
BIDDING INSTRUCTIONS & FORMS

Southgate Elementary Kitchen Upgrades & Addition
500 N. Norman
Moore, OK 73160

OMNI CONSTRUCTION
1909 S Eastern Ave Moore, OK 73160

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Southgate Elementary Kitchen Upgrades & Addition

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Southgate Elementary Kitchen Upgrades & Addition
500 N. Norman
Moore, OK 73160

Division 0

Bidding Instructions

&

Forms

ARCHITECT OF RECORD:

AGP– the Abla Griffin Partnership, LLC
313 SE 5th Street
Moore, OK 73160
405-735-3477

CONSTRUCTION MANAGER:

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

DOCUMENT 100

SOLICITATION FOR BIDS

(BIDNOTICE)

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 Thursday, the 20th day of August 2026, at which time said bids will be opened for furnishing all labor and materials for the construction of the Southgate Elementary Kitchen Upgrades & 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)
Bid Package 7 — Doors & Hardware
Bid Package 8 — Finishes (Ceiling Systems)
Bid Package 10 —Flooring
Bid Package 11 — Painting
Bid Package 13 —Mechanical
Bid Package 14 — Plumbing
Bid Package 15 — Electrical/Cabling/IT
Bid Package 16 —Kitchen Equipment

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 has a value greater than \$50,000.00. 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 Thursday, the 20th day of August 2026, at which time said bids will be opened for furnishing all labor and materials for the complete construction of the Southgate Elementary Kitchen Upgrades & Addition project.

Bid Packages: Bid Package 1 – Demo/Sitework

Bid Package 2 – Concrete

Bid Package 3 – Masonry

Bid Package 4 – Metal (Material Only)

Bid Package 7 – Doors & Hardware

Bid Package 8 – Finishes (Ceiling Systems)

Bid Package 10 – Flooring

Bid Package 11 – Painting

Bid Package 13 – Mechanical

Bid Package 14 – Plumbing

Bid Package 15 – Electrical/Cabling/IT

Bid Package 16 – Kitchen Equipment

- 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 Southgate Elementary Kitchen Upgrades & Addition, 500 N. Norman, Moore, OK 73160, 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 1-4, 7, 8, 10, 11, 13-16 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 for reviewing 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 = 9/15/2026
- B. Construction Completion Date = 3/14/2027

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 lumpsum 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 Abila 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 Abila Griffin Partnership L.L.C., 313 SE 5th Street, 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 become 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 architects to determine acceptability of proposed products.
- C. When a request to substitute a Product is made, the 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 themselves 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. All site visits shall be scheduled through 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 a 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 be 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 the proposal has a value greater 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. The 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: Southgate Elementary Kitchen Upgrades & Addition

DATE OF BID OPENING: _____

COMPANY NAME: _____

COMPANY ADDRESS: _____

CONTACT NAME: _____

TELEPHONE NUMBER: _____

FAX NUMBER: _____

EMAIL ADDRESS: _____

PACKAGENO./ 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 CONTRACT AMOUNT. PRIOR TO AWARD, THE OWNER AND CONTRACTOR RESERVE THE RIGHT TO ADD A PERFORMANCE BOND FROM THE TRADE CONTRACT 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.

_____ Reviewed **ALL** plan sheets, plan notes, & project specifications.

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.

SIGNATURE: _____

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

Notary Public

My Commission Expires:

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.

SIGNATURE: _____

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 sex 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 of 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: _____

DOCUMENT 400
GENERALBID PACKAGE ITEMS

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

Section1-
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. The 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:
 - o Each Submittal shall be submitted under separate coversheets indicating the specific Specification Section to which it pertains.
 - o The subcontractor shall submit three (3) hard copies and one (1) digital copy of each submittal.
 - o Subcontractor shall submit two (2) hardcopies 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. Subcontractors 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. The subcontractor shall engage a qualified surveyor to establish exact points to act as working points as needed. The 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. The subcontractor shall coordinate delivery of materials. Subcontractors shall provide equipment and personnel necessary to unload, stack, and store onsite. The 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. The 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. The subcontractor is responsible for the proper backfill 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.

Section3- Safety

- 3.1 The 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.

Southgate Elementary Kitchen Upgrades & Addition

500 N. Norman

Moore, OK 73160

Summary of Work / Bid Packages

BID PACKAGE #1: SITE-DEMO/SITE-WORK:

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Demo/Sitework work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 02020	Demolition	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- All miscellaneous equipment and material required for the proper completion of this scope of work.
- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- Any testing is to be paid for by others but needs to be coordinated by the contractor.
- Include all dewatering required for this scope of work.
- Earthwork as it is applicable to concrete & landscape grading.
- The subcontractor is to include all exterior demo as applicable to sitework.
- The subcontractor is to coordinate with MEP contractors on their demo work.

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Summary of Work / Bid Packages

BID PACKAGE #2: CONCRETE

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Concrete work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 02500	Paving & Surfacing	Complete
• Section 03300	Cast-In-Place Concrete	Complete
• Section 06100	Rough Carpentry	As applicable to Concrete
• Section 07900	Sealants	As applicable to Concrete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- Any testing is to be paid for by others but needs to be coordinated by the contractor.
- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- The subcontractor is responsible for and must provide their own disposal for washout and concrete debris waste.
- Include all concrete related weather and temperature protection.
- Included all dewatering required to perform this scope of work.
- Include concrete repairs including but not limited to patching, rubbing, grinding, fill, sandblast, and caulk as indicated on the plan sheets and specifications.
- Include termite treatments.
- Include all necessary layout and surveying from a provided benchmark for concrete work.
- Furnish and maintain all rebar caps on dowels until next trade begins.
- The concrete subcontractor is to include the bollards as called out in plans-verify cover color before ordering.

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Summary of Work / Bid Packages

BID PACKAGE #3: MASONRY

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Masonry work as specified by the drawings and specifications including the following:

SECTIONS:

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

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- The subcontractor is responsible for and must provide their own disposal for masonry/brick debris waste.
- Install all loose steel lintels over openings.
- Set/Install HM frames in CMU

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Summary of Work / Bid Packages

BID PACKAGE #4: METAL (MATERIAL ONLY)

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Metal (Material Only) work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 05120	Structural Steel	Material Complete
• Section 05310	Metal Deck	Material Complete
• Section 05500	Metal Fabrications	As per plans & applicable

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing **ALL PLAN SHEETS AND PLAN NOTES** for any and all information pertaining to this scope of work.
- Include delivery of all materials associated with this bid package. Delivery must be coordinated with the Construction Manager and steel erector.
- Supply all anchors for embedding into concrete and masonry.
- Supply all bridging, seats, bearings, and angles.
- Supply all lintels.
- Supply all seismic bracing steel.

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Summary of Work / Bid Packages

BID PACKAGE #7: DOORS & HARDWARE (MATERIAL ONLY)

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Doors & Hardware work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 08100	Metal Doors & Frames	Complete
• Section 08700	Finish Hardware	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- Installation to be performed by others.
- Include delivery of all materials associated with this bid package. Delivery must be coordinated with the job superintendent.

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Summary of Work / Bid Packages

BID PACKAGE #8: FINISHES (CEILING SYSTEM)

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Finishes (Ceiling System) work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 05400	Cold Formed Metal Framing	Complete
• Section 06100	Rough Carpentry	As applicable to this scope of work
• Section 06200	Finish Carpentry	As applicable to this scope of work
• Section 06300	Wood Treatment	As applicable to this scope of work
• Section 07200	Insulation	As applicable to this scope of work
• Section 09120	Ceiling Suspension Systems	Complete
• Section 09250	Gypsum Wallboard	Complete
• Section 095113	Accoustical Panel Ceilings Kitchen Zone	Complete
• Section 09780	Stainless Steel Wall Panels & Trim	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- The subcontractor is to include in-wall backing.
- The subcontractor is to include demo as applicable to this scope of work,
- The subcontractor is to include the demo of the existing window systems where new stud in-fill is called out on plans.
- The subcontractor is to include setting/installing Hollow Metal door frames.

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Summary of Work / Bid Packages

BID PACKAGE #10: FLOORING

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Flooring work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 09300	Ceramic Wall Tile	Complete
• Section 09301	Quarry Tile	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- The subcontractor is responsible for making sure work site conditions (temperature, moisture, etc.) are met before the installation of flooring.
- The subcontractor is to include the demo of existing flooring

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Summary of Work / Bid Packages

BID PACKAGE #11: PAINTING

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Painting work as specified by the drawings and specifications including the following:

SECTIONS:

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

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- Include and supply materials (joint tape & compound) & labor to complete the joint treatment application.
- Include and supply materials & labor to complete the texture application.

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Summary of Work / Bid Packages

BID PACKAGE #13: MECHANICAL

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Mechanical work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Plan Set	Specifications in Plan Set	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- Testing to be coordinated by the contractor.
- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- Coring, patching, and caulking of penetrations.
- The subcontractor shall include all mechanical demo & make safe all existing areas.

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Summary of Work / Bid Packages

BID PACKAGE #14: PLUMBING

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Plumbing work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Plan Set	Specifications in Plan Set	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- Provide all necessary sleeving, block out, and penetrations required in walls, CMU block, floors, roof, etc. for this work including fire/smoke sealing inside & outside of sleeves and patching/fire caulking of the penetrations.
- All penetrations through CMU walls must have block-outs, core drilling will not be allowed.
- Caulking all penetrations associated with this scope of work.
- Caulking of all fixtures.
- All permits, fees, and inspections as required.
- All identification as called for and/or required per code.
- The subcontractor is responsible for the removal of excess spoils from site.
- The 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 inspections.
- The subcontractor is responsible for backfilling and compactions.
- All testing for backfilling & compaction to be paid for by others and coordinated by the subcontractor.
- The subcontractor shall include all plumbing demo & make safe all existing areas.

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Summary of Work / Bid Packages

BID PACKAGE #15: ELECTRICAL/CABLING/IT

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Electrical/Cabling/IT work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Plan Set	Specifications in Plan Set	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- The Electrical Contractor 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.
- The Electrical Contractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The Electrical Contractor is responsible for reviewing **ALL PLAN SHEETS AND PLAN NOTES** for any and all information pertaining to this scope of work.
- Provide, coordinate, and maintain all temporary building, jobsite trailer and site electrical power and lighting services including temporary construction facilities.
- The Electrical Contractor is responsible for coordinating all systems with the fire sprinkler, mechanical, and plumbing contractors.
- All associated inspections, permits, and required fees.
- The Electrical Contractor is responsible for any earthwork associated with this bid package including hauling off of excess spoils.
- The Electrical Contractor is responsible for any and all wiring to others equipment.
- The Electrical Contractor is responsible for all layout associated with this bid package.
- Furnish and install all sleeves for associated electrical work.
- All penetrations through CMU walls must have block-outs, core drilling will not be allowed.
- The Electrical Contractor is responsible for all fire-stopping where this scope of work creates penetrations.

- The Electrical Contractor 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 inspections.
- The Electrical Contractor shall include all electrical demo & make safe all existing areas.
- Electrical Contractor to coordinate with Firetrol for all low voltage work.

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Summary of Work / Bid Packages

BID PACKAGE#18: KITCHEN EQUIPMENT:

- This bid package shall include all labor, materials, equipment, services, insurances, and incidentals required to complete the Demo/Sitework work as specified by the drawings and specifications including the following:

SECTIONS:

• Division 0	Bidding & Contract Documents	
• Division 1	General Requirements	
• Section 114000	Kitchen Equipment	Complete

THIS SCOPE OF WORK SHALL INCLUDE BUT NOT LIMITED TO:

- All miscellaneous equipment and material required for the proper completion of this scope of work.
- The 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.
- The subcontractor is responsible for the daily clean-up of all waste & trash generated by their work.
- The subcontractor is responsible for reviewing ALL PLAN SHEETS AND PLAN NOTES for any and all information pertaining to this scope of work.
- The subcontractor is to include demo & re-installation of existing kitchen equipment as noted in plans
- The subcontractor is to include installation of new kitchen equipment.

MOORE PUBLIC SCHOOLS
2026 SOUTHGATE
ELEMENTARY KITCHEN
UPGRADES and ADDITION

INDEPENDENT DISTRICT NO. 2
CLEVELAND COUNTY, MOORE, OKLAHOMA

500 NORTH NORMAN
MOORE, OKLAHOMA 73160

PROJECT MANUAL

APRIL 2026



PROJECT MANUAL

APRIL 2026

MOORE PUBLIC SCHOOLS 2026 SOUTHGATE ELEMENTARY KITCHEN UPGRADES and ADDITION

INDEPENDENT DISTRICT NO. 2
CLEVELAND COUNTY, MOORE, OKLAHOMA

500 NORTH NORMAN
MOORE, OKLAHOMA 73160

ARCHITECT:

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Partnership

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Not Used

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Not Used

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Not Used

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REFER TO MECHANICAL, PLUMBING, ELECTRICAL AND TECHNOLOGY DRAWINGS

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Not Used

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 2026 Southgate Elementary Kitchen Upgrades and Addition located at 500 North Norman, Moore, OK - **within 180 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. Owner's 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 11.1 and 11.2. Furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.
- D. **The 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. Construction Manager 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, CM, 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 &/or applicable Engineer/Consultant.

- 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 Construction Manager's responsibility to provide **ALL** additional materials, accessories, substrates, utility connections, 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 timekeepers, 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.

Constructor Manager markups shall be limited to 7% profit UNLESS a time extension has been approved by the Owner and the Architect allowing for an increase of G.C.s as per original base agreement times the number of approved additional days. 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 or flash drive). 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 CM shall engage all testing laboratories / subcontractors as approved by the Architect; and, pay for ALL testing as required by the drawings and specifications.** The CM 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 Construction Manager 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 ensure 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 CM 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 deem special inspections are necessary, provide assistance and facilities that will expedite their inspection.

Construction Manager shall be responsible for obtaining and paying for ALL building permits required for this project. This cost shall be included in the Construction Manager'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.

Quantities obtained during bidding &/or construction shall not be from the scaling of the drawings. Only dimensions obtained from dimensioned documents &/or existing on-site conditions shall be utilized for quantities determination, pricing, and ordering. Any scaling of the Construction Documents will be at the bidder's risk and any discrepancies shall be corrected by and paid for by the bidder.

If differences are found, they shall be submitted to the Architect for consideration and verification 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. 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.

F. CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS:

Conflicts between the drawings and specifications shall be brought to the immediate attention of the Architect. Failure to bid items(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 requirements to perform all the work required of their respective disciplines and/or trade to provide a complete and properly functioning product, system, device, material, etc.

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

Construction Manager 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. CM agrees to furnish Owner, upon request, a certificate or other evidence of compliance therewith.

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

The Construction Manager 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, they will require the Construction Manager 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 Construction Manager shall include in his proposal amount the total premiums for all required bonds.
4. Unless otherwise noted, the Contraction Manager 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

Geotechnical Engineering Report

**Proposed Building Addition
Southgate Elementary School
500 North Norman Avenue
Moore, Oklahoma**

September 9, 2015
Terracon Project No. 03155149

Prepared for:

AGP – the Abla Griffin Partnership LLC
Moore, Oklahoma

Prepared by:

Terracon Consultants, Inc.
Oklahoma City, Oklahoma

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

September 9, 2015



AGP – the Abla Griffin Partnership LLC
201 North Broadway, Suite 210
Moore, Oklahoma 73160

Attn: Mr. Michael L. Abla, AIA
P: [405] 735 3477
E: mabla@theAGP.net

Re: Geotechnical Engineering Report
Proposed Building Addition
Southgate Elementary School
500 North Norman Avenue
Moore, Oklahoma
Terracon Project No. 03155149

Dear Mr. Abla:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. This study was performed in accordance with the Proposal for Geotechnical Services No. P03150424 dated July 20, 2015. This report presents the findings of the subsurface exploration and provides geotechnical recommendations regarding the design and construction of foundations and floor slabs for the project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.
Cert. Of Auth. #CA-4531 exp. 6/30/17


Diana Vargas-Suaza, E.I.
Consultant


Jeremy Basler, P.E.
Oklahoma No. 20233



DCVS:JB\cn\in\projects\2015\03155149\project documents\sep2015

Copies to: Addressee (1 via email)



Terracon Consultants, Inc. 4701 North Stiles Avenue Oklahoma City, Oklahoma 73105
P [405] 525 0453 F [405] 557 0549 terracon.com

Environmental



Facilities



Geotechnical



Materials

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Geotechnical Engineering Report

Proposed Building Addition - Southgate Elementary School ■ Moore, Oklahoma
September 9, 2015 ■ Terracon Project No. 03155149

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Exhibits A-4 and A-5	Borings DB-1 and DB-2

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APPENDIX C - SUPPORTING DOCUMENTS

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Exhibit C-2	Unified Soil Classification System
Exhibit C-3	Sedimentary Rock Classification

EXECUTIVE SUMMARY

Geotechnical Engineering Services have been performed for the proposed new addition to the existing Southgate Elementary School in Moore, Oklahoma. Terracon's geotechnical scope of work included two test borings to approximate depths of 34 to 34.5 feet below existing site grades.

Based on the information obtained from our subsurface exploration, the site is suitable for development of the proposed project. The following geotechnical considerations were identified:

- The site surface cover generally consisted of grass and topsoil. The soil profile generally encountered lean to fat clays and shaley lean clays, with varying amounts of sand to depths of approximately 13.5 to 14 feet. The overburden soils were underlain by highly weathered shale extending to the boring termination depths of about 34 to 34.5 feet. Groundwater was encountered in the borings at depths of about 7.5 to 26 feet at the time of the exploration.
- Based on the subsurface conditions encountered and expected structural loads the building addition may be supported by drilled piers bearing on the highly weathered shale.
- On-site soils exhibit moderate to high expansion potential under light loading conditions such as those imposed by floor slabs. A minimum of 2 feet of low volume change materials are recommended beneath the floor slab to reduce the potential vertical rise to less than 1 inch. Increasing the low volume change soil thickness to 3 feet could reduce the potential vertical rise to less than 3/4 inch.
- Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during construction.

This geotechnical executive summary should be used in conjunction with the entire report for design and/or construction purposes. It should be recognized that specific details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled General Comments should be read for an understanding of the report limitations.

**GEOTECHNICAL ENGINEERING REPORT
PROPOSED BUILDING ADDITION
SOUTHGATE ELEMENTARY SCHOOL
500 NORTH NORMAN AVENUE
MOORE, OKLAHOMA
Terracon Project No. 03155149
September 9, 2015**

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the new Southgate Elementary School Building Addition located in Moore, Oklahoma. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- seismic site class

2.0 PROJECT INFORMATION

2.1 Project Description

Item	Description
Site layout	See Exhibits A-1 and A-2 in Appendix A.
Structures	The project will include construction of a classroom building addition.
Maximum loads	Columns: 10 to 200 kips (provide) Walls: 2 to 4 klf (assumed) Slabs: 125 psf max (assumed)
Grading	Grade changes for the proposed site were not provided to us at the time of this report; but, based on the boring elevations and the existing topography, we anticipate less than 2 feet of fill will be necessary for this site.

2.2 Site Location and Description

Item	Description
Location	The site is located at 500 North Norman Avenue in Moore, Oklahoma.
Existing improvements	Existing buildings, pavement, grass and topsoil.
Current ground cover	Grass and topsoil.
Existing topography	The site is relatively flat.

3.0 SUBSURFACE CONDITIONS

3.1 Typical Subsurface Profile

Specific conditions encountered at each boring location are indicated on the individual boring logs included in Appendix A. Stratification boundaries on the boring logs represent the approximate location of changes in soil and rock types; in-situ, the transition between materials may be gradual. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	13.5 to 14	Lean to fat clay and shaley lean clay with varying amounts of sand	Stiff to hard
Stratum 2	Below the boring termination depths	Highly weathered shale	Soft to moderately hard

Laboratory tests were conducted on selected soil and rock samples and the test results are presented on the boring logs in Appendix A.

3.2 Groundwater

The borings were monitored while drilling, immediately after completing the drilling activities and approximately 24 hours after drilling completion for the presence and level of groundwater. As reported in the lower left corner of the boring logs, groundwater was encountered in the borings at the following depths.

Boring No.	While Drilling (ft)	After Boring (ft)	24 HR After Boring (ft)
DB-1	7	26	7.5
DB-2	Not Encountered	Not Encountered	24.5

To obtain more accurate groundwater level information, longer observations in a monitoring well or piezometer that is sealed from the influence of surface water would be needed. Fluctuations in groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, altered natural drainage paths, and other factors not evident at the time the borings were advanced. Consequently, the designer and contractor should be aware of this possibility while designing and constructing the building.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The borings generally encountered moderate to high plasticity clays extending to depths of about 13.5 to 14 feet. The overburden soils were underlain by highly weathered shale extending to the boring termination depths. The moderate to high plasticity clays encountered at the site will experience significant volume changes with variation in subgrade moisture content. To reduce the potential floor slab movement, some overexcavation and replacement of the on-site soils will be required.

Based on the subsurface conditions encountered and the expected structural loads, drilled piers can be used to support the proposed building addition.

Expansive soils are present at this site. This report provides recommendations to help mitigate the effects of soil shrinkage and expansion. However, even if these procedures are followed, some movement and cracking in the structure should be anticipated. The severity of cracking and other cosmetic damage such as uneven floor slabs will probably increase if any modification of the site results in excessive wetting or drying of the expansive soils. Eliminating the risk of movement and cosmetic distress may not be feasible, but it may be possible to further reduce the risk of movement if significantly more expensive measures are used during construction. We would be pleased to discuss other construction alternatives with you upon request.

Geotechnical engineering recommendations for foundations and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, subgrade preparation, and placement and compaction of engineered fill on the project. The recommendations presented

for design and construction of earth supported elements including the building foundations and floor slab are contingent upon following the recommendations outlined in this section. Grading for the structure should incorporate the limits of the proposed structure plus a minimum pad blow-up of five feet beyond proposed perimeter building walls and any exterior columns.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing materials, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Site preparation for the proposed project should include removing the vegetation, topsoil and any other unsuitable surface materials from the areas of new construction. The depressions or excavations should be cleaned of loose material and backfilled as outlined in the following paragraphs. Actual removal depths should be determined at the time of construction by a representative of the geotechnical engineer.

4.2.2 Subgrade Preparation

The soils encountered in the borings within the anticipated depth of seasonal moisture change included moderate to high plasticity clays. These soils have the potential to exhibit significant volume changes with variations in the subgrade moisture content. Based on test method TEX 124E and an 8-foot depth of moisture fluctuation, we estimate the potential PVR for this site to generally be 1-3/4 inches. Therefore, the near surface soils should not be used to provide direct support for conventional on-grade floor slabs.

We recommend constructing a minimum 2-foot thickness of low volume change engineered fill within the building addition footprint to improve support for conventional on-grade floor slab and reduce the potential vertical rise PVR to less than one inch. Increasing the low volume change soil thickness to 3 feet could reduce the PVR to less than 3/4 inch.

The zone of fill compacted to meet this criteria should extend beyond the building footprint at least 1 foot laterally for each foot of fill required to develop design grade.

After performing any required undercut but before placing any fill, we recommend the building addition area be proofrolled with a loaded, tandem-axle dump truck weighing at least 25 tons (under the observation of Terracon personnel) to locate any soft or unstable zones. The proofrolling should involve overlapping passes in mutually perpendicular directions. Where rutting or pumping is observed during proofrolling, the unstable soils should be overexcavated and replaced with an approved low volume change soil as described in the following sections if it cannot be effectively compacted in-place.

After a successful proofroll, we recommend scarifying the exposed subgrade soils to a minimum depth of 8 inches in the building addition area. The scarified soil should be adjusted to a workable moisture content that is at or above its optimum value, as determined by test method ASTM D-698 (standard Proctor), prior to being compacted to at least 95 percent of its maximum dry density. The scarification and moisture conditioning process is important to reducing the future subgrade volume change and should be observed and documented during construction.

4.2.3 Fill Material Requirements

All fill required to develop the design subgrade elevation should be an approved cohesive material that is free of organic matter and debris as outlined in the following table.

Fill Type ¹	Acceptable Location for Placement
Imported Low Volume Change Soils (Cohesive Materials with $LL < 40$, $5 < PI < 15$)	All locations, but particularly for low volume change zone beneath on-grade floor slabs

1. Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained. Controlled, compacted fill should consist of approved materials free of organic matter and debris and contain a maximum rock size of 3 inches. The proposed fill materials should be approved by the geotechnical engineer prior to placement.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

4.2.4 Fill Placement and Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

Item	Description
Fill Lift Thickness	■ 9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used. ■ 4 to 6 inches in loose thickness when hand-guided equipment (i.e., a jumping jack or plate compactor) is used.
Compaction Requirements ¹	At least 95% of the material's maximum dry density as determined by the standard Proctor test method, ASTM D-698.
Moisture Content	Cohesive materials: Workable moisture content at or above its optimum value as determined by the standard Proctor test method, ASTM D-698 at the time of placement and compaction.

-
1. We recommend that each lift of fill be tested by Terracon for moisture content and compaction prior to the placement of additional fill or concrete. If the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
-

4.2.5 Earthwork Construction Considerations

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proofrolling, placement and compaction of controlled compacted fills, backfilling of excavations, and just prior to construction of the building floor slab.

Care should be taken to avoid disturbing prepared subgrades. Unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. New fill compacted several percentage points above optimum moisture content or that accumulates water during construction can also become disturbed under construction equipment. Construction traffic over the completed subgrade should be avoided to the extent practical. If the subgrade becomes saturated, desiccated or disturbed, the affected materials should either be scarified and compacted or be removed and replaced. Subgrades should be observed and tested by Terracon prior to construction of slabs.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties.

4.2.6 Grading and Drainage

Effective drainage should be developed during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features that could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately five percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce moisture infiltration.

Downspouts, roof drains or scuppers should discharge in a manner that carries the water several feet away from the building when the ground surface adjacent to the structure is not

protected by exterior slabs or paving. Sprinkler systems should not be installed within 5 feet of foundation walls. Landscape irrigation adjacent to the foundation systems should be minimized or eliminated.

4.2.7 Utility Trench Backfill

All trenches created for utility access under the building should be effectively sealed to restrict water intrusion and flow along the trenches. We recommend using a clay soil to construct an effective clay trench plug that extends at least 5 feet out from the face of the building. The clay should have a minimum plasticity index (PI) 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 standard Proctor dry density, ASTM D-698, at a minimum moisture content that is above its optimum value.

4.2.8 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type I Portland cement is suitable for all concrete on and below grade. Foundation concrete can be designed for low sulfate exposure in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 4.

Laboratory test results indicate that on-site soils have pH values of 7.74 to 8.49 and indicates the soils to be mildly corrosive. These values should be used to determine potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

Refer to Summary of Laboratory Results contained in Appendix B for the complete results of the various corrosivity testing conducted on the site soils in conjunction with this geotechnical exploration.

4.3 Drilled Pier Foundations

4.3.1 Design Recommendations - Drilled Pier Foundations

Description	Value
Foundation Type	Drilled pier foundation system
Bearing Material	Highly weathered shale that was encountered at depths of approximately 13.5 to 14 feet below the existing grade.
Minimum Embedment	2 feet into approved highly weathered shale.
Net Allowable Bearing Pressure¹	15,000 psf
Maximum Allowable Skin Friction²	1,500 psf

Description	Value
Minimum Shaft Diameter ³	18 inches
Minimum Grade Beam Embedment Depth Below Finished Grade ⁴	30 inches
Minimum Void Space Beneath Grade Beam ⁵	4 inches
Total Estimated Settlement	1/2 inch
Estimated Differential Settlement	Negligible
1. Due to the potential variations in the quality of the highly weathered shale bearing strata between borings, the geotechnical engineer or his representative should be present during pier drilling to verify that suitable highly weathered shale is adequately penetrated. 2. Use skin friction for the portion of the drilled pier that penetrates the weathered highly weathered shale at least 2 feet. 3. Assume that enough steel reinforcement is provided to provide adequate structural integrity. 4. Grade beams should be structurally connected to the top of the piers. 5. Excavations for grade beams should be free of loose material and protection should be provided to prevent future filling of the void by sloughing soils.	

4.3.2 Drilled Pier Foundation Construction Considerations

Our drilling rig used an earth auger to penetrate the overburden soils and highly weathered shale. However, a rock bit may be required to extend the drilled pier excavations into the highly weathered shale. We do not expect temporary casing will be needed to prevent caving of the excavation sides; however, the final determination should be made at the time of construction.

Groundwater was encountered in the borings during the field exploration; therefore, we anticipate dewatering will be required during pier construction. However, the need for dewatering will also depend on the actual groundwater conditions at the time of construction. The bottom of the pier excavation should be cleaned of debris, loose or disturbed soil, and water if any prior to placing reinforcing steel and concrete. If water is encountered and cannot be removed, the concrete should be placed using a tremie pipe and placed from the bottom of the pier excavation to the top, displacing the water to the surface. Concrete should be placed as soon as possible after the foundation excavation is completed to reduce the potential for disturbance of the bearing surface. To facilitate pier construction, concrete should be on-site and ready for placement as pier excavations are completed. In no event should the pier excavation be allowed to remain open over night.

4.4 Seismic Considerations

Description	Value
2009 International Building Code Site Classification (IBC)	C

Note: In general accordance with the 2009 *International Building Code*, Table 1613.5.2. The 2009 International Building Code (IBC) uses a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the required 100 foot soil profile determination. Borings extended to a maximum depth of 34.5 feet. This seismic site class definition considers that highly weathered shale continues below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be required to confirm the conditions below the current depth of exploration.

4.5 Floor Slab Design Recommendations

Description	Value
Interior floor system	Slab-on-grade concrete.
Floor slab support	2 to 3 feet of low volume change soils placed and compacted in accordance with section 4.2 Earthwork . ¹
Modulus of subgrade reaction	125 pounds per square inch per inch (psi/in) ²

1. Floor slabs should be structurally independent of building foundations and walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundations.
2. A slab constructed on the subgrade prepared as described herein.

4.5.1 Floor Slab Construction Considerations

By constructing a low volume change fill layer beneath the slab, closely controlling the moisture and density of the scarified soils and controlling the potential for moisture migration beneath the slab, the potential for floor slab movements should be reduced. However, because of the remaining thickness of moderate to high plasticity clay soils, the potential for some future movement still exists. Based on constructing a minimum 2 foot thick low volume change LVC fill layer beneath the floor slab, we anticipate potential slab movement could approach 1 inch. A 3 foot thick LVC layer could approach 3/4 inch of slab movement. This magnitude of slab movement could occur differentially. To further reduce the potential for slab movements, a greater thickness of low volume change fill could be placed beneath the slab.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

Effective separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines penetrating the slab to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with

recommendations outlined in section **4.2 Earthwork**. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION

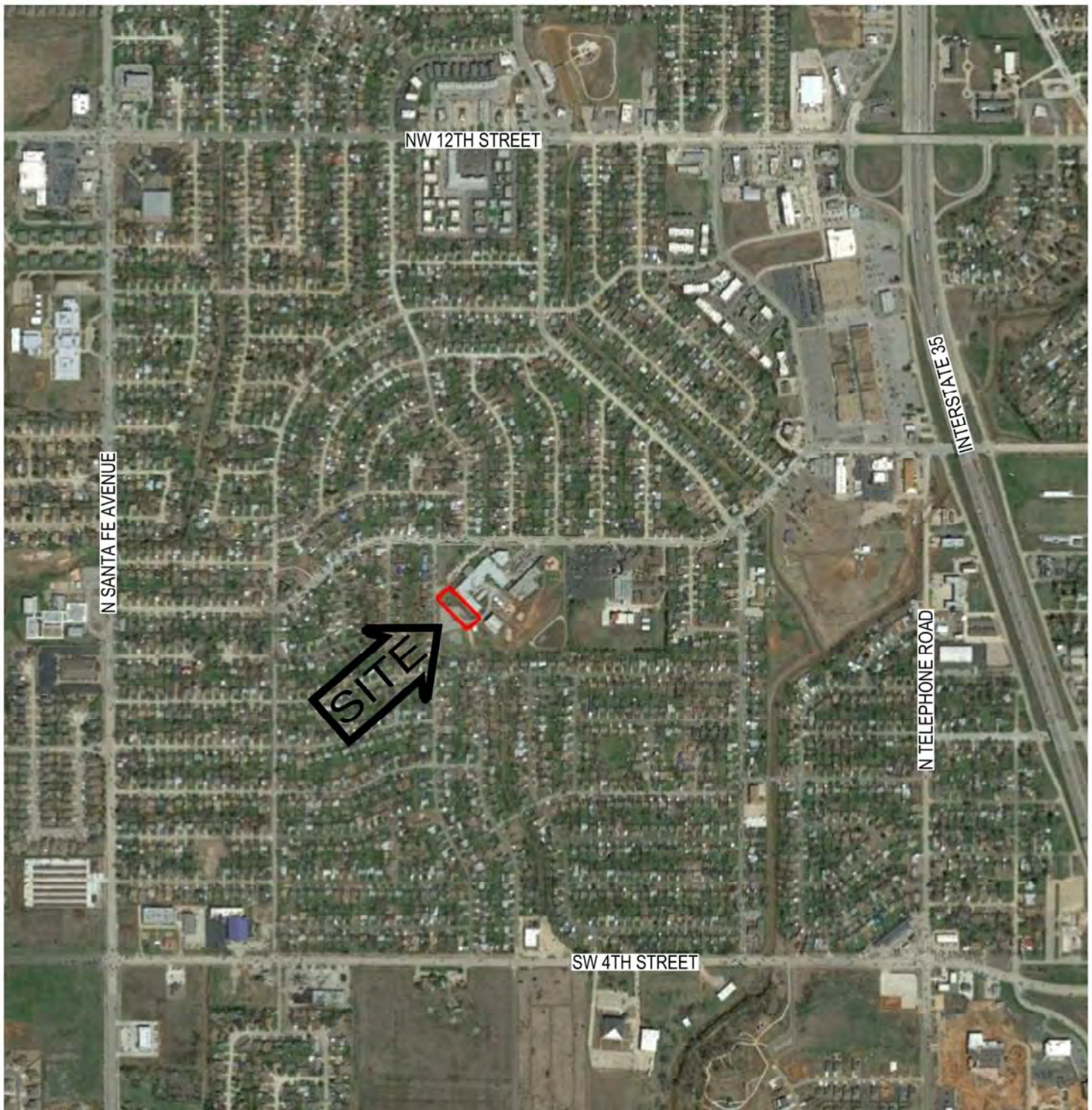


DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mgr: DCVS	Project No. 03155149	 Consulting Engineers and Scientists 4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105 PH. (405) 525-0453 FAX. (405) 557-0549	SITE LOCATION PLAN PROPOSED BUILDING ADDITION SOUTHGATE ELEMENTARY SCHOOL 500 NORTH NORMAN AVENUE MOORE, OKLAHOMA	EXHIBIT
Drawn By: CAN	Scale: NTS			A1
Checked By: DCVS	File No. 03155149 (A1-A2)			
Approved By: JWB	Date: SEPT 2015			



LEGEND

 BORING LOCATION

DIAGRAM IS FOR GENERAL LOCATION ONLY,
 AND IS NOT INTENDED FOR CONSTRUCTION
 PURPOSES.

Project Mgr:	DCVS	Project No:	03155149	Terracon Consulting Engineers and Scientists 4701 N STILES AVE OKLAHOMA CITY, OKLAHOMA 73105 PH. (405) 525-0453 FAX. (405) 557-0549		BORING LOCATION PLAN PROPOSED BUILDING ADDITION SOUTHGATE ELEMENTARY SCHOOL 500 NORTH NORMAN AVENUE MOORE, OKLAHOMA		EXHIBIT A2
Drawn By:	CAN	Scale:	NTS					
Checked By:	DCVS	File No:	03155149 (A1-A2)					
Approved By:	JWB	Date:	SEPT 2015					

Field Exploration Description

As requested, two test borings were drilled at the site on August 13, 2015. The borings were drilled to 34 to 34.5 feet below the ground surface at the approximate locations shown on the attached Boring Location Plan, Exhibit A-2.

Terracon personnel located the borings in the field by taping distances from the references shown on the attached boring location plan. The surface elevations at the boring locations were determined using differential leveling procedures. An assumed benchmark elevation of 100 feet was used and referenced to the top nut of the fire hydrant located approximately as shown on the boring location plan. Based on this benchmark, the surface elevations at borings DB-1 and DB-2 locations were 99.5 and 98.5 feet respectively. The elevations on the boring logs have been rounded to the nearest 1/2 foot. The locations and elevations of the borings should be considered accurate only to the degree implied by the methods used to define them.

A truck-mounted rotary drill rig equipped with continuous flight augers was used to advance the boreholes. Representative samples were obtained by the split-barrel and thin-walled tube sampling procedures.

The split-barrel sampling procedure uses a standard 2-inch O.D. split-barrel sampling spoon that is driven into the bottom of the boring with a 140-pound drive hammer falling 30 inches. The number of blows required to advance the sampling spoon the last 12 inches, or less, of a typical 18-inch sampling interval or portion thereof, is recorded as the standard penetration resistance value, N. The N value is used to estimate the in-situ relative density of cohesionless soils and, to a lesser degree of accuracy, the consistency of cohesive soils and the hardness of sedimentary bedrock. In the thin-walled tube sampling procedure, a seamless steel tube with a sharpened cutting end is hydraulically pushed into the bottom of the boring to obtain a relatively undisturbed cohesive soil sample. The sampling depths, penetration distances, and the N values are reported on the boring logs. The samples were tagged for identification, sealed to reduce moisture loss and returned to the laboratory for further examination, testing and classification.

An automatic Standard Penetration Test (SPT) drive hammer was used to advance the split-barrel sampler. The automatic drive hammer achieves a greater mechanical efficiency when compared to a conventional safety drive hammer operated with a cathead and rope. We considered this higher efficiency in our interpretation and analysis of the subsurface information provided with this report.

Geotechnical Engineering Report

Proposed Building Addition - Southgate Elementary School ■ Moore, Oklahoma

September 9, 2015 ■ Terracon Project No. 03155149



Field logs were prepared as part of the drilling operations. These boring logs included visual classifications of the materials encountered during drilling and the field personnel's interpretation of the subsurface conditions between samples. The final boring logs included with this report may include modifications based on observations and tests of the samples in the laboratory.

As required by the Oklahoma Water Resources Board, any borings deeper than 20 feet, or borings that encounter groundwater or contaminated materials must be grouted or plugged in accordance with Oklahoma State statutes. One boring log must also be submitted to the Oklahoma Water Resources Board for each 10 acres of project site area. Terracon grouted the borings and submitted a log in order to comply with the Oklahoma Water Resources Board requirements.

BORING LOG NO. DB-1

Page 1 of 2

PROJECT: Proposed Building Addition - Southgate Elementary School

CLIENT: AGP - the Abila Griffin Partnership, LLC
Moore, Oklahoma

SITE: 500 North Norman Avenue
Moore, Oklahoma

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	Approximate Surface Elev: 99.5 (Ft.) +/-	8.5	91+/-	5				5-6-6 N=12		16			
	Approximate Surface Elev: 99.5 (Ft.) +/-	14.0	85.5+/-	10				15-22-30 N=52		15		40-15-25	
	Approximate Surface Elev: 99.5 (Ft.) +/-	14.0	85.5+/-	15				30-50/6"		14		39-15-24	
	Approximate Surface Elev: 99.5 (Ft.) +/-	14.0	85.5+/-	20				50/6"		15			
	Approximate Surface Elev: 99.5 (Ft.) +/-	14.0	85.5+/-	25				38-50/3"		14			

Stratification lines are approximate. In-situ, the transition may be gradual.
+Classification estimated from disturbed samples. Core samples and petrographic analysis may reveal other rock types.

Hammer Type: Automatic

Advancement Method:
Power Auger

See Exhibit A-3 for description of field procedures

Notes:
Grass

Abandonment Method:

Backfilled with cuttings above 4'; grouted 4' to 14'; backfilled with cuttings from 14' to termination depth.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

- 7 ft While Drilling
- 26 ft After Boring
- 7.5 ft After 24 Hours

Terracon
4701 North Stiles Avenue
Oklahoma City, Oklahoma

Boring Started: 8/13/2015

Boring Completed: 8/13/2015

Drill Rig: 747

Driller: R. Peters

Project No.: 03155149

Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 03155149 SOUTHGATE ELEMENTARY SCHOOL ADDITION.GPJ

Page 2 of 2

CLIENT: AGP - the Abila Griffin Partnership, LLC
Moore, Oklahoma

[illegible]

Hammer Type: Automatic

Notes:

See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Terracon
4701 North Stiles Avenue
Oklahoma City, Oklahoma

Boring Completed: 8/13/2015

Driller: R. Peters

Exhibit: A-4

	7 ft While Drilling
	26 ft After Boring
	7.5 ft After 24 Hours

BORING LOG NO. DB-2

Page 1 of 2

PROJECT: Proposed Building Addition - Southgate Elementary School

CLIENT: AGP - the Abla Griffin Partnership, LLC
Moore, Oklahoma

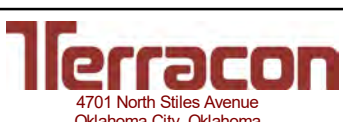
SITE: 500 North Norman Avenue
Moore, Oklahoma

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 03155149 SOUTHGATE ELEMENTARY SCHOOL ADDITION.GPJ

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
												LL-PL-PI	
	Approximate Surface Elev: 98.5 (Ft.) +/-												
	FAT CLAY (CH) , trace sand, dark grayish-brown, very stiff												
		3.5	95+/-			X	10	7-7-9 N=16		18		52-19-33	
	SANDY LEAN CLAY (CL) , dark grayish-brown, very stiff			5		X	12	7-7-9 N=16		18			
		6.0	92.5+/-										
	LEAN CLAY (CL) , red								2200	15	118		
	-red to dark brown, hard below 8.5'			10		X	18	9-12-20 N=32		14			
		13.5	85+/-										
	+HIGHLY WEATHERED SHALE red, soft			15		X	7	50/6"		12			
				20		X	13	15-22-49 N=71		12			
				25		X	14	35-37-50/5"		10			

Stratification lines are approximate. In-situ, the transition may be gradual.
+Classification estimated from disturbed samples. Core samples and petrographic analysis may reveal other rock types.

Hammer Type: Automatic

Advancement Method: Power Auger	See Exhibit A-3 for description of field procedures	Notes: Grass	
Abandonment Method: Backfilled with cuttings above 4'; grouted 4' to 14'; backfilled with cuttings from 14' to termination depth.	See Appendix B for description of laboratory procedures and additional data (if any). See Appendix C for explanation of symbols and abbreviations.		
WATER LEVEL OBSERVATIONS	 4701 North Stiles Avenue Oklahoma City, Oklahoma	Boring Started: 8/13/2015	Boring Completed: 8/13/2015
Dry While Drilling		Drill Rig: 747	Driller: R. Peters
Dry After Boring		Project No.: 03155149	Exhibit: A-5
 24.5 ft After 24 Hours			

BORING LOG NO. DB-2

Page 2 of 2

PROJECT: Proposed Building Addition - Southgate Elementary School

CLIENT: AGP - the Abila Griffin Partnership, LLC
Moore, Oklahoma

SITE: 500 North Norman Avenue
Moore, Oklahoma

GRAPHIC LOG	LOCATION	See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
											LL-PL-PI	
	DEPTH	Approximate Surface Elev: 98.5 (Ft.) +/- ELEVATION (Ft.)										
	<u>+HIGHLY WEATHERED SHALE</u> red, soft <i>(continued)</i>											

APPENDIX B

LABORATORY TESTING

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix C. Samples of bedrock were classified in accordance with the general notes for Sedimentary Rock Classification. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil and rock samples and the test results are presented on the logs in Appendix A. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- Visual Classification (ASTM D2488)
- In-situ Water Content (ASTM D2216)
- Atterberg Limits (ASTM D4318)
- Unconfined Compression Test: (ASTM D2166)
- In-Situ Dry Density (ASTM D2166)
- Sulfate content (EPA Method 300.0)
- pH (EPA Method)

Procedural standards noted above are for reference to methodology in general. In some cases variations to methods are applied as a result of local practice or professional judgment.

Geotechnical Engineering Report

Proposed Building Addition - Southgate Elementary School ■ Moore, Oklahoma
September 9, 2015 ■ Terracon Project No. 03155149

**CORROSION TEST RESULTS**

**PROPOSED BUILDING ADDITION
SOUTHGATE ELEMENTARY SCHOOL
500 NORTH NORMAN AVENUE
MOORE, OKLAHOMA**

Terracon Project No. 03155149

Boring No.	Depth (ft.)	Sulfate mg/kg	pH
DB-1	1.0 - 2.5	806	7.74
DB-2	3.5 - 5.0	384	8.49

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer	
	Auger	Split Spoon			Water Level After a Specified Period of Time		(T)	Torvane	
					Water Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)	
	Shelby Tube	Pressure Meter		Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.			(PID)	Photo-Ionization Detector	
							(OVA)	Organic Vapor Analyzer	
	Texas Cone	Rock Core					(TCP)	Texas Cone Penetrometer	
									
Grab Sample	No Recovery								

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1
	Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8
	Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15
	Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30
				Hard	> 8,000	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E		GW	Well-graded gravel ^F
			Cu < 4 and/or 1 > Cc > 3 ^E		GP	Poorly graded gravel ^F
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH		GM	Silty gravel ^{F,G,H}
			Fines classify as CL or CH		GC	Clayey gravel ^{F,G,H}
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E		SW	Well-graded sand ^I
			Cu < 6 and/or 1 > Cc > 3 ^E		SP	Poorly graded sand ^I
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH		SM	Silty sand ^{G,H,I}
			Fines classify as CL or CH		SC	Clayey sand ^{G,H,I}
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots on or above “A” line ^J		CL	Lean clay ^{K,L,M}
			PI < 4 or plots below “A” line ^J		ML	Silt ^{K,L,M}
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried		Organic silt ^{K,L,M,O}	
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above “A” line		CH	Fat clay ^{K,L,M}
			PI plots below “A” line		MH	Elastic Silt ^{K,L,M}
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried		Organic silt ^{K,L,M,Q}	
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

^A Based on the material passing the 3-inch (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

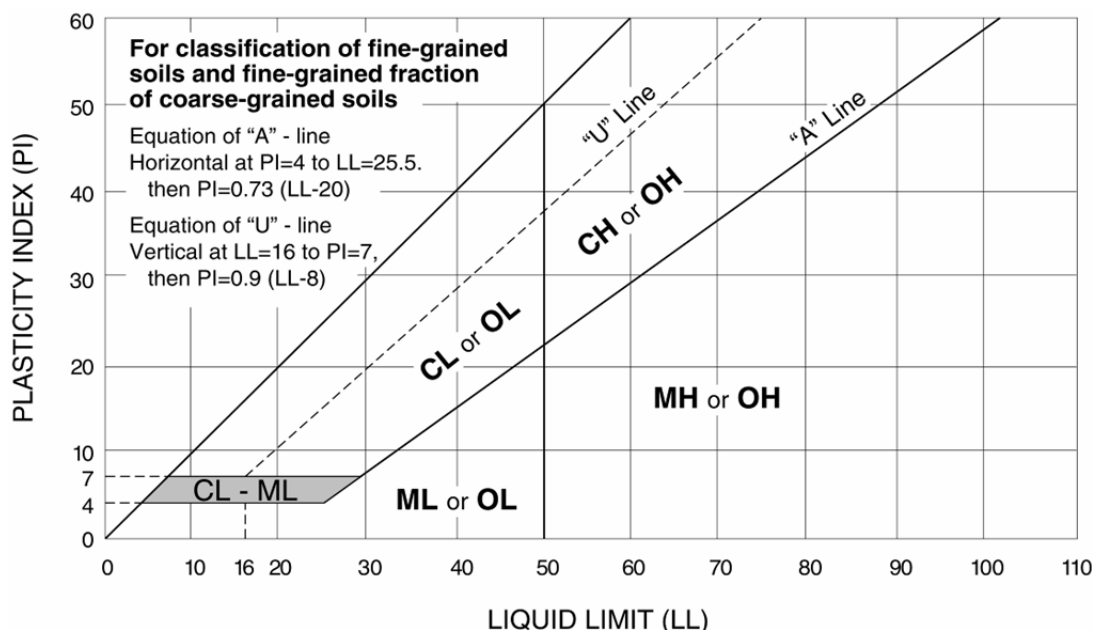
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



Terracon

GENERAL NOTES

Sedimentary Rock Classification

DESCRIPTIVE ROCK CLASSIFICATION:

Sedimentary rocks are composed of cemented clay, silt and sand sized particles. The most common minerals are clay, quartz and calcite. Rock composed primarily of calcite is called limestone; rock of sand size grains is called sandstone, and rock of clay and silt size grains is called mudstone or claystone, siltstone, or shale. Modifiers such as shaly, sandy, dolomitic, calcareous, carbonaceous, etc. are used to describe various constituents. Examples: sandy shale; calcareous sandstone.

LIMESTONE	Light to dark colored, crystalline to fine-grained texture, composed of CaCO_3 , reacts readily with HCl.
DOLOMITE	Light to dark colored, crystalline to fine-grained texture, composed of $\text{CaMg}(\text{CO}_3)_2$, harder than limestone, reacts with HCl when powdered.
CHERT	Light to dark colored, very fine-grained texture, composed of micro-crystalline quartz (SiO_2), brittle, breaks into angular fragments, will scratch glass.
SHALE	Very fine-grained texture, composed of consolidated silt or clay, bedded in thin layers. The unlaminated equivalent is frequently referred to as siltstone, claystone or mudstone.
SANDSTONE	Usually light colored, coarse to fine texture, composed of cemented sand size grains of quartz, feldspar, etc. Cement usually is silica but may be such minerals as calcite, iron-oxide, or some other carbonate.
CONGLOMERATE	Rounded rock fragments of variable mineralogy varying in size from near sand to boulder size but usually pebble to cobble size (1/2 inch to 6 inches). Cemented together with various cementing agents. Breccia is similar but composed of angular, fractured rock particles cemented together.

PHYSICAL PROPERTIES:

DEGREE OF WEATHERING

Slight	Slight decomposition of parent material on joints. May be color change.
Moderate	Some decomposition and color change throughout.
High	Rock highly decomposed, may be extremely broken.

HARDNESS AND DEGREE OF CEMENTATION

Limestone and Dolomite:

Hard	Difficult to scratch with knife.
Moderately Hard	Can be scratched easily with knife, cannot be scratched with fingernail.
Soft	Can be scratched with fingernail.

Shale, Siltstone and Claystone

Hard	Can be scratched easily with knife, cannot be scratched with fingernail.
Moderately Hard	Can be scratched with fingernail.
Soft	Can be easily dented but not molded with fingers.

Sandstone and Conglomerate

Well Cemented	Capable of scratching a knife blade.
Cemented	Can be scratched with knife.
Poorly Cemented	Can be broken apart easily with fingers.

BEDDING AND JOINT CHARACTERISTICS

Bed Thickness	Joint Spacing	Dimensions
Very Thick	Very Wide	> 10'
Thick	Wide	3' - 10'
Medium	Moderately Close	1' - 3'
Thin	Close	2" - 1'
Very Thin	Very Close	.4" - 2"
Laminated	—	.1" - .4"

Bedding Plane A plane dividing sedimentary rocks of the same or different lithology.

Joint Fracture in rock, generally more or less vertical or transverse to bedding, along which no appreciable movement has occurred.

Seam Generally applies to bedding plane with an unspecified degree of weathering.

SOLUTION AND VOID CONDITIONS

Solid	Contains no voids.
Vuggy (Pitted)	Rock having small solution pits or cavities up to 1/2 inch diameter, frequently with a mineral lining.
Porous	Containing numerous voids, pores, or other openings, which may or may not interconnect.
Cavernous	Containing cavities or caverns, sometimes quite large.

Terracon

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: **Southgate Elementary 2026 Kitchen Upgrades and Addition** - Moore Public Schools.
 - 2. Location: 500 North Norman - Moore, Oklahoma.

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 partial demolition, new addition, and renovations/upgrades of an existing (approximately) 2,300 total s.f. kitchen in the existing elementary school noted above plus new sidewalks, and applicable 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:
Tara Malbrough, Director
Arthur Drain, Assistant Director
Jimmy Welch, Procurement / Distribution Manager
Moore Public Schools - Child Nutrition
615 Tower Drive
Moore, OK 73160
405-735-4030
- C. Design Team:
 - 1. Architect:
Mike Abla, Principal Architect
Clay Griffin, Project Manager
AGP
313 SE 5th Street
Moore, OK 73160
405-735-3477
 - 2. Structural Engineer:
Brandon Birch, Structural Engineer
KFC Engineering, Inc.
1300 N. Walker, Suite 200
Oklahoma City, OK 73103

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010-SUMMARY OF THE WORK

3. Mechanical, Electrical and Plumbing Engineers:
Dwayne Gordon, Mechanical Engineer
Salas O'Brien LLC
2900 S. Telephone Rd., Suite 120
Moore, OK 73160
405-364-9926
4. Construction Manager:
Joe Sherga, Project Manager
Omni Construction LLC
1909 S. Eastern Ave.
Moore, OK 73160
405-735-3992

1.04 Work to be Provided and Installed By Others:

- A. Replacement of existing sanitary sewer which serves this area of the building. Work is being performed by Omni Construction LLC under a separate contract / agreement with Moore Public Schools.

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.

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010-SUMMARY OF THE WORK

- C. The attendees shall include:
 - 1. The Owner's Representative(s).
 - 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. Electronic 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 Moore.
- 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

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010-SUMMARY OF THE WORK

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:

- A. Provide and install painted plywood project sign on wooden posts securely erected at the project site in a location approved by the Owner.
- B. No other project signs or advertisement shall be allowed at the project site unless approved by the Owner.
- C. Graphics and form of letter of the project sign shall be as indicated in the attached detail.

1.13 Additional Requirements:

- A. The Construction Manager and all is to take all precautions necessary and required by code to protect the existing masonry walls, etc. to remain including structural support, care in performing work to prevent the possibility of damaging, collapsing, etc. of said walls.

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

DIVISION 2 - SITE WORK

SECTION 02110 - TEMPORARY CONSTRUCTION FENCING

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 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. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Section 07 9200 - 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.

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- 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.

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SECTION 03300 - CAST-IN-PLACE CONCRETE

- 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.

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SECTION 03300 - CAST-IN-PLACE CONCRETE

- 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 3000 - Administrative Requirements, for submittal procedures.
- B. 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.

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SECTION 03300 - CAST-IN-PLACE CONCRETE

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.

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- 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. See Section 01 6000 - Product Requirements.
- 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: See Section 01 6000 - Product Requirements.

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2.08 Liquid Floor Treatments

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ChemMasters; Chemisil Plus.
 - b. ChemTec Int'l; ChemTec One.
 - c. Conspec by Dayton Superior; Intraseal.
 - d. Curecrete Distribution Inc.; Ashford Formula.
 - e. Dayton Superior Corporation; Day-Chem Sure Hard (J-17).
 - f. Edoco by Dayton Superior; Titan Hard.
 - g. Euclid Chemical Company (The), an RPM company; Euco Diamond Hard.
 - h. Kaufman Products, Inc.; SureHard.
 - i. L&M Construction Chemicals, Inc.; Seal Hard.
 - j. Meadows, W. R., Inc.; LIQUI-HARD.
 - k. Metalcrete Industries; Floorsaver.
 - l. Nox-Crete Products Group; Duro-Nox.
 - m. Symons by Dayton Superior; Buff Hard.
 - n. US SPEC, Division of US Mix Products Company; US SPEC Industraseal.
 - o. Vexcon Chemicals, Inc.; Vexcon StarSeal PS Clear.

2.09 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.

2.10 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.

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- 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.

2.11 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.

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- 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.

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SECTION 03300 - CAST-IN-PLACE CONCRETE

- 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 hour 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.

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- 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 black-burnish 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.

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- 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 Liquid Floor Treatments

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
 - 1. Remove sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 - 2. Do not apply to concrete that is less than 28 days old.
 - a. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.10 Field Quality Control

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

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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.
- 3.11 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.

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

3.12 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 and Division 1 Specification Sections, apply to this Section.

1.02 Summary

- A. Section Includes:
 - 1. Clay facing brick.
 - 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 07620 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
- C. 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.
ASTM C 270 - Standard Specification for Mortar for Unit Masonry; 2007.
- I. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout; 2006.
- J. ASTM C 476 - Standard Specification for Grout for Masonry;

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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 Face Brick (Veneer):

- A. Type and Finish: Velour Modular Brick.
- B. Quality: ASTM C-216, Type FBS.
- C. Size: Nominal 4" x 2 2/3" x 8" or as directed / approved by Architect.
- D. Units shall be uniform in all dimensions and texture, straight and free from cracks, spalls and other defects.

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- E. Color: as manufactured by Acme Brick -
 - 1. Color A - to be selected by Architect to match existing. Confirm colors, blend, and layout with Architect.
- 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 (where applicable):
 - 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 (3.8 mm) side rods with 0.1483 inch (3.8 mm) cross rods; width as required to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) 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 (25 mm) and not less than 1/2 inch (13 mm) 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 (1.91 mm) 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 (4.75 mm) thick.
 - 3. Vertical adjustment: Not less than 3-1/2 inches (89 mm).
- 2.04 Flashings:
 - A. Metal Flashing Materials: Galvanized Steel / Prefinished

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Metal as specified in Section 07600.

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.

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. Exterior Mortar Color: SM270 Tanglewood as manufactured by SPEC MIX.
- 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 (200 to 280 mm) as measure according to ASTM C 143/C 143M.

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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. A waterproofing additive will be used in the mortar for brick.
5. 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.
6. 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

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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

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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. Brick: Provide a 3/8" mortar bed with concave tooled horizontal and vertical joints. Refer to drawings for vertical coursing as related to openings and other features. Brickwork is to be brushed down daily to remove large pieces of mortar slag. At completion of brick masonry work, all exposed masonry surfaces shall be thoroughly cleaned and washed down with clean water and a stiff bristled brush or as recommended by the brick manufacturer and as approved by the Design/Builder. The brick masonry work shall be left in a state exhibiting

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properly and fully pointed joints and completely clean surfaces. Subcontractor shall build-in all features of brickwork as shown or indicated on the drawings including weeps, special coursing and or patterned elements.

- J. 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.
- K. Subcontractor shall also furnish all materials save for the brick units as called out above. These materials include 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 (200 mm).
 - 3. Mortar Joints: Concave.
- D. Brick Units:
 - 1. Bond: Running.
 - 2. Coursing: Three units and three mortar joints to equal 8 inches (200 mm).
 - 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. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

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- D. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
 - E. Remove excess mortar and mortar smears as work progresses.
 - F. Interlock intersections and external corners.
 - G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
 - H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
 - I. Provide a 3/8" joint around hollow metal door jambs and window frames to allow for sealant and expansion.
- 3.06 Weeps/Cavity Vents:
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 (900 mm) horizontally and 24 inches (600 mm) vertically.
 - B. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 36 inches (900 mm) 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 (150 mm).
 - E. Reinforce joint corners and intersections with strap anchors 16 inches on center.
- 3.09 Reinforcement and Anchorage - Masonry Veneer:
- A. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally.

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Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

3.10 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.

3.11 Lintels:

- A. Install loose steel lintels over openings.

3.12 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.

3.13 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.

3.14 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.

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- 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.
- 3.15 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.
- 3.16 Cleaning:
- A. Remove excess mortar and mortar droppings.
 - B. Clean soiled surfaces with cleaning solution.
- 3.17 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 - STRUCTURAL STEEL

SECTION 05120 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 Section Includes

- A. Structural steel framing members.
- B. Base plates, shear stud connectors and anchor rods.
- C. Grouting under base plates.

1.02 Related Requirements

- A. Section 05 2100 - Steel Joist Framing.
- B. Section 05 3100 - Steel Decking: Support framing for small openings in deck.
- C. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.

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. AISC (MAN) - Steel Construction Manual.
- C. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
- D. AISC 360 - Specification for Structural Steel Buildings.
- E. ASTM A6/A6M - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
- F. ASTM A29/A29M - Standard Specification for Steel Bars, Carbon Alloy, Hot-Wrought, General Requirements.
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- H. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- I. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- J. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- K. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- L. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- M. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- N. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
- O. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric).

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- P. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
 - Q. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.
 - R. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
 - S. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
 - T. ASTM E94/E94M - Standard Guide for Radiographic Examination Using Industrial Radiographic Film.
 - U. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments.
 - V. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry.
 - W. ASTM E709 - Standard Guide for Magnetic Particle Testing.
 - X. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
 - Y. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
 - Z. ASTM F1852 - Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - AA. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
 - AB. AWS D1.1/D1.1M - Structural Welding Code - Steel.
 - AC. ICC (IBC)-2015 - International Building Code.
 - AD. MPI #79 - Primer, Alkyd, Anti-Corrosive for Metal.
 - AE. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections.
 - AF. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").
 - AG. SSPC-SP 3 - Power Tool Cleaning.
 - AH. SSPC-SP 6 - Commercial Blast Cleaning.
- 1.04 Submittals
- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
 - B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections.
 - 3. Indicate cambers and loads.
 - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

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- C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
- D. Product Data: For shop primers, include manufacturer's technical information including basic materials analysis and application instructions.
- E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
- F. Delegated Connection Design Submittal: Provide delegated connection design submittals as required by the General Notes included in the Project Drawings.
- G. Erection Sequence: Provide erection sequence submittal as required by the General Notes included in the Project Drawings.

1.05 Quality Assurance

- A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."
- B. Fabricator Qualifications:
 - 1. A steel fabricator specializing in performing the work of this section with minimum 10 years of experience.
- C. Erector Qualifications:
 - 1. An erector specializing in performing the work of this section with minimum 5 years of experience.
- D. Delegated Connection Designer Qualifications: Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of steel connections and licensed in the State in which the Project is located.

1.06 Delivery, Storage And Handling

- A. Comply with the requirements of the General Conditions and of ASTM A6/A6M, including the following.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- C. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.

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3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F1852 fasteners and for retesting fasteners after lubrication.

PART 2 - PRODUCTS

2.01 Materials

- A. Steel Angles, Plates, and Channels: ASTM A36/A36M.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade C.
- D. Pipe: ASTM A53/A53M, Grade B, Finish black.
- E. Headed Stud Anchors: AWS D1.1 Type B, ASTM A29 Grades 1010 through 1020.
- F. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A and galvanized in compliance with ASTM A153/A153M, Class C.
- G. High-Strength Structural Bolts, Nuts, and Washers: ASTM A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade C heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
- H. Tension Control Bolts: Twist-off type: ASTM F1852.
- I. Unheaded Anchor Rods: ASTM F1554, Grade 55, Supplementary Requirement S1, Weldable, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.
- J. Deformed Bar Anchors: AWS D1.1/D1.1M Type C, ASTM A1064 Grade 70.
- K. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- L. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 1. Minimum Compressive Strength at 48 Hours: 3000 pounds per square inch.
 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
 3. Height Change, Plastic State; when tested according to ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
- M. Shop and Touch-Up Primers: As required below, complying with VOC limitations of authorities having jurisdiction.
 1. Steel Exposed to Exterior Weather or an Uncontrolled Environment: Two-component, high performance, zinc-rich, aromatic urethane, compatible with topcoat and complying with SSPC-Paint 20.

DIVISION 5 - STRUCTURAL STEEL

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2. Interior Steel: Fabricator's standard lead- and chromate-free, non-asphaltic, rust-inhibiting primer complying with MPI #79 and compatible with topcoat.
- N. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
- 2.02 Fabrication
 - A. Shop fabricate to greatest extent possible. Fabricate according to AISC 303 and to AISC 360.
 - B. Fabricate connections for bolt, nut, and washer connectors.
 - C. Develop required camber for members.
 - D. Fabricated uncambered beams with rolling camber up.
- 2.03 Finish
 - A. Prepare structural component surfaces in accordance with SSPC-SP3 for interior steel or SSPC-SP6 for all steel exposed to exterior weather or an uncontrolled environment.
 - B. Shop prime structural steel members:
 1. Do not prime surfaces that will be galvanized, fireproofed, field welded, in contact with concrete, or [in slip surfaces of slip-critical connections].
 2. All steel exposed to exterior weather or an uncontrolled environment shall be blast cleaned and primed with a submitted and approved zinc-rich primer.
 3. Interior steel shall be shop primed with the fabricators standard shop primer.
 - C. Galvanize structural steel members to comply with ASTM A123/A123M.
- 2.04 Source Quality Control & Quality Assurance
 - A. Unless the fabricator is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel, an independent testing agency will perform Special Inspections and field quality control and quality assurance tests in the fabricator's shop as required by Chapter 17 of ICC (IBC)-2015 and Chapter N of AISC 360. Refer to the following parts of the structural drawings for additional Special Inspection requirements.
 1. Statement of Special Inspection Notes
 2. Two tables titled "Required Verification and Inspection of Steel Construction"

PART 3 - EXECUTION

3.01 Examination

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

DIVISION 5 - STRUCTURAL STEEL

SECTION 05120 - STRUCTURAL STEEL FRAMING

3.02 Erection

- A. Erect structural steel in compliance with AISC 303.
- B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing. Refer to the "Construction Loads and Stability" section of the General Notes in the Project Drawings for additional information and requirements.
- C. Field weld components, deformed bar anchors and shear studs indicated on shop drawings.
- D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".
- E. Do not field cut or alter structural members without approval of Structural Engineer.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for non-shrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 Field Quality Control & Quality Assurance

- A. An independent testing agency will perform Special Inspections and field quality control and quality assurance tests as required by Chapter 17 of ICC (IBC)-2015 and Chapter N of AISC 360. Refer to the following parts of the structural drawings for additional Special Inspection requirements:
 - 1. Statement of Special Inspection Notes
 - 2. Two tables titled "Required Verification and Inspection of Steel Construction"

END OF SECTION

DIVISION 5 - STRUCTURAL STEEL

SECTION 05310 - STEEL DECKING

PART 1 - GENERAL

1.01 Section Includes

- A. Roof deck.
- B. Supplementary framing for openings up to and including 8 inches.
- C. Bearing plates and angles.

1.02 Related Requirements

- A. Section 05 1200 - Structural Steel Framing: Support framing for openings larger than 8 inches and shear stud connectors.
- B. Section 05 2100 - Steel Joist Framing: Support framing for openings larger than 8 inches.
- C. Section 05 5000 - Metal Fabrications: Steel angle concrete stops at deck edges.

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. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- E. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- F. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel.
- G. ICC (IBC)-2015 - International Building Code.
- H. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks.
- I. SDI (QA/QC) - Standard for Quality Control and Quality Assurance for Installation of Steel Deck.
- J. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

1.04 Submittals

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.
- C. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.
- D. Submit manufacturer's installation instructions.

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SECTION 05310 - STEEL DECKING

- E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
- 1.05 Quality Assurance
 - A. Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck shall be in accordance with the quality assurance inspection requirements of SDI (QA/QC).
 - B. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.
- 1.06 Delivery, Storage, And Handling
 - A. Cut plastic wrap to encourage ventilation.
 - B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 - PRODUCTS

- 2.01 Steel Deck
 - A. Roof Deck: Non-composite type, fluted steel sheet:
 - 1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G60/Z180 galvanized coating.
 - 2. Structural Properties: As indicated in General Notes.
- 2.02 Accessory Materials
 - A. Bearing Plates and Angles: ASTM A36/A36M steel, galvanized per ASTM A123/A123M.
 - B. Welding Materials: AWS D1.1/D1.1M.
 - C. Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.
 - D. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
 - E. Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.
- 2.03 Fabricated Deck Accessories
 - A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 20 gauge, 0.0359 inch thick sheet steel; of profile and size as indicated; finished same as deck.
 - B. Roof Sump Pans: Formed sheet steel, 14 gauge, 0.0747 inch minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, sealed watertight.

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SECTION 05310 - STEEL DECKING

PART 3 - EXECUTION

3.01 Examination

- A. Verify existing conditions prior to beginning work.

3.02 Installation

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.
- B. On concrete and masonry surfaces provide minimum 4 inch bearing.
- C. On steel supports provide minimum 2 inch bearing at discontinuous ends of deck and minimum 3 inch bearing length of continuous roof deck over interior supports.
- D. Fasten deck to steel support members as indicated at spacings indicated on the drawings using methods specified.
- E. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.
- F. Where roof deck changes direction, install 6 inch minimum wide sheet steel cover plates, of same thickness as deck. Attach both sides of cover plate to roof deck below with the same fasteners and spacings as required for deck to supports.
- G. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.
- H. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.

3.03 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 and SDI (QA/QC). Refer to the following parts of the structural drawings for additional Special Inspection requirements:
 - 1. Statement of Special Inspection Notes
 - 2. Table titled "Required Inspection of Cold-Formed Steel Deck"
- B. Concurrent with the submittal of special inspection reports to the Owner's Representative, the special inspector shall submit to the Owner's Representative and the Installer a list of nonconforming items.

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 and Division 1 Specification Sections, apply to this Section.

1.02 Summary

- A. This Section includes the following:
 - 1. Exterior and interior non-load-bearing wall framing.
 - 2. Soffit joist framing.
- B. Related Sections include 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.

DIVISION 5 – METALS

SECTION 05400 – COLD-FORMED METAL FRAMING

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.

DIVISION 5 – METALS

SECTION 05400 – COLD-FORMED METAL FRAMING

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 Exterior 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).

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SECTION 05400 – COLD-FORMED METAL FRAMING

- 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.

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SECTION 05400 – COLD-FORMED METAL FRAMING

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.

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SECTION 05400 – COLD-FORMED METAL FRAMING

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

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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

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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 Exterior Non-Load-Bearing Wall Installation

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to bottom track, unless otherwise indicated. Fast both flanges to top track if required by deflection option selected. Space studs as follows:
 - 1. Stud Spacing: 16 inches (406 mm).
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 - 1. Single Deflection Track Option: Install single-leg deflection tracks and anchor to building structure.
 - 2. Double Deflection Track Option: Install double deep-leg deflection tracks and anchor outer track to building structure.
 - 3. Deflection Clip Option: Connect vertical deflection clips to infill studs and anchor to building structure.

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- E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches (1220 mm) apart. Fasten at each stud intersection.
 - 1. Top Bridging for Single Deflection Track Option:
Install row of horizontal bridging within 12 inches (305 mm) of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - a. Install solid blocking at maximum 96-inch (2440-mm) centers and as shown on approved Shop Drawings.
 - 2. Bridging Options:
 - a. Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
 - b. Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - c. Proprietary bridging bars installed according to manufacturer's written instructions.
 - F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system.
- 3.04 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.

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- 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.

3.05 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.

3.06 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 - STRUCTURAL STEEL

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 Section Includes

- A. Shop fabricated steel items.

1.02 Related Requirements

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 05 1200 - Structural Steel Framing: Structural steel column anchor bolts.
- D. Section 05 2100 - Steel Joist Framing: Structural joist bearing plates, including anchorage.
- E. Section 05 3100 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.
- F. Section 05 5100 - Metal Stairs.

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. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- J. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- K. MPI #79 - Primer, Alkyd, Anti-Corrosive for Metal.
- L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

DIVISION 5 - STRUCTURAL STEEL

SECTION 05500 - METAL FABRICATIONS

1.04 Submittals

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.
 - a. Include the following, as applicable:
 - 1) Design criteria.
 - 2) Engineering analysis depicting stresses and deflections.
 - 3) Member sizes and gauges.
 - 4) Details of connections.
 - 5) Support reactions.
 - 6) Bracing requirements.

PART 2 - PRODUCTS

2.01 Materials - Steel

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- F. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- G. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- I. Shop and Touch-Up Primer: As required below, complying with VOC limitations of authorities having jurisdiction.
 - 1. Steel Exposed to Exterior Weather or an Uncontrolled Environment: Two-component, high performance, zinc-rich, aromatic urethane, compatible with topcoat and complying with SSPC-Paint 20.
 - 2. Interior Steel: Fabricator's standard lead- and chromate-free, non-asphaltic, rust-inhibiting primer complying with MPI #79 and compatible with topcoat.

DIVISION 5 - STRUCTURAL STEEL

SECTION 05500 - METAL FABRICATIONS

- J. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.

2.02 Fabrication

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 Fabricated Items

- A. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking and joists; prime paint finish.
- B. Lintels: As detailed; prime paint finish.
- C. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; prime paint finish.
- D. Elevator Hoistway Divider Beams: Beam sections; prime paint finish.
- E. Toilet Partition Suspension Members: Steel channel sections; prime paint finish.

2.04 Finishes - Steel

- A. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP3 for interior steel or SSPC-SP6 for all steel exposed to exterior weather or an uncontrolled environment.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 Fabrication Tolerances

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.

DIVISION 5 - STRUCTURAL STEEL

SECTION 05500 - METAL FABRICATIONS

- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 - EXECUTION

3.01 Examination

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 Preparation

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 Installation

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.04 Tolerances

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

DIVISION 6 - WOOD & PLASTIC

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 trade mark 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 trade marks 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 with 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.

DIVISION 6 - WOOD & PLASTIC

SECTION 06100 - ROUGH CARPENTRY

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 WWP).
 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 AWP C20 (lumber) and AWP C27 (plywood). Identify fire-retardant treated wood with appropriate classification

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SECTION 06100 - ROUGH CARPENTRY

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. 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.

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SECTION 06100 - ROUGH CARPENTRY

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

DIVISION 6 - WOOD & PLASTIC

SECTION 06200 - FINISH 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.
- B. The erection of wall and partition wood finish materials, installation of door and hardware, and shelving incidentals necessary to finish the carpentry.

1.02 Related Work Specified Elsewhere:

- A. Wood Doors - Section 08200
- B. Hardware and Specialties - Section 08700
- C. Painting - Section 09900

1.03 Quality Assurance:

- A. Standards:
 - 1. Architectural Woodwork Institute:
 - a. Architectural Woodwork Quality Standards.
 - 2. National Electrical Manufacturers Association:
 - a. NEMA Publication LD-1.
 - 3. Western Wood Products Association:
 - a. Standard Grading Rules for Western Lumber.
 - 4. American Plywood Association:

1.05 Product Delivery, Storage and Handling:

- A. All finish materials, trim, etc. shall be inspected to ensure that no sub-grade, defective, or machine-marked pieces are installed.

Part 2 - Products

2.01 General:

- A. Grades specified shall conform to the most recent grading rules of the association or bureau under whose rules the lumber is produced.
- B. Quality standards specified shall conform to the latest edition of the Architectural Woodwork Institute's "Quality Standards".
- C. Lumber shall be kiln-dried to 10% to 12% moisture content which shall be maintained during the fabrication of millwork and cabinetry.

Part 3 - Execution

3.01 Miscellaneous Trim and Frames:

- A. Install all trim in longest possible lengths. Stagger joints in adjacent member. Cope at returns and miter at corners. Attach securely in place with fine finishing nails where exposed; set for filling.

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SECTION 06200 - FINISH CARPENTRY

- B. Immediately prior to final inspection of building, the contractor shall repair or replace all millwork or cabinetry items which have been damaged in any way.

End of Section

DIVISION 6 - WOOD & PLASTIC

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. AWPB Standard P-5 (Preservative)
 - b. AWPB 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

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 07195 - Vapor Retarder.

Part 3 - Execution

3.01 Installation - Wall Waterproofing:

- A. Location: Apply to all exterior concrete and masonry wall 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

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SECTION 07100 - WATERPROOFING

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 07150 - DAMPPROOFING

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. Waterproofing - Section 07100
- B. Sealants - Section 07900

1.03 Quality Assurance

- A. Standards:
 - 1. Federal Specifications:
 - a. SS-C-153B, Cement, Bituminous, Plastic.
 - b. SS-A-701B, Asphalt, Weatherproofing.
 - 2. American Society for Testing and Materials:
 - a. ASTM D-250, Asphalt Saturated Asbestos Felts.

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. Asphalt Saturated Felt: ASTM D-250, Un-perforated, #15.
- E. Accessories: As recommended by manufacturer.

Part 3 - Execution

3.01 Installation - Cavity Wall Dampproofing:

- A. General - Masonry and Concrete:
 - 1. Repoint all holes, cracks and mortar joints and allow to dry before waterproofing and dampproofing.
 - 2. Sweep wall base, including concrete slab, clean of dirt and mortar droppings immediately prior to application of waterproofing and dampproofing cavity walls.
 - 3. Do not apply until all surfaces are completely dry and clean.
 - 4. Do not apply until all surfaces are completely dry and clean.
 - 5. Sight exposed mastic and membrane not allowed.
- B. Wall Base Waterproofing:
 - 1. Location: Apply at base of outer face of concrete walls and outer face of inner wythe at all exterior masonry cavity walls.
 - 2. At intersection of outer face of inner wythe with concrete slab, provide a 2" radius cove built up with asphalt plastic cement.

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SECTION 07150 - DAMPPROOFING

3. At wall base, embed a strip of plastic flashing in Plastic Cement. Lap all joints 8" minimum and seal with joint sealant. Seal completely around piping, conduit, etc. provide minimum joints using longest sheets of flashing practicable. Seal all punctures. Top edge of membrane shall be a minimum of 8" above concrete slab, worked into curve of plastic cement cover, down, and outward on concrete slab or steel shelf angle to outer wythe.
- C. Cavity Wall Dampproofing:
 1. Apply to outer face of inner wythe masonry cavity walls.
 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 masonry ties, inserts, anchor slots, conduit, pipes, electrical boxes, etc.

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: Glass fiber reinforced polyisocyanurate core with foil facing each side (glass fiber facing at roof insulation), and a compressive strength of 25 p.s.i. and a maximum water vapor transmission rate of >.03 perm-inch.
 - a. Application: 2 layers of rigid insulation. First layer shall be 2" thick / second layer shall be 2" thick for a total thickness of 4" with a minimum total thermal resistance of R-24, for installation above metal decking and exterior wall at cavities. Refer to Drawings.
 - 2. 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.

DIVISION 7 - THERMAL & MOISTURE PROTECTION

SECTION 07200 - INSULATION

- B. Fibrous Insulation: ASTM C 665-84, Type 1
 - 1. Type:
 - a. 6" thick (approx.) mineral wool or fiberglass fire resistant insulating blanket or batt, with kraft paper facing. Thermal resistance R-19. Refer to Drawings for locations.
- C. Vapor Retarder:
 - 1. Roof Deck Installation:
 - a. Two layers of high strength kraft paper laminated with an adhesive and reinforced at edges with fiberglass yarns.
 - b. Type Example: Permstop - Owens Corning.

Part 3 - Execution

3.01 Installation - Rigid Insulation:

- A. Install rigid insulation horizontally against back-up wall, or to roof deck, as shown on the Drawings.
- B. **Rigid insulation and other components applied to metal decking at membrane roofing shall be fastened with approved fasteners at the rate of 1 per 2 square feet to meet FM I-90 requirements.**
- C. Install 2 layers of rigid insulation to metal roof deck and at wall cavity. Stagger joints of insulation to provide continuous insulation coverage.
- D. 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.
- E. 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.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 07260 - VAPOR BARRIER

- 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.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 07260 - VAPOR BARRIER

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

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Part 1 - General

1.01 Section Includes:

- A. Preparation of Substrate to Receive Roofing Materials
- B. Roof Insulation Application to Prepared Substrate
- C. Roof Membrane Application
- D. Roof Flashing Application
- E. Incorporation of Sheet Metal Flashing Components and Roofing Accessories into the Roof System

1.02 Products Installed But Not Furnished Under This Section:

- A. Sheet Metal Flashing and Trim
- B. Sheet Metal Roofing Specialties

1.03 Related Sections:

- A. Roof Decks - Section 05310
- B. Rough Carpentry - Section 06100
- C. Insulation - Section 07200
- D. Flashing & Sheet Metal Section 07600

1.04 Reference Standards:

References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout these specifications.

ASTM	American Society for Testing and Materials Philadelphia, PA
FM	Factory Mutual Engineering and Research Norwood, MA
NRCA	National Roofing Contractors Association Rosemont, IL
OSHA	Occupational Safety and Health Administration Washington, DC
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Chantilly, VA
UL	Underwriters Laboratories, Northbrook, IL

1.05 Description Of Work:

- A. **Project Type:** New installation.
Deck: Metal Slope: **3/8 inch ±** per foot.
- B. **Rigid Insulation:**
 - 1. Top and Bottom Layers: Polyisocyanurate, having a total thickness of **4"** - top layer of 2" and bottom layer of 2". Refer to Section 07200, Insulation.
 - 2. Crickets: Polyisocyanurate (tapered) providing a roof slope to roof drains (refer to Drawings.)
- C. **Gypsum sheathing panel:** having a thickness of 1/2 inch, mechanically attached, as per FM I-90 requirements.
- D. **Roof System:** Modified Bitumen Base, applied in cold adhesive; stripping and Flashing, applied in cold adhesive.

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Modified Bitumen Finish Ply applied in cold adhesive.

- E. **Flashing System:** SBS with continuous metal-foil surfacing, torch applied.

1.06 Submittals:

- A. Submittals Prior to Contract Award:
 - 1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.
 - 2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.
- B. Submittals Prior to Project Close-out:
 - 1. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.07 Quality Assurance:

- A. Acceptable Products: Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 10 years. The primary roofing products shall have maintained a consistent composition for a minimum of five years.
- B. Agency Approvals: The proposed roof system shall conform to the following requirements. No other testing agency approvals will be accepted.
 - 1. Underwriters Laboratories Class A acceptance of the proposed roofing system without additional requirements for coatings.
- C. Acceptable Contractor: Contractor shall have a minimum of 10 years of experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products for a minimum of 5 years prior to the date of bid opening.
 - 1. Torch Applicators: Contractor shall employ torch applicators who have successfully passed the CERTA (Certified Roofing Torch Applicator) program requirements as provided by the National Roofing Contractors Association (NRCA).
 - 2. The Contractor shall have an office, warehouse with supplies, and permanent roofing crews within a 50 mile radius of Moore, Oklahoma. Contractor shall have had "NDL" (No Dollar Limit) approval for 5 years AT THIS AREA OFFICE from manufacturer and shall perform a

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minimum of ten (10) NDL manufacturer guarantees per year.

- 3. Owner's Roofing Contractor (Universal Roofing and Sheet Metal located in Moore, Oklahoma) shall be utilized on this project. The bid shall be based on the provided drawings, specifications, and agreed-to pricing.**

- D. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full-time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractors Association, amended to include the acceptance of a phased roof system installation.
- E. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.
- F. Manufacturer Requirements: Ensure that the primary roofing materials manufacturer provides direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conducts a final inspection upon successful completion of the project.
- G. Contractor shall have one of the following approved Contractor Certification levels prior to bid opening:
 - Johns Manville - Peak Advantage Contractor
 - Soprema - Soprema Certified Applicator
 - Siplast - Siplast Select Applicator
 - GAF - Master Select Contractor

1.08 Product Delivery Storage And Handling:

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. Storage: Store materials out of direct exposure to the elements. Store roll goods on a clean, flat and dry surface. All material stored on the roof overnight shall be stored on pallets. Rolls of roofing must be stored on ends. Store materials on the roof in a manner so as to preclude overloading of deck and building structure. Store materials such as solvents, adhesives, and asphalt cutback products away from open flames, sparks, or excessive heat.

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Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.

- C. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.
- D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed, and replaced at the Contractor's expense.

1.09 Project/Site Conditions:

A. Requirements Prior to Job Start

- 1. Notification: Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
- 2. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.
- 3. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

B. Environmental Requirements:

- 1. Precipitation: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.
- 2. Temperature Restrictions: At ambient temperatures between 40F and 50F, prepare / warm adhesive as directed by manufacturer.

C. Protection Requirements:

- 1. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.
- 2. Torch Safety: Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas of roof construction. Continue the fire watch after roofing material application has been suspended for the day.
- 3. Limited Access: Prevent access by the public to materials, tools, and equipment during the course of the project.

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4. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
5. Site Condition: Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.

1.10 Guarantee/Warranty:

- A. Roof Membrane Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with **the manufacturer's ten year labor and materials membrane guarantee**. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and shall be issued at no additional cost to the Owner. This guarantee shall not exclude random areas of ponding from coverage.

1.11 Products of certain manufacturers are specified herein to simplify descriptions of design, construction, and/or materials only. Only the four systems listed in 2.02 Description of Systems below will be accepted for installation on this project.

Part 2 - Products:

2.01 Roofing System Assembly/Products:

- A. Rigid Roof Insulation: Roof insulation shall be UL and FM approved. Insulation shall be approved in writing by the insulation manufacturer for intended use and for use with the specified roof assembly. Refer to Section 07200.
- B. Recover Board Sheathing Panel for Roof Membrane Substrate: A panel composed of high density fiberboard, non-structural water resistant core material integrally bonded having a nominal thickness of 1/2 inch.
 1. Acceptable Manufacturer: Fiberboard Coated High Density Roof Insulation, by Huebert.
- C. Gypsum Sheathing Panel for Wood/Plywood Surfaces to Receive Flashing Coverage: A panel composed of a gypsum based, non-structural water resistant core material integrally bonded with fiberglass mats on both sides having a nominal thickness of 1/2 inch. The panel surface shall be factory primed with a non-asphaltic primer.
 1. Acceptable Manufacturer: DensDeck Prime Gypsum Roof Board, by Georgia Pacific Corporation; Atlanta, GA

2.02 Description Of Systems:

- A. Roofing Membrane Assembly: A roof membrane assembly consisting of two plies of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, applied over a prepared

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substrate. Both reinforcement mats shall be impregnated/saturated and coated each side with an SBS modified bitumen blend. The roof system shall pass 500 cycles of ASTM D 5849 Resistance to Cyclic Joint Displacement (fatigue) at 14F - or show evidence of other independent testing indicating resistance fatigue, membrane cracking and delamination. Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D 5849 after heat conditioning performed in accordance with ASTM D 5147. The assembly shall possess waterproofing capability, such that a phased roof application, with only the modified bitumen base ply in place, can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system.

1. Acceptable Manufacturer: Johns Manville roof system:
 - a. Modified Bitumen Base, Stripping, and Flashing Reinforcing Ply.
JM DynaBase
 - b. Modified Bitumen Finish Ply
JM DynaGlas FR
 - c. Stripping Ply and Flashing Reinforcing Sheet
JM DynaPly
- B. Flashing Membrane Assembly: A flashing membrane assembly consisting of a prefabricated, reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane with a continuous, channel-embossed metal-foil surfacing. The finish ply shall conform to ASTM D 6298 and the following physical and mechanical property requirements.
 1. Acceptable Manufacturer: Johns Manville flashing system, aluminum finish
 - a. Cant Backing Sheet for Wood/Plywood Surfaces to Receive Flashing Coverage: applicable JM product.
 - b. Metal-Clad Modified Bitumen Flashing Sheet: JM DynaClad Flashing
 - c. Cant Strip: JM FesCant Plus Cant Strips
- C. Catalyzed Acrylic Resin Flashing System: A specialty flashing system consisting of a liquid-applied, fully reinforced, multi-component acrylic membrane installed over a prepared or primed substrate. The flashing system consists of a catalyzed acrylic resin primer, basecoat and topcoat, combined with a non-woven polyester fleece. The resin and catalyst are pre-mixed immediately prior to installation. The use of the specialty flashing system shall be specifically approved in advance by the membrane manufacturer for each application.

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1. Acceptable Manufacturer: Flashing System by Johns Manville; Denver, CO
- D. Additional Roof Systems: The following additional roof systems are acceptable for use in lieu of the specified roof system.
 1. GAF Materials Corp., Wayne, NJ
 - Base Ply B Ruberoid Mop Smooth
 - Finish Ply B Ruberoid Mop FR - cap ply Plus
 - Flashing Sheet B Ruberoid Ultraclad SBS
 - Stripping Ply and Flashing Reinforcing Sheet - Ruberoid Mop Smooth
 2. Soprema, Inc., Wadsworth, OH
 - Base Ply - Elastophene Sanded 2.2
 - Finish Ply - Elastophene LS FR GR
 - Flashing Sheet - Sopralast 50 TV ALU
 - Stripping Ply and Flashing Reinforcing Sheet - Elastophene Sanded 2.2
- 2.03 Roofing Accessories:
 - A. Roofing Adhesives:
 1. Membrane Cold Adhesive: An asphalt, solvent blend conforming to ASTM D 3019, Type III requirements.
 - a. Acceptable Manufacturer: MBR Cold Application Adhesive by Johns Manville; Denver, CO
 - B. Bituminous Cutback Materials:
 1. Primer: An asphalt, solvent blend conforming to ASTM D 41 requirements.
 2. Mastics: An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D 4586 Type II requirements.
 - C. Sealant: A moisture-curing, non-slump elastomeric sealant designed for roofing applications. The sealant shall be approved by the roof membrane manufacturer for use in conjunction with the roof membrane materials.
 - D. Ceramic Granules: No. 11 grade specification ceramic granules of color scheme matching the granule surfacing of the finish ply.
 - E. Metallic Powder: A finely graded metal dust as supplied or approved by the membrane manufacturer, used for covering of bitumen overruns over the foil surfaced membrane.
 - F. Perlite Cant Strips: A cant strip composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The face of the cant shall have a nominal 4 inch dimension.

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G. Fasteners:

1. Gypsum Sheathing Panel Fasteners for Roofing Substrates and Wood/Plywood Flashing Surfaces: Gypsum sheathing panel fasteners and plates shall be FM Approved, and/or approved by the manufacturer of the primary roofing products. The fastening pattern for each panel to be used shall be as recommended by the panel manufacturer and approved by the manufacturer of the primary roofing products. Acceptable panel fastener manufacturers for specific substrate types are listed below.
 - a. Wood/Plywood Flashing Surfaces: Gypsum sheathing panel mechanical fasteners shall be factory coated for corrosion resistance. The fastener shall conform meet or exceed Factory Mutual Standard 4470 and when subjected to 30 Kesternich cycles, show less than 15% red rust. Acceptable fastener types for wood/plywood substrates are listed below.
 - 1) A fluorocarbon coated screw type roofing fastener having a minimum 0.220 inch thread diameter. Plates used in conjunction with the fastener shall be a metal type having a minimum 3 inch diameter, as supplied by the fastener manufacturer.
 - b. Acceptable Manufacturer=s:
 - 1) Ultrafast Fastener with UltraFast Round Metal Plates by Johns Manville; Denver, CO
 - 2) Dekfast #12 with Dekfast Steel Hexagonal Plates by Construction Fasteners, Inc.; Wyomissing, PA
 - 3) Standard Roofing Fastener by Olympic Manufacturing Group, Agawam; MA
2. Flashing Reinforcing Sheet Fasteners: Fasteners shall be approved by the manufacturer of the primary roofing products. Acceptable fasteners for specific substrate types are listed below.
 - a. Wood/Plywood Substrates
 - 1) A 12 gauge, spiral or annular threaded shank, zinc coated steel roofing fastener having a minimum 1 inch head.
 - 2) Square Cap by W.H. Maze Co.; Peru, IL
 - 12 Gauge Simplex Nail by the Simplex Nail and Manufacturing Co., Americus, GA
 - 3) Fasteners shall be applied to meet FM-I90 requirements. At crickets, if insulation

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thickness prohibits satisfactory application of fasteners, use adhesive similar to Para-STIK insulation adhesive.

- H. Walktread: A prefabricated, puncture resistant polyester core reinforced, polymer modified bitumen sheet material topped with a ceramic-coated granule wearing surface.
 - 1. Thickness: 0.25 in
 - 2. Width: 32 in
 - 3. Acceptable Manufacturer: DynaTred Roof Walkway Pads by Johns Manville; Denver, CO
- I. Pipe Supports Typical:
 - 1. Roller System: A Aroller-bearing@ pipe support for roof-mounted gas pipes, RTU condensate lines, and electrical conduit up to 4" I.D. or 5"O.D. Pipes rest on a self-lubricating roller system which is made of a stainless steel or glass-filled nylon rod and a sturdy polycarbonate resin roller. Pipe support base shall be manufactured of polycarbonate resin with a roller rod of glass-filled nylon, and stainless steel metal parts.
 - 2. Load Weight: Maximum load weight may not exceed 125 lbs. per pipestand.
 - 3. Spacing: Not to exceed 10 foot centers. Do not exceed 125 lbs. load weight and adjust pipe stand in height to even load.
 - 4. Acceptable Manufacturer: Pillow Block Pipestand Model 4-R, Miro Industries, Inc., 1780 West 2300 South, Salt Lake City, Utah 84119.
- J. Pipe Supports at Turns In Large Piping:
 - 1. Pipe Support Hangers: A Aclevis hanger@ pipe support hanger for roof mounted gas pipes at all large (over 4" I.D.) piping corners, bends, and Atees@/pipe intersections. Pipes rest on a clevis hanger with a support base of stainless steel polycarbonate. All other metal parts are hot-dip galvanized steel.
 - 2. Load Weight: Maximum load weight not to exceed 310 lbs. per pipestand or 155 lbs. on each base.
 - 3. Spacing: Locate Aclevis@ type pipe hangers at all corners, bends, and Atees@/pipe intersections not to exceed 10'-0" o.c. maximum. Do not exceed 310 lbs. load weight (155 lbs. on each base) and make certain each pipestand is adjusted in height to even load at all pipestands.
 - 4. Acceptable Manufacturer: Pillow Block Pipestand Model 6-H, Miro Industries, Inc., 1780 West 2300 South, Salt Lake City, Utah 84119.

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- K. Penetration Dam/Sealer Pockets shall be similar to:
ChemCurb System: gray polyester resin exterior forms, structural sealant and One (1) part self-leveling moisture cure pourable sealer (gray).

Part 3- Execution

3.01 Preparation:

- A. General: Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.

3.02 Substrate Preparation - Metal Deck / Insulation:

- A. Preparation of Wood/Plywood Substrates to Receive Flashing Materials: Mechanically attach the gypsum sheathing panels to all wood/plywood substrates that will be covered with the specified flashing membrane, using the specified screws/plates, at 12 inches o.c. staggered. Cut the cant backing sheet into 12 inch widths and peel the release film from the back of the sheet. Set the sheet into place extending 6 inches onto the field of the roof area and 6 inches up the gypsum sheathing panel surface utilizing minimum 3 inch side laps. Set the cant into place prior to installation of the roof membrane base ply.
- B. Insulation Panel - two layers: Mechanically attach the insulation panels, using the specified fasteners, at a rate of 1 fastener for every 2.7 square feet of panel area (12 per 4' x 8' panel). Increase the fastening frequency by 50% at the perimeter of the roof area and by 75% at the corners. Meet FM I-90 requirements.
- C. Gypsum Sheathing Panels: Install sheathing panels, and any tapered insulation in hot asphalt, with end joints offset; edges of the panels shall be in moderate contact without forcing applied in strict accordance with the insulation manufacturer's requirements and the following instructions.

3.04 Roof Membrane Installation:

- A. Membrane Application: Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of roofing membrane components shall immediately follow application of base sheet and/or insulation as a continuous operation.
- B. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials including granules and metallic powder, and exercise care in ensuring that the finished application is acceptable to the Owner.

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- C. Priming: Prime metal and concrete and masonry surfaces with a uniform coating of the specified primer.
- D. Membrane Adhesive Application: Membrane adhesive can be applied by roller, squeegee or spray unit. Apply cold adhesive in a smooth, even, continuous layer without breaks or voids. Utilize an application rate of 2 to 2 1/2 gal/sq over irregular or porous substrates. Utilize an application rate of 1 1/2 to 2 gal/sq for interply applications. Double the adhesive application rate at the end laps of granule surfaced sheets. In the areas surrounding details that are to receive the catalyzed acrylic resin primer and flashing system, apply membrane plies in a full coating of the specified elastomeric sealant in lieu of the solvent based adhesive a minimum 8 inches from the base of the penetration or curb.
- E. Bitumen Consistency: Cutting or alterations of bitumen, primer, and sealants will not be permitted.
- F. Roofing Application: Apply all layers of roofing free of wrinkles, creases, or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets.
 - 1. Apply all layers of roofing perpendicular to the slope of the deck.
 - 2. Fully bond the base ply to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the asphalt applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.
 - 3. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the cold adhesive applicator. Stagger end laps of the finish ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.
 - 4. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds 1/2 inch per foot. The manufacturer shall

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provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.

- G. Granule Embedment: Broadcast mineral granules over all bitumen overruns on the finish ply surface, while the bitumen is still hot or the adhesive is soft, to ensure a monolithic surface color.
- H. Flashing Application - masonry surfaces: Flash masonry parapet walls and curbs using the reinforcing sheet and the metal foil flashing membrane. After the base ply has been applied to the top of the cant, fully adhere the reinforcing sheet, utilizing minimum 3 inch side laps and extend a minimum of 3 inches onto the base ply surface and 3 inches up the parapet wall above the cant. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of 4 inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See manufacturer's schematic for visual interpretation).
- I. Flashing Application B surfaces sheathed with gypsum sheathing panels: After the gypsum sheathing panel and cant backing sheet have been installed, flash parapet walls and curbs with the specified reinforcing sheet and the metal foil flashing membrane. The reinforcing sheet shall have minimum 3 inch side laps and extend a minimum of 3 inches onto the base ply surface and to the top of the parapet wall or curb. Using the specified fasteners, mechanically attach the reinforcing sheet through the field of the sheet to the vertical flashing surface on 12 inch centers from the top of the cant to the top of the wall or curb. Fully adhere the remainder of the flashing reinforcing sheet that extends over the cant and roof level. Using a Leister Hand Welding Tool, seal the laps

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between flashing reinforcing sheets. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of 4 inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See manufacturer's schematic for visual interpretation).

- J. Catalyzed Acrylic Resin Flashing System: Install the liquid-applied primer and flashing system in accordance with the membrane system manufacturer's printed installer's guidelines and other applicable written recommendations as provided by the manufacturer.
 - K. Use of Metallic Powder: Broadcast metallic powder over all bitumen overruns on the metal foil membrane surface while the bitumen is still hot to ensure a monolithic surface color.
 - L. Water Cut-Off: At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.
- 3.05 Roof System Interface With Related Components:
- A. Walktread: Cut the walktread into maximum 5 foot lengths and allow to relax until flat. Adhere the sheet using the specified plastic cement. Apply the specified cement in a 3/8 inch thickness to the back of the product in 5 inch by 5 inch spots in accordance with the pattern as supplied by the walktread manufacturer. Walk-in each sheet after application to ensure proper adhesion. Use a minimum spacing of 2 inches between sheets to allow for proper drainage.
 - B. Sealant: Apply a smooth continuous bead of the specified sealant at the exposed finish ply edge transition to metal

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flashings incorporated into the roof system.

3.06 Field Quality Control And Inspections:

- A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment, and related items after completion of job.
- B. Notification Of Completion: Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.
- C. Final Inspection:
 - 1. Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.
- D. Issuance Of The Guarantee: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

End of Section

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SECTION 07600 - FLASHING AND SHEET METAL

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. Modified Bitumen Membrane Roofing System - Section 07550
- B. Sealants - Section 07900

1.03 Quality Assurance:

- A. Standards:
 - 1. American Society of Testing and Materials
 - a. ASTM A-526, Steel Sheet, Zinc-Coated (Galvanized), Commercial Quality.
 - b. ASTM B-32, Solder Metal
 - 2. Federal Specifications:
 - a. SS-C-153B, Cement, Bituminous, Plastics
 - 3. Sheet Metal and Air Conditioning Contractors National Association:
 - a. Architectural Sheet Metal Manual

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. Prefinished Sheet Metal overflow scuppers and Prefinished Metal Coping:
 - 1. Galvanized iron, prefinished one side.
 - 2. Gauge: 24 gauge, of design and width as detailed.
 - 3. Acceptable manufacturer: Color Klad - Vincent Brass and Aluminum Co.
 - 4. Finish: Kynar 500 - Refer Color Schedule
- B. Sheet Metal:
 - 1. Galvanized Sheet Steel: ASTM A-526, Commercial Quality.
 - 2. Gauge: 22 Gauge minimum or as required by Drawings or Specifications.
- C. Fasteners: Nails, screws, and other fasteners used in conjunction with this work shall be galvanized or cadmium plated.
- D. Solder: ASTM B-32, alloy grade 58, 50% tin, 50% lead.
- E. Flux: Muriatic acid with zinc.
- F. Sealants: Rubber based compound - refer to Section 07900.
- G. Bituminous Plastic Cement: FS SS-C-153B.

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- H. Accessories: Provide accessories as recommended by manufacturer or as indicated on Drawings.

Part 3 - Execution

3.01 Fabrication:

- A. Shape and install sheet metal as indicated on Drawings. Comply with recommendations of SMACNA "Architectural Sheet Metal Manual."
- B. Form exposed faces flat and free of buckles, excessive wave and tool marks. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
- C. Hem all exposed edges.
- D. Make waterproof corner joints by soldering solidly. Joints shall be full-lapped.
- E. Soldering: Shall be done slowly with well heated coppers to thoroughly heat the sheet and completely sweat the solder through the full width of the seam. Ample solder shall be used and the seam shall show a least one full inch of evenly flowed solder. Soldering coppers: Shall be heavy and blunt design, properly tinned before using. Neutralize all excess flux.
- F. Provide for thermal expansion of running trim, flashing and other items exposed for more than 15'-0" continuous length. Locate expansion seams at 10'-0" intervals and 2'-0" each side of corners and intersections.
- G. Angle bottom edges of exposed vertical surfaces to form drips.

3.02 Installation and Application:

- A. General:
 - 1. Furnish those items to be installed by other trades to proper grade for installation.
 - 2. Cooperate with and coordinate installation of sheet metal with roofing work as specified under Modified Bitumen Membrane Roofing System - Section 07550.
 - 3. Install work watertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
 - 4. Embed all flashing in plastic cement. Coat dissimilar metals from contact with bituminous coating.
- B. Metal Coping:
 - 1. Material: 24 gauge, prefinished sheet metal.
 - 2. Fabricate and install in accordance with drawings, and recognized sheet metal practices.
 - 3. Secure coping bedded in plastic cement to blocking.
 - 4. At joints, bed coping in plastic cement and secure on side to backing strip by soldering solid. Do not use screws

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- or nails in exposed face to coping.
5. Lower edge of coping to be securely hooked to hook strip. Secure to wood blocking with No. 8 x 1" galvanized sheet metal screws at 8 o.c.

End of Section

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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

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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: ICB0, SBCCI, BOCA, IBC
- K. NFPA 101 - Life Safety Code
- L. NFPA 70 - National Electric Code

THROUGH-PENETRATION UL CLASSIFICATION SYSTEM

Fire Stopping Systems

UL Classification System

		Construction Penetrated	Type Of Construction	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

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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 or 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 or 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

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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

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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

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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

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- 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

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- 3. Hilti CP 606 Flexible Firestop Sealant
- 4. Hilti CP 604 Self-Leveling Firestop Sealant
- 0. 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

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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

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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

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comply with the following limits for VOC content when calculated according to 40 CFR 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 CFR 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

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include, but are not limited to, the following:

- a. BASF Building Systems.
 - b. Bostik, Inc.
 - c. Lyntal, 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, Grade NF.
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.

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SECTION 07900 - SEALANTS

- 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

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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

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SECTION 07900 - SEALANTS

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

DIVISION 8 - DOORS & WINDOWS

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

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- 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,

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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 1011A 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 591A 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 5 Section "Glazing."
- I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-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:

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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

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- 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

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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.

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- 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

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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.

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- 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 3/4 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. 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 and operates an office, display room and stock.

1.04 Submittals:

- A. Prepare a complete schedule including all items processed for each opening and other miscellaneous item 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.
- 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.

DIVISION 8 - DOORS & WINDOWS

SECTION 08700 - FINISH HARDWARE

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 ASAH & 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. Supplier / Subcontractor shall be responsible for providing ALL materials for a complete and properly functioning installation.
 - 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.**

DIVISION 8 - DOORS & WINDOWS

SECTION 08700 - FINISH HARDWARE

2.02 Hardware Sets:

Hardware Group No. 001: Provide each SGL EXT door with the following:

Quantity		Description	Model Number	Finish	Mfr
1	EA	CONTINUOUS HINGE	224HD HEIGHT AS REQ	628	IVE
1	EA	PANIC HARDWARE	99L-F-BE-03 LENGTH AS REQUIRED	626	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX	626	SCH
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	C627A LENGTH AS REQ	AL	NGP
1	EA	OVERHEAD RAIN DRIP	16A DW + 4"	AL	NGP
1	EA	THRESHOLD	896V LENGTH AS REQ	AL	NGP
REFER TO ELECTRICAL FOR ACCESS, CARD READER, ETC. INFORMATION, ETC.					

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	PRIVACY SET	L9056R 03N OS-OCC	626	SCH
1	EA	STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 003: 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	23-030	626	SCH
1	EA	STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE
3	EA	SILENCER	SR64	GRY	IVE

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	STOREROOM LOCK	L9080T 03N	626	SCH
1	EA	CLASSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	4041 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

DIVISION 8 - DOORS & WINDOWS

SECTION 08700 - FINISH HARDWARE

Hardware Group No. 005: Provide each SGL door(s) with the following:

Quantity	Description	Model Number	Finish	Mfr
3	EA HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA CLASSROOM LOCK	L9070T 03N	626	SCH
1	EA CLASSIC CORE	23-030	626	SCH
1	EA SURFACE CLOSER	4041H OR P4041H MTG BRKTS, SPCRS & PLATES AS REQ 689	LCN	IVE
1	EA KICK PLATE	8400 10" X 1" LDW	630	IVE
1	EA STOP	WS407CCV OR FS436 AS REQUIRED	628	IVE
1	SET SILENCER	SR64	GRY	IVE
1	EA KICKDOWN HOLDER	FS544	628	IVE

The following list of products and manufactures are acceptable for this project.

<u>Product</u>	<u>Manufacture and Approved Equals</u>
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 manufacturer. Complete lockset, including keyed lock cylinder, shall be the product of one manufacturer unless noted otherwise.

DIVISION 8 - DOORS & WINDOWS

SECTION 08700 - FINISH HARDWARE

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.
 - 3. Underwriter's Laboratories, Inc.: UL 9, UL 10B, & UL 10C.
 - 4. National Fire Protection Association: NFPA 80 & NFPA 257.
- 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 1/2" air space - **both sides tempered**. Low Emissivity coating on 3rd glass surface from building exterior.
 - a. Type Example: Solexia Insulated with Low-E, Solarban 60. **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.

DIVISION 8 - DOORS AND WINDOWS

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.

D. 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.

DIVISION 9 - FINISHES

SECTION 09120 - CEILING SUSPENSION SYSTEMS

7. Acceptable Manufacturer: 200 Snap-Grid System, Chicago Metallic Corporation
8. Acoustical "Cloud" Edge Trim:
 - a. Axiom Classic Trim as manufactured by Armstrong World Industries, Inc.
 - b. Commercial quality extruded aluminum alloy 6063 trim channel with factory applied baked polyester paint finish.
 - c. Color - white (to match ceiling grid).
 - d. Height - 8".
 - e. Provide all necessary accessories including, but limited to, corner posts, T-bar connection clips, galvanized steel splice plates, etc. Do not hang acoustical clouds from edge trim.
- 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

DIVISION 9 - FINISHES

SECTION 09120 - CEILING SUSPENSION SYSTEMS

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: **Impact Resistant, Fire-rated**, ASTM C-36 / C-1396, Impact Resistance ASTM E-695, Indentation Resistance ASTM D-5420, Abrasion Resistance ASTM D-4977
- B. Size: 5/8" thick x 48" wide x 96" or as required.
- C. Edges: Tapered.
- D. Location: Where indicated on drawings and / or all exposed locations in entire project areas not receiving ceramic tile or stainless steel panels.

2.02 Gypsum Wallboard:

- A. Type: **Moisture / Mold-Resistant**, ASTM C-36 / C-1396, Moisture / Mold Resistant ASTM D3273, ASTM C-473 (B), core encased in moisture and mold resistant, 100% recycled green face and brown back papers.
- B. Size: 5/8" thick x 48" wide x 96" or as required.
- C. Edges: Tapered.
- D. Location: Where indicated on drawings and / or at substrates for ceramic tile and Stainless Steel panels.

2.03 Fasteners:

- A. Screws: Self-drilling, self-tapping, bugle head, Type S.
- B. Nails: Annular ring: GWB-54.

2.04 Joint Treatment Materials:

- A. Joint Tape: Perforated Tape, ASTM C-475.

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SECTION 09250 - GYPSUM WALLBOARD

- B. Joint Compound: ASTM C-475.
- 2.05 Accessories:
 - A. Metal Edge: Similar to United States Gypsum Trim No. 402.
 - B. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized coated steel sheet.
 - 2. Shapes:
 - a. Cornerbead.
 - b. L-Bead: L-shaped; exposed long flange receives joint compound.
 - c. Expansion (control) joint.
 - d. Curved-Edge Cornerbead: With notched or flexible flanges.
 - C. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep.
 - 1. Minimum Base Metal Thickness: 0.0312 inch.
 - D. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

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

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SECTION 09250 - GYPSUM WALLBOARD

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 Applying Texture Finishes:

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns. Provide light orange peel finish.
- C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.04 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 - CERAMIC WALL 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.
 - 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:

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SECTION 09300 - CERAMIC WALL TILE

1. Joint sealants.
3. 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

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SECTION 09300 - CERAMIC WALL TILE

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 A108.02, 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.

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2. Crossville, Inc.
 3. American Olean; Division of Dal-Tile International Inc.
- 2.02 Ceramic Tile:
- A. Wall Tile and Base Tile:
 1. Type: Glazed porcelain - walls.
 2. Nominal Face Size: 12" x 24" - orient as per Drawings.
 3. Edge: All-purpose cushion.
 4. Acceptable Manufacturer: Daltile - Synchronic.
 - 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-buttet 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. MAPEI Corporation.
 - i. Southern Grouts & Mortars, Inc.
 - j. Summitville Tiles, Inc.
 - k. TEC; a subsidiary of H. B. Fuller Company.
 - D. Grouting Materials:
 1. Wall Tile: Portland Cement Type.

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SECTION 09300 - CERAMIC WALL TILE

2. 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. MAPEI Corporation.
 - i. Southern Grouts & Mortars, Inc.
 - j. Summitville Tiles, Inc.
 - k. TEC; a subsidiary of H. B. Fuller Company.
- E. 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.
- F. 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 g/L or less when calculated according to 40 CFR 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.

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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

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SECTION 09300 - CERAMIC WALL TILE

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. MAPEI 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 A108.0 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

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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 A108.1A 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. Wall Tile, (Gypsum Board).
- 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.

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SECTION 09300 - CERAMIC WALL TILE

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 where applicable.
 - 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.
 - b. Porcelain Wall Tile Panels: 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.

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SECTION 09300 - CERAMIC WALL TILE

- 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 A108.11 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

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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

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SECTION 09301 - QUARRY TILE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: epoxy quarry tile for use as flooring
- B. Related sections:
 - 1. Division 03 Section: Self-Leveling Underlayment
 - 2. Division 07 Section: Joint Sealants
 - 3. Division 09 Section: Concrete and Masonry Coatings
 - 4. Division 09 Section: Waterproofing Membranes

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A108.4, 2005 - Specifications for Ceramic Tile Installed with Organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive.
 - 2. ANSI A108.5, 2005 - Specifications for Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
 - 3. ANSI A108.6, 2005 - Specifications for Ceramic Tile Installed with Chemical-Resistant, Water-Cleanable Tile-Setting and -Grouting Epoxy.
 - 4. ANSI A118.1, 2005 - Standard Specification for Dry-Set Portland Cement Mortar.
 - 5. ANSI A118.3, 2005 - Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy and Water-Cleanable Tile-Setting Epoxy Adhesive.
 - 6. ANSI A118.4, 2005 - Latex-Portland Cement Mortar.
 - 7. ANSI A118.6, 2005 - Standard Ceramic Tile Grouts.
 - 8. ANSI A136.1, 2005 - Organic Adhesives for Installation of Ceramic Tile.
- B. American Society of Testing and Materials (ASTM International)
 - 1. C144 Standard Specification for Aggregate for Masonry Mortar.
 - 2. C150 Specification for Portland Cement
 - 3. C207 Standard Specification for Hydrated Lime for Masonry Purposes.
- C. Tile Council of North America (TCNA)
 - 1. TCA Handbook for Ceramic Tile Installation, 2011.

1.03 SYSTEM REQUIREMENTS

- A. Performance Requirements
 - 1. Absorption (ASTM C67): Not more than 12%.
 - 2. Freeze Thaw Resistance (ASTM C67): Unaffected after 50 cycles.
 - 3. Compressive Strength (ASTM C67): Not less than 4000 psi (27,560 kPa).
 - 4. Bond Strength (ASTM C482): 50 psi (0.3 MPa).

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SECTION 09301 - QUARRY TILE

5. Coefficient of Friction (ASTM C1028): 0.6 dry; 0.6 wet.

6. Breaking Load (ASTM C67): Minimum load 300 lbs

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract Submittal Procedures Section.
- B. Product Data: Submit product data for specified products.
- C. Shop Drawings: Indicate layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, accessories and setting details.
- D. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods and polishes and waxes.
- E. Samples: Submit selection and verification samples of finishes, colors and textures.

1.05 QUALITY ASSURANCE

- A. Qualifications
 - 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project for a minimum of 5 years.
- B. Regulatory Requirements and Approvals: as required.
- C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Architect's acceptance of finish color, texture and pattern and workmanship standard(s). Comply with Quality Control (Mock-Up Requirements) Section.
 - 1. Mock-Up Size: minimum of 4 tiles each direction.
 - 2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required
 - 3. Incorporation: Mock-up may be incorporated into final construction upon Architect's approval.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 01 Product Requirements Section.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at

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SECTION 09301 - QUARRY TILE

temperature and humidity conditions recommended by the manufacturer

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Install mortar, set and grout tile when surface temperature is a minimum of 50 degrees F (10 degrees C) and rising but no greater than 90 degrees F (32 degrees C).
- B. Do not install mortar, set or grout tile when inclement weather conditions are expected within 48 hours of completion.

1.08 EXTRA MATERIALS

- A. Extra materials: Provide _ ft2 of each size, color and surface finish of tile specified.

1.09 **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 TILES

- A. Manufacturer: Daltile; Division of Dal-Tile International Inc.
 - 1. Contact: 7834 C.F. Hawn Freeway, Dallas, TX 75217; Telephone: (800) 933-8453; website: www.daltile.com.
- B. Substitutions: As approved by Architect.
- C. **Refer to Color Schedule for tile color. Colors will a determining factor in tile approval.**

2.02 TILES

- A. Style: Quarry Tile Arid Gray DQ42
- B. Size: 6" x 6"
- C. Color: refer to Room Finish / Color Schedules.

2.04 MATERIALS

- A. Organic Adhesive: ANSI A136.1, thinset bond type; use Type I in areas subject to prolonged moisture exposure.
- B. Epoxy Adhesive: ANSI A118.3, thinset bond type.
- C. Mortar Bed Materials:
 - 1. Portland cement: ASTM C150, type 1, gray.
 - 2. Hydrated Lime: ASTM C207, Type S.
 - 3. Sand: ASTM C144, fine.
 - 4. Latex additive: As approved.
 - 5. Water: Clean and potable.
- D. Mortar Bond Coat Materials:
 - 1. Dry-Set Portland Cement type: ANSI A118.1.
 - 2. Latex-Portland Cement type: ANSI A118.4.
 - 3. Epoxy: ANSI A118.3, 100 percent solids.

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SECTION 09301 - QUARRY TILE

- E. Standard Grout: Sanded cement grout as specified in ANSI A118.6; color as selected.
- F. Epoxy Grout: ANSI A118.8, 100 percent solids epoxy grout; color as selected.
- G. Cleavage Membrane:
 - 1. No. 15 (6.9 kg) asphalt saturated felt, ASTM D226, Type 1
 - 2. Polyethylene film, ASTM D4397, 4.0 mil thickness.
- H. Waterproofing Membrane in accordance with ANSI A118.10:
 - 1. Chlorinated Polyethylene Sheet with polyester fabric reinforcing.
 - 2. Fabric Reinforced, Fluid-Applied elastomeric membrane.
 - 3. Un-Reinforced, Fluid-Applied elastomeric membrane.
 - 4. Polyethylene Sheet Product.
 - 5. Fabric-Reinforced, Modified-Bituminous Sheet Product.
 - 6. Urethane Waterproofing and Tile-Setting Adhesive Product.
- I. 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.
 - 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

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SECTION 09301 - QUARRY TILE

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. MAPEI 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 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
 1. Concrete slabs shall have roughened or troweled surfaces to allow for bonding.
 2. Test concrete slabs for moisture emission rate and alkalinity. Obtain instructions if not within the limits recommended by setting material manufacturer.

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3. Ensure all substrates are clean and free of curing compounds and other contaminants.
4. Maximum substrate variation from required plane shall be 1/8" in 10 feet or as otherwise specified.
- B. Movement joints
 1. Verify that movement joints are installed as detailed in EJ171 of the TCA Handbook

3.03 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.
- E. Prepare substrate surfaces for installation in accordance with adhesive manufacturer's instructions.

3.04 INSTALLATION

- A. Install tile and grout in accordance with applicable requirements of ANSI A108, manufacturer's instructions, and TCA Handbook recommendations.
- B. Consult TCA Handbook for details applicable to each specific installation type.
- C. 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

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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.

D. Slope entire room or area to floor drains.

3.05 CLEANING

- A. Clean with water and soft nylon brushes only; do not allow mortar to set up on surfaces.
 - 1. Excessive water may affect curing of grout and mortar bed.
- B. Do not use acid or alkali cleansers which may damage the surface of the tile.
- C. Test all products before wholesale application.

3.06 PROTECTION

- A. Do not permit traffic over finished floor surface for 72 hours after installation.
- B. Cover floors and protect from dirt and residue from other trades.
- 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

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

KITCHEN ZONE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes

1. Acoustical ceiling panels
2. Exposed grid suspension system – refer other sections.
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings – refer other sections.
4. Perimeter Trim – refer other sections.

B. Related Sections

1. Section 09 500 – Acoustical Treatment
2. Section 09 120 - Ceiling Suspension Systems
3. Section 09 250 - Gypsum Wallboard
4. Division 23 - HVAC Air Distribution
5. Division 26 - Electrical

C. ALTERNATES

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted as approved by the Architect. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be noted. If included in a Bid are substitute products that have not been approved by the architect and included in the Addenda, the originally specified products shall be provided without additional compensation.
2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers; Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
 - 2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
 - 3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
 - 4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - 5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
 - 6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
 - 7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 - 8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
 - 9. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
 - 10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
 - 11. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
 - 12. ASTM E 1264 Classification for Acoustical Ceiling Products
- B. International Building Code
- C. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality
- D. NFPA 70 National Electrical Code
- E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
- F. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
- G. International Code Council-Evaluation Services Report - Seismic Engineer Report
 - 1. ESR 1308 - Armstrong Suspension Systems
- H. International Association of Plumbing and Mechanical Officials - Seismic Engineer Report
 - 1. 0244 - Armstrong Single Span Suspension System
- I. International Well Building Standard

- J. Mindful Materials
- K. Living Building Challenge
- L. U.S. Department of Agriculture BioPreferred program (USDA BioPreferred).
- M. Clean Rooms up to ISO Class 5 (Class 100)

1.4 SYSTEM DESCRIPTION

- A. Continuous/Wall-to-wall

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.
- B. Samples: Minimum 6-inch x 6-inch samples of specified acoustical panel; 8-inch-long samples of exposed wall molding and suspension system, including main runner and 4-foot cross tees.
- C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with or supported by the ceilings.
- D. Acoustical Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification, such as Underwriter's Laboratory (UL), of NRC, CAC, and AC.
 - 1. If the material supplied by the acoustical subcontractor does not have an independent laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of, and replaced with complying product at the expense of the Contractor performing the work.

1.6 SUSTAINABLE MATERIALS

- A. Transparency: Manufacturers will be given preference when they provide documentation to support sustainable requirements for the following: Material ingredient transparency, Removal of Red List Ingredients per LBCV3, Life Cycle impact information, Low-Emitting Materials, and Clean Air performance.
 - 1. Health Product Declaration (HPD). The end use product has a published, complete Health Product Declaration with disclosure at a minimum of 1000ppm of known hazards in compliance with the Health Product Declaration Open Standard.

2. Declare Label. The end use product has a published Declare label by the International Living Future Institute with disclosure of 100 ppm with a designation of Red List Free or Compliant (less than 1% proprietary ingredients).
3. Low Emitting products with VOC emissions data. Preference will be given to manufacturers that can provide emissions data showing their products meet any of the following: CDPH/EHLB/Standard Method v1.2-2017; Indoor Air Quality Certified to SCS-105 v4.2-2023
4. Life cycle analysis. Products that have communicated lifecycle data through Environmental Product Declarations (EPDs) will be preferred.
5. End of Life Programs/Recycling: Where applicable, manufacturers that provide the option for recycling of their products into new products at end-of-life through take-back programs will be preferred.
6. Products meeting LEED V4 requirements including:
 - i. Storage & Collection of Recyclables
 - ii. Construction and Demolition Waste Management Planning
 - iii. Building Life-Cycle Impact Reduction
 - iv. Building Product Disclosure and Optimization Environmental Product Declarations
 - v. Building Product Disclosure and Optimization Sourcing of Raw Materials
 - vi. Building Product Disclosure and Optimization Material Ingredients
 - vii. Construction and Demolition Waste Management

1.7 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer to ensure fit and function.
- B. Installer Qualifications: Company specializing in performing specified work type, a minimum of three years of documented experience, and approved by the manufacturer.
- C. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
- D. Surface Burning Characteristics: Tested per ASTM E 84 and complying with ASTM E 1264 Classification.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.9 PROJECT CONDITIONS

- A. Space Enclosure:
 - 1. HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel, aluminum or stainless-steel suspension systems can be installed up to 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

1.10 ALTERNATE CONSTRUCTION WASTE DISPOSAL

- A. Ceiling material being reclaimed must be kept dry and free from debris.
- B. Before disposing of ceilings, contact the Armstrong Recycling Center at 877-276-7876, select option #1 then #8 to review with a consultant the condition and location of building where the ceilings will be removed. The consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant will help facilitate the process to recycle the ceiling.
- C. Recycling may qualify for LEED Credits:
 - 1. LEED 2009 - Category 4: Material and Resources (MR)
 - i. Credit MRc2: Construction Waste Management
 - 2. LEEDv4 - MRp2
 - i. Construction Waste Management Planning Qualifies as a material stream (non-structural) targeted for diversion. Ceilings will be source-separated and diverted through the Armstrong Ceiling Recycling Program.

1.11 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:
 - 1. Acoustical Panels with HumiGuard® Max and HumiGuard® Plus performance: sagging and warping
 - 2. Acoustical panels with BioBlock® performance: growth of mold and mildew
 - 3. Grid System: rusting and manufacturer's defects

- B. Warranty Period:
 - 1. Ceiling System: Thirty (30) years from date of substantial completion
- C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.12 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - 1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
 - 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Ceiling Panels:
 - 1. Armstrong World Industries, Inc.

2.2 ACOUSTICAL CEILING UNITS

- A. Acoustical Panel Ceilings
 - 1. Surface Texture: Smooth Texture
 - 2. Composition: Mineral Fiber
 - 3. Color: White
 - 4. Size: 24 in x 24 in
 - 5. Edge Profile: Square Lay-in
 - 6. Ceiling Attenuation Class (CAC): ASTM E1414/E1414M; Classified with UL label on product carton: 33
 - 7. Flame Spread: ASTM E 1264; Class A
 - 8. Light Reflectance (LR) White Panel: ASTM E 1477; 0.89
 - 9. Dimensional Stability: HumiGuard Plus
 - 10. Recycle Content: Up to 36% total recycled content. (Total recycled content: pre-consumer, post-consumer and post-industrial)
 - 11. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label
 - 12. Life Cycle Assessment: Third Party Certified Environmental Product Declaration (EPD)
 - 13. Indoor Air Quality Certified to SCS-105 v4.2-2023
 - 14. Basis of Design: **KITCHEN ZONE** as manufactured by Armstrong World Industries, Inc.

15. Substitutions: Refer to Alternates in Part 1.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.
- B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.
 - 1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

- A. Follow manufacturer installation instructions.
- B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.
- C. Suspend main beam from overhead construction with hanger wires spaced 4 feet on center along the length of the main runner. Install hanger wires plumb and straight.
- D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
- E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
- F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

- A. Replace damaged and broken panels.

- B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

END OF SECTION

DIVISION 9 - FINISHES

SECTION 09780 – STAINLESS STEEL WALL PANELS and TRIM

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Stainless steel wall panel protection.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals governed by this section necessary to install the products as specified herein.

1.03 RELATED DOCUMENTS

- A. Drawings and general provisions of Project Specifications including the Special Conditions, apply to work of this section.

1.04 QUALITY ASSURANCE

- A. The material covered by these specifications shall be furnished by a certified manufacturer of proven ability who is regularly engaged in the manufacture, fabrication, and installation of stainless steel systems.
- B. Substitutions of any component or modification of system shall be made only when approved by the Architect.
- C. Fabricator Qualifications: firm experienced in successfully producing stainless steel fabrications similar to that indicated for this project, with sufficient production capacity to produce required units without causing delay in the work.
- D. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.
- E. Material shall conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with ASTM E84 (method of test for surface burning characteristics of building materials) Wall Required Rating – Class C.
- F. Sanitary Standards: system components and finishes to comply with:
 - 1. United States Department of Agriculture (USDA) / Food Safety & Inspection Services (FSIS) requirements for food preparation facilities, incidental contact.
 - 2. Food and Drug Administration (FDA) 2013 Food Code 6-101.11.

1.05 DESIGN CRITERIA

- A. The design of stainless steel panel system, the support structure, and associated structural

DIVISION 9 - FINISHES

SECTION 09780 – STAINLESS STEEL WALL PANELS and TRIM

connections, shall be in accordance with the governing building code(s) and approved standards as applicable.

1.06 SUBMITTALS

- A. Comply with Special Conditions, unless otherwise indicated.
- B. Product Data: Manufacturer's printed product data for each type of stainless steel wall panel system specified.
- C. Detail Drawings: Mounting details with the appropriate adhesives, connections, anchorage methods, etc. for specific project substrates.
- D. Manufacturer's Installation Instruction: Printed installation instructions for stainless steel wall panels.

1.07 PRODUCT HANDLING

- A. Deliver materials in unopened factory packaging to the site.
- B. Inspect materials at delivery to assure that specified products have been received.
- C. Store in original packaging in an interior climate-controlled location away from the elements and direct sunlight.
- D. Protect finished surfaces from soiling (including over exposure to sunlight) and damage during handling and installation. Any material which, in the opinion of the Architect, has become damaged and is unfit for use, shall be promptly replaced by the Construction Manager at no additional cost to the Owner.

1.08 JOB CONDITIONS

- A. Environmental Requirements: Do not install panels until permanent HVAC systems are operating and temperature and humidity have been stabilized to less than 80% for 24 hours in advance of installation and maintained for at least 48 hours after installation as required by the manufacturer's recommendation.
 - 1. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for stainless steel panel installation areas.
 - 2. After installation, control temperature and humidity to maintain relative humidity less than 80%.
- B. Conditions: Do not install panels until interior concrete work, masonry, plastering and other wet operations are complete.

DIVISION 9 - FINISHES

SECTION 09780 – STAINLESS STEEL WALL PANELS and TRIM

- C. Provide ventilation to disperse fumes during application of adhesive.

1.09 WARRANTY

- A. All materials and workmanship covered by this section shall carry a Standard IPC Limited Lifetime Warranty against material and manufacturing defects.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Inpro Corporation, IPC Door and Wall Protection Systems, P.O. Box 406, Muskego, WI 53150 USA; Telephone: 800-222-5556, Website: www.inprocorp.com or approved equal.
- B. Product:
Standard FRP Panels with Smooth Surface with Greenguard Certification for low chemical emissions.

2.02 WALL PANELS:

- A. Stainless Steel Wall Panels: provide stainless steel wall panel systems that include panels, top cap, divider trim, inside and outside corner trim.
 - 1. Dimensions:
 - a. Thickness – 18 gauge – Type 304 nominal
 - b. Width – 4'-0" nominal
 - c. Length – 8'-0" nominal or as indicated on the drawings.

2.03 BASE / MOLDINGS / TRIM:

- A. Stainless Steel Inside and Outside Corner Trim, Stainless Steel Top Caps, and Stainless Steel Divider Trim:
 - 1. 1" x 1" / 1" sightline, 24 gauge, 120" height. Receives edge of adjacent panel and/or top edge of panels. Stainless steel – Type 304 (conforms to NSF Standard 51).
 - 2. Attachment: adhesive mount.

2.04 MATERIALS:

- A. Stainless Steel:
 - 1. Wall Panels -
 - a. Thickness – 18 and 20 gauge.
 - b. Type 304 (conforms to NSF Standard 51).
 - 2. Top Cap, Divider, Inside & Outside Corner Trim -
 - a. Thickness – 24 gauge.
 - b. Type 304 (conforms to NSF Standard 51).

DIVISION 9 - FINISHES

SECTION 09780 – STAINLESS STEEL WALL PANELS and TRIM

2.05 COMPONENTS:

- A. Attachment: Non-staining nylon drive rivets.
 - 1. Panels –
 - a. Panels shall be adhered with field applied heavy duty adhesive and foam tape.
 - 2. Trim Pieces –
 - a. Trim Pieces shall be adhered with field applied heavy duty adhesive.

2.06 FINISH:

- A. Stainless Steel: Panels and corner guards shall have a No.4 satin finish.

PART 3- EXECUTION

3.01 PREPARATION

- A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
- B. Verify that stud spacing does not exceed 16" (61cm) on-center.
- C. Repair defects prior to installation.
- D. Level wall surfaces to panel manufacturer's requirements. Remove protrusions and fill indentations.
- E. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorage materials and miscellaneous items to be mounted to walls / panels.
- F. Surface Preparation: clean the substrate to remove dust, debris, and loose particles. Ensure the substrate is sound and per project plans.

3.02 INSTALLATION

- A. Comply with manufacturer's recommended procedures and installation sequence.
- B. General – locate the wall panels as indicated on the approved detail drawing for the appropriate substrate and in compliance with the installation instructions. Install wall panels level and plumb at the height indicated on the drawings.
- C. Apply panel moldings to all panel edges as required by manufacturer.

DIVISION 9 - FINISHES

SECTION 09780 – STAINLESS STEEL WALL PANELS and TRIM

3.03 CLEANING

- A. Refer to manufacturer's specific cleaning and maintenance instructions.

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.**

DIVISION 9 - FINISHES

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).
 - D. Enamel on Exterior Concrete Block (if applicable):
 - 1. One coat SW Promar Latex Block Filler B25W25.
 - 2. Two coats SW A-100 Semi-Gloss Latex 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 Existing 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. Interior Millwork and Cabinetry:
 - 1. One coat SW Promar 200 Alkyd Enamel Primer/Undercoat.
 - 2. Two coats SW Promar 200 Semi-Gloss Latex Enamel.
 - F. Enamel on Wood Trim:
 - 1. One coat SW Promar 200 Alkyd Enamel Primer/Undercoat.
 - 2. Two coats SW Promar 200 Semi-Gloss Latex Enamel.
 - G. Back-Painting, Interior Work:
 - 1. Two coats SW Promar 200 Alkyd Enamel Primer/Undercoat.

DIVISION 9 - FINISHES

SECTION 09900 - PAINTING

- H. Enamel on Exposed Metal Piping:
 - 1. One coat SW Galvite primer.
 - 2. Two coats SW Promar 200 Semi-Gloss Latex Enamel.

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

DIVISION 9 - FINISHES

SECTION 09900 - PAINTING

- 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 - MARKERBOARDS 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 shop 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. 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.

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 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 except where mounting to glazing is required. Provide adhesive for mounting and provide blank plates at opposite side of glass. Coordinate with Architect.
- D. Color: Black background with white letters/numbers, 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.

DIVISION 10 - SPECIALTIES

SECTION 10400 - INTERIOR SIGNAGE

2.03 Plaque Groupings Required (letter designation refers to 2.04):

Quantity	Plaque	Mounting Location

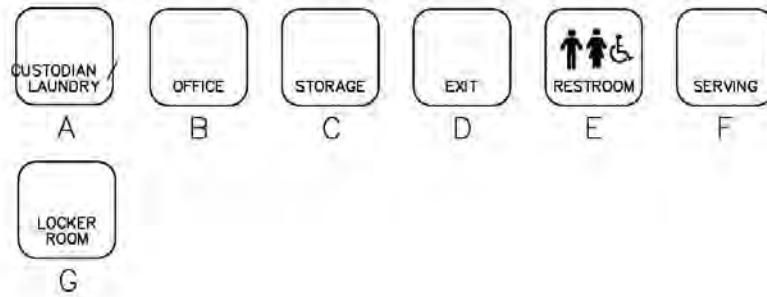
**Coordinate location with Architect

Plaque	Quantity	Location
A	1	@ room no. 6
B	1	@ door no. 5
C	2	@ door no. 4 & room no. 9
D	3	@ doors no. 1, 6, & existing
E	1	@ door no. 2
F	2	@ doors no. 6 & existing
G	3	@ door no. 3

DIVISION 10 - SPECIALTIES

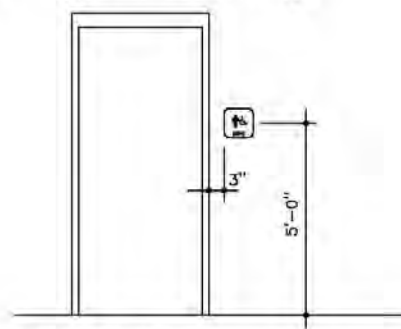
SECTION 10400 - INTERIOR SIGNAGE

2.04 Signage Plaques Required:



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.

DIVISION 10 - SPECIALTIES

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 - SOUTHMOORE HS STADIUM UPGRADES

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 "Quiet" Lockers - at the Kitchen Locker Room - 4 / 8 units:
 - 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.

DIVISION 10 - SPECIALTIES - SOUTHMOORE HS STADIUM UPGRADES

SECTION 10500 - LOCKERS

- 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. Welded construction with reinforced top and bottom with intermediate stiffener ribs, grind and finish all edges smooth.
 - d. Coat Hooks: provide three single prong coat hooks made of cadmium-plated or zinc-plated steel.
 - e. Ventilation: door perimeter and verti-vents.
- 2. Quantity: Refer to Drawings.
- 3. Size: 15"w x 18"d x 36"h per tier for a total locker height of 72".
- 4. Base: None - mount to top of continuous concrete masonry / wood framed 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 - coordinate numbering system with Architect.
- 7. Provide end finishing panels to closeout to adjacent / perpendicular walls and at corners.
- 8. Color: refer to Color Schedule.
- B. General: Locker manufacturer shall provide all appropriate matching trim and closure pieces for a complete and finished installation.
- B. 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

DIVISION 10 - SPECIALTIES - SOUTHMOORE HS STADIUM UPGRADES

SECTION 10500 - LOCKERS

provided.

Secure lockers with anchor devices with a minimum pull-out force of 100 lbs.

Provide any additional items necessary for support or to complete installation.

- C. 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

DIVISION 10 - SPECIALTIES

SECTION 10520 - FIRE PROTECTION SPECIALTIES

- 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 each @ room 2
- B. Grab Bars:
 - 1. Model No. 8120-001420-42".
 - 2. Quantity: 1 each @ room 2
- C. Grab Bars:
 - 1. Model No. 8120-001180-18".
 - 2. Quantity: 1 each @ room 2
- D. Tilted Stainless Steel Mirror (Frame and Surface):
 - 1. Model No. 740-1830.
 - 2. Quantity: 1 each @ room 2 (above lavatory)
- E. Custodian's Utility Shelf/With Mop & Broom Holder:
 - 1. Model No. 9984, 36" long.
 - 2. Quantity: 1 @ room 6
- G. Toilet Paper Dispensers to be provided by Owner and installed by Contractor.
- H. Paper Towel Dispenser to be provided by Owner and installed by Contractor.
- I. Soap Dispenser to be provided by Owner and installed by Contractor.

DIVISION 10 - SPECIALTIES

SECTION 10800 - TOILET AND BATH ACCESSORIES

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

SECTION 11 - EQUIPMENT

11400 - KITCHEN EQUIPMENT

PART 1 - GENERAL

1.01 SCOPE

- A. Include the work specified, shown or reasonably inferred as part of the foodservice equipment. Portions of the work may be subcontracted to those qualified to do the work as required by jurisdictional trade agreements and restrictions.
- B. Kitchen equipment furnished and installed by the Foodservice Contractor In the base bid.
- C. Provide itemized pricing providing both each pricing and total pricing for every item specified with a bid grand total.

1.02 RELATED SECTIONS

- A. Division 03 - Floor depressions, reinforced wearing beds and the interior finished floor with a coved base at walk-in coolers and freezers.
- B. Division 15 - Mechanical rough-ins, inter-connections of the equipment as required and final connections.
- C. Division 16 - Electrical rough-ins, inter-connections of the equipment as required and final connections.

1.03 QUALITY ASSURANCE

- A. All equipment and associated work must comply with all applicable laws, statutes, building codes and regulations of public authorities and comply with the following:
 - 1. NSF (National Sanitation Foundation). All the equipment must bear the NSF label.
 - 2. NEC (National electric Code).
 - 3. UL (Underwriter's Laboratories, Inc.).
 - 4. AGA (American Gas Association Laboratories).
 - 5. NFPA (National Fire Protection Association).
- B. The following are approved fabricators for providing the fabricated food service equipment:

Quality Food Equipment
812 Southeast 82nd Street
Oklahoma City, OK 73149

Jero Manufacturing, Inc.
5117 South 100th East Avenue
Tulsa, Oklahoma 74115

1.04 SUBSTITUTIONS

- A. Equipment items and the components specified are intended to be the basis of the bid. All other manufacturers, including manufactures which may be

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listed as "alternates" or "approved equals" must conform with the specifications, size, accessories, etc. of the original manufacturer specified.

- B. Proposed substitutions will be substituted no later than fourteen (14) days prior to the bid date. Submit the proposed substitutions with the manufacturer's specification or catalog sheets, shop drawings, etc. indicating all modifications required to conform to the specified items.
- C. Approved substitutions will be addressed in an addendum(s). Approved substitutions will be noted on the bid form as a substitution. All costs and fees for any design and engineering services required to make adjustments to the space, systems, utilities, etc. will be the responsibility of the successful bidder. All costs incurred for modifications of the utilities or construction or professional services will be the responsibility of the successful bidder.
- D. The Owner reserves the right to accept or reject any or all of the substitutions proposed before the execution of the contract

1.05 DOCUMENT INTERPERTATION

- A. An addendum(s) will be issued addressing questions and comments from contractors, suppliers or vendors pertaining to the intent or clarity of the construction documents.
- B. All questions and comments will be submitted in writing by the contractors, suppliers and vendors for review.

1.06 SUBMITTALS

- A. Submit brochure books, rough-in drawings, fabrication shop drawings and manufactures shop drawings. Refer to the Special Conditions for the required quantities and format (submittals are to be submitted by electronic files).
 - 1. Brochures:
 - a. Provide with a front and rear cover. Label the front cover with the project name.
 - b. Provide a cover sheet for each item number. The cover sheet will indicate the item number, the item name, the quantity, the manufacture, all optional equipment and accessories, specified modifications, the utility requirements and any special instructions.
 - c. The manufactures catalog specification sheets.
 - 2. Submittal drawings:
 - a. Indicate all equipment shown on the contract documents drawn at a 1/4" scale.

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- b. The contract documents are not to be traced or reproduced.
 - c. Provide an equipment schedule indicating all the equipment shown on the contract documents.
 - d. Drawings to be submitted on the same size drawing sheet as the Contract Documents in a PDF format. Provide the necessary required hard copies of the reviewed/stamped document to the General Contractor. Submit the drawings separately from the Brochure Book.
3. Rough-in drawings:
- a. Indicate all equipment shown on the contract documents drawn at a 1/4" scale.
 - b. Indicate all general use and convenience utilities indicated on the contract documents.
 - c. Include utilities shown on the contract documents but connected to equipment not furnished in this section.
 - d. Fully dimension all the utilities for the plumbing, electrical and mechanical from the finished room surface to the point of the stub-up through the floor and the stub-out through the wall or ceiling.
 - e. Drawings to be submitted on the same size drawing sheet as the Contract Documents in a PDF format. Provide the necessary required hard copies of the reviewed/stamped document to the General Contractor. Submit the drawings separately from the Brochure Book.
4. Manufacturer's and fabricators shop drawings:
- a. Indicate all equipment shown on the contract documents drawn at a 3/4" scale for the plan views and elevations. All sections and details to be drawn at a minimum of 1 1/2" scale.
 - b. Include the equipment name, the item number and the quantity on the drawings.
 - c. Include all required and necessary sections, details and elevations to reflect the drawings and the specifications.
 - d. Indicate all adjacent equipment, walls and columns.
 - e. Include all necessary plumbing and electrical schematic drawings.
 - f. Include any ventilation or access panels as required by the manufactures of the built-in equipment.

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- g. Drawings to be submitted on the same size drawing sheet as the Contract Documents in a PDF format. Provide the necessary required hard copies of the reviewed/stamped document to the Construction Manager. Submit the drawings separately from the Brochure Book.

1.07 COORDINATION OF THE PROJECT AND DATA

- A. Review the contract documents, rough-in drawings, shop drawings and brochure books for accuracy and completeness.
 1. Notify the Architect of any conflicts and required adjustments in writing.
 2. Coordinate the work with this section with the other sub-contractors on the job.
 3. Submit paint, stain, plastic laminate, vinyl coated surfaces, molded plastic, natural stone, man-made stone and solid surface material to the Owner for approval.
 4. Obtain serviceware samples for sizing and weight information from the Owner for coordination of all self-leveling equipment.
 5. Coordinate all mobile equipment will go through doors, wall openings and roll-in/roll-thru equipment. Notify the Architect of all conflicts or deviations from the approved submittals in writing.

1.08 FIELD VERIFICATION OF THE PROJECT AND DATA

- A. Review the contract documents, rough-in drawings, shop drawings and brochure books for accuracy and completeness.
 1. Field verify all the under-slab rough-in locations and quantities before the concrete slab is poured. Notify the Architect in writing of all conflicts or omissions of the rough-ins.
 2. Field verify all the in-slab recess locations, sizes, depths and quantities before the concrete slab is poured. Notify the Architect in writing of all conflicts or omissions of the in-slab recess.
 3. Field verify all the in-wall rough-in locations and quantities before the drywall is installed. Notify the Architect in writing of all conflicts or omissions of the rough-ins.
 4. Obtain actual field dimensions or guaranteed measurements from the general contractor to insure the proper fit of the equipment at the job site. The dimensions shown in the contract documents are

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approximate. The dimensions are for the bidding process only.

5. conditions before the fabrication and/or delivery of equipment to the job site. Notify the Architect of all conflicts or deviations from the approved submittals in writing.
6. Coordinate any exterior wall openings required for the delivery of all oversized equipment with the general contractor. The equipment must be manufactured to fit through standard door openings if this cannot be done.

1.09 WARRANTY

- A. Provide manufacturer's warranty on each piece of specified equipment.
- B. The warranty period will be for one year after acceptance from the Owner for parts and labor.
- C. The warranty period will be for five years after acceptance from the Owner for compressor bodies for refrigeration equipment.
- D. The warranty period will be for ten years after acceptance from the Owner for the walk-in panels.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Stainless steel.
 1. All stainless steel to 18-8, type 304, polished to a 180 grit number 4 finish unless noted otherwise in the item specifications or in the drawings.
 2. All seams and joints are to be heli-arc welded completely and free of flaws and pits. Grind the welds smooth and polish to a number 4 finish.
 3. The grain of the stainless steel is to run the length of the equipment including the backsplash. Provide a polished miter look where the tops form a corner.
- B. Galvanized iron.
 1. All seams and joints are to be heli-arc welded completely and free of flaws and pits. Grind the welds.
 2. Thoroughly clean the welded and polished areas and prime and paint with Rustoleum in a color to match the metal.
- C. Sound deadening.
 1. Apply 1/2" wide Schnee Butyl sealant rope continuously between all bracing/frame members and

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- the underside of the table/counter tops, overshelves, wall shelves and undershelves.
- 2. Weld stud bolts to the underside of the tops, overshelves, wall shelves and undershelves. Tighten the stud bolts for maximum compression of the sound deadening. Trim any excess that extends from out of the bracing.
- D. Shop and field joints.
 - 1. Field joints are to be used only when the equipment size must be limited for access into the building.
 - 2. Indicate the field joint locations on the shop drawings.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify and test that all equipment is plumbed, wired correctly, true and in good working order. Do not use until turned over to the Owner.
- B. Protect all appliances from construction dirt until the project is turned over to the Owner.

3.02 DELIVERY

- A. Coordinate with the construction progress and the Owner's operation schedule. Unless otherwise instructed by the general contractor or the Owner, the following procedures apply.
 - 1. Items that integrate into the building, such as, walk-in coolers and freezers, ventilators, hoods, equipment supports, ceiling mounted utensil racks, etc. will be sent to the job site after the building is water tight and directed by the general contractor. Protect the equipment as required after installation is complete.
 - 2. All the additional fixed equipment and mobile equipment requiring plumbing and electrical final connections will be delivered to the job site after the completion of the finished floor, wall finish, ceiling grid and tile or drywall and paint and the lighting system.
 - 3. The remaining mobile equipment will be delivered to the job site after the equipment can be inventoried and secured in a lockable area. If a secured area is not available, deliver the equipment when the job site when the installation is completed and the equipment clean-up process have been completed.

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4. Small counter item, pans, flatware containers, etc. will be delivered only when the Owner is ready to receive and inventory the items.

3.03 INSTALLATION

- A. Provide a competent supervisor at the job site during the entire installation process.
- B. Install the equipment per the manufacture's recommendations. Install the equipment square and level. All equipment shall be ready for the final connections.
- C. Protect the equipment after the installation process is complete.
 1. Protect the custom fabricated equipment with fiberboard or plywood taped to the tops and exposed body surfaces.
 2. Protect the buy-out equipment with fiberboard or plywood taped to the tops and exposed body surfaces.
 3. The general contractor must ensure the equipment is not used by other sub-contractors as work tables, scaffolding, tool and material storage, etc.
- D. Provide and install 18 gauge stainless steel trim at all gaps between the equipment and the walls and/or other high equipment when the gap is larger than 7/16 of an inch wide. Turn the trim down 90 degrees at the equipment splashes, top and/or turn downs. Attach the trim with hidden fasteners and seal with silicone caulking.

3.04 CLEAN AND ADJUST

- A. Leave the work area clean and free of debris.
- B. Remove or replace panels, parts or frames that are bowed, warped, dented or scratched as a result of manufacturing defects, shipping and delivery to the job site.
- C. The Foodservice Contractor is to deliver the foodservice equipment to the job sits, uncrate the equipment, remove all packing materials from the equipment, set the equipment into place per the floor plan and the job site conditions, level the equipment and make ready for final connection by the Mechanical, Plumbing and/or Electrical Contractor. All crating materials are to be removed from the job site by the Foodservice Contractor.
- D. The Foodservice Contractor will final clean (not sanitizing) the foodservice equipment and seal the fixed foodservice equipment to the adjacent walls and/or fixed equipment with silicone caulking after all the utilities have been connected. The caulking will be neat, smooth

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and level with the foodservice equipment. Concaved caulking will be rejected. Remove any smeared caulking from the foodservice equipment and adjacent surfaces.

3.05 SERVICE MANUAL

- A. Provide manufacture's warranties and operating manuals on all appliances over to the Owner - provide both printed and electronic copies.
- B. Each appliance shall have operating instructions and maintenance information.
- C. The Foodservice Contractor will furnish to the Owner three (3) copies of an owner's and operations manual. The manual will be in three ring binders. The manuals will include a cover sheet for each equipment item, warranty information sheets, manufactures specification Sheets and the service agent's name, address and telephone number.
- D. All warranties are not to begin until after the Owner accepts successful completion of the Start-up Demonstration and the kitchen.

3.06 EQUIPMENT DEMO AND START UP

- A. The Foodservice Contractor must test, adjust and regulate all the equipment per the manufacturer's instructions.
- B. The Foodservice Contractor will schedule, at the Owner's convenience, a date and time to demonstrate the foodservice equipment to the Owner. The Foodservice Contractor will start up and check out the foodservice equipment before the equipment is demonstrated to the Owner.

PART 4 - EQUIPMENT

ITEM NO. 01 - SOILED DISHTABLE & POT SINK (1 REQUIRED)

Custom fabricated soiled dishtable & pot sink to be constructed per drawings with a fully welded 14 gauge type 304 stainless steel top. Provide 12 gauge fully welded type 304 stainless steel channel underbracing under top with fully welded closed ends where they are exposed. Sound deadened between the top and the underbracing. Extend the top through the pass-through window. Provide a 1" high marine edge at the opening.

Features:

- 01 Provide with a 10" high x 2" thick backsplash at walls. Attach back splash to wall with stainless steel screws at a 4'-0" o.c.

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- maximum spacing with 14 gauge stainless steel Z-clips.
- 02 Provide with a 3" high rolled rim at exposed sides. Locate top of rolled rim 3'-1" above finish floor.
- 03 Provide a 1'-9" x 1'-9" x 12" deep 14 gauge type 304 stainless steel scrap sink welded integrally into top and 12 gauge type 304 stainless steel fully welded rack guide.
- 04 Provide an 8" wide x depth per drawings scrap trough at scrap sink. Slope the trough to collector per drawings. Provided a hinged silver saver in trough located near scrap sink. Pre-pipe trough per drawings.
- 05 Provide a 6" wide x 2" deep 14 gauge type 304 stainless steel scupper drain welded integrally into top. Provide a removable fully welded stainless steel basket with a perforated bottom. Full weld two (2) 1/4" stainless steel grab rods across the width in two places.
- 06 Provide three (3) 26 1/2" front-to-back x 21" x wide x 11" deep sink compartments constructed with 14 gauge type 304 stainless steel fully welded integrally into the top.
- 07 Provide type 304 stainless steel legs with stainless steel leg sockets and adjustable stainless steel bullet feet. Fully weld the leg sockets the underbracing.
- 08 Provide a 16 gauge type 304 stainless steel undershelves per the drawings. Turn the undershelves up 2" at rear and high equipment. Fully weld the undershelves to the legs. Provide 12 gauge fully welded type 304 stainless steel channel underbracing under the undershelves. Sound deadened between the undershelves and the underbracing.
- 09 Provide type 304 stainless steel crossrails per the drawings. Fully weld the crossrails to the legs.
- 07 Provide trash can space under top per drawings.
- 08 Provide a 7'-1" long cantilevered 16 gauge type 304 stainless steel slanted rack shelf with a 7'-1" long x 1" diameter rail fully welded stainless steel cantilevered rack

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storage shelf. Provide adjustable socket mounts on uprights for shelves. Attach uprights to wall at upright top. Mount slant rack shelf 1'-4" above rolled rim and mount rack storage shelf 1'-9" above slanted rack shelf.

- 09 Provide 1'-1" wide x length indicated on the drawing x 1" diameter fully welded stainless steel three-bar wall shelf at the sinks. Mount the rail shelf 1'-9" above the work surface.
- 10 Support the shelf with 12 gauge type 304 stainless steel angled brackets fully welded to the uprights
- 11 Provide a 14 gauge type 304 stainless steel wall panel behind the shelf per the drawings. Attach the panel to the wall with industrial adhesive.

Accessories:

- 1 ea. Component Hardware model E38-1012 basket drain in scrap sink.
- 1 ea. Component Hardware model E18-1822 basket drain in scupper drain.
- 3 ea. Fisher model 2906 water inlets.
- 1 ea. Fisher model 2905 water inlet.
- 1 ea. T & S model B-0457 vacuum breaker.
- 2 ea. T & S model B-0290 faucets.
- 3 ea. Component Hardware model DBN-8000 twist waste valve. Shorten the handle to be flush with the front of the sink bowl. Provide 14 gauge type 304 stainless steel brackets to support the handles. Attach to the sink bottom with stainless steel anchors.
- 3 ea. Component Hardware model J19-4962 brackets.

ITEM NO. 02 - DISHWASHER WITH BOOSTER HEATER (1 REQUIRED)

Insinger Machine Company model Admiral 44VG with standard features and left hand feed.

Accessories:

- 1 ea. 208 volts, three phase - refer to Electrical Drawings.
- 1 ea. Dual Built-in booster heater(s).
- 1 ea. Electric heat.
- 1 ea. Provide with a 3/4" brass pressure regulator.
- 1 ea. Shock arrestor.

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ITEM NO. 04 - CLEAN DISHTABLE (1 REQUIRED)

Custom fabricated clean dishtable to be constructed per drawings with a fully welded 14 gauge type 304 stainless steel top. Provide 12 gauge fully welded type 304 stainless steel channel underbracing under top with fully welded closed ends where they are exposed. Sound deadened between top and underbracing.

Features:

- A. Provide with a 10" high x 2" thick backsplash at walls. Attach back splash to wall with stainless steel screws at a 4'-0" o.c. maximum spacing with 14 gauge stainless steel Z-clips.
- B. Provide with a 3" high rolled rim at exposed sides. Locate top of rolled rim 3'-1" above finish floor.
- C. Provide type 304 stainless steel legs with stainless steel leg sockets and adjustable stainless steel bullet feet. Fully weld the leg sockets the underbracing.
- D. Provide a 16 gauge type 304 stainless steel undershelves per the drawings. Turn the undershelves up 2" at rear and high equipment. Fully weld the undershelves to the legs. Provide 12 gauge fully welded type 304 stainless steel channel underbracing under the undershelves. Sound deadened between the undershelves and the underbracing.
- E. Provide type 304 stainless steel crossrails per the drawings. Fully weld the crossrails to the legs.

ITEM NO. 06 - HAND SINK (1 REQUIRED)

To be supplied and connected by Plumbing Subcontractor - refer to Plumbing Drawings.

ITEM NO. 15 - ELECTRIC RESTAURANT RANGE (1 REQUIRED)

Vulcan model EV12-2FP240 electric restaurant range with all the standard features and 2 French Plates.

ITEM NO. 17 - VENTILATION AND FIRE SUPPRESSION SYSTEM

Refer to Mechanical, Fire Protection, Technology / Electrical drawings, etc.

ITEM NO. 24 - WALK-IN COOLER & FREEZER (1 REQUIRED)

The walk-in cooler & freezer to be manufactured by Thermo-Kool. The walk-in cooler & freezer to be

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approximately 18'-2"W x 12'-10"D x 9'-3" high per the drawings. Provide a 4" thick insulated panel floor. Provide stucco aluminum on the exterior and interior of the unit and white stucco aluminum on the ceiling.

Features:

- 01 Provide two (2) hinges on the doors.
- 02 Two (2) vapor proof lights.
- 03 Foot treadle at the doors.
- 04 One (1) 14" x 24" heated peep window in each door.
- 05 Two (2) pressure relief vents.
- 06 EC motors on the evaporator coils.
- 07 Provide wall trim and a closure panel constructed of stucco aluminum.
- 08 Provide all necessary refrigeration lines (hard copper), refrigerant and labor from the evaporator to the refrigeration rack system located on the ground.
- 09 All refrigerant line runs to be on the exterior of the walk-in with short runs only from the evaporators to above the ceiling. Seal the holes for the lines with a spray foam insulation to make an air-tight seal. Provide stainless steel or chrome covers at all exposed penetrations.
- 10 14 Gauge fully welded stainless steel bumper rails per drawings and details on the exposed exterior walls and doors.
- 11 Provide 14 Gauge fully welded stainless steel trim per drawings and details around the opening in the building and the walk-in box.

Accessories:

- 1 ea. ColdZone model MPL-2 refrigerated rack system per proposal number 25-0679. Locate the rack on the building roof. Verify the location at the job site.
- 1 ea. 208 volts, three phase.
- 2 ea. Berner model ASD36078 swing door. Install per the Manufacturer's requirements with stainless steel screws.
- 2 ea. Kason model 1810LCT40048" LED light fixtures with bulbs as located per the drawings. Conduit shall not be run on the interior of the units except what is required to connect to the lights. Seal the holes for the

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conduit and inside the conduit with a spray foam insulation to make an air-tight seal.

ITEM NO. 24 - WALK-IN SHELVING (1 LOT REQUIRED)

Quantum model WIRE storage shelves. Locate the bottom shelf at 10" above the finish floor and the remaining four (4) shelves at 17" O.C. at the balance of the shelving.

Accessories:

- 44 ea. Model 2142P shelves.
- 8 ea. Model P74P posts.
- 32 ea. Model P86P posts.
- 8 ea. Model FP foot plates. Mount the foot plates to the floor with stainless steel fasteners. Locate the foot plates on the units at the ingredient bins.

ITEM NO. 26 - AIR CURTAIN (1 REQUIRED)

Mars Air Systems model NH248-1UA-TS with all the standard features. Mount with stainless screws per the manufacturer's requirements.

Accessories:

- 1 ea. 120 volts, single phase with a cord and plug.
- 1 ea. Model 99-014 level 1 control package.
- 1 lot Model J2272 filter kit.

End of Section



CG _____
drawn by _____

MA _____
checked by _____

APRIL 2026 _____
date _____

revisions _____



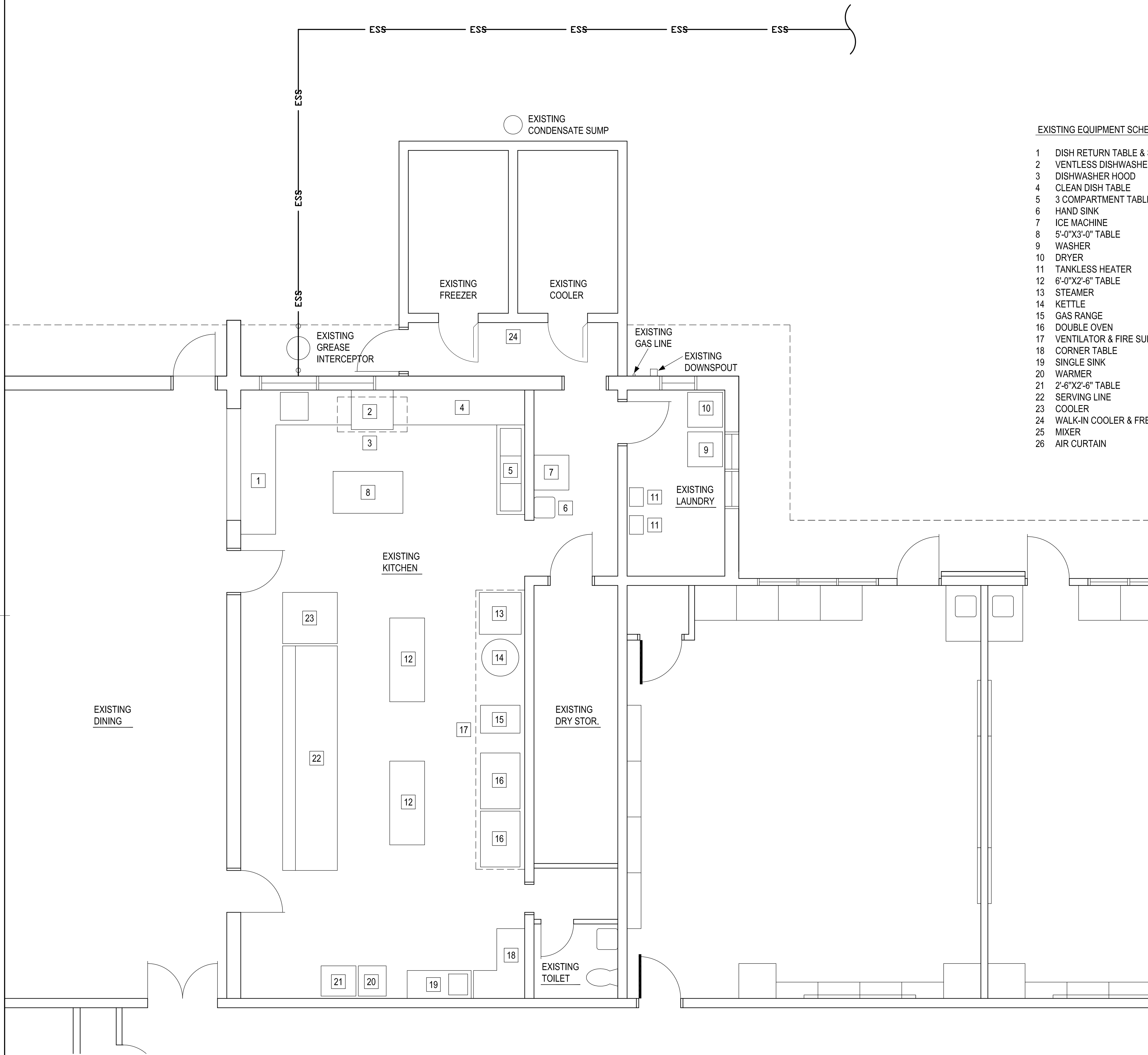
SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

A100

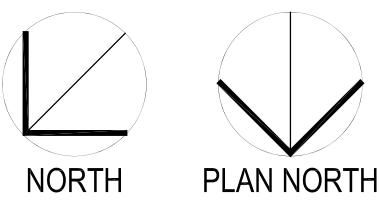
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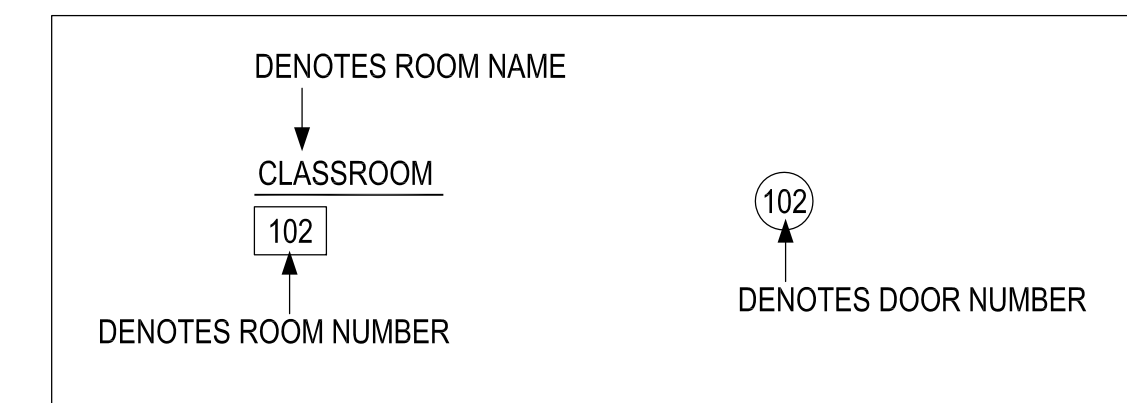
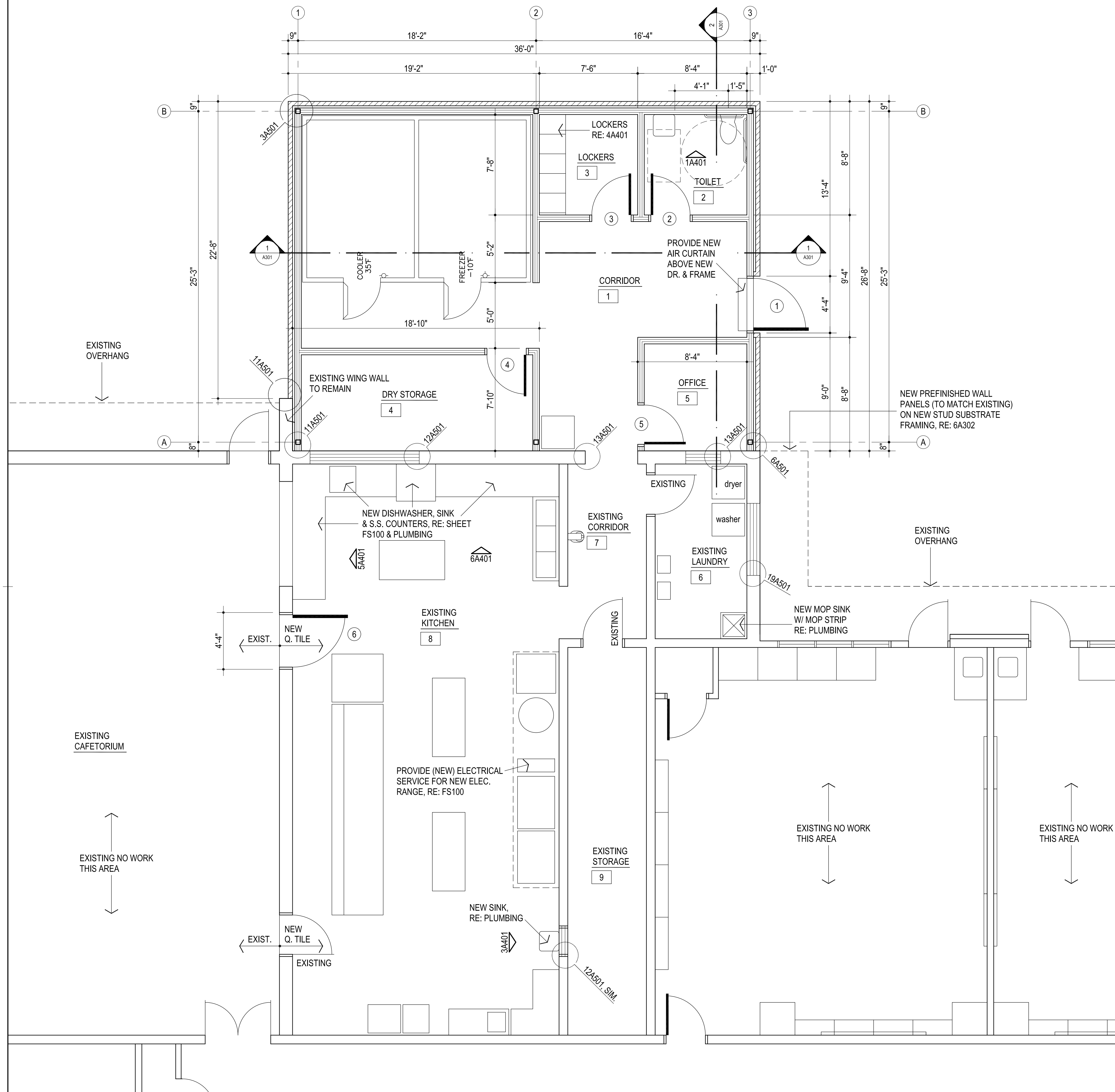
EXISTING EQUIPMENT SCHEDULE:

1	DISH RETURN TABLE & SINK	DISH RETURN TABLE & SINK
2	VENTLESS DISHWASHER WITH BOOSTER HEATER	INSINGER MACHINE COMPANY - ADMIRAL 44VG
3	DISHWASHER HOOD	ITEM TO BE REMOVED
4	CLEAN DISH TABLE	CUSTOM FABRICATED DISH TABLE
5	3 COMPARTMENT TABLE	REINSTALLED 3 COMPARTMENT TABLE
6	HAND SINK	HAND SINK
7	ICE MACHINE	SCOTSMAN
8	5'-0"X3'-0" TABLE	REINSTALLED 5'-0"X3'-0" TABLE
9	WASHER	REINSTALLED WASHER
10	DRYER	REINSTALLED DRYER
11	TANKLESS HEATER	EXISTING TANKLESS HEATER
12	6'-0"X2'-6" TABLE	REINSTALLED
13	STEAMER	STEAMER CLEVELAND RANGE LLC MODEL 36CGM300
14	KETTLE	KETTLE CLEVELAND MODEL KDL 40SH
15	GAS RANGE	GAS RANGE GARLAND MODEL H2SS
16	DOUBLE OVEN	DOUBLE OVEN VULCAN MODEL VC4GD-11D350K
17	VENTILATOR & FIRE SUPPRESSION SYSTEM	RE: MECHANICAL
18	CORNER TABLE	REINSTALLED CORNER TABLE
19	SINGLE SINK	REINSTALLED SINGLE SINK TABLE
20	WARMER	WARMER CRESCOR MODEL 121-PH-UA-11D
21	2'-6"X2'-6" TABLE	REINSTALLED 2'-6"X2'-6" TABLE
22	SERVING LINE	DUKE THURMADUKE DC-T8380-SS-679610M DUKE DC-TEHF-60SS-679640M
23	COOLER	MILK COOLER TRUE MANUFACTURING CO TMC-49-S-SS
24	WALK-IN COOLER & FREEZER	THERMO-KOOL
25	MIXER	HOBART MODEL D300
26	AIR CURTAIN	MARS AIR SYSTEM MODEL NH248-1UA-TSW



1

EXISTING KITCHEN PLAN
1/4" = 1'-0"





CG
drawn by
MA
checked by
APRIL 2026
date
revisions



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

A102

REFLECTED CEILING PLAN

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AND DRAWINGS ARE NOT TO BE
REPRODUCED IN ANY FORM OR MANNER
WITHOUT THE EXPRESSED WRITTEN
CONSENT OF AGP.

NOTES:

1. ALL CEILINGS TO BE LOCATED AT 9'-4" / MATCH EXISTING HEIGHT A.F.F. UNLESS NOTED OTHERWISE.

2. THESE DRAWINGS INDICATE THE LIMITS OF FINISHES FOR AREAS THAT HAVE MULTIPLE TYPES AND COLORS. REFER ROOM FINISH SCHEDULE FOR CEILING MATERIAL AND COLOR DESIGNATIONS NOT SHOWN ON THIS SHEET.

3. ALL FURRDOWNS SHALL BE PAINTED UNLESS NOTED OTHERWISE.

4. ALL CEILING FURRDOWNS SHALL BE BRACED WITH LIGHT GAUGE FRAMING TO PREVENT SWAYING.

5. ALL CEILINGS, FURRDOWNS, PIPES, DUCTS, EQUIPMENT, ETC. SHALL BE SUSPENDED FROM STRUCTURAL STEEL ABOVE. DO NOT SUPPORT ITEMS FROM METAL DECK ONLY. REFER STRUCTURAL FOR REQUIREMENTS OF ATTACHMENT TO STEEL.

6. MECHANICAL AND ELECTRICAL DISCIPLINES ARE SHOWN FOR INFORMATION PURPOSES ONLY. REFER TO CONSULTANT SHEETS FOR EXACT FIXTURE LOCATIONS.

7. COORDINATE LOCATION OF ANY CONTROL JOINTS NOT SHOWN WITH THE ARCHITECT PRIOR TO INSTALLATION.

8. PROVIDE DRYWALL CONTROL JOINTS AT WALLS, CEILINGS AND SOFFITS, FURRINGS, ETC., WHERE SHOWN ON DRAWINGS, AND THE FOLLOWING LOCATIONS (SHOWN OR NOT):

A. AT OTHER LOCATIONS WHERE STRUCTURAL SUPPORT FOR FRAMING CHANGES LEVEL OR MATERIAL, OR WHERE DIFFERENTIAL MOVEMENT IS LIKELY TO OCCUR,

B. AT LOCATIONS WHERE CEILING FRAMING MEMBERS CHANGE DIRECTION,

C. AT 30' MAX SPACING IN ANY UNINTERRUPTED STRAIGHT PLANE OR CURVE FOR WALLS, CEILINGS AND SOFFITS (IN TWO DIRECTIONS),

D. AT DOORS, WINDOWS AND OPENINGS LESS THAN OR EQUAL TO 4'-0" WIDE, FROM ONE EDGE OF FRAME, TO TOP OF WALL, AND TO FLOOR IF OPENING DOES NOT EXTEND TO FLOOR,

E. AT DOORS, WINDOWS AND OPENINGS GREATER THAN 4'-0" WIDE, FROM BOTH EDGES OF FRAME, TO TOP OF WALL, AND TO FLOOR IF OPENING DOES NOT EXTEND TO FLOOR,

F. AT BUILDING CONTROL JOINTS, SEISMIC JOINTS AND EXPANSION JOINTS,

G. AT LOCATIONS OF EXTREME DIFFERENCE IN THE DIMENSIONS OF ADJACENT DRYWALL AREAS.

9. REFER TO TECHNOLOGY SHEETS & SPECS FOR OTHER CEILING TILE REQUIREMENTS.

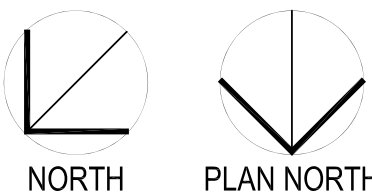
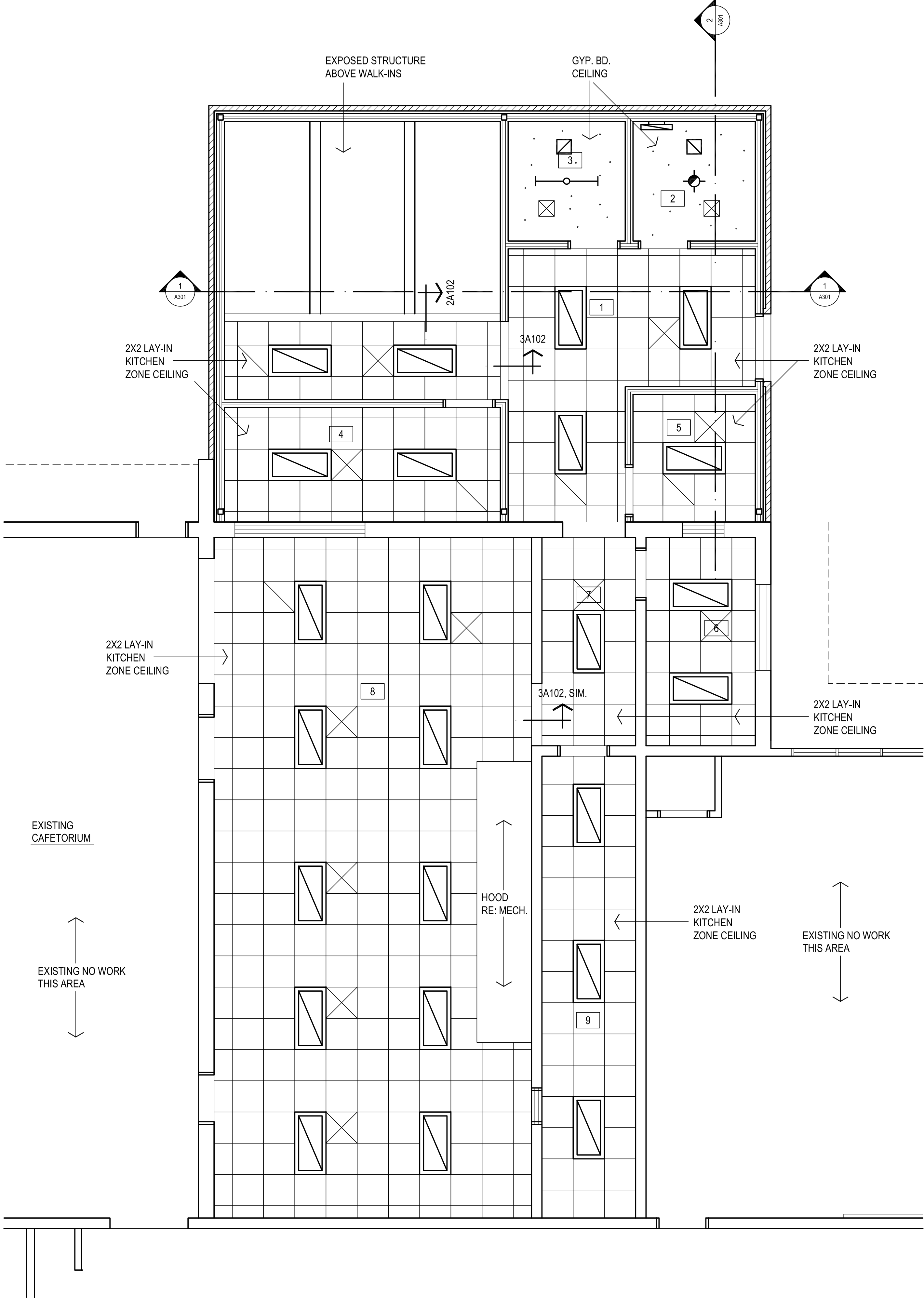
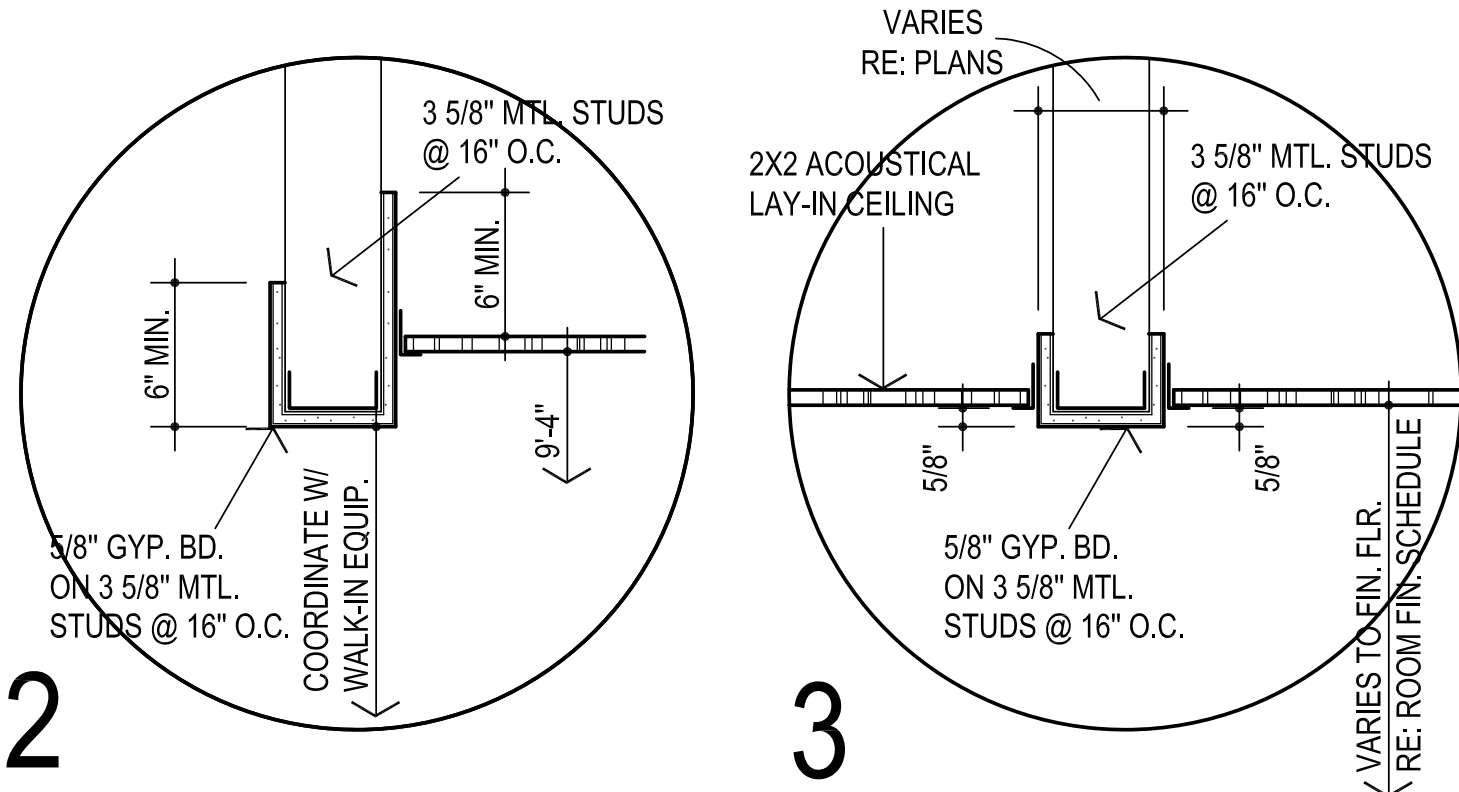
LEGEND:

- ☒ ☐ MECHANICAL OPENINGS
○ □ ELECTRICAL FIXTURES
⊙ CEILING MOUNTED SMOKE DETECTOR, RE: ELEC

- INDICATES AREA / ROOM TO RECEIVE GYP. BD.. CEILING
INDICATES AREA / ROOM TO RECEIVE 2X2 LAY-IN CEILING

NOTES:

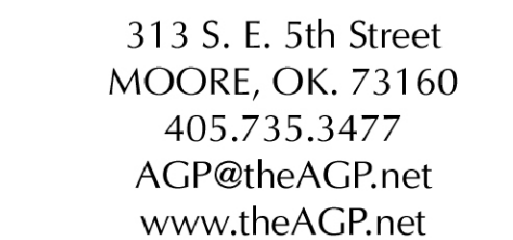
1. REFER MECHANICAL & ELECTRICAL FOR ANY ADDITIONAL CEILING MOUNTED FIXTURES
2. DO NOT SCALE DRAWINGS TO OBTAIN MATERIAL QUANTITIES. USE DRAWINGS WHICH ARE DIMENSIONED OR COORDINATE W/ EXISTING CONDITIONS &/OR ARCHITECT & ENGINEERS.



1

REFLECTED CEILING PLAN

1/4" = 1'-0"



KFC ENGINEERING
STRUCTURAL
SALAS O'BRIEN
MECHANICAL / ELECTRICAL



CG

drawn by

MA

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APRIL 2026

date

revisions



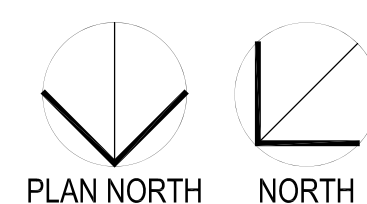
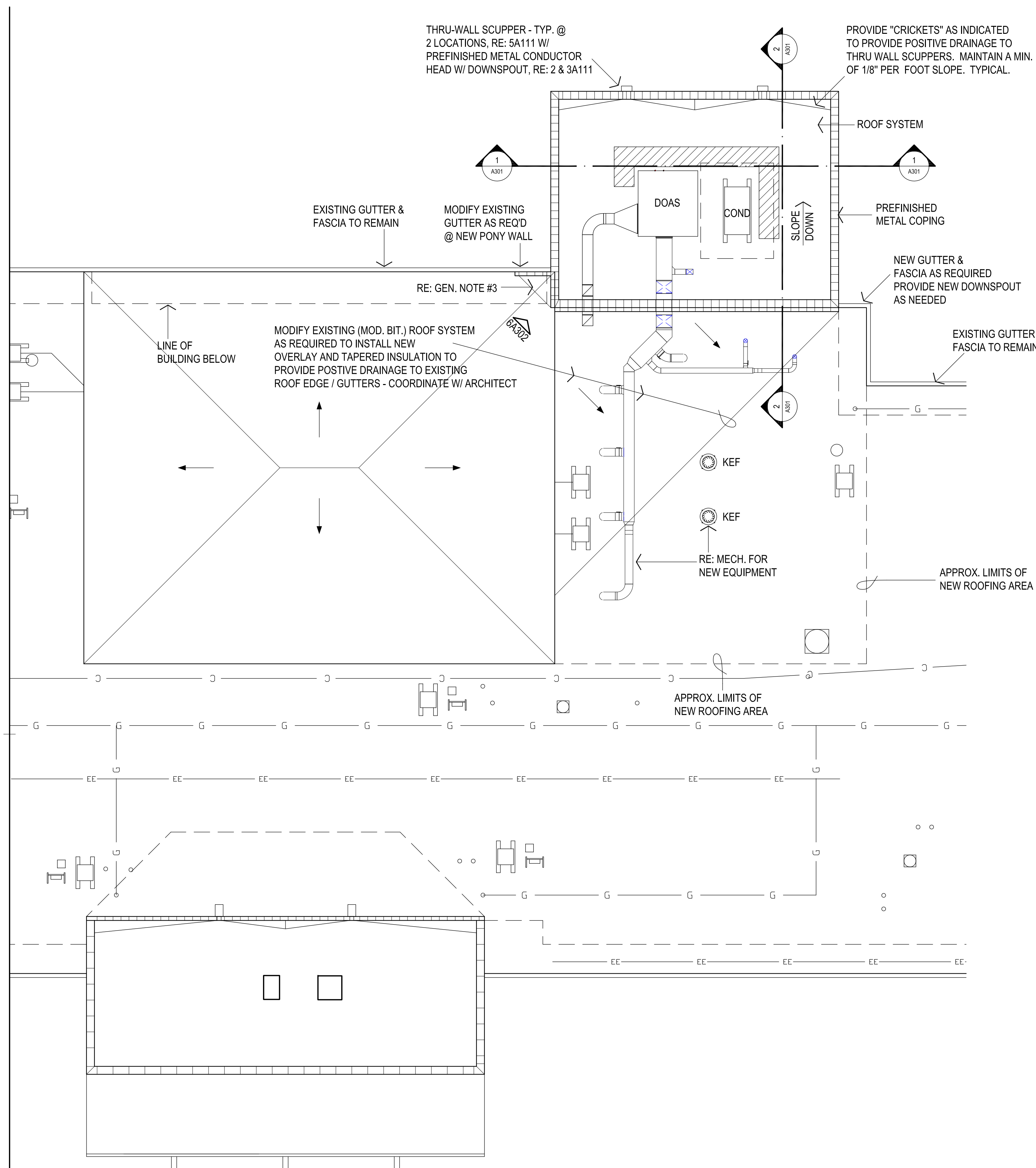
SOUTHGATE ELEMENTARY KITCHEN UPGRADES and ADDITION

sheet no:

A103

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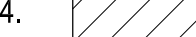


1

ROOF PLAN

1/8" = 1'-0"

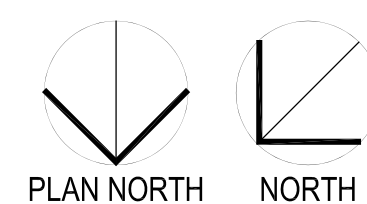
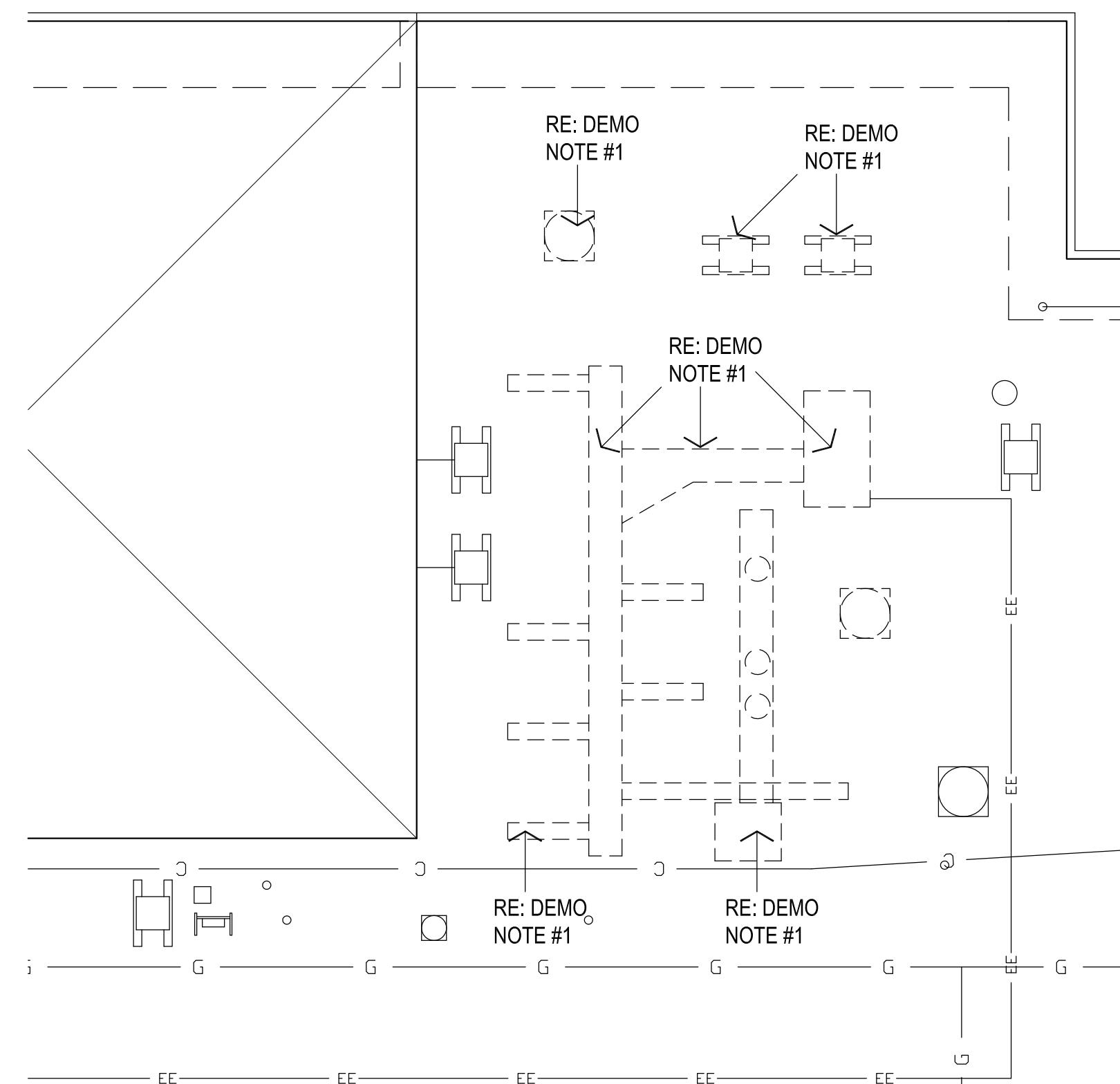
NOTES:

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.	4. 	INDICATES NEW WALKWAY PAD LOCATIONS - CUT PADS INTO 5'-0" MAX LENGTHS & PLACE 2" APART TO COVER AREAS INDICATED.
2. REROUTE EXISTING GAS LINE(S) AS REQUIRED FOR NEW ADDITION & NEW ROOFING. PROVIDE ALL MATERIALS AS REQUIRED FOR A COMPLETE AND WATER TIGHT INSTALLATION.	5. PROVIDE @ ALL ROOF PENETRATIONS - PENETRATION DAM / SEALER POCKETS AS PER 6A106	
3. MODIFY EXISTING "HIP" TAPERED INSULATION SYSTEM TO PROVIDE REVERSE TAPERED SYSTEM ALLOWING WATER TO GO AROUND NEW CONSTRUCTION., RE: 6A302	6. DO NOT SCALE DRAWINGS TO OBTAIN MATERIAL QUANTITIES. USE DRAWINGS WHICH ARE DIMENSIONED OR COORDINATE W/ EXISTING CONDITIONS &/OR ARCHITECT & ENGINEERS.	



INDICATES NEW WALKWAY PAD
LOCATIONS - CUT PADS INTO 5'-0"
MAX LENGTHS & PLACE 2" APART
TO COVER AREAS INDICATED.

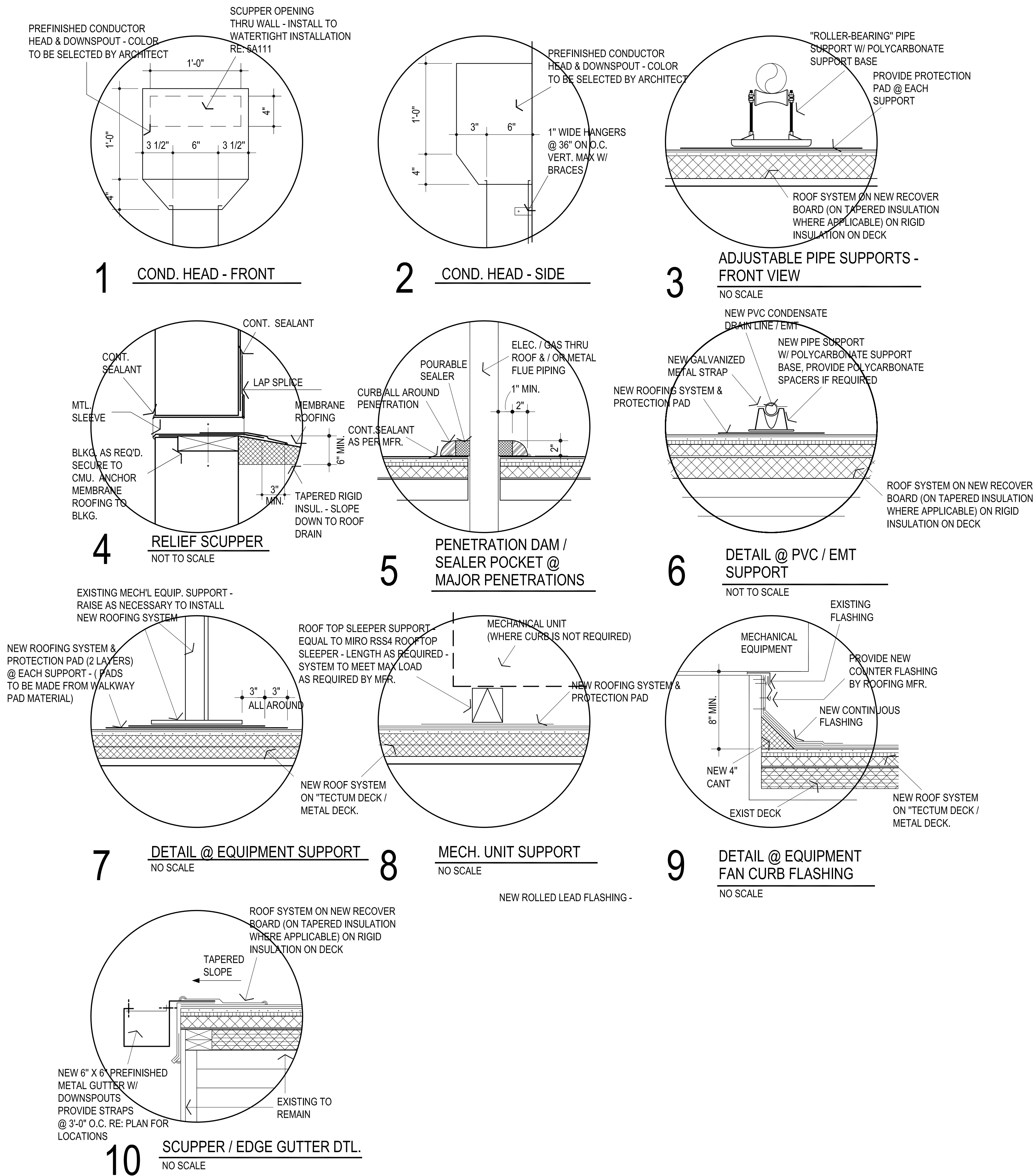
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6. DO NOT SCALE DRAWINGS TO OBTAIN MATERIAL QUANTITIES. USE DRAWINGS WHICH ARE DIMENSIONED OR COORDINATE EXISTING CONDITIONS &/OR ARCHITECT & ENGINEERS.

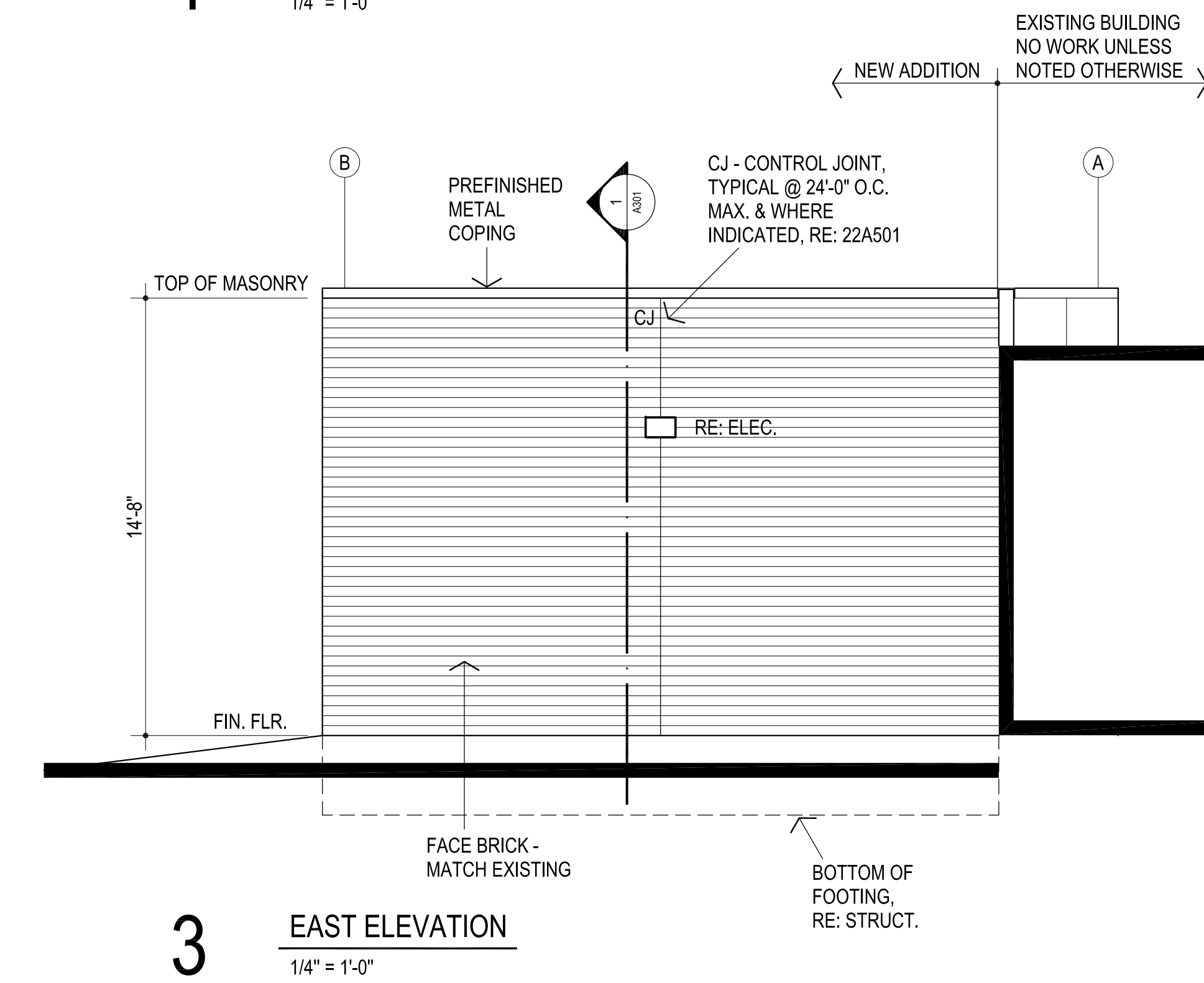
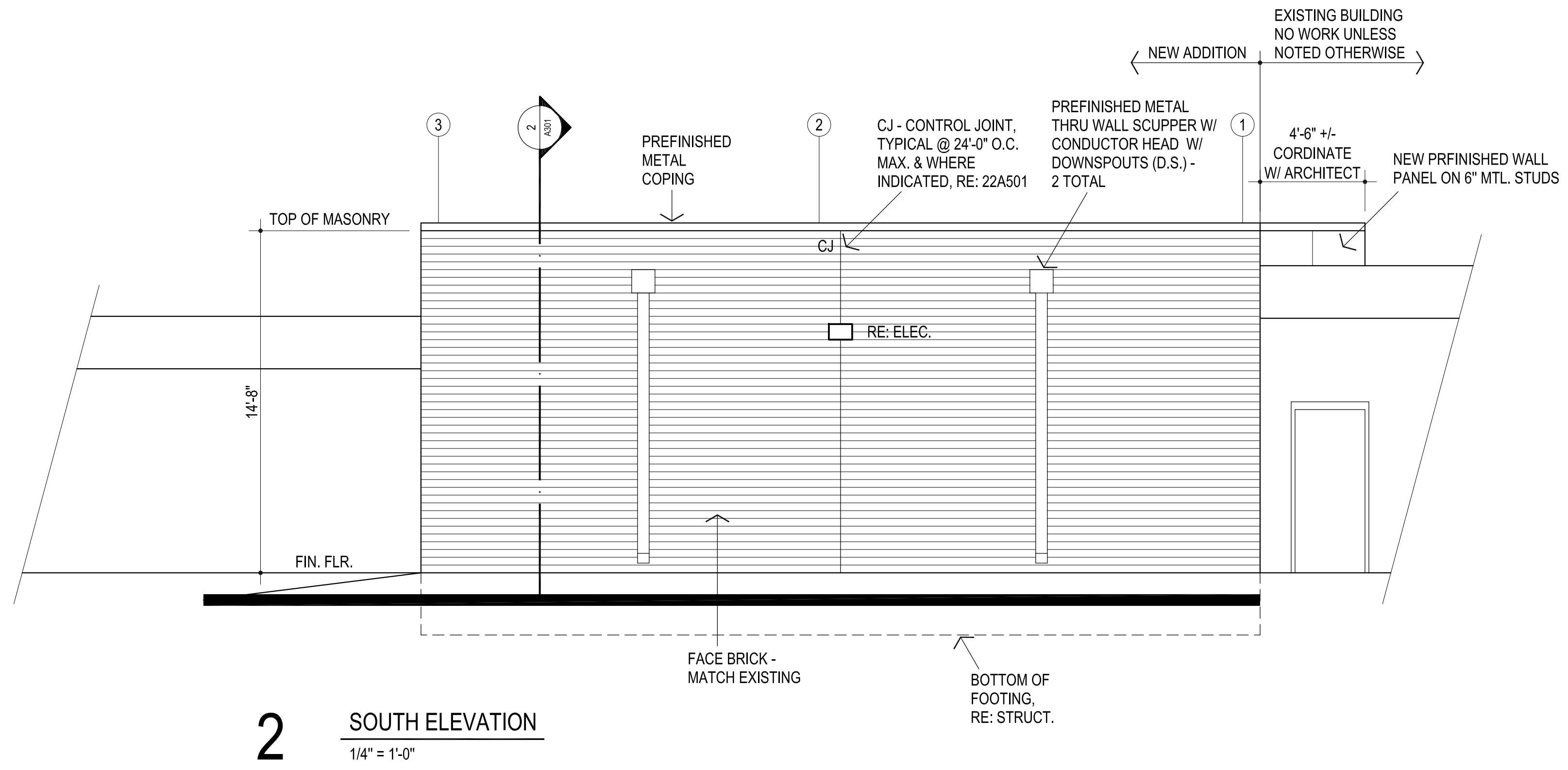
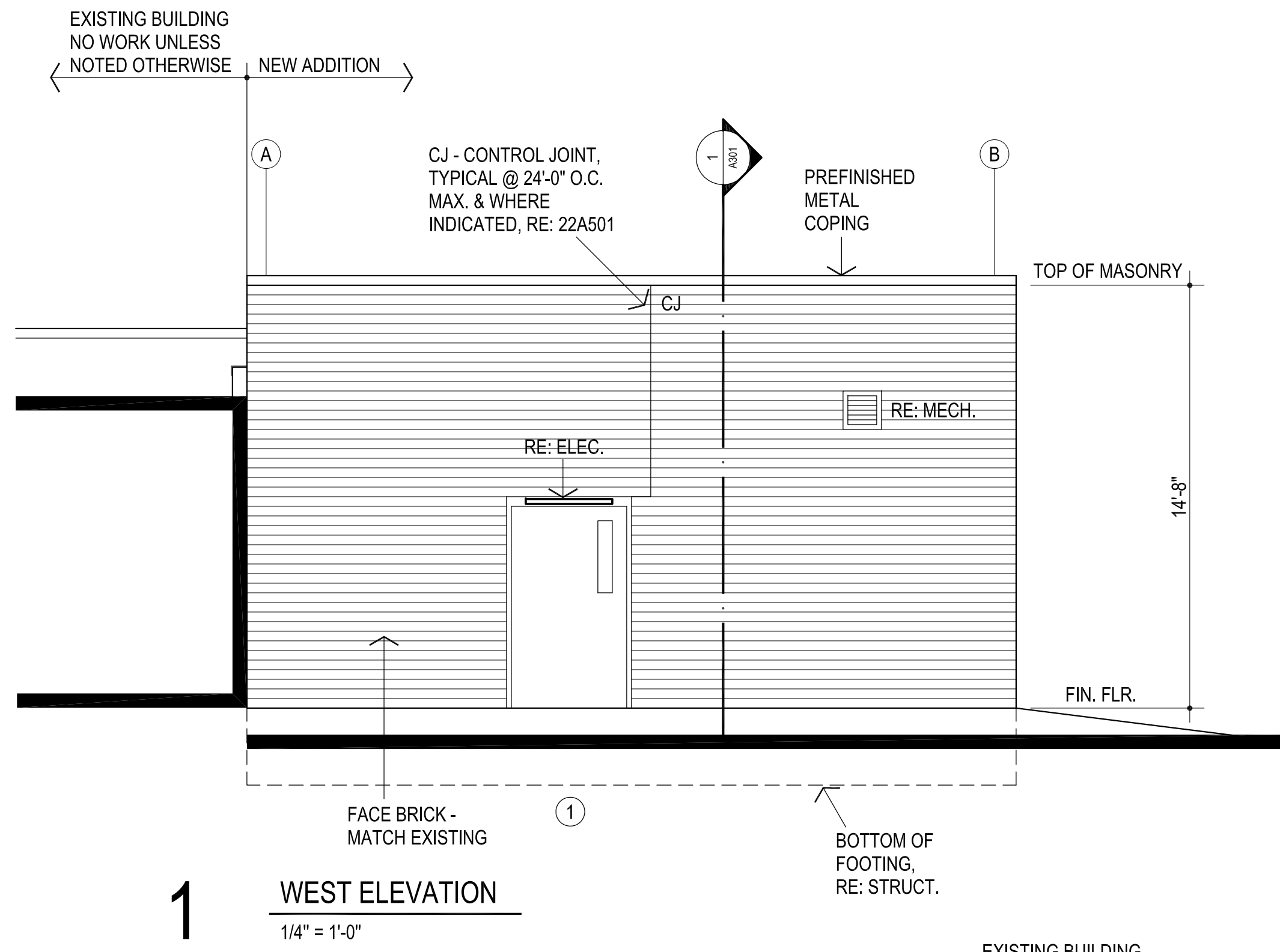


2

EXISTING ROOF DEMOLITION PLAN

1/8" = 1'-0"





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STRUCTURAL

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SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

A201

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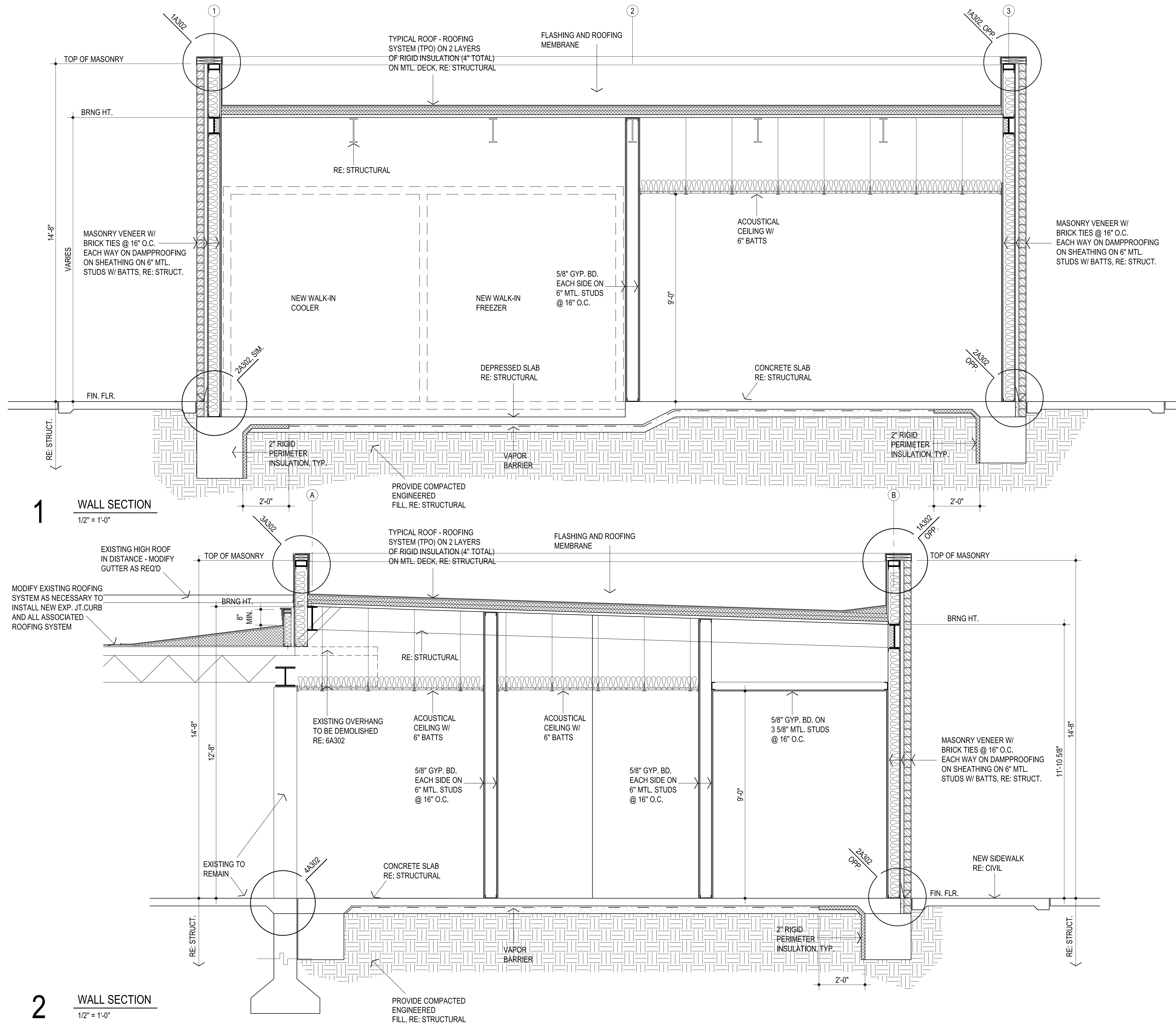
SOUTHGATE
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KITCHEN UPGRADES
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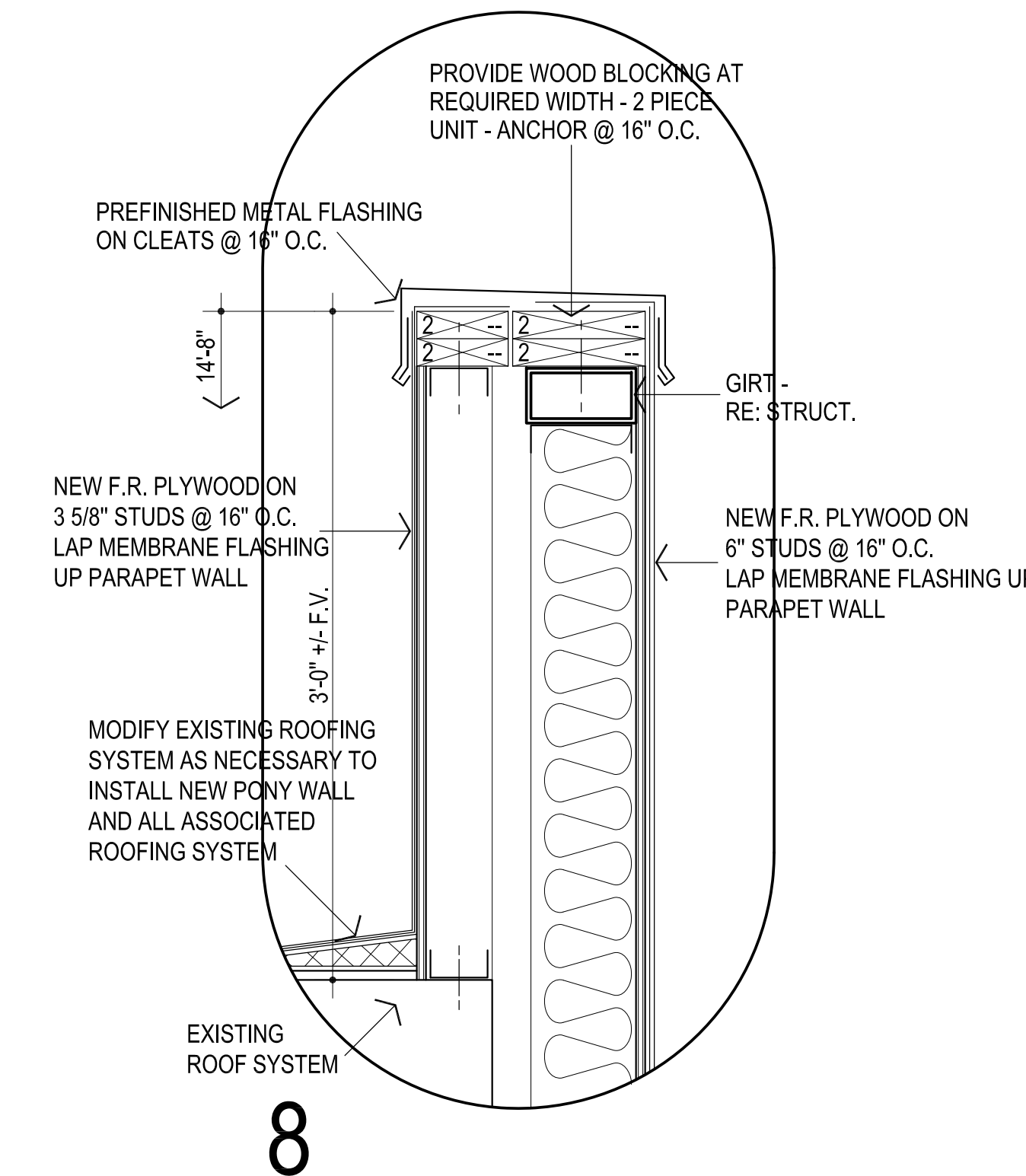
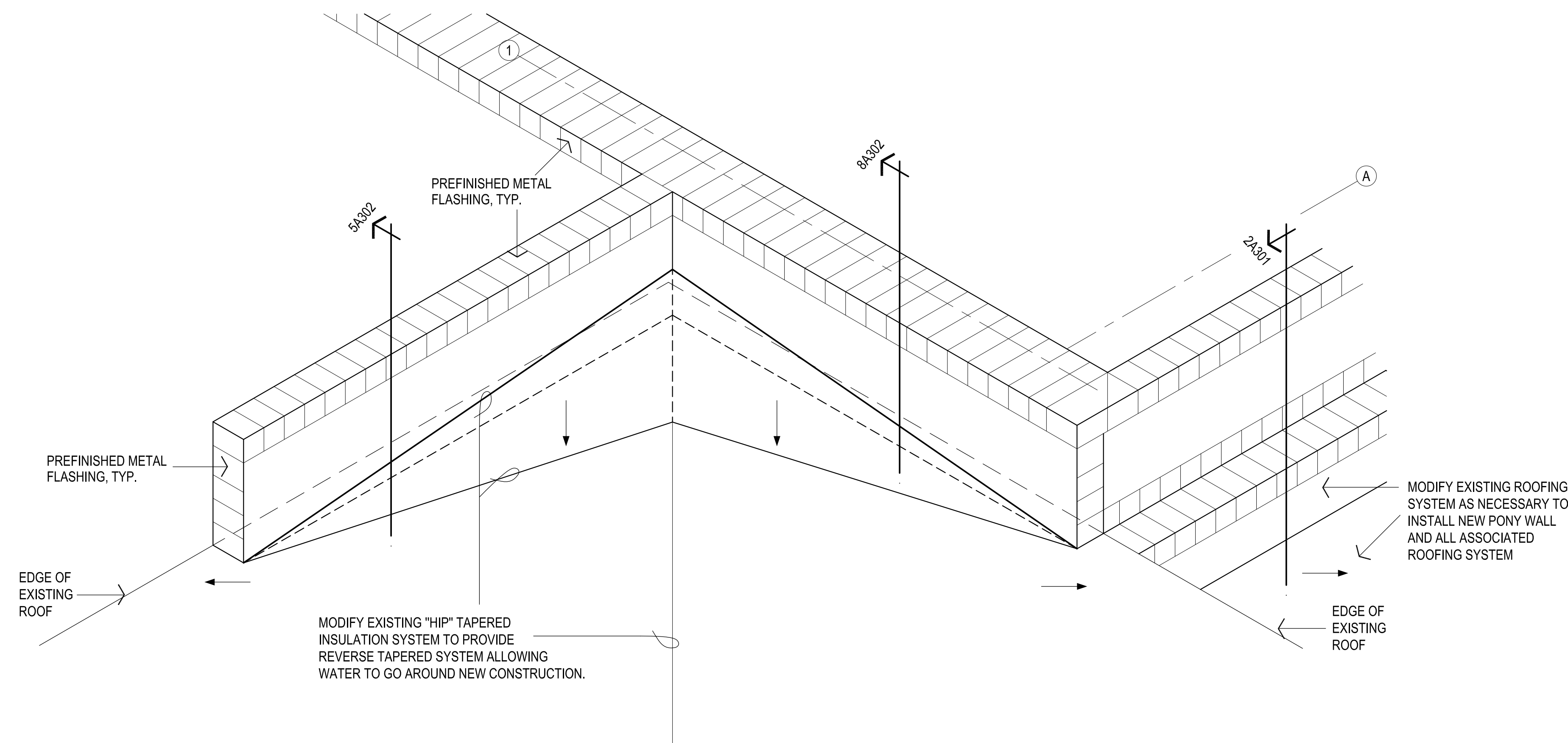
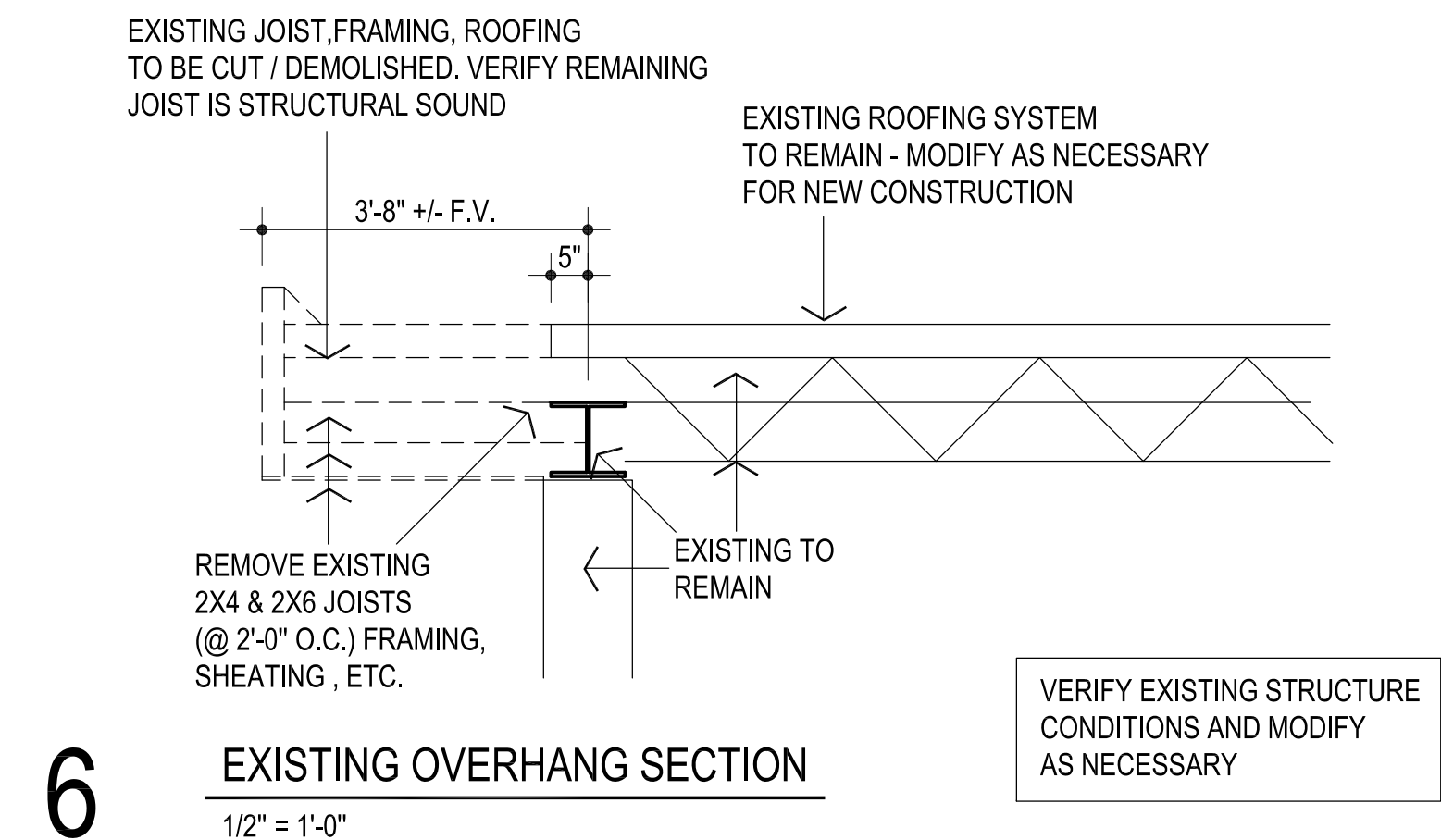
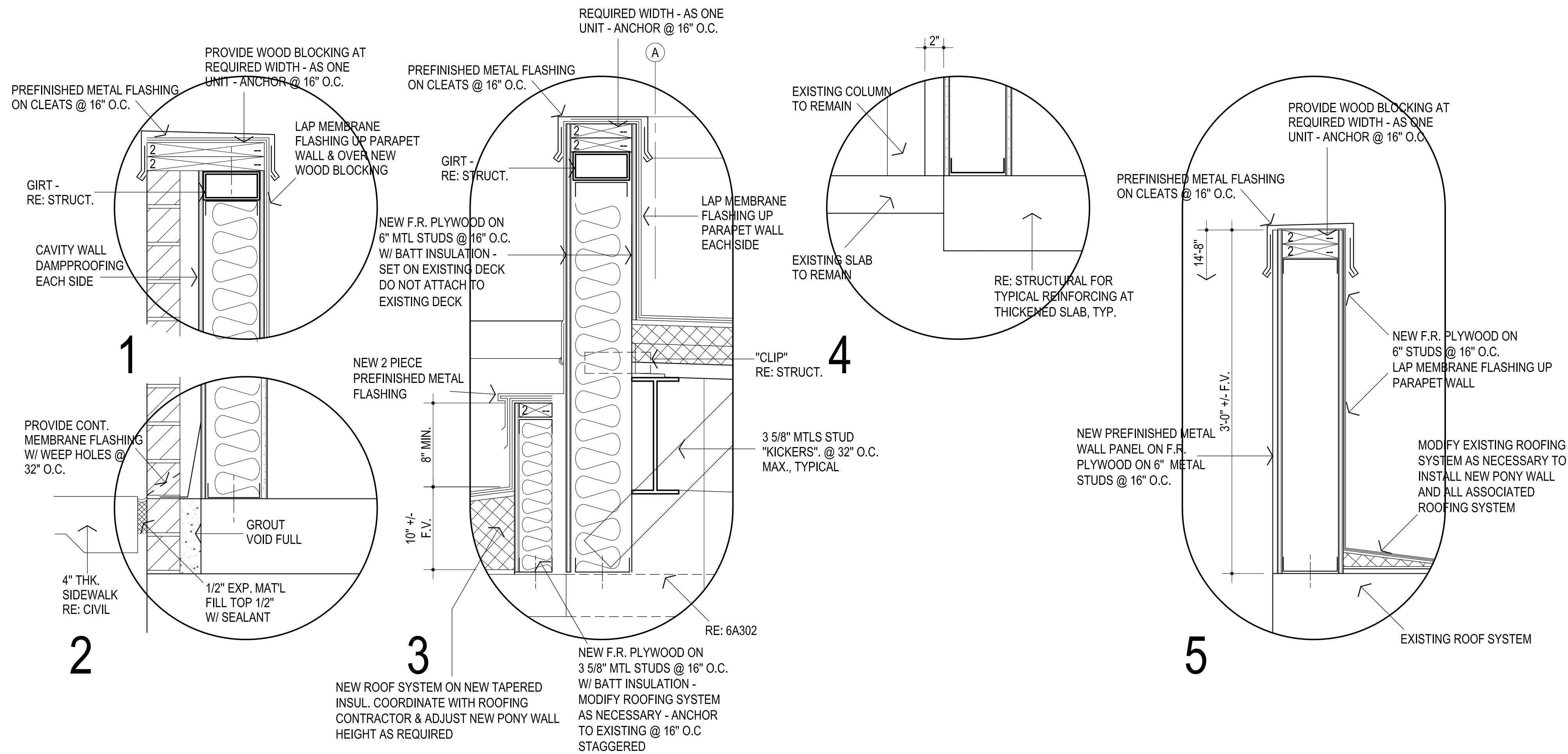
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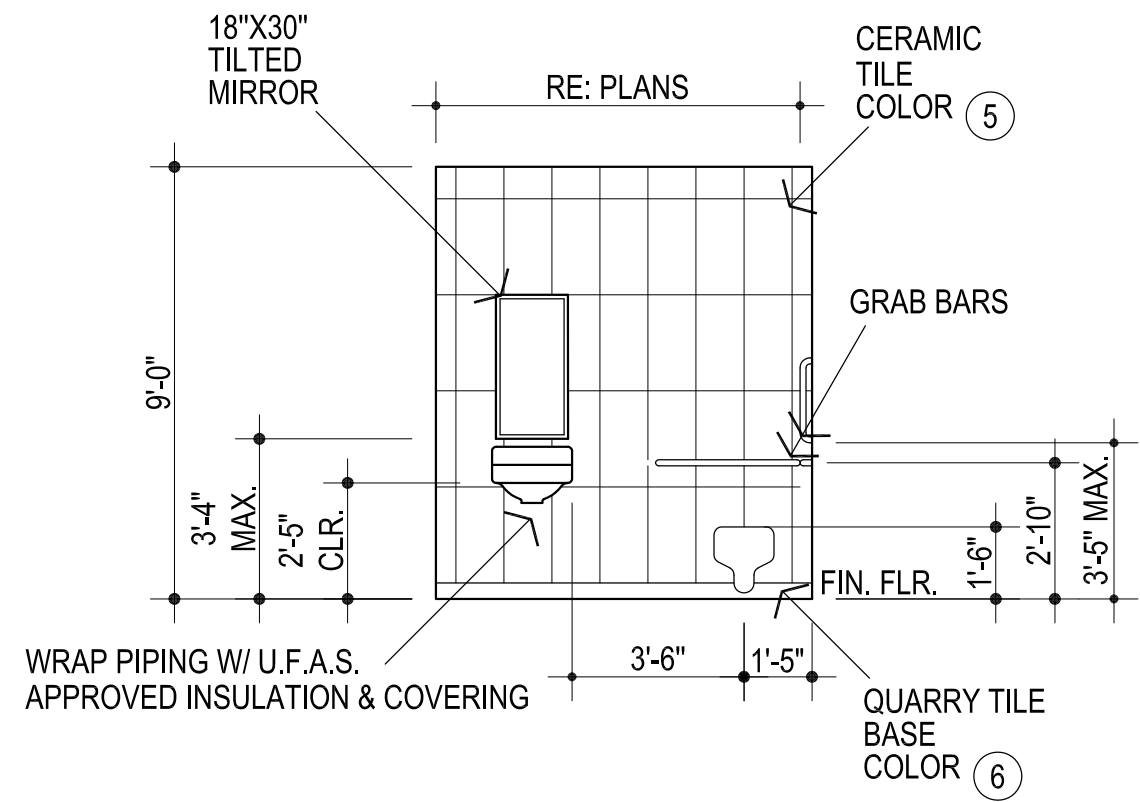
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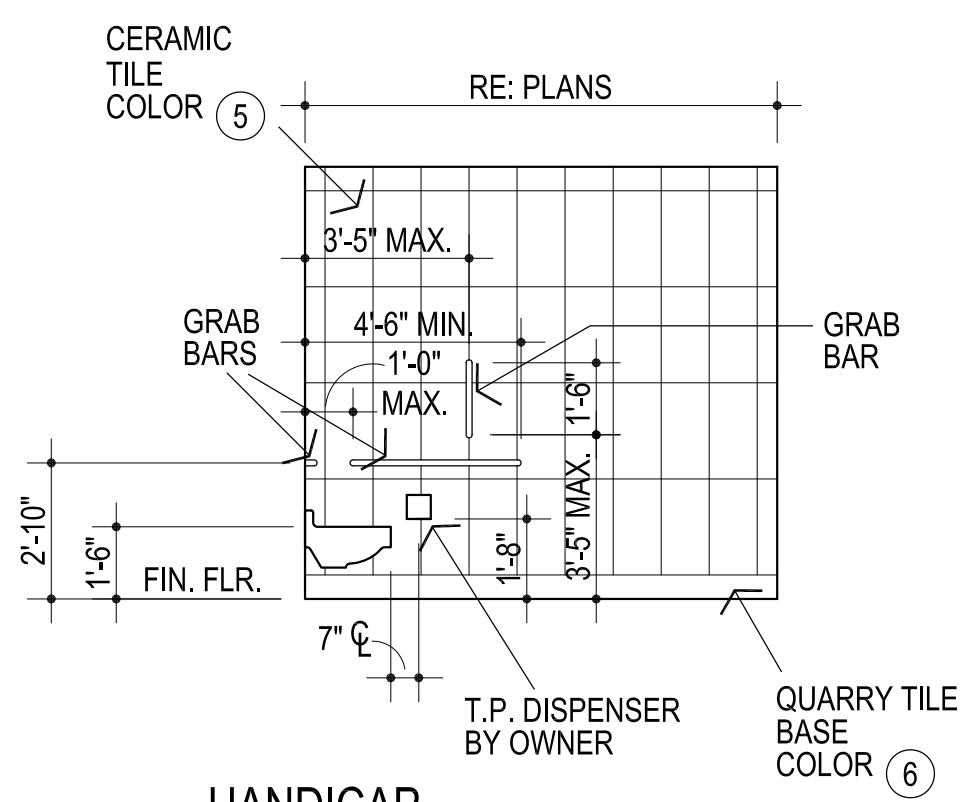


ROOFING IN-FILL @ EXISTING ROOF / NEW PARAPET WALLS
NOT TO SCALE

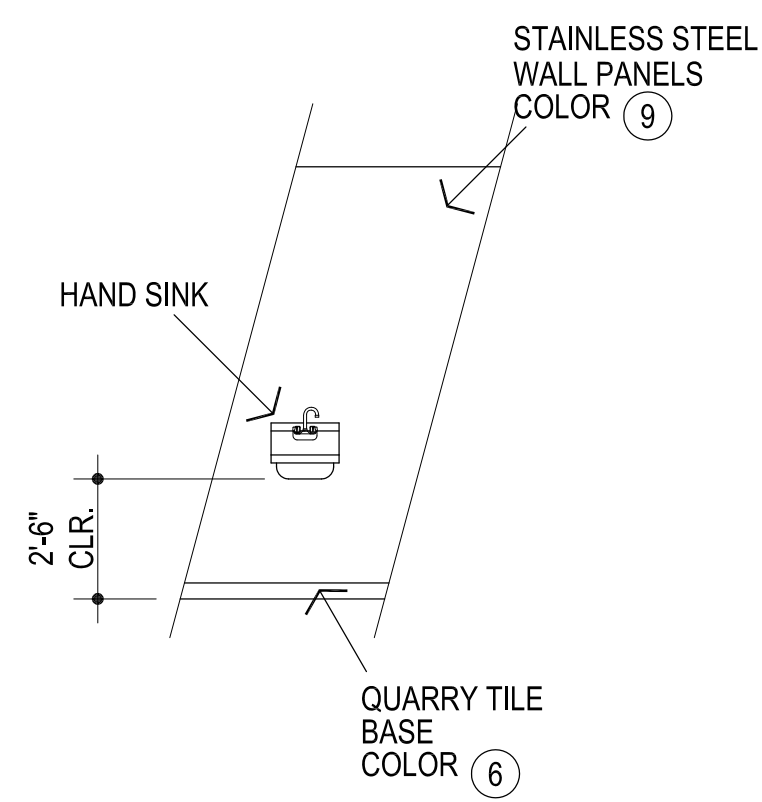


1 S. ELEVATION RM #2
1/4" = 1'-0"

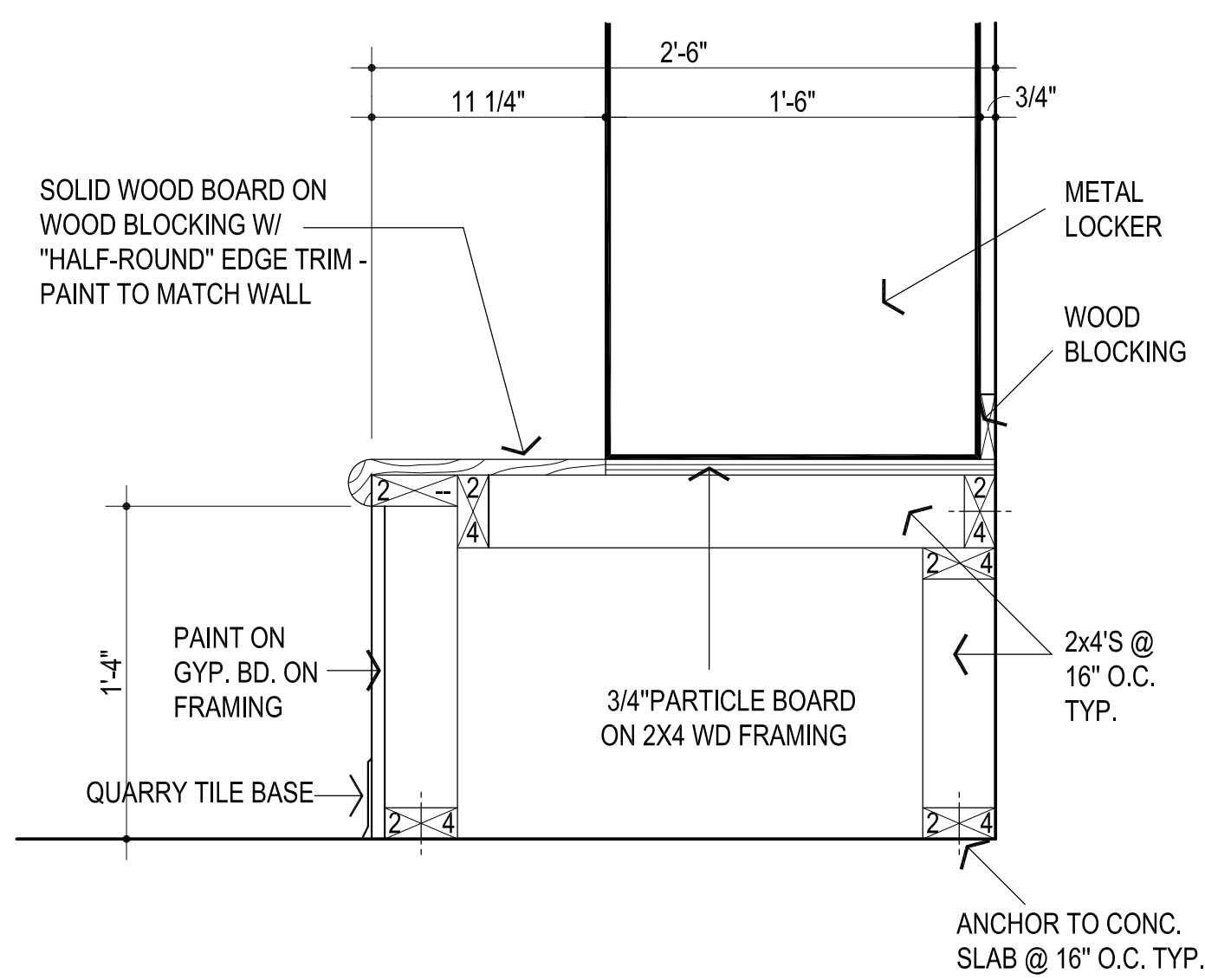
CONTRACTOR TO PROVIDE C.T. LAYOUT FOR REVIEW PRIOR TO INSTALLTION OF C.T.



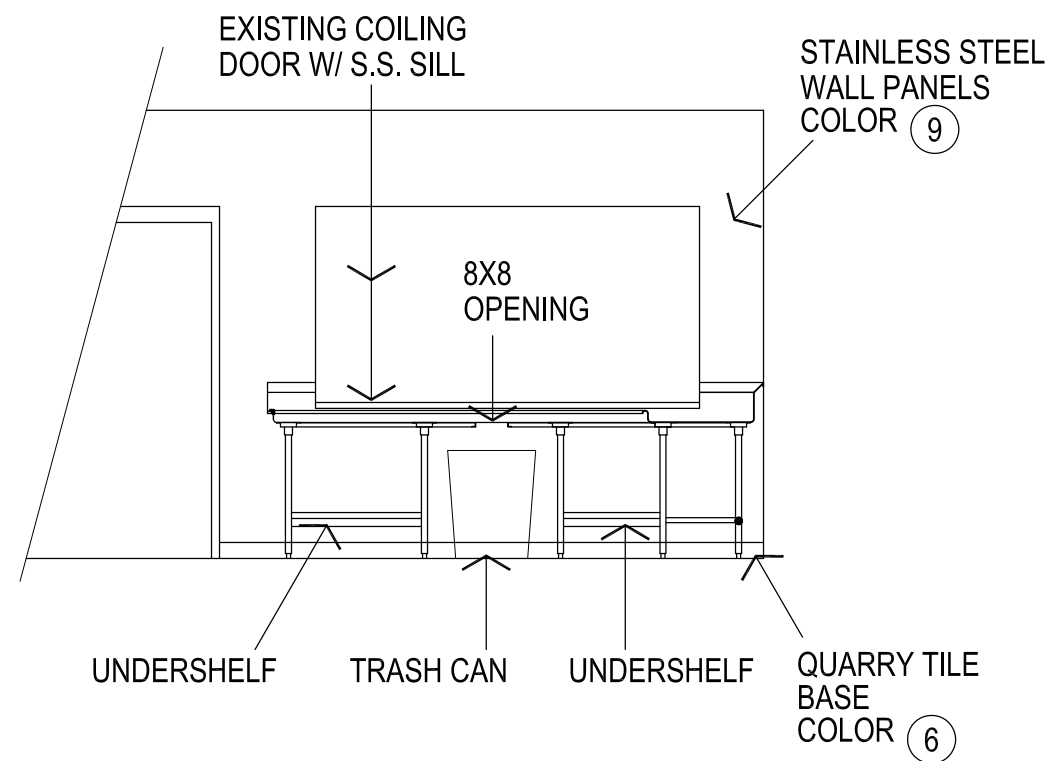
2 HANDICAP ACCESSIBLE W.C.
1/4" = 1'-0"



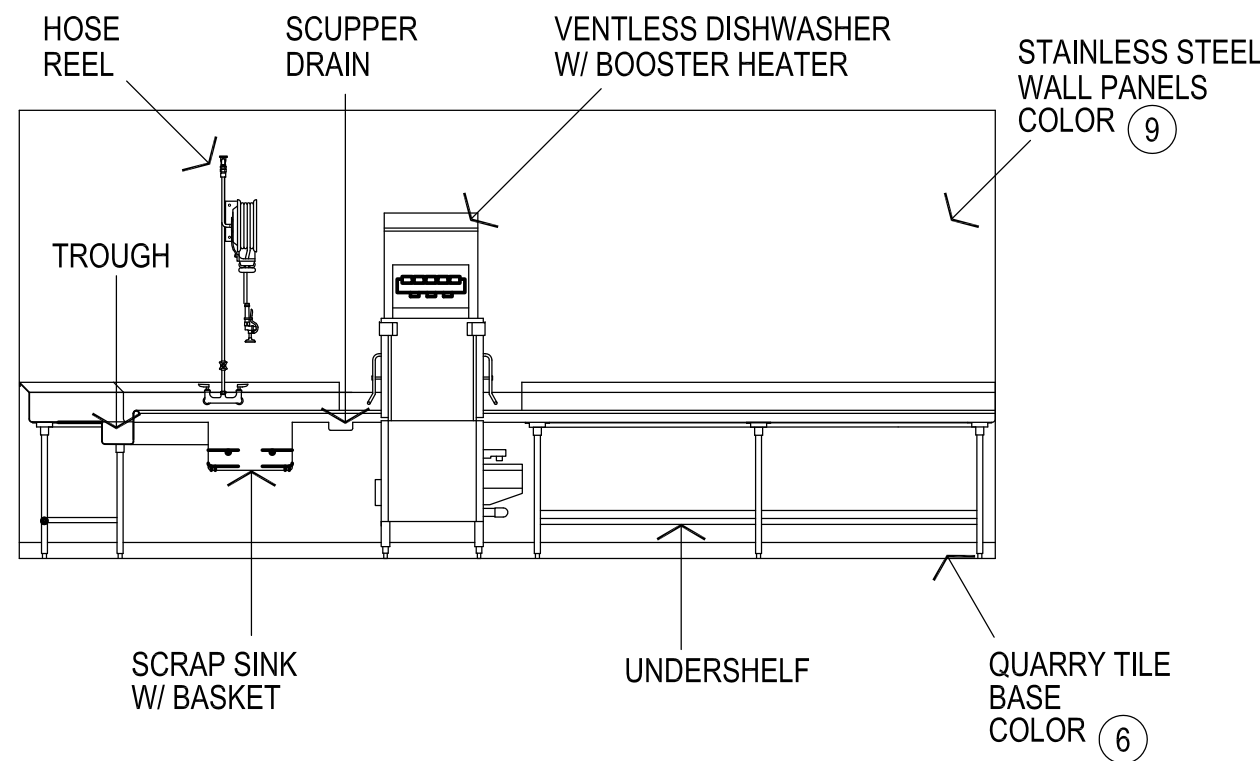
3 HAND SINK
1/4" = 1'-0"



4 LOCKER SUPPORT / SEAT
1-1/2" = 1'-0"



5 E. ELEVATION RM #8
1/4" = 1'-0"



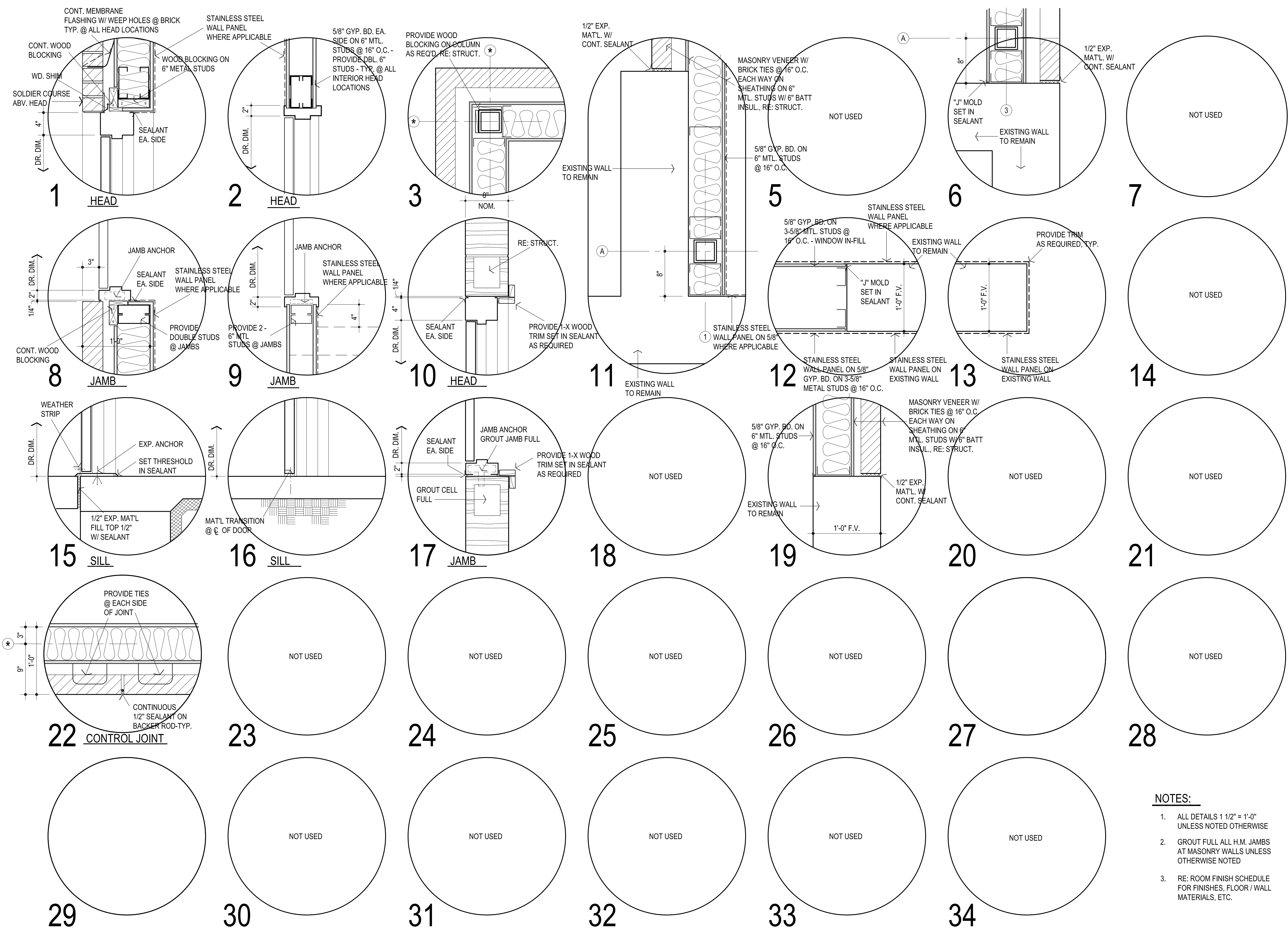
6 S. ELEVATION RM #8
1/4" = 1'-0"

GENERAL NOTES:

- DO NOT SCALE DRAWINGS TO OBTAIN MATERIAL QUANTITIES. USE DRAWINGS WHICH ARE DIMENSIONED OR COORDINATE W/ EXISTING CONDITIONS &/OR ARCHITECT & ENGINEERS.
- 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.

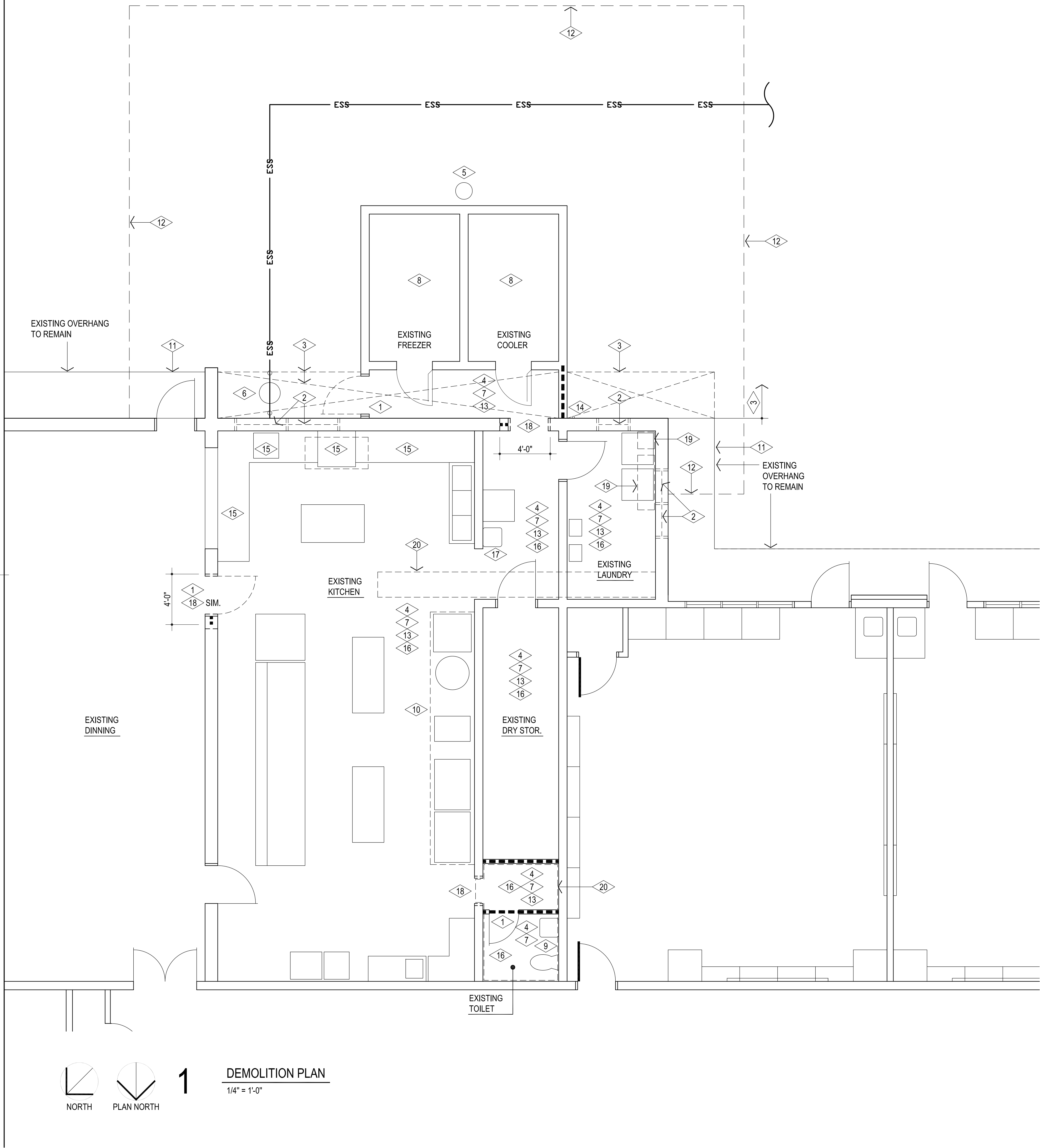
sheet no:

A401



NOTES:

- ALL DETAILS 1 1/2" = 1'-0" UNLESS NOTED OTHERWISE
- GROUT FULL ALL H.M. JAMBS AT MASONRY WALLS UNLESS OTHERWISE NOTED
- RE: ROOM FINISH SCHEDULE FOR FINISHES, FLOOR / WALL MATERIALS, ETC.



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 MOORE, OKLAHOMA.
8. CONSTRUCTION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE AMERICANS W/ DISABILITIES ACT INCLUDING ANY SUPPLEMENTAL REQUIREMENTS BY THE CITY OF MOORE, 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.
10. CAREFULLY REMOVE ALL KITCHEN EQUIPMENT / WORK TABLES, WALL MOUNTED ITEMS, ETC. AS NECESSARY FOR EXISTING DEMOLITION & INSTALLATION OF NEW / EXISTING EQUIPMENT AFTER INSTALLATION OF NEW FINISHES.

DEMOLITION NOTES:

- INDICATES EXISTING WALLS TO BE DEMOLISH TO LIMITS INDICATED
1. REMOVE EXISTING DOOR & FRAME.
 2. REMOVE EXISTING WINDOW SYSTEM AND VENEER SILL. PREPARE OPENING TO RECEIVE NEW STUD IN-FILL
 3. REMOVE EXISTING SOFFIT AND FRAMING, PREPARE AREA TO RECEIVE NEW ADDITION. RE: 6A302. PROTECT SOFFIT TO REMAIN. PATCH / REPLACE AS REQUIRED MATCH EXISTING. SALVAGE EXISTING SOFFIT & FASICA MATERIAL FOR REUSE.
 4. REMOVE EXISTING CEILING SYSTEM AT ENTIRE ROOM AS REQUIRED FOR NEW CEILING SYSTEM. RE: MECHANICAL & ELECTRICAL FOR ADDITIONAL WORK.
 5. DEMOLISH EXISTING CONDENSATE SUMP AND PREPARE AREA FOR NEW CONSTRUCTION
 6. DEMOLISH EXISTING GREASE INTERCEPTOR AND PREPARE AREA FOR NEW CONSTRUCTION. RE: PLUMBING FOR ADDITIONAL WORK.
 7. REMOVE EXISTING FLOORING & WALL BASE DOWN TO EXISTING CONCRETE SLAB / WALL. PREPARE / REPAIR EXISTING SLAB / WALLS TO RECEIVE NEW QUARRY TILE SYSTEM.
 8. REMOVE EXISTING COOLER AND FREEZER AND ASSOCIATED POWER, MECHANICAL EQUIPMENT, ETC.
 9. REMOVE EXISTING PLUMBING FIXTURES AND CAP EXISTING SERVICES AS REQUIRED. RE: PLUMBING FOR ADDITIONAL WORK.
 10. REMOVE EXISTING FIRE SUPPRESSION HOOD AND ASSOCIATED DUCT WORK. PREPARE / REPAIR / MODIFY EXISTING UTILITIES TO RECEIVE NEW HOOD / SUPPRESSION SYSTEM TO MEET ALL APPLICABLE CODES & STANDARDS.
 11. REMOVE EXISTING GUTTERS AND DOWNSPOUTS AS REQUIRED FOR NEW ADDITION. MODIFY GUTTERS TO REMAIN AS REQUIRED FOR PROPER OPERATION
 12. DEMOLISH EXISTING CONCRETE / ASPHALT TO LIMITS INDICATED. FILL & COMPACT VOIDS & PREPARE FOR KITCHEN ADDITION. WHERE APPLICABLE, PROTECT EXISTING CONCRETE SIDEWALKS TO REMAIN. REPAIR / REPLACE ANY SIDEWALKS / ASPHALT DAMAGED DURING CONSTRUCTION W/ NEW TO MATCH EXISTING.
 13. REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED MATERIALS AT AREAS TO RECEIVE WORK. REMOVE CONDUIT AND ASSOCIATED MATERIALS AT NEAREST JUNCTION BOX INSIDE BUILDING AS REQUIRED BY CODE. RE: ELECTRICAL.
 14. RELOCATE EXISTING GAS LINE AT BUILDING ENTRY. COORDINATE WITH ARCHITECT. RE: MECHANICAL
 15. REMOVE EXISTING DISHWASHER & ASSOCIATED DISH TABLES. PREPARE / REPAIR / MODIFY EXISTING UTILITIES TO RECEIVE NEW DISHWASHER, SINK, DISPOSAL, ETC.
 16. TEMPORALLY REMOVE ALL WALL MOUNTED ITEMS AS NECESSARY FOR PAINTING OF EXISTING / NEW CMU WALL W/ EPOXY PAINT.
 17. REMOVE EXISTING HAND SINK & SERVICE BACK TO EXISTING "MAINS" & CAP TO WATERTIGHT CONDITION. PATCH EXISTING CMU WALL TO REMAIN & EPOXY PAINT ENTIRE WALL.
 18. REMOVE EXISTING H.M. DOOR FRAME (& DOOR WHERE APPLICABLE) & ENLARGE OPENING WHERE INDICATED.
 19. REMOVE EXISTING WALL MOUNTED WOOD CABINETS.
 20. SAW CUT EXISTING CONCRETE SLAB AS REQUIRED FOR NEW PLUMBING WORK. RE: PLUMBING. NEW CONCRETE SLAB TO MATCH EXISTING.



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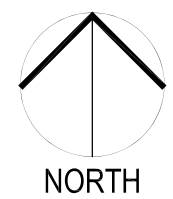


SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

AD101

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1

SITE PLAN
1" = 30'-0"

TO 5TH STREET

NORTH NORMAN AVE.

NEW ADDITION
MATCH EXISTING FIN. FLR.

EXISTING
PARKING TO
REMAIN

EXISTING SIDEWALK
TO REMAIN

EXISTING
PARKING TO
REMAIN

EXISTING
CONCRETE TO
REMAIN

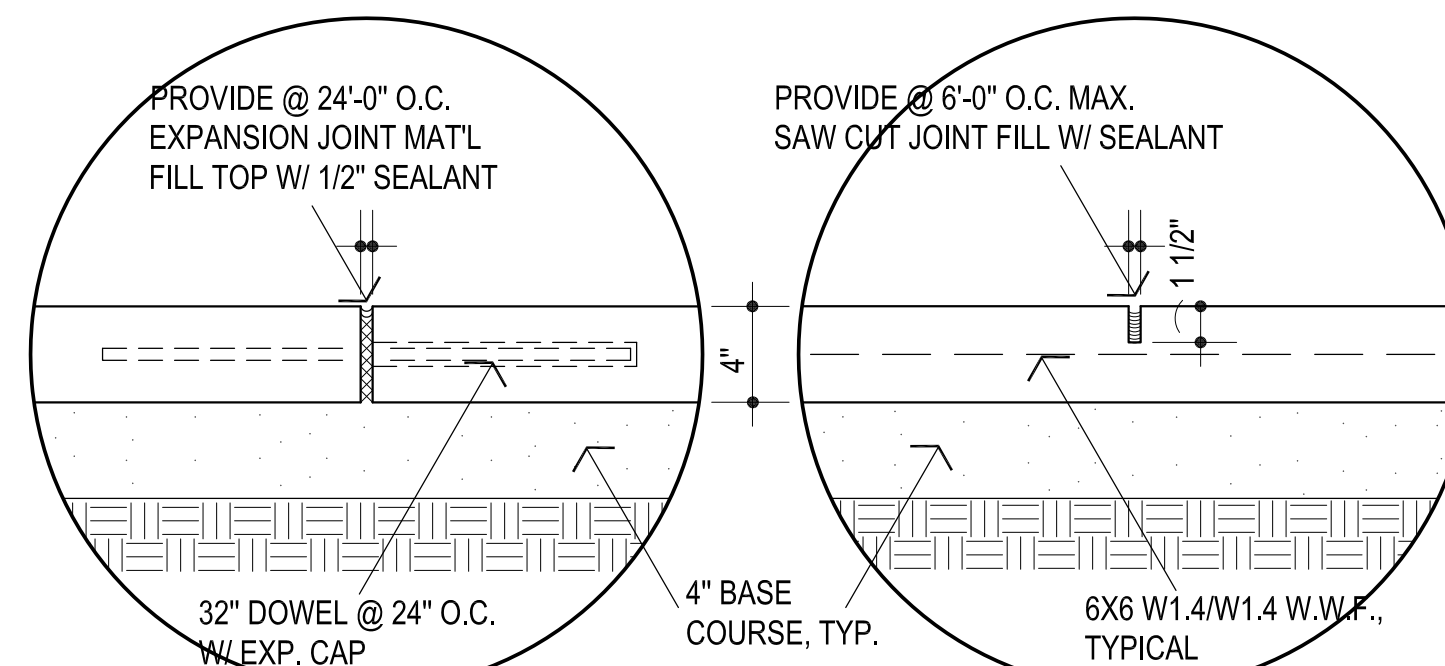
EXISTING
PAVILION

EXISTING
GYMNASIUM

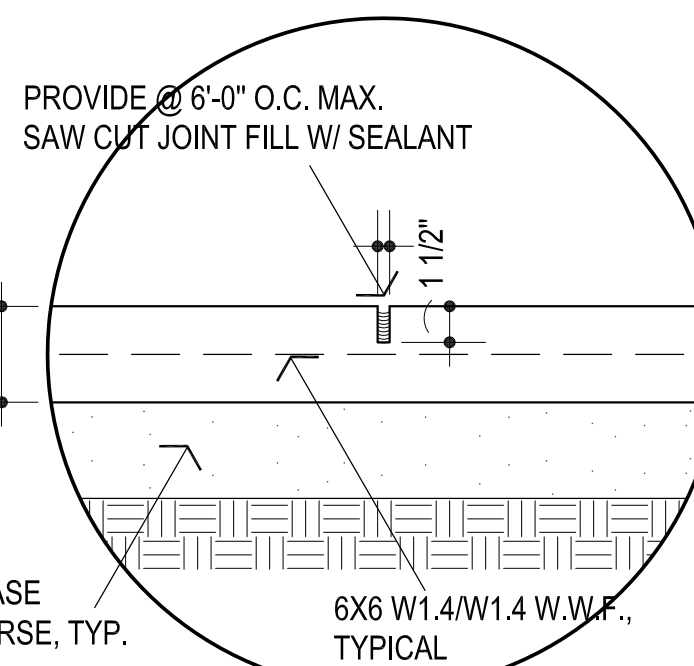
EXISTING DRIVE /
PAVING TO REMAIN

NEW 4" THICK
CONCRETE SIDEWALK,
RE: SHEET C100 FOR
TYPICAL DETAILS

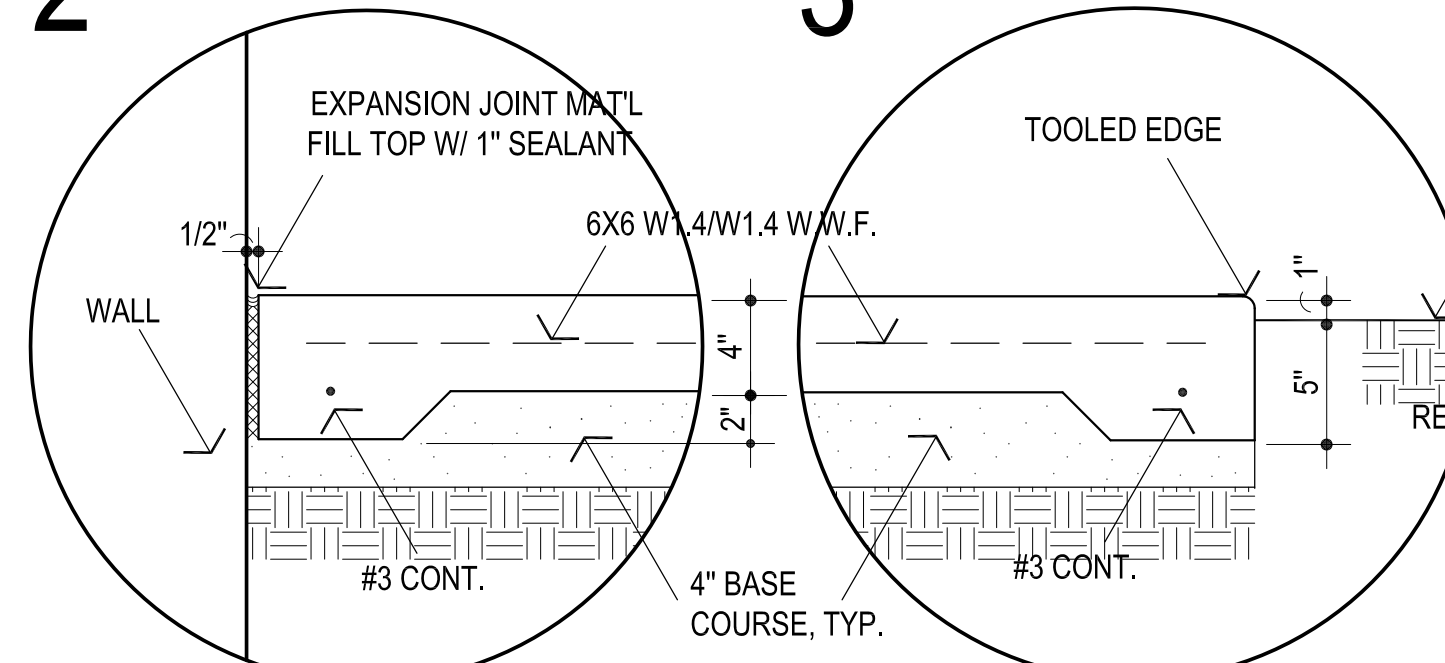
MATCH EXISTING
ELEVATION, TYP.



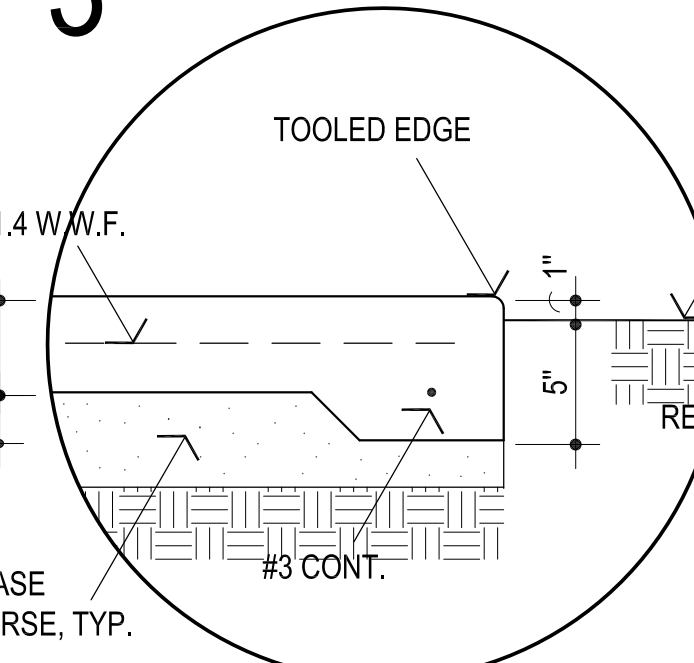
2 **SIDEWALK EXP. JOINT**



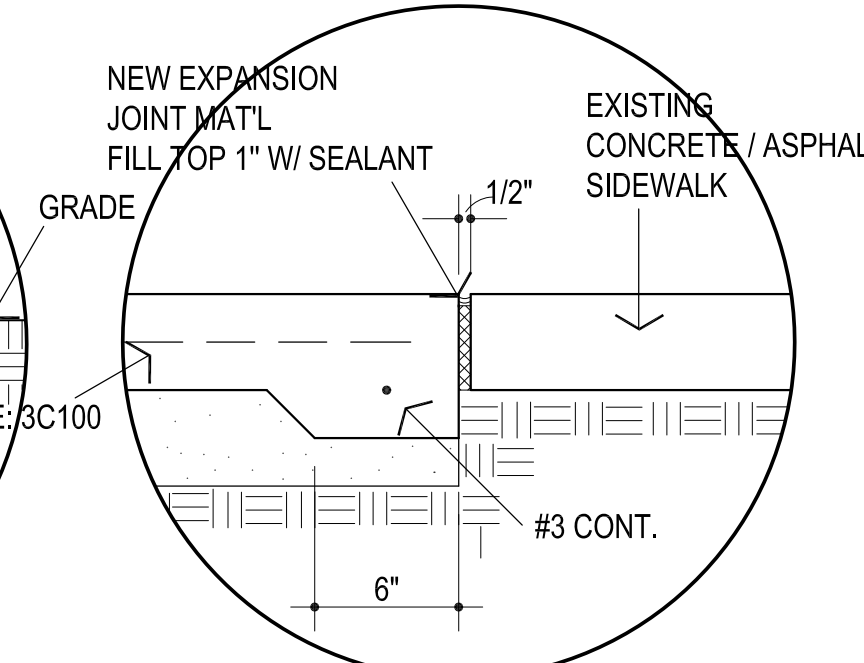
3 **SIDEWALK CONTROL JT.**



4 **SIDEWALK @ VERT. SURF.**



5 **SIDEWALK EDGE**



6 **EXISTING / NEW
CONCRETE SIDEWALK**

GENERAL NOTES:

- LOCATIONS OF EXISTING BUILDINGS, SITE FEATURES, & UNDERGROUND UTILITIES 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.
- ALL SOIL DISTURBED DURING CONSTRUCTION SHALL BE GRADED BY CONTRACTOR FOR INSTALLATION OF NEW SOD. COORDINATE W/ ARCHITECT.
- NO SURVEY OR EXISTING GRADING INFORMATION IS AVAILABLE.
→ INDICATES DOWNHILL DIRECTION OF PROPOSED WATER FLOW - SET FINAL GRADING ELEVATIONS AS REQUIRED TO INSURE POSITIVE SLOPE & DRAINAGE AWAY FROM BUILDING. COORDINATE W/ ARCHITECT.
- CONSTRUCTION SHALL MEET ALL APPLICABLE CODES, ORDINANCES, REGULATIONS & STANDARDS REQUIRED BY THE CITY OF MOORE, OKLAHOMA.
- CONSTRUCTION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE AMERICANS W/ DISABILITIES ACT INCLUDING ANY SUPPLEMENTAL REQUIREMENTS BY THE CITY OF MOORE, OKLAHOMA.
- CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ANY DAMAGE DONE TO EXISTING PAVING / ASPHALT TO REMAIN

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STRUCTURAL

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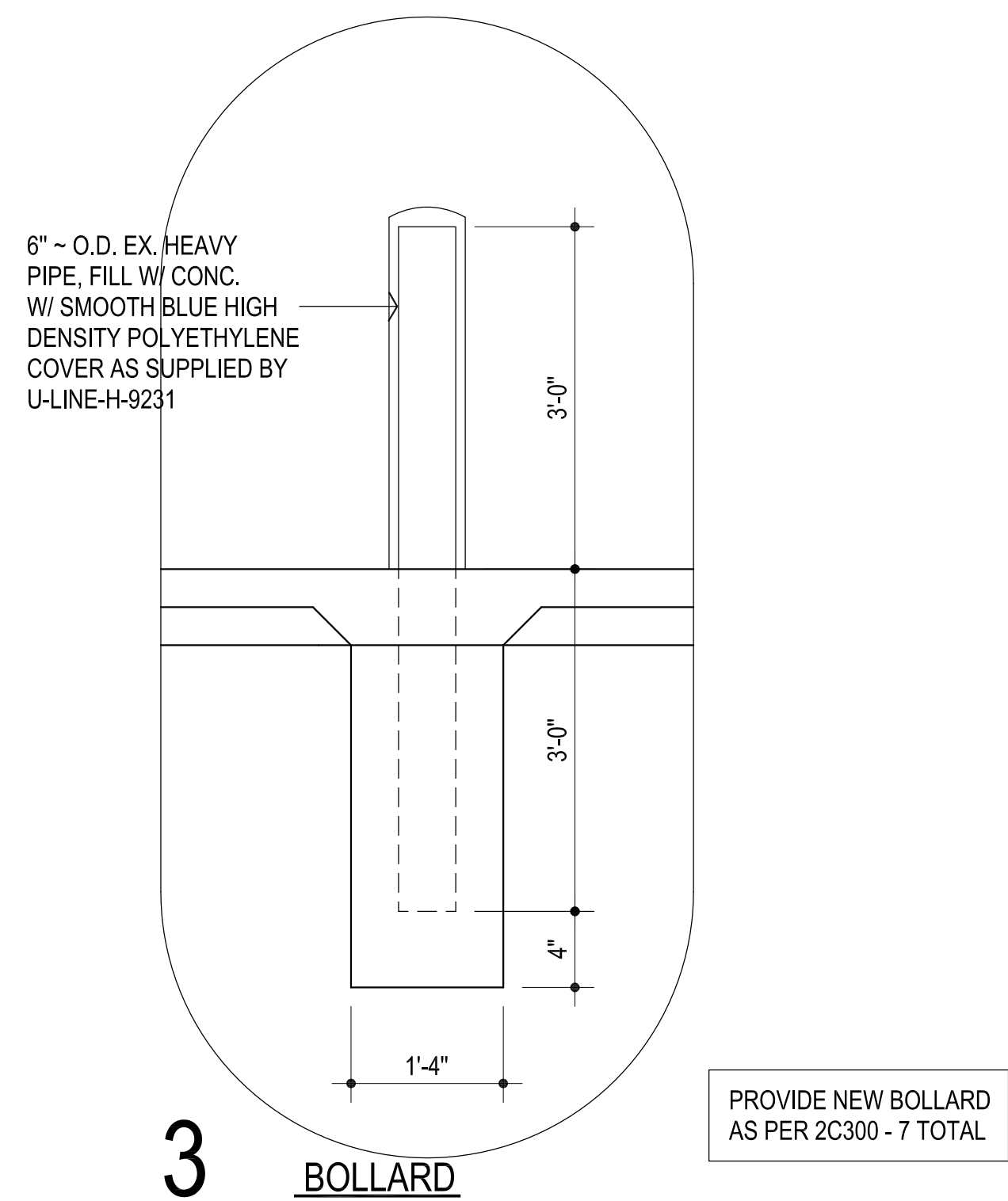
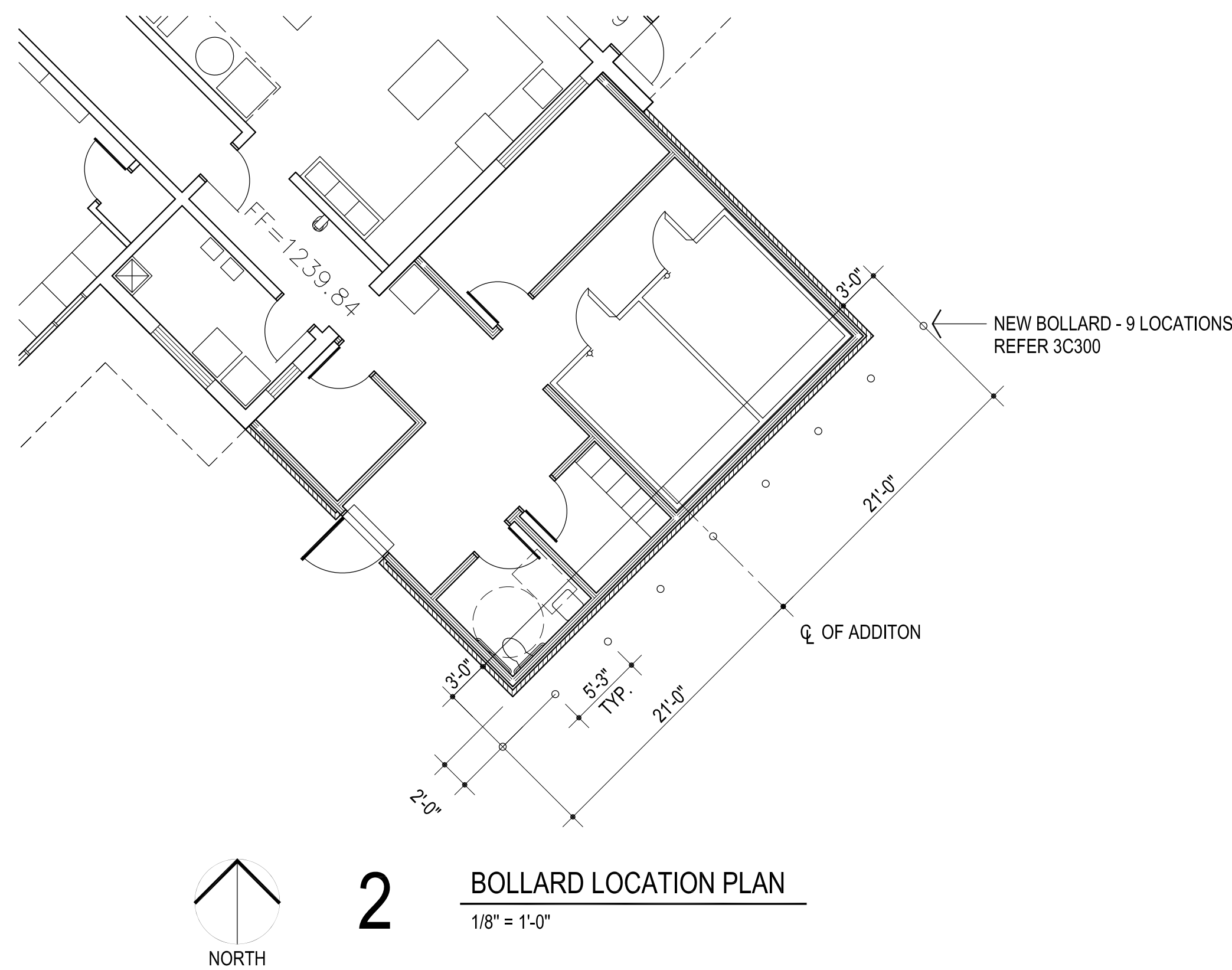
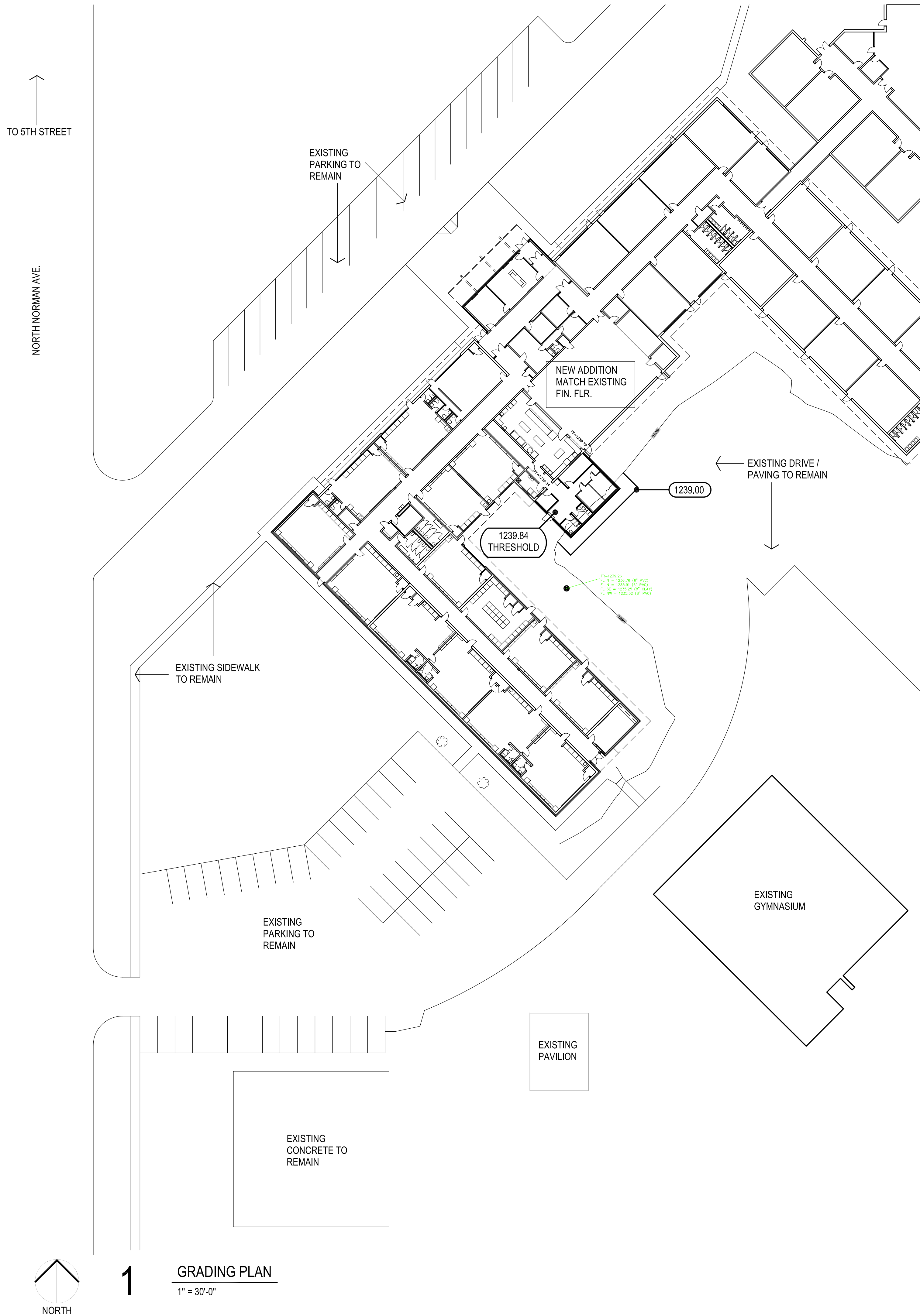
**SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION**

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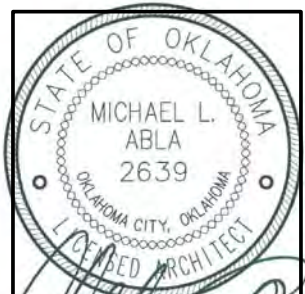
SOUTHGATE ELEMENTARY SCHOOL KITCHEN UPGRADES

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MOORE , OK. 73160

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the Abla Griffin
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313 SE 5TH STREET MOORE, OK. 73160
405.735.3477 AGP@theAGP.net www.the-AGP.net



5/15/26

CONSTRUCTION MANAGER


1909 S. EASTERN AVE.
MOORE, OK 73160

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STRUCTURAL

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MECHANICAL/ELECTRICAL/PLUMBING

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2900 S. TELEPHONE RD., SUITE 120
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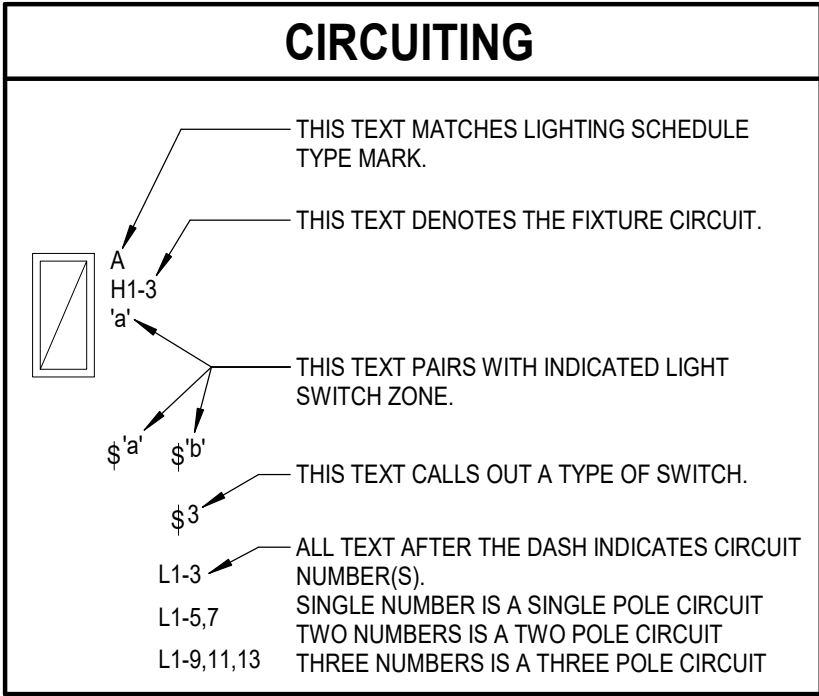
APRIL 2026

SOUTHGATE ELEMENTARY SCHOOL
KITCHEN UPGRADES

SET NO.

LIGHTING FIXTURE SCHEDULE									
Type Mark	CATALOG NUMBER		MOUNTING	LAMP TYPE	CCT	CRI	VOLTAGE	LOAD	REMARKS
A1	METALUX	24CGT4535C	RECESSED	4268L LED	3500K	80	120	39 W	2' X 4' LED TROFFER, DAMP RATED, 0-10V DIMMING.
A1E	METALUX	24CGT4535C-EL7W	RECESSED	4268L LED	3500K	80	120	39 W	SAME AS A1 WITH 90 MINUTE BATTERY BACKUP.
C1E	HALO COMM	HC610D010REM7 HM60525835 61MDC	RECESSED	1000L LED	3500K	80	120	10 W	6-INCH MEDIUM BEAM 60 DEGREE OPEN DOWNLIGHT, 0-10V DIMMING.
EX1	SURE-LITES	LPX7RSF	UNIVERSAL	N/A	3500K	80	120	11 W	UNIVERSAL LED EXIT SIGN WITH WHITE HOUSING, RED LETTERING AND EMERGENCY BATTERY BACK-UP.
S1	METALUX	4SLSTP5LC-UNV	UNIVERSAL	5802L LED	3500K	80	120	48 W	4' LED STRIP FIXTURE, DAMP RATED, 0-10V DIMMING.
V1	METALUX	2BCLED-LD4-16SL-F-UNV-L835-CD1-U	WALL	1607L LED	3500K	80	120	18 W	2' LED VANITY FIXTURE, WET LISTED.
W1	VERSALED LIGHTING	WP38-C-1L-QT-MCT-WT	WALL	3811L LED	3000 K	80	120	30 W	EXTERIOR RATED WALLPACK.
W2	LUMINAIRE LED	BLD-24IN-MIN10-35W-30K-MVOLT-DP-BLK-EM B310ST	SURFACE	1907L LED	3000 K	80	120	20 W	2' MULLION MOUNT LED, 90 MINUTE BATTERY BACK-UP.
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.									

SYMBOL SCHEDULE			
SYMBOL	DESCRIPTION (DISREGARD ITEMS NOT SHOWN ON PLANS)	SYMBOL	DESCRIPTION (DISREGARD ITEMS NOT SHOWN ON PLANS)
LIGHTING (LETTER DENOTES TYPE - SEE LIGHT FIXTURE SCHEDULE)		MISCELLANEOUS EQUIPMENT	
	LIGHT FIXTURE		FIRE ALARM CONTROL PANEL
	FIXTURE ON EMERGENCY CIRCUIT OR BATTERY BACK-UP		FIRE ALARM REMOTE ANNUNCIATOR
	DOWNLIGHT FIXTURE		TRANSFORMER FOR DOOR BELL/BUZZER
	LIGHT FIXTURE - WALL MOUNTED		CHIME/BUZZER
	DOWNLIGHT FIXTURE ON EMERGENCY CIRCUIT	MOTOR CONTROLLERS AND EQUIPMENT	
	LIGHT FIXTURE - WALL MOUNTED ON EMERGENCY CIRCUIT		MOTOR, MAKE FINAL MOTOR CONNECTION
	EXIT LIGHT-CEILING MTD WITH DIRECTIONAL ARROWS AS REQUIRED		3-PHASE MOTOR, MAKE FINAL MOTOR CONNECTION
	EXIT LIGHT-WALL MTD WITH DIRECTIONAL ARROWS AS REQUIRED		DISCONNECT SWITCH AS REQUIRED
SWITCHES			FUSED DISCONNECT SWITCH AS REQUIRED
	SINGLE POLE SWITCH		COMBINATION MOTOR STARTER/DISCONNECT SWITCH AS REQUIRED
	2-POLE SWITCH		MOTOR STARTER
	3-WAY SWITCH		MANUAL MOTOR SWITCH AS REQUIRED
	4-WAY SWITCH		PREWIRED DEVICE, MAKE ELECTRICAL FINAL CONNECTIONS
	KEYED SWITCH		VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
	KEYED 3-WAY SWITCH	ELECTRICAL EQUIPMENT	
	WALL DIMMER SWITCH, SIZE AND TYPE AS REQUIRED		ELECTRICAL DISTRIBUTION OR PANELBOARD
	WALL MOUNTED DIMMER SWITCH WITH VACANCY SENSOR, MANUAL ON / AUTO OFF.		DRY TYPE TRANSFORMER
	WALL MOUNTED SWITCH WITH VACANCY SENSOR, MANUAL ON / AUTO OFF.	CIRCUITING	
	WALL MOUNTED SWITCH WITH VACANCY SENSOR, AUTO ON / AUTO OFF.		CONDUIT
	SWITCH WITH PILOT LIGHT		CONDUIT BELOW FLOOR, SLAB, OR GRADE
	MOMENTARY CONTACT SWITCH	SUBSCRIPTS AND ABBREVIATIONS	
	PUSH BUTTON	WG	INDICATES WIREGUARD
	6-HOUR TIMER SWITCH WITH HOLD	H	INDICATES HORIZONTAL
	6-HOUR TIMER SWITCH WITH NO HOLD	TL	INDICATES TWIST LOCK
	2 AMP GENERATOR TRANSFER DEVICE	NL	LIGHT FIXTURE ON NIGHT LIGHT CIRCUIT
	WIRELESS SWITCH	ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
LOW VOLTAGE LIGHTING CONTROLS		1-L	REFER TO ONE-LINE DIAGRAM
	LOW VOLTAGE LIGHTING CONTROLLER WALL SWITCH	1-	INDICATES WALL MOUNTED DEVICE
	BACS TIMER LOCAL OVERRIDE SWITCH	AC	ABOVE COUNTERTOP
	CEILING MOUNTED PHOTO SENSOR	AFF	ABOVE FINISH FLOOR
	CEILING MOUNTED VACANCY SENSOR, MANUAL ON / AUTO OFF	AFG	ABOVE FINISH GRADE
	CEILING MOUNTED OCCUPANCY SENSOR, AUTO ON / AUTO OFF	ANNC	ANNUNCIATOR
	LIGHTING CONTROLLER WITH GTD, ZONES AS REQUIRED.	CC	CONTROLS CONTRACTOR
RECEPTACLES AND OUTLETS		DF	DRINKING FOUNTAIN
	SIMPLEX RECEPTACLE	EC	ELECTRICAL CONTRACTOR
	DUPLEX RECEPTACLE	EF	EXHAUST FAN
	POWER POLE	ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
	125/250 VOLT, 1 PHASE, 3-WIRE, 20 AMPS UNLESS NOTED OTHERWISE	EXR	EXISTING RELOCATED
	CEILING MOUNTED RECEPTACLE	GC	GENERAL CONTRACTOR
	DOUBLE DUPLEX IN 2-GANG BOX WITH SINGLE COVER PLATE	GFI	GROUND FAULT INTERRUPT
	DOUBLE DUPLEX GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE IN 2-GANG BOX WITH SINGLE COVER PLATE.	HP	HORSEPOWER
	DUPLEX GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE	IBC	INTERNATIONAL BUILDING CODE
	FLUSH FLOOR CONCEALED SERVICE DUPLEX RECEPTACLE OUTLET	IG	ISOLATED GROUND
	FLUSH FLOOR CONCEALED SERVICE DOUBLE DUPLEX RECEPTACLE OUTLET	LSIG	LONG TIME, SHORT TIME, INSTANTAEOUS, AND GROUND
	CONCEALED SERVICE MULTI-ACCESS FLOOR BOX WITH WIRING DEVICES AS INDICATED ON DRAWINGS. SIZE TO MATCH DEVICE QUANTITIES.	LV	LOW VOLTAGE
	REMOTE BLANK FACE GFCI DEVICE.	LVRP	LV RELAY PANEL
	PROVIDE DUPLEX RECEPTACLE WITH (2) USB CHARGING PORTS.	MC	MECHANICAL CONTRACTOR
	E.C. TO PROVIDE ROUGH-IN FOR CARD READER JUNCTION BOX. REFER TO TECHNOLOGY SHEETS FOR ADDITIONAL INFORMATION.	MCA	MINIMUM CIRCUIT AMPS
	SWITCH CONTROLLED RECEPTACLE WITH THE TOP RECEPTACLE LOAD CONTROLLED VIA PLUG LOAD SWITCH MEETING 2021 IECC 405.11 REQUIREMENTS. SPLIT LOAD-CONTROLLED RECEPTACLES SHALL BE PERMANENTLY FACTORY MARKED AS CONTROLLED.	MDP	MAIN DISTRIBUTION PANEL
	ELECTRICAL CONNECTION	MCB	MAIN CIRCUIT BREAKER
	ELECTRICAL J-BOX CONNECTION	MLO	MAIN LUG ONLY
	KEYED NOTE	MTD	MOUNTED
		NIC	NOT IN CONTRACT
		OCC	OCCUPANCY
		PC	PLUMBING CONTRACTOR
		PNL	PANEL
		SPST	SINGLE POLE SINGLE THROW
		TTB	TELEPHONE TERMINAL BOARD
		TYP	TYPICAL
		WG	WIRE GUARD
		WP	WEATHER PROOF
		20A	20 AMP
		ø	PHASE
		3W	3 WIRE
		1P20A	SINGLE POLE 20 AMP
		•	NEXT TO ANY SYMBOL INDICATES FINAL ROUGH-IN FIELD COORDINATION BY CONTRACTOR WITH ARCHITECTURAL MILLWORK DRAWINGS AND OTHER TRADES.
GENERAL NOTES:			
1. ALL EXTERIOR BUILDING ELECTRICAL EQUIPMENT AND DEVICES TO BE WEATHERPROOF NEMA-3R MINIMUM.			



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, MECHANICAL, & PLUMBING 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.
9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE A TEMPORARY ELECTRICAL SYSTEM FOR THE PROJECT. AT LEAST ONE 120 VOLT SINGLE PHASE RECEPTACLE SHALL BE PROVIDED FOR EACH 500 SQUARE FEET OF FLOOR SPACE. SUFFICIENT TEMPORARY LIGHTING SHALL BE PROVIDED TO ALLOW ALL CONTRACTORS TO COMPLETE THEIR WORK. TEMPORARY ELECTRICAL CIRCUITS SHALL BE EQUIPPED WITH COMBINATION GROUND FAULT INTERRUPTER AND CIRCUIT BREAKER PER NEC. TEMPORARY ELECTRICAL SYSTEM SHALL BE INCLUDED IN THIS BID. USAGE CHARGES SHALL BE PAID FOR BY THE GENERAL CONTRACTOR.

ELECTRICAL SHEET INDEX	
E000	ELECTRICAL TITLE SHEET
E001	ELECTRICAL SITE PLAN
ED101	ELECTRICAL DEMOLITION PLAN
E101	ELECTRICAL LIGHTING PLAN
E201	ELECTRICAL POWER PLAN
E202	ELECTRICAL ROOF PLAN
E401	ELECTRICAL ONE-LINE DIAGRAM
E501	ELECTRICAL DETAILS
E601	ELECTRICAL SCHEDULES
E701	ELECTRICAL SPECIFICATIONS

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MOORE
PUBLIC SCHOOLS

SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:
E000

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Moore, OK 73160
Call#: 9820 Expiration Date: 06/30/2027
Salas O'Brien Project Number: 2650-00226-00

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SITE GENERAL NOTES

1. THE PURPOSE OF THIS SHEET IS TO REFERENCE THE EXISTING ELECTRICAL EQUIPMENT. REFER TO OTHER ELECTRICAL SHEETS FOR SCOPE OF WORK.

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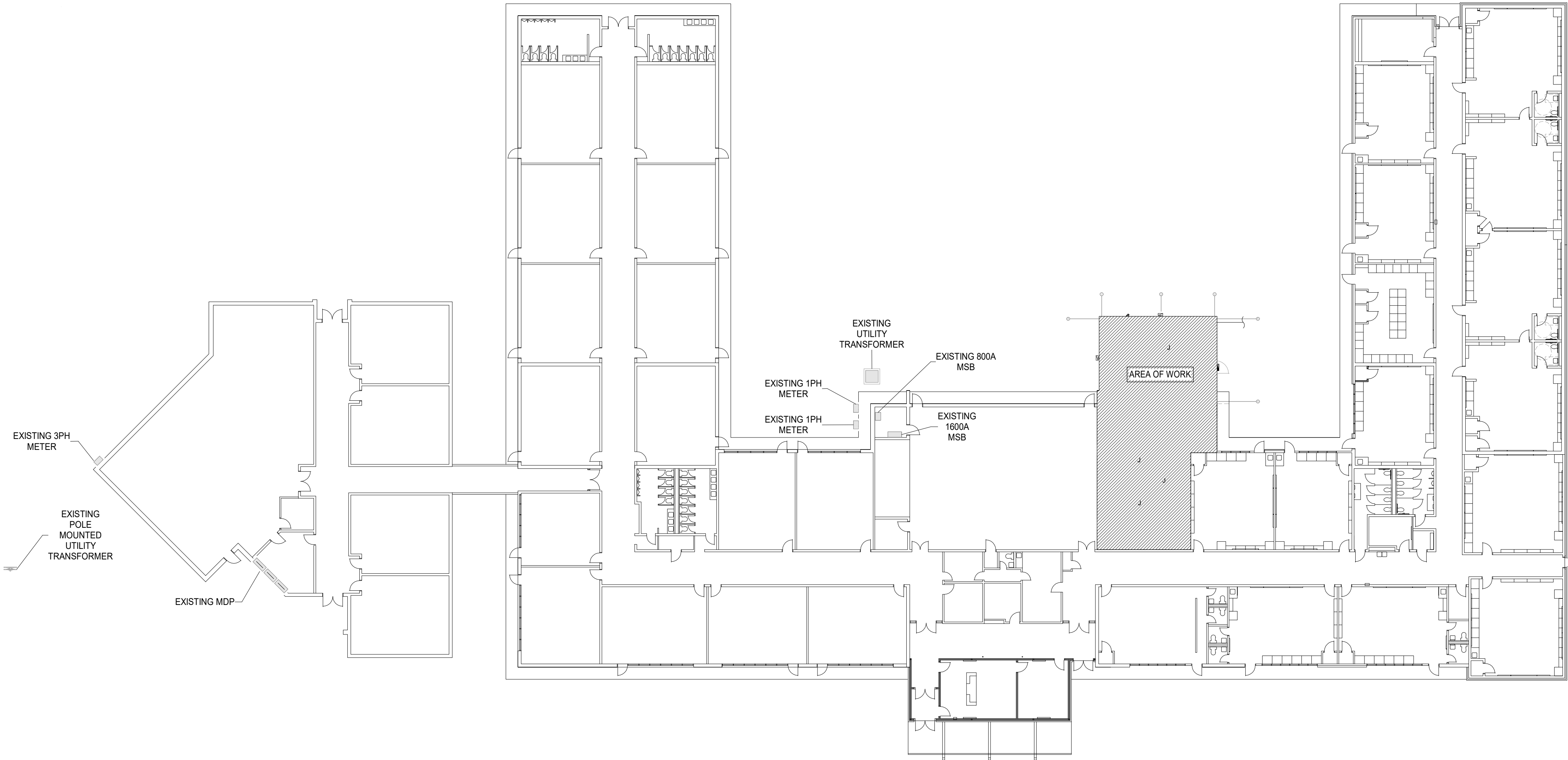
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E001

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 **1 ELECTRICAL SITE PLAN**
Scale: 3/64" = 1'-0"



- LIGHTING GENERAL NOTES**
1. OCCUPANCY SENSOR LOCATIONS SHOWN ARE FOR DESIGN INTENT ONLY. LOCATE OCCUPANCY SENSORS PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

2. CONNECT BATTERY PACKS TO UNSWITCHED HOT OF LOCAL LIGHTING CIRCUIT.

3. COORDINATE WITH ALL ASSOCIATED TRADES FOR THE EXACT LOCATIONS OF LIGHT FIXTURES WITH HVAC EQUIPMENT AND OTHER DEVICES/EQUIPMENT.

4. COORDINATE WITH THE ARCHITECT, OWNER, AND ASSOCIATED TRADES FOR THE EXACT HEIGHT/LOCATION OF EXTERIOR MOUNTED LIGHTING FIXTURES PRIOR TO ROUGH-IN.

5. LABEL SWITCH PLATES AND J-BOXES WITH CIRCUIT PER SPECS.

6. COORDINATE LIGHT SWITCHES WITH THERMOSTATS AND OTHER WALL MOUNT DEVICES.

7. EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY TO INTERLOCK WITH EXISTING EXTERIOR LIGHTING CONTROLS. EC SHALL FIELD INVESTIGATE AND REPORT ANY ANOMALIES TO THE ARCHITECT AND ENGINEER PRIOR TO PROCEEDING.

8. REFER TO SHEET E000 FOR LIGHTING FIXTURE SCHEDULE.

- ELECTRICAL KEYED NOTES**
- 1 WALK-IN LIGHTING PROVIDED BY OTHERS.

2 CIRCUIT NEW FIXTURES TO EXISTING LIGHTING CIRCUITS. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED. EXISTING WIRE AND CONDUIT MAY BE REUSED WHERE IN SERVICABLE CONDITION AND SIZED APPROPRIATELY. EC SHALL WARRANTY ANY REUSED MATERIALS AS NEW.

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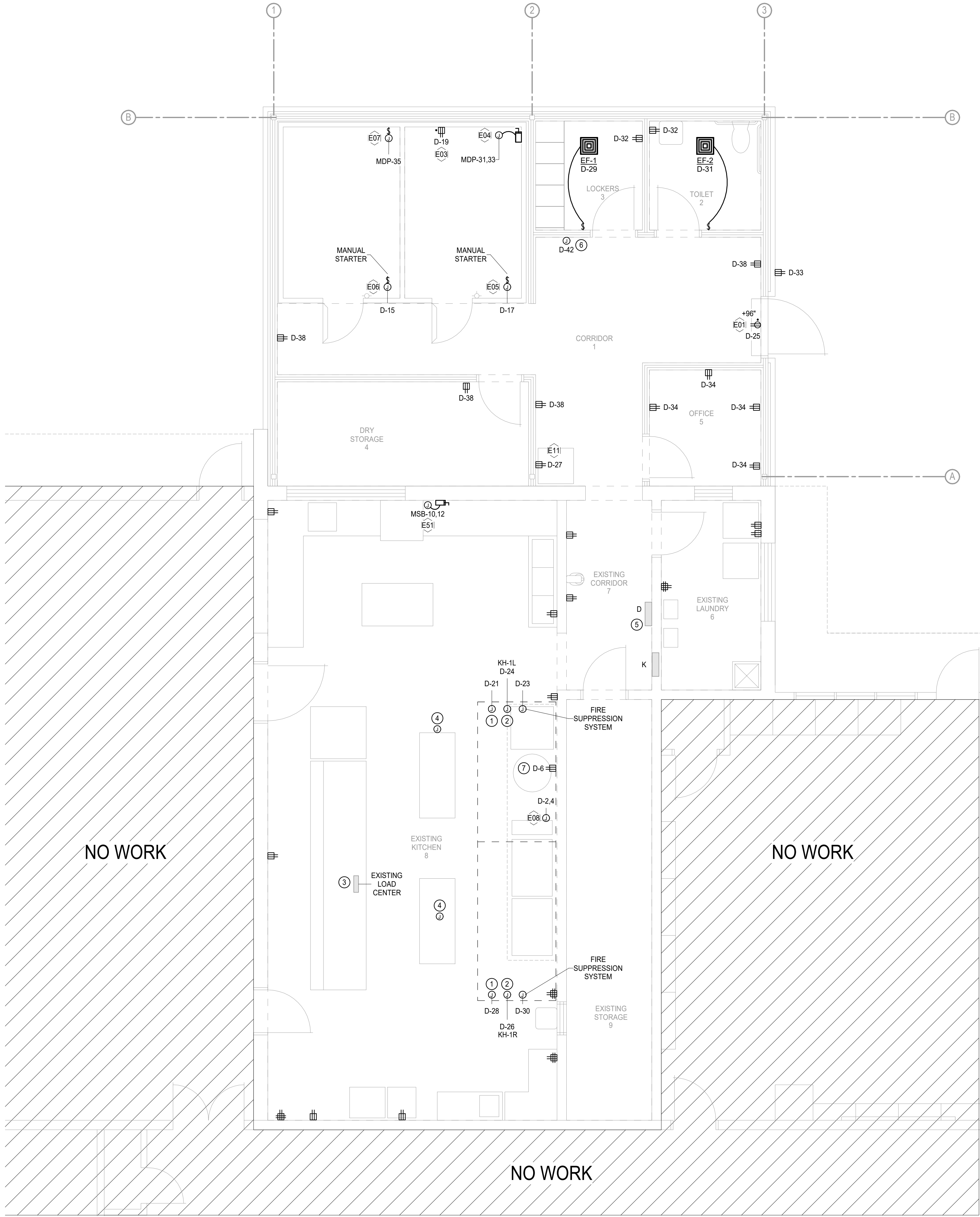
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1 ELECTRICAL POWER PLAN
Scale: 1/4" = 1'-0"

KITCHEN GENERAL NOTES

1. REFER TO SHEET E601 FOR KITCHEN EQUIPMENT SCHEDULE.
2. AVOID UNDER FLOOR CONDUIT WITHIN KITCHEN SPACE UNLESS ABSOLUTELY NECESSARY.
3. PURPOSE OF THIS SHEET IS TO GIVE DIRECTION ON CIRCUITING THE FOOD SERVICE PLANS & GAS FIRED EQUIPMENT HOOD DRAWINGS.
4. COORDINATE KITCHEN/FOODSERVICE EQUIPMENT EXACT INSTALLATION LOCATIONS AND REQUIREMENTS WITH THE ARCHITECT, MANUFACTURER, AND FOOD SERVICE CONTRACTOR PRIOR TO BEGINNING WORK. REFER TO FOOD SERVICE PLANS FOR ADDITIONAL INFORMATION.
5. COORDINATE KITCHEN HVAC EQUIPMENT EXACT INSTALLATION LOCATIONS AND REQUIREMENTS WITH THE ARCHITECT, MECHANICAL CONTRACTOR, AND ALL OTHER ASSOCIATED TRADES PRIOR TO ROUGH-IN. REFER TO MECHANICAL PLANS FOR ADDITIONAL INFORMATION.
6. COORDINATE KITCHEN PLUMBING EQUIPMENT EXACT INSTALLATION LOCATIONS AND REQUIREMENTS WITH THE ARCHITECT, PLUMBING CONTRACTOR, AND ALL OTHER ASSOCIATED TRADES PRIOR TO ROUGH-IN. REFER TO PLUMBING PLANS FOR ADDITIONAL INFORMATION.
7. E.C. SHALL COORDINATE WITH OWNER, KITCHEN EQUIPMENT PROVIDER, AND OTHER TRADES PRIOR TO ROUGH IN TO ENSURE ALL ROUGH IN LOCATIONS ARE CONCEALED IN THE WALL AND STUBBED OUT IN THE PROPER LOCATIONS.
8. GFCI PROTECTION REQUIRED FOR ALL 120V & 208V RECEPTACLES RATED 100 AMPS OR LESS. PROVIDE GFCI FUNCTION ON BREAKER OR RECEPTACLE AS REQUIRED, PER NEC 210.8 (B).
9. PROVIDE GFCI FUNCTION ON BREAKER OR RECEPTACLE FOR ALL EXISTING CIRCUITS AS NECESSARY. REFER TO NOTE 8 ABOVE.
10. HOOD STAND ALONE FIRE SUPPRESSION SYSTEM SHALL HAVE INPUT TO BUILDING FIRE ALARM SYSTEM.
11. PROVIDE A 20 AMP, 1 HP, 120V POWER SUPPLY FOR KITCHEN EXHAUST FAN ANSUL SYSTEM. THE ACTIVATION OF THE FIRE SUPPRESSION SYSTEM SHALL AUTOMATICALLY SHUT DOWN THE FUEL AND ELECTRICAL POWER SUPPLY TO THE COOKING EQUIPMENT UNDER THE KITCHEN HOOD. THE FUEL AND ELECTRICAL POWER SUPPLY RESET SHALL BE MANUAL. SHUNT TRIP CIRCUIT BREAKERS SHALL BE USED FOR ELECTRICALLY SUPPLIED APPLIANCES LOCATED UNDER THE HOOD.

ELECTRICAL KEYED NOTES

1. PROVIDE CONNECTION FROM EXHAUST HOOD TO FIRE SUPPRESSION SYSTEM INITIATION AND GAS SOLENOID VALVE SHUT OFF CONNECTION UPON ACTIVATION. COORDINATE EXACT LOCATION WITH KITCHEN CONTRACTOR AND ARCHITECT.
2. PROVIDE CONNECTION TO EXHAUST HOOD. VERIFY REQUIREMENTS AND EXACT LOCATION WITH KITCHEN CONTRACTOR AND ARCHITECT.
3. RETURN EXISTING SERVING LINE BACK TO ORIGINAL LOCATION. REMOVE ALL WIRE AND CONDUIT USED FOR TEMPORARY RELOCATION AND RECONNECT EXISTING LOAD CENTER TO ORIGINAL LOCATION.
4. PROVIDE DROP RECEPTACLE. REUSE CIRCUIT FROM DEMOLISHED FLOOR RECEPTACLE. PROVIDE NEW WIRE, CONDUIT AND ANY OTHER MATERIALS REQUIRED TO EXTEND EXISTING CIRCUIT TO NEW LOCATION. COORDINATE EXACT LOCATION WITH ARCHITECT. REFER TO DETAIL 5/E501 FOR MORE INFORMATION.
5. PROVIDE NEW CIRCUIT BREAKER, WIRE AND CONDUIT FROM 800A MSB TO EXISTING PANEL 'D'. REFER TO DETAIL 2/E401 FOR MORE INFORMATION.
6. PROVIDE 120V 20A CIRCUIT FOR TRAP PRIMER CONNECTION ABOVE CEILING. COORDINATE WITH ARCHITECT AND PLUMBING CONTRACTOR FOR FINAL LOCATION.
7. PROVIDE 120V 20A CIRCUIT TO NEW RECEPTACLE FOR FUTURE EQUIPMENT.

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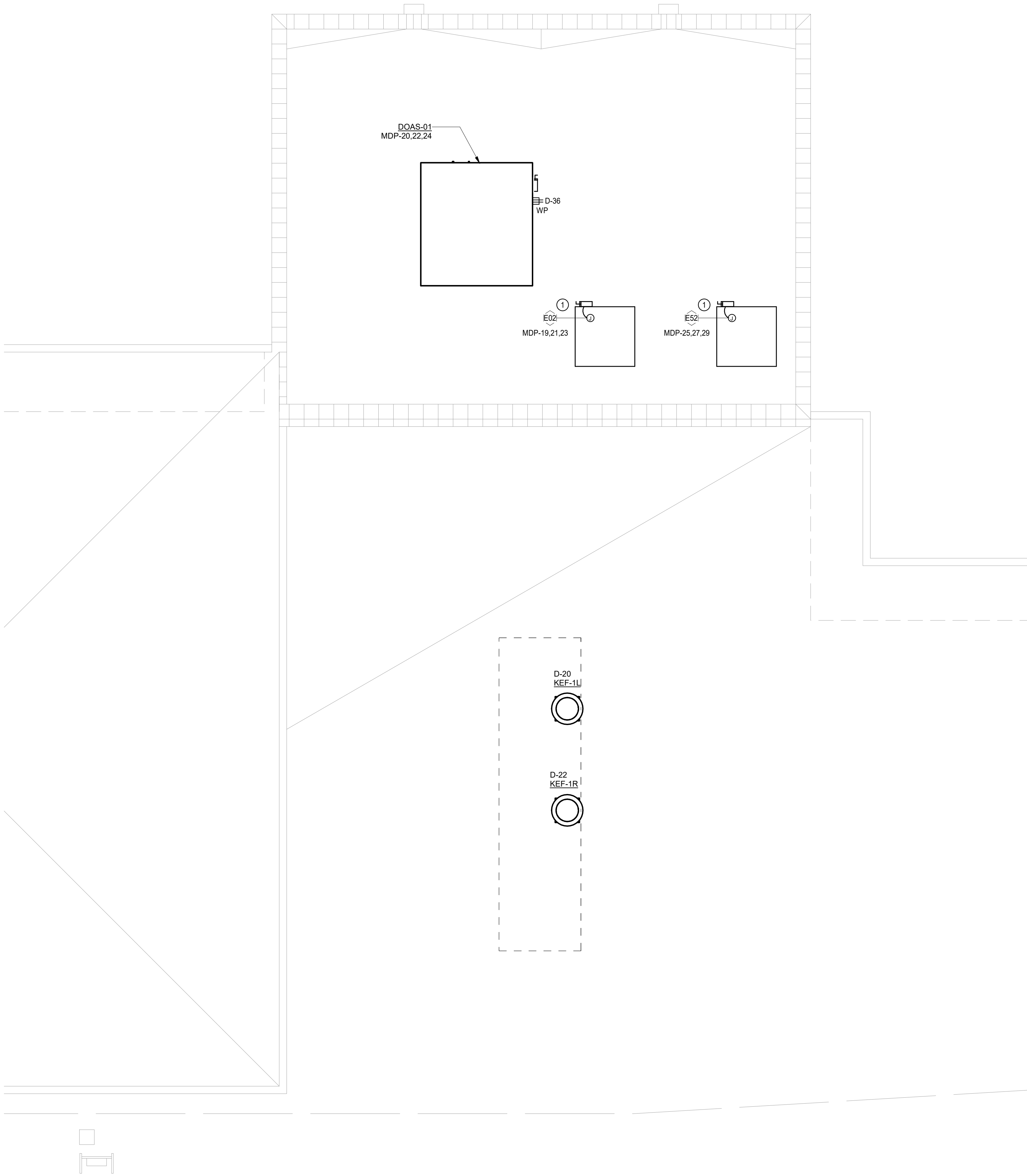
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1 ELECTRICAL ROOF PLAN
Scale: 1/4" = 1'-0"

- GENERAL NOTES
1.

COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
2.

COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE ALL RELAYS, CONNECTIONS, AND ALL DEVICES NECESSARY TO INTERLOCK EXHAUST FANS, DAMPERS, ETC WITH PROPER DEVICES.
3.

FIRMLY MOUNT WEATHERPROOF 120V CONVENIENCE OUTLET ON UNISTRUT/KINDORF. COORDINATE WITH OTHER TRADES PRIOR TO ROUGH-IN. REDUNDANT RECEPTACLES WHETHER STAND-ALONE OR INTEGRAL TO A UNIT, MAY BE OMITTED SO LONG AS ALL OF THE REQUIREMENTS OF NEC 210.63 ARE SATISFIED.
4.

REFER TO SHEET E601 FOR MECHANICAL EQUIPMENT SCHEDULE.

ELECTRICAL KEYED NOTES

1	WALK-IN CONDENSING UNIT. COORDINATE WITH ARCHITECT FOR EXACT LOCATION. REFER TO SHEET E601 FOR KITCHEN EQUIPMENT SCHEDULE.

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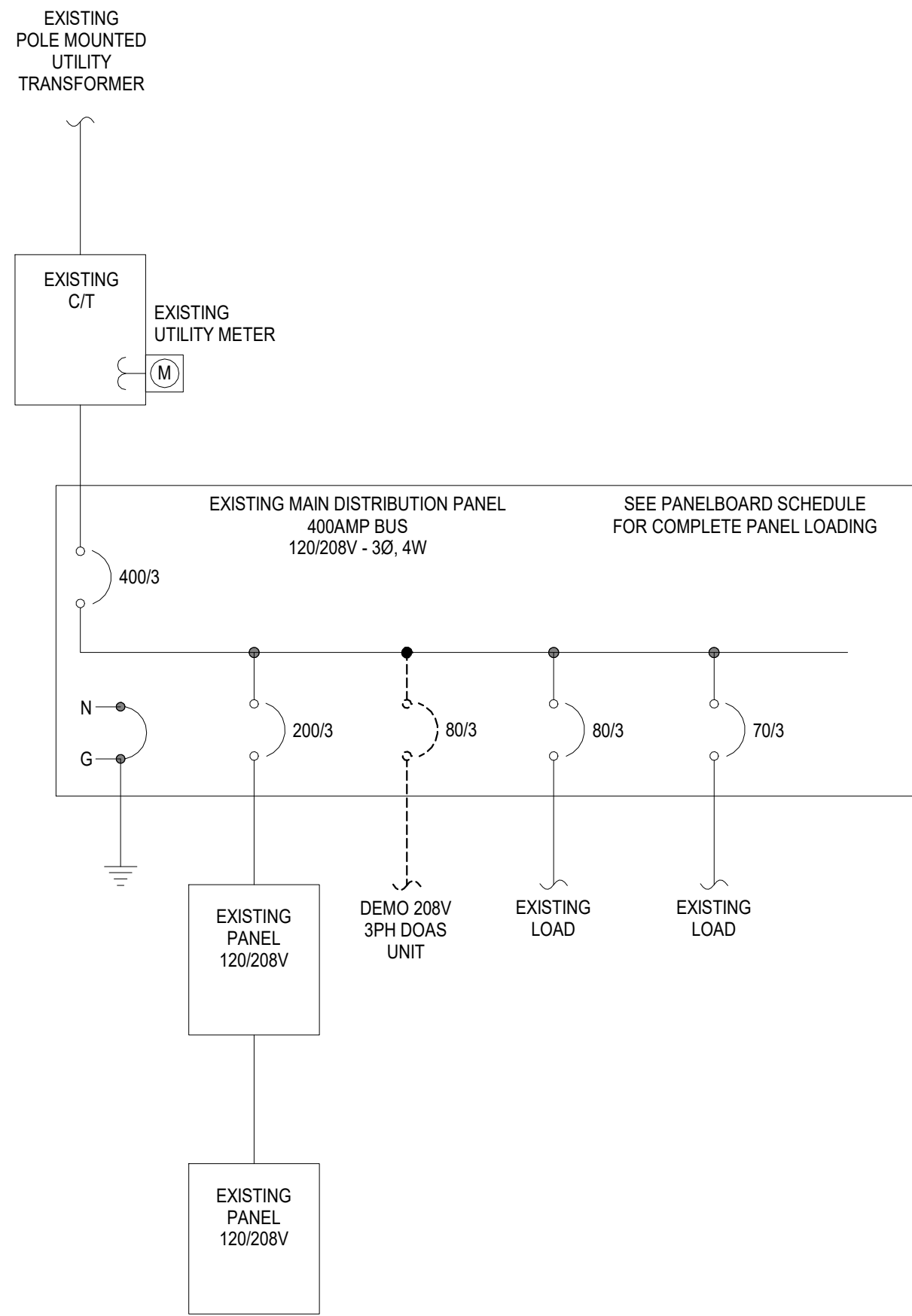
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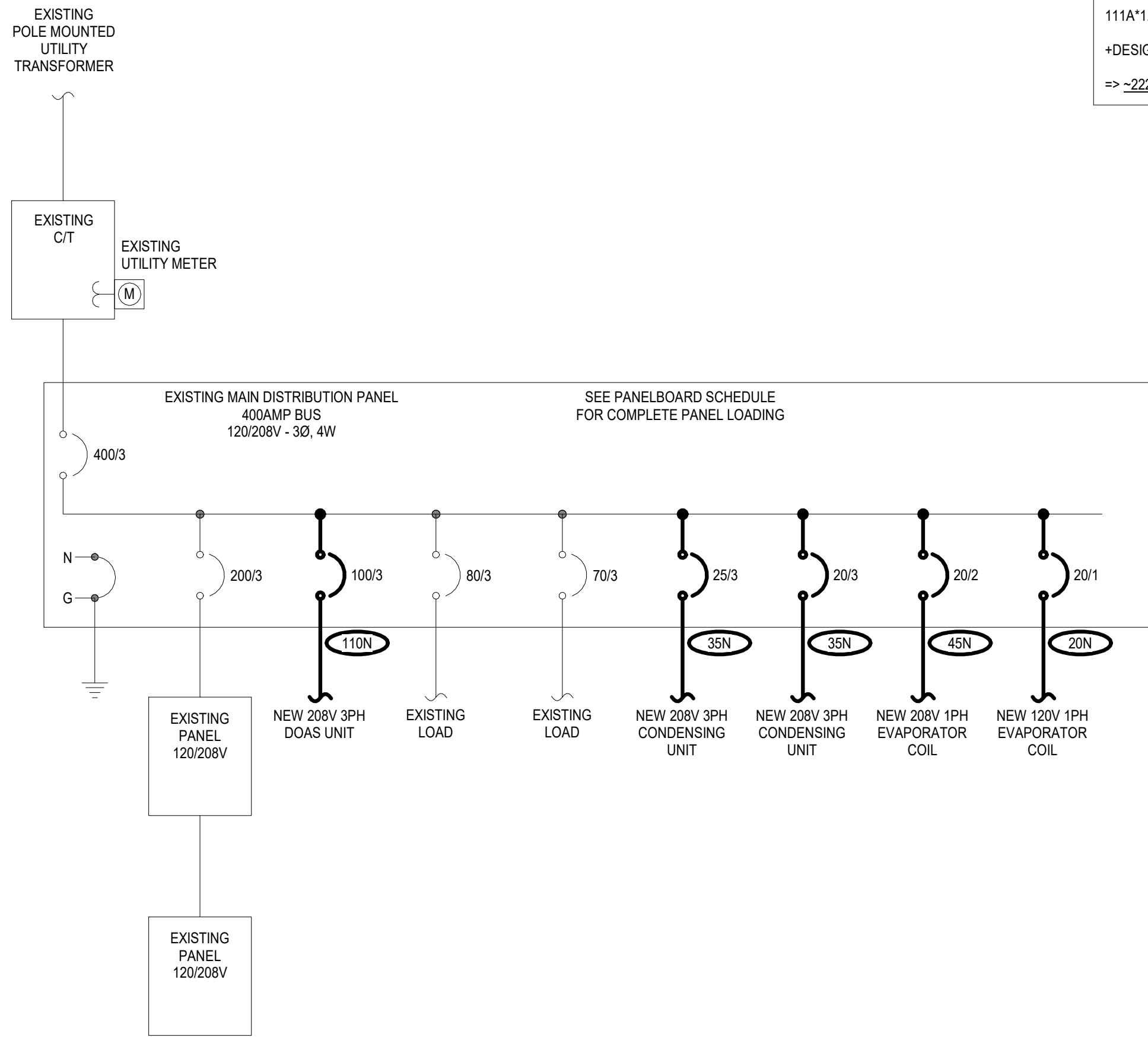
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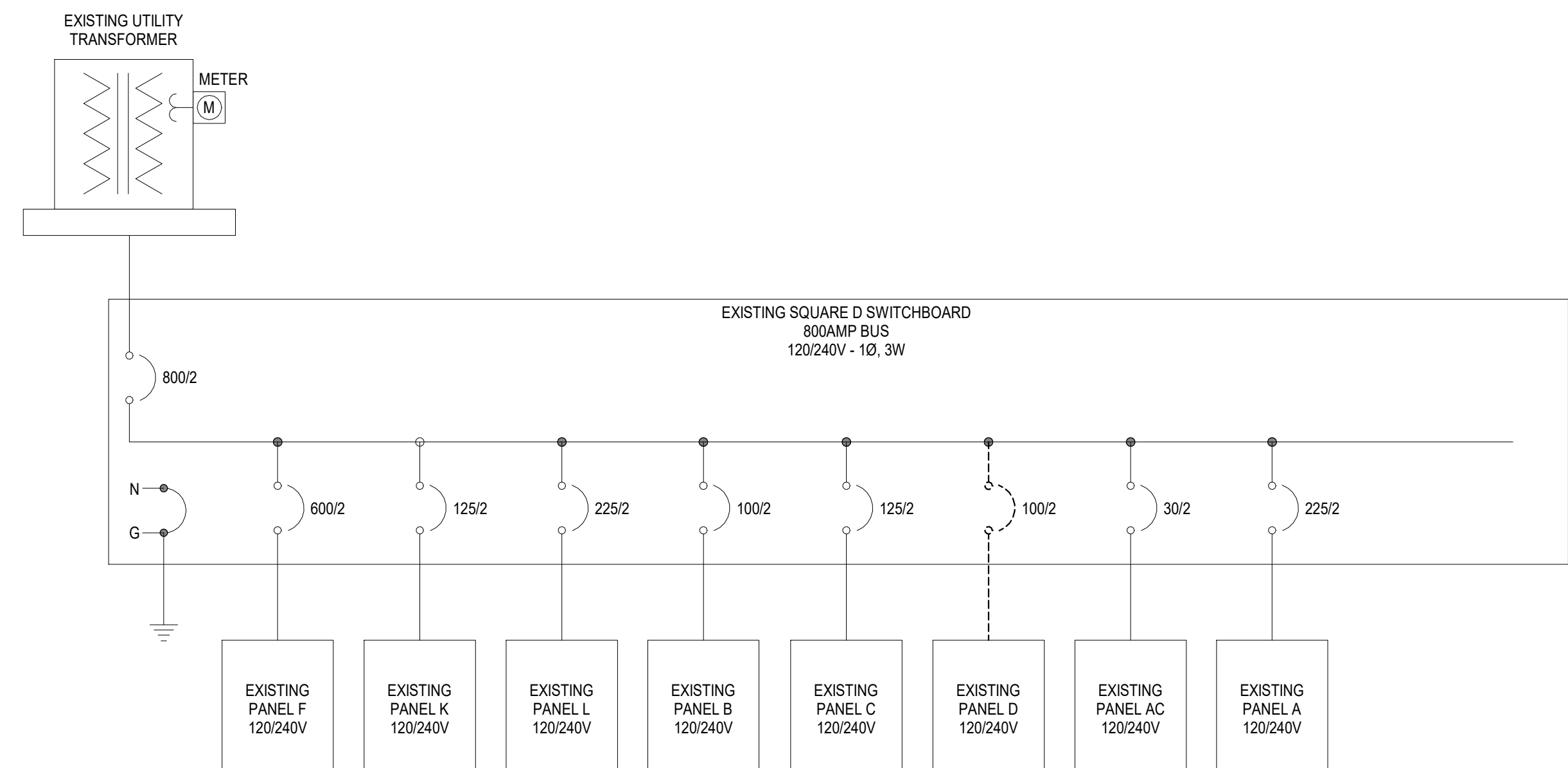
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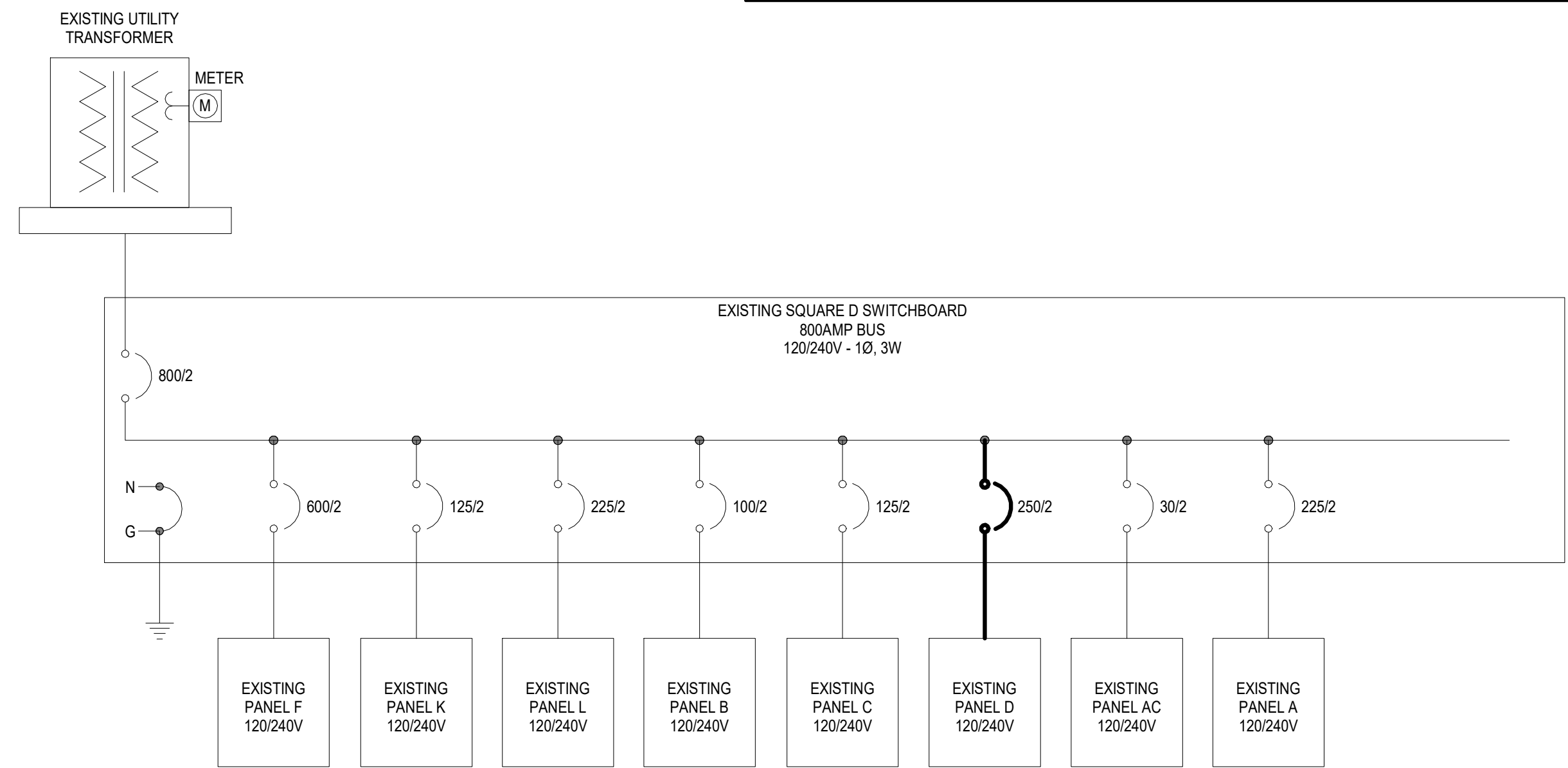
3 **ELECTRICAL ONE-LINE DIAGRAM - 3PH MDP - DEMO**
Scale: N.T.S.



1 **ELECTRICAL ONE-LINE DIAGRAM - 3PH MDP - NEW**
Scale: N.T.S.



4 **ELECTRICAL ONE-LINE DIAGRAM - 1PH MDP - DEMO**
Scale: N.T.S.



2 **ELECTRICAL ONE-LINE DIAGRAM - 1PH MDP - NEW**
Scale: N.T.S.

EXISTING LOAD ANALYSIS
EXISTING 3PH MDP LOAD ANALYSIS:
PEAK LOAD ASK REPORTED BY UTILITY: 111A/PHASE (40KVA)
111A*1.25 (PER NEC 220.87) = 139A/PHASE (50KVA)
+DESIGN LOAD = ~222A/PHASE (80KVA)
=> ~222A (80KVA) MAX ON THE PANEL 'MDP' 400A.

EXISTING LOAD ANALYSIS
EXISTING 1PH MDP LOAD ANALYSIS:
PEAK LOAD ASK REPORTED BY UTILITY: 312.5A/PHASE (75KVA)
312.5A*1.25 (PER NEC 220.87) = 390.625A/PHASE (93.8KVA)
+DESIGN LOAD = ~505.625A/PHASE (121.4KVA)
=> ~505.625A (121.4KVA) MAX ON THE PANEL 'MDP' 800A.

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.				



Δ	DESCRIPTION	DATE



JM/JS
drawn by
TVO
checked by
APRIL 2026
date

REVISIONS		
Δ	DESCRIPTION	DATE



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

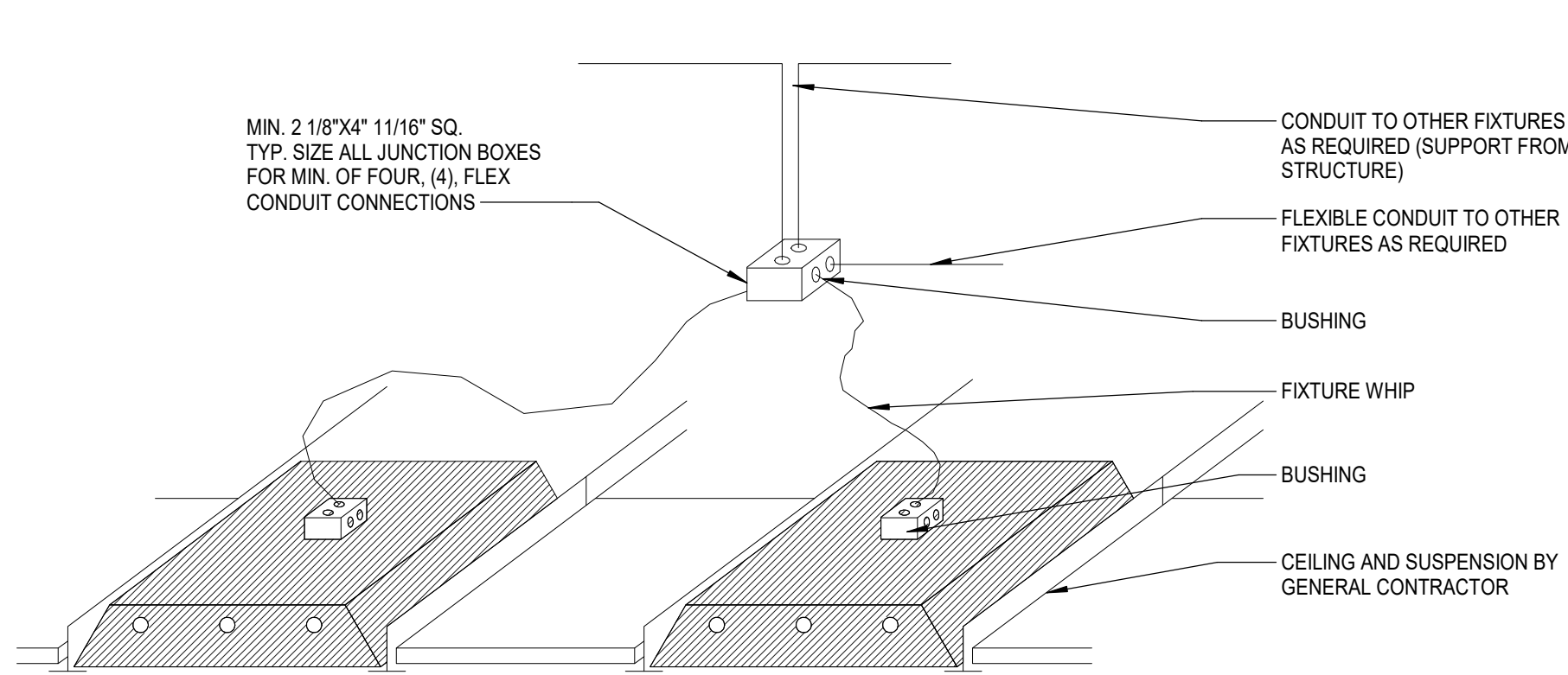
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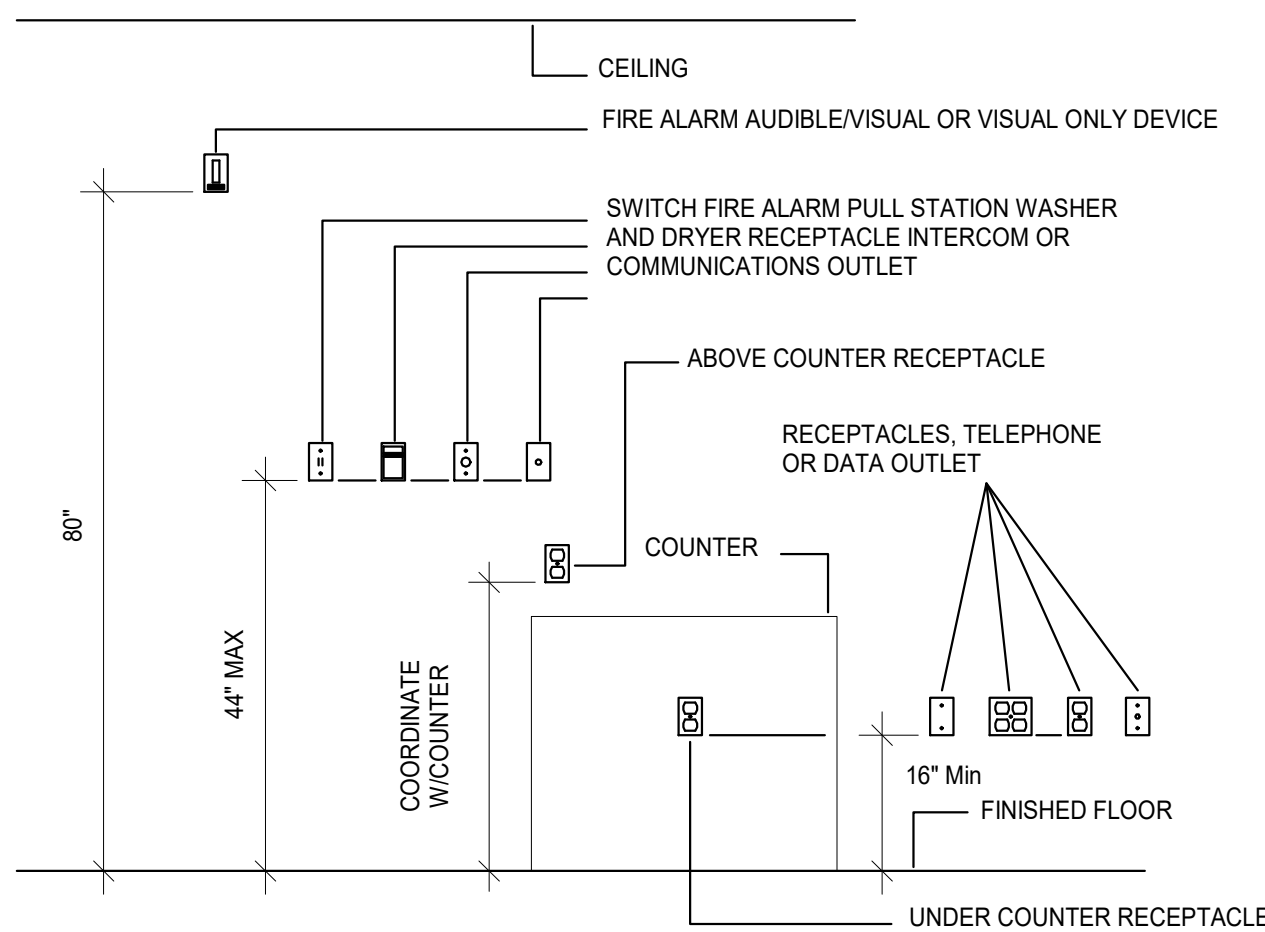
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**Salas O'Brien**

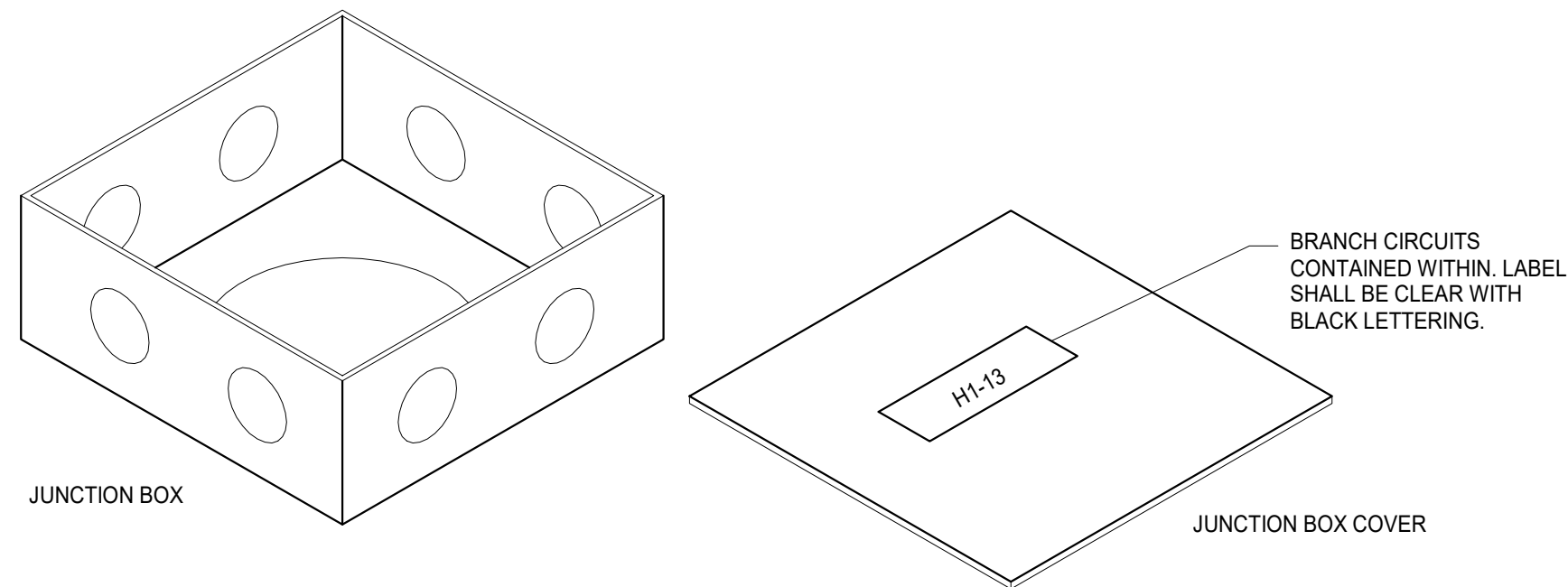
Salas O'Brien, Inc. - Oklahoma City
2900 S. Telephone Road, Suite 120
Moore, OK 73160
CA# 9820 Expiration Date: 06/30/2027
Salas O'Brien Project Number: 2650-00226-00



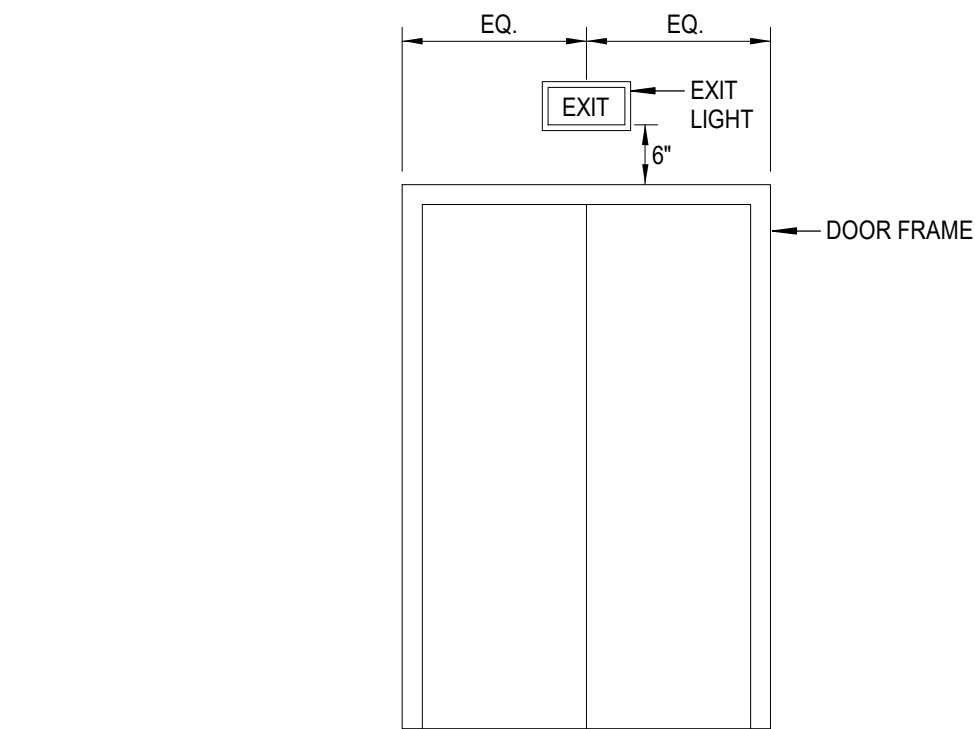
1 **TYP. TROFFER POWER DETAIL**
Scale: N.T.S.



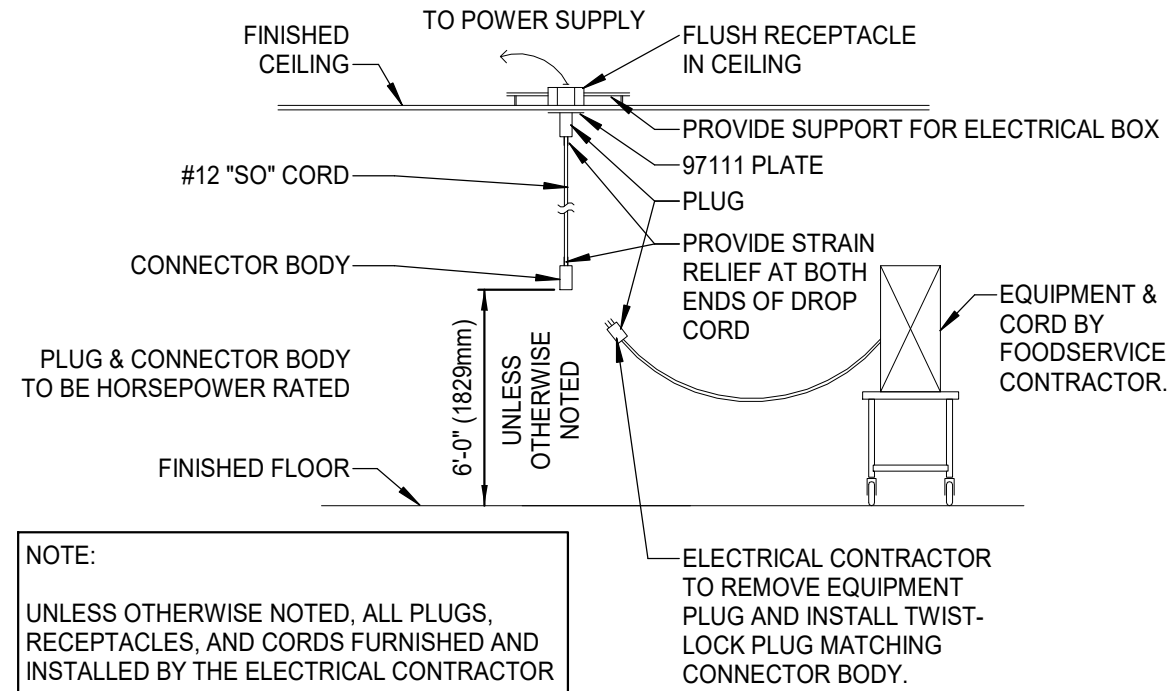
2 **TYP. OUTLET MOUNTING DETAIL**
Scale: N.T.S.



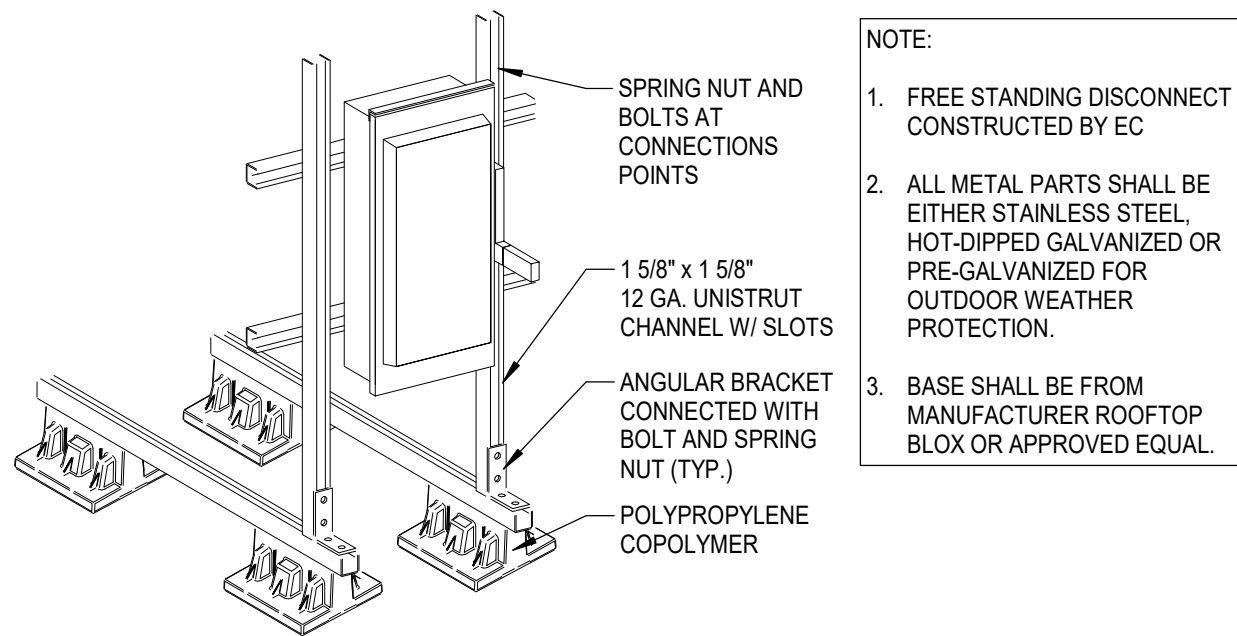
3 **TYP. JUNCTION BOX DETAIL**
Scale: N.T.S.



4 **TYP. EXIT SIGN LOCATION DETAIL**
Scale: N.T.S.



5 **TYP. FOOD SERVICE DROP CORD RECEPTACLE DETAIL**
Scale: N.T.S.



6 **TYP. DISCONNECT ROOF MOUNTING DETAIL**
Scale: N.T.S.



REVISIONS		
Δ	DESCRIPTION	DATE

Branch Panel: MSB												
Location: ELEC ROOM					Volts: 120/240 Single			A.I.C. Rating: EXISTING				
Supply From: UTILITY					Phases: 1			Enclosure: Type 1				
Mounting: Surface					Wires: 3			Mains: 800A				
Phase in kVA												
Note	CKT	Circuit Description	Wire	Breaker	A	B	Breaker	Wire	Circuit Description	CKT	Note	
--	1	PANEL F (EXISTING)	--	600	2	0.0 / 0.0	2	30	--	PANEL AC (EXISTING)	2	--
	3					0.0 / 0.0					4	
	5	PANEL K (EXISTING)	--	125	2	0.0 / 0.0		50	--	EXISTING LOAD	6	--
--	7					0.0 / 0.0	2				8	
	9	PANEL L (EXISTING)	--	225	2	0.0 / 10.6					10	
	11					0.0 / 10.6		110	#3	E01 DISHWASHER - EXISTING KITCHEN 8	12	U
--	13	PANEL B (EXISTING)	--	100	2	0.0 / 0.0	2	150	--	EXISTING LOAD	14	--
	15					0.0 / 0.0					16	
	17	PANEL C (EXISTING)	--	125	2	0.0 / 0.0		225	--	EXISTING LOAD	18	--
U	19					0.0 / 0.0	2				20	
	21	PANEL D (EXISTING)	--	250	2	9.1 / 0.0		225	--	PANEL A (EXISTING)	22	--
	23					9.1 / 0.0					24	
--	25					0.0 / 0.0	2	60	--	SPD (EXISTING)	26	--
	27	SERVICE DISCONNECT (EXISTING)	--	800	2	0.0 / 0.0					28	
	Total Load:					19.6 kVA		19.6 kVA				
Total Amps:					164 A	163 A						
Load Classification			Connected Load		Demand Factor		Estimated Demand		Panel Totals			
HVAC			1.9 kVA		100.00%		1.9 kVA					
Kitchen Equipment			33.6 kVA		65.00%		21.8 kVA		Total Conn. Load: 39.2 kVA			
Lighting			0.5 kVA		125.00%		0.6 kVA		Total Est. Demand: 27.6 kVA			
Power			0.1 kVA		100.00%		0.1 kVA		Total Conn. Current: 164 A			
Receptacles			3.2 kVA		100.00%		3.2 kVA		Total Est. Demand Current: 115 A			
Notes:					Abbreviations:							
EXISTING PANEL.					G - PROVIDE GFCI CIRCUIT BREAKER							
					LF - PROVIDE PERMANENT LOCK-OFF DEVICE							
					LO - PROVIDE PERMANENT LOCK-ON DEVICE							
					M - PROVIDE METERING DEVICE							
					U - AFFECTED CIRCUIT							

Branch Panel: K											
Location: EXISTING CORRIDOR 7					Volts: 120/240 Single			A.I.C. Rating: EXISTING			
Supply From: 800A MSB					Phases: 1			Enclosure: Type 1			
Mounting: Surface					Wires: 3			Mains: 125A MLO			
Phase in kVA											
NOTE	CKT	Circuit Description	Wire	Breaker	A	B	Breaker	Wire	Circuit Description	CKT	NOTE
	1	CENTER LIGHTS - KITCHEN	--	20 1	0.0 / 0.0		1 20	--	EXISTING LOAD	2	
	3	REACH-IN BOX	--	20 1		0.0 / 0.0	1 20	--	DEEP FREEZE	4	
	5	ICE CREAM BOX	--	20 1	0.0 / 0.0		2 20	--	DESPOOL, EXHAUST FAN OVER HOOD	6	
	7					0.0 / 0.0				8	
	9	DISHWASHER	--	20 2	0.0 / 0.0		2 20	--	EXHAUST FAN OVER HOOD, PLUGS RM 9	10	
	11	BACK ENTRANCE & STORAGE	--	20 1		0.0 / 0.0				12	
	13	PLUGS ROOM 7 & 8	--	20 1	0.0 / 0.0		1 20	--	BATHROOM LIGHTS ROOM 6	14	
	15	HEATER	--	20 1		0.0 / 0.0	1 20	--	WARMER	16	
	17	LIGHTS ROOM 7 & 8	--	20 1	0.0 / 0.0		1 20	--	LIGHTS ROOM 8	18	
	19	LIGHTS ROOM 7	--	20 1		0.0 / 0.0	1 20	--	LIGHTS ROOM 9	20	
	21	LIGHTS ROOM 9	--	20 1	0.0 / 0.0		1 20	--	HOT WATER HEATER	22	
	23	BATHROOM RM 9	--	20 1		0.0 / 0.0	1 20	--	BATHROOM ROOM 9	24	
	25	KITCHEN BATHROOM	--	20 1	0.0 / 0.0		1 20	--	STORAGE ROOM	26	
	27	PEELER, MEAT SLICER	--	20 1		0.0 / 0.0	1 20	--	SALAD AREA PLUG	28	
	29	MIXER PLUG	--	20 1	0.0 / 0.0		1 20	--	EXISTING LOAD	30	
	31	WORKTABLE	--	20 1		0.0 / 0.0	1 20	--	EXISTING LOAD	32	
	33	EXISTING LOAD	--	20 1	0.0 / 0.0		1 20	--	EXISTING LOAD	34	
	35	HOT WATER BOOSTER - SERVING LINE	--	50 2		0.0 / 0.0	1 20	--	EXISTING LOAD	36	
	37				0.0 / 0.0		1 20	--	EXISTING LOAD	38	
	39	EXISTING LOAD	--	20 1		0.0 / 0.0	2 30	--	EXISTING LOAD	40	
	41	SPACE	--	-- 1	0.0 / 0.0					42	
Total Load:					0.0 kVA	0.0 kVA					
Total Amps:					0 A	0 A					
Load Classification			Connected Load		Demand Factor		Estimated Demand		Panel Totals		
									Total Conn. Load: 0.0 kVA		
									Total Est. Demand: 0.0 kVA		
									Total Conn. Current: 0 A		
									Total Est. Demand Current: 0 A		
Notes:					Abbreviations:						
EXISTING PANEL.					G - PROVIDE GFCI CIRCUIT BREAKER						
					LF - PROVIDE PERMANENT LOCK-OFF DEVICE						
					LO - PROVIDE PERMANENT LOCK-ON DEVICE						
					M - PROVIDE METERING DEVICE						

ELECTRICAL KITCHEN EQUIPMENT FIXTURE COORDINATION SCHEDULE												
KITCHEN-ID	KITCHEN-DESCRIPTION	VOLTAGE	PHASE	LOAD	AMPS	CIRCUIT NUMBER	DISCONNECT TYPE	DISCO. FURNISHED BY	DISCO. INSTALLED BY			
E01	AIR CURTAIN	120	1	1.4 kVA	11	25	DUPLEX RECEPTACLE	EC		EC		
E02	WALK-IN CONDENSING UNIT - FREEZER	208	3	3.9 kVA	11	19,21,23	NON-FUSED	EC		EC		
E03	WALK-IN HEAT TAPE	120	1	1.9 kVA	16	19	DUPLEX RECEPTACLE	EC		EC		
E04	WALK-IN EVAPORATOR - FREEZER	208	1	4.0 kVA	11	31,33	NON-FUSED	EC		EC		
E05	WALK-IN LIGHTS AND HEATER - FREEZER	120	1	0.5 kVA	5	17	MANUAL STARTER	EC		EC		
E06	WALK-IN LIGHTS AND HEATER - COOLER	120	1	0.4 kVA	4	15	MANUAL STARTER	EC		EC		
E07	WALK-IN EVAPORATOR - COOLER	120	1	0.2 kVA	2	35	MANUAL STARTER	EC		EC		
E08	ELECTRIC RANGE	240	1	4.0 kVA	17	2,4	LOCKING HASP C.B.	EC		EC		
E11	ICE MACHINE	120	1	1.3 kVA	11	27	DUPLEX RECEPTACLE	EC		EC		
E51	DISHWASHER WITH BOOSTER HEATER.	240	1	21.1 kVA	88	10,12	FUSED	EC		EC		
E52	WALK-IN CONDENSING UNIT - COOLER	208	3	3.4 kVA	9	25,27,29	NON-FUSED	EC		EC		
E53	STEAMER (FUTURE)	120	1	1.1 kVA	9	6	DUPLEX RECEPTACLE	EC		EC		

Branch Panel: MDP												
Location: STORAGE ROOM Supply From: UTILITY TRANSFORMER Mounting: Flush					Volts: 120/208 Wye Phases: 3 Wires: 4 Phase in kVA			A.I.C. Rating: EXISTING Enclosure: Type 1 Mains: 400A				
Note	CKT	Circuit Description	Wire	Breaker	A	B	C	Breaker	Wire	Circuit Description	CKT	Note
--	1	UNIT #2 - ROOM 108 (EXISTING)	--	50	3	0.0 / 0.0			3	50	--	UNIT #3 - ROOM 110 (EXISTING)
						0.0 / 0.0						
						0.0 / 0.0						
--	5	UNIT #1 - ROOM 36 (EXISTING)	--	50	3		0.0 / 0.0		3	50	--	UNIT #5 - ROOM 106 (EXISTING)
							0.0 / 0.0					
--	9	UNIT #4 - ROOM 111 (EXISTING)	--	50	3	0.0 / 0.0	0.0 / 0.0		3	70	--	UNIT #6 - LIBRARY (EXISTING)
							0.0 / 0.0					
21	21	WALK-IN CONDENSING UNIT - FREEZER	#8	25	3	1.3 / 6.9	1.3 / 6.9		3	100	#1	DOAS-1
	23							1.3 / 6.9				
	25											
27	27	WALK-IN CONDENSING UNIT - COOLER	#8	20	3		1.1 / 0.0		3	80	--	CAFETERIA A/C (EXISTING)
	29						1.1 / 0.0					
31	31	E04 WALK-IN EVAPORATOR - FREEZER	#6	20	2	2.0 / 0.0			1	20	--	EXISTING LOAD
	33						2.0 / 0.0					
	35						0.2 / 0.0					
37	37	E07 WALK-IN EVAPORATOR - COOLER	#12	20	1	0.0 / 0.0			1	--	--	SPACE
	39						0.0 / 0.0					
	41											
--	39	EXISTING PANEL	--	200	3		0.0 / 0.0		1	--	--	SPACE
							0.0 / 0.0					
Total Load:					11.4 kVA	11.4 kVA						
Total Amps:					97 A	97 A	80 A					
Load Classification			Connected Load		Demand Factor		Estimated Demand		Panel Totals			
HVAC			20.8 kVA		100.00%		20.8 kVA					
Kitchen Equipment			11.4 kVA		80.00%		9.2 kVA					
									Total Conn. Load: 32.3 kVA			
									Total Est. Demand: 30.0 kVA			
									Total Conn. Current: 90 A			
									Total Est. Demand Current: 83 A			
Notes: EXISTING PANEL.					Abbreviations: G - PROVIDE GFCCI CIRCUIT BREAKER LF - PROVIDE PERMANENT LOCK-OFF DEVICE LO - PROVIDE PERMANENT LOCK-ON DEVICE M - PROVIDE METERING DEVICE U - AFFECTED CIRCUIT							



Δ	DESCRIPTION	DATE



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 29CFR, 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 CONTINUATION 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 MINIMUM. WIRING BY ALUMINUM, TRAPRO DISC, SW, FEEDER XXX, ETC. MARK ALL BRANCH CONDUIT 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 RUNS: SCH 40 OR 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 GREN GROUND WIRE. USE SEALTITE IN WET LOCATIONS SUCH AS OUTDOOR CONDENSING UNITS, WALK-IN COOLERS/FREEZERS, 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. 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.

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 WIRES.

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. INSULATION 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 FACILITY 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, TRAPRO 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.

	480V/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	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 "XXX" 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 SIMILARLY 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

ELECTRICAL SERVICE

CONTRACTOR SHALL MAKE ARRANGEMENTS FOR TEMPORARY AND PERMANENT SERVICE. COMPLY WITH ALL SERVICE INSTALLATION STANDARDS OF THE SERVING UTILITY. ELECTRICAL SERVICE CHARACTERISTICS SHALL BE AS SHOWN ON THE ELECTRICAL ONE LINE DIAGRAM. CONTRACTOR SHALL COORDINATE LOCATION OF SERVICE ENTRANCE WITH THE POWER COMPANY. PROVIDE MATERIALS AND EQUIPMENT REQUIRED TO CONNECT THE PROJECT SERVICE TO THE UTILITY SYSTEM. CONTRACTOR SHALL SUBMIT TO THE POWER COMPANY AN APPLICATION FOR SERVICE.

SHALL SUBMIT TO THE POWER COMPANY AN APPLICATION FOR SERVICE. SERVICE APPLICATION TO THE POWER COMPANY WITHIN 30 DAYS AFTER AWARD OF PROJECT. CONTRACTOR SHALL SECURE A SERVICE OUTLET AND DATA STATEMENT ("STATEMENT") FROM THE POWER COMPANY. VERIFY THAT THE INFORMATION ON THE STATEMENT IS CORRECT, INCLUDING VOLTAGE, PHASE AND NUMBER OF WIRES, TYPE OF SERVICE, SERVICE FACILITY ARRANGEMENTS, AND LOCATION OF SERVICE OUTLET. PROVIDE A COPY OF THE STATEMENT FOR ENGINEER'S REVIEW. FAILURE TO SUBMIT SERVICE APPLICATION IN A TIMELY MANNER MAY CAUSE PROJECT DELAY AND ADDITIONAL COST. ALL SUCH COST DUE TO CONTRACTOR'S FAILURE TO APPLY AND COORDINATE FOR SERVICE IN A TIMELY MANNER SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE AND ASSIST OWNER IF APPLICATION IS REQUIRED TO BE SUBMITTED BY OWNER.

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.

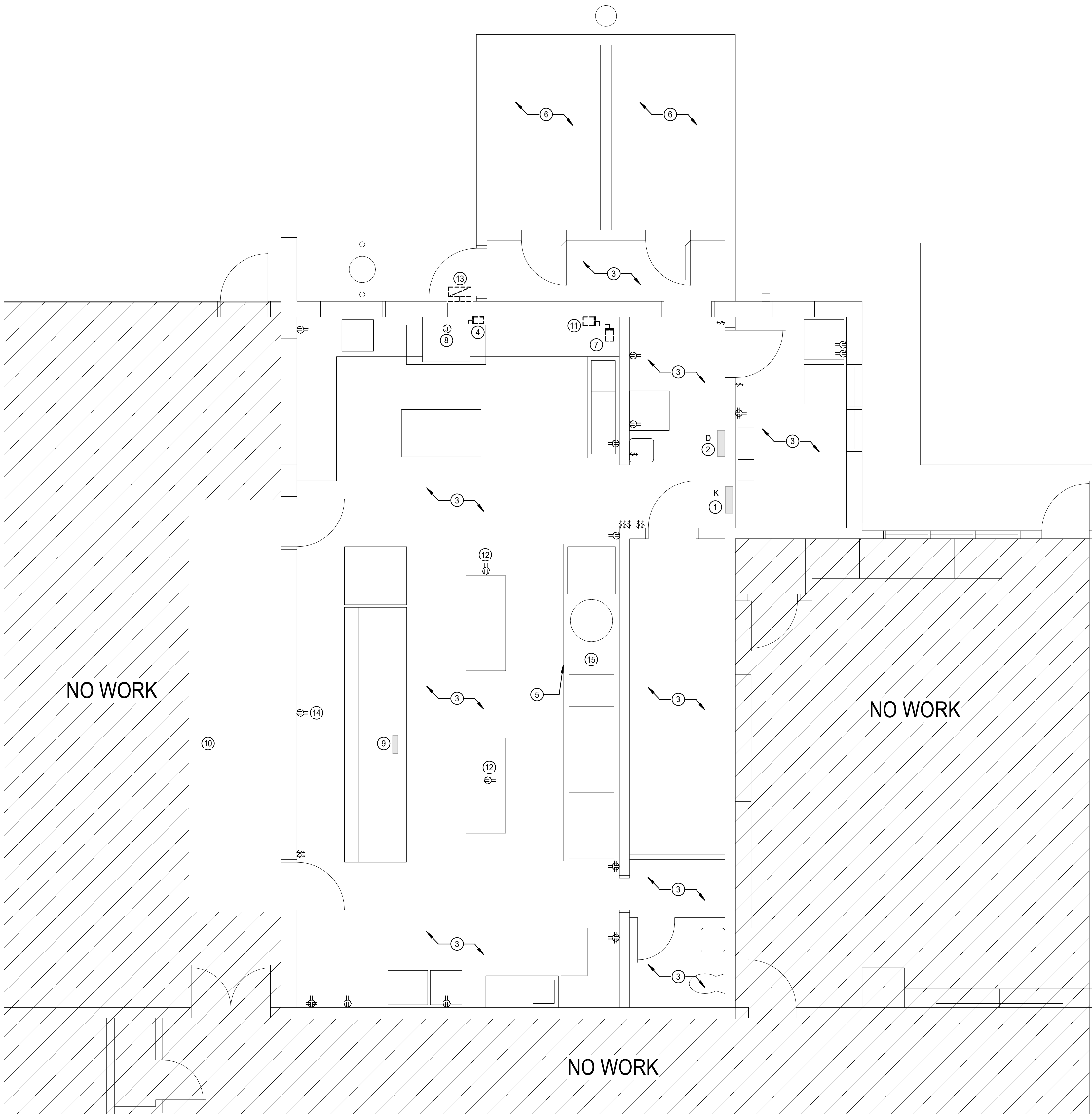
LUMINAIRES SHALL BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETL, OR IEC).

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.



1 ELECTRICAL DEMOLITION PLAN
Scale: 1/4" = 1'-0"

- DEMOLITION GENERAL NOTES**
1. THESE DEMOLITION PLANS HAVE BEEN PREPARED TO ASSIST THE CONTRACTOR IN DETERMINING THE SCOPE OF DEMOLITION WORK TO BE INCLUDED IN THIS PROJECT. THE CONTRACTOR SHOULD REVIEW ALL DRAWINGS AND SPECIFICATIONS, INCLUDING DEMOLITION SHOWN FOR OTHER TRADES, AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS, IN ORDER TO DETERMINE THE SCOPE OF DEMOLITION WORK.
 2. ALL EXISTING LIGHT FIXTURES, SWITCHES, AND LIGHTING DEVICES SHALL BE REMOVED AND REPLACED WITH NEW FIXTURES AS INDICATED ON NEW ELECTRICAL PLANS.
 3. ALL EXISTING RECEPTACLES AND OTHER DEVICES FEEDING EXISTING KITCHEN EQUIPMENT SHALL BE REMOVED AND REPLACED WITH NEW GFCI PROTECTED DEVICES AS INDICATED ON SHEET E201.
 4. DEMOLITION PLAN INFORMATION SHOWN AT TIME OF DESIGN. EC SHALL FIELD VERIFY EXISTING CONDITIONS AND MAKE ANY NECESSARY CHANGES TO COMPLETE THE WORK.
 5. REMOVE ALL UNUSED WIRING AND CONDUIT BACK TO SOURCE AS PART OF THE DEMOLITION PROCESS.
 6. MAINTAIN EXISTING CIRCUIT CONTINUITY FOR ALL CIRCUITS LOCATED OUTSIDE THE AREA OF WORK.

KEYED NOTES	
1	APPROXIMATE LOCATION OF EXISTING PANEL 'K' SHOWN FOR REFERENCE.
2	APPROXIMATE LOCATION OF EXISTING PANEL 'D'. REMOVE EXISTING UPSTREAM CIRCUIT BREAKER, FEEDER WIRES, AND CONDUIT BACK TO SOURCE PANEL.
3	EXISTING LIGHT FIXTURES AND ASSOCIATED CONTROLS IN AREA SHALL BE REMOVED AND REPLACED WITH NEW. REMOVE WIRE AND CONDUIT BACK TO NEAREST JBOX WHERE NOTED FOR REUSE. REFER TO SHEET E101 FOR MORE INFORMATION.
4	APPROXIMATE LOCATION OF EXISTING DISHWASHER TO BE DEMOLISHED ALONG WITH ASSOCIATED DISCONNECT. PULL WIRE AND CONDUIT BACK TO SOURCE PANEL.
5	DEMOLISH EXISTING FIRE SUPPRESSION HOOD IN PREPARATION FOR NEW. PULL FEEDERS BACK TO SOURCE PANEL.
6	DEMOLISH EXISTING FREEZER AND COOLER ELECTRICAL CONNECTIONS. REMOVE WIRE AND CONDUIT BACK TO SOURCE PANEL.
7	APPROXIMATE LOCATION OF EXISTING DISHWASHER BOOSTER HEATER TO BE DEMOLISHED ALONG WITH ASSOCIATED DISCONNECT. PULL WIRE AND CONDUIT BACK TO SOURCE PANEL.
8	APPROXIMATE LOCATION OF EXISTING DISHWASHER HOOD TO BE DEMOLISHED. PULL WIRE AND CONDUIT BACK TO SOURCE PANEL.
9	EXISTING SERVING LINE TO BE TEMPORARILY RELOCATED DURING CONSTRUCTION OF THIS PROJECT. PROVIDE (2) 120V 20A CIRCUITS AS TEMPORARY POWER FOR SERVING LINE POS AND MILK COOLER TO TEMPORARY LOCATION. TERMINATE EXISTING LOAD CENTER CONNECTION IN JBOX FOR LATER RECONNECTION.
10	APPROXIMATE TEMPORARY LOCATION OF SERVING LINE DURING TIME OF CONSTRUCTION.
11	APPROXIMATE LOCATION OF EXISTING WALK-IN DISCONNECT TO BE DEMOLISHED. PULL WIRE AND CONDUIT BACK TO SOURCE PANEL.
12	FLOOR RECEPTACLE TO BE REPLACED WITH CORD REEL. REMOVE WIRE AND CONDUIT BACK TO NEAREST JBOX WHERE NOTED FOR REUSE.
13	DEMOLISH EXISTING WALLPACK. REMOVE WIRE AND CONDUIT BACK TO NEAREST JBOX.
14	REMOVE WALL MOUNTED FAN PLUGGED INTO RECEPTACLE AND RETURN TO OWNER AS PART OF THE DEMOLITION PROCESS.
15	EXISTING GAS RANGE TO BE REPLACED WITH ELECTRIC RANGE IN SAME LOCATION.

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CEDAR CREEK
CIVIL

KFC ENGINEERING
STRUCTURAL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL



JM/JS
drawn by

TVO
checked by

APRIL 2026
date

REVISIONS		
Δ	DESCRIPTION	DATE



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

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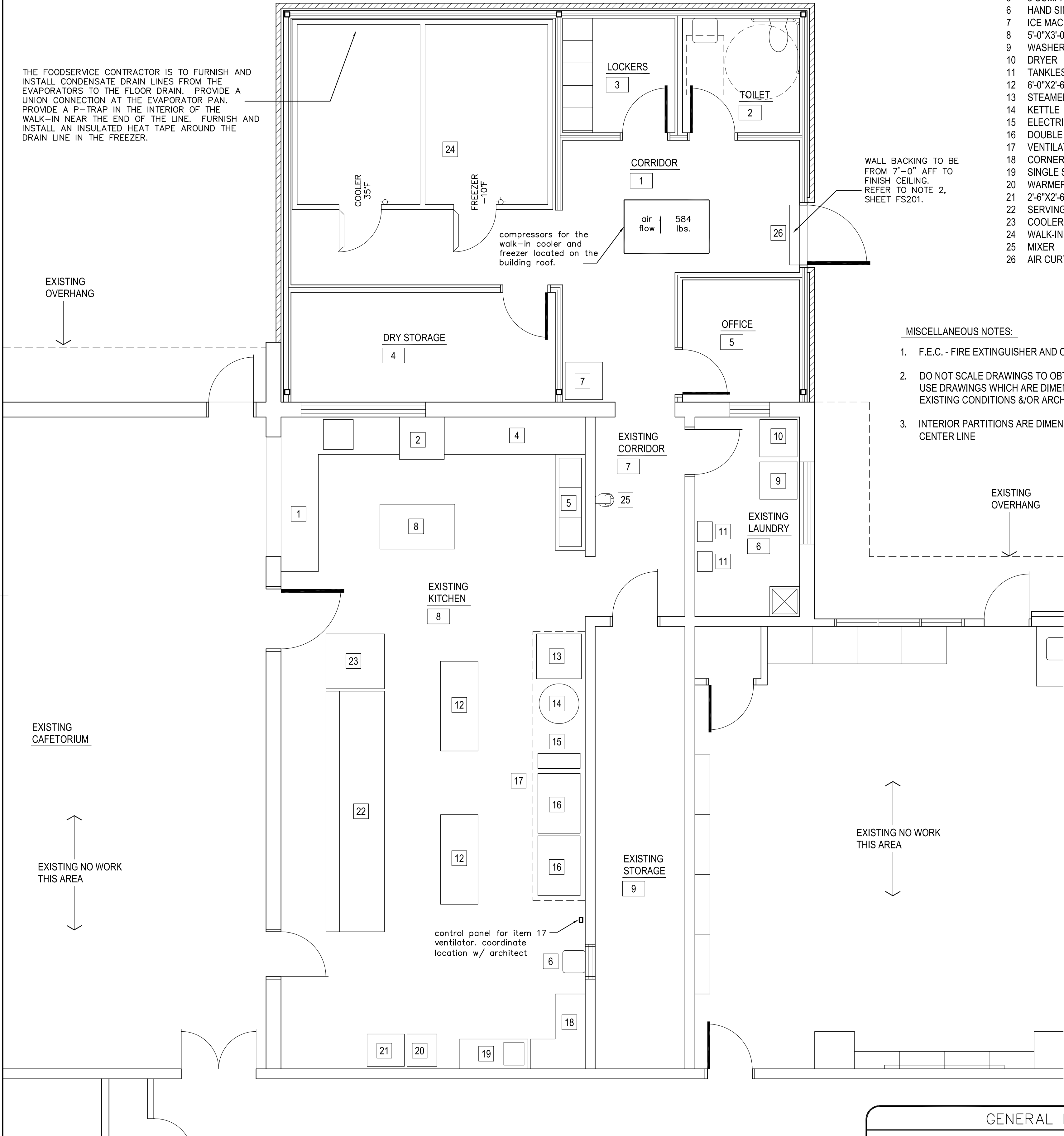
ED101

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**Salas O'Brien**

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CA# 9820 Expiration Date: 06/30/2027
Salas O'Brien Project Number: 2650-00226-00

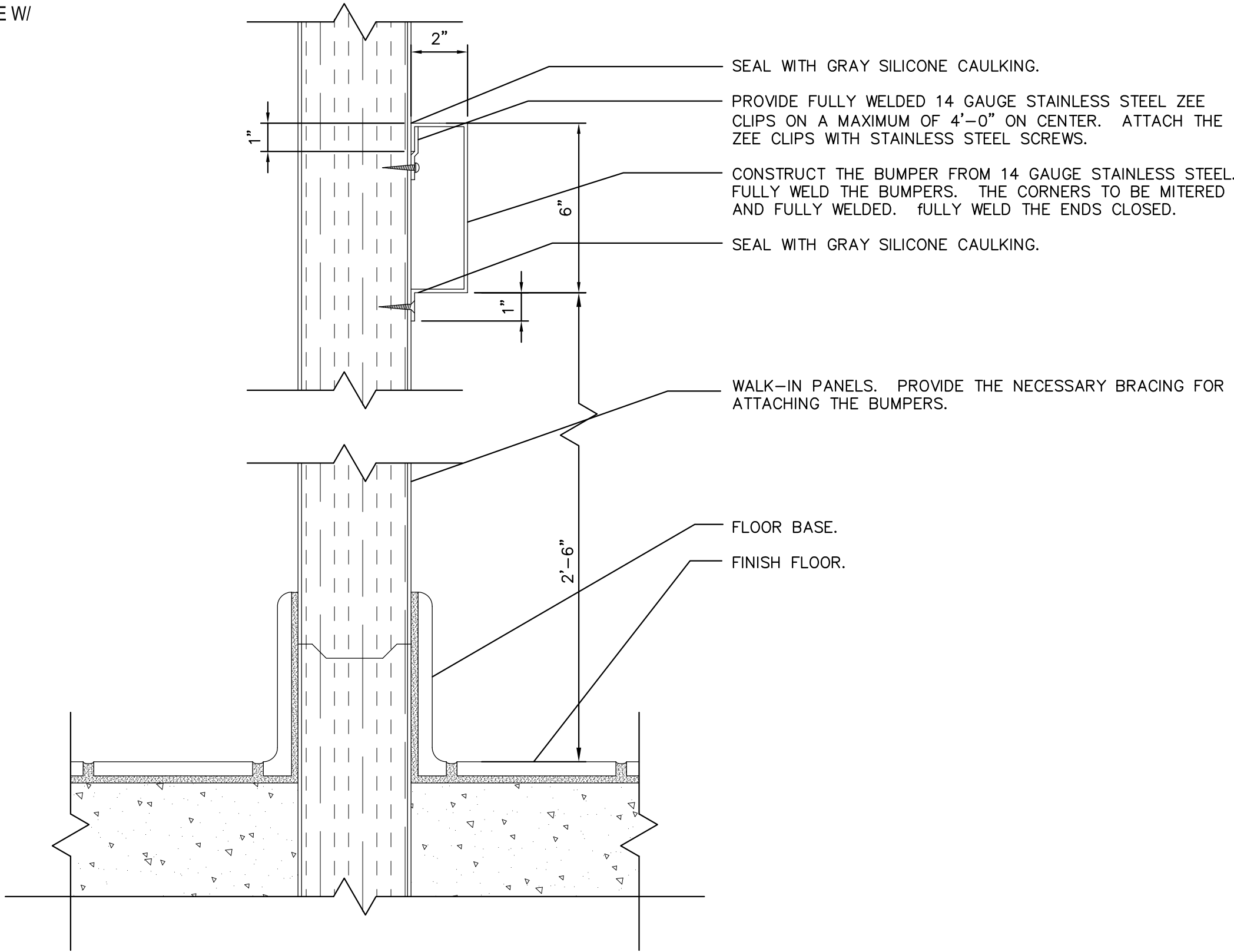


EXISTING / NEW EQUIPMENT SCHEDULE:

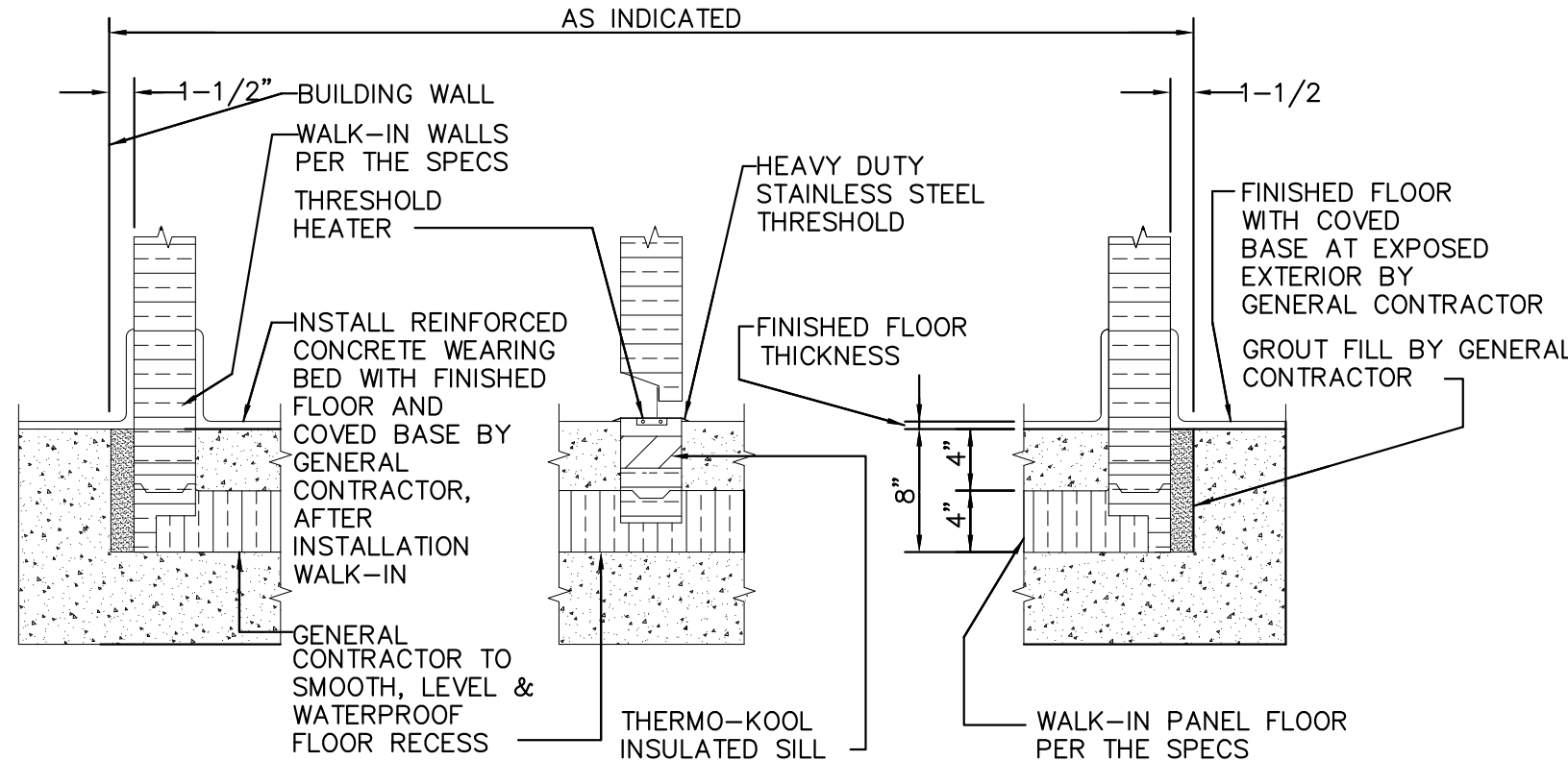
- 1 DISH RETURN TABLE & SINK
- 2 VENTLESS DISHWASHER WITH BOOSTER HEATER
- 3 NUMBER NOT USED
- 4 CLEAN DISH TABLE
- 5 3 COMPARTMENT TABLE
- 6 HAND SINK
- 7 ICE MACHINE
- 8 5'-0"x3'-0" TABLE
- 9 WASHER
- 10 DRYER
- 11 TANKLESS HEATER
- 12 6'-0"x2'-6" TABLE
- 13 STEAMER
- 14 KETTLE
- 15 ELECTRICAL RANGE
- 16 DOUBLE OVEN
- 17 VENTILATOR & FIRE SUPPRESSION SYSTEM
- 18 CORNER TABLE
- 19 SINGLE SINK
- 20 WARMER
- 21 2'-6"x2'-6" TABLE
- 22 SERVING LINE
- 23 COOLER
- 24 WALK-IN COOLER & FREEZER
- 25 MIXER
- 26 AIR CURTAIN

NEW CUSTOM DISH RETURN TABLE & SINK
NEW INSINGER MACHINE COMPANY - ADMIRAL 44VG

NEW CUSTOM FABRICATED DISH TABLE
REINSTALLED 3 COMPARTMENT TABLE
NEW HAND SINK
REINSTALLED SCOTSMAN
REINSTALLED 5'-0"x3'-0" TABLE
REINSTALLED WASHER
REINSTALLED DRYER
EXISTING TANKLESS HEATER
REINSTALLED
REINSTALLED STEAMER CLEVELAND RANGE LLC MODEL 36CGM300
REINSTALLED KETTLE CLEVELAND MODEL KDL 40SH
NEW VULCAN - EV12-2FP240
REINSTALLED DOUBLE OVEN VULCAN MODEL VC4GD-11D350K
RE: MECHANICAL
REINSTALLED CORNER TABLE
REINSTALLED SINGLE SINK TABLE
REINSTALLED WARMER CRESCOR MODEL 121-PH-UA-11D
REINSTALLED 2'-6"x2'-6" TABLE
REINSTALLED DUKE THURMADUKE DC-T8380-SS-679610M DUKE DC-TEHF-60SS-679640M
REINSTALLED MILK COOLER TRUE MANUFACTURING CO TMC-49-S-SS
NEW THERMO-KOOL
REINSTALLED HOBART MODEL D300
NEW MARS AIR SYSTEM MODEL NH248-1UA-TSW



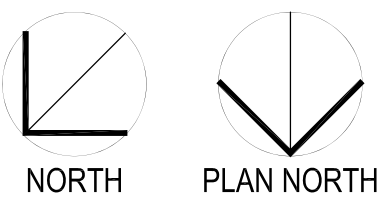
2 DETAIL - BUMPER RAILS AT THE WALK-INS
NO SCALE



3 DETAIL - WALK-IN RECESS @ COOLERS & FREEZERS
NO SCALE

GENERAL NOTES

- THE FOODSERVICE CONTRACTOR MUST COORDINATE AND VERIFY ALL DIMENSIONS WITH THE FOODSERVICE EQUIPMENT SHOP DRAWINGS AND THE MANUFACTURES DATA. DIMENSIONS ARE SHOWN FOR DESIGN AND BIDDING PURPOSES ONLY.
- THE GENERAL CONTRACTOR TO PROVIDE AND INSTALL 3/4" THICK WOOD BACKING IN THE WALL FOR THE MOUNTING OF THE EQUIPMENT FURNISHED BY THE FOODSERVICE CONTRACTOR. THE FOODSERVICE CONTRACTOR TO FURNISH EXACT DIMENSIONED LOCATIONS.
- THE WALK-IN DOORS MUST BE LEFT OPEN WHILE THE INTERIOR CONCRETE WALK-IN FLOOR CURES. FAILURE TO DO SO MAY DAMAGE THE INTERIOR OF THE WALK-IN REQUIRING THE UNIT TO BE REPLACED.



1

KITCHEN EQUIPMENT PLAN

1/4" = 1'-0"

DENOTES ROOM NAME

CLASSROOM

DENOTES ROOM NUMBER

102

DENOTES DOOR NUMBER

AGP
the Abila Griffin
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KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN

MECHANICAL / ELECTRICAL



CG

drawn by

MA

checked by

APRIL 2026

date

revisions

MOORE
PUBLIC SCHOOLS

SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

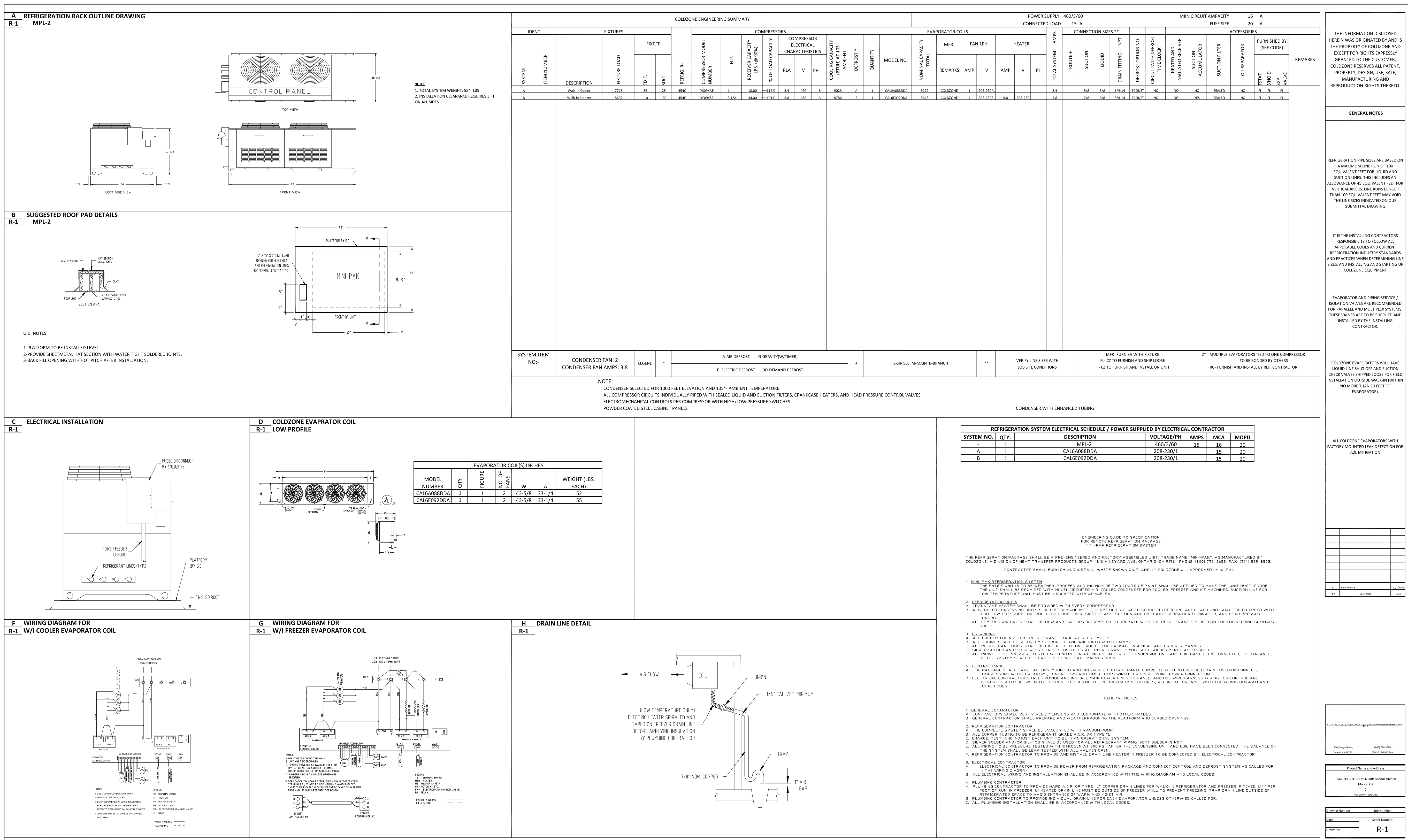
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[illegible]



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

	EXISTING SPOT ELEVATION		WALL SECTION/DETAIL CUT MARK
	FINISH SPOT ELEVATION		LARGE SCALE DETAIL MARK
	EXISTING GRADE CONTOUR		STRUCTURAL GRID COORDINATES
	FINISH GRADE CONTOUR		BUILDING SECTION CUT MARK
	EXISTING TREE TO BE PROTECTED		DOOR NUMBER
	EXISTING TREE TO BE REMOVED		WINDOW MARK
	PROJECT LIMITS		FRAME MARK
	CHAINLINK FENCE		GLAZING MATERIAL MARK
	BARBED WIRE FENCE		EQUIPMENT MARK
	CONCRETE PAVING		EXTERIOR ELEVATION MARK
	ASPHALT PAVING		TEST HOLE
	CONCRETE SIDEWALK		ELEV. BENCH MARK/BUILDING ELEVATION (SECTION)
	EXISTING PAVING/SIDEWALK TO REMAIN		
	EXISTING PAVING TO BE REMOVED		
	NEW BUILDING		
	EXISTING BUILDING - NO WORK		
	ROOM NUMBER		
	ROOM NUMBER/ LARGE SCALE PLAN REFERENCE		
	ROOM NUMBER/INTERIOR ELEVATION REFERENCE		

GENERAL NOTES:

- ALL REQUIRED HANDICAP ACCESSIBLE ITEMS TO COMPLY WITH AMERICANS WITH DISABILITIES ACT AND ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES.
- THE CONTRACTOR SHALL NOT USE ANY LEAD-BASED PAINT OR ASBESTOS CONTAINING MATERIAL ON THIS PROJECT
- 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.**
- LOCATIONS OF EXISTING BUILDINGS, SITE FEATURES, & UNDERGROUND UTILITIES 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.
- 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.
- REFER TO CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR UTILITY INFORMATION.
- REFER TO CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND CONCRETE TO BE PROVIDED BY CONTRACTOR.
- GENERAL CONTRACTOR TO VERIFY LOCATIONS OF EASEMENTS, ENCUMBRANCES AND SET BACKS PRIOR TO STARTING CONSTRUCTION
- 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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KITCHEN UPGRADES
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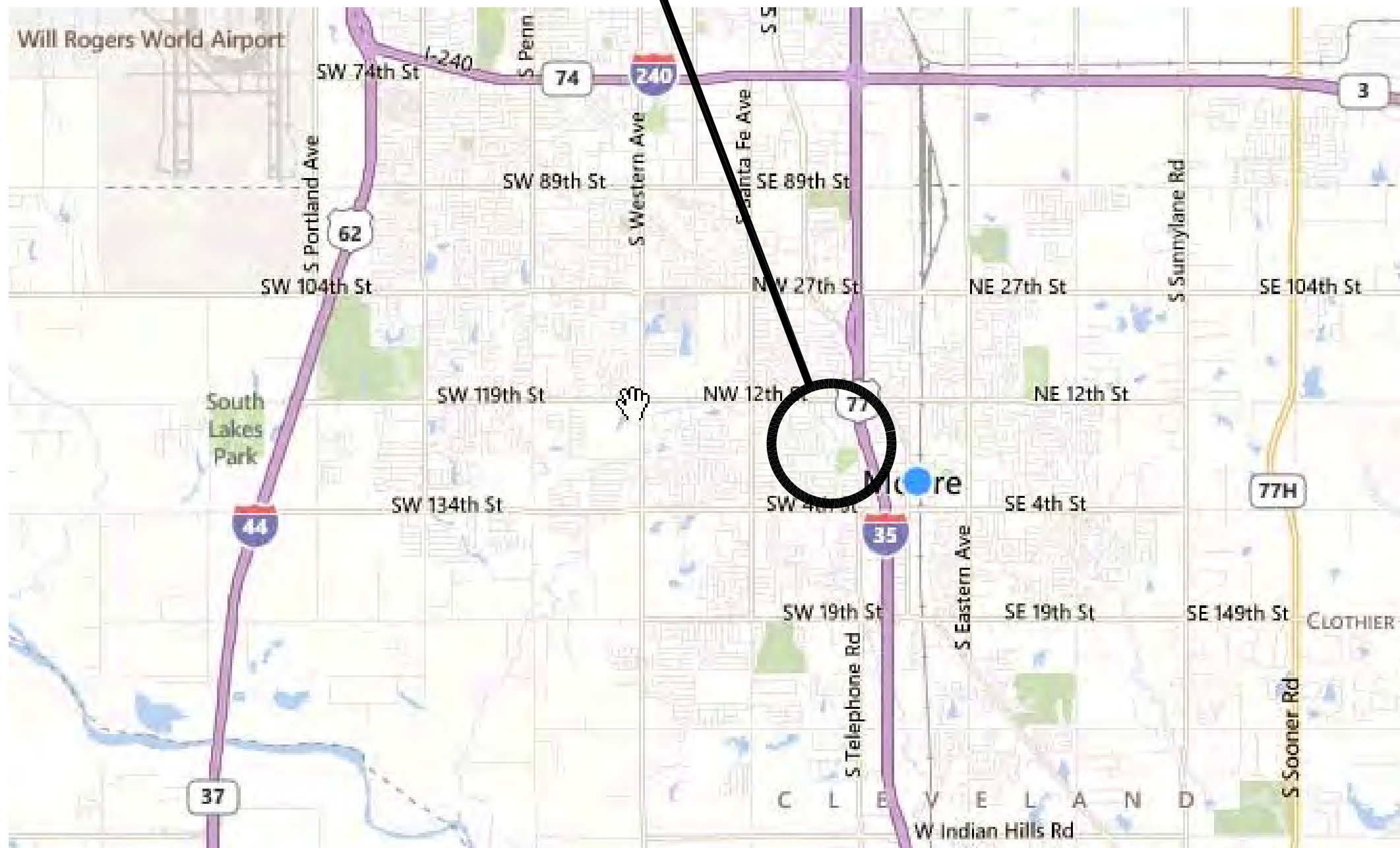
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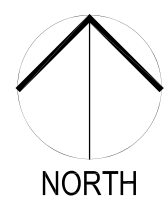
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PROJECT
LOCATION



SOUTHGATE ELEMENTARY
500 N. NORMAN
MOORE, OKLAHOMA 73160



VICINITY MAP

Legal Description:

SOUTH GATE ALL BLK 40

GENERAL NOTES (CON'T):

- CONSTRUCTION STAGING AREA & VEHICLE ACCESS SHALL BE CONFIRMED WITH OWNER, AND CONSTRUCTION MANAGER IF APPLICABLE, PRIOR TO CONSTRUCTION.
- 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) / ENTRANCES.
- ALL GRID LINES IDENTIFIED BY A LETTER OR NUMBER ARE PARALLEL UNLESS OTHERWISE NOTED.
- 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 (& ASSOCIATED BOLLARDS @ EXTERIOR LOCATIONS) TO BE PROVIDED BY THE CONTRACTOR.
- 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.
- 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.
- 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.
- 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.
- ALL WOOD WITHIN THIS PROJECT (I.E. PLYWOOD, BLOCKING, ETC.) SHALL BE FIRE-RETARDANT TREATED.
- 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.
- REFER TO SPECIFICATIONS FOR ADDITIONAL PAINT ITEMS NOT SHOWN ON ROOM FINISH SCHEDULE.
- 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.
- 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.
- 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.]
- 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.
- 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.
- FOR THIS PROJECT, THE TERM "CONTRACTOR" SHALL BE UNDERSTOOD TO REFER TO THE "CONSTRUCTION MANAGER / MANAGEMENT COMPANY"
- CONTRACTOR SHALL COORDINATE / SCHEDULE ALL CONSTRUCTION WITH THE OWNERS REQUIREMENTS FOR ALL ACADEMICS TO REMAIN ACTIVE DURING CONSTRUCTION.

ABBREVIATIONS		
A	AMP	I/O
ADD	ADDENDUM	IN
ADJ	ADJUSTABLE	
AFF	ABOVE FINISH FLOOR	LAT
AHU	AIR HANDLER UNIT	LB
AI	ANALOG INPUT	LWT
ALT	ALTERNATE	
AO	ANALOG OUTPUT	MAX
APPRX	APPROXIMATE	MBH
ARCH	ARCHITECT, ARCHITECTURAL	MC
		MCA
		MECH
		MIN
		MFR
BDD	BACK DRAFT DAMPER	NTS
BLDG	BUILDING	
BTUH	BRITISH THERMAL UNIT PER HOUR	OA
		OC
C	CENTER	
CD	CEILING DIFFUSER	QTY
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/Ø	DIAMETER	
DM	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	
EXST	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	

MECHANICAL SYMBOL LEGEND	
SYMBOL	DESCRIPTION (DISREGARD ITEMS NOT SHOWN ON PLANS)
GENERAL	
#	KEY NOTE TAG
△	REVISION TAG
▨	NEW EQUIPMENT
EQUIP-1	EQUIPMENT TAG
DUCTWORK	
↔	SUPPLY AIR DUCTWORK
↔↔	RETURN AIR AND OUTSIDE AIR DUCTWORK
↔↔↔	EXHAUST AIR DUCTWORK
	FLEXIBLE DUCTWORK
↔↔↔	SUPPLY AIR DUCTWORK THROUGH HORIZONTAL PARTITION
↔↔↔	RETURN AIR DUCTWORK THROUGH HORIZONTAL PARTITION
↔↔↔	EXHAUST AIR DUCTWORK THROUGH HORIZONTAL PARTITION
⊗	ROUND DUCTWORK
▲	FIRE DAMPER (VERTICAL)
◆	FIRE DAMPER (HORIZONTAL)
△	SMOKE DAMPER (VERTICAL)
◇	SMOKE DAMPER (HORIZONTAL)
△/S	COMBINATION FIRE & SMOKE DAMPER (VERTICAL)
◇/S	COMBINATION FIRE & SMOKE DAMPER (HORIZONTAL)
↔↔↔	MANUAL BALANCING DAMPER (SEE DAMPER SCHEDULE)
↔↔↔	MOTORIZED DAMPER (SEE DAMPER SCHEDULE)
SENSORS	
①	THERMOSTAT AND TEMPERATURE SENSOR
Ⓜ	HUMIDISTAT
Ⓢ	SMOKE DETECTOR
Ⓜ	HEAT DETECTOR
AIR DEVICES	
⊗	GRILLE SIZE TAG (REFER TO GRILLE SIZE LEGEND)
⊗	SUPPLY AIR GRILLE WITH FOUR-WAY THROW
⊗	SUPPLY AIR GRILLE WITH THREE-WAY THROW
⊗	SUPPLY AIR GRILLE WITH TWO-WAY THROW
⊗	SUPPLY AIR GRILLE WITH TWO-WAY CORNER THROW
⊗	SUPPLY AIR GRILLE WITH ONE-WAY THROW
⊗	RETURN AIR GRILLE
⊗	RETURN AIR GRILLE WITH SOUND BOOT
⊗	EXHAUST AIR GRILLE
↑	SUPPLY AIR SIDEWALL GRILLE
↓	RETURN AIR SIDEWALL GRILLE
20X12	RETURN AIR OPENING ABOVE CEILING
RENOVATIONS	
⊕	POINT OF CONNECTION FROM NEW TO EXISTING
□	ITEM TO REMAIN
⊖	ITEM TO BE REMOVED

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 RADIUSSED 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.

MECHANICAL SHEET INDEX	
M000	MECHANICAL TITLE SHEET
MD101	MECHANICAL DEMOLITION PLAN
MD201	MECHANICAL ROOF DEMOLITION PLAN
M101	MECHANICAL PLAN
M201	MECHANICAL ROOF PLAN
M501	MECHANICAL DETAILS
M601	MECHANICAL SCHEDULES
M602	MECHANICAL SCHEDULES
M603	MECHANICAL SCHEDULES
M604	MECHANICAL SCHEDULES
M605	MECHANICAL SCHEDULES
M606	MECHANICAL SCHEDULES
M607	MECHANICAL SCHEDULES
M701	MECHANICAL SPECIFICATIONS

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CEDAR CREEK

CIVIL

KFC ENGINEERING

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SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

M000

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Salas O'Brien, Inc. - Oklahoma City
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Salas O'Brien Project Number: 2650-00226-00

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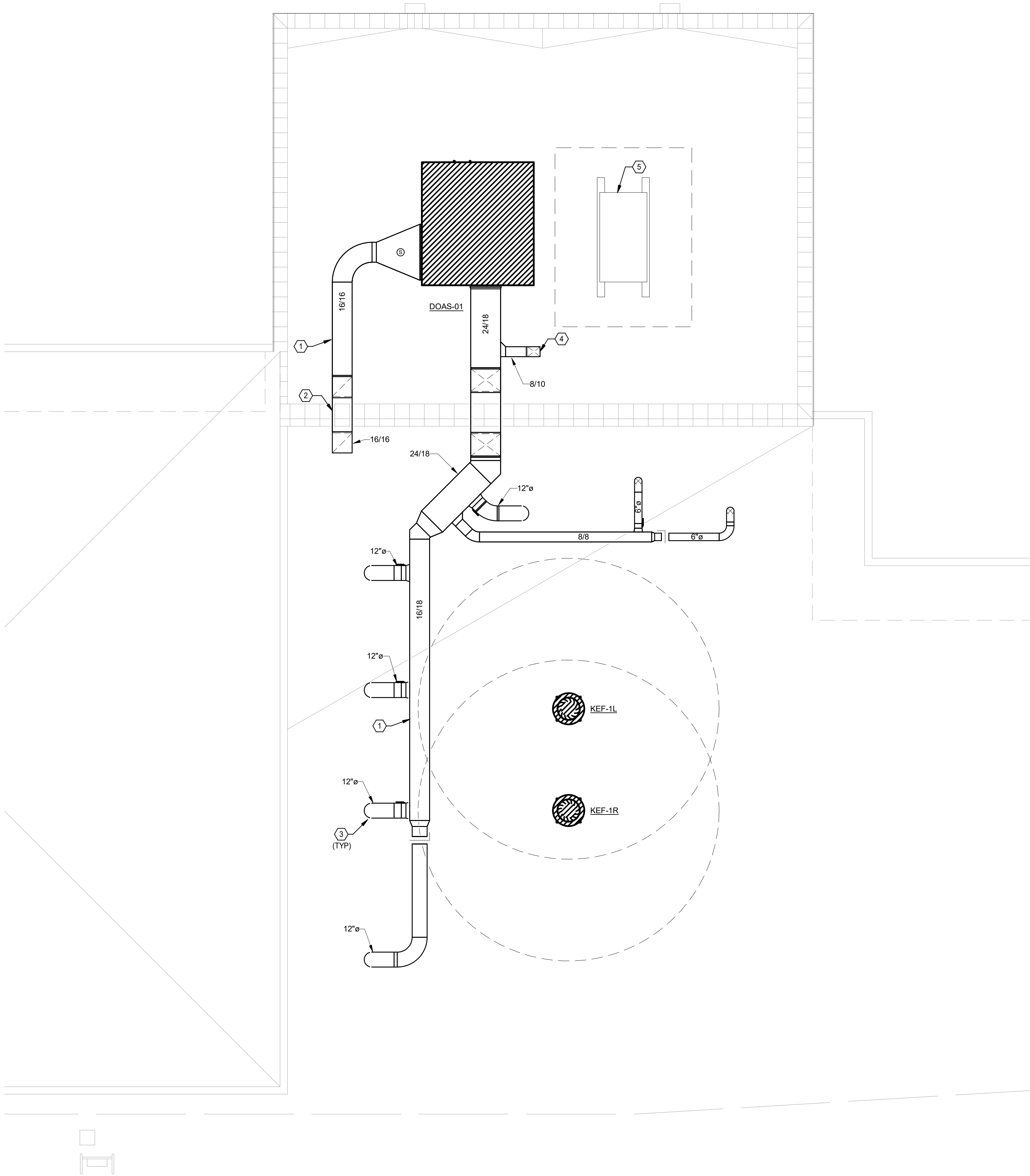
Scale: 1/4" = 1'-0'

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 **1 MECHANICAL ROOF PLAN**
Scale: 1/4" = 1'-0"

GENERAL NOTES

1. MAINTAIN A MINIMUM OF 10'-0" BETWEEN ALL OUTSIDE AIR INTAKES AND ANY EXHAUST OPENINGS.
2. MAINTAIN A MINIMUM OF 10'-0" BETWEEN ANY MECHANICAL ROOF EQUIPMENT AND ROOF EDGE WHERE PARAPET DOES NOT EXCEED 42".
3. COORDINATE THE EXACT LOCATION AND WEIGHT OF UNITS WITH STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO INSTALLATION OF CURB.
4. ROUTE CONDENSATE TO NEAREST OPEN SITE. PROVIDE PIPE SUPPORTS PER SPECIFICATIONS. MAINTAIN A MINIMUM OF 1/8" PER FOOT SLOPE IN DIRECTION OF DISCHARGE. PROVIDE COPPER PIPE WITH PAINTED BLACK FINISH. COORDINATE WITH PC.
5. PROVIDE A BALANCING DAMPER ON ALL BRANCH DUCTWORK TO DIFFUSERS AND RETURN GRILLES.

MECHANICAL KEYED NOTES

1	DUCT ON ROOF SHALL BE ROUTED ABOVE ROOF TO ALLOW WATER TO DRAIN BELOW IT. DUCT CONSTRUCTION SHALL BE ROBUST IN ORDER TO PREVENT HAIL DAMAGE. CROSS CUT DUCT TO PREVENT WATER POOLING. ENSURE DUCT IS WATER TIGHT.
2	ROUTE DUCT OVER TOP OF PARAPET THEN DUCT DOWN INTO CEILING SPACE BELOW. KEEP DUCT TIGHT TO STRUCTURE.
3	DUCT DOWN DIRECTLY TO AIR DEVICE BELOW.
4	DUCT DOWN TO CEILING CAVITY BELOW.
5	WALK IN COOLER AND FREEZER CONDENSING UNIT PROVIDED BY OTHERS.

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CEDAR CREEK
CIVIL

KFC ENGINEERING
STRUCTURAL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL



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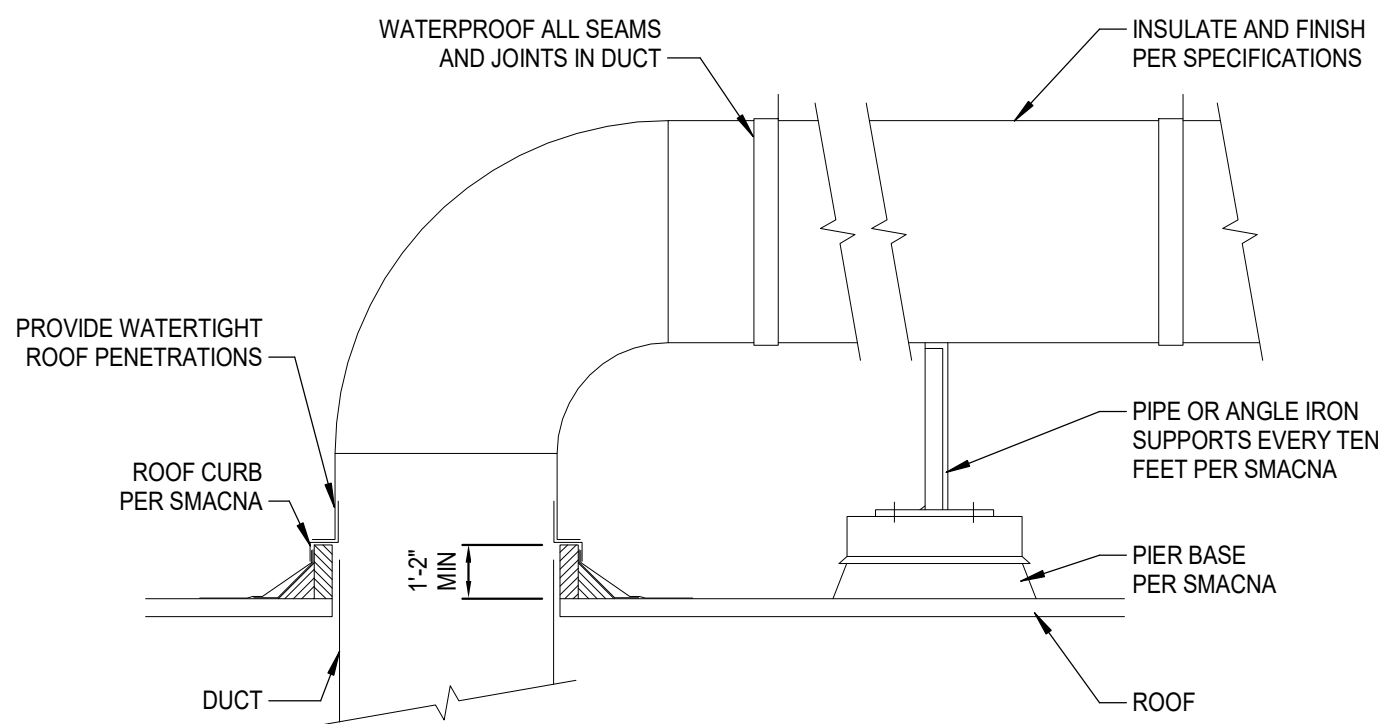
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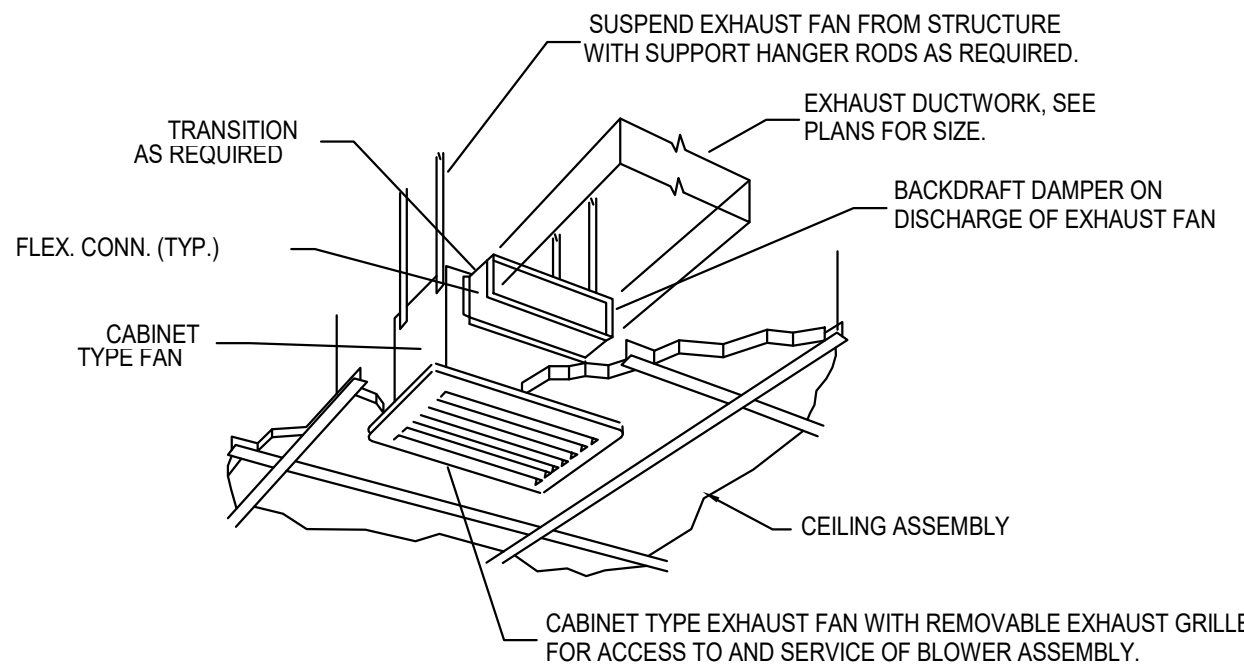
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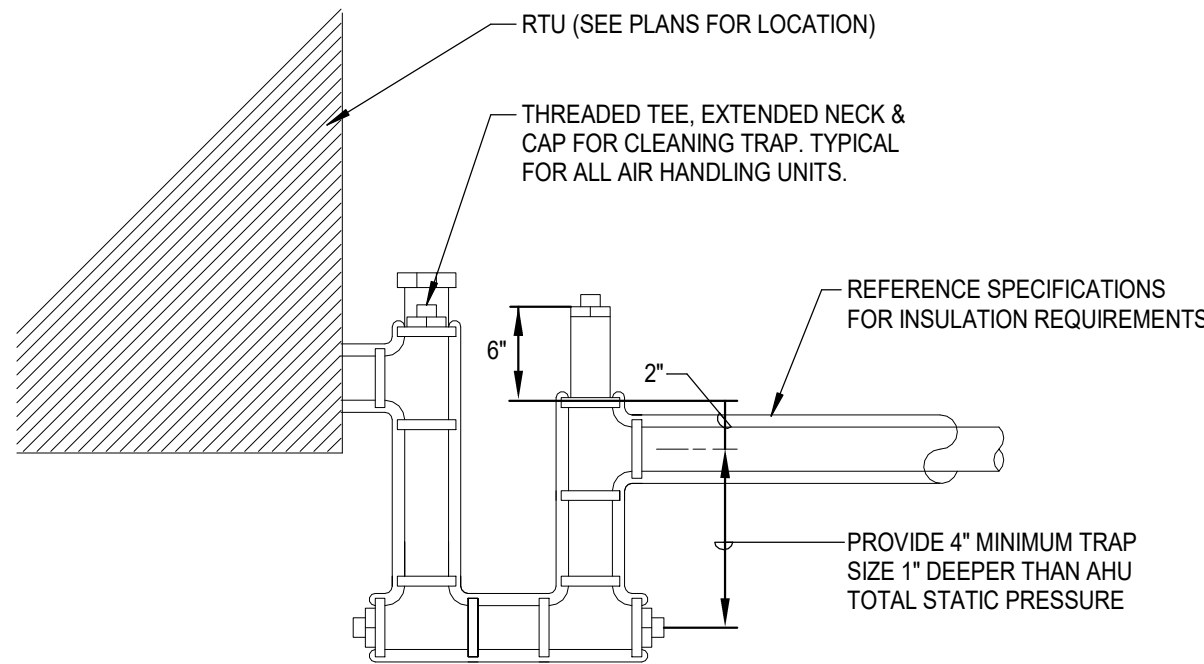
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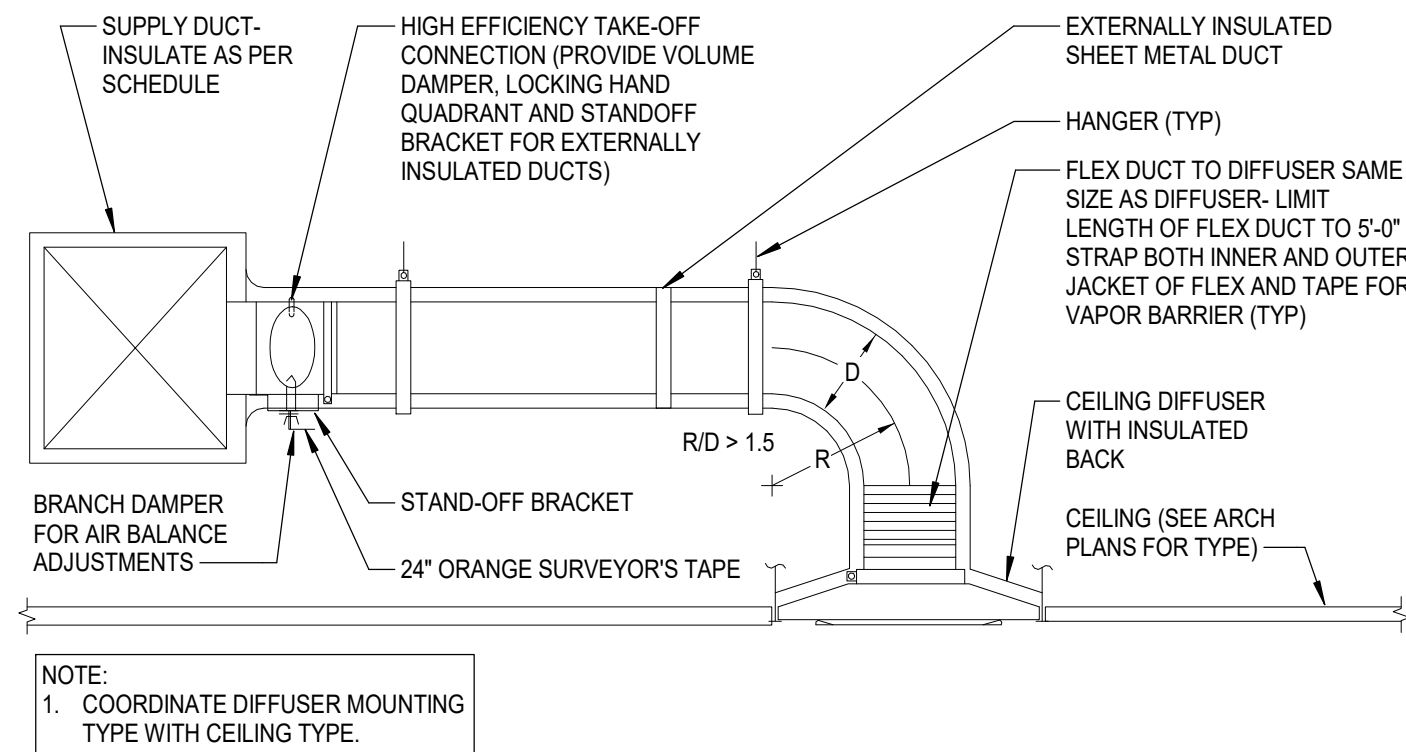
4 **ROOF DUCT SUPPORT AND PENETRATION DETAIL**
Scale: N.T.S.



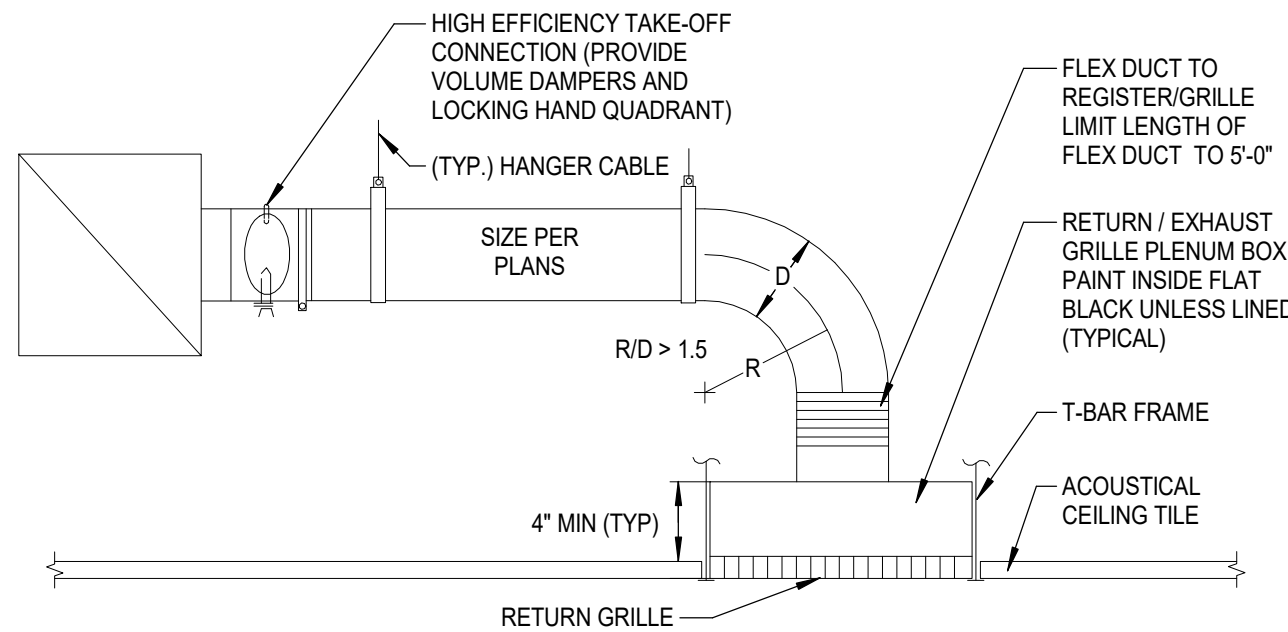
5 **CEILING MOUNTED EXHAUST FAN**
Scale: N.T.S.



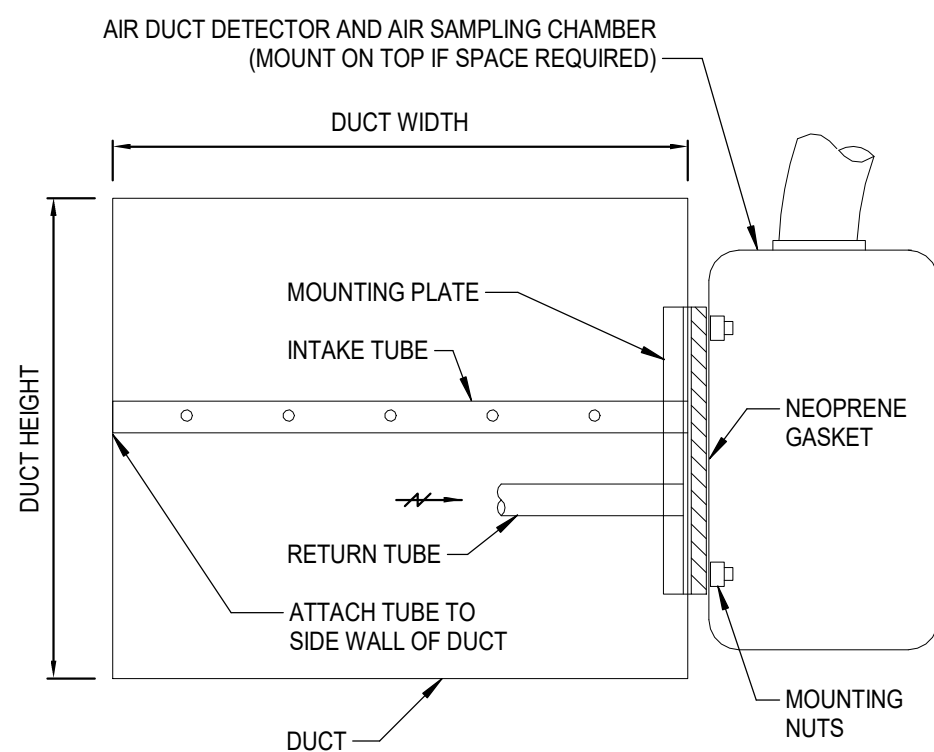
8 **CONDENSATE DRAIN PIPING AT RTU**
Scale: N.T.S.



2 **CEILING DIFFUSER DETAIL**
Scale: N.T.S.

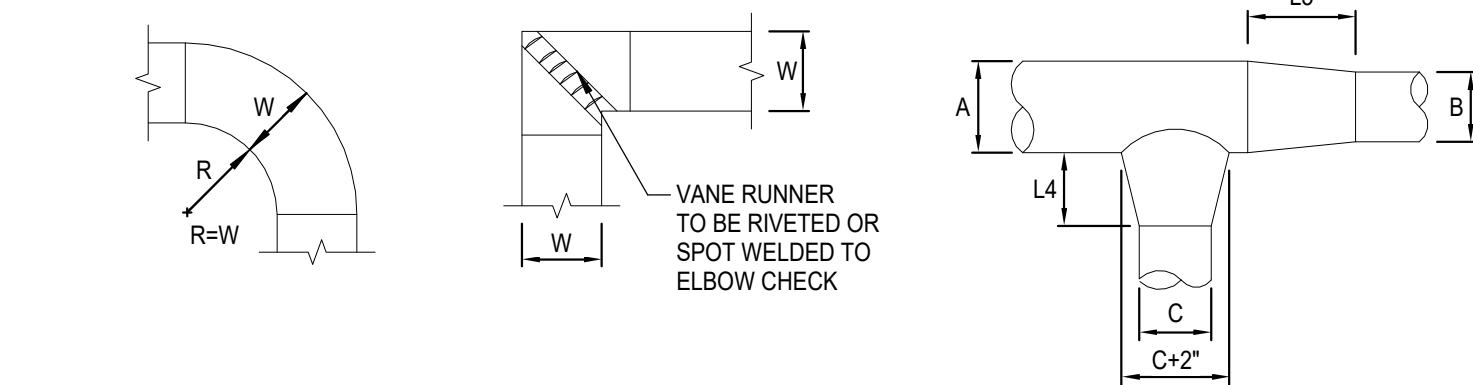
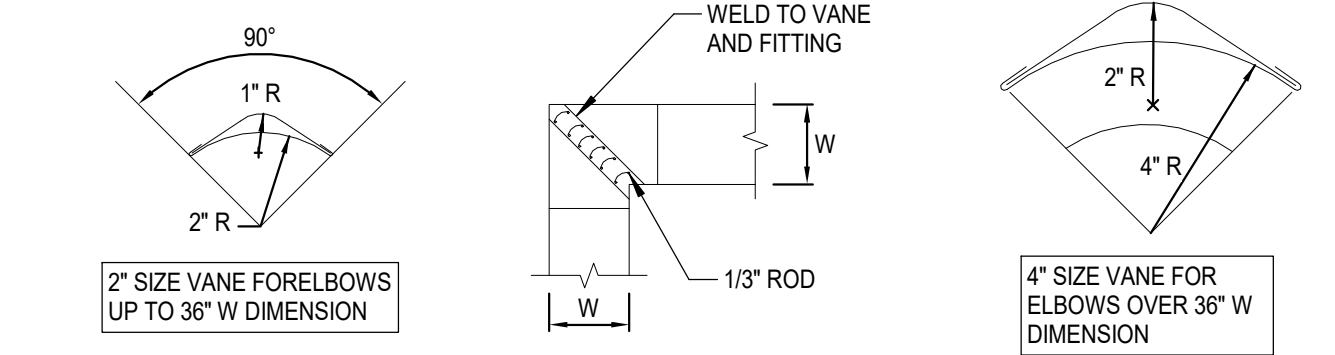
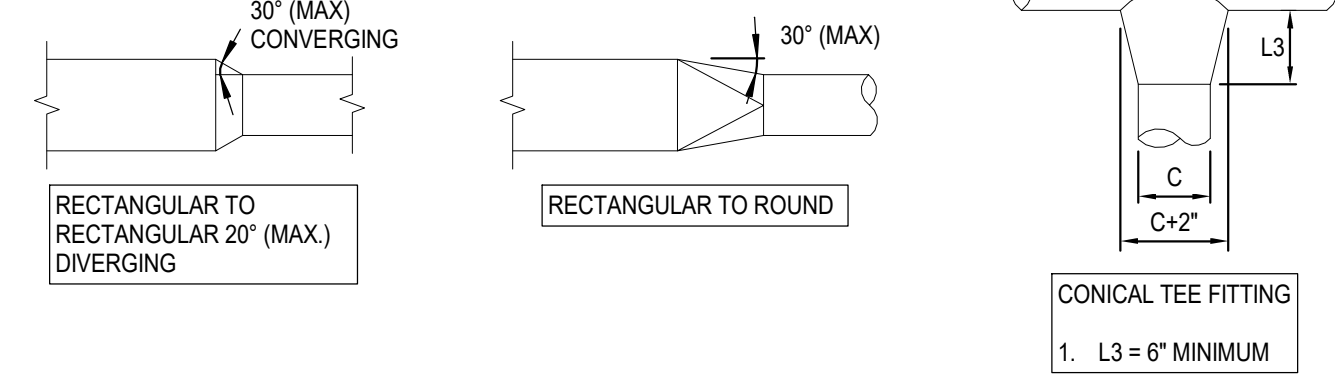
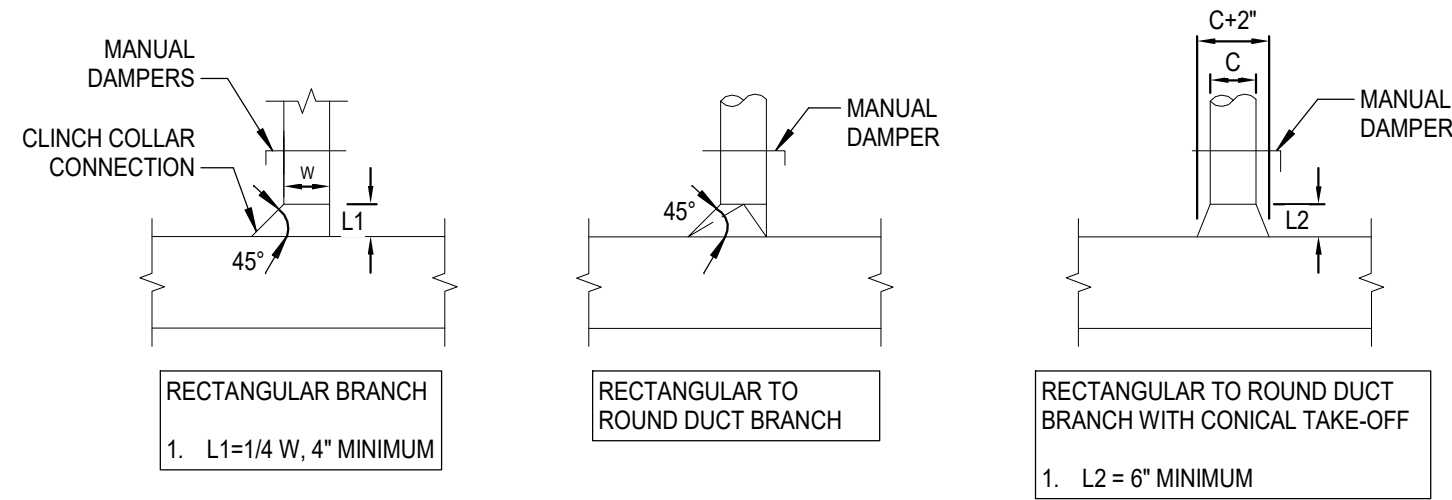


3 **CEILING PLENUM BOX DIFFUSER GRILLE DETAIL**
Scale: N.T.S.



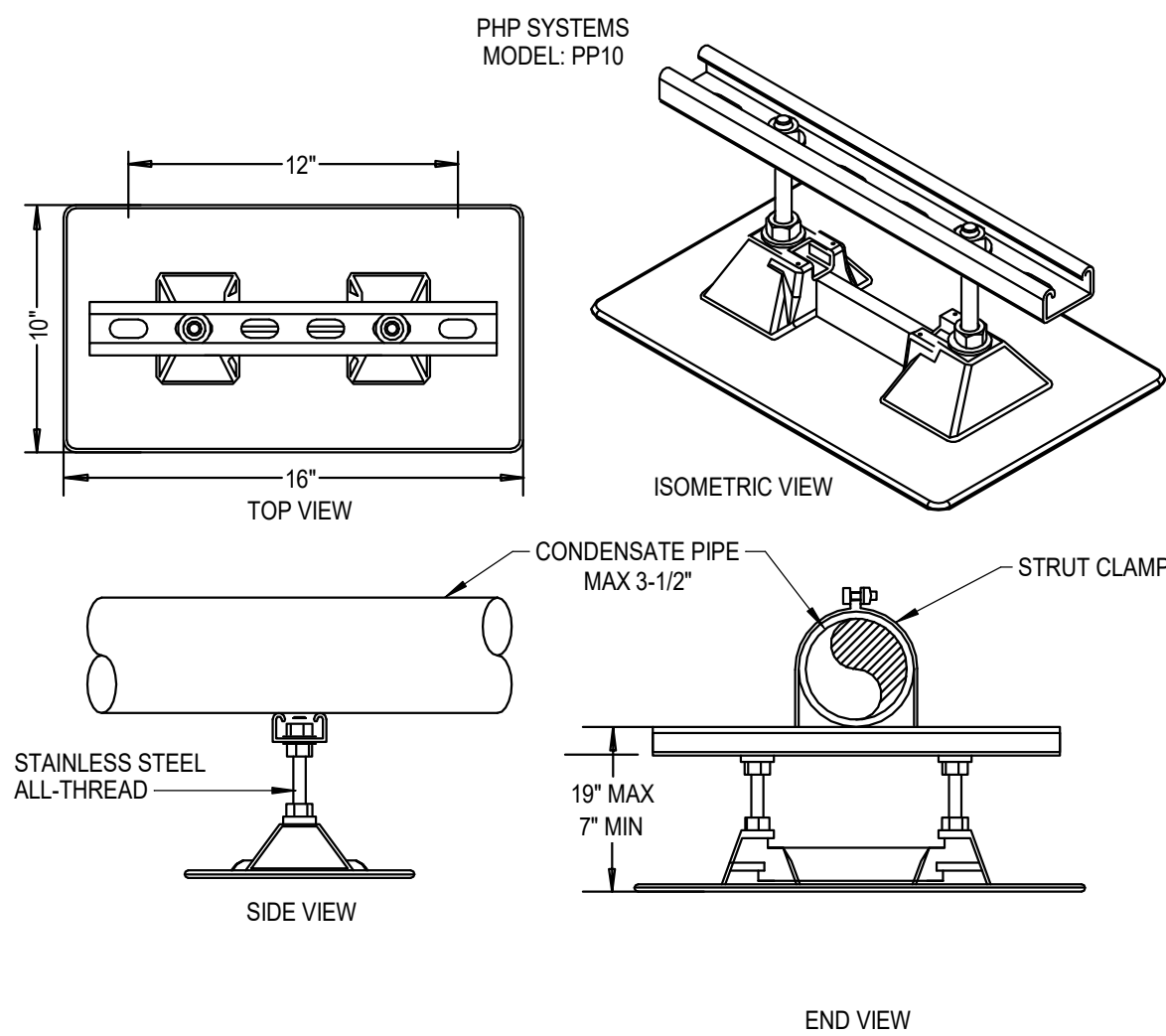
- NOTES:
1. SMOKE DETECTOR FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR, AND MOUNTED BY MECHANICAL CONTRACTOR.
 2. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 3. PROVIDE ACCESS DOOR AT SAMPLING TUBES.
 4. THE TUBE SHALL BE INSTALLED PARALLEL TO LONG DIMENSION OF DUCT.
 5. PRODUCT SHALL BE UL288A LISTED FOR DUCT MOUNTED SMOKE
 6. DETECTORS, OR UL288A FOR ALL OTHER SMOKE DETECTOR TYPES.
 7. EC SHALL TEST ACCORDING TO UL AND CODES IN THE PRESENCE OF CODE AUTHORITY.

7 **TYP. SMOKE DETECTOR MOUNTING DETAIL**
Scale: N.T.S.



- NOTES:
1. ALL DUCTWORK TO BE CONSTRUCTED TO MEET S.M.A.C.N.A. STANDARDS
 2. REMOVE EVERY OTHER TURNING VANE IN RETURN/EXHAUST DUCTS.

1 **TYPICAL DUCTWORK DETAILS**
Scale: N.T.S.



6 **CONDENSATE PIPE SUPPORT ON ROOF**
Scale: N.T.S.



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DOAS/RTU FAN SCHEDULE - JOB#8548225

FAN INFORMATION										ELECTRICAL INFORMATION										COOLING INFORMATION										REHEAT INFORMATION					GAS HEAT INFORMATION					AEL MINIMUM ROOM VOLUME			NOTES		
FAN UNIT NO	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	TOTAL CFM	MAX OUTSIDE AIR CFM	RETURN AIR CFM	WEIGHT (LBS)	ESP	HP	PHASE	VOLTS	MCA	MDCP	OUTSIDE AIR		MIXED AIR		LEAVING AIR		CAPACITY		IEER	ISMRE2	DISCHARGE		CAPACITY		MOISTURE REMOVAL RATE	GAS TYPE	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	ROOM AREA (F ²)	AIRFLOW (CFM)	HEIGHT (FT)							
3	DOAS-01	1	CAS-HVAC3-1400-20-20T	CAPTIVEAIRE	20P-3	3300	3300	0	2800	1.500	5.00	3	208	89.1A	100A	104.0°F	76.0°F	104.0°F	76.0°F	52.0°F	52.0°F	255.9 MBH	178.1 MBH	18.2	7.9	70.0°F	59.3°F	61.2 MBH	29.6 MBH	64.2 LBS/HR	NATURAL	400000	324000	89°F	7 IN. W.C. - 14 IN. W.C.	595.6	1031	7.2	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19						
NOTES:																																				18. MINIMUM ROOM AREA ASSUMED 7.2" SUPPLY DIFFUSER HEIGHT AND IS CALCULATED PER UL60335-2-40 4TH ED. VALUES BASED ON FACTORY CHARGE. ACTUAL SITE CHARGE MAY DIFFER.									
1. INVERTER SCROLL COMPRESSOR WITH INTEGRATED DIL SENSOR. DIGITAL DR STAGED SCROLL NOT AN APPROVED EQUAL. 2. DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE. 3. INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER. 4. REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE 5. ECM MOTOR CONDENSING FANS 6. ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE 7. SUCTION LINE ACCUMULATOR 8. FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER 9. AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT). 10. 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 16GA BASE 11. 81% EFFICIENT FURNACE WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 15:1 TURNDOWN WITH NG AND 12:1 TURNDOWN WITH LP 12. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE. 13. FULLY MODULATING HOT GAS REHEAT 14. LOW AMBIENT COOLING OPERATION DOWN TO 0°F 15. HAIL GUARD FOR CONDENSING COIL 16. FACTORY INSTALLED COMPRESSOR SOUND BLANKET 17. SIDE DISCHARGE/SIDE RETURN																																													

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF-1L	YES						
2	KEF-1R	YES						

CURB ASSEMBLIES

NO	DN FAN	TAG	R-VALUE	WEIGHT	ITEM	SIZE
1	# 1	KEF-1L		36 LBS	CURB	23,000"W X 23,000"L X 20,000"H VENTED HINGED.
2	# 2	KEF-1R		36 LBS	CURB	23,000"W X 23,000"L X 20,000"H VENTED HINGED.
3	# 3	DOAS-01	4.3	159 LBS	CURB	59,500"W X 91,000"L X 12,000"H INSULATED 16 GAUGE.

1" R4.3 FOIL FACED FIBERGLASS INSULATION. COMPLIES WITH UL/ULCASTM, & ASHRAE STANDARDS.

EXHAUST FAN INFORMATION - JOB#8548225

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLTS	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SDNES
1	KEF-1L	1	DURSHFA	CAPTIVEAIRE	1750	1.000	1420	TEAQ-ECM	1.000	0.6080	1	115	11.6	554 FPM	94	13.5
2	KEF-1R	1	DURSHFA	CAPTIVEAIRE	1750	1.000	1420	TEAQ-ECM	1.000	0.6080	1	115	11.6	554 FPM	94	13.5

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1 L	1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECM03 PREWIRE (TELCO MOTOR), CCW ROTATION
2	KEF-1 R	1	2 YEAR PARTS WARRANTY
		1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
3	DOAS-01	1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECM03 PREWIRE (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
		1	COOLING OVERRIDE
		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #2B, #47, 'MA', OR 'E2' PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
		1	RTU BLOWER DOOR SWITCH
		1	2" MERV 13 FILTERS FOR RTU3 (QTY. 4)
		1	2" MERV 8 FILTERS FOR RTU3 (QTY. 4)
		1	OVERHEAT STAT
		1	TOTAL CFM MONITORING
		1	BLOWER STOP DELAY, ALLOWS RESIDUAL HEAT TO BE TRANSFERRED INTO THE SUPPLY AIR AFTER HEATING HAS STOPPED. FACTORY SET AT: 90 SECS FOR 1BT, 30 SECS FOR DF
		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
		1	20 TON MODULATING COOLING OPTION, 208/230V. R454B REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
		1	LOW AMBIENT COOLING OPERATION - DOWN TO 0F AMBIENT
		1	R454B LEAK DETECTOR OPTION FOR RTUS
		1	OCCUPIED SCHEDULING
		1	INTAKE FIRESTAT SET TO 135°F
		1	FREEZESTAT
		1	DISCHARGE FIRESTAT SET TO 240°F
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	20 TON MODULATING REHEAT OPTION - SPACE DEWPOINT CONTROL - R454B
		1	RTU CURB DUCT HANGER
		1	RTU SIDE DISCHARGE
		1	120V FIRE INPUT
		1	RTU SIDE RETURN
		1	2" METAL MESH FILTERS FOR RTU OUTDOOR INTAKE
		1	DUCT MOUNTED SMOKE DETECTOR - SHIPS LOOSE
		1	HIGH TURNDOWN OPTION FOR PARAGON UNITS
		1	DDC MSTP BACNET REMOTE UNIT MONITORING
		1	CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
		1	RTU CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION. INCLUDES RECEPTACLE, COVER AND J-BOX
		1	RTU HAIL GUARD
		1	RTU INTAKE/RETURN DAMPER - MANUAL CONTROL VIA HMI
		1	RTUVZH17 COMPRESSOR SOUND BLANKET 230V - FACTORY INSTALLED
		1	VAV PACKAGE W/ 0-10VDC INPUT CONTROL (S71 VFD INCLUDED)
		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
		1	EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET

FAN

TAG	LOCATION	CFM	EXT. STATIC PRESSURE (IN W.C.)	MAX RPM	HORSE POWER	CURRENT CHAR			LOCALLY SWITCHED	INTERLOCK WITH	FAN TYPE	DRIVE TYPE	MANUFACTURER	MODEL NUMBER	REMARKS
						V	P	F							
CABINET															
EF-1	LOCKER	75	0.25	1300	0.02	120	1	60	-	LIGHTS	CABINET	DIRECT	GREENHECK	SP-B80	1-2
EF-2	RR	75	0.25	1300	0.02	120	1	60	-	LIGHTS	CABINET	DIRECT	GREENHECK	SP-B80	1-2

GENERAL NOTES:
1. PROVIDE WITH MANUFACTURER SPEED CONTROL AND DISCONNECT.
2. PROVIDE WITH BACK DRAFT DAMPER.

LOUVER

MARK	SIZE (HxW)	MIN FREE AREA (SQFT)	CFM	MANUFACTURER	MODEL NO.	LOUVER TYPE	LOUVER REMARKS
L-1	12/12	1	150	GREENHECK	ESD-403	EXHAUST	1-3

NOTES:
1. PROVIDE WITH BIRDSCREEN.
2. COORDINATE EXACT LOCATION WITH GC AND ARCHITECT.
3. COORDINATE FINISH WITH ARCHITECT.

FOR QUESTIONS, CALL THE
Oklahoma City Mechanical
REGION 118
PHONE: (405) 561 - 2697
EMAIL: reg118@captivelaire.com

PATENT NUMBERS
EXHAUST HOODS ND-2/BD-2/SND-2 (CANADA) - CA PATENT 2520435 C.

HOOD INFORMATION - JOB#8548225

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)							HOOD CONSTRUCTION	HOOD CONFIG	
										WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP		END TO END	ROW
1	KH-1L	6624 ND-2	CAPTIVEAIRE	10' 0"	600 DEG	I	HEAVY	175	1750			4"	14"	1750	1637	-0.612"	430 SS WHERE EXPOSED	LEFT	ALONE
2	KH-1R	6624 ND-2	CAPTIVEAIRE	10' 0"	600 DEG	I	HEAVY	175	1750			4"	14"	1750	1637	-0.612"	430 SS WHERE EXPOSED	RIGHT	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S)					LIGHT(S)			UTILITY CABINET(S)						FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	FIRE SYSTEM		ELECTRICAL	SWITCHES		
												TYPE	SIZE	MODEL #	QUANTITY		
1	KH-1L	CAPTRATE SOLD FILTER	7	20"	16"	85% SEE FILTER SPEC	3	RECESSED ROUND	NO							YES	681 LBS
2	KH-1R	CAPTRATE SOLD FILTER	7	20"	16"	85% SEE FILTER SPEC	3	RECESSED ROUND	NO	RIGHT	12"x66"x24"	TANK FS	4.0/4.0/4.0	SC-321110MA	1 LIGHT 1 FAN	YES	1114 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	KH-1L	FIELD WRAPPER 18.00" HIGH FRONT, LEFT.
		BACKSPLASH 122.00" HIGH X 288.00" LONG 430 SS VERTICAL.
		INSULATION FOR TOP OF HOOD.
		RISER SENSOR INSTALL 6IN PLEN.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
2	KH-1R	FIELD WRAPPER 18.00" HIGH FRONT, RIGHT.
		INSULATION FOR TOP OF HOOD.
		RISER SENSOR INSTALL 6IN PLEN.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.

SYSTEM DESIGN VERIFICATION (SDV)

IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

CLEARANCE TO COMBUSTIBLES

HOODS #	SURFACE	*CLEARANCE
1	TOP	0"
	FRONT	0"
	BACK	18"
	LEFT	18"
	RIGHT	18"
2	TOP	0"
	FRONT	0"
	BACK	18"
	LEFT	18"
	RIGHT	0"

- *0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.
- HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.

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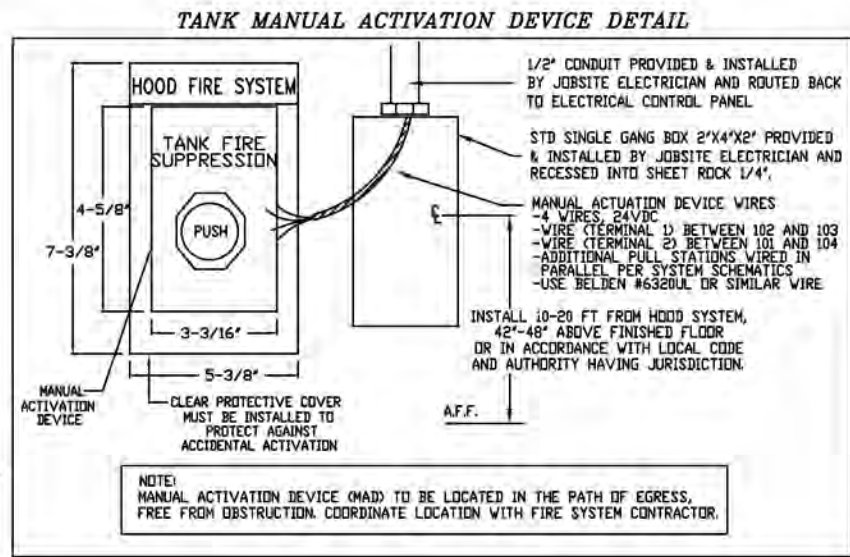
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- NOTES
- FIELD PIPE DROPS AS SHOWN
 - PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
 - FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
 - SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
 - RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVEING, SALAMANDERS, ETC.
 - OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION. IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
 - FACTORY PIPING EXTENDS A MAXIMUM OF 6' ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
- THIS PRE-ENGINEERED FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-S\$

JOB #: 8548225.

JOB NAME: SOUTHGATE ELEMENTARY RENOVATION.

SYSTEM SIZE: TANK-SP-3 DESIGN FP: 56. MAXIMUM FP: 60.

HOOD # 1 10' 0.00' LONG x 66' WIDE x 24' HIGH.

RISER # 1 SIZE: 1/4" DIA.

HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

HOOD # 2 10' 0.00' LONG x 66' WIDE x 24' HIGH.

RISER # 1 SIZE: 1/4" DIA.

HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.

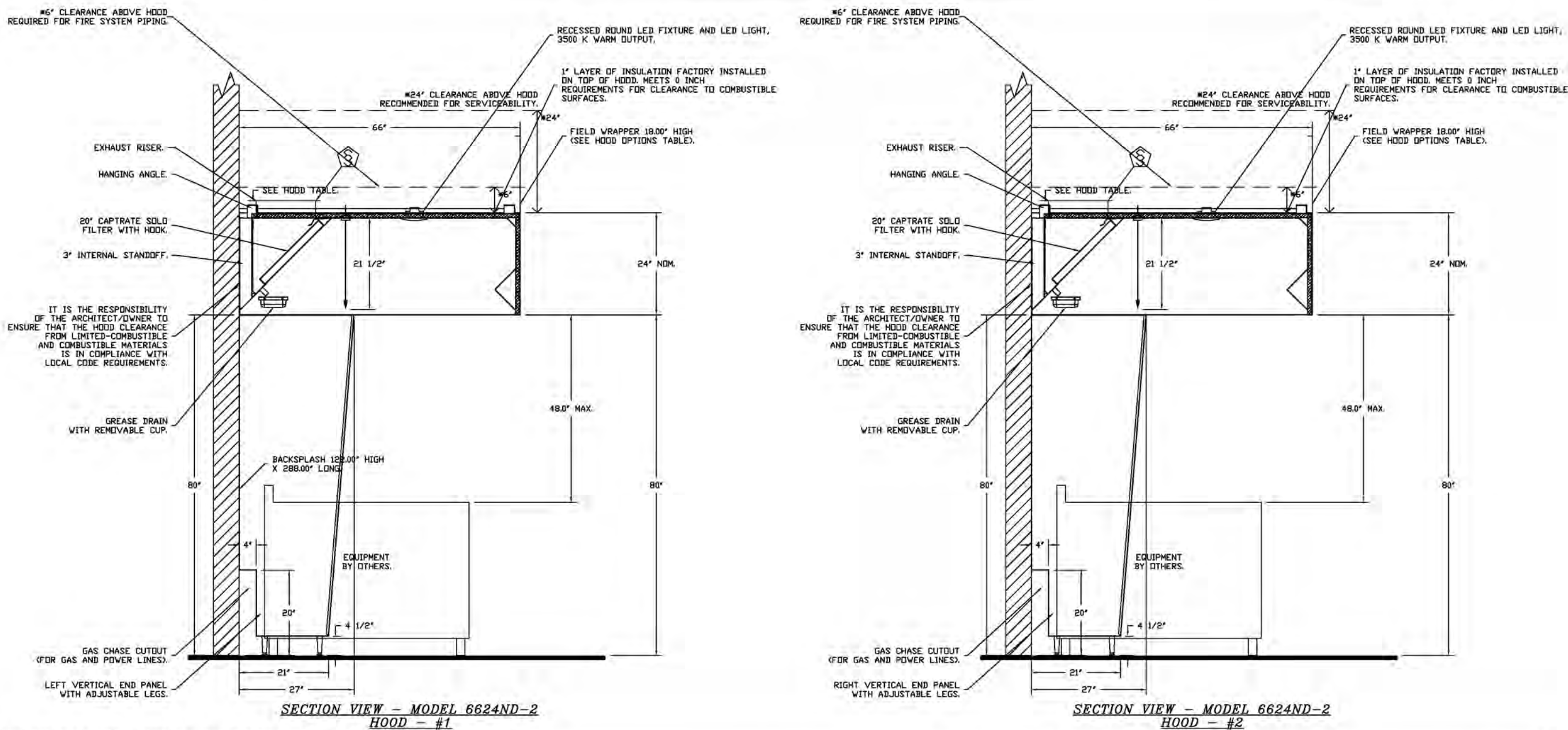
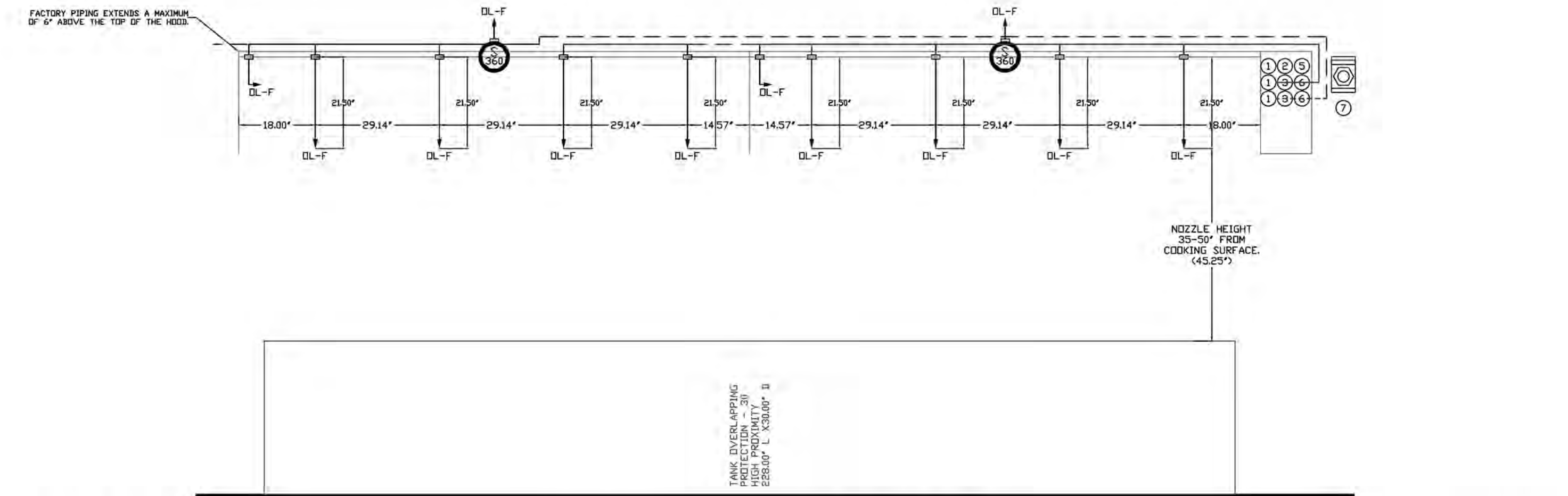
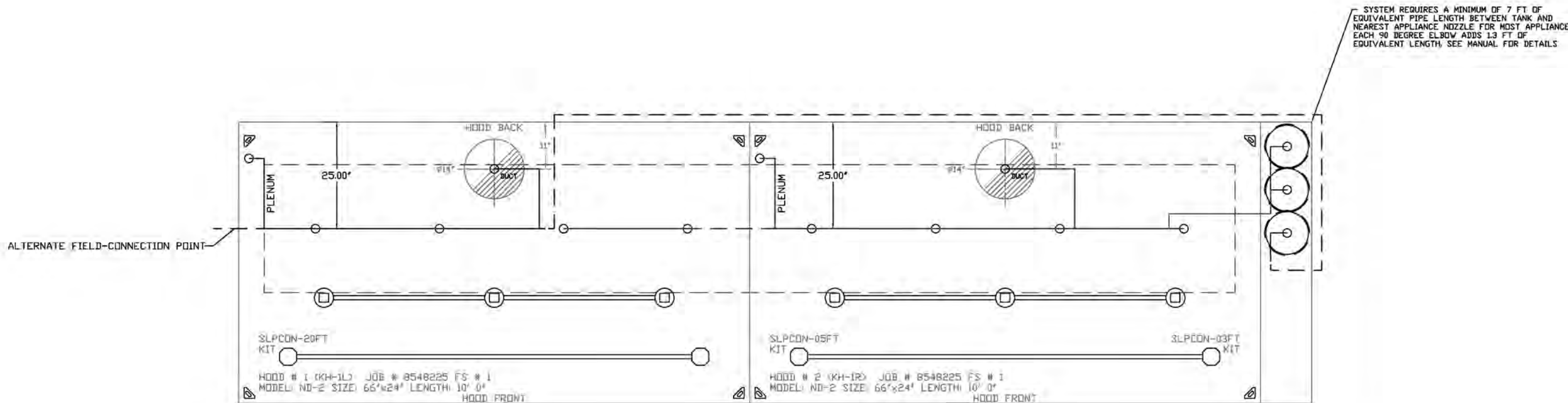
- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.

- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

AGENT DISTRIBUTION PIPING LIMITATIONS	MAX PIPE LENGTH (FT)
PIPE SECTION	42
MAX SUPPLY LINE TO FIRST OVERLAPPING NOZZLE	10
OVERLAPPING NOZZLE APPLIANCE BRANCH	10
DEDICATED NOZZLE APPLIANCE BRANCH	10

LEGEND - FIRE CABINET TANK SYSTEM

- 1 4 GALLON TANK.
- 2 PRIMARY ACTUATOR RELEASE.
- 3 SECONDARY ACTUATOR RELEASE.
- 4 PRESSURE SUPERVISION SWITCH.
- 5 PRIMARY HOSE ASSEMBLY.
- 6 SECONDARY HOSE ASSEMBLY.
- 7 REMOTE MANUAL ACTIVATION DEVICE.



INCLUDES: FIELD INSTALLATION AND HOOKUP DURING NORMAL BUSINESS HOURS BY CERTIFIED INSTALLERS ONLY IN THE LOCATION NOTED ABOVE. TWO SITE VISITS ONLY ONE VISIT TO SET PULL STATION & SYSTEM HOOKUP AND ONE VISIT FOR ONE TEST. ADDITIONAL VISITS WILL RESULT IN ADDITIONAL CHARGES. ONE MECHANICAL OR ELECTRICAL GAS VALVE PER SYSTEM AT A MAXIMUM SIZE OF 2\"/>

GAS VALVES AND STRAINERS									
TYPE	SIZE	VOLTAGE	MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DIM "A"	DIM "B"	DIM "C"
ELECTRICAL	2"	120 VAC	0 PSIG (0 IN.W.C.)	5 PSIG (138 IN.W.C.)	2,940,000 BTU/HR	1,900,000 BTU/HR	7-5/8"	6-3/8"	7-1/4"

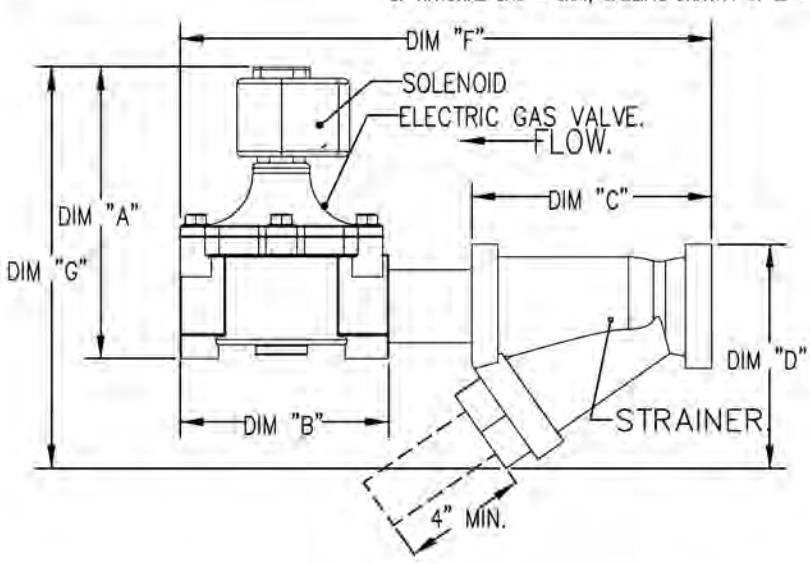
ALL GAS VALVES/STRAINERS PROPER CLEARANCE MUST BE PROVIDED IN ORDER TO SERVICE THE STRAINERS A MINIMUM OF 4\"/>

1/4\"/>

2 1/2\"/>

2 INCH GAS VALVES MUST BE MOUNTED WITH THE SOLENOID VERTICAL AND UPRIGHT.

2 INCH GAS VALVES MUST BE MOUNTED WITH THE SOLENOID VERTICAL AND UPRIGHT.



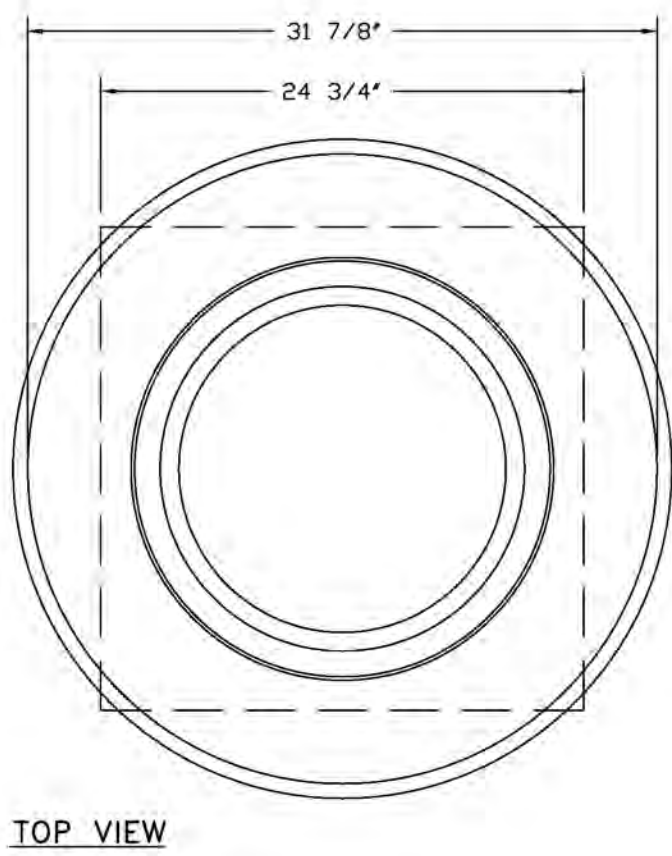
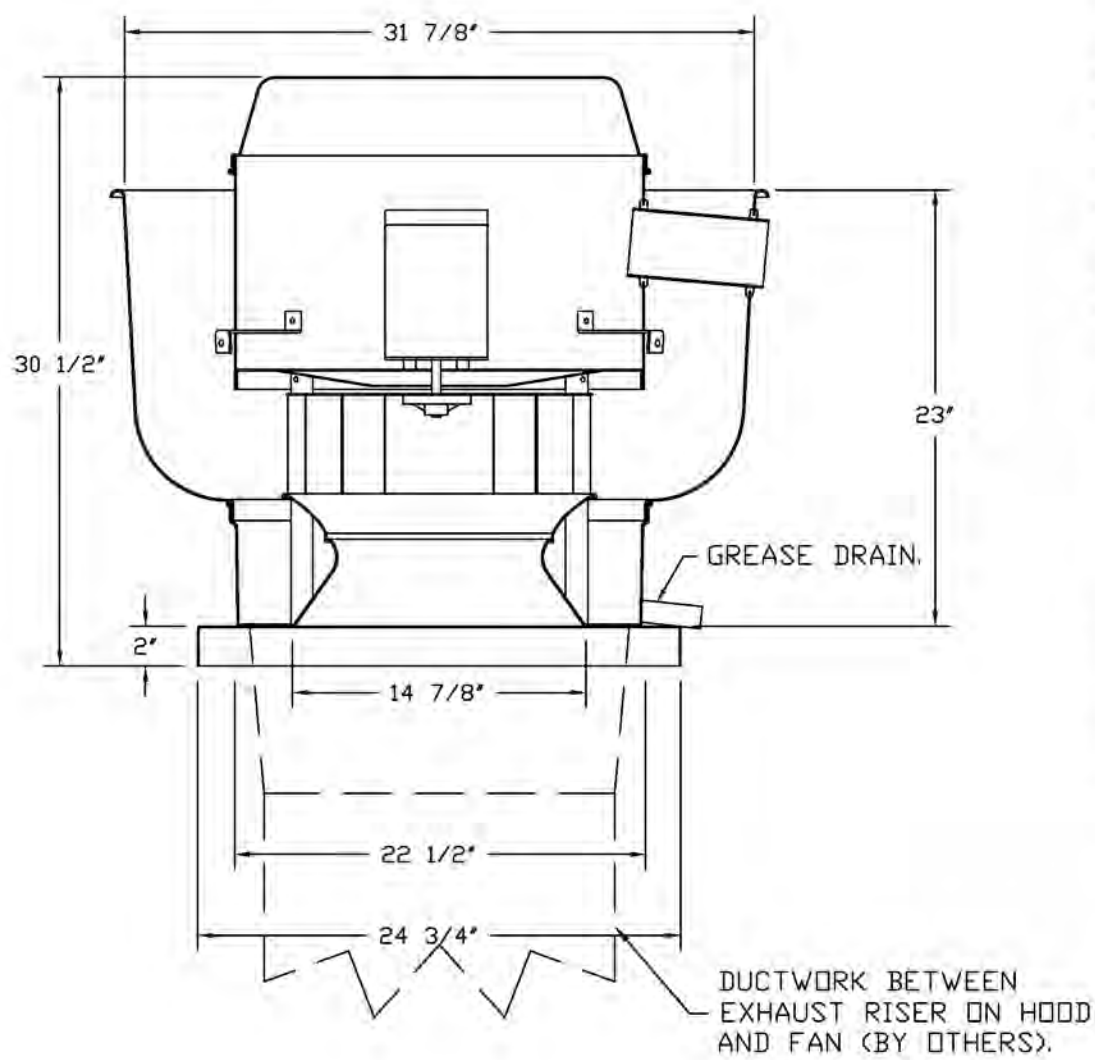
FIRE SYSTEM INFORMATION - JOB#8548225				INSTALLATION	
FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP
1		TANK FS	4.0/4.0/4.0	60	56

GAS VALVE(S)			SUPPLIED BY	
FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1		SC ELECTRICAL	2.000	CAPTIVEARE SYSTEMS

FIRE SYSTEM PARTS LIST KEY			QTY BY FACTORY	QTY BY JOST
FIRE SYSTEM NO	TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY JOST
1		0 - 0 - TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
1		0 - 0 - TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
1		0 - 0 - 12-FB8021-38144-DT-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO. CLOSURE ON TEMP RISE AT 350°F. (A0004930).	2	0
1		0 - 0 - 32-00002 QUIK SEAL - 1/2" O.D.	2	0
1		0 - 0 - 361091 3/8" BRASS PLUG.	5	0
1		0 - 0 - 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	3	0
1		0 - 0 - 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.	2	0
1		0 - 0 - 79425 3/4" NPT FEMALE TO 1/2" MALE PRO-PRESS ADAPTER.	5	0
1		0 - 0 - 79525 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.	2	0
1		0 - 0 - 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.	3	0
1		0 - 0 - 87-12042-001 SECONDARY ACTUATOR VALVE (CSVA) - SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	2	0
1		0 - 0 - 87-12045-001 HOSE, SECONDARY ACTUATOR HOSE, 75' BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	2	0
1		0 - 0 - 87-30001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	3	0
1		0 - 0 - 87-300030-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
1		0 - 0 - 87-300033-001 DIN CONNECTOR, CANFIELD PART #SJ560-201-FLGA, TANK FIRE SUPPRESSION, SUBMINATURE SOLENOID CONNECTION (CSD VENDOR 30377).	1	0
1		0 - 0 - 87-300152-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	12	0
1		0 - 0 - 905545SPC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LB.	10	0
1		0 - 0 - 9097200PC PRO PRESS PC611 1/2 PRESS TEE LB.	11	0
1		0 - 0 - 90554415 HARDWARE, DATAKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	6	0
1		0 - 0 - A0034332 JUNCTION BOX FOR MANUAL PULL STATION, 15" DEEP BACK BOX, RED COLOR.	1	0
1		0 - 0 - A31484 1/4" NPT SCHRAEDER VALVE AND CAP, JB INDUSTRIES, 1/4" FLARE X 1/4" NPT HALF UNION, USED ON TANK SERVICE PORT.	2	0
1		0 - 0 - B1145 3/8" BLACK IRON 90 ELL.	4	0
1		0 - 0 - DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION	3	0
1		0 - 0 - SLPCON-03FT SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 4" GAP. KIT CONTAINS 5 FEET OF BLACK MG WIRE, 5 FEET OF TAN MG WIRE, 3 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
1		0 - 0 - SLPCON-05FT SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 4" GAP. KIT CONTAINS 7 FEET OF BLACK MG WIRE, 7 FEET OF TAN MG WIRE, 5 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
1		0 - 0 - SLPCON-08FT SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN HOODS WITH UP TO 19' GAP. KIT CONTAINS 22 FEET OF BLACK MG WIRE, 22 FEET OF TAN MG WIRE, 20 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
1		0 - 0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	9	0
1		0 - 0 - TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	3	0
1		0 - 0 - WK-283955-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	3	0
1		16 - 16 - 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	12	0
1		16 - 16 - DL-F NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	12	0
1		26 - 26 - 65A-3/8 QUIK SEAL - 3/8" O.D.	12	0
1		34 - 34 - A0034331 RED COLOR - 24VDC SINGLE ACTION MANUAL ACTIVATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT.	1	0

HMI SCHEDULE				
UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS
FAN #3	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	55
FAN #3	HMI #2 - SPACE		AVERAGED	56

FANS #1 (KEF-1L), #2 (KEF-1R) - DUBSHFA EXHAUST FAN



FEATURES:

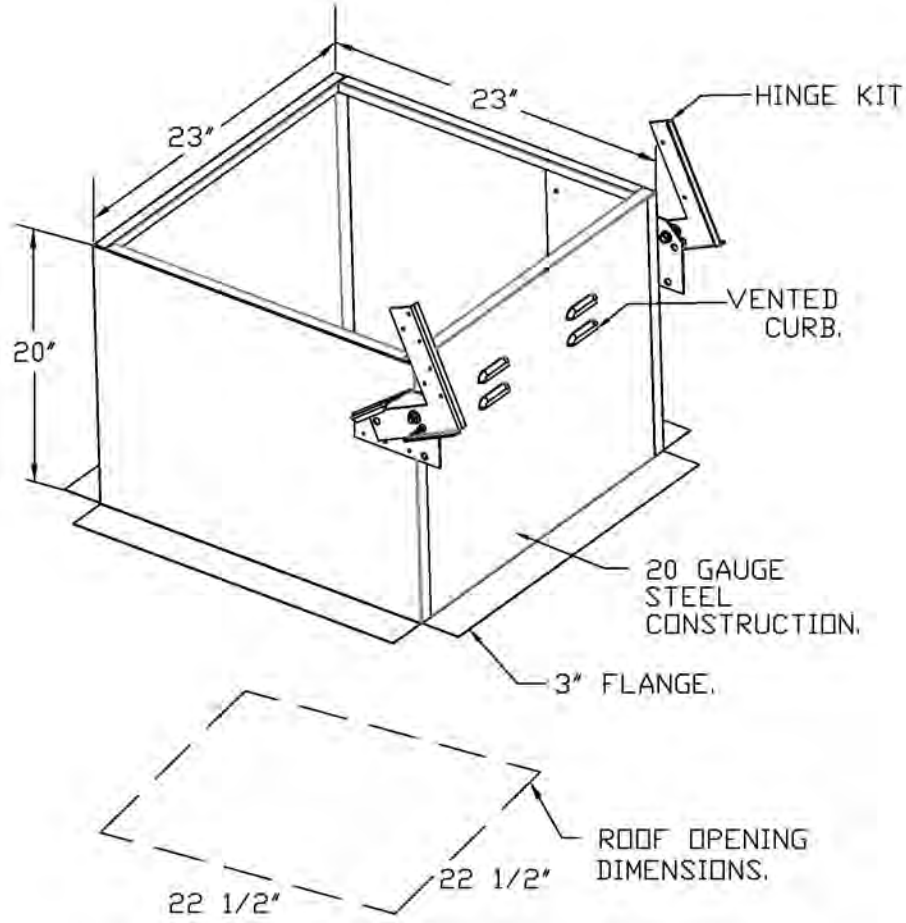
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETEIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

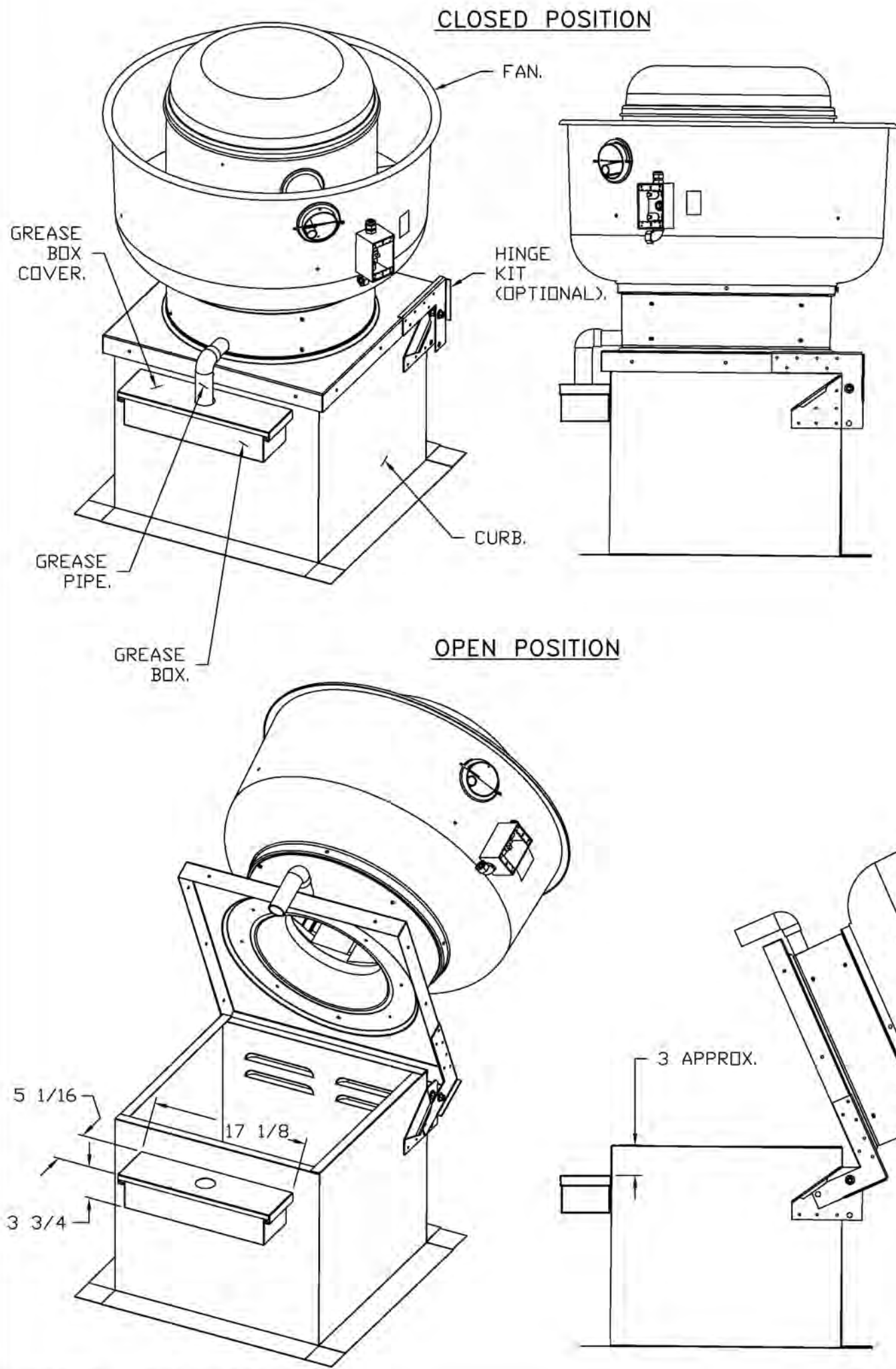
ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

- GREASE BOX.
- FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS.
- ECM WIRING PACKAGE - PWM SIGNAL FROM ECM03 PREWIRE (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.



GREASE BOX INSTALLATION



*NOTE: UL 705 INSTALL.

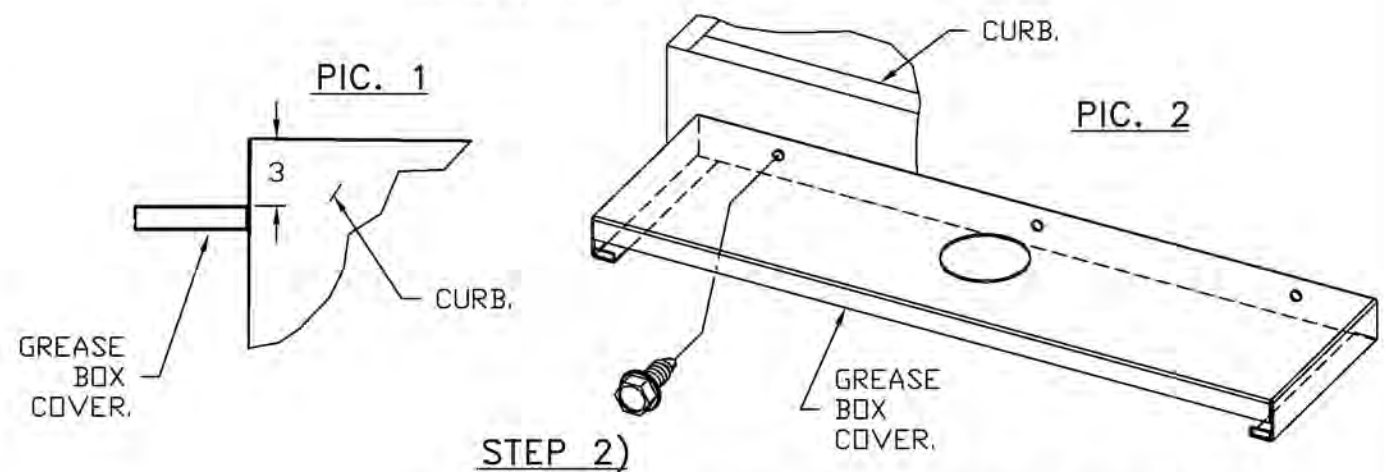
PARTS INCLUDED

- GREASE BOX.
- GREASE BOX COVER.
- GREASE PIPE.
- SHEET METAL SCREWS
3 - LONG (3/4" LG.).

GREASE BOX FIELD INSTALLATION

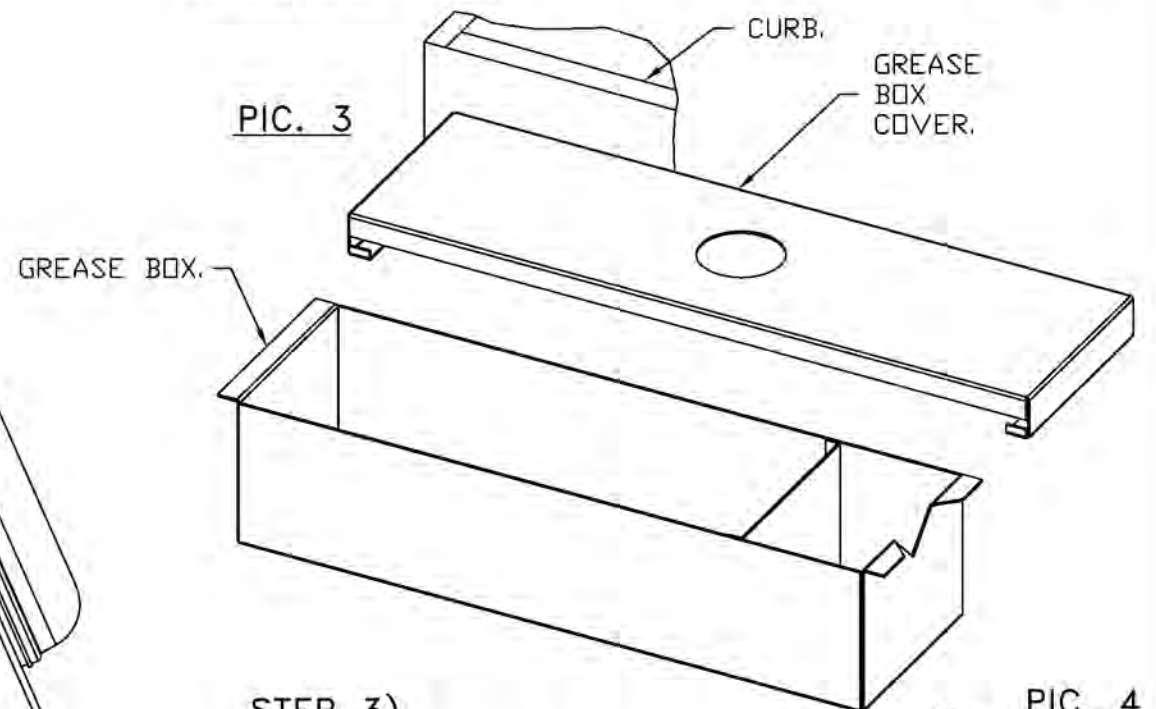
STEP 1)

ATTACH GREASE BOX COVER TO THE CURB, HOLD 3" DIMENSION AS SHOWN ON PIC. 1. SCREW GREASE BOX COVER TO CURB USING (3) LONG (3/4" LG.) SCREWS AS SHOWN ON PIC. 2.



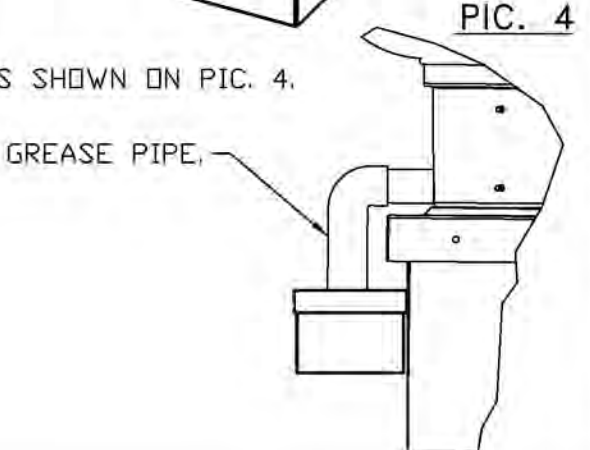
STEP 2)

ATTACH GREASE BOX TO GREASE BOX COVER, SLIDE AND DROP, AS SHOWN ON PIC. 3.



STEP 3)

INSTALL GREASE PIPE AS SHOWN ON PIC. 4.



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Salas O'Brien Project Number: 2650-00226-00

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SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
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FAN #3 CAS-HVAC3-L400-20-20T - HEATER (DOAS-01)

- NOTES:
- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
 - DENOTES CORNER WEIGHT.
 - ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
 - CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.
 - EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.

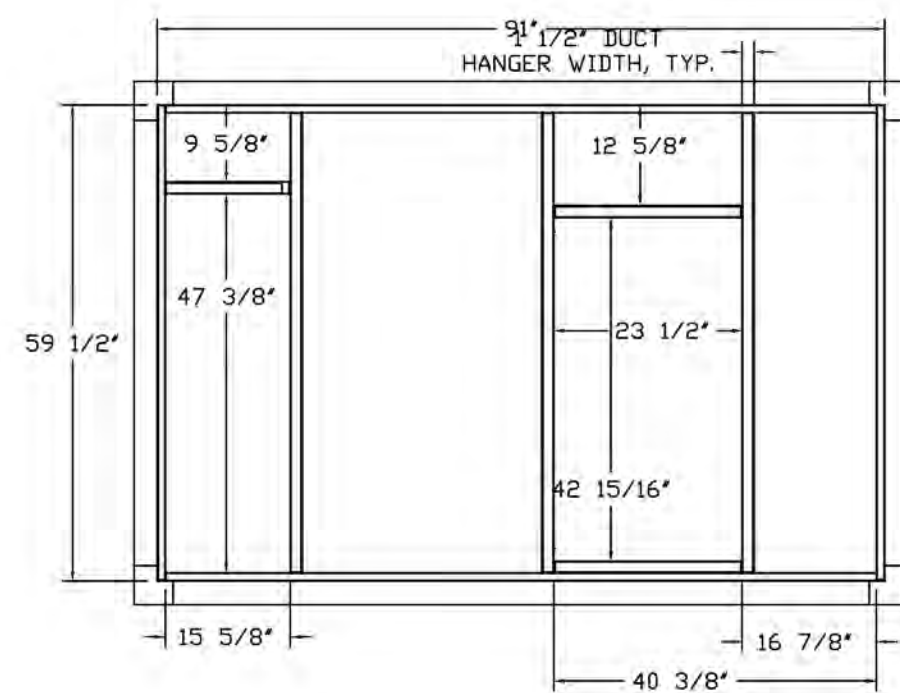
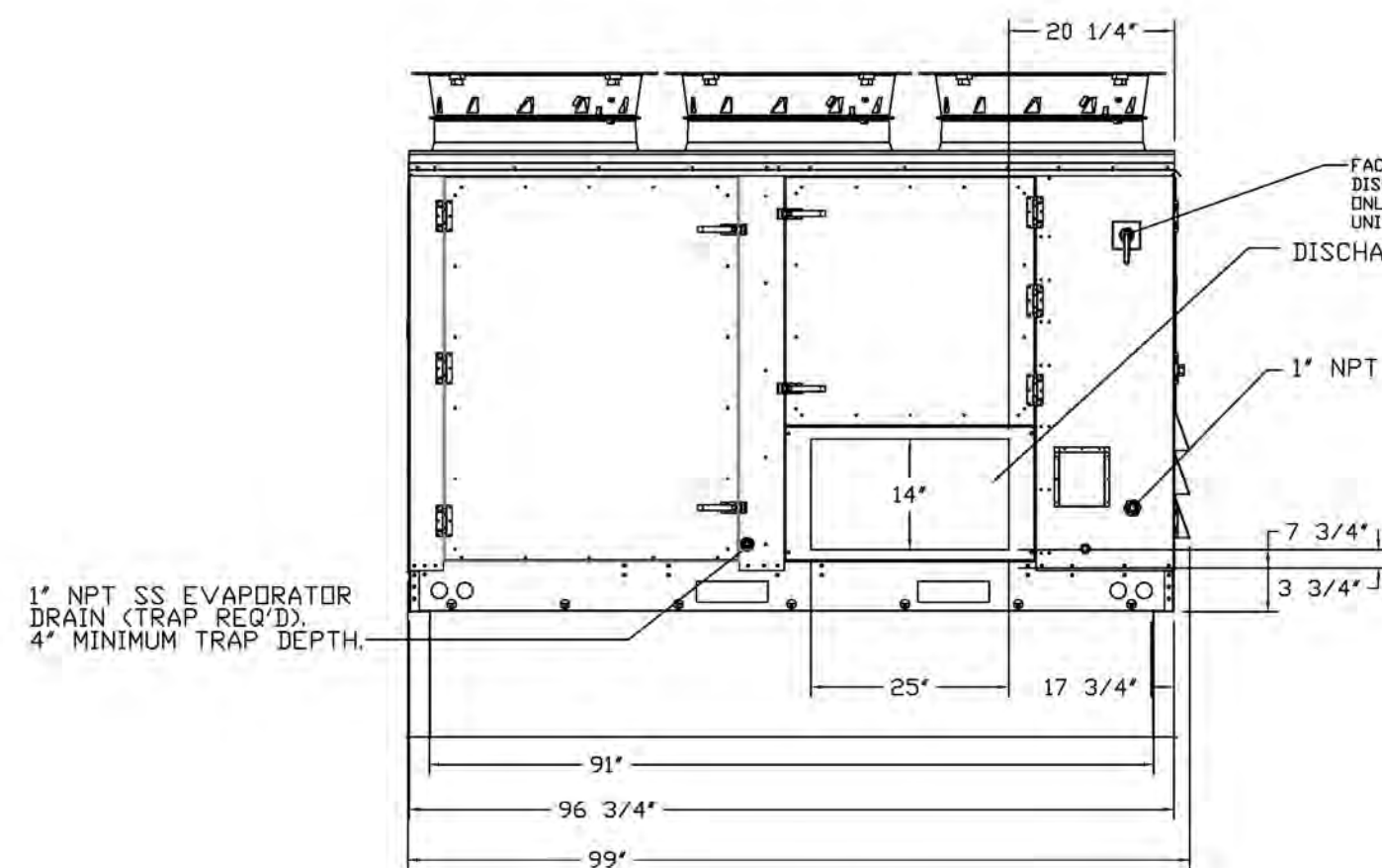
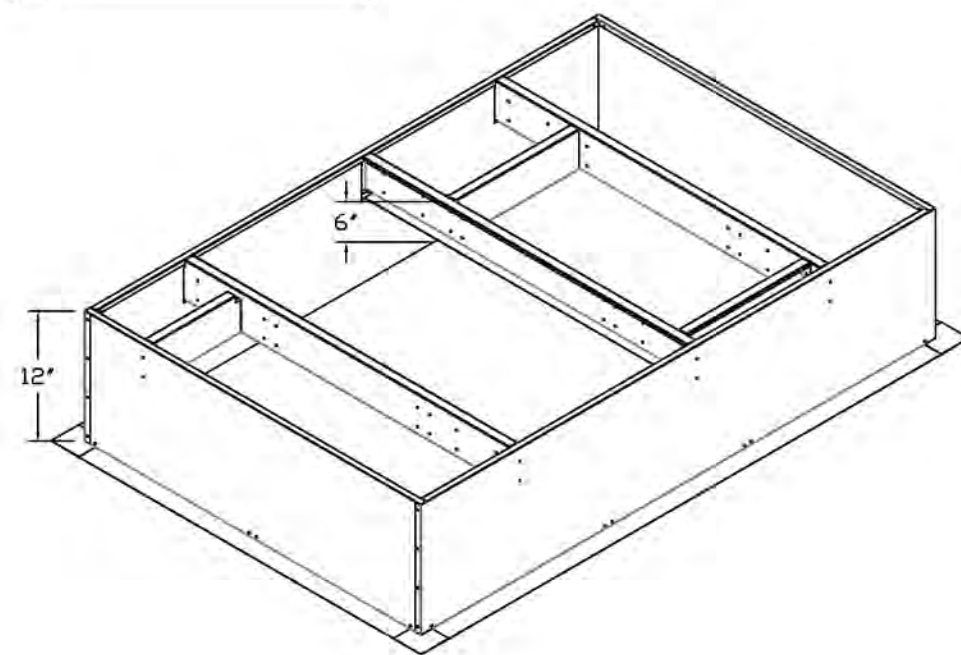
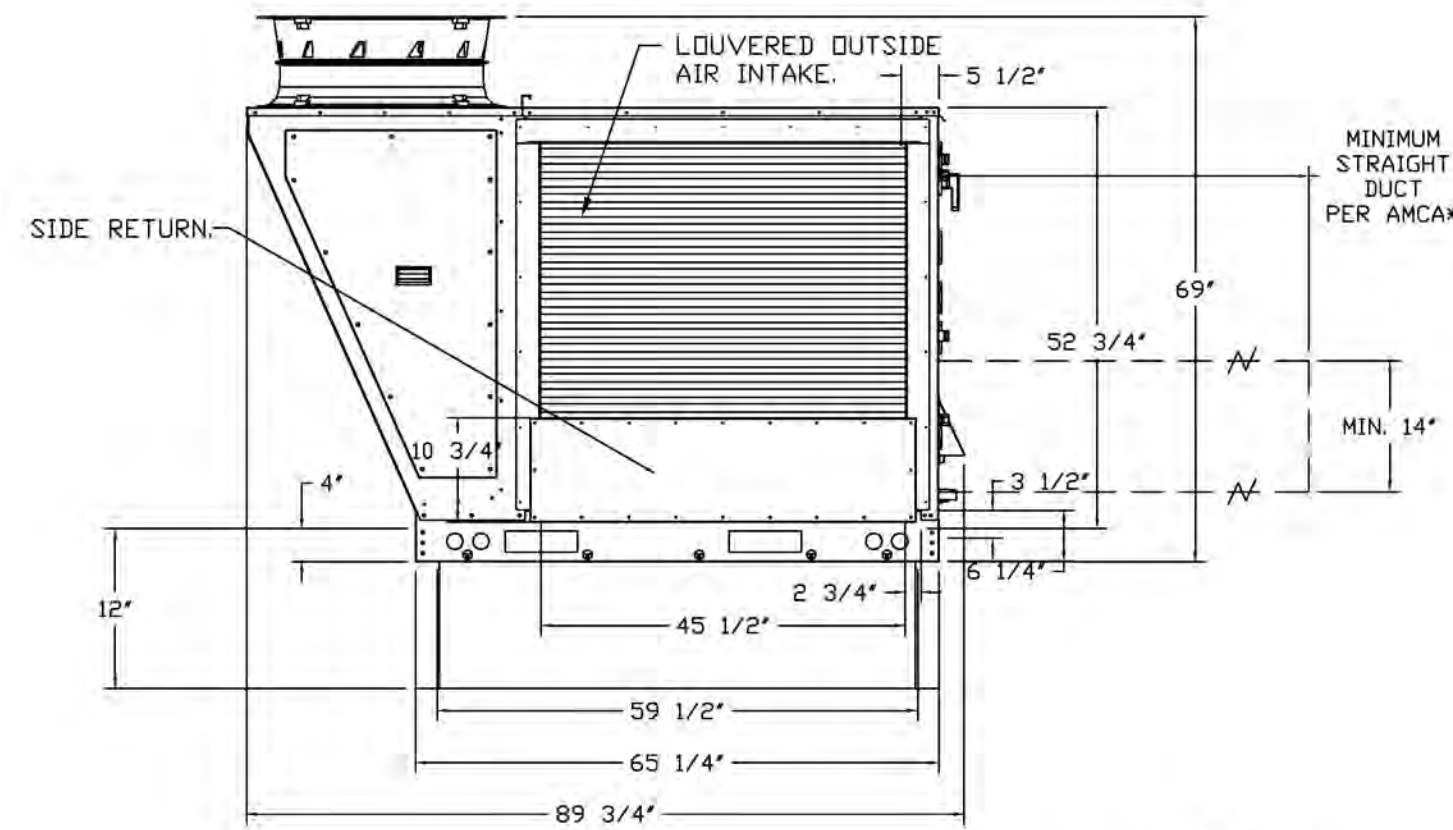
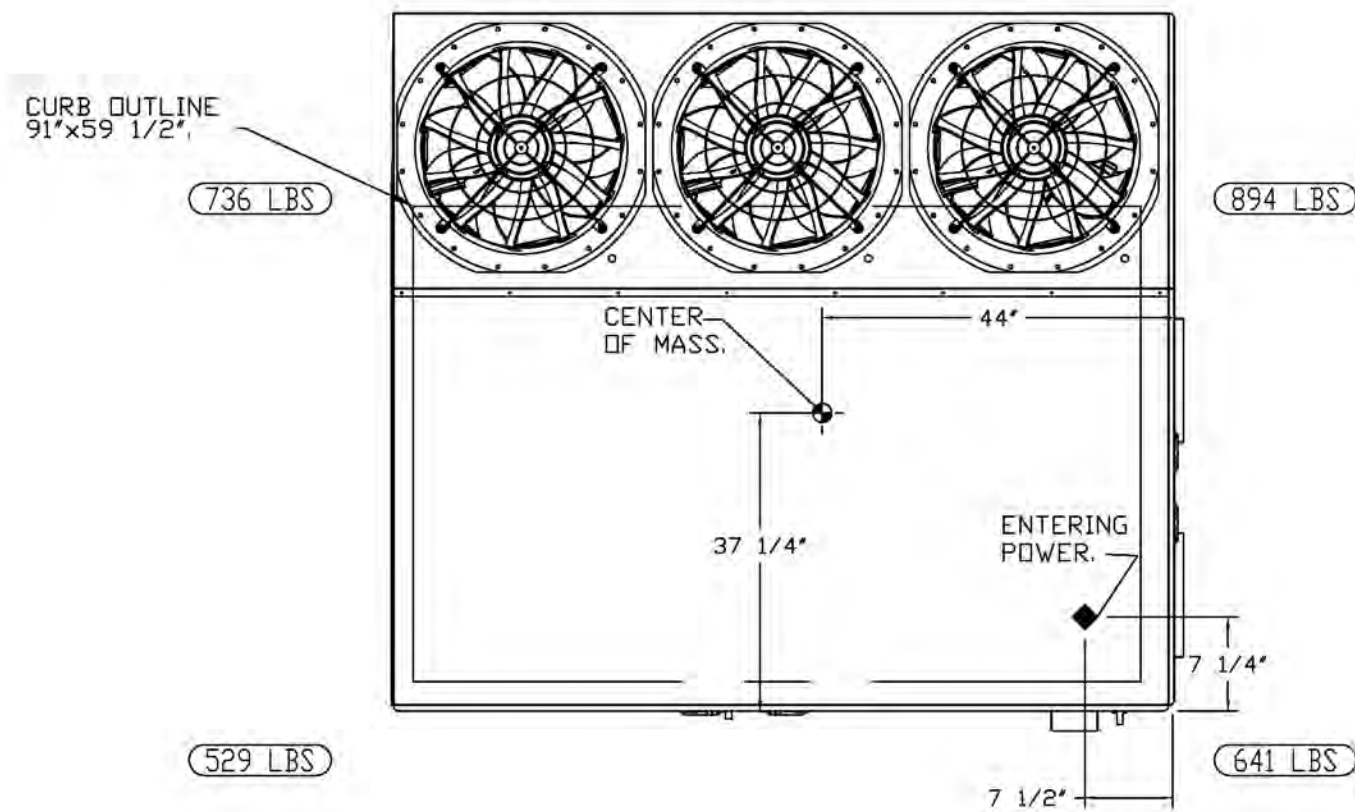
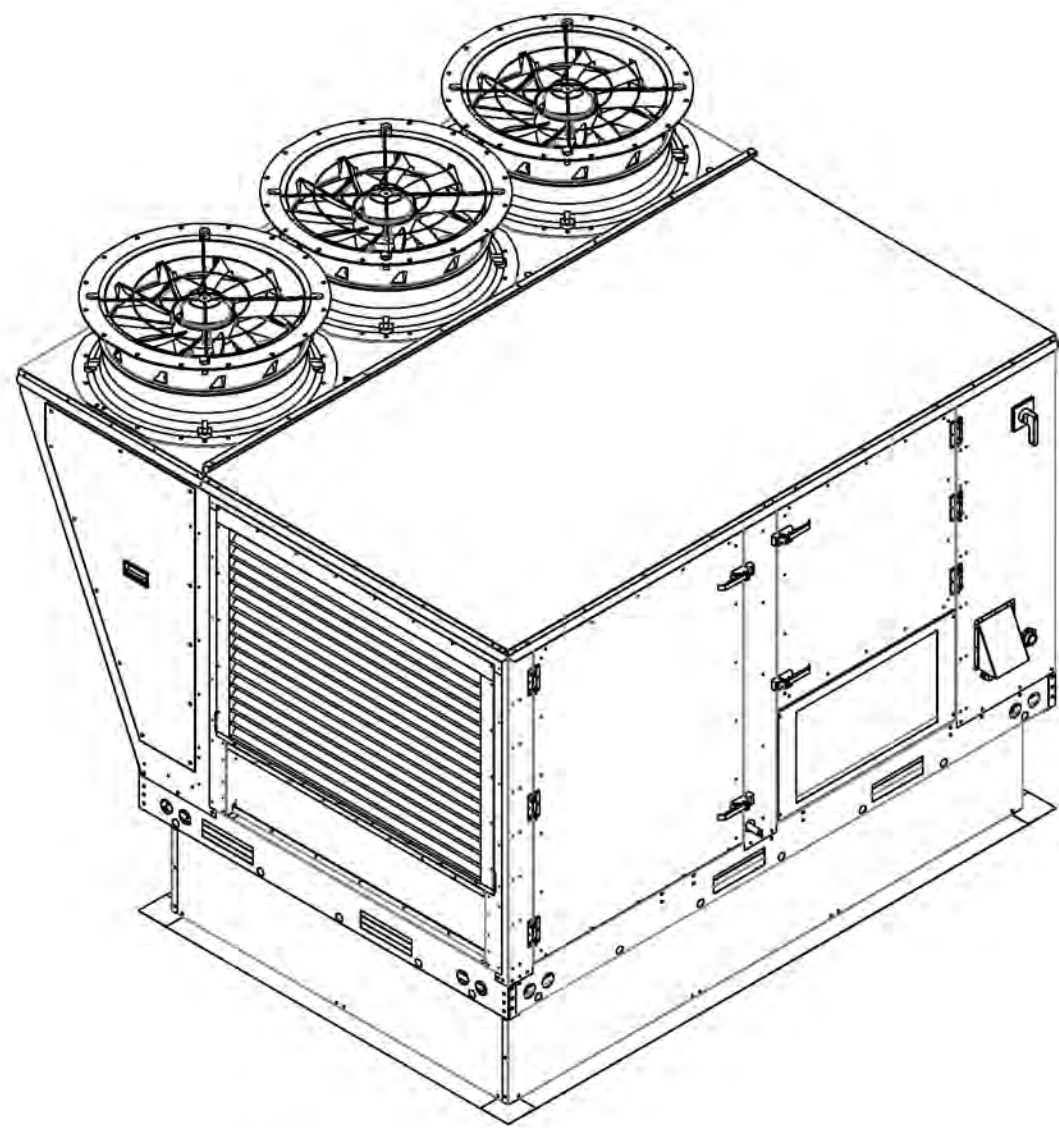
*NOTE: INTEGRAL CO2 MONITORING AND CONTROL CAPABILITIES FOR ALL SPACE MOUNTED THERMOSTATS.

*NOTE: THIS UNIT IS INTENDED TO SERVE IN PLACE OF THE KITCHEN HVAC ROOF TOP UNIT (RTU) IN ADDITION TO PROVIDING APPROPRIATE MAKE-UP AIR FOR THE KITCHEN HOOD(S), RTU AND ASSOCIATED DUCTWORK SHALL BE REMOVED FROM SCOPE UNLESS REQUIRED FOR INTERNAL LOAD ESTIMATES. FINAL DESIGN SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.

SUGGESTED SUPPLY STRAIGHT DUCT SIZE IS 25" x 14".

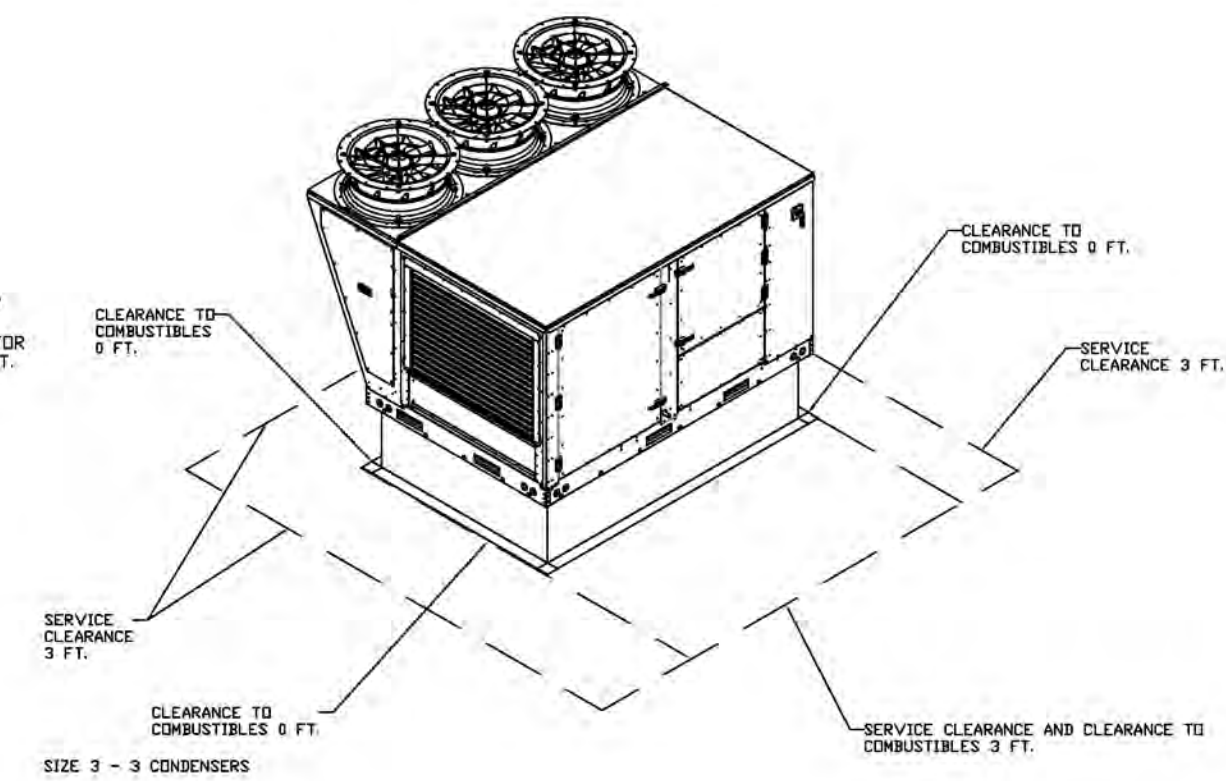
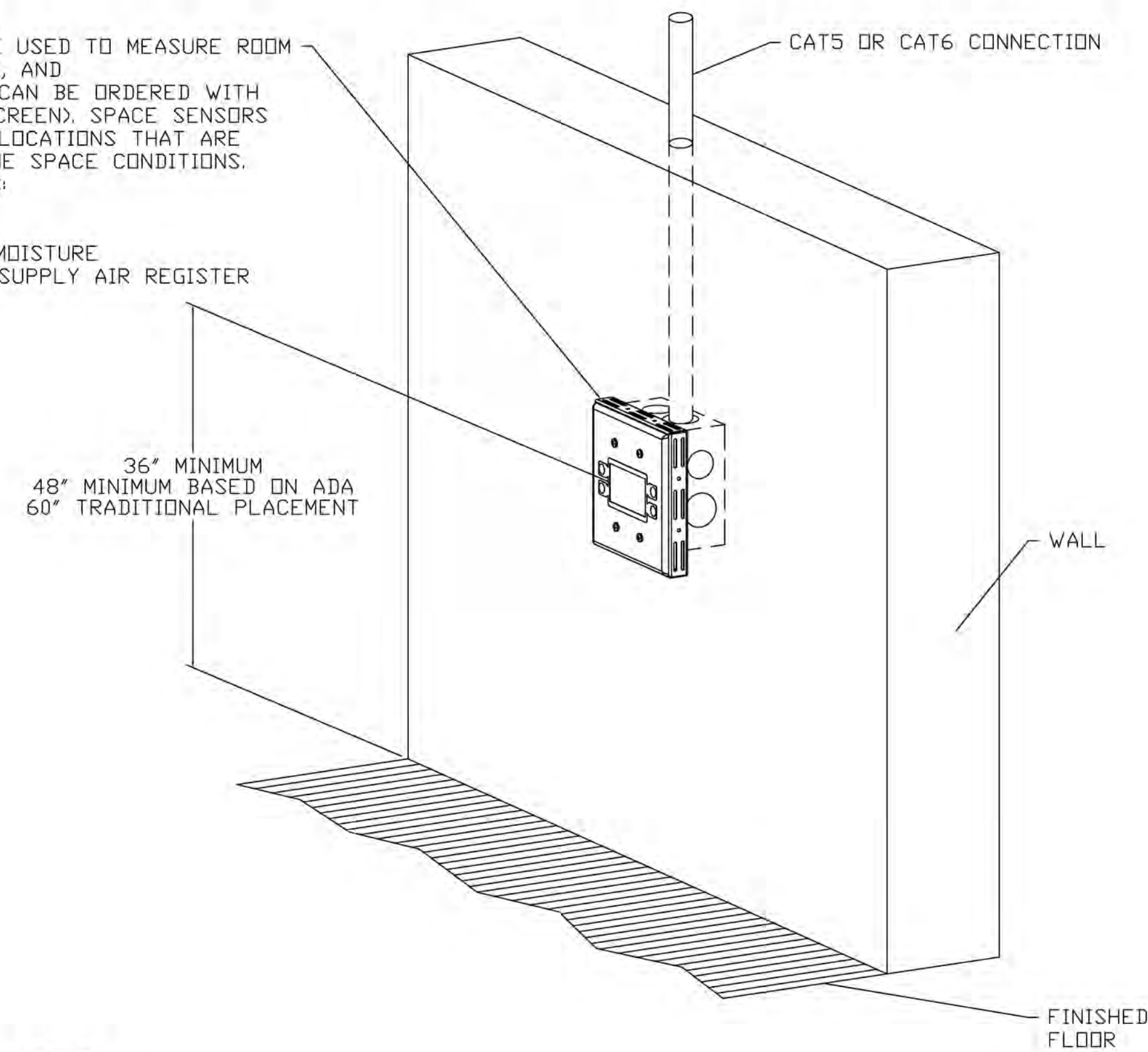
SUGGESTED RETURN STRAIGHT DUCT SIZE IS 45-1/2" x 10-3/4".



SPACE SENSOR MOUNTING DETAIL

SPACE SENSORS CAN BE USED TO MEASURE ROOM TEMPERATURE, HUMIDITY, AND CO2 LEVELS. SENSORS CAN BE ORDERED WITH OR WITHOUT AN HMI (SCREEN). SPACE SENSORS SHOULD BE PLACED IN LOCATIONS THAT ARE REPRESENTATIVE OF THE SPACE CONDITIONS. DO NOT MOUNT SENSORS:

- IN DIRECT SUNLIGHT
- NEAR HEAT SOURCES
- ABOVE A SOURCE OF MOISTURE
- DIRECTLY BENEATH A SUPPLY AIR REGISTER



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SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
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CA# 9820 Expiration Date: 06/30/2027
Salas O'Brien Project Number: 2650-00226-00

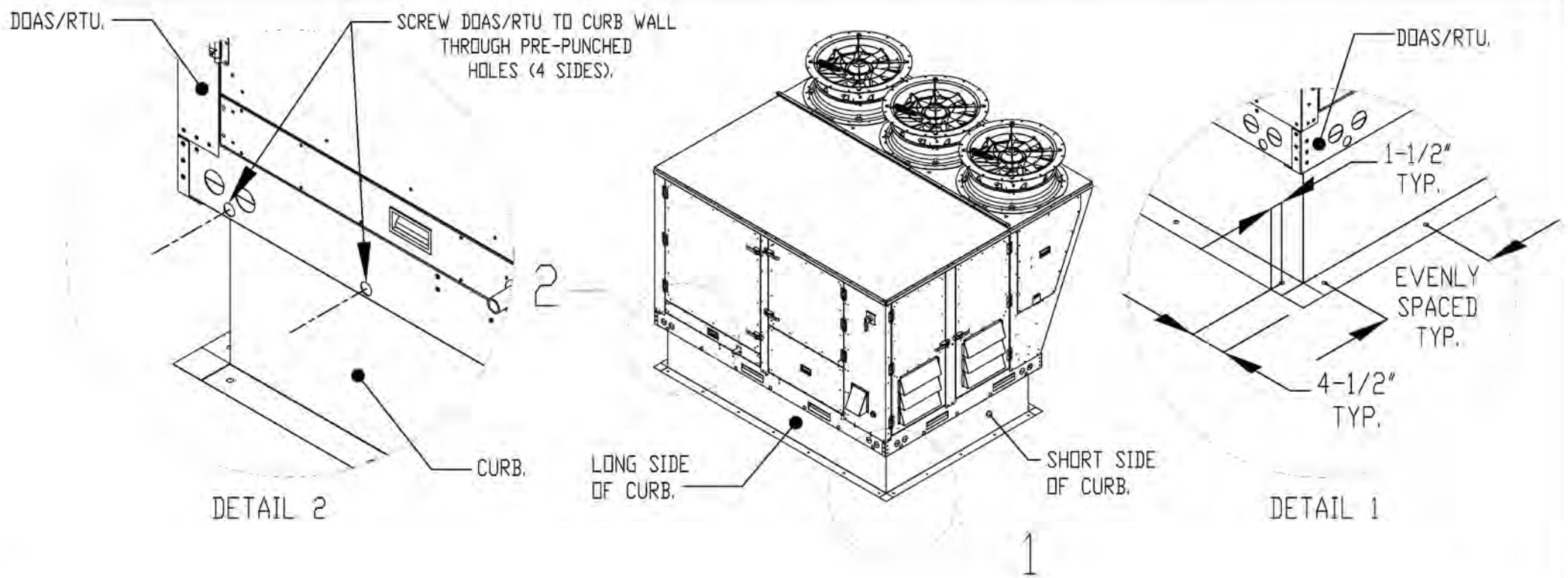
AIR DIFFUSION SUPPLY DUCT SPECIFICATIONS:
PROVIDE AIR DIFFUSION SUPPLY DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL DW-S0(HC), DW-S90(HC), & DW-S180(HC).
THREE DISTINCT HOLE PATTERN OPTIONS TO COVER A VARIETY OF CEILING HEIGHTS.
NO ADDITIONAL DIFFUSERS REQUIRED, AS THE DUCT ITSELF PROVIDES AIR DIFFUSION.
MADE OF HIGH QUALITY STAINLESS STEEL DESIGNED TO LAST 20+ YEARS.
HIGH INDUCTION SUPPLY DUCT IS CONSTRUCTED USING 24 GAUGE, 430 SS - 5" THRU 24".
HIGH INDUCTION SUPPLY DUCT IS CONSTRUCTED USING 20 GAUGE, 430 SS - 26" THRU 36".
QUICK DNSITE ASSEMBLY USING EPDM GASKETS & UNIVERSAL V-BANDS.
DOUBLE WALL SUPPLY DUCT AVAILABLE FOR INTERIOR AND EXTERIOR SPACES, EITHER CONDITIONED OR UNCONDITIONED.
DOUBLE WALL SUPPLY DUCT AVAILABLE IN DW-1S, DW-2S, & DW-3S TO MEET SPECIFIC REGIONAL "R" VALUE REQUIREMENTS.

Insulation R-Value Recommendations		
Supply Duct Type	Minimum R-value	Space Type
Single Wall - S & -HC	N/A	Conditioned Space Only
Double Wall - 1S	R-4	Unconditioned Interior Space Only
Double Wall - 2S	R-8	Unconditioned Space Climate Zones 1-4
Double Wall - 3S	R-12	Unconditioned Space Climate Zones 5-8

DOUBLE WALL SUPPLY DUCT IS INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.
AIR DIFFUSION SUPPLY DUCT COMPLIES WITH SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS) BEST PRACTICES.
POSITIONING OF SPRINKLERS TO AVOID OBSTRUCTION TO DISCHARGE, SEE NFPA 13, TABLE 8.12.5.1.1.

TYPICAL DOAS/RTU ROOF MOUNTING INSTALLATION INSTRUCTIONS

1. SECURE THE CURB TO THE ROOF FRAMING MEMBERS BY DRILLING 1/4" PILOT HOLES IN THE CURB FLANGES AT LOCATIONS SHOWN IN THE DIAGRAM BELOW. USING 3/8" X 2" ZINC PLATED STEEL LAG BOLTS, AND ZINC PLATED WASHERS, SCREW THROUGH THE CURB FLANGES AND INTO THE ROOF FRAMING MEMBERS. A MINIMUM OF (5) LAG BOLTS ON EACH SHORT SIDE, AND (7) LAG BOLTS ON EACH LONG SIDE IS REQUIRED.
2. SECURE THE UNIT BASE TO THE SIDE WALLS OF THE CURB USING (24) 1/4"-14 X 2" SELF-DRILLING, STEEL ZINC PLATED SCREWS. PRE-PUNCHED HOLES HAVE BEEN PROVIDED FOR EACH SCREW LOCATION.



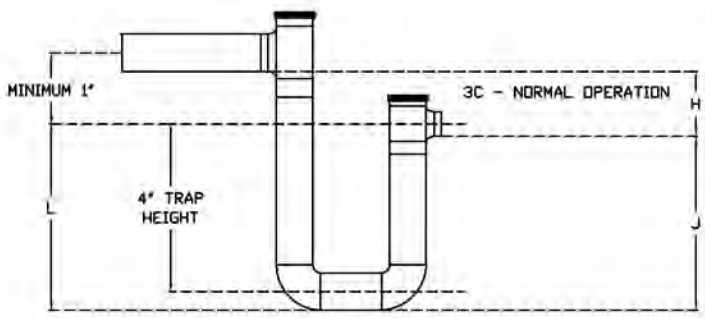
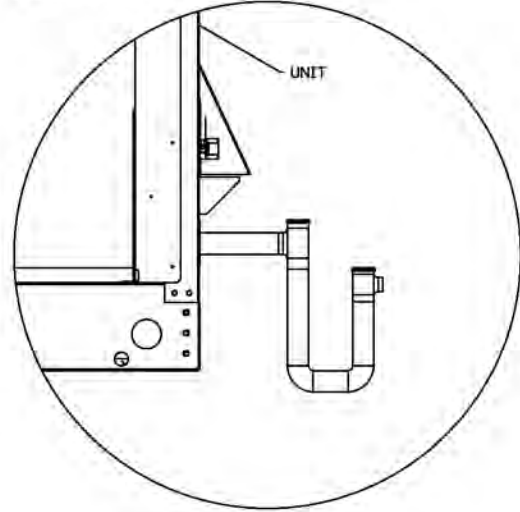
GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW"
ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW"
IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING
CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW"
DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER
THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER.
PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE
SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".
DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE
ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE
UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY
EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE
430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

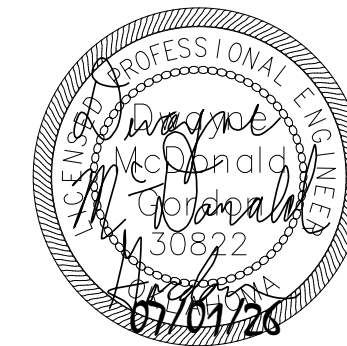
CUSTOMER APPROVAL TO MANUFACTURE:

APPROVED AS NOTED	☐
APPROVED WITH NO EXCEPTION TAKEN	☐
REVISE AND RESUBMIT	☐
SIGNATURE _____	
YOUR TITLE _____	DATE _____

RED CONDENSATE DRAIN TRAP DETAIL



H = (1" FOR EACH 1" OF MAXIMUM NEGATIVE STATIC PRESSURE) + 1"
J = HALF OF H
L = H + J + PIPE DIAMETER + INSULATION



KF
drawn by
DG
checked by
APRIL 2026
date

REVISIONS		
Δ	DESCRIPTION	DATE



sheet no:

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CONSENT OF AGP.

MECHANICAL SPECIFICATIONS

TESTING, BALANCING AND ADJUSTING

- SECTION INCLUDES BALANCE, ADJUST AND TEST THE AIR DISTRIBUTION SYSTEM INCLUDING THE EXHAUST SYSTEM, BALANCE, ADJUST AND TEST RELATED HYDRONIC SYSTEM.
- TAB TOLERANCES THE WATER, OUTSIDE AIR, SUPPLY AIR, RETURN AIR, AND EXHAUST AIR FOR EACH SYSTEM SHALL BE ADJUSTED TO WITHIN +/- 5% OF THE VALUE SCHEDULED ON THE DRAWINGS.
- TESTING THE SYSTEM THE TAB AGENCY SHALL VERIFY THAT ALL DUCTWORK, DAMPERS, GRILLES, REGISTERS, AND DIFFUSERS HAVE BEEN INSTALLED PER DESIGN.

- SUPPLY FANS:
 - FAN SPEEDS: TEST AND ADJUST FAN RPM TO ACHIEVE DESIGN CFM REQUIREMENTS.
 - CURRENT AND VOLTAGE: TEST AND RECORD MOTOR VOLTAGE AND AMPERAGE AND COMPARE DATA WITH THE NAMEPLATE LIMITS TO ENSURE FAN MOTOR IS NOT IN OR ABOVE THE SERVICE FACTOR.
 - PITOT-TUBE TRAVERSE: PERFORM A PITOT-TUBE TRAVERSE OF THE MAIN SUPPLY AND RETURN DUCTS, AS APPLICABLE, TO OBTAIN TOTAL CFM. MEASUREMENTS MUST BE RECORDED WITH AN INCLINED MANOMETER OR AN INCLINED/VERTICAL MANOMETER.
 - OUTSIDE AIR: TEST AND ADJUST THE OUTSIDE AIR ON APPLICABLE EQUIPMENT USING A PITOT-TUBE TRAVERSE.
 - STATIC PRESSURE: TEST AND RECORD SYSTEM STATIC PRESSURE, INCLUDING THE STATIC PRESSURE PROFILE OF EACH SUPPLY FAN.

- ALL OTHER FANS:
 - FAN SPEEDS: TEST AND ADJUST FAN RPM TO ACHIEVE DESIGN CFM REQUIREMENTS
 - CURRENT AND VOLTAGE: TEST AND RECORD MOTOR VOLTAGE AND AMPERAGE AND COMPARE DATA WITH THE NAMEPLATE LIMITS TO ENSURE FAN MOTOR IS NOT IN OR ABOVE THE SERVICE FACTOR.
 - PITOT-TUBE TRAVERSE: PERFORM A PITOT-TUBE TRAVERSE OF THE MAIN RETURN DUCTS, AS APPLICABLE, TO OBTAIN TOTAL CFM. MEASUREMENTS MUST BE RECORDED WITH AN INCLINED MANOMETER OR AN INCLINED/VERTICAL MANOMETER.
 - STATIC PRESSURE: TEST AND RECORD SYSTEM STATIC PRESSURE, INCLUDING THE STATIC PRESSURE PROFILE OF EACH RETURN FAN.

- COILS (INCLUDING ELECTRIC COILS):
 - AIR TEMPERATURE: ONCE AIR FLOWS ARE SET TO ACCEPTABLE LIMITS, TAKE WET BULB (COOLING COIL ONLY) AND DRY BULB AIR TEMPERATURES ON THE ENTERING AND LEAVING SIDE OF EACH COIL. CALCULATE THE SENSIBLE AND LATENT (COOLING COIL ONLY) CAPACITY OF THE COIL.

- HYDRONIC COILS:
 - TOLERANCES: TEST, ADJUST, AND BALANCE WATER COILS WITHIN 5%/% OF DESIGN FLOW REQUIREMENTS.
 - VERIFICATION: VERIFY THE TYPE, LOCATION, FINAL PRESSURE DROP AND WATER QUANTITY (GPM) OF EACH COIL. CALCULATE THE ACTUAL CAPACITY OF ALL COILS.

- REVIEW THE RETURN AIR PATH FOR EACH AREA SERVED BY AIR HANDLING UNITS TO ENSURE A CORRECT OPERATING SYSTEM.

- EQUIPMENT POWER READINGS (RECORD THE FOLLOWING INFORMATION FOR EACH MOTOR)
 - EQUIPMENT DESIGNATION.
 - MANUFACTURER.
 - UNIT MODEL NUMBER AND SERIAL NUMBER AND FRAME.
 - MOTOR NAMEPLATE HORSEPOWER; NAMEPLATE VOLTAGE; PHASE AND FULL LOAD AMPERES.
 - HEATER COIL IN STARTER.
 - RATING IN AMPERES.
 - MANUFACTURER'S RECOMMENDATION.
 - MOTOR RPM/DRIVEN EQUIPMENT RPM.
 - POWER READING (VOLTAGE, AMPERES OF ALL LEGS AT MOTOR TERMINALS).

- DIRECT EXPANSION EQUIPMENT (WITH EACH UNIT OPERATING AT NEAR DESIGN CONDITIONS, MEASURE AND RECORD THE FOLLOWING)
 - MANUFACTURER, MODEL NUMBER, SERIAL NUMBER AND ALL NAMEPLATE DATA.
 - AMBIENT TEMPERATURE, CONDENSER DISCHARGE TEMPERATURE.
 - AMPERAGE AND VOLTAGE FOR EACH PHASE.
 - LEAVING AND ENTERING AIR TEMPERATURES.
 - SUCTION AND DISCHARGE PRESSURES AND TEMPERATURES.
 - TONS OF COOLING.

- TAB REPORT
 - THE ACTIVITIES DESCRIBED IN THIS SPECIFICATION SHALL BE RECORDED IN A REPORT FORM, NEATLY TYPE AND ARRANGE DATA, INCLUDE WITH THE DATA THE DATE TESTED, PERSONNEL PRESENT, WEATHER CONDITIONS, NAMEPLATE RECORD OF THE TEST INSTRUMENTS USED AND LIST ALL MEASUREMENTS TAKEN AFTER ALL CORRECTIONS ARE MADE TO THE SYSTEM. PROVIDE A "PREFACE" WHICH SHALL INCLUDE A GENERAL DISCUSSION OF THE SYSTEM AND ANY ABNORMALITIES OR PROBLEMS ENCOUNTERED. SUBMIT PDF ELECTRONIC COPY TO THE ARCHITECT AND ENGINEER.
 - ALL MEASUREMENTS AND RECORDED READINGS (OF AIR, WATER, ELECTRICITY, ETC.) THAT APPEAR IN THE REPORT MUST HAVE BEEN RECORDED ON SITE BY THE PERMANENTLY EMPLOYED TECHNICIANS OR ENGINEERS OF THE TAB FIRM.
 - SUBMIT REPORTS ON FORMS APPROVED BY THE ENGINEER THAT WILL INCLUDE THE FOLLOWING DATA AS A MINIMUM: TITLE PAGE; COMPANY NAME; COMPANY ADDRESS; COMPANY TELEPHONE NUMBER; PROJECT NAME; PROJECT LOCATION; PROJECT MANAGER, PROJECT ENGINEER, PROJECT CONTRACTOR, SUMMARY OF THE TAB REPORT DATA, INDEX.
 - FAN DATA: LOCATION, MANUFACTURER, MODEL, AIR FLOW, SPECIFIED AND ACTUAL, TOTAL STATIC PRESSURE (TOTAL EXTERNAL) SPECIFIED AND ACTUAL, INLET PRESSURE, DISCHARGE PRESSURE, FAN RPM.
 - RETURN AIR/OUTSIDE AIR DATA: IDENTIFICATION, LOCATION, DESIGN RETURN AIRFLOW, ACTUAL RETURN AIRFLOW, DESIGN OUTSIDE AIRFLOW, ACTUAL OUTSIDE AIR FLOW, RETURN AIR TEMPERATURE, OUTSIDE AIR TEMPERATURE, REQUIRED MIXED AIR TEMPERATURE, ACTUAL MIXED AIR TEMPERATURE.
 - ELECTRIC MOTORS: MANUFACTURER, HP/BHP, PHASE, VOLTAGE, AMPERAGE, NAMEPLATE, ACTUAL, RPM, SERVICE FACTOR, STARTER SIZE, HEATER ELEMENTS, RATING.
 - V-BELT DRIVE: IDENTIFICATION, LOCATION, REQUIRED DRIVEN RPM, DRIVE SHEAVE, DIAMETER AND RPM, BELT, SIZE AND QUANTITY, MOTOR SHEAVE, DIAMETER AND RPM, CENTER-TO-CENTER DISTANCE, MAXIMUM, MINIMUM AND ACTUAL.
 - DUCT TRAVERSE: SYSTEM ZONE/BRANCH, DUCT SIZE, AREA, DESIGN VELOCITY, DESIGN AIRFLOW, TEST VELOCITY, TEST AIRFLOW, DUCT STATIC PRESSURE, AIR CORRECTION FACTOR.
 - COIL DATA: IDENTIFICATION, NUMBER, LOCATION, SERVICE, MANUFACTURER, ENTERING AIR DB TEMPERATURE, DESIGN AND ACTUAL, LEAVING AIR DB TEMPERATURE, DESIGN AND ACTUAL, WATER PRESSURE FLOW, DESIGN AND ACTUAL, WATER PRESSURE DROP, DESIGN AND ACTUAL, ENTERING WATER TEMPERATURE, DESIGN AND ACTUAL, J. LEAVING WATER TEMPERATURE, DESIGN AND ACTUAL, AIR PRESSURE DROP, DESIGN AND ACTUAL, CAPACITY.
 - ELECTRIC COIL DATA: IDENTIFICATION, NUMBER, LOCATION, SERVICE, MANUFACTURER, ENTERING AIR DB TEMPERATURE, DESIGN AND ACTUAL, LEAVING AIR DB TEMPERATURE, DESIGN AND ACTUAL, ELECTRICAL CHARACTERISTICS, CAPACITY.

REFRIGERANT PIPING

- REFRIGERANT PIPING: TYPE K HARD-DRAWN COPPER TUBING WITH SWEAT-TYPE, WROUGHT COPPER FITTINGS. CAST FITTINGS ARE NOT PERMITTED.
- PRESSURE TEST: CHARGE THE SYSTEM WITH DRY NITROGEN AND TEST TO 300 PSIG. TEST JOINTS WITH A HALIDE TORCH OR AN ELECTRONIC LEAK DETECTOR. RETEST SYSTEM UNTIL PROVEN TIGHT.
- EVAUATION AND DRYING: AFTER REFRIGERANT SYSTEM HAS BEEN PRESSURE TESTED, CONNECT A SUITABLE VACUUM PUMP AND EVAUATE PIPING SYSTEM, INCLUDING LINES AND EQUIPMENT. MAINTAIN A VACUUM AS HIGH AS PRACTICABLE FOR LONG ENOUGH TO EVAPORATE THE MOISTURE IN THE SYSTEM (AT LEAST 48 HOURS). CHECK THE HUMIDITY WITHIN THE SYSTEM WITH A WET BULB INDICATOR, AND MAINTAIN THE VACUUM UNTIL THE WET BULB TEMPERATURE IS REDUCED TO -40° F. AFTER THE SYSTEM HAS BEEN EVAUATED AND DRIED, BREAK THE VACUUM BY CHARGING PROPER REFRIGERANT INTO THE SYSTEM.
- INSULATION: ELASTOMERIC INSULATION WITH A MINIMUM THICKNESS OF 3/4" WITH A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS. THERMAL CONDUCTIVITY OF 0.27 AT 75° F MEAN (ASTM C177 OR C 518). INSULATION TO BE ARMSTRONG OR APPROVED EQUAL. ALL INSULATION IS TO BE COVERED BY SMOOTH FABRICATED Z LOCK ALUMINUM JACKET 0.016" THICK WITH A FACTORY APPLIED 1 MIL POLYETHYLENE40LB AND FAB STRAP. KRAFT MOISTURE BARRIER. CHILERS LOCK-ON OR APPROVED EQUAL.

SMOKE DETECTORS

- ACCEPTABLE MANUFACTURERS: AUTOCALL, SIMPLEX, SIEMENS, NOTIFIER, GAMEWELL, PYROTRONICS.
- THE UNIT SHALL CONSIST OF A CLEAR MOLDED PLASTIC ENCLOSURE (OR REMOTE MOUNTED LED STATUS INDICATOR SHALL BE PROVIDED NEXT TO THE SMOKE DETECTOR) WITH INTEGRAL CONDUIT KNOCKOUTS TO PROVIDE VISUAL VIEWING OF DETECTOR/SENSOR FOR MONITORING SENSOR OPERATION AND CHAMBER CONDITION. THE DUCT HOUSING SHALL BE PROVIDED WITH GASKET SEALS TO INSURE PROPER SEATING OF THE HOUSING TO THE ASSOCIATED DUCTWORK. EACH UNIT'S SAMPLING TUBES SHALL EXTEND THE WIDTH OF THE DUCT AND BE PROVIDED WITH POROSITY FILTERS TO REDUCE SENSOR/CHAMBER CONTAMINATION.
- COMPLY WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) SECTIONS NFPA 72, NFPA 98A, NFPA 101.
- TO MINIMIZE NUISANCE ALARMS, DETECTORS SHALL HAVE AN INSECT SCREEN AND BE DESIGN TO IGNORE INVISIBLE AIRBORNE PARTICLES OR SMOKE DENSITIES THAT ARE BELOW THE FACTORY SET ALARM POINT. NO RADIOACTIVE MATERIAL SHALL BE USED. THE DETECTOR HEAD SHALL BE DIRECTLY INTERCHANGEABLE WITH AN IONIZATION DETECTOR TYPE.
- INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL NECESSARY WIRING, POWER AND OTHER DEVICES FOR INSTALLATION. INTERLOCK THE SMOKE DETECTOR WITH THE RELATED AIR HANDLING EQUIPMENT TO PROVIDE AUTOMATIC SHUT-DOWN OF THE SYSTEM WHENEVER PRODUCTS OF COMBUSTION ARE DETECTED.

SINGLE PACKAGE 100% OUTSIDE AIR ROOFTOP AIR CONDITIONERS

- PROVIDE AND INSTALL A SINGLE-PACKAGE, MULTIPLE-ZONE, VARIABLE VOLUME, ELECTRIC AIR CONDITIONER WITH FREE COOLING & REHEAT, DEHUMIDIFICATION & INDIRECT NATURAL GAS HEATING.
- PERFORMANCE: AS SCHEDULED ON DRAWINGS, WITH HEAD PRESSURE CONTROL TO ENABLE UNIT START AND OPERATE DOWN TO 20 DEGREES FAHRENHEIT AMBIENT.
- ACCEPTABLE MANUFACTURERS: DES CHAMPS, AAO, ADDISON
- COMPRESSOR: PROVIDE A THERMALLY PROTECTED, SERVICEABLE SEMI-HERMETIC COMPRESSOR OR HERMETIC COMPRESSOR WITH SERVICE VALVES, VIBRATION ISOLATION, WARRANTY, CRANKCASE HEATERS, SIGHT GLASS AND FILTER DRIER. PROVIDE WITH A 5-YEAR
- EVAPORATOR AND CONDENSER COILS: PROVIDE COPPER TUBES WITH MECHANICALLY BONDED ALUMINUM FINS FOR EVAPORATOR AND CONDENSER COILS. PROVIDE HAIL GUARDS FOR CONDENSER COILS.
- GAS HEATING SECTION: UNIT SHALL BE EQUIPPED WITH STAINLESS STEEL BURNERS AND HEAT EXCHANGERS. THE GAS CONTROLS SHALL HAVE AN AUTOMATIC GAS VALVE AND PRESSURE REGULATOR, MANUAL SHUTOFF VALVE, AND AN ELECTRIC SPARK PILOT IGNITION SYSTEM WITH ELECTRONIC FLAME DETECTION AND 100%/%% SAFETY SHUTOFF.
- HEAD PRESSURE CONTROL: PROVIDE SOLID STATE OUTDOOR AIR FAN SPEED CONTROL TO PERMIT UNIT TO OPERATE DOWN TO -20° F.
- CONTROLS: CONTROLS SHALL BE FACTORY MOUNTED AND TESTED. DISCHARGE AIR CONTROLLER SHALL STAGE THE COOLING CAPACITY AS REQUIRED TO MAINTAIN DISCHARGE TEMPERATURE. DUCTWORK STATIC PRESSURE SENSOR SHALL MODULATE THE VARIABLE INLET DAMPERS TO MAINTAIN REQUIRED SYSTEM STATIC PRESSURE.

AIR FILTERS

- AIR FILTERS: FURNISH AND INSTALL A DISPOSAL MEDIA AND FRAME FILTER WITH RESISTANCE TO AIR FLOW OF A CLEAN FILTER NOT TO EXCEED 0.12" WG AT 300 FPM.
- INSTALL THE FILTERS AND FILTER GAUGES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

KITCHEN HOOD FIRE SUPPRESSION

- PROVIDE AN AUTOMATIC FIRE SUPPRESSION SYSTEM USING A WET CHEMICAL AGENT FOR GREASE RELATED FIRES.
- FURNISH ALL ARTICLES OF A COMPLETED SUPPRESSION SYSTEM INCLUDING ALL MATERIALS, LABOR, TOOLS, EQUIPMENT, TRANSPORTATION SERVICES AND SUPERVISION FEES.
- THE SYSTEM SHALL BE CAPABLE OF SUPPRESSING FIRES IN THE FOLLOWING AREAS ASSOCIATED WITH COOKING EQUIPMENT: VENTILATING EQUIPMENT INCLUDING HOODS, DUCTS, PLENUMS, AND FILTERS; FRYERS; GRIDDLES AND RANGE TOPS; UPRIGHT, NATURAL CHARCOAL, OR CHAIN-TYPE BROILERS; ELECTRIC, LAVA ROCK, MESQUITE OR GAS-RADIANT CHAR-BROILERS.
- THE SYSTEM SHALL BE THE PRE-ENGINEERED TYPE HAVING MINIMUM AND MAXIMUM GUIDELINES ESTABLISHED BY THE MANUFACTURER, NFPA 96 AND LISTED BY UNDERWRITERS LABORATORIES, INC. (UL).
- THE SYSTEM SHALL BE INSTALLED AND SERVICED BY PERSONNEL TRAINED BY THE MANUFACTURER.
- THE SYSTEM SHALL BE CAPABLE OF PROTECTING COOKING APPLIANCES BY UTILIZING EITHER DEDICATED APPLIANCE PROTECTION AND/OR OVERLAPPING APPLIANCE PROTECTION.
- THE SYSTEM SHALL BE MANUFACTURED BY ANSL FIRE PROTECTION.
- THE SYSTEM SHALL CONSIST OF A REGULATED RELEASE ASSEMBLY WHICH INCLUDES A REGULATED RELEASE MECHANISM AND A WET CHEMICAL STORAGE TANK(S) HOUSED WITHIN A SINGLE ENCLOSURE. NOZZLES BLOW-OFF CAPS, DETECTORS, CARTRIDGES, AGENT, FUSIBLE FUSIBLE LINKS, AND PULLEY ELBOWS SHALL BE SUPPLIED AS NECESSARY IN THE QUANTITIES NEEDED FOR FIRE SUPPRESSION SYSTEM ARRANGEMENTS. ADDITIONAL EQUIPMENT SHALL INCLUDE REMOTE MANUAL PULL STATION, MECHANICAL AND ELECTRICAL GAS VALVES, PRESSURE SWITCHES, AND ELECTRICAL SWITCHES FOR AUTOMATIC EQUIPMENT AND GAS LINE SHUT-OFF SHALL BE PROVIDED AS NECESSARY TO MEET THE UL & CODE REQUIREMENTS.
- THE FIRE SUPPRESSION SYSTEM SHALL BE DESIGNED, INSTALLED, INSPECTED, MAINTAINED, AND RECHARGED IN ACCORDANCE WITH THE MANUFACTURER'S LISTED INSTRUCTION.

AIR DEVICES

- FURNISH AND INSTALL AIR DISTRIBUTION DEVICES, INCLUDING GRILLES, DIFFUSERS, REGISTERS, DAMPERS, AND EXTRACTORS.
- ACCEPTABLE MANUFACTURERS: TUTTLE AND BAILEY, TITUS, KRUEGER, METAL-AIRE, NALOR INDUSTRIES, PRICE.

DUCTWORK INSULATION

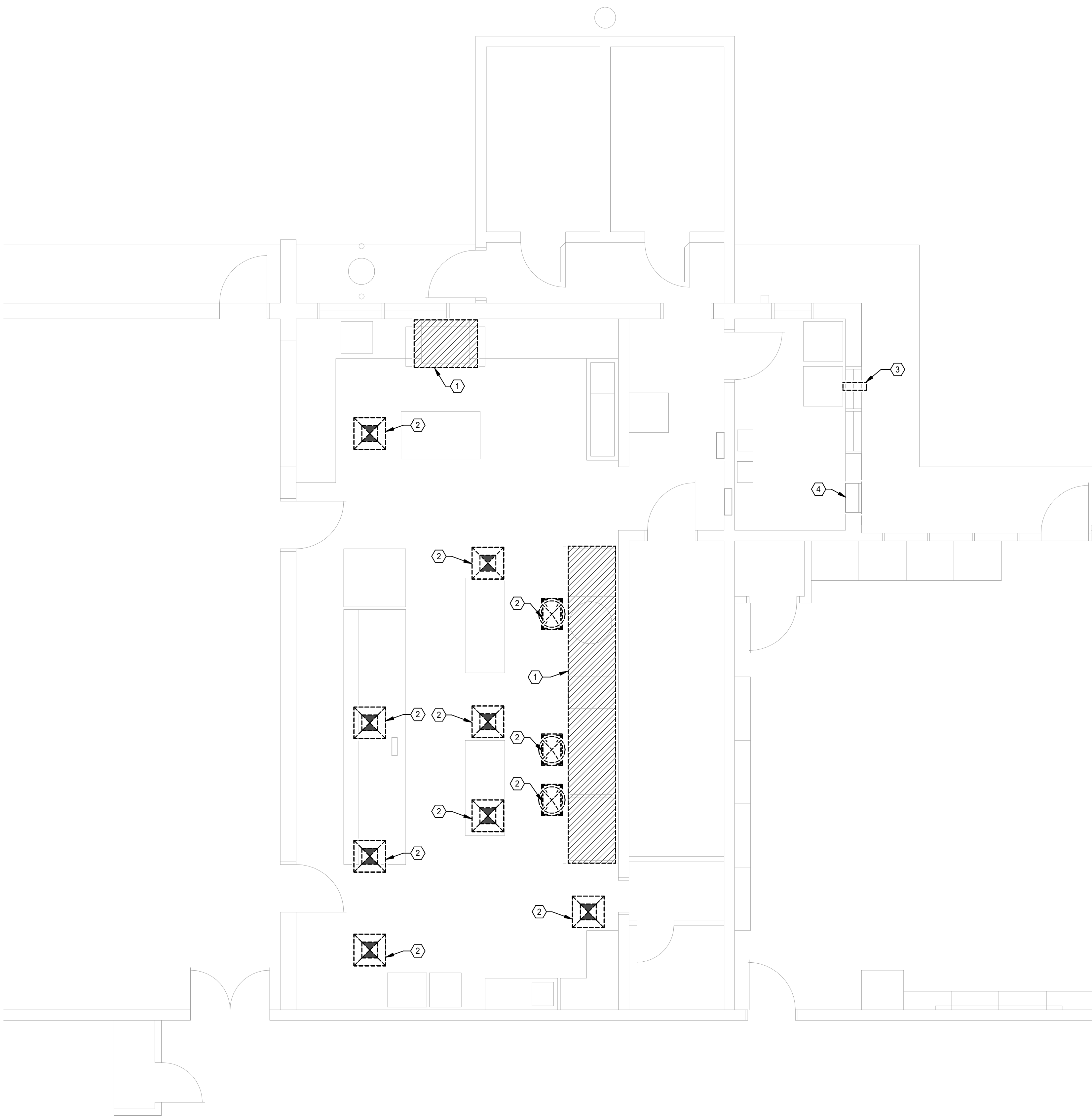
- FURNISH AND INSTALL EXTERNAL INSULATION ON SUPPLY, RETURN, EXHAUST AND FRESH AIR DUCTWORK.
- ALL DUCT INSULATION USED ON THE PROJECT INSIDE THE BUILDING MUST HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50 AS DETERMINED BY TEST PROCEDURES ASTM E84, NFPA 255 AND UL 723.
- CONDENSATION ON ANY INSULATED SYSTEM IS NOT APPROVED.
- WHERE EXISTING INSULATED DUCTWORK OR OTHER SERVICES ARE TAPPED, REMOVE EXISTING INSULATION BACK TO UNDAMGAGED SECTIONS AND REPLACE WITH NEW INSULATION OF THE SAME TYPE AND THICKNESS AS EXISTING INSULATION.
- INSULATION: GLASS FIBER BLANKET DUCT INSULATION. ACCEPTABLE MANUFACTURERS ARE: MANVILLE R-SERIES MICROULTE-FSKL, OWENS-CORNING ED100 RSK, KNAUF 1.0 PCF FSK.
- FIREBOARD INSULATION: TOTALLY ENCAPSULATED WITH FOIL FACING, TWO HOUR RATED FIRE PROTECTION, ZERO CLEARANCE TO COMBUSTIBLE PROTECTION. ACCEPTABLE MANUFACTURERS ARE: PARTAK INSULATION, INC., PAROC FIREBOARD, THERMAL CERAMICS FIREMASTER 3M, PREMIER REFRACORIES INTERNATIONAL, PROROCAT.
- REINFORCED FOIL TAPE: ACCEPTABLE MANUFACTURERS ARE: VENTURE 1525CW, 3" FSK.
- KITCHEN GREASE EXHAUST DUCTWORK / KILN DUCTWORK / FUME HOOD DUCT: SECURE FIREBOARD INSULATION TO DUCT WITH IMPALING PINS AND 3" SQUARE SPEED CLIPS. IN ADDITION, PROVIDE A WIRE MESH SUPPORT SYSTEM AND ADDITIONAL SEALING OR SUPPORT AS REQUIRED BY THE CODE ENFORCING AUTHORITY. THE INSULATION SUPPORT SYSTEM SHALL INCLUDE FRAMED ACCESS TO ALLOW THE INSULATION TO BE REMOVED AND REPLACED WITHOUT DAMAGE AT THE ACCESS DOORS IN THE DUCT SYSTEM FOR INSPECTION AND CLEANING. COORDINATE LOCATION OF ACCESS OPENINGS TO CORRESPOND ACCURATELY. PROVIDE STAINLESS STEEL BANDING ON 12" CENTERS.

FANS

- PROVIDE FAN TYPE, ARRANGEMENT, ROTATION, CAPACITY, SIZE, MOTOR HORSEPOWER, AND MOTOR VOLTAGE AS SHOWN, FAN CAPACITIES AND CHARACTERISTICS ARE SCHEDULED ON THE DRAWINGS. PROVIDE FANS CAPABLE OF ACCOMMODATING STATIC PRESSURE VARIATIONS OF +10 % OF SCHEDULED DESIGN AT THE DESIGN AIR FLOW.
- ACCEPTABLE MANUFACTURERS: COOK, GREENHECK, PENN VENTILATOR, ACME, CARNES
- SAFETY DISCONNECT SWITCH: PROVIDE A FACTORY-WIRED TO MOTOR, SAFETY DISCONNECT SWITCH ON EACH UNIT.
- PREFABRICATED ROOF CURBS: FURNISH PREFABRICATED ROOF CURBS AS DETAILED. THE MINIMUM HEIGHT IS 14". INCLUDE A RESILIENT PAD ON EACH ROOF CURB SO THE EQUIPMENT CAN BE MOUNTED ON THE TOP FLANGE FOR PROPER SEAL. COORDINATE ROOF SLOPE AND CURB TO ENSURE EQUIPMENT IS INSTALLED IN LEVEL POSITION. PROVIDE DOUBLE SHELL TO PROTECT INSULATION FROM DAMAGE.
- DAMPERS, WHERE AUTOMATIC BACKDRAFT DAMPER IS SCHEDULED: MULTI-BLADED, ROLL FORMED ALUMINUM BLADES, NYLON BEARINGS, NEOPRENE WEATHER STRIP ON BLADE EDGE.
- FURNISH KITCHEN HOOD EXHAUST FANS WITH VENTED CURB EXTENSION THAT MEETS NFPA 96, CLEANOUT PORT, GREASE TAP, CURB SEAL, DRAIN CONNECTION AND HINGE KIT.
- FURNISH SUPPLY FANS WITH 1" ALUMINUM WASHABLE FILTER SECTION.
- ROOFTOP VENTILATION AND EXHAUST SYSTEMS: PROVIDE EACH MOTOR WITH INTERNAL OVERLOAD PROTECTION, ALUMINUM, STAINLESS STEEL OR PLASTIC COATED BIRD GUARD, SCREWS AND FASTENERS OF STAINLESS STEEL, OR NONFERROUS MATERIAL. ALL ALUMINUM CONSTRUCTION UNLESS INDICATED OTHERWISE ON FAB SCHEDULE, WELDED CONSTRUCTION, CORROSION RESISTANT FASTENERS, MINIMUM 16 GAUGE MARINE ALLOY ALUMINUM, ALUMINUM BASE SHALL BE CONTINUOUSLY WELDED CURB CAP CORNERS.

DUCTWORK

- DUCT MATERIAL AND CONSTRUCTION: USE LOCK FORMING QUALITY PRIME GALVANIZED STEEL SHEETS OR COILS UP TO 80" WIDE. STENCIL EACH SHEET WITH GAUGE AND MANUFACTURER'S NAME. STENCIL COILS OF SHEET STEEL THROUGHOUT ON 10' CENTERS WITH GAUGE AND MANUFACTURER'S NAME. PROVIDE CERTIFICATION OF DUCT GAUGE AND MANUFACTURER FOR EACH SIZE DUCT.
- RECTANGULAR LOW AND MEDIUM PRESSURE DUCT CONSTRUCTED OF SHEET METAL IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- LOW PRESSURE ROUND DUCTS SHALL BE SHOP FABRICATED WITH SNAP LOCK LONGITUDINAL SEAMS. DUCTS SHALL BE CONSTRUCTED FOR A MINIMUM OF 2" W.G. STATIC PRESSURE. MEDIUM PRESSURE ROUND DUCTWORK SHALL BE WELDED SPIRAL SEAM SUCH AS MANUFACTURED BY UNITED SHEET METAL COMPANY. SEAMS AND JOINTS OF ALL MEDIUM PRESSURE DUCTWORK SHALL BE CONTINUOUSLY WELDED.
- KITCHEN EXHAUST DUCT: WELDED BLACK STEEL, MINIMUM 16 GAUGE. SHOWER AREA EXHAUST SYSTEMS: WELDED 304 STAINLESS STEEL.
- FLEXIBLE DUCT LOW PRESSURE SHALL BE A CONTINUOUS GALVANIZED SPRING STEEL WIRE HELIX WITH REINFORCED METALIZED COVER, REINFORCED VAPOR BARRIER JACKET RATED FOR USE AT SYSTEM PRESSURE (6" W.G. MINIMUM), THERMAL CHARACTERISTICS OF R-8 BTUHR/SQ. FT./F AND 2" WALL THICKNESS INSULATION WITH 1" OVERLAP. ACCEPTABLE MANUFACTURERS: FLEXMASTER, HART & COOLEY OMNIAIR.
- FLEXIBLE DUCT MEDIUM PRESSURE SHALL BE CONSTRUCTED OF A HEAVY COATED FIBERGLASS CLOTH FABRIC SUPPORTED BY HELICAL WOUND GALVANIZED STEEL. THE INTERNAL WORKING PRESSURE RATING SHALL BE AT LEAST AS FOLLOWS WITH A BURSTING PRESSURE OF AT LEAST TWO TIMES THE WORKING PRESSURE: POSITIVE: 12" W.G., NEGATIVE: 5" W.G. THE DUCT SHALL BE RATED FOR A VELOCITY OF AT LEAST 5500 FPM. FACTORY INSULATE THE FLEXIBLE DUCT WITH FIBERGLASS INSULATION. THE R-VALUE SHALL BE AT LEAST R-4 AT A MEAN TEMPERATURE OF 75 DEGREES FAHRENHEIT. ACCEPTABLE MANUFACTURERS: FLEXMASTER, OMNIAIR.
- DUCT LINING SHALL BE 1" THICK, 1 1/2 LB. DENSITY, FLEXIBLE LINING COATED ON THE AIR STREAM SIDE TO REDUCE ATTRITION. LINER SHALL BE SCHULER LINA-COUSTIC, CERTAIN TEED ULTRALITE, OR EQUAL MEETING REQUIREMENTS OF NFPA 90 A. PROVIDE 1 A.Q. RATED LINER.
- FIRE DAMPERS: FIRE DAMPERS FOR REQUIRED WALL RATINGS THAT ARE 95% MINIMUM FREE AREA. PROVIDE TYPE B OR TYPE C UL DAMPERS FOR LOW, MEDIUM AND HIGH-PRESSURE RECTANGULAR, SQUARE OR ROUND DUCTS. DAMPERS SHALL BE ACTIVATED BY A FUSIBLE LINK DESIGNED TO REACT AT 165° F. INSTALL PER MANUFACTURER'S RECOMMENDATIONS TO PROVIDE A UL ASSEMBLY. PROVIDE SEALED SLEEVE TO MEET DESIRED LEAKAGE PERFORMANCE.
- WALL LOUVERS: REFER TO SCHEDULE ON DRAWINGS. COORDINATE WITH ARCHITECTURAL DRAWINGS. ALL LOUVER FRAMES SHALL BE A MINIMUM OF 0.08" EXTRUDED ALUMINUM. ALL BLADES SHALL BE A MINIMUM OF 0.081" EXTRUDED ALUMINUM. BEGINNING POINT OF WATER PENETRATION AT 0.01 OZ/SQ.FT. SHALL BE A MINIMUM OF 800 FT/MIN. PROVIDE ALL LOUVERS WITH REMOVABLE ALUMINUM BIRD SCREEN WITH 1/4" MESH.
- VOLUME DAMPERS: MANUAL BALANCING DAMPERS THAT MEET OR EXCEED THE FOLLOWING MINIMUM CONSTRUCTION STANDARDS: FRAME 16-GAUGE, BLADES 16-GAUGE, BEARINGS CORROSION RESISTANT, OPPOSED BLADE DAMPERS.
- INSTALLATION: USE CONSTRUCTION METHODS AND REQUIREMENTS AS OUTLINED IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS AS WELL AS SMACNA BALANCING AND ADJUSTING PUBLICATIONS, UNLESS INDICATED OTHERWISE IN THE SPECIFICATIONS. REFER TO DETAILS ON THE DRAWINGS FOR ADDITIONAL INFORMATION. REINFORCE DUCTS IN ACCORDANCE WITH RECOMMENDED CONSTRUCTION PRACTICE OF SMACNA. PROVIDE ADDITIONAL REINFORCEMENT OF LARGE PLENUMS AS REQUIRED TO PREVENT EXCESSIVE FLEXING AND OR VIBRATION.



1

MECHANICAL DEMOLITION PLAN

Scale: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES

1. PROVIDE OWNER WITH FIRST RIGHT OF REFUSAL ON ALL DEMO'D EQUIPMENT.
2. DISPOSE OF ALL DEMO'D EQUIPMENT THAT IS NOT BEING RETAINED IN A LEGAL MANNER.
3. PATCH ALL PENETRATIONS THAT ARE NOT BEING REUSED. COORDINATE WITH GENERAL CONTRACTOR.

MECHANICAL KEYED NOTES

1	DEMOLISH KITCHEN HOOD, ANSUL SYSTEM, REMOTE SHUT-OFF, AND ASSOCIATED DUCTWORK.
2	DEMOLISH AIR DEVICE AND DUCTWORK UP TO ROOF.
3	REMOVE DRYER EXHAUST DUCT. PATCH AND SEAL WINDOW PENETRATION WATERTIGHT.
4	CAP OFF LOUVER FROM INTERIOR. INSULATE AND SEAL TO PREVENT AIR LEAKAGE.

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CEDAR CREEK

CIVIL

KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN

MECHANICAL / ELECTRICAL



KF

drawn by

DG

checked by

APRIL 2026

date

REVISIONS

Δ	DESCRIPTION	DATE



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

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MD101

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**Salas O'Brien**

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CA#: 9820 Expiration Date: 06/30/2027
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SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

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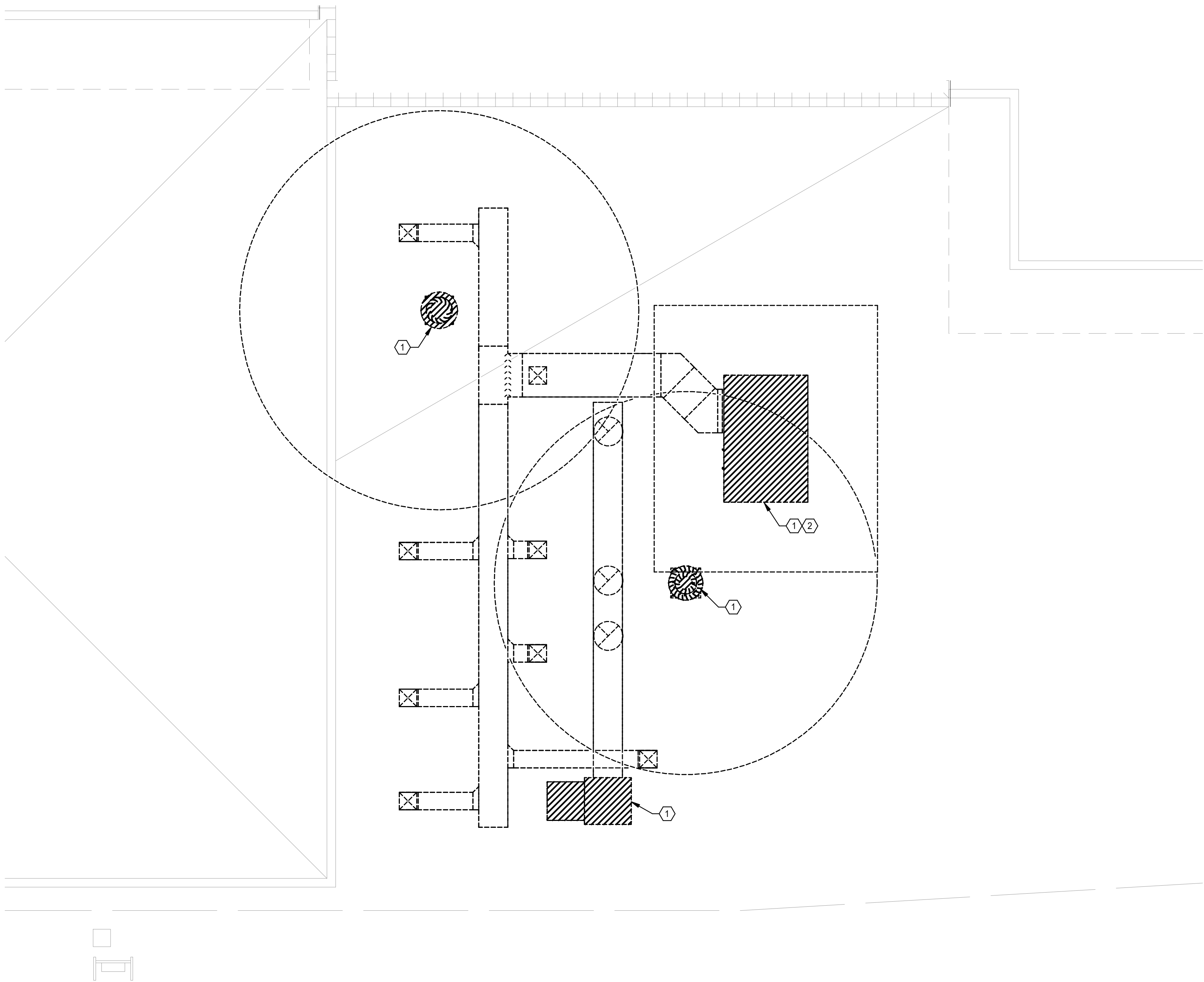
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GENERAL DEMOLITION NOTES

1. PROVIDE OWNER WITH FIRST RIGHT OF REFUSAL ON ALL DEMO'D EQUIPMENT.
2. DISPOSE OF ALL DEMO'D EQUIPMENT THAT IS NOT BEING RETAINED IN A LEGAL MANNER.
3. PATCH ALL PENETRATIONS THAT ARE NOT BEING REUSED. COORDINATE WITH GENERAL CONTRACTOR.

MECHANICAL KEYED NOTES

1	DEMOLISH ALL MECHANICAL EQUIPMENT, DUCTWORK, HANGERS, AND AIR DEVICES ASSOCIATED WITH SYSTEM MARKED.
2	REMOVE ROOF CURB. SEAL ROOF WEATHER TIGHT. COORDINATE WITH ROOFING CONTRACTOR AND GC.



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MECHANICAL ROOF DEMOLITION PLAN

Scale: 1/4" = 1'-0"

PLUMBING PIPING LEGEND			
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	FIRE DEPARTMENT VALVE AT RISER		SANITARY OR WASTE PIPING ABOVE GRADE (SAN)
	FIRE HYDRANT		SANITARY OR WASTE PIPING BELOW GRADE (SAN)
	FIRE DEPARTMENT CONNECTION		GREASE WASTE PIPING (GW)
	PRESSURE REDUCING VALVE (PRV)		GREASE WASTE PIPING BELOW GRADE (GW)
	BRANCH CONNECTION OUT OF TOP		STORM DRAIN PIPING (SD)
	BRANCH CONNECTION OUT OF BOTTOM		STORM DRAIN PIPING BELOW GRADE (GW)
	BRANCH CONNECTION OUT OF SIDE		SUB-SOIL DRAIN OR FOOTING DRAIN (SSD)
	WYE & 1/8TH BEND BRANCH CONNECTION		ACID WASTE PIPING (AW)
	WYE BRANCH CONNECTION		ACID WASTE PIPING BELOW GRADE (AW)
	HOSE BIBB		PUMPED DISCHARGE (PD)
	PRESSURE GAUGE WITH COCK		CONDENSATE DRAIN PIPING (CD)
	THERMOMETER		CONDENSATE - INDIRECT DRAIN PIPING (D)
	GAS PRESSURE REGULATOR		VENT PIPING (V)
	TEST COCK		COLD WATER PIPING (CW)
	GAS METER		HOT WATER PIPING (HW)
	WALL HYDRANT		HOT WATER RETURN PIPING (HWR)
	VALVE IN RISE		SOFT COLD WATER PIPING (SCW)
	ASME TEMPERATURE & PRESSURE RELIEF VALVE		CHILLED DRINKING WATER PIPING (CDW)
	VACUUM RELIEF VALVE		TRAP PRIMER LINE (TP)
	ANGLE VALVE		FIRE PROTECTION PIPING (F)
	OS&Y VALVE		AUTOMATIC SPRINKLER PIPING (AS)
	ROOF DRAIN		NATURAL GAS PIPING (G)
	FLOW SWITCH		GAS VENT PIPING (GV)
	FLOOR SINK (FS)		COMPRESSED AIR PIPING (A)
	FLOOR DRAIN (FD)		FLOW DIRECTIONAL ARROW
	FLOOR DRAIN WITH P-TRAP (FD)		CIRCUIT SETTER
	FLOOR DRAIN WITH P-TRAP AT 45° ANGLE (FD)		NEW TO EXISTING PIPE CONNECTION
	HUB DRAIN (HD)		PIPE CONNECTION
	WATER METER SYMBOL		HAMMER ARRESTOR (PISTON TYPE)
	ACCESS PANEL FOR TRAP PRIMER OR SHOCK ABSORBER		SHUT-OFF VALVE
	ACCESS PANEL LOCATION SYMBOL		BALANCING VALVE (BV)
	AIR CHAMBER		SOLENOID VALVE (SV)
	NEW CONNECTION		BALL VALVE (BV)
	INVERT ELEVATION		BUTTERFLY VALVE
	DELTA CHANGE SYMBOL		LUBRICATED PACKED PLUG STOP COCK (PC)
	REFER TO KEYED NOTE		HORIZONTAL SWING CHECK
			UNION
			HORIZONTAL SWING CHECK
			REDUCER OR INCREASER
			ECCENTRIC REDUCER
			REDUCED PRESSURE BACKFLOW PREVENTER (RPBFP)
			PIPING DOWN
			RISE OR DROP PIPING
			PIPING UP -OR- PIPING UP & DOWN
			CAP ON END OF PIPE
			CLEANOUT (WALL OR CEILING) (CO)
			FLOOR CLEANOUT (FCO)
			EXTERIOR CLEANOUT WITH 18"x18"x4" CONCRETE PAD (ECO)
			TWO-WAY CLEANOUT (PROVIDE 18"x24"x4" CONCRETE PAD OUTSIDE)

PLUMBING RENOVATION NOTES	
1. WHERE EXISTING PIPING IS DESIGNATED TO BE REMOVED AND CAPPED, ALL PIPING SERVING THE DESIGNATED FIXTURE SHALL BE REMOVED FROM WITHIN WALLS TO THE POINT DESIGNATED ON THE DRAWINGS OR TO A CLEARLY VISIBLE POINT BELOW THE FLOOR IN THE CRAWL SPACE OR ABOVE THE CEILING. PIPING SHALL BE CAPPED BY APPROVED CAPPING METHODS UTILIZING PIPE CAPS INTENDED FOR SUCH USE. ALL CAPS SHALL BE AIRTIGHT AND WATERTIGHT.	
2. WHERE EXISTING SURFACES ARE DISRUPTED DUE TO THE REMOVAL OF EXISTING EQUIPMENT OR PIPING, THIS CONTRACTOR SHALL BE RESPONSIBLE OF THE REPAIR OF DISRUPTED SURFACES TO MATCH EXISTING ADJACENT SURFACES.	
3. SANITARY VENT THROUGH ROOF PENETRATIONS SHALL BE CAPPED BOTH BELOW AND ABOVE THE ROOF SURFACE AND LEFT IN PLACE FOR POSSIBLE FUTURE USE.	
4. PLUMBING FIXTURES DESIGNATED TO BE REUSED SHALL BE CLEANED AND MAINTENANCE SERVICED TO OPERATE AS INTENDED.	
5. EXISTING CONDITIONS AS SHOWN ON THE DRAWINGS ARE TAKEN FROM ORIGINAL AND AS-BUILT DRAWINGS OF THE BUILDING AND IN PART ARE UNVERIFIED. FIELD CONDITIONS SHALL GOVERN. ALL EXISTING CONDITIONS MUST BE VERIFIED PRIOR TO INITIATION OF WORK. ALL DEVIATIONS FROM PLANS SHALL BE APPROVED BY ENGINEER OF RECORD PRIOR TO BEGINNING WORK.	
6. ALL EXISTING SANITARY, DOMESTIC WATER, RAINWATER, AND FIRE PROTECTION PIPING SHALL BE RELOCATED TO CREATE REQUIRED SPACE FOR INSTALLATION OF ALL NEW SERVICES FOR NEW CONSTRUCTION, INCLUDING BUT NOT LIMITED TO H.V.A.C., ELECTRICAL, PLUMBING, AND FIRE PROTECTION TRADES. CONTRACTOR SHALL INCLUDE ALL NEW PIPING AND FITTINGS REQUIRED AND RELOCATE ANY AND ALL EXISTING SERVICES.	
7. ALL EXISTING PIPING, NOT REMAINING IN SERVICE AFTER NEW CONSTRUCTION, SHALL BE REMOVED.	
8. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL EXISTING PLUMBING FIXTURES AND TRIM, PIPING, VALVES, ETC. IN AREAS TO BE DEMOLISHED.	
9. ALL EXISTING PLUMBING FIXTURES TO BE REMOVED AND ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER. DISCARD UNWANTED FIXTURES AT THE DISCRETION OF THE OWNER.	
10. PIPING WHICH IS TO REMAIN IN SERVICE SHALL NOT BE DISTURBED. EXISTING PIPING BROKEN DURING CONSTRUCTION SHALL BE REPLACED WITH NEW PIPING OF THE SAME SIZE AND MATERIAL AT NO ADDITIONAL COST.	
11. PLUMBING CONTRACTOR SHALL SUBMIT SHOP DRAWINGS APPROVED BY THE AUTHORITIES HAVING JURISDICTION TO THE ARCHITECT/ENGINEER FOR ANY PIPING CONFIGURATIONS AND SIZES THAT DIFFER FROM THOSE SHOWN ON PLUMBING DRAWINGS AS A RESULT OF EXISTING SITE CONDITIONS AND/OR EXISTING PIPING LOCATIONS.	
12. EXISTING BUILDING SEWERS THAT ARE USED WITH NEW BUILDING SANITARY SEWERS SHALL BE EXAMINED AND TESTED TO CONFORM IN ALL RESPECTS TO ALL REQUIREMENTS OF PLUMBING AUTHORITY HAVING JURISDICTION AND APPLICABLE PLUMBING CODES.	
13. ALL EXISTING SANITARY, DOMESTIC WATER, AND RAINWATER PIPING THAT ARE LOCATED IN EXISTING WALLS TO BE DEMOLISHED AND REMAINING IN SERVICE AFTER CONSTRUCTION SHALL BE RELOCATED TO NEW WALLS, CHASES, ETC.	
14. COORDINATE WITH GENERAL CONTRACTOR TO PATCH ALL EXISTING WALLS, FLOORS, CEILINGS, ETC., AS REQUIRED BY NEW WORK. SEE SPECIFICATIONS.	

PLUMBING ABBREVIATIONS			
AG	ABOVE GRADE	MECH	MECHANICAL
ADD	ADDENDUM	MIN	MINIMUM
ADDL	ADDITIONAL	MS	MOP SINK
ADJ	ADJUSTABLE	(N)	NEW
AFF	ABOVE FINISHED FLOOR	NG	NATURAL GAS
AFG	ABOVE FINISHED GRADE	NTS	NOT TO SCALE
ALT	ALTERNATE	NPCW	NON POTABLE COLD WATER
BFF	BELOW FINISHED FLOOR	ORD	OVERFLOW ROOF DRAIN
BG	BELOW GRADE	OSD	OVERFLOW STORM DRAIN
CO	CLEANOUT	PC	PLUMBING CONTRACTOR
COL	COLUMN	PH	PEDESTAL HYDRANT
CW	COLD WATER	PLBG	PLUMBING
DN	DOWN	PRES	PRESSURE
DW	DISHWASHER	QTY	QUANTITY
(E)	EXISTING	RD	ROOF DRAIN
EC	ELECTRICAL CONTRACTOR	RTU	ROOFTOP UNIT
ECO	EXTERIOR CLEANOUT	S	SINK
EQ	EQUAL	SAN	SANITARY
EW	ELECTRIC WATER COOLER	SCH	SCHEDULE
FCO	FLOOR CLEANOUT	SD	STORM DRAIN
FD	FLOOR DRAIN	SPEC	SPECIFICATIONS
FLR	FLOOR	SS	STAINLESS STEEL
FT	FOOT (FEET)	TEMP	TEMPERATURE
F	FURNACE	TG	TRAP GUARD
FRH	FREEZELESS ROOF HYDRANT	TMV	THERMOSTATIC MIXING VALVE
FWH	FREEZELESS WALL HYDRANT	TYP	TYPICAL
GAL	GALLON	UR	URINAL
GC	GENERAL CONTRACTOR	V	VENT
GPM	GALLONS PER MINUTE	VTR	VENT THRU ROOF
GW	GREASE WASTE	W	WITH
HW	HOT WATER	WCO	WALL CLEANOUT
HWR	HOT WATER RETURN	WC	WATER CLOSET
L	LAVATORY	WYH	WATER YARD HYDRANT
MC	MECHANICAL CONTRACTOR		

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.	
27. PROVIDE TRAP GUARDS ON ALL FLOOR DRAINS, FLOOR SINKS AND OPEN SITES.	
28. PROVIDE RIGID CONNECTION BETWEEN ALL SENSOR VALVES AND SENSOR LOCATION.	
29. MOUNT ALL FIXTURE SENSORS PER MANUFACTURER'S RECOMMENDATIONS.	

PLUMBING SHEET INDEX	
P000	PLUMBING TITLE SHEET
PD101	PLUMBING DEMOLITION PLAN
P101	PLUMBING PLAN
P201	PLUMBING ROOF PLAN
P501	PLUMBING DETAILS
P601	PLUMBING SCHEDULES
P602	PLUMBING SPECIFICATIONS

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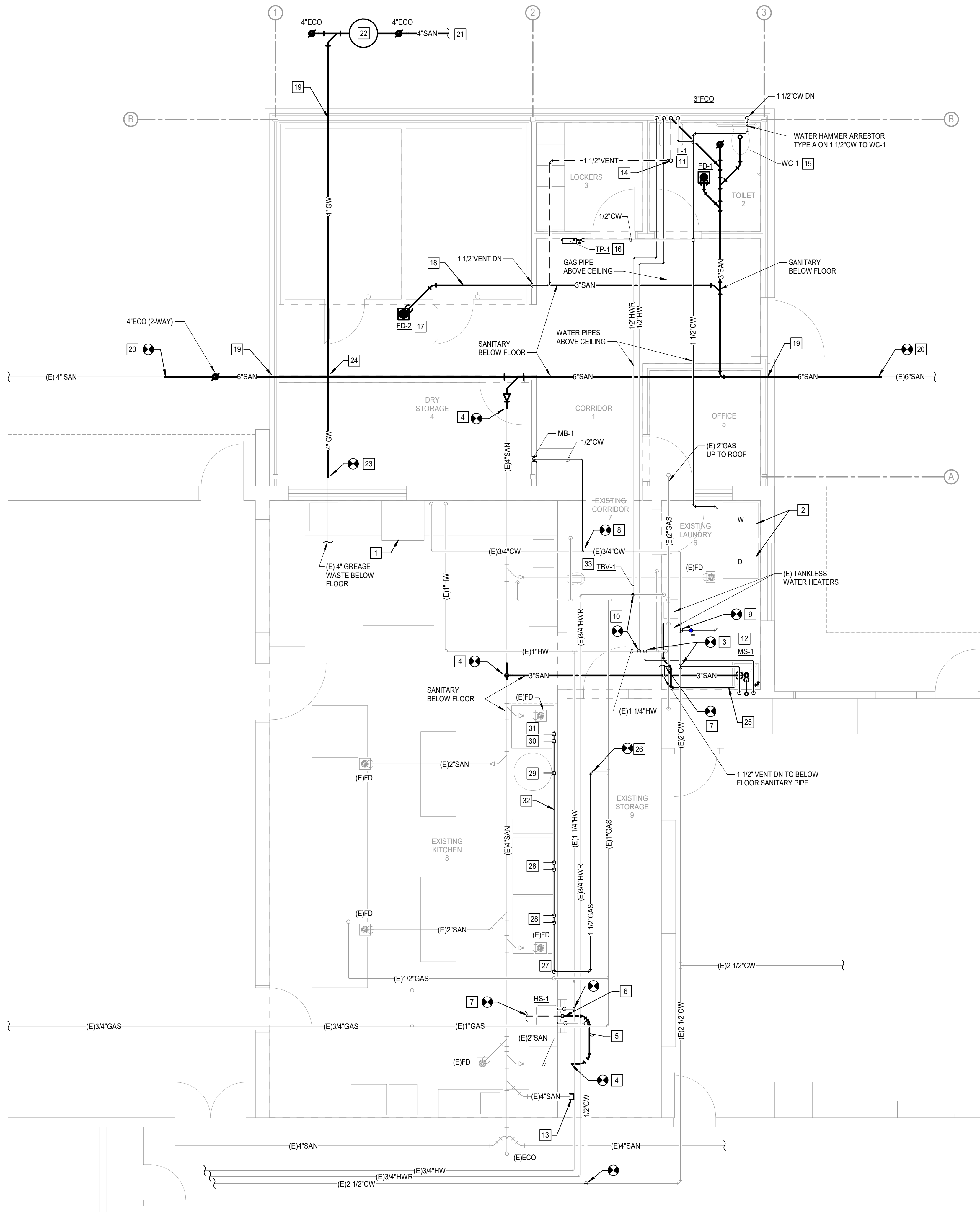
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1 PLUMBING PLAN
Scale: 1/4" = 1'-0"

GENERAL NOTES

- COORDINATE WORK WITH ALL OTHER TRADES ON SITE.
- FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK. VERIFY NATURAL GAS PRESSURE IN SYSTEM AND REPORT PRESSURE TO ENGINEER.
- INSULATE ALL WATER PIPING ABOVE CEILING.
- PROVIDE WATER HAMMER ARRESTORS (HA) ON WATER LINES TO FLUSH VALVES, SENSOR FAUCETS AND QUICK CLOSING VALVES. LOCATE IN ACCESSIBLE LOCATIONS.
- SINK AND LAVATORY WATER SUPPLY STUB OUTS SHALL BE COPPER PIPE WITH SUPPORT BRACKETS FASTENED IN WALL CAVITY.
- REFER TO PLUMBING FIXTURE SCHEDULE ON SHEET P801 FOR FIXTURE ROUGH-IN PIPE SIZES.
- TRAP PRIMER LINES SHALL BE COPPER TYPE "K" OR PEX-a TUBING WITH CONTINUOUS SLOPE TOWARDS DRAIN CONNECTION.
- FIRE SEAL ALL PENETRATIONS THRU RATED STRUCTURES TO MAINTAIN FIRE RATINGS.
- PROVIDE ACCESS PANELS FOR ALL VALVES / DEVICES ABOVE HARD CEILINGS AND BEHIND WALLS. INSTALLING CONTRACTOR TO COORDINATE EXACT LOCATIONS OF VALVES AND ACCESS PANELS WITH ARCHITECT PRIOR TO INSTALLATION.
- ALL GAS PIPE SHALL COMPLY WITH IFGC. BRANCH LINES SHALL TAP OFF TOP OF GAS MAINS AND INSTALL SHUT-OFF VALVE ON BRANCH LINE.
- COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER FOR EQUIPMENT CONNECTIONS. PROVIDE NATURAL GAS BRANCH LINES FROM MAIN TO EQUIPMENT WITH DORMONT FLEXIBLE GAS LINE, SWIVEL CONNECTIONS AND BALL VALVE

KEYED NOTES

- EXTEND OR ADJUST PIPING AS REQUIRED FOR INSTALLATION OF NEW DISHWASHER AND DISHTABLE IN SAME LOCATION.
- EXTEND OR ADJUST PIPING AS REQUIRED FOR REINSTALLATION OF WASHER AND DRYER. COORDINATE MOUNTING HEIGHT AND INSTALLATION OF REUSED WASHER BOX WITH NEW WALL CONSTRUCTION.
- FIELD VERIFY LOCATION OF EXISTING WATER MAINS IN THIS AREA AND CONNECT NEW 1/2" CW AND 1/2" HW SERVING NEW MOP SINK TO EXISTING. COORDINATE WITH ELECTRICAL FOR ROUTING OF PIPES TO AVOID CONFLICTS WITH ELECTRICAL PANELS.
- FIELD VERIFY INVERT ELEVATION, SIZE AND LOCATION OF EXISTING SANITARY MAIN IN THIS AREA AND CONNECT NEW SANITARY BRANCH PIPING TO EXISTING. EXTEND OR ADJUST PIPING AS REQUIRED TO ROUTE NEW SANITARY BRANCH PIPING TO NEW FIXTURE.
- ROUTE 2" SANITARY BELOW FLOOR AND CONNECT TO EXISTING SANITARY. COORDINATE ROUTING ON SITE.
- ROUTE 1/2" CW, 1/2" HW AND 1 1/2" VENT DOWN IN NEW WALL TO NEW HAND SINK. INSTALL THERMOSTATIC MIXING VALVE (TMV-1) BELOW FIXTURE. ROUTE 2" SANITARY DOWN TO BELOW FLOOR.
- FIELD VERIFY LOCATION OF NEAREST EXISTING VENT MAIN 2" OR LARGER AND CONNECT NEW 1 1/2" VENT TO EXISTING. EXTEND OR ADJUST PIPING AS REQUIRED.
- FIELD VERIFY SIZE AND LOCATION OF EXISTING CW MAIN IN THIS AREA AND CONNECT NEW 1/2" CW SERVING ICE MACHINE TO EXISTING. EXTEND OR ADJUST PIPING AS REQUIRED FOR INSTALLING NEW FIXTURE.
- FIELD VERIFY SIZE AND LOCATION OF NEAREST 2" OR LARGER CW MAIN IN THIS AREA AND CONNECT NEW 1/2" CW WITH BALL VALVE TO EXISTING. EXTEND OR ADJUST PIPING AS REQUIRED FOR INSTALLING NEW FIXTURES.
- FIELD VERIFY SIZE AND LOCATION OF NEAREST EXISTING HW AND HWR MAINS IN THIS AREA AND CONNECT NEW 1/2" HW AND 1/2" HWR TO EXISTING. EXTEND OR ADJUST PIPING AS REQUIRED FOR INSTALLING NEW FIXTURE.
- ROUTE 1/2" CW, 1/2" HW, 1/2" HWR AND 2" VENT DOWN IN WALL TO SERVE LAVATORY. CONNECT 1/2" HWR WITHIN 2'-0" OF HW SUPPLY STOP. INSTALL THERMOSTATIC MIXING VALVE (TMV-1) BELOW FIXTURE. SEE DETAIL 2/P501.
- PROVIDE 1/2" CW AND 1/2" HW WITH CHECK VALVE, BALL VALVES AND WATER HAMMER ARRESTORS PRIOR TO DROPPING IN WALL DOWN TO NEW MOP SINK. PROVIDE 3" SANITARY TO MOP SINK. SEE DETAIL 3/P501.
- CAP EXISTING 4" SANITARY BELOW FLOOR.
- ROUTE 2" VENT UP THRU ROOF. COORDINATE INSTALLATION WITH ROOFING CONTRACTOR.
- COORDINATE WITH STRUCTURAL FOR LOWERING FOUNDATION FOOTING FOR INSTALLATION OF SANITARY PIPE TO WATER CLOSET TO AVOID CONFLICTS.
- INSTALL TRAP PRIMER ABOVE CEILING. ROUTE 1/2" CW FROM PRIMER TO BELOW FLOOR TO FLOOR DRAIN FD-2. ROUTE 1/2" CW FROM TRAP PRIMER ABOVE CEILING TO RESTROOM WALL AND DOWN TO FD-1. COORDINATE 120V POWER WITH EC. SEE DETAIL 1/P501.
- COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER FOR COOLER/FREEZER CONDENSATE DRAIN PIPING TO FLOOR DRAIN. PROVIDE 1/2" TRAP PRIMER LINE TO FLOOR DRAIN.
- COORDINATE WITH COOLER / FREEZER SUPPLIER FOR INSTALLATION OF SANITARY PIPE BELOW UNITS TO AVOID CONFLICTS.
- INSTALL SANITARY OR GREASE WASTE PIPE IN PIPE SLEEVE THRU OR BELOW NEW WALL FOUNDATION. COORDINATE WITH STRUCTURAL FOR SLEEVE INSTALLATION.
- FIELD VERIFY INVERT ELEVATION, SIZE AND LOCATION OF EXISTING SANITARY MAIN IN THIS AREA AND CONNECT NEW SANITARY PIPING TO EXISTING. ROUTE NEW SANITARY PIPING (PVC) UNDER NEW ADDITION.
- COORDINATE WITH SITE CONTRACTOR FOR ROUTING NEW 4" SANITARY BELOW GRADE AND CONNECT TO EXISTING 6" SANITARY PIPE.
- RELOCATED GREASE INTERCEPTOR. FIELD VERIFY AND COORDIANTE LOCATION WITH OWNER.
- CONNECT NEW 4" EPOXY COATED CAST IRON GREASE WASTE PIPE TO EXISTING PIPE. FIELD VERIFY INVERT ELEVATION, PIPE SIZE AND LOCATION.
- FIELD VERIFY INVERT ELEVATIONS OF NEW 6" SANITARY PIPE AND NEW 4" GREASE WASTE PIPE TO AVOID CONFLICTS.
- ROUTE NEW WATER HEATER CONDENSATE DRAIN ABOVE FLOOR ALONG WALL AND TERMINATE OVER MOP SINK. FIELD VERIFY DRAIN LINE SIZE AND ROUTING. SLOPE TOWARDS MOP SINK.
- CONNECT NEW 1 1/2" NATURAL GAS TO EXISTING 1 1/2" NATURAL GAS PIPE. FIELD VERIFY LOCATION AND PIPE SIZE. VERIFY GAS PRESSURE IN THIS LINE. IF 2 PSI GAS PRESSURE INSTALL MAXITROL REGULATOR 325-SL WITH OUTLET PRESSURE OF 10 W.C. GAS LOAD 500 MBH.
- COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER FOR INSTALLATION OF GAS SOLENOID VALVE IN NEW 1 1/2" GAS LINE (600 MBH, LOW PRESSURE) SERVING COOKING LINE. SOLENOID VALVE FURNISHED BY KES AND INTERLOCKED WITH HOOD FIRE SUPPRESSION SYSTEM. COORDINATE POWER WITH EC. ROUTE 1 1/2" GAS LINE DOWN WALL AND BEHIND KITCHEN FIXTURES.
- EXISTING DOUBLE STACK CONVECTION OVENS REINSTALLED BY KEC. PROVIDE NEW BALL VALVE AND 3/4" GAS FLEX CONNECTION TO EACH UNIT FROM NEW GAS LINE ALONG WALL. 2 UNITS EACH AT 50 MBH (LOW PRESSURE). SEE DETAIL 6/P501.
- PROVIDE 3/4" GAS BRANCH LINE OFF NEW GAS MAIN WITH BALL VALVE AND CAP FOR FUTURE TILTING SKILLET. 120 MBH (LOW PRESSURE). SEE DETAIL 6/P501.
- EXISTING CONVECTION STEAMER REINSTALLED BY KEC. PROVIDE BALL VALVE AND 1" GAS FLEX CONNECTION TO UNIT FROM NEW GAS MAIN ALONG WALL. 300 MBH (LOW PRESSURE). SEE DETAIL 6/P501.
- PROVIDE 3/4" GAS BRANCH LINE OFF NEW GAS MAIN WITH BALL VALVE AND CAP FOR FUTURE CONVECTION STEAMER.
- ROUTE NEW 1 1/2" GAS LINE (LOW PRESSURE) ALONG WALL BEHIND KITCHEN COOKING EQUIPMENT. FIELD VERIFY ROUTING. PROVIDE PIPE SUPPORTS FASTENED TO WALL.
- INSTALL THERMOSTATIC BALANCING VALVE IN 1/2" HWR LINE. COORDINATE WITH SCHOOL FACILITY PERSONAL FOR HWR TEMP SETTING.



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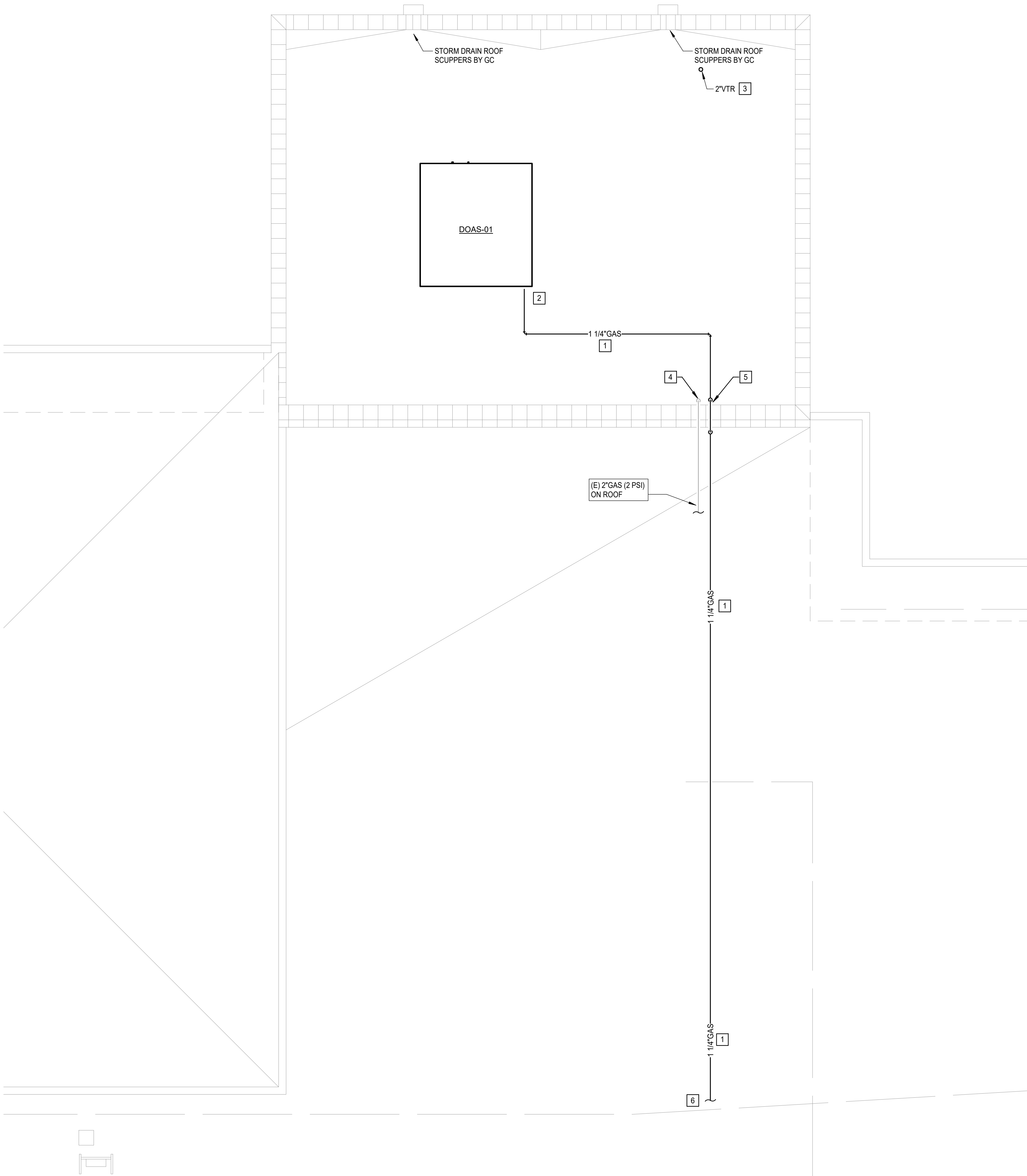
SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

P101

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- GENERAL NOTES
1.

COORDINATE WORK WITH ALL OTHER TRADES ON SITE.
2.

FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
3.

MAINTAIN A MINIMUM OF 10'-0" CLEAR BETWEEN EXHAUST AND INTAKE VENTS WITH MECHANICAL EQUIPMENT AND OTHER ROOF OPENINGS.
4.

ALL EXTERIOR ABOVE GRADE NATURAL GAS PIPING SHALL BE CLEANED AND DEGREASED PRIOR TO BEING PRIMED AND PAINTED YELLOW WITH WEATHER RESISTANT ZINC RICH PAINT.
5.

ALL GAS PIPING SHALL COMPLY WITH INTERNATIONAL FUEL GAS CODE AND LOCAL CODES. BRANCH LINES SHALL TAP OFF TOP OF GAS MAINS AND INSTALL SHUT-OFF VALVE ON BRANCH LINE.
6.

GAS PIPE IDENTIFICATION SHALL BE THE WORDS "NATURAL GAS" IN BLACK LETTERS AT 5'-0" INTERVALS USING PLASTIC PIPE MARKERS OR STENCILED PAINTED LETTERS.

- KEYED NOTES
- 1

ROUTE 1 1/4" NATURAL GAS LINE (2 PSI) ON ROOF. FIELD VERIFY ROUTING ON SITE. PROVIDE MIRO INDUSTRIES MODEL 3-RAH-8 ROOF TOP SUPPORTS OR APPROVED EQUAL. INSTALL AT MAXIMUM OF 8'-0" ON CENTER. SEE DETAIL 5/P501.
- 2

INSTALL 1 1/4" NATURAL GAS LINE (400 MBH, 2 PSI) TO DOAS UNIT. PROVIDE BALL VALVE, DIRT LEG, PRESSURE REGULATOR, UNION AND FINAL UNIT CONNECTION. COORDINATE WITH MC FOR CONNECTION. REGULATOR MAXITROL 325-5LB WITH VENT PROTECTOR.
- 3

COORDINATE INSTALLATION OF PLUMBING VENT WITH ROOFING CONTRACTOR. INSTALL VENT MINIMUM 10'-0" FROM ANY ROOF OPENINGS OR INTAKE VENTS.
- 4

COORDINATE WITH GC FOR REQUIRED REROUTING OF 2" NATURAL GAS PIPE DOWN THRU NEW ROOF.
- 5

COORDINATE WITH GC FOR ROUTING NATURAL GAS PIPE THRU OR OVER NEW ROOF PARAPET.
- 6

CONNECT NEW 1 1/4" NATURAL GAS (2 PSI) TO EXISTING GAS MAIN WITH SHUT-OFF VALVE. FIELD VERIFY LOCATION AND GAS PRESSURE.

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CEDAR CREEK

CIVIL

KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN

MECHANICAL / ELECTRICAL



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SOUTHGATE

ELEMENTARY

KITCHEN UPGRADES

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CA#: 9820 Expiration Date: 06/30/2027

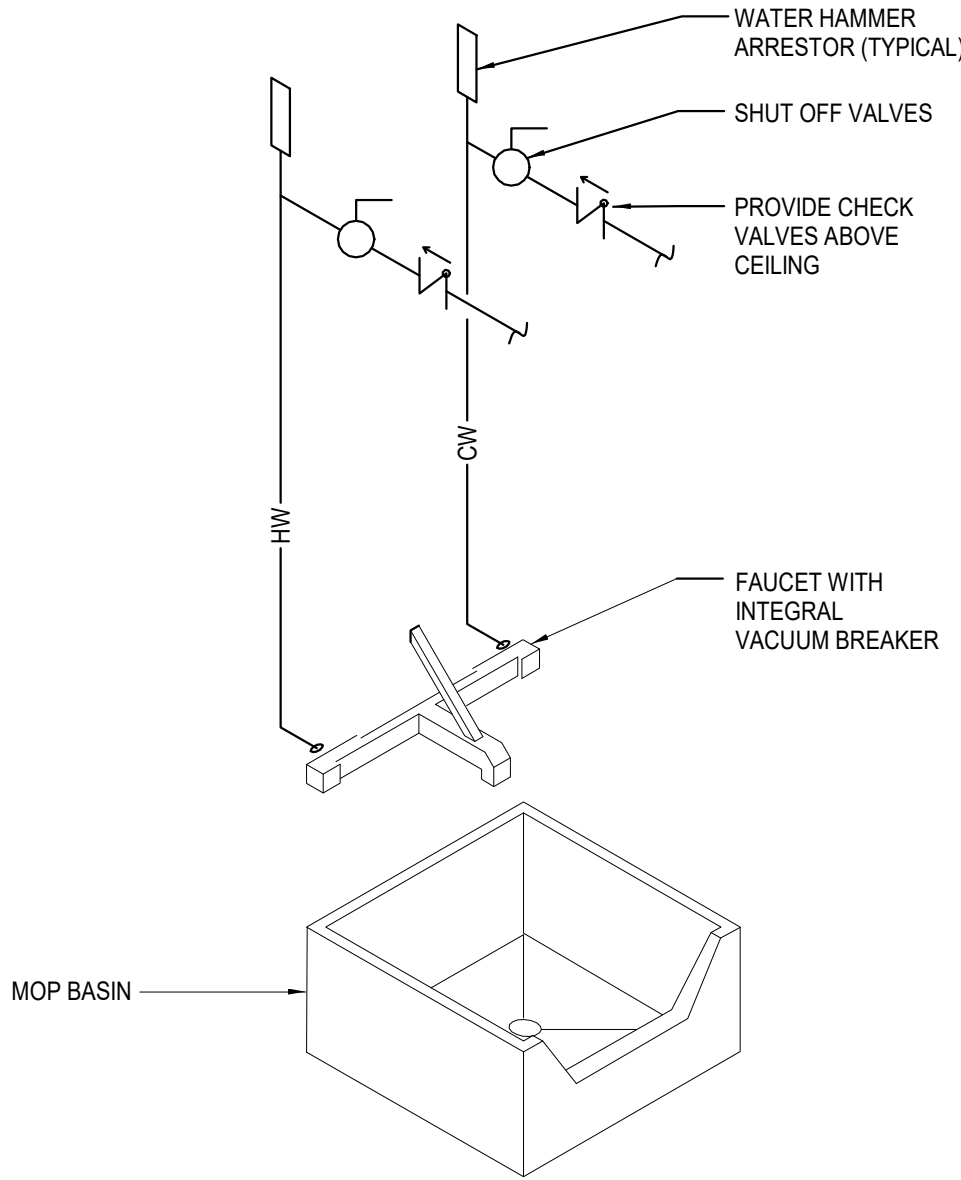
Salas O'Brien Project Number: 2650-00226-00



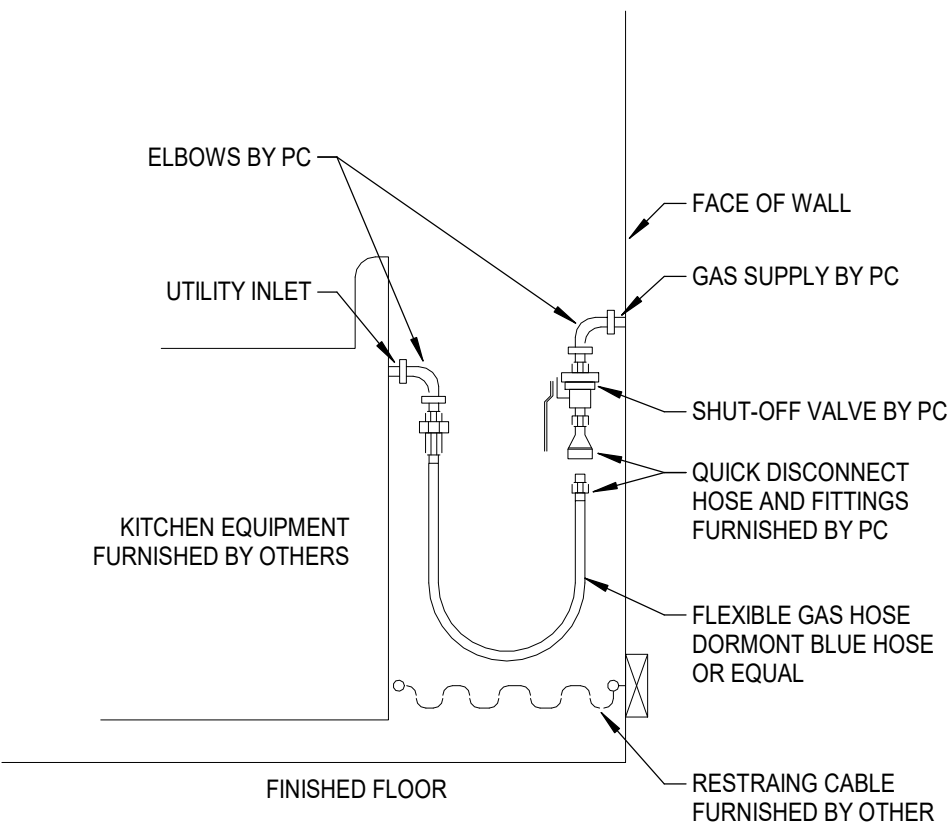
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PLUMBING ROOF PLAN

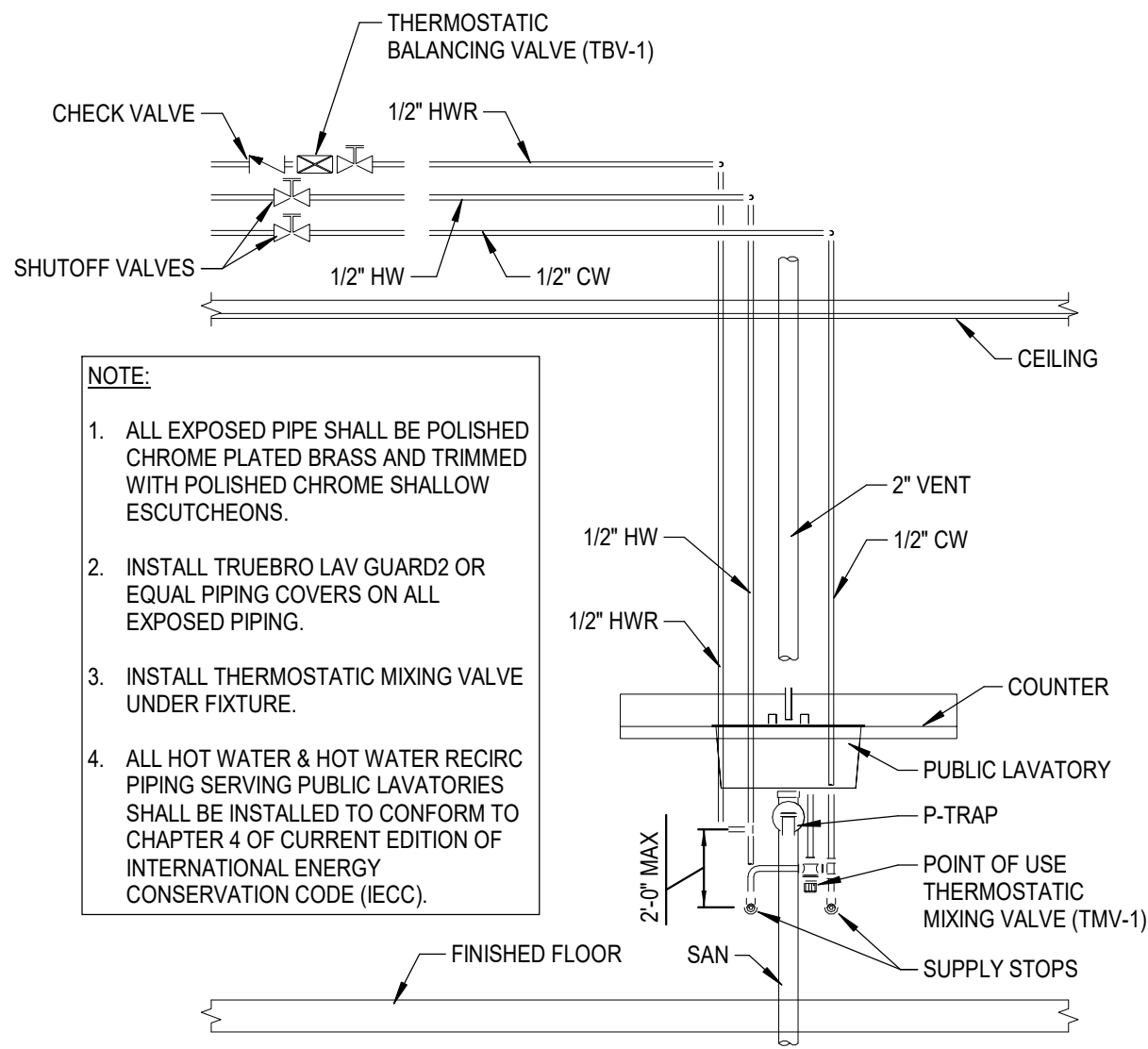
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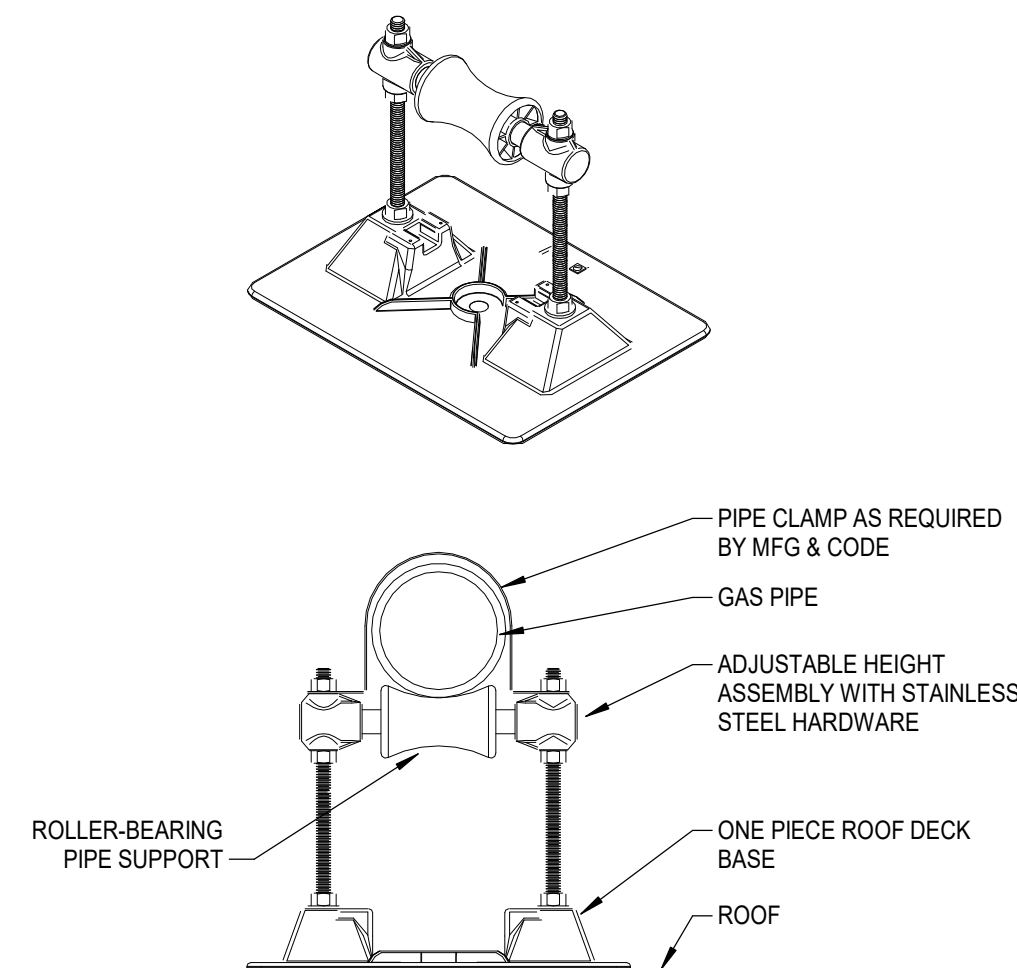
3 MOP SINK DETAIL
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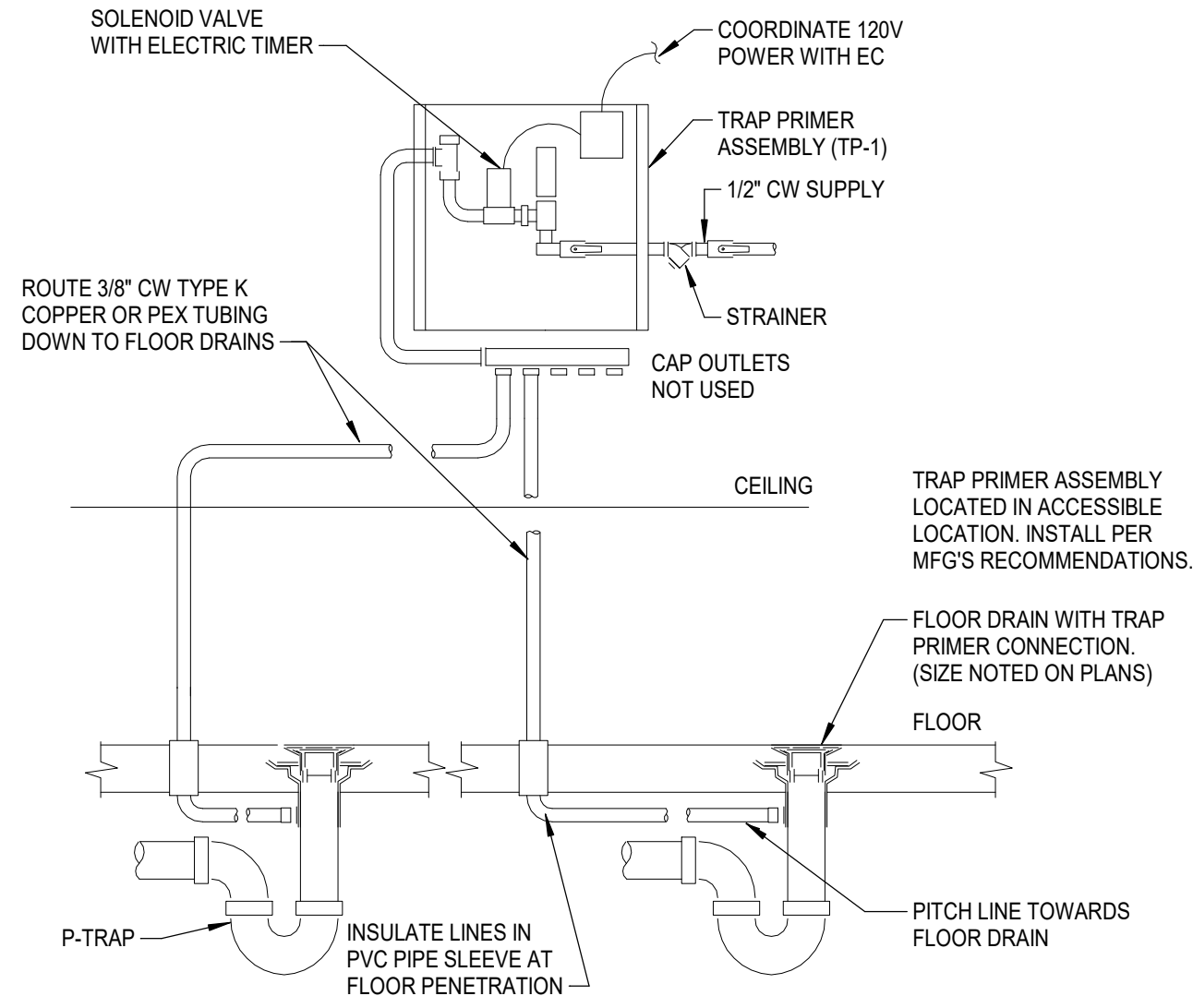
6 GAS QUICK CONNECT DETAIL
Scale: N.T.S.



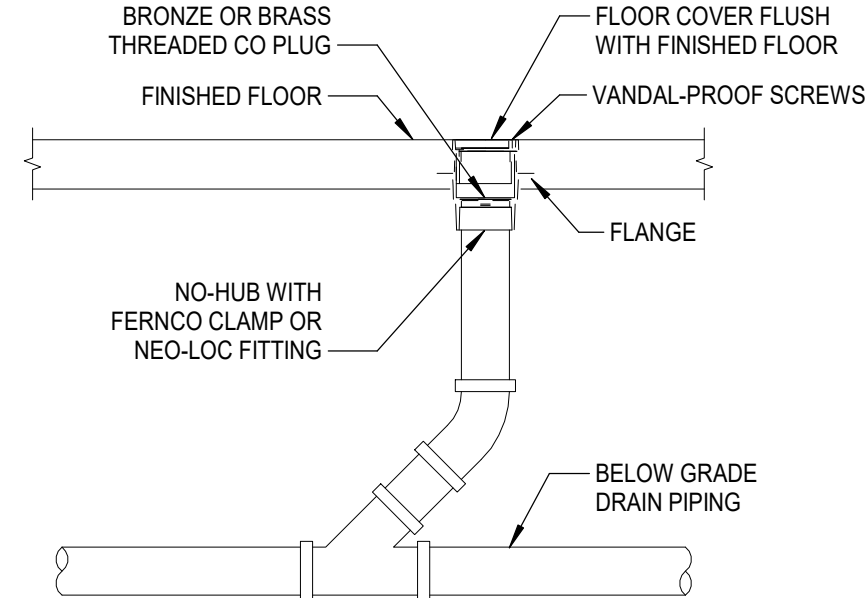
2 LAVATORY HW RECIRCULATION DETAIL
Scale: N.T.S.



5 ROOF PIPE SUPPORT DETAIL
Scale: N.T.S.



1 ELECTRIC TRAP PRIMER MANIFOLD DETAIL
Scale: N.T.S.



4 INTERIOR CLEANOUT DETAIL (PVC)
Scale: N.T.S.



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SOUTHGATE
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MOORE
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CA# 9820 Expiration Date: 06/30/2027

Salas O'Brien Project Number: 2650-00226-00

PLUMBING FIXTURE SCHEDULE									
MARK	MANUFACTURER	MODEL	MOUNTING TYPE	CW	HW	SS	VENT	FIXTURE DESCRIPTION	
DRAINAGE FIXTURE (FD, FS, HD, TD)									
3"FCO	ZURN	ZN1400-BZ-K-VP	FLOOR			3"		FLOOR CLEANOUT, CAST IRON BODY, ANCHOR FLANGE, ABS THREAD PLUG AND ADJUSTABLE TOP ASSEMBLY WITH GASKET SEAL, 6" ROUND SCORIATED NICKEL BRONZE COVER, VANDAL RESISTANT COVER SCREWS.	
4"ECO	ZURN	Z1474-N-SG-VP	GRADE			4"		EXTERIOR CLEANOUT, HEAVY DUTY CLEANOUT HOUSING, CAST IRON BODY, INTEGRAL ANCHOR FLANGE, GASKETED SCORIATED COVER WITH VANDAL-PROOF SCREWS, INTERNAL CLEANOUT FERRULE WITH ABS TAPERED THREAD PLUG MODEL Z1440.	
FD-1	ZURN	ZN415-BZ1-P-VP	FLOOR			2"		FLOOR DRAIN, CAST IRON BODY, ADJUSTABLE 6" DIAMETER NICKEL BRONZE STRAINER WITH VANDAL PROOF SCREWS, INTEGRAL CLAMPING DEVICE, BOTTOM OUTLET, 1/2" TRAP PRIMER CONNECTION. ROUGH-IN: REFER TO FLOOR PLANS FOR SIZES. COORDINATE FINAL LOCATION AND INSTALLATION WITH ARCHITECTURAL DRAWINGS / FLOOR CONSTRUCTION.	
FD-2	ZURN	ZN415-BZ1-P-VP	FLOOR			3"		FLOOR DRAIN WITH VANDAL PROOF SCREWS, INTEGRAL CLAMPING DEVICE, BOTTOM OUTLET, 1/2" TRAP PRIMER CONNECTION. PROVIDE 4" DIAMETER, 3-3/4" HIGH STAINLESS STEEL FUNNEL ATTACHED TO FLOOR DRAIN STRAINER. ROUGH-IN: REFER TO FLOOR PLANS FOR SIZES. COORDINATE FINAL LOCATION WITH EQUIPMENT PLACEMENT.	
FIXTURES									
IMB-1	SIOUX CHIEF	696RG1011-WF	WALL	1/2"				ICE MACHINE CONNECTION: DESCRIPTION: FIRE RATED REFRIGERATOR VALVE BOX, ABS WITH WHITE FINISH, 1/2" CONNECTION, INTEGRAL BALL VALVE WITH HAMMER ARRESTOR, 3/8" THREADED OUTLET CONNECTION. ROUGH-INS: COORDINATE ROUGH-IN LOCATION/HEIGHT, FINAL CONNECTION WITH EQUIPMENT BEING INSTALLED AND WITH ARCHITECT/CASEWORK DRAWINGS.	
MOP SINK (MS)									
MS-1	FIAT	TSB3010	FLOOR	1/2"	1/2"	3"	1 1/2"	MOP SINK: ONE-PIECE, PRECAST TERRAZZO, 24" x 24" x 12" WITH 6" DROP FRONT WITH STAINLESS STEEL THRESHOLD, STAINLESS STEEL STRAINER. FAUCET: T&S BRASS B-0605-BSTR WALL MOUNT. ACCESSORIES: FIAT B32AA HOSE & BRACKET, 889-CC MOP BRACKET, MSG2424 WALL GUARDS, ASSE 1011 APPROVED HOSE CONNECTION VACUUM BREAKER WATTS LF8A OR APPROVED EQUAL	
SINK/LAVATORIES (L, SK)									
HS-1	EAGLE	HSA-10-FAW	WALL	1/2"	1/2"	2"	1 1/2"	HAND SINK: WALL MOUNT, TYPE 304 STAINLESS STEEL, 6" BACKSPLASH, WITH GOOSENECK SPOUT, WRIST BLADE HANDLES, BASKET DRAIN, TAILPIECE, CHROME P-TRAP. SUPPLIES: QUARTER-TURN SUPPLY STOPS, 1/2" I.P.S. X 3/8" O.D. WITH ESCUTCHEONS AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS, MCGUIRE LFBV2165SS. PROVIDE TRUEBRO LAV GUARD2 PIPING COVERS. INSTALL THERMOSTATIC MIXING VALVE BELOW FIXTURE, WATTS LFUSG-B-MS. ROUGH-INS: REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED HEIGHT.	
L-1	AMERICAN STANDARD	0355.012	WALL	1/2"	1/2"	2"	2"	LAVATORY: SINGLE BOWL, COLOR WHITE, WALL MOUNTED, VITREOUS CHINA, 4" ON CENTER FAUCET HOLES. FAUCET: SINGLE LEVER, 4" CENTERS, CHICAGO FAUCET 420-ABCP. STRAINER: HEAVY DUTY CHROME GRID STRAINER WITH 1-1/4" TAILPIECE AND LOCK NUTS, MCGUIRE HD155A. TMV: BRONZE FINISH, 0.25 GPM MIN FLOW / 2.25 GPM MAX FLOW, ASSE 1070, INTEGRAL CHECK VALVE, LEAD FREE, WATTS LFUSG-B-M3. P-TRAP: INLET 1-1/4" 17 GAUGE CHROME PLATED BRASS TRAP WITH CLEANOUT AND 1 1/2" EXTENSION TO WALL WITH ESCUTCHEON PLATE, MCGUIRE 8902. SUPPLIES: QUARTER-TURN 1/2" I.P.S. x 3/8" O.D. WITH ESCUTCHEONS AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS, MCGUIRE LFBV2165. ACCESSORIES: PROVIDE TRUEBRO LAV GUARD2 PIPE COVERS, ZURN NARROW WALL FIXTURE CARRIER. ROUGH-IN: REFER TO ARCHITECT'S PLANS FOR HEIGHT AND WALL TYPE	
TRAP PRIMER									
TP-1	SIOUX CHIEF	695-ES-05		1/2"	0"	0"	0"	ELECTRIC TRAP PRIMER, 120V POWER, 1/2" CW INLET WITH STRAINER, SOLENOID ACTUATING DEVICE, VACUUM BREAKER, DISTRIBUTION MANIFOLD, 2 OUTLETS WITH 1/2" TO FLOOR DRAINS, CAP USED OUTLETS, COORDINATE POWER WITH EC.	
WATER CLOSET (WC)									
WC-1	AMERICAN STANDARD	3043.001	FLOOR	1 1/4"		3"	0"	WATER CLOSET: FIXTURE COLOR WHITE, FLOOR MOUNTED, VITREOUS CHINA, ADA INSTALLATION, FLUSH VALVE: SLOAN ROYAL 111-1.6 SFSM BATTERY OPERATED FLUSH VALVE. SEAT: BEMIS 1655-SSCT OPEN FRONT ELONGATED SEAT, EXTERNAL CHECK HINGE, COLOR WHITE. ACCESSORIES: PROVIDE WAX RING FLOOR KIT, RIM HEIGHT 16-1/2"	

THERMOSTATIC MIXING VALVE SCHEDULE

MARK	BASIS OF DESIGN		TEMP. OUT (DEG. F)	MIN. FLOW GPM	CW	HW	DESCRIPTION
	MANUFACTURER	MODEL					
TMV-1	WATTS	LFUSG-B-M3	105	0.25	1/2"	1/2"	LOCATED UNDER LAVATORY AND SINK
1. MAKE WATER CONNECTIONS TO THERMOSTATIC MIXING VALVE(S) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. 2. PROVIDE PIPE INCREASERS AND/OR VALVES AS REQUIRED. 3. REFER TO DETAIL SHEET FOR MORE INFORMATION.							

THERMOSTATIC BALANCING VALVE SCHEDULE

MARK	MANUFACTURER	MODEL NO.	LOCATION	SIZE	FLOW Cv DESIGN	ACCESSORIES	NOTES
TBV-1	CALEFFI	116441AC-108	HWR PIPE	1/2"-1/2"	0.69	BALL VALVES & TEMP GAUGE	INSTALL IN ACCESSIBLE LOCATION
1	PLUMBING CONTRACTOR TO COORDINATE HOT WATER SUPPLY AND HOT WATER RETURN TEMPERATURES WITH OWNER.						
2	INSTALL PER INTERNATIONAL PLUMBING CODE AND PER MANUFACTURER'S RECOMMENDATIONS.						

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CA# 9820 Expiration Date: 06/30/2027

Salas O'Brien Project Number: 2650-00226-00

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 IDENTIFICATION:

- A. 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.
- B. PLASTIC PIPE MARKERS: FACTORY FABRICATED, FLEXIBLE, PREFORMED TO PIPE SIZE OR VINYL FILM TAPE, INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.
- C. ACCEPTABLE MANUFACTURERS ARE BRADY, KOLBI, SETON OR APPROVED EQUAL.

PART 8: 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, JOHN'S MANVILLE, KNAUF, CERTAINTED 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 9: PLUMBING PIPING:

- A. SANITARY WASTE LINES AND VENTS BELOW AND ABOVE GRADE SHALL BE PVC PIPE: ASTM D 2665 SCHEDULE 40 SOLID CORE 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.
1. GREASE WASTE PIPE BELOW GRADE: SERVICE WEIGHT CAST IRON ASTM A74 AND CISPI RATED, EPOXY COATED, HUB & SPIGOT FITTINGS WITH ASTM C564 GASKETS.
- 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 5185 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 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.

PART 10: PLUMBING SPECIALTIES:

- A. DRAINS AND CLEANOUTS: ZURN, SIOUX CHIEF, 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, ZURN OR APPROVED EQUAL.
- D. THERMOSTATIC MIXING VALVE: WATTS, CALEFFI OR APPROVED EQUAL.
- E. VALVES: WATTS, CONBRACO INDUSTRIES, WEBSTONE OR APPROVED EQUAL.
- F. THERMOSTATIC BALANCING VALVES: CALEFFI, CIMBERIO, ACORN OR APPROVED EQUAL.

PART 11: 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, AMERICAN STANDARD OR APPROVED EQUAL.
2. FLUSH VALVES: SLOAN OR APPROVED EQUAL.
- C. STAINLESS STEEL SINKS: EAGLE, ELKAY, ADVANCE TABCO OR APPROVED EQUAL.
1. FAUCET: MOEN, ELKAY, CHICAGO FAUCET, T&S BRASS OR APPROVED EQUAL.
2. ACCESSORIES: ELKAY, MCGUIRE, DEARBORN BRASS OR APPROVED EQUAL.
- D. MOP SINK: FIAT, FLORESTONE, STERN-WILLIAMS OR APPROVED EQUAL.
1. TRIM: FIAT, CHICAGO FAUCET, T&S BRASS OR APPROVED EQUAL.
- E. ACCESS PANELS: ACUDOR, ELMENDOR OR APPROVED EQUAL.
- F. WATER BOX: SIOUX CHIEF, OATEY OR APPROVED EQUAL.
- G. WALL HYDRANTS: WOODFORD, ZURN OR APPROVED EQUAL.
- H. SUPPLY STOP VALVES: COMMERCIAL GRADE, QUARTER-TURN STYLE: MCGUIRE, BRASSCRAFT, DAHL OR APPROVED EQUAL.
- I. REFER TO PLUMBING SCHEDULES ON PLANS.

PART 12: 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.
- E. ROUTE PIPING IN ORDERLY MANNER, MAINTAIN GRADIENT AND ALLOW FOR EXPANSION AND CONTRACTION.
- F. INSTALL VENT PIPING PENETRATING ROOFS TO MAINTAIN INTEGRITY OF ROOF 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 CODE.
- AF. SERVICE CONNECTIONS:
1. WATER SERVICE: CONNECT TO EXISTING SERVICE.
2. SANITARY SEWER: CONNECT TO EXISTING SERVICE.
3. NATURAL GAS: CONNECT TO EXISTING SERVICE.

PART 13: 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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CEDAR CREEK

CIVIL

KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN

MECHANICAL / ELECTRICAL



KS

drawn by

KP

checked by

APRIL 2026

date

REVISIONS

Δ	DESCRIPTION	DATE



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

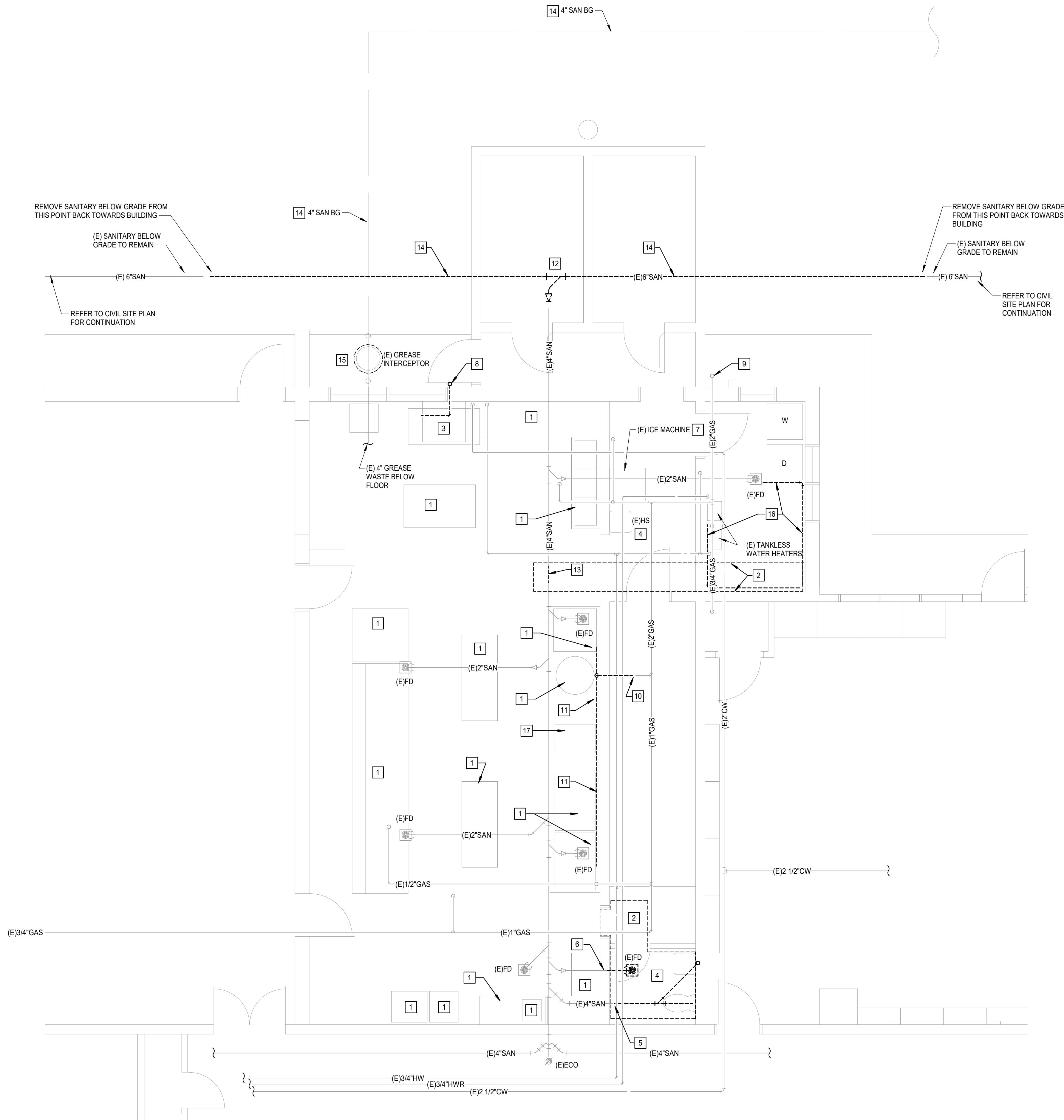
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**Salas O'Brien**

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Moore, OK 73160
Call#: 9820 Expiration Date: 06/30/2027
Salas O'Brien Project Number: 2650-00226-00



1 PLUMBING DEMOLITION PLAN
Scale: 1/4" = 1'-0"

GENERAL NOTES

- COORDINATE WORK WITH ALL OTHER TRADES ON SITE.
- FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
- REFER TO PLUMBING RENOVATION NOTES ON SHEET P000.
- COORDINATE WITH GENERAL CONTRACTOR FOR ALL REQUIRED FLOOR, WALL AND CEILING CUTTING FOR DEMOLITION AND NEW WORK.
- SANITARY VENT PIPING CONCEALED IN WALLS TO REMAIN UNLESS CONDITION OF PIPING REQUIRES REPLACEMENT.
- WATER PIPING CONCEALED IN WALL GOING UP TO CEILING TO REMAIN OR ABANDON IN PLACE AND CAPPED IF NOT REUSED.

KEYED NOTES

- REMOVE PLUMBING CONNECTIONS TO EXISTING KITCHEN EQUIPMENT. CAP ALL ASSOCIATED PIPING FOR REINSTALLATION OF KITCHEN EQUIPMENT IN SAME LOCATION. GAS PIPING TO BE REMOVED.
- COORDINATE WITH GC FOR FLOOR CUTTING AND WALL CUTTING IN THIS AREA FOR INSTALLATION OF NEW SANITARY PIPE.
- REMOVE ALL ASSOCIATED PIPING TO DISHWASHER AND DISHTABLE FOR INSTALLATION OF NEW FIXTURE IN SAME LOCATION. REMOVE GAS PIPING THRU WALL AND CAP.
- REMOVE EXISTING PLUMBING FIXTURES AND ALL ASSOCIATED PIPING BACK TO MAINS AND CAP.
- REMOVE SANITARY PIPING BELOW FLOOR BACK TO NEAR WALL AND CAP.
- REMOVE EXISTING 2" SANITARY SERVING FLOOR DRAIN BACK TO WALL AND CAP FOR REUSE OF NEW PLUMBING FIXTURE.
- REMOVE EXISTING ICE MACHINE AND TURN OVER TO OWNER FOR REUSE. REMOVE ALL ASSOCIATED PIPING BACK TO MAINS AND CAP.
- REMOVE 3/4" GAS PIPE ON EXTERIOR WALL UP TO ROOF AND PIPE ON ROOF TO MAIN. CAP BRANCH PIPE AT MAIN.
- COORDINATE WITH GC FOR REQUIRED REROUTING OF 2" GAS UP TO ROOF FOR NEW ADDITION CONSTRUCTION.
- REMOVE 1 1/2" GAS PIPE INTO WALL AND DOWN TO NEAR FLOOR. 1 1/2" GAS BRANCH PIPE TO BE REUSED AT MAIN.
- REMOVE GAS PIPING AND VALVES SERVING KITCHEN EQUIPMENT UNDER HOOD.
- REMOVE 4" SANITARY CONNECTION TO 6" SANITARY. CAP 4" SANITARY FOR CONNECTION TO NEW SANITARY PIPE.
- REMOVE SECTION OF BELOW GRADE 4" SANITARY FOR NEW BRANCH SANITARY CONNECTION.
- REMOVE EXISTING BELOW GRADE SANITARY PIPE.
- REMOVE AND RELOCATE GREASE INTERCEPTOR. REMOVE CLEANOUTS AND ASSOCIATED PIPING BELOW GRADE OUTSIDE OF BUILDING.
- REMOVE ABOVE FLOOR WATER HEATER CONDENSATE DRAIN LINE FROM HEATERS TO TERMINATION POINT AT FLOOR DRAIN.
- REMOVE GAS CONNECTION TO KITCHEN RANGE AND BRANCH GAS PIPE BACK TO MAIN.

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1) GENERAL INFORMATION

- A. GOVERNING BUILDING CODE: IBC-2018 "INTERNATIONAL BUILDING CODE".
- B. BUILDING RISK CATEGORY: THE BUILDING RISK CATEGORY ACCORDING TO IBC-2018 TABLE 1604.5 AND ASCE 7-16 TABLE 1.5-1 IS CATEGORY II.
- C. ELEVATIONS: REFERENCE FINISHED FLOOR ELEVATIONS OF 100'-0" EQUALS ACTUAL EXISTING FINISH FLOOR ELEVATION.
- D. CONTRACT DOCUMENTS:
- 1) THE CONTRACT DOCUMENTS CONSIST OF THE AGREEMENT BETWEEN THE OWNER AND CONTRACTOR, CONDITIONS OF THE CONTRACT, DRAWINGS, SPECIFICATIONS, ADDENDA ISSUED PRIOR TO EXECUTION OF THE CONTRACT, OTHER DOCUMENTS LISTED IN THE AGREEMENT AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT.
- 2) THE GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND DISSEMINATING ALL CONTRACT DOCUMENTS AND LATEST ADDENDA TO ALL SUB-CONTRACTORS PRIOR TO DETAILING, FABRICATION, OR INSTALLATION OF WORK.
- 3) CORRELATION OF THE CONTRACT DOCUMENTS: THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL. IF CONFLICTING REQUIREMENTS ARE FOUND BETWEEN THE DRAWINGS, SPECIFICATIONS AND/OR THESE GENERAL NOTES, THE MORE STRINGENT AND HIGHEST COST REQUIREMENT SHALL CONTROL UNLESS DIRECTED OTHERWISE IN WRITING BY THE OWNER'S REPRESENTATIVE.
- 4) THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DISCREPANCIES BETWEEN EACH SET, AND WITHIN EACH SET OF DRAWINGS, AND REPORT DISCREPANCIES, IF ANY, TO THE OWNER'S REPRESENTATIVE PRIOR TO THE DETAILING, FABRICATION, AND INSTALLATION OF AFFECTED WORK.
- 5) GENERAL CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF OPENINGS THROUGH FLOORS, ROOF, AND WALLS SHOWN ON ELECTRICAL, PLUMBING, AND FIRE SUPPRESSION SYSTEM DESIGN DOCUMENTS WITH ASSOCIATED SUBCONTRACTORS.
- 6) ALTHOUGH NOT NECESSARILY SPECIFICALLY REFERENCED IN THE CONTRACT DOCUMENTS, TYPICAL DETAILS AND GENERAL NOTES APPLY TO THE ENTIRE PROJECT WHEREVER CONDITIONS SIMILAR TO THOSE DETAILED OR NOTED EXIST.
- 7) THE USE OF ELECTRONIC FILES OR REPRODUCTION OF CONTRACT DOCUMENTS BY ANY TRADE OR MATERIAL SUPPLIER IN LIEU OF COMPLETELY INDEPENDENT PREPARATION OF SHOP DRAWINGS SIGNIFIES THE SUPPLIER'S CERTIFICATION THAT ALL INFORMATION SHOWN IN THE SHOP DRAWINGS IS CORRECT, AND ASSIGNS THEMSELVES TO RESPONSIBILITY FOR ANY JOB EXPENSE ARISING DUE TO ANY ERRORS OCCURRING THEREIN.
- E. FIELD MODIFICATIONS: CONTRACTOR OR SUBCONTRACTOR FIELD MODIFICATIONS TO THE STRUCTURE WITHOUT THE PRIOR WRITTEN CONSENT OF THE STRUCTURAL ENGINEER ARE EXPRESSLY PROHIBITED AND MAY REQUIRE SUBSEQUENT REMEDIATION DIRECTED BY THE STRUCTURAL ENGINEER AT CONTRACTOR'S EXPENSE.

2) DESIGN LOADS

- A. GOVERNING STANDARD FOR DESIGN LOADS: ASCE 7-16 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"
- B. DEAD LOAD: SELF WEIGHT OF MATERIALS, UNLESS NOTED OTHERWISE
- C. ROOF DEAD LOAD:
- 1) BUILT-UP ROOFING SYSTEM.....6 PSF
- 2) RIGID INSULATION.....2 PSF
- 3) METAL ROOF DECK.....3 PSF
- 4) JOIST SELF-WEIGHT.....2 PSF
- 5) CEILING SYSTEM.....2 PSF
- 6) ROOF COLLATERAL (MEP & MISC. FRAMING).....5 PSF
- 7) TOTAL.....20 PSF
- D. UNIFORM LIVE LOADS:
- 1) ROOF LIVE LOAD (REDUCIBLE).....20 PSF
- 2) SLAB-ON-GRADE.....250 PSF
- E. CONCENTRATED LIVE LOADS:
- 1) ALL FLOORS (ON AN AREA 2.5 FT. X 2.5 FT.).....2,000 LBS
- 2) ROOFS (ON AN AREA 2.5 FT. X 2.5 FT.).....300 LBS
- F. WIND LOADS:
- 1) RISK CATEGORY: II
- 2) EXPOSURE CATEGORY: C
- 3) ENCLOSURE CLASSIFICATION: ENCLOSED
- 4) INTERNAL PRESSURE COEFFICIENT, GCP:.....-0.18
- 5) TOPOGRAPHIC FACTOR, KZT:.....1.0
- 6) DIRECTIONALITY FACTOR, KD:.....0.85
- 7) ULTIMATE DESIGN WIND SPEED, Vu1t:.....109 MPH
- 8) NOMINAL DESIGN WIND SPEED, Vsd:.....90 MPH
- G. SNOW LOADS:
- 1) SNOW IMPORTANCE FACTOR, Is:.....1.0
- 2) GROUND SNOW LOAD, Pg:.....10 PSF
- 3) EXPOSURE OF ROOF: PARTIALLY EXPOSED
- 4) SURFACE ROUGHNESS CATEGORY: C
- 5) EXPOSURE FACTOR, Ce:.....1.0
- 6) THERMAL FACTOR, Ct:.....1.0
- 7) ROOF SLOPE FACTOR, Cs:.....1.0
- 8) CALCULATED FLAT ROOF SNOW LOAD, Pf:.....7.0 PSF
- 9) MINIMUM FLAT ROOF SNOW LOAD, I*Pg:.....10 PSF
- 10) RAIN ON SNOW SURCHARGE LOAD:.....5 PSF
- H. RAIN LOADS:
- 1) 15-MINUTE RAIN INTENSITY.....8.72 INCHES/HOUR
- 2) 60-MINUTE RAIN INTENSITY.....4.4 INCHES/HOUR
- 3) DEPTH OF WATER ON THE UNDEFLECTED ROOF UP TO THE INLET OF THE SECONDARY DRAINAGE SYSTEM WHEN THE PRIMARY DRAINAGE SYSTEM IS BLOCKED (I.E., THE STATIC HEAD), ds.....4.0 INCHES
- 4) ADDITIONAL DEPTH OF WATER ON THE UNDEFLECTED ROOF ABOVE THE INLET OF THE SECONDARY DRAINAGE SYSTEM AT ITS DESIGN FLOW (I.E., THE HYDRAULIC HEAD), dh.....2.0 INCHES
- I. SEISMIC DESIGN CRITERIA:
- 1) RISK CATEGORY: II
- 2) SEISMIC IMPORTANCE FACTOR, Is:.....1.00
- 3) SOIL SITE CLASSIFICATION:.....C
- 4) 0.2 SEC. MAPPED SPECTRAL ACCELERATION, Ss:.....0.332
- 5) 1.0 SEC. MAPPED SPECTRAL ACCELERATION, S1:.....0.084
- 6) SITE COEFFICIENT, 0.2 SEC. PERIOD, Fa:.....1.30
- 7) SITE COEFFICIENT, 1.0 SEC. PERIOD, Fv:.....1.50
- 8) 0.2 SEC. DESIGN SPECTRAL ACCELERATION, Sds:.....0.288
- 9) 1.0 SEC. DESIGN SPECTRAL ACCELERATION, Sd1:.....0.084
- 10) SEISMIC DESIGN CATEGORY:.....B
- 11) SEISMIC PARAMETERS FOR BUILDING:
- A) SEISMIC FORCE RESISTING SYSTEM: STEEL SYSTEMS NOT SPECIFICALLY DESIGNED FOR SEISMIC RESISTANCE
- B) SLAB-ON-GRADE DESIGNED AS A STRUCTURAL DIAPHRAGM:.....NO
- C) RESPONSE MODIFICATION COEFFICIENT, R:.....3.00
- D) SYSTEM OVERSTRENGTH FACTOR, O:.....2.50
- E) DEFLECTION AMPLIFICATION FACTOR, Cd:.....3.00
- F) ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE METHOD.
- G) SEISMIC RESPONSE COEFFICIENT, Cs:.....0.092
- H) TOTAL LATERAL BASE SHEAR, V:.....10 KIPS
- 3) MATERIAL DESIGN VALUES
- A. CONCRETE (MIN. COMPRESSIVE STRENGTH AT 28 DAYS, NORMAL WEIGHT U.N.O.)
- 1) FOUNDATIONS:.....3,500 PSI

- 2) SLABS-ON-GRADE:.....4,000 PSI
- 3) ALL OTHER STRUCTURAL CONCRETE, U.N.O.:.....4,000 PSI
- B. CONCRETE REINFORCEMENT (MINIMUM YIELD STRENGTH)
- 1) ALL PLAIN AND DEFORMED BARS (ASTM A615, GRADE 60).....FY = 60 KSI
- 2) WELDABLE REINFORCING BARS (ASTM A706) FY = 60 KSI
- C. STRUCTURAL STEEL (MINIMUM YIELD STRENGTH)
- 1) ALL WIDE FLANGE SHAPES (ASTM A992).....FY = 50 KSI
- 2) SQUARE AND RECTANGULAR HSS (ASTM A500, GRADE C).....FY = 50 KSI
- 3) ANCHOR RODS (ASTM F1554, GRADE 55, SUPPLEMENTARY REQUIREMENT S1, WELDABLE).....FY = 55 KSI
- 4) ALL OTHER SHAPES AND PLATES UNLESS NOTED (ASTM A36).....FY = 36 KSI (FABRICATOR MAY OPTIONALLY USE ASTM A572-50 PLATE MATERIAL)
- D. COLD FORMED STEEL (MINIMUM YIELD STRENGTH)
- 1) ROOF DECK (ASTM A653, SS GRADE 33, G-60 GALVANIZED).....FY = 33 KSI
- 2) COLD FORMED METAL STUDS, 43 MIL AND LIGHTER (ASTM A1003/A, GRADE ST33H, G-60 GALVANIZED).....FY = 33 KSI
- 3) COLD FORMED METAL STUDS, 54 MIL AND HEAVIER (ASTM A1003/A, GRADE ST50H, G-60 GALVANIZED).....FY = 50 KSI
- 4) COLD FORMED METAL CLIPS (ASTM A653, SS GRADE 50, G-90 GALVANIZED).....FY = 50 KSI
- 4) CONSTRUCTION LOADS AND STABILITY

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL TEMPORARY CONSTRUCTION LOADS CAN BE SAFELY SUPPORTED BY THE STRUCTURE DURING CONSTRUCTION.
- B. THE STRUCTURAL FRAMING SYSTEM AND FOUNDATIONS HAVE BEEN DESIGNED AS A COMPLETE STRUCTURAL SYSTEM FOR SUPPORT OF THE LOADS INDICATED IN THE CONSTRUCTION DOCUMENTS. THE STRUCTURE HAS NOT BEEN DESIGNED OR CHECKED FOR TEMPORARY CONSTRUCTION LOADS NOR HAS IT BEEN DESIGNED OR CHECKED FOR ADEQUACY OR STABILITY AS A PARTIALLY ERRECTED STRUCTURE.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THE ABILITY OF THE PARTIALLY COMPLETED OR FULLY COMPLETED STRUCTURE TO RESIST ALL CONSTRUCTION LOADS INCLUDING BUT ARE NOT NECESSARILY LIMITED TO MATERIAL STAGING, PERSONNEL, AND EQUIPMENT.
- D. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORES, GUYS, BRACES, AND OTHER SUPPORTS DURING CONSTRUCTION TO KEEP STRUCTURAL FRAMING COMPONENTS SECURE, PLUMB, AND IN ALIGNMENT AGAINST TEMPORARY CONSTRUCTION LOADS AND LOADS EQUAL IN INTENSITY TO DESIGN LOADS. THE TEMPORARY SUPPORTS SHALL BE SUFFICIENT TO SECURE THE PARTIALLY ERRECTED STRUCTURE OR ANY PORTION THEREOF AGAINST LOADS THAT ARE LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION, INCLUDING THOSE DUE TO WIND AND THOSE THAT RESULT FROM CONSTRUCTION OPERATIONS.
- E. THE CONTRACTOR SHALL NOT REMOVE TEMPORARY SUPPORTS UNTIL THE INSTALLATION OF ALL STRUCTURAL ELEMENTS IS COMPLETE AND HAS BEEN ACCEPTED AS COMPLETE BY THE ENGINEER. FOR THE PURPOSES OF THIS PARAGRAPH, "ALL STRUCTURAL ELEMENTS" INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING STRUCTURAL ELEMENTS:
- 1) FOUNDATIONS
- 2) STRUCTURAL STEEL FRAMING WITH COMPLETED STEEL CONNECTIONS, INCLUDING PERMANENT VERTICAL AND/OR HORIZONTAL BRACING
- 3) ROOF DECK
- 5) EXISTING CONSTRUCTION

- A. ALL VERTICAL AND HORIZONTAL DIMENSIONS, FINISHED FLOOR AND ROOF ELEVATIONS, PLUMBNESS, AND DETAILS FOR THE EXISTING STRUCTURE SHALL BE VERIFIED IN THE FIELD PRIOR TO PROCEEDING WITH ANY DEMOLITION OR INSTALLATION OF NEW WORK.
- B. PRIOR TO DEMOLITION OR INSTALLATION OF NEW WORK, THE CONTRACTOR SHALL MAKE WRITTEN DOCUMENTATION IF UNFORESEEN CONDITIONS OCCUR IN THE EXISTING CONSTRUCTION. THESE UNFORESEEN CONDITIONS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW AND A WRITTEN RESPONSE BEFORE PROCEEDING WITH THE WORK.
- C. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL SHORING, PROPS, AND GUYS REQUIRED FOR THE TEMPORARY SUPPORT OF THE EXISTING STRUCTURE, UTILITIES, ETC. AS MAY BE NECESSARY TO SAFELY COMPLETE DEMOLITION OR NEW WORK.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING UTILITIES, BOTH CHARTED AND UNCHARTED BEFORE COMMENCING WITH ANY EXCAVATION OR DEMOLITION WORK. DEPTH OF CONCRETE SAW SHALL BE SET SO AS NOT TO CUT ANY LOCAL EMBEDDED OR UNDER-FLOOR PIPING OR WIRING WHICH IS TO REMAIN.
- E. ALL DRILLING, CUTTING, DEMOLITION OR OTHER MODIFICATIONS TO EXISTING CONSTRUCTION SHALL BE PERFORMED IN A MANNER THAT WILL NOT REDUCE THE STABILITY OR STRUCTURAL INTEGRITY OF THE EXISTING CONSTRUCTION. WHEN SAW CUTTING, SPECIAL CARE SHALL BE TAKEN TO NOT OVER CUT INTO AN EXISTING AREA OF STRUCTURE THAT WILL REMAIN.
- F. CORING FOR PIPING OR CONDUIT THROUGH EXISTING STRUCTURAL MEMBERS IS NOT ALLOWED UNLESS SPECIFICALLY SHOWN IN THE CONTRACT DOCUMENTS OR SPECIFICALLY ALLOWED BY THE STRUCTURAL ENGINEER IN WRITING.
- G. DAMAGE TO PORTIONS OF THE EXISTING STRUCTURE OR OTHER EXISTING BUILDING COMPONENTS CAUSED BY DEMOLITION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND TO A LEVEL ACCEPTABLE TO THE OWNER'S REPRESENTATIVE.
- H. WHEN EXISTING FOUNDATIONS ARE TO BE DEMOLISHED, EXCAVATION DEPTHS EXCEEDING 4 FEET SHALL BE BACKFILLED WITH PROPERLY COMPACTED CRUSHED STONE OR FLOWABLE FILL TO WITHIN 4 FEET OF THE REQUIRED FINISHED BACKFILL ELEVATION. THE REMAINING DEPTH OF BACKFILL SHALL BE COMPLETED WITH PROPERLY COMPACTED STRUCTURAL FILL AS OUTLINED IN THE FOUNDATION NOTES.
- I. THE PROJECT AREA SHALL BE MAINTAINED AS CLEAN AS POSSIBLE WITH DUST BEING LIMITED AS MUCH AS PRACTICAL.

6) DEFERRED SUBMITTALS

- A. SOME STRUCTURAL AND/OR OTHER BUILDING ELEMENTS ARE DESIGNATED AS VENDOR DESIGNS. THESE CONSTRUCTION DOCUMENTS HAVE NOT BEEN INCLUDED IN THE BUILDING PERMIT ISSUED BY THE BUILDING OFFICIAL AND REQUIRE THEIR DESIGN BE SUBSTANTIATED BY DEFERRED SUBMITTALS.
- B. DEFERRED DESIGN SUBMITTALS ARE TO BE SUBMITTED TO THE OWNER'S REPRESENTATIVE AND SHALL INCLUDE BOTH SHOP DRAWINGS AND SIGNED AND SEALED CALCULATIONS PERFORMED BY AN ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND EXPERIENCED IN THE DESIGN OF THE SPECIFIC BUILDING ELEMENT BEING SUBMITTED. THE FOLLOWING ITEMS ARE CONSIDERED DEFERRED SUBMITTALS:
- 1) STRUCTURAL STEEL CONNECTIONS
- 2) COLD-FORMED METAL FRAMING SYSTEMS
- 3) ROOF MOUNTED EQUIPMENT AND ASSOCIATED ANCHORAGES
- 4) ANALYSIS OF CONCRETE SLABS FOR SUPPORT OF PROPOSED LIFT EQUIPMENT (FOR KFC FILE ONLY, WILL NOT BE REVIEWED AND RETURNED)
- C. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING.
- D. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY BOTH THE OWNER'S REPRESENTATIVE AND THE BUILDING OFFICIAL.
- E. ADDITIONAL ITEMS IMPACTING STRUCTURAL DESIGN, INCLUDING BUT NOT LIMITED TO, ELEVATORS AND MECHANICAL EQUIPMENT WEIGHTS, SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR EVALUATION

7) FOUNDATION NOTES

- A. GEOTECHNICAL REPORT: A PREVIOUSLY SUBMITTED GEOTECHNICAL ENGINEERING SERVICES REPORT AND IBC-2015 PRESUMPTIVE SOIL INFORMATION HAS BEEN UTILIZED FOR THE NEW OFFICE ADDITION AT SOUTHGATE ELEMENTARY SCHOOL, IN MOORE, OKLAHOMA. THE GEOTECHNICAL REPORT WAS PERFORMED BY TERRACON CONSULTANTS, INC. (TERRACON), DATED SEPTEMBER 9, 2015 (TERRACON PROJECT NO. 03155149).
- B. SITE SUB-GRADE PREPARATION:
- 1) STRIPPING: VEGETATION, CONCRETE, DELETERIOUS MATERIALS, AND SOFT AND LOOSE SOIL IN THE CONSTRUCTION AREAS, SHALL BE STRIPPED FROM THE SITE. THE DEPTH OF REMOVAL SHALL BE DETERMINED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION. UTILITIES SHALL BE LOCATED AND REDROUT AS NECESSARY.
- 2) PROOF-ROLLING: AFTER STRIPPING AND MAKING ANY REQUIRED CUTS, BUT BEFORE PLACING FILL, THE CONSTRUCTION AREA SHALL BE PROOF-ROLLED WITH A TANDEN AXLE DUMP TRUCK WEIGHING AT LEAST 9 TONS/AXLE. THE PROOFROLLING SHOULD INVOLVE OVERLAPPING PASSES IN MUTUALLY PERPENDICULAR DIRECTIONS AND SOILS WHICH ARE OBSERVED TO RUT OR DEFLECT EXCESSIVELY UNDER THE MOVING LOAD SHALL BE UNDERCUT AND RECOMPACTED IN PLACE OR REPLACED WITH PROPERLY COMPACTED ENGINEERED FILL. THE RECOMPACTED SOIL OR STRUCTURAL FILL SHALL BE MOISTURE CONDITIONED DURING PLACEMENT. THE PROOF-ROLLING AND UNDERCUTTING ACTIVITIES SHALL BE WITNESSED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AND SHALL BE PERFORMED DURING A PERIOD OF DRY WEATHER.
- 3) SCARIFICATION: AFTER STRIPPING, MAKING ANY REQUIRED CUTS AND PROOF ROLLING, BUT BEFORE FILL PLACEMENT, THE EXPOSED SOILS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 8 INCHES AND THEN PROCESSED AT A MOISTURE CONTENT AT OR ABOVE ITS OPTIMUM VALUE AS DETERMINED BY THE STANDARD PROCTOR TEST. THE SUBGRADE SOILS SHALL BE RECOMPACTED TO AT LEAST 95 PERCENT OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D-698).
- 4) ACCEPTABLE FILL: STRUCTURAL FILL MATERIALS SHALL BE FREE OF ORGANIC OR OTHER DELETERIOUS MATERIAL, HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES, HAVE A LIQUID LIMIT NOT MORE THAN 35, A PLASTICITY INDEX IN THE RANGE OF 5 AND 18 AND FINE MATERIAL PASSING THE NO. 200 SEIVE NOT LESS THAN 60%.
- 5) FILL PLACEMENT: FILL SHALL BE PLACED IN MAXIMUM LIFTS OF 8 INCHES OF LOOSE MATERIAL AND SHALL BE COMPACTED WITHIN THE RANGE OF 2 PERCENTAGE POINTS BELOW AND 3 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT. EACH LIFT OF COMPACTED ENGINEERED FILL SHALL BE TESTED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS. THE EDGES OF COMPACTED FILL SHALL EXTEND 5 FEET LATERALLY BEYOND THE BUILDING FOOTPRINT PRIOR TO SLOPING ON AS FLAT A GRADIENT AS PRACTICAL. STRUCTURAL FILL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.
- 6) DEPTH OF FILL: THE FLOOR SLAB SHALL BE GRADE SUPPORTED ON 2'-0" OF PROPERLY COMPACTED STRUCTURAL FILL. THE SHALLOW FOUNDATIONS SHALL BEAR ON 2'-0" OF PROPERLY COMPACTED STRUCTURAL FILL.
- 7) FILL PLACEMENT TESTING: EACH LIFT OF COMPACTED FILL SHALL BE TESTED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS. FIELD DENSITY TESTS SHALL BE TAKEN AT A MINIMUM OF ONE PER EVERY 2500 SF, BUT AT LEAST THREE SETS OF DENSITY TESTS SHALL BE TAKEN FOR EACH LIFT.
- 8) SITE DRAINAGE: GRADING OF THE SITE AROUND THE STRUCTURE'S PADS SHALL BE ACCOMPLISHED TO ENABLE POSITIVE DRAINAGE AWAY FROM THE PADS BY PROVIDING AN ADEQUATE GRADIENT. THE SURFACE GRADIENT PROVIDED WILL BE DEPENDENT ON THE LANDSCAPING TYPE AND VEGETATION. WATER INFILTRATION AND SEEPAGE INTO THE FOUNDATION SHALL BE REDUCED AS MUCH AS POSSIBLE. IF IT IS POSSIBLE FOR WATER TO COLLECT BENEATH THE FOUNDATION AND FOUNDATION AREAS, IT WILL BE NECESSARY TO USE INTERCEPTOR DRAINS TO REMOVE THE COLLECTED WATER.
- 9) MAINTENANCE OF SOIL MOISTURE: SOIL MOISTURE SHALL BE MAINTAINED UP UNTIL CONCRETE PLACEMENT TO PREVENT SHRINKAGE AND SUBSEQUENT POST-CONSTRUCTION SWELL OF SUBGRADE SOILS.

A. SHALLOW FOUNDATIONS:

- 1) FOOTING DESIGN PARAMETERS: THE PROPOSED BUILDING SHALL BE SUPPORTED ON CONVENTIONAL SHALLOW FOUNDATIONS BASED ON THE FOLLOWING DESIGN PARAMETERS:
- A) BEARING MATERIAL: 2'-0" OF PROPERLY COMPACTED STRUCTURAL FILL AS OUTLINED ABOVE.
- B) ALLOWABLE BEARING PRESSURE: 1,500 PSF
- 2) OBSERVATION OF BEARING CONDITIONS: A GEOTECHNICAL ENGINEER SHALL OBSERVE THE FOUNDATION EXCAVATIONS PRIOR TO STEEL OR CONCRETE PLACEMENT TO DETERMINE IF THE FOUNDATION MATERIALS ARE CAPABLE OF SUPPORTING THE DESIGN LOADS AND ARE CONSISTENT WITH THE MATERIALS DISCUSSED ABOVE.
- 3) IMPROVEMENT OF BEARING CONDITIONS: SOFT OR LOOSE SOIL ZONES ENCOUTNRED AT THE BOTTOM OF THE FOOTING EXCAVATIONS SHALL BE REMOVED TO THE LEVEL OF STIFF OR DENSE SOIL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. CAVITIES FORMED AS A RESULT OF EXCAVATION OF SOFT OR LOOSE SOIL ZONES SHALL BE BACKFILLED WITH ENGINEERED FILL, LEAN CONCRETE OR FLOWABLE FILL, AS DETERMINED BY THE GEOTECHNICAL ENGINEER. CARE SHALL BE TAKEN TO PREVENT WETTING OR DRYING OF THE BEARING MATERIALS DURING CONSTRUCTION. ANY EXTREMELY WET OR DRY MATERIAL, OR ANY LOOSE OR DISTURBED MATERIAL IN THE BOTTOM OF THE FOOTING EXCAVATIONS SHALL BE REMOVED PRIOR TO PLACING CONCRETE.
- 4) TRENCHED FOOTINGS: EARTH-FORMED TRENCHED FOOTINGS ARE PERMITTED, EXCEPT WHERE BRICK LEDGES OR EXPOSED SURFACES REQUIRE FORMING AND/OR WHERE SOIL SIDE WALLS SLOUGH INTO THE TRENCH. IN ORDER TO ACHIEVE 3" MINIMUM CONCRETE COVER OVER STEEL REINFORCING ON SIDEWALLS, EARTH FORMED TRENCHES SHALL BE A MINIMUM OF 2" WIDER THAT THE FORMED DIMENSIONS SHOWN IN ALL SECTIONS AND DETAILS.
- 5) PIPE PENETRATIONS: ALL HORIZONTAL PIPE OR SIMILAR PENETRATIONS OR SLEEVES THROUGH FOOTINGS SHALL OCCUR WITHIN THE MIDDLE 1/3 OF THE FOOTING DEPTH. AT PENETRATIONS, PROVIDE (4) #5 DIAGONAL BARS AT EACH FOOTING FACE (3" CLEAR BETWEEN BAR AND PENETRATION AND 3" CLEAR FROM FOOTING BEARING). IF PENETRATION OCCURS NEAR THE BOTTOM OF THE FOOTING, REFER TYPICAL DETAILS FOR STANDARD DETAIL TO TRANSITION AND THICKEN FOOTING TO ACCOMMODATE PENETRATION.

- 4) TRENCHED FOOTINGS: EARTH-FORMED TRENCHED FOOTINGS ARE PERMITTED, EXCEPT WHERE BRICK LEDGES OR EXPOSED SURFACES REQUIRE FORMING AND/OR WHERE SOIL SIDE WALLS SLOUGH INTO THE TRENCH. IN ORDER TO ACHIEVE 3" MINIMUM CONCRETE COVER OVER STEEL REINFORCING ON SIDEWALLS, EARTH FORMED TRENCHES SHALL BE A MINIMUM OF 2" WIDER THAT THE FORMED DIMENSIONS SHOWN IN ALL SECTIONS AND DETAILS.
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E. SLAB-ON-GRADE CONSTRUCTION

- 1) SLAB THICKNESS AND REINFORCING: SLABS-ON-GRADE SHALL BE 4" THICK CONCRETE REINFORCED WITH #3 BARS AT 15" ON CENTER EACH WAY. REINFORCING BARS SHALL BE PLACED 1X" CLEAR FROM TOP OF SLAB USING CHAIRS OR SLAB BOLSTERS COMPLYING WITH CRSI'S "MANUAL OF STANDARD PRACTICE".
- 2) SLAB SUBGRADE: THE FLOOR SLAB SHALL BE GRADE-SUPPORTED AS OUTLINED IN THE SITE SUB-GRADE PREPARATION NOTES SHOWN ABOVE.
- 3) CONSTRUCTION MONITORING: CONSTRUCTION ACTIVITY MAY CAUSE DAMAGE AND DETEIORATION TO THE PREPARED SUBGRADE. A FIELD REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL OBSERVE THE FINAL SUBGRADE PRIOR TO PLACEMENT OF THE SLAB ON GRADE, PERFORM FURTHER TESTING AS NECESSARY, AND DETERMINE IF ANY REMEDIAL MEASURES ARE NECESSARY PRIOR TO SLAB PLACEMENT.
- 4) AGGREGATE BASE COURSE: A 4-INCH THICK, FREE-DRAINING AGGREGATE BASE COURSE SHALL BE PLACED BENEATH THE FLOOR SLAB TO ENHANCE DRAINAGE AND PROVIDE INCREASED SUBGRADE STRENGTH. AT THE TIME OF THE SLAB PLACEMENT, THE AGGREGATE BASE SHALL BE MOIST, BUT FREE OF ANY STANDING OR SELF-DRAINING WATER. THE AGGREGATE BASE COURSE MATERIAL SHALL MEET THE OKLAHOMA DEPARTMENT OF TRANSPORTATIONS STANDARD SPECIFICATION 701.3 TYPE "A" CRITERIA.

- 5) VAPOR RETARDER: A 15 MIL VAPOR RETARDER SHALL BE PLACED IMMEDIATELY BELOW THE CONCRETE SLAB. VAPOR RETARDER SHALL BE SEALED AT ALL LAPS AND SEALED TO PREVIOUSLY PLACED CONCRETE AS RECOMMENDED BY VAPOR RETARDER MANUFACTURER. BEFORE PLACING CONCRETE, PATCH AND SEAL ANY RIPS, TEARS OR HOLES IN VAPOR RETARDER INCURRED DURING CONSTRUCTION.
- 6) MOIST CURING OF SLAB: SLABS-ON-GRADE SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. CURING COMPOUNDS ARE EXPRESSLY PROHIBITED.
- 7) ISOLATION JOINTS: PROVIDE SLAB ISOLATION AROUND COLUMNS PENETRATING THE SLAB-ON-GRADE. PROVIDE 1/2 INCH PREMOLED EXPANSION JOINT MATERIAL AROUND PERIMETER OF ISOLATION JOINTS. REFER TO TYPICAL DETAILS AND ADDITIONAL INFORMATION.
- 8) SLAB JOINTS: SLAB JOINTS SHALL BE PROVIDED AS SHOWN ON THE PLANS AND TYPICAL DETAILS. THE FOLLOWING JOINT TYPES ARE SHOWN ON THE DRAWINGS:
- A) CJ = CONSTRUCTION JOINT
- B) SJ = SAWED CONTRACTION JOINT

F. FOUNDATION MISCELLANEOUS

- 1) GROUNDWATER CONDITIONS: GROUNDWATER WAS ENCOUNTERED IN THE BORINGS AT THE TIME OF DRILLING. HOWEVER, IT IS POSSIBLE THAT TRANSIENT OVER-SATURATED GROUND CONDITIONS COULD DEVELOP AT SHALLOW DEPTHS AT A LATER TIME DUE TO PERIODS OF HEAVY PRECIPITATION, LANDSCAPE WATERING, LEAKING WATER LINES, OR OTHER UNFORESEEN CAUSES. THE CONTRACTOR SHALL DETERMINE THE ACTUAL GROUNDWATER LEVELS AT TIME OF CONSTRUCTION. IF GROUNDWATER ISSUES ARE ENCOUNTERED DURING CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED.
- 2) DRAINAGE CONSIDERATIONS DURING CONSTRUCTION: DUE TO ADVERSE EFFECT ON STRUCTURE, FILL SHALL NOT BE ALLOWED TO COLLECT IN THE FOUNDATION EXCAVATION OR ON PREPARED SUBGRADE OF THE CONSTRUCTION AREA EITHER DURING OR AFTER CONSTRUCTION. UNDERCUT OR EXCAVATED AREAS SHALL BE SLOPED TOWARD ONE CORNER TO FACILITATE REMOVAL OF ANY COLLECTED RAINWATER, OR POSITIVE RUNOFF SHALL BE PROVIDED. THE CONTRACTOR SHALL EXERCISE CARE IN CREATING DRAINAGE PATHS FOR WATER DURING THE CONSTRUCTION PHASE OF THE PROJECT. TO REDUCE INFILTRATION OF SURFACE WATER AROUND THE PERIMETER OF THE BUILDING AND BENEATH THE FLOOR SLABS, POSITIVE DRAINAGE SHALL BE PROVIDED DURING ALL PHASES OF CONSTRUCTION.
- 3) FINAL SITE GRADING: PER SECTION 1804.4 OF IBC-2015, THE GROUND IMMEDIATELY ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET PERPENDICULAR TO THE PERIMETER OF THE WALL. IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10 FEET OF HORIZONTAL DISTANCE, A 5-PERCENT SLOPE SHALL BE PROVIDED TO AN APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM THE FOUNDATION. SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2-PERCENT WHERE LOCATED WITHIN 10 FEET OF THE BUILDING FOUNDATION. IMPERVIOUS SURFACES WITHIN 10 FEET OF THE BUILDING SHALL BE SLOPED A MINIMUM OF 2-PERCENT AWAY FROM THE BUILDING.
- 4) EXCAVATION AND TEMPORARY SLOPES: THE CONTRACTOR, DESIGNATED AS "RESPONSIBLE PERSON" IN OSHA CONSTRUCTION STANDARDS FOR EXCAVATIONS, 29 CFR PART 1926, IS SOLELY RESPONSIBLE FOR PLANNING AND IMPLEMENTING ALL SAFETY PROCEDURES. ALL EXCAVATION HEIGHT, SLOPE, AND DEPTH MUST ADHERE TO ALL SPECIFICATIONS OUTLINED IN LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. THE STRUCTURAL ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY OR ANY PARTY'S, INCLUDING THE CONTRACTOR'S, COMPLIANCE WITH THE APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS OR ANY OTHER APPLICABLE REGULATIONS.
- 5) TRENCH BACKFILL: ALL REQUIRED TRENCH BACKFILL SHALL BE ACCEPTABLE FILL MATERIAL AS DEFINED ABOVE AND SHALL BE MECHANICALLY COMPACTED IN LAYERS TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698. SOME SETTLEMENT OF THE BACKFILL MAY BE EXPECTED AND ANY UTILITIES WITHIN THE TRENCHES SHALL BE CONSTRUCTED TO ALLOW THESE DIFFERENTIAL MOVEMENTS. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 6) CONSTRUCTION MONITORING: A GEOTECHNICAL ENGINEER SHALL BE RETAINED TO PROVIDE OBSERVATIONS AND TESTING OF SOILS EXPOSED DURING PROJECT CONSTRUCTION IN ORDER TO VERIFY THAT SOIL CONDITIONS ARE AS ANTICIPATED. CONSTRUCTION ACTIVITIES PERTAINING TO EARTHWORK AND OTHER RELATED ACTIVITIES SHALL ALSO BE OBSERVED BY THE GEOTECHNICAL ENGINEER AS OUTLINED ABOVE.

8) CONCRETE CONSTRUCTION NOTES

- A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL CONCRETE SHALL BE DETAILED, FABRICATED, AND ERRECTED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.
- 1) ACI 117-10 "SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
- 2) ACI 301-10 "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
- 3) ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
- 4) ACI 347-04 "GUIDE TO FORMWORK FOR CONCRETE"
- 5) ACI SP-66(04) "ACI DETAILING MANUAL"
- 6) AWS D1.4-2011 "STRUCTURAL WELDING CODE - REINFORCING STEEL".
- 7) CRSI MSP-2018 "CRSI MANUAL OF STANDARD PRACTICE"
- B. CONCRETE MIXTURES:
- 1) CEMENTITIOUS MATERIALS
- A) OPTION 1 - ORDINARY PORTLAND CEMENT (OPC): ASTM C150 TYPE I OR II UNLESS SPECIFICALLY NOTED OTHERWISE.
- B) OPTION 2 - PORTLAND LESTONE CEMENT (PLC): ASTM C595 TYPE II UNLESS SPECIFICALLY NOTED OTHERWISE.
- C) FLY ASH: ASTM C618 CLASS C OR F. THE MAXIMUM PERCENTAGE OF FLY ASH SHALL NOT EXCEED 25 PERCENT OF THE TOTAL CEMENTITIOUS MATERIAL.
- 2) ALL CONCRETE MIXES SHALL BE COMPRISED OF NORMAL WEIGHT AGGREGATES CONFORMING TO ASTM C33, EXCEPT WHERE SPECIFICALLY INDICATED AS LIGHTWEIGHT, IN WHICH CASE AGGREGATES SHALL CONFORM TO ASTM C330.
- 3) MIXING WATER SHALL CONFORM TO ASTM C1062. MIXING WATER, INCLUDING THAT PORTION OF MIXING WATER CONTRIBUTED IN THE FORM OF FREE MOISTURE ON AGGREGATES, SHALL NOT CONTAIN DELETERIOUS AMOUNTS OF CHLORIDE IONS.
- 4) ADMIXTURES, IF USED, SHALL CONFORM TO THE FOLLOWING:
- A) WATER REDUCTION AND SETTING TIME MODIFICATION: ASTM C494.
- B) PRODUCING FLOWING CONCRETE: ASTM C1017.
- C) AIR ENTRAINMENT: ASTM C260.
- D) INHIBITTING CORROSION INDUCED CORROSION: ASTM C1582.
- E) MOISTURE VAPOR REDUCING ADMIXTURE, MVRA: ASTM C494.
- 5) MIX DESIGNS SHALL BE PROPORTIONED BASED ON THE FOLLOWING MIX CHARACTERISTICS:
- A) FOUNDATIONS
- 1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS F1
- 2) SULFATE EXPOSURE CATEGORY (S): CLASS S0
- 3) WATER EXPOSURE CATEGORY (W): CLASS W0
- 4) CORROSION PROTECTION CATEGORY (C): CLASS C1
- 5) 28-DAY COMPRESSIVE STRENGTH: 3,500 PSI
- 6) MAXIMUM WATER/CEMENT RATIO: 0.55
- 7) MAXIMUM AGGREGATE SIZE: 1 1/2 INCHES
- 8) TARGET AIR CONTENT: 4.5 PERCENT PLUS OR MINUS 1.5 PERCENT
- 9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENTITIOUS MATERIALS: 0.30

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CC

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BB

checked by

APRIL 2026

date

revisions



F) INSTALLED ADHESIVE ANCHORS SHALL BE SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES. ANCHORS DISPLACED BEFORE FULL ADHESIVE CURE SHALL BE CONSIDERED DAMAGED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

7) POST-INSTALLED ANCHORS AND DOWELS SHALL NOT BE BENT AFTER BEING INSTALLED UNLESS PERMITTED BY THE ENGINEER IN WRITING.

6. SPECIAL INSPECTION REQUIREMENTS

1) CONTINUOUS INSPECTIONS: ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION BY A CERTIFIED INSPECTOR SPECIFICALLY APPROVED FOR THAT PURPOSE BY THE BUILDING OFFICIAL.

2) PERIODIC INSPECTIONS: PERIODIC SPECIAL INSPECTIONS SHALL BE PROVIDED FOR ALL OTHER POST-INSTALLED ANCHORS NOT INCLUDED IN THE CONTINUOUS INSPECTIONS REQUIRED ABOVE.

3) REPORTING REQUIREMENTS: THE SPECIAL INSPECTOR SHALL FURNISH A REPORT TO THE ENGINEER AND BUILDING OFFICIAL THAT THE WORK COVERED BY THE REPORT HAS BEEN PERFORMED AND THAT THE MATERIALS AND INSTALLATION PROCEDURES USED CONFORM WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).

10) STEEL CONSTRUCTION NOTES

A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.

- AISC 303-16 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
- AISC 341-16 "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS"
- AISC 360-16 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
- AWS D1.1-2015 "STRUCTURAL WELDING CODE - STEEL"
- RCSC-2014 "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS"

B. CONNECTION DESIGN BY FABRICATOR:

1) THE FABRICATOR SHALL RETAIN A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED, WHO SHALL DESIGN ALL CONNECTIONS AND SPlice CONNECTIONS SHOWN, NOT SHOWN, OR ONLY PARTIALLY DETAILED ON THE DRAWINGS.

2) CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE FACTORED END REACTIONS SHOWN ON THE DRAWINGS. WHERE END REACTIONS ARE NOT SHOWN OR OTHERWISE SPECIFIED, CONNECTIONS SHALL BE DESIGNED TO SUPPORT A FACTORED END SHEAR OF THE GREATER OF 10 KIPS OR 50% OF THE TOTAL FACTORED UNIFORM LOAD CAPACITY SHOWN IN THE MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN SHAPE, SPAN AND THE SPECIFIED STEEL.

3) IF NOT FULLY DETAILED ON THE DRAWINGS, DESIGN GIRT CONNECTIONS FOR MINIMUM CONCURRENT REACTIONS OF 6K KIP VERTICAL AND 6K HORIZONTAL (I.E., OUT-OF-PLANE) UNLESS HIGHER REACTIONS ARE INDICATED ON DRAWINGS.

4) ALL CONNECTION PLATES, STIFFENERS AND BOLTS SHOWN ON THE DRAWINGS ARE SCHEMATIC ONLY. FABRICATOR SHALL DESIGN ALL CONNECTIONS, SPLICES, PLATES, GUSSET PLATES, STIFFENERS, BOLTS AND WELDS FOR FORCES INDICATED ON DRAWINGS IN ADDITION TO THE REQUIREMENTS OF THE AISC DESIGN SPECIFICATION (LRFD PROVISIONS). IN ALL CASES, A MINIMUM 3/8" PLATE AND A MINIMUM OF (2) 3/4" DIAMETER A325 BOLTS SHALL BE PROVIDED.

5) FULL-DEPTH STIFFENER PLATES IN COLUMNS OR BEAMS SHALL MATCH THE YIELD STRENGTH OF THE BASE MEMBER.

6) CONNECTIONS FOR FRAMING MEMBERS WITH BOTH GRAVITY LOADS (REACTIONS) AND AXIAL LOADS OR TRANSFER FORCES (TENSION OR COMPRESSION) SHALL BE DESIGNED FOR THE COMBINED EFFECT OF BOTH LOADS. NOTE THAT BOLTS IN CONNECTIONS WITH AXIAL LOADS SHALL BE EITHER BEARING TYPE IN STANDARD HOLES OR SLIP-CRITICAL TYPE IN SHORT-SLOTTED HOLES.

7) THE FABRICATOR SHALL SUBMIT IN A TIMELY MANNER REPRESENTATIVE SAMPLES OF SUBSTANTIATING CONNECTION INFORMATION TO THE OWNER'S REPRESENTATIVE. THE OWNER'S REPRESENTATIVE WILL REVIEW AND CONFIRM IN WRITING THAT THESE REPRESENTATIVE SAMPLES ARE CONSISTENT WITH THE REQUIREMENTS IN THE CONTRACT DOCUMENTS, OR SHALL ADVISE WHAT MODIFICATIONS ARE REQUIRED TO BRING THE REPRESENTATIVE SAMPLES INTO COMPLIANCE WITH THE REQUIREMENTS IN THE CONTRACT DOCUMENTS. THIS INITIAL SUBMITTAL AND REVIEW IS IN ADDITION TO AND SHALL PRECEDE THE SUBMISSION OF COMPLETE SUBSTANTIATING CONNECTION INFORMATION WITH THE SHOP AND ERECTION DRAWINGS.

8) COMPLETE SUBSTANTIATING CONNECTION INFORMATION SHALL BE SUBMITTED PRIOR TO OR CONCURRENTLY WITH THE SHOP AND ERECTION DRAWINGS.

A) THE LICENSED PROFESSIONAL ENGINEER IN RESPONSIBLE CHARGE OF THE CONNECTION DESIGN SHALL REVIEW AND CONFIRM IN WRITING AS PART OF THE SUBSTANTIATING CONNECTION INFORMATION, THAT THE SHOP AND ERECTION DRAWINGS PROPERLY INCORPORATE THE CONNECTION DESIGNS.

B) THE FABRICATOR SHALL PROVIDE A MEANS BY WHICH THE SUBSTANTIATING CONNECTION INFORMATION IS REFERENCED TO THE RELATED CONNECTIONS ON THE SHOP AND ERECTION DRAWINGS FOR THE PURPOSE OF REVIEW

C) SUBMITTALS NOT COMPLYING WITH THESE REQUIREMENTS WILL BE RETURNED UNREVIEWED.

D) IF CONNECTION CALCULATIONS ARE SUBMITTED CONCURRENTLY WITH THE CORRESPONDING SHOP DRAWINGS, THE ENGINEER-OF-RECORD'S REVIEW TIME FOR THE COMBINED SUBMITTAL SHALL BE INCREASED TO THREE (3) WEEKS.

C. STRUCTURAL BOLTS, ANCHOR RODS & BASE PLATES:

1) STEEL CONTRACTOR SHALL FURNISH ERECTION BOLTS AS REQUIRED FOR FIELD CONNECTIONS.

2) ALL BOLTS SHALL BE 3/4 IN. DIAMETER ASTM A325 WITH SUITABLE WASHERS AND NUTS UNLESS OTHERWISE SHOWN IN THE CONSTRUCTION DOCUMENTS OR APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.

3) ALL BOLTS SHALL BE TIGHTENED TO THE SNUG-TIGHTENED JOINT REQUIREMENTS OF RCSC-10 EXCEPT AT SLIP-CRITICAL JOINTS OR WHERE NOTED OTHERWISE IN CONSTRUCTION DOCUMENTS OR IN FABRICATOR'S CONNECTION DESIGN.

4) UNLESS OTHERWISE INDICATED IN THE DRAWINGS, ALL ANCHOR RODS SHALL CONFORM TO THE SPECIFIED MATERIAL GRADE SHALL BE A MINIMUM 3/4 INCH DIAMETER WITH A MINIMUM FOUNDATION EMBEDMENT AS INDICATED IN STRUCTURAL DETAILS. THE EMBEDDED END SHALL HAVE EITHER A STANDARD BOLT HEAD, A HEAVY HEX NUT WITH THE THREADS SPOILED ABOVE AND BELOW THE NUT, OR JAMMED DOUBLE NUTS.

5) PRIOR TO PLACING CONCRETE, STEEL PLATE TEMPLATES SHALL BE PROVIDED TO FACILITATE PLACEMENT OF ANCHOR RODS IN DETAILED PLAN POSITIONS AND ELEVATIONS.

6) BASE PLATES SHALL BE LEVELED WITH LEVELING NUTS AND OVERSIZED WASHER PLATES OR WITH SHIM PACKS AT THE ERECTOR'S OPTION.

7) AFTER FINAL BASE PLATE POSITIONING, ANCHOR ROD NUTS SHALL BE INSTALLED TO A SNUG-TIGHT CONDITION AND WASHER PLATES SHALL BE FIELD WELDED AS INDICATED IN THE CONSTRUCTION DOCUMENTS.

D. STEEL FABRICATION & FINISH:

1) SHOP DRAWINGS SHALL BE SUBMITTED TO AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING FABRICATION. ANY FABRICATION INITIATED PRIOR TO APPROVAL OF SHOP DRAWINGS WILL BE AT THE SOLE RISK OF THE FABRICATOR.

2) ALL SHOP AND FIELD WELDS SHALL BE MADE IN ACCORDANCE WITH AWS D1.1. ALL WELDING SHALL USE LOW HYDROGEN PROCESSES.

D. APPROVED ANCHORING PRODUCTS: THE ANCHORING SYSTEMS SHOWN BELOW HAVE BEEN USED IN THE ANCHOR DESIGNS SHOWN IN THE CONSTRUCTION DOCUMENTS. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, AND INSTALLATION TEMPERATURE.

1) ANCHORAGE TO CONCRETE

A) ADHESIVE ANCHORS:

- HILTI HIT-HY 200 SYSTEM WITH HILTI HIT-Z ROD OR HAS-E THREADED ROD [ICC ESR-3187].
- HILTI HIT-RE 500 V3 SYSTEM WITH HILTI HAS-E THREADED ROD [ICC ESR-3814].

B) MEDIUM DUTY MECHANICAL ANCHORS:

- HILTI KWIK HUS-EZ AND KWIK HUS-EZ I SCREW ANCHORS [ICC ESR-3027]
- HILTI KWIK BOLT-TZ EXPANSION ANCHORS [ICC ESR-1917].
- HILTI KWIK BOLT 3 EXPANSION ANCHORS (UNCRACKED CONCRETE ONLY) [ICC ESR-2302]

C) HEAVY DUTY MECHANICAL ANCHORS:

- HILTI HDA UNDERCUT ANCHORS [ICC ESR-1546]
- HILTI HSL-3 EXPANSION ANCHORS [ICC ESR-1545]

2) REBAR DOWELING INTO CONCRETE

A) ADHESIVE ANCHORS:

- HILTI HIT-HY 200 SYSTEM WITH CONTINUOUSLY DEFORMED REBAR [ICC ESR-3187].
- HILTI HIT-RE 500 V3 SYSTEM WITH CONTINUOUSLY DEFORMED REBAR [ICC ESR-3814].

E. PREPARATION PRIOR TO INSTALLATION

1) CURING OF BASE MATERIAL: DO NOT DRILL OR CORE HOLES INTO SUPPORTING CONCRETE OR MASONRY MATERIALS UNTIL THE CONCRETE, MORTAR AND/OR GROUT HAVE BEEN ADEQUATELY CURED TO ACHIEVE FULL DESIGN STRENGTH. IN NO CASE SHALL ANCHORS BE INSTALLED PRIOR TO THE CONCRETE HAVING AN AGE OF LESS THAN 21 DAYS.

2) TEMPERATURE OF BASE MATERIAL: THE CONCRETE TEMPERATURE AT THE TIME OF ADHESIVE ANCHOR INSTALLATION SHALL BE AT LEAST 50°F (10°C) UNLESS TESTING HAS BEEN CONDUCTED IN ACCORDANCE WITH RECOGNIZED CRITERIA TO VERIFY PERFORMANCE IN CONCRETE AT LOWER TEMPERATURES.

3) AVOIDANCE OF EMBEDDED ITEMS: PRIOR TO DRILLING OR CORING OPERATIONS, THE CONTRACTOR SHALL LOCATE AND MARK ALL POTENTIALLY CONFLICTING REINFORCING BARS, UTILITIES AND OTHER EMBEDDED ITEMS BY INDUCTION SCANNING, GROUND PENETRATING RADAR, X-RAY, OR OTHER APPROVED NON-DESTRUCTIVE METHOD. CONTRACTOR SHALL AVOID DRILLING OR CORING HOLES THAT MAY DAMAGE THESE EMBEDDED ITEMS. NOTIFY THE ENGINEER IF CONFLICTING EMBEDDED ITEMS DO NOT ALLOW INSTALLATION OF POST-INSTALLED ANCHORS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND/OR APPROVED SHOP DRAWINGS.

4) CARTRIDGE STORAGE: ADHESIVE CARTRIDGES SHALL BE STORED UNDER CONDITIONS IN COMPLIANCE WITH MANUFACTURER RECOMMENDATIONS REGARDING TEMPERATURE, EXPOSURE TO SUNLIGHT, ETC. AND EVIDENCE OF COMPLIANCE SHALL BE MADE AVAILABLE UPON REQUEST. THE USE OF EXPIRED ADHESIVE, AS INDICATED BY THE EXPIRATION DATE ON THE CARTRIDGE, IS PROHIBITED.

5) INSTALLATION EQUIPMENT: THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT REQUIRED TO INSTALL THE EXPANSION AND/OR ADHESIVE ANCHOR INCLUDING, BUT NOT LIMITED TO, DRILLS, SETTING TOOLS, CLEAN-OUT BRUSHES, BLOWOUT BULBS, OIL-FREE COMPRESSED AIR, VACUUMS, WRENCHES, ETC.

F. INSTALLATION

1) ALL DRILLING AND CORING EQUIPMENT AND ALL METHODS FOR INSTALLATION OF POST-INSTALLED ANCHORS AND DOWELS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).

2) UNLESS OTHERWISE SPECIFIED, ANCHORS SHALL BE INSTALLED IN HOLES DRILLED WITH A ROTARY IMPACT HAMMER DRILL OR, WHERE NOT OTHERWISE PROSCRIBED, A ROCK DRILL. IN ALL CASES, THE BIT DIAMETER SHALL BE IN ACCORDANCE WITH THE MPII.

3) EMBEDMENT DEPTH AND MINIMUM ANCHOR PROJECTION OF THE ANCHOR ELEMENT FROM THE CONCRETE SURFACE SHALL BE AS SHOWN ON THE DRAWING OR DETAIL FOR THE PARTICULAR ANCHOR OR GROUP OF ANCHORS BEING INSTALLED.

4) ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGES OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS. ANCHOR SPACING AND EDGE DISTANCE VALUES SHALL NOT BE LESS THAN RECOMMENDED BY THE ANCHOR MANUFACTURER.

5) HOLES FOR POST-INSTALLED ANCHORS:

A) UNLESS SPECIFICALLY SHOWN OTHERWISE, ALL HOLES SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE OR MASONRY SURFACE.

B) ANCHOR HOLES SHALL BE THOROUGHLY CLEANED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN THE MPII PRIOR TO ADHESIVE INJECTION. AT A MINIMUM, THIS SHALL CONSIST OF CLEANING WITH OIL-FREE AND MOISTURE-FREE COMPRESSED AIR, USING A NOZZLE EXTENDED TO THE BOTTOM HOLE, SUPPLEMENTED WITH A BRUSH OR OTHER TOOL CLEANING TO REMOVE ALL CONCRETE DUST AND LOOSE MATERIAL, AND FOLLOWED BY A SECOND COMPRESSED AIR CLEANING. THIS IS COMMONLY KNOWN AS BLOW-BRUSH-BLOW OR BBB. SOME ANCHOR MANUFACTURERS HAVE DEVELOPED VACUUM SYSTEMS THAT REPLACE THE TRADITIONAL BBB APPROACH.

C) DRILLED AND CLEANED ANCHOR HOLES SHALL BE PROTECTED FROM CONTAMINATION AND WATER (E.G. RAIN) UNTIL THE ADHESIVE IS INSTALLED.

D) A DRILLED ANCHOR HOLE SHALL BE RE-CLEANED JUST PRIOR TO ADHESIVE INJECTION IF, IN THE OPINION OF THE ENGINEER, INSPECTOR, OR OWNER'S REPRESENTATIVE, THE HOLE HAS BECOME CONTAMINATED AFTER INITIAL CLEANING.

6) INSTALLATION OF ADHESIVE ANCHORS:

A) ADHESIVE ANCHORS WITH DIAMETER GREATER THAN 3/8-INCH INSTALLED IN ORIENTATIONS FROM HORIZONTAL TO VERTICAL SHALL EMPLOY A PISTON PLUG FOR THE ADHESIVE INJECTION.

B) ADHESIVE SHALL BE INJECTED IN ACCORDANCE WITH THE MPII USING EQUIPMENT AND PROCEDURES AS SPECIFIED THEREIN FOR THE SPECIFIC CONDITIONS ASSOCIATED WITH THE INJECTION. THIS SHALL BE CLEARLY SPECIFIED IN THE MPII, IF NOT, ANOTHER PRODUCT SHALL BE PROPOSED FOR USE.

C) ANCHOR ELEMENTS TO BE INSTALLED IN THE ADHESIVE SHALL BE CLEAN, OIL-FREE, AND FREE OF LOOSE RUST, PAINT, OR OTHER COATINGS.

D) THREADS ON THE PROJECTING PORTION OF THE ANCHOR ELEMENT SHALL BE PROTECTED FROM ADHESIVE CONTAMINATION.

E) UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS, ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE SURFACE.

- B) SLABS-ON-GRADE
- FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS FO
 - SULFATE EXPOSURE CATEGORY (S): CLASS SO
 - WATER EXPOSURE CATEGORY (W): CLASS WO
 - CORROSION PROTECTION CATEGORY (C): CLASS CO
 - 28-DAY COMPRESSIVE STRENGTH: 4,000 PSI
 - MAXIMUM WATER/CEMENT RATIO: 0.45
 - MAXIMUM AGGREGATE SIZE: 1 1/2-INCHES
 - TARGET AIR CONTENT: DO NOT ALLOW AIR CONTENT OF TROWEL-FINISHED FLOORS TO EXCEED 3 PERCENT
 - MVRA IS REQUIRED IN ALL SLAB-ON-GRADE POURS.
 - MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENTITIOUS MATERIALS: 1.00

6) CONCRETE MIX PROPORTIONS SHALL BE ESTABLISHED IN ACCORDANCE WITH ARTICLE 4.2.3 OF ACI 301 SO THAT THE CONCRETE SATISFIES THE FOLLOWING THREE REQUIREMENTS:

A) THE CONCRETE CAN BE PLACED READILY WITHOUT SEGREGATION INTO FORMS AND AROUND REINFORCEMENT UNDER ANTICIPATED PLACEMENT CONDITIONS. THE CONCRETE PRODUCER SHALL DETERMINE WHETHER ADMIXTURES ARE NECESSARY FOR WATER REDUCTION, SET TIME, OR SLUMP REQUIREMENTS.

B) THE CONCRETE SHALL MEET REQUIREMENTS FOR THE ASSIGNED EXPOSURE CLASSES OUTLINED HEREIN.

C) THE CONCRETE SHALL CONFORM TO STRENGTH TEST REQUIREMENTS FOR STANDARD-CURED SPECIMENS.

7) DOCUMENTATION OF CONCRETE MIXTURE CHARACTERISTICS SHALL BE SUBMITTED FOR REVIEW BEFORE THE MIXTURE IS USED. EVIDENCE OF THE ABILITY OF THE PROPOSED MIXTURE TO COMPLY WITH THE CONCRETE MIXTURE REQUIREMENTS IN THE CONSTRUCTION DOCUMENTS SHALL BE INCLUDED IN THE SUBMITTAL. THE EVIDENCE SHALL BE BASED ON FIELD TEST RECORDS OR LABORATORY TRIAL BATCHES.

C. CONCRETE REINFORCING:

1) ALL DETAILING, FABRICATION, AND PLACING OF REINFORCING STEEL, UNLESS OTHERWISE NOTED, SHALL FOLLOW ALL SECTIONS OF ACI MNL-66, ACI 318, AND THE CRSI MSP.

2) UNLESS OTHERWISE NOTED, LAP SPLICES OF DEFORMED REINFORCING BARS SHALL CONFORM TO ACI REQUIREMENTS FOR CLASS B TENSION SPLICES. REFER TO LAP LENGTH SCHEDULES FOR TYPICAL LAP REQUIREMENTS.

3) PROVIDE CORNER BARS IN BOTH FACES OF ALL CONTINUOUS GRADE BEAMS, FOOTINGS AND WALLS. NUMBER, SIZE, AND SPACING OF CORNER BARS SHALL BE EQUAL TO NUMBER, SIZE AND SPACING OF HORIZONTAL REINFORCING WITH WHICH THEY LAP AND SHALL HAVE CLASS B TENSION LAP SPLICES IN EACH DIRECTION. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

4) AT INTERSECTING FOUNDATIONS, EXTEND ALL HORIZONTAL REINFORCING OF THE INTERSECTING MEMBERS BEYOND THE POINT OF INTERSECTION TO THE OPPOSITE FACE. BEND TO A STANDARD 90 DEGREE HOOK OR PROVIDE BENT DOWELS OF EQUAL SIZE AND SPACING AND LAP AS REQUIRED FOR A CLASS B TENSION SPLICE (BUT NOT LESS THAN 12") IN EACH DIRECTION. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

5) PROVIDE TIES COMPLYING WITH ACI 318 IN ALL CONCRETE COLUMNS AND PILASTERS. EVERY CORNER AND ALTERNATING LONGITUDINAL BAR SHALL HAVE A LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE WITH AN INCLUDED ANGLE ON NOT MORE THAN 135-DEGREES. NO UNSUPPORTED LONGITUDINAL BAR SHALL BE FARTHER THAN 6-IN. CLEAR ON EACH SIDE ALONG THE TIE FROM A LATERALLY SUPPORTED BAR.

6) CONCRETE COVER OVER STEEL REINFORCING FOR NON-PRESTRESSED CAST-IN-PLACE CONSTRUCTION SHALL CONFORM TO THE "MINIMUM CONCRETE COVER FOR CAST-IN-PLACE NON-PRESTRESSED CONCRETE MEMBERS" TABLE PROVIDED IN THE TYPICAL DETAILS.

D. OPENINGS IN CONCRETE STRUCTURES:

1) THE SIZE AND LOCATION OF ALL FLOOR PITTS, TRENCH DRAINS, AND OPENINGS FOR ALL DUCTS AND PIPES THROUGH WALLS, FLOORS, AND FOUNDATION WORK SHALL BE VERIFIED WITH THE MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL CONTRACTOR'S REQUIREMENTS PRIOR TO THE START OF ANY CONCRETE WORK.

E. JOINTS IN CONCRETE CONSTRUCTION:

1) CONCRETE SLABS-ON-GRADE: REFER TO SLAB-ON-GRADE CONSTRUCTION NOTES FOR INFORMATION REGARDING JOINTS.

2) CURING AT CONSTRUCTION JOINTS: CONCRETE POURS EITHER SIDE OF CONSTRUCTION JOINTS SHALL NOT BE CONCURRENT. CONCRETE SHALL BE ALLOWED TO CURE A MINIMUM OF 7 DAYS PRIOR TO PLACEMENT OF ADJACENT CONCRETE.

F. CONCRETE MISCELLANEOUS:

1) SURFACE FINISH: ALL HORIZONTAL CONCRETE SURFACES SHALL HAVE A TROWELED FINISH UNLESS NOTED OTHERWISE IN ARCHITECTURAL DRAWINGS OR FLOORING SPECIFICATIONS. AT STAIR TREAD PLACEMENTS PROVIDE A FINE BROOM FINISH TRANSVERSE TO THE RISERS UNLESS NOTED OTHERWISE.

2) MOIST CURING OF SLABS: SLABS-ON-GRADE SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. CURING COMPOUNDS ARE EXPRESSLY PROHIBITED.

3) VAPOR EMISSION LIMITS: IT IS THE CONTRACTOR'S RESPONSIBILITY TO PLAN AND DETERMINE THE MEANS AND METHODS NECESSARY FOR LIMITING VAPOR EMISSIONS TO AN ACCEPTABLE RANGE AS REQUIRED BY FLOOR FINISH MANUFACTURERS.

9) POST-INSTALLED ANCHORS AND DOWELS

A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL POST-INSTALLED ANCHORS AND DOWELS SHALL BE DETAILED, FABRICATED, AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.

- ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE."
- ACI 355.2-07 "QUALIFICATION OF POST-INSTALLED MECHANICAL ANCHORS IN CONCRETE."
- ACI 355.4-11 "QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE."

B. QUALIFICATION REQUIREMENTS FOR INSTALLERS

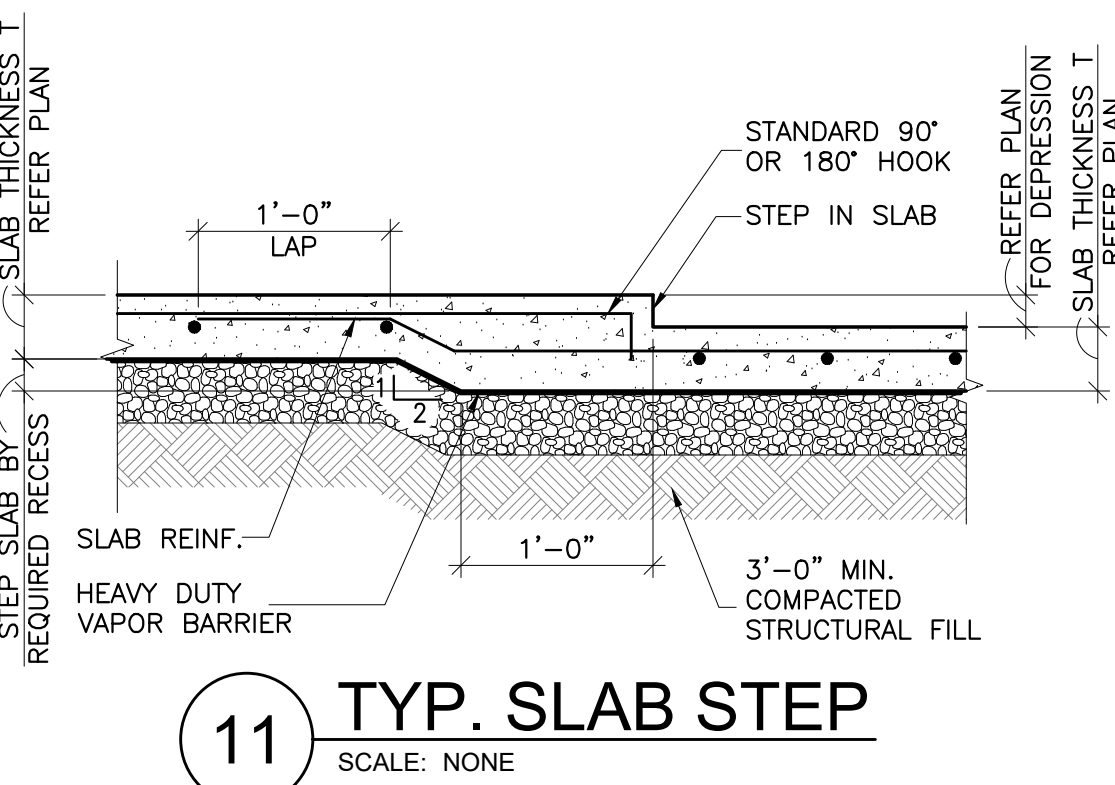
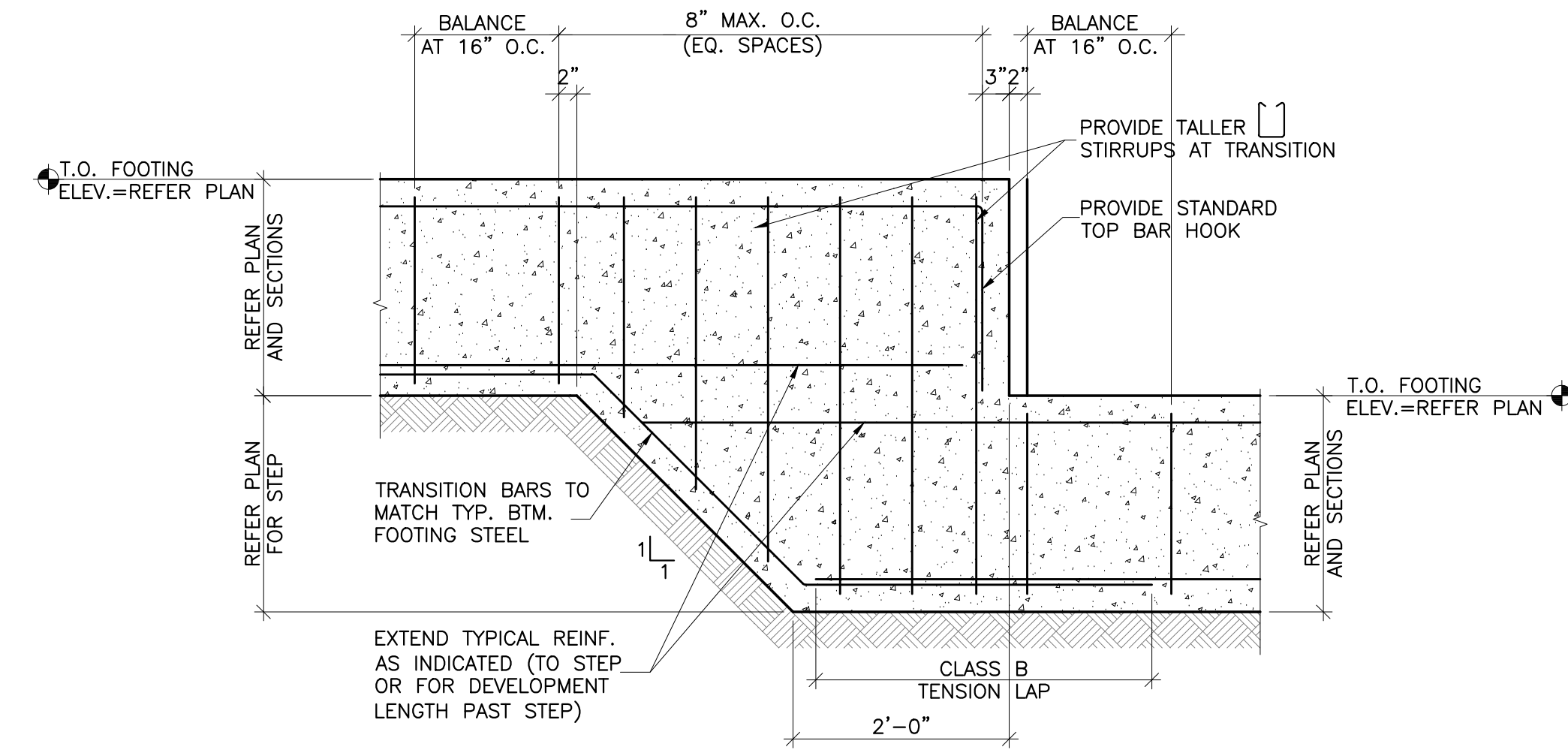
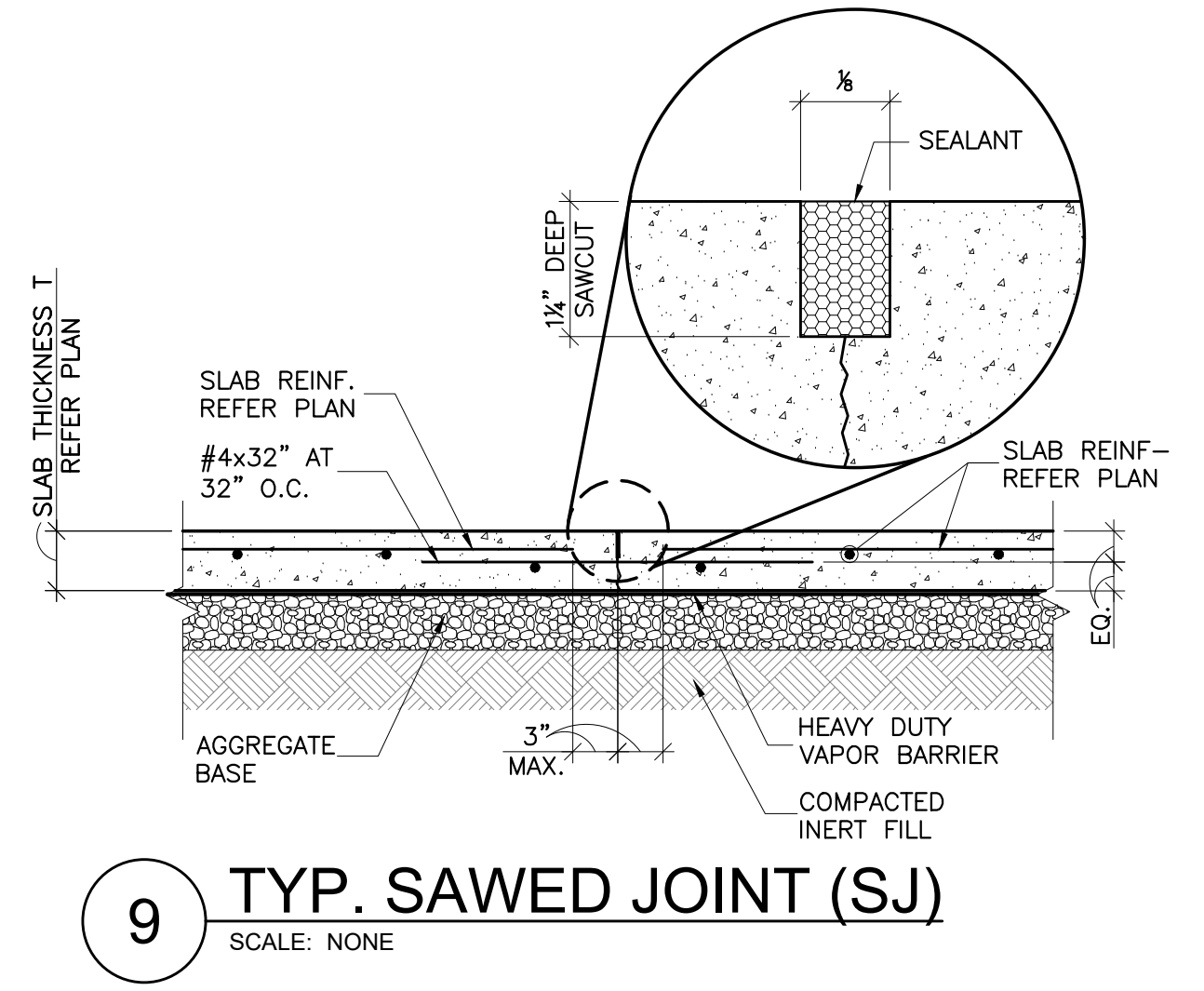
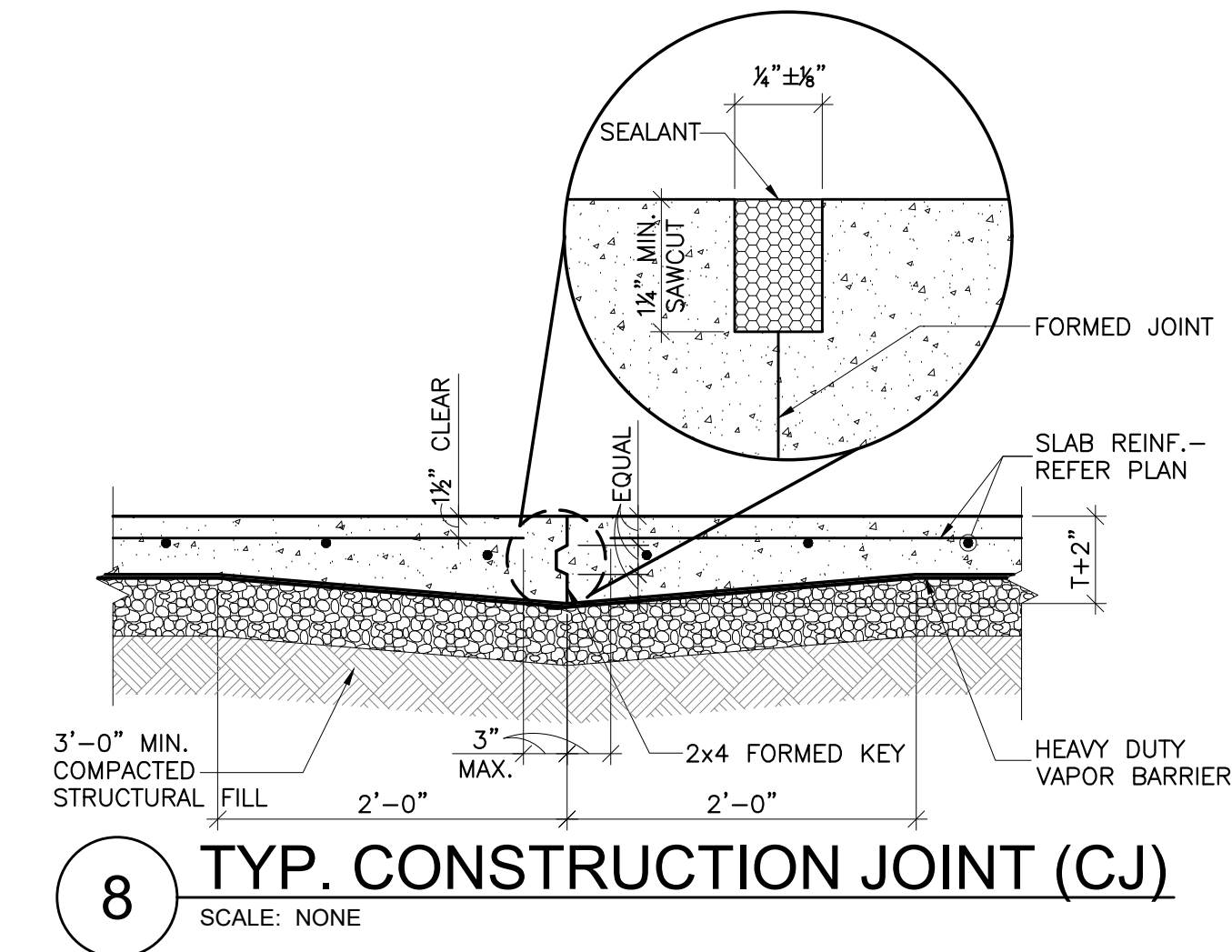
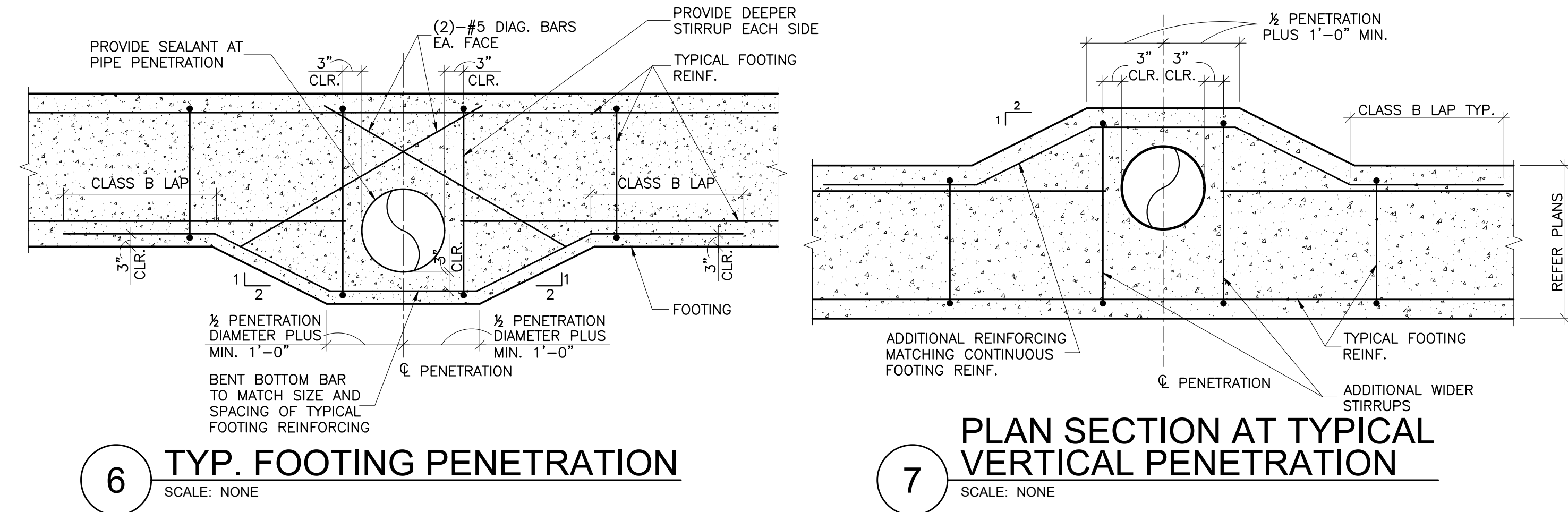
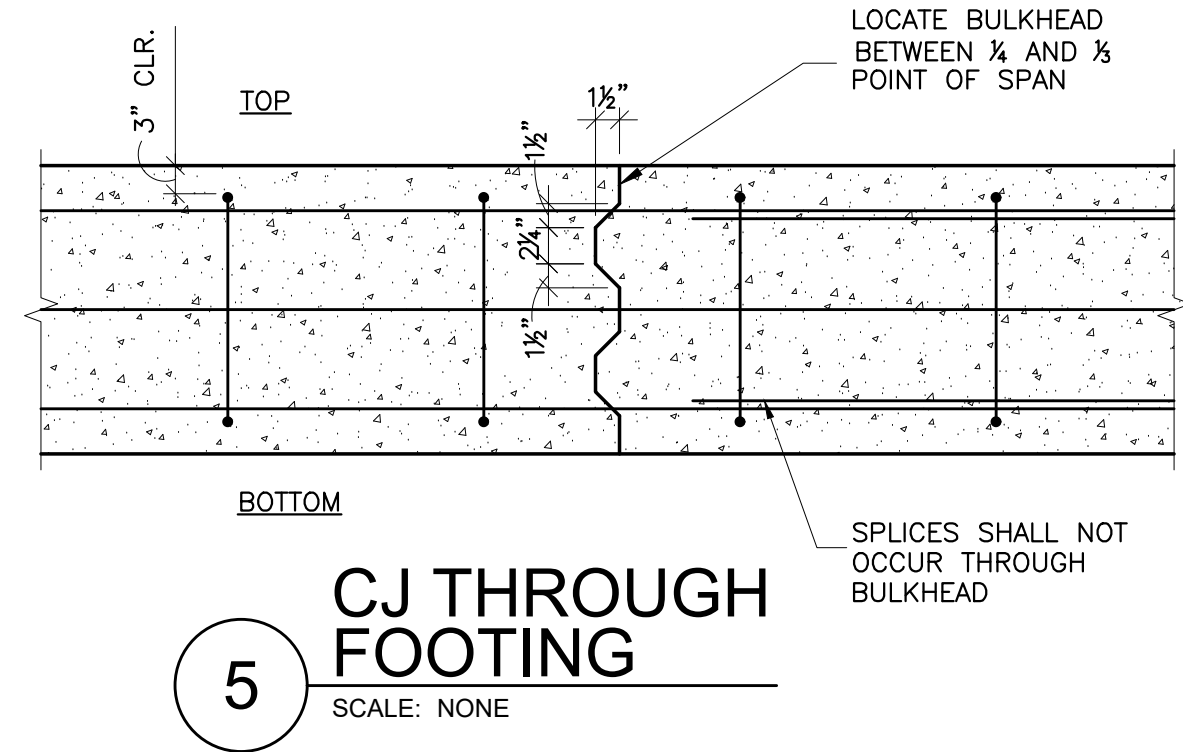
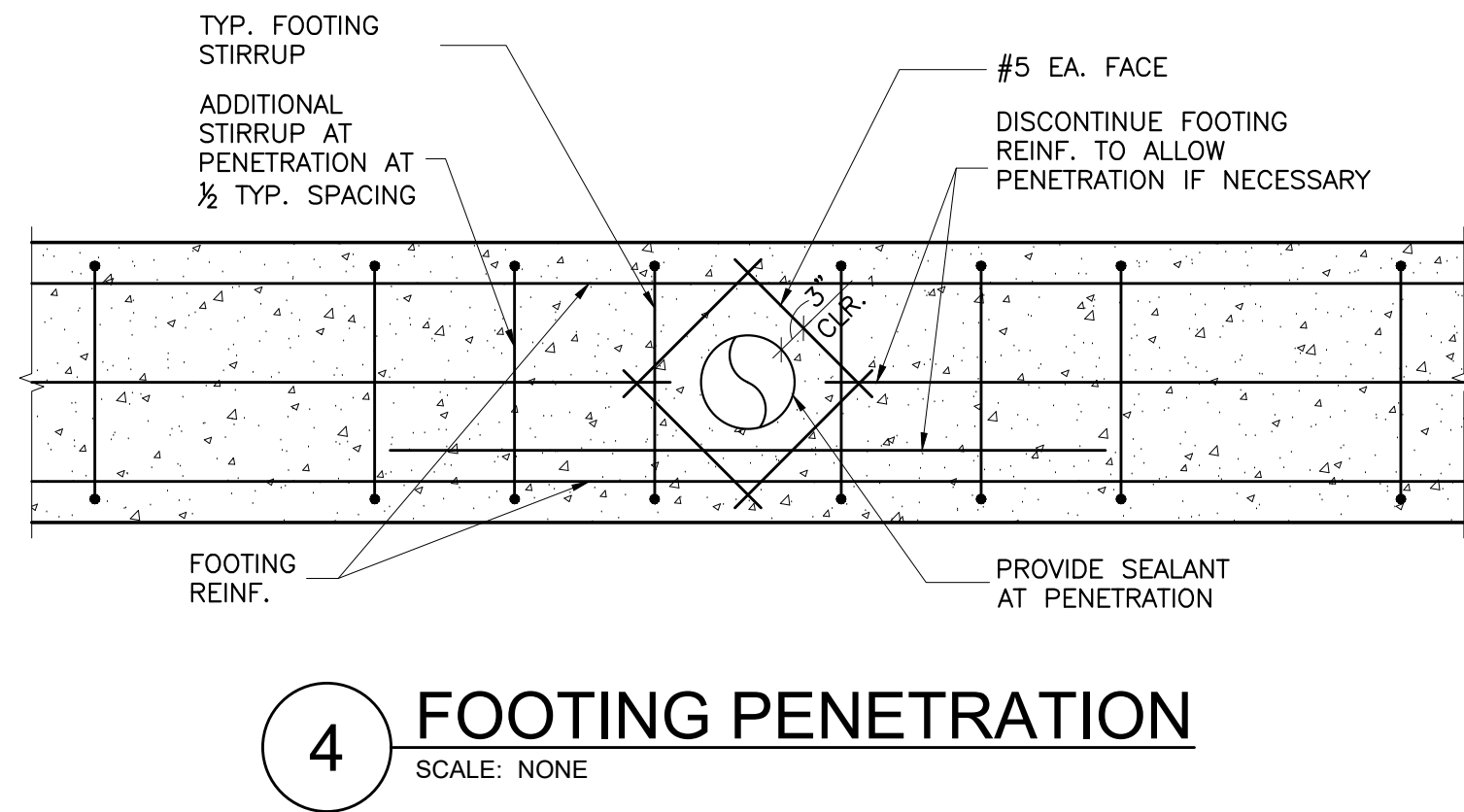
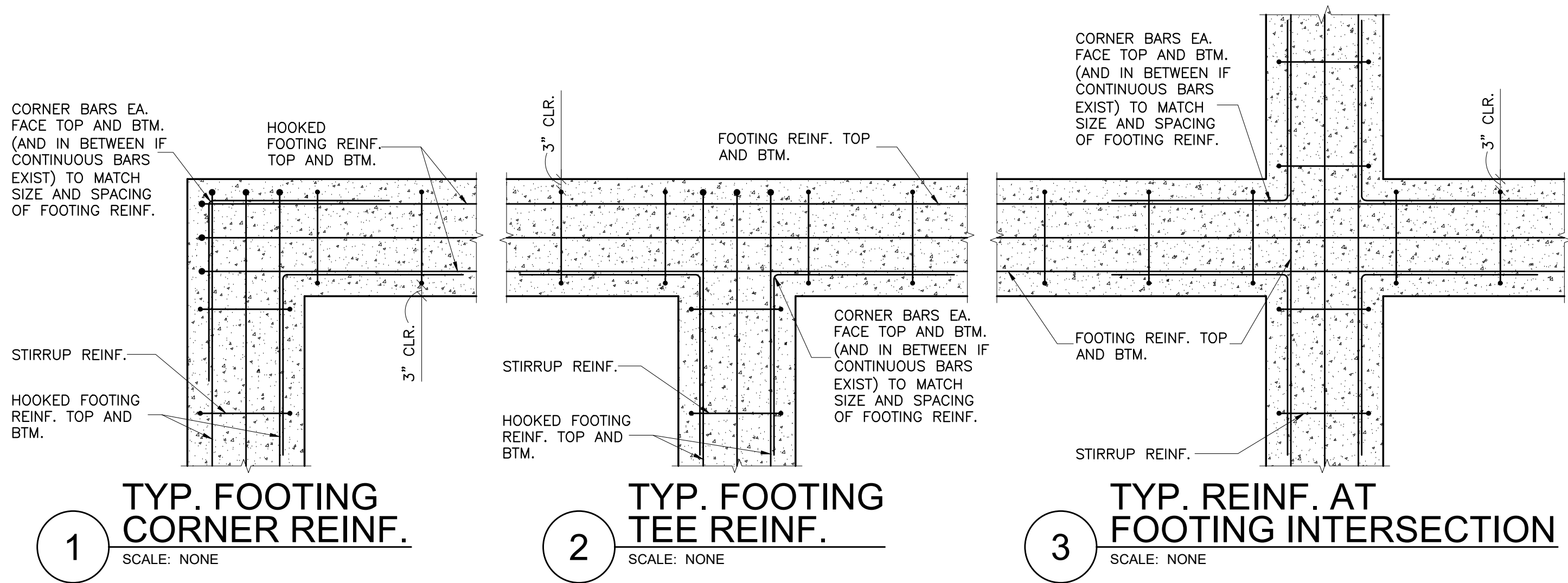
1) CONTRACTOR SHALL REQUEST, SCHEDULE AND FACILITATE THE ANCHOR AND/OR ADHESIVE MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL THE MANUFACTURER'S SPECIFIED ANCHORING PRODUCTS. THE ENGINEER MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S ANCHOR INSTALLATION PERSONNEL ARE TRAINED PRIOR TO COMMENCEMENT OF ANCHOR INSTALLATION OPERATIONS.

2) INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY AN APPLICABLE CERTIFICATION PROGRAM. CERTIFICATION SHALL INCLUDE WRITTEN AND PERFORMANCE TESTS IN ACCORDANCE WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER (AAI) CERTIFICATION PROGRAM, OR EQUIVALENT, WHEN APPLICABLE. SOME DOWN-HOLE INSTALLATIONS SHOWN ON DRAWINGS SUPPORTING SUSTAINED TENSION LOADS ARE DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALLOUT AND SHALL ALSO REQUIRE INSTALLER CERTIFICATION AS OUTLINED ABOVE.

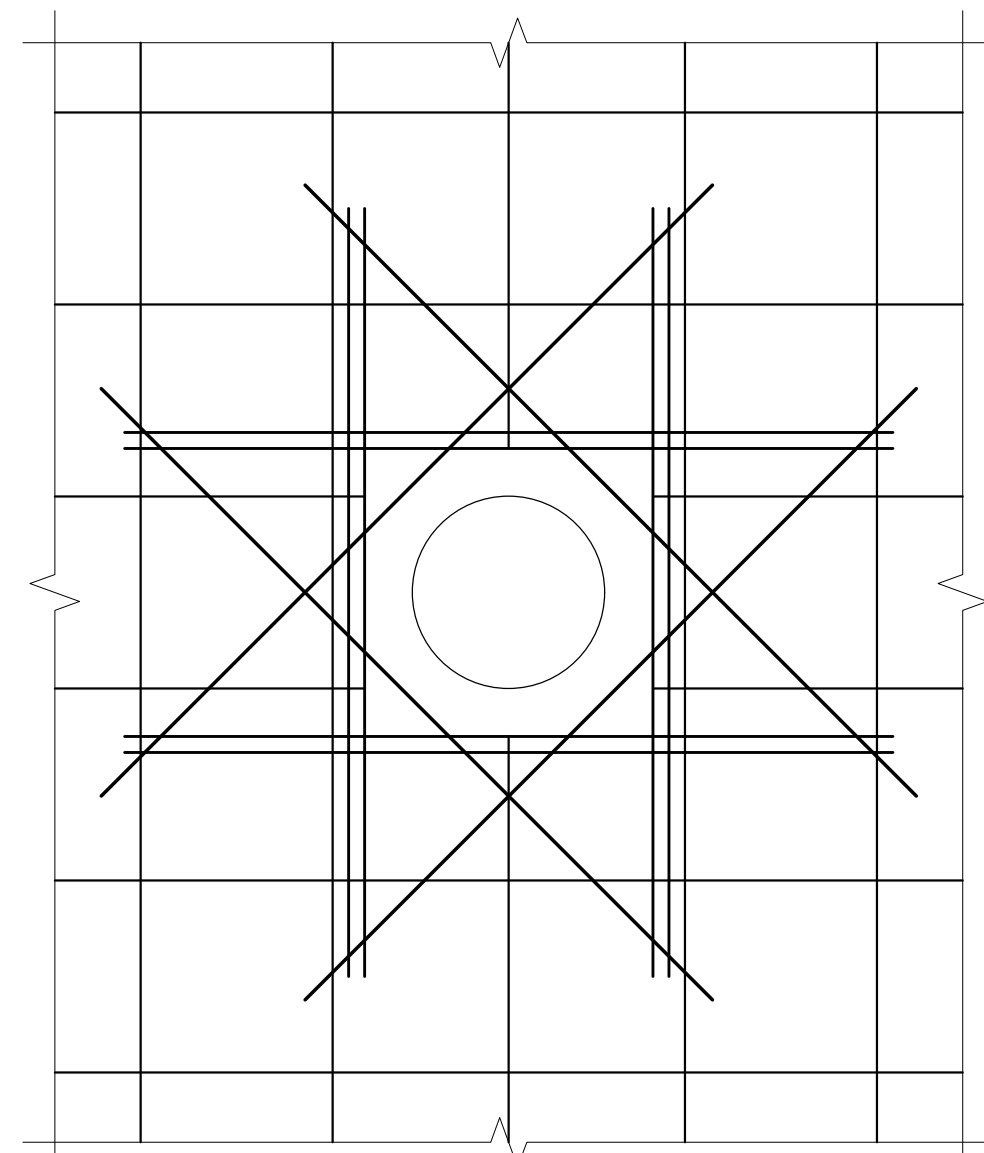
C. QUALIFICATION REQUIREMENTS FOR PRODUCTS

1) POST-INSTALLED EXPANSION AND UNDERCUT ANCHORS SHALL MEET THE ASSESSMENT CRITERIA OF ACI 355.2.

2) POST-INSTALLED ADHESIVE ANCHORS SHALL MEET THE ASSESSMENT CRITERIA OF ACI 355.4.



CONCRETE EXPOSURE	MEMBER	REINFORCEMENTS	SPECIFIED COVER, IN.
CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND	ALL	ALL	3
EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	ALL	NO. 6 THROUGH NO. 18 BAR	2
		NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER	1-1/2
		NO. 14 AND NO. 18 AND SMALLER	1-1/2
NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	SLAB, JOISTS, AND WALLS	NO. 11 BAR AND SMALLER	3/4
	BEAMS, COLUMNS, PEDESTALS, AND TENSION TIES	PRIMARY REINFORCEMENT, STIRRUPS, TIES, SPIRALS, AND HOOPS	1-1/2



TENSION DEVELOPMENT AND LAP-SPLICE LENGTHS FOR UNCOATED REINFORCING BARS					
BAR SIZE	LAP CLASS	LAP LENGTH (IN.) PER SPACING AND COVER CASE			
		f'c=3500 psi (NORMAL WEIGHT)			
		TOP BARS		OTHER BARS	
#3	A	22	32	17	25
	B	28	42	22	32
#4	A	29	43	22	33
	B	37	56	29	43
#5	A	36	54	28	41
	B	47	70	36	54
#6	A	43	64	33	50
	B	56	84	43	64
#7	A	63	94	48	72
	B	81	122	63	94
#8	A	72	107	55	82
	B	93	139	72	107
#9	A	81	121	62	93
	B	105	157	81	121
#10	A	91	136	70	105
	B	118	177	91	136
#11	A	101	151	78	116
	B	131	196	101	151
#14	N/A	121	181	93	139
#18	N/A	161	241	124	186



- NOTES: 1 in.=25.4 mm.
- TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE. LENGTHS ARE IN INCHES.
 - TENSION DEVELOPMENT LENGTHS AND TENSION LAP-SPLICE LENGTHS ARE CALCULATED PER ACI 318, SECTIONS 25.4 AND 25.5, RESPECTIVELY. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS.
 - CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND CENTER-TO-CENTER SPACING OF THE BARS, ARE DEFINED AS: BEAMS OR COLUMNS: CASE 1-COVER AT LEAST 1.0d_s AND CENTER-TO-CENTER SPACING AT LEAST 2.0d_s; CASE 2-COVER LESS THAN 1.0d_s OR CENTER-TO-CENTER SPACING LESS THAN 2.0d_s. ALL OTHERS: CASE 1-COVER AT LEAST 1.0d_s AND CENTER-TO-CENTER SPACING AT LEAST 3.0d_s; CASE 2-COVER LESS THAN 1.0d_s OR CENTER-TO-CENTER SPACING LESS THAN 3.0d_s.
 - LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A=1.0d_s AND CLASS B=1.3d_s (ACI 318, SECTION 25.5.2).
 - ACI 318 DOES NOT ALLOW TENSION LAP SPLICES OF #14 OR #18 BARS. THE TABULATED VALUES FOR THOSE BAR SIZES ARE THE TENSION DEVELOPMENT LENGTHS.
 - TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 in. OF CONCRETE CAST BELOW THE BARS.
 - FOR LIGHTWEIGHT-AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.

TENSION DEVELOPMENT AND LAP-SPLICE LENGTHS FOR UNCOATED REINFORCING BARS					
BAR SIZE	LAP CLASS	LENGTHS (IN.) PER CONCRETE STRENGTH			
		f'c=4000 psi (NORMAL WEIGHT)			
		TOP BARS		OTHER BARS	
#3	A	19	28	15	22
	B	24	36	19	28
#4	A	25	37	19	29
	B	32	48	25	37
#5	A	31	47	24	36
	B	40	60	31	47
#6	A	37	56	29	43
	B	48	72	37	56
#7	A	54	81	42	63
	B	70	106	54	81
#8	A	62	93	48	71
	B	80	121	62	93
#9	A	70	105	54	81
	B	91	136	70	105
#10	A	79	118	61	91
	B	102	153	79	118
#11	A	87	131	67	101
	B	113	170	87	131
#14	N/A	105	157	81	121
#18	N/A	139	209	107	161

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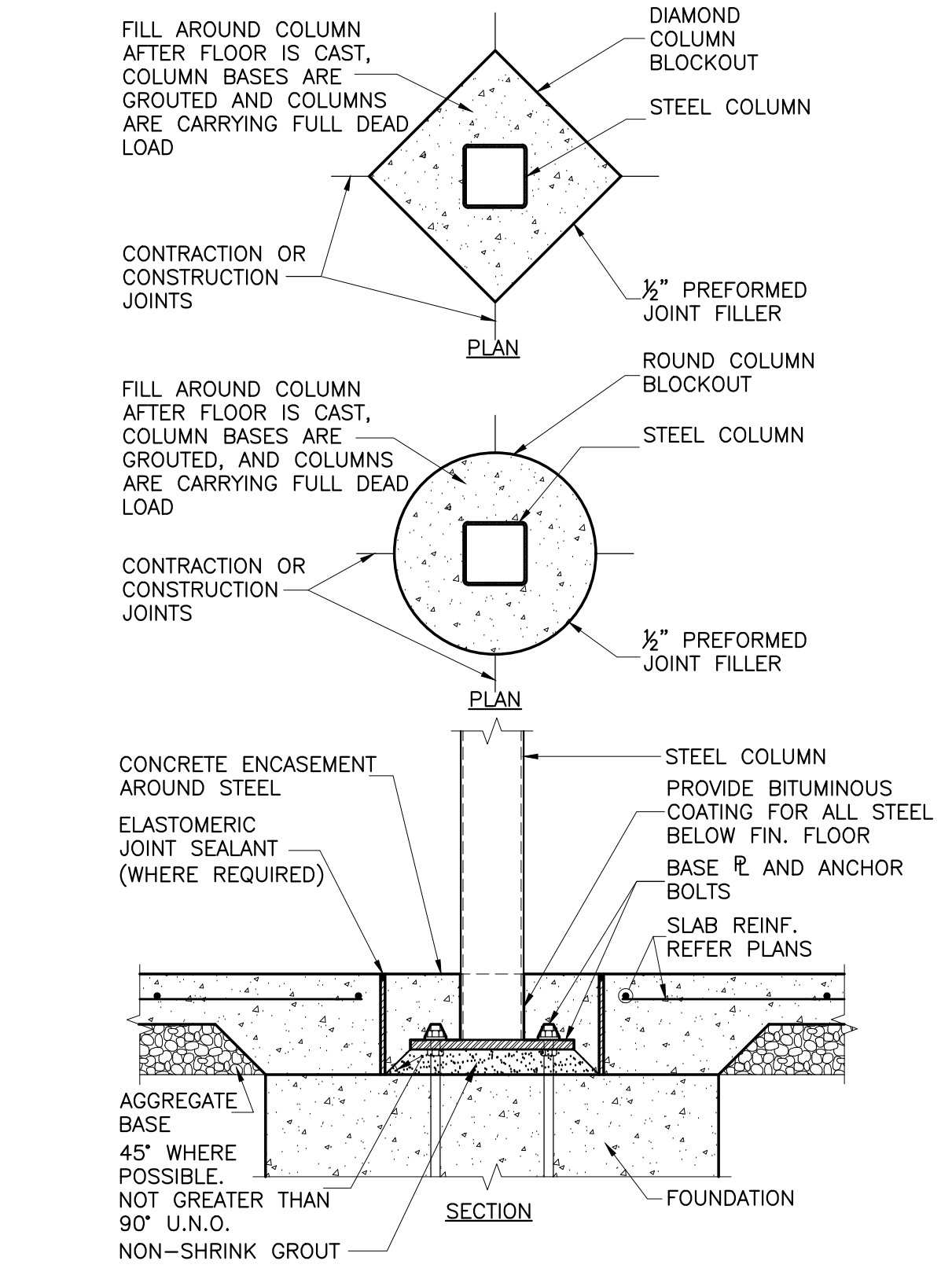
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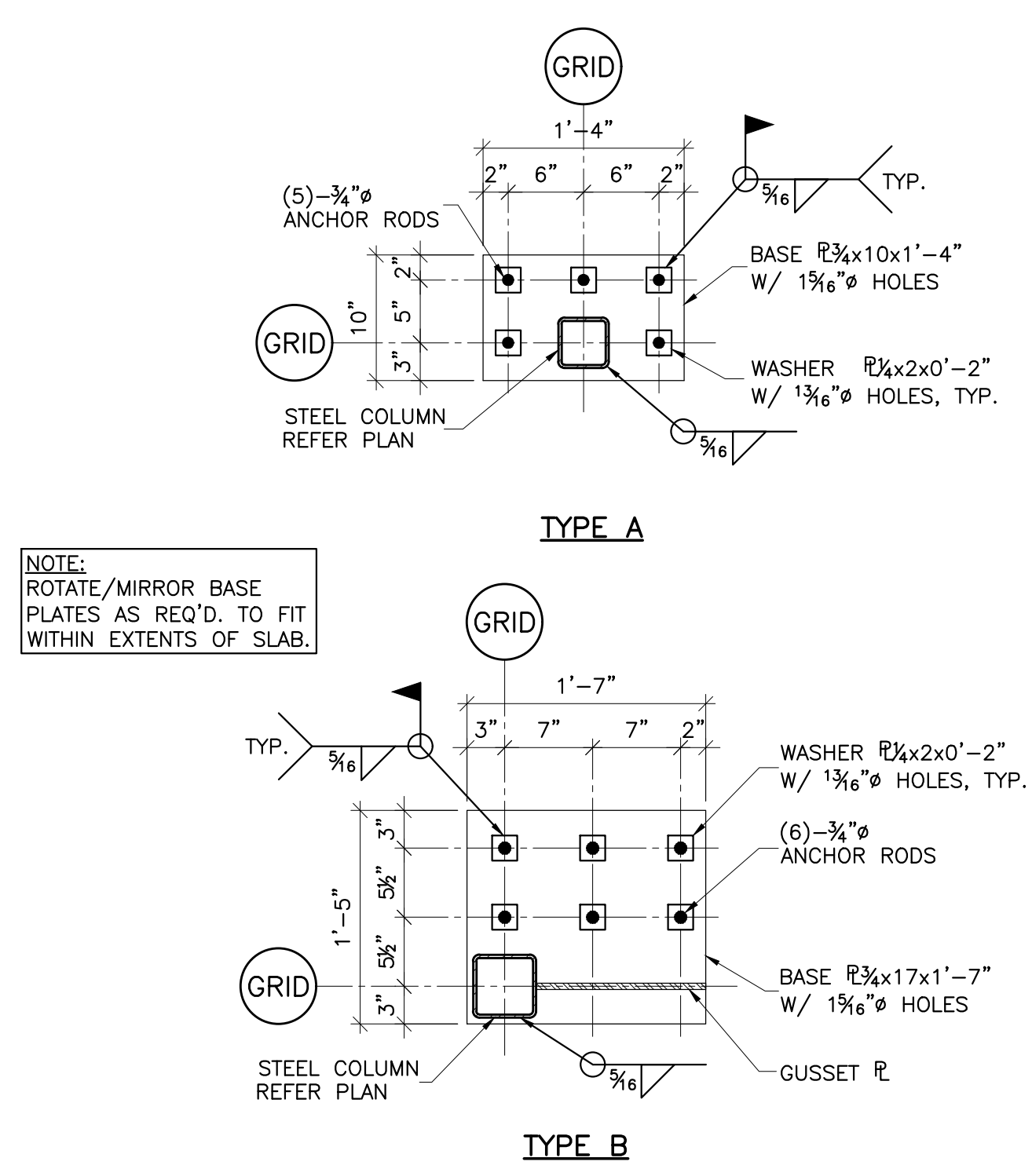
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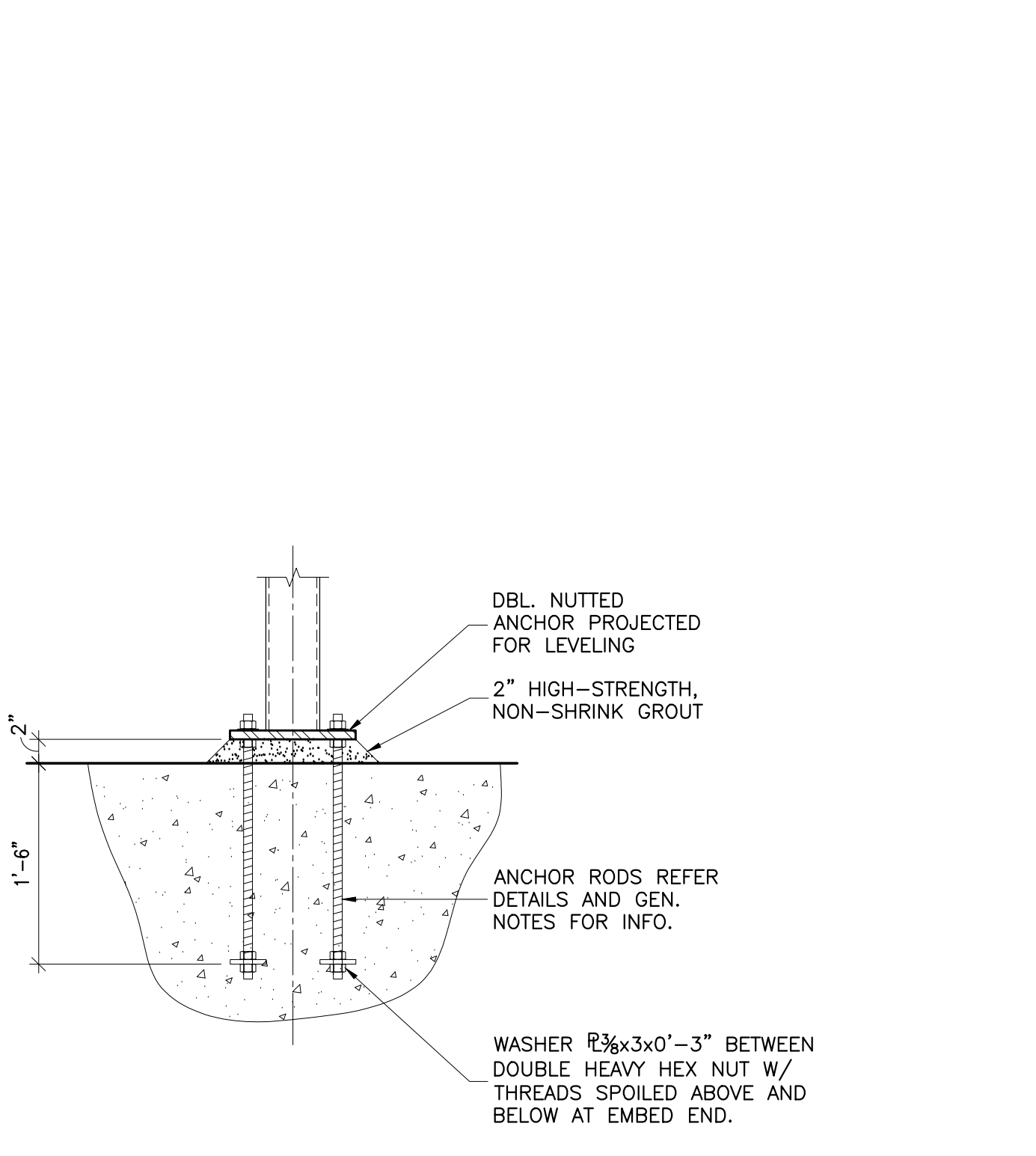
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1 TYP. ISOLATION JOINT DETAILS
SCALE: NONE



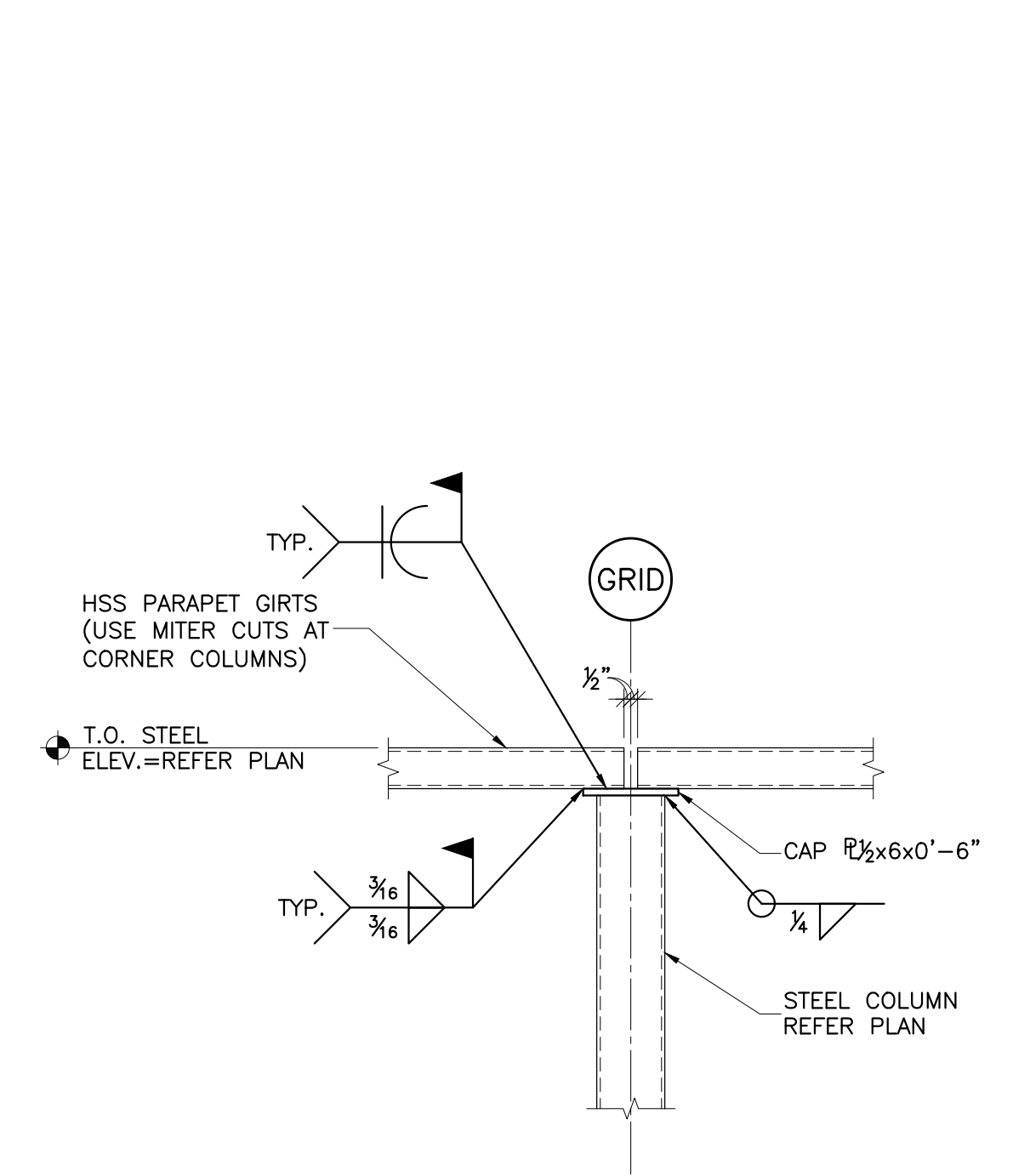
2 BASE PLATE DETAILS
SCALE: NONE



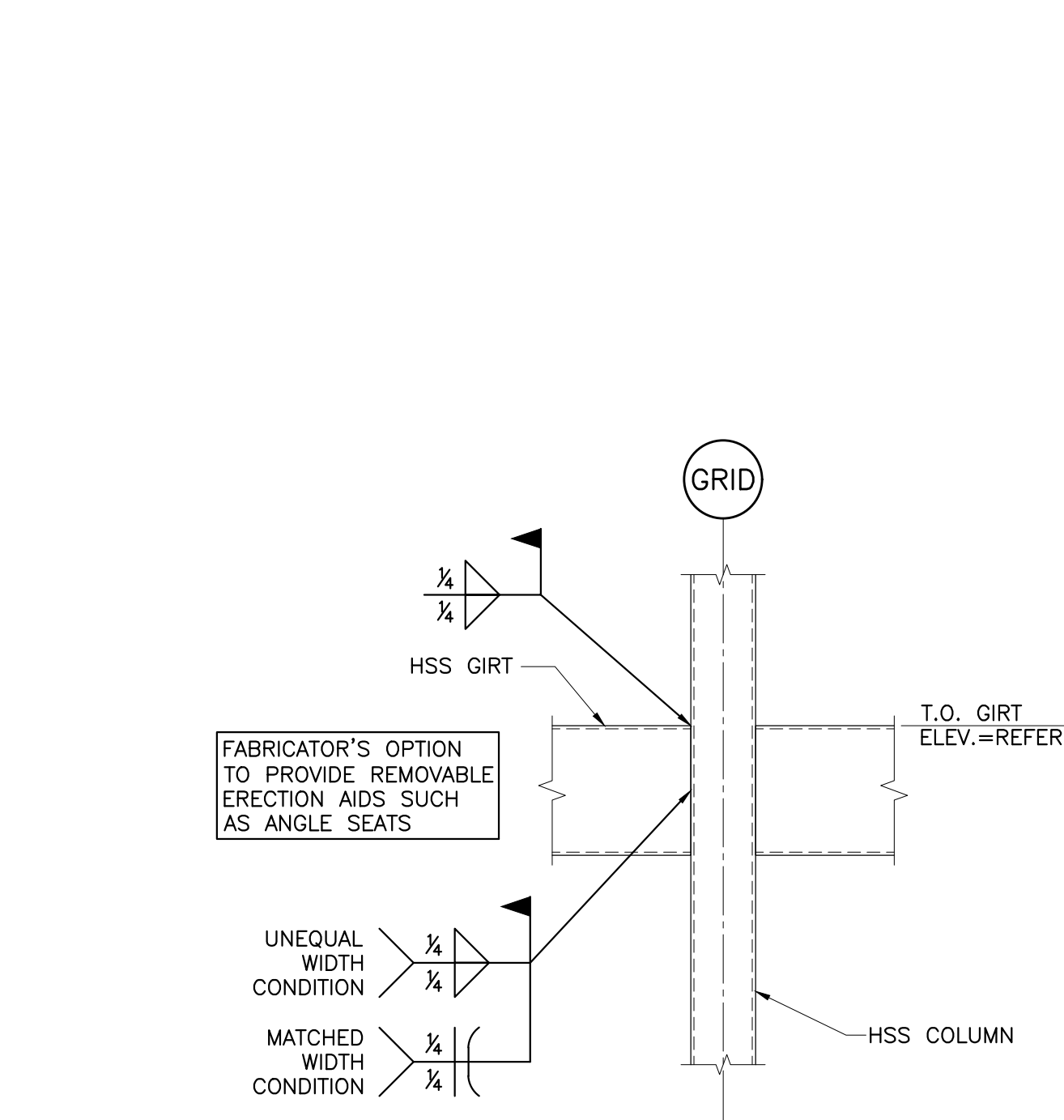
END REACTION	NO. OF BOLTS
0 THRU 24.8 KIPS	2-3/4"
24.9 THRU 43.4 KIPS	3-3/4"
43.5 THRU 62.5 KIPS	4-3/4"
62.6 THRU 81.3 KIPS	5-3/4"
81.4 THRU 100 KIPS	6-3/4"
101 THRU 118 KIPS	7-3/4"
119 THRU 137 KIPS	8-3/4"

NOTES:
1. VALUES SHOWN ARE APPLICABLE FOR SINGLE PLATE SHEAR TAB CONNECTIONS
2. SEE PLAN FOR END REACTIONS
3. L = PLATE LENGTH ≥ T/2 OF CONNECTED BEAM.
4. AT HSS OR PIPE COLUMNS, A THROUGH-PLATE WITH EQUAL WELD ON THE BACK SIDE OF THE COLUMN IS REQUIRED UNDER EITHER OF THE FOLLOWING CIRCUMSTANCES:
A. FOR SQUARE OR RECTANGULAR HSS:
WHEN $\frac{B-2t}{0.93t} > 35.1$
B. FOR ROUND HSS OR PIPE:
WHEN $\frac{D}{t} > \frac{3.190}{F_y}$
WHERE:
B = NOMINAL COLUMN WIDTH ACROSS THE COLUMN FACE WITH THE SINGLE PLATE CONNECTION, IN.
D = OUTSIDE DIAMETER OF ROUND HSS OR PIPE, IN.
t = NOMINAL THICKNESS OF COLUMN, IN.
F_y = YIELD STRENGTH OF COLUMN, KSI

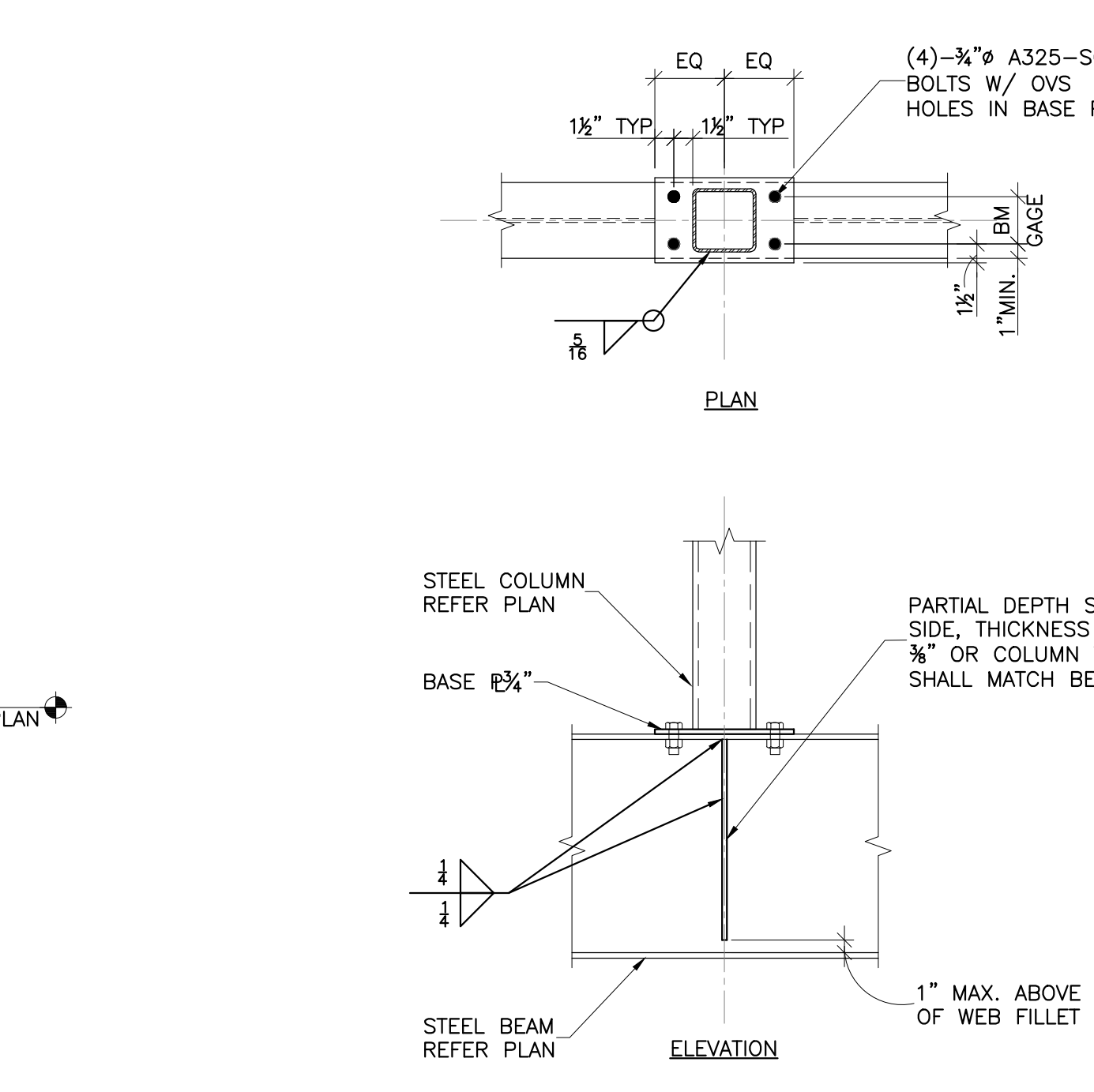
3 SINGLE PLATE SHEAR TAB CONNECTIONS (LRFD-AISC 14TH EDITION MANUAL)
SCALE: NONE



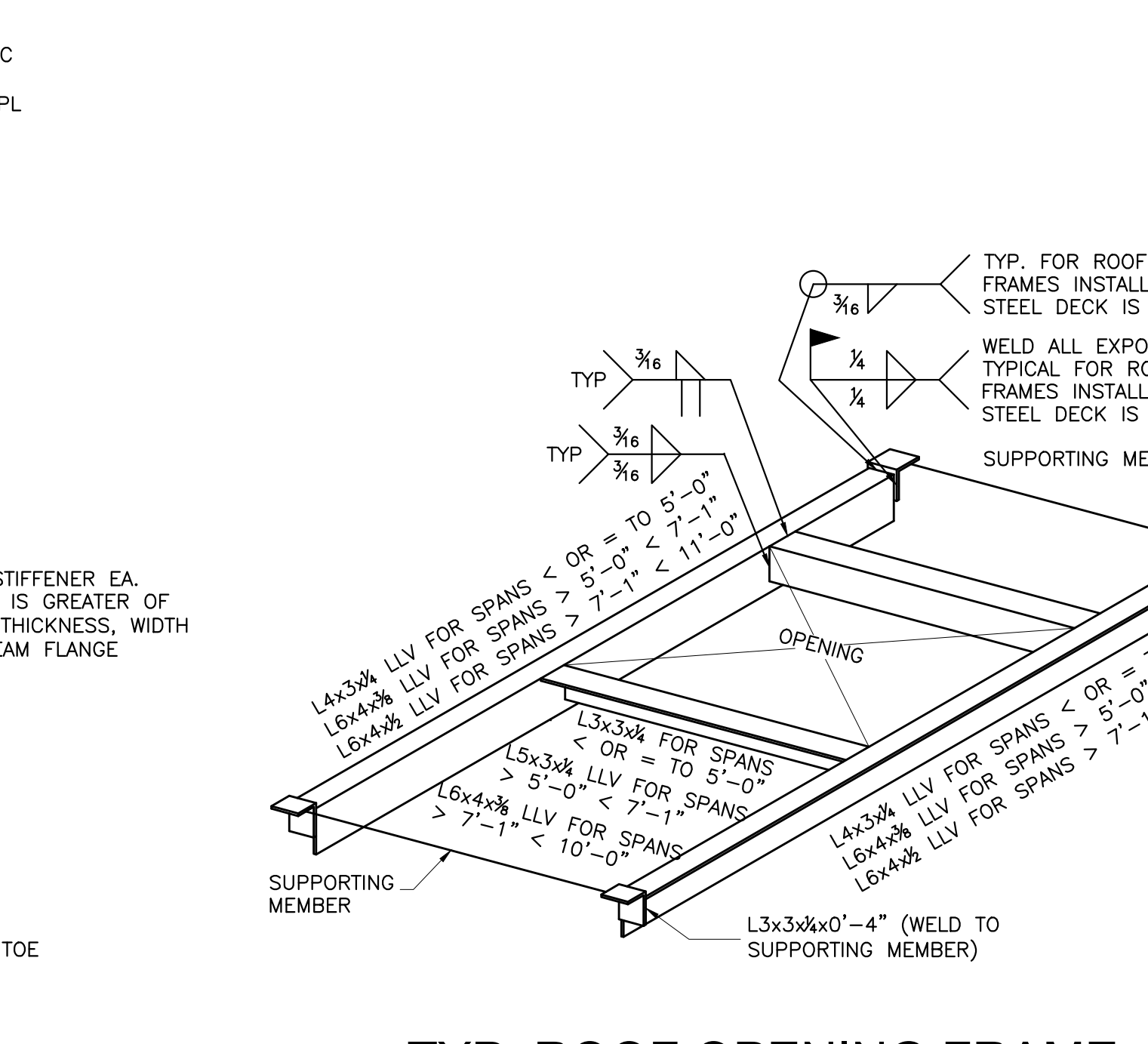
4 TYP. PARAPET GIRT TO COLUMN
SCALE: NONE



5 TYP. HSS GIRT TO HSS COLUMN CONNX.
SCALE: NONE



6 TYPICAL TRANSFER GRIDER DETAIL
SCALE: NONE



7 TYP. ROOF OPENING FRAME AND MECHANICAL UNIT SUPPORT
SCALE: NONE

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SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

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1. STATEMENT OF SPECIAL INSPECTIONS NOTES:
- A. THIS STATEMENT OF SPECIAL INSPECTIONS IS INCLUDED AS REQUIRED BY SECTIONS 1704.1 AND 1705 OF THE 2018 INTERNATIONAL BUILDING CODE.

B. SPECIAL INSPECTIONS SHALL CONFORM TO CHAPTER 17 OF THE 2018 INTERNATIONAL BUILDING CODE AND AS SUMMARIZED HEREIN. GENERAL REQUIREMENTS ARE LISTED BELOW AND IN THE ATTACHED INSPECTION TABLES.

C. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIAL INSPECTION REQUIREMENTS. IF CONFLICTING REQUIREMENTS ARE FOUND BETWEEN THIS STATEMENT OF SPECIAL INSPECTIONS AND THE PROJECT SPECIFICATIONS, THE MORE STRINGENT PROVISION SHALL CONTROL UNLESS DIRECTED OTHERWISE IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.

D. THE CONTRACTOR SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS FOR THIS PROJECT. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR THE INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

E. THE SPECIAL INSPECTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING HIS OR HER COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING. EXPERIENCE OR TRAINING SHALL BE CONSIDERED RELEVANT WHEN THE DOCUMENTED EXPERIENCE OR TRAINING IS RELATED IN COMPLEXITY TO THE SAME TYPE OF SPECIAL INSPECTION ACTIVITIES FOR PROJECTS OF SIMILAR COMPLEXITY AND MATERIAL QUALITIES.

F. THE SPECIAL INSPECTOR SHALL PROVIDE CONTINUOUS OR PERIODIC INSPECTIONS AS SHOWN IN THE ATTACHED INSPECTION TABLES

1) CONTINUOUS INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT AT ALL PROCEDURAL EVENTS.

2) PERIODIC INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT AT THE START OF THE WORK AND PERIODIC INSPECTION IS MADE TO VERIFY PROGRESS OF WORK IS IN COMPLIANCE.

G. INSPECTION OF FABRICATORS: WHERE FABRICATION OF STRUCTURAL LOADBEARING MEMBERS AND ASSEMBLIES IS BEING PERFORMED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTION OF THE FABRICATED ITEMS SHALL BE REQUIRED BY SECTION 1704.2.5 OF THE 2018 INTERNATIONAL BUILDING CODE AND AS REQUIRED ELSEWHERE IN THE CODE.

H. FABRICATOR APPROVAL: SPECIAL INSPECTIONS REQUIRED BY SECTION 1704 ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED SPECIAL INSPECTION AGENCY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

I. REPORT REQUIREMENTS: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED AT A POINT IN TIME AGREED UPON PRIOR TO THE START OF WORK BY THE APPLICANT AND THE BUILDING OFFICIAL.

J. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING REASONABLE NOTICE TO THE SPECIAL INSPECTOR(S) REGARDING WHEN ELEMENTS OF THE PROJECT WILL BE READY FOR EFFICIENT IMPLEMENTATION OF SPECIAL INSPECTIONS.

K. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE LATEST VERSION OF ALL APPROVED PLANS AND SHOP DRAWINGS FOR THE SPECIAL INSPECTOR'S USE IN PERFORMING SPECIAL INSPECTIONS.

L. CONTRACTOR SHALL GRANT ACCESS TO OWNER'S SPECIAL INSPECTOR AS IS REASONABLY NECESSARY FOR THE PROPER PERFORMANCE OF SPECIAL INSPECTIONS.

M. SPECIAL INSPECTIONS DO NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND JOBSITE SAFETY ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION			
VERIFICATION AND INSPECTION	FREQUENCY OF INSPECTION		REFERENCED STANDARD
	CONTINUOUS (inspect each joint/member)	PERIODIC (inspect random joint/members)	
1. Material verification of high-strength bolts, nuts and washers:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	-	QC and QA	AISC 360, Section A3.3 and applicable ASTM material standards
b. Manufacturer's certifications available for fastener materials.	QA	QC	
c. Fasteners marked in accordance with ASTM requirements.	-	QC and QA	
d. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane).	-	QC and QA	AISC 360, Table N5.6-1
e. Proper bolting procedure selected for joint detail.	-	QC and QA	
f. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.	-	QC and QA	
g. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used.	QC	QA	
h. Proper storage provided for bolts, nuts, washers and other fastener components.	-	QC and QA	
2. Inspection of high-strength bolting:			
- For bolts requiring pretensioning, the special inspector shall observe the preinstallation testing and calibration procedures; determine that all piles of connected materials have been drawn together and properly snugged prior to pretensioning and monitor the installation of bolts to verify that fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point to the free edges. - For joints required to be tightened only to the snug-tight condition, the special inspector need only verify that the connected materials have been drawn together and properly snugged.			
a. Snug-tight joints.	-	QC and QA	AISC 360, Section M2.5
b. Pretensioned and slip-critical joints using turn-of-nut with matchmarking, twist-off bolt or direct tension indicator methods of installation.	-	QC and QA	
c. Pretensioned and slip-critical joints,using turn-of-nut without matchmarking of calibrated wrench methods of installation.	QC and QA	-	
d. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required.	-	QC and QA	AISC 360, Table N5.6-2
e. Fastener component not turned by the wrench prevented from rotating.	-	QC and QA	
f. Document acceptance or rejection of bolted connections.	QC and QA	-	AISC 360, Table N5.6-3
3. Material verification of structural steel and cold-formed steel deck U.N.O.:			
a. For structural steel, identification markings to conform to AISC 360.	-	QC and QA	AISC 360, Section M1
b. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents.	-	QC and QA	Applicable ASTM material standards
4. Inspection prior to welding:			
a. Verify identification markings of weld filler materials conform to AWS specification in the approved construction documents.	-	QC and QA	AISC 360, Section A3.5 and applicable AWS AS documents
b. Welding procedure specifications are available.	QC and QA	-	
c. Manufacturer certifications for welding consumables available.	QC and QA	-	
d. Material identification (type/grade) and welded identification system.	-	QC and QA	
e. Fit-up of welds including but not limited to joint preparation, dimensions, cleanliness, tacking, and backing type/fit as applicable.	-	QC and QA	
f. Configuration and finish of access holes	-	QC and QA	
g. Check welding equipment.	-	QC	

TABLE 1705.6 REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS		
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X
2. Verify excavations are extended to proper depth and have reached proper material.	-	X
3. Perform classification and testing of compacted fill materials.	-	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION			
VERIFICATION AND INSPECTION	FREQUENCY OF INSPECTION		REFERENCED STANDARD
	CONTINUOUS (inspect each joint/member)	PERIODIC (inspect random joint/members)	
5. Inspection of welding:			
a. AISC 360 requirements for welding structural steel			
1) Use of qualified welders	-	QC and QA	AISC 360, Table N5.4-2 During Welding
2) Packaging and exposure control and handling of welding consumables.	-	QC and QA	
3) Welding over cracked tack welds	-	QC and QA	
4) Environmental conditions including but not limited to precipitation, temperature and wind.	-	QC and QA	
5) Verify settings on equipment, travel speeds, elected materials, shielding gas type/flow rate, preheating interpass temperatures and proper position meets WPS standards.	-	QC and QA	
6) Verify welding techniques for interpass, final cleaning, profile limitations, and quality requirements.	-	QC and QA	AISC 360, Table N5.4-2 After Welding
7) Welds are cleaned and painted where required.	-	QC and QA	
8) Verify size, length and locations of welds.	QC and QA	-	
9) Visually verify welds for crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercutting, and porosity.	QC and QA	-	
10) Arc strikes, k-area cracks within 3" of weld, removal of backing, and repair activities as applicable.	QC and QA	-	
11) Documentation of acceptance or rejection of welded joint or member.	QC and QA	-	
b. American Welding Society requirements for structural steel and cold-formed steel deck:			
1) Complete and partial joint penetration groove welds.	X	-	AWS D1.1
2) Multipass fillet welds.	X	-	
3) Single-pass fillet welds > 5/ 16"	X	-	
4) Plug and slot welds.	X	-	
5) Single-pass fillet welds ≤ 5/ 16"	-	X	AWS D1.3
6) Floor and roof deck welds.	-	X	
7) Welded studs & deformed bar anchors (DBA's).	-	X	AWS D1.1
8) Welded sheet steel for cold-formed steel members	-	X	AWS D1.3
9) Welding of stairs & railing systems	-	X	AWS D1.1
c. Reinforcing steel:			
1) Verification of weldability of reinforcing steel other than ASTM A 706.	-	X	AWS D1.4, ACI 318: Section 3.5.2
2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	X	-	
3) Shear reinforcement.	X	-	
4) Other reinforcing steel.	-	X	
6. Inspection of steel elements of composite construction prior to concrete placement:			
a. Placement and installation of steel deck.	QC and QA	-	AISC 360, Table N6.1
b. Placement and installation of steel HSA.	QC and QA	-	AISC 360, Table N6.1
c. Documentation of acceptance or rejection of steel elements.	QC and QA	-	AISC 360, Table N6.1

TABLE 1705.3 REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION				
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD	IBC REFERENCE
1) Inspect reinforcement, including prestressing tendon, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2) Reinforcing bar welding: a) Verify weldability of reinforcing bars other than ASTM A706; b) Inspect single-pass fillet welds, maximum 5/16"; and c) Inspect all other welds.	- X	X -	AWS D1.4 ACI 318: 26.6.4	-
3) Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
4) Inspect anchors post-installed in hardened concrete members. a) Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b) Mechanical anchors and adhesive anchors not defined in 4.a.	X -	- X	ACI 318: 17.8.2.4 ACI 318: 17.8.2	-
5) Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6) Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C 172 ASTM C 31 ACI 318: 26.5, 26.12	1908.10
7) Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8) Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.5.3-26.5.5	1908.9
9) Inspect prestressed concrete for: a) Application of prestressing forces; and b) Grouting of bonded prestressing tendons.	X X	- -	ACI 318: 26.10	-
10) Inspect erection of precast concrete members.	-	X	ACI 318: Ch. 26.9	-
11) Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.11.2	-
12) Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.11.1.2(b)	-

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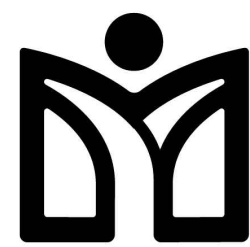
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MOORE
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SOUTHGATE
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Diagram illustrating the components of a column section:

- COLUMN SIZE
- BASE PL TYPE REFER S103
- HSS 4x4x $\frac{1}{4}$ / A
- F1
- SPOT FOOTING SIZE, REFER SCHEDULE. IF NO MARK IS SHOWN, REFER PLAN AND SECTIONS FOR INFORMATION

EXIST. STRUCTURE TO REMAIN

EXIST. FOUNDATION TO REMAIN

1'-0"

8"

4"

1'-0"

1'-0"

1/2" EXP. JOINT MATERIAL

4" CONC. SLAB REFER PLAN

FINISHED FLOOR ELEV. = 100'-0"

(2) - #3xCONT.

#3x $\frac{0-8}{2-0}$ AT 30" O.C.

2

SECTION

S201

SCALE: 3/4"=1'-0"

EXIST. STRUCTURE BEYOND

EXIST. FOUNDATION TO REMAIN

#4x2'-4" REBAR DOWEL AT 30" O.C. EMBED 4" INTO EXIST. CONC. SLAB W/ HIT-HY EPOXY

4" CONC. SLAB REFER PLAN

FINISHED FLOOR ELEV. = 100'-0"

(2)-#3xCNT.

#3x $\frac{0-8}{2-0}$ AT 30" O.C.

2A SECTION

S201 SCALE: 3/4"=1'-0"

3 SECTION
S201 SCALE: 3/4"=1'-0"

4 SECTION
S201 SCALE: 3/4"=1'-0"

5 SECTION
S201 SCALE: 3/4"=1'-0"

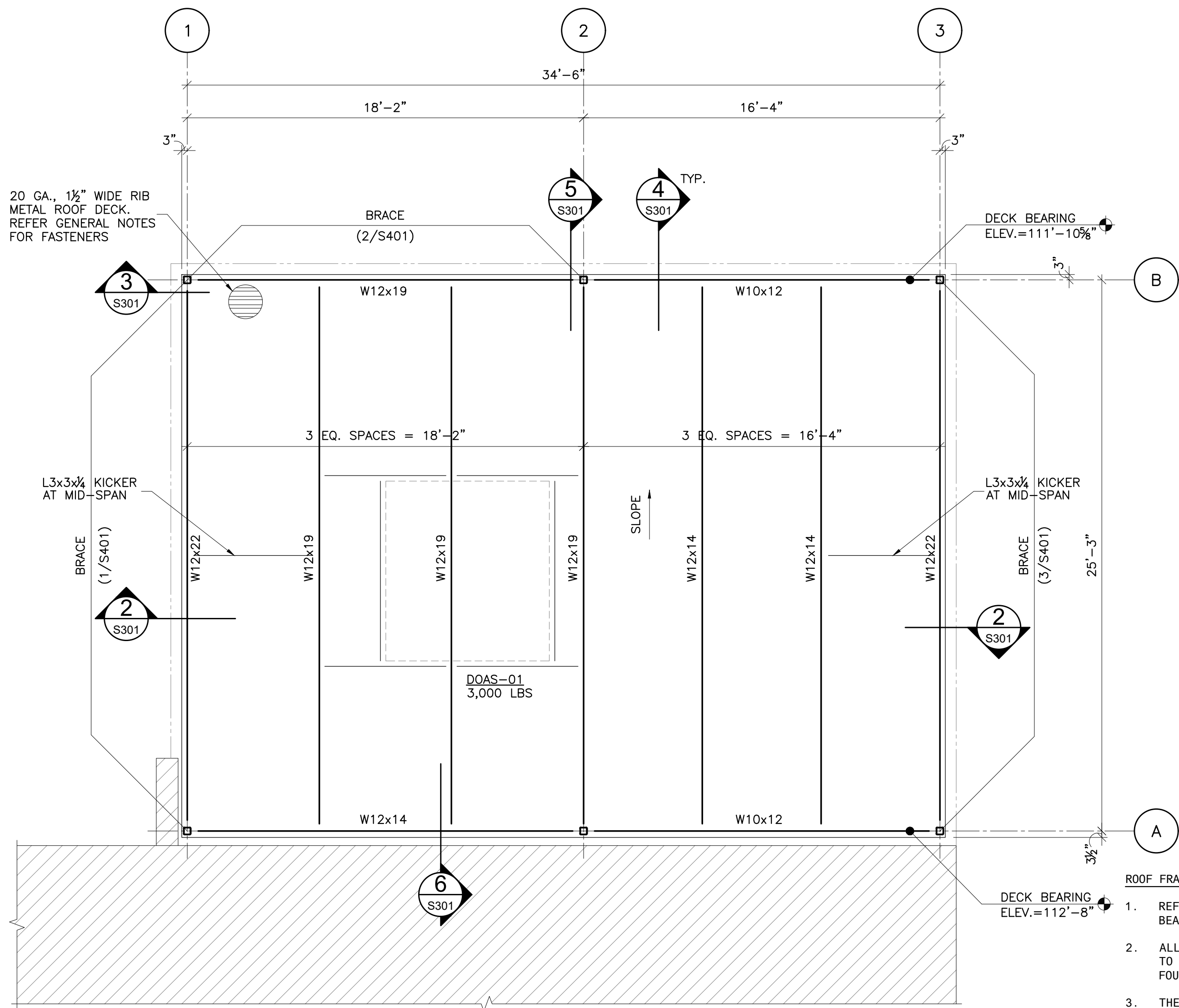
6 SECTION
S201 SCALE: 3/4"=1'-0"

Professional Engineer
BRANDON W.
BIRCH
26145
OKLAHOMA
04/28/2026

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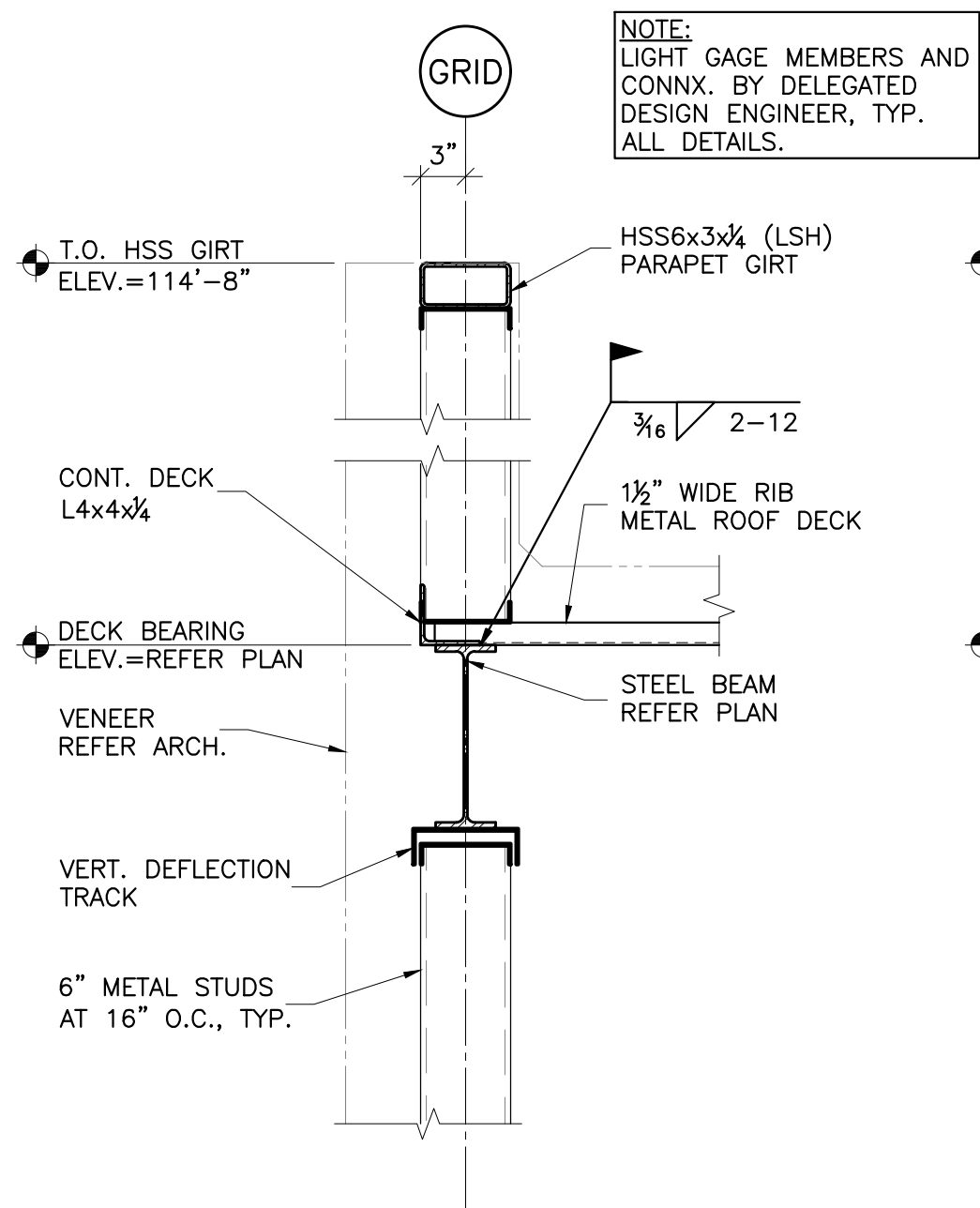
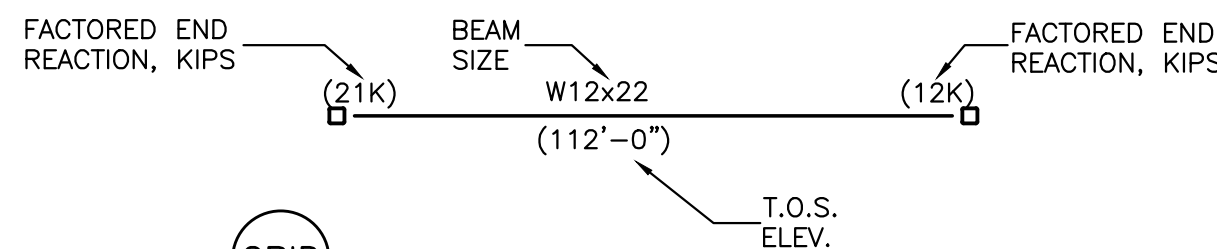
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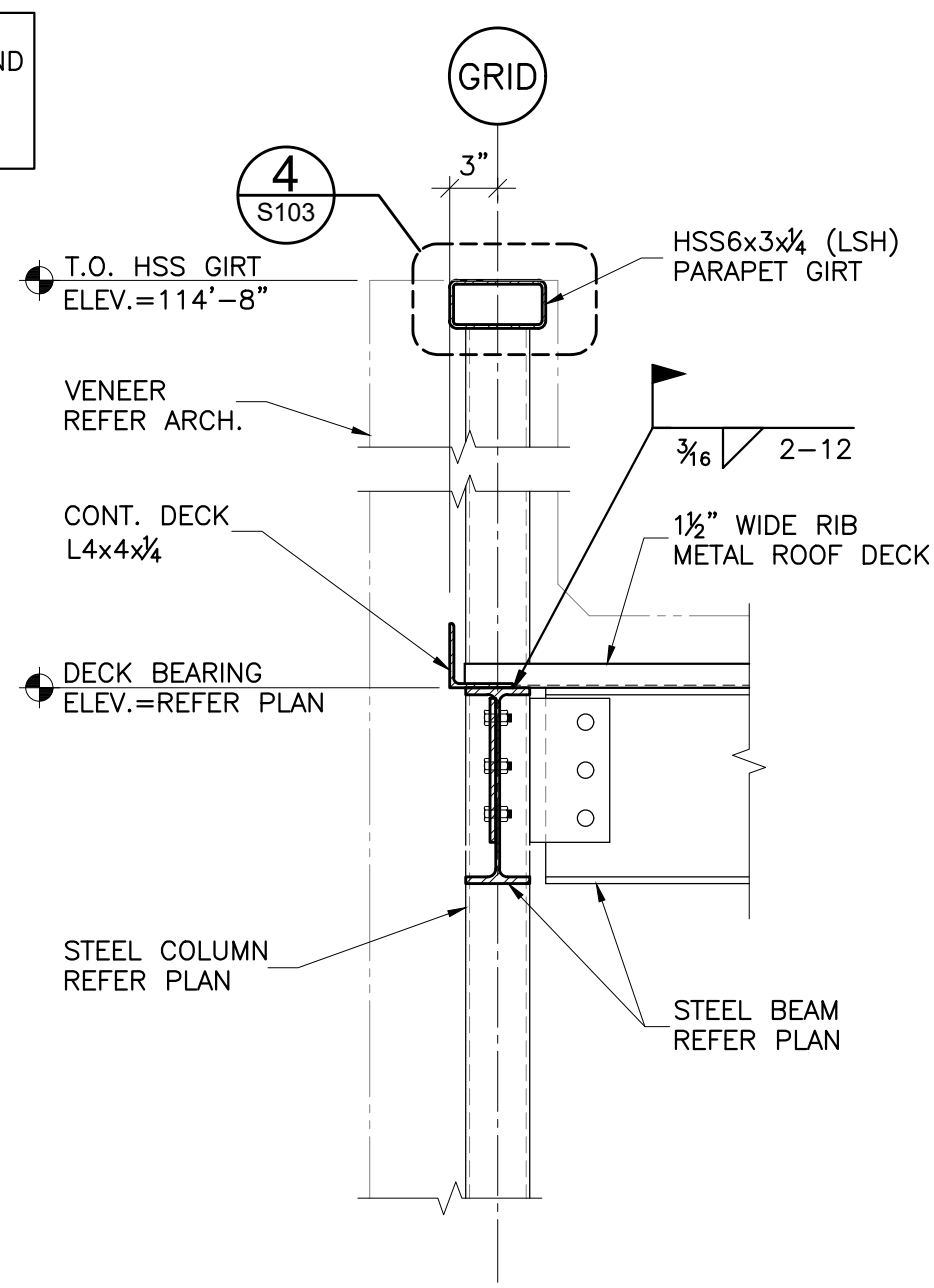
1 ROOF FRAMING PLAN
S301 SCALE: 1/4"=1'-0"

- ROOF FRAMING NOTES:**
1. REFER TO GENERAL NOTES FOR INFORMATION REGARDING STEEL BEAMS AND METAL DECKING.
 2. ALL TOP OF STEEL OR DECK NOTATIONS ARE WITH REFERENCE TO THE FINISH FLOOR ELEVATIONS SPECIFIED ON THE FOUNDATION PLAN, U.N.O.
 3. THE ROOF DECK SHALL CONSIST OF A MODIFIED BIT ROOF OVER 1 1/2" 20 GA. GALV. WIDE RIB DECKING. REFER TO METAL DECK NOTES FOR ATTACHMENT.
 4. REFER TYPICAL STEEL DETAILS FOR ADDITIONAL INFORMATION.

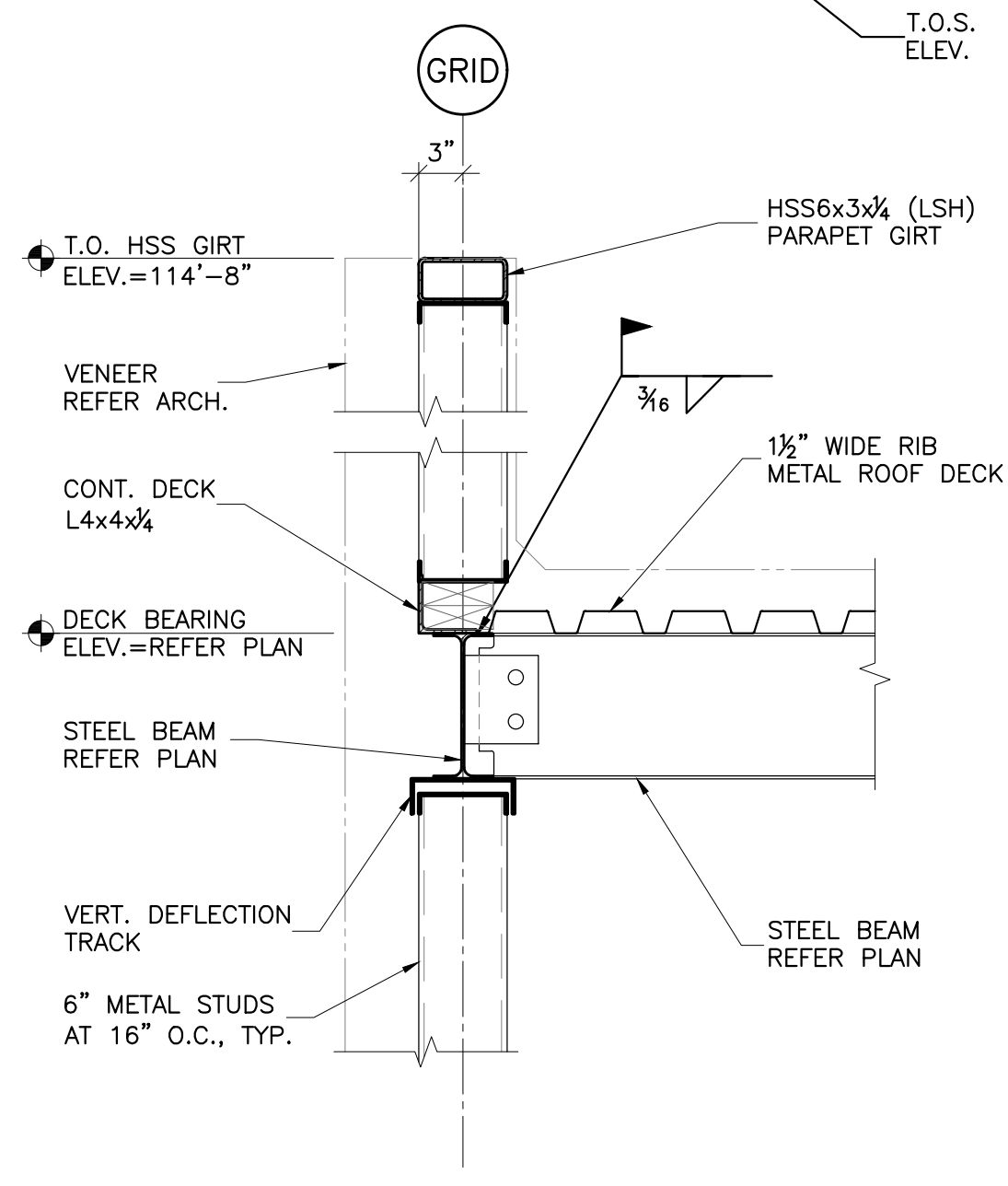
FRAMING PLAN LEGEND:



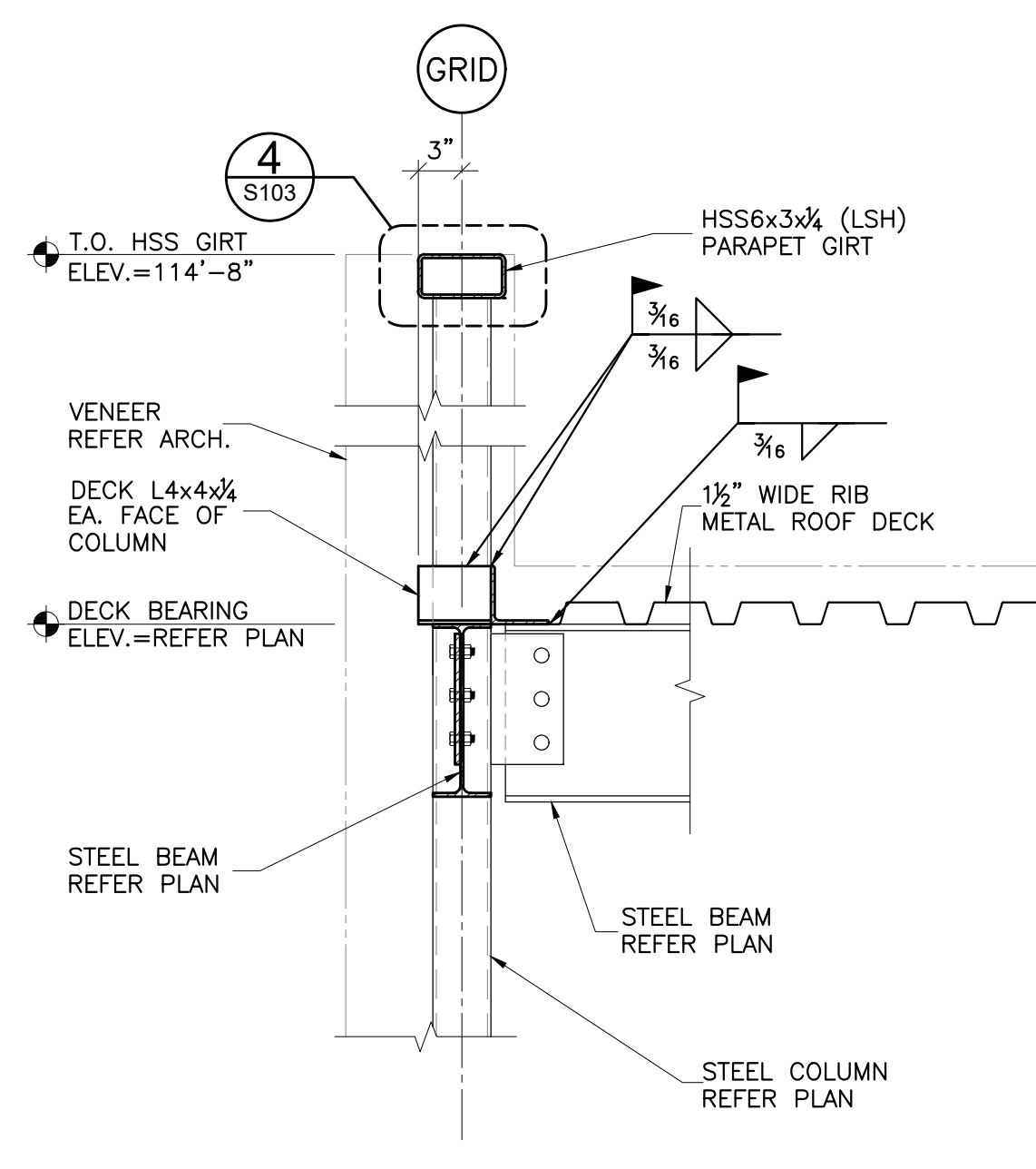
2 SECTION
S301 SCALE: 1"=1'-0"



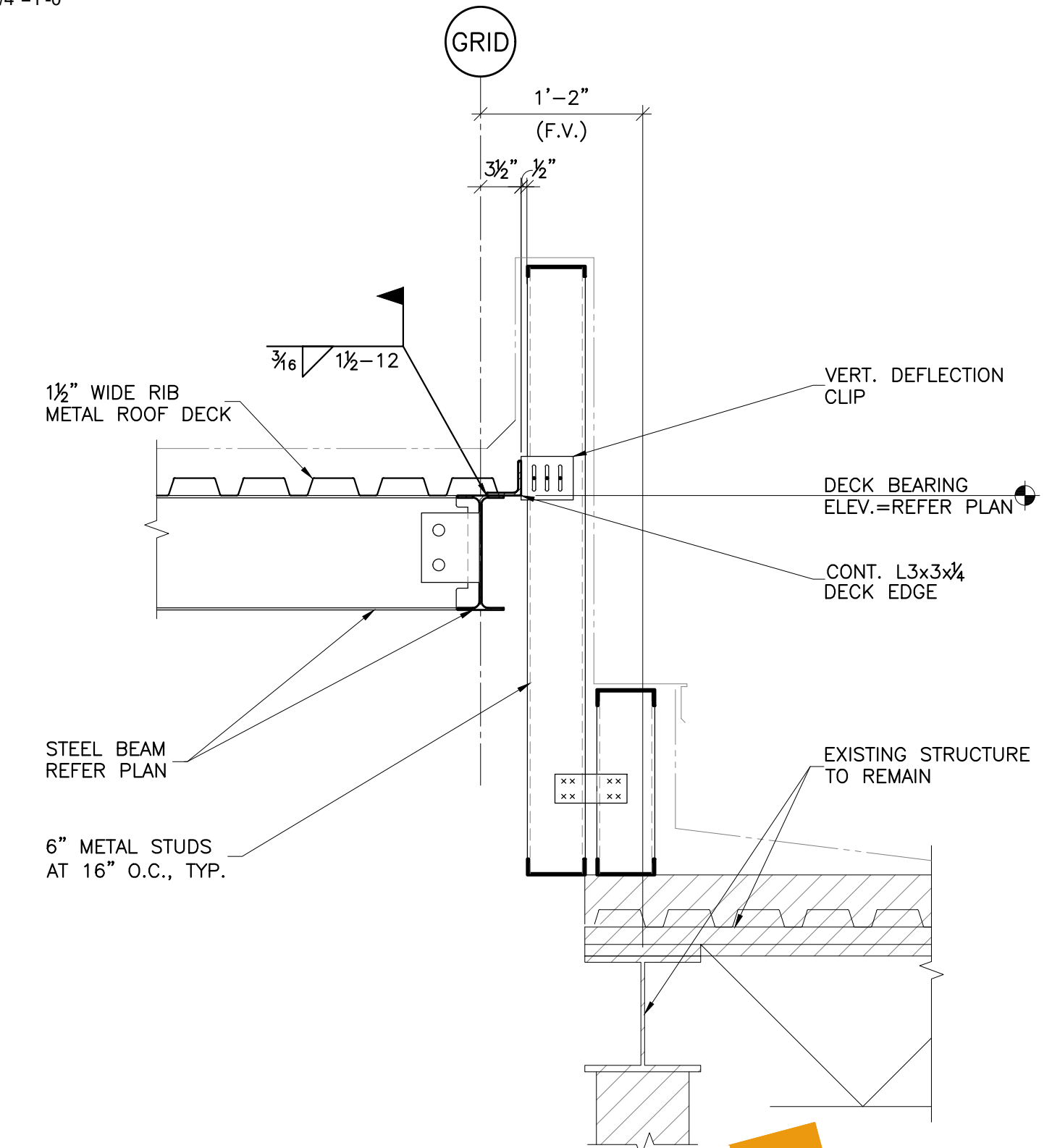
3 SECTION
S301 SCALE: 1"=1'-0"



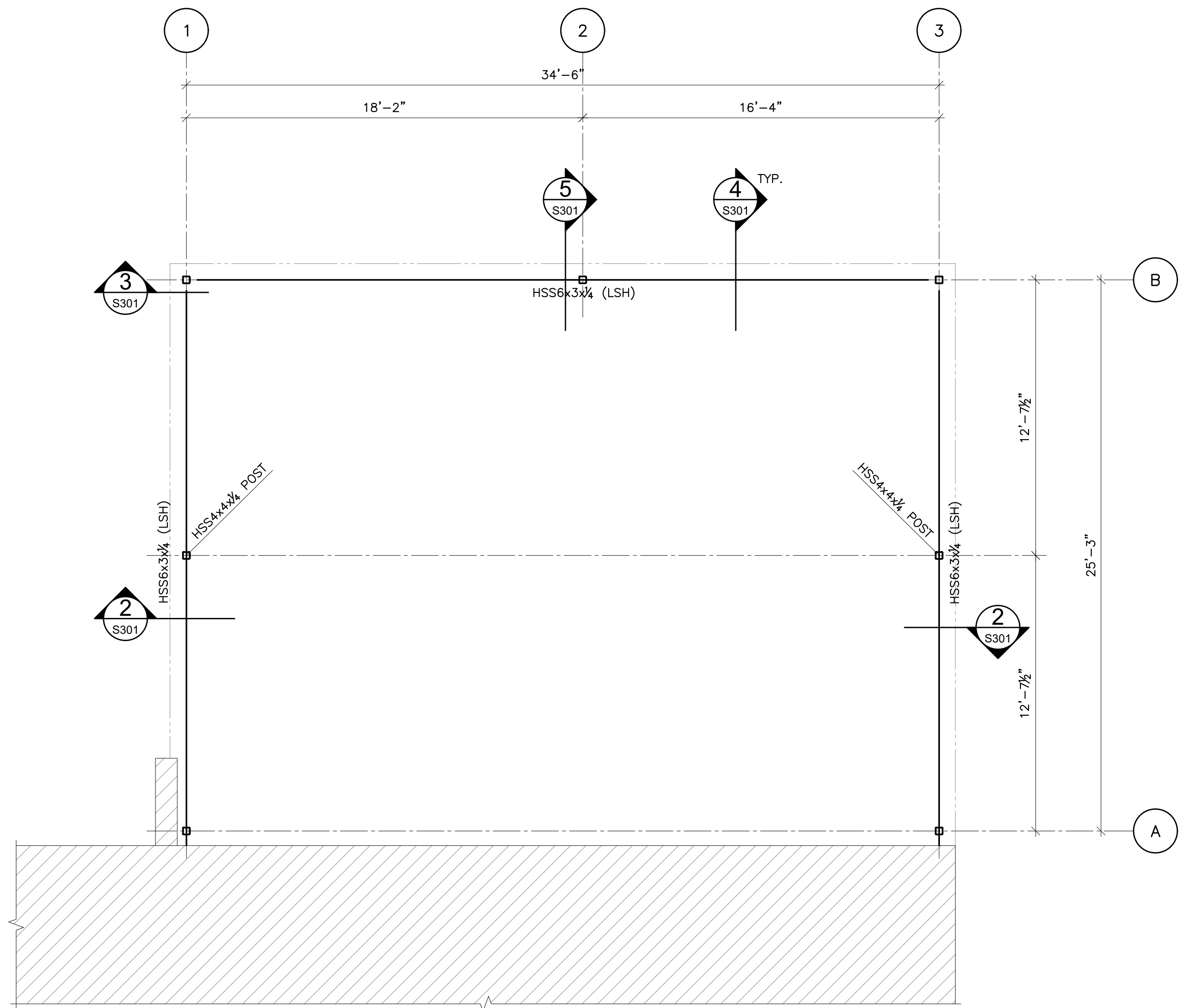
4 SECTION
S301 SCALE: 1"=1'-0"



5 SECTION
S301 SCALE: 1"=1'-0"



6 SECTION
S301 SCALE: 1"=1'-0"



1A PARAPET FRAMING PLAN
S301 SCALE: 1/4"=1'-0"

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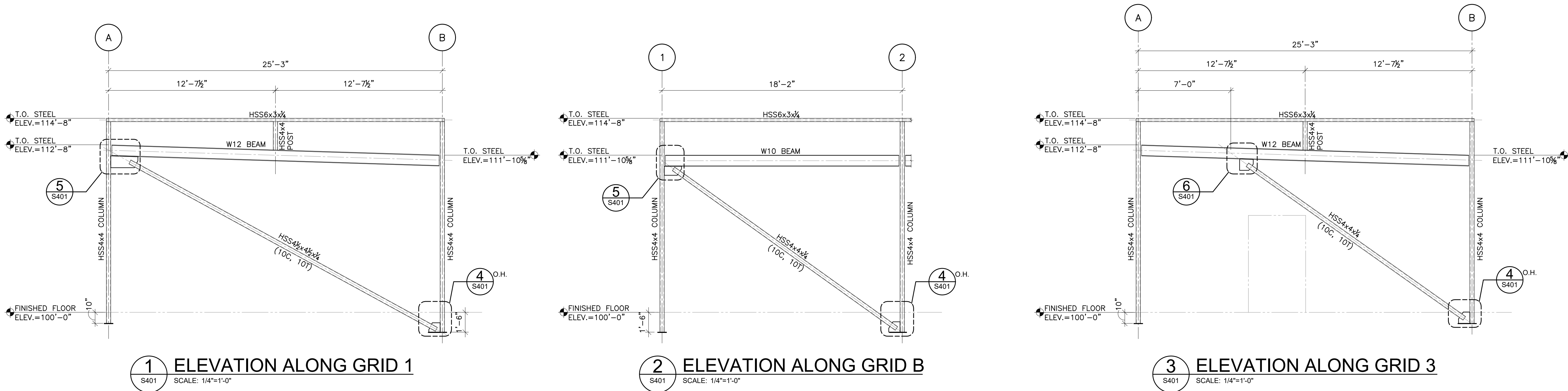
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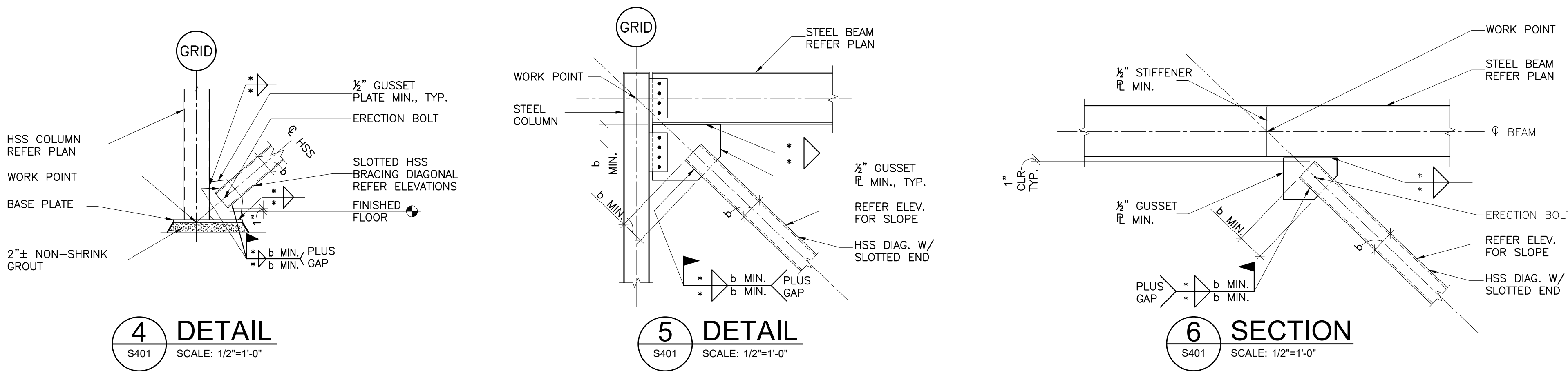
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NOTE:
* WELD AND
CONNECTION SIZED FOR
AXIAL FORCES SHOWN.



SUBSCRIPTS AND ABBREVIATIONS	
TEXT	DESCRIPTION
WP	DEVICE SHALL BE WEATHER PROOF AND RATED FOR EXTERIOR CONDITIONS
•	NEXT TO ANY SYMBOL INDICATES DEVICE ROUGH-IN SHALL BE ABOVE COUNTER. FINAL ROUGH-IN FIELD COORDINATION TO BY CONTRACTOR WITH ARCHITECTURAL MILLWORK DRAWINGS AND OTHER TRADES
AFF	ABOVE FINISHED FLOOR
'UC'	DEVICE IS TO BE MOUNTED ON THE UNDERSIDE OF THE ELEVATED CANOPY.
'WM'	DEVICE IS TO BE WALL MOUNTED.
'WG'	WIRE GUARD TO BE PROVIDED AND INSTALLED TO PROTECT ASSOCIATED DEVICE.

SUBSCRIPTS LEGEND - EXISTING DEVICES	
TEXT	DESCRIPTION
'E'	EXISTING TO REMAIN.
'D'	DEVICE IS EXISTING AND IS TO BE REMOVED. CONTRACTOR TO REMOVE THE DEVICE AND RETURN TO OWNER.
'R'	REMOVE EXISTING DEVICE AND RELOCATE TO A LOCATION INDICATED ON THE DRAWINGS.

NOTES TO CONTRACTOR	
1. EVERY SYMBOL SHOWN ON LEGEND MAY NOT APPEAR ON DRAWINGS.	
2. SYSTEM INSTALLERS SHALL COORDINATE LOCATIONS AND CONNECTIONS WITH THE PROJECT'S ELECTRICAL CONTRACTOR.	
3. CONTRACTOR TO PROVIDE PROPERLY GROUNDED LIGHTING PROTECTION ON ALL CABLING ENTERING AND EXITING THE BUILDING.	
4. REFERENCE DETAIL SHEETS FOR ADDITIONAL INSTRUCTIONS.	

RESPONSIBILITY MATRIX				
SCOPE ITEM		RESPONSIBILITY		NOTES
COMMUNICATIONS - DIVISION 27		OFOI	CFCI	OFCI
CATEGORY 6 STRUCTURED CABLING SYSTEM (SCS)			✓	
INTERACTIVE VIDEO DISPLAYS		✓		
BUILDING INTERCOMPA, BELL, AND CLOCK SYSTEM			✓	
→ NETWORK SWITCHES		✓		
NETWORK EQUIPMENT				
→ MDF/IDF NETWORK EQUIPMENT		✓		
→ VOIP TELEPHONES		✓		
→ WIRELESS ACCESS POINTS		✓		
→ UNINTERRUPTIBLE POWER SUPPLIES (UPS)			✓	
RACEWAY: CONDUIT, BACK BOXES, ETC.			✓	SEE NOTE 1.
ELECTRICAL POWER			✓	SEE NOTE 1.
LIFE SAFETY AND SECURITY - DIVISION 28		OFOI	CFCI	OFCI
ACCESS CONTROL SYSTEM(ACS)			✓	
INTRUSION DETECTION SYSTEM			✓	
DOOR ACCESS VIDEO INTERCOM SYSTEM			✓	
VIDEO SURVEILLANCE SYSTEM (VSS)				
→ VSS SERVERS			✓	
→ VSS CAMERAS			✓	
→ VSS PROGRAMMING			✓	
→ VSS CABLING			✓	SEE NOTE 2.
FIRE ALARM SMOKE DETECTION WITH VOICE EVACUATION			✓	
RACEWAY: CONDUIT, BACK BOXES, SLEEVES, ETC.			✓	SEE NOTE 1.
ELECTRICAL POWER			✓	SEE NOTE 1.
OFOI - OWNER FURNISHED AND OWNER INSTALLED OFCI - CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED OFCI - OWNER FURNISHED AND CONTRACTOR INSTALLED				
RESPONSIBILITY MATRIX NOTES: 1. BY DIVISION 28 2. BY DIVISION 27				

ACCESS CONTROL LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[ACP]	ACCESS CONTROL SYSTEM, CONTROL PANEL.	+60" AFF TO CENTER	AS REQUIRED	COORDINATE POWER. NOTE #4.
[CR] #	ACCESS CONTROL PROXIMITY CARD READER. DEFAULT SYMBOL INDICATES WALL MOUNTED *M - INDICATES MULLION MOUNTED READER	+42" A.F.F.	1-G, 3/4" C	
[CR] #	DOOR MOUNTED ACCESS CONTROL PROXIMITY CARD READER THAT IS INTEGRATED INTO THE DOOR HARDWARE.	+42" AFF	N/A	
[DS] #	2-WAY AUDIO/VIDEO INTERCOM DOOR STATION. *DEFAULT INDICATES WALL MOUNTED *M - INDICATES MULLION MOUNTED DEVICE	+42" AFF	*W: 1-G, 3/4" C *M: 3/4" C	COORDINATE POWER. NOTE #4 & #5.
[DS]	DOOR MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION	+42" AFF, FIELD COORDINATE		COORDINATE POWER. NOTE #4
[MS]	2-WAY AUDIO/VIDEO INTERCOM MASTER STATION.	DESK MOUNTED UNO		COORDINATE POWER. NOTE #4
[DR]	DOOR RELEASE BUTTON	COORDINATE WITH GC	1-G, 3/4" C	
[DH]	PIR MOTION REQUEST TO EXIT DEVICE, DOOR CONTACT AND ELECTRIC STRIKE.			ACCESS CONTROL ONLY DOOR SHALL BE SPST. DOOR WITH BOTH ACCESS CONTROL AND INTRUSION SHALL BE DPDT. ONLY 1 DOOR CONTACT PER DOOR IF DH AND DC SYMBOL ARE SHOWN
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK 5. AVIGILON PART #30C-H4V-ROI-R				

VIDEO SURVEILLANCE LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[ZC]	WALL/CORNER MOUNT 4-SENSOR CAMERA	REFERENCE FLOOR PLANS	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	NOTE #5 AND 6
[ZC]	CEILING MOUNTED 4-SENSOR CAMERA	CEILING		NOTE #5
[ZC]	3-SENSOR CAMERA	CEILING UNO		NOTE #5 AND 6
[ZC]	2-SENSOR CAMERA	REFERENCE FLOOR PLANS	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	NOTE #5
[ZC]	1-SENSOR CAMERA	REFERENCE FLOOR PLANS	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[+]	SYMBOL ADDED TO CAMERA TO INDICATE WALL MOUNT.			
[+]	SYMBOL ADDED TO CAMERA TO INDICATE CORNER MOUNT.			
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR. 5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK				

INTRUSION LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[IDP]	INTRUSION DETECTION SYSTEM CONTROL PANEL	+60" AFF	TWO(2) - 1" C TO CONTRACTOR PROVIDED BACK BOX	COORDINATE POWER WITH EC. NOTE #5
[KP]	INTRUSION DETECTION SYSTEM KEYPAD.	+48" AFF TO TOP	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[+M]	WALL MOUNTED MOTION DETECTOR *# = LR IF LONG RANGE	REFERENCE FLOOR PLAN	N/A	
[GB]	CEILING MOUNTED GLASS BREAK DETECTOR	CEILING	N/A	
[DC]	DOOR CONTACT	FLUSH MOUNTED IN DOOR FRAME	N/A	INTRUSION ONLY DOOR SHALL BE SPST. DOOR WITH BOTH ACCESS CONTROL AND INTRUSION SHALL BE DPDT. ONLY 1 DOOR CONTACT PER DOOR IF DH AND DC SYMBOL ARE SHOWN
[ODC]	OVERHEAD DOOR MOUNT MAGNETIC DOOR CONTACT.	SURFACE MOUNTED ON DOOR FRAME	N/A	NOTE #4
[WHU]	WIRELESS HOLD UP BUTTON & TRANSMITTER		N/A	
[SS]	SECURITY SIREN	+9" AFF	SINGLE GANG BACKBOX	
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. WHU REQUIRES RECEIVER. REFERENCE SECURITY SHEET SPECIFICATIONS FOR PART NUMBERS. 5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK				

FIRE ALARM LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL
[FAA]	FIRE ALARM ANNUNCIATOR PANEL
[NAC]	NOTIFICATION APPLIANCE
NOTES: 1. REFERENCE SHEET SPECIFICATIONS 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.	

STRUCTURED CABLING LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[#] #	WALL MOUNTED NETWORK OUTLET D#: NUMBER OF DATA DROPS IN OUTLET AP: WIRELESS ACCESS POINT	+18" AFF, UNLESS OTHERWISE NOTED	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[#] #	COMMUNICATIONS OUTLET	FIELD COORDINATE	FIELD COORDINATE	
[W] #	WALL MOUNTED NETWORK OUTLET	+44" AFF	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[B] #	WALL MOUNTED BOX FOR FUTURE USE.	+18" AFF UNO	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[DH] #	FLOOR MOUNTED NETWORK OUTLET	N/A	COORDINATE WITH ELECTRICAL CONTRACTOR	FINISHED HARDWARE PROVIDED BY DIV 27
[DH] #	CEILING MOUNTED NETWORK OUTLET D#: NETWORK OUTLET	ABOVE CEILING	CEILING BRACKET WITH BISCUIT BLOCK	
[AP] #	CEILING MOUNTED NETWORK OUTLET FOR ACCESS POINT D#: NETWORK DROP QUANTITY	ABOVE CEILING	CEILING BRACKET WITH BISCUIT BLOCK	
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. CONDUIT STUB UP AND SLEEVES SHALL HAVE A SOLID UNCUT PLASTIC PROTECTIVE BUSHING. 5. NO CONDUITS SHALL EXCEED FOR 40% MAXIMUM FILL RATIO. CONTRACTOR TO PROVIDE ADDITIONAL CONDUITS REQUIRED.				

AUDIO/VIDEO LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[WMP]	WALL MOUNTED PROJECTOR AUDIO/VISUAL OUTPUT OUTLET	REFERENCE FLOOR PLANS.	4 11/16"x4 11/16"x2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25" C	NOTE #5
[CMP]	CEILING MOUNTED PROJECTOR AUDIO/VISUAL OUTPUT OUTLET	CEILING MOUNTED	N/A	NOTE #5
[AV-1]	WALL MOUNTED AUDIO/VIDEO INPUT OUTLET	+18" AFF UNO	4 11/16"x4 11/16"x2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25" C	NOTE #6
[FSD-1]	WALL MOUNTED FLAT SCREEN DISPLAY AUDIO/VISUAL OUTPUT OUTLET	REFERENCE FLOOR PLAN	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	NOTE #5
[FSD-2]	WALL MOUNTED FLAT SCREEN DISPLAY AUDIO/VISUAL OUTPUT OUTLET ASSOCIATED WITH AV-1 INPUT OUTLET	REFERENCE FLOOR PLAN	4 11/16"x4 11/16"x2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25" C	NOTE #5
[VD]	INTERACTIVE VIDEO DISPLAY AUDIO/VISUAL OUTPUT OUTLET	REFERENCE FLOOR PLAN	4 11/16"x4 11/16"x2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25" C	NOTE #6
[CP]	AV CONTROL PANEL	+48" AFF TO TOP	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[PS]	LOCAL INSTRUCTIONAL SPACE PRESENTATION SPEAKER	CEILING	CONTRACTOR PROVIDED CEILING BOX	COORDINATE POWER WITH EC
[CX]	STREAMING CAMERA	CEILING UNO	N/A	NOTE #5
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR. 5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK 6. REFERENCE DETAIL SHEETS FOR ADDITIONAL INSTRUCTIONS.				

LOCAL SOUND SYSTEM LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[LS]	LOCAL SOUND SYSTEM SPEAKER P: POLE MOUNTED SPEAKER	CEILING MOUNT UNO	CONTRACTOR PROVIDED BACK BOX OR 4"x4"x2 1/8" J BOX WITH COVER, 1" C	
[LSC]	LOCAL SOUND SYSTEM CONTROL PLATE	+48" AFF TO TOP	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[MI]	MICROPHONE INPUT	+18" AFF UNO	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[MA]	COMBINATION OUTLET CONSISTING OF ONE (1) MICROPHONE INPUT AND ONE (1) AUXILIARY INPUT	+18" AFF UNO	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[AI]	3.5MM STEREO AUDIO AUXILIARY INPUT	+18" AFF UNO	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[H]	HANGING MICROPHONE	CEILING MOUNT	N/A	
[ABRI]	AUXILIARY INPUT AND BLUETOOTH MIXER	+48" AFF TO TOP	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[RACK]	VENUE SPECIFIC LOCAL SOUND SYSTEM HEAD END RACK	WALL MOUNT UNO	N/A	
[WA]	WIRELESS ANTENNA	WALL MOUNT UNO	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[ALA]	ASSISTED LISTENING ANTENNA	WALL MOUNT UNO	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[SUB]	SUBWOOFER	CEILING MOUNT UNO		
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR. 5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK				

INTERCOM LEGEND				
SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
[ICS]	INTERCOM COMMUNICATIONS SYSTEM HEAD END UNIT.	FLOOR MOUNTED	COORDINATE WITH EC	COORDINATE POWER WITH EC
[S]	CEILING MOUNT INTERCOM SPEAKER, LAY-IN CEILING	CEILING	CONTRACTOR PROVIDED	
[S2]	CEILING MOUNT INTERCOM SPEAKER, HARD CEILING.	CEILING	CONTRACTOR PROVIDED	
[S3]	WALL MOUNT INTERIOR INTERCOM SPEAKER	REFERENCE FLOOR PLANS	CONTRACTOR PROVIDED	
[S4]	WALL MOUNT EXTERIOR INTERCOM SPEAKER	+10" AFF UNO	CONTRACTOR PROVIDED	
[S5]	PENDANT MOUNT INTERCOM SPEAKER	REFERENCE FLOOR PLANS	CONTRACTOR PROVIDED	
[S6]	SURFACE MOUNT INTERCOM SPEAKER, MOUNT TO STRUCTURE	CEILING	CONTRACTOR PROVIDED	
[S7]	CEILING MOUNTED EXTERIOR INTERCOM SPEAKER	CEILING	CONTRACTOR PROVIDED	
[#] [IP]	IP BASED SPEAKER. *# TO BE REPLACED WITH S, S2, S3, S4 INDICATING THE SPECIFIC TYPE OF SPEAKER.	REFERENCE FLOOR PLANS	CONTRACTOR PROVIDED	NOTE #5
[#] [IP] [AMP]	SPEAKER CONNECTED TO IP MODULE AND AMPLIFIER. *# TO BE REPLACED WITH S, S2, S3, S4 INDICATING THE SPECIFIC TYPE OF SPEAKER.	REFERENCE FLOOR PLANS	CONTRACTOR PROVIDED	
[VC]	WALL MOUNTED VOLUME CONTROL	+48" AFF	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[CB]	INTERCOM CALL BUTTON	+48" AFF	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[C]	SINGLE FACE CLOCK	90" AFF UNO.	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[C2]	DOUBLE FACE CLOCK	90" AFF UNO.	4"x4"x2 1/8" BACK BOX WITH 1-G MUD RING, 1" C	
[RPS]	REMOTE PROGRAM SOURCE	DESK TOP	COORDINATE WITH EC	NOTE #5
[ACS]	ADMINISTRATIVE CALL STATION.	DESK TOP	N/A	NOTE #5
NOTES: 1. #G INDICATES BACK BOX SIZE. 2. #C INDICATES CONDUIT SIZE. 3. UNO: UNLESS NOTED OTHERWISE 4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR. 5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK				

Author
drawn by

Checker
checked by

APRIL 2026
date

REVISIONS		
Δ	DESCRIPTION	DATE



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

T101

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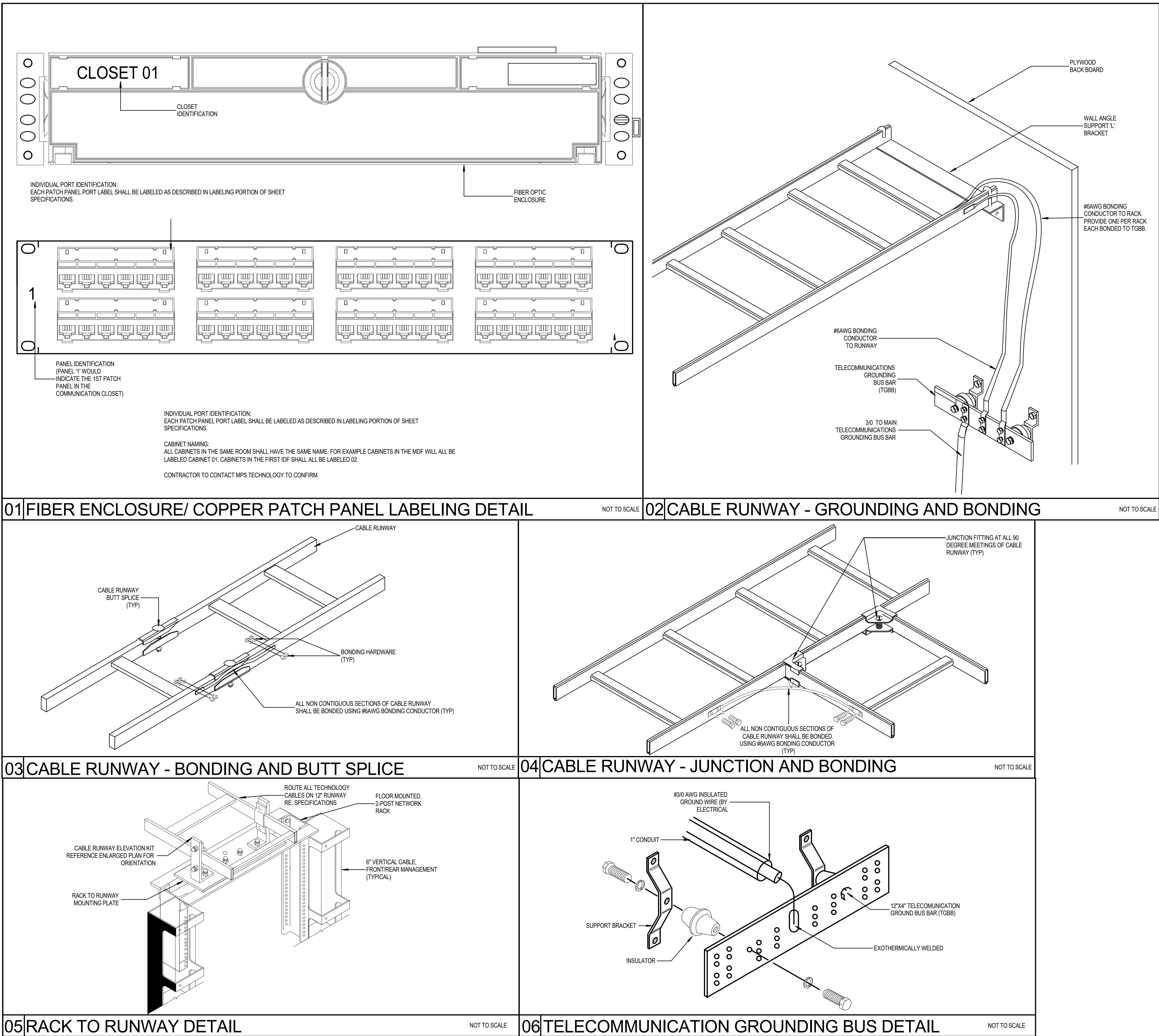


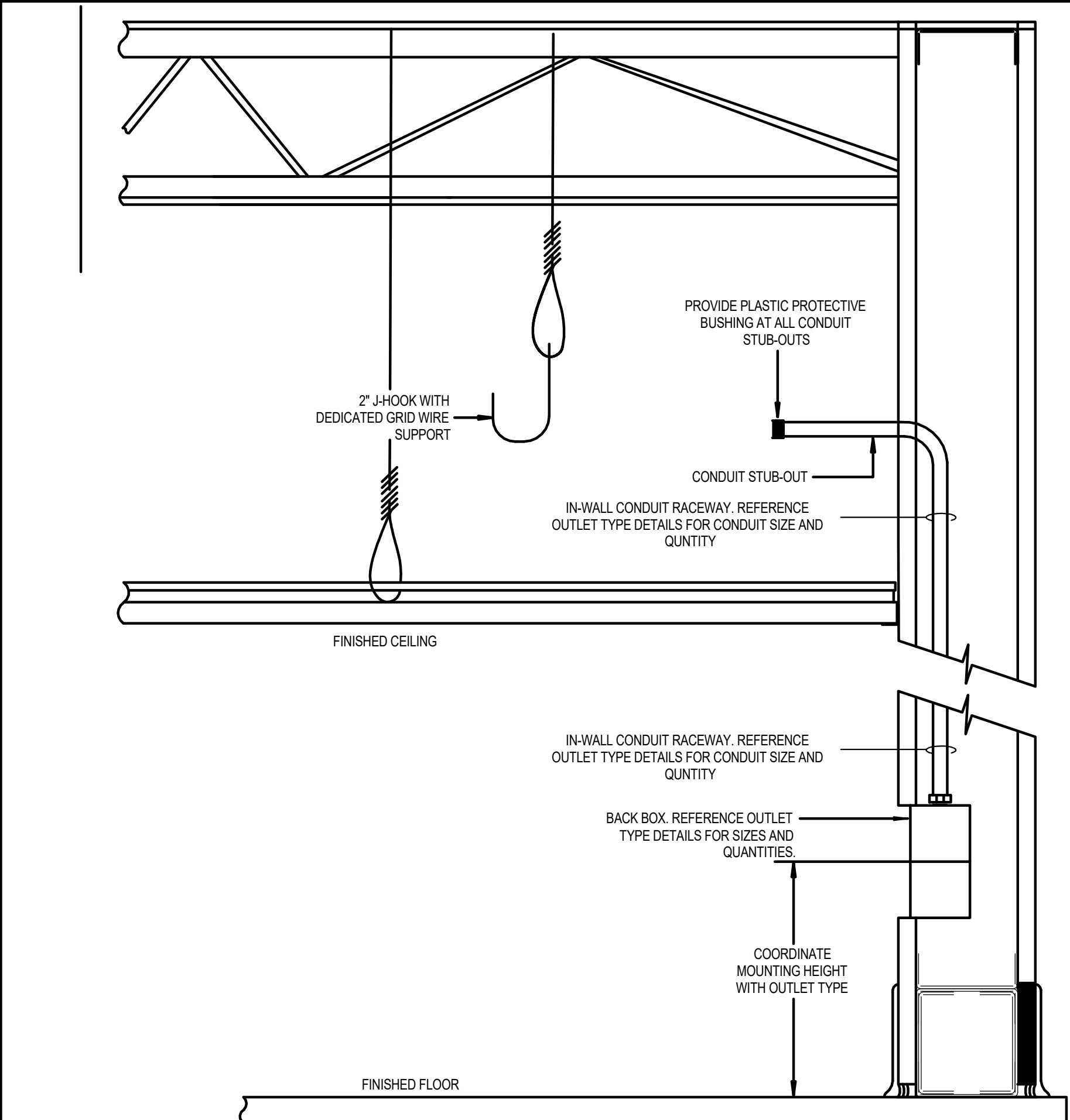
1 TECHNOLOGY PLAN
Scale: 1/4" = 1'-0"

**Salas O'Brien**

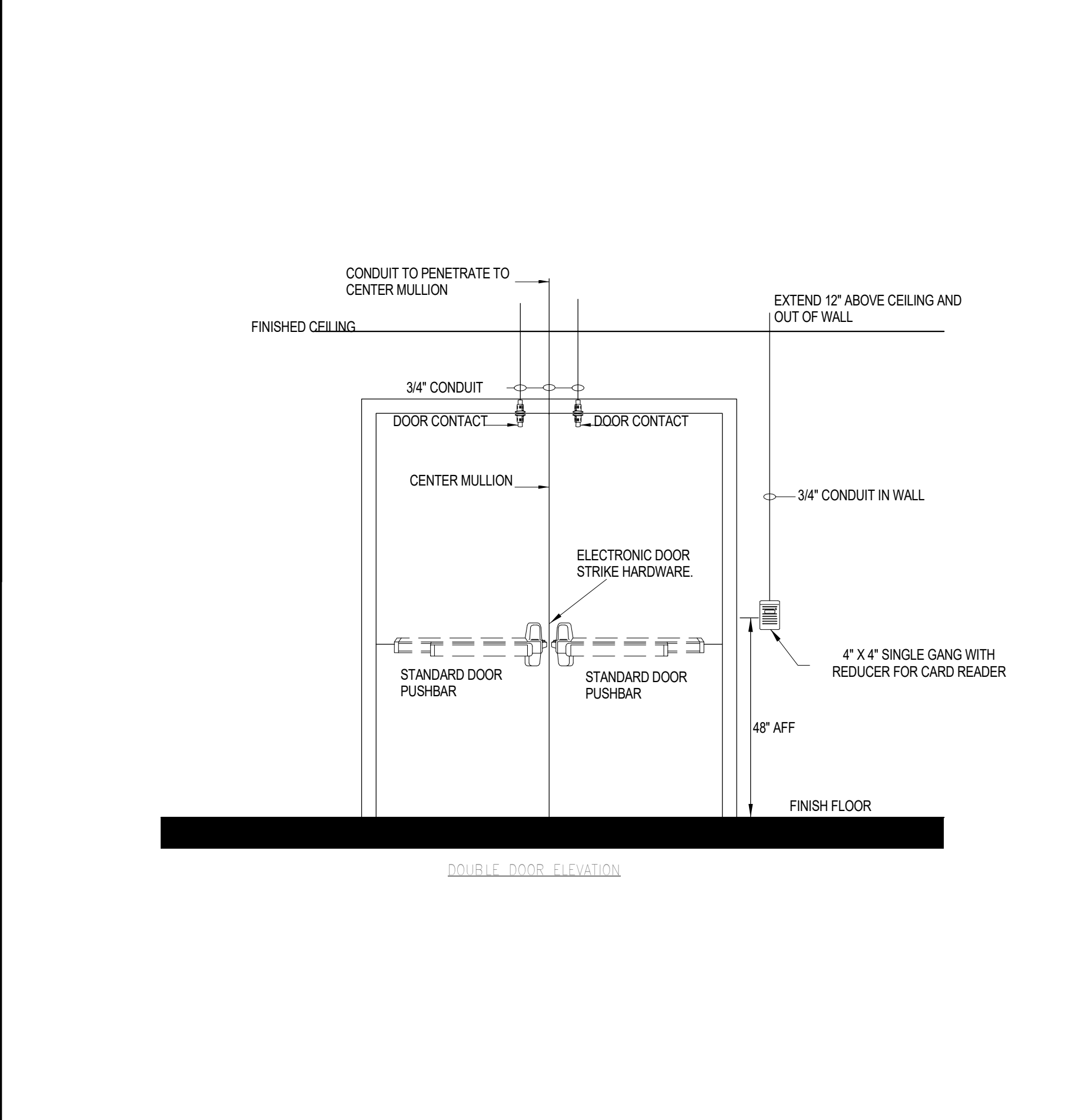
Salas O'Brien, Inc. - Oklahoma City
2900 S. Telephone Road, Suite 120
Moore, OK 73160
CA#: 9820 Expiration Date: 06/30/2027
Salas O'Brien Project Number: 2650-00226-00

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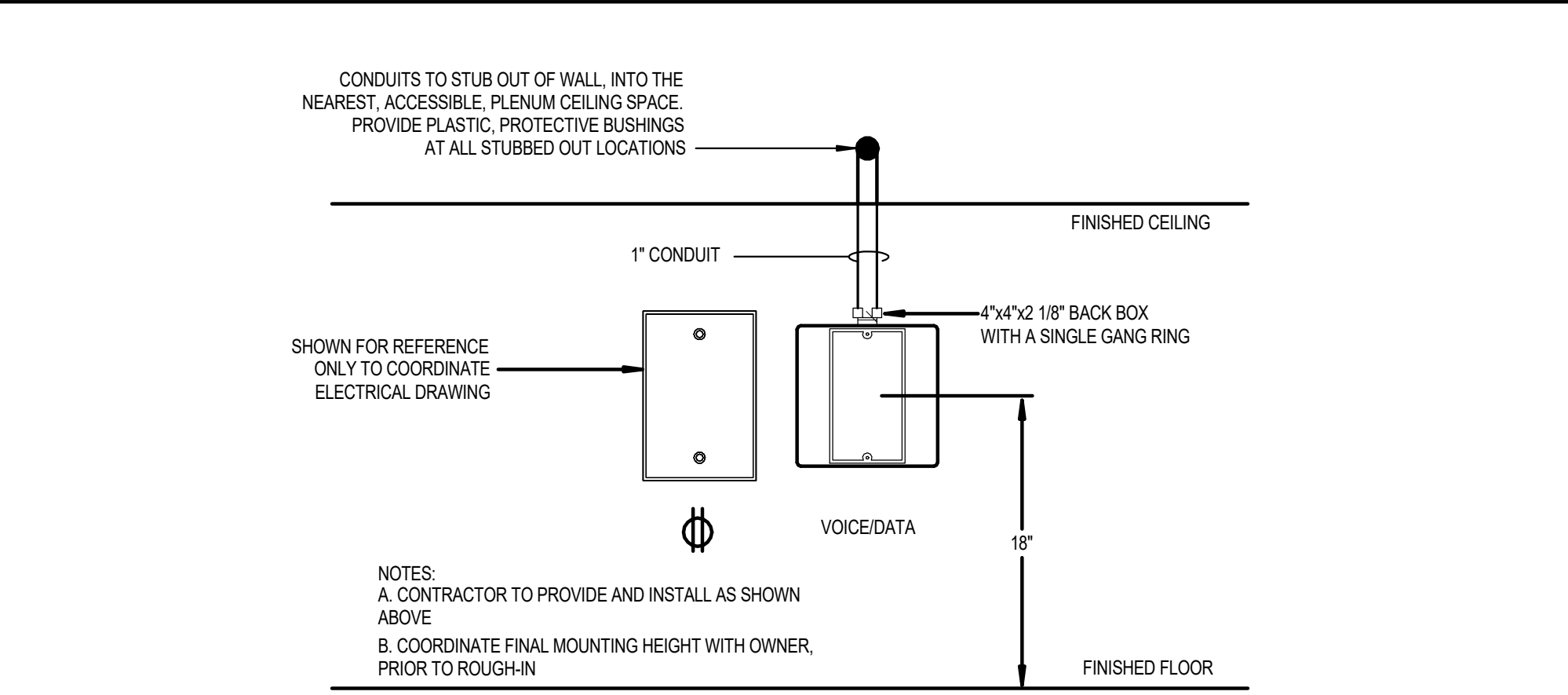




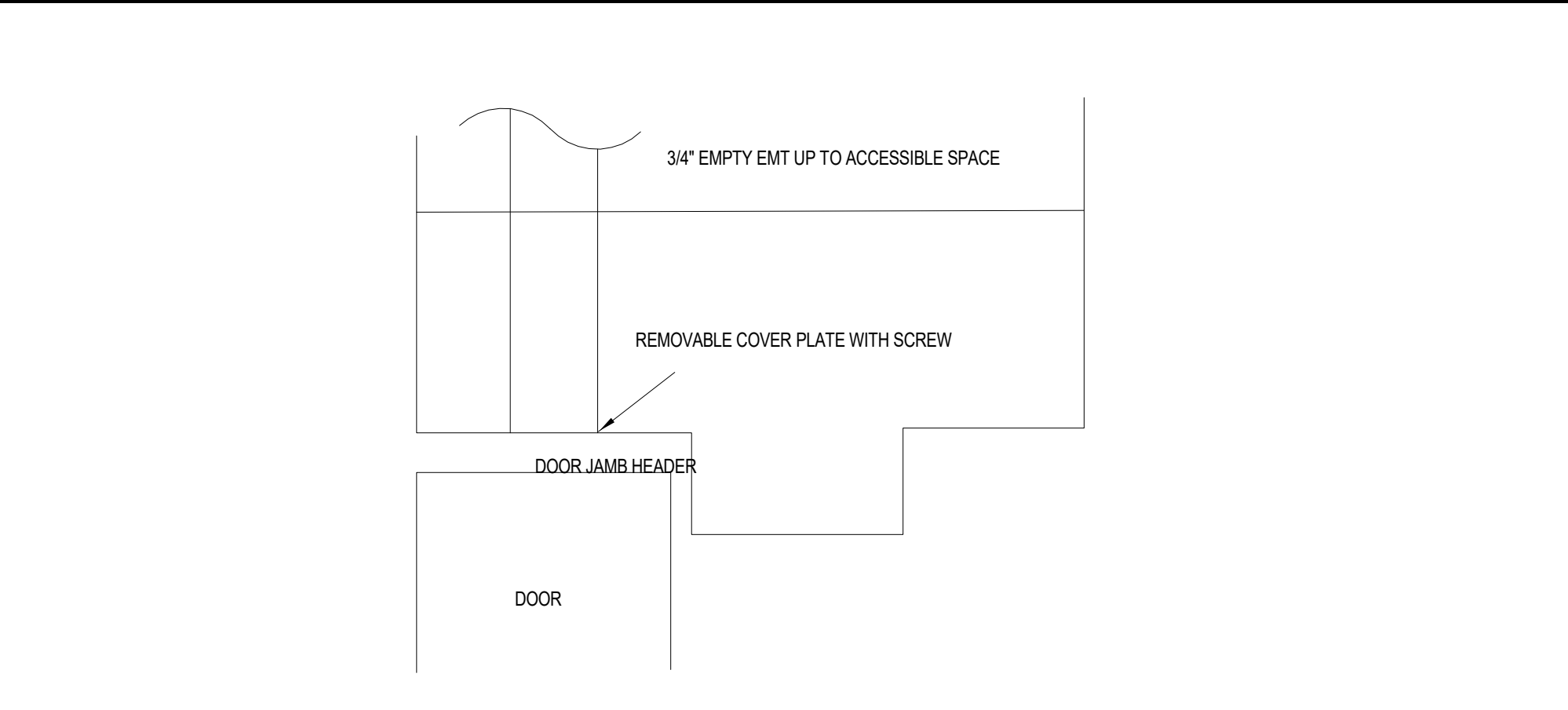
01 | LOW VOLTAGE ELEVATION - IN-WALL RACEWAY



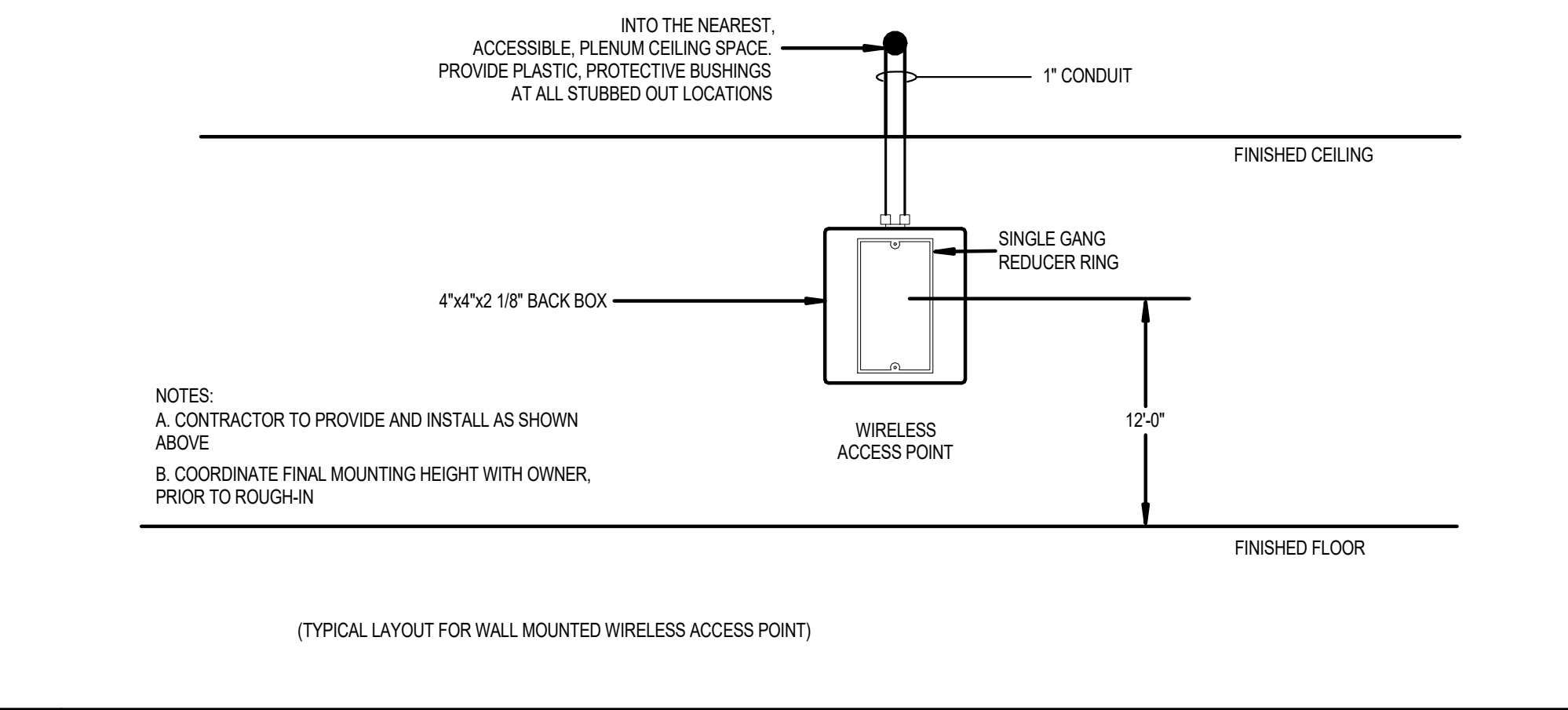
06 | DOUBLE DOOR SECURITY & ACCESS CONTROL



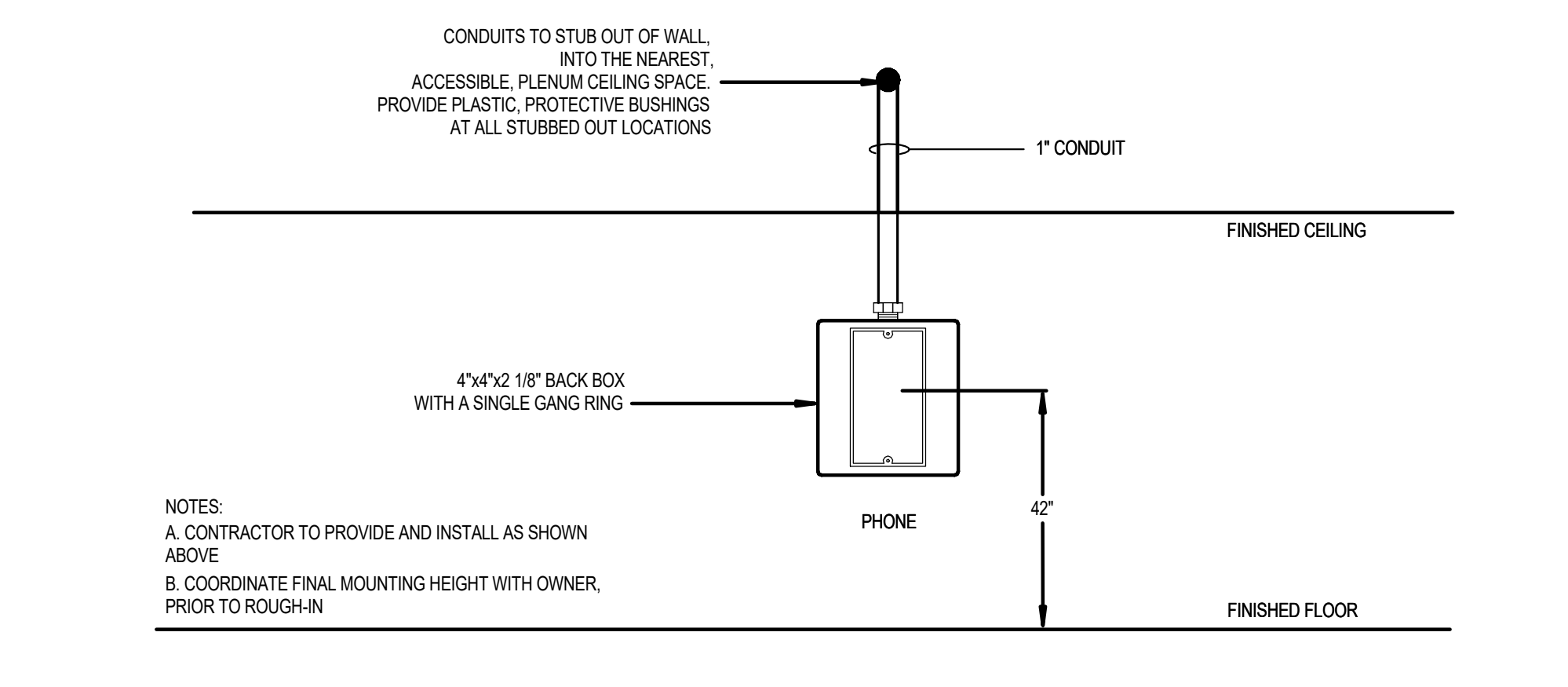
02 | RACEWAY DETAIL - TYPICAL VOICE/DATA OUTLET



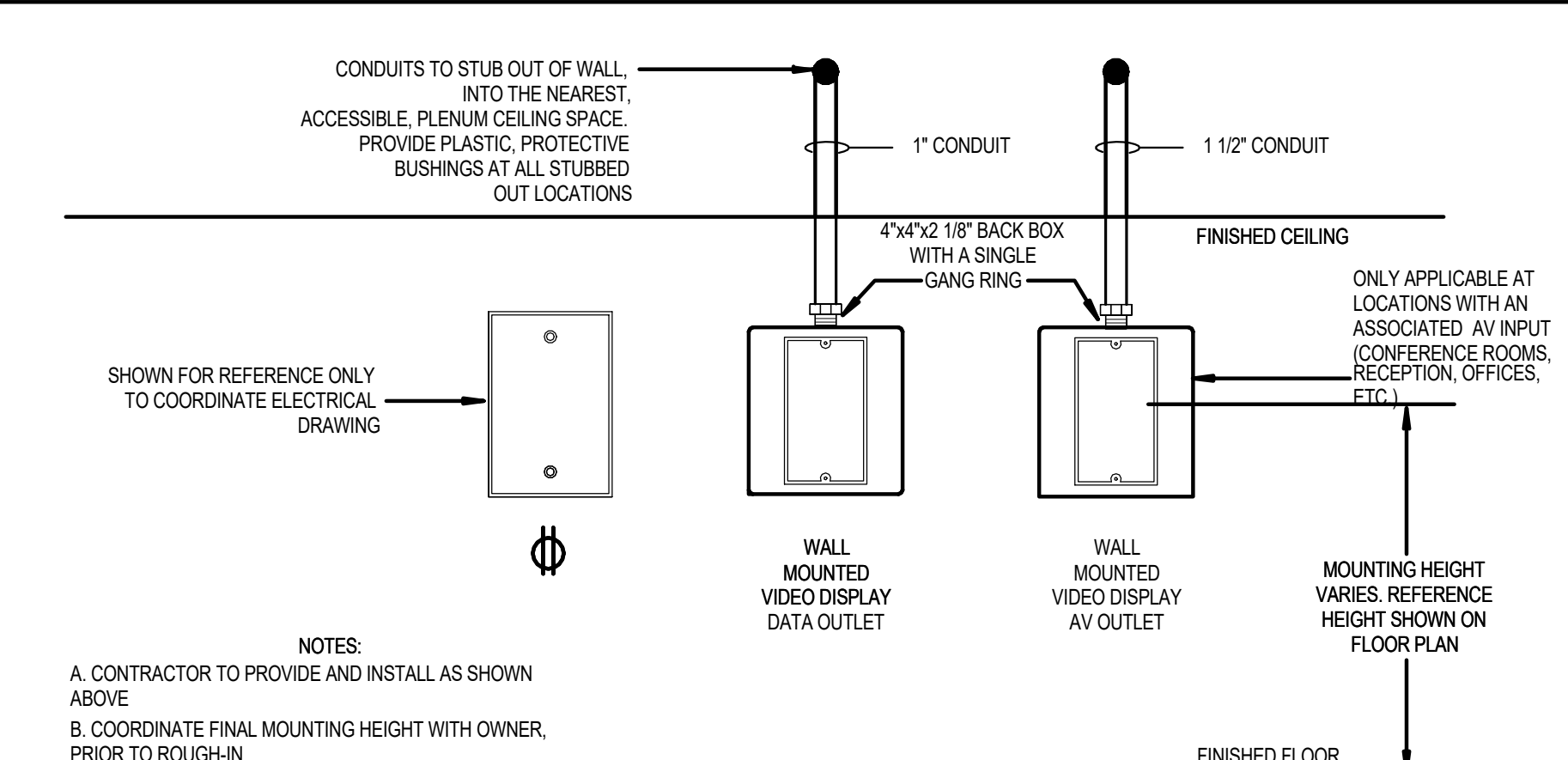
04 | SECURITY CONDUIT DOOR JAMB HEADER



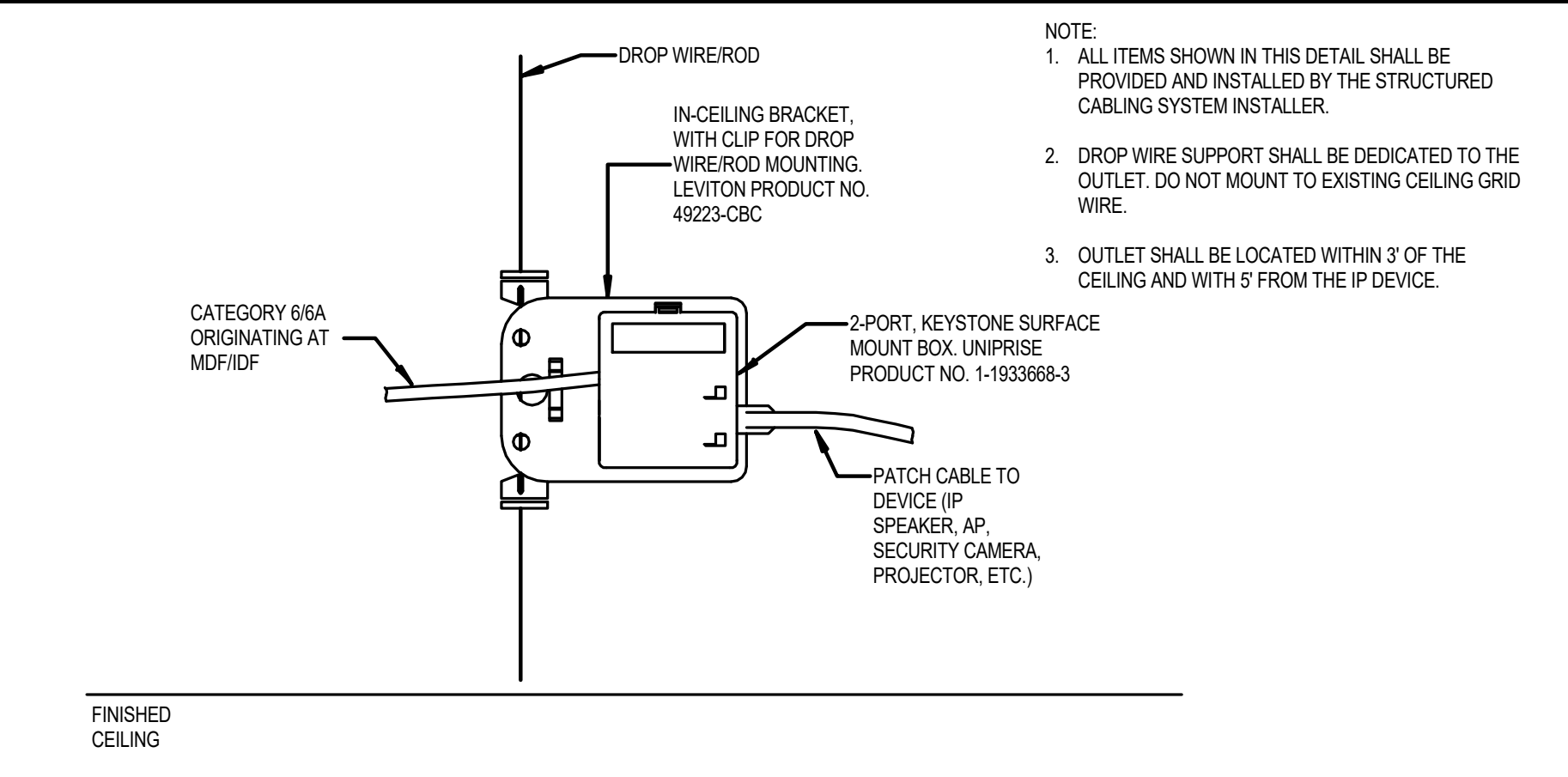
07 | RACEWAY DETAIL - WALL MOUNTED WIRELESS AP



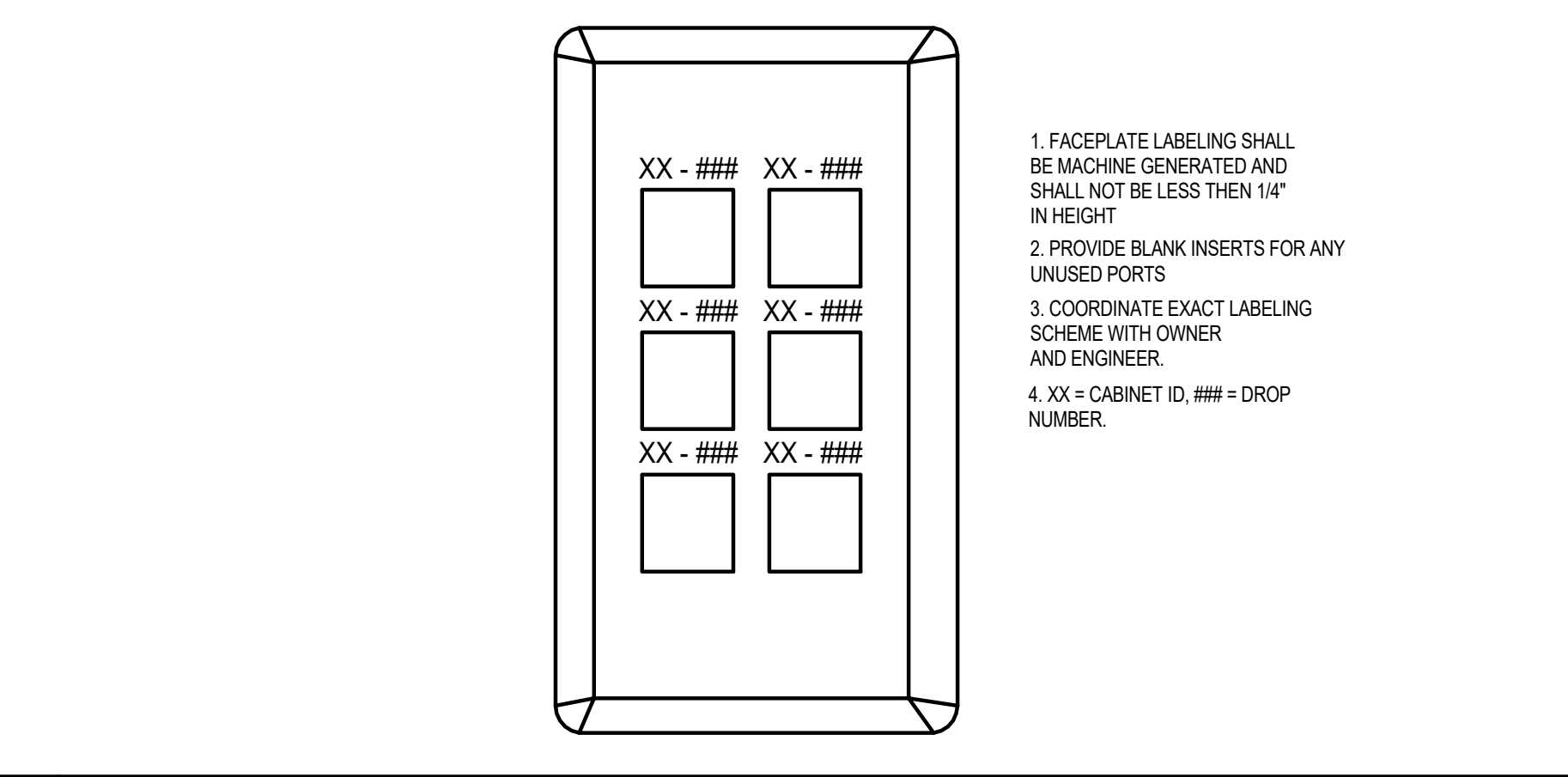
09 | RACEWAY DETAIL - WALL MOUNTED TELEPHONE



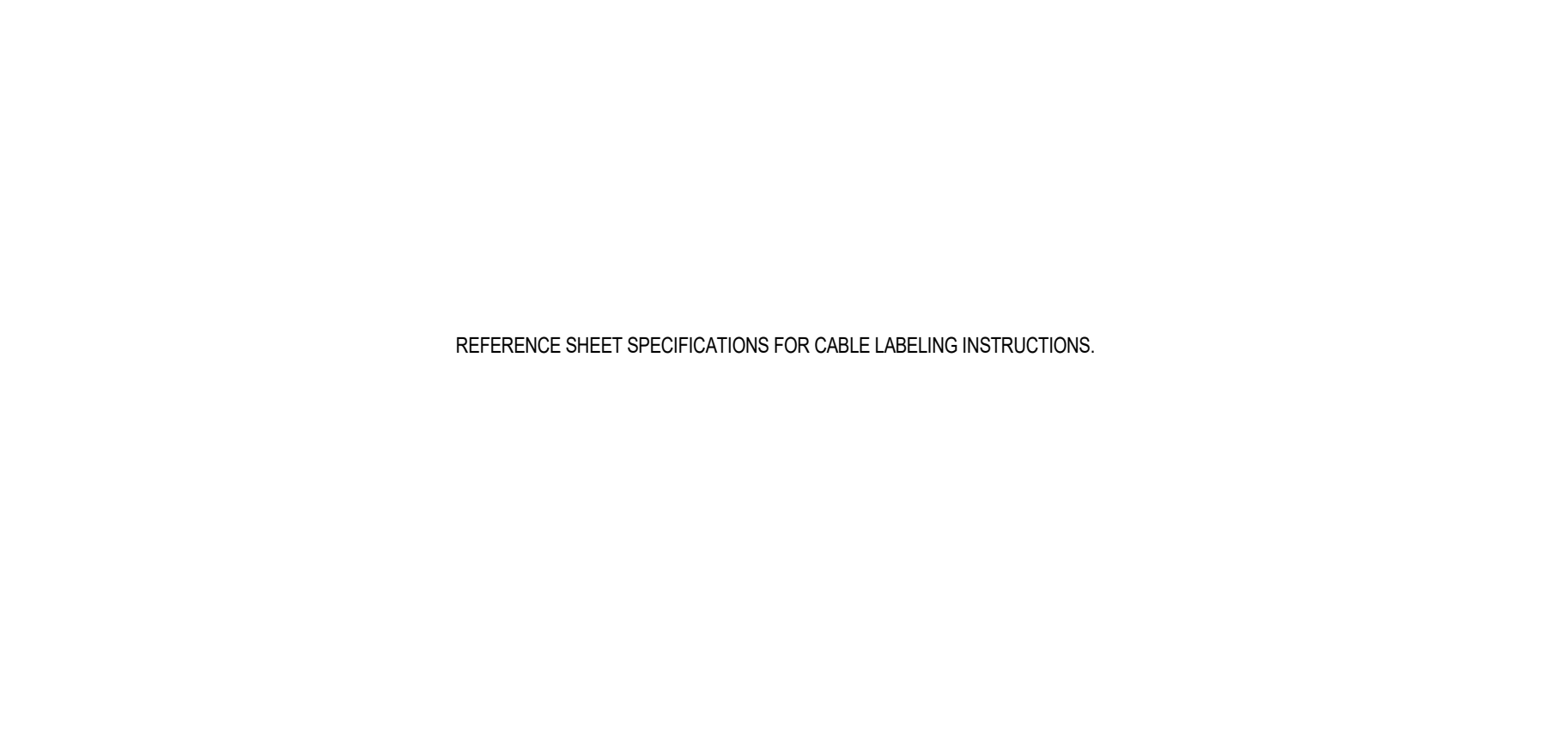
03 | RACEWAY DETAIL - WALL MOUNTED DISPLAY



05 | ABOVE CEILING STAND ALONE OUTLET



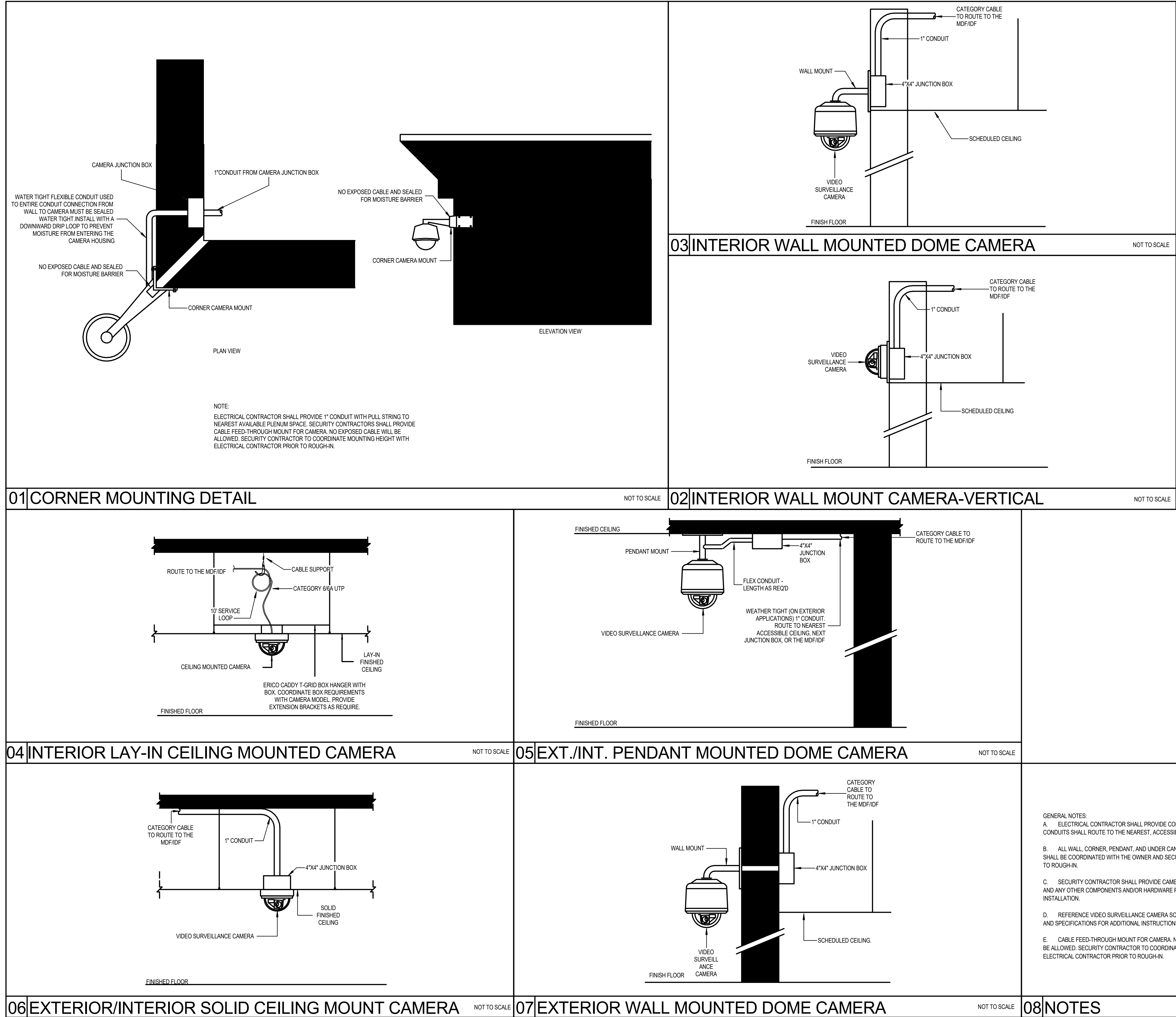
08 | FACEPLATE LABEL DETAIL



10 | CABLE LABEL DETAIL

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STRUCTURED CABLING SYSTEM SPECIFICATIONS

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 77-240-8B yellow 77-240-5B green
Mohawk Cat6 Plenum Part #s	M58281B Blue M58280B white M58283B yellow M58286B 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.

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.
- 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.
- 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.

Communications Equipment Room Fittings

Equipment rack

- Existing to remain.

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

- Existing to remain.

Optical fiber patch panel / enclosure

- Existing to remain.

Ladder racking

- Existing to remain.

Power protection power strips

- Existing to remain.

Uninterruptible Power Supply (UPS)

- Existing to remain.

Installation

Cable management

- 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.

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 - Equipment

1.01 System Manufacture

- Intercom System Manufacturer shall be Rauland Telecenter U IP. (Match existing system)
- Cable Manufacturer shall be Belden or Equivalent

Locations where TelecenterU equipment is required. It may be purchased from the following authorized TelecenterU dealer
Endex of Oklahoma Inc - 405-602-0001

1.02 Intercom Systems Equipment

1.02.a Rauland Telecenter U IP Intercom Systems Equipment

- Classroom Intercom Equipment
- § Call button shall be Part # 603302 Dual Level call switch.
- § Ceiling speakers shall be Part #BAFKIT2XL6RJ - 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.
- § BAFKIT2XL- 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

Part 2 - Installation

2.01 Systems Installation

- All non-IP cabling shall be shielded and have a minimum of 5 conductors.
- All network IP cabling shall be Cat6 & Purple in color (See Structured Cabling System Specifications for cabling information)
- In Daycare projects each room with a call button shall have a status light mounted above the room door on the hallway side. (Rauland Telecenter U IP sites only)
- All circuits and cabling shall be labeled at all terminating ends.
- All Ceiling mounted devices shall be mounted on non-stainable ceiling tiles
- All devices shall be mounted according to the manufacture's specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All non-IP 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 lies 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. Lighting suppression shall be installed at entry points.
- 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.

2.02 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.

2.03 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.

2.04 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.

2.05 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.

2.06 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.

3.05 Submittals

1.03.01 Prior to installation

- Show complete map of system design for approval by Owner.

3.06 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.

Intercom System Installation

Completion Check List

Part 4 - Check List

4.01 Section Includes

- Intercom System Completion Check List

4.02 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

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KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN

MECHANICAL / ELECTRICAL

Author
drawn by

Checker
checked by

APRIL 2026
date

REVISIONS

Δ	DESCRIPTION	DATE



SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

sheet no:

T601

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CONSENT OF AGP.

**Salas O'Brien**

Salas O'Brien, Inc. - Oklahoma City
2900 S. Telephone Road, Suite 120
Moore, OK 73160
Call#: 9820 Expiration Date: 06/30/2027

Salas O'Brien Project Number: 2650-00226-00

CLOCK SYSTEM SPECIFICATIONS

Part 1 - General

1.01 System Manufacture

- Clock Equipment shall be Telecor, Rauland, Sapling or Primex. See plans for the specific manufacturer required. (No Substitutions)

1.02 Intercom Clock Systems Equipment Description

- Digital clock size & voltage shall be as follows:
 - Standard size classrooms shall be 2.5 inch - 24volt.
 - Larger rooms, common areas and hallways shall be 4 inch - 24volt.
- Analog Clock size and voltage shall be 12 inch - 24volt.
- Digital Clocks shall be hard wired 24volt power and may not use battery power for its primary power source.
- Analog Clocks shall be hard wired 24volt power and may not use battery power for its primary power source.
- Install clock part number shall be as follows:

SMA-3R0-1004-1	Transmitter
SBL-31S-254-4R	2.5" Digital Clocks 24volt
SBL-31S-404-4R	4" Digital Clocks 24volt
SAB-1BD-10S-0	Metal Pole for Double Clocks
SAL-4BS-12R-14	12" Analog Clock 24volt
3S-MO15	15KVA Power Transformer
3S-MO20	25KVA Power Transformer
3S-MO25	50KVA Power Transformer
3S-MO30	75KVA Power Transformer

- If a clock system is not specified and the 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 E93BAOD204BP
 - 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 manufacture's specifications.
- All Ceiling mounted devices shall be mounted on non-stainable ceiling tiles
- 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 and shall have lightning suppression installed at building entry.
- 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 at 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.

1.04 Submittals

1.04.01 Prior to installation

- Show complete map of system design for approval by Owner.

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

UPDATED FEBURARY 2026

Part 1 - General

2.01 Manufacturers

- Security System Manufacturer shall be DMP. See plans for the specific manufacturer required. (No Substitutions)
- Installer shall be certified by manufacturer to install & 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 DMP Model # XR550NL-G. (No Substitutions)
- Security alarm keypad shall be DMP Model # 7973. (No Substitutions)
- Security alarm keypad for all kitchen locations shall be DMP Model # 7073. (No Substitutions)
- Security alarm & zone hardwire expander shall be DMP Model # 714-8. (No Substitutions)
- Security alarm 16 zone hardwire expander shall be DMP Model # 714-16. (No Substitutions)
- Security alarm power supply shall be DMP systems = Altronix Model # SMP3PMCXTX. (No Substitutions)
- Security alarm cabinet locks shall be DMP Model # 301. (No Substitutions)
- Security alarm wireless receiver shall be DMP Model # 1100XH. DSC N/A
- Security alarm wireless transmitter shall be DMP Model # 1103. DSC N/A
- Security alarm 35x35 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 hold-up button shall be Potter HUSK-20

- Security alarm door contact shall be GE Model # 1076D-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-55A 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

- Keypad zones shall not be used. All zones shall wire to the main control or zone expanders.
- 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 manufacture's specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All DMP 714-8 & 714-16 zone expanders shall be installed with a power supply Altronix Model # SMP3PMCXTX keyed with DMP Model # 301.
- 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.
- All new DMP main control panels shall have a Cat 6 cable ran back to the nearest IDF for network connectivity.
- Each expansion cabinets shall have two non-shielded 16 gauge 4 conductor cables ran from the main control to the expansion cabinet.
- 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 hardwired individually 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 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 holdup buttons shall be connected via wireless.
- Protective grommets shall be installed on all conduits and enclosures to protect wire.

- All devices shall be wired with **NON-shielded** cable.

- All panels, power supplies and modules shall be grounded.
- All roof hatches shall have an alarm contact installed and connected to the alarm system.
- 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 and shall have lightning suppression installed at building entry.

- 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 at 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 of 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.

1.02 Submittals

1.03.01 Prior to installation

- Show complete 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

- 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.

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

End of Section

ACCESS CONTROL SYSTEM SPECIFICATIONS

Access Control Equipment - UPDATED APRIL 2026

Part 1 - Manufacture

- Existing Access Control Manufacturer is 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 reader control panel per building shall be equipped with (1) Keyscan Netcom2p module. If the building has an existing 2,4 or 8 Door Control Panel with a Netcom2P already installed, then CIM modules shall be installed to connect the new Control Panel to the existing Control Panel.
- All Reader Control Panels shall be linked together with CIM modules.

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)

- Camden CX-EPD1292L ½ inch Rim Strike (ONLY USE IF ¾ INCH RIM WILL NOT FIT)
- Camden CX-EPD1289L ¾ inch Rim Strike
- Camden CX-EPD1579L RECESSED ALL-IN-ONE STRIKE (For use on all doors with mortise lockset hardware)

All doors with cylindrical lockset hardware shall use the following appropriate strike & faceplate:

- CX-EPD-2010L - ANSI Square, 4-7/8" x 1-1/4", Stainless Steel Faceplate
- CX-EPD-2020L - ANSI Square, 4-7/8" x 1-1/4", Stainless Steel Faceplate
- CX-EPD-2030L - Hollow Metal Door 6-7/8" x 1-1/4", Stainless Steel Faceplate
- CX-EPD-2040L - Wood Door, 7-15/16" x 1-7/16", Stainless Steel Faceplate

- 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 Securiton- AccuPower- AQM20-8C/16C, AQDS-8C or equal.
- Each Power supply shall have a minimum of 7ah battery installed

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.

3.01.1Submittals

3.01.2Prior to installation

- Show complete 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

3.02.1Qualifications

- 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

- 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.

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 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 cabling.
- All core holes and EMT sleeves between floors for

FIRE ALARM SPEICIFCATIONS - SK PROTOCOL ONLY

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. If location has existing SD Protocol devices, contractor shall replace all SD Protocol devices with SK Protocol devices. Contractor shall not combine SD & SK protocol devices to one system.

- Fire alarm control shall be Silent Knight Model # 6820XL or 6820EVS (If voice evac is required). (No Substitutions) If location has an existing 5820XL, contractor shall replace with a 6820XL or 6820EVS.

- Fire Alarm signaling line circuit expander shall be Silent Knight Model # 6815. (No Substitutions) If location has existing 5815XL, contractor shall replace with 6815 to support SK Protocol devices. Contractor shall not combine SD & SK protocol devices to one system.

- 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 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 expansion 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.
- 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 manufacturer's 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.
- 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 shall be 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 del.)
- 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 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.
- 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.
- Wire shall have lightning suppression installed where it enters building.
- 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 unused 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.

1.04 Submittals

1.04.01 Prior to installation

- Show complete 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

Fire System Completion Check List

1.01 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 points have been tested to verify proper description at the keypad.
- All horns/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.
- A list of all zone numbers and zone descriptions have been provided to Moore Public Schools for alarm monitoring purposes.

End of Section

IP CAMERA SYSTEM SPECIFICATIONS

IP CAMERA MANUFACTURE IS AVIGILON (NO SUBSTITUTIONS).

AVIGILON EQUIPMENT

INDOOR DOME SINGLE HEAD CAMERA REQUIRED EQUIPMENT LIST

4.0C-H6A-D1-IR

ACC7-ENT LICENSE - 1 per camera

INDOOR MULTI-HEAD 2 HEAD CAMERA REQUIRED EQUIPMENT LIST

10.0C-H6D-HD01-IR

ACC7-ENT LICENSE - 1 per camera

INDOOR FISHEYE CAMERA REQUIRED EQUIPMENT LIST

12.0C-H6A-FE-360-D01-IR

ACC7-ENT LICENSE - 1 per camera

INDOOR MULTI-HEAD 3 HEAD CAMERA REQUIRED EQUIPMENT LIST

9C-H5A-3MH (3x3MP)

Axis T8134 Midspan 60W Power Injector

ACC7-ENT LICENSE - 1 per camera

HSAMH-AD-DOME1

HSAMH-DC-COVR1

HSAMH-AD-IRL1

INDOOR MULTI-HEAD 4 HEAD CAMERA REQUIRED EQUIPMENT LIST

12C-H5A-3MH (4x3MP)

Axis T8134 Midspan 60W Power Injector

ACC7-ENT LICENSE - 1 per camera

HSAMH-AD-DOME1

HSAMH-DC-COVR1

HSAMH-AD-IRL1

OUTDOOR DOME SINGLE HEAD CAMERA REQUIRED EQUIPMENT LIST

6.0C-H6A-D01-IR

ACC7-ENT LICENSE - 1 per camera

OUTDOOR MULTI-HEAD 2 HEAD CAMERA REQUIRED EQUIPMENT LIST

16.0C-H6AD-HD01-IR

NPTA-1201

WLMT-1021

ACC7-ENT LICENSE - 1 per camera

OUTDOOR MULTI-HEAD 3 HEAD CAMERA CORNER MOUNT REQUIRED EQUIPMENT LIST

15C-H5A-3MH (3x5MP)

Axis T8134 Midspan 60W Power Injector

ACC7-ENT LICENSE - 1 per camera

HSAMH-AD-PEND1

HSAMH-DC-COVR1

HSAMH-AD-IRL1

WLMT-1001

OUTDOOR MULTI-HEAD 3 HEAD CAMERA WALL MOUNT REQUIRED EQUIPMENT LIST

15C-H5A-3MH (3x5MP)

Axis T8134 Midspan 60W Power Injector

ACC7-ENT LICENSE - 1 per camera

HSAMH-AD-PEND1

HSAMH-DC-COVR1

HSAMH-AD-IRL1

WLMT-1001

CAMERA SERVER INFORMATION, CONTRACTOR TO PROVIDE, INSTALL AND CONFIGURE THE FOLLOWING AT NEW BUILDINGS OR AS

NEEDED TO ACCOMMODATE ADDITIONAL CAMERAS TO EXISTING SYSTEM:

- 1 - Dell Server part# NVR6-PRM-FORM-D-721B-S22
- 1 - SFP fiber connector, part# NVR6-AINVR2-FORM-D-SFPPLUS-SR
- 1 - Cyber Power UPS Model QL1500RTXL2UN in the MDF dedicated for each new camera server

The contractor shall be responsible for the complete installation, configuration, and programming of the video surveillance system, including all cameras and the video surveillance server. The contractor shall ensure the system is fully operational, integrated, and tested prior to project closeout. The contractor responsible for installing the video surveillance cameras shall also perform all system programming, including configuration of the video surveillance server. No secondary subcontractors or sub-tiers shall be used for any portion of the installation or programming work.

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 sheets 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.

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CIVIL

KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN

MECHANICAL / ELECTRICAL

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Checker

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APRIL 2026

date

REVISIONS

Δ	DESCRIPTION	DATE

MOORE
PUBLIC SCHOOLS

SOUTHGATE
ELEMENTARY
KITCHEN UPGRADES
and ADDITION

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