADES AND ALL CONSTRUCTION TRAILERS. PROVIDE TEMPORARY CONSTRUCTION LIGHTING AND POWER. ELECTRICAL CONTRACTOR SHALL INCLUDE TEMPORARY ELECTRIC: ALL TEMPORARY ELECTRIC SHALL BE IN ACCORDANCE WITH OSHA CONSTRUCTION STANDARDS 29FCR, PART 1926 AND ARTICLE 590 OF THE NATIONAL ELECTRICAL CODE. TEMPORARY LIGHTING AND POWER SHALL BE PROVIDED IN ACCORDANCE WITH OSHA STANDARDS. THE OSHA MINIMUM ILLUMINATION IS 5 FOOTCANDLES IN GENERAL CONSTRUCTION AREAS, AND 10 FC IN MECHANICAL / ELECTRICAL ROOMS AND WORKROOMS. INCLUDED ARE CONNECTIONS TO ALL CONSTRUCTION TRAILERS. THE COST OF THIS WORK IS TO BE INCLUDED IN THE BASE ELECTRICAL BID FOR THE PROJECT.

VISITING THE JOB SITE

VISIT THE SITE OF THE PROPOSED CONSTRUCTION IN ORDER TO FULLY UNDERSTAND THE FACILITIES, DIFFICULTIES AND RESTRICTIONS ATTENDING THE EXECUTION OF THE WORK. NO ADDITIONAL COMPENSATION WILL BE ALLOWED THIS CONTRACTOR FOR WORK OR ITEMS OMITTED FROM HIS ORIGINAL PROPOSAL DUE TO HIS FAILURE TO INFORM HIMSELF REGARDING SUCH MATTERS AFFECTING THE PERFORMANCE OF THE WORK IN THIS CONTRACT OR NECESSARY FOR THE INSTALLATION AND COMPLETION OF THE WORK INCLUDED HEREIN.

DRAWINGS

DRAWINGS ARE DIAGRAMMATIC, CONFIRM DIMENSIONS & LOCATIONS IN THE FIELD. IF CONFLICTING DIMENSIONS ARE SHOWN, USE LARGER DIMENSIONS AND VERIFY WITH ARCHITECT. SEE ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF FIXTURES AND WALL MOUNTED DEVICES.

MATERIAL

ALL MATERIALS SHALL BE NEW, MADE IN USA AND U.L. LISTED. MATERIAL INSTALLATION SHALL COMPLY WITH NEC REQUIREMENTS AND PERFORM BY CRAFTSMEN SKILLED IN THIS PARTICULAR WORK.

EQUIPMENT PROTECTION

PROTECT EQUIPMENT AND WORK FROM DAMAGE DURING HANDLING AND INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.

COOPERATION WITH OTHER TRADES

COOPERATION WITH TRADES OF ADJACENT, RELATED OR AFFECTED MATERIALS OR OPERATIONS, AND WITH TRADES PERFORMING CONTINUATIONS OF THIS WORK UNDER SUBSEQUENT CONTRACTS, IS CONSIDERED A PART OF THIS WORK IN ORDER TO EFFECT TIMELY AND ACCURATE PLACING OF WORK AND TO BRING TOGETHER, IN PROPER AND CORRECT SEQUENCE, THE WORK OF SUCH TRADES. PROVIDE OTHER TRADES, AS REQUIRED, ALL NECESSARY TEMPLATES, PATTERNS, SETTING PLANS AND SHOP DETAILS FOR THE PROPER INSTALLATION OF THE WORK AND FOR THE PURPOSE OF COORDINATING ADJACENT WORK. ELECTRICAL POWER CONNECTIONS FOR MECHANICAL AND PLUMBING EQUIPMENT ARE IN THIS DIVISION UNLESS NOTED OTHERWISE. VERIFY ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT WITH OTHER DIVISIONS BEFORE ROUGHING IN THE ELECTRICAL CONNECTIONS AND ENERGIZING THE EQUIPMENT.

MECH/PLUMBING/SPECIAL EQPT ACCESS AND CLEARANCE AREAS: REMOVE ANY IMPROPERLY INSTALLED ELECTRICAL EQPT AND CONDUIT THAT ARE LIMITING PROPER ACCESS FOR EQPT SERVICE AND MAINTENANCE.

LOSS OR DAMAGE TO FACILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOSS OR DAMAGE TO THE FACILITIES CAUSED BY HIM AND HIS WORKMEN, AND SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING SUCH LOSS OR DAMAGE. THE CONTRACTOR SHALL SEND PROPER NOTICES, MAKE NECESSARY ARRANGEMENTS, AND PERFORM OTHER SERVICES REQUIRED FOR THE CARE, PROTECTION AND IN-SERVICE MAINTENANCE OF ALL ELECTRICAL SERVICES FOR THE NEW FACILITIES. THE CONTRACTOR SHALL ERECT TEMPORARY BARRICADES, WITH NECESSARY SAFETY DEVICES, AS REQUIRED TO PROTECT PERSONNEL AND THE GENERAL PUBLIC FROM INJURY, REMOVING ALL SUCH TEMPORARY PROTECTION UPON COMPLETION OF THE WORK.

THE CONTRACTOR SHALL MODIFY, REMOVE AND/OR REPLACE ALL MATERIALS AND ITEMS SO INDICATED ON THE DRAWINGS OR REQUIRED BY THE INSTALLATION OF NEW FACILITIES. SALVAGE MATERIALS SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO SUCH DESTINATION AS DIRECTED BY THE OWNER. DISPOSE OF SALVAGE MATERIAL IF NOT RETAINED BY OWNER. WHERE EXISTING CONSTRUCTION IS REMOVED TO PROVIDE WORKING AND EXTENSION ACCESS TO EXISTING FACILITIES, CONTRACTOR SHALL REMOVE CEILING GRIDS, TILES, DOORS, PIPING, AIR CONDITIONING DUCTWORK AND EQUIPMENT, ETC., TO PROVIDE THIS ACCESS AND SHALL REINSTALL SAME UPON COMPLETION OF WORK IN THE AREAS AFFECTED.

WORK IN OCCUPIED AREAS

WORK IN, ABOVE, BELOW OR NEAR OCCUPIED AREAS SHALL BE AT OWNER'S CONVENIENCE AND MAY BE DURING EVENINGS OR WEEKENDS. SCHEDULE ALL REQUIRED POWER OUTAGES A MINIMUM OF 7 DAYS IN ADVANCE WITH FACILITY ENGINEER. DO NOT TURN OFF ANY POWER SOURCES. ONLY FACILITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE MAY DO SO.

CLEAN UP

A) PROVIDE FOR ISOLATION OF WORK AREAS AND DAILY REMOVAL OF DEBRIS.
B) CLEAN ALL EQUIPMENT AND FIXTURE LENSES.
C) REPLACE ALL BURNED OUT LAMPS.
D) TOUCH UP WITH PAINT WHERE REQUIRED.

SUBMITTAL DATA

SUBMITTALS ARE REQUIRED BUT NOT LIMITED TO THE FOLLOWING EQUIPMENT:
BRANCH CIRCUIT PANELBOARDS, TRANSFORMERS, SWITCHES, CONDUIT/FITTINGS, WIRES, DEVICES, LIGHTING FIXTURES, ETC. ALTERNATE EQUIPMENT SHALL BE APPROVED BY ARCHITECT/OWNER.

SHOP DRAWINGS

SHOP DRAWINGS AS REQUIRED SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE ARCHITECT. THESE SHOP DRAWINGS SHALL BE PREPARED TO INDICATE INSTALLATION AT MAJOR EQUIPMENT WHERE SPECIAL COORDINATION PROBLEM EXIST. OVERCURRENT & SAFETY DISCONNECT DEVICES FOR HVAC EQPT: OVERCURRENT (OC) & DISCONNECT DEVICES SHOWN ON PLANS ARE BASED ON A SPECIFIC HVAC EQUIPMENT MANUFACTURER. HVAC CONTRACTOR MAY SUBMIT OTHER MANUFACTURERS, DIFFERENT MODELS OR RATINGS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE OC/DISCONNECT DEVICES WITH THE HVAC CONTRACTOR PRIOR TO SUBMITTING SUCH DEVICES FOR ENGINEER'S REVIEW. ANY DEVIATIONS FROM SIZES SHOWN ON DRAWINGS MUST BE NOTED IN THE SUBMITTALS. THE ELECTRICAL CONTRACTOR MUST CERTIFY THAT HE HAS REVIEWED AND COORDINATED WITH THE HVAC CONTRACTOR AND THAT ALL OC/DISCONNECT DEVICES SUBMITTED MATCH THE HVAC EQPT REQUIREMENTS. SHOP DRAWINGS WITHOUT SUCH CERTIFICATION WILL BE RETURNED TO THE CONTRACTOR. ONLY SUBMITTALS WITH SUCH CERTIFICATION WILL BE REVIEWED.

COMPLETE SYSTEMS

ALL SYSTEMS SHALL BE COMPLETE AND WORKING AT COMPLETION OF CONSTRUCTION.

FINAL INSPECTION & OPERATING TESTS

ALL ELECTRICAL SYSTEMS MUST BE CHECKED FOR PROPER POLARITY AND SEQUENCE, ALL MOTORS MUST BE CHECKED FOR PROPER ROTATION AND ALL EQUIPMENT (INCLUDING HVAC, ELEVATOR AND SPECIAL EQUIPMENT) CHECKED FOR PROPER VOLTAGE AND PHASING REQUIREMENTS. PRIOR TO THE APPLICATION OF ANY POWER, THE CONTRACTOR MUST CERTIFY THAT ALL CONNECTED EQUIPMENT MATCH THE CHARACTERISTICS OF THE SUPPLY CIRCUIT VOLTAGE, PHASING AND FEEDER REQUIREMENTS.

AT THE TIME DESIGNATED BY THE ARCHITECT, THE ENTIRE SYSTEM SHALL BE INSPECTED BY THE ARCHITECT AND THE ENGINEER. THE CONTRACTOR OR HIS REPRESENTATIVE SHALL BE PRESENT AT THIS INSPECTION.

AFTER ALL SYSTEMS HAVE BEEN COMPLETED AND PUT INTO OPERATION, SUBJECT EACH SYSTEM TO AN OPERATING TEST UNDER DESIGN CONDITIONS TO ENSURE PROPER SEQUENCE AND OPERATION THROUGHOUT THE RANGE OF OPERATION. MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER FUNCTIONING OF ALL SYSTEMS. SPECIAL TESTS ON INDIVIDUAL SYSTEMS ARE SPECIFIED UNDER INDIVIDUAL SECTIONS.

THE CONTRACTOR SHALL PROVIDE A SET OF AS-BUILT DRAWINGS IN PDF FORMAT TO THE ARCHITECT. AFTER THE INSPECTION, ANY ITEMS WHICH ARE NOTED AS NEEDING TO BE CHANGED OR CORRECTED IN ORDER TO COMPLY WITH THESE SPECIFICATIONS AND THE DRAWINGS SHALL BE ACCOMPLISHED WITHOUT DELAY.

GUARANTEE

GUARANTEE ALL WORK AND MATERIALS FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE TENANT AND ARCHITECT. GUARANTEE SHALL INCLUDE: ALL LABOR, PARTS, TRAVEL/SUBSISTENCE, SOFTWARE CHANGES / RE-PROGRAMMING, ETC.

SHORT CIRCUIT CALCULATION, PROTECTIVE DEVICE COORDINATION AND ARC FLASH STUDIES

PROVIDE SHORT CIRCUIT CALCULATION, PROTECTIVE DEVICE COORDINATION AND ARC FLASH HAZARD STUDIES. STUDIES SHALL ENCOMPASS ELECTRICAL DISTRIBUTION SYSTEM FROM NORMAL POWER SOURCE OR SOURCES TO AND INCLUDING {BRANCH BREAKERS IN EACH PANELBOARD}. PREPARE STUDY PRIOR TO ORDERING DISTRIBUTION EQUIPMENT TO VERIFY EQUIPMENT RATINGS REQUIRED. SUBMIT REPORT WITH EQUIPMENT SUBMITTALS FOR ENGINEER'S REVIEW. PERFORM STUDY WITH AID OF COMPUTER SOFTWARE PROGRAMS. REPORT SHALL INCLUDE: (A) CALCULATION METHODS AND ASSUMPTIONS, (B) ONE LINE DIAGRAM, (C) STATE CONCLUSIONS AND RECOMMENDATIONS. STUDIES AND REPORT SHALL BE PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS PERMITTED.

CONTRACTOR SHALL PROVIDE WARNING LABELS ON ELECTRICAL EQUIPMENT INDICATING INCIDENT ENERGY LEVEL, LEVEL OF HAZARD AND THE REQUIRED PERSONAL PROTECTION EQUIPMENT. EQUIPMENT SHALL INCLUDE, BUT NOT LIMITED TO, SWITCHBOARDS, DISTRIBUTION PANELS, MOTOR CONTROL CENTERS, PANELS, CONTACTORS, DISCONNECT SWITCHES AND MOTOR STARTERS.

CONDUIT

CONDUIT: SHALL BE RIGID GALVANIZED STEEL (RGS) OR ELECTRICAL METALLIC TUBING (EMT) AS MANUFACTURED BY ALLIED, TRIANGLE OR WHEATLAND.
INDOORS ABOVE GRADE: EMT OR RGS.
OUTDOORS ABOVE GRADE, STUB-UPS, OR ON ROOF: RGS, IMC.
BELOW GRADE: SCHEDULE 40 OR 80 PVC OR RGS. PROVIDE TRANSITION FITTINGS FROM PVC SCH 40 OR 80 TO RGS FOR ALL ABOVE GRADE CONDUIT. ALL UNDERGROUND METALLIC CONDUIT SHALL HAVE 40-MIL THICK EXTERNAL PVC COATING FOR CORROSION PROTECTION. UNDERGROUND CONDUIT MINIMUM SIZE 3/4". MINIMUM 24" BURIAL DEPTH FROM FINISHED GRADE TO TOP OF CONDUIT, PROVIDE DEEPER BURIAL DEPTH IF REQUIRED BY LOCAL CODES. PROVIDE CONCRETE ENCASEMENT FOR ALL INCOMING SERVICE CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. PROVIDE RED DETECTABLE WARNING TAPE OVER ENTIRE RUN OF SERVICE AND MAJOR CONDUIT RUNS.
UNDER SLAB: RGS, SCHEDULE 80 PVC.
INSTALL GROUND WIRES WHERE SHOWN ON THE DRAWINGS. COMPRESSION OR SET-SCREW TYPE FITTINGS MAY BE USED FOR EMT. MINIMUM CONDUIT SIZE 1/2 INCH, HOWEVER HOMERUN TO PANEL SHALL BE MINIMUM 3/4 INCH. TYPE "MC" METAL CLAD CABLE IS ACCEPTABLE ONLY IF APPROVED BY THE OWNER IN WRITING AND THE LOCAL AUTHORITY.
MC CABLE, IF APPROVED, HOWEVER, MAY BE USED ONLY FOR DROPS FROM CEILING PLENUM JUNCTION BOXES TO RECEPTACLES AND LIGHT SWITCHES IN WALLS. MC CABLE MAY ALSO BE USED AS FIXTURE WHIPS FROM CEILING PLENUM JUNCTION BOXES TO LIGHT FIXTURES, WHIPS MUST BE 6-FT OR LESS. HOMERUN CIRCUITS TO PANELS SHALL BE IN CONDUIT, MC HOMERUN TO PANELS ARE NOT ACCEPTABLE.

TYPE "AC" ARMORED CABLE (COMMONLY REFERRED TO AS "BX") IS NOT ACCEPTABLE AND SHALL NOT BE USED. ELECTRICAL NONMETALLIC TUBING (ENT, NEC ARTICLE 362) SHALL NOT BE USED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER. FLEXIBLE CONDUIT SHALL BE UTILIZED AS FINAL CONNECTIONS (3'-5' ONLY) AT THE FOLLOWING EQUIPMENT: MOTORS, LIGHTING FIXTURES, HEATER, POWER SUPPLIES, AND ANY OTHER VIBRATION PRODUCING EQUIPMENT. UTILIZE 1/2" FLEXIBLE METALLIC CONDUIT MINIMUM AND INCLUDE A GREEN GROUND WIRE. USE SEALTITE IN WET LOCATIONS SUCH AS OUTDOOR CONDENSING UNITS, WALK-IN COOLER/FREEZER, KITCHEN, ROOFTOP HVAC EQPT, ETC. CONDUIT SHALL BE SUPPORTED FROM STRUCTURE EVERY 5 FEET AND WITHIN 3 FEET OF ALL BOXES. USE LOCKNUTS INSIDE AND OUT AT BOXES. MAINTAIN MINIMUM 12" SEPARATION FROM ALL HIGH TEMPERATURE PIPES. ALL CONDUIT RUNS SHALL BE INSTALLED EITHER PARALLEL OR PERPENDICULAR TO BUILDING LINES. ROUTE CONDUIT AS DIRECTLY AS POSSIBLE WITH LARGEST RADIUS BENDS POSSIBLE. MAKE BENDS WITH STANDARD ELLS OR BENDS PER NEC. PROVIDE EXPANSIONS FITTINGS IF CONDUIT CROSSES STRUCTURAL EXPANSION JOINT. ALL CONDUIT ON ROOF SHALL BE SUPPORTED BY AN ENGINEERED, PREFABRICATED PORTABLE PIPE SYSTEM SPECIFICALLY DESIGNED TO BE INSTALLED ABOVE FINISHED ROOF WITHOUT ROOF PENETRATIONS, FLASHINGS OR DAMAGE TO ROOF MEMBRANE. PROVIDE MANUFACTURED PIPE HANGER SYSTEMS SIMILAR TO PHP. PROVIDE SS8-C FOR CONDUIT UP TO 2 1/2", FOR CONDUIT 3 1/2" AND SMALLER PROVIDE PP10 WITH STRUT, FOR CONDUIT 4" AND LARGER PROVIDE PSE-CUSTOM OR PPH-D. SUPPORT AT INTERVAL NOT TO EXCEED 10' ON CENTER, AND WITHIN 5' OF ANY DEFLECTION OF CONDUIT. CLEAN CONDUIT INTERIOR AFTER INSTALLATION; COAT SCRATCHES WITH ZINC PAINT. PROVIDE PULL WIRE IN ALL CONDUIT (POWER, FIRE ALARM, TELEPHONE AND OTHER COMMUNICATION CONDUIT). PULL WIRE ALSO REQUIRED IN ALL SPARE CONDUIT.
PROJECT RECORD DOCUMENTS: ACCURATELY RECORD ACTUAL ROUTING OF ALL UNDERSLAB AND UNDERGROUND CONDUITS; INCLUDE DIMENSIONS FROM KEY BUILDING POINTS AND DEPTH OF COVER.

BOXES

OUTLET BOXES: SHALL BE GALVANIZED STEEL SUITABLE FOR LOCATION. CEILING OUTLET BOXES SHALL BE 4" OCTAGON. WALL OUTLET BOXES SHALL BE PROPER DESIGN TO ACCOMMODATE THE DEVICES REQUIRED – 4 INCH SQUARE WITH RAISED COVER. PROVIDE RACO, STEEL CITY OR APPLETON. ALL J-BOXES / SPLICE BOXES MUST BE ACCESSIBLE.

JUNCTION /PULL BOXES: (A) FOR EACH CONDUIT RUN: PROVIDE ONE JUNCTION/PULL BOX FOR EACH_EQUIVALENT THREE QUARTER BENDS (270°). (B) UNDERGROUND FEEDERS: MINIMUM ONE PULL BOX FOR EACH 350 FEET <500 FEET> OF CONDUIT RUN.

BUILDING WIRE AND CABLE

WIRE: (TRIANGLE, AMERICAN INSULATED CABLE CO., OR CABLEC)
ALL WIRING SHALL BE IN CONDUIT (EXCEPT PLENUM RATED LOW VOLTAGE CABLES). ALL WIRES MUST BE 75°C RATED OR BETTER, 60°C RATED WIRE SHALL NOT BE USED. 90°C RATED WIRE MAY BE USED BUT ONLY AT 75°C AMPACITY.

A.) MINIMUM SIZE #12 EXCEPT CONTROLS MAY BE #14. USE #10 CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET. USE #10 CONDUCTORS FOR 20 AMPERE, 277 VOLT BRANCH CIRCUITS LONGER THAN 200 FEET.
B.) TYPE THHN/THWN STRANDED COPPER THERMOPLASTIC IN DRY LOCATIONS.
C.) TYPE THWN IN WET LOCATIONS (OUTDOOR, UNDERGROUND, ON ROOF, ...).
D.) ALL WIRE SHALL BE 98% CONDUCTIVITY COPPER, 600 VOLT. NO ALUMINUM WIRES.
E.) WIRE #10 AND SMALLER MAY BE SOLID OR STRANDED, #8 OR LARGER SHALL BE STRANDED.
F.) COMMUNICATION WIRES (FIRE ALARM, TELEPHONE, HVAC THERMOSTAT, DATA ETC.): PLENUM RATED LOW-SMOKE CABLE MAY BE USED IN LIEU OF WIRE/CONDUIT TYPE INSTALLATION. ALL PLENUM RATED CABLE SHALL BE PROPERLY SUPPORTED BY BRIDAL RINGS, CABLE TIES, CLIPS ETC MADE BY ERICO (CADDY COMMUNICATION FASTENERS) OR EQUAL. DO NOT USE SCRAP WIRE TO WRAP AND SUPPORT COMMUNICATION WIRES. HOMEMADE SUPPORT DEVICES ARE NOT ACCEPTABLE. DO NOT LAY COMMUNICATION CABLE DIRECTLY ON TOP OF CEILING TILES, INSTALL CABLES A MINIMUM OF 12" ABOVE CEILING TILES AND 12" FROM HVAC DUCTWORK. PROVIDE MINIMUM 6" SEPARATION BETWEEN POWER CONDUIT AND COMMUNICATION WIRINGS.

FIELD INSULATION TESTING

INSULATION RESISTANCE OF ALL CONDUCTORS SHALL BE TESTED. EACH CONDUCTOR SHALL HAVE ITS INSULATION RESISTANCE TESTED AFTER THE INSTALLATION IS COMPLETED AND ALL SPLICES, TAPS AND CONNECTIONS ARE MADE EXCEPT CONNECTION TO OR INTO ITS SOURCE AND POINT (OR POINTS) OF TERMINATION. INSULATION RESISTANCE OF CONDUCTORS WHICH ARE TO OPERATE AT 600 VOLTS OR LESS SHALL BE TESTED BY USING A BIDDLE MEGGER OF NOT LES THAN 1000 VOLTS DC. INSUALTION RESISTANCE OF CONDUCTORS RATED AT 600 VOLTS SHALL BE FREE OF SHORTS AND GROUNDS AND HAVE A MINIMUM RESISTANCE PHASE-TO-PHASE AND PHASE-TO-GROUND OF AT LEAST 10 MEGOHMS. CONDUCTORS THAT DO NOT EXCEED INSULATION RESISTANCE VALUES LISTED ABOVE SHALL BE REMOVED AT CONTRACTOR'S EXPENSE AND REPLACED AND TEST REPEATED. THE CONTRACTOR SHALL FURNISH ALL INSTRUMENTS AND PERSONNEL REQUIRED FOR TESTS, SHALL TABULATE READINGS OBSERVED, AND SHALL FORWARD COPIES OF THE TEST READINGS TO THE ARCHITECT. THESE TEST REPORTS SHALL IDENTIFY EACH CONDUCTOR TESTED, DATE AND TIME OF TEST AND WEATHER CONDITIONS. EACH TEST SHALL BE SIGNED BY THE PARTY MAKING THE TEST.

WIRING DEVICES

WIRING DEVICES: FURNISH AND INSTALL WHERE INDICATED ON DRAWINGS. ALL DEVICES SHALL BE LEVITON "DECORA" TYPE (CONFIRM W/ ARCHITECT) OR APPROVED EQUAL UNLESS SPECIFIED OTHERWISE BY ARCHITECT.
GROUND FAULT CIRCUIT INTERRUPTER (GFCI) RECEPTACLE SHALL COMPLY WITH 2006 UL 943 SAFETY STANDARD. GFCI RECEPTACLE SHALL HAVE INTEGRAL END-OF-LIFE LED INDICATOR LIGHT, AND CONTINUOUS SENSING AND SELF-TESTING EVERY 60 SECONDS. PROVIDE HUBBELL GFR5352 OR APPROVED EQUAL.
COVER PLATES: STAINLESS STEEL (CONFIRM W/ ARCHITECT).
PROVIDE CIRCUIT NUMBER LABEL ON ALL DEVICE PLATES.

GROUNDING AND BONDING

GROUNDING: ALL CONDUIT WORK AND ELECTRICAL EQUIPMENT SHALL BE EFFECTIVELY AND PERMANENTLY GROUNDED IN ACCORDANCE WITH NEC REQUIREMENTS. PROVIDE GREEN EQUIPMENT GROUNDING CONDUCTOR WITH ALL POWER AND RECEPTACLE AND LIGHTING CIRCUITS. GREEN EQUIPMENT GROUNDING CONDUCTOR SHALL BE ROUTED FROM PANEL GROUND BUS TO FINAL DEVICES.

ELECTRICAL IDENTIFICATION

IDENTIFICATION: LABEL ALL JUNCTION AND PULL BOXES WITH PANELS AND CIRCUIT NUMBERS. FURNISH MARKERS OR PAINT BAND FOR EACH CONDUIT LONGER THAN 6 FEET, SPACING 20 FEET ON CENTER. COLOR OF PAINT BAND (CONFIRM COLOR MATCHES EXISTING FACITITY COLOR CODE.): (A) 480 VOLT SYSTEM – BLACK, (B) 208 VOLT SYSTEM – BLACK W/BLUE STRIPES, (C) FIRE ALARM SYSTEM – RED, (D) TELEPHONE SYSTEM – YELLOW, (E) OTHER SYSTEM – BY SPECIFIC LETTER DESCRIPTION. LABEL ALL HOMERUN AND MAJOR CONDUIT WITH HOME PANELS/SWITCHES, ETC. AT EVERY 10-FT. INTERVAL IF ACCESSIBLE AND/OR VISIBLE, EXAMPLE: PANEL "X", SW. "X", COND UNIT XXX, XFMR DISC. SW., FEEDER XXX, ETC. MARK ALL BRANCH CONDUIT WITH CIRCUIT NUMBERS AT EACH SURFACE MOUNTED PANEL LOCATION. FOR RECESSED PANELS, MARK BRANCH CONDUIT IN CEILING PLENUM JUST ABOVE PANELS. COLOR CODE: CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS.

	480Y/277V 3 Ph, 4W	208Y/120V 3 Ph, 4W	240/120V 3 Ph, 4W	120/240V 1 Ph, 3W
Phase A	Brown	Black	Black	Black
Phase B	Purple	Red	Orange (High Leg)	Red
Phase C	Yellow	Blue	Blue	--
Neutral	Gray or White	White	White	White
Ground	Green	Green	Green	Green

ALL PANELS SHALL BE IDENTIFIED USING NAMEPLATES WITH 4 ROWS OF TEXT (LETTER HEIGHT SHALL BE 1/4" MINIMUM), EXAMPLE:
PANEL "XX" 225 AMPS MCB, SECTION #1 OF 2-SECTION PNL
208Y/120V, 3 PHASE, 4 WIRE
FEEDER SIZE 4 # 4/0 THWN, 1 # 4 G, 2 1/2" C.
FED FROM DIST PANEL "XXX", 1ST FLOOR

PANEL NAMEPLATES SHALL BE ENGRAVED THREE-LAYER LAMINATED PLASTIC, WHITE LETTERS ON BLACK BACKGROUND. SECURE NAMEPLATES TO EQUIPMENT USING SCREWS OR RIVETS.

ALL SWITCHES, STARTERS, COMBINATION STARTER/DISCONNECT, TRANSFORMERS, WIREWAYS, COMMUNICATION CABINETS, JUNCTION AND PULL BOXES ETC. SHALL BE SIMILIARLY IDENTIFIED. PROVIDE LABEL FOR EACH BRANCH CIRCUIT ON DISTRIBUTION PANELS, SWITCHBOARDS AND MCC'S.
EXAMPLE:
ACCU-1
208V, 3 PHASE, 3 WIRE
FEEDER SIZE 3 # 4/0 THWN, 1 # 4 G, 2 1/2" C.
FED FROM DIST PANEL "XXX", 1ST FLOOR

PANELBOARDS – DISTRIBUTION AND BRANCH CIRCUIT

ALL PANELBOARDS SHALL HAVE COPPER BUSES. LOAD CENTER TYPE PANELBOARDS ARE NOT ACCEPTABLE AND SHALL NOT BE USED. PROVIDE BREAKERS WHICH ARE QUICK-MAKE AND QUICK-BREAK ON BOTH MANUAL AND AUTOMATIC OPERATION. USE A TRIP-FREE BREAKER WHICH IS TRIP INDICATING. INCORPORATE INVERSE TIME CHARACTERISTIC BY BIMETALLIC OVERLOAD ELEMENTS AND INSTANTANEOUS CHARACTERISTIC BY MAGNETIC TRIP. FOR 2-POLE AND 3-POLE BREAKERS, USE THE COMMON-TRIP TYPE SO THAT AN OVERLOAD OR FAULT ON ONE POLE WILL TRIP ALL POLES SIMULTANEOUSLY. HANDLE TIES ARE NOT ACCEPTABLE. ALL BREAKERS SHALL BE BOLT-ON THERMAL MAGNETIC TYPE. STAB-ON BREAKERS ARE NOT ACCEPTABLE. DO NOT USE TANDEM CIRCUIT BREAKERS. ALL CIRCUIT BREAKERS RATED 100 AMP OR LESS SHALL BE SUITABLE FOR TERMINATING 75°C WIRE (BREAKERS RATED FOR ONLY 60°C WIRE IS NOT ACCEPTABLE. SEE 16123 – BUILDING WIRE AND CABLE). ALL EQUIPMENT SHALL BE LABELED, PANELBOARDS SHALL BE LABELED BOTH ON THE COVERPLATES AND THE INTERIORS.

PANELBOARD DIRECTORIES: PROVIDE A STEEL DIRECTORY FRAME MOUNTED INSIDE THE DOOR WITH A HEAT-RESISTANT TRANSPARENT FACE AND A DIRECTORY CARD FOR IDENTIFYING THE LOADS SERVED. IDENTIFY EACH CIRCUIT WITH LOAD AND LOCATIONS (ROOM NAMES AND ROOM NUMBERS) AND INDICATE WITH TYPED DIRECTORIES. (EXAMPLE: 5 DUPLEX RECEPTACLES, OFFICE, RM XXX). INSTALL THE PANELBOARDS SUCH THAT THE CENTER OF THE SWITCH OR CIRCUIT BREAKER IN THE HIGHEST POSITION WILL NOT BE MORE THAN 6 1/2 FEET ABOVE THE FLOOR OR WORKING PLATFORM. FOR EACH PANEL: FURNISH AND INSTALL ONE SPARE 3/4" CONDUIT FOR EVERY 6 SPARES AND/OR SPACES IN THE PANEL. EACH SPARE CONDUIT SHALL BE INSTALLED WITH PULL STRING STUBBED TO A J-BOX LOCATED IN ACCESSIBLE CEILING/PLENUM SPACE. INSTALL A MINIMUM OF ONE SPARE 3/4" CONDUIT FOR EVERY PANEL SHOWN ON PLANS, EVEN IF THERE ARE NO SPARES/SPACES IN SOME PANELS. MANUFACTURER SHALL BE SQUARE D.

ENCLOSED SAFETY SWITCHES

ALL SAFETY SWITCHES SHALL BE HEAVY-DUTY TYPE WITH QUICK-MAKE, QUICK-BREAK CONTACTS AND SUITABLE FOR TERMINATING 75°C WIRE. PROVIDE EACH SWITCH WITH A GROUND LUG. PROVIDE A DEFEATABLE, FRONT ACCESSIBLE, COIN-PROOF DOOR INTERLOCK TO PREVENT OPENING THE DOOR WHEN THE SWITCH IS IN THE ON POSITION AND TO PREVENT TURNING THE SWITCH ON WHEN THE DOOR WHEN THE SWITCH IS IN THE ON POSITION AND TO PREVENT TURNING THE SWITCH ON WHEN THE DOOR IS OPEN. PROVIDE INCOMING LINE TERMINALS WITH AN INSULATED SHIELD SO THAT NO LIVE PARTS ARE EXPOSED WHEN THE DOOR IS OPEN. PROVIDE EACH SWITCH WITH AN ISOLATED, FULLY RATED NEUTRAL BLOCK WITH PROVISIONS FOR BONDING THE BLOCK TO THE ENCLOSURE. WHERE FUSIBLE SWITCHES ARE SHOWN, PROVIDE SWITCHES WITH REJECTION-TYPE FUSE HOLDERS WHICH ARE SUITABLE FOR USE WITH FUSES. IN GENERAL, MOUNT SWITCHES SO THAT OPERATING HANDLE IS APPROXIMATELY 44 INCHES ABOVE FINISHED FLOOR; WHERE GROUPED, ALIGN TOPS OF SWITCHES. MANUFACTURER SHALL BE SQUARE D.

INTERIOR LIGHTING FIXTURES, LAMPS, AND BALLASTS

SEE THE LIGHT FIXTURE SCHEDULE ON THE DRAWINGS FOR TYPE OF LUMINAIRES AND CATALOG NUMBERS. CATALOG NUMBERS ARE SHOWN ON THE DRAWINGS FOR QUALITY AND PERFORMANCE REQUIREMENTS ONLY. LUMINAIRES MANUFACTURED BY OTHERS ARE EQUALLY ACCEPTABLE PROVIDED THEY MEET OR EXCEED THE PERFORMANCE OF THE INDICATED LUMINAIRES, AND MEET THE INTENT OF THE DESIGN.

LUMINAIRES SHALL BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETL, OR IEC).

WHERE ALTERNATE FIXTURES TO THOSE SPECIFIED ARE PROVIDED, NOTIFICATION OF ALTERNATES ARE REQUIRED PRIOR TO BID AND MUST BE APPROVED BY THE ARCHITECT/OWNER. FULL PHOTOMETRIC DRAWINGS AND A SPREADSHEET INDICATING THE DIFFERENCES BETWEEN THE SPECIFIED FIXTURES AND ALTERNATE FIXTURES SHALL BE PROVIDED AS PART OF THE PRE-BID NOTIFICATION. THE SPREADSHEET SHALL INDICATE ALL ASPECTS OF THE ALTERNATE FIXTURE THAT DIFFER FROM THE SPECIFIED FIXTURE, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

1. PHYSICAL DIMENSIONS.
2. MOUNTING TYPE.
3. FIXTURE RATINGS/LISTINGS.
4. HOUSING MATERIALS/CONSTRUCTION.
5. LUMEN OUTPUT.
6. FIXTURE VOLTAGE.
7. FIXTURE WATTAGE.
8. FIXTURE EFFICACY.
9. CCT.
10. CRI.
11. BEAM ANGLES/DISTRIBUTION.
12. MANUFACTURER WARRANTY.
13. EMERGENCY POWER.
14. CONTROLS REQUIREMENTS.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH THE PROPER CEILING FRAMES FOR THE CEILING MATERIAL IN WHICH RECESSED FIXTURES ARE TO BE INSTALLED.

ALL FIXTURES BROKEN OR DAMAGED DURING THE COURSE OF CONSTRUCTION SHALL BE REPLACED WITHOUT ADDITIONAL COST TO THE OWNER.

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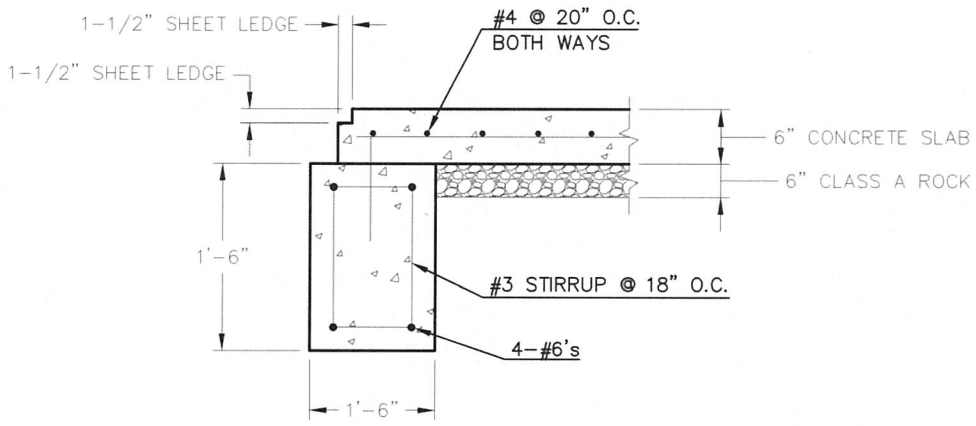
MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

E601

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00



CONTINUOUS FOOTING

TYPICAL SECTION VIEW

NOT TO SCALE

DAVID BRUCE WYATT #23396 OKLAHOMA

WDB ENGINEERING PLLC 6330 S.E. 74TH STREET OKC, OK 73135 PH: 405-741-7090 CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6-30-2025	
MOORE WEST JUNIOR HIGH WEIGHT ROOM ADDITION	
DATE: 07-19-2023	APPROVED BY DRAWN BY MW
FOOTING DETAIL	
WDB ENGINEERING P.L.L.C.	SHEET NUMBER FT01

ABBREVIATIONS

@	AT	HDWD.	HARDWOOD
ABV	ABOVE	HDWR.	HARDWARE
ACOUST.	ACOUSTICAL	HORIZ.	HORIZONTAL
ADJ.	ADJUSTABLE	HT.	HEIGHT
ANCH.	ANCHOR	INSUL.	INSULATION
APPROX.	APPROXIMATE	JST.	JOIST
BD.	BOARD	JT.	JOINT
BLK'G.	BLOCKING	LAV.	LAVATORY
BM.	BEAM	MAT'L	MATERIAL
BOT.	BOTTOM	MAX.	MAXIMUM
Ç	CENTERLINE	MECH.	MECHANICAL
CL'G.	CEILING	MFG.	MANUFACTURING
CONC.	CONCRETE	MFR.	MANUFACTURER
CMU	CONCRETE MASONARY UNIT	MIN.	MINIMUM
COL.	COLUMN	MISC.	MISCELLANEOUS
CONT.	CONTINUOUS	MTL.	METAL
D.F.	DRINKING FOUNTAIN	N.I.C.	NOT IN CONTRACT
DIM.	DIMENSION	NO. / #	NUMBER
DR.	DOOR	N.T.S.	NOT TO SCALE
DWG.	DRAWING	O.C.	ON CENTER
DWL.	DOWEL	OPN'G.	OPENING
EA.	EACH	OPP.	OPPOSITE
ELECT.	ELECTRICAL	PP.	POWER POLE
ELEV.	ELEVATION	PREFIN.	PREFINISHED
EQ.	EQUAL	P.T.	PAPER TOWEL
E.J.	EXPANSION JOINT	PW / PLY. WD.	PLYWOOD
E.W.	EACH WAY	RE:	REFER
EXIST.	EXISTING	REQ'D.	REQUIRED
EXP.	EXPANSION	RM.	ROOM
EXT.	EXTERIOR	S.B.	SPLASH BLOCK
FD.	FLOOR DRAIN	SCHED.	SCHEDULE
FE.	FIRE EXTINGUISHER	STD.	STANDARD
FEC.	FIRE EXTINGUISHER CABINET	STL.	STEEL
FFL.	FINISH FLOOR LINE	S.J.	SAWJOINT
FIN.	FINISH	T.C.	TOP OF CURB
FRM'G.	FRAMING	T.P.H.	TOILET PAPER HOLDER
GA.	GAUGE	TYP.	TYPICAL
G.B.	GRAB BAR	U.N.O.	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	VTR.	VENT THROUGH ROOF
GYP. BD.	GYPSUM BOARD	W/	WITH
H.C.	HANDICAP	W.C.	WATERCLOSET
		WD.	WOOD
		WWF.	WELDED WIRE FABRIC

MATERIALS LEGEND

FOR PLANS AND DETAILS

- MASONRY VENEER
- C.M.U.
- CONCRETE
- FRAME PARTITION, METAL STUDS

FOR DETAILS

- GYPSUM BOARD
- PARTICLE BOARD
- RIGID INSULATION
- WOOD BLOCKING / FRAMING, CONTINUOUS
- WOOD BLOCKING, DISCONTINUOUS
- FINISH WOOD
- SMALL SCALE STRUCTURAL STEEL / MISCELLANEOUS METAL
- LARGE SCALE STRUCTURAL STEEL
- BATT INSULATION
- ACOUSTICAL CEILING TILE
- EARTH FILL

SYMBOLS LEGEND

- 1152 — EXISTING SPOT ELEVATION
- 1152 — FINISH SPOT ELEVATION
- 1152 — EXISTING GRADE CONTOUR
- 1152 — FINISH GRADE CONTOUR
- 18" ELM — EXISTING TREE TO BE PROTECTED
- 15" OAK — EXISTING TREE TO BE REMOVED
- PROJECT LIMITS
- CHAINLINK FENCE
- BARBED WIRE FENCE
- CONCRETE PAVING
- ASPHALT PAVING
- CONCRETE SIDEWALK
- EXISTING PAVING/SIDEWALK TO REMAIN
- EXISTING PAVING TO BE REMOVED
- NEW BUILDING
- EXISTING BUILDING - NO WORK
- 3 — ROOM NUMBER
- 3 RE: 4A7 — ROOM NUMBER/ LARGE SCALE PLAN REFERENCE
- 3 2A6 — ROOM NUMBER/INTERIOR ELEVATION REFERENCE

- 2A7 — WALL SECTION/DETAIL CUT MARK
- 5A7 — LARGE SCALE DETAIL MARK
- A / 1 — STRUCTURAL GRID COORDINATES
- 1A4 — BUILDING SECTION CUT MARK
- 6 — DOOR NUMBER
- C — WINDOW MARK
- B — FRAME MARK
- G2 — GLAZING MATERIAL MARK
- 4 — EQUIPMENT MARK
- *A18 — EXTERIOR ELEVATION MARK
- #4 — TEST HOLE
- ELEV. 1152 — BENCH MARK/BUILDING ELEVATION (SECTION)

GENERAL NOTES:

1. ALL REQUIRED HANDICAP ACCESSIBLE ITEMS TO COMPLY WITH AMERICANS WITH DISABILITIES ACT AND ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES.
2. THE CONTRACTOR SHALL NOT USE ANY LEAD-BASED PAINT OR ASBESTOS CONTAINING MATERIAL ON THIS PROJECT
3. THESE CONTRACT DOCUMENTS INCLUDING BUT NOT LIMITED TO THE DRAWINGS, PROJECT MANUAL AND ANY SUBSEQUENT ADDENDA ARE ISSUED AS A "WHOLE" AND SHALL BE BID AS SUCH. EACH DISCIPLINE / SUBCONTRACTOR SHALL REVIEW THE ENTIRE SET OF CONTRACT DOCUMENTS AND INCLUDE APPLICABLE WORK IN THEIR BID REGARDLESS OF LOCATION WITHIN THE CONTRACT DOCUMENTS. REVIEWING ONLY PORTION OF THE CONTRACT DOCUMENTS SHALL NOT ABSOLVE THE CONTRACTOR OR SUBCONTRACTOR OF THE REQUIREMENT TO PERFORM THE WORK OF THEIR RESPECTIVE DISCIPLINES.
4. LOCATIONS OF EXISTING BUILDINGS, SITE FEATURES, & UNDERGROUND UTILTIES HAVE BEEN OBTAINED FROM EXISTING AVAILABLE SOURCES. THE CONTRACTOR IS TO FIELD VERIFY EXISTING LOCATIONS PRIOR TO STARTING CONSTRUCTION AND NOTIFY THE ARCHITECT IMMEDIATELY IF ANY EXISTING BUILDING &/OR SITE FEATURE CONFLICTS W/ THE NEW CONSTRUCTION.
5. THE CONTRACTOR SHALL VERIFY ALL EXISTING SITE UTILITIES AND PROTECT DURING CONSTRUCTION. COORDINATE NEW UTILITY REQUIREMENTS WITH APPLICABLE UTILITY COMPANIES (WATER, GAS ELECTRICITY, SANITARY SEWER, TELEPHONE, CABLE, SITE DRAINAGE AND OTHERS AS REQUIRED). COMPLY WITH ALL APPLICABLE REGULATIONS. INCLUDE ALL CONNECTION FEES AND OTHER CHARGES IN BID.
6. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR UTILITY INFORMATION.
7. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND CONCRETE TO BE PROVIDED BY CONTRACTOR.
8. GENERAL CONTRACTOR TO VERITY LOCATIONS OF EASEMENTS, ENCUMBRANCES AND SET BACKS PRIOR TO STARTING CONSTRUCTION
9. CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO ARCHITECT'S ATTENTION. FAILURE TO BID ITEM(S) NOTED ON DRAWINGS AND OMITTED FROM SPECIFICATIONS DOES NOT REMOVE RESPONSIBILITY TO PROVIDE AND INSTALL SUCH.

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CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

STATE OF OKLAHOMA
MICHAEL L. ABLA
2639
REGISTERED ARCHITECT
5/13/23

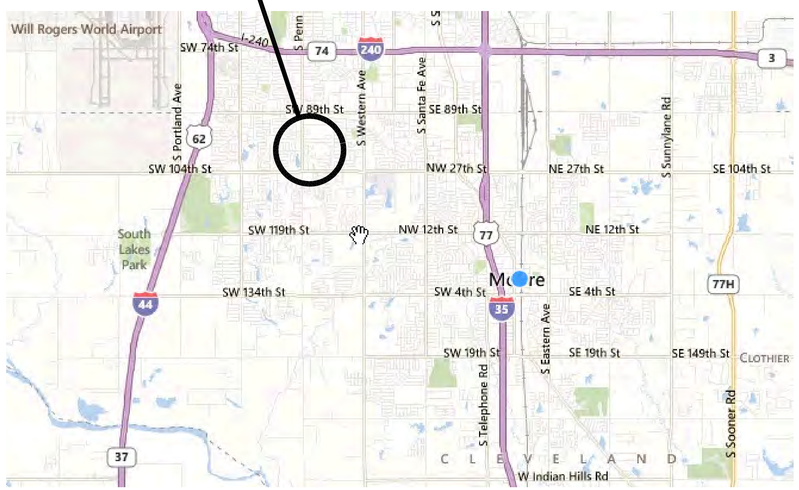
CG
drawn by

MA
checked by

MAY 2023
date

revisions

PROJECT LOCATION



MOOREWEST JUNIOR HIGH SCHOOL
9400 S. PENN
OKLAHOMA CITY, OKLAHOMA 73159

NORTH

VICINITY MAP

GENERAL NOTES (CON'T):

10. CONSTRUCTION STAGING AREA & VEHICLE ACCESS SHALL BE CONFIRMED WITH OWNER, AND CONSTRUCTION MANAGER IF APPLICABLE, PRIOR TO CONSTRUCTION.
11. FINISH GRADE AT BUILDING PERIMETERS SHALL BE 6" BELOW FINISH FLOOR UNLESS SPECIFICALLY NOTED OTHERWISE ON CIVIL DRAWINGS. DEVELOP POSITIVE DRAINAGE AWAY FROM NEW AND/OR EXISTING BUILDING(S).
12. ALL GRID LINES IDENTIFIED BY A LETTER OR NUMBER ARE PARALLEL UNLESS OTHERWISE NOTED.
13. SIZES OF HOUSEKEEPING PADS AND BASES FOR MECHANICAL EQUIPMENT ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATION AND REQUIRED SIZE OF ALL CONCRETE PADS AND BASES WITH EQUIPMENT MANUFACTURERS BEFORE POURING. ALL PADS TO BE PROVIDED BY THE CONTRACTOR.
14. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE VARIOUS TRADE ITEMS WITHIN THE SPACE ABOVE THE CEILINGS (INCLUDING, BUT NOT LIMITED TO STRUCTURAL MEMBERS AND SPRAY-ON INSULATION OR FIREPROOFING, MECHANICAL DUCTS AND BATT INSULATION, CONDUITS, RACEWAY, SPRINKLER SYSTEMS, LIGHT FIXTURES, CEILING SYSTEMS, AND ANY SPECIAL STRUCTURAL SUPPORTS REQUIRED) AND SHALL BE RESPONSIBLE FOR MAINTAINING THE FINISH CEILING HEIGHT ABOVE THE FINISH FLOOR INDICATED IN THE DRAWINGS AND FINISH SCHEDULE.
15. ALL METAL STUDS WALLS WHERE PLUMBING OCCURS OR STRUCTURAL COLUMNS ARE LOCATED SHALL BE MINIMUM 6" METAL STUDS. NOTIFY ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS.
16. PROVIDE AND INSTALL ACCESS PANELS, WHERE REQUIRED BY BUILDING CODE OR FOR THE PROPER OPERATION OF MECHANICAL OR ELECTRICAL EQUIPMENT, AND AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL COORDINATE SIZE, LOCATION, AND TYPE OF ACCESS PANEL WITH OTHER CONTRACTORS' WORK AND RECEIVE APPROVAL OF THE ARCHITECT. ACCESS PANEL SHALL BE AS SPECIFIED.
17. 3/4" FIRE-RETARDANT TREATED PLYWOOD BACKING 8'-0" HIGH SHALL BE PROVIDED AND INSTALLED ON ALL WALLS OF TELEPHONE AND ELECTRICAL ROOMS UNLESS SPECIFICALLY SHOWN OTHERWISE ON ELECTRICAL DRAWINGS.
18. ALL WOOD WITHIN THIS PROJECT (I.E. PLYWOOD, BLOCKING, ETC.) SHALL BE FIRE-RETARDANT TREATED.
19. FOR ILLUSTRATION AND DEFINITION OF TYPICAL SYMBOLS USED ON THE ARCHITECTURAL DRAWINGS, SEE "SYMBOLS AND ABBREVIATIONS" SHEET. ADDITIONAL SYMBOLS NOT SHOWN OR DEFINED THERE MAY OCCUR AND ARE DEFINED ON OTHER DRAWINGS.
20. REFER TO SPECIFICATIONS FOR ADDITIONAL PAINT ITEMS NOT SHOWN ON ROOM FINISH SCHEDULE.
21. THE SPECIFICATIONS AND ALL CONSULTANT DRAWINGS ARE SUPPLEMENTAL TO THE ARCHITECTURAL DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE ARCHITECTURAL DRAWINGS BEFORE THE INSTALLATION OF ANY OF THE CONSULTANTS' WORK AND TO BRING ANY DISCREPANCIES OR CONFLICTS TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION. IMPROPERLY INSTALLED WORK SHALL BE CORRECTED BY THE CONTRACTOR AT NO EXPENSE TO THE ARCHITECT, HIS CONSULTANTS, OR THE OWNER.
22. THE ARCHITECTURAL DRAWINGS ARE A PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSISTS OF ALL DRAWINGS LISTED BY THE INDEX OF DRAWINGS. THE WORK DESCRIBED BY THE DRAWINGS OF ANY ONE DISCIPLINE MAY BE AFFECTED BY THE WORK DESCRIBED ON DRAWINGS OF ANOTHER DISCIPLINE AND MAY REQUIRE REFERENCE TO DRAWINGS OF ANOTHER DISCIPLINE. PARTIAL SETS OF DRAWINGS SHALL NOT BE DISTRIBUTED AND UTILIZED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW AND COORDINATE THE WORK OF ALL SUBCONTRACTORS, TRADES, AND SUPPLIERS WITH THE REQUIREMENTS OF THE CONTRACT BEFORE COMMENCING CONSTRUCTION AND TO ASSURE THAT ALL PARTIES ARE AWARE OF ALL REQUIREMENTS, REGARDLESS OF WHERE THE REQUIREMENTS OCCUR IN THE CONTRACT DOCUMENTS.
23. THE ARCHITECTURAL DRAWINGS ESTABLISH AND COORDINATE THE FINISHED APPEARANCE AND EXACT LOCATIONS OF ALL EXPOSED ELEMENTS OF THE WORK, INCLUDING THAT WORK WHICH IS ILLUSTRATED PRIMARILY ON DRAWINGS OF OTHER DISCIPLINES. LOCATIONS SHOWN ON OTHER DRAWINGS ARE SCHEMATIC, UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS. THE ARCHITECTURAL DRAWINGS TAKE PRECEDENCE FOR THE FINISHED APPEARANCE AND EXACT LOCATION OF ALL PARTS OF THE WORK. [EXCEPTIONS: DIMENSIONED LOCATIONS SHOWN ON DRAWINGS OF OTHER DISCIPLINES SHALL GOVERN ONLY WHERE: (A) SPECIFICALLY AND INDIVIDUALLY INDICATED BY SYMBOL, KEYED NOTE, OR NOTATION ON THE ARCHITECTURAL DRAWINGS. (B) OCCURRING WITHIN A ROOM OR OTHER IDENTIFIED SPACE FOR WHICH ARCHITECTURAL SHEET OR SCHEDULE NOTES INDICATE THAT DIMENSIONS PROVIDED ELSEWHERE SHALL GOVERN.]
24. WORK NOT SPECIFICALLY INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO WORK SHOWN ON THE DRAWINGS IN CORRESPONDING AND OTHER PLACES SHALL BE CONSTRUCTED SIMILARLY.
25. PROVIDE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2A WITHIN 75 FOOT TRAVEL DISTANCE TO ALL PORTIONS OF THE BUILDING. PROVIDE PORTABLE FIRE EXTINGUISHERS AS THE BUILDING IS CONSTRUCTED.

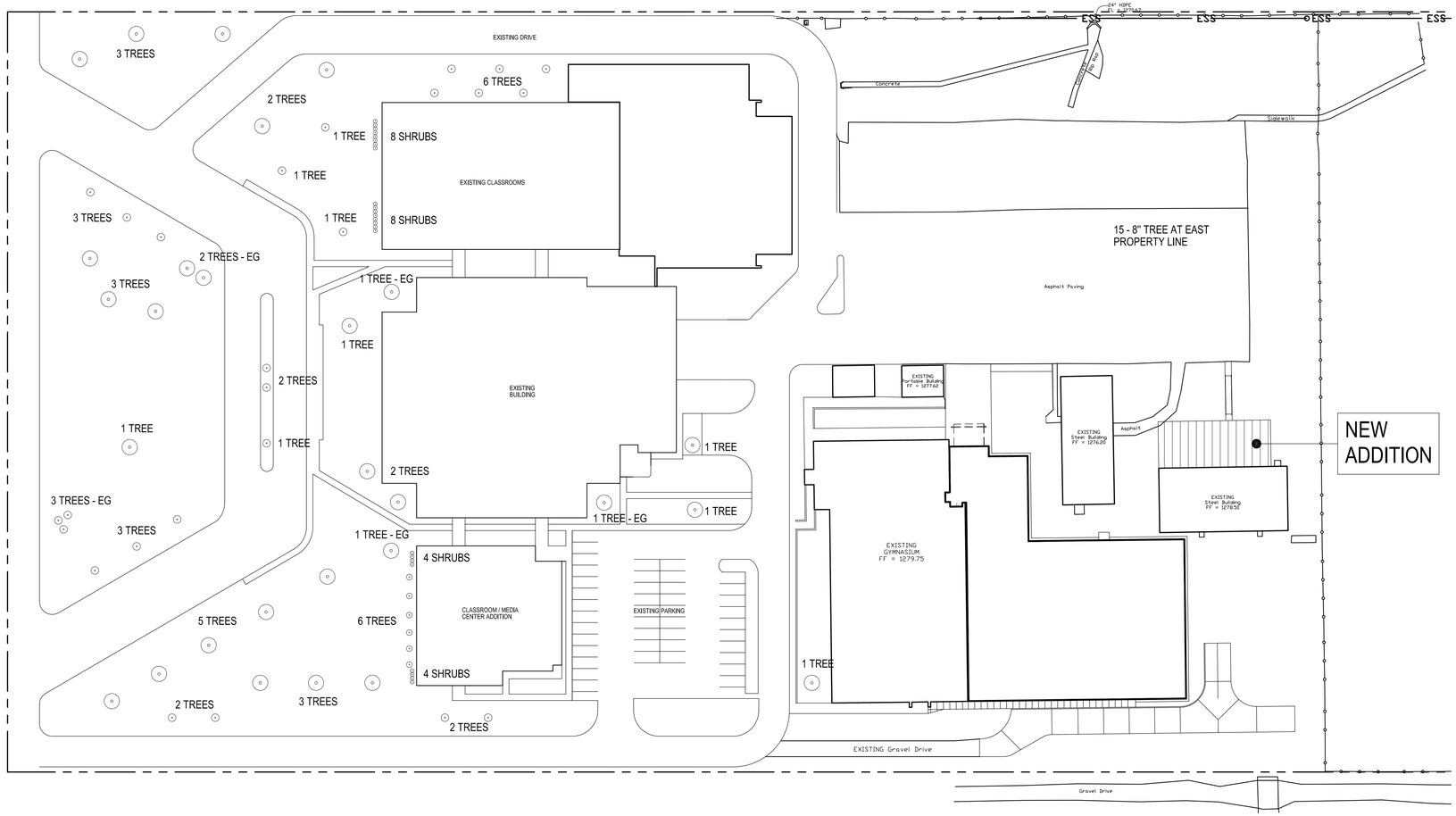
MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

G100



NORTH

1 EXISTING LANDSCAPE PLAN

1" = 50'-0"

LANDSCAPING NOTES:

508,200 S.F. TOTAL DEVELOPED AREA

EXISTING SITE SIZE:508,200 / 200 = 2541 POINTS
EXISTING PARKING LOT: 110 EXISTING SPACES = 220 POINTS
POINTS REQ'D. 2541 + 220= 2761

EXISTING LANDSCAPING:

35 - 8" TREES = 910 PTS
39 - 6" TREES = 858 PTS
7 - 6" TREES (EVERGREENS) = 154 PTS
24 - MED. SHRUBS = 48 PTS
16117 SY - TURF GRASS = 4029 PTS
MAX 25% ALLOWED =1007 PTS
TOTAL EXISTING PTS 2,977 PTS

EXISTING SPRINKLER SYSTEM
MODIFICATION NOTE:

THE CONTRACTOR SHALL FIELD VERIFY, INVENTORY & REMOVE ANY SPRINKLER SYSTEM HEADS, PIPING & ASSOCIATED ITEMS WHICH INTERFERE W/ THE NEW BUILDING ADDITION. THE CONTRACTOR SHALL MODIFY REMAINING SYSTEM AS NECESSARY AFTER CONSTRUCTION OF NEW ADDITION / NEW BUILDING TO PROPER WORKING ORDER COORDINATE W/ ARCHITECT.

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sheet no:

L100

GENERAL MECHANICAL NOTES

1. ALL WORK SHALL BE IN COMPLIANCE WITH STATE AND LOCAL CODES.
2. THE CONTRACTOR SHALL PAY FOR ALL FEES, PERMITS, LICENSES, ETC., NECESSARY FOR PROPER COMPLETION OF THE WORK.
3. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
4. VERIFY ALL EXISTING CONDITIONS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN CONTRACT DRAWINGS AND ACTUAL CONDITIONS.
5. EXISTING UTILITIES TO BE ABANDONED SHALL BE PROPERLY DISCONNECTED AND CAPPED AS REQUIRED BY CODE OR LOCAL ORDINANCE.
6. THESE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. ADDITIONAL DATA SHALL BE FROM THE ENGINEER THROUGH WRITTEN CLARIFICATION ONLY. VERIFY ALL EXISTING CONDITIONS, ELEVATIONS, AND DIMENSIONS BEFORE PROCEEDING WITH ANY PORTION OF ANY WORK. THE CONTRACTOR SHALL PROVIDE ALL OFFSETS AND TRANSITIONS REQUIRED TO MEET EXISTING CONDITIONS.
7. THE CONTRACTOR SHALL PERFORM WORK IN A SKILLED AND PROFESSIONAL MANNER.
8. ALL CONTRACTORS ARE RESPONSIBLE TO FIELD COORDINATE WORK SCHEDULE WITH OWNER REPRESENTATIVE.
9. THE CONTRACTOR SHALL WORK AND COORDINATE WITH THE OTHER TRADES.
10. ALL EQUIPMENT SHALL BE NEW AND IN UNDAMAGED CONDITION. ANY EQUIPMENT FOUND DEFECTIVE SHALL BE IMMEDIATELY REMOVED FROM THE PROJECT.
11. PROVIDE 3 COPIES OF AN OPERATION AND MAINTENANCE MANUAL FOR ALL MAJOR EQUIPMENT REQUIRING SERVICE. MAJOR EQUIPMENT INCLUDES BUT IS NOT LIMITED TO COILS, FANS, AND CONTROL WIRING DIAGRAMS. EACH PIECE OF EQUIPMENT SHALL STATE THE CONTRACT DATE AND THE NAME, ADDRESS AND PHONE NUMBER FOR THE PRIME CONTRACTOR, SUBCONTRACTOR PERFORMING THE INSTALLATION, AND THE LOCAL VENDOR FOR SPARE PARTS. THE MANUALS SHALL CONTAIN MAINTENANCE INSTRUCTIONS REQUIRED FOR THE INSTALLED EQUIPMENT. MANUALS SHALL BE BOUND IN A THREE RING HARD COVER BINDER. O & M MANUALS SHALL BE SUBMITTED TO THE OWNER PRIOR TO FINAL WALK THROUGH OF THE PROJECT.
12. PROVIDE 8 HOURS OF OWNER TRAINING FOR THE INSTALLED EQUIPMENT. TRAINING SHALL BE HELD ONLY AFTER ALL OF THE EQUIPMENT IS INSTALLED AND PROPER OPERATION IS VERIFIED.
13. CONTRACTOR SHALL SUBMIT A CERTIFIED REPORT INDICATING SYSTEM PERFORMANCE INCLUDING, BUT NOT LIMITED TO, VOLTAGE AND AMPERAGE MEASUREMENTS OF ALL EQUIPMENT GREATER THAN 1/3 H.P. WATER BALANCE MEASUREMENTS OF EACH COIL AND PUMP. AIR BALANCE MEASUREMENTS OF OUTSIDE AIR DELIVERY, AIR HANDLING UNIT SUPPLY, SUPPLY DIFFUSERS, EXHAUST AND RETURN GRILLES. AIR BALANCE SHALL BE WITHIN 10% OF DESIGN CONDITIONS. THE REPORT CERTIFICATION SHALL BE AS FOLLOWS:

    I (name) of (company) CERTIFY THAT ALL MEASUREMENTS, FIGURES AND STATEMENTS INDICATED IN THIS REPORT WERE TAKEN BY ME OR UNDER MY SUPERVISION AND ARE ACCURATE AS OF (date). DESIGN FLOWS WERE BASED UPON PLANS DATED (xx/xx/xx).

14. DUCT MATERIAL SHALL BE GALVANIZED OR ALUMINUM CONSTRUCTION IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARD 2005 FOR THE PRESSURE AND SEAL CLASS LISTED IN DUCTWORK/INSULATION SCHEDULE.
15. DUCT SIZES LISTED ON PLANS ARE THE REQUIRED CLEAR INTERIOR DIMENSIONS.
16. SUPPLY AND RETURN BRANCH DUCTS MAY BE INSULATED FLEX DUCT IF THE RUN IS LESS THAN 5 FEET IN LENGTH. ANY LENGTHS OVER 5 FEET SHALL BE RIGID DUCTWORK, DUCT SHALL BE THE SAME SIZE AS THE LISTED DIFFUSER THROAT UNLESS NOTED OTHERWISE.
17. PROVIDE VOLUME CONTROL DAMPERS WHERE INDICATED AND AT ALL TAKEOFFS, BOTH SUPPLY AND RETURN SYSTEMS, AND MAJOR DUCT RUNS. DAMPERS SHALL BE FACTORY-FABRICATED WITH ZINC-PLATED, DIE-CAST CONTROL HARDWARE. CONTROL HARDWARE SHALL INCLUDE HEAVY GAUGE DIAL AND HANDLE WITH ELEVATED PLATFORM FOR INSULATED DUCT MOUNTING.
18. PROVIDE TURNING VANES IN ALL RECTANGULAR ELBOWS CONFORMING TO SMACNA DUCT CONSTRUCTION STANDARD 2005 FIG. 4-2 TYPE RE-3 WITH STANDARD RADIUS. WHERE SPACE PERMITS, PROVIDE RADIUSED ELBOWS IN ACCORDANCE WITH FIGURES 4-2, TYPE RE-1.
19. ALL RECTANGULAR MAIN TO RECTANGULAR BRANCH CONNECTIONS, BOTH CONVERGING AND DIVERGING CONFIGURATIONS, SHALL HAVE A 45 DEG. ENTRY TAP CONSTRUCTED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARD 2005 FIG. 4-6.
20. DIFFUSER PATTERN 4-WAY UNLESS OTHERWISE INDICATED. PROVIDE FIBERGLASS DUCT INSULATION WITH VAPOR BARRIER AS SCHEDULED UNLESS NOTED OTHERWISE.
21. MECHANICAL CONTRACTOR TO REPAIR ANY DAMAGE DONE TO THE FIRE PROOFING WHILE INSTALLING THE MECHANICAL TRADES. SEAL ALL PENETRATIONS THROUGH RATED STRUCTURES WITH UL LISTED FIRE SEAL DESIGNED FOR THE SPECIFIED APPLICATION.
22. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION.
23. THE CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OR AS OTHERWISE REQUIRED IN THE SPECIFICATIONS.
24. MECHANICAL CONTRACTOR TO INCLUDE THE TEST AND BALANCE, AND ANY PERMIT FEES IN THEIR BID.
25. MECHANICAL CONTRACTOR SHALL VERIFY ALL ROOFTOP EQUIPMENT WEIGHTS, SIZES, LOCATIONS AND OPENINGS REQUIRED AND SHALL COORDINATE ANY CHANGES WITH THE ARCHITECT.
26. UPON PROJECT COMPLETION, RECORD (AS-BUILT) DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR TO THE BUILDING OWNER. ALL CHANGES MADE TO EQUIPMENT, DUCTWORK, AND GENERAL DESIGN SHALL BE NOTED ON THE DRAWINGS. PROVIDE IN PDF FORMAT OR PRINTED SET AT THE OWNER'S REQUEST.

ABBREVIATIONS

A	AMP
ADD	ADDENDUM
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLER UNIT
AI	ANALOG INPUT
ALT	ALTERNATE
AO	ANALOG OUTPUT
APPRX	APPROXIMATE
ARCH	ARCHITECT, ARCHITECTURAL
BDD	BACK DRAFT DAMPER
BLDG	BUILDING
BTUH	BRITISH THERMAL UNIT PER HOUR
C	CENTER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CO	CLEAN OUT
COND	CONDENSATE
CONT	CONTINUOUS
COP	COEFFICIENT OF PERFORMANCE
DB	DRY BULB
DET	DETAIL
DG	DOOR GRILLE
DI	DIGITAL INPUT
DIA OR ø	DIAMETER
DIM	DIMENSION
DN	DOWN
DO	DIGITAL OUTPUT
DWG	DRAWING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ELEC	ELECTRICAL
ERV	ENERGY RECOVERY VENTILATOR
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
FA	FRESH AIR
FPM	FEET PER MINUTE
FT	FOOT (FEET)
GA	GAUGE/GAGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
GYP	GYPSUM
HORIZ	HORIZONTAL
HP	HORSEPOWER
HT	HEIGHT
I/O	INPUT/OUTPUT
IN	INCH
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MECH	MECHANICAL
MIN	MINIMUM
MFR	MANUFACTURER
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OC	ON CENTER
P	PUMP
PC	PLUMBING CONTRACTOR
PLBG	PLUMBING
PSI	POUNDS PER SQUARE INCH
QTY	QUANTITY
RA	RETURN AIR
REQD	REQUIRED
REV	REVERSE OR REVISION
RG	RETURN AIR GRILLE
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SQFT	SQUARE FEET
SG	SUPPLY GRILLE
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SS	STAINLESS STEEL
T&B	TEST AND BALANCE
TEMP	TEMPERATURE OR TEMPORARY
TG	TRANSFER GRILLE
TYP	TYPICAL
V	VOLT
VAR	VARIABLE OR VARIES
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
W/	WITH
W/IN	WITHIN
W/O	WITH OUT
WB	WET BULB
WC	WATER COLUMN (INCHES OF)
WT	WEIGHT

MECHANICAL HVAC LEGEND

EXHAUST AIR DUCT (DOWN)			EXHAUST AIR DUCT (UP)
RETURN AIR DUCT (DOWN)			RETURN AIR DUCT (UP)
OUTSIDE OR SUPPLY AIR DUCT (DOWN)			OUTSIDE OR SUPPLY AIR DUCT (UP)
DUCT SIZE	24x12		NEW DUCTWORK
FLEX DUCT			EXISTING DUCTWORK
DEMOLITION LINETYPE			SUPPLY AIR CEILING DIFFUSER
RETURN AIR GRILLE			EXHAUST AIR GRILLE
DIFFUSER, GRILLE, AND REGISTER CALL-OUTS	CALL-OUT CFM		SCHEDULED EQUIPMENT TAG
MANUAL BALANCING DAMPER			PIPE PENETRATION THROUGH FIRE RATED WALL
FIRE DAMPER			SMOKE DAMPER
MOTORIZED DAMPER	M		FIRE/SMOKE DAMPER
THERMOSTAT	T	H	HUMIDISTAT
REMOTE SENSOR	S	C	CARBON DIOXIDE SENSOR
DUCT SMOKE DETECTOR			

MECHANICAL SHEET INDEX

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

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WDB ENGINEERING
CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

KF
drawn by

DMG
checked by

MAY 2023
date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

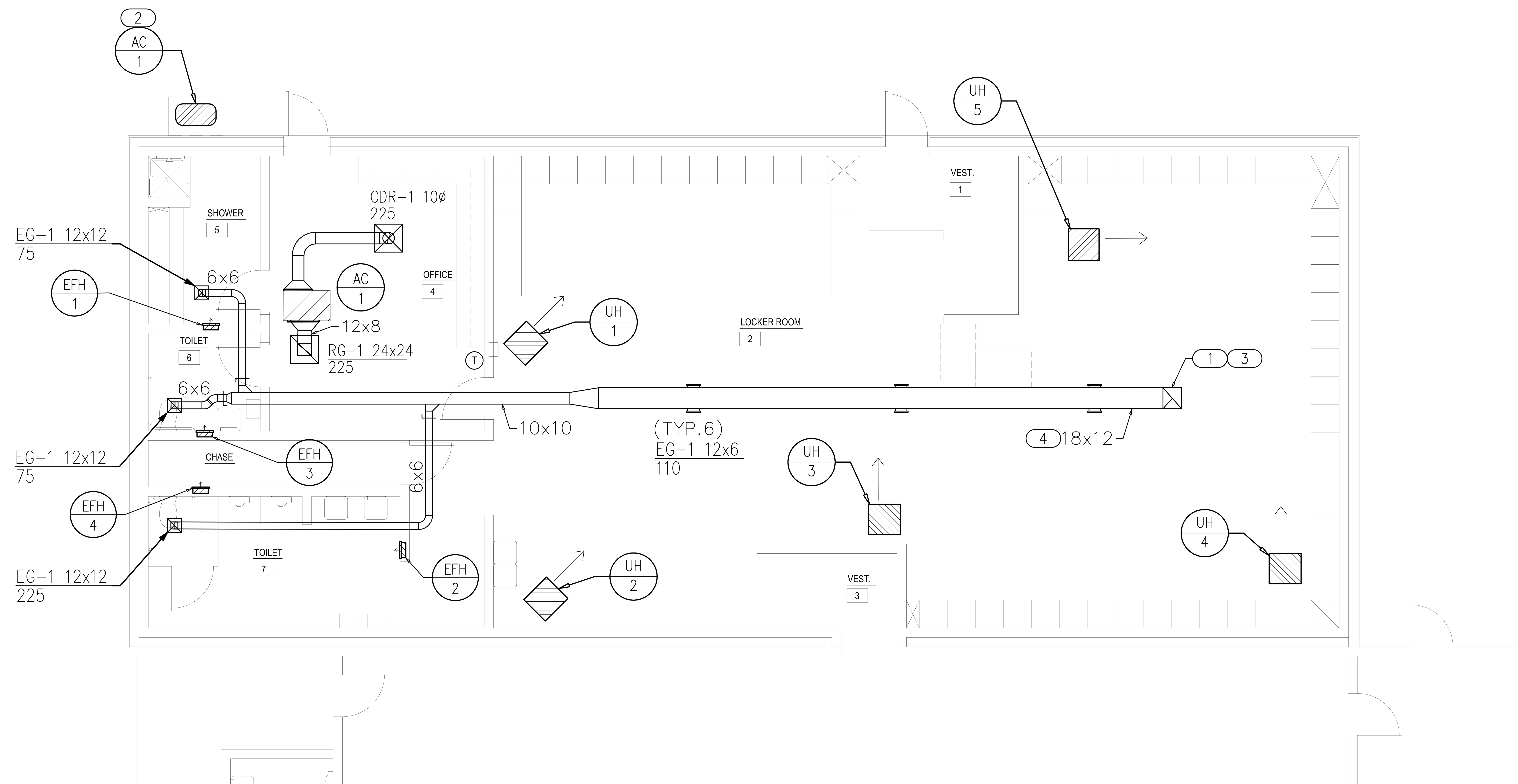
M000

GENERAL NOTES

1. COORDINATE WORKS WITH ALL TRADES.
2. COORDINATE LOCATION OF THERMOSTATS WITH E.C. ROUGH-IN BY E.C.
3. EXPOSED CEILING WITH SPIRAL DUCT SHALL HAVE PAINT GRIP FINISH. COLOR BY ARCHITECT.

KEYED NOTES

1. PROVIDE DUCTWORK RUNNING FROM EXHAUST GRILLE CARRYING MOISTURE-LADEN AIR CONSTRUCTED OF ALUMINUM IN ACCORDANCE WITH SMACNA STANDARDS. SEAL ALL JOINTS AND SEAMS WATERTIGHT. SLOPE DUCT DOWN TO GRILLE.
2. PROVIDE 4" REINFORCED CONCRETE PAD. INSTALL UNIT IN ADHERENCE WITH MANUFACTURER'S SUGGESTED CLEARANCES. EXTEND CONCRETE PAD A MINIMUM OF 6" ON EACH SIDE OF UNIT. EXTEND PAD TO BUILDING. COORDINATE WITH G.C. AND ARCHITECT.
3. DUCT UP TO EF-1.
4. ROUTE DUCTWORK TIGHT TO BOTTOM OF STRUCTURE.



1 MECHANICAL DUCTWORK PLAN
SCALE: 1/4" = 1'-0"

NORTH

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Dwayne McDonald Yocham 10/20/23

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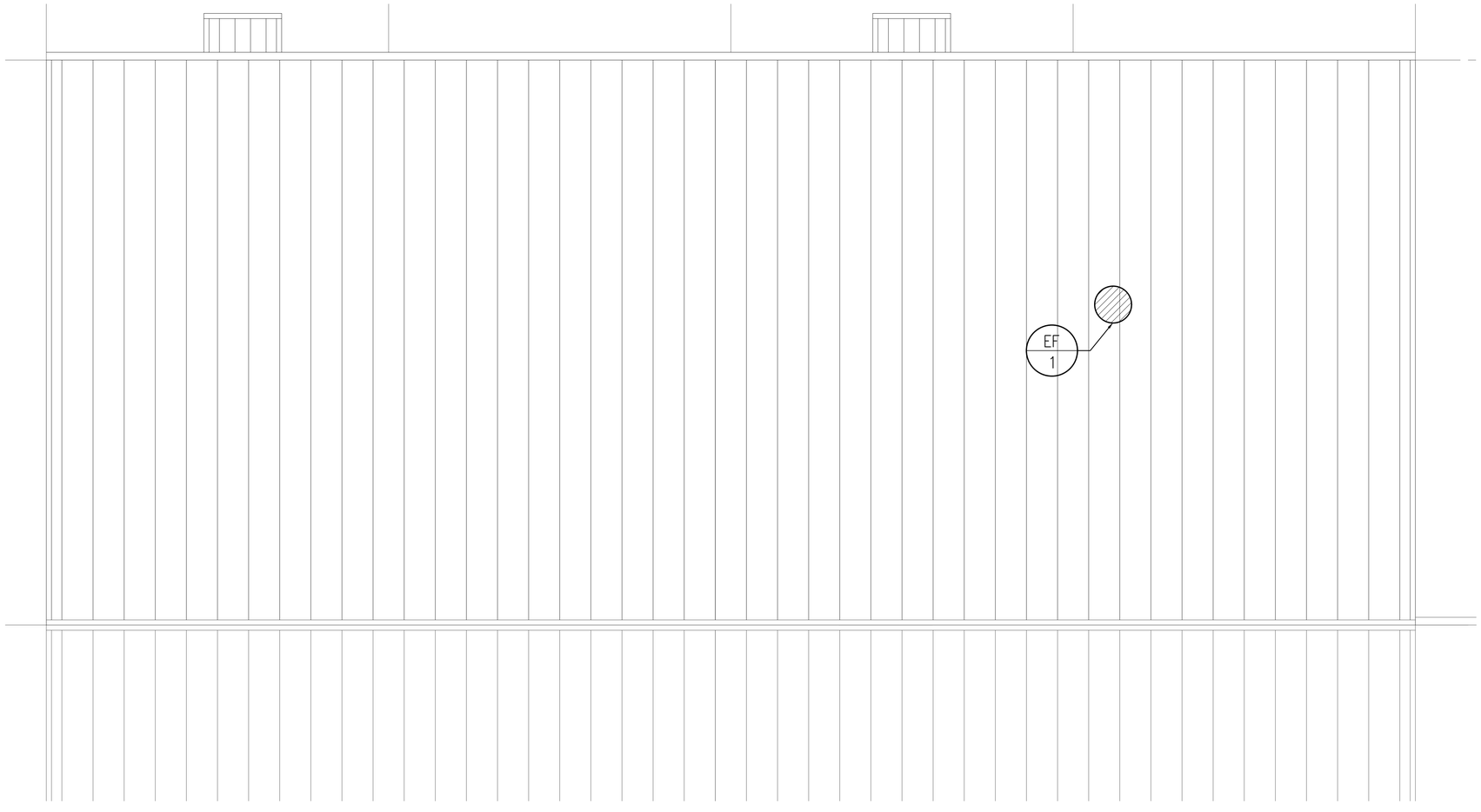
GENERAL NOTES

1. COORDINATE WORKS WITH ALL TRADES.
2. MAINTAIN A MINIMUM OF 10'-0" HORIZONTAL CLEARANCE BETWEEN ALL EXHAUST AIR OUTLETS AND ANY FRESH AIR INTAKES.



1 MECHANICAL ROOF PLAN
SCALE: 1/16" = 1'-0"

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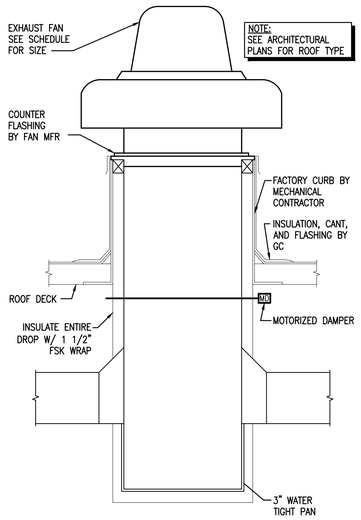
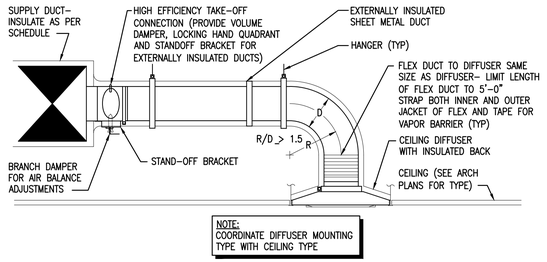


4 POWER ROOF VENTILATOR DETAIL
NOT TO SCALE



2 CEILING DIFFUSER DETAIL
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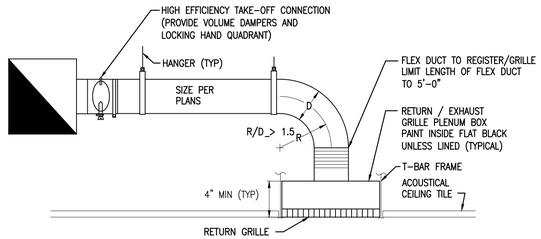
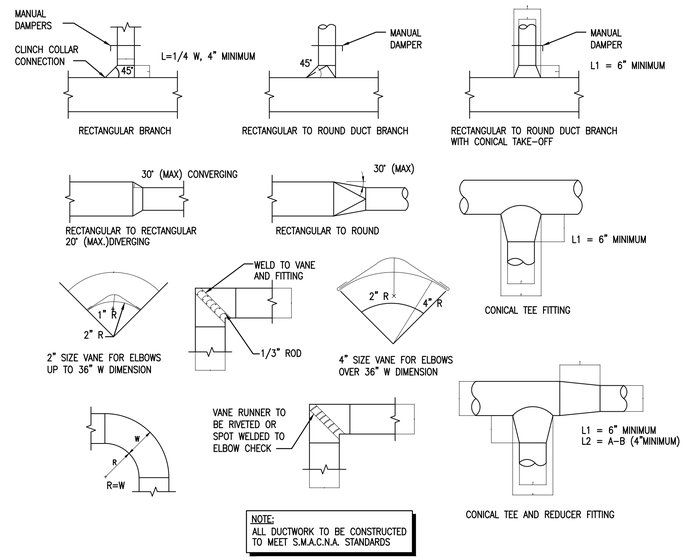


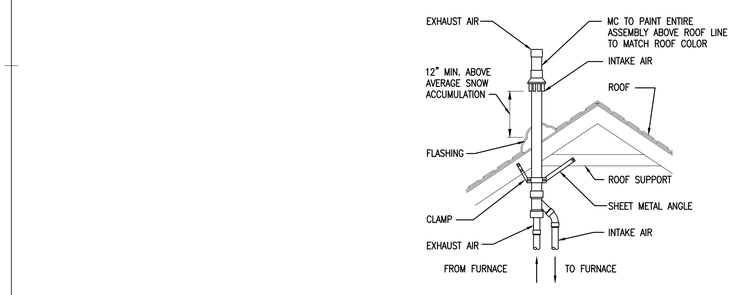
3 RETURN / EXHAUST AIR GRILLE PLENUM BOX
NOT TO SCALE



1 TYPICAL DUCTWORK DETAILS
NOT TO SCALE

5 MINI-SPLIT CONDENSING UNIT DIAGRAM
NOT TO SCALE

6 FAN COIL UNIT MOUNTING DETAIL
NOT TO SCALE



7 VENT TERMINATION DETAIL
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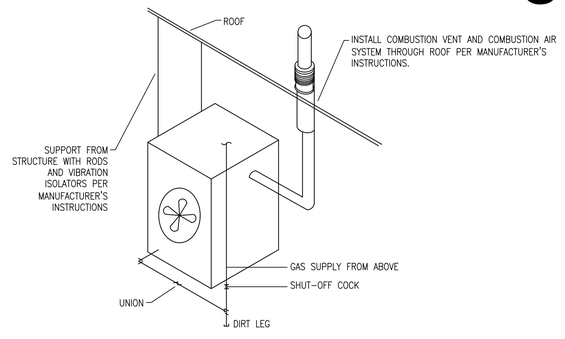

9 UNIT HEATER DETAIL
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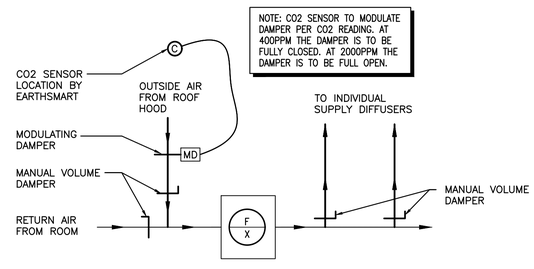

8 TYPICAL FURNACE AIR BALANCING SCHEMATIC
NOT TO SCALE

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ELECTRIC FAN FORCED HEATER SCHEDULE

EFH #	CFM	WALL OR CEILING	KW	MOUNTING	ELECTRICAL CHAR	AMPS	SPEEDS	CONTROL	RPM	MANUFACTURER & MODEL NUMBER	NOTES
1	100	WALL	4	RECESSED	208/1	19.2	1	INT.	–	BERKO FRC-4020	1-3
2	100	WALL	4	RECESSED	208/1	19.2	1	INT.	–	BERKO FRC-4020	1-3
3	100	WALL	2	RECESSED	208/1	9.6	1	INT.	–	BERKO FRC-4020	1-3
4	100	WALL	4	RECESSED	208/1	19.2	1	INT.	–	BERKO FRC-4020	1-3

NOTES: M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSION, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.

1. PROVIDE INTERNAL THERMOSTAT.
2. RECESSED MOUNTED UNIT. PROVIDE RECESSED MOUNTING KIT.
3. MANUFACTURER PROVIDED BUILT-IN DISCONNECT.

GAS UNIT HEATER SCHEDULE

UH #	TYPE	INPUT MBH	OUTPUT MBH	C.F.M.	MIN. F.A.	WEIGHT	HEAT EXCH. MTL	BLOWER				F.L.A.	PILOT	VENT	MANUFACTURE & MODEL NO.	NOTES
								SIZE	DRIVE	H.P.	ELEC. CHAR					
1	GAS	30	24.6	450	–	58LB	ALUMINUM	10"	DIRECT	FRAC.	120/1	2	ELEC.	4"	REZNOR UDZ-030	1-4
2	GAS	30	24.6	450	–	58LB	ALUMINUM	10"	DIRECT	FRAC.	120/1	2	ELEC.	4"	REZNOR UDZ-030	1-4
3	GAS	30	24.6	450	–	58LB	ALUMINUM	10"	DIRECT	FRAC.	120/1	2	ELEC.	4"	REZNOR UDZ-030	1-4
4	GAS	30	24.6	450	–	58LB	ALUMINUM	10"	DIRECT	FRAC.	120/1	2	ELEC.	4"	REZNOR UDZ-030	1-4
5	GAS	30	24.6	450	–	58LB	ALUMINUM	10"	DIRECT	FRAC.	120/1	2	ELEC.	4"	REZNOR UDZ-030	1-4

NOTES: M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSIONAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.

1. PROVIDE AND INSTALL 24V HARD-WIRED THERMOSTAT. MULTIPLE UNITS PER THERMOSTAT, SEE PLANS.
2. MC TO PROVIDE NECESSARY HARDWARE TO MOUNT TO EXPOSED ROOF STRUCTURE.
3. PROVIDE BUILT-IN DISCONNECT.
4. PROVIDE AND INSTALL GYM WIRE GUARD FOR THERMOSTAT. MULTIPLE UNITS PER THERMOSTAT, SEE PLANS.

MINI SPLIT HEAT PUMP SCHEDULE - INDOOR & OUTDOOR UNIT

AC #	NOMINAL TON	OUTDOOR UNIT						INDOOR UNIT							NOTES
		ELEC. CHAR	SEER	MCA	MOP	COMPRESSOR TYPE	MANUFACTURER & MODEL NUMBER	COOLING/ HEATING	CFM	MCA	MOP	TYPE	CONDENSATE PUMP	MANUFACTURER & MODEL NUMBER	
1	0.5	208/1	17	14	24	INVERTER	TRANE NTXSKH09A112AA	BOTH	200	N/A	N/A	DUCTED	YES	TRANE NTXDKS09112AA	ALL

NOTES: M.C. IS RESPONSIBLE FOR PROVIDING ALL NECESSARY DIMENSION, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.

1. M.C. PROVIDE DISCONNECTS FOR INSTALLATION BY E.C.
2. PROVIDE AND INSTALL CONDENSATE PUMP. ROUTE CONDENSATE TO NEAREST OPEN SITE.
3. PROVIDE CONDENSER COIL HAIL GUARD.
4. M.C. SHALL PROVIDE HARD WIRED THERMOSTAT.
5. INDOOR UNIT POWERED BY OUTDOOR UNIT.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

PLAN SYMBOL	DESCRIPTION	MANUFACTURER & MODEL NO.	MATERIAL	FINISH	NOISE CRITERIA
CDR-1	SQUARE FACE, ROUND NECK, 4-WAY DEFLECTION CEILING DIFFUSER, SPRING LOCK INNER CORE, FOR LAY-IN CEILING INSTALLATION.	PRICE SCD (4C)	ALUMINUM	WHITE	–
EG-1	FIXED CORE OF 1/2"X1/2"X1/2" FABRICATED ALUMINUM SQUARES, FLAT FRAME WITH 1 1/4" MARGIN, FOR CEILING INSTALLATION.	PRICE 80	ALUMINUM	WHITE	–
RG-1	SQUARE PATTERN GRILLE, FIXED CORE OF 1/2"X1/2"X1/2" FABRICATED ALUMINUM SQUARES, FLAT FRAME WITH 1 1/4" MARGIN, FOR LAY-IN CEILING INSTALLATION.	PRICE 80	ALUMINUM	WHITE	–

NOTES:

SEE PLANS FOR QUANTITY AND SIZES.
M.C. TO FIELD VERIFY CEILING TYPE FOR ALL GRD BEFORE PURCHASING EQUIPMENT. PROVIDE REQUIRED MOUNTING.

DUCTWORK/INSULATION SCHEDULE

SYSTEM	LOW PRESSURE				MED. PRESS		HIGH PRESS.		INSULATION				NOTES
	MAX. PRES.	SEAL A	SEAL B	SEAL C	MAX PRES.	SEAL A	MAX PRES.	SEAL A	INTERNAL	THICKNESS	EXTERNAL	THICKNESS	
SUPPLY AIR WITHIN 10' OF UNIT	2"	X	–	–	–	–	–	–	YES	1"	NO	–	–
SUPPLY AIR BEYOND 10' OF UNIT	2"	X	–	–	–	–	–	–	NO	–	YES	2" FSK	–
RETURN AIR WITHIN 10' OF UNIT	2"	–	X	–	–	–	–	–	YES	1"	NO	–	–
EXHAUST AIR	2"	–	X	–	–	–	–	–	NO	–	YES	2" FSK	–
OUTSIDE AIR/MIXED AIR	2"	–	X	–	–	–	–	–	NO	–	YES	3" FSK	–

NOTES:

EXHAUST FAN SCHEDULE

EF #	LOCATION	SYSTEM	CFM	SP	FAN RPM	MOTOR H.P.	ELEC CHAR	AMPS	DAMPER BDD OR MOD	DRIVE	FAN TYPE	INTERLOCK/ CONTROL	WEIGHT	MANUFACTURER & MODEL NUMBER	NOTES
1	ROOF	EXHAUST	650	0.5	1200	1/4	208/1	–	MOD	DIRECT	PRV	LIGHTS	60	GREENHECK G-120-VG	1-4

NOTES: M.C. IS RESPONSIBLE FOR PROVIDING ANY AND ALL NECESSARY DIMENSIONAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL ALTERATIONS NECESSITATED BY PROVIDING ALTERNATE EQUIPMENT.

1. PROVIDE ELECTRONIC SPEED CONTROL MOUNTED ABOVE ACCESSIBLE CEILING.
2. M.C. SHALL PROVIDE LOW VOLTAGE MOTORIZED DAMPER.
3. OPERATION OF DEVICE ON OCCUPIED MODE OF RTU OR SWITCH WITH LIGHTS. SEE INTERLOCK/CONTROL COLUMN FOR TYPE.
4. PROVIDE WEATHER HOOD AND BIRD SCREEN.

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MECHANICAL SPECIFICATIONS

MECHANICAL SPECIFICATIONS

PART I: GENERAL

A. THE CONTRACTOR SHALL FURNISH, INSTALL, PROVIDE AND MAKE OPERATIVE ALL EQUIPMENT, MATERIALS, SUPERVISION LABOR AND ANY AND ALL ITEMS NECESSARY FOR THE PROPER INSTALLATION OF A CORRECTLY FUNCTIONING HEATING VENTILATING AND AIR CONDITIONING SYSTEM AND PLUMBING SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

B. SMALL DETAILS NOT USUALLY INDICATED ON THE DRAWINGS OR SPECIFIED, BUT WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEM, SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF SPECIFIED OR SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL INSTALL THE EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THE MANUFACTURER'S RECOMMENDATIONS, IT WILL BE THE CONTRACTOR'S DUTY TO BRING THIS TO THE ATTENTION OF THE ARCHITECT.

C. ANY ALTERATIONS TO THE PLANS CAUSED BY ALTERNATIVE EQUIPMENT THAT WAS NOT ORIGINALLY SCHEDULED WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

PART II: CODE REQUIREMENTS

A. ORDINANCES, PERMITS AND CODES: THE WORKMANSHIP AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL CONFORM TO ALL REGULATIONS OF ALL THE AUTHORITIES HAVING JURISDICTION WHETHER SHOWN ON THE DRAWINGS OR NOT.

PART III: PERMITS

A. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CONNECTION AND INSPECTION FEES AS REQUIRED FOR THE COMPLETE INSTALLATION OF THE MECHANICAL AND PLUMBING SYSTEMS.

PART IV: SPECIFICATIONS AND DRAWINGS

A. THE PLANS DEPICT THE LOCATION OF ALL FIXTURES AND EQUIPMENT AND ARE INTENDED TO INDICATE THE GENERAL INTENT OF THE WORK IN SCOPE, LAYOUT AND QUALITY OF WORKMANSHIP. THEY ARE NOT INTENDED TO SHOW IN MINUTE DETAIL EVERY AND ALL ACCESSORIES INTENDED FOR THE PURPOSE OF EXECUTION OF THE WORK, BUT THE CONTRACTOR SHALL UNDERSTAND THAT SUCH DETAILS ARE PART OF THIS WORK.

B. THE LOCATION OF DUCTS, PIPE AND EQUIPMENT AS SHOWN ON THE DRAWINGS, IS DIAGRAMATIC AND SCHEMATIC AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE HIS OWN WORKING LAYOUT TO ELIMINATE ALL STRUCTURAL INTERFERENCES WITHOUT DETRIMENT TO THE STRUCTURAL AND ARCHITECTURAL COMPONENTS OF THE BUILDING.

C. THE CONTRACTOR SHALL CAREFULLY VERIFY ALL MEASUREMENTS OF THE SITE, DETERMINE THE EXACT LOCATION OF ALL CHASES AND OPENINGS REQUIRED BY HIS WORK AND SHALL FURNISH AND SET ALL SLEEVES, INSERTS AND HANGERS AS REQUIRED FOR THE WORK HEREIN.

D. ALL CONTRACTORS SUBMITTING PROPOSALS FOR THIS WORK SHALL FIRST EXAMINE THE SITE AND ALL CONDITIONS. ALL PROPOSALS SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY THE WORK UNDER THIS CONTRACT.

PART V: COORDINATION AND CONFLICTS

A. THE CONTRACTOR SHALL COORDINATE HIS WORK SO THAT IT DOES NOT INTERFERE WITH THE WORK OF THE OTHER TRADES. IT SHALL BE THE CONTRACTOR'S DUTY TO SEE THAT THE WORK IS PERFORMED IN A TIMELY MANNER.

B. IN THE EVENT THAT THERE IS A DISCREPANCY OR CONFLICT IN THE PLANS OR SPECIFICATIONS IT SHALL BE THE CONTRACTOR'S DUTY TO NOTIFY THE ARCHITECT OF THIS CONFLICT OR DISCREPANCY PRIOR TO HIS ACCEPTANCE OF THE PROJECT. UNLESS EXPRESSLY STIPULATED, NO ADDITIONAL ALLOWANCES WILL BE MADE IN THE CONTRACTOR'S AND/OR MANUFACTURER'S FAVOR BY VIRTUE OF ERRORS, AMBIGUITIES AND/OR OMISSIONS WHICH WERE KNOWN TO OR WHICH SHOULD HAVE BEEN KNOWN OR DISCOVERED DURING THE PREPARATION OF THE BID ESTIMATE AND DIRECTED TO THE ARCHITECT'S ATTENTION IN A TIMELY MANNER.

PART VI: EXPERIENCE

A. THE CONTRACTOR SHALL BE A REPUTABLE FIRM REGULARLY DOING THIS TYPE OF WORK, WITH SKILLED MECHANICS AND EQUIPMENT CAPABLE OF PROVIDING A FIRST CLASS INSTALLATION IN ACCORDANCE WITH ACCEPTABLE MODERN PRACTICES.

PART VII: EQUIPMENT

A. SUBMITTALS

1. SUBMITTALS MUST BE REVIEWED, AND APPROVED BY SUBMITTING CONTRACTOR.
2. SUBMIT FOR ALL EQUIPMENT AND SYSTEMS AS INDICATED IN THE RESPECTIVE SPECIFICATION SECTIONS, MARKING EACH SUBMITTAL WITH THAT SPECIFICATION SECTION NUMBER. MARK GENERAL CATALOG SHEETS AND DRAWINGS TO INDICATE SPECIFIC ITEMS BEING SUBMITTED AND PROPER IDENTIFICATION OF EQUIPMENT BY NAME AND/OR NUMBER, AS INDICATED IN THE CONTRACT DOCUMENTS.
3. SUBMIT ALL SHOP DRAWINGS IN PDF FORMAT WITH PAPER COPIES.

B. ELECTRICAL FURNACES

1. SHALL BE MANUFACTUERED BY BRYANT, CARRIER, LENNOX, DAIKIN, TRANE, OR YORK. SUBSTITUTIONS MUST MEET SPECIFICATIONS AND BE APPROVED PRE BIDING BY THE ENGINEER.
2. 22 GAUGE STEEL CASING WITH BAKED ENAMEL FINISH OR PRE-PAINTED GALVANIZED STEEL. INSULATE CASING BACK AND SIDE PANELS WITH FOIL FACED FIBERGLASS INSULATION.
3. CENTRIFUGAL TYPE BLOWER FAN STATICALLY AND DYNAMICALLY BALANCED WITH MULTIPLE SPEED, DIRECT DRIVE OR BELT DRIVE FAN MOTOR. PROVIDE LOW ENERGY INDUCED DRAFT BLOWER FOR HEAT EXCHANGER PREPURGE AND COMBUSTION GAS VENTING.
4. PROVIDE UNIT WITH 2" THICK FARR 30/30 OR EQUAL TYPE PANEL AIR FILTER AND FILTER HOLDING RACK
5. PROVIDE SOLID STATE INTEGRAL CONTROL UNIT WITH ALL NECESSARY CONTROLS AND RELAYS INCLUDING BUT NOT LIMITED TO:
   a. ROLLOUT SWITCH WITH MANUAL RESET TO PREVENT OVER TEMPERATURE IN HEATER AREA.
   b. BLOWER ACCESS SAFETY INTERLOCK.
   c. FACTORY INSTALLED 24 V TRANSFORMER FOR CONTROLS AND THERMOSTAT.
   d. LED'S TO INDICATE STATUS AND TO AID IN TROUBLESHOOTING.
10. PROVIDE A 7 DAY PROGRAMMABLE THERMOSTAT WITH 2 OCCUPIED PERIODS PER DAY, AUTOMATIC CHANGEOVER, SEPARATE HEATING AND COOLING SET POINTS FOR BOTH OCCUPIED AND UNOCCUPIED MODES. PROVIDE AUXILIARY CONTROLS ON SUB-BASE TO OPEN MINIMUM OUTSIDE AIR DAMPER DURING OCCUPIED MODE. EQUAL TO HONEYWELL MODEL T7300 WITH Q730D SUB-BASE.
11. DURING OCCUPIED MODE RUN THE SUPPLY FAN CONTINUOUSLY, OPEN THE OUTSIDE AIR DAMPER AND CYCLE THE COOLING OR HEATING AS REQUIRED TO MAINTAIN OCCUPIED SPACE TEMPERATURE COOLING OR HEATING SET POINT. DURING UNOCCUPIED MODE CLOSE THE OUTSIDE AIR DAMPER AND CYCLE THE SUPPLY FAN AND COOLING OR HEATING AS REQUIRED TO MAINTAIN UNOCCUPIED COOLING OR HEATING TEMPERATURE SET POINT.
12. OUTSIDE AIR BALANCING DAMPER TO BE ADJUSTED TO ALLOW SCHEDULED OUTSIDE AIRFLOW WHILE MOTORIZED DAMPER IS FULLY OPENED. MOTORIZED DAMPER TO MODULATE IN ACCORDANCE WITH CO2 SENSOR READING.

C. AIR-COOLED REFRIGERANT COMPRESSOR AND CONDENSING UNITS

1. SHALL BE MANUFACTURED BY BRYANT, CARRIER, LENNOX, DAIKIN, TRANE, OR YORK. SUBSTITIONS MUST MEET SPECIFICATIONS AND BE APPROVED PRE BIDING BY THE ENGINEER.
2. UNIT ENERGY EFFICIENCY RATIO (EER), COEFFICIENT OF PERFORMANCE (COP) AND INTEGRATED PART LOAD VALUE (IPLV) SHALL MEET THE MINIMUM APPLICABLE REQUIREMENTS OF ASHRAE 90.1(2004 EDITION). UNITS THAT ARE LABELED ENERGY STAR® WILL BE ACCEPTABLE.
3. PROVIDE FACTORY ASSEMBLED, OUTDOOR MOUNTED, AIR -COOLED CONDENSING UNIT SUITABLE FOR ON GRADE OR ROOFTOP INSTALLATION. INCLUDE COMPRESSOR, AIR COOLED CONDENSER, REFRIGERANT, LUBRICATION SYSTEM, INTERCONNECTING WIRING, SAFETY AND OPERATING CONTROLS, MOTOR STARTING COMPONENTS AND ADDITIONAL FEATURES AS SPECIFIED HEREIN OR REQUIRED FOR SAFE, AUTOMATIC OPERATION. CAPACITY AND STEPS OF UNLOADING AS INDICATED IN THE EQUIPMENT SCHEDULE.
4. CABINET: CONSTRUCT CABINET OF HEAVY GAUGE, GALVANIZED STEEL COATED WITH WEATHER RESISTANT PAINT. PROVIDE REMOVABLE ACCESS PANELS TO FACILITATE FULL ACCESS TO THE COMPRESSOR, FAN AND CONTROL COMPONENTS.
5. COMPRESSOR: PROVIDE HERMETIC RECIPROCATING OR SCROLL TYPE COMPRESSOR WITH BUILT IN MOTOR WINDING TEMPERATURE AND CURRENT PROTECTION, LIQUID AND SUCTION SERVICE VALVES, GAGE PORTS, SIGHT GLASS AND LIQUID LINE FILTER DRYER. PROVIDE CRANKCASE HEATER WITH RECIPROCATING TYPE COMPRESSORS. MOUNT COMPRESSORS ON VIBRATION ISOLATORS.
6. CONDENSER: PROVIDE CONDENSER COILS WITH ALUMINUM ALLOY PLATE FINS MECHANICALLY FASTENED TO SEAMLESS COPPER TUBING WITH INTEGRAL SUBCOOLER. CONSTRUCT COILS WITH DESIGN WORKING PRESSURE SUITABLE FOR THE REFRIGERANT. LOUVERED CONDENSER HAIL GUARD SHALL BE PROVIDED.
7. CONTROLS:
   a. PROVIDE HIGH/LOW REFRIGERANT PRESSURE CUTOUTS WITH MANUAL RESET AND ANTI-SHORT CYCLE COMPRESSOR UNIT.
   b. PROVIDE "LOW AMBIENT" CONTROLS AND ACCESSORIES NEEDED SO THAT UNIT IS CAPABLE OF OPERATING DOWN TO AMBIENT TEMPERATURE OF 0F.
8. REFRIGERANT PIPING ACCESSORIES:
   a. FILTER DRYERS: FOR CIRCUITS BELOW 15 TONS PROVIDE STRAIGHT PATTERN FILTER DRYERS WITHOUT REPLACEABLE CORE.
   b. SIGHT GLASSES: TWO PIECE BRASS CONSTRUCTION WITH SOLDER END CONNECTIONS. INCLUDE COLOR INDICATOR FOR SENSING MOISTURE.
   c. SOLENOID VALVES: TWO WAY NORMALLY CLOSED WITH TWO PIECE BRASS BODY, FULL PORT, STAINLESS STEEL PLUG, STAINLESS STEEL SPRING, TEFLON DIAPHRAGM AND SOLDER END CONNECTIONS. PROVIDE REPLACEABLE COIL ASSEMBLY.
   d. THERMOSTATIC EXPANSION VALVES: BRASS BODY, BRONZE DISC, NEOPRENE SEAT, BRONZE BONNET, STAINLESS STEEL SPRING AND SOLDER END CONNECTIONS.
   e. CHARGING VALVES: PROVIDE ¼" SAE BRASS MALE FLARE ACCESS PORTS WITH FINGER TIGHT, QUICK SEAL CAPS. PROVIDE 2-INCH LONG COPPER EXTENSION SECTIONS.
   f. CHECK VALVES: SPRING LOADED TYPE WITH BRONZE BODY, BRONZE DISC, NEOPRENE SEAT, BRONZE BONNET, STAINLESS STEEL SPRING AND SOLDER END CONNECTIONS.

D. ACCESS PANELS AND DOORS

1. LAY-IN CEILINGS:
   a. REMOVABLE LAY-IN CEILING TILES IN 2 X 2 FOOT OR 2 X 4 FOOT CONFIGURATION PROVIDED UNDER DIVISION 9 ARE SUFFICIENT; NO ADDITIONAL ACCESS PROVISIONS ARE REQUIRED UNLESS SPECIFICALLY INDICATED.
2. PLASTER WALLS AND CEILINGS
   a. 16 GAUGE FRAME WITH NOT LESS THAN A 20 GAUGE HINGED DOOR PANEL, PRIME COATED STEEL FOR GENERAL APPLICATIONS, STAINLESS STEEL FOR USE IN TOILETS, SHOWERS, AND SIMILAR WET AREAS, CONCEALED HINGES, SCREWDRIVER OPERATED CAM LATCH FOR GENERAL APPLICATIONS, KEY LOCK FOR USE IN PUBLIC AREAS, UL LISTED FOR USE IN FIRE RATED PARTITIONS IF REQUIRED BY THE APPLICATION. USE THE LARGEST SIZE ACCESS OPENING POSSIBLE, CONSISTENT WITH THE SPACE AND THE EQUIPMENT NEEDING SERVICE; MINIMUM SIZE IS 12" BY 12". PAINT TO MATCH SURROUNDING SURFACE.

E. IDENTIFICATION

1. IDENTIFY ALL MECHANICAL EQUIPMENT BY STENCILING EQUIPMENT NUMBER AND SERVICE WITH ONE COAT OF BLACK ENAMEL AGAINST A LIGHT BACKGROUND OR WHITE ENAMEL AGAINST A DARK BACKGROUND. USE A PRIMER WHERE NECESSARY FOR PROPER PAINT ADHESION. DO NOT LABEL EQUIPMENT SUCH AS CABINET HEATERS AND CEILING FANS IN OCCUPIED SPACES. MECHANICAL EQUIPMENT INCLUDES BUT IS NOT LIMITED TO: FURNACES, CONDENSERS, RTU'S, AND OTHER SCHEDULED EQUIPMENT.
   a. STENCILS: NOT LESS THAN 1 INCH HIGH LETTERS/NUMBERS FOR MARKING PIPE AND EQUIPMENT.
   b. ENGRAVED NAME PLATES: WHITE LETTERS ON A BLACK BACKGROUND, 1/16 INCH THICK PLASTIC LAMINATE, BEVELED EDGES, SCREW MOUNTING; SETONPLY STYLE 2060 BY SETON NAME PLATE COMPANY OR EMEDOLITE- STYLE EIP BY EMED CO., OR EQUAL BY MARKING SERVICES, OR W. H. BRADY.
2. WHERE STENCILING IS NOT APPROPRIATE FOR EQUIPMENT IDENTIFICATION, ENGRAVED NAME PLATES MAY BE USED.

F. DUCT PENETRATIONS:

1. ANNULAR SPACE BETWEEN DUCT (WITH OR WITHOUT INSULATION) AND THE NON-RATED PARTITION OR FLOOR OPENING SHALL NOT BE LARGER THAN 2". WHERE EXISTING OPENINGS HAVE AN ANNULAR SPACE LARGER THAN 2", THE SPACE SHALL BE PATCHED TO MATCH EXISTING CONSTRUCTION TO WITHIN 2" AROUND THE DUCT. INSULATION TO MAINTAIN CONTINUOUS VAPOR BARRIER THROUGH PENETRATION.
2. WHERE SHOWN OR SPECIFIED, PACK ANNULAR SPACE WITH FIBERGLASS BATT INSULATION OR MINERAL WOOL INSULATION. PROVIDE 4" SHEET METAL ESCUTCHEON AROUND DUCT ON BOTH SIDES OF PARTITION OR FLOOR TO COVER ANNULAR SPACE. INSULATION TO MAINTAIN CONTINUOUS VAPOR BARRIER THROUGH PENETRATION.

G. SEALING AND FIRESTOPPING

1. FIRE AND/OR SMOKE RATED PENETRATIONS:
   a. INSTALL APPROVED PRODUCT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WHERE PIPES PENETRATE A FIRE/SMOKE RATED SURFACE. WHEN PIPE IS INSULATED, USE A PRODUCT WHICH MAINTAINS THE INTEGRITY OF THE INSULATION AND VAPOR BARRIER. PROVIDE A UL LABEL AT EACH PENETRATION.
2. NON-RATED PARTITIONS:
   a. IN EXTERIOR WALL OPENINGS BELOW GRADE, ASSEMBLE RUBBER LINKS OF MECHANICAL SEAL TO THE PROPER SIZE FOR THE PIPE AND TIGHTEN IN PLACE, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   b. AT ALL INTERIOR PARTITIONS AND EXTERIOR WALLS, PIPE PENETRATIONS ARE REQUIRED TO BE SEALED. APPLY SEALANT TO BOTH SIDES OF THE PENETRATION IN SUCH A MANNER THAT THE ANNULAR SPACE BETWEEN THE PIPE SLEEVE OR CORED OPENING AND THE PIPE OR INSULATION IS COMPLETELY BLOCKED.
   c. DUCT PENETRATIONS THROUGH NON-RATED PARTITIONS SHALL REQUIRE SHEET METAL ESCUTCHEONS WITH FIBERGLASS OR MINERAL WOOL INSULATION FILL FOR SPACES THAT INCLUDE JANITOR CLOSETS, TOILET ROOMS, MECHANICAL ROOMS, CONFERENCE ROOMS, PRIVATE CONSULTATION ROOMS, AND WHERE NOTED ON DRAWINGS ELSEWHERE.

PART VIII: INSULATION

A. ALL INSULATION, INCLUDING JACKET, OR FACING AND ADHESIVE USED TO ADHERE FACING OR JACKET TO THE INSULATION SHALL HAVE A COMPOSITE FIRE AND SMOKE HAZARD RATING TESTED BY THE PROCEDURE RECOMMENDED BY ASTM E84, NFPA 255 OR U.L. 723, NOT EXCEEDING FLAME SPREAD 25, SMOKE DEVELOPED 50. ALL INSULATION ACCESSORIES SHALL ALSO HAVE THE RATINGS LISTED ABOVE.

B. NEW SUPPLY/MAKE UP AIR DUCT SHALL BE INSULATED WITH 2" THICK BLANKET TYPE FIBERGLASS INSULATION WITH A MINIMUM DENSITY OF 1.0 POUND/CUBIC FOOT, AND A FACTORY APPLIED FLAME RETARDANT FOIL BACKED KRAFT FACING. INSULATION SHALL BE WRAPPED ON THE DUCTWORK WITH ALL CIRCUMFERENTIAL JOINTS BUTTED AND LONGITUDINAL JOINTS OVERLAPPED A MINIMUM OF 2". ADHERE INSULATION WITH 4" STRIPS OF INSULATION BONDING ADHESIVE AT 8" CENTERS. FIBERGLASS SERIES ED100 OR EQUAL.

C. NEW RETURN/EXHAUST DUCT SHALL BE INSULATED WITH 1-1/2" THICK BLANKET TYPE FIBERGLASS INSULATION WITH A MINIMUM DENSITY OF 1.0 POUND/CUBIC FOOT, AND A FACTORY APPLIED FLAME RETARDANT FOIL BACKED KRAFT FACING. INSULATION SHALL BE WRAPPED ON THE DUCTWORK WITH ALL CIRCUMFERENTIAL JOINTS BUTTED AND LONGITUDINAL JOINTS OVERLAPPED A MINIMUM OF 2". ADHERE INSULATION WITH 4" STRIPS OF INSULATION BONDING ADHESIVE AT 8" CENTERS. FIBERGLASS SERIES ED100 OR EQUAL.

D. RIGID FIBERGLASS INSULATION: MINIMUM NOMINAL DENSITY OF 3 LBS. PER CU. FT., AND THERMAL CONDUCTIVITY OF NOT MORE THAN 0.23 AT 75 DEGREES F. MINIMUM COMPRESSIVE STRENGTH OF 25 PSF AT 10% DEFORMATION, RATED FOR SERVICE TO 450 DEGREES F.

E. ALL INSULATION TO CREATE A CONTINUOUS VAPOR BARRIER BETWEEN MAIN AND BRANCH DUCTWORK.

F. ACCEPTABLE MANUFACTURER'S ARE OWENS CORNING, JOHNS MANVILLE, ARMSTRONG OR CERTAINTEED.

PART IX: DUCTWORK

A. ALL DUCTWORK SHALL BE CONSTRUCTED OF THE BEST BLOOM GALVANIZED SHEET METAL SHEETS, FREE FROM BLISTER IMPERFECTIONS, AND WITH GAUGES, JOINTS, BRACING AND SUPPORTS TO BE IN STRICT ACCORDANCE WITH SMACNA STANDARDS, 1993 EDITION. PROVIDE "PAINT GRIP" FINISH FOR DUCTWORK THAT WILL BE PAINTED.
   1. GALVANIZED STEEL SHEET: USE ASTM A 653 GALVANIZED STEEL SHEET OF LOCK FORMING QUALITY. GALVANIZED COATING TO BE 1.25 OUNCES PER SQUARE FOOT, BOTH SIDES OF SHEET, G90 IN ACCORDANCE WITH ASTM A90.. PROVIDE "PAINT GRIP" FINISH FOR DUCTWORK THAT WILL BE PAINTED.
   2. STAINLESS STEEL SHEET: USE ASTM A167, TYPE 304 OR 316 STAINLESS STEEL SHEET AS SPECIFIED, 316L IF WELDED DUCTWORK, WITH NO. 2B FINISH FOR CONCEALED WORK AND NO. 3 FINISH FOR EXPOSED WORK.
B. CROSS BREAK FLAT SIDES OF DUCTS. REDUCTION IN DUCT SIZES SHALL BE MADE WITH A MAXIMUM SLOPE OF 30 DEGREES.
C. DOUBLE THICKNESS TURNING VANES SHALL BE USED IN ALL 90 DEGREE SUPPLY AIR ELBOWS.
D. DUCT HANGERS FOR HORIZONTAL DUCT SHALL NOT BE OVER 8'-0" O.C. #16 U.S. GAUGE, ONE INCH WIDE FOR DUCTS 35" INCHES GREATEST DIMENSION, 6'-0" UP TO 59" GREATEST DIMENSION, AND 4'-0" FOR DUCTS OVER 60". DUCT HANGERS SHALL EXTEND TO THE BOTTOM OF THE DUCT. SUPPORTS SHALL BE 18 GAUGE. EACH SECTION OF DUCT SHALL HAVE AT LEAST ONE PAIR OF SUPPORTS.
E. ALL DUCTWORK SHALL BE MADE AIRTIGHT WITH MASTIC AND PRESSURE SENSITIVE TAPE.
F. ALL ACCESSORY ITEMS SUCH AS TURNING VANES, DAMPER, ETC., SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS.
G. ALL EXPOSED DUCTWORK TO BE PAINTED. COLOR BY ARCHITECT. SEAL ALL JOINTS AIR-TIGHT WITH NON-SILICONE SEALANT.
H. DUCT SEALANT
   1. SILICONE SEALANTS ARE NOT ALLOWED IN ANY TYPE OF DUCTWORK INSTALLATION
   2. INSTALL SEALANTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, PAYING SPECIAL ATTENTION TO TEMPERATURE LIMITATIONS. ALLOW SEALANT TO FULLY CURE BEFORE PRESSURE TESTING OF DUCTWORK, OR BEFORE STARTUP OF AIR HANDLING SYSTEMS.
J. GASKETS
   1. 2 INCH PRESSURE CLASS AND LOWER: SOFT NEOPRENE OR BUTYL GASKETS IN COMBINATION WITH DUCT SEALANT FOR FLANGED JOINTS.

PART X: REINFORCEMENT:

A. ALL DUCTS REQUIRING REINFORCEMENT SHALL BE REINFORCED ACCORDING TO THE LATEST EDITION OF THE SMACNA MANUAL. MATERIALS FOR THE REINFORCING SHALL BE GALVANIZED STEEL. ALL SCREWS AND WASHERS SHALL BE PLATED OR GALVANIZED.

PART XI: AIR DISTRIBUTION:

A. SHALL BE AS SCHEDULED ON THE DRAWINGS. FINISH SHALL BE OFF-WHITE. NC SHALL NOT EXCEED 24. ACCEPTABLE MANUFACTURER SHALL BE TITUS, PRICE, CARNES, KRUEGER.
B. SQUARE CEILING DIFFUSERS - HIGH PERFORMANCE
   1. DIFFUSERS TO BE STEEL UNLESS OTHERWISE INDICATED, LOUVERED FACE FURNISHED WITH FRAME TYPE APPROPRIATE TO INSTALLATION
   2. DIFFUSER SHALL HAVE THROW CHARACTERISTICS OF A ROUND DIFFUSER HAVING A 360º HORIZONTAL BLOW PATTERN.
   3. LOUVER CONES SHALL BE ONE-PIECE CONSTRUCTION WITH NO CORNER JOINTS.
   4. WHITE, BAKED ENAMEL FINISH OR POWDER COAT FINISH, UNLESS OTHERWISE INDICATED.
   5. HIGH PERFORMANCE TYPE DIFFUSER INCORPORATING SHORT THROWS AND LOW NC LEVELS.
C. EGGCRATE GRILLE
   1. ALUMINUM CONSTRUCTION WITH FRAME TYPE APPROPRIATE TO INSTALLATION.
   2. GRILLE FACE 1/2" X 1/2" OR 1" X 1" GRID PATTERN 1" DEEP WITH A MINIMUM OF 85% FREE AREA.
   3. GRILLE SIZES AND FINISHES AS SHOWN ON DRAWINGS AND/OR AS SCHEDULED.
   4. WHITE, BAKED ENAMEL FINISH OR POWDER COAT FINISH, UNLESS OTHERWISE INDICATED.
   5. SCREW HOLES ON SURFACE COUNTER SUNK TO ACCEPT RECESSED TYPE SCREWS.

PART XII: DUCT ACCESS:

A. MANUAL VOLUME DAMPERS
   1. SHALL BE MANUFACTUERED BY RUSKIN, VENT PRODUCTS, AIR BALANCE, OR GREENHECK. SUBSTITIONS MUST MEET SPECIFICATIONS AND BE APPROVED PRE BIDING BY THE ENGINEER.
   2. DAMPERS MUST BE CONSTRUCTED IN ACCORDANCE WITH SMACNA FIG. 2-12, FIG. 2-13, AND NOTES RELATING TO THESE FIGURES, EXCEPT AS MODIFIED BELOW.
   3. REINFORCE ALL BLADES TO PREVENT VIBRATION, FLUTTER, OR OTHER NOISE. CONSTRUCT DAMPERS IN MULTIPLE SECTIONS WITH MULLIONS WHERE WIDTH IS OVER 48 INCHES. USE RIVETS OR TACK WELDS TO SECURE INDIVIDUAL COMPONENTS; SHEET METAL SCREWS WILL NOT BE ACCEPTED. PROVIDE OPERATORS WITH LOCKING DEVICES AND DAMPER POSITION INDICATORS FOR EACH DAMPER; USE AN ELEVATED PLATFORM ON INSULATED DUCTS. PROVIDE END BEARINGS OR BUSHINGS FOR ALL VOLUME DAMPER RODS PENETRATING DUCTWORK CONSTRUCTED TO A 3" W.C. PRESSURE CLASS OR ABOVE.
B. TURNING VANES
   1. CONSTRUCT TURNING VANES AND RUNNERS FOR SQUARE ELBOWS IN ACCORDANCE WITH SMACNA FIG. 2-3 AND FIG. 2-4 EXCEPT USE ONLY AIRFOIL TYPE VANES. CONSTRUCT TURNING VANES FOR SHORT RADIUS ELBOWS AND ELBOWS WHERE ONE DIMENSION CHANGES IN THE TURN IN ACCORDANCE WITH SMACNA FIG. 2-5 AND FIG. 2-6.
C. FIRE DAMPERS
   1. FIRE DAMPERS SHALL BE MANUFACTUERED BY AIR BALANCE, ADVANCED AIR, AMERICAN WARMING AND VENTILATING, GREENHECK, PHILIPS-AIRE, PREFCO, RUSKING, OR SAFE-AIR. SUBSTITIONS MUST MEET SPECIFICATIONS AND BE APPROVED PRE BIDING BY THE ENGINEER.
D. ACCESS DOORS
   1. ACCESS DOOR TO BE DESIGNED AND CONSTRUCTED FOR THE PRESSURE CLASS OF THE DUCT IN WHICH THE DOOR IS TO BE INSTALLED. DOORS IN EXPOSED AREAS SHALL BE HINGED TYPE WITH CAM SASH LOCK. HINGES SHALL BE STEEL FULL LENGTH CONTINUOUS PIANO TYPE. DOORS IN CONCEALED SPACES MAY BE SECURED IN PLACE WITH CAM SASH LATCHES. FOR BOTH HINGED AND NON HINGED DOORS PROVIDE SUFFICIENT NUMBER OF CAMP SASH LATCHES TO PROVIDE AIR TIGHT SEAL WHEN DOOR IS CLOSED. DO NOT USE HINGED DOORS IN CONCEALED SPACES IF THIS WILL RESTRICT ACCESS. USE MINIMUM 1" DEEP 24 GAUGE GALVANIZED STEEL DOUBLE WALL ACCESS DOORS WITH MINIMUM 24 GAUGE GALVANIZED STEEL FRAMES. FOR NON-GALVANIZED DUCTWORK, USE MINIMUM 1" DEEP DOUBLE WALL ACCESS DOOR WITH FRAME THAT SHALL USE MATERIALS OF CONSTRUCTION IDENTICAL TO ADJACENT DUCTWORK. PROVIDE DOUBLE NEOPRENE GASKET THAT SHALL PROVIDE SEALS FROM THE FRAME TO THE DOOR AND FRAME TO THE DUCT. WHEN ACCESS DOORS ARE INSTALLED IN INSULATED DUCTWORK OR EQUIPMENT PROVIDE INSULATED DOORS WITH INSULATION EQUIVALENT TO WHAT IS PROVIDED FOR ADJACENT DUCTWORK OR EQUIPMENT. ACCESS DOORS CONSTRUCTED WITH SHEET METAL SCREW FASTENERS WILL NOT BE ACCEPTED.
   2. USE INSULATED 1-1/2 HOUR UL 1978 LISTED AND LABELED ACCESS DOORS IN KITCHEN EXHAUST DUCTS.

PART XIII: FANS

A. IN-LINE CENTRIFUGAL FANS
   1. SHALL BE MANUFACTUERED BY LOREN COOK, GREENHECK, PENN, OR TWIN CITY. ANY SUBSTITIONS MUST MEET SPECIFICATIONS AND BE APPROVED PRIOR TO BID BY THE ENGINEER.
   2. CONSTRUCT HOUSING OF WELDED STEEL WITH REINFORCING TO PREVENT DISTORTION. FURNISH WITH STREAMLINED INLET CONES AND MULTIPLE STRAIGHTENING VANES FOLLOWING THE FAN WHEEL TO MINIMIZE NOISE AND REDUCE TURBULENCE. PROVIDE EACH HOUSING WITH A BOLTED AND GASKETED ACCESS DOOR FOR INSPECTION OF DRIVE AND FAN WHEEL. USE NON-OVERLOADING AIRFOIL BLADE FANS WELDED TO THE WHEEL CONES. ISOLATE BELT DRIVES FROM AIRSTREAM WITH A BELT TUBE. EXTERNALLY MOUNT MOTORS ON AN ADJUSTABLE BASE. BEARINGS TO BE GREASE LUBRICATED, SELF-ALIGNING BALL BEARING TYPE WITH GREASE SEAL AND EXTERNAL GREASE FITTING. PAINT FANS WITH A PRIME COAT AFTER METAL CLEANING AND SURFACE PREPARATION. APPLY A SECOND COAT OF PAINT TO ALL EXTERIOR SURFACES.
   3. ALL FANS WITH BELTS TO USE OSHA APPROVED BELT GAURDS THAT TOTALLY ENCLOSE THE ENTIRE DRIVE.

PART XIV: TEST AND BALANCE:

A. THE CONTRACTOR WILL SEPARATELY CONTRACT WITH AN INDEPENDENT TEST AND BALANCE AGENCY TO PERFORM ALL TESTING, ADJUSTING, AND BALANCING OF AIR SYSTEMS REQUIRED FOR THIS PROJECT. TESTING PROCEDURES TO BE PERFORMED IN ACCORDANCE WITH AABC OR NEBB.
   1. TEST, ADJUST, AND BALANCE ALL AIR SYSTEMS SO THAT EACH ROOM, PIECE OF EQUIPMENT OR TEMRINAL DEVICE MEETS THE DESIGNED REQUIREMENTS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS.
   2. PERMANENTLY MARK EQUIPMENT SETTINGS, INCLUDING DAMPER POSITIONS, CONTROL SETTINGS, AND SIMILAR DEVICES ALLOWING SETTINGS TO BE RESTORED. SET AND LOCK MEMORY STOPS.
   3. QUALIFICATIONS: AN INDEPENDENT FIRM SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS FOR A MINIMUM OF 3 YEARS.
   4. SUBMIT TESTING, ADJUSTING, AND BALANCING REPORTS BEARLING THE SEAL AND SIGNATURE OF THE NEBB OR AABC CERTIFIEI TEST AND BALANCE SUPERVISOR. DISTRIBUTE COPIES OF THE REPORT TO THE CONTRACTOR, THE LEAD CONTRACTOR, THE OWNER, AND THE PRIME ARCHITECT/ENGINEER.

PART XV: WALK THRU:

A. THE GENERAL CONTRACTOR SHALL PERFORM AN INSTRUCTIONAL WALK THRU WITH THE OWNER TO EXPLAIN THE OPERATION OF THE HVAC SYSTEM.
B. PROVIDE A MINIMUM OF 4 HOURS OF OWNER TRAINING. TRAINING TO INCLUDE HOW TO OPERATE AND MAINTAIN EQUIPMENT.

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WDB ENGINEERING
CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

KF
drawn by

DMG
checked by

MAY 2023
date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

M701

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

GENERAL PLUMBING NOTES

1. THESE DRAWINGS SHALL NOT BE SCALED. SEE ARCHITECTURAL/CIVIL DRAWINGS FOR DIMENSIONAL INFORMATION. THIS ENGINEER WILL NOT BE LIABLE FOR MISCALCULATED PRODUCT TAKE-OFFS DUE TO SCALING OF DRAWINGS.
2. ALL SANITARY PIPING SHALL HAVE A 1/8" PER FOOT SLOPE UNLESS OTHERWISE NOTED. 2" SANITARY OR SMALLER SHALL HAVE A 1/4" PER FOOT SLOPE.
3. VENT PIPING SHOWN ON FLOOR PLANS IS DIAGRAMMATIC EXCEPT FOR VENT THRU ROOF (VTR) LOCATIONS.
4. VALVES AND FITTINGS SHALL BE OF SAME SIZE AS THE LINE ON WHICH THEY ARE LOCATED, UNLESS OTHERWISE INDICATED ON DRAWINGS.
5. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES.
6. CONTRACTOR SHALL FIELD VERIFY ALL GIVEN MEASUREMENTS PRIOR TO LAYING AND CONNECTING ALL SANITARY AND WASTE PIPING AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FIRE RATING AND WEATHERPROOFING INTEGRITY OF ALL PIPING AND PENETRATIONS.
8. ALL WATER SUPPLY AND SANITARY LINES SHALL BE RUN AS CLOSE TO PLANS AS POSSIBLE WITH NO CHANGES IN SIZING.
9. CHANGES IN THE DIRECTION OF SANITARY DRAIN PIPING SHALL NOT BE MADE WITH FITTINGS WHICH WILL CAUSE EXCESSIVE REDUCTION IN THE VELOCITY OF FLOW OR CREATE ANY OTHER ADVERSE EFFECT UNLESS PHYSICALLY IMPOSSIBLE (I.E.: USE OF SANITARY TEE IN A HORIZONTAL CONNECTION, USE OF A DOUBLE SANITARY TEE IN A VERTICAL STACK, IN GENERAL, USE OF SHORT-RADIUS FITTINGS FOR BRANCH TO HOUSE DRAIN OR STACK CONNECTION).
10. CONTRACTOR SHALL GIVE 48 HOURS HOUR EMERGENCY LOCATE NOTICE TO APPLICABLE UTILITY COMPANY PRIOR TO PERFORMING WORK INVOLVING UTILITIES.
11. ALL DRAINAGE PIPING SHALL BE MARKED WITH THE SEAL OF APPROVAL OF THE NATIONAL SANITATION FOUNDATION.
12. ROUTE ALL PIPING CONCEALED ABOVE CEILINGS, WITHIN WALLS, OR IN CHASES. PIPING EXPOSED SHALL BE SLOPED AND PAINTED TO MATCH ARCHITECTURAL FINISHES. PIPING IN MECHANICAL ROOMS MAY BE EXPOSED.
13. SITE UTILITY CONNECTIONS SHALL BE PROVIDED ON CIVIL DRAWINGS. ALL SERVICES SHOWN ON THIS SET OF PLANS TERMINATE 5'-0" FROM BUILDING, UNLESS SHOWN OTHERWISE ON DRAWINGS. PLUMBING CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO SITE UTILITIES. (INC. CLEAN OUTS, INCREASES, BACKWATER VALVES, ETC.)
14. COORDINATE WITH ARCHITECT/GENERAL CONTRACTOR FOR INSTALLATION OF HOSE BIBS. HEIGHT OF INSTALLATION SHALL BE DETERMINED IN FIELD.
15. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF SEWERS TO WHICH NEW SEWER LINES ARE TO BE CONNECTED BEFORE INSTALLATION OF NEW SEWER LINE.
16. ALL VENTS THROUGH ROOF SHALL BE MIN. 10'-0" FROM ANY AIR INTAKES.
17. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
18. CONTRACTOR SHALL ROUGH-IN ALL WASTES AND SUPPLIES TO SPECIAL EQUIPMENT ACCORDING TO MANUFACTURER'S SHOP DRAWINGS AND MAKE FINAL CONNECTIONS. ALL SUPPLIES SHALL BE VALVED. INSTALL VACUUM BREAKERS WHERE REQUIRED BY CODE.
19. DO NOT PENETRATE WALL FOOTINGS WITH PIPING, COORDINATE WITH GENERAL CONTRACTOR TO DROP FOOTINGS AS REQUIRED TO CLEAR PLUMBING SERVICES WHERE ABSOLUTELY NECESSARY. ALL PIPING PENETRATING A BEARING WALL OR FOOTING MUST BE SLEEVED AND LOCATION APPROVED BY STRUCTURAL ENGINEER. PROVIDE LINK-SEALS IN ALL PENETRATIONS OF EXTERIOR WALLS.
20. ALL PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE IN PROVIDED CEILING SPACE.
21. COORDINATE PIPING INSTALLATION AS TO NOT INTERFERE WITH HVAC EQUIPMENT ACCESS.
22. ANY ERRORS OR AMBIGUITIES IN THE PLANS AND/OR SPECIFICATIONS THAT ARE DISCOVERED BY THE CONTRACTOR SHALL BE REPORTED TO THE ARCHITECT/ENGINEER BEFORE WORK IS STARTED. OMISSION OF PARTICULAR REFERENCE TO ANY ITEM NECESSARY FOR COMPLETE INSTALLATION AND PROPER OPERATION THEREOF SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING THE SAME AT NO EXTRA COST. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL CONSTRUCTION DOCUMENTS FOR INFORMATION PRIOR TO BID.
23. VERIFY WITH ARCHITECT ON ALL EQUIPMENT AND FIXTURES REQUIRING PLUMBING PRIOR TO BID. COORDINATE EXACT LOCATIONS AND CONNECTIONS.
24. ALL WORK SHALL BE IN COMPLIANCE WITH STATE AND LOCAL CODES.
25. CONTRACTOR SHALL PAY ALL FEES, PERMITS, LICENSES, ETC. NECESSARY FOR PROPER COMPLETION OF WORK.
26. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

PLUMBING PIPING LINETYPES

LINETYPE	DESCRIPTION
– – – – – – – – – – – –	DEMOLITION
——— G ———	GAS
———————	SANITARY ABOVE GRADE
— — — — — — — —	SANITARY BELOW GRADE
———————	STORM ABOVE GRADE
– – – – – – – – – – – –	STORM BELOW GRADE
– – – – – – – – – – – –	VENT ABOVE GRADE
----------	VENT BELOW GRADE
——— - ———	COLD WATER
— — — — — — — —	COLD WATER BELOW GRADE
——— -- ———	HOT WATER
— — — — — — — —	HOT WATER BELOW GRADE
——— --- ———	RECIRC WATER
— — — — — — — —	RECIRC WATER BELOW GRADE

PLUMBING PIPING LEGEND

	CIRCUIT SETTER
	BALL VALVE OR SHUT-OFF VALVE
	SPRING CHECK VALVE
	END CAP
	NEW TO EXISTING PIPE CONNECTION
	FLOW DIRECTION ARROW
	NEW TO EXISTING POINT OF CONNECTION SYMBOL
	PIPE CONNECTION
	HAMMER ARRESTOR (PISTON TYPE)
	HAMMER ARRESTOR (BELLOWS TYPE)
	PIPING LINEWEIGHT: NEW/DEMOLITION
	PIPING LINEWEIGHT: EXISTING

PLUMBING ABBREVIATIONS

AG	ABOVE GRADE	MAU	MAKE-UP AIR UNIT
ADD	ADDENDUM	MC	MECHANICAL CONTRACTOR
ADDL	ADDITIONAL	MECH	MECHANICAL
ADJ	ADJUSTABLE	MIN	MINIMUM
AFF	ABOVE FINISH FLOOR	NG	NATURAL GAS
AFG	ABOVE FINISH GRADE	NTS	NOT TO SCALE
ALT	ALTERNATE	NPCW	NON POTABLE COLD WATER
BG	BELOW GRADE	ORD	OVERFLOW ROOF DRAIN
CO	CLEANOUT	OS	OPEN SITE
COL	COLUMN	OSD	OVERFLOW STORM DRAIN
CW	COLD WATER	PC	PLUMBING CONTRACTOR
DN	DOWN	PLBG	PLUMBING
DS	DOWNSPOUT	PRES	PRESSURE
EC	ELECTRICAL CONTRACTOR	QTY	QUANTITY
ECO	EXTERIOR CLEANOUT	RD	ROOF DRAIN
EQ	EQUAL	RTU	ROOFTOP UNIT
FCO	FLOOR CLEANOUT	SAN	SANITARY
FD	FLOOR DRAIN	SCH	SCHEDULE
FLR	FLOOR	SD	STORM DRAIN
FS	FLOOR SINK	SPEC	SPECIFICATIONS
FT	FOOT (FEET)	SS	STAINLESS STEEL
F	FURNACE	TEMP	TEMPERATURE
GAL	GALLON	TYP	TYPICAL
GC	GENERAL CONTRACTOR	UR	URINAL
GPM	GALLONS PER MINUTE	V	VENT
GI	GREASE INTERCEPTOR	VTR	VENT THRU ROOF
GW	GREASE WASTE	W/	WITH
HW	HOT WATER	WCO	WALL CLEANOUT
HWR	HOT WATER RETURN	WC	WATER CLOSET

PLUMBING SHEET INDEX

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WDB ENGINEERING
CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

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date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

P000

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025

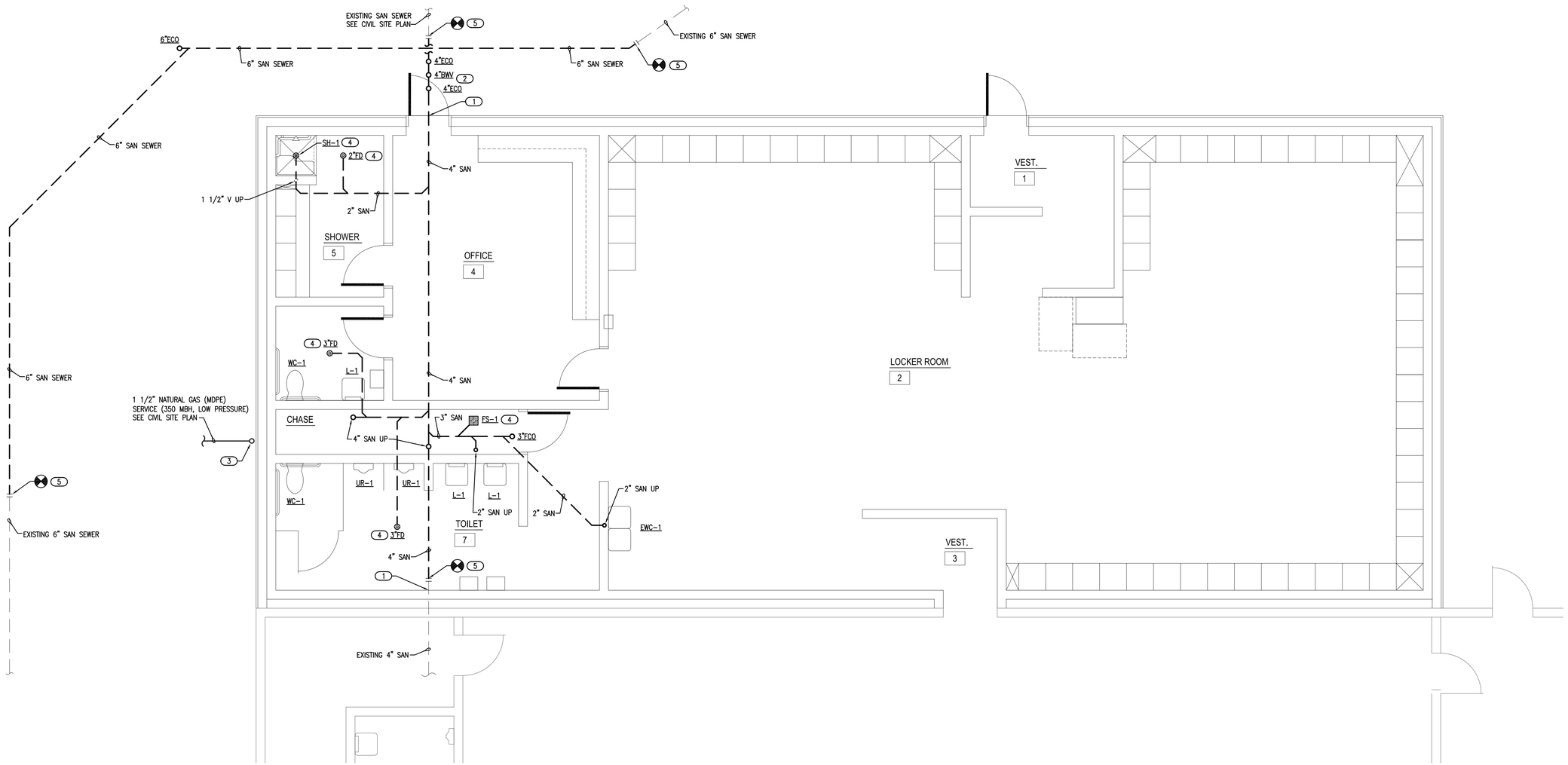
Salas O'Brien Project Number: 2023-04636-00

KEYED NOTES

1. PROVIDE CAST IRON PIPE SLEEVE FOR SANITARY PIPE THRU OR BELOW GRADE BEAM. INSTALL FOAM SPACER BLOCKS TO MAINTAIN PIPE IN CENTER OF SLEEVE. COORDINATE PIPE SLEEVE INSTALLATION WITH STRUCTURAL.
2. INSTALL 4" SANITARY BACKWATER VALVE AND 4" EXTERIOR CLEANOUTS. PROVIDE CONCRETE PAD AT GRADE. SEE DETAIL 4/P501.
3. INSTALL NATURAL GAS ANODELESS RISER FOR TRANSITION FROM BELOW GRADE MDPE TUBING TO ABOVE GRADE BLACK IRON PIPE.
4. INSTALL BELOW FLOOR 1/2" CW LINE TYPE K COPPER OR PEX-a FOR TRAP PRIMER TO FLOOR DRAIN OR FLOOR SINK. SLOPE LINE CONTINUOUSLY TOWARDS DRAIN. SEE DETAIL 1/P501.
5. CONNECT NEW SANITARY SEWER TO EXISTING SANITARY SEWER. FIELD VERIFY LOCATION. COORDINATE WITH SITE CONTRACTOR.

GENERAL NOTES

1. COORDINATE WORK WITH ALL OTHER TRADES ON SITE.
2. COORDINATE ALL BELOW GRADE PIPE ROUTING WITH STRUCTURAL FOUNDATIONS AND REQUIRED PIPE SLEEVES THRU FOUNDATION PENETRATIONS.
3. FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
4. PRIOR TO COMMENCING WORK, COORDINATE WITH SITE CONTRACTOR FOR SANITARY SEWER AND WATER INVERT ELEVATIONS.
5. REFER TO PLUMBING FIXTURE SCHEDULE ON SHEET P601 FOR FIXTURE ROUGH-IN PIPE SIZES AND ADDITIONAL SIZES ON ISOMETRIC P401.
6. PIPE TRENCHES SHALL HAVE SAND BEDDING TO A MINIMUM POINT 6" ABOVE THE TOP OF PIPE. REFER TO SPECIFICATIONS.
7. INSTALL BELOW FLOOR 1/2" CW LINE TYPE K COPPER OR PEX-a FOR TRAP PRIMER TO FLOOR DRAINS. SLOPE LINE CONTINUOUSLY TOWARDS DRAIN. SEE DETAIL 1/P501.



1 PLUMBING PLAN - BELOW GRADE

SCALE: 1/4" = 1'-0"

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OKLAHOMA PROFESSIONAL ENGINEER
Stewart McDonald
No. 30822
10/20/25

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KEYED NOTES

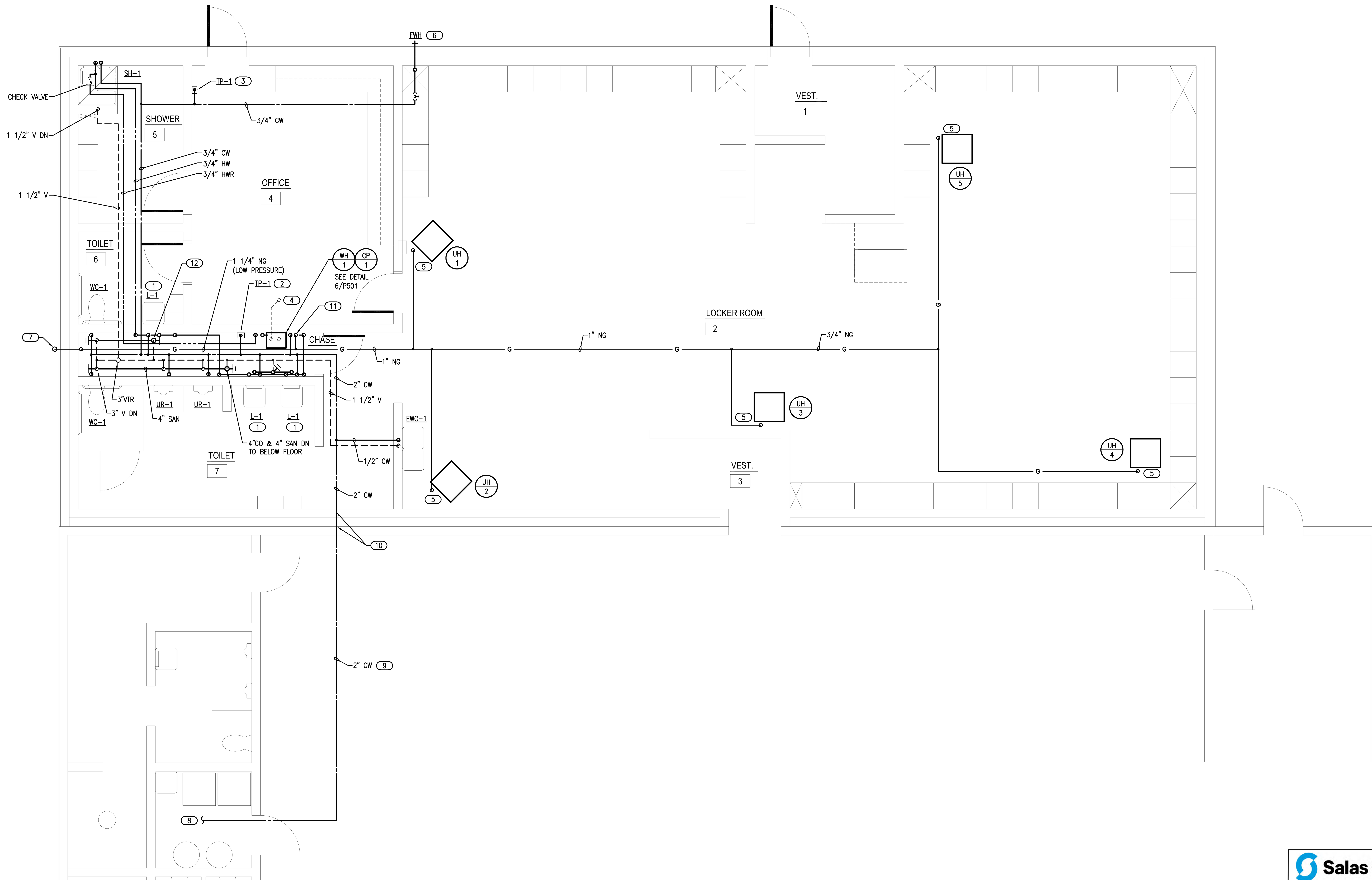
7. ROUTE 1 1/4" NATURAL GAS LINE (350 MBH AT LOW PRESSURE) UP TO MINIMUM 16" ABOVE GRADE WITH GAS SHUT-OFF VALVE AND ROUTE INTO BUILDING. PROVIDE PIPE SLEEVE AT WALL PENETRATION, FIRESEAL AND INSTALL WALL ESCUTCHEON.
8. CONNECT NEW 2" CW PIPE WITH BALL VALVE TO EXISTING 2" OR LARGER CW PIPE. REINSTALL PIPE INSULATION AT CONNECT POINT AS REQUIRED. FIELD VERIFY CONNECTION POINT.
9. ROUTE NEW INSULATED 2" CW PIPE AS HIGH AS POSSIBLE THRU EXISTING WEIGHT ROOM. FIELD VERIFY ROUTING.
10. INSTALL PIPE SLEEVE THRU EXISTING WALL AND NEW WALL FOR NEW 2" CW PIPE. FIRESEAL WALL PENETRATION AND SLEEVE ENDS.
11. ROUTE 3/4" NATURAL GAS (LOW PRESSURE) TO WATER HEATER. SEE DETAIL 6/P501.
12. ROUTE 4" SANITARY UP FROM BELOW FLOOR WITH 4" SANITARY TO WATER CLOSET, 4" CLEANOUT AND 2" SANITARY UP TO SERVE LAVATORY WITH 2" VENT UP.

KEYED NOTES

1. INSTALL THERMOSTATIC MIXING VALVE (TMV-1) BELOW LAVATORY. ROUTE HW LINE ALONG CHASE WALL WITHIN 24" OF BRANCH HW LINE TO LAVATORY. SEE DETAIL 5/P501.
2. PROVIDE 1/2" CW WITH STRAINER TO TRAP PRIMER (TP-1) IN ACCESSIBLE LOCATION IN CHASE. ROUTE (3) 1/2" LINES FROM DISTRIBUTION UNIT TO (2) FLOOR DRAINS AND FLOOR SINK. COORDINATE POWER WITH EC. SEE DETAIL 1/P501.
3. PROVIDE 1/2" CW WITH STRAINER TO TRAP PRIMER (TP-1) IN ACCESSIBLE LOCATION ABOVE LAY-IN CEILING. ROUTE (2) 1/2" LINES FROM DISTRIBUTION UNIT TO FLOOR DRAIN AND SHOWER DRAIN IN THIS AREA. SEE DETAIL 1/P501.
4. WATER HEATER 3" CONCENTRIC VENT UP THRU ROOF.
5. ROUTE 1/2" NATURAL GAS (LOW PRESSURE) LINE TO UNIT HEATER. PROVIDE BALL VALVE, DRIP LEG, AND FINAL UNIT CONNECTION. COORDINATE CONNECTION WITH MC. SEE DETAIL 8/P501.
6. COORDINATE HEIGHT OF EXTERIOR FREEZELESS WALL HYDRANT (FWH) WITH GC AND/OR ARCHITECT. SEAL FIXTURE FLANGE WATERTIGHT.

GENERAL NOTES

1. COORDINATE WORK WITH ALL OTHER TRADES ON SITE.
2. PROVIDE WATER HAMMER ARRESTORS (HA) ON WATER LINES TO FLUSH VALVES, SENSOR FAUCETS AND QUICK CLOSING VALVES. LOCATE UNITS IN ACCESSIBLE LOCATIONS.
3. SINK AND LAVATORY WATER SUPPLY STUB OUTS SHALL BE COPPER PIPE WITH SUPPORT BRACKET FASTENED IN WALL CAVITY OR CHASE.
4. FIRE SEAL ALL PENETRATIONS THRU RATED STRUCTURES TO MAINTAIN FIRE RATING.
5. REFER TO PLUMBING FIXTURE SCHEDULE ON SHEET P601 FOR FIXTURE ROUGH-IN PIPE SIZES AND ADDITIONAL SIZES ON ISOMETRIC P401.
6. PROVIDE ACCESS PANELS FOR ALL VALVES/DEVICES ABOVE HARD CEILINGS AND BEHIND WALLS.
7. ALL GAS PIPE SHALL COMPLY WITH IFGC. BRANCH LINES SHALL TAP OFF TOP OF GAS MAINS AND INSTALL SHUT-OFF VALVE ON BRANCH LINE.
8. TRAP PRIMER LINES SHALL BE COPPER TYPE "K" OR PEX-a TUBING WITH CONTINUOUS SLOPE TOWARDS DRAIN CONNECTION.



1 PLUMBING PLAN - ABOVE GRADE

SCALE: 1/4" = 1'-0"

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P110

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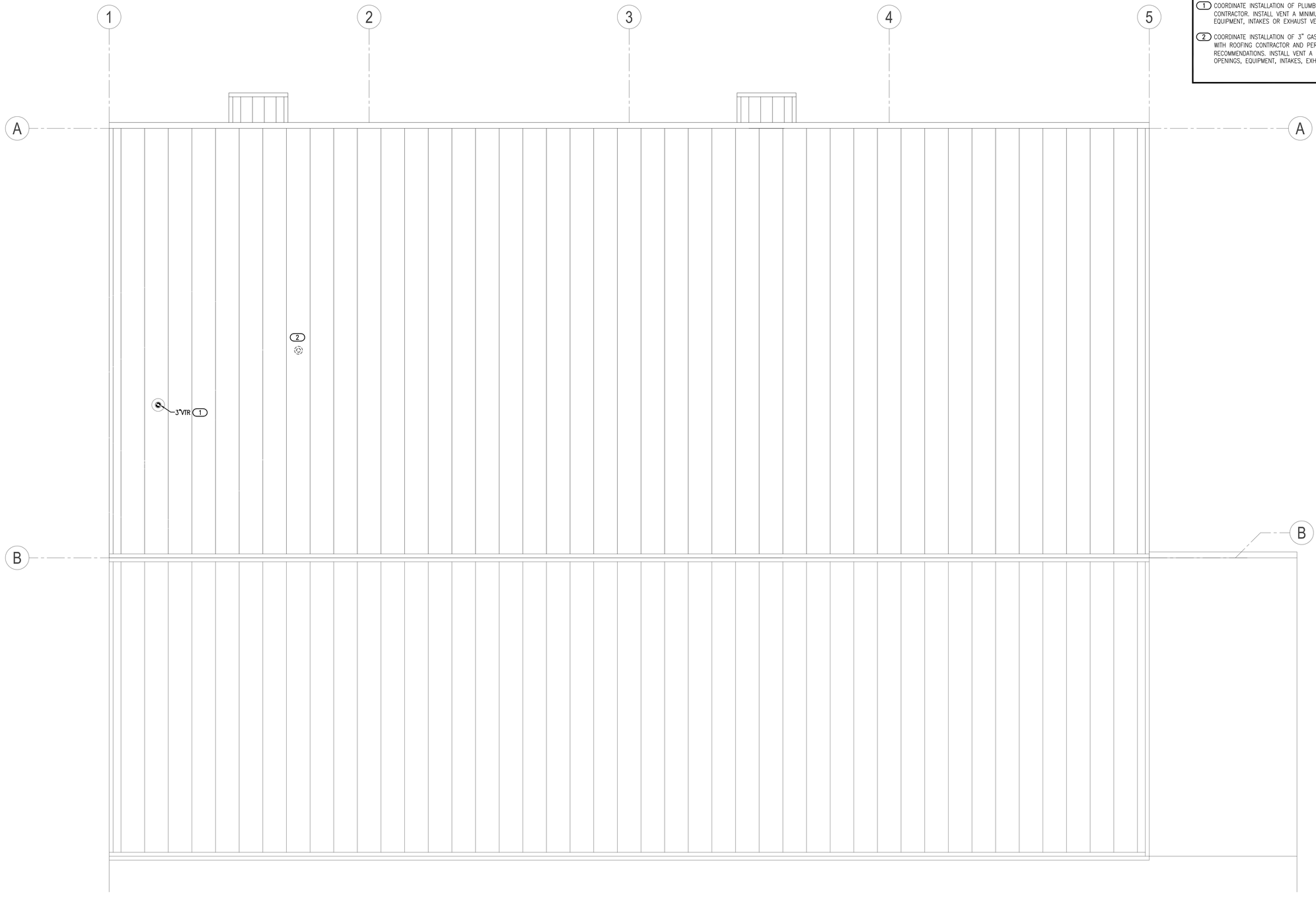

GENERAL NOTES

1. COORDINATE WORK WITH ALL TRADES ON SITE.
2. MAINTAIN MINIMUM OF 10'-0" CLEAR BETWEEN EXHAUST AND INTAKE VENTS WITH MECHANICAL EQUIPMENT AND OTHER ROOF OPENINGS.

KEYED NOTES

(1) COORDINATE INSTALLATION OF PLUMBING VENTS WITH ROOFING CONTRACTOR. INSTALL VENT A MINIMUM 10'-0" FROM ANY OPENINGS, EQUIPMENT, INTAKES OR EXHAUST VENTS.

(2) COORDINATE INSTALLATION OF 3" GAS WATER HEATER CONCENTRIC VENT WITH ROOFING CONTRACTOR AND PER MANUFACTURER'S RECOMMENDATIONS. INSTALL VENT A MINIMUM 10'-0" FROM ANY OPENINGS, EQUIPMENT, INTAKES, EXHAUST VENTS AND ROOF EDGE.

1 PLUMBING PLAN - ROOF
SCALE: 1/4" = 1'-0"

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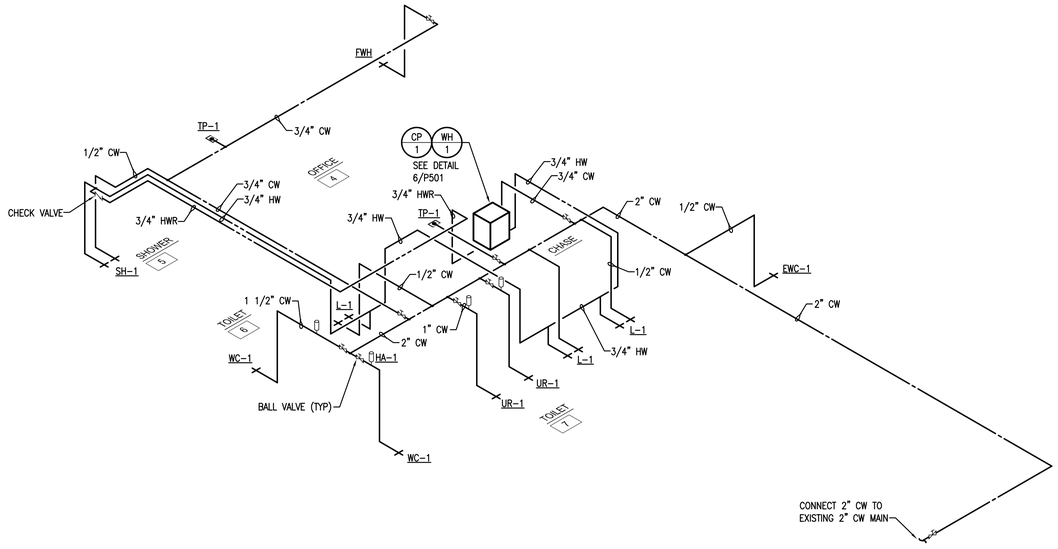
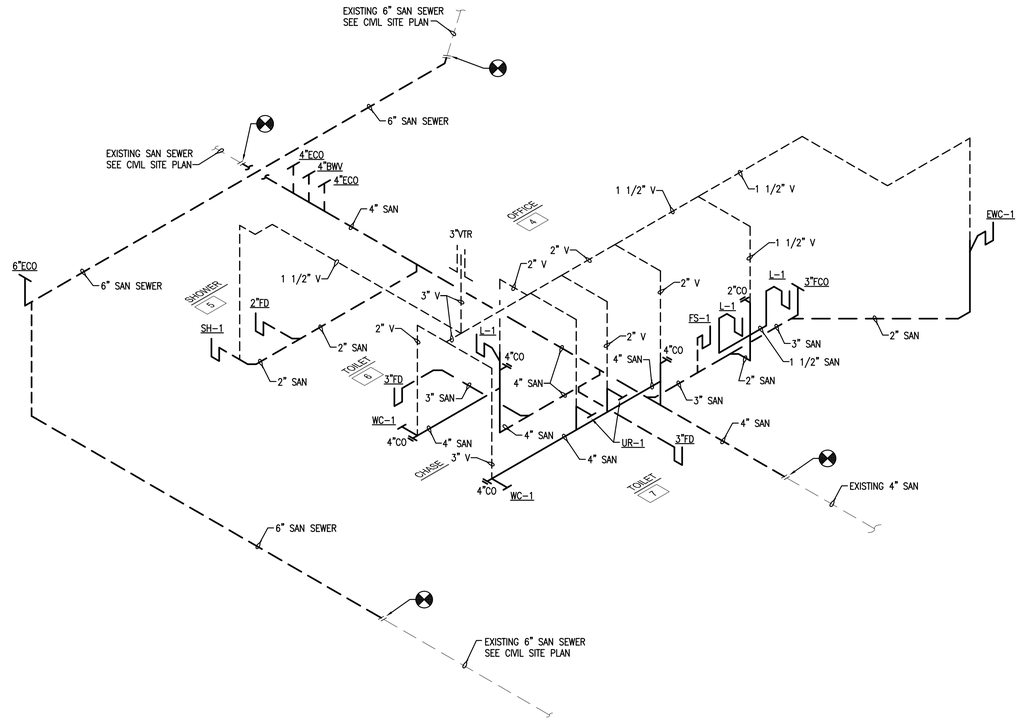


2 PLUMBING ISOMETRIC - WATER SUPPLY

SCALE: NO SCALE



1 PLUMBING ISOMETRIC - WASTE & VENT

SCALE: NO SCALE

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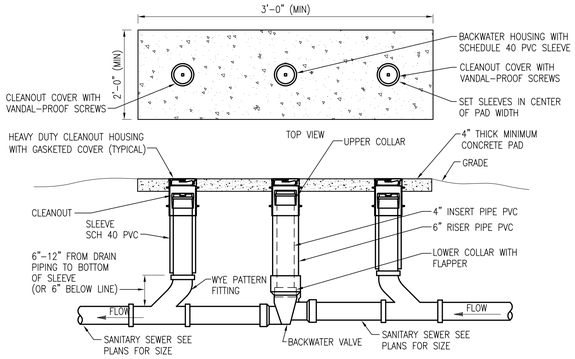
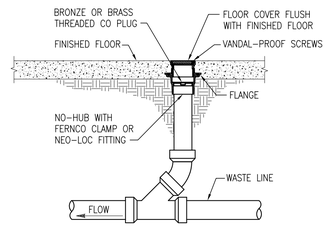
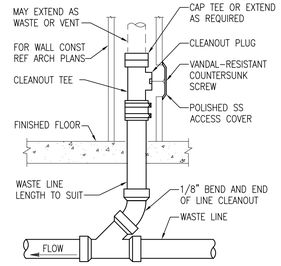


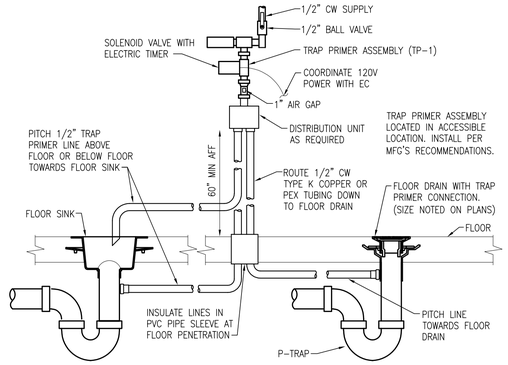
4 BACKWATER VALVE & EXTERIOR CLEANOUT DETAIL
NOT TO SCALE



3 INTERIOR CLEANOUT DETAIL
NOT TO SCALE

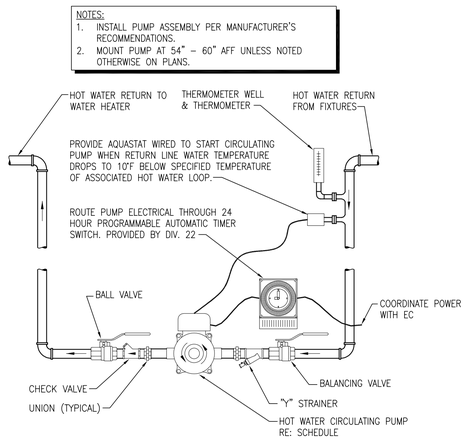


2 WALL CLEANOUT DETAIL
NOT TO SCALE



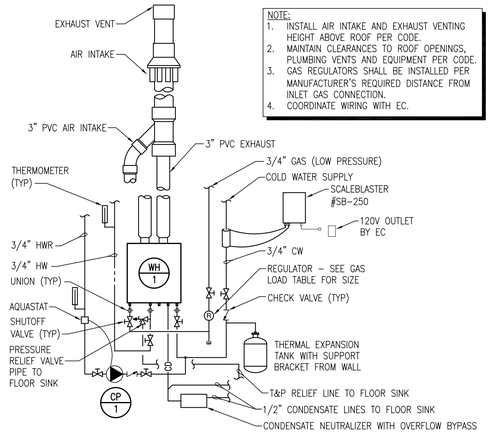
1 ELECTRIC TRAP PRIMER DETAIL
NOT TO SCALE

NOTES:
1. INSTALL PUMP ASSEMBLY PER MANUFACTURER'S RECOMMENDATIONS.
2. MOUNT PUMP AT 54" – 60" AFF UNLESS NOTED OTHERWISE ON PLANS.



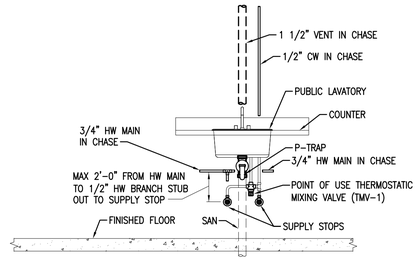
7 HW RECIRCULATION PUMP DETAIL
NOT TO SCALE

NOTE:
1. INSTALL AIR INTAKE AND EXHAUST VENTING HEIGHT ABOVE ROOF PER CODE.
2. MAINTAIN CLEARANCES TO ROOF OPENINGS, PLUMBING VENTS AND EQUIPMENT PER CODE.
3. GAS REGULATORS SHALL BE INSTALLED PER MANUFACTURER'S REQUIRED DISTANCE FROM INLET GAS CONNECTION.
4. COORDINATE WIRING WITH EC.



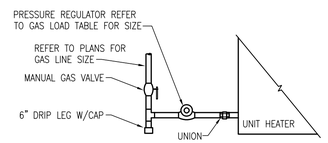
6 TANKLESS GAS WATER HEATER DETAIL
NOT TO SCALE

NOTE:
1. ALL EXPOSED PIPE SHALL BE POLISHED CHROME PLATED BRASS AND TRIMMED WITH POLISHED CHROME SHALLOW ESCUTCHEONS.
2. INSTALL TRUEBRO LAV GUARD2 OR EQUAL PIPING COVERS ON ALL EXPOSED PIPING.
3. INSTALL THERMOSTATIC MIXING VALVE UNDER FIXTURE.
4. ALL HOT WATER & HOT WATER RECIRC PIPING SERVING PUBLIC LAVATORIES SHALL BE INSTALLED TO CONFORM TO CHAPTER 4 OF CURRENT EDITION OF INTERNATIONAL ENERGY CONSERVATION CODE (IECC).



5 PUBLIC LAVATORY HW RECIRC DETAIL
NOT TO SCALE

NOTE:
1. COORDINATE GAS CONNECTION TO UNIT WITH MC.
2. INSTALL PRESSURE REGULATOR IF REQUIRED PER MANUFACTURER'S RECOMMENDATIONS.



8 UNIT HEATER GAS CONNECTION DETAIL
NOT TO SCALE

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GAS WATER HEATER SCHEDULE

MARK	LOCATION	TEMPERATURE RISE	FLOW RATE GAL/MIN	CAPACITY (GALLONS)	MBH INPUT MAX	AIR INTAKE	FLUE EXHAUST	MANUFACTURER & MODEL NO.	NOTES
WH 1	MECH/ELEC ROOM 15	(50°F – 120°F) 70°F	5	TANKLESS	199.9	2"	2"	NAVIEN NPE-240S	ALL

NOTES:
1. INSTALL AND VENT PER MANUFACTURER'S RECOMMENDATIONS.
2. COORDINATE POWER SUPPLY WITH ELECTRICAL CONTRACTOR. POWER SUPPLY TO UNIT 120V, 2 AMP (GFCI OUTLET).
3. PROVIDE AMTROL ST-5 THERMAL EXPANSION TANK ON COLD WATER LINE. REFER TO DETAILS SHEET P501.
4. PROVIDE CLEAR WATER ENVIRO TECHNOLOGIES SCALEBLASTER MODEL SB-250 ELECTRONIC DESCALER. COORDINATE 120 VOLT OUTLETS WITH EC.
5. PROVIDE CIRCULATION PUMP WIRING FROM WATER HEATER. COORDINATE POWER CONNECTIONS WITH EC.
6. PROVIDE NAVIEN CONDENSATE NEUTRALIZER KIT AND OVERFLOW BY-PASS PIPING TO FLOOR SINK PER MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE NAVIEN EXHAUST/INTAKE CONCETRIC VENT KIT THRU ROOF.
8. SEE DETAILS SHEET P501 FOR MORE INFORMATION.

CIRCULATION PUMP SCHEDULE

MARK	MAXIMUM WORKING PRESSURE	MAXIMUM OPERATING TEMP (°F)	MOTOR				FLANGE SIZE (INCHES)	MATERIAL	MANUFACTURER & MODEL NO.
			ELECTRICAL CHAR	F.L. AMPS	HP	RPM			
CP 1	150 PSI	225	115/60/1	3.5	1/6	3300	3/4"	S.S.	GRUNDFOS UPS 26-150 SF

NOTES:
1. PROVIDE GRUNDFOS BRONZE 3/4" FLANGE SET.
2. DATA: 3 GPM AT 30 FEET HEAD.
3. PROVIDE 24 HOUR TIMER AND AQUASTAT – SET TIMER PER OWNER'S REQUIREMENTS.
4. COORDINATE WIRING WITH E.C.
5. SEE DETAIL SHEET P501 FOR MORE INFORMATION.

GAS LOAD TABLE

–	INPUT(MBH)	REQUIRED PRESSURE	REQUIRED REGULATOR	SYSTEM PRESSURE	NOTES
UH-1	30	7"	NONE	LOW	1,2,3
UH-2	30	7"	NONE	LOW	1,2,3
UH-3	30	7"	NONE	LOW	1,2,3
UH-4	30	7"	NONE	LOW	1,2,3
UH-5	30	7"	NONE	LOW	1,2,3
WH-1	199.9	7"	NONE	LOW	1,4
TOTAL LOAD	350 MBH				

NOTES:
1. INSTALL AND VENT REGULATOR PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE VENT LIMITING DEVICE IF REQUIRED FOR INDOOR REGULATORS EQUIPPED WITH INTEGRAL VENT LIMITING ORIFICE MAXITROL MODEL 12A09.
3. COORDINATE WITH MECHANICAL CONTRACTOR FOR EQUIPMENT LOCATIONS AND REQUIRED CONNECTION.
4. PROVIDE VENT LIMITING DEVICE IF REQUIRED FOR INDOOR REGULATORS EQUIPPED WITH INTEGRAL VENT LIMITING ORIFICE MODEL 12A39.

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	MANUFACTURER	MODEL	MOUNT	ROUGH-IN SCHEDULE				FITTINGS AND REMARKS
					COLD	HOT	WASTE	VENT	
L-1	LAVATORY ADA	AMERICAN STANDARD	0355.012	WALL	1/2"	1/2"	1 1/2"	1 1/2"	COLOR WHITE. PROVIDE CHICAGO FAUCET 420-CP FAUCET. PROVIDE MCGUIRE HD155W OFFSET STRAINER, 8902C P-TRAP, & LFBV2165CC SUPPLY STOPS. TRUEBRO LAV GUARD 2 PIPE COVERS. WADE CARRIER 520-08. REFER TO ARCHITECT'S PLANS FOR MOUNTING HEIGHT AND WALL TYPE. ADA INSTALLATION.
WC-1	WATER CLOSET ADA	AMERICAN STANDARD	2257.101	WALL	1 1/4"	–	4"	–	COLOR WHITE. PROVIDE SLOAN ROYAL 111-1.6 SFSM BATTERY OPERATED FLUSH VALVE. PROVIDE BEMIS 1655SSCT OPEN FRONT ELONGATED SEAT, EXTERNAL CHECK HINGE, COLOR WHITE. WADE WALL CARRIER. REFER TO ARCHITECT'S PLANS FOR HEIGHT AND WALL TYPE. ADA INSTALLATION.
UR-1	URINAL ADA	AMERICAN STANDARD	6590.001	WALL	1"	–	2"	1 1/2"	COLOR WHITE. PROVIDE SLOAN ROYAL 186-0.5 SFSM BATTERY OPERATED FLUSH VALVE. WADE WALL SUPPORT CARRIER. REFER TO ARCHITECT'S PLANS FOR MOUNTING HEIGHT AND WALL TYPE. ADA INSTALLATION.
SH-1	SHOWER ADA	BRADLEY	SEE REMARKS	WALL	1/2"	1/2"	2"	–	SHOWER ENCLOSURE BY OTHERS. PROVIDE BRADLEY SHOWER SYSTEM 1C-HD-B-A24-DV WITH SHOWER VALVE, DIVERTER VALVE, SHOWER HEAD, HAND WAND WITH BRACKET, 60" HOSE, 24" SLIDE BAR & VACUUM BREAKER. PROVIDE WADE FLOOR DRAIN. COORDINATE TRIM & DRAIN LOCATIONS WITH GC. ADA INSTALLATION.
EWC-1	ELECTRIC WATER COOLER DUAL	ELKAY	LZSTL8WSVRSK	WALL	1/2"	–	1 1/2"	1 1/2"	DUAL LEVEL VANDAL-RESISTANT WITH PUSH BUTTON ACTIVATION, SENSOR WATER BOTTLE FILLING STATION ON LOWER UNIT, FILTERED, 120 VOLT. PROVIDE ELKAY CANE APRON LKAPREZL ON UPPER UNIT. PROVIDE PVC P-TRAP AND 1/4 TURN SUPPLY STOP. REFER TO ARCHITECT'S PLANS FOR MOUNTING HEIGHT & WALL TYPE. ADA INSTALLATION.
FD	FLOOR DRAIN	WADE	1100-DA6-1	FLOOR	–	–	SEE PLANS	–	6" ROUND NICKEL BRONZE STRAINER, CAST IRON BODY ANCHOR FLANGE, CLAMP COLLAR, ADJUSTABLE COLLAR, ADJUSTABLE STRAINER HEIGHT, VANDAL-PROOF SECURED TOP, 1/2" TRAP PRIMER CONNECTION.
FS-1	FLOOR SINK	WADE	9110-64-15-24-27	FLOOR	–	–	3"	–	8"x8" TOP, 6" DEEP, CAST IRON BODY WITH WHITE A.R.E INTERIOR, 1/2 GRATE, SEDIMENT BUCKET, ANCHOR FLANGE.
FCO	FLOOR CLEANOUT	WADE	6000-1-VP-75	FLOOR	–	–	SEE PLANS	–	ADJUSTABLE, CAST IRON BODY, ANCHOR FLANGE, MEDIUM DUTY SCORIATED ROUND TOP WITH NICKEL BRONZE FINISH, VANDAL RESISTANT COVER SCREWS, BRASS PLUG.
WCO	WALL CLEANOUT	WADE	8560-75 8304-85-VP	WALL	–	–	SEE PLANS	–	CAST IRON CLEANOUT TEE, THREADED BRASS PLUG, PROVIDE 8304-85-VP STAINLESS STEEL 6" ROUND ACCESS COVER WITH VANDAL RESISTANT SECURING SCREW.
ECO	EXTERIOR CLEANOUT	WADE	8401-COF4-VP	GRADE	–	–	SEE PLANS	–	CAST IRON CLEANOUT ACCESS HOUSING, ANCHOR FLANGE, SECURED GASKETED COVER WITH CLEANOUT FERRULE WITH BRASS PLUG. VANDAL PROOF SCREWS.
BWV	BACKWATER VALVE (SANITARY)	RECTORSEAL	97034	GRADE	–	–	4"	–	PVC BODY, FLAPPER WITH EXTENSION AND CAP. PROVIDE PVC SLEEVE TO FLUSH WITH FINISH GRADE. FIELD VERIFY DEPTH OF ACCESS HOUSING. ASSEMBLY MEETS IPC CODES. SEE DETAIL SHEET P501.
HA-1	HAMMER ARRESTOR	WATTS	LF15M2	PIPE	VARIES	–	–	–	LEAD-FREE DESIGN, PDI WH201 LISTED, MAINTENANCE FREE, INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
TP-1	TRAP PRIMER	SIOUX CHIEF	695-ESO1	PIPE	1/2"	–	–	–	ELECTRONIC UNIT WITH 24 HOUR ELECTRIC TIMER, SOLENOID VALVE, INTEGRAL BALL VALVE, WATER HAMMER ARRESTOR & AIR GAP, 1/2" CW INLET & OUTLET, 120V POWER HARD-WIRED. PROVIDE STRAINER PRIOR TO UNIT. COORDINATE 120 VOLT POWER WITH EC. PROVIDE DISTRIBUTION SPLITTER. SEE DETAIL 1/P501.
TMV-1	THERMOSTATIC MIXING VALVE	WATTS	LFMMV-M1	BELOW FIXTURE	1/2"	1/2"	–	–	LEAD FREE MIXING VALVE WITH ADJUSTABLE TEMPERATURE SET-POINT & LOCKABLE, INTEGRAL CHECK STOPS & STRAINERS, 1/2" INLETS & OUTLET. SET OUTLET TEMP AT 105 DEGREES F. ASSE 1070 LISTED.
AP-1	ACCESS PANEL	ACUDOR	UF-5000 14x14 CLSS	WALL	–	–	–	–	14"x14" STEEL, 16 GAGE DOOR & FRAME, 18 GAGE MOUNTING FRAME. CONCEALED HINGE, CYLINDER LOCK & KEY, STAINLESS STEEL FINISH. CONCEALED FASTENING POINTS.
FWH	FREEZELESS WALL HYDRANT	WOODFORD	B65	WALL	3/4"	–	–	–	CONCEALED BOX TYPE WITH HINGED DOOR, CHROME FINISH, ASSE STANDARD 1019, INSTALL AT MINIMUM 18" ABOVE GRADE, GIVE HYDRANT KEY TO OWNER.

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Salas O'Brien Project Number: 2023-04636-00

PLUMBING SPECIFICATIONS

PART 1: GENERAL:

A. THE CONTRACTOR SHALL FURNISH, INSTALL, PROVIDE AND MAKE OPERATIVE ALL EQUIPMENT, MATERIALS, SUPERVISION LABOR AND ANY AND ALL ITEMS NECESSARY FOR THE PROPER INSTALLATION OF A CORRECTLY FUNCTIONING PLUMBING SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

B. SMALL DETAILS NOT USUALLY INDICATED ON THE DRAWINGS OR SPECIFIED, BUT WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE PLUMBING SYSTEM, SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF SPECIFIED OR SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL INSTALL THE EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THE MANUFACTURER'S RECOMMENDATIONS, IT WILL BE THE CONTRACTOR'S' DUTY TO BRING THIS TO THE ATTENTION OF THE ARCHITECT.

PART 2: CODE REQUIREMENTS:

A. ORDINANCES, PERMITS AND CODES: THE WORKMANSHIP AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL CONFORM TO ALL REGULATIONS OF ALL THE AUTHORITIES HAVING JURISDICTION WHETHER SHOWN ON THE DRAWINGS OR NOT.

PART 3: PERMITS:

A. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CONNECTION AND INSPECTION FEES AS REQUIRED FOR THE COMPLETE INSTALLATION OF THE PLUMBING SYSTEMS.

PART 4: SPECIFICATIONS AND DRAWINGS:

A. THE PLANS DEPICT THE LOCATION OF ALL FIXTURES AND EQUIPMENT AND ARE INTENDED TO INDICATE THE GENERAL INTENT OF THE WORK IN SCOPE, LAYOUT AND QUALITY OF WORKMANSHIP. THEY ARE NOT INTENDED TO SHOW IN MINUTE DETAIL EVERY AND ALL ACCESSORIES INTENDED FOR THE PURPOSE OF EXECUTION OF THE WORK, BUT THE CONTRACTOR SHALL UNDERSTAND THAT SUCH DETAILS ARE PART OF THIS WORK.

B. THE LOCATION OF PIPES AND EQUIPMENT AS SHOWN ON THE DRAWINGS, IS DIAGRAMMATIC AND SCHEMATIC AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE HIS OWN WORKING LAYOUT TO ELIMINATE ALL STRUCTURAL INTERFERENCES WITHOUT DETRIMENT TO THE STRUCTURAL AND ARCHITECTURAL COMPONENTS OF THE BUILDING.

C. THE CONTRACTOR SHALL CAREFULLY VERIFY ALL MEASUREMENTS OF THE SITE, DETERMINE THE EXACT LOCATION OF ALL CHASES AND OPENINGS REQUIRED BY HIS WORK AND SHALL FURNISH AND SET ALL SLEEVES, INSERTS AND HANGERS AS REQUIRED FOR THE WORK HEREIN.

D. ALL CONTRACTORS SUBMITTING PROPOSALS FOR THIS WORK SHALL FIRST EXAMINE THE SITE AND ALL CONDITIONS. ALL PROPOSALS SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY THE WORK UNDER THIS CONTRACT.

E. SUBMITTALS: PROVIDE PRODUCT DATA AND SIZES, ROUGH-IN DIMENSIONS TO ENGINEER FOR APPROVAL.

PART 5: COORDINATION AND CONFLICTS:

A. THE CONTRACTOR SHALL COORDINATE HIS WORK SO THAT IT DOES NOT INTERFERE WITH THE WORK OF THE OTHER TRADES. IT SHALL BE THE CONTRACTOR'S DUTY TO SEE THAT THE WORK IS PERFORMED IN A TIMELY MANNER.

B. IN THE EVENT THAT THERE IS A DISCREPANCY OR CONFLICT IN THE PLANS OR SPECIFICATIONS IT SHALL BE THE CONTRACTOR'S DUTY TO NOTIFY THE ARCHITECT OF THIS CONFLICT OR DISCREPANCY PRIOR TO HIS ACCEPTANCE OF THE PROJECT. UNLESS EXPRESSLY STIPULATED, NO ADDITIONAL ALLOWANCES WILL BE MADE IN THE CONTRACTOR'S AND/OR MANUFACTURER'S FAVOR BY VIRTUE OF ERRORS, AMBIGUITIES AND/OR OMISSIONS WHICH WERE KNOWN TO OR WHICH SHOULD HAVE BEEN KNOWN OR DISCOVERED DURING THE PREPARATION OF THE BID ESTIMATE AND DIRECTED TO THE ARCHITECT'S ATTENTION IN A TIMELY MANNER.

PART 6: EXPERIENCE:

A. THE CONTRACTOR SHALL BE A REPUTABLE FIRM REGULARLY DOING THIS TYPE OF WORK, WITH SKILLED MECHANICS AND EQUIPMENT CAPABLE OF PROVIDING A FIRST CLASS INSTALLATION IN ACCORDANCE WITH ACCEPTABLE MODERN PRACTICES.

PART 7: PLUMBING THERMOMETERS:

A. STEM TYPE THERMOMETERS: ADJUSTABLE ANGLE, RED OR BLUE APPEARING NON-TOXIC LIQUID IN GLASS, CAST ALUMINUM CASE WITH ENAMEL FINISH, CAST ALUMINUM ADJUSTABLE JOINT WITH POSITIVE LOCKING DEVICE; ADJUSTABLE 360 DEGREES IN HORIZONTAL PLANE, 180 DEGREES IN VERTICAL PLANE. SIZE 9 INCH, SCALE 30 TO 240 DEG. F.

B. ACCEPTABLE MANUFACTURERS ARE WEKSLER GLASS, H.O. TRERICE OR APPROVED EQUAL.

PART 8: PLUMBING IDENTIFICATION:

A. NAMEPLATES FOR EQUIPMENT: LAMINATED THREE LAYER PLASTIC WITH ENGRAVED LETTERS, 1/4" HEIGH, COLOR WHITE, BACKGROUND COLOR BLACK.

B. TAGS: PLASTIC OR BRASS, 1 1/2 INCH DIAMETER, WITH ENGRAVED OR STAMPED BLACK LETTERS WITH LIGHT CONTRASTING BACKGROUND COLOR. USE TAGS FOR VALVES AND PIPING SMALLER THAN 3/4 INCH. INSTALL TAGS WITH CORROSION RESISTANT CHAIN. PROVIDE TYPEWRITTEN LIST OF TAGS INCLUDING LOCATION AND SERVICE.

C. PLASTIC PIPE MARKERS: FACTORY FABRICATED, FLEXIBLE, PREFORMED TO PIPE SIZE OR VINYL FILM TAPE, INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.

D. ACCEPTABLE MANUFACTURERS ARE BRADY, KOLBI, SETON OR APPROVED EQUAL.

PART 9: PLUMBING INSULATION:

A. ALL INSULATION, INCLUDING JACKET, OR FACING AND ADHESIVE USED TO ADHERE FACING OR JACKET TO THE INSULATION SHALL HAVE A COMPOSITE FIRE AND SMOKE HAZARD RATING TESTED BY THE PROCEDURE RECOMMENDED BY ASTM E84, NFPA 255 OR U.L. 723, NOT EXCEEDING FLAME SPREAD 25, SMOKE DEVELOPED 50. ALL INSULATION ACCESSORIES SHALL ALSO HAVE THE RATINGS LISTED ABOVE.

B. ABOVE GRADE HOT AND COLD WATER LINES WILL BE INSULATED WITH RIGID, MOLDED FIBERGLASS WITH VAPOR BARRIER. MAINS 1 INCH THICK AND BRANCH LINES SERVING INDIVIDUAL FIXTURES, 1/2 INCH. PROVIDE PVC JACKETS FOR FITTINGS, JOINTS AND VALVES. MITERED AND MASTIC FIBERGLASS NOT ACCEPTABLE.
   1. ACCEPTABLE MANUFACTURERS ARE OWENS CORNING, JOHNS MANVILLE, KNAUF, CERTAINTEED OR APPROVED EQUAL.

C. BELOW GRADE HOT AND COLD WATER LINES WILL BE INSULATED WITH PREFORMED CLOSED CELL FLEXIBLE ELASTOMERIC CELLULAR RUBBER INSULATION, RATED FOR DIRECT BURIAL, 1 INCH THICK. PROVIDE PVC PIPE SLEEVE AT CONCRETE PENETRATIONS.
   1. ACCEPTABLE MANUFACTURERS ARE ARMACELL, AEROFLEX, NOMACO OR APPROVED EQUAL.

D. INSULATION INSERTS AND SHIELDS: PROVIDE GALVANIZED STEEL SHIELD AND INSERT ON ALL PIPING TO PROVIDE 180 DEGREE COVERAGE ON BOTTOM OF SUPPORTED PIPING AND FULL 360 DEGREE COVERAGE ON CLAMPED PIPING. 1 INCH THICK.
   1. ACCEPTABLE MANUFACTURERS ARE B-LINE, ANVIL OR APPROVED EQUAL.

PART 10: – PLUMBING PIPING:

A. SANITARY WASTE LINES AND VENTS BELOW AND ABOVE GRADE SHALL BE PVC PIPE: ASTM D 2665 SCHEDULE 40 WITH SOLVENT WELDED PVC FITTINGS. USE SERVICE WEIGHT CAST IRON PIPE IN ONE HOUR OR GREATER FIRE RATED WALLS. PROVIDE CAST IRON PIPE SLEEVE AT FOUNDATION WALL PENETRATIONS.

B. ABOVE GRADE DOMESTIC COLD AND HOT WATER LINES SHALL BE COPPER TUBE WITH SOLDERED COPPER FITTINGS OR MECHANICAL PRESS FITTINGS:
   1. ASTM B 88, TYPE "L", H (DRAWN) TEMPER.
   2. FITTINGS: ASME B16.18, CAST COPPER ALLOY OR ASME B16.22, WROUGHT COPPER AND BRONZE.
   3. JOINTS: ASTM B 32, ALLOY SN95 SOLDER.
   4. COPPER PRESS FIT JOINTS SHALL BE DOUBLE PRESSED TYPE AND UTILIZE EPDM SEALING ELEMENTS. JOINTS SHALL BE MADE IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS.

C. CONCEALED BRANCH LINES FOR ABOVE GRADE DOMESTIC COLD AND HOT WATER LINES: COPPER OR PEX-a TUBING.
1. COPPER ASTM B 88, TYPE "L", H (DRAWN) TEMPER.
2. CROSS-LINKED POLYETHYLENE TUBING (PEX-a) ASTM F876, ASTM F877, NFS 61. FITTINGS ASTM F 1960.

D. BELOW GRADE UNDER BUILDING DOMESTIC COLD AND HOT WATER LINES SHALL BE:
1. ASTM B 88, TYPE "K", (SOFT) TEMPER. ASME B16.26 CAST BRONZE. NOT JOINTS BELOW GRADE.
2. CROSS-LINKED POLYETHYLENE TUBING (PEX-a) ASTM F876, ASTM F877, NFS 61. NO JOINTS BELOW GRADE.

E. ALL WATER PIPING SHALL BE APPROVED FOR CONTACT WITH POTABLE WATER IN ACCORDANCE WITH NSF 61 AND NSF 14.

F. NATURAL GAS PIPING:
   1. BELOW GRADE BEYOND BUILDING: MEDIUM DENSITY POLYETHYLENE PIPE (MDPE), ASTM D2513, SDR 11 WITH FUSION WELDED JOINTS. EXTERIOR USE ONLY.
   2. ABOVE GRADE: STANDARD WEIGHT BLACK STEEL PIPE ASTM A 53 SCHEDULE 40, WITH WELDED JOINTS OR MALLEABLE IRON THREADED FITTINGS. JOINTS: NFPA 54 OR WELDED TO ASME B31.1.
   3. EQUIPMENT CONNECTIONS: CORRUGATED STAINLESS STEEL TUBING (CSST), ANSI LC-1 STANDARD, ASTM A240, TYPE 304. UV RESISTANT POLYETHYLENE JACKET, MECHANICAL TYPE FITTINGS. DO NOT USE FOR PIPE MAINS.
   4. PROVIDE A GAS SHUT-OFF VALVE IN THE MAIN GAS RISER PRIOR TO ENTERING THE BUILDING.
   5. GAS PIPING TO APPLIANCES, ROOFTOP EQUIPMENT, FURNACES, WATER HEATERS OR ANY OTHER GAS-FIRED EQUIPMENT SHALL BE FURNISHED WITH A SHUT-OFF VALVE AND DRIP LEG PRIOR TO ENTERING THE EQUIPMENT. PROVIDE PRESSURE REGULATOR AS REQUIRED BY APPLIANCE AND GAS PRESSURE AVAILABLE.

G. ALL ABOVE GRADE EXTERIOR GAS PIPE SHALL BE DEGREASED, PRIMED AND PAINTED YELLOW WITH PIPE IDENTIFICATION MARKERS EVERY 5'-0" PER IFGC.

H. DISINFECTION OF DOMESTIC WATER SYSTEM: WATER DISTRIBUTION SYSTEM SHALL BE DISINFECTED PER STATE AND LOCAL CODES.

PART 11: – PLUMBING SPECIALTIES:

A. DRAINS AND CLEANOUTS: ZURN, WADE, JR SMITH, OR APPROVED EQUAL.

B. TRAP PRIMERS: SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, ZURN, OR APPROVED EQUAL.

C. WATER HAMMER ARRESTORS: WATTS, SIOUX CHIEF OR ZURN OR APPROVED EQUAL.

D. THERMOSTATIC MIXING VALVE: WATTS, LAWLER OR APPROVED EQUAL.

E. VALVES: WATTS, CONBRACO INDUSTRIES, WEBSTONE OR APPROVED EQUAL.

F. SANITARY BACKWATER VALVES: RECTORSEAL, OATEY OR APPROVED EQUAL.

PART 12: – PLUMBING EQUIPMENT:

A. WATER HEATERS: NAVIEN, OR APPROVED EQUAL.

B. THERMAL EXPANSION TANKS: AMTROL, WESSEL, ZILMET OR APPROVED EQUAL.

C. CIRCULATION PUMPS: GRUNDFOS, ARMSTRONG, BELL & GOSSETT OR APPROVED EQUAL.

D. REFER TO PLUMBING SCHEDULES ON PLANS.

PART 13: – PLUMBING FIXTURES:

A. LAVATORIES: AMERICAN STANDARD, KOHLER OR APPROVED EQUAL.
   1. FAUCET: MOEN, CHICAGO FAUCET, T&S BRASS OR APPROVED EQUAL.
   2. ACCESSORIES: MCGUIRE, DEARBORN BRASS OR APPROVED EQUAL.

B. WATER CLOSETS: AMERICAN STANDARD, KOHLER OR APPROVED EQUAL.
   1. SEATS: BEMIS, KOHLER OR APPROVED EQUAL.
   2. FLUSH VALVES: SLOAN, ZURN, OR APPROVED EQUAL.
   3. FIXTURE CARRIERS: WADE, ZURN, WATTS OR APPROVED EQUAL.

C. URINALS: AMERICAN STANDARD, KOHLER OR APPROVED EQUAL.
   1. FLUSH VALVES: SLOAN, ZURN, OR APPROVED EQUAL.

D. SHOWER TRIM: BRADLEY, MOEN, ACORN OR APPROVED EQUAL.
   1. ADA COMPLIANT.
   2. SHOWER ENCLOSURE BY GENERAL CONTRACTOR.

E. ACCESS PANELS: ACUDOR, ELMDOR OR APPROVED EQUAL.

F. ELECTRIC WATER COOLER STATION: ELKAY, OASIS, HALSEY TAYLOR OR APPROVED EQUAL.

G. WALL HYDRANTS: WOODFORD, OR APPROVED EQUAL.

H. SUPPLY STOP VALVES: COMMERCIAL GRADE, QUARTER-TURN STYLE: MCGUIRE, BRASSCRAFT OR APPROVED EQUAL.

I. REFER TO PLUMBING SCHEDULES ON PLANS.

PART 14: – INSTALLATION:

A. FURNISH AND INSTALL A COMPLETE PLUMBING SYSTEM AS INDICATED ON THE PLUMBING PLANS. TEST AND ADJUST EQUIPMENT AND FIXTURES FOR PROPER OPERATION.

B. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

C. PROVIDE TRACER WIRE FOR BELOW GRADE NON-METALLIC PIPING.

D. PIPE HANGERS AND SUPPORTS INSTALLED IN ACCORDANCE WITH ASME B31.9, MSS SP-58, MSS SP-69, MMS SP-89 AND SPACING PER CODE. INSTALL HANGERS WITHIN 12" OF ALL ELBOWS AND BRANCH CONNECTIONS.

E. ROUTE PIPING IN ORDERLY MANNER, MAINTAIN GRADIENT AND ALLOW FOR EXPANSION AND CONTRACTION.

F. INSTALL VENT PIPING PENETRATING SIDEWALLS TO MAINTAIN INTEGRITY OF WALL ASSEMBLY.

G. IDENTIFY VALVES WITH TAGS AND PIPING WITH PIPE MARKERS OR TAGS.

H. PIPE INSULATION: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NAIMA NATIONAL INSULATION STANDARDS.

I. INSULATED PIPES CONVEYING FLUIDS BELOW AMBIENT TEMPERATURE INCLUDING FITTINGS, VALVES, UNIONS, FLANGES, AND STRAINERS.

J. FOR HOT PIPING CONVEYING FLUIDS 140 DEGREES F OR LESS, DO NOT INSULATE FLANGES AND UNIONS AT EQUIPMENT, BUT BEVEL AND SEAL ENDS OF INSULATION.

K. INSULATE FITTINGS, JOINTS, AND VALVES WITH INSULATED PVC FITTING COVERS.

L. INSULATION INSERTS AND SHIELDS: GALVANIZED STEEL BETWEEN PIPE HANGERS OR PIPE HANGER ROLLS AND INSERTS WITH 180 DEGREE COVERAGE ON BOTTOM OF SUPPORTED PIPING AND 360 DEGREE COVERAGE ON CLAMPED PIPING. LOCATE INSERT BETWEEN SUPPORT SHIELD AND PIPING AND UNDER THE FINISH JACKET. INSERT MINIMUM 6 INCHES LONG. INSERT MATERIAL OF HYDROUS CALCIUM SILICATE INSULATION OR OTHER HEAVY DENSITY INSULATING MATERIAL SUITABLE FOR THE PLANNED TEMPERATURE RANGE. INSERTS AND SHIELD ASSEMBLIES MAY BE FACTORY FABRICATED.

M. EXPOSED PIPING: LOCATE INSULATION AND COVER SEAMS IN LEAST VISIBLE LOCATIONS

N. SLEEVE PIPES PASSING THROUGH NON-RATED PARTITIONS, WALLS AND FLOORS. USE URETHANE CAULK IN ANNULAR SPACE BETWEEN PIPE INSULATION AND SLEEVE. CONTINUE INSULATION THROUGH WALLS, SLEEVES, PIPE HANGERS, AND OTHER PIPE PENETRATIONS. FINISH AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS. AT FIRE SEPARATIONS, FIRE CAULK AS REQUIRED.

O. FIRE AND/OR SMOKE RATED PENETRATIONS: ALL FIRESTOPPING SYSTEMS SHALL BE PROVIDED BY THE SAME MANUFACTURER AND UL LISTED. USE A PRODUCT THAT HAS A RATING NOT LESS THAN THE RATING OF THE WALL OR FLOOR BEING PENETRATED. REFERENCE ARCHITECTURAL DRAWINGS FOR IDENTIFICATION OF FIRE AND/OR SMOKE RATED WALLS AND FLOORS.

P. PIPING INSULATION SHALL BE CONTINUOUS THROUGH WALL PENETRATIONS.

Q. INSTALL UNIONS AT EQUIPMENT CONNECTIONS. PROVIDE BALL VALVES TO ISOLATE EQUIPMENT AND PARTS OF SYSTEMS. PROVIDE BALL VALVE AT WATER SERVICE ENTRANCE.

R. INSTALL DIELECTRIC UNIONS AT DISSIMILAR PIPE MATERIAL CONNECTION POINTS.

S. INSTALL COMPONENTS LEVEL AND PLUMB. SEAL FIXTURES TO WALL AND FLOOR SURFACES WITH SEALANT COLOR TO MATCH FIXTURE.

T. PLUMBING FIXTURE MOUNTING HEIGHT SHALL BE PER ARCHITECTURAL DRAWINGS.

U. INSTALL FLOOR DRAINS AND CLEANOUTS FLUSH WITH FINISHED FLOOR.

V. INSTALL BALL VALVES FOR SHUT-OFF AND TO ISOLATE EQUIPMENT, PARTS OF SYSTEMS OR VERTICAL RISERS.

W. INSTALL UNIONS DOWNSTREAM OF VALVES AND AT EQUIPMENT OR APPARATUS CONNECTIONS.

X. PIPE WORK MUST BE PROPERLY TESTED AND APPROVED BEFORE BEING COVERED UP OR ENCLOSED.

Y. TEST FIXTURES TO DEMONSTRATE PROPER OPERATION. REPLACE MALFUNCTIONING UNITS OR COMPONENTS.

Z. CLEAN PLUMBING FIXTURES AND EQUIPMENT.

AA. PROTECT INSTALLED PRODUCTS FROM DAMAGE DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS.

AB. DO NOT PERMIT USE OF FIXTURES BY CONSTRUCTION PERSONNEL.

AC. REPAIR OR REPLACE DAMAGED PRODUCTS BEFORE DATE OF SUBSTANTIAL COMPLETION.

AD. DISINFECT WATER PIPING SYSTEM PER STATE AND LOCAL CODES.

AE. PIPING LEAK TESTS: PERFORM LEAK TESTS ON DOMESTIC WATER SYSTEMS, WASTE & VENT SYSTEMS AND NATURAL GAS SYSTEMS PER STATE AND LOCAL CODES.

AF. SERVICE CONNECTIONS:
   1. CONNECT NEW COLD WATER PIPE TO EXISTING COLD WATER MAIN IN ADJACENT BUILDING. FIELD VERIFY LOCATION.
   2. CONNECT NEW SANITARY PIPING TO EXISTING SANITARY PIPING. CONNECT NEW SANITARY SEWER TO EXISTING SANITARY SEWER 5'-0" BEYOND NEW ADDITION. FIELD VERIFY INVERT ELEVATIONS AND LOCATION. REROUTE EXISTING SANITARY SEWER AROUND NEW ADDITION. FIELD VERIFY LOCATION.
   3. PROVIDE NEW NATURAL GAS SERVICE FROM GAS LINE BROUGHT TO BUILDING BY SITE CONTRACTOR. COORDINATE NATURAL GAS NEW LOAD WITH LOCAL GAS UTILITY.

PART 15: – WALK THRU:

A. THE CONTRACTOR SHALL PERFORM AN INSTRUCTIONAL WALK THRU WITH THE OWNER TO EXPLAIN THE OPERATION AND MAINTENANCE OF THE PLUMBING SYSTEM.

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sheet no:

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Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

GENERAL NOTES

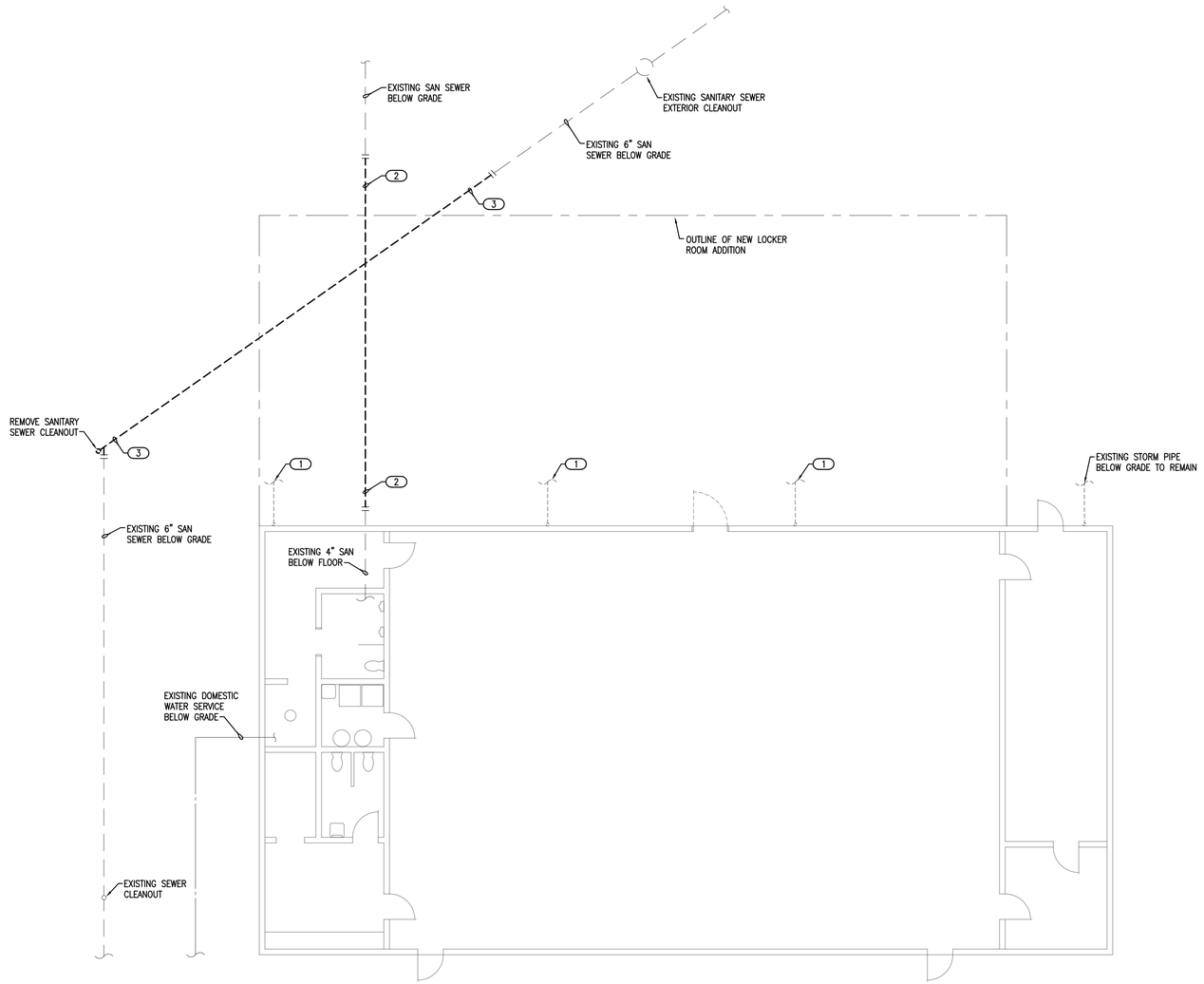
1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
2. COORDINATE WORK WITH ALL TRADES ON SITE.

KEYED NOTES

(1) REMOVE STORM DRAINAGE PIPING BELOW GRADE AND ABOVE GRADE. FIELD VERIFY LOCATION. COORDINATE REMOVAL WITH SITE CONTRACTOR.

(2) REMOVE SANITARY SEWER BELOW GRADE FOR REPLACEMENT OF PIPING RATED FOR BELOW NEW ADDITION. FIELD VERIFY LOCATION AND SIZE.

(3) REMOVE SANITARY SEWER BELOW GRADE FOR REROUTING AROUND NEW ADDITION. FIELD VERIFY LOCATION AND SIZE. COORDINATE WITH SITE CONTRACTOR.



1 PLUMBING PLAN - DEMOLITION

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

NORTH

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H:/JOBS/3459/DWG/

NOTE:
ANY UTILITIES TO BE ABANDONED MUST BE REMOVED.

- EW — EXISTING WATERLINE
- EG — EXISTING GAS LINE
- EE — EXISTING ELECTRICAL SERVICE
- ESS — EXISTING SANITARY SEWER
- GAS — EXISTING GAS LINE
- EC — EXISTING CABLE
- FIRE HYDRANT
- (M) WATER METER
- WATER VALVE
- ET EXISTING TRANSFORMER

DIRT WORK

CUT: 184 CU.YD.
FILL: 235 CU.YD.
NET: 51 CU.YD. (FILL)

ASPHALT PAVING

EXISTING Portable Building FF = 1277.62

RELOCATE GAS LINE

RELOCATE SEWER SERVICE

PROPOSED CLEANOUT

PROPOSED CLEANOUT

EXISTING 5' SIDEWALK

PROPOSED 2 – 6" STAIRS W/ HANDRAILS

EXISTING Steel Building FF = 1276.20

PROPOSED FF = 1278.50

EXISTING Steel Building FF = 1278.50

2 – 16"X24" CMA FL = 1276.50

2 – 16"X24" CMA FL = 1276.60

EXISTING GYMNASIUM FF = 1279.75

EXISTING GYMNASIUM FF = 1279.75

EXISTING ASPHALT DRIVE

EXISTING ASPHALT DRIVE

12" CMP FL = 1277.87

2 – 16"X24" CMA FL = 1277.65

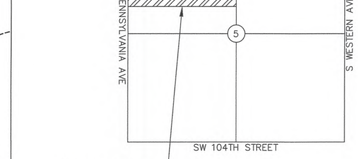
Gravel Drive

BM
Cut "X" in top of Spillway
Elev. = 1279.55

GENERAL CONSTRUCTION NOTES

1. ALL WORK NOT CLASSIFIED AS A CONTRACT "PAY ITEM", SHALL BE CONSIDERED INCIDENTAL AND THE COST THEREOF AND INCLUDED IN ITEMS CLASSIFIED FOR PAYMENT.
2. BEFORE ANY SIDEWALK OR DRIVE IS CUT, THE RESIDENT ON PROPERTY AFFECTED SHALL BE NOTIFIED BY THE CONTRACTOR. NO DRIVE OR SIDEWALK SHALL BE LEFT UNCOVERED OVERNIGHT.
3. THE CLEAN–UP OF RIGHT–OF–WAY SHALL NOT BE DELAYED UNTIL FINAL ESTIMATE. THE CLEAN–UP WORK ON SECTIONS OF COMPLETED LINE SHALL BE BROUGHT UP TO DATE AT LEAST EVERY 10 WORKING DAYS. IF CLEAN UP GETS BEHIND TIME, PRODUCTION SHALL BE SUSPENDED TO GIVE MORE MEN AND EQUIPMENT ATTENTION TO CLEAN UP UNTIL IT IS DONE. ALL RUBBISH AND DISCARDED MATERIALS SHALL BE REMOVED FROM THE SITE AND ADJACENT WILL NOT BE CONSIDERED AS HAVING BEEN DISPOSED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL UTILITIES EITHER PUBLIC OR PRIVATE. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE OWNER TO DETERMINE THEIR EXACT LOCATION BEFORE CONSTRUCTION BEGINS.
5. THE CONTRACTOR SHALL NOTIFY THE UTILITY OWNER AND ALL PARTIES AFFECTED BEFORE ANY WATER LINE IS TAKEN OUT OF SERVICE.
6. ALL CONCRETE SHALL HAVE 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
7. THE CONTRACTOR SHALL VERIFY THE DEPTH OF THE EXISTING UTILITIES AND/OR WATER LINES BEFORE STARTING ANY EXCAVATION.
8. THE LOCATION OF OTHER UTILITIES AS SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE OF ALL UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT. CALL 1–800–840–5032 48 HOURS PRIOR TO ANY EXCAVATION.
9. FILL MATERIAL SHALL BE COMPACTED IN LIFTS NOT TO EXCEED 12" TO 95% STANDARD PROCTOR DENSITY.
10. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE, FEDERAL AND LOCAL REGULATIONS.
11. ANY CONSTRUCTION PROCEDURES NOT COVERED IN PLANS AND SPECIFICATIONS, WILL BE EXECUTED IN ACCORDANCE WITH PROPER CONSTRUCTION TECHNIQUES AND SHALL BE APPROVED BY THE ENGINEER.
12. IF DITCHES SUBSIDE LATER, THE CONTRACTOR SHALL REFILL DITCHES AS SOON AS WEATHER PERMITS, AND SHALL NOT LET DITCHES WITH SUBSIDENCE EXIST DURING CONSTRUCTION OR THEREAFTER.
13. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE FINISHED TO A SMOOTH UNIFORM SURFACE PERMITTING DRAINAGE AND SLOPED IN SUCH CONDITION THAT ALL AREAS MAY BE MOWED WITH ROTARY TYPE MOWING EQUIPMENT.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FENCES DISTURBED DURING CONSTRUCTION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING FOR THE PROJECT.
16. THE CONTRACTOR SHALL REFERENCE CITY OF OKLAHOMA CITY STANDARDS.

PROJECT LOCATION



PROJECT LOCATION
MOORE WEST JUNIOR HIGH
N/2, S/2, NW/4, SEC. 5, T10N, R3W
CLEVELAND CO., OKLAHOMA

20 10 0 20 40

WDB ENGINEERING PLLC
6330 S.E. 74TH STREET
OKC, OK 73135 PH: 405–741–7090
CERTIFICATE OF AUTHORIZATION: #3987 EXP: 6–30–2023

MOORE WEST JUNIOR HIGH SCHOOL
WEIGHT ROOM ADDITION

DATE: 6–16–23	APPROVED BY	DRAWN BY MW

SITE PLAN

WDB ENGINEERING P.L.L.C. | SHEET NUMBER ST01

TECHNOLOGY LEGEND

'D#'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A NETWORK CONNECTION. THE '#' SHALL BE REPLACED WITH NUMERIC TEXT THAT IDENTIFIES THE TOTAL NUMBER OF CATEGORY 6 NETWORK CABLES THAT ARE TO BE INSTALLED AT THE TECHNOLOGY OUTLET LOCATION. CONTRACTOR TO PROVIDE AND INSTALL CATEGORY 6 NETWORK CABLES, CATEGORY 6 CONNECTORS, STAINLESS STEEL FACEPLATES WITH IDENTIFICATION WINDOWS, LABELS, BLANK INSERTS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED OUTLET LOCATION. ALL FACEPLATES PROVIDED SHALL CONTAIN A MINIMUM 4-PORTS AND SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE THE NUMBER OF CIRCUITS BEING INSTALLED AT THIS TECHNOLOGY OUTLET LOCATION. MAXIMUM OF SIX(6) DATA CABLES PER OUTLET.
'W'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WALL MOUNTED TELEPHONE CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 NETWORK CABLE, (1) CATEGORY 6 CONNECTOR, STAINLESS STEEL WALL TELEPHONE FACEPLATE, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. CONTRACTOR SHALL MOUNT THIS OUTLET AT ADA HEIGHT (MATCH LIGHT SWITCH HEIGHT) AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 8" OF CLEARANCE ON ALL FOUR SIDES OF THE BACK BOX. OUTLETS SHALL REMAIN CLEAR OF ROOM DOORS, CABINET DOORS, APPLIANCE DOORS, AND SLIDING DRAWERS.
'AP'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WIRELESS ACCESS POINT CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (2)CATEGORY 6 NETWORK CABLE, (2) CATEGORY 6 CONNECTOR, (2) CAT 6 BISCUIT JACK FACEPLATE WITH IDENTIFICATION WINDOWS, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. REFERENCE SPECIFICATIONS FOR PATCH CABLE REQUIREMENTS.
'FF'	INDICATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR FURNITURE FEED, ALLOWING CABLING TO ROUTE INTO A MODULAR FURNITURE SYSTEM. CONDUIT SHALL BE SIZE TO ACCOMMODATE THE NUMBER CABLE ROUTING INTO TO THE FURNITURE SYSTEM.
'V#'	VOICE OUTLET WITH CABLE AND TERMINATION AS INDICATED.

NOTES:

REFERENCE TECHNOLOGY GENERAL NOTES, PLAN KEYED NOTES, AND ALL OTHER SYSTEM LEGENDS/NOTES. THE STRUCTURED CABLING SYSTEM CONTRACTOR SHALL PROVIDE AND INSTALL CATEGORY 6/6A CABLE TO ALL SYSTEMS' EQUIPMENT REQUIRING NETWORK CONNECTIVITY.

RACEWAY LEGEND

⊙	INDICATES THE LOCATION OF A FLOOR MOUNTED BOX AND RACEWAY FOR LOW VOLTAGE. CONTRACTOR TO PROVIDE AND INSTALL A FLOOR BOX. EACH FLOOR BOX SHALL HAVE ONE (1) SINGLE GANG PORT WITH ONE (1) 1" CONDUIT(PER EVERY SIX(6) CATEGORY 6 OR FOUR(4) CATEGORY 6A CABLES) AND ONE (1) DOUBLE GANG PORT WITH ONE (1) 1 1/2" CONDUIT UNLESS NOTED OTHERWISE. ALL CONDUITS SHALL ROUTE FROM THE FLOOR BOX, DIRECTLY TO THE WALL INDICATED AND STUB-UP INTO THE NEAREST ACCESSIBLE PLENUM CEILING
⊕	INDICATES THE LOCATION OF A CEILING MOUNTED OUTLET. CONTRACTOR SHALL MOUNT THIS OUTLET AT +12" ABOVE THE CEILING AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 12" OF CLEARANCE FROM THE FRONT OF THE FACEPLATE FOR OWNER ACCESS.
▼	INDICATES THE LOCATION OF A NEW LOW VOLTAGE OUTLET. CONTRACTOR TO PROVIDE ONE (1) DOUBLE GANG BACK BOX WITH A SINGLE GANG REDUCER ONE (1) 1" CONDUIT STUBBING INTO THE NEAREST, ACCESSIBLE PLENUM CEILING.
⊽	INDICATES THE LOCATION OF A NEW LOW VOLTAGE OUTLET. CONTRACTOR TO PROVIDE ONE (1) DOUBLE GANG BACK BOX WITH ONE (1) 1 1/2" CONDUITS STUBBING INTO THE NEAREST, ACCESSIBLE PLENUM CEILING.
▽	INDICATES THE LOCATION OF A NEW LOW VOLTAGE OUTLET. CONTRACTOR TO PROVIDE ONE (1) SINGLE GANG BACK BOX WITH ONE (1) 3/4" CONDUITS STUBBING INTO THE NEAREST, ACCESSIBLE PLENUM CEILING.

NOTES:

A. SYSTEM INSTALLER TO PROVIDE AND INSTALL A PLASTIC PROTECTIVE BUSHING ON ALL CONDUIT STUB-UP AND SLEEVES, PRIOR TO ROUTING CABLING IN CONDUIT, CUTTING BUSHING TO FIT ROUND INSTALLED CABLE WILL NOT BE ACCEPTED

B. NO CONDUITS SHALL EXCEED FOR 40% MAXIMUM FILL RATIO. CONTRACTOR TO PROVIDE ADDITIONAL CONDUITS REQUIRED.

C. ANY CONDUIT INSTALL FOR AUDIO /VIDEO SYSTEMS SHALL INCLUDE AT LEAST ONE (1) 1 1/4" CONDUIT.

INTRUSION DETECTION LEGEND

IDP	DESIGNATES THE LOCATION OF THE INTRUSION DETECTION SYSTEM, CONTROL PANEL, ZONE EXPANDER AND POWER SUPPLIES. ELECTRICAL CONTRACTOR TO PROVIDE 120V POWER TO PANEL.
DC	FLUSH MOUNTED MAGNETIC DOOR CONTACT.
KP	INTRUSION DETECTION SYSTEM ARM/DISARM KEYPAD.
M	STANDARD RANGE WALL MOUNTED MOTION DETECTOR. PROVIDE WALL MOUNT FOR EACH DEVICE INSTALLED.
M	CEILING MOUNTED, 360° MOTION DETECTOR.
SS	SECURITY SYSTEM ALARM SIREN
GB	CEILING MOUNTED GLASS BREAK DETECTOR.

NOTES:

1. REFERENCE DIVISION SHEET SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

CONDUIT / CABLE FILL CHART

CONDUIT SIZE (ID)	4-PR UTP CATEGORY 3	4-PR UTP CATEGORY 5/5E	4-PR UTP CATEGORY 6	4-PR UTP CATEGORY 6A	4-PR UTP CATEGORY 3/5	12-ST ARMORED FIBER OPTIC CABLE
1"	12	9	6	4	-	-
1-1/4"	21	15	12	8	-	-
1-1/2"	28	21	16	11	1	-
2"	47	35	27	19	3	1
3"	124	93	72	50	8	3
4"	208	155	120	83	12	6

A. CONDUIT SIZE FOR 25-PAIR COPPER AND FIBER OPTIC CABLES APPLY TO SLEEVE SIZES ONLY. CONDUIT SIZES SHALL BE SIZED BASED ON MAXIMUM FILL RATION AND ALLOWING INSTALLATION TO NOT EXCEED THE MAXIMUM ALLOWABLE PULL TENSION.

B. CONDUIT FILL RATIO MAY VARY BY MANUFACTURER. THIS CHART SHALL STIPULATE A MINIMUM REQUIREMENT. CONTRACTOR SHALL REFERENCE MANUFACTURER SPECIFICATION AND DECREASE CABLE COUNT PER CONDUIT SIZE IF REQUIRED.

C. SIZES SHOWN DEPICT THE INTERIOR DIAMETER OF THE CONDUIT.

ACCESS CONTROL LEGEND

SYMBOL	DESCRIPTION
CR	WALL OR MULLION MOUNTED ACCESS CONTROL PROXIMITY CARD READER.
CR	DOOR MOUNTED ACCESS CONTROL PROXIMITY CARD READER THAT IS INTEGRATED INTO THE DOOR HARDWARE.
DR	DOOR RELEASE BUTTON
ACP	DESIGNATES THE LOCATION OF THE ACCESS CONTROL SYSTEM, CONTROL PANEL. ELECTRICAL CONTRACTOR TO PROVIDE 120V POWER TO PANEL. PROVIDE NETWORK CABLE TO PANEL AND COORDINATE WITH THE OWNER'S TECHNOLOGY DEPARTMENT ON ACQUIRING AN IP ADDRESS.
DS	WALL OR MULLION MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.
DS	DOOR MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.
MS	2-WAY AUDIO/VIDEO INTERCOM MASTER STATION.
PB	ADA AUTO DOOR OPEN BUTTON. SHOWN FOR REFERENCE ONLY, BUTTON AND AUTO DOOR OPERATOR PROVIDED AND INSTALLED BY THE DOOR SYSTEM INSTALLER.
DC	DPDT MAGNETIC DOOR CONTACT/DOOR POSITION SENSOR. FLUSH MOUNTED IN DOOR FRAME, UNLESS NOTED OTHERWISE.
LD	LOCKDOWN BUTTON

NOTES:

1. REFERENCE ACCESS CONTROL SCHEDULE, DETAILS, AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

VIDEO SURVEILLANCE LEGEND

SYMBOL	DESCRIPTION
#	4-SENSOR CAMERA WITH 3-SENSOR PROVIDING A 270 DEGREE AREA OF VIEW AND 1-SENSOR PROVIDING COVERAGE DIRECTLY UNDERNEATH THE CAMERA LOCATION. '#' TO BE REPLACED WITH AN ALPHABETICAL TEXT DEPICTING THE CAMERA TYPE AS ASSOCIATED WITH THE VIDEO SURVEILLANCE CAMERA SCHEDULE.
#	4-SENSOR CAMERA, 4-SENSORS TO PROVIDE A 360 DEGREE AREA OF VIEW.'#' TO BE REPLACED WITH AN ALPHABETICAL TEXT DEPICTING THE CAMERA TYPE AS ASSOCIATED WITH THE VIDEO SURVEILLANCE CAMERA SCHEDULE.
# # # # #	2-SENSOR CAMERA, EACH SENSOR SHALL BE POSITIONED TO PROVIDE COVERAGE IN THE DIRECTION SHOWN. '#' TO BE REPLACED WITH AN ALPHABETICAL TEXT DEPICTING THE CAMERA TYPE AS ASSOCIATED WITH THE VIDEO SURVEILLANCE CAMERA SCHEDULE.
#	1-SENSOR CAMERA, SENSOR SHALL BE POSITIONED TO PROVIDE COVERAGE IN THE DIRECTION SHOWN. '#' TO BE REPLACED WITH AN ALPHABETICAL TEXT DEPICTING THE CAMERA TYPE AS ASSOCIATED WITH THE VIDEO SURVEILLANCE CAMERA SCHEDULE.

NOTES:

1. REFERENCE VIDEO SURVEILLANCE SCHEDULE AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

SECURITY GENERAL NOTES

1. THE SECURITY SYSTEM INSTALLERS SHALL BE RESPONSIBLE FOR CONNECTING ALL APPLICABLE SYSTEM EQUIPMENT TO THE OWNER'S NETWORK.
2. THE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLING FROM AN APPROVED CABLE SUPPORT SYSTEM AS DETAILED IN SPECIFICATIONS. NO CABLING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. THE CABLE SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. AT LOCATIONS WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
3. SECURITY CAMERA SYSTEM INSTALLER SHALL PROVIDE A CEILING MOUNTED INSTALLATION KIT RECOMMENDED BY THE MANUFACTURER OF THE CAMERA. EACH CEILING MOUNTED CAMERA KIT SHALL HAVE A SUPPORT WIRE ATTACHED TO THE BUILDING'S STRUCTURE TO PREVENT THE CAMERA FROM DROPPING TO THE FLOOR AT ANY TIME. AT NO POINT SHALL THE WEIGHT OF THE CEILING MOUNTED SECURITY CAMERA BE SUPPORTED BY THE CEILING GRID SYSTEM OR CEILING TILES. ALL CEILING MOUNTED CAMERAS SHALL BE FLUSH MOUNTED.
4. ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.
5. PROVIDE AND INSTALL MAGNETIC DOOR CONTACT AT ALL ROOF HATCHES ON THE ENTIRE PROJECT. CONTACTS TO BE CONNECTED TO THE BUILDINGS INTRUSION DETECTION SYSTEM.

COORDINATE MONITORING REQUIREMENTS WITH THE INSTALLER FOR EACH SYSTEM AND THE OWNER. PROGRAM SYSTEM TO ALERT THE OWNER DESIGNATED PERSONNEL UPON A MONITORED ALARM EVENT

LOCAL SOUND SYSTEM LEGEND

SYMBOL	DESCRIPTION
LS *#	VENUE SPECIFIC LOCAL SOUND SYSTEM SPEAKER. *# TO BE REPLACED WITH NUMERIC VALUE INDICATING THE POSITION NUMBER OF THE VENUE SPECIFIC DEVICE.
LSC *#	VENUE SPECIFIC LOCAL SOUND SYSTEM CONTROL PLATE. *# TO BE REPLACED WITH NUMERIC VALUE INDICATING THE POSITION NUMBER OF THE VENUE SPECIFIC DEVICE.
MI *#	VENUE SPECIFIC LOCAL SOUND SYSTEM MICROPHONE INPUT. *# TO BE REPLACED WITH NUMERIC VALUE INDICATING THE POSITION NUMBER OF THE VENUE SPECIFIC DEVICE.
ABM *#	VENUE SPECIFIC LOCAL SOUND SYSTEM 3.5MM AUXILIARY INPUT AND BLUETOOTH MIXER. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIXER NUMBER. CONTRACTOR TO PROVIDE AND INSTALL A RECESSED ENCLOSURE WITH FLUSH MOUNTED, LOCKABLE DOOR. DEVICE TO BE MOUNTED AT + 42" AFF.
RACK	INDICATED THE LOCATION OF THE VENUE SPECIFIC LOCAL SOUND SYSTEM HEAD END RACK. AMPLIFIERS, DSPS, AND ALL OTHER HEAD END EQUIPMENT SHALL BE INSTALLED IN THIS RACK/CABINET.
WA	WIRELESS MICROPHONE ANTENNA. REFERENCE SPECIFICATIONS FOR MORE INFORMATION.
ALA	ASSISTED LISTENING ANTENNA. REFERENCE SPECIFICATIONS FOR MORE INFORMATION.

NOTES:

1. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

AUDIO/VIDEO LEGEND

'AV-*#'	INDICATES THAT THE DESIGNATED TECHNOLOGY OUTLET IS INTENDED FOR AN AUDIO/VIDEO (A/V) INPUT. CONTRACTOR TO PROVIDE AND INSTALL A FLOOR MOUNTED OR WALL MOUNTED BOX AS INDICATED. (1) 1.25" CONDUIT AND (1) 1" CONDUITS FROM THE BOX TO THE NEAREST, PLENUM ACCESSIBLE CEILING WITHIN THE SAME ROOM. ALL FLOOR AND WALL MOUNTED BOXES SHALL BE A MINIMUM OF 2-GANGS. *# - WHEN REPLACED WITH A '1' (AV-1) ONLY, THE OUTLET SHALL BE A STANDALONE, LOCAL INPUT TIED TO A LOCAL VIDEO DISPLAY (FSD, CMP, WMP, AV-2, ETC.). THIS OUTLET WILL NOT BE ASSOCIATED WITH ANY SYSTEM FOR ROUTING TO DISPLAYS LOCATED IN ANY OTHER PORTION OF THE PROJECT. IF NOT REPLACED WITH A '1' SEE THE NOTES AT THE BOTTOM OF THE LEGEND FOR ADDITIONAL INSTRUCTIONS.
'FSD-*#'	INDICATES THE LOCATION OF A FLAT PANEL VIDEO DISPLAY. CONTRACTOR TO PROVIDE AND INSTALL TWO (2) CATEGORY 6 UTP NETWORK CABLE TO ALL LOCATIONS SHOWN ON THE ENTIRE PROJECT. *# - WHEN REPLACED WITH A '1' (FSD-1) ONLY, THE OUTLET SHALL BE A STANDALONE AND ONLY HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA ROOM. *# - WHEN REPLACED WITH A '2' (FSD-2) ONLY, THE OUTLET SHALL HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA, AND THE CABLING FROM THE ASSOCIATED AV-1. *# - WHEN NOT REPLACED WITH A '1' OR '2', SEE THE "NOTES" SECTION AT THE END OF THIS LEGEND. EACH FSD OUTLET SHALL BE A 2-GANG BOX AND TWO (2) 1.25 CONDUITS STUBBING INTO THE ROOMS ACCESSIBLE CEILING. PROVIDE ONE DOUBLE-GANG FACEPLATE WITH TWO (2) DECORA PORTS. PROVIDE A DECORA STYLE INSERT THAT ACCEPTS THE STYLE OF DATA JACK BEING USED FOR STRUCTURED CABLING. WHEN THERE IS A LOCAL A/V INPUT ASSOCIATED WITH THE DISPLAY, PROVIDE A DECORA INSERT THAT CONFORMS WITH THE SYSTEMS SPECIFIED. OTHERWISE PROVIDE A BLANK INSERT IN THE SECOND PORT .
'IVD'	INDICATES THE LOCATION OF A WALL MOUNTED, INTERACTIVE VIDEO DISPLAY. PROVIDE AND INSTALL A/V CABLE FROM THE ASSOCIATED AV-1 AS PER SYSTEM SPECIFICATIONS. RACEWAY SHALL CONSIST OF A 2-GANG BOX AND ONE (1) 1.25 " CONDUITS STUBBING INTO THE ROOMS ACCESSIBLE CEILING. PROVIDE ONE DOUBLE-GANG FACEPLATE WITH TWO (2) DECORA PORTS. PROVIDE A DECORA STYLE INSERT THAT ACCEPTS THE STYLE OF DATA JACK BEING USED FOR STRUCTURED CABLING. WHEN THERE IS A LOCAL A/V INPUT ASSOCIATED WITH THE DISPLAY, PROVIDE A DECORA INSERT THAT CONFORMS WITH THE SYSTEMS SPECIFIED. OTHERWISE PROVIDE A BLANK INSERT IN THE SECOND PORT
AVC *#	INDICATES THE LOCATION OF AN AUDIO/VIDEO CONTROL PLATE. RACEWAY SHALL CONSIST OF ONE (1) A BACK BOX WITH A 1" CONDUIT ROUTING INTO THE ACCESSIBLE CEILING SPACE WITHIN THE SAME ROOM. AV SYSTEM INSTALLER TO COORDINATE THE CONTROL BACK BOX SIZE REQUIREMENT WITH THE PROJECT'S ELECTRICAL CONTRACTOR.
PS	LOCAL INSTRUCTIONAL SPACE PRESENTATION SPEAKER. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
*#	INDICATES THE LOCATION OF A STREAMING CAMERA. CONTRACTOR TO PROVIDE AND INSTALL TWO (2) CATEGORY 6 UTP NETWORK CABLE TO ALL LOCATIONS SHOWN ON THE ENTIRE PROJECT. REFERENCE SPECIFICATION FOR ADDITIONAL INFORMATION.

NOTES:

A. IN THE EVENT THAT '*#* IS NOT DEFINED IN THE OUTLET DESCRIPTION, THE DEVICE SHALL BE CONSIDERED A STANDALONE DEVICE, SERVING THE SYSTEM WITHIN THE SAME SPACE OR THE FOLLOWING SHALL APPLY:

*# - UNLESS SPECIFICALLY NOTED OTHERWISE, THE FOLLOWING SHALL APPLY TO EACH DEVICE SHOWN ON THE ENTIRE PROJECT:

*# - SHALL BE REPLACED WITH ALPHABETICAL CHARACTERS THAT SHALL INDICATE THE SPECIFIC VENUE THAT THE DEVICE IS ASSOCIATED WITH.

*# - SHALL BE REPLACED WITH A NUMERIC VALUE THAT SHALL IDENTIFY THE SPECIFIC DEVICE WITHIN THE SPECIFIC VENUE.

B. THE AUDIO/VIDEO SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROOUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.

C. REFERENCE SCOPE MATRIX AND PROJECT SPECIFICATIONS FOR INSTRUCTIONS REGARDING THE PROVIDING AND INSTALLATION OF VIDEO DISPLAYS, PROJECTORS, SCREENS, MOUNTS, AND LIFTS.

INTERCOM/CLOCK LEGEND

S	PROVIDE AND INSTALL A 2"2, TILE REPLACEMENT, CEILING MOUNTED, 25/70V INTERCOM SPEAKER. SPEAKER TO BE INSTALLED FLUSH WITH CEILING UNLESS NOTED OTHERWISE.
S2	PROVIDE AND INSTALL A 12" CEILING MOUNTED, 25/70V INTERCOM SPEAKER THAT IS TO BE FLUSH MOUNTED IN A SOLID CEILING ENVIRONMENT. SYSTEM INSTALLER TO PROVIDE BACK CANS TO PROJECTS ELECTRICAL CONTRACTOR FOR INSTALLATION. ON PROJECTS WITHOUT AN ELECTRICAL CONTRACTOR THE INSTALLER SHALL BE RESPONSIBLE FOR THE COMPLETE INSTALLATION INCLUDING BACK CANS AND ASSOCIATED RACEWAY.
S3	INTERIOR WALL MOUNTED, 25/70V INTERCOM SPEAKER INTERCOM SPEAKER. SPEAKER TO BE INSTALLED FLUSH WITH WALL UNLESS NOTED OTHERWISE. SYSTEM INSTALLER TO PROVIDE BACK CANS TO PROJECTS ELECTRICAL CONTRACTOR FOR INSTALLATION. ON PROJECTS WITHOUT AN ELECTRICAL CONTRACTOR THE INSTALLER SHALL BE RESPONSIBLE FOR THE COMPLETE INSTALLATION INCLUDING BACK CANS AND ASSOCIATED RACEWAY.
S4	EXTERIOR WALL MOUNTED INTERCOM PAGING HORN. PAGING HORN SHALL BE TAPPED AT 7 WATTS UNLESS NOTE OTHERWISE. SYSTEM INSTALLER TO PROVIDE BACK CANS TO PROJECTS ELECTRICAL CONTRACTOR FOR INSTALLATION. ON PROJECTS WITHOUT AN ELECTRICAL CONTRACTOR THE INSTALLER SHALL BE RESPONSIBLE FOR THE COMPLETE INSTALLATION INCLUDING BACK CANS AND ASSOCIATED RACEWAY. REFERENCE SHEET SPECIFICATIONS FOR MORE INFORMATION.
VC	PROVIDE AND INSTALL A WALL MOUNTED VOLUME CONTROL WITH EMERGENCY ANNOUNCEMENT PRIORITY OVERRIDE. VOLUME CONTROL SHALL BE INSTALLED WITH LEVEL ZERO ATTENUATING AT NO LESS THAN 10DB. DEVICE TO BE MOUNTED AT +48" AFF.
CB	PROVIDE AND INSTALL A WALL MOUNTED, INTERCOM CALL BUTTON. DEVICE TO BE MOUNTED AT +48" AFF
ACS	PROVIDE AND INSTALL AN IP ADMINISTRATIVE CALL STATION. DEVICE OUTLET TO BE INSTALLED IN THE WORKSTATION KNEE SPACE AND THE DEVICE SHALL RESIDE ON THE WORKSTATION SURFACE.
C	INDICATES THE LOCATION OF A SINGLE FACE SECONDARY TIME CLOCK. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION. PROVIDE CABLING AS REQUIRED FOR THE TYPE OF CLOCK BEING INSTALLED: - IP BASED CLOCKS - PROVIDE ONE (1) CATEGORY 6 CABLE PER FACE - 12V/24V CLOCK TO BE POWERED VIA A CLOCK POWER SUPPLY AND CONNECTED TO THE SPECIFIED MASTER CLOCK. - 120V CLOCK SHALL BE POWERED VIA 120V ELECTRICAL OUTLET AT THE DEVICE LOCATION AND CONNECTED TO THE SPECIFIED MASTER CLOCK.
S5	INTERIOR SURFACE MOUNT SPEAKER MOUNTED TO BUILDING STRUCTURE. CONTRACTOR TO PROVIDE AND INSTALL BACK CAN AND ALL NECESSARY RACEWAY

INTERCOM GENERAL NOTES

1. THE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLING FROM AN APPROVED CABLE SUPPORT SYSTEM AS DETAILED IN SPECIFICATIONS. NO CABLING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. THE CABLE SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. AT LOCATIONS WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
2. ALL EXTERIOR AND WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 10'-0" UNLESS OTHERWISE NOTED.
3. EXTERIOR SPEAKERS SHALL BE INDEPENDENTLY ZONED FROM INTERIOR SPEAKERS.
4. ALL WALL MOUNTED CALL INITIATING DEVICES SHALL BE INSTALLED AT ADA HEIGHT, MATCHING THE HEIGHT OF THE INSTALLED LIGHT SWITCHES.
5. PROVIDE AND INSTALL WALL MOUNTED VOLUME CONTROLS IN ALL OFFICES, CONFERENCE ROOMS, AND CLINICS.
6. ALL VOLUME CONTROLS SHALL BE CONFIGURED WITH EMERGENCY CALL OVERRIDE, ALLOWING EMERGENCY ANNOUNCEMENTS TO BE HEARD DESPITE THE POSITION OF THE VOLUME CONTROL
7. ALL 25/70V SPEAKERS SHALL BE CONNECTED TO A STANDARD PUNCH DOWN BLOCK LOCATED NEAR HEAD END EQUIPMENT AND THEN CONNECTED TO HEAD END EQUIPMENT.
8. CONTRACTOR TO TAP ALL EXTERIOR SPEAKERS AT 7 WATTS.
9. ALL EXTERIOR AND WALL MOUNTED SPEAKERS SHALL BE MOUNTED AT 10'-0" UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. ALL 120V POWER REQUIRED FOR THE FUNCTIONALITY OF EACH SYSTEM SHALL BE A DEDICATED CIRCUIT AND ON EMERGENCY POWER WHEN AVAILABLE. PROJECTS ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER TO MAIN CONTROL PANELS, REMOTE POWER SUPPLIES AND ALL HEAD END EQUIPMENT. SYSTEM INSTALLERS SHALL COORDINATE LOCATIONS AND CONNECTIONS WITH THE PROJECT'S ELECTRICAL CONTRACTOR.
2. THE PROJECT'S ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUITS, FLOOR BOX, BACK BOXES, JUNCTION BOXES, RACEWAYS, AND SLEEVES REQUIRED TO ESTABLISH CLEAR PATHWAYS FOR ALL SYSTEMS. ALL CONDUITS, SLEEVES, BOXES, AND RACEWAYS SHALL BE PROPERLY SIZED TO MAINTAIN A 40% MAXIMUM FILL RATIO. THE INSTALLER FOR EACH SYSTEM SHALL PROVIDE THE ELECTRICAL CONTRACTOR WITH SHOP DRAWINGS INDICATING LOCATIONS AND SIZES OF CONDUITS BEYOND THOSE SHOWN ON THE CONTRACT DOCUMENTS.
3. ALL EXPOSED SYSTEM'S WIRING OR WIRING ROUTING ACROSS NON-ACCESSIBLE CEILINGS SHALL BE ROUTED IN CONDUIT, PROVIDED AND INSTALLED BY THE PROJECT'S ELECTRICAL CONTRACTOR. SIZE CONDUIT AS REQUIRED TO ROUTE SYSTEMS WITH 40% CABLE FILL RATIO. MINIMUM CONDUIT SIZE SHALL BE 3/4".
4. EACH SYSTEM INSTALLER SHALL BE RESPONSIBLE FOR ENSURING ALL EXTERIOR WALL PENETRATIONS ARE PROPERLY SEALED TO PREVENT ANY MOISTURE FROM ENTERING BUILDING.
5. NO CONDUITS SHALL BE INSTALLED ON THE EXTERIOR OF THE BUILDING. IF EXTERIOR CONDUITS ARE REQUIRED FOR A COMPLETE INSTALLATION, EACH SYSTEM CONTRACTOR SHALL COORDINATE WITH THE PROJECTS CONSULTANT PRIOR TO ANY ROUGH-IN.
6. EACH SYSTEM INSTALLER SHALL PROVIDE AND INSTALL PROTECTIVE BUSHINGS ON ALL CONDUIT STUB OUTS AND SLEEVES TO PREVENT CABLE DAMAGE. BUSHING TO BE INSTALLED PRIOR TO CABLE INSTALLATION. CUTTING BUSHING AND INSTALLING AFTER CABLE IS INSTALLED WILL NOT BE EXCEPTED.
7. ALL CABLE SHALL BE ROUTED DOWN CORRIDORS, PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS AND STRUCTURE. CABLE TO EACH DEVICE SHALL BRANCH OFF OF A MAIN CORRIDOR TRUNK. ROUTING CABLES THROUGH CLASSROOMS, OFFICES, STORAGE ROOMS, RESTROOMS OR ANY TYPE OF ROOM OTHER THAN A CORRIDOR WILL NOT BE ACCEPTED. ENTER ALL ROOMS ABOVE THE ASSOCIATED ROOM DOORWAY.

TECHNOLOGY GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE WITH THE SYSTEM ENGINEER PRIOR TO THE INSTALLATION OF RACKS AND RACK EQUIPMENT. NO RACKS SHALL BE PERMANENTLY INSTALLED WITHOUT WRITTEN APPROVAL OF THE PROPOSED LOCATIONS.
2. THE SELECTED, INSTALLING CONTRACTOR MUST BE A CERTIFIED INTEGRATOR/INSTALLER AUTHORIZED BY THE SPECIFIED SYSTEM MANUFACTURER TO INSTALL THE CABLE PLANT AND CONNECTIVITY PRODUCTS. REFER TO SPECIFICATIONS FOR PRODUCT TYPE AND DESCRIPTION.
3. SYSTEM WIRING AND EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AS ESTABLISHED BY ANSI/EIA/TIA, BICSI, AND THE NEC.
4. ALL WIRING SHALL MEET ALL STATE AND LOCAL ELECTRICAL CODES.
5. ALL TELECOMMUNICATIONS SYSTEMS EQUIPMENT AND MOUNTING LOCATIONS SHALL BE IN COMPLIANCE WITH ADA ACCESSIBILITY STANDARDS.
6. ALL INDUSTRY STANDARD CATEGORY 6 CABLING PRACTICES MUST BE FOLLOWED FOR ALL DATA CABLING.
7. ALL CABLES/WIRING ARE TO BE INSTALLED WITH A MINIMUM OF 12 INCHES OF SEPARATION FROM AC POWER CABLES, INTERCOM, FIRE ALARM, SECURITY CABLES IN ANY PARALLEL OPEN WIRE RUN.
8. ALWAYS CROSS OTHER SYSTEM CABLES AT A 90 DEGREE ANGLE.
9. ALL CABLES AND TERMINATION COMPONENTS SHALL BE MACHINE LABELED AT BOTH ENDS. LABEL ALL CABLES PER TS DRAWINGS AND/OR SPECIFICATIONS. FINAL CABLE/OUTLET IDENTIFICATION LABELS SHALL BE COORDINATED WITH THE OWNER AND ENGINEER .
10. CONTRACTOR TO PROVIDE LIGHTNING PROTECTION ON ALL COMMUNICATION CABLE BETWEEN BUILDINGS.
11. ALL EXPOSED CABLING ROUTED IN PLENUM SHALL BE PLENUM-RATED. ALL NON PLENUM-RATED CABLING INSTALLED IN PLENUM SPACES SHALL BE INSTALLED IN CONDUIT.
12. NO TERMINATION OR SPLICES SHALL BE INSTALLED IN OR ABOVE CEILINGS UNLESS NOTED NOTED OTHERWISE.
13. CONTRACTOR SHALL MAINTAIN WALL RATING WITH PROPER FIRE BLOCKING METHODS.
14. ALL CABLE INSTALLED SHALL ROUTE TO THE CENTER OF THE ROOM IN WHICH IT SERVES AND THEN TO THE OUTLET LOCATION IT IS INTENDED FOR. EACH CABLE SHALL HAVE A 10' SERVICE LOOP AT THE CENTER OF EACH ROOM AND A 3' SERVICE LOOP ABOVE EACH OUTLET LOCATION.
16. PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO EACH VIDEO SURVEILLANCE CAMERA ON THE ENTIRE PROJECT. REFERENCE VIDEO SURVEILLANCE LEGEND, NOTES, FLOOR PLANS, DETAILS, AND SCHEDULE.
17. PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO THE BUILDING'S ACCESS CONTROL HEAD END PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
18. PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO THE BUILDING'S INTRUSION DETECTION PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
19. PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO EACH LIGHTING CONTROL HUB ON THE ENTIRE PROJECT. COORDINATE EXACT QUANTITY AND LOCATIONS WITH THE LIGHTING CONTROL SYSTEM INSTALLER. CONTRACTOR TO ASSUME A MINIMUM OF TEN (10) PER PROJECT.
20. PROVIDE AND INSTALL TWO (2) CATEGORY 6 DATA CIRCUITS TO EACH FSD (ALL VARIATIONS OF), CMP, WMP, AND DS ON THE ENTIRE PROJECT. COORDINATE ANY DISCREPANCIES WITH ENGINEER.
21. PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO THE LOCAL AIR UNIT CONTROLLER IN EACH MDF AND IDF.
22. PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO EACH ACCESS CONTROL VIDEO DOOR STATION AND MASTER STATION ON THE ENTIRE PROJECT. COORDINATE EXACT LOCATION AND TERMINATION REQUIREMENTS WITH THE DOOR STATION INSTALLER, PRIOR TO INSTALLATION.

RESPONSIBILITY MATRIX

SCOPE ITEM	RESPONSIBILITY			NOTES
COMMUNICATIONS - DIVISION 27	OFOI	CFCI	OFCI	
CATEGORY 6 STRUCTURED CABLING SYSTEM		X		
BUILDING INTERCOM/PA, BELL, AND CLOCK SYSTEM		X		
NETWORK EQUIPMENT				
→ MDF/IDF NETWORK EQUIPMENT		X		
→ VOIP TELEPHONES		X		
→ WIRELESS ACCESS POINTS		X		
→ UNITERRUPTABLE POWER SUPPLIES (UPS)		X		
RACEWAY: CONDUIT, BACK BOXES, SLEEVES, ETC.		X		SEE NOTE 1.
ELECTRICAL POWER		X		SEE NOTE 1.
LIFE SAFETY AND SECURITY - DIVISION 28	OFOI	CFCI	OFCI	
ACCESS CONTROL SYSTEM(ACS)		X		
INTRUSION DETECTION SYSTEM		X		
VIDEO SURVEILLANCE SYSTEM (VSS)				
→ VSS SERVERS		X		
→ VSS CAMERAS		X		
→ VSS PROGRAMMING		X		
→ VSS CABLING		X		SEE NOTE 2.
FIRE ALARM SMOKE DETECTION WITH VOICE EVACUATION		X		SEE NOTE 1.
RACEWAY: CONDUIT, BACK BOXES, SLEEVES, ETC.		X		SEE NOTE 1.
ELECTRICAL POWER		X		SEE NOTE 1.

OFOI - OWNER FURNISHED AND OWNER INSTALLED
CFCI - CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED
OFCI - OWNER FURNISHED AND CONTRACTOR INSTALLED

REPONSIBILITY MATRIX NOTES:

1. BY DIVISION 26.
2. BY DIVISION 27.

SUBSCRIPTS AND ABBREVIATIONS

'WM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE WALL MOUNTED AT SPECIFIED HEIGHT OR IN COMPLIANCE WITH CODE REQUIREMENTS. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'WP'	INDICATES THAT THE DESIGNATED DEVICE SHALL BE WEATHER PROOF AND RATED FOR EXTERIOR CONDITIONS INSTALLATION.
'AC'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE COUNTERTOP. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE COUNTER. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'AFF'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE FINISHED FLOOR. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE FINISHED FLOOR. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'UC'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE MOUNTED ON THE UNDERSIDE OF THE ELEVATED CANOPY.
'CM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE CORNER MOUNTED AT SPECIFIED HEIGHT. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
	FIELD COORDINATE ELEVATION.

FIRE ALARM LEGEND

FACP	FIRE ALARM CONTROL
FAA	FIRE ALARM ANNUNCIATOR PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT

NOTES:

1. FIRE ALARM SYSTEM IS A PERFORMANCE BASED PER SPECIFICATIONS 28 46 00. CONTRACTOR TO REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. A LICENSED FIRE ALARM PLANNING SUPERINTENDENT CERTIFIED TO A MINIMUM LEVEL 3, IN THE SUBFIELD OF FIRE ALARM SYSTEMS THROUGH THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET), SHALL PROVIDE PLANS AND CALCULATIONS FOR A MANUAL AND AUTOMATIC FIRE DETECTION AND ALARM SYSTEM TO COMPLY WITH THE BUILDING SPACE LAYOUT, BUILDING OCCUPANCY, CURRENT NFPA 72, LOCAL AND STATE CODE REQUIREMENTS, AND THE FIRE ALARM AND DETECTION SYSTEM SPECIFICATIONS.
3. PROJECT SCOPE INCLUDES EXPANDING THE EXISTING FIRE ALARM SYSTEM. FIRE ALARM SYSTEM SHALL BE FULLY OPERATIONAL THROUGHOUT ALL PHASES OF CONSTRUCTION.

NOTES TO CONTRACTOR

1. EVERY SYMBOL SHOWN ON LEGEND MAY NOT APPEAR ON DRAWINGS. REFER TO GENERAL ELECTRICAL NOTES FOR WALL-MOUNTED DEVICE MOUNTING HEIGHTS.
2. REFERENCE SPECIFICATIONS FOR MATERIALS AND METHODS.
3. COMPLETE INSTALLATION OF ALL PRODUCTS SHALL BE IN COMPLIANCE WITH ALL CODES, INDUSTRY STANDARDS, COMMON PRACTICES AND MANUFACTURER'S INSTRUCTIONS.
4. ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.

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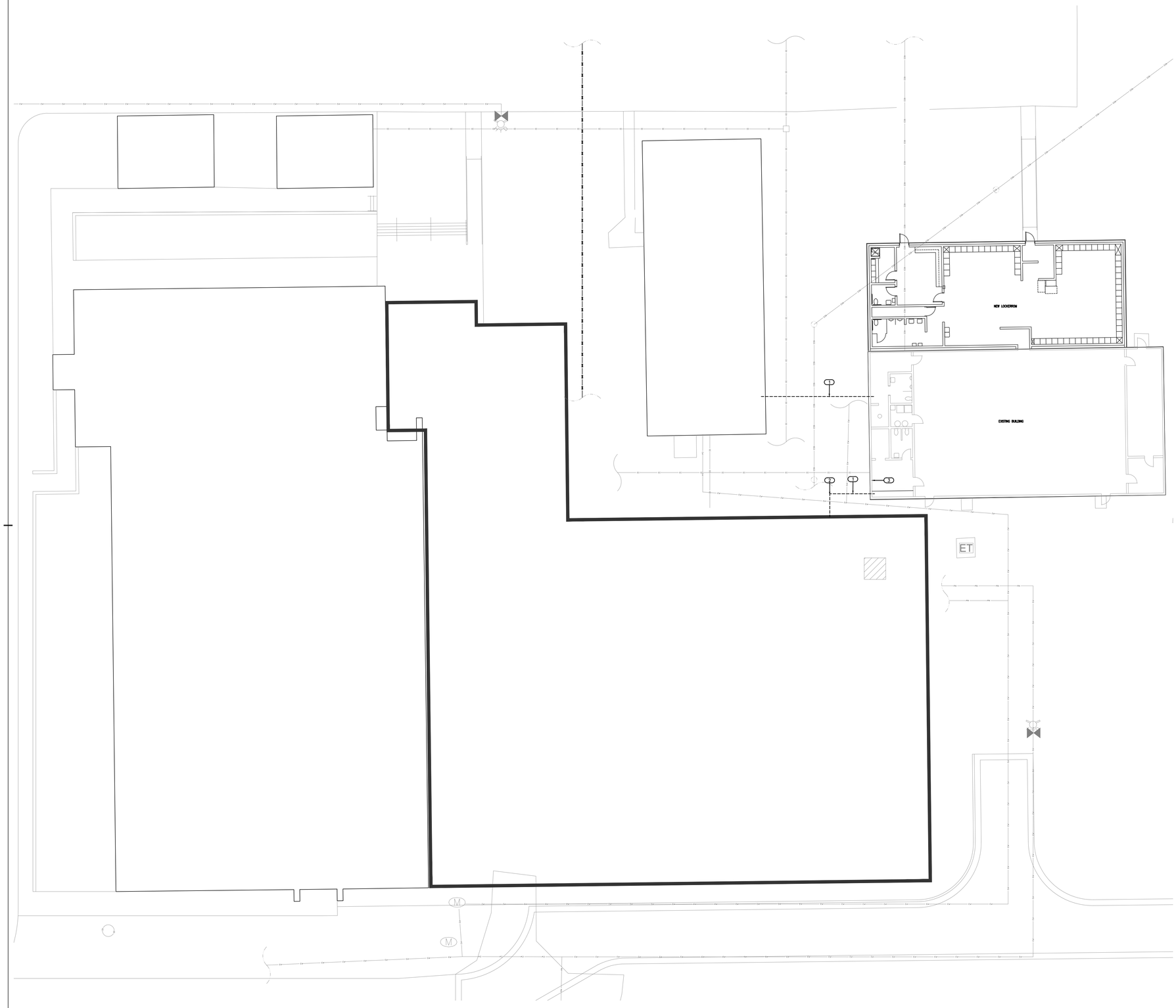
OWNERSHIP USE OF DOCUMENTS:



1 TECHNOLOGY SITE PLAN

SCALE: 1/16" = 1'-0"

NORTH

GENERAL NOTES

FIRE: CONNECT NEW FIRE ALARM DEVICES TO NEW SILENT KNIGHT 5895XL POWER SUPPLY AND NEW 5815XL SLC EXPANDER. CONNECT NEW POWER SUPPLY AND SLC EXPANDER TO EXISTING JUNIOR HIGH SCHOOL SILENT KNIGHT SYSTEM.

SECURITY ALARM: CONNECT NEW SECURITY ALARM DEVICES TO NEW DMP SECURITY PANEL. SEE SPECIFICATIONS FOR SPECIFIC MODEL NUMBERS. PROVIDE AND INSTALL 1 CAT 6 NETWORK CABLE FOR IP COMMUNICATION.

INTERCOM: CONNECT NEW INTERCOM DEVICES TO EXISTING TELECOR INTERCOM SYSTEM. ALL WIRE SHALL BE SHEILDED. PROVIDE 4 EXTRA SHEILDED WIRE FOR FUTURE USE. PROVIDE ENOUGH SLACK TO REACH FARTHEST WALL.

DATA: CONNECT NEW DATA, WIFI AND CAMERA NETWORK DROPS TO EXISTING IDF IN EXISTING GYM SHELTER.

CLOCKS: SEE SPECIFICATIONS FOR MORE CLOCK INFORMATION. PROVIDE AND INSTALL 110V STAND ALONE CLOCKS, AMERICAN TIME PART NUMBER E56BAAV304.

CAMERA: CONNECT NEW CAMERA DROPS TO EXISTING RACK IN EXISTING IDF IN EXISTING GYM SHELTER. EXISTING SYSTEM IS AVIGILON. MATCH PER SPECIFICATIONS.

ACCESS CONTROL: CONNECT NEW ACCESS CONTROL DEVICES TO NEW KEYSCAN CONTROLLER. PROVIDE CONTROLLER, READERS, STRIKES, ETC NEEDED TO FURNISH A COMPLETE AND FULLY OPERABLE SYSTEM.

KEYED NOTES

1. CONTRACTOR TO PROVIDE AND INSTALL 4-2" CONDUITS AS INDICATED.
2. CONTRACTOR TO PROVIDE AND INSTALL BELOW GRADE PULL BOX. PULL BOX SHALL BE CLEARLY LABELED "COMMUNICATIONS".
3. INDICATES THE LOCATION OF EXISTING BUILDING WALL MOUNTED IDF RACK.

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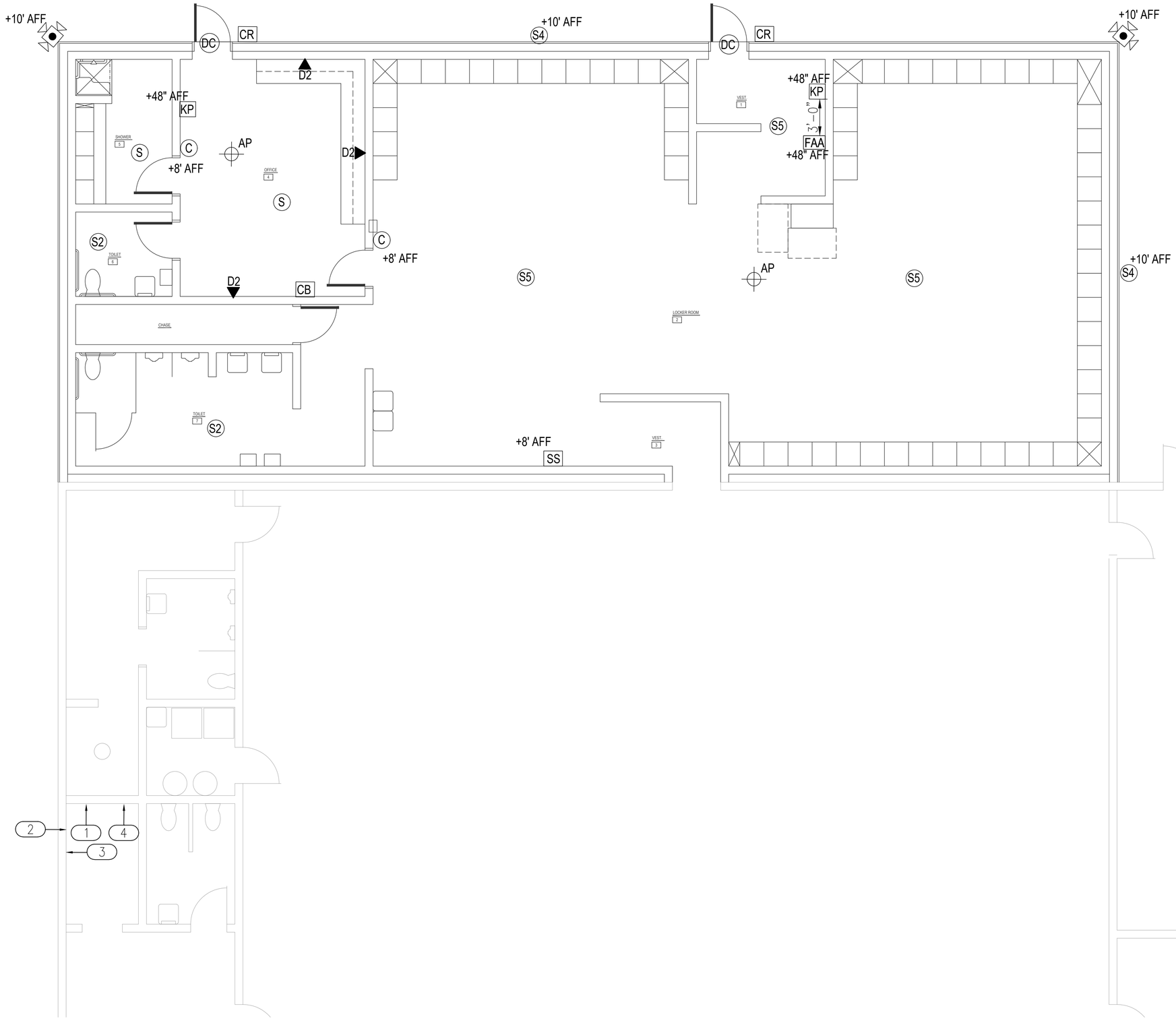

GENERAL NOTES

A. COORDINATE ALL FINAL MOUNTING HEIGHTS, FOR WALL MOUNTED DEVICES, PRIOR TO ROUGH-IN. COORDINATE WITH ARCHITECT, OWNER AND ENGINEER.

B. COORDINATE ALL CEILING DEVICE LOCATIONS WITH ARCHITECTURAL DRAWINGS AND INTERIOR DESIGN CONSULTANT(IF APPLICABLE) PRIOR TO ROUGH-IN.

C. REFERENCE TECHNOLOGY PLANS, OVERALL PLANS, NOTES & LEGENDS AND ELECTRICAL PLANS FOR ADDITIONAL INFORMATION AND DEVICE/OUTLET LOCATIONS.

D. CONTRACTOR TO COORDINATE ALL DROP LOCATIONS WITH FURNITURE. COORDINATE WITH ARCHITECT AND OWNER FOR MORE INFORMATION.

KEYED NOTES

1. INDICATED THE NEW LOCATION OF A RELOCATED EXISTING 4U, WALL MOUNTED IDF RACK. ALL DATA DROPS IN NEW ADDITION SHALL ROUTE BACK TO THIS RACK. CONTRACTOR TO FIELD VERIFY IF RACK NEEDS TO BE EXPANDED TO SUPPORT NEW DROPS.
2. CONTRACTOR TO MOUNT NEW KEYSCAN CONTROLLER TO THIS LOCATION. PROVIDE POWER.
3. CONTRACTOR TO MOUNT NEW DMP SECURITY PANEL TO INDICATED LOCATION. PROVIDE POWER.
4. CONTRACTOR TO PROVIDE AND INSTALL NEW FIRE ALARM POWER SUPPLY AND SCL EXPANDER TO INDICATED LOCATION. PROVIDE POWER.

1 TECHNOLOGY PLAN

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

NORTH

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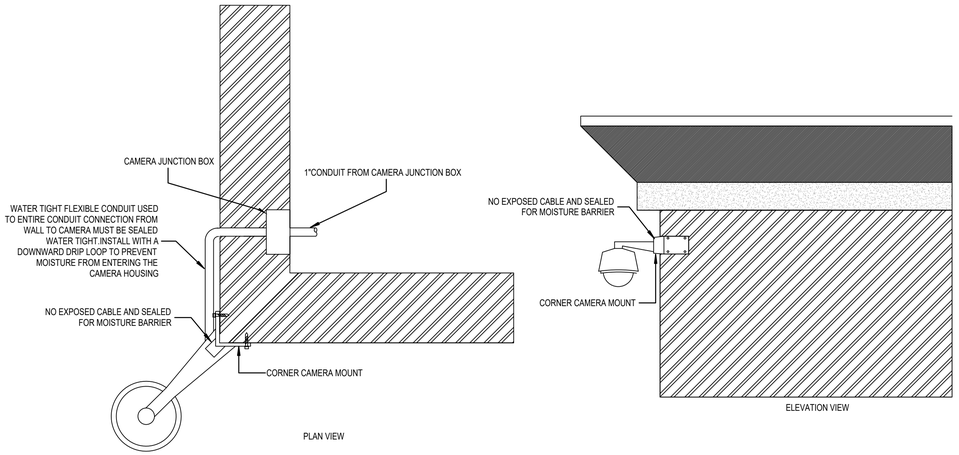
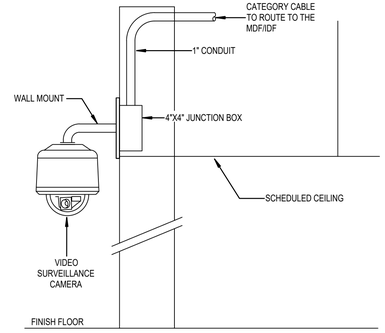


NOTE:

ELECTRICAL CONTRACTOR SHALL PROVIDE 1" CONDUIT WITH PULL STRING TO NEAREST AVAILABLE PLENUM SPACE. SECURITY CONTRACTORS SHALL PROVIDE CABLE FEED-THROUGH MOUNT FOR CAMERA. NO EXPOSED CABLE WILL BE ALLOWED. SECURITY CONTRACTOR TO COORDINATE MOUNTING HEIGHT WITH ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN.

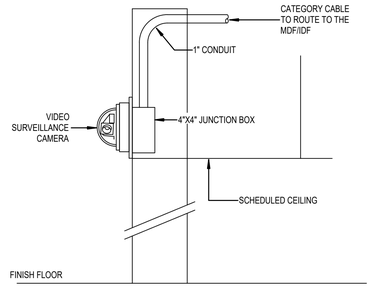
01 CORNER MOUNTING DETAIL

NOT TO SCALE



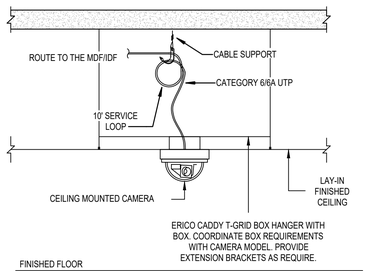
03 INTERIOR WALL MOUNTED DOME CAMERA

NOT TO SCALE



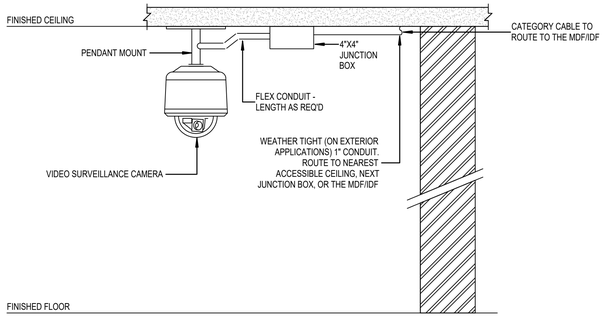
02 INTERIOR WALL MOUNT CAMERA-VERTICAL

NOT TO SCALE



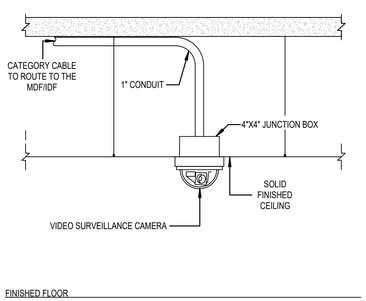
04 INTERIOR LAY-IN CEILING MOUNTED CAMERA

NOT TO SCALE



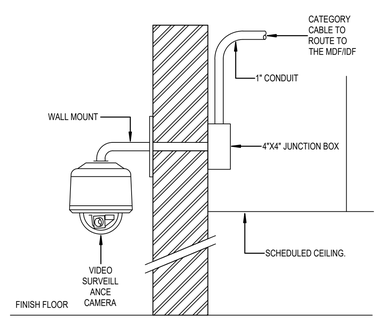
05 EXT./INT. PENDANT MOUNTED DOME CAMERA

NOT TO SCALE



06 EXTERIOR/INTERIOR SOLID CEILING MOUNT CAMERA

NOT TO SCALE



07 EXTERIOR WALL MOUNTED DOME CAMERA

NOT TO SCALE

GENERAL NOTES:

A. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUITS AND BACK BOXES. CONDUITS SHALL ROUTE TO THE NEAREST, ACCESSIBLE PLENUM SPACE.

B. ALL WALL, CORNER, PENDANT, AND UNDER CANOPY MOUNTING HEIGHTS SHALL BE COORDINATED WITH THE OWNER AND SECURITY CONSULTANT PRIOR TO ROUGH-IN.

C. SECURITY CONTRACTOR SHALL PROVIDE CAMERAS, MOUNTING HARDWARE, AND ANY OTHER COMPONENTS AND/OR HARDWARE REQUIRED FOR A COMPLETE INSTALLATION.

D. REFERENCE VIDEO SURVEILLANCE CAMERA SCHEDULES, FLOOR PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS.

E. CABLE FEED-THROUGH MOUNT FOR CAMERA. NO EXPOSED CABLE WILL BE ALLOWED. SECURITY CONTRACTOR TO COORDINATE MOUNTING HEIGHT WITH ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN.

08 NOTES

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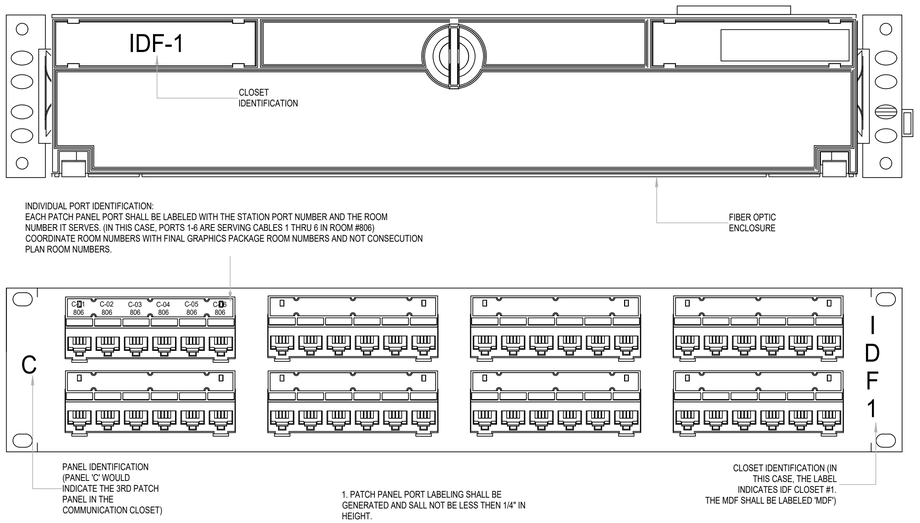
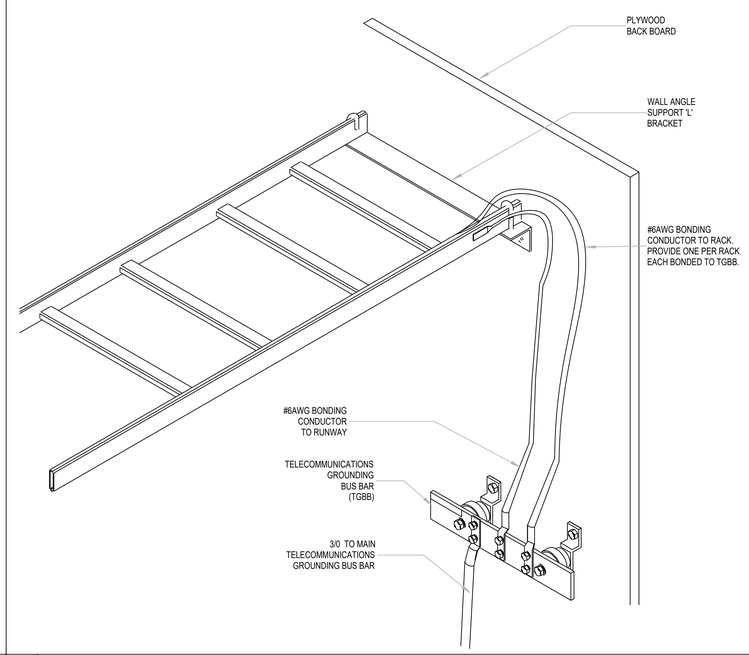
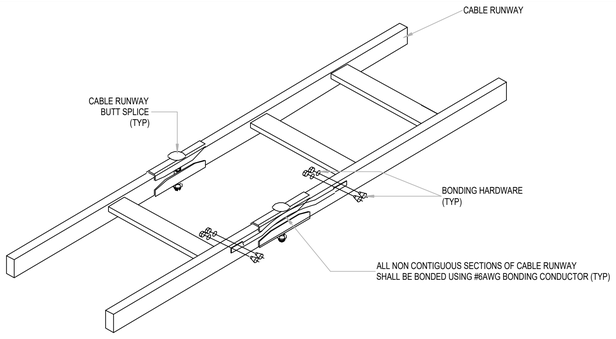


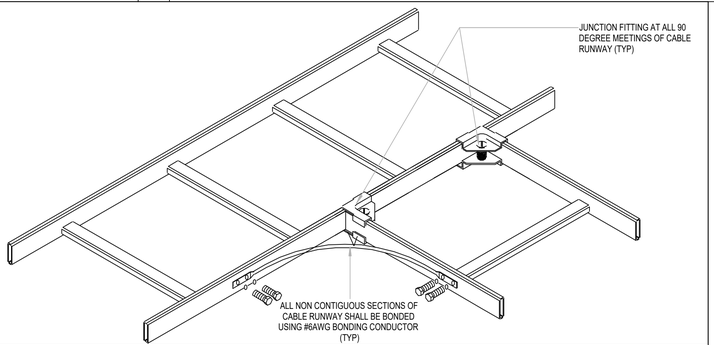
01 FIBER ENCLOSURE/ COPPER PATCH PANEL LABELING DETAIL — NOT TO SCALE



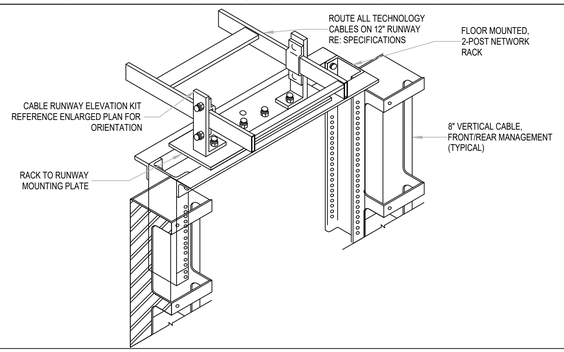
02 CABLE RUNWAY - GROUNDING AND BONDING — NOT TO SCALE



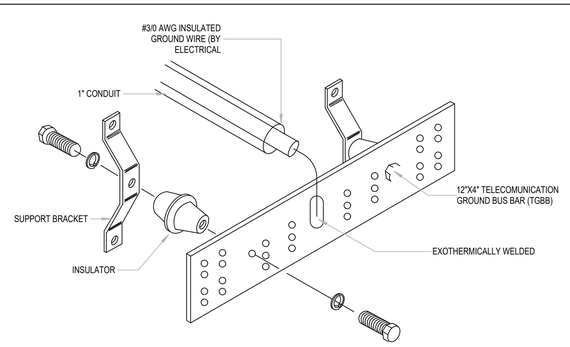
03 CABLE RUNWAY - BONDING AND BUTT SPLICE — NOT TO SCALE



04 CABLE RUNWAY - JUNCTION AND BONDING — NOT TO SCALE



05 RACK TO RUNWAY DETAIL — NOT TO SCALE



06 TELECOMMUNICATION GROUNDING BUS DETAIL — NOT TO SCALE

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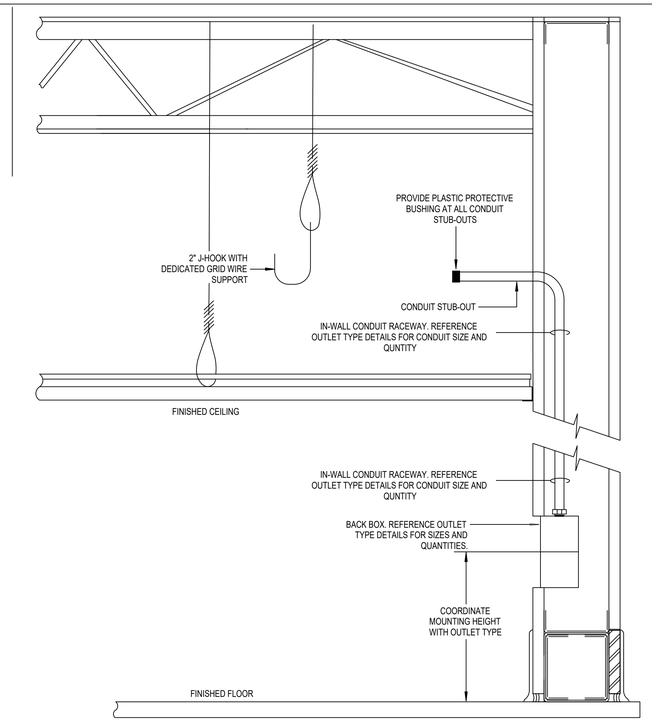
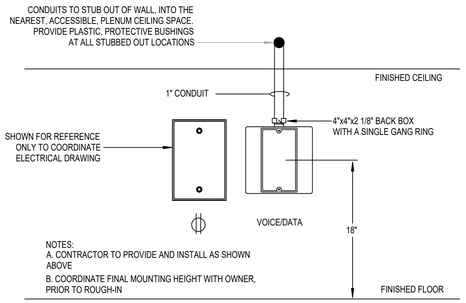
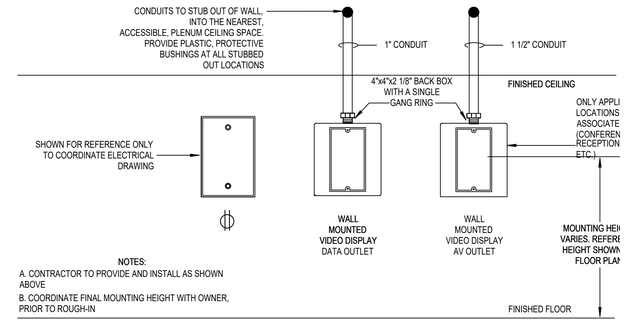
Norman, OK. 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00



01 LOW VOLTAGE ELEVATION - IN-WALL RACEWAY NOT TO SCALE

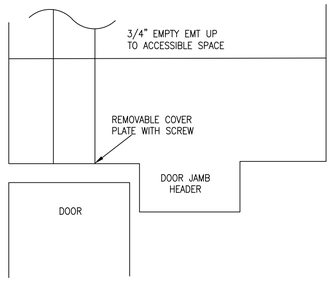


02 RACEWAY DETAIL - TYPICAL VOICE/DATA OUTLET NOT TO SCALE

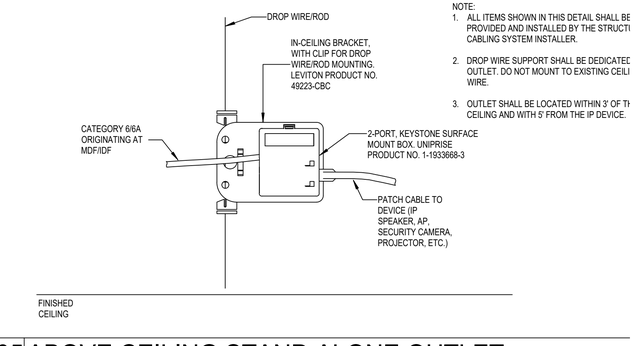


03 RACEWAY DETAIL - WALL MOUNTED DISPLAY N

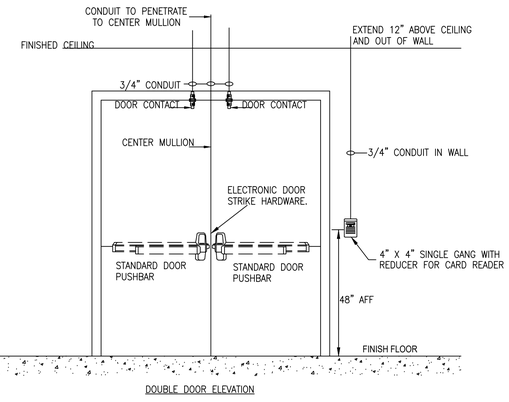
06 DOUBLE DOOR SECURITY & ACCESS CONTROL



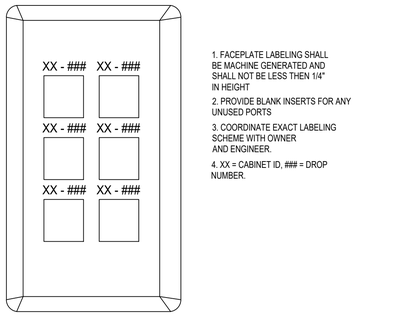
04 SECURITY CONDUIT DOOR JAMB HEADER NOT TO SCALE



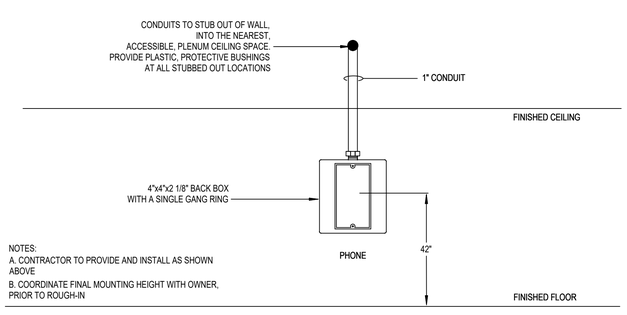
05 ABOVE CEILING STAND ALONE OUTLET N



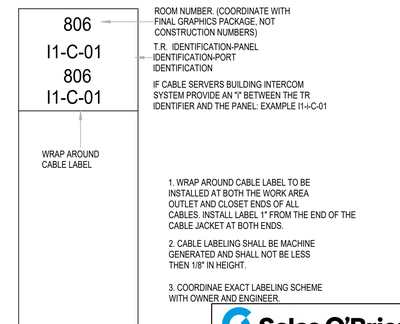
07 RACEWAY DETAIL - WALL MOUNTED WIRELESS AP NOT TO SCALE



08 FACEPLATE LABEL DETAIL N



09 RACEWAY DETAIL - WALL MOUNTED TELEPHONE NOT TO SCALE



10 CABLE LABEL DETAIL N

AGP
the Abla Griffin Partnership L.L.C.
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WDB ENGINEERING
CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

NY
drawn by

NY
checked by

MAY 2023
date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM ADDITION
MOORE WEST JUNIOR HIGH SCHOOL

sheet no:

T-403

Salas O'Brien
2600 Van Buren St., Suite 2635 N
Norman, OK. 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

STRUCTURED CABLING

Horizontal Cabling

Requirements

- Copper cable shall be Category 6 plenum rated cable (blue in Color) for all work station drops.
- Copper cable shall be Category 6 plenum rated cable (White in Color) for all Security camera drops.
- Copper cable shall be Category 6 plenum rated cable (Yellow in Color) for all Wifi drops.
- Approved Category 6 cables are as follows.

Superior Essex Cat6 Plenum Part #'s	77-240-2B blue 77-240-4B white 77-240-6B yellow 77-240-5B green
Mohawk Cat6 Plenum Part #'s	M58281B Blue M58280B white M58283B yellow M58288B green
Berk-Tech Cat6 Plenum Part #'s	10136226 blue 10136230 white 10136749 yellow 10136748 green
General Cat6 Plenum Part #'s	7131800 blue 7131841 white 7131802 yellow 7131806 green

- Connector shall be Leviton part # 61110-RO6 eXtreme 6 connector for all workstation drops.
- Connector shall be Leviton part # 61110-RW6 eXtreme 6 connector for all Security camera drops.
- Connector shall be Leviton part # 61110-RY6 eXtreme 6 connector for all Wifi drops.
- Contractor shall provide Moore Public Schools, Technology Department, one 5' category 6 patch cord, (blue in color) for each category 6 work station cable installed. To be installed by contractor at the network cabinet.
- Contractor shall provide Moore Public Schools, Technology Department, one 10' category 6 patch cord, (blue in color) for each category 6 work station cable installed. Leave in box at network cabinet. To be installed by MPS Technology Dept.
- Contractor shall provide Moore Public Schools, Technology Department, one 5' category 6 patch cord, (White in color) for each category 6 Security Camera cable installed. To be installed by contractor at the network cabinet.
- Contractor shall provide Moore Public Schools, Technology Department, one 10' category 6 patch cord, (White in color) for each category 6 Security Camera cable installed. Leave in box at network cabinet. To be installed by MPS Technology Dept.
- Contractor shall provide Moore Public Schools, Technology Department, one 5' category 6 patch cord, (Yellow in color) for each category 6 Wifi cable installed. To be installed by contractor at the network cabinet.
- Contractor shall provide Moore Public Schools, Technology Department, one 10' category 6 patch cord, (Yellow in color) for each category 6 Wifi cable installed. Leave in box at network cabinet. To be installed by MPS Technology Dept.
- Each cable shall be terminated on the patch panel in data closets.
- All Category 6 connectors shall be placed into QuickPort faceplates at the workstation end.
- Faceplate shall be Leviton part # 41080-6wp
- No substitutions.

Communications Backbone Cabling

Requirements - Optical fiber

- 1 Optical fiber cable shall be run from the MDF to each IDF.
- Fiber shall be terminated with LC connectors.
- Optical fiber cable shall be plenum rated Laser Optimized 50 micron Multi Mode distribution fiber.
- Optical fiber cable shall be an OM3 rated cable guaranteed to support 10 Gigabit Ethernet for 300 meters using 850 nm wavelength.
- Optical fiber cable shall have 24 strands using industry standard color coding.
- Optical fiber cable shall have a flame retardant and low smoke FEP jacket.
- Optical fiber cable shall support 10GBase-SX applications for the life of the system.
- Optical fiber cable shall be armor jacketed or protected inside plenum rated plastic inner duct orange or aqua in color.

  MIC Tight-buffered 024T88-33180-A3
- No substitutions.

Requirements - Copper backbone

- 6 Cat 6 cables shall be run from the MDF to each IDF.
- 3 Cat 6 cables shall be run from the phone Dmark to the MDF.
- Copper cable shall be Category 6 cable. Green in color
- Connector shall be Leviton part # 61110-RV6 eXtreme 6 connector.
- Each cable shall be terminated on the patch panel in data closets.
- Each cable end shall be terminated using the T568B pin/pair assignment.
- No substitutions.

Cable Installation

- Properly support horizontal cables in ceiling every 4'-5' using J-Hooks or cable tray only. (no slings, pouches, or D rings.)
- Place horizontal cables in pathways and spaces dedicated for communications cables. No pathways shall be in or above the red iron. Data cable will be run in separate pathways from all other cables.
- Provide 30' of slack at station end in ceiling and not inside wall.
- Slack shall be rolled neatly in a 2' loop and hanging from a j-hook in ceiling above drop location.
- Cat 6 data cables are to be terminated using the T568B standard.
- Leviton face plates that support 6 snap in jacks will be used with Leviton snap in blanks in unused slots.
- Ensure terminations are at 180 degrees to the jack with no more than ¼" un-twisting and no more than ½" un-jacketing and are in accordance with manufacturer's recommendations.
- Ensure terminations have no un-twisting and that tower separators are utilized to separate pairs.
- Ensure pulling tensions of cables are not exceeded.
- Maintain proper cable bend radius of 4 times the cable's outer diameter during placement.
- No splices are permitted.
- No link shall exceed 90 meters. Contractor is responsible for verifying proper footages.
- Pull one additional "Mule Tape" or ¼" Nylon rope when pulling cables through any conduit utilizing existing pull string.
- Mule Tape or Nylon rope is to be pulled into conduit separately and after all other cables have been installed.
- Install sleeves when puncturing walls.
- Cable shall not be installed between cinder block walls and roof decking.
- Cable shall not be installed between red iron and roof decking.
- Firestop all sleeves and conduit openings after cable installation.
- Terminate all pairs and conductors at all ends according to manufacturer's instructions following color code sequence.
- No splices are permitted in any fiber optic cable except when terminating connectors
- Terminate all Fiber pairs.
- All optical fiber cable shall be installed in the fiber panels in accordance with the manufacturer's instructions.
- Optical fiber Back bone cable length shall not exceed 300 meters.
- Copper backbone cable length shall not exceed 90 meters.
- All back bone cables (Fiber and Copper) shall have 20' of slack at both ends.
- Corning rack mount fiber patch panels are to be used where applicable.
- Outdoor rated fiber will be used for all outdoor fiber runs.
- Stress relief cable and the appropriate building fastener will be used on all aerial runs.
- All aerial cables will be fastened to the stress relief cables.
- 3" conduit is to be used for all buried runs, accessible at each end, with a pull string inside.
- A trace wire and warning tape will be buried with all buried runs
- All bends in conduit will be made with sweeps.
- Back bone cabling shall utilize a star topology with no more than 2 levels of backbone.
- Utilize Velcro ONLY in all closets.
- Install all components in a neat and workmanlike manner.
- Install all horizontal cables and termination frames in accordance with manufacturer's recommendations.

Labeling

- Label shall be a rap type with number printed multiple times enabling print to be legible from any angle.
- Machine label all termination panels and face plates with cabinet and cable number.
- Termination panels shall be labeled in numerical order.
- A single drop will be labeled a total of four times. The labels will be located on the patch panel in the rack, on both ends of the cable, and on the face plate at the work station end. The labels are to read exactly the same in all four locations.
- All 5' patch cables will be labeled at both ends. 5' cables will be installed at the cabinet.
- Numbering scheme will be 00-000 where the first two digits are the cabinet number and the last three are the drop number. Example, drop number 75 in cabinet 2 will read, 02-075.
- Camera drop labels numerically start at 500 in each cabinet. If camera drops already exist in said cabinet the next available consecutive number will be used.
- WiFi drop labels numerically start at 800 in each cabinet. If WiFi drops already exist in said cabinet the next available consecutive number will be used.

  Example for cabinet 1:
  Data (blue cable orange jacks) 01-001 to 01-499
  Camera (white cable white jacks) 01-500 to 01-799
  WiFi (yellow cable yellow jacks) 01-800 to 01-999
- Label all fiber optic cables at both ends on the cable and in the break out box

Test

- Test results for all Category 6 copper and fiber optic cables shall be provided to Moore Public Schools, Technology department.

End of Section

Communications Equipment Room Fittings

Equipment rack

- Free standing equipment rack shall be Chatsworth #55053-703.
- Free standing racks shall be sized to accept 19" spaced equipment and handle a total weight load of 1, 000 pounds.
- Free standing racks shall have 3" side rails tapped on both sides with universal hole patterns for threaded 12-24 screws.
- No substitutions.

Copper Patch panels

- Patch panel shall be a Leviton #49255-H24 Quick Port 110 panel with cable management bar.
- Patch panel shall have 24 ports taking up 1 rack mount unit.
- No substitutions.

Horizontal cable management

- Horizontal cable manager shall be a 2 RU Chatsworth part #30130-719.
- No substitutions.

Vertical cable management

- Vertical cable manager shall be Chatsworth part #30095-703.
- No substitutions.

Optical fiber patch panel / enclosure

- Optical fiber enclosure shall be Corning LC loaded rack mount panel.

  CCH-04U
  CCH-01U
  CCH-CP24-E4
  SOC-LC-900-OM4
- No substitutions.

Ladder racking

- Ladder racking shall be Chatsworth #10250-718.
- The appropriate Chatsworth mounting hardware shall be used.
- No substitutions.

Power protection power strips

- PDU's are to be placed in all data racks.
- PDU shall have overload protection and easy to reset circuit breaker.
- PDU shall be rack mountable.
- PDU shall be constructed from 18 AWG steel.
- PDU shall have light emitting diodes to indicate "Power On" and "Ground/Polarity OK" feature.
- PDU shall be rated for 20 Amps and have a 12' L5-20P plug and ten 5-20R receptacles.
- No substitutions.

Installation

Free standing racks

- Assemble free standing racks according to manufacturer's instructions. Verify that equipment mounting rails are sized properly for rack-mount equipment before attaching the rack to the floor.
- All racks must be attached to the floor in four places using appropriate floor mounting anchors. When placed over a raised floor, threaded rods should pass through the raised floor tile and be secured in the structural floor below.
- All rack must be secured to the adjacent wall using ladder rack to stabilize the top of the rack and provide a cable pathway from the ceiling to the rack.
- Racks shall be grounded to the telecommunications bus bar using #6 AWG green insulated solid copper wire and any necessary attachment hardware provided by the Communications Contractor.
- Mount rack mount power strips on rack where active equipment will be placed.

Ladder rack

- Ladder rack shall be attached to the top of the rack to deliver cables to the rack. The rack should not be drilled to attach ladder rack. Use appropriate hardware from the ladder rack manufacturer.
- Ladder racking shall be supported every 5' with 3/8" threaded rod anchored and secured to permanent ceiling structure.
- Loading of cable rack shall not exceed 6" depth and should have retainers every 12" to prevent cables from spilling over the sides.
- Where ladder racking butts up against wall the appropriately sized wall mount bracket shall be utilized.
- Ladder rack shall extend vertically up wall and through drop ceiling to gain access to cavity above drop ceiling.
- Ladder racking shall utilize all appropriate radius drop stringers, corner bends and other devices to maintain cable bend radius when entering and exiting racks, cabinets and drop ceilings
- Mating pieces of ladder racking together shall utilize appropriate butt splice and junction splice kits.
- All cut and exposed sharp ends shall utilize a plastic end cap to prevent injury.

Cable management

- Vertical cable manager shall be installed on every rack vertical rail. Where two rack rails will be butted together there shall be two vertical wire managers between the racks.
- Horizontal wire managers shall be utilized above and below every copper and fiber patch panel.
- All cables shall sweep in and out of any cable management product without a deformation of cable jacket.
- Ensure cables are properly supported when using cable management to ensure cables do not sag.
- Utilize Velcro ONLY for securing of cables on cable management.

Copper and Fiber patching panels

- Route all cables to backside of termination panels in an asymmetrical orientation to ensure cable bundles are split evenly.
- Utilize rear wire management bars for supporting cables into point of termination.
- Secure all cables on all panels using Velcro ONLY to prevent cables from pulling away.

End of Section

Quality Assurance

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.
- Follow and adhere to installation practices specified by the applicable Telecommunications Industry Association standards.
- Follow and adhere to installation practices specified by BICSI Information Transport System Installation.
- Follow and adhere to installation practices specified by BICSI Telecommunications Distribution Methods.
- Follow and adhere to installation practices specified by NFPA-70 National Electric Code.
- Follow and adhere to installation practices specified by the Manufacturers.
- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

Bidder/Installer Qualifications

- Bidding Contractor shall be a licensed to install telecommunications systems in the state where work will be performed.
- Bidding Contractor shall be Leviton certified for at least one year
- Bidding Contractor shall have a minimum of 5 years experience installing structured cabling for telecommunications.
- Bidding Contractor shall have the capability to bond project in its entirety.
- Bidding Contractor shall be able to provide insurance at the request of the owner.
- Installer shall have an onsite supervisor and one technician who are certified by the Manufacturer to install the Manufacturer's telecommunications products.
- Communications Contractor shall have an RCDD on staff for at least one year, to certify that the Communications System can support the required applications on the various cabling media.
- Installer shall have obtained Leviton certification from the Manufacturer within 1 year prior to performing the Work.

Delivery, Storage, and Protection

- Communications Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Communications Contractor is responsible for all materials, tools and vehicles left on the job site.
- Communications Contractor shall coordinate a disposal bin for the removal of all trash produced by the Communications Contractor personnel during the project.
- Communications Contractor shall ensure materials are stored in an environmental area where:

  Temperature does not exceed 120 degrees Fahrenheit nor below 32 degrees Fahrenheit.
  Humidity does not exceed 80 %.
  No direct exposure to sunlight.
- Follow Manufacturer's recommendations for handling of materials.

Warranty

- Communications Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure.
- Communications Contractor shall execute a Lifetime Applications Assurance Warranty for parts and labor to support stated applications from the connectivity Manufacturer.

End of Section

Intercom System Specifications

Part 1 - General

1.01 System Manufacture

- Intercom System Manufacturer shall be Telecor or Rauland Telecenter U IP (Match existing system.)
- Cable Manufacturer shall be Belden or Equivalent

  Locations where Telecor equipment is required. It may be purchased from the following authorized Telecor dealers
  Advanced Cabling, Inc - 405-418-4322
  High-Tech Tronics, Inc - 405-495-0215

  Locations where TelecenterU Equipment is required. It may be purchased from the following authorized TelecenterU dealer: Endex of Oklahoma Inc - 405-602-0001

1.02a Intercom Systems Equipment Description - Telecor Intercom Equipment

- Intercom call in button shall be momentary close and compatible with existing intercom system
- Intercom ceiling speakers shall be Manufacture Clarity Model # S-522. (Or equivalent approved by MPS must have volume control accessible from the floor)
- Intercom outside paging horn shall be Manufacture Rauland Borg 3601. (Or equivalent approved by MPS)
- Locations where Telecor equipment is required. It may be purchased from the following authorized Telecor dealers
  Advanced Cabling, Inc - 405-418-4322
  High-Tech Tronics, Inc - 405-495-0215

1.02b Intercom Systems Equipment Description - Rauland Telecenter U IP Intercom Equipment

- Classroom Intercom Equipment
  - Call button shall be Part # 603302 Dual Level call switch.
  - Ceiling speakers shall be Part # BAFKIT2X2L8RJ - 8 Ohm ceiling tile replacement speaker with RJ45 connector.
  - IP Classroom Module shall be TCC2011 IP Module (*Module required for each classroom, *Requires POE network drop)
- Hallway/Commons/Outside Intercom Equipment
  - TCC2022-IP Zone page module (*Requires POE network drop)
  - Appropriate size amp for quantity of speakers.
  - BAFKIT2X2L- 25 volt ceiling tile replacement paging speaker (For all classroom & hallway locations)
  - Rauland Borg 3601 - Loud paging horn (For all outside & large area locations such as gymnasiums, etc.)

  Locations where TelecenterU equipment is required. It may be purchased from the following authorized TelecenterU dealer
  Endex of Oklahoma Inc - 405-602-0001

1.03 Systems Installation

- All non-IP cabling shall be shielded and have a minimum of 5 conductors.
- All network IP cabling shall be Cat6 (see structured cabling System Specifications for cabling information)
- All wire shall be shielded and have a minimum of 5 conductors.
- All circuits and wiring shall be labeled at all terminating ends.
- All devices shall be mounted according to the manufactures specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All room circuits shall run from the intercom system to the call button then to the room speaker.
- All extra speaker wire taps shall be insulated.
- All rooms shall be individually wired and terminated at the intercom system on individual points. (No Doubling)
- All rooms shall be tested to verify proper room number programming and operation.
- All call buttons shall be labeled with their corresponding system point number.
- Protective grommets shall be installed on all conduits to protect wire.
- All wire shall be run in J hooks above ceiling with a minimum space of 4" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed. No wire shall be run between the red iron and roof deck.
- All wire ran between building shall be in conduit and shall be direct burial cable. It shall be a minimum of 5 conductor 18 AWG copper.
- Installer shall supply the electrical and or masonry contractors with specialty back boxes and coordinate with them to ensure that all necessary conduits, back boxes, etc. are installed in the proper locations.
- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.
- Follow and adhere to installation practices specified by the Manufacturers.

1.04 Quality Assurance

1.03.01 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

1.03.02 Bidder/Installer Qualifications

- Bidding contractor shall have a minimum of 5 years experience installing school intercom systems.
- Bidding contractor shall be able to provide insurance at the request of the owner.

1.05 Delivery, Storage, and Protection

- Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Contractor is responsible for all materials, tools and vehicles left on the job site.
- Follow Manufacturer's recommendations for handling of materials.

1.06 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager.

1.07 Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure.

Part 3 - Execution

3.01 Field Quality Control

- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

3.02 Adjusting

- No additional work outside of the contract scope of work shall be completed without the approval of the Owner or Owner's representative.

3.03 Protection

- It is the responsibility of the Contractor to ensure equipment is protected from dust and water during the project with appropriate materials.
- Remove all protective covers and protective materials from equipment prior to turnover to Owner.

3.04 Schedules

- Coordinate work with Owner's project manager and follow scheduling sequence as established by Owner's project manager.
- It is recommended that the Contractor schedule closely with any other systems contractor to ensure turnover date is met.
- Contractor bidding will supply the electrical and or masonry contractors with any specialty back boxes such as clock recessed back boxes etc. and coordinate with them to ensure that all necessary conduits, back boxes, etc. are installed in the proper locations.

End of Section

1.04 Submittals

1.04.01 Prior to installation

- Show compete map of system design for approval by Owner.

3.02 System Requirements

Intercom system shall be capable of communicating to all rooms and shall have adequate number of room points as to not double up on any given point.

End of Section

Intercom System Installation
Completion Check List

Part 1 - General

1.01 Section Includes

- Intercom System Completion Check List

1.02 Completion Check List

- Main control panel has a map of the entire system inside and a copy has been given to Jack Phillips with MPS.
- All intercom programming such as bell times, tornado drill alert, etc has been checked and is correct.
- Intercom has been tested for proper operation.
- All rooms have been tested to verify proper description at console.
- All speakers have been tested to verify proper operation and volume.
- All extra speaker wires have been tapped or insulated
- All call buttons are labeled and have been tested for proper operation.

End of Section

Clock System
Specifications

Part 1 - General

1.01 System Manufacture

- Clock Equipment shall match existing system. (Must be compatible with schools existing system.)

  Locations where Telecor equipment is required. It may be purchased from the following authorized Telecor dealers

  Advanced Cabling, Inc - 405-418-4322
  High-Tech Tronics, Inc - 405-495-0215

1.02 Intercom Clock Systems Equipment Description

- Intercom Digital Clocks shall be hard wired and may not use battery power for its primary power source. Clocks shall be 4 inch and be compatible with existing system. Clocks must be compatible with existing clock system.

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WDB ENGINEERING
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SALAS O'BRIEN
MECHANICAL / ELECTRICAL

NY
drawn by

NY
checked by

MAY 2023
date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

T-501

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK. 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

SYSTEMS SPECIFICATIONS

- Intercom 12" Analog Clock shall be hard wired and may not use battery power for its primary power source. Clock must be compatible with existing clock system.
- If site does not have an existing working clock system, stand-alone battery powered clocks shall be used.
  Stand-alone wall clock shall be
  American Time E56BAQD304BP

  Stand-alone dual face hallway clock shall be
  American Time E93BAQD204BP
  An 110v electric clock receptacle shall be installed at each clock location for future devices.

1.03 Systems Installation

- All devices shall be mounted according to the manufactures specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All extra wire taps shall be insulated.
- Protective grommets shall be installed on all conduits to protect wire.
- All wire shall be run in J hooks above ceiling with a minimum space of 4" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed.
- All wire ran between building shall be in conduit and shall be direct burial cable. It shall be a minimum of 5 conductor 18 AWG copper.
- Installer shall supply the electrical and or masonry contractors with specialty back boxes such as clock recessed back boxes etc. and coordinate with them to ensure that all necessary conduits, back boxes, etc. are installed in the proper locations.
- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.
- Follow and adhere to installation practices specified by the Manufacturers.

1.04 Quality Assurance

1.04.01 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

1.04.02 Bidder/Installer Qualifications

- Bidding contractor shall have a minimum of 5 years experience installing school intercom systems.
- Bidding contractor shall be able to provide insurance at the request of the owner.

1.05 Delivery, Storage, and Protection

- Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Contractor is responsible for all materials, tools and vehicles left on the job site.
- Follow Manufacturer's recommendations for handling of materials.

1.06 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager.

1.07 Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure.

Part 3 - Execution

3.01 Field Quality Control

- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

3.02 Adjusting

- No additional work outside of the contract scope of work shall be completed without the approval of the Owner or Owner's representative.

3.03 Protection

- It is the responsibility of the Contractor to ensure equipment is protected from dust and water during the project with appropriate materials.
- Remove all protective covers and protective materials from equipment prior to turnover to Owner.

3.04 Schedules

- Coordinate work with Owner's project manager and follow scheduling sequence as established by Owner's project manager.
- It is recommended that the Contractor schedule closely with any other systems contractor to ensure turnover date is met.
- Contractor bidding will supply the electrical and or masonry contractors with any specialty back boxes such as clock recessed back boxes etc. and coordinate with them to ensure that all necessary conduits, back boxes, etc. are installed in the proper locations.

End of Section

1.04 Submittals

1.04.01 Prior to installation

- Show compete map of system design for approval by Owner.

End of Section

Clock System Installation
Completion Check List

Part 1 - General

1.01 Section Includes

- Clock System Completion Check List

1.02 Completion Check List

- All Clocks have been tested for proper operation and synchronization.

End of Section

Security System
Specifications

Part 1 - General

2.01 Manufacturers

- Security System Manufacturer shall be DSC or DMP. See plans for the specific manufacturer required.(no substitutions)
- Installer shall be certified by manufacturer to install and program the specified systems. (no substitutions)
- Peripheral device Manufacturers shall be according to equipment list. (No Substitutions)
- Cable Manufacturer shall be Genesis. (Or Equivalent)

Security Systems Equipment

- security alarm control shall be dsc model # pc4020 or dmp model # xr550nl-g. (no substitutions)
- security alarm control communicator shall be dsc model # t-linktl250. dpm n/a. (no substitutions)
- security alarm keypad shall be dsc model # lcd4501 or dmp model # 7873. (no substitutions)
- security alarm keypad for all kitchen locations shall be dsc model # lcd4501 or dmp model # 7073. (no substitutions)
- security alarm 8 zone hardwire expander shall be dsc model # pc4108 or dmp model # 714-8. (no substitutions)
- security alarm 16 zone hardwire expander shall be dsc model # pc4116 or dmp model # 714-16. (no substitutions)
- security alarm power supply shall be dsc model # pc4204 or dmp systems = altronix model # smp3pmctx. (no substitutions)
- security alarm power supply cabinet shall be dsc model # pc4051c. dmp n/a. (no substitutions)
- security alarm cabinet locks shall be dsc model # l1 or dmp model # 301. (no substitutions)
- security alarm 35'x35' motion detector shall be honeywell model # dt-8035. (no substitutions)
- security alarm 50'x60' motion detector shall be honeywell model # dt-8050. (no substitutions)
- security alarm window glass break sensor shall be honeywell model # fg-730. (no substitutions)
- security alarm door contact shall be ge model # 10765d-m. double pole double throw for all doors (no substitutions)
- each single door or double door shall be wired with 4 conductor wire.
- dmp systems shall be wired with 2 zones per single door or double door. one zone for security alarm and one zone for "door held open alert"
- security alarm c channel door magnets shall be gri model # mc180
- security alarm surface window contact shall be aleph model # ps-1541. (or equivalent approved by mps)
- security alarm overhead door & roof hatch contact shall be amseco model # odc-59a or for rail mount applications interlogix ge2315al. (no substitutions)
- security alarm indoor siren shall be ademco model # wave2ex. (no substitutions)
- security alarm outdoor siren shall be atw model # ds301set. (no substitutions)
- security alarm outdoor strobe shall be amseco model # sl401c. (no substitutions)

1.01 Systems Installation

- installer shall be certified by manufacturer to install & program the specified systems.
- installer shall perform all programming required to complete the installation. moore public schools shall not be required to assist in any part of the installation or programming.
- All alarm junctions and or splices shall be soldered and insulated.
- All circuits and wiring shall be labeled at all terminating ends.
- All devices shall be mounted according to the manufactures specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All zone expansion module shall be DMP 714-16 and Relay Output Module shall be DMP 860.
- All cabinets shall be labeled outside with their corresponding module and zone numbers and installed with lock.
- All cabinets shall be labeled inside with module number by the corresponding module and zone list definitions.
- Main control panel shall have a CAT 6 cable ran between the main control and the phone company DMARC for monitoring purposes.
- Each expansion cabinets shall have two non-sheilded16 gauge 4 conductor cables ran from the main control to the expansion cabinet.
- All devices such as motion detectors, glass break detectors, door contacts, Keypads etc. shall be labeled with their corresponding module and zone number. Label shall be visible from the floor.
- All motion detectors shall be sealed to prevent air and insects from entering.
- All steel doors shall have wide gap contacts installed.
- All door contacts shall be recessed and door magnets shall be glued in place.
- All keypads shall be wired individually back to new power supply.
- All sirens shall be wired individually and connected to new power supply.
- All devices such as door contact (double doors wire as one), motion detectors, glass break detectors, etc. shall be wired individually on separate zones with end of line resistors at the devices.
- All devices such as motion detectors, glass break detectors, door contacts, keypads, sirens, etc. shall be labeled with their corresponding module and or zone number. label shall be visible from the floor.
- All air conditioning condensers accessible from the outside and roof shall have pressure switches installed on the high pressure side and be connected to the security alarm.
- Protective grommets shall be installed on all conduits to protect wire.
- All devices shall be wired with NON shielded cable.
- All panels, power supplies and modules shall be grounded.
- All wire shall be run in J hooks above ceiling with a minimum space of 4" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed. No wire shall be run between the red iron and roof deck.
- All wire visible from the finished floor shall be covered in decorative wire molding.
- All wire ran between building shall be in conduit and shall be non shielded direct burial cable. It shall be a minimum of 4 conductor 16 AWG copper.
- Installer shall have a commercial burglar technician on the job site at all times during installation.
- Installer will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.
- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.
- Follow and adhere to installation practices specified by the Manufacturers.

1.02 Products Installed but not Supplied Under This Section

- All conduit and EMT required for Fire cabling pathway in/out of closets and in/out of wall cavities at the work area. EMT or Conduit for pathways shall have no more than two 90 degree sweeps and no continuous section over 100'.
- All core holes and poke through devices in the floor for the installation of Fire cabling.
- All core holes and EMT sleeves between floors for the routing of Fire cabling.
- Back boxes for the mounting of Fire Devices.
- Drag line or pull string at the back boxes fished through EMT or conduit to the other end for installing Fire Cabling.

1.03 Quality Assurance

1.03.01 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

1.03.02 Bidder/Installer Qualifications

- Bidding contractor shall be a local licensed Commercial Burglar Alarm Company with licensed Commercial Burglar Alarm technician(s) on staff.
- bidding contractor shall be certified by manufacturer to install & program the specified systems.
- bidding contractor shall perform all programming required to complete the installation. moore public schools shall not be required to assist in any part of the installation or programming.
- bidding contractor shall have at least one year experience installing dsc/dmp equipment.
- bidding contractor shall have a minimum of 5 years experience installing commercial burglar alarms.
- bidding contractor shall be able to provide insurance at the request of the owner.
- bidding contractor shall have a commercial burglar technician on the job site at all times during installation

1.04 Delivery, Storage, and Protection

- Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Contractor is responsible for all materials, tools and vehicles left on the job site.
- Follow Manufacturer's recommendations for handling of materials.

1.05 Project Conditions

1.05.01 Environmental Requirements

- Contractor shall ensure that any pollutants produced during the Work are disposed off according to local, state or national regulations. Follow the most stringent guidelines.
- It is preferred that the Contractor recycle any used or un-used components during the course of the construction project.

1.06 Sequencing

- Contractor shall coordinate with Owner's project manager on sequencing of various trades and construction teams for the lifecycle of the project.

1.07 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager.

1.08 Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure. (1 year warranty shall begin at job completion)

Part 2 - Products

2.02 Source Quality Control

- Materials shall be purchased from Distributors authorized by system Manufacturers to sell new and unused components.

Part 3 -

3.01 Field Quality Control

- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

3.02 Adjusting

- No additional work outside of the contract scope of work shall be completed without the approval of the Owner or Owner's representative.

3.03 Cleaning

- Contractor shall sweep and mop the floors of all equipment rooms or connection point closets prior to turnover to the Owner.

3.04 Protection

- It is the responsibility of the Contractor to ensure equipment is protected from dust and water during the project with appropriate materials.
- Remove all protective covers and protective materials from equipment prior to turnover to Owner.

3.05 Schedules

- Coordinate work with Owner's project manager and follow scheduling sequence as established by Owner's project manager.
- It is recommended that the Contractor schedule closely with any other systems contractor to ensure turnover date is met.
- Contractor bidding will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.

End of Section

1.02 Submittals

1.03.01 Prior to installation

- Show compete map of system design for approval by Owner.

Security System Installation
Completion Check List

Part 1 - General

1.01 Section Includes

- Security System Completion Check List

1.02 Completion Check List

- A map of the entire system showing device numbers and wire routes has been left inside the main control panel and a copy has been given to Jack Phillips with MPS.
- All panel programming has been checked and is correct.
- Panel(s) has been tested for proper operation.
- All zones have been tested to verify proper description at keypad.
- All zones have been tested to verify proper reporting to the monitoring station.
- All zones have been tested to verify they are in their proper partition(s).
- All sirens and strobes have been tested for proper operation.
- All motion detectors have been adjusted for proper sensitivity and have been walk tested.
- All motion detectors have been sealed to prevent air and insects from entering.
- All glass break detectors have been adjusted for proper sensitivity and tested.
- All cabinets are labeled on the outside with module numbers and zone numbers.
- All cabinets are labeled on the inside with module numbers by the corresponding module and zone descriptions.
- All user codes have been programmed and tested for proper partition access.
- The monitoring station has the correct account information such as call list, zone descriptions etc.

End of Section

1.09 References

- NFPA-70 National Electrical Code 2008 edition
- NFPA-72 National Fire Alarm Code
- UL 1666 - Standard for Safety of Flame Propagation Height
- NFPA 262 - Flame Travel and Smoke of Wires and Cables
- Local Authority Having Jurisdiction

1.10 Definitions

AWG - American Wire Gauge

BICSI - Building Industry Consulting Service International

EIA - Electronics Industry Alliance

FCC - Federal Communications Commission

NECA - National Electrical Contractors Association

NFPA - National Fire Protection Agency

UL - Underwriters Laboratory

Access Control System
Specifications

Access Control Equipment

Part 1 - Manufacture

- Access Control Manufacturer shall be Keyscan. (No Substitutions)
- Peripheral device Manufacturers shall be according to equipment list. (No Substitutions)
- Cable Manufacturer shall be Genesis. (Or Equivalent)

1.01 Access Control Equipment Description

- Access Control System Manufacture shall be Keyscan (No Substitutions)
- Access Control Management Software = Aurora (This software is already installed and in use. It is listed for information purposes only)
- Reader Control Panels shall be (No Substitutions)
  Keyscan CA 4500 = 4 Door
  Keyscan CA 8500 = 8 Door
- Each Reader Control Panel shall be equipped with (2) 16VAC 40VA Transformer
- Each Reader Control Panel shall be equipped with (1) 12V 7AH Battery
- One 2,4 or 8 Door Reader Control Panel per site shall be equipped with (1) Keyscan Netcom2p module. If the site has an existing 2,4 or 8 Door Control Panel with a Netcom2P already installed, then a Netcom 2P is not needed and CIM or CIM-Link modules shall be used to connect the new Control Panel to the existing Control Panel.
- All Reader Control Panels shall be linked together with either CIM or CIM-Link modules.
- Each new Reader Control Panel shall be capable of 4 doors minimum

Card Readers shall be (No Substitutions)

- HID 40NKS00000000 Signo Wall Mount reader (for use in all locations except where mullion mount reader size is required to fit)
- HID 20NKS00000000 Signo 20 Mullion Reader (For use on mullion mount locations where single gang reader is too large.
- ALL READERS REQUIRE 22/6 STR OAS WIRE.

Access Control Strikes and locks shall be (No Substitutions unless approved by Moore Public Schools)
RCI 0163X32D ½ inch Rim(ONLY USE IF ¾ INCH RIM WILL NOT FIT)
RCI 0162X32D ¾ inch Rim
RCI F0162X32D ¾ inch Rim Fire Rated
RCI F2164 RECESSED ALL-IN-ONE STRIKE

- Where storm doors are installed, install compatible power motor and power supply to activate door hardware unless installed by door contractor.
- Egress Motions shall be (No Substitutions)
  BOSCH DS160 OR HONEYWELL IS310
- Door Contacts shall be GE Model # 1076D-M Double Pole Double Throw (To be utilized for Access Control and Security Alarm) (See security alarm specs)
- DOOR LOCK RELEASE BUTTON SHALL BE (NO SUBSTITUTIONS)
  RCI PART # 909S ROCKER SWITCH
- Power Supply for locking hardware
  **Power supply in Keyscan Controller is for the Control and Readers only.
- Power Supplies shall be sized to meet requirements of Strikes and locks with a maximum of 80% amp load.
- Power Supply shall have form "C" contacts for supervision that is connected to Keyscan Control Aux Input.
- 24 VDC Securitron- AccuPower- AQM20-8C/16C, AQD5-8C or equal.

2.01 Systems Installation

- All junctions and or splices shall be soldered and insulated.
- All circuits and wiring shall be labeled at all terminating ends.
- All devices shall be mounted in accordance to the manufactures specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All controllers shall be labeled outside with their corresponding modules and installed with lock.
- All controllers shall have a Cat 6 network cable Blue in color ran from the nearest network cabinet and labeled with drop number.
- All card readers shall be labeled with their corresponding reader number.
- All doors with access control shall have contacts installed for door status indication. Steel doors shall have wide gap door contacts installed.
- All doors with access control shall have egress motions installed to allow system to detect proper egress. (including doors with panic exit hardware.)
- Protective grommets shall be installed on all conduits to protect wire.
- All panels, power supplies and modules shall be grounded.
- All wire shall be run in J hooks above ceiling with a minimum space of 6" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed. No wire shall be run between the red iron and roof deck.
- All wire visible from the finished floor shall be covered in decorative wire molding.
- All wire ran between building shall be in conduit and shall be direct burial cable.
- Installer shall have a licensed Access Control technician on the job site at all times during installation.
- Installer will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.
- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.
- Follow and adhere to installation practices specified by the Manufacturers.

3.01 Bidder/Installer Qualifications

- Bidding contractor shall be a local licensed Access Control Company with licensed Access Control technician(s) on staff.
- Bidding contractor shall have at least one year experience installing Keyscan Access Control Systems.
- Bidding contractor shall have a minimum of 5 years experience installing commercial Access Control Systems.
- Bidding contractor shall be able to provide insurance at the request of the owner.
- Bidding contractor shall have a commercial Access Control technician on the job site at all times during installation.

3.01.1 Submittals

3.01.2 Prior to installation

- Show compete map of system design for approval by Owner.

3.01.3 Prior to final acceptance

- Provide a soft CAD copy As-Built showing layout of Controller Panel, Card Readers, Power Supplies and all mounted equipment upon Substantial Completion.
- Ensure all warranties specify that the Owner is entitled to all rights guaranteed by the warranty for various components.

3.02 Quality Assurance

3.02.1 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

Access Control Installation
Completion Check List

Part 4 - General

4.01 Section Includes

- Access Control System Completion Check List

4.02 Completion Check List

- A map of the entire system showing device numbers and wire routes has been left inside the main controller panel and a copy has been given to Rodney Cobb with MPS.
- All system programming has been checked and is correct.
- Panel(s) has been tested for proper operation.
- All card readers are labeled with reader number and have been tested to verify proper operation.
- All user card and key fobs have been programmed into system and tested to verify proper operation.
- All egress motion detectors have been adjusted for proper sensitivity and have been walk tested.
- All controllers are labeled on the outside with module numbers.
- All controllers are labeled on the inside with module numbers by the corresponding module.

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MAY 2023
date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

T-502

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

SYSTEMS SPECIFICATIONS

4.03 Products Installed but not Supplied Under This Section

- All conduit and EMT required for Fire cabling pathway in/out of closets and in/out of wall cavities at the work or Conduit for pathways shall have no more than two 90 degree sweeps and no continuous section over EMT 100'.
- All core holes and poke through devices in the floor for the installation of cabling.
- All core holes and EMT sleeves between floors for the routing of cabling.
- Back boxes for the mounting of Devices.
- Drag line or pull string at the back boxes fished through EMT or conduit to the other end for installing Cabling.

4.04 References

- NFPA-70 National Electrical Code 2008 edition
- NFPA-72 National Fire Alarm Code
- UL 1666 - Standard for Safety of Flame Propagation Height
- NFPA 262 - Flame Travel and Smoke of Wires and Cables
- Local Authority Having Jurisdiction

4.05 Definitions

AWG - American Wire Gauge

BICSI - Building Industry Consulting Service International

EIA - Electronics Industry Alliance

FCC - Federal Communications Commission

NECA - National Electrical Contractors Association

NFPA - National Fire Protection Agency

UL - Underwriters Laboratory

4.06 Delivery, Storage, and Protection

- Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Contractor is responsible for all materials, tools and vehicles left on the job site.
- Follow Manufacturer's recommendations for handling of materials.

4.07 Project Conditions

4.07.1 Environmental Requirements

- Contractor shall ensure that any pollutants produced during the Work are disposed off according to local, state or national regulations. Follow the most stringent guidelines.
- It is preferred that the Contractor recycle any used or un-used components during the course of the construction project.

4.07.2 Field Measurements

- Contractor shall coordinate with electrical engineer on project that the main electrical service ground has a resistance to earth of less than 5 ohms.
- Contractor shall ensure that all field testers have been calibrated from the Manufacturer within 1 year.
- All field test results will be documented and submitted to Moore Public Schools, Technology Department.

4.08 Sequencing

- Contractor shall coordinate with Owner's project manager on sequencing of various trades and construction teams for the lifecycle of the project.

4.09 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager.

4.10 Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure. (1 year warranty shall begin at job completion)

4.11 Source Quality Control

- Materials shall be purchased from Distributors authorized by system Manufacturers to sell new and unused components.

Part 5 -

5.01 Field Quality Control

- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

5.02 Adjusting

- No additional work outside of the contract scope of work shall be completed without the approval of the Owner or Owner's representative.

5.03 Cleaning

- Contractor shall sweep and mop the floors of all equipment rooms or connection point closets prior to turnover to the Owner.

5.04 Protection

- It is the responsibility of the Contractor to ensure equipment is protected from dust and water during the project with appropriate materials.
- Remove all protective covers and protective materials from equipment prior to turnover to Owner.

5.05 Schedules

- Coordinate work with Owner's project manager and follow scheduling sequence as established by Owner's project manager.
- It is recommended that the Contractor schedule closely with any other systems contractor to ensure turnover date is met.
- Contractor bidding will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.

End of Section

Fire System
Specifications

Part 1 - General

2.01 Manufacturers

- Fire System Manufacturer shall be Silent Knight. (No Substitutions)
- Notification appliance Manufacturer shall be System Sensor. (No Substitutions)
- Device Manufacture shall be as specified in equipment description. (No Substitutions)
- Cable Manufacturer shall be Genesis. (Or Equivalent)

1.03 Fire Systems Equipment Description

- **note:** contractor shall use sk protocol devices on all new installations. contractor shall replace all existing sd protocol devices connected to existing system with sk protocol.
- fire alarm control shall be silent knight model # 6820. (no substitutions)
- fire alarm distributed power module nac expansion shall be silent knight sk-ps6 / sk-ps10 or fire-lite model #'s fl-ps6 / fl-ps10. (no substitutions)
- fire alarm intelligent power supply shall be silent knight model # 5895xl. (no substitutions)
  NOTE: the 5895xl nac circuits will not sync with the main control panels nac circuits. if new nac circuit synchronization is required with existing nac circuits, use the sk-ps6/fl-ps6 or sk-ps10/fl-ps10
- fire alarm remote annunciator shall be silent knight model # 5860 (grey) and surface mount trim ring 5860tg (grey) shall be used if surface mounted. (no substitutions)
- fire alarm signaling line circuit expander shall be silent knight model # 5815xl. (no substitutions)
  sk protocol devices shall be
- fire alarm addressable manual pull station shall be silent knight model # sk-pull-da. (no substitutions)
- fire alarm addressable photoelectric smoke detector shall be silent knight model # sk-photo-w. (no substitutions)
- fire alarm addressable heat detector shall be silent knight model # sk-heat-w. (no substitutions)
- fire alarm base shall be silent knight model # b300-6. (no substitutions)
- smoke detectors in areas that require a co detector shall be sk-fire-co-w. (no substitutions)
- fire alarm addressable input module shall be silent knight model # sk-monitor or sk-monitor-2. (no substitutions)
- fire alarm addressable relay module shall be a silent knight model # sk-relay. (no substitutions)
- fire alarm slc line isolator shall be silent knight model # sk-iso. (no substitutions)
- fire alarm duct detectors and duct detector remote test stations shall be silent knight model #'s sk-duct and rts151key. if a form-c relay is required, please add an sk-relay. (no substitutions)
- fire alarm horn / strobe signaling device shall be system sensor model # p2wl. (model pc2wl can be substituted if mounted on non-stainable ceiling tile. no other substitutions)
- fire alarm strobe signaling device shall be system sensor model # swl. (model scwl can be substituted if mounted on non-stainable ceiling tile. no other substitutions)
- fire alarm strobe synch module shall be system sensor model # mdl3. (not needed on version 9 panels or newer) (no substitutions)
- fire alarm outdoor strobe signaling device shall be system sensor model # p2rk. (no substitutions)
- fire alarm speaker / strobe signaling device shall be system sensor model # spswl. (model spscwl can be substituted if mounted on non-stainable ceiling tile. no other substitutions)
- fire alarm speaker signaling device shall be system sensor model # spwl. (no substitutions)
- fire alarm 50-watt voice evac system shall be as needed silent knight ske-450 (single zone), ske-450-zn4 (4 zone) or ske-450-zn6 (6 zone). (no substitutions)

1.01 Systems Installation

- All fire alarm junctions and or splices shall be soldered and insulated.
- All Ceiling mounted devices shall be mounted on non-stainable ceiling tiles. (BIDDING CONTRACTOR SHALL PROVIDE NON-STAINABLE TILE.)
- All circuits and wiring shall be labeled at all terminating ends.
- All fire system wiring shall be RED in color and non-shielded.
- All devices shall be mounted according to the manufactures specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All fire pulls shall be dual action.
- All Initiating Devices shall be labeled with their corresponding module and point number. Smoke detector label shall be on smoke detector and smoke detector base and be clearly visible from the finished floor.
- All Each Initiating Device Circuits (IDC) shall have Line Isolator Modules installed at the SLC Head End.
- All Initiating Device Circuits (IDC) shall be wired Class B (NFPA Style B).
- All Initiating Device Circuits (IDC) shall be wired with minimum 18 AWG gauge red NON Shielded cable.
- All duct detectors shall be connected to fire system and shall have remote test stations installed accessible and visible from the finished floor. They shall be labeled with their corresponding module and point number.
- All duct detector ARM / AIM shall be installed adjacent to the remote test stations and accessible and visible from the finished floor. They shall be labeled with their corresponding module and point number. (ARM/AIM should not be needed when using SD505-DUCTR duct det.)
- Each CO 1224T detectors shall have an SD500 AIM installed (No doubling). All CO1224T & SD500 AIM shall be labeled with their corresponding module and point number and also be visible and accessible from finished floor.
- All modules shall have their corresponding module number.
- All notification devices shall be wall mounted where possible. Where wire is exposed decorative wire molding shall be installed from the ceiling to the device. If ceiling mount devices are used they shall be mounted on a non-stainable ceiling tile
- All notification devices shall be labeled with their corresponding module, circuit number and device number. Label shall be on the base and be clearly visible from the finished floor. EOL Device shall be labeled as such.
- All horn / strobes and strobes shall be synchronized.
- All Notification Appliance Circuits (NAC) shall be wired Class B (NFPA Style Y).
- All Notification Appliance Circuits (NAC) shall be wired with minimum 16 AWG gauge red NON Shielded cable.
- Protective grommets shall be installed on all conduits to protect wire.
- All SBUS and SLC circuits shall be wired with red NON shielded cable.
- All wire shall be run in J hooks above ceiling with a minimum space of 4" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed. No wire shall be run between the red iron and roof deck.
- Main control panel shall have a CAT 6 cable ran between the main control and the phone company DMARC for monitoring purposes.
- All wire ran between building shall be in conduit and shall be non shielded direct burial cable. It shall be a minimum of 4 conductor 16 AWG copper.
- Installer shall have a commercial fire technician on the job site at all times during the installation.
- Installer shall supply the electrical and or masonry contractors with specialty back boxes such as remote annunciator recessed back boxes etc. and coordinate with them to ensure that all necessary conduits, back boxes, etc. are installed in the proper locations.
- Follow and adhere to installation practices specified by the applicable NFPA 72 standards.
- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.
- Follow and adhere to installation practices specified by the Manufacturers.

1.02 Products Installed but not Supplied Under This Section

- All conduit and EMT required for Fire cabling pathway in/out of closets and in/out of wall cavities at the work area. EMT or Conduit for pathways shall have no more than two 90 degree sweeps and no continuous section over 100'.
- All core holes and poke through devices in the floor for the installation of Fire cabling.
- All core holes and EMT sleeves between floors for the routing of Fire cabling.
- Back boxes for the mounting of Fire Devices.
- Drag line or pull string at the back boxes fished through EMT or conduit to the other end for installing Fire Cabling.

1.03 Quality Assurance

1.03.01 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

1.03.02 Bidder/Installer Qualifications

- Bidding contractor shall be a local licensed Commercial Fire Alarm Company with licensed Commercial Fire Alarm technician(s) on staff.
- Bidding contractor shall have a minimum of one year experience installing Silent Knight Addressable fire panels.
- Bidding contractor shall have a minimum of 5 years experience installing commercial fire alarms.
- Bidding contractor shall be able to provide insurance at the request of the owner.
- Bidding contractor shall have a commercial fire technician on the job site at all times during the installation.

1.04 Sequencing

- Contractor shall coordinate with Owner's project manager on sequencing of various trades and construction teams for the lifecycle of the project.

1.05 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager.

1.06 Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure. (1 year warranty shall begin at job completion)

Part 2 - Products

2.02 Source Quality Control

- Materials shall be purchased from Distributors authorized by system Manufacturers to sell new and unused components.

Part 3 -

3.01 Field Quality Control

- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

3.02 Adjusting

- No additional work outside of the contract scope of work shall be completed without the approval of the Owner or Owner's representative.

3.03 Protection

- It is the responsibility of the Contractor to ensure equipment is protected from dust and water during the project with appropriate materials.
- Remove all protective covers and protective materials from equipment prior to turnover to Owner.

End of Section

1.04 Submittals

1.04.01 Prior to installation

- Show compete map of system design for approval by Owner.

1.04.02 Prior to final acceptance

- Provide a soft CAD copy As-Built showing layout of panel, initiating devices, notification devices and all mounted equipment upon Substantial Completion.
- Ensure all warranties specify that the Owner is entitled to all rights guaranteed by the warranty for various components.

Fire System Installation
Completion Check List

Part 1 - General

1.01 Section Includes

- Fire System Completion Check List

1.02 Completion Check List

- A map of the entire system showing device numbers and wire routes has been left inside the main control panel and a copy has been given to Rodney Cobb with MPS.
- All panel programming has been checked and is correct.
- Panel(s) has been tested for proper operation.
- All zones have been tested to verify proper description at keypad.
- All zones have been tested to verify proper reporting to the monitoring station.
- All points have been tested to verify proper description at the keypad.
- All horn/strobes and strobes have been tested for proper operation.
- All smoke detectors have been tested and dust covers removed.
- All devices have been tested for proper operation.
- All cabinets are labeled on the outside with module numbers and point numbers.
- All cabinets are labeled on the inside with module numbers by the corresponding module and point descriptions.
- The monitoring station has the correct account information such as call list, zone descriptions, etc.

End of Section

IP camera Specifications

Moore Public Schools
IP camera Specifications

IP CAMERA MANUFACTURE is AVIGILON (NO SUBSTITUTIONS).

AVIGILON EQUIPMENT
INDOOR DOME SINGLE HEAD CAMERA REQUIRED EQUIPMENT LIST
4.0C-H5A-D1-IR
ACC7-ENT LICENSE - 1 per camera

INDOOR MULTI-HEAD 3 HEAD CAMERA REQUIRED EQUIPMENT LIST
9C-H4A-3MH-180 (3x3MP)
POE-INJ2-60W-NA Power Injector
ACC7-ENT LICENSE - 1 per camera
H4AMH-AD-CEIL1
H4AMH-DC-COVR1

INDOOR MULTI-HEAD 4 HEAD CAMERA REQUIRED EQUIPMENT LIST
12C-H4A-3MH-360 (4x3MP)
POE-INJ2-60W-NA Power Injector
ACC7-ENT LICENSE - 1 per camera
H4AMH-AD-CEIL1
H4AMH-DC-COVR1

OTDOOR DOME **SINGLE HEAD CAMERA REQUIRED EQUIPMENT LIST**
6.0C-H5A-DO1-IR
ACC7-ENT LICENSE - 1 per camera

OUTDOOR MULTI-HEAD 3 HEAD CAMERA CORNER MOUNT REQUIRED EQUIPMENT LIST
15C-H4A-3MH-270 (3x5MP)
POE-INJ2-60W-NA Power Injector
ACC7-ENT LICENSE - 1 per camera
H4AMH-AD-PEND1
H4AMH-DO-COVR1
H4AMH-AD-IRIL1
H4-MT-CRNR1

OUTDOOR MULTI-HEAD 3 HEAD CAMERA WALL MOUNT REQUIRED EQUIPMENT LIST
15C-H4A-3MH-180 (3x5MP)
POE-INJ2-60W-NA Power Injector
ACC7-ENT LICENSE - 1 per camera
H4AMH-AD-PEND1
H4AMH-DO-COVR1
H4AMH-AD-IRIL1
IRPTZ-MNT-WALL1

INSTALLATION

- Install cameras on adjacent walls were possible. If it must be mounted on ceiling, it shall be on a water-resistant non-stainable ceiling tile. **MPS to have final determination of camera location and field of view) (Call Jack Phillips for final location and view phone 473-5225)**
- Any cameras installed on ceiling shall be mounted on a water-resistant non-stainable ceiling tile. (BIDDING CONTRACTOR SHALL PROVIDE NON-STAINABLE TILE)
- Each installed camera needs a camera license.
- All network drops shall be connected with patch cords to a switch at each rack location.
- No Substitutions.

Horizontal Cabling

Requirements

- See MPS Structured Cabling Specifications for camera network cabling installation, labelling and testing requirements.

Warranty

- Communications Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure.
- Communications Contractor shall execute a Lifetime Applications Assurance Warranty for parts and labor to support stated applications from the connectivity Manufacturer.

End of Section

Audio Visual Systems for Instructional Spaces Specifications

Part 1 - General

1.01 Instructional Spaces

- Reference technology drawings and detail sheet T504 for classroom configuration and part numbers.

1.02 Special Spaces

- Reference technology drawings and one line diagrams.

1.03 Flat Panel Displays

- All non interactive Flat Panel displays shall be 43" Samsung BE Series.
- Bio Lab 37 displays shall be ceiling mounted.
- Career Tech 12 and Career Tech 15 displays shall be wall mounted 55" AFF to center of display.

End of Section

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WDB ENGINEERING
CIVIL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

NY
drawn by

NY
checked by

MAY 2023
date

revisions

MOORE PUBLIC SCHOOLS
BOARD OF EDUCATION
MOORE, OKLAHOMA

MOORE Public Schools
LEARNING FOR LIFE

LOCKER ROOM
ADDITION
MOORE WEST
JUNIOR HIGH SCHOOL

sheet no:

T-503

Salas O'Brien
2600 Van Buren St., Suite 2635
Norman, OK 73072
Salas O'Brien Registration: CA# 7058
Expiration Date : 6/30/2025
Salas O'Brien Project Number: 2023-04636-00

Moore Public Schools
Video Intercom Door System Specifications

MANUFACTURE

AVIGILON (NO SUBSTITUTIONS).

AVIGILON REQUIRED EQUIPMENT

3.0CH4VIRO1-IR
3.0 MP; H4 Video Intercom; WDR;LightCatcher; Day/Night; 1.83mm
f/2.4; Integrated IR; Recessed Mount

H4VI-AC-RELY1
Safety Relay for H4 Video Intercom

H4VI-MT-SURF1
Surface mount adapter for H4 Video Intercom

ACC7-ENT
ACC 7 Enterprise camera channel license

INSTALLATION

- Video Intercom system requires a Cat 6 network drop ran to the nearest IDF
- Video Intercom system requires an 18 gauge 4 conductor cable ran between the video intercom station and the entry door Keyscan controller unit. **MPS to have final determination of camera location and field of view) (Call Jack Phillips for final location and view phone 473-5225)**
- Each installed Video Intercom System requires a license.
- All network drops shall be connected with patch cords to a switch at each rack location.
- No Substitutions.

Horizontal Cabling

Requirements

- See MPS Structured Cabling Specifications for camera network cabling installation, labelling and testing requirements.

Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure.

- Contractor shall execute a Lifetime Applications Assurance Warranty for parts and labor to support stated applications from the connectivity Manufacturer.

End of Section

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